MP SENSOR

PRODUCT CATALOG

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MP-SENSOR GMBH – YOUR PARTNER FOR INNOVATIVE SENSORS

The MP-SENSOR GmbH is a German family business - developing, manufacturing and distributing high-quality sensors of all kind. Our motivation is to develop innovative products, which perfectly match your application.

Our strength is to professionally develop new own or customer specific products and to provide an excellent customer experience. In case you are unable to find a suitable product, our highly flexible R&D and production structure allows us a multitude of customer specific developments.

Our motivation is to implement the latest technology into our sensor functionality and equip it with a perfectly suitable housing for all kinds of industries and applications. This way we want to add our part to the success of our customer. Because only if our customers are successful, we also can be successful sustainably.

Excellent service and cooperative customer care are the reason for many success stories. The team of MP-Sensor will be assisting during the whole process of planning, quotation, purchase and after sales with whatever is necessary to satisfy the customer's needs.

Applications in the areas of robotics, handling (vacuum lifting), mobile machines and the field of general engineering are predestined for our wide range of products. Our switches for example are often used as a control device for vacuum pumps, as part of an end-of-arm tool in the robotic field or as a crash sensor for the safety shutdown of electric charging stations.

Made in Germany also means, that all our processes are designed to allow a maximum of customer service and product quality. All our products are developed and made in Germany and distributed successfully all over the world.

PRESSURE & VACUUM SENSORS

Electronic vacuum and pressure sensors with digital or analog outputs

Pressure sensors and vacuum sensors are required in many industrial and process engineering processes. Pressure sensors can be pressure switches on the one hand and pressure transmitters or transducers on the other.

Pressure sensors are available from MP-SENSOR in numerous designs. Different designs are available, which are all characterized by an extremely compact, space-saving construction. The designs differ, among other things, with regard to the housing material, the number and type of outputs, and the ease of operation. The measuring range, the electrical connection and the fluid connection can be freely selected for most designs.

CASES OF APPLICATIONS

Due to the very compact size and light weight, MP-SENSOR pressure and vacuum switches are especially eligible for applications in the robotic and handling area (vacuum lifting), as well as for general purposes in machine and plant engineering. Basically anywhere a reliable pressure or vacuum switch is required. Amongst other cases of applications, our switches are often used for controlling vacuum pumps or are integrated in robotic end-of-arm tools to ascertain a successful tool change on an automatic tool changing system.

P.TOUCH

Very flexible, compact pressure and vacuum switch with rotatable TFT touchscreen color display

rotatable 350°

IO-Link

YOUR ADVANTAGES

+ Unique new operating concept: TFT color touch display
+ Easy installation: display can be rotated 350°, even after mounting
+ For small installation spaces: Ø 28 mm
+ Real-time display: Pressure as well as switching states are clearly shown on the color display

CHARACTERISTICS

With this new operating concept for sensors, it is possible to navigate intuitively through the menu using swipe gestures and to parameterize the switching points as well as various settings using a virtual scroll wheel - similar to what is known from smartphones. This simplifies and speeds up operation immensely. The extremely compact design with a diameter of only 28 mm is achieved by the rotatable, longitudinally installed TFT touch display and the electrical connection, which is also arranged longitudinally.

The P.TOUCH is a benchmark when the maximum in innovation and user experience is to be achieved with the most compact housing possible.

VARIANTS / ORDER CODE

5 - 10 - X13X - XXX0XX

Process connection

G1/4“ M (External)	1
G1/4“ F (Internal)	5

Seals

NBR (=Standard)	1
FKM	2
EPDM	3

Firmware

Standard	00
Customized	>00

Pressure range*

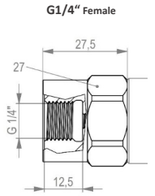
bar	psi	
0...10	0...145	010
0...16	0...232	016
0...25	0...362.5	025
0...40	0...580	040
0...100	0...1,450	100
0...250	0...3,625	250
0...400	0...5,800	400
0...600	0...8,700	600

* more on request

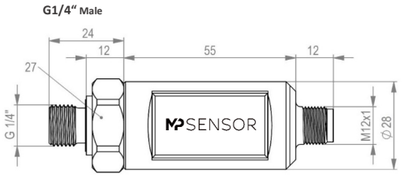
TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, pressure unit, switch points, switching delay for ON and OFF, key lock, display ON/OFF/ROTATE
Pressure ranges (bar); (psi)	0...10 / 0...16 / 0...25 / 0...40 / 0...100 / 0...250 / 0...400 / 0...600 bar; 0...145 / 0...232 / 0...362.5 / 0...580 / 0...1450 / 0...3625 / 0...5800 / 0...8700 psi
Switching outputs	2 configurable outputs: Out1 = PNP/NPN/PP or IO-Link Out2 = digital or analog (0-10V/4-20mA)
Operating fluids	Liquid, gaseous and viscous fluids
Mounting position	Any
MTTF (40° C)	478 Years (continuous operation)
Material (housing)	Stainless steel and break resistant installed glass
Material (process connection)	Stainless steel
Operating voltage	9...30 VDC
Overall accuracy (23°C)	± 0.5% FS
Repeatability	± 0.2% FS

G1/4“ Female

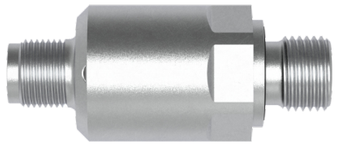


G1/4“ Male



P.CORE

Compact pressure sensor with 2 switching outputs



YOUR ADVANTAGES

+ For small installation spaces - Ø23 mm
+ Smart Sensor - IO-Link
+ For harsh environmental conditions - Stainless steel housing

IO-Link

CHARACTERISTICS

The P,Core is one of the smallest sensors with a ceramic measuring cell and yet extremely robust. The housing with protection class IP68 is made of solid stainless steel and designed for continuous industrial use. The high accuracy and short response time of the pressure switches is permanently guaranteed by the high long-term stability of the ceramic measuring cell.

2 configurable switching outputs and an IO-Link interface give the sensor maximum functionality and flexibility for the user.

