GERMANY

OPERATING INSTRUCTIONS

CE

Digital Pressure Gauge

DM 80-UMS

Rel. 20220518

Described product

Manufacturer
LEITENBERGER GmbH, Bahnhofstrasse 32/33
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Legal notice

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1. Safety

1.1 Safety notes and regulations

To ensure safe and reliable work with the digital pressure gauge and to protect the user from injuries, the following points are to be observed:

- **Read the operating instructions carefully.**

- The digital pressure gauge may only be operated and installed in systems by trained specialists who possess the necessary expertise and qualifications to perform these tasks, and who are familiar with the applicable standards, regulations and requirements of the field of application.

- The operating instructions are an integral part of the digital pressure gauge. Store the operating instructions in a safe location so that you can quickly find the desired information if necessary.
- The legal provisions and regulations as well as those of the system/vehicle manufacturer are generally to be observed.
- Prior to commissioning, perform a check to ensure that the digital pressure gauge is in faultless condition. Do NOT operate the digital pressure gauge if damaged.
- No technical modifications to the digital pressure gauge may be made.

- Protection class according to DIN 60529: The ambient conditions at the place of use must not exceed the requirements for the specified protection class (see Technical data).
- Do not subject the digital pressure gauge to any extreme temperatures, direct sunlight, extreme humidity or wet.
- Observe the measurement range limits and temperature ranges.

- Do not exceed the maxim measurement range limits and temperature ranges of the digital pressure gauge at any time.
- The maximum pressure/load range of the system or component with the lowest value is the decisive maximum value for the overall pressure/load range.
- Do not exceed the maximum pressure/load value of the smallest component of the system at any time.
- Always observe the nominal pressure specifications of the built-in measuring connections and lines as well as the specified safety factors.

- Repairs to the digital pressure gauge may only be performed by the manufacturer.
- Use only original spare parts and accessories.

- Non-specified use of the product or failure to observe the safety and operating notes may lead to severe malfunctions as well as personal injury and property damage.
- The discharge of media or hot liquids that are under pressure may cause injuries.
- Pressurised systems may burst and cause parts to be ejected.

- Wear personal protective equipment, such as protective goggles, gloves, safety shoes, etc. when working on pressurised systems and components.

1.2 Explanation of symbols

Warning notices and important information are marked in this document with symbols for better identification.

The notices begin with signal words that indicate the extent of the danger. You must absolutely comply with these notices and information and handle the device with care to prevent accidents and avoid personal injury and property damage.

DANGER
Notice indicating a dangerous situation which, if not avoided, will result in death or severe injury.

WARNING
Notice indicating a dangerous situation which, if not avoided, could result in death or severe injury.

CAUTION
Notice indicating a dangerous situation which, if not avoided, could result in minor to moderate injury.

Attention
Notice indicating a dangerous situation which, if not avoided, could result in property damage.

Note
Notice including useful tips, recommendations and information for efficient and trouble-free operation of the digital pressure gauge.

1.3 Intended use

The DM 80-UMS digital pressure gauge is used for the mobile and stationary measurement of pressures, within the approved ranges (see technical data).

WARNING
Danger from improper use.
Any improper use and failure to observe safety and operating notices can result in serious malfunctions as well as personal injury and property damage.

- Only use the DM 80-UMS digital pressure gauge as intended.
- All information in the operating instructions and safety data sheets must be strictly complied with.

1.4 Disclaimer

Failure to comply with the intended use will immediately void any warranty and guarantee claims against the manufacturer. No liability is accepted for damage or malfunctions caused by improper use, assembly errors or failure to observe the operating instructions.

1.5 Ambient conditions

The DM 80-UMS digital pressure gauge is only intended for use in commercial workshops. It is not approved for ATEX areas and therefore must not be used in potentially explosive areas.
The climatic requirements correspond to the conditions typically prevailing in Central Europe. Optimum function is ensured between -10 °C and +50 °C. The device must be stored within a temperature range of -20 °C to + 50 °C.

The DM 80-UMS digital pressure gauge must be secured against falling down.

2. Product description

The DM 80-UMS is a digital pressure gauge with actual value display as well as min/max display and accuracy class 0.5 FSO. The MIN/MAX memory is permanently updated and overwritten. The sampling rate is 10 milliseconds (100 measurement values/second) for measuring dynamic pressure peaks. The integrated data logger saves the measured data. The data storage is 8 GB. The data is accessed via the Micro-USB interface in the form of a .csv file.

