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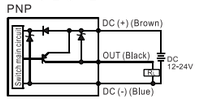
PE.40 ELECTRONIC PRESSURE SWITCH

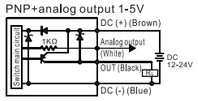
For your safety, please read the following before using.

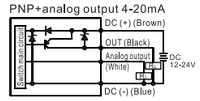
① Do not use corrosive or flammable gas or liquid with this product.
② Please use within the rating pressure range. Do not apply pressure beyond recommended maximum withstand pressure, permanent damage to the pressure sensor may occur.
③ Do not drop, hit or allow excessive shock. Even if switch body appears undamaged, internal components may be broken and can cause malfunction.
④ Turn power off before connecting wiring. Wrong wiring or short circuit will damage and / or cause malfunction.
⑤ Do not use in environment containing steam or oil vapor.
⑥ This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.
⑦ Wiring for pressure sensor should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

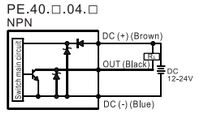
SPECIFICATIONS		PE.40.C.□.□ (Compound)	PE.40.V.□.□ (Vacuum)	PE.40.P.□.□ (Positive)
Rated pressure range		-100.0 ~ 100.0 kPa	0.0 ~ -101.3 kPa	0 ~ 1000 kPa
Setting pressure range		-101.0 ~ 101.0 kPa	10.0 ~ -101.3 kPa	-100 ~ 1000 kPa
Withstand pressure		300kPa		1500kPa
Fluid		Air, Non-corrosive / Non-flammable gas		
Set pressure resolution	kPa	0.1		1
	kgf/cm²	0.001		0.01
	bar	0.001		0.01
	psi	0.01		0.1
	inHg	0.1		—
	mmHg	1		—
Power supply voltage		12 to 24VDC ±10%, Ripple (P-P) 10% or less		
Current consumption		≦ 45mA (With no load)		
Switch output		NPN open collector Max. load current: 125mA Max. supply voltage: 30V DC Residual voltage: ≦ 1.5V		PNP open collector Max. load current: 125mA Max. supply voltage: 24V DC Residual voltage: ≦ 1.5V
Repeatability(Switch output)		≦ ±0.2% F.S. ±1digit		
Hysteresis	Hysteresis mode	Adjustable		
	Window comparator mode			
Response time		≦ 2.5ms (chattering-proof function: 24ms, 250ms, 500ms, 1000ms and 1500ms selections)		
Output short circuit protection		Yes		
7 segment LCD display		Two color (Red/Green) display (Sampling rate: 5 times/1sec.)		
Indicator accuracy		≦ ±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Switch ON Indicator		Green OUT Indicator		
Analog output (Voltage Output)		Output Voltage: 1 to 5V ≦ ±2.5% F.S. (within rated pressure range) Linearity: ≦ ±1% F.S. Output impedance: about 1kΩ		
Analog output (Current Output)		Output Current: 4 to 20mA ≦ ±2.5% F.S. (within rated pressure range) Linearity: ≦ ±1% F.S. Max.Load Impedance: 300Ω at power supply of 12V, 600Ω at power supply of 24V Min.Load impedance: 50Ω		
Environment	Enclosure	IP40		
	Ambient temp. range	Operation: 0 ~ 50°C, Storage: -10 ~ 60°C (No condensation or freezing)		
	Ambient humidity range	Operation/Storage: 35 ~ 85% RH (No condensation)		
	Withstand voltage	1000VAC in 1-min (between case and lead wire)		
	Insulation resistance	50Mohm min. (at 500V DC, between case and lead wire)		
	Vibration	Total amplitude 1.5mm,10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y and Z		
	Shock	100m/s²(10G), 3 times each in direction of X, Y and Z		
Temperature characteristic		≦ ±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C		
Port size		G 1/8", M5		
Lead wire		Oil-resistance cable (0.15mm²)		
Weight		Approx. 75g (with 2-meter lead wire), Approx. 45g (with male connector)		

