LDPG-30-S, LDPG-30-E

Digital gauge /

CE

LDPG-30-S

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Operating instructions

1. Important details for your information

Read these operating instructions before installing and starting the digital gauge. Keep the operating instructions in a place that is accessible to all users at any time.
The following installation and operating instructions have been compiled by us with great care but it is not feasible to take all possible applications into consideration. These installation and operation instructions should meet the needs of most pressure measurement applications.
If questions remain regarding a specific application, you can obtain further information:

- Via our Internet address www.lenzinc.com
- The product data sheet is found in Pressure Gauges section of catalog.
- Contact LENZ for additional technical support

With special model number, e.g. LDPG-30-XX, please note specifications in the delivery note. If the serial number gets illegible (e.g. by mechanical damage or repainting), the retraceability of the instrument is not possible any more.

LENZ digital gauge are carefully designed and manufactured using state-of-the-art technology. Every component undergoes strict quality and environmental inspection before assembly and each instrument is fully tested prior to shipment. Our environmental management system is certified to DIN EN ISO 14001.

Use of the product in accordance with the intended use LPDG-30-S and LDPG-30-E:
Use the digital gauge for reading pressure from the digital display.

Knowledge required
Install and start the digital gauge only if you are familiar with the relevant regulations and directives of your country and if you have the qualification required. You have to be acquainted with the rules and regulations on measurement and control technology and electric circuits, since this digital gauge is “electrical equipment” as defined by EN 50178. Depending on the operating conditions of your application you have to have the corresponding knowledge, e.g. of aggressive media.

2. A quick overview for you

If you want to get a quick overview, read **Chapters 3, 5, 7 and 10**. There you will get some short safety instructions and important information on your product and its starting. **Read these chapters in any case.**

3.Signs, symbols and abbreviations

Potential danger of life or of severe injuries.

Potential danger of life or of severe injuries due to catapulting parts.

Potential danger of burns due to hot surfaces.

Notice, important information, malfunction.

The product complies with the applicable European directives.

4. Function

The pressure prevailing within the application is transformed into a standardised electrical signal through the deflection of the diaphragm, which acts on the sensor element with the power supply fed to the digital gauge. This electric signal changes in proportion to the pressure and is correspondingly displayed.

5. For your safety

- Select the appropriate digital gauge with regard to scale range, performance and specific measurement conditions prior to installing and starting the instrument.
- Observe the relevant national regulations (e.g.: EN 50178) and observe the applicable standards and directives for special applications (e.g. with dangerous media such as acetylene, flammable gases or liquids and toxic gases or liquids and with refrigeration plants or compressors). **If you do not observe the appropriate regulations, serious injuries and/or damage can occur!**
- **Open pressure connections only after the system is without pressure!**
- Please make sure that the digital gauge is only used within the overload threshold limit all the time!
- Observe the ambient and working conditions outlined in section 7 „Technical data".

- Observe the technical data for the use of the digital gauge in connection with aggressive / corrosive media and for the avoidance of mechanical hazards.
- Ensure that the digital gauge is only operated in accordance with the provisions i.e. as described in the following instructions.
- Do not interfere with or change the digital gauge in any other way than described in these operating instructions.
- Remove the digital gauge from service and mark it to prevent it from being used again accidentally, if it becomes damaged or unsafe for operation
- **Take precautions with regard to remaining media in removed digital gauge. Remaining media in the pressure port may be hazardous or toxic!**
- Have repairs performed by the manufacturer only.

6. Packaging

Has everything been supplied?

Check the scope of supply:
Completely assembled digital gauge.

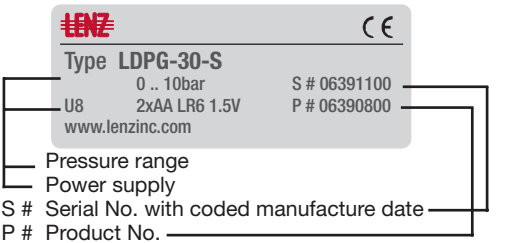
- Inspect the digital gauge for possible damage during transportation. Should there be any obvious damage, inform the transport company and LENZ without delay.
- Keep the packaging, as it offers optimal protection during transportation (e.g. changing installation location, shipment for repair).
- Ensure that the pressure connection thread and the digital display will not be damaged.

