



Rotork Group

Rotork is a market-leading global provider of mission-critical flow control and instrumentation solutions for the industrial actuation and flow control markets. These include oil and gas, water and wastewater, power, chemical, process and industrial applications.

Customers rely on us for innovative, high quality and dependable solutions for managing the flow of liquids, gases and powders. We help customers around the world to improve efficiency, reduce emissions, minimise their environmental impact and assure safety.

Our reliability record is second to none. Our products are designed with safety and performance at their core and are put through vigorous testing and certified to international standards. Our products are certified for use in the world's most dangerous and hazardous areas.

Partnering with us provides the following:

- Assured safety and reliability
- Industry leading accuracy and efficiency
- Proven technology that works with all network control systems
- Product range with solutions to suit every application
- Assistance with plant planning, development and maintenance through our local support services
- We have innovative research and development centers throughout the world

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rotork Limit Switch Boxes 03



The Rotork Soldo range of limit switch boxes, bolt type proximity sensors, valve controllers, and related accessories provide a wide selection of valve position monitoring solutions from where you can always find a fit-for-purpose solution for your needs. The high-quality Soldo products guarantee a reliable link between the control room and automated process valves.

Unique design features

Our unique twin shaft design simplifies installation and maintenance while protecting internal components from contamination. In addition, the split shaft design allow installation to applications where space is a factor. We also offer our own range of magnetic switches – reed and NOVA. Our NOVA switches provide an optimum solution for a wide range of electrical ratings.

The end-of-line monitoring option enables simulating sensor behavior and detecting line faults.

High performance in compact sizes

We provide compact solutions thanks to advanced manufacturing technology, such as serrated joints, that drastically reduces enclosure thickness while maintaining the highest ATEX protection standards.

Simple installation and maintenance

Neatly routed through, solid and well-organized PCBs, facilitating installation and maintenance while ensuring clean wiring and electrical safety. The pre-wired boards are conformal coated for environmental protection. We also offer a full line of mounting brackets enabling the use of our limit switch boxes on top any brand actuators.



Versatility

Soldo range products have a corrosion-resistant design and many of the models are also certified for explosive environments. Integrated communication options such as Profibus and HART add to the applications where you can find a perfect fit from our offering.

Visual indication

3D visual indicator solution provides a clear position indication also from a distance.

Reliability

High resistance to extreme environmental conditions, with robust materials, make Soldo products a perfect fit also for the harshest environments.

Italy / Bergamo plant (main manufacturing location)

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Full contact details and company information is available online at www.rotork.com.

Switches and Sensors

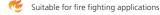
Rotork offers one of the widest ranges of switches in the market, providing the best switch or sensor solution for your specific application.

Soldo limit switch boxes can include mechanical, magnetic or inductive proximity switches to fulfil your plant feedback requirements. With over 20 years of experience in valve automation feedback solutions, Rotork offers a complete selection of magnetic limit switches to meet the most critical and demanding requirements. Inert gas hermetical sealing, high power loops, different contact forms and alternative materials are all satisfied with high quality Soldo switches.

04 Limit Switch Boxes rotork



SIL√ (SIL) up to SIL3 approved device



Suitable in arctic application

Suitable in Exia application

Hermetically sealed

Magnetic switches - including Rotork's industry leading NOVA technology

SPDT switches

Code N1 🔆 ⊕ SIL✓

- NOVA V3™ SPDT hermetically sealed snap action proximity switch
- High power loop: rating up to 5 A @ 250 VAC - 5 A @ 28 VDC
- Temperature range: -50 to +95 °C (-58 to +203 °F)

Code N3 🔆 😉 🕮 SIL🗸

- **NOVA** V3[™] SPDT hermetically sealed snap action proximity switch
- High power loop: rating up to 1 A @ 250 VAC - 1 A @ 30 VDC
- Temperature range: -50 to +95 °C (-58 to +203 °F)

Code C4 🔆 😉 的 SIL🗸

- SPDT hermetically sealed proximity reed switch
- Inert gas contact chamber
- Rating up to 1 A @ 24 VDC
- Temperature range:
 -60 to +100 °C (-76 to +212 °F)

DPDT switches

Code N4 ⊕ SIL√

- NOVA V3™ DPDT hermetically sealed snap action proximity switch
- High power loop: rating up to 5 A @ 250 VAC - 5 A @ 28 VDC
- Temperature range: -20 to +90 °C (-4 to +194 °F)

Code C8 🔆 😉 🕀 SIL🗸

- DPDT hermetically sealed proximity reed switch
- Inert gas contact chamber
- Rating up to 1 A @ 24 VDC
- Temperature range: -60 to +100 °C (-76 to +212 °F)

Code N5 BIL

- **NOVA** V3[™] DPDT hermetically sealed snap action proximity switch
- High power loop: rating up to 1 A @ 250 VAC - 1 A @ 30 VDC
- Temperature range:
 -20 to +90 °C (-4 to +194 °F)



Electro mech. switches

SPDT switches

Code 01 SILv

- SPDT silver plated snap action switch
- High power loop: rating up to 5A @ 250 VAC – 3A @ 24 VDC
- Temperature range: -40 to +125 °C (-40 to +257 °F)

Code 03 E SIL

- SPDT gold plated snap action switch
- Rating up to 0.1 mA @ 250 VAC -0.5 mA @ 30 VDC
- Temperature range: -40 to +125 °C (-40 to +257 °F)

Code **5P [™]** SIL√

- SPDT silver plated snap acting switch
- High power loop: rating up to 5 A @ 250 VAC
- Temperature range: -50 to +204 °C (-58 to 399 °F)
- Short time temperature range: Maximum 250 °C (482 °F) for 2 hours Maximum 300 °C (572 °F) for 70 minutes

DPDT switches

Code 1F SIL√

- DPDT silver plated snap action switch
- High power loop: rating up to 5 A @ 250 VAC, 0.1 A @ 80 VDC
- Temperature range: -40 to +120 °C (-40 to +248 °F)

Code 06 SIL√

- DPDT gold plated snap action switch
- Rating up to 0.1 A @ 250 VAC, 0.1 A @ 80 VDC
- Temperature range: -40 to +120 °C (-40 to +248 °F)



Inductive sensors

Amplified sensors

Code 32

- 2 wires NO
- LED indicator
- Operating voltage 5-60 VDC
- Operating current 2-100 mA
- Temperature range:
 -25 to +70 °C (-13 to +158 °F)

Code 73 SIL√

- 3 wires PNP NO
- LED indicator
- Operating voltage 10-30 VDC
- Operating current 0-100 mA
- Temperature range:
 -25 to +70 °C (-13 to +158 °F)

Code **75**

- 2 wires NO/NC programmable
- Operating voltage 5-36 VDC
- Operating current 200 mA
- Temperature range: -25 to +80 °C (-13 to +176 °F)



NAMUR Exia sensors

Nominal voltage 8 VDC

Code 70 E SIL

- Current consumption:
 1 mA (target detected)
 3 mA (target not detected)
- Temperature range: -25 to +100 °C (-13 to +212 °F)



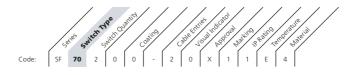
- Nominal voltage 8 VDC
- Current consumption:
 1 mA (target detected)
 3 mA (target not detected)







If discrete feedback information is not enough, Rotork can offer a complete range of analogue position transmitter options embedded within the switch box enclosure for both safe and hazardous areas. Analogue 4-20 mA current loops are commonly used for electronic signalling in industrial process control. 4 & 20 mA represents 0–100% of the measurement range. With the introduction of SMART devices, HART provides digital communication overlaid on the analogue 4-20 mA signal.



SIL√ (SIL) up to SIL3 with double channel configuration



4-20 mA

Code TO

- 4-20 mA analogue output
- Supply voltage 13-30 VDC
- Linearity ± 0.5% on full scale
- Direct or Reverse action
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code T4

- 4-20 mA analogue output
- Additional magnetic reed switches
- Supply voltage 13-30 VDC
- Linearity ± 0.5% on full scale
- Direct or Reverse action
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code T1

- 4-20 mA analogue output
- · Additional silver plated mech. switches
- Supply voltage 13-30 VDC
- Linearity ± 0.5% on full scale
- · Direct or Reverse action
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code T7

- 4-20 mA analogue output
- Additional inductive NAMUR sensors
- Supply voltage 13-30 VDC
- Linearity ± 0.5% on full scale
- Direct or Reverse action
- Temperature range:
 -25 to +80 °C (-13 to +176 °F)



4-20 mA HART



Code H0 E SIL

- 4-20 mA HART Transmitter
- ATEX 1G Ex ia IIC T6/T4 2D Ex ib IIIC
- Update time 10 ms
- Response time 70 ms
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code H4 **€** SIL√

- 4-20 mA HART Transmitter
- Additional magnetic reed switches
- ATEX 1G Ex ia IIC T6/T4 2D Ex ib IIIC
- Update time 10 ms
- Response time 70 ms
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code H1 SIL√

- 4-20 mA HART Transmitter
- Additional silver plated mech. switches
- ATEX 1G Ex ia IIC T6/T4 2D Ex ib IIIC
- Update time 10 ms
- Response time 70 ms
- Temperature range: -40 to +80 °C (-40 to +176 °F)

Code H7 SIL√

- 4-20 mA HART Transmitter
- · Additional inductive NAMUR sensors
- ATEX 1G Ex ia IIC T6/T4 2D Ex ib IIIC
- Update time 10 ms
- Response time 70 ms
- Temperature range:
 -25 to +80 °C (-13 to +176 °F)



More options available on request.