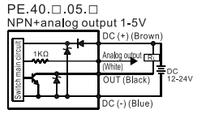
OUTPUT CIRCUIT WIRING GRAPH

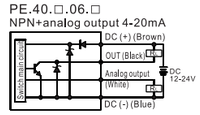
PE.40.□.01.□ PNP


PE.40.□.02.□ PNP+analog output 1-5V


PE.40.□.03.□ PNP+analog output 4-20mA


PE.40.□.04.□ NPN


PE.40.□.05.□ NPN+analog output 1-5V


PE.40.□.06.□ NPN+analog output 4-20mA


ORDERING INFORMATION

P E . 4 0 . C . 0 1 . C 2

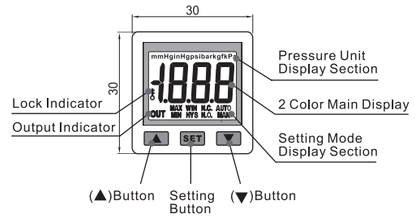
Pressure Range
C: Compound (-101.0/+101.0 kPa)
V: Vacuum (+10.0/-101.3 kPa)
P: Positive (-100/+1000 kPa)

Cable Length/Connector
Blank: With 2-meter cable
QD: With M8, 4-Pin male connector

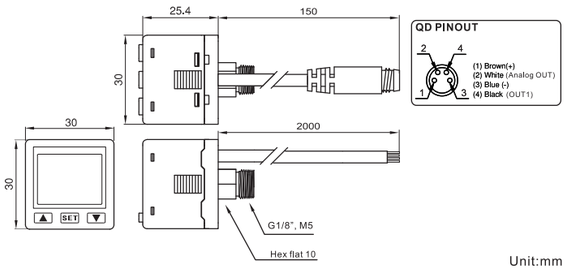
Output Specifications
01: 1 PNP output
02: 1 PNP output + 1 analog output 1-5V
03: 1 PNP output + 1 analog output 4-20mA
04: 1 NPN output
05: 1 NPN output + 1 analog output 1-5V
06: 1 NPN output + 1 analog output 4-20mA

Accessories
C4C.XX.PUR: M8 female connector XX=cable length in meters
PE.40.A: mounting bracket (A1+A2)
PE.40.B: Panel adapter + Front protective lid (B1+B2+B3)

