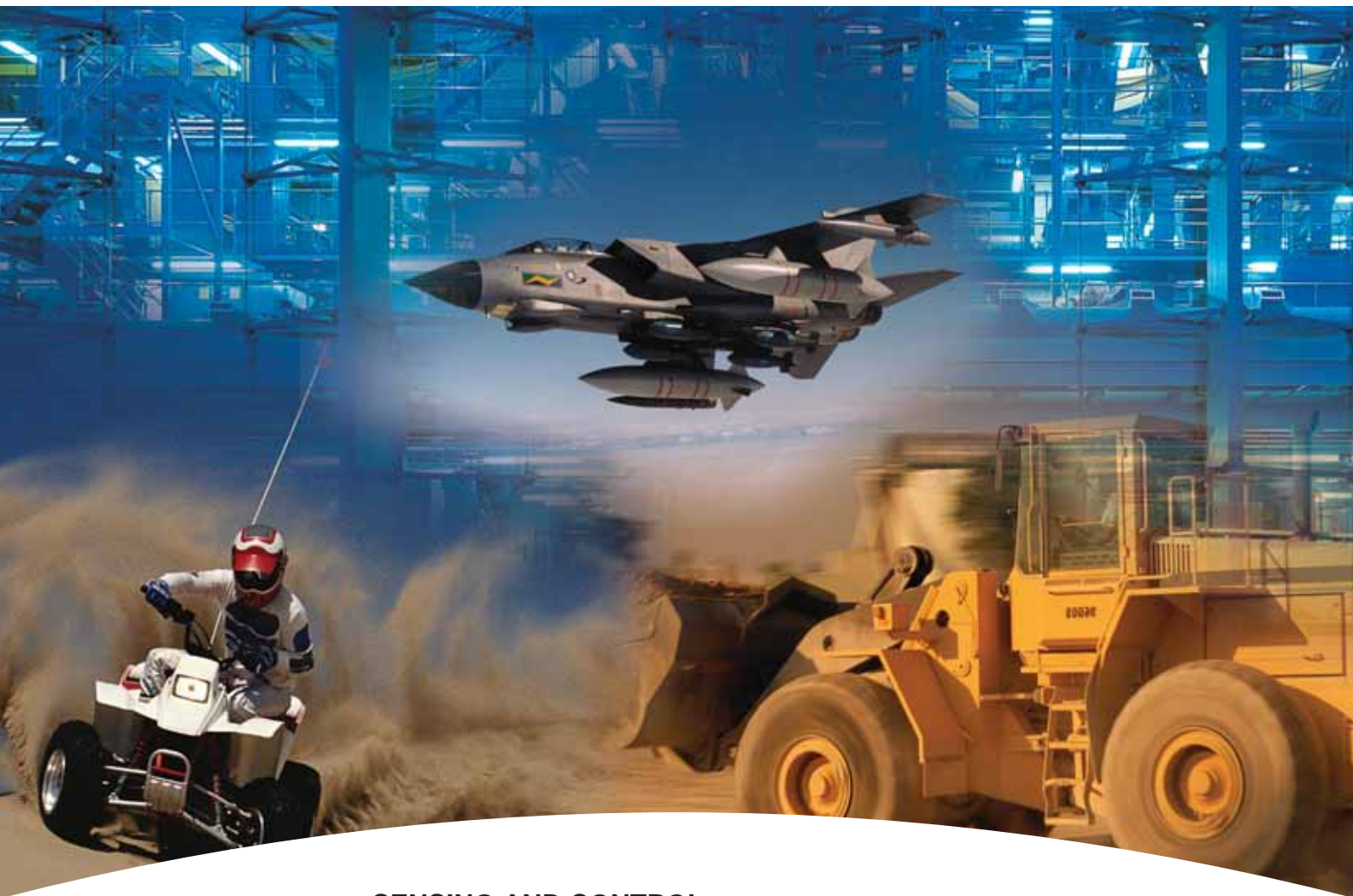


Switches and Custom Controls



SENSING AND CONTROL

Product Catalog

Honeywell

⚠ WARNING

IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING

PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING

MISUSE OF DOCUMENTATION

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

<i>Introduction - How to use this catalogue</i>	<i>Page 2</i>
<i>Industrial Electromechanical Limit Switches</i>	<i>Page 5</i>
Selection Guide	Page 6
Limit Switch Application Information	Page 8
Global Limit Switches	Page 10
Compact Limit Switches	Page 21
Precision Limit Switches	Page 34
Heavy Duty Limit Switches	Page 46
Hazardous Location Switches	Page 57
Levers for Limit Switches	Page 71
<i>Power Relays</i>	<i>Page 74</i>
<i>Electromechanical Safety Switches</i>	<i>Page 79</i>
Selection Guide	Page 80
<i>Basic Switches</i>	<i>Page 103</i>
<i>Pressure Switches</i>	<i>Page 113</i>
<i>Environment Sealed, Hermetically Sealed and Manual Switches</i>	<i>Page 119</i>
Sealed Switches	Page 119
Manual Switches	Page 139
<i>Manual Switches and Pushbuttons</i>	<i>Page 165</i>
Selection Guide	Page 166
AML Series Advanced Manual Line Switches	Page 168
MML Series Miniature Manual Line Switches	Page 171
<i>Custom Switches and Assemblies</i>	<i>Page 173</i>
<i>Vehicle Controls</i>	<i>Page 175</i>
Custom Controls	Page 175
Hour Meters	Page 176
Key Switches	Page 184
Push/Pull Switches	Page 185
Shifters	Page 186
Proportional Retarders	Page 187
Turn Signals	Page 188
Lighting Products	Page 189
Other Vehicle Controls	Page 194
<i>Precision Aerospace</i>	<i>Page 195</i>
<i>Sensing and Control Product Overview</i>	<i>Page 196</i>
<i>New Technologies and Emerging Capabilities</i>	<i>Page 198</i>
<i>Index</i>	<i>Page 199</i>
<i>Sales and Service</i>	<i>Page 210</i>

HONEYWELL SWITCHES AND CONTROLS

Honeywell switches and controls provide a wide selection of solutions. This catalogue contains our most popular offerings. To view our complete range of products, visit our web site at <http://www.honeywell.com/sensing>.

Honeywell is a worldwide leader in advanced switching and sensing technology. Our reputation for technology, quality and reliability is second to none. We have more than 60 years of experience; and extensive knowledge of a wide range of industries and an extensive customer service and support network.

Honeywell manufactures the original MICRO SWITCH brand switches: micro switches, toggle and rocker switches, hermetically and environmentally sealed switches, and relays and limit switches. Honeywell switches are aimed at providing an enhanced level of performance and quality.

Honeywell HOBBS brand is well known worldwide for the development of quality electromechanical products. The HOBBS brand includes hour meters and battery discharge indicators, key switches, off-highway

vehicular lighting, shifters, pressure and vacuum switches, and custom product development and rapid prototyping technology.

Honeywell's aerospace switches and controls are designed for the most stringent industry requirements. The portfolio consists of position, force, torque and pressure sensors, indicators and actuators. In addition to our standard product offering, Honeywell offers repair and overall services for highly engineered aerospace controls.

Honeywell continues to strive to solve customers' needs. Whether you need custom solutions or standard off-the-shelf products, our extensive in-house design, manufacturing and environmental testing capabilities offer solutions and alternatives to meet your needs.

How to use this catalogue

For each referenced listing, key specification parameters, descriptions and mounting drawing information are presented. These illustrate our capabilities while the specifications allow easy differentiation between similar products.

There are, of course, many more product options available. Full product specification may be accessed on our website (www.honeywell.com/sensing). At the Home page enter the catalog listing in the SEARCH box and click GO! This will take you directly to the interactive catalogue/specification search tables for this listing. Alternatively select and click the interactive catalogue icon on the Home page and then choose a product category against which to do a specification search.

Also on the website you can access installation instructions, application notes, Frequently Asked Questions (FAQs), selection guides and additional technical information.

Mounting dimensions

Mounting dimensions shown in each product section are for reference only. For exact information, request an engineering drawing from your nearest Honeywell sales office or visit our website and access it through the interactive catalogue. Where dual dimensions are shown on mounting drawings, the first or upper one is millimetres (mm) and the second or lower is inches (in). Where single dimensions are shown, they are millimetres (mm), unless otherwise stated.

To order these products

Simply contact your local Honeywell Sales Representative, your Honeywell Distributor or your local Honeywell office.

If you need a product not listed in this catalogue

One of Honeywell's strengths is in packaging of sensing technology to meet customer needs. Honeywell provides many variations of our basic switches and sensors. For more information, either browse the full interactive catalogue available on our website, or telephone the following numbers:

USA 1-800-537-6945/1-815-537-6945

UK +44 (0)1698 481 481 Germany +49 69 8064 444

France +33 1 60 19 80 40 Italy +39 02 92146 450/456

More information on Honeywell Sensing & Control products and how to contact us can be found on our website.



Interactive Catalog

www.honeywell.com/sensing

Select the right product – select the right supplier Delivering excellence in system critical sensing solutions

A system is critical if the quality, reliability, delivery and customer service associated with a component part is essential to the performance of the operation or end product. If a sensor or a switch is critical to the performance, cost effectiveness, delivery or safety of a product or operation then it's system critical. It is therefore a defining element in the performance of the system under whatever conditions apply. Failure of the component - or failure of delivery of the component - results in lost productivity, increased costs or a catastrophic event such as a shutdown. Therefore selecting the right product is essential. It can make the difference between success and failure.

Honeywell Sensing and Control – delivering excellence

To select the right product, first select the right supplier. To deliver the right products for our customers' needs we listen to them to understand their needs. Using techniques such as "Voice of the Customer" and "Concept Engineering" we make sure that the products and solutions we deliver are the right ones. As part of Honeywell we can use local knowledge and understanding combined with global expertise and resources to achieve this. We can deploy many key technologies to bring innovative solutions to customers' problems.

Our products are manufactured to work well and to last. We use Six Sigma Plus productivity to ensure this is the case. We have award winning manufacturing facilities around the world and recognised world class business excellence in manufacturing and supply chain management to deliver on time, anywhere in the world.

Our e-business approach offers instant access to product information, technical support and application knowledge through our Internet site. Check out our powerful interactive catalogue that can search and find the right products for customers' needs and deliver a drawing ready for incorporation in a CAD system direct to your desk.

And of course, we manage our whole business for the benefit of our customers, using an acknowledged world-class business excellence approach that incorporates Six Sigma principles.

Expanded Product Lines

As well as many new and innovative switches, this catalogue includes an expanded range of Pressure and Position Sensors, previously known under the Clarostat, NEI and Electrocorporation brand names.

Industrial Electromechanical Limit Switches

Honeywell offers an advanced line of heavy duty limit switches and a wide selection of application-proven enclosed switches (precision snap-acting switches sealed in rugged metal housing). Sealed versions keep out moisture and other contaminants. Our products meet or exceed critical standards allowing for global use. Our rugged switches are suitable for use in harsh-duty, wash-down environments. We offer a variety of circuitry, terminations and actuators to ensure that you can match your choice of switch to your application.

Limit and enclosed switches are the cost effective switches of choice for detecting objects which can be touched. When an object comes in contact with an actuator, the switch operates. Rugged and dependable, these switches are offered in a variety of sizes, with different seals, enclosures, actuation, circuitries and electrical ratings. Enclosed switches are known for enhanced precision and low cost. Limit Switches are especially rugged and well sealed. Explosion proof switches are designed for use in hazardous locations.

The Honeywell switches featured here are all proven in a broad range of potential Industrial applications - machine tools, packaging machinery, lifting gear, presses and construction machinery.

More information about our complete product range - and the depth of product available within each product line - can be found on our interactive catalogue at www.honeywell.com/sensing.

MICRO SWITCH Brand products

Honeywell has been at the forefront of switching technology since we were the first to develop the precision snap-action switch more than 60 years ago. Ever since we introduced the Micro Switch Brand Products in 1937, we have been recognized as the performance standard that all other switches are measured against. We continue in that tradition by constantly improving the technology, cost-effectiveness, and delivery of these hardworking, versatile electromechanical switches.



⚠ WARNING

IF USED IN APPLICATIONS CONCERNING HUMAN SAFETY

- Only use NC direct opening (“positive opening”/ “positive break”) contacts, identified by the symbol \ominus .
- Do NOT use flexible / adjustable actuators. Only use actuators designed for safety applications.
- Do NOT defeat, tamper, remove, or bypass this switch.
- Hazardous voltage, disconnect power before servicing.
- Strictly adhere to all installation and maintenance instructions.
- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.

Failure to comply with these instructions could result in death or serious injury.

**Selection Guide
for Limit Switches**

GLOBAL

EVN2000



SZL-VL

GLC

GLD

GLA

GLE

GLA

PRECISION

BF



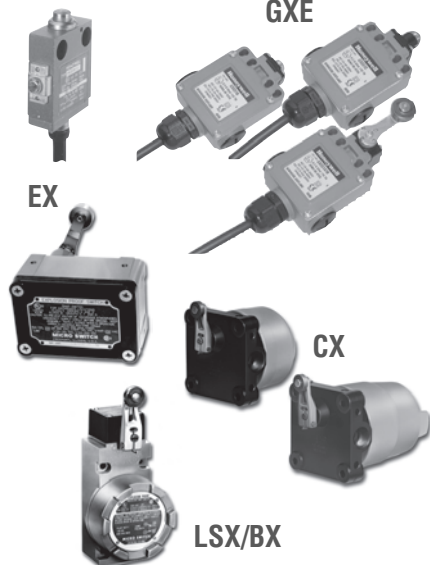
**BAF/
DTF**

**BZE/
DTE
E7**

HAZARDOUS LOCATION

14CE100

GXE



EX

CX

LSX/BX

Series	Housing Material		Approvals					Sealing		Dimensions	Electrical Rating		
	Plastic	Metal	CE	C-UL	UL	CSA	CCC	IEC IP	NEMA (USA)	Height x Width x Depth mm [in]	AC	DC	
Global	GLL	•	•	•	•	•	•	65	1, 12, 13	62,0 x 30,5 x 31,0 [2.44 x 1.20 x 1.22]	10 A Thermal, 300 Vac	10 A Thermal, 250 Vdc	
	EVN2000	•	•	•	•	•	•	66, 67	1, 12, 13	95,3 x 28,7 x 22,0 [3.75 x 1.13 x 0.87]	AC15, A300	DC13, Q300	
	SZL-VL	Die cast base/ Plastic cover		•	•	•	•	64	-	96,0 x 28,0 x 39,0 [3.8 x 1.10 x 1.51]	5 A Resistive-125, 250 Vac	0.4 A Resistive 125 Vdc	
	GL	EN50041 (GLA)	•	•	•	•	•	•	67	1, 4, 12, 13	102,9 x 42,0 x 42,0 [4.05 x 1.65 x 1.65]	AC15 A600 (A300 DPDT)	DC13
		EN50047 (GLC/DIE)	•	•	•	•	•	•	66	GLC/E 1, 4, 12, 13 GLD 1, 2, 12	77,0 x 30,0 x 30,5 [3.03 x 1.18 x 1.20]	AC15 A600 Plastic, A300 Metal Housing	DC13
Compact	SL1	Thermoplastic/ Metal		•	•	•	•	67	3, 4, 13	28,4 x 44,2 x 18,0 [1.12 x 1.74 x 0.71]	5 A - 125, 250 Vac		
	14CE	•	•	•	•	•	•	66, 67, 68	1, 2, 3, 3R, 4, 6, 6P, 12 (boot seal), 13	44,0 x 40,0 x 16,0 [1.73 x 1.57 x 0.63]	5 A - 125, 250 Vac		
	914CE	•	•	•	•	•	66 (standard), 67 (boot seal)				-	49,0 x 40,0 x 16,0 [1.93 x 1.57 x 0.63]	10 A - 250 Vac
	24CE	•	•	•	•	•		67 (20 mm conduit)	1, 3, 4, 6, 13 (½ in conduit)	94,0 x 40,6 x 58,42 [3.7 x 1.6 x 2.3]			10 A - 120, 240, 480 Vac
	924CE	•	•	•	•	•	BF				•	67	1, 3, 4, 13; 1 (-2RQ9)
LS	•	•	•	•	•	BF		•	67	1, 3, 4, 13			
Precision	BZE/DTE	•	•	•	•		•				•	-	1 (E6) 1, 3 (V6)
	E7	•	•	•	•	•	•	50 (standard), 65 (boot seal)	-	45,2 x 76,4 x 25,4 [1.67 x 3.0 x 1.0]	1 A - 125 Vac, 15 A - 125 Vac		
	BAF/DTF	•	•	•	•	•	•	-	1, 3, 4, 13; 1 (-2RQ9)	54,8 x 101,6 x 33,0 [2.16 x 4.0 x 1.3]	10 A - 125 Vac, 20 A - 125 Vac		
	Heavy Duty	HDL5	•	•	•	•	•	•	-	1, 3, 4, 4X, 6, 6P, 12, 13	SDPT: 106,7 x 41,1 x 62,0 [4.2 x 1.6 x 2.4] DPDT: 119,1 x 47,8 x 62,0 [4.7 x 1.9 x 2.4]	10 A Thermal: SPDT (NEMA A600), DPDT (NEMA B600)	
HDL5 Fully potted		•	•	•	•	•	•	-	1, 4, 6, 6P, 12, 13 (connector) 1, 4, 6, 6P, 12 (cable)				
HDL5 Stainless steel		Stainless Steel	•	•	•	•	•	•	1, 3, 3R, 4, 4X, 6, 6P, 12, 13	123,0 x 47,7 x 61,9 [4.9 x 1.9 x 2.4]			
Hazardous Location	14CE100	•	•	•	•	•	•	65 (standard), 67 (boot seal)	1, 3 (standard), 1, 3, 4, 12, 13 (boot seal)	49,0 x 40,0 x 16,0 [1.93 x 1.57 x 0.63]	AC14 D300, DC13 R300		
	GXE	•	•	•	•	•	•	66/67	-	60,0 x 52,0 x 25,0 [2.36 x 2.05 x 1.0]	AC15, DC13		
	EX	•	•	•	•	•	•	-	1, 7, 9	65,0 x 93,0 x 52,0 [2.56 x 3.66 x 2.0]	Up to 20 A @ 125, 250 or 480 Vac		
	CX	•	•	•	•	•	•	-	1, 3, 4, 4X, 6, 6P, 7, 9, 13	102,0 x 102,0 x 145,0 [4.0 x 4.0 x 5.71]	Up to 20 A @ 125, 250 or 480 Vac		
	LSX	•	•	•	•	•	•	-	1, 3, 4, 6, 7, 9, 13	121,0 x 76,0 x 73,0 [[4.8 x 3.0 x 3.0]	SPDT (NEMA A600), DPDT (NEMA B600)		
	BX	•	•	•	•	•	•	67	1, 3, 4, 6, 7, 9, 13				

	Operating Temperature		Switching Options*												Termination	Special Features	Page Number		
	From	To	Snap Action				Slow Action				Gold Contacts (Low Energy Options)								
	°C [°F]		1NC/1NO	2NC/2NO	1NC/1NO	2NC/2NO	1NC	2NC	1NC/1NO	1NC/1NO		2NC/1NO	2NC/2NO	3NC/1NO				4NC	
	-10 [14]	80 [176]			•												Conduit	Lowest cost switch option	20
	-25 [-13]	85 [185]			•												Cable gland/cord grip	Insulation Displacement Termination	10
	-20 [-4]	60 [140]	•														Flexible cable gland/cord grip	Gold plated silver contacts standard	11
	-25 [-13]	85 [185]			•	•			•	•	•	•	•				Conduit	Wide variety of actuator styles and circuitry options	14
	-40 [-40]	85 [185]			•	•			•	•	•	•	•						
	-10 [-14]	70 [160]	•														Cord grip	Miniature size	21
	0 [32]; low temp option to -30°	70 [221]	•														Cable, Quick Connect	Low and high temperature options available. Superior Sealing (IP 68)	23
		105 [221]	•																
	0 [32]	70 [221]					•		•	•							Cable, Quick Connect	Low and high temperature options available. Direct acting contacts	26
							•		•	•									
	-29 [-20]	71 [160]	•														Conduit		34
	-32 [-25]	71 [160]	•														Conduit	Cost effective solution	34
	-32 [-25]	71 [160]	•	•													Conduit	Precise operation. Low temperature versions available	36
	-30 [-22]	70 [158]	•	•													Conduit	Precise operation	41
	-32 [-25]	71 [160]	•	•													Conduit	Rugged housed precise operation	42
	-12 [-10]; -40 [-40]	121 [250]**	•	•													Conduit	Low temperature and Fluorocarbon Seal versions available. Wide variety of actuator styles. Cable and connector available.	46
	-12 [-10]	Connector 121 [250]; Cable version 105 [221]	•	•													Cable or Connector	Switch cavity is epoxy filled	53
	-12 [-10]; -40 [-40]	121 [250]**	•	•													Conduit, Cable	Corrosion resistant stainless steel housing	55
	0 [32]	70 [158]	•														Preleaded cable	Miniature size	58
	-20 [-4]	75 [167]	•														Preleaded cable		59
	-40 [-40]	71 [160]	•	•													Conduit	High temperature option (400 °F for 100 Hr)	60
	See Catalog for details	85 [185]	•	•													Conduit	Optional 4-20 mA analog output	64
	See Catalog for details	See Catalog for details	•	•													Conduit	Wide variety of actuators, circuitry and termination options	66
	-40 [-40]	See Catalog for details	•	•													Conduit	ATEX approvals for European use	66

**Refer to catalog for additional data

*HDLs, LSX and BX Series are available with the following Switching Options: NC/NO snap-action, Maintained; 2NC/2NO snap-action, Maintained; 2NC/2NO snap-action, Center Neutral; 2NC/2NO snap-action, Sequential CX, LSX, BX also available with 1NC Direct Acting

COMPACT



HEAVY DUTY



Proper application of limit switches

The following are guidelines for the correct application of Limit Switches. Never use the Limit Switch as a physical end stop. Mechanical damage or incorrect operation may occur if this is done. Always ensure that the mechanical actuator is protected from excessive mechanical shock. Never release the actuator suddenly - gradual actuation and release will ensure that stress on the mechanics of the switch is kept to a minimum. This has the added benefit that the switch life will be improved. The diagrams illustrate how to actuate your limit switch for optimum performance.

Standards and Electrical rating

IEC/EN 60947-1 explains the general rules relating to **Low Voltage switchgear and controlgear**. The purpose of this standard is to harmonize as much as possible the product performance and test requirements for equipment where the rated voltage does not exceed 1,000 Vac or 1,500 Vdc.

IEC 60947-5-1 is part 5 of the general rules which relates to **Control-circuit devices and switching elements**, where rated voltage does not exceed 1,000 Vac or 600 Vdc. There are special requirements for control switches with direct opening operation. These switches are marked on the outside with this symbol:



The Contact Element form defines the configuration and number of contacts within the switch.

Form Za – both contact elements have the same polarity

Form Zb – the two contact elements are electrically separated.

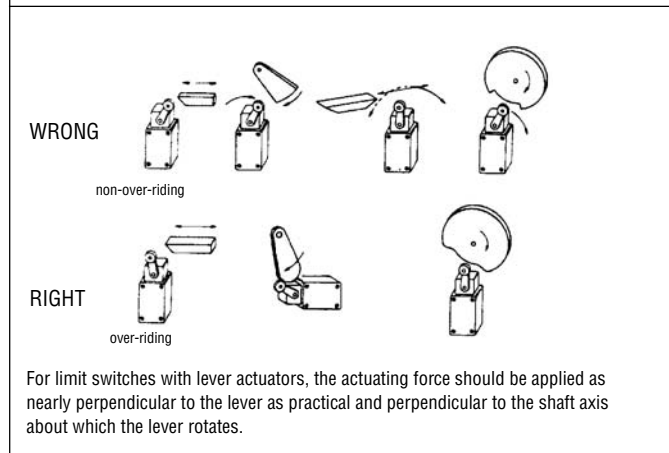
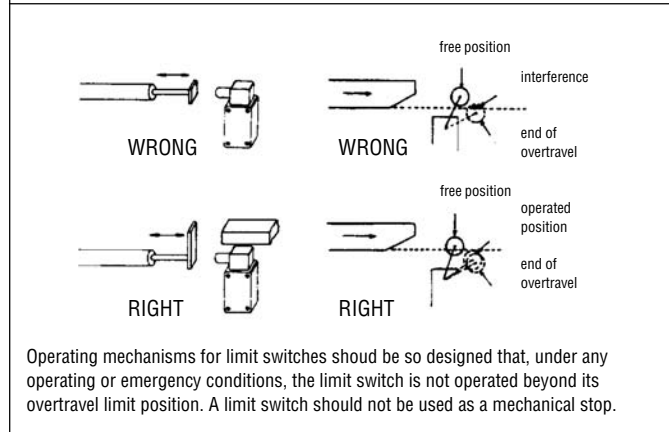
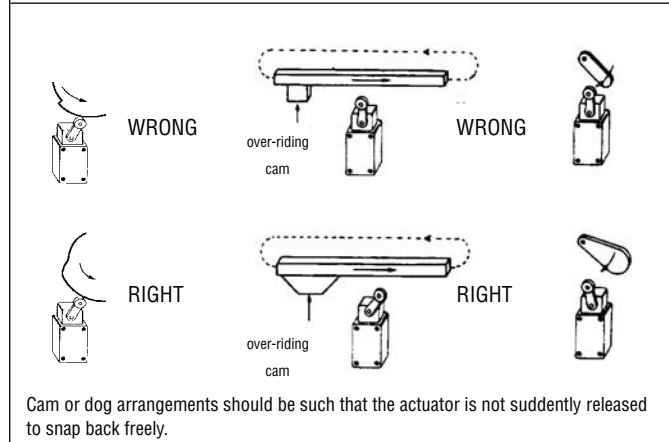
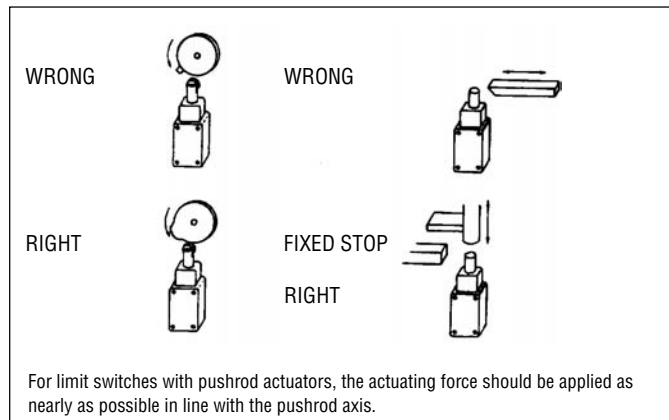
The **Utilization Category** defines the type of current carried – ac or dc – and the typical application where the switch is used.

The contact rating **Designation** relates to the Utilization Categories and defines the conventional thermal current I_{th} (a) rated operational current I_e (A) at rated operational voltages U_e and the VA rating.

Actuators

A range of actuators is available for limit switches. Illustrations of actuator types available from this catalogue are shown at the beginning of each product family. Other actuators may be available - for more information please contact your local Honeywell office.

Roller lever 	Top roller lever 	Adjustable roller lever 	Top pin plunger 	Top pin plunger, boot seal 	
Top roller plunger 	Top roller plunger, boot seal 	Top roller plunger, perpendicular 	Top roller plunger, perpendicular, boot seal 	Ball bearing plunger 	
Side pin plunger 	Side roller plunger 	Roller lever 	Yoke lever 	Rod lever 	Wobble head



EVN2000 Series EN 50047 Global Limit Switches

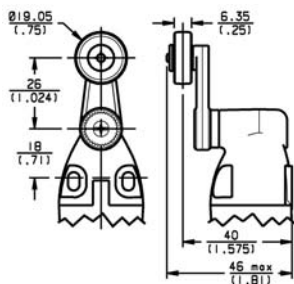


Actuators



OPTIONS

Side rotary plastic roller



CAT. LISTING
EVN2000A

The EVN2000 series limit switch is an innovative product which has been developed to address a need highlighted by Original Equipment Manufacturers (OEM), where "Ease of Wiring" is required. With the new design there is no need for access to the inside of the housing and therefore the housing cover, cover screws and gasket become obsolete. Furthermore, the integrated cable gland eliminates the need for additional conduit or cable gland hardware. All Normally Closed (NC) contacts are Direct Opening.

Mechanical life:

10 million

Sealing:

IP 66/67, NEMA 1, 12, 13

Operating temperature:

-25 °C to 85 °C [-13 °F to 185 °F]

Approvals:

IEC/EN 60947-5-1

EN 60529

EN81-1

AC15 A300

DC13 Q300

UL, CE

Plastic

Insulation Displacement Terminals (IDT)

Single Pole, Double Throw,

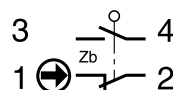
Snap action contacts (1NC/1NO)

Housing material:

Termination:

Switching options:

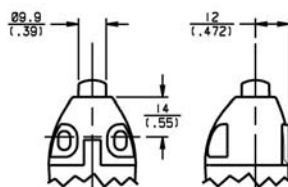
SPDT



Operating characteristics

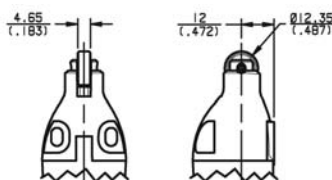
Actuator type	Operating torque/force (OF)	Free position (FP)	Pretravel (PT)	Travel to positive opening (PO)	Overtravel (OT)	Differential travel (DT)	Operating point (OP)
Side rotary EVN2000A	0,120 N m [1.10 lb in]	0°	25°	45°	45°	12°	25°
Top pin plunger EVN2000B	16,0 N [3.60 lb]	20,0 mm [0.79 in]	2,0 mm [0.08 in]	3,5 mm [0.14 in]	4,0 mm [0.16 in]	1,0 mm [0.04 in]	18,0 mm [0.71 in]
Top roller plunger, parallel EVN2000C	16,0 N [3.60 lb]	30,0 mm [1.18 in]	2,0 mm [0.08 in]	3,5 mm [0.14 in]	4,0 mm [0.16 in]	1,0 mm [0.04 in]	28,0 mm [1.10 in]
Top roller plunger, perpendicular EVN2000D	16,0 N [3.60 lb]	30,0 mm [1.18 in]	2,0 mm [0.08 in]	3,5 mm [0.14 in]	4,0 mm [0.16 in]	1,0 mm [0.04 in]	28,0 mm [1.10 in]

Top pin plunger



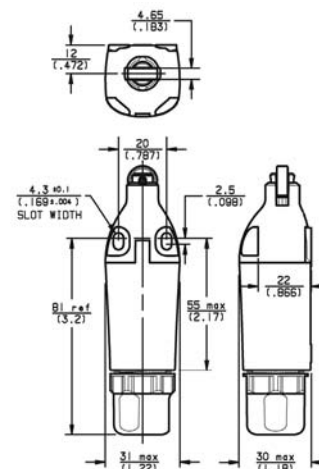
CAT. LISTING
EVN2000B

Top roller plunger, perpendicular



CAT. LISTING
EVN2000D

Top roller plunger, parallel



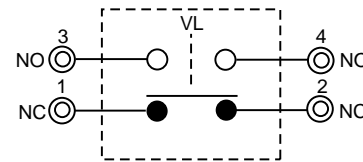
CAT. LISTING
EVN2000C

VL Series General Purpose Compact Limit Switches



The new economical SZL-VL Series miniature type limit switches are specially designed for potential applications of small mounting space. These miniature switches are ideal for OEM machinery which requires a rugged and reliable limit switch that is capable of being mounted in space restricted applications. A wide range of actuators and optional neon lamp indicators add additional flexibility. A special pre-molded flexible cable gland allows for fast and simple wiring termination.

Mechanical life:	up to 10 million operations
Sealing:	IP 64
Operating temperature:	-20 °C to 60 °C [-4 °F to 140 °F]
Approvals:	UL, C-UL, CE
Termination:	Cable gland
Contacts:	Gold plated silver
Electrical ratings:	250 Vac 125 Vdc max.
Ampere rating:	5 A @ 250 Vac max./0.4 A @ 125 Vdc max.
Switching options:	Single Pole, Double Throw, Double break (1NC/1NO)



Actuators

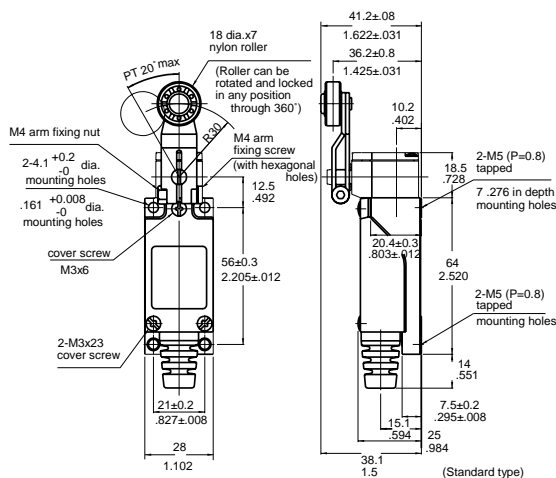


Side rotary actuated switches

Pretravel max. (PT):	20°
Overtravel min. (OT):	75°
Differential travel max. (DT):	10°

OPTIONS

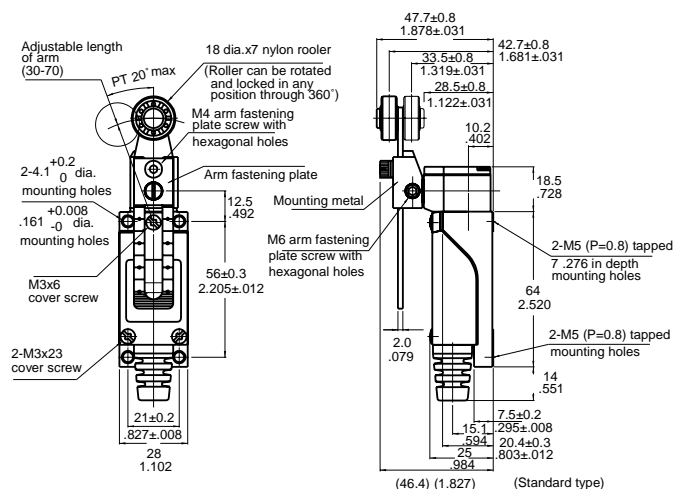
Roller lever



Operating torque max.: 5,88 N [1.32 lb]

CAT. LISTING
SZL-VL-A

Roller lever, adjustable

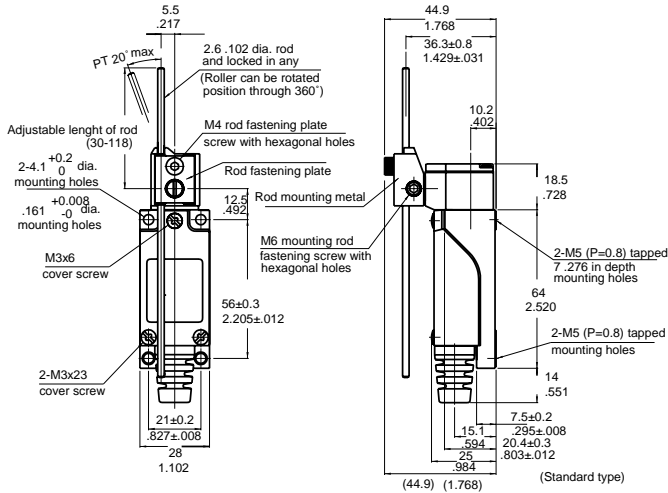


Operating torque max.: 3,35 N to 7,84 N [0.75 lb to 1.76 lb]

CAT. LISTING
SZL-VL-B

VL Series
Side rotary actuated switches (continued)

Adjustable rod



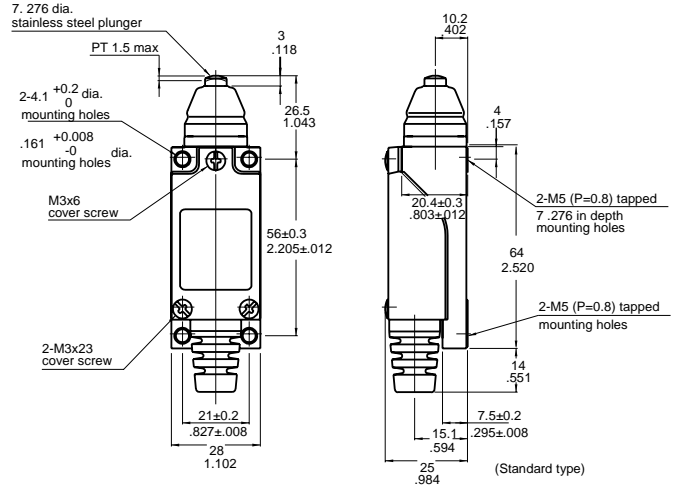
Operating torque max.: 2 N to 7,84 N
 [0.45 lb to 1.76 lb]

CAT. LISTING
 SZL-VL-C

Plunger actuated switches

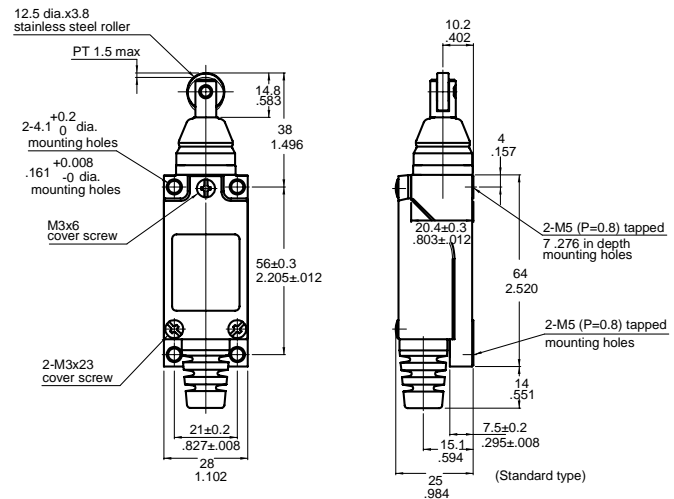
Pretravel max. (PT): 1,5 mm [0.060 in]
Overtravel min. (OT): 4,0 mm [0.158 in]
Differential travel max. (DT): 0,7 mm [0.028 in]
Operating force max. (OF): 8,83 N [2 lb]

Top pin plunger



CAT. LISTING
 SZL-VL-D

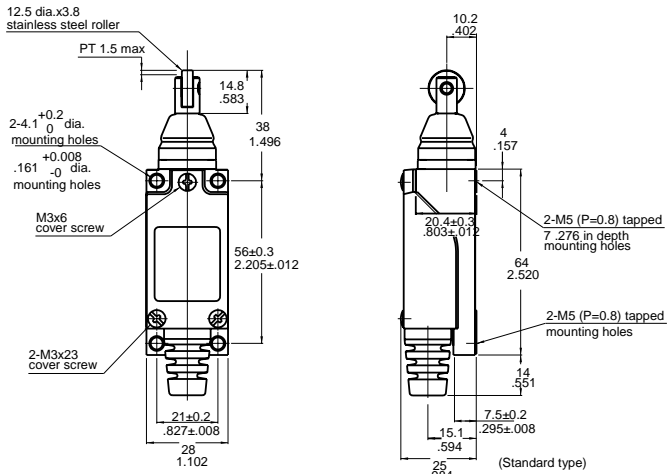
Top roller plunger



CAT. LISTING
 SZL-VL-H

Plunger actuated switches (continued)

Cross roller plunger



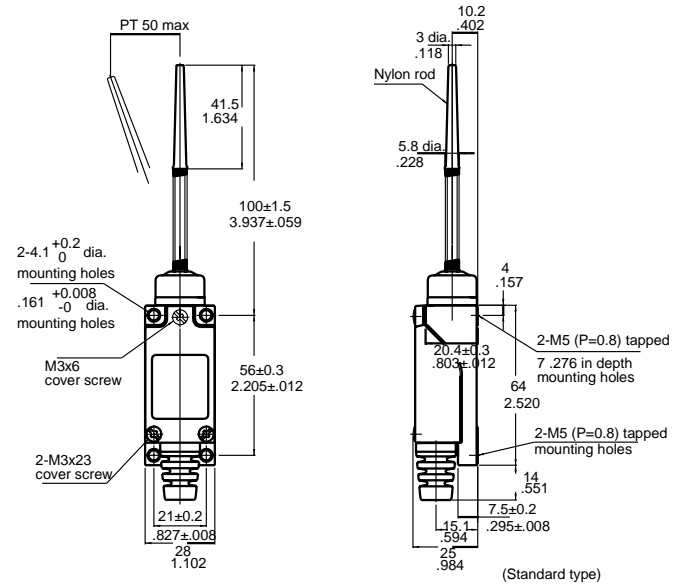
CAT. LISTING
SZL-VL-E

Wobble actuated switches

Pretravel max. (PT):
Overtravel min. (OT):
Operating force max. (OF):

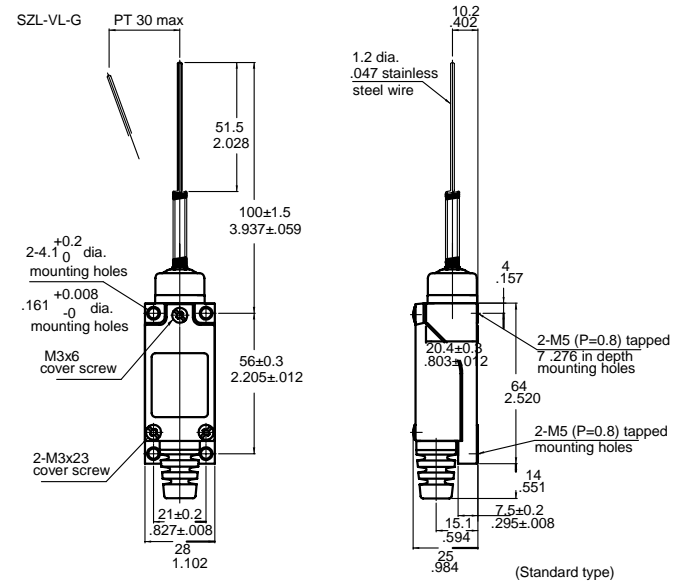
30 mm [1.18 in]
20 mm [0.788 in]
0,88 N [0.2 lb]

Plastic rod, coil spring



CAT. LISTING
SZL-VL-F

Coil spring



CAT. LISTING
SZL-VL-G

GLS Series Global Limit Switches



GLS Series switches offer a complete range of CENELEC approved products, and are suitable for most potential industrial applications.

The standard product EN 50041 norm defines the switch mounting centres as 30 mm x 60 mm and also defines the switching characteristics of the side rotary head with fixed lever, top pin plunger and top roller plunger. This means that the switch can be interchanged in the application with other EN 50041 switches with mounting and switching characteristics maintained. Honeywell offers many more head styles and switching options.

The miniature EN 50047 product range offers the user a choice of plastic, metal and three conduit versions which are all mounting (20 mm x 22 mm) compatible with each other. The EN 50047 standard defines how the switches are mounted and the switching characteristics for fixed side rotary lever, top pin plunger and top roller plunger.

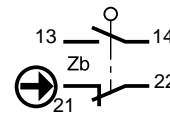
Electrical ratings

IEC947-5-1/EN60947-5-1									
Designation & Utilization Category	Rated operational current Ie (A) at rated operational voltage Ue						VA rating		
	120V	240V	380V	480V	500V	600V	Make	Break	
AC15 A600	6	3	1.9	1.5	1.4	1.2	7200	720	
AC15 A300	6	3	-	-	-	-	7200	720	
AC15 B300	3	1.5	-	-	-	-	3600	360	
AC14 D300	0.6	0.3	-	-	-	-	432	72	
	125V	250V							
DC13 Q300	0.55	0.27					69	69	
DC13 R300	0.22	0.1					28	28	

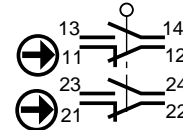
Vibration (Actuator not fitted): 10 g conforming to IEC 68-2-6
Shock (Actuator not fitted): 50 g conforming to IEC 68-2-27
 Terminal marking to EN 50013

Switching options:

SPDT Single Pole, Double Throw, Snap action contacts (1NC/1NO)



DPDT Double Pole, Double Throw Snap action contacts (2NC/2NO)



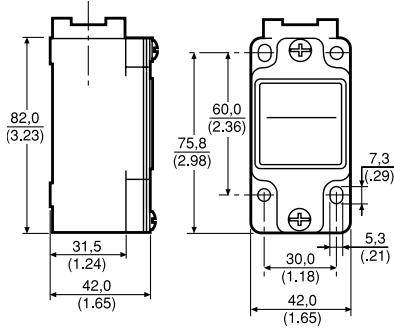
Operating characteristics

Actuator type	Body size	Operating torque/force (OF)		Free position (FP)		Pretravel (PT)		Travel to positive opening (PO)		Overtravel (OT)		Differential travel (DT)		Operating point (OP)	
		SPDT	DPDT	SPDT	DPDT	SPDT	DPDT	SPDT	DPDT	SPDT	DPDT	SPDT	DPDT	SPDT	DPDT
Lever types A, A*A, A*B, A4J	EN50041 (GLA)	0,330 N m [2.90 lb in]		0°		26°		55°		59°		12°		26°	
	EN50047 (GLC, GLD, GLE)	0,120 N m [1.10 lb in]	0,165 N m [1.50 lb in] GLE only	0°		26°		55°		49°		11.5°	8°	26°	
Top pin plunger B	EN50041 (GLA)	16,0 N [3.60 lb]		37,5 mm [1.48 in]		2,5 mm [0.10 in]		4,5 mm [0.18 in]		4,5 mm [0.18 in]		0,9 mm [0.035 in]		35,0 mm [1.38 in]	
	EN50047 (GLC, GLD, GLE)	16,0 N [3.60 lb]	13,0 N [2.90 lb] GLE only	21,0 mm [0.83 in]		3,0 mm [0.12 in]		5,0 mm [0.20 in]		3,0 mm [0.12 in]		0,9 mm [0.035 in]	0,6 mm [0.024 in]	18,0 mm [0.71 in]	
Top roller plunger C	EN50041 (GLA)	16,0 N [3.60 lb]		50,5 mm [2.00 in]		2,5 mm [0.10 in]		4,5 mm [0.18 in]		4,5 mm [0.18 in]		0,9 mm [0.035 in]		48,0 mm [1.89 in]	
	EN50047 (GLC, GLD, GLE)	16,0 N [3.60 lb]	13,0 N [2.90 lb] GLE only	31,0 mm [1.22 in]		3,0 mm [0.12 in]		5,0 mm [0.20 in]		3,0 mm [0.12 in]		0,9 mm [0.035 in]	0,6 mm [0.024 in]	28,0 mm [1.10 in]	
Top roller lever D	EN50041 (GLA)	9,5 N [2.10 lb]		65,2 mm [2.57 in]		4,2 mm [0.165 in]		8,3 mm [0.33 in]		9,0 mm [0.35 in]		1,7 mm [0.067 in]		61,0 mm [2.40 in]	
	EN50047 (GLC, GLD, GLE)	11,0 N [2.4 lb]	9,0 N [1.9 lb] GLE only	39,25 mm [1.55 in]		3,45 mm [0.14 in]		6,9 mm [0.27 in]		5,2 mm [0.205 in]		1,3 mm [0.19 in]		35,8 mm [1.41 in]	
Wobble head E7B, E7D, K8B, K8C	EN50041 (GLA)	0,1 N [0.90 in lb]		0°		18°		—		—		8°		—	
	EN50047 (GLC, GLD, GLE)	1,3 N [0.29 lb]	1,1 N [0.25 lb] GLE only	0°		16°		—		—		10°	7°	—	

Actuators



GLA EN 50041
Standard metal body

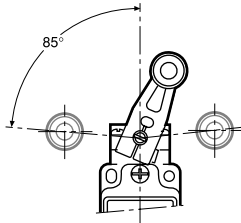


Mechanical life: up to 15 million
Sealing: IP 67, NEMA 1, 4, 12, 13
Operating temperature: -25 °C to 85 °C
 [-13 °F to 185 °F]
Approvals: IEC/EN 60947-5-1
 AC15 A300/A600
 DC13 Q300
 UL, CSA, CE

Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)
 DPDT Double Pole, Double Throw
 Snap action contacts (2NC/2NO)

HEAD OPTIONS

Side rotary



No lever

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A
DPDT	½ in NPT	GLAA20A
SPDT	PG 13,5	GLAB01A

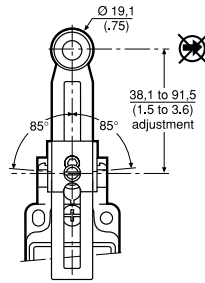
Plastic roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A1A
DPDT	½ in NPT	GLAA20A1A
SPDT	PG 13,5	GLAB01A1A
DPDT	PG 13,5	GLAB20A1A
SPDT	20 mm	GLAC01A1A
DPDT	20 mm	GLAC20A1A

Metal roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A1B
DPDT	½ in NPT	GLAA20A1B
SPDT	PG 13,5	GLAB01A1B
DPDT	PG 13,5	GLAB20A1B
SPDT	20 mm	GLAC01A1B
DPDT	20 mm	GLAC20A1B

Side rotary adjustable roller



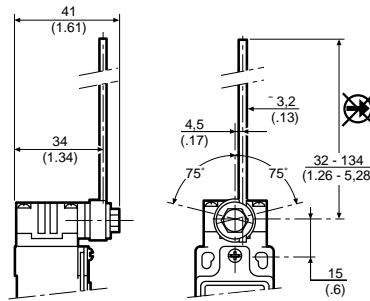
Plastic roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A2A
DPDT	½ in NPT	GLAA20A2A
SPDT	PG 13,5	GLAB01A2A
DPDT	PG 13,5	GLAB20A2A
SPDT	20 mm	GLAC01A2A

Metal roller

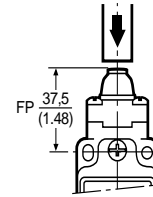
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A2B
DPDT	½ in NPT	GLAA20A2B
SPDT	PG 13,5	GLAB01A2B
DPDT	PG 13,5	GLAB20A2B
SPDT	20 mm	GLAC01A2B
DPDT	20 mm	GLAC20A2B

Side rotary adjustable metal rod



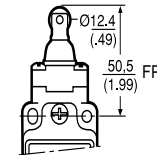
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01A4J
DPDT	½ in NPT	GLAA20A4J
SPDT	PG 13,5	GLAB01A4J
DPDT	PG 13,5	GLAB20A4J
SPDT	20 mm	GLAC01A4J

Top pin plunger



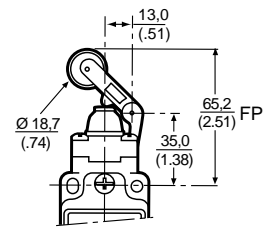
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01B
DPDT	½ in NPT	GLAA20B
SPDT	PG 13,5	GLAB01B
DPDT	PG 13,5	GLAB20B
SPDT	20 mm	GLAC01B
DPDT	20 mm	GLAC20B

Top roller plunger



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01C
DPDT	½ in NPT	GLAA20C
SPDT	PG 13,5	GLAB01C
DPDT	PG 13,5	GLAB20C
SPDT	20 mm	GLAC01C
DPDT	20 mm	GLAC20C

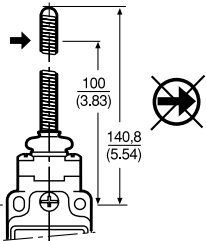
Top roller lever



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01D
DPDT	½ in NPT	GLAA20D
SPDT	PG 13,5	GLAB01D
DPDT	PG 13,5	GLAB20D
SPDT	20 mm	GLAC01D
DPDT	20 mm	GLAC20D

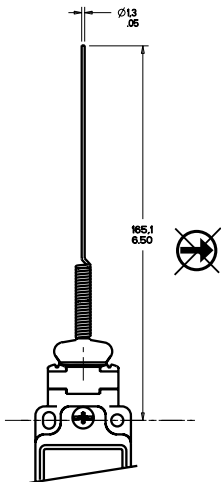
GLA EN 50041
Standard metal body
(continued)

Wobble, coil actuator



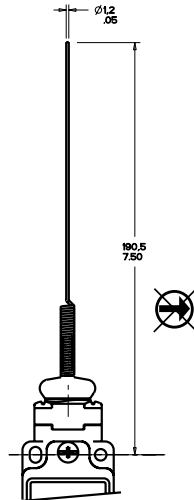
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01E7B
SPDT	PG 13,5	GLAB01E7B
DPDT	PG 13,5	GLAB20E7B
SPDT	20 mm	GLAC01E7B
DPDT	20 mm	GLAC20E7B

Coil wobble head, stainless steel spring actuator



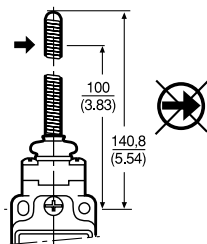
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01E7D

Wobble, cat whisker



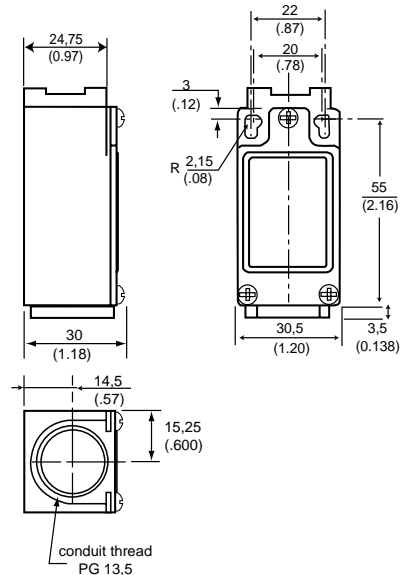
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01K8B
SPDT	PG 13,5	GLAB01K8B

Wobble, cat whisker, coil actuator



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLAA01K8C
DPDT	½ in NPT	GLAA20K8C
SPDT	PG 13,5	GLAB01K8C

GLC EN 50047
Standard metal body

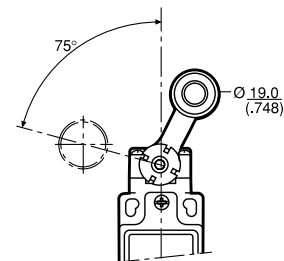


- Mechanical life:** up to 10 million
- Sealing:** IP 66, NEMA 1, 4, 12, 13
- Operating temperature*:** -40 °C to 85 °C [-40 °F to 185 °F]
- Approvals:** IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA, CE

- Switching options:**
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)
- *Wobble actuator rated to -25 °C [-13 °F]

HEAD OPTIONS

Side rotary



Plastic roller

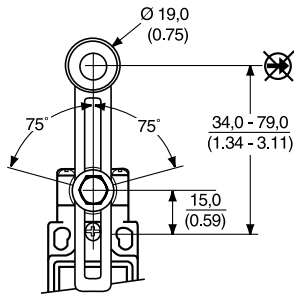
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01A1A
SPDT	PG 13,5	GLCB01A1A

Metal roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01A1B
SPDT	PG 13,5	GLCB01A1B
SPDT	20 mm	GLCC01A1B

GLC EN 50047
Standard metal body
(continued)

Side rotary adjustable



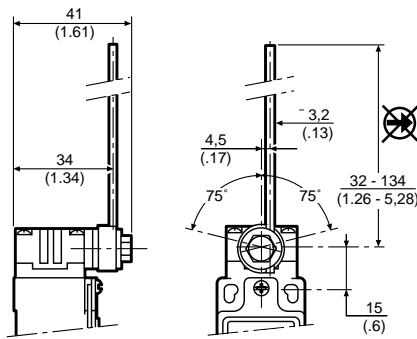
Plastic roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01A2A
SPDT	PG 13,5	GLCB01A2A

Metal roller

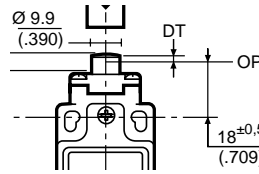
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01A2B
SPDT	PG 13,5	GLCB01A2B
SPDT	20 mm	GLCC01A2B

Side rotary adjustable, metal rod



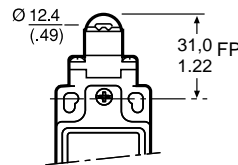
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01A4J
SPDT	PG 13,5	GLCB01A4J

Top pin plunger



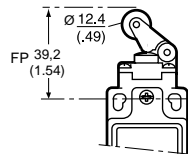
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01B
SPDT	PG 13,5	GLCB01B
SPDT	20 mm	GLCC01B

Top roller plunger



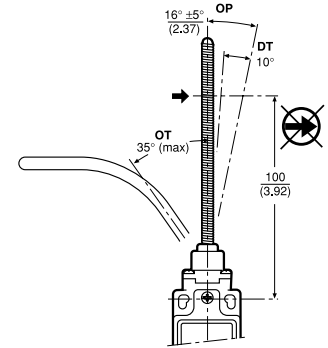
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01C
SPDT	PG 13,5	GLCB01C
SPDT	20 mm	GLCC01C

Top roller lever



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01D
SPDT	PG 13,5	GLCB01D
SPDT	20 mm	GLCC01D

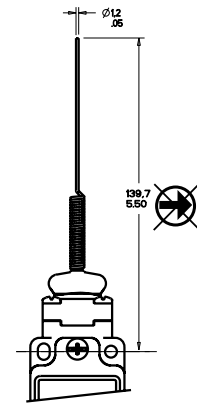
Wobble, coil actuator



Mechanical life: up to 5 million

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01E7B
SPDT	PG 13,5	GLCB01E7B
SPDT	20 mm	GLCC01E7B

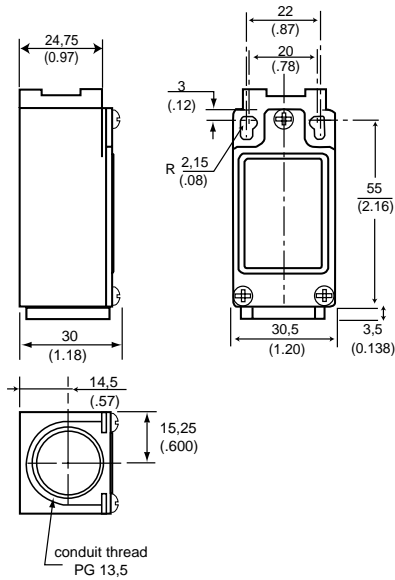
Wobble, cat whisker



Mechanical life: 5 million

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLCA01K8A
SPDT	PG 13,5	GLCB01K8A

GLD EN 50047
Double insulated plastic
standard body



Mechanical life: See GLC section
Sealing: IP 66, NEMA 1, 2, 13
Operating temperature*: -40 °C to 85 °C
 [-40 °F to 185 °F]
Approvals: IEC/EN 60947-5-1
 AC15 A600
 DC13 Q300
 UL, CSA, CE
Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)
 *Wobble actuator rated to -25 °C [-13 °F]

HEAD OPTIONS

See GLC section for dimension illustrations

Side rotary

Plastic roller/lever

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01A1A
SPDT	PG 13,5	GLDB01A1A

Metal roller/lever

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01A1B
SPDT	PG 13,5	GLDB01A1B
SPDT	20 mm	GLDC01A1B

Side rotary adjustable

Plastic roller/metal lever

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01A2A
SPDT	PG 13,5	GLDB01A2A

Metal roller/metal lever

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01A2B
SPDT	PG 13,5	GLDB01A2B
SPDT	20 mm	GLDC01A2B

Side rotary adjustable metal rod

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01A4J
SPDT	PG 13,5	GLDB01A4J

Top pin plunger

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01B
SPDT	PG 13,5	GLDB01B
SPDT	20 mm	GLDC01B

Top roller plunger

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01C
SPDT	PG 13,5	GLDB01C
SPDT	20 mm	GLDC01C

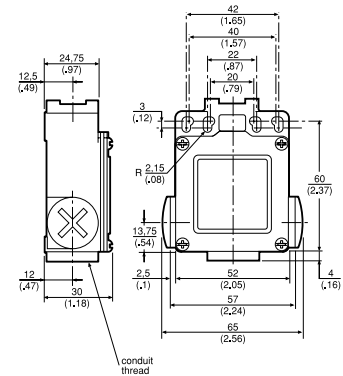
Top roller lever

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01D
SPDT	PG 13,5	GLDB01D
SPDT	20 mm	GLDC01D

Wobble, coil actuator

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLDA01E7B
SPDT	PG 13,5	GLDB01E7B
SPDT	20 mm	GLDC01E7B

GLE EN 50047 Compatible
3 conduit
metal standard body

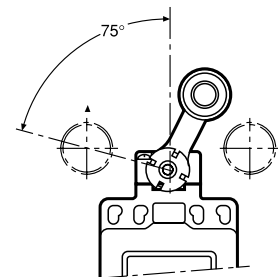


Mechanical life: up to 10 million
Sealing: IP 66, NEMA 1, 4, 12, 13
Operating temperature*: -40 °C to 85 °C
 [-40 °F to 185 °F]
Approvals: IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA, CE

Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)
 DPDT Double Pole, Double Throw
 Snap action contacts (2NC/2NO)
 *Wobble actuator rated to -25 °C [-13 °F]

HEAD OPTIONS

Side rotary



Plastic roller

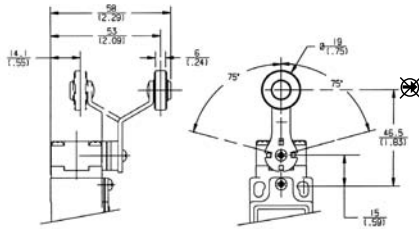
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01A1A
SPDT	PG 13,5	GLEB01A1A
DPDT	PG 13,5	GLEB24A1A

Metal roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01A1B
DPDT	½ in NPT	GLEA24A1B
SPDT	PG 13,5	GLEB01A1B
DPDT	PG 13,5	GLEB24A1B
SPDT	20 mm	GLEC01A1B

**GLE EN 50047 Compatible
3 conduit
metal standard body
(continued)**

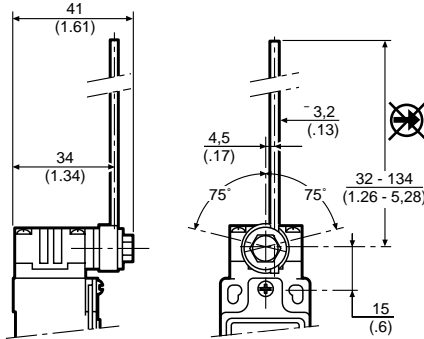
Offset side rotary roller



Plastic roller

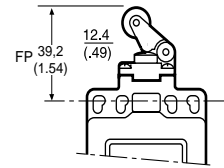
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01A5A
SPDT	PG 13,5	GLEB01A5A

Side rotary adjustable metal rod



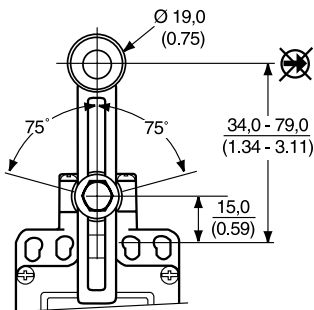
CONTACT	CONDUIT	CAT. LISTING
SPDT	PG 13,5	GLEB01A4J
DPDT	PG 13,5	GLEB24A4J

Top roller lever



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01D
DPDT	½ in NPT	GLEA24D
SPDT	PG 13,5	GLEB01D
DPDT	13,5	GLEB24D
SPDT	20 mm	GLEC01D
DPDT	20 mm	GLEC24D

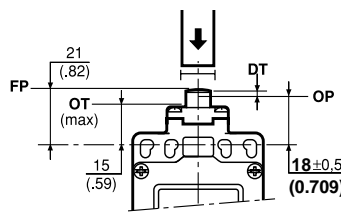
Side rotary adjustable



Plastic roller

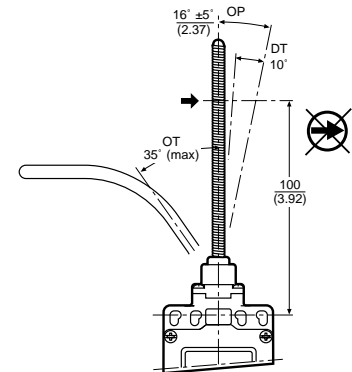
CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01A2A
DPDT	½ in NPT	GLEA24A2A
SPDT	PG 13,5	GLEB01A2A

Top pin plunger



CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01B
DPDT	½ in NPT	GLEA24B
SPDT	PG 13,5	GLEB01B
DPDT	PG 13,5	GLEB24B

Wobble, coil actuator



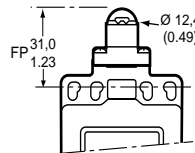
Mechanical life: up to 5 million

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01E7B
DPDT	½ in NPT	GLEA24E7B
SPDT	PG 13,5	GLEB01E7B
DPDT	PG 13,5	GLEB24E7B

Metal roller

CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01A2B
SPDT	PG 13,5	GLEB01A2B
DPDT	PG 13,5	GLEB24A2B

Top roller plunger

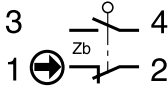


CONTACT	CONDUIT	CAT. LISTING
SPDT	½ in NPT	GLEA01C
DPDT	½ in NPT	GLEA24C
SPDT	PG 13,5	GLEB01C
DPDT	PG 13,5	GLEB24C
DPDT	20 mm	GLEC24C

GLL EN50047
Standard plastic body



Mechanical life: 5 million
Sealing: IP 65, NEMA 1, 12, 13
Operating temperature: -10 °C to 80 °C
 [14 °F to 176 °F]
Approvals: c-UL-US, CE, CCC
Switching options:
 SPDT Single Pole, Double Throw
 Direct opening snap action contacts
 (1NC/1NO)

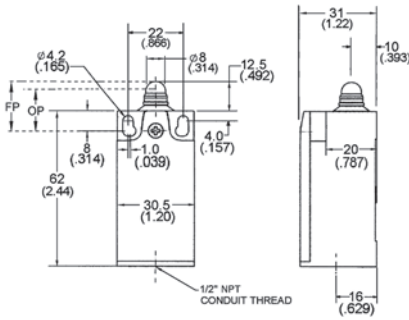


Actuators



HEAD OPTIONS

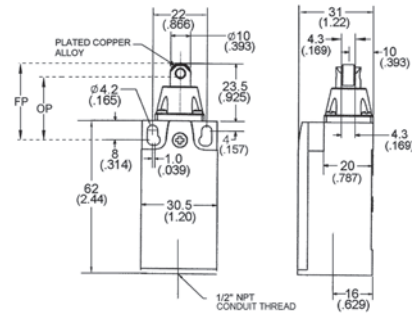
Top plunger



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01B
GLLC01B

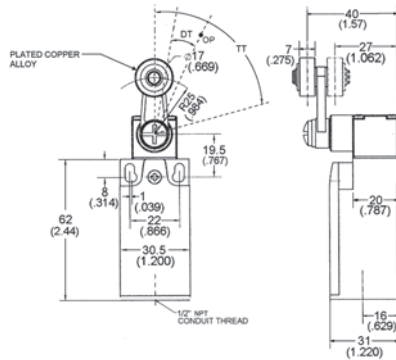
Top roller plunger



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01C
GLLC01C

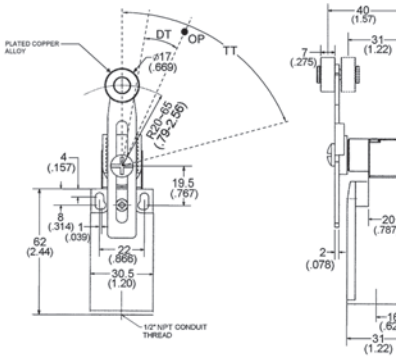
Side rotary, 25 mm fixed length lever with metal roller



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01A1B
GLLC01A1B

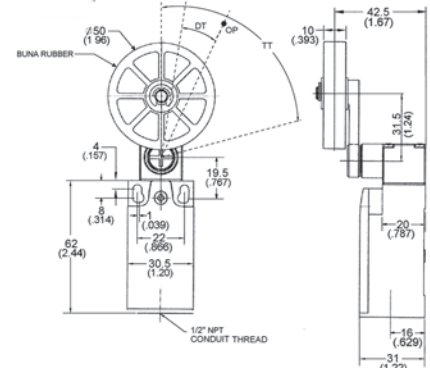
Side rotary, 20 mm to 65 mm adjustable length lever with metal roller



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01A2B
GLLC01A2B

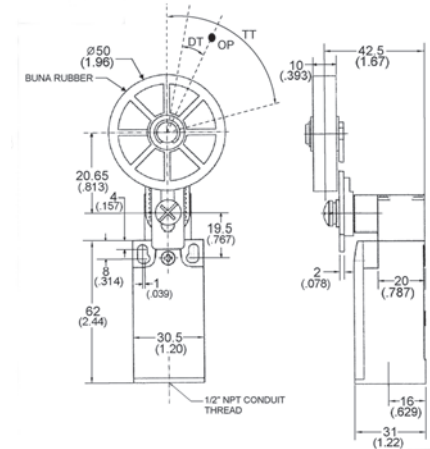
Side rotary, 31,5 mm fixed length lever with 50 mm rubber roller



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01A1Y
GLLC01A1Y

Side rotary, 20 mm to 65 mm adjustable length lever with 50 mm rubber roller



CONDUIT
1/2 in NPT
20 mm

CAT. LISTING
GLLA01A2Y
GLLC01A2Y

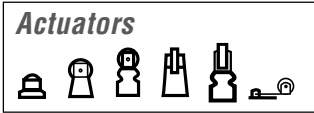
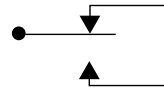
SL1 Series Compact Limit Switches



The SL1 Series compact limit switches are sealed, sensitive and have a long life. The compact size makes them suitable for the total miniaturization of machinery or equipment.

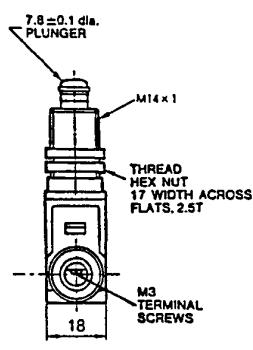
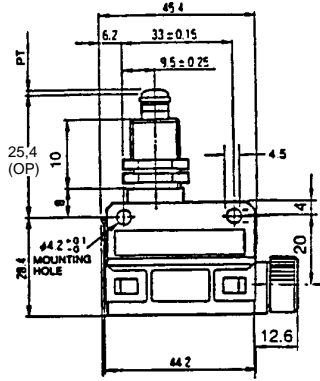
Mechanical life:	10 million
Sealing:	IP 67, NEMA 3, 4, 13
Operating temperature:	-10 °C to 70 °C [14 °F to 160 °F]
Approvals:	UL, CSA, CE
Termination:	Cable gland
Operating force max. (OF):	11,76 N [2.64 lb]
Pretravel max. (PT):	1,5 mm [0.060 in]
Overtravel min. (OT):	3,0 mm [0.118 in]
Differential travel max. (DT):	0,10 mm [0.004 in]
Electrical rating/contact:	SL1-* 5A - 125, 250 Vac SL1-* K 0.1 A - 125 Vac; 0.1 A - 30 Vdc
	Silver Gold clad cross point

Switching options:
SPDT
Single Pole, Double Throw,
Snap action contacts (1NC/1NO)



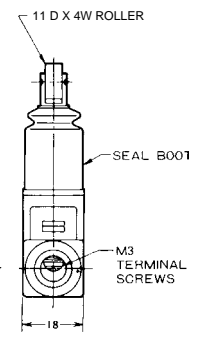
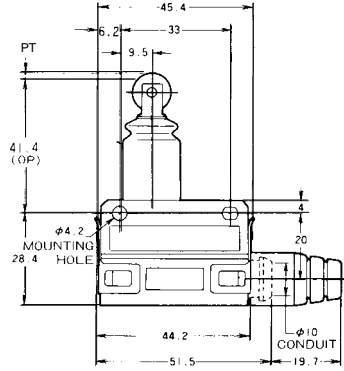
OPTIONS

Top pin plunger



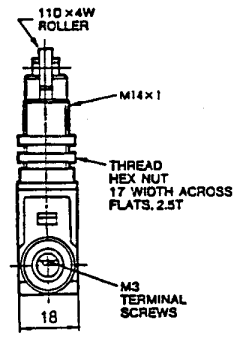
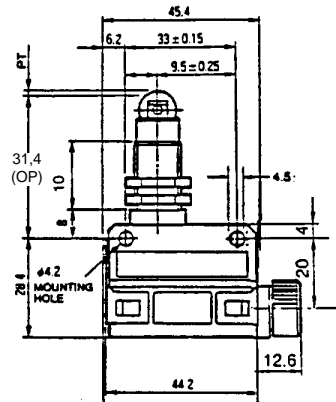
CONTACT	CAT. LISTING
Silver	SL1-H
Gold clad cross point	SL1-HK

Top roller plunger, parallel, boot seal



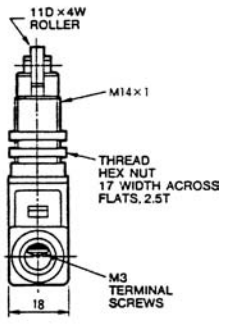
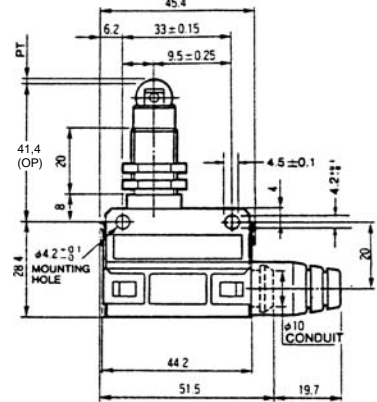
CONTACT	CAT. LISTING
Silver	SL1-B
Gold clad cross point	SL1-BK

Top roller plunger, parallel



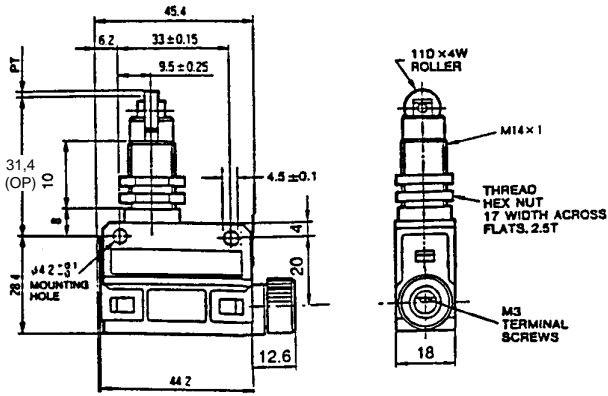
CONTACT	CAT. LISTING
Silver	SL1-A
Gold clad cross point	SL1-AK

Top roller plunger, long, parallel



CONTACT	CAT. LISTING
Silver	SL1-E
Gold clad cross point	SL1-EK

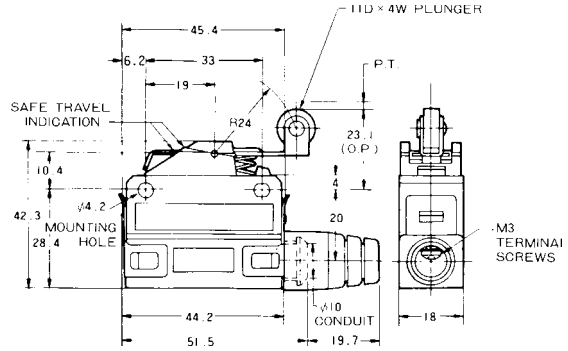
Top roller plunger, perpendicular



CONTACT
Silver
Gold clad cross point

CAT. LISTING
SL1-D
SL1-DK

Top roller lever

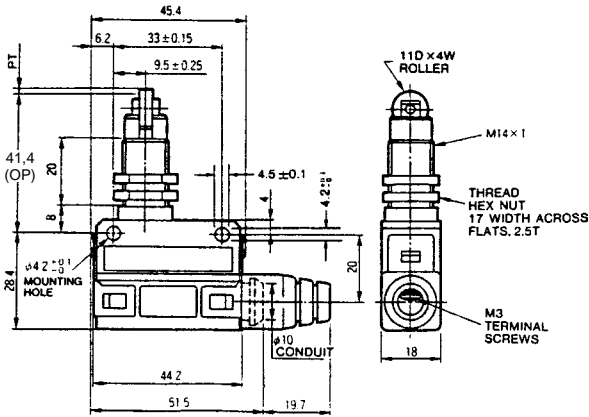


Operating force max. (OF): 3,92 N [0.88 lb]
Pretravel max. (PT): 2,0 mm [0.079 in]
Overtravel min. (OT): 4,0 mm [0.158 in]
Differential travel max. (DT): 0,3 mm [0.012 in]

CONTACT
Silver
Gold clad cross point

CAT. LISTING
SL1-P
SL1-PK

Top roller plunger, long, perpendicular



CONTACT
Silver
Gold clad cross point

CAT. LISTING
SL1-K
SL1-KK

14CE/914CE Series Miniature Enclosed Switches



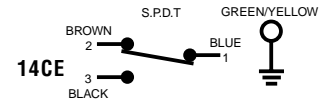
Actuators



The 14CE/914CE Series offers a miniature, rugged, compact, pre-wired switch which has gained wide market acceptance and performed successfully in a wide range of potential applications. The entire range of 14CE and 914CE switches has been approved to meet the requirements of the Low Voltage directive and is therefore CE marked.

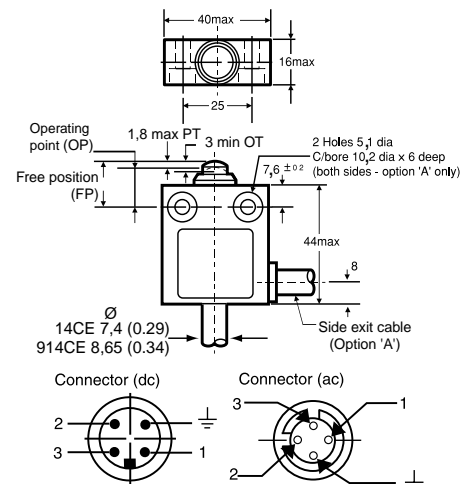
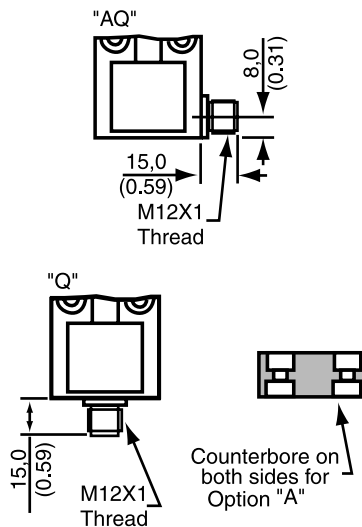
CE switches have different degrees of protection from IP66 to IP68 for the fully booted head styles. The cable entry is fully potted using a special compound to ensure that ingress is virtually impossible.

