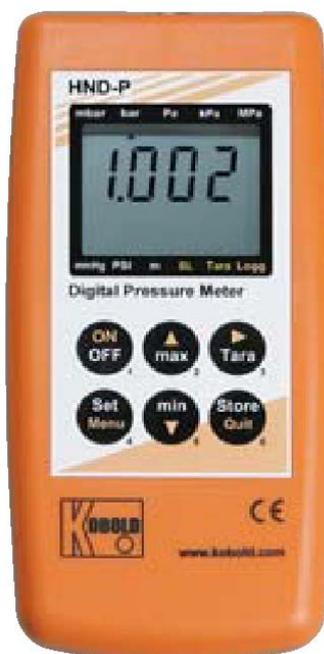


Operating Instructions
for
Hand-held Pressure Measuring Devices
for External Pressure Sensors

Model: HND-P210



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Manufactured and sold by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim
Tel.: +49(0)6192-2990
Fax: +49(0)6192-23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Hand-held Pressure Measuring Devices for External Pressure Sensors
Model: HND-P210

4. Regulation Use

Any use of the Manual Pressure Measuring Devices with External Pressure Sensors, model: HND-P210, which exceeds the manufacturer's specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

The KOBOLD manual pressure measuring devices HND-P210 are highly precise, compact pressure measuring devices that can be used universally. In conjunction with the appropriate external pressure sensors, precise measurement results over the entire measuring range can be achieved.

Various pressure sensors are available for a multitude of measuring tasks and special applications. The respective measurement task determines which combination is selected. Naturally, these first-rate KOBOLD-measuring units can display more than just pressure. All devices in this series allow for minimum/maximum value memory, hold function, automatic self-shut-off, or zero point offset entry for all connected pressure sensors, for example. The HND-P210 types also have a logger function, a peak value memory, or a minimum/maximum alarm.

6. Electrical Connection

6.1 Mains Operation with Power Supply



Warning: When using a power supply please note that operating voltage has to be 10.5 to 12 V_{DC}. Do not apply overvoltage!! Cheap 12 V-power supplies often have excessive no-load voltage. We, therefore, recommend using regulated voltage power supplies. Trouble-free operation is guaranteed by our power supply HND-Z002.

Prior to connecting the power supply to the mains make sure that the operating voltage stated at the power supply is identical to the mains voltage.

Connecting/Changing Sensors

Do not use insuitable sensors. Connecting other devices/sensors as specified may cause a damage to the instrument and device/sensor! Switch off device before changing the sensor. Connect sensor before switching on the device, otherwise the sensor may not be detected correctly. When connecting the sensor, the connector may not lock correctly. In such case take the plug not at the casing but at the buckling protection at the end of the plug. If plug is entered correctly, it will slide in smoothly. To disconnect sensor do not pull at the cable but at the plug (to open locking mechanism).

6.2 Battery operation

The devices are always delivered with the battery disconnected.



The battery must be connected before commissioning.



7. Operation

7.1 Safety Requirements

This device has been designed and tested in accordance with 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 the device.

1. Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated see chapter ***Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.***
2. Device and sensors have to be handled with care (don't throw, hit, etc.). Protect plugs and sockets from soiling.
3. If the device is transported from a cold to a warm environment condensation may cause 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.
4. If device is to be connected to other devices (e.g. via serial interface) the circuitry has to be designed most carefully. Internal connection in third party devices (e.g. connection GND and earth) may result in not-permissible voltages impairing or destroying the device or another device connected.



