ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

Electronic Digital Display Pressure Sensor PS500


Standard ED sealed type


Flat seal threaded type


Blocking hole G1/2 thread type


External taper seal


Internal thread connection


Flat film chuck type

Principle structure

The diffused silicon sensor is used for pressure measurement, and the signal is processed by a post-processing circuit and converted into a standard industrial electrical signal for output and display. 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.

Technical parameter

- ◇ Supply voltage: 12... 30Vdc
- ◇ No-load current consumption: maximum 40mA,24Vdc power supply
- ◇ Switch output:

Output type: PNP/NPN can be switched, normally open/normally closed can be set
switch load: <200mA /24VDC
Response time: 0.01~2s (Factory default)
Switching accuracy: ≤±0.5% range
Current model analog output: ≤±0.5% range
Output type: 4-20mA/1-5V/0-10V can be set
Load RA: ≤500Ω
Linearity: ≤0.5% range
Communication output: IO-Link/RS485
Connection protection: reverse phase, overload, short circuit protection

- ◇ Display:

Design: Red 4-bit 12mm high brightness LED
Display range: -1999... 9999

- ◇ Accuracy: ≤±0.5% range
- ◇ Stability (annual drift) : ≤±0.3% range
- ◇ Temperature:

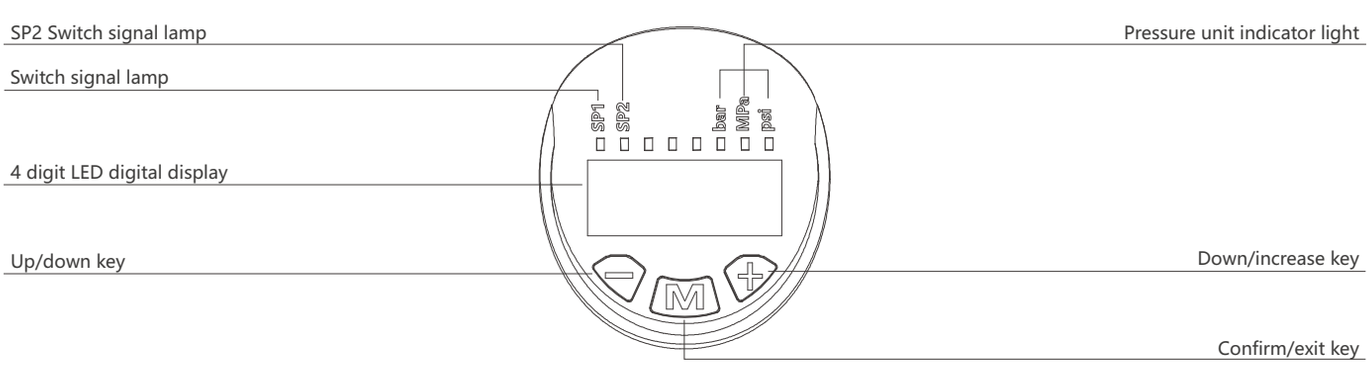
Medium temperature: -20... 85 ° c.
Ambient temperature: -20... 80 ° c.
Storage temperature: -30... 80 ° c.

- ◇ Materials:

Case: engineering plastic
Flame retardant grade: UL-94 V-0
Housing: stainless steel 304
Medium contact part: stainless steel 304

- ◇ Protection level: IP67
- ◇ Outlet mode: M12x1 connector

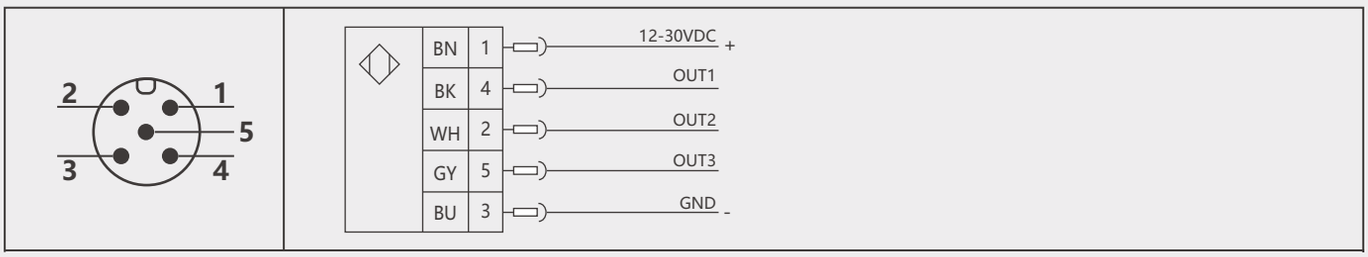
Panel diagram



ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

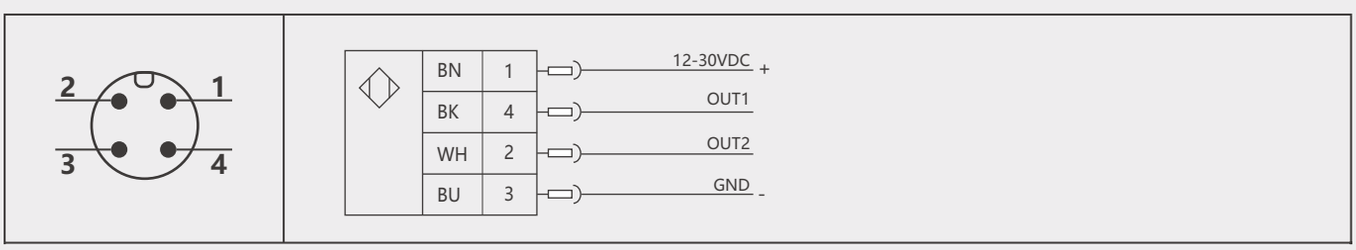
Electronic Digital Display Pressure Sensor PS500