PANEL INSTRUCTIONS



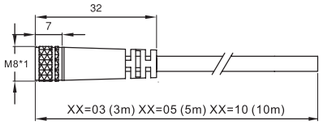
DIMENSION GRAPH



Unit:mm

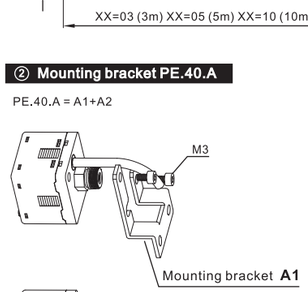
TYPE OF OPTION PARTS / DIMENSION GRAPH

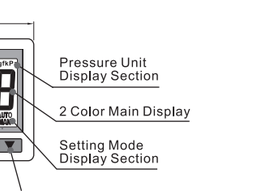
① M8 female connector C4C.XX.PUR

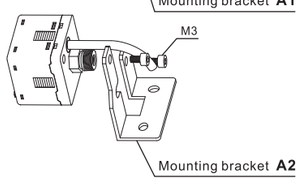


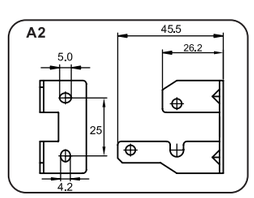
② Mounting bracket PE.40.A

PE.40.A = A1+A2



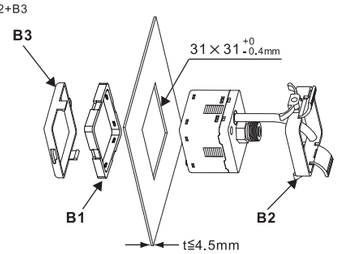


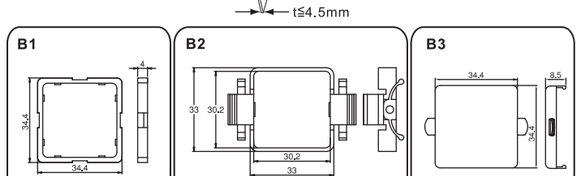




③ Panel type PE.40.B

PE.40.B = B1+B2+B3





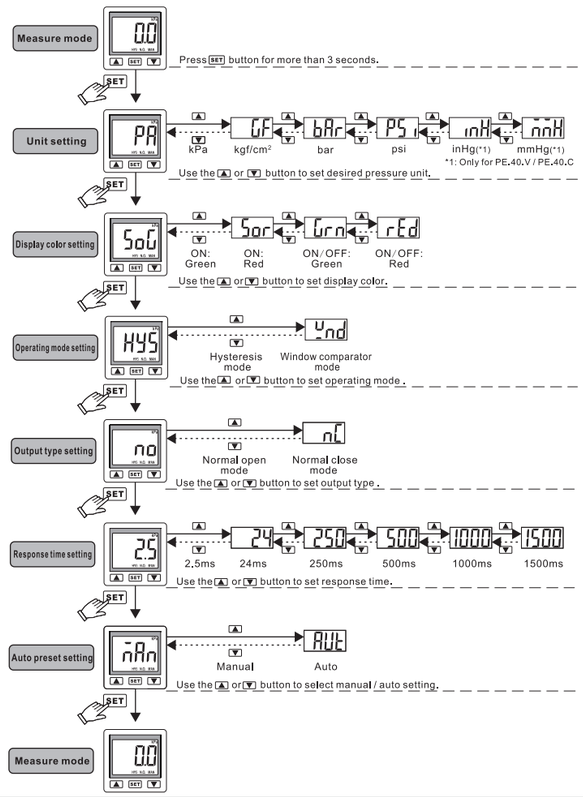
Unit:mm

SETTING STEPS

Measure mode → Initial setting → Pressure setting → Zero point setting → Measure mode

- Initial setting: Unit, Display Color, Operation mode, Output type, Response time, Auto/manual
- Pressure setting: P_1 or n_1, P_2 or n_2, H
- Zero point setting: Setting zero point under atmospheric pressure

INITIAL SETTING MODE

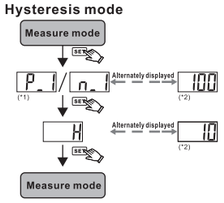


PRESSURE SETTING MODE

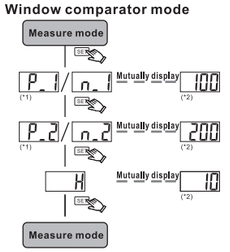
Select auto/manual setting mode during initial set-up.

Manual setting mode

Hysteresis mode

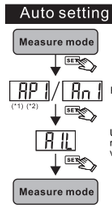


Window comparator mode



【NOTE :】
*1.The LCD shows :
(P_*) at normal open mode, (n_*) at normal close mode.
*2.Change pressure value :
Press ▲ button, each press will increase one digit. Keep pressing the ▲ button, the pressure value will keep increasing.
Press ▼ button, each press will decrease one digit. Keep pressing the ▼button, the pressure value will keep Decreasing.
*3.After proper pressure value has been selected/entered, press the SET button or wait 10 sec.
Without pressing any button to return to the pressure setting value display mode.

Auto setting mode



【 Calculation of Setting Value 】
A=The max. pressure value under auto setting mode.
B=The min. pressure value under auto setting mode.

$$P1(n1) = A - \frac{A-B}{4}$$

$$H = \frac{A-B}{2}$$

【NOTE :】
*1.The LCD show 「AP1」 at normal open mode and 「An1」 at normal close mode.
*2.In case of without need of auto pressure value setting, press ▲+▼ at the same time to enter measure mode.

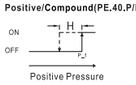
OUTPUT TYPE

Output hysteresis value can be pre-set.
Within pressure setting range, pressure sensor output can be ON or OFF.

