



# 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 / max. 60Min.
- complete device certified by 3A
- all materials are FDA conform

## Features

- 2-fold overpressure safety as standard
- protected calibration possibility
- standard min./max. pressure caption feature
- display 23mm high

## Options

- two independent relays with external power supply
- MAN-90p-Bat: pharmaversion with Ra<0,2µm wetted parts
- Hastelloy wetted parts



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 -1...+1bar	u bottom l left r right	316L Hastelloy	x without 1 with switch
MAN-90p-Bat (Pharmaversion)	tc1" (TriClamp 1"/1,5") tc2" (TriClamp 2") tc2,5" (TriClamp 2,5") tc3" (TriClamp 3")	-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			

Bestellbeispiel: MAN-90-Bat / tc2" / -1...+2bar / r / 316L / 1



## Specification

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

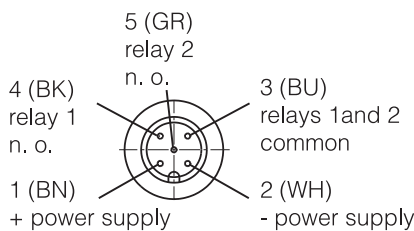
\* for temperature up to 163°C

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. 60min.
	ambient	0°C...50°C
Display	LED height	23mm
	dampening	programmable
	additional display of battery status and alarm 1 and 2 indicators	
	Power	for gauge only
Output	for relay operating	9-30VDC, 250mA
	battery back up of programmed values	
Approvals / Standards	2x switch	24VDC max. 1A (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

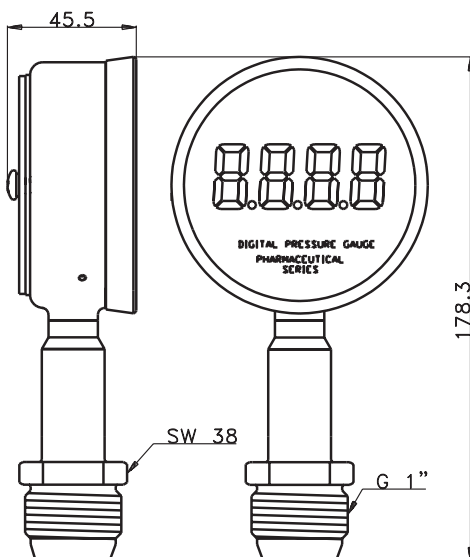
## Option MAN-90p (Pharma)

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

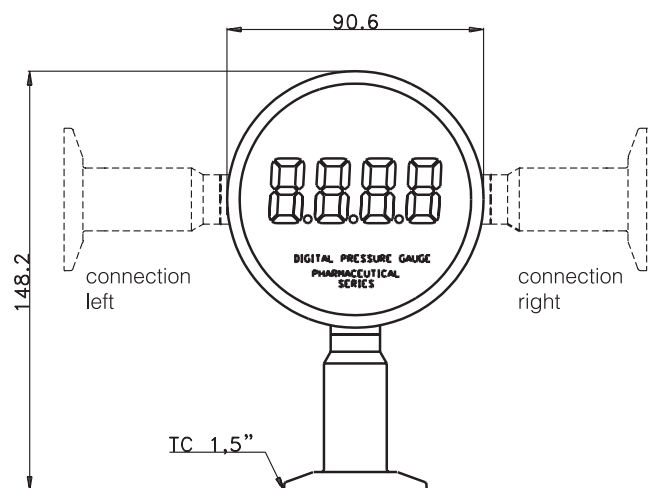
## Electrical connection M12-plug



## Drawings MAN-90-Bat



MAN-90-Bat CLEANadapt  
G1" connection "u" (bottom)



MAN-90-Bat with connections options  
"u" (bottom), "l" (left), "r" (right)

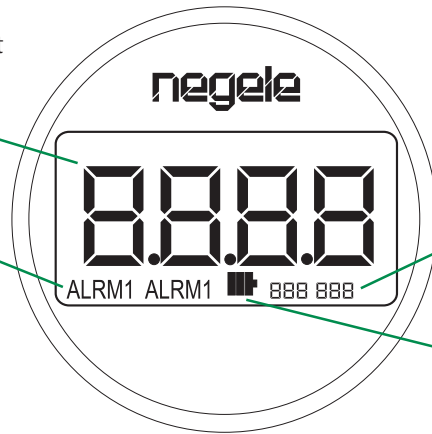
## User Display Digital Pressure Gauge MAN-90-Bat

### Primary display

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

### Anzeige Schaltpunkt 1 und 2

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



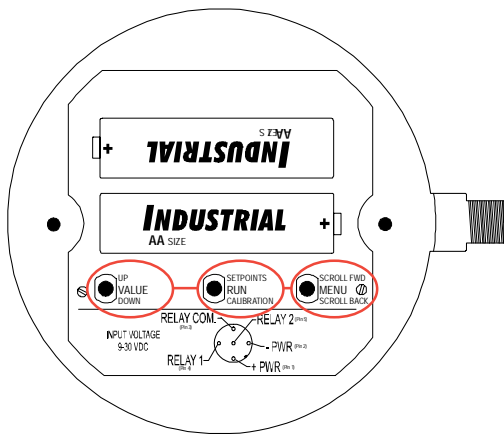
### Secondary display

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 Sek. 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








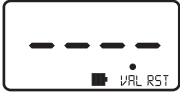




### hysteresis SP2



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 <sub>2</sub> O,kg/cm <sup>2</sup> , 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