PSW2100

INSTRUCTION SHEET

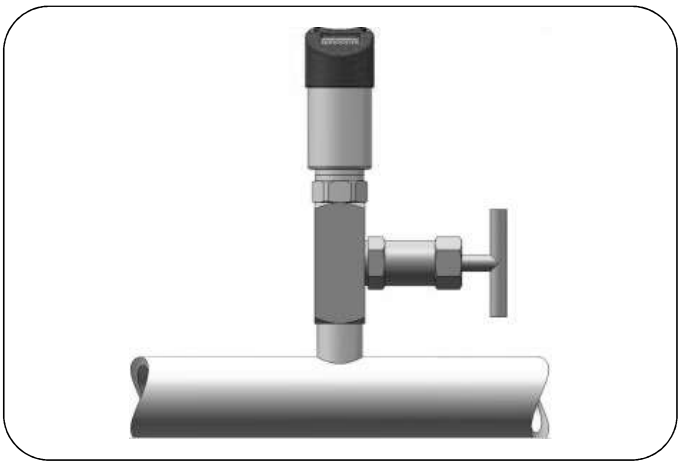
M-5762/0320

Safety precautions

⚠ Pressure switch is powered by an external power supply. The power supply should be in accordance with relevant standards stipulated by energy limitation circuit, and special attention should be given to the high-voltage that may exist in the circuit.

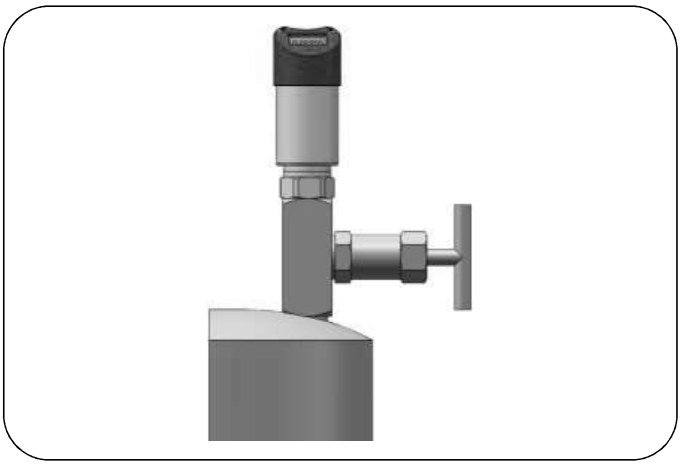
Product usage

Pipe pressure measurement



Can be installed with adapters on the pipe directly.

Container pressure measurement

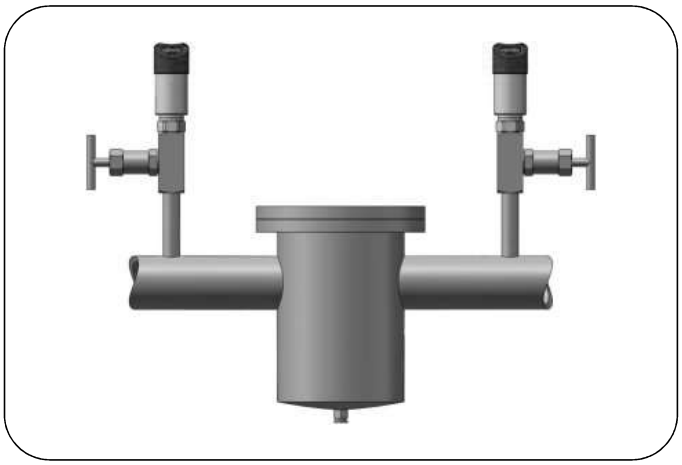


After the pressure in vessel is stable, slowly open the shut-off valve to start measuring.

Container level measurement

Can be used for liquid level measurement in open container. Media compatibility should be considered.

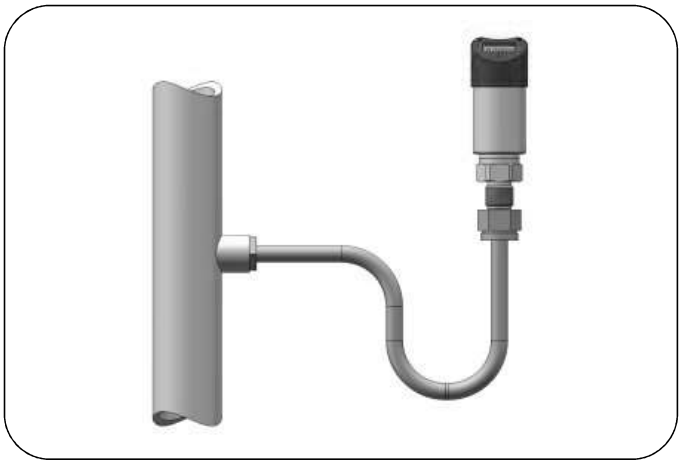
Differential pressure measurement system



Two pressure switches can be used to create a differential measurement system, commonly used in the filter control or closed container level measurement.

