

PK01VR...P vacuum PK010R...P pressure



Industrial
Automation

Technical Data

Electrical Data

- Response time <2.5 ms
- Operating frequency 400 Hz
- Supply voltage 10.8-30 V, keyed residual ripple 10%
- Input current during programming <55 mA
- Input current in normal operation <35 mA
- Switchable outputs 2x PNP 250 mA short-circuit protected
- Display 3 digit 7 segment display
- Ambient temperature effect: 3% of measured value of 0 to 50°C
- Repeat accuracy: 0.2% of measured value
- Hysteresis adjustable: 0 to 100%
- Measuring range: 0 to -1 bar/0 to 10 bar
- Max. over pressure: 5 bar/16 bar

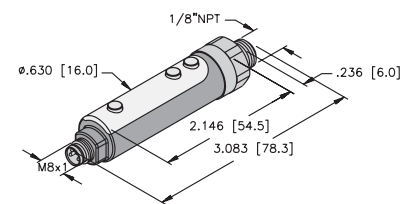
Environmental Conditions

- Protection: IP 65
- Measuring medium: filtered compressed air, lubricated or unlubricated, inert gases
- Emitted interference adheres to DIN EN 50081-1
- Interference immunity adheres to DIN EN 50082-2
- High voltage test 1000 VDC 1 min
- Insulation resistance >100 MΩ at 500 VDC
- Operating temperature: -10 to +50°C
- Storage temperature: -20 to +85°C
- Permissible humidity: 10 to 90% RH
- Shock resistance: 10G XYZ
- Vibration resistance: 10 to 55 Hz, 1.5 mm, XYZ 2 hours

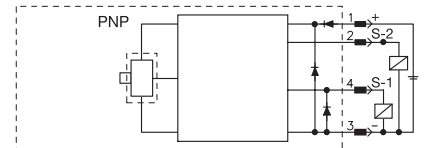
Mechanical Data

- Electrical connector: M8 4-pin
- Process connector: male 1/8" NPT
- Weight: approx. 25 g
- Wetted parts: nickel plated brass

Dimensions



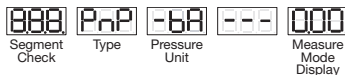
Circuits



Programming

Start-Up

→ Apply Voltage



→ Display

1. Factory Settings

OU1 Output 1	OU2 Output 2	SF Special Functions
HY1 Hysteresis Mode	HY2 Hysteresis Mode	PU Pressure Unit Bar
S-1 4.6 bar / -0.46 bar	S-2 7.9 bar / -0.79 bar	UnL Unlock
H-1 0.7 bar / -0.07 bar	H-2 0.7 bar / -0.07 bar	
nc1 NC Mode	nc2 NC Mode	
EO1 0 sec.	EO2 0 sec.	
EF1 0 sec.	EF2 0 sec.	

The Clear All special function loads the factory settings, and all previous settings are cleared.

2. Setting Options

OU1 Output 1	OU2 Output 2	SF Special Functions
HY1 Hysteresis Mode	CP2 Comparator Mode	PU Pressure Unit
S-1 Switching Threshold	U-2 Upper Switching Threshold	CLA Factory Settings
H-1 Hysteresis	L-2 Lower Switching Threshold	UnL Unlock
nc1 Normally Closed	no2 Normally Open	deU Rotate Display 180°
EO1 Closing Delay	EO2 Closing Delay	
EF1 Release Delay	EF2 Release Delay	

- Menu items listed under OU1 are settings specific to output 1
- Menu items listed under OU2 are settings specific to output 2
- Menu items listed under SF OU2 are general settings which influence both outputs.

Output setting options

→ Hysteresis mode

- Switching threshold
- Hysteresis
- Type of contact (normally open, normally closed)
- Closing delay
- Release delay

→ Comparator mode

- Upper switching threshold
- Lower switching threshold
- Type of contact (normally open, normally closed)
- Closing delay
- Release delay

Special functions settings options

- Vacuum unit for PK01VR => bar, mmHg, inHg, KPa
- Pressure unit for PK010R => bar, psi, MPa
- Clear All => factory setting loaded
- Key lock activated = BLC, inactive = UnL
- Rotate display 180°

3. General Procedure for Adjusting Settings

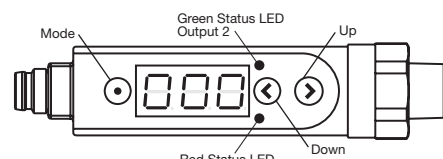
By following the flow diagram, you can move to any menu item you wish using the three buttons (Up, Down and Mode).

