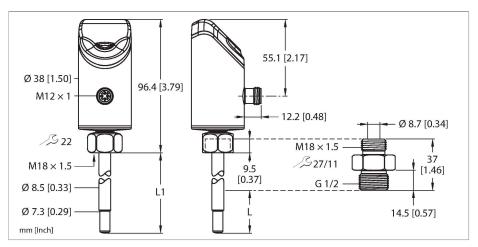


FS100-300L-61-2UPN8-H1141 Flow Sensor





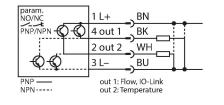
D	T	E0400 2001 C4 01 IDNO 114444		
Medium temperature -25+85 °C Application area Immersion sensor Application area liquids Bar length (L1) 81 mm Immersion depth (L) 52.9 mm, When using the supplied adapter Pressure resistance 300 bar Flow Monitoring 3300 cm/s Standard flow range 3300 cm/s Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s ; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range Switching point accuracy ± 2 K; for water >3 cm/s	Туре	FS100-300L-61-2UPN8-H1141		
Application area Mounting conditions Immersion sensor Application area Bar length (L1) Immersion depth (L) Pressure resistance Pressure resistance 300 bar Flow Monitoring Standard flow range Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	ID	100028426		
Mounting conditions Immersion sensor Application area liquids Bar length (L1) 81 mm Immersion depth (L) 52.9 mm, When using the supplied adapter Pressure resistance 300 bar Flow Monitoring The sensor rod in the medium Standard flow range 3300 cm/s Any axial alignment of the sensor rod in the medium Extended flow range Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Medium temperature	-25+85 °C		
Application area liquids Bar length (L1) 81 mm Immersion depth (L) 52.9 mm, When using the supplied adapter Pressure resistance 300 bar Flow Monitoring Standard flow range 3300 cm/s Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s ; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 325 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Application area			
Bar length (L1) Standard flow range Standard flow range Switching point accuracy Switching point accuracy Standard flow range Standard flow range Switching point accuracy Switching accuracy Switching accuracy Switching point accuracy Switching accur	Mounting conditions	Immersion sensor		
Immersion depth (L) 52.9 mm, When using the supplied adapter Pressure resistance 300 bar Flow Monitoring 3300 cm/s Standard flow range 3300 cm/s Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range Switching point accuracy ± 2 K; for water >3 cm/s	Application area	liquids		
Pressure resistance 300 bar Flow Monitoring Standard flow range 3300 cm/s Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s ; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 325 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Bar length (L1)	81 mm		
Flow Monitoring Standard flow range 3300 cm/s Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient 4 ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Immersion depth (L)			
Standard flow range Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s ; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Pressure resistance	300 bar		
Any axial alignment of the sensor rod in the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 325 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Flow Monitoring			
the medium Extended flow range 1300 cm/s Extended flow range comment Directed inflow to punch mark ±20 ° Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Standard flow range	3300 cm/s		
Extended flow range comment Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s ; for water 3100 cm/s; 1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient 4 sign of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy 5 switching point accuracy Directed inflow to punch mark ±20 ° 130 cm/s; for water 3300 cm/s 7 sign of the switching cm/s 2 sign of the switching point 2 Sign of the switching point		•		
Switching point accuracy 130 cm/s; for water 3300 cm/s Reproducibility 0.25 cm/s; for water 3100 cm/s; $1080 ^{\circ}\text{C}$ Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient $\leq 300 \text{K/min}$ Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 $^{\circ}\text{C}$ Switching point accuracy $\pm 2 \text{K}$; for water >3 cm/s	Extended flow range	1300 cm/s		
Reproducibility 0.25 cm/s ; for water 3100 cm/s ; $1080 ^{\circ}\text{C}$ Response time T09 6 s Response time T05 3 s Temperature drift $0.5 \text{cm/s} \times 1/\text{K}$ Temperature gradient $\leq 300 \text{K/min}$ Hysteresis $3 25 \%$ of the switching point Temperature monitoring Measuring range $-2585 ^{\circ}\text{C}$ Switching point accuracy $\pm 2 \text{K}$; for water $> 3 \text{cm/s}$	Extended flow range comment	Directed inflow to punch mark ±20 °		
1080 °C Response time T09 6 s Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range Switching point accuracy ± 2 K; for water >3 cm/s	Switching point accuracy	130 cm/s; for water 3300 cm/s		
Response time T05 3 s Temperature drift 0.5 cm/s × 1/K Temperature gradient \leq 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy \pm 2 K; for water >3 cm/s	Reproducibility			
Temperature drift $0.5 \text{ cm/s} \times 1/\text{K}$ Temperature gradient ≤ 300 K/min Hysteresis 325% of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Response time T09	6 s		
Temperature gradient ≤ 300 K/min Hysteresis 3 25 % of the switching point Temperature monitoring -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Response time T05	3 s		
Hysteresis 3 25 % of the switching point Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Temperature drift	0.5 cm/s × 1/K		
Temperature monitoring Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Temperature gradient	≤ 300 K/min		
Measuring range -2585 °C Switching point accuracy ± 2 K; for water >3 cm/s	Hysteresis	3 25 % of the switching point		
Switching point accuracy ± 2 K; for water >3 cm/s	Temperature monitoring			
	Measuring range	-2585 °C		
Reproducibility ≤ 0.5 K	Switching point accuracy	± 2 K; for water >3 cm/s		
,	Reproducibility	≤ 0.5 K		