Wiring diagram



Two way switch /IO-Link/Frequency + 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 IO-Link Frequency (full scale 100Hz)	WH	2 (OUT2)	SP2 switch PNP (Factory default) SP2 switch NPN			



Two-way switch/Frequency

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 Frequency (full scale 100Hz)	WH	2 (OUT2)	SP2 switch PNP (Factory default) SP2 switch NPN

One switch /IO-Link/Frequency+ 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 Frequency (full scale 100Hz)	WH	2 (OUT2)	4-20mA (Factory default) 1-5V 0-10V

RS485

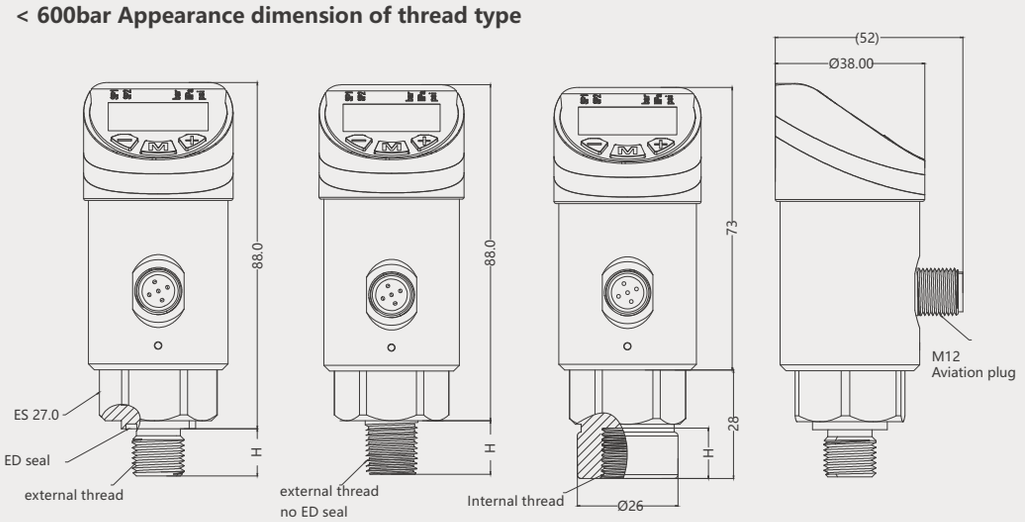
color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply (+)	BU	3	power supply (-)
BK	4 (OUT1)	RS485(B)	WH	2 (OUT2)	RS485(A)

ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

Electronic Digital Display Pressure Sensor PS500

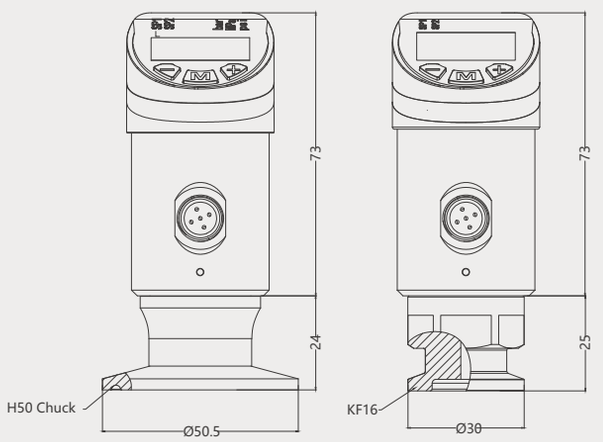
Dimensional drawing（mm）

< 600bar Appearance dimension of thread type

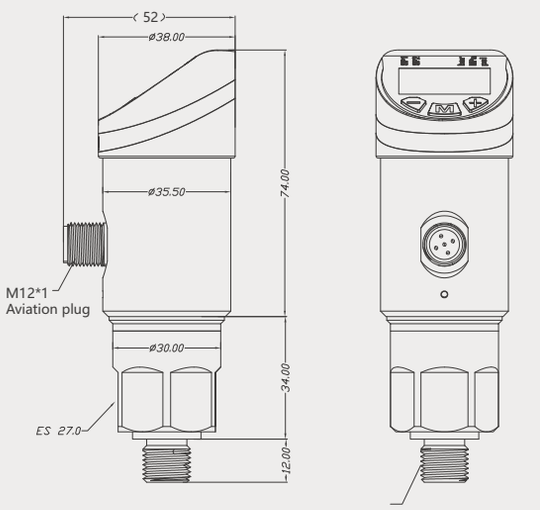


Screw thread		Thread height(H)	seal
external thread	G1/4	12	Sealed with ED
	G1/2	12	
	M20*1.5	12	
	R1/4	14	No ED seal
	R1/2	14	
	NPT1/4	14	
Internal thread	R1/4	13	
	G1/4	13	

< 600bar Chuck type appearance dimensions



≥600bar Appearance size



The process connection specification is the same as < 600bar

Parameter list

Pressure range	bar	1	2	5	10	16	25	60	100	160	250	400	600
	psi	15	30	75	145	230	370	900	1500	2300	3600	6000	9000
Maximum overload pressure		×5			×3			×2			×1.5		×1.3
Minimum damage pressure		×6			×4			×3			×2		×1.6

ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

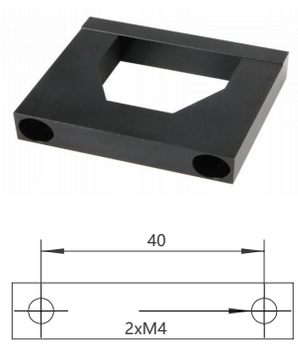
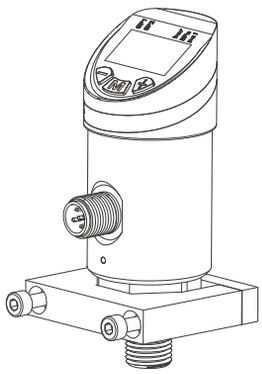
Electronic Digital Display Pressure Sensor PS500

Selection table

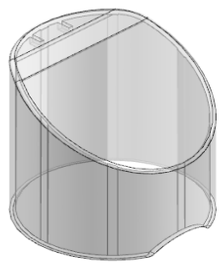
PS500-	B	100	G14M	S2	expatiate
PS500-					PS500 series electronic digital display pressure sensor
	B				Manometer pressure
	F				Negative pressure
		0001			Measuring range: -10... 10KPa or 0... 10KPa
		0006			Measuring range: -60... 60KPa or 0... 60KPa
		001			Measuring range: -1... 1bar or 0... 1bar
		002			Measuring range: -1... 2bar or 0... 2bar
		005			Measuring range: -1... 5bar or 0... 5bar
		010			Measuring range: -1... 10bar or 0... 10bar
		025			Measur ing range: 0... 25bar
		060			Measuring range: 0... 60bar
		100			Measuring range: 0... 100bar
		160			Measuring range: 0... 160bar
		250			Measuring range: 0... 250bar
		400			Measuring range: 0... 400bar
		600			Measuring range: 0... 600bar
		1000			Measuring range: 0... 1000bar
			G14M		Process connection: G1/4 external thread
			G12M		Process connection: G1/2 external thread
			G14K		Process connection: G1/4 internal thread
			N14M		Process connection: NPT1/ 4 external thread
			R12M		Process connection: R1/2 external thread
			R14M		Process connection: R1/4 external thread
			M20M		Process connection: M20*1.5 external thread
			KP50		Process connection: 1.5 inch (outer diameter 50.5mm) chuck metal flat film type (standard pressure 1.6MPa)
			KF16		Process connection: KF16 vacuum chuck type
				S2	Output signal: Two switch output/frequency (4-core cable)
				SA	Output signal: One switch outpu t /IO-link/ frequency + analog output (4-core cable)
				A3	Output signal: two switch output /IO-link/ frequency + analog output (5-core cable)
				RS	Output signal: RS485 communication (4-core cable)

Electronic Digital Display Pressure Sensor PS500

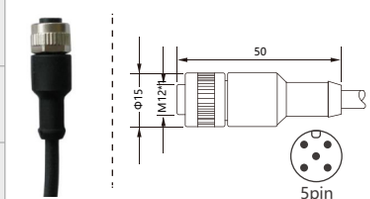
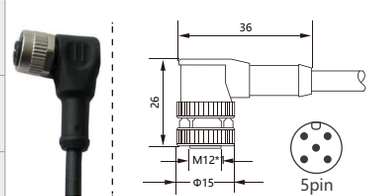
Optional accessories-FA027

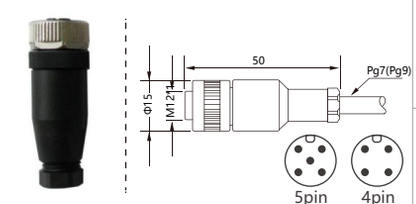
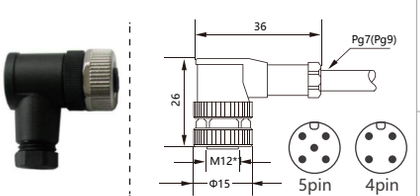
Outline drawing/dimension drawing（mm）	Installation effect drawing
	

Optional accessories - Protective cover

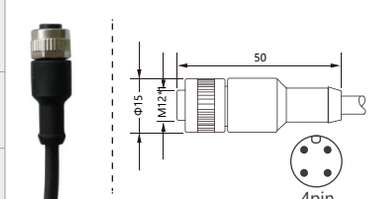
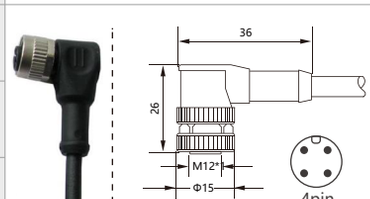
500 Series(switch) Sensor protection cover

Order number：KTCS33662

Optional accessories - electrical accessories

name	Outline drawing/dimension drawing（mm）	material	model
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
			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/size drawing（mm）	model
	GL04（4Pin joint）
	GL05（5Pin joint）
	WL04（4Pin joint）
	WL05（5Pin joint）