TECHNICAL DATA

Programming options	Hysteresis/window mode, switching logic, pressure units, switching/reverse switching points, switching delays, damping
Pressure ranges (in bar)	0...10 / 0...16 / 0...25 / 0...40 / 0...100 / 0...250 / 0...400 / 0...600 bar
Outputs	2 configurable outputs: Out1 = PNP/NPN/PP or IO-Link Out2 = PNP/NPN/PP
Operating media	Fluid group 2 media
Operating voltage	9...30 VDC
Material	Stainless steel
Electrical connection	M12 4-pol.
Fluid connection	G1/4“ M / G1/4“ F
Accuracy	± 0,5% FS
Protection class	IP65 / IP67 / IP68

VARIANTS / ORDER CODE

5 - 20 - X 14 X - XXX 000

Process connection

G1/4“ M	1
G1/4“ F	5

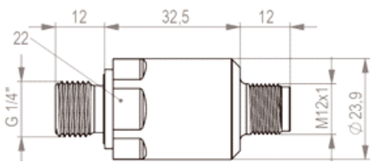
Seals

NBR	1
FKM	2
EPDM	3

Pressure range*

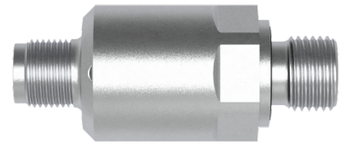
0...10	010
0...16	016
0...25	025
0...40	040
0...100	100
0...250	250
0...400	400
0...600	600

other pressure ranges on request



P.TRACE

Compact pressure sensor with analog current or voltage output



YOUR ADVANTAGES

+ For small installation spaces - Ø23 mm
+ Fast response time - Fast response due to direct signal processing
+ For harsh environmental conditions - Stainless steel housing

CHARACTERISTICS

The P.Trace is one of the smallest sensors with a ceramic measuring cell and yet extremely robust. The housing with protection class IP68 is made of solid stainless steel and designed for continuous industrial use. Various analog signals such as 0-10V / 1-10V or 4-20mA can be tapped via the popular industry standard plug connection, the M12 4-pin.

The high accuracy and short response time of the pressure transmitter is permanently guaranteed by the high long-term stability of the ceramic measuring cell.

TECHNICAL DATA

Pressure ranges (in bar)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar
Outputs	4... 20 mA / 1...10 V / 0...10 V
Operating media	Fluid group 2 media
Protection class	IP65 / IP67 / IP68
Material	Stainless steel
Accuracy	≤ 0,5% FS
Operating voltage	9...30 VDC (for current output); 14...30 VDC (for voltage output)
Fluid connection	G1/4“ M / G1/4“ F
Electrical connection	M12 4-pol.

VARIANTS / ORDER CODE

5 - 30 - X 1 X X - XXX 000

Process connection

G1/4“ M	1
G1/4“ F	5

Output signal

0-10V	5
1-10V	6
4-20mA	7

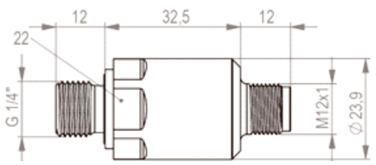
Seals

NBR	1
FKM	2
EPDM	3

Pressure range*

0...10	010
0...16	016
0...25	025
0...40	040
0...100	100
0...250	250
0...400	400
0...600	600

other pressure ranges on request



PICO-02

Multipurpose pressure and vacuum switch with keypad and rotatable display

rotatable 360°

IO-Link

YOUR ADVANTAGES

- + For small spaces: Ø 16 mm
- + Easily programmable: without tools
- + Smart sensor: IO-Link
- + Easy installing: display and buttons rotatable by 360°
- + Quick diagnosis: LEDs / IO-Link
- + Real time pressure reading

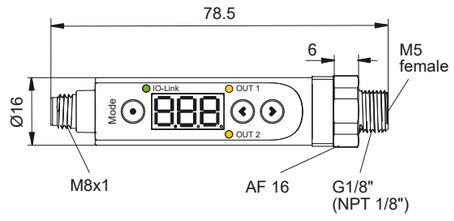
CHARACTERISTICS

The PICO-02 switch is controlling actuators directly or indirectly over 2 independently adjustable transistor switching outputs (each supplied with 250 mA), without necessarily needing a control unit (such as a PLC). The light-weight and compact design is predestined for applications in vacuum lifting technology or to control valves. If the PICO-02 is connected to an IO-Link master, it will switch into IO-Link mode. Otherwise the outputs can be used conventionally as signal transmitters or switches.

The PICO-02 is very easily programmable on site by using its keys and display to access the menu. 3 status LEDs and the diagnosis function of IO-Link provide ideal fault diagnosis.

TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, pressure unit, switch points, switching delay for ON and OFF, key lock, display ON/OFF/ROTATE
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14.5...0 / -14.5...14.5 / -14.5...145 / 0...145 / 0...174 psi
Switching outputs	2x PNP or 2x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
MTTF (40° C)	318 years
Material (housing)	Plastic PC
Material (process connection)	Brass nickel-plated
Operating voltage	11...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	yes
Electrical connection	M8 4-pole / M12 4-pole



VARIANTS / ORDER CODE

1 - 07 - XX XX - XX 3 X 00

Process connection

G1/8“	02
NPT1/8“	04

Electrical connection

M8 4-pole	01
M12 4-pole	02

Output signal

2x PNP	03
2x NPN	04

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

NANO-02

Multipurpose pressure and vacuum switch with keypad, display and a durable metal housing

IO-Link

YOUR ADVANTAGES

- + Very narrow: only 33 mm in height
- + Easily programmable: without tools
- + Smart sensor: IO-Link
- + Very robust: metal housing
- + Quick diagnosis: LEDs / IO-Link
- + Real time pressure reading

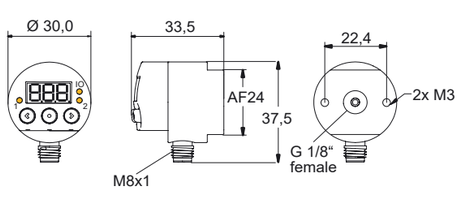
CHARACTERISTICS

The NANO-02 is predestined for many applications within the pneumatic industry. The durable but compact metal housing enables the use in harsh environmental conditions and the installation in limited spaces. The sensor is equipped with two transistor switching outputs, of which one can be used optionally as an IO-Link communication interface. Through IO-Link functionality, the sensor has got an additional simple option to change and display all parameters.

The NANO-02 is very easily programmable on site by using its keys and display to access the menu. 3 status LEDs and the diagnosis function of IO-Link provide ideal fault diagnosis.

TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, pressure unit, switch points, switching delay for ON and OFF, key lock, display ON/OFF/ROTATE
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14.5...0 / -14.5...14.5 / -14.5...145 / 0...145 / 0...174 psi
Switching outputs	2x PNP or 2x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
MTTF (40° C)	319 years
Material (housing)	Alloy (anodized)
Material (process connection)	Alloy (anodized)
Operating voltage	11...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	yes
Electrical connection	M8 4-pole



VARIANTS / ORDER CODE

1 - 06 - XX 01 - XX 3 X 00

Process connection

G1/8“ female	08
NPT1/8“ male	04

Electrical connection

M8 4-pole	01

Output signal

2x PNP	03
2x NPN	04

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

FEMTO

Multipurpose pressure and vacuum switch with a keypad, one switching output and one analog output

rotatable 360°

YOUR ADVANTAGES

- + All-rounder: transistor switching output plus additional analog output
- + Easily programmable: with keypad
- + Very small: Ø 16 mm, 65 mm in length
- + Easy installing: rotatable by 360° after mounting

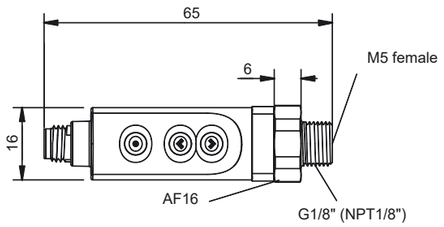
CHARACTERISTICS

The FEMTO sensor is equipped with an adjustable transistor switching output (supplied with 250 mA) as well as with an analog output. This way the sensor is able to control actuators directly or indirectly and supply an analog measurement signal at the same time. Therefor it can be used in a wide range of the pneumatic field. When installing the FEMTO, the rotatable body ensures a quick alignment and initial setup.

The FEMTO is easily teachable on site by using its 3 keys. LEDs are indicating the status of the output or will assist during teaching.

TECHNICAL DATA

Setting options	Switch point, hysteresis, NO/NC, reset to factory settings
Pressure ranges (bar); (psi)	-1...0 / -1...10 bar; -14.5...0 / -14.5...145 psi
Outputs	1x PNP plus 1x analog 1...5 V or 1x NPN plus 1x analog 1...5 V
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
Weight	Approx.. 20 g
Material (housing)	Plastic PC
Material (process connection)	Brass nickel-plated
Operating voltage	11...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	no
Electrical connection	M8 4-pole / M12 4-pole



VARIANTS / ORDER CODE

1 - 05 - XX XX - XX 3 X 00

Process connection

G1/8“	02
NPT1/8“	04

Electrical connection

M8 4-pole	01
M12 4-pole	02

Output signal

1x PNP + 1x analog 1...5 V	05
1x NPN + 1x analog 1...5 V	On request

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...10	-14.5...145	3

INLINE

Very small and lightweight pressure and vacuum switch , optionally with IO-Link interface

IO-Link

YOUR ADVANTAGES

- + Quick installation: Push-in fluid connections for hoses Ø 4/6/8/10 mm.
- + Extremely small & lightweight: Ø16-19 mm / 40 mm long / 20-30 g
- + Easily adjustable: via potentiometer or IO-Link
- + Various output signals: 2x PNP output / analog / IO-Link

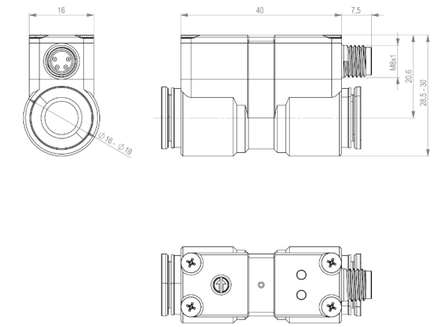
CHARACTERISTICS

The INLINE sensor impresses with its compact and lightweight design and its quick, uncomplicated installation via push-in connections, even in existing pneumatic systems. It is ideally suited for applications where weight and size are important. The INLINE can be programmed via an IO-Link interface. Without IO-Link, the switching point can be set very easily via potentiometer.

The low-cost INLINE vacuum and pressure switch stands out due to its very simple and particularly fast installation: "Cut open the hose, plug the InLine in between, done!"

TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, switch points, switching delay for ON and OFF, reset to factory settings
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...3 / -1...10/ 0...0.25 / 0...10 / 0...12 -14.5...0 / -14.5...14.5 / -14.5...43.5 / -14.5.. .145 / 0...3.6 / 0...145 / 0...174
Switching outputs	1x PNP or 1x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any
Weight	Approx. 20-30 g
Material (housing)	Plastic PBT/PC
Material (process connection)	Push-In for hose Ø 4/6/8/10 mm
Operating voltage	9...30 VDC
Accuracy	± 0.5% FS / ± 3% FS with Poti
Repeatability	± 0,2% FS / ± 3% FS with Poti
IO-Link interface	yes



VARIANTS / ORDER CODE

1 - 08 - XX X1 - 0XX X 00

Process connection

Push-In hose Ø 4 mm	14
Push-In hose Ø 6 mm	07
Push-In hose Ø 8 mm	15
Push-In hose Ø 10 mm	16

Degree of protection

IP40	5
IP68	8

Output signal

1x PNP / NO	11
1x PNP / NC	12
2x PNP with IO-Link	33

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5
-1...3	-1...43.5	6
0...0,25	0...3.6	8

VS11

Miniature vacuum switch for very narrow spaces, with adjustment potentiometer

rotatable 360°

YOUR ADVANTAGES

+ Miniature design: smallest possible size for narrow spaces
+ Potentiometer: switching point is easily adjustable
+ Extremely light-weight: only 8 g
+ Simple installation: continuously rotatable by 360°
+ Male connector or open cable end

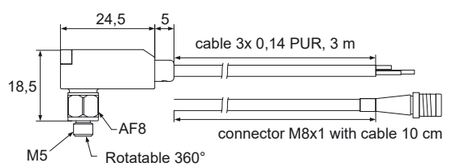
CHARACTERISTICS

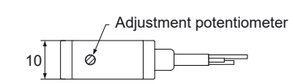
The trendsetting sensor design of the VS11 is the most light-weight and smallest possible size available today. Specifically designed for extremely narrow spaces and simple installation, the fluid port comes either with an M5 thread or a tube connection. The options for the electrical connection are an M8 male connector or an attached cable with an open cable end. Once installed, the sensor is still rotatable by 360°, which ensures a quick and simple initial setup.

The switch point of the VS11 is easily settable on site by using its adjustment potentiometer. 2 LEDs are indicating the status of operation and the switching status.

