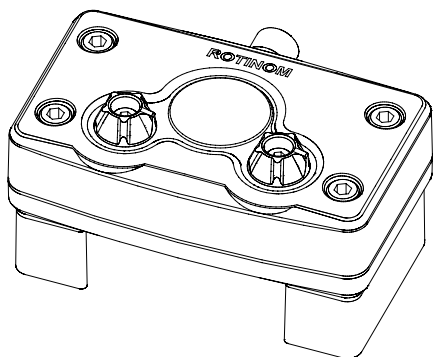


Overview of Limit Switch Boxes

Signal devices (limit switches, position control, position sensing) are used to report and control the position of valves. Switches and sensors of different technical specifications can be installed into boxes and mounted on pneumatic part-turn valves or directly on valves.

Depending on the design, switches and sensors are also suitable for application in hazardous environments. ROTECH offers different housing design and material which are perfectly adaptable to the application required.

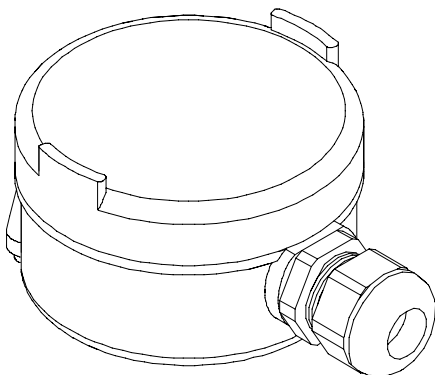
Signal device ROTINOM



ROTINOM represents a compact and low cost solution for monitoring the positions of part-turn valves. For plenty of applications a compact design is most important. Especially for the automation of small units for indoor solutions the installation height is of decisive importance. ROTINOM is the answer to this requirement. Ready for the most compact direct mounting on the actuator. Equipped with M12 cable gland, a quick replacement and service is guaranteed. It is possible to adjust the end position very easily over a range from 0° to 180° without opening the box.

▶ page 12

Signal device PB - Series

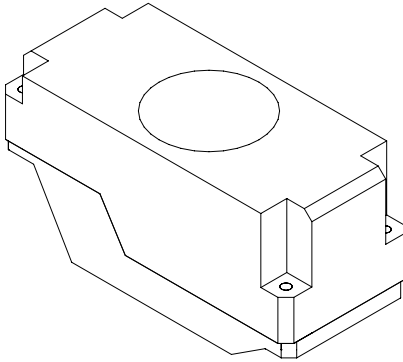


The advantages of the Proxi-Box are obvious: very compact, robust round design, optionally available with high vision beacon, a position indicator which allows visual control of the valve position from a great distance. Combination of colours for indicator can be specified by customer. Apart from these visible features, the high qualities inside are also notable: a wide range of double sensors and microswitches installed in our PB-housing offers a cost-efficient and flexible solution for many applications.

▶ page 14

Overview of Limit Switch Boxes

Signal device TCR - Series

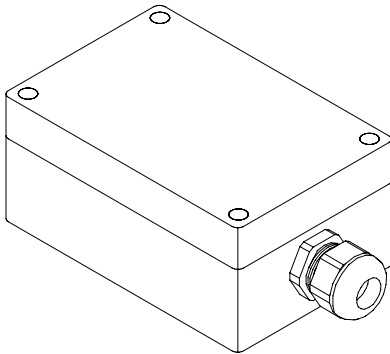


The universal box has a lot of advantages. The housing design with height offset protects the connection of the sensor against mechanical wear. It is possible to mount all standard sensor designs and models in this housing. The connections inside the box are readily accessible and offer ease of use and ease of inspection.

LED status indicator, optional high vision beacon and the connection of up to 2 solenoid valves are additional features of this flexible box design. Although the housing design is compact it is possible to install up to 4 microswitches or 4 slotted proximity sensors. Thanks to the flexible design of this housing we are able to realize customized solutions very fast and at affordable cost.

▶ page 26

Signal device ET - Series

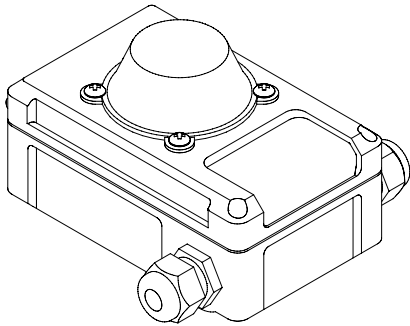


Rectangular, practical, good. Housing in standard design, symmetrically assembled offers enough space for ease of mounting for a great variety of switch models. Easy to mount also on actuators and valves. For all connections we offer a wide range of mounting brackets. Also technical details are striking: mounted with spring loaded feather connecting shaft for the height compensation, individually adjustable position indicator at the shaft. Suitable for traverse and in line to the flow direction of the installed actuators. The adjusted end positions are secured against any unintentional release. Optionally solenoid valves can be connected directly into the housing.

▶ page 52

Overview of Limit Switch Boxes

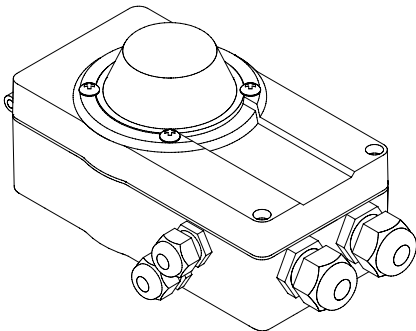
Signal device COM - Series



The innovative design of the very robust aluminium COM-Box is convincing. With the comfortable solution of the hinge for the cover new dimensions are achieved in ease of service and ease of use. Optimized sealings guarantee durable tightness. A newly developed two way breathable membrane avoids condensed water inside the box. The external position indicator of the cover is available in pure glass and various other materials. The COM-Box is robust, innovative, technically leading, durable.

▶ page 66

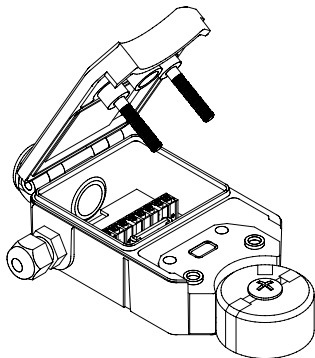
Signal device ALB - Series



The ALB-Box is the direct result of further development of our COM-Box with all features and benefits. The ex-proof (Ex e) box fits perfectly in the most demanding plant conditions and offers numerous technical benefits. The interior design allows installation of 2 separate switching networks. A convenient solution, which was only possible with 2 housings in the time before ALB-Box was created. Available with sensors of different designs and connections for solenoid valves, this new creation fits perfectly in different applications and diverse process plants.

▶ page 74

Signal device FMV - Series



FMV is the abbreviation for F25 (= form F25) and MV (= Magnetventil) which means solenoid valve. An excellent solution, which offers the most convincing advantages for MSR-service support. The FMV serie allows fast and most reliable maintenance. The fastening of the box is used to open/close and to change the sensor. Very easy to maintain, and thanks to the large cable terminal compartment and the plug-in connection of the sensor wiring it is very comfortable. Thanks to the diversity of design and feature it is suitable for explosion proof or non explosion proof locations.

▶ page 78

ROTINOM

The very compact design suits perfectly in plants where space is small. The low profile box with 35 mm height only is perfect for direct mounting on the actuator. Especially for small actuators the space benefit is significant. Directly mounted on standard connection 80 x 30 mm, the amount of installation time and cost is greatly minimized. Very efficient is the M12-plug-in connection, which offers ease of service and ease of mounting and allows a faster change. The box is exactly pre-adjusted. Without opening the box, it is possible to adjust the end positions within the range of 0° - 180° very easily.



Benefits

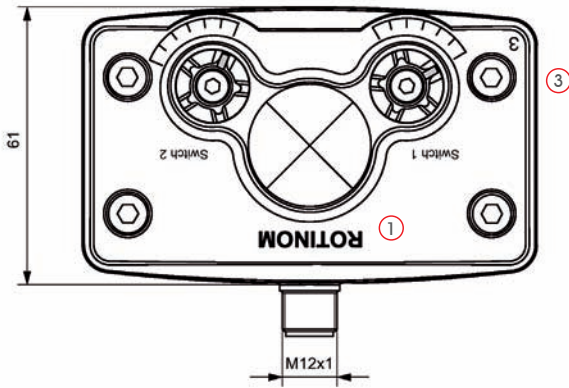
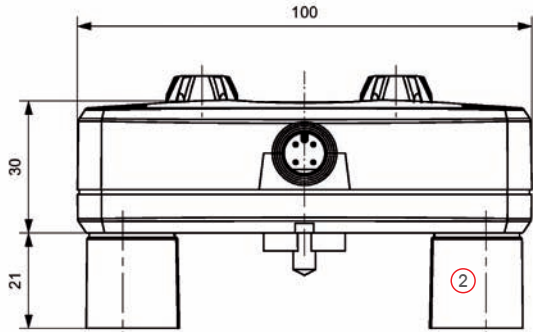
- Very compact design, fast and easy direct installation
- Fast and easy adjustment of end position with external turning knobs
- Ease of service electrical M12-plug-in connection



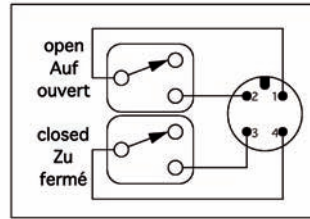
technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching capacity	2 A, max. 230 V ~	0,1 A, max. 230 V ~
Contacts	nickel-silver	gold alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP65	IP65
Housing material	ABS	ABS
Connection	M12-plug connection	M12-plug connection

dimensions

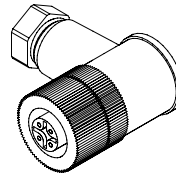


wiring diagram



accessories

KDM12W4PG7



basic schedule

Pos.	Pcs.	Description	Material
1	1	ROTINOM	ABS
2	2	Spacer *	ABS
3	4	Screw DIN 7984 M5x30	A2

product key ROTINOM

R	Design	ROTINOM
CR	Make	Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
AZ	Display	AZ = Open + Closed
B	Version	230 V

product key attaching parts

ROTINOM	Design	ROTINOM
A0	Accessories	A0 = attaching parts actuator size 0 A2 = attaching parts actuator size 2

* attaching parts for actuator size 1 included in delivery of ROTINOM package.

Proxi-Boxes - General Information

The PB-box (Proxi-box) with ease of service screwable cover and very compact design is available in numerous different specifications. For the sensing of end positions or intermediate positions of pneumatic actuators or valves, double sensors of different designs, e.g. square proximity switch or microswitch can be utilized. Each end position is adjustable in the range from 0° - 360°. The preset position is secured by serrated cams against unintentional releases caused by vibrations. Specified sensors can be implemented with damped or undamped end position thanks to the design of the cam. The shock-resistant Vestamid housing protects the installed signal devices against dirt and mechanical wear. The housing cover of the PB-box is available in transparent Macrolon or black Vestamid.

We have created a high vision beacon cover, a position indicator, optionally available with different combination of colors which is highly visible from a great distance.



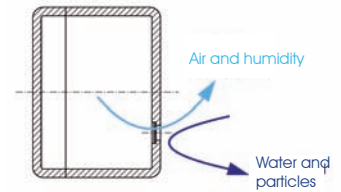
Benefits

- Very compact design
- Very competitive price and ease of service thanks to the persuasive technical construction
- Switching points individually adjustable in the range from 0° to 360°
- Highly visible position indicator

The better the sealing of a box is the bigger the problem with condensed water when the temperature fluctuation is extreme. By integrating a waterproof, but air permeable membrane, the air inside is able to interchange with the air outside. As a result, condensed water can be avoided. The two way breathable membrane is standard in all our Proxi-boxes.

Benefits

- No condensed water by integrating a steam permeable membrane, which ensures a durable and reliable „breathing“ of the housing.
- High protection class, because the microporous structure of the membrane prevents the ingress of microparticles and salt crystals. It also mechanically protects thanks to the lattice structure.
- Cost saving, because a dry cable terminal compartment does not cause corrosion, as a result, there is no maintenance service required.



two way breathable membrane

options

Model with transparent Macrolon cover.



Model with solid Vestamid cover.

Instead of flat Macrolon or Vestamid cover the Proxi-boxes are also available with a high vision beacon cover.



Microswitches

The PB-box with microswitches is a very cost-saving choice to detect end- or intermediate-positions of pneumatic positioning-actuator and valves. The microswitch is preferred in cases when the operating voltage is not specified by special requirements. When used as a potential free contact, there are no limits of controlling possibilities.

Though the construction is simple, the microswitch box allows a separate adjustment of the switching points. The adjusted setting of the end position is secured against unintentional releases caused by vibrations thanks to the serrated cams.



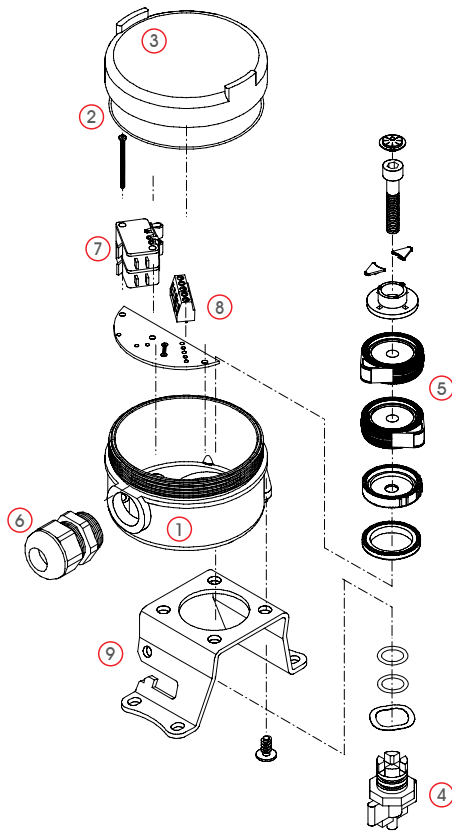
Benefits

- Very compact design
- As a potential-free change-over contact universally applicable
- Switching points individually adjustable in the range from 0° - 360°

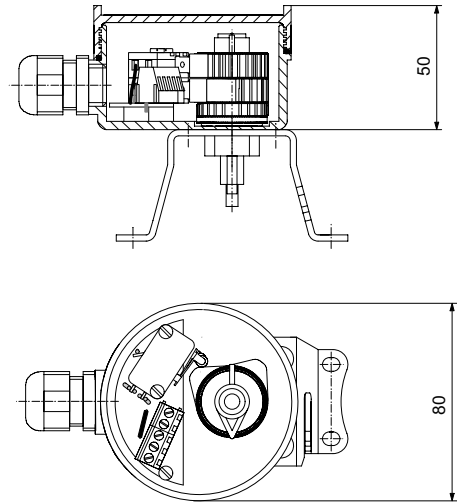


technical data

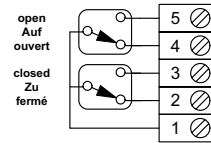
Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	silver-nickel	gold-alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65	IP 65
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black), position indicator	Makrolon (transparent), Vestamid (black), position indicator
Sealing	NBR	NBR
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams adjustable	POM, A2
6	1	Cable gland	-
7	2	Microswitch	-
8	1	Terminal block, 5-pole	-
9	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
M	Housing cover	M = Makrolon V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

3-Wire Double Sensor

To use double sensors with integrated cable clamp in the PB-box is the best way to couple compact design with the greatest ease of use. The covers of this model are flexible to combine: flat Makrolon or Vestamid cover or high vision beacon with position indicator. As in the other boxes, the adjusted position of the PB-box is secured by the serrated switching cams against unintentional releases caused by vibrations.



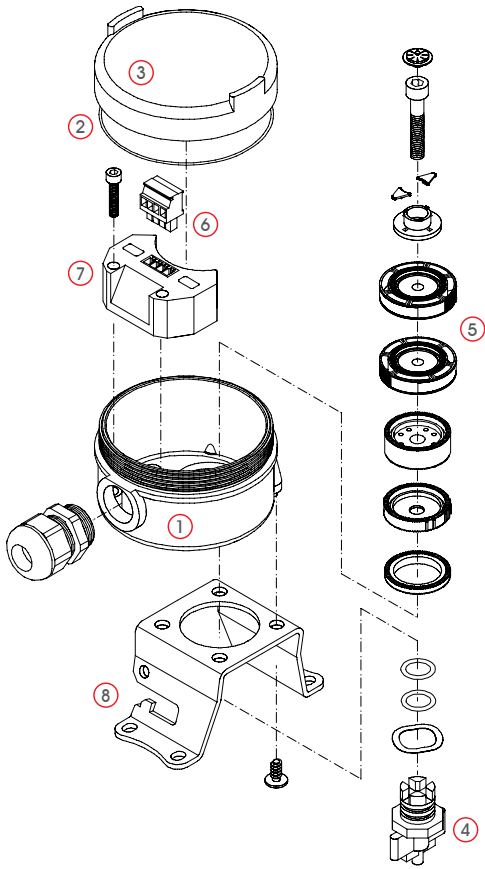
Benefits

- Very compact design
- Very cost-saving and ease of use thanks to the simple mechanical construction
- Available with highly visible position indicator

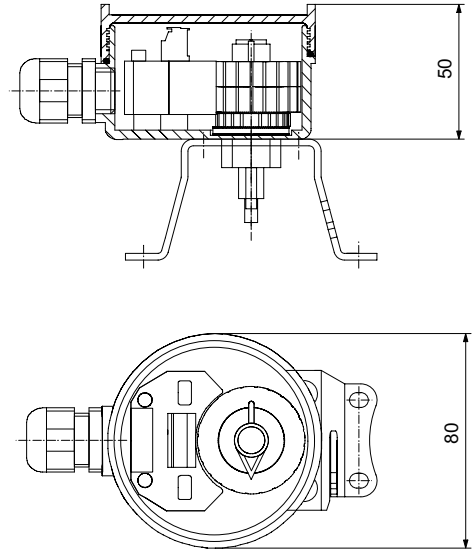


technical data

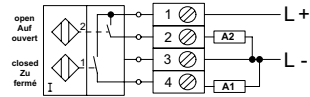
Manufacturer	Pepperl + Fuchs
Type	NBN3-F25F-E8-P
Operation switching element	3-wire, PNP Dual NOC
Operating distance	3 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 200 mA
Residual current	0 ... 0,5 mA
No load current	≤ 25 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (housing) IP 60 (sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black), position indicator
Sealing	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams adjustable	POM, A2
6	1	Terminal block, 4-pole	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8-P
P	Connection	Cable clamp (pluggable)
M	Housing cover	M = Makrolon V = Vestamid S = High vision beacon
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

Ex ia -Double Sensor with Cable Clamp

In this PB-box a 2-wire double sensor is installed. This technology is commonly used in the chemical industry and in general Ex-proof areas. The double sensor is intrinsically safe because of the low potential and therefore require no additional explosion protection measures. A plug-in cable clamp is integrated in the sensors. This cable clamp offers very comfortable and fast wiring when installing the box.