7. Starting, operation

Required tools: wrench (flats 27)

Mechanical connection

Product label (example)



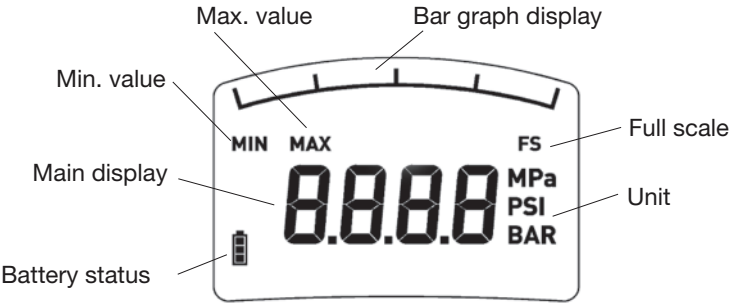
- For Model LDPG-30 you have to provide for a sealing element; exceptions are instruments with self-sealing threads (e.g. NPT thread).
- Please refer to our data sheet “Pressure gauge sealing washers in LENZ’s product catalog or our website www.lenzinc.com for details about sealing washers.
- When mounting the instrument, ensure that the sealing faces of the instrument and the measuring point are clean and undamaged.
- Screw in or unscrew the instrument only via the flats using a suitable tool. The appropriate torque depends on the dimension of the pressure connection and on the sealing element used (form/material). Do not use the case as working surface for screwing in or unscrewing the instrument.
- When screwing the digital gauge in, ensure that the threads are not jammed.
- For tapped holes and welding sockets please see catalog page for download at www.lenzinc.com

Power supply

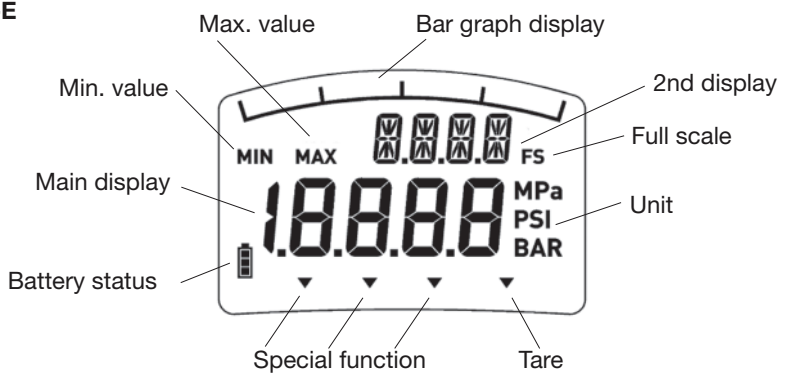
- Operate the digital gauge with 2 batteries AA.
- If the charge state of the batteries is low, a flashing battery symbol will appear on the display. In this case, replace the batteries.
- Open the battery compartment cover on the back of the digital gauge.
- Replace the batteries with 2 new batteries. Close the cover of the battery compartment.

Description of display screen

LDPG-30-S



LDPG-30-E



Function in normal mode

Key	Function / Action
	■ Switches the device on / off ■ Changes to programming mode if pressed for longer than 3 secs
	Display indicated max. value as long as key is pressed
	Display indicates min. value as long as key is pressed
 + 	Resets max. value to " 0 "
 + 	Resets min. value to " 0 "