Mechanical life:		10 million
Sealing:		IP66, IP67, IP68
Operating temperature:	14CE	0 °C to 70 °C [32 °F to 158 °F]
	914CE	0 °C to 105 °C [32 °F to 221 °F]
Approvals:	14CE	CE
	914CE	CSA, UL, CE
		AC14 D300
		DC13 R300
Operating force (OF):		11,8 N [2,65 lb] max.
Pretravel (PT):		1,8 mm [0.71 in] max.
Overtravel (OT):		3,0 mm [0.118 in] min.
Differential travel (DT):		0,1mm [0.004 in] max.
Contact/Rating:	(9)14CE* -*	Silver A
	(9)14CE* -*G	Gold B
	(9)14CE* -Q, -AQ, -AQ1	Silver C
Connection:		Harmonised GENELEC 4 x 0,75 mm ² cable (14CE)
		SJTO 4 x 0,75 mm ² (18 AWG) cable (914CE)
		Connector (dc), 4 pin male, M12 thread (-Q)
		Connector (ac), 4 pin male, ½ in x 20 thread (-Q1)
Switching options:	SPDT	Single Pole, Double Throw
		Snap action contacts (1NC/1NO)



Electrical ratings:

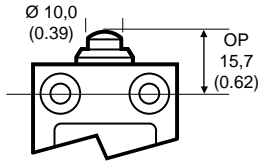
		Amps	
		Make	Break
A	240 Vac, ind.	1.2	0.2
	240 Vac, res.	5	5
	28 Vdc, res.	3	3
	28 Vdc, ind.	3	3
UL/CSA:	5 A, 1/10 Hp, 125 or 250 Vac		
B	1 A res., 0.5 A ind., 30 Vdc		
	UL:	1 A, 125 Vac	
C	UL/CSA:	3 A, 125 or 250 Vac	



Plunger actuated switches

OPTIONS

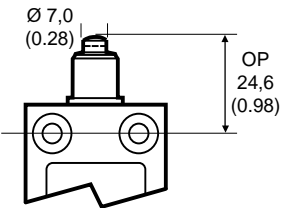
Top pin plunger



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE1-3
3 ft cable, side exit	914CE1-3A
3 ft cable, bottom exit, gold contacts	914CE1-3G
6 ft cable, bottom exit	914CE1-6
6 ft cable, bottom exit, gold contacts	914CE1-6G
9 ft cable, bottom exit	914CE1-9
Connector (dc), bottom exit	914CE1-Q
Connector (ac), bottom exit	914CE1-Q1

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE1-1
1 metre cable, side exit	14CE1-1A
1 metre cable, bottom exit, gold contacts	14CE1-1G
2 metre cable, bottom exit	14CE1-2
3 metre cable, bottom exit	14CE1-3
3 metre cable, side exit	14CE1-3A
3 metre cable, bottom exit, gold contacts	14CE1-3G
Connector (dc), side exit	14CE1-AQ
Connector (dc), bottom exit	14CE1-Q

Top pin plunger, boot seal

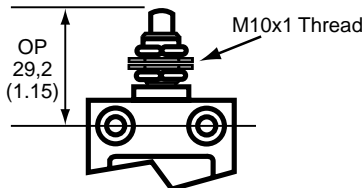


Operating force (OF): 22,5 N [5.06 lb]

NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE18-3
3 ft cable, side exit	914CE18-3A
6 ft cable, bottom exit	914CE18-6
9 ft cable, bottom exit	914CE18-9
9 ft cable, side exit	914CE18-9A
Connector (ac), side exit	914CE18-AQ1
Connector (dc), bottom exit	914CE18-Q
Connector (ac), bottom exit	914CE18-Q1

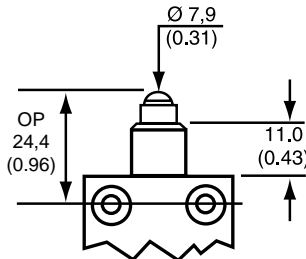
EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE18-1
3 metre cable, bottom exit	14CE18-3
Connector (dc), bottom exit	14CE18-Q

Top pin plunger, panel mounted



NORTH AMERICA/GLOBAL	CAT. LISTING
Connector (dc), bottom exit	914CE27-Q

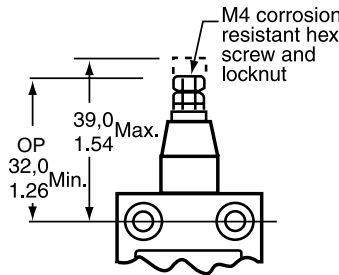
Ball bearing plunger



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE66-3
6 ft cable, bottom exit	914CE66-6

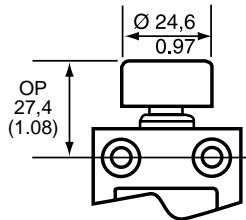
EUROPE/	CAT. LISTING
1 metre cable, bottom exit	14CE66-1
2 metre cable, bottom exit	14CE66-2

Adjustable plunger



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE19-3
9 ft cable, bottom exit	914CE19-9

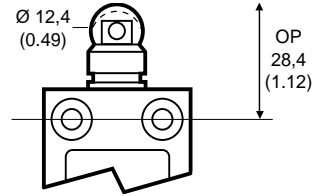
Manually operated



Operating force (OF): 9,0 N [2.02 lb]

NORTH AMERICA/GLOBAL	CAT. LISTING
6 ft cable, bottom exit	914CE22-6

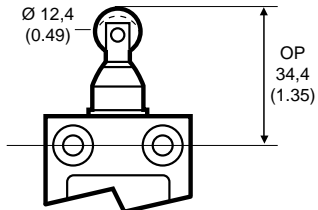
Top roller plunger, parallel



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE2-3
3 ft cable, side exit	914CE2-3A
3 ft cable, bottom exit, gold contacts	914CE2-3G
6 ft cable, bottom exit	914CE2-6
6 ft cable, side exit	914CE2-6A
9 ft cable, bottom exit	914CE2-9
Connector (dc), side exit	914CE2-AQ
Connector (dc), bottom exit	914CE2-Q
Connector (ac), bottom exit	914CE2-Q1

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE2-1
1 metre cable, side exit	14CE2-1A
1 metre cable, bottom exit, gold contacts	14CE2-1G
2 metre cable, bottom exit	14CE2-2
2 metre cable, side exit	14CE2-2A
3 metre cable, bottom exit	14CE2-3
3 metre cable, side exit	14CE2-3A
3 metre cable, bottom exit, gold contacts	14CE2-3G
Connector (dc), side exit	14CE2-AQ
Connector (dc), bottom exit	14CE2-Q

Top roller plunger, parallel, boot seal

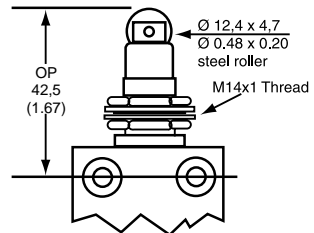


Operating force (OF): 17,5 N [3.82 lb]

NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE31-3
6 ft cable, bottom exit	914CE31-6

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE31-1
3 metre cable, bottom exit	14CE31-3

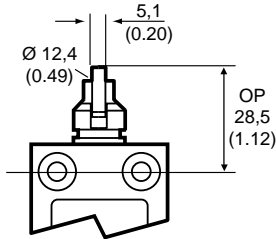
Top roller plunger, parallel, panel mounted



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE28-3
6 ft cable, bottom exit	914CE28-6
Connector (dc), bottom exit	914CE28-Q

**14CE/914CE Series
Plunger actuated switches
(continued)**

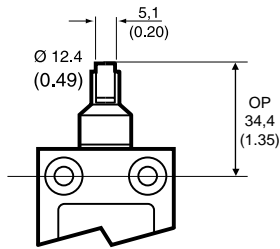
Top roller plunger, perpendicular



NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE3-3
6 ft cable, bottom exit	914CE3-6
6 ft cable, side exit	914CE3-6A
9 ft cable, bottom exit	914CE3-9
Connector (dc), bottom exit	914CE3-Q
Connector (ac), bottom exit	914CE3-Q1

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE3-1
2 metre cable, bottom exit	14CE3-2
3 metre cable, bottom exit	14CE3-3

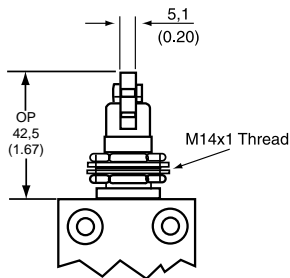
Top roller plunger, perpendicular, boot seal



Operating force (OF): 17,5 N [3.82 lb]

NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE55-3
3 ft cable, side exit	914CE55-3A

Top roller plunger, perpendicular, panel mounted



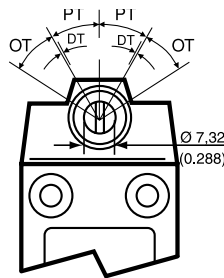
NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE29-3
6 ft cable, bottom exit	914CE29-6

Side rotary and wobble actuated switches

OPTIONS

Rotary motion

(actuating lever not included - use any LSZ51*, LSZ52*, LSZ54*, LSZ55* or LSZ61* Series shown on pages 71-73)

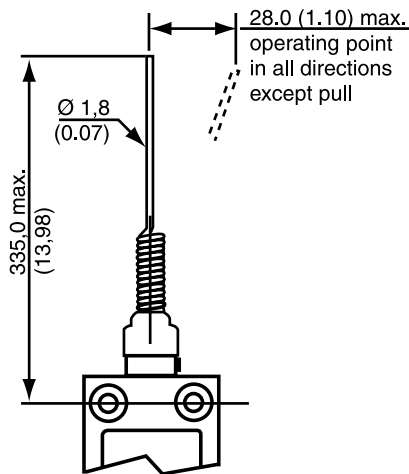


Operating torque: 0,3 Nm [2.66 in lb]
 Pretravel (PT): 30° max.
 Overtravel (OT) mm: 40° min.
 Differential travel: 3°

NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE16-3
3 ft cable, side exit	914CE16-3A
6 ft cable, bottom exit	914CE16-6
9 ft cable, bottom exit	914CE16-9
Connector (dc), bottom exit	914CE16-Q

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE16-1
2 metre cable, bottom exit	14CE16-2
3 metre cable, bottom exit	14CE16-3

Wobble Spring wire



Operating Force (OF): 0,55 N [0.12 lb]

NORTH AMERICA/GLOBAL	CAT. LISTING
3 ft cable, bottom exit	914CE20-3
6 ft cable, bottom exit	914CE20-6
9 ft cable, bottom exit	914CE20-9
Connector (dc), bottom exit	914CE20-Q

EUROPE	CAT. LISTING
1 metre cable, bottom exit	14CE20-1
3 metre cable, bottom exit	14CE20-3

24CE/924CE Series Miniature Safety Electromechanical Switches



Actuators



For position sensing and switching applications requiring direct acting, positive opening contacts the 24CE and 924CE ranges are ideal. They have been tested and approved to meet the requirements of the Low Voltage directive and positive opening safety contacts per IEC/EN 60947-5-1-3. The devices are CE marked. The red colour clearly differentiates this safety component in the application. The 924CE range also has UL and CSA approval.

It is possible for the end user to enhance the safety level of these switches from Category 1 on their own to Categories 2, 3 or 4 when the switches are used in conjunction with our wide range of FF-SR safety relays to form a safety system.

Potential applications for these switches could use the roller plunger 24CE2- or 24CE3- style in conjunction with cams on doors with hinges; or our fixed side rotary 24CE16- style for detection of sliding doors. Also available are a range of panel mounting or top mounting versions to ensure that small space or difficult mounting can be simply achieved.

Several contact arrangements are available.

Mechanical life:		10 million
Sealing:		standard type: IP66; with boot seal type: IP67
Operating temperature:	24CE	0 °C to 70 °C [32 °F to 158 °F] Low temperature: -40 °C [-40 °F]
	924CE	0 °C to 105 °C [32 °F to 221 °F]
Approvals:	24CE	CE AC15 B300 DC13 R300
	924CE	CSA, CE per UL file #E41859, 10 A 250 Vac; 1/3 Hp 125-250 Vac AC15 B300 DC13 R300
Connection:		Harmonised CENELEC 3 or 5 x 0,75 mm ² cable (24CE) SJTO 3 or 5 x 18 AWG cable (924CE)
Contacts:		Silver
Switching options:		

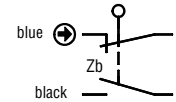
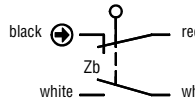
924CE

24CE

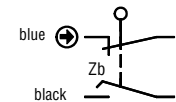
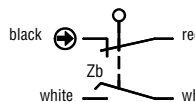
Slow action contacts (1NC)



Slow action contacts (1NC/1NO), Break Before Make (BBM)

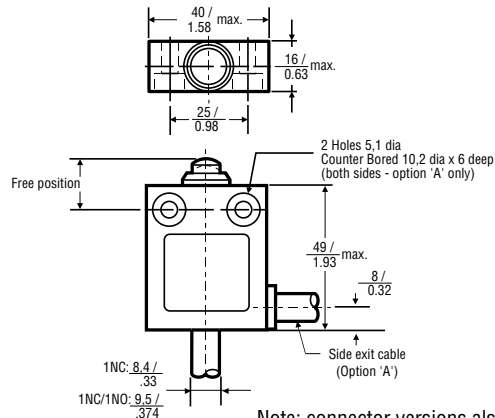


Slow action contacts (1NC/1NO), Make Before Break (MBB)



Electrical ratings:

Designation & Utilization Category		IEC 60947-5-1/EN 60947-5-1						VA rating	
		Rated operational current I _e (A) at rated operational voltage U _e						Make	Break
AC15	B300	120 V	240 V	380 V	480 V	500 V	600 V	3600	360
		3	1.5	-	-	-	-		
		125 V	250 V						
DC13	R300	0,22	0,1				28	28	

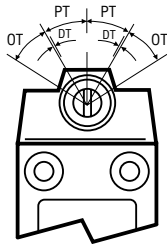


Note: connector versions also available

24CE/924CE Series

OPTIONS

Side rotary



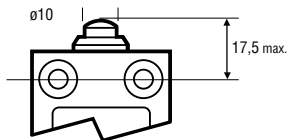
North America/Global

CABLE LENGTH	CONTACT	CAT. LISTING
3 ft	1NC, BBM	924CE16-S3
9 ft	1NC, BBM	924CE16-S9
3 ft	1NC, MBB	924CE16-T3
3 ft	1NC	924CE16-Y3
9 ft	1NC	924CE16-Y9

Europe

CABLE LENGTH	CONTACT	CAT. LISTING
1 m	1NC/1NO, BBM	24CE16-S1
1 m	1NC	24CE16-Y1
6 m	1NC	24CE16-Y6

Top pin plunger



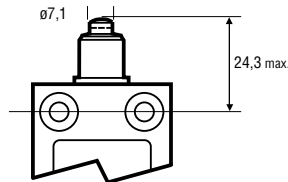
North America/Global

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
3 ft	1NC, BBM		924CE1-S3
6 ft	1NC, BBM		924CE1-S6
9 ft	1NC, BBM		924CE1-S9
25 ft	1NC, MBB	side exit	924CE1-T25A
3 ft	1NC, MBB	side exit	924CE1-T3
3 ft	1NC, MBB	side exit	924CE1-T3A
6 ft	1NC, MBB	side exit	924CE1-T6A
9 ft	1NC, MBB		924CE1-T9
9 ft	1NC, MBB	side exit	924CE1-T9A
3 ft	1NC		924CE1-Y3
9 ft	1NC		924CE1-Y9

Europe

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
12 m	1NC/1NO, BBM	low temperature	24CE1-S12B
2 m	1NC/1NO, BBM		24CE1-S2
2 m	1NC/1NO, BBM	side exit	24CE1-S2A
2 m	1NC/1NO, BBM	low temperature	24CE1-S2B
3 m	1NC/1NO, BBM		24CE1-S3
6 m	1NC/1NO, BBM		24CE1-S6
1 m	1NC	side exit	24CE1-Y1A
2 m	1NC		24CE1-Y2
3 m	1NC		24CE1-Y3

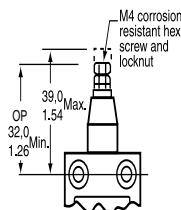
Top pin plunger, boot sealed



North America/Global

CABLE LENGTH	CONTACT	CAT. LISTING
6 ft	1NC/1NO, BBM	924CE18-S6

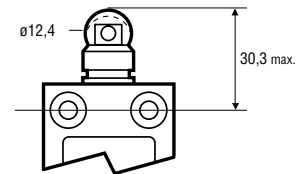
Adjustable plunger



North America/Global

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
3 ft	1NC/1NO, BBM	low temperature	924CE19-S3L1

Top roller plunger, parallel



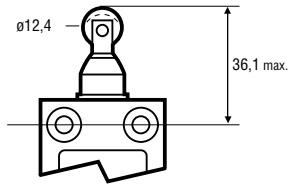
North America/Global

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
15 ft	1NC, BBM		924CE2-S15
21 ft	1NC, BBM		924CE2-S21
3 ft	1NC, BBM		924CE2-S3
6 ft	1NC, BBM		924CE2-S6
6 ft	1NC, BBM	side exit	924CE2-S6A
9 ft	1NC, BBM		924CE2-S9
25 ft	1NC, MBB		924CE2-T25
25 ft	1NC, MBB	side exit	924CE2-T25A
3 ft	1NC, MBB		924CE2-T3
6 ft	1NC, MBB		924CE2-T6
9 ft	1NC, MBB		924CE2-T9
3 ft	1NC		924CE2-Y3
9 ft	1NC		924CE2-Y9

Europe

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
1 m	1NC/1NO, BBM		24CE2-S1
2 m	1NC/1NO, BBM		24CE2-S2
2 m	1NC/1NO, BBM	side exit	24CE2-S2A
2 m	1NC/1NO, BBM	low temperature	24CE2-S2B
3 m	1NC/1NO, BBM		24CE2-S3
6 m	1NC/1NO, BBM		24CE2-S6
2 m	1NC/1NO, MBB		24CE2-T2
1 m	1NC		24CE2-Y1
2 m	1NC		24CE2-Y2
2 m	1NC	side exit	24CE2-Y2A
4 m	1NC		24CE2-Y4
6 m	1NC	side exit	24CE2-Y6A

Top roller plunger, parallel, boot sealed



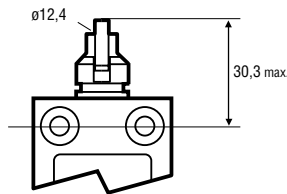
North America/Global

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
6 ft	1NC, BBM		924CE31-S6
20 ft	1NC		924CE31-Y20
3 ft	1NC	low temperature	924CE31-Y3L1

Europe

CABLE LENGTH	CONTACT	OPTION	CAT. LISTING
1 m	1NC/1NO, BBM		24CE31-S1
2 m	1NC/1NO, BBM		24CE31-S2
2 m	1NC/1NO, BBM	low temperature	24CE31-S2B
5 m	1NC/1NO, BBM		24CE31-S5
1 m	1NC		24CE31-Y1
2 m	1NC		24CE31-Y2
3 m	1NC		24CE31-Y3

Top roller plunger, perpendicular



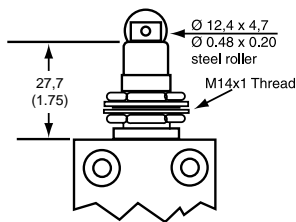
North America/Global

CABLE LENGTH	CONTACT	CAT. LISTING
3 ft	1NC, BBM	924CE3-S3
6 ft	1NC, BBM	924CE3-S6
9 ft	1NC, BBM	924CE3-S9
9 ft	1NC, MBB	924CE3-T9

Europe

CABLE LENGTH	CONTACT	CAT. LISTING
2 m	1NC/1NO, BBM	24CE3-S2
1 m	1NC	24CE3-Y1
2 m	1NC	24CE3-Y2

Top roller plunger, parallel, panel mounted



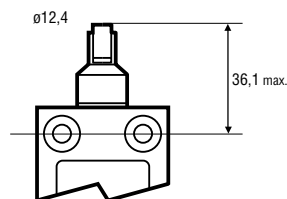
North America/Global

CABLE LENGTH	CONTACT	CAT. LISTING
15 ft	1NC, BBM	924CE28-S15

Europe

CABLE LENGTH	CONTACT	CAT. LISTING
2 m	1NC/1NO, BBM	24CE28-S2

Top roller plunger, perpendicular, boot sealed



Europe

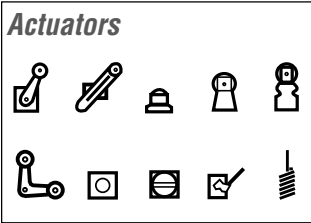
CABLE LENGTH	CONTACT	CAT. LISTING
1 m	1NC/1NO, BBM	24CE55-S1
2 m	1NC/1NO, BBM	24CE55-S2
1 m	1NC	24CE55-Y1

LS Series Compact Limit Switches

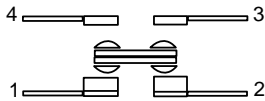
LS Series compact limit switches are carefully designed for enhanced repeatability under the most stringent conditions. Compact size and field adjustable features greatly extend the flexibility of these switches. Heads may be positioned at 90° increments. Side rotary models can be adjusted for clockwise and/or counter-clockwise operation. Actuators can be set and locked in any position through 360°.

The rugged housings and actuator heads are constructed from cast aluminium, capable of withstanding physical abuse. Protection against oil, water and dust is achieved by O-ring seals on the actuator shaft; a ring seal between head and body; and a seated compression seal between cover and case.

The LS fits in many places too small for any other fully adjustable limit switch.



Conduit:		½ in - 14 NPT 20 mm
Sealing:	½ in - 14 NPT conduit 20 mm conduit	NEMA 1, 3, 4, 6, 13 IP67
Operating temperature:	Standard High	-29 °C to 71 °C [-20 °F to 160 °F] -29 °C to 121 °C [-20 °F to 250 °F]
Approvals:	LS-L	UL, CSA
Contacts:	Electrical ratings A, B, C, D, E Electrical ratings F, G	Silver Cadmium Oxide ⁽¹⁾ Fine Silver
Switching options:	SPDT	Single Pole, Double Throw Snap action contacts (1NC/1NO)



Electrical ratings:	A	10 A, 120, 240 or 480 Vac; 1/3 hp, 120 Vac; 3/4 hp, 240 Vac; 0.8 A, 115 Vdc ^{**} ; 0.4 A, 230 Vdc ^{**} ; 0.1 A, 550 Vdc ^{**} Pilot Duty, 600 Vac max.
	B	10 A, 120, 240 or 480 Vac; 1/4 hp, 120 Vac; 1/2 hp, 240 Vac. Pilot Duty, 600 Vac max.
	C	10 A, 120 Vac; 1/3 hp, 120 Vac.
	D	10 A, 120, 240, 480 Vac; 1/4 hp, 120 Vac; 1/2 hp, 240 Vac; 0.8 A, 115 Vdc ^{**} ; 0.4 A, 230 Vdc ^{**} ; 0.1 A, 550 Vdc ^{**} ; Pilot Duty, 600 Vac max.
	E	10 A, 120, 240 or 480 Vac; 1/3 hp, 120 Vac; 3/4 hp, 240 Vac. Pilot Duty, 600 Vac max.
	F	UL Rating: 10 A, 125, 250, or 480 Vac; 1/3 hp, 125 Vac; 3/4 hp, 250 Vac; 0.8 A, 125 Vdc ^{**} ; 0.4 A, 250 Vdc ^{**}
	G	UL Rating: 10 A, 125, 250 or 480 Vac; 1/4 hp, 125 Vac; 1/2 hp, 250 Vac; 0.8 A, 125 Vdc ^{**} ; 0.4 A, 250 Vdc ^{**}

^{**} Resistive rating

⁽¹⁾ Designed for use with inductive loads such as relays, contactors, motors and solenoids. Honeywell does *not* recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 volts and/or 0.5 amp.

LS Series
Side rotary actuated switches

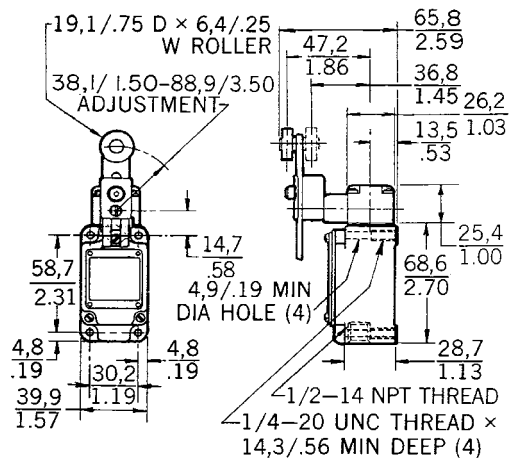
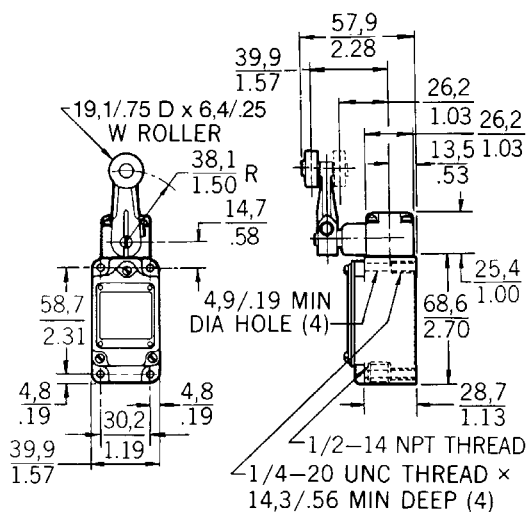
OPTIONS

Fixed length lever

Operating force max. (OF):	Standard	13,3 N [3.0 lb]
	Low	5,0 N [18 oz]
Pretravel max. (PT):	Standard	20°
	Low	5°
Overtravel min. (OT)		30°
Differential travel max. (DT):	Standard	12°
	Low	4°
Switching options:		SPDT
Lever:		Aluminium, steel roller

Adjustable roller lever

Operating force max. (OF):	Standard	13,3 N [3.0 lb]
	Low	5,0 N [18 oz]
Pretravel max. (PT):	Standard	20°
	Low	5°
Overtravel min. (OT)		30°
Differential travel max. (DT):	Standard	12°
	Low	4°
Switching options:		SPDT
Lever:		Aluminium, nylon roller



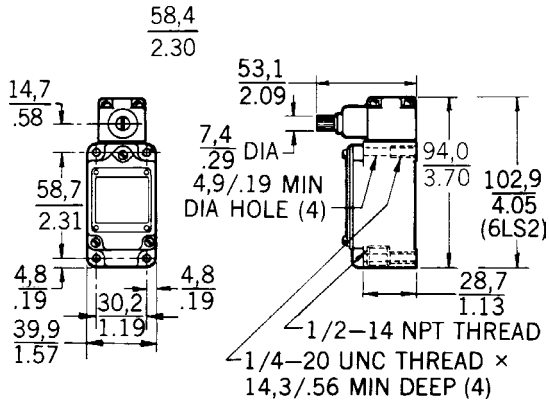
	CONDUIT	ELECTRICAL RATING	CAT. LISTING
		A	1LS1
		F	1LS1-L
	20 mm	A	1LS1-4C
Low PT/OF		B	1LS131
Low PT		B	1LS19
Low PT	20 mm	B	1LS19-4C
High temperature		A	1LS243
High temperature 20 mm		A	1LS243-4C
Indicator light		C	1LS501
Low OF		A	1LS6

	CONDUIT	ELECTRICAL RATING	CAT. LISTING
Low PT		A	1LS3
Low OF/PT/DT		F	1LS3-L
	20 mm	A	1LS3-4C
		B	1LS58
		B	1LS59

No lever

Note: Levers for are ordered separately (see pages 71-73 for details)

Operating force max. (OF):	Standard	0,51 N m [4.5 in lb]
	Low with standard PT	0,21 N m [30 in oz]
	Low with low PT	0,11 N m [1 in lb]
Pretravel max. (PT):	Standard	20°
	Low	5°
	Maintained contact	55°
Overtravel min. (OT)	Standard	30°
	Maintained contact	35°
Differential travel max. (DT):	Standard	12°
	Low PT	4°
	Maintained contact	20°
Switching options:		SPDT
		Maintained contact



SPDT contact

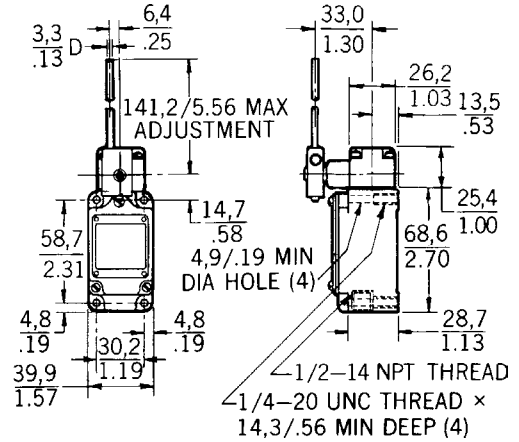
	CONDUIT	ELECTRICAL RATING	CAT. LISTING
		A	1LS2
		F	1LS2-L
	20 mm	A	1LS2-4C
Low OF		A	1LS23
Low OF/PT		B	1LS56
Low PT		B	1LS9

Maintained contact

	CONDUIT	ELECTRICAL RATING	CAT. LISTING
		A	6LS2
		F	6LS2-L

Adjustable rod

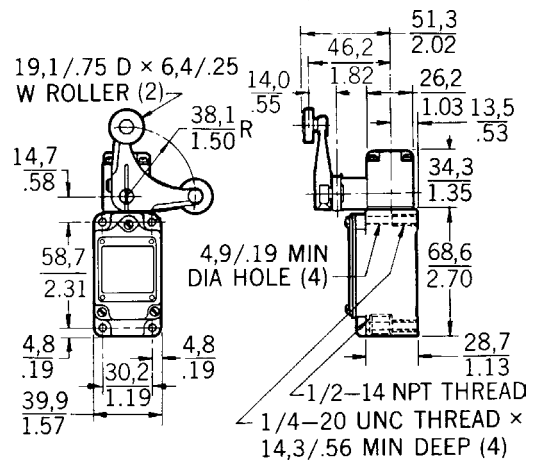
Operating force max. (OF):	Standard	1,39 N [5 oz]
	Low	0,83 Nm [3 oz]
Pretravel max. (PT):	Standard	20°
	Low	5°
Overtravel min. (OT)		30°
Differential travel max. (DT):	Standard	12°
	Low	4°
Switching options:		SPDT
Lever:		Aluminium rod



	CONDUIT	ELECTRICAL RATING	CAT. LISTING
		A	1LS10
		F	1LS10-L
	20 mm	A	1LS10-4C
Low PT		B	1LS47
Low PT/OF/DT		B	1LS53

Side rotary, yoke lever, maintained contact

Operating force max. (OF):	8,9 N [2.0 lb]
Pretravel max. (PT):	55°
Switching options:	Maintained
Lever:	6LS1 Steel rollers on opposite sides of arm 6LS3 Nylon rollers on same side of arm



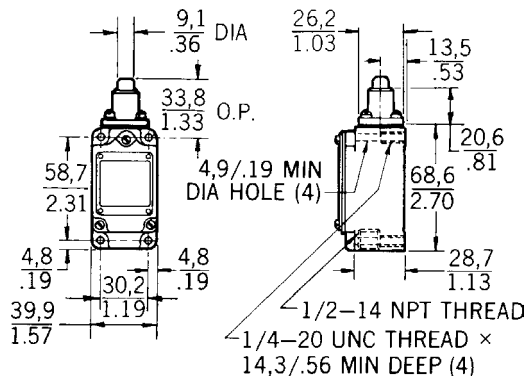
	CONDUIT	ELECTRICAL RATING	CAT. LISTING
		A	6LS1
	20 mm	A	6LS1-4C
		A	6LS3

**LS Series
Plunger actuated switches**

OPTIONS

Top pin plunger

Operating force max. (OF):	Standard	31,14 N [7 lb]
	Low	10 N [36 oz]
Pretravel max. (PT):		1,65 mm [0.065 in]
Overtravel min. (OT)	Standard	6,35 mm [0.25 in]
	Low	5,56 mm [0.219 in]
Differential travel max. (DT):	Standard	0,51 mm [0.020 in]
	Low	0,23 mm [0.009 in]
Switching options:		SPDT

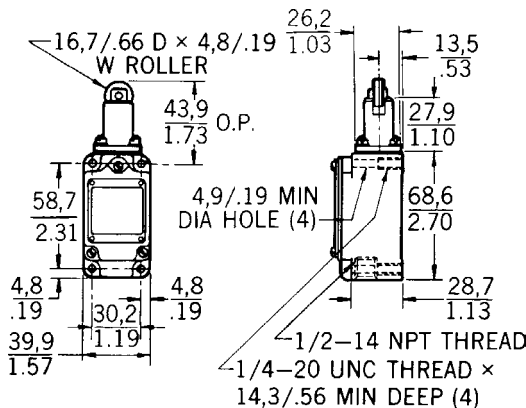


CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	A	2LS1
	F	2LS1-L
	A	2LS1-4C
	E	2LS111

Low OF/OT/DT

Top roller plunger

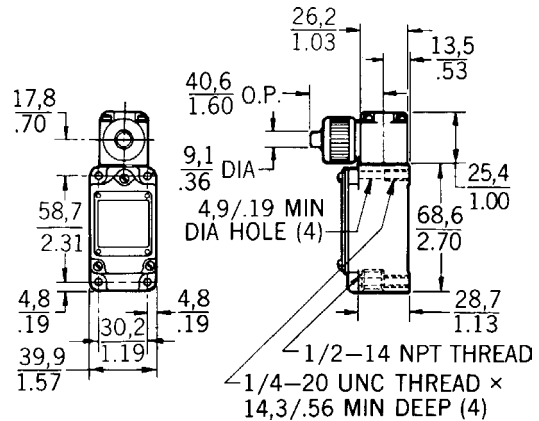
Operating force max. (OF):		31,14 N [7 lb]
Pretravel max. (PT):		1,65 mm [0.065 in]
Overtravel min. (OT)		5,56 mm [0.219 in]
Differential travel max. (DT):		0,51 mm [0.020 in]
Switching options:		SPDT



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	A	5LS1
	F	5LS1-L
	A	5LS1-4C

Side pin plunger

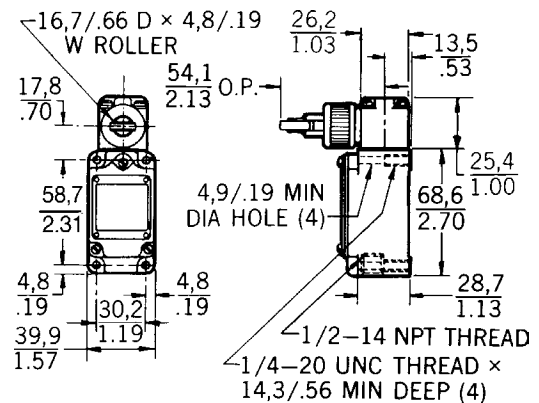
Operating force max. (OF):		40,03 N [9 lb]
Pretravel max. (PT):		2,8 mm [0.110 in]
Overtravel min. (OT)		6,35 mm [0.25 in]
Differential travel max. (DT):		1,02 mm [0.040 in]
Switching options:		SPDT



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	A	4LS1 4LS1-4C

Side roller plunger

Operating force max. (OF):		40,03 N [9 lb]
Pretravel max. (PT):		2,8 mm [0.110 in]
Overtravel min. (OT)		5,56 mm [0.219 in]
Differential travel max. (DT):		1,02 mm [0.040 in]
Switching options:		SPDT



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	A	3LS1 3LS1-4C

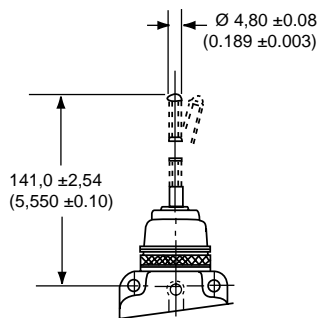
Wobble actuated switches

These switches will operate by moving actuator in any direction except direct pull.

Operating force max. (OF): 1,39 N [5 oz]
 Pretravel max. (PT): 28,6 mm [1,125 in]
 Switching options: SPDT

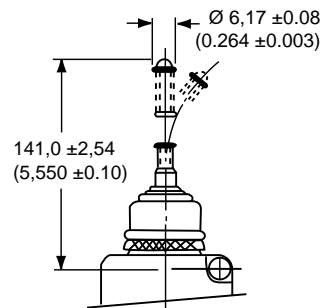
OPTIONS

Flexible cable



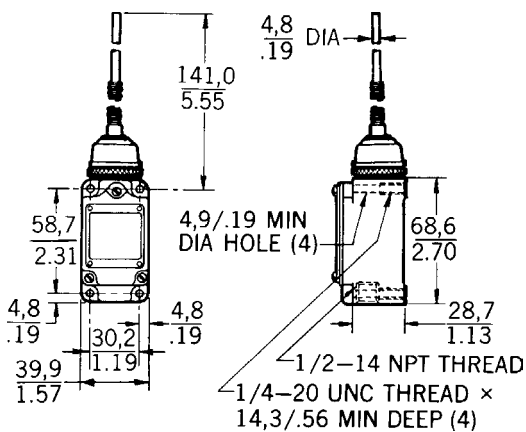
CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	D	8LS1
	G	8LS1-L
	D	8LS1-4C

Coil spring



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	D	8LS152
	D	8LS152-4C

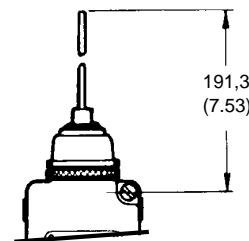
Spring rod



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	D	8LS3
	D	8LS3-4C

Steel wire

Operating force max. (OF): 0,28 N [1 oz]
 Pretravel max. (PT): 63,5 mm [2.5 in]



CONDUIT	ELECTRICAL RATING	CAT. LISTING
20 mm	D	8LS125
	D	8LS125-4C

BF Series Plastic Enclosed Basic Switches



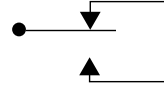
BF Series Plastic Enclosed Basic Switches are available with a wide variety of actuators, and are designed for easy mounting and wiring. BF switches are designed to allow mounting with the cover either towards or away from the mounting surface.

Switches with lever type actuators are adjustable in two directions. The entire actuator can be rotated around its mounting bushing, and the angle of the lever can also be changed.

Sealing: NEMA 1, 3, 4, 13
Operating temperature: -32 °C to 71 °C [-25 °F to 160 °F]
Approvals: UL
Termination: ½ in - 14NPT
Contacts: Silver
Electrical ratings: A 11 A - 125 Vac, 250 Vac or 277 Vac
 B 5 A - 125 Vac, 250 Vac or 277 Vac

Switching options:
SPDT

Single Pole, Double Throw,
Snap action contacts (1NC/1NO)



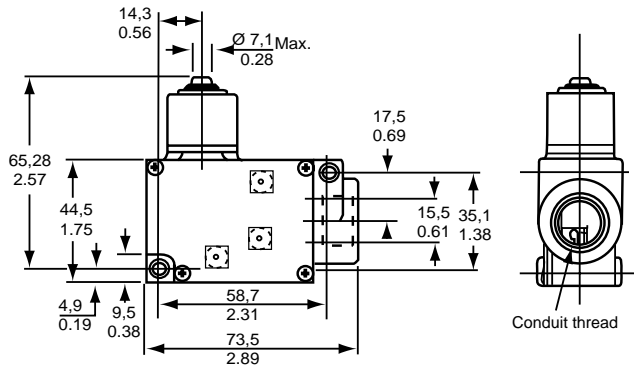
Actuators



Plunger actuated switches

OPTIONS

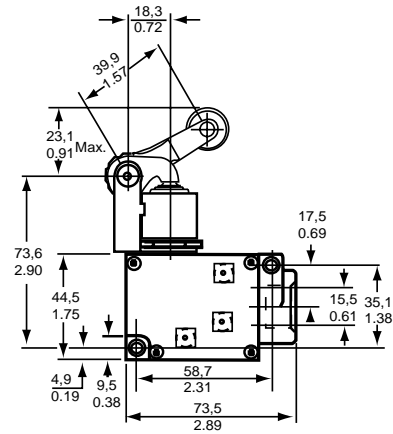
Top pin plunger



Operating force max. (OF): 12,23 N [44 oz]
Differential travel max. (DT): 0,64 mm [0.025 in]

ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	B	BFL1-BP1
Right	B	BFR1-BP1

Top roller arm, adjustable

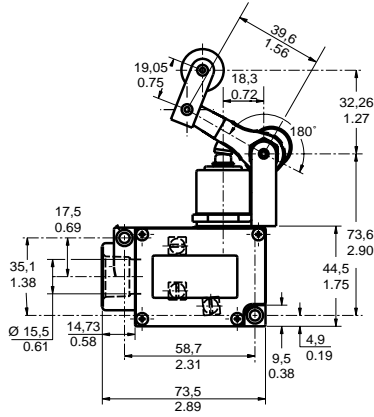


Operating force max. (OF): 10,56 N [38 oz]
Differential travel max. (DT): 1,65 mm [0.065 in]

ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	B	BFL1-BL1
Right	B	BFR1-BL1

Plunger actuated switches (continued)

Top roller arm, adjustable, one way



Operating force max. (OF):

Left 3,61 N [13 oz]
Right 10,56 N [38 oz]

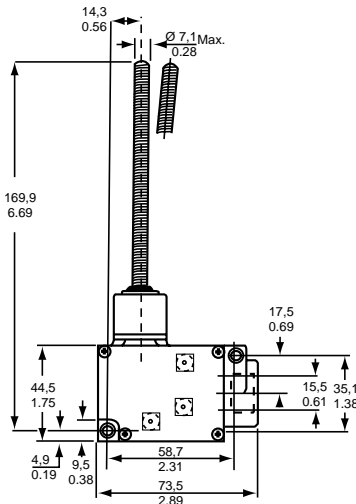
ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	B	BFL1-BL3
Right	B	BFR1-BL3

Wobble actuated switches

Operating force max. (OF): 1,95 N [7 oz]

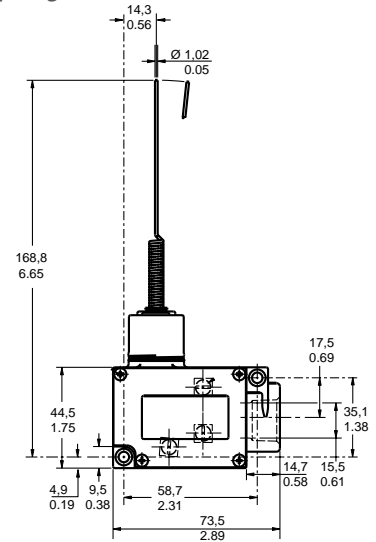
OPTIONS

Coil spring



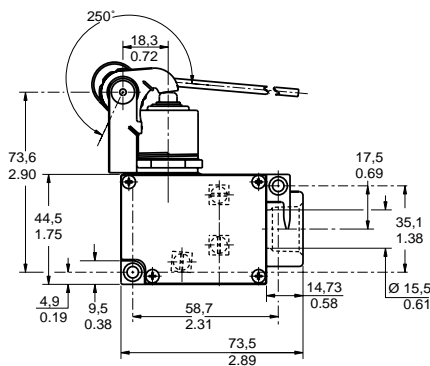
ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	A	BFL1-AW1
Left	B	BFL1-BW1
Right	B	BFR1-BW1

Spring wire



ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	B	BFL1-BW4
Right	B	BFR1-BW4

Low force rod

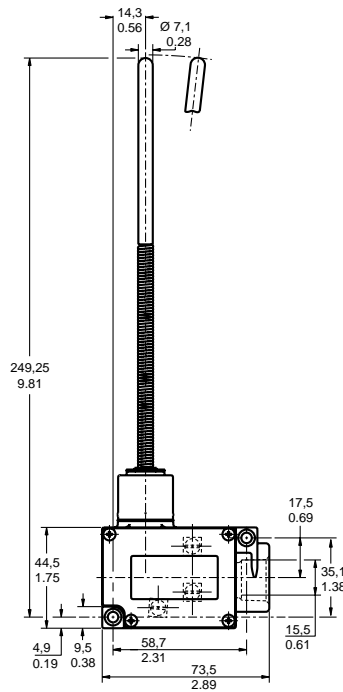


Operating force max. (OF):

Left 10,56 N [38 oz]
Right 3,61 N [13 oz]

ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left	B	BFL1-BL2
Right	B	BFR1-BL2

Plastic



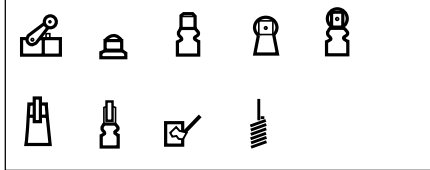
Type -BW3

ACTUATOR POSITION	ELECTRICAL RATING	CAT. LISTING
Left, 179,3 mm [7.06 in] length rod	A	BFL1-AW2
Left, 249,25 mm [9.8 in] length rod	B	BFL1-BW3

BZE/DTE Series Compact Enclosed Switches



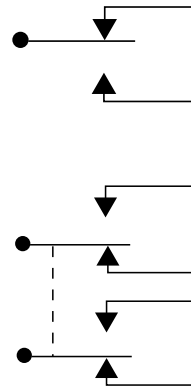
Actuators



The BZE/DTE Series general purpose enclosed limit switches offer enhanced precision operation and sturdy actuation in a compact but rugged metal housing. The large wiring enclosure means that the user can get access to wire the device simply. The switch incorporates high repeatability of the switch point early in the travel of the switch. This is achieved through a very tolerant over-travel mechanism aimed at reducing the effect of the application drift and the long-term accuracy of the switch.

Conduit: ½ in - 14 NPT
Sealing: E6 NEMA 1
V6 NEMA 1, 3
Operating temperature: Standard -32 °C to 71 °C [-25 °F to 160 °F]
Low -40 °C to 71°C [-40 °F to 160 °F]
Approvals: UL, CSA, CE
Contacts: Electrical ratings A, B, C Silver
Electrical rating D Gold
Switching options: SPDT Single Pole, Double Throw
Snap action contacts (1NC/1NO)

DPDT



Double Pole, Double Throw
Snap action contacts (2NC/2NO)

Electrical ratings:

A	UL/CSA Rating:	15 A, 125, 250 or 480 Vac: 2 A, 600 Vac: 1/8 Hp, 125 Vac; 1/4 Hp, 250 Vac: 1/2 A, 125 Vdc; 1/4 A, 250 Vdc
B	UL/CSA Rating:	10 A, 125 or 250 Vac: 0.3 A, 125 Vdc; 0.15 A, 250 Vdc
C	UL/CSA Rating:	15 A, 125, 250 or 480 Vac; 1/4 Hp, 125 Vac; 1/2 Hp, 250 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc
D	UL/CSA Rating:	1 A - 125 Vac

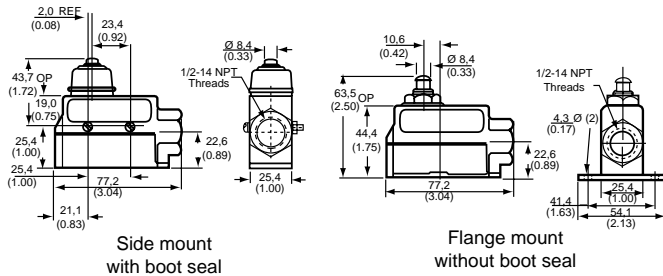
E6/V6

E6 (side mount) and V6 (flange mount) switches are offered with or without actuator seal boots. Both have a combination insulator/ seal cemented inside the bottom enclosure. Lead washers are used to seal the mounting holes on side mount switches. All side mount switches are installed with #6 screws, except the BZE6-2RN7 (#8 screws). Removal of the bottom enclosure exposes the terminals for easy wiring.

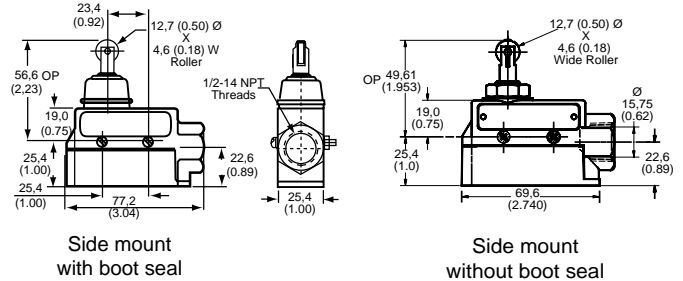
Momentary contact

OPTIONS

Top pin plunger



Top roller plunger, parallel



With boot seal

Operating force max. (OF):	SPDT Standard	2,50 N to 6,67 N [9 oz to 24 oz]
	SPDT Low temperature	4,17 N to 10,84 N [15 oz to 39 oz]
Pretravel max. (PT):	SPDT	1,98 mm [0.078 in]
	DPDT	2,8 mm [0.110 in]
Overtravel min. (OT):	SPDT	5,56 mm [0.219 in]
	DPDT	3,18 mm [0.125 in]
Differential travel max. (DT):	SPDT	0,05 mm [0.002 in]
	DPDT	1,52 mm [0.060 in]

With boot seal

Operating force max. (OF):	SPDT	2,50 N to 6,67 N [9 oz to 24 oz]
	DPDT	5,56 N to 13,34 N [20 oz to 48 oz]
Pretravel max. (PT):	SPDT	1,98 mm [0.078 in]
	DPDT	2,8 mm [0.110 in]
Overtravel min. (OT):	SPDT	5,56 mm [0.219 in]
	DPDT	3,18 mm [0.125 in]
Differential travel max. (DT):	SPDT	0,01 mm to 0,05 mm [0.0004 in to 0.0020 in]
	DPDT	1,52 mm [0.060 in]

Side mount

	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	BZE6-2RN
	DPDT	B	DTE6-2RN
Low temperature/High OF	SPDT	A	BZE6-2RN34
#8 screws	SPDT	A	BZE6-2RN7
Gold contacts	SPDT	D	BZE6-2RN72

Side mount

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZE6-2RN80
DPDT	B	DTE6-2RN80

Flange mount

	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	BZV6-2RN
	DPDT	B	DTV6-2RN

Flange mount

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	BZV6-2RN80

Without boot seal

Operating force max. (OF):	SPDT	2,50 N to 3,61 N [9 oz to 13 oz]
	DPDT	5,56 N to 11,12 N [20 oz to 40 oz]
Pretravel max. (PT):	SPDT	0,38 mm [0.015 in]
	DPDT	3,81 mm [0.150 in]
Overtravel min. (OT):	SPDT	5,56 mm [0.219 in]
	DPDT	2,24 mm [0.088 in]
Differential travel max. (DT):	SPDT	0,05 mm [0.002 in]
	DPDT	1,52 mm [0.060 in]

Without boot seal

Operating force max. (OF):	SPDT	2,50 N to 3,61 N [9 oz to 13 oz]
	DPDT	6,67 N to 13,34 N [24oz to 48 oz]
Pretravel max. (PT):	SPDT	0,38 mm [0.015 in]
	DPDT	3,58 mm [0.141 in]
Overtravel min. (OT):	SPDT	3,55 mm [0.140 in]
	DPDT	3,18 mm [0.125 in]
Differential travel max. (DT):	SPDT	0,05 mm [0.002 in]
	DPDT	1,52 mm [0.060 in]

Side mount

	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	BZE6-2RQ
	DPDT	B	DTE6-2RQ

Side mount

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
	SPDT		A	BZE6-2RQ8
Field adjustable roller	SPDT		A	BZE6-2RQ9
Field adjustable roller	DPDT		B	DTE6-2RQ9

Flange mount

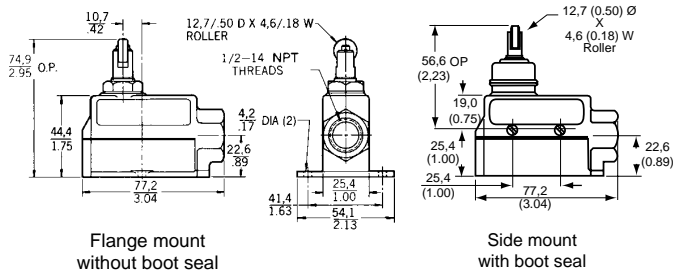
	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	BZV6-2RQ

Flange mount

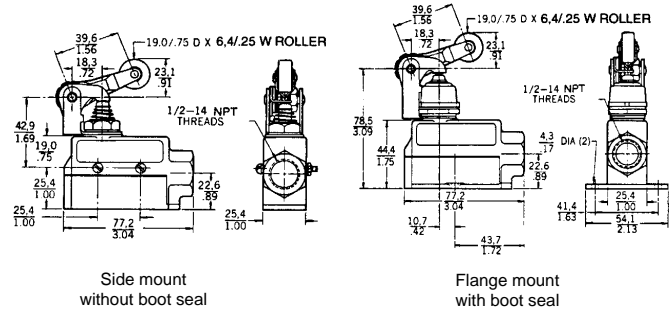
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	BZV6-2RQ8

**BZE/DTE Series
E6/V6 Momentary contact (continued)**

Top roller plunger, perpendicular



Roller arm, adjustable



With boot seal

Operating Force max. (OF): 2,60 N to 6,67 N [9 oz to 24 oz]
Pretravel max. (PT): 1,98 mm [0.078 in]
Overtravel min. (OT): 5,56 mm [0.219 in]
Differential travel max. (DT): 0,01 mm to 0,05 mm [0.0004 in to 0.0020 in]

Side mount

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZE6-2RN81

Without boot seal

Operating Force max. (OF): SPDT 2,50 N to 3,61 N [9 oz to 13 oz]
 DPDT 6,67 N to 13,34 N [24 oz to 48 oz]
Pretravel max. (PT): SPDT 0,38 mm [0.015 in]
 DPDT 3,58 mm [0.141 in]
Overtravel min. (OT): SPDT 3,55 mm [0.140 in]
 DPDT 3,18 mm [0.125 in]
Differential travel max. (DT): SPDT 0,05 mm [0.002 in]
 DPDT 1,52 mm [0.060 in]

Side mount

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZE6-2RQ81
DPDT	B	DTE6-2RQ81

Flange mount

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZV6-2RQ81

Operating temperature: Standard -32 °C to 71 °C [-25 °F to 160 °F]
 Low -40 °C to 71 °C [-40 °F to 160 °F]
Roller: Steel

With boot seal

Operating Force max. (OF): 2,78 N to 5,56 N [10 oz to 20 oz]
Pretravel max. (PT): 4,78 mm [0.188 in]
Overtravel min. (OT): 5,56 mm [0.219 in]
Differential travel max. (DT): SPDT 0,15 mm [0.006 in]
 DPDT 4,19 mm [0.165 in]

Side mount

Operating Force max. (OF): DPDT 13,34 N [48 oz]
Pretravel max. (PT): DPDT 7,92 mm [0.312 in]

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZE6-2RN2
DPDT	B	DTE6-2RN2
Low temperature SPDT	A	BZE6-2RN234

Flange mount

Operating Force max. (OF): DPDT 2,78 N to 8,34 N [10 oz to 30 oz]
Pretravel max. (PT): DPDT 6,76 mm [0.266 in]

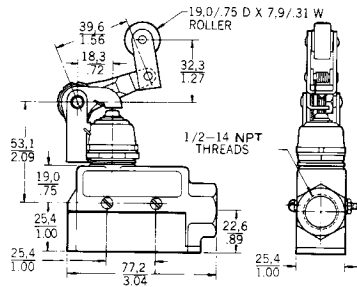
CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	BZV6-2RN2
DPDT	B	DTV6-2RN2

Without boot seal

Operating Force max. (OF): 2,78 N to 5,00 N [10 oz to 20 oz]
Pretravel max. (PT): 4,78 mm [0.188 in]
Overtravel min. (OT): 5,56 mm [0.219 in]
Differential travel max. (DT): 0,15 mm [0.006 in]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Side mount	SPDT	A	BZE6-2RQ2
Flange mount	SPDT	A	BZV6-2RQ2

One way roller lever



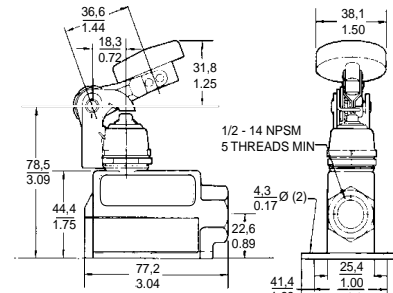
Side mount with boot seal

With boot seal

Operating Force max. (OF): 2,22 N to 5,56 N [8 oz to 20 oz]
Pretravel max. (PT): 5,94 mm [0.234 in]
Overtravel min. (OT): 5,56 mm [0.219 in]
Differential travel max. (DT): 0,15 mm [0.006 in]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Side mount	SPDT	A	BZE6-2RN28

Manual palm button



Side mount with boot seal

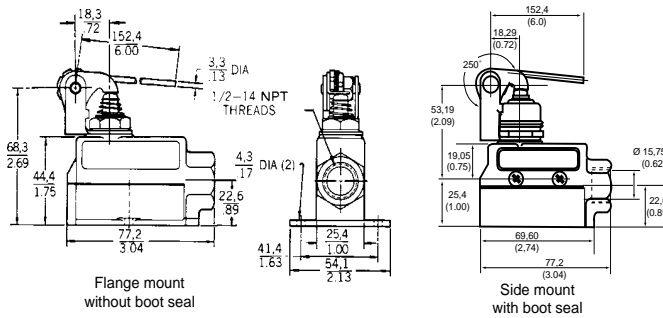
With boot seal

Operating force max. (OF): 2,78 N to 5,56 N [10 oz to 20 oz]
Pretravel max. (PT): 4,78 mm [0.188 in]
Overtravel min. (OT): 5,56 mm [0.219 in]
Differential travel max. (DT): 0,15 mm [0.006 in]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Flange mount	SPDT	A	BZV6-2RN4

Rod lever

Pretravel max. (PT): 18,24 mm [0.718 in]
Overtravel min. (OT): 21,29 mm [0.838 in]
Differential travel max. (DT): 5,82 mm [0.229 in]



Flange mount without boot seal

Side mount with boot seal

With boot seal

Operating force max. (OF): 0,83 N to 1,95 N [3 oz to 7 oz]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Side mount	SPDT	A	BZE6-2RN62
Flange mount	SPDT	A	BZV6-2RN62

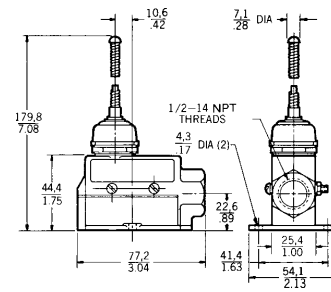
Without boot seal

Operating force max. (OF): 0,56 N to 1,39 N [2 oz to 5 oz]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Side mount	SPDT	A	BZE6-2RQ62
Flange mount	SPDT	A	BZV6-2RQ62

Wobble, coil spring

These switches will operate by moving actuator in any direction except direct pull.



Flange mount with boot seal

With boot seal

Operating force max. (OF): 1,95 N [7 oz]
Pretravel max. (PT): 15°

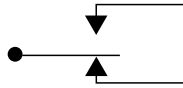
	CONTACT	ELECTRICAL RATING	CAT. LISTING
Side mount	SPDT	A	BZE6-2RN18
Flange mount	SPDT	A	BZV6-2RN18

BZE/DTE Series E6/V6 Maintained contact (reset) switches

The switches shown below provide maintained contact after the operating force on either top or bottom plunger is released.

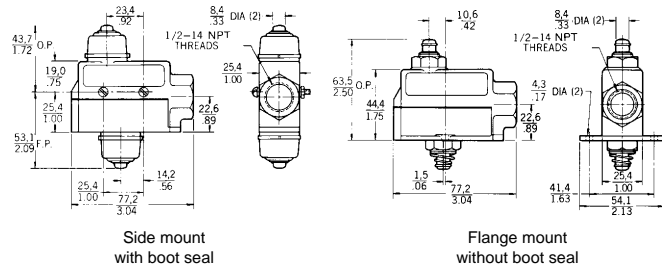
Note: The top plungers on these switches provide enhanced accuracy and uniform operation than the “reset” plungers and should be used when closely held operating characteristics are required.

Switching:
SPDT Single Pole, Double Throw
(1NC/1NO) Maintained

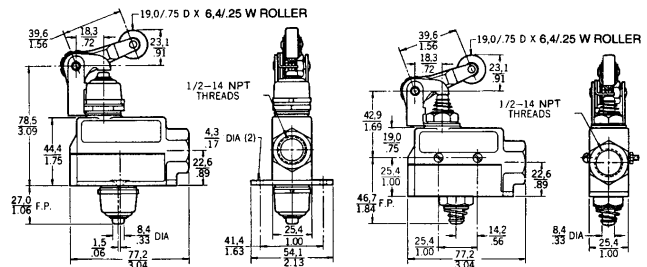


OPTIONS

Top pin plunger



Roller arm, adjustable



Side mount

Operating force max. (OF): With boot seal 1,67 N to 5,56 N [6 oz to 20 oz]
Without boot seal 1,67 N to 2,64 N [6 oz to 9.5 oz]
Pretravel max. (PT): With boot seal 1,98 mm [0.078 in]
Without boot seal 0,30 mm [0.012 in]
Overtravel min. (OT): With boot seal 4,75 mm [0.187 in]
Without boot seal 4,75 mm [0.187 in]

Flange mount with boot seal

Side mount without boot seal

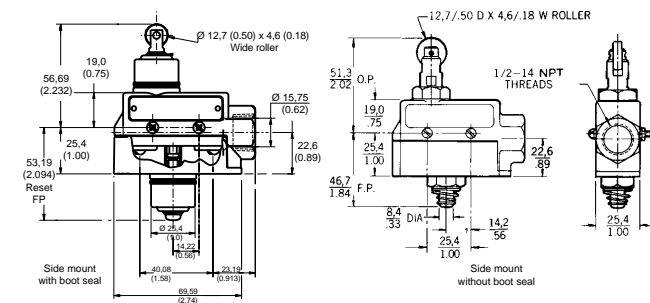
Side mount

Operating Force max. (OF): With boot seal 4,45 N [16 oz]
Without boot seal 3,34 N [12 oz]
Pretravel max. (PT): 4,78 mm [0.188 in]
Overtravel min. (OT): 5,56 mm [0.219 in]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
With boot seal	SPDT Maintained	C	BZE6-RNX1
Without boot seal	SPDT Maintained	C	BZE6-RQX2

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
With boot seal	Maintained	C	BZE6-RN2X1
Without boot seal	Maintained	C	BZE6-RQ2X2

Top roller plunger



Side mount

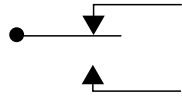
Operating force max. (OF): With boot seal 3,34 N to 15,57 N [12 oz to 56 oz]
Without boot seal 1,67 N to 2,64 N [6 oz to 9.5 oz]
Pretravel max. (PT): With boot seal 1,98 mm [0.078 in]
Without boot seal 0,30 mm [0.012 in]
Overtravel min. (OT): With boot seal 4,75 mm [0.187 in]
Without boot seal 3,55 mm [0.140 in]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
With boot seal	SPDT	C	BZE6-RN80X2
Without boot seal	SPDT	C	BZE6-RQ8X2

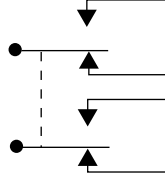
E7 Metal standard enclosed switch

Mechanical life: 10 million
Sealing: Without boot seal IP50 Standard
 With boot seal IP65 Sealed
Operating temperature: -30 °C to 70 °C [-22 °F to 158 °F]
Approvals: IEC 60947-5-1
 EN 60947-5-1

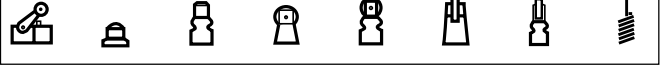
Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)



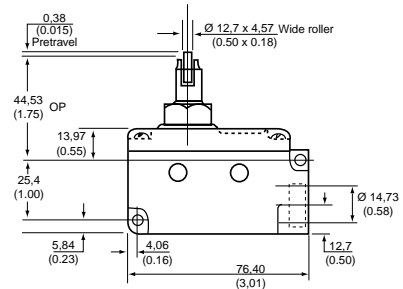
DPDT Double Pole, Double Throw
 Snap action contacts (2NC/2NO)



Actuators



Top roller plunger, perpendicular, without boot seal

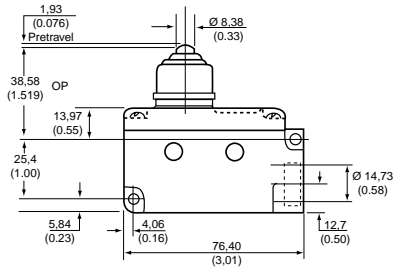


CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RQ81-PG

OPTIONS

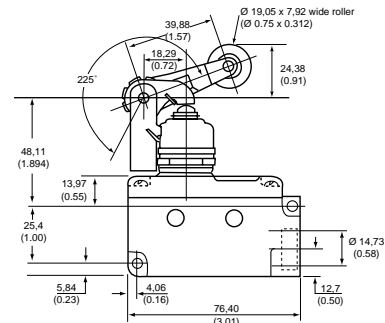
Top pin plunger

With boot seal



CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RN-PG
SPDT	20 mm		BZE7-2RN-C
DPDT	PG 13.5		DTE7-2RN-PG

Top roller lever, boot seal

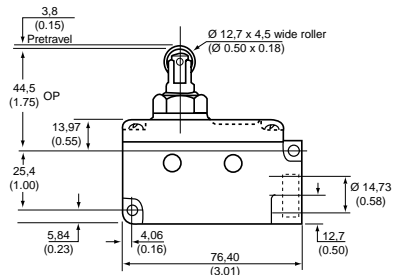


CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RN2-PG
SPDT	20 mm		BZE7-2RN2-C

Without boot seal

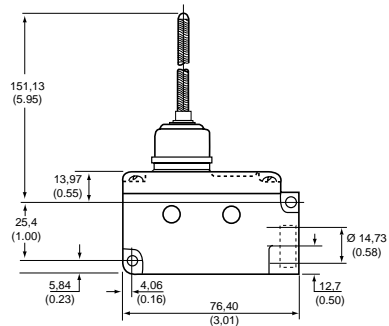
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RQ-PG

Top roller plunger, parallel, without boot seal



CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RQ8-PG

Wobble, coil spring, boot seal



CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	PG 13.5		BZE7-2RN18-PG

BAF/DTF Series High Capacity Enclosed Switches

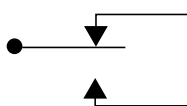


Actuators

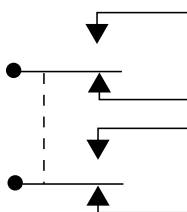


Approvals: UL, CSA
 Sealing: NEMA 1, 3, 4, 13
 Operating temperature: -2RQ9 -32 °C to 71 °C [-25 °F to 160 °F]
 Conduit: 1/2 in - 14 NPT
 Contacts: Silver
 Electrical ratings: B UL/CSA Rating: 10 A, 125 or 250 Vac; 0.3 A, 125 Vdc; 0.15 A, 250 Vdc.
 D UL/CSA Rating: 20 A, 125, 250 or 480 Vac; 1 Hp, 125 Vac; 2 Hp, 250 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc; Lamp Load - 10 A, 125 Vac.

Switching options: D SPDT Single Pole, Double Throw Snap action contacts (1NC/1NO)



B DPDT Double Pole, Double Throw Snap action contacts (2NC/2NO)



The BAF/DTF Series is available with or without boot seals. The elastomer boot on sealed actuator versions protects the actuating mechanism and the internal basic switch from contamination. They are therefore potentially suitable for wash-down applications. Both sealed and unsealed versions are available with the actuators on the right or left hand side.

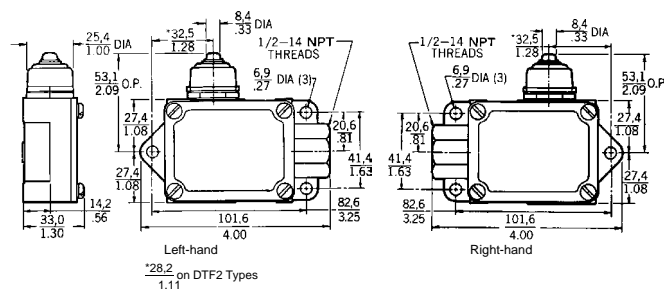
The cover plate is removable to allow ease of wiring and switch replacement without having to dismount the housing.

The BAF/DTF Series is potentially suitable for use in packaging equipment, farm machinery, conveyors, overhead cranes and hoists.

Momentary contact

OPTIONS

Top pin plunger



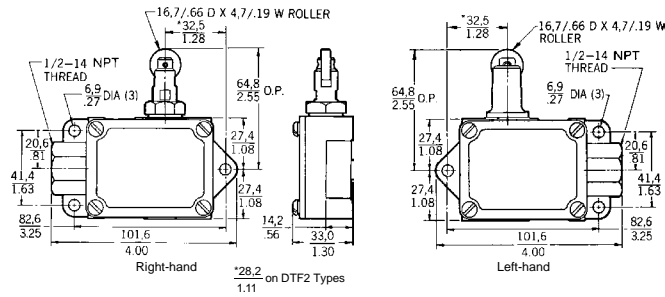
With boot seal

Operating force max. (OF):	BAF/DTF	11,2 N [2.5 lb]
Pretravel max. (PT):	BAF	2,39 mm [0.094 in]
	DTF	3,59 mm [0.141 in]
Overtravel min. (OT):	BAF	5,56 mm [0.219 in]
	DTF	3,96 mm [0.156 in]
Differential travel max. (DT):	BAF	0,26 mm [0.010 in]
	DTF	1,53 mm [0.060 in]
Operating position (OP):	BAF	53,19 mm [2.094 in]
	DTF	52,07 mm [2.050 in]

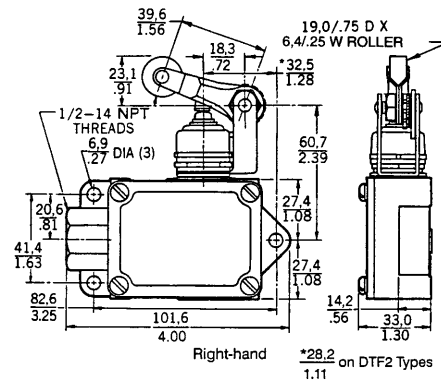
ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RN-RH
Left	SPDT	D	BAF1-2RN-LH
Right	DPDT	B	DTF2-2RN-RH
Left	DPDT	B	DTF2-2RN-LH

Momentary contact (continued)

Top roller plunger, parallel



Roller arm, adjustable



O-ring actuator seal

Operating force max. (OF):	BAF/DTF	35,6 N [8.0 lb]
Pretravel max. (PT):	BAF/DTF	3,18 mm [0.125 in]
Overtravel min. (OT):	BAF	4,75 mm [0.187 in]
	DTF	3,18 mm [0.125 in]
Differential travel max. (DT):	BAF	0,19 mm [0.0075 in]
	DTF	1,53 mm [0.060 in]
Operating position (OP):	BAF	64,69 mm [2.547 in]
	DTF	63,88 mm [2.515 in]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RQN8-RH
Left	SPDT	D	BAF1-2RQN8-LH
Right	DPDT	B	DTF2-2RQN8-RH
Left	DPDT	B	DTF2-2RQN8-LH

Field adjustable roller plunger

Adjustable 360° horizontally

Operating force max. (OF):	BAF/DTF	11,2 N [2.5 lb]
Pretravel max. (PT):	BAF	2,39 mm [0.094 in]
	DTF	3,18 mm [0.125 in]
Overtravel min. (OT):	BAF	3,96 mm [0.156 in]
	DTF	3,18 mm [0.125 in]
Differential travel max. (DT):	BAF	0,26 mm [0.010 in]
	DTF	1,53 mm [0.060 in]
Operating position (OP):	BAF	64,69 mm [2.547 in]
	DTF	63,88 mm [2.515 in]

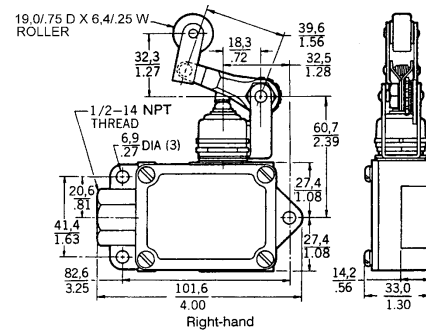
ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RQ9-RH
Left	SPDT	D	BAF1-2RQ9-LH
Right	DPDT	B	DTF2-2RQ9-RH
Left	DPDT	B	DTF2-2RQ9-LH

With boot seal

Operating force max. (OF):	BAF	8,90 N [2.0 lb]
	DTF	11,1 N [2.5 lb]
Pretravel max. (PT):	BAF	5,56 mm [0.219 in]
	DTF	7,93 mm [0.312 in]
Overtravel min. (OT):	BAF	6,35 mm [0.25 in]
	DTF	5,56 mm [0.219 in]
Differential travel max. (DT):	BAF	0,51 mm [0.020 in]
	DTF	3,05 mm [0.120 in]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RN2-RH
Left	SPDT	D	BAF1-2RN2-LH
Right	DPDT	B	DTF2-2RN2-RH
Left	DPDT	B	DTF2-2RN2-LH

One way roller lever



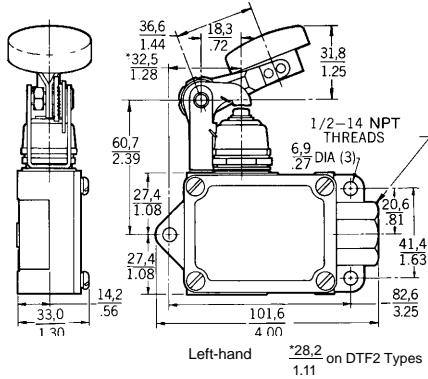
With boot seal

Operating force max. (OF):		8,90 N [2.0 lb]
Pretravel max. (PT):		5,56 mm [0.219 in]
Overtravel min. (OT):		6,35 mm [0.25 in]
Differential travel max. (DT):		0,51 mm [0.020 in]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RN28-RH
Left	SPDT	D	BAF1-2RN28-LH

BAF/DTF Series
Momentary contact (continued)

Manual palm button

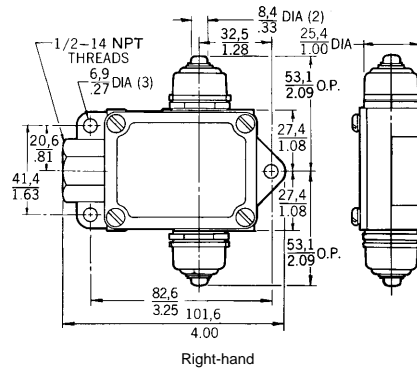


With boot seal
Operating force max. (OF): 8,90 N [2.0 lb]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RN4-RH
Left	SPDT	D	BAF1-2RN4-LH

Maintained contact (reset) switches

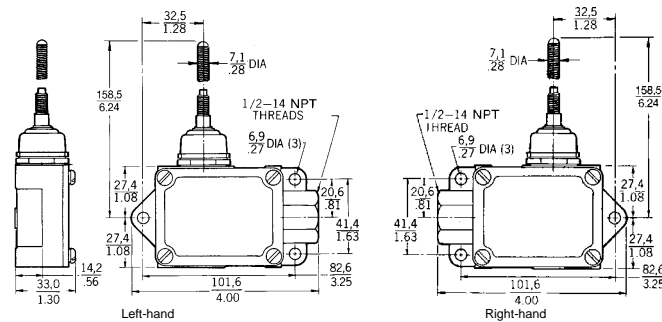
Top pin plunger



With boot seal
Operating force max. (OF): 7,79 N [1.75 lb]
Pretravel max. (PT): 2,39 mm [0.094 in]
Overtravel min. (OT): 5,56 mm [0.219 in]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	Maintained SPDT	D	BAF1-3RNX1

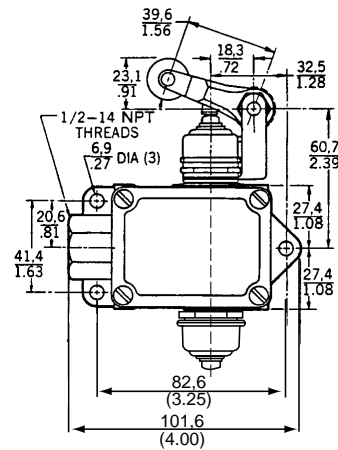
Wobble, coil spring



With boot seal
Pretravel max. (PT): 15°

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	SPDT	D	BAF1-2RN18-RH
Left	SPDT	D	BAF1-2RN18-LH

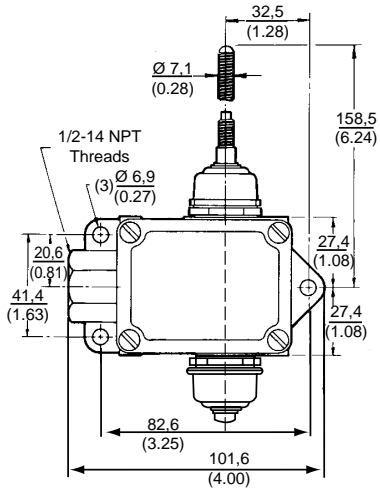
Roller arm, adjustable



With boot seals on roller arm and plunger
Operating force max. (OF): 6,67 N [1.5 lb]
Pretravel max. (PT): 5,56 mm [0.219 in]
Overtravel min. (OT): 6,35 mm [0.25 in]
Operating position (OP): 60,71 mm [2.390 in]

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	Maintained SPDT	D	BAF1-3RN2X-RH
Left	Maintained SPDT	D	BAF1-3RN2X-LH

Wobble, coil spring



With boot seals on wobble stick and plunger

Pretravel max. (PT): 15°

ACTUATOR POSITION	CONTACT	ELECTRICAL RATING	CAT. LISTING
Right	Maintained SPDT	D	BAF1-3CN18X1

HDLS Series Heavy Duty Limit Switches



Actuators



Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

The HDLS Series Heavy Duty Limit Switches offer a wide choice of mounting and actuator options. Housed in a rugged, die-cast zinc body, the switch is epoxy coated for protection. Potential applications include harsh duty environments where conventional limit switches may not be used. Versatile and full featured, they are designed for long life.

Listings referenced in this section are mainly standard. Low temperature and fluorocarbon (FC, high temperature) construction is available in all forms of HDLS limit switches. For temperature ranges see table opposite. Also available are factory sealed, pre-wired switches.

Low temperature switches have fluorosilicone diaphragm, shaft seals and external boot seal (where applicable) plus a low temperature lubricant. If prewired with cable, temperature limits are -10 °C [14 °F] flex and -30 °C [22 °F] no flex.

To order a low temperature version insert the additional letters **Y** and **B** as in the following example: LSA1A - standard side rotary plug-in switch
LSYAB1A - low temperature version.

Completely fluorocarbon (FC) sealed, high temperature, chemical resistance switches have a full FC body gasket covering the switch cavity. Rotary types have an extra FC seal on the operating shaft, while plunger versions have FC boot seals. They are for use in potential applications where the environment includes fire-resistant synthetic fluids. The additional FC seals also promote enhanced operating life for rotary actuated HDLS switches in applications where the temperatures are normally -12 °C to 121 °C [10 °F to 250 °F]. If prewired with cable, temperature limits are 105 °C [221 °F] dry and 60 °C [140 °F] wet.

To order a fluorocarbon (FC) sealed switch insert the additional letters **Y** and **C** as in the following example:

LSA1A - standard side rotary plug-in switch
LSYAC1A - completely FC sealed version.

Factory sealed, pre-wired limit switches have the entry area completely sealed and are available with 6 ft [1.83 m], ST00W-A cable or 4, 5 or 9-pin connectors. NEMA ratings are, for cable version 1, 4, 6, 6P, 12, for connector version 1, 4, 6, 6P, 12, 13.

To order a factory sealed switch add the appropriate letter:

Circuitry	Cable	½ in Connector (available with ½ in conduit tap only)
SPDT	C	A (4 pin mini) B (5 pin mini) DD (4 pin micro)
DPDT	M (¾ in only)	R (9 pin)

Example:

- LSA1AC - LSA1A with 6 ft of 5 conductor ST00W-A cable
- LSJ2BM-7N - LSJ2B-7N with 6 ft of 9 conductor ST00W-A cable
- LSA1AB - LSA1A with 5 pin receptable
- LSA1ADD - 4 pin micro-change connector

Electrical ratings

10 amps continuous carry. Circuits on any one pole must be the same polarity.

ac Volts

Pilot duty: 600 Vac, 720 VA

	Vac	Amps at 0.35 Power Factor	
		Make	Break
A	120	60	6
SPDT	240	30	3
NEMA	480	15	1.5
A600	600	12	1.2
B	120	30	3
DPDT	240	15	1.5
NEMA	480	7.5	0.75
B600	600	6	0.60
C	250 Vac or 60 Vdc, 0.050 amp max.		
SPDT/DPDT			

dc Volts

Pilot duty: 240 Vdc, 30 watts

	Vdc	Make and Break Amps	
		Inductive	Resistive
A	120	0.25	0.8
SPDT	240	0.15	0.4
B	120	0.25	0.8
DPDT	240	0.15	0.4
C	250 Vac or 60 Vdc, 0.050 amp max.		
SPDT/DPDT			

Operating temperatures

	Standard HDLS				Low Temperature HDLS				High Temperature HDLS (Fluorocarbon Sealed*)		
	Low Limit		High Limit		Low Limit		High Limit		Low Limit		High Limit
	10 °F -12 °C	30 °F -1 °C	200 °F 93 °C	250 °F 121 °C	-40 °F -40 °C	-20 °F -29 °C	200 °F 93 °C	250 °F 121 °C	10 °F -12 °C	30 °F -1 °C	250 °F 121 °C
LSA - Side Rotary Momentary	X			X	X			X	X		X
LSB - Top Rotary		X		X		X		X		X	X
LSC - Top Plain Plunger	X		X		X		X		X		X
LSD - Top Roller Plunger	X		X		X		X		X		X
LSE - Side Plain Plunger	X		X		X		X		X		X
LSF - Side Roller Plunger	X		X		X		X		X		X
LSG - Side Plunger Maintained		X	X			X	X			X	X
LSH - Side Rotary, Low P.T., Low Torque		X		X		X		X		X	X
LSJ - Wobble Stick	X		X		X			X	X		X
LSK - Cat Whisker	X		X			X		X	X		X
LSL - Side Rotary Sequence	X			X	X			X	X		X
LSM - Side Rotary Center Neutral		X		X	X			X		X	X
LSN - Side Rotary Maintained		X		X		X		X		X	X
LSP - Side Rotary, Low Pretravel	X			X	X			X	X		X
LSR - Side Rotary, Low Torque		X		X		X		X		X	X
LSU - Side Rotary, Low Pretravel	X			X	X			X	X		X
LSV - Top Adjustable Plunger	X		X		X		X		X		X
LSW - Side Adjustable Plunger	X		X		X	X	X		X		X

* For HDLS application wherein the upper temperature limit is normally above 200 °F (93 °C), much longer switch life can be obtained by using

completely fluorocarbon-sealed switches rather than the standard HDLS.

Environmental seal performance

Std. Seals	Cellulube	Detergent	5 Star	ASTM #1	ASTM #2	ASTM #3	ASTM #4	Houghto Safe 260, 271	Houghto Safe 1010, 1055, 1120	Mineral Oil	Petr. Oil Crude	Silicon Gr. & Oil	SunSAFE	Beer	Stoddard Solv.	Chlorinated Solvents	Citric Acids	Di-ester Syn. Lubricant	Ozone	Pydraul	Pyroguard	Petr. Base Hydraulic Oil	Lard Oil	Silicate Esters
LSA	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSB	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSC	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSD	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSE	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSF	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSG	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSH	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSJ	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSK	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSL	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSM	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSN	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSP	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSR	4	1	1	1	1	1	2	1	4	1	1	1	1	1	1	4	1	2	4	4	4	1	1	2
LSV	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2
LSW	4	2	2	1	2	4	4	2	4	2	2	1	2	1	2	4	1	4	3	4	4	2	2	2

All HDLS with seals of:

Fluorisilicone (Low Temp. HDLS)	4	1	1	1	1	1	2	2	4	1	1	1	1	1	1	1	1	2	1	4	4	1	1	1
Fluorocarbon (High Temp. HDLS)	1*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

* Fluorocarbon seals good for all Cellulubes Except A60.CODE:

- 1 J Satisfactory
- 2 J Fair
- 3 J Doubtful
- 4 J Unsatisfactory



OPTIONS

Standard

Pretravel: 15° max.
Differential travel: SPDT 5° max.
 DPDT 7° max.
Overtravel: 60° min.

Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSA1A
SPDT		C	LSA1E
DPDT	¾ in	B	LSA2B
DPDT		B	LSA6B
DPDT		C	LSA6S
SPDT	20 mm	A	LS4A1A
DPDT	20 mm	B	LS4A2B

Non plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSA3K
DPDT	¾ in	B	LSA4L
SPDT	20 mm	A	LS4A3K

Low differential travel

Pretravel: 9° max.
Differential travel: SPDT 3° max.
 DPDT 4° max.
Overtravel: 66° min.

Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSP1A
SPDT	C	LSP1E
DPDT	B	LSP2B
DPDT	B	LSP6B
DPDT	C	LSP6S

Non plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSP3K
DPDT	¾ in	B	LSP4L

Low torque

Pretravel: 15° max.
Differential travel: SPDT 5° max.
 DPDT 7° max.
Overtravel: 60° min.

Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSR1A
SPDT		C	LSR1E
DPDT	¾ in	B	LSR2B
DPDT		B	LSR6B
DPDT		C	LSR6S

Non plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSR3K
DPDT	¾ in	B	LSR4L

Low differential, low torque

Pretravel: 9° max.
Differential travel: SPDT 3° max.
 DPDT 4° max.
Overtravel: 66° min.

Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSH1A
SPDT		C	LSH1E
DPDT	¾ in	B	LSH2B
DPDT		B	LSH6B
DPDT		C	LSH6S

Non plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSH3K
DPDT	¾ in	B	LSH4L

5° Pretravel

Pretravel: 5° max.
Differential travel: SPDT 3° max.
 DPDT 4° max.
Overtravel: 70° min.

Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSU1A
SPDT		C	LSU1E
DPDT	¾ in	B	LSU2B
DPDT		B	LSU6B
DPDT		C	LSU6S

Non plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT		A	LSU3K
DPDT	¾ in	B	LSU4L

Side rotary, additional circuitry/ action

The following listings, sequential, centre neutral and maintained switches, are assembled with the operating shaft facing front. The user can position and lock the head with the shaft to rear or either side. They can also be factory assembled with the shaft to rear or either side. Contact Honeywell for more information.

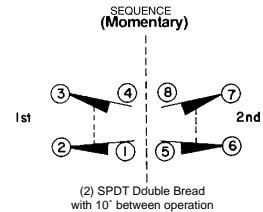
OPTIONS

Sequential

One pole operates before the other in each direction, with 10° lever travel between operations.

Pretravel: 1st pole 15° max.
 2nd pole additional 10° max.
Differential travel: Each pole 5° max.
Overtravel: 48° min.

Switching options:



Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
DPDT	¾ in	B	LSL2C
DPDT		B	LSL6C

Non plug in

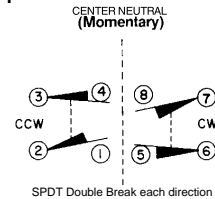
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
DPDT	¾ in	B	LSL4M
DPDT		B	LSL7M

Centre neutral

One pole operates on clockwise rotation, the other on counterclockwise rotation.

Pretravel: 18° max.
Differential travel: 10° max.
Overtravel: 57° min.

Switching options:



Plug in

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
DPDT	¾ in	B	LSM2D
SPDT	20 mm	B	LS4M2D
DPDT		B	LSM6D

Non plug in

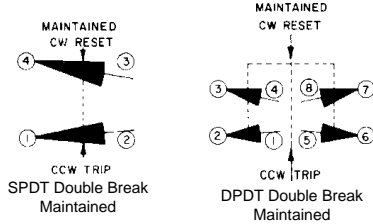
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
DPDT	¾ in	B	LSM4N
DPDT		B	LSM7N

HDLS Series
Side rotary actuated switches (continued)

Maintained contact, 2 position

Operation is maintained on counterclockwise rotation, reset on clockwise rotation and vice versa.

Pretravel: 65° max.
Differential travel: 40° max.
Overtravel: 20° min.
Switching options:
 SPDT DPDT



Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSN1A
DPDT	B	LSN6B

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSN3K
DPDT	B	LSN7L

Plunger actuated switches

HDLS plunger actuated switches are available with either top or side facing plungers for application flexibility. Switches with adjustable plungers simplify installation. They have a hex setscrew and locknut on the plunger, providing an adjustment range of 0.25 in [6,35 mm].

Assembled conditions

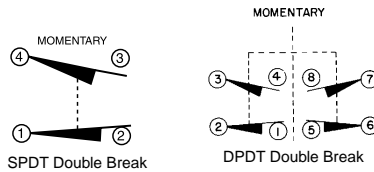
The listing shown are factory assembled with side plungers facing front (label side of switch); rollers on side plungers are in horizontal position. Rollers on top plunger switches are parallel to mounting surface. Other options are available. Contact Honeywell for more information.

