B.2.17.

HAND -HELD DIGITAL PRESSURE GAUGES

mobile use
fce alarm, logger, data etc.

DESCRIPTION:
- light, easy, portable
- resistant case

APPLICATION:
- power engineering
- mechanical engineering
- gas distribution, air conditioning
- food industry

DIGITAL PRESSURE GAUGES WITH INTEGRATED SENSOR
- GDH 200xx - basic design;
for overpressure, vacuum and differential pressure
- GMH31xx - design with advance functions;
for overpressure, vacuum and differential pressure,
optional Ex design

DIGITAL PRESSURE GAUGES FOR EXCHANGABLE SENSORS
- GMHxx - for overpressure, vacuum and differential pressure,
EX design optional, all pressure sensors
series GMSD/MSD can be used with option of Ex design

SENSORS GMSD FOR LOW PRESSURES
- for overpressure, vacuum and differential pressure,
not suitable for aggressive mediums and water

STAINLESS STEEL SENSOR GMSD UP TO 400BAR
- for overpressure, vacuum and differential pressure,
suitable for aggressive mediums and water

SPECIFICATION:
Hand-held digital pressure gauges are designed for mobile measurement of relative, absolute and differential pressures in range of -1+400 bar.Pressure gauges are divided into two main groups. Pressure gauges with inbuilt sensor are designed for direct pressure measurement using connecting tubes, max. pressure up to 2,5 bar.
Pressure gauges with external sensor can measure ranges up to 400 bar.


Digital pressure gauges with integrated sensors


Digital pressure gauges for exchangable sensors


Sensors for low pressures


Stainless steel sensor

• (+420) 545 226 177-184 •
• info@thermis.cz • www.thermis.cz •

• Thermis, spol. s r.o. • Mateří 14 •
• 614 00 Brno • Czech Republic •

Technical specification	GDH 200-7	GDH 200-13	GDH 200-14
Measure ranges	0,00-19,99 nebo 20,0-199,9 mbar(hPa) 0,00-19,99 or 20,0-150,0mmHg 0,00-1,999PSI/0-1999Pa	0,0-199,9 nebo 200-1999 mbar(hPa) 0,0-199,9 or 200-1500mmHg 0,00-19,99PSI	0-11000 mbar(hPa) abs. 0-8250mmHg abs. 0,000-11,000bar abs. 0,00-160,00PSI abs.
Load	max. 500mbar	max. 4000mbar	max. 13bar abs
Resolution	automatic switching 0,1 / 0,01	automatic switching 1 / 0,1	1mbar, 1mmHg, 0,001bar, 0,02PSI
Accuracy	(for nominal temperature and automatic setting of zero point)		
Measure range	up to 200mbar ±0,2%FS hysteresis and linearity ±0,4%FS temp. influence 0-50°C	up to 2000mbar ±0,2%FS hysteresis and linearity ±0,4%FS temp. infl. 0-50°C	for nominal temp. 25°C ± 3mbar or 0,10% of MH ±0,3%FS temp. infl. 0-50°C
Sensor	piezo-resistive for relative pressure		piezor. for absolute pressure
Display	31 -digit, 13mm high LCD		41 -digit, 12mm high LCD
Pressure connection	2 adapters of nickel-plated brass for pressure tube 6x1mm (inner Ø 4mm), length 11mm		nickel-plated brass adapter for pressure tube 6x1mm
Working conditions	-25+50°C, 0-95% r.v. (non-condensating)		
Controls	3 foil buttons		
Power supply	9 V battery IEC 6 F 22 (part of supply)		
Power take-off	250µA (=1200 operating hours)		40µA (=7500 operating hours)
Battery state control	„BAT“, automatic		
Case	made of shock-proof material ABS 106x67x30mm (hxwxd) +11mm connection adapter		
Weight	135g (including battery)		
Auto-Øff Function	1-120 min. (may be deactivated if required)		
Memory min./max. values	minimum and maximum measured value is saved into the memory		
Zero value settings	automatic		may be entered manually
Transconduct. correction	may be entered manually		
Zero function	displayed value, including min/max value, may be set to zero		

GDH 200xx with integrated sensor

Series GDH 200-7, 13, 14

Hand-held pressure gauge with integrated sensor. Wide range of application. Ranges up to 11000mbar. Measurements of relative and differential pressure. Automatic switching of measure ranges. Choice of pressure unit (mbar, Pa, mmHg, PSI) on devices panel.

