DATA SHEET

Type SE32 + S077

Inline positive displacement flowmeter / flow threshold detector

- Indication, monitoring, transmitting and On/Off control in one device
- Selectable outputs (transistor or relay)
- Automatic calibration using Teach-In
- Process value output: 4…20 mA

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8792 ▸
Digital electropneumatic Positioner SideControl

Type 2300 ▸
Pneumatically operated 2 way angle seat control valve ELEMENT

Type 8644 ▸
Remote Process Actuation Control System AirLINE

Type description

This positive displacement flowmeter with display for continuous flow measurement is designed for use with highly viscous fluid like glue, honey.

The flowmeter Type SE32 + S077 is made up of a compact sensor-fitting with oval rotors (S077) and a transmitter (SE32) quickly and easily connected together by a bayonet catch without having to open the pipeline. The Bürkert designed sensor-fitting system ensures simple installation of the device into all pipelines from DN 15…DN 100.

This measuring device is available with freely configurable switching outputs (transistor or relay) or with 4…20 mA process value output.
The switching outputs enable the direct switching of valves and the establishment of a simple On/Off control circuit within a monitoring system. The switching points can be configured with the 3 keys directly at the display.

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1. General technical data

Note:
If the device is mounted in a humid environment or outside, then the maximum voltage allowed is **35 V DC** instead of 36 V DC.

Product properties	
Material	
Please make sure the device materials are compatible with the fluid you are using. Detailed information can be found in chapter "3.1. Chemical Resistance Chart – Bürkert resistApp" on page 6.	
Non wetted parts	
Housing, cover	PC, glass fibre reinforced
Front panel folio	Polyester
Screws	Stainless steel
Female cable plug/male fixed plug	• Body, contact holders and cable gland in PA • Cable gland seal and flat seal in NBR
M12 male fixed plug	PA or PA and nickel-plated brass (CuZn)
Quarter turn system	PC
Wetted parts	
Sensor-fitting body	Aluminium or stainless steel (316L)
Seal	FKM or FEP/PTFE encapsulated
Oval gear	PPS, aluminium or stainless steel (316L)
Shaft	Stainless steel (316L)
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 7.
Pipe diameter	DN 15…DN 100
Compatibility	Any pipe from DN 15…DN 100 which is fitted with Bürkert S077 Inline sensor-fitting. For the selection of the nominal diameter of the Inline sensor-fittings, see **data sheet Type S077** ▶.
Display	8-digit LCD with backlighting
Measuring principle	Oval gear
Measuring range	• Viscosity >5 mPa.s: 2…1200 l/min (0.53…320 gpm) • Viscosity <5 mPa.s: 3…616 l/min (0.78…320 gpm)
Performance data	
Measurement deviation	• With K-factor determined with a teach-in procedure or with the specific K-factor, engraved on the sensor-fitting: ±0.5 % of the measured value (at Teach-In flow rate value) • With standard K-factor: ±1 % of the measured value
Repeatability	±0.03 % of the measured value[1.)]
Electrical data	
Operating voltage	12…36 V DC ±10 %, filtered and regulated Connection to main supply: permanent (through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply)
Power source (not supplied)	Limited power source according to UL/EN 60950-1 standards or limited energy circuit according to UL/EN 61010-1 §9.4
Protection against DC polarity reversal	Yes
Current consumption	≤80 mA (no load)

