

www.sentinel-china.com

TIANJIN SENTINEL ELECTRONICS CO.,LTD.

Adress: Hitech green industry base,Huayuan industrial park,Tianjin China

Website: www.sentinel-china.com

Tel: 022-83726972

E-mail: sales@sentinel-china.com



official website



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2024/25



FLUID DETECTION TECHNOLOGY

SENSING YOUR MIND!



CE certification

Excellent sales team and professional technical support provide you with comprehensive products and related solutions.



16
Years16
2000 +

40 +

15 +

Experiences

Customers

National patent

Overseas regions

SINCE
2008

In 2013, the company developed and mass-produced inductive proximity sensors, expanding its product line.



2010



In 2010, the company successfully designed and mass-produced inductive proximity switches, solidifying its position in the industrial sensor field. In 2011, it expanded its production facilities to support future business growth.

2015



In 2015, the company further entered the field of fieldbus and industrial Ethernet by launching remote I/O modules. The application of this technology significantly improved the automation level of factory automation.

2023



In 2023, the company further enhanced IO-Link technology by launching sensor products with IO-Link functionality, making them more efficient in industrial automation and equipment management. In the future, the company will continue to focus on sensor and IO technologies, driving the development of Industry 4.0 and smart manufacturing.

In 2019, the company made a significant breakthrough in IO-Link technology by successfully launching IO-Link Master and Device products, achieving standardized data exchange and efficient data management from field sensors to the central control system.



2019

*The above data is accurate as of 2023.

INDUSTRIES



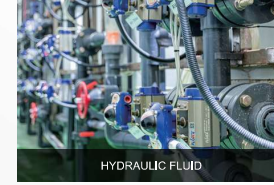
PHARMA



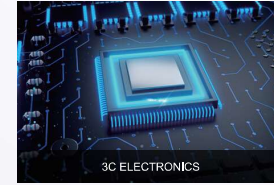
WAREHOUSE LOGISTICS



SOLAR ENERGY



HYDRAULIC FLUID



3C ELECTRONICS



AUTOMOTIVE



EV BATTERY-SWAP STATION



PACKAGING



TRANSPORTATION

The solution covers major fields such as machine tool industry, automobile manufacturing, new energy, 3C electronics, EV battery-swap station, warehousing, printing and packaging, and steel. SENTINEL focuses on providing customers with customized products and services, continuously innovating and upgrading products, and gaining the recognition and trust of customers in the field of industrial automation product segmentation.

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Liquid Level Sensor

Overview

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Flow Switch/Sensor

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Accessories

Connect accessories

Pressure detection

Pressure transmitter

Pressure is one of the most frequently measured parameters in the industrial field. Whether it's monitoring system pressure in hydraulic systems, pipeline pressure in cooling circuits, or pressure parameters inside storage tanks, constant monitoring and measurement are essential. Sentinel's pressure transmitters can provide process interfaces of various sizes, multiple output signals, and a wide pressure measurement range. The rich function settings and flexible installation methods can meet various needs of actual production and provide the greatest flexibility for your design.



IO-Link Pressure sensor

Sentinel's new SEH series pressure sensors not only uphold the excellent performance of previous products but also come equipped with IO-Link functionality. With IO-Link technology, the sensors can directly convert the millivolt signal of pressure into a digital signal, achieving high-precision data transmission and robust anti-interference capability. The new generation of products comes standard with an IP67 protection class, making them an ideal choice for intelligent control in industrial automation.



SEH Pressure sensor

Pressure sensor with display



IP67

- Compact size,easy to install in tight spaces
- Stainless steel housing,completely sealed,protection class IP67
- Upper part of the housing can be rotated 300°to ensure the best installation direction
- High-brightness dual-color large-size digital display,support mirroring
- Integrated programming operation panel,simple setting
- Pressure range-1...600bar
- Support IO-Link protocol,parameters can be set via IO-Link
- Flexible application through configurable output states:digital,analog,IO-Link
- Key lock function,simple key menu operation
- The starting and ending points of the analog signal can be set

Technical parameters

Electrical data

Operating voltage	24VDC±10%
Operating current	<100mA
Electrical interface	4-pin M12 connector,gold-plated,A-coded

Pressure parameters

Measuring medium	Liquids,gases(non-toxic,harmful,flammable and explosive gases)
Pressure type	Relative pressure
Medium temperature	-30...105°C
Measurement accuracy	0.5%
Max overvoltage	2 times the maximum measurement value

Output parameters

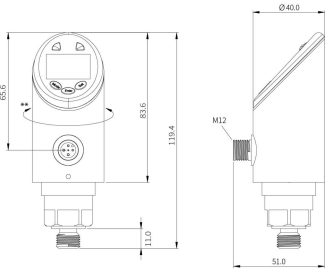
OUT1 Signal	Switching signal or IO-Link(automatic wake-up)	
OUT2 Signal	Switching signal or Analog	
Switching signal output type	PNP/NPN/Push-Pull,NO/NC,Hysteresis/Window programmable	
Switching signal output current	250mA	
Switch point SP setting range(bar)	Positive pressure:0.5%F.S.,F.S*	Negative pressure:(-1+0.5%F.S)...FMR**
Release signal rP setting range(bar)	Positive pressure:0...(SP-0.5%F.S)	Negative pressure:-1....(SP-0.5%F.S)
SP,rP minimum interval	0.5%F.S	
Switching signal output resolution	0.1bar、0.01bar、0.001bar(Modle differentiation)	
Analog signal output maximum load	500Ω	
Analog signal output accuracy	0.5%F.S	
Minimum interval between analogsignal start and end points	20%F.S	

IO-Link Information

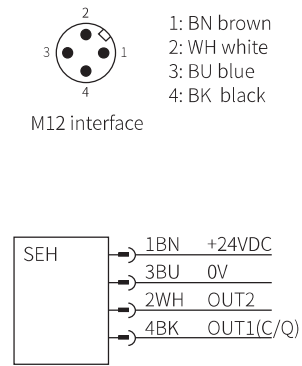
Vendor ID	1317(0x0525)
Device ID	198673(0x030811)
Number of interfaces	1
IO-Link protocol version	V1.1
IO-Linkinput bytes	2 bytes(16Bit)
Frame type	TYPE_2_2
Transmission rate	COM2 38.4kbit/s
Minimum cycle time	2400us
ISDU(Indexing Service)	Support
Block parameter operations	Not support
Data storage(DS)	Not support

Mechanical parameters

Material	304 stainless steel
Process interface	G1/4 external thread
Ambient temperature	-40...80°C
Storage temperature	-40...100°C
Protection class	IP67

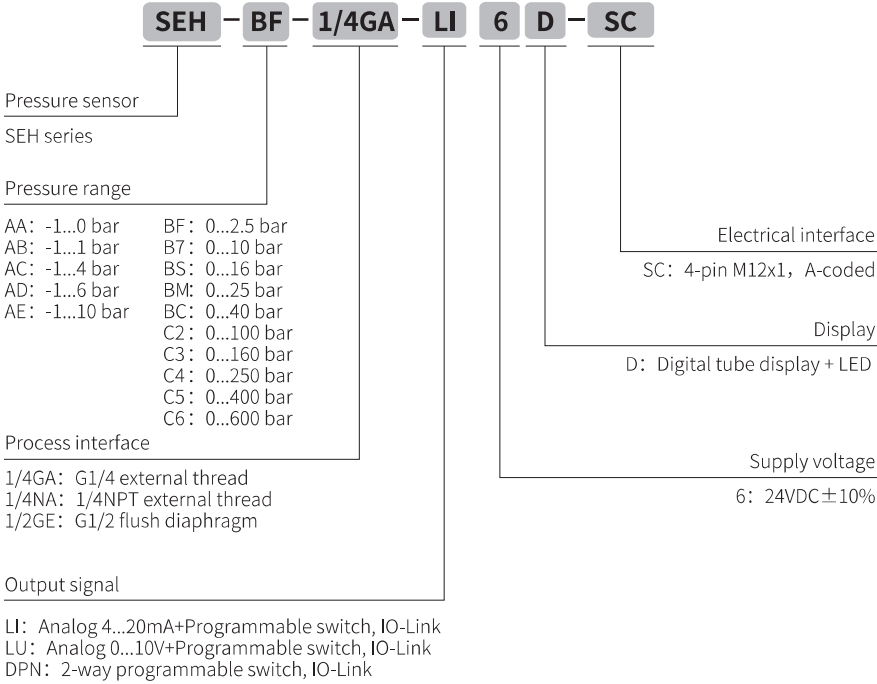


Wiring diagram



Pin	LI Output definition	LU Output definition	DPN Output definition
1	+24VDC	+24VDC	+24VDC
2	(OUT2) Switch or 4...20mA	(OUT2) Switch or 0...10V	(OUT2) Switch
3	0V	0V	0V
4	(OUT1) Switch or IO-Link	(OUT1) Switch or IO-Link	(OUT1) Switch or IO-Link

