



ELPRO LIBERO Gx Real Time Monitoring Solution Instruction Manual

[Home](#) » [ELPRO](#) » ELPRO LIBERO Gx Real Time Monitoring Solution Instruction Manual 

Contents

- [1 ELPRO LIBERO Gx Real Time Monitoring Solution](#)
- [2 Product Usage Instructions](#)
- [3 Safety Instructions](#)
- [4 Quick Start](#)
- [5 System Overview](#)
- [6 Functionality and Modes](#)
- [7 Further instructions](#)
- [8 Accessories](#)
- [9 Disposal](#)
- [10 Declaration of Conformity](#)
- [11 FCC/ISED Regulatory notices](#)
- [12 Documents / Resources](#)
 - [12.1 References](#)
- [13 Related Posts](#)



ELPRO LIBERO Gx Real Time Monitoring Solution



Product Information

Specifications

- Brand: ELPRO
- Model: LIBERO Gx
- Types: GS, GF, GL, GE, GH
- Wireless data logger with cellular data transmission (LTE-M / NB-IoT)
- Display: Yes
- Memory: Internal
- Usage: Single-use and Multi-use options available
- Temperature and humidity sensors included
- For detailed technical specifications, visit www.elpro.com/liberog

Product Usage Instructions

Safety Instructions

Ensure proper environmental conditions are maintained to prevent damage to the device. Avoid exposure to IR radiation, microwave radiation, and X-ray. Do not remove or exchange the battery.

Safe Use

Ordinary users can install and operate the device without additional safeguards.

Radio Equipment

This device emits radiated power on specific LTE bands. Maximum power is 23 dBm.

Quick Start

Refer to the quick start guide provided in the manual for initial setup and usage.

System Overview

The LIBERO Gx is a wireless data logger with various types available for different applications. For detailed software support, visit the online knowledge base at <https://www.elpro.cloud/support/elpro-cloud>.

Functionality and Modes

The data logger records temperature and humidity values based on configured settings and evaluates them against defined alarm criteria. The display indicates the current mode of operation.

FAQ

- **Q: Can the battery be replaced?**

A: No, do not remove or exchange the battery. Refer to the material safety data sheet for more information.

- **Q: What type of data transmission does the LIBERO Gx use?**

A: The LIBERO Gx uses cellular data transmission, specifically LTE-M / NB-IoT.

Safety Instructions

Intended Use

All electrical devices produced by ELPRO are intended for commercial use („business to business“).

Environmental Conditions

- Temperature
Temperatures outside of operation range may damage the battery. For the operation range see specifications on www.elpro.com.
- Water/Humidity
Limited protection against dust ingress and protected against splash water from any direction.
- Pressure
Overpressure or vacuum can damage the device. Do not vacuum if used for airfreight.
- Mechanical Force
Avoid violent knocks and blows. Avoid violent knocks and blows.
- IR radiation
Avoid exposure to IR radiation (heat and superheated steam can result in deformation of the case).
- Microwave
Do not expose to microwave radiation (risk of battery explosion).
- X-ray
Avoid long-term exposure to X-ray (risk of harm to device). Tests of short x-ray exposures as part of transportation processes (airports, customs) have been performed and documented (available at ELPRO).

Battery

Do not remove or exchange battery. Material safety data sheet according to provisions of directive 91/155/EEC and shipping information are available from ELPRO. Do not subject the batteries to mechanical stress nor dismantle them. The leaking battery fluid is highly corrosive and can generate severe heat when it comes into contact with moisture or it can ignite fire.

Safe Use

Ordinary people may install and operate the device without further safeguards.

Radio Equipment

This equipment emits radiated power: LTE Bands 1, 2, 3, 4, 5, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 66
maximum power: 23 dBm

ELPRO-BUCHS AG

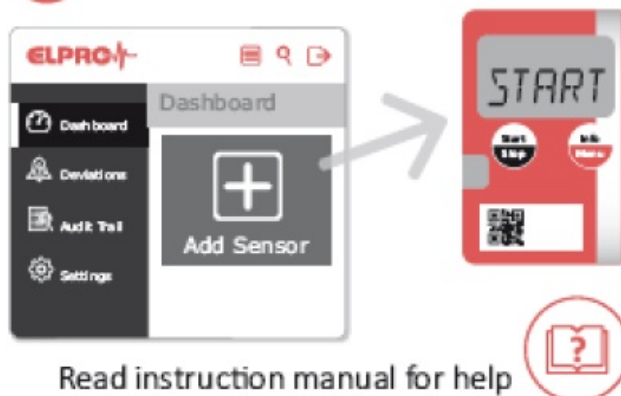
Langaeulistrasse 45
9470 Buchs SG
Switzerland

