

Digital Pressure Gauge



Application

- Hygienic pressure measurement
- Overpressure save at highest accuracy
- Largest display in a process gauge

Application Example

- Local display without external power supply
- Pressure swithc with two relays

Hygienic Design / Process Connection

- Integrated process connection
- Direct connections for TriClamp 3/4" bis 2"
- CLEANadapt for DIN 11851, SMS u.v.m.
- CIP- / SIP-cleanable up to 149 °C / 60 minutes max.
- Complete device certified by 3-A-SSI
- All materials are FDA conform

Features

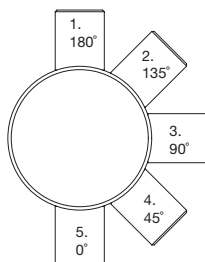
- 2-fold overpressure safety as standard
- Protected calibration possibility
- Standard min. / max. pressure caption feature
- Display 23 mm high

Options

- Two independent relays with external power supply
- MAN-90P-BAT: pharmaversion with Ra < 0,2 µm wetted part
- Hastelloy wetted parts

Conditions for a measuring point according to 3-A-Standard 74-03:

- The sensors MAN-90-BATA / TC... and MAN-90P / TC... are approved according to the 3-A-Standard.
- Self draining has to be warranted by the build-in position (pos. 1, 2 oder 3).



**MAN-90-Bat
with CLEANadapt G1"**

**MAN-90-Bat
with TriClamp 1"**

Order Code

Type	Process connection	Range	Connection	Diaphragm	Switch
MAN-90-BAT	S (CLEANadapt G1" hygienic)	-1...0bar	U bottom	316L	X without
MAN-90P-BAT (Pharma-version)	TC1" (TriClamp 1"/1,5") TC2" (TriClamp 2") TC2,5" (TriClamp 2,5") TC3" (TriClamp 3")	-1...+1bar -1...+2bar -1...+4bar -1...+7bar 0...+0,35bar 0...+1bar 0...+2bar 0...+4bar 0...+6bar 0...+7bar 0...+10bar 0...+14bar 0...+20bar	L left R right	Hastelloy	1 with switch

Bestellbeispiel: **MAN-90-BAT / TC2" / -1...+2bar / R / 316L / 1**



Specification

Material	diaphragm	1.4404
	fitting	optional: Hastelloy
	case	1.4404
	case	1.4301 complete welded
Surface roughness	window	polysulphon*
	diaphragm	Ra < 0,6 µm
Actuating fill	pharmaversion	Ra < 0,2 µm
	(acc. FDA 21CFR 172.828 and 178.3620)	paraffin oil
Protection class		IP66
Overpressure safety		2-fold

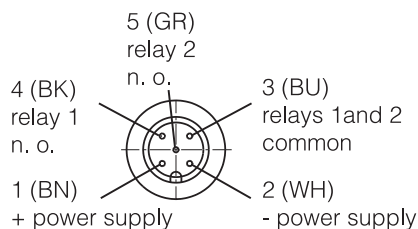
* for temperature up to 163°C

Option MAN-90P (Pharma)

Surface roughness	Ra < 0,2 µm
conform ASME BPE 2002	
Certificates provided with product	

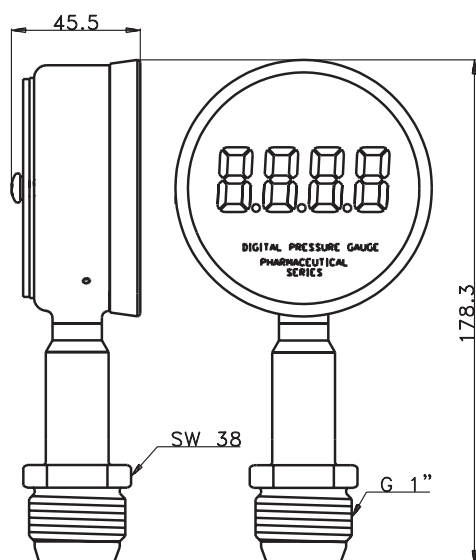
Electrical connection

M12-plug

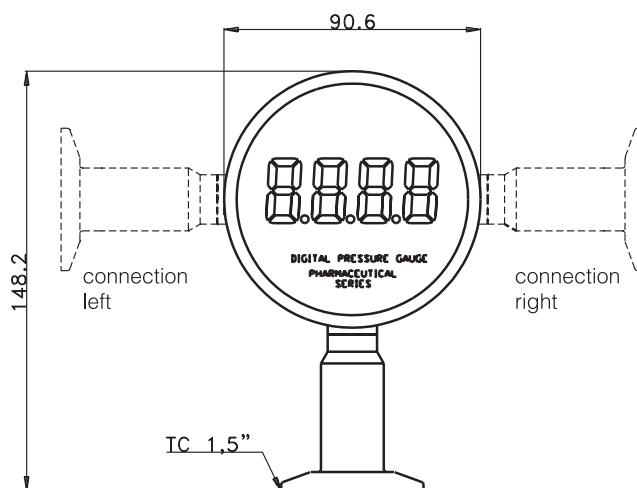


Accuracy		0,2 % of f. scale
	repeatability	+0,06 % of f. scale
	linearity	+0,07 % of f. scale
	hysteresis	+0,07 % of f. scale
Temperature effect		<+0,32 %/10 °K f.s. (process and ambient)
Temperature	process	-4 °C...130 °C
	CIP / SIP	149 °C max. 60 min.
	ambient	0 °C...50 °C
Display	LED height	23 mm
	dampening	programmable
	additional display of battery status and alarm 1 and 2 indicators	
Power	for gauge only	batteries 2xAA
	for relay operating	9...30 V DC, 250 mA
	battery back up of programmed values	
Output	2x switch	24 V DC max. 1 A
	(open with no power)	
programmable function and hysteresis		
Approvals / Standards		3-A
	PED	PED-SEP
	EMV-conformity	IEC 61326
	enclosure	NEMA 4X
hazardous locations		pending

