Principle structure

TM800S uses a ceramic thick film sensor for temperature measurement, and the signal is converted into a standard industrial electrical signal after processing by a post-processing circuit.

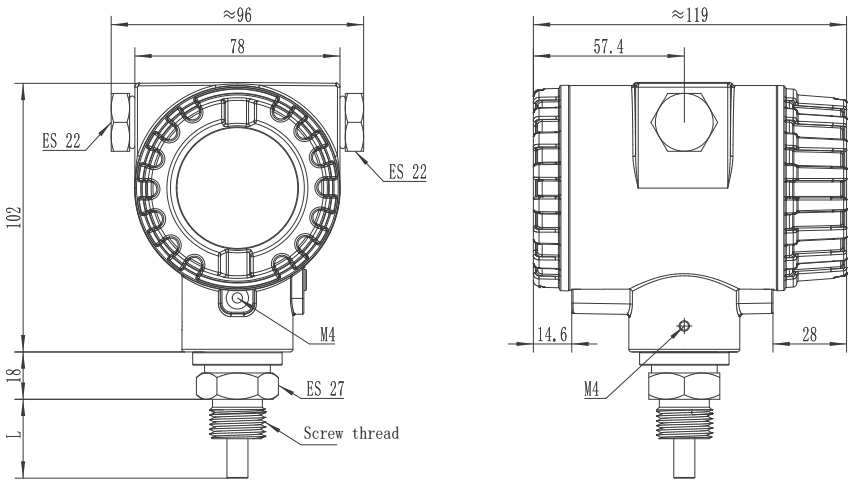
The explosion-proof housing design, with high-light LED digital display, makes this series of products can be used in a variety of industrial applications. The three-button design and menu make the product more convenient to use, and a variety of connection methods can fully meet various specific installation needs.

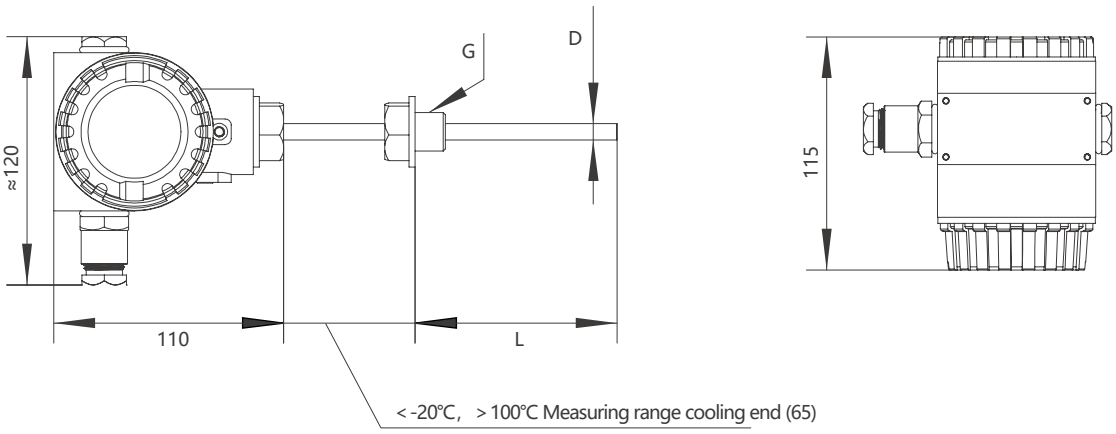
Technical parameter

◇ Measuring range:	- 50... 200 ℃
◇ Supply voltage:	12... 30VDC
◇ No-load current consumption:	≤30mA, 24VDC
◇ Switch output:	
◇ Output type:	Push-pull (compatible with both PNP and NPN),
	Normally open and normally closed can be set
◇S1,S2 Output current:	< 500mA
◇ Response time:	< 10ms
◇ Voltage drop:	< 1V
◇ Switching accuracy:	≤±0.5% range
◇ Current type analog output	
◇ Output type:	Three wire 0... 20mA/4... 20mA can be configured
◇ Load RA:	RA 0.5 Kohm or less
◇ Linearity:	≤±0.5% range
◇ Voltage type analog output	
◇ Output type:	Three wire 0... 20mA/4... 20mA can be configured
◇ Load RA:	RA 0.5 Kohm or less
◇ Linearity:	≤±0.5% range

