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Operating Instruction

SPG-DIGI



Please read carefully before use!

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1 Introduction

The SPG-DIGI is a digital manometer featuring a MIN/MAX display function. Full scale (FS) accuracy is $\pm 0,5\%$ based on the upper limit of the measurement range. Dynamic pressure peaks are measured at a scanning rate of 10 ms (100 measurement values/second). The MIN/MAX memory is continuously updated and rewritten.

1.1 Notes on Safety / Product Selection

The correct functioning of the SPG-DIGI can only be guaranteed when the specifications detailed in these operation instructions are adhered to. In particular, specifications relating to the permitted upper limit of the measurement range as well as the permissible temperature range must be observed.



Serious malfunctions leading to personal injury or damage to property can result from using the chosen product in applications that do not comply with the specifications or from disregarding the operation instructions. In particular, incorrect mounting of the manometer and the corresponding adapter can cause the manometer to be torn out of the assembly.

For Service, Repair and Calibration of the measurement instruments please contact your STAUFF sales branch.

1.2 Device Versions and Range of Delivery

Device Versions and scope of delivery			
Pressure connection G 1/4 male thread Without Connection adapter Basic setting to unit "bar"		Pressure connection 7/16-20 UNF male Without Connection adapter Basic setting to unit "PSI"	
Measurement Range	Part No.	Measurement Range	Part No.
-1... 16 bar	SPG-DIGI-B0016-B	-14,5... 230 PSI	SPG-DIGI-B0016-U
0... 100 bar	SPG-DIGI-B0100-B	0 ... 1450 PSI	SPG-DIGI-B0100-U
0... 400 bar	SPG-DIGI-B0400-B	0... 5800 PSI	SPG-DIGI-B0400-U
0... 600 bar	SPG-DIGI-B0600-B	0... 8700 PSI	SPG-DIGI-B0600-U
0...1000 bar	SPG-DIGI-B1000-B		



SPG-DIGI with Adapter



SPG-DIGI without Adapter

2 Commissioning

The SPG-DIGI is supplied with batteries fitted.
The device is operational as soon as it is turned on.

2.1 Replacing the Batteries



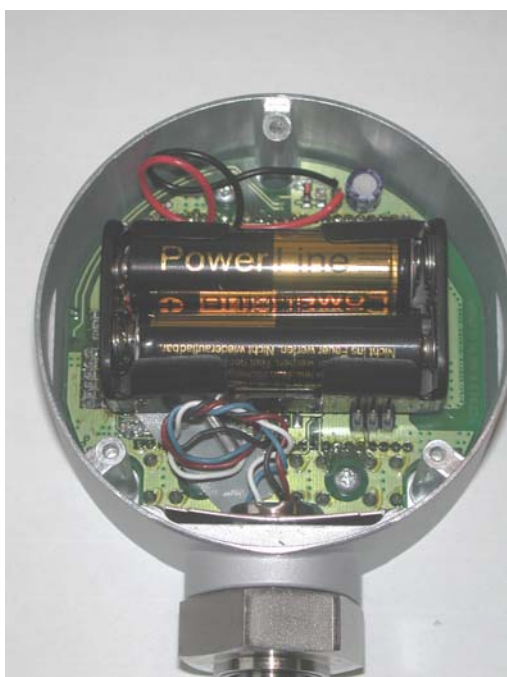
Caution!

Turn off the device before replacing the batteries. Open the battery compartment. Insert the new batteries as depicted. Ensure correct polarity of the batteries.

Batteries: 2 x 1,5 V (LR6 - AA)



When in continuous operation (without light), the service life of the batteries is 1.500 hours.
A battery symbol permanently displays the actual battery status.