Other properties and functions: memory for maximum/minimum values, automatic shutdown 1-120min, exceptional stability of zero point, function ZERØ - all displayed figures including min/max value may be set to zero value.

Power supply: battery 9V, IEC 6F 22

Technical specification (type)	GMH 3161 - ...	GMH 3161 - ... - ex
Display	2x 41 -digit LCD	2x 41 -digit LCD
Output	interface	interface
Series interface	X	X
Power supply	battery 9V, socket for AC adapter, battery 9V (type IEC 6F22) part of the supply, socket for connection of external DC supply voltage 10,5-12V (suitable supply GNG10/3000)	
Sensor setting	digital setting of offset and transconductance	digital setting of offset and transconduct.
Tara, Hold, min./max.	X	X
Measure cycles	„slow“ 4 measurements/s	„slow“ 4 measurements/s
Power take-off	0,6mA	0,6mA
Operational conditions	-25+50°C, 0-95% r.h. (non-condensating)	-10+50°C, 0-95% r.h. (non-condensating)
Case	142x71x26mm (without adapter 11mm long), case made of shock-resistant ABS, protection IP 65, integrated holder	
Weight	165g	205g (including the case)

Technical specification	3161-002	3161-01	3161-07H	3161-07	3161-07B
Measure range	-500,0+500,0Pa (-5,000+5,000mbar)	-100+2500Pa (-1,00+25,00mbar)	-1,00+70,00mbar	-10,0+350,0mbar	-10,0+420,0mbar (-7,5+315,0 mmHg)
Loading	max.250hPa(mbar)	max. 100mbar	max. 1000mbar	max. 1bar	max. 1bar
Resolution	0,1Pa (0,001mbar)	1Pa (0,01mbar)	0,01mbar	0,1mbar	0,1mbar(0,1mmHg)
Optional pressure units	kPa, PSI, mmHg, mH2Ø	bar, kPa, PSI, mmHg, mH2Ø	bar, Pa, kPa, PSI, mmHg, mH2Ø	bar, kPa, MPa, PSI,mmHg, mH2Ø	bar, kPa, MPa, PSI, mH2Ø
Accuracy: (typ.values)					
Hysteresis and linearity	0,3%	±0,3%FS	±0,1%FS	±0,2%FS	±0,1%FS
Temp. influence 0 - 50°C	0,4%	±0,4%FS	±0,4%FS	±0,4%FS	±0,4%FS
Option of higher accuracy	no	no	already included	yes	already included
Sensor	piezo-resistance, sensor of relative pressure inbuilt into the device designed for air and non-agressive gases (caution: the sensor is not designed for water!)				
Pressure connection	2 universal metal adapters for hoses 6 x 1 mm or 8 x 1 mm (4 or 6 mm inner diameter of the hose)				

GMH 31xx with inbuilt sensor

Hand-held pressure gauge with inbuilt sensor. Wide range of applications. Ranges according to type of sensor up to 2,5 bar. Measurement of relative, absolute and differential pressure. Choice of pressure unit (mbar, bar, Pa, kPa, Mpa, mmHg, PSI) on devices panel. CAUTION! Choice of various units for relevant sensor is possible only in case, that the whole range of selected units can be shown on a 4-digit display. Other properties and functions: memory for minimum and maximum value, function TARA and HØLD. Function TARA enables measuring of relative pressure using sensors for absolute pressure. Power supply: from battery, accumulator, or AC adapter GNG10/3000. When connected to the AC adapter, the battery or the accumulator is disconnected. Accumulator is charged outside the device. Communication interface: RS232 compatible. There may be up to 5 devices series GMH3xxx connected to the PC serial port at the same time, using convertor GRS3105. Data display on PC using software EBS9M (9-channel computer data recorder and projector). Must be ordered separately including cable GRS3100. Or single-channel graphic recorder for PC (you only need communication cable GRS3100, which can be found in accessories) with software GSØFT3000I.