Special Options

Rotork offer a wide range of options for specific field applications.



 $\mathbf{SIL}\checkmark$ (SIL) up to SIL3 approved device

Suitable in arctic application

Suitable in Exia application

Partial Stroke Test device

Code P0 * Ex SIL

The Partial Stroke Test (PST) device is a simple and reliable electro-mechanical system. A magnetic key initiates the test while an internal electro-mechanical system drives the actuator back to the opening position after the last position has been reached. Includes:



Magnetic reed SPDT switches

Code P7 & SIL

Exia inductive NAMUR sensors



Surge protector devices

Code S6

Surge protectors guard the device and all inner electrical components from external power overloads. Certification is available for Exia or Exd, with components in 316 stainless steel for harsh environments protection. Includes:

Code S7 😉

Exia inductive NAMUR sensors

Code SC

Exia inductive NAMUR sensors tamper-proof magnetic reed SPDT switches





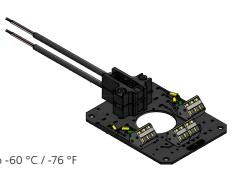
End-Of-Line monitoring system

Code 28 🔆 😉 SIL🗸

End-of-line monitoring system to perform diagnostics on switches and wiring integrity. The DCS will detect feedback information as well as fault detection.

Applicable to electro-mechanical and magnetic switches, with reduced max rating capabilities.

- NAMUR simulated output
- SIL3 suitable option available
- Available with standard or tropicalised board
- Suitable also for arctic environment with the tropicalised board down to -60 °C / -76 °F
- Standard board temperature range goes down to -55 °C / -67 °F



More options available on request.

Product Overview Chart











	Model	SP	SB	SF	SS	SX	SK
						•	
ation	Industry		(4)	6	6 6 6	∅ 🚵 💩	6 6 6
Application	Valve type	Rotary valves	Rotary valves	Rotary valves	Rotary valves	Rotary valves	Rotary valves
Material	Housing	Glass reinforced plastic	Copper free aluminium	Copper free aluminium	316 stainless steel	Aluminium	Aluminium
Mat	Cover	Polycarbonate	Polycarbonate	Aluminium	316 stainless steel	Aluminium	Aluminium
	IP rating	IP65	IP66/67	IP66/67 IP67M	IP66/67 IP67M	IP66/67	IP66/68
	SIL Rating up to:	SIL2	SIL3	SIL3	SIL3	SIL3	SIL3
	ATEX, IECEX option	Exia IIC T6	Exia IIC T6	Exia IIC T6	Exia IIC T6	N/A	Exd IIC T6
uo	cULus option	-	Safe area or Class1/2 Div2	Safe area or Class1/2 Div2	Safe area or Class1/2 Div2	Class 1/2 Div 1/2 (available at Rotork Fairchild)	Class 1/2 Div 1/2
Certification	EAC option	-	-	~	~	N/A	~
e e	ECAS option	-	-	~	~	-	~
	CCOE option	N/A	~	~	~	N/A	V
	INMETRO option	-	-	~	~	-	V
	CCCEx option	-	-	~	~	-	V
ator	3D	V	V	V	V	V	V
on indic	Flat	N/A ?	N/A	V	~	V	V
isual position indicator	Multi port valves	-	V	V	V	V	V
Visua	None	-	-	V	V	-	-
	Electro mechanic	~	V	V	V	V	V
back	Magnetic	V	~	~	~	~	V
Electrical feedback	Inductive	V	~	~	~	V	V
Electri	4-20 mA	-	V	~	~	V	-
	Communication protocols	-	V	~	V	V	-
	Twin shaft design	-	V	V	V	V	V
Features	Temp. Max range	-20 to +80 °C (-4 to +176 °F)	-20 to +80° C (-22 to +176 °F)	-60 to +105 °C (-76 to +221 °F)	-60 to +105 °C (-76 to +221 °F)	-20 to +105 °C (-4 to +221 °F)	-55 to +105 °C (-67 to +221 °F)
	Integrated mounting kit	V	-	-	-	-	Optional

08 Limit Switch Boxes

Product Overview Chart











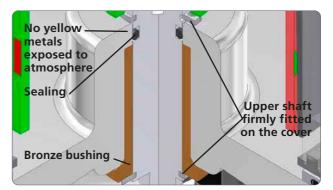
		İ		I	I	Water Power	
	Model	SQ	SY	SW	ВМ	ТВ	ВХ
					1	Carried States	
ation	Industry	6	∅ 🐞 🛕		6		
Application	Valve type	Rotary valves	Rotary valves	Rotary valves	External switches general purpose	External switches general purpose	External switches general purpose
Material	Housing	316L stainless steel	Copper free aluminium	316 stainless steel 316 stainless steel		316 stainless steel or aluminium	316 stainless steel or aluminium
Mate	Cover	316L stainless steel	Copper free aluminium	316 stainless steel	316 stainless steel	316 stainless steel or aluminium	316 stainless steel or aluminium
	IP rating	IP66/68	IP66/68	IP66/68	-	IP67	IP67
	SIL Rating up to:	SIL3	SIL3	SIL3	SIL3	SIL3	SIL3
	ATEX, IECEX option	Exd IIC T6	Exd IIC T6	Exd IIC T6	Exd IIC T6 Exia IIC T4	Exd IIC T6 (only ATEX Declaration of Conformity)	Ex ia IIC T6
	cULus option	-	Class 1/2 Div 1/2	Class 1/2 Div 1/2	Class 1/2 Div 1/2	-	-
Certification	EAC option	~	~	~	-	-	-
ී	ECAS option	~	~	~	-	-	~
	CCOE option	~	~	~	-	-	-
	INMETRO option	~	~	~	-	-	-
	CCCEx option	~	~	~	-	-	-
ator	3D	~	~	•	-	-	-
on indic	Flat	~	~	~	-	-	-
Visual position indicator	Multi port valves	~	~	~	-	-	-
Visu	None	-	-	-	~	~	✓
	Electro mechanic	~	V	~	-	-	-
dback	Magnetic	~	V	~	~	~	-
Electrical feedback	Inductive	~	~	~	-	-	✓
Electr	4-20 mA	-	~	~	-	-	-
	Communication protocols	-	~	~	-	-	-
	Twin shaft design	V	V	V	-	-	-
Features	Temp. Max range	-55 to +105 °C (-67 to +221 °F)	-60 to +105 °C (-76 to +221 °F)	-60 to +105 °C (-76 to +221 °F)	-40 to +105 °C (-40 to +221 °F)	-40 to +105 °C (-40 to +221 °F)	-40 to +80°C (-40 to +176 °F)
	Integrated mounting kit	Optional	-	-	-	-	-

rotoric Limit Switch Boxes 09

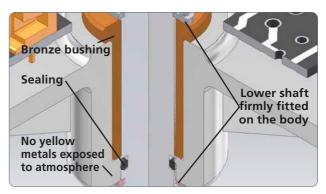
The innovative twin shaft design provides user-friendly installation, replacement, calibration and operation. Splitting the limit switch box into two halves improves the sealing arrangement to extend its operating life in harsh or severe environments whilst reducing the possibility of failure.

Features:

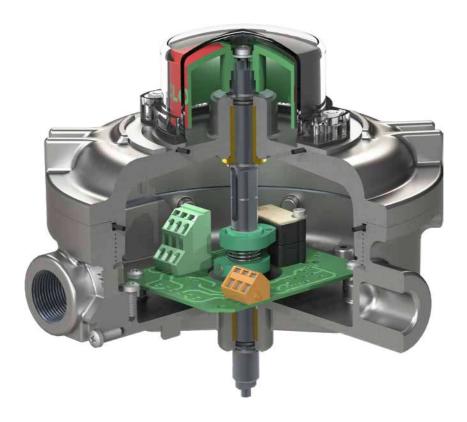
- Shaft sections mate together with a simple and reliable mechanical linkage
- Each half of the switch box mechanically retains the shaft, preventing loss of components during disassembly
- The shaft is completely sealed from the external atmosphere, avoiding contamination of the lubricating grease
- The switch position indicator is permanently fixed to the top shaft to guarantee alignment during reassembly
- Electrical components are completely sealed once both halves of the switch box are reassembled



Upper shaft schematic for SW limit switch box



Lower shaft schematic for SW limit switch box



1 Limit Switch Boxes rotork

Visual Indication

Ever increasing market requirements push Rotork to develop innovative solutions for position indication.

