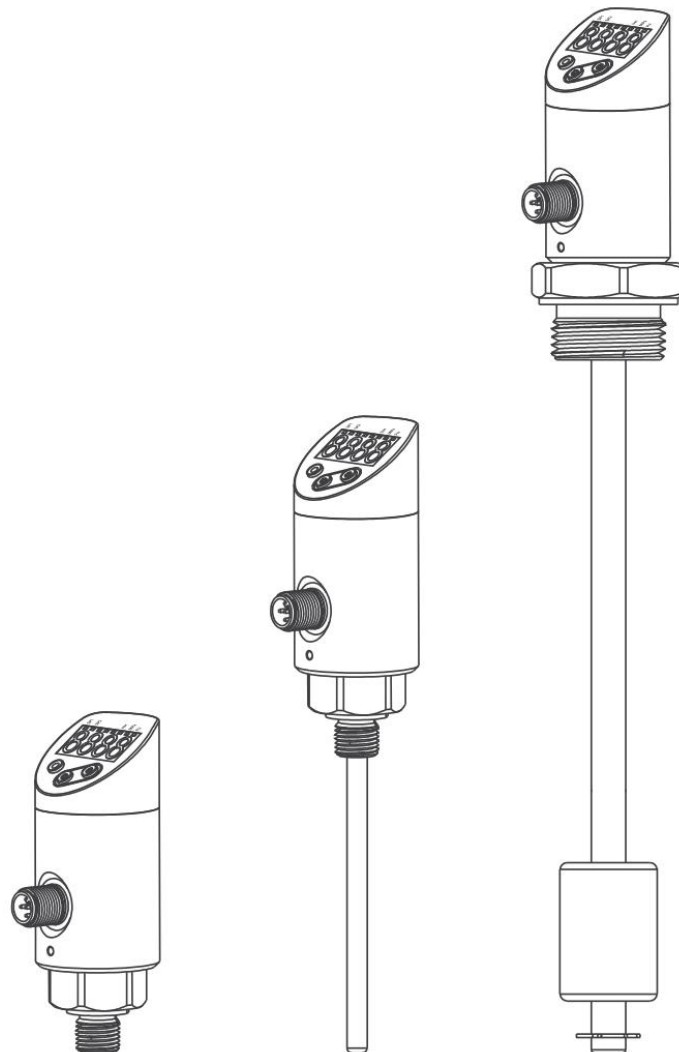




Electronic Liquid Level Sensor Manual



Product Application Purpose

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



Dangerous

The sensor (switch) can only be used for the specified application range.

The temperature range must be within the allowable range. Do not exceed the rated pressure and electric load value.

Assembly, commissioning and operation must be carried out in accordance with applicable national and local safety instructions.

The switch is designed as a safety device pressurization system according to the "Pressure Equipment Directive 97/23/EC (PED)".

Standards

The standards applied during development, manufacturing and configuration are listed in the CE conformity and manufacturer's declaration.

Quality Assurance

Our scope of delivery and service is subject to the legal guarantee and warranty period.

Warranty

The company warrants that the product purchased from Norika is free from defects in materials and workmanship under normal use during the warranty period. The warranty period begins on the day of purchase from Norika. The warranty extends only to the original purchaser. It is not transferable to anyone who subsequently purchases the product from you. It excludes all expendable parts.

The warranty does not extend to any product that has been damaged or rendered defective a) as a result of accident, misuse or abuse b) as a result of an act of God c) by operation outside the usage parameters stated herein; d) by the use of parts not manufactured or sold by Norika; e) by modification of the product.

Safety Instructions

The safety instructions are intended to protect the user from hazardous situations and/or material damage.

In the operating instructions, the severity of potential risks can be expressed by the following signal words.



Dangerous

It refers to the imminent danger faced by users. Failure to comply may result in fatal injury.



Warning

Refers to identifiable hazards.
Failure to comply may result in fatal injury and damage to equipment or plant components.



Cautious

It refers to a danger.
Failure to comply may cause slight injury and material damage to the sensor (switch) and/or the factory.



Important

Refers to information that is critical to users.



Dispose

The sensor (switch) must be handled correctly according to the national or local regulations on electrical/electronic equipment.

The sensor (switch) cannot be disposed with household garbage!

Product Features

The all-metal housing design and the use of bright LED digital display make this series of products can be used in various industrial occasions. The three-key design and menu make the product more convenient to use, and various connection methods can fully meet various specific installation requirements. The body with 330 ° rotation can ensure the best viewing angle under different installation modes.

Switch Function

If the switch is higher or lower than the set switch limit (SP, rP), its switch status will be changed.

The following switch functions can be selected:

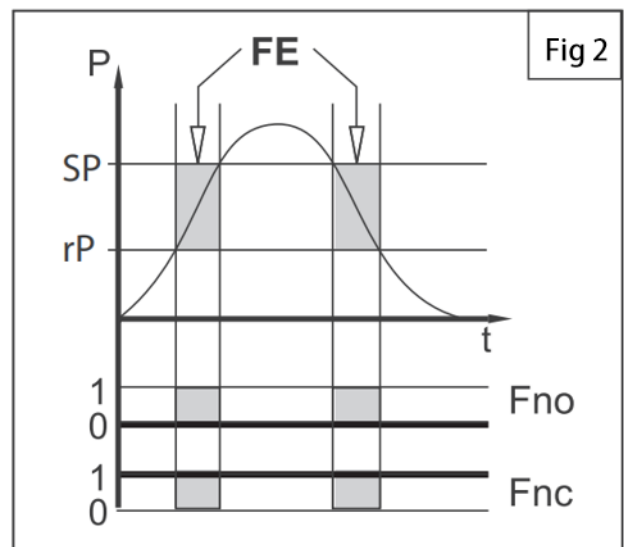
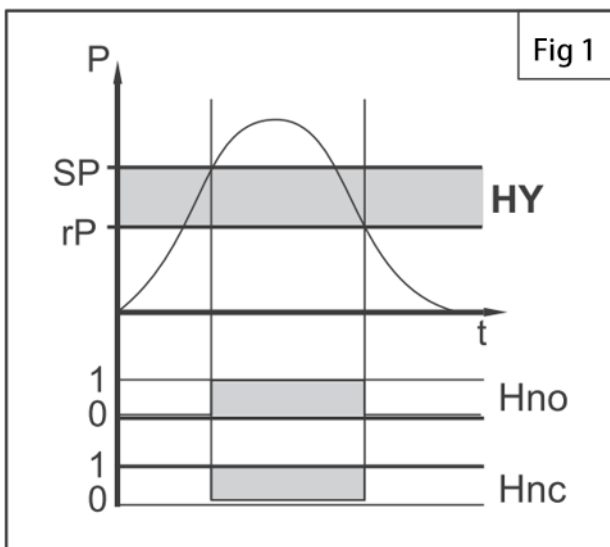
- ◆ Hysteresis function normally open : = **【Hno】** (→ Fig 1)
 - ◆ Hysteresis function normally closed : = **【Hnc】** (→ Fig 1)
- First set the switching point (SP), then set the reset point (rP) .

If the SP changes again, the hysteresis will also change.

- ◆ Window function normally open : = **【Fno】** (→ Fig 2)
- ◆ Window function is normally closed : = **【Fnc】** (→ Fig 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 = Hysteresis ;

FE = window

Installation

The safety instructions are intended to protect the user from hazardous situations and/or material damage.

In the operating instructions, the severity of potential risks can be expressed by the following signal words.



Cautious

Vibration and severe vibration must be avoided during transportation. Even if the sensor (switch) housing is not damaged, internal components may be damaged and cause failure.



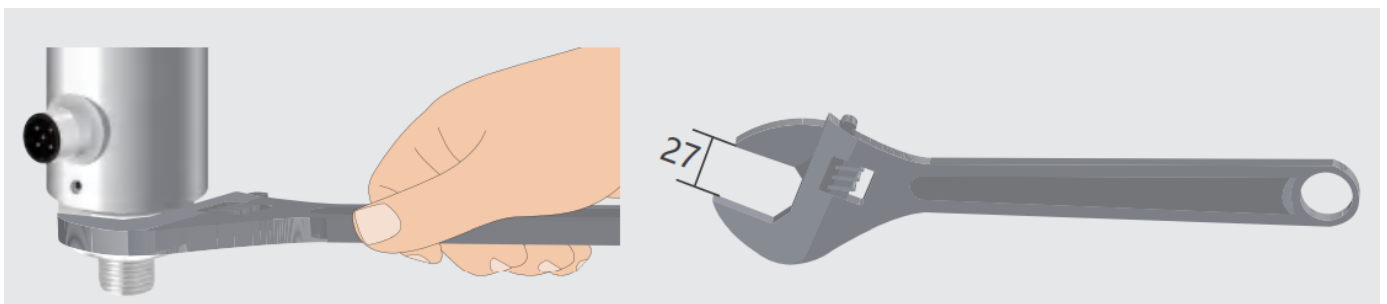
Dangerous

The sensor (switch) can only be installed in the system that does not exceed the maximum pressure P_{max} .

