ema

Pressure Sensors Manual

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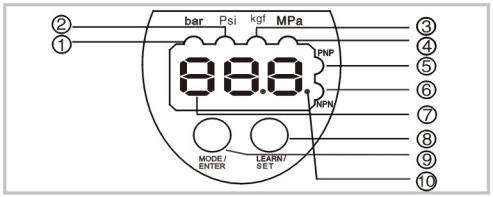
IP67 CE RoHS

Controls and visual indication



①	bar	Pressure unit	bar
②	Psi		Pounds per square inch
③	kgf		Kilogram-force
④	MPa		Million passal（2，5，10bar
⑤	PNP		PNP status;lights up on under connecting to the output terminal
⑥	NPN		NPN status;lights up on under connecting to the output terminal
⑦	7-segment Display		System pressure display, Parameter and parameter value display
⑧	LEARN/SET		Setting of learn mode and parameter value
⑨	MODE/ENTER		Select on of parameter and acknowledgement of parameter value
⑩	Millesimal display		The value displayed should be multiplied by 10 when this dot flashes.

Fuctions and features

By the probe, the pressure sensor can detect and thendisplaythe current system pressure; meanwhile, it canoutput two signals according the setting of output.

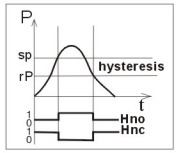
Output 1	Output 2
Hysteresis/N.O.(Hno)	Analog 4~20 mA(I)
Hysteresis function/N.C.(Hnc)	
window function/N.O.(Fno)	Analog 0~10 V(U)
window function/N.C.(Fnc)	

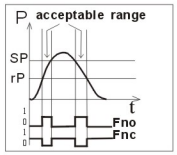
Hysteresis

The hysteresis keeps the switching state of the outputs stable if the system pressure varies about the preset value.
When the system pressure is increasing, the output switches when the switch-on point has been reached (SP1); when the system pressure is decreasing again, the output switch-off point (rP1) has been reached. The hysteresis can be adjusted: fist the switch-on point is set, then the switch-on point with the requested difference.

Window function:

The window function enables the monitoring of a defined acceptable range.When the system pressure varies between the switch-on point (SP1) and the switch-off point (rP1) ,the output is switched (window function/NO) or not switched (window function/NC).The width of the window can be set by means of the difference between SP1 and rP1. SP1=upper value, rP1=lower value.





Operating modes

Run mode:
(Normal operating mode)
When the supply voltage has been applied, the unit is in the Run mode .it monitors and switches the transistor output according to the set parameters.
The value of the analog output depends on the system temperature.
The digit display indicates the current system pressure; the red LED indicates the switching state of the transistor output.

Display mode:
(Indication of parameters and the set parameter values)
When the "MODE/ENTER" button is pressed briefly, the unit passes to the Display mode which allows parameter values to be read. The internal sensing , processing and output functions of the unit continue as if in Run mode.
・The parameter names are scrolled with each pressing of the "MODE/ENTER" button.
・when the "SET" button is pressed briefly, the corresponding parameter value is displayed for 5 sec.. After another 5 sec. The unit returns to the Run mode.

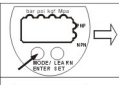
Programming mode:
(Setting of the parameter values)
The unit passes it the programming mode when after the selection of a parameter value (Display mode) the "LEARN / SET" button is pressed until the display of the parameter value is changed. Internally the unit remains in the operating mode .It continues its monitoring function with the existing parameters until the change has been terminated.
You can change the parameter value by pressing the "LEARN /SET" button and confirm it by pressing the "MODE/ENTER" button. The unit returns to the Run mode when no button has been pressed for 5 secretary.

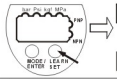
Adjustable parameters

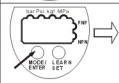
Menu	Function	Range	In steps of
SP1	Switch-on point	Details on Attachment1	
rP1	Switch-off point	Details on Attachment1	
OUt	Output status	HNO Hysteresis NO	
		HNC Hysteresis NO	
		FNO Window NO	
		FNC Window NO	
n-P	Switching output selection	nPn NPN output	
		PnP PNP output	
AOU	Analog output selection	U 0–10V Voltage output	
		I 4–20mA current output	
diS	Status display	d	Front display
		P	Reverse display
UNi	Unit switching	bar	
		Psi	
		kgf/cm²	
		MPa	

COF	Calibration offset
	The internal measured value (operating value of the sensor) offset against the real measured value
	*Setting range：-5%...+5% of the span
	*In steps of 0.1% of the span
CAL	Calibration offset
	Resets the calibration set by "COF" to the value set at the factory
	*Press the "MODE/ENTER"button until "CAL"is displayed
	*Press the "LEARN/SET"button and keep it presseduntil "....." is displayed
	*Then press the "MODE/BUTTON"briefly

Programming

1  Press the "MODE/ENTER" button several times until the respective parameter is displayed.

2  Press the "set" button and keep it pressed. The current parameter value is indicated in 5 sec., then the value is increased (incremental by pressing briefly or scrolling by holding pressed).

3  Press the " MODE/ENTER" button briefly (=acknowledgement). The parameter is displayed again; the set parameter value becomes effective.

