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IMPORTANT INFORMATION OR WARNING

Reference to related chapter or document

Software
For a detailed description, see the corresponding operating instructions or the software help files.

Software  Operation Manual
elproLOG ANALYZE  SE3003E
elproLOG ANALYZE QLS
elproLOG MONITOR  SM3002E
elproLOG CONFIG  SC3001E

- This product is subject to CE marking.
- The manufacturer guarantees that this product complies with the relevant guidelines: EN 61000-6-2 : 2001 and EN 61000-6-4 : 2001
- This product must be disposed of in accordance with WEEE (Waste electrical and electronic equipment, 2002/96/EC)!

In the interest of our customers, we reserve the right to make changes due to ongoing technical development. As a result, images, descriptions and scope of delivery are not binding! The release of this document is available on the printed and archived original only. This manual is valid beginning with firmware version 8.14 elproLOG 3.31
1. Product description

ECOLOG-NET LP4 dataloggers are network-ready 4-channel dataloggers for recording temperature values between -200°C and 600°C using PT100 sensors in 3- or 4-wire circuit. 64,000 measured values can be recorded. The data are loaded to the PC via local network. The datalogger provides the highest level of data security because an internal battery backup allows data recording even in the event of a power outage or network disruption. There are various alarm features provided by the local alarm contacts and the network functions.

Protection zone 2

The ECOLOG-NET LP4 datalogger sensors are also approved for use in the intrinsically safe area of zone 2.

1.1 Datalogger

Connections
- Membrane keypad
- Battery discharge protection

The ECOLOG-NET LP4 has numerous electrical connections available on the left-side of the housing and on the front a display, and a membrane keyboard.

1. Network connection
2. Connection for 4 PT100 sensor: -200°C ... 600°C
3. USB connection
4. Power supply, contact inputs and alarm output
5. Alarm output
6. Membrane keypad with 4 buttons
7. Type label with ID number and IP address
8. Battery
9. Battery protection

Removal initiates the first "System Reset" entry in the status! After removal, it is necessary to wait about 10 sec. until the datalogger is operational.

1.2 Display

Large LCD display for measured values, units and conditions

1. Measured value with display units
2. Date
3. Time
4. Alarm
5. Measured value is above upper threshold value
6. Measured value is below lower threshold value
7. Sensor number
8. Alarm flag for sensor 1 ... 4
9. Communication
10. Normal operation + Wait = Stop
11. Wait = Start

Battery low
Activated when the capacity limit of the battery has been reached. Replace the battery at the next possible opportunity.

2.7 Battery backup / lifetime
2. Instructions and safety guidelines

2.1 Network and USB connection

The ECOLOG-NET family of dataloggers is fitted with a 10/100 Base T network connection point. The datalogger functions and network can be configured using this connection.

In addition, the datalogger is equipped with a USB connection. This connection can be used for datalogger configuration and data download if no network connection is available; however, it is not possible to define network parameters using this connection. In the event that both the network connection and USB connection are in use, data cannot be transmitted via LAN connection.

3.1 Assign network address

In order to obtain an optimal USB connection, the following operational sequence should be followed:

1. Connect the power supply to the datalogger and turn on the PC
2. Once both devices are ready for use, connect the USB cable
3. The Windows driver for the USB connection being used must be installed. If the appropriate driver is missing, it can be installed using the elproLOG ANALYZE software CD.
4. elproLOG ANALYZE: Options - Com Port - RS232 & 57600 (Hotseries 4) and appropriate COM-port.

2.2 Temperature effect

- For the range of application 12.2 Operating range.
- It can't be guaranteed that the loggers will function properly if the datalogger is exposed to temperatures which exceed the specified threshold range. Experience has shown that the battery freezes at approx. -50°C, that it is no longer possible to perform measurements, and that the timer tracking function can be temporarily interrupted. Once it has been returned to room temperature, the logger must be reprogrammed before it can be used again.
- At temperatures below - 20°C, the display is not easily readable; however, longterm use is not affected.
- For longterm use above 40°C, lithium battery passivation can lead to temporary reading problems (self-discharge protection), which can be resolved with repeated utilization.
- At temperatures above 45°C self-discharging of the battery increases. At continuous operations above 45°C the battery life time will be reduced by 1/3.
- Exposure to temperatures above 55°C can result in permanent discoloration of the display.
- There is danger of a gas explosion if the lithium battery is heated to temperatures exceeding 100°C.

2.3 Exceptional environmental conditions

Pay attention to the following when dataloggers are used under special environmental conditions:

- IR radiation (heat) and superheated steam can damage the surface coating of the casing
- There is a risk that the battery may explode if the logger is used under microwave radiation

BEFORE THE INITIAL START-UP THE DATALOGGER MUST BE AT ROOM TEMPERATURE!
2.4 Precautionary measures for handling units containing lithium batteries

- Do not short-circuit and charge batteries: Explosion hazard
- Do not throw units which contain batteries into fire: Explosion hazard
- Do not subject batteries to mechanical stress and do not dismantle them as leaking battery fluid is highly corrosive and lithium can generate severe heat or can ignite a fire if it comes into contact with moisture.
- Do not heat battery operated units to temperatures exceeding 100°C: Explosion hazard
- Avoid excessive impact
- Follow the manufacturer specifications for storing batteries
- Return batteries to the supplier for correct waste disposal

2.5 Precautions in handling with power supply units

Follow the safety and application instructions of the power supply unit.

