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The Datalogger Company

# HAMSTER-A and HOTDOG

ELPRO dataloggers for extreme conditions



ELPRO-BUCHS AG

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HOTDOG and its enhanced and compatible companion HAMSTER-A are proven performers under harsh conditions. Watertight and virtually indestructible, HAMSTER-A and HOTDOG are the ideal instruments for documentation for applications in tough environments.

The dataloggers can be submerged to a maximum depth of 10 meters, or can also be buried directly into the soil. One application may be to leave the datalogger during the cleaning process of your cooling chamber using superheated steam.

The measurement values of the internal temperature sensor are stored in the memory and can be analysed and printed out at any time. Using the elproLOG software and PC interface, the data can be transferred easily to any PC using infrared communication.



#### **HAMSTER-A AT1**

**Part no. 4500**

- Large memory for 64'000 data points
- Operating temperature: -40°C... +70°C (data logging)
- Measuring clock: from 1 minute till 3 hours
- Washable, rugged and shock resistant housing
- Requires elproLOG version 3.31 or higher



#### **HOTDOG DT1**

**Part no. 2201**

- Memory for 16'000 data points
- Operating temperature: -40°C... +70°C (data logging)
- Measuring clock: from 2 seconds till 3 hours
- Washable, rugged and shock resistant housing



#### **Part no.: 2302**

PC-Interface for HAMSTER-A and HOTDOG datalogger  
incl. elproLOG evaluation software and connection cable



#### **Part no.: 2802**

Security mounting bracket, for HAMSTER-A and HOTDOG, stainless steel, lockable, 4 snap locks included, with InPosition marking (shows the time, the datalogger was positioned in the bracket)



#### **Part no.: 2816**

Simple mounting bracket for HAMSTER-A and HOTDOG, stainless steel



#### Technical Data HAMSTER-A AT1

Time range: programmable, 1 min - 3 hrs  
Accuracy: see diagram  
Resolution: 0.1°C (-20°C... +70°C)  
Operating Temp.: -40°C... +70°C (data logging)  
0°C... +50°C (data transfer to PC)

Housing: ABS, SAN, welded  
Weight: 120g  
Sealed: IP68, watertight  
Battery life: 5 years, depending of use  
Battery changeable by ELPRO service only!  
Magnetic interference: Module is switched on for data transfer by a magnetic field.

Calibration certificate included

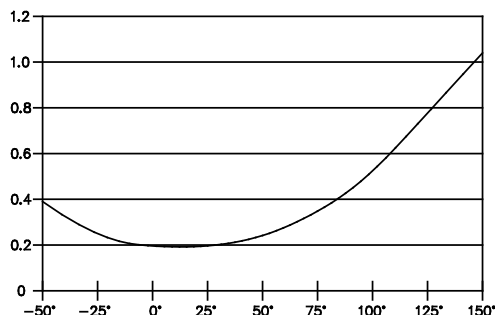
#### Technical Data HOTDOG DT1

Time range: programmable, 2 s - 3 hrs  
Accuracy: see diagram  
Resolution: 0.1°C (-20°C... +70°C)  
Operating Temp.: -40°C... +70°C (data logging)  
0°C... +50°C (data transfer to PC)

Housing: SAN welded  
Weight: 170g  
Sealed: IP68, watertight  
Battery life: 5 years, depending of use  
Battery changeable by ELPRO service only!  
Magnetic interference: Module is switched on for data transfer by a magnetic field.

Calibration certificate included

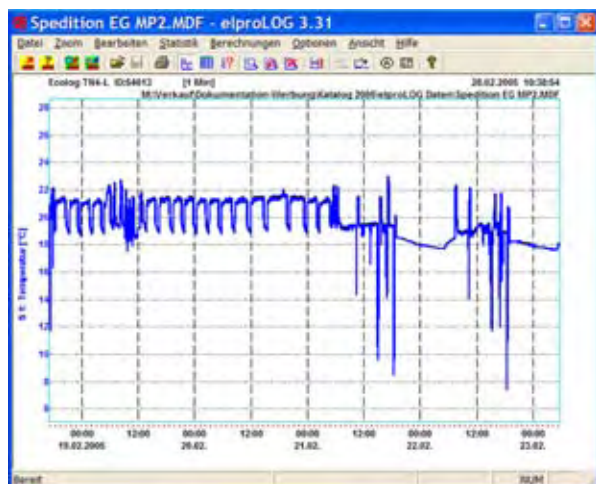
#### Accuracy of NTC temperature sensors



#### Inscription Area

Please attach no markings or labels outside of the designated inscription area as this may interfere with the infrared data communication.





#### elproLOG evaluation software functions

- Programming for all ELPRO dataloggers
- Data readout from datalogger
- Hardcopies of all screens with print preview
- Clearly laid-out graphs and tables
- Min, max values displayed
- Status printout with information about the datalogger
- Statistical data, histogram representation
- Data and graph export
- E-mail: send data file via e-mail to receiver

#### elproLOG, the PC software for all ELPRO dataloggers

elproLOG is an easy-to-use software for fast, efficient data evaluation and reporting.

Using elproLOG, the measured values can be transferred easily to the PC and displayed either in graphical or tabular form. The software helps you comply with the provisions of FDA 21 CFR Part 11, GMP, GAMP4 and GLP.

#### elproLOG software

Part No. 2338-CDV full version

Part No. 2338-CDU update

#### elproLOG QLS Software for FDA, GLP, GMP

Part No. 2339-BL, basic license

Part No. 2339-FL, follow license

for all Windows PCs:

W98, WNT4, W2000, XP

Automatic installation from the CD



Available as EEx models

#### ECOLOG allround datalogger

For temperatures (NTC and PT100) from -200°C .. +550°C, relative humidity 0%..100%, programmable alarm functions, one-year memory capacity (64,000 measured values), large display and multifunctional keypad.



#### The ECOLOG NET logger

LAN/WLAN datalogger for monitoring temperature, humidity and 4..20mA signals. Multi-channel logger system with high data security and alarm features. The ECOLOG-NET is the foundation of the ELPRO Central Monitoring System.



#### All-purpose datalogger HOTBOX-SE

Ideal for service technicians to use at locations where fast, uncomplicated logging of process data is required. The datalogger measures parameters as temperature, humidity CO2, differential pressure and various signals.



#### HOTBOX HTH

Humidity and temperature up to 105°C. Stand-alone datalogger for high temperatures, robust aluminum casing, memory capacity for 64,000 measured values.

Contact us for information about dataloggers, sensors, accessories and alarm devices.

