



PAULWEGENER

MESSTECHNIK SEIT 1921

Operating manual

Data acquisition system

PWBlogg



Type: N7/180



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Design and specifications are subject to change without notice.

1 Safety instructions on installation, start-up, maintenance and troubleshooting

1.1 Installation and start-up

The data acquisition system PWBlogg N7 is destined for intended use within gas explosion hazardous areas of zone 1 only if there is the respective safety marking on the identification label.

Before installing the device within the hazard area, please check whether the ambient conditions meet the safety level of the data logger (ambient temperature, gas group, temperature classes etc). The applicable installer- and operating regulations must be observed.

The dedicated junction at the housing of the data logger must be used for integration into the potential equalisation of the unit or the system.

Pluggable external transducers must only be used with the data logger with which they were delivered (compare identification number on the identification label).

If the device is equipped with an external infrared online port, that port can be temporarily as well as permanently used **outside** of the hazard area for connecting laptop/PC or modem. That infrared online port is even with pluggable connection part of the measurement instrument and must only be used with the data logger with which they were delivered (compare identification number on the identification label).

If the use of one or both alarm outputs is destined, the specified connection values for maintaining intrinsic safety must be adhered.

If the data logger's voltage is supplied via the external separator module PWBlogg TEV8.2N7Ex1, please take note of the separate manual of this device.

1.2 Maintenance

Maintenance jobs at the data logger restrict themselves to doing battery changes, cleaning the device and visual check up of connecting cables of components of the measurement system.

If the connecting cables are damaged, please contact manufacturer for purpose of repair.

The housing should be simply cleaned by wet cloth to avoid electrostatic charge.

The devices are designed in such a way which facilitates safe battery change within Ex zone 1. Please note following safety instructions when changing battery:

- Only battery packs BP16.5N5-Ex1 supplied by manufacturer must be used. Using other batteries or battery packs may cause danger of fire or explosion.
- The battery pack is safely fixed inside the device by Velcro fastener. Make sure that the new battery pack is firmly fastened at its dedicated position.
- Do not rub or clean the battery pack using dry items. There is a danger of electrostatic charge.
- The battery pack used inside the device can be a danger of fire or burn in case of mishandling. Do not charge, open, heat over 100°C or incinerate it.
- Do not try to open the battery pack by force. It contains components which heat themselves to high levels due to a short circuit.
- If the battery connecting cable is visibly damaged, you must not use it anymore, but replace it by a new one. Please note that the cable is not caught when closing the device.
- Do not use pointed or sharp-edged tools when working to avoid damages to the electronics of the device.
- Do dispose of batteries promptly. Keep them out of reach of children. Do not open them or throw them into fire.



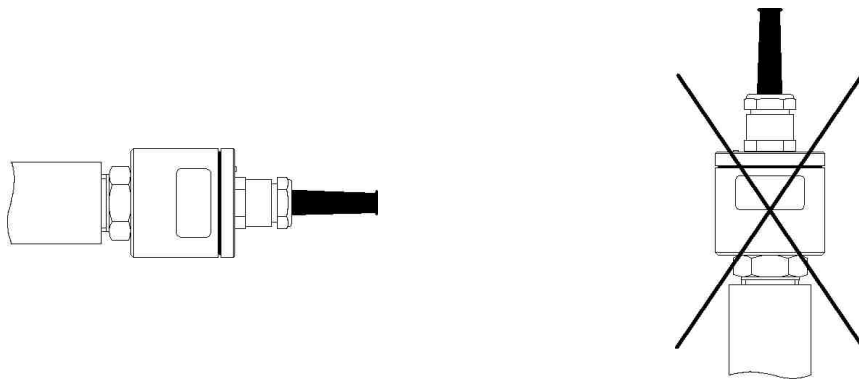
Attention: The electronics consists of electrostatic sensitive components. Pay attention to ESD operation instructions when handling with this electronics!

1.3 Troubleshooting

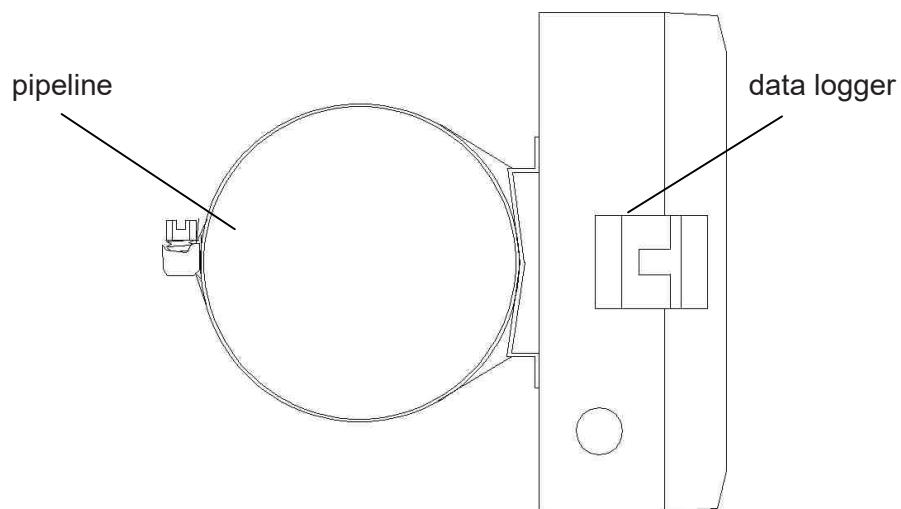
No modifications are allowed to devices which are designed for intended use in explosion hazardous areas. Repairs of devices must only be done by purpose-trained specialists.