Features

- Screw-in adapter with process connection G1/2 inch male thread included in delivery
- Electronics housing material/contact with medium 1.4404 (316L)/1.4571 (316Ti)
- ■Immersion depth 52.9 mm
- ■Process value display with bar graph
- Flow monitoring for liquid media
- ■Protection classes IP66, IP67 and IP69K
- Adjustment of flow speed via teach function
- ■10...33 VDC
- ■NO/NC contact, PNP/NPN output, IO-Link
- ■Connector, M12 × 1

Wiring diagram





Functional principle

The flow sensor functions according to the calorimetric principle. The distinctive feature of this principle is that the flow rate correlates directly to the thermal loss of energy in the probe. The increased loss of energy is therefore a direct measure of an increased flow rate.



Technical data

Response time T09 12 s Response time T05 3 s Electrical data Jo33 VDC Short-circuit/reverse polarity protection yes, cyclic / yes (voltage supply) Power consumption ≤ 1.6 W, Typ. 1.3 W Voltage drop ≤ 1.8 VDC Continuous current carrying capacity of the DC switching output 250 mA Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Output I Output 2 Temperature: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link V 1.1 IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Stainless-steel/Plastic, 1.4404 (AI	Resolution	0.5 K			
Electrical data Operating voltage U, Short-circuit/reverse polarity protection Power consumption \$\frac{1}{2}\$ 1.6 W, Typ. 1.3 W Voltage drop \$\frac{2}{2}\$ 1.8 VDC Continuous current carrying capacity of the DC switching output Overload protection Insulation class III Standby delay time Output 1 Output 2 Temperature: Switching output Communication protocol IO-Link Output function IO-Link IO-Link specification V 1.1 IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type Included in the SIDI GSDML Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touchpads Automatic switching pointadjustment via touchpads Adapter material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grijamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection Process connection sensor M18 x 1.5 male thread Process connection adapter M18 x 1.5 male thread Process connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Response time T09	12 s			
Operating voltage U₀ 1033 VDC Short-circuit/reverse polarity protection yes, cyclic / yes (voltage supply) Power consumption ≤ 1.6 W, Typ. 1.3 W Voltage drop ≤ 1.8 VDC Continuous current carrying capacity of the DC switching output 250 mA Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Temperature: Switching output or IO-Link Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link V 1.1 O-Link specification V 1.1 O-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Yes Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Stainless-steel/Plastic, 1.4404 (AISI 316Ti); FKM O-ring, AFM flat seal	Response time T05	3 s			
Short-circuit/reverse polarity protection Power consumption Solve the DC switching output Voltage drop Solve the DC switching output Overload protection Insulation class III Standby delay time Outputs Output 1 Communication protocol Output 2 Temperature: Switching output Output function No/NC programmable, PNP/NPN IO-Link IO-Link IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 male thread Process connection adapter M18 x 1.5 male thread Process connection Connector, M12 x 1 Protection class III 250 mA 418 VDC 250 mA 428 VVE Poma Temperature: Switching output or IO-Link Temperature: Switching output or IO-Link V 1.1 Class A COM 2 (38.4 kBaud) Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection sensor M18 x 1.5 male thread Process connection adapter M18 x 1.5 male thread Process connection Connector, M12 x 1 Protection class III Stainless steel 1.4571 Included thread Included thread Included thread Included thread Included th	Electrical data				
Power consumption \$1.6 W, Typ. 1.3 W Voltage drop \$1.8 VDC Continuous current carrying capacity of the DC switching output Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 × 1.5 male thread Process connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Operating voltage U _B	1033 VDC			
Voltage drop \$ 1.8 VDC Continuous current carrying capacity of the DC switching output Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 × 1.5 male thread Process connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Short-circuit/reverse polarity protection	yes, cyclic / yes (voltage supply)			
Continuous current carrying capacity of the DC switching output Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output or IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 10-Link yes Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touchpads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class III Stainless Legal specification Ves Adapter material Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Power consumption	≤ 1.6 W, Typ. 1.3 W			
the DC switching output Overload protection Yes Insulation class III Standby delay time 1830 s Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-	Voltage drop	≤ 1.8 VDC			
Insulation class Standby delay time 1830 s Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Frocess connection dapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K		250 mA			
Standby delay time Outputs Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection dapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Overload protection	Yes			
Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link Specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection dapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Insulation class	III			