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Elpro-Buchs AG, CB1001Ba, 01.2006

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**ECOLOG-NET**

## Network Dataloggers for Central Monitoring Systems



**ELPRO™** Datalogging Company

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## COMMUNICATION TALENT

### WITH HIGH DATA SAFETY

ECOLOG-NET dataloggers combine the assets of autonomous and safe data logging with the advantages of modern network technology. From the real time display of data points on each PC in your company to fully automated data saves, the new generation of network-compatible dataloggers opens fascinating possibilities for simplifying your workflows in the field of process and quality monitoring.

### Safety and convenience

ECOLOG-NET dataloggers are the ideal units for logging temperature, relative air humidity or 4-20mA signals. The dataloggers store the recorded data in their internal memory. This data can be loaded to the PC via the network. The system offers the highest level of data safety as the datalogger continues data point logging even in the event of a power failure or network interruption by running from its own internal battery.

### Perfect and wireless integration

To make integrating the units in your network as easy as possible, ECOLOG-NET dataloggers are available with a LAN or Wireless LAN interface. On request, the units can also be fitted with PoE modules (Power over Ethernet). PoE allows the units to be supplied directly on the same cable used for the network connection, thereby eliminating the need for additional supply cables.

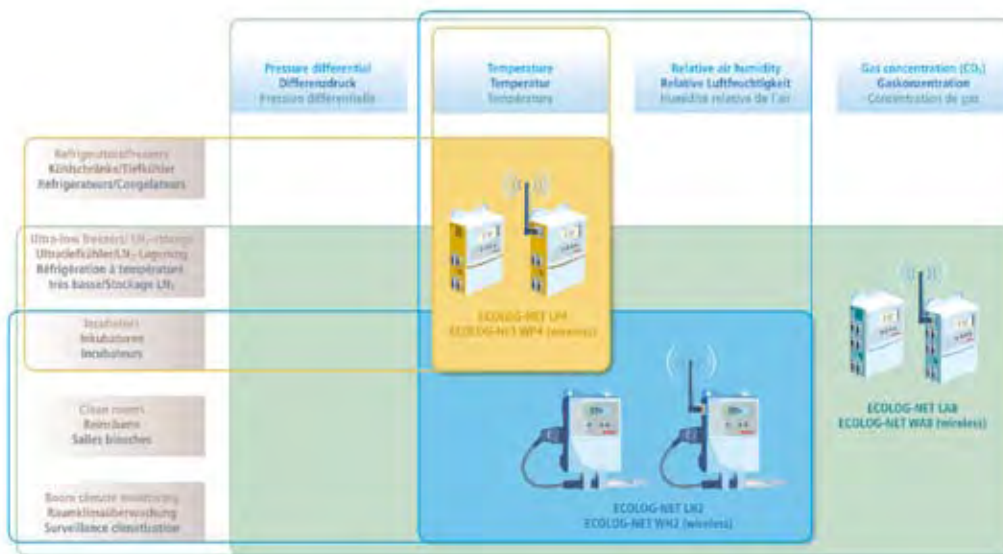
## THE ECOLOG-NET FAMILY

- 4 and 8 channel dataloggers with LAN or Wireless LAN connection (external 10-30VDC voltage supply required for network communication)
- Wireless LAN standard: 802.11b
- PoE support available (spare pairs)
- USB connection for local communication with datalogger
- Large memory capacity for 64,000 data points
- Data safety even in event of power failure due to integrated backup battery
- Large display showing currently measured values and alarm information
- Keypad
- Evaluation on the PC with elproLOG software
- Inputs for recording digital states
- Multifunctional alarm output (break/make contact)
- Measuring interval and alarm thresholds defined by user
- Versatile alarming capabilities:
  - via network (together with optional elproLOG MONITOR)
  - local via integrated alarm contacts
  - alarms shown on display
  - via integrated alarm buzzer
- Open interface for communication with other units and systems
- Robust metal housing

## APPLICATIONS AREAS

### AND USES

- Warehouses and cold storage warehouses
- Cold storage areas for pharmaceutical products
- Chilled showcases and storage areas for food products
- Museums and galleries
- Technical processes
- Air-conditioned areas



## ECOLOG-NET LA8/WA8

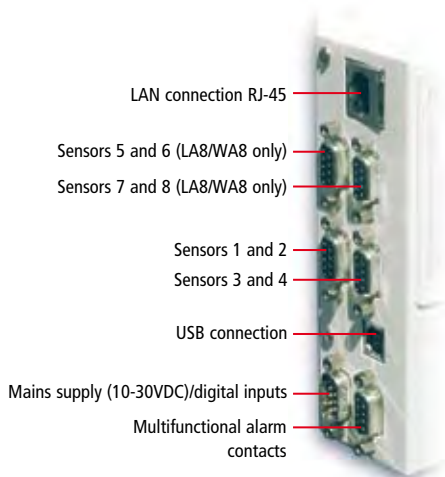


The 8 channel ECOLOG-NET LA8/WA8 is designed for **logging any transmitter signals on the basis of the 4-20mA standard**. The LA8/WA8 can be used, in conjunction with the large range of transducers, for a multitude of applications and industries.

- 8 channel datalogger with 4-20mA inputs for logging differential pressure, CO<sub>2</sub>, particle concentrations, etc.
- Direct display of sensor units
- Special functions for connecting particle counters (whole-number display and limit values)
- Data protection even in event of power failure (for uninterrupted logging; in the event of malfunctioning, an UPS is required to support the sensor supply)

### CONNECTIONS

ECOLOG-NET offers versatile communication capabilities. In addition to the LAN connection, there is a USB socket for local communication in the event of a network error. Two digital inputs (D1 and D2) can also be logged.



## ECOLOG-NET LP4/WP4



The ECOLOG-NET LP4/WP4 is a 4 channel datalogger designed for **logging and monitoring temperatures**. Standardized PT100 measuring technology allows the unit to be used for a multitude of various applications, from monitoring low temperatures to documenting drying procedures.

- 4 channel datalogger
- Principle of measurement: 3 or 4 wire PT100 in accordance with EC751/EN60751
- Autonomous data logging even in event of network and power failures
- State-of-the-art measurement technology allows cable lengths of up to 70m (in the case of weak electromagnetic interference)

## ECOLOG-NET LH2/WH2



The ECOLOG-NET LH2 is ELPRO's network-compatible datalogger designed for **logging temperature and relative air humidity** with two T/RH probes. Its wide measuring range, high accuracy and reliability make the LH2 the ideal unit for the demanding user.