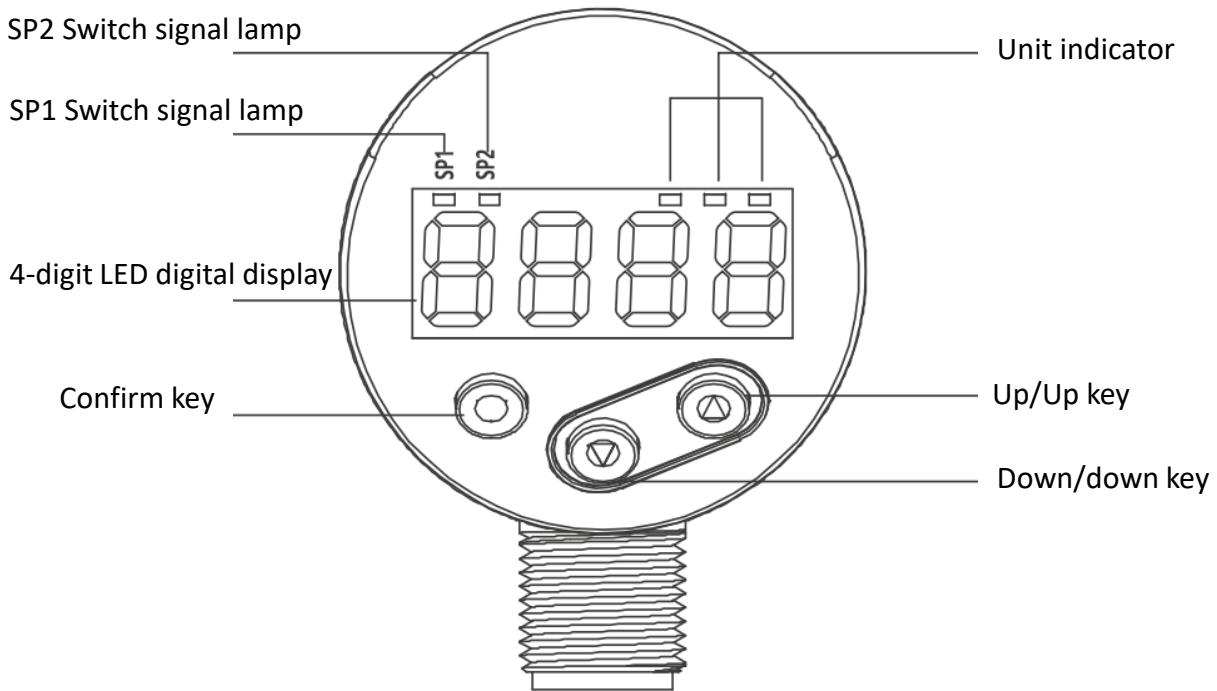
Only install the sensor (switch) when the power is off (electric, hydraulic/pneumatic).

! Before installing and removing the sensor, please confirm that the system is not under any pressure.

- Connect the sensor equipment according to the optional process interface.
- Fully tighten, recommended tightening torque range: 25 - 35Nm
- In key applications (such as severe vibration or impact), the pressure pipe joint can be mechanically decoupled through a miniature hose



Panel Description

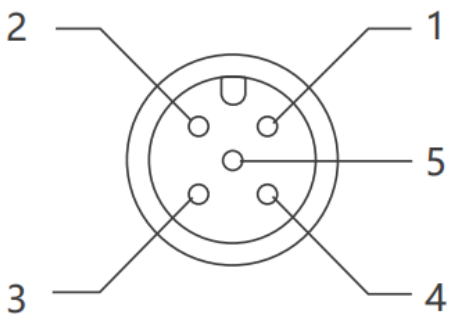


Electrical Connection

! The product must be wired by qualified electricians, and the relevant domestic and international specifications for electrical equipment installation must be observed.

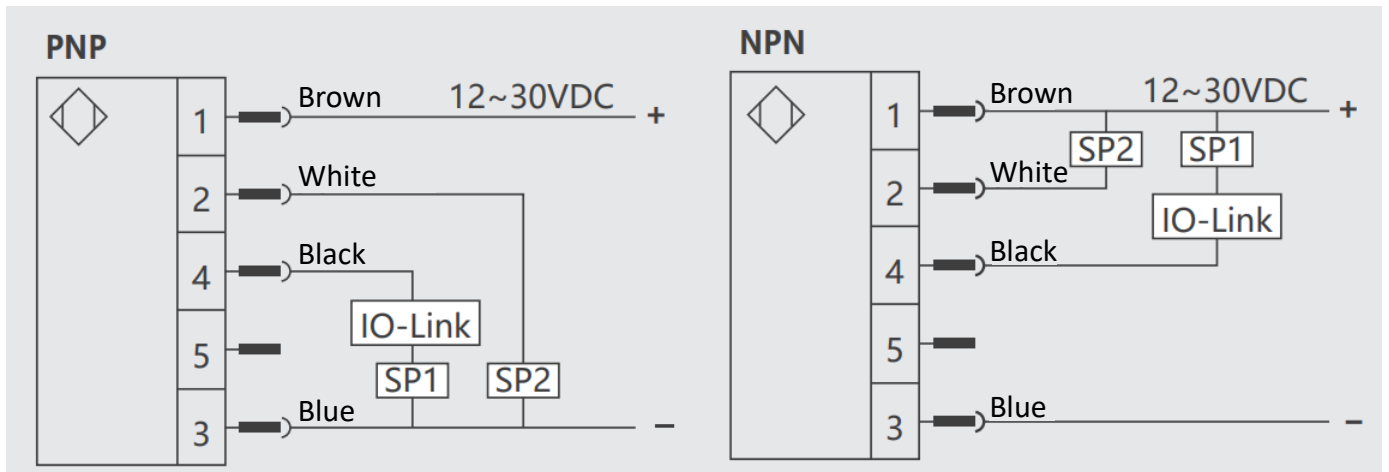
Power supply voltage shall comply with EN50178, SELV and PELV standards

- Cut off the power supply
- Wire the product according to the corresponding wiring method in the figure below.

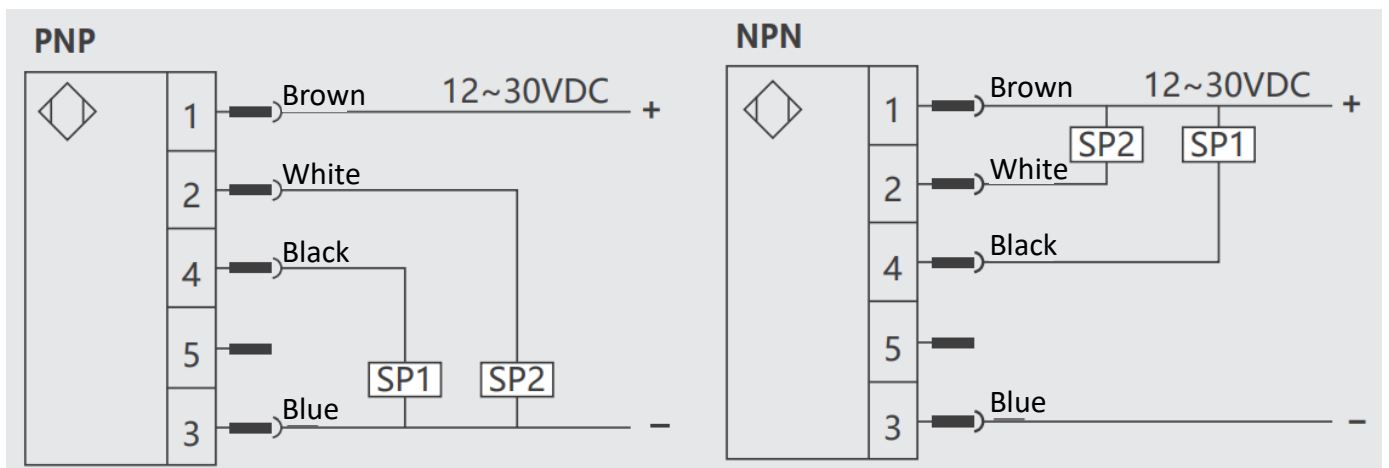


1	Brown	Power supply positive
2	White	Switch output SP2 (analog quantity)
3	Blue	Power supply negative
4	Black	Switch output SP1(IO-Link)
5	Grey	Analog output (voltage or current)