Output 1 Flow: Switching output or IO-Link Output 2 Temperature: Switching output Communication protocol IO-Link Output function NO/NC programmable, PNP/NPN IO-Link IO-Link Specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L.)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Standby delay time	1830 s			
Output 2 Communication protocol Output function NO/NC programmable, PNP/NPN IO-Link IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 1.2 Included in the SIDI GSDML Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 × 1.5 female thread Process connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Outputs				
Communication protocol Output function NO/NC programmable, PNP/NPN IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Output 1	Flow: Switching output or IO-Link			
Output function NO/NC programmable, PNP/NPN IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Output 2	Temperature: Switching output			
IO-Link IO-Link specification V 1.1 IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Yes Programming Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Communication protocol	IO-Link			
IO-Link specification IO-Link port type Class A Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 x 1.5 female thread Process connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Output function	NO/NC programmable, PNP/NPN			
Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 x 1.5 female thread Process connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	IO-Link				
Transmission physics COM 2 (38.4 kBaud) Frame type 2.2 Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection adapter M18 × 1.5 female thread Process connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	IO-Link specification	V 1.1			
Frame type Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 × 1.5 female thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	IO-Link port type	Class A			
Included in the SIDI GSDML Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Transmission physics	COM 2 (38.4 kBaud)			
Programming Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K					
Programming options Automatic switching logic recognition, easy switching pointadjustment via touch-pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Frame type	2.2			
easy switching pointadjustment via touch- pads Mechanical data Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 × 1.5 female thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K					
Housing material Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML				
316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Adapter material Stainless steel 1.4571 (316Ti) Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming	Yes Automatic switching logic recognition, easy switching pointadjustment via touch-			
Materials (contact with media) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options	Yes Automatic switching logic recognition, easy switching pointadjustment via touch-			
O-ring, AFM flat seal Process connection G 1/2" male thread Process connection sensor M18 x 1.5 female thread Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data	Yes Automatic switching logic recognition, easy switching pointadjustment via touch-pads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65			
Process connection sensor M18 x 1.5 female thread Process connection adapter M18 x 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 x 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material	Yes Automatic switching logic recognition, easy switching pointadjustment via touchpads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5			
Process connection adapter M18 × 1.5 male thread; G 1/2" male thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material	Automatic switching logic recognition, easy switching pointadjustment via touch-pads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM			
thread Electrical connection Connector, M12 × 1 Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material Materials (contact with media)	Automatic switching logic recognition, easy switching pointadjustment via touch-pads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal			
Protection class IP66 IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material Materials (contact with media) Process connection	Automatic switching logic recognition, easy switching pointadjustment via touchpads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal G 1/2" male thread			
IP67 IP69K	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material Materials (contact with media) Process connection Process connection sensor	Automatic switching logic recognition, easy switching pointadjustment via touchpads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal G 1/2" male thread M18 x 1.5 female thread M18 x 1.5 male thread; G 1/2" male			
Electromagnetic compatibility (EMC) DIN EN 60947-5-9: 2007	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material Materials (contact with media) Process connection Process connection sensor Process connection adapter	Automatic switching logic recognition, easy switching pointadjustment via touchpads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal G 1/2" male thread M18 x 1.5 female thread M18 x 1.5 male thread; G 1/2" male thread			
	Included in the SIDI GSDML Programming Programming options Mechanical data Housing material Adapter material Materials (contact with media) Process connection Process connection sensor Process connection adapter Electrical connection	Automatic switching logic recognition, easy switching pointadjustment via touchpads Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5 Stainless steel 1.4571 (316Ti) Stainless steel 1.4571 (AISI 316Ti), FKM O-ring, AFM flat seal G 1/2" male thread M18 × 1.5 female thread M18 × 1.5 male thread; G 1/2" male thread Connector, M12 × 1 IP66 IP67			