Install pressure transmitter

Direct installation

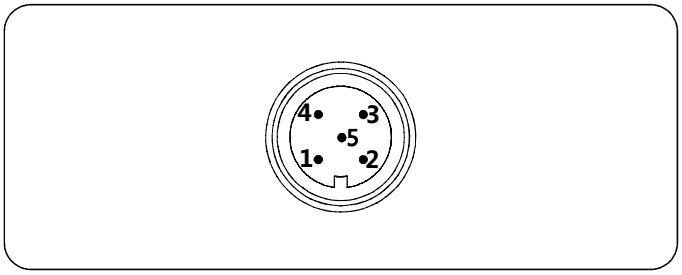


Light-weight pressure switch can be mounted directly on the pressure leading tube. When installing the maximum torque force can not exceed 50Nm.

⚠
- **Do not install the instruments in medium flow area or the position of pressure impact.**
- **Install the instruments downstream of the valve for easy calibration and function testing.**
- **The installation position may affect measurement accuracy. For example: the measured value is not zero under the condition of normal atmospheric pressure. If this occurs, refer to the section "zero point adjustment".**

Process connection

Aviation plug (M12*1, 5 pins)

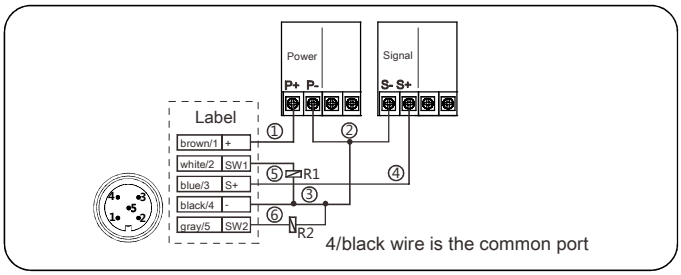


1	2	3	4	5
Power+	Transistor output 2	Power-	Transistor output 1	*Signal+

*Signal: 4~20mA, 1-5VDC

Signal connection

4~20mA five wires + two way transistor output (PNP)



① Connect the positive power supply (P+) to the terminal 1/brown wire of pressure switch;

② Connect the negative signal module (S-) to the negative power supply(P-);

③ Connect the negative signal module (S-) to the negative power supply(P-) and then connect to the terminal 4/black wire of pressure switch;

④ Connect the positive signal module (S+) to the terminal 3/blue wire of pressure switch;

⑤ Connect the first way transistor to the terminal 2/white wire of pressure switch;

⑥ Connect the second way transistor to the terminal 5/gray wire of pressure switch.

⚠ **The signal connection of 4~20mA + two way NPN output is similar as above. Just note the common port in the fifth and sixth step is positive power supply (1/brown is the common port)**

Power supply

A zero point adjustment should be made after installation to counter any effects the mounting position may have on the zero setting. When performing the adjustment, the vessel should be completely empty, with no pressure or media on the measuring diaphragm and the vessel exposed to atmospheric air. With unit powered, short the key-z wire (blue) to the + power lead. hold for 5 seconds, when removed the zero point will be adjusted.Set the zero point three weeks after installation to ensure accuracy, and reset zero point annually.

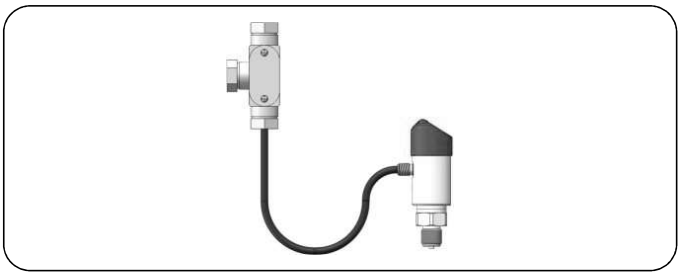
- Standard current signal output+transistor output: 12-30VDC,
- Transistor output: 12-30VDC.

Grounding

- A cable with a shielded twisted-pair signal is recommended to avoid ground loop.
- The built-in transient resistance module is only effective if properly grounded. The metal body and internal grounding terminals should be directly grounded.

Cable protection system

Standard protection system



To safeguard against liquid media potentially traveling along the cable into the terminal box, the cable should be configured in a U-shape as shown, with the bottom of the “U” lower than the bottom of the pressure switch.

Zero point adjustment

- A zero point adjustment should be made after installation to counter any effects the mounting position may have on the zero setting.
- When performing the adjustment, the vessel should be completely empty, with no pressure or media on the measuring diaphragm and the vessel exposed to atmospheric air.
- With unit powered, short the key-z wire (blue) to the + power lead. hold for 5 seconds, when removed the zero point will be adjusted.
- Set the zero point three weeks after installation to ensure accuracy, and reset zero point annually.
- Set PV=0 each year.

External cleaning

Please observe the following when cleaning:

- Use a cleaner that is compatible with pressure switch materials
- Clean carefully to ensure that the pressure port isn't damaged (e.g. with a sharp object)
- Do not directly spray electrical connection or gauge vent with water or cleaner.

Transportation / storage

- Do not store outside.
- Keep dry and dust-free.
- Do not expose to the corrosive medium.
- Avoid solar radiation.
- Avoid mechanical shock and vibration.
- Storage temperature: -40-185℉(-40-85℃).
- Maximum relative humidity: 95%.