2.1 Device versions / delivery scope

– DM 80-UMS Digital pressure gauge with rubber protection cap (green) and Micro USB cable

2.2 Device view, buttons and functions

Display:
4.5-digit display with background lighting. Display of measurement values and menu functions.

Display mode:
The actual value display shows the current pressure. The measured value is displayed in the set unit. The MIN, MAX or FS value and battery status are shown at the bottom of the display.

Item	Designation	Button	Function
①	Bargraph		The bar graph graphically depicts the maximum measuring span. The stored MAX value is displayed as a static, individual bar (= drag pointer function). The display is updated at an interval of 10 milliseconds. (100 measurements / second)
②	Actual value display, measured value and pressure unit		Displays the current pressure. This display is updated at an interval of 300 milliseconds. (3 displays / second) Displays the unit set.
③	Display MIN/MAX/FS		Displays the display value selected: MIN, MAX or full scale (FS).
④	REC/RESET/OK button	REC RESET OK	Activation of data recording or data logger. Deleting the MIN and MAX measured data storage. Confirmation of the MENU functions
⑤	MENU/ZERO button	MENU ZERO	Short press of button: menu Long press of button (3 seconds): nullification
⑥	MIN/MAX/FS button	MIN MAX FS	Selection of the display value: MIN, MAX or full scale (FS) minimum value / maximum value: Pressure peak / Display of the maximum measuring span (e.g. 60,00 bar)
⑦	ON/OFF button	ON OFF	Short press of button: switch device on/off Long press of button (3 seconds) Background lighting on/off (for 20 seconds)
⑧	Battery symbol		Displays the battery status (fully charged = 5 segments)
⑨	Charge control indicator		Illuminates red when the battery is charging and green when the battery is fully charged.
⑩	Micro USB socket (female)		For battery charging and data transmission
⑪	Rubber protective cap		Protection against damage to the device

2.3 Menu functions

The following settings are made using the MENU function

- unit: Set the measurement unit (bar, mbar, PSI, kPa, MPa)
- Filt: Set the filter function (attenuation)
- LOG: Set the sampling rate
- FS: Function menu reserved by the manufacturer (locked)
- date: Set the date and time
- Sw: Shows the software version

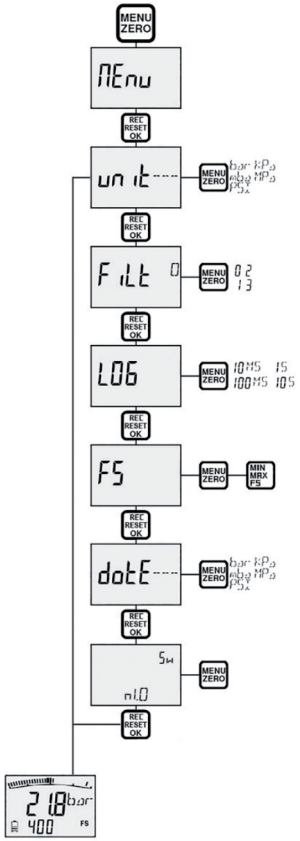
- Press the "MENU" button to adjust the parameters and the "REC/RESET/OK" button to save the respective parameter. Will then jump to the next parameter.

- Press the "REC/RESET/OK" button continuously (approx. 3 seconds) to exit the function menu.

If the user is in the function menu and does not activate any action for 20 seconds, he also exits from the function menu and all set parameters are saved.

Overflow
If the device displays "OFL" (overflow), this means that the existing pressure is too high.

The device switches off automatically after 5 minutes if there is a maximum pressure change of 2 % of the respective end value.



3. Prior to commissioning

3.1 Check the scope of delivery.

3.2 Prepare and connect the digital pressure gauge.

NOTE
Charge the battery fully before using the digital pressure gauge for the first time.

- Charge the battery fully, see point 4.13

CAUTION
Risk of injury due to leaking liquids or gases.
The discharge of media or hot liquids that are under pressure may cause injuries.
Risk of injury due to ejected parts.
Pressurised systems may burst and cause parts to be ejected.
Do not exceed the maximum pressure/load value of the smallest component of the system at any time.
Never open pressurised fittings.
Wear personal protective equipment, such as protective goggles, gloves and safety shoes when working on pressurised systems.