Approvals: NEMA 1, 3, 4, 4X, 6, 6P, 12, 13
 UL, CSA, CE

Conduit: ½ in - 14 NPT

Contacts: Electrical ratings A, B Silver
 Electrical rating C Gold

Switching options: Snap action contacts
 SPDT DPDT

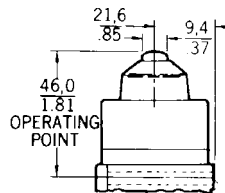


Top plungers, momentary action

Pretravel: 1,78 mm [0.07 in] max.
Differential travel:
 SPDT 0,38 mm [0.015 in] max.
 DPDT 0,51 mm [0.02 in] max.
Overtravel: 4,83 mm [0.19 in] min.
Operating force: 17,8 N m [4 lb] max.

OPTIONS

Top pin plunger



Operating point: 45,8 mm ± 0,76
 1.805 in ± 0.030

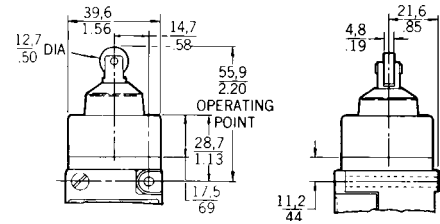
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSC1A
SPDT	C	LSC1E
DPDT	B	LSC6B
DPDT	C	LSC6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSC3K
DPDT	B	LSC7L

Top roller plunger



Operating point: 55,9 mm ± 1,02
 2,20 in ± 0,040

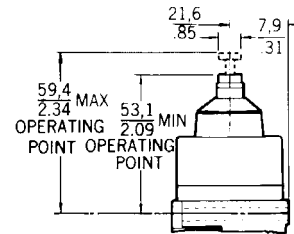
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSD1A
SPDT	C	LSD1E
DPDT	B	LSD6B
DPDT	C	LSD6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSD3K
DPDT	B	LSD7L

Adjustable plunger



Operating point: 53,0 mm to 59,3 mm
 2.085 in to 2.335 in

Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSV1A
SPDT	C	LSV1E
DPDT	B	LSV6B
DPDT	C	LSV6S

Non plug in

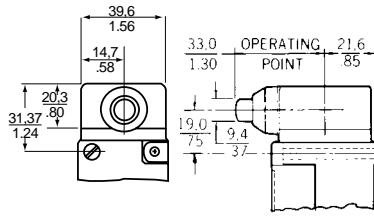
CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSV3K
DPDT	B	LSV7L

Side plungers, momentary action

Pretravel: 2,54 mm [0.100 in] max.
Differential travel:
 SPDT 0,64 mm [0.025 in] max.
 DPDT 0,89 mm [0.035 in] max.
Overtravel: 4,83 mm [0.19 in] min.
Operating force: 26,7 N m [6 lb] max.

OPTIONS

Side pin plunger



Operating point: 33 mm ± 0,76
 1.300 in ± 0.030

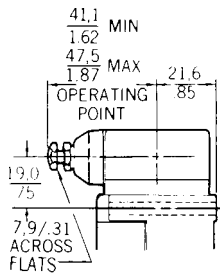
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSE1A
SPDT	C	LSE1E
DPDT	B	LSE6B
DPDT	C	LSE6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSE3K
DPDT	B	LSE7L

Adjustable side pin plunger



Operating point: 41,0 mm to 47,4 mm
 1.615 in to 1.865 in

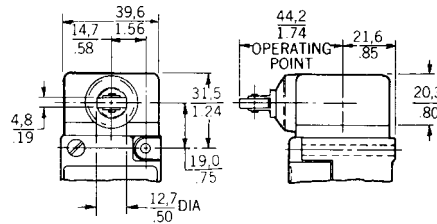
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSW1A
SPDT	C	LSW1E
DPDT	B	LSW6B
DPDT	C	LSW6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSW3K
DPDT	B	LSW7L

Side roller plunger



Operating point: 44,1 mm ± 1,02
 1.735 in ± 0.040

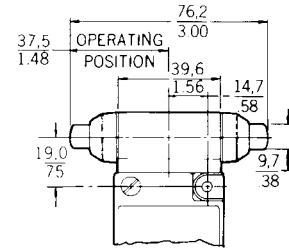
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSF1A
SPDT	C	LSF1E
DPDT	B	LSF6B
DPDT	C	LSF6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSF3K
DPDT	B	LSF7L

Side plunger, maintained circuitry



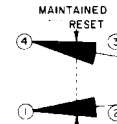
LSG contact transfer is maintained after either plunger is operated. Operation of other plunger resets switch.

Pretravel: 4,32 mm [0.170 in] max.
Differential travel:
 SPDT 2,29 mm [0.090 in] max.
 DPDT 2,29 mm [0.090 in] max.
Overtravel: 2,00 mm [0.080 in] max.
Operating force: 44,5 N m [10 lb] min.
Operating point: 37,6 ± 0,76 mm
 1.48 ± 0.030 in

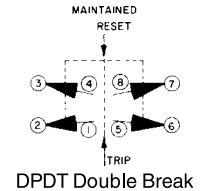
Switching options:

SPDT

DPDT



SPDT Double Break



DPDT Double Break

Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSG1A
SPDT	C	LSG1E
DPDT	B	LSG6B
DPDT	C	LSG6S

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSG3K
DPDT	B	LSG7L

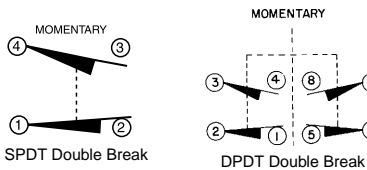
HDLS Series Wobble actuated switches

Momentary action wobble actuated switches have flexible levers which may be operated with any movement, except direct pull.

Approvals: NEMA 1, 3, 4, 4X, 6, 6P, 12, 13
UL, CSA, CE

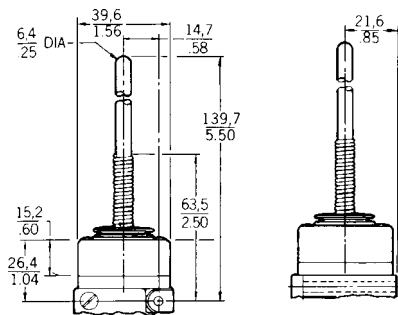
Conduit: ½ in - 14 NPT

Contacts: Silver
Electrical ratings A, B
Switching options: Snap action contacts
SPDT DPDT



OPTIONS

Plastic rod



Pretravel (approx) (Radius): 25,4 mm [1.0 in]
Operating force: 2,78 g [10 oz] max.

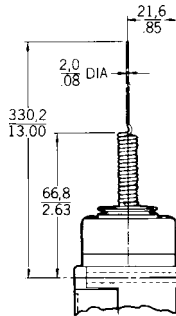
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ1A-7A
DPDT	B	LSJ6B-7A

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ3K-7A
DPDT	B	LSJ7L-7A

Spring wire



Pretravel (approx) (Radius): 102,0 mm [4.0 in]
Operating force: 1,39 g [5 oz] max.

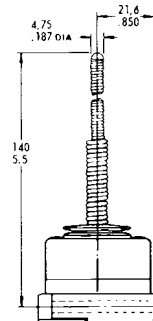
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ1A-7M
DPDT	B	LSJ6B-7M

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ3K-7M
DPDT	B	LSJ7L-7M

Cable



Pretravel (approx) (Radius): 38,0 mm [1.5 in]
Operating force: 1,95 N [7.0 oz] max.

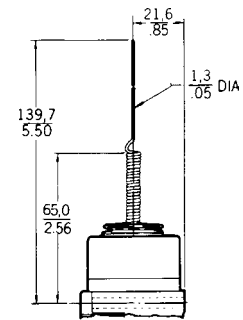
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ1A-7N
DPDT	B	LSJ6B-7N

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSJ3K-7N
DPDT	B	LSJ7L-7N

Cat whisker



Pretravel (approx) (Radius): 51,0 mm [2.0 in]
Operating force: 1,39 N [5.0 oz] max.

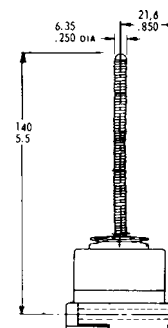
Plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSK1A-8A
DPDT	B	LSK6B-8A

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSK3K-8A
DPDT	B	LSK7L-8A

Coil spring



Pretravel (approx) (Radius): 51,0 mm [2.0 in]
Operating force: 1,95 N [7.0 oz] max.

Plug in

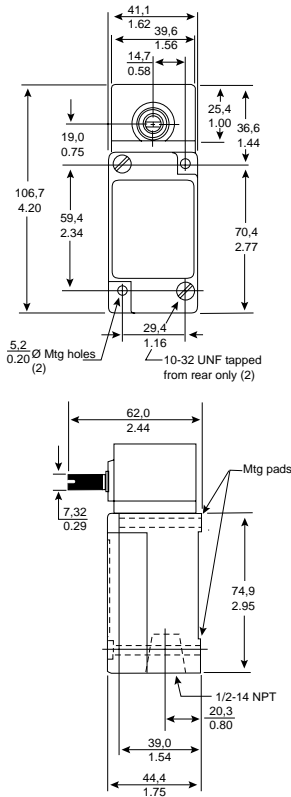
CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSK1A-8C
DPDT	B	LSK6B-8C

Non plug in

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LSK3K-8C
DPDT	B	LSK7L-8C

Fully potted HDLS

Fully potted HDLS are designed to meet the demanding requirements of NEMA 1, 3, 4, 6, 6P and 13 for wet applications where the integrity of the conduit seal must be assured. These switches are the same as the standard HDLS non plug in limit switch except that the conduit entrance is factory sealed to simplify installation and ensure integrity of the conduit seal. They are epoxy filled and supplied with six feet of 5 or 9 conductor 16 gauge STO cable. Fully potted HDLS are built with all Fluorocarbon seals. Sealing exceeds Nema 6P. Low temperature versions are available, see page 46 for temperature range and how to order.



Approvals:

Connector NEMA 1, 4, 6, 6P, 12, 13
 Cable NEMA 1, 4, 6, 6P, 12
 UL, CSA, CE, CCC

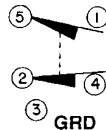
Operating temperature:

Cable versions -12 °C to 105 °C
 10 °F to 221 °F
 Connector versions -12 °C to 121 °C
 10 °F to 250 °F
 3,658 m [12 ft]

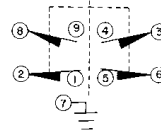
Cable length:

Contacts: Electrical ratings A, B Silver

Switching options: Snap action contacts
 SPDT DPDT



SPDT Double-Break Elect.
 Rating: A

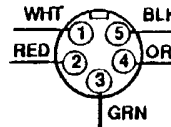


DPDT Double-Break Elect.
 Rating: B

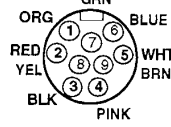
Wiring diagrams:

Numbers = Connectors
 Colours = Cables

Single-Pole



Double-Pole



Actuators



Side rotary actuated switches

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

OPTIONS

Standard

Pretravel:		15° max.
Differential travel:	SPDT	5° max.
	DPDT	7° max.
Overtravel:		60° min.
Operating force:		0,45 N m [4 in lb] max.

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYAC3KP-FP
DPDT	Cable	B	LSYAC4LX-FP
SPDT	5-pin Connector	A	LSYAC3KQ-FP
DPDT	9-pin Connector	B	LSYAC7LR-FP

Low differential travel

Pretravel:		9° max.
Differential travel:	SPDT	3° max.
	DPDT	4° max.
Overtravel:		66° min.
Operating force:		0,45 N m [4 in lb] max.

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYPC3KP-FP
DPDT	Cable	B	LSYPC4LX-FP
SPDT	5-pin Connector	A	LSYPC3KQ-FP
DPDT	9-pin Connector	B	LSYPC7LR-FP

5° Pretravel

Pretravel:		5° max.
Differential travel:	SPDT	3° max.
Overtravel:		70° min.
Operating force:		0,45 N m [4 in lb] max.

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYUC3KP-FP
SPDT	5-pin Connector	A	LSYUC3KQ-FP

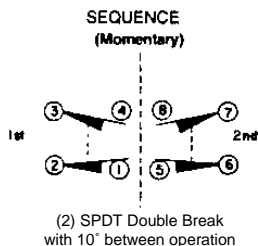
For low temperature versions substitute "Y_B" for "Y_C"

Fully potted HDLS (continued)

Side rotary actuated switches

Sequential

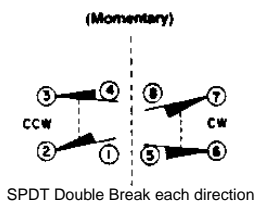
Pretravel: 1st pole 15° max.
2nd pole additional 10° max.
Differential travel: Each pole 5° max.
Overtravel: 48° max.
Operating force: 0,45 N m [4 in lb] max.
Switching options: DPDT



CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
DPDT	Cable	B	LSYLC4MX-FP
DPDT	9-pin Connector	B	LSYLC7MR-FP

Centre neutral

Pretravel: 18° max.
Differential travel: 10° max.
Overtravel: 57° min.
Operating force: 0,45 N m [4 in lb] max.
Switching options: DPDT



CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
DPDT	Cable	B	LSYMC4NX-FP
DPDT	9-pin Connector	B	LSYMC7NR-FP

For low temperature versions substitute "Y_B" for "Y_C"

Plunger actuated switches

OPTIONS

Top plungers

Pretravel: 1,78 mm [0.07 in] max.
Differential travel: SPDT 0,38 mm [0.015 in] max.
DPDT 0,51 mm [0.02 in] max.
Overtravel: 4,83 mm [0.19 in] min.
Operating force: 17,8 N m [4 lb] max.

Top pin plunger

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYCC3KP-FP
DPDT	Cable	B	LSYCC4LX-FP
SPDT	5-pin Connector	A	LSYCC3KQ-FP
DPDT	9-pin Connector	B	LSYCC7LR-FP

Top roller plunger

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYDC3KP-FP
DPDT	Cable	B	LSYDC4LX-FP
SPDT	5-pin Connector	A	LSYDC3KQ-FP
DPDT	9-pin Connector	B	LSYDC7LR-FP

Side plungers

Pretravel: 2,54 mm [0.100 in] max.
Differential travel: SPDT 0,38 mm [0.015 in] max.
DPDT 0,51 mm [0.02 in] max.
Overtravel: 4,83 mm [0.19 in] min.
Operating force: 26,7 N m [6 lb] max.

Side pin plunger

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSYEC3KP-FP
DPDT	Cable	B	LSYEC4LX-FP
SPDT	5-pin Connector	A	LSYEC3KQ-FP
DPDT	9-pin Connector	B	LSYEC7LR-FP

Wobble actuated switches

Actuator codes **:	Head style*	
7A	Delrin rod	J
7M	Spring wire	J
8A	Cat whisker	K
7N	Cable	J
8C	Coil spring	K

CONTACT	TERMINATION	ELECTRICAL RATING	CAT. LISTING
SPDT	Cable	A	LSY*C3KP-**FP
DPDT	Cable	B	LSY*C4LX-**FP
SPDT	5-pin Connector	A	LSY*C3KQ-**FP
DPDT	9-pin Connector	B	LSY*C7LR-**FP

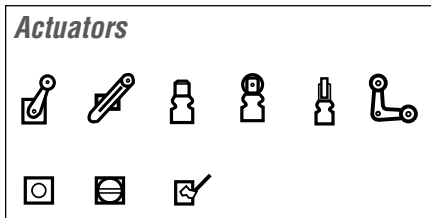
Stainless steel HDLS



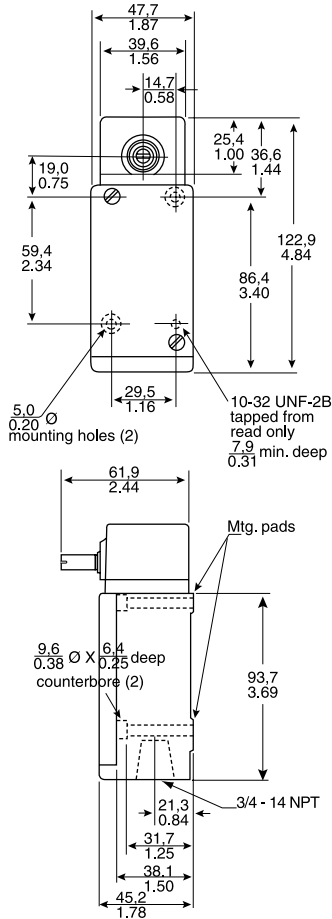
HDLS stainless steel switches are designed for use in highly corrosive environments such as petro-chemical plants, food processing plants, shipboard and dockside locations. The type 316 cast stainless steel body is designed to minimise crevices where food particles could become trapped. The actuator, operating head and screws are also stainless steel. All seals are Fluorocarbon to provide excellent chemical resistance and to withstand operating temperatures up to 121 °C [250 °F] and pressurised steam cleaning.

- Approvals:** NEMA 1, 3, 3R, 4, 4X, 6, 6P, 12, 13
 UL, CSA, CE, CCC
- Operating temperature:** -12 °C to 121 °C
 10 °F to 250 °F
- Contacts:** Electrical ratings A, B Silver

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)



Side rotary actuated switches



OPTIONS

Standard

- Pretravel:** 15° max.
Differential travel: SPDT 5° max.
 DPDT 7° max.
Overtravel: 60° min

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LS2A4K
DPDT	B	LS2A4L

Low Torque

- Pretravel:** 9° max.
Differential travel: SPDT 3° max.
 DPDT 4° max.
Overtravel: 60° min.

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LS2H4K
DPDT	B	LS2H4L

Centre neutral

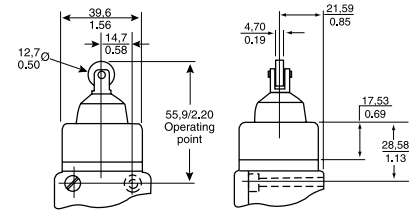
- Pretravel:** 18° max.
Differential travel: DPDT 10° max.
Overtravel: 57° min.

CONTACT	ELECTRICAL RATING	CAT. LISTING
DPDT	B	LS2M4N

Plunger actuated switches

OPTIONS

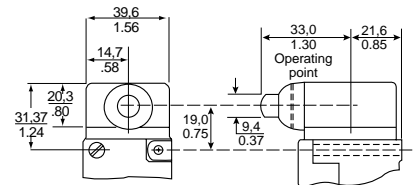
Top roller plunger



- Pretravel:** 1.78 mm [0.07 in] max.
Differential travel: 0.38 mm [0.015 in] max.
Overtravel: 4.83 mm [0.19 in] min.
Operating point: 55.9 mm ± 1.02
 2.20 in ± 0.04

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LS2D4K
DPDT	B	LS2D4L

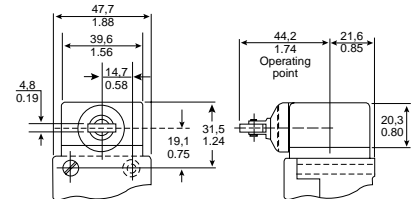
Side pin plunger



- Pretravel:** 2.54 mm [1.00 in] max.
Differential travel: 0.64 mm [0.025 in] max.
Overtravel: 4.83 mm [0.19 in] min.
Operating point: 33 mm ± 0.76
 1.3 in ± 0.03

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LS2E4K
DPDT	B	LS2E4L

Side roller plunger



- Pretravel:** 2.54 mm [1.00 in] max.
Differential travel: 0.64 mm [0.025 in] max.
Overtravel: 4.83 mm [0.19 in] min.
Operating point: 44.1 mm ± 1.02
 1.73 in ± 0.04

CONTACT	ELECTRICAL RATING	CAT. LISTING
SPDT	A	LS2F4K
DPDT	B	LS2F4L

Hazardous location switches

Honeywell explosion proof switches are designed specifically for use in hazardous locations. To comply with explosion-proof requirements, the flame path within the housing is designed to contain and cool the escaping hot gases that otherwise could cause an explosion outside the switch.

Switches are available with UL/CSA for North America. See information below and product pages for details. In Europe, the usage is governed under the European Directive on Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres (94/9/EC) commonly referred to as the ATEX Directive.

The BX, CX and GXE product families comply to the following ATEX Directive: EExd IIC T6 Category II 2 GD

The 14CE100 product family complies to the following ATEX Directive: EExd IIC T6 Category II 2 G

NEMA TYPE 7, CLASS I FLAMMABLE GASES OR VAPORS

Type 7 enclosures are for use indoors in locations classified as Class I, Groups B, C, or D by the National Electrical Code.

Group B — (only switches so noted in the order guides include this listing). Atmospheres containing hydrogen or manufactured gas.

Group C — atmospheres containing diethyl ether, ethylene, or cyclopropane.

Group D — Atmospheres containing gasoline, hexane, butane, naphtha, propane, acetone, toluene or isoprene.

Division 1

Locations in which hazardous agents are present under normal operating conditions.

Division 2

Locations in which hazardous agents may be present only in case of accidental rupture or breakdown.

All Honeywell listings covered in Division 1 are also covered in the same groups in Division 2.

NEMA TYPE 9, CLASS II COMBUSTIBLE DUSTS

Type 9 enclosures are for use in indoor locations classified as Class II, Groups E, F or G, as defined in the National Electrical Code.

Group E — Atmospheres containing metal dust.

Group F — Atmospheres containing carbon black, coal dust or coke dust.

Group G — Atmospheres containing flour, starch or grain dust.

ATEX EExd

EExd	II	c	T6	Category II 2	G	D
Flameproof enclosure	Places with potentially explosive atmospheres, other than mines susceptible to fire damp	Atmosphere may contain gases from groups A, B or C from table in EN50014, Annex A	Maximum surface temperature of 85 °C [185 °F]	Areas in which an explosion proof atmosphere is likely to occur	Gas could be present	Dust could be present



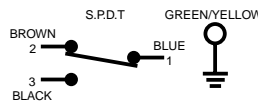
14CE100 Series Miniature Enclosed, Explosion Proof Switches



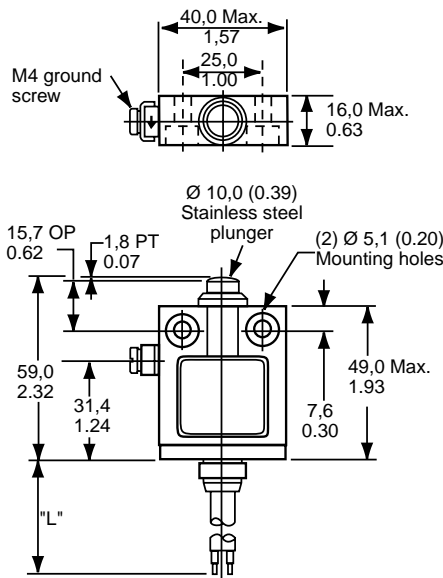
The 14CE100 Series has been designed for use in explosive environments. It is approved to meet the requirements of the Low Voltage directive and is CE marked. The prewired construction allows for ease of installation where space is at a premium and external operating conditions can be difficult.

Mechanical life:		10 million
Sealing:	Standard	IP65, NEMA 1, 3
	Boot sealed	IP67, NEMA 1, 3, 4 12, 13
Operating temperature:		0 °C to 70 °C [32 °F to 158 °F]
Approvals:		CE, PTB 98 ATEX 1064 X EExd IIC T6 Category II 2 G
		AC14 D300
		DC13 R300
Operating force (OF):		11,8 N max.
Pretravel (PT):		1,8 mm [0.71 in] max.
Overtravel (OT):		3,0 mm [0.118 in] min.
Differential travel (DT):		0,1mm [0.004 in] max.
Contacts:	Standard	Silver
	- * G	Gold
Connection:		Harmonised CENELEC 4 x 0,75 mm ² cable
Switching options:		Single Pole, Double Throw
SPDT		Snap action contacts (1NC/1NO)

Actuators

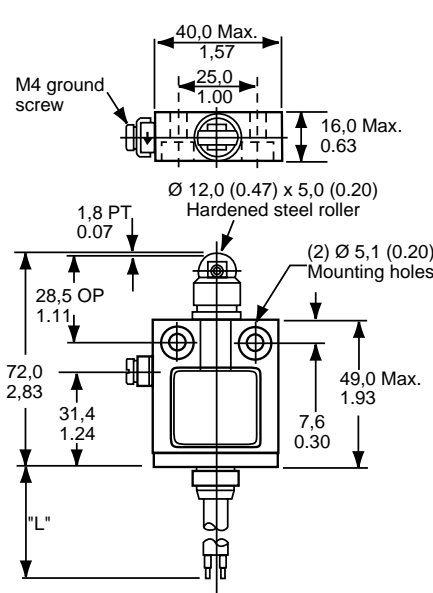


Top pin plunger



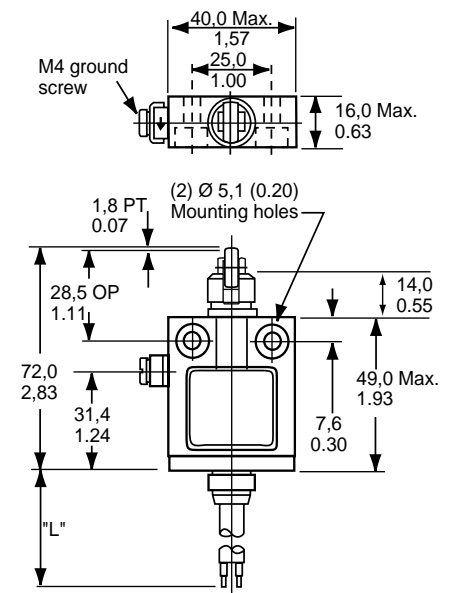
CABLE LENGTH	CAT. LISTING
1 m [3.3 ft]	14CE101-1
2 m [6.6 ft]	14CE101-2
3 m [9.9 ft]	14CE101-3
4 m [13.2 ft]	14CE101-4
5 m [16.5 ft]	14CE101-5
6 m [19.8 ft]	14CE101-6
10 m [33.0 ft]	14CE101-10

Top roller plunger, parallel



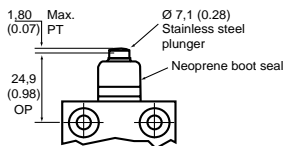
CABLE LENGTH	CAT. LISTING
1 m [3.3 ft]	14CE102-1
3 m [9.9 ft]	14CE102-3
3 m [9.9 ft]	Gold contacts 14CE102-3G
5 m [16.5 ft]	14CE102-5
6 m [19.8 ft]	14CE102-6
6 m [19.8 ft]	Gold contacts 14CE102-6G
8 m [26.4 ft]	14CE102-8
12 m [39.6 ft]	14CE102-12
15 m [49.5 ft]	14CE102-15

Top roller plunger, perpendicular



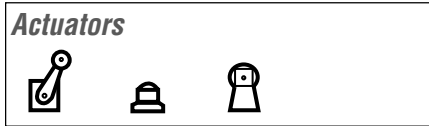
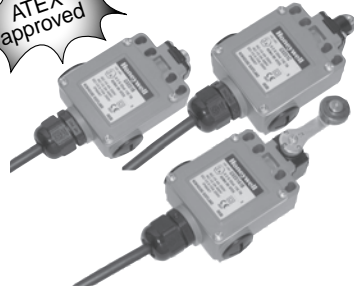
CABLE LENGTH	CAT. LISTING
1 m [3.3 ft]	14CE103-1
3 m [9.9 ft]	14CE103-3

Boot sealed



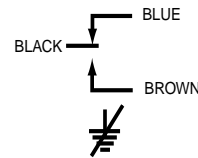
CABLE LENGTH	CAT. LISTING
1 m [3.3 ft]	14CE118-1
6 m [19.8 ft]	14CE118-6
10 m [33.0 ft]	14CE118-10

GXE Series Explosion Proof Limit Switches

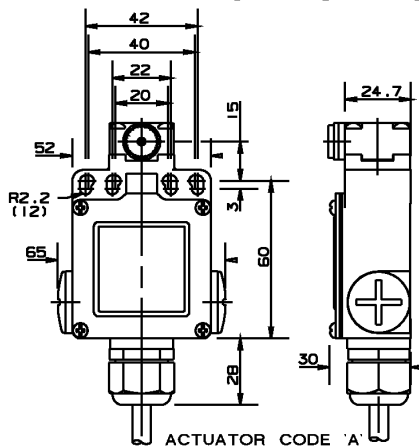


The GXE Series explosion proof limit switches are designed specifically for use in hazardous applications. The GXE enclosure is fully potted and has sealing protection of IP66/67 as per IEC/ EN 60529. The entire GXE Series complies with the European Directive on Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres (94/9/EC) commonly referred to as the ATEX Directive.

Mechanical life: 2 million
Sealing: IP66/67, EN 60529
Operating temperature: -20 °C to 75 °C [-4 °F to 167 °F]
Approvals: CE, EN 50014, EN 50018, EN 50281-1-1
 KEMA 00 ATEX 2103 X Exd IIC T6 T85 Category II 2 GD
 AC15
 DC13
 Silver
Contacts: 5 metre, HO5VV-F, 3 x 0,75 mm² cable
Connection: Single Pole, Double Throw
Switching options: Snap action contacts (1NC/1NO)
 SPDT



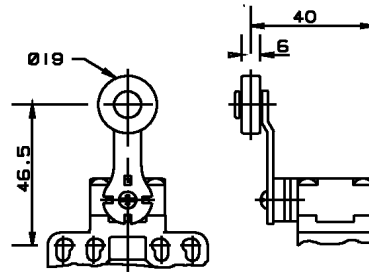
GXE Series



Operating force max. (OF): 16 N [3.6 lb]

OPTIONS

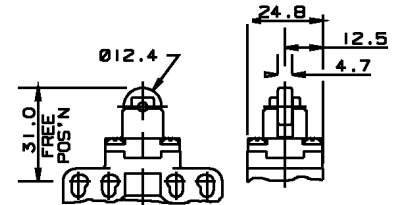
Side rotary roller lever



Overtravel min. (OT): 49°
Differential travel max. (DT): 8°
Operating position max. (OP): 26°

CAT. LISTING
GXE51A1B

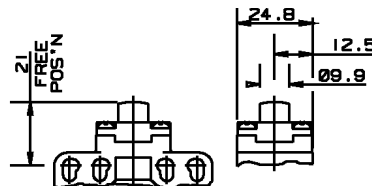
Top roller plunger, parallel



Overtravel min. (OT): 6,0 mm [0.0.236 in]
Differential travel max. (DT): 0,5mm [0.020 in]
Operating position max. (OP): 2,0 mm [0.079 in]

CAT. LISTING
GXE51C

Top pin plunger



Overtravel min. (OT): 6,0 mm [0.0.236 in]
Differential travel max. (DT): 0,5mm [0.020 in]
Operating position max. (OP): 2,0 mm [0.079 in]

CAT. LISTING
GXE51B

EX Series Standard Explosion Proof Switches

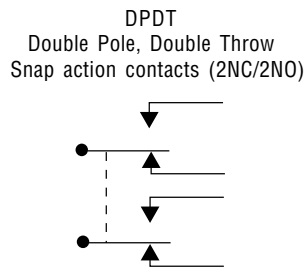
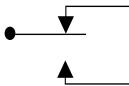


Actuators



Sealing:	NEMA 1, 7 (Class I, Division I, Groups C, D) 9, (Class II, Division I, Groups E, F, G)
Operating temperature:	Standard -40 °C to 71 °C [-40 °F to 160 °F] High 100 hr @ 400 °F
Approvals:	UL, CSA, KEMA 04ATEX2312X
Conduit:	½ in - 14NPT
Contacts:	Silver
Electrical ratings:	
A	UL/CSA Rating: 15 A, 125, 250 or 480 Vac; 1/8 Hp, 125 Vac; 1/4 Hp, 250 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc.
B	UL/CSA Rating: 20 A, 125, 250 or 480 Vac; 10 A, 125 Vac "L"; 1 Hp, 125 Vac; 2 Hp, 250 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc.
C	UL/CSA Rating: 10 A, 125 or 250 Vac; 0.3 A, 125 Vdc; 0.15 A, 250 Vdc
D	UL/CSA Rating: 10 A, 125, 250 or 480 Vac; 1/2 A, 125 Vdc; 1/4 A, 250 Vdc.
E	UL Rating: 1 A, 125 Vac.

Switching options:	
SPDT	DPDT
Single Pole, Double Throw	Double Pole, Double Throw
Snap action contacts (1NC/1NO)	Snap action contacts (2NC/2NO)



The EX Series features the smallest UL listed housings available for use in hazardous locations. Flame paths within the housing are designed to cool exploding gases below the kindling temperature before they reach the explosive gases surrounding the housing.

Options available include single or double conduit connection.

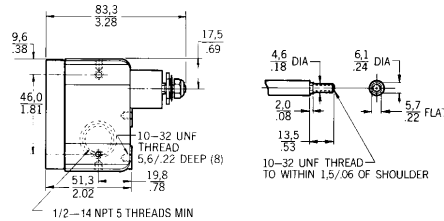
These switches are not sealed against liquids and should not be used where there will be liquid splash. If a weather sealed explosion proof switch is required please select from the CX or LSX/BX series.

Side rotary actuated switches

OPTIONS

No lever

Note: Levers are ordered separately (see pages 71-73 for details)



Operating force max. (OF):

Electrical rating A	0,22 N m [31.25 in oz]
Electrical rating B	3,34 N to 8,90 N [0.75 lb to 2.0 lb]

Pretravel max. (PT):

5,56 mm [0.219 in] 8°

Overtravel max. (OT):

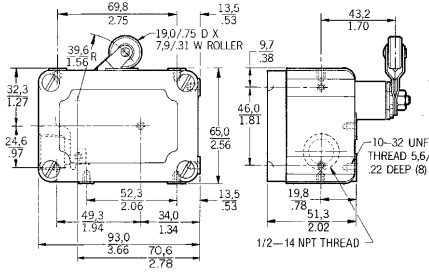
Electrical rating A	90°
Electrical rating B	25°

Differential travel max. (DT):

Electrical rating A	0,18 mm [0.007 in] 0.25°
Electrical rating B	0,3 mm [0.012 in] 4°

ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW	SPDT	A	EX-AR20
CCW	SPDT	A	EX-AR230
CW	SPDT	B	EXA-AR20

Roller lever



Roller material:	Bronze
Operating force max. (OF):	
Electrical rating A	
Clockwise (CW)	2,22 N to 5,56 N [0.5 lb to 1.25 lb]
Counter clockwise (CCW)	11,1 N [2.5 lb]
Electrical rating B	3,34 N to 8,90 N [0.75 lb to 2.0 lb]
Pretravel max. (PT):	
Electrical rating A, B	
Clockwise (CW)	5,56 mm [0.219 in] 8°
Counter clockwise (CCW)	1,65 mm [0.065 in] 3.5°
Overtravel max. (OT):	
Electrical rating A	90°
Clockwise (CW)	25°
Counter clockwise (CCW)	25°
Electrical rating B	
Differential travel max. (DT):	
Electrical rating A	0,18 mm [0.007 in] 0.25°
Electrical rating B	0,3 mm [0.012 in] 4°

ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW	SPDT	A	EX-AR
CCW	SPDT	A	EX-AR30
CW/Class 1 Group B	SPDT	A	EX-AR800
CCW/Class 1 Group B	SPDT	A	EX-AR830
CW/High temperature	SPDT	A	EX-AR400*
CW	SPDT	B	EXA-AR
CW/No mounting bracket	SPDT	B	EXA-AR62
CW/Nylon roller	SPDT	A	EX-AR182
CW/No mounting bracket	SPDT	A	EX-AR141

*No ATEX approval

CW or CCW actuation, no return spring, low operating force

Operating force max. (OF): 0,56 N [2 oz]

ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW/CCW/No mounting bracket	SPDT	A	EX-AR16

Maintained contact

Operating force max. (OF): 3,34 N [0.75 lb]
Pretravel max. (PT): 5,56 mm [0.219 in] 8°
Overtravel max. (OT): 90°

ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW	SPDT	A	EX-XR3

DPDT, Preloaded with 0,91 m [3 ft] leadwire

Operating force max. (OF):
 Clockwise (CW) 2,22 N to 6,67 N [0.5 lb to 1.5 lb]
 Counter clockwise (CCW) 12,2 N [2.75 lb]
Pretravel max. (PT): 6,35 mm [0.250 in]
Overtravel max. (OT): 25°
Differential travel max. (DT): 2,77 mm [0.109 in] 4°
Sealing: NEMA Class 1 Group B

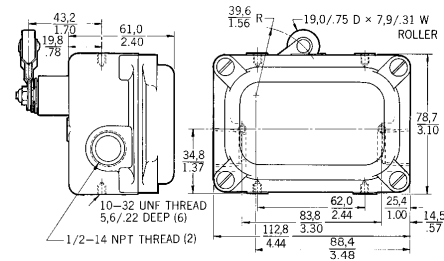
ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW	DPDT	C	EXD-AR-3
CCW	DPDT	C	EXD-AR30-3

Hermetically sealed

Operating force max. (OF):
 Clockwise (CW) 2,22 N to 6,67 N [0.5 lb to 1.5 lb]
 Counter clockwise (CCW) 11,1 N [2.5 lb]
Pretravel max. (PT):
 Clockwise (CW) 5,56 mm [0.219 in] 8°
 Counter clockwise (CCW) 1,65 N [0.065 in] 3.5°
Overtravel max. (OT): 25°
Differential travel max. (DT): 0,64 mm [0.025 in]
Sealing: NEMA Class 1 Group B

ACTUATION	CONTACT	ELECTRICAL RATING	CAT. LISTING
CW/3,2 m [10.5 ft] leadwire	SPDT	E	EXH-AR3
CCW/0,91 m [3 ft] leadwire	SPDT	E	EXH-AR33
CW/0,91 m [3 ft] leadwire	SPDT	E	EXH-AR7

2 Conduit openings



Operating force max. (OF):
 Electrical rating A 2,22 N to 5,56 N [0.5 lb to 1.25 lb]
 Electrical rating B 3,61 N to 8,90 N [0.8 lb to 2 lb]
 Electrical rating C 2,22 N to 6,67 N [0.5 lb to 1.5 lb]
Pretravel max. (PT):
 Electrical rating A, B 5,56 mm [0.219 in] 8°
 Electrical rating C 6,35 mm [0.250 in]
Overtravel max. (OT):
 Electrical rating A 90°
 Electrical rating B, C 25°
Differential travel max. (DT):
 Electrical rating A 0,18 mm [0.007 in] 0.25°
 Electrical rating B 0,3 mm [0.012 in] 0.5°
 Electrical rating C 2,77 mm [0.109 in] 4°

CONTACT	ELECTRICAL RATING	CAT. LISTING
DPDT	C	4EX1-3
SPDT	B	2EX1
SPDT	A	1EX1

**EX Series
Side rotary actuated switches (continued)**

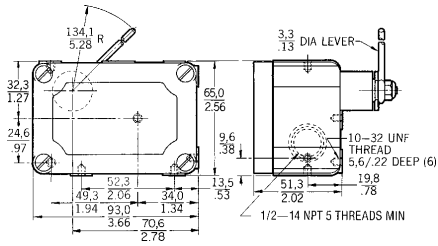
Cross roller lever, rotated 90°



Operating force max. (OF): 2,22 N to 5,56 N [0.5 lb to 1.25 lb]
Pretravel max. (PT): 5,56 mm [0.219 in] 8°
Overtravel max. (OT) 90°
Differential travel max. (DT): 0,18 mm [0.007 in] 0.25°

CW	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	EX-CR

Rod lever



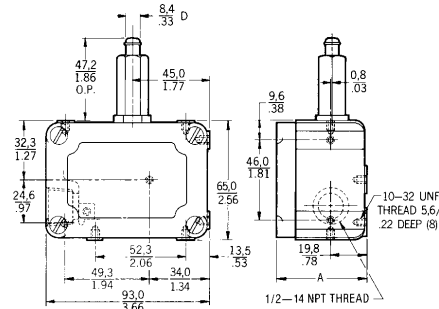
Operating force max. (OF): 0,56 N [2 oz]
Pretravel max. (PT): 18°
Overtravel min. (OT): 40°

CW/No mounting bracket	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	EX-AR1613

Overtravel plunger actuated switches

OPTIONS

Top pin plunger



Operating force max. (OF):
 Electrical rating A, C 13,34 N [3.0 lb]
 Electrical rating B 8,90 N [2 lb]
Pretravel max. (PT):
 Electrical rating A 1,98 mm [0.078 in]
 Electrical rating B 1,27 mm [0.050 in]
 Electrical rating C 3,96 mm [0.156 in]
Overtravel min. (OT):
 Electrical rating A 4,78 mm [0.188 in]
 Electrical rating B 3,18 mm [0.125 in]
 Electrical rating C 3,48 mm [0.141 in]
Differential travel max. (DT):
 Electrical rating A 0,10 mm [0.004 in]
 Electrical rating B 0,23 mm [0.009 in]
 Electrical rating C 1,52 mm [0.060 in]

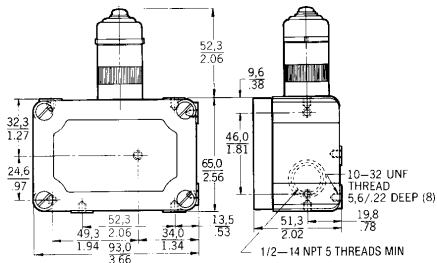
	CONTACT	ELECTRICAL RATING	CAT. LISTING
No mounting bracket	SPDT	A	EX-Q
High temperature	SPDT	A	EX-Q62
Low OF	SPDT	A	EX-Q400*
	SPDT	B	EXA-Q

*No ATEX approval

Sealing NEMA Class 1 Group B

	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	EX-Q800
Preleaded with 0,91 m [3 ft] leadwire	DPDT	C	EXD-Q-3

Boot sealed



Operating force max. (OF):
 Electrical rating D 13,34 N [3.0 lb]
 Electrical rating B 15,57 N [3.5 lb]

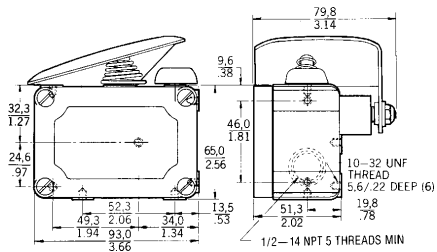
Pretravel max. (PT):
 Electrical rating D 1,98 mm [0.078 in]
 Electrical rating B 2,77 mm [0.109 in]

Overtravel min. (OT):
 Electrical rating D 4,78 mm [0.188 in]
 Electrical rating B 3,18 mm [0.125 in]

Differential travel max. (DT):
 Electrical rating D 0,10 mm [0.004 in]
 Electrical rating B 0,23 mm [0.009 in]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
Class 1 Group B	SPDT	D	EX-N15
	SPDT	B	EXA-N

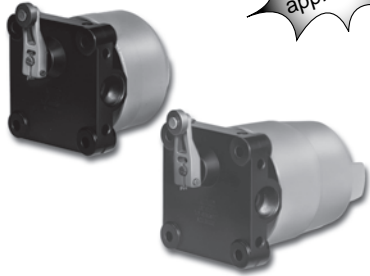
Manually actuated



Operating force max. (OF): 11,1 N [2.5 lb]

	CONTACT	ELECTRICAL RATING	CAT. LISTING
	SPDT	A	EX-AR50

CX Series Weather Sealed Explosion Proof Switches



Actuators



CX switches, as are the LSX/BX Series, are built especially for outdoor use in hazardous atmospheres. These enclosures are constructed to withstand the pressure of an internal explosion.

O-ring seals make the enclosure weatherproof but are outside of required flame paths so explosion proof requirements are maintained.

As factory assembled, all basic switches operate on clockwise and counterclockwise rotation. The actuating mechanism can be field adjusted for CW or CCW operation only.

Analog output, 4 mA to 20 mA, is available.

Basic switches operate nearly simultaneously in multiple switch devices.

Shafts of devices without shaft restoring force can be rotated through 360°.

Sealing: IP66, 67; NEMA 1, 3, 4, 4X, 6, 6P, 7, 9 and 13
UL listed Class I, Div. 1, Groups B (16CX, 24CX, 26CX, and 84CX only),
C and D; and Class II, Div. 1, Groups E, F and G

CSA certified Class I, Div. 1, Groups B (16CX, 24CX, 26CX, and 84CX only),
C and D; and Class II, Groups E, F and G

Operating temperature: -25 °C to 85 °C [-13 °F to 185 °F]

Approvals: UL, CSA
ATEX EExd IIC T6 Category II 2 GD

Housing: Aluminium
80CX Bronze

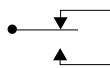
Conduit: ¾ in - 14NPT

Contacts: A, C, D Silver
F Gold

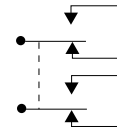
Electrical Ratings:		
A	UL/CSA Rating: L96	15 A, 120, 240 or 480 Vac, ind. and res 1/8 Hp, 120 Vac; 1/4 Hp, 240 Vac 0.5 A, 125 Vdc, 0.25 A, 250 Vdc, res
C	UL/CSA Rating: L59	10 A, 120 or 240 Vax, ind. and res 0.3 A, 125 Vdc, 0.15 A, 250 Vdc, res
D	UL/CSA Rating: L22	1 A, 120 Vax, ind. and res
F	UL/CSA Rating: L22	1 A, 125 Vac
G	Analog Current Output (4 mA to 20 mA)	12.5 Vdc to 40 Vdc

Switching options:

SPDT
Single Pole, Double Throw
Snap action contacts (1NC/1NO)



DPDT
Double Pole, Double Throw
Snap action contacts (2NC/2NO)



Analog position sensing specifications (Electrical rating "G")

Current output: 4 mA to 20 mA
Voltage compliance range: 12.5 Vdc to 40 Vdc
Maximum load resistance: RL, Max., -V Supply - 12.5
20 mA

Current signal output: 4 mA to 20 mA
Span: Adjustable from 15° to 90° of angular rotation
Null: 4 mA position may be set at any angular position

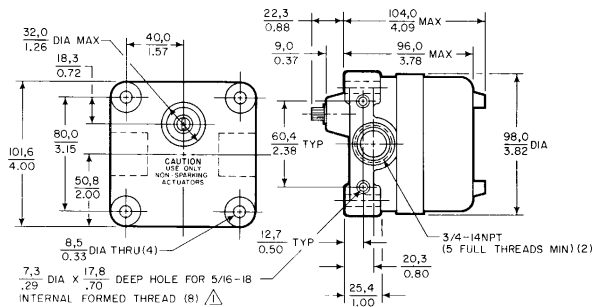
Operating characteristics

Basic Switch Type	BZ	BA	DT	HS
Pretravel (max.)*	15°	15°	30°	30°
Differential Travel (max.)	10°	10°	25°	20°
Overtravel (min.)*	90°	90°	75°	75°
Operating Torque (max.)	11.1 in lb/1,25 N m			

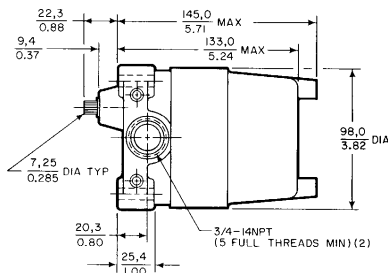
* May be modified in field to suit application requirements.

Note: Levers are ordered separately (see pages 71-73 for details)

Short housing



Standard housing



Notes:

Add the letter "A" to listings with side mounting holes tapped 5/16 (8).

Example: 11CX2A

Add the letter "B" to listings with thru mounting holes tapped 3/8-24 (4).

Example: 11CX2B

Add the letter "C" to listings for low temperature (-40 °C/°F) applications.

Example: 11CX2C

Add "D01" to specify a "direct-couple" listing with 3/8 in. dia by 3/4 in. long flatted shaft.

Example: 11CX2-D01

Add the letter "E" to listings for European Atex approvals.

Example: 11CX2E

For Replacement Basic Switch Assemblies, change the first number in the listing to "9".

Example: 11CX2 becomes 91CX2

OPTIONS

HOUSING SIZE	BASIC SWITCHES	CONTACT	ELECTRICAL RATING	SHAFT RESTORING FORCE TO CENTRE	CAT. LISTING
Short	BZ (2)	SPDT	A	With	11CX2
Short	BZ (2)	SPDT	A	Without	11CX12
Short	BZ (2)	SPDT	A	With	11CX2E
Short	BZ (2)	SPDT	A	Without	11CX12E
Short	BZ (2)	SPDT	F	With	1172CX2
Short	BZ (2)	SPDT	F	Without	1172CX12
Standard	BZ (4)	SPDT	A	With	21CX4
Standard	BZ (4)	SPDT	A	Without	21CX14

UL listed for Class I, Group B (hydrogen atmospheres)

HOUSING SIZE	BASIC SWITCHES	CONTACT	ELECTRICAL RATING	SHAFT RESTORING FORCE TO CENTRE	CAT. LISTING
Standard	DT (2)	DPDT	C	With	24CX2
Standard	DT (2)	DPDT	C	Without	24CX12
Short	HS (2)	SPDT	D	With	16CX2
Short	HS (2)	SPDT	D	Without	16CX12
Standard	HS (4)	SPDT	D	With	26CX4

Analog output, 4 mA to 20 mA

HOUSING SIZE	BASIC SWITCHES	CONTACT	ELECTRICAL RATING	SHAFT RESTORING FORCE TO CENTRE	CAT. LISTING
Short	None	N/A	G	With	18CX0
Short	None	N/A	G	Without	18CX10
Short	None	N/A	G	Without	18CX10E
Standard	BZ (2)	SPDT	A, G	With	281CX2
Standard	BZ (2)	SPDT	A, G	Without	281CX12

Bronze housing for use in corrosive environments

80CX switches have rugged bronze housings which are resistant to salt water and other corrosive environments. They comply with the NEMA 4X requirement for protection against corrosion, in addition to NEMA enclosure standards met by other CX switches. O-ring seals make the enclosure weather-proof, but are outside of required flame paths, maintaining explosion-proof requirements.

HOUSING SIZE	BASIC SWITCHES	CONTACT	ELECTRICAL RATING	SHAFT RESTORING FORCE TO CENTRE	CAT. LISTING
Standard	BZ (2)	SPDT	A	With	81CX2
Standard	BZ (4)	SPDT	A	With	81CX4
Standard	BZ (4)	SPDT	A	Without	81CX14
Standard	DT (2)	DPDT	C	With	84CX2

LSX/BX Series Weather sealed explosion proof switches



Actuators



Sealing:

LSX NEMA 1, 3, 4, 6, 7 (Class 1, Division 1, Groups B, C, D),
9 (Class 2, Division 1, Groups E, F, G), 13
BX IP67, NEMA 1, 3, 4, 6, 7 (Class 1, Division 1, Groups B, C, D),
9 (Class 2, Division 1, Groups E, F, G), 13

Approvals:

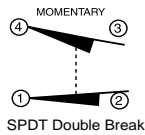
LSX/BX UL, CSA*
BX only EExd IIC T6 category II 2 GD, SIRA 00ATEX 1037X

Contacts:

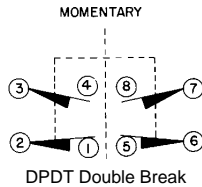
Electrical ratings A, B Silver
Electrical rating C Gold

Switching options:

SPDT
Single Pole, Double Throw
Snap action contacts (1NC/1NO)



DPDT
Double Pole, Double Throw
Snap action contacts (2NC/2NO)



* Applies only to listings with 1/2 in NPT or 3/4 in NPT

Electrical ratings

10 amps continuous carry. Circuits on any one pole must be the same polarity.

ac Volts

Pilot duty: 600 Vac, 720 VA

	Vac	Amps at 0.35 Power Factor	
		Make	Break
A	120	60	6
SPDT	240	30	3
NEMA	480	15	1.5
A600	600	12	1.2

B	120	30	3
DPDT	240	15	1.5
NEMA	480	7.5	0.75
B600	600	6	0.60

C 250 Vac or 60 Vdc, 0.050 amp max.
SPDT/DPDT

dc Volts

Pilot duty: 240 Vdc, 30 watts

	Vdc	Make and Break Amps	
		Inductive	Resistive
A	120	0.25	0.8
SPDT	240	0.15	0.4
B	120	0.25	0.8
DPDT	240	0.15	0.4

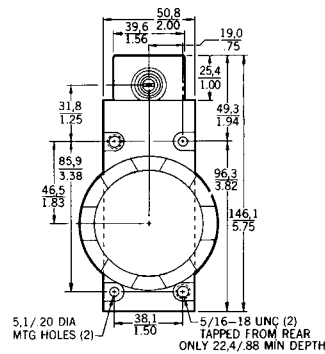
C 250 Vac or 60 Vdc, 0.050 amp max.
SPDT/DPDT

LSX/BX Series weather sealed, explosion proof limit switches are for use either indoor or outdoors in hazardous atmospheres. They are completely sealed and designed for use in explosive gas/dust environments.

LSX/BX products meet the sealing standards of NEMA 1, 3, 4, 6, 7, 9 and 13. BX products are also sealed to IP67 standard and are ATEX approved (see specifications below).

All heads are field adjustable at 90° increments. Heads with side rotary actuators can be adjusted for clockwise and counter clockwise operation.

Rotary actuated switches

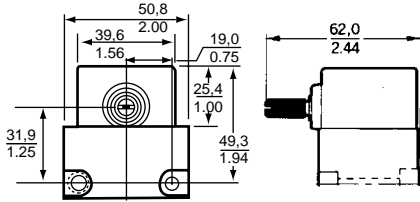


Operating torque max.:	Standard	0,45 N m [4.0 in lb]
	Low	0,19 Nm [1.7 in lb]
Pretravel max. (PT):	Standard	15°
	Low	9°
Overtravel min. (OT):	Standard	60°
	Low	66°
Differential travel max. (DT):	Standard SPDT	5°
	Standard DPDT	7°
	Low SPDT	3°
	Low DPDT	4°

**Note: Levers are ordered separately
(see pages 71-73 for details)**

OPTIONS

Side rotary



LSX

Operating temperature: -12 °C to 121 °C [10 °F to 250 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
	SPDT	½ in - 14NPT	A	LSXA3K
	SPDT	20 mm	A	LSXA3K
	SPDT	¾ in - 14NPT	A	LSXA4K
	SPDT	½ in - 14NPT	C	LSXA3E
	DPDT	¾ in - 14NPT	B	LSXA4L
	DPDT	20 mm	B	LSXA4L
	DPDT	½ in - 14NPT	B	LSXA7L
Low DT	SPDT	½ in - 14NPT	A	LSXP3K

BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
	SPDT	½ in - 14NPT	A	BXA3K
	SPDT	20 mm	A	BX4A3K
	DPDT	¾ in - 14NPT	B	BXA4L

LSX

Operating temperature: -1 °C to 121 °C [30 °F to 250 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
Low DT/Low torque	SPDT	½ in - 14NPT	A	LSXH3K
Low DT/Low torque	DPDT	¾ in - 14NPT	B	LSXH4L
Low torque	SPDT	½ in - 14NPT	A	LSXR3K
Low torque	DPDT	¾ in - 14NPT	B	LSXR4L

BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
Low torque	SPDT	½ in - 14NPT	A	BXR3K
Low torque	SPDT	½ in - 14NPT	C	BXR3E
Low torque	DPDT	¾ in - 14NPT	C	BXR4S

Centre neutral

Operating torque max. : 0,45 N m [4.0 in lb]
Pretravel max. (PT): 18°
Overtravel min. (OT): 57°
Differential travel max. (DT): 10°

LSX

Operating temperature: -1 °C to 121 °C [30 °F to 250 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
	DPDT	¾ in - 14NPT	B	LSXM4N
	DPDT	20 mm	B	LSX4M4N

Maintained contact

Operating torque max.: 0,45 N m [4.0 in lb]
Pretravel max. (PT): 65°
Overtravel min. (OT): 20°
Differential travel max. (DT): SPDT 30°
 DPDT 35°

LSX

Operating temperature: -1 °C to 121 °C [30 °F to 250 °F]

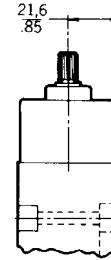
	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
Maintained	SPDT	½ in - 14NPT	A	LSXN3K
Maintained	DPDT	¾ in - 14NPT	B	LSXN4L
Maintained	DPDT	½ in - 14NPT	B	LSXN7L

BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
Maintained	SPDT	½ in - 14NPT	A	BXN3K
Maintained	DPDT	¾ in - 14NPT	B	BXN4L

Top rotary



Operating torque max.: 0,28 N m [2.5 in lb]
Pretravel max. (PT): 25°
Overtravel min. (OT): 100°
Differential travel max. (DT): SPDT 10°
 DPDT 12°

LSX

Operating temperature: -1 °C to 121 °C [30 °F to 250 °F]

	CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
	SPDT	½ in - 14NPT	A	LSXB3K
	DPDT	¾ in - 14NPT	B	LSXB4L

**LSX/BX Series (continued)
Plunger actuated switches**

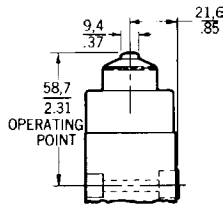


Top plungers

Operating force max. (OF):	17,79 N [4 lb]
Pretravel max. (PT):	1,78 mm [0.07 in]
Overtravel min. (OT):	4,83 mm [0.19 in]
Differential travel max. (DT):	
SPDT	0,38 mm [0.015 in]
DPDT	0,51 mm [0.02 in]

OPTIONS

Top pin plunger



Operating point: 58,5 mm ± 0,76 mm [2.305 in ± 0.03 in]

LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXC3K
SPDT	20 mm	A	LSX4C3K
DPDT	¾ in - 14NPT	B	LSXC4L

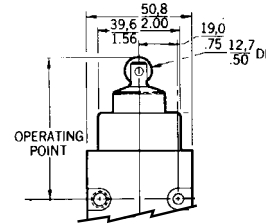
BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	20 mm	A	BX4C3K
DPDT	¾ in - 14NPT	B	BXC4L
DPDT	20 mm	B	BX4C4L

Top roller plunger

Head can be set at 90° increments for cam or slide actuation



Operating point: 68,6 mm ± 1.00 mm [2.700 in ± 0.04 in]

LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

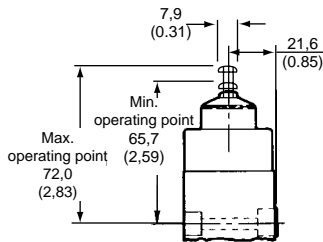
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXD3K
SPDT	20 mm	A	LSX4D3K
DPDT	¾ in - 14NPT	B	LSXD4L

BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	20 mm	A	BX4D3K

Top pin plunger, adjustable



Operating point: 65,66 mm to 72,01 mm [2.585 in to 2.835 in]

LSX

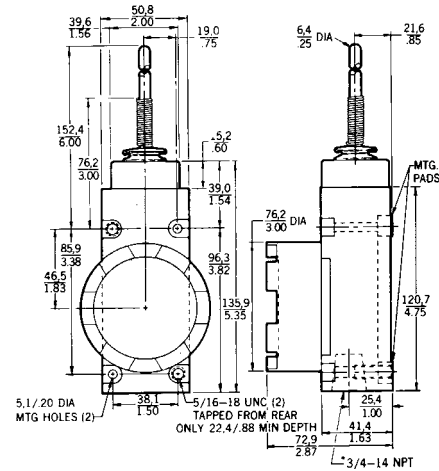
Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXV3K

Wobble actuated switches

OPTIONS

Plastic rod

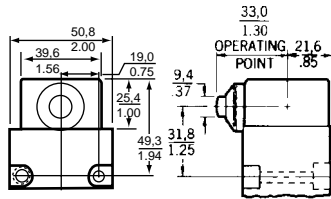


Side plungers

Operating force max. (OF): 26,69 N [6 lb]
 Pretravel max. (PT): 2,54 mm [0.10 in]
 Overtravel min. (OT): 4,83 mm [0.19 in]
 Differential travel max. (DT): 1,14 mm [0.045 in]

OPTIONS

Side pin plunger



Operating point: 33,0 mm [1.30 in]

LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXE3K
DPDT	¾ in - 14NPT	B	LSXE4L

Operating force max. (OF): 2,78 N [10 oz]
 Pretravel max. (PT): 25,4 mm [1.0 in]

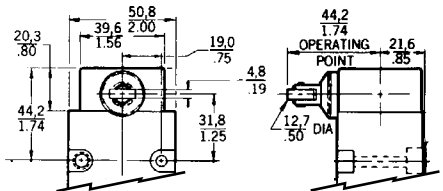
LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXJ3K-7A
DPDT	¾ in - 14NPT	B	LSXJ4L-7A

Side roller plunger

Roller may be set in vertical or horizontal position for cam or slide actuation



Operating point: 44,1 mm [1.735 in]

LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F]

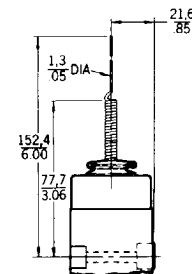
CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXF3K

BX (ATEX approved)

Operating temperature: -40 °C to 70 °C [-40 °F to 158 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	BXF3K

Cat whisker



Operating force max. (OF): 1,39 N [5 oz]
 Pretravel max. (PT): 50,8 mm [2.0 in]

LSX

Operating temperature: -12 °C to 93 °C [10 °F to 200 °F][10 °F to 200 °F]

CONTACT	CONDUIT	ELECTRICAL RATING	CAT. LISTING
SPDT	½ in - 14NPT	A	LSXK3K-8A

Levers

Separate levers must be ordered with side rotary types. The table provides a cross reference between product families and the lever order/reference numbers. The following pages describe the levers. Illustrations are for reference only. Exact mounting drawings and dimensions are available from your local sales office or from the website below.

Levers lock in any position, 360° around the shaft. Rollers may be mounted on the front or back of the lever.

All levers are supplied with cap screws.

Explosion proof switches

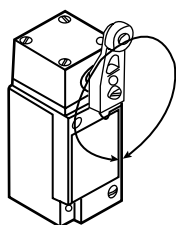
Because of explosion proof requirements, only nylon rollers or other non sparking material should be selected. BX/LSX, CX and EX plunger and cat whisker types are of non sparking material. **Do not mix or substitute.**

Specification (unless stated otherwise)

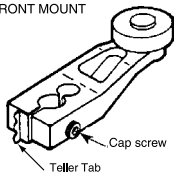
- Lever radius/length: 1.5 in [38,1 mm]
- Roller Diameter: 0.75 in [19,1 mm]
- Roller Width: 0.25 in [6,35 mm]
- EX 0.312 in [7,92 mm]

Note:

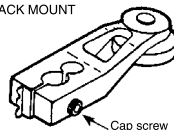
Not all levers are compatible with all switches



FRONT MOUNT



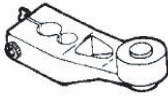
BACK MOUNT



CAT. LISTING	ROLLER MATERIAL	LIMIT SWITCH SERIES				EXPLOSION PROOF SERIES		
		GLA	HDLS	LS2	LS	BX/LSX	CX	EX
6PA57	Aluminium				❖			
6PA63	Stainless steel				❖			
6PA69	Spring rod				❖			
6PA80	Steel				❖			
6PA82	Steel				❖			
6PA102	Nylon				❖			
6PA144	Ball bearing				❖			
GLZ51A	Nylon	❖						
GLZ51B	Steel	❖						
GLZ52A	Nylon	❖						
GLZ52B	Steel	❖						
GLZ54J	Aluminium	❖						
GLZ55B	Steel	❖						
LSZ51	N/A		❖			❖	❖	
LSZ51A	Nylon		❖		❖	❖	❖	
LSZ51B	Steel		❖		❖			
LSZ51C	Nylon		❖			❖	❖	
LSZ51D	Steel		❖					
LSZ51W	Rubber		❖					
LSZ51Y	Rubber		❖					
LSZ52	N/A		❖					
LSZ52A	Nylon		❖			❖		
LSZ52B	Steel		❖					
LSZ52C	Nylon		❖		❖	❖	❖	
LSZ52D	Steel		❖		❖			
LSZ52J	Nylon		❖		❖	❖	❖	
LSZ52K	Nylon		❖		❖	❖	❖	
LSZ52M	Nylon		❖		❖	❖		
LSZ52N	Nylon		❖			❖		
LSZ52W	Rubber		❖					
LSZ52Y	Rubber		❖					
LSZ53A	Nylon		❖					
LSZ53B	Steel		❖					
LSZ53D	Steel		❖					
LSZ53E	Nylon		❖			❖	❖	
LSZ53P	Steel		❖					
LSZ53S	Nylon		❖			❖	❖	
LSZ53U	Steel		❖					
LSZ54	N/A		❖			❖	❖	
LSZ54M	Aluminium		❖		❖	❖	❖	
LSZ54N	Stainless steel		❖					
LSZ54R	Spring wire		❖					
LSZ54V	Cable		❖					
LSZ55	N/A		❖			❖	❖	
LSZ55A	Nylon		❖			❖	❖	
LSZ55B	Steel		❖					
LSZ55C	Nylon		❖			❖		
LSZ55D	Steel		❖					
LSZ55W	Rubber		❖					
LSZ55Y	Rubber		❖					
LSZ61	Nylatron		❖					
LSZ67AA	Rubber		❖					
LSZ68	Delrin		❖					
6PA5-EX	Bronze							❖
6PA127-EX	Nylon							❖
6PA130-EX	Bronze							❖
6PA131-EX	Bronze							❖
6PA136-EX	Aluminium							❖
6PA138-EX	Nylon							❖
6PA142-EX	Bronze							❖
6PA204-EX	Nylon							❖
Stainless steel levers								
LSZ251A	Nylon		❖	❖			❖	
LSZ251B	Steel		❖	❖				
LSZ252A	Nylon		❖	❖			❖	
LSZ252B	Steel		❖	❖				
LSZ254N	Steel		❖	❖				

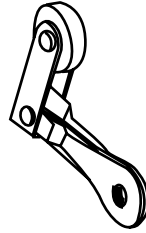
OPTIONS * denotes lever suitable for Explosion Proof Series switches

Standard fixed lever



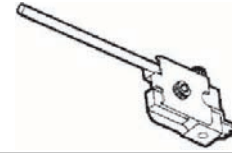
	MOUNTED ON	CAT. LISTING
Without roller		LSZ51*
Nylon roller	Front	LSZ51A*
Metal roller	Front	LSZ51B
Nylon roller	Back	LSZ51C*
Metal roller	Back	LSZ51D
Nylon roller	Front	GLZ51A
Metal roller	Front	GLZ51B
Bronze roller	Front	6PA5-EX*
Nylon roller	Front	6PA127-EX*
Ball bearing roller	Front	6PA144

One way roller lever



	RADIUS/LENGTH	CAT. LISTING
Bronze roller, clockwise	1.56 in [39,6 mm]	6PA130-EX*
Bronze roller, counter clockwise	1.56 in [39,6 mm]	6PA142-EX*

Adjustable rod



	RADIUS/LENGTH	CAT. LISTING
Hub only		LSZ54*
Aluminium rod	5.5 in [139,7 mm]	LSZ54M*
Stainless steel rod	13.0 in [330,2 mm]	LSZ54N
Aluminium, spring only	12.0 in [305 mm]	LSZ54R
Aluminium, flexible cable	4.8 in [122 mm]	LSZ54V
Aluminium rod	7.9 in [200 mm]	GLZ54J
Stainless steel rod	13.0 in [330,2 mm]	6PA63
Aluminium rod	5.3 in [134,1 mm]	6PA136-EX*

Offset fixed lever



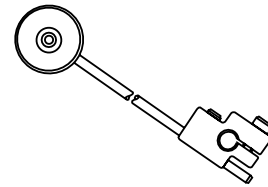
	MOUNTED ON	CAT. LISTING
Without roller		LSZ55*
Nylon roller	Back	LSZ55A*
Metal roller	Back	LSZ55B
Nylon roller	Front	LSZ55C*
Metal roller	Front	LSZ55D
Metal roller	Front	GLZ55B

Perpendicular (cross) roller lever



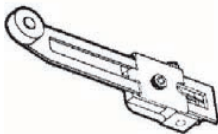
	RADIUS/LENGTH	CAT. LISTING
Bronze roller mm]	6PA131-EX*	1.81 in [46,0

Adjustable rod, nylon roller



	RADIUS/LENGTH	CAT. LISTING
Aluminium rod, nylon roller	12.5 in [317,5 mm]	6PA204-EX*

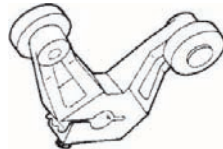
Adjustable lever



Operating radius/length: 1.5 in to 3.5 in [38,1 mm to 88,9 mm]
 -EX 1.69 in to 3.0 in [42,9 mm to 76,2 mm]

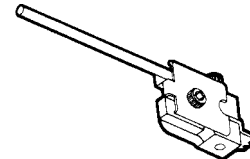
	MOUNTED ON	CAT. LISTING
Adjustable lever, without roller		LSZ52
Nylon roller	Back	LSZ52A*
Metal roller	Back	LSZ52B
Nylon roller	Front	LSZ52C*
Metal roller	Front	LSZ52D
Nylon roller, Ø 1.0 in [25,4] x 0.5 in [12,7 mm]	Front	LSZ52J*
Nylon roller, Ø 1.5 in [38,1]	Front	LSZ52K*
Nylon roller, Ø 2.0 in [50,8]	Front	LSZ52M*
Nylon roller, 0.5 in wide [12,7 mm]	Front	LSZ52N*
Nylon roller	Back	GLZ52A
Metal roller	Back	GLZ52B
Nylon roller, Ø 1.0 in [25,4] x 0.5 in [12,7 mm]	Front	6PA138-EX*

Yoke lever



	MOUNTED ON	CAT. LISTING
Nylon roller	Front/Back	LSZ53A
Metal roller	Front/Back	LSZ53B
Metal roller	Front/Front	LSZ53D
Nylon roller	Back/Front	LSZ53E*
Metal roller	Back/Back	LSZ53P
Nylon roller	Back/Back	LSZ53S*
Metal roller	Back/Front	LSZ53U
Metal roller	Front/Back	6PA80
Metal roller	Front/Front	6PA82
Nylon roller	Front/Front	6PA102

Spring rod



	RADIUS/LENGTH	CAT. LISTING
Ø 0.25 in [6,35 mm]	12.0 in [305 mm]	LSZ68
Ø 0.17 in [4,32 mm]	7.4 in [188 mm]	6PA69

Note: Not all levers are compatible with all switches

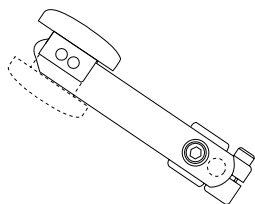
* denotes lever suitable for Explosion Proof Series switches

Flexible loop



	RADIUS/LENGTH	CAT. LISTING
Flexible loop	6.0 in [152 mm]	LSZ61

Hand operated button



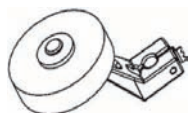
	CAT. LISTING
Ø 1.5 in [38,1 mm]	6PA57

****Large rubber roller, fixed lever**



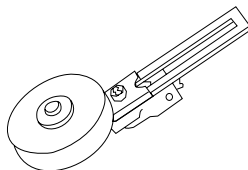
	CAT. LISTING
Ø 1.6 in X 0.50 in wide roller [40,6 mm X 12,7 mm]	LSZ51W
Ø 2 in X 0.50 in wide roller [50,8 mm X 12,7 mm]	LSZ51Y

****Large rubber roller, fixed offset lever**



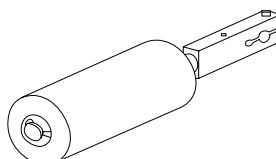
	CAT. LISTING
Ø 1.6 in X 0.50 in wide roller [40,6 mm X 12,7 mm]	LSZ55W
Ø 2 in X 0.50 in wide roller [50,8 mm X 12,7 mm]	LSZ55Y

****Large rubber roller, adjustable lever**



	CAT. LISTING
Ø 1.6 in X 0.50 in wide roller [40,6 mm X 12,7 mm]	LSZ52W
Ø 2 in X 0.50 in wide roller [50,8 mm X 12,7 mm]	LSZ52Y

****Conveyor roller arm**



Operating radius/length: 6.78 in [172,2 mm]

	CAT. LISTING
Plastic roller, 1.5 in Ø X 3.8 in long [38,1 mm X 96,5 mm]	LSZ67AA

NOTICE **

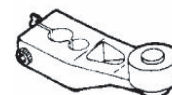
Large rubber rollers and conveyor roller arm
Because of the lever's mass, the limit switch should be mounted with the lever facing down. This will enable gravity to help restore the switch to the free position.

Stainless steel levers

Roller Diameter:	0.75 in [19,1 mm]
Roller Width:	0.25 in [6,35 mm]

OPTIONS

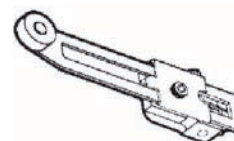
Standard fixed lever



Operating radius/length: 1.5 in [38,1 mm]

	MOUNTED ON	CAT. LISTING
Nylon roller	Front	LSZ51A*
Stainless steel roller	Front	LSZ51B

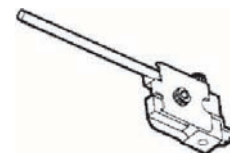
Adjustable lever



Operating radius/length: 1.5 in to 3.5 in
[38,1 mm to 88,9 mm]

	MOUNTED ON	CAT. LISTING
Nylon roller	Back	LSZ52A*
Stainless steel roller	Back	LSZ52B

Adjustable rod



Operating radius/length: 13 in [330,2 mm]

CAT. LISTING
LSZ54N

Note: Not all levers are compatible with all switches

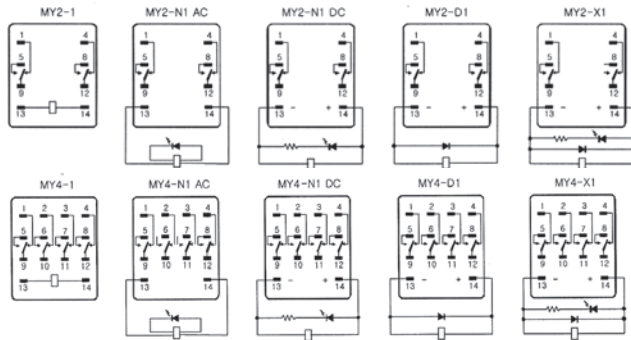
SZR-MY Series Power Relay



SZR-MY Series general-purpose power relays are designed for a wide range of potential applications including power, as well as logic control, for factory machines and control panels.

SZR-MY Series relays have a small package design for multiple application needs. Relays are available in two configurations: DPDT with a 5 A load and 4PDT with a 3 A load. One standard and three options are available: LED indicator, internal surge protection diode, and LED indicator/diode protection.

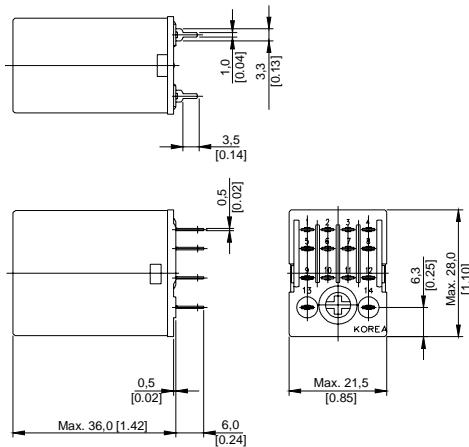
Current rating (SZR-MY2):	5 A
Current rating (SZR-MY4):	3 A
Contact resistance:	50 mOhm max.
Contact material:	Fine silver
Agency approvals:	UL, CE, CSA
Operate time:	20 ms max.
Release time:	20 ms max.
Ambient temperature:	-25 °C to 75 °C [-13 °F to 167 °F]
Ambient humidity:	45% RH to 85% RH
Switching options:	DPDT, 4PDT



MY2 Series

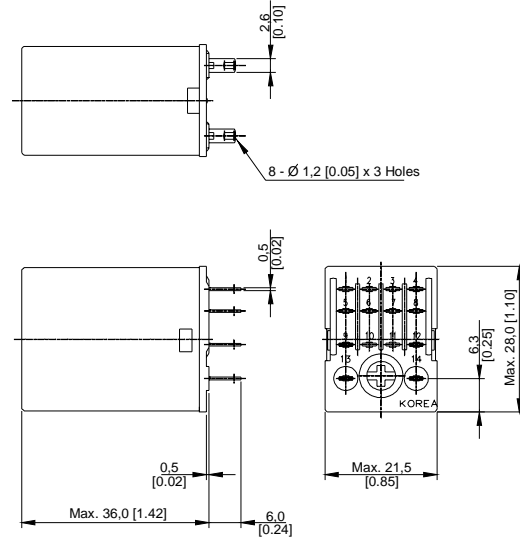
OPTIONS

Standard, PCB Terminal, DPDT



COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/5 amp	SZR-MY2-1P-AC110-120V
220/240 Vac	250 Vac/5 amp	SZR-MY2-1P-AC220V-240V
24 Vdc	125 Vdc/1 amp	SZR-MY2-1P-DC24V

Solder/Plug-In Terminal, DPDT



Standard

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/5 amp	SZR-MY2-1-AC110-120V
220 Vac	250 Vac/5 amp	SZR-MY2-1-AC220V
12 Vdc	125 Vdc/1 amp	SZR-MY2-1-DC12V
24 Vdc	125 Vdc/1 amp	SZR-MY2-1-DC24V

LED Indicator

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/5 amp	SZR-MY2-N1-AC110-120V
220 Vac	250 Vac/5 amp	SZR-MY2-N1-AC220V
12 Vdc	125 Vdc/1 amp	SZR-MY2-N1-DC12V
24 Vdc	125 Vdc/1 amp	SZR-MY2-N1-DC24V

Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/1 amp	SZR-MY2-D1-DC24V

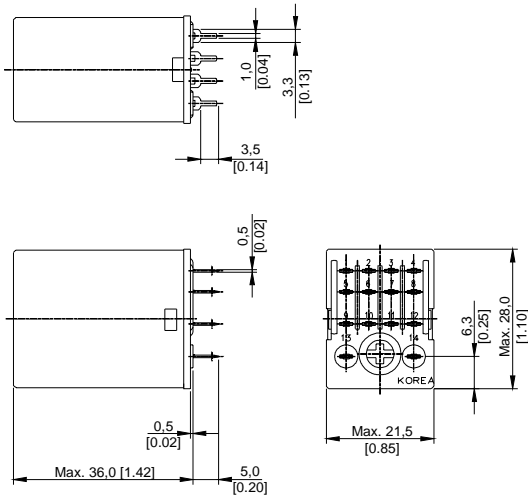
LED Indicator/Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/1 amp	SZR-MY2-X1-DC24V

MY4 Series

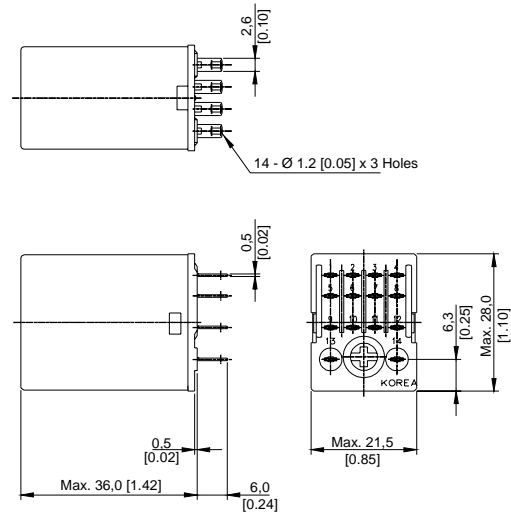
OPTIONS

Standard, PCB Terminal, 4PDT



COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/3 amp	SZR-MY4-1P-AC110-120V
220/240 Vac	250 Vac/3 amp	SZR-MY4-1P-AC220V-240V
24 Vdc	125 Vdc/0.6 amp	SZR-MY4-1P-DC24V

Solder/Plug-In Terminal, 4PDT



Standard

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/3 amp	SZR-MY4-1-AC110-120V
220 Vac	250 Vac/3 amp	SZR-MY4-1-AC220V
12 Vdc	125 Vdc/0.6 amp	SZR-MY4-1-DC12V
24 Vdc	125 Vdc/0.6 amp	SZR-MY4-1-DC24V

LED Indicator

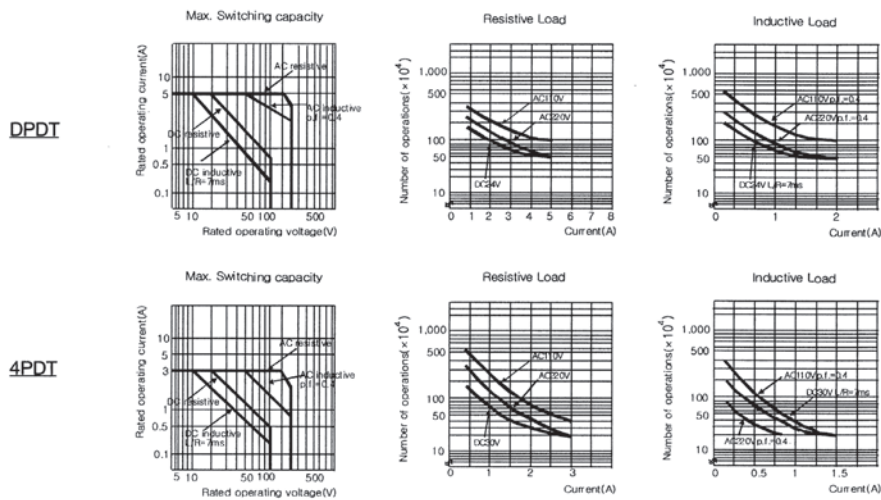
COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/3 amp	SZR-MY4-N1-AC110-120V
220 Vac	250 Vac/3 amp	SZR-MY4-N1-AC220V
12 Vdc	125 Vdc/0.6 amp	SZR-MY4-N1-DC12V
24 Vdc	125 Vdc/0.6 amp	SZR-MY4-N1-DC24V

Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/0.6 amp	SZR-MY4-D1-DC24V

LED Indicator/Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/0.6 amp	SZR-MY4-X1-DC24V



SZR-LY Series Power Relay

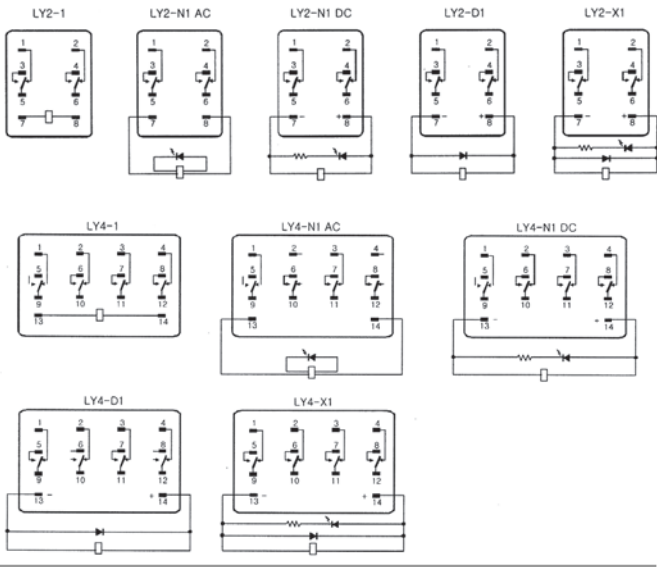


SZR-LY Series general-purpose power relays are designed for a wide range of potential applications including power, as well as logic control, for factory machines and control panels.

SZR-LY Series relays break 10 A loads are often ideal for control panels that require stable and reliable relays.

One standard and three options are available: LED indicator, internal surge protection diode, and LED indicator/diode protection.

