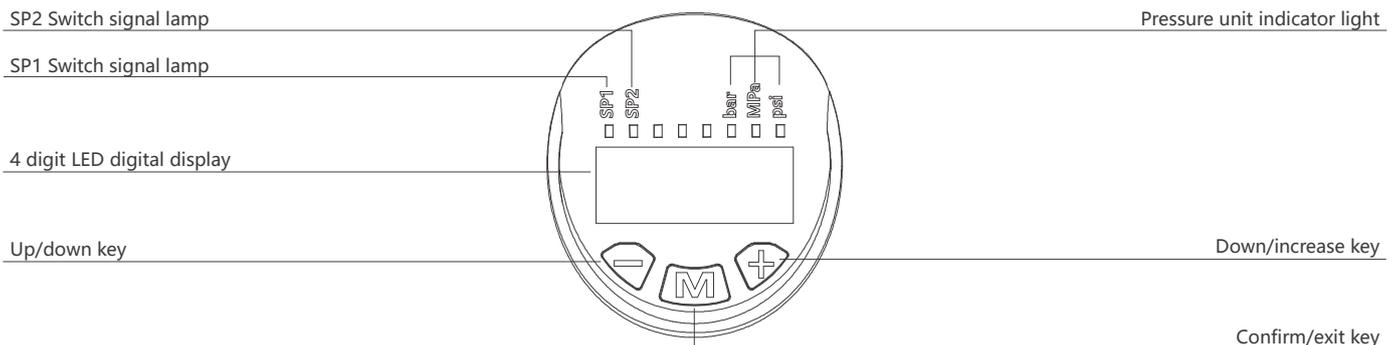**330°**

330°

Principle structure

The ceramic capacitive pressure sensor is used for pressure measurement, and the signal is converted into a standard industrial electrical signal after processing by the circuit and displayed. The compact design, with a high-light LED digital display, makes this series of products can be used in a variety of industrial applications. The three-button design and menu make the product more convenient to use, and a variety of connection methods can fully meet various specific installation needs. The body and display can be rotated at 330° to ensure that the electrical outlet direction can be adjusted in different installation modes and the best viewing Angle can be obtained.
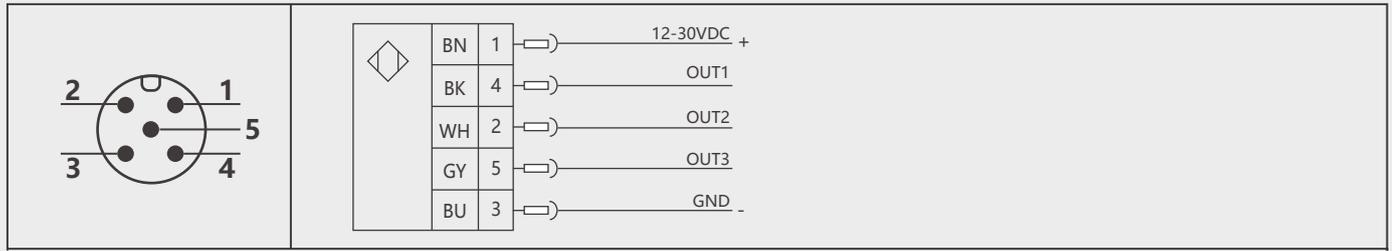
Technical parameter

◇ Supply voltage: 12... 30Vdc

◇ No-load current consumption: maximum 40mA,24Vdc power supply

◇ Switch output:

Output type: 2-way PNP/NPN can be switched,

normally open/normally closed can be set

switch load: <200mA /24VDC

Response time: 0.01~2s (Factory default)

Switch accuracy: ≤±0.25% range

◇ Current type analog output: ≤±0.25% range

Output type: 4-20mA/0-10v/1-5v can be configured

Load RA: ≤500Ω

Linearity: ≤0.5% range

◇ Communication output: IO-Link/RS485 optional

◇ Wiring protection: reverse phase, overload, short circuit protection

◇ Display:

Design: Red 4-bit 12mm high brightness LED

Display range: -1999... 9999

◇ Accuracy: ≤±0.25% range

◇ Stability (annual drift) : ≤±0.3% range

◇ Temperature:

Medium temperature: -20... 85°C

Ambient temperature: -20... 80°C

Storage temperature: -30... 80°C

◇ Material:

Watch head housing: engineering plastic

Flame retardant class: UL-94 V-0

Housing: stainless steel 304

Medium contact part:

stainless steel 304/ Ceramic Al_2O_3 (purity 99.9%)

◇ Protection grade: IP67
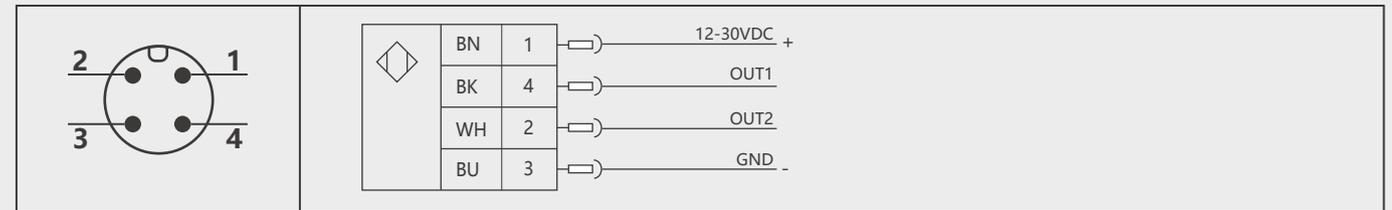
◇ Outlet: M12x1 connector

Panel diagram

SP2 Switch signal lamp	Pressure unit indicator light
SP1 Switch signal lamp	
4 digit LED digital display	
Up/down key	Down/increase key
	Confirm/exit key

SP1 SP2 bar MPa psi

Wiring diagram

BN	1	12-30VDC +
BK	4	OUT1
WH	2	OUT2
GY	5	OUT3
BU	3	GND -

A3: Two way switch + one way analog

color	stitch	Instructions	color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply（+）	BU	3	power supply（-）	GY	5 (OUT3)	4-20mA (Factory default) 1-5V 0-10V
BK	4 (OUT1)	SP1 switch PNP (Factory default) SP1 switch NPN	WH	2 (OUT2)	SP2 switch PNP (Factory default) SP2 switch NPN			

BN	1	12-30VDC +
BK	4	OUT1
WH	2	OUT2
BU	3	GND -

S2: Two-way switch/IO-Link

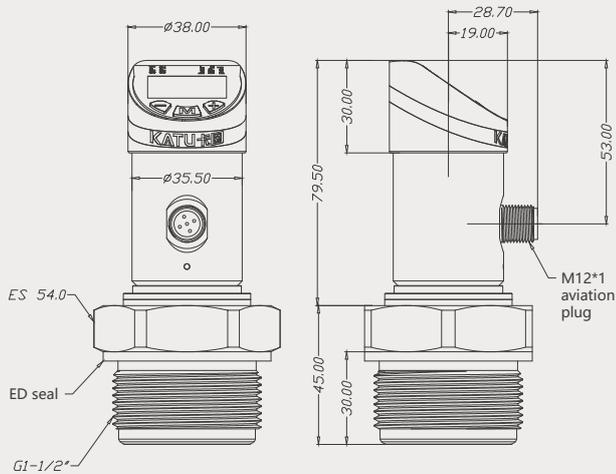| color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply（+）	BU	3	power supply（-）
BK	4 (OUT1)	SP1 switch PNP (Factory default) SP1 switch NPN IO-Link	WH	2 (OUT2)	SP2 switch PNP (Factory default) SP2 switch NPN

