



# Flow sensors



## Flow sensors - Monitoring of limit values and flow patterns

Flow sensors are applied in automated manufacturing to detect deviating flow speeds of gases and liquids quickly and reliably. They monitor coolant circuits, run-dry protection of pumps or control the flow of exhaust air ducts and air conditioning systems.

Flow sensors are not applied to perform precise measurements but to monitor limit values and flow patterns. In other words, the increase or decrease of flow speed. In this context, high repeatability is the most important feature.

The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored.

TURCK insertion flow sensors operate on the thermo-dynamic principle: The flow speed is determined from thermal energy dissipated by a probe. The dissipated

heat quantity serves as a measure for the flow speed.

TURCK flow sensors are available as compact devices with integrated signal processor or as insertion or inline sensor with separate processing unit. Sensor and housing are available in different materials and with different connectivity. The connection technology is made for many different industrial application conditions:

- Standard sensors for factory automation
- Sensors for high temperatures and pressures
- Sensors for the food and pharmaceutical industries
- Chemical-resistant sensors
- Sensors for the Ex area
- Flow sensors for the control of gaseous media

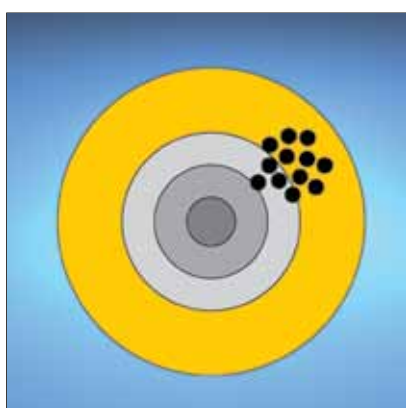
# Our strengths – Your advantages



## Monitoring of flow speeds and patterns

Flow monitoring of media plays an important role in many applications of factory and process automation. Cooling circuits, run-dry protection of pumps or the flow control of exhaust air ducts and

air conditioning systems are typical applications. Electronic flow sensors are increasingly applied to detect critical changes in flow and to signal them to a control unit.



## High repeatability

Flow sensors are mainly applied to control flow speeds. Precise and expensive measurement is not the aim but rather the control of limit values. High repeatability is therefore the most important feature. The sensors not only detect limit

values of flows but also flow patterns. That is, the increase or decrease of flow speed. The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored.

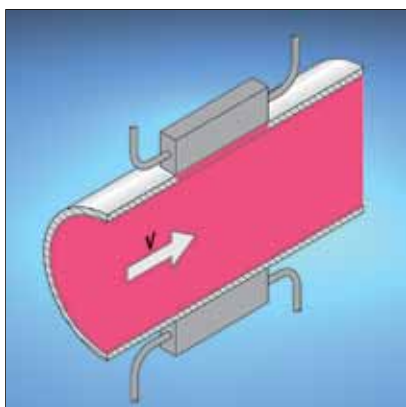


## High performance in a compact housing

A great variety of types are available, such as insertion and inline flow sensors as well as compact sensors and sensors with downstream electronics. They are easily integrated in existing line configurations and are space saving alternatives for new constructions. Not only coolant

circuits and temperature cycles are precisely monitored but also dosage intervals, like in water purification systems. Limit value monitoring as well as analog linearized switching outputs are available for these tasks.

# ur advantages



## Calorimetric flow sensors

Calorimetric flow sensors work on the thermodynamic principle and are applied to monitor flow speeds of liquids and gases. Depending on the type, they also measure the media temperature. Short response times within seconds and

stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for flow rate monitoring in return and cooling circuits.



## Different designs and versions

You can choose between insertion and inline flow sensors as well as between compact devices and sensors with downstream electronic evaluation system. All sensors can be easily integrated in existing line configurations and are space saving alternatives for new construc-

tions. Not only coolant circuits and temperature cycles are precisely monitored but also dosage intervals, like in water purification systems. Limit value monitoring and analog switching outputs are available for these tasks.

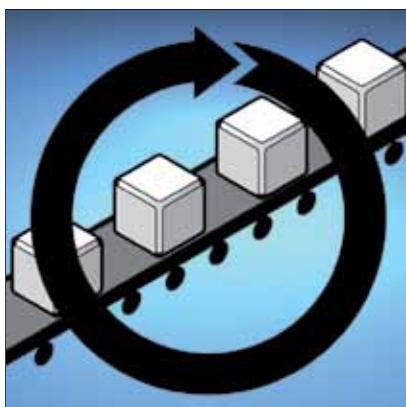


## The right solution for complex applications

Depending on the application, a broad range of different flow sensors is required. TURCK offers them in different material qualities, for liquid as well as for gaseous media. The product portfolio also comprises flow sensors for the Ex-

area, extremely chemical-resistant versions, high-temperature and pressure-resistant versions as well as sensors for the pharmaceutical and food industries.

# Our strengths – Your advantages



## High system availability

Flow meters proof their outstanding reliability in rough environments of factory and process automation. This is guaranteed through excellent EMC properties and protection rating IP67. A practical housing, durable mounting aids and a

well legible LED chain are the main features considered in the design. Flow meters thus withstand the special ambient conditions of many applications easily. Use these benefits to optimize your production processes.



## Maximum planning freedom

The flow meters provide maximum planning freedom with just a few device types, many connection possibilities and different mounting aids. From polling of single switchpoints over analog output

signals to a well legible display, even from a greater distance: Profit from the extensive standard product range of TURCK flow meters providing more flexibility to your application.



## User-friendly operation

The compact flow sensors feature user-friendly potentiometers at the front for comfortable adjustment of the switch-

point. The LED chain indicates the current flow state.

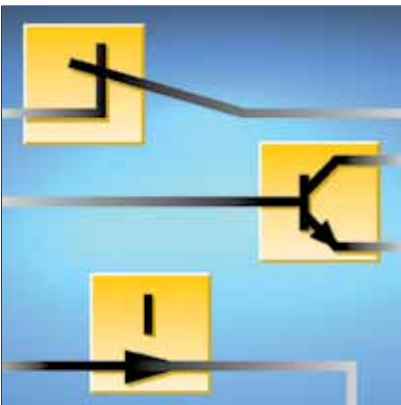
# Our advantages



## Easy mounting

Unlike insertion sensors, inline types are installed in pipes. The pipe may be connected directly via cutting ring fittings or a matching adapter. With insert nuts located at the bottom, the sensor can be

mounted to a baseplate. Alternatively, the baseplate can be screwed to the housing for frontal mounting of the sensor.