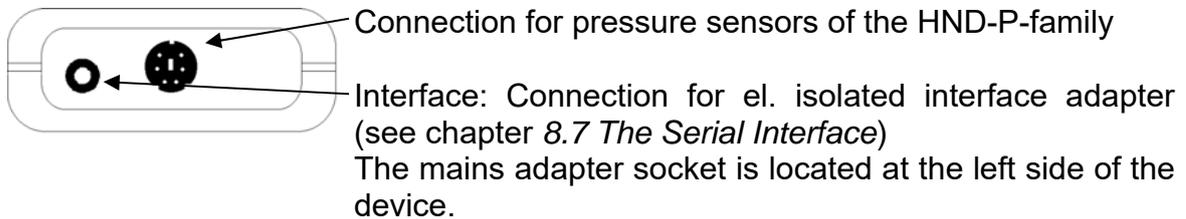
Warning: If device is operated with a defective mains power supply (e.g. short circuit from mains voltage to output voltage) this may result in hazardous voltages at the device (e.g. at sensor socket or interface).

5. 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 for a longer period of time.

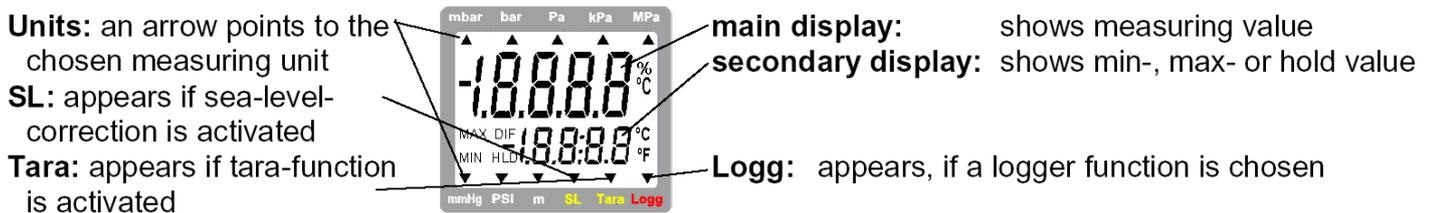
In case of doubt, please return device to manufacturer for repair or maintenance.

8. Start of Operation

8.1 Connections



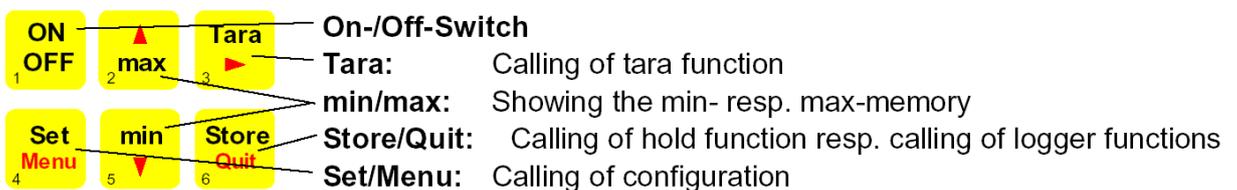
8.2 Display



8.3 Basic Operation

When switching on the device and the logger function is not off the time of the integrated clock will shortly be displayed. Furthermore the kind of measuring is displayed (Slo/Fast/P.det, p.r.t 2.1) and "Corr", if a Sensor with activated offset or scale correction is connected.

After changing the battery the clock-setting menu is activated automatically (,CLOC'). Check the clock and adjust, if necessary (see chapter 8.4 *Configuration*).



Tare Function: By pressing 'Tara' (key 3) the display will be set to 0. All measurements from then on will be displayed relatively to the set tare value. When tara function is activated, the arrow "Tara" appears in the display. To deactivate tare function press 'Tara' for >2 seconds.



Please Note: Activating/deactivating tara clears the max- & min-memories.

- Max Memory:** Pressing 'max' (key 2) shows the maximum of the measured values. Pressing it again hides them. To clear the max memory press key 'max' for >2 seconds.
- Min Memory:** Pressing 'min' (key 5) shows the minimum of the measured values. Pressing it again hides them. To clear the min memory press key 'min' for >2 seconds.
- Hold Function:** By pressing 'Store/Quit' (key 6) the last measuring value will be held in the secondary display. Pressing it again hides it. (only when logger = ,off').
- Zero-Point Adjustment:** If there is no pressure or zero-pressure (absolute) applied to the pressure ports the device will display 0. If there is a permanent deviation (and device is operated under steady conditions), a permanent zero point adjustment can be carried out.
To carry out the adjustment press button 3 for approx. 5 seconds. (Auto Null will be displayed shortly). The adjustment is done via the OFFSET-value of the sensor (referring configuration menu).
Note: A zero-point adjustment can only be carried out if the difference between the value on display is less than 500 digits!
To recall the manufacturer's calibration press button 3 for approx. 15 seconds.