Selection guide



S300 Pressure transmitter

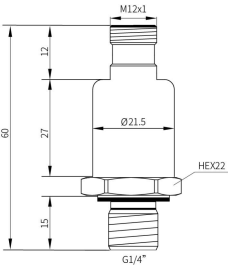
Pressure transmitter without display



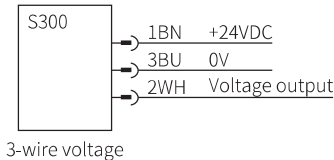
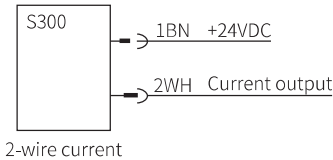
IP65

- Compact size,easy to install in tight spaces
- Digital circuit compensation
- Strong anti-interference ability and high stability
- For measuring liquids and gases in industrial applications
- Can measure gauge pressure and absolute pressure
- The liquid contact diaphragm is made of 316L stainless steel
- The housing is made of 304 stainless steel

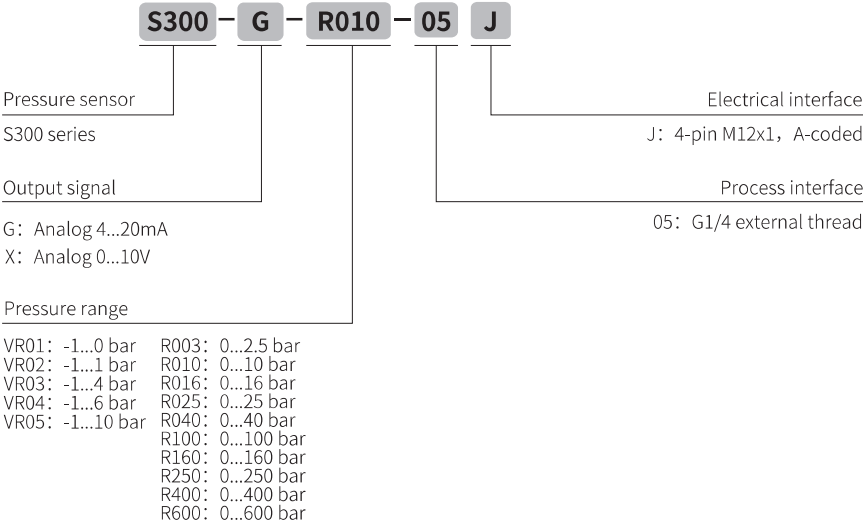
Technical parameters	
Electrical data	
Operating voltage	24VDC±10%
Electrical interface	4-pin M12 connector,gold-plated,A-coded
Pressure parameters	
Measuring medium	Liquids,gases(non-toxic,harmful,flammable and explosive gases)
Pressure type	Relative pressure
Medium temperature	-30...105°C
Measurement accuracy	±0.5%F.S(typical value);±1%F.S(maximum value)
Performance parameters	
Hysteresis and Repeatability	≤±0.1%F.S
Temperature drift	≤±1.5%F.S (-20°C....85°C)
Response time	<10ms
Service life	≥10 Pressure cycle
Over load pressure	150%~300%F.S
Burst pressure	200%~600%F.S
EMC-Interference	IEC061000-6-3
EMC-Immunity	IEC061000-6-2
Insulation resistance	≥100MΩ/500VDC(200MΩ/250VDC)
Vibration resistance	Sinusoidal curve:20g,25Hz~2KHz;Random:7.5grms,5Hz~1KHz
Impact resistance	Shock:100g/11ms;Free fall:1m
Mechanical parameters	
Material	304 stainless steel
Process interface	G1/4 external thread
Ambient temperature	-20...80°C
Storage temperature	-40...120°C
Protection class	IP65



Wiring diagram



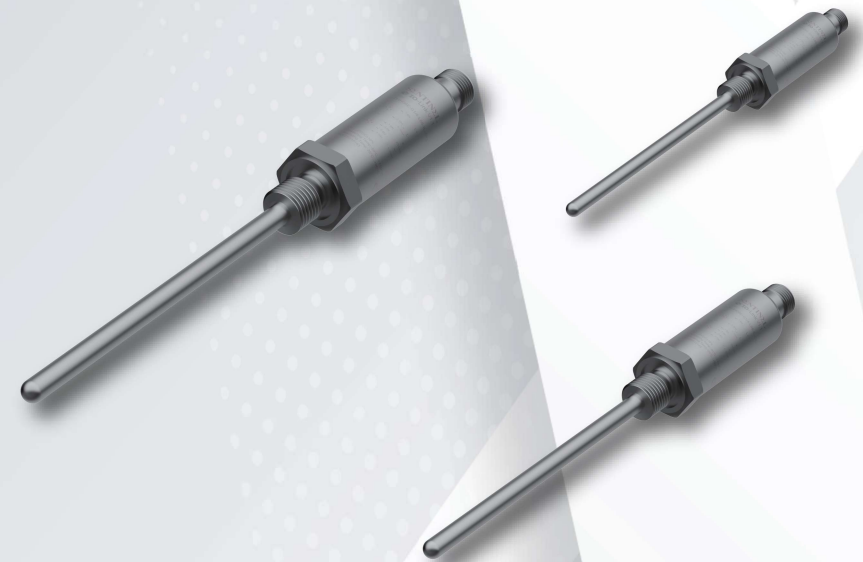
Selection guide



Temperature detection

IO-Link Temperature sensor

In modern industrial automation, temperature control and monitoring are key elements to ensure process safety, enhance production efficiency, and optimize product quality. As a company committed to technological innovation and high-quality service, Sentinel has introduced temperature sensors based on resistance temperature detectors (RTDs) integrated with IO-Link functionality. The product housing is made of 304 or 316L stainless steel, offering durability and a protection rating of IP67, making it suitable for harsh industrial environments. With its high precision, reliability, and intelligent features, this sensor has become a preferred solution for numerous industrial applications.



IO-Link Temperature transmitter

Small temperature transmitter with compact design, customizable probe length, measuring range -50...150°C, PT1000 measuring element, wire and connector outlet.



