

Operating Manual Manometer (Over- /Under- And Difference Pressure) GDH200-07



Specification

Measuring Range:	0.00 ...19.99 mbar, resolution 0.01 mbar 0.00 ...19.99 mmHg, resolution 0.01 mmHg 0.000...1.999 PSI, resolution 0.001 PSI; Measuring range for underpressure: same as above; just switch connections -> display without neg. sign non corrosive gases Because of automatic offset adjustment not suitable for pressures smaller than ± 0.04 mbar (4Pa). Suitable instrument for such measurements: GMH3110 + GMSD 2,5 (0,001mbar or 0,1Pa resolution!)	20.0...199.9 mbar, resolution 0.1 mbar; 20.0...150.0 mmHg, resolution 0.1 mmHg; 0 ...1999 Pa, resolution 1 Pa;
Max. Overpressure:	500 mbar	
Accuracy: (at nominal temperature = 25°C, ± 1 digit, offset adjustment)	20.0...199.9mbar: $\pm 0.2\%$ FS hysteresis and linearity $\pm 0.4\%$ FS temperature dependency 0 to 50°C 0.00...19.99mbar: $\pm 1\%$ FS hysteresis and linearity $\pm 2\%$ FS temperature dependency 0 to 50°C	
Pressure Connections:	2 metal pressure ports for connection to 6 x 1 mm tubes at the top of device (4mm inner tube Ø) standing out approx. 11mm „+“ = higher pressure, „-“ = lower pressure	
Measuring Frequency:	1 measuring per second (at 'dyn'-measuring integrating, for quickly changing pressures)	
Display:	approx. 13 mm high, 3½-digit LCD	
Operation Elements:	3 keys for ON/OFF, min-/max-value display, zero setting	
Min-/Max-Value Memory:	Min and max measured value are stored	
Zero Function:	The display value is set to zero per keypress, identical to an autom. zero adjustment	
Scale:	digital scale correction for pressure measuring	
Ambient Conditions:	-25 to 50°C; 0 to 80% RH. (not condensing)	
Storage Temperature:	-25 to 70°C	
Power Supply:	9V-battery type JEC 6F22 (in scope of supply)	
Power Consumption:	approx. 250µA at standard measuring of static pressures, 3mA at 'dyn'-measuring	
Battery Life:	Standard zinc carbon battery more than 1200 hours at standard measuring!	
Battery Change Indicator:	automatically if battery is used up: "BAT"	
Auto-Off-Function:	when the Auto Off Function is activated, the device switches automatically off, if keypad is not attended for a longer time (selectable 1..120min).	
Housing:	impact-resistant ABS, transparent panel, front side IP65	
Dimensions:	approx. 106 x 67 x 30 mm (L x W x D) without pressure ports	
Weight:	approx. 135g incl. battery	
EMC:	The device corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member countries regarding electromagnetic compatibility (89/336/EWG). Additional fault: <1%	



Safety instructions:

This device has been designed and tested in accordance to the safety regulations for electronic devices.

However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using it.

1. Trouble-free operation and reliability of the device can only be guaranteed if it is not subjected to any other climatic conditions than those stated under "Specification".
If the device is transported from a cold to a warm environment condensation may result in a failure of the function. In such a case make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.
2. If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting. Operator safety may be a risk if:
 - there is visible damage to the device
 - the device is not working as specified
 - the device has been stored under unsuitable conditions
 In case of doubt, please return device to manufacturer for repair or maintenance.
3. **Warning:** Do not use these product as safety or emergency stop device, or in any other application where failure of the product could result in personal injury or material damage.
Failure to comply with these instructions could result in death or serious injury and material damage.
4. The battery has to be taken out, when storing device above 50°C.
It is recommended to take the battery out, when storing device for a longer period of time.

Measuring And Functions

The Pressure Measuring

The device measures the **difference pressure** between the two pressure ports ("+" = higher pressure, "-" = lower pressure). An automatic zero point adjustment is performed, when switching on the device! If a pressure is connected when switching on, the high accuracy cannot be reached! As long as no pressure is connected additionally the zero-point is automatically stabilised, If a fastly varying pressure should be measured (chimneys, etc.) the "dyn"-measuring should be activated (see below). This functions is filtering the variations. Attention: "dyn"- measuring increases the power consumption more than 10 times.