TECHNICAL DATA

Setting options	Switching point with adjustment potentiometer
Pressure ranges (bar); (psi)	-1...0 / -1...1 bar; -14.5...0 / -14.5...14.5 psi
Switching outputs	1x PNP (NPN on request)
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
Weight	8 g
Material (housing)	Plastic PC
Material (process connection)	Brass nickel-plated
Operating voltage	9...30 VDC
Accuracy	± 2% FS
Repeatability	± 0,2% FS
IO-Link interface	no
Electrical connection	M8 3-pole / open cable end





VARIANTS / ORDER CODE

1 - 01 - XX XX - 01 X X 00

Process connection

M5 male	01
Tube Ø 4 mm	06

Electrical connection

3 m cable	04
M8 3-pole	05

Output signal

1x PNP	01

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2

Output logic

NO	1
NC	2

F08-K

Very compact and light-weight pressure and vacuum switch with IO-Link interface

IO-Link

YOUR ADVANTAGES

+ For small spaces: only Ø16 mm, only 45 mm in length
+ When every gram counts: 18 g
+ Smart sensor: IO-Link interface
+ Tube connection possible

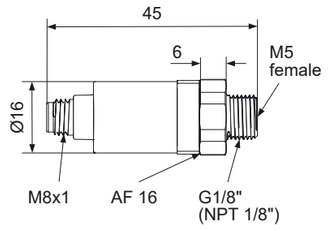
CHARACTERISTICS

The F08-K is a small and light-weight pressure and vacuum switch. It is especially suitable for applications within the pneumatic field, where size and weight matter, but still a smart sensor with many setting options is required. The F08-K can be programmed by its IO-Link interface. If no IO-Link is needed, the sensor can of course be used as a conventional switch with the transistor switching output.

Additionally to the G1/8“ fluid port, there is also a 6mm tube connection available for a simple and quick adaption to vacuum.

TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, switch points, switching delay for ON and OFF, reset to factory settings
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14,5...0 / -14,5...14,5 / -14,5...145 / 0...145 / 0...174 psi
Switching outputs	1x PNP or 1x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
Weight	Approx. 18 g
Material (housing)	Plastic PC
Material (process connection)	Brass nickel-plated
Operating voltage	11...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	yes
Electrical connection	M8 4-pole / M12 4-pole



VARIANTS / ORDER CODE

1 - 02 - XX XX - XX 3 X 00

Process connection

G1/8“	02
NPT1/8“	04
Tube 6 mm	05

Electrical connection

M8 4-pole	01
M12 4-pole	02

Output signal

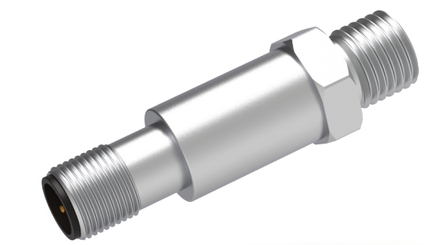
1x PNP	01
1x NPN	02

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

F08-M1

Precise, compact and durable pressure and vacuum switch with a stainless steel housing and one switching output



LABS free IO-Link

YOUR ADVANTAGES

- \+ Extremely robust and durable for robotics, handling, packaging. Vibration / shock, LABS-free, stainless steel
- \+ 1 transistor switching output
- \+ Smart sensor: IO-Link
- \+ For small spaces: Ø 16 mm
- \+ Customer variants are done quickly

CHARACTERISTICS

The F08-M1 convinces by its special suitability in demanding environments. This pressure and vacuum switch in a stainless steel housing is tested to its high vibration/shock load capability. The compact and extremely robust design predestines the F08-M1 e.g. for applications in robotics. The proven and at “Fraunhofer Institute” according to the newest VDMA standard tested fact, that the sensor is LABS-free, makes it perfectly suitable for applications within lacquering system lines.

If the F08-M1 is connected to an IO-Link master, it will switch into IO-Link mode, which will enable extensive programming options. Otherwise the output can be used conventionally as a signal transmitter or a switch.

VARIANTS / ORDER CODE

1 - 03 - XX 02 - XX 3 X 00

Process connection

G1/8“	02
G1/4“	03
NPT1/8“	04
Push-in 6 mm	07
G3/8“	09

Pressure range

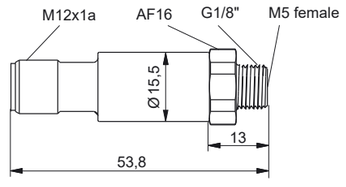
bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

Output signal

1x PNP	01
1x NPN	02

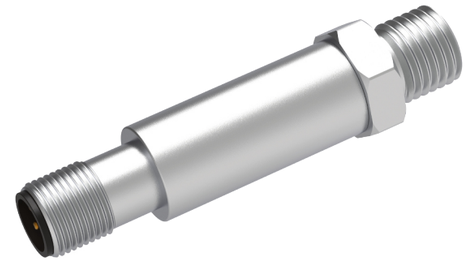
TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, switch points, switching delay for ON and OFF, reset to factory settings
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14,5...0 / -14,5...14,5 / -14,5...145 / 0...145 / 0...174 psi
Switching outputs	1x PNP or 1x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
MTTF (40° C)	820 years
Material (housing)	Stainless steel 1.4305
Material (process connection)	Brass nickel-plated
Operating voltage	9...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	yes
Electrical connection	M12 4-pole



F08-M2

Precise, compact and durable pressure and vacuum switch with a stainless steel housing and two switching outputs



LABS free IO-Link

YOUR ADVANTAGES

- \+ Extremely robust and durable for robotics, handling, packaging. Vibration / shock, LABS-free, stainless steel
- \+ 2 transistor switching outputs
- \+ Smart sensor: IO-Link
- \+ For small spaces: Ø 16 mm
- \+ Customer variants are done quickly

CHARACTERISTICS

The F08-M2 convinces by its special suitability in demanding environments. This pressure and vacuum switch in a stainless steel housing is tested to its high vibration/shock load capability and is proven to be LABS-free. It comes with two independently programmable transistor switching outputs (each supplied with 250 mA). The compact and extremely robust design predestines the F08-M2 for applications in robotics, lacquering systems, handling, packaging, ...

Through its IO-Link communication interface, the F08-M2 is enabled with extensive programming options. Amongst other settings, the switch point, re-switch point or the switching logic can be changed.