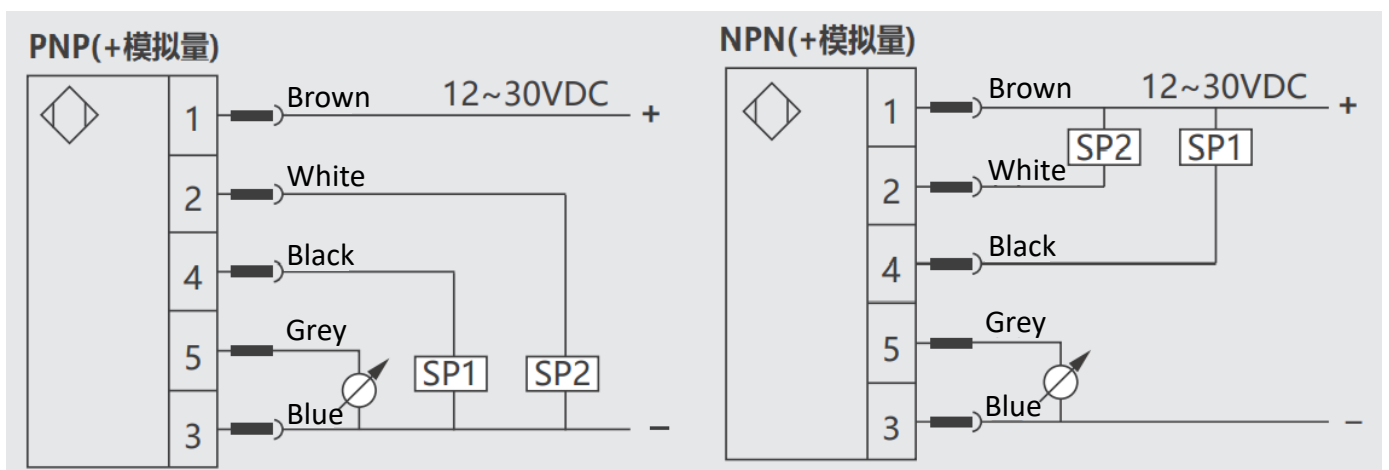
Two switches + (IO-Link)



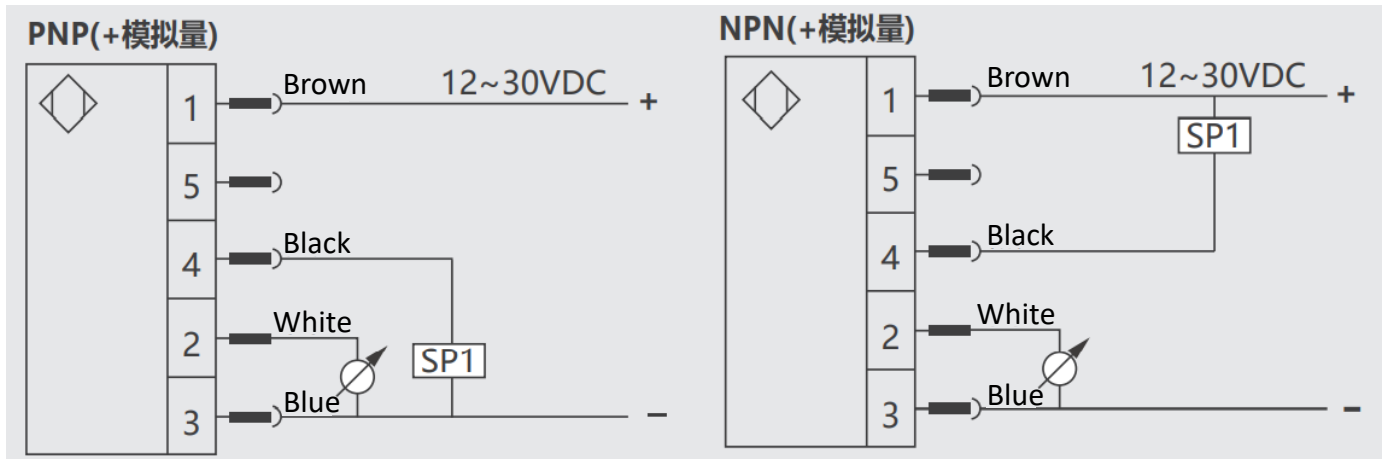
Two switches



Two switches + One-way analog quantity



One switch + one analog quantity



Commissioning/Operation

The sensor (switch) can only be commissioned and operated by authorized personnel.



Caution

When the sensor (switch) itself or the connecting cable is damaged, do not put the switch into operation.

Do not use any sharp and hard objects to make entries. The key may be damaged by sharp hard objects.



Warning

Please note that if the operating temperature is high, the casing surface may become very hot!

Level 1 MENU

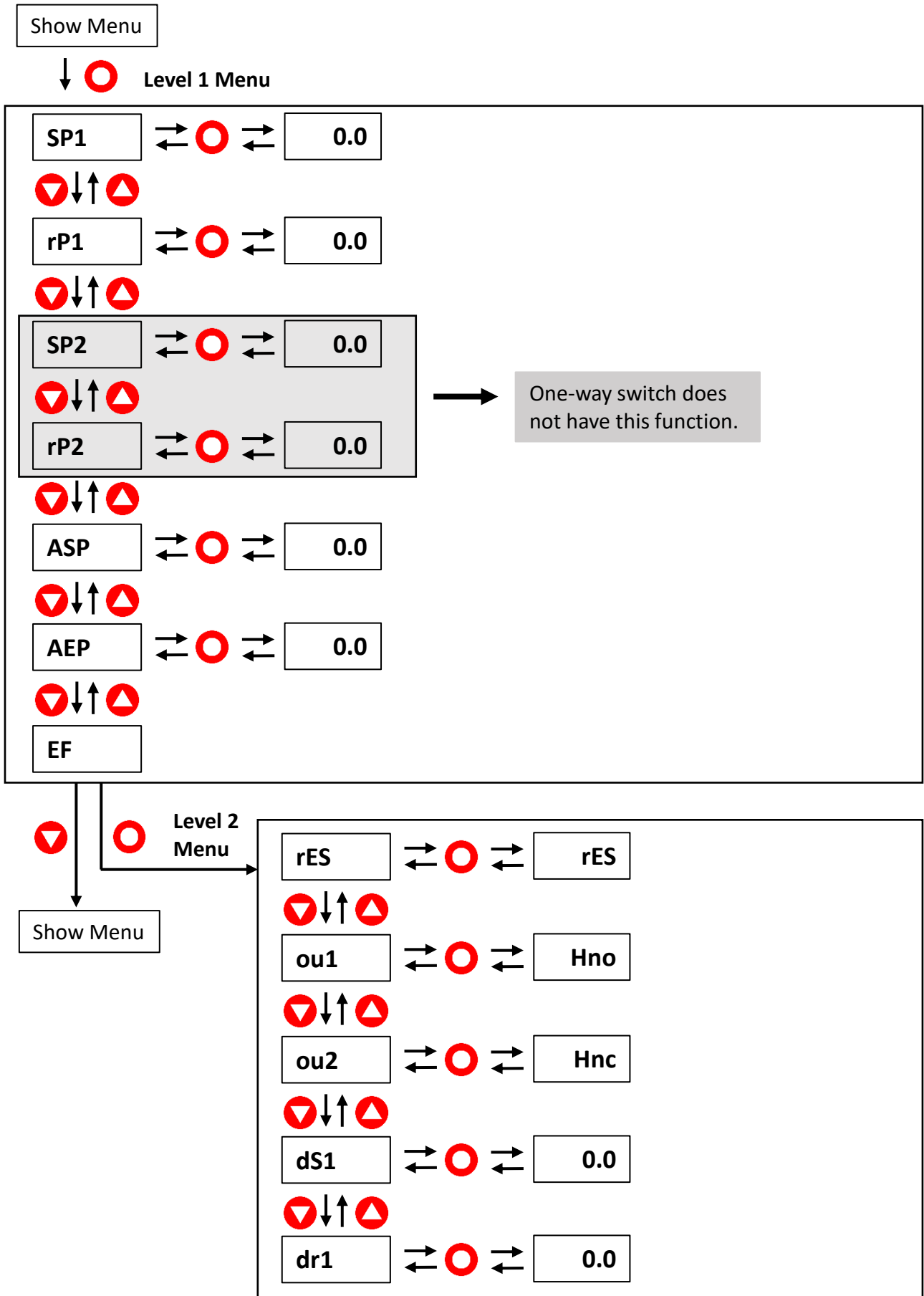
sp1	Switch 1 alarm value (factory default value is 0.2% of range)	Restore the factory setting and the range reference value.
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
rp1	Switch 1 reset value (factory default value is SP1-0.5%)	
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
sp2	Switch 2 alarm value (factory default value is 0.8% of range)	
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
rp2	Switch 2 reset value (factory default value is SP2-0.5%)	
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
asp	Lower range value (factory default is lower range value)	
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
aep	Upper range value (factory default is upper range value)	
	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>	
EF	Expand functions/open level 2 menu	
	<p>Press the [●] key to enter the extended level 2 menu</p> <p>Press [▼] key to exit</p>	