Code selection guide

Code	Description		
1	No visual position indicator	-	-
0	3D 90° red and green visual position indicator	(3)	8
Y	3D 90° yellow-black (open-close) visual position indicator		8
3	3D 180° visual position indicator		0
A	3D indicator for 3 way "L" 90° port valve		
В	3D indicator for 3 way "T" 90° port valve		
С	3D indicator for 3 way "L" 120° port valve	0	0
2	3D indicator for 3 way "T" 180° centre port blocked	@	6
D	3D visual position indicator with single flux direction	@	0
F	3D visual position indicator for 60° rotation	6	0
т	316 stainless steel 3D visual position indicator	6	Pa
U	Flexible indicator extension of 500 mm with red and green 90° 3D visual position indicator		ڑے
v	Stainless steel rigid 300 mm indicator extension with red and green 90° 3D visual position indicator		1
K	Stainless steel rigid 150 mm indicator extension with red and green 90° 3D visual position indicator		I
X	316 stainless steel compact disk indicator	•	
E	Aluminium disk indicator		

Visual Indicator code selection guide for SP series

Code	Description	
н	3D black and yellow flux indicator	•

rotork Limit Switch Boxes

Approvals and Marking

Electrical components require a specific protection method in explosive atmospheres due to the presence of gas or dust. Different geographical regions are subject to local standards and certification to guarantee safety against explosion risks. Rotork offers a complete range of certifications, covering worldwide requirements.

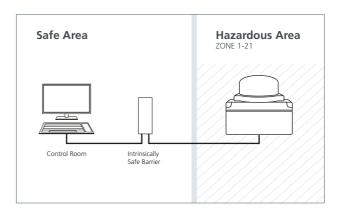
Hazardous areas and ignition

Explosions in hazardous areas occur when flammable liquids, vapours, gases or combustible dusts are mixed with oxygen and an ignition source, causing a fire or explosion. Limiting oxygen or gas is difficult, therefore the solution is to control the ignition source or safely contain the explosion.



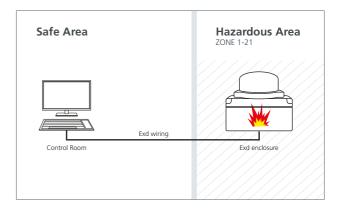
Intrinsically safe protection method

The intrinsically safe protection method works by reducing the power supplied into the hazardous area with an Ex'ia' barrier. The power reaching the hazardous area and the device is insufficient to generate a spark thus avoiding ignition.



Explosionproof protection method

The explosionproof protection method guarantees that in case an explosion should happen, it will be contained inside the enclosure. All mechanical joints of the device, such as the lid to body connection, cable entries and shaft assembly have flame paths, designed and certified to ensure an explosion is contained.



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Approvals and Marking

Code selection guide



		Weather proof	ATEX	ATEX / IECEx	ECAS	UL/CSA	EAC	CCOE	INMETRO	CCCEx
SP	Safe area	W0	-	-	-	-	-	-	-	-
SP	Intrinsically safe	-	-	X1	-	-	-	-	-	-
	Safe area	W0	-	-	-	UA	-	-	-	-
SB	Intrinsically safe	-	-	X1	-	-	-	J1	-	-
	Non-incendive (3GD Exn)	-	A6	-	-	U9	-	-	-	-
	Safe area	W0	-	-	-	UA	-	-	-	-
SF/SS	Intrinsically safe	-	-	X1	X1	-	G1	J1	I1	N1
31/33	Non-incendive (3GD Exn)	-	A6	-	-	U9	-	-	-	-
	Dust-tight (2D Extb)	-	-	XD	XD	-	-	-		
	Safe area	W0	-	-	-	UA	-	-	-	-
HW	Non-incendive (3GD Exn)	-	A6	-	-	-	-	-	-	-
	Safe area	W0	-	-	-	_	-	-	-	-
SK/SQ SY/SW	Explosionproof / flameproof (Exd IIC)	-	-	X2	-	U7*	G2	J2	12	N2
0.,,011	Non-incendive (3GD Exn)	-	-	-	-	U8*	-	-	-	-
	Explosionproof / flameproof (Exd IIC)	_	-	-	-	U7	_	_	_	-
SX	Non-incendive (3GD Exn)	-	-	-	-	U8	-	-	-	-
	Safe area	W0	-	-	-	-	-	_	_	-
ВМ	Explosionproof / flameproof (Exd IIC)	-	-	X2	-	-	-	-	-	-
	Safe area	W0	-	-	_	_	-	_	_	-
ВХ	Intrinsically safe	-	-	X1	X1	-	-	-	-	-
	Safe area	W0	-	_	-	_	_	_	_	_
ТВ	Explosionproof / flameproof	-	A2 or A4	-	-	-	-	-	-	-

^{*} Excluding SQ series

Safety Integrity Level (SIL)

SIL approval (suitable for use up to SIL3 level) is available as standard for all above certifications, depending on selected switches.

For further information please follow SIL compatibility for each standard electrical feedback type on pages 5-7.

Please refer to our SIL certificate to validate your device combination.

rotork

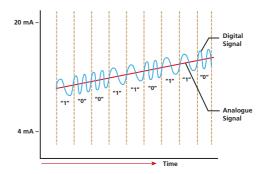
The HART communication protocol (Highway Addressable Remote Transducer) is a hybrid, analogue and digital, industrial automation protocol.

HART provides two simultaneous communication channels: the 4-20 mA analogue signal and a digital signal. The 4-20 mA signal communicates the primary measured value. Additional device information is communicated using a superimposed digital signal on the analogue one.

Rotork can offer a complete range of 4-20 mA HART position transmitters with or without additional switches.

Refer to the position sensor section for a wider list of options and code selection guide.





AS-i Communication

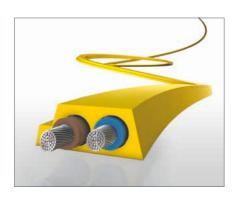
Superior productivity is one of the key factors to successful business in the process automation sector. The secret to modern manufacturing is flexibility.

AS-Interface (AS-i) is the simplest of the industrial networking protocols used in PLC, DCS and PC-based automation systems. It is designed for connecting binary (ON/OFF) devices such as actuators and sensors in discrete manufacturing and process applications using a single cable.

Features

- Highly efficient alternative to hard wiring of field devices
- Excellent partner to Profibus, DeviceNet, Interbus and Industrial Ethernet network systems
- Proven in hundreds of thousands of applications
- Cut-down AS-i SW version available for ultra-simple devices
- Provides the ideal basis for Functional Safety in machinery safety/emergency stop applications





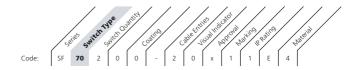
AS-I communication board

Code A1

AS-I communication board 4 In – 3 Out.

Up to four electro-mechanical switches and three solenoid valve connection.

Available on SB, SF, SS, HW, SY, SW series.



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Profibus® option

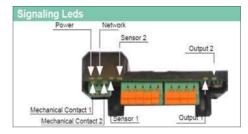
We introduced the Profibus communication bus into our HW series to provide a complete control unit, facing all demanding field applications.

Features and benefits

- Weatherproof enclosure
- 3D red and green visual position indicator
- 2½" NPT cable entries
- 1¾" NPT cable entry
- Profibus communication board
- Two digital inputs for valve position detection
- Two extra dry contact inputs available
- Two digital outputs for solenoid valve connection
- Adjustable metal cams
- Integrated mounting legs for NAMUR actuators
- Integrated sov, 5/2 or 5/3 way configuration

PROFU^{*}





Profibus control unit

Code PF

Profibus DP control unit.

Two digital feedback and two digital output for solenoid valves.

Code PG

Profibus DP feedback unit.

Two digital feedback and two digital output for solenoid valves.

Additional two mechanical switches 5A 250 VAC.

Both options available on HW series.



Tropicalised Board

An advanced tropicalised solution for position feedback and indication. These oxidation-resistant circuit boards offer superior anti-corrosion protection for use in high humidity, offshore, coastal and desert conditions.

An extended temperature range is available for maximum application coverage. The corrosion and oxidant-resistant package makes it an ideal choice for challenging requirements such as high humidity, unexpected water ingress or agressive atmospheres.

The innovative circuit board design includes an optional End Of Line (EOL) monitoring system for switch diagnostics.

Feature

- Full protection against corrosion and oxidation
- Compatible with SF / SS and SY / SW Series
- Deliverable into Exia or Exd package
- Up to SIL3 approval
- Up to four switch outputs
- Standard DRY-CONTACT output or EOL monitoring system to simulate NAMUR feedback
- Cage clamp terminals up to 2.5 mm²
- Extended temperature range -60 to +105 °C (-76 to +221°F)

rotork Limit Switch Boxes 15

Compact limit switch box for industrial, water treatment and light duty applications.