EMC statement

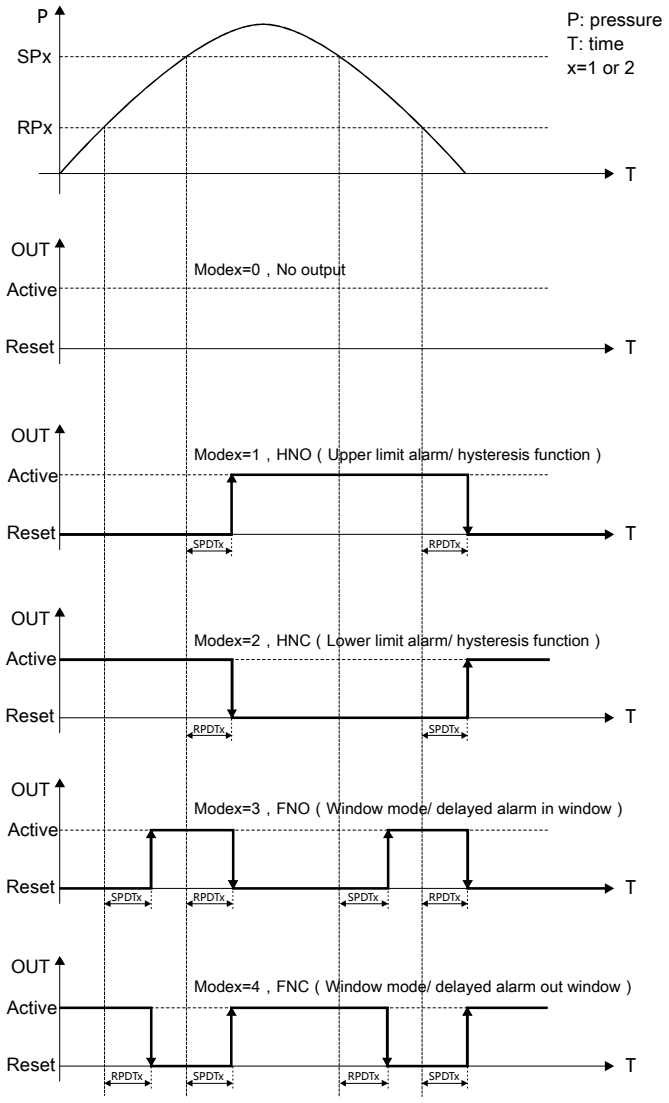
- EMC equipment instructions 2014/30/EU.
- CE mark suggests the instruments are in line with EU standards
- Users need to ensure the whole equipment conform to all the applicable standards.

Alarm settings function

Lable	Item	Setting range	Description
SPx (Note1)	OUT upper limit	-99999~99999	Upper limit value of transistor output
Rpx	OUT lower limit	-99999~99999	Lower limit value of transistor output
SPDTx	OUT output delay	0.0~60.0(S)	Delay time before transistor output active
RPDTx	OUT reset delay	0.0~60.0(S)	Delay time before transistor output reset
Modex	OUT working mode	Modex=0	No output. OUTx keeps reset state
		Modex=1	Measured value > SPx, delay SPDTx, OUTx active (Note2)
			Measured value < RPx, delay RPDTx, OUTx reset (0V, the same below)
		Modex=2	Measured value > SPx, delay SPDTx, OUTx reset
			Measured value < RPx, delay RPDTx, OUTx active
		Modex=3	RPx < measured value < SPx, delay SPDTx, OUTx active
			Measured value > SPx or measured value < RPx, delay RPDTx, OUTx reset
		Modex=4	Measured value > SPx or measured value < RPx, delay SPDTx, OUTx active
			RPx < measured value < SPx, delay RPDTx, OUTx reset

Notes: 1. x =1 or 2, SPx ≥ RPx
2. Active electrical level is 2V lower than power supply level. Eg, power supply level is 24V, then active electrical level is 22V.

Oscillogram of alarm function



Application

High level alarm

Output alarm signal when pressure is higher than 145Psi. Normal setting: SP1=145Psi, RP1=137.78Psi, Mode1=1, SPDT1=1, RPDT1=1. Pressure rises to 145Psi, delay 1s, OUT1 active (on); pressure drops to 137.78Psi, delay 1s, OUT1 reset (off)

Low level alarm

Output alarm signal when pressure is lower than 145Psi. Normal setting: RP1=145Psi, SP1=152.28Psi, Mode1=2, SPDT1=1, RPDT1=1. Pressure drops to 145Pssi, delay 1s, OUT1 active (on); pressure rises to 152.28Psi, delay 1s, OUT1 reset (off)

Window function

Starting devices normally requires pressure is within the range 72.51~145Psi. Normal setting: SP1=145Psi, RP1=72.51Psi, Mode1=3, SPDT1=1, RPDT1=1. Pressure rises to 145Psi, delay 1s, OUT1 active (on); pressure rises to 145Psi, delay 1s, OUT1 reset (off); Pressure drops to 145Psi, delay 1s, OUT1 active (on); pressure drops to 72.51Psi, delay 1s, OUT1 reset (off)

Automatically keep pressure function

Applying pressure on a device by a compressor and keeping the pressure within the range 72.51~145Psi need two ways output. The first way output controls the compressor and the second way output controls the device. The first way output setting: SP1=130.53Psi, RP=87.02Psi, Model=2, SPDT1=1, RPDT1=1. The first way contact controls the power supply of compressor through intermediate relay to disconnect once the pressure is higher than 130.53Psi and connect once the pressure is lower than 87.02Psi. The pressure value needs to be controlled within 87.02~130.53MPa. The second way output setting: SP2=145Psi, RP2=72.51Psi, Mode2=3, SPDT2=1, RPDT2=1. Once the working pressure of device is not within the range 72.51Psi~145Psi, after 1s, the second way contact controls the alarm output of the device through intermediate relay to ensure the abnormal working pressure of the device can be discovered and handled in time.