If the measurement system is equipped with pluggable transducer ports (optional), the defect measurement module or pressure transducer can be forwarded to its manufacturer for checking or repair. A complex dismantling of the connecting cables between transducer and measurement module is not applicable.

Mounting notes:



Relative pressure transducers contain a venting device and should be horizontally positioned.



Data loggers (side view) can optionally be mounted on pipelines or the like by band clamp.

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2 Start-up instruction

Measurement systems with pluggable transducers are delivered in unplugged state. Measurement module, transducer cable and pressure transducer are separate in the transport package. Transducers and connecting cables are labelled with their respective channel number. Please note that those labellings correspond to their respective transducer ports at the measurement module when connecting.

Please note the following references during the first initiation of data measuring- and storage devices:

- Install software PWB-Soft on your PC/laptop first.
- Subsequently, in observance of the safety instructions mentioned, connect data logger to PC/laptop by infrared data cable.
- Start the evaluation software. Follow instructions on screen (see also operating manual on PWB-Soft)
- Set interface in dialog box „Settings“ of menu item „File“.
- Establish communication between PC and data logger via „Connection“.
- Make all necessary settings in the dialog field „Configuration“. Please note that the data logger is delivered with battery power-saving sample rate.
- After pressing „OK“, the controller will be configured again and the memory will be cleared. Measurement can start now.
- Note that the data logger must be switched on for activating measurement and the adjusted measurement start time must be reached!
- Note that integrating relative pressure transducers into the potential equalization can cause a zero offset (see chapter 6.2 Reset to zero).

Attention: The relative pressure transducer on devices with delivery date **as of July 2005** are equipped with venting device in mint condition. This small circular-shaped venting device is on the sealing cap of the transducer. **Pay attention that the venting device is not removed or damaged!**

3 Data acquisition system PWBlogg

The basic version of the data logger PWBlogg N7 is battery-operated.

The power can optionally be supplied by the separator module PWBlogg TEV8.2N7Ex1. This way data logging can only be done when the data logger is supplied by voltage via separator module. If this external supply fails, a backup battery provides sufficient power to save and read any recorded performance data. Operating the data logger by keypad and display during failure of external supply is not possible.

3.1 Components of data logger PWBlogg N7

The Data loggers PWBlogg N7 consist of following units. These allow in their entirety reading acquisition and -storage, evaluation of measuring data on PC/laptop/PDA and adaptation to specific measuring problems.

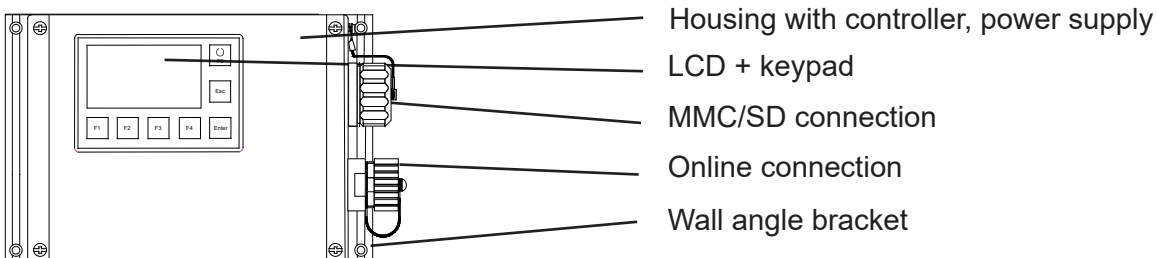


Figure 1 Type N7/180

3.2 Settings

Following settings to the requirements of measurement can be adapted on site by means of configuration dialog of PWB-Soft on PC/laptop/Pocket-PC:

- Identification (eg company address)
- Brief description (location/project number)
- Measurement start (date/time)
- Interval 1 (min 1s; max 60min)
- Interval 2 (if required)
- Threshold defaults for analog channels
- Alert states for status inputs
- Storage mode

Following settings can be altered directly on device:

- Start of measurement
- Interval 1 and 2
- Storage mode
- Short text
- Time

Parameters important for threshold monitoring are described as follows.

Digital signals and pulses are always monitored in interval 2, independent of adjusted sampling mode because of a low power consumption. That means eg if there is a threshold violation of flow rate or a monitored safety valve operates, the alarm mode will be switched on directly. Now, all data are measured and recorded in interval 2.