## Many different output signals

For further processing of output signals via control or PLC, the flow sensors provide a standard PNP switching and a relay output as well as an analog 4...20 mA

output. Parameters such as switchpoint, temperature, start and end value at sensors with analog output signal, are adjusted via potentiometer.



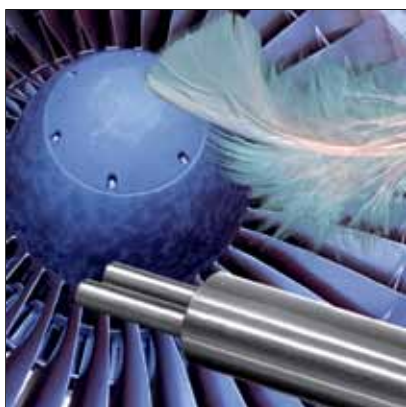
## High serviceability

Thanks to flexible mounting options, the user-friendly operation and adjustment, the well legible 3-digit 7-segment display and last but not least, the excellent

repeatability, flow sensors offer calculable advantages.



# Flow sensors for special applications



## Sensors for gaseous media

TURCK offers special versions for monitoring gaseous media which are especially adjusted to the low thermal conductivity of gases. They are typically

applied in air conditioning and ventilation systems, filling and coating lines as well as in motor ventilation and cabinets.



## Sensors for the Ex area

Flow sensors for areas exposed to gas and dust-explosion hazards are ATEX approved and can only be operated in combination with approved external signal processors [Ex ia]. Inline sensors are available for zone 1 and zone 0 and

mounted with a T-piece or a weld-on adapter. The inline sensors for zone 1 are mounted directly in pipes with cutting ring fittings, thus ensuring a tight and pressure resistant connection.



## Chemical-resistant sensors

Stainless steel 1.4571 is often not resistant enough for aggressive media. Depending on the application, chemical-resistant materials such as PTFE and PVDF

(Dyflor), stainless steel alloy (Hastelloy) or titanium are used. These materials are highly resistant to many chemicals.

# Special applications



## Sensors for high temperatures and pressures

More and more applications require sensors that withstand temperatures outside the standard range. We offer sensors for extreme ambient temperatures of up to +120 °C and operating pressures of up to 500 bar. They are typically applied in production lines and withstand rinsing

with hot cleaning liquids or in plastics processing machines. These sensors are identified by D090 or D100 in the type code for high-temperature applications and D500 for high-pressure applications.



## Sensors for the food and pharmaceutical industry

The mechanics and electronics have to fulfill special requirements of the food and pharmaceutical industry. Food-safe connections such as Tri-Clamp or dairy screw connections (DIN11851) are conform to the 3 A sanitary standard. The standard cleaning cycles CIP and SIP with rapid temperature changes impose se-

vere strain on the electronics and thus require special protective measures. For this reason the sensors are made of special steel 1.4404 and 1.4435. Customized connections such as GEA-Varivent or APV flanges are available as well as other metal based materials.



# Type code

**FCS** – **G1/2** **A4** – **A** **P** **8** **X** – **H1** **1** **4** **1** / **L120**

FCS	Functional principle	–	G1/2	A4	Design	–	A	P	8	X	Electrical version	–
	<div>Series flow sensors</div> <div>FCI calorimetric, inline</div> <div>FCS calorimetric, insertion</div>				<div>Materials</div> <div>A4 stainless steel A4 (1.4404 or 1.4571)</div> <div>A4P sensor stainless steel A4 (1.4404 or 1.4571), housing plastic, ceramics/PTFE</div> <div>CT PVDF (Dyflor)</div> <div>DY PVDF (Dyflor)</div> <div>HA2P sensor stainless steel A2 (1.4305), housing plastic with coupling nut</div> <div>HB2 Hastelloy B2 (2.4617)</div> <div>HC22 Hastelloy C22 (2.4603)</div> <div>HC4 Hastelloy C4 (2.4610)</div> <div>P plastic housing</div> <div>T PTFE</div> <div>TN titanium alloy (3.7235)</div> <div>Mechanical connection</div> <div>50 Tri-Clamp, Ø 50.5 mm</div> <div>68 Varivent, Ø 68 mm</div> <div>10D08 compression fittings for smooth barrel, outer Ø 10 mm</div> <div>34D10 Tri-Clamp, Ø 34 mm (FCI with barrel Ø 10 mm)</div> <div>D03 gland, 4 mm barrel Ø</div> <div>D04 male thread G1/4", 4 mm barrel Ø</div> <div>D06 female thread G1/4", 6 mm barrel Ø</div> <div>D09 female thread, 9 mm barrel Ø</div> <div>D15 male thread G1/2", 15 mm barrel Ø</div> <div>D20 male thread G3/4", 19 mm barrel Ø</div> <div>DN25 flange DN25/PN40 or Tri-Clamp DN25</div> <div>G1/4 thread G1/4"</div> <div>G1/2 thread G1/2"</div> <div>GL1/2 thread G1/2", long</div> <div>GL3/4 thread G3/4", long</div> <div>K20 smooth barrel Ø 20 mm</div> <div>M18 threaded barrel M18 x 1</div> <div>N1/2 thread 1/2 NPT</div> <div>N3/4 thread 3/4 NPT</div> <div>TCD04 gland, Ø 4 mm, inline sensor with 3.6 mm barrel Ø</div>				<div>Indication</div> <div>...X number of LEDs or multicolor LED</div> <div>Voltage range</div> <div>8 19.2...28.8 VDC</div> <div>Output mode</div> <div>P PNP</div> <div>N NPN</div> <div>R relay output</div> <div>Output function</div> <div>2A 2 x NO, working current</div> <div>A 1 x NO, working current</div> <div>R 1 x NC, closed current</div> <div>V changeover contact</div> <div>LI analog output (I)</div> <div>LIU NO/NC programmable, analog + I + PNP</div> <div>LU analog output (U)</div> <div>2U NO/NC programmable, 2 x PNP</div> <div>U NO/NC programmable, sensor with downstream electronics (processor units MC96, MK96, MS96)</div> <div>NA NAEX sensor for Ex zone 1 with downstream electronics (processor units MC96, MS96)</div> <div>NAEX0 sensor for Ex zone 0 with downstream electronics (processor units MC96, MS96)</div>			