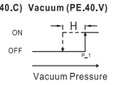
Hysteresis mode

Normal open mode

Positive/Compound(PE.40.P/PE.40.C)



Vacuum (PE.40.V)



Normal close mode

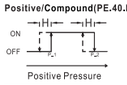
Positive/Compound(PE.40.P/PE.40.C)

Vacuum (PE.40.V)

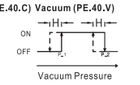
Window comparator mode

Normal open mode

Positive/Compound(PE.40.P/PE.40.C)

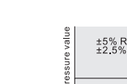


Vacuum (PE.40.V)



Normal close mode

Positive/Compound(PE.40,P/PE.40.C)



Vacuum (PE.40.V)

【NOTE :】 In case Hysteresis is set at less than or equal to 2 digits, switch output may chatter if input pressure fluctuates near the set point.

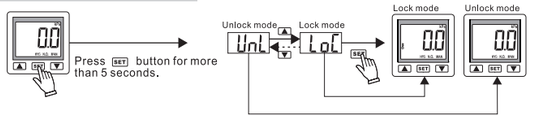
ZERO POINT SETTING / THE MAX. & MIN. DISPLAY MODE

Zero point setting:
Press the ▲ + ▼ button at the same time until the "00" is shown.
Release the button to end zero point setting.

The Max. value display mode:
Press ▲ button 2 seconds to enter the max. value mode, pressure sensor will detect the max. value and keep display.
Press ▲ button 2 seconds to return to measure mode.

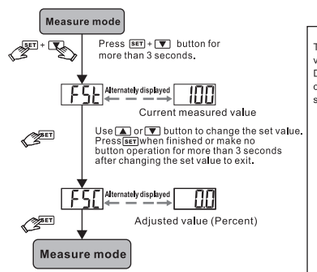
The Min. value display mode:
Press ▼ button 2 seconds to enter the min. value mode, pressure sensor will detect the min. value and keep display.
Press ▼ button 2 seconds to return to measure mode.

KEY LOCK/UNLOCK MODE

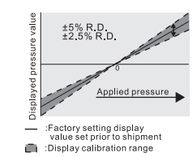


Use ▲ or ▼ to select key lock/unlock mode.
Key lock mode can prevent operation mistakes.

FINE ADJUSTMENT MODE



This function eliminates slight differences in the output values and allows uniformity in the numbers displayed. Displayed values of the pressure sensor can be calibrated to within ±5% for PE.40.P and ±2.5% for series PE.40.V/PE.40.C.



【NOTE :】 PE.40.P: When display unit is in "psi", setting resolution is 0.2 psi.
PE.40.C/PE.40.V: When display unit is in "psi", setting resolution is 0.02 psi.

ERROR CODE INSTRUCTION

Error Type	Error code	Error Condition	Troubleshooting
Excess load current error	oCP	Output load current is more than 125 mA	Turn power off and check the cause of overload current or lower the current load under 125 mA, then restart.
Residual pressure error	oUr	During zero reset, ambient pressure is over ±3% F.S.	Change input pressure to ambient pressure and perform zero reset again.
Applied pressure error	HHH	Supply pressure is exceeds the upper limit of pressure setting.	Adjust the pressure within operating pressure range.
	LLL	Supply pressure is exceeds the lower limit of pressure setting.	
System error	Err4	Internal data error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
	Err6	Internal system error	
	Err1	Internal data error	
	Err8	Internal system error	

PRESSURE UNIT CONVERSION TABLE

From \ To	Pa	kPa	MPa	kgf/cm²	mmHg	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002953
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998
1 kgf/cm²	98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979
1 mmHg	133.32	0.13332	0.000133	0.0013595	1	0.019336	0.0013332	0.039370
1 psi	6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074
1 bar	100000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998
1 inHg	3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1

F.I.PE40/1

PR-0120E 2019/09 Printing We reserve the right to change the specification without prior notice.

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PRESSOSTATO ELETTRONICO SERIE PE.40.