Note: If a zero-point adjustment was carried out, this will be signalled by the short displaying of „Corr“ when switching on the device.

8.4 Configuration

To change device settings, press **Menu** (key 4) for 2 seconds. This will call the configuration menu (main display: „SEt“).

Pressing key **Menu** changes between the menus, pressing **▶** (key 3) jumps to the referring parameters, which can be selected with key **▶** (key 3).

The parameters can be changed with **▲** (key 2) or **▼** (key 5).

Pressing **Menu** again jumps back to the main configuration menu and saves the settings.

Quit (key 6) finishes the configuration and returns to standard measuring operation.

Menu	Param.	Values	Meaning	
,Menu'	▶	▲ or ▼		
Set ConF	Set Configuration: Generic Configurations			
	Unit	mbar,bar..	Unit: Unit of display	*
	SL	oFF/on	Sea level correction: on or off	*
	ALti	-2000..9999	Altitude: Input of altitude above sea level [m] (only if SL on)	*
	rAtE		Rate: Measuring rate (p.r.t. chapter 8.4.1)	*
		Slo	Slow measuring rate (4 Hz filtered, low power consumption)	*
		FASt	Fast measuring rate, filtered (>1000 Hz)	*
	t.AVG	P.dEt	Peak detection: fast measuring rate, unfiltered (>1000 Hz)	*
		1-120	Averaging period in seconds, used by the averaging function	
		oFF	Averaging function deactivated	
	P.oFF	1-120	Auto Power Off time in minutes	
		oFF	Auto Power Off deactivated	
	Out	oFF	Function of the output: No output function, lowest power consumption	
		Ser	Output is serial interface	
		dAC	Output is analogue output 0...1 V	
Adr.	01,11..91	Base address of interface (if Out = SEr)		
dAC.0	eg. -5.00.. 5.00 mbar	Enter desired value which the analogue output potential should be 0 V (if Out = dAC)		
dAC.1	eg. -5.00.. 5.00 mbar	Enter desired value at which the analogue output potential should be 1 V (if Out = dAC)		
Set CAL	Set Calibration: Adjustment of Sensor			
	OFFS	Sensordep., e.g. - 5.00..5.00 mbar	The offset of sensor will be displaced by this value to compensate for deviations in the probe or in the measuring device.	
		oFF	Zero	
	SCAL	-2.000... 2.000	The measuring scale of sensor will be changed by this factor [%] to compensate deviations of temperature probe or measuring device.	
oFF		Scale correction factor inactive (=0.000)		
Set AL.	Set Alarm: Settings Of Alarm Function			
	AL.	On	Alarm on, with horn-sound	
		no.So	Alarm on, without horn-sound	
		oFF	no alarm function	
	AL.Lo	Sensor-Min ... AL.Hi	Min alarm rail (not when AL. oFF, Sensor-Min is the lower display range of connected sensor)	
AL.Hi	AL.Lo ... Sensor-Max	Max alarm rail (not when AL. oFF, Sensor-Max is the upper display range of connected sensor)		
Set LoGG	Set Logger: Configuration Of Logger Function			
	Func	CYCL	Cyclic: logger function ,cyclic logger'	*
		Stor	Store: logger function ,individual value logger'	*
		oFF	no logger function	*
	CYCL	1..3600	Cycle time of cyclic logger [seconds]	*
Lo.Po	on/oFF	Low-power logger with very low power consumption only for cyclic logger and slow measuring rate)	*	

Set CLOC	Set Clock: Setting Of Real Time Clock		
	CLOC	HH:MM	Clock: Setting of time hours:minutes
	dAtE	TT.MM	Date: day.month
	YEAr	YYYY	Year



Note: If the logger memory contains data already, the menus/parameters marked with (*) cannot be invoked! If these should be altered the logger memory has to be cleared before! (key 6, see chapter 8.6 Operation Of Logger)

8.4.1 Different Kinds of Measuring: “rAtE-Slo, -P.dEt, -FASt”

Three different kinds of measuring pressure are supported. Two of them (P.dEt and FASt) are working with high measuring frequency of more than 1000 measurings per second.