3.3 Threshold signalling

If there is a threshold exceeding or if it falls below, arrow symbols will appear on display. Furthermore, the data loggers have 2 separate alarm outputs for signalling threshold violations. If there is an identification of an exceeding of the limit or the opposite way round, so the respective alarm output is activated. Once the signal is in regular range again (in consideration of hysteresis), the respective alarm output will be deactivated again. While alarm state is on, it is switched over from interval 1 to interval 2 so that in case of an alarm state the measurement signal can be terminably finer resolved. Hence it is necessary to set Interval 2 always shorter than Interval 1 (see also pages 10 and 11).

Shall the alarm state be signalled far from measuring location, there are different options:

- Activating available monitoring equipment via alarm outputs
- Alarm message by SMS to a mobile phone via connected GSM modem
- Alarm message by voice output by a threshold signalling device

At locations without telephone jack or any other connection to the place of alarm signalization, wireless transmittance of the alarm message via GSM modem can be used. Alarm signalling by voice output is possible wherever phone connection is available. The threshold signalling device is connected to the phone and must be supplied via delivered AC adapter. Subsequently, configuration will be done in accordance with the separate instruction. Four telephone numbers which are dialed in alarm case can be entered at the most. While answering the phone, a speech alarm up to 20 sec will be sent. If a complete device system is available, consisting of data logger, threshold monitoring system and optional modem, the threshold signalling device is supported on a short-duration with the battery of the data logger to keep the entered data.

Further technical solutions of the alarm message can also be implemented to customer requirement.

4 Operating the Datenlogger N7

The data logger function are controlled by keypad and LCD. Different functions are arranged in a menu structure.

4.1 References on keypad operation

F5 / On/Off

Special key for activating/deactivating measurement or calling main menu.

F1 to F4

Function keys which respective meanings are described in the menu by softkeys. The keys F1 and F4 normally operate as cursors. The respective direction for navigation in the menu is shown on display. Further functions are shown in the menu items.

Enter

Enter opens submenus and alterations will be accepted.

Esc

Submenus are quitted as well as alert messages are hidden by pressing Esc key.

5 Main menu of the data logger

5.1 Menu items

The measurement ms menu is the top display level. If measurement is deactivated, the message „No measurement planned“ appears. Short pressing F5 or Enter opens the main menu which contains following sub-menu items:

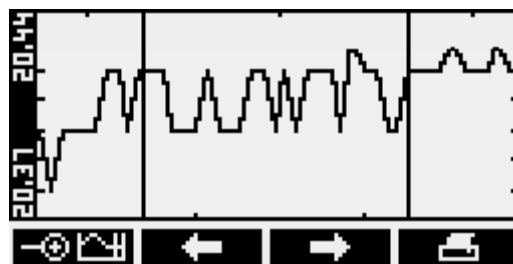
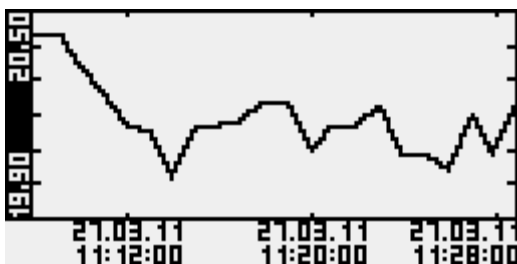


Evaluation



Chart

The values are displayed grafically here. A cursor menu can be activated by pressing F1 and F4. F1 switches over from first to second cursor there. The cursors can be moved to the left and right using F2 and F3. The cursor area will be accepted and displayed by Enter. Furthermore, the displayed area in the cursor menu can be printed out by pressing F4. After pressing F5, the whole measurement area will be shown again.



Table

Values are shown in tabular form here. F1 and F4 navigate between data records. Channels can be selected by F2 and F3.

1 Pressure	bar
28.05.09 11:23:44	0.410
28.05.09 11:23:45	0.410
28.05.09 11:23:46	0.410
28.05.09 11:23:47	0.410
28.05.09 11:23:48	0.410
28.05.09 11:23:49	0.410
28.05.09 11:23:50	0.410

Print

Readings can be printed out here on a connected thermal printer. Graphic output can be done normally or enlarged (zoom). Over and above, current state information can be displayed.



Logbook

Any recorded events eg activated/deactivated measurement are displayed here. Navigating between entries can be done by F1 and F4.

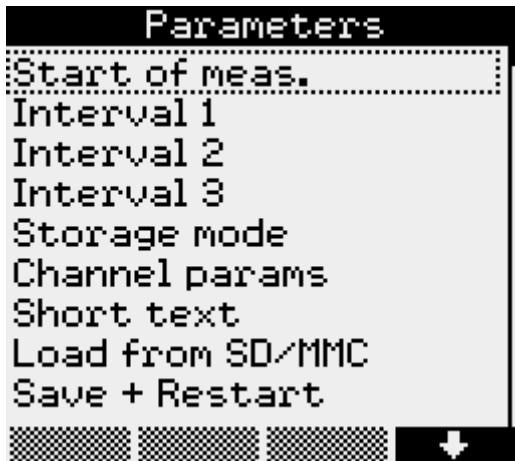


The respective state can be read under the symbols for activated measurement (U), alarm (A), memorycard (M), battery (B), power supply unit (P) and iModem (I). Over and above, the information menu can be retrieved by F2.