Per la vostra sicurezza, leggere le istruzioni prima dell'uso

① non utilizzare sostanze corrosive, gas infiammabili o liquidi su questo prodotto

② si prega di utilizzare lo strumento all'interno della gamma di pressioni. Non utilizzare a pressioni superiori a quella massima raccomandata per non danneggiare il sensore

③ evitare urti o cadute. anche se lo strumento puo' risultare integro i componenti interni potrebbero essere danneggiati e quindi causare malfunzionamento

④ accertarsi che non vi sia tensione nell'impianto prima di effettuare il collegamento elettrico dello strumento

⑤ non utilizzare in ambienti contenenti vapore o vapori di olio

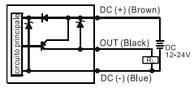
⑥ lo strumento non adatto ad essere utilizzato in ambienti potenzialmente esplosivi pertanto non deve essere utilizzato in presenza gas infiammbili

⑦ collegare lo strumento a distanza da linee di alta tensione o di alta potenza, il disturbo potrebbe causare malfunzionamento

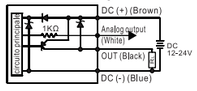
specifiche tecniche		PE.40.C.□.□ (Composito)	PE.40.V.□.□ (Vuoto)	PE.40.P.□.□ (Positivo)
gamma di pressioni		-100.0/+100.0 kPa	0.0 /-101.3kPa	0/+1000kPa
gamma di pressioni impostabili		-101.0/+101.0 kPa	+10.0/-101.3kPa	-100/+1000kPa
pressione ammissibile		300 kPa		1500 kPa
Fluido		Aria, gas non corrosivo, gas incombustibile		
risoluzione strumento	kPa	0.1		1
	kgf/cm²	0.001		0.01
	bar	0.001		0.01
	psi	0.01		0.1
	inHg	0.1		—
	mmHg	1		—
tensione di alimentazione		da 12 a 24 VDC +/-10%, oscillazione (p-p) ≤ 10%		
consumo di corrente		≤ 45mA (in assenza di carico)		
uscite		NPN corrente max di carico: 125mA tensione max: 30 V DC tensione residua: ≤ 1,5 V		PNP tensione max: 24 V DC
Ripetibilita'		≤ 0,2% F.S.+/-1 cifra		
isteresi	modo isteresi	regolabile		
	modo comparatore			
Tempo di risposta		≤ 2.5ms		
Protezione contro i cortocircuiti		presente		
display a 7 segmenti		2 colori (rosso/verde) frequenza di campionamento 5Hz		
precisione dello strumento		≤ 2% FS +/-1 cifra a temp. ambiente 25 ±3°C		
indicatore stato On		indicatore di colore verde		
uscita analogica in tensione		tensione d'uscita: 1-5V ≤ +/-2.5% F.S. (nella gamma di pressioni) linearita': ≤ +/-1% F.S. impedenza in uscita: circa 1kohm		
uscita analogica in corrente		corrente d'uscita: 4-20 mA ≤ +/-2.5% F.S.(nella gamma di pressioni) linearita': ≤ +/-1% F.S. massima impedenza del carico: 300 ohm alla tensione di 12 V 600 ohm alla tensione di 24 V minima impedenza del carico: 50 ohm		
Condizioni ambientali	grado di protezione	IP 40		
	temperatura di esercizio	in servizio: 0/50 °C, magazzino -10/60 °C (no condensa o ghiaccio)		
	umidita' di esercizio	servizio o magazzino 35/85 %RH (no condensa)		
	tensione massima	1000V AC (tra telaio e fili)		
	isolamento elettrico	50 Mohm min (a 500 VDC tra telaio e fili)		
	resistenza alle vibrazioni	ampiezza 1.5 mm 10 Hz max		
	urti	100 m/s² (10 G)		
caratterist. di temperatura		≤ +/-2% F.S della press. a 25 °C in un campo di temperatura 0-50°C		
connessioni pneumatiche		G 1/8", M5		
fili elettrici		resistenti all'olio sez. 0.15 mm²		
Peso		circa 75g versione cavo 2m, circa 45g versione connettore		

COLLEGAMENTI ELETTRICI

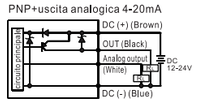
PE.40.□.01.□ PNP



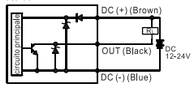
PE.40.□.02.□ PNP+uscita analogica 1-5V



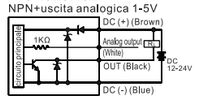
PE.40.□.03.□ PNP+uscita analogica 4-20mA