SA: One switch /IO-Link + analog

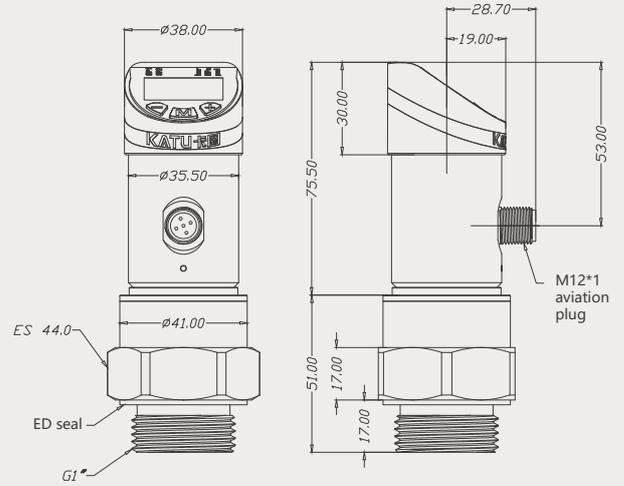| color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply（+）	BU	3	power supply（-）
BK	4 (OUT1)	SP1 switch PNP (Factory default) SP1 switch NPN IO-Link	WH	2 (OUT2)	4-20mA (Factory default) 1-5V 0-10V

RS: RS485

color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply（+）	BU	3	power supply（-）
BK	4 (OUT1)	RS485(B)	WH	2 (OUT2)	RS485(A)

Dimension drawing (mm)

G1-1/2 External thread connection

Ø38.00
28.70
19.00
30.00
79.50
53.00
Ø35.50
ES 54.0
ED seal
45.00
30.00
G1-1/2"
M12*1 aviation plug

G1 External thread connection

Ø38.00
28.70
19.00
30.00
75.50
53.00
Ø35.50
ES 44.0
Ø41.00
ED seal
51.00
17.00
17.00
G1"
M12*1 aviation plug

2 "chuck connection

Ø38.00
28.70
19.00
30.00
75.50
53.00
Ø35.50
41.00
2 "chuck
36.00
Ø64.00
M12*1 aviation plug
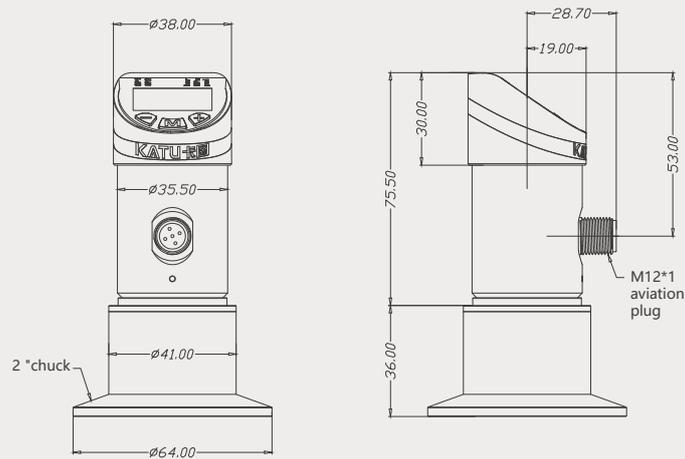
Vacuum chuck (Material: 304 stainless steel)

Model	A(mm)	B(mm)	C(mm)	D(mm)
KF16	30	17.2	19	16
KF25A	40	26.2	25	21.7
KF25B	40	26.2	28	25
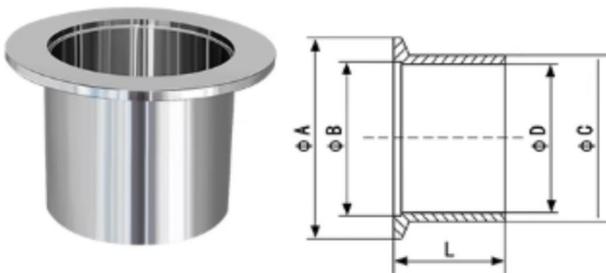
The dimensions marked with L are 20mm, 30mm, 40mm and 50mm respectively

Range meter (overload pressure x10 times full scale)

Gauge pressure range	Order code
0...4KPa	B004
0...10KPa	B010
0...100KPa	B100
0...200KPa	B200
0...500KPa	B500

Absolute pressure range	Order code
0...10KPa	A010
0...100KPa	A100
0...200KPa	A200
0...1000KPa	A1000
0...2000KPa	A2000
0...4000KPa	A4000
0...7000KPa	A7000

Negative pressure range	Order code
-2.5...2.5KPa	F02.5
-10...10KPa	F010
-20...20KPa	F020
-100...100KPa	F100
-100...400KPa	F400
-100...1000KPa	F1000
-100...4000KPa	F4000
-100...7000KPa	F7000

* When installing, please install the sensor connector downward, horizontal or inverted. For small range sensors, zero drift will occur (≤400mbar). If necessary, please set zero to zero.

Selection list

PS520-	B100	G112M	SA	-	expatiate
PS520-					PS520 ceramic capacitive vacuum pressure sensor
	B100				Range (see range table for details)
		G112M			Thread interface: G1-1/2 external thread
		G1T			Ceramic capacitor type: G1 external thread
		K64			2 "quick chuck (outer diameter 64mm)
		KF16			Vacuum chuck KF16
		KF25A			Vacuum chuck KF25
		KF25B			Vacuum chuck KF25
			S2		Output signal: Two switch output/IO-link (4-core cable)
			SA		Output signal: One switch output /IO-link + analog output (4-core cable)
			A3		Output signal: two switch output + analog output (5-core cable)
			RS		Output signal: RS485 communication (4-core cable)
				-	Liquid seal ring: fluorine rubber (factory default)
				CF	Liquid seal ring: perfluorinated rubber

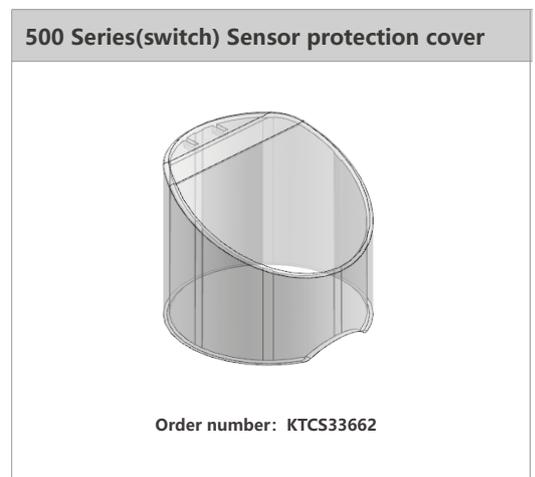For specific dimensions, please refer to the vacuum chuck dimension table