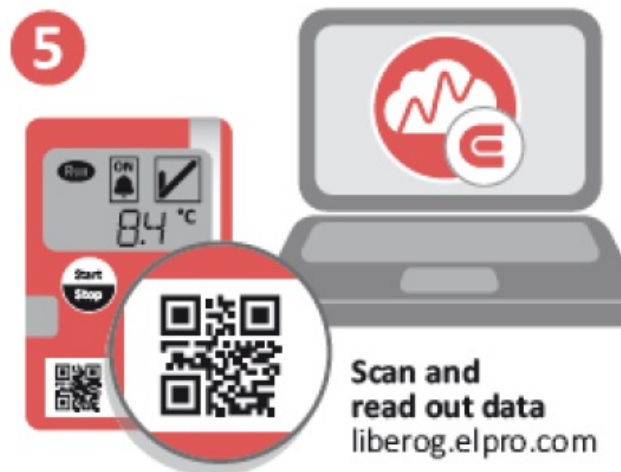
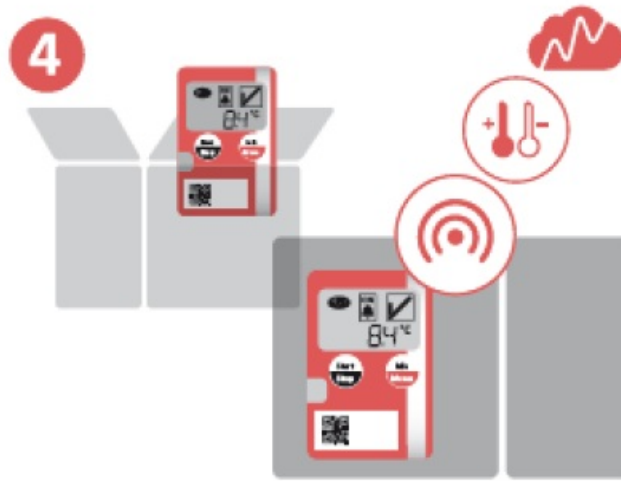
Quick Start



web.elpro.cloud

2 Add Sensor and follow instructions





liberog.elpro.com



elpro.com

1000447_V01

elpro.com/liberog

elpro.com

1000447_V01

System Overview

The LIBERO Gx realtime data logger family described in this document are used for temperature monitoring. The measured values are transmitted via the cellular network to a monitoring software (ELPRO Cloud) which stores and analyzes the data, provides alerts if alarm limits are violated, and generates reports. The system provides

superior visibility and transparency in meeting GxP requirements. The sensor-based monitoring software is easily accessible via a web browser and is also used to configure the devices. The following pages cover the key functionality of the Wireless data logger (LIBERO GS/GL/GF/GH/GE) For more detailed software support, please visit our online knowledge base:

<https://www.elpro.cloud/support/elpro-cloud>



Monitoring Software



LIBERO Gx Types



LIBERO GS



LIBERO GF



LIBERO GL



LIBERO GE



LIBERO GH

Wireless real time data logger, cellular data transmission (LTE-M / NB-IoT). Data logger has a display and internal memory so that all data is available.				
Single-use Shipping g2-8 °C, 15-25 °C	Multi-use Shipping- 20 °C	Multi-use Shipping2- 8 °C, 15-25 °C	Multi-use Container, D ry-ice, Cryo	Multi-use Shipping2 -8 °C, 15-25 °C
internal temperatur e sensor	internal temperatur e sensor	internal temperature sensor	internal / external tem perature sensor	internal temperature / humidity sensor

For technical specifications: please go to www.elpro.com/liberog

Functionality and Modes

Unless otherwise noted the following information applies equally to all three LIBERO models. After configuration of the data logger measured values for temperature and relative humidity (LIBERO CH only) are recorded, stored and evaluated with regard to the defined alarm criteria. The display shows the current mode.

Elements



Generic elements



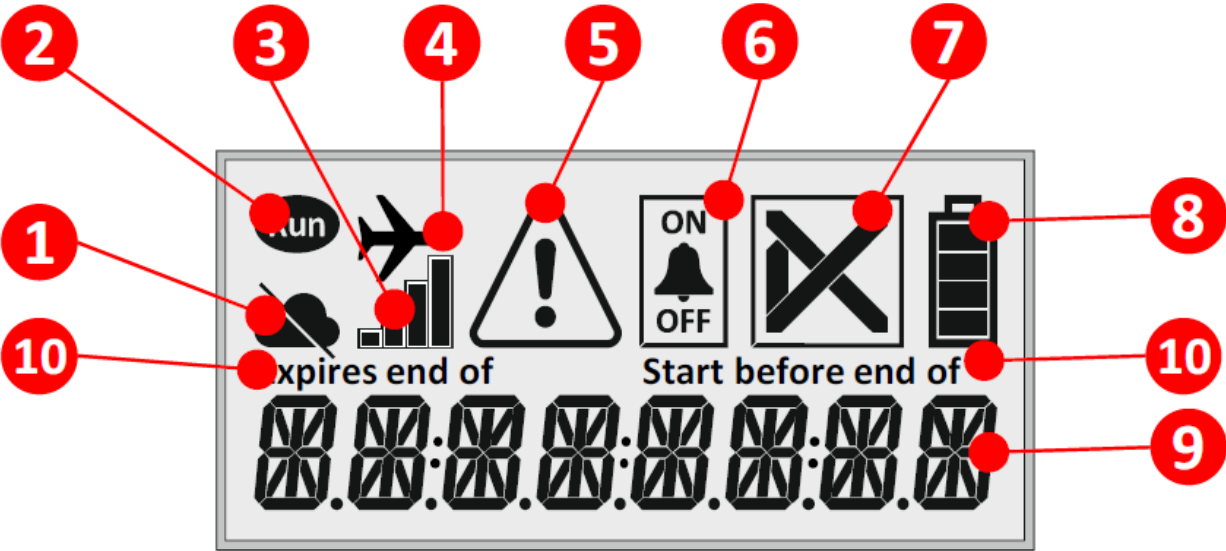
1	Display
2	Start / Stop button <ul style="list-style-type: none"> Press long (> 3 seconds) to start / stop device
3	Light sensor (not configurable in version 1) if light sensor is configured, make sure it is not dirty or covered
4	QR-Code containing Device ID and weblink to cloud
5	Info / Menu button <ul style="list-style-type: none"> Press short (< 1 second) = Info (toggle display / menu) Press long (> 3 seconds) = Menu (open menu / select menu entry)
6	Device type
7	Device ID and Start before date