VARIANTS / ORDER CODE

1 - 04 - XX 02 - XX 3 X 00

Process connection

G1/8“	02
G1/4“	03
NPT1/8“	04
Push-in 6 mm	07
G3/8“	09

Pressure range

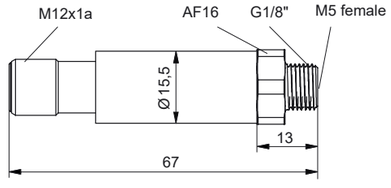
bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

Output signal

1x PNP	01
1x NPN	02

TECHNICAL DATA

Setting options	Hysteresis / window mode, NO/NC, switch points, switching delay for ON and OFF, reset to factory settings
Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14,5...0 / -14,5...14,5 / -14,5...145 / 0...145 / 0...174 psi
Switching outputs	2x PNP or 2x NPN
Operating fluids	Filtered, dry or oiled air and non-corrosive gases
Mounting position	Any (port downwards when using oiled air)
MTTF (40° C)	713 years
Material (housing)	Stainless steel 1.4305
Material (process connection)	Brass nickel-plated
Operating voltage	9...30 VDC
Accuracy	± 0.5% FS
Repeatability	± 0.2% FS
IO-Link interface	yes
Electrical connection	M12 4-pole



F09-T-K

Very compact and light-weight pressure and vacuum transmitter with an analog voltage or current output

YOUR ADVANTAGES

- \+ For small spaces: only Ø16 mm, only 45 mm in length
- \+ Ideal for pneumatic applications
- \+ Fast & easy installation: Tube connection possible
- \+ Integrated temperature compensation

CHARACTERISTICS

The F09-T-K pressure and vacuum transmitter converts the detected pressure value into an analog voltage (0...10 V / 1...10 V) or current (4...20 mA) signal. It perfectly qualifies for applications in the vacuum handling and pneumatic industry due to the compact design of the housing and the very light weight. The integrated temperature compensation and the high long-term stability together ensure a permanently accurate indicated value.

The analog output signal of F09-T-K pressure and vacuum transmitters can be used for almost any area of application by feeding an analog input of a control unit / a PLC.

VARIANTS / ORDER CODE

2 - 01 - XX XX - XX 0 X 00

Process connection

G1/8“	01
NPT1/8“	02
Rohr 6 mm	03

Electrical connection

M8, 4-polig	01
M12, 4-polig	02

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

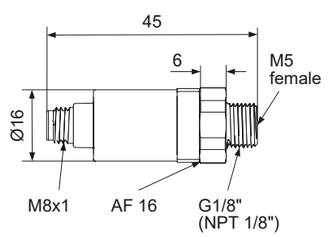
Output signal

4...20 mA	01
1...10 V**	02
0...10 V	03

** Not available for every pressure range

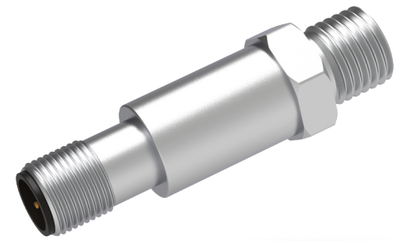
TECHNICAL DATA

Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14,5...0 / -14,5...14,5 / -14,5...145 / 0...145 / 0...174 psi
Outputs	4... 20 mA / 1..10 V** / 0...10 V
Operating fluids	Filtered, dry or oiled air and noncorrosive gases
Mounting position	Any (port downwards when using oiled air)
Material (housing)	Plastic PC
Material (process connection)	Brass nickel-plated
Operating voltage	9...30 VDC (if current output) 14...30 VDC (if voltage output)
Accuracy	≤ 0.5% FS
Repeatability	< 0,2% FS p.a.
Weight	18 g
Electrical connection	M8 4-pole / M12 4-pole
Process connection	G1/8“; NPT1/8“; Tube 6 mm



F09-T-M-M12

Compact and durable pressure / vacuum transmitter in a stainless steel housing, with an analog voltage or current output



LABS$_{free}$

YOUR ADVANTAGES

- \+ For small spaces: only Ø 15.5 mm, only 67 mm in length
- \+ Very robust: stainless steel housing
- \+ Quick installation: available with Push-in process connection
- \+ LABS-free
- \+ Integrated temperature compensation

CHARACTERISTICS

The F09-T-M pressure and vacuum transmitter converts the detected pressure value into an analog voltage (0...10V / 1...10V) or current (4...20 mA) signal and excels with its stainless steel housing. Therefor it is especially suitable for harsh environments, such as pneumatic applications in robotics, handling or packaging. The integrated temperature compensation and the high long-term stability together ensure a permanently accurate indicated value.

The proven and at “Fraunhofer Institute” according to the newest VDMA standard tested fact, that the sensor is LABS-free, makes it perfectly suitable for applications within lacquering system lines.

VARIANTS / ORDER CODE

2 - 02 - XX 02 - XX 0 X 00

Process connection

G1/8“	01
NPT1/8“	02
G1/4"	04
G3/8"	05
Push-in 6 mm	06

Pressure range

bar	psi	
-1...0	-14.5...0	1
-1...1	-14.5...14.5	2
-1...10	-14.5...145	3
0...10	0...145	4
0...12	0...174	5

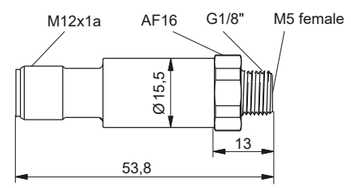
Output signal

4...20 mA	01
1...10 V**	02
0...10 V	03

** Not available for every pressure range

TECHNICAL DATA

Pressure ranges (bar); (psi)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar; -14,5...0 / -14,5...14,5 / -14,5...145 / 0...145 / 0...174 psi
Outputs	4... 20 mA / 1..10 V** / 0...10 V
Operating fluids	Filtered, dry or oiled air and noncorrosive gases
Mounting position	Any (port downwards when using oiled air)
Material (housing)	Stainless steel 1.4305
Material (process connection)	Brass nickel-plated
Operating voltage	9...30 VDC (if current output) 14...30 VDC (if voltage output)
Accuracy	≤ 0.5% FS
Repeatability	< 0,2% FS p.a.
Weight	28 g
Electrical connection	M12 4-pole
Process connection	G1/8“; NPT1/8“; G1/4”; G3/8”; Push-in 6 mm



F09-T-M-M8

Compact pressure sensor with analog current or voltage output

LABS$_{frei}$

YOUR ADVANTAGES

+ For small spaces - Ø 15,5 mm
+ Extremely robust - stainless steel housing
+ High degree of protection - IP67
+ LABS-free

CHARACTERISTICS

With its stainless steel housing, the F09-T-M-M8 pressure and vacuum transmitter is particularly suitable for demanding environmental conditions. It is ideal for pneumatic applications in robotics, for example. The F09-T-M converts the applied process pressure into an analog current signal (4...20 mA) or voltage signal (0...+10 V / 1....+10 V).