KATU卡图

Optional accessories - Electrical accessories (M12-5Pin: Factory default ZL05-PC02G)

name	Outline drawing/dimension drawing (unit :mm)	material	Model number	Shielded wire
M12*1-5Pin (2m cable)		PUR	ZL05-PU02G	
M12*1-5Pin (5m cable)			ZL05-PU05G	
M12*1-5Pin (10m cable)			ZL05-PU010G	
		PVC	ZL05-PC02G	-P
			ZL05-PC05G	
			ZL05-PC010G	
M12*1-5Pin (2m cable)		PUR	ZL05-PU02W	
M12*1-5Pin (5m cable)			ZL05-PU05W	
M12*1-5Pin (10m cable)			ZL05-PU010W	
		PVC	ZL05-PC02W	
			ZL05-PC05W	
			ZL05-PC010W	

M12*1-4Pin/5Pin self-connector/Dimensions (Unit :mm)	Model number
	GL04 (4 Pin connector)
	GL05 (4 Pin connector)
	WL04 (4 Pin connector)
	WL05 (5 Pin connector)

Optional accessories - Electrical accessories (M12-4Pin: Factory default ZL04-PC02G)

name	Outline drawing/dimension drawing (unit :mm)	material	Model number	Shielded wire
M12*1-4Pin (2m cable)		PUR	ZL04-PU02G	
M12*1-4Pin (5m cable)			ZL04-PU05G	
M12*1-4Pin (10m cable)			ZL04-PU010G	
		PVC	ZL04-PC02G	-P
			ZL04-PC05G	
			ZL04-PC010G	
M12*1-4Pin (2m cable)		PUR	ZL04-PU02W	
M12*1-4Pin (5m cable)			ZL04-PU05W	
M12*1-4Pin (10m cable)			ZL04-PU010W	
		PVC	ZL04-PC02W	
			ZL04-PC05W	
			ZL04-PC010W	

Optional accessories - Protective cover

500 Series(switch) Sensor protection cover

Order number: KTCS33662

KATU 卡图

Operation instruction
Electronic pressure sensor
500 series
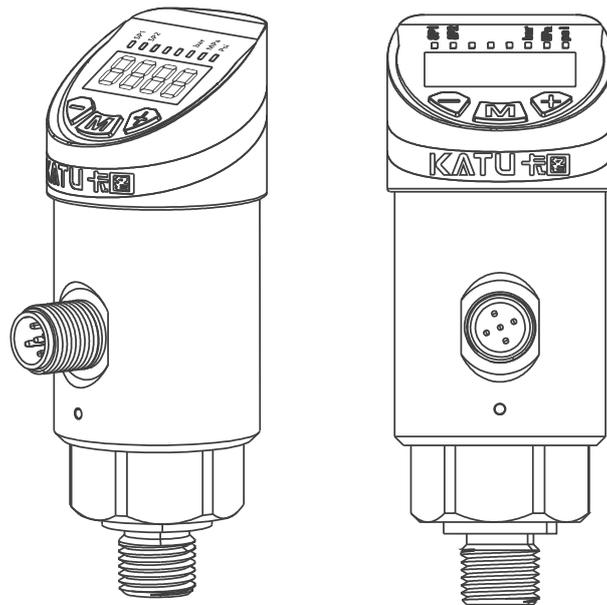
Purpose of product application

The 500 Series sensor (switch) has two switch outputs and one analog output.

⚠️ **danger**
The sensor (switch) can only be used in the specified application range.
The temperature range must be within the permissible range. Do not exceed the rated pressure and power load value.
Assembly, commissioning and operation must be carried out in accordance with applicable national and local safety instructions.
The switch is designed to be used as a safety device for pressurizing the system in accordance with "Pressure Equipment Directive 97/23 / EC(PED)".

Standard

The standards applied during development, manufacturing and configuration are listed in the CE Compliance and manufacturer declarations.

Quality assurance

Our scope of delivery and service is subject to legal warranties and warranty periods.

Warranty clause

We guarantee that the functions and materials of the dual pressure switch meet the statutory requirements under normal operation and maintenance conditions.

Security of loss

Such as:

- Incorrect use,

- Incorrect installation

- Incorrect operation or operation in violation of the provisions of this operation manual.

No liability shall be assumed for any damage resulting therefrom or consequential.

Safety instruction

Safety instructions are intended to protect users from dangerous situations and /or prevent material damage.

In the operating instructions, the severity of the potential risk can be indicated by the following signal words:

⚠️ **danger**
An imminent danger to the user. Failure to comply may result in fatal injury.

⚠️ **warning**
An identifiable hazard. Failure to comply may result in fatal injury and damage to equipment or plant parts.

⚠️ **caution**
It means a danger. Non-compliance may result in minor injury and material damage to the sensor (switch) and/or plant.

★ **important**
Information that is important to the user.

Deal with
Sensors (switches) must be handled correctly in accordance with national or local regulations for electrical/electronic equipment. Sensors (switches) cannot be disposed of with household waste!

Product characteristics

The all-metal casing design, with a highlighted LED digital display, enables the product line to be used in a variety of industrial applications. The three-button design and menu make the product more convenient to use, and a variety of connection methods can fully meet various specific installation needs. The device, which can rotate at 330°, guarantees the best viewing Angle in different mounting modes.

Switching function

If the switch is higher or lower than the set switching limit (SP, rP), its switching state is changed. The following switch functions can be selected:

- Hysteresis function normally open: = [Hno]   (→ Figure 1)
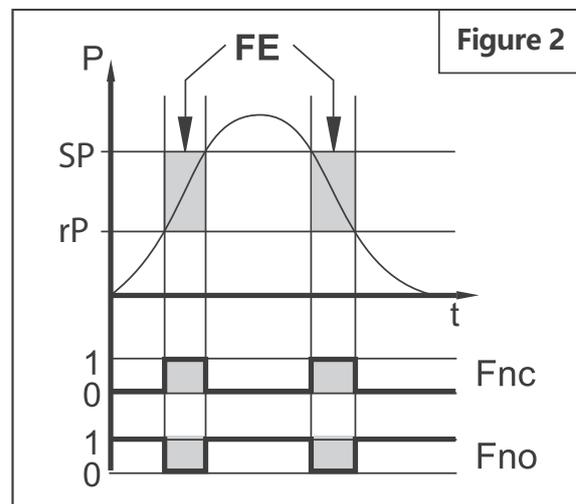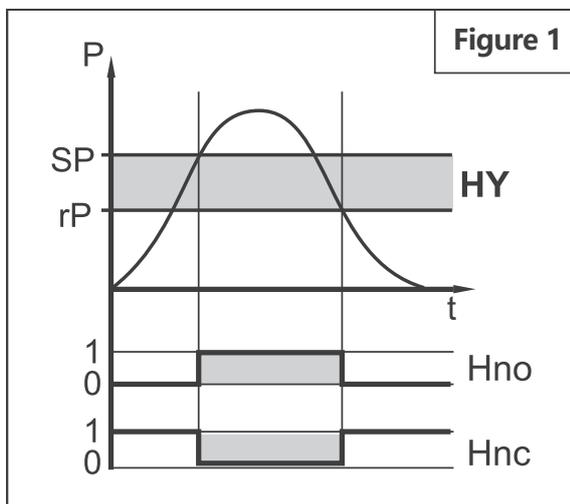- Hysteresis function normally closed: = [Hnc]   (→ Figure 1)

    First set the switch point: (SP),   Then set the reset point: (rP)。
    If SP changes again, the hysteresis will change with it.