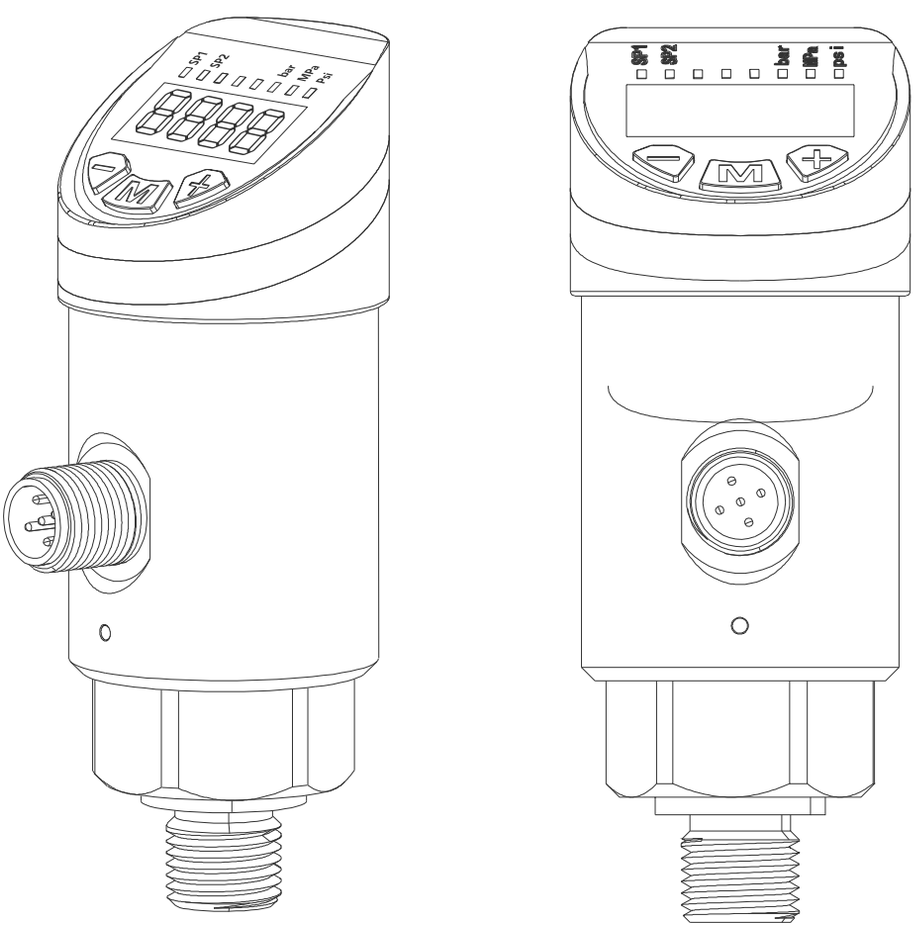
Factory standard:ZL05-PC02G

name	Outline drawing/dimension drawing（mm）	material	model
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
			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

Factory standard:ZL04-PC02G

ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

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

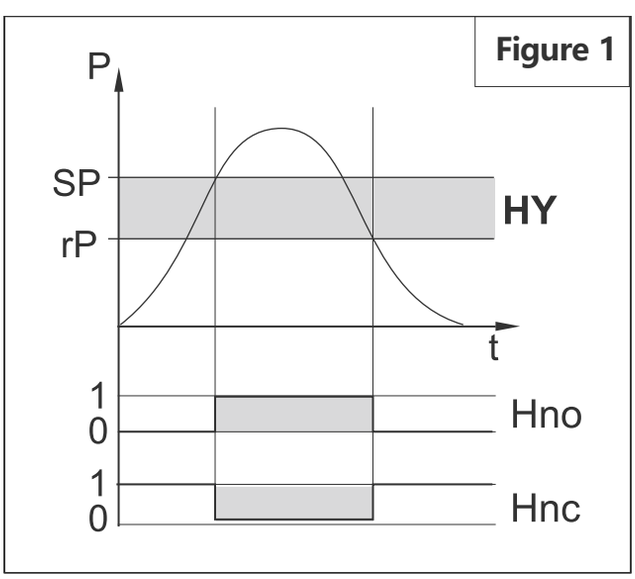
If the switch is higher or lower than the set switching limit (SP, rP), its switching state is changed. The following switch functions can be selected:

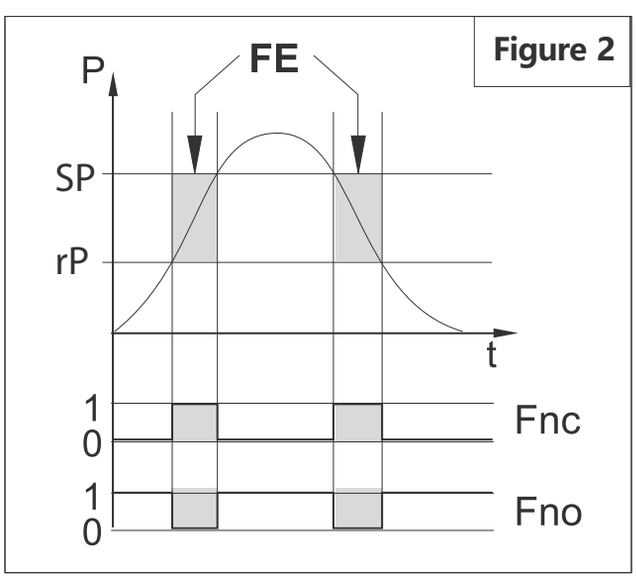
- Hysteresis function normally open: = [Hno] (→ Figure 1)
- Hysteresis function normally closed: = [Hnc] (→ Figure 1)

  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

Install

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.