- Temperature and relative air humidity logging with internal and external sensors
- Principle of measurement:  
T: Resistance measuring (NTC)  
rH: Capacitive
- Use of calibrated and replaceable universal probes
- Large display showing currently measured values and alarm information
- Inputs for logging digital states

#### PT100 PROBES (SELECTION)



Part No. 3188-L0  
PT100 4 wire, class A temperature probe,  
-90°..+350°C; SL=100mm, D=3mm stain-  
less steel, bendable



Part No. 3167-SL02  
PT100 4 wire, class A temperature probe,  
-80°..+105°C; 3167-Lxx SL=20mm,  
D=5mm molded plastic



Part No. 3163-L04  
PT100 4 wire, class A temperature probe,  
-90°..+260°C; 3163-Lxx SL=100mm,  
D=4mm stainless steel, teflon cable



Part No. 3181-L05  
PT100 4 wire, class A temperature probe,  
-200°..+220°C; 3181-Lxx SL=100mm,  
D=5mm steam-resistant, Autoclave

#### T/rH PROBES (LH2/WH2)

Standard ELPRO humidity/temperature  
probe



Part No. 3087  
Universal probe: humidity and temperature,  
range: T: -35°..+70°C, rH: 0%..100%

Part No. 3087-B  
Extended temperature range:  
T: -35°..+110°C

#### TRANSMITTERS (SELECTION)



Part No. 3260-L  
Differential pressure transmitter,  
range: -50..+50Pa; further measuring  
ranges on request



Part No. 3271-F  
CO<sub>2</sub> transmitter for wall-mounting,  
range: 0..2000ppm



Part No. 3271-M  
CO<sub>2</sub> transmitter with external probe,  
range: 0..10% CO<sub>2</sub>



Part No. 3310-T02  
T/rH transmitter, wall-mounting,  
range: T: -40..+60°C, rH: 0..100%;  
also available as model for high frequency  
applications (3310-T02H)



Part No. 3315-T02  
T/rH transmitter,  
ductmounting,  
range: T: -40..+60°C, rH: 0..100%



Part No. 3350-A  
PT100 transmitter, programmable  
measuring range -200°..+600°C

#### ALARM LIGHT



Part No. 2311-B  
Flasher lamp, xenon flash light, red

#### VOLTAGE SUPPLY

Part No. 2750-V24  
Power supply unit for ECOLOG-NET  
24VDC, 0.35A

Part No. 2751-V24  
Power supply unit for ECOLOG-NET  
24VDC, 1.6A and transmitter

Part No. 2730-A  
Mounting set, PoE splitter for  
ECOLOG-NET 24VDC, 1.6A

#### EXTENSION CABLES

Extension cables are available in various  
lengths. When ordering, replace the «x» in  
the Part No. with the required cable length.

We recommend the use of shielded cables  
when the cable is longer than 30 meters.

Part No. 3205-Lxx  
Extension cable for LP4/WP4. M12  
coupling/open ends

Part No. 3206-Lxx  
Extension cable for LA8/WA8. M12  
coupling/open ends

Part No. 3218-Sxx  
Extension cable for LH2/WH2. DB9/plugon

#### SERVICE & QUALITY

- ISO 9001 quality system
- Vendor and internal audits
- Expert systems
- Own production and development
- Own calibration laboratory
- Modern facilities
- Datalogger service since 1989
- Calibration according to all standards
- Repair service for all products
- Customer calibration service
- IQ/OQ qualifications
- Temperature mapping
- Worldwide distributors
- Return of ELPRO units and batteries  
for eco-friendly disposal

#### DIRECTIVES & STANDARDS

ISO 9001: 2000  
SGS certificate no. CH98/0013  
ATEX  
SNCH 01 ATEX 3280/Directive 94/9/EC  
EX1, CE1258  
Approval for EX protection zone 1  
(EN50014:1997 +A1 +A2,  
EN50020:2002 and EN1127-1:1997)  
CE  
EN61000-6-2:2001 und EN61000-6-4:2001  
EN12830/EN13485/EN13486  
Temperature recorder for transport,  
storage and distribution of foodstuffs

#### GZ1480

Exceptional approval for calibration  
GZ1480/2000 from 10.4.2000, BEV,  
Austria

#### INTEGRATED REGULATIONS AND RECOMMENDATIONS

GMP/GLP/GAMP 4  
Software validation in accordance with  
21 CFR Part 820, Electronic Records  
21 CFR Part 11, 21 CFR Part 210/211,  
21 CFR Part 110, 21 CFR Part 58  
EG/EU  
Regulation (EC) 37/2005  
Directive 2002/95/EC (RoHS)  
HACCP  
Hazard Analysis Critical Control Points

#### EXPLANATION OF ICONS



Temperature / humidity / pressure measurement



Networks

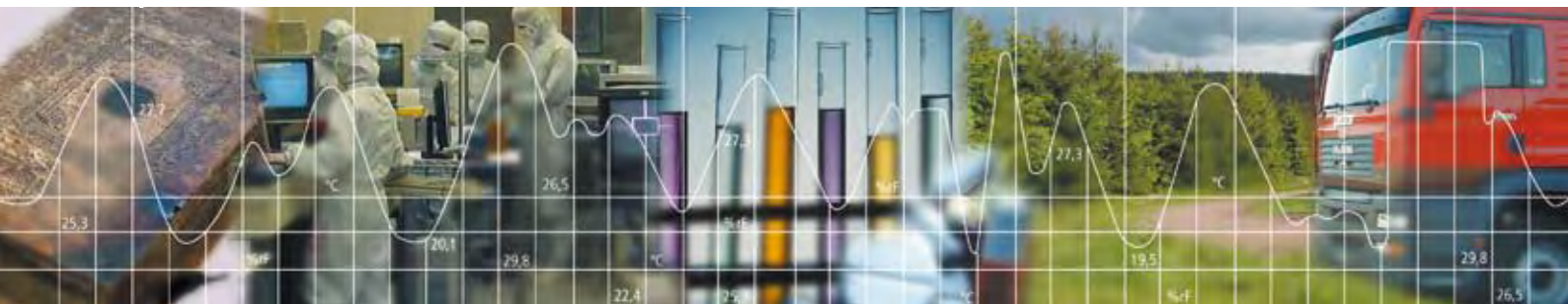


Display alarm / alarm output / central alarming



Universal 4-20 mA inputs / 21 CFR Part 11





## ECOLOG Datalogger Series



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## ECOLOG TN & SPECIAL ACCESSORIES



ECOLOG TN are universal, multi-purpose instruments for monitoring and documenting temperatures. The possible applications for these measuring instruments are practically limitless, ranging from monitoring rooms or production processes to documenting transport conditions.

Versatile configuration possibilities, sensors for various applications and a comprehensive assortment of accessories ensure reliable solutions for every requirement.