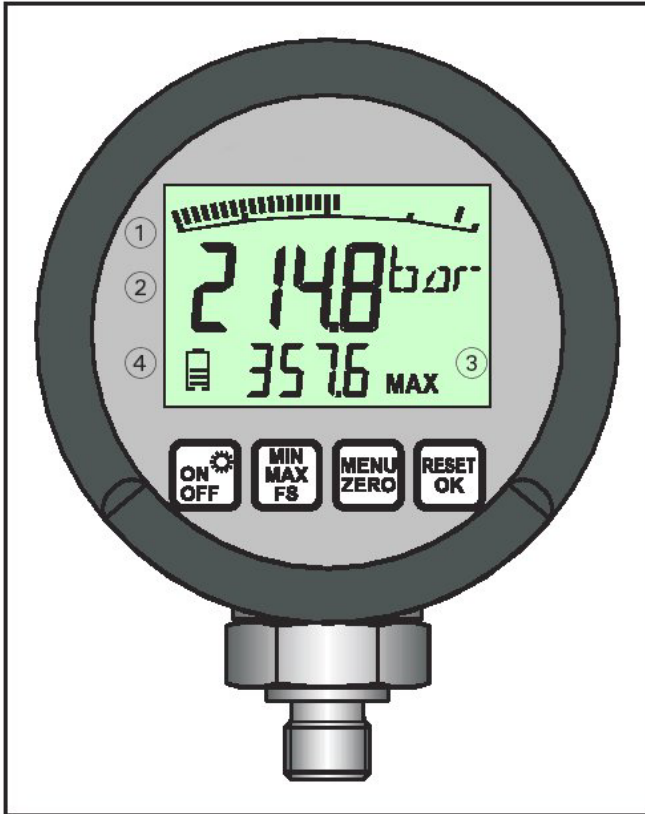


The serial number of the SPG-DIGI pressure gauge is no longer displayed on a label under the protective rubber cap but now in the SPG-DIGI software menu.

Please press the button  and hold the button for min. 2 s. The SPG-DIGI will switch through the following menu points on every keystroke:

- Automatic Switch off (PO, 5.10)
- Changing the units (unit, 5.11)
- Filter settings (Filt, 5.12)
- Display serial number (5.13)

3 Functions and keys



Display

- 4 ½ digit LCD with backlight
- Displays measurement values and menu functions

- ① - „Bar-graph“ with peak & hold function
- ② - Actual Value display (size 15mm)
- ③ - MIN/MAX or FullScale (FS) (8 mm)
- ④ - Battery status


Keys



Key		Function
	ON /OFF ☀	Turns the device on / off. Press for 2 s. Turns on the Back Light (stays on for 20 s.).
	MIN MAX FS	Select display unit: MIN, MAX or FS. Minimum value, Maximum value (=pressure peak) Displays the upper limit (FS) of the scale (e.g.400 bar)
	MENU: ZERO:	Press for 2 s. Changes the unit. Auto power off - on/off. Zero point calibration.
	RESET: OK:	Erases MIN and MAX values from the memory. Confirms the MENU functions.

3.1 Display Mode

The actual pressure (ACT) is indicated in the display mode. The ACT measured value is displayed in the corresponding unit. The MIN, MAX or FS values is indicated in the lower oart of the display.

Display	Description
bar-graph	Graphic indication of the actual pressure. A pressure peak is indicated by means of a pixel (graduation mark). The indicated value is refreshed at intervals of 50 ms (20 measurements /s).
ACT	Indicates the actual pressure. The indicated value is refreshed at intervals of 300 ms (3 times /s).
MIN/MAX	Indicates the MIN- , MAX- or FS value according to setting. The indicated value is refreshed at intervals of 300 ms (3 times /s).
FS	Upper limit of the scale (e.g. 400 bar).
Units	Indicates the chosen unit.
Battery 	Indicates the battery status (5 segments).
x10	Indicated value (actual indication and MIN/MAX indication) x10

3.2 Menu Functions

The following settings can be made in the MENU function:

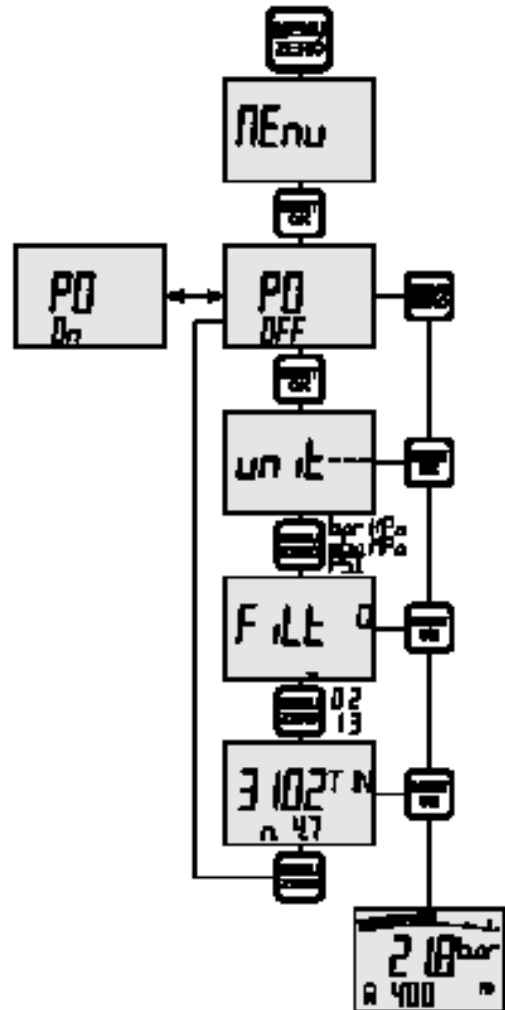
- Auto Power Off – **on** or **off**
- Unit selection (bar/mbar/PSI/kPa/Mpa.)