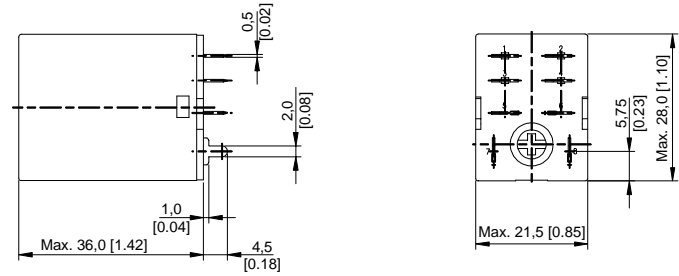
- Current rating:** 10 A
- Contact resistance:** 50 mOhm max.
- Contact material:** Silver cadium oxide
- Agency approvals:** UL, CE, CSA
- Operating frequency:** 18,000 operations/hour (mechanical)
1,800 operations/hour (electrical)
- Operate time:** 25 ms max.
- Release time:** 25 ms max.
- Ambient temperature:** -25 °C to 70 °C [-13 °F to 158 °F]
- Ambient humidity:** 45% RH to 85% RH
- Switching options:** DPDT, 4PDT



LY2 Series

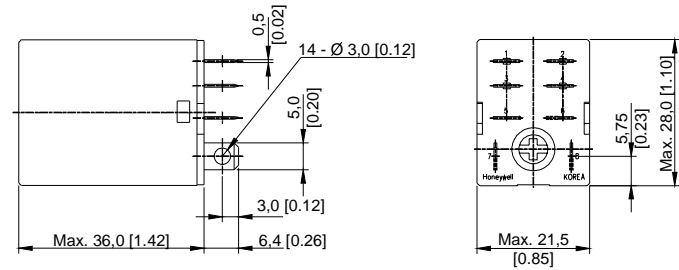
OPTIONS

Standard, PCB Terminal, DPDT



COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY2-1P-AC110-120V
24 Vdc	125 Vdc/2 amp	SZR-LY2-1P-DC24V

Solder/Plug-In Terminal, DPDT



Standard

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY2-1-AC110-120V
220 Vac	250 Vac/10 amp	SZR-LY2-1-AC220V
12 Vdc	125 Vdc/2 amp	SZR-LY2-1-DC12V
24 Vdc	125 Vdc/2 amp	SZR-LY2-1-DC24V

LED Indicator

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY2-N1-AC110-120V
220 Vac	250 Vac/10 amp	SZR-LY2-N1-AC220V
12 Vdc	125 Vdc/2 amp	SZR-LY2-N1-DC12V
24 Vdc	125 Vdc/2 amp	SZR-LY2-N1-DC24V

Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/2 amp	SZR-LY2-D1-DC24V

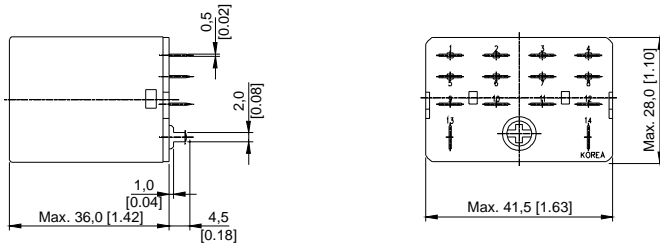
LED Indicator/Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/2 amp	SZR-LY2-X1-DC24V

LY4 Series

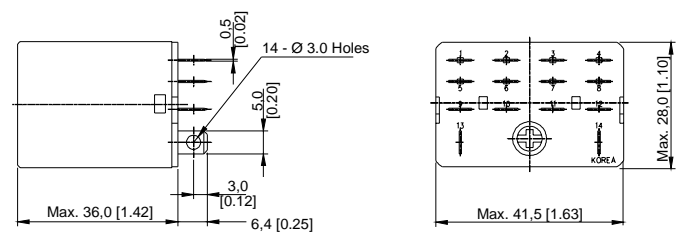
OPTIONS

Standard, PCB Terminal, 4PDT



COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY4-1P-AC110-120V
220/240 Vac	250 Vac/10 amp	SZR-LY4-1P-AC220V-240V
24 Vdc	125 Vdc/2 amp	SZR-LY4-1P-DC24V

Solder/Plug-In Terminal, 4PDT



Standard

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY4-1-AC110-120V
220 Vac	250 Vac/10 amp	SZR-LY4-1-AC220V
12 Vdc	125 Vdc/2 amp	SZR-LY4-1-DC12V
24 Vdc	125 Vdc/2 amp	SZR-LY4-1-DC24V

LED Indicator

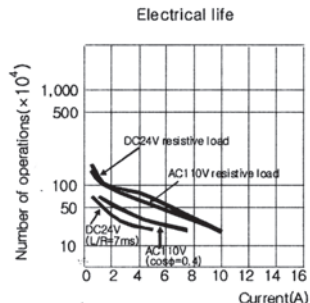
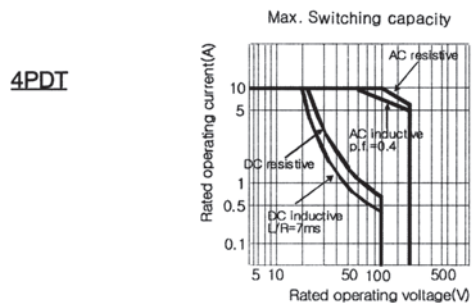
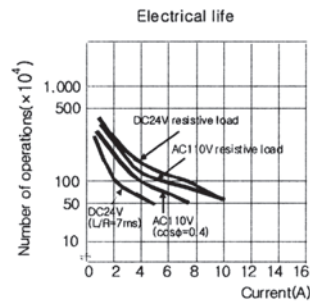
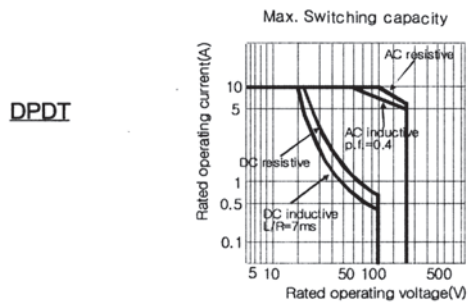
COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
110/120 Vac	250 Vac/10 amp	SZR-LY4-N1-AC110-120V
220 Vac	250 Vac/10 amp	SZR-LY4-N1-AC220V
12 Vdc	125 Vdc/2 amp	SZR-LY4-N1-DC12V
24 Vdc	125 Vdc/2 amp	SZR-LY4-N1-DC24V

Diode Protection

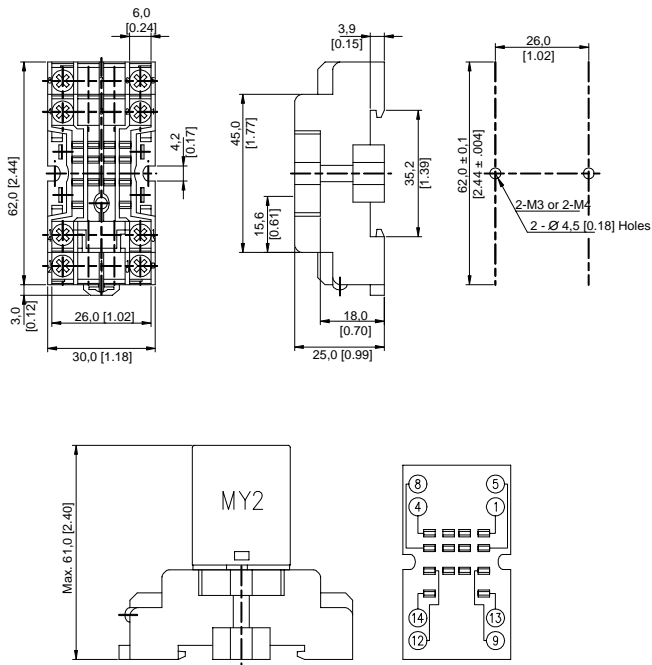
COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/2 amp	SZR-LY4-D1-DC24V

LED Indicator/Diode Protection

COIL INPUT VOLTAGE	MAX. CONTACT RATING	CAT. LISTING
24 Vdc	125 Vdc/2 amp	SZR-LY4-X1-DC24V

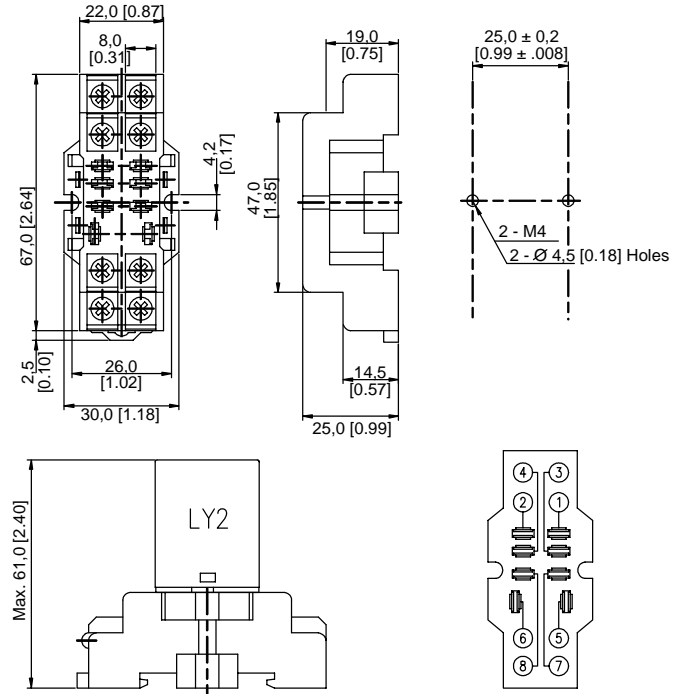


MY2 Series Socket



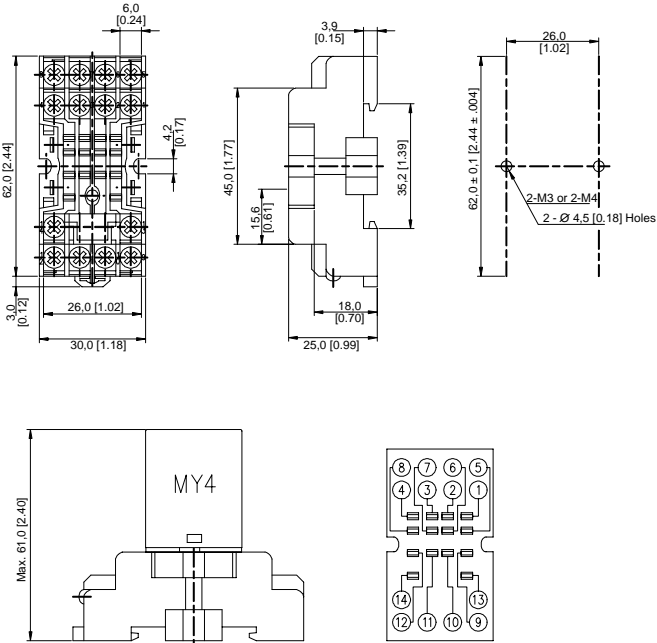
TYPE	POLES	CAT. LISTING
Rail socket	2	SZX-SMF-08N

LY2 Series Socket



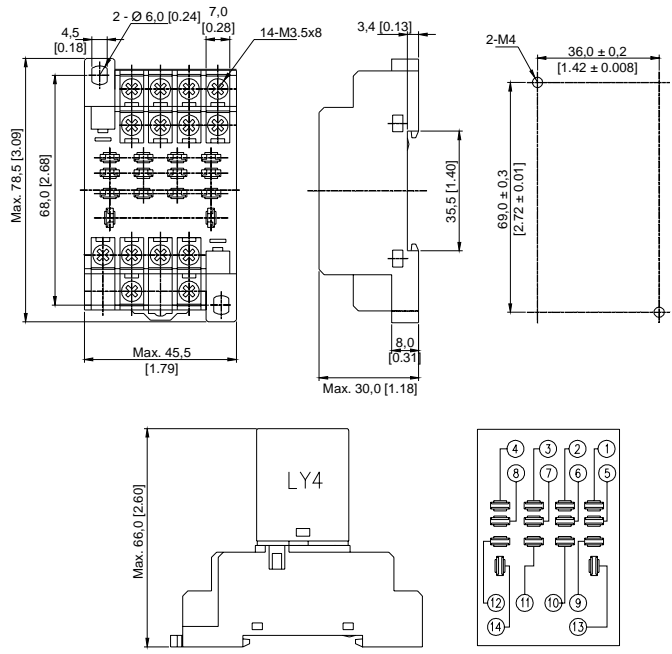
TYPE	POLES	CAT. LISTING
Rail socket	2	SZX-SLF-08N

MY4 Series Socket



TYPE	POLES	CAT. LISTING
Rail socket	4	SZX-SMF-14N

LY4 Series Socket



TYPE	POLES	CAT. LISTING
Rail socket	4	SZX-SLF-14

Electromechanical Safety Switches

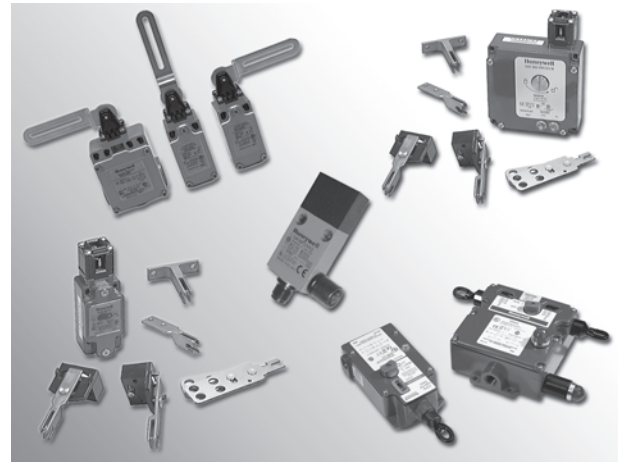
Honeywell is a worldwide leader in advanced switching and sensing technology - especially in the area of industrial safety. We offer both electromechanical safety switches and electronic safety sensors as well as safety control modules for safety applications in all categories of risk. Our diverse product line can help customers meet all of their machine safety needs.

Honeywell products meet or exceed European machine safety standards and have been approved (CE, INRS) for use in Europe for more than 25 years. As North America moves toward harmonizing with global standards, machine builders and users can confidently turn to Honeywell for compliant machine safety solutions. Our products are designed to meet all applicable OSHA and ANSI standards.

Refer to pages 6 and 7 for more information about degrees of protection and electrical ratings.

Protective Guarding

Protective guarding around a dangerous machine can be achieved with tamper-resistant safety switches. Safety switches incorporate positive opening operation such that even a welded contact will be mechanically broken and a stop signaled. These switches monitor the position of moveable guards and doors, which are used to safeguard access to equipment and provide protection from ejected pieces, chips, projectiles or oil. These safeguards require a relatively low investment and can provide reliable protection if they are regularly checked and maintained.



Cable Pull Switches

Cable-pull limit switches serve as a readily accessible means of emergency stop for applications. These cable-pull devices are visible, accessible and easy to use and are designed to immediately open the emergency stop circuit when activated.

⚠ WARNING **IMPROPER INSTALLATION**

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

Failure to comply with these instructions could result in death or serious injury.

Selection Guide for Electromechanical Safety Switches

Series	Housing Material		Approvals				Sealing		Dimensions Height x Width x Depth mm [in]	Actuator	Electrical Rating	Operating Temperature	
	Plastic	Metal	CE	UL	CSA	CCC	IEC IP	NEMA (USA)				From	To
												°C [°F]	
GKE	•		•	•	•	•	66	1, 12, 13	92,2 x 30,5 x 30,5 [3.63 x 1.20 x 1.20]	Straight or 90° key	AC15 A600, DC13 Q300	-25 [-13]	85 [185]
GKN	•		•	•	•		67	1, 12, 13 4 (indoor use only)	90,0 x 40,0 x 33,0 [3.55 x 1.57 x 1.30]	Straight or 90° key	AC15 A600, DC13 Q300	-25 [-13]	85 [185]
GKM	•		•	•	•		67	1, 12, 13	69,4 x 34,0 x 16,0 [2.73 x 1.34 x 0.63]	Straight or 90° key	AC15, DC13 A300	-25 [-13]	85 [185]
GSS	GSC	•	•	•	•		66	1, 4, 12, 13	83,0 x 30,5 x 30,0 [3.27 x 1.2 x 1.18]	Hinge Straight or 90°	AC15, DC13 A300	-25 [-13]	85 [185]
	GSD	•	•	•		66	1, 12, 13	AC15, DC13 A600					
	GSE	•	•	•	•		66	1, 4, 12, 13	83,0 x 65,0 x 30,0 [3.27 x 2.56 x 1.18]		AC15, DC13 A300		
GK		•	•	•	•		67	1, 4, 12, 13	121,6 x 42,0 x 42,6 [4.79 x 1.65 x 1.68]	Straight, 90°, Spring key	AC15, DC13 A600	-25 [-13]	85 [185]
GKLR		•	•	•	•		67	1, 4, 6P, 12, 13	149,0 x 110,0 x 48,8 [5.85 x 4.33 x 1.92]	Straight, 90°, Spring key	AC15, DC13 A600	-25 [-13]	85 [185]
1CPS		•	•	•	•		67	1, 4, 12, 13	99,1 x 276,2 x 65,2 [3.9 x 10.87 x 2.57]	Linear	AC15, DC13 A600	-40 [-40]	85 [185]
2CPS		•	•	•	•		67	1, 4, 12, 13	165,1 x 79,8 x 325,9 [6.5 x 3.14 x 12.75]	Left and/or Right	AC15, DC13 A600	-40 [-40]	85 [185]



Honeywell

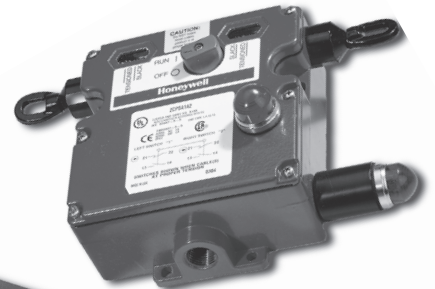
www.honeywell.com/sensing

	Switching Options													Termination	Special Features	Page Number	
	Snap Action				Slow Action								Gold Contacts (Low Energy Options)				
					Make Before Break		Break Before Make										
1NC/1NO	2NC/2NO	1NC/1NO	2NC/2NO	1NC	2NC	1NC/1NO	1NC/2NO	1NC/1NO	2NC/1NO	2NC/2NO	3NC/1NO	4NC					
			•			•			•						Conduit		93
						•	•	•	•	•					Conduit		96
						•			•					•	M12 or Cable	Daisy chain capability	82
			•			•			•	•	•	•	•	•	Conduit		85
			•			•			•					•		85	
			•			•			•	•	•	•	•	•		86	
			•	•		•			•	•	•	•	•	•	Conduit		87
			•	•		•			•	•	•	•	•	•	Conduit		89
									•		•	•	•	•	Conduit	Integral LED option	93
											•	•		Standard	Conduit	High intensity multi-cluster LED	95

GKL/GKR



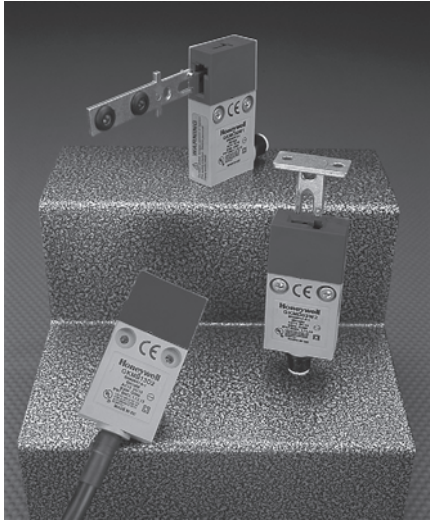
2CPS



1CPS



GKM Series Global Miniature Safety Key Operated Switch



Used alone as Category 1 safety components or, in conjunction with other safety switches and our complete range of safety relays, it is possible to construct comprehensive protection schemes with Category 2, 3 or 4 compliance.

The preleaded versions are designed to allow rapid fit, easy cable routing and function testing which cut costs dramatically in OEM applications. Simple upgrade guarding solution for End User applications.

Low energy basic switches are rated as follows:

Operating Voltage U_e 1 Vdc to 60 Vdc or 1 Vac to 125 Vac

Operating Current I_e 1 mA to 50 mA

Example of catalog listing using a low energy basic switch - GKMA19

Mechanical life:

> 1 million
IP66/67, EN 60529, NEMA 1, 12, 13

Sealing:

-25 °C to 85 °C [-13 °F to 185 °F]

Operating temperature:

Approvals:

CE, UL, CSA

AC15 B300

DC13 Q300

Silver

Low energy Gold plated

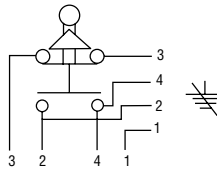
Slow action contacts

Contacts:

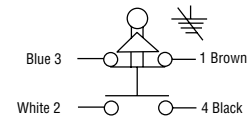
Switching options:

1 Normally Closed/1 Normally Open, Break Before Make
1NC/1NO, BBM - GKMF

1NC/1NO, BBM, low energy - GKMA, B, C, D

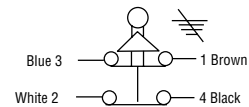
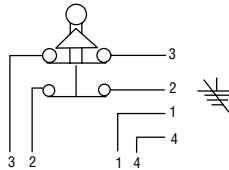


2NC - GKMF



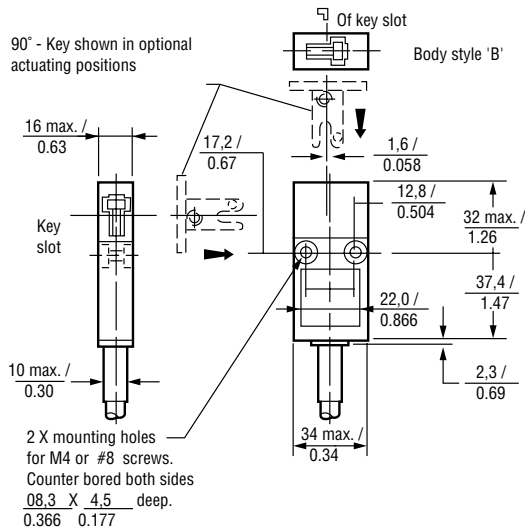
2 Normally Closed

2NC, low energy - GKMA, B, C, D



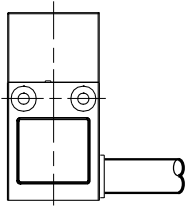
Electrical ratings:

		IEC 60947-5-1/EN 60947-5-1						VA rating	
Designation & Utilization Category		Rated operational current I_e (A) at rated operational voltage U_e						Make	Break
		120 V	240 V	380 V	480 V	500 V	600 V		
AC15	A600	6	3	1,9	1,5	1,4	1,2	7200	720
AC15	A300	6	3	-	-	-	-	7200	720
AC15	B300	3	1,5	-	-	-	-	3600	360
AC14	D300	0,6	0,3	-	-	-	-	432	72
		125 V 250 V							
DC13	Q300	0,55	0,27					69	69
DC13	R300	0,22	0,1					28	28



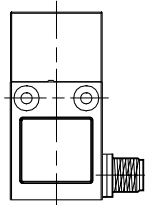
OPTIONS

Side exit cable



CABLE LENGTH	CONTACT	CAT. LISTING
1 m	2NC, low energy	GKMA17
1 m	1NC/1NO, BBM, low energy	GKMA19
2 m	1NC/1NO, BBM	GKMA23
2 m	2NC	GKMA26
2 m	2NC, low energy	GKMA27
2 m	1NC/1NO, BBM, low energy	GKMA29
3 m	1NC/1NO, BBM	GKMA33
3 m	2NC	GKMA36
3 m	2NC, low energy	GKMA37
3 m	1NC/1NO, BBM, low energy	GKMA39

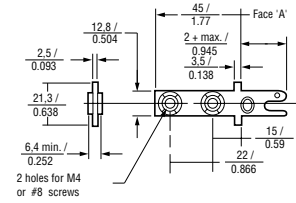
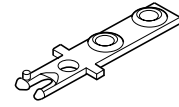
Side exit M12 dc micro-change connector



CONTACT	CAT. LISTING
1NC/1NO, BBM	GKMC03
2NC	GKMC06
2NC, low energy	GKMC07
1NC/1NO, BBM, low energy	GKMC09

KEY STYLE

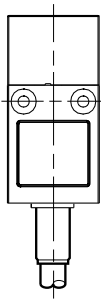
Straight key



Stainless steel

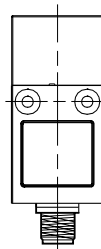
CAT. LISTING
GKZ51M

Bottom exit cable



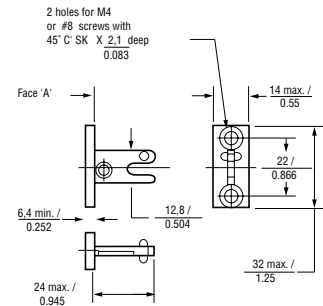
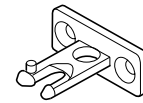
CABLE LENGTH	CONTACT	CAT. LISTING
1 m	1NC/1NO, BBM	GKMB13
1 m	2NC	GKMB16
1 m	2NC, low energy	GKMB17
1 m	1NC/1NO, BBM, low energy	GKMB19
2 m	1NC/1NO, BBM	GKMB23
2 m	2NC	GKMB26
2 m	2NC, low energy	GKMB27
2 m	1NC/1NO, BBM, low energy	GKMB29
3 m	1NC/1NO, BBM	GKMB33
3 m	2NC	GKMB36
3 m	2NC, low energy	GKMB37
3 m	1NC/1NO, BBM, low energy	GKMB39

Bottom exit M12 dc micro-change connector



CONTACT	CAT. LISTING
1NC/1NO, BBM	GKMD03
2NC, low energy	GKMD07
1NC/1NO, BBM, low energy	GKMD09

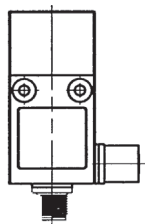
90° key



Stainless steel

CAT. LISTING
GKZ52M

Dual exit M12 dc micro-change connector



CONTACT	CAT. LISTING
1NC/1NO, BBM	GKMF03
2NC	GKMF06
2NC, low energy	GKMF07
1NC/1NO, BBM, low energy	GKMF09

GSS Series Hinge Mount Safety Limit Switch



The Hinge Mount Safety Limit Switch is designed for use on machine access doors as an alternative solution to key operated interlocks and safety limit switches. When the access door is opened, a follower pin (not supplied) slides down the slot in the actuator lever, forcing the actuator lever to rotate and positively open the NC safety circuit to shut off the machine. Closing the access door rotates the actuator lever to the reset position, closing the NC safety contacts.

The Hinge Mount Safety Limit Switch minimizes alignment problems because it may be offset-mounted from the hinge point of the door. The tamper-resistant design and the positive opening contacts provide an enhanced level of safety over the conventional spring-driven limit switches often used to monitor door position.

Low Energy Switching

In today's demanding age of low energy controls, electromechanical switches are frequently used to interface directly with safety relays, PLCs and other low energy devices. To accommodate this requirement GSS offers a new gold plated contact version of the standard basic switch. This improves reliability of switching at low currents and voltages by protecting the contact surfaces from contamination during operation or storage prior to use.

Standard silver contacts have a disadvantage in that the contact surface may tarnish under certain environmental conditions, e.g. in the presence of moisture.

Low energy basic switches are rated as follows:

Operating Voltage U_e 1 Vdc to 60 Vdc or 1 Vac to 125 Vac

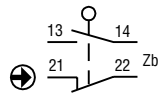
Operating Current I_e 1 mA to 50 mA

Example of catalog listing using a low energy basic switch - GSCB33S2.

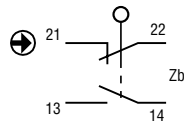
Switching options:

GSC/D

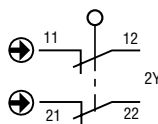
Snap action contacts (1NC/1NO)



Slow action contacts (1NC/1NO) BBM

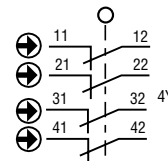


Slow action contacts (2NC)

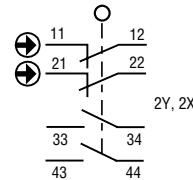


GSE

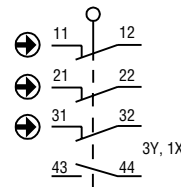
Slow action contacts (4NC)



Slow action contacts (2NC/2NO) BBM



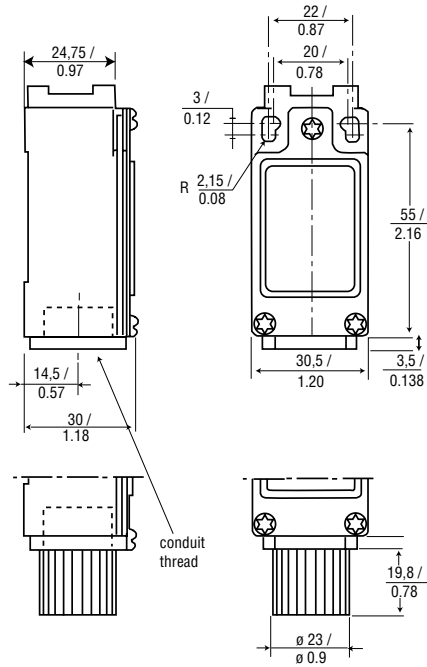
Slow action contacts (3NC/1NO) BBM



Electrical ratings:

Designation & Utilization Category		IEC 60947-5-1/EN 60947-5-1						VA rating	
		Rated operational current I_e (A) at rated operational voltage U_e						Make	Break
		120 V	240 V	380 V	480 V	500 V	600 V		
AC15	A600	6	3	1,9	1,5	1,4	1,2	7200	720
AC15	A300	6	3	-	-	-	-	7200	720
AC15	B300	3	1,5	-	-	-	-	3600	360
AC14	D300	0,6	0,3	-	-	-	-	432	72
		125 V	250 V						
DC13	Q300	0,55	0,27					69	69
DC13	R300	0,22	0,1					28	28

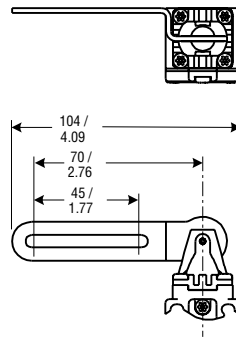
**GSC Metal body
GSD Plastic body
EN 50047
Safety Standard**



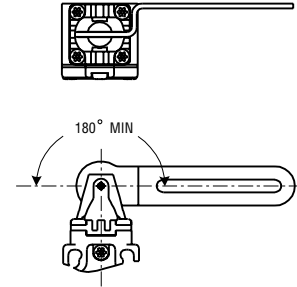
Mechanical life: up to 1 million
Sealing: IP 66
 (GSC) NEMA 1, 4, 12, 13
 (GSD) NEMA 1, 12, 13
Operating temperature: -25 °C to 85 °C
 [-13 °F to 185 °F]
Approvals: IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA

ACTUATED SWITCHES

*Rotated 90° to the left
from center*



*Rotated 90° to the right
from center*



GSC - Metal body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO	½ in NPT	GSCA01S1
1NC/1NO, BBM	½ in NPT	GSCA03S1
2NC	½ in NPT	GSCA06S1
2NC, low energy	20 mm	GSCC36S1

GSD - Plastic body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO, BBM	½ in NPT	GSDA03S1
2NC	½ in NPT	GSDA06S1
1NC/1NO, BBM	PG 13,5	GSDB03S1
2NC	PG 13,5	GSDB06S1
1NC/1NO	20 mm	GSDC01S1

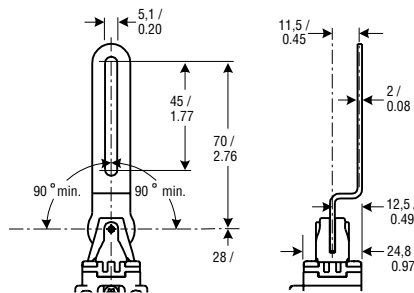
GSC - Metal body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO	½ in NPT	GSCA01S3
1NC/1NO, BBM	½ in NPT	GSCA03S3
2NC	½ in NPT	GSCA06S3
2NC, low energy	PG 13,5	GSCB36S3

GSD - Plastic body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO, BBM	½ in NPT	GSDA03S3
2NC	½ in NPT	GSDA06S3
1NC/1NO, BBM	PG 13,5	GSDB03S3
2NC	PG 13,5	GSDB06S3
1NC/1NO	20 mm	GSDC01S3

*Rotated 90° either direction from
center*



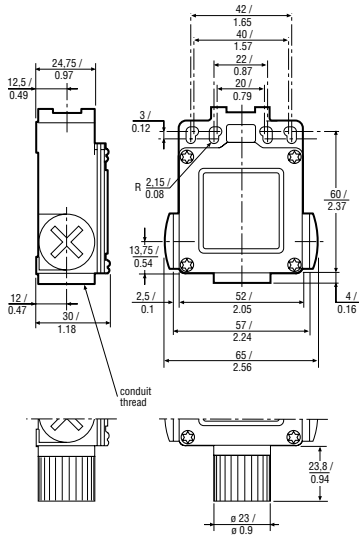
GSC - Metal body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO	½ in NPT	GSCA01S2
1NC/1NO, BBM	½ in NPT	GSCA03S2
2NC	½ in NPT	GSCA06S2
2NC, low energy	PG 13,5	GSCB36S2

GSD - Plastic body

CONTACT	CONDUIT	CAT. LISTING
1NC/1NO, BBM	½ in NPT	GSDA03S2
2NC	½ in NPT	GSDA06S2
1NC/1NO, BBM	PG 13,5	GSDB03S2
2NC	PG 13,5	GSDB06S2
1NC/1NO	20 mm	GSDC01S2

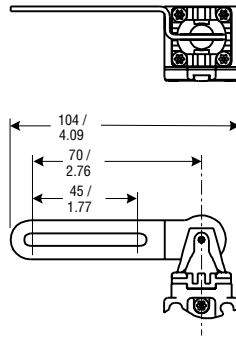
**GSE EN 50047
Compatible
Safety 3 Conduit Metal
Standard**



Mechanical life: up to 1 million
Sealing: IP 66, NEMA/UL 1, 4, 12, 13
Operating temperature: -25 °C to 85 °C
 [-13 °F to 185 °F]
Approvals: IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA

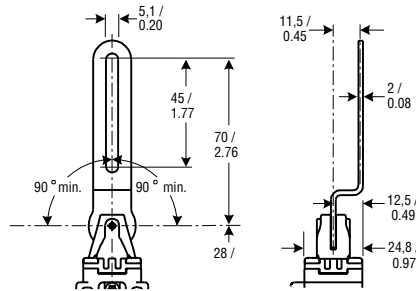
ACTUATED SWITCHES

*Rotated 90° to the left
from center*



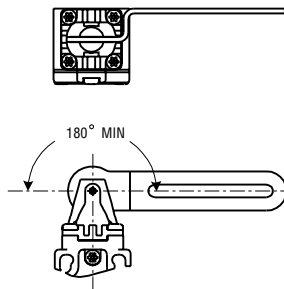
CONTACT	CONDUIT	CAT. LISTING
2NC/2NO, BBM	½ in NPT	GSEA44S1
3NC/1NO, BBM	½ in NPT	GSEA46S1
4NC, low energy	20 mm	GSEC41S1

*Rotated 90° either direction from
center*



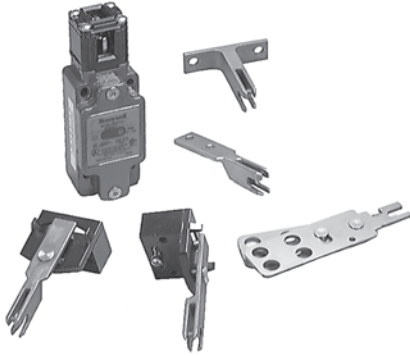
CONTACT	CONDUIT	CAT. LISTING
2NC/2NO, BBM	½ in NPT	GSEA44S2

*Rotated 90° to the right
from center*



CONTACT	CONDUIT	CAT. LISTING
2NC/2NO, BBM	½ in NPT	GSEA44S3

GK Series Dual Entry Key Operated Safety Interlock Switch



The GK Series is designed specifically for use on machines where key removal brings the machine to an immediate safe condition. It provides enhanced operator safety when added to hinged or sliding guard doors, screens and protective covers on enclosures. The GK Series is especially well suited for large door applications, typically in the automotive plant floor environment. Its heavy duty construction withstands harsh industrial environments where rugged, long-term durability is required.

Nearly 1000 options are available in a simple to understand part number tree.

A safety lockout device is also available for use with the GK Series. The lockout device (GKZL2) is specifically designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device can accommodate up to four padlocks to prevent unauthorised removal of the device.

Mechanical life:

Sealing:

Operating temperature:

Approvals:

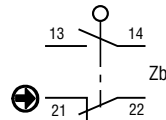
up to 15 million
IP 67, NEMA/UL type 1, 4, 12,13
-25 °C to 85 °C [-13 °F to 185 °F]
CE, CSA, UL
AC15 A300/A600
DC13 Q300
Silver

Contacts:

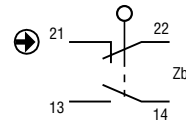
Gold

Switching options:

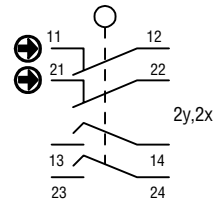
Snap action contacts (1NC/1NO)



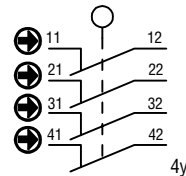
Slow action contacts (1NC/1NO), BBM



Slow action contacts (2NC/2NO), BBM

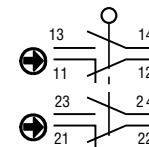


Slow action contacts (4NC)

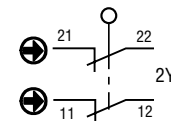


Low energy

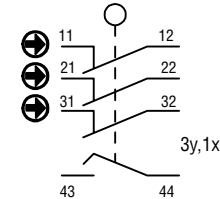
Snap action contacts (2NC/2NO)



Slow action contacts (2NC)

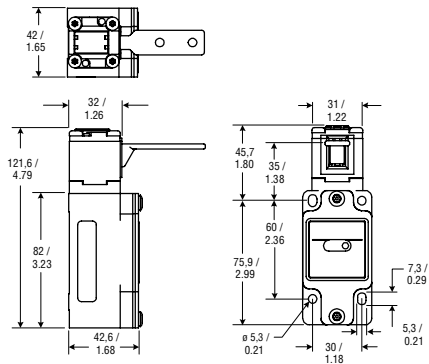


Slow action contacts (3NC/1NO)



IEC 60947-5-1/EN 60947-5-1								
Designation & Utilization Category	Rated operational current Ie (A) at rated operational voltage Ue						VA rating	
	120 V	240 V	380 V	480 V	500 V	600 V	Make	Break
AC15 A600	6	3	1,9	1,5	1,4	1,2	7200	720
AC15 A300	6	3	-	-	-	-	7200	720
AC15 B300	3	1,5	-	-	-	-	3600	360
AC14 D300	0,6	0,3	-	-	-	-	432	72
	125 V	250 V						
DC13 Q300	0,55	0,27					69	69
DC13 R300	0,22	0,1					28	28

GK Series (continued)

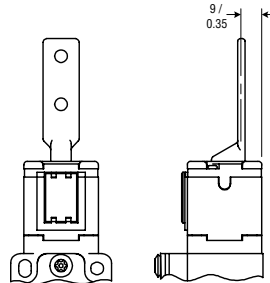


Electrical ratings:

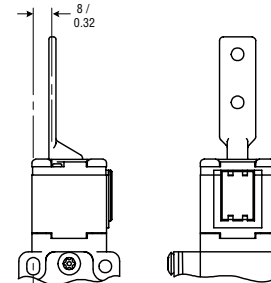
Head orientation

OPTIONS

Opening to front and top



Opening to right and top



Standard

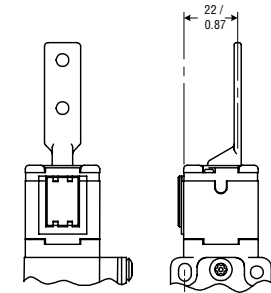
CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	1NC/1NO	90°	GKBA1L7
1/2 NPT	1NC/1NO	Up-down	GKBA1L8-F11*
1/2 NPT	1NC/1NO	None	GKBA1LX
1/2 NPT	4NC	90°	GKBA10L7
1/2 NPT	2NC/2NO, BBM	Straight	GKBA14L6
1/2 NPT	2NC/2NO, BBM	90°	GKBA14L7
1/2 NPT	3NC/1NO, BBM	Straight	GKBA16L6
1/2 NPT	3NC/1NO, BBM	90°	GKBA16L7
1/2 NPT	2NC/NO	Straight	GKBA2L6
1/2 NPT	4NC, low energy	None	GKBA30LX
1/2 NPT	3NC/1NO, BBM, low energy	None	GKBA36LX
1/2 NPT	1NC/1NO, BBM	Straight	GKBA3L6
1/2 NPT	1NC/1NO, BBM	90°	GKBA3L7
1/2 NPT	2NC	None	GKBA6LX
PG 13.5	2NC/2NO, BBM	Straight	GKBB14L6
PG 13.5	1NC/1NO, BBM	90°	GKBB3L7
PG 13.5	2NC	90°	GKBB6L7
20 mm	2NC/2NO, BBM	90°	GKBC14L7
20 mm	1NC/1NO	Straight	GKBC1L6
20 mm	1NC/1NO	90°	GKBC1L7
20 mm	1NC/1NO	None	GKBC1LX
20 mm	2NC/NO	None	GKBC2LX
20 mm	4NC, low energy	None	GKBC30LX
20 mm	3NC/1NO, BBM, low energy	None	GKBC36LX
20 mm	2NC	None	GKBC6LX

* fluorocarbon seal

Single LED indicator

CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	2NC/2NO, BBM	Straight	GKCA14M6

Opening to left and top



Single LED indicator

CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	1NC/1NO	Straight	GKCA1L6
1/2 NPT	1NC/1NO	90°	GKCA1L7
1/2 NPT	1NC/1NO	None	GKCA1LX
1/2 NPT	2NC	None	GKCA6LX
1/2 NPT	4NC	Straight	GKCA10L6
1/2 NPT	2NC/2NO, BBM	Straight	GKCA14L6
1/2 NPT	2NC/2NO, BBM	90°	GKCA14L7
1/2 NPT	2NC/2NO, BBM	Side-side	GKCA14L9
1/2 NPT	4NC, low energy	None	GKCA30LX
1/2 NPT	3NC/1NO, BBM, low energy	None	GKCA36LX
20 mm	1NC/1NO	None	GKCC1LX
20 mm	2NC	None	GKCC6LX
20 mm	4NC, low energy	None	GKCC30LX
20 mm	3NC/1NO, BBM, low energy	None	GKCC36LX

Single LED indicator

CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	2NC/2NO, BBM	Straight	GKCA14P6
1/2 NPT	1NC/1NO	90°	GKCA1P7

Double LED indicator

CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	2NC/2NO, BBM	90°	GKDA14P7

Double LED indicator

CONDUIT	CONTACT	KEY	CAT. LISTING
1/2 NPT	2NC/2NO, BBM	90°	GKDA14L7

GKL/GKR Series Dual Entry Solenoid Key Operated Safety Interlock Switch



The GKR (head to the right) and GKL (head to the left) products offer the user an unrivalled range of standard options.

The GKR/GKL product is a key actuated device incorporating a key trapping mechanism. The switch is used on machinery where instant stop and access to the machinery is either impossible (due to the momentum of the machine) or impractical (due to tool or machine damage or scrapped product if the current machine cycle is interrupted).

The switch incorporates an optional manual override feature which allows removal of the key for emergency access.

Over 1000 options are available in a simple to understand part number tree.

A safety lockout device is also available for use with the GKR/GKL Series. The lockout device (GKZL2) is specifically designed to prevent a key from being inserted either manually, or by the access door being closed while maintenance personnel are working on the machine. When inserted, the lockout device can accommodate up to four padlocks to prevent unauthorised removal of the device.

Mechanical life:

Sealing:

Operating temperature:

Approvals:

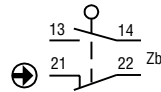
up to 1 million
IP 68, NEMA/UL type 1, 4, 6P, 12,13
-25 °C to 40 °C [-13 °F to 104 °F]
CE, GSA, UL
AC15 A300/A600
DC13 Q300
Silver
Gold-plated

Contacts:

Switching options:

Snap Action

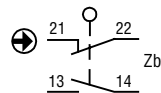
Type 11NC/1NO Direct Opening



Slow Acting

Type 3

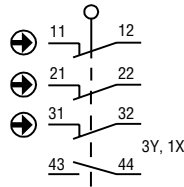
1NC/1NO, Break before make (BBM)



2 Slow Acting

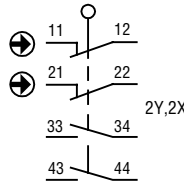
Type 36

3NC/1NO, Break before make (BBM), low energy



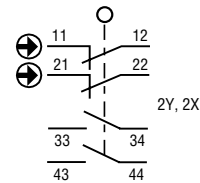
Type 44

2NC/2NO, Break before make (BBM)



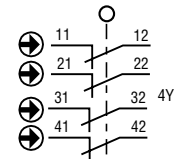
Type 14/15

2NC/2NO, Break before make (BBM)



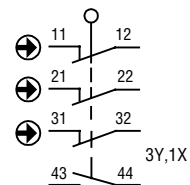
Type 40

4NC



Type 46

3NC/1NO, Break before make (BBM)



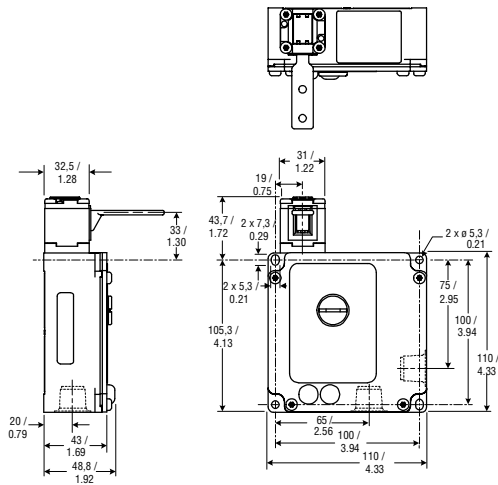
Honeywell

www.honeywell.com/sensing

GKL/GKR Series (continued)

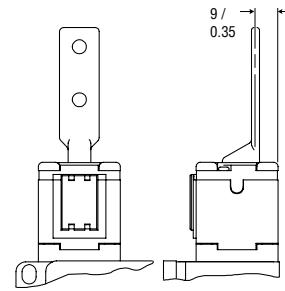
- Key:** Type 6 Straight
 Type 9 Side - side, spring loaded
 Type X No key
- Latching mechanism:** Type A Mechanical (solenoid unlock with screwdriver)
 Type B Mechanical (without override)
 Type S Electrical (solenoid unlock with screwdriver)
- Solenoid voltage:** Type 2 24 Vdc
 Type 4 120 Vac
- Electrical ratings:**

IEC 60947-5-1/EN 60947-5-1									
Designation & Utilization Category		Rated operational current Ie (A) at rated operational voltage Ue						VA rating	
		120 V	240 V	380 V	480 V	500 V	600 V	Make	Break
AC15	A600	6	3	1,9	1,5	1,4	1,2	7200	720
AC15	A300	6	3	-	-	-	-	7200	720
AC15	B300	3	1,5	-	-	-	-	3600	360
AC14	D300	0,6	0,3	-	-	-	-	432	72
		125 V 250 V							
DC13	Q300	0,55	0,27					69	69
DC13	R300	0,22	0,1					28	28



OPTIONS

Opening to front and top



Left

1/2 in - NPT buna-n seals

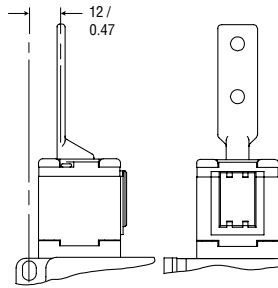
CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
3 (1NC/1NO, BBM)	None	A	24 Vdc	GKLE3LXA2
40 (4NC)	None	A	24 Vdc	GKLE40LXA2
46 (3NC, BBM)	None	A	24 Vdc	GKLE46LXA2

Right

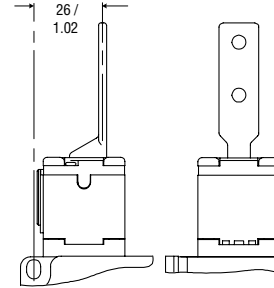
1/2 in - NPT buna-n seals

CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
40 (4NC)	None	A	24 Vdc	GKRE40LXA2
46 (3NC, BBM)	None	A	24 Vdc	GKRE46LXA2

Opening to right and top



Opening to left and top



Right

1/2 in - NPT buna-n seals

CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
3 (1NC/1NO, BBM)	None	A	24 Vdc	GKRE3MXA2
3 (1NC/1NO, BBM)	None	A	120 Vac	GKRE3MXA4
3 (1NC/1NO, BBM)	None	S	24 Vdc	GKRE3MXS2
3 (1NC/1NO, BBM)	None	S	120 Vac	GKRE3MXS4
36 (3NC/1NO, BBM, low energy)	None	A	24 Vdc	GKRE36MXA2
36 (3NC/1NO, BBM, low energy)	None	A	120 Vac	GKRE36MXA4
36 (3NC/1NO, BBM, low energy)	None	S	24 Vdc	GKRE36MXS2

Left

1/2 in - NPT buna-n seals

CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
3 (1NC/1NO, BBM)	None	A	24 Vdc	GKLE3PXA2
3 (1NC/1NO, BBM)	None	A	120 Vac	GKLE3PXA4
3 (1NC/1NO, BBM)	None	S	24 Vdc	GKLE3PXS2
3 (1NC/1NO, BBM)	None	S	120 Vac	GKLE3PXS4
36 (3NC/1NO, BBM, low energy)	None	A	24 Vdc	GKLE36PXA2
36 (3NC/1NO, BBM, low energy)	None	A	120 Vac	GKLE36PXA4
36 (3NC/1NO, BBM, low energy)	None	S	24 Vdc	GKLE36PXS2
36 (3NC/1NO, BBM, low energy)	None	S	120 Vac	GKLE36PXS4

20 mm - buna-n seals

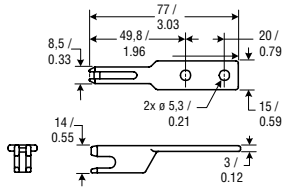
CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
1 (1NC/1NO)	None	A	24 Vdc	GKRG1MXA2
1 (1NC/1NO)	None	A	120 Vac	GKRG1MXA4
1 (1NC/1NO)	None	S	24 Vdc	GKRG1MXS2
1 (1NC/1NO)	None	S	120 Vac	GKRG1MXS4
3 (1NC/1NO, BBM)	None	A	24 Vdc	GKRG3MXA2
36 (3NC/1NO, BBM, low energy)	None	A	24 Vdc	GKRG36MXA2
36 (3NC/1NO, BBM, low energy)	None	A	120 Vac	GKRG36MXA4
36 (3NC/1NO, BBM, low energy)	None	S	24 Vdc	GKRG36MXS2
36 (3NC/1NO, BBM, low energy)	None	S	120 Vac	GKRG36MXS4

20 mm - buna-n seals

CONTACT TYPE	KEY	LATCHING TYPE	SOLENOID VOLTAGE	CAT. LISTING
1 (1NC/1NO)	None	A	24 Vdc	GKLG1PXA2
1 (1NC/1NO)	None	A	120 Vac	GKLG1PXA4
1 (1NC/1NO)	None	S	24 Vdc	GKLG1PXS2
1 (1NC/1NO)	None	S	120 Vac	GKLG1PXS4
3 (1NC/1NO, BBM)	None	S	24 Vdc	GKLG3PXS2
36 (3NC/1NO, BBM, low energy)	None	A	24 Vdc	GKLG36PXA2
36 (3NC/1NO, BBM, low energy)	None	A	120 Vac	GKLG36PXA4
36 (3NC/1NO, BBM, low energy)	None	S	24 Vdc	GKLG36PXS2
36 (3NC/1NO, BBM, low energy)	None	S	120 Vac	GKLG36PXS4
44 (2NC/2NO, BBM)	None	B	24 Vdc	GKLG44PXB2

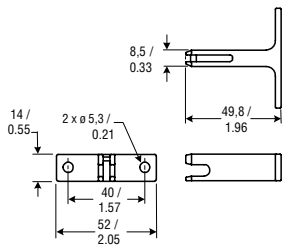
Keys for GK and GKL/GKR switches

Straight key



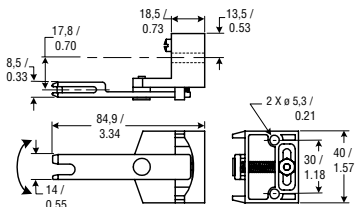
CAT. LISTING
GKZ56

90° key



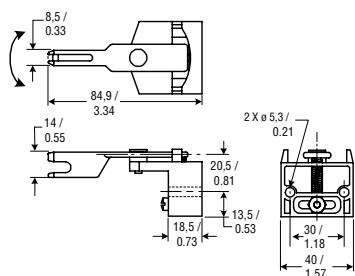
CAT. LISTING
GKZ57

Spring-loaded key: up/down



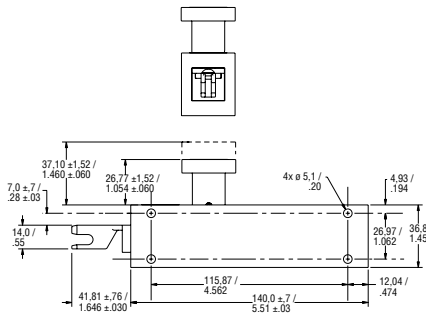
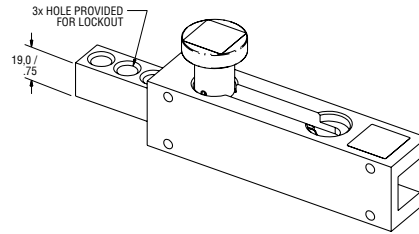
CAT. LISTING
GKZ58

Spring-loaded key: left/right



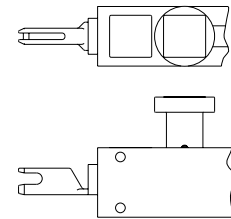
CAT. LISTING
GKZ59

Locking slider bolt with actuating key



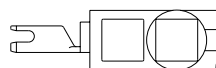
CAT. LISTING
GKZ71

0° key rotation



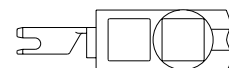
CAT. LISTING
GKZ73

180° key rotation



CAT. LISTING
GKZ72

90° key rotation



CAT. LISTING
GKZ74

270° key rotation

GKE Series Dual Entry Safety Interlock Switch



The GKE Series safety key-operated switch provides enhanced reliability for safety hard-guarding applications in a compact, cost-effective package.

Mechanical life:

Sealing:

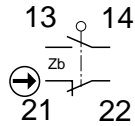
Operating temperature:

Approvals:

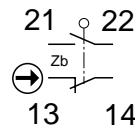
1 million
IP 66, NEMA 1, 12, 13
-25 °C to 85 °C [-13 °F to 185 °F]
cULus, CE
AC15 A500/A600
DC13 Q300

Switching options:

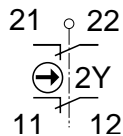
Switch Code 01: 1NC/1NO



Switch Code 03: 1NC/1NO (BBM)



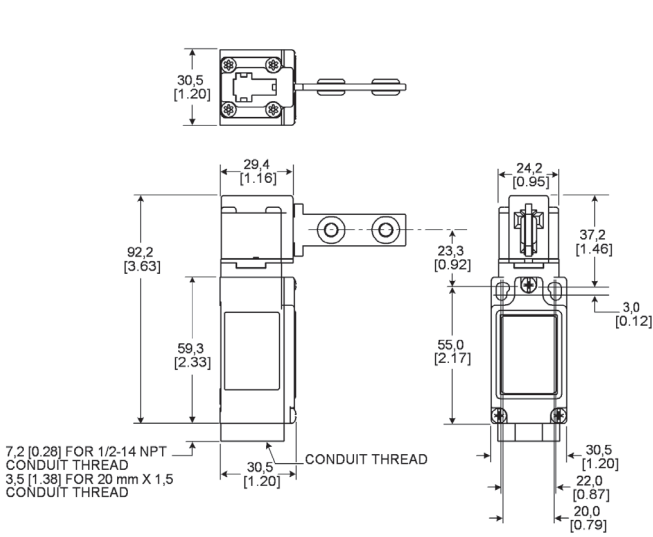
Switch Code 06: 2NC



IEC 60947-5-1/EN 60947-5-1								
Designation & Utilization Category		Rated operational current I _e (A) at rated operational voltage U _e						
		24V	120 V	240 V	380 V	480 V	500 V	600 V
AC15	A500	–	6	3	1,9	1,5	1,4	–
AC15	A600	–	6	3	1,9	1,5	1,4	1,2
DC13	Q300	2,8	0,55	0,27	–	–	–	–

OPTIONS

Dual Entry, Key Operated



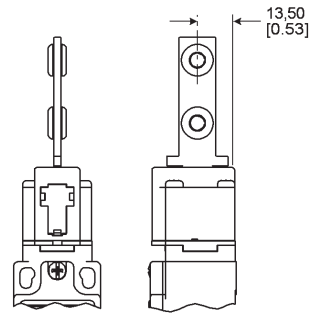
1/2 in NPT conduit

CONTACT TYPE	SWITCH CODE	CAT. LISTING
1NC/1NO	01	GKEA1LX
1NC/1NO BBM	01	GKEC1LX
2NC	03	GKEA3LX

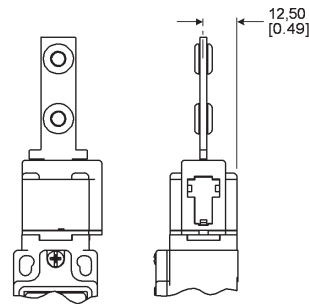
M20 x 1,5 conduit

CONTACT TYPE	SWITCH CODE	CAT. LISTING
1NC/1NO	03	GKEC3LX
1NC/1NO BBM	06	GKEA6LX
2NC	06	GKEC6LX

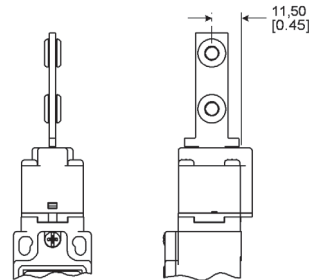
Head Code L



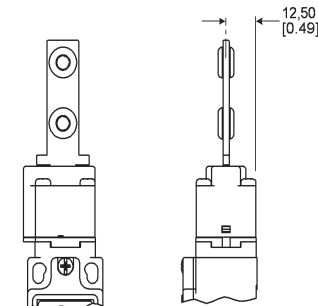
Head Code M



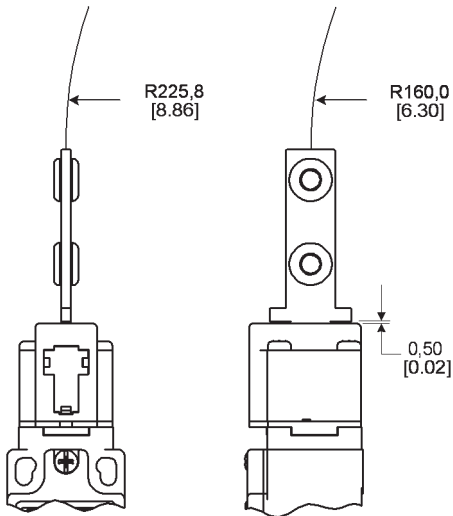
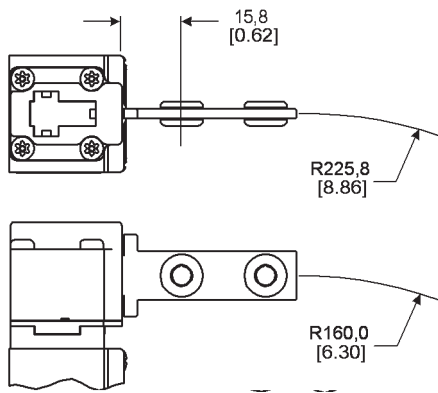
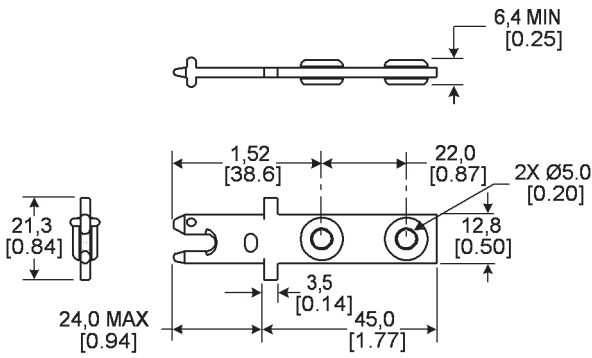
Head Code N



Head Code P



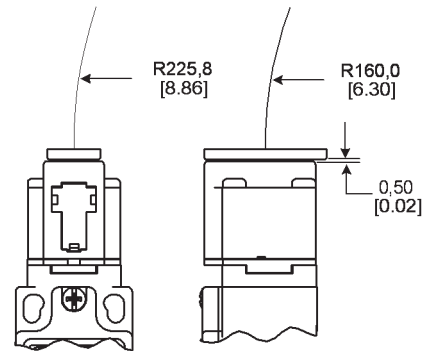
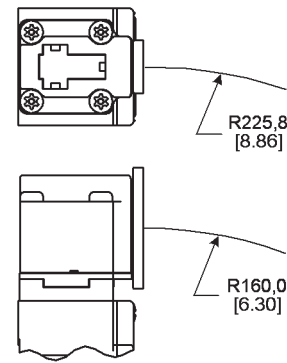
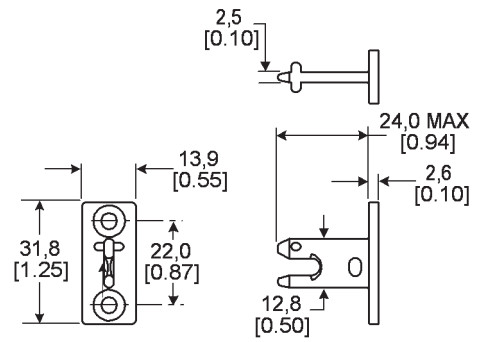
GKZ51M Key and Mounting



Straight key

CAT. LISTING
GKZ51M

GKZ52M Key and Mounting



90 degree key

CAT. LISTING
GKZ52M

GKN Safety Key Operated Switch



The GKN Series safety interlock switches provide enhanced reliability in a compact, cost-effective package size. A black plastic snap fit cover is provided to plug the unused key entry window. Straight and 90 degree actuator keys are available separately. The GKN Series conforms to IEC 60947-5-1 and carries cULus and CE approvals.

Mechanical life:

1 million

Sealing:

IP 67, NEMA 1, 12,13, 4 (indoor use only)

Operating temperature:

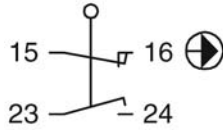
-25 °C to 85 °C [-13 °F to 185 °F]

Approvals:

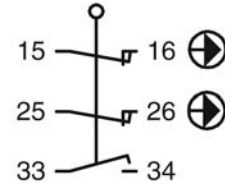
cULus, CE

Switching options:

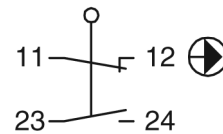
1NC/1NO MBB



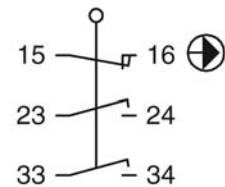
2NC/1NO MBB



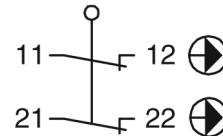
1NC/1NO BBM



1NC/2NO MBB



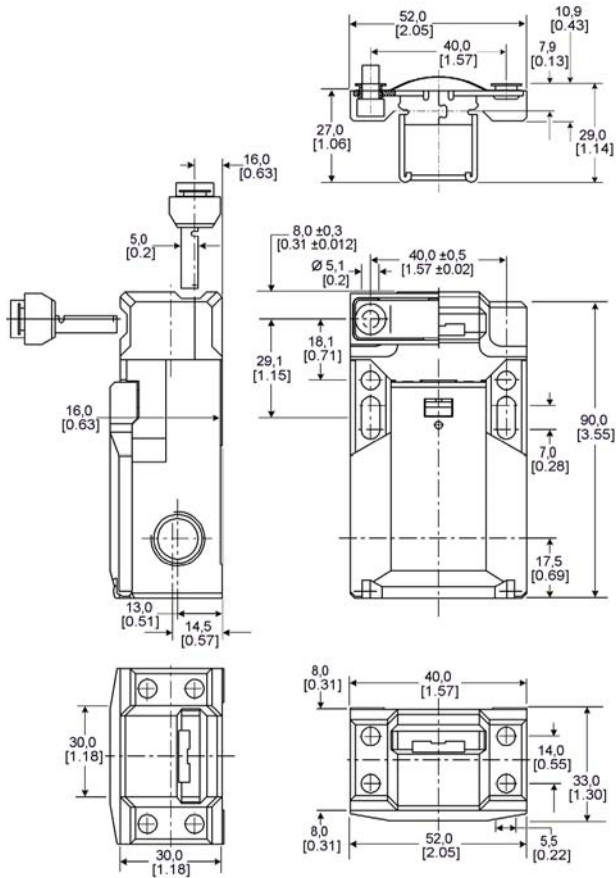
2NC



Designation & Utilization Category		IEC 60947-5-1/EN 60947-5-1			
		Rated operational current Ie (A) at rated operational voltage Ue			
		120 V	125V	240 V	600 V
AC15	A600	6	-	3	1,2
DC13	Q300	-	0,55	0,27	-

OPTIONS

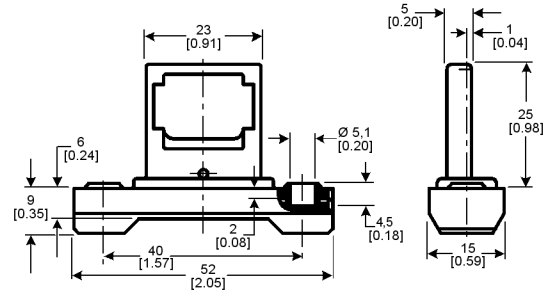
Dual Entry, Key Operated



M20 x 1,5 conduit

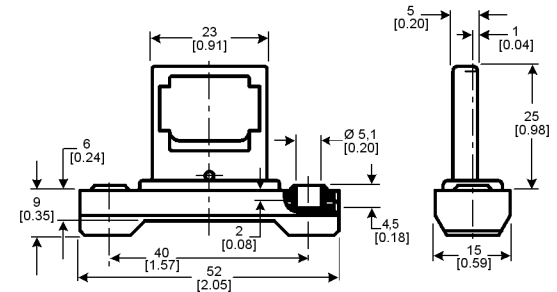
CONTACT TYPE	CONDUIT OPENINGS	CAT. LISTING
1NC/1NO BBM	3	GKNC3L
1NC/1NO MBB	3	GKNC4L
2NC/1NO MBB	2	GKNC12I
1NC/2NO MBB	2	GKNC33L
2NC	3	GKNC6L

GKZB1



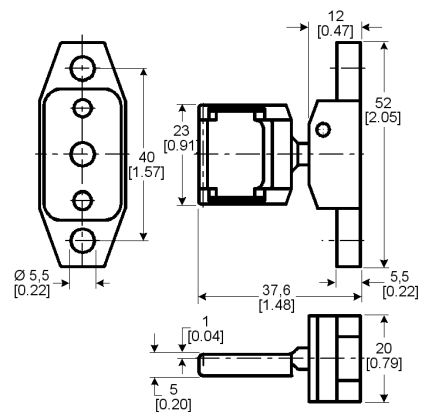
Straight stainless steel key
CAT. LISTING
GKZB1

GKZB2



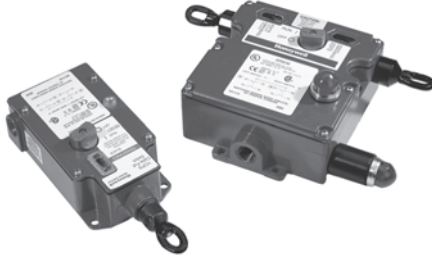
Straight thermoplastic key
CAT. LISTING
GKZB2

GKZB6



Flexible key
CAT. LISTING
GKZB6

CPS Series Cable Pull Safety Switch



CPS Series Cable Pull Safety Switches provide a readily accessible emergency stop signal. This is a cost-effective means compared to using multiple emergency stop push-buttons. (Cable Pull Safety Switches are not, however, to be used as a means of personnel safeguarding. They may be used to prevent further injury or damage to equipment when used for emergency stop signaling.)

The CPS Series Cable Pull Safety switch is designed to provide emergency stop protection for exposed conveyor and assembly lines. The internal mechanism latches on both slackened cable (push) and pulled cable. This capability also enhances productivity by eliminating nuisance stops due to variations in temperature, stretch of cable over time, and other application variables.

The 1CPS is intended for use in applications where the cable span is 76 m [250 ft] or shorter. It is a potential economical solution for shorter runs or zone protection typical to automated systems. The 2CPS series is intended for use in very long cable runs of 152 m [500 ft] or shorter, such as long conveyor lines found in warehouses.

The CPS complies with: Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC; Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function; IEC/EN 60947-1; IEC/EN 60947-5-1; IEC/EN 60947-5-5.

Mechanical life:

1 000 000

Sealing:

IP67, NEMA 1, 4, 12,13

Operating temperature:

1CPS

-40 °C to 80 °C [-40 °F to 176 °F]

2CPS

-40 °C to 80 °C [-40 °F to 176 °F]

Approvals:

AC15 A300

DC13 Q300

1CPS

UL, CSA

2CPS

UL, CSA

Contacts:

1CPS

Silver

1CPS, Low energy

Gold plated

2CPS

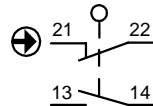
Gold plate over silver

Switching options:

1CPS

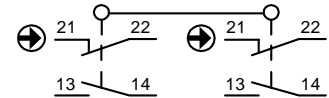
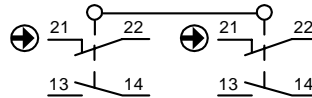
2CPS

1NC/1NO

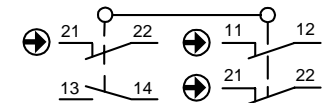
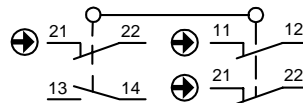


N/A

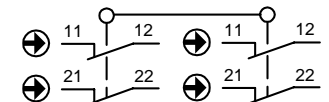
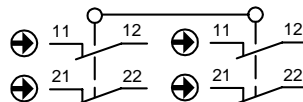
2NC/2NO



3NC/1NO



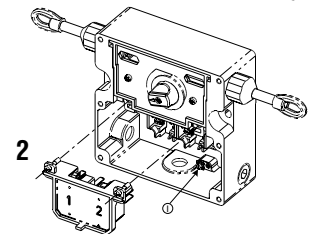
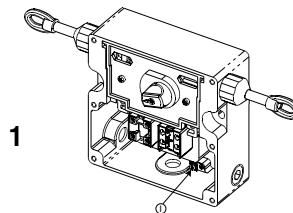
4NC



2CPS contact block mounting:

- 1
- 2

To housing
Removable with heavy duty
terminals



1CPS indicator Light Code:

- No letter
- A
- B

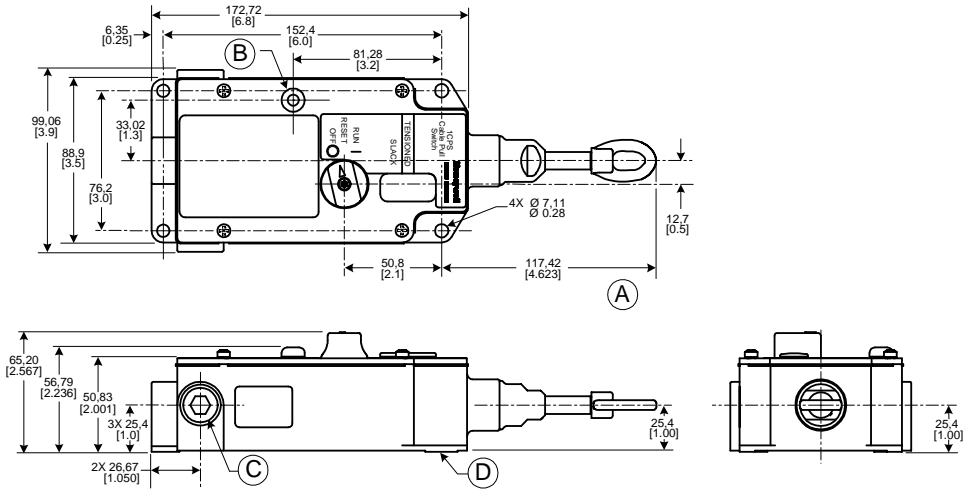
- No indicator provided
- 24 Vdc red LED
- 120 Vac red LED

2CPS indicator Light Code:

- No letter
- A
- B

- No indicator provided
- 24 Vdc red multi-cluster LED
- 120 Vac red multi-cluster LED

CPS Series (continued)
1CPS



- A Fully extended
- B Optional indicator
- C Conduit thread (3 total)
- D Mounting pad (4 total)

OPTIONS

Cable maintained

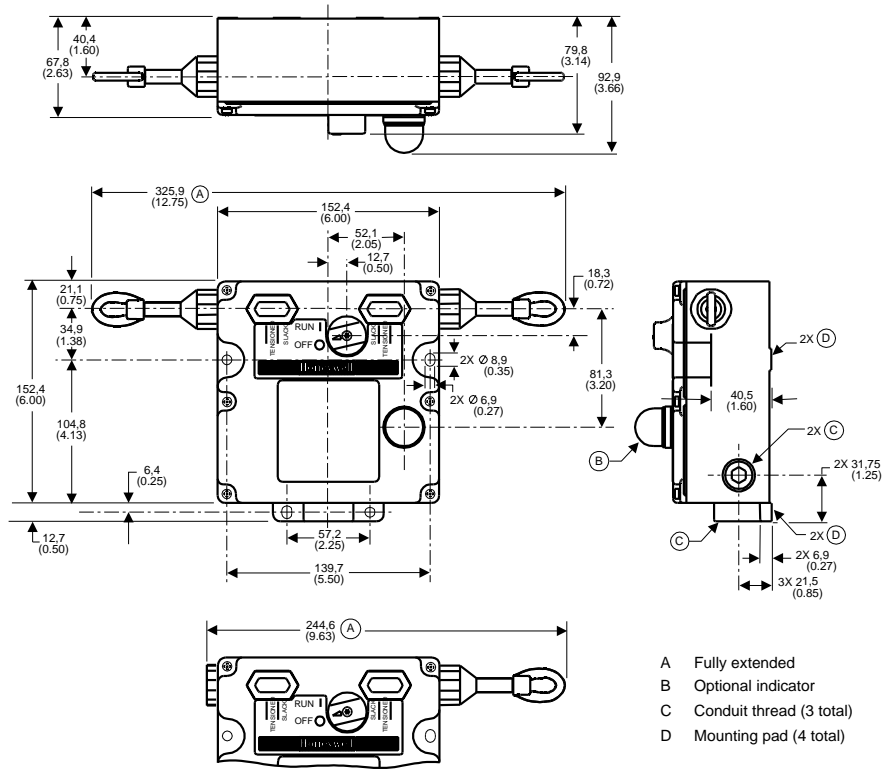
1/2 in NPT

CONTACT	INDICATOR	CAT. LISTING
1NC/1NO	None	1CPSA1
1NC/1NO	24 V	1CPSA1A
1NC/1NO	120 V	1CPSA1B
2NC/2NO	None	1CPSA2
2NC/2NO	24 V	1CPSA2A
2NC/2NO	120 V	1CPSA2B
3NC/1NO	None	1CPSA3
3NC/1NO	24 V	1CPSA3A
3NC/1NO	120 V	1CPSA3B
4NC	None	1CPSA4
1NC/1NO, low energy	None	1CPSA5
2NC/2NO, low energy	None	1CPSA6
2NC/2NO, low energy	24 V	1CPSA6A
2NC/2NO, low energy	120 V	1CPSA6B
3NC/1NO, low energy	None	1CPSA7
4NC, low energy	None	1CPSA8

20 mm

CONTACT	INDICATOR	CAT. LISTING
1NC/1NO	None	1CPSC1
1NC/1NO	24 V	1CPSC1A
2NC/2NO	None	1CPSC2
2NC/2NO	24 V	1CPSC2A
2NC/2NO	120 V	1CPSC2B
3NC/1NO	None	1CPSC3
3NC/1NO	24 V	1CPSC3A
4NC	None	1CPSC4
1NC/1NO, low energy	None	1CPSC5
2NC/2NO, low energy	None	1CPSC6
2NC/2NO, low energy	24 V	1CPSC6A
3NC/1NO, low energy	None	1CPSC7
4NC, low energy	None	1CPSC8

2CPS



- A Fully extended
- B Optional indicator
- C Conduit thread (3 total)
- D Mounting pad (4 total)

Cable maintained both sides
1/2 in NPT

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSA1A1
2NC/2NO	1	24 Vdc	2CPSA1A1A
2NC/2NO	1	120 Vac	2CPSA1A1B
3NC/1NO	1	None	2CPSA1B1
3NC/1NO	1	24 Vdc	2CPSA1B1A
3NC/1NO	1	120 Vac	2CPSA1B1B
2NC/2NO	2	None	2CPSA2A1
2NC/2NO	2	24 Vdc	2CPSA2A1A
2NC/2NO	2	120 Vac	2CPSA2A1B
3NC/1NO	2	None	2CPSA2B1
3NC/1NO	2	24 Vdc	2CPSA2B1A
3NC/1NO	2	120 Vac	2CPSA2B1B

20 mm

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSC1A1
2NC/2NO	1	24 Vdc	2CPSC1A1A
4NC	1	24 Vdc	2CPSC1D1A

No actuation right side, cable maintained left side
1/2 in NPT

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSA1A2
2NC/2NO	1	24 Vdc	2CPSA1A2A
2NC/2NO	1	120 Vac	2CPSA1A2B
3NC/1NO	1	None	2CPSA1B2
3NC/1NO	1	24 Vdc	2CPSA1B2A
3NC/1NO	1	120 Vac	2CPSA1B2B
2NC/2NO	2	None	2CPSA2A2
2NC/2NO	2	24 Vdc	2CPSA2A2A
2NC/2NO	2	120 Vac	2CPSA2A2B

20 mm

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSC1A2
2NC/2NO	1	24 Vdc	2CPSC1A2A

No actuation left side, cable maintained right side
1/2 in NPT

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSA1A3
2NC/2NO	1	24 Vdc	2CPSA1A3A
2NC/2NO	1	120 Vac	2CPSA1A3B
3NC/1NO	1	None	2CPSA1B3
3NC/1NO	1	24 Vdc	2CPSA1B3A
3NC/1NO	1	120 Vac	2CPSA1B3B
2NC/2NO	2	None	2CPSA2A3
2NC/2NO	2	24 Vdc	2CPSA2A3A
2NC/2NO	2	120 Vac	2CPSA2A3B

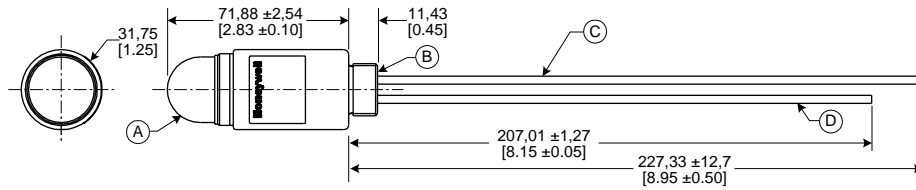
20 mm

CONTACT	CONTACT BLOCK MOUNTING	INDICATOR	CAT. LISTING
2NC/2NO	1	None	2CPSC1A3
2NC/2NO	1	24 Vdc	2CPSC1A3A

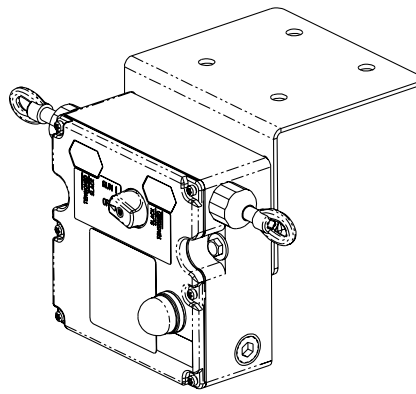
CPS Series (continued)

Hardware packets (order separately)

CPS LED



CPS Bracket



ACCESSORY

- Cable - 7,6 m [25 ft] length
- Cable - 15,2 m [50 ft] length
- Cable - 30,5 m [100 ft] length
- Cable - 45,7 m [150 ft] length
- Cable - 61 m [200 ft] length
- Cable - 76,2 m [250 ft] length
- (2) Thimbles
- (2) Low-profile Duplex Cable Clamps

CAT. LISTING

- CLSZC1
- CLSZC2
- CLSZC3
- CLSZC4
- CLSZC5
- CLSZC7
- CLSZTC

ACCESSORY

- (1) Draw-bar Endspring
- (1) J-hook Turnbuckle with Lock Nuts
- (2) Thimbles
- (2) Low-profile Duplex Cable Clamps
- (16) Sets of Cable Supports ((16) 1/4-20 Eye Bolts,
- (32) 1/4-20 Nuts, (32) Flat Washers, (16) Lock Washers)
- Multicuster LED Accessory - 24 Vdc (conduit mount)
- Multicuster LED Accessory - 120 Vdc (conduit mount)
- Mounting bracket (to be used with 1CPS or 2CPS)
- J-hook turnbuckle with lock nuts (included with 2CPS)

CAT. LISTING

- CPSZ1S
- CPSZK1

- CPSLED24
- CPSLED120
- CPS-BRACKET
- CPSZTB

Basic Switches



These listings include standard size basics, miniature and subminiature switches. The precision snap-action mechanisms are offered with a wide variety of actuators and operating characteristics. Basic switches are often ideal for applications requiring compactness, light weight, accurate repeatability and long life.

They are best used for presence/absence detection where physical contact with object is permissible. Very economical.

OPTIONS

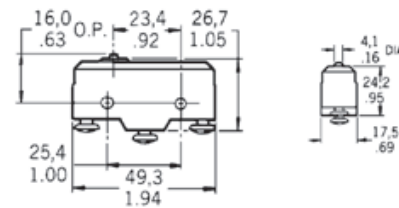
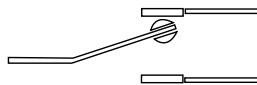
Note: BA/BE plunger position distance from mounting hole = 19 mm [0.75 in]

BZ/BA/BM/BE Series Basic Switches

BZ/BA/BM/BE Series standard basic switches may be used for simple or precision on/off application needs.

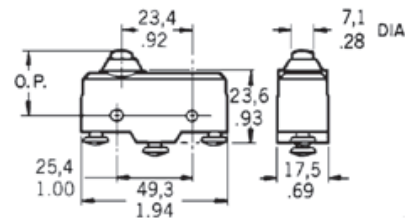
As well as the catalogue listings presented here, we offer other versions with higher temperature ratings, different termination options, different electrical ratings and Single Pole, Single Throw (SPST) circuitry. Refer to our Web site for details.