◇ Voltage type analog output	
◇ Output type:	Three wire 0... 20mA/4... 20mA can be configured
◇ Load RA:	RA > 10Kohm
◇ Linearity:	≤±0.5% range
◇ Wiring protection:	Reverse phase, overload, short circuit protection
◇ Display	
Design:	Red 4-bit 8mm high brightness LED
Display range:	- 999... 9999
◇ Accuracy:	≤±0.5% range
◇ Stability (annual drift) :	≤±0.3% range
◇ Temperature	
Medium temperature:	- 50... 125 ℃
Ambient temperature:	- 20... 80 ℃
Storage temperature:	- 30... 80 ℃
◇ Probe pressure:	200bar
◇ Materials	
Watch head housing:	Engineering plastics
Housing:	Cast aluminium
Medium contact part:	Stainless steel 316L/ ceramic
◇ Explosion-proof rating:	Ex d Ⅱ C T6 Gb
◇ Appearance mode:	The M12*1 connector is directly wired

Size chart (mm)

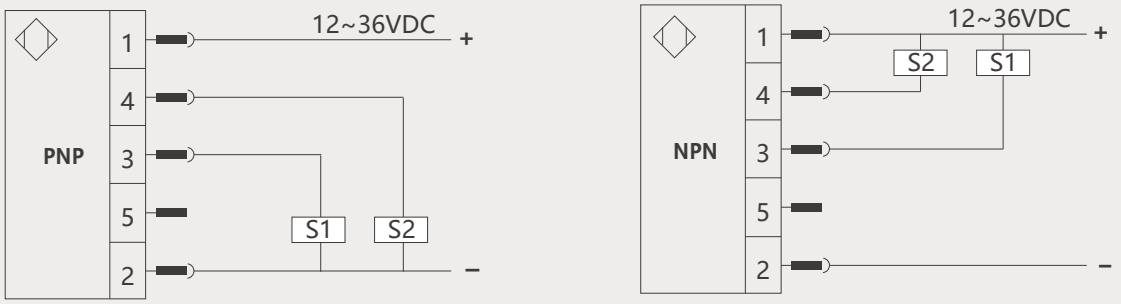




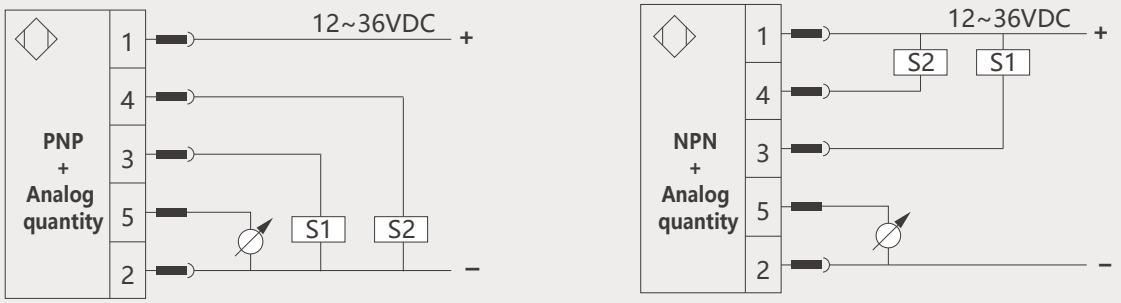
Wiring diagram

Binding post				
1	2	3	4	5
12-36VDC	GND	S1	S2	mA

Two switches



Two switches + one analog



Selection table

TM800S-	C2080	S2	G14M	G	025	/	-	detailed
TM800S-								TM800S Explosion-proof electronic digital temperature sensor
	C2080							range -20...80℃(User can specify range)
	C0100							range 0...100℃(User can specify range)
	C50200							range -50...200℃ High and low temperature type (user can specify range)
	C50400							range -50...400℃ High and low temperature type (user can specify range)
	C100100							range -100...100℃ High and low temperature type (user can specify range)
	C200100							range -200...100℃ High and low temperature type (user can specify range)
		S2						Two switch output
		A3						Two switch outputs + analog output (0...20/4...20mA)
		V5						Two switch outputs + analog output (0...5/1...5V)
		V10						Two switch outputs + analog output (0...10/1...10V)
			G12M					installation: G1/2 External thread