2.6 Applications in intrinsically safe environments

During authorized use, only the PT100 sensor is located in the intrinsically safe area. The data logger and the power supply are installed outside of the intrinsically safe area. The sensor is powered by the datalogger. For the standard-compliant mode, the points in the chapter 2.6.1 Measures to maintain explosion protection during operation and 2.6.3 Example of explosion-proof refrigerators must be met. The sensor must comply with the Chapter 12.3 Marking for use ECOLOG-NET LP4 in potentially explosive atmospheres specified label has to be provided.

2.6.1 Measures to maintain explosion protection during operation

- Only operate the datalogger ECOLOG-NET LP4 in dry, clean locations
- Connect or disconnect cables only with current disconnected
- Only use the power supply provided, Part no. 2750-E12
- Ensure that there is a strain-free cable entry point
- The sensor cable may be extended only in the unprotected zone, maximum cable length for the connection cable and extension cable is 30m
- Only use the connection cable type, Part no.3205-Lxx, with a maximum length of 30m or the cable that is permanently attached to the sensor in intrinsically safe zones
- Only operate using PT100 sensors that have been specified by Elpro-Buchs AG
- In order to ensure the proper functioning of the datalogger, the customer may not make repairs to the datalogger or the power supply.
- The alarm switch (relay contact) may only be used in accordance with the wiring diagram 9.1 Alarm; Connector white.
- Alarm outputs 1 and 2 may not be used
- Ground the housing with R <= 1 MOhm
2.6.2 Application area of the sensor: II 3G Ex nA IIC T6 X

II Device group II for use in all areas at risk of an explosion except mines
3 Category 3, appropriate for use in zone 2 (rare hazard)
G Area at risk for explosion due to gas and vapors; however, not because of dust
Ex Explosion protection according to European standards: EN 60079-0:2009, EN 60079-15:2010,
   EN 1127-1:2011 and the standards for specific types of ignition protection
nA Type of ignition protection: non-sparking equipment
IIC Use in all hazardous areas outside of the mines:
   Group II subdivision C
T6 Temperature class T6: max. surface temperature 85°C with a safety margin of 5 Kelvin for con-
   stantly hot surfaces.
X • Special installation conditions 2.6.1 Measures to maintain explosion protection during
   operation to 2.6.3 Example of explosion-proof refrigerators
   • List of PT100 sensors, which are approved for use in intrinsically safe area 12.3 Marking
   for use ECOLOG-NET LP4 in potentially explosive atmospheres
2.6.3 Example of explosion-proof refrigerators

Laboratory, hazardous free area

Fridge
II 3G Ex nA IIC T6

Sensor, II 3G Ex nA T6 X

Sensor, II 3G Ex nA T6 X

Sensor, II 3G Ex nA T6 X

Sensor, II 3G Ex nA T6 X

LAN

12VDC

230VAC

Power Supply Unit
EN60601-1
Part No 2750-E12
2.7 Battery backup / lifetime

approx. 3 months In the event of a power failure, the internal battery backup functions for approximately.

Battery low This indicator (1.2 Display) is activated when the battery capacity limit is reached. Replace the battery at the next possible opportunity (11. Maintenance).

2.8 Logger display / Power-saving mode

The datenlogger ECOLOG-NET has a power-save mode which switches off the display. As a result, measurements are only made during the defined log interval. Four small circles located in the display indicate that the datalogger is functioning and recording correctly. The display is switched on and off using the elproLOG ANALYZE software - Extended setup - Display mode / power save. 5.2 Extended setup

If no external power supply is available, the datalogger automatically enters power-saving mode. To check the status during Power-saving mode, use the keypad to temporarily switch on the display.

2.9 Overlaying graphical data

elproLOG ANALYZE Function: Overlaying

This function allows graphs from multiple dataloggers to be ECOLOG-NET LP4 displayed simultaneously. To utilize this function, each datalogger must have the same recording interval. 5.1 Datalogger setup
3. Configuring the datalogger

3.1 Assign network address

For datalogger identification within a network environment, a unique network address is assigned to each datalogger. This address is made up of 3 pieces of information: IP address, subnet mask and default gateway. For the elproLOG ANALYZE and elproLOG MONITOR programs, we recommend the use of a static IP address.

In order to avoid network conflicts, the network administrator must assign the addresses! These 3 pieces of information must be entered manually into each datalogger using the software Digi Device Discovery. For additional installation information see the elproLOG ANALYZE operating instructions, SE3003E, or the online help feature. For additional network information see ECOLOG-NET service instruction IT6001A.

This manual can be found on the ELPRO homepage at www.elpro.com/Download/Data Sheets/ECOLOG-NET networkable datalogger.

3.1.1 Desktop installation

The relevant network address is assigned to the datalogger during this workstep. This work should be performed at the place of use prior to final installation, e.g. in an office.

3.1.2 Documentation

Documentation for the implemented configurations. Log the network parameters on a status printout from the radio datalogger.

3.2 Installing the datalogger

3.2.1 Installation

- Mount the datalogger at the place of use in accordance with the network plan.
- Connect the network, power supply, sensors, contact inputs and alarm outputs.

3.2.2 Communication test

Check communication - PING

3.2.3 elproLOG CONFIG

The purpose of this software is to facilitate the organization of the datalogger in the network environment. The dataloggers can be combined into groups or logical units within the network. Both elproLOG ANALYZE and elproLOG MONITOR work with this information. For more information about the use of this software see elproLOG CONFIG operating instructions, SC3001E or the on-line help function.