<b>H1</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>Electrical connection: connector</b>	<b>/</b>	<b>L120</b>	<b>Special versions</b>
				<b>Assignment</b>			
				<b>0</b> M12 x 1, connector (modified)			
				<b>1</b> M12 x 1, connector (standard)			
				<b>blank</b> 2 m cable connection			
				<b>Number of contacts</b>			
				<b>4</b> 4 contacts			
				<b>Connector type</b>			
				<b>1</b> straight			
				<b>Connector type</b>			
				<b>H1</b> connector M12 x 1			
				<b>Special version</b>			
				<b>A</b> air-flow sensors gaseous media			
				<b>D003</b> process connection Varivent			
				<b>D014</b> process connection Tri-Clamp			
				<b>D024</b> material test certificate 3.1b			
				<b>D041</b> sensor and mounting block glued together			
				<b>D090</b> high-temperature version up to 100 °C			
				<b>D100</b> high-temperature version up to 120 °C			
				<b>D500</b> high-pressure version up to 500 bar			
				<b>L065</b> insertion depth 65 mm (incl. thread)			
				<b>L080</b> insertion depth 80 mm (incl. thread)			
				<b>L115</b> insertion depth 115 mm (incl. thread)			
				<b>L120</b> insertion depth 120 mm (incl. thread)			
				<b>L200</b> insertion depth 200 mm (incl. thread)			
				<b>M12</b> process connection female thread M12 x 1.5			
				<b>M16</b> process connection female thread M16 x 1.5			
				<b>5M</b> cable connection, 5 m			
				<b>10M</b> cable connection, 10 m			
				<b>24VDC</b> supply voltage 24 VDC			
				<b>230VAC</b> supply voltage 230 VAC			

# Type code

**FM X – IM – 3UP 63 X**

<b>FM</b>	<b>X</b>	<b>Series</b>	–	<b>IM</b>	<b>Housing</b>	–	<b>3UP</b>	<b>63</b>	<b>X</b>	<b>Electrical version</b>
		<b>Function</b> <b>blank</b> connection of non-Ex sensors FCS-/FCI-...-NA series FM is IO-Link capable <b>X</b> connection of Ex sensors FCS-/FCI-...-NAEX(0) series FMX is IO-Link resp. HART capable			<b>Housing</b> <b>IM</b> Interfacemodul (modular housing)			<b>LED display</b> <b>X</b> 4 status LEDs, LED band <b>Voltage range</b> <b>38</b> 20...125 VDC/ 20...250 VAC <b>63</b> 20...30 VDC		
		<b>Series</b> <b>FM</b> flow module, processor unit for the connection of TURCK flow sensors							<b>Outputs</b> <b>3UP</b> one PNP output (20...30 VDC) each for monitoring of flow, temperature and errors <b>3UR</b> one relay output (< 250 VAC/60VDC) each for monitoring of flow, temperature and error <b>2UPLi</b> one PNP output (20...30 VDC) each for monitoring of temperature and errors and one analog output (4...20 mA) for monitoring of flow	



# Designs and variants





	Medium	Operating ranges	Medium temperature	Material in contact with medium	Pressure resistance	Housing material	Output	Page
<b>G 1/4" – Stainless steel housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	V4A (1.4571)	—, PNP —, NPN Relay output	343
								
<b>G 1/2" – Stainless steel housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	V4A (1.4571)	—, PNP —, NPN	343
								
<b>G1/2" – Dyflor housing</b>	Liquids	Water: 1...70 cm/s Oil: 2...100 cm/s	-10...80 °C	PVDF	5 bar	PVDF	—, PNP	344
								
<b>GL1/2" – Stainless steel housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	V4A (1.4571)	—, PNP	344
								
<b>N 1/2" – Stainless steel housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	V4A (1.4571)	—, PNP	345
								
<b>Varivent – Stainless steel A4 housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	0...80 °C	V4A (1.4404)	10 bar	V4A (1.4404)	—, PNP	345
								
<b>1 1/2" TriClamp – Stainless steel</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	0...80 °C	V4A (1.4404)	10 bar	V4A (1.4404)	—, PNP	356
								

# ts and variants

	Medium	Operating ranges	Medium temperature	Material in contact with medium	Pressure resistance	Housing material	Output	Page
<b>G1/4" – Plastic housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	PBT	 , PNP	356
								
<b>G1/4" – Plastic housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	PBT	 , PNP  , Relay output	347
								
<b>GL1/2" – Plastic housing</b>	Liquids Air	Water: 1...150 cm/s Oil: 3...300 cm/s Air: 0.5...30 m/s	-20...80 °C	V4A (1.4571) V2A (1.4305)	100 bar 30 bar	PBT	 , PNP  , Relay output analog output, 4...20 mA	347
								
<b>G 1" – Female – Coupling nut – Plastic housing</b>	Air	Air: 0.5...30 m/s	-20...80 °C	V2A (1.4305)	3 bar	PBT	analog output, 4...20 mA  , Relay output	348
								
<b>N 1/2" – Plastic housing</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	PBT	 , PNP	348
								
<b>G1/4" – Male thread – Plastic housing</b>	Air Liquids	Air: 0.5...40 m/s Flow Rate: 0,01...1 l/min Flow Rate: 0,1...6 l/min	-20...80 °C	V4A (1.4571)	20 bar	PBT	 , PNP analog output, 4...20 mA  , Relay output	351
								
<b>G1/2" – Male thread – Plastic housing</b>	Liquids	Flow Rate: 3...20 l/min	-20...80 °C	V4A (1.4571)	20 bar	PBT	 , PNP	351
								



# Designs and variants






	Medium	Operating ranges	Medium temperature	Material in contact with medium	Pressure resistance	Housing material	Output	Page
<b>G3/4" – Male thread – Plastic housing</b> 	Liquids	Flow Rate: 4...30 l/min	-20...80 °C	V4A (1.4571)	20 bar	PBT	— / —, PNP	352
<b>G1/4" – Female thread – Plastic housing</b> 	Liquids	Flow Rate: 0,02...3 l/min	0...60 °C	Al <sub>2</sub> O <sub>3</sub> /PTFE	5 bar	PBT	— / —, PNP Relay output analog output, 4...20 mA	352
<b>4 mm pipe connection – Plastic housing</b> 	Liquids	Flow Rate: 0,001...0,2 l/min	0...60 °C	V4A (1.4571)	1 bar	PBT	— / —, PNP analog output, 4...20 mA — / —, Relay output	353
<b>TriClamp DN 10 – Plastic housing</b> 	Liquids	Flow Rate: 0,1...6 l/min	-20...80 °C -20...60 °C	V4A (1.4404)	20 bar	PBT	— / —, PNP Relay output analog output, 4...20 mA	353