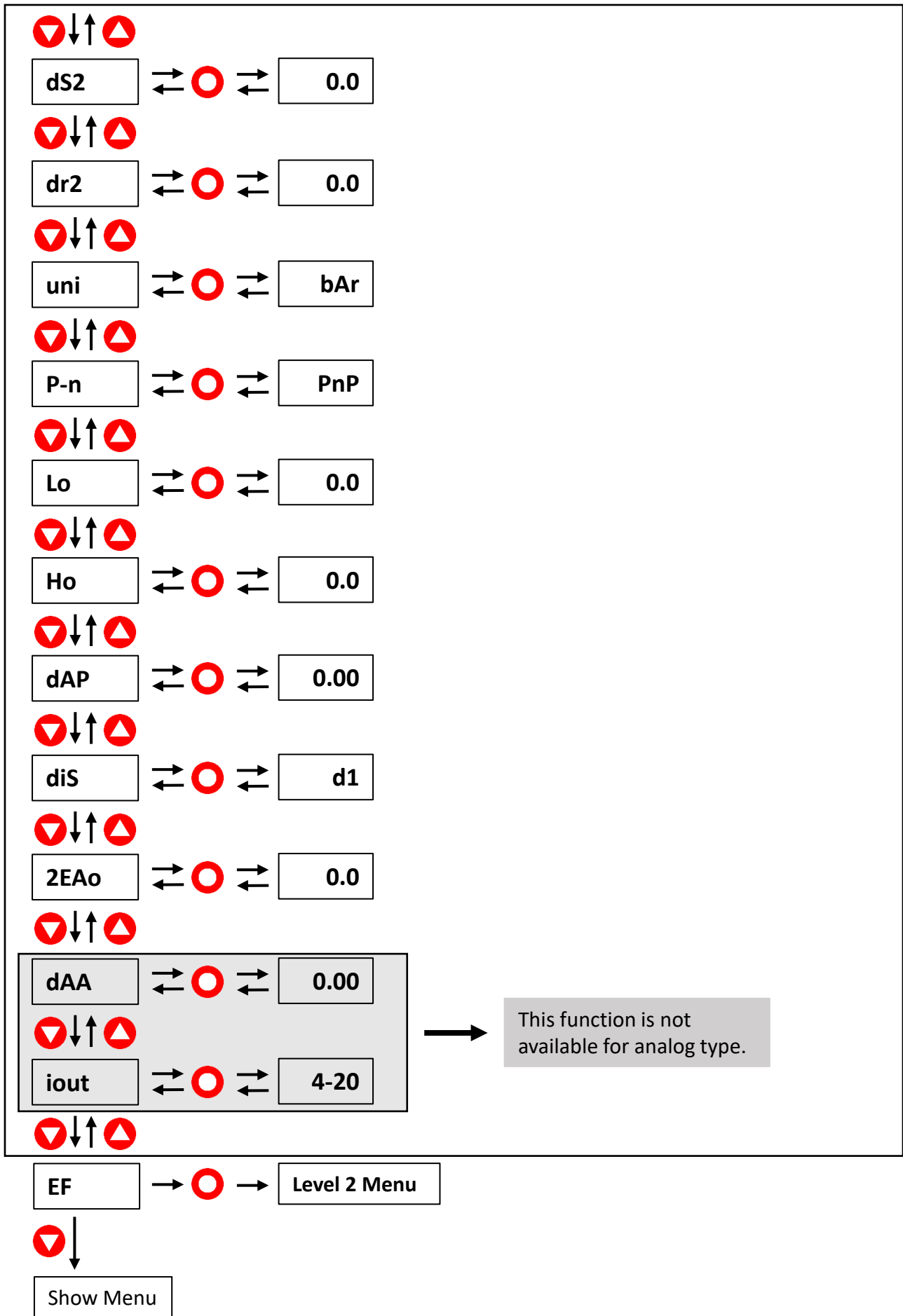
Level 2 MENU

res	Restore factory settings
	Press and hold [▲] 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)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.
ou2	Switch 2 signal: (factory default is HNC) Hysteresis function: HNO (normally open)/HNC (normally closed) Window function: FNO (normally open)/FNC (normally closed)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.
ds1	Opening delay of OUT1 (factory default is 0 seconds)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.
dr1	Closing delay of OUT1 (factory default is 0 seconds)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.
ds2	Opening delay of OUT2 (factory default is 0 seconds)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.
dr2	Shutdown delay of OUT2 (factory default is 0 seconds)
	Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed: Press the button once and the value will increase; Press and hold the button, and the value will continue to change.

	System standard measurement unit (display)
uni	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
	PNP/NPN switching (factory default is PNP)
p-n	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
	Minimum value of system measurement history
LO	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
	Maximum value of system measurement history
H0	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
	Switching point damping/process data flow (IO-Link communication) and display. (0.06 by default)
dap	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
	Update rate and direction of display screen (factory default is d1)
dis	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p> <p>[d1]: update the measured value every 10ms [d2]: update the measured value every 100ms [d3]: update the measured value every 600ms</p>
	Zero cutoff value (% of full scale) (factory default is 0.5)
zeao	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>

	Display screen refresh time: analog 0.1s (factory default is 0.01)
daa	<p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
iout	<p>Output analog switching:</p> <p>Current type: 4-20: (4-20mA) 20-4: (20-4mA) 0-20: (0-20mA) 20-0: (20-0mA)</p> <p>5V voltage type: 1-5: (1-5V) 5-1: (5-1V) 0-5: (0-5V) 5-0: (5-0V)</p> <p>10V voltage type: 1-10: (1-10V) 10-1: (10-1V) 0-10: (0-10V) 10-0: (10-0V)</p> <p>Press and hold [▲] or [▼] for at least 1 second. After 1 second: the setting value can be changed:</p> <p>Press the button once and the value will increase; Press and hold the button, and the value will continue to change.</p>
EF	<p>Expand functions/open level 2 menu</p> <p>Press the [●] key to enter the extended level 2 menu</p> <p>Press [▼] key to exit</p>





Maintenance/Cleaning

The sensor (switch) does not require maintenance.



Warning

Regularly check whether the sensor (switch) works normally.
If the sensor (switch) does not work properly, stop the operation immediately.



Caution

Using improper cleaning agent may damage the sensor (switch).
The following cleaning agents can be used to clean polycarbonate: mild soap or detergent

- Isopropanol

Rinse immediately with clean water after cleaning. Do not leave the cleaner on the product surface. Do not clean the product in high temperature 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 solvent (benzene, gasoline, acetone or carbon tetrachloride)
- Strong alkalinity
- Methyl ethyl ketone
- Abrasive material

Disassemble



Dangerous

Only remove the sensor (switch) when the power is off (electric, hydraulic/pneumatic).
Disconnection of sensor (switch) from pressure and power supply must be carried out by trained or instructed personnel according to the most advanced standards.