3.2.4 elproLOG ANALYZE

Set the parameters on the datalogger, 5. Settings in elproLOG ANALYZE and 6. Threshold value and alarm function.

Error messages no. 5 4. Menu
3.2.5  elproLOG MONITOR

This program is used for the on-line measured value display. For a detailed description of the functions and use applications elproLOG MONITOR operation manual SM3001E or the on-line help.

3.2.6  Verification of the installation

Check the installation and ensure that sensor positions, alarm parameters and network addresses are correct. Test connectors can be used as an aid in simulating defined measured values.
# Menu

<table>
<thead>
<tr>
<th></th>
<th>1 Power-saving mode</th>
<th>The 4 small circles only appear when the datalogger is in power-save mode and is logging data. The measured value display can be activated for a few seconds by pressing the menu button.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 Measuring mode</td>
<td>Jump to menu item 3 or 4 or 5; depending upon the situation</td>
</tr>
<tr>
<td></td>
<td>3 Start</td>
<td>Only appears when the datalogger is in start/stop mode and is waiting for the start time.</td>
</tr>
<tr>
<td></td>
<td>4 Acknowledgment</td>
<td>Appears when there is an alarm or when the &quot;self-sustaining&quot; function is selected and an alarm is registered.</td>
</tr>
<tr>
<td></td>
<td>5 Functions</td>
<td>Timestamp indicated as D2 and exit menu, jump to menu item 8</td>
</tr>
<tr>
<td></td>
<td>6 LCD display test</td>
<td>Exit menu, jump to menu item 8</td>
</tr>
<tr>
<td></td>
<td>7 Alarm output test</td>
<td>Exit menu, jump to menu item 8</td>
</tr>
<tr>
<td></td>
<td>8 Exit menu</td>
<td>Automatic jump back to menu item 1 or 2 or 3</td>
</tr>
</tbody>
</table>

**ERROR 5: MODULE DOES NOT RESPOND DURING DATA READ-OUT**
- THE DATALOGGER IS NOT IN MEASURING MODE
- PRESS F1/F3 TO EXIT THE MENU
5. Settings in elproLOG ANALYZE

5.1 Datalogger setup

Window "Datalogger Setup" is used to define the implemented measuring parameters.

- Mode
- Log Start
- Log Interval
- Module Tag
- Zoom Preset
- Sensor

5.2 Extended setup

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct calibration by values ...</td>
<td>This function is used for calibration of the datalogger only</td>
</tr>
<tr>
<td>Set calibration date</td>
<td></td>
</tr>
<tr>
<td>Definition of the alarm thresholds...</td>
<td>6. Threshold value and alarm function</td>
</tr>
<tr>
<td>Reset alarm</td>
<td>This function is used to acknowledge an alarm message.</td>
</tr>
<tr>
<td>Set date and time...</td>
<td>Used to adjust the integrated datalogger clock</td>
</tr>
<tr>
<td>Configure logger display...</td>
<td>2.8 Logger display / Power-saving mode</td>
</tr>
<tr>
<td>Configure communication settings...</td>
<td>No function in this version</td>
</tr>
<tr>
<td>Set temperature unit...</td>
<td>Selection of temperature units used.</td>
</tr>
<tr>
<td>Set new password...</td>
<td>A selection can be made between °C and °F</td>
</tr>
<tr>
<td>Programming of battery change time...</td>
<td>This function restarts the radio datalogger after a battery replacement (2. Instructions and safety guidelines).</td>
</tr>
</tbody>
</table>
6. Threshold value and alarm function

Sensor selection

The ECOLOG-NET LP4 datalogger has a feature for monitoring threshold values. Threshold values and alarm parameters are defined in the "Setup of Alarm Parameters" window. Threshold values are only monitored using sensors that are selected in the "Datalogger setup - sensors" window. 5.1 Datalogger setup

6.1 Conditions

Threshold values
Alarm Delay Time
Alarm output

- The measured value must be outside the defined tolerance range, i.e. the measured value is higher than the maximum allowable threshold value or lower than the minimum allowable threshold value.
- The threshold violation must exceed the defined alarm delay times.
- The threshold violation remains active until the measured value reaches the defined tolerance range again.

No alarm conditions are:
- Cable break of the sensor cable
- Short circuit of the sensor cable
- Readings outside of the measuring range

10.1 Datalogger display and elproLOG ANALYZE
6.2 Window: Setup of Alarm parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm on</td>
<td>Activate this checkbox to switch on the alarm threshold function. 6. Threshold value and alarm function.</td>
</tr>
<tr>
<td>Alarm thresholds</td>
<td>Input fields for the lower and upper threshold values.</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>The Hysteresis is used to avoid &quot;fluttering&quot; of the alarm contact. A change in the contact only occurs when the measured value deviates from the threshold by the amount of the hysteresis.</td>
</tr>
<tr>
<td>Alarm-Delay Time</td>
<td>- normal</td>
</tr>
<tr>
<td></td>
<td>An alarm is not triggered until the threshold violation has lasted longer than the specified time.</td>
</tr>
<tr>
<td></td>
<td>- defrost on</td>
</tr>
<tr>
<td></td>
<td>If the &quot;Check defroster&quot; function is active and defrost contact D1 is closed, then an alarm is not triggered until the threshold violation has lasted longer than the time specified at this enter field.</td>
</tr>
<tr>
<td>Alarm output</td>
<td>This mode is used for all applications where the alarm contact controls an external device such as a flash or a telephone dialing unit.</td>
</tr>
<tr>
<td></td>
<td>- No selection made</td>
</tr>
<tr>
<td></td>
<td>The text: ALARM is displayed for the duration of the threshold violation.</td>
</tr>
<tr>
<td></td>
<td>The alarm contact is closed for the duration of the threshold violation.</td>
</tr>
<tr>
<td></td>
<td>- self-sustaining</td>
</tr>
<tr>
<td></td>
<td>This mode is used for all applications where the alarm contact controls an external device such as a flash or a telephone dialing unit.</td>
</tr>
<tr>
<td></td>
<td>The text: ALARM is displayed until a manual reset is executed.</td>
</tr>
<tr>
<td></td>
<td>The alarm contact remains closed until a manual reset is executed.</td>
</tr>
<tr>
<td></td>
<td>- Buzzer</td>
</tr>
<tr>
<td></td>
<td>Switches the buzzer on/off</td>
</tr>
<tr>
<td>Close / Download /</td>
<td>These buttons are used to program the datalogger and to close the &quot;Alarm Parameters Setup&quot; window.</td>
</tr>
<tr>
<td>status Print</td>
<td></td>
</tr>
</tbody>
</table>

