Service Manual

for

Digital Manometer

Type: MAN-SD

1. Instructions

Please read this service manual carefully before unpacking and setting the unit for operation, and follow the instructions precisely as described herein.
These devices may only be installed, used and maintained by skilled personnel who are familiar with this service manual and can observe applicable regulations regarding industrial safety and accident-prevention.

2. Contents

Manufactured and Marketed by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim
Tel.: 06192-2990
Fax: 06192-23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

3. Regulation usage

These units of type MAN-SD serve to measure, monitor and remote-transfer of pressure-dependent operational processes in machines and systems.

These devices are equipped as follows:

- 4-digit LCD display
- Three Programming keys
- Process connection (St. Steel)
- Power Supply via 9V block battery
- Limit relays (option)
- Peak value memory (option)
- Analogue output (option)

4. Principle of Operation

A ceramic sensor picks up the pressure (to be measured) and sends the signal to the display via evaluation electronics. Parallel to this, an output is provided as analogue signal for the purpose of remote transfer of measured pressure.
A relay-output is also made available.

5. Unit Check-up

These devices are checked before despatch and sent away in perfect condition. Should the damage to a device be visible, we recommend a thorough inspection of the delivery packing. In case of damage, please inform your parcel service/ forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:
Standard scope of delivery applies on:
- Transmitter with display
- Service manual

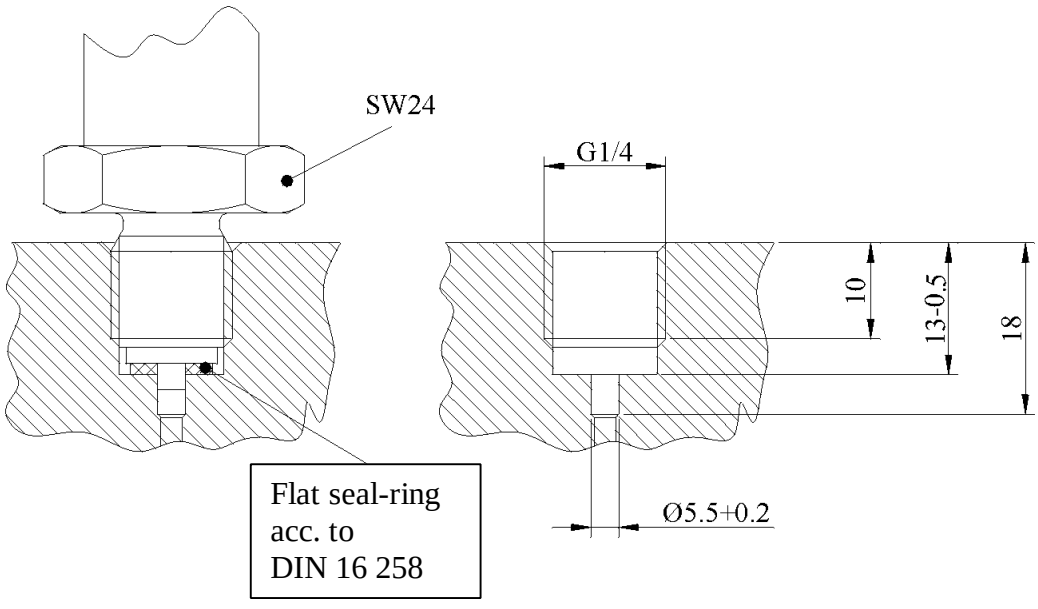
6. Mechanical Connection

Before installation:

- Ensure that the max. pressure in your system is within the prescribed range of digital manometer. The measuring range can be read from the type label of device.
- Make sure that the permitted max. operational temperature of device is not exceeded.
- Ascertain that the electrical power supply to the unit is in agreement with the operational data of the unit.
- Please confirm that there are no parts of packing material present inside the unit.

Installation:

- Ensure that the piping has no pressure inside.
- The digital manometer should be mounted just like a mechanical manometer.
- With standard thread connection, sealing is achieved by means of a suitable gasket (flat-seal or seal-ring (DIN 16258).
- While screwing in the device, rotate the hexagonal screw (SW 24) and not the housing.
- If possible, please check after the mechanical installation, whether the connection joint is adequately sealed or not.