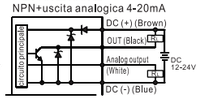
PE.40.□.04.□ NPN



PE.40.□.05.□ NPN+uscita analogica 1-5V



PE.40.□.06.□ NPN+uscita analogica 4-20mA



CODICI DI ORDINAZIONE

P E . 4 0 . C . 0 1 . C 2

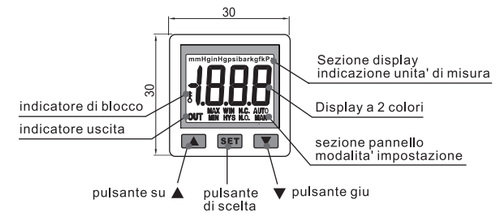
Gamma Di Pressioni
C : Composito (-101.0/+101.0 kPa)
V : Vuoto (+10.0/-101.3 kPa)
P : Positivo (-100/+1000 kPa)

connessioni elettriche
C2 : cavo 2m
M8 : connettore M8

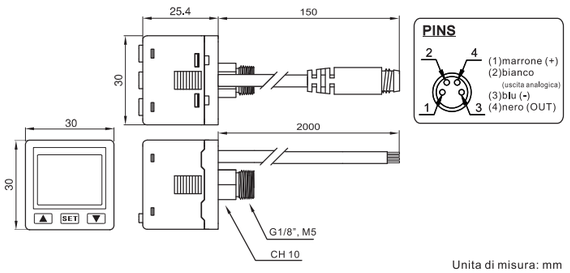
uscite
01 : 1 uscita PNP
02 : 1 uscita PNP + 1 analogica 1-5 V
03 : 1 uscita PNP + 1 analogica 4-20 mA
04 : 1 uscita NPN
05 : 1 uscita NPN + 1 analogica 1-5 V
06 : 1 uscita NPN + 1 analogica 4-20 mA

Accessori
C4C.XX.PUR: connettore M8 femmina lunghezza cavo XX metri
PE.40.A: staffe di montaggio a parete (A1+A2)
PE.40.B: staffa di montaggio a pannello (B1+B2+B3)