# ts and variants

# Designs and variants

	Medium	Operating ranges	Medium temperature	Material in contact with medium	Pressure resistance	Housing material	Page
<b>G 1/4" – Stainless steel housing</b> 	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s Water: 1...100 cm/s Oil: 3...200 cm/s	-20...80 °C -20...85 °C -20...60 °C	V4A (1.4571)	100 bar 60 bar	V4A (1.4571)	355
<b>G 1/4" – PTFE housing</b> 	Liquids	Water: 1...70 cm/s Oil: 2...100 cm/s	-10...70 °C	PTFE	5 bar	PTFE	355
<b>G 1/2" – Stainless steel housing</b> 	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s Water: 1...100 cm/s Oil: 3...200 cm/s	-20...80 °C -20...85 °C -20...60 °C	V4A (1.4571)	100 bar 60 bar	V4A (1.4571)	356
<b>G 3/4" – Stainless steel housing</b> 	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s Water: 1...100 cm/s Oil: 3...200 cm/s	-20...80 °C -20...60 °C	V4A (1.4571)	100 bar 60 bar	V4A (1.4571)	356
<b>GL 1/2" – PTFE housing</b> 	Liquids	Water: 1...70 cm/s Oil: 2...100 cm/s	-10...70 °C	PTFE	5 bar	PTFE	357
<b>GL 1/2" – Stainless steel housing</b> 	Liquids Air	Water: 1...150 cm/s Oil: 3...300 cm/s Water: 1...100 cm/s Oil: 3...200 cm/s Air: 2...20 m/s Air: 0.5...30 m/s	-20...80 °C -20...85 °C -20...60 °C 10...120 °C	V4A (1.4571) V2A (1.4305)	100 bar 60 bar 10 bar 30 bar	V4A (1.4571) V2A (1.4305)	357
<b>N 1/2" – Stainless steel housing</b> 	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s Water: 1...100 cm/s Oil: 3...200 cm/s	-20...80 °C -20...85 °C	V4A (1.4571)	100 bar 60 bar	V4A (1.4571)	358
<b>N 3/4" – Stainless steel housing</b> 	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	-20...80 °C	V4A (1.4571)	100 bar	V4A (1.4571)	358

# Standard variants

	Medium	Operating ranges	Medium temperature	Material in contact with medium	Pressure resistance	Housing material	Page
<b>DN25 – Dairy screw connection – Stainless steel</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	10...120 °C	V4A (1.4404)	10 bar	V4A (1.4404)	359
							
<b>1 1/2" TriClamp – Stainless steel</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	10...120 °C	V4A (1.4404)	10 bar	V4A (1.4404)	359
							
<b>Varivent – Stainless steel</b>	Liquids	Water: 1...150 cm/s Oil: 3...300 cm/s	10...120 °C	V4A (1.4571)	10 bar	V4A (1.4571)	360
							
<b>M12x1.5 – Female – Stainless steel</b>	Liquids	Flow Rate: 0,01...0,15 l/min Flow Rate: 0,005...0,15 l/min	-20...70 °C -20...80 °C	V4A (1.4571)	6 bar 10 bar	V4A (1.4571)	363
							
<b>M16x1.5 – Female – Stainless steel</b>	Liquids	Flow Rate: 0,05...0,9 l/min Flow Rate: 0,03...0,9 l/min	-20...70 °C -20...80 °C	V4A (1.4571)	6 bar 16 bar	V4A (1.4571)	363
							

	Flow monitoring	Output	Page
<b>FM – Flow modules</b>	Current output transistor output relay output	4...20 mA, Analog output — / — programmable, PNP/NPN — / — programmable, Relay output	365
			
<b>FMX - Flow Module</b>	Current output transistor output relay output	4...20 mA, Analog output — / — programmable, PNP/NPN — / — programmable, Relay output	367
			

## Compact devices – insertion

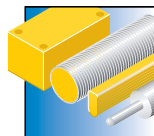


The compact devices incorporate sensor and signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

### Features

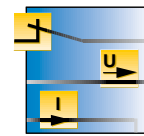
- Insertion flow sensor in a stainless steel or plastic housing
- Sensor and signal processor enclosed in the housing
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 0.5 ... 30 m/s
- Switchpoint freely adjustable within the operating range
- LED band for flow indication
- Transistor, relay or analog current output
- Pressure-resistant up to 100 bar

### Properties



#### Designs

Compact insertion flow sensor, for pipe diameters of DN20 and larger



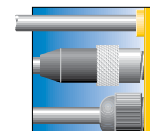
#### Electrical versions

PNP transistor, relay or current output 4...20 mA



#### Monitoring range

Adjustable to flow speeds between 0.5 ... 30 m/s gaseous media and 1...300 cm/s for liquids



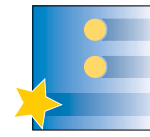
#### Electrical connections

Via A-coded male M12 x 1 or connection cable



#### Materials

Housing and sensor made of stainless steel or plastic



#### Special features

Switchpoint adjusted via potentiometer, LED chain for status indication, pressure-resistant up to 30 bar



#### Internet link

Scan the QR code to access our products on the internet

## G 1/4" – Stainless steel housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	100 bar	<b>Medium temperature</b>	-20...80 °C
<b>Operating voltage</b>	21...26 VDC		

### Types and data – selection table

Type	Output	w	d
FCS-G1/4A4-AP8X-H1141	—, PNP	w143	d573
FCS-G1/4A4-ARX-H1140	—, Relay output	w144	d573

## G 1/2" – Stainless steel housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	100 bar	<b>Medium temperature</b>	-20...80 °C
<b>Operating voltage</b>	21...26 VDC		

### Types and data – selection table

Type	Output	w	d
FCS-G1/2A4-AP8X-H1141	—, PNP	w143	d574
FCS-G1/2A4-AN8X-H1141	—, NPN	w145	d574



## G1/2" – Dyflor housing



### General data

<b>Medium</b>	liquids	<b>Sensor quality</b>	PVDF
<b>Operating ranges</b>	Water: 1...70 cm/s Oil: 2...100 cm/s	<b>Pressure resistance</b>	5 bar
<b>Medium temperature</b>	-10...80 °C	<b>Operating voltage</b>	21...26 VDC
<b>Output</b>	—, PNP		

### Types and data – selection table

Type	Connection	w	d
FCS-G1/2DY-AP8X-H1141	male, M12 x 1	w143	d574
FCS-G1/2DY-AP8X	2 m cable	w146	d575

## GL1/2" – Stainless steel housing



### General data

<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	100 bar	<b>Medium temperature</b>	-20...80 °C
<b>Operating voltage</b>	21...26 VDC	<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCS-GL1/2A4-AP8X-H1141	w143	d576