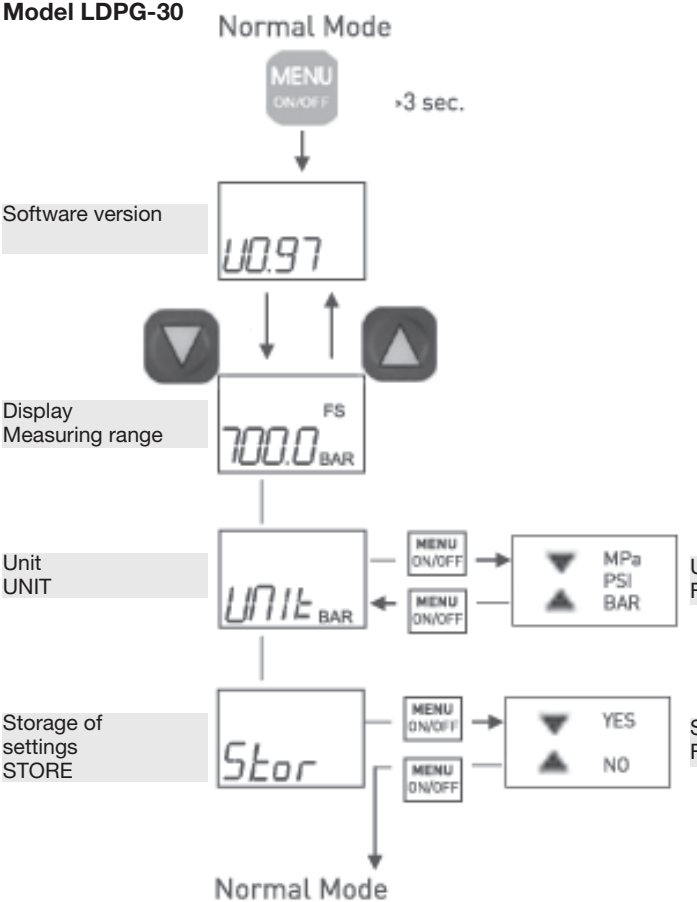
Min/Max Memory

The min/max memory is updated with the current measured value in every measuring cycle.
The min. value is displayed by pressing the ▼ -key.
The max. value is displayed by pressing the ▲ -key.
Pressing and holding the appropriate key (min. or max.) and quickly pressing the menu key at the same time resets the device to the current measured value.

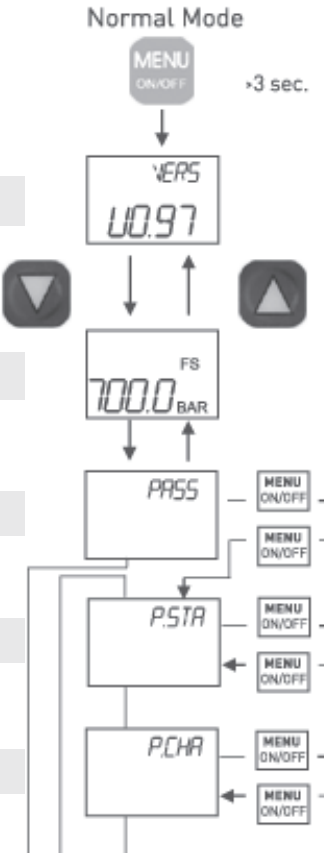
Bar Graph with Trailing Pointer Function

The integrated bar graph display with trailing pointer function additionally indicated on the display shows the trend in current working pressure directly regardless of the digital display. With the help of the trailing pointer function, the max. stored value is also indicated in the bar graph display in addition to the digital display in the form of a bar segment. This bar segment is also updated to the current measure value when the min./max. value is reset.

Model LDPG-30



Model LDPG-30



Software version

Display
Measuring range

Password entry
PASS

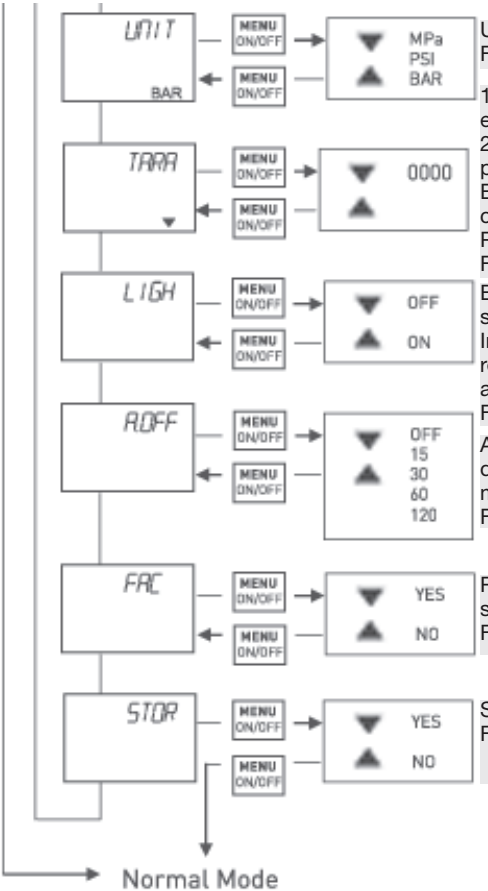
▼-Key changes figure of display on entry.
▲-Key sets display value 0 ... 9 on entry.
Factory setting "0000".

Password status
P.STATUS

Password is only active in "ON" position.
"PASS" does not appear in menu in "OFF" position.
Factory setting "OFF".