Press the MENU key for 2 seconds to activate the functions menu.

Press the MENU key again to select the next function.

Press the OK key to save the function setting.

The device then switches to the display mode.



4 Connection to the Hydraulics

The SPG-DIGI is available with male thread G 1/4 (BSPP) or 7/16-UNF for the corresponding versions (bar / psi). Several adapters for other pressure connections can be supplied also.

Please make sure that the device is properly mounted to avoid malfunctions.



Please do not assemble while the SPG-DIGI is pressurized

Connection	Designation Adapter
G1/4 to M16x2	SDA20-G1/4
G1/4 to M16x1,5	SDA15-G1/4
G1/4 to S12,65x1,5	SDA12-G1/4
Adapter SAD only in conjunction with Adapter SDA20-G1/4	
M16x2 to M16x1.5	SAD20/15-P
M16x2 to S12,65x1.5	SAD20/12-P
M16x2 to Plug	SAD20/10-P

(Other adapters on request available.)



Observe specified torques when fitting the SPG-DIGI:

The spanner size of the pressure connection is 27 mm	
Pressure connection	Torque
1/4 BSPP	25 Nm
7/16-20 UNF	35 Nm

When fitting directly, please ensure the SPG-DIGI can be rotated freely.



Safety instructions for using the 1.000 bar operating range:

Please note that special connection adapters are available which are approved for a nominal working pressure of 1.000 bar.

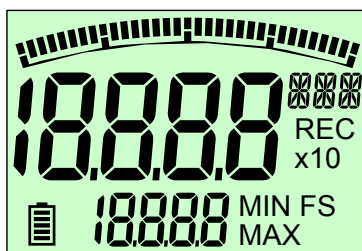
Please pay attention to built in test points acc. to rated nominal pressure and specified safety factors.

5 Operating the SPG-DIGI

5.1 Turning on (ON)



Press



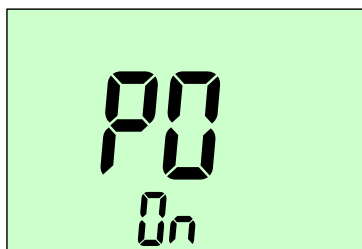
A self-test procedure is carried out



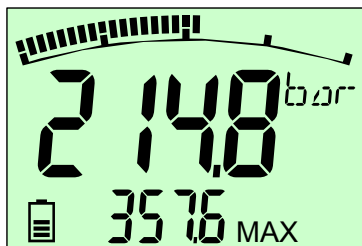
The measuring range is indicated (FS)

Unit (**bar**) SPG-DIGI-...-B

Unit (**PSI**) SPG-DIGI-...-U



Auto Power Off function is active. Power off activates automatically after 5 min. This function can be altered in **MENU**.



Display mode.

ACT value displayed

MAX pressure peak

5.2 Turn off (OFF)



Press once (briefly)

5.3 Turn on backlight



Press for 2 s

The backlight turns off automatically after 20 seconds.

5.4 MIN/MAX Display

Use this key to toggle the required value.

The key function is sequential; the values are indicated in the display in sequence.

The MIN/MAX function is used to measure pressure peaks. The respective lowest (MIN) and highest (MAX) measured values are stored in the MIN/MAX memory. Values in the MIN/MAX memory are erased when the device is turned off. If different pressure tests are to be carried out in succession, the MIN/MAX memory must be erased after each measurement.



MIN / MAX and FS value is indicated in the display

5.5 FS Full Scale Display

Displaying the upper limit of the scale (FS) is designed to increase readability of the bar graph function. The upper limit of the measurement range is indicated numerically. FS is indicated in sequence after MIN and MAX



FS is displayed.

5.6 Erasing MIN/MAX Values



Erases MIN/MAX values.

5.7 OFL Display



This indicates that the applied pressure is outside given full scale range (at appr. 20% overload from FS).

If the message will remain displayed, while the SPG-DIGI is pressure less, please consult your local STAUFF office.