Benefits

- Very compact design
- Ease of service thanks to the simple mechanical construction at affordable cost
- Available with highly visible position indicator

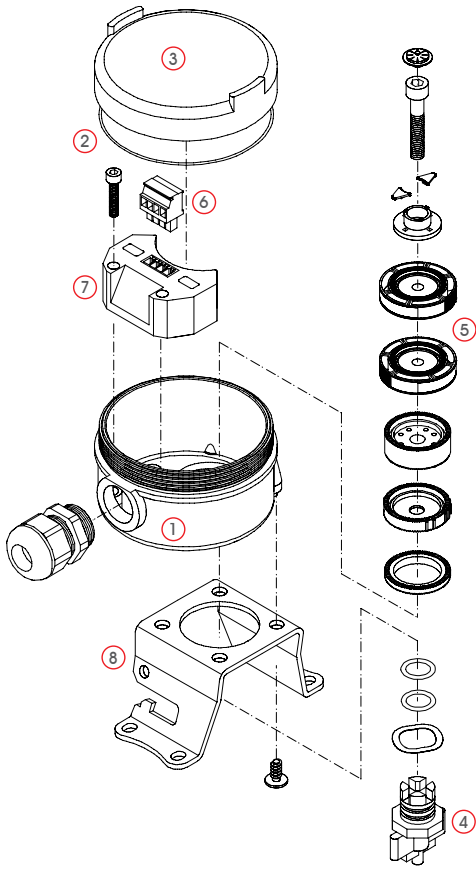


II 2G Ex ia IIC T6

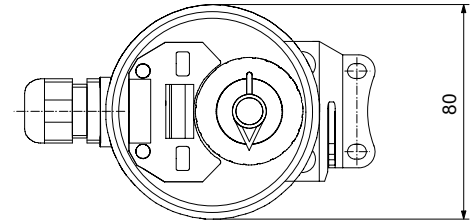
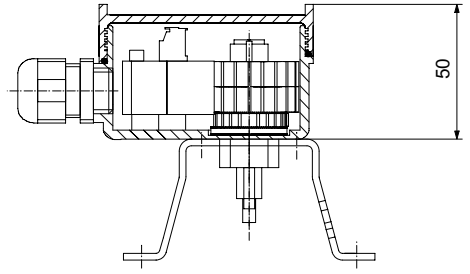
other protection classes available

technical data

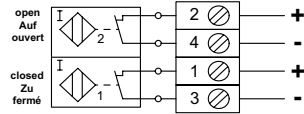
Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4-P
Operation switching element	Dual NCC NAMUR
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Operating distance	3 mm
Rated voltage	8 V DC
current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
No load current	≤ 3 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 60 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid (black)
Housing cover	Vestamid (black)
Sealing	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	Vestamid
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	Terminal block, 4-pole	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 oder PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25N	Type	F25N = NCN3-F25F-N4-P
P	Connection	Cable clamp (pluggable)
V	Housing cover	V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

3-Wire Double Sensor

The PB-box with double proximity sensor and M12-plug-connector or cable is greatly easy to install and to maintain. It is not even necessary to open the box for the connection to a control system. But it is simply to connect by a plug-in connector or by cables into a terminal compartment. The shock-resistant Vestamid housing protects the sensor against dirt and mechanical wear. The cover of the housing is available in black Vestamid with flat design or transparent Makrolon, flat design or with high vision beacon position indicator. The adjusted end position is secured by the serrated switching cams against unintentional releases caused by vibrations.

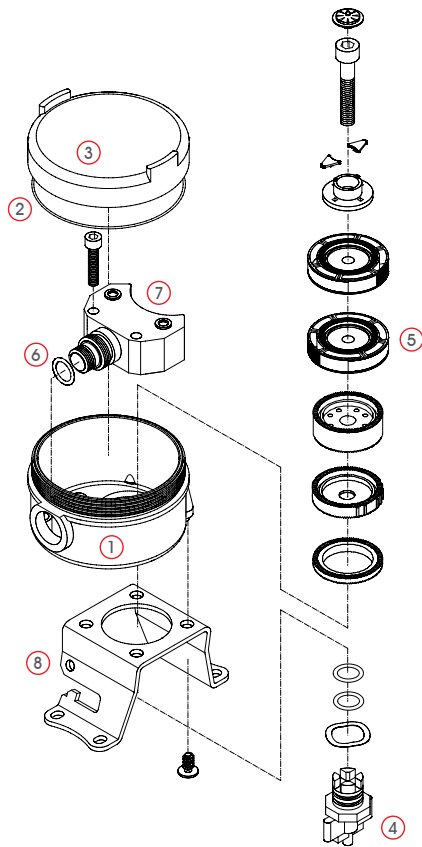


Benefits

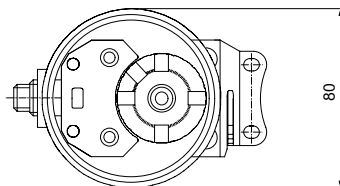
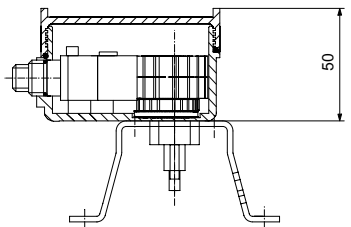
- Very compact design
- Available with different connection possibilities
- Available with highly visible position indicator

technical data

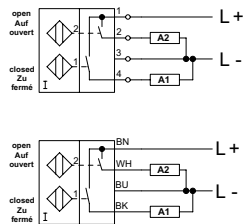
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NBN3-F25F-E8	NBN3-F25F-E8-V1
Operation switching element	3-Wire, PNP Dual NOC	3-Wire, PNP Dual NOC
Connection	Cable 5m	M12-plug-connection
Operating distance	3 mm	3 mm
Operating voltage	10 .. 30 V DC	10 .. 30 V DC
Operating current	0 ... 200 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	0 ... 0,5 mA
No load current	≤ 25 mA	≤ 25 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤0,5°	≤0,5°
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black)	Makrolon (transparent), Vestamid (black)
Sealing	NBR	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	O-ring seal	-
7	1	Double sensor inductive	-
8	1	bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8
S	Connection	K = Cable 5m S = M12-plug-connector
M	Housing cover	M = Makrolon V = Vestamid S = high vision beacon
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

Ex ia - Double Sensor

The PB-box offers intrinsic safety, in addition, highest grade of protection against environmental influences and mechanical wear. The electrical connection is possible without opening the box thanks to the M12-plug-in connector or integrated cable. There is no better protection against environmental influences. 2-wire technology sensors are commonly used in the chemical industry and in hazardous areas. The double sensor is intrinsically safe thanks to its low potential and requires therefore no additional explosion protection measures. The pre-adjusted position of the end positions is secured by the serrated cams against uncontrolled releases caused by vibrations.



Benefits

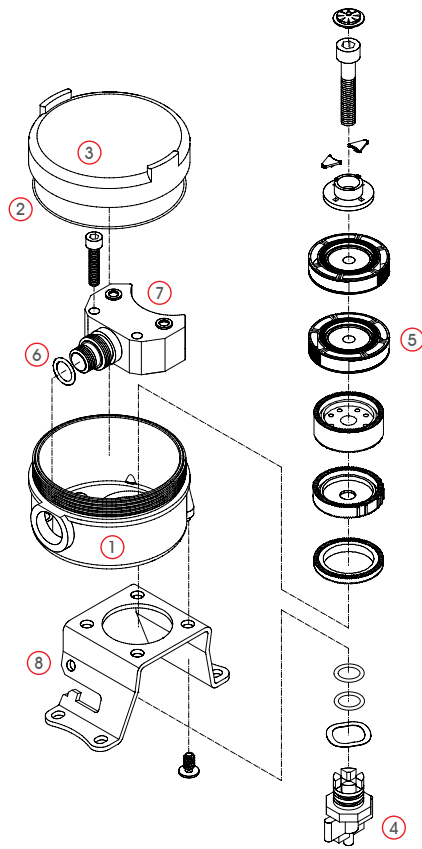
- Very compact design
- Available with different connection possibilities
- Fully adjustable switching points in the range from 0° - 360°



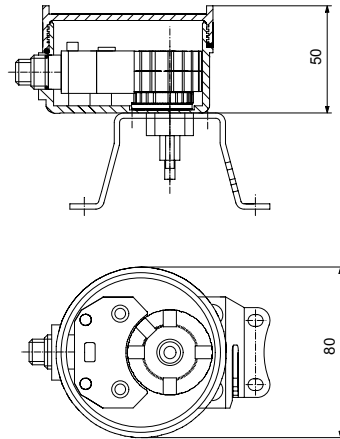
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

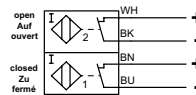
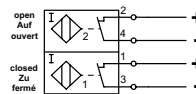
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NCN3-F25F-N4	NCN3-F25F-N4-V1
Operation switching element	Dual NC NAMUR	Dual NC NAMUR
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Connection	Cable 5m	M12-plug
Switching distance	3 mm	3 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Off-load voltage	≤ 3 mA	≤ 3 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 65 (Sensor)	IP 65 (Housing) IP 65 (Sensor)
Switching precision	≤0,5°	≤0,5°
Housing base	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black)	Vestamid (black)
Sealing	NBR	NBR
Connection	Cable gland M20x1,5, pluggable cable clamp	Cable gland M20x1,5, pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	Vestamid
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	O-ring seal	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25N	Type	F25N = NCN3-F25F-N4
S	Connection	K = Cable 5m S = M12-plug
V	Housing cover	V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

TCR-Boxes - General Information

The TCR-housing is a „large capacity“ box with compact design. Although with small dimensions it is possible to implement up to 4 microswitches, 4 slotted proximity sensors or 2 cylindrical proximity sensors (even up to size M18 x 60 mm incl. cable outlet).

The following matrix shows the possibility of combinations for signal devices and covers.

Housing cover	Makrolon	Makrolon (with high vision beacon)	Vestamid	Vestamid (vision panel)	Vestamid (with high vision beacon)	Aluminium
Signal device						
Microswitch	•	•	•	•	•	•
Microswitch Ex d			•			•
proximity switch	•	•	•	•	•	•
proximity switch Ex ia			•	•	•	•

Benefits

- Very compact design
- Ease of service thanks to the simple mechanical construction at affordable cost
- Switching points individually adjustable in the range from 0° - 360°
- Highly visible position indicator

The revolutionary design with NAMUR interface (according to VDI/VDE 3845) inside offers a safe installation of all switching components, which is created for direct mounting on pneumatic actuator. A compensating element with similar effectiveness like the approved two way breathable membrane avoids condensed water forming inside the housing even at extreme variation of temperature. Actuators and mounted accessories, e.g. limit switch boxes are often misused as steps in plants. Therefore we have found the way to protect the cable connection in a height offset of the housing. This constructive solution protects the cable connection also against heavy rain, because installed in the standard position the cable gland is covered by the housing or by the actuator. Once the cover is open the terminal block is absolutely freely accessible. As a result, wiring and installation is most comfortable and very fast. In addition, the possibility for a direct connection of a solenoid valve is integrated as standard in the base of the housing. As a result, the installation time is optimized and offers the user the control of the part-turn valve actuator and the detection of the end positions with one cable only.

The cover, used as a protection for the implemented switching components, has to withstand the most demanding and extreme plant conditions. To satisfactorily meet the requirements of each applications, the TCR-cover is available in several designs.

For the indoor application we especially recommend the transparent Makrolon cover. It allows the operators to see the status of the position sensor and the illuminating diode of the sensors without opening the box. For the outdoor application, in areas with high static charge and in hazardous areas, the black Vestamid cover suits your needs perfectly. Endurance tested for resistance to light exposure, high and low temperatures and extreme low surface resistance are the most important features for these applications. The cover, made of die casting aluminium is extremely robust. It can be used as „heavy-duty-cover“ suitable for all harsh conditions.



Position indicator

Each limit switch box of the TCR-series, including the design with Vestamid or aluminium cover, is available with a high vision beacon. This highly visible position indicator allows visual control of the valves position from a great distance. Combination of colours for the high vision beacon can be specified by customer.

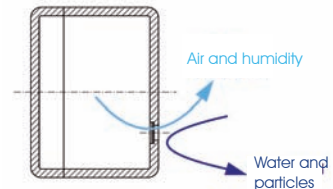
Options



Additional M12 solenoid valve connection available



Additional LED indicator available

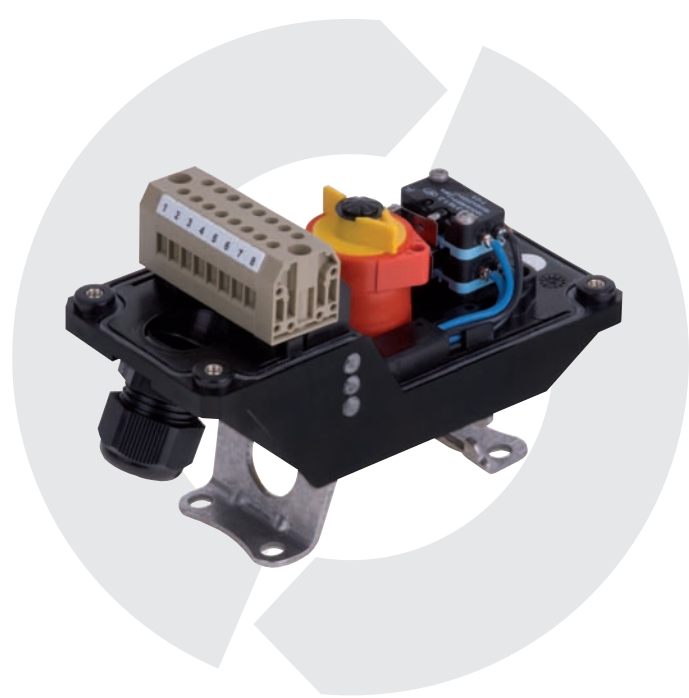


two way breathable membrane

TCR-limit switch boxes are standard equipped with two way breathable membrane

Microswitches

Microswitches are very compact, suitable for a lot of applications and low-cost solutions for detecting end positions. The TCR-box with integrated microswitches converts the positions of actuators, which are transmitted through the switching shaft in electrical signals. The microswitches in housing are preferred in cases where the operating voltage is not specified by special requirements. When used as a potential free contact, there are no limits of controlling possibilities for the user. The TCR-box allows a separate adjustment of the switching points for up to 4 microswitches in a very easy way. The adjusted setting of the position is secured against unintentional releases caused by vibrations.



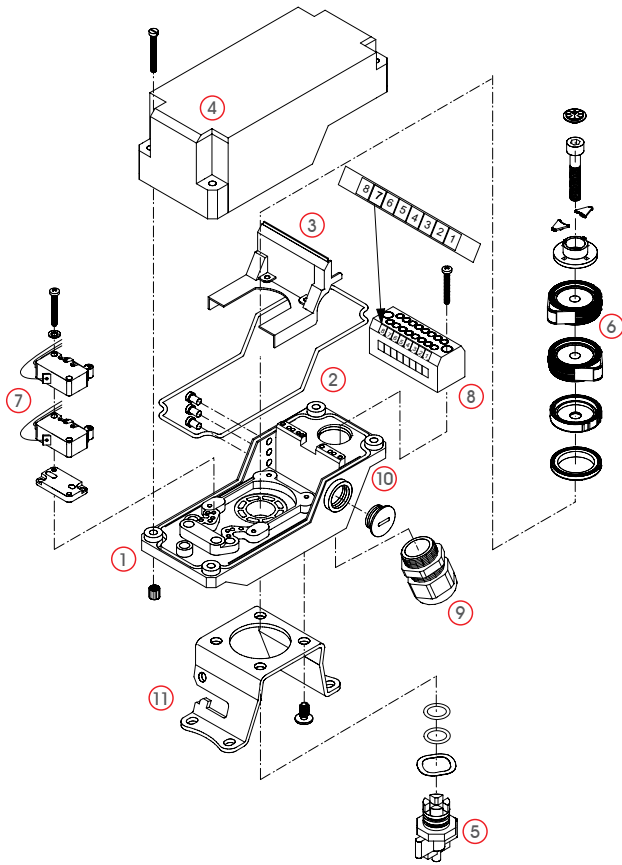
Benefits

- Comfortable, individual adjustment of the switching points using serrated switching cam
- Ease of mounting connection of all components
- Terminal block with possibility for solenoid valve connection
- Optionally with position indicator

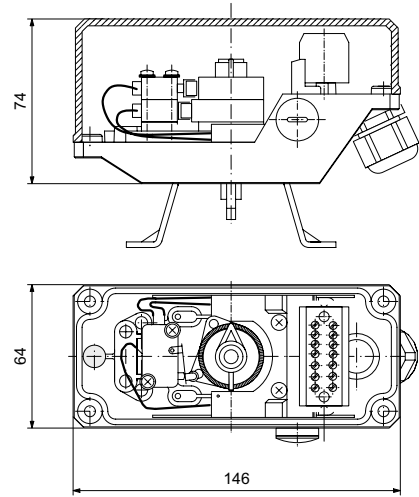


technical data

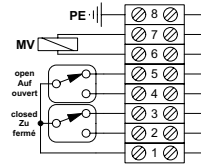
Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching loads	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	gold-alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65	IP 65
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

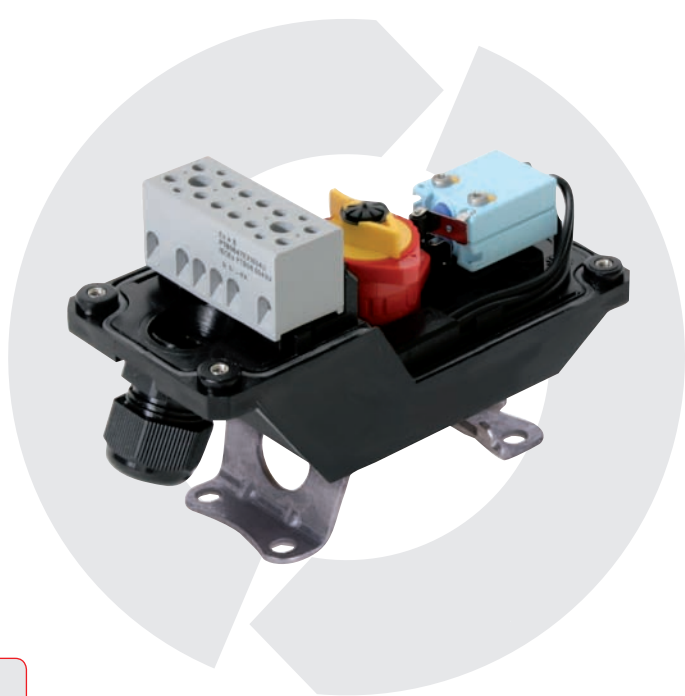
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Microswitch	-
8	1	Terminal block, 8-pole	-
9	1	Cable gland M20x1,5	PA
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

Ex d - Microswitches

The TCR-box, made of shock-resistant Vestamid housing is certified to protection class Ex ed IIC T6 by using components of increased safety. Implementing compact explosion-proof microswitches certified to classification group Ex ed IIC T6, we have created a multi-purpose application, and also competitive limit switch box. When used as a potential free change-over contact, the microswitch offers flexible method of controlling. Like all ROTECH limit switch boxes of the TCR-series, this competitive Ex-box offers also an easy, individual adjustment of the switching points and efficient protection against unintentional releases caused by vibrations.