## N 1/2" – Stainless steel housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	100 bar	<b>Medium temperature</b>	-20...80 °C
<b>Operating voltage</b>	21...26 VDC	<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCS-N1/2A4-AP8X-H1141	w143	d577

## Varivent – Stainless steel A4 housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316L	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	10 bar	<b>Medium temperature</b>	0...80 °C
<b>Operating voltage</b>	21...26 VDC	<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCS-68A4-AP8X-H1141/D003	w143	d578

## 1 1/2" TriClamp – Stainless steel housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316L	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	10 bar	<b>Medium temperature</b>	0...80 °C
<b>Operating voltage</b>	21...26 VDC	<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCS-50A4-AP8X-H1141/D014	w143	d579

## G1/4" – Plastic housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	100 bar	<b>Medium temperature</b>	-20...80 °C
<b>Operating voltage</b>	21...26 VDC	<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCS-G1/4A4P-AP8X-H1141	w143	d580

## G1/2" – Plastic housing



### General data

<b>Medium</b>	liquids	<b>Sensor quality</b>	AISI 316Ti
<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s	<b>Pressure resistance</b>	100 bar
<b>Medium temperature</b>	-20...80 °C		

### Types and data – selection table

Type	Connection	Operating voltage	Output	w	d
FCS-G1/2A4P-AP8X-H1141	male, M12 x 1	21...26 VDC	—, PNP	w143	d581
FCS-G1/2A4P-AP8X/L120	2 m cable	21...26 VDC	—, PNP	w146	d582
FCS-G1/2A4P-VRX/24VDC	2 m cable	19.2...28.8 VDC	—, Relay output	w147	d583

## GL1/2" – Plastic housing



### General data

<b>Medium temperature</b>	-20...80 °C
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### Types and data – selection table

Type	Medium	Connection	Sensor quality	Operating ranges	Pressure resistance	Operating voltage	Output	w	d
FCS-GL1/2A4P-AP8X-H1141	liquids	male, M12 x 1	AISI 316Ti	Water: 1...150 cm/s Oil: 3...300 cm/s	100 bar	21...26 VDC	—, PNP	w143	d584
FCS-GL1/2A4P-VRX/230VAC	liquids	2 m cable	AISI 316Ti	Water: 1...150 cm/s Oil: 3...300 cm/s	100 bar	195...264 VAC	—, Relay output	w148	d585
FCS-GL1/2A2P-AP8X-H1141/A	air	male, M12 x 1	AISI 303	Air: 0.5...30 m/s	30 bar	21...26 VDC	—, PNP	w143	d586
FCS-GL1/2A2P-LIX-H1141/A	air	male, M12 x 1	AISI 303	Air: 0.5...30 m/s	30 bar	21...26 VDC	Analog output, 4...20 mA	w149	d586

## G 1" – Female thread – Coupling nut – Plastic housing



### General data

Medium	air	Sensor quality	AISI 303
Operating ranges	Air: 0.5...30 m/s	Pressure resistance	3 bar
Medium temperature	-20...80 °C		

### Types and data – selection table

Type	Connection	Operating voltage	Output	w	d
FCS-HA2P-LIX-H1141/AL115	male, M12 x 1	21...26 VDC	Analog output, 4...20 mA	w149	d587
FCS-HA2P-VRX/230VAC/AL115	2 m cable	195...264 VAC	—, Relay output	w148	d588
FCS-HA2P-VRX/24VDC/AL115 6M	6 m cable	19.2...28.8 VDC	—, Relay output	w148	d588

## N 1/2" – Plastic housing



### General data

Medium	liquids	Connection	male, M12 x 1
Sensor quality	AISI 316Ti	Operating ranges	Water: 1...150 cm/s Oil: 3...300 cm/s
Pressure resistance	100 bar	Medium temperature	-20...80 °C
Operating voltage	21...26 VDC	Output	—, PNP

### Types and data – selection table

Type	w	d
FCS-N1/2A4P-AP8X-H1141	w143	d589





## Inline compact devices

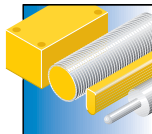


The compact devices incorporate sensor and signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

### Features

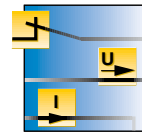
- Inline flow sensor installed in a plastic housing, parts in contact with medium are made of stainless steel
- Sensor and signal processor enclosed in the housing
- Ideal for small pipe diameters of up to DN10
- Adjustable to flow speeds between 0.5 ... 40 m/s
- Pressure-resistant up to 20 bar
- Switchpoint freely adjustable within the operating range
- LED band for flow indication
- Transistor or analog current output
- No disturbing components, free pipe profile, no pressure loss
- Fast response times within seconds

### Properties



#### Designs

Inline flow sensors, ideal for all pipe diameters of up to DN20



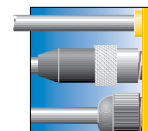
#### Electrical versions

PNP transistor, relay or analog current output 4...20 mA



#### Monitoring range

Adjustable to flow rates between 1 ml/min ... 30 l/min or flow speeds between 0.5... 40 m/s (air)



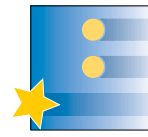
#### Electrical connections

M12 x 1 connectors, A-coded



#### Materials

Plastic housing, sensor material stainless steel



#### Special features

Switchpoint adjusted via potentiometer, LED chain for status indication



#### Internet link

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## G1/4" – Male thread – Plastic housing



### General data

<b>Connection</b>	male, M12 x 1
<b>Pressure resistance</b>	20 bar
<b>Operating voltage</b>	21...26 VDC

<b>Sensor quality</b>	AISI 316Ti
<b>Medium temperature</b>	-20...80 °C

### Types and data – selection table

Type	Medium	Operating ranges	Output	w	d
FCI-D10A4P-AP8X-H1141/A	air	Air: 0.5...40 m/s	—, PNP	w143	d590
FCI-D10A4P-LIX-H1141/A	air	Air: 0.5...40 m/s	Analog output, 4...20 mA	w149	d590
FCI-D04A4P-LIX-H1141	liquids	Flow Rate: 0,01...1 l/min	Analog output, 4...20 mA	w149	d591
FCI-D10A4P-ARX-H1140	liquids	Flow Rate: 0,1...6 l/min	—, Relay output	w144	d590

## G1/2" – Male thread – Plastic housing



### General data

<b>Medium</b>	liquids
<b>Sensor quality</b>	AISI 316Ti
<b>Pressure resistance</b>	20 bar
<b>Operating voltage</b>	21...26 VDC