- Window function usually open: = [Fno]   (→ Figure 2)
- Window function normally closed: = [Fnc]   (→ Figure 2)

    The width of the window can be set by the difference between SP and rP.
     SP = Upper limit value,   rP = Lower limit value.

P = System pressure； HY = lag；   FE = window

Safety instructions are intended to protect users from dangerous situations and/or prevent material damage. In the operating instructions, the severity of the potential risk can be indicated by the following signal words:

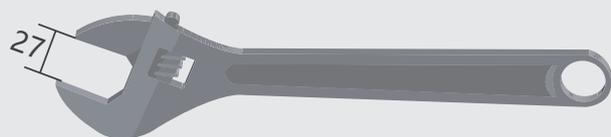| ⚠️ **caution** |
|---|
| Vibration and violent vibration must be avoided during transportation. Even if the sensor (switch) housing is not damaged, Internal components can also break down and cause failure. |

⚠️ **danger**
Sensors (switches) should only be installed in systems that do not exceed the maximum pressure Pmax (see type label). Install sensors (switches) only when power is off (electric, hydraulic/pneumatic).

! Ensure that the system is under any pressure before installing or removing the sensor.

➤ Connect the sensor device to the selected process port

➤ Fully tighten, recommended tightening torque range: 25 to 35Nm

➤ In critical applications (such as violent vibrations or shocks), the pressure pipe joint can be mechanically decoupled via a miniature hose.

Panel description

SP2 switch signal light

SP1 switch signal light

4 digit LED digital display

Up/down key

Unit indicator light

Down/increase key

Confirm/exit key
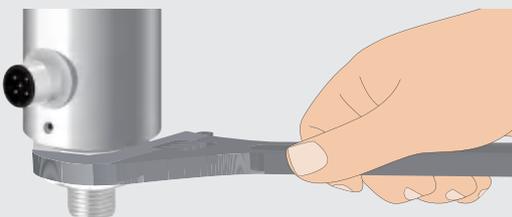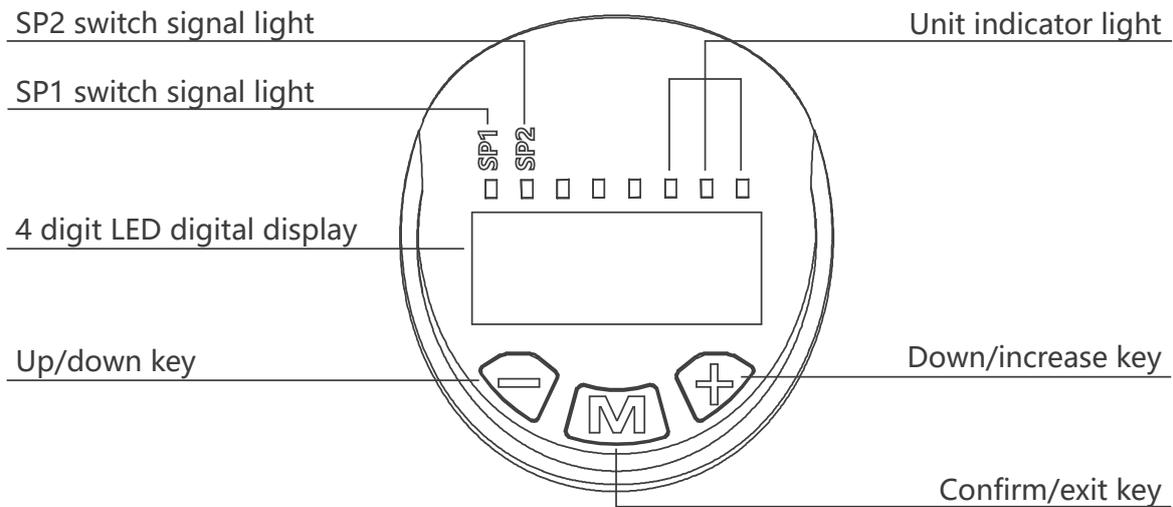
Electrical connection (Standard type)
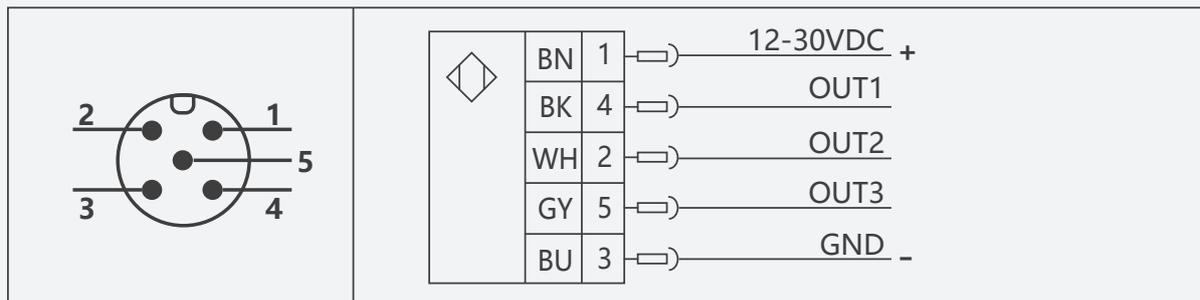
BN	1	12-30VDC +
BK	4	OUT1
WH	2	OUT2
GY	5	OUT3
BU	3	GND −

A3: Two-way switch + one-way analog		
color	stitch	Instructions
BN	1	power supply (+)
BU	3	power supply (-)
BK	4 (OUT1)	SP1 Switch PNP (factory default) SP1 Switch NPN
WH	2 (OUT2)	SP2 Switch PNP (factory default) SP2 Switch NPN
GY	5 (OUT3)	4-20mA (factory default) 1-5V 0-10V
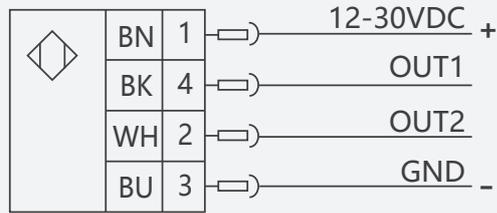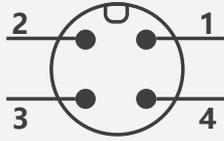
S2: Two way switch/IO-Link		
color	stitch	Instructions
BN	1	power supply （+）
BU	3	power supply （-）
BK	4 (OUT1)	SP1 Switch PNP （factory default） SP1 Switch NPN IO-Link
WH	2 (OUT2)	SP2 Switch PNP （factory default） SP2 Switch NPN

SA: One switch /IO-Link + one analog		
color	stitch	Instructions
BN	1	power supply （+）
BU	3	power supply （-）
BK	4 (OUT1)	SP1 Switch PNP （factory default） SP1 Switch NPN IO-Link
WH	2 (OUT2)	4-20mA （factory default） 1-5v 0-10v

Debugging/operation

Sensors can only be debugged and operated by authorized personnel.