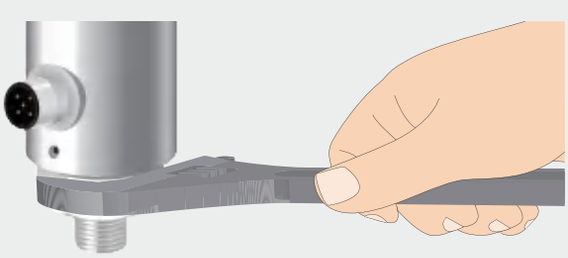
danger

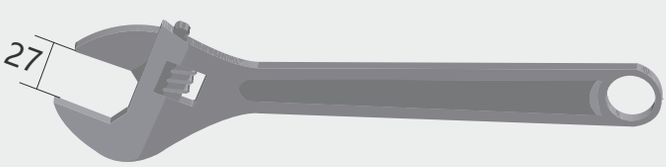
Sensors (switches) should only be installed in systems that do not exceed the maximum pressure Pmax (see type label).

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.

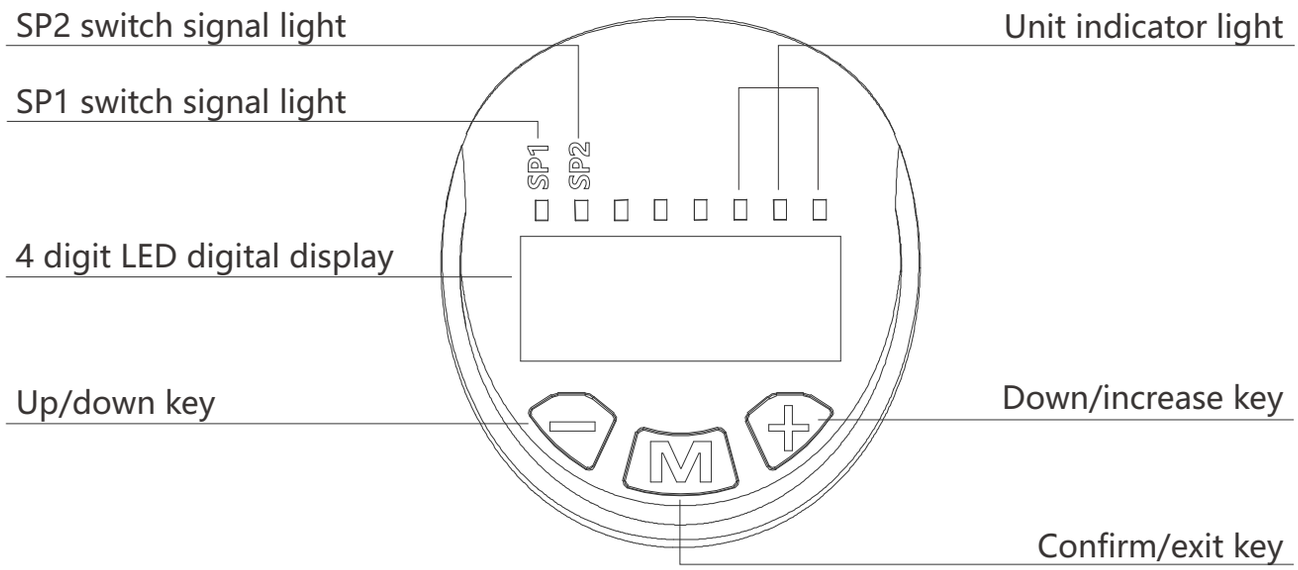
- Connect the sensor device to the selected process port
- Fully tighten, recommended tightening torque range: 25 to 35Nm
- In critical applications (such as violent vibrations or shocks), the pressure pipe joint can be mechanically decoupled via a miniature hose.



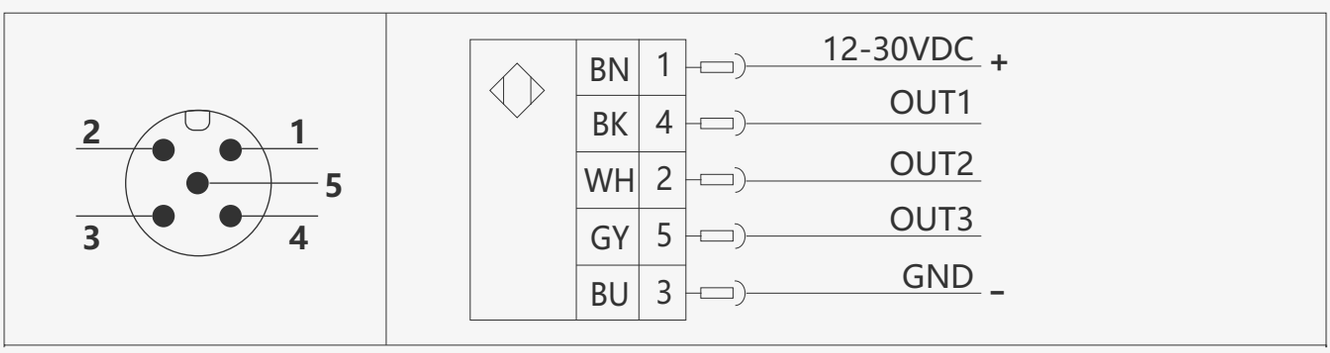


ATOM METRIC
FINEST MEASUREMENTS, HIGHEST PRECISION

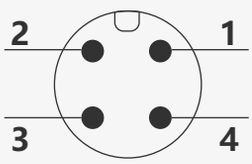
Panel description

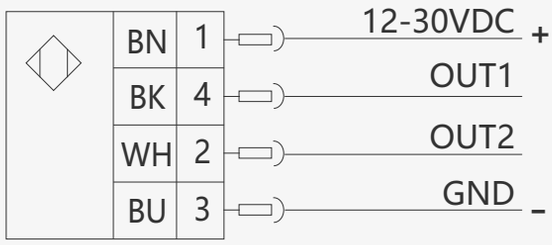


Electrical connection (Standard type)