- 2 - 4 channel dataloggers with internal and external sensors
- Principle of measurement: resistance measuring (NTC)
- Large display for current measured values and alarm information
- Inputs for recording digital states
- Evaluation with elproLOG software at PC
- Programmable recording interval
- One-year memory capacity for 64'000 measured values
- Keypad on datalogger (TN4, TN4-L):
  - Displays measured values and alarms
  - Controls printing functions
  - Tests alarm output
  - Resets alarm output
  - Starts logging
- Open interface for communication with other devices (TN3-P, TN4, TN4-L)
- Low energy consumption due to power-save mode
- Also available with EEx approval (details on page 8)

### ECOLOG TN4



Part No. 2421  
TN4, red housing

Part No. 2421-Ex  
TN4, with EEx approval in accordance with ATEX (details on page 8)



Part No. 2421-W  
TN4, white housing



- 4 channel datalogger (NTC) for external sensors
- Measuring range: -50°C..140°C
- Programmable alarm functions with alarm output
- Keypad for datalogger control and configuration
- 2 digital inputs
- Direct printout of measured values and alarm data at protocol printer

### ECOLOG TN2



Part No. 2420  
TN2, red housing

Part No. 2420-Ex  
TN2, with EEx approval in accordance with ATEX (details on page 8)



Part No. 2420-W  
TN2, white housing



- 2 channel datalogger (NTC) with internal sensor
- Measuring range:
  - External sensor: -50°C..140°C
  - Internal sensor: -35°C..55°C
- Programmable alarm functions with alarm output

- Special functions via multifunction connector:
  - External measuring start
  - Alarm reset
  - 1 digital input

### ECOLOG TN3-P

- 3 channel datalogger (NTC) with internal sensor
- Measuring range:
  - External sensor: -50°C..140°C
  - Internal sensor: -35°C..55°C
- Programmable alarm functions with alarm output
- Special functions via multifunction connector:
  - External measuring start
  - Alarm reset

- 1 digital input
- Direct printout of measured values and alarm data at protocol printer

Part No. 2420-P TN3-P, red housing  
Part No. 2420-PW TN3-P, white housing  
Part No. 2420-PEx TN3-P, with EEx approval in accordance with ATEX (details on page 8)



### ECOLOG TN4-L



Part No. 2422  
TN4-L, red housing

Part No. 2422-Ex  
TN4-L, with EEx approval in accordance with ATEX (details on page 8)



Part No. 2422-W  
TN4-L, white housing



- 4 channel datalogger (NTC) for external sensors, with LEMO connector
- Measuring range: -50°C..140°C
- Programmable alarm functions with alarm output
- Keypad for datalogger control and configuration

- 2 digital inputs
- Direct printout of measured values and alarm data at protocol printer

## MOUNTING BRACKETS



Part No. 2804-C  
Mounting bracket with  
terminals  
Part No. 2804-C-Ex  
with EEx approval



Part No. 2804-CR  
Mounting bracket with terminals and  
RS232 interface

## LOGGING



Part No. 2315-B  
Built-in printer with bracket



Part No. 2560-A  
Set for cooling transporter ECOLOG TN3-P  
with printer in watertight box



## COUPLERS



Part No. 3032-IS  
Multifunction connector for external  
start and for setting the digital input for  
TN2/TN3-P



Part No. 3032-VN  
Coupler DB15 LEMO

## NTC TEMPERATURE PROBES

Resistor probe 3K3A1B for temperature  
range -50°C..140°C:



Part No. 3090-Lxx  
Universal sensor, LS = 50 mm, D = 6 mm  
Part No. 3091-Lxx  
Universal sensor, LS = 150 mm, D = 6 mm



Part No. 3095-Lxx  
Sensor for Twinlock measuring nipple,  
LS = 70 mm, D = 3.4 mm



Part No. 3010-Lxx  
Needle probe, LS = 100 mm, D = 4 mm



Part No. 3021-Lxx  
Needle probe with handle,  
LS = 100 mm, D = 4 mm



Part No. 3041-Lxx  
Surface probe,  
Sensor surface area 6 x 30 mm



Part No. 3050-Lxx  
Magnet temperature probe, D = 22 mm,  
H = 12 mm



Part No. 3055-Lxx  
Drop probe, D = 2.5 mm



Part No. 3060  
Plug-in probe



Part No. 3093-Lxx  
Temperature range -50°..105°C,  
with flat cable, LS = 20 mm, D = 5 mm



Part No. 3094-Lxx  
Temperature range -50°..105°C,  
with round cable, LS = 20 mm, D = 5 mm



Part No. 3025-L00  
Submergible probe with immersion sleeve

See page 7 for additional accessories that  
can be used for the entire ECOLOG family.

## Applications

ECOLOG dataloggers can be used for a wide variety of applications:



### Documenting pharmaceutical product storage

Documenting storage conditions of  
temperature-sensitive pharmaceutical  
products. ELPRO systems are qualifiable  
and are a valuable tool when it comes  
to fulfilling GMP/GLP regulations.



### Recording clean room conditions

Using ELPRO systems to provide  
documented evidence of the specified  
climatic conditions in clean rooms and  
laboratories.



### Monitoring museum climate

Controlling and documenting climatic  
storage conditions for valuable, antique  
objects.



### Monitoring food industry processes

Using ELPRO datalogger systems as tools  
to document temperatures in HACCP  
processes.



### Documenting transport conditions

Logging temperatures during  
low-temperature and refrigerated  
transports.  
A printer, connected directly at the  
ECOLOG datalogger, makes complete,  
on-location transport documentation  
possible.

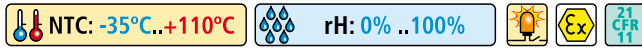


### Analyzing environmental data

Using robust ECOLOG dataloggers with  
their versatile accessories are used for  
long-term analysis of environmental data.



# ECOLOG TH & SPECIAL ACCESSORIES



For users who set high standards, the ECOLOG TH is the ideal instrument for logging temperature and relative humidity. High reliability and a proven measuring technique, versatile configuration possibilities and the comprehensive assortment of accessories are some of the reasons for the success of the ECOLOG TH in a multitude of industries and applications.