Over pressure measuring: Connect to "+"-port.

Under pressure measuring: Connect to "-" port, under pressure will be displayed without negative sign.

MIN/MAX Value Memory

watch MIN value (Lo):	press key 'Mode' shortly once	display changes between 'Lo' and MIN value
watch MAX value (Hi):	press key 'Mode' shortly once again	display changes between 'Hi' and MAX value
restore current value:	press key 'Mode' shortly once again	current value is displayed
clear MIN-/MAX- value:	press key 'Mode' for 2 seconds	MIN and MAX value are cleared. The display shows shortly 'CLr'.

Zero-Function

By means of the zero-function the display will be set to zero. This is mainly intended to correct position dependency and drift of the sensor. Disconnect both pressure ports before zeroing

press "zero"-key for 2 seconds –the display will be set to 0, press "zero" for 5 seconds: Zero function will be reset.

Relative measurements can also be performed by this function (= "tare").

Scale Adjustment

The scale adjustment is intended to be used to compensate errors of the internal pressure sensor.

The display value is given by following formula:

$$\text{Display} = \text{measured value} * (1 + \text{scale adjustment}/100)$$

To adjust a measuring scale proceed like follows:

1. Switch off the instrument.
2. Press the 'Zero' key while switching on the instrument, keep 'Zero' key pressed until 'SCL' appears (after about 3 seconds).
3. Press 'up' or 'down' key, the currently selected scale adjustment appears.
4. Choose the desired value by pressing 'up' or 'down' key. (max. input range: $\pm 5.00\%$, off = 0%). The input is displayed in %.
example: *scale adjustment is 1.00 => scale is increased by 1.00% => Scale = 101%*
At a measured value of 100 (without offset correction) the instrument would show 101
5. Store the value by pressing left key. The instrument will restart (segment test).

Please note: If during the changing of the scale adjustment no key is pressed within 60 seconds, the input will be aborted. Eventually made changes won't be stored!

Configuration Of The Device

To configure the instrument proceed like follows:

1. Switch off the instrument.
2. Press the 'Mode' key while switching on the instrument, keep 'Mode' key pressed until 'P.oF' appears (after about 3 seconds).

I.) Auto Power Off Time „P.oF“

The auto power off time is entered in minutes. If no key is pressed during a measuring, the instrument switches itself off automatically after the entered period of time.

3. Press 'up' or 'down' key, the currently selected power off time will be displayed (off, 1..120min)
4. Enter the desired time by pressing 'up' or 'down' key.
Possible input: off: The auto power off function is deactivated (permanent operation)
 1...120: auto power off time in minutes.
5. Confirm the value by pressing left key, 'Uni' appears in the display

II.) Display Unit „Uni“:

6. Press 'up' or 'down' key, the currently selected unit will be displayed:
mbar = hPascal ('hPA'), mmHg ('nHG'), PSI ('PSI') or Pascal ('PA')
7. Enter the desired unit by pressing 'up' or 'down' key.
8. Confirm the value by pressing left key, 'dyn' appears in the display

III.) Measuring static / fast varying pressures "dyn" (= dynamic):

9. Press 'up' or 'down' key, the currently selected measuring mode will be displayed
dyn = off: standard measuring of static pressures, optimum battery life – dyn = on: measuring of dynamic pressures
10. Enter the desired mode by pressing 'up' or 'down' key.
11. Confirm with left key: values will be stored, the instrument will restart (segment test). End of configuration.

Please note: If during the configuration no key is pressed within 60 seconds, the configuration will be aborted. Eventually made changes won't be stored!

System Messages

- | | |
|-------|--|
| Er. 1 | = measuring range has been exceeded |
| Er. 2 | = meas. value has fallen below perm. range |
| Er. 3 | = display range has been exceeded (>1999) |
| Er. 4 | = meas. value has fallen below displayable range (<-1999) |
| Er. 7 | = System fault - the device has detected a system fault (defective or far outside allowable ambient temperature range) |
| --- | = Sensor error or value could not be calculated |

If the symbol "BAT" is displayed at the left side of display, the battery is weak, measuring can be continued for a certain time.

If "bAt" is displayed in the main display the battery is used up and needs to be replaced. Measuring is no more possible.