Benefits

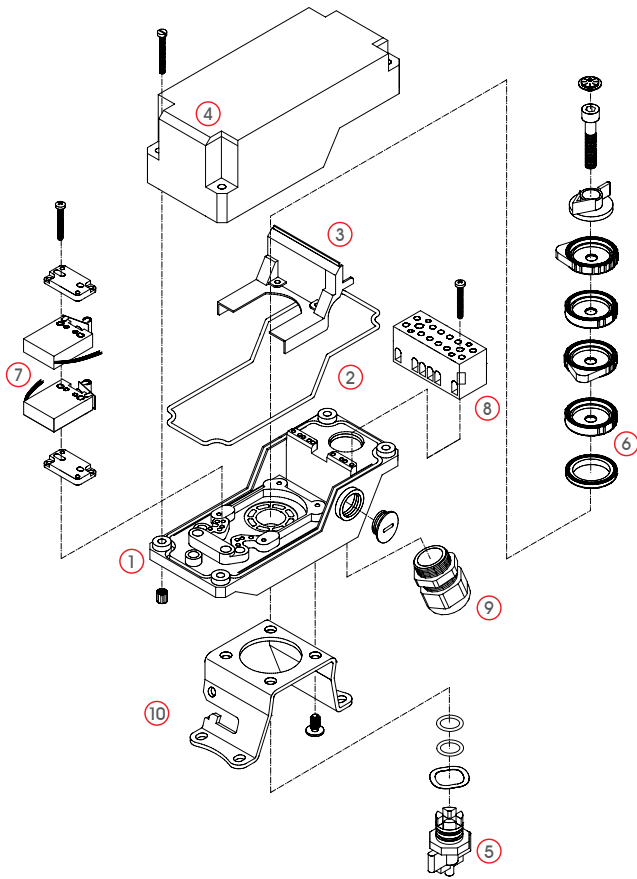
- Indicator „Open“ and „Closed“ individually adjustable by using switching cams
- Very good cost/performance ratio
- Optionally available with aluminium cover



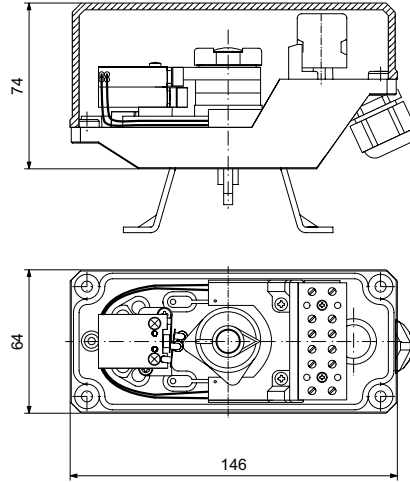
Ex II 2G Ex ed IIC T6
other protection classes available

technical data

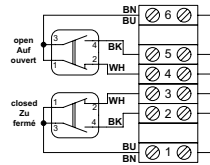
Manufacturer	Crouzet
Type	83.139.1
Operation switching element	Double Pole Double Throw
Type of protection	II 2G Ex d IIC T6 (according to EN 60079) PTB 02 ATEX 1150
Switching loads	4 A, 230 V ~
Contacts	silver-nickel
Mechanical life	5 x 10 ⁶ switching cycle
Temperature range	-20 ... +60 °C
Switching precision	1,5°
Protection class (according to DIN EN 60529)	IP 65 Housing IP 67 Microswitches
Housing base	Vestamid (black) Aluminium
Housing cover	Vestamid (black)
Sealing	EPDM
Connection	Cable gland M20x1,5 (protection class: EEx e II)
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM 60
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid
5	1	TCR-shaft	POM
6	1	Switching cams	POM
7	2	Microswitches (Ex d II C T6)	-
8	1	Terminal block, 6-pole (Ex e II C)	-
9	1	Cable gland M20x1,5 (Ex e II C)	PA
10	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
CR	Make	CR = Crouzet
1	Type	1 = 83.139.1 (Ex d IIC T6)
V	Housing cover	V = Vestamid A = Aluminium
V	Housing base	V = Vestamid
AZ	Display	A = Open M = Middle Z = Closed

3-Wire - Double Sensor

Double sensors are very compact units, which are designed for direct mounting on NAMUR interface. They consist of a one-piece encapsulate component with proximity sensors and a so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. The mechanical positions are converted into electrical position feedback signals. These units can also be integrated very easily into ROTECH TCR-housing, as a result, it is protected from environmental influences and mechanical wear. The application of double sensors allows a very comfortable mechanical construction of the limit switch box. We are able to install sensors of other manufacturers. The adjusted position is secured against unintentional releases caused by vibrations thanks to the serrated cams. The box is available with a high vision beacon position indicator.



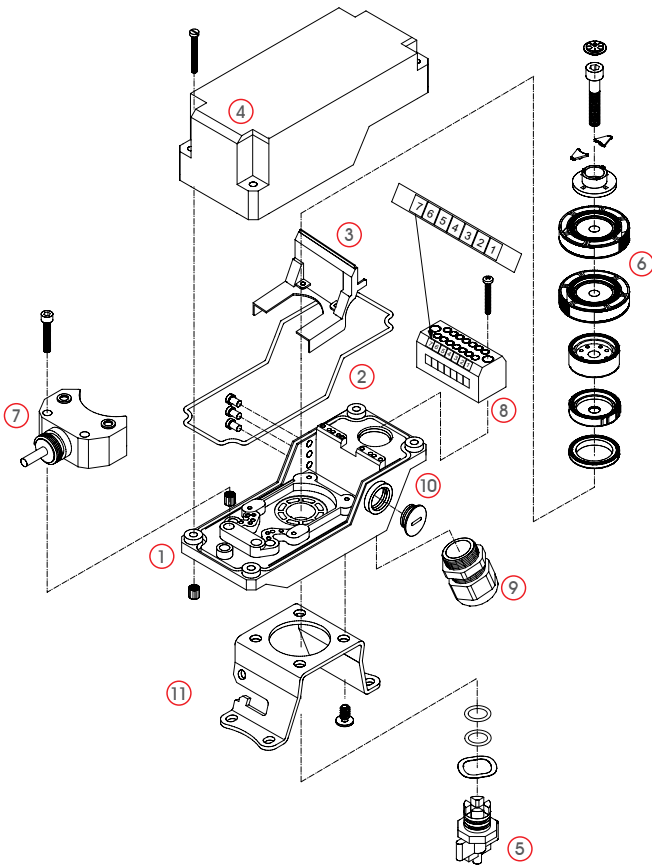
Benefits

- Ease of service thanks to the simple mechanical construction at affordable cost
- Terminal block with possibility of connection for solenoid valves
- Optionally with position indicator

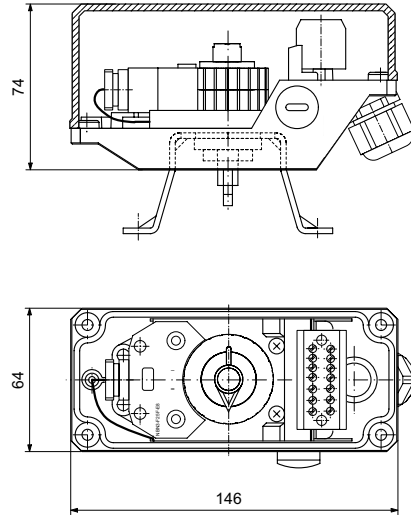


technical data

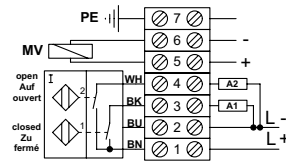
Manufacturer	Pepperl + Fuchs	IFM	Turck
Type	NBN3-F25F-E8	IN5251	Ni4-DS20-2AP6X2
Operation switching element	PNP, Dual NOC	PNP, Dual NOC	PNP, Dual NOC
Switch distance	3 mm	4 mm	4 mm
Nominal voltage	10 ... 30 V DC	10 ... 36 V DC	10 ... 30 V DC
Normal current	0 ... 200 mA	0 ... 250 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	k.A.	0 ... 0,1 mA
Neutral current	≤ 25 mA	k.A.	≤ 15 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +80 °C	-25 ... +70 °C
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing base	Vestamid (black)	Vestamid (black)	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block, 7-pole	-
9	1	Cable gland M20x1,5	PA
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs IF = IFM TU = Turck
F25E	Type	F25E = NBN3-F25F-E8 5251 = IN 5251 4DSAP = Ni4-DS20-2AP6X2
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Double Sensor

The intrinsically safe double sensor is a very compact unit, which is designed for direct mounting on NAMUR interface of actuators. The whole unit consists of one encapsulate component with the proximity sensors and one so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. The mechanical positions are converted into electrical position feedback signals. These units can also be integrated very easily into ROTECH TCR-housing, as a result, it is protected from environmental influences and mechanical damage. The application of double sensors allows a very comfortable mechanical construction of the limit switch box.



Benefits

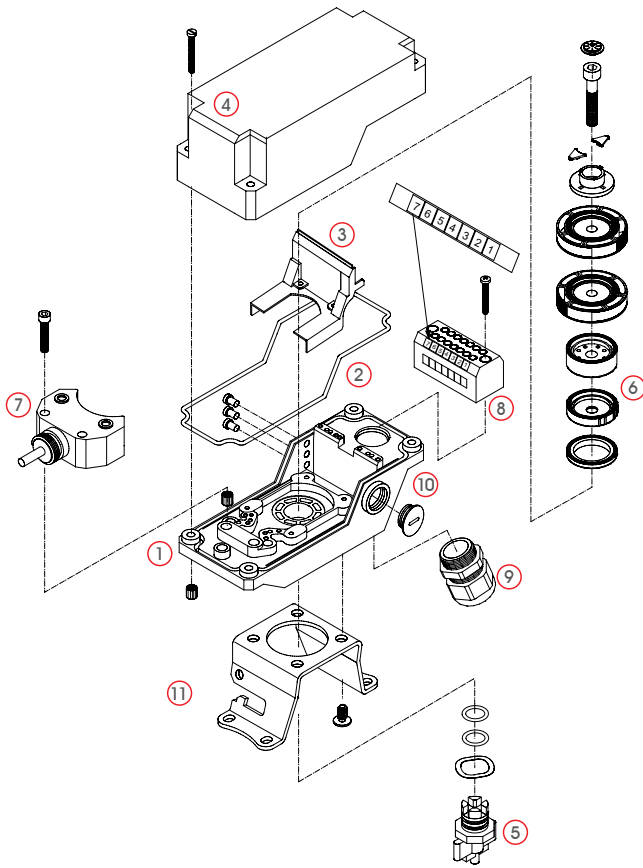
- Very competitive price and ease of service thanks to the simple technical construction
- Switching points adjustable in a range from 0° - 360°
- Optionally with position indicator



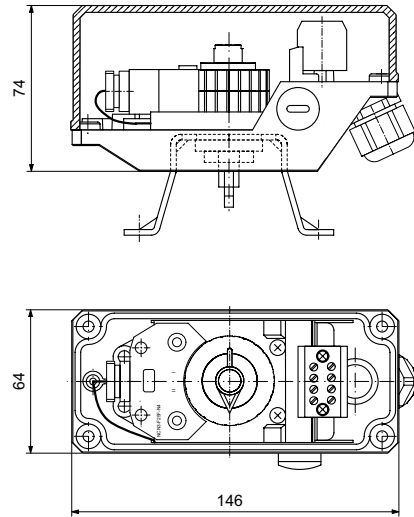
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

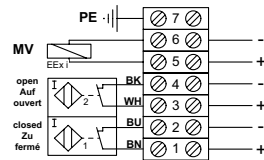
Manufacturer	Pepperl + Fuchs	Turck	IFM
Type	NCN3-F25F-N4	Ni4-DS20-2Y1X2	NN5009
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)	NCC NAMUR	NCC NAMUR
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	3 mm	4 mm	4 mm
Nominal voltage	8 V DC	8,2 V DC	8,2 V DC (1kΩ)
Neutral current	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity		
Temperature range	-25 ... +85 °C	-25 ... +70 °C	-20 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing base	Vestamid (black)	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

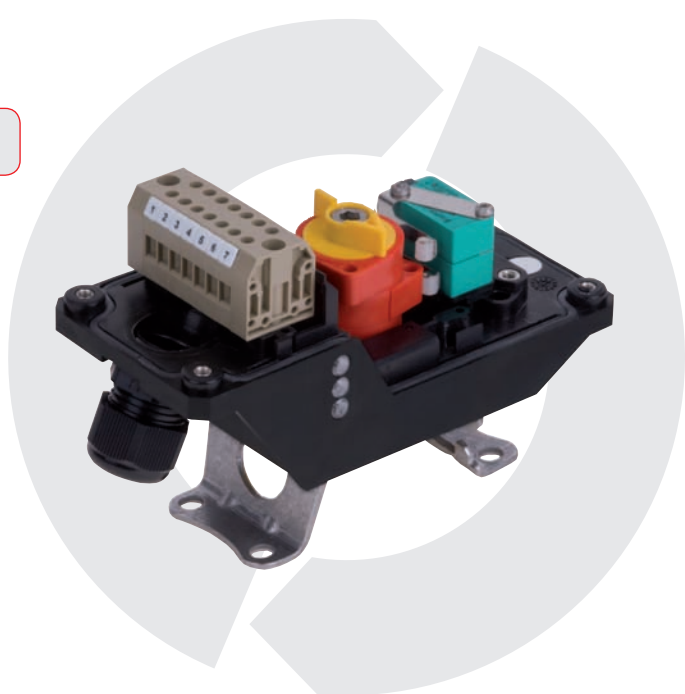
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block 7-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs TU = Turck
F25N	Type	F25N = NCN3-F25F-N4 4DSY1 = Ni4-DS20- 2Y1X2
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

3-Wire-Square Sensors (V3-Version)

The TCR-box with square proximity sensors converts the end positions or intermediate positions of the positioning actuator to electrical signals. The 3-wire sensor is used in several European countries as a contact-free signal device for NON Ex-applications. It is known for its ultimate reliability, because it has an insignificant residual current in locked/closed- and a minimum voltage drop in operating-status. The flexible design of the TCR-housing allows an individual adjustment of both switching points in the full range from 0° - 360°. The yellow, turnable axis is a spring loaded feather connection, which secures a perfect fit into the slotted connection of the actuator. This box model is available with position indicator.

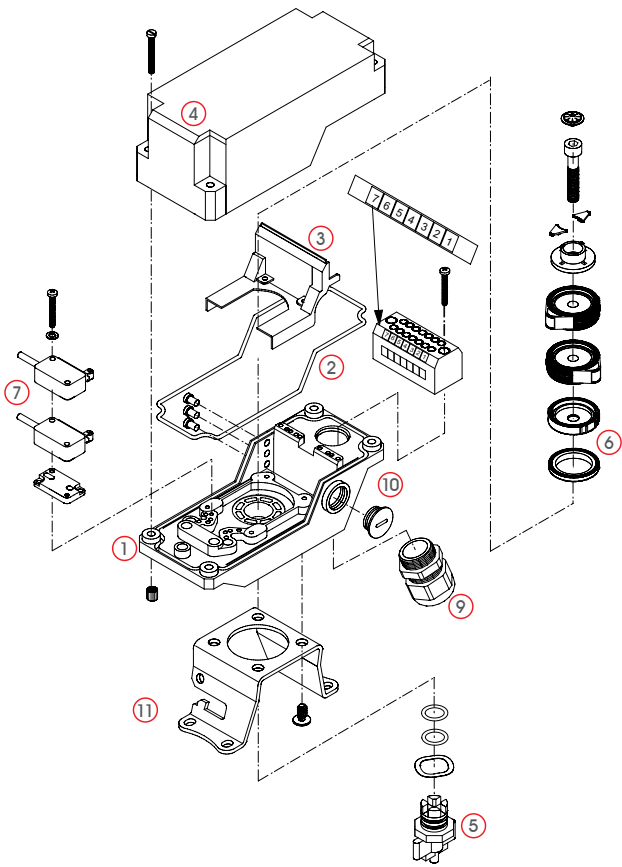


Benefits

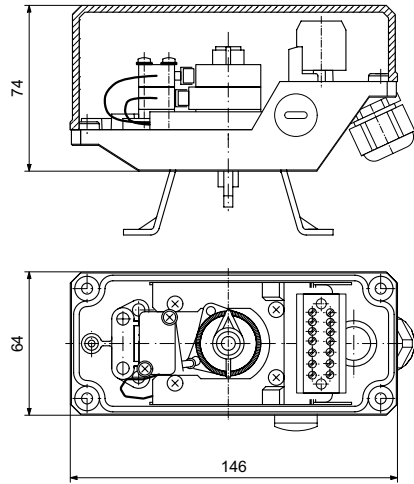
- Easy and precise adjustment of switching points
- Individually adjustable in the range from 0° - 360°

technical data

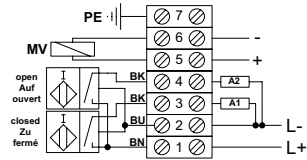
Manufacturer	Pepperl + Fuchs	IFM
Type	NBB2-V3-E2	IS5001
Operation switching element	3-Wire, PNP NOC	3-Wire, PNP NOC
Switch distance	2 mm	2 mm
Operating voltage	10 ... 30 V DC	10 ... 36 V DC
Operating current	0 ... 100 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	
Load current	≤ 15 mA	
Output	Short-circuit proof, Protected against reverse polarity	-
Temperature range	-25 ... +70 °C	-25 ... +80 °C
Switching precision	≤ 0,5°	≤ 0,5°
Protection class (according to DIN EN 60529)	Housing (IP65) Sensor (IP67)	Housing (IP65) Sensor (IP67)
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

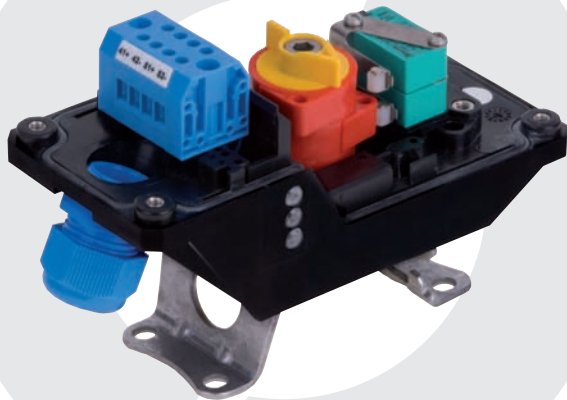
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Sensor	-
8	1	Terminal block, 7-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs IF = IFM
2V3E	Type	2V3E = NBB2-V3-E2 5001 = IS5001
M	Housing cover	M = Makrolon A = Aluminium
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

Ex ia - Square Sensors (V3-Version)

The intrinsically safe TCR-box with square sensors converts the end positions or intermediate positions of the positioning actuators to electrical signals. The 2-wire sensor is intrinsically safe and suitable for the categories 1G, 2G and 1D. The compact sensor is certified for application in SIL2-areas. It offers a switching distance of up to 2 mm and can be used as a NAMUR opener with its nominal voltage of 8 V. Besides these characteristics of the sensor, also all benefits of the TCR-housing is included, e.g. individual adjustment of both switching points in the full range from 0° - 360°; spring loaded feather axis, the connection to the actuator; once the housing is open, all connections are freely accessible; optionally high vision beacon position indicator and more others.