Voltage:	250 Vac
Electrical rating:	up to 25 A
Operating temperature:	-55 °C to 85 °C [-67 ° F to 185 °F]
Termination:	Screw
Contact type:	Silver
Approvals:	CE, CSA, UL, ENEC
Switching options:	Single pole, double throw (SPDT)



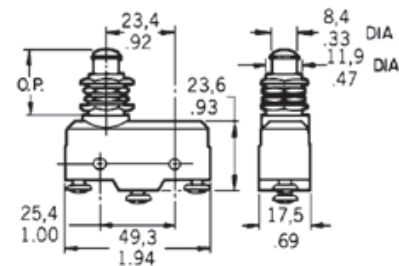
Top pin plunger

Approvals:		BE-2R-A4	CSA, UL
ELECTRICAL RATING	TERMINATION	CAT. LISTING	
15 A	Solder	BZ-R	
15 A	Screw	BZ-R-A2	
15 A	Solder	BZ-R169	
15 A	Screw	BZ-2R-A2	
25 A	Screw	BE-2R-A4	



Overtravel plunger (standard)

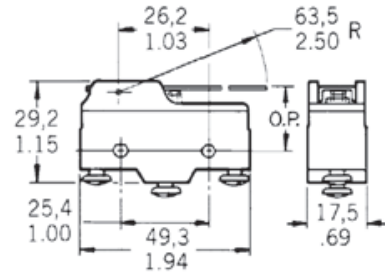
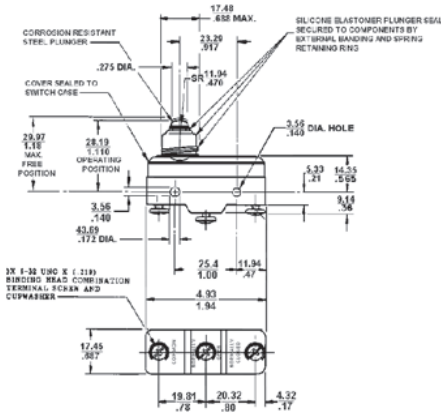
ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	Screw	BZ-2RD-A2
20 A	Screw	BA-2RB-A2



Panel mount overtravel plunger

ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	Screw	BZ-2RQ1-A2
20 A	Screw	BA-2RQ1-A2

BZ/BA/BM/BE Series (continued)

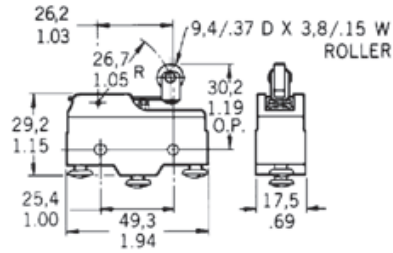
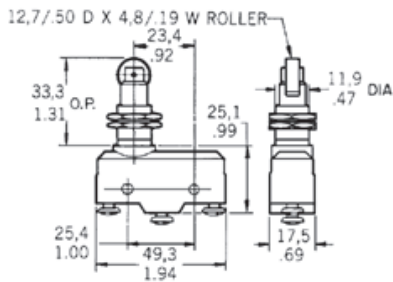


Overtravel plunger (splash resistant)

Straight lever

ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	Screw	BZ-2RDS-A2
15 A (Stainless steel spring)	Screw	BZ-2RDS-A2S

ELECTRICAL RATING	TERMINATION	LEVER RADIUS	CAT. LISTING
20 A	Screw	63.5 mm [2.5 in]	BA-2RV-A2
15 A	Screw	63.5 mm [2.5 in]	BZ-2RW80-A2
15 A	Screw	152.4 mm [6.0 in]	BZ-2RW863-A2

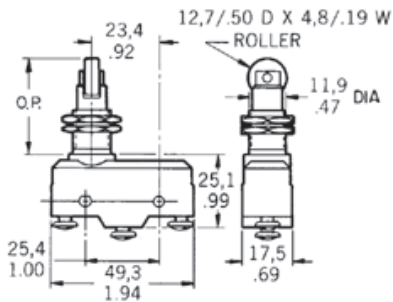


Overtravel roller plunger

Roller lever

ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	Screw	BZ-2RQ18-A2

ELECTRICAL RATING	TERMINATION	LEVER RADIUS	CAT. LISTING
15 A	Screw	26.67 mm [1.05 in]	BZ-2RW822-A2
15 A	Solder	26.67 mm [1.05 in]	BZ-2RW822
15 A (Splash resistant)	Screw	26.67 mm [1.05 in]	BZ-2RW8225551-A2
15 A	Screw	One way, 32.0 mm [1.26 in]	BZ-2RW826-A2
15 A	Screw	48.3 mm [1.9 in]	BZ-2RW82-A2



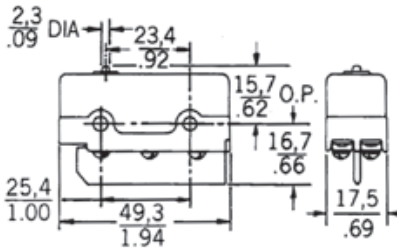
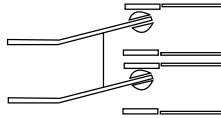
Overtravel roller plunger, perpendicular

ELECTRICAL RATING	APPROVALS	CAT. LISTING
15 A	Screw	BZ-2RQ181-A2

DT Series Basic Switches

DT Series standard basic switches consist of two independent single-pole double throw circuits in one housing actuated by one actuator. The terminals are separated by a non-conductive shield to reduce shorting.

Voltage:	250 Vac
Electrical rating:	10 A
Operating temperature:	-55 °C to 85 °C [-67 ° F to 185 °F]
Termination:	Screw
Contact type:	Silver
Approvals:	CSA, UL
Switching options:	Double pole, double throw (DPDT)



Top pin plunger

ELECTRICAL RATING	TERMINATION	CAT. LISTING
10 A	Screw	DT-2R-A7

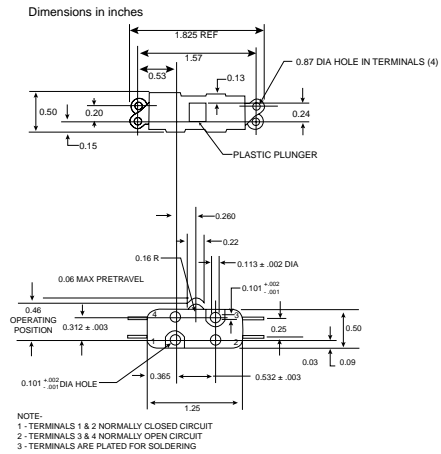
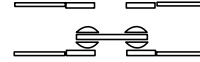
Basic Switch Accessories

A range of accessories is available for BZ, BA, BM, BE and DT switches, such as the 5PA2 terminal enclosure. For more information please contact your local sales office.

TB Series Miniature Double-break Basic Switches

TB Series miniature double-break basic switches are basic double-break units that offer a means of controlling isolated circuits. Each circuit may be driven by an independent voltage source.

Voltage:	250 Vac
Electrical rating:	10 A
Operating temperature:	-55 °C to 125 °C [-67 ° F to 257 °F]
Termination:	Solder
Contact type:	Silver
Approvals:	CSA, UL
Switching options:	Single pole, double throw, double break (SPDT DB)



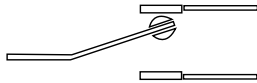
Top pin plunger

ELECTRICAL RATING	TERMINATION	CAT. LISTING
10 A	Solder	1TB1-2

SM and SX Series Subminiature Basic Switches

SM and SX Series subminiature basic switches may be used for simple or precision on/off application needs. These switches combine small size and light weight with ample electrical capacity, precision operation and long life. The SX Series are small, precision, snap-action switches that are often ideal where savings in space and weight are important.

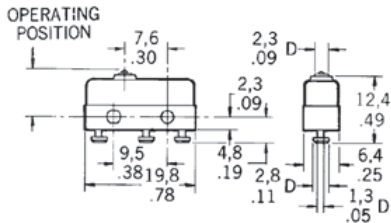
Voltage: 250 Vac
Operating temperature: -55 °C to 125 °C [-67 ° F to 257 °F]
Termination: Solder
Contact type: Silver
Switching options: Single pole, double throw (SPDT)



SM Series

Approvals: CE, CSA, UL
Electrical rating: 5 A

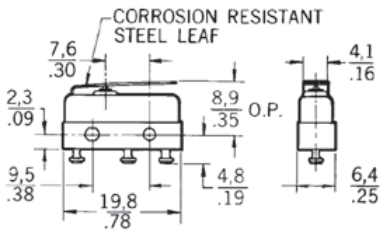
OPTIONS



Top pin plunger

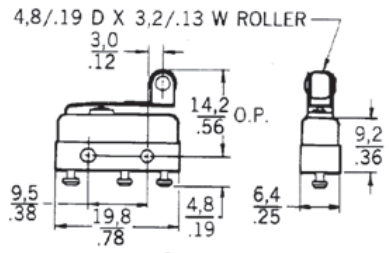
Approvals: 11SM601-H4 UL, CSA

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Solder/quick connect	5 A	silver	11SM1
	5 A	silver	11SM601-H4



Straight lever

LEVER LENGTH	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
4.83 mm	5 A	silver	11SM1



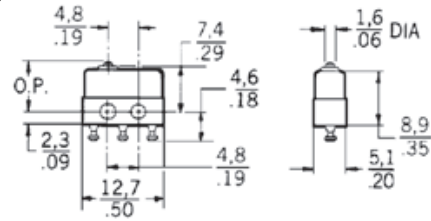
Roller lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Solder/quick connect	5 A	silver	111SM2-T

SX Series

Approvals: CE, CSA, UL
Electrical rating: 5 A

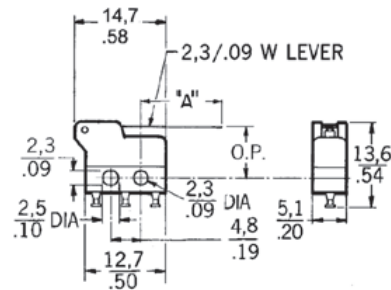
OPTIONS



Top pin plunger

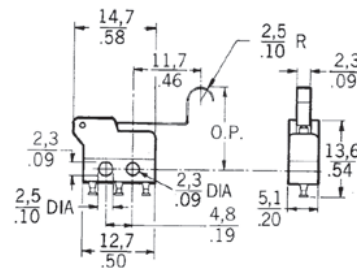
Approvals: 6SX7-T UL, CSA

CONTACTS	ELECTRICAL RATING	CAT. LISTING
Silver	7 A	1SX1-T
Silver	3 A	11SX1-T
Gold	1 A	6SX7-T



Straight lever

CONTACT TYPE	ELECTRICAL RATING	LEVER LENGTH	CAT. LISTING
Silver	5 A	'A' 12.8 mm	311SX2-T
Silver	5 A	'A' 24.5 mm	311SX3-T



Simulated roller

CONTACT TYPE	ELECTRICAL RATING	LEVER	CAT. LISTING
Silver	5 A	Roller	311SX5-T

ZM, ZX, ZV and ZW Series Subminiature Basic Switches

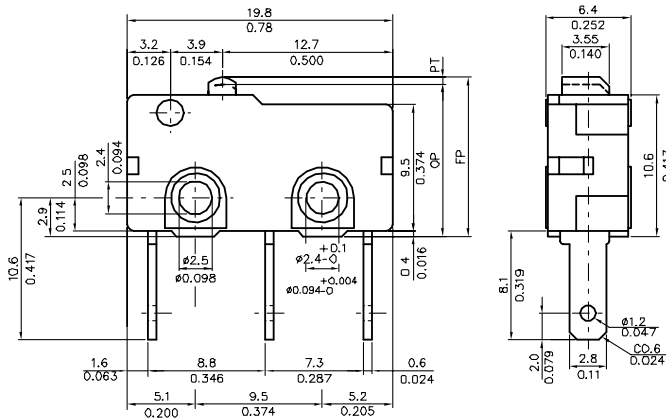
ZM, ZX, ZV and ZW Series subminiature basic switches are cost-effective devices used for simple on/off applications. These switches combine small size and light weight with ample electrical capability and long life. Plastic lever capability is available on the ZV Series.

Electrical rating: 0.1 A, 3 A, 5 A or 10.1 A
Voltage: 125/250 Vac
Operating temperature: 25 °C to 85 °C [-13 °F to 185 °F]
Termination: Quick connect, solder, PCB
Contact type: Gold or silver
Switching options: SPDT

ZM Series

Approvals: UL/CSA
Electrical rating: 0.1 A, 5 A or 10.1 A

OPTIONS



Top pin plunger

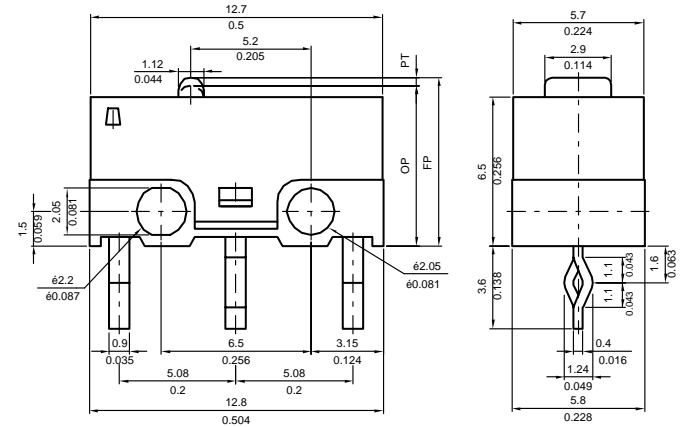
TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Quick connect	5 A	silver	ZM50E70A01
Solder	5 A	silver	ZM50E10A01
PCB	10.1 A	silver	ZM90G20A01
Solder	0.1 A	gold	ZM10B10A01

ZX Series

Approvals:
Electrical rating:

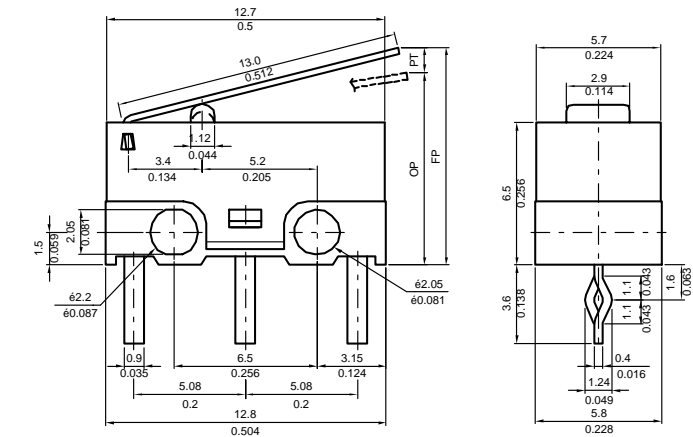
UL/CSA
 0.1 A or 3 A

OPTIONS



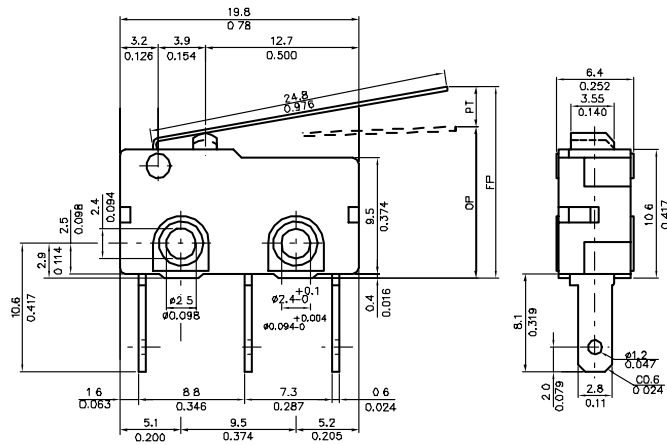
Top pin plunger

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
PCB	3 A	silver	ZX40E30A01
Solder	0.1 A	gold	ZX10C10A01



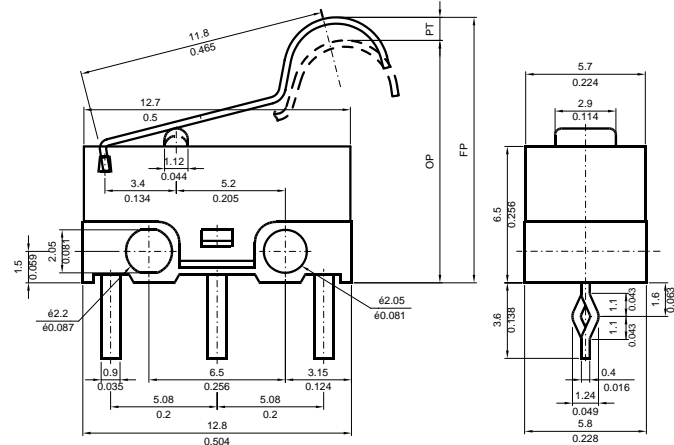
Straight lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
PCB	3 A	silver	ZX40E30C01
Solder	3 A	silver	ZX40E10C01



Straight lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Quick connect	5 A	silver	ZM50E70D01
Solder	5 A	silver	ZM50E10D01



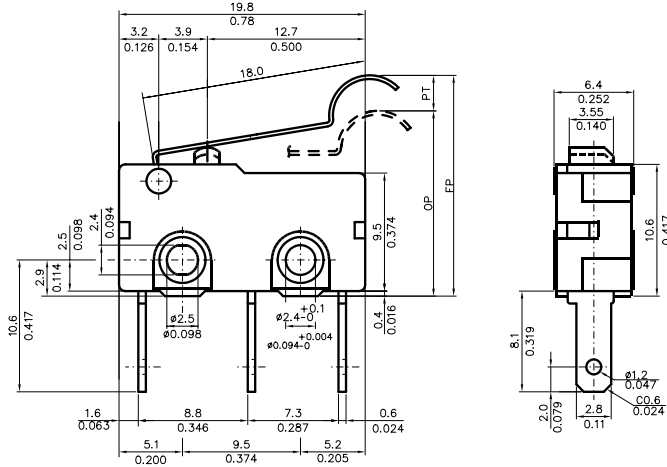
Simulated roller lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
PCB	3 A	silver	ZX40E30E01
Solder	3 A	silver	ZX40E10E01

ZV Series

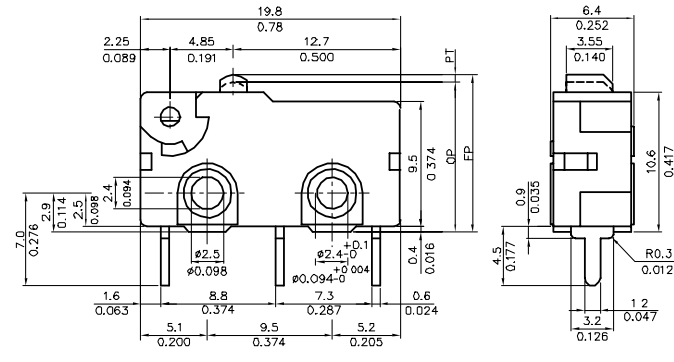
Approvals: UL/ENEC
 Electrical rating: 0.1 A, 5 A or 10.1 A

OPTIONS



Simulated roller lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Quick connect	5 A	silver	ZM50E70E01
Solder	5 A	silver	ZM50E10E01



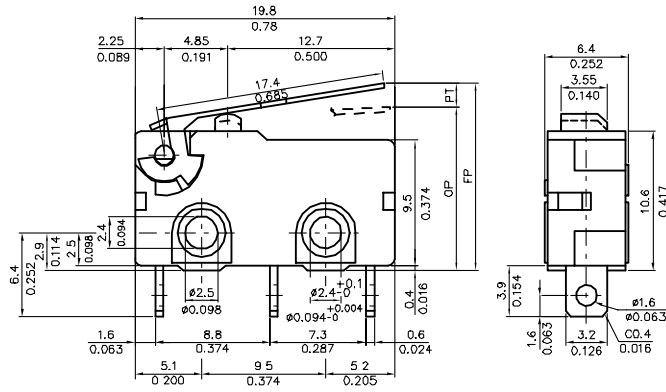
Top pin plunger

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
PCB	5 A	silver	ZV50E20A01
Solder	5 A	silver	ZV50E10A01
Quick connect	0.1 A	gold	ZV10B70A01

ZW Sealed Series

Approvals:
Electrical rating:
Sealing:

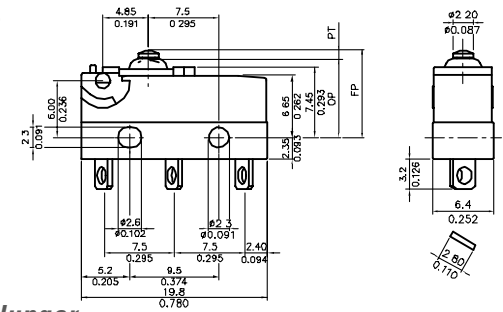
UL/ENEC
 0.1 A or 5 A
 IP50 and IP67



Straight lever

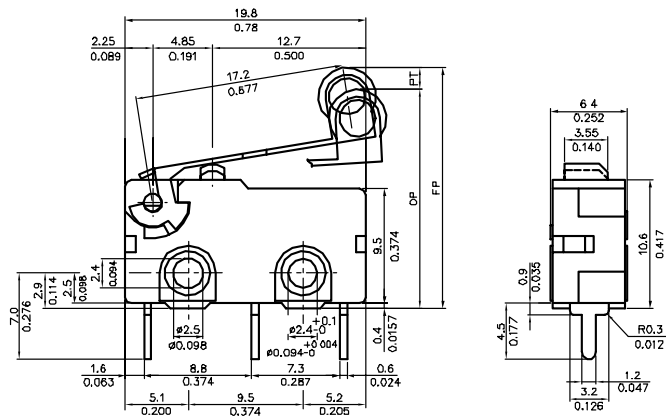
TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Solder	5 A	silver	ZV50E10B01
Quick connect	5 A	silver	ZV50E70C01

OPTIONS



Top pin plunger

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Solder	5 A	silver	ZW50F15AD1

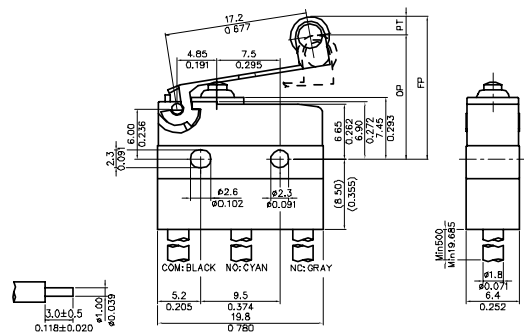


Roller lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
PCB	5 A	silver	ZV50E20F01
Quick connect	5 A	silver	ZV50E70F01

Straight lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Solder	0.1 A	gold	ZW10E15CD1



Roller lever

TERMINATION	ELECTRICAL RATING	CONTACT TYPE	CAT. LISTING
Wire leads	0.1 A	gold	ZW10E90FW1

V7 Series Miniature Basic Switches

V7 Series basic switches may be used for simple or precision on/off, end of limit, presence/absence, pressure, temperature and manual operator interface application needs.

Operating temperature:

-40 °C to 82 °C [-40 °F to 180 °F] (standard)
 -40 °C to 200 °C [-40 °F to 350 °F] (high temperature)

Termination:

Printed circuit board (PCB)
 and two types of quick connect (QC)
 D8, E8: 4,8 mm x 0,5 mm [0.187 in x 0.02 in]
 E9: 6,35 mm x 0,80 mm [0.25 in x 0.032 in]

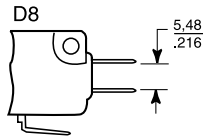
	Electrical rating	Contact Type
V7-*A	5 A	Silver
V7-*B	11 A	Silver
V7-*C/W	15 A	Silver
V7-*D	1 A	Gold alloy
V7-*E	10 A	Silver
V7-*S	100 mA	Gold alloy
V7-*V	21 A	Silver alloy
V7-*Z	25 A	Silver cadmium oxide

Approvals: CSA, UL, ENEC
 V7-*C/W (Electrical ratings) CSA, UL

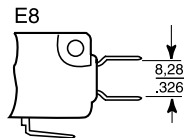
Switching options: Single pole double throw (NO and NC) (SPDT)

AVAILABLE TERMINALS

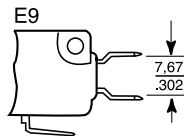
Quick Connect (QC)



0.187 in wide x 0.020 in thick. D8 terminals are European approved when used with electrical ratings A, B, D, E or S. International approval agencies require that switches with these terminals have insulated receptacles or connector.

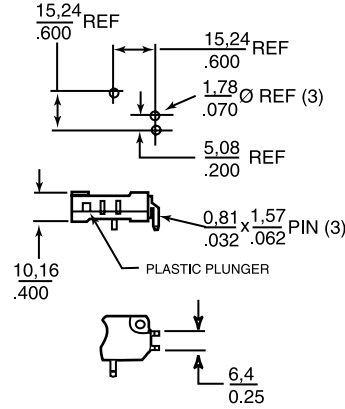


0.187 in wide x 0.020 in thick. E8 terminals are European approved when used with electrical ratings A, B, D, E or S.



0.250 in wide x 0.032 in thick. E9 terminals are European approved when used with electrical ratings A, B, D, E, S, V or Z.

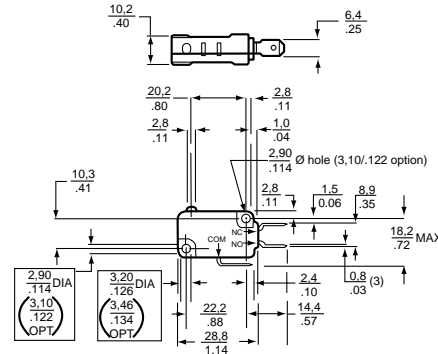
Printed circuit board (P02)



These terminals interface with snap-on receptacles and other components from AMPMODU interconnection system.

PCB terminals are European approved when used with electrical ratings A, B, D, E, S.

ACTUATION OPTIONS

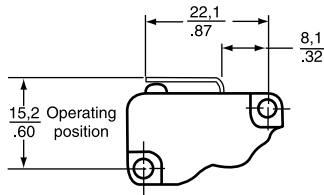


Note: The optional mounting hole dimensions shown above are standard on V5/V7 International Series switches.

Top pin plunger

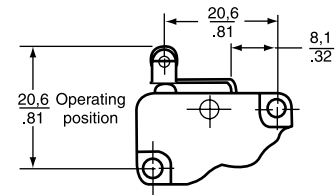
CURRENT	TERMINATION	CAT. LISTING
5 A	QC (D8)	V7-1A17D8
5 A	PCB	V7-1A17P02
11 A	QC (D8)	V7-1B17D8
11 A	QC (E9)	V7-1B19E9
15 A	QC (D8)	V7-1C17D8
15 A	QC (E9)	V7-1C17E9
1 A	QC (D8)	V7-1D10D8
0.1 A	QC (D8)	V7-1S17D8
21 A	QC (E9)	V7-1V19E9
25 A	QC (E9)	V7-1Z19E9

**V7 Series Miniature Basic Switches
(continued)**



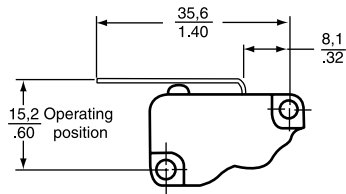
**Straight lever
Type -002**

ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	QC (D8)	V7-1C17D8-002
15 A	QC (E9)	V7-1C17E9-002
11 A	QC (E9)	V7-2B17E9-002



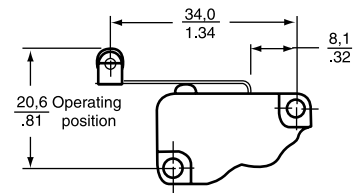
**Roller lever
Type -201**

ELECTRICAL RATING	TERMINATION	CAT. LISTING
15 A	QC (D8)	V7-1C17D8-201
15 A	QC (E9)	V7-1C17E9-201
0.1 A	QC (D8)	V7-1S17D8-201
11 A	QC (D8)	V7-2B17D8-201



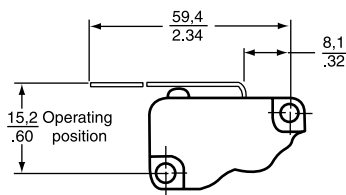
**Straight lever
Type -022**

ELECTRICAL RATING	TERMINATION	CAT. LISTING
5 A	QC (D8)	V7-1A17D8-022
11 A	QC (D8)	V7-1B19D8-022
15 A	QC (D8)	V7-1C17D8-022
0.1 A	QC (D8)	V7-1S17D8-022



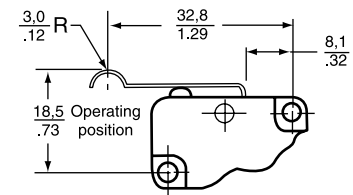
Type -207

ELECTRICAL RATING	TERMINATION	CAT. LISTING
11 A	QC (E9)	V7-1B10E9-207
15 A	QC (D8)	V7-1C17D8-207
15 A	QC (E9)	V7-1C17E9-207
0.1 A	QC (D8)	V7-1S17D8-207
21 A	QC (E9)	V7-1V1939-207
5 A	QC (D8)	V7-2A17D8-207
1 A	QC (D8)	V7-7D17D8-207



Type -048

ELECTRICAL RATING	TERMINATION	CAT. LISTING
11 A	QC(D8)	V7-1B17D8-048
15 A	QC(D8)	V7-1C17D8-048
21 A	QC(E9)	V7-1V19E9-048
11 A	QC(E9)	V7-2B19E9-048
0.1 A	QC(D8)	V7-3S17D8-048
15 A (High temperature)	QC(E9)	V7-9W1AE9-048



**Simulated roller lever
Type -263**

ELECTRICAL RATING	TERMINATION	CAT. LISTING
11 A	QC (D8)	V7-1B17D8-263
15 A	QC (D8)	V7-1C17D8-263
0.1 A	QC (D8)	V7-1S17D8-263
0.1 A	QC (E9)	V7-3S17E9-263

Pressure Switches

Honeywell has over 60 years of experience in the pressure switch industry. A wide variety of pressure ranges, along with a wide choice of mounting, package, and port configurations allows customers to choose from standard off-the-shelf designs.

All Honeywell pressure switches feature excellent repeatability, enhanced accuracy and reliability under varying environmental conditions. In addition, they feature highly consistent operating characteristics from one sensor to the next and interchangeability without recalibration.



Pressure Switches



Honeywell's pressure and vacuum switches are designed for use in heavy duty equipment. They are suitable for potential applications that are constantly subjected to harsh environments, such as chemical splashes, salt water or pressure spikes.

The products listed are standard switches, but other circuitry and terminal options are available. Switches can be customised to customer requirements, contact your local Honeywell sales office for more information.

Operating temperature:	-40 °C to 122 °C [-40 °F to 250 °F]	
Termination:	#8-32 screws	
Connector:	1/8-27 NPT male thread	
Contacts:	Silver alloy, gold plated	
Electrical rating:	Resistive	15 A, 6 Vdc
		8 A, 12 Vdc
		4 A, 24 Vdc
	Inductive	1 A, 120 Vac
		0.5 A, 240 Vac
Circuitry:	SPST-NO (Normally open)	
	SPST-NC (Normally closed)	

5000 Series Extended Duty Switch Set point range - 0.5 psi to 150 psi [0.035 bar to 10.35 bar]

This pressure switch was designed to stand up to extended duty applications. It is factory set but is capable of being field adjusted. The Kapton diaphragm is compatible with a wide variety of media with the exception of water. An optional Teflon diaphragm is available when water is the operating media.

Other options are available - SPDT, NO/NO or NC/NC circuitry and blade or integral Packard MetriPack terminals - contact Honeywell sales office for details.

Operating pressure:		
Set point range	0.5 psi to 24 psi =	150 psi
	[0.0345 bar to 1.656 bar] =	[10.350 bar]
	25 psi to 150 psi =	250 psi
	[1.725 bar to 10.350 bar] =	[17.237 bar]

Proof pressure: 500 psi (34.474 bar)

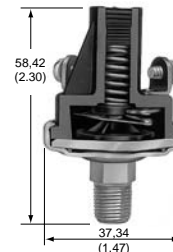
Burst pressure:		
Set point range	0.5 psi to 24 psi =	750 psi
	[0.0345 bar to 1.656 bar] =	[51.711 bar]
	25 psi to 150 psi =	1250 psi
	[1.725 bar to 10.350 bar] =	[86.185 bar]

NOTE

Operating Media (Pressure Switch)

The pressure switch is designed to operate with air, motor oils, transmission oils, jet fuels and other similar hydrocarbon media.

Direct action blade contacts, 2 terminals



SPST-NO

CONTACT SETTING PSI [BAR]	FACTORY SET AT PSI [BAR]	CAT. LISTING
0.5 to 1.0 [0.0345 to 0.069]	1.0 [0.069]	78628
1.1 to 3.0 [0.0759 to 0.207]	2.0 [0.138]	76051
3.1 to 7.0 [0.2139 to 0.483]	4.0 [0.276]	76575
8.0 to 13.0 [0.552 to 0.897]	10.0 [0.690]	76576
14.0 to 24.0 [0.996 to 1.656]	15.0 [1.035]	76052
25.0 to 50.0 [1.725 to 3.450]	35.0 [2.415]	76053
51.0 to 90.0 [3.519 to 6.210]	60.0 [4.140]	76054
91.0 to 150.0 [6.279 to 10.350]	100.0 [6.90]	76055

SPST-NC

CONTACT SETTING PSI [BAR]	FACTORY SET AT PSI [BAR]	CAT. LISTING
0.5 to 1.0 [0.0345 to 0.069]	1.0 [0.069]	78632
1.1 to 3.0 [0.0759 to 0.207]	2.0 [0.138]	76061
3.1 to 7.0 [0.2139 to 0.483]	4.0 [0.276]	76577
8.0 to 13.0 [0.552 to 0.897]	10.0 [0.690]	76578
14.0 to 24.0 [0.996 to 1.656]	15.0 [1.035]	76062
25.0 to 50.0 [1.725 to 3.450]	35.0 [2.415]	76063
51.0 to 90.0 [3.519 to 6.210]	60.0 [4.140]	76064
91.0 to 150.0 [6.279 to 10.350]	100.0 [6.90]	76065

5000 Series Extended Duty Vacuum Switch
Set point range -
1.1 in to 22.0 in Hg
[27,94 mm Hg to 558,80 mm Hg]

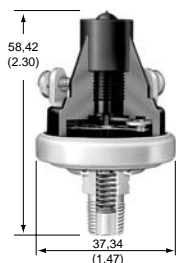
The 5000 Series Extended Duty Vacuum switch is designed for vacuum applications. The factory setting cannot be changed or adjusted in the field. It features a fluorosilicone rubber diaphragm that is compatible with a wide range of media.

Blade terminal option is also available.

Connector
Operating vacuum:
Burst pressure:

1/8-27 NPT Male
 30 in Hg [762 mm Hg]
 150 psi [10.35 bar]

Direct action blade contacts



SPST-NO

	CAT. LISTING
Internally grounded, 1 Terminal	78813
2 Terminals	77342

SPST-NC

	CAT. LISTING
Internally grounded, 1 Terminal	78815
2 Terminals	77343

5000 Series Extended Duty Piston Switch
Set point range -
70 psi to 1000 psi [13.80 bar to 68.95 bar]

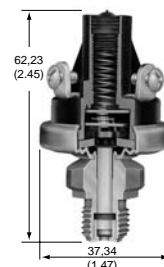
This switch is a variation of the "standard" 5000 Series Extended duty switch for applications requiring a compact package size, enhanced set point and operating characteristics.

Other options are available - SPDT, NO/NO or NC/NC circuitry and blade terminals - contact Honeywell sales office for details.

Termination: #8-32 screws or 280 Series MetriPack
Connector: 1/2-20 UNF [O-ring fitted]
Operating pressure: 1000 psi [68.95 bar]
Proof pressure: 2000 psi [138.00 bar]
Burst pressure: 3000 psi [206.84 bar]

OPTIONS

Standard screw terminal, direct action blade contacts



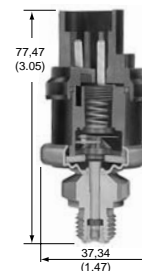
SPST-NO

CONTACT SETTING PSI (BAR)	APPROX. DIFFERENTIAL PSI (BAR)	CAT. LISTING
70 to 400 [13.80 to 27.60]	30 to 100 [2.07 to 6.90]	79700
401 to 800 [27.67 to 55.20]	40 to 125 [2.76 to 8.625]	79704
801 to 1000 [55.27 to 69.00]	50 to 180 [3.45 to 12.42]	79708

SPST-NC

CONTACT SETTING PSI (BAR)	APPROX. DIFFERENTIAL PSI (BAR)	CAT. LISTING
70 to 400 [13.80 to 27.60]	30 to 100 [2.07 to 6.90]	79702
401 to 800 [27.67 to 55.20]	40 to 125 [2.76 to 8.625]	79706
801 to 1000 [55.27 to 69.00]	50 to 180 [3.45 to 12.42]	79710

Metri-Pack terminal, direct action blade contacts



SPST-NO

CONTACT SETTING PSI (BAR)	APPROX. DIFFERENTIAL PSI (BAR)	CAT. LISTING
200 to 350 [13.80 to 24.15]	30 to 100 [2.07 to 6.90]	79718
351 to 500 [24.22 to 34.50]	40 to 125 [2.76 to 8.625]	79720
501 to 750 [34.57 to 51.75]	50 to 150 [3.45 to 12.42]	79722

SPST-NC

CONTACT SETTING PSI (BAR)	APPROX. DIFFERENTIAL PSI (BAR)	CAT. LISTING
200 to 350 [13.80 to 24.15]	30 to 100 [2.07 to 6.90]	79719
351 to 500 [24.22 to 34.50]	40 to 125 [2.76 to 8.625]	79721
501 to 750 [34.57 to 51.75]	50 to 150 [3.45 to 12.42]	79723

Mating connector - Packard Part Number 15300027

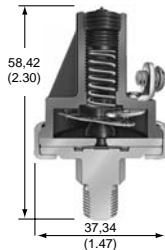
5000 Series Ultra Duty Switch Set point range - 10 psi to 400 psi [0.69 bar to 27.60 bar]

The 5000 Series Ultra Duty pressure switch is designed for high pressure/low set point applications that can experience sudden pressure spikes and high system pressures. Screw machined and heat treated components along with a reduced effective area in the pressure cavity allow improved performance over the standard extended duty 5000 Series.

Other options are available - Dual Circuit (SPDT) configuration and blade or integral Packard MetriPack terminals - contact Honeywell sales office for details.

Connector	1/8-27 NPT Male
Operating pressure:	500 psi [34.50 bar]
Proof pressure:	2000 psi [138.00 bar]
Burst pressure:	4000 psi [276.00 bar]

Direct action blade contacts, 2 terminals



SPST-NO

CONTACT SETTING PSI [BAR]	FACTORY SET AT PSI [BAR]	CAT. LISTING
10 to 35 [0.69 to 2.41]	20 [1.38]	83298
35 to 75 [2.41 to 5.17]	60 [4.14]	83301
75 to 150 [5.17 to 10.35]	100 [6.90]	83304
150 to 250 [10.35 to 17.25]	200 [13.89]	83307
250 to 400 [17.25 to 27.6]	300 [20.70]	83310

SPST-NC

CONTACT SETTING PSI [BAR]	FACTORY SET AT PSI [BAR]	CAT. LISTING
10 to 35 [0.69 to 2.41]	20 [1.38]	83299
35 to 75 [2.41 to 5.17]	60 [4.14]	83302
75 to 150 [5.17 to 10.35]	100 [6.90]	83305
150 to 250 [10.35 to 17.25]	200 [13.89]	83308
250 to 400 [17.25 to 27.6]	300 [20.70]	83311

Pressure Switches - Customised

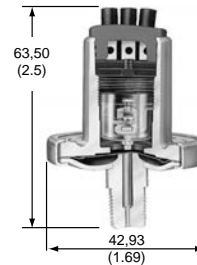
The pressure and vacuum switches on the following pages are custom built to customer specification, therefore minimum order quantities are required. Catalog listings are for reference only. Standard specification is shown below, but other contact, termination and connector options are available. Contact Honeywell for more information.

Operating temperature:	-40 °C to 122 °C [-40 °F to 250 °F]
Termination:	8 in (203.2 mm) wire leads - 18 ga
Connector:	1/8-27 PTF SAE short male thread
Contacts:	Gold over silver
Electrical rating:	Resistive 15 A, 6 Vdc 8 A, 12 Vdc 4 A, 24 Vdc Inductive 1 A, 120 Vac 0.5 A, 240 Vac
Circuitry:	SPST-NO (Normally open) SPST-NC (Normally closed) SPDT (Dual circuit)

Series III Factory Set Variable Differential Pressure and Vacuum Switches

The Series III features a snap action switch with gold contacts that provides hysteresis, low contact resistance, enhanced transfer time and an adjustable differential.

Operating pressure:	200 psi [13.80 bar]
Proof pressure:	350 psi [24.13 bar]
Burst pressure:	500 psi [34.49 bar]



OPTIONS

Pressure switch, snap action contacts

Set point range - 2 psi to 70 psi [0.138 bar to 4.83 bar]

SET POINT RANGE PSI [BAR]	DIFFERENTIAL PSI [BAR]	REF. LISTING
2 to 4 [0.138 to 0.276]	1 to 1.5 [0.069 to 0.103]	120000
4 to 12 [0.276 to 0.828]	2 to 6 [0.138 to 0.414]	120001
12 to 24 [0.828 to 1.656]	8 to 12 [0.552 to 0.828]	120002
24 to 40 [1.656 to 2.760]	10 to 18 [0.690 to 1.242]	120003
40 to 70 [2.760 to 4.830]	15 to 20 [1.035 to 1.380]	120004

Vacuum switch, snap action contacts

**Set point range -
1.1 in Hg to 22 in Hg [27,94 mm Hg to 558,8 mm Hg]**

SET POINT RANGE IN HG [MM HG]	DIFFERENTIAL IN HG [MM HG]	REF. LISTING
15 in H ₂ O to 36 in H ₂ O [28,025 to 67,259]	4 in H ₂ O to 12 in H ₂ O [7,473 to 22,420]	120005
2 to 6 [50,8 to 152,4]	0.4 to 1 [10,16 to 25,40]	120006
6 to 12 [152,4 to 304,8]	0.4 to 1 [10,16 to 25,4]	120007
12 to 22 [304,8 to 558,8]	0.6 to 1.5 [15,24 to 38,1]	120008

**Pressure Switches - Customised
(continued)**

**Series V
High Pressure, Environmentally Sealed,
Extreme Duty Switches
Set point range -
35 psi to 3000 psi [2.415 bar to 206.84 bar]**

The Series V features a snap action switch with gold-plated contacts that provides hysteresis, low contact resistance, enhanced transfer time and an adjustable differential.

OPTIONS

Diaphragm switch, snap action contacts

**Set point range -
35 psi to 300 psi [2.415 bar to 20.70 bar]**

The diaphragm material is fluorosilicone and is compatible with air, motor and transmission oil and other hydrocarbon media.

Connector: 1/8-27 PTF
Operating pressure: 300 psi [20.70 bar]
Proof pressure: 500 psi [34.47 bar]
Burst pressure: 2000 psi [138.00 bar]



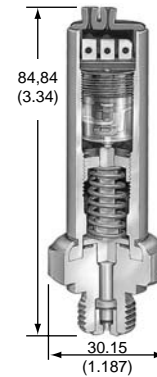
SET POINT RANGE PSI [BAR]	DIFFERENTIAL PSI [BAR]	REF. LISTING
35 to 50 [2.415 to 3.45]	10 to 15 [0.690 to 1.035]	26900
50 to 100 [3.45 to 6.90]	10 to 15 [0.690 to 1.035]	26901
100 to 200 [6.90 to 13.80]	10 to 15 [0.690 to 1.035]	26902
200 to 300 [13.80 to 20.70]	10 to 20 [0.690 to 1.380]	26903

Piston seal switch, snap action contacts

**Set point range -
100 psi to 3000 psi [6.90 bar to 206.84 bar]**

The piston seal is nitrile and is compatible with motor and transmission oil and other hydrocarbon media. An optional seal is available for use with brake fluid.

Connector: 3/4-16 UNF (O-ring fitting)
Operating pressure: 3000 psi [206.84 bar]
Proof pressure: 5000 psi [345.00 bar]
Burst pressure: 10000 psi [690.00 bar]



SET POINT RANGE PSI [BAR]	DIFFERENTIAL PSI [BAR]	REF. LISTING
100 to 150 [6.90 to 10.35]	35 to 50 [2.415 to 3.450]	26904
150 to 250 [10.35 to 17.25]	50 to 75 [3.450 to 5.175]	26905
250 to 500 [17.25 to 34.50]	75 to 100 [5.175 to 6.90]	26906
500 to 750 [34.50 to 48.30]	100 to 150 [6.90 to 10.35]	26907
750 to 1000 [48.30 to 69.00]	150 to 300 [10.35 to 20.70]	26908
1000 to 1250 [69.00 to 86.25]	175 to 350 [12.075 to 24.15]	26909
1250 to 1500 [86.25 to 103.50]	175 to 360 [12.075 to 24.84]	26910
1500 to 1750 [103.50 to 120.75]	220 to 370 [15.18 to 25.53]	26911
1750 to 2000 [120.75 to 138.00]	230 to 380 [15.87 to 26.22]	26912
2000 to 2250 [138.00 to 155.25]	250 to 390 [17.25 to 26.91]	26913
2250 to 2500 [155.25 to 172.50]	355 to 400 [24.495 to 27.60]	26914
2500 to 2750 [172.50 to 189.75]	370 to 420 [25.53 to 28.98]	26915
2750 to 3000 [189.75 to 206.84]	385 to 450 [26.565 to 31.05]	26916

Environment Sealed, Hermetically Sealed and Manual switches

Most of the products in this section have one thing in common - they are sealed to withstand harsh environments.

You will find them in such diverse places as landing gears, flaps, cargo doors and cockpit panels. Environmentally sealed products also satisfy needs in many other potential applications. Some examples are agriculture, transportation, construction, marine, ordnance and command and control equipment.

Our commitment to quality products begins with the design of the products. Marketing, design and manufacturing engineering personnel review the customer specifications and translate them into design and manufacturing instructions. Every product Honeywell manufactures, be it an aerospace, industrial or commercial design, follows a single, uniform system of quality assurance. This helps ensure the same high level of reliability in all our products. Our aim is to build in quality.

We have evaluation test labs that can subject our designs to most every test and environmental condition known to exist in our world or in outer space. Test equipment includes - electrical and mechanical life cycling devices, high-low temperature chambers, hydrostatic pressure chambers, impact shock machines, vibration equipment, centrifugal acceleration equipment, humidity and salt spray chambers, and dielectric strength testing equipment.

To ensure you have the latest information on our product offering, contact Honeywell.

Switch load/life

Switch life depends on such criteria as electrical load, environment, switch mechanism and other factors peculiar to the application. As electrical load increases, switch life decreases. For military qualification testing 25,000 operations electrical life at rated load (maximum recommended load) is the minimum operations required. In most cases switch life exceeds 25,000 operations when operated at electrical loads less than rated load. Below one amp, the electrical life approaches the mechanical life of the switch. If your application requires more than 25,000 cycles and your electrical load is less than rated load, please contact Honeywell for application assistance.

Sealed basic switches and switch assemblies

Basic switches are either environment sealed or hermetically sealed. The environment sealed basics have a watertight seal and most meet military specifications. Limit switches are environment sealed or hermetically sealed and some are suitable for high temperature applications. Most switches meet appropriate military requirements. Environment sealed limit switches come in a choice of sizes and are offered for military aerospace and commercial aircraft applications. Hermetically sealed switches withstand temperatures up to 125 °C [257 °F], and high temperature hermetically sealed switches will operate in temperatures up to 334 °F [615 °F].

Manual control switches

Standard size and some miniature toggle switches have bushing seals and are military qualified. Rocker switches also have a bushing seal. Rockers are easy to remove and are available in a variety of colours. Magnetically held toggle switches contain a holding coil to maintain the toggle in the operated position. They have environment sealing, and most are military qualified.



Basic switches operating characteristics

Electromechanical switches

Definitions below explain the meaning of operating characteristics. Characteristics shown in tables throughout this catalog were chosen as most significant. They are taken at normal room temperature and humidity. These characteristics may vary as temperature and humidity conditions differ. Sketches show how characteristics are measured for in-line plunger actuation.

Linear dimensions for in-line actuation are from top of plunger to a reference line, usually the center of the mounting holes.

Differential Travel (D.T.)—Plunger or actuator travel from point where contacts “snap-over” to point where they “snapback.”

Free Position (F.P.)—Position of switch plunger or actuator when no external force is applied (other than gravity).

Full Overtravel Force—Force required to attain full overtravel of actuator.

Operating Position (O.P.)—Position of switch plunger or actuator at which point contacts snap from normal to operated position. Note that in the case of flexible or adjustable actuators, the operating position is measured from the end of the lever or its maximum length. Location of operating position measurement shown on mounting dimension drawings.

Operating Force (O.F.)—Amount of force applied to switch plunger or actuator to cause contact “snap-over.” Note in the case of adjustable actuators, the force is measured from the maximum length position of the lever.

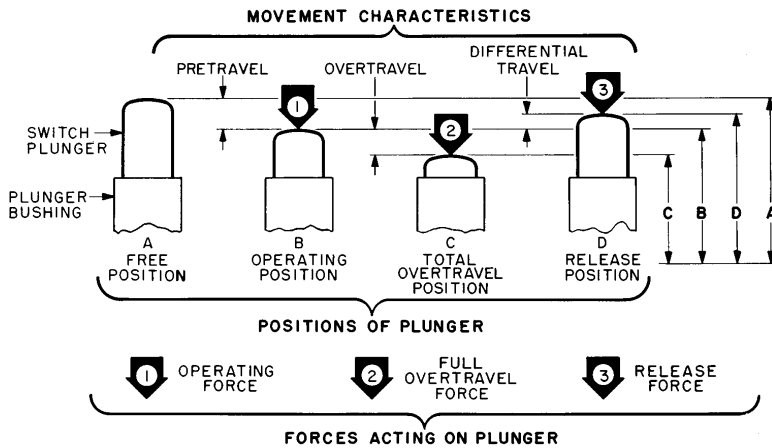
Overtravel (O.T.)—Plunger or actuator travel safely available beyond operating position.

Pretravel (P.T.)—Distance or angle traveled in moving plunger or actuator from free position to operating position.

Release Force (R.F.)—Amount of force still applied to switch plunger or actuator at moment contacts snap from operated position to unoperated position.

Total Travel (T.T.)—Distance from actuator free position to overtravel limit position.

In-line plunger actuation



Toggle switch locking configurations

Toggle switches are available with the following locking configurations -

Military specifications procurement information

How to increase your effectiveness in using specification MIL-PRF-8805

The following information is intended to increase your effectiveness in using the Specification MIL-PRF-8805, minimize your costs and reduce delivery time for switches procured to the Specification.

Standard items (shown on QPL 8805)

HONEYWELL suggests the following statement be used when ordering items appearing on QPL 8805:

“Honeywell” catalog listing No. listed on QPL 8805 as No. .”

Should additional requirements be needed for application of the switch in its end use, they should be specifically stated as part of the ordering information.

Non-standard items (not shown on QPL 8805)

Honeywell suggests the following statement be used when ordering items which do not appear on QPL 8805:

“Switch drawing No. shall meet the following performance requirements of MIL-PRF-8805.”

The above statement to be supplemented by the performance requirements which you consider applicable.

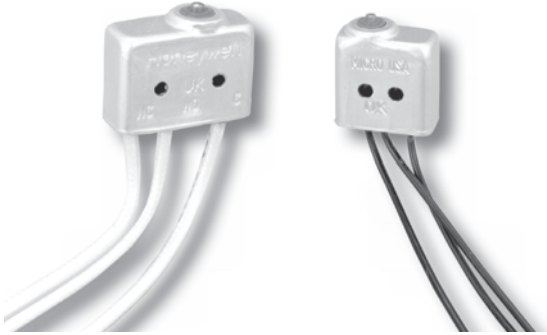
Why the suggested statements will minimize cost and delivery of non-standard items

Military Specification MIL-PRF-8805 requires a complete qualification test of non-standard items (unless you specifically call out the performance requirements which you consider applicable to your switch application). Complete qualification is costly and will delay shipment of switches. By specifying all those requirements which you consider applicable you can minimize both your cost and delivery flow time. General statements, such as “switch must meet requirements of MIL-PRF-8805”, require complete MIL-PRF-8805 qualification tests.

Honeywell believes that you, the user, know best the specific requirements of your application. These requirements may be more or less severe than those reflected by the test parameters of MIL-PRF-8805. In the interest of supplying switches which will meet your requirements with a minimum of expense and delay, we suggest use of the applicable statement provided for Standard (QPL) items and Non-Standard items (not on QPL).

Honeywell solicits submittal of your proposal prints for review and comment. This review may result in savings of time and cost for you.

SE and XE Series Environmentally Sealed Basic Switches

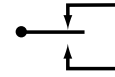


SE and XE Series switches are the smallest, environment sealed switches offered by Honeywell. They enclose basic switches within a corrosion-resistant aluminum housing to seal precision switch contacts from contamination. SE switches include a SM basic switch; XE switches include the smaller SX basic switch.

Housing material: Aluminium
Sealing: Watertight seal per MIL-PRF-8805, symbol 3
Termination: 305,0 mm [1 ft] leadwire or Solder (turret)
Contacts: Silver

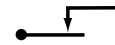
Switching options:
SPDT

Single Pole, Double Throw



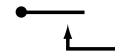
SPNC

Single Pole, Normally Closed



SPNO

Single Pole, Normally Open



Electrical ratings:	A	5 A res., 3 A ind., (sea level), 5 A res., 2.5 A ind., [50000 ft], 28 Vdc 5 A res., 5 A ind., 125 or 250 Vac, 60 Hz
	B	UL/CSA rating - 5A, 250 Vac, 60 Hz
	C	7 A res., 4 A ind., (sea level) 7 A res., 2.5 A ind., [50000 ft], 28 Vdc 7 A res., 4 A ind., (sea level) 115 Vac, 400 Hz
	D	UL Rating - 7 A, 250 Vac, 60 Hz
	E	7 A res., 4 A ind., (sea level) 7 A res., 2.5 A ind., [50000 ft], 28 Vdc
	F	1 A res., 0.5 A ind., 28 Vdc

SE Series

Leadwire



Solder (Turret)

Package size: 19,05 mm H x 8,64 mm W x 22,35 mm L
[0.75 in H x 0.34 in W x 0.88 in L]

Operating temperature:
Standard -53 °C to 105 °C [-65 °F to 221 °F]
Low -26 °C to 80 °C [-15 °F to 185 °F]
UL, CSA (4SE1 only)

Approvals:
UL, CSA (4SE1 only)

Operating force max. (OF):
Standard 1,39 N to 4,73 N [5.0 oz to 17.0 oz]
Low 1,11 N to 2,22 N [4.0 oz to 8.0 oz]
High 1,39 N to 5,28 N [5.0 oz to 19.0 oz]

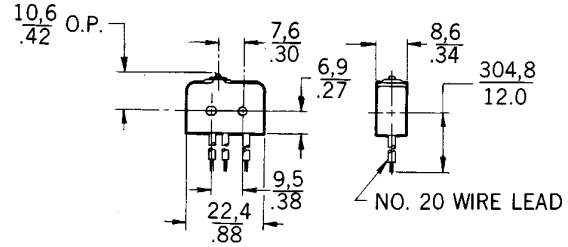
Pretravel max. (PT): 1,27 mm [0.050 in]
Overtravel min. (OT): 0,08 mm [0.003 in]
Differential travel max. (DT): 0,10 mm [0.004 in]

Top pin plunger

OPTIONS

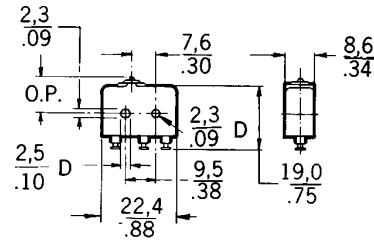
SPDT Single Pole, Double Throw

Leadwire termination



FEATURES	ELECTRICAL RATING	CAT. LISTING
Gold contacts	A	1SE1
Gold bifurcated contacts	F	1SE7
UL/CSA listing/leadwires	F	1SE401
Fluorosilicone seal/Low temperature	B	4SE1
Low OF	A	5SE1
	A	7SE1

Solder (Turret) termination



FEATURES	ELECTRICAL RATING	CAT. LISTING
Gold contacts	A	1SE1-T
High OF	F	1SE61-T
	A	12SE4-T

SPNC Single Pole, Normally Closed

Leadwire termination

ELECTRICAL RATING	CAT. LISTING
A	1SE2

SPNO Single Pole, Normally Open

Leadwire termination

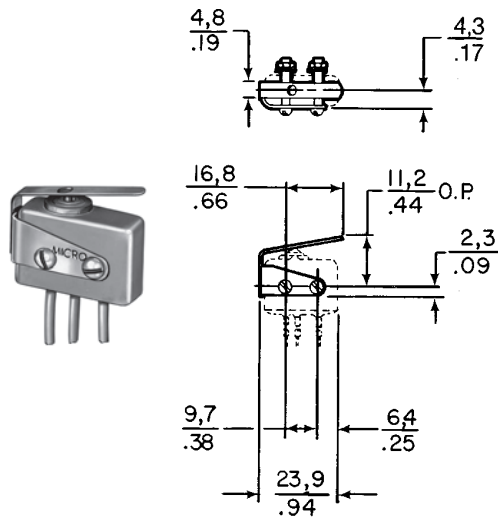
ELECTRICAL RATING	CAT. LISTING
A	1SE3

SE Series Auxiliary actuators

(Switches must be ordered separately)

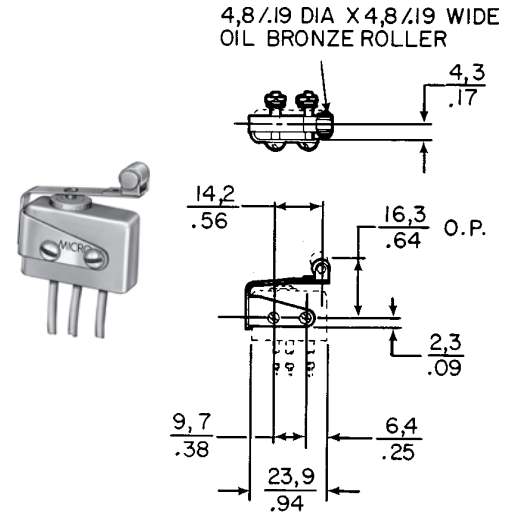
Operating force max. (OF):	3,34 N [12 oz]
Pretravel max. (PT):	3,81 mm [0.150 in]
Overtravel min. (OT):	0,38 mm [0.015 in]
Differential travel max. (DT):	0,64 mm [0.025 in]

Straight leaf



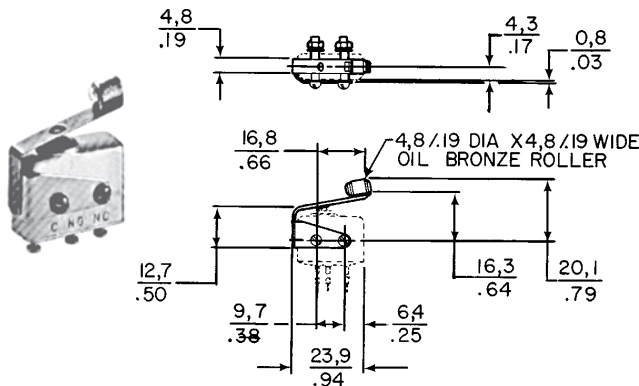
CAT. LISTING
JE-1

Roller leaf



CAT. LISTING
JE-5

Roller leaf , perpendicular



CAT. LISTING
JE-4

XE Series

Solder (Turret)



Leadwire

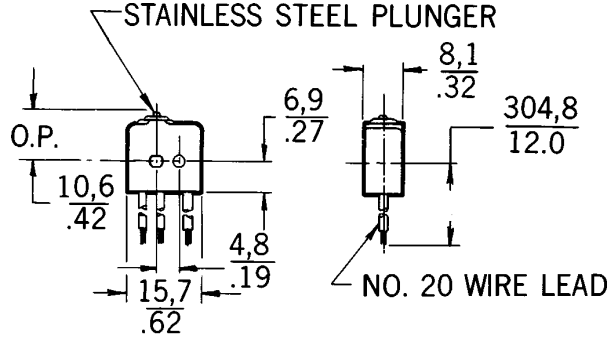
Package size:	19,05 mm H x 8,13 mm W x 15,75 mm L [0.75 in H x 0.32 in W x 0.62 in L]
Operating temperature:	Standard -55 °C to 85 °C [-67 °F to 185 °F] High -53 °C to 149 °C [-65 °F to 300 °F] Low -26 °C to 85 °C [-15 °F to 185 °F]
Approvals:	UL, CSA (4XE1 only)
Operating force max. (OF):	Standard 1,39 N to 4,73 N [5.0 oz to 17.0 oz] Low 2,50 N [9 oz]
Pretravel max. (PT):	Standard 1,27 mm [0.05 in] Low 0,76 mm [0.03 in]
Overtravel min. (OT):	0,10 mm [0.004 in]
Differential travel max. (DT):	0,13 mm [0.005 in]

Top pin plunger

OPTIONS

SPDT Single Pole, Double Throw

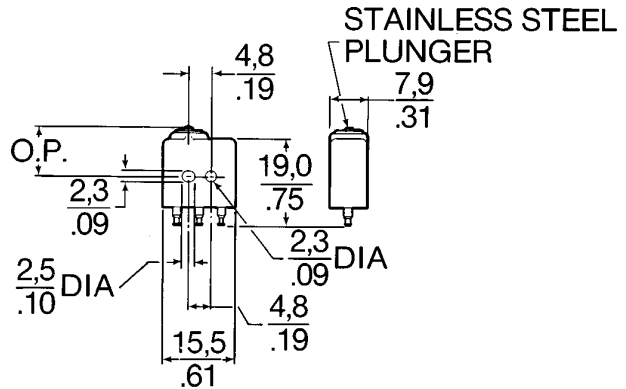
Leadwire termination



MOUNTING HOLES WILL ACCEPT PINS OR SCREWS OF 22,1 / .087 MAX DIA

FEATURES	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Gold contacts	C	MS27994-1	1XE1
Gold bifurcated contacts/ high temperature/1524 mm [6 ft]	C	MS27994-4	1XE201
leadwire length	F	MS27994-5	1XE301
Low OF/Low PT/high temperature	E		14XE1-6
UL/CSA listing/leadwires	D		14XE1
Fluorosilicone seal/low temperature	C		5XE1

Solder (Turret) termination



FEATURES	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Gold bifurcated contacts/ high temperature	A	MS27994-3	1XE1-T
Gold contacts	F		1XE401-T
Low OF/Low PT/high temperature	E		1XE99-T
			14XE1-T

SPNO Single Pole, Normally Open

Leadwire termination

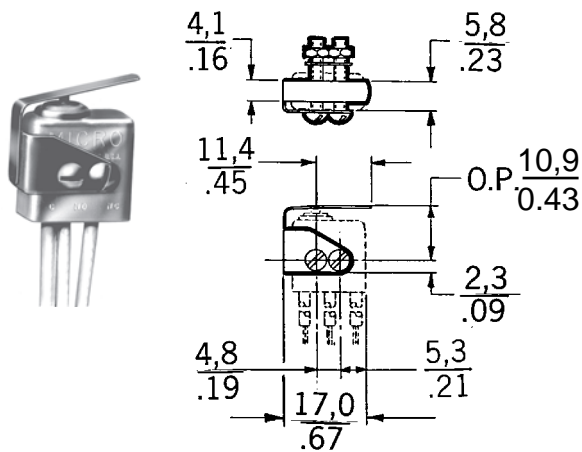
FEATURES	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
	C		1XE3

XE Series Auxiliary actuators

(Switches must be ordered separately)

Operating force max. (OF):	5,84 N [21 oz]
Pretravel max. (PT):	3,18 mm [0.12 in]
Overtravel min. (OT):	0,23 mm [0.01 in]
Differential travel max. (DT):	0,30 mm [0.01 in]

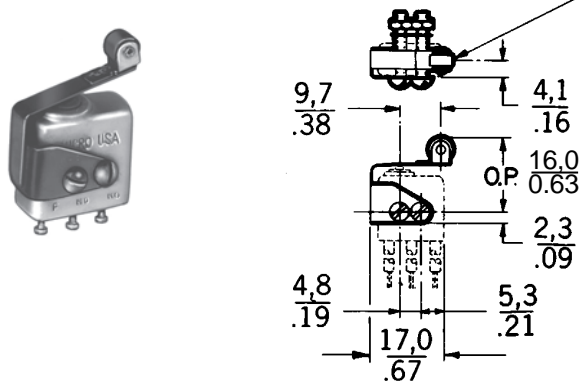
Straight leaf



CAT. LISTING
JM-1

Roller leaf

4,8/.19 D X 2,3/.09 W ROLLER



CAT. LISTING
JM-5

HM Series Miniature, Hermetically Sealed, Basic Switches

HM Series hermetically sealed basic switches contain contacts in a sealed chamber. A gas-tight seal is maintained while transmitting force and motion to the switch mechanism through a metal diaphragm.

This series is not generally recommended for 115 Vac, 60 Hz. If you have a 60 Hz application in the mA range, or applications that require the switch to function electrically during exposure to sub-freezing temperatures, contact Honeywell for special design variations that are available.

Package size: 18,29 mm H x 6,35 mm W x 22,35 L
(0.72 in H x 0.25 in W x 0.88 in L)

Housing material: Stainless Steel

Sealing: Hermetic MIL-PRF-8805, design symbol 5

Termination: Solder or leadwire

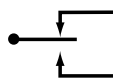
Operating force max. (OF): 1,95 N [7.00 oz]

Pretravel max. (PT): 0,76 mm [0.03 in]

Overtravel min. (OT): 0,08 mm [0.003 in]

Differential travel max. (DT): 0,15 mm [0.006 in]

Switching options:
SPDT Single Pole, Double Throw



Electrical ratings:

A	1 A res., 0.25 A ind., (sea level or 70000 ft), 28 Vdc
B	4 A res., 2 A ind., (sea level), 28 Vdc
C	0.5 A res., 0.25 A ind., (sea level or 70000 ft), 28 Vdc
D	3 A res., 1 A ind. (sea level or 70000 ft), 28 Vdc 1 A res., or ind. (sea level), 115 Vac, 400 Hz
E	0.1 A res., 0.1 A ind., 28 Vdc

Temperature range:

1	-65 °C to 121 °C [-85 °F to 257 °F]
2	-65 °C to 176 °C [-85 °F to 350 °F]
3	-65 °C to 260 °C [-85 °F to 500 °F]
4	-184 °C to 121 °C [-300 °F to 250 °F]
5	-184 °C to 260 °C [-300 °F to 500 °F]

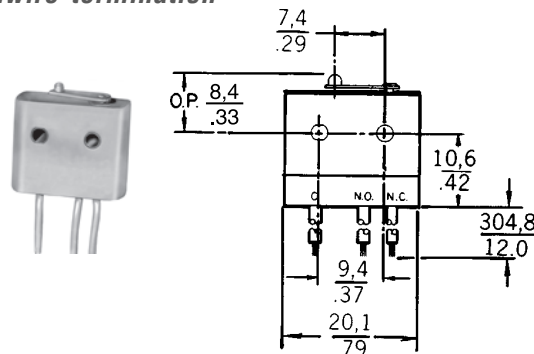
Application notes

- Honeywell does not recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 V and/or 0.5 A. Catalog listings in the 5, 6, 15, and 16HM Series use silver cadmium oxide contacts. If you have specific questions, contact Honeywell.
- For applications involving non-arcing loads, catalog listings in the 9, 10, 19 and 20HM Series are recommended.

Integral lever

OPTIONS

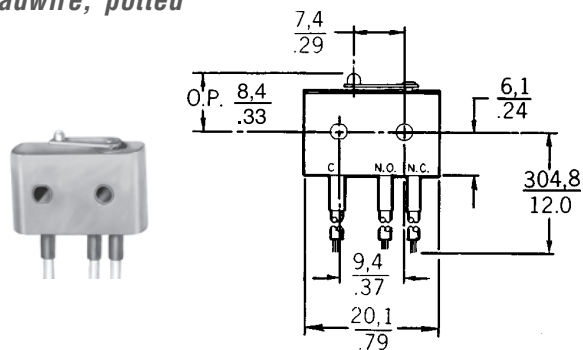
Leadwire termination



CABLE LENGTH	CONTACT MATERIAL	TEMPERATURE RANGE	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
152,4 mm [6 in]	Gold	2	E		114HM1-2 [1]
304,8 mm [1 ft]	Gold Bifurcated	3	C		20HM1-1
304,8 mm [1 ft]	Silver	1	B	MS27216-2	2HM19-1
1524,0 mm [5 ft]	Silver	1	B	MS27216-4	2HM19-5

[1] Mechanical life 100 000 operations

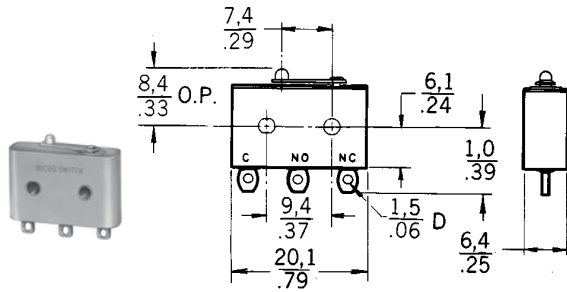
Leadwire, potted



CABLE LENGTH	CONTACT MATERIAL	TEMPERATURE RANGE	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
304,8 mm [1 ft]	Silver cadmium oxide	3	B		6HM1-1

HM Series, Integral lever (continued)

Solder termination

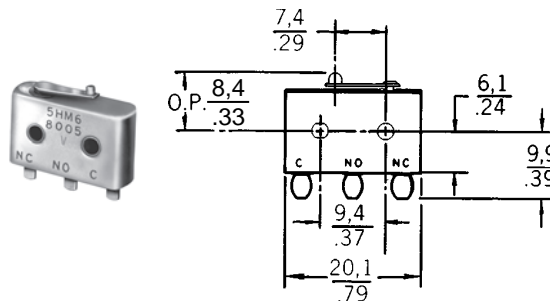


CONTACT MATERIAL	TEMPERATURE RANGE	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Silver	4	D	MS27216-5	11HM1
Gold	4	A		13HM1
Gold Bifurcated	5	C		19HM1
Gold Bifurcated	5	C		19HM4 [2]
Gold Bifurcated	4	C	MS27216-6	9HM1
Gold Bifurcated	4	C		109HM1 [3]

[2] Only metal and glass material exposed external to switch (i.e. vacuum application consideration)

[3] Mechanical life 100 000 operations
Electrical life 25 000 operations at full rated load

Solder, weld



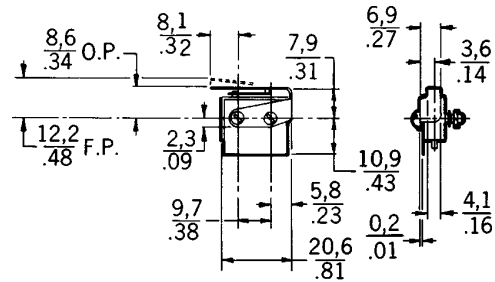
CONTACT MATERIAL	TEMPERATURE RANGE	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Silver cadmium oxide	3	D		15HM2
Silver cadmium oxide	5	D		15HM5 [2]

HM Series Auxiliary actuators

(Switches must be ordered separately)

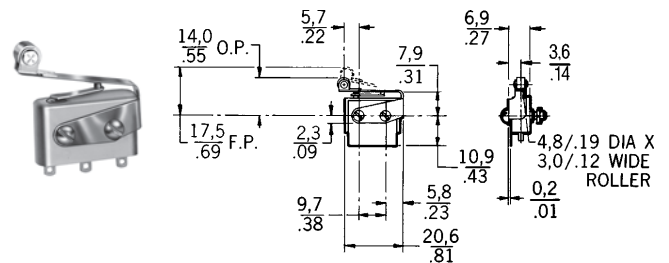
Operating force max. (OF): 2,50 N [9.0 oz]
Overtravel min. (OT): 0,76 mm [0.030 in]
Differential travel max. (DT): 0,76 mm [0.030 in]

Straight leaf



CAT. LISTING
JS-254

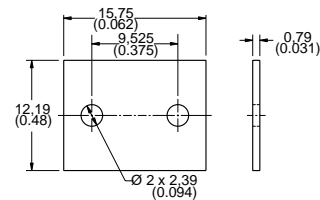
Roller leaf



CAT. LISTING
JS-151

Mounting plate

A force spreading plate is recommended to reduce the risk of product damage due to excessive mounting force.



CAT. LISTING
19PA137-HM

Notice

Torque on #2 mounting screws must be restricted to 0,16 N m [1.5 in lb] max. to prevent switch damage. The force spreading mounting plate 19PA137-HM will allow up to 0,28 N m [2.5 in lb] of mounting torque.

HS Series Hermetically Sealed Basic Switches



HS Series Hermetically Sealed Switches are designed for potential applications where maximum electrical rating and maximum sealing are essential, and where size and weight requirements are less critical. These switches are side-mounted through mounting holes located outside the sealed switching chamber.

Package size: Standard 25,4 mm H x 17,8 mm W x 50,8 mm L
[1.0 in H x 0.7 in W x 2.0 in L]

Housing material: Stainless Steel, phenolic

Sealing: Hermetic MIL-S-8805, design symbol 5

Operating temperature: Standard -55 °C to 125 °C
[-67 °F to 250 °F]
High -55 °C to 149 °C
[-67 °F to 300 °F]

Approvals: UL, CSA (screw terminals)

Termination: Screw or leadwire

Operating force max. (OF): 2,78 N to 6,12 N [10 oz to 22 oz]

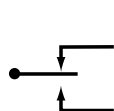
Pretravel max. (PT): 1,65 mm [0.065 in]

Overtravel min. (OT): 0,25 mm [0.010 in]

Differential travel max. (DT): 0,51 mm [0.020 in]

Contacts: Silver

Switching options: SPDT



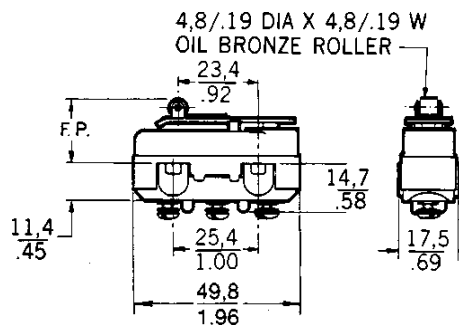
Single Pole, Double Throw

Electrical ratings:	A	B	C	D
	25 A res., 8 A ind., 28 Vdc 1 A res., 1 A ind., 115 Vac UL-CSA rating - 1 A, 125 Vac	15 A res., 8 A ind., 28 Vdc 0.5 A res., 1A ind., 125 Vac	15 A res., 8 A ind., 28 Vdc 0.5 A res., 1A ind., 125 Vac UL-CSA rating - 1 A, 125 Vac	25 A res., 8 A ind., 28 Vdc 0.5 A res., 1 A ind., 125 Vac UL-CSA rating - 1A, 125 Vac

OPTIONS

Top roller lever

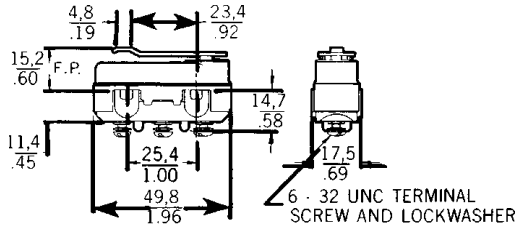
Screw termination



ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
A		1HS3

Integral lever

Screw termination



Standard

ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
A	MS25011-1	1HS1
D		101HS1

High Temperature

Operating force (OF): 2,78 N to 8,34 N [10 oz to 30 oz]

ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
C		102HS1

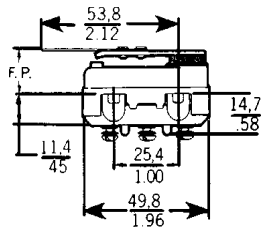
Increased operating force

Operating force (OF): 6,12 N to 7,78 N [22 oz to 28 oz]

Pretravel max. (PT): 2,16 mm [0.85 in]

ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
A	MS25011-4	1HS6

Leaf - added overtravel



Operating force (OF): 1,11 N to 5,56 N [4 oz to 20 oz]

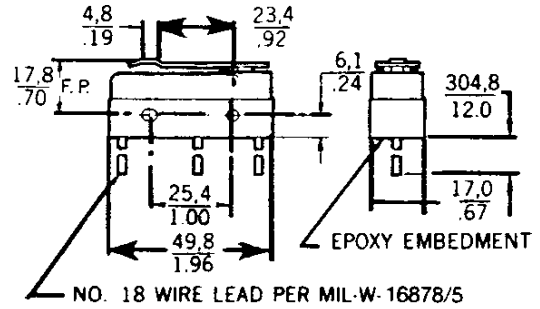
Pretravel max. (PT): N/A

Overtravel max. (OT): 1,57 mm [0.062 in]

Differential travel max. (DT): 2,54 mm [0.100 in]

ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
A		1HS41

Leadwire termination



ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
B		4HS4-118

HT Series High Temperature Basic Switches



HT Series High Temperature Switches are designed to withstand temperatures up to +538 °C [+1000 °F]. The switching element is mounted on a ceramic base with a stainless steel enclosure.

Note: HT Series switches are not classified as sealed switches.

Package size: Standard 31,75 mm H x 17,78 mm W x 49,78 mm L
[1.25 in H x 0.70 in W x 1.96 in L]

Housing material: Ceramic/Stainless Steel

Sealing: No

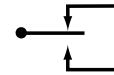
Operating temperature: 538 °C [1000 °F]

Approvals: UL, CSA

Termination: Screw

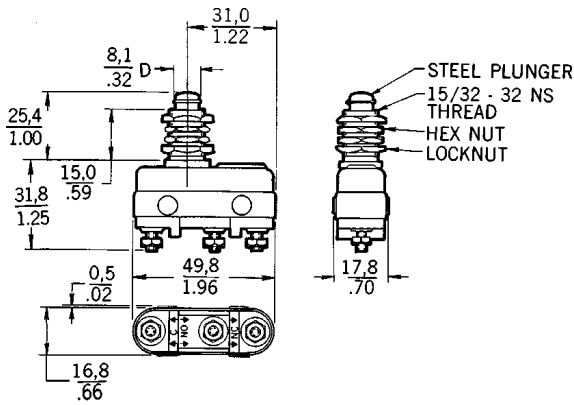
Electrical rating: 3 A, 1/10 HP, 125 Vac
2 A, 1/6 HP, 250 Vac

Switching options: SPDT
Single Pole, Double Throw



OPTIONS

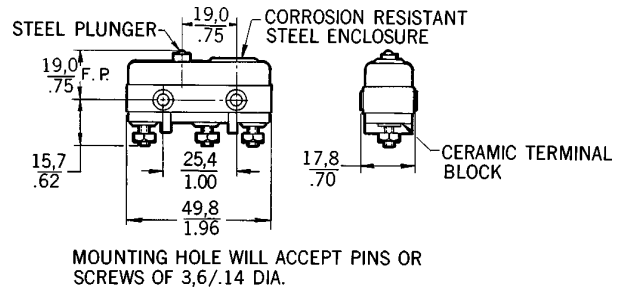
Top pin plunger, panel mount



Operating force max. (OF):	2,78 N to 5,6 N [10 oz to 20 oz]
Pretravel max. (PT):	1,65 mm [0.06 in]
Overtravel min. (OT):	4,78 mm [0.19 in]
Differential travel max. (DT):	0,25 mm [0.01 in]

CAT. LISTING
1HT1

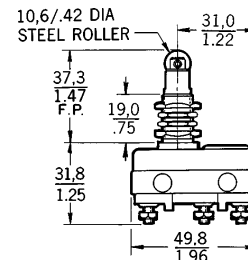
Top pin plunger, side mount



Operating force max. (OF):	2,78 N to 5,6 N [10 oz to 20 oz]
Pretravel max. (PT):	1,27 mm [0.05 in]
Overtravel min. (OT):	0,25 mm [0.01 in]
Differential travel max. (DT):	0,25 mm [0.01 in]

CAT. LISTING
2HT1

Top roller plunger, panel mount



Operating force max. (OF):	8.34 N [30 oz]
Pretravel max. (PT):	1,65 mm [0.06 in]
Overtravel min. (OT):	4,78 mm [0.19 in]
Differential travel max. (DT):	0,254 mm [0.01 in]

CAT. LISTING
3HT1

EN Series Environment Sealed Limit Switches



The EN Series Environment-sealed Limit Switch has resilient sealing as defined in MIL-S-8805, Symbol 4. In addition to the standard versions, miniature housing constructions may be available with similar actuator styles. The miniature versions may meet the demand for smaller size and lighter weight without sacrificing performance or electrical capacity. The miniature version housing is 7,92 mm [0.312 in] smaller in diameter and weighs 14,2 g [0.5 oz] less than the standard version.

Housing material:

Sealing:

Operating temperature:

Termination:

Contacts:

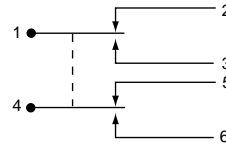
Switching options:

DPDT

Hermetic

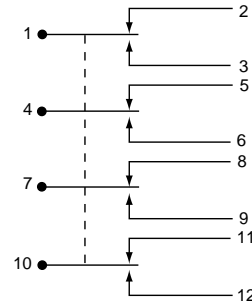
Stainless Steel
MIL-PRF-8805, design symbol 4
-54 °C to 85 °C [-65 °F to 185 °F]
1,829 m [6 ft] Leadwire (#18 and #20)
Receptacle (bottom or side)
Silver

Double Pole, Double Throw



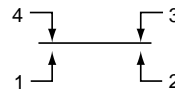
4PDT

4 Pole, Double Throw



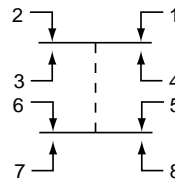
1 CKT, DB

Single Pole, Double Throw, Double Break



2 CKT, DB

Double Pole, Double Throw, Double Break



Electrical Specifications

The electrical ratings charted below are referenced in the order guides. Refer to Appropriate MIL specification for ratings applicable to specific switches.

DC Ratings (Amps)

Rating ² Code	Voltage	Sea Level				50,000 Feet			
		Inrush	Motor	Res.	Ind.	Inrush	Motor	Res.	Ind.
A	28 Vdc	24	4	4	2	24	4 ³	4 ¹	2
B	28 Vdc	36	6	10	3	36	6 ³	10	3
C	28 Vdc	30	5	15	10	30	5 ³	15	10
D	28 Vdc	24	4	5	3	N/A			
E	28 Vdc	N/A		1	.5	N/A		1	.5
F	28 Vdc	24	4	7	4	24	4 ³	7	2.5

Notes:

¹ 5 amps for rotary switches.

² For other electrical data, contact your nearest Honeywell office, MIL-S-8805 ratings apply when this specification is invoked.

³ Application information only.

AC Ratings

Rating Code	Voltage	Sea Level			
		Motor		Res.	Ind.
		Make	Break		
A & D	125/460 Vac @ 60 Hz	24	4	5	3
	125 Vac @ 400 Hz	24	4	5	5
B	125/250 Vac @ 60 Hz	20	3	5	5
	460 Vac @ 60 Hz	20	3	3	3
	125 Vac @ 400 Hz	36	6	10	6
C	125/250 Vac @ 60 Hz	20	3	5	5
	460 Vac @ 60 Hz	20	3	3	3
	125 Vac @ 400 Hz	30	5	10	6
F	125/460 Vac @ 60 Hz	12	2	2	2
	125 Vac @ 400 Hz	24	4	5	5

Explanations of switches with special features

Low force operation (Low OF)

Special spring construction within this switch reduces the normal 6 lb to 12 lb [26,7 N to 53,4 N] EN operating force to 3 lb to 6 lb [13,3 N to 26,7 N]. This switch is also dimensionally interchangeable with the standard size 1EN1-6. Low force 600 series ENs have 3 to 6 pounds [13,3 to 26,7 N] of operating force.

Increased overtravel (High OT)

A longer plunger and bushing on the switch extends the EN overtravel capabilities from the normal 0.25 in to 0.86 in [6,35 mm to 21,8 mm]. The longer bushing also permits additional adjustment of the plunger position.

High impact shock (High shock)

Catalog listing 1EN75-R3 (M8805/65-001) has been qualified to MIL-PRF-8805, including high impact shock class H. Other switches rated for high impact shock applications incorporate the same plunger mechanism and internal switch design as used in the 1EN75-R3 and are expected to conform to the same requirements.

Switch dimensions

Where there is no dimension drawing shown, combine housing height and diameter with actuator for overall measurement.