Testing of the sensor for freedom from LABS in accordance with the latest VDMA standard sheet at a Fraunhofer Institute guarantees perfect suitability for applications in the painting process.

TECHNICAL DATA

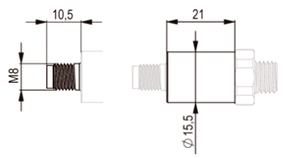
Pressure ranges (in bar)	-1...0 / -1...1 / -1...10 / 0...10 / 0...12 bar
Outputs	4... 20 mA / 1...10 V** / 0...10 V
Operating media	Filtered, dry or lubricated compressed air and neutral gases
Installation position	Any (pressure connection with lubricated air downwards)
Material (housing)	Stainless steel
Material (fluid connection)	Nickel-plated brass; Stainless steel on request
Operating voltage	9...30 VDC (for current output); 14...30 VDC (for voltage output)
Accuracy	≤ 0,5% FS
Long-term stability	< 0,2% FS p.a.
Weight	25 g
Electrical connection	M8 4-pol.
Fluid connection	G1/8"; NPT1/8"; G1/4"; G3/8"

VARIANTS / ORDER CODE

2 - 02 - XX X2 - XX 0 X 00

Process connection		Pressure range	
G1/8"	01	-1...0	1
NPT1/8"	02	-1...1	2
G1/4"	04	-1...10	3
G3/8"	05	0...10	4
Push-in 6 mm	06	0...12	5
Protection class		**Output signal**	
IP54	4	4...20 mA	01
IP67	7	1...10 V**	02
		0...10 V	03

** not available for all pressure ranges



G	L	SW
G1/8"	13	16
G1/4"	18	17
G3/8"	16	19
NPT1/8"	13	16

NOTES

FLOW SENSORS

Electronic flow sensors

Flow sensors are often also called flow meters or flow rate sensors and are used in various industrial or medical applications to measure the flow of any media through a pipe. The areas of application include both simple monitoring functions and exact determination of specific flow rates.

The F.Core represents a true all-rounder in the area of flow sensors, as this flow sensor combines measurements of gas flow, temperature, process pressure and energy consumption. The results can be output as an analog signal or digital switching signal and / or via an electronic interface. The F.Core is configurable, so you can choose between several process connections and also between Ethernet and IO-Link as a communication interface.

F.CORE

Elektronischer Durchflusssensor

YOUR ADVANTAGES

+ Flexible - 4 switchable outputs
+ Multi-talented - various measured values can be recorded (flow rate, pressure and temperature)
+ Quickly programmed - menu-guided via buttons and display

CHARACTERISTICS

MP-SENSOR offers a flow sensor in the form of the F.Core in its product portfolio. This sensor is a true all-rounder, as it can record several measured values (flow rate, pressure and temperature) simultaneously. Thanks to various configuration options, the F.Core can be adapted to different customer requirements.

Process connection (G1/2", G3/4" or G1") and communication interface (IO-Link or Ethernet) flexibly configurable.

TECHNICAL DATA

Electrical connection	M12 5-pole
Operating voltage	17...30 VDC
Interface	IO-Link or Ethernet
Outputs	1 analog output 4...20 mA + 1 digital/analog output (PNP, NPN, push-pull, 4...20 mA) + 1 digital output (PNP, NPN, push-pull), IO-Link
Measured variables	Flow rate, pressure, temperature
Measuring principle	Calorimetric, piezoresistive
Accuracy of the sensor	± 3 %
Operating medium	Compressed air (air quality ISO 8573-1:2010), helium, argon, nitrogen, carbon dioxide
Protection class	IP65 / IP67

VARIANTS / ORDER CODE

Process connection	Interface	Article number
G1/2“ F	IO-Link	60101503
G3/4“ F	IO-Link	60102003
G1“ F	IO-Link	60102503
G1/2“ F	Ethernet	60201503
G3/4“ F	Ethernet	60202003
G1“ F	Ethernet	60202503

INCLINATION SENSORS

Robust, electronic inclination switches with precise MEMS sensor elements

The electronic inclination switches from MP-SENSOR are equipped with either transistor outputs or relay outputs. The moment a preset angle has been reached, the respective switching output will open or close. The highly accurate switches are designed for professional continuous operation and excel by highest quality and accuracy as well as through a robust, compact and an easy-to-assemble design. The sensor element and the electronics are protected against environmental influences excellently by a durable metal housing and the potting compound.

All MP-SENSOR inclination switches do not use any mercury at all and are temperature compensated. Angles are measured contactless by a modern, highly accurate Micro Electromechanical System (MEMS) with intelligent evaluation by a micro controller.

CASES OF APPLICATIONS

Inclination switches may be installed in stationary or mobile applications, in which it is necessary to measure and safely supervise any kind of an angle.

Typical cases of application of inclination switches (which are often also called crash sensors due to their case of operation) are tilt protection devices, lifting platforms, forklifts, cranes, excavators, agricultural machinery, truck trailers and also a lot of electric car charging stations. But inclination switches are also required and very useful in many more different areas such as mobile homes, yachts, off-road vehicles or wind power plants.

DNS

Very easily programmable inclination switch with 4 independently adjustable transistor switching outputs

YOUR ADVANTAGES

+ Very flexible: 4 independently adjustable switching angles
+ Highly accurate: high quality MEMS sensor element
+ Outdoor suitable: IP67 housing
+ Easily programmable: by keys and display through the menu

CHARACTERISTICS

The DNS tilt switches have a very precise 3D MEMS sensor element. They control actuators directly or indirectly via 4 transistor switching outputs (each with a load capacity of 500 mA) without necessarily requiring a control unit (e.g. PLC). The 4 switching angles can be distributed as required to the X and Y axes and programmed completely independently of each other with various parameters. The DNS is also available with 2 analog outputs (4...20mA).

The DNS is very easy to program using the menu-guided buttons and display. It also offers quick visual feedback thanks to 4 status LEDs, 4 crosshair LEDs and a display.