6.3 Threshold value violation

1. In an active display, a threshold value violation is indicated by two arrows. 1.2 Display. They are only visible for the duration of the threshold violation. This status is not logged.

2. The text: ALARM is displayed when the conditions for an alarm are fulfilled and depending upon the selected alarm output (self-sustaining), and the display/power-saving mode.

3. If an alarm is triggered, the ECOLOG-NET LP4 has a collective alarm function. This function is simultaneously activated with the text: ALARM activated 6.4 Collective alarm contact functions and 9. Alarm diagrams.

4. After the alarm delay time is up, an alarm is not registered in the memory until the next log interval has elapsed. All threshold violations / alarms are registered in the alarm protocol, even if they are shorter than the defined log interval!

Alarm messages can be acknowledged manually by using the PC software or the keypad.

Acknowledging alarm messages
6.4 Collective alarm contact functions

**Alarm signaling:**
- Relay contact S
- Alarm 1
- Alarm 2
- Buzzer

Datalogger type ECOLOG-NET LP 4 has 4 possibilities for alarm signaling:
- Relay contact S
  - This is a potential-free switch-over contact. The contact switches when an alarm is triggered or when the external power supply fails.
- Semiconductor contact alarm 1
  - Only reacts when there is an alarm
  - This is a semiconductor switch - break contact to datalogger GND
- Semiconductor contact alarm 2
  - Only reacts when there is an alarm
  - This is a semiconductor switch - make contact to datalogger GND
- Internal Buzzer
  - Serves as an acoustic alarm

6.4.1 Time response collective alarm

DURING NORMAL OPERATION, THE THRESHOLD VALUES ARE CHECKED EVERY 4 SECONDS OR AT THE DEFINED LOG INTERVAL IF A SHORTER TIME HAS BEEN SET. IN POWER-SAVE MODE, THRESHOLD VALUES ARE MONITORED EITHER IN 1 MINUTE CYCLES IF THE LOG INTERVAL IS LONGER THAN 1 MINUTE OR AT THE DEFINED LOG INTERVAL IF SHORTER INTERVALS HAVE BEEN SET. THE TEXT: ALARM AND ADDITIONAL ALA IS DISPLAYED IN THE POWER SAVING MODE BY FULFILLING THE RELEVANT CONDITIONS. THRESHOLD VALUES ARE NOT MONITORED WHEN THE LOGGER IS IN STOP MODE.
1. **Alarm is shorter than the datalogger recording interval**

   - **ECOLOG-NET**: Alarm contact responds immediately.
   - **ANALYZE**: No alarm measurement, because the alarm is shorter than the logging interval.
   - **ANALYZE**: Alarm protocol with 2 entries - alarm on/off
   - **MONITOR**: Represents an alarm for 1 cycle time.

2. **Alarm is logged**

   - **ECOLOG-NET**: Alarm contact responds immediately.
   - **ANALYZE**: 2 Alarm measurement
   - **ANALYZE**: Alarm protocol with 2 entries: alarm on/off.
   - **MONITOR**: Represents an alarm for 7 cycle time.

3. **Alarm with self-retention; logged**

   - **ECOLOG-NET**: Alarm contact responds immediately.
   - **ANALYZE**: 1 alarm measurement
   - **ANALYZE**: Alarm protocol with 2 or 3 entries: Alarm on/off/acknowledged.
   - **MONITOR**: Represents an alarm till the end of the limit value violation (5 cycle times). The duration of the self-retention period is not represented as an alarm.
### 4. Alarm with delay time; logged

- **ECOLOG-NET**: Alarm contact reacts after the delay time has elapsed.
- **ANALYZE**: 1 alarm measurement
- **ANALYZE**: Alarm protocol with 2 entries: alarm on/off. "Alarm on" is logged after delay time has elapsed.
- **MONITOR**: Represents an alarm for 3 cycle time. The end of the third cycle already falls in a new, delayed alarm and therefore it is not recognized as an alarm.

### 5. Reset of delay time by short threshold value violations

- **ECOLOG-NET**: Alarm contact does not react. Even in the case of repeated, short threshold value violations, no alarm is logged since the time delay starts from the beginning each time.
- **ANALYZE**: No alarm measurement
- **ANALYZE**: No entry in the alarm measurement
- **MONITOR**: Represents no alarm.