Features

- Integrated mounting kit for NAMUR pattern
- Corrosion free glass reinforced plastic enclosure on SP series
- One cable entry (SP) metric
- Multiple indicator options
- Easy wiring through the terminal PCB board

Approvals

ATEX, IECEx:

II 1G Ex ia IIC T6...T1 Ga II 2D Ex ia IIIC T85 °C...T135 °C Db

-20 °C <- Ta <- +80 °C

SIL certificate: Up to SIL 2 certified by TÜV

Protection rating: IP65

IP67 on request NEMA 4 4X on request

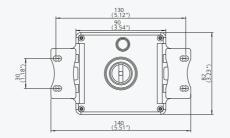
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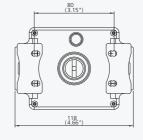
-20 to +80 °C (-4 to +176 °F) standard temperature range

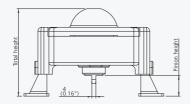


SP limit switch box

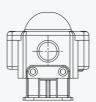






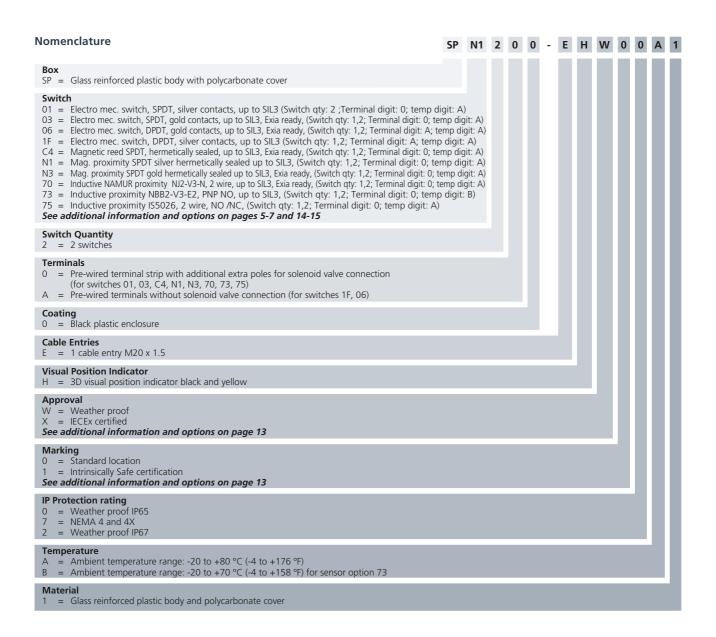






16 Limit Switch Boxes

SP Limit Switch Box Series



rotorie Limit Switch Boxes

Multi purpose limit switch box for safe area or Intrinsically safe applications.

Features

- Self lubricating bushings
- Copper free aluminium housing for maximum corrosion
- Two cable entries, either metric or imperial
- Multiple indicator options
- Easy wiring through the terminal PCB board
- Position transmitter board optional

Approvals

ATEX, IECEx:

For NAMUR sensors type:

II 2GD Ex ia IIC T4/T5/T6 Gb Ex ia IIIC T95°C/95°C/85°C Db

For SPDT, DPDT switches type:

II 2GD Ex ia IIC T4 Gb Ex ia IIIC T95°C Db

II 2D Ex tb IIIC T95°C Db

UL: Class I Division 2 Groups A, B, C, D Class II Division 2 Groups F, G

SIL certificate: Up to SIL 3 certified by TÜV

Protection rating: IP 66 / 67

NEMA 4 4X on request

Temperature:

-20 to +80 °C (-4 to +176 °F) standard temperature range



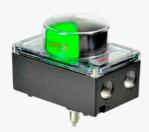


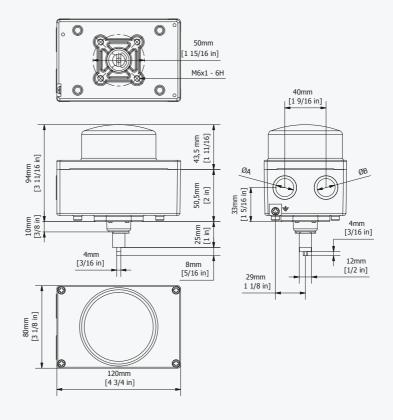






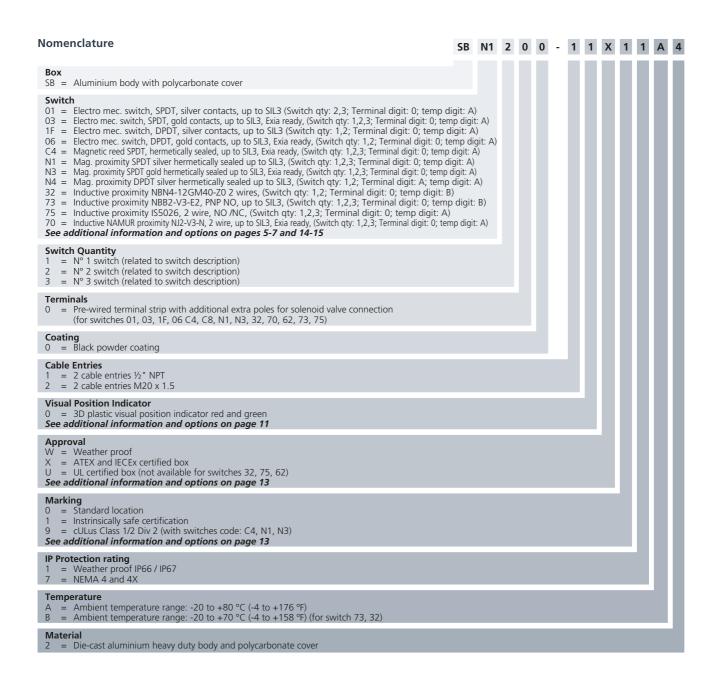
SB limit switch box





rotork **Limit Switch Boxes**

SB Limit Switch Box Series



rotorie Limit Switch Boxes

Multi-purpose limit switch box for safe area or Intrinsically safe applications.

Features

- Twin shaft design
- Self lubricating bushings
- Copper-free aluminium or 316 stainless steel housing option for maximum corrosion protection
- Two cable entries, either metric or imperial
- Multiple indicator options
- Easy wiring through the terminal PCB board
- Position transmitter board optional
- Suitable for arctic environments
- SF standard painting C5-M

Approvals

ATEX, IECEX, EAC, CCOE, INMETRO:

II 1GD Ex ia IIC T6...T4 Ga Exia IIIC T20045°C...T200 118°C Da II 2GD Ex ib IIC T6...T4 Gb Ex ib IIIC T45°C...T135°C Db II 2D Ex tb IIIC T85°C...T120°C Db

UL: Class I Division 2 Groups A, B, C, D Class II Division 2 Groups F, G

SIL certificate: Up to SIL 3 certified by TÜV

Protection rating: IP 66 / 67

NEMA 4 4X on request

Temperature:

-40 to +80 °C (-40 to +176 °F) standard temperature range

-60 to +105 °C (-76 to +221 °F) available on request















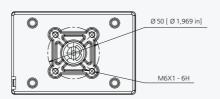


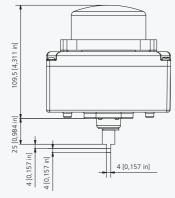
SF limit switch box

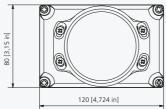


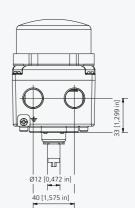
SS limit switch box











rotork **Limit Switch Boxes**

SF - SS Limit Switch Box Series

Nomenclature SB N1 2 0 0 - 1 1 X 1 1 A 4 = Aluminium enclosure SS = 316 stainless steel enclosure Switch Switch 01 = Electro mec. switch, SPDT, silver contacts, up to SIL3 (Switch qty: 2,3,4; Terminal digit: 0; temp digit: L) 03 = Electro mec. switch, SPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L) 1F = Electro mec. switch, DPDT, silver contacts, up to SIL3 (Switch qty: 1,2; Terminal digit: 0; temp digit: L) 06 = Electro mec. switch, DPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: L) C4 = Magnetic reed SPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, P) C8 = Magnetic reed DPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: L, P) N1 = Mag. proximity SPDT silver hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, M) N3 = Mag. proximity SPDT gold hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, M) N4 = Mag. proximity DPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, M) 2 Inductive proximity NBN4-12GM40-Z0 2 wires, (Switch qty: 1,2, Terminal digit: 0; temp digit: B) 31 Inductive proximity NBN4-12GM40-Z0 2 wires, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: B) 42 Inductive proximity NBB2-V3-E2, PNP NO, up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: B) 43 Inductive proximity IS5026, 2 wire, NO /NC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) 44 Inductive NAMUR proximity NJ2-V3-N, 2 wire, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) 45 Inductive NAMUR proximity SI 3,5 SN, 2 wire, 8V DC, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0, A; temp digit: L, M) T0 = 4-20mA analog position transmitter, (Switch qty:0; Terminal digit: A; temp digit: L) T1 = 4-20mA analog position transmitter + electro mec. switch, SPDT, silver contacts, (Switch qty: 1,2; Terminal digit: A; temp digit: L) H0 = 4-20mA HART position transmitter, Exia ready, (Switch qty: 0; Terminal digit: A; temp digit: L) See additional information and options on pages 5-7 and 14-15 2 = N° 2 switch (related to switch description) **Switch Ouantity** = no switches for digital feedback 3 = N° 3 switch (related to switch description) = N° 1 switch (related to switch description) 4 = N° 4 switch (related to switch description) Pre-wired terminal strip with additional extra poles for solenoid valve connection (for switches 01, 03, 1F, 06 C4, C8, N1, N3, 32, 70, 62, 73, 75) A = Pre-wired terminals without solenoid valve connection (for switches N4, 62, T0, T1, H0) Coating 0 = Black powder coating = Electro polished finishing (on SS series) **Cable Entries** = 2 cable entries ½ " NPT = 2 cable entries M20 x 1.5p 3D plastic visual position indicator red and green No visual position indicator 3D stainless steel position indicator See additional information and options on page 11 Weather proofATEX and IECEx certified box EAC certification CCOE certification for Indian market NEPSI certification for Chinese market = UL certified box (not available for switches 32, 75, 62, H0) See additional information and options on page 13 Marking Standard location 1 = Instrinsically safe certification 9 = cULus Class 1/2 Div 2 (with switches code: C4, C8, N1, N3) See additional information and options on page 13 IP Protection rating 1 = Weather proof IP66 / IP67 = NEMA 4 and 4X = Ambient temperature range: -20 to +80 °C (-4 to +176 °F) = Ambient temperature range: -40 to +80 °C (-40 to +176 °F) (standard for all switch options, excluding: 32, 70, 73, 75, N4) = Ambient temperature range: -60 to +80 °C (-76 to +176 °F) (extended temp range for switches C4, C8) = Ambient temperature range: -20 to +70 °C (-4 to +158 °F) (for switch 73) Ambient temperature range: -25 to +80 °C (-41 to +136 °F) (tol switch 70, 75 Ambient temperature range: -25 to +80 °C (-13 to 176 °F) standard for switch 70, 75 Ambient temperature range: -25 to +70 °C (-13 to +158 °F) standard for switch 73. Ambient temperature range: -40 to +40 °C (-40 to 104 °F) only applicable to C4, C8 switches with UL approval. Ambient temperature range: -60 to +40 °C (-76 104 °F) extended temperature range applicable to C4, C8 switches with UL approval. Copper free aluminium (on SF series)316 stainless steel heavy duty enclosure (on SS series)