Benefits

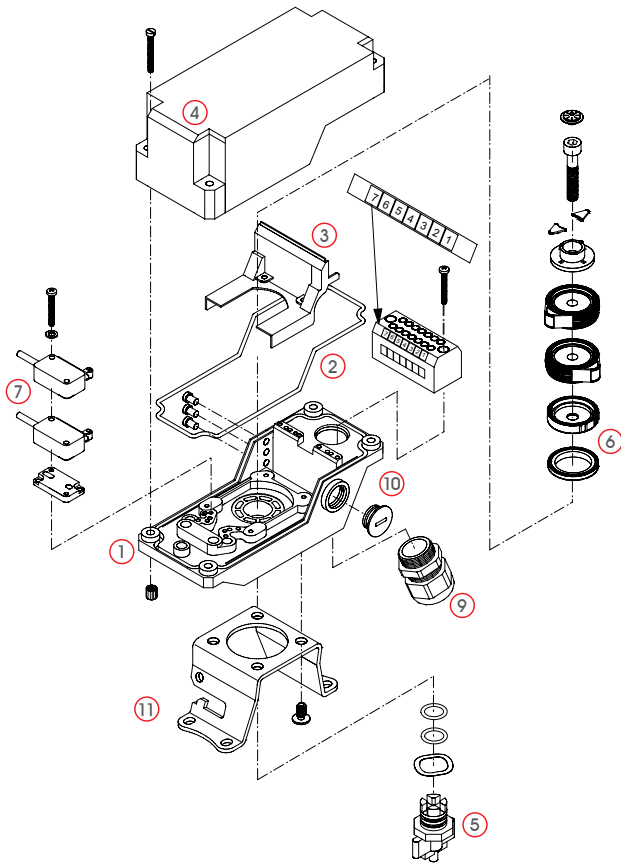
- Easy and precise adjustment of switching points
- Individually adjustable in the range from 0° - 360°



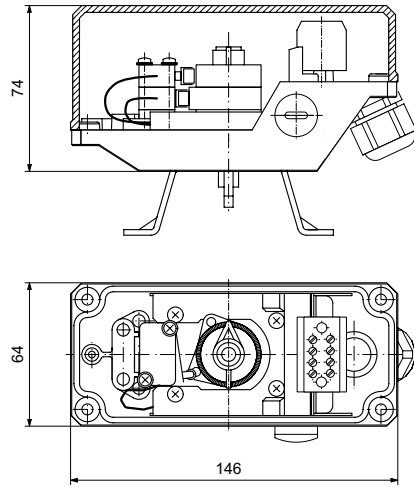
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

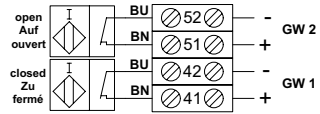
Manufacturer	Pepperl + Fuchs
Type	NJ2-V3-N
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm
Nominal voltage	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
Temperature range	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid, black
Housing cover	Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Sensor	-
8	1	Terminal block, 4-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

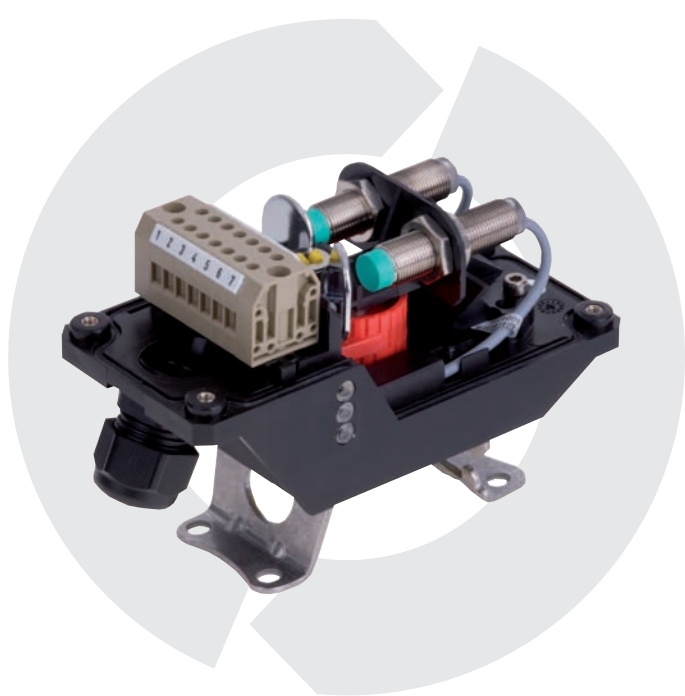
product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
2V3N	Type	2V3N = NJ2-V3-N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

3-Wire Cylindrical Sensor

Cylindrical 3-wire sensors are often used to detect end positions in non-Ex area. They provide the ultimate reliability and safety. In open-mounted application this sensor type is extremely sensitive to mechanical damage and unintentional release of the switching points. Installing the cylindrical 3-wire sensors into ROTECH TCR-housing provides decisive benefits:

The signal devices are protected against mechanical damage and influences of hostile environment. The physical position of the actuators shaft is detected by the TCR-box with high reliability. Each sensor is adjustable in the range from 0° - 360°. The TCR-box offers no limits in the adjustment of switching points. The adjustment of the switching flags is very easy, though it is secured against unintentional releases. It is possible to install cylindrical sensors up to size M18 x 60 mm into the TCR-housing.

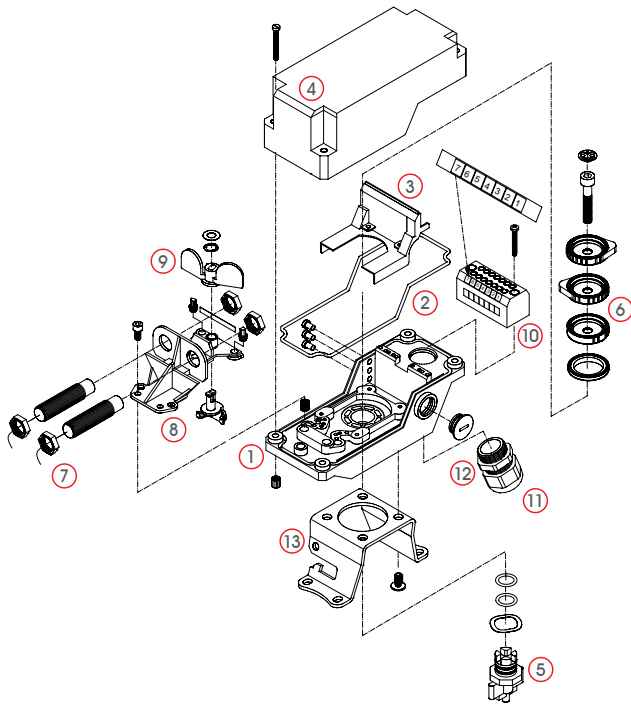


Benefits

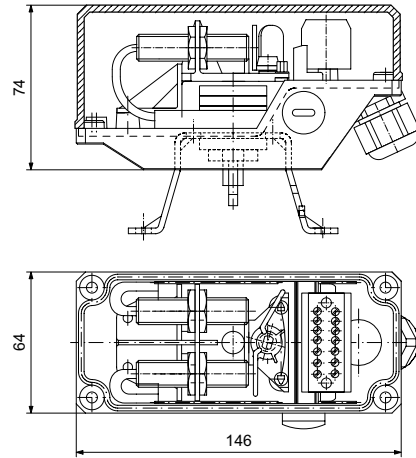
- Easy and precise adjustment of the switching points in the range from 0° - 360°
- Sensors up to size M18 x 60 mm installable

technical data

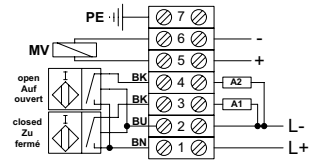
Manufacturer	Pepperl + Fuchs
Type	NBN4-12GM50-E2
Operation switching element	3-Wire, PNP NOC
Switch distance	4 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 100 mA
Residual current	0 ... 0,5 mA
Load current	≤ 15 mA
Current draw	≤ 1 mA (detected) ≥ 3 mA (not detected)
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

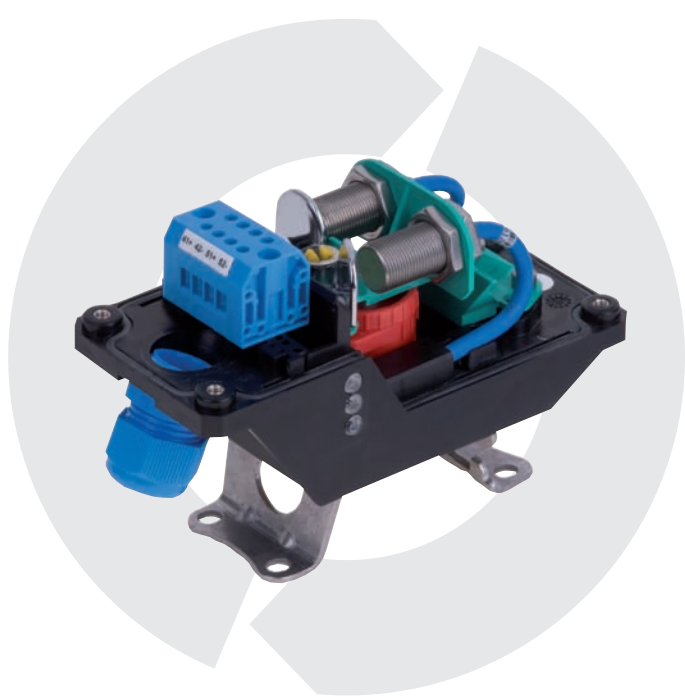
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Proximity switch	-
8	1	Proximity switch mounting	PA + 30% GF
9	1	Dampening flag	PE chromed
10	1	Terminal block, 7-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
N412E	Type	NBN4-12GM50-E2
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Cylindrical Sensor

The TCR-box with 2-wire proximity sensors transforms the end positions or intermediate positions of actuators to electrical signals. The sensor is used in several European countries as a contact-free signal device for Ex-applications. It is known for its ultimate reliability, because of the insignificant residual current in damped- and a minimum voltage drop in undamped-status. The innovative design of ROTECH TCR-housing allows installation of sensors up to 60 mm long. Unique is the completely flexible adjustment of each individual sensor in the range from 0° - 360°. The adjusted position is secured by a serrated cam against unintentional releases caused by vibrations. The box is available with visual position indicator.



Benefits

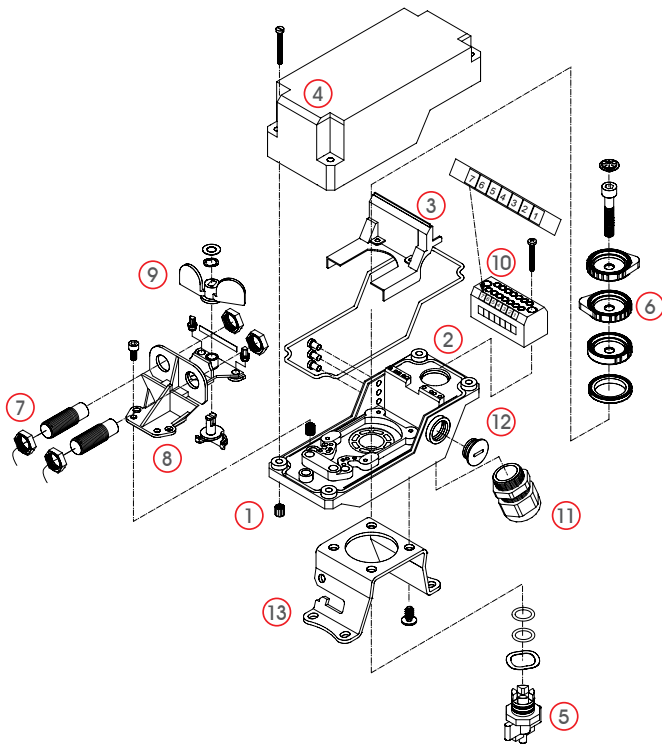
- Easy and precise adjustment of switching points in the range from 0° - 360°
- Sensors up to size M18 x 60 mm installable



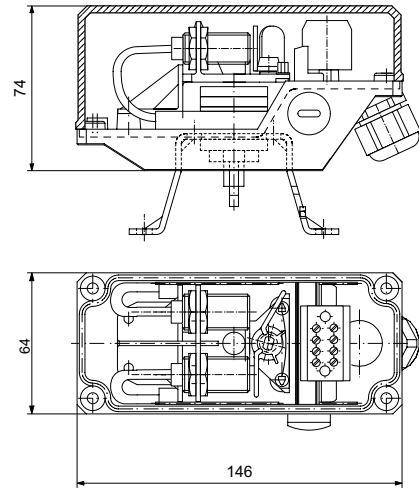
Ex 2G Ex ia IIC T6
other protection classes available

technical data

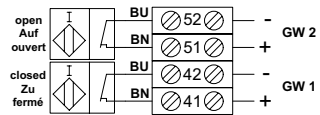
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NJ2-11-N-G	Nj2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (not detected) ≤ 1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 68 (Sensor)	IP 65 (Housing) IP 68 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°
Housing base	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Proximity switch	-
8	1	Proximity switch mounting	PA + 30% GF
9	1	Dampening flag	PE chromed
10	1	Terminal block, 5-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor in Housing

Sensors in 2-wire technology are preferred in the chemical industry and in hazardous areas. The slotted proximity sensor is intrinsically safe due to its low potential and requires therefore no additional protective measures. It is possible to install up to 4 slotted proximity sensors into ROTECH TCR-box, which allows the detection of end positions or/ and intermediate positions of actuators. The stainless steel switching disc of the switching cam system and thus each single switching point are adjustable individually in the range from 0° - 360°. The adjusted position is secured by a serrated cam system against unintentional releases caused by vibrations.



Benefits

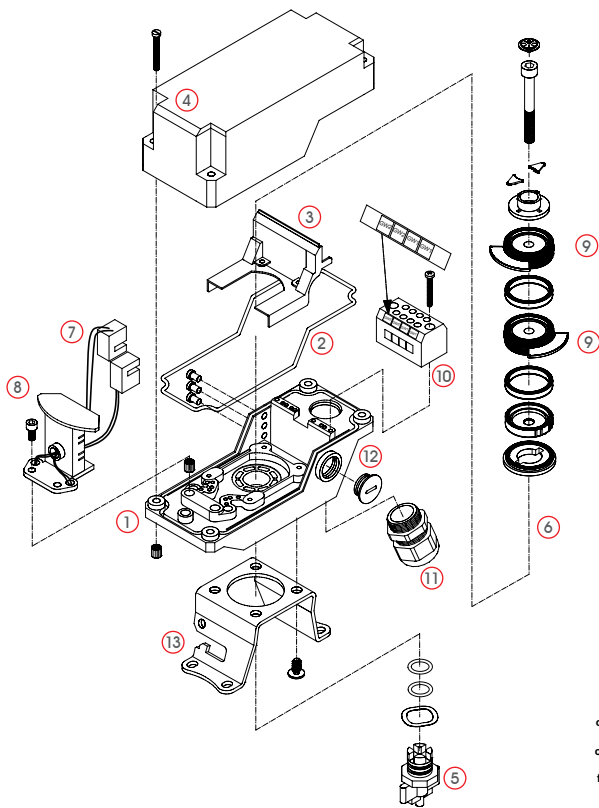
- End position damped or undamped possible
- High precision sensing due to large diameter of switching disc
- With up to 4 slotted proximity sensors
- Optionally available with position indicator



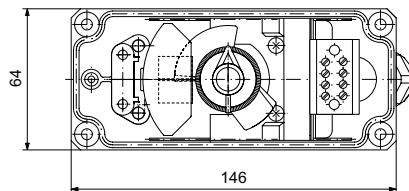
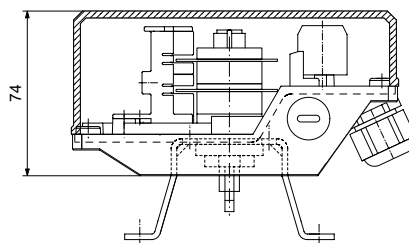
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

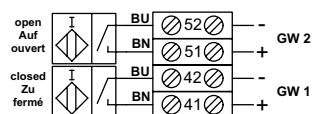
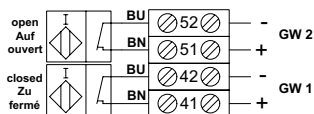
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs	Pepperl + Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Slot size	3,5 mm	3,5 mm	3,5 mm
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (detected) ≤ 1 mA (not detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing base	Vestamid, black	Vestamid, black	Vestamid, black
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (schwarz) or Aluminium anodize	Vestamid (schwarz) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



TPF3NVVAZ
 TPF3SVVAZ
 TPF3NOVVAZ

TPF3S1VVAZ

basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM
7	2	Proximity switch NAMUR	-
8	1	Proximity switch mounting	PA + 30% GF
9	2	Dampening flag	A2
10	1	Terminal block, 4-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for Solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
3	Slot size	3 = 3,5mm
N	Typ	N = ... -N S = ... -SN NO = ... NO S1 = ...-S1N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

TCR-box for Analog Signal

This TCR-model is an all-rounder. As well as the digital end position feedback achieved by using reliable double sensors, this box provides an analog angle-potentiometer with 4-20 mA output signal. Thanks to this emerging technology, each position of the whole turning movement of a part-turn valve actuator or armature is detectable in less than 0,5° steps. In addition, it is possible to connect up to 2 solenoid valves with 24 V DC coil on the terminal block inside the box. For an easy-to-install connection - the so called Plug & Play connection - we can supply a ready-to-use plug-in connector, which is already connected with both solenoid valves connections. All these features are integrated as standard in ROTECH TCR-housing. Our deep expertise is unified in this design for your benefits, e.g. protection of electrical connection, the very easily accessible sensor components and terminal block and the flexibility in choosing cover and position indicator is guaranteed for this box.



Benefits

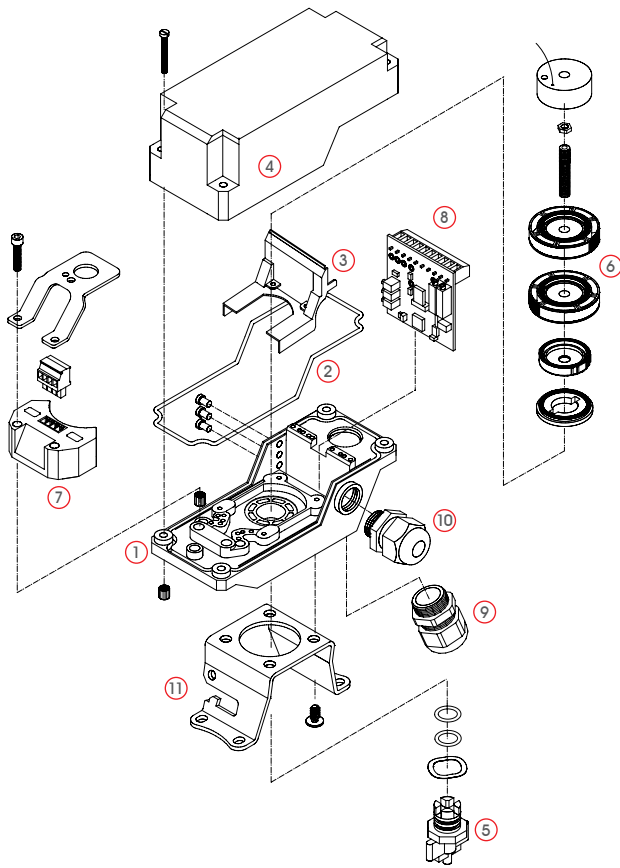
- Detection with 4-20 mA signal
- Connection of up to 2 solenoid valves possible
- Useable also without sensor

technical data - control electronics

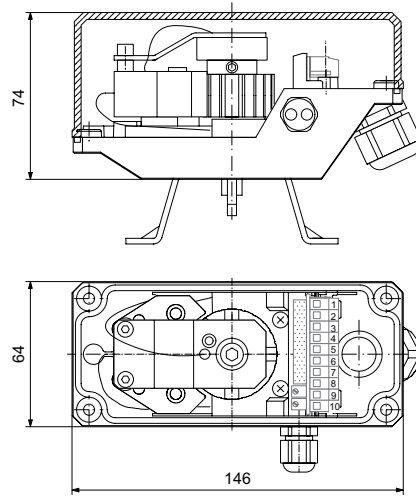
Signal	4 - 20 mA
Voltage	24 V DC \pm 15%
Angle sensor	GL 60-10K M354
Electrical rotation angle	20 ... 354°
Linearity	\pm 0,25%
Protection class	IP63
Characteristic	decreasing if actuator closes

technical data - double sensor

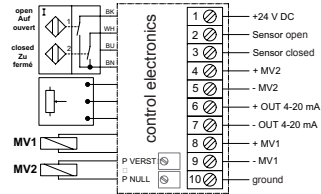
Manufacturer	Pepperl + Fuchs
Type	NBN3-F25F-E8
Operation switching element	PNP, Dual NOC
Switch distance	3 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 200 mA
Residual current	0 ... 0,5 mA
Load current	\leq 25 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Switching precision	\leq 0,5°
Protection class (acc. to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



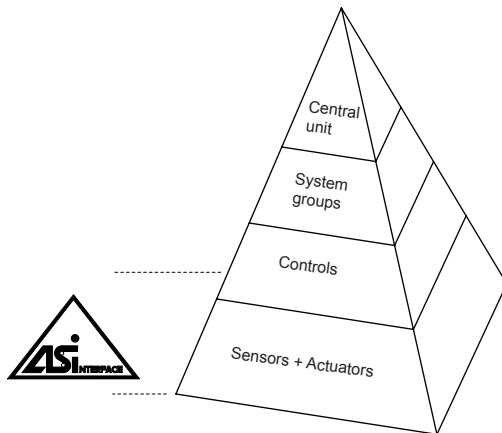
basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block, 10-pole	-
9	1	Cable gland M20x1,5	-
10	1	Cable gland M16x1,5 up to two solenoid connections	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed
420	Output signal	420 = 4 -20 mA

Actor - Sensor - Interface



The Actor-Sensor-Interface (AS-Interface) is perfectly suitable for the communication between an industrial control system and the decentral Actor and Sensor. The Actor-Sensor-Interface (AS-Interface) provides, due to the specific yellow ASi flat cable, the possibility for up to 62 participants to transfer data and supply energy to sensors and actors. Compared to conventional wiring technology (wiring loom) the installing time and cost is minimized. Components of different manufacturers are installable without problem with the same cable or in case of similar functionality, replaceable with another participant. AS-Interface provides an intrinsically safe data transfer, it is very resistant against electro-magnetic interferences and offers an integrated diagnostics, e.g. identification of short circuit.