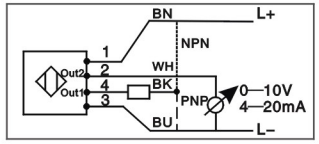
Decrease parameter value: Make the parameter value displayed reach the highest of the parameter setting, and then recycle to the highest value from the lowest.

Lock/Unlock:

Lock:This equipment owns automatic button lock function. When there is no button being pressed in 1 minute, it will lock the button automatically. The detection of changes of the pressure is running and outputting normally.
Unlock: Keep pressing "SET" button under the normal pressure display mode (running mode), and then press "MODE /ENTER" for 10 sec. until the "ULC" is displayed, meaning that it's unlock. The original setting is under lock mode.

oL	Pressure is too strong
Lo	Pressure is too weak
SC	Short-circuit in the switching output; the PNP-NPN output is switched off. (Flashing)

Connection



Core color:

1 = BN (brown);
2 = WH (white);
3 = BU (blue);
4 = BK (black)

Electrical connection

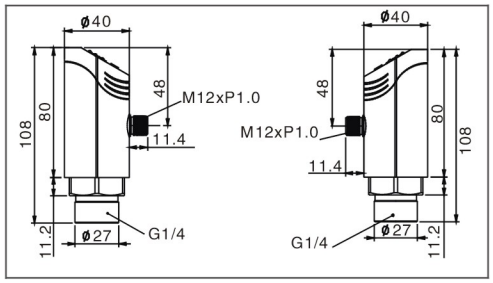
The unit must only be connected by an electrician. The national and international regulations for the installation of electrical equipment must be observed.
Voltage supply to EN50178,SELV,PELV.
Disconnect power before connecting the unit.

Technical data

Detected objects: Relative medium such as air and liquid

Electric design	DC
Voltage[V]	18...36V
Pressure sensing rang	2/5/10/20/50/100/200/400
Max.overload pressure	4/10/20/40/100/200/400/650
Load current[mA]	300
Short-circuit protection	Pulse
Reverse polarity protection	Yes
Overload protection	Yes
Watchdog	Yes
Voltage drop[V]	< 2
Current consumption[mA]	< 60
Digital output	PNP/NPN Programmable
Analog output	4...20 mA/0...10V Programmable
Analog output (4–20mA) load [Ohm]	Max. 500
Analog output (0–10V)load [Ohm]	Min. 1000
Operating temperature[° C]	-25...80
Medium temperature[° C]	-25...80
Storage temperature[° C]	-40...100
Protection classification	IP 67
Insulation resistance	> 100 (500 V DC)
Shock resistance	50
Vibration resistance	20
Min. switching recycle	one billion
Housing material	Aluminum;Stainless steel (S304) PBT+30%GF
Matorial of part contacting substance	PC copolymere; FPM (Viton)

Demension



Mounting and maintenance

1.To reduce the shock to the product, please install this product vertically to the flow of medium.
2.To avoid damage of the product, please do not make the loading pressure of the product exceed the range of acceptable pressure by twice.
3. When pressure sensing range is igger than 100 bar (including 100 bar),the device must be mounted with damping screw,so that it can prevent impact caused during value opening moment.

Attachment1

Order NO.	Unit	SP1 Setting Range	rP1 Setting Range	Step Range
PA1101	bar	0.02–2.00	0.01–1.99	0.01
	Psi	0.4–29.0	0.2–28.8	0.2
	kgf/cm²	0.02–2.04	0.01–2.03	0.01
PA1102	bar	0.04–5.00	0.02–4.98	0.02
	Psi	0.8–72.4	0.4–72.0	0.4
	kgf/cm²	0.04–5.10	0.02–5.08	0.02
PA1103	bar	0.1–10.0	0.05–9.95	0.05
	Psi	2–145	1–144	1
	kgf/cm²	0.1–10.2	0.05–10.1	0.05
PA1104	bar	0.2–20.0	0.1–19.9	0.1
	Psi	4–290	2–288	2
	kgf/cm²	0.2–20.4	0.1–20.3	0.1
	MPa	0.02–2.00	0.01–1.99	0.01

Attachment1

Order NO.	Unit	SP1 Setting Range	rP1 Setting Range	Step Range
PA1105	bar	0.2–20.0	0.1–19.9	0.1
	Psi	4–290	2–288	2
	kgf/cm²	0.2–20.4	0.1–20.3	0.1
	MPa	0.02–2.00	0.01–1.99	0.01
	bar	0.4–50.0	0.2–49.8	0.2
PA1106	Psi	8–724	4–720	4
	kgf/cm²	0.4–51.0	0.2–50.8	0.2
	MPa	0.04–5.00	0.02–4.98	0.02
	bar	1.0–100	0.5–99.5	0.5
	Psi	20–1450	10–1440	10
PA1107	kgf/cm²	0.1–10.2	0.5–101	0.5
	MPa	0.1–10.0	0.05–9.95	0.05
	bar	2–200	1–199	1
	Psi	30–2890	15–2880	15
	kgf/cm²	2–204	1–203	1
PA1108	MPa	0.2–20.0	0.1–19.9	0.1
	bar	4–400	2–398	2
	Psi	60–5790	30–5760	30
	kgf/cm²	4–408	2–406	2
	MPa	0.4–40.0	0.2–39.8	0.2