Two-way switch /IO-Link/ frequency + 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 IO-Link Frequency (full scale 100Hz)
WH	2 (OUT2)	SP2 Switch PNP (factory default) SP2 Switch NPN
GY	5 (OUT3)	4-20mA (factory default) 1-5V 0-10V





Two way switch/frequency		
color	**stitch**	**Instructions**
BN	1	power supply（+）
BU	3	power supply（-）
BK	4 (OUT1)	SP1 Switch PNP（factory default) SP1 Switch NPN Frequency (full scale 100Hz)
WH	2 (OUT2)	SP2 Switch PNP（factory default) SP2 Switch NPN

One switch /IO-Link/ frequency + 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 Frequency (full scale 100Hz)
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

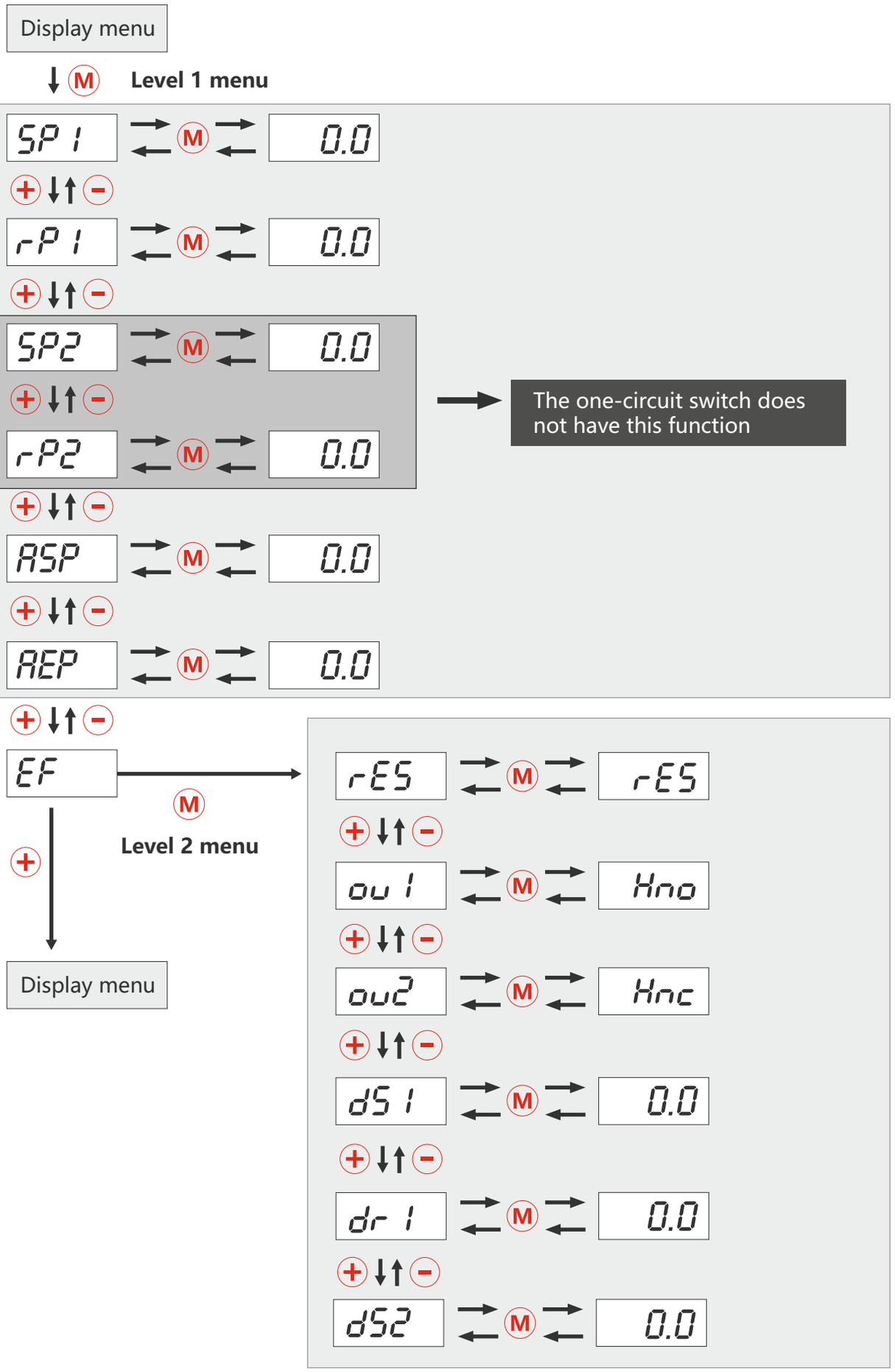
Note that the casing surface may become very hot if the operating temperature is high!

