LIBERO W

Independent Monitoring Solution For Rooms And Equipment

Operation Manual

ELPRO-BUCHS AG

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  -Brackets
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- This guarantee is valid for material faults or production faults.
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  -misused
  -modified
  -replaced by an incorrect product
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- ELPRO-BUCHS AG applies the highest quality standards during production of the data loggers and their accessories as well as a certified quality management system in compliance with ISO 9001.
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- During the installation of data loggers, probes and accessories, compliance with the locally valid installation regulations is mandatory.
- When used in potentially explosive atmospheres, the zone category and the application and safety instructions of ELPRO-BUCHS AG must be complied with.
- In the event of a guarantee claim, customers receive a repair cost estimate from ELPRO-BUCHS AG to obtain the corresponding consent before starting work.
- The customer will bear the transport costs incurred for any repairs carried out by ELPRO-BUCHS AG. The DAP (value added tax) is borne by ELPRO-BUCHS AG.
- ELPRO-BUCHS AG reserves the right to invoice the customer for costs incurred for repair/part replacement.
- After repair work the product is returned to the purchaser, who will be charged with the return shipping costs (FOB shipping point).

Trademarks

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Information

IMPORTANT INFORMATION AND WARNINGS

⇨ Reference to supplementary section [xxx / yyy / zzz]; e.g. Change Password 3.4 *Passwords* - Data Access Password] or document

LIBERO W	Name of data logger, containing a base station and a sensor.
PDF report	Logged temperature plot is created as ****.pdf file.
liberoCONFIG	Program for the configuration of a LIBERO W.
LIBERO SmartStart	Application for simple and reliable assignment of configuration profiles on a LIBERO W.

In the interest of our customers, we reserve the right to make any changes resulting from technical advancement. For this reason, diagrams, descriptions and the extent of delivery are subject to change without any notice!

Introduction

LIBERO W is a data logger comprising a base station and a sensor. Communication between the base station and the sensor is wireless. LIBERO W is a temperature monitoring system used to monitor the storage of temperature-sensitive products. This allows the trouble-free monitoring of refrigerators, rooms, transportation boxes, incubators, and small rooms. LIBERO W is an independent, battery-operated measurement system that is permanently on standby. Temperature limits and logging time can be set as alarm criteria and continuously monitored.

If the LIBERO W is connected to any USB port by plugging the USB cable into the back of the base station, it generates automatically a PDF report containing the logged results. No additional software is required to read out the LIBERO W. The PDF report is created in PDF/A format and is compliant with the ISO 19005-1 Document Management Standard, which permits long-term archiving of the PDF report without further conversion.

LIBERO W can be ordered unconfigured or preconfigured. Customers can configure unconfigured devices themselves using the liberoCONFIG software. ELPRO can also supply custom-configured devices.

Preconfigured devices have one of four standard configurations stored in the form of profiles. Depending on the application, the profiles available include Refrigerator and Room for pharmacies, or Refrigerator and Room for clinical studies.

The LIBERO W base station settings are made with the liberoCONFIG configuration software. During configuration, it is not only possible to make device settings, such as the measurement interval, warning and alarm limits, and device warnings, you can also specify text information and contents in the PDF report. The selected settings can be saved as a configuration profile.

If there are several LIBERO Ws that are to be configured with the same settings, previously created configuration profiles can be transferred directly using the LIBERO SmartStart application. Transfer is absolutely reliable and safe as no device settings are accessible during this process. When assigning a profile with the LIBERO SmartStart, previously defined fields can be filled with monitoring-related information, such as department, room name, refrigerator number, etc. This allows you to create product-related PDF reports containing all the relevant details.

The data logged with the LIBERO W can additionally be analyzed, evaluated, and commented with the elproVIEWER software.

A LIBERO PDF REPORT IS A PDF/A ISO STANDARD FILE AND CONTAINS EMBEDDED RAW DATA.
ONLY OPEN THE FILE WITH A PDF READER.

Always save the LIBERO W PDF file immediately without opening it - or send it as an email attachment. Opening and saving the PDF file with a PDF editor can make embedded data unusable for subsequent processing with elproVIEWER, elproASSISTANT, or liberoMANAGER. The integrity of a PDF report can be checked with the "Check PDF file integrity" function in liberoCONFIG. The mentioned software components run this check automatically.

Types

LIBERO W, base station

- Logging of 70,000 values
- Measuring interval from 1 to 60 minutes
- No special device driver required
- Fully user configurable

LIBERO WSI, sensor up to Version Number V7.12

- Internal NTC
- Measurement range: -10°C to +50°C
- Logging of 1,000 values

LIBERO WSI, sensor up to Version Number V7.20

- Internal NTC
- Measurement range: -35°C to +50°C
  Lithium-metal batteries must be used at temperatures below -10°C.
- Configuring the thermal response time (Tau90)
- Logging of 2,200 values

Version number

The version number appears in the analysis report.

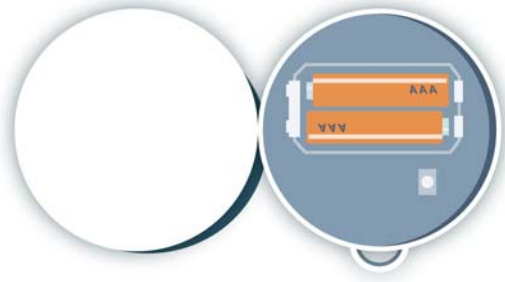
1. Generate analysis report, see 2.4 *Reading Out LIBERO W*
2. Assign version number, see 2.7 *Pairing New Sensors*, Figure: Device information

1 Quick Start

1.1 Preconfigured LIBERO W

Preparation

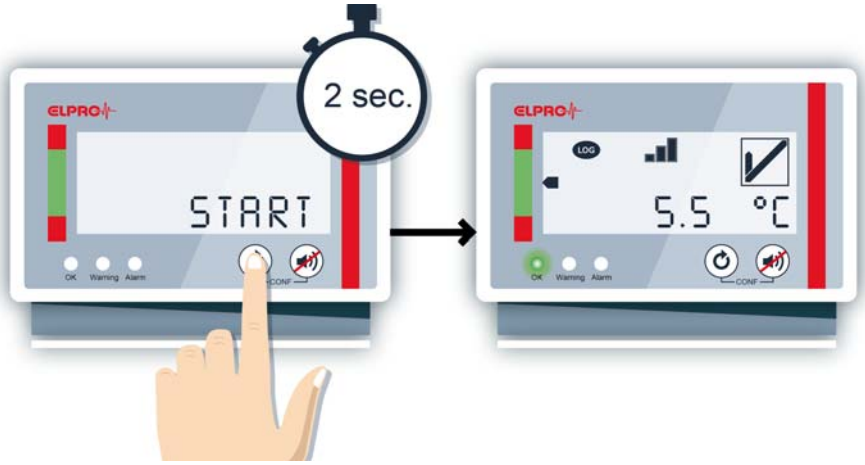
- Open sensor (screw top). Insert batteries in the sensor. Close sensor.



- Operating range: to -10°C
  Use alkali-manganese or lithium-metal batteries.
- Operating range from -10°C to -35°C
  Only use lithium-metal batteries in the sensor.

- Position sensor (at location where temperature needs to be monitored). If this means a refrigerator, place the sensor centrally – neither too close to the door, nor too close to the cooler surface.

- Start LIBERO W



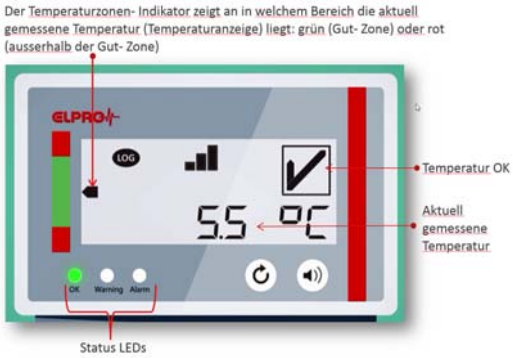
- Check wireless connection

No connection

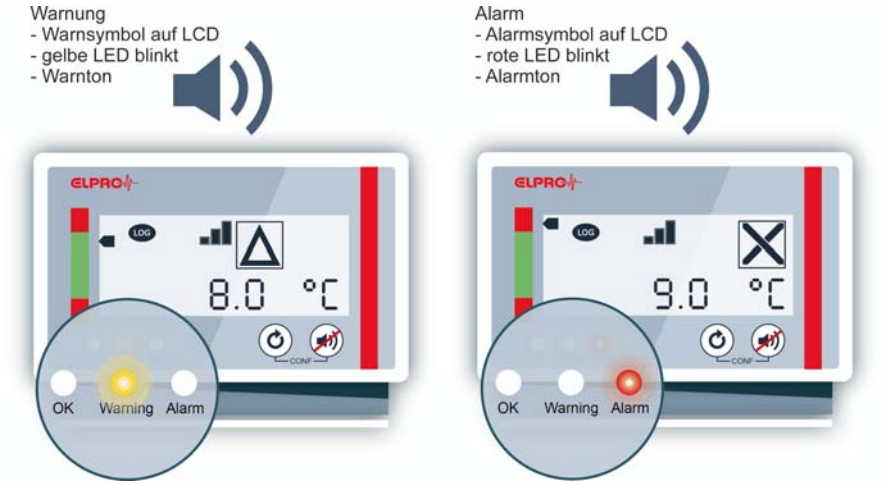
- If there is no connection, replace base station closer to the sensor or remove shielding materials, such as aluminum, if present.

Connection OK

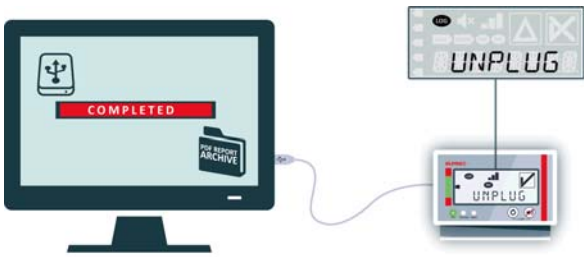
Easy to use



Intervention required



Generate PDF

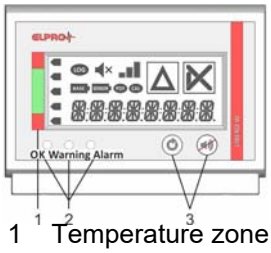


ONLY REMOVE THE BASE STATION FROM THE USB PORT WHEN "UNPLUG" APPEARS IN THE BASE STATION DISPLAY. IF YOU UNPLUG THE BASE STATION TOO SOON, DATA MAY BE LOST.

1

2 LIBERO W Status Information

Base station front



1	Temperature zone indicator	■	Temperature in OK zone
		■	Temperature above or below defined OK zone
2	Status LEDs	☀	OK
		☀	Warnings
		☀	Alarms
		⇨ 2.2 *Base Station LEDs*	
3	Operating buttons	↻	START/MARK/ACKNOWLEDGEMENT button
		🔇	MUTE button

Operating buttons

↻ START/MARK/ACKNOWLEDGEMENT button

The START/MARK/ACKNOWLEDGEMENT button has several functions, depending on the configuration.

- The Start function switches from Start mode to Logging mode in all configurations. You can only execute this function when the display shows "START".
- The Mark function sets a mark in all configurations, i.e. it generates a "MARK" event entry as a log that somebody operated the device to check the status. Continue to press the button to scroll through the menu. This function is only possible when the base station is in Logging mode.
- The Acknowledgement function acknowledges an alarm when configured appropriately and if a temperature alarm occurs.

🔇 MUTE button

If you configured an audible signal, you can disable (mute) the signal temporarily during a warning or alarm by tapping the MUTE button briefly.

You can configure the mute duration in the configuration software (from 1 minute up to 24 hours). The function is configurable separately for alarm and warning.

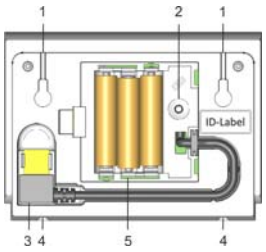
If a new warning or alarm event occurs during the mute period, the acoustic alarm is reactivated.

If you reset the alarm during alarm mute (active alarm AND warning), the acoustic warning signal is reactivated.

If you reset the warning during alarm mute (active alarm AND warning), the acoustic alarm signal is reactivated.

You can reconfigure the base station at any time, no matter what the operating modes are. To set the base station in configuration mode, press the START/MARK/ACKNOWLEDGEMENT button and MUTE button at the same time.

Base station rear



1. Slots for wall mounting
2. Pairing button
3. USB readout cable
4. Slots for mounting foot
5. Batteries: 3 pcs. AAA batteries, alkali-manganese or lithium-metal (always use the same battery type)

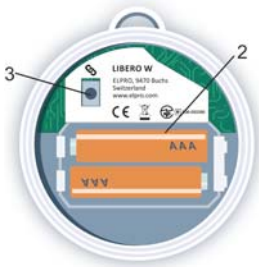
Sensor front

First Status LEDs

- Run – measurement in progress
- Low battery
- No connection

⇨ 2.3 *Sensor LEDs*

Sensor rear



2. Batteries: 2 pcs. AAA batteries, alkali-manganese or lithium-metal (always use the same battery type)

   Only use lithium-metal batteriesbatteries for applications below -10°C.

3. Pairing button

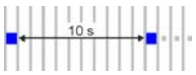
   The batteries and the Pairing button are located in the sensor interior.

Tone sequences

Confirmation

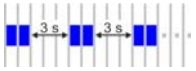
The base station can signal a confirmation tone when an action is completed.
The following actions are confirmed: start, connection to USB port, end of PDF download: successful pairing, mark set, and alarm acknowledgment by START/MARK/ACKNOWL-EDGEMENT button (if configured).

Warnings



A base station or sensor warning can be signaled acoustically on the base station by a periodic warning tone.

Alarms



A base station alarm can be signaled acoustically on the base station by a periodic alarm tone.

Configuration of alarm and warning tones

Volume

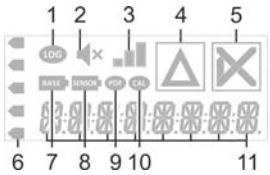
The volume of the acoustic signaling of a warning or alarm can be adjusted in 2 levels by using the configuration tool.

The volume can be adjusted to loud or soft.

A confirmation tone is always adjusted to soft.

2

2.1 Base Station Display



1. LOG
   Flashes when the LIBERO W is active.
2. Acoustic signaling on or off
   You can suppress a base station audible signal temporarily by pressing the MUTE button briefly. The "Mute" icon appears in the display.
3. Wireless signal strength
   The quality of the wireless connection between the base station and the sensor is depicted by the signal strength indicator (bars) on the display.

   ⇨ 2.1.2 *Wireless Connection*
4. Temperature warning
   You can reset a temperature warning by means of a specifically required or possible interaction, as follows:

   - Temperature above the top temperature limit -> Lower temperature
   - Temperature below the bottom temperature limit -> Raise temperature

   A temperature warning is acknowledged automatically as soon as the temperature stabilizes and provided no alarm is generated.


5. Alarm: OK / NOK indicator
   The alarm indicator shows whether the temperature was within the defined OK limits (✓), or whether the limit values were violated and an ALARM (X) occurred.

6. Temperature zone indicator
   If a current measurement value is present, the temperature zone indicator shows the zone of the present temperature.
7. BASE
   Signals low battery voltage of the base station. Access to the data via the USB port on the base station is still possible.
8. SENSOR
   Signals low battery voltage of the sensor. Access to the data via the USB port on the base station is still possible.
9. PDF
   If configured, the PDF device warning indicates that a PDF must be generated.
10. CAL
    If configured, the CAL warning indicates that the sensor must be calibrated or replaced.
11. Currently measured temperature value with unit (°C, °F), date and time, or status information.
    You can configure a number of different date and time formats for display.

2.1.1 Display and Interactions

Display	Interaction
 Temperature warning	Adjust temperature
 No connection to sensor (device warning)	⇨ 2.1.2 *Wireless Connection*
 Base station battery almost spent (device warning)	Replace the batteries in the base station
 Sensor battery almost spent (device warning)	Replace the batteries in the sensor
 Generate PDF (device warning)	Connect base station to the PC. Open the PDF. Save it and then disconnect from the PC.
 Sensor calibration date will soon expire (device warning)	Return the sensor for calibration, or order new sensor.
 Temperature alarm	Correct temperature. Analyze alarm and acknowledge alarm.

2.1.2 Wireless Connection

Sehr gute Verbindung

Gute Verbindung

Genügend Verbindung

Keine Verbindung

If the wireless connection is poor, all functions are still operational. However, under certain circumstances, battery life, response speed, and other performance parameters may be drastically reduced.

If the wireless connection is interrupted, the last temperature value measured is displayed until the next measurement. The duration depends on the measuring interval. A "no connection" (n.c.) warning occurs if it was configured.

⇨ 2.1.3 *No Connection (n.c.) Warning*

All n.c. measurement values are analyzed as measurement values outside of the OK zone. Depending on the configuration, a temperature warning or alarm can be generated in case of n.c.

No connection

During an interruption in connection, the base station saves and analyzes the missing measurement values as n.c. The sensor can buffer up to 1000 measurement values.

A wireless connection interruption is logged by an event entry.

⇨ Event Entries

When the connection is restored, the temperature values buffered in the sensor are transferred to the base station.

Connection restored

If missing measurement values generate an alarm, the alarm is acknowledged automatically if the synchronized measurement values are OK. Synchronized measurement values are buffered in the sensor until they are transferred to the base station after the connection is restored.

The end of successful synchronization is logged by an event entry.

⇨ Event Entries

Distance between base station and sensor

The distance between the base station and the sensor, provided the line of sight is unobstructed, can be up to 10 m to ensure the satisfactory quality of the wireless connection. If the connection is interrupted because of shielding due to metallic objects, or because the distance between the sensor and the base station is too large, reposition the base station closer to the sensor, or remove the shielding objects.

2.1.3 No Connection (n.c.) Warning

The n.c. warning is activated when the n.c. warning limit is reached. The n.c. warning is configurable in the configuration software (default setting: deactivated).

The following parameters can be configured:
time to n.c. warning. The value corresponds to the measuring interval or a multiple of the measuring interval.

The base station then reacts as follows:

- The yellow LED lights up periodically.
- The base station emits a warning tone.
- The signal strength bars on the display are unfilled.
- The measurement value and the temperature zone indicator are not visible on the display.
- The n.c. warning is logged by an event entry.

  ⇨ Event Entries

2.1.4 Battery Status

If a battery icon appears in the display (base station and sensor are displayed separately), there remains a period of approx. 14 days under normal operating conditions to replace the batteries without any reduction in device functions.

Storage affects battery capacity.

⇨ 2.5 *Replacing Base Station Batteries*

⇨ 2.6 *Replacing Sensor Battery*

2.1.5 Error Codes

In the event of device errors, an alarm indicator and the error code are displayed. The error is logged in the PDF report. If this occurs, please contact the ELPRO Customer Service.

⇨ 2.1.5 *Error Codes*

2.2 Base Station LEDs

The battery status of the base station is displayed visually by 3 flashing status LEDs.

Status LEDs

OK
- All correct – no action needed.
- No wireless connection:
  The number of configured n.c. values for the n.c. warning was not yet exceeded.

WARNING
- A device or temperature warning occurred – action needed.

  ⇨ 2.1.1 *Display and Interactions*
- No wireless connection:
  The number of configured n.c. values for the n.c. warning was exceeded.
  Check the position and distance between the base station and the sensor.
- If a connection can not be set up within 30 seconds after the start of the Logging mode, the base station starts to generate a warning.

ALARM
An alarm occurred – action needed.

Behavior of base station in various statuses				Pairing possible	Calibration possible	Wireless communication	Measure-ment value logging	Acoustic alarm
Start				yes	no	none	no	
Connected	3 s / 10 ms			yes	yes	Receive / send	yes	
Warning no connection		3 s / 10 ms		yes	yes	Receive / send	yes	Warning tone
Battery warning		3 s / 10 ms		yes	yes	Receive / send	yes	
Temperature warning		3 s / 10 ms		yes	yes	Receive / send	yes	Warning tone
Temperature Alarm			3 s / 10 ms	yes	yes	Receive / send	yes	Alarm tone
Calibration required		3 s / 10 ms		yes	yes	Receive / send	yes	

2.3 Sensor LEDs

The battery status of the sensor is displayed visually by 3 flashing status LEDs.

Status LEDs

- OK — All correct – no action needed.
- Low Bat — Replace batteries in the sensor.
- No Con — No connection to the base station; measurement values are buffered – action needed.