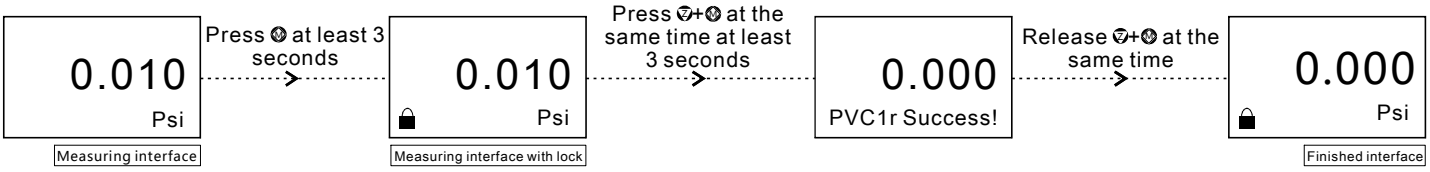
Display function

Display module is used for field adjustment to complete all the parameters setting and site configuration before measuring.

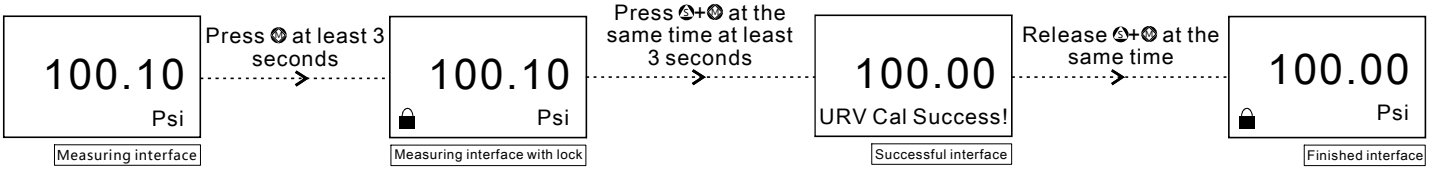
Keys operation

For example, factory setting parameters: pressure range -10-100Psi, display unit Psi, operate in the atmosphere.