PANNELLO FRONTALE



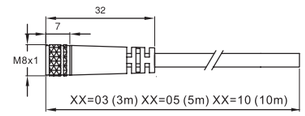
DIMENSIONI



Unita di misura: mm

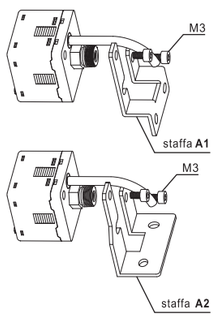
ACCESSORI

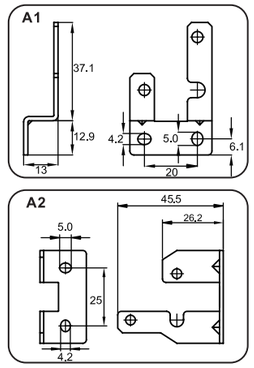
① Connettore femmina M8 C4C.XX.PUR



② staffe di montaggio a parete PE.40.A

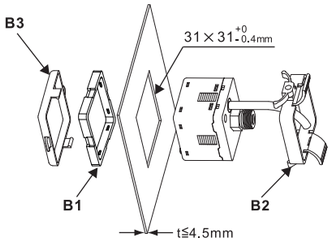
il codice prevede la fornitura di A1+A2

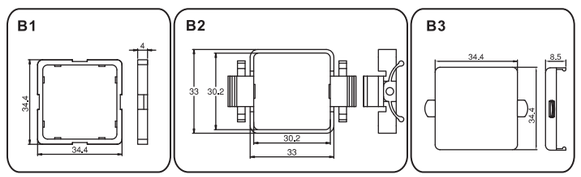




③ staffe di montaggio a pannello PE.40.B

il codice prevede la fornitura B1+B2+B3





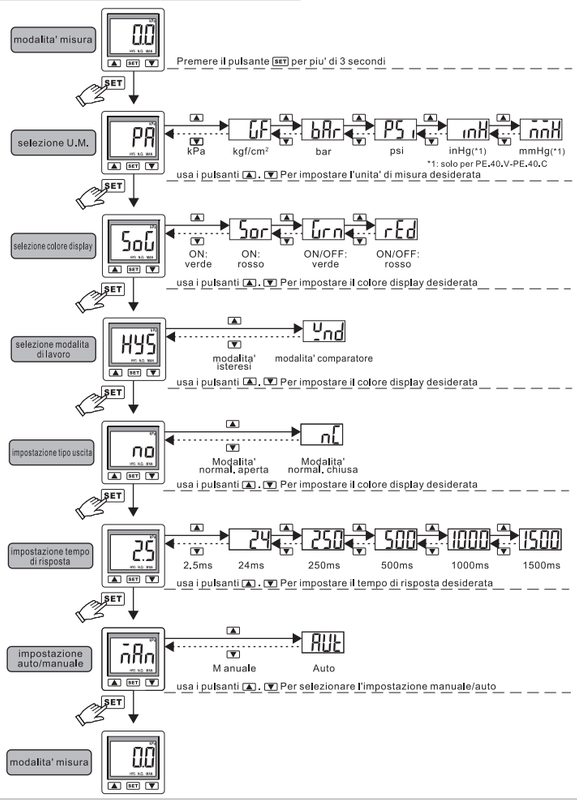
Unita di misura: mm

PROCE DURA IMPOSTAZIONI INIZIALI

modalita' misura → impostaz. iniziali → impostaz. pressione → impostaz. punto zero → modalita' misura

- impostaz. iniziali: unita' di misura; colore display; modalita' lavoro; tipo uscita; tempo di risposta; auto/manuale
- impostaz. pressione: P_1 or n_1; P_2 or n_2; H
- impostaz. punto zero: impostare il punto zero alla pressione atmosferica

MODALITA' IMPOSTAZIONI INIZIALI

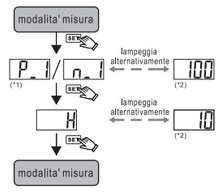


MODALITA' IMPOSTAZIONE PRESSIONE

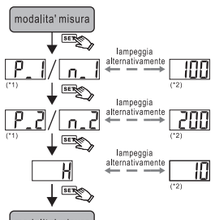
seleziona l'impostazione manuale/auto durante il set up iniziale

modalita' impostazione manuale

modalita' isteresi



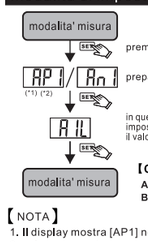
modalita' comparatore



【NOTA】

1. Il display mostra:
(P_*) nella modalita' normalmente aperta, (n_*) in quella normalemte chiusa
2. Cambio del valore di pressione:
premere ▲, ogni pressione incrementa di una cifra. Tenendo ▲ Premuto il valore continua a incrementare
premere ▼, ogni pressione de cremenda di una cifra. Tenendo ▼ Premuto il valorecontinua a decrementare
3. dopo che il valore cercato e' stato selezionato premere SET o attendere 10 secondi senza premere alcun bottone per ritornare alla modalita di impostazione pressione

modalita di impostazione auto



【Calcolo del valore delle impostazioni】
A=The max. Valore max della pressione nella modalita' auto
B=The min. Valore min della pressione nella modalita' auto.

$$P1(n1) = A - \frac{A-B}{4}$$

$$H = \frac{A-B}{2}$$

【NOTA】

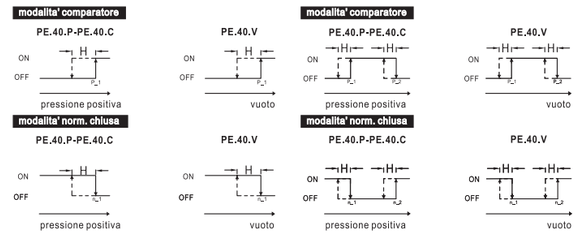
1. Il display mostra [AP1] nella modo norm. aperto e [An1] in quello norm. chiuso
2. nel caso non sia necessaria l'impostazione auto, premere ▲ + ▼ contemporanea mente per entrare nella modalita' misura