<b>Connection</b>	male, M12 x 1
<b>Operating ranges</b>	Flow Rate: 3...20 l/min
<b>Medium temperature</b>	-20...80 °C
<b>Output</b>	—, PNP

### Types and data – selection table

Type	w	d
FCI-D15A4P-AP8X-H1141	w143	d592

## G3/4" – Male thread – Plastic housing



### General data

<b>Medium</b>	liquids
<b>Sensor quality</b>	AISI 316Ti
<b>Pressure resistance</b>	20 bar
<b>Operating voltage</b>	21...26 VDC

### Connection

male, M12 x 1

### Operating ranges

Flow Rate: 4...30 l/min

### Medium temperature

-20...80 °C

### Output

—, PNP

### Types and data – selection table

Type	w	d
FCI-D20A4P-AP8X-H1141	w143	d593

## G1/4" – Female thread – Plastic housing



### General data

<b>Medium</b>	liquids
<b>Sensor quality</b>	Al
<b>Pressure resistance</b>	5 bar
<b>Operating voltage</b>	21...26 VDC

### Connection

male, M12 x 1

### Operating ranges

Flow Rate: 0,02...3 l/min

### Medium temperature

0...60 °C

### Types and data – selection table

Type	Output	w	d
FCI-D06CTP-ARX-H1140	—, Relay output	w144	d594
FCI-D06CTP-LIX-H1141	Analog output, 4...20 mA	w149	d595
FCI-D06CTP-AP8X-H1141	—, PNP	w143	d594

## 4 mm pipe connection – Plastic housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Flow Rate: 0,001...0,2 l/min
<b>Pressure resistance</b>	1 bar	<b>Medium temperature</b>	0...60 °C
<b>Operating voltage</b>	21...26 VDC		

Types and data – selection table

Type	Output	w	d
FCI-TCDO4A4P-AP8X-H1141	—, PNP	w143	d596
FCI-TCDO4A4P-LIX-H1141	Analog output, 4...20 mA	w149	d597
FCI-TCDO4A4P-ARX-H1140	—, Relay output	w144	d596

## TriClamp DN 10 – Plastic housing



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	male, M12 x 1
<b>Sensor quality</b>	AISI 316L	<b>Operating ranges</b>	Flow Rate: 0,1...6 l/min
<b>Pressure resistance</b>	20 bar	<b>Operating voltage</b>	21...26 VDC

Types and data – selection table

Type	Medium temperature	Output	w	d
FCI-34D10A4P-ARX-H1140	-20...80 °C	—, Relay output	w144	d598
FCI-34D10A4P-LIX-H1141	-20...60 °C	Analog output, 4...20 mA	w149	d599
FCI-34D10A4P-AP8X-H1141	-20...80 °C	—, PNP	w143	d598

## Insertion probe

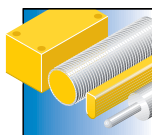


The insertion flow sensors are operated with an external signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available with transistor, relay or analog current output, depending on the signal processor used. They are also available with different process connections and probe lengths.

### Features

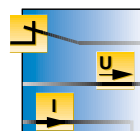
- Insertion flow sensors
- Sensor and signal processor available as separate units
- Values adjusted and displayed at the signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1 ... 300 cm/s
- Switchpoint freely adjustable within the operating range via potentiometer
- Depending on processing unit, available with transistor, relay or analog output
- High temperature version up to 120 °C
- Chemical resistant materials

### Properties



#### Designs

Insertion flow sensors, ideal for pipe diameters of DN20 and larger



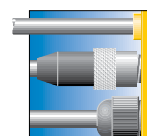
#### Electrical versions

Depending on processor unit: Available with transistor, relay or analog current output 4...20 mA



#### Monitoring range

Adjustable to flow speeds between 1 ... 300 cm/s (liquids) and 0.5 ... 30 m/s gaseous media (air)



#### Electrical connections

Via A-coded male M12 x 1 or connection cable



#### Materials

Sensor material stainless steel or PTFE



#### Special features

Pressure-resistant up to 100 bar, high-pressure version up to 500 bar, high-temperature version up to +120 °C



#### Internet link

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## G 1/4" – Stainless steel housing



### General data

Medium

liquids

Sensor quality

AISI 316Ti

### Types and data – selection table

Type	Connection	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCS-G1/4A4-NA-H1141	male, M12 x 1	Water: 1...150 cm/s Oil: 3...300 cm/s	–	100 bar	-20...80 °C	–	w150	d600
FCS-G1/4A4-NAEX-H1141	male, M12 x 1	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ib IIC	60 bar	-20...85 °C	Ex II 2 G	w151	d600
FCS-G1/4A4-NAEX	2 m PUR cable	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ib IIC	60 bar	-20...85 °C	Ex II 2 G	w152	d601
FCS-G1/4A4-NAEX0	2 m PUR cable	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ia IIC	60 bar	-20...60 °C	II 1/2 G	w153	d601

## G 1/4" – PTFE housing



### General data

Medium

liquids

Sensor quality

PTFE

Connection

2 m FEP cable

Operating ranges

Water: 1...70 cm/s  
Oil: 2...100 cm/s

Pressure resistance

5 bar

Medium temperature

-10...70 °C

### Types and data – selection table

Type	w	d
FCS-G1/4T-NA	w154	d602



## G 1/2" – Stainless steel housing



### General data

Medium

liquids

Sensor quality

AISI 316Ti

### Types and data – selection table

Type	Connection	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCS-G1/2A4-NA-H1141	male, M12 x 1	Water: 1...150 cm/s Oil: 3...300 cm/s	–	100 bar	-20...80 °C	–	w150	d603
FCS-G1/2A4-NAEX-H1141	male, M12 x 1	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ib IIC	60 bar	-20...85 °C	Ex II 2 G	w151	d603
FCS-G1/2A4-NAEX0-H1141	male, M12 x 1	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ia IIC	60 bar	-20...60 °C	II 1/2 G	w151	d603
FCS-G1/2A4-NAEX0	2 m PUR cable	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ia IIC	60 bar	-20...60 °C	II 1/2 G	w153	d604

## G3/4" – Stainless steel housing



### General data

Medium

liquids

Sensor quality

AISI 316Ti

### Types and data – selection table

Type	Connection	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCS-G3/4A4-NA-H1141	male, M12 x 1	Water: 1...150 cm/s Oil: 3...300 cm/s	–	100 bar	-20...80 °C	–	w150	d605
FCS-G3/4A4-NAEX0	2 m PUR cable	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ia IIC	60 bar	-20...60 °C	II 1/2 G	w153	d606