Technical specification (type)	GMH 3111	GMH 3151	GMH 3151 - ex	GMH 3111 - ex
Max. display range	-19999+19999 digits			
Measure range	according to connected sensor			
Load, Resolution	according to connected sensor			
Accuracy (device)	±0,1%FS ±1digit (at nominal temperature=25°C)			
Pressure units	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH2O, setting via keyboard			
Sensor connection	1 socket (6-pole shielded socket Mini-DIN for sensors series GMSD/MSD automatic recognition of sensor and setting of relevant measure range)			
Display	2x 4½-digit LCD			
Output	interface	interface/anal.output	interface/anal.output	interface
Serial interface	through gal. separated communication converter GRS 3100, GRS 3105 or USB 3100 N device may be connected to port RS232 or computers USB			
Analog output	-	0-1V, freely adjustable (resolution 12bit)		-
Power supply	battery 9V, socket for AC adapter, battery 9V (type IEC 6F22) part of supply, socket for			
	connection of external DC supply voltage 10.5-12V (suitable supply GNG10/3000)			
Sensor settings	digital setting of zero point and transconductance			
Tara,Hold,min/max values	X	X	X	X
Measure cycle „slow“	4 measurements/s	4 measurements/s	4 measurements/s	4 measurements/s
„fast“ (with filter)		≥1000 measurem./s	≥1000 measurem./s	
„peak-detect“		≥1000 measurem./s	≥1000 measurem./s	
Power take-off	1,6 mA	max. 1,6mA (4 measurements/s) max. 7mA (1000 measurements/s)		max. 1,6mA
Operating conditions	-25+50°C, 0-95% r.h.			
Function Auto-Off	1-120min (may be deactivated)			
Case	142x71x26mm,case made of shock-proof ABS, front panel protection IP 65			
	integrated holder		-	-
Weight	150 g	190 g (including case)	150 g	190g (including case)
Logger function				
- manually		99 dataset		
- cyclical		10000		
		(max. 64 series of measurements)		

GMH 31xx for exchangeable sensors

Hand-held pressure gauge for exchangeable sensors. Wide range of applications. Ranges according to sensor up to 1000 bar. Measurement: relative, absolute and differential pressure. Choice of pressure units (mbar, bar, Pa, kPa, Mpa, mmHg, PSI,mH2O) on devices panel.

CAUTION! Choice of various units for relevant sensor is possible only in case, that the whole range of selected units can be shown on a 4-digit display. Other properties and functions: memory for minimum and maximum value, function TARA and HOLD. Function TARA enables measuring of relative pressure using sensors for absolute pressure. Power supply: from battery 9V, accumulator, or AC adapter GNG10/3000. When connected to the AC adapter, the battery or the accumulator is disconnected. Accumulator is charged outside the device. Communication interface: possible convectors USB 3100N, GRS 3100 a GRS 3105.

	Relative pressure sensors: for measurements of overpressure, vacuum and differential pressure				
Types	GMSD 2,5 MR ..	GMSD 25 MR ..	GMSD 350 MR ..	GMSD 2 BR ..	GMSD 10 BR ..
Measure range	-1,999+2,500mbar	-19,99+25,00mbar	-199,9+350,0mbar	-1000+2000mbar	-1,00+10,00 bar
Loading	max. 200mbar	max. 300mbar	max. 1bar	max. 4bar	max. 10,34bar
Definition	0,001mbar (0,1Pa)	0,01mbar (1Pa)	0,1mbar	1 mbar	10mbar
Accuracy (typ.)					
Hysteresis / linearity	±0,2%FS	±0,2%FS	±0,2%FS	±0,2%FS	±0,2%FS
Temp. influen. (0-50°C)	±1,0%FS	±0,5%FS	±0,4%FS	±0,4%FS	±0,4%FS