7. Electrical Connection

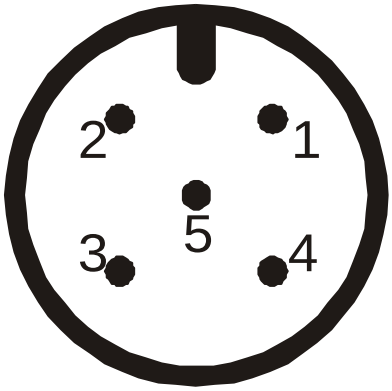
Attention! Please ensure that the voltage of your power supply corresponds with the admissible voltage level for this device.

- Make sure that the power supply lines are not active.
  (only with option: limit-contacts or analogue output)
- Open the battery enclosure on the back-side of the unit and connect the 9V block battery with the connection plug.
- Place the 9V block battery in the enclosure and close it with the lid.
- Terminate the connection wires on the plug (cable), as shown in the illustration below.
- Power supply conductor (area of cross-section): min. 0.5 mm².

Warning! A wrong connection can result in the destruction of device's electronics.

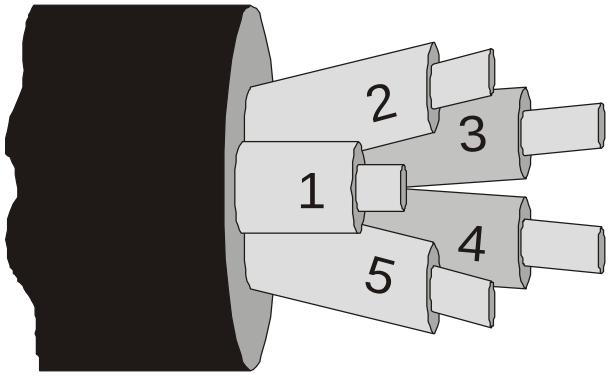
Cable No.	**MAN-SD2...**	**MAN-SD3...**
1		
2	Contact output (Relay in)	
3		GND (0V Reference)
4		Analogue output 0-2V_{DC}
5	Contact output (Relay out)	

Plug M12x1



View of plug contacts

5-core cable



cable wires with numbers

8. Function Keys

For the selection of menu options, the following functions keys are available:

↓	**Next Menu Option**
↑	**Previous Menu Option**
P	**1 x operate Switch-on**
P	**2 x operate Switch-off**
P & ↓	**Jump to Function**

Adjustment and Function:

↓	**Value-adjustment upwards**
↑	**Value-adjustment downwards**
P	**Confirm input for next Menu Option**
↑&↓	**Reject input, Return to Menu Option**

9. Adjustments

Possible adjustments of the device:

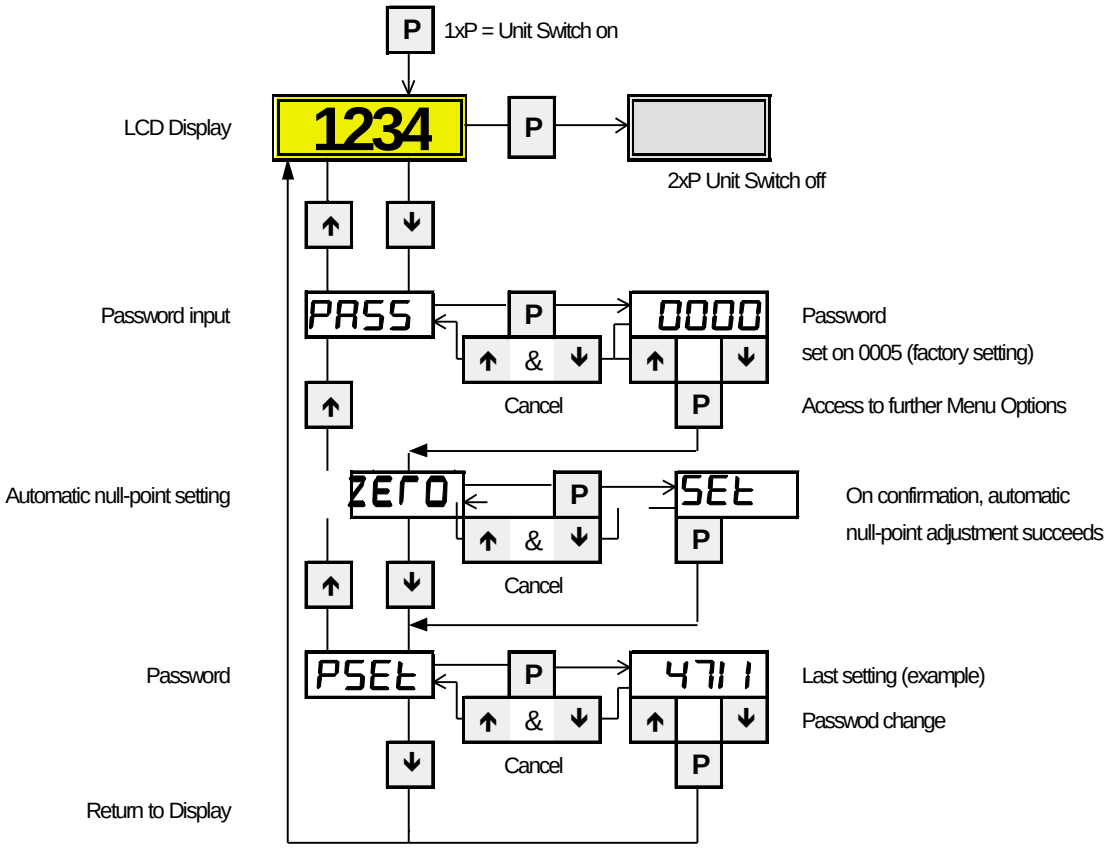
1. Zero point
2. Password (factory preset: 0005)
3. Peak value memory (option)
4. Relay and Hysteresis (option)
   (factory preset: switching point on 50% of measuring range)

Factory presets:

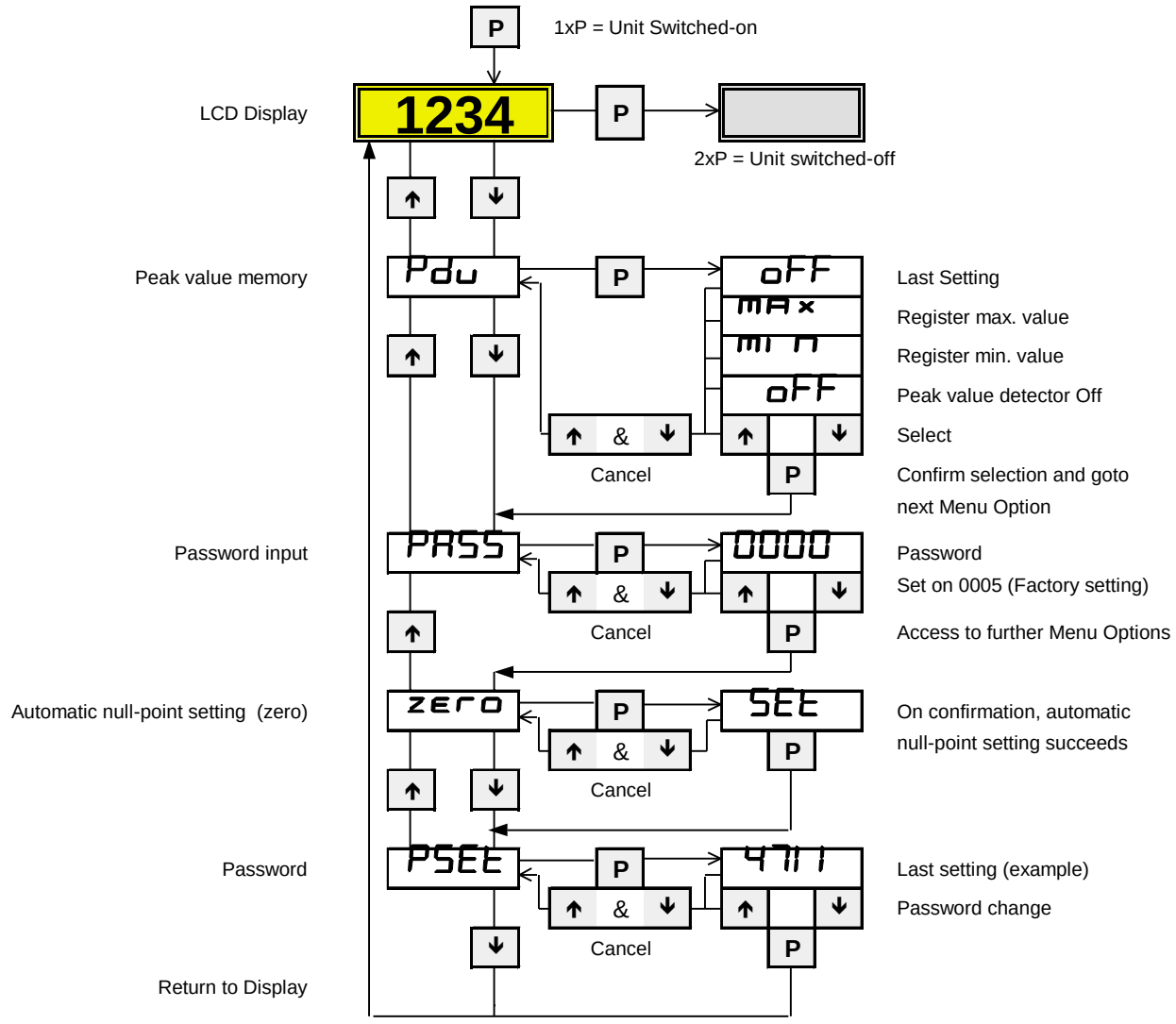
1. Battery symbol on: voltage under 7 V
2. Switch-off time (default: 0 = inactive)
3. Conversion rate (default: 5 measurements per second)
4. Analogue output (linear) within measuring range (option)