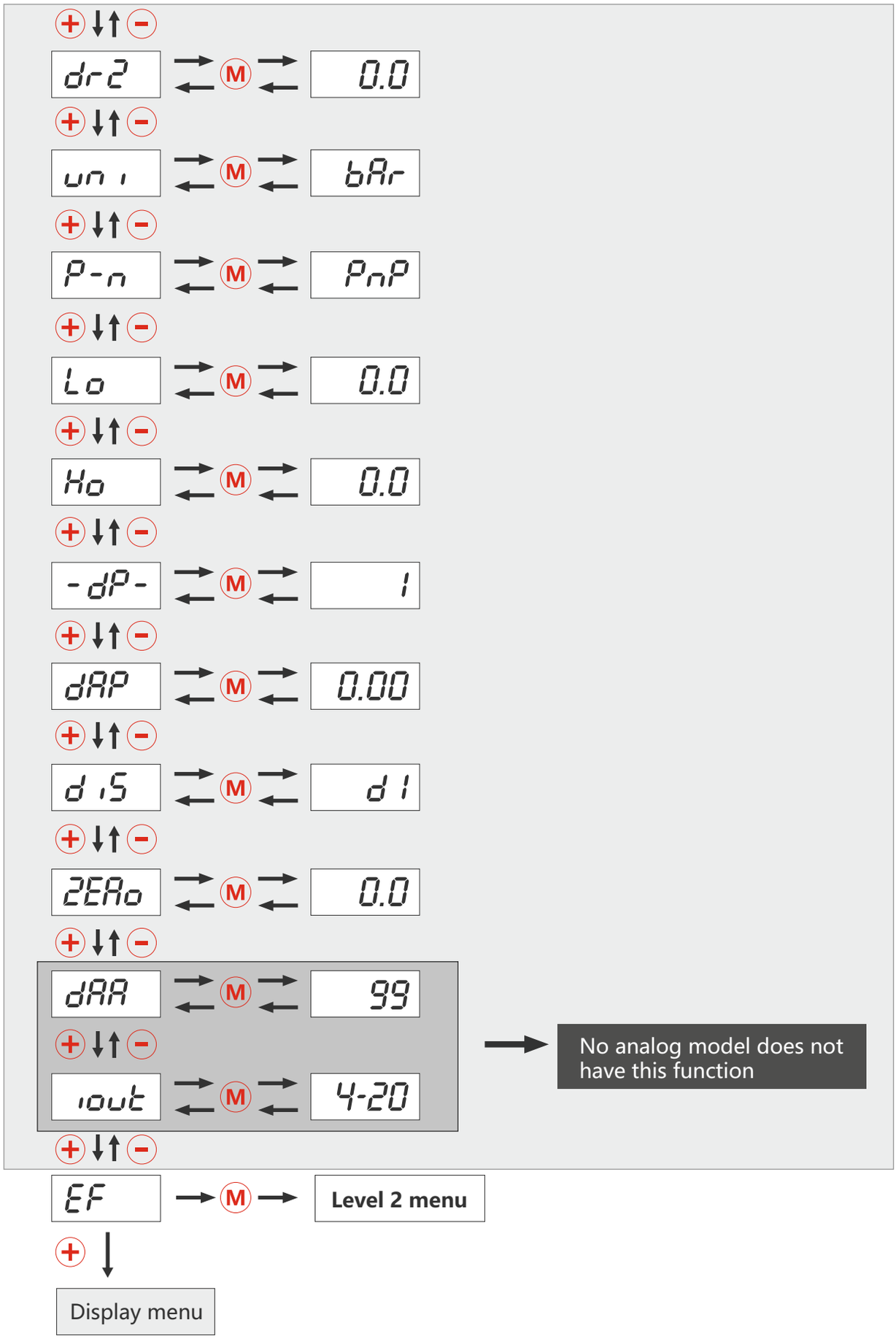
Level 1 menu		
sp1	Alarm value of Switch 1 (Factory default value is 0.2 of the range)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
rp1	Switch 1 Reset value (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 0.8of 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.	
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 changing.	
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)
	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 wil l 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)
	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. (Th e 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 b utton down and the value will keep changing.
ds2	OUT2's opening 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.

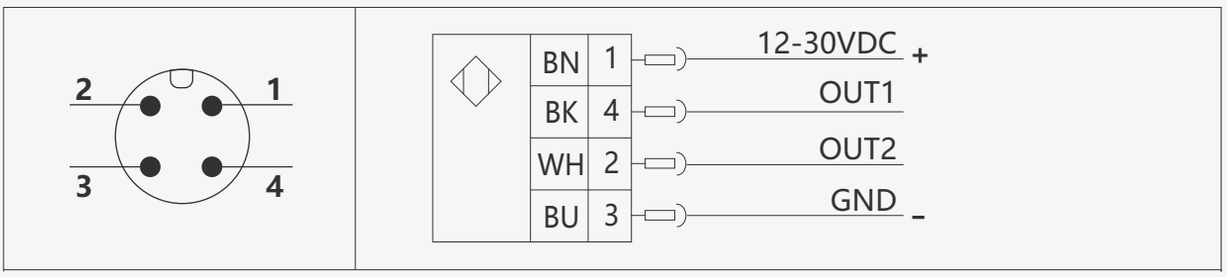
dr2	OUT2 shutdown delay. (The factory default is 0s)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
uni	System standard unit of measurement (display)
	Hold down [+] 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.
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.
-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.
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 measurem ent 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	Signal filtering (factory default 99)
	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 bu tton down and the value will keep changing.
iout	Output analog switch: Current type: 4-20: (4-20mA) 20-4: (20-4mA) 0-20: (0-20mA) 20-0: (20-0mA) 5V voltage type: 1-5: (1-5V) 5-1: (5-1V) 0-5: (0-5V) 5-0: (5-0V) 10V voltage type: 1-10: (1-10V) 10-1: (10-1V) 0-10: (0-10V) 10-0: (10-0V)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increase s; 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
SP 1
0.0
rP 1
0.0
SP2
0.0
rP2
0.0
The one-circuit switch does not have this function
ASP
0.0
AEP
0.0
EF
M
Level 2 menu
Display menu
rES
rES
ou 1
Hno
ou2
Hnc
dS 1
0.0
dr 1
0.0
dS2
0.0


dr2
0.0
un i
bAr
P-n
PnP
Lo
0.0
Ho
0.0
-dP-
1
dAP
0.00
d iS
d 1
2ERo
0.0
dAA
99
iout
4-20
No analog model does not have this function
EF
Level 2 menu
Display menu