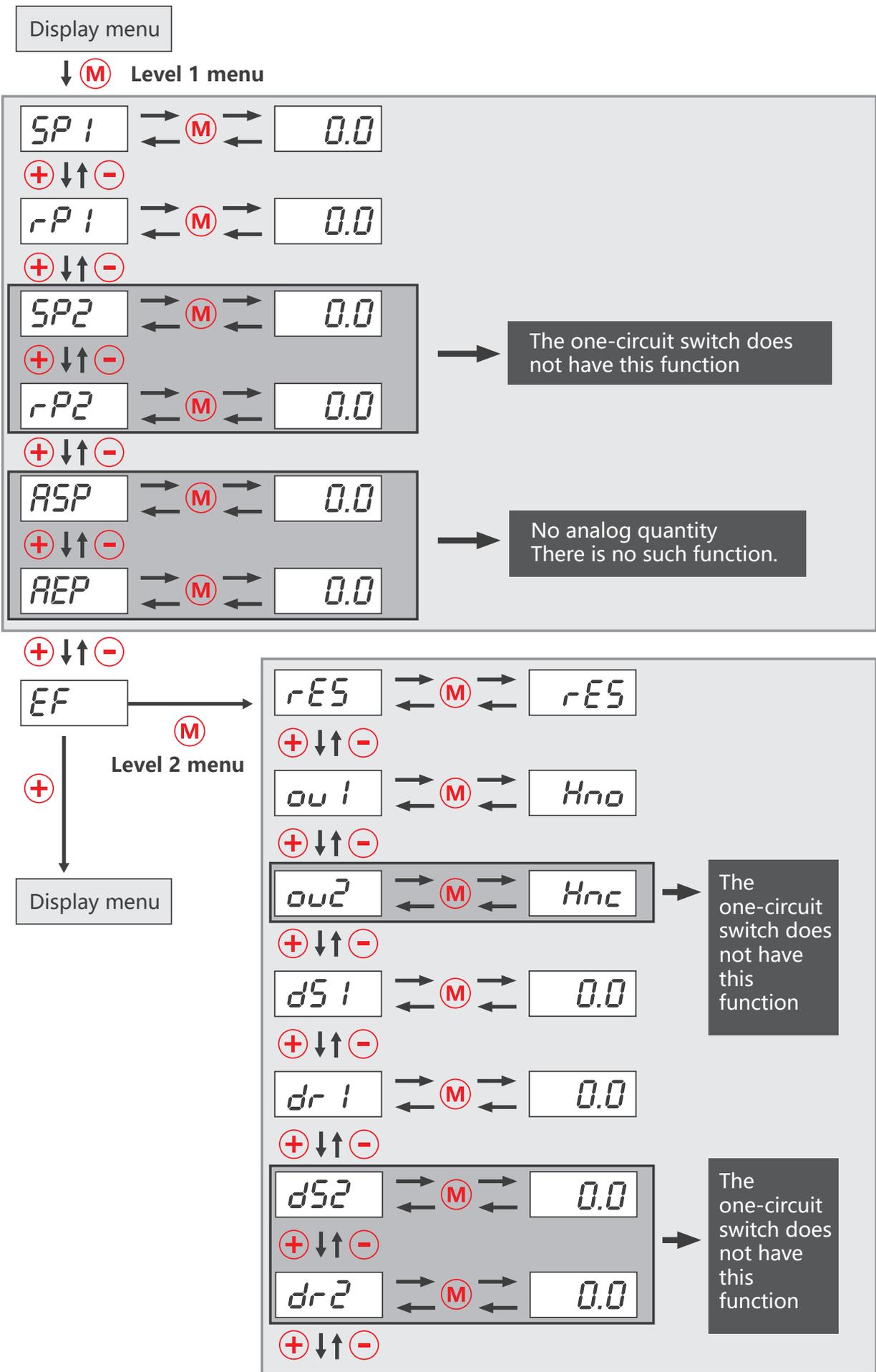| ⚠ **caution** |
|---|
| Do not put the switch into operation when the sensor itself or the connecting cable is damaged.
Do not use any sharp, hard objects to make entries. The key may be damaged by something sharp and hard. |

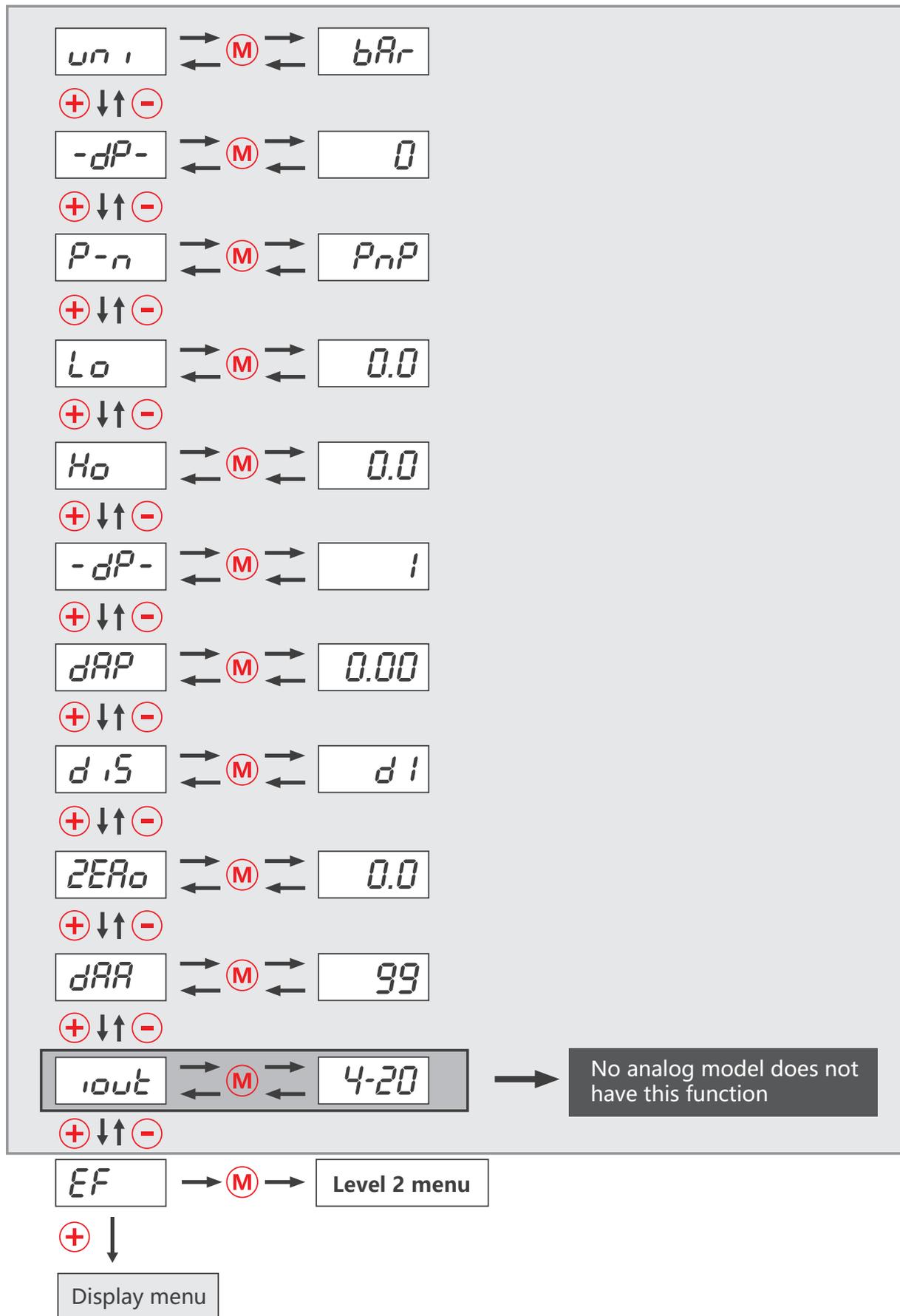| ⚠ **warning** |
|---|
| Note that the casing surface may become very hot if the operating temperature is high! |