### 6. Alarm with time delay not logged

- **ECOLOG-NET**: Alarm contact reacts after the delay time has elapsed.
- **ANALYZE**: No alarm measurement
- **ANALYZE**: Alarm protocol with 2 entries: alarm on/off.
- **MONITOR**: Represents an alarm for 3 cycle time.
7. Contact inputs D1 and D2

Both inputs are busy with dual functions!
In each case, only one function should be used!

<table>
<thead>
<tr>
<th>Function</th>
<th>possible configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign</td>
<td>D2 key</td>
</tr>
<tr>
<td>Defrost input</td>
<td>D1 external</td>
</tr>
<tr>
<td>Alarm forwarding</td>
<td>D1 external</td>
</tr>
</tbody>
</table>

D2 key
See function F2, timestamp designated as D2 F. Menu
This function can be used to register incidents such as a watchman's patrol on the logger.

D1 external
As defroster input (Threshold value and alarm function) or for alarm forwarding.
Wiring Supply, Contact input, Alarm 2

D2 external
For alarm forwarding.
Wiring Supply, Contact input, Alarm 2

The status of D1 and D2 is not recorded in the alarm protocol and has no influence on the alarm contacts. They are first logged to memory on the datalogger at the end of the following recording interval in memory. In the measurement table elproLOG ANALYZE both contacts are represented as D1, D2 or MarkPos.

Alarm forwarding
Alarm forwarding is used in combination with the elproLOG MONITOR software. The status (alarm / no alarm) of the contacts is checked during the update of the monitor data. Status changes between two updates are not detected.
8. Pin assignments and connections

8.1 PT100 sensors 1 - 4

Connector green
DB9 female

Schema

<table>
<thead>
<tr>
<th>Cable &lt; 12m</th>
<th>Cable 12 ... 30m</th>
<th>Cable &lt; 30m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part no. 3205</td>
<td>Part no. 3206</td>
<td>Part no. 2790</td>
</tr>
<tr>
<td>red</td>
<td>white</td>
<td>white</td>
</tr>
<tr>
<td>red</td>
<td>brown</td>
<td>brown</td>
</tr>
<tr>
<td>white</td>
<td>back</td>
<td>green</td>
</tr>
<tr>
<td>white</td>
<td>blue</td>
<td>yellow</td>
</tr>
</tbody>
</table>

PT100 3-wires

PT100 4-wires cable length < 12m
Part no. 3205

PT100 4-wires cable length 12 ... 30m
Part no. 3206
Pin assignments and connections

PT100 4-wires cable length > 30m Part no. 2790

CABLE LENGTH

12.1 Measuring ranges and Accuracy
8.2 Alarm

white plug  
DB9 female  
Part no. 2754-WS

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>sb</td>
<td>Alarm contact (relay contact)</td>
</tr>
<tr>
<td>2</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>Alarm 1</td>
<td>Alarm output</td>
</tr>
<tr>
<td>5</td>
<td>V out</td>
<td>Alarm power supply (logger operating voltage)</td>
</tr>
<tr>
<td>6</td>
<td>sc</td>
<td>Alarm contact (relay contact)</td>
</tr>
<tr>
<td>7</td>
<td>sa</td>
<td>Alarm contact (relay contact)</td>
</tr>
<tr>
<td>8</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
</tbody>
</table>

**Alarm contact**

- Alarm contact (relay contact)
- Relay contact represented in dead state.
- Connection sa - sc: Alarm
- Connection sb - sc: no a Alarm
- This relay is actuated (sb - sc) as soon as the power supply is available.
- Switching load max. 42VAC or VDC; 500mA

**Alarm output 1**

- Alarm output 1(open)
- Semi-conductor contact! Use only for DC voltage (DCV)
  - Opens in the event of an alarm
  - No floating contact
  - Alarm cable max. 15m long

**ALARM OUTPUT 1 MAY NOT BE USED WITH A LOGGER WHOSE SENSORS ARE USED IN POTENTIALLY EXPLOSIVE ENVIRONMENTS!**
8.3 Supply, Contact input, Alarm 2

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alarm 2</td>
<td>Alarm output 2</td>
</tr>
<tr>
<td>2</td>
<td>D1 external</td>
<td>Contact input 1</td>
</tr>
<tr>
<td>3</td>
<td>D2 external</td>
<td>Contact input 2</td>
</tr>
<tr>
<td>4</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>V in</td>
<td>External power supply (logger operating voltage)</td>
</tr>
<tr>
<td>6</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>7</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>8</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>Gnd</td>
<td>Ground</td>
</tr>
</tbody>
</table>

**FOLLOW THE SAFETY AND APPLICATION INSTRUCTIONS OF THE POWER SUPPLY UNIT.**

Contact input 1 and 2

- Semi-conductor contact! Use only for DC voltage (DCV)
- Contact closes during an alarm
- No floating contact
- Alarm cable max. 15m long

Alarm output 2

- External power supply unit
  - ATTENTION: The starting current is temporarily ca 1.6A (100ms).
  - If more than one datalogger is being operated using the same power supply, the power supply must be appropriately powerful.