10. Control Functions

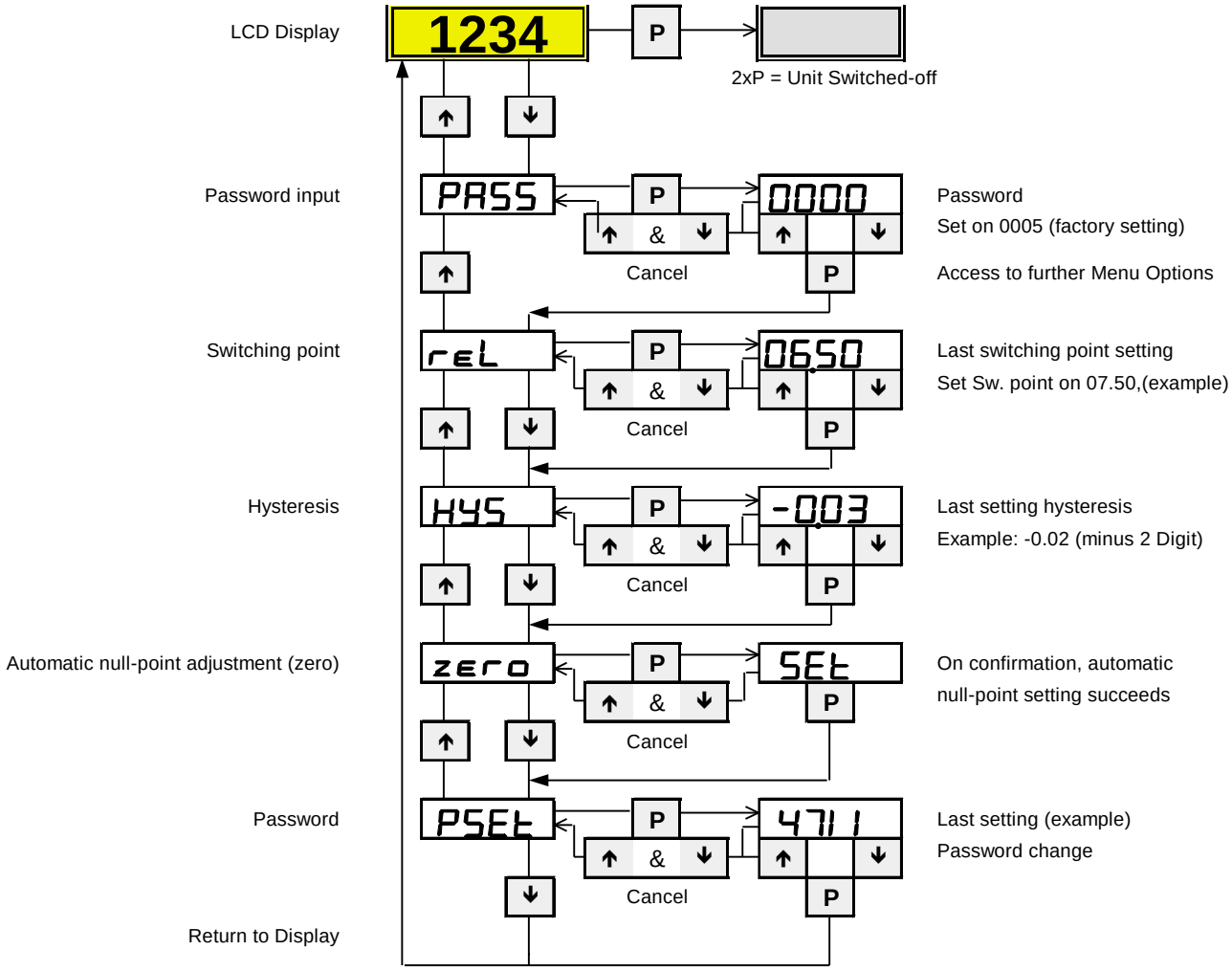
10.1 Standard version MAN-SD10...
and unit with analogue output MAN-SD30...