	Absolute pressure sensors; for absolute pressure measurements		
Type	GMSD 1,3 BA ..	GMSD 2 BA ..	GMSD 7 BA ..
Measure range	0-1300mbar abs.	0-2000mbar abs.	0,00-7,00bar abs.
Loading	max. 4bar abs.	max. 4bar abs.	max. 10,34bar abs
Definition	1mbar	1mbar	10mbar
Accuracy (typ.)			
Hysteresis / linearity	±0,2%FS	±0,2%FS	±0,2%FS
Temp. influen. (0 - 50°C)	±0,4%FS	±0,4%FS	±0,4%FS

Technical parameters	
Sensor	piezo-resistive pressure sensor
Pressure connection	2 connection adapters made of nylon for hoses 6x1mm (outer Ø 6mm and inner Ø 4mm)
Electronics	Board with amplifier and memory with information about range and sensors calibration. Placed in sensors case.
Working temperature	0-50°C
Relative humidity	0-95% r.h. (non-condensing)
Storing temperature	-25+70°C
Case	made of ABS material, lifitng eye, dimesions without adapters: 68x32,5x15mm (lxwxd), with adapters: 68x32,5x27,5mm
Weight	75g (..-K51: 82g)
Connection to the device	
GMSD ... - K31, GMSD ... - ex	shielded cable made of PVC, 1m long, terminated with a 6-pole connector Mini-DIN
GMSD ... - K51	shielded cable made of PVC, 1m long, terminated with a 7-pole bayonet connector
Use	air or non-corrosive gases, sensors are not intended for water/liquid use

Sensor GMSD for low pressures

Piezo-ceramic sensors for overpressure, vacuum and differential pressure. Not intended for water use.
Ranges: -1,9+2,5mbar...-1+10bar.
Sensor: piezo-resistive,of relative pressure, built into plastic case.
2 connecting adapters for hoses with inner Ø 4mm.
Electronics: board with amplifier and memory with information about range and sensor calibration, placed in sensors case.
Nominal temperature: 25°C ,Operational temperature: 0 up to +50°C
Humidity: 0 up to +95% r.h. (must not bedew)
Storing temperature: -40+85°C
Case: material ABS with lifting eye. Dimensions without adapters 68x32,5x15mm (LxWxD). Including adapter 68x32,5x27,5mm.
Connection to the device: shielded cable made of PVC, 1 m long. Terminated with a 6-pole connector Mini DIN.
Weight: 75g

absolute pressure	measure range	load	resolution
MSD 1 BAE	0-1000mbar abs.	max. 5bar abs.	1mbar
MSD 2,5 BAE	0-2500 mbar abs.	max. 10bar abs.	1mbar
MSD 4 BAE	0-4000 mbar abs.	max. 17bar abs.	1mbar
MSD 6 BAE	0-6000 mbar abs.	max. 35bar abs.	1mbar
MSD 10 BAE	0-10,00bar abs.	max. 35bar abs.	10mbar
MSD 16 BAE	0-16,00bar abs.	max. 80bar abs.	10mbar
MSD 25 BAE	0-25,00 bar abs.	max. 50bar abs.	10mbar

relative pressure	measure range	load	resolution
MSD 100 MRE	0,0-100,0mbar rel.	max. 1bar rel.	0,1mbar
MSD 250 MRE	0,0-250,0mbar rel.	max. 2bar rel.	0,1mbar
MSD 400 MRE	0,0-400,0mbar rel.	max. 2bar rel.	0,1mbar
MSD -1/1.5 BRE	-1000+1500mbar rel.	max.10bar rel.	1mbar
MSD -1/3 BRE	-1000+3000 mbar rel.	max.17bar rel.	1mbar
MSD 1 BRE	0-1000 mbar rel.	max. 5bar rel.	1mbar
MSD 2,5 BRE	0-2500mbar rel.	max. 10bar rel.	1mbar
MSD 4 BRE	0-4000mbar rel.	max. 17bar rel.	1mbar
MSD 6 BRE	0-6000mbar rel.	max. 35bar rel.	1mbar
MSD 10 BRE	0,00-10,00bar rel.	max. 35bar rel.	10mbar
MSD 25 BRE	0,00-25,00bar rel.	max. 50bar rel.	10mbar
MSD 40 BRE	0,00-40,00bar rel.	max. 80bar rel.	10mbar
MSD 60 BRE	0,00-60,00bar rel.	max. 120bar rel.	10mbar
MSD 100 BRE	0,0-100,0bar rel.	max. 200bar rel.	0,1bar
MSD 160 BRE	0,0-160,0bar rel.	max. 320bar rel.	0,1bar
MSD 250 BRE	0,0-250,0bar rel.	max. 500bar rel.	0,1bar
MSD 400 BRE	0,0-400,0bar rel.	max. 800bar rel.	0,1bar
MSD 600 BRE	0,0-600,0bar rel.	max. 1200bar rel.	0,1bar
MSD 1000 BRE	0-1000bar rel.	max. 1500bar rel.	1bar