Drawings MAN-90-BAT



MAN-90-BAT CLEANadapt
G1" connection "U" (bottom)



MAN-90-BAT with connections options
"U" (bottom), "L" (left), "R" (right)

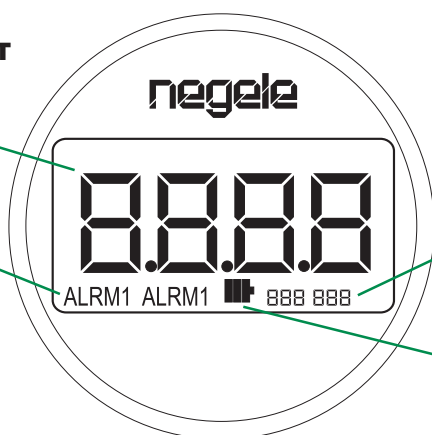
User Display Digital Pressure Gauge MAN-90-BAT

Primary display

Four digit LCD with adjustable decimal point position to indicate pressure value

Display setpoint 1 and 2

Flashes if setpoint is tripped. Displays continuously during setpoint viewing or programming.



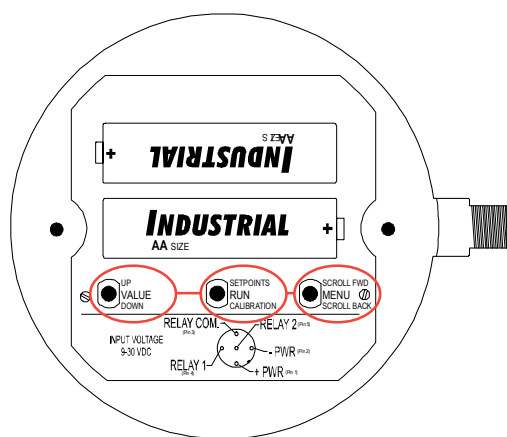
Secondary display

Indicates pressure units or parameter information.

Battery status indicator

Three bars indicate battery condition is good.

Calibration and programming (back sight with removed cover)



To access the switches remove the two screws and the cover with gasket.

All parameter values can be read in RUN-Mode by pressing SCROLL FWD and SCROLL BACK.

After 3 sec. the gauge automatically switches to the display mode.

MAN-90-BAT is to be programmed with the indicated switches VALUE, RUN and MENU. Therefore you put the RUN-switch to SETPOINTS or CALIBRATION.

Um in den Messbetrieb zurückzukehren, muss der RUN-Schalter wieder auf RUN gestellt werden!

Pay attention:

While the cover is removed, do not allow moisture to enter the gauge housing.

Alarm setpoint programming (RUN-switch to SETPOINTS)

← UP **VALUE** DOWN →

alarm 1 (SP1)



setpoint 1
0-100% of range in pressure units
(pressure at which relay 1 closes)

action SP1



relay 1 closed
above setpoint

relay 1 closed
below setpoint

hysteresis SP1



hysteresis SP 1
0-100% of range

alarm 2 (SP2)



setpoint 2
0-100% of range in pressure units
(pressure at which relay 1 closes)

action SP2



relay 2 closed
above setpoint

relay 2 closed
below setpoint

hysteresis SP2

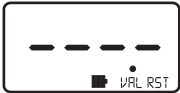
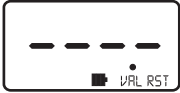


hysteresis SP 2
0-100% of range

SCROLL BACK **MENU** SCROLL FWD

Programming of digital pressure gauge

(RUN-switch to CALIBRATION)

		← UP VALUE DOWN →	
↑ SCROLL BACK MENU SCROLL FWD ↓	calibration menus		calibration mode switch SCROLL BACK / SCROLL FWD to proceed MENU
	offset		offset calibration adjustment change value with VALUE UP / DOWN range: +/- 10% of span
	span		span calibration adjustment multiplies reading range: 0,90...1,10
	displayed units		display unit PSI gau, PSI abs, in H ₂ O, kg/cm ² , mmHg, inHg, MPa, kPa, bar,
	dampening factor		dampening / digital filter factor: 0,0...10,0
	decimal position		decimal point position (setting is not stored in nonvolatile memory)
	maximum pressure captured		hold UP-switch for 3 seconds to reset
	minimum pressure captured		hold UP-switch for 3 seconds to reset
	restore factory defaults		hold UP-switch for 3 seconds to reset all factory defaults
			
			
			

Accessories

PVC-cable

(with M12-coupling made of SS, IP69K)



Order code:

M12-PVC / 5-5m	PVC-cable, 5-pins, 5m, readymade
M12-PVC / 5-10m	PVC-cable, 5-pins, 10m, readymade
M12-K / 5	M12-coupling 5-pins