The AS-Interface works according the Master-Slave-Method. With the AS-Interface-Specification 2.1 it is possible to implement up to 62 Slaves to one Master. The amount of transferable inputs has increased to 248, and those of outputs to 186. For the AS-Interface every 2-wire conductor cable is in principle suitable. But we recommend using the yellow, reverse polarity protected AS-Interface cable, on which the components can be connected by perforating the cable. If the data transfer and the current supply together need more than 8 A, then a second additional black AS-Interface profile cable is needed at the same time with the yellow one to ensure the correct data transfer.

Brief Description

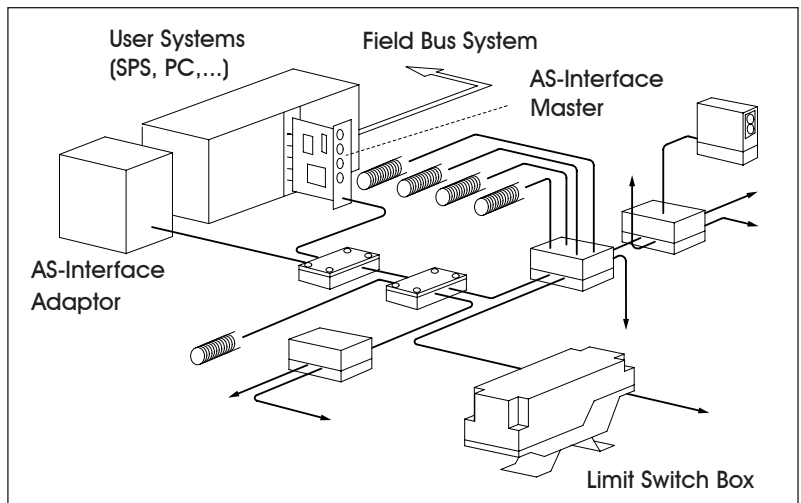
Topology	optional: linear, star, tree, ring
Amount of the participant	62 ASi-Slaves / 1 Master
Addressing	with Master, using programming device or automatically when replacing the components
Transmitting medium	unshielded 2-wire cable for data transfer and energy supply (2 x 1,5 mm ²)
Dimension	100 m total length (without repeater)
Transmission rate	Approx. 167 kBit/s
Access method	cyclic polling Master - Slave
Cycle time	5 ms complete network installation
Data sequence	4 bit bi-directional
Saving data	1 bit parity + Signal quality control

The AS-Interface System Components



AS-Interface Master

The Master or Gateway is the heart of the AS-Interface network. It controls the system and the data exchange between its Slave units and higher level bussystems, e.g. PROFIBUS, INTERBUS-S, MODBUS, etc. The „stand alone master“ design is able to memorize a whole control sequence and to independently execute combinations of inputs and outputs.



AS-Interface Adaptor

Due to the shared use of only one unshielded cable to transfer data and auxiliary power in the AS-Interface Network, the installed power supply has to have special filters for data processing. It is not advisable to use a standard 24 V adaptor to supply each single participant with power.

AS-Interface Module Group

Already installed standard sensors/-actors in 2-wire or 3-wire technology can be integrated into the AS-Interface Network as a Module Group. Each Group is considered as only one participant in the system. As a result, up to 248 binary units can be integrated into the network (by using bidirectional Slaves).

AS-Interface Sensors/Actors

The „intelligent Sensors/Actors“ with integrated chip are bus-compatible and ready-to-connect to the AS-Interface cable.

AS-Interface Limit Switch Boxes

The special E/A Module Group of ROTTECH limit switch boxes records the actuators position „Open/Closed“ and at the same time controls the solenoid valve of the actuator. The complete unit represents a single participant in the AS-Interface net.

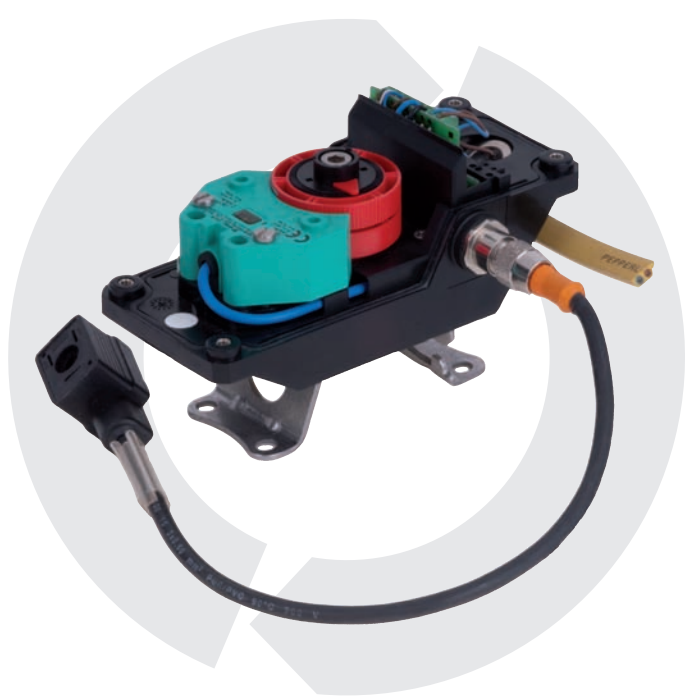
AS-Interface Cable

The special perforation technology allows an easy, fast and reverse polarity protected connection of the participant to the AS-Interface net without complicated cutting to length and skinning the cable.

AS-Interface

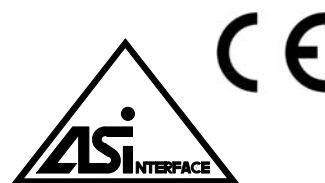
The AS-Interface limit switch box converts the mechanical end position or intermediate positions of pneumatic positioning actuators into electrical signals and provides them to the AS-Interface-Bussystem. For the detection of the end positions, NAMUR-sensors or mechanical microswitches with gold alloy contacts can be utilized. This TCR-box allows an indirect control of a solenoid valve (2,6W/24V) by using the bus cable. Thanks to the perforation technology the connection of the box is possible at any position of the already existing or newly installed AS-Interface cable. No special tools are required.

This box model is also available with position indicator.



Benefits

- Bus interconnection of the complete limit switch box
- Integrated control function of a solenoid valve
- Easy and fast installation and connection



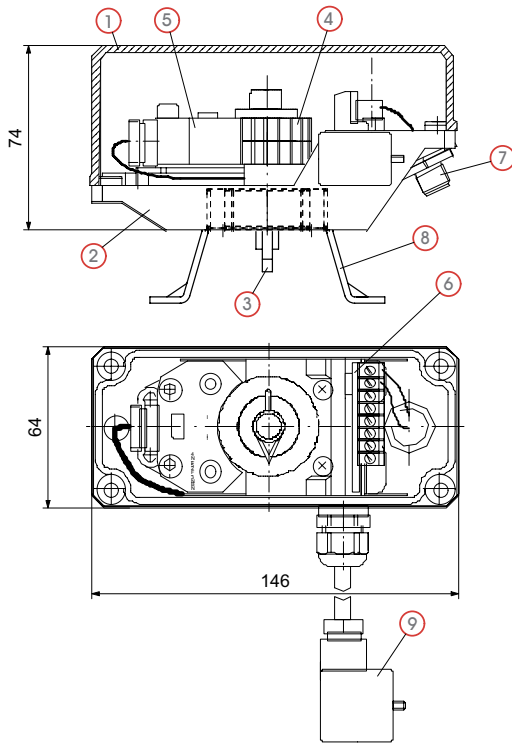
technical data - double sensor

Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4
Operation switching element	NAMUR NCC
Switch distance	3 mm
Data bit	AS-Interface
2x Input/1x Output	D0 : Magnetic valve control D2 : sensor 1 D3 : sensor 2
Nominal voltage	30 V DC
Temperature range	-25 ... +60 °C
Switching precision	≤ 0,5°
Protection class	IP 65 (Housing)
(according to DIN EN 60529)	IP 67 (Sensor)
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent)
Sealing	EPDM
Connection	plug M12x1, 4-pole
Solenoid-valve	2,6 W / 24 V DC
Solenoid-plug	Type industry

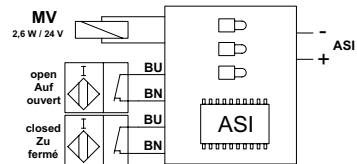
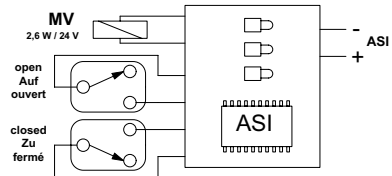
programming details

Profile	S-D.A.E
IO-Code	D
ID-Code	A
ID1-Code	7
ID2-Code	E

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	Housing cover	page 27
3	1	TCR-shaft	POM
4	1	Switching cams	POM
5	1	Double sensor	-
6	1	ASI-plug-in card	-
7	1	ASI-connection	-
8	1	Bracket size 1-4	A2
9	1	Solenoid plug	-
10	1	Solenoid valve connection M12	-

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs CR = Crouzet
F25N	Type	F25N = NCN3-F25F-N4 3N = SJ3,5-N 8 = 83.161.801
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed
M12	Solenoid con.	M12 = M12x1,5 RS = circular con.
ASI	Output signal	ASI = ASI

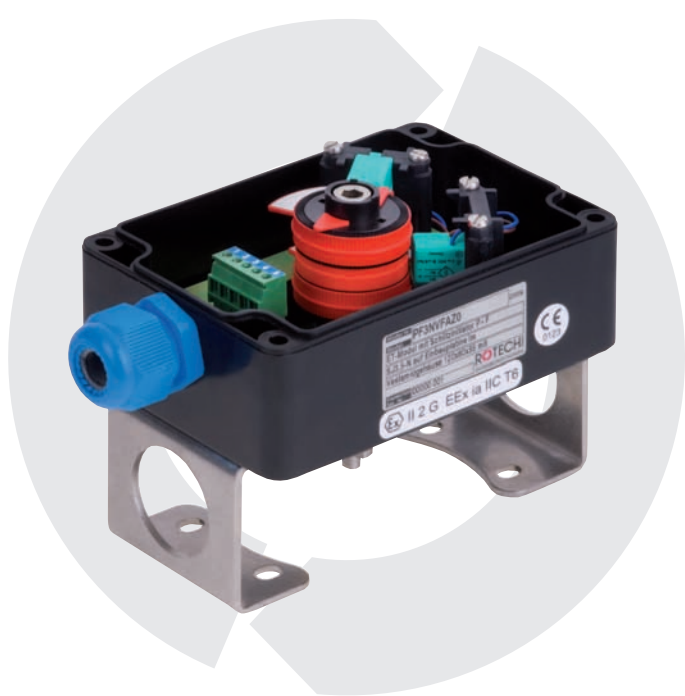


ET-Boxes - General Information

The ET-box is the classical housing shape in ROTECH's program. This housing in standard design has its axis in the middle. Thus a symmetrical assembly of all components is possible and it offers enough space and free access to the terminal block for an easy connection of sensors and valves.

The interior design offers enough space for an integration of a cylindrical proximity sensor up to M18 x 50 mm dimension. To mount the ET-box on to actuators of various sizes we offer a wide range of mounting brackets. The box is available with fixed standard sizes or with our extremely flexible universal bracket.

The ET-box is available in material of construction Macrolon, Vestamid and extremely robust aluminium. The Vestamid-cover is optionally available with a viewing window. The position of the connecting shaft to the actuator is indicated by an oversized, eye-catching yellow position indicator, which is also visible from a great distance. This position indicator is turnable by 90°, thus a correct indication of the valves position is guaranteed even if the actuator is mounted traverse to the flow direction. The ET-box offers more technical advantages. To ensure a reliable connection between ET-box and shaft of the part-turn valve actuator the axis of the ET-box is mounted with spring loaded feather. As a result, tolerances, that may occur while operating can be compensated. Optionally it is possible to connect solenoid valves directly into the housing. There are no tools needed for the adjustment of the switching points in all designs. Very easy to adjust, though the set positions are secured against uncontrolled releases caused by vibrations due to the serrated switching cams.



Benefits

- Flexible electrical connection
- Ease of mounting
- 5 different housing materials: Makrolon, Vestamid, Polyester, Aluminium and Stainless Steel

The following matrix will give you an overview of which signal device can be combined with which housing material:

Signal device \ Material	Makrolon	Vestamid	Aluminium	Stainless steel	Polyester
Microswitches	•	•	•	•	•
Microswitches Ex d					
Proximity switches	•	•	•	•	•
Proximity switches Ex ia		•	•	•	•

Optional

Each NON-Ex ET-box made of aluminium is available with highly visible high vision beacon, which is printed with „OPEN“ and „CLOSED“.



An alternative to the position indicator, which is integrated into the cover, is the „ACsicht“-panel. It is very easy and fast to mount onto the shaft of the limit switch box.

The standard ET-box is optionally available with 2 solenoid valve connections.



Microswitches

The ET-box with microswitches guarantees most value for price paid. The most convenient way to use a classical switch box. The microswitch is preferred in cases when the operating voltage is not specified and there are no special requirements. Thanks to its compact design it is ideal for installation into a housing. Due to the potential free contact model, there is no restriction in application possibilities for controlling. The ET-box is supplied with a torsion spring coupling, which is the connection between the actuators shaft / the valves shaft and the box. Even height-related tolerances of the mounting brackets can be compensated and a perfect fit into the slotted shaft of the actuator/ the coupling is guaranteed. A supplement yellow, by 90° turnable position indicator at the axis, indicates highly visible the position of the valve. The adjustment of the switching points can be realized easily and without tools thanks to the internal serrated cams. The preset switching points are secured against unintentional releases.



Benefits

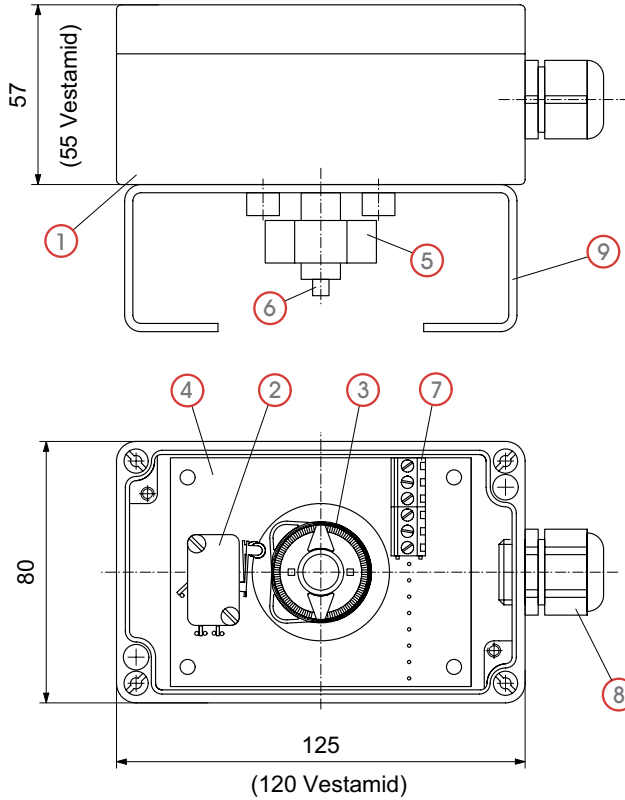
- Flexible electrical connection
- Ease of service
- Self-explanatory mounting
- 5 different housing materials: Makrolon, Vestamid, Polyester, Aluminium and Stainless steel



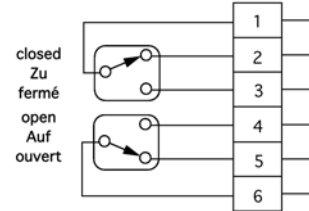
technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	Gold alloy
Mechanical life	2 x 10 ⁷ Switching cycle	5 x 10 ⁷ Switching cycle
Temperature range	-20 ... +85 °C	-20 ... +85 °C
Switching capacity	1,5°	1,5°
Protection class	IP 65 (Housing)	IP 65 (Housing)
(according to DIN EN 60529)	IP 65 (Sensor)	IP 65 (Sensor)
Housing material	Makrolon (transparent), Vestamid (black), Aluminium, stainless steel, polyester	Makrolon (transparent), Vestamid (black), Aluminium, stainless steel, polyester
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

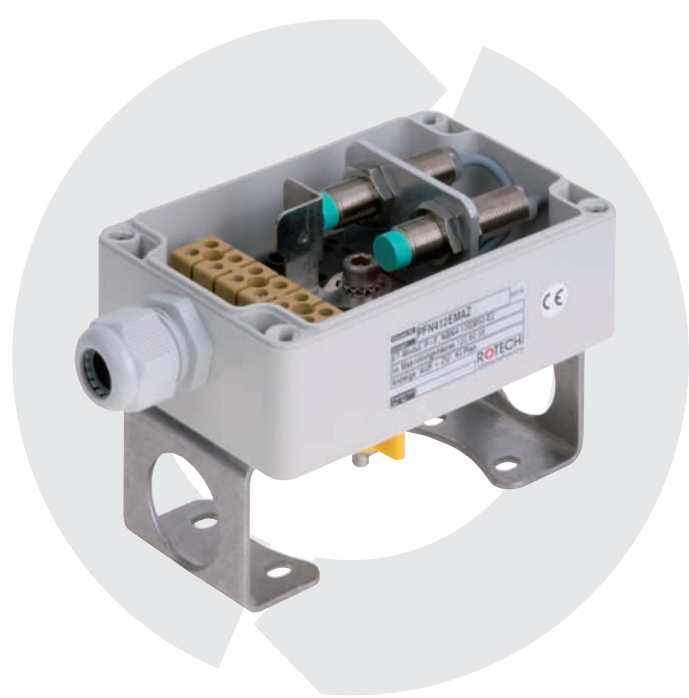
Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	2	Microswitches	-
3	2	Switching cams	POM
4	1	Mounting plate	-
5	1	Position indicator	PE
6	1	Shaft	A2
7	1	Terminal block 6-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Bracket, Size 1-4	A2

product key

CR	Make	CR = Cruzet
3	Type	3 = 83.161.301
M	Housing Material	M = Makrolon A = Aluminium V = Vestamid E = Edelstahl P = Polyester
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid connection	0 = Without 1 = 1x M12 x 1,5 2 = 2x M12 x 1,5

3-Wire Sensor Cylindrical

The box with 3-wire proximity sensor transforms the mechanical end position or intermediate position of actuators into electrical signals. The 3-wire sensor is used in several European countries as a contact-free signal device for a NON-Ex application. It is known for its ultimate reliability, because it has an insignificant voltage drop in operating-status. The feather coupling of the box compensates possible unevenness of the mounting bracket and guarantees a perfect fit into the slotted axis of the actuator for the transmission. A supplement yellow, turnable position indicator at the axis shows highly visible the position of the armature.