8.4.1.1 rAtE-Slo: Standard Measuring

Measuring rate 4Hz, averaging and filter functions are active.

Application: Measuring of slowly changing or static pressures, eg. measuring of leakproofness, atmospheric pressure...

Highest accuracy, high noise immunity (EMI and unstable measuring signals), low power consumption.

8.4.1.2 rAtE-P.dEt: Peak detection

Measuring rate >1000Hz, the value is displayed unfiltered.

Application with logger function: Measuring of short pressure peaks or fast changing pressures with a resolution of <1ms. The cyclic logger function records the arithmetic mean value, the highest and the lowest peak of the referring time interval.

Attention: higher power consumption, measuring is sensitive to noise (EMI,..)

8.4.1.3 rAtE-FASt: Fast filtered measuring

Measuring rate >1000Hz, the value is filtered slightly (higher noise immunity than P.dEt., small peaks will be filtered out), apart from that identical behaviour like P.dEt.

8.4.2 Averaging Function

The averaging function concerns the display values (LCD and interface). It is completely independent from the averaging of the logger function, please don't mix them up!

The averaging integrates the measuring values during a selectable period of time and then calculates the average display value. It is independent from the selected kind of measuring (slow, fast, peak detect). As long as not enough values are collected (selected averaging time) to calculate a average value, the upper display shows “----“, the lower display a ‘countdown‘.

During an active low-power-logging procedure the averring is always deactivated
Function of min/max-value memory during averaging:

- If averaging is activated and slow measuring is selected (rAtE-Slo), the min-/max-value memory refers to the average display value.
- If averaging is activated and fast measuring is selected (rAtE-FASt or P.dEt) , the min-/max-value memory refers to the internal measured values (fast peaks can be detected).

8.4.3 Power Off Time

If there won't be pressed any key and no interface communication takes place for the time of the power off time setting (P.Off), the device will be switched off automatically to save battery power.

If P.oFF = oFF then the automatic switch off is deactivated.

8.4.4 Address

Up to 10 devices of the HND-P- handheld-family can be connected to a serial interface at once (depending on interface converter). To get access to each device the base addresses of the devices have to be different. For example, choose 01 for the first, 11 for the second device and so on. See also chapter 8.7 *The Serial Interface*.

8.4.5 Alarm

There are three possible settings: Alarm off (AL. oFF), on with horn sound (AL. on), on without sound (AL. no.So).

Following conditions will display an alarm, when the function is activated (on or no.So):

- Value is below lower (AL. Lo) or above upper alarm rail (AL.Hi).
- Sensor error (Sens Erro)
- Low battery (bAt)
- Fe 7: System error (always with sound)

In case of an alarm and when polling the interface, the prio-flag is set in the returned interface message.

8.4.6 Real Time Clock

The real time clock is used for the logger function: Recorded values are also containing the point of time, when they were measured. Please check the settings when necessary.

If the battery was replaced the referring menu ,CLOC' will automatically be started.

8.5 Measuring of Water Level – Display Unit [m]

(only for devices with ,m‘ printed below the display)

When using a suitable waterproof pressure sensor the unit [m] for meters of water can be set in the menu "Unit". 10 m of water are roughly 1 bar over pressure. Measurements can be made e.g. like described below:

- With abs. pressure sensor (SL oFF!): Press ,Tara‘ when sensor is at ambient air and then bring sensor to the depth to be measured. The display shows now the depth in [m].
- With rel pressure sensor: bring tube connection for lower press. in contact to ambient air by means of a tube (no water contact!) and bring the sensor with its open press. connection for higher pressure to water depth to be measured (display and is compensated for pressure changes in ambient air).