- Temperature and rel. humidity logging with internal and external sensors
- Principle of measurement: T: resistance measuring (NTC), rH: capacitive
- Implementation of calibrated and replaceable combi-sensors
- Large display for current measured values and alarm information
- Inputs for recording digital states
- Evaluation with elproLOG software at PC
- Programmable recording interval
- One-year memory capacity for 64'000 measured values
- Keypad at datalogger:
  - Displays measured values and alarms
  - Controls printing functions
  - Tests alarm output
  - Resets alarm output
  - Starts logging
  - Measured value marking
- Open interface for communication with other devices
- Low energy consumption due to power-save mode
- Also available with EEx approval (details on page 8)

## ECOLOG TH2



Part No. 2426  
TH2, red housing

Part No. 2426-Ex  
TH2, with EEx approval in accordance with ATEX (details on page 8)



Part No. 2426-W  
TH2, white housing



- 4 channel datalogger for 2 x temperature and rel. humidity
- Two external combi-sensors can be connected
- Input for external temperature sensor (NTC)
- Measurement range:
  - External combi-sensor: -35°C..70°C, 0..100%rH (Part. No. 3087)
  - -35°C..110°C, 0..100%rH (Part No. 3087-B)
  - External temperature sensor NTC -55°C..140°C
- Programmable alarm functions with alarm output
- Keypad for datalogger control and configuration
- Alarm reset via key pad
- 1 digital input
- Direct printout of measured values and alarm data at protocol printer

## ECOLOG TH1



Part No. 2423  
TH1, red housing with standard sensor

Part No. 2423-Ex  
TH1, with EEx approval in accordance with ATEX (details on page 8)



Part No. 2423-W  
TH1, white housing with standard sensor

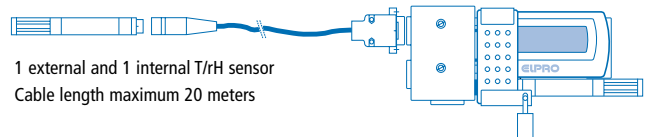


- 4 channel datalogger for 2 x temperature and rel. humidity
- Integrated combi-sensor for temperature and rel. humidity
- External temperature sensor (NTC) can be connected
- Measurement range:
  - Internal combi-sensor: -35°C..55°C, 0..100%rH
  - External combi-sensor: -35°C..70°C, 0..100%rH (Part No. 3087)
  - -35°C..110°C, 0..100%rH (Part No. 3087-B)
  - External temperature sensor: -55°C..140°C
- Programmable alarm functions with alarm output
- Keypad for datalogger control and configuration
- 1 digital input
- Direct printout of measured values and alarm data at protocol printer

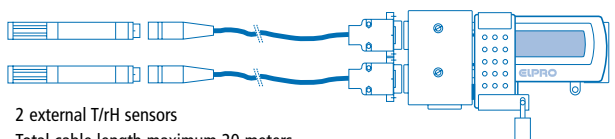
## CONFIGURATION EXAMPLES FOR ECOLOG TH



Standard T/rH sensor as external probe



1 external and 1 internal T/rH sensor  
Cable length maximum 20 meters



2 external T/rH sensors  
Total cable length maximum 20 meters



## T / rH SENSORS



Part No. 3087  
Plug-in combi-sensor temperature/  
humidity  
T -35°C...+70°C, rH 0%..100%  
Part No. 3087-B  
Plug-in combi-sensor temperature/  
humidity  
T -35°C ...+110°C, rH 0%..100%

## NTC TEMPERATURE PROBE

Resistor probe 3K3A1B for temperature  
range -50°C..140°C:  
See ECOLOG TN on page 3.

## MOUNTING BRACKET



Part No. 2805-CR  
Mounting bracket with RS232 interface  
and connections for 2 external  
combi-sensors T/rH  
Part No. 2805-C-Ex  
with EEx approval



## EXTENSION CABLE



Part No. 3215-Sxx  
Extension cable for ECOLOG TH1, TH2

## HOUSING



Part No. 2352-A  
Protective housing for steam cleaning



Part No. 2804-G  
Protective lid



Part No. 2804-F  
Protective cage for transport monitoring

See page 7 for additional accessories that  
can be used for the entire ECOLOG family.

## SENSOR LENGTHS AND DIAMETERS



Temperature sensors (NTC and PT100) are usually available in various lengths or with  
various diameters. When an order is made, the 'x' in the respective part number is  
replaced with the relative cable length in meters.

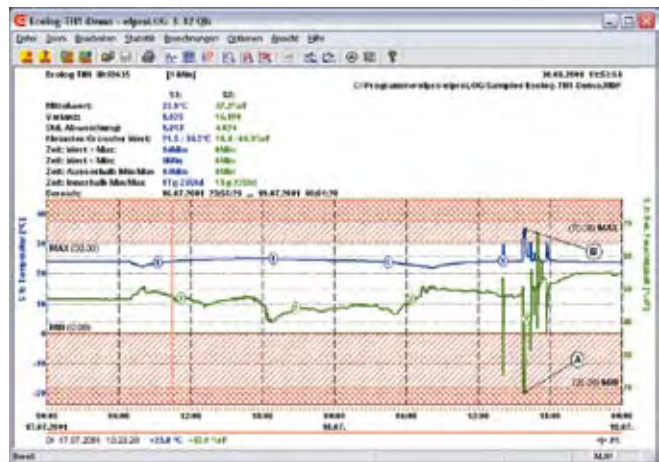
## elproLOG software



The **elproLOG** software can be  
used for all ELPRO datalogger  
models, allowing fast and  
efficient evaluation of logged  
data. With **elproLOG** and a few  
mouse clicks, you can create  
meaningful and clearly laid out  
documentation of your climatic  
values in graph or table format.

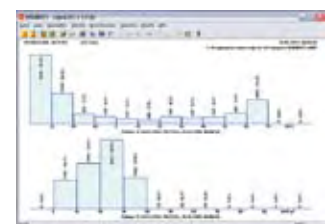


Table with colored markings showing  
threshold violations.



Data with marked threshold values and statistic information.

While observing regulatory  
compliance to FDA 21 CFR Part  
11, GMP, GAMP4 and GLP,  
the validated **elproLOG QLS**  
software offers you all the  
security you need for monitoring  
your regulated environments.  
The detailed validation manual  
contains IQ/OQ templates for  
software and dataloggers as well  
as sample SOPs.



Histogram with manual or automatic  
grouping.



Extensive qualification and validation  
manual with templates for IQ/OQ and  
sample SOPs.

## ECOLOG TP & SPECIAL ACCESSORIES



The ECOLOG TP stands for precision measuring and evaluating of temperatures in the -200°C..550°C range. This universal datalogger, based on the standardized PT100 measuring technique and with a comprehensive assortment of sensors and accessories, can be used for widespread applications ranging from monitoring low temperature to documenting drying processes.

