

—— Sensor and controller ——

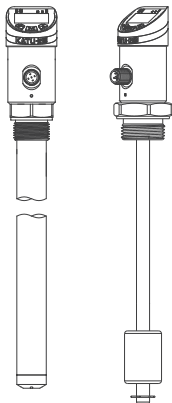
■ Flow ■ pressure ■ temperature ■ level ■ position

KATU 卡图

Operation instruction

Electronic level 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!

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)

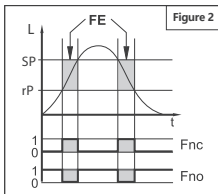
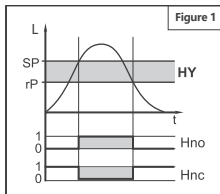
First set the switch point: (SP), Then set the reset point: (rP).

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.



L = level; 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

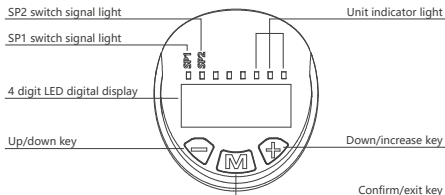
Vibration and violent vibration must be avoided during transportation. Even if the sensor (switch) housing is not damaged,
Internal components can also break down and cause failure.



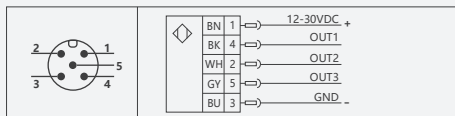
danger

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

Panel description

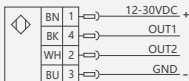


Electrical connection



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

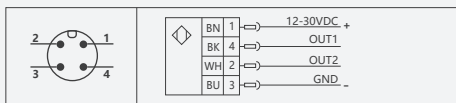


S2: Two way switch/IO-Link

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



RS485

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

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

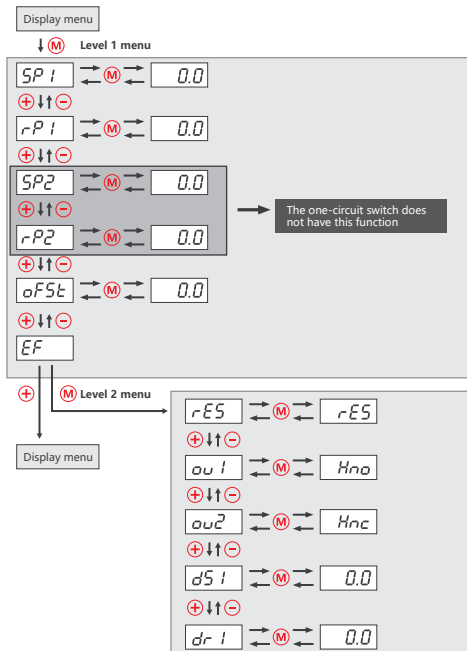
Note that the casing surface may become very hot if the operating temperature is high!

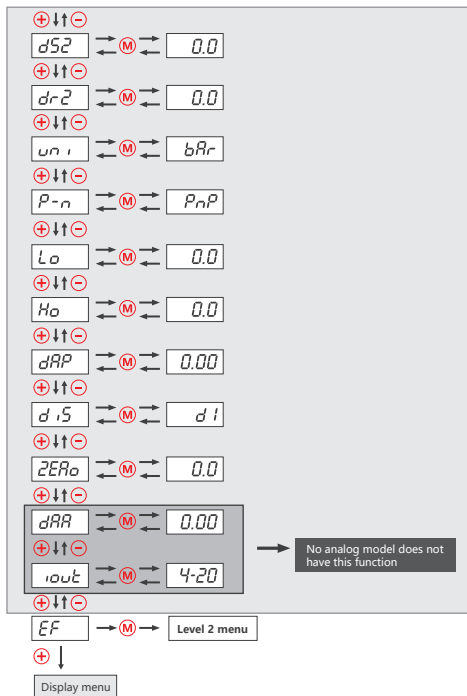
Level 1 menu	
sp1	Alarm value of Switch 1 (Factory default value is 0.2% of the range)
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.
rp1	Switch 1 Reset value (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)
	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.
ofst	Level offset
	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 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)
	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)
	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.

	OUT2 shutdown delay. (The factory default is 0s)
dr2	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.
	System standard unit of measurement (display)
uni	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.
	PNP/NPN switch (Factory default is PNP)
p-n	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.
	System measurement history minimum.
LO	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.
	The maximum value of system measurement history
HO	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.
	Switch point damping/process data flow (IO-Link communication) and display. (Factory default: 0.06)
dap	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.
	Update rate and direction of the display (d1 by default)
dis	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

	Zero excision value (full scale %) (factory default is 0.5)
zeao	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.
	Display refresh time: analog 0.1s (factory default is 0.01)
daa	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) 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 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.





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!

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