	Level 1 menu	
sp1	Alarm value of Switch 1 (Factory default value is 0.2 of the range)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:	
	At the press of a button, the value increases; Hold the button down and the value will keep changing.	
rp1	Switch 1 Reset value (factory default is SP1-0.5)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:	
	At the press of a button, the value increases; Hold the button down and the value will keep changing.	
sp2	Switch 2 alarm value (factory default value is 0.8 of the range)	One switch None of this.
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:	
	At the press of a button, the value increases; Hold the button down and the value will keep	
rp2	Switch 2 Reset value (Factory default value is SP2-0.5)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:	
	At the press of a button, the value increases; Hold the button down and the value will keep	
asp	Lower range limit (factory default is lower range limit)	factory data reset Range reference value
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
aep	Range upper limit (Factory default is range upper limit)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
EF	Expand functionality/Open the Level 2 menu	
	Press the [M] key to enter the Extended 2 level menu Press [+] to exit.	

Level 2 menu			
res	factory data reset		
	Hold down [+] to restore factory Settings		
ou1	Switch 1 signal: (Factory default is HNO) Hysteresis function: HNO (normally open) /HNC (normally closed) Window function: FNO (normally open) /FNC (normally closed) IO-Link：(Only S2/SA signal output)		
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.		
ou2	Switch 2 signal: (Factory default HNC) Hysteresis function: HNO (normally open) /HNC (normally closed) Window function: FNO (normally open) /FNC (normally closed)	One switch None of this.	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.		
ds1	The opening delay of OUT1. (The factory default is 0s)		
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.		
dr1	OUT1 shutdown delay. (The factory default is 0s)		
	Hold + or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.		
ds2	OUT2's opening delay. (The factory default is 0s)	One switch None of this.	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.		
dr2	OUT2 shutdown delay. (The factory default is 0s)		
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.		

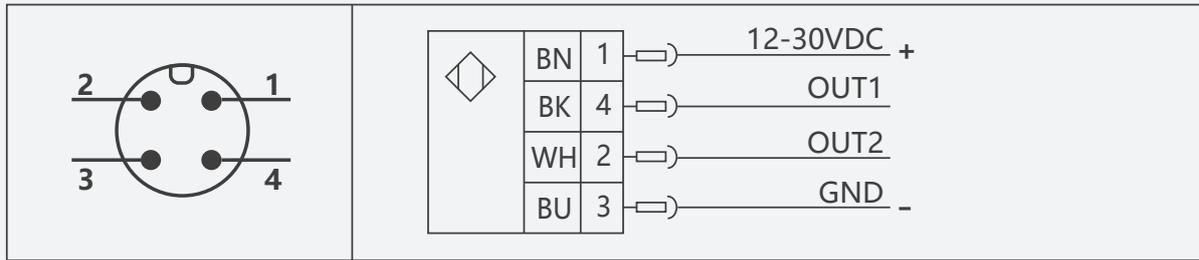|	
uni	System standard unit of measurement (display)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
-dp-	Modify the number of decimal points
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
p-n	PNP/NPN switch (Factory default is PNP)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
L0	System measurement history minimum.
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
H0	The maximum value of system measurement history
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
dap	Switch point damping/process data flow (IO-Link communication) and display. (Factory default: 0.06)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
dis	Update rate and direction of the display (d1 by default)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; If you hold the button down, the value will keep changing. [d1] : The measured value is updated every 10ms [d2] : The measurement is updated every 100ms [d3] : Update measurement every 600ms

zeao	Zero excision value (full scale %) (factory default is 0.5)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
daa	Display refresh time: analog 0.1s (factory default is 0.01)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
iout	Output analog switch: Current type: 4-20：（4-20mA） 0-20：（0-20mA） 20-4：（20-4mA） 20-0：（20-0mA） 5V voltage type: 1-5F：（1-5V） 0-5F：（0-5V） 10V voltage type: 210F：（2-10V） 110F：（1-10V） 010F：（0-10V）	No analog quantity None of this.
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed:At the press of a button, the value increases; Hold the button down and the value will keep changing.	
EF	Expand functionality/Open the Level 2 menu	
	Press the [M] key to enter the Extended 2 level menu Press [+] to exit.	

Display menu

↓ (M) **Level 1 menu**

5P 1	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

rP 1	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

5P2	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

rP2	⇄ (M) ⇄	0.0

→ The one-circuit switch does not have this function

(+) ↓↑ (−)

A5P	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

AEP	⇄ (M) ⇄	0.0

→ No analog quantity
There is no such function.