## GL1/2" – PTFE housing



### General data

<b>Medium</b>	liquids	<b>Connection</b>	2 m FEP cable
<b>Sensor quality</b>	PTFE	<b>Operating ranges</b>	Water: 1...70 cm/s Oil: 2...100 cm/s
<b>Pressure resistance</b>	5 bar	<b>Medium temperature</b>	-10...70 °C

### Types and data – selection table

Type	w	d
FCS-GL1/2T-NA	w154	d607

## GL1/2" – Stainless steel housing



### General data

### Types and data – selection table

Type	Medium	Connection	Sensor quality	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCS-GL1/2A4-NA-H1141	liquids	male, M12 x 1	AISI 316Ti	Water: 1...150 cm/s Oil: 3...300 cm/s	–	100 bar	-20...80 °C	–	w150	d608
FCS-GL1/2A4-NAEX-H1141	liquids	male, M12 x 1	AISI 316Ti	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ib IIC	60 bar	-20...85 °C	Ex II 2 G	w151	d608
FCS-GL1/2A4-NAEX-H1141/A	air	male, M12 x 1	AISI 316Ti	Air: 2...20 m/s	Ex ib IIC	10 bar	-20...85 °C	Ex II 2 G	w151	d609
FCS-GL1/2A4-NAEX0-H1141/A	air	male, M12 x 1	AISI 316Ti	Air: 2...20 m/s	Ex ia IIC	10 bar	-20...60 °C	II 1/2 G	w151	d609
FCS-GL1/2A2-NA-H1141/A	air	male, M12 x 1	AISI 303	Air: 0.5...30 m/s	–	30 bar	-20...80 °C	–	w150	d609
FCS-GL1/2A2-NA/A/D100	air	2 m FEP cable	AISI 303	Air: 0.5...30 m/s	–	30 bar	10...120 °C	–	w154	d610
FCS-GL1/2A4-NAEX/A	air	2 m PUR cable	AISI 316Ti	Air: 2...20 m/s	Ex ib IIC	10 bar	-20...85 °C	Ex II 2 G	w152	d610
FCS-GL1/2A4-NAEX0/A	air	2 m PUR cable	AISI 316Ti	Air: 2...20 m/s	Ex ia IIC	10 bar	-20...60 °C	II 1/2 G	w153	d610

## N 1/2" – Stainless steel housing



### General data

**Medium**

liquids

**Sensor quality**

AISI 316Ti

### Types and data – selection table

Type	Connection	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCS-N1/2A4-NA	2 m PVC cable	Water: 1...150 cm/s Oil: 3...300 cm/s	–	100 bar	-20...80 °C	–	w154	d611
FCS-N1/2A4-NAEX-H1141	male, M12 x 1	Water: 1...100 cm/s Oil: 3...200 cm/s	Ex ib IIC	60 bar	-20...85 °C	Ex II 2 G	w151	d612

## N3/4" – Stainless steel housing



### General data

**Medium**

liquids

**Sensor quality**

AISI 316Ti

**Connection**

male, M12 x 1

**Operating ranges**

Water: 1...150 cm/s  
Oil: 3...300 cm/s

**Pressure resistance**

100 bar

**Medium temperature**

-20...80 °C

### Types and data – selection table

Type	w	d
FCS-N3/4A4-NA-H1141	w150	d613

## DN25 – Dairy screw connection – Stainless steel



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	2 m FEP cable
<b>Sensor quality</b>	AISI 316L	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	10 bar	<b>Medium temperature</b>	10...120 °C

### Types and data – selection table

Type	w	d
FCS-DN25A4-NA/D100	w154	d614

## 1 1/2" TriClamp – Stainless steel



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	2 m FEP cable
<b>Sensor quality</b>	AISI 316L	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	10 bar	<b>Medium temperature</b>	10...120 °C

### Types and data – selection table

Type	w	d
FCS-50A4-NA/D014	w154	d615

Varivent – Stainless steel



<b>General data</b>			
<b>Medium</b>	liquids	<b>Connection</b>	2 m PVC cable
<b>Sensor quality</b>	AISI 316Ti	<b>Operating ranges</b>	Water: 1...150 cm/s Oil: 3...300 cm/s
<b>Pressure resistance</b>	10 bar	<b>Medium temperature</b>	10...120 °C

Types and data – selection table

Type		w	d
FCS-68A4-NA/D011		w154	d616



## Inline probe

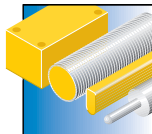


The inline flow sensors are operated with an external signal processor. For this purpose they are mounted directly in pipes. They have very fast response times and are suited for simple control tasks, such as monitoring low flow rates. The integrated LED chain indicates the current flow state. The sensors are available with transistor, relay or analog current output, depending on the signal processor used. They are also available with different mechanical process connections.

### Features

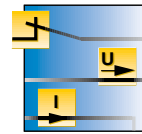
- Insertion flow sensors
- Sensor and signal processor available as separate units
- Values adjusted and displayed at the signal processor
- Ideal for all pipe diameters of DN10 and larger
- Adjustable to flow rates between 5 ... 900 ml/min
- Switchpoint freely adjustable within the operating range via potentiometer
- Depending on processing unit, available with transistor, relay or analog output
- Fast response times within seconds

### Properties



#### Designs

Inline flow sensors, ideal for all pipe diameters of up to DN10



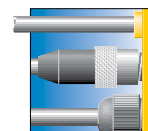
#### Electrical versions

Depending on processor unit: Available with transistor, relay or analog current output 4...20 mA



#### Monitoring range

Adjustable to flow rates between 5 ... 900 ml/min



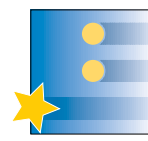
#### Electrical connections

Male M12 x 1, A-coded



#### Materials

Sensor material stainless steel



#### Special features

Pressure-resistant 5, 10, or 16 bar, temperature range -20...+80 °C



#### Internet link

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## M12x1.5 – Female – Stainless steel



### General data

Medium

liquids

Connection

male, M12 x 1

Sensor quality

AISI 316Ti

### Types and data – selection table

Type	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCI-D03A4-NAEX-H1141/M12	Flow Rate: 0,01...0,15 l/min	Ex ib IIC	6 bar	-20...70 °C	Ex II 2 G	w151	d617
FCI-D03A4-NA-H1141/M12	Flow Rate: 0,005...0,15 l/min	–	10 bar	-20...80 °C	–	w150	d617