TIPO DI USCITA

il valore di isterisi dell'uscita puo' essere preimpostato all'interno della gamma delle pressioni impostabili, l'uscita puo essere ON o OFF

modalita' isteresi

modalita' comparatore



【NOTA】 nel caso l'isteresi sia impostata a 2 o meno cifre, il sensore potrebbe vibrare se la pressione in ingresso fluttua vicino al valore impostato

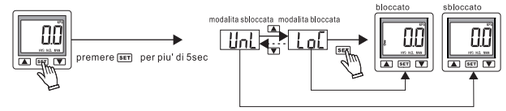
IMPOSTAZ. PUNTO ZERO / VISUALIZ. MAX E MIN

impostazione punto zero:
premere ▲+▼contemporeamente fino a che "00" appare
rilasciare il bottone per chi udere l'impostazione punto zero

modalita' visualizzazione valore massimo:
premere ▲ per 2 secondi per inserire la modalita' massimo valore
il sensore rilevera' il valore massimo e lo terra' visualizzato
premere ▲ per 2 secondi per tornare alla modalita' misura

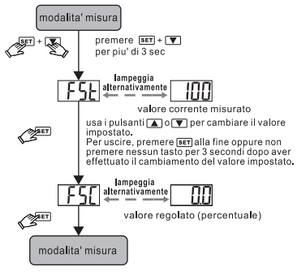
modalita' per visualizzare il valore minimo:
Premere ▼ per 2 secondi per inserire la modalita' minimo valore
il sensore rilevera' il valore massimo e lo terra' visualizzato
premere ▼ per 2 secondi per tornare alla modalita' misura

MODALITA' BLOCCO/SBLOCCO

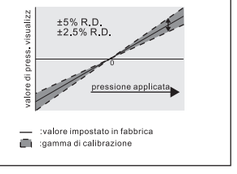


Usa ▲ o ▼ per selezionare il modo blocco/sblocco
modo blocco puo prevenire errori operativi

MODALITA' REGOLAZIONE FINE



questa funz. elimina le lievi differenze nei valori in uscita e permette uniformita' nei valori visualizzati I valori visualizzati del sensore possono essere calibrati entro +/-5% per PE.40.P e +/-2.5% per PE.40.V/PE.40.C



【NOTA】 PE.40.P: quando l'unita e' psi, impostazione della risoluzione e' 0.2 psi
PE.40.V/PE.40.C: quando l'unita e' psi, l'impostazione della risoluzione e' 0.02 psi

CODICI DI ERRORE E RISOLUZIONE DEI PROBLEMI

tipo errore	codice	descrizione	soluzione
sovraccarico di corrente	oCP	corrente in uscita superiore a 125 mA	spegnere l'appareccchio e controllare la causa del sovraccarico, quindi ria vviare
pressione residua	oUr	durante l'azzeramento la pressione ambiente eccede di +/- 3% F.S.	modificare la pressione ambiente tramite la funzione di zero forzato
sovraccarico di pressione	HHH	pressione di alimentaz. eccede il valore limite superiore impostato	regolare la pressione di alimentazione entro il campo di pressione ammissibile
	LLL	pressione di alimentaz. eccede il valore limite inferiore impostato	
errore di sistema	Er4	errore dati interno	spegnere l'appareccchio e riavviarlo se il difetto permane, ritornare al fornitore per il controllo
	Er6	errore interno di sistema	
	Er1	errore dati interno	
	Er8	errore interno di sistema	

TABELLA DI CONVERSIONE DELLA PRESSIONE

da / a	Pa	kPa	MPa	kgf/cm²	mmHg	psi	bar	inHg
1 Pa	1	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002953
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998
1 kgf/cm²	98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979
1 mmHg	133.32	0.13332	0.000133	0.0013595	1	0.019336	0.0013332	0.039370
1 psi	6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074
1 bar	100000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998
1 inHg	3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1

F.I.PE40/1