Temperature sensor with display



IP67

- IO-Link Smart Temperature Sensor
- 4-digit large digital tube display, Mirroring, semi-transparent design
- Upper part of the housing can be rotated 300° (G1/2 only)
- NO/NC, PNP/NPN/push-pull, hysteresis/window configurable
- Switching signal/analog signal, Switching signal/IO-Link configurable
- Sensor parameters can be set via buttons and IO-Link
- The start and end point of the analog signal can be set
- Standard 4-pin A-coded M12 interface
- Simple key operation, with key lock function
- The display panel adopts an integrated molded housing
- The housing body is made of stainless steel

Technical parameters

Electrical data

Operating voltage	24VDC±10%
Operating current	<100mA
Electrical interface	4-pin M12 connector, gold-plated, A-coded

Temperature parameters

Measuring medium	Liquid
Measuring element	PT1000
Measuring range	All-in-one: -50°C...150°C(-58°F...302°F); Split type: -50°C...500°C(-58°F...932°F)
Measurement accuracy	0.5°C
Process interface	M18x1.5 Internal thread, G1/2 External thread

Output parameters

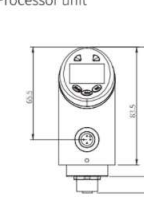
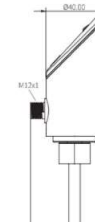
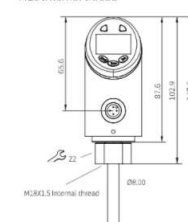
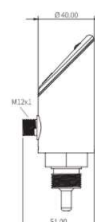
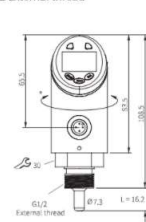
OUT1 Signal	Switching signal or IO-Link(automatic wake-up)
OUT2 Signal	Switching signal or analog signal
Switching signal output type	PNP/NPN/Push-Pull,NO/NC,Hysteresis/Window programmable
Switching signal output current	250mA
Switch point SP setting range	All-in-one: -49.8°C...150°C;Split type: -49.8°C...500°C
Release point rP setting range	All-in-one: -50°C...149.8°C;Split type: -50°C...499.8°C
Switching signal output resolution	0.1°C
Analog signal output maximum load	500Ω
Analog signal output accuracy	0.5%F.S
Minimum interval between analogsignal start and end points	10°C

IO-Link Information

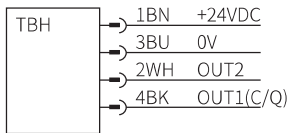
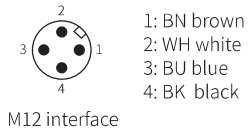
Vendor ID	1317(0x0525)
Device ID	198417(0x030711)
Number of interfaces	1
IO-Link protocol version	V1.1
IO-Link input bytes	2 bytes(16Bit)
Frame type	TYPE_2_2
Transmission rate	COM2 38.4kbit/s
Minimum cycle time	2400us
ISDU(Indexing Service)	Support
Block parameter operations	Not support
Data storage(DS)	Not support

Mechanical parameters

Material	Electronic compartment:304 stainless steel;Probe:304/316L stainless steel
Ambient temperature	-40...80°C
Storage temperature	-40...100°C
Protection class	IP67

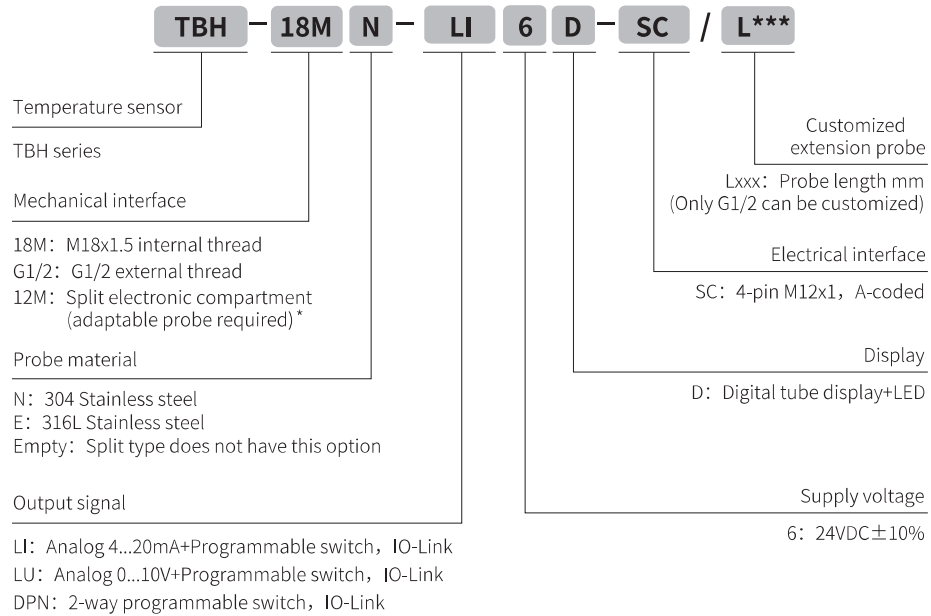


Wiring diagram



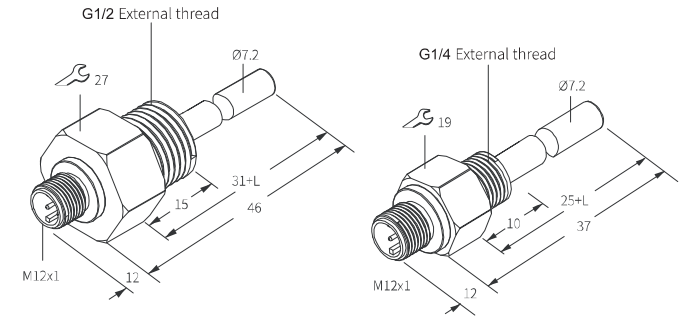
Pin	LI Output definition	LU Output definition	DPN Output definition
1	+24VDC	+24VDC	+24VDC
2	(OUT2) Switch or 4...20mA	(OUT2) Switch or 0...10V	(OUT2) Switch
3	0V	0V	0V
4	(OUT1) Switch or IO-Link	(OUT1) Switch or IO-Link	(OUT1) Switch or IO-Link

Selection guide

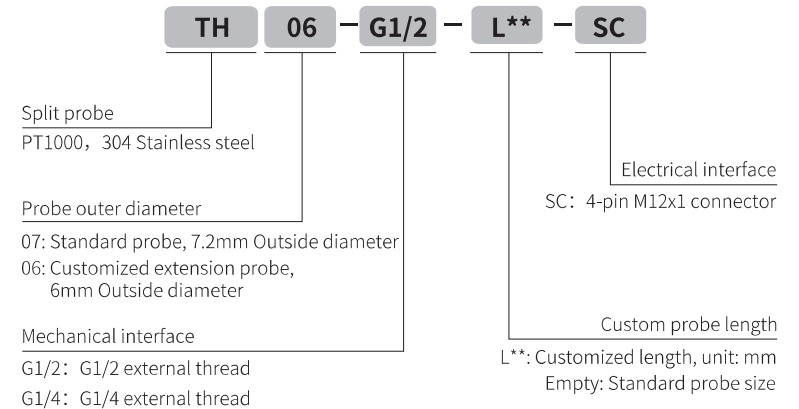


* Note: When measuring liquid temperature greater than 100°C, please use the split type (12M), separate the probe from the sensor, place the sensor at room temperature, and insert the probe into the high-temperature pipe. This split type model represents the temperature sensor, and a separate probe is required.