Backup

This menu item provides the backup function. Data are saved on MMC/SD card. After pressing Enter, the question „Store data?“ will appear. Subsequently, backup can be started by pressing F1.

Parameters



Start of measurement

You can determine the measurement start under Start of meas. The cursor position can be changed by pressing F1 and F4. The respective value can be increased/decreased by F2 and F3.

Interval 1, the period between two reading samples during normal operation, can be set from 1 second up to 60 minutes.



Interval 2 determines the period between two reading samples in case of alert and provides setting options between 1 second and 1 minute. This period must always set lesser than Interval 1. Readings are logged in Interval 1 during normal operation (depending on storage mode). If a threshold violation is detected, sampling will be switched over to Interval 2 and logged there till the threshold violation is over (under consideration of preset hysteresis values). If „Alarm watching“ is preset, sampling will be done permanently in Interval 2. Thereby threshold violations are quicker detected. Switching over storage interval from Interval 1 to Interval 2 will be done promptly. Please note that frequent sampling increases power consumption of the data logger and hence battery lifetime diminishes!

Interval 3

If Gazmodem 2 protocol is activated, the smallest sample rate will be 1 min. This parameter can be customized via entry Interval 3.

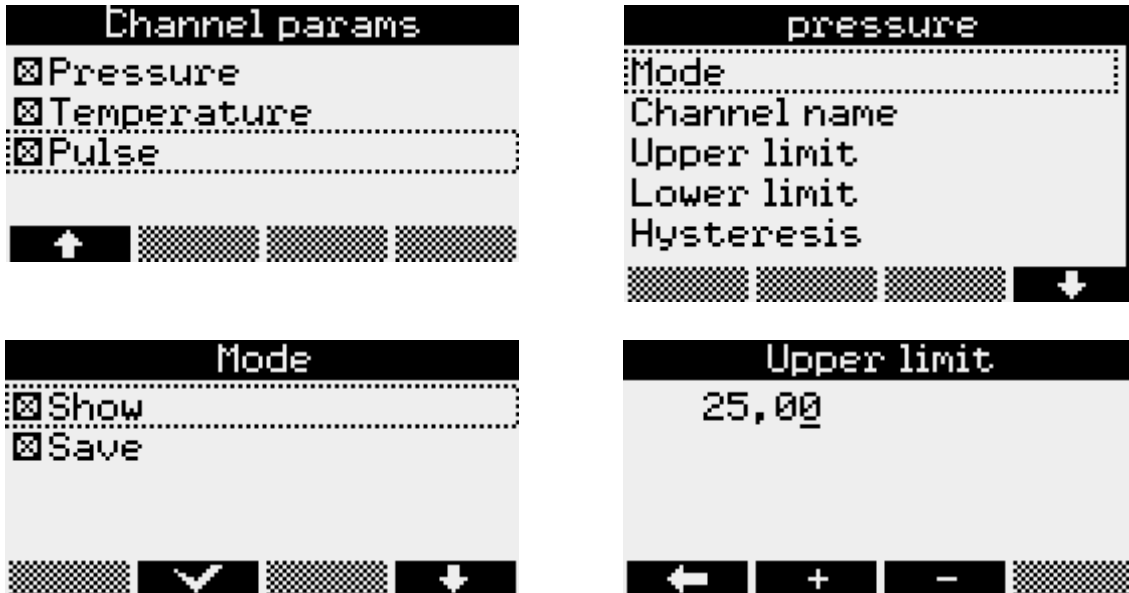
Storage mode

In Storage mode can be determined whether Cycle memory shall be activated, so that existing values will be overwritten at full memory, whether only alarm values shall be stored, whether permanent monitoring shall be done or whether alarm values shall only be stored within a limited period to use memory more efficiently.



Channel parameters

Channel-specific parameters for all channels of the data logger are set under Channel params. Pressing Enter will open the menu items such as the mode where „Show“ and „Save“ are set, the „Channel name“ which can be individually allocated, the „Upper“- and „Lower limit“ where, if exceeded, the alert message will be shown as well as the hysteresis which inhibits permanent switching over in case of fluctuations of the reading. These settings can be altered by the navigation keys F1 to F4.



Short text

The cursor position can be changed by F1 and F4 in menu item Short text. Selecting characters of the provided ones can be done by F2 and F3.

Load from SD/MMC

This function facilitates data transmission to the data logger via memory card. The file to be transmitted is selected by F1 and F4. Pressing Enter starts data transmission.