			G14M					installation: G1/4 External thread
			N14M					installation: NPT1/4 External thread
			N34M					installation: NPT3/4 External thread
			R14M					installation: R1/4 External thread
			M27M					installation: M27*1.5 External thread
			K50					The sanitary chuck is connected with the outer diameter of 50.5mm
				G				Electrical interface: Electric gran head
				M20K				Electrical interface: M20*1.5 internal thread
				M27K				Electrical interface: M27*1.5 internal thread
					025			Probe rod length L=mm (example: 025 represents probe rod length 25mm)
						D6		Sheath maerial of diameter 6mm
						D8		Sheath maerial of diameter 8mm
							-	No explosion-proof
							-E	Explosion-proof grade (IICT6)

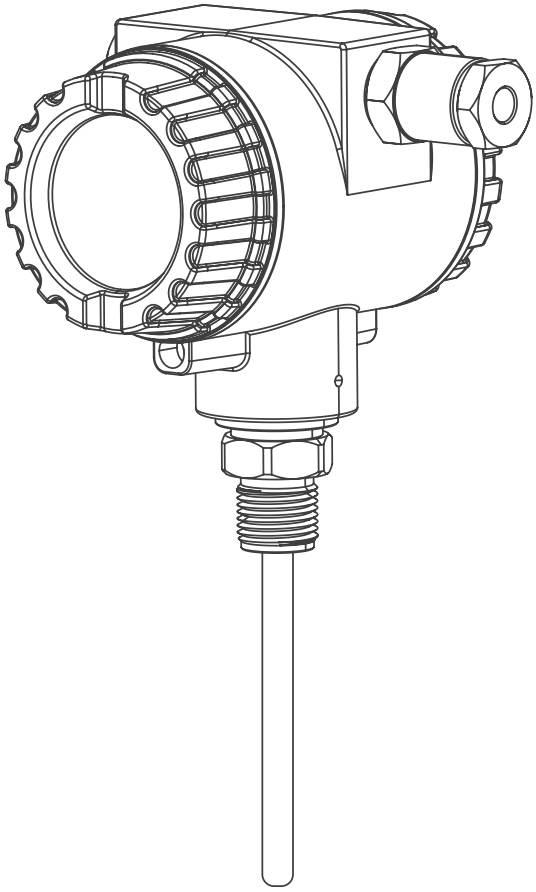
* Special requirements can be customized

Sensor and controller

■ Flow ■ pressure ■ temperature ■ level ■ position

KATU 卡图

Operation instruction
Explosion-proof temperature sensor
TM800S series



Product application

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 TM800S uses a ceramic thick film sensor for temperature measurement. The signal is processed by the post-processing circuit and converted into a standard industrial electrical signal for output and display. The explosion-proof shell design and the adoption of high-brightness LED digital display enable this series of products to be used in various industrial Settings. The three-button design and menu make the product more convenient to use, and multiple connection methods can fully meet various specific installation requirements.

Switching function

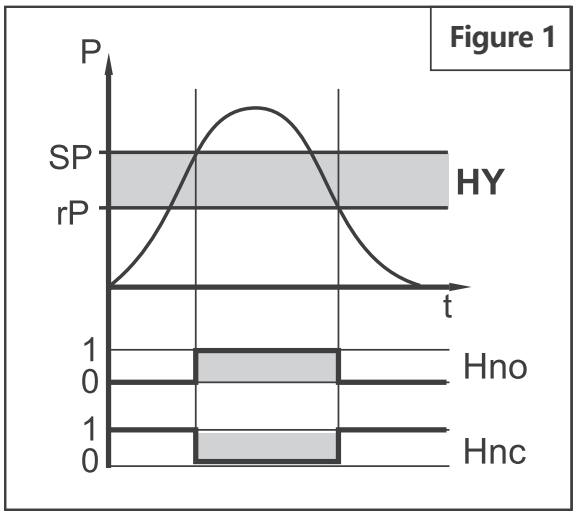
If the switch is higher or lower than the set switching limit (SP, rP), its switching state is changed. The following switch functions can be selected:

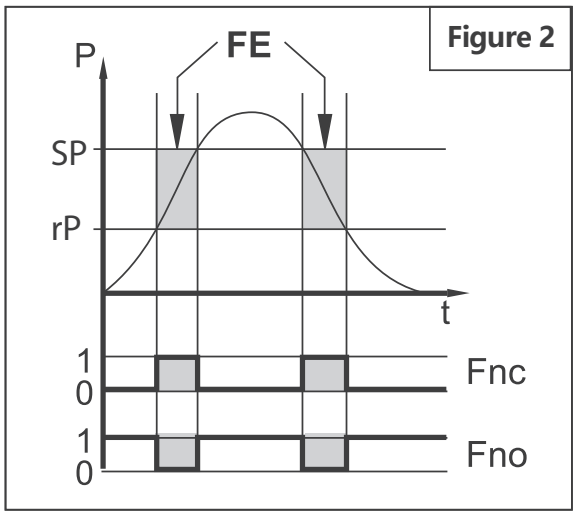
- Hysteresis function normally open: = [Hno] (→ Figure 1)
- Hysteresis function normally closed: = [Hnc] (→ Figure 1)

  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 Temperature; 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,

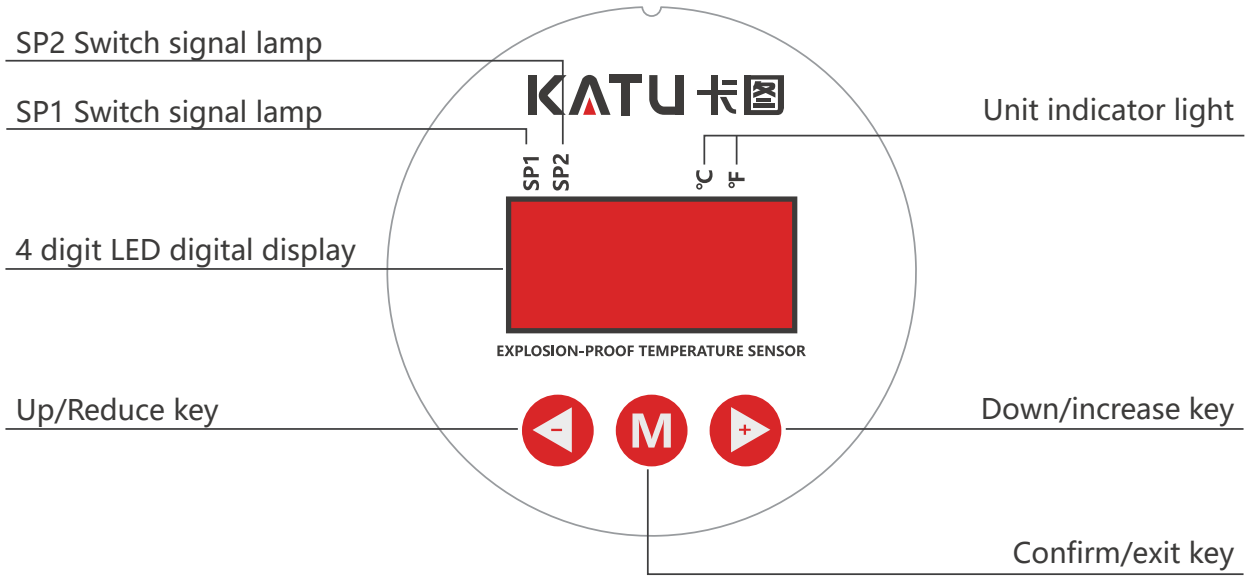
Internal components can also break down and cause failure.

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).