(+) ↓↑ (−)

EF →

(M)

Level 2 menu

(+)

↓

Display menu

rE5	⇄ (M) ⇄	rE5

(+) ↓↑ (−)

ou 1	⇄ (M) ⇄	Hno

(+) ↓↑ (−)

ou2	⇄ (M) ⇄	Hnc

→ The one-circuit switch does not have this function

(+) ↓↑ (−)

d5 1	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

dr 1	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

d52	⇄ (M) ⇄	0.0

(+) ↓↑ (−)

dr2	⇄ (M) ⇄	0.0

→ The one-circuit switch does not have this function

(+) ↓↑ (−)

uni	⇄ (M) ⇄	bAr
⊕ ↓↑ ⊖		
-dP-	⇄ (M) ⇄	0
⊕ ↓↑ ⊖		
P-n	⇄ (M) ⇄	PnP
⊕ ↓↑ ⊖		
Lo	⇄ (M) ⇄	0.0
⊕ ↓↑ ⊖		
Ho	⇄ (M) ⇄	0.0
⊕ ↓↑ ⊖		
-dP-	⇄ (M) ⇄	1
⊕ ↓↑ ⊖		
dAP	⇄ (M) ⇄	0.00
⊕ ↓↑ ⊖		
diS	⇄ (M) ⇄	d1
⊕ ↓↑ ⊖		
ZEAo	⇄ (M) ⇄	0.0
⊕ ↓↑ ⊖		
dAA	⇄ (M) ⇄	99
⊕ ↓↑ ⊖		
iout	⇄ (M) ⇄	4-20

→ No analog model does not have this function

⊕ ↓↑ ⊖		
EF	→ (M) →	**Level 2 menu**
⊕ ↓		

Display menu

Electrical connection (RS485 communication)

RS485		
color	**stitch**	**Instructions**
BN	1	power supply （+）
BU	3	power supply （-）
BK	4 (OUT1)	RS485(B)
WH	2 (OUT2)	RS485(A)

Debugging/operation

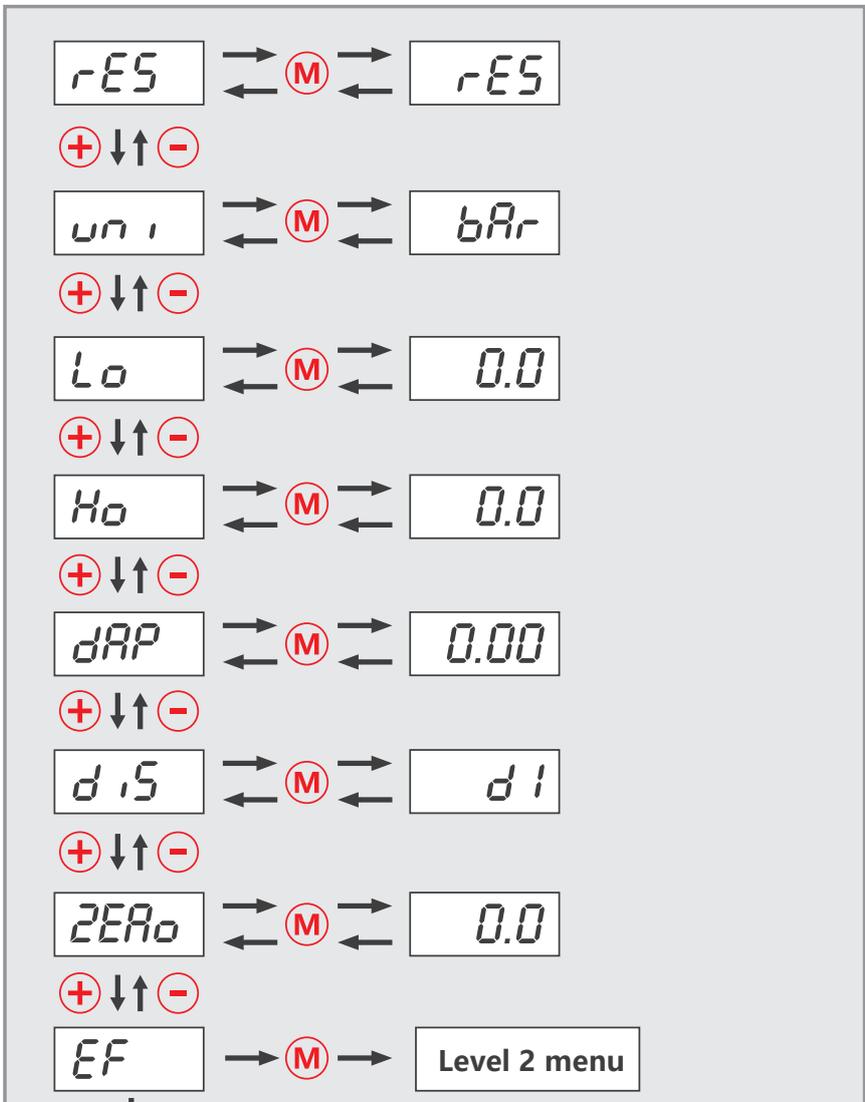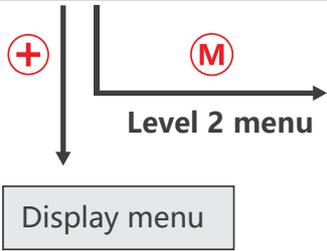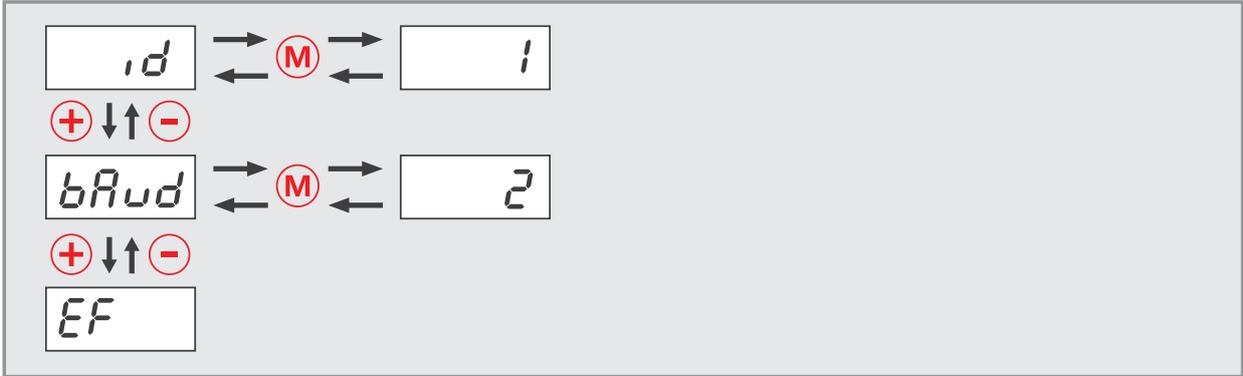| Level 1 menu	
id	Address (system default is 1)
	Press and hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
baud	Baud rate setting (System default is 2)
	Press and hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
EF	Expand functionality/Open the Level 2 menu
	Press the [M] key to enter the Extended level 2 menu Press the [+] key to exit

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Level 2 menu	
res	factory data reset
	Press and hold [+] to restore factory Settings
uni	Standard unit of measurement for system pressure (display) : [bar]/[MPa]/[psi]
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
L0	Historical minimum system pressure.
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
H0	Historical maximum system pressure
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
dap	Switch point damping/process data flow (IO-Link communication) and display.
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.

dis	Update rate and direction of the display. (Factory default is d1)
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change. [d1] : The measurement value is updated every 10ms [d2] : The measurement is updated every 100ms [d3] : Update the measurement every 600ms
zeao	Zero excision value (full scale %) (factory default is 0.5)
	Hold [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Press and hold the button while the value continues to change.
EF	Expand functionality/Open the Level 2 menu
	Press the [M] key to enter the Extended Level 2 menu Press the [+] key to exit.