EN Series Standard switches

Operating characteristics (except where specified otherwise)
Operating force max. (OF): 26,69 N to 53,38 N [6 lb to 12 lb]
 Low 13,3 N to 26,7 N [3 lb to 6 lb]
Pretravel max. (PT): 1,02 mm [0.04 in]
Overtravel min. (OT): 6,35 mm [0.25 in]
 High 12,7 mm [0.50 in]
Differential travel max. (DT): 0,51 mm [0.020 in]

OPTIONS

Top pin plungers



Leadwire termination

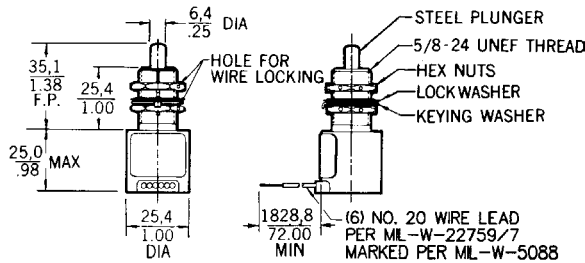


Bottom receptacle termination



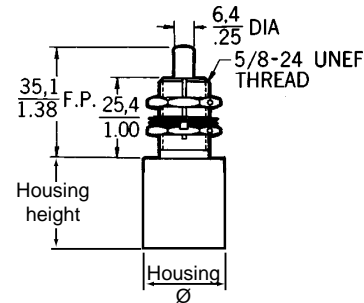
Side receptacle termination

Leadwire #20 wire gage



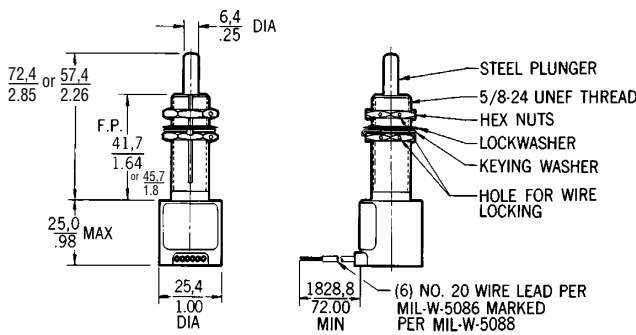
1EN1-6/1EN231-6/1EN51-6

Leadwire #18 wire gage



2EN/3EN/4EN Series

	Pretravel max. (PT)	Differential travel max. (DT)	Housing Height	Diameter
2EN	1,27 mm [0.05 in]	0,89 mm [0.035 in]	38,1 mm [1.50 in]	38,1 mm [1.5 in]
3EN	1,52 mm [0.06 in]	0,89 mm [0.035 in]	33,3 mm [1.31 in]	38,1 mm [1.5 in]
4EN	1,78 mm [0.07 in]	1,14 mm [0.045 in]	43,2 mm [1.70 in]	38,1 mm [1.5 in]



1EN61-6/1EN412-3

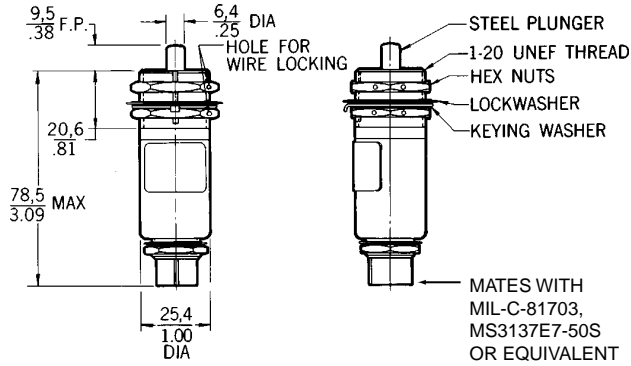
CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	A	MS24331-1	1EN1-6
High shock	DPDT	A	1EN231-6
Low OF	DPDT	A	1EN51-6
High OT	DPDT	A	1EN61-6
Gold contacts	DPDT	E	1EN412-3

CIRCUITRY	ELECTRICAL	MILITARY PART RATING	CAT. LISTING NUMBER
DPDT	B	MS24331-2	2EN1-6
1 CKT, DB	C	MS24331-3	3EN1-6
2 CKT, DB	C	MS24331-4	4EN1-6

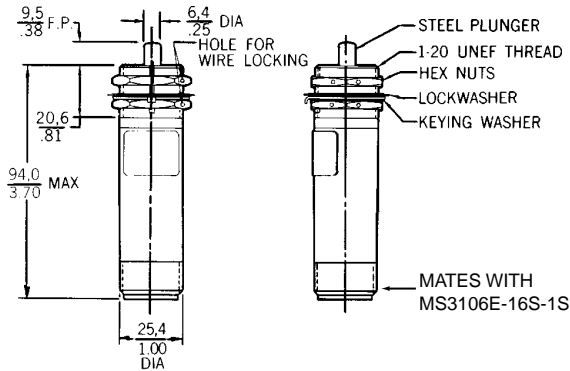
**EN Series
Standard switches (continued)**

Top pin plungers (continued)

Bottom receptacle



1EN75-R

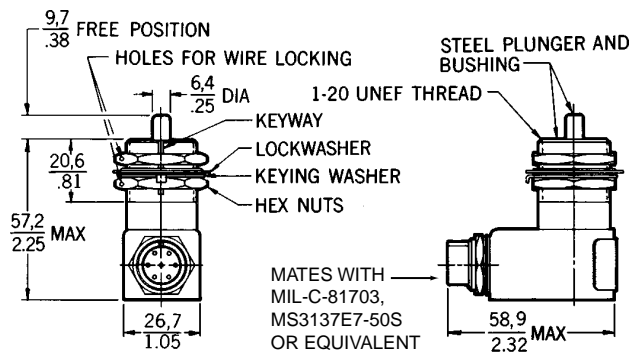


1EN75-R3

	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
High shock	DPDT	D		1EN75-R
High shock	DPDT	D	M8805/65-001	1EN75-R3

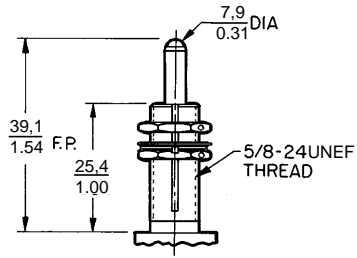
Side receptacle

1EN76-R



	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
High shock	DPDT	D		1EN76-R

Ball bearing plunger

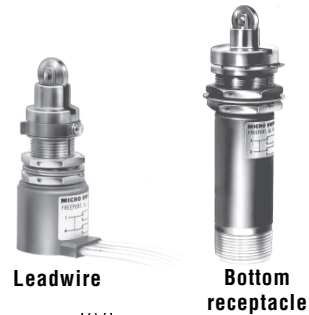


Leadwire #20 wire gage

Housing height: 24,9 mm [0.98 in]
Diameter: 25,4 mm [1.00 in]

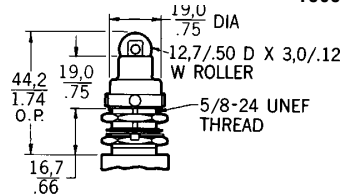
CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	A		2001EN1-6

Top roller plunger



Leadwire

Bottom receptacle

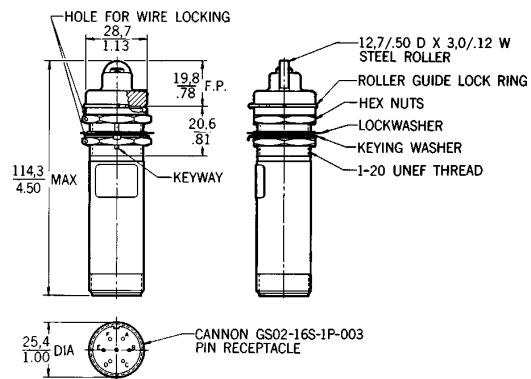


Leadwire #20 wire gage

Housing height: 24,9 mm [0.98 in]
Diameter: 25,4 mm [1.00 in]

	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Gold contacts	DPDT	A		21EN9-6
	DPDT	E		21EN108-6

Bottom receptacle

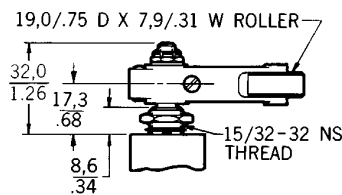


	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
High shock	DPDT	D		21EN75-R1

Rotary roller lever



Leadwire termination



Leadwire #20 wire gage

Operating force max. (OF): 1,4 N m to 2,8 N m [12 in lb to 25 in lb]
Pretravel max. (PT): 13° ± 3°
Differential travel max. (DT): 4°
Housing height: 53,6 mm [2.11 in]
Diameter: 25,4 mm [1.00 in]

CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	D	MS21320-1 (CW)	31EN11-6
DPDT	D	MS21320-2 (CCW)	31EN1-6

Leadwire #18 wire gage

Operating force max. (OF): 1,4 N m to 2,8 N m [12 in lb to 25 in lb]

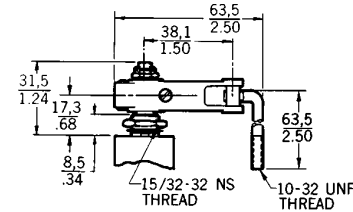
	Pretravel (PT)	Differential travel max. (DT)	Housing Height	Diameter
32EN	20° ± 4°	6°	68,6 mm [2.70 in]	38,1 mm [1.5 in]
33EN	15° ± 4°	5°	62,0 mm [2.44 in]	38,1 mm [1.5 in]
34EN	15° ± 5°	10°	71,6 mm [2.82 in]	38,1 mm [1.5 in]

CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	B	MS21320-3 (CW)	32EN11-6
DPDT	B	MS21320-4 (CCW)	32EN1-6
1CKT DB	C	MS21320-5 (CW)	33EN11-6
1CKT DB	C	MS21320-6 (CCW)	33EN1-6
2CKT DB	C	MS21320-7 (CW)	34EN11-6
2CKT DB	C	MS21320-8 (CCW)	34EN1-6

Rotary linkage lever, adjustable rod



Leadwire termination



Leadwire #20 wire gage

Operating force max. (OF): 0,34 N m [3 in lb]
Differential travel max. (DT): 12°
Housing height: 25,4 mm [1.00 in]
Diameter: 25,4 mm [1.00 in]

CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	A	MS24420-1	41EN1-6

Leadwire #18 wire gage

Operating force max. (OF): 42EN 0,57 N m [5 in lb]
 44EN 1,13 N m [10 in lb]

	Differential travel max. (DT)	Housing Height	Diameter
42EN	12°	42,2 mm [1.66 in]	38,1 mm [1.5 in]
44EN	20°	45,7 mm [1.80 in]	38,1 mm [1.5 in]

CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	B	MS24420-2	42EN1-6
2 CKT DB	C	MS24420-4	44EN1-6

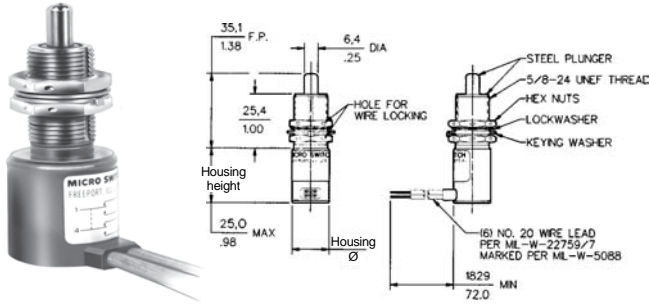
**EN Series
Miniature switches**

Miniature type EN switches may meet the demand for smaller size and lighter weight without sacrificing performance or electrical capacity. These types are of the same construction, seal, and materials as the standard size EN switches.

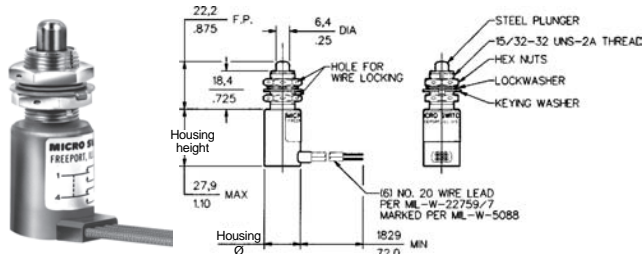
Type 400EN switches are directly interchangeable with their standard size EN counterpart, yet are smaller in diameter and lighter in weight. The miniature listing housing is 0.312 in [7,92 mm] smaller in diameter, and the switch weight 1.2 oz [14,2g] less.

Operating temperature: -55 °C to 85 °C
[-67 °F to 185 °F]

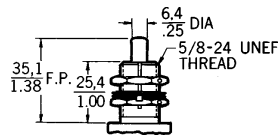
Top pin plunger



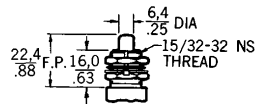
400EN



600EN



400EN



600EN

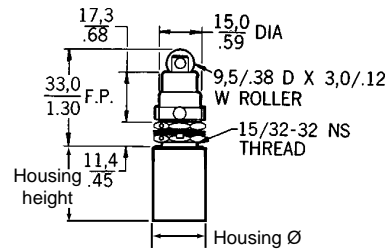
Leadwire #20 wire gage

	Housing Height	Diameter
402EN	24,9 mm [0.98 in]	17,5 mm [0.69in]
404EN	30,5 mm [1.20 in]	25,4 mm [1.0 in]
602EN	25,4 mm [1.0 in]	17,5 mm [0.69 in]
604EN	30,5 mm [1.200 in]	25,4 mm [1.0 in]

	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
	DPDT	F	MS21321-1	402EN1-6
	4PDT	F	MS21321-2	404EN1-6
	DPDT	F	MS27240-1	602EN1-6
Gold contacts	DPDT	E	MS27240-5	602EN222-6
	4PDT	F	MS27240-2	604EN1-6
Gold contacts	4PDT	E	MS27240-6	604EN222-6

Top roller plunger

600EN



Leadwire #20 wire gage

	Housing Height	Diameter
622EN	25,4 mm [1.0 in]	17,5 mm [0.69 in]
624EN	30,5 mm [1.20 in]	25,4 mm [1.0 in]

	CIRCUITRY	ELECTRICAL RATING	MILITARY PART NUMBER	CAT. LISTING
Gold contacts	DPDT	F	MS27240-3	622EN1-6
	DPDT	E	MS27240-7	622EN222-6
	4PDT	F	MS27240-4	624EN1-6
	4PDT	E	MS27240-8	624EN222-6

HE Series Hermetically Sealed, Limit Switches



The HE Series Hermetically-sealed Limit Switch meets hermetic sealing as defined in MIL-S-8805, Symbol 5. The HE Series features true hermetic sealing (metal-to-metal, glass-to metal construction), aimed at providing maximum sealing effectiveness for exceptionally long periods of time regardless of constant changes in atmospheric pressures and temperatures.

Housing material: Stainless Steel
Sealing: Hermetic MIL-S-8805, design symbol 5
Operating temperature: -55 °C to 125 °C [-67 °F to 257 °F]
Termination: Leadwire (x 6)
Operating force max. (OF):

1HE Series 26,69 N to 53,38 N [6 lb to 12 lb]
 600HE Series 22,2 N to 53,38 N [5 lb to 12 lb]

Pretravel max. (PT): 1,02 mm [0.04 in]
Overtravel min. (OT): 1HE Series 6,35 mm [0.25 in]
 600HE Series 3,18 mm [0.12 in]
Differential travel max. (DT): 0,51 mm [0.02 in]
Contacts: Electrical ratings A/B Silver
 Electrical rating C Gold

Electrical ratings:	A	7 A res., 5 A ind., 28 Vdc
	B	5 A res., 3 A ind., 28 Vdc
	C	1 A res., 0.50 A ind., 28 Vdc

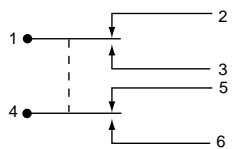
Switching options:
 SPDT

Single Pole, Double Throw



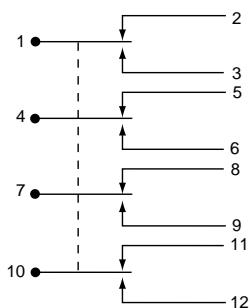
DPDT

Double Pole, Double Throw



4PDT

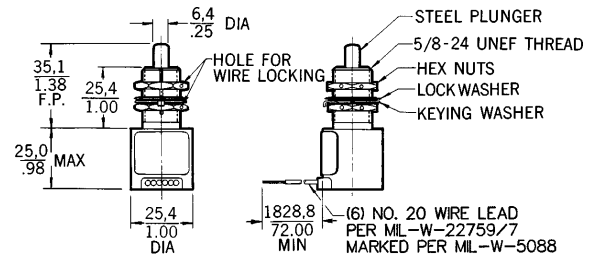
4 Pole, Double Throw



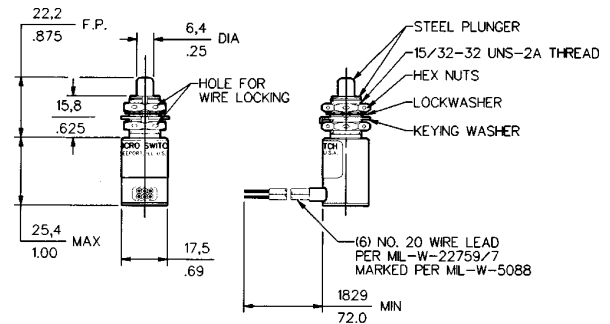
OPTIONS

Top pin plunger

1HE1-6



602HE1-6

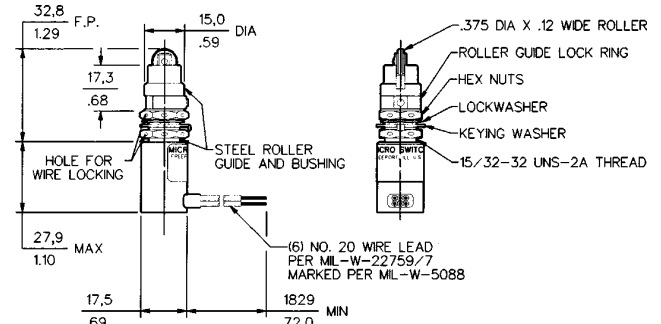


604HE1-6 dimensions as 602HE1-6 except: Ø 25,4 mm [1.00 in]
 Height 30,5 mm [1.20 in]

FEATURES	ELECTRICAL RATING	CONTACT	MILITARY PART NUMBER	CAT. LISTING
3 x leadwires, gold contacts	C	SPDT		1HE222-6
	B	DPDT	MS8805/80-01	1HE1-6
Gold contacts	C	DPDT		602HE106-6
	A	DPDT		602HE1-6
12 x leadwires	A	4PDT		604HE1-6

Top roller plunger

622HE1-6



624HE1-6 dimensions as 622HE1-6 except: Ø 25,4 mm [1.00 in]
 Height 30,5 mm [1.20 in]

FEATURES	ELECTRICAL RATING	CONTACT	MILITARY PART NUMBER	CAT. LISTING
12 x leadwires	A	DPDT		622HE1-6
	A	4PDT		624HE1-6

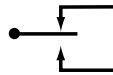
HR Series

Hermetically Sealed, High Temperature, Limit Switches



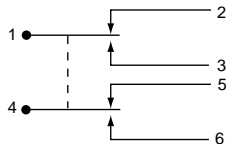
The HR Series high temperature, hermetically sealed switch is sealed as defined in MIL-S-8805, Symbol 5. The HR Series combines maximum sealing, high temperature (315 °C [600 °F]) capabilities and rugged, heavy duty, corrosion-resistant construction aimed at providing reliable switching in the most demanding applications.

- Housing material:** Stainless Steel
- Sealing:** Hermetic MIL-S-8805, design symbol 5
- Operating temperature:** -65 °C to 315 °C [-85 °F to 600 °F]
- Termination:** Screw or leadwire [1,83 m, 6 ft]
- Operating force max. (OF):** 26,69 N to 53,38 N [6 lb to 12 lb]
- Pretravel max. (PT):** 1,27 mm [0.05 in]
- Overtravel min. (OT):** 6,35 mm [0.25 in]
- Differential travel max. (DT):** 0,38 mm [0.01 in]
- Contacts:** Silver
- Electrical rating:** 5 A, 28 Vdc
- Switching options:** SPDT, DPDT



Single Pole, Double Throw

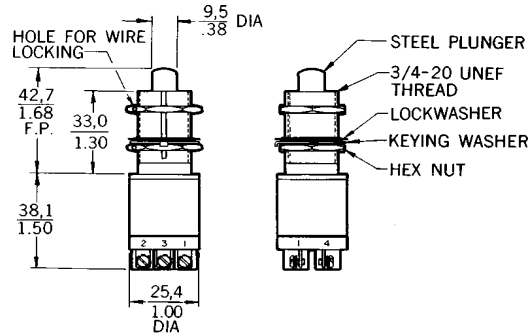
DPDT



Double Pole, Double Throw

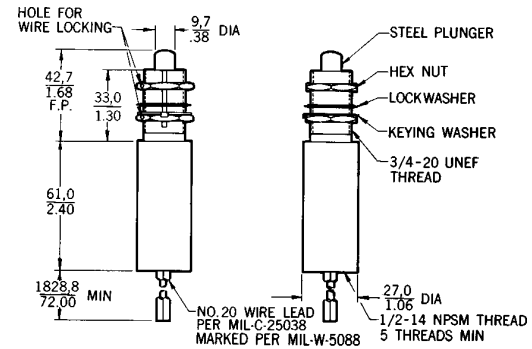
OPTIONS

Top pin plunger Screw termination



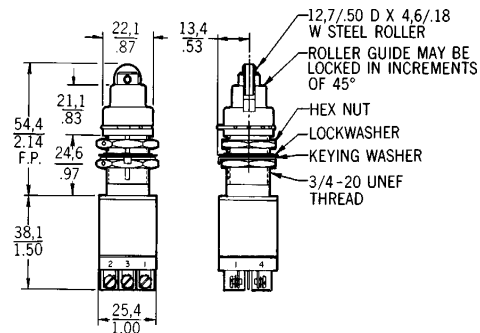
CONTACT	MILITARY PART NUMBER	CAT. LISTING
DPDT	MS24594-1	12HR1-S

Leadwire termination



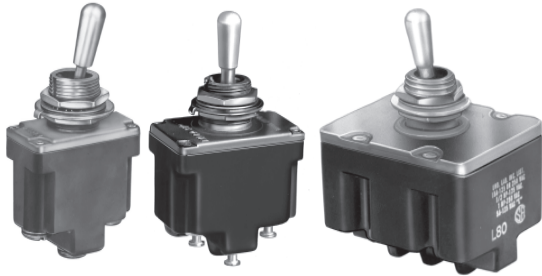
CONTACT	MILITARY PART NUMBER	CAT. LISTING
SPDT		12HR8-6

Top roller plunger, parallel Screw termination



CONTACT	MILITARY PART NUMBER	CAT. LISTING
DPDT		22HR1-S

TL Series Environment Sealed Toggle Switches



Standard lever - 1, 2 and 4 pole



Locking lever



IWTS type -
1 and 2 pole

The TL Series are military-grade design and environment-proof sealed toggle switches, qualified to MIL-S-3950. A large selection of circuitries, lever designs, and electrical terminations are available, with silver or gold plated contacts to meet a variety of electrical load requirements. They have high strength, temperature resistant, non-tracking case material. For options other than those shown below, contact Honeywell for more information.

IWTS (Integrated Wire Termination System) option

IWTS provides you with a reliable, completely serviceable unit which meets MIL-S-3950 requirements. IWTS improves maintainability since wiring bundles need not be disturbed. Leads are quickly and easily assembled or removed with an insert-extract tool.

A unique three-rib (grommet style) elastomer seal protects the lead connections without potting. There are no exposed metal terminals.

Versions are available that will accept No.16 wire with M39029/1-102 contact pins or No. 20 wire with M39029/1-101 contact pins. Connections are resistant to shock, vibration, and high pulling force.

Approvals:	UL, CSA, CE
Sealing:	MIL-S-3950
Operating temperature:	-65 °C to 71 °C [-85 °F to 160 °F]
Mounting:	Bushing 15/32 in
Termination:	Solder, Screw, IWTS (14-16 Gage and 16-20 Gage)
Contacts:	Silver cadmium oxide or gold (gold where indicated)

Electrical ratings (Resistive load):

Values below are based on previous Honeywell testing and opinion. See MIL-S-3950 for Military specified values.

A	0.5 A to 15 A at 0.5 Vac to 277 Vac 0.75 A at 115 Vdc 0.5 A to 20 A at 0.5 Vdc to 28 Vdc 0.5 A at 250 Vdc
B	0.5 A to 15 A at 0.5 Vdc to 28 Vdc 0.75 A at 115 Vdc 0.5 A to 10 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdc
C	0.75 A at 115 Vdc 0.5 A to 20 A at 0.5 Vdc to 28 Vdc 0.5 A to 15 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdc
D	0.5 A to 18 A at 0.5 Vdc to 28 Vdc 0.5 A to 10 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdc 0.75 A at 115 Vdc
E	0.5 A to 20 A at 0.5 Vdc to 28 Vdc 0.5 A to 15 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdc 0.75 A at 115 Vdc
F	0.75 A at 115 Vdc 0.5 A at 250 Vdc 0.5 A to 10 A at 0.5 Vac to 277 Vac 0.5 A to 18 A at 0.5 Vdc to 28 Vdc

UL/CSA Rating Code:

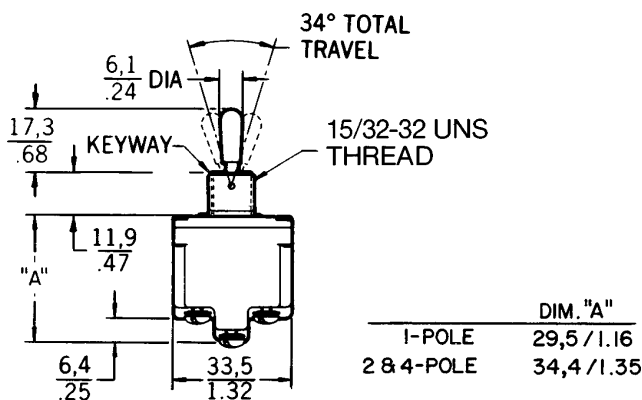
L191:	15 A-125, 250, 277 Vac; 1/2 Hp-125 Vac; 1 Hp-250, 277 Vac; 5 A-120 Vac "L"
L192:	10 A-125, 250, 277 Vac; 1/4 Hp-125 Vac; 1/2 Hp-250, 277 Vac; 3 A-125 Vac "L"

Application Note:

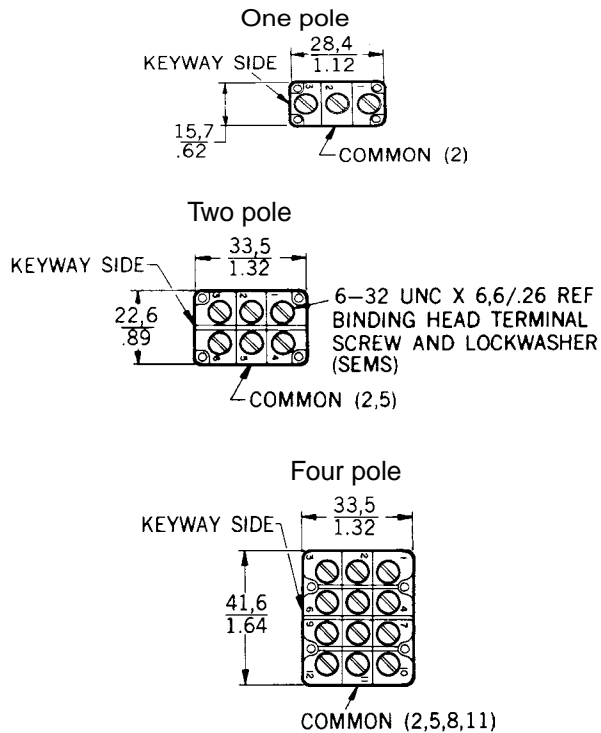
Honeywell does not recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 V and/or 0.5 A. TL switches use silver cadmium oxide contact.

If you have specific questions, contact Honeywell.

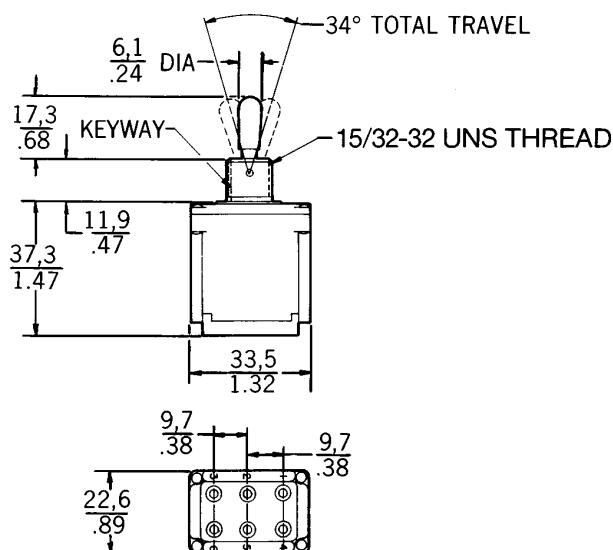
Standard lever



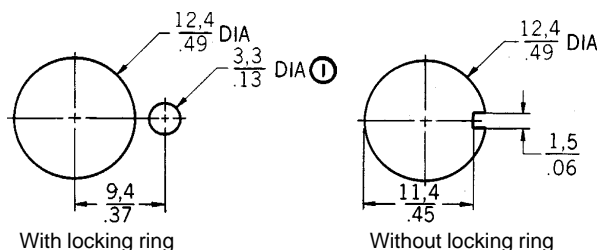
Terminal circuit identification



IWTS (Integrated Wire Termination System)

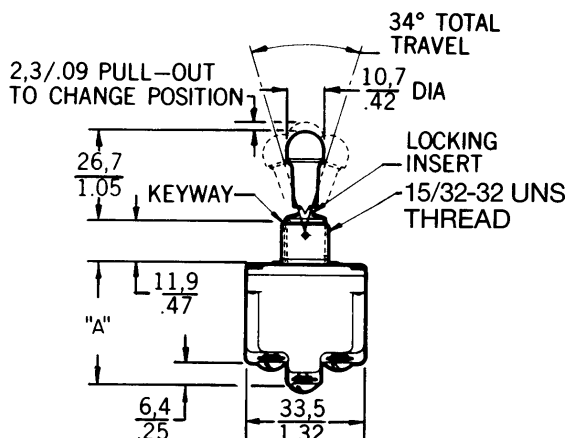


Panel cutout



Note:
1,4 mm/.06in MIN DEEP TO ACCOMMODATE LOCKING RING. 15PA87 PANEL SEAL REQUIRES BLIND HOLE TO ENSURE SEAL INTEGRITY

Locking lever



Lever locking configurations

Relates to **bold** digit in Cat. Listing (part number)

<p>A</p> <p>Locked In 3 Positions</p>	<p>D</p> <p>Locked Out of Center Position</p>	<p>E</p> <p>Locked In Center Position</p>
<p>F</p> <p>Locked In Extreme Position (Opposite Keyway)</p>	<p>G</p> <p>Locked In Extreme Position (Keyway Side)</p>	<p>K</p> <p>Locked In Center and Extreme Position (Opposite Keyway)</p>

TL Series

2 position switches

Standard lever

1 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
SPST	1	A	L191	MS24523-22	1TL1-2
SPST	2	B	L192	MS24523-30	1TL1-6
SPDT	3	A	L191	MS24523-23	1TL1-3
SPDT	4	B	L192	MS24523-26	1TL1-8

2 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPST	5	C	L191	MS24524-22	2TL1-2
DPST	6	D	L192	MS24524-30	2TL1-6

2 pole, solder terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPST	5	C	L191	MS27735-22	12TL1-2
DPDT	7	C	L191	MS27735-23	12TL1-3

2 pole, ITWS (16-20 Gage)

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPST	5	C	L191	MS27785-22	102TL2-2
DPDT	7	C	L191	MS27785-23	102TL2-3

4 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
4PST	8	E	L191	MS24525-22	4TL1-2
4PDT	9	E	L191	MS24525-23	4TL1-3
4PDT	10	F	L192	MS24525-26	4TL1-8

Locking lever

1 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
SPST	1	A	L191	MS24658-22D	1TL1-2D
SPST	1	A	L191	MS24658-22G	1TL1-2G
SPDT	3	A	L191	MS24658-23D	1TL1-3D
SPDT	3	A	L191	MS24658-23F	1TL150-3D ⁽¹⁾
SPDT	4	B	L192	MS24658-26F	1TL1-8F

2 pole, screw terminals

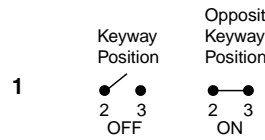
CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPST	5	C	L191	MS24659-22D	2TL1-2D

4 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
4PDT	9	E	L191	MS24660-23D	4TL1-3D

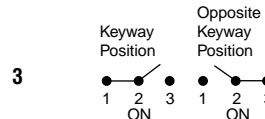
2 Position Switching options/Operating action:

SPST



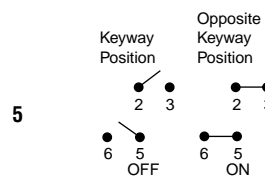
Single Pole, Single Throw

SPDT



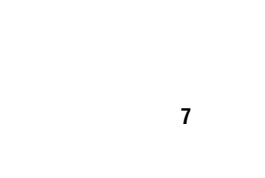
Single Pole, Double Throw

DPST



Double Pole, Single Throw

DPDT



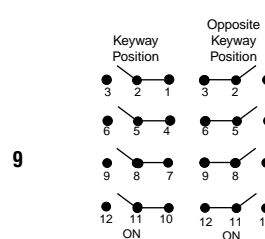
Double Pole, Double Throw

4PST



4 Pole, Single Throw

4PDT



4 Pole, Double Throw

⁽¹⁾ FAA-PMA approved, white resilient cap on lever

TL Series 3 position switches

Standard lever

1 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
SPST	11	A	L191	MS24523-24	1TL1-21
SPST	12	B	L192	MS24523-28	1TL1-61
SPDT	13	A	L191	MS24523-21	1TL1-1
SPDT	14	B	L192	MS24523-31	1TL1-5
SPDT	15	B	L192	MS24523-27	1TL1-7

1 pole, ITWS (14-16 Gage)

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
SPST	11	A	L191	MS27722-24	101TL1-21

2 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPST	16	C	L191	MS24524-24	2TL1-21
DPDT	17	C	L191	MS24524-21	2TL1-1
DPDT	20	C	L191	MS27407-4	2TL1-10
DPDT	24	C	L191	MS27407-1	2TL1-12
DPDT	17	C	L191	MS24524-23	2TL1-3
DPDT	26	D	L192	MS24524-31	2TL1-5
DPDT	22	D	L192	MS27407-5	2TL1-50
DPDT	23	D	L192	MS27407-2	2TL1-56
DPDT	25	D	L192	MS24524-27	2TL1-7
DPDT	21	D	L192	MS27407-6	2TL1-70
DPDT	18	D	L192	MS24524-26	2TL1-8

4 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
4PDT	27	F	L192	MS24525-27	4TL1-7

Locking lever

1 pole, screw terminals

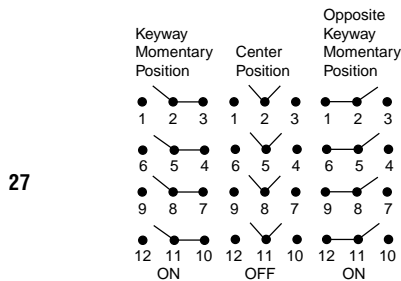
CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
SPDT	13	A	L191	MS24658-21A	1TL1-1A
SPDT	15	B	L192	MS24658-27E	1TL1-7E

2 pole, screw terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	MILITARY PART NUMBER	CAT. LISTING
DPDT	17	C	L191	MS24659-21A	2TL1-1A
DPDT	20	C	L191	MS27408-4A	2TL1-10A
DPDT	17	C	L191	MS24659-23D	2TL1-3D
DPDT	17	C	L191	MS24659-23G	2TL1-3G
DPDT	19	C	L191	MS24659-33K	2TL1-31K
DPDT	21	D	L192	MS27408-6E	2TL1-70E
DPDT	18	D	L192	MS24659-26F	2TL1-8F

3 Position Switching options/Operating action (continued)

4PDT

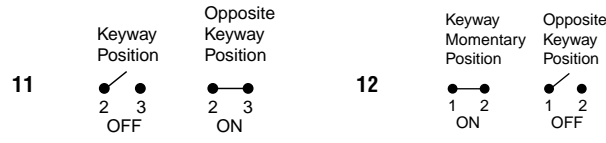


4 Pole, Double Throw

3 Position Switching options/Operating action:

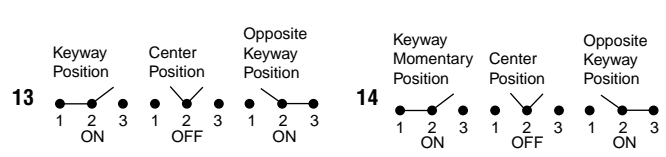
SPST

Single Pole, Single Throw



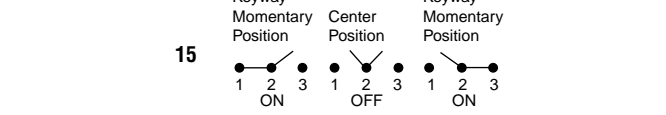
SPDT

Single Pole, Double Throw



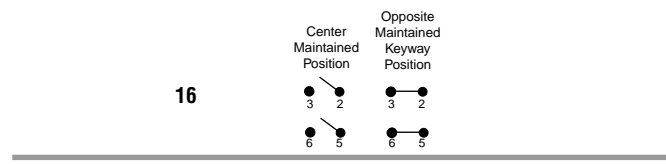
DPST

Double Pole, Single Throw



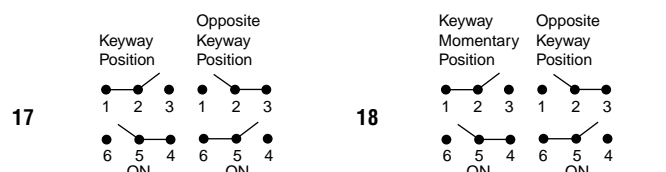
DPDT

Double Pole, Single Throw



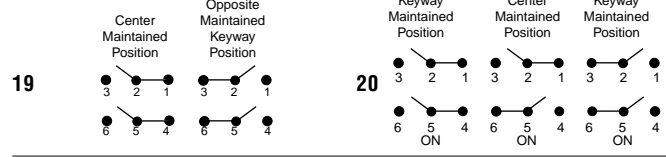
DPDT

Double Pole, Double Throw



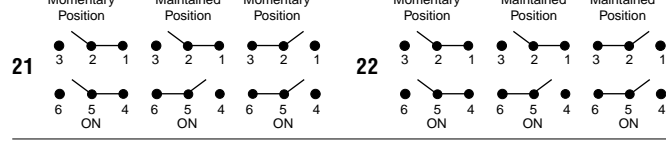
DPDT

Double Pole, Double Throw



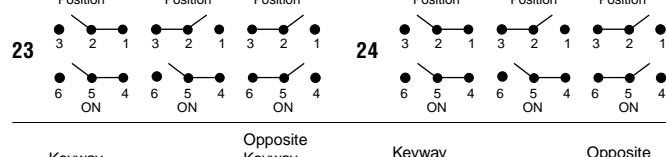
DPDT

Double Pole, Double Throw



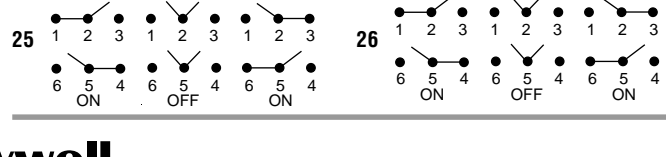
DPDT

Double Pole, Double Throw

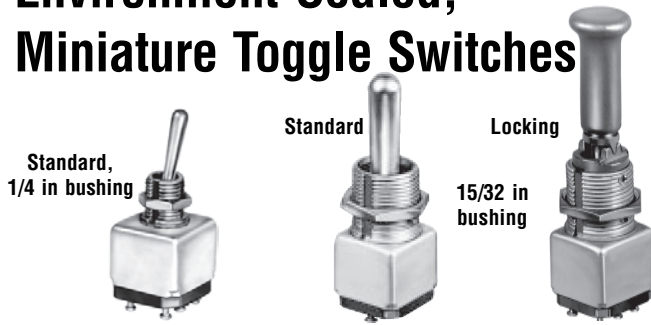


DPDT

Double Pole, Double Throw



TW Series Environment Sealed, Miniature Toggle Switches



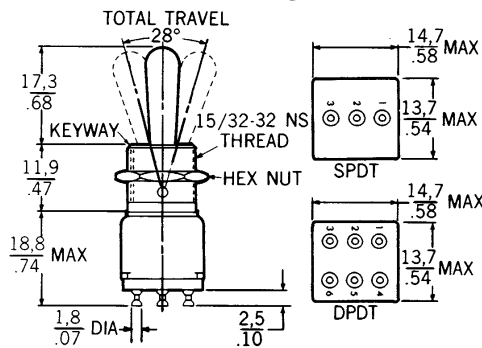
TW Series toggle switches are miniature, military grade design and environment-proof sealed. With silver or gold contacts to meet a variety of electrical load requirements, options available include IWTS (integrated wire termination system) versions, a large selection of circuitries, electrical terminations, lever, and bushing designs. Contact Honeywell for more information.

Sealing: MIL-S-83731(1TW1-3 not sealed)
Operating temperature: -65 °C to 71 °C
 [-85 °F to 160 °F]
Mounting: Bushing 15/32 in or 1/4 in
Termination: Solder
Contacts: Fine silver or gold (gold where indicated)

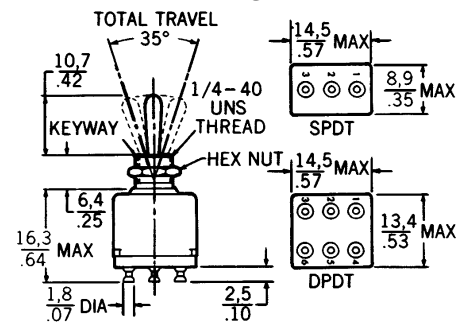
Electrical ratings* (Resistive load): 0.1 A to 5.0 A at 0.5 Vac to 115 Vac
 0.1 A to 5.0 A at 0.5 Vdc to 28 Vdc

* Values are based on previous Honeywell testing and opinion. See MIL-S-83731 for Military specified values.

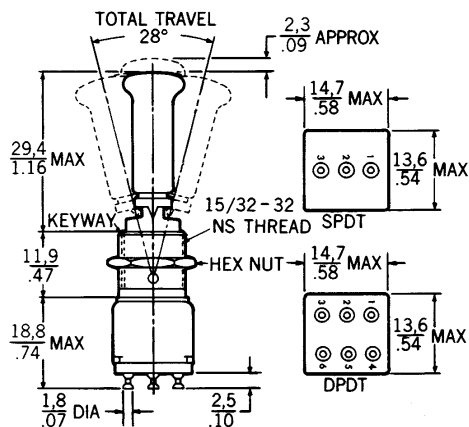
Standard lever, 15/32 in bushing



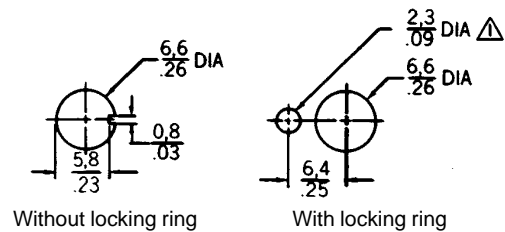
Standard lever, 1/4 in bushing



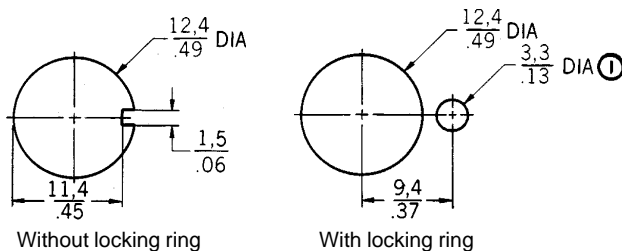
Locking lever, 15/32 in bushing



Panel cutout, 1/4 in bushing

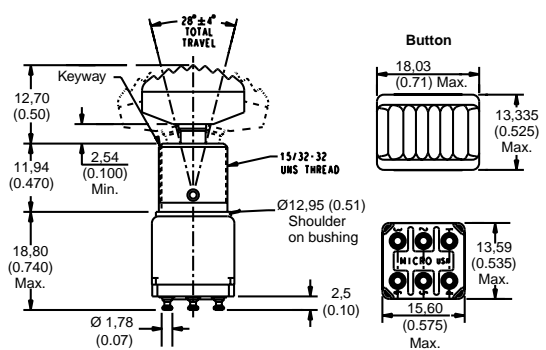


Panel cutout, 15/32 in bushing

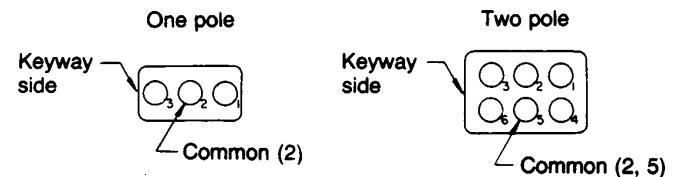


Note:
 1,1 mm/.05 in min. deep to accommodate locking ring.
 For switches using panel seal, do not allow thru hole mounting.

Special design - black button



Terminal circuit identification



TW Series 2 position switches

Standard lever

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
	SPST	1	MS27718-22-1	11TW1-2
Gold plated contacts	SPST	1		11TW8-2
	SPDT	2	MS27718-23-1	11TW1-3
Gold plated contacts	SPDT	2		11TW8-3
	DPDT	3	MS27719-23-1	12TW1-3
Gold plated contacts	DPDT	2		12TW8-3
Solder T2 type	DPDT	3		12TW75-3

Standard lever, unsealed

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
Bushing 1/4 in	SPDT	2	MS27716-23-1	1TW1-3

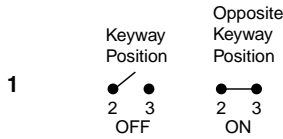
Locking lever

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
	SPDT	2	MS27720-23-1D	11TW1-3D
	DPDT	3	MS27721-23-1D	12TW1-3D

2 Position Switching options/Operating action:

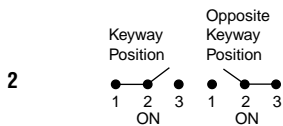
SPST

Single Pole, Single Throw



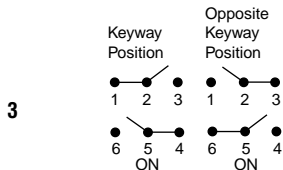
SPDT

Single Pole, Double Throw



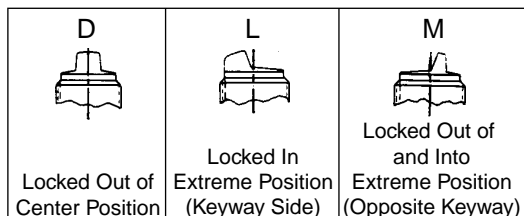
DPDT

Double Pole, Double Throw



Lever locking configurations

Relates to **bold** digit in Cat. Listing (part number)



TW Series 3 position switches

Standard lever

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
	SPDT	6	MS27718-27-1	11TW1-7
Gold plated contacts	SPDT	5		11TW8-5
Gold plated contacts	SPDT	6		11TW8-7
	DPDT	7	MS27719-21-1	12TW1-1
	DPDT	10	MS27753-39	12TW1-50
	DPDT	8	MS27719-27-1	12TW1-7
	DPDT	9	MS27753-40	12TW1-70
Gold plated contacts	DPDT	8		12TW8-7
Solder T2 type	DPDT	8		12TW75-7

Locking lever

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
	SPDT	4	MS27720-21-1L	11TW1-1L
	DPDT	10	MS27754-39M	12TW1-50M

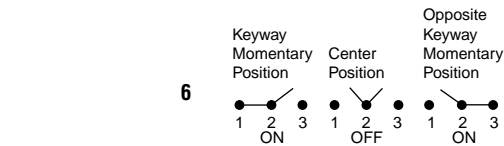
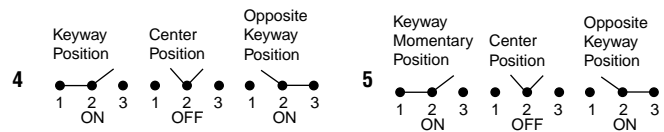
Special design lever - black button

	CIRCUITRY	OPERATING ACTION	MILITARY PART NUMBER	CAT. LISTING
	DPDT	7		12TW29-1
	DPDT	8		12TW29-7

3 Position Switching options/Operating action:

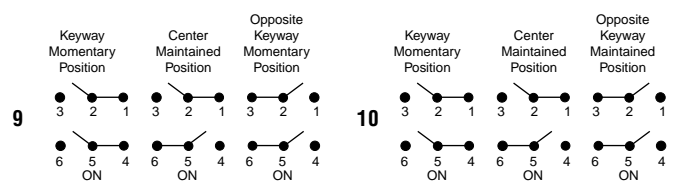
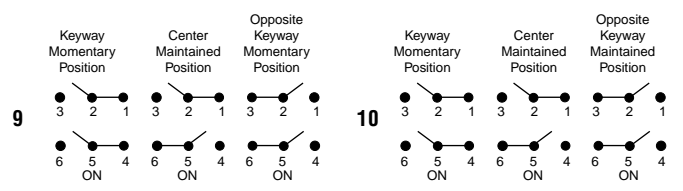
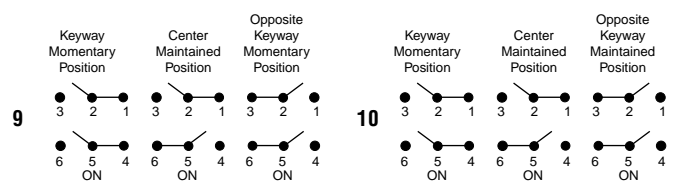
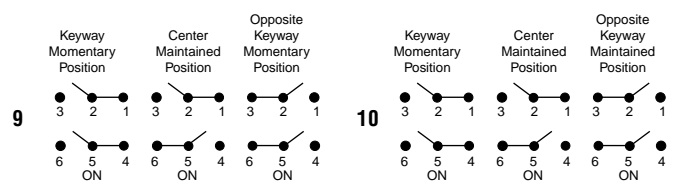
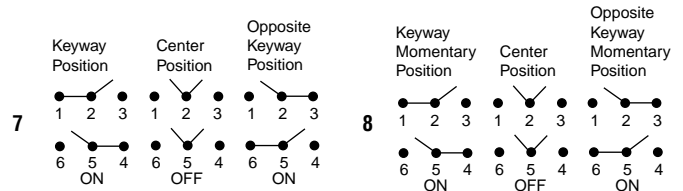
SPDT

Single Pole, Double Throw



DPDT

Double Pole, Double Throw



AT Series Toggle Switch Assemblies

Standard



Pull-to-unlock

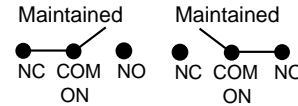
The AT Series provides multi-pole (2, 4, 6, 8 & 10) toggle switches that contain precision basic switches which conserve space and weight. The AT Series offers a standard lever design along with lever-locking mechanisms that are sometimes required to prevent inadvertently actuating the toggle lever when it is not desired to do so. The lever-locking mechanisms require that the toggle lever must be pulled approximately 2,3 mm [0.09 inches] to change the position. Other variations include different toggle lever designs/styles, circuitry variation, toggle lever to bushing seals, etc. The 60AT Series offers qualified versions that meet MIL-S-8805/98 requirements. To find out more about the AT Series variations that are available, contact Honeywell or visit www.honeywell.com/sensing.

Sealing:

MIL-S-8805/98

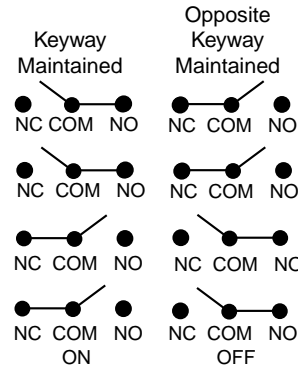
Switching options/Operating action:
SPDT

Single Pole, Double Throw



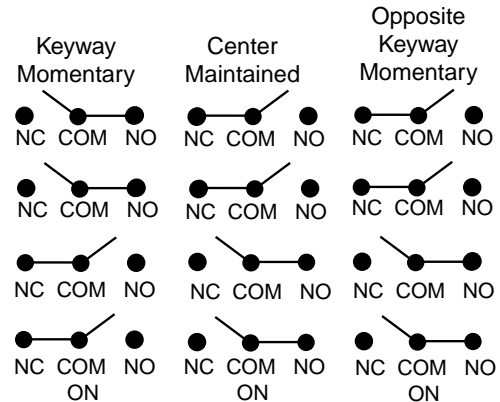
4PDT, 2 Position

4 Pole, Double Throw



4PDT, 3 Position

4 Pole, Double Throw



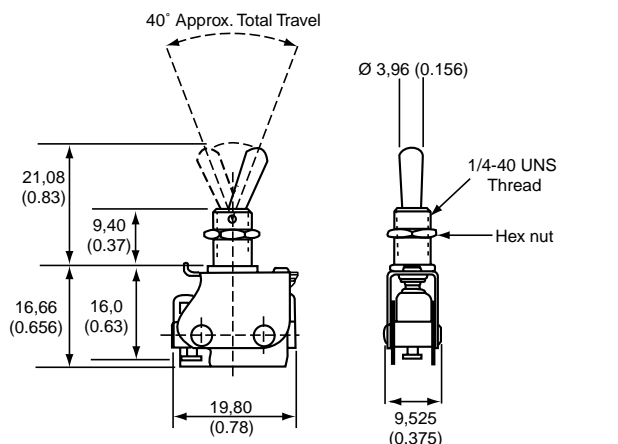
Electrical ratings (Resistive load):

Values below are based on previous Honeywell testing and opinion. See MIL-S-8805/98 for Military specified values.

A	0.1 A to 1.0 A @ 0.5 Vdc to 28 Vdc 0.1 A to 1.0 A @ 0.5 Vac to 115 Vac
B	0.1 A to 7.0 A @ 0.5 Vdc to 28 Vdc

AT Series
2 toggle positions

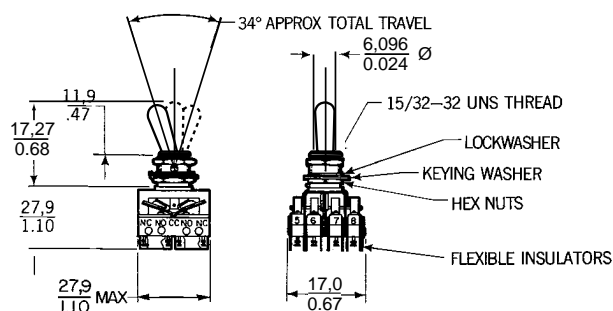
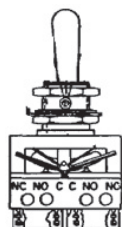
Standard lever
SPDT



Electrical rating: A
Mounting: Bushing 1/4 in

	TERMINATION	CAT. LISTING
Gold contacts	Solder T type	6AT124-T

4PDT

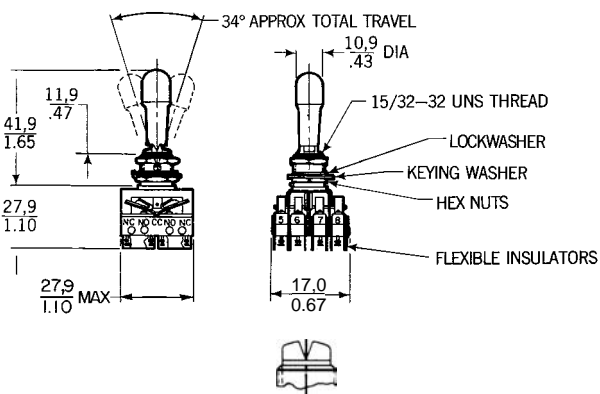
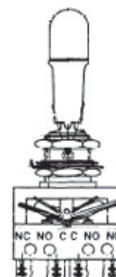


Electrical rating: B
Mounting: Bushing 15/32 in

	TERMINATION	CAT. LISTING
Silver contacts/FAA-PMA approved	Quick Connect	64AT22-3

AT Series
3 toggle positions

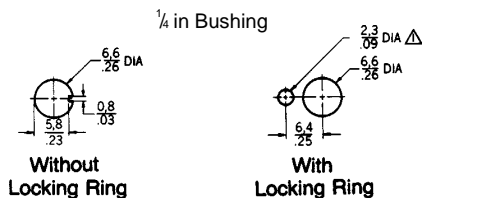
Locking lever
4PDT



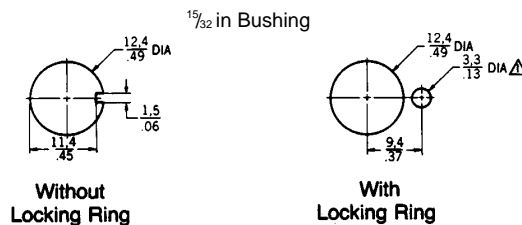
Electrical rating: A
Mounting: Bushing 15/32 in

	TERMINATION	CAT. LISTING
Gold contacts/FAA-PMA approved	H58	64AT34-7E

Panel Cutout



NOTE - Δ 1.1/.05 MIN DEEP TO ACCOMMODATE LOCKING RING



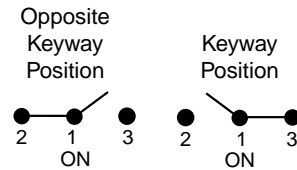
NOTE - Δ 1.4/.05 MIN DEEP TO ACCOMMODATE LOCKING RING

ET Series Toggle Switches

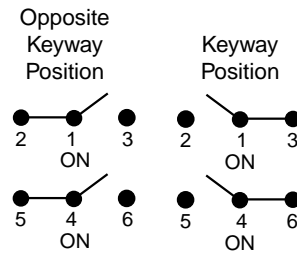
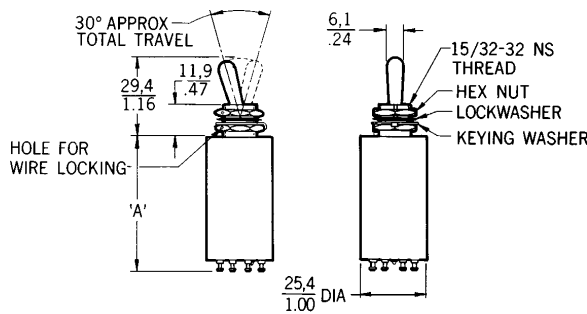


Environmentally sealed, magnetically held toggle switch. A holding coil replaces mechanical holding mechanism to maintain the toggle in an operate position. Available with silver or gold contacts to meet a variety of electrical load requirements.

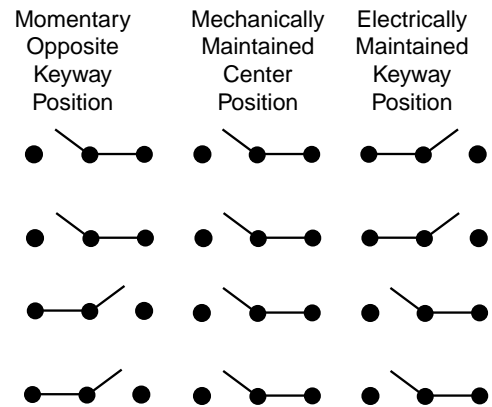
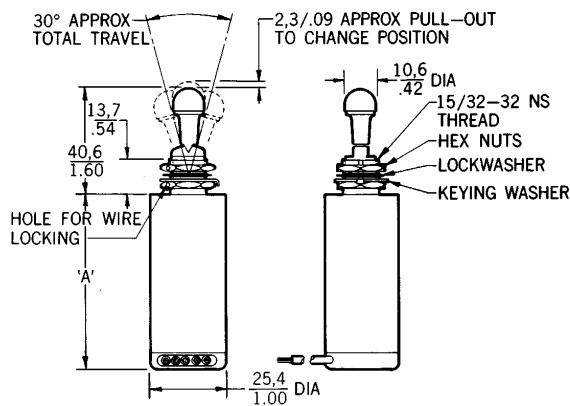
Sealing: MIL-S-5594
Operating temperature: -65 °C to 71 °C [-85 °F to 160 °F]
Mounting: Bushing 15/32 in
Termination: Connector MS 27478Y10E35P
 Leadwire 1,83 m [6 ft], #20 wire per MIL-W-5086
 Screw 4 x 48 UNF x 0.188
 Solder (turret) Plated, use up to #14 wire
 Silver or gold (gold where indicated)
Contacts: Silver or gold (gold where indicated)
Switching options/Operating action: SPDT Single Pole, Double Throw



Standard



Pull-to-unlock



Electrical ratings (Resistive load):

Values below are based on previous Honeywell testing and opinion. See MIL-S-5594 for Military specified values.

- A** 0.1 A to 4.0 A @ 0.5 Vdc to 28 Vdc
- B** 0.1 A to 7.0 A @ 0.5 Vdc to 28 Vdc
- C** 0.1 A to 5.0 A @ 0.5 Vdc to 28 Vdc
0.1 A to 5.0 A @ 0.5 Vac to 115 Vac
- D** 0.1 A to 1.0 A @ 0.5 Vdc to 28 Vdc

ET Series 2 toggle positions

Standard lever

SPDT

Electrical rating: A
D

Gold contacts

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Leadwire	M5594/1-1	25ET61-6
Leadwire	M5594/1-6	25ET64-6
Leadwire	M5594/1-4	25ET62-6
Screw	M5594/1-3	25ET61-S
Solder T type	M5594/1-2	25ET61-T
Gold contacts Solder T type		25ET117-T

DPDT

Electrical rating: A
D

Gold contacts

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Solder T type	M5594/2-1	26ET61-T
Solder T type	M5594/2-2	26ET65-T
Gold (Bifurcated) contacts Solder T type		26ET107-T

Locking lever

SPDT

Electrical rating: A

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Solder T type		25ET1-T-F
Screw		25ET61-S-F

DPDT

Electrical rating: A

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Solder T type		26ET1-T-F
Connector		26ET1-R-F

ET Series 3 toggle positions

Standard lever

DPDT

Electrical rating: B
D

Gold contacts

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Solder T type	M5594/3-1	27ET61-T
Gold contacts Solder T type		27ET71-T

4PDT

Electrical rating: C

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Side exit metal tube Leadwire		29ET3

Locking lever

DPDT

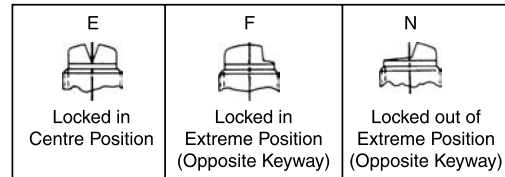
Electrical rating: B
D

Gold contacts

TERMINATION	MILITARY PART NUMBER	CAT. LISTING
Leadwire		27ET2-6-E
Solder T type	M5594/6-1E	27ET61-T-E
Solder T type		27ET71-T-E
Solder T2 type		27ET118-T2-N

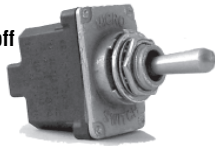
Lever locking configurations

Relates to **bold** digit in Cat. Listing (part number)

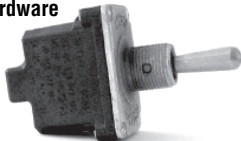


NT Series Sealed Toggle Switches

Step base,
Panel stand-off



Step base,
no hardware



Flat base,
Panel stand-off

Note:

No hardware indicates no mounting nuts, keying washer, lockwasher or termination screws (if applicable).

NT Series toggle switches can meet the need for a rugged, cost-effective toggle switch. Quality construction features include a seal between the toggle lever and bushing, and between the cover and case. These switches can be used where panels are subject to splashes, hosedowns, or outdoor environments. The “Easy-Start” threaded bushing enables quick alignment of mounting nut to decrease the chance of cross threading. The panel stand-off with O-ring feature available on some listings, eliminates the need for behind-the-panel hardware, provides uniform panel height, and provides a panel to cover seal.

Locking toggle levers prevent accidental toggle movement. The knobbed, toggle lever must be pulled out to change position.

Approvals:	UL, CSA
Sealing:	IP 67/68, NEMA 3, 3R, 4, 13
Operating temperature:	-40 °C to 71 °C [-40 °F to 160 °F]
Mounting:	Bushing 15/32 in
Termination:	Solder, Screw, Quick Connect
Contacts:	Silver cadmium oxide (Gold option available)

Electrical ratings (Resistive load):

Values below are based on previous Honeywell testing and opinion.

A	0.5 A to 15 A at 0.5 Vac to 277 Vac 0.75 A at 115 Vdcl 0.5 A to 20 A at 0.5 Vdc to 28 Vdcl 0.5 A at 250 Vdc
B	0.5 A to 10 A at 0.5 Vac to 277 Vac 0.5 A to 15 A at 0.5 Vdc to 28 Vdcl 0.5 A at 250 Vdcl 0.75 A at 115 Vdc
C	0.75 A at 115 Vdcl 0.5 A to 20 A at 0.5 Vdc to 28 Vdcl 0.5 A to 15 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdc
D	0.5 A to 18 A at 0.5 Vdc to 28 Vdcl 0.5 A to 10 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdcl 0.75 A at 115 Vdc
E	0.5 A to 20 A at 0.5 Vdc to 28 Vdcl 0.5 A to 15 A at 0.5 Vac to 277 Vac 0.5 A at 250 Vdcl 0.75 A at 115 Vdc

UL/CSA Rating Code:

L191:	15 A-125, 250, 277 Vac; 1/2 Hp-125 Vac; 1 Hp-250, 277 Vac; 5 A-120 Vac “L”
L192:	10 A-125, 250, 277 Vac; 1/4 Hp-125 Vac; 1/2 Hp-250, 277 Vac; 3 A-125 Vac “L”

Application Note:

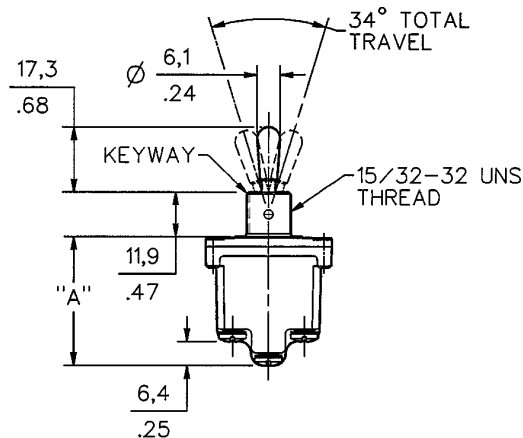
Honeywell does not recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 V and/or 0.5 A. NT switches use silver cadmium oxide contacts, but gold contact options are available.

If you have specific questions, contact Honeywell.

NT Series, Step base switches



Standard lever



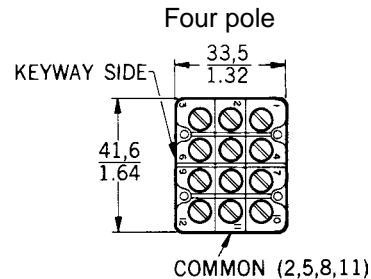
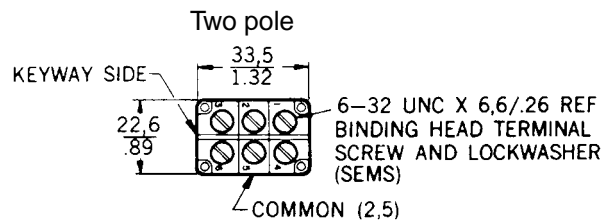
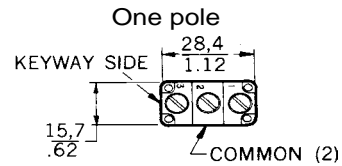
DIM "A"

1 pole	29,5 mm (1.16 in)
2 & 4 pole	34,4 mm (1.35 in)

NOTES:

1. Locking levers have 10,7 mm (0.42 in) Ø
2. Locking ring, lockwasher, 2 hexnuts and terminal screws are provided unassembled

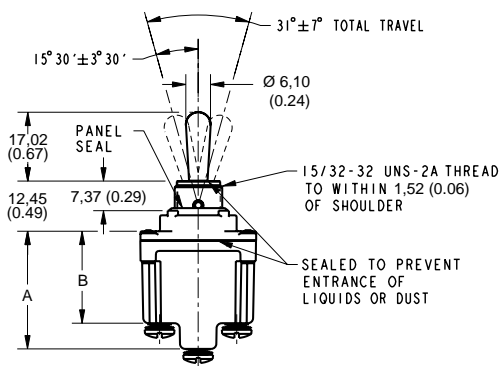
Terminal circuit identification



Panel stand off toggle

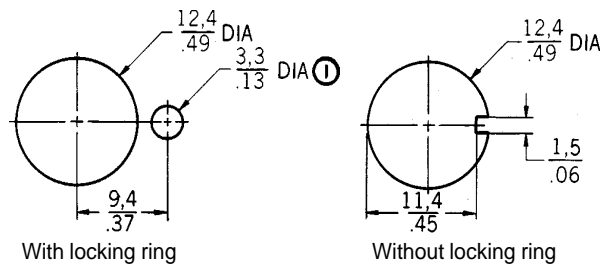
To order an NT Series toggle switch with panel stand-off feature, insert "6" in front of any standard listing.

Example: to order panel stand-off version of standard bushing 1NT1-7, alter number to 61NT1-7.



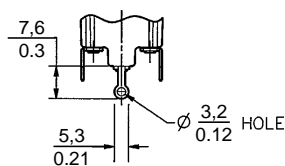
1 pole	DIM "A" 29,5 mm (1.16 in)	DIM "B" 23,11 mm (0.91 in)
2 pole	34,4 mm (1.35 in)	27,94 mm (1.10 in)

Panel cutout

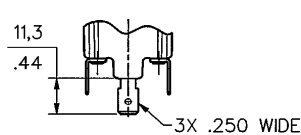


Note:
 1,4 mm/.06in MIN DEEP TO ACCOMMODATE LOCKING RING. 15PA87 PANEL SEAL REQUIRES BLIND HOLE TO ENSURE SEAL INTEGRITY

Solder terminals



Quick Connect terminals



Lever locking configurations

Relates to **bold** digit in Cat. Listing (part number)

A Locked In 3 Positions	D Locked Out of Center Position	E Locked In Center Position	G Locked Out of Extreme Position (Keyway Side)	L Locked In Extreme Position (Keyway Side)
---------------------------------------	---	---	--	--

NT Series, Step base, 2 position switches

Standard lever

1 pole, screw terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	SPST	1	A	L191	1NT1-2
	SPST	2	B	L192	1NT1-6
	SPDT	3	A	L191	1NT1-3
No hardware	SPDT	3	A	L191	1NT1-3-NH
	SPDT	4	B	L192	1NT1-8
No hardware	SPDT	4	B	L192	1NT1-8-NH

1 pole, Quick Connect terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	SPST	2	A	L191	1NT91-2

1 pole, solder terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	SPST	1	A	L191	11NT1-2
	SPDT	3	A	L191	11NT1-3

2 pole, screw terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	DPST	5	C	L191	2NT1-2
	DPDT	6	C	L191	2NT1-3
No hardware	DPDT	6	C	L191	2NT1-3-NH
	DPDT	7	D	L192	2NT1-8
No hardware	DPDT	7	D	L192	2NT1-8-NH

2 pole, solder terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	DPDT	6	C	L191	12NT1-3

4 pole, screw terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	4PDT	8*	E	L191	4NT1-3

4 pole, solder terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	4PDT	8*	E	L191	14NT1-3

Locking lever

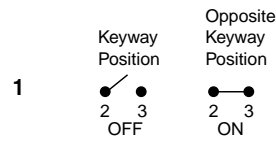
1 pole, screw terminals

	CIRCUITRY ACTION*	OPERATING RATING	ELECTRICAL RATING	UL/CSA RATING	CAT.LISTING
	SPST	1	A	L191	1NT1-2G
	SPDT	3	A	L191	1NT1-3D

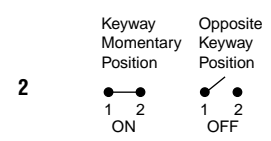
* Operating action 1 to 8

2 Position Switching options/Operating action* (1 to 8):

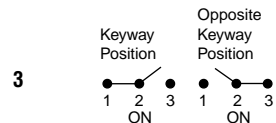
SPST



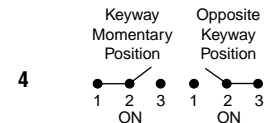
Single Pole, Single Throw



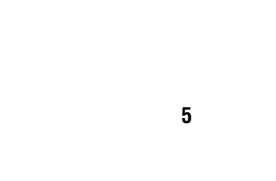
SPDT



Single Pole, Double Throw

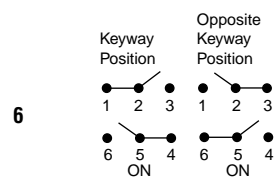


DPST



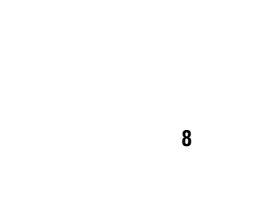
Double Pole, Single Throw

DPDT



Double Pole, Double Throw

4PDT



4 Pole, Double Throw

NT Series, Step base, 3 position switches

Standard lever

1 pole, screw terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	SPDT	9	A	L191	1NT1-1
	SPDT	10	B	L192	1NT1-5
	SPDT	11	B	L192	1NT1-7
No hardware	SPDT	11	B	L192	1NT1-7-NH
	SPDT	11	B	L191	1NT231-7
Panel stand off	SPDT	11	D	L192	61NT1-7

1 pole, Quick Connect terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	SPDT	11	B	L192	1NT91-7

1 pole, solder terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	SPDT	11	B	L192	11NT1-7
No hardware	SPDT	11	B	L192	11NT1-7-NH

2 pole, screw terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	DPDT	12	C	L191	2NT1-1
No hardware	DPDT	12	C	L191	2NT1-1-NH
	DPDT	13	C	L191	2NT1-10
	DPDT	17	D	L192	2NT1-5
	DPDT	15	D	L192	2NT1-50
	DPDT	16	D	L192	2NT1-7
No hardware	DPDT	16	D	L192	2NT1-7-NH
	DPDT	14	D	L192	2NT1-70
	DPDT	16	D	L192	2NT231-7
Gold contacts/long lever	DPDT	14	D	L192	2NT889-70

2 pole, Quick Connect terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	DPDT	16	D	L192	2NT91-7

4 pole, screw terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	4PDT	18	E	L191	4NT1-1

Locking lever

1 pole, screw terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	SPDT	11	B	L192	1NT1-7E
	SPDT	11	B	L191	1NT20-7E

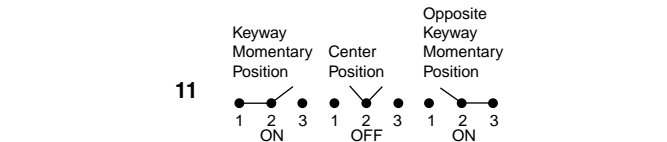
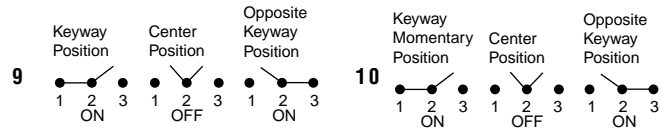
4 pole, screw terminals

	CIRCUITRY	OPERATING ACTION**	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
	4PDT	18	E	L191	4NT1-1A

3 Position Switching options/Operating action** (9 to 18):

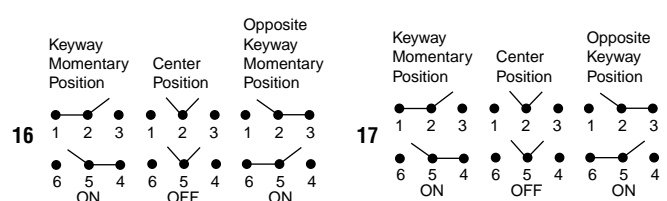
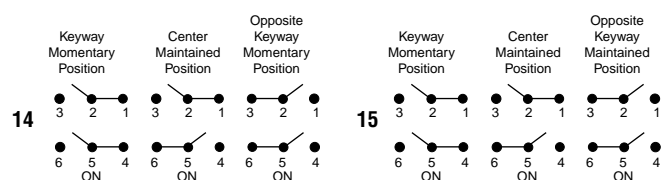
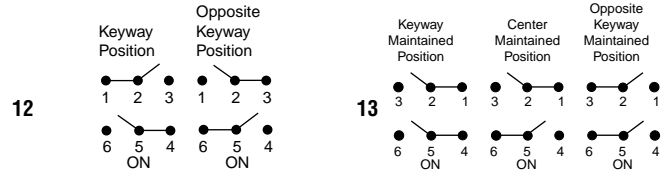
SPDT

Single Pole, Double Throw



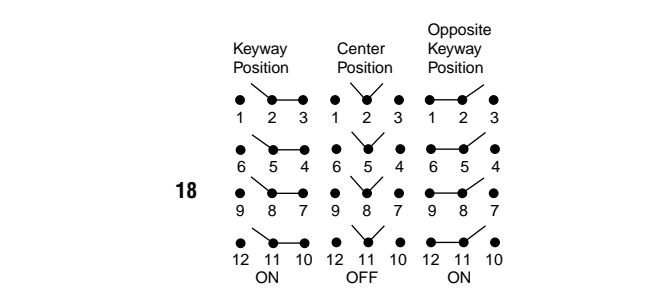
DPDT

Double Pole, Double Throw



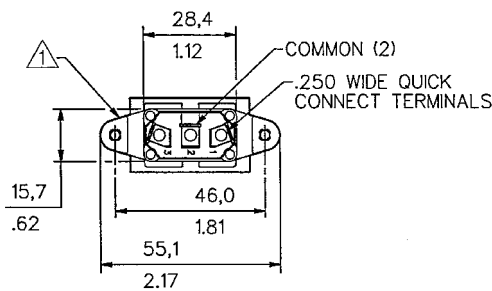
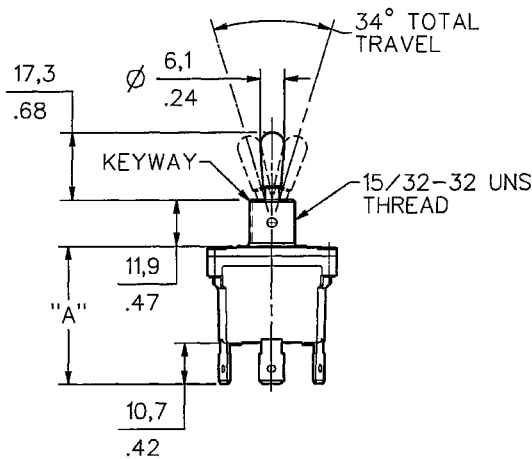
4PDT

4 Pole, Double Throw

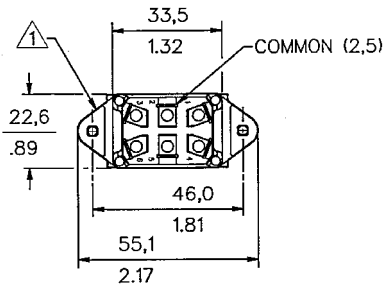


**Operating action 9 to 18

NT Series, Flat base switches



IDENTIFICATION LUG SIDE



IDENTIFICATION LUG SIDE

NT Series, Flat base, 2 position switches

Standard lever

1 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
SPST	1	A	L191	31NT91-2
SPST	2	B	L192	31NT91-6
SPDT	3	A	L191	31NT91-3

2 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
DPST	4	C	L191	32NT91-2
DPDT	5	C	L191	32NT91-3

Locking lever

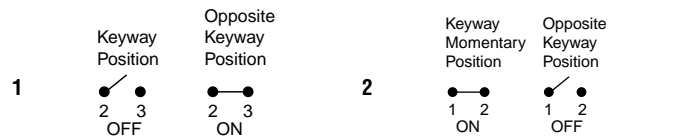
1 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
DPDT	5	C	L191	32NT291-3G

2 Position Switching options/Operating action:

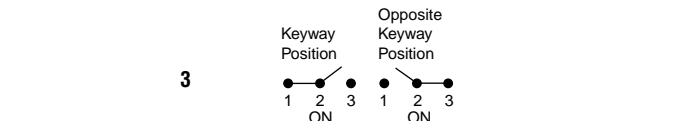
SPST

Single Pole, Single Throw



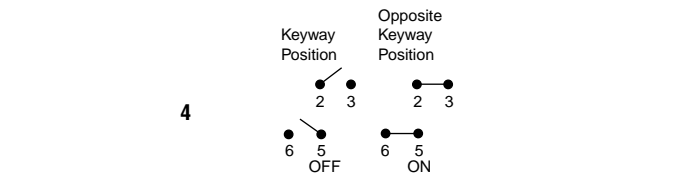
SPDT

Single Pole, Double Throw



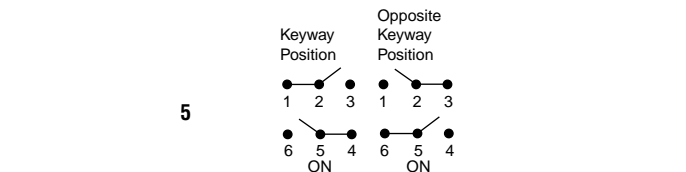
DPST

Double Pole, Single Throw



DPDT

Double Pole, Double Throw



NT Series, Flat base, 3 position switches

Standard lever

1 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
SPDT	6	A	L191	31NT91-1
SPDT	7	B	L192	31NT91-7

2 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING	
DPDT	8	C	L191	32NT91-1	
DPDT	10	D	L192	32NT91-7	
No hardware	DPDT	10	D	L192	32NT91-7-NH

Locking lever

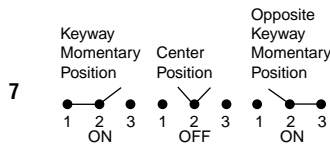
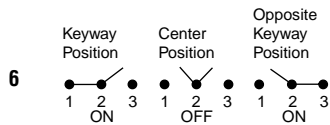
2 pole, Quick Connect terminals

CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
DPDT	11	D	L192	32NT291-5E
DPDT	9	D	L192	32NT94-70L

3 Position Switching options/Operating action:

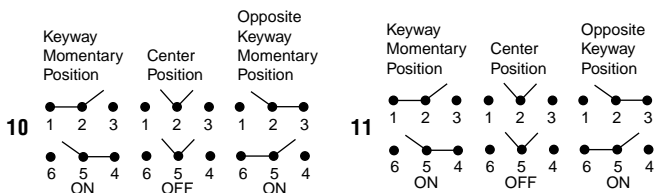
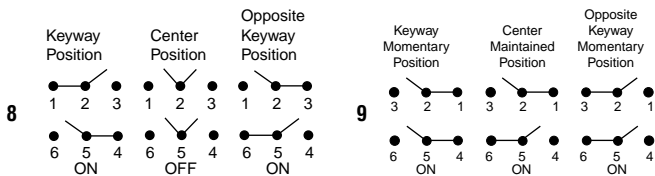
SPDT

Single Pole, Double Throw

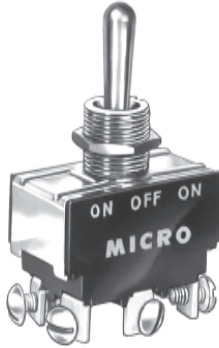


DPDT

Double Pole, Double Throw



TS Series Toggle Switches



TS Series switches may be used in applications where manual operation is desired. Special on-on-on circuitry can also be furnished. They have 2- or 3-position, momentary and maintained action switches with 1- and 2-pole circuitry. Switches have solder, screw or quick-connect terminations.