Benefits

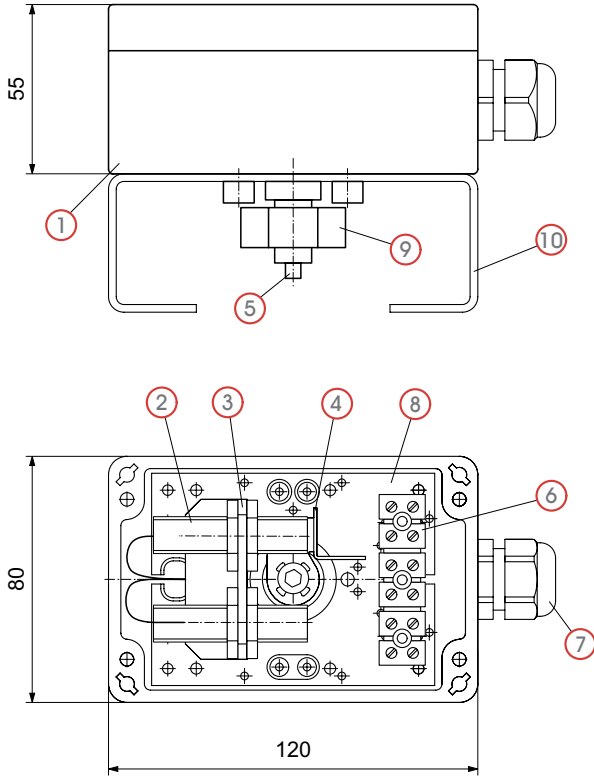
- Easy and precise adjusting of the end positions
- Reliable in control operation due to the stainless steel switch flag
- Ease of mounting thanks to the symmetrical design



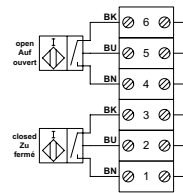
technical data

Manufacturer	Pepperl+Fuchs
Type	NBN4-12GM50-E2
Operation switching element	3-Wire, PNP NOC
Switch distance	4 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 100 mA
Residual current	0 ... 0,5 mA
Load current	≤ 15 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Switching precision	≤ 0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Makrolon, Vestamid (black), Aluminium anodize, Polyester
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

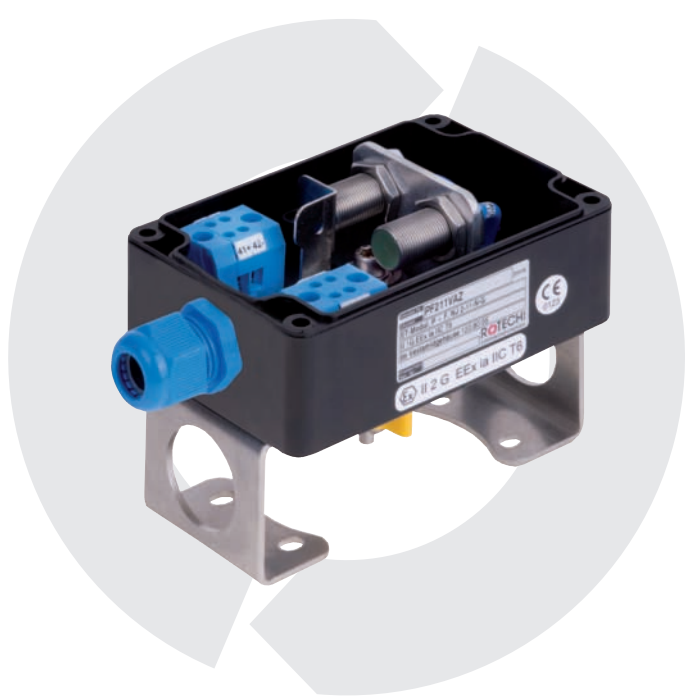
Pos.	Pcs.	Description	Material
1	1	Housing	Makrolon
2	2	Proximity switch	-
3	1	Proximity switch mounting	Aluminium
4	1	Switch flag	A2
5	1	Shaft proximity switch	A2
6	1	Terminal block, 6-pole	-
7	1	Cable gland M20x1,5	PA
8	1	Mounting plate	PA 6
9	1	Position indicator	PE
10	1	Bracket, size 1-4	A2

product key

PF	Make	PF = Pepperl + Fuchs
N412E	Type	NBN4-12GM50-E2
M	Housing Material	M = Makrolon A = Aluminium V = Vestamid VF = Vestamid + vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Proximity Sensor Cylindrical

Cylindrical sensors are extremely susceptible to mechanical damage and dirt when openly mounted onto actuator and valves. It is possible to install sensors up to size M18 x 50 mm into the ET-box. Thanks to the housing design, ease of mounting and connecting is guaranteed. Proximity sensors, designed according to NAMUR standard are preferred for application in hazardous areas, where protective measures concept intrinsic safety is required. The ET-box made of housing materials Vestamid, aluminium or Polyester offers the required explosion-proof security for the housing. Also this box ensures the easy adjustment of the end position, the perfect fit into the axis due to the torsion spring coupling, integrated in the axis of the box, and by the 90° turnable, yellow position indicator.



Benefits

- Easy and precise adjusting of the end positions
- Reliable in control operation due to the stainless steel switch flag
- Ease of mounting thanks to the symmetrical design



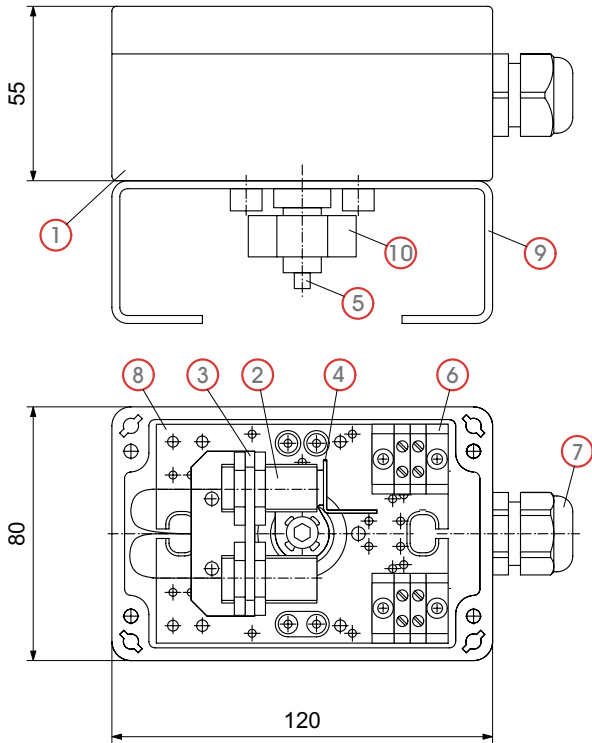
II 2G Ex ia IIC T6

other protection classes available

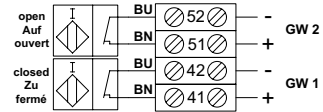
technical data

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs
Typ	NJ2-11-N-G	NJ2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 68 (Sensor)	IP 65 (Housing) IP 68 (Sensor)
Housing material	Vestamid (black) or Aluminium anodize Polyester Stainless steel	Vestamid (black) or Aluminium anodize Polyester Stainless steel
Sealing	EPDM	EPDM
Switching precision	≤ 0,5°	≤ 0,5°
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Makrolon
2	2	Proximity switch	-
3	1	Proximity switch mounting	Aluminium
4	1	Switch flag	A2
5	1	Shaft proximity switch	A2
6	2	Terminal block, 2x2-pole	-
7	1	Cable gland M20x1,5	PA
8	1	Mounting plate	PA 6
9	1	Bracket, size 1-4	A2
10	1	Position indicator	PE

product key

PF	Make	PF = Pepperl + Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
V	Housing material	A = Aluminium E = Stainless steel V = Vestamid VF = Vestamid + vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor

Slotted proximity sensors in 2-wire technology are preferred in the chemical industry and in the machine building sector in areas where general explosion protection measures are required. This sensor type is intrinsically safe due to its low potential and therefore usually requires no additional explosion protection measures. Slotted proximity sensors can be implemented with damped or undamped end position and offer high flexibility for the end position feedback transmission to the control system. The adjustment of the switching points is very easy to realize by turning the switching flag. For this intrinsically safe design, housing material Vestamid and aluminium are available.



Benefits

- Usable with damped or undamped end position
- High precision operation due to large diameter of switching disc
- Individually adjustable switching points

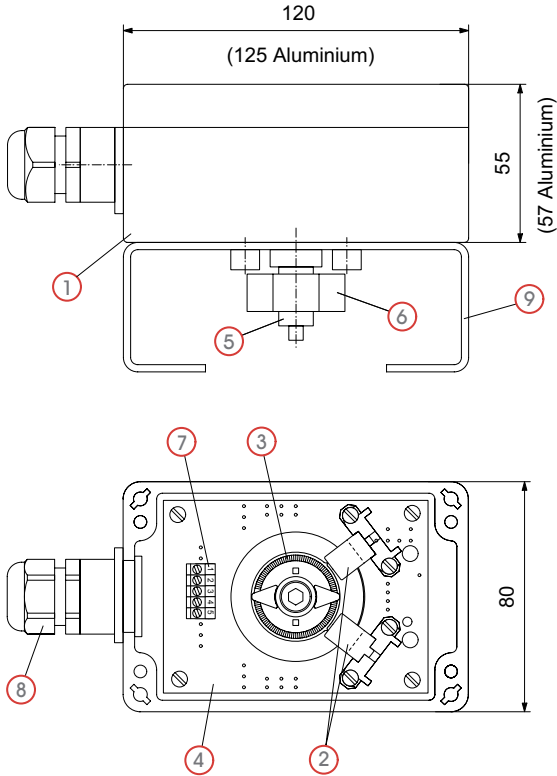


Ex II 2G Ex ia IIC T6
other protection classes available

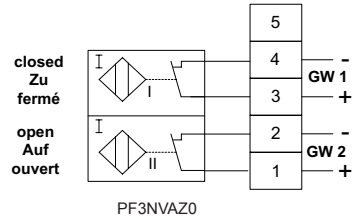
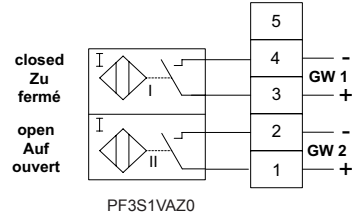
technical data

Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs	Pepperl + Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Switching precision	≤0,5°	≤0,5°	≤0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Vestamid (black) Aluminium (grey) Stainless steel Polyester	Vestamid (black) Aluminium (grey) Stainless steel Polyester	Vestamid (black) Aluminium (grey) Stainless steel Polyester
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

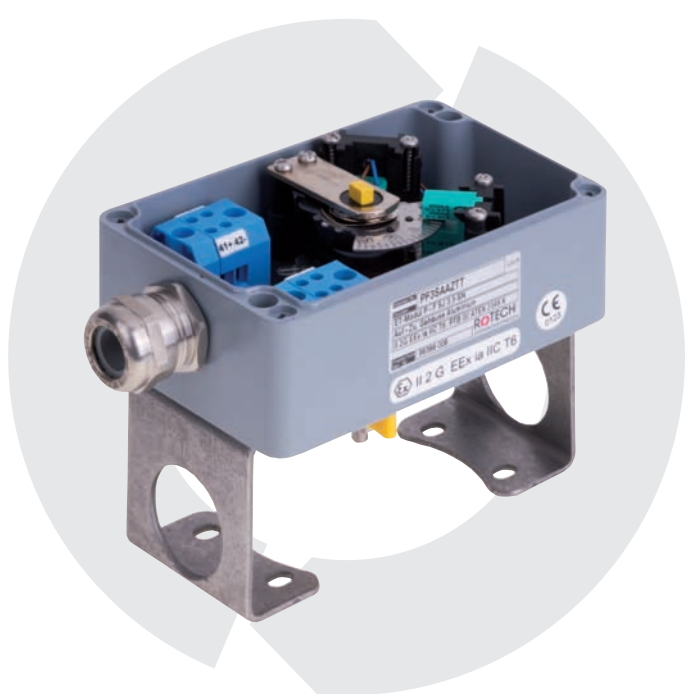
Pos.	Pcs.	Description	Material
1	1	Housing	Vestamid
2	2	Slotted proximity switch	-
3	1	Switching cams	POM
4	1	Mounting plate	-
5	1	Shaft	A2
6	1	Position indicator	PE
7	1	Terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Bracket, size 1-4	A2

product key

PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5mm
N	Type	N = ... - N S = ... - SN NO = ... NO S1 = ... - S1N
A	Housing Material	A = Aluminium P = Polyester E = Stainless steel V = Vestamid VF = Vestamid+Panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor - Low Temperature

This limit switch box can be used in an ambient temperature up to $-50\text{ }^{\circ}\text{C}$. For an application in this ambient temperature the robust aluminium housing is standard. Special sealings guarantee the protection class IP65 of the housing even at such low temperatures. The slotted sensors in 2-wire technology, implemented in housings are suitable for an application in the temperature range up to $-50\text{ }^{\circ}\text{C}$ and for an easy installation into the aluminium housing. Designed as a NC NAMUR-sensor it is intrinsically safe due to its low working voltage and therefore usually requires no additional explosion protection measures. The adjustment of the switching points is very easy to realize by turning the stainless steel switching flag. Of course this design also offers all the benefits of our ET-housing: secured position of the limit switches, switching axis with spring loaded feather for the height compensation and turnable yellow position indicator.



Benefits

- Usable in an ambient temperature up to $-50\text{ }^{\circ}\text{C}$
- Ease of service screw connection for all components
- Ease of mounting thanks to the symmetrical design

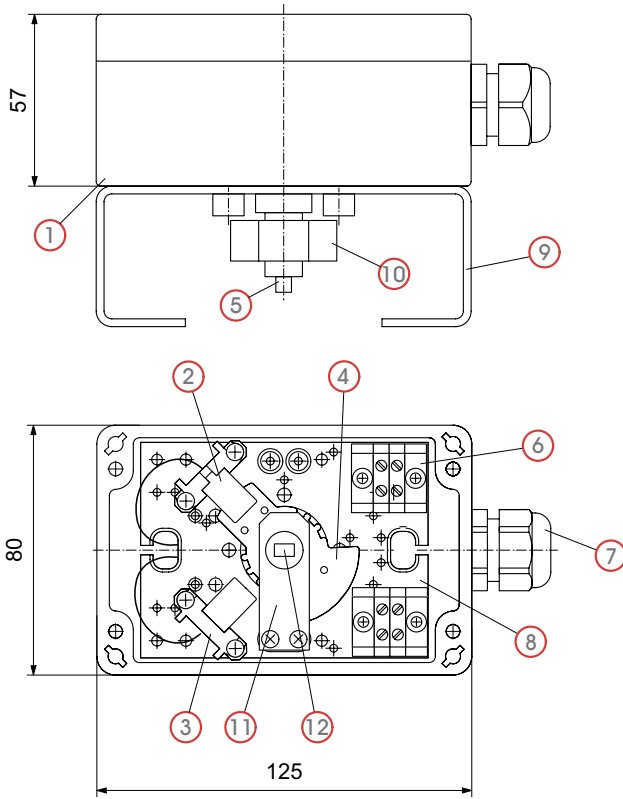


II 2G Ex ia IIC T6
other protection classes available

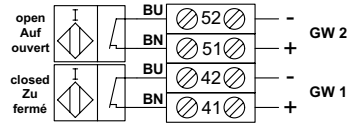
technical data

Manufacturer	Pepperl+Fuchs
Type	SJ3,5-SN
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6 with safety function
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC
Power input	$\geq 3\text{ mA}$ (not detected) $\leq 1\text{ mA}$ (detected)
Temperature range	$-50\text{ }^{\circ}\text{C}$ bis $+85\text{ }^{\circ}\text{C}$
Switching precision	$\leq 0,5^{\circ}$
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Aluminium (industry grey)
Sealing	Perbunan 70 Shore (NBR)
Connection	Cable gland M20x1,5

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	2	Slotted proximity switch	-
3	2	Slotted prox. sensor mounting	PA 6
4	2	Switching cams	A2
5	1	Shaft	A2
6	2	Terminal block, 2-pole	-
7	1	Cable gland M20x1,5	brass nickel-plated
8	1	Mounting plate	-
9	1	Bracket, size 1-4	A2
10	1	Position indicator	PE
11	1	Bearing plate short	Steel nickel-plated
12	1	Shaft long	PE

product key

PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5mm
S	Type	S = ... - SN
A	Housing material	A = Aluminium
AZ	Display	A = Open M = Middle Z = Closed
TT	Temperature range	TT = Low temperature

COM-Boxes - General Information

The COM-Box is an extremely robust, multi-purpose and innovative housing design - an all-rounder, which fits perfectly in different applications and diverse industry sectors. The newly created box made of coated aluminium offers as a special benefit the comfortable and practical solution of the hinge for the cover. As a result the cover is attached and needs to be fastened and opened with only two captive screws. Compared to conventional housings this solution offers time saving and high ease of service.

Also from the technical point of view the COM-Box offers benefits: The foam-filled sealing and the enlarged diameter sealing guarantee high tightness and provide reliable service for a lifetime. The integrated two way breathable membrane in the base of the box guarantees the compensation of steam pressure and avoids condensed water completely. Due to the optimized housing design it is possible to implement an extensive range of sensors and switches.

The display in the cover is available in pure glass and various other materials. The axis of the box is available in stainless steel or robust plastic with indicator at both sides.

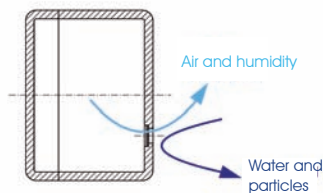


Benefits

- Robust thanks to the new housing design
- Comfortable and captive cover with hinge for the cover
- High tightness with high diameter seal and foam-filled sealing

Options

COM limit switch boxes are equipped as standard with two way breathable membrane



two way breathable membrane

Design with oversized control window.





Microswitch

The COM-Box with integrated microswitches is the most cost-saving choice to have all the benefits of this robust box. The microswitch is preferred in cases when there are no special requirements needed and the operating voltage is not specified. It fits perfectly into a housing thanks to its compact design. When used as a potential free change-over contact, there are no limits of controlling possibilities. The aluminium housing of the COM-Box guarantees highest protection against mechanical wear of sensors and all other environmental influences. The interior of the box is readily accessible due to the innovative and captive hinged cover. As a result, ease of inspection has increased a lot compared to conventional boxes.



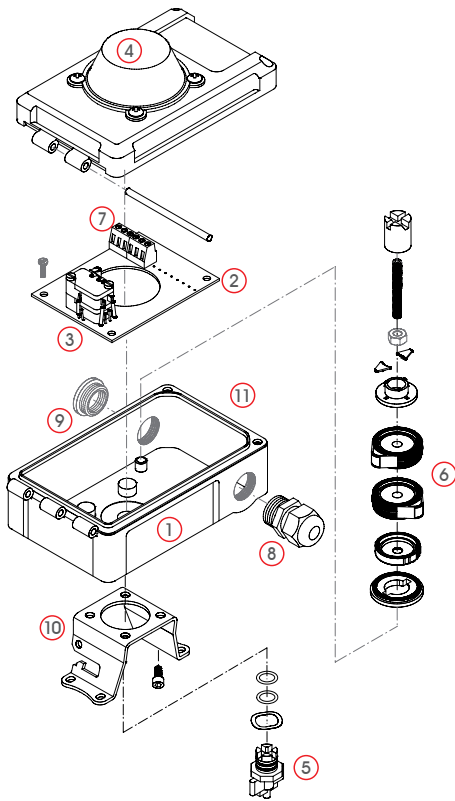
Benefits

- Robust newly created housing design
- Ease of service hinged cover
- Cost-saving design with microswitches

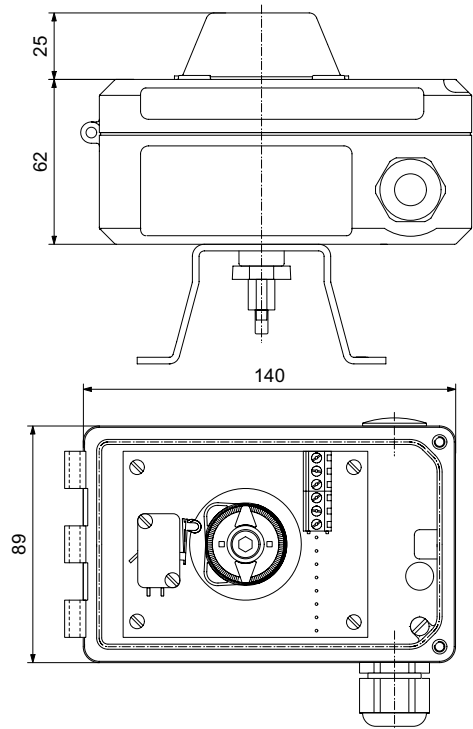


technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	Gold alloy
Mechanical life	2 x 10 ⁷ Switching cycle	5 x 10 ⁷ Switching cycle
Temperature	-20 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 65 (Sensor)	IP 65 (Housing) IP 65 (Sensor)
Housing Material	Aluminium	Aluminium
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	2	Microswitches	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket, size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid-Con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

Double Sensor

The intrinsically safe double sensor is a compact unit, which allows direct mounting onto NAMUR interface on actuators. The whole unit consists of an one-piece encapsulated component with proximity sensors and the so called Puck, a cam which transmits the mechanical rotary movement of the switching axis. The mechanical positions are converted into electrical position feedback signals. By using the double sensor it is possible to create a very simple mechanical construction of the box. Inside the robust COM-aluminium housing, the double sensor is perfectly protected. The innovative and captive hinged cover guarantees the greatest ease of service.