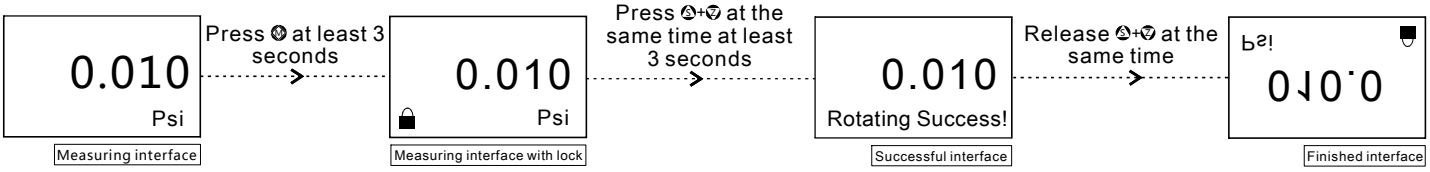
Set PV=0



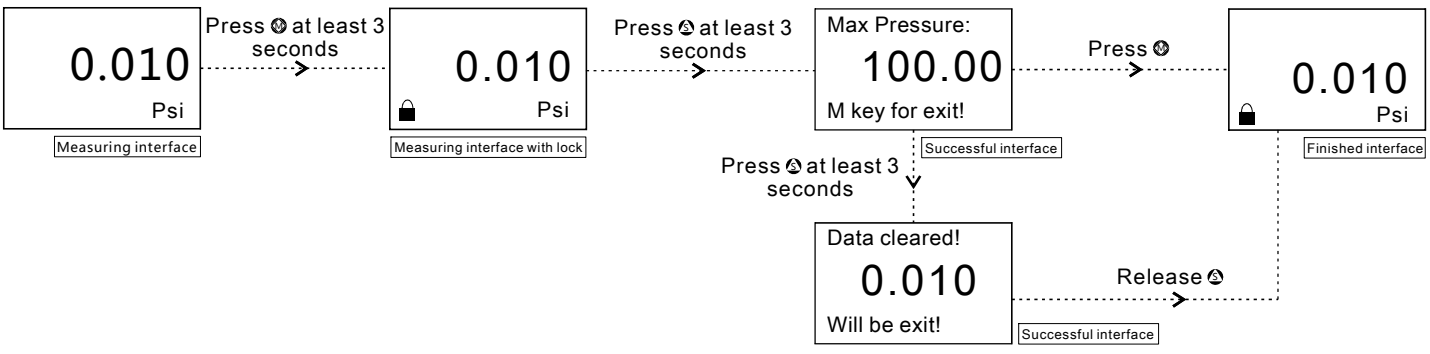
Span adjustment



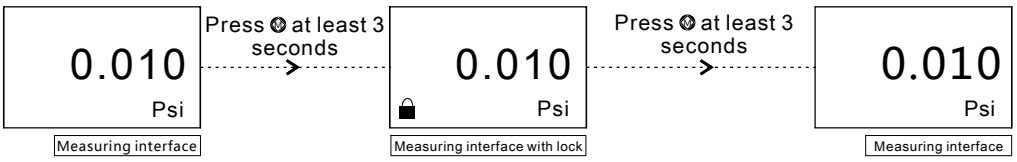
180° shift display



Check peak pressure

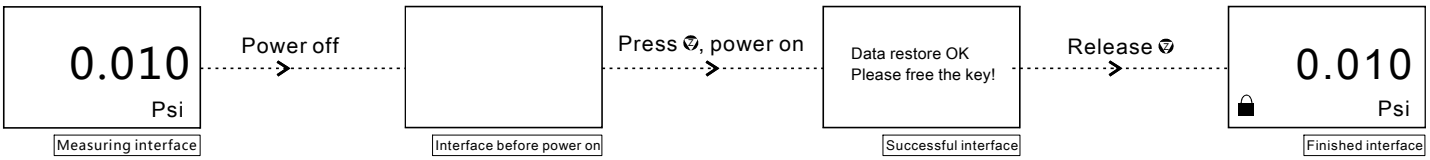


Switch to lock/unlock

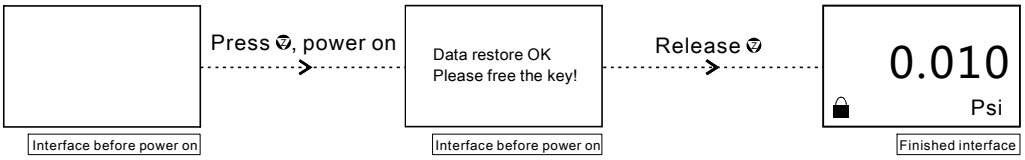


Factory reset

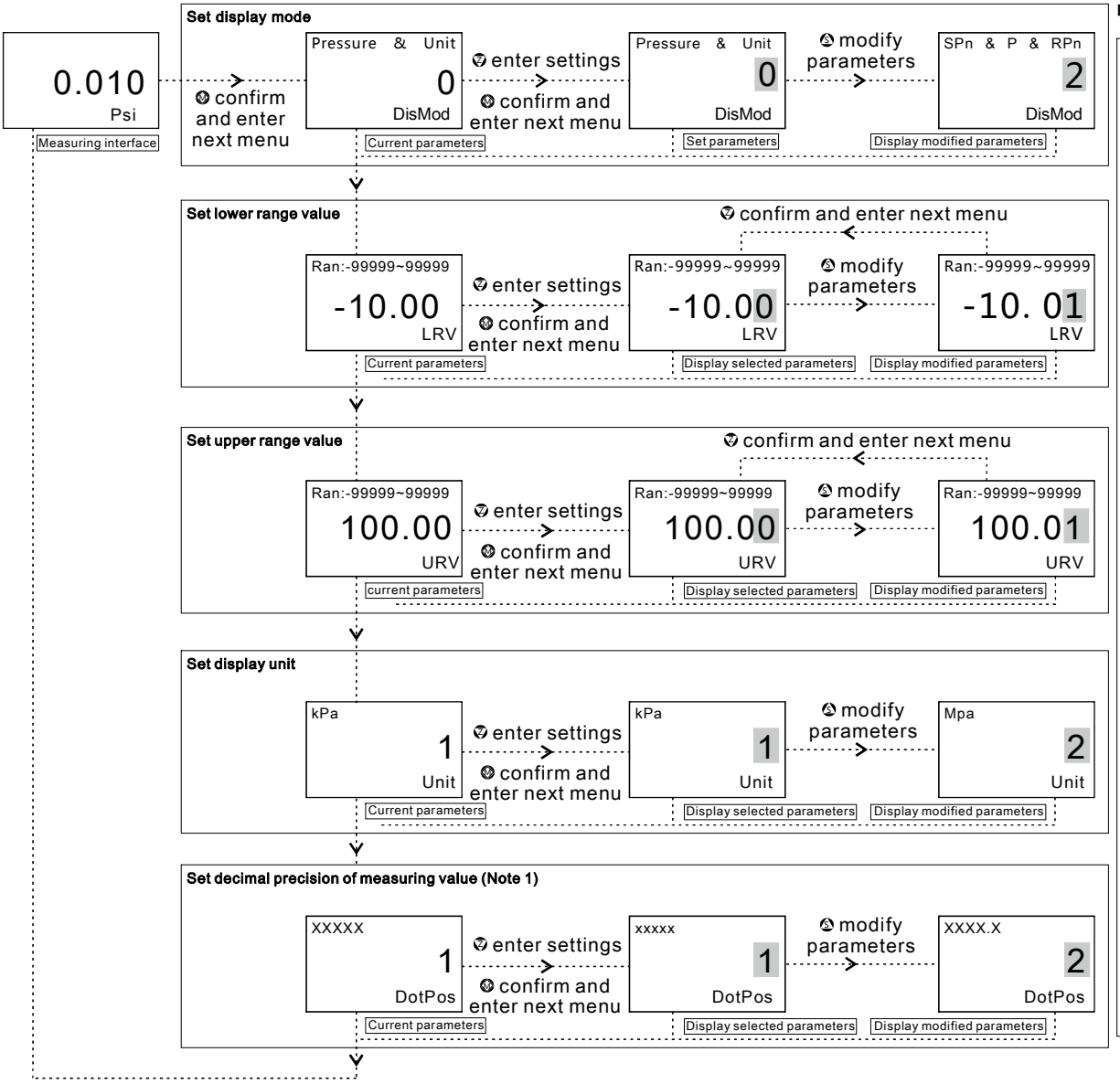
method 1



method 2



Detailed operating instructions



Parameters table

Dispaly mode

0	Pressure & Unit	Two rows display: PV & Unit
1	XXX% & P & Unit	Three rows display: percentage; pv & unit
2	Spn & P & RPn	Three rows display: SP1&RP1 alternate display, SP2&RP2 alternate display