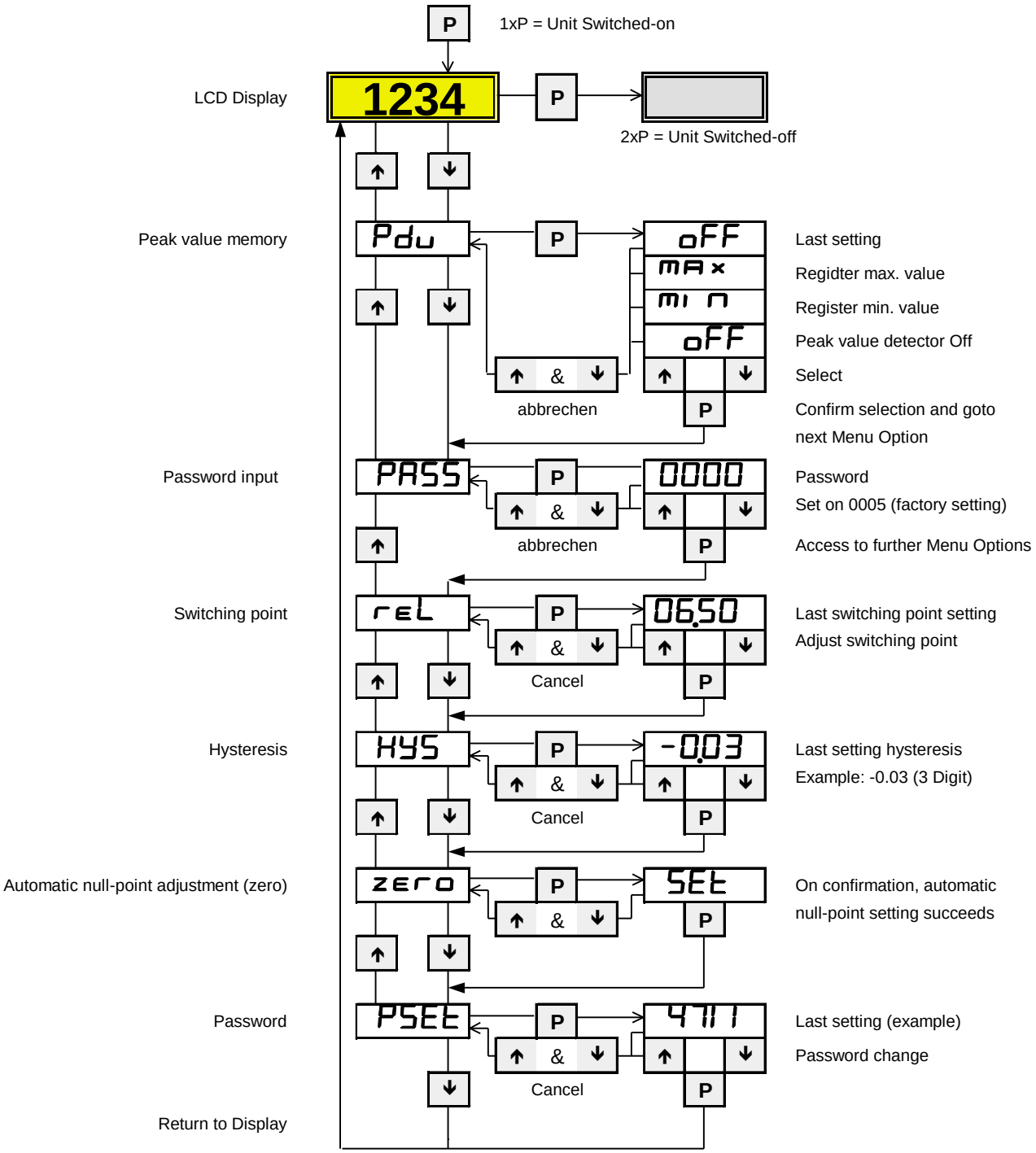
10.2 Unit with peak value detector MAN-SD1S...
and unit with peak value detector + analogue output MAN-SD3S...