Probe size



Selection guide



THH Temperature transmitter

Temperature transmitter without display



IP67

- Compact Temperature Transmitter for Industrial Applications
- 4-20 mA Two-wire or Three-wire Output
- IO-Link Communication Protocol V1.1
- Stainless Steel Housing
- 4-pin M12 connector, gold-plated, A-coded
- Customizable Probe Length
- High-Precision PT1000 Temperature Sensing Element
- G1/4 Threaded Process Connection

Electrical interface

Temperature parameters

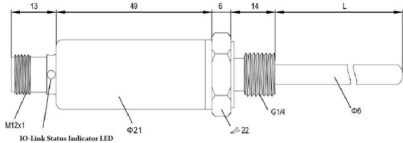
Measuring range	-50°C - 150°C (-58°F - 302°F)
Interface Type	M12 A-coded 4-pin
Measuring element	PT1000
Measurement Accuracy	0.5°C

Output parameters

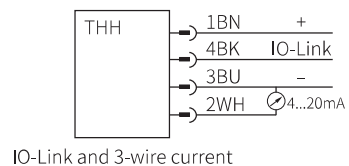
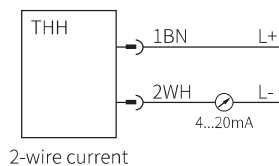
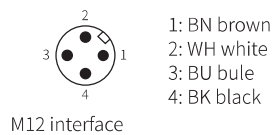
OUT2 Signal	4-20mA or 20-4mA
Analog signal output maximum load	200Ω
Analog signal output accuracy	0.5%F.S
Minimum interval between analogsignal start and end points	10°C

IO-Link

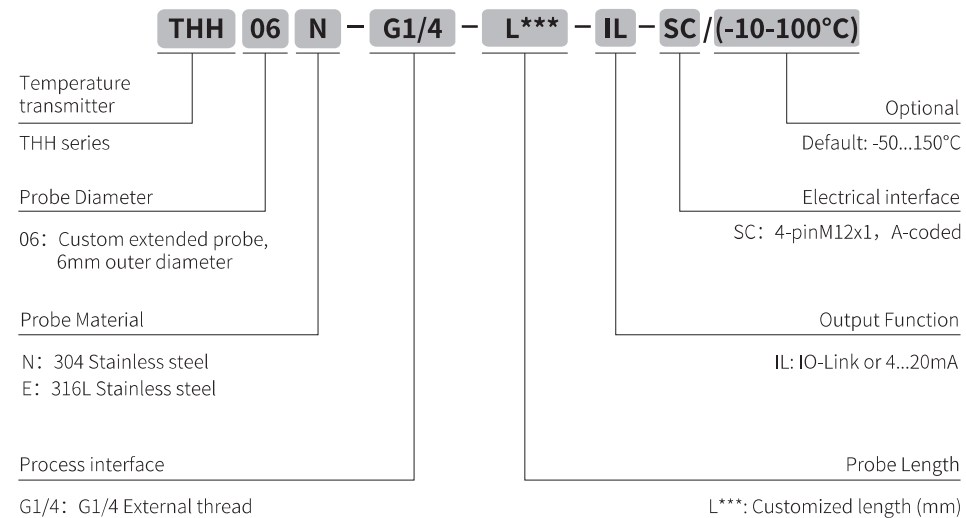
Vendor ID	1317 (0x0525)
Device ID	199186(0x030A12)
Number of interfaces	1
IO-Link protocol version	V1.1
IO-Link input bytes	2 bytes(16Bit)
Frame type	TYPE_2_2
Transmission rate	COM2 38,4kbit/s
Minimum cycle time	4000us
ISDU(Indexing Service)	Support
Block parameter operations	Not support
Data storage(DS)	Not support
Status Indicator LED	Green ON: Communication Normal OFF: Communication Not Established
Ambient temperature	-25 - 80°C
Protection class	IP67



Wiring diagram



Selection Guide





Flow/temperature dual display
4-digit large digital tube display
Mirrorable, semi-transparent design

Dual monitoring of liquid level and temperature

IO-Link Level/Temperature Sensor with Display

It integrates dual monitoring of liquid level and temperature, adopts magnetic resistance liquid level detection + PT1000 temperature element, supports IO-Link communication protocol, and is convenient for access to various industrial control systems. The product adopts a high-brightness large digital tube and a numerical mirroring design, the reading is intuitive and clear, and has a strong on-site visual recognition. The temperature measurement range covers -50 °C to 150 °C, and the liquid level detection accuracy can reach 5mm, which is suitable for complex working conditions. It has a variety of output modes, including analog, switch, NPN/PNP/push-pull, normally open/normally closed, etc. The display part supports 300° rotation and flexible installation. Equipped with simple button operation, parameter locking, and protection level IP67, it is an ideal choice for liquid level and temperature monitoring.



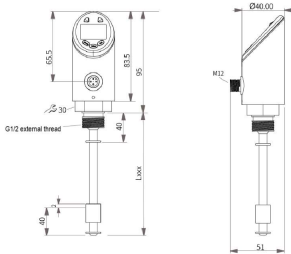
LTH Liquid/Temperature sensor

Liquid/Temperature sensor with display

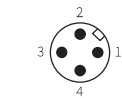


- IO-Link Smart liquid level/temperature sensor
- 4-digit large digital tube display,Mirroring,semi-transparent design
- Upper part of the housing can be rotated 300°
- NO/NC,PNP/NPN/push-pull,hysteresis/window configurable
- Switching signal/analog signal,Switching signal/IO-Link configurable
- The display panel adopts an integrated molded housing
- The housing body is made of stainless steel
- Standard 4-pin A-code M12 interface
- Simple key operation,with key lock function
- Sensor parameters can be set via buttons and IO-Link
- The start and end point of the analog signal can be set

Electrical data	
Operating voltage	24VDC ± 10%
Operating current	< 200mA
Temperature parameters	
Measuring range	-50°C - 150°C
Process interface	4-pin M12 connector,A-coded
Measuring element	PT1000
Measurement accuracy	0.5°C
Liquid parameters	
Lxxx Customization Range	L250 and L500 are standard products.customized lengths from 250mm and increase in 40mm increments,290mm,330mm,370mm... exceeding 500mm,customization from 500mm and also increases in 40mm increments,540mm,580mm,620mm...
Measuring range	40-(Lxxx-40)mm
Interface Type	M12 A-coded 4-pin
Measuring element	Reluctance
Measurement Accuracy	5mm (only for L250 and L500, other customized length accuracy is 10mm)
Float material	NBR 17.5x25mm
Output parameters	
OUT1 Signal	Temperature switching signal or IO-Link (automatic wake-up)
OUT2 Signal	Liquid level switching signal or liquid level 4- 20mA or 20-4mA
Switching signal output type	PNP/NPN/Push-Pull,NO/NC,Hysteresis/Window programmable
Switching signal output current	250mA
Switch point SP1 setting range	-49.8°C - 150°C
Release point rP1 setting range	-50°C - 149.8°C
Switch point SP2 setting range	45mm - (Lxxx-40) mm
Release point rP2 setting range	40mm - (SP2-5) mm
Temperature Switching signal output resolution	0.1°C
Analog signal output maximum load	500Ω
Analog signal output accuracy	0.5%F.S
Minimum interval between analogsignal start and end points	50mm
IO-Link	
Vendor ID	1317 (0x0525)
Device ID	198929(0x030911)
Number of interfaces	1
IO-Link protocol version	V1.1
IO-Link input bytes	4 bytes(32Bit)
Frame type	TYPE _2_V
Transmission rate	COM2 38.4kbit/s
Minimum cycle time	3400us
ISDU(Indexing Service)	Support
Block parameter operations	Not support
Data storage(DS)	Support
Ambient temperature	-40 - 80°C
Protection class	IP67

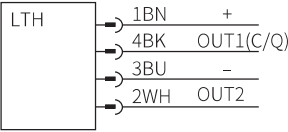


Wiring diagram

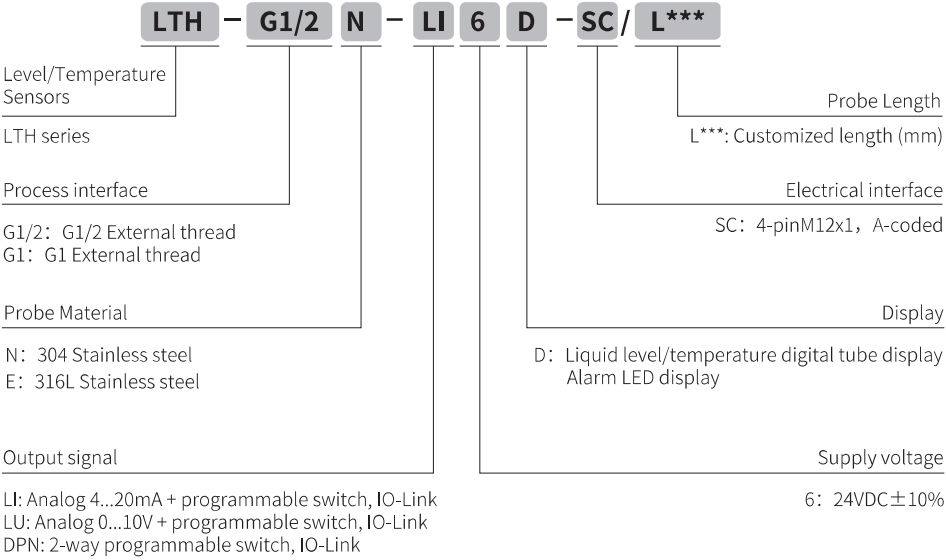


M12 interface

- 1: BN brown
- 2: WH white
- 3: BU blue
- 4: BK black



Selection Guide





Vortex flow sensors

Accurate flow measurement is crucial for ensuring the efficiency and quality of the production process. Vortex flow sensors play an indispensable role in many application scenarios due to their high precision, stability, and reliability.