rotorie Limit Switch Boxes 2

Compact limit switch box for hazardous areas, with explosionproof protection method.

Features

- Twin shaft design
- Metallic self-lubricant bushings
- Aluminium or 316L stainless steel housing option for maximum corrosion protection
- Two cable entries, either metric or imperial
- Adjustable mounting kit for NAMUR actuators available on request
- Easy wiring through the terminal PCB board
- Suitable for arctic environments

Approvals

ATEX, IECEx, EAC, CCOE, INMETRO:

Ex II 2GD Ex db IIC T4/T5/T6 Gb Ex tb IIIC T135/T100/T85°C Db Ta: $-55 \,^{\circ}\text{C} \le \text{Ta} \le 105 \,^{\circ}\text{C} / 80 \,^{\circ}\text{C} / 60 \,^{\circ}\text{C}$

UL (available on SK series only):

Class I Division 1 Groups A, B, C, D Division 2 Groups A, B, C, D Class II Division 1 Groups E, F, G Division 2 Groups F, G

SIL certificate: Suitable for use up to SIL 3 certified by TÜV

Protection rating: IP 66/68 15 m for 100 hours NEMA 4 4X on request Temperature:

-40 to +80 °C (-40 to +176 °F) standard temperature range -55 to +105 °C (-67 to +221 °F) available on request

















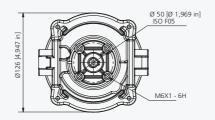


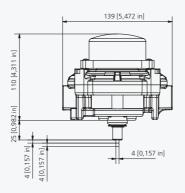


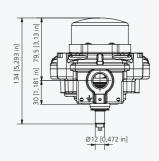


SQ limit switch box

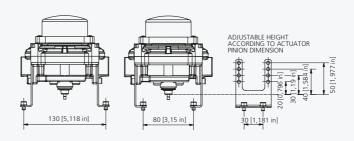








Optional adjustable mounting kit for NAMUR actuators



rotork **Limit Switch Boxes**

SK - SQ Limit Switch Box Series

Nomenclature SK N1 2 0 0 - 1 1 X 2 1 A 3 Box SK = Die-cast aluminium enclosure SQ = 316L stainless steel enclosure 01 = Electro mec. switch, SPDT, silver contacts, up to SIL3 (Switch qty: 2;Terminal digit: 0; temp digit: L) 03 = Electro mec. switch, SPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2;Terminal digit: 0; temp digit: L) 06 = Electro mec. switch, DPDT, gold contacts, up to SIL3, Exia ready, Switch qty: 1,2;Terminal digit: A; temp digit: L) 1F = Electro mec. switch, DPDT, silver contacts, up to SIL3 (Switch qty: 1,2;Terminal digit: A; temp digit: L) C4 = Magnetic reed SPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2;Terminal digit: 0; temp digit: L, M, N) N1 = Mag. proximity SPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2;Terminal digit: 0; temp digit: L, M) N3 = Mag. proximity SPDT gold hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2;Terminal digit: 0; temp digit: L, M) 70 = Inductive NAMUR proximity NJ2-V3-N, 2 wire, up to SIL3, Exia ready, (Switch qty: 1,2;Terminal digit: 0; temp digit: E) 73 = Inductive proximity NBB2-V3-E2, PNP NO, up to SIL3, (Switch qty: 1,2;Terminal digit: 0; temp digit: F) 75 = Inductive proximity IS5026, 2 wire, NO /NC, (Switch qty: 1,2;Terminal digit: 0; temp digit: E) See additional information and options on pages 5-7 and 14-15 **Switch Quantity** 2 = 2 switches = Prewired terminal strip with additional extra poles for solenoid valve connection (for switches 01, 03, C4, N1, N3, 70, 73, 75) A = Prewired terminals without solenoid valve connection (for switches 1F, 06) Coating 0 = Black powder coating (SK Series) Aluminium E = Electro polish finishing (SQ Series) Stainless Steel **Cable Entries** 2 cable entries ½" NPT 2 = 2 cable entries M20 x 1.5 **Visual Position Indicator** 0 = 3D plastic visual position indicator red and green T = 3D stainless steel position indicator See additional information and options on page 11 **Approval** ATEX and IECEx certified box G = EAC certification = INMETRO certification for Brazilian market N = NEPSI certification for Chinese market J = CCOE certification for Indian market = UL certified box (only for SK series) W = Weather proof See additional information and options on page 13 0 = Standard location = Certification marking: Ex II 2GD Exd IIC = cULus Class 1/2 Div1 (only for SK series) = cULus Class 1/2 Div 1/2 with switches code: C4, N1, N3. (Only for SK series) See additional information and options on page 13 IP Protection rating 3 = Weather proof IP66/IP68 7 = NEMA 4 and 4X= Ambient temperature range: -40 to +80 °C (-40 to +176 °F) standard for all switch options, excluding: 70, 73, 75 E = Ambient temperature range: -25 to +80 °C (-13 to 176 °F) standard for switch 70, 75 F = Ambient temperature range: -25 to +80 °C (-13 to +158 °F) standard for switch 73. M = Ambient temperature range: -50 to +80 °C (-58 to +176 °F) extended temp range for switches N1, N3 N = Ambient temperature range: -55 to +80 °C (-67 to +176 °F) for switch code C4 (extended temp range for switches C4) = Die-cast aluminium heavy duty body and cover (on SK series)

7 = 316L stainless steel heavy duty enclosure (on SQ series)
 Note: optional mounting kit for NAMUR actuators ordering code: KN07

rotork Limit Switch Boxes 2

Limit switch box for heavy duty explosionproof applications in the oil & gas and petrochemical industries, both on-shore and off-shore.

Features

- Twin shaft design
- Metallic self lubricating bushings
- Copper free aluminium or 316 stainless steel housing option for maximum corrosion protection
- Up to four cable entries, either metric or imperial
- Multiple indicator options
- Easy wiring through the terminal PCB board
- High volume for the maximum wiring comfort
- Optional position transmitter board
- Suitable for arctic environments
- SY standard painting C5-M

Approvals

ATEX, IECEx, EAC, CCOE, INMETRO, NEPSI:

Ex II 2GD Ex db IIC T4/T5/T6 Gb Ex tb IIIC T140/T110/T110°C Db Ta: $-60 \, ^{\circ}\text{C} \le \text{Ta} \le 105 \, ^{\circ}\text{C} / 80 \, ^{\circ}\text{C} / 60 \, ^{\circ}\text{C}$

UL:

Class I Division 1 Groups B,C,D Division 2 Groups A, B, C, D Class II Division 1 Groups E,F,G Division 2 Groups F, G

SIL certificate: Suitable for use up to SIL 3 certified by TÜV

Protection rating: IP66/68 10 m for 48 hours NEMA 4 4X on request

Temperature:

-40 to +80 °C (-40 to +176 °F) standard temperature range

-60 to +105 °C (-76 to +221 °F) available on request

















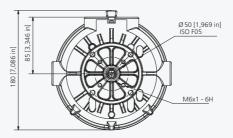


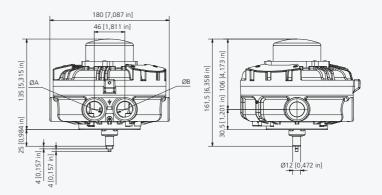
SY limit switch box



SW limit switch box







rotork **Limit Switch Boxes**

Nomenclature SY N1 2 0 0 - 1 0 X 2 3 A 4 SY = Copper free aluminium enclosure SW = Stainless steel 316 enclosure 01 = Electro mec. switch, SPDT, silver contacts, up to SIL3 (Switch qty: 2,3,4; Terminal digit: 0; temp digit: L) 03 = Electro mec. switch, SPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L) 1F = Electro mec. switch, DPDT, silver contacts, up to SIL3 (Switch qty: 1,2; Terminal digit: 0; temp digit: L) 06 = Electro mec. switch, DPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: L) C4 = Magnetic reed SPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, P) C8 = Magnetic reed DPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, P) N1 = Mag. proximity SPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: L, M) N3 = Mag. proximity SPDT gold hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: I, M) N4 = Mag. proximity DPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: I, M) N4 = Mag. proximity DPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: A) 32 = Inductive proximity NBN4-12GM40-Z0 2 wires, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: F) 73 = Inductive proximity NBB2-V3-E2, PNP NO, up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: F) 75 = Inductive proximity IS5026, 2 wire, NO /NC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) 70 = Inductive NAMUR proximity NJ2-V3-N, 2 wire, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) Inductive NAMUR proximity SJ 3,5 SN, 2 wire, 8V DC, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0, A; temp digit: L, M) TO = 4-20mA analog position transmitter, (Switch qty: 0; Terminal digit: A; temp digit: L) T1 = 4-20mA analog position transmitter + electro mec. switch, SPDT, silver contacts, (Switch qty: 1,2; Terminal digit: A; temp digit: L) T4 = 4-20mA analog position transmitter + mag. reed switch, SPDT, (Switch qty: 1,2; Terminal digit: A; temp digit: L) H0 = 4-20mA HART position transmitter, Exia ready, (Switch qty: 0; Terminal digit: A; temp digit: L) H4 = 4-20mA HART position transmitter + mag. reed switch, SPDT, (Switch gty: 1,2; Terminal digit: A; temp digit: L) PO = Partial Stroke Test capabilities with remote or local magnetic key activation (Switch qty: 3; Terminal digit: A; temp digit: L, M) See additional information and options on pages 5-7 and 14-15 2 = N° 2 switch (related to switch description) 3 = N° 3 switch (related to switch description) **Switch Quantity** 0 = no switches for digital feedback 1 = N° 1 switch (related to switch description) 4 = N° 4 switch (related to switch description) Terminals = Pre-wired terminal strip with additional extra poles for solenoid valve connection (for switches 01, 03, 1F, 06 C4, C8, N1, N3, N4, 32, 70, 62, 73, 75) A = Pre-wired terminals without solenoid valve connection (for switches 62, T0, T1, T4, H0, H4, P0) = Black powder coating (SY Series) E = Electro polish finishing (SW Series) **Cable Entries** T = 4 cable entries ½" NPT 2 cable entries ¾" NPT 2 cable entries 1/2 " NPT = 2 cable entries M20 x 1.5p 4 cable entries ¾ " NPT = 3D plastic visual position indicator red and green B = 3-position indicator (T-port 180 deg.) 3-position indicator (T-port 180 deg. Blocked centre) T = 3D stainless steel position indicator See additional information and options on page 11 Approval = ATEX and IECEx certified box EAC certification INMETRO certification for Brazilian market NEPSI certification for Chinese market = CCOE certification for Indian market UL certified box = Weather proof See additional information and options on page 13 Marking Standard location Certification marking: Ex II 2GD Exd IIC cULus Class 1/2 Div1 cULus Class 1/2 Div 1/2 with (with switches code: C4,C8,N1,N3) See additional information and options on page 13 **IP Protection rating** Weather proof IP66/IP68 7 = NEMA 4 and 4X= Ambient temperature range: -40 to +80 °C (-40 to +176 °F) (standard for all switch options, excluding: 32, 70, 73, 75) = Ambient temperature range: -25 to +80 °C (-13 to +176 °F) standard for switch 70, 75 = Ambient temperature range: -25 to +70 °C (-13 to +158 °F) standard for switches 32, 73. Ambient temperature range: -50 to +80 °C (-58 to +176 °F) extended temp range for switches N1, N3) Ambient temperature range: -60 to +80 °C (-76 to +176 °F) for switch codes C4 and C8 (extended temp range for switches C4, C8) Α = Ambient temperature range: -20 to +80 °C (-4 to +176 °F) Copper free aluminium heavy duty body and cover (SY series) 316 stainless steel heavy duty enclosure (SW series)

rotork

Limit switch box specifically designed for explosion proof applications in the North American market.

Features

- Twin shaft design
- Metallic self lubricating bushings
- Aluminium enclosure with thick protective powder coating
- Up to three cable entries, either metric or imperial
- Multiple indicator options
- Easy wiring through the terminal PCB board

Approvals

UL:

Class I Division 1 Groups C, D Division 2 Groups A, B, C, D Class II Division 1 Groups E, F, G Division 2 Groups F, G

SIL certificate: Suitable for use up to SIL 3 certified by TÜV

Protection rating: IP66/67

NEMA 4 4X on request

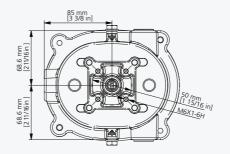
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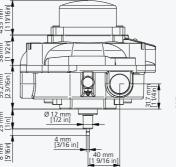
-40 to +80 °C (-40 to +176 °F) standard temperature range

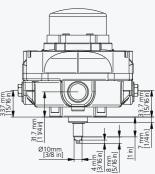


SX limit switch box









26 Limit Switch Boxes rotork

SX Limit Switch Box Series

= Die cromated aluminium heavy duty body and cover

Nomenclature SX N1 2 0 0 - 1 0 U 7 7 U 3 SX = Exd IIB applications 01 = Electro mec. switch, SPDT, silver contacts, up to SIL3 (Switch qty: 2,3,4; Terminal digit: 0; temp digit: E) 03 = Electro mec. switch, SPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) 1F = Electro mec. switch, DPDT, silver contacts, up to SIL3 (Switch qty: 1,2; Terminal digit: 0; temp digit: E) 06 = Electro mec. switch, DPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: E) C4 = Magnetic reed SPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E, L) C8 = Magnetic reed DPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E, L) Mag. proximity SPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E, L) N3 = Mag. proximity SPDT gold hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E, L) N4 = Mag. proximity SPDT gold hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: A) 32 = Inductive proximity NBN4-12GM40-Z0 2 wires, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: U) 73 = Inductive proximity NBB2-V3-E2, PNP NO, up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) 75 = Inductive proximity IS5026, 2 wire, NO /NC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) Inductive NAMUR proximity NJ2-V3-N, 2 wire, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: E) TO = 4-20mA analog position transmitter, (Switch qty: 0; Terminal digit: A; temp digit: E) T1 = 4-20mA analog position transmitter + electro mec. switch, SPDT, silver contacts, (Switch qty: 1,2; Terminal digit: A; temp digit: E) T4 = 4-20mA analog position transmitter + mag. reed switch, SPDT, (Switch qty: 1,2; Terminal digit: A; temp digit: E) See additional information and options on pages 5-7 and 14-15 **Switch Quantity** = no switches for digital feedback N° 1 switch (related to switch description) N° 2 switch (related to switch description) = N° 3 switch (related to switch description) 4 = N° 4 switch (related to switch description) Pre-wired terminal strip with additional extra poles for solenoid valve connection (for switches 01, 03, 1F, 06 C4, C8, N1, N3, N4, 32, 70, 62, 73, 75) A = Pre-wired terminals without solenoid valve connection (for switches 62, T0, T1, T4) 0 = Black powder coating Cable Entries = 2 cable entries ½" NPT 2 cable entries M20x1.5 $3 = 2 \times \frac{1}{2}$ "NPT + 1 x 3/4"NPT cable entries **Visual Position Indicator** = 3D plastic visual position indicator red and green = 3-position indicator (T-port 180 deg. Blocked centre) = 3-position indicator (L-port) = 3-position indicator (T-port 180 deg.) 3D stainless steel position indicator See additional information and options on page 11 = UL certified box (for UL certified units please contact your local office for temperature selection) See additional information and options on page 13 cULus Class1/2 Div 1 cULusClass 1/2 Div 1/2 (with switches code: C4, C8, N1, N3) See additional information and options on page 13 **IP Protection rating** = Nema 4 and 4X Ambient temperature range: -20 to +80 °C (-4 to +176 °F) (for N4 option only) Ambient temperature range: -40 to +80 °C (+40 to +176 °F) (standard for switch options C4, C8, N1, N3 with marking 8) Ambient temperature range: -25 to +80 °C (-13 to +176 °F) (for switches 01, 03, 06, 70, 73, 75, T1, T4, T0 + magnetic switches C4, C8, N1, N3 for marking 7) U = Ambient temperatura range: -20 to +40 °C (-4 to +104 °F) (for switch option 32)

rotoric Limit Switch Boxes 27

BM Limit Switch Box Series

Limit switches for hazardous areas with Exd protection method. Designed for linear valves and general purpose applications.