Save + Restart

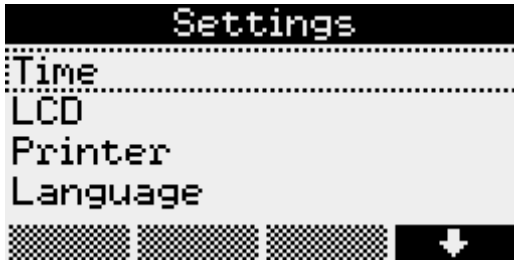
Any changed parameter will be saved. The memory will be deleted. The confirmation prompts must be confirmed by Enter.



All parameters will be initially buffered and accepted not until pressing **Save + Restart**.

Settings

The current time of the data logger is entered here. F1 and F4 are used for that purpose. Changings of values must be confirmed by Enter. After confirmation prompt has appeared, changings can be saved by F1 or undone by F4.



LCD

The period, where after last key pressing the display and illumination shall be switched off automatically, can be adjusted in the menu item LCD time. Furthermore, the display contrast can also be adjusted here. Changings will be saved by pressing Enter. +/- changes for F1 and F4 between input mode for the values to be adjusted and cursor function.



Printer

The printer type to be used can be determined under the menu item Printer and must be confirmed by Enter.

Language

This menu item enables adapting the language of menu navigation. Changes are confirmed by Enter.

State

This menu item shows currently adjusted Time, the current position (if GPS module is provided only), the Short text entered, free internal Memory, free memory of an inserted MMC/SD card, Operating hrs. of the data logger, state of the Battery, Serial-No of the logger, Built in as well as the Hardware and Firmware version used.



5.2 Password protection

The menu items „Parameters“, „On/Off“ and „Time“ can optionally be protected from unauthorized access. The software PWB-Soft 2.1 provides in its configuration dialog a dedicated input box where a password can be set. Subsequently, that password can be transmitted to the data logger via data cable. If thereafter the menu items „Parameters“, „On/Off“ and „Time“ are called, a prompt for entering that password will appear.

6 Measurement

6.1 Activating

Long pressing F5 key activates measurement. If the main menu is already open, measurement can be started by **short** pressing F5. After confirming the question „Switch on?“ by F1, measurement will start. The current reading will appear on display.



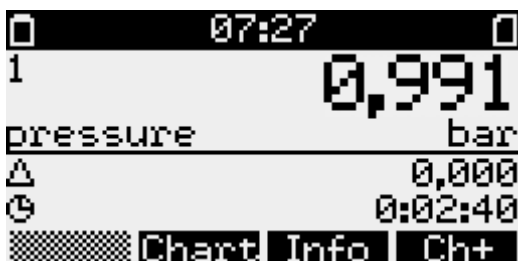
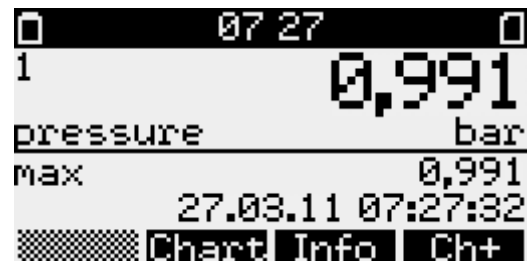
In the top line of this online display are a symbol on battery state, the current time as well as the memory card symbol if an MMC/SD is inserted. The menu item are visible below. If measurement is activated, the additional menu item Reset Min/Max will appear. Minimum and maximum values can be reset here.



The numbers of the channels are shown on the left. Selecting one of them can be done by F1 and F4. The chart can be displayed by pressing F2. This one adapts itself optimally to the fluctuation range of the values shown.



Further information on current channel displayed are provided by pressing the info key F3. There can be navigated between minimum- maximum-, delta value and multi display of all channels.



The delta value is the difference of the current value to the one which was visible when activating measurement last time. Below this difference value you can see the elapsed time since last activating measurement or reset minimum/maximum. When using external transducers (sensor modules), the symbol * after the channel number indicates that the transducer reading could not be retrieved. In this case the reading will be created from the last known one.

6.2 Reset to zero

Some transducers (e.g. relative displaying absolute pressure transducers) enable correcting the zero point. If pressure transducers during pressureless state display a value unequal zero, then the zero offset saved in the device should be corrected. For this purpose, measurement must be activated and the channel to be reset to zero must be called in the readings display (using F1 or F4). Thereafter call the main menu using the Enter key. There „set to zero“ will appear as additional menu item (as the case may be use F1 or F4). After calling the menu item and confirming a further request, the current reading will be saved as zero offset. This channel will show 0 now.

NOTE: Reset to zero must only be done at pressureless state.

6.3 Alarm message at threshold exceeding

If an upper or lower limit preset in the menu item Channel params is exceeded, the message „!!!Alarm!!!“ will appear on display. The alarm message will be hidden by pressing Esc. The arrow symbol after the channel number indicates that the alarm is still recorded. That symbol disappears not until the reading is beyond the alarm range again.