Technical data

Environmental conditions			
Ambient temperature	-40+80 °C		
	(UL: -25+80 °C)		
Storage temperature	-40+80 °C		
Shock resistance	50 g (11 ms) DIN EN 60068-2-27		
Vibration resistance	20 g (552000 Hz)DIN EN 60068-2-6		
Tests/approvals			
Approvals	CE cULus		
UL registration number	E516036		
Display	LED display functions for status of supply voltage, switching states and teach processes. Process indicators via bar graph.		
MTTF	120 years acc. to SN 29500 (Ed. 99) 40 °C		

Mounting instructions

TURCK

Product features



Inclined display

The user interface is tilted by 45°, offering a high level of comfort when operating and reading values.

FLOW and TEMP LEDs

Two LED displays which are visible from almost all directions indicate the status of the outputs and the active teach mode.

Status LEDs

Additional LED displays provide information about the status of the power supply, faults and the locking function and—if available—IO-Link communication.

Process value display

The generous 11-segment bicolor LED bar displays either the flow or temperature values in an easy-to-read manner.

Label

The translucent front cap and the metal housing are scratch-resistant and are inscribed in a contrasting color using a laser.

MODE, ENTER and SET

Touch pads allow menus to be navigated reliably — without wear and tear and with no need for additional sealing.

Alignment

The sensor head can be freely rotated within a range of 340°, simplifying the alignment of the electrical connection and user interface following installation.

Translucent front cap

The front cap is made from scratch-resistant, temperature-resistant, translucent plastic.

Modular Concept

The portfolio exhibits a variable and modular mechanical concept. The neutral M18 coupling nut on the sensor and the various screw-in adapters allow a variable process connection based on the usage requirements. Fast and flexible thanks to using neutral stock and spare parts as required.

Temperature measurement

Based on the calorimetric principle, the sensor also offers the option, in addition to monitoring the flow rate, of measuring the medium temperature. If in addition to the flow rate the medium temperature is also important, both process variables can be determined and evaluated independently of each other.

DeltaFlow

The implemented DeltaFlow monitoring supports error-free teaching by only enabling all teach processes once the flow rate to be monitored has settled at a constant level.