→ For example: output 2

- Comparator mode
- Lower threshold: PK010R = 3.0 bar, PK01VR = -0.3 bar
- Upper threshold: PK010R = 5.0 bar, PK01VR = -0.5 bar
- Position of normally closed contact
- Closing delay 0 sec.
- Release delay 0 sec.

→ Procedure: Measure mode output

- Briefly press Mode button => OU1 display
- Briefly press Up button => OU2 display
- Briefly press Mode button to enter Menu level => HY2 display
- Proceed to desired menu item with Up or Down button and confirm by pressing the Mode button.
- In this case: confirm HY2 with Mode button. => HY2 display flashes
- Go to the desired setting with the Up or Down button. In this case: CP2. Then confirm setting with Mode button.



- To adjust further settings, follow the procedure in (d) above. In this case, set U-2 (lower threshold) and confirm with Mode button. => U-2 display flashes
- Adjust the desired setting with the Up or Down button. In this case: set U-2 to 0.50 and then confirm setting with Mode button.
- Proceed in the same way for all other settings.
- To enter another setting level, e.g. output 1 (OU1) or special functions (SF), you use the Up or Down button to go to the menu item rEt (Return). If this is confirmed with the Mode button, you arrive at the previous level. In this case you would arrive at the menu item OU2 and now you can switch between the menu items Output 1 or Special functions with the Up or Down button in order to adjust settings.

4. Activate Key Lock

The locking function ensures that the switch settings are safeguarded against unintentional changes or manipulation. To activate the locking function, proceed as follows:

- Starting state is Measure => Display: Pressure activated
- Briefly press Mode button (select level) => Display OU1
- Press Up or Down button until SF reached => Display SF
- Briefly press Mode button until menu entered => Display PU
- Press Up or Down button until UnL reached => Display UnL
- Briefly press Mode button until menu entered => Display UnL flashes
- Set BLC with Up or Down button => Display BLC flashes
- Confirm setting with Mode button => Display Measure

5. Deactivate Key Lock

- Briefly press Up, Down and Mode buttons simultaneously => Display BLC
- Briefly press Mode button once => Display BLC flashes
- Set UnL with Up or Down button => Display UnL flashes
- Confirm with Mode button => Display UnL static
- Return to Measure state via rEt (Return) menu item

6. Selectable Display Units

The following units of measurement are available

PK01VR Display	PK010R Display	Procedure for adjusting settings
-bA bar	-bA bar	- Looking at the flow diagram, select the menu item SF (special functions) and briefly press Mode button.
-pA KPa	-pS Psi	- PU appears on the display (pressure unit).
-mH mmHg	-pS bar	- Select PU with Mode button. Now the desired unit can be selected with the Up or Down button.
-iH inHg	-pA MPA	- Confirm the selected unit with the Mode button and exit the menu via the rEt function (Return).

7. Setting Display To Zero

- Operate switch in Measure mode
- Depress Mode button for 3 sec.
- Display is set to zero

8. Peak Values

- Briefly press Down button, the lowest measured value will be displayed for 3 sec.
- Briefly press Up button, the highest measured value will be displayed for 3 sec.

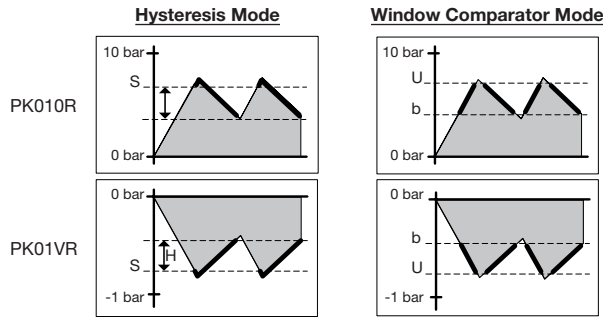
9. Error Messages

Error Messages	Cause	Remedy
OC1 Overcurrent Out1	Output 1 overloaded (current > 125 mA)	Increase load impedance
OC2 Overcurrent Out2	Output 2 overloaded (current > 125 mA)	Increase load impedance
-FF Pressure instead of vacuum	Pressure instead of vacuum	Apply vacuum
FFF Applied vacuum > range	Applied vacuum > measuring range	Put the vacuum within the measuring range
Er2 EEPROM defective	EEPROM defective, data memory defective	Switch defective, replace
Er3 Distance to zero point >3%	Vacuum or pressure was higher than +/- 3% of the measuring range	Reset zero point to ambient pressure

Start-Up (cont'd...)