Features

- AISI 316 stainless steel enclosure
- Standard 580 mm flying leads
- Magnetic or ferrous sensing capabilities

Approvals

ATEX, IECEx:

II 2GD

Ex db IIC T6...T4 Gb

Ex tb IIIC T85°C/T90°C/T95°C Db

II 2GD

Ex db IIB+H2 T6...T4 Gb

Ex tb IIIC T85°C/T90°C/T95°C Db

UL: only available on BMC4

Class I, Division 1 and 2, Groups A, B, C and D

Class II, Division 1, Groups E, F and G Class II, Division 2, Groups F and G

SIL certificate: Suitable for use up to SIL 3 approval on request

Protection rating: IP66/68

NEMA 4 4X (available on BMC4 option)





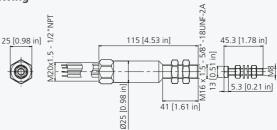




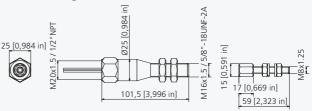
BM limit switch



BM dimensional drawing

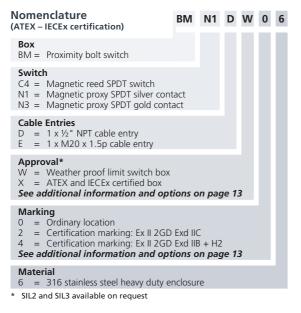


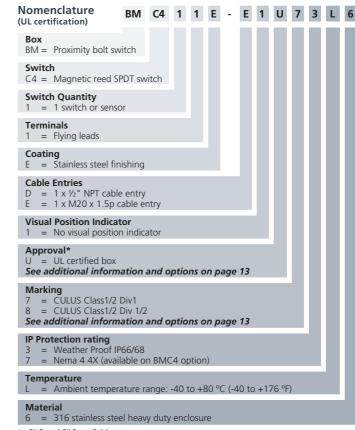
BM UL dimensional drawing



rotork **Limit Switch Boxes**

BM Limit Switch Box Series



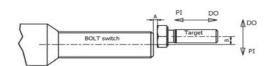


SIL2 and SIL3 available on request

Sensing distance chart

•							
Caralian diatana	Switch		Direction A	Direction B [mm]			
	SWITCH		[mm]	Target distance: 1 mm			
Sensing distance	N1/N3*	PI: Max 2	DO : 6	PI : 7	DO : 12		
	C4	PI: 3.6	DO : 6	PI: 4.5	DO: 7		
F	_ N1/N3*			Max 30 Hz			
Frequency range	C4	Max 100 Hz					
Response time	N1/N3*		2 ms				
	C4		2	ms			

Notes:
*ATEX – IECEx certification only.
PI: Is the point where the switch first operates.
DO: Is the point where the switch first operates.
DO: Is the point where the switch is released.
PI & DO values refers to the distance between the 2 axis of BOLT switch and target.
Target distance refers to the distance between the 2 opposite faces of BOLT switch and target.
For BMN1 switch the maximum operating distance is 2 mm using a properly size ferrous target.
This distance may be increased using a magnetic target (optional).
BMC4 switch is supplied with its standard magnetic target.
Optional magnetic target to increase the sensing range of the switch are available. For any kind of request please contact SOLDO.



TB Limit Switch Box Series

Proximity sensor with applied junction box for hazardous areas with Exd protection methods. Designed for linear valves and general purpose applications.

Features

- AISI 316 stainless steel enclosure
- AISI 316 stainless steel or aluminum for junction box
- Magnetic or ferrous sensing capabilities

Approvals

The TB proximity sensor is constructed by combining three distinct components, each featuring its own certification and

JB: II 2GD Ex db IIC T6/T5/T4/T3 Gb

Ex tb IIIC T85/T100/T135/T200°C Db

BM: II 2GD Ex db IIB+H2 T6/T5/T4/T3 Gb

(Switches N1 and N3)

Ex db IIC T6/T5/T4/T3 Gb (Switch C4)

Ex tb IIIC T85/T90/T95°C Db

Nipple: II 2GD Ex db IIC Gb

Ex tb IIIC Db

SIL certificate: Suitable for use for SIL 3 approval on request

Protection rating: IP67





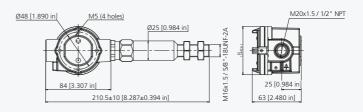




TB limit switch

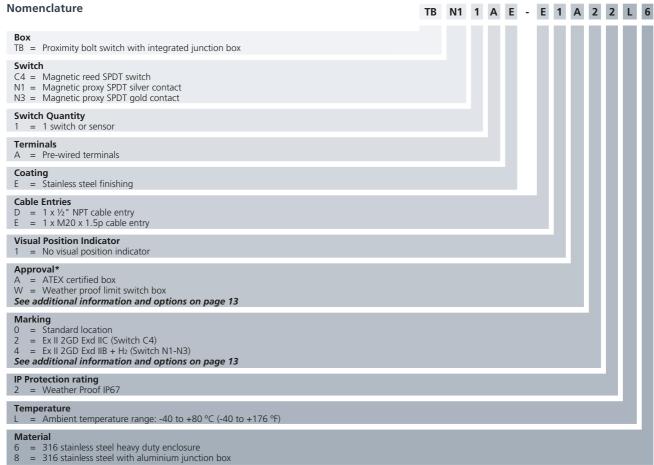


TB dimensional drawing



Limit Switch Boxes

TB Limit Switch Box Series



* SIL2 and SIL3 available on request

Sensing distance chart

	Switch		tion A m]	Direction B [mm] Target distance: 1 mm			
Sensing distance	N1/N3	PI : Max 2	DO:6	PI : 7	DO: 12		
	C4	PI: 3.6	DO : 6 PI : 4.5		DO:7		
Eroguones rango	N1/N3		Max 3	30 Hz			
Frequency range	C4	Max 100 Hz					
Response time	N1/N3		2 1	ms			
	C4		2 ו	ms			

Notes:

PI: Is the point where the switch first operates.

DO: Is the point where the switch first operates.

DO: Is the point where the switch is released.

PI: & DO values refers to the distance between the 2 axis of BOLT switch and target.

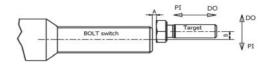
Target distance refers to the distance between the 2 opposite faces of BOLT switch and target.

For BMM1 switch the maximum operating distance is 2 mm using a properly size ferrous target.

This distance may be increased using a magnetic target (optional).

BMC4 switch is supplied with its standard magnetic target.

Optional magnetic target to increase the sensing range of the switch are available. For any kind of request please contact SOLDO.



BX Limit Switch Box Series

Proximity sensor with integrated junction box for hazardous areas with Exia protection methods. Designed for linear valves and general purpose applications.

Features

- AISI 316 stainless steel enclosure
- Integrated junction box
- C-clamp terminal
- Ferrous sensing capabilities

Approvals

ATEX, IECEx:

II 1GD

Ex ia IIC T6...T4 Ga Ex ia IIIC T200 135°C Da

SIL certificate: Suitable for use for SIL 3 approval on request

Protection rating: IP66/67



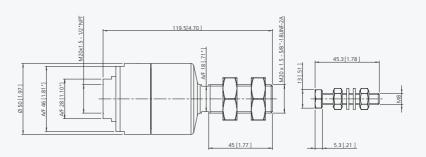






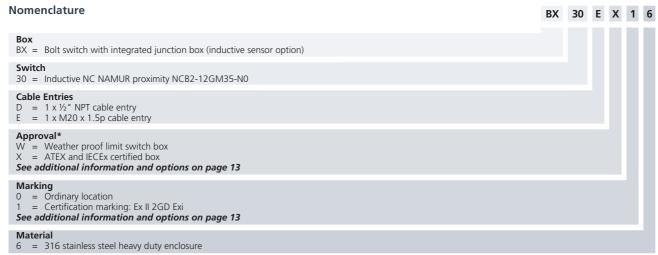
BX limit switch





rotork Limit Switch Boxes

BX Limit Switch Box Series



* SIL2 and SIL3 available on request

Sensing distance chart

	Switch	Direction	n A [mm]	Direction B [mm] Target distance: 1 mm			
Sensing distance		PI: 1.6	DO:2	PI : 7	DO: 7.5		
Frequency range	30		Max 1	00 Hz			
Response time			2 1	ms			

Notes:

PI: Is the point where the switch first operates.

DO: Is the point where the switch is released.

PI: & DO values refers to the distance between the 2 axis of BOLT switch and target.

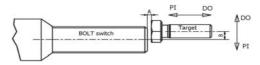
Target distance refers to the distance between the 2 opposite faces of BOLT switch and target.

For BMN1 switch the maximum operating distance is 2 mm using a properly size ferrous target.

This distance may be increased using a magnetic target (optional).

BMC4 switch is supplied with its standard magnetic target.

Optional magnetic target to increase the sensing range of the switch are available. For any kind of request please contact SOLDO.



Control unit that combines a limit switch box and solenoid valve into a single device. Maximum efficiency with minimum customer effort.