Specific elements

Logger type	Element	
LIBERO GE	M8 connector for Pt100 probe <ul style="list-style-type: none"> Compare chapter 6.2 – External Pt100 Probes for LIBERO GE for available probes 	

LIBERO GS	Peel-off label containing device ID including barcode	
LIBERO GH	Slot for combined temperature / humidity sensor	

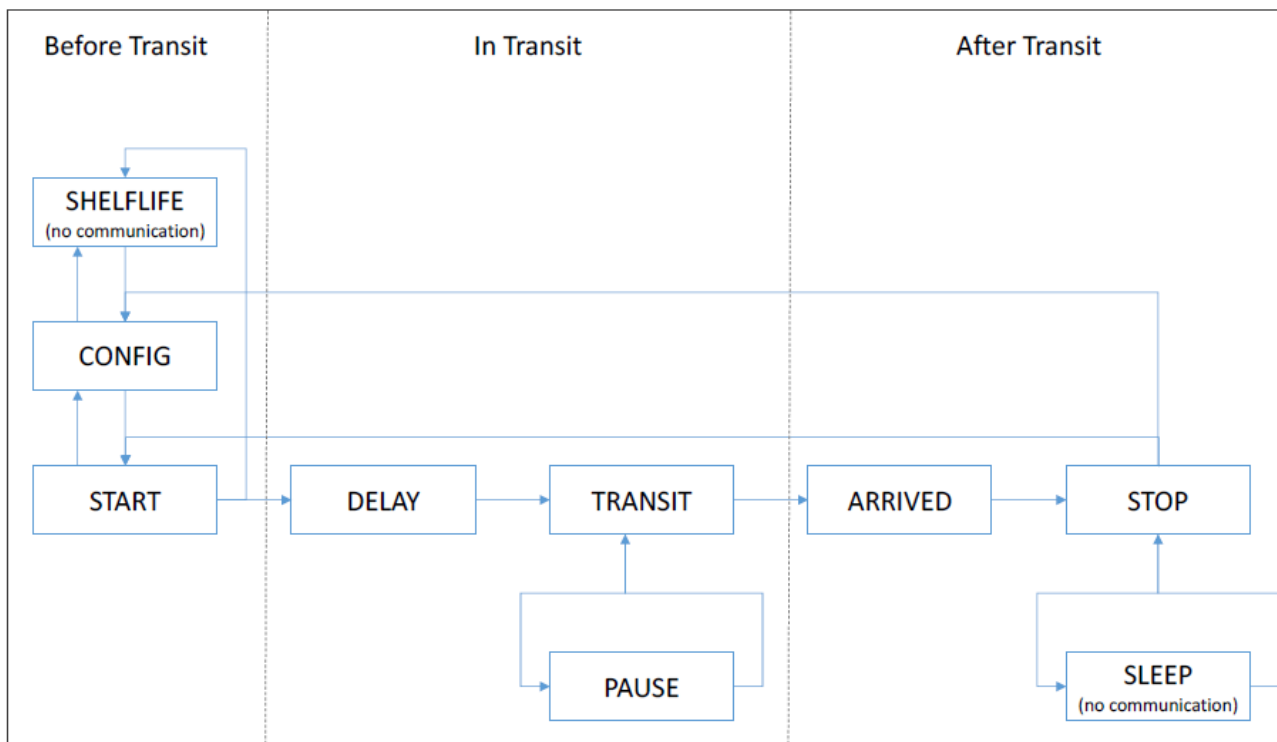
Display



Icon	Name	Description
1	No connection to Cloud	No connection to Cloud possible
2	Run	Measure and buffer Shown in <i>TRANSIT</i> (including <i>DELAY</i> and <i>PAUSE</i>)
3	Communication strengths	Not visible if radio off / flight-mode
4	Flight-mode	Automated detection (Auto on/off) Manual on/off via Menu > <i>RADIO.ON</i> / <i>RADIO.OFF</i>
5	Warning	Warning (configurable) for <ul style="list-style-type: none"> • Temperature warning limit • Communication warning • Tilt/light/shock warning (not in version 1) • Low battery warning (not in version 1)
6	Alarm On/Off	Shows if Alarm criteria are active or paused
7	Alarm Status	Display (configurable in future versions) OK or Alarm (pushed from Cloud) After excursion, Alarm will remain on display
8	Battery level	4 battery levels Level one: approximately 30 days runtime remaining
9	8 Digit display	Various functions, e.g. <ul style="list-style-type: none"> • Temperature • Status • Customer field (e.g. pallet no.)
10	Start before end of / Expires end of	Latest possible start of device / End of runtime

States

LIBERO Gx devices are mainly used to monitor temperature sensitive products through the entire supply chain. The device has various configuration options available. The device states are visualized below and further described in subsequent chapters. The workflow options may vary depending from configuration and device type (e.g. single use).



Shelflife

When delivered, the device is in SHEFLIFE.

- In this state, the device is not transmitting and the display is switched off.
- By pressing the Info button (shortly), the battery level as well as the Start before Date / Expiry Date are visible
- By pressing the Start/Stop button for 3 seconds, the device will activate communication

Configuration

In the CONFIG mode the device connects immediately to the cloud to retrieve a configuration. The display shows CONFIG.

- When entering this state, the device communicates in a higher frequency for the first 30 minutes
- After the receipt of the configuration the device enters START mode immediately
- By pressing the Info button the Start before Date / Expiry Date are visible

Start

When the display shows START, the device is configured properly and can be started according to the chosen start option.