Approvals: UL, CSA
Operating temperature: -54 °C to 71 °C
 [-65 °F to 160 °F]
Mounting: Bushing 15/32 in
Lever/bushing material: Bright nickel
Termination: Solder, Screw, Quick Connect
Contacts: Silver tin oxide and indium oxide

Electrical ratings* (Resistive load): 0.4 A to 10 A at 126 Vac to 277 Vac
 0.4 A to 20 A at 0.5 Vac to 125 Vac

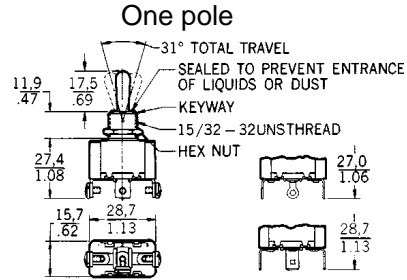
* Values are based on previous Honeywell testing and opinion.

UL/CSA Rating Code:

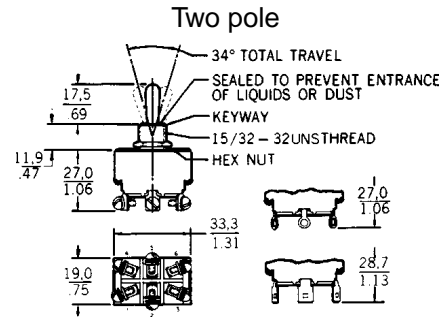
L311: 10 A 277 Vac, 20 A 125 Vac; 3/4 Hp-125, 250 Vac

L312: 10 A 277 Vac, 20 A 125 Vac; 1 1/2 Hp-125, 250 Vac

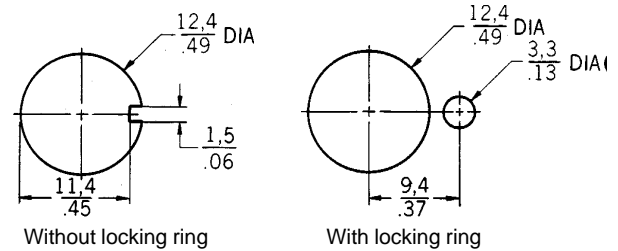
11TS



12TS



Panel cutout



TS Series 2 position switches

Standard lever

Screw terminals

	CIRCUITRY	OPERATING ACTION	UL/CSA RATING	CAT. LISTING
	SPST	1	L311	11TS15-2
	SPST	2	L311	11TS15-6
	DPST	4	L312	12TS15-2
	DPDT	5	L312	12TS15-3

Quick Connect terminals

	CIRCUITRY	OPERATING ACTION	UL/CSA RATING	CAT. LISTING
	SPST	1	L311	11TS95-2
	DPDT	5	L312	12TS95-3

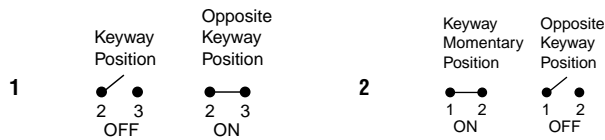
Solder terminals

	CIRCUITRY	OPERATING ACTION	UL/CSA RATING	CAT. LISTING
Furnished unassembled	SPDT	3	L311	11TS115-3
	DPDT	5	L312	12TS115-3

2 Position Switching options/Operating action:

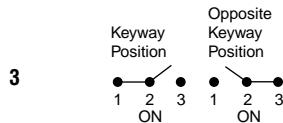
SPST

Single Pole, Single Throw



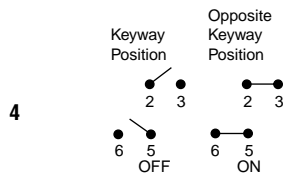
SPDT

Single Pole, Double Throw



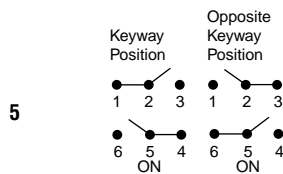
DPST

Double Pole, Single Throw



DPDT

Double Pole, Double Throw



TS Series 3 position switches

Standard lever

Screw terminals

	CIRCUITRY	OPERATING ACTION	UL/CSA RATING	CAT. RATING
LISTING	SPDT	6	L311	11TS15-1
	SPDT	7	L311	11TS15-7
	DPDT	8	L312	12TS15-7

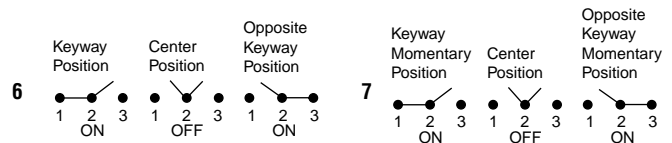
Quick Connect terminals

	CIRCUITRY	OPERATING ACTION	UL/CSA RATING	CAT. RATING
LISTING	SPDT	7	L311	11TS95-7
Furnished unassembled	DPDT	9	L312	12TS95-10

3 Position Switching options/Operating action:

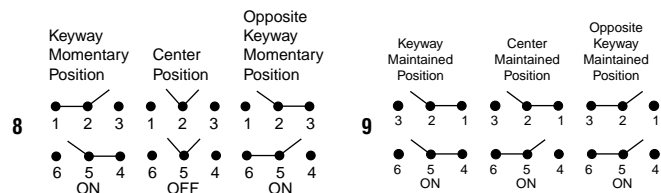
SPDT

Single Pole, Double Throw



DPDT

Double Pole, Double Throw



TP Series Rocker Switches



Approvals: UL, CSA, CE
Operating temperature: -54 °C to 71 °C
 [-65 °F to 160 °F]
Mounting: Above Panel and Flush Panel
Termination: Screw
Contacts: Silver cadmium oxide

Electrical ratings (Resistive load):
 Values below are based on previous Honeywell testing and opinion.

A	0.5 A to 18 A at 0.5 Vdc to 28 Vdcl 0.5 A to 10 A at 0.5 Vac to 277 Vac 0.75 A at 115 Vdcl 0.5 A at 250 Vdc
B	0.5 A to 20 A at 0.5 Vdc to 28 Vdcl 0.75 A at 115 Vdcl 0.5 A at 250 Vdcl 0.5 A to 15 A at 0.5 Vac to 277 Vac
C	0.5 A to 10 A at 0.5 Vac to 277 Vac 0.75 A at 115 Vdcl 0.5 A at 250 Vdcl 0.5 A to 15 A at 0.5 Vac to 28 Vdc

UL/CSA Rating Code:

L191:	15 A-125, 250, 277 Vac; 1/2 Hp-125 Vac; 1 Hp-250, 277 Vac; 5 A-120 Vac "L"
L192:	10 A-125, 250, 277 Vac; 1/4 Hp-125 Vac; 1/2 Hp-250, 277 Vac; 3 A-125 Vac "L"

Application Note:

Honeywell does not recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 V and/or 0.5 A. TP switches use silver cadmium oxide contacts, but gold contact options are available.

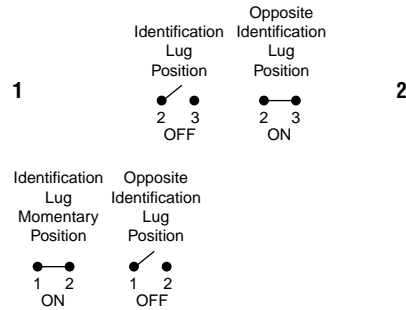
If you have specific questions, contact Honeywell.

Honeywell's 2 and 3 position, pushbutton action rocker switches are dust and splash-proof sealed. They can be provided with or without buttons. The switches are available as flush or panel mount, a large selection of rocker colors, circuitries and electrical terminations. Versions are available with silver or gold contacts to meet a variety of electrical load requirements. For options other than those shown below, contact Honeywell for more information.

Switching options/Operating action:

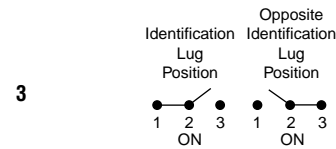
2 Position Switches
SPST

Single Pole, Single Throw



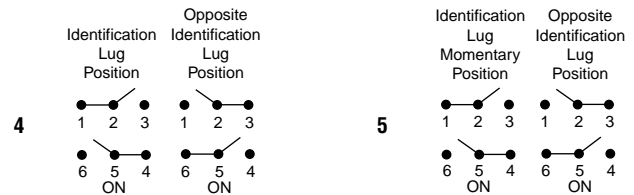
SPDT

Single Pole, Double Throw



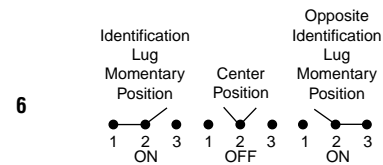
DPDT

Double Pole, Double Throw



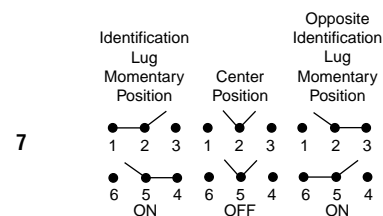
3 Position Switches
SPDT

Single Pole, Double Throw

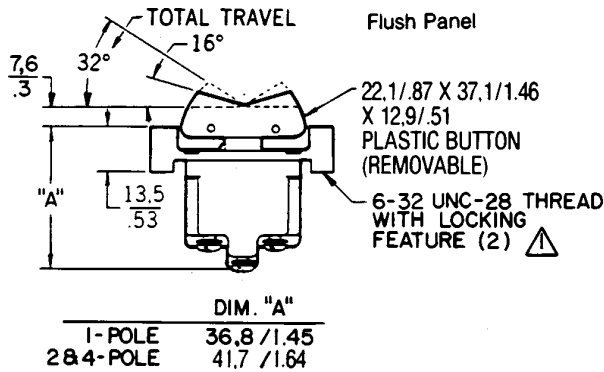


DPDT

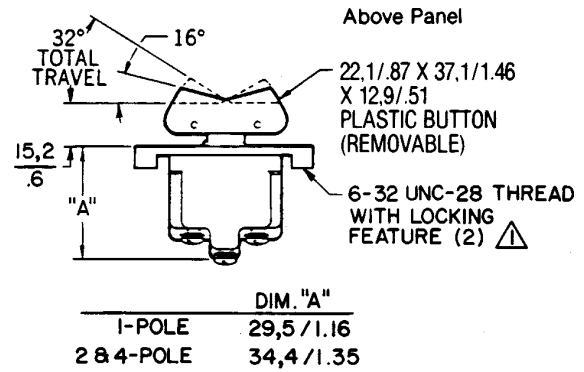
Double Pole, Double Throw



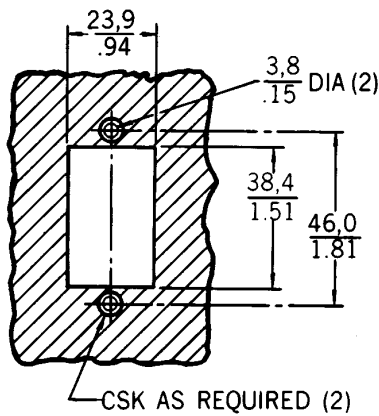
Above panel mounting



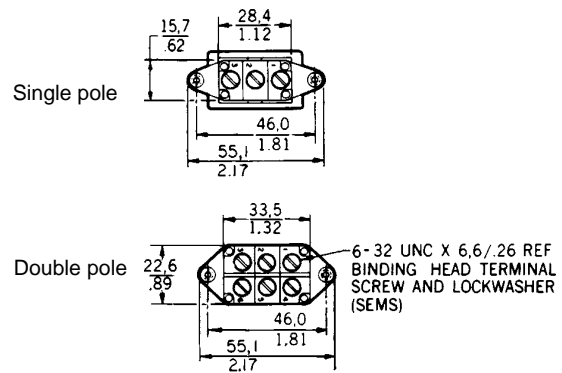
Flush panel mounting



Panel cutout



Terminals



2 Position

Flush Panel Mount

BUTTON	CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
Translucent	SPST	2	C	L192	1TP1-6
No	SPST	1	B	L191	1TP8-2
No	SPDT	3	B	L191	1TP8-3

Above Panel Mount

BUTTON	CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
Translucent	DPDT	5	A	L192	2TP216-8
No	DPDT	4	B	L191	2TP7-3

3 Position

Flush Panel Mount

BUTTON	CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
Transparent	SPDT	6	C	L192	1TP12-7
Translucent	SPDT	6	C	L192	1TP201-7
No	SPDT	6	C	L192	1TP8-7
Transparent	DPDT	7	A	L192	2TP12-7
Translucent	DPDT	7	A	L192	2TP1-7

Above Panel Mount

BUTTON	CIRCUITRY	OPERATING ACTION	ELECTRICAL RATING	UL/CSA RATING	CAT. LISTING
Translucent	DPDT	7	A	L192	2TP216-7

Button Options

Buttons are removable and interchangeable. They measure 22,1 mm x 37,1 mm [0.87 in x 1.46 in].

COLOUR	CAT. LISTING
Translucent	12PA6
Transparent	12PA4
White*	12PA5-W
Yellow*	12PA5-Y
Black*	12PA5-BK
Green*	12PA5-G
Red*	12PA5-R
Blue*	12PA5-BL

* Opaque

FR Series Sealed Rocker Switches

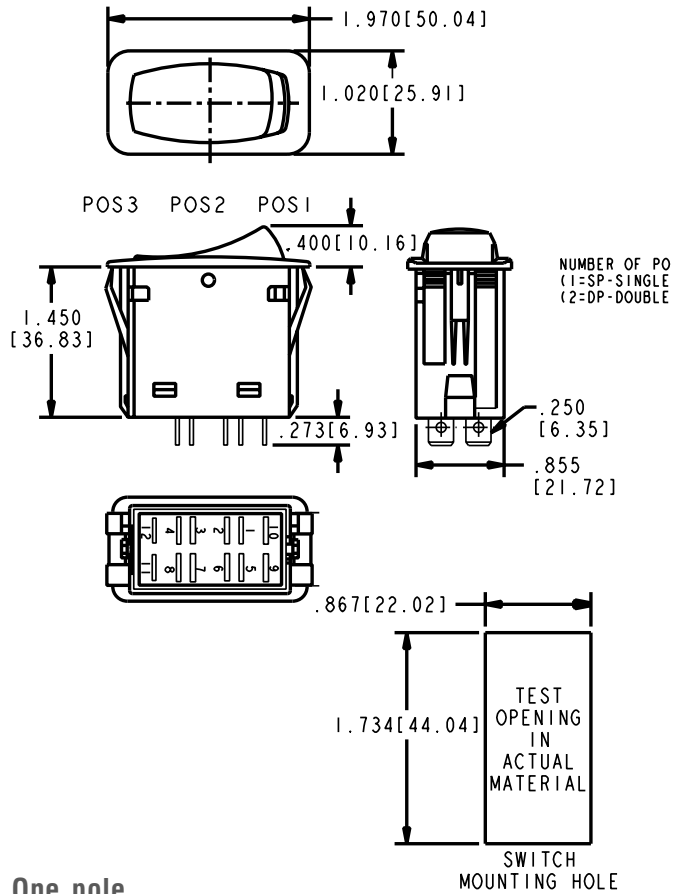


The FR Series illuminated and non-illuminated full-size sealed rocker switches offer enhanced design flexibility and set new standards for both performance and reliability. The switches are designed to fit industry standard mounting holes of 44,0 mm x 22,0 mm [1.734 in x 0.867 in] and offer a variety of switch and lamp circuit combinations.

Approvals: UL, CSA
Mechanical life: 250,000 cycles minimum
Electrical life: 50,000 cycles (mom.); 100,000 cycles (maint.)
Sealing: IP 67
Operating temperature: -40 °C to 85 °C [-40 °F to 185 °F]
Termination style: 6,35 mm x 0,81 mm [0.25 in x 0.032 in] quick connect tabs

OPTIONS

FRN SERIES



One pole

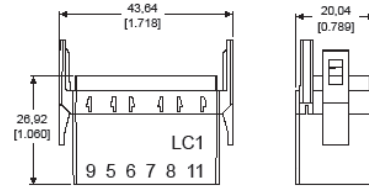
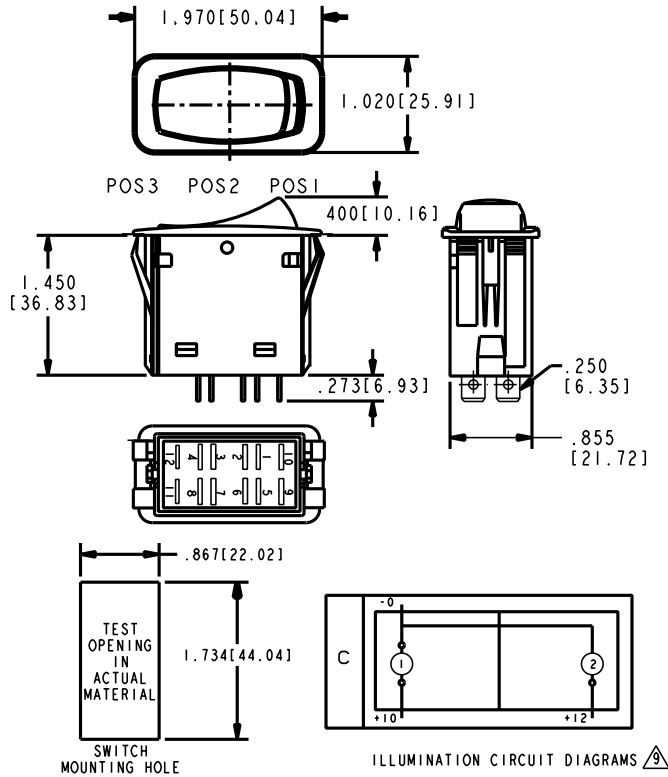
CIRCUITRY (POS. 3, 2, 1)	BEZEL/ACTUATOR COLOR	CAT. LISTING
Off, None, On	Black/Black	FRN91-12BB
Off, None, On (Mom.)	Black/Black	FRN91-16BB
Off (Mom.), None, On	Black/Black	FRN91-14BB
On, None, On	Black/Black	FRN91-13BB
On (Mom.), None, On	Black/Black	FRN91-18BB
On, Off, On	Black/Black	FRN91-11BB
On (Mom.), Off, On	Black/Black	FRN91-15BB
On (Mom.), Off, On (Mom.)	Black/Black	FRN91-17BB

Two poles

CIRCUITRY (POS. 3, 2, 1)	BEZEL/ACTUATOR COLOR	CAT. LISTING
Off, None, On	Black/Black	FRN91-22BB
Off, None, On (Mom.)	Black/Black	FRN91-26BB
Off (Mom.), None, On	Black/Black	FRN91-24BB
On, None, On	Black/Black	FRN91-23BB
On (Mom.), None, On	Black/Black	FRN91-28BB
On, Off, On	Black/Black	FRN91-21BB
On (Mom.), Off, On	Black/Black	FRN91-25BB
On (Mom.), Off, On (Mom.)	Black/Black	FRN91-27BB

OPTIONS

FRL SERIES



Accessories

DESCRIPTION	CAT. LISTING
Rocker Boot	FR-01

Two poles, Illumination Style C, 12 V

CIRCUITRY (POS. 3, 2, 1)	LAMP/LAMP	LENS/LENS	CAT. LISTING
Off, None, On	Green/Amber	Large white trans./White bar	FRL91-22CGA3-BB79
On, None, On	Green/Green	Large white trans./White bar	FRL91-23CGG3-BB79
On, Off, On	Green/Green	Large white trans./Large white trans.	FRL91-21CGG3-BB77
On (Mom.), Off, On (Mom.)	Green/Green	Large white trans./Large white trans.	FRL91-27CGG3-BB77

SR Series Sealed Rocker Switches

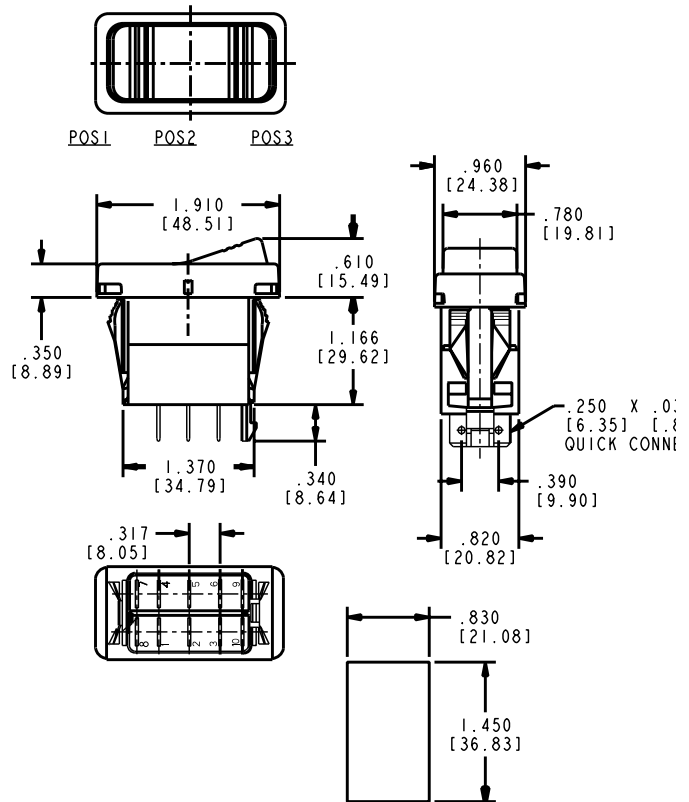


The SR Series illuminated and non-illuminated full-size sealed rocker switches offer enhanced performance in a flexible package. The switches are available in single or double pole configurations, have an optional panel seal, and the SRL Series can be illuminated with square or bar-shaped lenses.

- Approvals:** UL, CSA
- Mechanical life:** 150,000 cycles minimum
- Electrical life:** 50,000 cycles (mom.); 100,000 cycles (maint.)
- Sealing:** Dual switch seal certified to IP66/IP68
- Operating temperature:** -40 °C to 85 °C [-40 °F to 185 °F]
- Termination style:** Offered in both 8 and 10 terminal base options.
AMP and Packard compatible connectors available.

OPTIONS

SRN SERIES



One pole

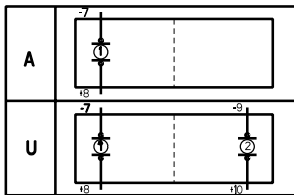
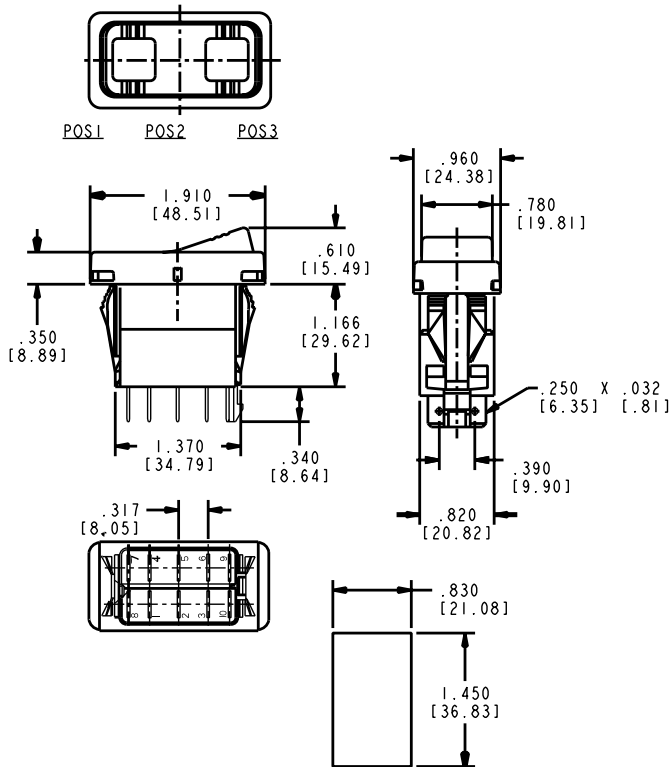
CIRCUITRY (POS. 3, 2, 1)	BEZEL/ACTUATOR COLOR	CAT. LISTING
Off, None, On	Black/Black	SRN91-12BB
Off, None, On (Mom.)	Black/Black	SRN91-16BB
Off (Mom.), None, On	Black/Black	SRN91-14BB
On, None, On	Black/Black	SRN91-13BB
On (Mom.), None, On	Black/Black	SRN91-18BB
On, Off, On	Black/Black	SRN91-11BB
On (Mom.), Off, On	Black/Black	SRN91-15BB
On (Mom.), Off, On (Mom.)	Black/Black	SRN91-17BB

Two poles

CIRCUITRY (POS. 3, 2, 1)	BEZEL/ACTUATOR COLOR	CAT. LISTING
Off, None, On	Black/Black	SRN91-22BB
Off, None, On (Mom.)	Black/Black	SRN91-26BB
Off (Mom.), None, On	Black/Black	SRN91-24BB
On, None, On	Black/Black	SRN91-23BB
On (Mom.), None, On	Black/Black	SRN91-28BB
On, Off, On	Black/Black	SRN91-21BB
On (Mom.), Off, On	Black/Black	SRN91-25BB
On (Mom.), Off, On (Mom.)	Black/Black	SRN91-27BB

OPTIONS

SRL SERIES

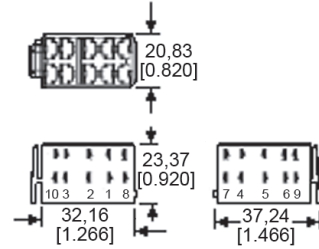


Two poles, Illumination Style A, 12 V

CIRCUITRY (POS. 3, 2, 1)	LAMP/LAMP	CAT. LISTING
Off, None, On	Red/None	SRL91-22ARN3-BB9N

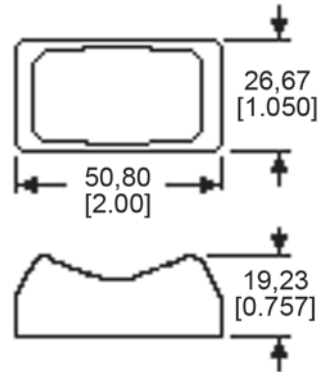
Two poles, Illumination Style U, 12 V

CIRCUITRY (POS. 3, 2, 1)	LAMP/LAMP	LED VOLTAGE	CAT. LISTING
On, None, On	Red/Red	12 V	SRL91-23URR3-BB99
On, Off, On	Red/Red	12 V	SRL91-21URR3-BB99
On (Mom.), Off, On (Mom.)	Red/Red	12 V	SRL91-27URR3-BB99
Off, None, On	Green/Amber	12 V	SRL91-22UGA3-BB99
On, None, On	Green/Green	12 V	SRL91-23UGG3-BB99
On, Off, On	Green/Green	12 V	SRL91-21UGG3-BB99
Off, None, On	Green/Green	12 V	SRL91-22UGG3-BB99



Accessories

DESCRIPTION	CAT. LISTING
Connector Housing	HRSR-01



DESCRIPTION	CAT. LISTING
Connector Housing	SR-01

MR Series Miniature Rocker Switches

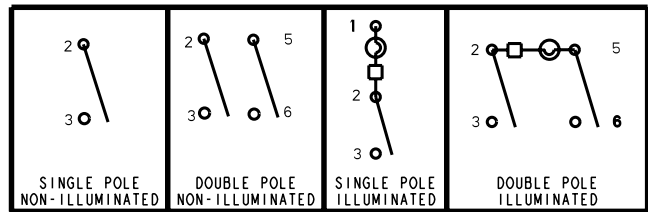
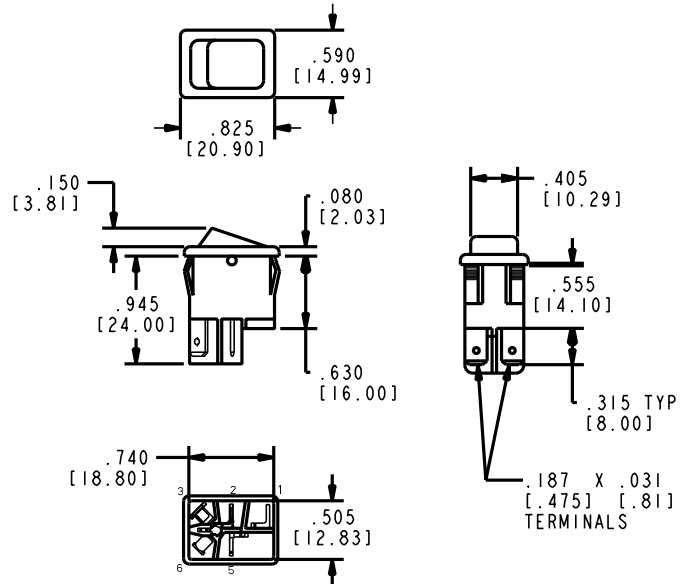


These miniature rocker switches offer a variety of aesthetic and functional options ranging from circuit configurations to ac and dc ratings. They feature industry standard dimensions, an easy snap-in mounting method, and offer one-or-two pole switches in numerous single-throw and double-throw maintained and momentary circuits. The illuminated and non-illuminated miniature switches are intended to meet the needs of a wide variety of industries and potential applications. The silver-alloy contacts will handle a range of electrical loads. The illuminated products offer LED or neon-style lamps.

Approvals:	UL, CSA
Mechanical life:	100,000 cycles minimum
Electrical life:	50,000 cycles
Dielectric strength UL/CSA:	1000 V
Operating temperature:	0 °C to 85 °C [32 °F to 185 °F]
Termination style:	4,75 mm x 0,81 mm tab QC [0.187 in x 0.032 in] tab QC

OPTIONS

MR SERIES



Non-Illuminated

POLES	CIRCUITRY	CAT. LISTING
1	N	MR93-12BBN
2	N	MR93-22BBN

Illuminated, Single Pole

LAMP	CIRCUITRY*	ACTUATOR COLOR	CAT. LISTING
12 V LED	3	Clear Red	MR93-122B3
12 V LED	3	Clear Green	MR93-124B3
125 V Neon	J	Clear Red	MR93-122BJ
250 V Neon	K	Clear Amber	MR93-121BK

Illuminated, Double Pole

LAMP	CIRCUITRY*	ACTUATOR COLOR	CAT. LISTING
12 V LED	3	Clear Red	MR93-222B3
12 V LED	3	Clear Green	MR93-224B3
24 V Neon	4	Clear Amber	MR93-221B4

* Electrical Ratings (UL/CSA)

- N** 8 A, 125 Vac; 12 A, 125 Vac, ½ HP, 125 Vac - 250 Vac; UL, CSA
- 1** N/A
- 2** 12 A, 6 V
- 3** 12 A, 12 V
- 4** 12 A, 24 V
- A** 12 A, 6 V
- C** 12 A, 12 V
- E** 12 A, 18 V
- H** 12 A, 24 V
- J** 12 A, 125 Vac; UL, CSA
- K** 8 A, 250 Vac; UL, CSA

MRS Series Miniature Rocker Switches

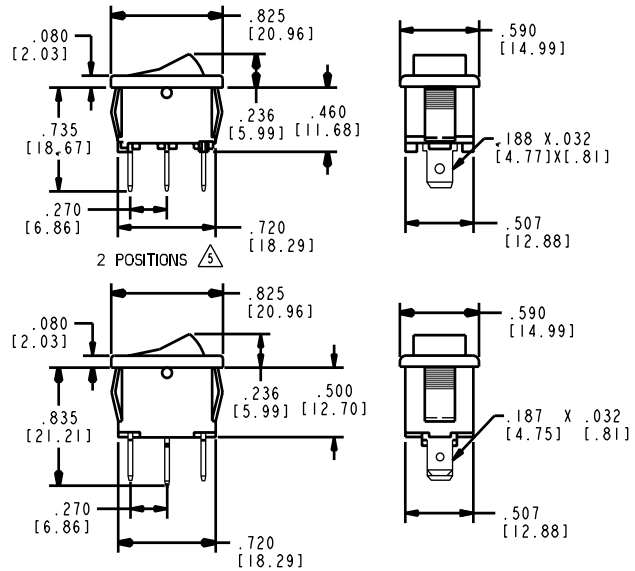


These subminiature rocker switches offer a variety of aesthetic and functional options ranging from circuit configurations to ac and dc ratings. They feature industry standard dimensions, an easy snap-in mounting method, and offer one-or-two pole switches in numerous single-throw and double-throw maintained and momentary circuits. These non-illuminated switches are often ideal for applications where there is restricted space behind the panel. It fits in a standard rectangular cutout and is designed to fit easily and securely. The snap-action contacts provide the user with a crisp, positive response. A variety of circuitry choices will appeal to many industry segments.

Approvals:	UL, CSA
Mechanical life:	100,000 cycles minimum
Electrical life:	50,000 cycles (mom.); 100,000 cycles (maint.)
Dielectric strength UL/CSA:	1000 V
Operating temperature:	0 °C to 85 °C [32 °F to 185 °F]
Termination style:	4,75 mm x 0,81 mm tab QC [0.187 in x 0.032 in] tab QC

OPTIONS

MRS SERIES



One pole

CIRCUITRY (POS. 3, 2, 1)	BEZEL/ACTUATOR COLOR	ELEC. RATING*	CAT. LISTING
Off, None, On	Black/Black	1	MRS93-12BB
Off, None, On (Mom.)	Black/Black	3	MRS93-16BB
Off (Mom.), None, On	Black/Black	3	MRS93-14BB
On, None, On	Black/Black	1	MRS93-13BB
On (Mom.), None, On	Black/Black	3	MRS93-18BB
On, Off, On	Black/Black	2	MRS93-11BB
On (Mom.), Off, On	Black/Black	2	MRS93-15BB
On (Mom.), Off, On (Mom.)	Black/Black	2	MRS93-17BB

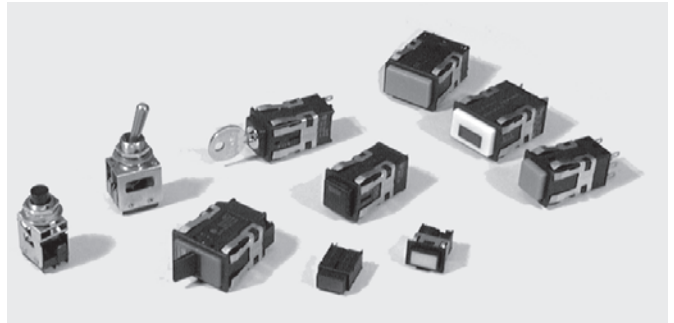
* Electrical Ratings (UL/CSA)




- 1 10 A, 125 Vac; 10 A, 250 Vac; ¼ HP, 125 Vac - 250 Vac
- 2 8 A, 125 Vac - 250 Vac; ¼ HP, 125 Vac - 250 Vac
- 3 12 A, 125 Vac; 6 A, 250 Vac; ¼ HP, 125 Vac - 250 Vac

Manual Switches and Pushbuttons




Manual Switches. Designed by industrial designers to achieve balance between harmonious appearance and ergonomics, AML Advanced Manual Line has pushbuttons, paddles, and rockers; with LED, incandescent, and neon illumination. Plus, matching indicators and LED annunciators. A smaller cousin, MML Minature Manual Line, offers many AML features in a space-saving size.

Pushbuttons. A wide array of different pushbutton families, many with lighted display and matching indicators. Includes Series 2, an easily assembled modular design with many color display/control options; and compact PB unlighted pushbuttons.

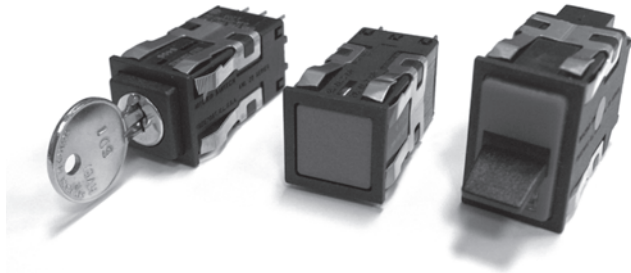


	AML			MML			Series 4
							
Panel Area	20,5 mm [0.80 in] square and 20,5 mm x 30 mm [0.80 in x 1.20 in]			PWB mount: 10,2 mm [0.40 in] square and 15,2 mm x 10,2 mm [0.60 in x 0.40 in], except 2-pole power duty paddles and rockers			21,3 x mm x 26,2 mm [0.84 in x 1.03 in]
Display	15,0 mm [0.59 in] square and 15,0 mm x 25,0 mm [0.59 in x 0.99 in] buttons Pushbutton or lens cap (indicator only) buttons with up to 3-section display. Various button heights. Transmitted, projected, and dead front hidden legend/color			Pushbuttons: 6,6 mm [0.26 in] square and 11,7 mm x 6,6 mm [0.46 in x 0.26 in]. Transmitted color Rockers: Optional lenses for transmitted color			13,5 mm x 18,0 mm [0.53 in x 0.71 in] buttons Single section display Transmitted, projected, and dead front hidden color
Illumination	Incandescent T-1-3/4 lamps – 6 V, 14 V, and 28 V LEDs – 2 V, 4 V, 5 V, 10 V, 15 V Neon lamps – 125 V, 250 V			LEDs – 1.7 V, 2.1 V, 2.2 V, 2.3 V Incandescent T-1 lamps – 5 V (other voltages available)			Incandescent T-3-1/4 lamps 14 V, 28 V
Behind Panel Depth (max.)	43,1 mm [1.7 in]			17,0 mm [0.67 in]			6,1 mm [2.4 in]
Mounting	Snap-in individual, strip, matrix, sub-panel, P.C. board mounting			Printed wiring board, snap-in strip, matrix			Snap-in individual or strip mounting; top panel or sub-panel mounting
Termination	Solder, quick-connect, P.C. board, push-on			Printed wiring board, solder, quick-connect			Solder, quick-connect, P.C. board
Sealing	Optional panel seal			–			–
Special Features	Along with companion rockers and paddles, provides the most advanced and complete line of manual controls available			–			Can be furnished with locked button feature for use in public areas where tampering is a problem
Electrical Data	Solid State: 5, 6 - 16, or 4.5 - 24 Vdc	Electronic control: Up to 3 A, 125 Vac	Power Duty: up to 10 A, 125/250 Vac	Solid State: 5 Vdc to 24 Vdc	Electronic Control: Up to 1 A, 125 Vac res.	Power Duty Pushbuttons: up to 6 A, 250 Vac res.	up to 10 A
Circuitry	Current sinking	1, 2, and 4 Form C	2 pole, Form X	Current sinking	1 or 2 Form C	1 or 2 Form X	1 or 2 Form C
Agency Listings	UL, CSA, CDE and CE (selected products)*			UL and CSA			UL, CSA

* For complete international compliance information, contact the 800 number.

	Series 2	PB	AML		
					
	25,4 mm x 35,8 mm [1.0 in x 1.41 in] 21,8 mm x 34,3 mm [0.86 in x 1.35 in]	Depends on type and number of basic switches	20,5 x mm x 30,5 mm [0.80 in x 1.20 in]		
	21,6 mm x 27,4 mm [0.85 in x 1.08 in] buttons. 1-4 section display Transmitted and projected color	8,1 mm [0.32 in] dia., and other button sizes Colored buttons	Paddle: Full and split color covers	Rocker: Full and split color rockers	
	Incandescent T-1-3/4 lamps, 28 V	–	–		
	83,3 mm [3.28 in]	–	–		
	Snap-in flange mount and units with mounting barriers for individual or strip mount	Threaded bushing	Snap-in individual, strip, matrix, sub-panel, P.C. board mounting		
	Solder, quick-connect, and screw terminals	Solder terminals	Solder, quick-connect, P.C. board, push on		
	–	Panel seal version. Hermetically sealed units	–		
	–	Compact size	Matches display/control options of AML pushbuttons		
	1 A to 20 A, 125 Vac, 250 Vac, 480 Vac, depending on switch module specified	2 A to 5 A, 125/250 Vac	Solid state: 5, 6 -16, or 4.5 - 24 Vdc	Electronic Control: Up to 3 A, 125 Vac	Power Duty Pushbuttons: up to 15 A, 125/250 Vac
	1 - 4 Form C	1 - 4 Form C	Current sinking 2 or 3 positions, mom. or maint.	1, 2, & 4 Form C, 2 or 3 positions, mom. or maint.	1 or 2 Form A 2 pos. maint.
	UL, CSA	UL, CSA. Some meet MIL-S-8805 and MIL-STD-1080D	UL, CSA, VDC, and CE (selected products)*		

AML Series Advanced Manual Line Switches



In Front of the Panel

Coordinated, attractive appearance. AML features innovations designed by industrial designers aimed at achieving the best balance of human factors and aesthetic appearance. Operator height, bezel size, and the compatibility of square and rectangular shapes blend with other components to harmonize your panel. There's no visual clutter to distract from man/machine communication.

This comprehensive line of lighted and unlighted manual controls features:

- Pushbuttons for high and intermediate frequency functions.
- Rocker and paddle switches, with two or three positions, for less frequent control functions.
- Plus lighted indicators and annunciators which complement AML's universal appeal.

Various controls can be matched with their functions to accommodate the most natural and efficient habit pattern reflex. Keylock-operated switches can be used to assure "authorized personnel only" access.

Display flexibility. AML offers a choice of five legend sizes, four button heights, full or split second display, and illumination by incandescent lamps, LEDs or neons. Colors are bright and uniform, providing a strong definition and good visibility. (Non-illuminated devices have the same attractive colors.)

Color display options include:

- Transmitted color – color can be distinguished whether the lamp is On or Off.
- Dead front – display appears black, until illumination causes legend and color to appear.
- Projected color – white display is diffused with color when illuminated.

Behind the Panel

AMLs simple, cost-effective design provides many behind-panel benefits for the designer and installer/user.

Simple to install. They snap in from the panel front individually or in vertical or horizontal strips; or in subpanel mounted strips and matrices that can be pre-assembled and pre-wired.

Electrical flexibility. Solid state switches with Hall-effect integrated circuits interface directly with microprocessors and other logic-level devices. These ICs were first applied in MICRO SWITCH solid state keyboards. Today, many MICRO SWITCH products incorporate the Hall-effect technology to meet a wide range of position sensing and manual control needs.

Electronic control switches with gold or silver contacts, and 1, 2, or 4 poles, will handle up to three amps. Including an encoded version which generates different binary coded outputs merely by changing cam-keyed buttons.

Power-duty switches meet line disconnect application needs with 10-amp pushbuttons and 15-amp paddle and rocker switches.

Easy to Wire. All AML devices present single-level termination. This means faster, easier, neater, and more economical wiring. And there is a choice of solder, quick-connect, push-on, and printed circuit termination.

Mating Terminals

The .110 x .020 quick-connect/solder terminals (types 2 and 8) are designed for use with receptacles that comply with the UL standard for insertion and withdrawal forces. Maximum insertion force is 12 lbs. max., withdrawal force is 14 lbs. These receptacles are supplied by AMP Inc., Berg, Augat, Hollingsworth, MALCO, Zierick, and others. Refer to Thomas Register or the Yellow Pages for the location of your supplier.

Features

- Complete selection of pushbutton, rocker, and paddle (toggle type) switches accommodates different functions and helps promote operator efficiency.
- Solid state, electronic, and power duty control.
- Full or split-screen incandescent display switches and indicators provide vivid transmitted color, projected color (for neutral display when unlit), and dead front (hidden color).
- Wide-angle visibility LED and line voltage neon display switches and indicators.
- Annunciators back lighted by LEDs enable high density message display.
- Keylock switches available for controlled access applications.
- All AML terminations at the same shallow depth (43,1 mm [1.7 in]) for convenient wiring or PC board termination.
- Snap-in surface mount or sub-panel (hidden bezel) mount with mounting hardware.
- Pad-printed legends with a clear polyurethane overcoat available in a choice of five standard sizes.
- Metric design for worldwide acceptance.
- UL recognized, CSA certification.
- Selected listings are certified by VDE and CE. (For compliance status, contact the 800 number).

Honeywell's AML Advanced Manual Line combines functional flexibility with electrical versatility to provide a broad range of options to choose from.

Easy to Relamp. Relamping of T-1-3/4 incandescent AML91 lamps is accomplished from the front of the panel without tools. (AML92 T-1-3/4 LEDs can be added in the same manner.)

Full Guard Bezel Option. As an alternative to standard height bezels (1,5 mm [0.6 in]), pushbutton switches can be furnished with full-guard bezels extending 5,0 mm [0.19 in] from the mounting surface. In the free position, standard buttons are flush with full-guard bezels.

The raised bezel guards against accidental operation by someone leaning against or dropping something on a control console.

High Intensity LEDs for Full-face AML Lighted Display

AML 92 Series

- Full-face illumination for high visibility lighted colors.
- Advanced illumination technology combines high-intensity LED in standard T-1-3/4 wedge base lamp package.
- Easy plug-in installation in AML lighted switches and indicators.
- Low operating temperature permits high density, continuous operation with minimal heat build up.

AML92 Series LEDs have a quad chip assembled in a T-1-3/4 wedge base lamp package. They provide full-face illumination when used with lighted pushbutton, rocker and paddle switches, or indicators equipped with incandescent lamp sockets.

AML Series, continued

AML10 Series

Approvals: UL (E53576), CSA (LR4442)

Electromechanical Life*

Pushbuttons - Momentary	1,000,000
Pushbuttons - Alternate	25,000
Rockers	25,000
Paddles	25,000

*95% survival

AML10 Series Electrical Data

Electrical Characteristics						Absolute Maximum Rating ⁴			
Integrated Circuit Function	Supply Current (max.)	Output Voltage (Operated)	Output Leakage Current max. (Released)	Switching Time Max.		Supply Voltage (V _s)	Voltage Externally Applied to Output	Loads to Output	Storage Temperature
				Rise 10% to 90%	Fall 90% to 10%				
5 Vdc Sinking ¹	3.5 mA (released) 6.5 mA (operated - no load)	+0.4 V (sinking 8 mA)	2.0 μA	1.0 μs (sinking 8 mA)	1.0 μs (sinking 8 mA)	-0.5 Vdc to 7.0 Vdc 0 °C to 65 °C [32 °F to 149 °F]	-0.5 V min. 15 V max. (off condition)	20 mA (sinking)	-40 °C to 65 °C [-40 °F to 149 °F]
6 Vdc to 16 Vdc Sinking ²	6.5 mA @ 6 Vdc, 10.0 mA @ 16 Vdc (plus load current) ³	+0.4 V (sinking 20 mA max.)	2.0 μA	1.5 μs (sinking 20 mA)	0.5 μs (sinking 20 mA)	-1.2 Vdc to +20 Vdc	20 Vdc max. in off condition only -0.5 Vdc min. in off or on condition	40 mA	-40 °C to 65 °C [-40 °F to 149 °F]
4.5 Vdc to 24 Vdc Sinking	5 V 7.0 mA (released) 24 V 9.0 mA (released) 14.0 mA (operated - no load)	+0.4 V (sinking 10 mA)	10 μA	1.5 μs (sinking 10 mA)	0.5 μs (sinking 10 mA)	-30 Vdc to +30 Vdc	-0.5 V min. +24 V max. (off condition)	20 mA (sinking)	-40 °C to 65 °C [-40 °F to 149 °F]

¹ Over temperature range of 0 °C to 55 °C [32 °F to 131 °F] and supply voltage of 4.5 Vdc to 5.5 Vdc.

² Over temperature range of 0 °C to 55 °C [32 °F to 131 °F] and supply voltage of 16 Vdc.

³ At 24 °C [75 °F]

⁴ As with all solid state components, performance can be expected to deteriorate as rating limits are approached; however, they will not be damaged unless the limits are exceeded.

Order Guide

SERIES NAME AML10	CAT. LISTING Custom
-----------------------------	-------------------------------

AML Series, continued

AML20 Series

Approvals: UL (E12252), CSA (LR4442)
 VDE (0630/10.78*), CE (Rating 1710 No. 4275.5788)

Electromechanical Life
 Pushbuttons - Momentary 25,000 (silver); 100,000 (gold)
 Pushbuttons - Alternate 25,000
 Rockers 25,000
 Paddles 25,000

* Exception: Four-pole AMLs are not included in VDE approval.

AML 20 Series Electrical Data

Contacts	Voltage	Current	Load Type
Silver	250 Vac	2 A	75% Power Factor
or	125 Vac	3 A	75% Power Factor
gold-plated silver	24 Vdc	2 A	Resistive
Gold	125 Vac/Vdc	100 mA	Resistive

Order Guide

SERIES NAME	CAT. LISTING
AML20	Custom

AML40 Series

Approvals: UL (E58932), CSA (LR4442)
Electromechanical Life* N/A

Order Guide

SERIES NAME	CAT. LISTING
AML40	Custom

AML30 Series

Approvals: UL (E12252), CSA (LR4442)
 VDE (0630/10.78*), CE (Rating 1710 No. 4275.5788)

Electromechanical Life
 Pushbuttons - Momentary 25,000
 Pushbuttons - Alternate 25,000
 Rockers 25,000
 Paddles 25,000

* Exception: Only the two-pole AML33 and AML34 are certified by VDE.

AML 30 Series Electrical Data

Voltage	Current Pushbuttons	Current Rockers or Paddles	Load Type
125 Vac	10 A	15 A	60% Power Factor
250 Vac	10 A	15 A	60% Power Factor

Order Guide

SERIES NAME	CAT. LISTING
AML30	Custom

MML Series Miniature Manual Line Switches



Features

- Breadth of line offers complete selection of pushbuttons, rockers, and indicators to accommodate different functions and promote operator efficiency.
- Printed wiring board (PWB) or panel-mounted switches, plus multi-unit strip mounting, and single-level termination for cost-effective installation.
- Tactile feedback imparts a definite feel of switching action.
- Coordinated appearance enhances panel harmony.
- Illumination by long-life LEDs and incandescent lamps – for lighted display versatility.
- Solid state, electronic control and power-duty switching – for electrical versatility.
- Temperature range 18 °C to 65 °C [0 °F to 149 °F].

Design Freedom

Rocker switches are available in the MML Miniature Manual Line. They complement AML pushbuttons and indicators, providing you flexibility and design freedom to meet all your miniature manual control requirements. You can choose the actuator option that matches the switch function and natural-habit pattern reflex of the operator. You no longer need to compromise quality, appearance, or human factors considerations because of size constraints.

The MML pushbutton and indicator offering has been expanded to include new square forms which are small enough to fit in the tightest places.

Mounting Flexibility

Printed wiring board (PWB) mounted switches can be arranged in individual panel openings or multi-unit strips, in a common panel cutout. Optional support brackets provide added rigidity for stand-alone PWB-mounted devices. Units with bezels and mounting clips can be snap-in mounted from the front panel.

Single-level PWB or solder/quick-connect termination throughout makes wiring faster, easier, and more economical. Housing are designed to accommodate washing, before and after wave soldering, to help prevent contamination during printed wiring board installation.

Lighted Display Options

Pushbuttons and indicators can be full-face illuminated by LEDs or incandescent lamps for high visibility of colors and legends. Inherently rugged, long-life LEDs can help reduce service and maintenance costs. Also, their low drive and in-rush current (30 mA or less) reduces costs of drive circuitry.

Rockers can be furnished with colored lenses for illumination by LEDs or incandescent lamps.

Control Versatility

Solid state pushbutton switches with Hall-effect integrated circuits interface directly with microprocessors and other logic-level devices. Time-proven for billions of cycles, Hall-effect ICs provide the ultimate in reliability.

Electronic control push button or rocker switches, with gold or silver contacts, handle up to 1 A; power-duty switches, up to 6 A.

MML Enhances Panel Harmony

The attractive, clean line design of the total MML offering is coordinated to work in harmony and enhance the visual qualities of your product. MML will help make a good first impression with your customers by blending with other panel components, and also works hard over the long run to maintain operator satisfaction.

How to Order

To specify MML catalog listings, refer to the order guides. They are based on a modular cataloging system which gives you the flexibility to choose the combination of feature options that best answers the requirements of your application.

MML10 Series

Approvals:	UL (E53576), CSA (LR4442)
Mechanical Lifetime*	
Pushbuttons – Momentary	1,000,000
Pushbuttons – Alternate	100,000
Rockers	100,000
Electrical Lifetime**	
Pushbuttons – Momentary	1,000,000
Pushbuttons – Alternate	100,000
Rockers	100,000

* 95% survival
 ** Lifetime at full-rated load

MML10 Series Electrical Data

Electrical Characteristics

Integrated circuit function	5 Vdc to 24 Vdc sinking
Supply current (max)	7 mA (released) 8 mA (operated no load)
Output voltage (operated)	0.3 V (sinking 10 mA)
Output leakage current max. (released)	5.0 μ A
Switching time (max.)	
Rise 10% to 90%	15 μ s (sinking 10 mA)
Fall 90% to 10%	0.5 μ s (sinking 10 mA)
Rated output current	10 mA sinking

Absolute Maximum Ratings

Supply Voltage (V_s)	-28 Vdc to 28 Vdc
Voltage externally applied to output	-0.5 V min.; 28 V max. (off condition)
Loads to output	20 mA (sinking)
Storage temperature	-40 °C to 85 °C [-40 °F to 185 °F]
Operating temperature	-18 °C to 65 °C [0 °F to 149 °F] and supply voltage of 4.5 Vdc to 5.5 Vdc

As with solid state components, performance can be expected to deteriorate as rating limits are approached; however, they will not be damaged unless the limits are exceeded.

MML20 Series

Approvals:	UL (E12252), CSA (LR4442)
Mechanical Lifetime*	
Pushbuttons - Momentary	250,000
Pushbuttons - Alternate	100,000
Rockers	250,000
Electrical Lifetime**	
Pushbuttons - Momentary	25,000
Pushbuttons - Alternate	25,000
Rockers	25,000

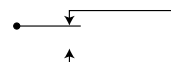
* 95% survival
 ** Lifetime at full-rated load

MML20 Series Electrical Data Electrical Rating (silver contacts)

Standard buttons	Up to 1 A, 125 Vac
1-piece plunger/ lens cap buttons	black – up to 1 A, 125 Vac All others – up to 0.5 A, 125 Vac

Electrical Rating (gold contacts)

All button styles	Up to 0.25 A, 30 Vdc UL rating - 0.1 A, 30 Vdc
Contact arrangement	One pole Form C



Order Guide

SERIES NAME	CAT. LISTING
MML20	Custom

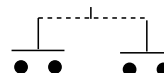
MML30 Series

Approvals:	UL (E12252), CSA (LR4442)
Mechanical Lifetime*	
Pushbuttons - Momentary	100,000
Pushbuttons - Alternate	100,000
Rockers	100,000
Electrical Lifetime**	
Pushbuttons - Momentary	25,000
Pushbuttons - Alternate	25,000
Rockers	25,000

* 95% survival
 ** Lifetime at full-rated load

MML30 Series Electrical Data MML31

Electrical rating	6 A @ 125 Vac, 250 Vac, 2 A @ 30 Vdc
Silver contacts	1 A @ 125 Vdc "L", 1/10 hp @ 125 Vac
Contact arrangement	1 or 2 poles Form X



Order Guide

SERIES NAME	CAT. LISTING
MML30	Custom

MML40 Series

Approvals:	UL (E58932), CSA (LR4442)
-------------------	---------------------------

Order Guide

SERIES NAME	CAT. LISTING
MML40	Custom

Custom Switches and Assemblies

Honeywell Sensing and Control's broad product and technology portfolio combined with our industry experience and know-how offers customers a wealth of choice:

- Custom engineered solutions for customer-specific designs and product packaging
- Technology selection
- Integration and component miniaturisation

For more information contact your local Honeywell sales representative.

Shown here are some examples of what we can do.

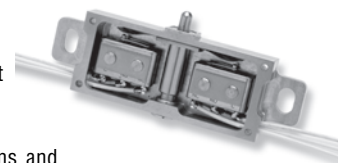
Harness assemblies

- Cable harness assemblies can be added to many of our products, designed to specific customer requirements.
- These may incorporate latest specification leadwire systems, screens, connectors and backshells and aimed at providing customers with a fully integrated solutions.



Switch assemblies

- Honeywell has many years of experience designing custom solutions for customers.
- Our environment and hermetically sealed products may, for instance, be incorporated into housings that provide minimum space envelope or specific mounting arrangement.
- They may incorporate precision actuating mechanisms and electronic circuitry to interface with customer systems.



Rotary switches

- Based on Honeywell basic or miniature hermetic switches, rotary switches can be designed to incorporate multiple poles, specific switch on/off sequences and high or low energy switching.
- Potential applications include weapons selectors, Re-fuelling probe indicators and flap position indicators.
- Customer-specific space envelope and mounting arrangements can be accommodated.



Operator interface products

- Honeywell has many examples of custom designed operator interfaced products for both hand and foot operation.
- These products may incorporate pushbuttons, indicators and electronic interfacing circuitry.
- All products are capable of operating in these most severe environments.



Gear selectors

- Based on rotary switches, this family of rugged and reliable gear selectors is used in armoured vehicle applications.
- These products can be modified to meet new potential applications such as illuminated or fluorescent gear position indications, number of gear positions, interlocking, high or low energy switching and mounting arrangements.



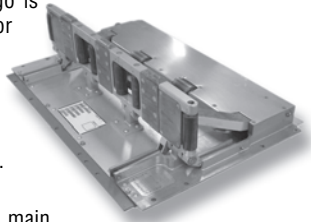
Flap selectors

- A range of commercial aircraft flap selectors based on RVDT (Rotary Variable Differential Transducers) or Honeywell basic switches.
- These products can be modified to meet new potential application requirements such as flap positions, mounting arrangements, connectors or electrical harnesses.
- The example illustrated incorporates four-position flap selection, environmentally sealed fluorescent flap decal and illuminated position indicators and is based on RVDTs.



Cargo loading systems

- The **door sill roller** is part of the cargo loading system that serves as a guiding and protecting element during load and unload operations. Incoming cargo is guided into the cargo loading bay to protect the cargo door sill.
- The **Y-guide** is part of the cargo loading system that controls the lateral guidance of cargo during load and unload operations at the cargo entrance area. The unit is designed as a powered, retractable and overrideable guide.
- The **angle measurement device** is part of door actuator symmetry monitoring. This device prevents damage to the main cargo door and the structure of the aircraft by monitoring the asymmetric movement of the two main cargo door actuators.
- The example shown is a Y-guide cargo loading system incorporating robust mechanical components and environmentally sealed position sensors. It is used in commercial aircraft applications.



Custom Controls

Competition between off-road equipment manufacturers can be fierce. Honeywell can help you distinguish yourself from the competition by working with you in developing your custom controls and switches. We have innovative and flexible design capabilities coupled with cost-effective prices. Quick response including design, and “fit-up” prototypes in weeks versus months from your initial request provides the edge you need to shine over your competition. Control interfaces that are functional, rugged and aesthetically pleasing are an important part of the design process. The ability to ergonomically design numerous functions into one product is our strength.

Technological and process capabilities

- Pro/Engineer software
- Programmable controllers
- Mold flow analysis

Control and switch capability

- Sliding, toggle and button engagement
- Environmentally protected
- Night visibility/lighted components
- Directional
- Speed control
- Molded terminal arrays
- Ergonomically sensitive
- Indicator light panels

Potential Applications

- All terrain vehicles (ATVs)
- Forestry
- Agriculture
- Lawn and garden
- Snowmobiles
- Motorcycles
- Construction
- Material handling

Multi-function controls



Throttle controls



Electronic shifters



Key switches



Indicator light strips



Push/Pull switches



Proportional retarders



Hour meters

Honeywell has a wide range of hour meters that are used for recording and tracking the total elapsed time that equipment is in use.

Long recognised as the industry leader, the Hobbs brand hour meters are designed for use in a wide variety of potential applications and environments. In order to protect investment in expensive equipment, our customers demand a meter that is accurate and dependable. Down time is not an option - customers need to know when it is time to service their equipment.

No matter whether the equipment is for production or recreation, manufacturers, operators and service professionals rely on Honeywell for their hour meters needs.



98000 Series LCD hour meters

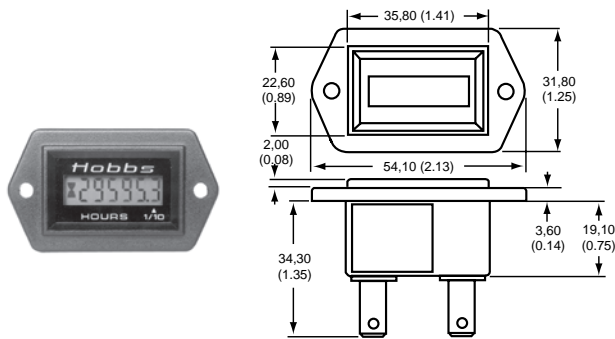
The 98000 Series LCD hour meter combines reliability with a solid state package, built for rugged, heavy-duty applications. The meter utilizes a large LCD display with 6 mm [0.24 in] high digits.

Other benefits include shorter overall meter depth, totally silent operation, non-volatile memory and solid-state circuitry. A wide variety of mounting styles are offered that are direct replacements for most traditional hour meters. Optional offerings include, reset capability, customised logos, 4.5 Vdc to 16 Vdc, and pulse counters. The series is UL recognised and comes in a variety of mounting and case options.

Termination: 6,35 mm [¼ in] blade
Sealing: IP66 (Cased hour meters only)
Approvals: UL
Operating temperature: -40 °C to 85 °C [-40 °F to 185 °F]
Voltage range: 9 Vdc to 64 Vdc

OPTIONS

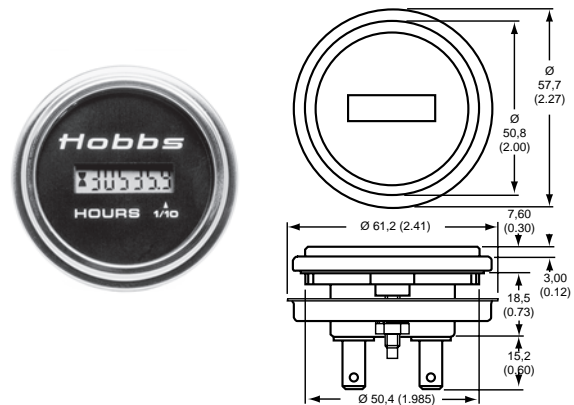
2 Screw, deluxe bezel



2 Screw Deluxe:
 Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening
 2 x 3,81 (0.15) holes spaced 44,45 (1.750)

NUMBER OF TERMINALS	CAT. LISTING
2	98313
3	98323
4 with reset	98303

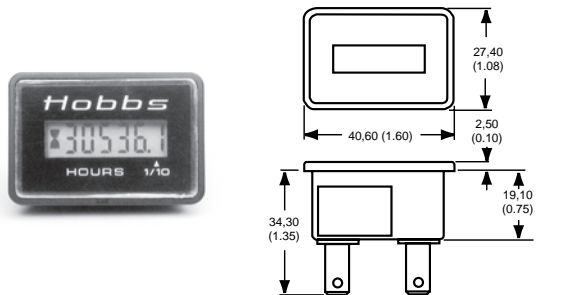
Round, 2¼ in [57,15 mm], chrome, flush cup mount



Flush Mount (Retainer) 57,77 (2.27):
 Panel cutout 50,8 (2.00) Ø opening

NUMBER OF TERMINALS	CAT. LISTING
2	98314
3	98324
4	98304

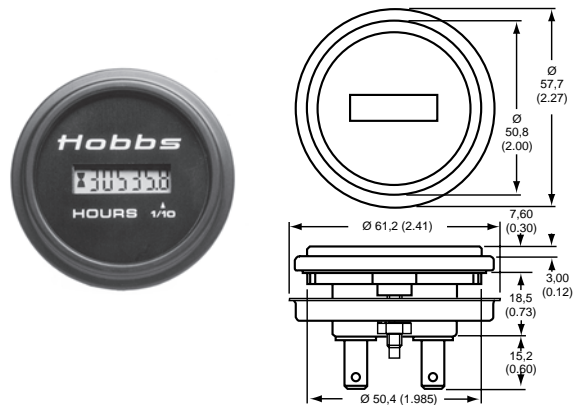
Rectangular, retainer mount



Retainer Mount:
 Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening

NUMBER OF TERMINALS	CAT. LISTING
2	98311
3	98321
4	98301

Round, 2¼ in [57,15 mm], black, flush cup mount



Flush Mount (Retainer) 57,77 (2.27):
 Panel cutout 50,8 (2.00) Ø opening

NUMBER OF TERMINALS	CAT. LISTING
2	98312
3	98322
4	98302

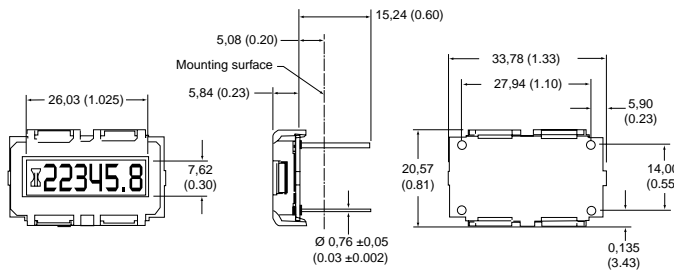
**98000 Series
LCD hour meter modules**

The LCD hour meter module is a custom engineered elapsed time meter designed to be mounted directly onto a printed circuit board (PCB). It can be used in a variety of dc applications that require an hour meter for preventative maintenance, warranty verification, renting and leasing. LCD counter also available.

Approvals:
Voltage range:

A
B

UL, CSA
9 Vdc to 64 Vdc
4.5 Vdc to 16 Vdc



	NUMBER OF TERMINALS	VOLTAGE RANGE	CAT. LISTING
	4	A	98706
	4	B	98707
Metal bezel	4	A	98750

CAUTION

All meter modules have crucial components exposed. The module must be sufficiently protected if used in an environment other than specified. Contact Honeywell when suitability of application is questioned.

**98000 Series
LCD volt/hour meters**

Honeywell Sensing and Control has introduced the LCD volt/hour meter that combines two important instruments in one rugged, sealed package. Honeywell volt hour meters monitor the condition of battery electrical systems and simultaneously measure the total elapsed run time of equipment in which they are installed. During operation, the micro-controller based movement will cycle the LCD display between voltage and hours indication at a rate of fifteen seconds on for voltage and one second on for total hours. The high-impact polycarbonate case is sealed against dust and moisture. Available in various bezel and mounting configurations, Honeywell's volt/hour meters are the perfect choice for a variety of applications.

Termination:

6,35 mm [¼ in] blade

Sealing:

IP66

Operating temperature:

-40 °C to 85 °C [-40 °F to 185 °F]

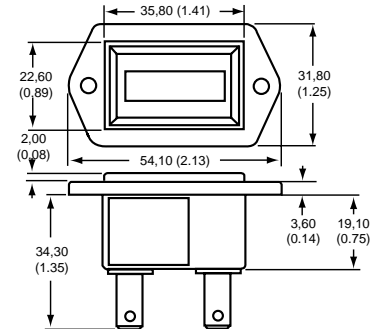
Voltage range:

7 Vdc to 19 Vdc

OPTIONS

Combination volt/hour meters

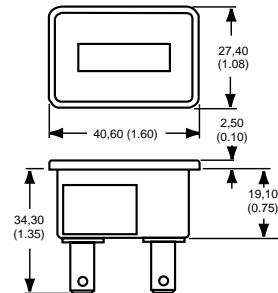
2 Screw, deluxe bezel



2 Screw Deluxe:
Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening
2 x 3,81 (0.15) holes spaced 44,45 (1.750)

CAT. LISTING
98103

Rectangular, retainer mount



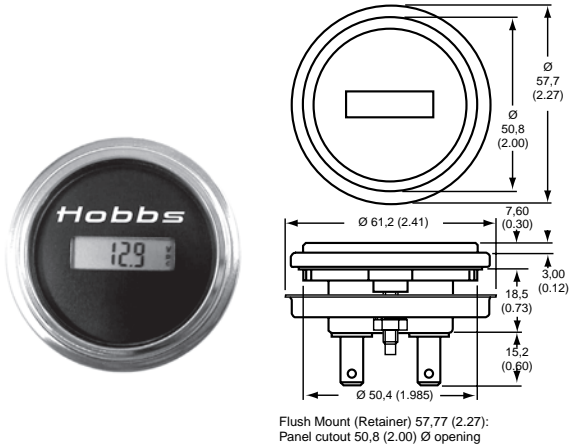
Retainer Mount:
Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening

CAT. LISTING
98101

**98000 Series
LCD volt/hour meters (continued)**

Combination volt/hour meters

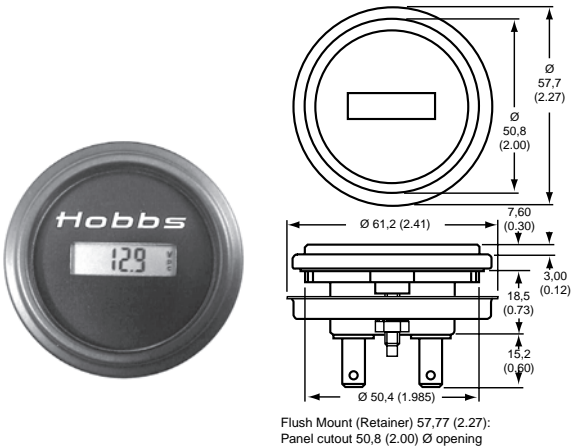
Round, 2¼ in [57,15 mm], chrome, flush cup mount



Flush Mount (Retainer) 57,77 (2,27):
Panel cutout 50,8 (2,00) Ø opening

CAT. LISTING
98111

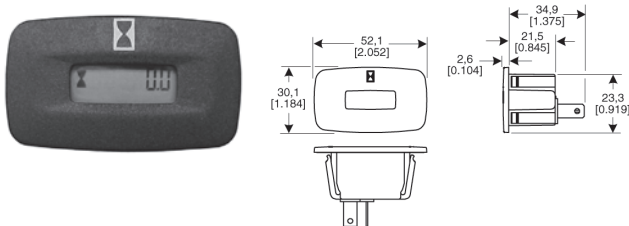
Round, 2¼ in [57,15 mm], black, flush cup mount



Flush Mount (Retainer) 57,77 (2,27):
Panel cutout 50,8 (2,00) Ø opening

CAT. LISTING
98102

Maintenance Meter



CAT. LISTING
98202

Volt meters

The volt meter incorporates the features and benefits of the LCD volt hour meter but is used for volts only. The large easy to read LCD display provides a digital readout of the vehicle voltage. Available in standard Round, 2-Screw and Rectangular case configurations, volt meters require only battery positive and ground leads for installation and operation.

Termination: 6,35 mm [¼ in] blade
Sealing: IP66
Operating temperature: -40 °C to 85 °C [-40 °F to 185 °F]
Voltage range: 7 Vdc to 19 Vdc

2 Screw, deluxe bezel

CAT. LISTING
98108

Rectangular, retainer mount

CAT. LISTING
98106

Round, 2¼ in [57,15 mm], chrome, flush cup mount

CAT. LISTING
98110

Round, 2¼ in [57,15 mm], black, flush cup mount

CAT. LISTING
98109

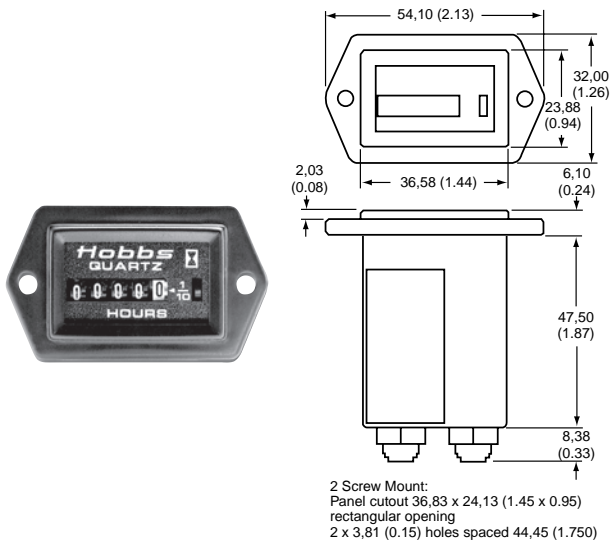
85000 Series Quartz plus dc hour meters

The Quartz Plus Series of hour meters are aimed at providing performance and reliability. Features include a highly reliable drive mechanism and odometer gear train combined with the accuracy of quartz crystal timing. The totally sealed meters are UL/CSA recognized and come in a variety of mounting styles.

Termination:	6,35 mm [¼ in] blade
Sealing:	IP67
Approvals:	UL, CSA
Operating temperature:	-40 °C to 85 °C [-40 °F to 185 °F]
Voltage range:	A 10 Vdc to 80 Vdc
	B 6.5 Vdc to 16 Vdc
	C 10 Vdc to 32 Vdc

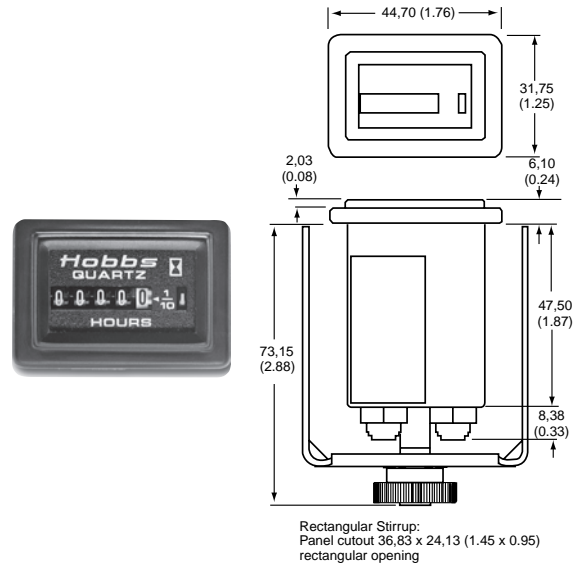
OPTIONS

2 Screw, bezel



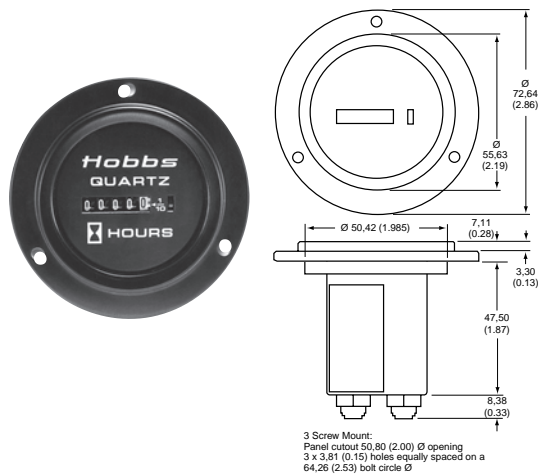
VOLTAGE RANGE	CAT. LISTING
A	85094
B	85331

Rectangular, stirrup mount



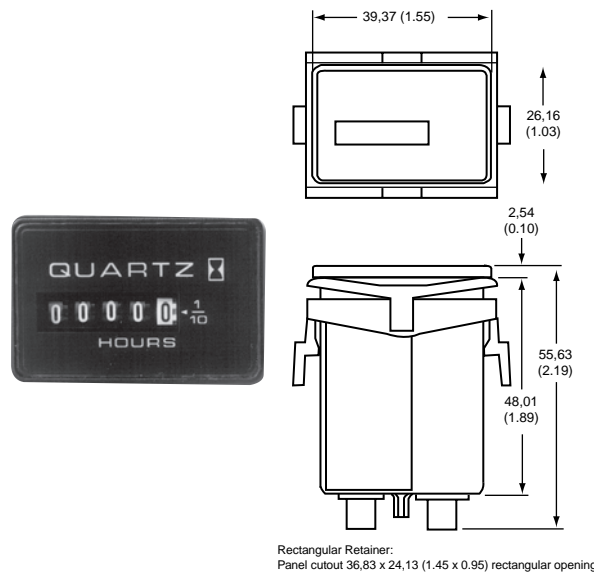
VOLTAGE RANGE	CAT. LISTING
C	85010

3 Screw, round



VOLTAGE RANGE	CAT. LISTING
A	85097

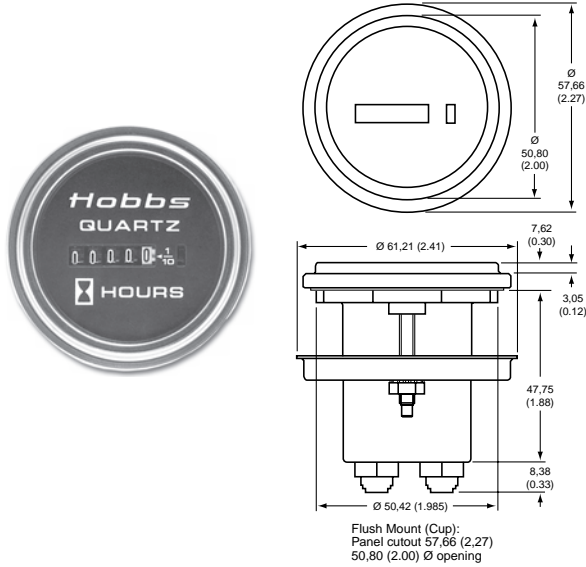
Rectangular, retainer mount



Sealing:	IP66
VOLTAGE RANGE	CAT. LISTING
A	82320

85000 Series
Quartz plus dc hour meters (continued)

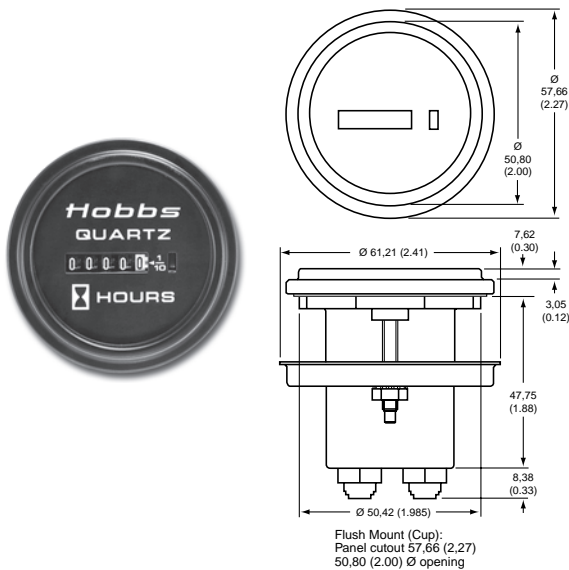
Round, 2 1/4 in [57,15 mm], chrome, flush cup mount



VOLTAGE RANGE
 A

CAT. LISTING
 85342

Round, 2 1/4 in [57,15 mm], black, flush cup mount



VOLTAGE RANGE
 A

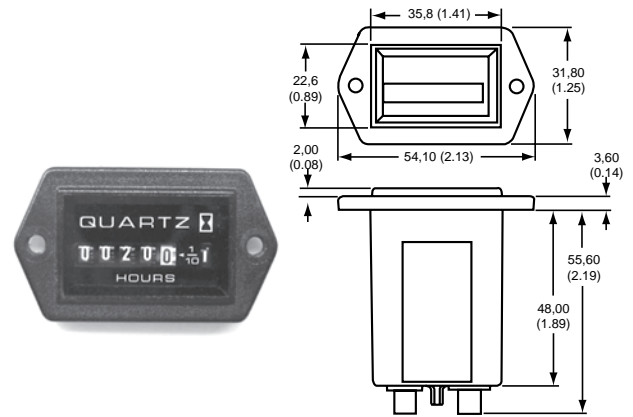
CAT. LISTING
 85093

82400 Series
Quartz dc hour meters, polarity insensitive

Termination: 6,35 mm [1/4 in] blade
 Sealing: IP66
 Approvals: UL
 Operating temperature: -40 °C to 85 °C [-40 °F to 185 °F]
 Voltage range: 10 Vdc to 80 Vdc

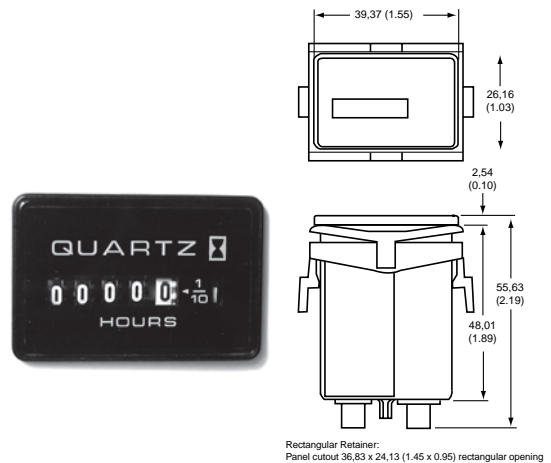
OPTIONS

2 Screw, bezel



CAT. LISTING
 82416

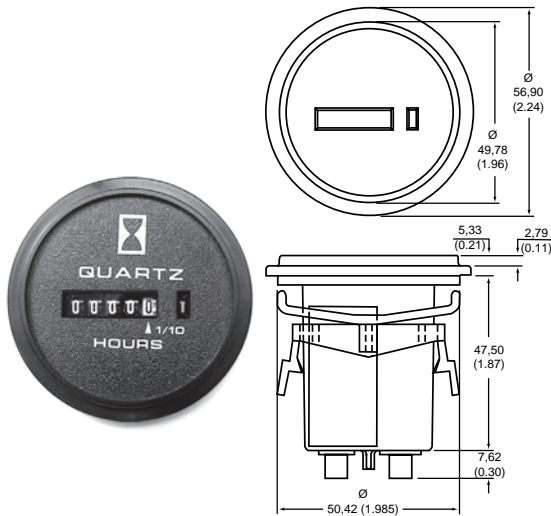
Rectangular, retainer mount



CAT. LISTING
 82401

82400 Series
Quartz dc hour meters, polarity insensitive
(continued)

Round, 2¼ in [57,15 mm], black, retainer mount



CAT. LISTING
 82404

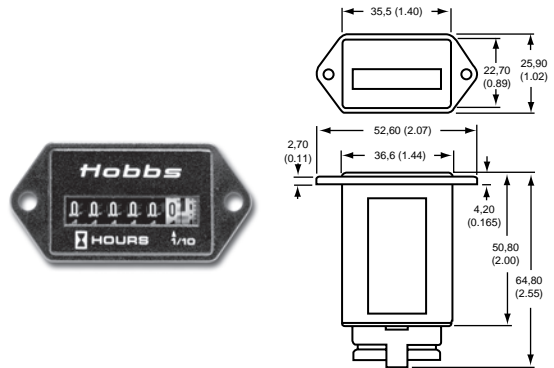
20000 Series
Deluxe ac hour meters

Honeywell's 20000 Series Deluxe ac meter is a completely sealed hour meter that utilizes a synchronous motor to drive the odometer gear train. Meters are available in a combination of mounting styles, voltages and frequencies and are UL Listed, CSA and CE Certified.

Termination:	Screw
Sealing:	IP65
Approvals:	UL, CSA, CE
Operating temperature:	-54 °C to 68 °C [-65 °F to 154 °F]
Voltage range:	A 120 Vac, 60 Hz
	B 240 Vac, 60 Hz
	C 120 Vac, 50 Hz
	D 240 Vac, 50 Hz

OPTIONS

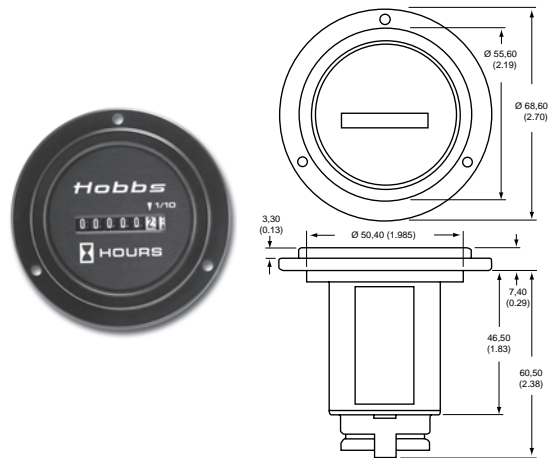
2 Screw, bezel



2 Screw Mount:
 Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening
 2 x 3,81 (0.15) holes spaced 44,45 (1.750)

VOLTAGE RANGE	CAT. LISTING
A	20001
B	20007
C	20028
D	20029

3 Screw, round



3 Screw Mount:
 Panel cutout 50,8 (2,00) Ø opening
 3 x 3,175 (0,125) holes equally spaced on
 61,47 (2,42) circle Ø

VOLTAGE RANGE	CAT. LISTING
A	20017
B	20019
C	20016
D	20018

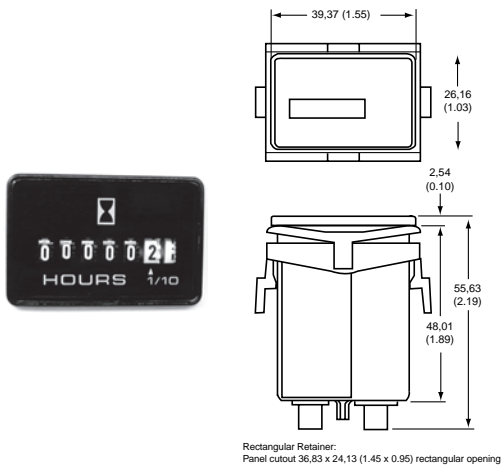
28000 Series Standard ac hour meters

The Honeywell 28000 Series ac hour meters use a synchronous motor to drive the odometer gear train. These meters can be used in a wide variety of potential applications including control panels and medical applications. All styles are UL, CSA and CE certified.