Display menu

↓ (M) **Level 1 menu**

| ıd | ⇄ (M) ⇄ | 1 |

(+) ↓↑ (−)

| bRud | ⇄ (M) ⇄ | 2 |

(+) ↓↑ (−)

| EF |

(+) | (M)

Level 2 menu

Display menu

| rES | ⇄ (M) ⇄ | rES |

(+) ↓↑ (−)

| unı | ⇄ (M) ⇄ | bRr |

(+) ↓↑ (−)

| Lo | ⇄ (M) ⇄ | 0.0 |

(+) ↓↑ (−)

| Ho | ⇄ (M) ⇄ | 0.0 |

(+) ↓↑ (−)

| dRP | ⇄ (M) ⇄ | 0.00 |

(+) ↓↑ (−)

| dıS | ⇄ (M) ⇄ | d1 |

(+) ↓↑ (−)

| 2ERo | ⇄ (M) ⇄ | 0.0 |

(+) ↓↑ (−)

| EF | → (M) → | **Level 2 menu** |

(+) ↓

Display menu
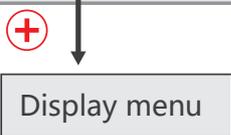
Maintenance/cleaning

Sensors (switches) do not require maintenance.

⚠️ **warning**
Periodically check whether the switch is working properly. If the switch does not work properly, stop the operation immediately.

⚠️ **caution**
Use of improper cleaning agent may damage the switch. The following cleaning agents can be used to clean polycarbonate: mild soap or detergent Isopropyl alcohol Immediately after cleaning, rinse with water. Do not leave cleaner on the surface of the product. Do not clean products in high heat or direct sunlight. The following cleaning agents are known to affect the integrity of polycarbonate components and should not be used: ZEP Fast 505, Pinesol, Formula 409 Halogenated solvents (benzene, gasoline, acetone or carbon tetrachloride) Strong alkalinity Methyl ethyl ketone Abrasive substance

disassemble

⚠️ **danger**
Only remove the switch in case of power failure (electrical, hydraulic/pneumatic). Switch disconnection from pressure and power supply must be performed by trained   or directed personnel in accordance with the most advanced standards.

⚠️ **warning**
Be aware that the surface of the shell may become very hot if the operating temperature is higher!

PS500-RS485
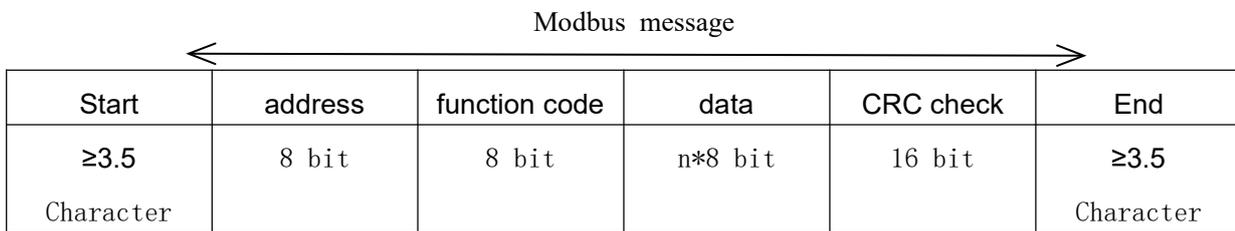## communication protocol (MODBUS-RTU)

1.RTU Data format explanation

1.1 communication mode

This instrument uses MODBUS RTU format. The protocol is used for master-slave query mode data communication.

1.2 data format

In RTU mode, the format of each byte (10 bits) is as follows: The encoding system uses 8-bit binary. Each byte consists of 1 start bit, 8 data bits (transmitting the least significant bit first), and 1 stop bit. The baud rate options are: 2400, 4800, 9600, 19200, and 115200.

Modbus message

Start	address	function code	data	CRC check	End
≥3.5 Character	8 bit	8 bit	n*8 bit	16 bit	≥3.5 Character

Note：

1) In RTU mode, idle intervals of at least 3.5 character times separate message frames.

2) (2) The entire message frame must be sent as a continuous stream of characters.

3) (3) The idle interval between two characters should not exceed 1.5 character times.

1.3 address

The agreement specifies that the instrument's address is '0-255', where the '0' address is used for broadcasting. This protocol does not support broadcasting, and the remaining addresses are reserved.

2. Configuration instructions

500 series pressure sensor, no parity check, 8 data bits, 1 stop bit

500 series pressure sensor		
parity check	/	Fixed and unchangeable
bit	8	Fixed and unchangeable
stop bit	1	Fixed and unchangeable

display code	Parameter definition	Scope	explain
id	Sensor address code (default 1)	1-250	Sensor address cannot conflict with other sensor addresses.
baud	Sensor baud rate (default 2)	0-5	0: Baud rate is 2400　bps 1: Baud rate is 4800　bps 2: Baud rate is 9600　bps 3: Baud rate is 19200　bps 4: Baud rate is 115200 bps

3. instruction explanation

03H (Read the instructions)

send data：01 03 00 00 00 03 05 CB （16 Octal)

Instruction	01	03	00	00	00	03	05	CB
explain	sensor address	Read the instructions	The high-order starting address of the register	The lower part of the starting address of the register	Read high-order quantity	Read the lower digit of the quantity	CRCL	CRCH
Explain: Send a read command to the 01 sensor, start reading from register 0000, and read 0003 registers.								

Return data: 01 03 06 00 00 01 23 00 01 10 83 (16 Octal)

Instruction	01	03	06	00	00	01	23	00	01	10	83
explain	sensor address	Read the instructions	Return six data points.	Register 1 high bit	Register 1 low bit	Register 2 high bit	Register 2 low bit	Register 3 high bit	Register 3 low bit	CRCL	CRCH
Explanation: 01 sensor responds to the read command, returning 6 data points											
00 00: 0000H, which is decimal 0, indicating that the pressure sign is 0, i.e., it is positive pressure;											
01 23: 0123H, which is decimal 291, indicating that the pressure value is 291;											
00 01: 0001H, which is decimal 1, indicating that the pressure has one decimal place;											
The pressure value is 29.1.											

4.Address (register) and its meaning

Decimal, hexadecimal, and Modbus registers represent the same parameter but in different formats. Different upper-level machine software may use different formats; if one format is not recognized, you can try the other two.

decimal address	Hexadecimal address	MODBUS Register	Parameter definition	Explanation
0	0	40001	Positive or negative pressure	Positive and negative (0 is positive, 1 is negative)
1	1	40002	Pressure value	Read the value (units displayed on the same screen)
2	2	40003	Decimal places of the pressure value	1 is one decimal point (the number is displayed on the same screen)