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Outputs	• Transistor – NPN and/or PNP, open collector – 700 mA max. (500 mA max. per transistor if both transistor outputs are wired) – 0…300 Hz – operation and thresholds can be parametered – NPN-output: 0.2…36 V DC – PNP-output: power supply – protection against short circuits • Relay (non UL device) – single relay output: 250 V AC/3 A or 30 V DC/3 A, operation and thresholds can be parametered – relay output and 4…20 mA current output: 48 V AC/3 A or 30 V DC/3 A, operation and thresholds can be parametered • Relay (UL device) – 30 V AC/42 V_{peak}/3 A or 60 V DC/1 A, operation and thresholds can be parametered • Process value – 4…20 mA, galvanic insulation – loop impedance max.: 1300 Ω at 36 V DC, 1000 Ω at 30 V DC, 700 Ω at 24 V DC, 450 Ω at 18 V DC, 200 Ω at 12 V DC – response time (10…90 %): 3 s with filter 2 (default setting)
Voltage supply cable	Max. 100 m length, shielded • For female cable plug (supplied): external diameter of wire: 6…7 mm, cross section of wires: 0.25…1.5 mm² • For 5-pins M12 female plug (not supplied): external diameter of wire: 3…6.5 mm, cross section of wires: max. 0.75 mm² • For 8-pins M12 female plug (not supplied): external diameter of wire: 5.9 mm, cross section of wires: 0.25 mm²
Medium data	
Fluid temperature	With sensor-fitting S077 in: • Aluminium: -20…+80 °C (-4…+176 °F) • Stainless steel: -20…+120 °C (-4…+248 °F) See **data sheet Type S077** ▶ for more information.
Fluid pressure (max.)	With sensor-fitting S077 with: • DN 15: 55 bar (798.05 PSI) (threaded process connection) • DN 25: 55 bar (798.05 PSI)[1.)] • DN 40 or DN 50: 18 bar (261.18 PSI) • DN 80: 12 bar (174.12 PSI) • DN 100: 10 bar (145.1 PSI) See **data sheet Type S077** ▶ for more information.
Viscosity	Max. 1 Pa.s (higher on request)
Rate of solid particles	0 %
Process/Port connection & communication	
Process connection	• Thread: ½"; 1"; 1½"; 2"; 3" (G or NPT) • Flange: – 25; 40; 50; 80 or 100 mm DIN PN 16 flange – 1"; 1½"; 2"; 3" or 4" ANSI 150LB flange See **data sheet Type S077** ▶ for more information.
Electrical connection	Cable plug acc. to EN 175301-803, free positionable 5 pin M12 male fixed plug or 8 pin M12 male fixed plug
Approvals and Certificates	
Standards	
Degree of protection[2.)] according to IEC/EN 60529	IP65 with device wired and plugs mounted and tightened

Directives	
CE directives	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable)
Pressure equipment directives	Complying with Article 4, Paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter "2.2. Pressure Equipment Directive" on page 5.
Certification	UL-Recognized for US and Canada
Environment and installation	
Ambient temperature	Operation and storage: 0…+60 °C (+32…+140 °F)
Relative air humidity	≤80 %, without condensation
Height above sea level	Max. 2000 m
Operating condition	Continuous
Equipment mobility	Fixed
Application range	Indoor and outdoor (protect the device against electromagnetic interference, ultraviolet rays and against the effects of climatic conditions)
Installation category	Category I according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

1.) Or in accordance to the value of the used flanges.

2.) Not evaluated by UL

2. Approvals

2.1. Certification UL

Certificate	Description
c UL us	**UL-Recognized for USA and Canada** Products are UL-certified products and comply also with the following standards: • UL 61010-1 • CAN/CSA-C22.2 No.61010-1

2.2. Pressure Equipment Directive

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

Device used on a pipe

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure; DN = nominal diameter of the pipe

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	DN ≤25
Fluid group 2, Article 4, Paragraph 1.c.i	DN ≤32 or PS*DN ≤1000
Fluid group 1, Article 4, Paragraph 1.c.ii	DN ≤25 or PS*DN ≤2000
Fluid group 2, Article 4, Paragraph 1.c.ii	DN ≤200 or PS ≤10 or PS*DN ≤5000

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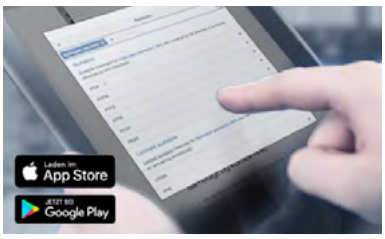
3. Materials