## M16x1.5 – Female – Stainless steel



### General data

Medium

liquids

Connection

male, M12 x 1

Sensor quality

AISI 316Ti

### Types and data – selection table

Type	Operating ranges	Protection type	Pressure resistance	Medium temperature	Approvals	w	d
FCI-D09A4-NAEX-H1141/M16	Flow Rate: 0,05...0,9 l/min	Ex ib IIC	6 bar	-20...70 °C	Ex II 2 G	w151	d618
FCI-D09A4-NA-H1141/M16	Flow Rate: 0,03...0,9 l/min	–	16 bar	-20...80 °C	–	w150	d618



# Signal processors for flow sensors

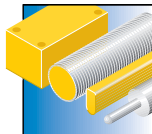


Easy handling, high functionality and many connection possibilities are the key features of the FM-IM flow modules. All Turck flow sensors of the FCS (immersion) and FCI (inline) series can be operated unrestrictedly at the FM modules. The FCS and FCI flow sensors work according to the calorimetric measuring principle and continuously capture the flow speed and temperature of media via signal processors. The desired switchpoint is adjusted in a few steps with the new Quick-Teach function. In addition to numerous software options such as wire-break and short-circuit diagnostics, which are available via IO-Link in combination with FDT/DTM, each sensor features LEDs and a 10-segment LED band for indication of local diagnostics.

## Features

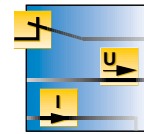
- Intelligent signal processors for flow sensors
- Many display and diagnostic functions
- Integrated IO-Link interface
- Easy adjustment directly at the signal processor or software supported via IO-Link (FDT/DTM)
- Easy to handle and parametrize via Quick-Teach
- Additional monitoring of temperature
- Transistor, relay or analog output 4...20 mA
- Compact design, requires little space

## Properties



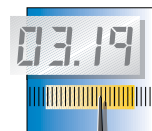
### Design

The flow modules are designed for DIN rail mounting.



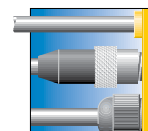
### Electrical versions

They are available as types with standard PNP transistor output, relay output and analog 4...20 mA current output.



### Monitoring range

The monitoring range depends on the type of flow sensor connected.



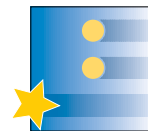
### Electrical connections

The sensors are powered via terminal strips. The modules additionally feature a jack plug for IO-Link communication.



### Materials

The rugged IP20 housing is made of polycarbonate (ABS).



### Special features

The functionality is increased through IO-Link communicability as well as through temperature monitoring and the new Quick-Teach function for adjustment of switchpoints.



### Internet link

Scan the QR code to access our products on the internet

## FM – Flow modules



### General data

Communication via

IO-Link

Connection

Terminal block

Dimensions

27 x 89 x 110 mm

### Types and data – selection table

Type	Switching element function	Temperature monitoring	Error monitoring	Flow monitoring	Operating voltage	Output	w	d
FM-IM-2UPLI63X	4...20 mA	transistor output	transistor output	Current output	20...30 VDC	4...20 mA, Analog output	–	–
FM-IM-3UP63X	NO/NC programmable	transistor output	transistor output	transistor output	20...30 VDC	—/— programmable, PNP/NPN	–	–
FM-IM-3UR38X	NO/NC programmable	relay output	relay output	relay output	20...250 VAC / 20...125 VDC	—/— programmable, Relay output	–	–

## Signal processors for Ex flow sensors

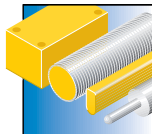


Easy handling, high functionality and many connection possibilities are the key features of the new FMX-IM flow modules. All Turck Ex flow sensors of the FCS (immersion) and FCI (inline) series can be operated unrestrictedly at the FMX modules. The FCS and FCI flow sensors work according to the calorimetric measuring principle and continuously capture the flow speed and temperature of media via signal processors. The desired switchpoint is adjusted in a few steps with the new Quick-Teach function. In addition to numerous software options such as wire-break and short-circuit diagnostics, which are available via IO-Link or HART in combination with FDT/DTM, each sensor features LEDs and a 10-segment LED band for local diagnostics.

### Features

- Intelligent signal processors for Ex flow sensors
- Many display and diagnostic functions
- Integrated IO-Link or HART interface
- Easy adjustment directly at the signal processor or software supported via IO-Link or HART (FDT/DTM).
- Easy to handle and parametrize via Quick-Teach
- Additional monitoring of temperature
- Transistor, relay or analog output 4...20 mA
- Compact design, requires little space

### Properties



#### Design

The flow modules are designed for DIN rail mounting.



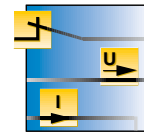
#### Monitoring range

The monitoring range depends on the type of flow sensor connected.



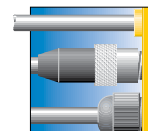
#### Materials

The rugged IP20 housing is made of polycarbonate (ABS).



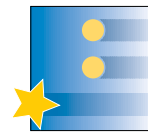
#### Electrical versions

They are available as types with standard PNP transistor output, relay output and analog 4...20 mA current output.



#### Electrical connections

The sensors are powered via terminal strips. The modules additionally feature a jack plug for IO-Link or HART communication.



#### Special features

The functionality is increased through IO-Link and HART communicability as well as through temperature monitoring and the new QuickTeach function.



#### Internet link

Scan the QR code to access our products on the internet





## FMX - Flow Module



### General data

<b>Connection</b>	Terminal block	<b>Protection type</b>	Ex II (1) G [Ex ia Ga] IIC resp. II (1) D [Ex ia Da] IIIC
<b>Approvals</b>	<div> <div>Ex</div> <div>II 1 G</div> </div> <div> <div>Ex</div> <div>II 1 D</div> </div>	<b>Dimensions</b>	27 x 89 x 110 mm

### Types and data – selection table

Type	Switching element function	Temperature monitoring	Error monitoring	Communication via	Flow monitoring	Operating voltage	Output		
FMX-IM-2UPLI63X	4...20 mA	transistor output	transistor output	HART	Current output	20...30 VDC	4...20 mA, Analog output	–	–
FMX-IM-3UP63X	NO/NC programmable	transistor output	transistor output	IO-Link	transistor output	20...30 VDC	 programmable, PNP/NPN	–	–
FMX-IM-3UR38X	NO/NC programmable	relay output	relay output	IO-Link	relay output	20...250 VAC / 20...125 VDC	 programmable, Relay output	–	–