Attention
Follow the instructions and specifications of the system manufacturer regarding the tightening torques for fittings, adapters, etc.

Install the pressure gauge at the measuring point of the system. To do so, loosen or open the fitting and install the pressure gauge. Tighten fittings to the specified torque. Do not exceed the maximum torque of the pressure gauge connection.

4. Operation

4.1 Commissioning (switching on)

Switching on the pressure gauge:
Briefly press the ON/OFF button. The pressure gauge is ready.

4.2 Switching off

Briefly press the ON/OFF button.

4.3 Switching the lighting on/off

Press and hold the ON/OFF button for approx. 3 seconds.

4.4 Setting/resetting the measurement unit

Measurement units: bar, PSI, kPa, MPa, mbar
Press the MENU/ZERO button to start the menu function.

Press the REC/RESET/OK button and open the  menu item.

Briefly press the MENU/ZERO button to call up the desired measurement unit.
(The next unit is called up by briefly pressing the MENU/ZERO button again)

Briefly press the REC/RESET/OK button, save the selection and call up the filter function.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.5 Setting the filter function (attenuation)

The filter function serves to attenuate the measurement value display.
The following filter functions can be set:

0 = no attenuation
1 = weak attenuation
2 = medium attenuation,
3 = strong attenuation

Press the MENU/ZERO button to start the menu function.
(This does not apply if the menu item is already open)

Keep pressing the REC/RESET/OK button until the  menu item is displayed.
(This does not apply if the menu item is already open)

Briefly press the MENU/ZERO button to call up the desired attenuation value.
(The next value is called up by briefly pressing the MENU/ZERO button again)

Briefly press the REC/RESET/OK button, save the selection and call up the logging function.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.6 Logging (setting/changing the sampling rate)

For capturing and logging the pressure peaks.
Selection: 10 ms, 100 ms, 1 s, 10 s.

Press the MENU/ZERO button to start the menu function.

Keep pressing the REC/RESET/OK button until the  menu item is displayed.

Briefly press the MENU/ZERO button to call up the desired sampling rate.
(The next rate is called up by briefly pressing the MENU/ZERO button again)

Briefly press the REC/RESET/OK button, save the selection and call up full scale.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.7 FS (function menu reserved by the manufacturer)

Press the MENU/ZERO button to start the menu function.

Keep pressing the REC/RESET/OK button until the  menu item is displayed.

Briefly press the REC/RESET/OK button and call up the date/time.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.8 Setting the date and time

Press the MENU/ZERO button to start the menu function.

Keep pressing the REC/RESET/OK button until the  menu item is displayed.

Press the MIN/MAX/FS button &  MENÜ/ZERO MENU/ZERO button simultaneously and call up the year (YY).

Press the MIN/MAX/FS button to lower the value. ▼

Press the MENU/ZERO button to increase the value. ▲

Press the REC/RESET/OK button and month (MM); day (TT); time [HH] and minutes (MM).
Set the values as described in how to set the year.

Press the REC/RESET/OK button and save the settings. The  menu item is displayed.

Briefly press the REC/RESET/OK button, save the selection and call up the software version.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.9 Displaying the software version

MENU ZERO

Press the MENU/ZERO button to start the menu function.

REC RESET OK

Keep pressing the REC/RESET/OK button until the  menu item is displayed.
The software version is displayed.
Briefly press the REC/RESET/OK button, confirm the measurement unit and call up the measurement unit.
Option: Press and hold the REC/RESET/OK button for 3 seconds to exit the menu.

4.10 Displaying the MIN/MAX pressure

MIN MAX FS

Press the MIN/MAX/FS button to call up the following values:
MIN (lowest measured pressure)
MAX (highest measured pressure)
FS (full scale = maximum measuring span)

4.11 Recording measurement values

MIN MAX FS

Press the MIN/MAX/FS button to start logging.
REC is shown on the right of the display.

Note: During logging it is not possible to call up the menu with the MENU/ZERO button.