3.1. Chemical Resistance Chart – Bürkert resistApp

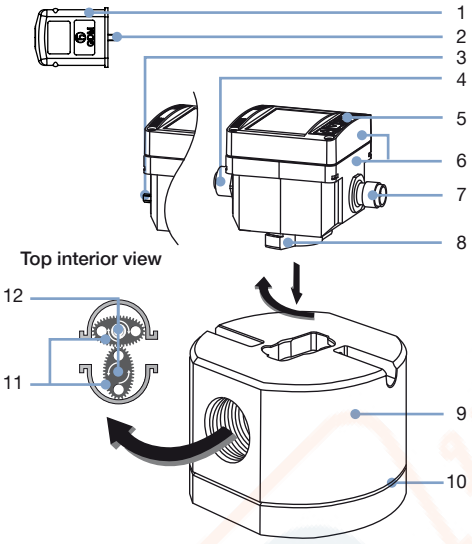


Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

3.2. Material specifications



No.	Element	Material
1	Female cable plug (EN 175301-803)	• Body, contact holders and cable gland in PA • Cable gland seal and flat seal in NBR
2	Screws	Stainless steel
3	Electrical contact	Sn
4	M12 male fixed plug	PA and nickel-plated brass
5	Front panel folio	Polyester
6	Housing, cover	PC, glass fibre reinforced
7	M12 male fixed plug	PA
8	Quarter turn system	PC
9	Sensor-fitting body	Aluminium or stainless steel (316L)
10	Seal	FKM or FEP/PTFE encapsulated
11	Oval gear	PPS, aluminium or stainless steel (316L)
12	Axis	Stainless steel (316L)

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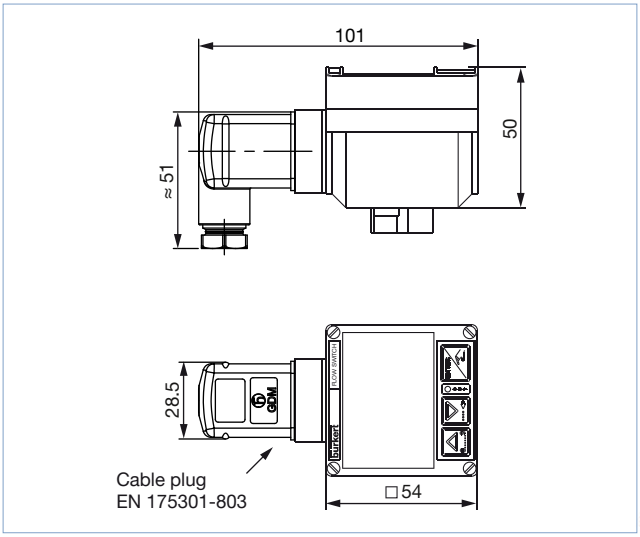
4. Dimensions

4.1. Transmitter SE32

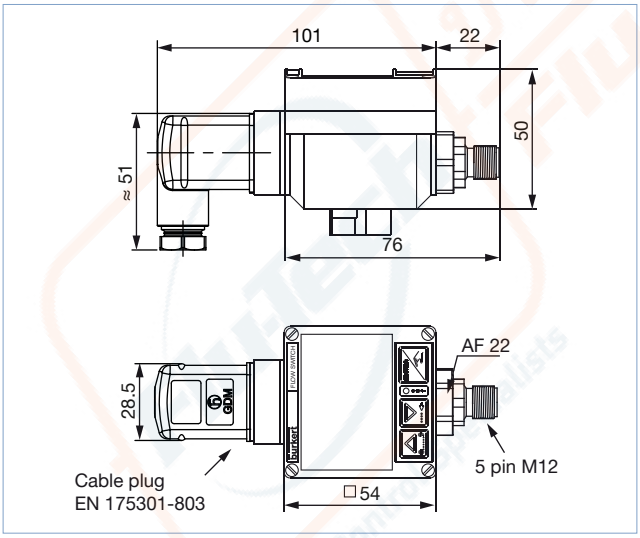
With cable plug (EN 175301-803)