6.4 Deactivating

After pressing F5, the question „Switch off?“ will appear. The measurement can be deactivated by the F1 key. This action can be cancelled by F4.

After deactivating measurement, data will be automatically saved on MMC/SD card. Subsequently, the successful storage process will be shown on display.

6.5 Using the MMC/SD

The MMC/SD card is in a dedicated slot outside of the data logger and provides backup and transmitting data wirelessly to PC/laptop.

The available memory capacity will be automatically determined upon inserting the card into the data logger.

Note: As these information has to be determined by searching available sections on the card, this process can take some minutes when using cards with large memory capacity! Meanwhile a card symbol is shown in the system state display.

The card should not be removed while searching!

Backup can be done manually by menu command „Backup“ as well as automatically when deactivating measurement. The memory card should not be removed during storage process, to avoid potential loss of data.

The MMC/SD card can be directly inserted into the slot of the PC/laptop, or, if not provided, plugged in an USB port by means of a card reader. The memory card will be automatically recognized as removable medium. Clicking on the respective drive letter will make data visible. They can be evaluated now by the software PWB-Soft.

Before you remove the MMC/SD card, open the context menu by right mouse click on the drive letter of the memory card and use the function „Remove“.

Correct storage of accumulated data on the external memory card can only be guaranteed if memory cards supplied by the Paul Wegener GmbH are used! These cards are formatted when delivered, so that they can be used promptly without any further preparations. If, however, there was the necessity to format, the context menu could be opened by right mouse click on the drive letter of the memory card and the function „Format“ could be used. Please note that formatting can only be done using FAT or FAT32, since other file systems are not recognized by the data logger.

6.6 Generated files

When saving the first time, a file will be automatically created on MMC/SD which corresponds to the serial number of the data logger. All reading files will be consecutively stored there, beginning with „DAT_0000.PWB“.

7 Battery

7.1 Battery check

The battery state is checked by the firmware of the data logger. All activities of peripherals are taken into consideration, ie the period where the display is on or the data logger is online will be logged and included into calculation of remaining battery capacity. The activities are acquired and included to evaluation of battery capacity. **The influence of low temperatures to the available capacity of the battery pack can not be considered in respect of evaluation.**

The manufacturer gives an estimate of durability of the measuring system on request.

Measurement is stopped after falling below minimum voltage and the data logger will be operated by energy-saving mode. Thereafter, a backup battery will provide power supply to avoid loss of data over a longer period (even if battery is changed). If battery capacity falls below 20%, battery should be replaced. Recycling of used batteries/rechargeable batteries is described in the paragraph Recycling of batteries and old appliances.

In case the battery is discharged below 10%, the message „**!!!Battery!!!**“ will be shown after activating the display.

7.2 Depassivation

In particular after long storage periods, lithium batteries build up a protective layer during passivation process which protects against self-discharge.

Before connecting a new battery or if the data logger has not been used for a long period, this protective layer needs to be released. This process is called depassivation.

For this purpose, connect the battery (BP16.5N5-Ex1) with the enclosed depassivation connector for about 30 s or with the dedicated plug connection on the circuit board inside the housing cover of the data logger.

If, after connecting the battery, a battery alarm is triggered, please repeat the process of depassivation.

The battery's service life is not affected by this process.

7.3 Battery change at battery-operated devices

We recommend, battery change should be carried out by manufacturer. Please consider following notes if you want to change it by yourself.

General information note for battery change:

Battery change should be carried out without any loss of data when the backup battery is intact. Reading out data prior to battery change is used as guarantee in case of a discharged backup battery. Changing the backup battery can only be done by manufacturer!

From firmware version 2.1.27 onwards (as of 01/2013), the battery change of N7 devices is facilitated by an own menu item. For this purpose, the menu „settings“ provides the submenu item „battery“ which allows monitoring battery status and battery change.

After confirming the prompt „Change battery?“, the data logger will save the current system status and it will deactivate measurement. The prompts „Change battery!“ and „Press any key“ will appear on display.

Now the battery of the device can be replaced by a new one as follows.

- A corresponding battery type is obtainable from manufacturer. The 7,2V-battery pack is equipped with a special pin-and-socket connector.
- Unscrew the cross-head screws of the housing.
- Loose the pin-and-socket connector at battery pack **carefully** and remove the old battery.
- Place the new battery in the battery tray and fit it with the adhesive pad which is designed for it.
- Connect the new battery with the pin-and socket connector of the data logger.
- Close the housing again without crimping the connecting cable inside.

After subsequent arbitrary keypress, the enquiry „Battery changed?“ will appear. If this is confirmed by „yes“, the current date will be entered and the battery status will be reset to 100%.

If the device deactivates itself when changing battery, then the internal clock battery is discharged!

Though, battery change can be done safely. However, it is recommended, as the case may be, to have the battery changed by manufacturer within the scope of the scheduled maintenance.