TECHNICAL DATA

Programming options	Hysteresis/window mode, switching logic, switching/reverse switching angle, switching delays, damping, turn-down 5 to 1 (analog output)
Operating voltage	9...30 VDC
Outputs	4x PNP, switching angle can be distributed to the X and Y axes as required or 2x analog 4....20mA
Display	1 status LED per output; 4 crosshair LEDs; 3-digit LED display (programming and angle display)
Material (housing)	Aluminum, powder-coated
Protection class	IP68
Internal resolution	0,005°
Display resolution	0,1°
Temperature drift (at 0°)	0,01°/°C

VARIANTS / ORDER CODE

Setting range	Description	Article number
-10°...+10°	DNS-10 4xPNP	50752010
-45°...+45°	DNS-45 4xPNP	50752045
-85°...+85°	DNS-45 4xPNP	50752085
-10°...+10°	DNS-10 2x4...20mA	50802010
-45°...+45°	DNS-45 2x4...20mA	50802045
-85°...+85°	DNS-85 2x4...20mA	50802085

HNS-45-D2

Highly accurate and robust inclination switch with 4 PNP transistor switching outputs to monitor 2 axes

YOUR ADVANTAGES

+ 4x PNP transistor switching outputs
+ High accuracy: MEMS sensor element
+ Easy programming: Teaching with DIP switches
+ Small size
+ Robust metal housing IP67

CHARACTERISTICS

The HNS-45-D2 monitors the inclination of 2 axes, X and Y. There can be set an independent inclination angle on each of the two axes. The switching angles are automatically mirrored on the respective axis, so that by setting one angle, the same angle in the opposite direction of that axis (+/-) will also be monitored. The HNS is equipped with 4 separate transistor switching outputs for +X, -X, +Y and -Y. Due to its robust metal housing (IP67) and potted electronics, the switch excels in harsh operation environments.

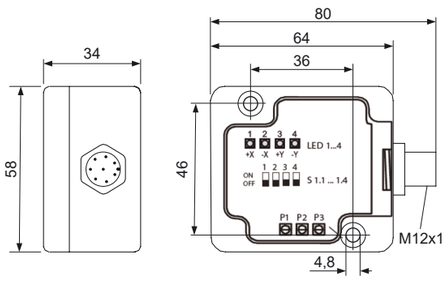
The zero position can be adjusted afterwards, without reprogramming all the switching angles. The switch is equipped with a highly accurate MEMS sensor element.

TECHNICAL DATA

Setting options	Switching angle X-axis (0.5°...45°)* Switching angle Y-axis (0.5°...45°)* Hysteresis (0.1°...2° via potentiometer) Inertia 5...0.2 sec Cut-off frequency 0.2 Hz
Operating voltage	9...30 VDC
Switching outputs	4x PNP transistor switching outputs
Display	4 LEDs: display of programming and status
Max. output current	500 mA for each output
Switching accuracy	±0,050° + 1% of inclination angle
Accuracy of calibration (25°C)	±0,050°
Ambient temperature	Operation: -25°...+80°C
Degree of protection	IP67
Material (housing)	Alloy, powder coated

VARIANTS / ORDER CODE

Area of operation	Description	Product number
-45°...+45°	HNS-45-D2	50200007



HNS-45-D2-R

Highly accurate and robust inclination switch with merged relay output to monitor 2 axes

YOUR ADVANTAGES

+ 1 potential-free relay output (2 A load)
+ High accuracy: MEMS sensor element
+ NO/NC function through toggle switch
+ Safety function: signal when power failure
+ Small, robust metal housing IP67

CHARACTERISTICS

The HNS-45-D2-R monitors the inclination of 2 axes, X and Y. There can be set an independent inclination angle on each of the two axes. The switching angles are automatically mirrored on the respective axis, so that by setting one angle, the same angle in the opposite direction of that axis (+/-) will also be monitored. Due to its robust metal housing (IP67) and potted electronics, the switch excels in harsh operation environments, especially when mounted to mobile work machines or stationary outdoor equipment.

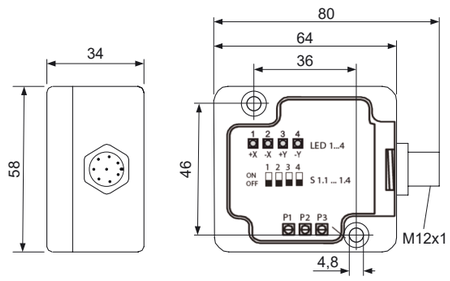
The merged relay output drops down when reaching a set inclination angle or in case of a power failure (safety function). The zero position can be adjusted afterwards, without reprogramming all the switching angles.

TECHNICAL DATA

Setting options	Switching angle X-axis (0.5°...45°)* Switching angle Y-axis (0.5°...45°)* Hysteresis (0.1°...2° via potentiometer) Inertia 5...0.2 sec Cut-off frequency 0.2 Hz
Operating voltage	9...30 VDC
Switching outputs	1x potential-free relay output, works as toggle switch
Display	4 LEDs: display of programming and status
Max. output current	Relay-output 2 A
Switching accuracy	±0,050° + 1% of inclination angle
Accuracy of calibration (25°C)	±0,050°
Ambient temperature	Operation: -25°...+80°C
Degree of protection	IP67
Material (housing)	Alloy, powder coated

VARIANTS / ORDER CODE

Area of operation	Description	Product number
-45°...+45°	HNS-45-D2-R	50210008



ACCESSORIES

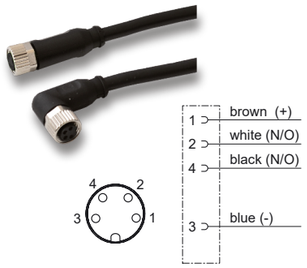
Relevant accessories, perfectly matching the product portfolio of MP-Sensor

With matching accessories you will be able to fully utilize the potential of our products. To ensure a quick and simple installation, MP-Sensor provides a wide range of useful accessories. They are tested and exactly tailored to our sensors, switches and ejectors. Through competitive prices, high quality and many variations we can be a perfect one-source supplier for your need. This will help you to increase productivity and save time and money.

For the electrical connection you may chose between various types, lengths and variations of connection cables to meet the requirements of your application. Your fluid port is incompatible to the fluid connection of a product? Various different adapters can help you to install the sensor. We also help you with different kind of mounting brackets or installation kits to arrange our products at your mounting location.

CONNECTION TECHNOLOGY

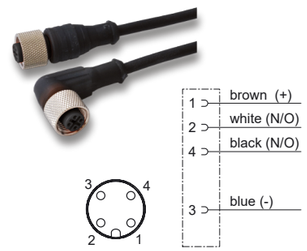
Matching connection cables for our pressure and vacuum sensors and our inclination switches.