Electrical connection (RS485 communication)



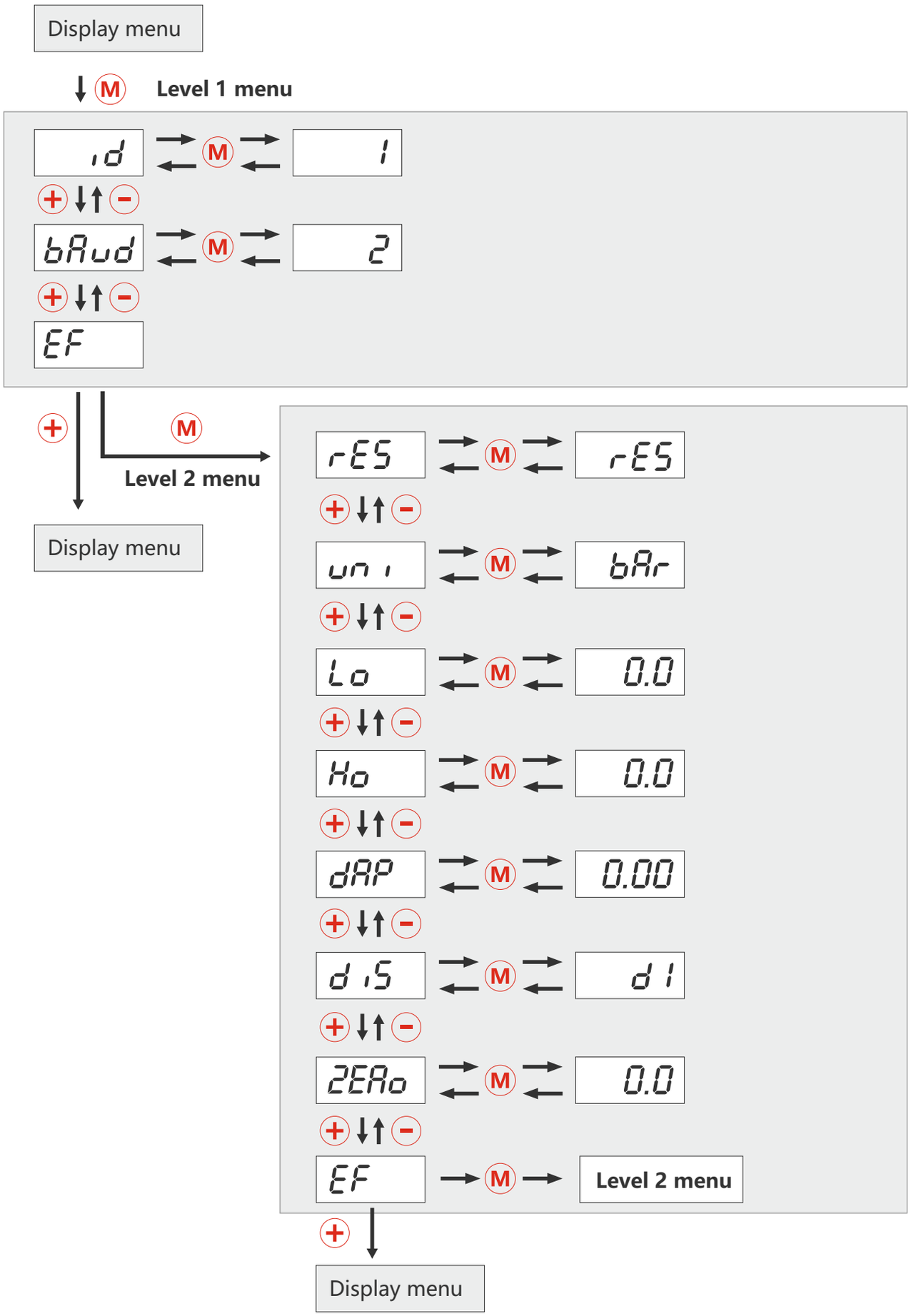
RS485		
color	**stitch**	**Instructions**
BN	1	power supply（+）
BU	3	power supply（-）
BK	4 (OUT1)	RS485(B)
WH	2 (OUT2)	RS485(A)

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 but ton, 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

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 c hange.
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
id
1
bAud
2
EF
M
Level 2 menu
Display menu
rES
rES
uni
bAr
Lo
0.0
Ho
0.0
dAP
0.00
diS
d1
ZERo
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!

THM HUADE HYDRAULICS PVT LTD.
F-127, PHASE-VIII, FOCAL POINT, LUDHIANA
- 141010 (PUNJAB) INDIA
PHONE: +91-88722-42200, +91-88722-42500
E-MAIL: salesho@thmhuade.com
Website: www.thmhuade.com

ADDRESS: UNIT 2/12B EXCHANGE DR, PAKENHAM VIC 3810
WEBSITE: www.atommetricsensors.com