To refresh the battery date, even if the backup battery is discharged, the menu item „settings/battery“ can be called again. When doing so, confirm any prompts in the same way as you do when changing battery, without removing it again!

7.4 Battery change at external supplied devices

The external supplied version of the data logger uses the battery pack BP2.4N7Ex1 as backup battery. If a battery change is necessary (battery capacity has fallen below 20% or external power failure for quite some time), please generally proceed as described in paragraph 7.2. Take note that data loss can only be avoided in case external supply is permanently provided. Using the above mentioned BP16.5N5Ex1 here is inadmissible.

8 Technical specifications

8.1 Data logger

Analog inputs	maximum 8 inputs logging in the adjusted interval												
Digital inputs	logging of status, meter readings and flows maximum 8 inputs for potential-free contact; thereof optional up to 4x NAMUR transducer subject to EN 60947-5-6:2000 or IEC 60947-5-6:1999 maximum signal frequency 1 kHz, pulse width $\geq 0,5$ ms												
Data memory	256kB, optional 512kB, 1024kB, 2048kB optional: changeable memory card (MMC/SD up to 4GB)												
Limit value	adjustable upper and lower limit value for each analog channel												
Sampling rate	freely adjustable from 1s to 1h												
AD-converter	8 bit (256 digital levels, $\pm 1/2$ LSB) 12 bit (4096 digital levels, ± 1 LSB) 14 bit (16384 digital levels, ± 1 LSB) 16 bit (65536 digital levels, ± 1 LSB)												
Real time clock	deviation 5 ± 23 ppm ($\Delta f/f_0$) at 25°C												
Storage mode	cycle memory mode (overwrites oldest data at full memory) or straight memory mode (stops at full memory)												
Interface	Infrared interface 9600 Bd maximum 57600 Bd when reading data; minimum 2400 Bd when printing via mini printer 8 data bits, 1 start bit, 1 stop bit, no parity check												
LCD	128x64 pixels, contrast and display duration adjustable												
Power supply													
• battery-operated	7,2V lithium battery pack, intrinsically safe BP16.5N5-Ex1 capacity 16500 mAh												
• externally supplied (N7/.../Ex1/TEV)	3,6V lithium backup battery, intrinsically safe BP2.4N7Ex1 capacity 2400 mAh external supply interface e.g. for PWBlogg TEV8.2N7Ex1 with the safety-relevant supply parameters: <table style="margin-left: 20px;"> <tr> <td>U_i</td> <td>9,2 V</td> <td>C_i</td> <td>33,28 μF</td> </tr> <tr> <td>I_i</td> <td>600 mA</td> <td>L_i</td> <td>insignificant</td> </tr> <tr> <td>P_i</td> <td>1,2 W</td> <td></td> <td></td> </tr> </table>	U_i	9,2 V	C_i	33,28 μ F	I_i	600 mA	L_i	insignificant	P_i	1,2 W		
U_i	9,2 V	C_i	33,28 μ F										
I_i	600 mA	L_i	insignificant										
P_i	1,2 W												
Operating temperature	-20..60°C												
Storage temperature	-30..80°C												

8.2 Explosion protection

Non sparking ATEX II2G Ex ib IIB T4 Gb according to EN 60079-0, and EN 60079-11 for intended use within the explosion-hazard area of zone 1.

Alarm output

$$U_i = 18,0 \text{ V} \quad C_i = \text{insignificant}$$

$$I_i = 50,0 \text{ mA} \quad L_i = \text{insignificant}$$

$$P_i = 100 \text{ mW}$$

NAMUR input

$$U_o = 9,14 \text{ V}$$

$$I_o = 9,3 \text{ mA}$$

$$P_o = 23,0 \text{ mW}$$

$$C_o = 34,0 \text{ } \mu\text{F}$$

$$L_o = 0,57 \text{ mH}$$

Ex ib	IIB			
C_o [μF]	34,0	23,0	9,6	0
L_o [mH]	0	0,02	0,15	0,57

8.3 EMC

Checked in accordance with EN 61000-6-3 (emitted interference in living quarters) and with EN 50081-2 (interference resistance in industrial field).

8.4 Data memory

Storage times of the internal memory result from the number of occupied channels, from preset sample intervals 1 and 2 as well as from storage and sample mode. If the reading resolution is > 8 bit (12, 14 or 16 bit), possible storage times will halve themselves. The signal inputs cause different memory requirements (analog, state and pulse inputs). We can do the preliminary work for you for each of the combinations of those parameters occupied.

Error sources

The analog signals of transducers are converted into a digital value with resolution of 8 bit, 12 bit, 14 bit or 16 bit. The values, shown in PWB-Soft program or on LCD must be rounded to the defaulted number of decimal places so that the increment between two neighbouring values will not always be identical.