8.6 Operation Of Logger

The device supports two different logger functions:

„Func-Stor“: each time when „store“ (key 6) is pressed a measurement will be recorded.

„Func-CYCL“: measurements will automatically be recorded each interval, which was set in the logger menu ,CYCL‘ until the logger will be stopped or the logger memory is full. The recording is started by pressing „Store“ 2 seconds.

The logger records 3 measurement results each time:

current or mean value (depending on logger setting, see below), min peak and max peak of sensor

Min and max peak are the minimum resp. the maximum of the measured values since the last recording. Using them allows f.e. analysis of fluctuating pressures. For the evaluation of the data the software HND-Z034 has to be used. The software also allows easy configuration and starting of the logger. When the logger is activated (Func Stor or Func CYCL) the hold function is no more available, the key 6 is solely used for the operation of the logger functions.

8.6.1 „Func-Stor“: Storing Single Measurements

Each time when „store“ (key 6) is pressed a measurement and its time stamp will be recorded.

The recorded data can be viewed either in the display (when calling the configuration an additional menu „REAd LoGG“ is displayed, see below) or by means of the interface and a PC with HND-Z034-software.

Please note: For the Func-Stor-logging function it is not allowed to change the pressure sensor after values are stored, otherwise invalid data could be read out. For the read out of the logger the sensor has to be kept connected!

Max. number of measurings: 99

A measuring contains:

- current measuring value at the time of recording
- min peak, max peak since the last recording
- max peak since the last recording

- time and date of the recording

After each recording „St. XX“ will be displayed for a short time. XX represents the number of the recording.

If logger memory contains recordings already:

When „Store“ is pressed for 2 seconds, the choice for clearing the logger memory will be displayed:



Clear all recordings



Clear the last recording



Clear nothing (cancel menu)

The selection can be made by ▲ (key 2) and ▼ (key 5). "Quit" (key 6) enters the choice.



If the logger memory is full, the display will show:

Viewing Recorded Measurements

Within the „LoGg Stor“ function the measurements can be viewed directly in the display not only by means of a computer (like at „Func CYCL“): press 2 seconds „Set“ (key 4): The first menu displayed now is „rEAd LoGg“ (read logger data). After pressing ▶ (key 3) the measurement recorded last will be displayed, changing between the different values referring to the measurement also is done by pressing ▶ .

Changing the measurement is done by pressing the keys ▲ or ▼ .

8.6.2 „Func-CYCL“: Automatic Recording With Selectable Logger-Cycle-Time

The Logger-Cycle-Time is settable (p.r.t. Configuration). For example „CYCL“ = 60: A measuring is recorded after each 60 seconds.

When the slow measurement "rAtE-Slo" is chosen, additionally a low power function is available: „Lo.Po“.

If „Lo.Po“ is on, the device only will take a measurement at the point of time of the recording. In between the recordings the measuring shuts down. This decreases the power consumption enormously and therefore is recommended e.g. for long time recordings where no mains adapter is available.

Max. number of measurements: 10000

Cycle time: 1...3600 seconds (=1h), selectable in the configuration

A measuring contains:

- rAtE SLo:
 - current measuring value at the time of recording
 - min peak, max peak since the last recording
- rAtE FASt,P.dEt
 - arithmetic mean value since the last recording
 - min peak, max peak since the last recording

Starting a recording:

By pressing "Store" (key 6) for 2 seconds the recording will be initiated. After that the display shows 'St.XXXX' for a short time whenever a measuring is recorded. XXXX is the number of the measuring 1..10000.



If the logger memory is full, the display will show:  The recording automatically will be stopped.

If Low-Power-Logger-Function „Lo.Po = on“ the device switches itself off as soon as the memory gets filled.