relative pressure	measure range	load	resolution
MSD 25 MRE	0,00-25,00mbar	max. 500mbar	0,01mbar
MSD -20/60 MRE	-20,00+60,00 mbar	max. 500mbar	0,01mbar
not suitable for aggressive mediums, water, etc. Does not come in Ex design or with optional -HG (higher sensor accuracy)			

Technical specification	
Sensor	pressure sensor made of stainless steel (parts in contact with measured medium), designed for aggressive mediums, water, etc. (does not apply for MSD 25 MRE a MSD -20/60 MRE)
Accuracy: (typ. values)	±0,2%FS (histeresis and linearity), ±0,02%FS/K (TK for zero point and transconductance)
Electronics	board with amplifier and memory of range and calibration, placed in sensors case, electronics sealed from humidity
Response time	1ms
Measured medium temp.	-25+100°C (compensated range 0-80°C); -25+80°C for MSD 25 MRE and MSD -20/60 MRE
Working temperature	-20+80°C
Storing temperature	-40+80°C
Pressure connection	connection thread G1/2 (other on request)
Cable connection	connector M16
Case	made of CrNi steel or Elgiloy (parts that come in contact with measured medium)
	length: 88,5mm, Ø 27mm, 220g
Protection	IP 67 (sensor)
Use	air, aggresive gases and liquids, water, etc.

Optional	
-HG higher sensor accuracy	multi-point calibration performed in production, values for linearization saved in memory EEPRØM sensors (must not be used for MSD 25 MRE and MSD -20/60 MRE)

Accessories	
MSD-K31	cable for connection of devices GMH 31xx and GDUSB 1000 1m long PVC, shielded, with buried 6-pole connector Mini- DIN and socket M16 (IP 54)
MSD-K51	cable for connection of devices GMH 51xx 1 m long PVC, shielded, with 7-pole bayonet connector and socket M16 cable and water-proof connector with IP 67
MSD-K31-xx	longer connection cable (same as MSD-K31); possible lengths 2-10m advice in order
MSD-K51-xx	longer connection cable (same as MSD-K51); possible lengths 2-10m advice in order

Stainless steel sensor GMSD up to 400 bar

GNSD stainless steel sensors for overpressure, vacuum and differential pressure. Suitable for aggressive mediums.
Ranges: 0-160mbar... 0-400bar
Sensor: sensor of relative pressure made of stainless steel (parts that come in contact with measured medium), designed for aggressive mediums, water, etc.
Electronics: board with amplifier and memory holding information about ranges and sensor calibration, located in sensors casing.
Pressure connection: connecting thread G1/4 (other threads alternatively adapters on request). Spanner size 27mm.
Nominal temperature: 25°C.
Operational temperature: 0-70°C
Humidity: 0-95% r.h. (must not bedew)
Storing temperature: -40+80°C
Case: made of alloy steel. Outer Ø26mm, cable length 103mm without protection.
Connection shielded cable PVC, 1m long, terminated with a 6-pole connector Mini-DIN
Weight: 195 g

• (+420) 545 226 177-184 •
• info@thermis.cz • www.thermis.cz •
• Thermis, spol. s r.o. • Mateří 14 •
• 614 00 Brno • Czech Republic •