Password change
P.CHANGE

The password is generated/ changed using this function
▼-Key changes figure of display on entry.
▲-Key stes display value 0 ... 9 on entry.
Factory setting "0000".



Unit
UNIT

Unit may be selected
Factory setting "BAR"

Tare function
TARA

1. Version without initial pressure: enter tare value using keys.
2. Version with initial pressure: press both keys together.
Entry is coninuous without changing character see Chapter Programming / Tara function.
Factory setting "0000".

Background illumination
LIGHT

Background illumination may be selected.
In "ON" position illumination remains switched on for 15 secs after every key operation.
Factory setting "OFF".

Automatic Switch off time
A.OFF

Automatic switch off time of device may be selected in minutes.
Factory setting "OFF".

Factory settings
FACTORY

Resets all parameters to factory setting.
Factory setting "NO".

Storage of settings
STORE

Stores all parameter settings.
Factory setting "NO".

Tare Function LDPG-30

In this mode the positive deviation of the measured value from the tared value (max. 20% of the measuring range) is constantly indicated by the main display. The untared pressure value is always shown on the bar graph display. Thus the digital gauge's actual working load can be read off even if the tare function is active. When the tare function is active, a function indicator ▼ appears on the display. There are 2 possible ways of activating this mode:

1) Select the tare function and set the value to be tared using the keys ▼ ▲ .
   When set, the measured value to be tared is backed up as tare. The main display and the auxiliary display then show the value "0000" in the unpressurised state.
   Example: If a value to be tared is set as 2 bar, the main display indicates 0 bar in the unpressurised state.
2) Load the digital gauge with the pressure to be tared.
   The current measured value appears in the main display field of the main display. Select the tare function and then operate both keys simultaneously ▼ ▲ . The current measured value will be backed up as tare. The main display and the auxiliary display are set to (0000).

Setting the tare value to (0000) resets the tare function in both models.

Specifications		Model LDPG-30					
Pressure ranges	bar	2	5	10	20	50	100
Over pressure safety	bar	5	10	20	40	100	200
Burst pressure	bar	6	12	25	50	120	800
Pressure ranges	bar	160	250	400	600		
Over pressure safety	bar	320	500	800	1200		
Burst pressure	bar	1000	1200	1700	2400		
Pressure ranges	psi	30	60	145	300	600	1450
Over pressure safety	psi	70	145	290	580	1450	2900
Burst pressure	psi	85	170	360	725	1740	11600
Pressure ranges	psi	2000	3000	5000	7500	10000	
Over pressure safety	psi	4640	7250	11600	17400	21750	
Burst pressure	psi	14500	17400	24650	34800	43500	
Materials							
■ Wetted parts							
» Pressure connection		1.4571					
» Pressure sensor		Ceramic Al_2O_3 96%, NBR {EPDM } (up to 0 ... 50 bar)					
		XM-13 (1.4534) (as of 0 ... 100bar)					
■ Case		1.4301					
Power supply		2x 1.5 V cell AA					
Operating time	h	4000 (AA 2000 mAh)					
Internal sampling rate	ms	200					
Insulation voltage	VDC	500					
Display accuracy	% of span	± 0.5 ± 1 Digit (according to IEC 61298-2)					
Zero offset	% of span	0.1 (Power-up reset)					
Adjustability zero	% of span	20 (via Tara-Function with model LDPG-30-E)					
Hysteresis	% of span	0.1					

Specifications		Model LDPG-30	
Non-repeatability	% of span	0.1	
Long-term stability per year	% of span	0.2	
Long-term drift	% of span	0.1	
Permissible temperature of			
■ Medium	°C	-20 ... +85 (up to 0 ... 50 bar)	
	°C	-30 ... +100 (as of 0 ... 100bar)	
■ Ambience	°C	-10 ... +60	
■ Storage	°C	-20 ... +70	
Operating temperature range	°C	0 ... +60	
Temperature coefficients within compensated temp range			
■ Mean TC of zero	% of span	0.15 / 10k	
■ Mean TC of range	% of span	0.15 / 10k	
CE-conformitiy			
■ Pressure equipment directive		97/23/EC	
■ EMC directive		89/336/EEC emission (class B) and immunity according to EN 61 326	
Rotatability of case	°	300 (with model LDPG-30-E)	
		LDPG-30-S	**LDPG-30-E**
Principle		7 segment LCD 4 digit	7 segment LCD 4 1/2 digit
			14 segment LCD 4 1/2 digit (2nd display)
Digit size		11 mm	11 mm and 7 mm
Display		-999 ... 9999	-1999 ... 19999
Background illumination		---	+
Bar graph with trailing pointer function		+	+
Min/Max memory		+	+
Auto On/Off		Optional (ex works)	15/30/60/120 min

Specifications	Model LDPG-30		
Tara adjustment		---	+
Units bar, psi, MPa		+	+
Password protection		---	+
Reset factory setting		---	+
Weight	g	Approx. 400	

{ } Items in curved brackets are optional extras for additional price.