Behavior of sensor in connected state

				Pairing possible	Calibration possible	Wireless communication	Meas. value/ temp. log-ging
Temperature logging	3 s / 10 ms			yes	yes	Receive / send	yes
Battery warning		3 s / 10 ms		yes	yes	Receive / send	yes
No connection			3 s / 10 ms	yes	yes	Receive / send	yes
No connection + battery warning		3 s / 10 ms	3 s / 10 ms	no	no	Receive / send	yes

2.4 Reading Out LIBERO W

Generate analysis report - Report mode

To generate the analysis report automatically, the base station must be in Start mode or Logging mode. The report is started when you plug the USB cable from the rear of the base station to the USB port on the PC. The analysis report can also be generated by a battery warning.

Warning: Do not unplug device! An interruption to the USB connection during report generation may result in corrupt data or data loss. When the base station displays "UNPLUG", save the PDF report and then unplug the base station from the PC.

While the analysis report is generated, the sensor continues to log and buffer measurement values. After disconnecting the base station from the USB port, the sensor transfers measurement values to the base station. There, they are analyzed and the base station then resumes normal operation.

Base station status during report generation

- A confirmation tone sounds when the base station is successfully connected to the PC.
- A confirmation tone sounds when the PDF report is successfully downloaded
- At the end of this mode, the device returns to its original mode.

Display:

First 

Successful connection at mode start.

2. 

The progress of the PDF download in Report mode (file download or PDF display) is displayed in percent on the base station while the PDF report is downloaded.

3. 

- ✔ At the end of the PDF report download, the base station display indicates "UNPLUG".
- ✔ Save the PDF report and then disconnect the base station from the PC.

Virus scanner

The virus scanner can acknowledge an alarm if it is configured accordingly. The virus scanner reads the PDF, so LIBERO W recognizes it as a readout and acknowledges the alarm.

Format

The PDF report is compliant with the PDF/A format and with the ISO 19005-1 Document Management Standard, which permits long-term archiving of the PDF report without further conversion.

2

2.5 Replacing Base Station Batteries

The battery compartment contains 3 size AAA batteries. Use customary commercial alkali-manganese or lithium-metal batteries (LR03) as battery type. Battery life under normal operating conditions is minimum 13 months for the base station.
Configuration data and all base station measurement values are retained for at least 10 years, even without batteries.
The base station batteries must be replaced within 20 seconds to prevent any loss of the current internal time information. If the base station batteries are removed for longer than 20 seconds, the current internal time information is lost. The base station synchronizes the time using the signal received from the paired sensor. For this reason, the batteries of the base station and the paired sensor should not be replaced at the same time. After changing the base station batteries, normal operation and/or the battery status before the battery change are resumed.
Any missing measurement values are buffered in the sensor and transferred to the base station when the connection is re-established. A maximum of 2,200 measurement values are buffered.

Battery type

Lithium-metal batteries (LR03) can be used as of base station version number V6.20 and higher. The currently used battery type and the battery status are logged in the analysis report of the LIBERO W in the block: Device Information.

⇨ Device Information

NEVER REPLACE BATTERIES IN THE BASE STATION AT THE SAME TIME AS THE BATTERIES IN THE PAIRED SENSOR.
EVEN WHEN YOU REMOVE BATTERIES FOR A SHORT TIME, ALWAYS REPLACE WITH NEW, UNUSED BATTERIES.

Only replace the batteries in the base station when the base station is within wireless range of the sensor.

Normal operation ⇨ 8.5 *Environmental Conditions* – base station

Battery position ⇨ 2 *LIBERO W Status Information* – base station rear

Battery replaced, time taken < 20 seconds

After the batteries are replaced in the base station, the following functions are executed:

- The base station reconnects to the paired sensor.
- The buffered temperature values are transferred to the base station and analyzed. Any temperature warnings or alarm caused by n.c. are acknowledged automatically by synchronization, if the transferred values are OK.
- A successful battery replacement in the base station is logged by an event entry.

  ⇨ Event Entries

Battery replaced, time taken > 20 seconds

If the batteries are removed from the base station for more than 20 seconds, the base station performs a restart after the batteries are replaced, and waits for connection to the sensor.

After a base station restart, the following functions are executed:

- All display segments are activated for 2 seconds.
- The three LEDs are activated for 2 seconds.
- The buzzer signals with a confirmation tone.
- Normal logging status is established.

If the paired sensor is within range, the following occurs:

- The base station reconnects to the paired sensor.
- The sensor transfers the time and date to the base station.
- The sensor transfers the buffered temperature values to the base station where they are analyzed. Any temperature warnings or alarm caused by n.c. are acknowledged automatically by synchronization, if the transferred values are OK.
- A successful base station start is logged by an event entry.

  ⇨ Event Entries

If the paired sensor is not within range, the following occurs:

- The signal strength indicator shows unfilled bars.
- Depending on the configuration, a n.c. warning may occur. In this case, the yellow LED lights up and the tone provides a warning, if configured. Action needs to be taken here: Relocate the base station closer to the paired sensor, otherwise the time and date are no longer synchronized and the base station changes to Configuration mode. The time and date can only be updated by reconfiguring the base station.

2.6 Replacing Sensor Battery

The battery compartment contains 2 size AAA batteries. Use customary commercial alkali-manganese or lithium-metal batteries (LR03) as battery type. The battery life of the sensor is minimum 14 months within the specified range..
After removing the batteries from the sensor, the scope of system functions is reduced as follows:

- Remove the batteries for at least 1 second so that a battery change is recognized reliably.

- The sensor generates or maintains no warnings. The sensor does not log, save, or transfer any new measurement values. Missing measurement values are saved in the base station as n.c. The missing measurement values (n.c.) caused by missing batteries can no longer be transferred to the base station after synchronization.
- Avoid changing the batteries in the sensor and the base station at the same time, otherwise the current time is lost. If this occurs, the base station must be re-configured.

Battery type

Lithium-metal batteries (LR03) can be used as of sensor version number V6.20 and higher. The currently used battery type and the battery status are logged in the analysis report of the LIBERO W in the block: Device Information.

⇨ Device Information

ONLY REPLACE BATTERIES IN THE SENSOR WHEN THE SENSOR IS WITHIN WIRELESS RANGE OF THE BASE STATION. NEVER REPLACE THE SENSOR BATTERY AT THE SAME TIME AS THE BATTERIES IN THE PAIRED BASE STATION.
EVEN WHEN YOU REMOVE BATTERIES FOR A SHORT TIME, ALWAYS REPLACE WITH NEW, UNUSED BATTERIES.

Specified range

⇨ 8.5 *Environmental Conditions* – Sensor

Battery position

⇨ 2 *LIBERO W Status Information* – Sensor front

Battery changed

After a battery change in the sensor, the following applies:

- The three LEDs are activated for 2 seconds.
- The sensor reconnects to the base station.
- Any measurement values are handled and saved as n.c. in the base station until connection and synchronization have been re-established with the base station.
- Measurement values buffered in the sensor before a battery change are transferred to the base station after connection setup.
- Measurement values not logged when the battery is changed in the sensor are handled and saved in the base station as n.c. until synchronization takes place with the base station.
- The system checks whether the base station was reconfigured in the meantime. If this is the case, the new configuration data are accepted and the sensor buffer memory is cleared.
- The base station displays “NO.SENSOR” until sensor synchronization is completed.

  ⇨ Event Entries

Avoid changing the batteries in the sensor and the base station at the same time since the time information is then lost and the base station must be reconfigured.

2.7 Pairing New Sensors

A LIBERO W data logger is always operated as a set consisting of a base station and its paired sensor. Pairing is only possible under the following condition:

THE BASE STATION OF VERSION NUMBERS V6.11 AND V6.12 CAN BE PAIRED WITH SENSORS OF VERSION NUMBERS V7.11, V7.12, AND V7.20.
THE BASE STATION OF VERSION NUMBER V6.20 CAN ONLY BE PAIRED WITH A SENSOR OF VERSION NUMBER V7.20.

The version number of the paired is logged in the analysis report of the LIBERO W in the block: Device Information.

⇨ Device Information

LIBERO PDF Report No 3002935407406 (LIBERO PDF Report 20180508095129 81000165.pdf)

LIBERO W All PDF-Report

Additional Information

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

Device Information

Base Type:	LIBERO W V6.20	Status:	Logging
Base ID:	81000165	Log Interval:	1 m
Base Battery State:	Good (LiFe)	Report Time Base:	UTC +08:00
Sensor Type:	LIBERO WSI V7.20	Start at:	08.Mar.2018 17:42:09
Sensor ID:	83000555	Calibration Date:	Not available
Sensor Battery State:	Good (LiFe)	Profile ID / Checksum:	1.921.647.952
Configured by:	C1770, EC179/anubler, 08.May.2018 17:41:50		

Device Information

The battery type and the version number are only marked red for display purposes. The information (LiFe) only appears when lithium-metal batteries are used. No separate message is displayed for alkali-manganese batteries.

2.7.1 Base Station

Pairing button

- The Pairing button can only be pressed when the battery compartment lid is open.
- The Pairing button sets up a connection between the base station and the sensor.
- The Pairing button also permits unpairing (deleting the connection between the base station and the sensor - only for sensor version types V7.11 and V7.12)).

Operating modes

Pairing with the sensor is established using these operating modes:

- Logging mode
- Configuration mode
- Start mode

Pairing

Press the Pairing button briefly on the base station to activate the base station search function which lasts maximum 30 seconds. Press the Pairing button again briefly within the 30 second period to cancel the search function.

When the base station has found a sensor in Pairing mode, the base station search function ends and a connection is set up between the two devices.

- The green LED on the base station is activated for 10 seconds.
- The base station buzzer signals a confirmation tone.
- The ID of the paired sensor appears in the display for 10 seconds.

If no pairing takes place within the 30 second period, the base station returns to the operating mode before pairing. This does not affect pairing with the originally connected sensor.

- The green LED on the base station is activated for 10 seconds.
- The "PAIR:FAIL" message appears in the display for 10 seconds.
- Pairing is logged with several event entries.

  ⇨ Event Entries

If you accidentally press the Pairing button during operation:
The base station remains in Measuring mode. The display returns to normal operation after 30 seconds.

2

2.7.2 Sensor

Press the Pairing button briefly on the sensor to activate the transmit function which lasts maximum 30 seconds. Press the Pairing button again briefly within the 30 second period to cancel the search function.

Operating modes for pairing sensor

Pairing the sensor is executed using these operating modes:

- Standby mode
- Logging mode

Standby mode

If a sensor is in Standby mode, it means that pairing must take place with a base station.

For a sensor in Standby mode, the following applies:

- No measurement values are logged.
- Pairing with the base station can be executed by pressing the Pairing button briefly.

Logging mode

If a sensor is in Measuring mode, it means that pairing with a base station was already performed.

Replace sensor

An existing sensor can be removed from the system at any time and replaced with another sensor. The following applies here:

- Successful pairing of the base station with another sensor removes the existing sensor automatically from the system.
- A failed pairing of the base station with another sensor retains the existing sensor in the system.
- Measurement values logged in the buffer memory of the existing sensor are cleared, and are handled and saved in the base station as n.c.
- Only one sensor can be paired to one base station.
- Pairing is logged with several event entries.

  ⇨ Event Entries

Unpairing (only for sensor version numbersV7.11 and V7.12)

Press the Pairing button for at least 5 s to unpair the sensor from the base station. An unpaired sensor returns to Standby mode.

An unpaired sensor returns to Standby mode.

Check – successful sensor pairing

After the successful pairing of a sensor, the sensor measurement value buffer memory is cleared and the green sensor LED is activated for 10 seconds.

Check – failed sensor pairing

After a failed pairing, the sensor status before pairing is restored and the red sensor LED is activated for 10 seconds.

2

Confirmation tone

The end of the Pairing process is signaled by a confirmation tone.

⇨ 2 *LIBERO W Status Information*

- If the pairing button on the sensor is pressed accidentally in operation, the sensor displays the Search status for 30 seconds. The sensor then returns to Measuring mode automatically. Measurement values detected within these 30 seconds are transferred. Logged data is retained unchanged.

2.8 Warning Behavior

The conditions for warnings are set in the configuration software.

Acknowledge

A warning is only active until the warning condition is fulfilled.

2.8.1 Temperature Warning

The following parameters can be configured:

- Switching on/off temperature warning
  A temperature warning is only possible when the temperature alarm is activated.
- When the temperature warning is activated, the limits L1 and H1 set for the alarm are used as temperature warning limits.
- Warning delay time for L1 and H1 is freely configurable as a Single Event in minutes, hours, or days.

The result of temperature monitoring appears in the temperature warning indicator display as follows:

- Warning function active, no warning occurred
- Warning function active, warning occurred
  If a temperature warning occurs, it is signaled as follows:
  - Temperature warning icon in the display (Δ).
  - The yellow LED flashes.
  - Warning tone if the warning tone is activated in the configuration software.

2.8.2 Device Warnings

The following device warnings may be active:

- Low battery level in base station
- Low battery level in sensor
- Calibration reminder
- Wireless connection interrupted
- "Generate PDF" reminder

The following device warnings can be configured separately:

- Wireless connection interruption (n.c. warning)
- Calibration reminder
- "Generate PDF" reminder

2.9 Alarm Behavior

The temperature alarm is set in the configuration software. The following parameters can be configured:

- Switching temperature alarm on or off:
- Activate temperature alarm zones H4, H3, H2, H1, and L1, L2, L3.
- Temperature limits for zones H4, H3, H2, H1, and L1, L2, L3.
- Alarm delay time for zones H4, H3, H2, H1, and L1, L2, L3 in minutes, hours, or days.
- Event type: Single or Cumulative for zones H4, H3, H2, H1, and L1, L2, L3.
- The maximum number of permitted excursions for each temperature limit.

The result of temperature monitoring appears on the alarm indicator display as follows:

- Alarm function active, no alarm occurred.
- Alarm function active, alarm occurred.

If an alarm occurs, it is signaled as follows:

- Alarm indicator on the display (X).
- The red LED flashes.
- Alarm tone if the alarm tone is activated in the configuration software.

An alarm has priority over a warning (alarm behavior applies here).

An alarm can occur without previous warning or at the same time as a warning (depending on the configuration).

An alarm can be reset manually and/or automatically.

Manual alarm acknowledgment

With a manual alarm acknowledgment, the alarm is acknowledged by pressing the START/MARK/ACKNOWLEDGEMENT button and/or by generating a PDF report. (Alarm acknowledgment)

- A manual alarm acknowledgment is logged by an event entry.

  ⇨ Event Entries

Automatic alarm acknowledgment

An alarm can be acknowledged automatically by a synchronization process, if this is permitted after the transferred, buffered measurement values are analyzed.

An alarm acknowledgment resets all existing alarms.

- An automatic alarm acknowledgment is logged by an event entry.

  ⇨ Event Entries

Alarm acknowledgment with START/MARK/ACKNOWLEDGEMENT button

An alarm acknowledgment with the START/MARK/ACKNOWLEDGEMENT button can be configured in the configuration software. Press the START/MARK/ACKNOWLEDGEMENT button for a long time in the Mark menu to acknowledge the alarm.

The base station then reacts as follows:

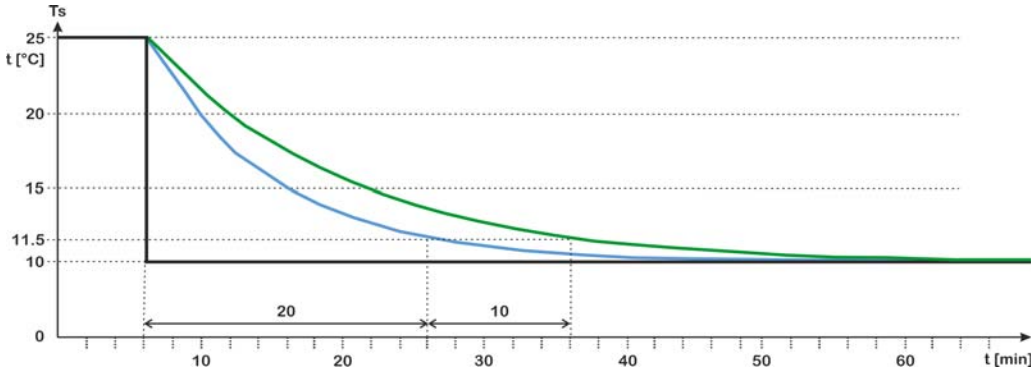
- The alarm acknowledgment is indicated by the "ACKNOWL." message in the display.
- The alarm acknowledgment is confirmed by a confirmation tone.

- The display returns to normal temperature monitoring and the alarms are acknowledged.

Thermal damping TAU (90)

TAU (90) is the response time that a sensor needs to reach 90% of the final value of a sudden change in ambient temperature.

Due to the sensor mass, the natural thermal damping (TAU 90) is 20 minutes. After 20 minutes, 90% of the ambient temperature is reached.



Temperature jump: 25°C -> 10°C

Natural cooling curve - TAU (90) LIBERO W
The sensor response time is 20 minutes to reach 90% of the new final value.

Cooling curve adjusted by liberoCONFIG
(Damping is delayed by 10 minutes by an electronic adjuster in liberoCONFIG)
This adjustment is desirable if the drugs have a natural damping that lasts longer than 20 minutes.

2

2.10 Analysis

2.10.1 Events

Events are logged by continuous indexing, classification (alarm, warning, information), message text, and time stamp. Events that occur within the same second have the same time stamp.

In the configuration software, you can determine the types of events that are listed in the report. A distinction is made between information, warning, and alarm.

The maximum number of event entries displayed in the analysis report is limited to the last 275 events.

In elproVIEWER, however, the last 1050 events can be analyzed per event category.

Information in the event entry

- Unique and consecutive event number (chronological)
- Type
- Message text
- Time stamp

2.10.2 Marking

Use the Mark function to log a temperature check and verify the maximum and minimum temperature values since the last alarm acknowledgment.
First, press the START/MARK/ACKNOWLEDGEMENT button briefly to trigger the following actions:

- "MARK" appears in the display for 10 seconds.
- Setting the mark is acknowledged by a confirmation tone.
- All device warnings, temperatures warnings, and the temperature indicator are displayed during a "Mark" process.
- If you do not press the START/MARK/ACKNOWLEDGEMENT button within the 10 second period, the display returns to the current temperature display.
- If you press the START/MARK/ACKNOWLEDGEMENT button briefly a second time within the 10 second period, the display changes to the next display value. The following displays appear in cyclical rotation:

1 

Current date
The date format is dependent on the configured date format for analysis reports.

2 

Current time
The time format is dependent on the configured time format for analysis reports, either 24 h, or 12/24 h format.

3 

Highest temperature
The highest temperature value since the last alarm acknowledgment is displayed.
If no temperature value exists, "NONE" is displayed instead of a temperature value.

4 

Only if limits are configured!

Time duration of temperature excess
The system displays the accumulated time since the last alarm acknowledgment in which the temperature was measured within zones H4-H1.

- Display less than 10 days: 9 days, 23 hours, 59 minutes
- Display greater than 10 days: 9999D.23H

5  Lowest temperature
The lowest temperature value since the last alarm acknowledgment is displayed.
If no temperature value exists, "NONE" is displayed instead of a temperature value.

6  **Only if limits are configured!**

Time duration of temperature undershoot
The system displays the accumulated time since the last alarm acknowledgment in which the temperature was measured within zones L1-L4.

- Display less than 10 days: 9 days, 23 hours, 59 minutes
- Display greater than 10 days: 9999D.23H

2

3 Configuration

Configuration mode
(--> After the LIBERO W is connected to the USB port.)

Manual configuration

You can configure the base station at any time.

- Before you write the configuration, generate and archive the PDF report.
- Press the START/MARK/ACKNOWLEDGEMENT and MUTE buttons at the same time for longer than 2 seconds to change to Configuration mode.
- If no USB connection is set up within 10 seconds after manual change to Configuration mode, the base station returns to the original operating mode.
- Tap briefly on the START/MARK/ACKNOWLEDGEMENT or MUTE button again within 10 seconds to exit Configuration mode immediately.

You can only change to Configuration mode when the base station has no USB connection.

Automatic change to Configuration mode

A change to Configuration mode from Logging mode takes place automatically when the base station loses the time due to a battery change lasting longer than >20 s, the paired sensor is not within range, or, for example, loses time information during a battery change.

Configuration Mode - Exit

To exit Configuration mode, reconfigure the base station, or reset the time by carrying out a SmartStart.

A base station reconfiguration leads to a system restart, resulting in the deletion of all logged data with two exceptions:

- When you set a new calibration date for the sensor, no data are deleted, and the system continues regular operation after configuration.
- When you change the time zone, or set the clock, no data are deleted, and the system continues regular operation after configuration.
- Configuration is logged by an event entry.

  ⇨ Event Entries

3.1 Introduction to liberoCONFIG

liberoCONFIG is the software for configuration of LIBERO PDF loggers and indicators. The necessary configuration parameters are created and saved as profiles. A profile contains all information regarding the monitored task and is logged in the PDF report. Using Smart-Start Pack & Go is a fast and safe way to assign a profile to a large number of LIBERO Ws.