Note:
Specifications in mm



With Cable plug (EN 175301-803) and free positionable 5 pin M12 male fixed plug

Note:
Specifications in mm



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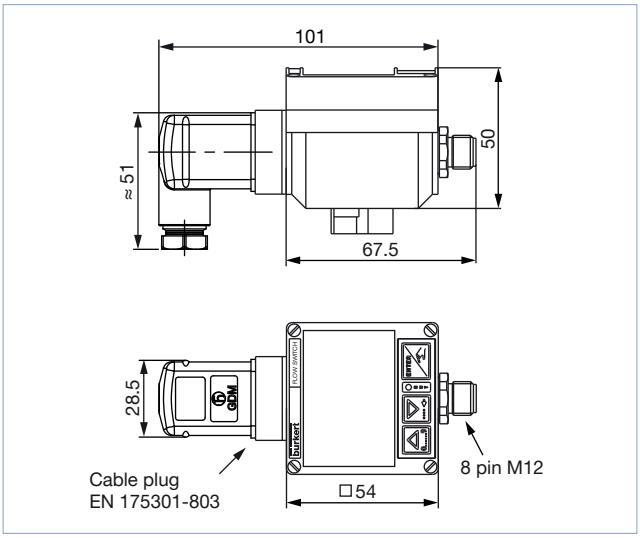
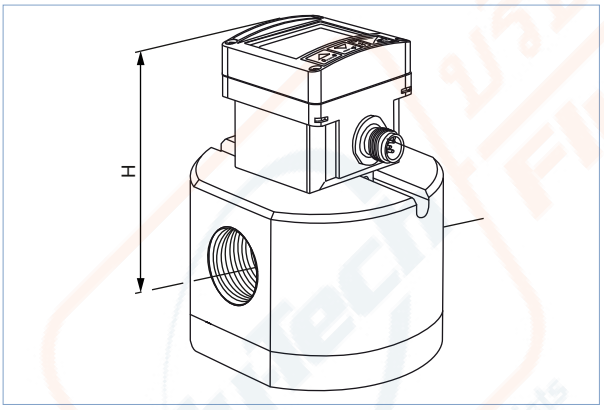
With cable plug (EN 175301-803) and 8 pin M12 male fixed plug

Note:
Specifications in mm



4.2. Transmitter SE32 mounted in a S077 sensor-fitting

Note:
Specifications in mm



DN	H
15	71
25	80
40	82
50	102
80	152
100	168

DN 15 DN 25 DN 40 DN 50 DN 80
Threaded connection
DN 15 DN 25 DN 40 DN 50 DN 80 DN 100
Flanged connection

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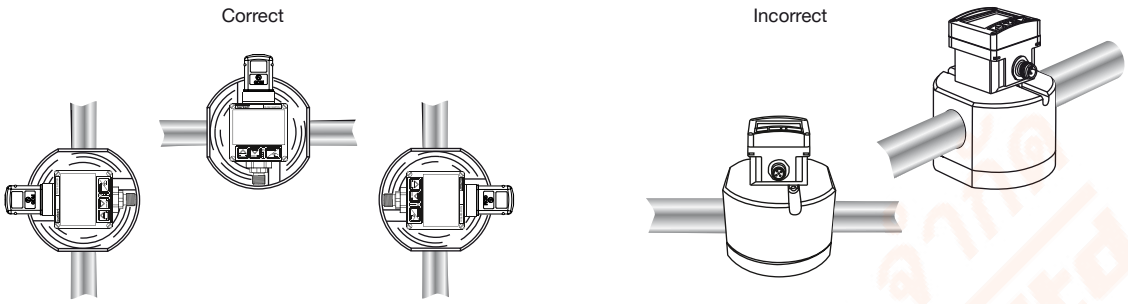
5. Product installation

5.1. Installation notes

Note:
The flowmeter is not designed for gas and steam flow measurement.

The sensor fitting can be installed in any orientation as long as **the rotor shafts are always in a horizontal plane**.