5.8 Zero Point Correction (ZERO)

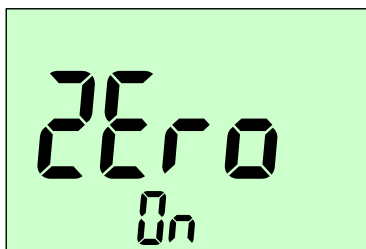
The zero point can be corrected manually should undesired deviations occur when no system pressure is being applied (atmospheric pressure).



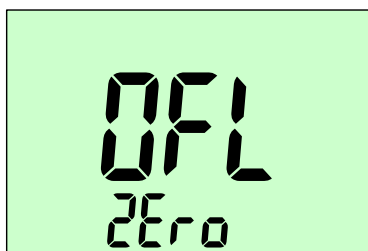
Caution! The zero point correction sets the current ACT value to zero. In order to exclude erroneous measurements; ensure **no system pressure** is being applied when carrying out this function.



Press ZERO (quick)



This initiates the zero point correction.. The **ACT** (actual) value is indicated in the display as 0.0 bar. This correction remains active until the device is turned off.



OFL / Zero is displayed for 3 s if the measured pressure is greater than 5% of the measurement range.

Zero point correction cannot be carried out. Please ensure that **no system pressure** is being applied.

5.9 Resetting Zero Point Correction



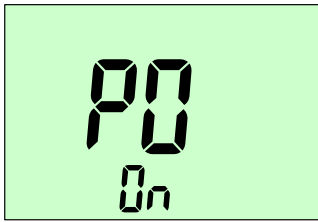
Turn off the device.
Zero point correction is **no** longer active when the device is turned off and on again.

5.10 Automatic Power Off

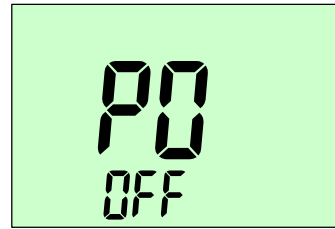


Press for 2 s

Depending on the device configuration, two different displays are possible:




Auto Power off




Continuous operations

PO ON

Press . Auto Power off is activated after 5 minutes.

PO OFF

Press . The device must be turned off manually.

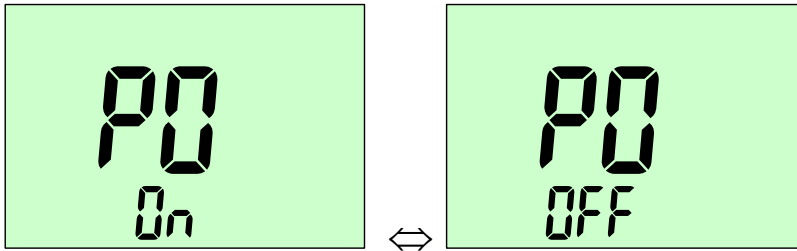


The settings Auto Power Off or Continuous operations remain stored and are active when the device is turned off and on again.

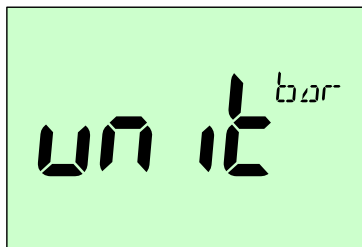
5.11 Changing the Unit



Press for 2 s.



Press.

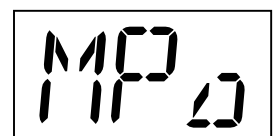
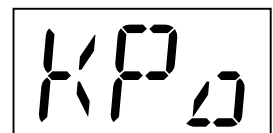
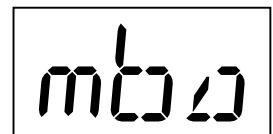
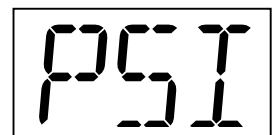
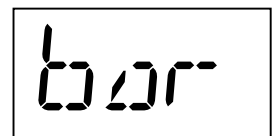


Press once (briefly)