Details on the current model range and their data sheets are available at https://shop.elpro.com/de/artikel/900619/SWA_liberoCONFIG

Sensor

- A sensor can not be configured directly to a PC.
- The parameters needed to operate a sensor are transferred from the base station to the sensor wirelessly.

3.1.1 Configuration File up to SmartStart Pack & Go exe file

The configuration of an individual LIBERO W is carried out with liberoCONFIG. If configurations are repeated frequently, this work is simplified considerably by the use of SmartStart and Pack & Go.

The SmartStart Pack & Go exe file with a LIBERO W can be used on any PC without installing the liberoCONFIG or a special driver.

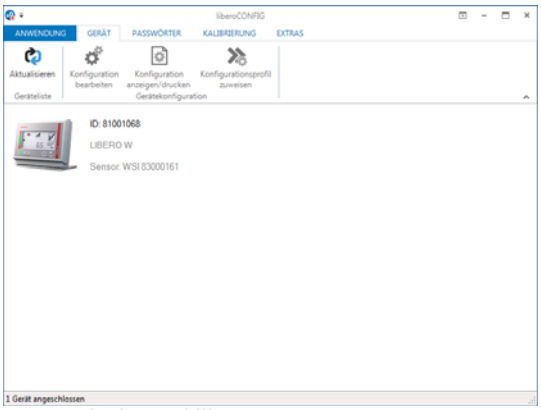
3.1.2 System Requirements

- Windows 7, 8, or 10
- CPU 1.5GHz
- Memory: 512 MB RAM
- Free hard disk space: 100 MB
- Monitor: 800 x 600 Pixel

Information on the latest functions is given in the "ReadMe" file.

3.2 Starting liberoCONFIG

In this view, all available LIBERO Ws are visible.



Start window of liberoCONFIG

The following information is shown

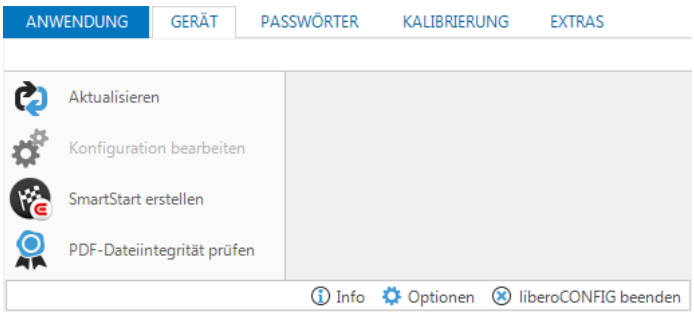
- LIBERO W ID
- Type
- Sensor type and ID

Single / multiple device selection

Except "Edit configuration", all functions described in the following chapters can be applied to multiple LIBERO Ws selected at the same time.

A LIBERO W IN STOP MODE DOES NOT APPEAR IN THE START WINDOW!

Application



Refresh

Refreshes the start window of liberoCONFIG

Edit configuration

⇨ 3 *Configuration*

LIBERO SmartStart

⇨ 4 *Create LIBERO SmartStart*

Check the PDF file integrity

⇨ 5 *Using SmartStart Pack & Go*

First use

Before using liberoCONFIG for the first time make the following settings:

- Language
- Default file locations
- Password length
- Specify the paper format for the reports

⇨ 3.2.1 *Options*

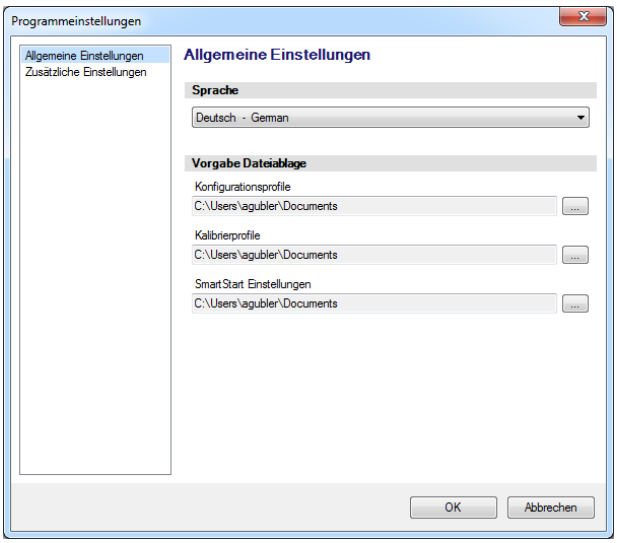
Info

Shows the information about the current program version and license number.

3.2.1 Options

In "Options" various general program settings can be made.

3.2.1.1 General Settings



Options - General Settings

Language

- German
- English
- Spanish
- French
- Italian
- Japanese

Default File Locations

2 different file locations may be defined or selected:

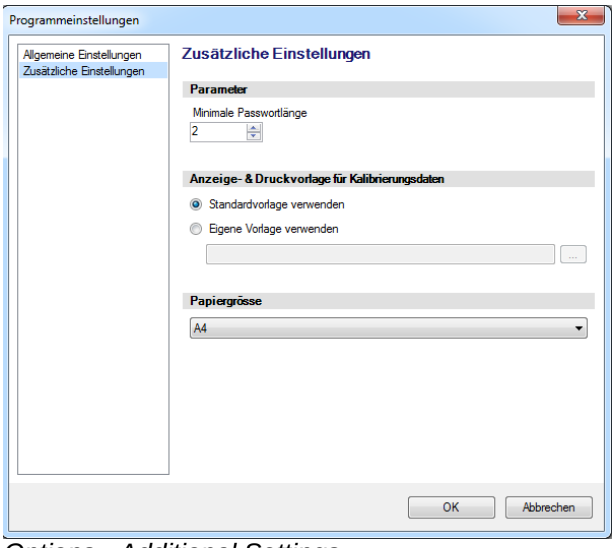
⇨ 3.3 *Device Configuration*, for calibration profiles.

⇨ Calibration Profiles

It is not possible to assign a calibration profile to a LIBERO W.

⇨ 4 *Create LIBERO SmartStart*

3.2.1.2 Additional Settings



Options - Additional Settings

Parameters

Data entry field used for the definition of the minimum password length.

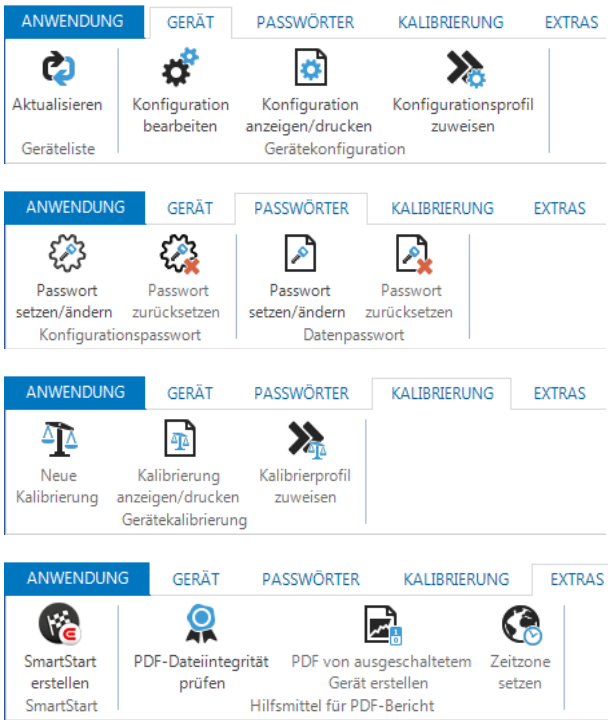
View & Print Template for Calibration Data

- Use built in template
  The factory defined layout of the calibration document is used for printouts.
- Use custom template
  The customer has the possibility to design his own calibration template.
  Please contact ELPRO-BUCHS AG for further assistance.

Paper Size

You may choose between A4 and Letter.

3.2.2 Menus



Chapter

3.3 *Device Configuration*

⇨ 3.4 *Passwords*

⇨ 6 *Calibration*

⇨ 3.5 *Tools for PDF report*

⇨ 4 *Create LIBERO SmartStart*

⇨ 5 *Using SmartStart Pack & Go*

3

3.2.3 Buttons

The following buttons are used in the liberoCONFIG program - Edit configuration:

- Load Profile
  Used to open a previously saved profile for setting up data loggers.

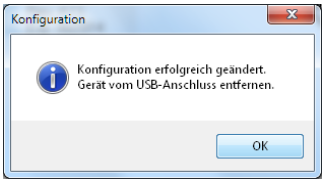
- Save Profile
  Used to save a new profile in a file

- Apply
  The currently displayed configuration settings are transferred to the LIBERO W.

- Cancel
  Used to cancel a configuration process.

3.2.4 Confirmation

All successful actions are confirmed, e.g. configuration.



3.2.5 Configuration Profiles

A configuration profile represents all set-up information used by the selected LIBERO W for a monitoring task and defined by liberoCONFIG such as:

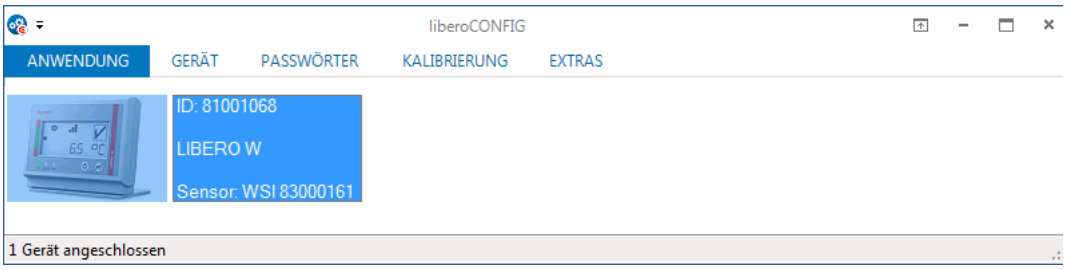
- Description of the PDF report
- Logging interval
- Alarm settings
- Device options, etc.

Configuration profiles saved as "***. LiberoCFG" files can either be applied to multiple LIBERO W or saved for later use.

3

3.3 Device Configuration

The following chapter represents a step-by-step procedure for the configuration.



LIBERO W selected for configuration

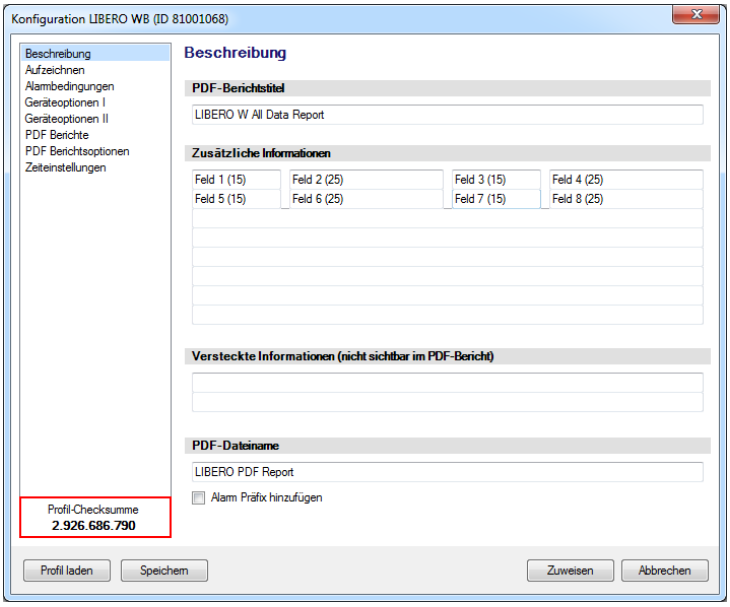
Menu: Device - Edit Configuration

The following chapters (3.3.1 *Description* - 3.3.10 *Apply Configuration Profile*) are related to the functions within the menu: Device.

Configuration or creation of a configuration file (****.liberoCFG) is only possible if at least one LIBERO W is shown in the start window.

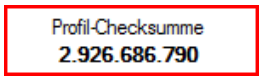
3.3.1 Description

Red frame = field with the profile checksum



Description Overview

Profile Checksum



The checksum is used to prove the validity of the profile and as reference value for a configuration check. It is displayed in the "Edit Configuration" window and is logged in the section " Device Information" of the PDF report.

PDF Report Title

Information used as title on the PDF report, and appearing on all pages; up to 60 characters

Additional Information

Free text that can be added to the profile to appear on the PDF report.

1. 4 text fields limited to 15 characters; fields 1, 3, 5 and 7
2. 4 text fields limited to 25 characters; fields 2, 4, 6 and 8
3. 6 lines of 80 characters

Hidden Information

Two lines with text (limited to 80 characters) that do not appear in the PDF report. This information is only visible in both applications elproVIEWER and liberoMANAGER.

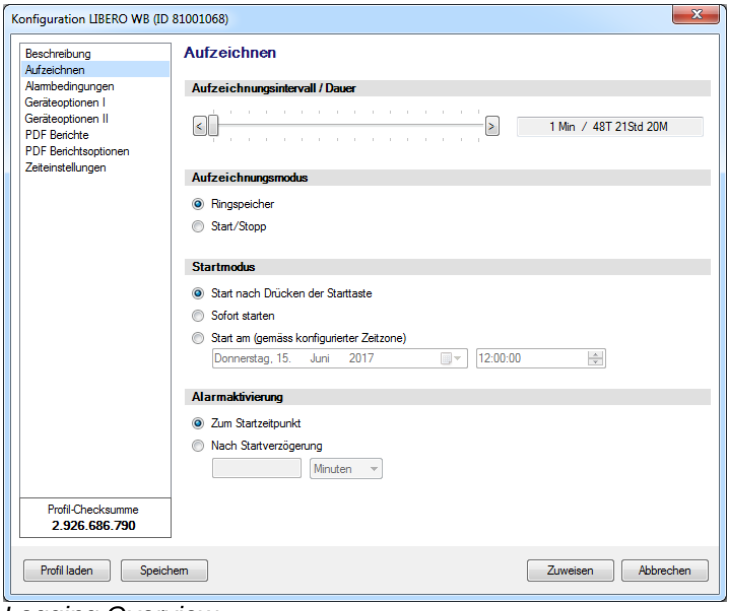
PDF Filename

Specified filename of the PDF report.

Add alarm prefix
Depending on the logged data and alarm conditions, "ALARM" or "OK" is added as prefix before the filename.

3.3.2 Logging

The logging interval and logging time are displayed. Adjust settings by clicking on the arrow buttons or by dragging the sliding bar.



Logging Overview

Logging Interval / Duration

The logging interval ranges from 1 to 60 minutes.

THE DISPLAY OF THE LIBERO W IS ONLY UPDATED WITHIN THE MEASUREMENT INTERVAL.

Logging Mode

Data logging begins after the LIBERO W is started. The current measurement value is shown on the display and "LOG" flashes.

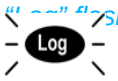
- Loop
  Logging is done continuously. When the memory is full (70,000 measurement points), each additional value overwrites the oldest measurement value by the newest one. The oldest value is irretrievably lost.
- Start/Stop
  Logging is done continuously. When the memory is full (70,000 measurement points), the LIBERO W stops logging automatically.

Start Mode

Determines the operating conditions of the LIBERO W after it is configured.

- Start after pressing START/MARK/ACKNOWLEDGEMENT button
  Data logging starts after you press the START/MARK/ACKNOWLEDGEMENT button for 2 seconds. START appears in the display until you press the START/MARK/ACKNOWLEDGEMENT button.

"Log" flashes.



- Start immediately
  Data logging starts immediately after the LIBERO W is configured.

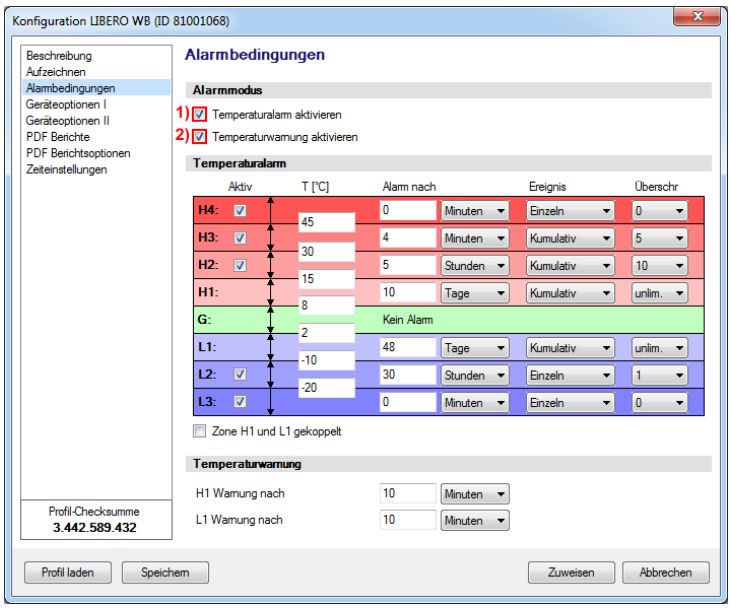
- Start at (according to configured Time Zone)
  Data logging starts when the preset date is reached. The display shows DELAY and the wireless connection quality until the start date is reached.

Alarm Activation

- At time of start
  Limit monitoring starts at the same time as data logging.
- After start delay
  Limit monitoring only starts when the start delay has elapsed. During this time, DELAY is displayed.

3.3.3 Alarm Conditions

The alarm conditions are divided into 8 separate zones; H1 - H4, G, and L1 - L3. Zone G represents the OK zone.



Alarm conditions overview

Alarm Mode

1. This tick enables the temperature alarm.
2. This tick also enables the temperature warning.
   A threshold violation of the two zones H1 and L1 triggers a temperature alarm.

Temperature Alarm

- Used
  These check boxes are used to select the desired alarm zones.
- T[°C] or T[°F]
  Data entry fields for the threshold values.
- Alarm after
  An alarm is not triggered until the threshold violation has lasted longer than the specified time.
- Event
  - Single
    The delay time restarts for each threshold violation.
  - Cumulative
    An alarm will be triggered as soon as the elapsed time of all violations together has reached the delay time.
- Excursions
  Accepted number of violations, irrespective of the set alarm delay time.

Zone H1 and L1 coupled.
If this field is checked, the information entered for the alarm zone in H1 are used for both H1 overstepping and L1 understepping. (Total time and number of excursions overstepping and understepping)

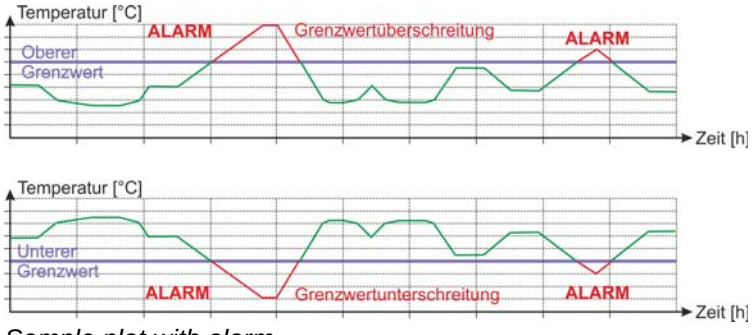
Temperature Warning

- H1 warning after
  Delay time to temperature warning after the H1 threshold limit is overstepped. This should be a multiple of the measurement interval, but shorter than the alarm delay time.
- L1 warning after
  Delay to temperature warning after the L1 threshold limit is understepped. This should be a multiple of the measurement interval, but shorter than the alarm delay time.

Example: Delay time

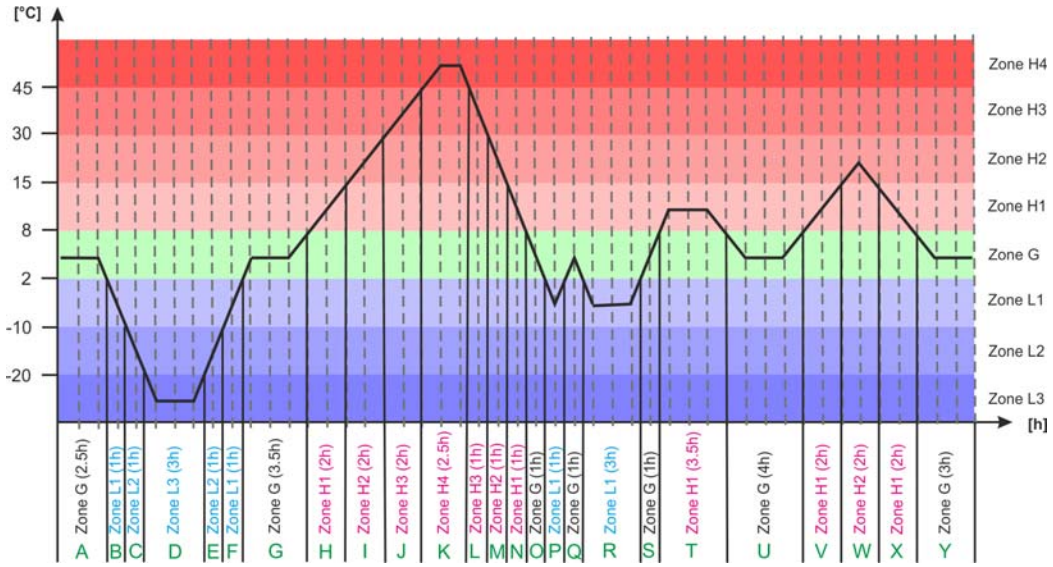
If the measurement interval is 10 minutes and the alarm occurs after 30 minutes, a temperature warning after 10 or 20 minutes makes sense.