The pipe must be filled with liquid and free from air bubbles. Avoid air purge of the system which would cause damage and to prevent damage from dirt or foreign matter, we strongly recommend the installation of a 250 µm strainer as close as possible to the inlet side of the meter.

6. Product operation

6.1. Measuring principle

When liquid flows through the pipe, the rotors turn. This rotation produces a measuring signal in the associated hall sensor. The frequency and amplitude are proportional to the flow. The volume of the fluid being transferred in this way is exactly determined through the sensor geometry.
A conversion coefficient, specific to each meter size, enables the conversion of this frequency into a flow rate. The standard K-factor depending on the meter size is available in the **instruction manual of the sensor fitting S077** ▶. To improve the measurement deviation, a specific K-factor is given with each device on its label.

The electrical connection is provided via a cable plug according to EN 175301-803 and/or a M12 multipin plug.

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6.2. Functional overview

The display is used to:

- read the value of certain parameters such as the measured flow rate
- parameterize the device by means of 3 keys
- read the configuration of the device
- get notification of some events.

Display and operating keys	No.	Description
	1	Shows if the relay is open or closed
	2	Means that the access to the parameters and test menus is protected through a code
	3	Bar graph is running in each mode, except during a Teach-In procedure
	4	"Confirm" key: • to confirm the function displayed • to confirm the parameters set
	5	Shows the status of the on/off output (red LED)
	6	"Next" key: • to select the digit at the left • to go to the next function
	7	"Back" key: • to change the value (0…9) of the selected digit • to go back to the previous function

The device can be calibrated by means of the K-factor (conversion coefficient), or via the Teach-In function. User adjustments, such as engineering units, output, filter, bargraph are carried out on site.

The device has 2 operating levels:

- the process level
- the configuration level, which comprises the parameters and the test menus

Operating level	Functions
Process	• Indication of – the value of the measured flow rate – switching thresholds (high and low value) – the value of the 4…20 mA output (flowmeter only) • Access to the parameters and test menus of the configuration level
Configuration - parameters menu	• To make the settings needed for operation: – engineering units (international measuring units) – K-factor/Teach-In function – 4…20-mA-current output (flowmeter only) – selection of switching mode: window, hysteresis (see chapter "6.3. Function modes" on page 11.) – selection of threshold value (see chapter "6.3. Function modes" on page 11.) – delay – filter – 10-segment bargraph (select min. and max. value) • Additional parameter definition – backlighting – password protects the access to the parameters and test menus
Configuration - test menu	• To test the configuration made in the parameters menu with entering of a theoretical value • To read the frequency of the measured signal • To adjust the 4…20 mA current output

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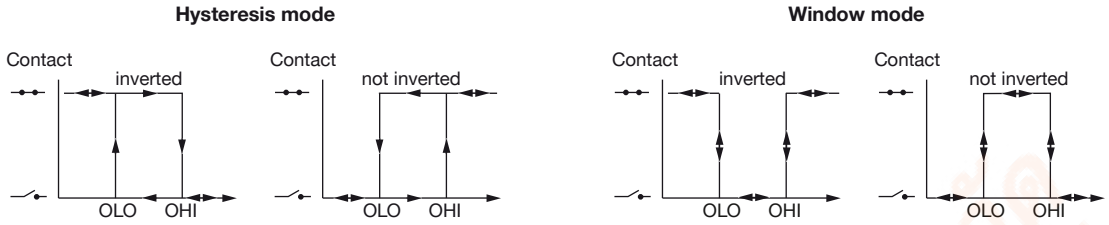
6.3. Function modes

Flow threshold detector

Type 8032/SE32 with standard On/Off output

- 2 switching modes for the output, either hysteresis or window, inverted or not



- Configurable delay before switching
- Possible outputs depending on the version: relay, transistor NPN, transistor PNP