The next unit is indicated



Confirm unit selection

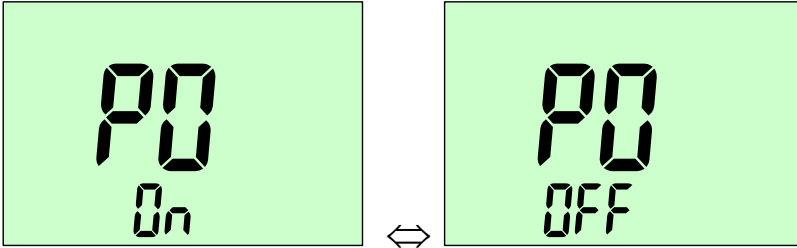


5.12 Filter settings

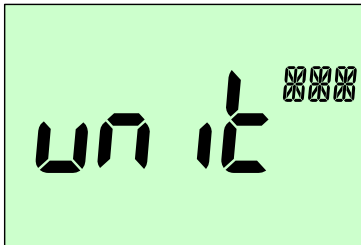
The filter prevents little fluctuations of the displayed values (has the same function as a glycerin filling in an analog pressure gauge that prevents a shivering indicator because of small system fluctuations).



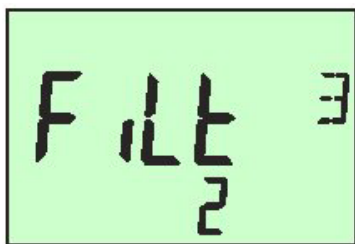
Press for 2 s.



Press.



Press



Press once (briefly)

Filter selection is indicated



Confirm filter configuration

5.13 Display serial number



Press



Display of serial number (1.line)
Display of software version (2.line)



6 Technical Data:

Version	<ul style="list-style-type: none"> - Digital pressure gauge with ACT - MIN and MAX Display - Bar graph display (33 segments) with peak and hold function - 4 ½ digit LC display (15 mm) with back light illumination - Battery powered with low power electronic system - Life time cycle 1.500 h (No back light function) - Pressure port stainless steel 1.4404 - ¼" BSPP (ISO 1179-2) or - 7/16 – 20 UNF (ISO 11926-2/3) 	
Input:	<ul style="list-style-type: none"> - Ceramic sensor cell (relative) -1. . 16 bar - Strain gauge cell (absolute) 0. . 100/400/600/1000 bar - Scan rate 10 ms - Resolution 12 bit = 4.096 steps. - Accuracy ± 0,25%FS (Full Scale) typ., ± 0,5 %FS max. 	
Housing	<ul style="list-style-type: none"> - Ø79 mm, - T=33 mm, - Zinc die cast with rubber protection TPE 	
Sealing	<ul style="list-style-type: none"> - NBR sealed (standard) - FKM (Viton®) or EPDM on request 	
Weight	<ul style="list-style-type: none"> - 540 g 	
Power supply	<ul style="list-style-type: none"> - Battery 2 x1,5 VDC AA (LR6 –AA) Alkaline (Mignon) 	
Parts in contact with media	<ul style="list-style-type: none"> - Stainless steel 1.4404 - NBR - Ceramics 	
Ambient conditions	<ul style="list-style-type: none"> - Operating temperature: - Fluid temperature: - Storage temperature: - Rel. humidity: - Protection: - Vibration: - Shock: - Reliability cycles (10⁶): 	<ul style="list-style-type: none"> -10. . 50 °C -20. . +80°C -20. . +60°C < 85% EN 60529 (IP 67) IEC 60068-2-6, (5g) IEC 60068-2-27 (25g) 100

Digital Pressure Gauge SPG-DIGI

Range bar	Display bar	Display PSI	Display mbar	Display kPa	Display MPa
-1 ... 16	-1,0...16,0	-14,5...200,0	-999...16000	-100...1600	-
0 ... 100	0...100,0	0...1500	-	0...10000	0...10,0
0 ... 400	0...400,0	0...6000	-	0...4000 (x10)	0...40,0
0 ... 600	0...600,0	0...9000	-	0...6000 (x10)	0...60,0
0 ...1000	0...1000	0...15000	-	-	0...100,0

Range (bar)	-1 .. 16	0 .. 100	0 .. 400	0 .. 600	0...1000
Overload P _{max} (bar)	40	200	800	1200	1500
Burst Pressure (bar)	50	800	1700	2200	2500
Range (PSI)	-14,5 .. 230	0 .. 1450	0 .. 5800	0 .. 8700	14500
Overload P _{max} (PSI)	580	2900	11600	17400	21750
Burst Pressure (PSI)	725	11600	24650	31900	36250

Burst pressures are based on data without assembled adapters.



Exceeding the maximum overload values (P_{max}) can lead to malfunctions and result in the SPG-DIGI being destroyed.

The SPG-DIGI meets the guidelines of the European Community (EU).
It is confirmed that this product is approved acc. to following standards:



DIN / EN 61000-6-2
DIN / EN 61000-6-3

Technical subject to change

November 2006