Flow monitoring and detection

Thermal flow sensor

In the field of factory and process automation, it is necessary to monitor the critical deviation of the flow rate of liquid and gas media. It is typically used for monitoring the circulation of coolant, idling the pump, and detecting the airflow state of ventilation shaft or air conditioning system. Based on the thermal conductivity principle, Sentinel's flow sensor can reliably monitor the flow limit value, and also monitor and alarm the temperature of the medium.



PLSX Flow Sensor

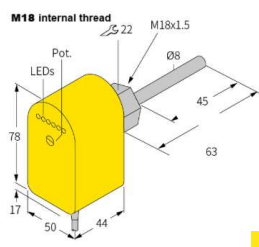
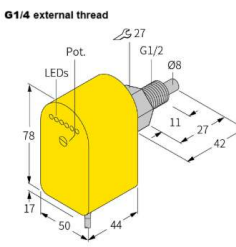
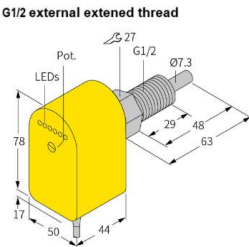
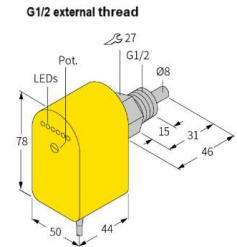
Simple settings Flow sensors



IP67

- Thermal detection principle
- Insertion measurement, reliable monitoring of liquids, such as water and oil in pipelines
- LED indicator shows flow status
- Simple and convenient switch point setting, suitable for quick installation
- Optional high-strength plastic shell and stainless steel housing, sturdy and durable
- Various process interface sizes to meet different needs

Technical parameters				
Output Signal	PNP NO	NPN NO	DC Relay	AC Relay
Measuring medium	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil
Switching Regulation	Adjustable resistor	Adjustable resistor	Adjustable resistor	Adjustable resistor
Flow rotated status	Three-color LED	Three-color LED	Three-color LED	Three-color LED
Operating Range	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s
Operational voltage	24VDC±20%	24VDC±20%	24VDC±20%	195...265 VAC
NO-load current	≤60mA	≤60mA	≤80mA	≤80mA
Operational current	≤400mA	≤400mA	≤4A AC/4A DC	≤4A AC/4A DC
Switch-on/off time	2s(1...15S)	2s(1...15S)	2s(1...15S)	2s(1...15S)
Contact capacity	—	—	8A/250V	8A/250V
Temperature jump, response time	≤12s	≤12s	≤12s	≤12s
Temperature gradient	≤250K/min	≤250K/min	≤250K/min	≤250K/min
Mounting torque	≤100Nm	≤100Nm	≤100Nm	≤100Nm
Short-circuit Protection	built-in	built-in	built-in	built-in
Reverse Polarity Protection	built-in	built-in	built-in	built-in
Pressure resistance	100bar	100bar	100bar	100bar
Probe material	304 stainless steel, 316L stainless steel available			
Housing material	PBT plastics			
Process interface	M18x1.5 internal thread, G1/2 external thread, G1/2 external extended thread, G1/4 external thread			
Electrical connection	2m PVC cable			
Medium temperature	20°C...80°C	20°C...80°C	20°C...80°C	20°C...80°C
Ambient temperature	-20°C...80°C	-20°C...80°C	-20°C...80°C	-20°C...80°C
Storage temperature	-40°C...100°C	-40°C...100°C	-40°C...100°C	-40°C...100°C
Protection class	IP67	IP67	IP67	IP67



PLSX Flow Sensor

Simple settings Flow sensors

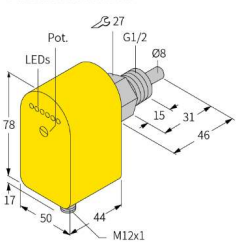


IP67

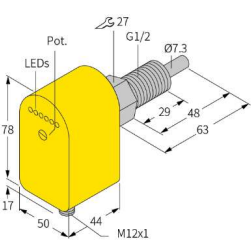
- Thermal detection principle
- Insertion measurement, reliable monitoring of liquids, such as water and oil in pipelines
- LED indicator shows flow status
- Simple and convenient switch point setting, suitable for quick installation
- Optional high-strength plastic shell and stainless steel housing, sturdy and durable
- Various process interface sizes to meet different needs

Technical parameters				
Output Signal	PNP NO	NPN NO	DC Relay	AC Relay
Measuring medium	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil
Switching Regulation	Adjustable resistor	Adjustable resistor	Adjustable resistor	Adjustable resistor
Flow rotated status	Three-color LED	Three-color LED	Three-color LED	Three-color LED
Operating Range	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s	Water: 1...150cm/s Oil: 3...300cm/s
Operational voltage	24VDC±20%	24VDC±20%	24VDC±20%	195...265 VAC
NO-load current	≤60mA	≤60mA	≤80mA	≤80mA
Operational current	≤400mA	≤400mA	≤4A AC/4A DC	≤4A AC/4A DC
Switch-on/off time	2s(1...15S)	2s(1...15S)	2s(1...15S)	2s(1...15S)
Contact capacity	—	—	8A/250V	8A/250V
Temperature jump, response time	≤12s	≤12s	≤12s	≤12s
Temperature gradient	≤250K/min	≤250K/min	≤250K/min	≤250K/min
Mounting torque	≤100Nm	≤100Nm	≤100Nm	≤100Nm
Short-circuit Protection	built-in	built-in	built-in	built-in
Reverse Polarity Protection	built-in	built-in	built-in	built-in
Pressure resistance	100bar	100bar	100bar	100bar
Probe material	304 stainless steel, 316L stainless steel available			
Housing material	PBT plastics			
Process interface	M18x1.5 internal thread, G1/2 external thread, G1/2 external extended thread, G1/4 external thread			
Electrical connection	4-pin M12x1 connector			
Medium temperature	20°C...80°C	20°C...80°C	20°C...80°C	20°C...80°C
Ambient temperature	-20°C...80°C	-20°C...80°C	-20°C...80°C	-20°C...80°C
Storage temperature	-40°C...100°C	-40°C...100°C	-40°C...100°C	-40°C...100°C
Protection class	IP67	IP67	IP67	IP67

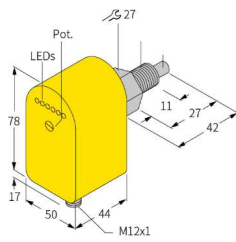
G1/2 external thread



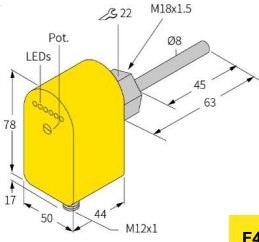
G1/2 external extended thread



G1/4 external thread



M18 internal thread



PLSU Flow Sensor

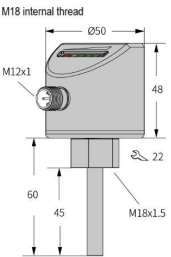
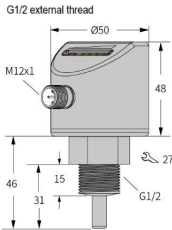
Simple settings Flow sensors