- By pressing the Info button the Profile information / configured info field / Start before Date /Expiry Date are visible
- By pressing the Start/Stop button, the device starts logging (TRANSIT or DELAY). The RUN icon on the display indicates a successful start.
 - The Start/Stop button is inactive for 2 minutes after start
 - To reconfigure a device, delete the sensor in the cloud and reset the device

Delay

Depending on the activation mode, the device will enter into DELAY or TRANSIT.

- The display indicates the DELAY mode by showing DELAY.
 - if DELAY mode “press button to activate alarm limits” is configured, the display shows DELAY
 - if DELAY mode “time delay” is configured, the display shows the remaining time
- By pressing the Info button the actual measurement value / configured info field are visible

Transit

In TRANSIT, the alarm limits are activated (if configured). The Alarm on/off icon appears (Alarm on).

- By pressing the Start/Stop button, the device enters ARRIVED mode. The RUN icon on the display disappears.
 - Ensure to pack the device as such that the start / stop button is not pressed accidentally
- By pressing the Info button the second measurement value (for LIBERO GH/GE) / configured info field are visible

Pause

When the alarm limits are deactivated, the device will enter PAUSE mode. The Alarm on/off icon changes to Alarm off. The device remains logging and transmitting.

- By pressing the Info button the second measurement value (for LIBERO GH/GE) / configured info field are visible

Arrived

After terminating the TRANSIT mode, the device will enter ARRIVED mode. The RUN icon on the display disappears. The device will still log and communicate (interval 2 hours) for 72 hours or until stopped.

- By pressing the Start/Stop button, the device enters STOP mode.
- By pressing the Info button the measurement values / configured info field / Expiry Date are visible

Stop

In STOP mode, the device will not log any measurement data. The device communicates at a reduced interval (12 hours) for 24 hours.

- By pressing the Info button the configured info field / Expiry Date are visible
- By pressing the Menu button, the following menu options are available (select by pressing Menu button):

Sleep

After stop, the device is in SLEEP mode.

- In this state, the device is not transmitting and the display is switched off.
- By pressing the Info button (shortly), the battery level as well as the Expiry Date are visible
- By pressing the Start/Stop button for 3 seconds, the device will activate communication and enter STOP mode.

Menu

The LIBERO G family feature a menu to operate the device:

- To enter the menu, press the Menu button for at least three seconds
- To switch between the menu options, press the Info button shortly

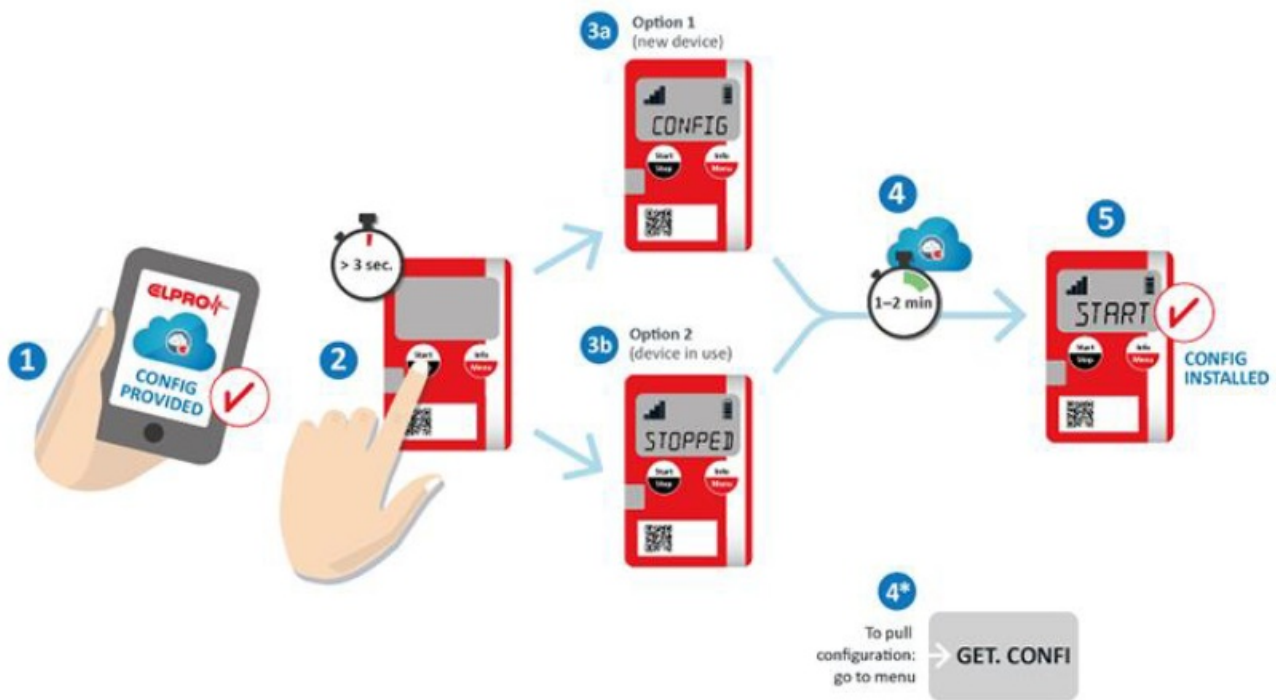
- To select a menu item, press the Menu button for at least three seconds. To confirm, a selected menu item blinks once.
 - The menu item FCT.RESET has to be confirmed by pressing the Info button again shortly
- To leave the menu
 - Wait for 5 seconds
 - Press the Start/Stop button
 - Select the last menu item EXIT