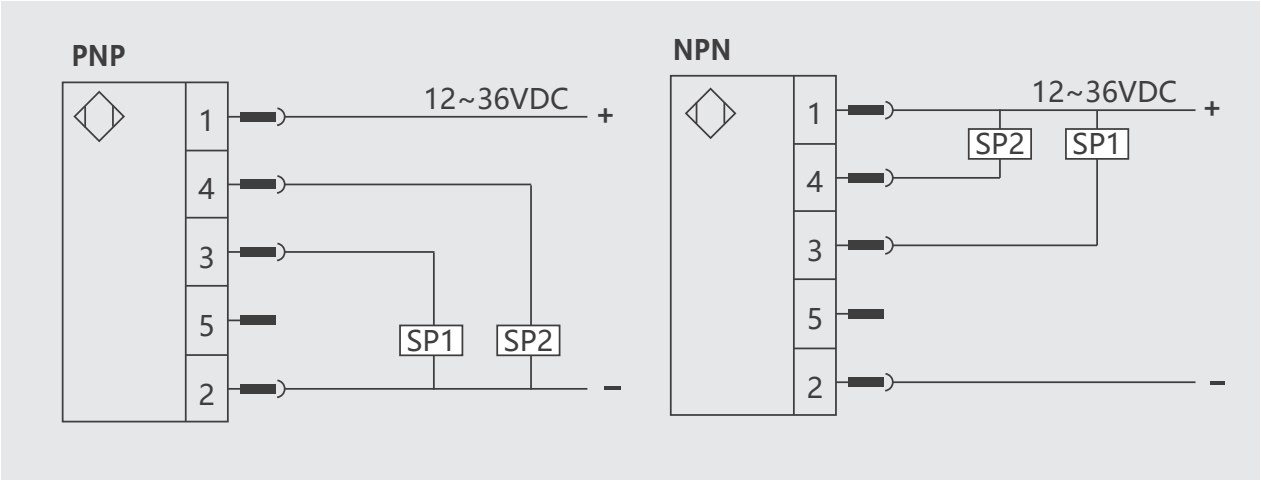
Panel description



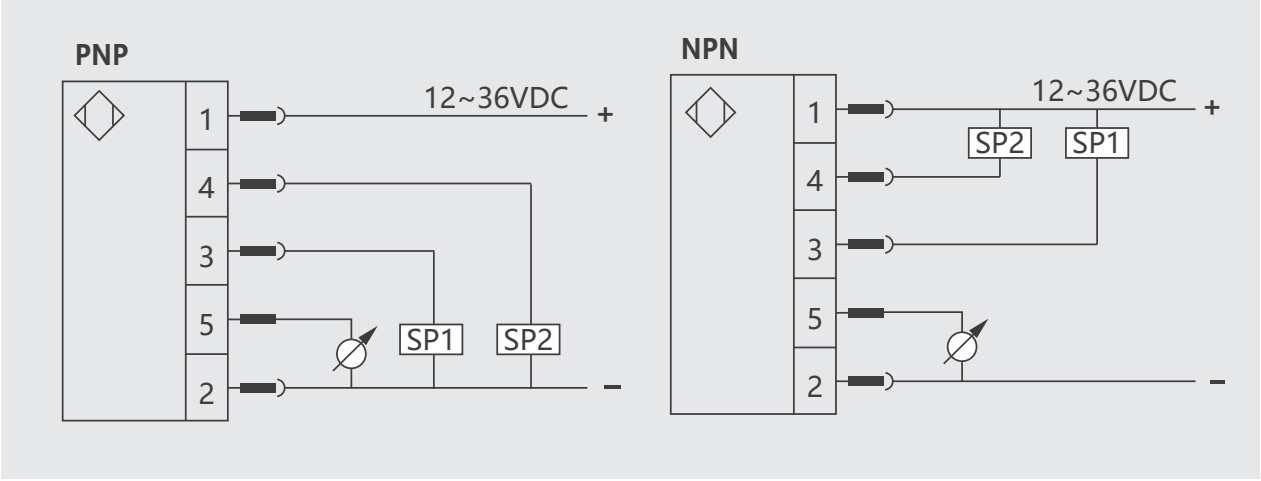
Wiring diagram

Binding post				
1	2	3	4	5
12-36VDC	GND	S1	S2	mA

Two-way switch