Benefits

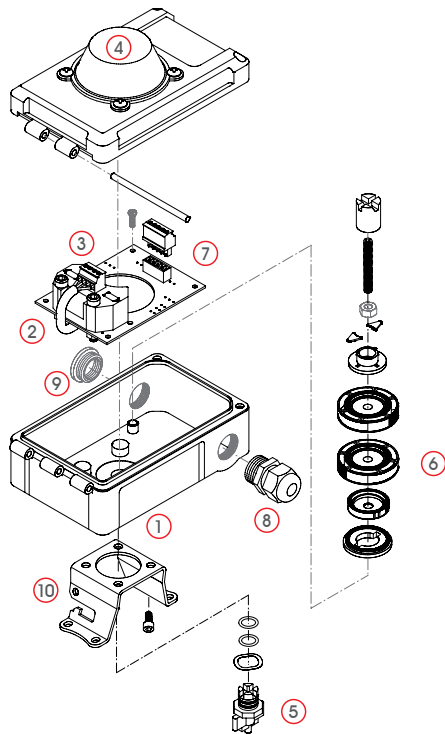
- Intrinsic safety in robust aluminium housing
- Hinged cover for a great ease of service
- Ease of mounting thanks to the big interior



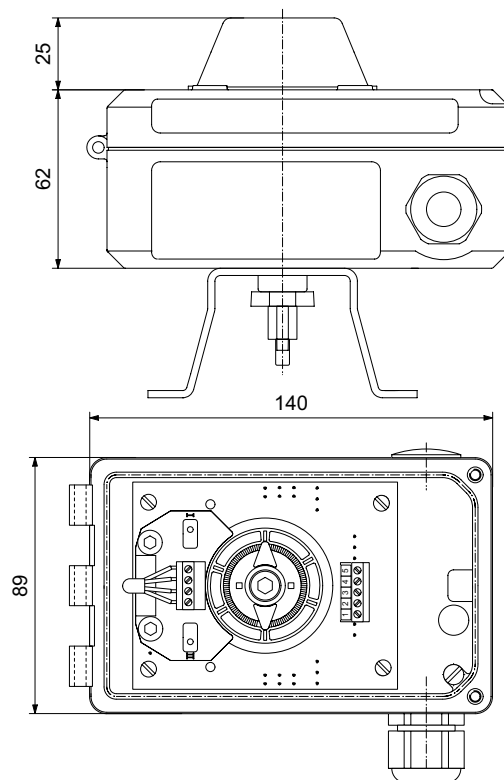
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

Manufacturer	Pepperl + Fuchs	Turck	IFM
Type	NCN3-F25F-N4	Ni4-DS20-2Y1X2	NN5009
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)	NCC NAMUR	NCC NAMUR
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switching distance	3 mm	4 mm	4 mm
Nominal voltage	8 V DC	8,2 V DC	8,2 V DC (1kΩ)
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity		
Load current	≤ 3mA		
Temperature range	-25 ... +85 °C	-25 ... +70 °C	-20 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing material	Aluminium	Aluminium	Aluminium
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	1	Double sensor	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Plugable terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket, size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
PF	Make	PF = Pepperl+Fuchs
F25N	Type	F25N = NCN3-F25F-N4
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

Slotted Sensor

Sensors in 2-wire technology are preferred in the chemical industry and in hazardous areas. The slotted sensor is intrinsically safe, due to its low potential and therefore requires no additional explosion protection measures. The switching disc of the cam system and thus each single switching points are adjustable individually in the range from 0° - 360°. Slotted sensors can be used in damped or undamped end position and offers a very flexible application. The aluminium housing guarantees perfect protection against mechanical wear of the sensors and all environmental influences. The readily accessible interior due to the innovative and captive hinged cover greatly increases ease of service in comparison to the conventional box.



Benefits

- Sensors usable in damped or undamped end position
- High precision operation due to the large diameter of the switching disc
- Hinged cover for a great ease of service

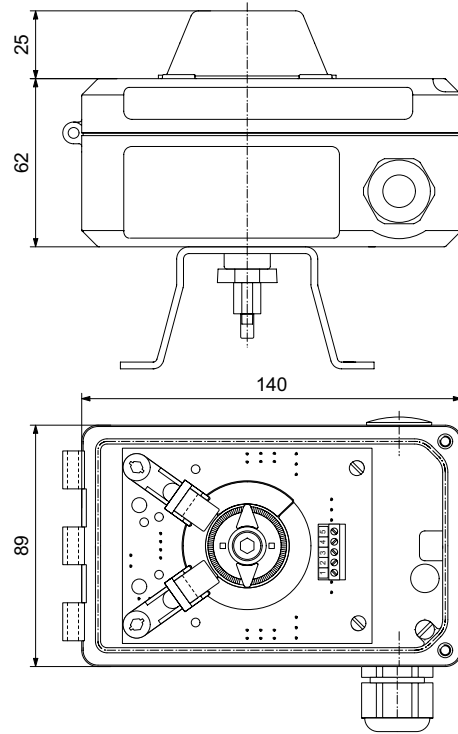
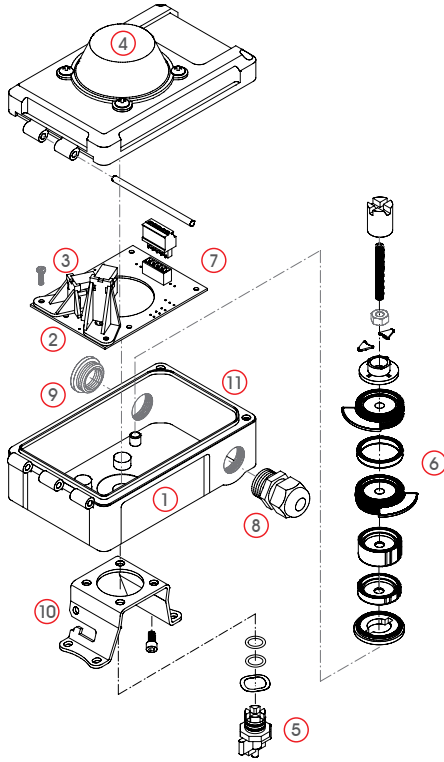


Ex II 2G Ex ia IIC T6
other protection classes available

technical data

Manufacturer	Pepperl + Fuchs	Pepperl+ Fuchs	Pepperl+ Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Ex-protection class	Ex ia 2G IIC T6 PTB 02 ATEX 1150	Ex ia 2G IIC T6 PTB 02 ATEX 1150	Ex ia 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Switching precision	≤0,5°	≤0,5°	≤0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Aluminium	Aluminium	Aluminium
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5

dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	2	Slotted proximity switch	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Plugable terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5 mm
N	Type	N = ... - N S = ... - SN NO = ... NO
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

ALB-Boxes - General Information

The ALB-box is the direct result of further development of our COM-box and it is perfect for application in process plants. The box offers all benefits of the COM-box and, in addition, a greater internal space and extended application possibilities. The Certification for an explosion-proof Ex e box allows the application of, e.g. two switching networks with different voltage potential and it is possible to separate them effectively. A good example for a typical application is the intrinsically safe signal control (Ex ia) and the separated 24 V DC power supply for the control of the solenoid valves, which required until now, two separated housings. Now, it is also possible to use reliable Ex ed (d) solenoid valves with cable. The ample space inside the ALB-box allows the installation of a wide range of sensors and even switches, which were too big to be implemented into a housing before, can now be installed.



Benefits

- Two switching networks in one housing with a new concept
- Comfort thanks to the large interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing



Options

Design with closed cover



Design with control window

Design with big high vision beacon



Ex d - Microswitches

The ALB-box, made of coated aluminium offers as a special feature a comfortable hinged cover. The cover is captive and is available with different position indicator designs. The ample internal space offers numerous possibilities for your applications. The Aluminium housing is certified to protection class Ex ed IIC T6 by using components of increased safety. Implementing compact explosion-proof microswitches certified to classification group Ex ed IIC T6, we have created a multi-purpose application, and also competitive limit switch box. When used as a potential free change-over contact, the microswitch offers flexible method of controlling.



Benefits

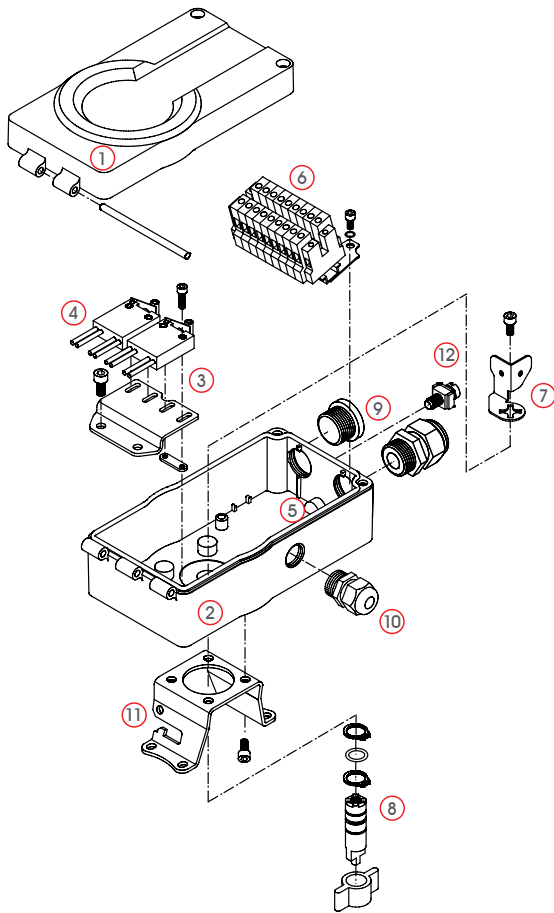
- Two switching networks in one housing with new concept
- Comfort thanks to the very spacious interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing



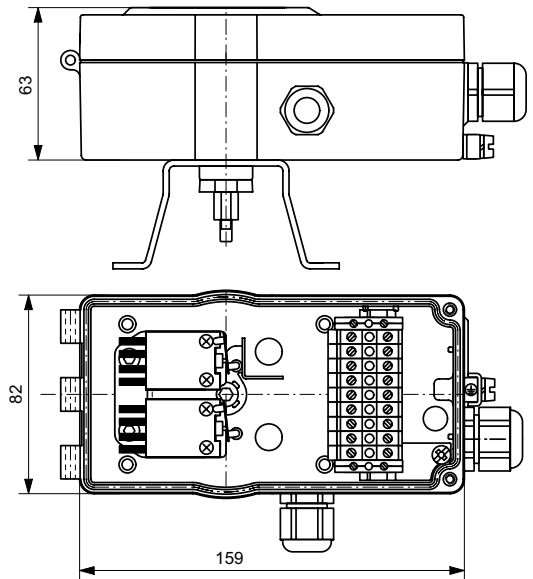
other protection classes available

technical data

Manufacturer	Crouzet
Type	83.139.1
Operation switching element	Double Pole Double Throw
Type of protection	II 2G Ex d IIC T6 (according to EN 60079) PTB 02 ATEX 1150
Switching loads	4 A, 230 V ~
Contacts	silver-nickel
Mechanical life	5 x 10 ⁶ switching cycle
Temperature range	-20 ... +60 °C
Switching precision	1,5°
Protection class (according to DIN EN 60529)	IP 65 Housing IP 67 Microswitches
Housing base	Vestamid (black) Aluminium
Housing cover	Vestamid (black)
Sealing	EPDM
Connection	Cable gland M20x1,5 (protection class: EEx e II)
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	Microswitch plate	Aluminium
4	2	Microswitch sensor	-
5	1	Membran	-
6	1	Terminal block	-
7	1	Switching cams	POM
8	1	Shaft	POM
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA
11	1	Bracket size 1-4	A2
12	1	Grounded conductor clamp (optional)	-

product key

A	Design	A = ALB
CR	Make	CR = Crouzet
1	Type	1 = 83.139.1 (Ex d IIC T6)
A	Housing	A = Aluminium
S	Cover	S = Vision beacon F = Vision panel R = Closed, with Rotech logo
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open Z = Closed

Ex ia - Proximity Sensor Cylindrical

The ALB-box, made of coated aluminium offers as a special feature a comfortable hinged cover. The cover is captive and is available with different position indicator designs. The ample internal space offers numerous possibilities for your applications. The certified Ex e box allows e.g. two switching networks with different voltage potential. For example, Ex ia (intrinsic safety) for the signal control and 24 V DC power supply for the solenoid valves control. As a result, it is possible to use reliable solenoid valves in Ex ed (d = flameproof enclosure) with cable.



Benefits

- Two switching networks in one housing with new concept
- Comfort thanks to the very spacious interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing

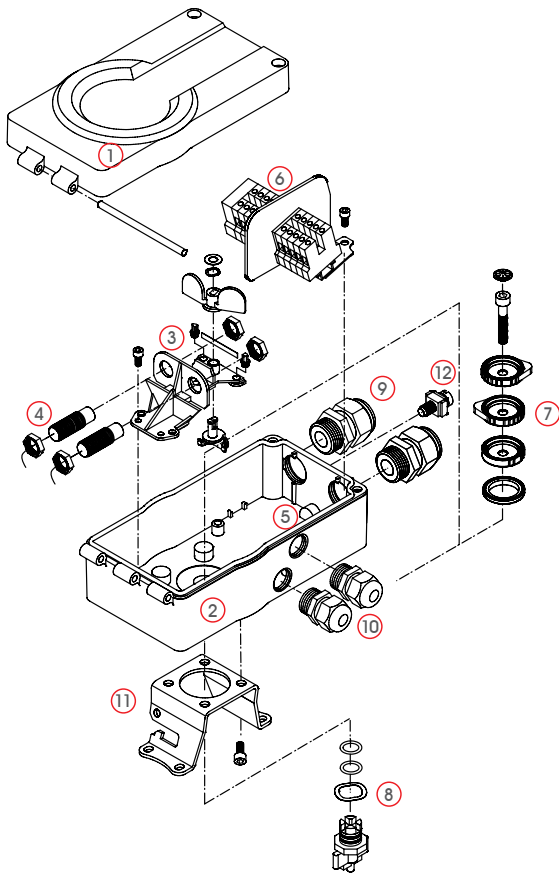


II 2G Ex ia IIC T6

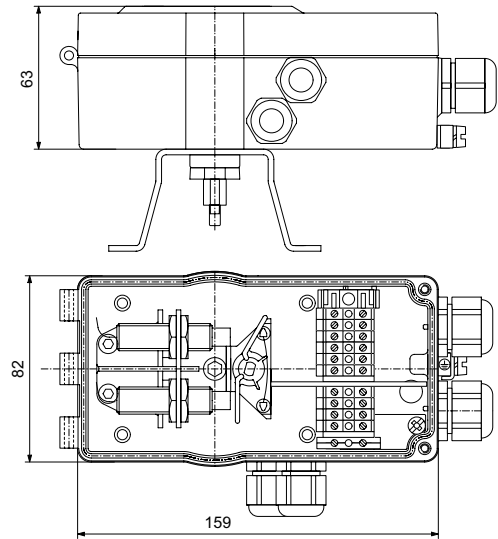
other protection classes available

technical data

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs
Type	NJ2-11-N-G	NJ2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class	IP 65 (Housing)	IP 65 (Housing)
(according to DIN EN 60529)	IP 68 (Sensor)	IP 66 / IP 68 (Sensor)
Housing material	Aluminium	Aluminium
Sealing	EPDM	EPDM
Switching precision	≤ 0,5°	≤ 0,5°
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



basic schedule

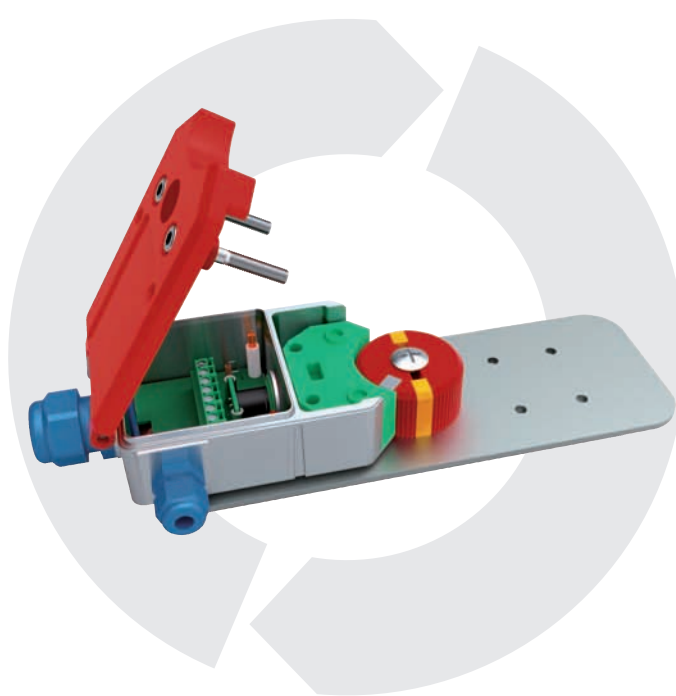
Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	Proximity switch mounting	Aluminium
4	2	Proximity switch	-
5	1	Membran	-
6	1	Terminal block	-
7	1	Switching cams	POM
8	1	Shaft	POM
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA
11	1	Bracket, size 1-4	A2
12	1	Grounded conductor clamp (optional)	-

product key

A	Design	A = ALB
PF	Make	PF = Pepperl+Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel R = Closed, with Rotech logo
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open Z = Closed
10	Connections	10 = 1x M20x1,5 11 = 1x M20x1,5 + 1x M16x1,5 12 = 1x M20x1,5 + 2x M16x1,5 20 = 2x M20x1,5 21 = 2x M20x1,5 + 1x M16x1,5 22 = 2x M20x1,5 + 2x M16x1,5

FMV

The FMV-box is a revolution regarding the installation of double sensors. To be correct, we should have called it an „open-covered construction“. All benefits of the double sensor are utilised fully. The connection interface of the double sensor is at the same time the mounting interface for the FMV-box, with these striking advantages: The installation time of the FMV, including the double sensor is the same as the installation of the double sensor it self. The spacious interior of the FMV offers the possibility to connect the sensor directly with a plug-in connector. In addition, it is possible to connect a solenoid valve directly onto the terminal block of the FMV-box. All benefits of a great limit switch box in a compact, fast to install and flexible unit.