Warning

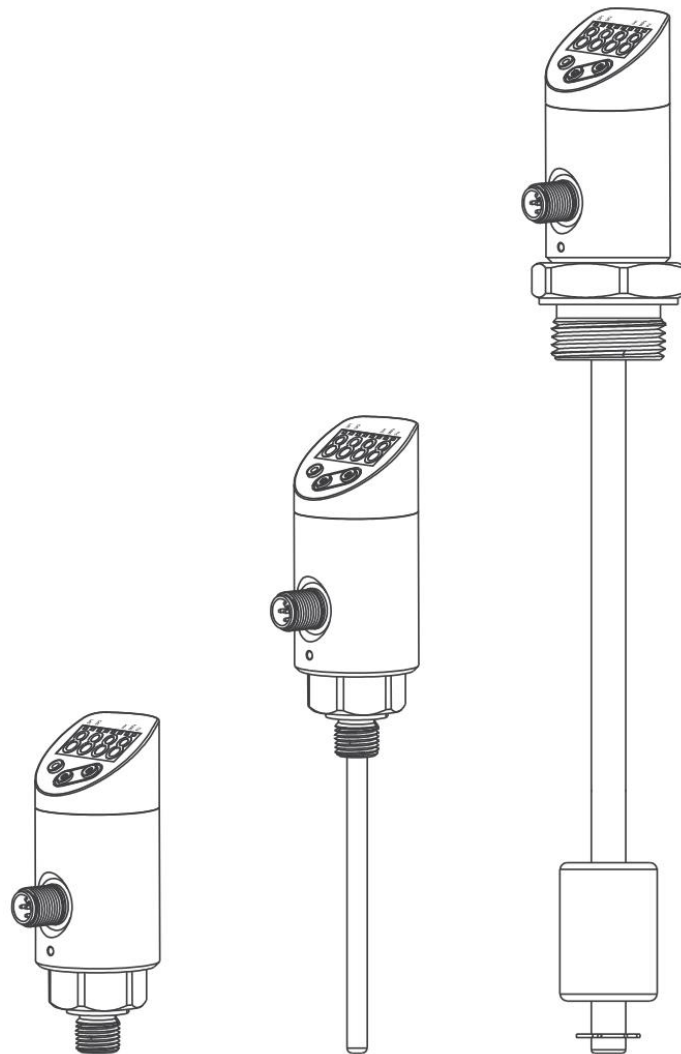
Please note that if the operating temperature is high, the housing surface may become very hot!

—— 传感器与控制器 ——

■流量 ■压力 ■温度 ■液位 ■位置



电子式液位传感器 操作说明



产品应用目的

传感器（开关）有两个开关输出和一个模拟输出。



危险

该传感器（开关）只能用于指定的应用范围。

温度范围必须在允许的范围内。不超过额定压力和电力负荷值。

必须按照适用的国家和地方安全指令进行组装，调试和操作。

开关设计用作的安全装置加压系统根据“压力设备指令97/23/EC (PED)”。

标准

在开发、制造和配置过程中应用的标准列于CE符合性和制造商声明中。

质量保证

我们的交付和服务范围受法律保证和保修期限的约束。

保证条款

我们保证传感器（开关）在正常运行和维护条件下的功能和材料符合法定规定。

损失的担保

如：

- 不正确的使用；
- 不正确的安装；
- 不正确的操作或操作违反本操作说明书的规定。

由此造成的任何损害或相应的任何损害不承担任何责任。

安全指令

安全说明旨在保护用户免受危险情况和/或防止材料损坏。

在操作说明书中，潜在风险的严重性可以用以下信号词来表示。



危险

指用户面临的迫在眉睫的危险。不遵守可能导致致命的伤害。



警告

指可识别的危险。

不遵守可能导致致命的伤害，并破坏设备或工厂部件。



谨慎

指的是一种危险。

不遵守可能会对传感器（开关）和/或工厂造成轻微伤害和物质损害。



重要的

指对用户至关重要的信息。



处理

传感器（开关）必须按照国家或地方有关电气/电子设备的规定正确处理。

传感器（开关）不能与家庭垃圾一起处理！

产品特点

全金属外壳设计，采用高亮型LED数字显示，使得该系列产品能够被用于各种工业场合。三键设计和菜单使产品使用更加方便，多种连接方式可以充分满足各种特定的安装需求。可330° 旋转的本体能保证在不同安装方式下获得最佳的观察角度。

开关功能

如果开关高于或低于设定的开关限值（SP、rP），则会改变其开关状态。

可以选择以下开关功能：

◆ 迟滞功能常开： = 【Hno】（→ 图1）

◆ 迟滞功能常闭： = 【Hnc】（→ 图1）

首先设定开关点（SP），然后设定复位点（rP）。

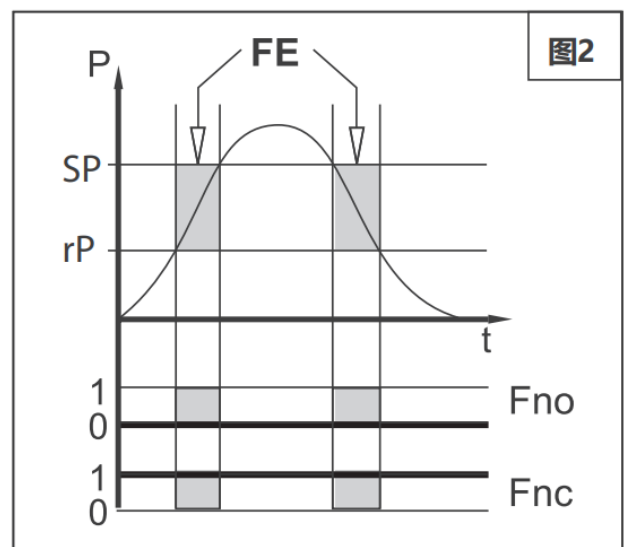
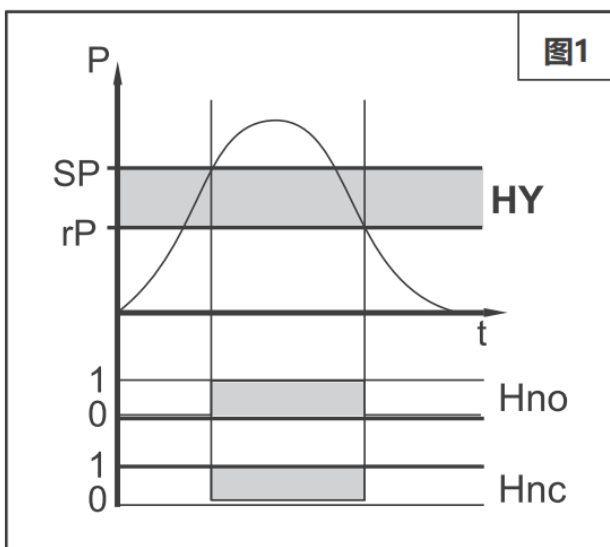
如果SP再次更改，迟滞也将会随着改变。