IP67

- Thermal detection principle
- Insertion measurement, reliable monitoring of liquids, such as water and oil in pipelines
- LED indicator shows flow status
- Simple and convenient switch point setting, suitable for quick installation
- Optional high-strength plastic shell and stainless steel housing, sturdy and durable
- Various process interface sizes to meet different needs

Technical parameters				
Output Signal	PNP NO	NPN NO	DC Relay	AC Relay
Measuring medium	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil	Fluid: Water, Oil
Switching Regulation	Adjustable resistor	Adjustable resistor	Adjustable resistor	Adjustable resistor
Flow rotated status	Three-color LED	Three-color LED	Three-color LED	Three-color LED
Operating Range	Water: 1...150cm/s	Water: 1...150cm/s	Water: 1...150cm/s	Water: 1...150cm/s
	Oil: 3...300cm/s	Oil: 3...300cm/s	Oil: 3...300cm/s	Oil: 3...300cm/s
Operational voltage	24VDC±20%	24VDC±20%	24VDC±20%	195...265 VAC
NO-load current	≤60mA	≤60mA	≤80mA	≤80mA
Operational current	≤400mA	≤400mA	≤4A AC/4A DC	≤4A AC/4A DC
Switch-on/off time	2s(1...15S)	2s(1...15S)	2s(1...15S)	2s(1...15S)
Contact capacity	—	—	8A/250V	8A/250V
Temperature jump, response time	≤12s	≤12s	≤12s	≤12s
Temperature gradient	≤250K/min	≤250K/min	≤250K/min	≤250K/min
Mounting torque	≤100Nm	≤100Nm	≤100Nm	≤100Nm
Short-circuit Protection	built-in	built-in	built-in	built-in
Reverse Polarity Protection	built-in	built-in	built-in	built-in
Pressure resistance	100bar	100bar	100bar	100bar
Probe material	304 stainless steel, 316L stainless steel available			
Housing material	304 stainless steel			
Process interface	M18x1.5 internal thread, G1/2 external thread			
Electrical connection	4-pin M12x1 connector			
Medium temperature	20°C...80°C	20°C...80°C	20°C...80°C	20°C...80°C
Ambient temperature	-20°C...80°C	-20°C...80°C	-20°C...80°C	-20°C...80°C
Storage temperature	-40°C...100°C	-40°C...100°C	-40°C...100°C	-40°C...100°C
Protection class	IP67	IP67	IP67	IP67



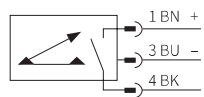
Wiring diagram



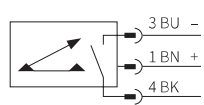
- 1: BN brown
- 2: WH white
- 3: BU blue
- 4: BK black
- 5: GY gery

M12 interface

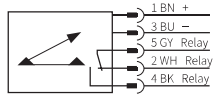
PNP Normally open



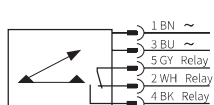
NPN Normally open



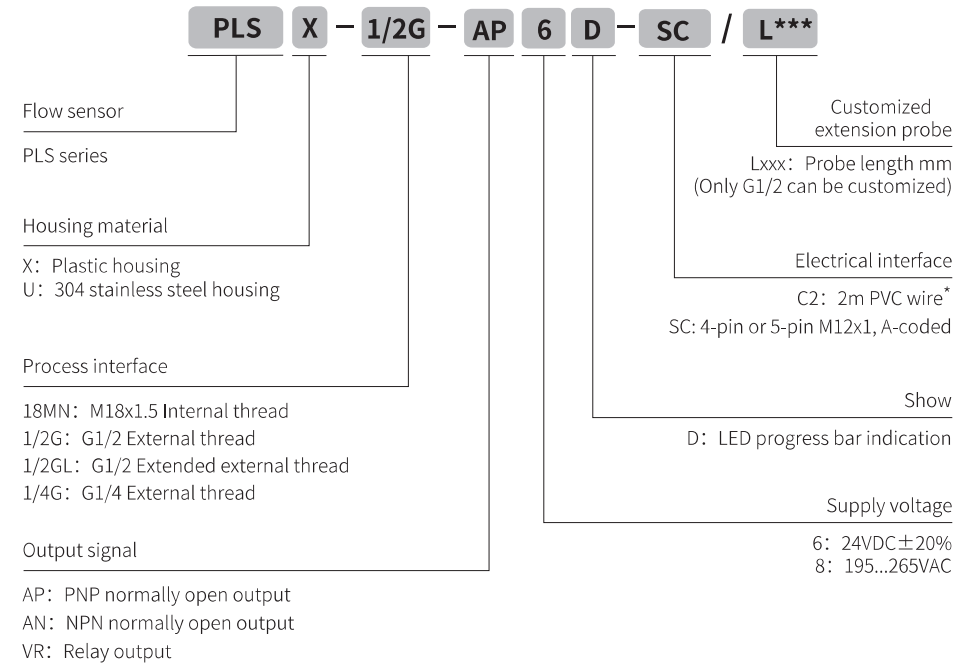
DC relay output



AC relay output



Selection Guide



*The wire connection method is only applicable to plastic housing switches.
The wire length can be customized in meters, for example: C5 = 5 meters PVC wire.

PLSN Flow sensor

Flow sensor with display

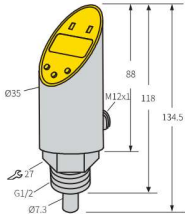


IP65

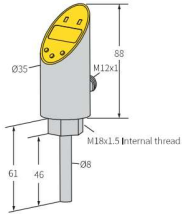
- Flow and Temperature alarm
- Calorimetric principle
- Insert type M18x1.5 internal thread/G1/2"external thread
- Standard 5-pin A-coded M12 interface
- Process value is displayed through digital tube
- 304 stainless steel housing and probe
- Programmed by 3 buttons
- Digital display can be mirrored

Technical parameters	
Electrical data	
Operating voltage	24VDC±10%
Operating current	≤400mA
Electrical interface	4-pin M12 connector,gold-plated,A-coded
Flow parameters	
Measuring medium	water,Oil
Measuring principle	Thermal
Operating range	water: 1..150cm/s,Oil: 3..300cm/s
Temperature alarm accuracy	1°C
Process interface	M18x1.5 internal thread, G1/2 external thread
Output parameters	
OUT1 Signal(pin 4)	Switch
OUT2 Signal(pin 2)	Switch
OUT3 Signal(pin 5)	4...20mA
Switch output type	PNP/NPN,Normally Open
Switch output current	250mA
Switch on/off time	1~15s
Short-circuit Protection	yes
Reverse Polarity Protection	yes
Mechanical parameters	
Housing material	304 stainless steel
Probe material	304 stainless steel
Pressure resistance	100bar
Thread torque	30Nm
Medium temperature	-20...80°C
Ambient temperature	-40...80°C
Storage temperature	-40....100°C
Protection class	IP65

