RESOL Datalogger DL2

Mounting

Connection

Operation

Datalogger DL2

EN

Manual

www.resol.com

Table of contents

Safety advice

Please pay attention to the following safety advice in order to avoid danger and damage to people and property.

Attention should be paid to

- the statutory provisions for prevention of industrial accidents,
- the statutory provisions for environmental protection,
- the Health and Safety at Work Act 1974
- Part P of the Building Regulations 2005
- BS7671 Requirements for electrical installations and relevant safety regulations

These instructions are exclusively addressed to authorised skilled personnel.

- Only qualified electricians should carry out electrical works.
- Initial installation must be effected by qualified personnel named by the manufacturer

This manual contains important information about safe and proper usage of this product. Please keep this manual for future reference.

Subject to technical change. Errors excepted.

Description of symbols

WARNING!
Warnings are indicated with a warning triangle!

Signal words describe the danger that may occur, when it is not avoided.

- **Warning** means that injuries or even danger of life can occur.

Note
Notes are indicated with an information symbol.

➜ Arrows indicate instruction steps that should be carried out.

Disposal

- Dispose of the packaging in an environmentally sound manner.
- Dispose of old appliances in an environmentally sound manner. Upon request we will take back your old appliances bought from us and guarantee environmentally-friendly disposal of the devices.

Information about the product

Proper usage

The datalogger DL2 may only be used in conjunction with controllers with VBus® output in order to log and access data in compliance with the technical data specified in this manual.

Improper use excludes all liability claims.

CE-Declaration of conformity

The product complies with the relevant directives and is therefore labelled with the CE mark. The Declaration of Conformity is available upon request, please contact RESOL.

C E

RESOL®

1. Overview

- **Visualisation of system states**

- **Yield control**

- **Easy configuration by integrated web interface for standard Internet browsers**

- **Optional SD card**

- **Export function for further data processing in spreadsheet programs**

- **Direct connection of PC or router for remote access**

This additional module enables the acquisition and storage of large amounts of data (such as measuring and balance values of the solar system) over a long period of time. The DL2 can be configured and read-out with a standard Internet browser via its integrated web interface. For transmission of the data stored in the internal memory of the DL2 to a PC, an SD card can be used.

The DL2 is appropriate for all controllers with RESOL VBus®. It can be connected directly to a PC or router for remote access and thus enables comfortable system monitoring for yield monitoring or for diagnostics of faults.

Note
The SD card is not used for increasing the internal memory capacity. It is used for data transfer only.

Technical data

Housing:
Plastic PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 0 ... 40 °C

Dimensions: Ø130 mm, depth 45 mm

Mounting: wall mounting

Display: Bar LED for monitoring the memory capacity, 1 illuminated push-button for presentation of the SD card status

Interfaces: VBus® for connection to RESOL controllers. Ethernet (LAN), Auto MDIX 10/100 Base TX

Power consumption: 1,75 W

Power supply:
Input voltage of mains adapter: 100 ... 240 V
Rated current: 350 mA
Input voltage of Datalogger: 5V DC ± 5 %

Memory: 180 MB internal memory, with a logging interval of 5 min. sufficient for:

- 30 months for a systems with one *DeltaSol*® M, one HKM and one WMZ module

- 60 months for a system with one *DeltaSol*® M and one HKM

- 120 months for a system with one *DeltaSol*® M

Included with the DL2:
- Datalogger DL2, ready to plug in, with mains adapter and RESOL VBus®-cable

- Network cable, 1 m

- Wall plugs and screws

- Terminal block (for extending the RESOL VBus® -cable)

RESOL®

2. Installation
2.1 Mounting

(1)

⚠️ **WARNING!**
**Always disconnect the device from power supply before opening the housing!**

The unit must only be located in dry interior locations. It is not suitable for installation in hazardous locations and should not be placed close to any electromagnetic fields.

Please pay attention to separate routing of sensor cables and mains cables in order to avoid interferences.

➜ Choose a mounting place

➜ Drill two holes (Ø 6mm) next to each other at a distance of 113 mm and insert the enclosed wall plugs.

➜ Attach the base by means of the enclosed screws (4 x 40 mm) (1).

2.2 Connection
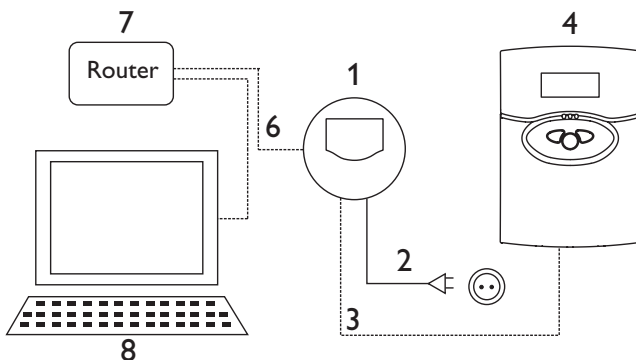
**Connect the datalogger (pos.1) to other modules in the following order:**

➜ Connect the data cable (RESOL VBus®, pos.3) to the RESOL controller (pos.4). Extend, if necessary, with enclosed screw terminal and (twisted) two-wire cable.