Lower range value

-99999~99999

Upper range value

-99999~99999

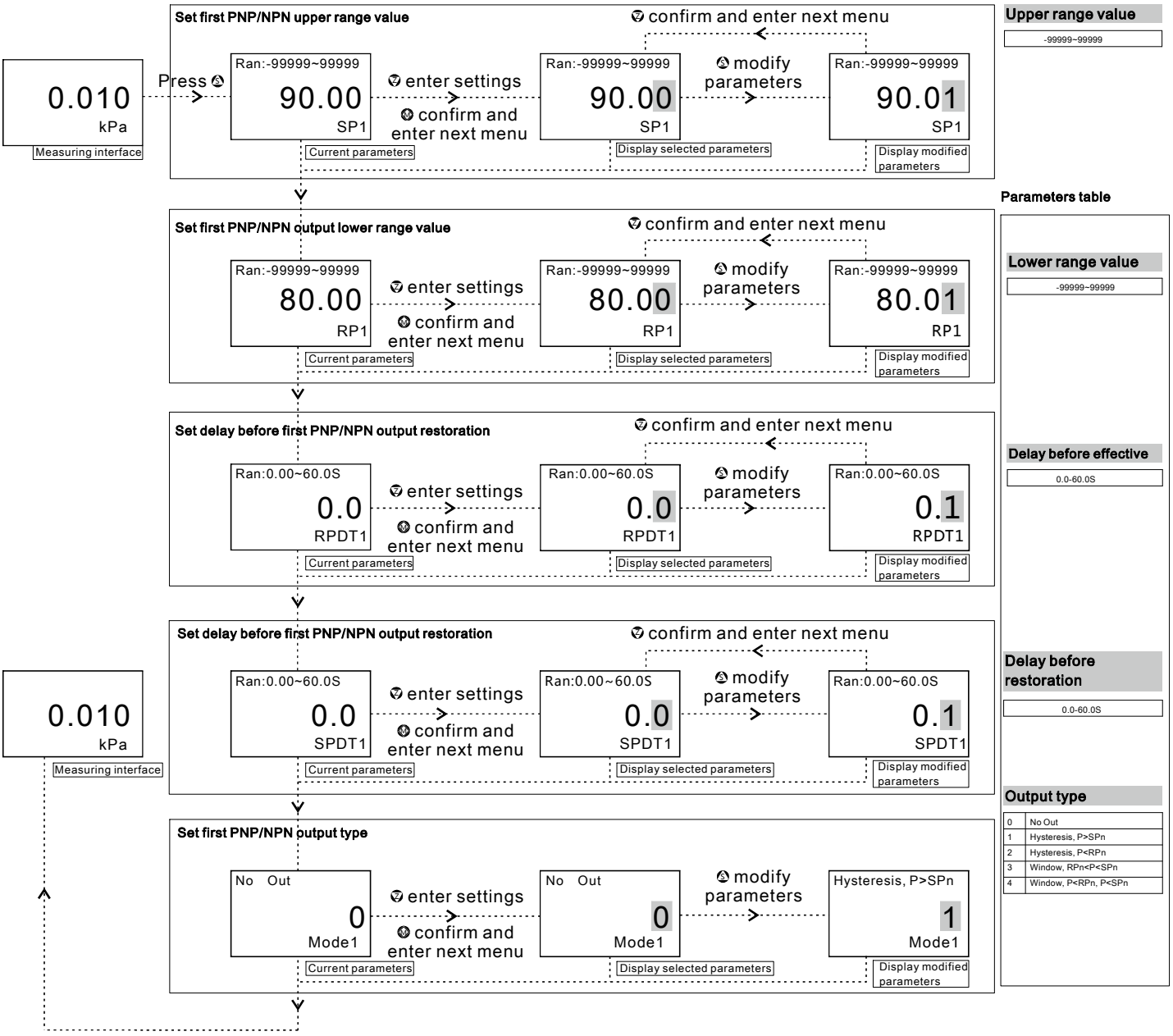
Process unit

0	-
1	kPa
2	MPa
3	Pa
4	bar
5	mBar
6	Psi
7	mH2O
8	mmH2O
9	cmH2O
10	mmHg
11	Torr
12	Atm

Display mode

0	Auto	Optimal display mode
1	xxxxx	Integer, no decimal
2	xxxx.x	One decimal
3	xxx.xx	Two decimal
4	xx.xxx	Three decimal
5	x.xxxx	Four decimal