G1/2 External thread



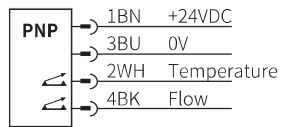
M18 Internal thread



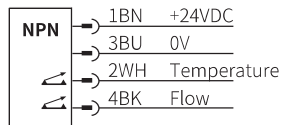
Unit: mm

Wiring diagram

PNP Normally open

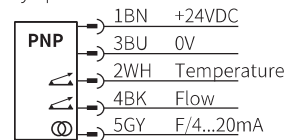


NPN Normally open

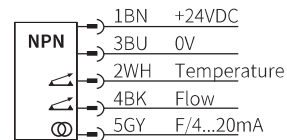


M12 Interface

4...20mA+PNP Normally open

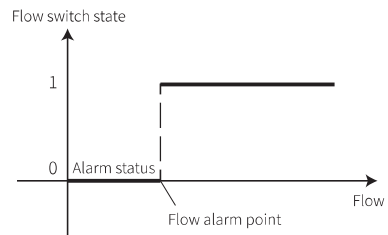


4...20mA+NPN Normally open

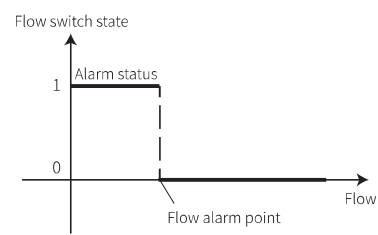


Switch state

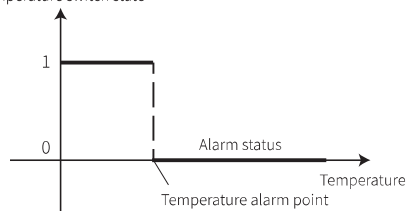
Output signal: PI, NI



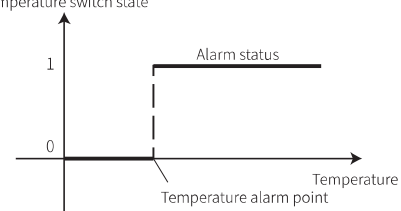
Output signal: AP, AN, AI, BI



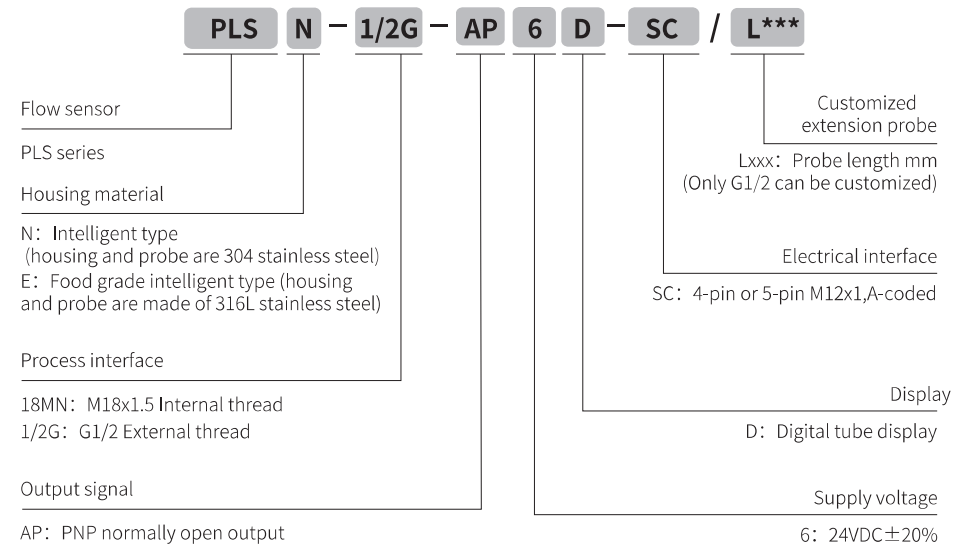
Temperature switch state



Temperature switch state



Selection Guide



FMV Vortex Flow Sensor

Vortex flow sensor for precise metering



- Von Kaman vortex principle
- Flow,temperature dual switching signal output,dual display
- High-resolution IPS display
- Four viewing directions can be switched
- Cumulative flow recording function
- Analog or switch output,compatible with IO-Link protocol
- Switching signal NO/NC,NPN/PNP/push-pull optional
- Units can be selected,simple button menu operation
- Various thread specifications,suitable for different installation requirements
- Compact size,takes up little space
- Standard 4-pin M12 electrical interface

Technical parameters

Electrical data

Operating voltage	24VDC±10%		
Operating current	<100mA		
Process interface	thread G or RC or NPT		
Measuring medium	water		
Electrical interface	4-pin M12 connector,gold-plated,A-coded		

Flow parameters

Measuring range	2...16L/min(0.12...0.96m³/h)	5...40L/min(0.3...2.4m³/h)	10...100L/min(0.6...6m³/h)
Flow accuracy	<3.0%F.S		
Cumulative Flow Range	99999L or 99999m³ note: Power-off Reset,For Reference Only		
pressure rating	10bar,max pressure 16bar		
Real-time Flow Unit	L/min or m³/h,Selectable via Buttons		
Switching signal output type	PNP/NPN/Push-Pull,NO/NC,Hysteresis/Window programmable		
Switching signal output current	250mA		
Switch point SP setting range	2.2L/min....16L/min	5.4L/min...40L/min	11L/min...100L/min
Release point rP setting range	2L/min...15.8L/min	5L/min...39.6L/min	10L/min..99L/min
Minimum interval between sp、rp	0.2L/min(1%F.S)	0.4L/min(1%F.S)	1L/min(1%F.S)
Switching signal output resolution	0.1L/min	0.1L/min	0.1L/min

Temperature parameters

Measuring range	0...100°C		
Temperature accuracy	1°C		
Display Unit	°C or °F Selectable via Button		
Switching signal output type	PNP/NPN/Push-Pull,NO/NC,Hysteresis/Window programmable		
Switching signal output current	250mA		
Switch point SP setting range	1°C...100°C		
Release point rP setting range	0°C..99°C		
Minimum interval between sp、rp	1°C(1%F.S)		
Switching signal output resolution	0.1°C		

Analog Output

Number of Outputs	2 Analog Channels		
Output Type	4—20mA Output or 0—10V,Depending on Model		
Output Data Mapping	OUT1:Flow or Temperature,OUT2:Flow or Temperature Selectable via Button		

IO-Link Information

Vendor ID	1317(0x0525)		
Device ID	198162(0x030612)		
Number of interfaces	1		
IO-Link protocol version	V1.1		
IO-Link Interface Type	Class A		
Frame type	TYPE_2_V		
Transmission rate	COM2 38.4kbit/s		
Minimum cycle time	3000us		
ISDU(Indexing Service)	Support		
Block parameter operations	Not support		
Data storage(DS)	Support		

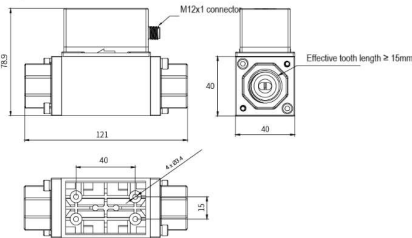
Support note: This function is supported for compatibility purposes, but the device does not perform this operation

Mechanical parameters

Wetted Parts Material	PPS/304 Stainless steel		
Ambient temperature	-10...65°C		
Storage temperature	-20...80°C		
Protection class	IP65		

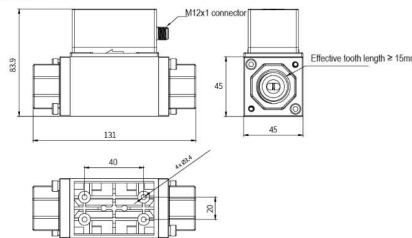
Applicable measuring range:

2...16L/min
5...40L/min

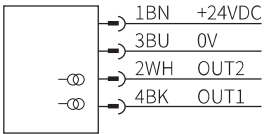


Applicable measuring range:

10...100L/min

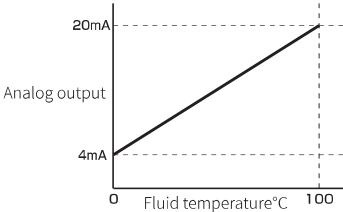
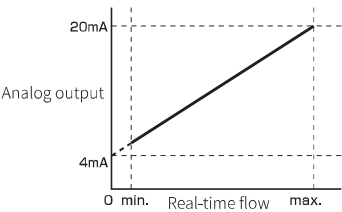