◆ 窗口功能常开： = 【Fno】（→ 图2）

◆ 窗口功能常闭： = 【Fnc】（→ 图2）

可通过SP与rP的差值设定窗口的宽度。

SP=上限值， rP=下限值。



P = 系统压力； HY = 迟滞； FE = 窗口

安装

安全说明旨在保护用户免受危险情况和/或防止材料损坏。

在操作说明书中，潜在风险的严重性可以用以下信号词来表示。



谨慎

在运输过程中必须避免震动和剧烈震动。即使传感器（开关）外壳没有损坏，内部部件也可能损坏并引起故障。

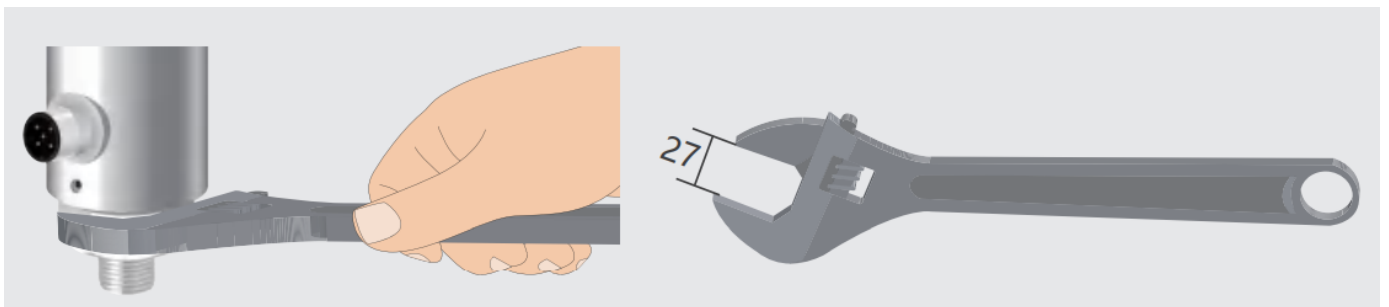


危险

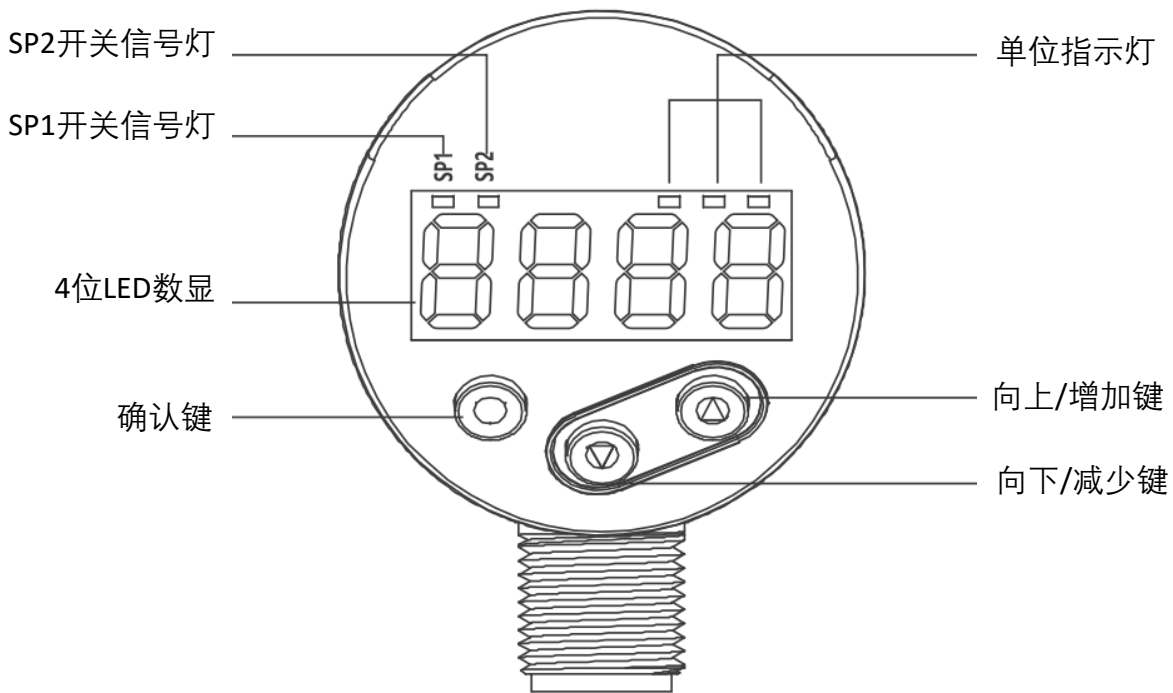
传感器（开关）只能安装在不超过最大压力 P_{max} 的系统中
只有在断电（电、液压/气动）时才安装传感器（开关）。

！安装和拆除传感器前请确认系统为承受任何压力。

- 将传感器设备按照选配的过程接口连接上
- 充分紧固，推荐拧紧扭矩范围：25- 35Nm
- 在关键应用场合（如剧烈震动或冲击），压力管接头可以通过微型软管进行机械解耦。



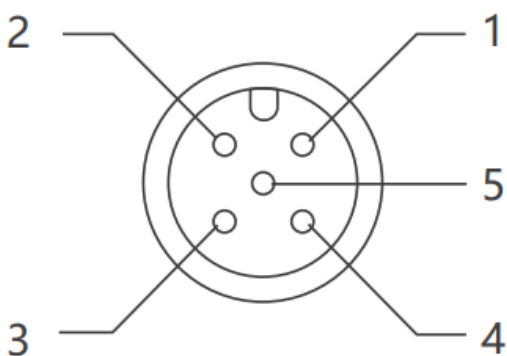
面板说明



电气连接

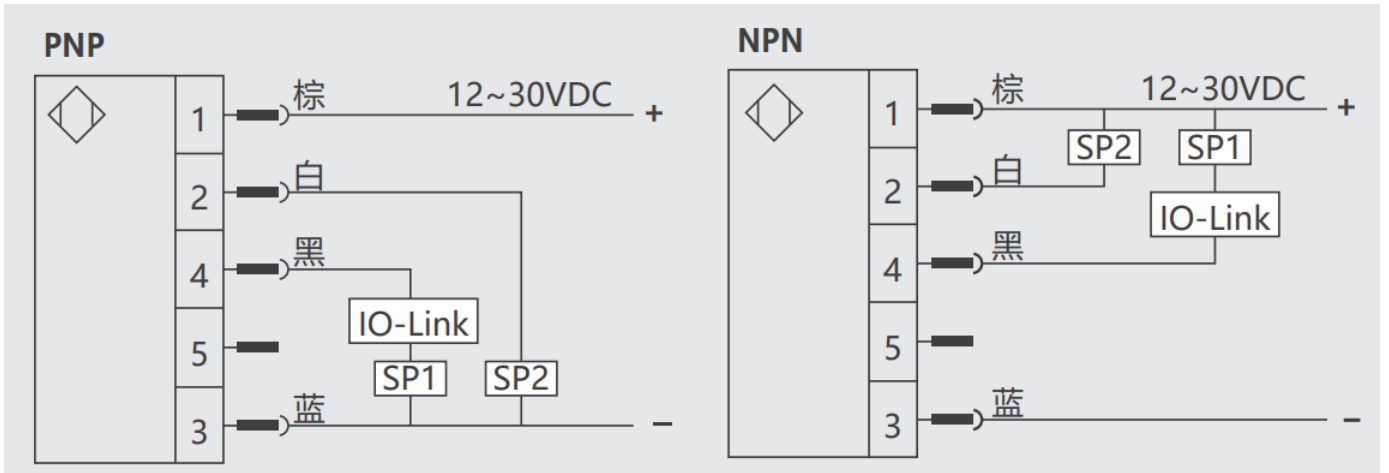
！务必由合格的电工对产品进行接线，务必遵守电气设备安装相关的国内和国际规范。电源电压应符合EN50178、SELV、PELV标准

- 切断电源
- 按下图对应接线方法对产品进行接线

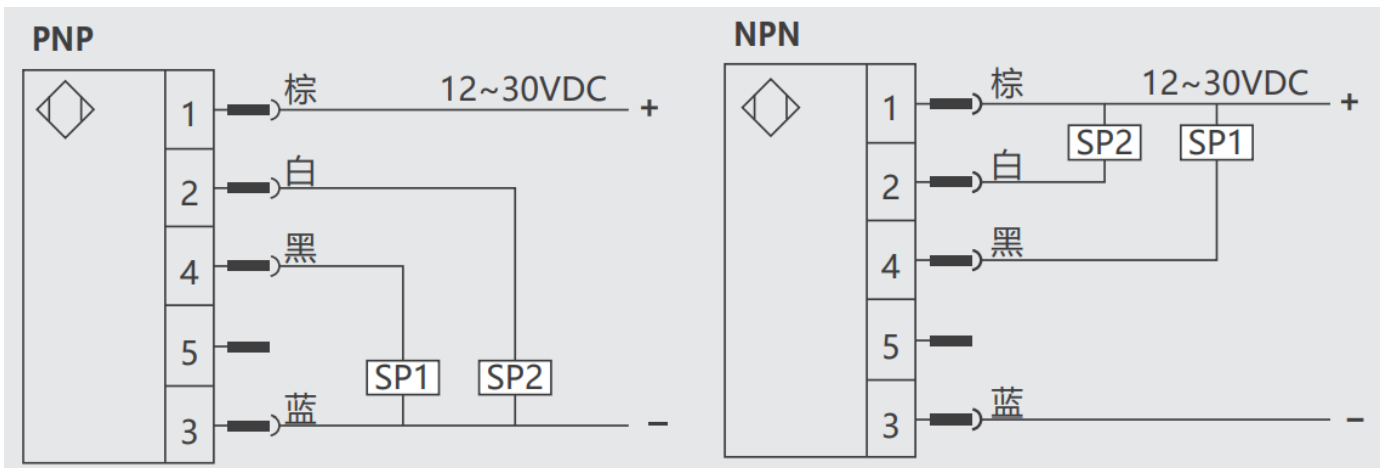


1	棕色	电源正
2	白色	开关输出SP2(模拟量)
3	蓝色	电源负
4	黑色	开关输出SP1(IO-Link)
5	灰色	模拟输出（电压或电流）

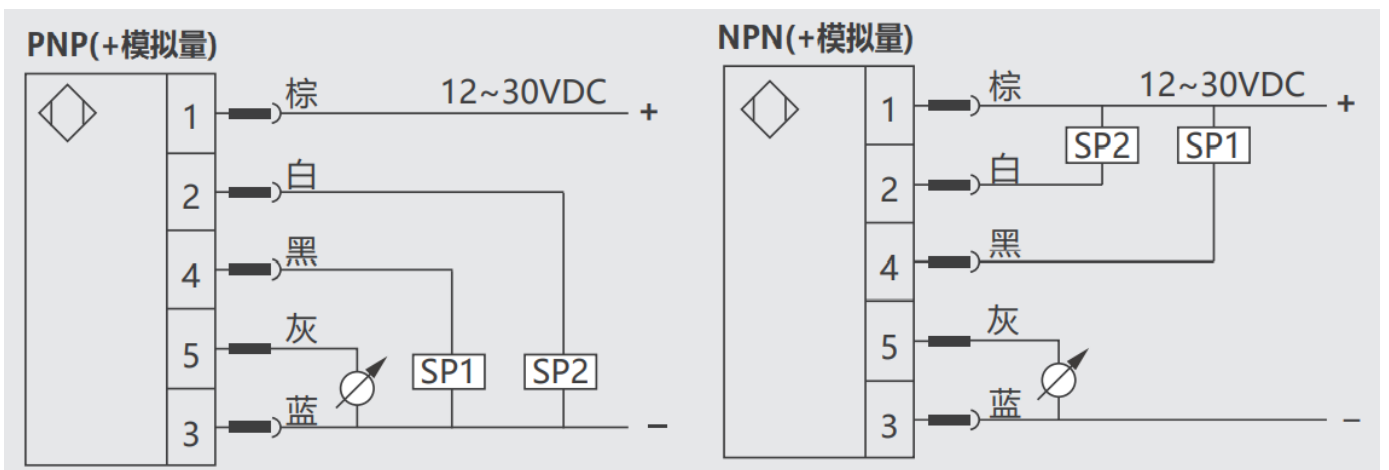
两个开关 + (IO-Link)