All menu items and its availability are described in the table below (now menu available in SHELF LIFE / SLEEP mode)

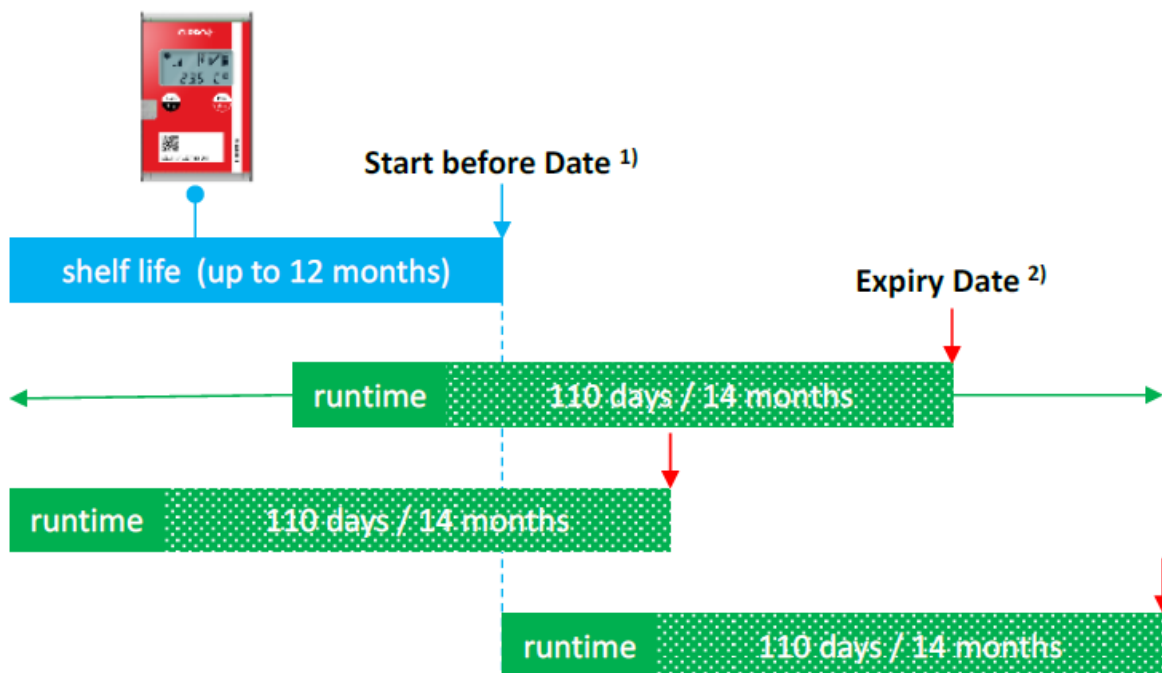
Menu item	State						
	CONFIG	START	DELAY	TRANSIT	PAUSE	ARRIVED	STOP
GET.CONFI trigger communication to pull (new) configuration from cloud	✓	✓					✓
PUSH.DATA trigger communication			✓	✓	✓	✓	✓
RADIO.ON Terminates flight mode (manually)	✓	✓	✓	✓	✓	✓	✓
RADIO.OFF The communication turns off <ul style="list-style-type: none"> • state changes from CONFIG / START to SHEFLIFE (configuration remains if device started again) • state changes from ARRIVED / STOP to SLEEP (device returns to STOP mode if started again) 	✓	✓				✓	✓
LAST COM show last communication time	✓	✓	✓	✓	✓	✓	✓
ALARM.ON activate alarm limits if configured (state changes from PAUSE to TRANSIT)					✓		
ALARM.OFF deactivate alarm limits if active (state changes from TRANSIT to PAUSE)				✓			
MARK set marker (not logged in cloud in version 1)				✓	✓	✓	
EXP DATE show the expiry date of the device	✓	✓	✓	✓	✓	✓	✓
FCT.RESET reset device and confirm by pressing <i>Info</i> button again ⇒ a reset device has to be paired again in cloud	✓	✓					✓