Two switches + one analog



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

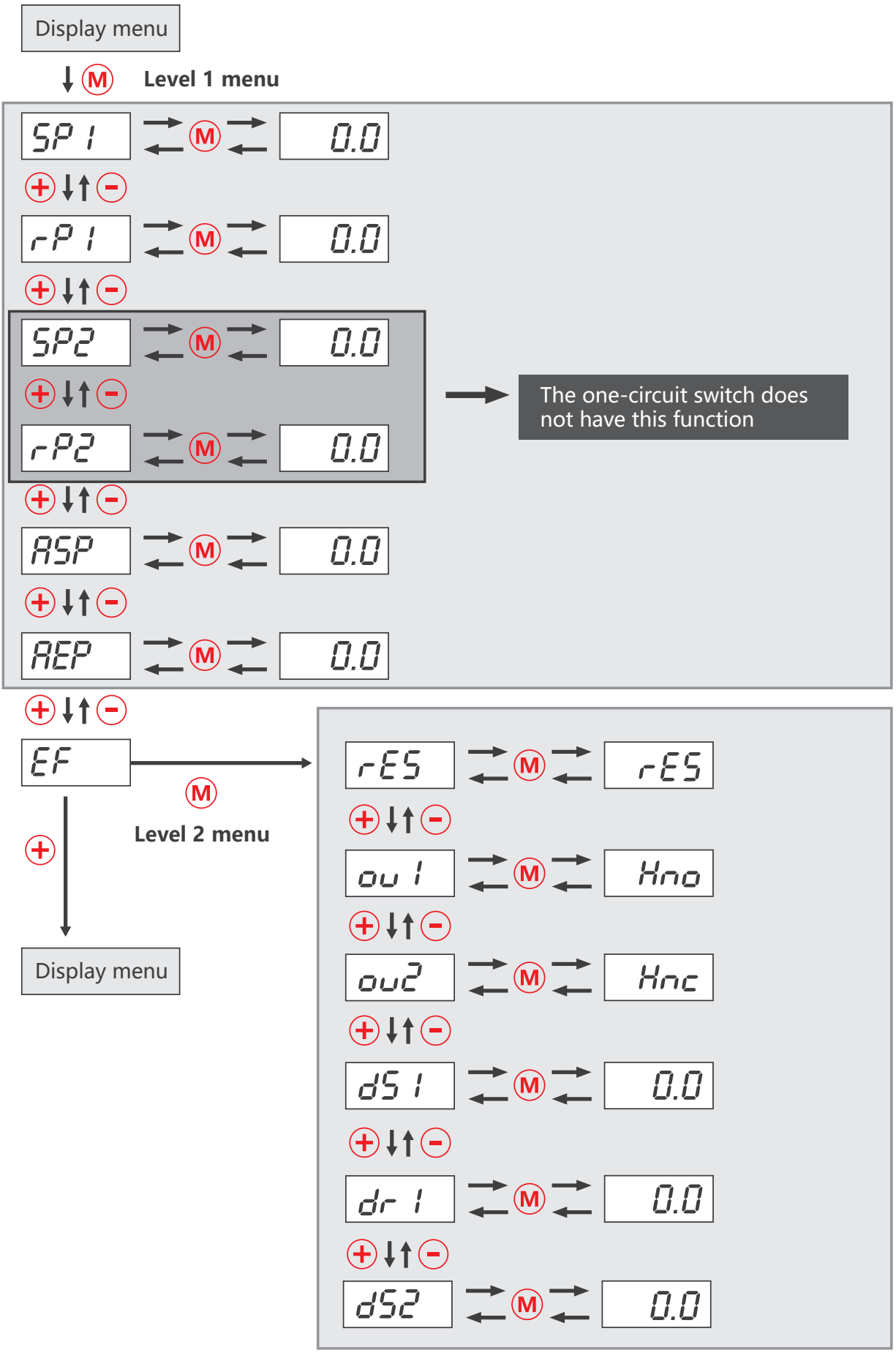
Note that the casing surface may become very hot if the operating temperature is high!