M8 FEMALE 4-POLE

M8 connector cable with open line end. Other variants on request.
Suitable for PICO-02, NANO-02, FEMTO, F08-T-K, F09-T-K.

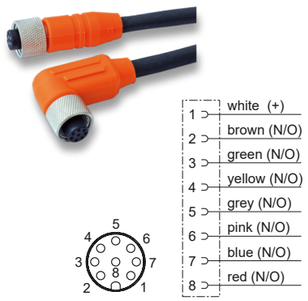
Version / Cable length	0°	90°
3 m	11026210	11026200
5 m	11026311	11026300
10 m	11026511	11026500



M12 FEMALE 4-POLE

M12 connector cable with open line end. Other variants on request.
Suitable for F08-M1 & M2, F09-T-M, P.Touch, P.Trace, P.Core etc.

Version / Cable length	0°	90°
3 m	99000591	99000592
5 m	99000562	99000560
10 m	99000594	99000595



M12 FEMALE 8-POLE SHIELDED

M12 connector cable with open line end. Other variants on request.
Suitable for DNS, HNS-45-D2 und HNS-45-D2-R.

Version / Cable length	0°	90°
2 m	99000041	99000572
5 m	99000541	99000569
10 m	99000571	99000570

MOUNTING ACCESSORIES

Perfectly suitable for our pressure and vacuum sensors

G1/8“ ADAPTER FLANGE

Adapter flange for the mounting of sensors with a G1/8" male fluid port. G1/8“ male, including sealing gasket. Suitable for PICO, FEMTO, F08-K and F09-K.

(P/N 8041730)

G1/8“ ADAPTER + BRACKET

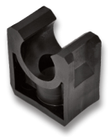
Set consisting of G1/8“ adapter flange and a bracket with mounting screws. For easy installation of our sensors PICO, FEMTO, F08-K and F09-K with G1/8” male fluid port.

(P/N 8040610)

BRACKET + PUSH-IN ADAPTER

Set for easy mounting and easy installation and by retrofitting a push-in hose connector. Suitable for PICO, FEMTO, F08-K and F09-K with a G1/8” fluid port. Following variations are available:

+ for 4 mm hose (P/N 8038574)
+ for 6 mm hose (P/N 8038576)
+ for 8 mm hose (P/N 8038578)



CLAMP MOUNTING

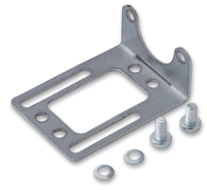
Simple clamp mounting made of plastic to easily clip our sensors to any place. Suitable for PICO, FEMTO, F08-K, F08-M1, F08-M2, F09-K and F09-M.

(P/N 1026373)

CLAMP MOUNTING + HAT RAIL CLIP

Set consisting of clamp mounting and hat rail clip. To easily install our sensors within control cabinets with top hat rails.
Suitable for PICO, FEMTO, F08-K, F08-M1, F08-M2, F09-K and F09-M.

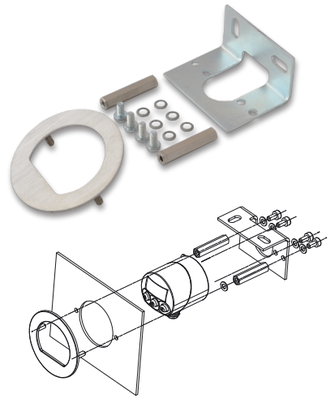
(P/N 8040532)



NANO MOUNTING BRACKET

Bracket including fasteners to easily install our NANO vacuum and pressure switch anywhere.

(P/N 8040534)



NANO INSTALLATION KIT

Installation-kit for front panel installation of our NANO vacuum and pressure switch. Including an elegant metal cover.

(P/N 8040570)

REDUCERS / DOUBLE NIPPLES

Suited for our vacuum and pressure sensors.

PUSH-IN REDUCERS

Adapter suiting the sensors with a G1/8“ fluid port PICO, FEMTO, F08-K and F09-K, to retrofit them with a push-in hose connector.
Following variations are available:

+ G1/8“ female / push-in, 4 mm hose (P/N 8038564)
+ G1/8“ female / push-in, 6 mm hose (P/N 8038566)
+ G1/8“ female / push-in, 8 mm hose (P/N 8038568)

REDUCERS

Adapter to change the thread size or type of a fluid port.
Following variations are available:

+ G1/8“ female / G1/4“ male (P/N 8038614)
+ G1/4“ female / G1/2“ male (P/N 9017783)

DOUBLE NIPPLE

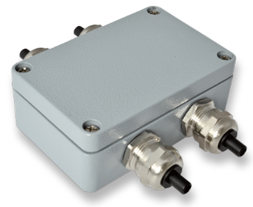
Adapter to change the thread size or type of the fluid port of our NANO vacuum and pressure switch with a G1/8” female port.
Following variations are available:

+ G1/8“ male / G1/8“ male (P/N 8038563)
+ G1/8“ male / NPT1/8“ male (P/N 8038620)
+ G1/8“ male / G1/4“ male (P/N 8038627)

RELAY BOXES / PULSE STRETCHERS

To adjust the transistor switching outputs to your requirements

RELAY BOXES



CHARACTERISTICS

The relay boxes enable a potential free integration of our sensors with PNP transistor switching outputs into an electronic control system.

By means of the built-in changeover contacts you can realize NO or NC functionality. Following variations are available:

+ RB-2-2 with 2 inputs and 2 outputs (P/N 50100902)
+ RB-4-4 with 4 inputs and 4 outputs (P/N 50100904)

YOUR ADVANTAGES

+ Potential free relay changeover contacts
+ Load currents of up to 5A for each output
+ Robust metal housing
+ Protection class IP65

PULSE STRETCHER MP-IV2.0

CHARACTERISTICS

If the output signal of a sensor is too short for a specific application, this impulse stretcher helps by increasing the length of the signal. It will detect impulses as short as 1.5 ms and stretch them by a freely adjustable range between 2 ms and 2 s.

The MP-IV2.0 is suitable for PNP as well as for NPN transistor switching outputs and can be operated in two different modes: Either the incoming impulse is stretched by a length between 2 ms and 2 s (impulse triggered), or the output signal equates to the fixed set time span between 2 ms and 2 s (edge triggered).

(P/N 11854310)

YOUR ADVANTAGES

+ Suitable for PNP or NPN sensor outputs
+ 2 operating modes: Impulse triggered or edge triggered
+ Flexible: adjustable and antivalent output signals

NOTES

NOTES

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