Wiring diagram



Pin	2AO Output definition	2VO Output definition	IOL Output definition
1	+24VDC	+24VDC	+24VDC
2	(OUT2) 4...20mA	(OUT2) 0...10V	(OUT2) Switch (flow, temperature optional)
3	0V	0V	0V
4	(OUT1) 4...20mA	(OUT1) 0...10V	(OUT1) Switch (flow) or IO-Link
Note: The data relationship button corresponding to the pin is optional OUT1: Flow data OUT2: Temperature data; or OUT1: Temperature OUT2: Flow data			

Corresponding relationship between analog and temperature or flow



Selection guide

FMV

040

2AO

G38

Flow sensor

Vortex flow sensor

Range

016: 2...16L/min
040: 5...40L/min
100: 10...100L/min

Output signal

2AO: Two 4-20mA outputs
2VO: Two 0-10V outputs
IOL: Two-way switching and IO-Link

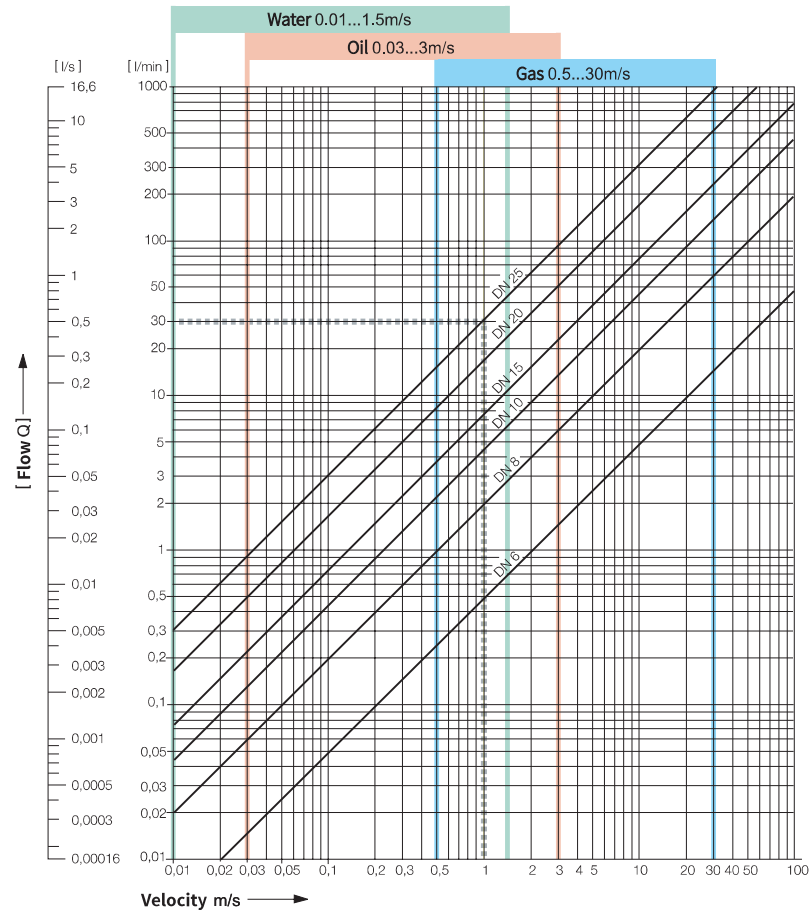
Interface thread specifications

Model code	Corresponding specifications	Adaptable range
G38	G3/8	016
RC38	RC3/8	016
NPT38	NPT3/8	016
G12	G1/2	016 040
RC12	RC1/2	016 040
NPT12	NPT1/2	016 040
G34	G3/4	100 040
RC34	RC3/4	100 040
NPT34	NPT3/4	100 040
G1	G1	100
RC1	RC1	100
NPT1	NPT1	100

Flow-velocity comparison chart

According to different pipe diameters, the flow velocity curve can easily convert the flow into flow velocity. The curve clearly explains the relationship between the two. If the velocity exceeds the detection range of the sensor, the flow velocity can be increased or reduced by changing the pipe diameter to ensure the normal operation of the flow monitor

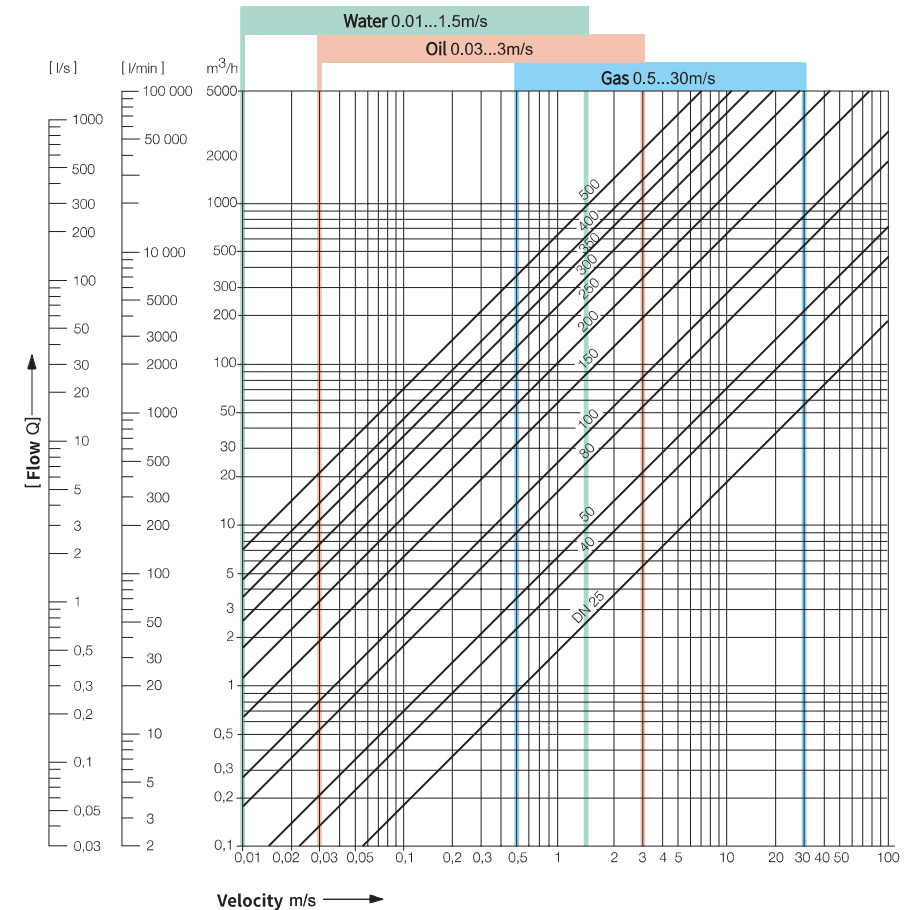
Pipe diameter 6...25mm



For example: From the flow-velocity comparison chart above, we can know that for a DN25 pipe, when the flow rate is 30 l/min, the flow velocity is 1m/s.

Flow-velocity comparison chart

Pipe diameter 25...500mm



Accessories



Model	MM0101-0001	MM0045-0001	MM0045-0002	MM9000-0006
Description	Mounting Bracket	Welding Adapter	Welding Adapter	Process Adapter
Material	Aluminum Alloy	Iron (M18x1.5 external thread)	304 stainless steel (M18x1.5 external thread)	304 stainless steel (M18x1.5 to G1/2)
Dimensions	Hole distance 47mm, width 55mm Height adjustable, maximum 50mm			

Connection



Model	ZAK3-**/PVC	ZAK4-**/PVC	ZAK4.5-**/PVC
Description	3-core connector	4-core connector	5-core connector
Cable	3*0.25m², PVC cable	4*0.25m², PVC cable	5*0.25m², PVC cable
Dimensions			

Note:
The length of the wire can be customized according to the requirements.
The ** in the model number represents the cable length in meters.
For example, ZAK3-2/PVC, the cable length is 2 meters.