- 2 - 4 channel dataloggers
- Principle of measurement: 4-wire PT100 in accordance with IEC751 / EN60751
- Digital inputs and evaluation with elproLOG software at PC
- Large display for current measured values and alarm information
- Programmable recording interval
- One-year memory capacity for 64'000 measured values
- Keypad at datalogger:
  - Displays measured values and alarms
  - Controls printing functions
  - Resets alarm output
  - Starts logging
- Open interface for communication with other devices
- Low energy consumption due to power-save mode
- Also available with EEx approval (details on page 8)

### COUPLERS



Part No. 3032-VNP  
DB15 LEMO connector for simple temperature probe replacing

### MOUNTING BRACKETS



Part No. 2801-CR  
Mounting bracket with terminals  
Part No. 2801-C-Ex with EEx approval

### PT100 TEMPERATURE PROBES

Resistor probes EN60751; temperature range type-depending from -200°C..550°C  
Contact us for information about additional PT100 temperature probes or visit [www.elpro.com](http://www.elpro.com).

Part No. 3163-Lxx  
DIN A probe, -90°C..260°C, stainless steel, LS = 100 mm, D = 4 mm



Part No. 3181-Lxx  
DIN A probe, steam-resistant, autoclavable, -200°C..180°C, LS = 100 mm, D = 5 mm



Part No. 3165-Lxx  
DIN A ML probe, -200°C..500°C, stainless steel, bendable, LS = 350 mm, D = 3 mm



Part No. 3164-Lxx  
DIN A probe, -50°C..260°C, stainless steel, pointed, LS = 100 mm, D = 4 mm



Part No. 3167-Lxx  
DIN B probe, -80°C..105°C, synthetic, molded, LS = 20 mm, D = 5 mm



Part No. 3174-Lxx  
ML probe, -80°C..350°C, stainless steel, bendable, LS = 50 mm, D = 2 mm



Part No. 3169-Lxx  
DIN A probe, 0°C..500°C, stainless steel, glass fiber cable, LS = 50 mm, D = 6 mm



Part No. 3173-Lxx  
DIN A screw-in probe, -50°C..120°C, R1/8", LS = 24 mm, D = 3 mm



Part No. 3160  
DIN A plug-on probe, -35°C..55°C, LS = 30 mm, D = 10 mm



Part No. 3171-Lxx  
Surface probe, 0°C..180°C, 6x10x35 mm, can be screwed down with bonding foil (up to +80°C)



Part No. 3159-Lxx  
Foil probe, class 0.5, 0°C..180°C



Part No. 3168-Lxx  
Tight foodstuff probe, DIN A, -50°C..180°C, synthetic, LS = 120 mm, D = 4 mm

## ECOLOG TP2



Part No. 2425-2T  
TP2, red housing



Part No. 2425-2TW  
TP2, white housing



Part No. 2425-2TEx  
TP2, with EEx approval in accordance with ATEX (details on page 8)

- 2 channel datalogger (PT100) for external sensors
- Measuring range: -200°C..550°C
- Programmable alarm functions with alarm output

- Keypad for datalogger control and configuration
- 1 digital input
- Direct printout of measured values and alarm data at protocol printer

## ECOLOG TP4-L



Part No. 2425  
TP4-L, red housing



Part No. 2425-W  
TP4-L, white housing



Part No. 2425-Ex  
TP4-L, with EEx approval in accordance with ATEX (details on page 8)

- 4 channel datalogger (PT100) for external sensors, with LEMO connector
- Measuring range: -200°C..550°C
- Programmable alarm functions with alarm output

- Keypad for datalogger control and configuration
- 1 digital input
- Direct printout of measured values and alarm data at protocol printer

# ECOLOG Accessories for all models

## ALARMING



Part No. 2311-B  
Alarm flash xenon flash red



Part No. 2311-C  
Alarm flash with siren



Part No. 2312  
Alarm flash for logger and bracket with  
EEx approval



Part No. 2340-T  
Sender for radio alarm



Part No. 2340-R  
Receiver for radio alarm



Part No. 2341-B  
Automatic telephone dial unit  
(example)

## MOUNTING BRACKETS



Part No. 2804-A  
Mounting plate



Part No. 2804-E  
Holding plate padlockable  
(lock not included)



Part No. 2804-B  
Holding plate with bracket for connector

## HOUSING



Part No. 2350-x  
Casing IP66

## CONNECTORS



Part No. 3202-2PB / Part No. 3202-4PB  
LEMO connector, 2-pin or 4-pin mounting



Part No. 3032-B  
DB15 connector, incl. customer-specific  
assembly, number of cables is limited



Part No. 3034  
DB15 connector for self-mounting

## ADAPTERS



Part No. 2317-USB  
USB-RS232 adapter for connecting  
datalogger to PC USB port



Part No. 2318  
PC data cable for PC evaluation

## TEMPERATURE SENSORS ACCESSORIES



Part No. 3211-y  
Mounting flange



Part No. 3211-Byy  
Screw clamp



Part No. 3095-T  
Measuring nipple TWINLOK

## BATTERY



Part No. 2820  
Replacement battery for ECOLOG data-  
logger, set with 2 batteries, storable for at  
least 5 years

## Temperature measurement TPx

(only datalogger at room temperature)

Measurement range	Resolution	Linearity
-200°C .. -101°C	0.2°C	±0.3°C
-100°C .. 399°C	0.1°C	±0.2°C
400°C .. 499°C	0.1°C	±0.3°C
500°C .. 550°C	0.2°C	±0.5°C

## Temperature measurement TNx and THx


(datalogger with temperature sensor, logger at room temperature)

Measurement range	Resolution	Typical accuracy (U95)
-50.0°C .. -25.0°C	0.1°C	±0.4°C
-24.9°C .. 0.0°C	0.1°C	±0.3°C
0.1°C .. 70.0°C	0.1°C	±0.2°C
70.1°C .. 100°C	0.1°C	±0.4°C
100.1°C .. 140.0°C	0.1°C	±0.7°C

## Accuracy of measurement rel. humidity

At room temperature	23°C	±1.5% rH
Hysteresis	10-90-10% rH	<1% rH



Made in Switzerland – for 20 years 



## EEX APPROVAL

All ECOLOG dataloggers are available with EEx approval.