Termination:	6,35 mm [¼ in] blade
Sealing:	IP64
Approvals:	UL, CSA, CE
Operating temperature:	-54 °C to 68 °C [-65 °F to 154 °F]
Voltage range:	A 120 Vac, 60 Hz
	B 240 Vac, 60 Hz
	C 120 Vac, 50 Hz
	D 240 Vac, 50 Hz

OPTIONS

Rectangular, retainer mount



Rectangular Retainer:
Panel cutout 36,83 x 24,13 (1.45 x 0.95) rectangular opening

VOLTAGE RANGE	CAT. LISTING
A	28000
B	28004
C	28002
D	28006

Round, 2¼ in [57,15 mm], retainer mount



VOLTAGE RANGE	CAT. LISTING
A	28030

Key Switches

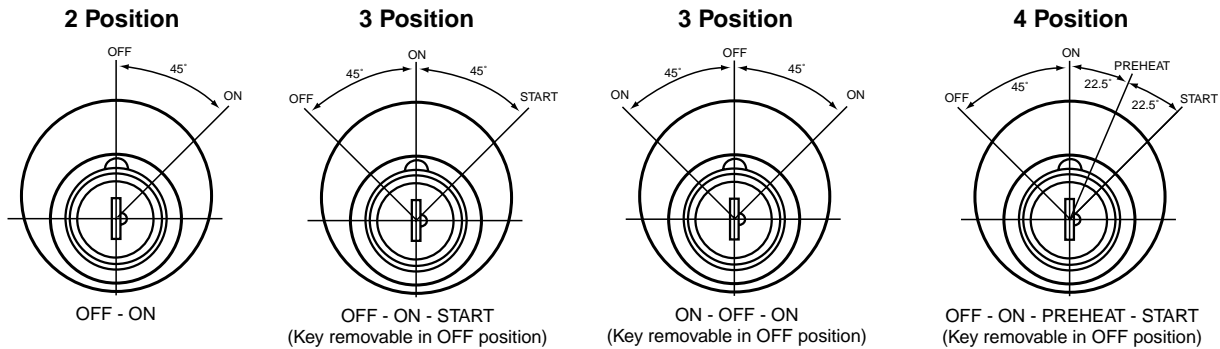


Honeywell Key switches are custom engineered, environmentally sealed, sliding contact switches. They can be designed to match existing keys or to use a six tumbler mechanism with up to 300 unique key combinations. The stainless steel keyhole shroud and keyhole dust shutter contribute to the durability of the assembly while O-rings protect the contact and rotor assembly from moisture and contamination.

Key switches can be used in off-highway, material handling or other potential applications where environmental specifications must be met. They have been tested for temperature, vibration, dust, cycling, humidity, pressure wash and salt fog and mount into a 22,10 mm [0.87 in] hole in panels 3,81 mm to 6,35 mm [0.15 in to 0.25 in] thick.

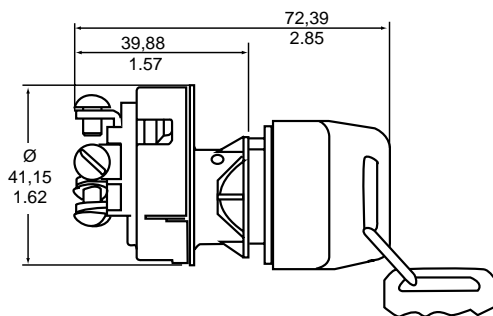
Standard configurations are shown below, others are available. Contact your Honeywell sales representative for more information.

Mechanical life: 25000 cycles
Operating temperature: -40 °C to 85 °C
 [-40 °F to 185 °F]
Connector: Screw or Packard MetriPack 280 Series
Electrical rating: Screw - 20 A, 12 Vdc
 10 A, 24 Vdc
 4 A, 48 Vdc
 Packard MetriPack - 20 A, 12 Vac
 8 A, 24 Vac



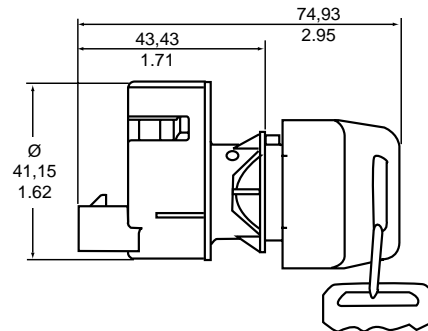
OPTIONS

Screw terminals



SWITCH POSITIONS	CAT. LISTING
2 (Off/On)	84828
3 (Off/On/Start)	84829
3 (On/Off/On)	84830

Integral connector



SWITCH POSITIONS	CAT. LISTING
2 (Off/On)	84825
3 (Off/On/Start)	84826
3 (Off/On/Start, Magneto Ground)	89165
4 (Off/On/Preheat/Start)	89477

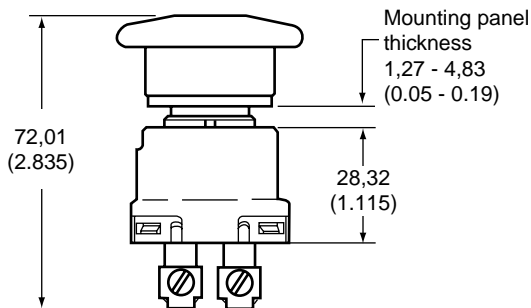
Push/Pull Switches



Honeywell's Push/Pull switches are robust, environmentally sealed, positive action, sliding contact switches incorporating two circuits with multiple combinations. The switch can be designed with a single contact closure in either the push or pull position, two contact closures in either the push or pull positions or a single contact closure in both the push and pull position. For more details on these options, contact a Honeywell sales office. The dual O-ring design protects the contact chamber by isolating it from moisture or any other contaminant.

These switches may be suitable for the demands of harsh environments found in off-highway, material handling or other applications where rapid, positive action is required.

Mechanical life:	25000 cycles
Operating temperature:	-40 °C to 100 °C [-40 °F to 212 °F]
Connector:	Screw Terminals
Electrical rating:	20 A, 12 to 14 Vdc 10 A, 24 Vdc
Sealing:	IP67



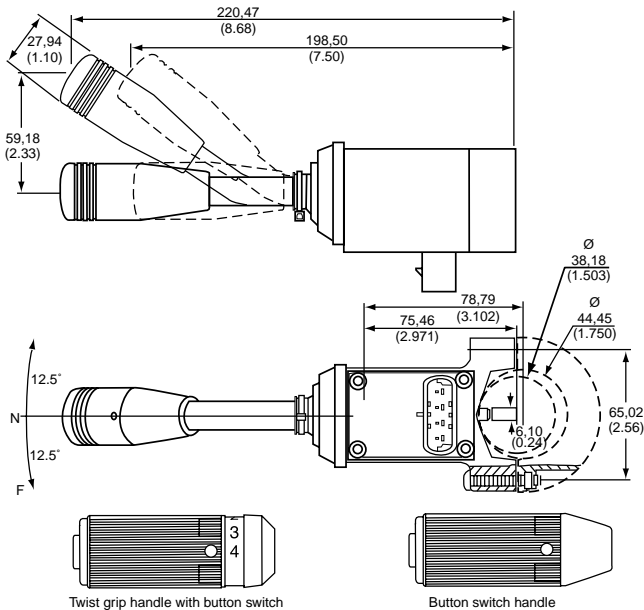
CIRCUITRY
2NO Circuits in Push
1NO/1NC Circuits in Push

CAT. LISTING
87941
87943

Shifters



- Mechanical life:**
 Rotary 1 million cycles (2 A, 12 V load)
 Shifter handle 500,000 cycles
 Lever with drop down neutral lock 3 million cycles
 without drop down neutral lock 5 million cycles
- Sealing:** IP67
- Operating temperature:** -40 °C to 85 °C
 [-40 °F to 185 °F]
- Supply voltage:** 3V to 32 V operation [12 V or 24 V typ.]
- Mounts to column size:** 38 mm, 45 mm or 55 mm
 [1.50 in, 1.77 in or 2.17 in]
- Neutral lock:** Drop down
- Connector:** Integral Packard, Integral Deutsch or Wire harness



Optional mounting clamps

COLUMN SIZE	CAT. LISTING
38 mm [1.50 in]	80260
45 mm [1.77 in]	80262

Honeywell electromechanical shifters are often ideal for meeting the direction and speed control requirements of most off-highway applications. They are completely sealed and are built to withstand the harsh environments of the off-highway industry.

Mounting clamps for shifters and turn signals are available to order separately, with or without locating pin, for column sizes shown in order guides.

Standard configurations are shown below, others are available. Contact your Honeywell sales representative for more information.

Shifter - FNR Forward, Neutral, Reverse

OPTIONS

Column size 38 mm or 45 mm [1.50 in or 1.77 in]
Integral Packard connector

FEATURES	MOUNTING	CAT. LISTING
Neutral lock	left or right	80438
No neutral lock	left or right	81521
Neutral lock/Wash/wipe	right	86835

Wire harness connector

FEATURES	MOUNTING	CAT. LISTING
Neutral lock	left	80909

Column size 55 mm [2.17 in]
Integral Deutsch connector

FEATURES	MOUNTING	CAT. LISTING
Neutral lock/Horn	left	80910

Shifter - FNR Forward, Neutral, Reverse with speed selector

OPTIONS

Column size 38 mm or 45 mm [1.50 in or 1.77 in]
Integral Deutsch connector

FEATURES	MOUNTING	SPEEDS	CAT. LISTING
Neutral lock	left	4	81248
Neutral lock/button	left	3	81426
No neutral lock	left	3	81758
Neutral lock	left	bump	84105
Neutral lock	right	6	85874

Wire harness connector

FEATURES	MOUNTING	SPEEDS	CAT. LISTING
Neutral lock	left	4	84467

Proportional Retarders



Honeywell's Proportional Retarder is a shift-lever handle that attaches to the steering column of a vehicle and gives an electronic pulse-width-modulated output signal that is proportional to the position of the lever.

In standard mounting position, output signal has 10 % duty cycle when lever is pulled towards operator to maximum extent. When moved away from operator to its maximum travel, the lever snaps into a detent indicating the output signal now has 90 % duty cycle. The duty cycle between these two positions is a continuously variable function of position.

Housed in a sealed unit with a rugged, positive locking connector, the proportional retarder has reverse voltage, short circuit and over voltage protection.

Travel:	25° maximum angle travel
Supply Voltage:	9 Vdc to 32 Vdc (12 Vdc to 24 Vdc operating system)
Base Frequency:	500 Hz, ± 10 % over temperature and input voltage
Duty Cycle:	10 % to 90 %, ± 5 % at limits of travel
Output Voltage:	Pulse-width-modulated, 0 V to 7 V amplitude
Wiring and Connection:	Receptacle compatible with positive-locking Deutsch DT06-6S connector with 18 AWG (minimum wiring to conform to 1E815)

Turn Signals



Honeywell Turn signal switches are built to complement the Honeywell shifters or can be mounted independently. A variety of potential operations are available such as wiper speeds, head lamp control, button and auto cancel options.

These switches can be tailored to meet your design requirements; contact Honeywell for more information.

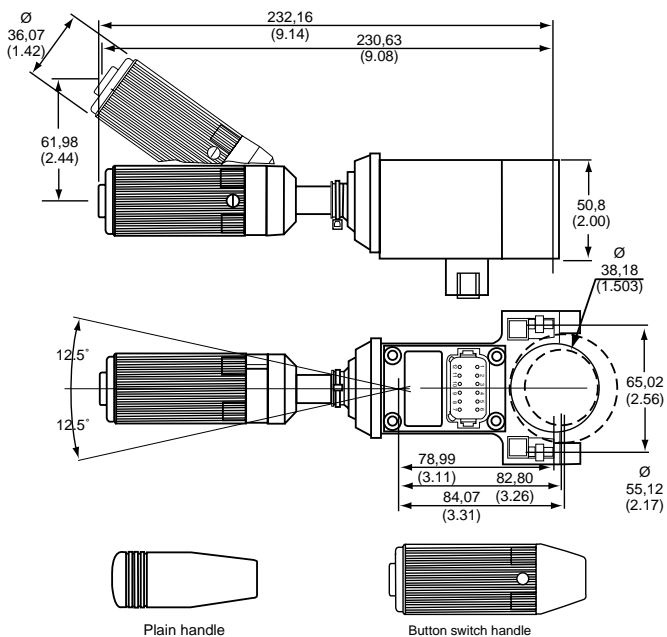
Mechanical life: Turn signal 50,000 cycles (8 A, 12 V load)
 Wiper 50,000 cycles (2 A, 12 V load)
 Washer 20,000 cycles (2 A, 12 V load)
 Head lamp dimmer 20,000 cycles (15 A, 12 V load)

Sealing: IP67
Operating temperature: -40 °C to 85 °C
 [-40 °F to 185 °F]

Supply voltage: 3V to 32 V operation (12 V or 24 V typ.)

Mounts to column size: 38 mm, 45 mm, 55 mm
 [1.50 in, 1.77 in, 2.17 in]

Connector: Integral Packard, Integral Deutsch or Wire harness



Optional mounting clamps

COLUMN SIZE	CAT. LISTING
38 mm [1.50 in]	80260
45 mm [1.77 in]	80262

Turn signal

Integral Deutsch connector

FEATURES	COLUMN SIZE MM [IN]	CAT. LISTING
	55 [2.17]	80877

Turn signal with wiper control

Integral Deutsch connector

FEATURES	COLUMN SIZE MM [IN]	WIPER SPEEDS	CAT. LISTING
Wash	38/45 [1.50/1.77]	Hi/Lo	80350
Wash	55 [2.17]	1	80876

Turn signal with head lamp control

OPTIONS

Integral Packard connector

FEATURES	COLUMN SIZE MM [IN]	LIGHTS	CAT. LISTING
	45 [1.77]	Hazard warning	84884

Integral Deutsch connector

FEATURES	COLUMN SIZE MM [IN]	LIGHTS	CAT. LISTING
Horn/side marker	45 [1.77]	Head lamp switch/Dimmer	81705

Wire harness connector

FEATURES	COLUMN SIZE MM [IN]	LIGHTS	CAT. LISTING
	45 [1.77]	Head lamp switch	79809

Turn signal with wiper and head lamp control

OPTIONS

Integral Deutsch connector

FEATURES	COLUMN SIZE MM [IN]	WIPER SPEEDS	LIGHTS	CAT. LISTING
Wash	45 [1.77]	1	Head lamp dimmer/Flash	81601

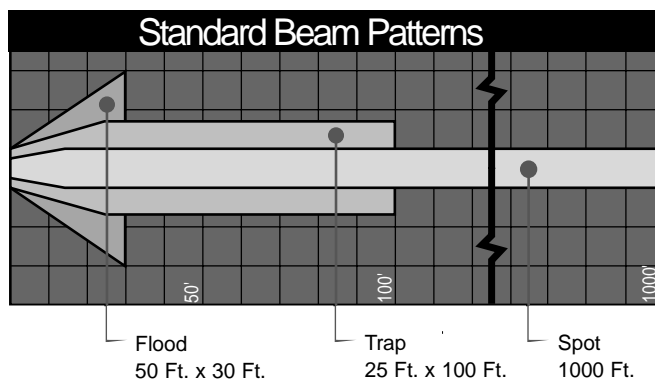
Wire harness connector

FEATURES	COLUMN SIZE MM [IN]	WIPER SPEEDS	LIGHTS	CAT. LISTING
Wash	45 [1.77]	1	Dimmer/Flash	80279
Wash	45 [1.77]	Hi/Lo/Intermittent	Dimmer	82570
Wash/Horn/Auto cancel	38/45 [1.50/1.77]	Hi/Lo/Intermittent	Dimmer/Flash	86320
Wash/Horn	45 [1.77]	Hi/Lo	Dimmer/Flash	86508

Lighting products

Honeywell continues the Hobbs tradition of rugged, off-highway work lamps. More than 20 million incandescent and halogen work lamps have been put to use in some of the most rugged working environments imaginable. Because they are designed for potential use in heavy construction and farming equipment, they are also designed to take shock, vibration and other extreme service conditions in their stride.

Sealing: IP67
Electrical rating (Voltage/Wattage/Current):A 12 Vdc/50 W/4 A
 B 24 Vdc/60 W/2.5 A



Halogen Swivel Mount Lamps

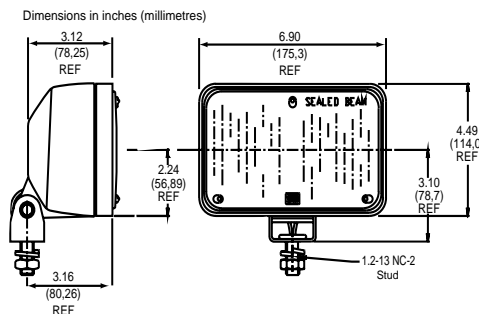
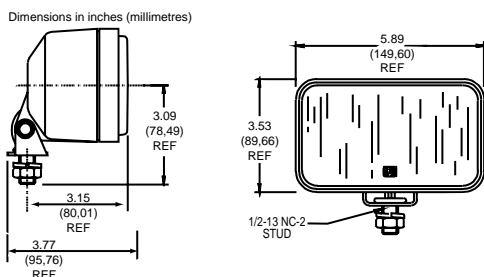
Honeywell offers a full line of heavy-duty, halogen, off highway, vehicle lamps to keep equipment moving long after the sun has set. Our halogen lamp housings are constructed of durable, vibration resistant materials. The securing hardware is zinc plated steel with a black dichromate coating. Reflectors are vacuum metalised. The borosilicate glass lenses are highly resistant to cracking, especially when subjected to extreme temperature changes.

Mounting: Stud, 1/2 in [12,7 mm] Ø

OPTIONS

3 in x 5 in [76,2 mm x 127,0 mm]

4 in x 6 in [101,6 mm x 152,4 mm]



BEAM PATTERN	ELECTRICAL RATING	CAT. LISTING
Wide Flood	A	73761
Trapezoid	A	73763
Spot	A	73764

BEAM PATTERN	ELECTRICAL RATING	CAT. LISTING
Wide Flood	A	71898
Wide Flood	B	72540
Trapezoid	A	71915
Trapezoid	B	72542
Spot	A	71902
Spot	B	72544

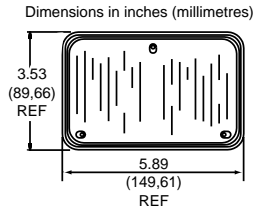
Replacement Sealed Beams



Replacement sealed beams are offered in both 3 in x 5 in [76,2 mm x 127,0 mm] and 4 in x 6 in [101,6 mm x 152,4 mm] rectangular size lenses. These are designed with the same rugged construction as the originals and are designed to meet the same demanding standards. These lamps are also designed to withstand tough environmental conditions, such as sudden temperature change, shock and intense vibration.

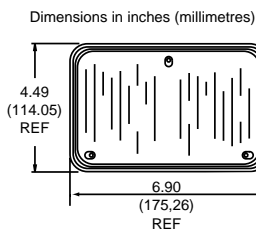
OPTIONS

3 in x 5 in [76,2 mm x 127,0 mm]



BEAM PATTERN	ELECTRICAL RATING	CAT. LISTING
Wide Flood	A	72408
Trapezoid	A	72801
Spot	A	73804

4 in x 6 in [101,6 mm x 152,4 mm]



BEAM PATTERN	ELECTRICAL RATING	CAT. LISTING
Wide Flood	A	71017
Wide Flood	B	72541
Trapezoid	A	71792
Trapezoid	B	72543
Spot	A	71794
Spot	B	72545

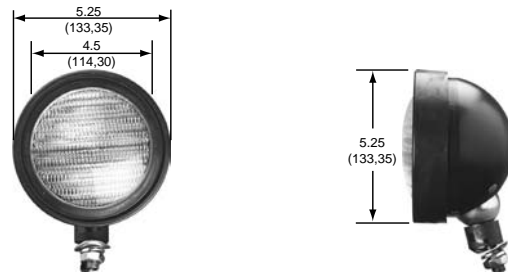
Round Halogen Lamps, PAR 36



The PAR 36 Halogen work lamp may be well suited to more traditional agricultural equipment applications. They are virtually the same 4.5 in [114,3 mm] diameter lamps that have been factory-installed on popular makes of combines and tractors over the years.

4.5 in [114,3 mm] Ø lamp

Dimensions in inches [millimetres]



BEAM PATTERN	ELECTRICAL RATING	CAT. LISTING
Wide flood	A	73468
Trapezoid	A	73469

Portable Work Lamp



The Portable work lamp is often ideal for situations when temporary lighting is required. It can be used to replace failed equipment lighting, light dark areas, or service equipment. It is also useful for recreational activities.

It operates by plugging the connector into a 12 Vdc cigarette lighter. The work lamp is supplied with a 15 foot [4,92 metre] electrical cable and an 80 lb [36,4 kg] magnet in the base.

**3 in x 5 in [76,2 mm x 127,0 mm]
with handle and switch**

Dimensions in inches [millimetres]



BEAM PATTERN
Wide flood
Spot

ELECTRICAL RATING
A
A

CAT. LISTING
80413
80510

HID Xenon High Intensity Discharge Lamps

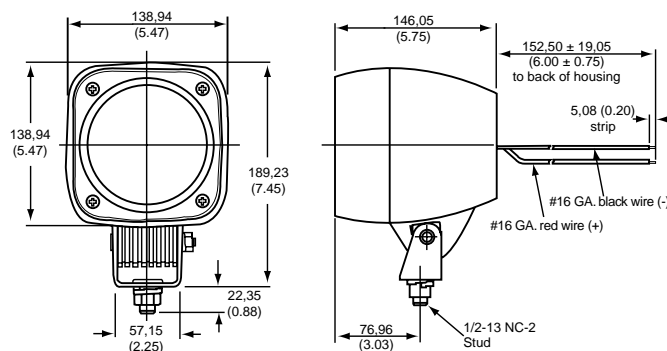


Honeywell Xenon high intensity discharge lamps are designed to hold up to the extreme demands of the off-highway construction and agricultural markets. HID technology is significantly more efficient than halogen and produces more light with less amperage draw.

HID lamps can provide up to three times the light output compared to the average halogen lamp. The technology allows equipment to operate more safely with less load on the electrical system resulting in optimum alternator and battery life.

Honeywell's HID features an electronic bulb/igniter/ballast system for enhanced performance throughout a broad temperature and vibration range. This reduces normal failure modes including filament breakage producing a life expectancy up to six times greater than a typical halogen lamp.

Electrical rating:	12 V [42 W]	24 V [42 W]
Operating voltage range:	9 V to 16 V	10 V to 32 V
Startup amperage:	15 A @ 9 V, 9 A @ 16 V	8 A @ 14 V, 5 A @ 32 V
Stabilised amperage:	15 A @ 9 V, 2.7 A @ 16 V	3.3 A @ 14 V, 1.4 A @ 32 V
Startup time:	0.1 to 5 seconds	0.1 to 5 seconds



**12 Volt (System requirement of 42 Watts)
35 W D1S source**

	CAT. LISTING
Wide flood	84760-50
Spot	88217-50

**24 Volt (System requirement of 42 Watts)
35 W D1S source**

	CAT. LISTING
Wide flood	88735-50
Trapezoid	88913-50

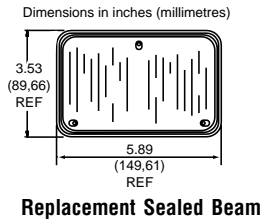
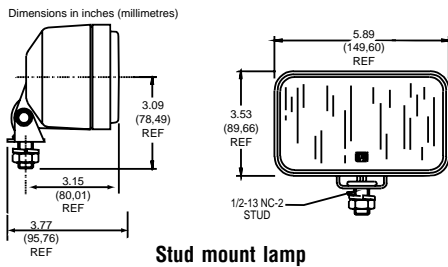
Marine Lamps



3 in x 5 in lamp with spreader bracket

OPTIONS

3 in x 5 in [76,2 mm x 127,0 mm]



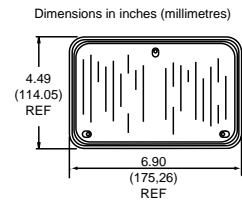
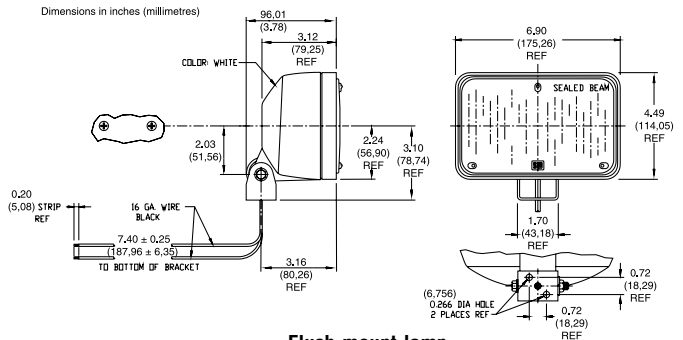
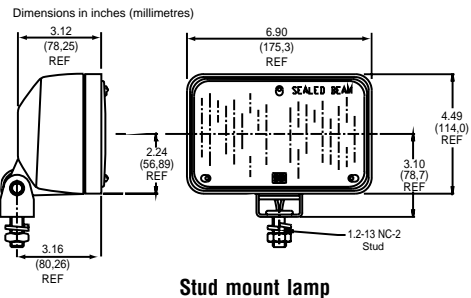
BEAM PATTERN	MOUNTING	ELECTRICAL RATING	LAMP CAT. LISTING	REPLACEMENT SEALED BEAM CAT. LISTING
Wide Flood	Stud	A	73620	74041

Honeywell's marine lamps are completely weatherproof. They are totally sealed against moisture ingress, and the mounting hardware is stainless steel to prevent rust and corrosion. The housing is shock resistant and can withstand up to 6 G vibration. The flood pattern illuminates an area 80° wide by 30° long.

Suitable applications for Honeywell marine lamps include:

- Engine compartment lighting
- Deck lighting
- Emergency lighting
- Launching and docking
- Spreader lights
- Shrimp and fishing boats
- Off-shore oil rigs
- Ocean vessels
- Barges
- Dry dock lighting
- Freighters, tankers, etc.
- Pleasure craft
- Anywhere a corrosion resistant lamp is needed

4 in x 6 in [101,6 mm x 152,4 mm]

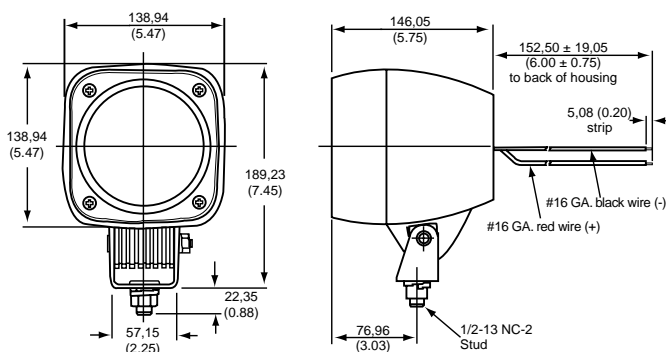


BEAM PATTERN	MOUNTING	ELECTRICAL RATING	LAMP CAT. LISTING	REPLACEMENT SEALED BEAM CAT. LISTING
Wide flood	Flush	A	72656	72108
Wide flood	Stud	A	71723	72108
Wide flood	Flush	B	72666	72728
Wide flood	Stud	B	72530	72728
Spot	Flush	A	72715	72719
Spot	Stud	A	72716	72719
Spot	Flush	B	72717	72720
Spot	Stud	B	72718	72720

Marine HID Lamps



Honeywell's HID marine lamps are completely weatherproof. They are totally sealed against moisture ingress, and the mounting hardware is stainless steel to prevent rust and corrosion.



12 Volt (System requirement of 42 Watts)

35 W D1S source

BEAM PATTERN	CAT. LISTING
Wide flood	88432
Trapezoid	89444
Spot	89445

24 Volt (System requirement of 42 Watts)

35 W D1S source

BEAM PATTERN	CAT. LISTING
Wide flood	89446
Trapezoid	89447
Spot	89448

Custom Vehicle Lighting



Lighting products designed to the form, fit and functional requirements of OEM vehicles is the fastest growing segment in lighting. Continual investment in the latest equipment and software allows optical designs to be created in unique shapes and sizes to meet this need.

Honeywell Product Management and Engineering personnel can offer a complete custom design based upon the goals provided. Our manufacturing facilities are equipped to produce such lights in a matter of weeks. This quick turn around for prototype and production components is aimed at meeting even the most aggressive project timetables.

Other Vehicle Controls

Honeywell Sensing and Control's broad product and technology portfolio combined with industry experience and application know-how offers customers a wealth of choice:

- Custom engineered solutions for application-specific designs and product packaging
- Proven technology
- Low cost
- Automotive grade
- Extensive portfolio of designs
- Extensive high-volume experience

Pressure switches

- Extensive portfolio of existing designs
- Designed for transportation-related applications (12 Vdc)
- Custom designs possible
- Potential applications include engine oil pressure, compressor air pressure, heavy truck air brake pressure, transmission fluid pressure
- Modular designs



Circuit breakers

- Extensive portfolio of existing designs
- Designed for 12 Vdc applications
- Type 1 automatic reset
- Type 2 remote reset
- Type 3 manual reset
- Multiple designs, terminal styles, and mounting brackets
- 5 A to 50 A



Mechanical switches

- Extensive portfolio of existing designs
- Designed for 12 Vdc applications
- Multiple designs and terminal styles
- Potential applications include neutral start, reverse lamp, and 4WD transfer case mode indication



Precision Aerospace

If you have ever traveled by air, chances are you've flown with equipment by Honeywell Sensing and Control. We have been meeting demanding aerospace applications since 1952 under these brand names:

- Courter
- Bendix
- Eclipse-Pioneer
- Sperry
- MICRO SWITCH
- Valetin

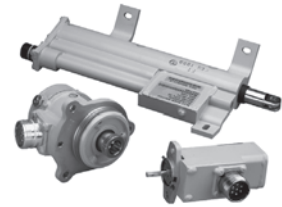
Flight control actuation

- Linear and rotary flight control actuators with integral position feedback, clutches, brakes, dual motors and other options.
- These linear actuators are typically used for helicopter blade control. Many small aircraft use our rotary actuators in their autopilot systems.



Flight control position sensing

- Our linear and rotary position transmitters solve challenging measurement problems in harsh environments.
- Added value through features such as integral gear-train and discreet switches, non-linear response, viewing window, auto-rig-lock feature.



Cockpit controls

- Force and torque sensors integrated into flight control linkage measure pilot input forces.
- Speedbrake, flap selector, and other pilot input devices incorporating built-in detents, servo backdrive, and up to quad-channel redundant output.



Cockpit indicators

- Analog cockpit indicators serve potential applications such as angle of attack, fuel quantity, fuel flow.
- Dial, pointer and range markings can be designed to meet almost any customer requirement.
- Instruments can be either wedge lighted, backlit, unlighted, or night vision compliant.



Pressure switches and transmitters

- Pressure switches for a variety of potential applications including engine, hydraulics, and bleed-air. Available in a wide operating range with preset dead-band.
- Our extremely rugged electromechanical pressure transmitters operate at 250 °C [482 °F] and pressures as high as 11,000 psi and feature ac output.



HONEYWELL SENSING AND CONTROL PRODUCTS

Selecting the right sensor or switch for your application has never been easier. Honeywell Sensing and Control has one of the broadest product ranges of any supplier in the world, and the depth of our technology and product lines ensure you are able to find the right product for most applications.

We also have the outstanding technical support staff and responsive service to back this up, so you can always find what you need, when you need it. We aim to supply on time, every time, anywhere in the world.

Honeywell - Taking the risk and high costs out of system critical sensing and control.

You can find out more about Honeywell's extensive product range by visiting our website at

www.honeywell.com/sensing

There you can browse our interactive catalogue and discover our full range of products for use in Industrial, Automotive, Aviation, Transportation, Motion Control, Medical applications and more. Some of our more popular product families include:

Accelerometers

Utilizing Quartz Flexure and Resonating Beam technologies for inertial, control, and industrial applications.

Automotive Sensors

Speed and position sensors for engine management, wheel speed sensors, and position sensors for comfort, convenience, and motor control applications.

Basic Switches

Standard size, miniature, subminiature, hermetically sealed, and high temperature snap-action switches for applications requiring compactness, light weight, accurate repeatability and long life.

Current Sensors

Adjustable linear, null balance, digital, and linear output current sensors for monitoring ac or dc current.

Electronic and Electromechanical Safety products for Machine Safeguarding

Safety light curtains, laser scanners, mats, door interrupt devices and single and multi-beam optoelectronic devices for industrial machine safety. Safety interlock switches, limit switches and cable-pull limit switches for industrial machine safety. Safety control modules for industrial machine safety.

Environment Sealed Switches and Sensors

Designed for use in the harsh environments encountered in aerospace, transportation, ordnance and marine applications.

Fibre Optic Sensors

Active optoelectronic components and sub-assemblies (LEDs/transmitters, fiber-DIPs, receivers and modules) for the datacom market.

Force Sensors

Enhanced reliability and performance in compact commercial grade packaging.

Hour Meters

Honeywell's Hobbs brand products are designed for elapsed time measurement for testing, leasing, maintenance and warranty programs.

The meter family includes LCD, Counter, Battery Controller, AC Electro-Mechanical and DC Electro-Mechanical.

Humidity Sensors

Relative humidity/temperature and relative humidity sensors in chemically resistant packages to accommodate harsh environments.

Infrared Sensors

Optoelectronic standard infrared emitting diodes (IREDs), sensors and assemblies for object presence, limit, and motion sensing, position encoding, and movement counting.

Limit and Enclosed Switches

Heavy duty limit switches, enclosed switches (precision snap-acting switches sealed in rugged metal housing) and sealed and explosion-proof switches.

Liquid Level Sensors

Basic and industrial (designed for harsh industrial environments) liquid level sensors used to indicate the presence or absence of liquid.

Mass Airflow Sensors

Amplified and unamplified microbridge mass airflow sensors provide a sensitive and fast response to the flow of air or other gas over the chip.

Off-Highway Vehicular Lighting

Honeywell's Hobbs brand halogen sealed beams, composites, custom designer lights, specialty lighting and indicator modules for vehicular and non-vehicular applications.

Position Sensors

Hall-effect, magnetoresistive, and potentiometric devices for detecting the presence of a magnetic field or linear and rotary position.

Pressure Sensors

A wide offering of media-isolated pressure sensors with multiple pressure ports and electrical signals for a variety of potential applications including the monitoring and control of corrosive media in aggressive environments.

Proximity Sensors

Severe environment proximity sensors designed for use in applications with particularly demanding requirements on temperature, vibration, shock, and EMI/lightning resistance.

Pushbuttons, Keyswitches and Indicators

MICRO SWITCH brand pushbuttons, keyswitches, and indicators for use anywhere manual operation is desired.

Railway Sensors and Control Systems

Railwheel proximity sensors, interface modules, train departure control systems, solid state sensors, pressure sensors and electromechanical switches for potential on-board and off-board rail industry applications.

Relays

General-purpose power relays and relay sockets designed for a wide range of applications that require stability and reliability.

Resolvers

Absolute position sensors which provides high angular accuracy, high resolution and repeatability under severe environmental conditions.

Temperature Sensors

Platinum- and silicon-based thin film resistance temperature devices (RTDs) for applications that require small package size, accuracy, and linear outputs.

Thermal Products

Bimetal thermostats, Discrete and Packaged Thermistors, Precision Hi-Rel Negative Temperature Coefficient (NTC) Thermistors, Thermal cut offs and Flexible Heaters

Thermocouples, Non-contact probes and RTDs

Megopak thermocouples, thermocouples with protecting tubes, Radiamatic/Rayotube Sensors, and the platinum RTD 100 Ohm.

Toggle and Rocker Switches

MICRO SWITCH brand toggles, rockers and paddle switches for use anywhere manual operation is desired. Military grade and environment sealed options are available.

Turbidity Sensors

Wash process turbidity sensors to improve product quality, minimize ingredient consumption, and reduce wastewater discharge in commercial and industrial bath applications.

Ultrasonic Sensors

Ultrasonic position sensors for presence/absence sensing, precision distance sensing or tracking for areas where other sensing technologies have difficulty, such as clear or shiny objects, foggy or particle laden air, or splashing liquids.

VRS Speed and Timing Sensors

Completely self-powered, VRS (magnetic) sensors are simple, rugged devices that do not require an external voltage source for operation. They are generally used to provide speed, timing or synchronization data to a display (or control circuitry) in the form of a pulse train.

This list of our products is not exhaustive, so check out our full range at www.honeywell.com/sensing

New Technologies and Emerging Capabilities

Honeywell Sensing and Control is constantly developing new technologies to keep customers competitive and at the forefront of their businesses. We excel at delivering innovative sensing and switching solutions with best use of technology. We are able to combine our different sensing technologies to offer differentiating solutions with enhanced precision and accuracy for the increasingly complex needs of our customers. Our range of technologies, combined with our application expertise and our customization capability, is what makes our sensors and switches leaders in their fields.

Wireless Pressure and Torque Sensors

New sensing capabilities using Surface Acoustic Wave (SAW) technology

Potential Applications

- *Electronic power steering*
- *Electro-hydraulic power steering*
- *Active suspension control*
- *Limited slip drive train controls*
- *Transmissions*

Emissions sensors

New sensing technologies to measure Exhaust gas recirculation (EGR) mass flow, In- cylinder pressure, oxygen, particulate matter, ammonia, nitrogen oxide.

Index

101HS1	129	12PA5-BK	158	14CE103-3	58
101TL1-21	142	12PA5-BL	158	14CE118-1	58
102HS1	129	12PA5-G	158	14CE118-10	58
102TL2-2	141	12PA5-R	158	14CE118-6	58
102TL2-3	141	12PA5-W	158	14CE16-1	25
109HM1	127	12PA5-Y	158	14CE16-2	25
111SM1	106	12PA6	158	14CE16-3	25
111SM2-T	106	12SE4-T	122	14CE18-1	24
114HM1-2	126	12TL1-2	141	14CE18-3	24
1172CX12	65	12TL1-3	141	14CE18-Q	24
1172CX2	65	12TS115-3	156	14CE2-1	24
11CX12	65	12TS15-2	156	14CE2-1A	24
11CX12E	65	12TS15-3	156	14CE2-1G	24
11CX2	65	12TS15-7	156	14CE2-2	24
11CX2E	65	12TS95-10	156	14CE2-2A	24
11HM1	127	12TS95-3	156	14CE2-3	24
11NT1-2	151	12TW1-1	144	14CE2-3A	24
11NT1-3	151	12TW1-3	144	14CE2-3G	24
11NT1-7	152	12TW1-3D	144	14CE2-AQ	24
11NT1-7-NH	152	12TW1-50	144	14CE2-Q	24
11SM1	106	12TW1-50M	144	14CE20-1	25
11SM601-H4	106	12TW1-7	144	14CE20-3	25
11SX1-T	106	12TW1-70	144	14CE3-1	25
11TS115-3	156	12TW29-1	144	14CE3-2	25
11TS15-1	156	12TW29-7	144	14CE3-3	25
11TS15-2	156	12TW75-3	144	14CE31-1	24
11TS15-6	156	12TW75-7	144	14CE31-3	24
11TS15-7	156	12TW8-3	144	14CE66-1	24
11TS95-2	156	12TW8-7	144	14CE66-2	24
11TS95-7	156	13HM1	127	14NT1-3	151
11TW1-1L	144	14CE1-1	24	14XE1	124
11TW1-2	144	14CE1-1A	24	14XE1-T	124
11TW1-3	144	14CE1-1G	24	15HM2	127
11TW1-3D	144	14CE1-2	24	15HM5	127
11TW1-7	144	14CE1-3	24	16CX12	65
11TW8-2	144	14CE1-3A	24	16CX2	65
11TW8-3	144	14CE1-3G	24	18CX0	65
11TW8-5	144	14CE1-AQ	24	18CX10	65
11TW8-7	144	14CE1-Q	24	18CX10E	65
120000	116	14CE101-1	58	19HM1	127
120001	116	14CE101-10	58	19HM4	127
120002	116	14CE101-2	58	19PA137-HM	127
120003	116	14CE101-3	58	1CPSA1	100
120004	116	14CE101-4	58	1CPSA1A	100
120005	116	14CE101-5	58	1CPSA1B	100
120006	116	14CE101-6	58	1CPSA2	100
120007	116	14CE102-1	58	1CPSA2A	100
120008	116	14CE102-12	58	1CPSA2B	100
12HR1-S	138	14CE102-15	58	1CPSA3	100
12HR8-6	138	14CE102-3	58	1CPSA3A	100
12NT1-3	151	14CE102-3G	58	1CPSA3B	100
12PA4	158	14CE102-5	58	1CPSA4	100
		14CE102-6	58	1CPSA5	100
		14CE102-6G	58	1CPSA6	100
		14CE102-8	58	1CPSA6A	100
		14CE103-1	58	1CPSA6B	100

1CPSA7	100	1NT1-1	152	20001	182
1CPSA8	100	1NT1-2	151	20007	182
1CPSC1	100	1NT1-2G	151	20016	182
1CPSC1A	100	1NT1-3	151	20017	182
1CPSC2	100	1NT1-3-NH	151	20018	182
1CPSC2A	100	1NT1-3D	151	20019	182
1CPSC2B	100	1NT1-5	152	2001EN1-6	134
1CPSC3	100	1NT1-6	151	20028	182
1CPSC3A	100	1NT1-7	152	20029	182
1CPSC4	100	1NT1-7-NH	152	20HM1-1	126
1CPSC5	100	1NT1-7E	152	21CX14	65
1CPSC6	100	1NT1-8	151	21CX4	65
1CPSC6A	100	1NT1-8-NH	151	21EN75-R1	134
1CPSC7	100	1NT20-7E	152	21EN9-6	134
1CPSC8	100	1NT231-7	152	22HR1-S	138
1EN1-6	133	1NT91-2	151	24CE1-S12B	27
1EN231-6	133	1NT91-7	152	24CE1-S2	27
1EN51-6	133	1SE1	122	24CE1-S2A	27
1EN61-6	133	1SE1-T	122	24CE1-S2B	27
1EN75-R	134	1SE2	122	24CE1-S3	27
1EN75-R3	134	1SE3	122	24CE1-S6	27
1EN76-R	134	1SE61-T	122	24CE1-Y1A	27
1EX1	61	1SE7	122	24CE1-Y2	27
1HE1-6	137	1SX1-T	106	24CE1-Y3	27
1HE222-6	137	1TB1-2	105	24CE16-S1	27
1HS1	129	1TTL1-1	142	24CE16-Y1	27
1HS3	128	1TTL1-1A	142	24CE16-Y6	27
1HS41	129	1TTL1-2	141	24CE2-S1	27
1HS6	129	1TTL1-21	142	24CE2-S2	27
1HT1	130	1TTL1-2D	141	24CE2-S2A	27
1LS1	30	1TTL1-2G	141	24CE2-S2B	27
1LS1-4C	30	1TTL1-3	141	24CE2-S3	27
1LS1-L	30	1TTL1-3D	141	24CE2-S6	27
1LS10	31	1TTL1-5	142	24CE2-T2	27
1LS10-4C	31	1TTL1-6	141	24CE2-Y1	27
1LS10-L	31	1TTL1-61	142	24CE2-Y2	27
1LS131	30	1TTL1-7	142	24CE2-Y2A	27
1LS19	30	1TTL1-7E	142	24CE2-Y4	27
1LS19-4C	30	1TTL1-8	141	24CE2-Y6A	27
1LS2	31	1TTL1-8F	141	24CE28-S2	28
1LS2-4C	31	1TTL150-3D	141	24CE3-S2	28
1LS2-L	31	1TP1-6	158	24CE3-Y1	28
1LS23	31	1TP12-7	158	24CE3-Y2	28
1LS243	30	1TP201-7	158	24CE31-S1	28
1LS243-4C	30	1TP8-2	158	24CE31-S2	28
1LS3	30	1TP8-3	158	24CE31-S2B	28
1LS3-4C	30	1TP8-7	158	24CE31-S5	28
1LS3-L	30	1TW1-3	144	24CE31-Y1	28
1LS47	31	1XE1	124	24CE31-Y2	28
1LS501	30	1XE1-T	124	24CE31-Y3	28
1LS53	31	1XE201	124	24CE55-S1	28
1LS56	31	1XE3	124	24CE55-S2	28
1LS58	30	1XE301	124	24CE55-Y1	28
1LS59	30	1XE401-6	124	24CX12	65
1LS6	30	1XE401-T	124	24CX2	65
1LS9	31	1XE99-T	124	25ET1-T-F	148

25ET117-T	148	2CPSA1B3	101	2TL1-31K	142
25ET61-6	148	2CPSA1B3A	101	2TL1-3D	142
25ET61-S	148	2CPSA1B3B	101	2TL1-3G	142
25ET61-S-F	148	2CPSA2A1	101	2TL1-5	142
25ET61-T	148	2CPSA2A1A	101	2TL1-50	142
25ET62-6	148	2CPSA2A1B	101	2TL1-56	142
25ET64-6	148	2CPSA2A2	101	2TL1-6	141
26900	117	2CPSA2A2A	101	2TL1-7	142
26901	117	2CPSA2A2B	101	2TL1-70	142
26902	117	2CPSA2A3	101	2TL1-70E	142
26903	117	2CPSA2A3A	101	2TL1-8	142
26904	117	2CPSA2A3B	101	2TL1-8F	142
26905	117	2CPSA2B1	101	2TP1-7	158
26906	117	2CPSA2B1A	101	2TP12-7	158
26907	117	2CPSA2B1B	101	2TP216-7	158
26908	117	2CPSC1A1	101	2TP216-8	158
26909	117	2CPSC1A1A	101	2TP7-3	158
26911	117	2CPSC1A2	101	311SX5-T	106
26912	117	2CPSC1A2A	101	31EN1-6	135
26913	117	2CPSC1A3	101	31EN11-6	135
26914	117	2CPSC1A3A	101	31NT91-1	154
26CX4	65	2CPSC1D1A	101	31NT91-2	153
26ET1-R-F	148	2EN1-6	133	31NT91-3	153
26ET1-T-F	148	2EX1	61	31NT91-6	153
26ET107-T	148	2HM19-1	126	31NT91-7	154
26ET61-T	148	2HM19-5	126	32EN1-6	135
26ET65-T	148	2HT1	130	32EN11-6	135
27ET118-T2-N	148	2LS1	32	32NT291-3G	153
27ET2-6-E	148	2LS1-4C	32	32NT291-5E	154
27ET61-T	148	2LS1-L	32	32NT91-1	154
27ET61-T-E	148	2LS111	32	32NT91-2	153
27ET71-T	148	2NT1-1	152	32NT91-3	153
27ET71-T-E	148	2NT1-1-NH	152	32NT91-7	154
28000	183	2NT1-10	152	32NT91-7-NH	154
28002	183	2NT1-2	151	32NT94-70L	154
28004	183	2NT1-3	151	33EN1-6	135
28006	183	2NT1-3-NH	151	33EN11-6	135
28030	183	2NT1-5	152	34EN1-6	135
281CX12	65	2NT1-50	152	34EN11-6	135
281CX2	65	2NT1-7	152	3EN1-6	133
29ET3	148	2NT1-7-NH	152	3HT1	130
2CPSA1A1	101	2NT1-70	152	3LS1	32
2CPSA1A1A	101	2NT1-8	151	3LS1-4C	32
2CPSA1A1B	101	2NT1-8-NH	151	402EN1-6	136
2CPSA1A2	101	2NT231-7	152	404EN1-6	136
2CPSA1A2A	101	2NT889-70	152	41EN1-6	135
2CPSA1A2B	101	2NT91-7	152	42EN1-6	135
2CPSA1A3	101	2TL1-1	142	44EN1-6	135
2CPSA1A3A	101	2TL1-10	142	4EN1-6	133
2CPSA1A3B	101	2TL1-10A	142	4EX1-3	61
2CPSA1B1	101	2TL1-12	142	4HS4-118	129
2CPSA1B1A	101	2TL1-1A	142	4LS1	32
2CPSA1B1B	101	2TL1-2	141	4LS1-4C	32
2CPSA1B2	101	2TL1-21	142	4NT1-1	152
2CPSA1B2A	101	2TL1-2D	141	4NT1-1A	152
2CPSA1B2B	101	2TL1-3	142	4NT1-3	151

4SE1	122	71902	189	79721	115
4TL1-2	141	71915	189	79722	115
4TL1-3	141	72108	192	79723	115
4TL1-3D	141	72408	190	79809	188
4TL1-7	142	72530	192	7SE1	122
4TL1-8	141	72540	189	80260	186
4XE1	124	72541	190	80262	186
5LS1	32	72542	189	80279	188
5LS1-4C	32	72543	190	80350	188
5LS1-L	32	72544	189	80413	191
5SE1	122	72545	190	80438	186
5XE1	124	72656	192	80510	191
602EN1-6	136	72666	192	80876	186
602EN222-6	136	72715	192	80877	188
602HE1-6	137	72716	192	80909	186
602HE106-6	137	72717	192	80910	186
604EN1-6	136	72718	192	81248	186
604EN222-6	136	72719	192	81426	186
604HE1-6	137	72720	192	81521	186
61NT1-7	152	72728	192	81601	188
622EN1-6	136	72801	190	81705	188
622EN222-6	136	73468	190	81758	186
622HE1-6	137	73469	190	81CX14	65
624EN1-6	136	73761	189	81CX2	65
624EN222-6	136	73763	189	81CX4	65
624HE1-6	137	73764	189	82320	180
64AT22-3	146	73804	190	82400	181
64AT34-7E	146	74041	192	82401	181
6AT124-T	146	76051	114	82404	182
6HM1-1	126	76052	114	82416	181
6LS1	31	76053	114	82570	188
6LS1-4C	31	76054	114	83298	116
6LS2	31	76055	114	83299	116
6LS2-L	31	76061	114	83301	116
6LS3	31	76062	114	83302	116
6PA102	72	76063	114	83304	116
6PA127-EX	72	76064	114	83305	116
6PA130-EX	72	76065	114	83307	116
6PA131-EX	72	76575	114	83308	116
6PA136-EX	72	76576	114	83310	116
6PA138-EX	72	76577	114	83311	116
6PA142-EX	72	76578	114	84105	186
6PA144	72	77342	115	84467	186
6PA204-EX	72	77343	115	84760-50	191
6PA5-EX	72	78628	114	84825	184
6PA57	73	78632	114	84826	184
6PA63	72	78813	115	84828	184
6PA69	72	78815	115	84829	184
6PA80	72	79700	115	84830	184
6PA82	72	79702	115	84884	188
6SX7-T	106	79704	115	84CX2	65
71017	190	79708	115	85010	180
71723	192	79710	115	85093	181
71792	190	79718	115	85094	180
71794	190	79719	115	85097	180
71898	189	79720	115	85331	180

85342	181	914CE2-AQ	24	924CE2-Y9	27
85874	186	914CE2-Q	24	924CE28-S15	28
86320	188	914CE2-Q1	24	924CE3-S3	28
86508	188	914CE20-3	25	924CE3-S6	28
86835	186	914CE20-6	25	924CE3-S9	28
87941	185	914CE20-9	25	924CE3-T9	28
87943	185	914CE20-Q	25	924CE31-S6	28
88217-50	191	914CE22-6	24	924CE31-Y20	28
88432	193	914CE27-Q	24	924CE31-Y3L1	28
88735-50	191	914CE28-3	24	98101	178
88913-50	191	914CE28-6	24	98102	177
89165	184	914CE28-Q	24	98103	178
89444	193	914CE29-3	25	98106	179
89445	193	914CE29-6	25	98108	179
89446	193	914CE3-3	25	98109	179
89447	193	914CE3-6	25	98110	179
89448	193	914CE3-6A	25	98111	177
89477	184	914CE3-9	25	98202	179
8LS1	33	914CE3-Q	25	98301	177
8LS1-4C	33	914CE3-Q1	25	98302	177
8LS1-L	33	914CE31-3	24	98303	179
8LS125	33	914CE31-6	24	98304	179
8LS125-4C	33	914CE55-3	25	98311	177
8LS152	33	914CE55-3A	25	98312	177
8LS152-4C	33	914CE66-3	24	98313	179
8LS3	33	914CE66-6	24	98314	179
8LS3-4C	33	924CE1-S3	27	98321	177
914CE1-3	24	924CE1-S6	27	98322	177
914CE1-3A	24	924CE1-S9	27	98323	179
914CE1-3G	24	924CE1-T25A	27	98324	179
914CE1-6	24	924CE1-T3	27	98706	178
914CE1-6G	24	924CE1-T3A	27	98707	178
914CE1-9	24	924CE1-T6A	27	98750	177
914CE1-Q	24	924CE1-T9	27	9HM1	127
914CE1-Q1	24	924CE1-T9A	27		
914CE16-3	25	924CE1-Y3	27	B	
914CE16-3A	25	924CE1-Y9	27	BA-2RB-A2	103
914CE16-6	25	924CE16-S3	27	BA-2RQ1-A2	103
914CE16-9	25	924CE16-S9	27	BA-2RV-A2	104
914CE16-Q	25	924CE16-T3	27	BAF1-2RN-LH	42
914CE18-3	24	924CE16-Y3	27	BAF1-2RN-RH	42
914CE18-3A	24	924CE16-Y9	27	BAF1-2RN18-LH	44
914CE18-6	24	924CE18-S6	27	BAF1-2RN18-RH	44
914CE18-9	24	924CE19-S3L1	27	BAF1-2RN2-LH	43
914CE18-9A	24	924CE2-S15	27	BAF1-2RN2-RH	43
914CE18-AQ1	24	924CE2-S21	27	BAF1-2RN28-LH	43
914CE18-Q	24	924CE2-S3	27	BAF1-2RN28-RH	43
914CE18-Q1	24	924CE2-S6	27	BAF1-2RN4-LH	44
914CE19-3	24	924CE2-S6A	27	BAF1-2RN4-RH	44
914CE19-9	24	924CE2-S9	27	BAF1-2RQ9-LH	43
914CE2-3	24	924CE2-T25	27	BAF1-2RQ9-RH	43
914CE2-3A	24	924CE2-T25A	27	BAF1-2RQN8-LH	43
914CE2-3G	24	924CE2-T3	27	BAF1-2RQN8-RH	43
914CE2-6	24	924CE2-T6	27	BAF1-3CN18X1	45
914CE2-6A	24	924CE2-T9	27	BAF1-3RN2X-LH	44
914CE2-9	24	924CE2-Y3	27	BAF1-3RN2X-RH	44

BAF1-3RNX1 44
 BE-2R-A4 103
 BF Series 34
 BFL1-AW1 35
 BFL1-AW2 35
 BFL1-BL1 34
 BFL1-BL2 35
 BFL1-BL3 35
 BFL1-BP1 34
 BFL1-BW1 35
 BFL1-BW3 35
 BFL1-BW4 35
 BFR1-BL1 34
 BFR1-BL2 35
 BFR1-BL3 35
 BFR1-BP1 34
 BFR1-BW1 35
 BFR1-BW4 35
 BX4A3K 67
 BX4C3K 68
 BX4C4L 68
 BX4D3K 68
 BXA3K 67
 BXA4L 67
 BXC4L 68
 BXF3K 69
 BXN3K 67
 BXN4L 67
 BXR3E 67
 BXR3K 67
 BXR4S 67
 BZ-2R-A2 103
 BZ-2RD-A2 103
 BZ-2RDS-A2 104
 BZ-2RDS-A2S 104
 BZ-2RQ1-A2 103
 BZ-2RQ18-A2 104
 BZ-2RQ181-A2 104
 BZ-2RW80-A2 104
 BZ-2RW82-A2 104
 BZ-2RW822 104
 BZ-2RW822-A2 104
 BZ-2RW822551-A2 104
 BZ-2RW826-A2 104
 BZ-2RW863-A2 104
 BZ-R 103
 BZ-R-A2 103
 BZ-R169 103
 BZE6-2RN 37
 BZE6-2RN18 39
 BZE6-2RN2 38
 BZE6-2RN234 38
 BZE6-2RN28 39
 BZE6-2RN34 37
 BZE6-2RN62 39
 BZE6-2RN7 37

BZE6-2RN72 37
 BZE6-2RN80 37
 BZE6-2RN81 38
 BZE6-2RQ 37
 BZE6-2RQ2 38
 BZE6-2RQ62 39
 BZE6-2RQ8 37
 BZE6-2RQ81 38
 BZE6-2RQ9 37
 BZE6-RN2X1 40
 BZE6-RN80X2 40
 BZE6-RNX1 40
 BZE6-RQ2X2 40
 BZE6-RQ8X2 40
 BZE6-RQX2 40
 BZE7-2RN-C 41
 BZE7-2RN-PG 41
 BZE7-2RN18-PG 41
 BZE7-2RN2-C 41
 BZE7-2RN2-PG 41
 BZE7-2RQ-PG 41
 BZE7-2RQ8-PG 41
 BZE7-2RQ81-PG 41
 BZV6-2RN 37
 BZV6-2RN18 39
 BZV6-2RN2 38
 BZV6-2RN4 39
 BZV6-2RN62 39
 BZV6-2RN80 37
 BZV6-2RQ 37
 BZV6-2RQ2 38
 BZV6-2RQ62 39
 BZV6-2RQ8 37
 BZV6-2RQ81 38

C

CLSZC1 102
 CLSZC2 102
 CLSZC3 102
 CLSZC4 102
 CLSZC5 102
 CLSZC7 102
 CLSZTC 102
 CPS-BRACKET 102
 CPSLED120 102
 CPSLED24 102
 CPSZ1S 102
 CPSZK1 102
 CPSZTB 102
 Custom Switches & Assemblies 173
 Cargo Loading Systems 174
 Flap Selectors 174
 Gear Selectors 174
 Harness Assemblies 173
 Operator Interface Products 173
 Rotary Switches 173

Switch Assemblies 173

D

DT-2R-A7 105
 DTE6-2RN 37
 DTE6-2RN2 38
 DTE6-2RN80 37
 DTE6-2RQ 37
 DTE6-2RQ81 38
 DTE6-2RQ9 37
 DTE7-2RN-PG 41
 DTF2-2RN-LH 42
 DTF2-2RN-RH 42
 DTF2-2RN2-LH 43
 DTF2-2RN2-RH 43
 DTF2-2RQ9-LH 43
 DTF2-2RQ9-RH 43
 DTF2-2RQN8-LH 43
 DTF2-2RQN8-RH 43
 DTV6-2RN 37
 DTV6-2RN2 38

E

EVN2000A 10
 EVN2000B 10
 EVN2000C 10
 EVN2000D 10
 EX-AR 61
 EX-AR141 61
 EX-AR16 61
 EX-AR1613 62
 EX-AR182 61
 EX-AR20 60
 EX-AR230 60
 EX-AR30 61
 EX-AR400 61
 EX-AR50 63
 EX-AR800 61
 EX-AR830 61
 EX-CR 62
 EX-N15 63
 EX-Q 62
 EX-Q400 62
 EX-Q62 62
 EX-Q800 62
 EX-XR3 61
 EXA-AR 61
 EXA-AR20 60
 EXA-AR62 61
 EXA-N 63
 EXA-Q 62
 EXD-AR-3 61
 EXD-AR30-3 61
 EXD-Q-3 62
 EXH-AR3 61
 EXH-AR33 61

EXH-AR7	61	GKCA14P6	88	GKMB23	83
F		GKCA1L6	88	GKMB26	83
FR-01	160	GKCA1L7	88	GKMB27	83
FRL91-22CGA3-BB79	160	GKCA1LX	88	GKMB29	83
FRL91-23CGG3-BB79	160	GKCA1P7	88	GKMB33	83
FRL91-21CGG3-BB77	160	GKCA30LX	88	GKMB36	83
FRL91-27CGG3-BB77	160	GKCA36LX	88	GKMB37	83
FRN91-11BB	159	GKCA6LX	88	GKMB39	83
FRN91-12BB	159	GKCC1LX	88	GKMC03	83
FRN91-13BB	159	GKCC30LX	88	GKMC06	83
FRN91-14BB	159	GKCC36LX	88	GKMC07	83
FRN91-15BB	159	GKCC6LX	88	GKMC09	83
FRN91-16BB	159	GKDA14L7	88	GKMD03	83
FRN91-17BB	159	GKDA14P7	88	GKMD07	83
FRN91-18BB	159	GKEA1LX	94	GKMD09	83
FRN91-21BB	159	GKEA3LX	94	GKMF03	83
FRN91-22BB	159	GKEA6LX	94	GKMF06	83
FRN91-23BB	159	GKEC1LX	94	GKMF07	83
FRN91-24BB	159	GKEC3LX	94	GKMF09	83
FRN91-25BB	159	GKEC6LX	94	GKNC12I	97
FRN91-26BB	159	GKLE36PXA2	91	GKNC33L	97
FRN91-27BB	159	GKLE36PXA4	91	GKNC4L	97
FRN91-28BB	159	GKLE36PXS2	91	GKNC6L	97
		GKLE36PXS4	91	GKRE36MXA2	91
		GKLE3LXA2	90	GKRE36MXA4	91
G		GKLE3PXA2	91	GKRE36MXS2	91
GKBA10L7	88	GKLE3PXA4	91	GKRE3MXA2	91
GKBA14L6	88	GKLE3PXS2	91	GKRE3MXA4	91
GKBA14L7	88	GKLE3PXS4	91	GKRE3MXS2	91
GKBA16L6	88	GKLE40LXA2	90	GKRE3MXS4	91
GKBA16L7	88	GKLE46LXA2	90	GKRE40LXA2	90
GKBA1L7	88	GKLG1PXA2	91	GKRE46LXA2	90
GKBA1L8-F11	88	GKLG1PXA4	91	GKRG1MXA2	91
GKBA1LX	88	GKLG1PXS2	91	GKRG1MXA4	91
GKBA2L6	88	GKLG1PXS4	91	GKRG1MXS2	91
GKBA30LX	88	GKLG36PXA2	91	GKRG1MXS4	91
GKBA36LX	88	GKLG36PXA4	91	GKRG36MXA2	91
GKBA3L6	88	GKLG36PXS2	91	GKRG36MXA4	91
GKBA3L7	88	GKLG36PXS4	91	GKRG36MXS2	91
GKBA6LX	88	GKLG3PXS2	91	GKRG36MXS4	91
GKBB14L6	88	GKLG44PXB2	91	GKRG3MXA2	91
GKBB3L7	88	GKM Series	82	GKZ51M	83
GKBB6L7	88	GKMA17	83	GKZ52M	83
GKBC14L7	88	GKMA19	83	GKZ56	92
GKBC1L6	88	GKMA23	83	GKZ57	92
GKBC1L7	88	GKMA26	83	GKZ58	92
GKBC1LX	88	GKMA27	83	GKZ59	92
GKBC2LX	88	GKMA29	83	GKZ71	92
GKBC30LX	88	GKMA33	83	GKZ72	92
GKBC36LX	88	GKMA36	83	GKZ73	92
GKBC6LX	88	GKMA37	83	GKZ74	92
GKCA10L6	88	GKMA39	83	GLAA01A	15
GKCA14L6	88	GKMB13	83	GLAA01A1A	15
GKCA14L7	88	GKMB16	83	GLAA01A1B	15
GKCA14L9	88	GKMB17	83	GLAA01A2A	15
GKCA14M6	88	GKMB19	83	GLAA01A2B	15

GLAA01A4J	15	GLCA01A1B	16	GLEA01D	19
GLAA01B	15	GLCA01A2A	17	GLEA01E7B	19
GLAA01C	15	GLCA01A2B	17	GLEA24A1B	18
GLAA01D	15	GLCA01A4J	17	GLEA24A2A	19
GLAA01E7B	16	GLCA01B	17	GLEA24B	19
GLAA01E7D	16	GLCA01C	17	GLEA24C	19
GLAA01K8B	16	GLCA01D	17	GLEA24D	19
GLAA01K8C	16	GLCA01E7B	17	GLEA24E7B	19
GLAA20A	15	GLCA01K8A	17	GLEB01A1A	18
GLAA20A1A	15	GLCB01A1A	16	GLEB01A1B	18
GLAA20A1B	15	GLCB01A1B	16	GLEB01A2A	19
GLAA20A2A	15	GLCB01A2A	17	GLEB01A2B	19
GLAA20A2B	15	GLCB01A2B	17	GLEB01A4J	19
GLAA20A4J	15	GLCB01A4J	17	GLEB01A5A	19
GLAA20B	15	GLCB01B	17	GLEB01B	19
GLAA20C	15	GLCB01C	17	GLEB01C	19
GLAA20D	15	GLCB01D	17	GLEB01D	19
GLAA20K8C	16	GLCB01E7B	17	GLEB01E7B	19
GLAB01A	15	GLCB01K8A	17	GLEB24A1A	18
GLAB01A1A	15	GLCC01A1B	16	GLEB24A1B	18
GLAB01A1B	15	GLCC01A2B	17	GLEB24A2B	19
GLAB01A2A	15	GLCC01B	17	GLEB24A4J	19
GLAB01A2B	15	GLCC01C	17	GLEB24B	19
GLAB01A4J	15	GLCC01D	17	GLEB24C	19
GLAB01B	15	GLCC01E7B	17	GLEB24D	19
GLAB01C	15	GLDA01A1A	18	GLEB24E7B	19
GLAB01D	15	GLDA01A1B	18	GLEC01A1B	18
GLAB01E7B	16	GLDA01A2A	18	GLEC01D	19
GLAB01K8B	16	GLDA01A2B	18	GLEC24C	19
GLAB01K8C	16	GLDA01A4J	18	GLEC24D	19
GLAB20A1A	15	GLDA01B	18	GLL EN 50047	20
GLAB20A1B	15	GLDA01C	18	GLZ51A	72
GLAB20A2A	15	GLDA01D	18	GLZ51B	72
GLAB20A2B	15	GLDA01E7B	18	GLZ52A	72
GLAB20A4J	15	GLDB01A1A	18	GLZ52B	72
GLAB20B	15	GLDB01A1B	18	GLZ54J	72
GLAB20C	15	GLDB01A2A	18	GLZ55B	72
GLAB20D	15	GLDB01A2B	18	GSCA01S1	85
GLAB20E7B	16	GLDB01A4J	18	GSCA01S2	85
GLAC01A1A	15	GLDB01B	18	GSCA01S3	85
GLAC01A1B	15	GLDB01C	18	GSCA03S1	85
GLAC01A2A	15	GLDB01D	18	GSCA03S2	85
GLAC01A2B	15	GLDB01E7B	18	GSCA03S3	85
GLAC01A4J	15	GLDC01A1B	18	GSCA06S1	85
GLAC01B	15	GLDC01A2B	18	GSCA06S2	85
GLAC01C	15	GLDC01B	18	GSCA06S3	85
GLAC01D	15	GLDC01C	18	GSCB36S2	85
GLAC01E7B	16	GLDC01D	18	GSCB36S3	85
GLAC20A1A	15	GLDC01E7B	18	GSCC36S1	85
GLAC20A1B	15	GLEA01A1A	18	GSDA03S1	85
GLAC20A2B	15	GLEA01A1B	18	GSDA03S2	85
GLAC20B	15	GLEA01A2A	19	GSDA03S3	85
GLAC20C	15	GLEA01A2B	19	GSDA06S1	85
GLAC20D	15	GLEA01A5A	19	GSDA06S2	85
GLAC20E7B	16	GLEA01B	19	GSDA06S3	85
GLCA01A1A	16	GLEA01C	19	GSDB03S1	85

LSXA3K	67
LSXA4K	67
LSXA4L	67
LSXA7L	67
LSXB3K	67
LSXB4L	67
LSXC3K	68
LSXC4L	68
LSXD3K	68
LSXD4L	68
LSXE3K	69
LSXE4L	69
LSXF3K	69
LSXH3K	67
LSXH4L	67
LSXJ3K-7A	69
LSXJ4L-7A	69
LSXK3K-8A	69
LSXM4N	67
LSXN3K	67
LSXN4L	67
LSXN7L	67
LSXP3K	67
LSXR3K	67
LSXR4L	67
LSXV3K	68
LSY*C3KP-**FP	54
LSY*C3KQ-**FP	54
LSY*C4LX-**FP	54
LSY*C7LR-**FP	54
LSYAC3KP-FP	53
LSYAC3KQ-FP	53
LSYAC4LX-FP	53
LSYAC7LR-FP	53
LSYCC3KP-FP	54
LSYCC3KQ-FP	54
LSYCC4LX-FP	54
LSYCC7LR-FP	54
LSYDC3KP-FP	54
LSYDC3KQ-FP	54
LSYDC4LX-FP	54
LSYDC7LR-FP	54
LSYEC3KP-FP	54
LSYEC3KQ-FP	54
LSYEC4LX-FP	54
LSYEC7LR-FP	54
LSYLC4MX-FP	54
LSYLC7MR-FP	54
LSYMC4NX-FP	54
LSYMC7NR-FP	54
LSYPC3KP-FP	53
LSYPC3KQ-FP	53
LSYPC4LX-FP	53
LSYPC7LR-FP	53
LSYUC3KP-FP	53
LSYUC3KQ-FP	53

LSZ51	72
LSZ51A	72
LSZ51B	72
LSZ51C	72
LSZ51D	72
LSZ51W	73
LSZ51Y	73
LSZ52	72
LSZ52A	72
LSZ52B	72
LSZ52C	72
LSZ52D	72
LSZ52J	72
LSZ52K	72
LSZ52M	72
LSZ52N	72
LSZ52W	73
LSZ52Y	73
LSZ53A	72
LSZ53B	72
LSZ53D	72
LSZ53E	72
LSZ53P	72
LSZ53S	72
LSZ53U	72
LSZ54	72
LSZ54M	72
LSZ54N	72
LSZ54R	72
LSZ54V	72
LSZ55	72
LSZ55A	72
LSZ55B	72
LSZ55C	72
LSZ55D	72
LSZ55W	73
LSZ55Y	73
LSZ61	73
LSZ67AA	73
LSZ68	72

M

MR93-12BBN	163
MR93-121BK	163
MR93-122B3	163
MR93-122BJ	163
MR93-124B3	163
MR93-22BBN	163
MR93-221B4	163
MR93-222B3	163
MR93-224B3	163
MRS93-11BB	164
MRS93-12BB	164
MRS93-13BB	164
MRS93-14BB	164
MRS93-15BB	164

MRS93-16BB	164
MRS93-17BB	164
MRS93-18BB	164

P

Precision Aerospace	195
---------------------	-----

S

SL1-A	21
SL1-AK	21
SL1-B	21
SL1-BK	21
SL1-D	22
SL1-DK	22
SL1-E	21
SL1-EK	21
SL1-H	21
SL1-HK	21
SL1-K	22
SL1-KK	22
SL1-P	22
SL1-PK	22
SR-01	162
SRL91-22ARN3-BB9N	162
SRL91-21URR3-BB99	162
SRL91-21UGG3-BB99	162
SRL91-22UGA3-BB99	162
SRL91-22UGG3-BB99	162
SRL91-23UGG3-BB99	162
SRL91-23URR3-BB99	162
SRL91-27URR3-BB99	162
SRN91-11BB	161
SRN91-12BB	161
SRN91-13BB	161
SRN91-14BB	161
SRN91-15BB	161
SRN91-16BB	161
SRN91-17BB	161
SRN91-18BB	161
SRN91-21BB	161
SRN91-22BB	161
SRN91-23BB	161
SRN91-24BB	161
SRN91-25BB	161
SRN91-26BB	161
SRN91-27BB	161
SRN91-28BB	161
SZL-VL-A	11
SZL-VL-B	11
SZL-VL-C	12
SZL-VL-D	12
SZL-VL-E	13
SZL-VL-F	13
SZL-VL-G	13
SZL-VL-H	12
SZR-LY2-1-AC110-120V	76

SZR-LY2-1-AC220V	76		
SZR-LY2-1-DC12V	76		
SZR-LY2-1-DC24V	76		
SZR-LY2-1P-AC110-120V	76		
SZR-LY2-1P-DC24V	76		
SZR-LY2-D1-DC24V	76		
SZR-LY2-N1-AC110-120V	76		
SZR-LY2-N1-AC220V	76		
SZR-LY2-N1-DC12V	76		
SZR-LY2-N1-DC24V	76		
SZR-LY2-X1-DC24V	76		
SZR-LY4-1-AC110-120V	77		
SZR-LY4-1-AC220V	77		
SZR-LY4-1-DC12V	77		
SZR-LY4-1-DC24V	77		
SZR-LY4-1P-AC110-120V	77		
SZR-LY4-1P-AC220V-240V	77		
SZR-LY4-1P-DC24V	77		
SZR-LY4-D1-DC24V	77		
SZR-LY4-N1-AC110-120V	77		
SZR-LY4-N1-AC220V	77		
SZR-LY4-N1-DC12V	77		
SZR-LY4-N1-DC24V	77		
SZR-LY4-X1-DC24V	77		
SZR-MY2-1-AC110-120V	74		
SZR-MY2-1-AC220V	74		
SZR-MY2-1-DC12V	74		
SZR-MY2-1-DC24V	74		
SZR-MY2-1P-AC110-120V	74		
SZR-MY2-1P-AC220V-240V	74		
SZR-MY2-1P-DC24V	74		
SZR-MY2-D1-DC24V	74		
SZR-MY2-N1-AC110-120V	74		
SZR-MY2-N1-AC220V	74		
SZR-MY2-N1-DC12V	74		
SZR-MY2-N1-DC24V	74		
SZR-MY2-X1-DC24V	74		
SZR-MY4-1-AC110-120V	75		
SZR-MY4-1-AC220V	75		
SZR-MY4-1-DC12V	75		
SZR-MY4-1-DC24V	75		
SZR-MY4-1P-AC110-120V	75		
SZR-MY4-1P-AC220V-240V	75		
SZR-MY4-1P-DC24V	75		
SZR-MY4-D1-DC24V	75		
SZR-MY4-N1-AC110-120V	75		
SZR-MY4-N1-AC220V	75		
SZR-MY4-N1-DC12V	75		
SZR-MY4-N1-DC24V	75		
SZR-MY4-X1-DC24V	75		
SZX-SLF-08N	78		
SZX-SLF-14	78		
SZX-SMF-08N	78		
SZX-SMF-14N	78		
		V	
		V7-1A17D8	110
		V7-1A17D8-022	111
		V7-1A17P02	110
		V7-1B10E9-207	111
		V7-1B17D8	110
		V7-1B17D8-048	111
		V7-1B17D8-263	111
		V7-1B19D8-022	111
		V7-1B19E9	110
		V7-1C17D8	110
		V7-1C17D8-002	111
		V7-1C17D8-022	111
		V7-1C17D8-048	111
		V7-1C17D8-201	111
		V7-1C17D8-207	111
		V7-1C17D8-263	111
		V7-1C17E9	110
		V7-1C17E9-002	111
		V7-1C17E9-201	111
		V7-1C17E9-207	111
		V7-1D10D8	110
		V7-1S17D8	110
		V7-1S17D8-022	111
		V7-1S17D8-201	111
		V7-1S17D8-207	111
		V7-1S17D8-263	111
		V7-1V19E9	110
		V7-1V19E9-048	111
		V7-1V19E9-207	111
		V7-1Z19E9	110
		V7-2B17D8-201	111
		V7-2B17E9-002	111
		V7-2B19E9-048	111
		V7-3S17D8-048	111
		V7-3S17E9-263	111
		V7-7D17D8-207	111
		V7-9W1AE9-048	111
		Vehicle Controls	175
		Hour Meters	176
		Indicator Light Strips	175
		Key Switches	184
		Lighting Products	189
		Multi-function Controls	175
		Other Vehicle Controls	194
		Proportional Retarders	187
		Push/Pull Switches	185
		Shifters	186
		Throttle Controls	175
		Turn Signals	188
		Z	
		ZM10B10A01	107
		ZM50E10A01	107
		ZM50E10D01	108
		ZM50E10E01	108
		ZM50E70A01	107
		ZM50E70D01	108
		ZM50E70E01	108
		ZM90G20A01	107
		ZV10B70A01	108
		ZV50E10A01	108
		ZV50E10B01	109
		ZV50E20A01	108
		ZV50E20F01	109
		ZV50E70C01	109
		ZV50E70F01	109
		ZW10E15CD1	109
		ZW10E90FW1	109
		ZW50F15AD1	109
		ZX10C10A01	107
		ZX40E10C01	107
		ZX40E10E01	108
		ZX40E30A01	107
		ZX40E30C01	107
		ZX40E30E01	108

Sales and Service

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorised Distributor or Sales Representative, contact your local sales office or:

INTERNET: www.honeywell.com/sensing

E-mail: info.sc@honeywell.com

ASIA PACIFIC

Control Products

Asia Pacific Headquarters

Phone: +(65) 6355-2828
FAX: +(65) 6445-3033

Australia

Honeywell Limited
Phone: +(61) 2-9370-4500
FAX: +(61) 2-9370-4525
Toll Free 1300-36-39-36
Toll Free Fax: 1300-36-04-70

China – PRC - Beijing

Honeywell China Inc.
Phone: +(86-10) 8458-3280
FAX: +(86-10) 8458-3102

China – PRC - Shanghai

Honeywell China Inc.
Phone: (86-21) 6237-0237
FAX: (86-21) 6237-1237

China - Hong Kong S.A.R.

Honeywell Ltd.
Phone: +(852) 2953-6412
FAX: +(852) 2953-6767

Indonesia

Honeywell Indonesia Pte Ltd.
Phone: +(62) 21-535-8833
FAX: +(62) 21-5367 1008

India

TATA Honeywell Ltd.
Phone: +(91) 20 6870 445/446
FAX: +(91) 20 681 2243/ 687 5992

Japan

Honeywell Inc
Phone: +(81) 3 5440 1425
FAX: +(81) 3 5440 1368

South Korea

Honeywell Korea Co Ltd
Phone: +(822) 799-6167
FAX: +(822) 792-9013

Malaysia

Honeywell Engineering Sdn Bhd
Phone: +(60-3) 7958-4988
FAX: +(60-3) 7958-8922

New Zealand

Honeywell Limited
Phone: +(64-9) 623-5050
FAX: +(64-9) 623-5060
Toll Free (0800) 202-088

Philippines

Honeywell Systems (Philippines) Inc.
Phone: +(63-2) 636-1661 / 1662
FAX: +(63-2) 638-4013

Singapore

Honeywell South East Asia
Phone: +(65) 6355-2828
FAX: +(65) 6445-3033

Thailand

Honeywell Systems (Thailand) Ltd.
Phone: +(662) 693-3099
FAX: +(662) 693-3085

Taiwan R.O.C.

Honeywell Taiwan Ltd.
Phone: +(886-2) 2245-1000
FAX: +(886-2) 2245-3241

EUROPE

Austria

Honeywell Austria GmbH
Phone: +(43) 1 727 80 366/246
FAX: +(43) 1 727 80 337

Belgium

Honeywell SA/NV
Phone: +(32) 2 728 2522
FAX: +(32) 2 728 2502

Bulgaria

Honeywell EOOD
Phone: +(359) 2 979 00 23
FAX: +(359) 2 979 00 24

Czech Republic

Honeywell spol. s.r.o.
Phone: +(420) 242 442 111
FAX: +(420) 242 442 182

Denmark

Honeywell A/S
Phone: +(45) 39 55 55 55
FAX: +(45) 39 55 55 58

Finland

Honeywell OY
Phone: +(358) 9 3480101
FAX: +(358) 9 34801375

France

Honeywell SA
Phone: +(33) 1 60 19 80 40
FAX: +(33) 1 60 19 81 73

Germany

Honeywell AG
Phone: +(49) 69 8064 444
FAX: +(49) 69 8064 442

Hungary

Honeywell Kft.
Phone: +(361) 451 43 00
FAX: +(361) 451 43 43

Italy

Honeywell S.p.A.
Phone: +(39) 02 92146 450/456
FAX: +(39) 02 92146 490

The Netherlands

Honeywell B.V.
Phone: +(31) 20 565 69 11
FAX: +(31) 20 565 66 00

Norway

Honeywell A/S
Phone: +(47) 66 76 20 00
FAX: +(47) 66 76 20 90

Poland

Honeywell Sp. zo.o
Phone: +(48) 606 09 64
FAX: +(48) 606 09 01

Portugal

Honeywell Portugal Lda
Phone: +(351 21) 424 50 00
FAX: +(351 21) 424 50 99

Romania

Honeywell Bucharest
Phone: +(40) 21 231 64 37/38
FAX: +(40) 21 231 6439

Commonwealth of Independent States (CIS)

Z.A.O. Honeywell
Phone: +(7 095) 796 98 36
FAX: +(7 095) 797 99 06

Slovak Republic

Honeywell s.r.o.
Phone: +(421 2) 58 247 403
FAX: +(421 2) 58 247 415

South Africa (Republic of)

Honeywell Southern Africa
Honeywell S.A. Pty. Ltd
Phone: +(27) 11 695 8000
FAX +(27) 11 805 1504

Spain

Honeywell S.A.
Phone: +(34) 91 313 6100
FAX: +(34) 91 313 6129

Sweden

Honeywell AB
Phone: +(46) 8 775 55 00
FAX: +(46) 8 775 56 00

Switzerland

Honeywell AG
Phone: +(41) 1 855 24 40
FAX: +(41) 1 855 24 45

Turkey

Honeywell Turkey A.S.
Phone: +(90) 216 5756620
FAX: +(90) 216 5756637

Ukraine

Honeywell
Phone: +(380) 44 201 44 74
FAX: +(380) 44 201 44 75

United Kingdom

Honeywell Control Systems Ltd
Phone: +(44) 1698 481481
FAX: +(44) 1698 481676

Mediterranean & African Distributors

Honeywell SpA
Phone: +(39) 2 921 46 232
FAX: +(39) 2 921 46 233

Middle East Headquarters

Honeywell Middle East Ltd.
Phone: +(9712) 443 2119
FAX +(9712) 443 2536

NORTH AMERICA

USA/Canada

Honeywell
Sensing and Control
Phone: 1-800-537-6945
1-815-235-6847
FAX: 1-815-235-6545
E-mail: info.sc@honeywell.com

LATIN AMERICA

Honeywell Latin America Headquarters

Phone: 1-305-805-8188
FAX: 1-305-883-8257

Argentina

Honeywell S.A.I.C.
Phone: +(54-11) 4383-3627
FAX: +(54-11) 4325-6470

Brazil

Honeywell Do Brasil & Cia
Phone: +(55-11) 4166-1900
FAX: +(55-11) 4166-1901

Chile

Honeywell Chile, S.A.
Phone: +(56-2) 425-8400
FAX: +(56-2) 425-8410

Mexico

Honeywell S.A. de C.V.
Phone: +(52) 55 5081-0200
FAX: +(52) 55 5081-0202

Puerto Rico, Caribbean

Honeywell Inc.
Phone: +(787) 792-7075
FAX: +(787) 792-0053

Venezuela

Honeywell C.A.
Phone: +(58-212) 273-0511
FAX: +(58-212) 273-0599

Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

Automation and Control Solutions

Sensing and Control

Honeywell

1985 Douglas Drive North

Minneapolis, MN 55422

www.honeywell.com

The Honeywell logo is displayed in a bold, red, sans-serif font.

000640-1-EN IL50 GLO

July 2006

Copyright © 2006 Honeywell International Inc. All rights reserved.