10.3 Unit with switching output MAN-SD20...



10.4 Unit with switching output + peak value detector MAN-SD2S...



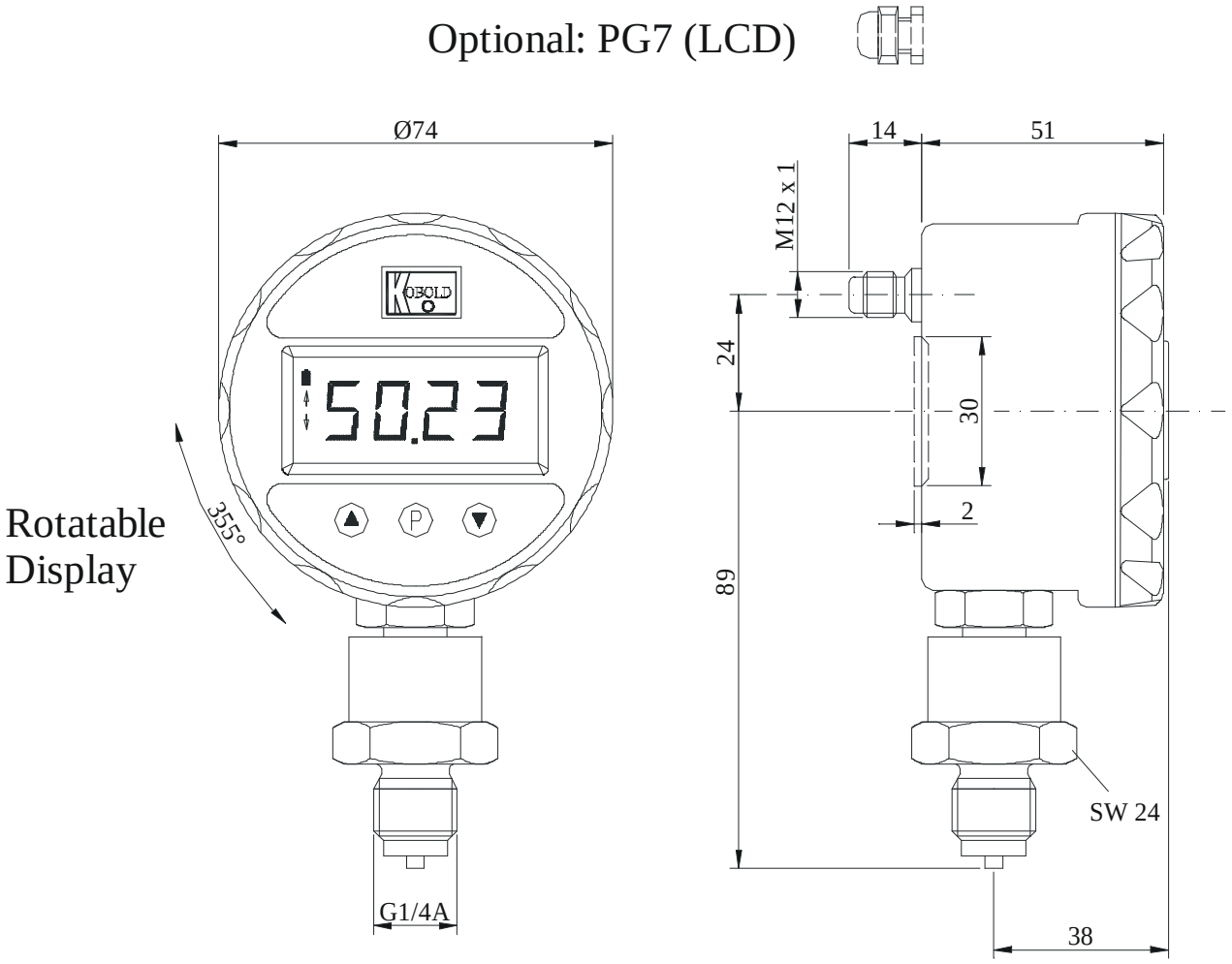
11. Technical Data

Nominal size:	74 mm
Accuracy class	0.5
Display:	4-digit LCD; digit height 12.7 mm
Measuring range:	-1...0, 0...1, 0 - 1.6, 0 - 2.5, 0...4, 0...6, 0...10, 0...16, 0...25, 0...40, 0...60, 0...100, 0...160, 0...250, 0...400
Overload range:	3 x P_N (upto 40 bar) 2 x P_N (60 bis 250 bar) 1,5 x P_N (ab 250 bar)
Power supply:	9 VDC (block battery)
Service-life at conversion rate 5/s:	5000 h (block battery 600mAh), 10000 h (Lithium blockbattery 1200 mAh)
Conversion rate:	5 per Sec. (standard) (1 to 10 per sec. Factory-adjusted)
Automatic switch-off times: (auto off)	2 ..... 90 min, Only factory-adjustable. 0 = inactive (not recommended with analogue or switching output)
Zero point correction:	≤ ± 25 %
Parts in contact with medium:	St.Steel 1.4571, Ceramic, NBR
Connection:	G ¼ (Manometer) ¼" NPT (Option)
Medium temperature:	-30...+85°C
Ambient temperature:	0...+60°C
Storage temperature:	-30...+80°C
Permissible relative humidity:	<90%, not condensing
Protection cat.:	IP 65
Limit-value relay (Option):	N.O., bistable arbitrary adjustable, adjustable hysteresis
Max. switching power:	30 V AC/DC, 2 A
Analogue output (Option):	0 - 2 VDC
Load:	≥ 100 kΩ
Electrical connection (for Relay or analogue output)	Plug M12 x 1 or 0.5m cable
Peak value memory (Option):	Min or Max value, Resetting via keypad

12. Maintenance

In case, the medium to be measured is not polluted, the unit is maintenance-free.

13. Dimensions



14. Ordering code

MAN-SD	1	0	C315	0

Output

without	1
Relay/N.O. contact	2
Analogue output	3

Peak value memory

without	0
with	S

Measuring range code

-1 to 0 bar	C315
0 to 1 bar	B025
0 to 2.5 bar	B045
0 to 4 bar	B055
0 to 6 bar	B065
0 to 10 bar	B075
0 to 16 bar	B085
0 to 25 bar	A095
0 to 40 bar	A105
0 to 60 bar	A115
0 to 100 bar	A125
0 to 160 bar	A135
0 to 250 bar	A145
0 to 400 bar	A155

Electrical connection

Without	0
0.5 m cable	K
Plug M12 x 1	S

15. Declaration of Compliance

We, Kobold-Messring GmbH, Hofheim-Ts., Federal Republic of Germany, declare, that the product

Digital Manometer Type: MAN-SD...
complies with the standards given below:

EN 50081-1.2.1994.03
Electromagnetic compatibility - Generic emission standard

EN 50082-2.1996.02
Electromagnetic compatibility - Generic emission standard

EN 61010-1.1994.03
Safety requirements for electrical measurement, control, and laboratory use

Also, following EWG guidelines are fulfilled:
89/336/EWG

Signature:

H. Peters M. Wenzel

Date: 29.11.00