Stopping the recording manually:

By pressing "Store" (key 6) the recording can be stopped manually. Then the following choice appears:



Stop the recording



Do not stop the recording

The selection can be made by ▲ (key 2) and ▼ (key 5). "Quit" (key 6) enters the choice.



Note: If you try to switch off the instrument in the cyclic recording operation You will be asked once again if the recording is to be stopped. The device can only be switched off after the recording has been stopped! The Auto-Power-Off-function is deactivated during recording!

Clear Recordings:

By pressing „Store“ (key 6) for 2 seconds the logger operation will be called.

The display will show  By pressing the keys ▲ (key 2) or ▼ (key 5)

the display will change to



When "Store" is pressed, the choice for clearing the logger memory will be displayed:



Clear all recordings



Clear the last recording sequence



Clear nothing (cancel menu)

The selection can be made by ▲ (key 2) and ▼ (key 5). "Quit" (key 6) enters the choice.

8.7 The Serial Interface

By means of the serial interface and a suitable electrically isolated interface adapter (HND-Z031/-032) the device can be connected to a computer for data transfer. To avoid transmission errors, there are several security checks implemented e.g. CRC.

The following standard software packages are available:

- **HND-Z034:** Operation and read out of logger function, data display in diagrams and tables
- **BUS-SW9M:** 9-channel software to display the measuring values

The device has 3 channels:

- 1: current measuring value (base address)
- 2: min peak (see chapter 8.6 Operation Of Logger)
- 3: max peak (see chapter 8.6 Operation Of Logger)



Note: The measuring-/ alarm- and display range values read back from the interface are always in the selected measurement unit (mbar, bar...)!

Supported functions:

Channel	Code	Name/Function	Channel	Code	Name/Function	
1	2, 3		1	2, 3		
x	x	0	x	208	Read # of channels	
x	x	3	x	222	Read power off time (Conf-P.oFF)	
x		12	x	223	Set power off time (Conf-P.oFF)	
x		22	x	x	224	Logger: Read data of CYCL- Logger
x		23	x		225	Logger: Read cycle time (LoGG - CYCL)
x		32	x		226	Logger: set cycle time (LoGG - CYCL)
		BitAlarmOn:1; BitAlarmSound:3; BitLoggerOn:50; BitCyclicLogger:51; BitLowPowerLogger:52				
x		160	x		227	Logger: start recording
x	x	176	x		228	Logger: Read # of recordings made
x	x	177	x		229	Logger: Read state
x	x	178	x		231	Logger: Read stop time
x	x	179	x		233	Read real time clock (CLOC)
x	x	180	x		234	Set real time clock (CLOC)
			x		236	Read logger memory size
x	x	199	x		237	Read logger filecount
x	x	200	x		238	Read logger filepointer
x	x	201	x		239	Read logger file info
x	x	202	x		240	Reset
x	x	204	x		254	Program version
			x		260	Logger: read data of STOR Logger
			x	x	263	Read logger channel info

8.8 Pressure Connection to The Sensors

The device is designed to be connected to the sensors of the HND-PS...-series without a new calibration being necessary. Therefore, a great variety of replaceable sensors of e.g. -1.999...2.500 mbar relative up to 0...400.0 bar absolute pressure can be connected to the device (p.r.t. chapter 11 order codes)

Relative Pressure Sensors

- **For measurements of over- or under pressure:**

Connect plastic tube with internal dia of 4 mm to pressure port "B". Port "A" will not be used! Pressure sensors HND-PS01/-PS02/-PS03 allow for measurements of under pressure up to the entire over pressure measuring range by re-plugging the tube to pressure port "A". Please note that all values are displayed as positive values. No minus sign will be shown. (Example for HND-PS02: For tube connection "B" the measuring range covers -19.99 to 25.00 mbar. If you replug to port "A" under pressure measurements down to -25.00 mbar could be carried out with the display showing the value 25.00 (no minus sign).

- **For measurements of pressure differences:**

Connect both plastic tubes with an internal dia of 4 mm to pressure port "B" and "A"; make sure to apply higher pressure to port "B".