**ALARM OUTPUT 2 MAY NOT BE USED WITH A LOGGER WHOSE SENSORS ARE USED IN POTENTIALLY EXPLOSIVE ENVIRONMENTS!**
9. Alarm diagrams

9.1 Alarm; Connector white

Alarm = threshold violation

- Alarm: Contact open
- Datalogger requires an external power supply for signaling
  - 8.3 Supply, Contact input, Alarm 2
- Relays
- Switching load max. 42VAC or VDC; 500mA

Alarm = Threshold value violation or failure of external power supply

- Alarm: Contact open
- Relays
- Switching load max. 42VAC or VDC; 500mA

Alarm = Threshold value violation, failure of external power supply or cable break

- Alarm: Contact open
- Relays
- Switching load max. 42VAC or VDC; 500mA

Alarm = Threshold value violation or cable break

- Alarm: Contact open
- Datalogger does not require external power supply
- Semi-conductor contact! Use only for DC voltage (DCV)
- Switch load max. 24VDC; 200mA

9.1.1 Elpro telephone dialing device

- Alarm: Threshold violation, loss of datalogger power or cable damage between datalogger and telephone dialing device.
- Jumper 16, see image
- Settings B-TEL 2
  - Set "Connection type" to "positive command"

THE REPRESENTATIONS OF THE ALARM CONTACTS CORRESPOND TO A LOGGER NOT CONNECTED TO A POWER SUPPLY UNIT OR DURING AN ALARM!

9.2 Supply; Connector red

Alarm = Threshold value violation

- Alarm: Contact closed
- Semi-conductor contact! Use only for DC voltage (DCV)
- Signalization has its own power supply
- Switch load max. 24VDC; 200mA
10. Status and error messages

10.1 Datalogger display and elproLOG ANALYZE

<table>
<thead>
<tr>
<th>Display</th>
<th>elproLOG ANALYZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAL</td>
<td>Additional alarm text in the power saving mode</td>
</tr>
<tr>
<td>Strt</td>
<td>Datalogger is waiting for the log start time programmed at menu item: Datalogger setup</td>
</tr>
<tr>
<td>SIOP</td>
<td>Datalogger is in Start/Stop mode and the memory is full. No further measured values can be logged. In order to resume data logging, the logger must be reprogrammed. This is the condition upon delivery of ECOLOG-NET LP4.</td>
</tr>
<tr>
<td>b.F.</td>
<td>Battery voltage is low</td>
</tr>
<tr>
<td>C.F.</td>
<td>Faulty datalogger</td>
</tr>
<tr>
<td>HHHH</td>
<td>Logger keyboard is defective</td>
</tr>
<tr>
<td>L.C.</td>
<td>Faulty datalogger</td>
</tr>
</tbody>
</table>
| O.F.    | >=max - Measured value is larger than the allowed maximum  
- Sensor - cable damage |
| U.F.    | <=min - Measured value is smaller than the allowed minimum  
- Sensor - short-circuit |

10.2 Datalogger status in elproLOG ANALYZE

This error message appears in the datalogger status report in line: "Module time". The cause of this error message may be a battery change if the battery change time was not programmed (11. Maintenance).

This message is shown in the data logger status in line: "Last reprogrammed on". It is the result of the data logger reset counter. All entries in the alarm protocol will be erased!

The status of the batteries is displayed in the (elproLOG ANALYZE) status information. Battery replacement: 11. Maintenance

The version of the firmware is documented in the status.
11. Maintenance

*Maintenance schedule*

To ensure proper datalogger functioning, the following steps should be part of a periodic maintenance schedule:

- Perform datalogger readout and save the data
- Test the alarm function, if implemented
- Replace the battery 12.4 *Dimensional view*
  (Part no. 2820, set of 2, storable for at least 5 years / lithium 3.6V, 1900mAh, AM3/LR6/AA)

*Battery*

An energy consumption counter is used to monitor datalogger battery life. For this reason, only the specific manufacturer recommended battery should be used. Do not remove the battery from the logger when it is not in use. The use of third party batteries or removal of batteries will produce incorrect status information at the battery indicator.

*Replacing battery*  

⚠️ **AFTER THE BATTERIES ARE CHANGED, THE BATTERY CHANGE TIME MUST BE SET (ELPROLOG ANALYZE SOFTWARE - EXTENDED SETUP - PROGRAMMING BATTERY CHANGE TIME...) OTHERWISE THE ENERGY COUNTER WILL NOT FUNCTION CORRECTLY!**
12. Technical data

Additional product information can be found on the elproLOG ANALYZE CD-ROM.

12.1 Measuring ranges and Accuracy

12.1.1 Temperature measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>-200.0°C ... -100.0°C</td>
<td>0.1°C</td>
<td>± 0.3°C</td>
</tr>
<tr>
<td>-99.9°C ... 400.0°C</td>
<td>0.1°C</td>
<td>± 0.2°C</td>
</tr>
<tr>
<td>400.1°C ... 500.0°C</td>
<td>0.1°C</td>
<td>± 0.3°C</td>
</tr>
<tr>
<td>500.1°C ... 600.0°C</td>
<td>0.1°C</td>
<td>± 0.5°C</td>
</tr>
</tbody>
</table>

This information applies to the ECOLOG-NET LP4 sensors at room temperature and without PT100.