### II 2 G

- II Device category II intended for use in all potentially explosive atmospheres apart from mines.
- 2 Category 2, suitable for use in zone 1 (occasional explosion hazard) as well as in zone 2 (rare explosion hazard)
- G Atmosphere with explosion hazard arising from gases and vapors but not from dust

### EEx ib IIB T4

- EEx Explosion protection type according to European directives: EN 50014 : 1997 +A1 +A2 and the directives for special types of protection against ignition
- ib Type of protection for intrinsic safety against ignition: category ib with 1 failure according to EN 50020:1994
- IIB Use in all potentially explosive atmospheres apart from mines: group IIB subclause B
- T4 Temperature class T4: max. surface temperature 135° with a safety margin of 5 Kelvin for permanently hot surfaces  
T4 applies for compound materials with an ignition temperature  $t > 135^{\circ}\text{C}$ , essentially ethyl ether and ethanol, which are used for industrial production of synthetics and solvents

## EXPLANATION OF ICONS



Temperature / humidity / pressure measurement



Gas / wind / comfort measurement



RFID / networks



Display alarm / alarm output / central alarming



IP protective class



EEx-approved



Universal 4-20 mA inputs / 21 CFR Part 11

## DIRECTIVES & STANDARDS

ISO 9001: 2000

SGS certificate no. CH98/0013

ATEX

SNCH 01 ATEX 3280/Directive 94/9/EC

EX1, CE 0499

Approval for EX protection zone 1 (EN 50014 and EN 50020)

CE

EN 50081-2 and EN 50082-2

EN12830/EN13485/EN13486

Temperature recorder for transport, storage and distribution of foodstuffs

GZ1480

Exceptional approval for calibration GZ1480/2000 from 10.4.2000, BEV, Austria

## INTEGRATED REGULATIONS

### AND RECOMMENDATIONS

GMP/GLP/GAMP 4

Software validation in accordance with 21 CFR Part 820, Electronic Records 21 CFR Part 11, 21 CFR Part 210/211, 21 CFR Part 110, 21 CFR Part 58

EG/EU

Regulation (EC) 37/2005

Directive 2002/95/EC (RoHS)

HACCP

Hazard Analysis Critical Control Points

## SERVICE & QUALITY

- ISO 9001 quality system
- Vendor and internal audits
- Expert systems
- Own production and development
- Own calibration laboratory
- Modern facilities
- Datalogger service since 1989
- Calibration according to all standards
- Repair service for all products
- Customer calibration service
- IQ/OQ qualifications
- Temperature mapping
- Worldwide distributors
- Return of ELPRO units and batteries for eco-friendly disposal

Contact us  
for additional information  
about ELPRO dataloggers  
and systems or visit us at  
[www.elpro.com](http://www.elpro.com).

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Switzerland

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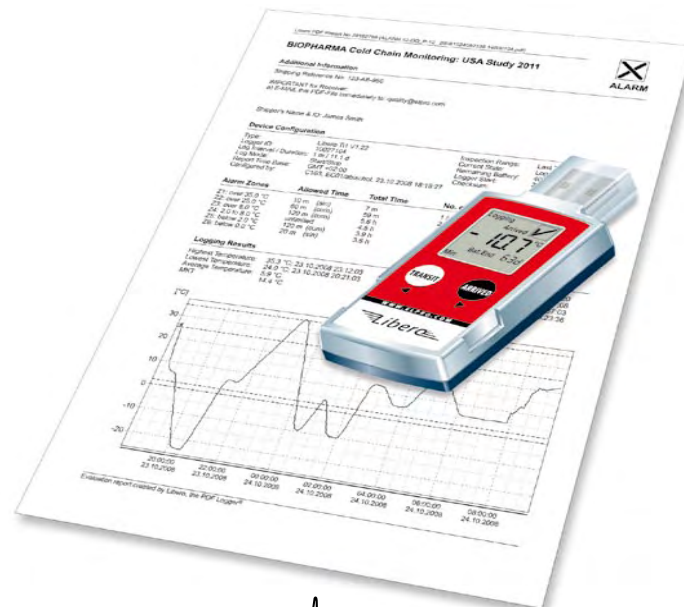
 مؤسسة الخطوط الكهربائية للتجارة  
**ELECTROLINES**



## Libero. old Chain Monitoring: No software at destination



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**United Kingdom**  
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F +44 (0)1243 210 132  
E [uk@elpro.com](mailto:uk@elpro.com)



**ELPRC™** Datalogging Company

**P. O. Box. 942 Yanbu Saudi Arabia Tel: +966 4 3225418 Fax: +966 4 3222213 Al-Jubail: Tel: +966 3 3632967 Fax: +966 3 3612967**

# The ultimate solution for cold chain monitoring

## No software required at destination

- ➔ Libero reduces costs as shown with the phenomenon of the iceberg

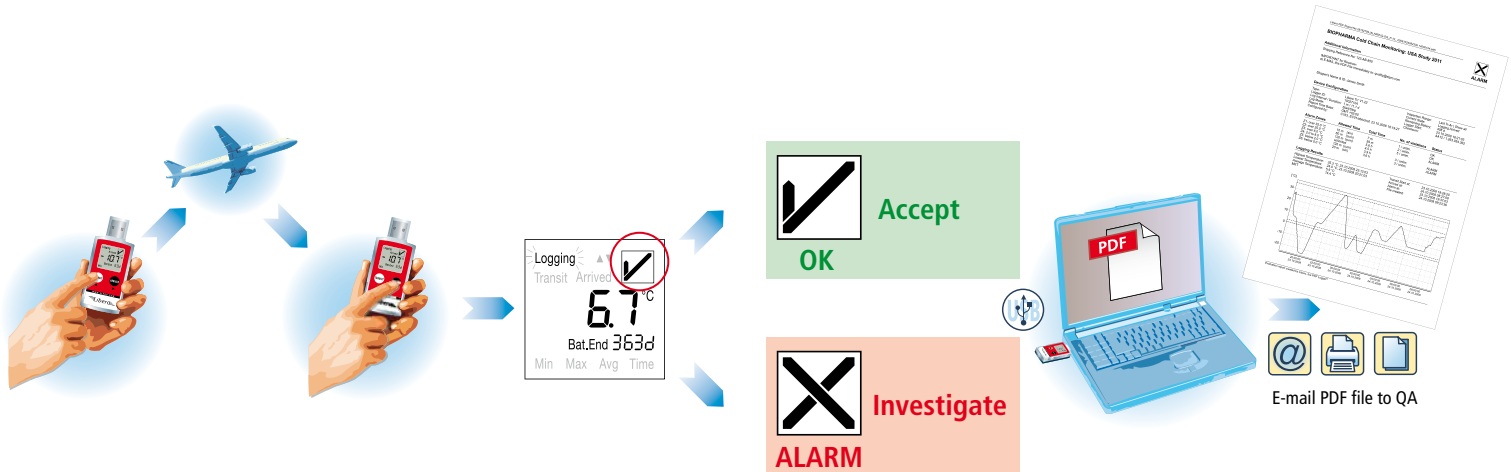
## Evaluation report without any software:

- Automatically created when plugging LIBERO into the USB port of any PC worldwide

## This report in PDF/A format contains:

- Detailed sender/shipment information
- Go/No-Go information, also on display
- Statistics (min/max/average/MKT)
- Chart visualizing measured temperatures
- And in a hidden part, all raw data for any further analysis

## COLD CHAIN MONITORING WITH LIBERO PDF LOGGER®



Electrolines Est.