Example: Threshold violation



Sample plot with alarm

Example: Temperature plot with zones



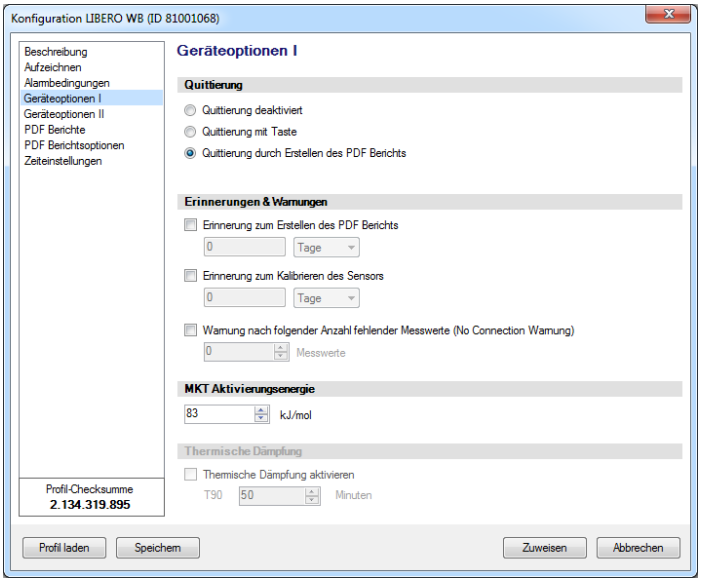
Example with alarm zones

Data

Zone	Temperature zone [°C]	Alarm duration Cumulative time [h]	Number of threshold violations	Plot section used for calculation
H4	over 45	2.5	1	K
H3	over 30	5.5	3	J+K+L
H2	over 15	10.5	6	I+J+K+L+M+W
H1	over 8	21	11	H+I+J+K+L+M+N+T+V+W+X
G	2 to 8	16	7	A+G+O+Q+S+U+Y
L1	below 2	11	7	B+C+D+E+F+P+R
L2	below -10	5	3	C+D+E
L3	below -20	3	1	D

3.3.4 Device Options I

Various settings for::
- Acknowledgment variants
- Reminder messages
- Behavior in case of missing measurement values
- Activation energy



Device Options 1 overview

Acknowledgement

Select alarm acknowledgment as follows:

- Acknowledgement disabled
- Acknowledgement by button
- Acknowledgement by creating PDF report

“Acknowledgement by button” makes sense in cases where there is a daily min/max as PDF report; "Acknowledgement by creating PDF report" makes sense in conjunction with a Status Report.

⇨ 2.9 *Alarm Behavior*

Reminders & Warnings

PDF

- Reminder to generate PDF report
  This defines the time between 2 readouts. If a readout is to take place every 30 days, enter 30 days here. A “Make PDF” warning then occurs every 30 days.

CAL

- Reminder to calibrate sensor
  This defines the time interval between 2 calibrations. If a calibration is to take place every year, enter 365 days here. A “CAL” warning then occurs every year.

  ⇨ 6 *Calibration*

- Warning after following number of missing measurement values (no connection warning)
  Select a time (in days, hours, minutes) that is not longer than the delay time for the temperature warning.
  Time interval = number of missing measurement values x logging interval

  ⇨ 2.1.3 *No Connection (n.c.) Warning*

MKT Activation Energy

You can enter product-specific parameters (activation energy) to calculate the MKT.

Activation energy range: 42 kJ/mol. to 125 kJ/mol. (default: 83 kJ/mol.)

Thermal Damping

Enable thermal damping

Response to a sensor temperature jump (Tau90) is adjustable depending on the behavior of the monitored product. This suppresses alarms which are not product-related. This behavior is implemented in the software as a mathematical function.

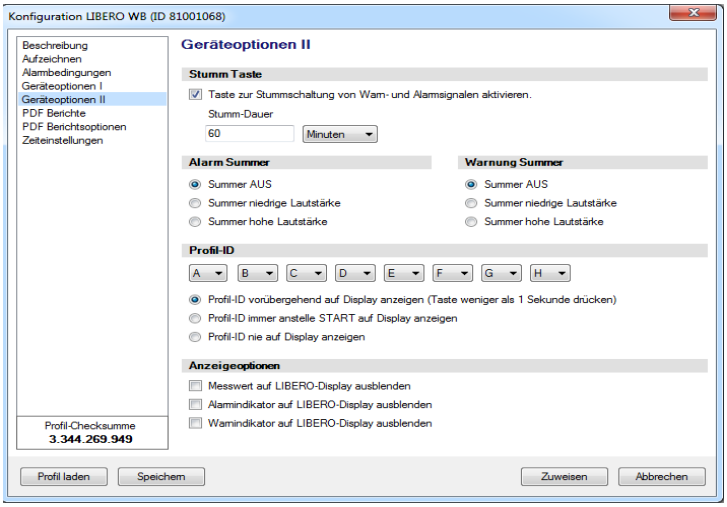
This electronic software solution permits user configurations using liberoCONFIG. The configuration range is from 20 to 120 minutes in 5-minute steps.

⇨ Thermal damping TAU (90), page 31

The function Thermal damping may prolong sensor response time. This function is available on the following versions of LIBERO W.
- Base station: V6.20
- Sensor: V7.20

3.3.5 Device Options II

Various settings for::
- Behavior of audible signal
- Identification of the Profile-ID



Device Options 2 overview

Mute Button

⇨ 2 *LIBERO W Status Information* - MUTE button

Alarm Buzzer
Warning Buzzer

⇨ 2 *LIBERO W Status Information* - Tone sequences

Profile-ID

The configuration data summarized in the profile can be described by a Profile-ID for easier recognition. The Profile-ID is always listed in the section “Device Information” of the LIBERO PDF Report.

Profile-ID

Default is an 8-digit Profile-ID. Select each of the digits from pulldown lists.

- Temporarily show Profile-ID on display (press START/MARK/ACKNOWLEDGEMENT button for less than 1 second)
- Always show Profile-ID instead of START on display
- Never show Profile-ID on display

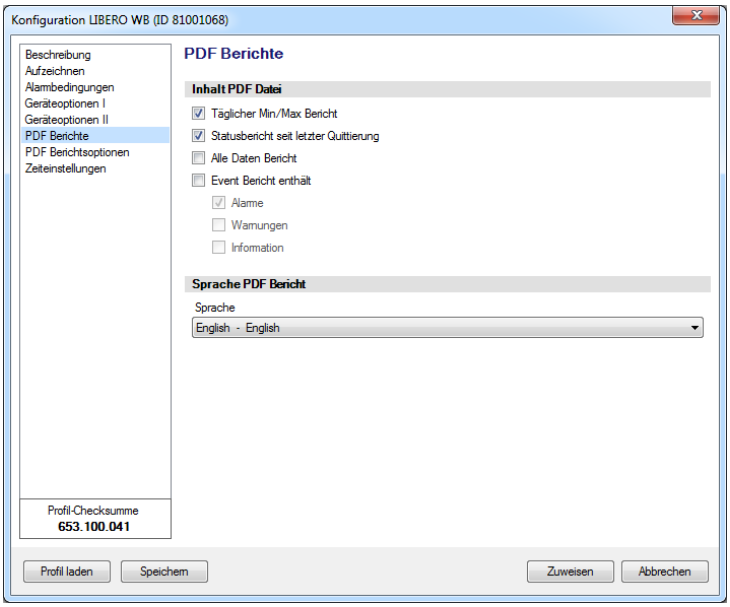
Display Options

Hide measurement value and/or indicators.

⇨ 2.1 *Base Station Display*

3.3.6 PDF Reports

Selection of the information contained in the PDF Report



Content and language in the PDF report

PDF File Content

The content of PDF reports consists of several blocks of information.

A number of different analysis reports can be generated. The following contents are activated by checking boxes.

- Daily min/max report
  Report in the form of a log containing the daily min/max measurement values. The report contains 1 line for every 24 hour period. The report can document the last 36 days at the most.
- Status report since last acknowledgement
  An analysis report containing alarm status and measurement values since the last alarm acknowledgment.
- All data report
  A complete analysis report containing all measurement values (maximum 70,000).
- Event Report contains
  a list of events that occurred. The following events can be listed in the report:
  - Alarms

- Warnings
- Information

PDF report Language

The languages:

- German
- English

are available.

3.3.6.1 Status Information and Error Messages in the PDF report

File name

1. Unique PDF report number comprising the device ID and the time stamp of the PDF Report.
2. PDF file name specified during configuration.
3. Date of report creation
4. Time of report creation
   The time corresponds to the current time of the base station.
5. Device ID of base station.

Logging Results - File created

This timestamp corresponds to the time when the LIBERO W was connected to a USB port for the first time.

WARNING: Device Error EXXX

In the event of an error or if the data are not complete, a warning is given with an error code above the Graphic.

3.3.6.2 Contents

This report contains the following blocks of information:

- Device Information LIBERO W configuration
- Configured temperature zones
- Table containing data on measured lowest and highest values.

Example: Daily Min/Max Report

LIBERO PDF Bericht Nr 387723273344 (LIBERO PDF Report 20170627123252 81001068.pdf)

LIBERO W

Zusätzliche Informationen

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

Geräte Information

Basis Typ:	LIBERO WB V6.11	Status:	Aufzeichnen
Basis ID:	81001068	Log Intervall:	1 M
Basis Batteriestatus:	Gut	Zeitbasis:	UTC +01:00
Sensor Typ:	LIBERO WSI V7.98	Start am:	23.Jun.2017 15:04:23
Sensor ID:	83000124	Datum der Kalibrierung:	26.Jun.2017 15:39:30
Sensor Batteriestatus:	Gut	Profil ID / Checksumme:	ABCDEFGH / 2.920.910.004
Konfiguriert von:	C1760, EC142/agubler, 23.Jun.2017 15:04:12		

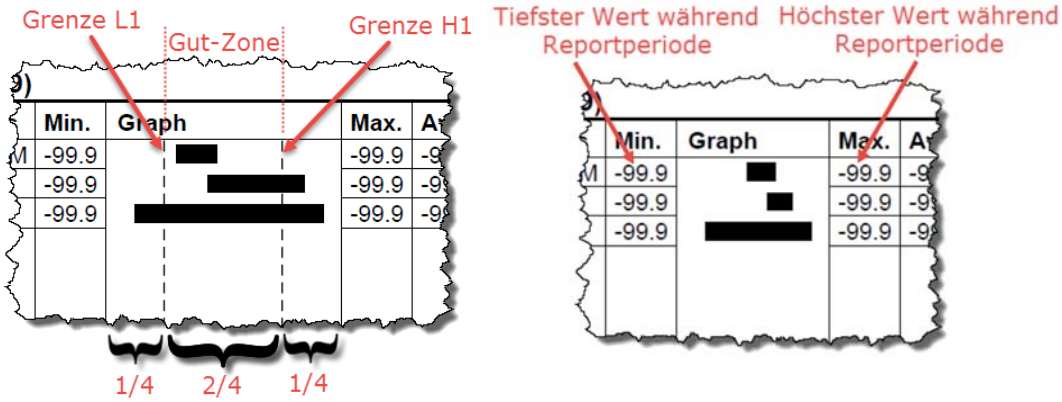
Temperatur Zonen	Warnung nach	Alarm nach
H1: über 10.0 °C	2 M	10 M
G: 5.0 bis 10.0 °C	unbegrenzt	unbegrenzt
L1: unter 5.0 °C	2 M	10 M

Datum	Status	Min	Grafik	Max	Ø	Zt. ausserhalb	Warnung	Alarm	Markierung	Kommentar
23.06.2017	ALARM	0.9		26.4	3.0	8 Std 46 M	15:07:13	15:15:13	--	
24.06.2017	ALARM	1.3		5.2	3.2	22 Std 5 M	00:00:13	00:00:13	--	
25.06.2017	ALARM	1.5		18.8	13.9	21 Std 6 M	00:00:13	00:00:13	--	
26.06.2017	ALARM	18.8		25.5	22.3	1 T 0 Std 0 M	00:00:13	00:00:13	15:22:54	
27.06.2017	ALARM	13.3		23.9	21.8	13 Std 33 M	00:00:13	00:00:13	10:43:24	

Name _____ Datum _____ Unterschrift _____

Täglicher Min/Max Bericht Seite 1 / 4 www.elpro.com

Details



Column definitions

The "Daily min/max report" covers the last 36 days at the most.

Details

Datum	Status	Min	Grafik	Max	Ø	Zt. ausserhalb	Warnung	Alarm	Markierun	Kommentar
23.06.2017	ALARM	0.9		26.4	3.0	8 Std 46 M	15:07:13	15:15:13	--	
24.06.2017	ALARM	1.3		5.2	3.2	22 Std 5 M	00:00:13	00:00:13	--	
25.06.2017	ALARM	1.5		18.8	13.9	21 Std 6 M	00:00:13	00:00:13	--	
26.06.2017	ALARM	18.8		22.2	19.2	7 Std 12 M	00:00:13	00:00:13	--	

If no alarm and warning zones were configured, the Graph column is scaled to set limits from the lowest to the highest temperature value occurring during the reporting period. The bars are scaled accordingly. In this case, the statistics columns remain empty: Out of Limits, Warning, and Alarm

Warning and Alarm Duration

- Always single evaluation
- Zone coupling (H1 and L1) is ignored
- Only 3 zones (H1, G, and L1); the remaining configured zones are ignored.

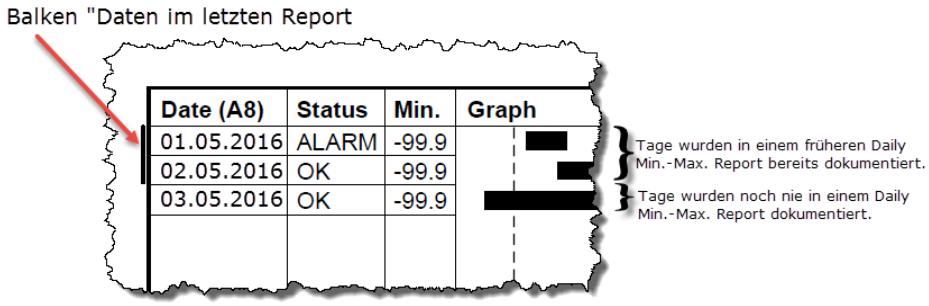
Comment

This column is not written and is provided for you to enter hand-written notes after generating the analysis report.

Calculations

Warnings and alarms are calculated on a daily basis. Each one is calculated every day from (00:00 to 23:59). The last alarm status of the previous day is included in the calculation.

Data already contained in a previous report.



If the table contains data that was logged in a previous Daily min/max report, this is marked by a side bar on the left of the graphic. You then know that these values were checked in a previous report.

Release line

The final detail in this report is a line for hand-written release.

Name _____ Datum _____ Unterschrift _____

Täglicher Min/Max Bericht Seite 1 / 4 www.elpro.com

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3.3.6.3 Example: Status Report since Last Acknowledgment

Contents

This report contains the following blocks of information:

- Device Information: LIBERO W configuration
- Report information: measurement value statistics for the period since the last alarm acknowledgment.
- Configured temperature zones
- Measurement value chart since acknowledgment of the last warning or last alarm.

LIBERO PDF Bericht Nr 3877232373344 (LIBERO PDF Report 20170627123252 81001068.pdf)

LIBERO W

ALARM

Zusätzliche Informationen

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

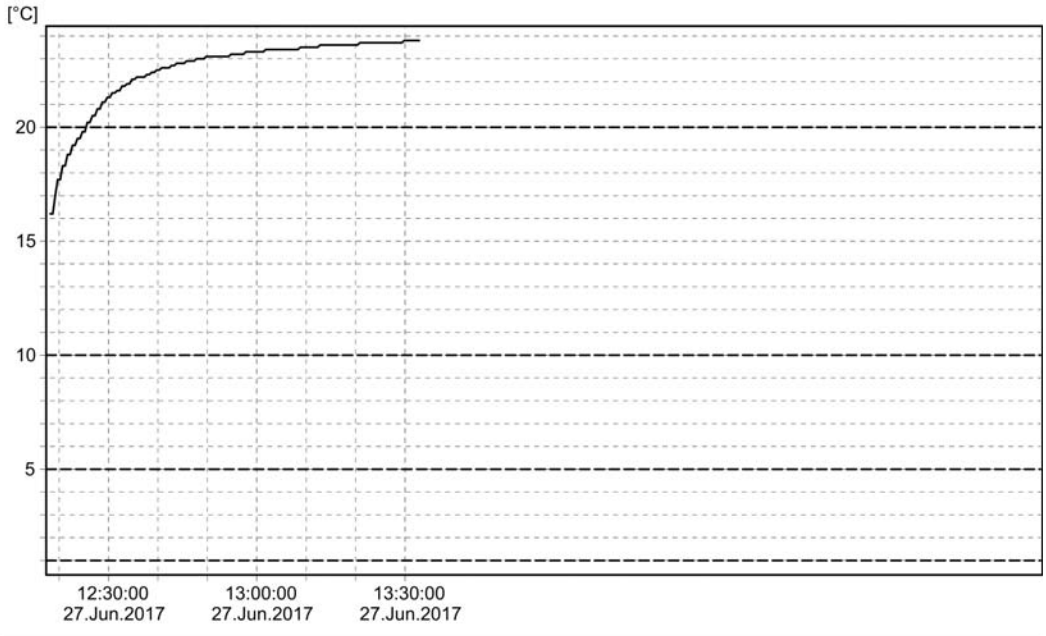
Geräte Information

Basis Typ:	LIBERO WB V6.11	Status:	Aufzeichnen
Basis ID:	81001068	Log Intervall:	1 M
Basis Batteriestatus:	Gut	Zeitbasis:	UTC +01:00
Sensor Typ:	LIBERO WSI V7.98	Start am:	23.Jun.2017 15:04:23
Sensor ID:	83000124	Datum der Kalibrierung:	26.Jun.2017 15:39:30
Sensor Batteriestatus:	Gut	Profil ID / Checksumme:	ABCDEFGH / 2.920.910.004
Konfiguriert von:	C1760, EC142/agubler, 23.Jun.2017 15:04:12		

Bericht Information

Von:	27.Jun.2017 12:18:13	Höchste Temperatur:	23.8 °C; 27.Jun.2017 13:30:13
Bis:	27.Jun.2017 13:32:52	Tiefste Temperatur:	16.2 °C; 27.Jun.2017 12:18:13
Erste Warnung am:	23.Jun.2017 15:07:13	Durchschnittstemperatur:	22.5 °C
Erster Alarm am:	27.Jun.2017 12:28:13	MKT:	17.1 °C

Temperatur Zonen	Warnung nach	Alarm nach	Gesamtzeit	Überschreitungen	Status
H2: über 20.0 °C		10 M (sin)	1 Std 7 M	1 / unbegrenzt	ALARM
H1: über 10.0 °C	2 M	10 M (sin)	1 Std 15 M	1 / unbegrenzt	ALARM
G: 5.0 bis 10.0 °C	unbegrenzt	unbegrenzt	0 M		
L1: unter 5.0 °C	2 M	10 M (sin)	0 M	0 / unbegrenzt	OK
L2: unter 1.0 °C		10 M (sin)	0 M	0 / unbegrenzt	OK