12.1.2 Error caused by cable symmetries at lengths over 30m

<table>
<thead>
<tr>
<th>Length</th>
<th>Cable</th>
<th>typical errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>50m</td>
<td>4x0.25mm², shielded</td>
<td>± 0.1°C</td>
</tr>
<tr>
<td>max. 80m</td>
<td>4x0.34mm², shielded</td>
<td>± 0.2°C</td>
</tr>
</tbody>
</table>

12.1.3 Error caused by 2 / 3 wire PT100 sensors

<table>
<thead>
<tr>
<th>Wire</th>
<th>Cable</th>
<th>typical errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2x0.366mm²</td>
<td>± 0.27°C/m</td>
</tr>
<tr>
<td>3</td>
<td>2x0.366mm²</td>
<td>± 0.21°C/m</td>
</tr>
</tbody>
</table>

12.2 Operating range

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>-35°C ... 55°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective class</td>
<td>IP30</td>
</tr>
<tr>
<td>Power supply</td>
<td>24VDC</td>
</tr>
<tr>
<td>Alarm contact</td>
<td>42VAC or VDC</td>
</tr>
<tr>
<td>Alarm output 1 and 2</td>
<td>24VDC</td>
</tr>
<tr>
<td>Alarm cable, max. length</td>
<td>15m</td>
</tr>
</tbody>
</table>

MAY NOT BE USED WITH A LOGGER WHOSE SENSORS ARE USED IN POTENTIALLY EXPLOSIVE ENVIRONMENTS!
### 12.3 Marking for use ECOLOG-NET LP4 in potentially explosive atmospheres

#### 12.3.1 PT100 sensor

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Identification</th>
</tr>
</thead>
</table>
| 3155-Lxx | PT100, 4-wire ML-temperature sensor -200°C ... +500°C (DIN A -70°C ... +300°C) stainless steel, flexible  
  LS=350mm, D=3mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3155-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3165-Lxx | PT100, 4-wire ML-temperature sensor -200°C ... +500°C (DIN A -70°C ... +300°C) stainless steel, flexible  
  LS=350mm, D=3mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3165-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3166-Lxx | PT100, 4-wire ML-temperature sensor -90°C ... +500°C (DIN A -70°C ... +300°C) stainless steel, flexible  
  LS=250mm, D=3mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3166-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3167-Lxx | PT100 4-wires temperature sensor,-80°C +105°C (DIN A -70°C ... +105°C) molded plastic, boil resistant  
  LS=20mm, D=5mm | ELPRO Buchs AG  
  ID: __________  
  3167-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3168-Lxx | PT100, 4-wire sensor for dense foods, DIN A, -50°C .... +180°C plastic, boil resistant  
  LS=120mm, D=4mm, cable L=6m, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3168-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3172-Lxx | PT100, 4-wire ML-temperature sensor -200°C ... +500°C (DIN A -70°C ... +300°C) stainless steel, flexible  
  LS=750mm, D=3mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3172-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3173-Lxx | PT100, 4-wire DIN A screw-in temperature sensor DIN A -50°C. .... 120°C , R1/8” Stainless steel, LS=24mm, D=3mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3173-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3181-Lxx | PT100-temperature sensor, L=5.0m vapor-proof, pressure-resistant, autoclavable -200°C ... +180°C (DIN A -70°C ... +150°C, DIN A, D=5mm, LS=100mm, Teflon cable L=5m, T max. cable 220°C | ELPRO Buchs AG  
  ID: __________  
  3181-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3188-Lxx | PT100, 4-wire A ML-temperature sensor -90°C ... +350°C (DIN A -70°C ... +300°C) stainless steel, flexible  
  D=3mm, LS=100mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3188-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3190-Lxx | PT100, 4-wire DIN A ML temperature sensor -35? .... +350°C, stainless steel, slow  
  D=6mm, LS=100mm, T max. connector 90°C, T max. cable 180°C | ELPRO Buchs AG  
  ID: __________  
  3190-Lxx  
  II 3 G Ex nA IIC T6 X |
| 3205xx  | Connection cable lmax. 30m with molded connector on the sensor side, IP67 | ECOLOG-NET LP4  
  EL6006Ec |
12.3.2 Datalogger and power supply

Achtung!
Datenlogger mit Sensor im explosionsgefährdeten Bereich

Caution!
Datalogger with sensor in hazardous area

Art.-Nr 2750-E
Netzteil für eigensicheren Datenlogger

Part No 2750-E
Power supply unit for intrinsically safe datalogger

12.4 Dimensional view

1. Battery;
   for a battery exchange, the rear wall has to be removed.
2. Screws for the attachment of the rear wall
### 12.5 Accessories

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2750-V24</td>
<td>Power supply unit plug DB9 24VDC, 0.35A</td>
</tr>
<tr>
<td>2751-V24</td>
<td>Power supply unit plug DB9 24VDC, 1.6A</td>
</tr>
<tr>
<td>2750-E12</td>
<td>Power supply unit with plug DB9 for applications in potentially explosive environments</td>
</tr>
<tr>
<td>2754-MT</td>
<td>Connector DB9 with soldering work of sensors metalized casing</td>
</tr>
<tr>
<td>2754-WS</td>
<td>Plug DB9, male, alarm, white</td>
</tr>
<tr>
<td>2754-RT</td>
<td>Plug DB9, female, power supply, red</td>
</tr>
<tr>
<td>2758-SET</td>
<td>with 2m Patch, Crossover and USB cable</td>
</tr>
<tr>
<td>3205-M005</td>
<td>Extension cable for PT100 sensor 0.5m for cable guides e.g. refrigerators</td>
</tr>
<tr>
<td>3205-Lxx</td>
<td>Connection cable PT100 (up to 30m) with M12 plug</td>
</tr>
<tr>
<td>3206-Lxx</td>
<td>4-wire connection cable with M12 plug for cable lengths &lt;30m</td>
</tr>
<tr>
<td>2790</td>
<td>4-wire connection cable without M12 plug for cable lengths &gt;30m</td>
</tr>
<tr>
<td>2755-Q</td>
<td>Plug M12 (f) with insulation displacement connection technology</td>
</tr>
<tr>
<td>2757-Q</td>
<td>Plug M12 (m) with insulation displacement connection technology</td>
</tr>
<tr>
<td>2311-B0</td>
<td>Various alarm flashers</td>
</tr>
<tr>
<td>2311-F</td>
<td></td>
</tr>
<tr>
<td>2311-FS</td>
<td></td>
</tr>
<tr>
<td>2820</td>
<td>Replacement battery, set of 2, can be stored for up to 5 years</td>
</tr>
</tbody>
</table>
13. Declarations of conformity