10. Selecting the Operating Mode

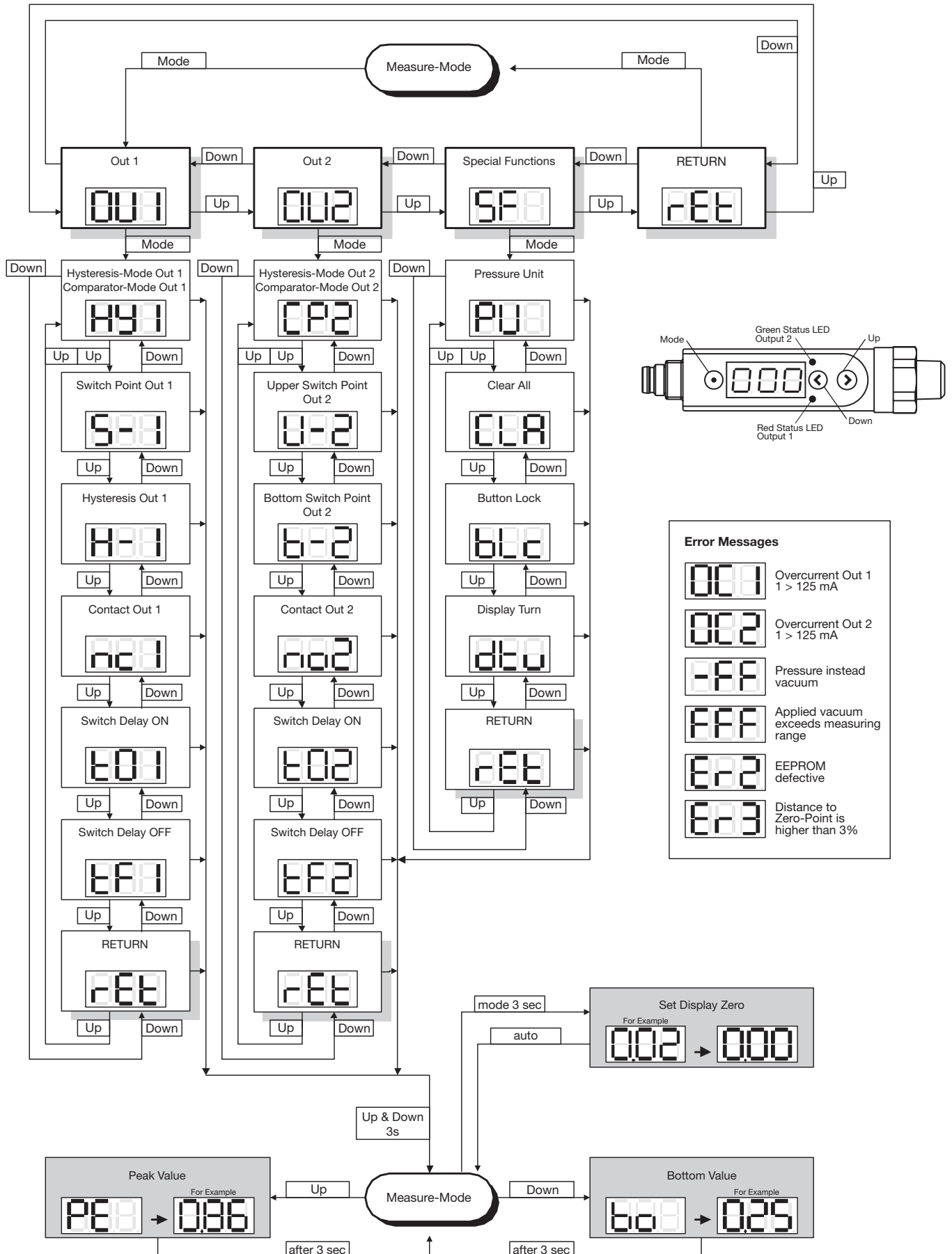
Each output needs to be programmed individually, as they are completely independent and can work in different operating modes and under various settings.



Pressure – PK010R Ranges	
S-1 / S-2	0.7 to 9.99 bar
H-1 / H-2	0 to 100% of S-1
U-1 / U-2	0 to 10 bar
b-1 / b-2	0 to 100% of U-1

Vacuum – PK01VR Ranges	
S-1 / S-2	-0.11 to -1.0 bar
H-1 / H-2	0 to 100% of S-1
U-1 / U-2	0 to -1 bar
b-1 / b-2	0 - 100% of U-1

Menu Navigation



Error Messages	
001	Overcurrent Out 1 > 125 mA
002	Overcurrent Out 2 > 125 mA
-FF	Pressure instead vacuum
FFF	Applied vacuum exceeds measuring range
Er2	EEPROM defective
Ez3	Distance to Zero-Point is higher than 3%