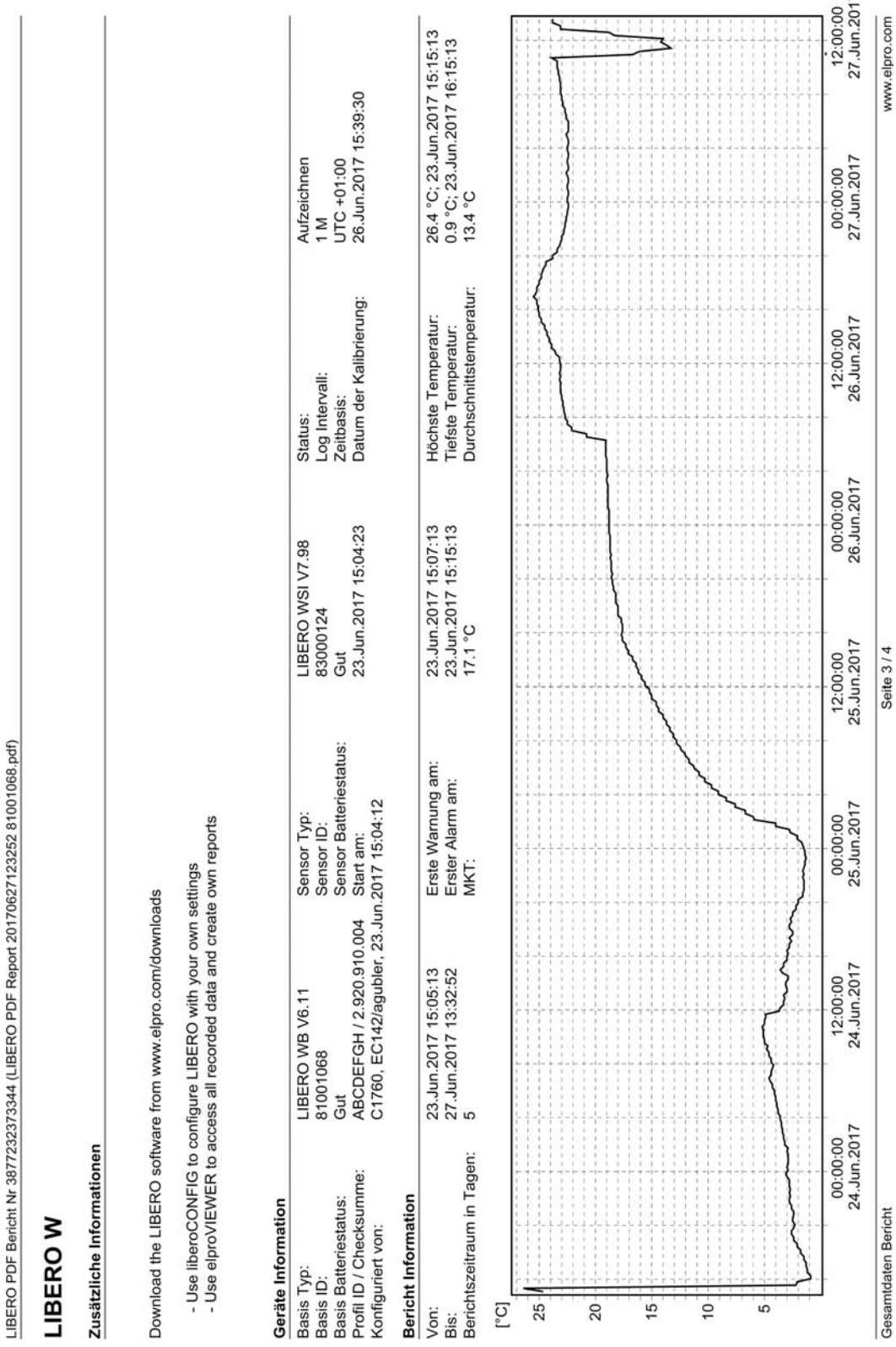
Status Bericht seit letzter Quittierung Seite 2 / 4 www.elpro.com

3.3.6.4 Example: All Data Report

Contents

This report contains the following blocks of information:

- Device Information: LIBERO W configuration
- Report information: Measurement value statistics since logging start.
- Measurement value chart since logging state, but max. the last 70,000 measurement values.



LIBERO PDF Bericht Nr 3877232373344 (LIBERO PDF Report 20170627123252 81001068.pdf)

LIBERO W

Zusätzliche Informationen

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

Geräte Information

Basis Typ:	LIBERO WB V6.11	Sensor Typ:	LIBERO WSI V7.98	Status:	Aufzeichnen
Basis ID:	81001068	Sensor ID:	83000124	Log Intervall:	1 M
Basis Batteriestatus:	Gut	Sensor Batteriestatus:	Gut	Zeitbasis:	UTC +01:00
Profil ID / Checksumme:	ABCDEFGH / 2.920.910.004	Start am:	23.Jun.2017 15:04:23	Datum der Kalibrierung:	26.Jun.2017 15:39:30
Konfiguriert von:	C1760, EC142/agubler, 23.Jun.2017 15:04:12				

Bericht Information

Von:	23.Jun.2017 15:05:13	Erste Warnung am:	23.Jun.2017 15:07:13	Höchste Temperatur:	26.4 °C; 23.Jun.2017 15:15:13
Bis:	27.Jun.2017 13:32:52	Erster Alarm am:	23.Jun.2017 15:15:13	Tiefste Temperatur:	0.9 °C; 23.Jun.2017 16:15:13
Berichtszeitraum in Tagen:	5	MKT:	17.1 °C	Durchschnittstemperatur:	13.4 °C

Gesamtdaten Bericht

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www.elpro.com

3.3.6.5 Event Report

Contents

The Event Report is a log containing all the events that occurred.

LIBERO PDF Bericht Nr 3877232373344 (LIBERO PDF Report 20170627123252 81001068.pdf)

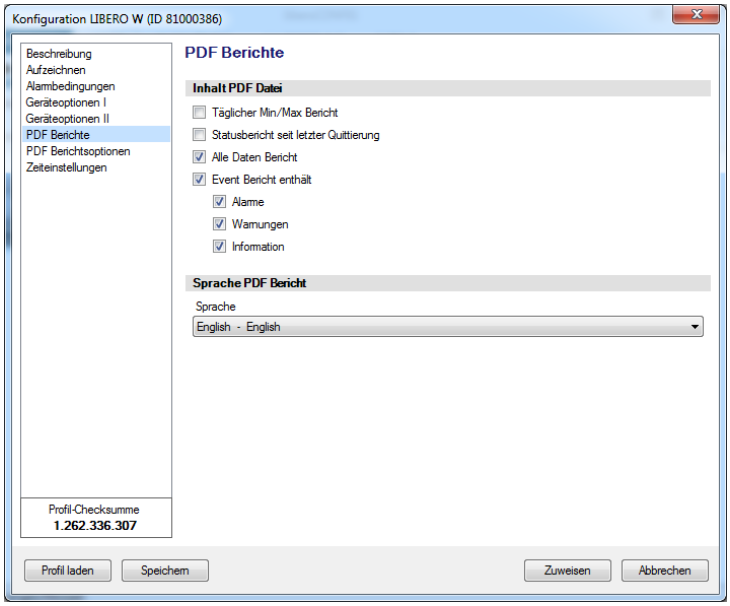
LIBERO W

Event Nr	Typ	Beschreibung	Datum / Zeit
00042	Alarm	H2 über 20.0 °C	27.Jun.2017 12:36:15
00041	Alarm	H1 über 10.0 °C	27.Jun.2017 12:28:13
00040	Information	PDF Bericht generiert	27.Jun.2017 12:22:47
00039	Alarm Quittierung	Bericht generiert	27.Jun.2017 12:17:44
00038	Information	PDF Bericht generiert	27.Jun.2017 12:17:44
00037	Information	Synchronisation abgeschlossen	27.Jun.2017 10:56:23
00036	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:55:40
00035	Information	Synchronisation abgeschlossen	27.Jun.2017 10:52:29
00034	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:51:34
00033	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:50:39
00032	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:50:29
00031	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:50:10
00030	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:50:02
00029	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:49:52
00028	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:49:47
00027	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:49:27
00026	Information	Keine Verbindung zum Sensor	27.Jun.2017 10:48:57
00025	Information	Markierung gesetzt	27.Jun.2017 10:48:56
00024	Information	Markierung gesetzt	27.Jun.2017 10:43:24
00023	Alarm	H1 über 10.0 °C	27.Jun.2017 10:36:13
00022	Alarm	H2 über 20.0 °C	27.Jun.2017 10:36:13
00021	Alarm Quittierung	Bericht generiert	27.Jun.2017 10:26:11
00020	Information	PDF Bericht generiert	27.Jun.2017 10:26:11
00019	Alarm	H1 über 10.0 °C	26.Jun.2017 15:55:13
00018	Alarm	H2 über 20.0 °C	26.Jun.2017 15:55:13
00017	Alarm Quittierung	Bericht generiert	26.Jun.2017 15:45:10
00016	Information	PDF Bericht generiert	26.Jun.2017 15:45:10
00015	Information	Markierung gesetzt	26.Jun.2017 15:40:56
00014	Information	Markierung gesetzt	26.Jun.2017 15:22:54

The events are divided into the following types:

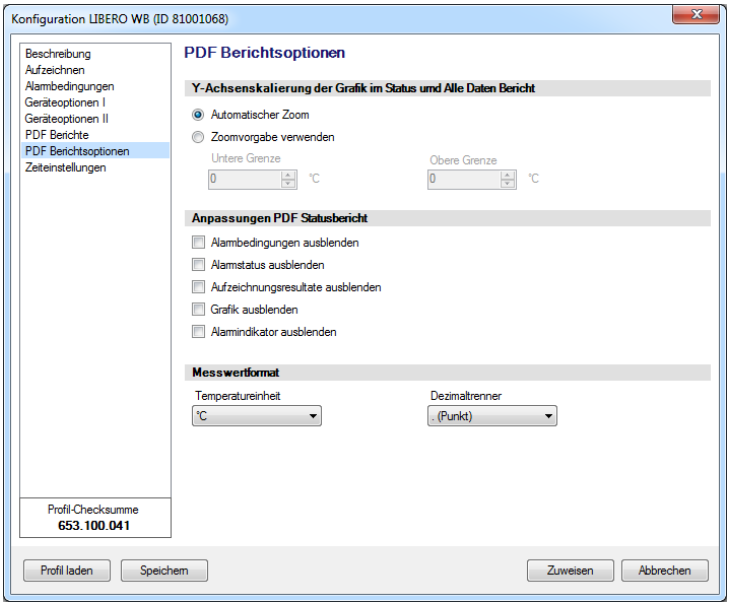
- Information
- Warnings (with warning acknowledgment) and
- Alarms (with alarm acknowledgment)

The different types displayed is listed and selected in liberoCONFIG.



3.3.7 PDF Report Options

Selection of the information contained in the PDF Report



Options in PDF report

Y-Axis Scaling of Chart in Status and All Data Report

- Automatic zoom
  The y-axis is scaled automatically according to the measurement range.
- Use preset zoom
  The Y-axis is scaled according to the lower and upper limits.

THE "Y-AXIS SCALING OF CHART" SETTING DOES NOT AFFECT THE MEASUREMENT RANGE OF THE LIBERO W.

Status Report Customizing

The following customizing options are activated by a checked box.

- Hide alarm conditions in the PDF report
- Hide the alarm status in the PDF report
- Hide logging results in the PDF report
- Hide graphic in the PDF report
- Hide the alarm indicator in the PDF report

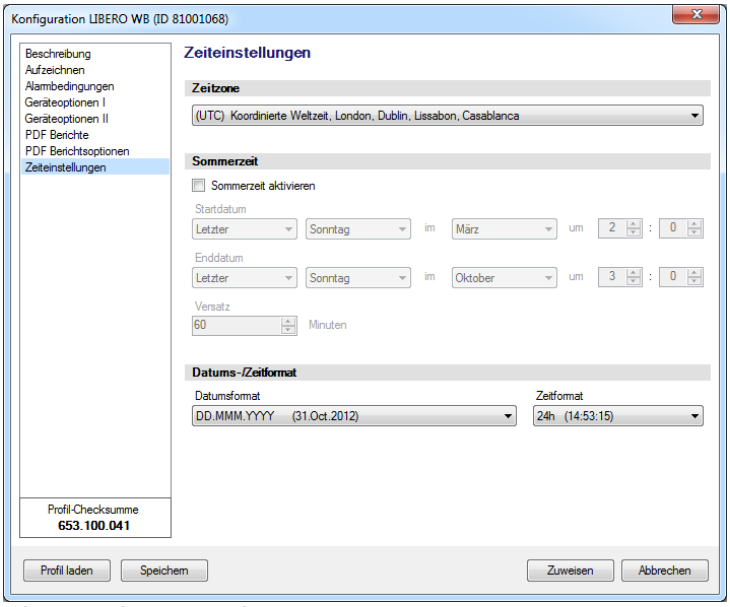
Measurement Value Format

Selection of various display formats for:

- Temperature unit: °C or °F
- Decimal separator: xx.yy (point) or xx,yy (comma) status information

3.3.8 Time Settings

Country-specific settings.



Time Settings overview

Time Zone

Represents the time zone used in the PDF report. This setting is based on UTC. When you change the time zone, no data are deleted and the LIBERO W continues regular operation after configuration.

Daylight Saving Time

Data entry fields for switchover between daylight saving time and winter time.

- Start date
- End date
- Offset (difference between daylight saving time and winter time)

Default setting

- UTC
  Select from UTC-12:0 to UTC+13:00.
- DD.MMM.YYYY (31.Oct.2017) and 24h (example: 14:53:13)

Date/Time Format

Date and time formats:

12h (AM/PM format) or 24h

31.10.2017

31/10/17

17-10-31

10/31/17

OCT31/17

31.OCT.17

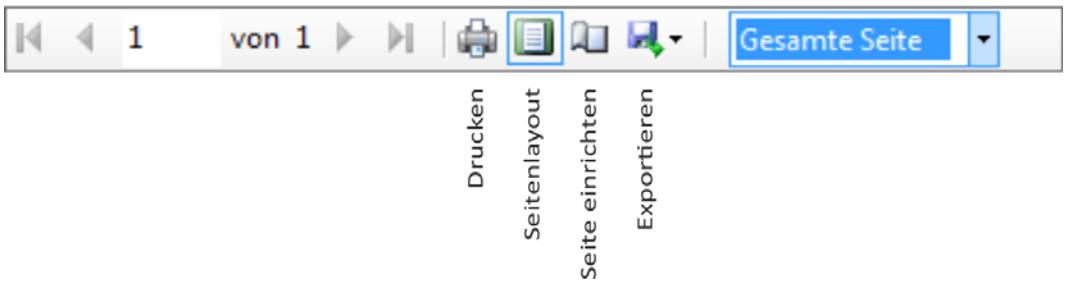
3.3.9 View/Print Calibration

Menu: Show/Print Device Configuration

Creates a report with all configuration data. This report contains as many pages as LIBERO W selected.

3.3.9.1 Example: Configuration Report

Print report



Print menu bar

3

LIBERO Konfigurationsbericht

Profil			
Profil-Checksumme:	2.134.319.895	Konfigurationspasswort:	Keine
Profil-ID:	ABCDEFGH	Datenpasswort:	Keine
Gerät			
Basis Typ:	LIBERO WB (V 6.11)	Sensor Typ:	LIBERO WSI (V 7.98)
Basis ID:	81001068	Sensor ID:	83000124
Log Intervall / Dauer:	1 Min / 48T 21Std 20M	Startverzögerung:	0 M
Log Modus:	Ringspeicher	Startmodus:	Start nach Tastendruck
Konfiguriert durch:	C1760, EC142/agubler 23.06.2017 07:06:46 (UTC)		
Beschreibung			
Titel des Berichts:	LIBERO W All Data Report		
Info Feld 1-4:			
Info Feld 5-8:			
Info Linie 3:	Download the LIBERO software from www.elpro.com/downloads		
Info Linie 4:			
Info Linie 5:	- Use liberoCONFIG to configure LIBERO with your own settings		
Info Linie 6:	- Use elproVIEWER to access all recorded data and create own reports		
Info Linie 7:			
Info Linie 8:			
Versteckte Linie 1:			
Versteckte Linie 2:			
Dateiname:	LIBERO PDF Report		

Alarmbedingungen			
Temperatur:	**Erlaubte Zeit:**	**Ereignismodus:**	**Erlaubte Überschreitungen**
H2: über 20,0 °C	10 M	Einzeln	unbegrenzt
H1: über 10,0 °C	10 M	Einzeln	unbegrenzt
G: 5,0 °C bis 10,0 °C	unbegrenzt		
L1: unter 5,0 °C	10 M	Einzeln	unbegrenzt
L2: unter -5,0 °C	10 M	Einzeln	unbegrenzt
Zone L1+H1 gekoppelt:	Keine		
Warnungen aktiviert:	Ja		
H1 Warnung nach:	2 M	L1 Warnung nach:	2 M

Geräteoptionen			
Quittierung:	PDF-Bericht	PDF Erinnerung:	Deaktiviert
Kalibrierererinnerung:	Deaktiviert	NC Warnung (Messungen):	Deaktiviert
MKT Aktivierungsenergie:	83 kJ/mol	Thermische Dämpfung (T90):	Deaktiviert
Stumm-Dauer:	60 M	Alarm Summer:	Deaktiviert
Warnung Summer:	Deaktiviert	Profile-ID auf Display:	mit Taste
PDF Berichte			
PDF Datei beinhaltet:	Täglicher Min/Max Bericht, Statusbericht, Alle Daten Bericht, Event Bericht		
Event Report enthält:	Alarme, Warnungen, Information		
PDF-Sprache:	Deutsch		
PDF-Optionen			
Alarmbedingungen:	Keine	Alarm Indikator:	Keine
Alarmstatus:	Keine	Y-Achsenskal. Grafik:	Automatischer Zoom
Aufzeichnungsresultate:	Keine		
Grafik:	Keine		
Formateinstellungen			
Zeitzone:	UTC +00:00	Sommerzeit:	Ja
Sommerzeitbeginn:	Letzter Sonntag im März um 02:00	Sommerzeitende:	Letzter Sonntag im Oktober um 03:00
Datumsformat:	DD.MMM.YYYY	Zeitformat:	24h
Temperatureinheit:	°C	Dezimaltrenner:	. (Punkt)
Temperatureinheit:	°C	Dezimaltrenner:	. (Punkt)

Gedruckt: liberoCONFIG 2017.6.0.6 / agubler / 23.06.2017

3.3.10 Apply Configuration Profile

Menu: Apply device configuration profile

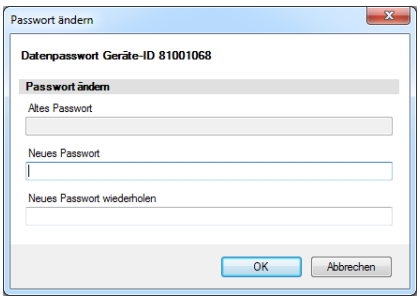
All selected LIBERO Ws are directly configured with a previously saved profile.

3.4 Passwords

LIBERO W offers 2 different password functions. Both passwords can be set, changed and reset as long as the LIBERO W has not been started.

- Configuration password
  Protects the LIBERO W from an unauthorized configuration.
- Data access password
  A password-protected PDF report can only be opened with the elproVIEWER or elproASSISTANT software, provided the data access password is known.

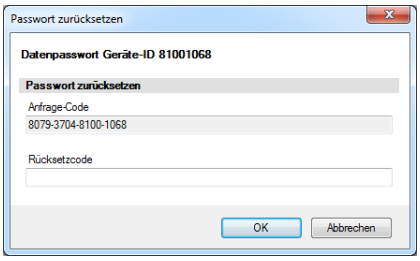
Set/Change



Example: Data access password

If "New Password" & "Repeat new Password" are left blank, the password will be reset.

Reset



Example: Data access password

If you have forgotten the password:

1. To reset the password the displayed "Request-Code" and the ID number has to be mailed to ELPRO-BUCHS AG (password-reset@elpro.com).
2. ELPRO-BUCHS AG will send the "Reset Code" by e-mail after clarifying ownership.

The "Reset-Code" can only be performed by ELPRO-BUCHS AG.
This code is just valid for the respective LIBERO W.

3.5 Tools for PDF report

3.5.1 Check PDF File Integrity

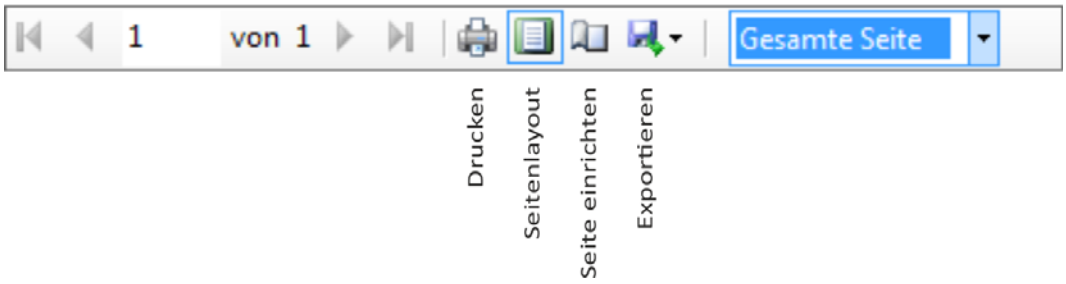
The software liberoCONFIG has the capability to validate the integrity of the PDF report. If the files have passed, test results will be shown and can be printed or archived.