When designing your plant, take into account that the stated values (e.g.burst pressure, over pressure safety) apply depending on the material, thread and sealing element used.

Functional test

The displayed measure value must be proportional to the pressure. If not, this might point to a damage of the sensor diaphragm. In that case refer to chapter 9 “Trouble-shooting”.

Warning

- Open pressure connections only after the system is without pressure!
- Observe the ambient and working conditions outlined in section 7 Technical data.
- Please make sure that the digital gauge is only used within the overload threshold limit at all times!

Caution

When touching the digital gauge, keep in mind that the surfaces of the instrument components might get hot during operation.

8. Maintenance, accessories

- LENZ digital gauge require no maintenance, except for battery replacement.
- Have repairs performed by the manufacturer only.

Accessories

For details about the accessories (e. g. protection cap), please refer to LENZ’s price list, LENZ’s product catalog or contact our sales department.

9. Trouble shooting

Warning

Open pressure connections only after the system is without pressure!

Warning

- Take precautions with regard to remaining media in removed digital mano meter. Remaining media in the pressure port may be hazardous or toxic!
- Remove the digital gauge from service and mark it to prevent it from being used again accidentally, if it becomes damaged or unsafe for operation.
- Have repairs performed by the manufacturer only.

Do not insert any pointed or hard objects into the pressure port for cleaning to prevent damage to the sensor diaphragm of the pressure connection.

Please verify in advance if pressure is being applied (valves/ ball valve etc. open) and if the right voltage supply has been chosen?

Failure	Possible cause	Procedure
No display indication	Empty batteries, wrong polarity	Test battery and replace, if required
Displayed signal unchanged after change in pressure	Mechanical overload through over-pressure	Replace instrument; if failure reoccurs, consult the manufacturer
Signal span too small	Mechanical overload through over-pressure	Replace instrument; if failure reoccurs, consult the manufacturer
Signal span erratic	Electromagnetic interference source in the vicinity, e.g. inverter drive	Remove the interference source
Signal span erratic	Working temperature too high/too low	Ensure permissible temperatures as per the Operating Instructions
Signal span incorrect	Working temperature too high/too low	Ensure permissible temperatures as per the Operating Instructions
Abnormal zero point signal	Medium or ambient temperature too high/too low	Control the internal temperature of the instrument within the permissible range; observe the allowable temperature error (see Operating Instructions)

Failure	Possible cause	Procedure
Abnormal zero point signal	Overload limits exceeded	Ensure permissible overload limits are observed (see Operating Instructions).
Abnormal zero point signal	Working temperature too high/too low	Ensure permissible temperatures as per the Operating Instructions
Signal span dropping off/too small	Diaphragm is damaged, e.g. through impact, abrasive/agressive media; corrosion of diaphragm/pressure connector.	Contact the manufacturer and replace the instrument

In case of unjustified reclamation we charge the reclamation handling expenses.

If the problem persists, contact our sales department.

Process material certificate (Contamination declaration for returned goods)

Purge / clean dismounted instruments before returning them in order to protect our employees and the environment from any hazard caused by adherent remaining media.
Service of instruments can only take place safely when a Product Return Form has been submitted and fully filled-in. This Return Form contains information on all materials with which the instrument has come into contact, either through installation, test purposes, or cleaning.
You can find the Product Return Form on our internet site (www.lenzinc.com).

10. Storage, disposal

Warning

When storing or disposing of the digital gauge, take precautions with regard to remaining media in removed digital gauge. We recommend cleaning the digital gauge properly and carefully. Remaining media in the pressure port may be hazardous or toxic!

Disposal

Dispose of instrument components and packaging materials in accordance with the respective waste treatment and disposal regulations of the region or country to which the instrument is supplied.

LENZ reserves the right to alter these technical specifications.