Auto Detection PNP/NPN

The automatic setting of the sensor output signal supports error-free configuration of the sensor on connection to the remote IO environment. The sensor automatically activates the output type that corresponds to the signal type of the input card connected. This function is activated by default and can also be configured specifically as required.

Programmable NO/NC

The switching outputs can optionally be used as normally open or normally closed. If the sensors have more than one switching output, these can be configured differently. Each switching output is configured as normally open by default.

Back to pre- and factory settings Both Back to functions offer the option of resetting the current settings. Back to Pre-Settings replaces the current settings with the previous settings. Back to Factory Settings resets the sensor to the factory settings.

Lock function (Loc/unLoc)

The touch buttons can be locked/unlocked. When the key lock is activated, a teach-in process cannot be initiated. This prevents parameters from being modified accidentally, for example.

Teach functions (Quick and MAX/MIN) Quick Teach allows quick teaching in of the switchpoint without teaching in a separate MAX/MIN range. With MAX/MIN Teach on the other hand, the flow range to be monitored is scaled to two limit values to be taught and the switchpoint is set within these two limits. Sensors with a switching output have both modes, whereas sensors without a switching output only have MAX/MIN Teach.



LED display

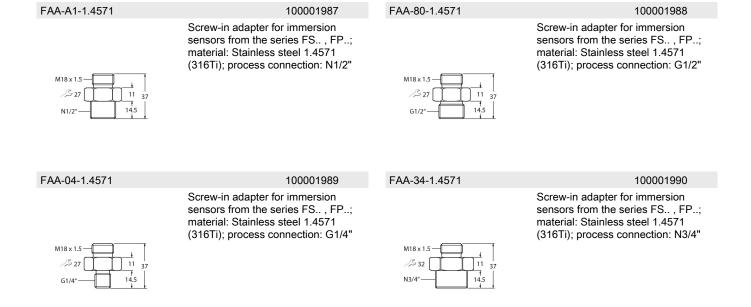
LED	Color	Status	Description			
PWR	Green	On	Operating voltage applied			
			Device is operational			
		Flashing	Operating voltage applied			
			IO-Link communication active			
			(inverted flash with T on 900 ms and T off 100 ms)			
FLT	Red On		Error displayed			
			(for error pattern in combination with LEDs see manual)			
		Off	No errors displayed			
LOC	OC Yellow		Device locked			
		Off	Device unlocked			
		Flashing	Locking/unlocking process active			
FLOW	FLOW Yellow		NO: Flow switchpoint exceeded (output "high")			
			NC: Flow below minimum switchpoint (output "high")			
		Off	NO: Flow below minimum switchpoint (output "low")			
			NC: Flow switchpoint exceeded (output "low")			
		Flashing	Teach mode/display of diagnostic data			
			(see manual for specification)			
TEMP	1P Yellow	On	NO: Temperature switchpoint exceeded (output "high")			
			NC: Temperature below minimum switchpoint (output "high")			
		Off	NO: Temperature below minimum switchpoint (output "low")			
			NC: Temperature switchpoint exceeded (output "low")			
		Flashing	Teach mode/display of diagnostic data			
			(see manual for specification)			

For detailed description of the display patterns and flashing codes, see manual D100002084

IO-Link process data image

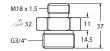
Bit	15 14 13 12 11 10 9 8	7 6 5	4 3	2	1	0
Byte n	14 Bit Process Value (TEN	1P)			State Out 2 (TEMP)	State Out 1 (FLOW)
Bit	31 30 29 28 27 26 25 2	4 23 22 21	20 1	9 18	17	16
Byte n+1	16 Bit Process Value (FLC	W)				

Accessories



FAA-81-1.4571 100001991

Screw-in adapter for immersion sensors from the series FS.., FP..; material: Stainless steel 1.4571 (316Ti); process connection: G3/4"



Accessories