Procedure: Check LIBERO PDF File Integrity

1. Select and open PDF files which should be checked.
2. Check PDF file
   A report with the check results will be created. This report contains as many pages as LIBERO W selected.

3.5.2 Example: Check PDF File Integrity

Print report



Print menu bar

LIBERO PDF-Dateiintegrität prüfen

Gerät

Geräte ID:	--
Typ:	--

PDF-Datei

Berichtsnummer:	--
Datei erstellt:	--
Dateiname:	M:\Entwicklung\Dokumentation\Anleitungen\LI Libero \Bedienungsanweisung\Bedienungsanweisung Libero W \Bedienungsanweisung DE\Bilder DE\LIBERO PDF Report 20170623122909 81001068.pdf

Prüfergebnis

Das ist keine Original LIBERO PDF-Datei.

Gedruckt: liberoCONFIG 2017.6.0.6 / agubler / 23.06.2017

3.5.3 Create PDF from Switched Off Device

This function gives the possibility to read the logged data from an already switched off LIBERO W as PDF report. After the file has been read, the LIBERO W switches itself off automatically.

3.5.4 Set Time Zone

For easier data evaluation, the used time zone could be adjusted to local time. Measurement values are not affected at all.

4 Create LIBERO SmartStart

The used LIBERO SmartStart application allows a fast and secure configuration of many LIBERO W. End-users can select from a list of possible predefined profiles in the Pack & Go file and have the opportunity to add shipment-specific information that later appears on the PDF report.

LIBERO SmartStart Create and make settings, see 3.2.2 Menus - Extras

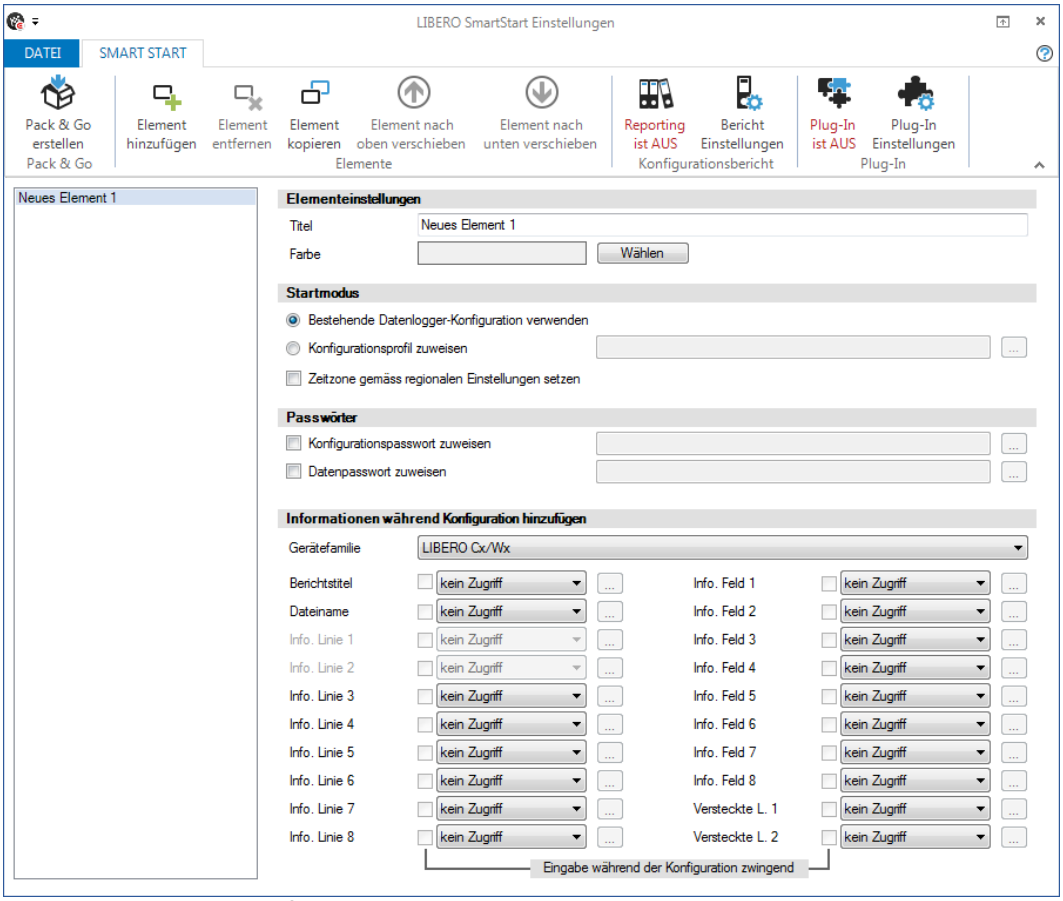
First, the "Create LIBERO SmartStart Settings" menu is used to select configuration profiles that have already been created and saved. An appropriate title and color are assigned to each profile for easier selection.
Then, the LIBERO SmartStart allows additional information fields to be defined so that shipment-specific information can be easily added and viewed on the PDF report. During final configuration, information can be added either in the form of plain text or dropdown menus. All other critical device settings in the configuration profile, such as handling and alarm settings, are static and cannot be changed. After the initial settings are defined in the LIBERO SmartStart menu, a LIBERO SmartStart Pack & Go (.exe) file is created.

Another feature of the LIBERO SmartStart Pack & Go is the generation of a history log called the SmartStart Configuration Report (SSCR), with i.e. settings and the additionally entered information. The SSCR is editable and replaces error-prone manually generated lists.

The basic configuration process using Pack & Go is as follows:

1. Open the Pack & Go file.
2. Select the appropriate configuration profile (by name and/or color).
3. Add shipment-specific information manually or from a dropdown menu.

Start



LIBERO SmartStart settings

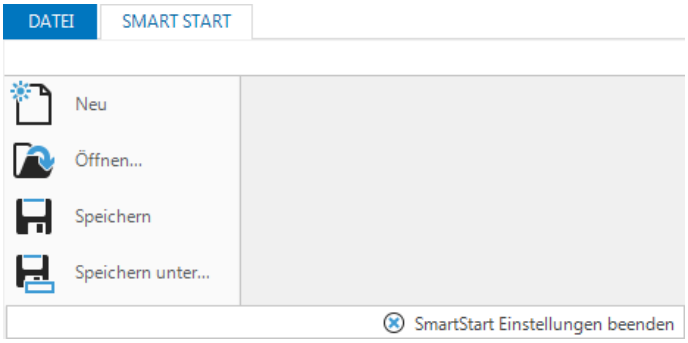
⇨ 4.1 *Items*

⇨ 4.2 *Configuration Report*

⇨ 4.3 *Plug-In*

⇨ 4.6 *Building SmartStart Pack & Go*

File



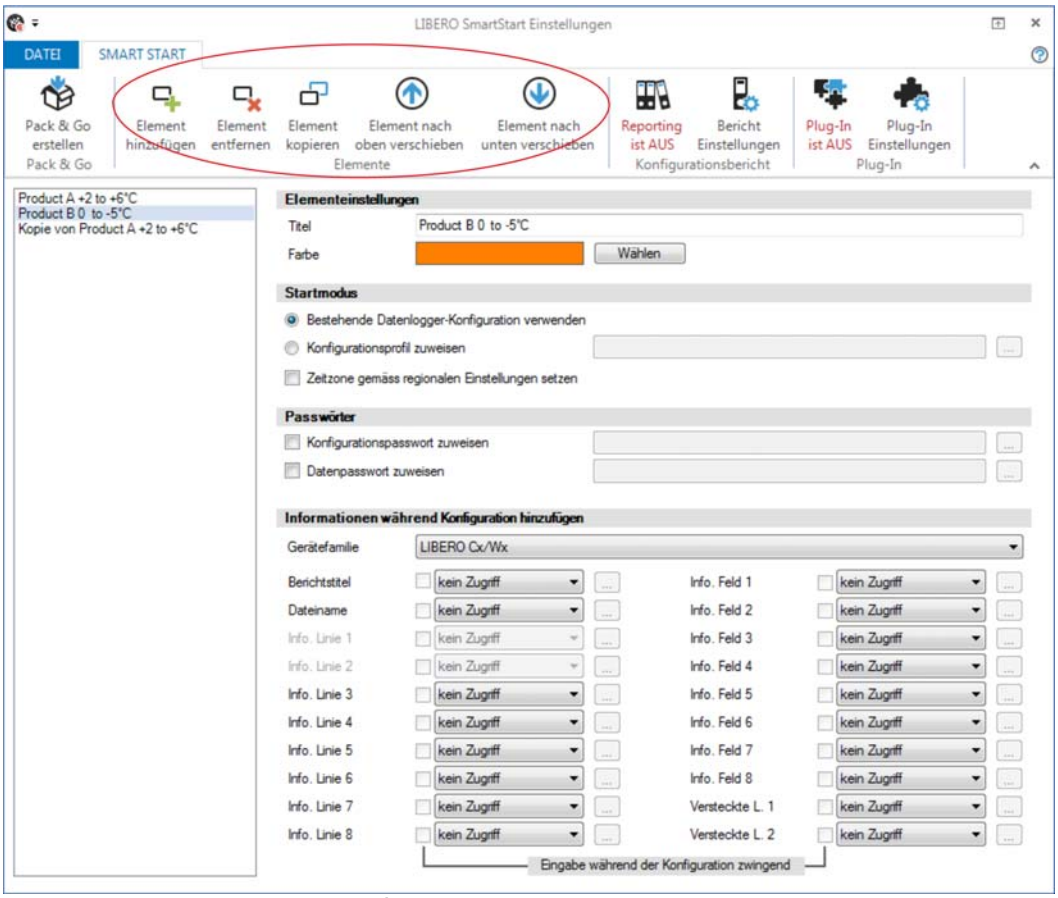
General management functions for LIBERO SmartStart files

SmartStart Einstellungen beenden ⇨ Return to liberoCONFIG.

File format ****.liberoSMS

4.1 Items

Manage items

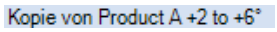


LIBERO SmartStart Items overview

Use the "Items" function to add, modify or remove new items of the LIBERO SmartStart file. The new entry is added at the end of the list. Up to 500 LIBERO SmartStart-items can be defined.

Typically one item is created per profile, product or study number.

Move item up/down.



Adds a copy of the selected items to the item list with the name: "Copy of xxxxx". This copy can be used as the basis for another item.

Activate the relevant entry field by checking the box.

This icon opens a window for the definition of variable information.

Item Settings

- Title

  The title is the designation for the selected item. Enter a short, clear name.
- Color

  Each item can be assigned a color. The color serves to identify the item quickly at a later point while working with LIBERO SmartStart.

Start Mode

- Use existing data logger configuration
  Used if it is not necessary to assign a specific profile to the LIBERO W. The LIBERO W retains the current configuration.
- Apply configuration profile
  A profile previously created with liberoCONFIG is used.

A PROFILE CAN ONLY BE ASSIGNED TO ONE DEVICE FAMILY (CX, TX, OR W).

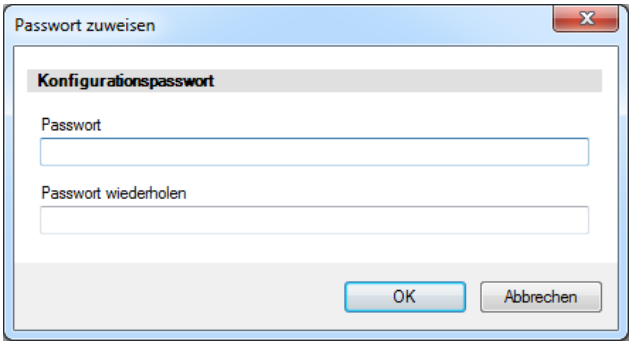
Set the time zone to the regional setting during configuration.

Passwords

- Configuration password
  Protects the LIBERO W from an unauthorized configuration.
- Data access password
  A password-protected PDF report can only be opened with the elproVIEWER or elproASSISTANT software, provided the data access password is known.

They are automatically added to each LIBERO W configured with LIBERO SmartStart.

- A checked box opens the window to enter the password.
- An empty field deletes the existing password..



Example: Delete configuration password

4.1.1 Add Information During Configuration

Device Family

Manual or automatic recognition of the device family. When you select the LIBERO for configuration, SmartStart automatically enables the possible information windows.

Add information during configuration

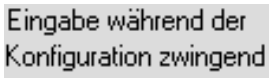
It is possible to make entries for all variable information of the PDF report during profile assignment.

no access	There are no entries possible If all entries are set to "no access", no entry prompts appear during profile assignment with SmartStart Pack & Go. In all other cases an entry window is opened to enter text with a barcode reader or with the keyboard.
add text	Entries can be added to the existing text.
edit text	The existing text can be supplemented and changed.
add dropdown	Opens the "Edit Dropdown" window for selection of predefined information. The existing line content is supplemented.
insert dropdown	Opens the "Edit Dropdown" window for selecting predefined information. The existing line content is always overwritten.

Comment

Two minus signs in front of the text are treated as a comment in the dropdown and cannot be added or inserted in a mandatory field.

A checked box permits text editing in the "Dropdown" list during configuration.



Successful configuration is only possible when all activated fields are filled out.

4.2 Configuration Report

The configuration report is an option and not required for LIBERO SmartStart Pack & Go to function correctly.
If no automatic reporting of the configured LIBERO W is needed, skip this section and continue with 4.6 *Building SmartStart Pack & Go*.

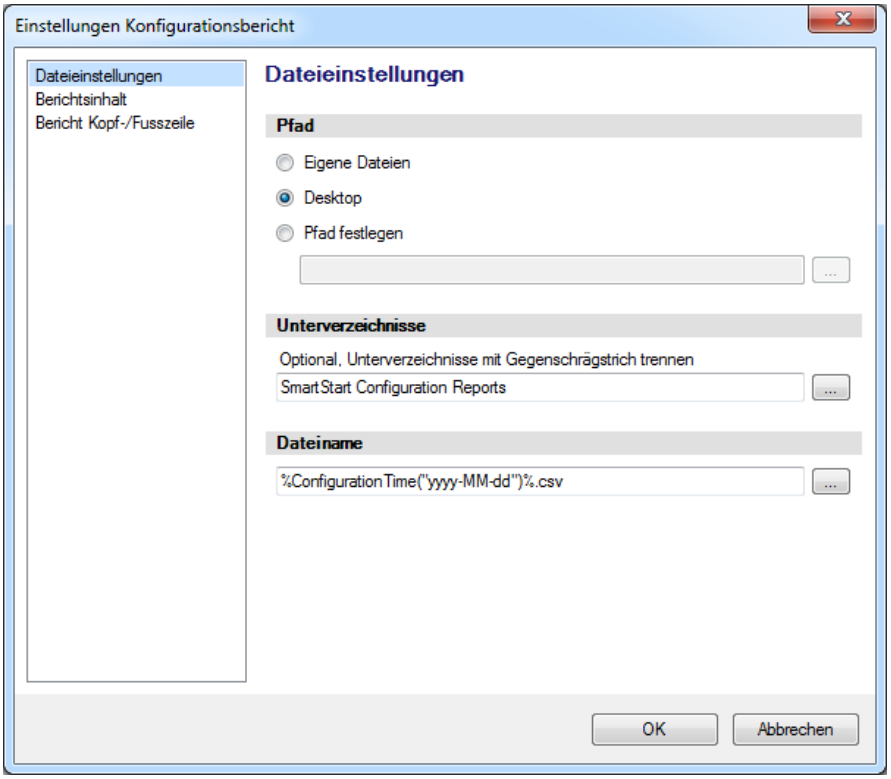
Configuration report menu bar

The configuration report documents all configurations done by LIBERO SmartStart. With the aid of the "Placeholder Editor", the used file name, path and the parameters documented may be customized.

Reporting ON / OFF

The action recording in the configuration report is switched ON/OFF.

4.2.1 File Settings



File settings

Path

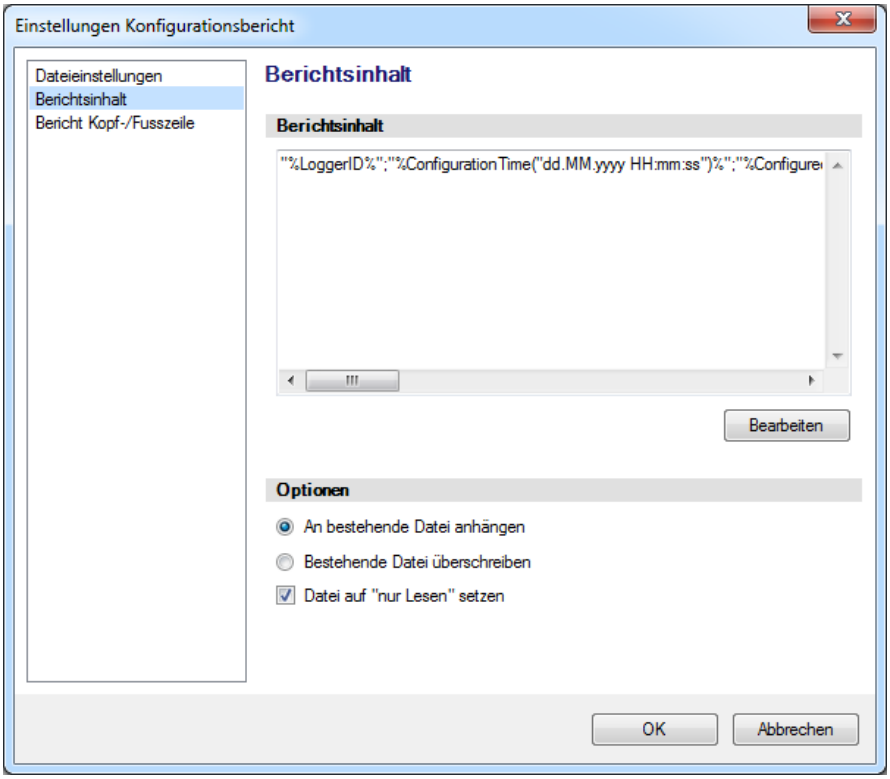
Default setting for saving the configuration report.

Subdirectories & Filename

Opens the Placeholder Editor to describe the subdirectories and file name.

⇨ 4.4 *Placeholder Editor*

4.2.2 Report Content



Report Content

Report Content This window is used to define the placeholders and the formats used to create the report.

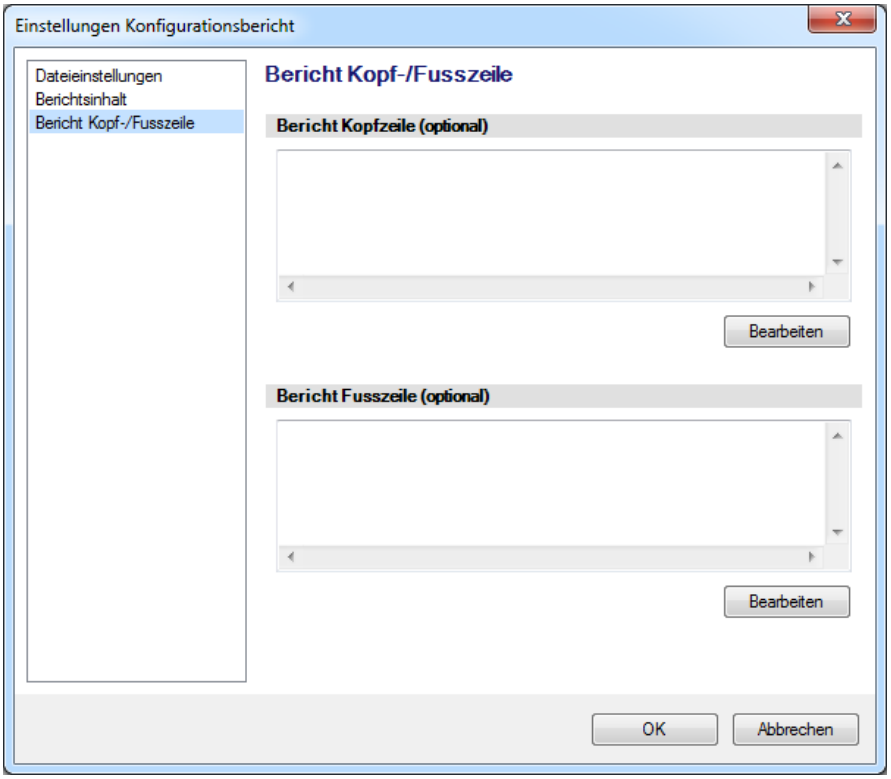
Options The current report can be added as an extension to the existing one or the existing report replaced by the new one.

Bearbeiten

Opens the “Placeholder Editor”. The selected placeholders determine the content of the PDF report.