Absolute pressure sensors:

Connect plastic tube with an internal dia of 4 mm to pressure port "A". (Port "B" is not used.)

Stainless steel pressure sensors:

For measurements of over-, under- or absolute pressure screw sensor to G1/4" pressure terminal or plug plastic tube to a suitable adapter.

8.9 Error and System Messages

Display	Meaning	What to do?
	Low battery power, device will only continue operation for a short period of time	Replace battery
	Battery empty	Replace battery
	Mains operation without battery: wrong voltage	Check power supply, replace it when necessary
 or Err.9	No sensor connected	Switch off device and connect sensor
	Connected sensor or device defective	If second sensor available, check if device is ok. Return defective device/sensor to manufacturer for repair
	Value extremely out of measuring range	Check: pressure not within sensor range?
No display or confused characters, device does not react on keypress	Battery empty	
	Mains operation: wrong	
Err.1	Measured value above allowable range	Check: pressure not within sensor range? -> measuring value to high
	Sensor defective	Return to manufacturer for repair
Err.2	Measured value below allowable range	Check: pressure not within sensor range? -> measuring value to low
	Sensor defective	Return to manufacturer for repair
Err.3	Display range overflow	Check: value above 19999->to high to be displayed
Err.4	Display range underflow	Check: value below -19999 (Tara?) ->to low!
Err.11	Value could not be calculated	Choose different unit
	Calculation overflow happened	Choose different unit
Err.7	System error	Return to manufacturer for repair
----	Sensor not present/recognised	Reconnect sensor, during logging: stop the logger and restart it
	Could not calculate value	Suitable sensor/unit combination necessary

8.10 Calibration Services

Calibration certificates – DKD-certificates – other certificates:

If device should be certificated for its accuracy, it is the best solution to return it with the referring sensors to the manufacturer.

Only the manufacturer is capable to do efficient recalibration if necessary, to get results of highest accuracy!

9. Maintenance

9.1 Battery Operation

If  and 'bAt' are shown in the secondary display the battery has been used up and needs to be replaced. The device will, however, operate correctly for a certain amount of time. If 'bAt' is shown in the upper display the voltage is too low to operate the device; the battery has been completely used up. The battery has to be taken out, when storing device above 50 °C.



Please note: We recommend to take out battery if device is not used for a longer period of time!

10. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

11. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12.1 Pressure sensors

Measuring range	Accuracy	Resolution	Overload	Working temperature	Connection	Order-no.
-1,999...2,500 mbar	$\pm 0,2\%$ ME / $\pm 1,0\%$ ME*	0,001 mbar	max. 200 mbar	0...+50 °C	Nylon-spigot for hose 6 x 1 mm 	HND-PS01**
-19,99...25 mbar	$\pm 0,2\%$ ME/ $\pm 0,5\%$ ME*	0,01 mbar	max. 300 mbar			HND-PS02**
-199,9...350,0 mbar	$\pm 0,2\%$ ME/ $\pm 0,4\%$ ME*	0,1 mbar	max. 1 bar			HND-PS03**
-1000...2000 mbar		1 mbar	max. 4 bar			HND-PS04**
-1...10 bar		10 mbar	max. 10,34 bar			HND-PS05**
0...1300 mbar abs.		1 mbar	max. 4 bar abs.			HND-PS06**
0...2000 mbar abs.		10 mbar	max. 10 bar abs.			HND-PS07**
0...7,00 bar abs.		0,1 mbar	max. 2 bar rel.			HND-PS19
0...400,0 mbar rel.		1 mbar	max. 5 bar rel.	HND-PS20		
0...1000 mbar rel.			max. 10 bar rel.	HND-PS21		
0...2500 mbar rel.	max. 17 bar rel.		HND-PS22			
0...4000 mbar rel.	10 mbar		max. 35 bar rel.	HND-PS23		
0...6000 mbar rel..			max. 50 bar rel.	HND-PS24		
0...10 bar rel.			max. 80 bar rel.	HND-PS25		
0...25 bar rel.			max. 120 bar rel.	HND-PS26		
0...40,0 bar rel.	0,1 bar		max. 200 bar rel.	HND-PS27		
0...60 bar rel.		max. 320 bar rel.	HND-PS28			
0...100 bar rel.		max. 500 bar rel.	HND-PS29			
0...160 bar rel.		max. 800 bar rel.	HND-PS30			
0...250 bar rel.	10 mbar	max. 1200 bar rel.	HND-PS31			
0...400 bar rel.	0,1 bar	max. 1500 bar rel.	HND-PS32			
0...600 bar rel.	1 bar		HND-PS33			
0...1000 bar rel.						
0...1000 mbar abs	$\pm 0,2\%$ ME / $\pm 0,4\%$ ME*	1 mbar	max. 5 bar abs	0...+70°C	External threads G 1/2 	HND-PA20
0...2500 mbar abs			max. 10 bar abs			HND-PA21
0...4000 mbar abs			max. 17 bar abs			HND-PA22
0...6000 mbar abs			max. 35 bar abs			HND-PA23