Type 8032/SE32 with current output for the measurement value

- 4…20 mA output
- 4…20 mA output + relay output

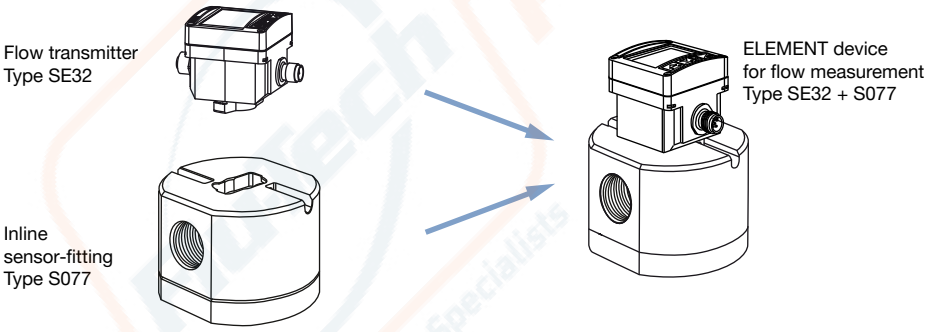
7. Product design and assembly

7.1. Product assembly

Note:

- The device SE32 + S077 is made up of a compact Inline sensor-fitting (S077) equipped with a sensor with oval gear and an enclosure with cover containing the electronic module (transmitter SE32).
- The S077 Inline sensor-fitting ensures simple installation into pipes from DN 15…DN 100. The SE32 transmitter can easily be installed into any Bürkert sensor-fitting system, by means of a quarter turn.

See **data sheet Type S077** ▸ for more information.



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8. Networking and combination with other Bürkert products

Example:

Type SE32 + S0777

4…20 mA output	Transistor output	Relay output
		
Type 8802 ▶ (2301 & 8693) ELEMENT Continuous control valve systems	**Type 6212 ▶** Servo-assisted 2/2 way diaphragm valve	**Type 6281 ▶** Servo-assisted 2/2 way diaphragm valve

9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

9.2. Recommendation regarding product selection

Note:
A SE32 + S077 flowmeter consists of a compact SE32 flow transmitter and a Bürkert S077 Inline sensor-fitting.

See **data sheet Type S077** ▶ for more information.

Two different components must be ordered in order to select a complete device. The following information is required:

- **Article no.** of the compact SE32 flow transmitter (see chapter "9.4. Ordering chart of the SE32 flow transmitter" on page 13)
- **Article no.** of the selected S077 Inline sensor-fitting (see **data sheet Type S077** ▶)

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9.3. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

9.4. Ordering chart of the SE32 flow transmitter

Voltage supply	Output	UL certification	Electrical connection	Article no.
Flow threshold detector Type SE32				
12…36 V DC	1 x transistor NPN	No	Female cable plug EN 175301-803	436474
		UL-Recognized		570475
	1 x transistor PNP	No		434871
		UL-Recognized		570474
	2 x transistors NPN/PNP	No	Free positionable 5 pin M12 male fixed plug	436473
		UL-Recognized		553431
	Relay	No	Free positionable 5 pin M12 male fixed plug and female cable plug EN 175301-803	436475
		UL-Recognized		570476
Flow transmitter Type SE32				
12…36 V DC	4…20 mA + relay	No	8 pin M12 male fixed plug and female cable plug EN 175301-803	560547
		UL-Recognized		570488
		No	Free positionable 5 pin M12 male fixed plug and female cable plug EN 175301-803	560402
		UL-Recognized		570486
	4…20 mA	No	Free positionable 5 pin M12 male fixed plug	560403
		UL-Recognized		570487

9.5. Ordering chart accessories

Description	Article no.
5 pin M12 female straight cable plug with plastic threaded locking ring, to be wired	917116
5 pin M12 female straight cable plug moulded on cable (2 m, shielded)	438680
8 pin M12 female straight cable plug with plastic threaded locking ring, to be wired	444799
8 pin M12 female straight cable plug moulded on cable (2 m, shielded)	444800
Female cable plug EN 175301-803 with cable gland - see **Type 2518** ▶	572264
Female cable plug EN 175301-803 with NPT ½" reduction without cable gland - see **Type 2509** ▶	162673

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