⇨ 4.4 *Placeholder Editor*

4.2.3 Report Header/Footer



Report Header/Footer

In these two windows, you can define the content for an optionally added heater/footer in the PDF report.

Bearbeiten

Opens the “Placeholder Editor”. The selected placeholders determine the content of the PDF report.

⇨ 4.4 *Placeholder Editor*

4.3 Plug-In

The configuration report is an option and not required for LIBERO SmartStart Pack & Go to function correctly.
If no automatic reporting of the configured LIBERO W is needed, skip this section and continue with 4.6 *Building SmartStart Pack & Go*.

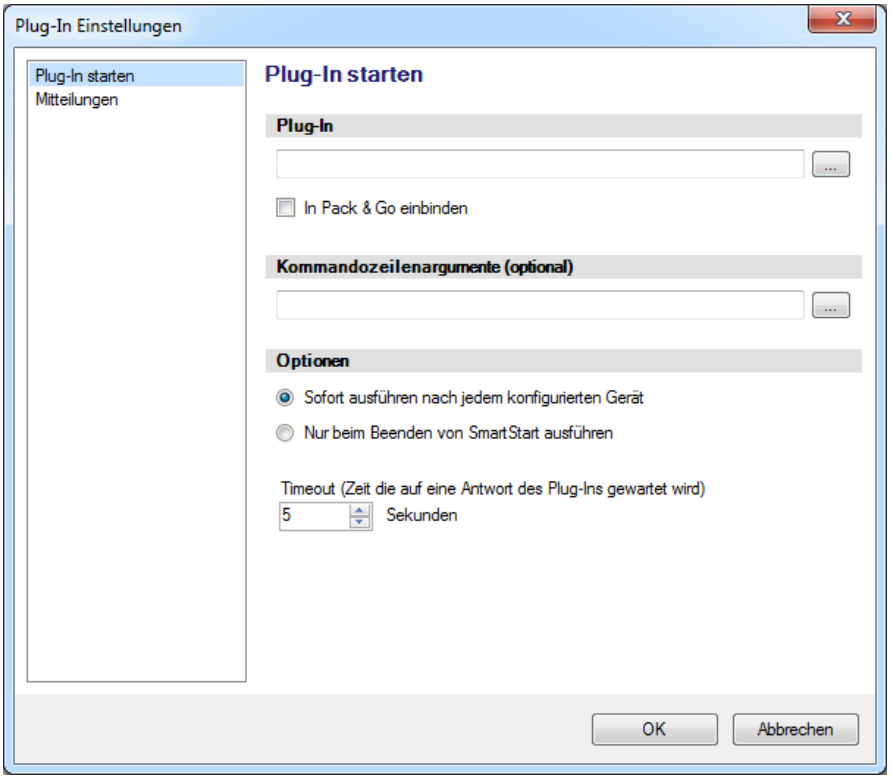
Plug-in menu bar

The configuration report documents all configurations done by LIBERO SmartStart. With the aid of the "Placeholder Editor", the used file name, path and the parameters documented may be customized.

Plug-In ON / OFF

Plug-in execution is switched ON / OFF.

4.3.1 Start Plug-In



Plug-in overview

Plug-In

Opens Windows Explorer to select an executable application.

Check the box to start the executable application automatically when the LIBERO Smart-Start Pack & Go (.exe) file is launched.

Opens the Placeholder Editor to describe the application.

⇨ 4.4 *Placeholder Editor*

Command Line Arguments (optional)

If this application can be controlled by additional commands, this can be entered directly as text,

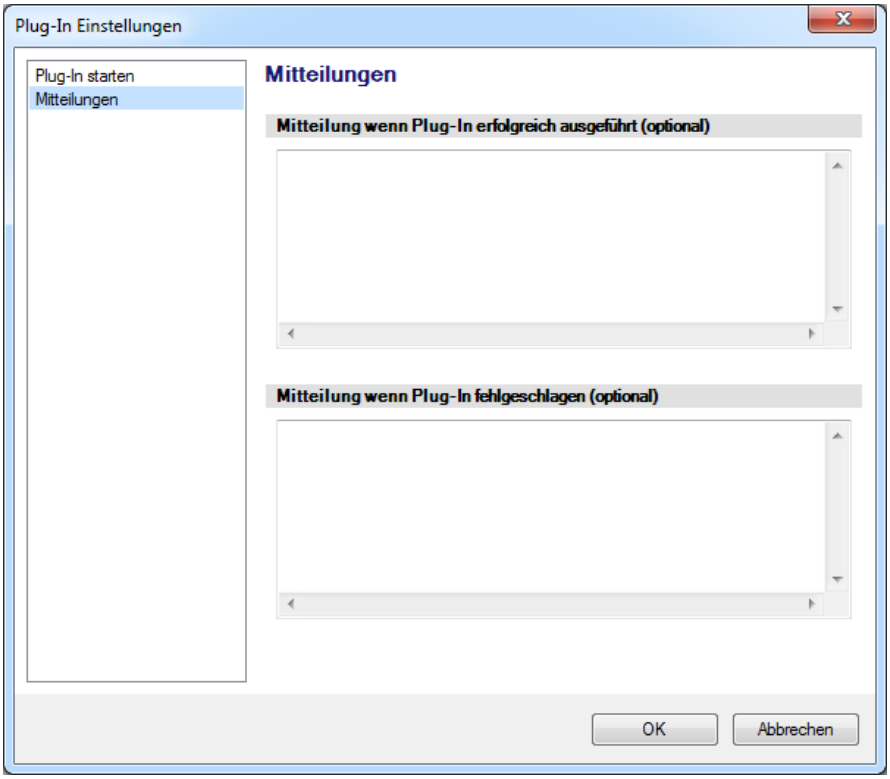
Commands which refer to the contents of the PDF report are compiled in the Placeholder Editor.

⇨ 4.4 *Placeholder Editor*

Options

Launch conditions for the plug-in

4.3.2 Messages

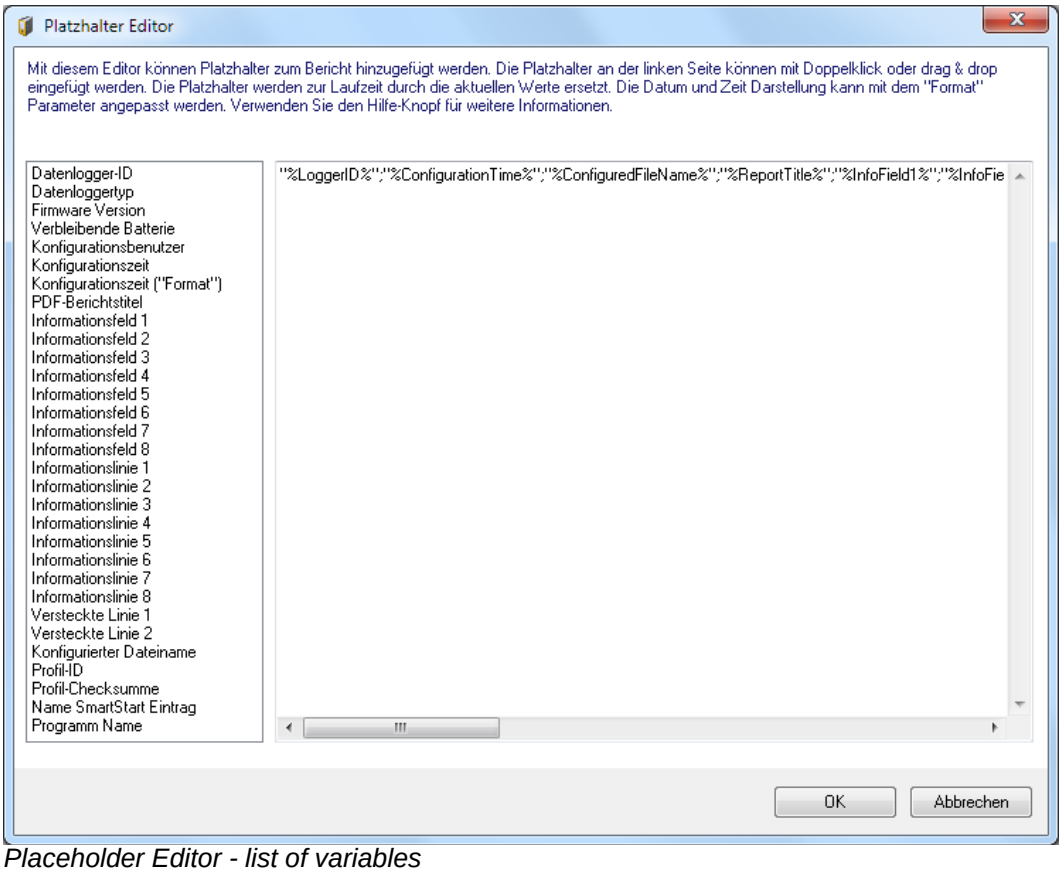


Plug-in messages

Optional comments on the status of the launched plug-in.

4.4 Placeholder Editor

Placeholders are expressions that appear as variable information in the report.



Placeholder Editor - list of variables

Placeholder Description	Syntax	Function
Data Logger ID	%LoggerID%	ID of the data logger configured with SmartStart.
Data Logger Type	%LoggerType%	Type of the LIBERO W e.g. Ti1-S, configured with LIBERO SmartStart.
Firmware Version	%FirmwareVersion%	Firmware version of the LIBERO W configured with LIBERO SmartStart.
Remaining Battery	%RemainingBattery%	Current battery level of the LIBERO W at the time of configuration with SmartStart.
Configuration User	%ConfigurationBy%	Computer and User Name

Configuration Time	%ConfigurationTime%	Point of time of the data logger configuration. Format settings according to regional settings of the computer. Time zone corresponds to settings in the PDF report.
Configuration Time ("Format")	%Configuration-Time("Format")%	Time of the configuration of the LIBERO W with user-defined date-time format
PDF Report Title	%ReportTitle%	Title of the PDF report ⇨ 3.3.1 *Description*
Information Field 1 ... 8	%InfoField1% ... %InfoField8%	Field 1 to 8 of the additional information in the PDF report ⇨ 3.3.1 *Description*
Information Line 1 ... 8	%InfoLine1% ... %Info-Line8%	Line 1 to 8 of the additional information in the PDF report ⇨ 3.3.1 *Description*
Hidden Line 1... 2	%HiddenLine1% %HiddenLine2%	Hidden line 1 and 2 of the additional information in the PDF report ⇨ 3.3.1 *Description*
Configured File Name	%ConfiguredFile-Name%	Configured PDF file name ⇨ 3.3.1 *Description*
Profile-ID	%ProfileID%	User defined Profile-ID ⇨ 3.2.5 *Configuration Profiles* - Profile-ID
Profile Checksum	%ProfileChecksum%	Automatically calculated checksum
SmartStart Item Name	%SmartStartItem-Name%	Name of the selected LIBERO SmartStart item
Application Name	%ApplicationName%	Corresponds to the "Window Title" ⇨ 4.6 *Building SmartStart Pack & Go*

Placeholder: Configuration Time ("Format")

This placeholder allows a customized date and time format.

Placeholders	Function
dd	Day with leading zero
MM	Month with leading zero
MMM	Shortcut month (Jan, Feb, Mar. ..)
MMMM	Name of month not abbreviated
yyyy	Year with four digits
hh	Time in 12-hour format with leading zero
HH	Time in 24-hour format with leading zero
mm	Minutes with leading zero
ss	Seconds with leading zero
tt	AM/PM designator
zzz	UTC Offset in format hh:mm

Examples

("Format")

yyyy MMM dd hh:mm:ss	2013 Jul. 17 16:23:12
dd MMM. yyyy	17 Jul. 2013
yyyy-MM	2013-07
dd/MM/yyyy	17/07/2013

4.5 Example of a Configuration Report

This example documents the different placeholder formats. The following line numbers (1 - 4) refer to the line of text in the "Placeholder Editor".

Key to examples

	Description
1)	Date and time configured with the placeholder: Configuration time ("Format") configured.
2)	Text
3)	- Always use placeholder with quotation marks. In this case a semicolon (;) used within the text of the placeholder, will not be interpreted as column formatting. - Semicolon (;) between placeholders are used for column formatting. - Control characters have no effect on reports opened with an editor.
4)	Entire line in quotes - Text and parameters are not separated into different columns. - Control characters have no effect on reports opened with an editor.

Entries in the Placeholder Editor

1) `%ConfigurationTime% "yyyy MMM dd hh:mm")%`

2) `Datalogger Type and ID`

3) `"Datalogger Type and ID";"%LoggerID%";"%LoggerType%"`

4) `"Datalogger Type and ID;%LoggerID%;%LoggerType%"`

Report opened in MS Excel

	A	B	C
1) 1	2017 June 18 09:13		
2) 2	Datalogger Type and ID		
3) 3	Datalogger Type and ID	81001068	W
4) 4	Datalogger Type and ID ; 81001068 ; W		

Report opened for the example with: WordPad

1) **2017 June 18 09:13**

2) **Datalogger Type and ID**

3) **"Datalogger Type and ID";"81001068";"W"**

4) **"Datalogger Type and ID;81001068;W"**

The control characters used: Quotation marks ("...") and semicolon (;) are interpreted according to the country settings of MS Excel. Depending on the country settings different characters for the described functions have to be used.

4.6 Building SmartStart Pack & Go

Pack & Go menu bar

This is a function to set up an executable file of LIBERO SmartStart including all required settings and configuration profiles.

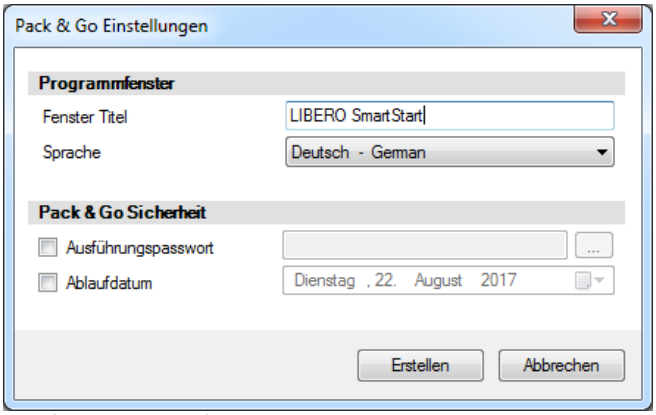
LIBERO USB DEVICE DRIVER REQUIRED.

File format (.exe)

Pack & Go runs:

- on any PC
- from a WEB, FTP or file server
- or from the Internet

4.6.1 SmartStart Pack & Go Settings



Pack & Go - Settings

Program Window

- Window Title
  Window title bar of the executable (.exe) file. This title can provide information such as: Service provider, location or version.
- Language
  - German
  - English
  - Spanish
  - French
  - Italian
  - Japanese

Pack & Go Security

- Start password
  Only authorized staff is permitted to run SmartStart Pack & Go.
- Expiry date
  The file generated with Pack & Go can no longer be used after this date.

Workflow of Pack & Go

1. Define profiles and LIBERO SmartStart settings:
   ⇨ 3.3 *Device Configuration*
   ⇨ 3.4 *Passwords*

2. Create an (.exe) file which includes the following information:
   - Defined profiles and LIBERO SmartStart settings
   - File name and title of the window
   - Optional: Password and expiry date

3. Send the (.exe) file to the respective department.
4. The recipient runs the (.exe) file and configures the LIBERO Ws.
   ⇨ 5 *Using SmartStart Pack & Go*

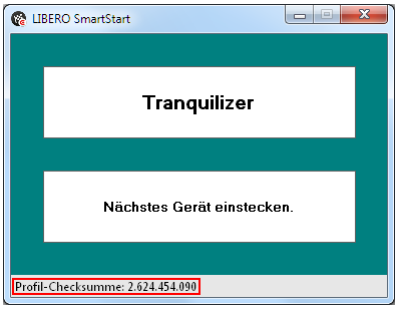
5 Using SmartStart Pack & Go

When starting the SmartStart Pack & Go (.exe) file created with the liberoCONFIG, a window with predefined settings appears. The window text and the respective color code is defined in the LIBERO SmartStart settings.

⇨ 4 *Create LIBERO SmartStart*

Mode

The LIBERO W must be in Configuration mode. If the modes are not set properly, a PDF report will be shown!



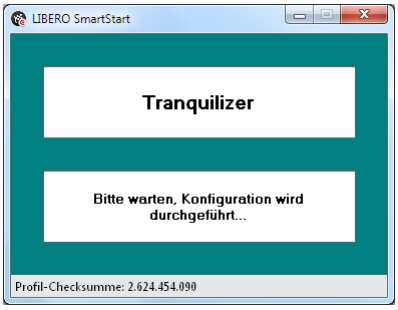
In the window, the first item from the list is shown with a color code and name tag.

Profil-Checksumme: 2.624.454.090

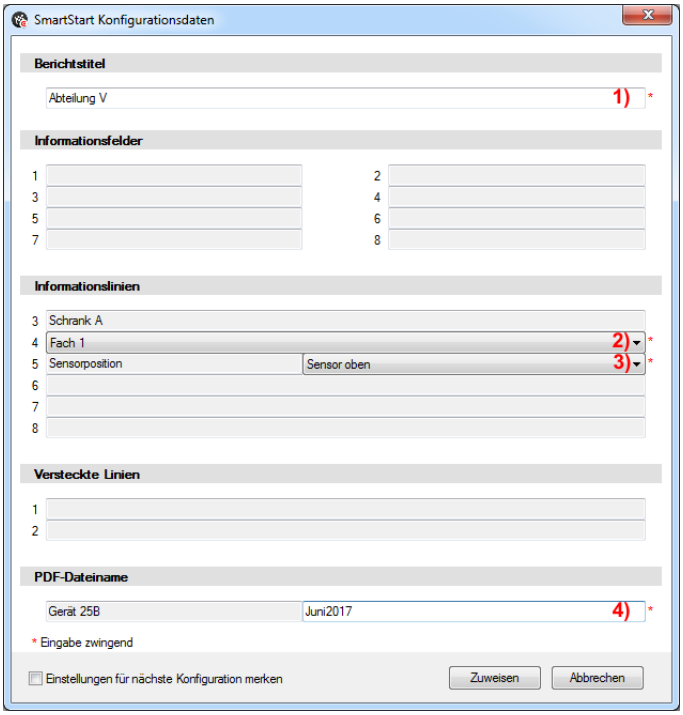
THE PROFILE CHECKSUM CORRESPONDS TO THE PROFILE CHECKSUM OF THE CONFIGURATION!

⇨ 3.2.5 *Configuration Profiles*

Now the LIBERO can be plugged into the USB port.



SmartStart Pack & Go then automatically sends the selected profile to the LIBERO.



If various variable entries are defined during creation of the SmartStart Pack & Go, the window for entering the free configuration data is opened. The data can be entered with the keyboard or with the barcode reader.

5

Key to entries

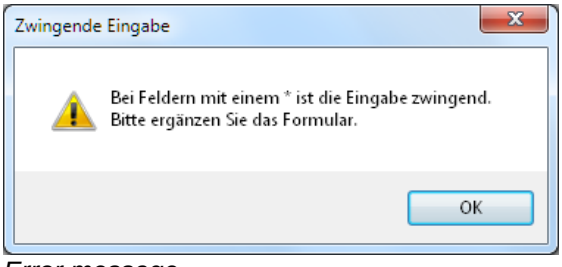
1. Edit text
2. Insert dropdown
3. Add dropdown
4. Add text

⇨ 4.1 *Items*

Gray shaded fields could be declared as not configurable during the creation of LIBERO SmartStart.

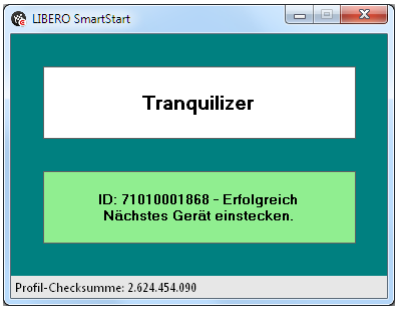
Missing variable

* Eingabe zwingend



Error message

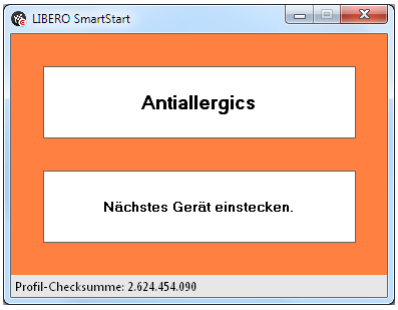
When all entries have been done, the profile settings and the variable entries are applied to the LIBERO.



Now disconnect the LIBERO from the USB port and continue with the next LIBERO.