Further instructions

Pairing procedure



Start before Date / Expiry Date



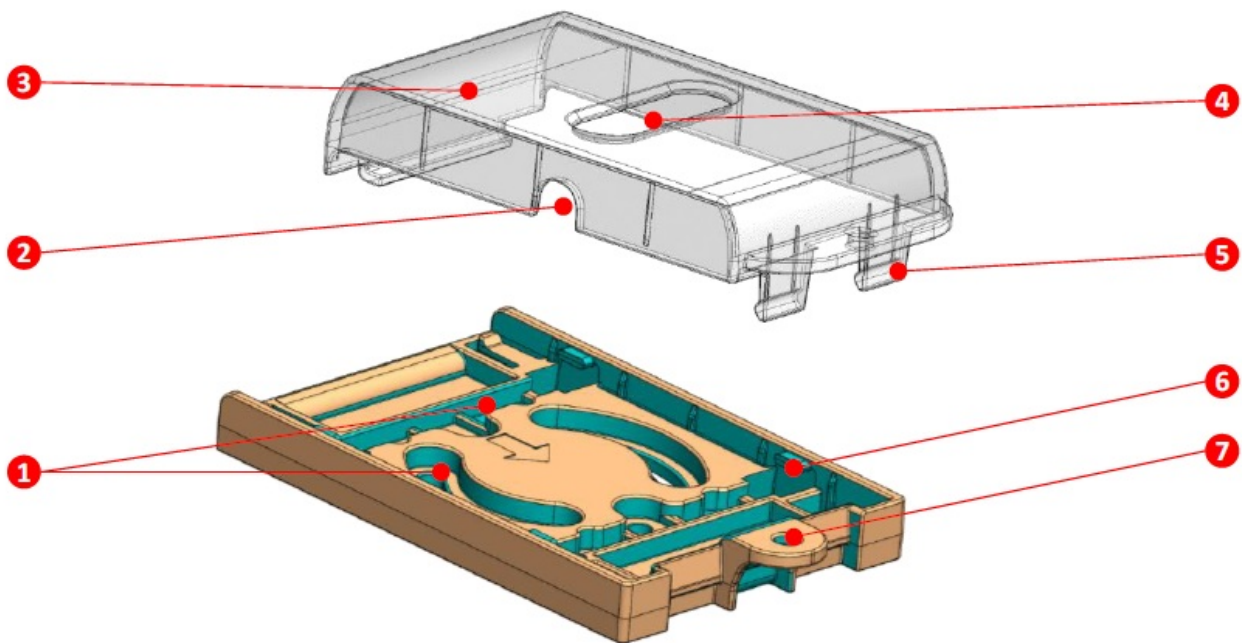
1. The Start before Date indicates the latest possible start of the device. The date (MMM/yyyy) is visible on the device label or via the display (before first device start)
 - Device cannot be started afterwards (for Multi use devices: only applicable to initial start)
2. The Expiry Date indicates the end of the runtime of the device. The date (MMM/yyyy) is visible via the display (> Menu) or in the Cloud. The runtime is calculated from the initial start date.
 - Device stops automatically (logging and communication)

Accessories

Bracket

ELPRO offers an optional bracket (BRA_LIBERO Gx (part number 802286)) for mounting of data loggers if

required, i.e. to containers for cryogenic applications. The bracket is made of solid ABS plastic to protect the data logger but not influence the communication. It consists of an upper and a lower part. The LIBERO is inserted into the lower holder from above.



1	Various mounting options <ul style="list-style-type: none"> • 360° screwing • Adhesive tape • Cable strap
2	Cable wire mouth
3	Transparent cover allows to read display
4	A button slot to operate the device
5	The A snapping mechanism to close the cover
6	Secure fixation for the LIBERO Gx
7	Possibility to lock the cover

External Pt100 Probes for LIBERO GE

LIBERO GE can be used for different applications, depending on the sensor element.

ELPRO offers standard probes for three main applications:

- Cryogenic shipments and storage
- Dry ice shipments and storage
- Freezer (-25 °C...-15°C, typical) / fridge (+2 °C...+8 °C) / ambient (+15 °C...+25 °C) shipments and storage
 - To ensure correct measurement values, do only use external sensor elements provided by ELPRO

Cryogenic shipments and storage

For cryogenic applications the LIBERO GE is usually mounted directly to the container or the container lid, using

the optionally available bracket with the sensor leading into the tank. ELPRO offers an easy, turnkey service for mounting the assembly and calibration.

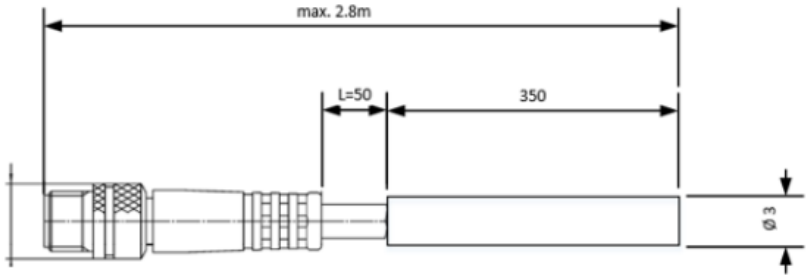
ELPRO offers two Pt100 standard probes for cryogenic applications with M8 connector in different lengths:



PRO_PT100_ST300D3_M8_CRYO (part number 802287)

Note	Cable with mounted M8 plug (male). Probe can be bent (do not kink) once at room temperature, except for the foremost 3 cm.
Probe length	30 cm
Probe diameter	3 mm
Temperature range of probe	-200 °C...+200 °C
- Temperature range Class A	n.a
- Temperature range Class B	-50 °C...+200 °C
Cable length	0.05 m
Cable diameter	4.0 mm
Litz wire	4x AWG 22
Cable material	Silicon
Cable color	black
Temperature range of cable	bendable in the range between -60 °C...+90 °C
Drawing	

PRO_PT100_ST350D3_M8_CRYO (part number 802288)

Note	Cable with mounted M8 plug (male). Probe can be bent (do not kink) once at room temperature, except for the foremost 3 cm.
Probe length	35 cm
Probe diameter	3 mm
Temperature range of probe	-200 °C...+200 °C
- Temperature range Class A	n.a
- Temperature range Class B	-50 °C...+200 °C
Cable length	0.05 m
Cable diameter	4.0 mm
Litz wire	4x AWG 22
Cable material	Silicon
Cable color	black
Temperature range of cable	bendable in the range between -60 °C...+90 °C
Drawing	

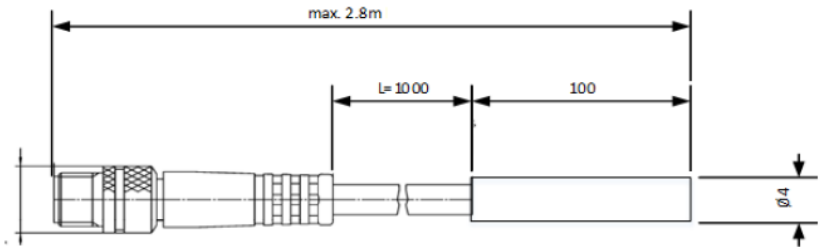
Dry ice shipments and storage

Also in dry ice applications, the LIBERO GE is usually attached to the outside of the container using the optionally available bracket and the sensor leads into the tank. ELPRO offers an easy, turnkey service for mounting the assembly and calibration.