Set first PNP/NPN output parameters



Parameters table

Upper range value

-99999~99999

Lower range value

-99999~99999

Delay before effective

0.0-60.0S

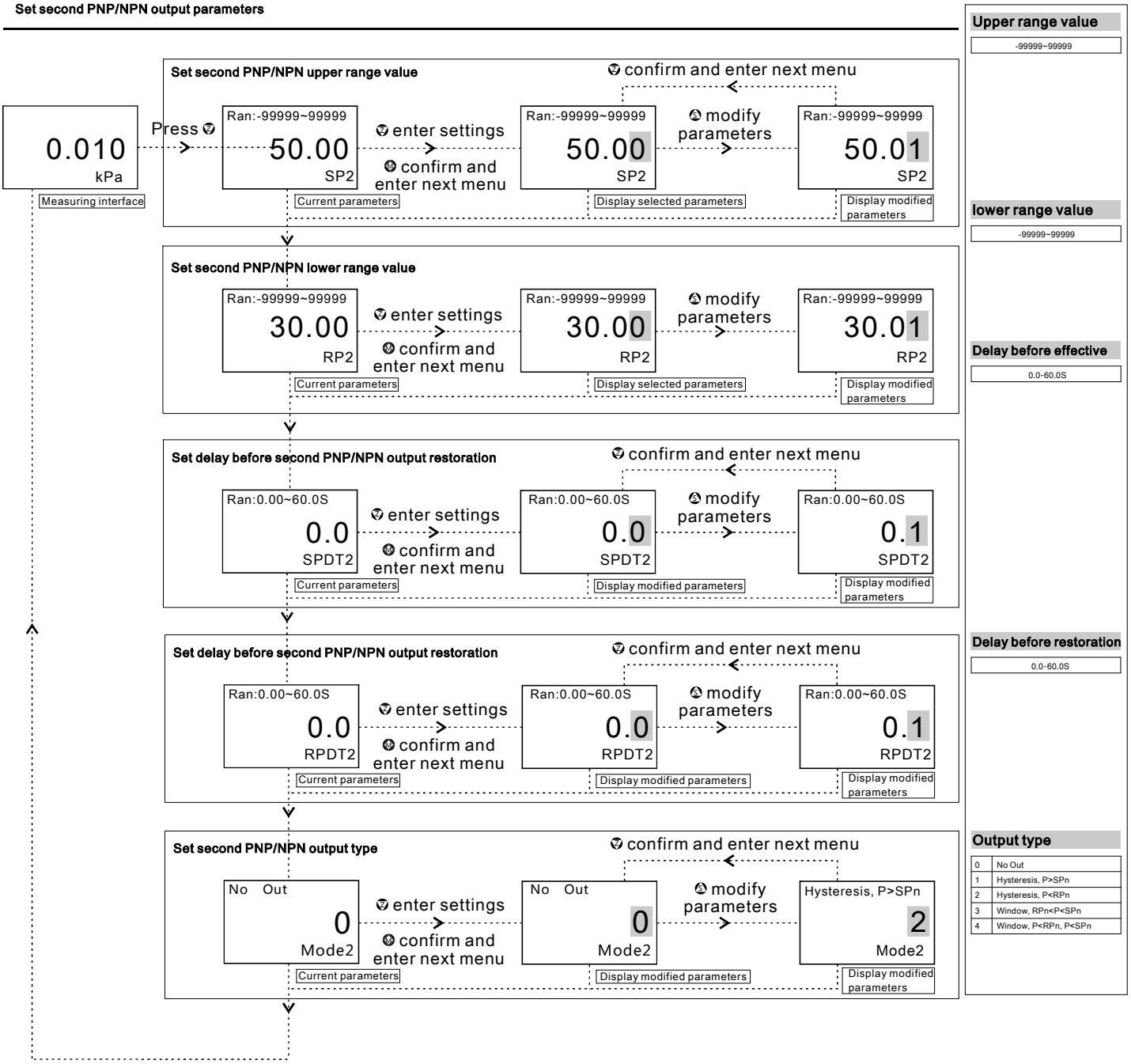
Delay before restoration

0.0-60.0S

Output type

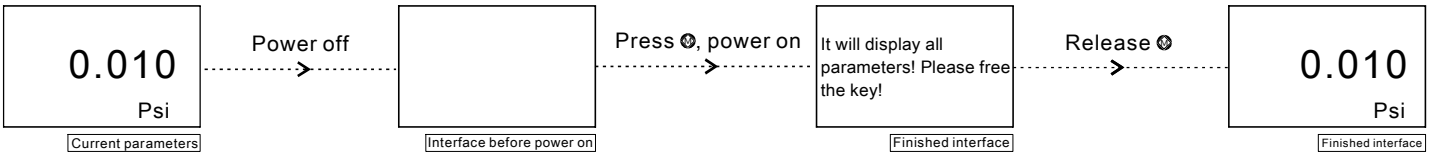
0	No Out
1	Hysteresis, P>SPn
2	Hysteresis, P<RPn
3	Window, RPn<P<SPn
4	Window, P<RPn, P<SPn

Set second PNP/NPN output parameters

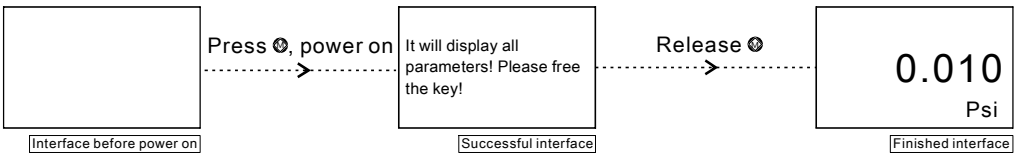


Display hidden parameters

Method one:

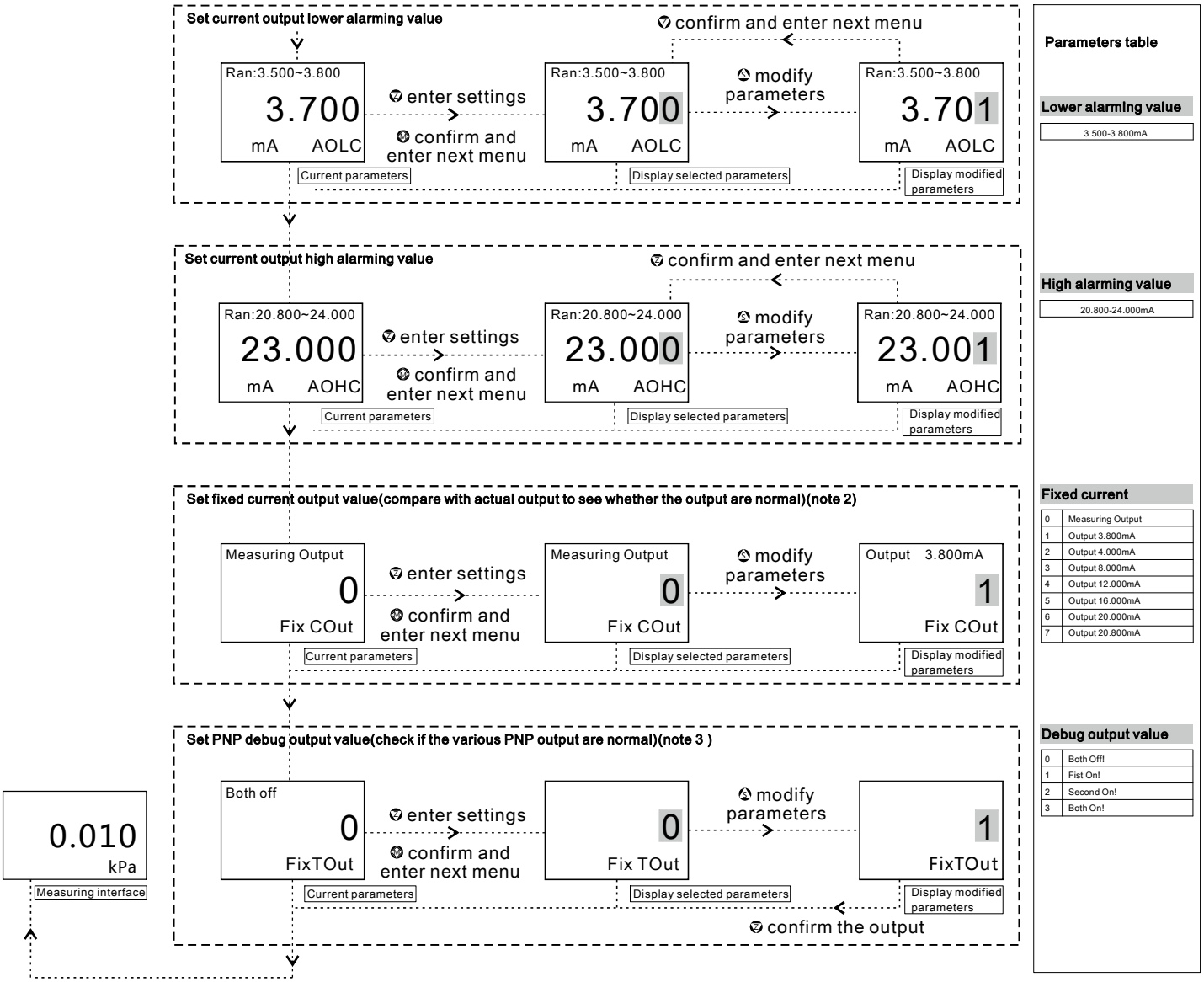


Method two:



Detailed operating instructions

After above operation, press M get into DisMod-LRV-Unit parameters setting,and press M again get into hidden parameters setting



Note 1: By default, the system shows optimal precision according to measuring range. Eg: While the measuring range of product is 0-10kPa, measuring value shows 0.000-10.000; while the measuring range of product is 0-100kPa, the measuring value shows 0.00-100.00. If DotPos parameters value and measuring range do not match, the system will automatically ignore and then process by default.

Eg: While the measuring range of product is 0-10kPa, if operator makes DotPos=5, the system will regard it as ineffectiveness and the measuring value will still shows 0.000-10.000 by default; while the measuring range of product is 0-100kPa, if operator makes DotPos=4 or 5, the system will regard it as ineffectiveness and the measuring value will still shows 0.00-100.00 by default.

Note 2:Use FixCOut parameters to control fixed current ,to confirm whether current output is ok. Changing fixed current value by press S and confirm by Z.

Note 3:Use FixTOut parameters to control 2 way PNP by mannual operation, to confirm whether PNP output is ok. Changing fixed current value by press S and confirm by Z.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

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1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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