5.1 Changing the Settings

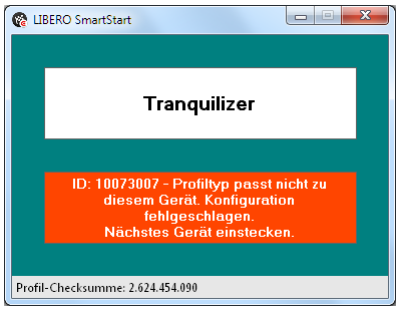
A SmartStart Pack & Go can contain several items / profiles. Click the setting window with the right mouse button and select the proper profile, for example: "Antiallergics".



After changing the profile you can proceed with the next LIBERO.

5.2 Error Messages

In case of error, a message is displayed..



Reasons for error massages:

- Profile incompatible
- "Cancel" selected during data download

LIBERO was disconnected during configuration.

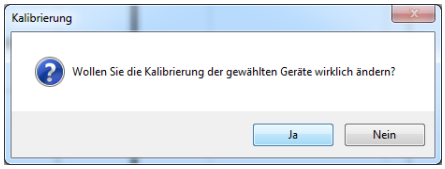
6 Calibration

6.1 New Calibration

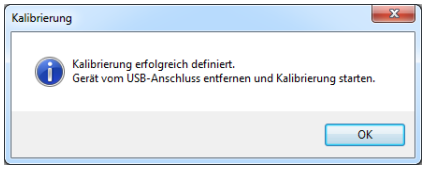
Base station

The function New Calibration buffers the current date as the calibration date in the base station. This procedure is fixed with the entry: Calibration done in the Event Report. No data are deleted and the LIBERO W continues regular operation.

Procedure

1. 

Yes: Confirms the change of date.
The date at the time of confirmation is accepted as the current date.

2. 

OK: Closes the window.

3. The LIBERO W is again ready to run.

Sensor

The next time a connection is made to the base station, the buffered calibration date is transferred to the sensors as “Calibration Date": This date and the “Reminder to calibrate sensor” (if configured) determine the time of the next CAL warning.

⇨ 3.3.4 *Device Options I*

Before calibration

LIBERO W

Zusätzliche Informationen

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

Geräte Information

Basis Typ:	LIBERO WB V6.11	Status:	Aufzeichnen
Basis ID:	81001068	Log Intervall:	1 M
Basis Batteriestatus:	Gut	Zeitbasis:	UTC +01:00
Sensor Typ:	LIBERO WSI V7.98	Start am:	23.Jun.2017 15:04:23
Sensor ID:	83000124	Datum der Kalibrierung:	23.Jun.2017 14:37:57
Sensor Batteriestatus:	Gut	Profil ID / Checksumme:	ABCDEFGH / 2.920.910.004

After calibration
New date set

LIBERO W

Zusätzliche Informationen

Download the LIBERO software from www.elpro.com/downloads

- Use liberoCONFIG to configure LIBERO with your own settings
- Use elproVIEWER to access all recorded data and create own reports

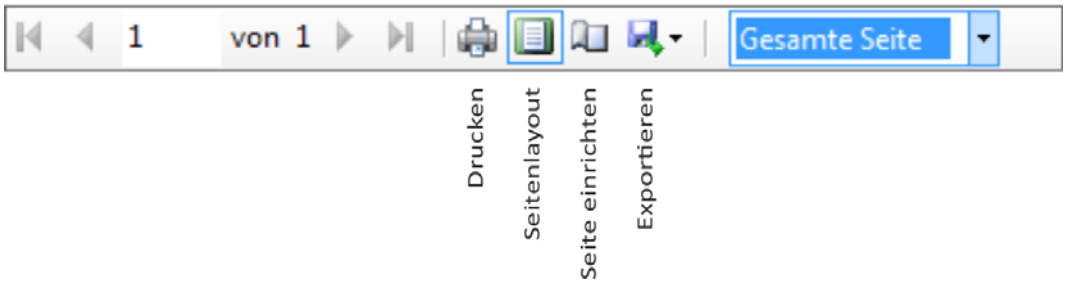
Geräte Information

Basis Typ:	LIBERO WB V6.11	Status:	Aufzeichnen
Basis ID:	81001068	Log Intervall:	1 M
Basis Batteriestatus:	Gut	Zeitbasis:	UTC +01:00
Sensor Typ:	LIBERO WSI V7.98	Start am:	23.Jun.2017 15:04:23
Sensor ID:	83000124	Datum der Kalibrierung:	26.Jun.2017 15:39:30
Sensor Batteriestatus:	Gut	Profil ID / Checksumme:	ABCDEFGH / 2.920.910.004

6.2 View/Print Calibration

Shows a calibration report. This report contains as many pages as LIBERO W selected.

Print report



Print menu bar

Default Calibration

A new device without optional calibration is supplied by ELPRO-BUCHS AG with a validation certification which can be viewed with “View Calibration”

Example: Validation Certificate

Validation Certificate

Certificate Number: **VC-83000028**

Device Type:	LIBERO WSI
Device ID:	83000028
Device Revision:	7.2

ELPRO performs a 100% temperature calibration of all sensors plus a 100% electrical calibration of all electronics. Additionally the measurement accuracy and functionality is verified and documented with a system calibration of a representative sample of LIBEROs after final assembly. ELPRO certifies that the LIBERO mentioned above has been manufactured according to ELPRO’s Quality Assurance procedures and has passed the following tests:

Test and method	Acceptance criteria	Result
Temperature calibration of all sensors (100%) at 0 °C	±0.3 °C	passed
Temperature calibration of all sensors (100%) at 15 °C	±0.3 °C	passed
Temperature calibration of all sensors (100%) at 25 °C	±0.3 °C	passed
Electrical calibration of all electronics (100%) at -35 °C	±0.4 °C	passed
Electrical calibration of all electronics (100%) at 0 °C	±0.2 °C	passed
Electrical calibration of all electronics (100%) at 50 °C	±0.3 °C	passed
Temperature calibration of assembled LIBERO WSI (representative sample) at -35 °C	±1.0 °C	passed
Temperature calibration of assembled LIBERO WSI (representative sample) at 0 °C	±0.4 °C	passed
Temperature calibration of assembled LIBERO WSI (representative sample) at 25 °C	±0.4 °C	passed
Temperature calibration of assembled LIBERO WSI (representative sample) at 50 °C	±0.8 °C	passed

Calibration standards are calibrated by an ISO/IEC 17025 accredited laboratory and are traceable to ISO/IEC 17025, and/or national/international standards (equivalent to NIST, UKAS, DAkkS).

All certificates for the used calibration standards are on file at ELPRO.

This is a non-signed document produced (and reproduceable) by a validated system. Page 1/1

The customer can download a production calibration certificate from the website www.libe-row.elpro.com. Use the sensor ID as identification.

Example: Production Calibration Certificate

Production Calibration Certificate

83000725

Certificate for LIBERO ID	**83000725**
LIBERO sensor type	LIBERO WSI
Calibration date	26. Jul. 2017

Process of calibration
The calibration follows a certified quality system according ISO 9001. Therefore, a comparison with certified calibration standards (reference instrument, reference material) is performed.

Calibration standards & traceability
Calibration standards are calibrated by an ISO/IEC 17025 accredited laboratory and are traceable to ISO/IEC 17025, and/or national/international standards (equivalent to NIST, UKAS, DAkkS).
Certificates for the used calibration standards are on file at ELPRO.

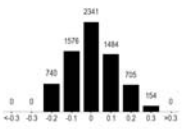
Measuring uncertainty
The measurements, the uncertainties with confidence probability and calibration methods are given in the table below.
The reported expanded uncertainty of measurements is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The uncertainty includes the uncertainty of the standard, the processes of calibration, the conditions of measurement and the device to calibrate.

Measuring results

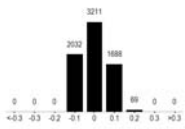
	Result	Unit	Rated value	Observed value	Difference	Allowed tolerance	Uncertainty	Standard
Electrical Calibration	passed	°C	-35.00	-35.10	-0.10	±0.40	0.13	LBWT-DIB-R6-1
Electrical Calibration	passed	°C	0.00	-0.20	-0.20	±0.20	0.13	LBWT-DIB-R6-1
Electrical Calibration	passed	°C	50.00	50.00	0.00	±0.30	0.13	LBWT-DIB-R6-1
Temperature Calibration	passed	°C	0.00	see below	see below	±0.30	0.19	PM193
Temperature Calibration	passed	°C	15.00	see below	see below	±0.30	0.19	PM193
Temperature Calibration	passed	°C	25.00	see below	see below	±0.30	0.19	PM193

Observed values sensor calibration
The sensor used in LIBERO ID 83000725 is from lot NDTA160330-3W-26.
The calibration results of the sensors in lot NDTA160330-3W-26 are noted below.

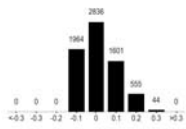
0.0 °C



15.0 °C



25.0 °C



The LIBERO conforms to the given specifications ☒ Yes ☐ No

This is an electronically released document which is valid without handwritten signature.
This certificate shall not be published or reproduced other than in full, except with the prior written approval of the issuing laboratory.

Version: 1.3 | Page 1/1

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9470 Buchs | Switzerland
T +41 81 552 08 08 | swiss@elpro.com

Optional single-point or multi-point calibration

The LIBERO W may also be calibrated using a single-point or multi-point calibration procedure depending on customer requirements. This calibration is traceable to national standards. After the calibration, the document shows true and rated values instead of system test values. This document may be printed out for inspection purpose.

7 Miscellaneous

7.1 elproVIEWER and Software License

Registration and download

The elproVIEWER software is ready for download as a demo version at: https://shop.elpro.com/de/artikel/900628/SWA_elproVIEWER+Professional+DEMO. The license key required for licensing is sent to you free of charge by e-mail. You have then 30 days to test the elproVIEWER analysis software.

License

Dear customer,

Thank you for having chosen an ELPRO product.

Please find below the link to the setup program for liberoCONFIG as well as a personal serial number that is required during installation. Click the link and the installation will start automatically. Please be aware that the download link works just twice. In case it is not valid anymore, please register again.

Yours sincerely,
ELPRO-BUCHS AG

Download link:
http://www.elpro.com/en/support-center/software-downloads/software-downloads/at/download/dc/577cf2970b04a91fe9a28b63da10f1bb51d2a3087ce0a/

License information:
==========
User name: Gubler Andreas
Company name: ELPRO-BUCHS AG
Serial number: 0000-0000-0000
==========

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This license information is sent in the e-mail:

==========

User name: xxxxxx xxxxxx

Company name: zzzzzz

Serial number: yyyy-yyyy-yyyy

==========

7.2 ELPRO Customer Service Information

If you need any assistance from the ELPRO Customer Center, please make sure you can provide the following information:

- Software version; select "Info" in the "Application" menu
- Used LIBERO type
- PDF report of the LIBERO
- Which actions were carried out before the problem arose (exact description of the LIBERO handling: time, temperature, shock etc.)
- Specification of the error, error codes

7.3 Change Reports

Author	Date	Version	Description
AG	04-06-2017	-	First edition
AG	07-27-2017	a	Description of liberoCONFIG introduced
AG	05-01-2018	b	Changes to new configuration software and new data logger functions: - Measurement range up to -35°C - Use of lithium-metal batteries possible - Calculation with TAU 90 - Function: Unpairing in no longer necessary.

8 LIBERO W Safety Instructions

8.1 Battery

Use only one battery type in the base station.

Always use only one battery type in the sensor. The use of lithium-metal batteries is absolutely necessary with a temperature range of -35°C to -10°C.

After removing lithium-metal batteries, only replace them with new batteries, otherwise the battery warning function does not function.

8.1.1 Base Station

3 pcs size AAA (LR03)

- Non-rechargeable
- No shipping declaration necessary
- The battery may explode at temperatures exceeding 70°C.
- Do not throw the LIBERO W base station into fire, the battery can explode
- Then operating range of the base station from 0°C to 50°C is not dependent on the battery type.

8.1.2 Sensor

Sensor: 2 pcs size AAA (LR03)

- Non-rechargeable
- No shipping declaration necessary
- The battery may explode at temperatures exceeding 70°C.
- Do not throw the LIBERO W sensor into the fire, the battery can explode
- Lithium-metal batteries must be used at temperatures below -10°C.

8.2 IP

LIBERO W Base station

IP41

- Protection against ingress of solid objects (diameter > 1 mm) - dust protected
- Protection against vertically falling drops of water
- Protection from persons accessing dangerous parts with wires

LIBERO W Sensor

IP67

- Protection against ingress of solid objects - dust protected
- Protection against ingress of water – temporary immersion

8.3 Wireless

Data transfer

Data transfer between the sensor and the base station is protected against manipulation by checksums.

The standards applied for assessing the product defines limits for use in residential, business, and commercial areas, and in small firms, provided the use of the product is designed for these operating environments.

RED

2014/53/EU

CE

EN 60950-1:2006+A11:2009+A12:2011+A1:2010+A2:2013+AC:2011

ETSI EN 301 489-1 V1.9.2.:2011

ETSI EN 301 489-17 V2.2.1

ETSI EN 300 328 V1.8.1:2012

ETSI EN 300 328 V1.9.1. (2015)

EN62479:2010

FCC

This device complies with the FCC part 15 rules for a Class B digital device. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Modifications or changes to this equipment may render void the user's authority to operate this equipment.

To comply with FCC radiation exposure limits for general population, the transmitter with its antenna must be installed such that a minimum separation distance of 20 cm is maintained between the radiator (antenna) and all persons at all times and must not be collocated or operating in conjunction with any other antenna or transmitter.

FCC ID: S9NSPBTLERF

Industry Canada RF

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference, including interferene that may cause undesired operation of the device.

Cet appareil est conforme à la norme RSS Industrie Canada exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes

1. Cet appareil ne peut pas provoquer d' interférences
2. Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

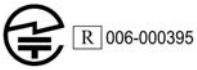
IC: 8976C-SPBTLERF

To comply with Industry Canada RF radiation exposure limits for general population, the transmitter with its antenna must be installed such that a minimum separation distance of 20 cm is maintained between the radiator (antenna) and all persons at all

times and must not be collocated or operating in conjunction with any other antenna or transmitter.

" Pour être conforme aux limites d'exposition aux rayonnements radiofréquence définies pour la population générale par les normes FCC et Industrie Canada, l'émetteur avec son antenne doit être installé de telle manière qu'une distance de séparation d'au moins 20 cm soit maintenue entre l'élément rayonneur (antenne) et toutes personnes à tout moment, et ne doit pas être placé à côté d'une autre antenne ou d'un autre émetteur, ou utilisé en combinaison avec de tels éléments ".

Japan



8.4 Disposal

Europe

WEEE

This product has to be disposed of according to WEEE (Waste Electrical and Electronic Equipment, 2002/96/EC)!

U.S.A.

Find a drop-off center for electronic waste in your area to dispose of the LIBERO W. In any case, it is recommended to contact the local EPA (U.S. Environmental Protection Agency) office. http://www.epa.gov

International

If possible, dispose of the LIBERO W in an official drop-off center for electronic waste in your area. Many countries enforce electronic recycling.

http://en.wikipedia.org/wiki/Electronic_waste

8.5 Environmental Conditions

Base station

- The material of the base station case consists of ABS, plastic.
- The base station has a weight of approx. 190 g (incl. batteries).
- Ambient conditions for the base station:
  +0 °C to +40 °C
  10% rH to 100% rH

Normal operating conditions

Ambient temperature	+20°C
Logging interval	3 minutes
Optical and acoustic signaling	6 hours per month
Distance from sensor to base station	50 cm, unobstructed line of sight
Material in cavity	Glass
Wireless connection quality	>60%
Signal volume	Minimum
Battery storage life	None

Sensor

- The material of the sensor case consists of ABS, plastic.
- The sensor has a weight of approx. 65 g (incl. batteries).

Ambient conditions for the sensor
Operating range=measurement range=application range*Measurement range accuracy*

±1.0°C within the range of -35.0°C to -10.1°C

±0.5°C within the range of -10.0°C to -0.1°C

±0.4°C within the range of 0.0°C to +25.0°C

±0.8°C within the range of +25.1°C to +50.0°C

Internal clock: ± 20 minutes per year

IR radiation
Microwaves
X-rays

Pay attention to the following if you use the LIBERO W under exceptional environmental conditions:

- IR radiation (heat) and superheated steam can result in deformation of the case.
- There is a risk that the battery may explode if it is used in conjunction with microwaves.
- X-rays can harm the LIBERO W. The specifications are on file at ELPRO-BUCHS AG.

⇨ 3.3.6.1 *Status Information and Error Messages in the PDF report*

Appendices

Event Entries

Information

Event	Text in Analysis Report
System was reconfigured	System configuration complete
Wireless connection between sensor and base station interrupted	No wireless connection to sensor
Wireless connection between measuring sensor and base station interrupted	No connection to measuring sensor
Sensor with ID 123456789 was unpaired from base station	Sensor unpaired 123456789
Sensor with ID 123456789 was paired to base station	Sensor paired 123456789
Failed pairing between the base station and the sensor	Sensor pairing failed
Transfer of buffered data from sensor was completed	Synchronization complete
Battery change on base station was completed	Base station batteries changed
Battery change on sensor was completed	Sensor batteries changed
Sensor calibration was completed	Sensor calibration complete
Marking was set with the START/MARK/ ACKNOWLEDGEMENT button – this indicates that somebody accessed the device and checked the min./max.temperature values	Marking set
The device was read out	PDF generated
Time was reset	Summer/winter time change
Time zone was changed	Time zone changed

Warnings

Event	Text in Analysis Report
Temperature limit L1 (=X°C) undershot	L1 below X°C
Temperature limit H1 (=Z°C) exceeded	H1 above Z°C
The base station battery level is too low	Low battery level in base station
The sensor battery level is too low	Low battery level in sensor
Calibration running	Calibration required
There is no connection between sensor and base station. The number of maximum defined n.c. values is reached	Wireless connection interrupted
The periodic device readout is due	Generate PDF
Warning reset by temperature restabilization as per configuration	Temperature in G

Alarms

Event	Text in analysis report
Temperature limit L1 (=X°C) undershot	L1 below X°C
Temperature limit L1 (=Y°C) undershot	L2, below Y°C
Temperature limit L3 (=J°C) undershot	L3, below J°C
Temperature limit H1 (=Z°C) exceeded	H1, above Z°C
Temperature limit H2 (=I°C) exceeded	H2, above I°C
Temperature limit H3 (=K°C) exceeded	H3, above K°C
Temperature limit H4 (=L°C) exceeded	H4, above L°C
The alarm was acknowledged by generating the PDF report	Report generated
The alarm was acknowledged by pressing the START/MARK/ACKNOWLEDGEMENT button	Button pressed
The buffered data in the sensor were transferred and analyzed The alarm was acknowledged automatically because the transferred values were OK	Temperature synchronized

Errors

Base station device error

Sensor device error

Analysis report

The analysis report lists only the last 275 events.

Number of entries

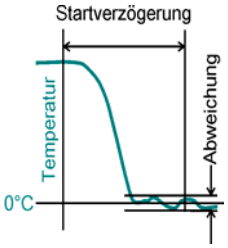
A maximum of 1050 events per category (alarm, warning, information) are logged. If more than 1050 events are logged for an event type, the last 1050 event entries are always retained (LIFO = Last In, First Out). This information can be evaluated in elproVIEWER and you can view all existing events.

Calibration Methods

- 0°C ice water
  Calibration, which uses the triple point of ice-water (0°C) as reference temperature. You can expect an accuracy of approx. 0°C ±0.1 K.
- Calibration bath
  If a calibration bath is used (-10°C to 50°C), the reference sensor should be fastened to the LIBERO W sensor under calibration. This ensures there is no temperature difference between the sensor and reference sensor. The watertight packed LIBERO W sensor should be immersed completely and the bath should be stable. Also make sure that the LIBERO W sensor reaches the reference temperature. Repeated measuring and averaging can improve the measured values.

Ice-Water Calibration Procedure

1. Fill up an insulated container, e.g. a camping coolbox with ice cubes. Use ice from an ice machine (-1°C) and not from the freezer (-20°C). Fill the coolbox with cold water up, till to the filling height of the ice. In order to mix it well, stir the contents.



2. The "Logging Interval" is set to 1 minute, the "Start Delay" to 60 minutes, and the "Measurement Time" to 10 minutes.
3. Wrap up the LIBERO W sensor in watertight packaging material, e.g. latex glove.
4. Immerse the LIBERO W sensor fully in the ice water.
5. Carry out the calibration.
6. Evaluate the calibration.

   ⇨ 6.2 *View/Print Calibration*

The calibration process lasts as long as the total time required for "Start Delay" + "Measurement Time" for each calibration point.

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Für lokale Vertretungen
siehe:
www.elpro.com

Bedienungsanweisung

LIBERO W

LI6005Eb