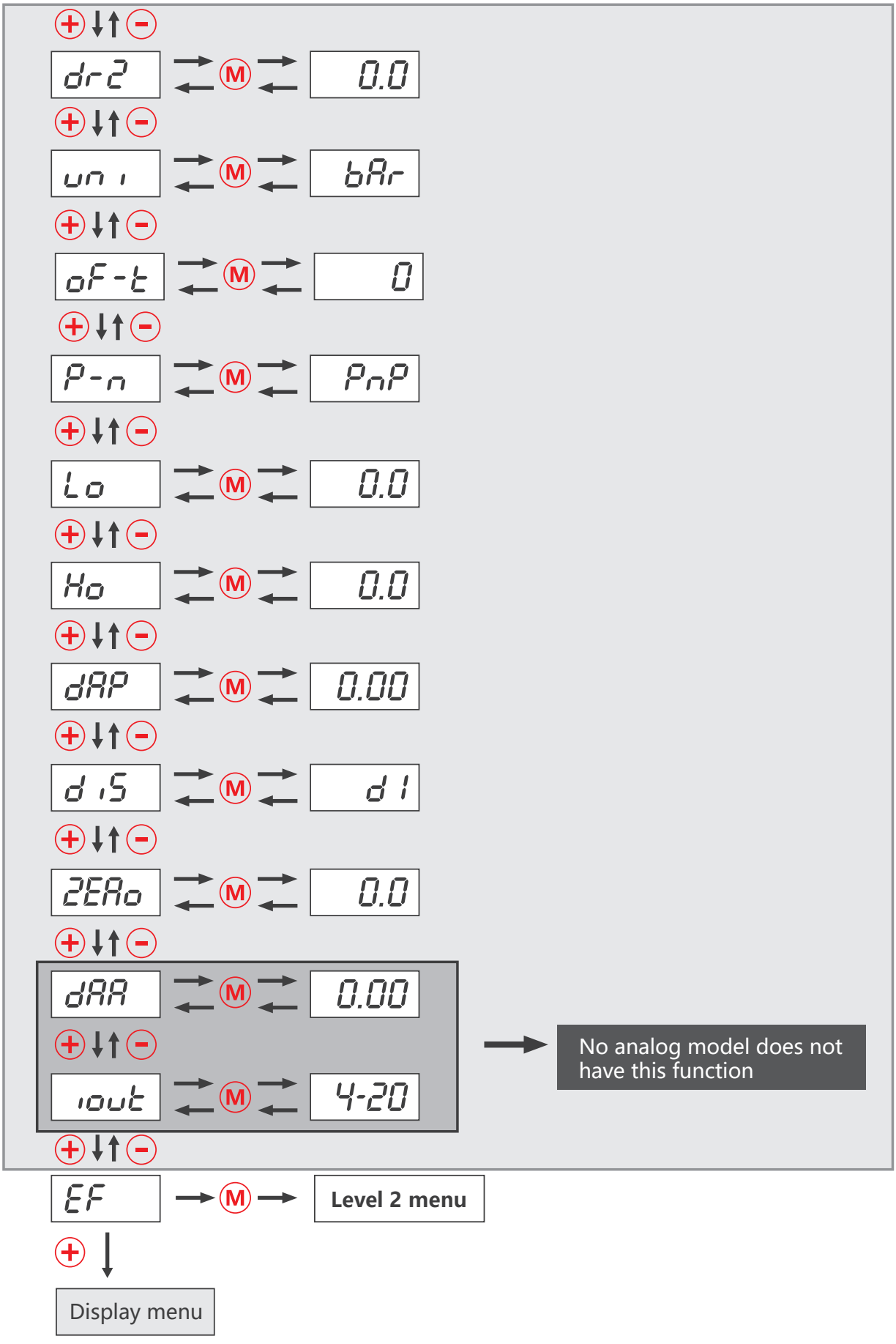
Level 1 menu		
sp1	Alarm value of Switch 1 (Factory default value is 30.0℃)	
	Hold down [+] or [-] for at least 1s. After 1 second: The setting value can be changed: At the press of a button, the value increases; Hold the button down and the value will keep changing.	
rp1	Switch 1 Reset value (factory default is 29.5℃)	
	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 40.0℃)	
	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 39.5℃)	
	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 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.
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.
of-t	Temperature offset value (default is 0)
	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) 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.


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
uni
bAr
oF-t
0
P-n
PnP
Lo
0.0
Ho
0.0
dAP
0.00
diS
d1
ZERo
0.0
dAA
0.00
iout
4-20
No analog model does not have this function
EF
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!

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