* in the range from 0 to +50 °C

** Pressure sensors HND-PS01 up to HND-PS08 are only suitable for air and non-corrosive/non-ionizing gases and liquids.

Accessories for HND-PS19...PA23		Model and Code
1.2 m PVC-cable with 6-pin Mini-DIN plug and M16 socket (IP 54)		HND-K31

12.2 Accessories

Order-no.	Description
HND-Z002	Plug power supply unit (220/240 V, 50/60 Hz), 10.5 V/10 mA
HND-Z011	Equipment protective housing bag, nappa leather, with 1 cut-out for round sensor connection
HND-Z012	Equipment protective housing bag, nappa leather, with 2 cut-outs for round sensor connection
HND-Z021*	Case with recess (275 x 229 x 83 mm)
HND-Z022*	Universal case with egg crate foam (275 x 229 x 83 mm)
HND-Z023*	Large case with recess (394 x 294 x 106 mm)
HND-Z031	Interface converter on RS232, galvanically isolated
HND-Z032	Interface converter on USB, galvanically isolated
HND-Z033	Adapter RS232 converter on USB- interface
HND-Z034	Windows software for setting and data read- and print-out of instruments of the HND- series with logger function
BUS-S20M	Software for recording measuring data on a PC for 20 modules, for devices of the HND series without logging function
HND-Z081	Double nozzle for hose 6.4 on hose 6.4
HND-Z082	Hose clamp for hose 6.4
HND-Z083	Adapter made of brass for G 1.4 internal threads on hose 6.4
HND-Z084	PVC-hose (5 bar), 6 mm external / 4 mm internal
HND-Z085	PE-hose (10 bar), 6 mm external / 4 mm internal
HND-Z086	PU-hose (9 bar), 6 mm external / 4 mm internal
HND-Z087	PA-hose (25 bar), 6 mm external / 4 mm internal
HND-K31	1.2 m PVC-cable with 6-pin Mini-DIN plug and M16 socket (IP 54)

*Pay attention to instrument dimensions

Additional accessories on request

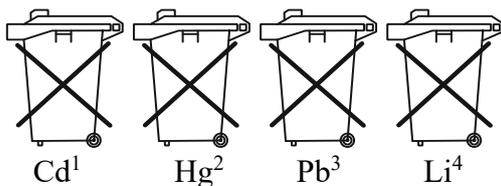
13. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



14. EU Declaration of Conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

**Hand-held Pressure Measuring Devices with External Pressure Sensors
Model: HND-P210**

to which this declaration relates is in conformity with the following EU directives stated below:

2014/30/EU	Electromagnetic compatibility
2011/65/EU	RoHS (category 9)
2015/863/EU	Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN 61326-1:2013

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Hofheim, 10 October 2023



H. Volz
General Manager

J. Burke
Compliance Manager