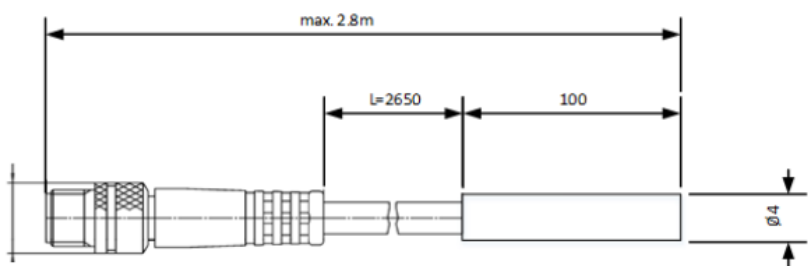
For this application, ELPRO offers two standard probes with a probe length of 10 cm and Teflon cable in different lengths:



PRO_PT100_ST100D4_PTFE1_M8 (part number 802284)

Note	Cable with mounted M8 plug (male).
Probe length	10 cm
Probe diameter	4 mm
Temperature range of probe	-90 °C...+250 °C
- Temperature range Class A	-30 °C...+250°C
- Temperature range Class B	-50 °C...+250 °C
Cable length	1 m
Cable diameter	3.5 mm
Litz wire	4x AWG 28
Cable material	PTFE
Cable color	white
Temperature range of cable	bendable in the range between -90 °C...+70 °C
Drawing	

PRO_PT100_ST100D4_PTFE2.65_M8 (part number 802285)

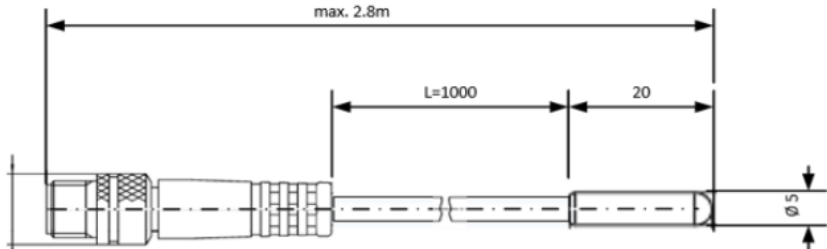
Note	Cable with mounted M8 plug (male).
Probe length	10 cm
Probe diameter	4 mm
Temperature range of probe	-90 °C...+250 °C
- Temperature range Class A	-30 °C...+250°C
- Temperature range Class B	-50 °C...+250 °C
Cable length	2.65 m
Cable diameter	3.5 mm
Litz wire	4x AWG 28
Cable material	PTFE
Cable color	white
Temperature range of cable	bendable in the range between -90 °C...+70 °C
Drawing	

Freezer / fridge / ambient shipments and storage

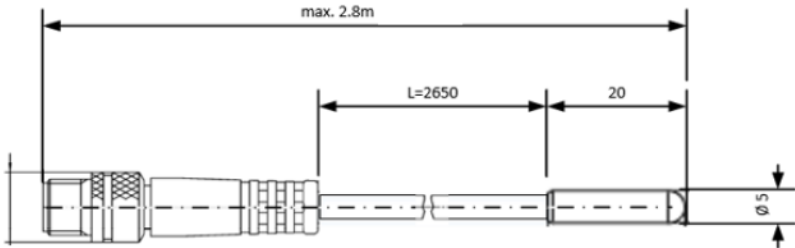
For temperature monitoring of freezers, refrigerators or rooms, ELPRO offers two waterproof silicon Pt100 probes with different cable lengths as standard articles:



PRO_PT100_P20D5_PLA1_M8 (part number 802290)

Note	Cable with mounted M8 plug (male). Waterproof
Probe length	2 cm
Probe diameter	5 mm
Temperature range of probe	-50 °C...+105 °C
- Temperature range Class A	-30 °C...+105 °C
- Temperature range Class B	-50 °C...+105 °C
Cable length	1 m
Cable diameter	4.0 mm
Litz wire	4x AWG 24
Cable material	Silicon
Cable color	black
Temperature range of cable	bendable in the range between -60 °C...+90 °C
Drawing	

PRO_PT100_P20D5_PLA2.65_M8 (part number 802291)

Note	Cable with mounted M8 plug (male). Waterproof
Probe length	2 cm
Probe diameter	5 mm
Temperature range of probe	-50 °C...+105 °C
- Temperature range Class A	-30 °C...+105 °C
- Temperature range Class B	-50 °C...+105 °C
Cable length	2.65 m
Cable diameter	4.0 mm
Litz wire	4x AWG 24
Cable material	Silicon
Cable color	black
Temperature range of cable	bendable in the range between -60 °C...+90 °C
Drawing	

Extension of sensor cables

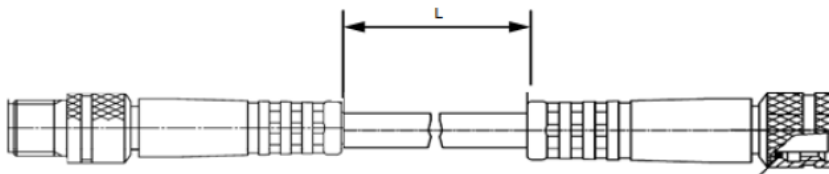
An extension cable with two M8 connectors at a length of 1 m is also available to attach the data logger and the probe.