Features

- Twin shaft design
- Self lubricating bushings
- Optional integrated solenoid valve for maximum efficiency and compactness
- Three or five way pneumatic valve with single or double coil configurations
- Aluminium enclosure with thick powder coat paint and integrated NAMUR mounting kit
- Up to three cable entries, either metric or imperial
- Multiple indicator options

- Easy wiring through the terminal PCB board
- Optional position transmitter boards
- Optional Profibus communication board for complete process handling

Approvals

UL general purpose

SIL certificate: Suitable for use for SIL 2 approval

on request

Protection rating: IP66/67

NEMA 4 4X on request

Temperature:

-10 to +50 °C (+14 to +122 °F) with solenoid valve

0

-20 to +100 °C (-4 to +212 °F) without solenoid valve

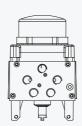




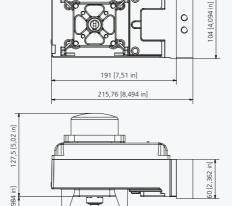


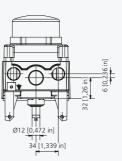
HW valve controller





4 [0,157 in] 4 [0,157 in]





Nomenclature HW N1 2 2 2 - 3 T W 9 7 P 3 0 HW= Aluminium control unit enclosure Switch

01 = Electro mec. switch, SPDT, silver contacts, up to SIL3 (Switch qty: 2,3,4; Terminal digit: 0; temp digit: S)

03 = Electro mec. switch, SPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

15 = Electro mec. switch, DPDT, silver contacts, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: S)

16 = Electro mec. switch, DPDT, gold contacts, up to SIL3, Exia ready, (Switch qty: 1,2; Terminal digit: 0; temp digit: S)

17 = Magnetic reed SPDT, hermetically sealed, up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

18 = Magnetic reed DPDT, hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

19 = Mag. proximity SPDT silver hermetically sealed up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

10 = Mag. proximity DPDT silver hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

11 = Mag. proximity DPDT silver hermetically sealed up to SIL3, Exia ready, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

12 = Inductive proximity NBNA-12GM40-Z0 2 wires, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

13 = Inductive proximity NBB2-V3-E2, PNP NO, up to SIL3, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

14 = Inductive Proximity NBAB2-V3-E2, PNP NO, NDC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

15 = Inductive NAMUR proximity SI3,5 SN, 2 wire, ND O/NC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

16 = Inductive NAMUR proximity SI3,5 SN, 2 wire, ND O/NC, (Switch qty: 1,2,3,4; Terminal digit: 0; temp digit: S)

17 = 4-20mA analog position transmitter, (Switch qty: 0; Terminal digit: A; temp digit: S)

18 = 4-20mA Analog position transmitter, Exia ready, (Switch qty: 1,2; Terminal digit: A; temp digit: S)

19 = Profibus communication card PG = Profibus communication card See additional information and options on pages 5-7 and 14-15 vitch Quantity

= no switches for digital feedback
= N° 1 switch (related to switch description)

2 = N° 2 switch (related to switch description)

3 = N° 3 switch (related to switch description)

4 = N° 4 switch (related to switch description) 0 = Pre-wired terminal strip with additional extra poles for solenoid valve connection (for switches 01, 03, 1F, 06 C4, C8, N1, N3, 32, 70, 62, 73, 75)

A = Pre-wired terminals without solenoid valve connection (for switches N4, 62, T0, T1, H0) Coating
0 = Black polyester powder coating (only for aluminium) **Cable Entries** 2 = 2 cable entries ½" NPT 2 = 2 cable entries M20x1.5 3 = 2 x ½" NPT + 1 x ³/₄" NPT cable entries 4 = 2 x M20 x 1.5p + 1 x M25 x 1.5p cable entries 0 = Red and green visual position indicator See additional information and options on page 11 Weather proof limit switch boxUL certified box See additional information and options on page 13 Marking
0 = Ordinary location
A = CULUS normally location See additional information and options on page 13 IP Protection rating
1 = Weather proof IP66/IP67
7 = Nema 4 4X = Ambient temperature range: -10 to +50 °C (+14 to +122 °F)For optional HW limit switch box without solenoid pilot valve please follow SF, SS temperature options. Material and solenoid valve selection Aluminium heavy duty body and cover
 Aluminium heavy duty body and cover die-cromated, 5/2 way aluminium solenoid valve, single coil
 Aluminium heavy duty body and cover die-cromated, 5/2 way aluminium solenoid valve, double coil Coil Rating
2 = Coil rating: 12 VDC 2, 3 W
3 = Coil rating: 24 VDC 2, 3 W
4 = Coil rating: 24 VAC 2, 8 VA
5 = Coil rating: 110 VAC 2, 8 VA = Coil rating: 230 VAC 2, 8 VA Pneumatical Connection
A = ½" NPT/F pneumatical connections

rotoric Limit Switch Boxes 3

The Rotork KN and KNC mounting kit series have been designed to mount almost any device on a NAMUR pattern actuator.

KN and KNC mounting kits are made from AISI 304 stainless steel to provide a reliable solution to install your ISO F05 drilled device to complete the automated valve package.

NAMUR pattern VDI / VDE 3845	KN	KNC	KN07
30 x 80 pinion height 20 mm	01	01	OK
30 x 130 pinion height 30 mm	02	02	OK
30 x 80 pinion height 30 mm	03	03	OK
30 x 130 pinion height 50 mm	04	04	OK
30 x 80 pinion height 40 mm	05	_	OK
30 x 130 pinion height 40 mm	_	05	OK
25 x 50 pinion height 20 mm	_	32	_
Mounting kit dedicated to all Soldo limit switch box series (excluding SP, SM series)			_
Adjustable mounting kit dedicated to SK and SQ series only	_	_	

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Linear mounting kit

Linear diaphragm and piston actuators have always been problematic to mount, often requiring external switches to indicate position, therefore losing the flexibility and benefits of a limit switch box.

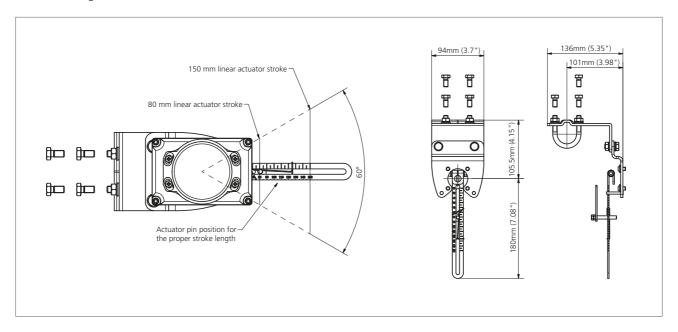
With the linear universal mounting kit, we provide a proven system to fit every limit switch box in our range to a linear valve from 20 up to 250 mm stroke with two different kit layouts: 20-150 mm stroke; 100-250 mm stroke.

The mounting kit includes a specific position dome indicator, perfectly showing the open/close position status.

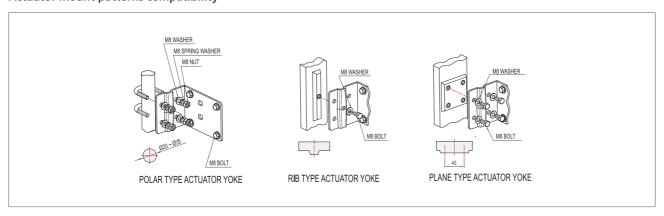
The graduated lever system, combined with the remote pin connection, offers great flexibility to fit a huge variety of systems and offers precise adjustment on the go.

Indicator type F (60° rotation) needs to be chosen when using linear mounting kit.





Actuator mount patterns compatibility



rotork Limit Switch Boxes 37

We offer specialist expertise to support missioncritical flow control and instrumentation solutions across oil and gas, water and power, and chemical, process and industrial markets.

With a global presence and decades of experience, we offer services including installation, commissioning, Reliability Services, Intelligent Asset Management (iAM), product upgrades, spare parts, and overhauls.

Our engineers are highly trained, ensuring consistent, highquality service worldwide. We operate dedicated workshops for the repair, calibration and testing of our products and only use genuine parts to guarantee top-level performance and reliability.

Our service offering covers four key areas:

- Connected Services including Rotork's Intelligent Asset Management (iAM) system
- **Field Services** including site support, upgrade solutions, valve automation and spares
- **Reliability Services** including health checks and product maintenance
- **Support Services** including technical training and support



38 Limit Switch Boxes rotork



Connected Services

Intelligent Asset Management (iAM) is a cloud-based system for intelligent Rotork actuators and the flow control equipment they operate. Effective asset management and maintenance are essential for maintaining site uptime.



Reliability Services

Reliability Services is a customisable approach to maintenance, with options that provide progressively increased levels of coverage and support. Our tailor-made programmes increase reliability and availability and allow customers to have flexibility about what services are most appropriate for them.



Field Services

Site Support

Benefit from our on-site support, from installation to emergency repairs.

Upgrade Solutions

Make sure your assets are prepared for the future with suitable upgrade options.

Valve Automation

Achieve precise and consistent flow control with automation of existing valves and replacement actuator/valve packages.

Spares

Maximise performance and reliability with genuine OEM spare parts.



Support Services

Technical Training

Our products and solutions are used in mission-critical applications and it is critical that any workforce is highly trained to ensure a safe and efficient plant. We provide advanced technical training from our strategically located facilities around the world.

Technical Support

We provide expert technical support exactly when you need it – trusted by global industries for over 60 years. Our technical experts draw on decades of our experience to provide you with the right answers and solutions.

rotork Limit Switch Boxes 39



Contact us now

mail@rotork.com www.rotork.com