# LIBERO PDF Logger®

## A most cost efficient solution!

### DIRECT COST – visible

- Monitoring device / Datalogger
- Software
- Interface and data cable

### INDIRECT COST – hidden

- Software installation support, IQ/OQ, user training
- Stock keeping of various logger types
- Time lost until monitoring device is back for evaluation
- Read-out and creation of evaluation report and readable back-up standard
- Exception handling and approval process

**Electrolines Est.**

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## Benefits



#### User:

##### Ease of use and productivity

- Easy handling, no specific procedures needed, no wrong manipulations possible
- Clearly structured display for immediate visibility of any temperature deviations during transportation
- Shortened workflow thanks to the unique feature of the automatically generated analysis and compound report

#### Supply Chain Manager:

##### Productivity and Flexibility

- Quick and easy availability of supply chain history
- Straightforward transmission of complete reports (data and graphics) thanks to PDF/A format
- Parameters can be set according to your requirements in order to follow your SOP's
- Detailed evaluation of raw data possible with elproLOG ANALYZE Software
- Problems within the cold chain can rapidly be isolated, illustrated and then definitively be solved
- Full control thanks to worldwide standardized reports (PDF/A file format)
- No specific training required

#### Purchase Manager:

##### Cost efficiency

- Excellent price/performance ratio
- No cost for worldwide software training, SW validation, SW support, software upgrading activities or user training
- Swiss quality product – life time warranty

#### Quality Manager:

##### Assured quality

- PDF/A file format is an approved ISO standard
- Alarm indicators according to WHO standards
- Helps to be compliant with the provision of GMP/GLP/FDA (21CFR11), USP 1079
- 5 programmable alarm ranges according to PDA Technical Report No 39 (cold chain guidance for medical products: maintaining the quality of temperature-sensitive medicinal products through the transportation environment)
- Validation certificate inclusive, optional multi point calibration
- IQ/OQ documentation is made available

#### IT Manager:

##### Reliability and seamless integration

- No specific evaluation software necessary (Adobe®Reader®)
- No additional hardware required (USB port/PC)
- No additional infrastructure cost for software validation, upgrade policy and end user support
- No user training necessary

#### Financial Director:

##### Cost savings

- Cost effective solution for total cold chain monitoring
- Safe investment thanks to proven technology, ELPRO's compatibility strategy and the long-term experience of ELPRO in providing professional data logging solutions



## Technical Data

- **Record options:**  
Multiple use (Ti1) or single use (Ti1-S)
- **Record mode:**  
Start/stop and loop (Ti1)
- **Temperature measurement range:**  
-35°C to +70°C
- **Temperature accuracy:**  
± 0.2 °C (-10 °C to 25 °C)  
± 0.5 °C for the ranges of -35 °C to -10 °C  
and 25 °C to 70 °C
- **Resolution:**  
1/10 °C
- **Memory capacity:**  
16'000 measuring data points
- **Measurement interval and display renewal:**  
1 minute or more, programmable
- **Programmable temperature alarms:**
  - a) 2 limits or
  - b) 5 multiple alarm ranges, conform wit PDA Technical Report No 39 (Cold Chain Guidance for Medical Products: Maintaining the Quality of Temperature-sensitive Medicinal Products through the Transportation Environment)
- **Start-up delay:**  
0 minutes to 1 day
- **Battery life:**  
3.6V Lithium Battery  
Ti1: 400 days / Ti1-S: 100 days
- **Display:**  
Multifunction LCD, size: 23.5 x 23.5 mm, statistics functionality

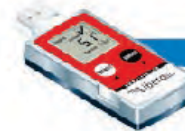


- **Evaluation report (Adobe®PDF/A):**  
Includes a text area, a chart visualizing the temperature curve of the current transport section and the raw data of all transport sections. There are 8 lines at 80 characters available for sender-specific information.
- **Supported operating systems:**  
Windows, Mac, Linux
- **Datalogger configuration:**  
Libero confi guration utility & Libero SmartStart downloadable free of charge from [www.pdf-logger.com](http://www.pdf-logger.com)
- **PDF Data Logger:**  
Built-in PDF file generator that automatically establishes a complete evaluation report including all raw data
- **Display functionality:**
  - Start and end marking with TRANSIT and ARRIVED buttons
  - Current temperature measurement (last stored value)
  - Status OK or ALARM
  - Indicator whether limit value has been exceeded
  - Remaining battery life in days
- **Software (at sender):**
  - Libero Confi guration Utility
  - Libero SmartStart
- **Interface:** USB – Universal Serial Bus
- **Case:** ABS plastic material
- **Protective Class:** IP 54
- **Dimensions:** 95 x 40 x 12 mm
- **Weight:** 40 g
- **Application area:**  
Supply chain temperature monitoring



## Team Libero

Temperature and humidity data evaluation without any software, PDF/A report inclusive, via USB port anywhere in the world:  
ELPRO presents its team of independent specialists with specific qualities.



### LIBERO Ti1 & Ti1-S

- Team leader of Libero PDF Logger®s
- Internal temperature sensor for -35°C..+70°C
- Application area: Transport monitoring of temperature sensitive products



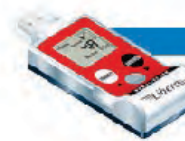
### LIBERO Ti1-D (DRY ICE)

- Libero PDF Logger® with internal temperature sensor
- Temperature range: -80°C..+70°C
- Battery life: 100 days or 20 days at -80°C (dry ice)
- Application areas: Monitoring of dry ice shipments



### LIBERO Te1-N & Te1-P\* (EXTERNAL SENSORS)

- Libero PDF Logger® with an external sensor connected to the USB port (patent solution)
- Te1-N with NTC sensor for temperatures of -80°C..+85°C
- Te1-P with PT100 sensor for temperatures of -200°C..+200°C
- Battery life: 3 years
- Application areas: Monitoring of cryo and dry ice shipments, liquid nitrogen and cooling cabinets, temperature monitoring



### LIBERO Thi1\* (TEMPERATURE & HUMIDITY)

- Libero PDF Logger® with internal temperature and humidity sensor
- Temperature range: -35°C..+70°C  
Humidity range: 0..100 %
- Battery life: 3 years
- Application areas: Transport monitoring for temperature and humidity sensitive products

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