Benefits

- Spacious terminal compartment
- Ease of service
- Compact design



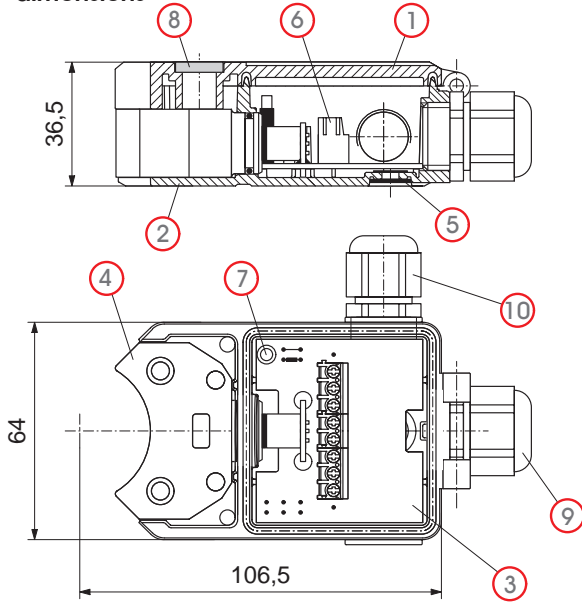
II 2G Ex ia IIC T6

other protection classes available

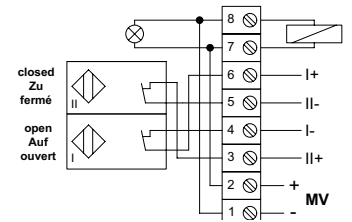
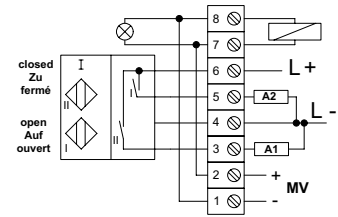
technical data

Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	3 mm
Nominal voltage	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity
Load current	≤ 3mA
Temperature range	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP65
Housing material	Aluminium
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

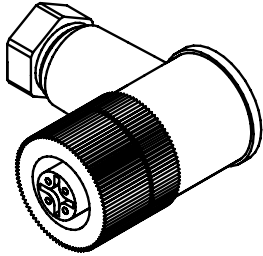
Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	FMV-Plate	-
4	1	Double sensor	-
5	1	Membran	-
6	1	Terminal block	-
7	1	LED solenoid valve	-
8	1	Vision panel LED sensor	-
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA

product key

F	Design	F = FMV
PF	Make	PF = Pepperl+Fuchs
N	Type	N = Double sensor NAMUR E = Double sensor 3-wire
A	Housing	A = Aluminium
AZ	Position indicator	A = Open Z = Closed
0	Solenoid con.	0 = Without Solenoid con. 1 = 1x Solenoid con. 2 = 2x Solenoid con.

Accessories and Options for Limit Switch Boxes

Female plug M12



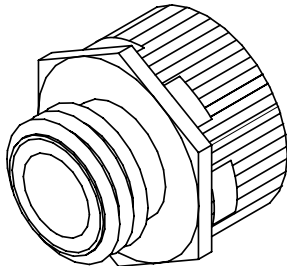
In special application cases, it is necessary to connect the sensors using a plug-in connector with the control center of the plant. For these special cases, we supply some double sensors with a M12-plug connector.

The plug-in connectors are separately available as accessories and are suitable for various applications.

product key

KD	_____ Type _____	KD = Plug-in connection
M12	_____ M12-plug connection _____	M12 = M12-plug connection
G	_____ Version _____	G = Straight through W = Right angled
4	_____ Number of poles _____	4
PG9	_____ Cable outlet _____	PG9

Venting device

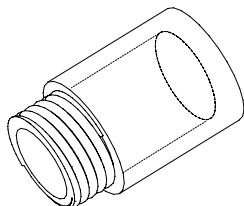


Condensated water caused by extreme fluctuation of temperature, e.g. between day and night is a problem for outdoor applications. The cooling down air is supersaturate and gives off humidity in the vapour pressure ambient. The humidity condenses in the coldest part of the environment. This nondesired and aggressive humidity causes corrosion and short-circuits. By using the compensating element, the air inside the housing is connected with the air of the environment outside and can interchange in the vapour pressure area. As a result, this „breathing“ avoids the dreaded condensate.

product key

BODAE12	_____ Type _____	Venting device
----------------	------------------	----------------

Adaptor M20x1,5 to 1/2" NPT



By using the adaptor M20x1,5 to NPT 1/2", it is possible to equip ROTTECH limit switch boxes with NPT-cable gland. This adaptor is available in brass and stainless steel.

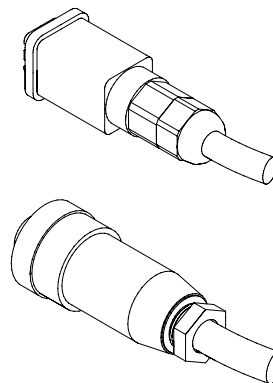
product key

M20/NPT12	_____ Type _____	Adaptor brass
E	_____ Material _____	E = Stainless steel (optional)

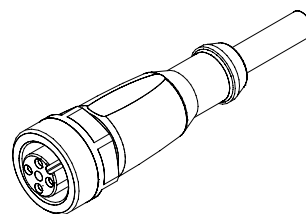
Accessories and Options for Limit Switch Boxes

Optionally, the ROTECH limit switch boxes are available instead of the standard cable gland M20x1,5 also with many other connections, e.g. Harting- or Hirschmann-connection. (Please notice that this option is not possible for TCR- and PB-housing)

Various plug-in Connector



M12 with 5 m cable



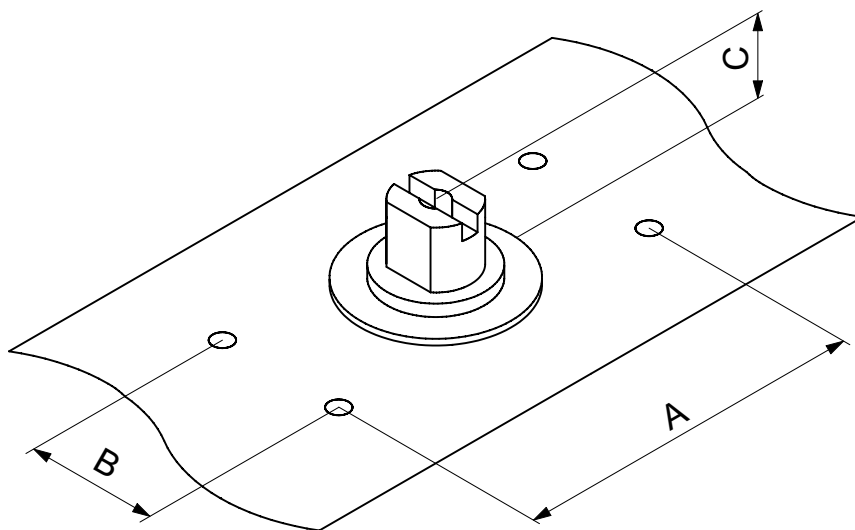
Brackets for Boxes

ROTECH offers a wide range of solutions for the installation of signal devices on actuator units. Our product range is specially harmonized for pneumatic part-turn actuators with connection interfaces according to VDI/VDE 3845. It is completed by brackets for mounting standard boxes, such with hand lever interlock and constructions for the direct mounting of limit switch units onto a manually operated valve.

The different sizes allow an easy and simple installation onto the various sizes of actuators.




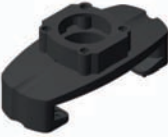


Actuator-size according to VDI/VDE 3845

Actuator-size	Connection interfaces		Shaft height
	A	B	C
0	50	20/25	20
1	80	30	20
2	80	30	30
3	130	30	30
4	130	30	50

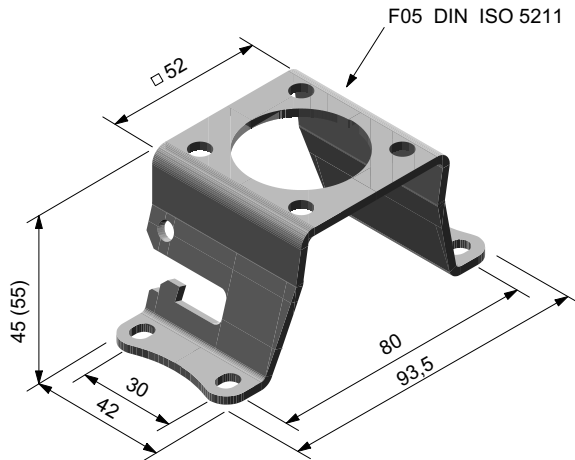


Overview - Brackets for Boxes

The following matrix gives an overview of different bracket types and shows simultaneously the adapted combination possibilities of box design respectively positioner.

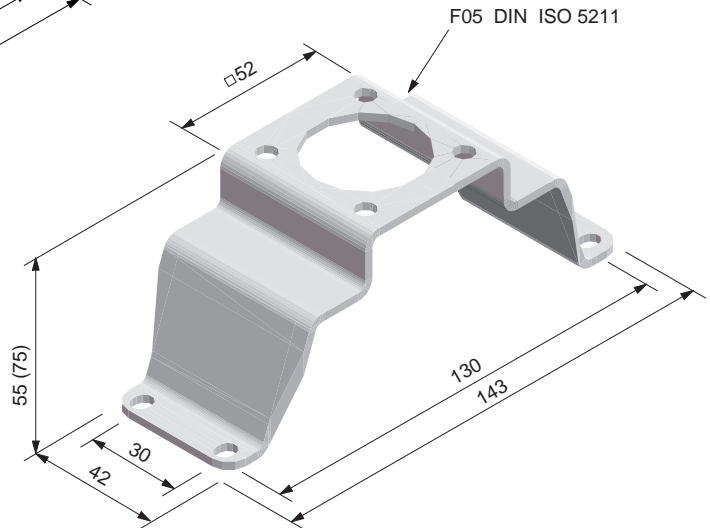
	Proxi-Box	TCR-Design	ET-Design	COM-Design	ALB-Design	Positioner
T-Brackets 	●	●	●	●	●	
TK-Brackets 	●	●	●	●	●	
ET-Brackets 			●	●	●	●
UBT-Brackets 		●				
UBE-Brackets 	●		●			
ETU-Brackets 			●	●	●	●

Brackets for Limit Switch Boxes



TCR-bracket TK1 (TK2)

Bracket with hand lever interlock suitable for actuators size 1 (size 2) according to VDI/VDE 3845



TCR-bracket TL3 (TL4)

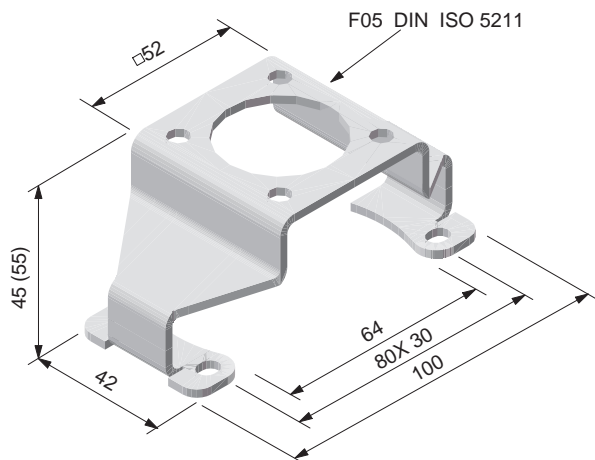
Bracket for actuators size 3 (size 4) according to VDI/VDE 3845

product key

T	Type	T = TCR-Bracket
K	Design	K = short design for size 1 and 2 L = long design for size 1 and 2
1	Size	Connection Interface Shaft height 1 = Size 1: 80x30 20 mm 2 = Size 2: 80x30 30 mm 3 = Size 3: 130x30 30 mm 4 = Size 4: 130x30 50 mm
A1	Mounting kit	A1-4 = Mounting kit bracket size 1-4 4x according to DIN 933 M5x8

Brackets for Limit Switch Boxes

Thanks to their extremely wide shape, the brackets T1..T4 offers maximum mounting space.

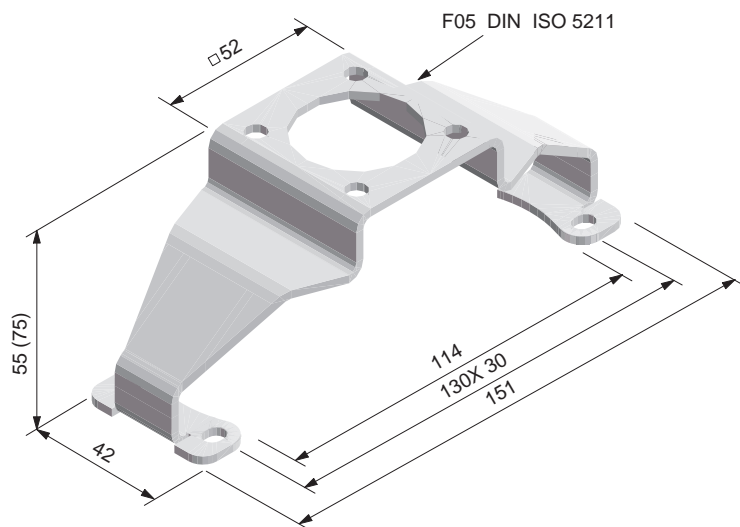


TCR-bracket T1 (T2)

Bracket for actuators
size 1 (size 2)
according to VDI/VDE 3845

TCR-bracket T3 (T4)

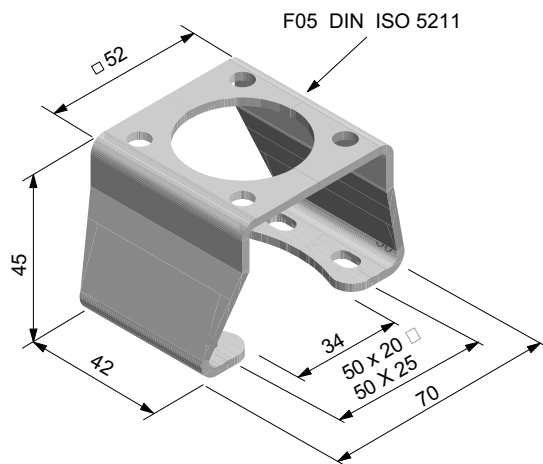
Bracket for actuators
size 3 (size 4)
according to VDI/VDE 3845



product key

T	Type	T = TCR-Bracket										
I	Size	<table border="1"> <thead> <tr> <th>Connection Interface</th> <th>Shaft height</th> </tr> </thead> <tbody> <tr> <td>1 = Size 1: 80x30</td> <td>20mm</td> </tr> <tr> <td>2 = Size 2: 80x30</td> <td>30mm</td> </tr> <tr> <td>3 = Size 3: 130x30</td> <td>30mm</td> </tr> <tr> <td>4 = Size 4: 130x30</td> <td>50mm</td> </tr> </tbody> </table>	Connection Interface	Shaft height	1 = Size 1: 80x30	20mm	2 = Size 2: 80x30	30mm	3 = Size 3: 130x30	30mm	4 = Size 4: 130x30	50mm
Connection Interface	Shaft height											
1 = Size 1: 80x30	20mm											
2 = Size 2: 80x30	30mm											
3 = Size 3: 130x30	30mm											
4 = Size 4: 130x30	50mm											
A1	Mounting kit	A1-4 = Mounting kit bracket size 1-4 4x according to DIN 933 M5x8										

Brackets for Limit Switch Boxes



The bracket size T0 is very compact, specially made for small actuators (size 0)

product key

T	Type	T = TCR-Bracket
O	Size	Connection Interface Shaft height 0 = Size 0: 50 x 25/30 20mm
A0	Mounting kit	A0 = Mounting kit size 0 4x according to DIN 933 M5x8

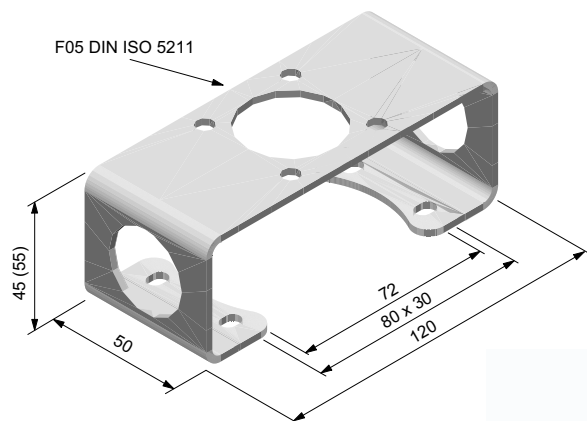
The bracket TL5 allows the adaption of boxes to the biggest part-turn actuators size 5 (e.g. Air Torque SC/DR 10000)

product key

T	Type	T = TCR-Bracket
L	Design	L = Long design
5	Size	Connection Interface Shaft height 5 = Size 5: 200x50 80mm
A5	Mounting kit	A5 = Mounting kit size 5 4x according to DIN 933 M5x8

Brackets for Limit Switch Boxes

The ET-brackets are specially made for boxes of ET-housing series.

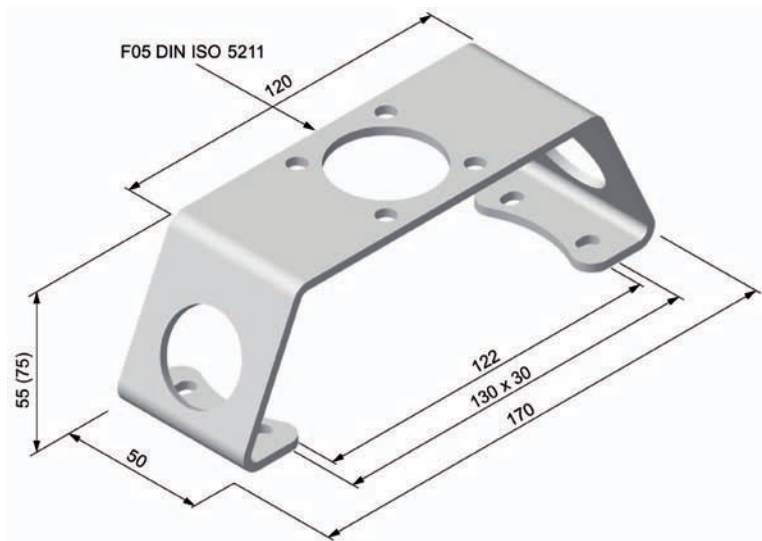


ET-bracket size 1 (size 2)

Brackets for actuators size 1 (size 2)
according to VDI/VDE 3845

ET-bracket size 3 (size 4)

Bracket for actuators size 3 (size 4)
according to VDI/VDE 3845



product key

ET	Type	ET = ET-Bracket												
1	Size	<table border="1"> <thead> <tr> <th>Connection Interface</th> <th>Shaft height</th> </tr> </thead> <tbody> <tr> <td>1 = Size 1: 80x30</td> <td>20 mm</td> </tr> <tr> <td>2 = Size 2: 80x30</td> <td>30 mm</td> </tr> <tr> <td>3 = Size 3: 130x30</td> <td>30 mm</td> </tr> <tr> <td>4 = Size 4: 130x30</td> <td>50 mm</td> </tr> <tr> <td>5 = Size 5: 200x50</td> <td>80 mm</td> </tr> </tbody> </table>	Connection Interface	Shaft height	1 = Size 1: 80x30	20 mm	2 = Size 2: 80x30	30 mm	3 = Size 3: 130x30	30 mm	4 = Size 4: 130x30	50 mm	5 = Size 5: 200x50	80 mm
Connection Interface	Shaft height													
1 = Size 1: 80x30	20 mm													
2 = Size 2: 80x30	30 mm													
3 = Size 3: 130x30	30 mm													
4 = Size 4: 130x30	50 mm													
5 = Size 5: 200x50	80 mm													
OGSA1	Mounting kit	OGSA1-5 = Mounting kit size 1-5 4x according to DIN 933 M5x8												