ATTENTION:

Total cable length (including sensor and cable tail on the data logger) must not exceed 3 m!



ECA_PLA_1M_M8 (part number 802282)

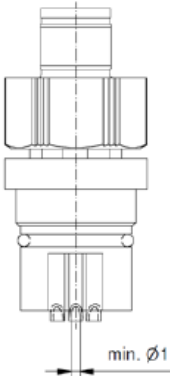
Note	M8 plugs on both ends (male, female)
Probe length	n.a.
Probe diameter	n.a.
Temperature range of probe	n.a.
- Temperature range Class A	n.a.
- Temperature range Class B	n.a.
Cable length	1 m
Cable diameter	3.5 mm
Litz wire	4x AWG 28
Cable material	PVC
Cable color	black
Temperature range of cable	bendable in the range between -60 °C...+90 °C
Drawing	

M8 connector incl. mounting service on Pt100 probe

ELPRO offers a mounting service, adding an M8 connector to a Pt100 temperature sensor in order to use any 4-wire Pt100 probe in combination with LIBERO CE.



CTR_M8_SER (part number 802289)

Note	M8 connector incl. mounting on any 4-wire Pt100 temperature probe
Probe length	depends on the selected probe
Probe diameter	depends on the selected probe
Temperature range of probe	depends on the selected probe
- Temperature range Class A	n/a
- Temperature range Class B	n/a
Cable length	depends on the selected probe
Cable diameter	depends on the selected probe
Litz wire	must be 4-wire
Cable material	depends on the selected probe
Cable color	depends on the selected probe
Temperature range of cable	depends on the selected probe
Drawing	

Disposal

Device



Electronic devices are recyclable and do not belong in the household waste. Dispose of the product at the end of its service life in accordance with applicable laws. Remove any batteries and dispose of them separately from the product.

Batteries



You are legally obliged to dispose of all used batteries according to applicable laws; disposal via household waste is prohibited. Batteries are marked with the adjacent symbol, under which is printed the chemical symbol for the heavy metal (Cd = cadmium, Hg = mercury, Pb = lead). This indicates the battery contains hazardous material. You can dispose of used batteries at collection points in your local community. Please help protect our environment and dispose of batteries properly.

Declaration of Conformity

8.1 EU Declaration

- Manufacturer ELPRO-BUCHS AG
- Postal address Langäulistrasse 45
- Postcode 9470
- City Buchs
- Country Schweiz | Suisse | Switzerland
- Phone T +41 81 552 08 08
- E-mail swiss@elpro.com

- Product names LIBERO GE, LIBERO GS, LIBERO GL, LIBERO GH, LIBERO GF ECOLOG-PRO 1TGi, ECOLOG-PRO 1THGi
- Product no. 802325, 802326, 802327, 802328, 802331, 802332, 802333

Description:

LIBERO x and ECOLOG-PRO 1T(H)Gi are devices for continuous temperature or humidity monitoring including an internal radio module for the cellular network. LIBERO GE is operated with an external Pt100 probe, maximum cable length 3m.

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Radio Equipment Directive 2014/53/EU
RoHS Directive 2011/65/EU

Harmonized standards and specifications:

- Electromagnetic compatibility EN 301 489-01:2019 (v2.2.3) EN 301 489-52:2016 (v1.1.0) EN 61326-1:2012
- Radio EN 301 908-1:2019 (v13.1.1)
- Electrical security EN 62368-1:2014 + AC 2015 + A11:2017

This declaration of conformity is issued under the sole responsibility of the manufacturer.
Buchs, September 29, 2020

FCC/ISED Regulatory notices

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

- Unique Identifiers
 - LIBERO GS (Part number: 802326)
 - LIBERO GL (802327)
 - LIBERO GE (802325)
 - LIBERO GH (802328)
 - LIBERO GF (802331)
 - ECOLOG-PRO 1TGi (802332)
 - ECOLOG-PRO 1THGi (802333)
- Responsible Party -U.S. Contact Information ELPRO Services, Inc.
- Address 210 Mill Creek Road
- Postal code 45750
- City Marietta
- Country USA
- Phone +1 740 568 9900
- E-mail usa@elpro.com

FCC Compliance Statement: 47 CFR FCC Part 15 Subpart B

These devices comply with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. These devices may not cause harmful interference, and
2. These devices must accept any interference received, including interference that may cause undesired operation

Marietta, 19" August, 2019

Revision History

Date	Version	Author	Description
04. March 2021	01	SIKAUF	Initial Version

ELPRO-BUCHS AG
 Langäulistrasse 45
 9470 Buchs
 SWITZERLAND
 E-Mail: swiss@elpro.com
 For local agencies see: www.elpro.com

Documents / Resources

	<p>ELPRO LIBERO Gx Real Time Monitoring Solution [pdf] Instruction Manual LIBERO Gx Real Time Monitoring Solution, LIBERO Gx, Real Time Monitoring Solution, Time Monitoring Solution, Monitoring Solution, Solution</p>
------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

References

- [ELPRO Temperature Data Loggers and Monitoring for Pharma ? ELPRO](#)
- [ELPRO Temperature Data Loggers and Monitoring for Pharma ? ELPRO](#)
- [LIBERO G - Support & Knowledge Base](#)
- [elproCLOUD - Support & Knowledge Base](#)
- [User Manual](#)

[Manuals](#), [Privacy Policy](#)

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