4.12 Charging the battery

Use the USB cable and a commercially available USB charger* (230 VAC). Plug the USB charger into a 220 V socket. Insert the A plug of the USB cable into the USB charger and the micro-plug into the USB socket on the digital pressure gauge. The battery charge control indicator lights up red when charging and green when the battery is fully charged, at which point the charger should be removed.
(*USB charger not included in scope of standard delivery)

4.13 Transferring the measurement data to the PC

Use the USB cable. Insert the A plug of the USB cable into a USB socket on the PC and the micro-plug into the USB socket on the digital pressure gauge. Switch on the digital pressure gauge. The digital pressure gauge is recognised as a USB mass storage device. The measurement data is saved in a CSV file.

5. Handling instructions

The device must only be mounted and tightened on the pressure connection using a suitable open-end wrench.
Never screw into the pressure connection while holding on to the housing - **Caution:** Risk of breakage.

5.1 Care and storage

To enable effective working, we designed the digital pressure gauge to be low maintenance. Nevertheless, you should still observe a few notes. This helps to ensure trouble-free operation and to preserve the value of the technology.

Note:
Aggressive cleaning agents or solvents may damage the digital pressure gauge or individual components.
Do not use aggressive or abrasive cleaning agents, solvents or similar chemicals for cleaning.

- Keep dust and dirt away from the digital pressure gauge.
- Clean the digital pressure gauge with a soft, slightly moistened cloth.
- Pay attention to the self-discharging of the battery. (We recommend charging the battery every 8 weeks).
- Battery warranty 6 months / device warranty 12 months.
- Store your product in a dry, dust-protected environment. Avoid places with higher temperatures and moisture or places which can become wet, also for maintenance.
- Keep the original packaging to avoid damage during transportation.

5.2 Environmentally friendly disposal

Recycling according to WEEE (EU Directive 2002/96 EC)
You can optionally return the digital pressure gauge to us for disposal.
This digital pressure gauge or its components must not be disposed of as normal waste.

If you prefer not to return the digital pressure gauge to us for disposal, you are required to bring the device to a specialised centre for the separate collection and disposal of hazardous and special waste. The digital pressure gauge contains an electronic circuit board and a battery. These parts must be removed before the device is scrapped.

6. Technical data, specifications

Feature		Unit			
Measurement range relative		bar	-1…+16	0…25	0…40
Measurement range absolute		bar	-	-	-
Measurement range relative		mbar	-	-	-
Overpressure Pmax		bar	32	50	80
Bursting pressure		bar	80	125	200
Accuracy		% FS			
Ambient temperature		°C			
Storage temperature		°C			
Media temperature		°C			
Maximum relative humidity		% RH			
Materials	Pressure connection				
	Membrane				
	Seal				
	Test connection	-	1.078	-	-
	Seal for test connection	-	NBR	-	-
Compensated range		°C			
Error in compensated range		% FS / °C			
Pressure cycles minimum		-			
Battery		-			
Max. battery life					
IP protection class		-			
Units		-			bar, PSI, kPa, MPa, mbar
Standard pressure connection		-			
Test connection		-	M16x2	-	-
Approx. weight		g			
Approx. dimensions L x W x H		mm			
Approx. dimensions L x W x H (with test connection)		mm	180 x 90 x 45	-	-

Measurement range							
0…60	0…100	0…250	0…400	0…600	0…1000	0…2500	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
120	200	500	800	1200	2000	3750	
300	500	1000	2000	3000	5000	5000	
±0.5							
-10…+50							
-20…+60							
-40…+125							
85							
1.4301							
1.4548							
welded							
-	1.078	-	1.078	1.078	1.078	-	
-	NBR	-	NBR	NBR	NBR	-	
0…+50							
≥ ±0.035							
100 x 10^6							
Li-Ion							
500 load cycles @ 23 ±5°C ≥ 800 mAh							
IP40							
	bar, PSI, kPa, MPa				bar, PSI, MPa		
G1/2" EN837							
-	M16x2	-	M16x2	M16x2	M16x2	-	
450							
140 x 90 x 45							
-	180 x 90 x 45	-	180 x 90 x 45	180 x 90 x 45	180 x 90 x 45	-	

7. Accessories

– Rubber protective cap (not shown)
blue, green, black, red, orange

A green rubber cap is included but must have been ordered seperately.

– Rubber protective cap
with hook and wire rope 340 mm
blue, green, black, red, orange

– Hydaulic adapter
① M 16x2 I x G1/4 I
② M 16x2 A x G1/4 I