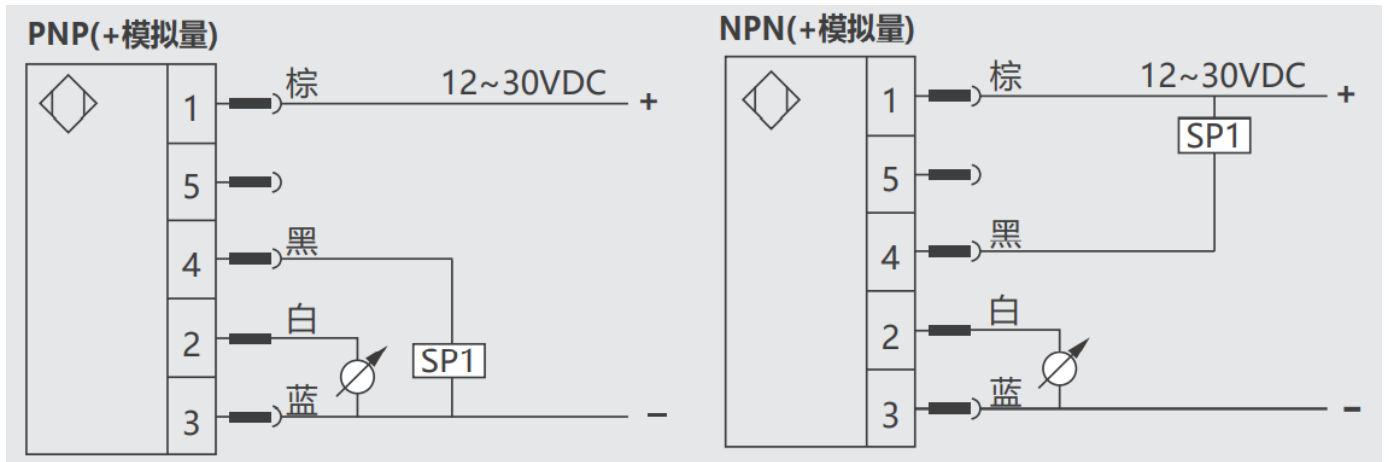
两个开关



两个开关 + 一路模拟量



一个开关 + 一路模拟量



调试/操作

传感器（开关）只能由授权人员进行调试和操作。



谨慎

当传感器（开关）本身或连接电缆损坏时，请勿将开关投入工作。

不要使用任何尖锐、坚硬的物体来制作条目。钥匙可能被尖尖的硬物损坏。



警告

请注意，如果操作温度较高，套管表面可能会变得非常热！

1级菜单

sp1	开关 1 报警值（出厂默认值为量程的0.2%）	恢复出厂设置，量程基准参考值
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
rp1	开关 1 复位值（出厂默认值为SP1-0.5%）	
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
sp2	开关2报警值（出厂默认值为量程的0.8%）	
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
rp2	开关 2 复位值（出厂默认值为SP2-0.5%）	
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
asp	量程下限值（出厂默认为量程下限）	
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
aep	量程上限值（出厂默认为量程上限）	
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改；按一下按钮，值会递增；按住按钮不放，值会持续更改。	
EF	扩展功能/打开2级菜单	
	按【●】键，进入扩展2级菜单	
	按【▼】键，退出	

2级菜单

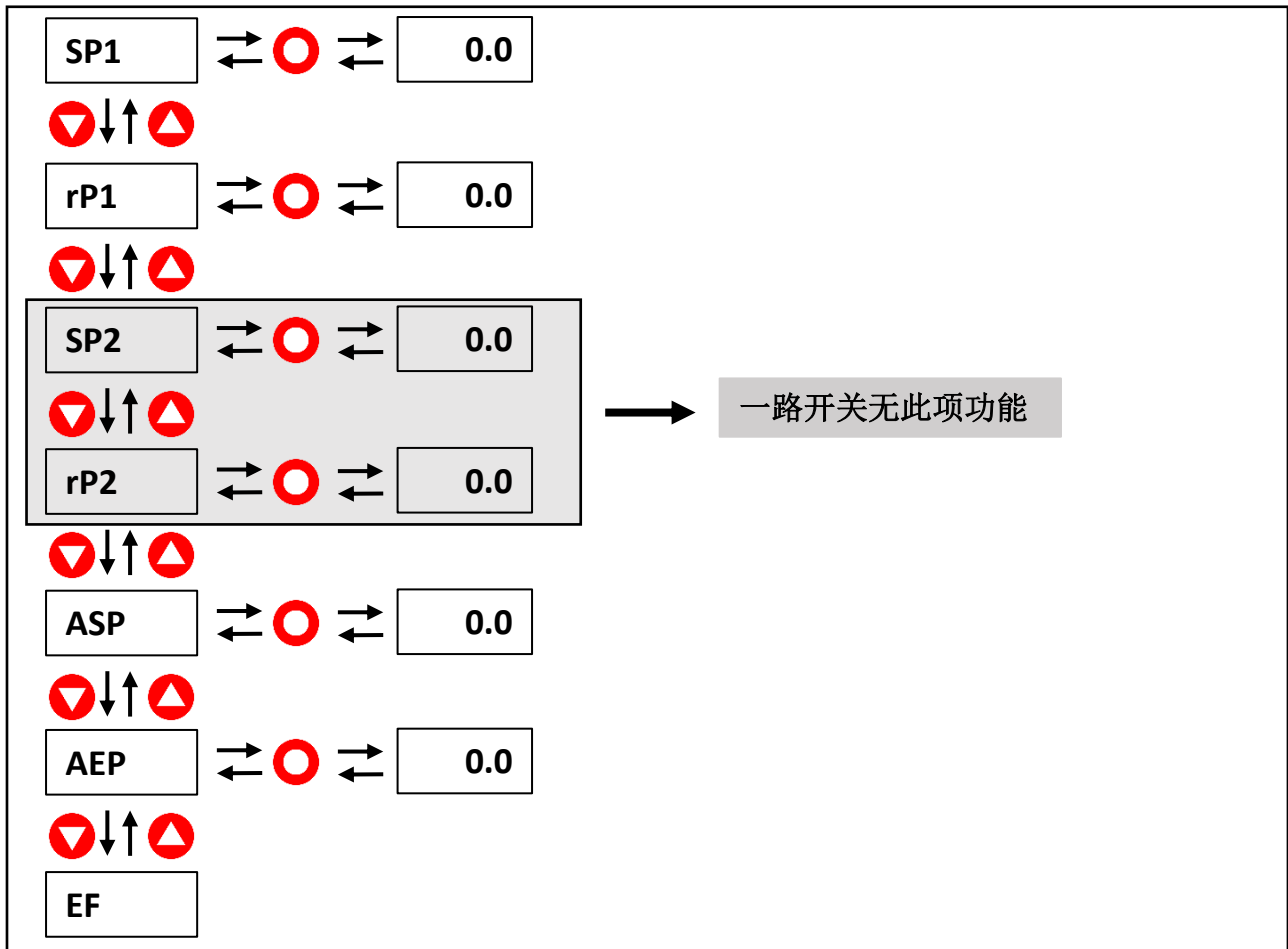
res	恢复出厂设置
	长按【▲】恢复出厂设置
ou1	开关 1信号：（出厂默认为HNO） 迟滞功能：HNO（常开）/HNC（常闭） 窗口功能：FNO（常开）/FNC（常闭）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
ou2	开关 2信号：（出厂默认为HNC） 迟滞功能：HNO（常开）/HNC（常闭） 窗口功能：FNO（常开）/FNC（常闭）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
ds1	OUT1的开启延迟（出厂默认为0秒）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
dr1	OUT1的关闭延迟（出厂默认为0秒）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
ds2	OUT2的开启延迟（出厂默认为0秒）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
dr2	OUT2的关闭延迟（出厂默认为0秒）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。

uni	系统标准测量单位（显示）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
p-n	PNP/NPN 切换（出厂默认为PNP）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
LO	系统测量历史最小值
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
HO	系统测量历史最大值
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
dap	开关点阻尼/过程数据流（IO-Link通信）和显示。（出厂默认为0.06）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。
dis	显示屏的更新速率和方向（出厂默认为d1）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。 【d1】：每10ms更新一次测量值 【d2】：每100ms更新一次测量值 【d3】：每600ms更新一次测量值
zeao	零位切除值（满量程%）（出厂默认为0.5）
	按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。