Potential sources of error are non-linearities of AD converter which are irrelevant on resolution of 8 bit or 12 bit. However, another important error source is the digital step at small resolutions. At the limit of two sequent digital values, the tolerance between the measured (in digital steps presentable) and the real value (other sources of error excluded) already amounts $\frac{1}{2}$ resolution step. Additionally, there are device-dependent sources of error such as temperature drop or deterioration of components. At resolutions as 14 bit and 16 bit, they have much importance.

9 Recycling of batteries and old appliances

Used electric appliances, batteries and rechargeable batteries are subject to particular statutory provisions. Batteries, rechargeable batteries and electric appliances must not be disposed with the household waste. The end user is obligated to return them by the law. Used electric appliances, batteries and rechargeable batteries can be disposed at collecting points, municipal disposal areas or by manufacturer / supplier.

The Paul Wegener GmbH as seller of batteries and electric appliances fulfills its take-back obligation and disposes used batteries and old electric appliances free of charge. This take-back obligation, however, limits itself to used electric appliances, batteries and rechargeable batteries which belong or belonged to the product range of the Paul Wegener GmbH and the amount which was delivered by the Paul Wegener GmbH. The end user bears the forwarding charges.

EU-DECLARATION OF CONFORMITY

Herewith we declare that the data acquisition systems of type range

PWBlogg N7-Ex1

complies with the directive **2014/30/EU** in reference to electromagnetic compatibility and **2014/34/EU** for equipment and protective systems for use according to regulations in consideration of explosion-hazard areas. The data acquisition system was developed according to following harmonizing of standards:

- EN 61000-6-3:2011-09** subject basic standard for emitted interference – emitted interference for living quarters, business- and trade as well as small firms
- EN 61000-6-2:2011-06** subject standard for interference resistance– industrial sector
- EN 60079-0:2019-09** electrical equipment for explosion-hazard areas, section 0: general requirements
- EN 60079-11:2012-06** potentially explosive atmosphere - section 11: equipment protection by intrinsic safety „i“

Marking as category 2 - equipment for use in explosion-hazard areas of the zone 1:



EC type-examination certificate:

IBExU11ATEX1064

The quality management system is monitored by:

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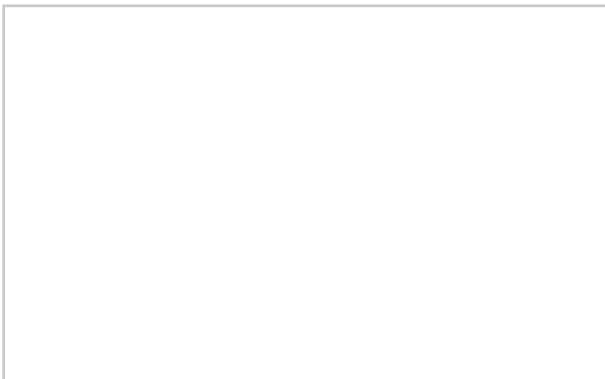
The safety advice of the product documentation must be followed!

Ballenstedt, 14.03.2023

Wegener
Managing director

10 Troubleshooting

Problem	Measure
Software reports: „No modules found!“	Check the following: <ul style="list-style-type: none"> • whether correct interface chosen • whether cable to data logger and PC is connected properly
No data stored in controller	Check, whether: <ul style="list-style-type: none"> • a pre-set starting time is reached and measurement is activated • battery is functional • all transducers and cable are functional • readings are shown on LCD • moisture is intruded into the data logger
Battery is low	Change battery or have it changed by manufacturer
Password forgotten	Read out measured data, send reading file to manufacturer
No connection possible via modem	Check on PC as well as on data logger whether: <ul style="list-style-type: none"> • power supply of the modem is functional • modem and data logger or PC are connected properly • modem is initialized correctly on PC or on data logger • correct type of modem was selected in dialog „settings“ when configuring <p>If you use a GSM modem, check in addition whether:</p> <ul style="list-style-type: none"> • the correct PIN number entered into configuration of data logger and/or in settings on PC <p>In case of error messages in modem dialog of software, check whether:</p> <ul style="list-style-type: none"> • initialization parameters are supported by your modem
Software does not read measuring data completely or reports errors when reading data	Check, whether: <ul style="list-style-type: none"> • all cable connections are made properly • moisture is intruded into the data logger • battery of data logger is functional <p>Connect it directly again (menu item „module/connect“) and start reading measured data again</p> <p>Modern computers have power management functions. During shutdown of hard disk or change into standby mode the CPU can be busy temporarily, so that it „oversleeps“ the sent characters. This leads to abort of reading out. If necessary, extend periods for activating standby functions or switch off the power management.</p>
Not enough memory	Data backup has to be done. Delete or rather format the card.
Could not create MMC file	General error message if write/read problems on the card occur. Maybe wrong file system or card is not readable.
Data logger notifies: „Card invalid!“	Data storage not possible. Remove card, insert it again, if necessary format it again.
Pressure transducer shows value unequal zero during pressureless state	Reset the respective channel to zero when measurement is activated (see chapter 6.2. Reset to zero).



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