13.1 Declaration of conformity for ECOLOG-NET LP4

EG | CE | EC
Konformitätserklärung | Déclaration de conformité | Declaration of conformity

Gültig ab | Valable à | Valid from 04. 2011
Zertifikat Nr. | No. du certificat | Certificate No. 10100 04/11

<table>
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<tr>
<th>Beschreibung</th>
<th>Description</th>
<th>Description</th>
<th>Datalogger Typ</th>
<th>Type</th>
<th>Type</th>
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<tbody>
<tr>
<td>ECOLOG-NET LP4</td>
<td>27/41</td>
<td>for temperature recording</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECOLOG-NET LP4F</td>
<td>2712-CR</td>
<td>for temperature recording</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECOLOG-NET LH</td>
<td>27/5</td>
<td>for humidity and temperature recording</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECOLOG-NET LAF</td>
<td>27/10</td>
<td>for 0*-4.20mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECOLOG-NET LAF</td>
<td>27/10-CR</td>
<td>for 0*-4.20mA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hersteller | Manufacturer | Fabrikant | ELPRO-BUCHS AG, CH 9470 Buchs, Switzerland
Ablage | File | Classement | ELPRO 25 E
Richtlinien EMV | Directives EMV | Directives CEM | 89/336/EEG
Standards | Standards | Standards | EN 50081-1:2006; EN 61000-6-2:2006; EN 61000-6-3:2006; EN 61000-6-4:2006

Wir erklären, dass das oben aufgeführte Produkt den erwähnten Richtlinien und Normen oder normativen Dokumenten entspricht. Diese Erklärung gilt für alle Ausführungen innerhalb der Modell-Serie.

Nous déclarons que le produit décrit ci-dessus est conforme aux dispositions de directives et les normes ou autres documents normatifs susmentionnés. Cette déclaration est valable pour tous les modèles mentionnés ici.

Wir deklarieren, dass das hier beschriebene Produkt den angegebenen Richtlinien und Normen entspricht. Diese Erklärung gilt für alle Ausführungen innerhalb der Modellreihe.

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We declare that the product listed above is in conformity with the mentioned provisions of directives and the standards or other normative documents.

This declaration is valid for all versions of the product series detailed.

Buchs, den 26. April 2011
Buchs, le 26 Avril 2011
Buchs, 26. April 2011

ELPRO-BUCHS AG | Langtullistrasse 52 | CH 9470 Buchs 50 | Switzerland
ELPRO-BUCHS AG Quality Manager
KeesarFrick

ECOLOG-NET LP4
EL6006Ec
## 13.2 Declaration of conformity for ECOLOG-NET LP4 in potentially explosive environments

94/9/EG (ATAEX95)

---

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Art. No.</th>
<th>Part. No.</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECOLOG-NET LP4</td>
<td>2701-Ex</td>
<td></td>
<td></td>
<td>for temperature recording</td>
<td></td>
</tr>
<tr>
<td>ECOLOG-NET WP4</td>
<td>2703-Ex</td>
<td></td>
<td></td>
<td>for temperature recording</td>
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</table>

Gültig ab | Valable à | Valid from: 04. 2011

Herstellerzertifikat Nr. | No. du certificat | Certificate No: 10.110 04/11

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<th>Manufacturer</th>
<th>ELPRO-BUCHS AG, CH 9470 Buchs, Switzerland</th>
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<td>Ablage</td>
<td>Classement</td>
<td>ELPRO 26 E</td>
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<tr>
<td>Richtlinien EMV</td>
<td>Directives CEM</td>
<td>Directives CEM 2004/108/EG (EMV)</td>
</tr>
<tr>
<td>Richtlinien ATEX</td>
<td>Directives ATEX</td>
<td>Directives ATEX 94/9/EG (ATEX95)</td>
</tr>
<tr>
<td>Standards</td>
<td>Standards</td>
<td>EN 61000-6-2:2006, EN 61000-6-4:2006</td>
</tr>
</tbody>
</table>

**Wir erklären, dass das oben aufgeführte Produkt den erwähnten Richtlinien und Normen oder normativen Dokumenten entspricht. Diese Erklärung gilt für alle Ausführungen innerhalb der Modell-Serie.**

**Nous déclarons que le produit décrit ci-dessus est conforme aux dispositions de directives et les normes ou normatifs ci-mentionnés. Cette déclaration est valable pour tous les modèles parmi cette série.**

**We declare that the product listed above is in conformity with the mentioned provisions of directives and the standards or other normative documents. This declaration is valid for all versions of the product series detailed.**

---

Buchs, den 26. April 2011
Buchs, le 26 Avril 2011
Buchi, 26 April 2011

---

ELPRO-BUCHS AG | Langäulistrasse 62 | CH 9470 Buchs SG | Switzerland
## Revision History

<table>
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<th>Author</th>
<th>Date</th>
<th>Version</th>
<th>Description</th>
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</thead>
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