	显示屏刷新时间：模拟0.1s（出厂默认为0.01）
daa	<p>按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。</p>
iout	<p>输出模拟量切换：</p> <p>电流型：4-20：（4-20mA） 20-4：（20-4mA） 0-20：（0-20mA） 20-0：（20-0mA）</p> <p>5V电压型：1-5：（1-5V） 5-1：（5-1V） 0-5：（0-5V） 5-0：（5-0V）</p> <p>10V电压型：1-10：（1-10V） 10-1：（10-1V） 0-10：（0-10V） 10-0：（10-0V）</p>
	<p>按住【▲】或【▼】至少1秒。1秒后：设定值可更改： 按一下按钮，值会递增；按住按钮不放，值会持续更改。</p>
	扩展功能/打开2级菜单
EF	<p>按【●】键，进入扩展2级菜单 按【▼】键，退出</p>

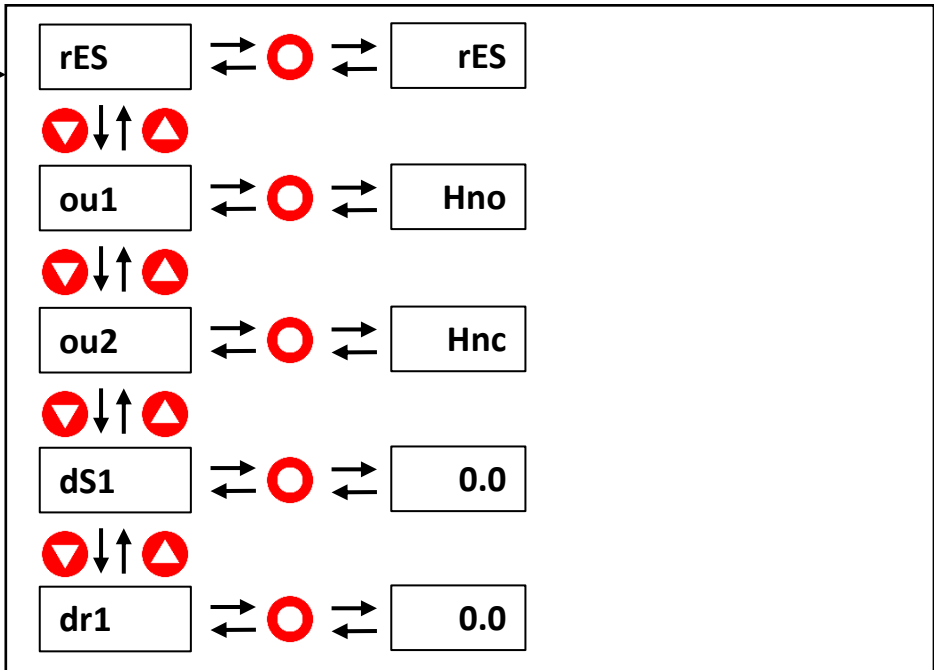
显示菜单

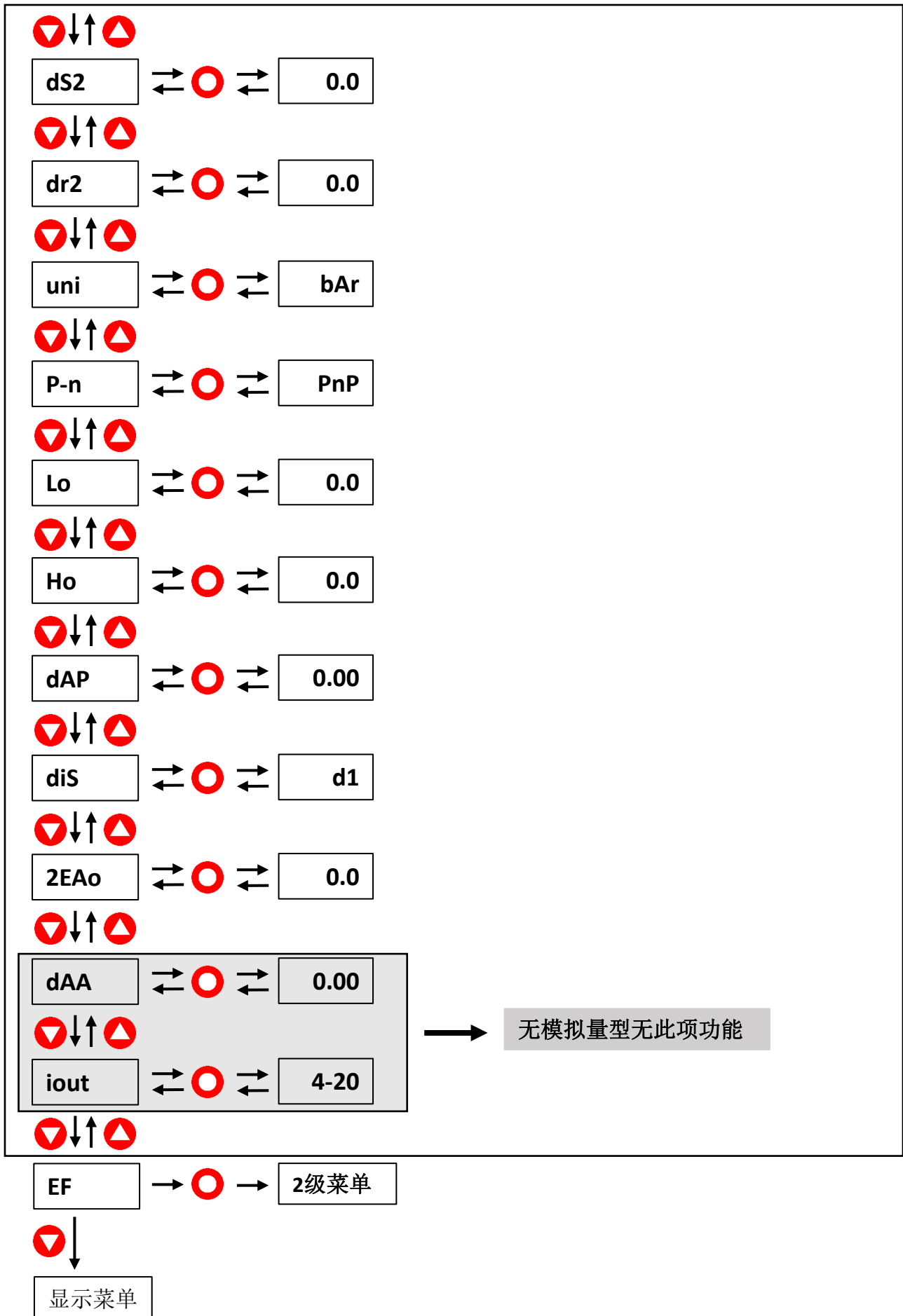
↓ ○ 1级菜单



○ 2级菜单

显示菜单





维护/清洗

传感器（开关）不需要维护。



警告

定期检查传感器（开关）是否正常工作。

如果传感器（开关）不能正常工作，立即停止操作。



谨慎

使用不适当的清洗剂可能会损坏传感器（开关）。

下列清洗剂可用于清洗聚碳酸酯: 温和的肥皂或洗涤剂

异丙醇

清洗后，立即用清水冲洗。不要将清洁剂留在产品表面。不要在高温或阳光直射下清洁产品。下列清洗剂已知会影响聚碳酸酯组件的完整性，不应使用: ZEP Fast

505, Pinesol, 公式409

卤代溶剂(苯、汽油、丙酮或四氯化碳)

强碱性

甲乙酮

研磨物质

拆卸



危险

只有在断电时（电、液压/气动）才拆下传感器（开关）。

传感器（开关）与压力和电源的断开必须由经过培训或指导的人员按照最先进的标准进行。



警告

请注意，如果操作温度较高，壳体表面可能会变得非常热！