➜ Plug mains adapter (Pos.2) into the mains socket.

➜ For direct connection of a router or PC, connect the datalogger to the router (pos. 7) or PC (pos. 8) by means of the network cable (enclosed, pos.6).

interior view

The power supply to the device must be carried out via an external mains adapter and the supply voltage must be 100 ... 240 V~ (50 ... 60 Hz).

The DL2 is supplied with connected mains adapter and VBus®-cable.

VBus® connection at terminals:
1 / 2 = VBus®- connection 1
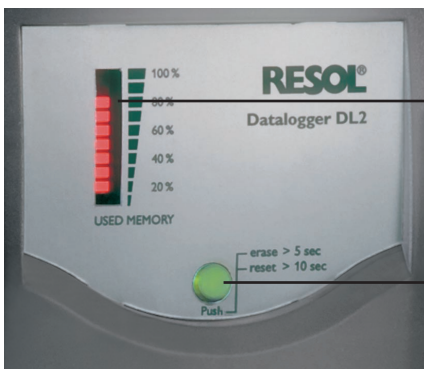3 / 4 = VBus®- connection 2
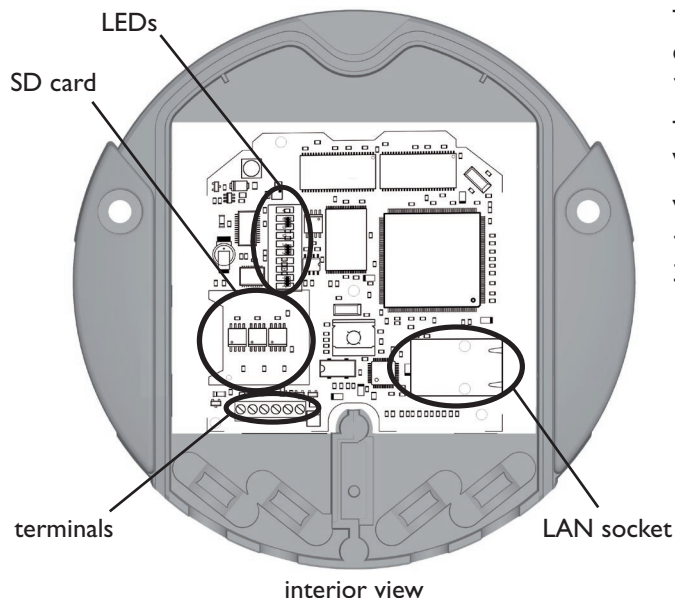
side view: LAN socket

side view: SD card slot

3.   Operation

fill level data memory

reset button

The datalogger can be configured, read out and deleted via the integrated web interface. The DL2 is additionally equipped with a manual reset button. The following functions can be carried out by pushing the button:

- Deleting the internal memory; the settings will not be deleted. For this purpose, press the button for more than 5 but less than 10 seconds. All LEDs will be flashing.
- Resetting the datalogger to the factory settings. For this purpose, press the button for more than 10 seconds. All LEDs will be illuminated. This reset process can take several minutes.

4.   Data transfer

For data transfer from the internal memory of the DL2, an SD card can be used:

➜ Insert the SD card into the card slot

➜ The status LED flashes green: The card has been recognised and data are being automatically transferred

➜ After data transfer, the status LED is illuminated (green), the SD card can be removed

For further information about further processing see RESOL ServiceCenter manual
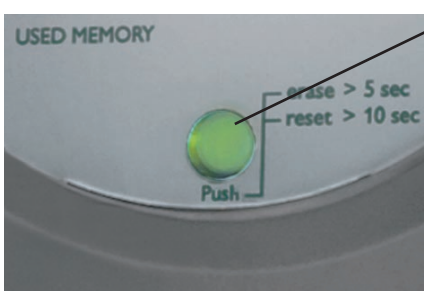
Note
The SD card is not used for increasing the internal memory capacity. It is used for data transfer only.

5.   Displays

5.1   Status LED

Status LED

The status LED (integrated into the button) visualises the operating state of the DL2.

off	booting in progress or no mains voltage
green flashing	SD card has been recognised; DL2 data are being copied to the SD card. Do **not** remove the SD card; firmware update in progress
green	SD card can be removed
red flashing	error occured during copy process
red	mains supply ok; operating system ready for operation

5.2 Fill level of data memory

The fill level LEDs visualise the current fill level of the data-logger, i.e. the internal memory capacity used.

One bar corresponds to 10 % of the internal memory capacity: Permanent illumination means that the memory capacity is fully used. Flashing LEDs indicate the level at which data are being stored.

Example: When the third bar from the bottom is flashing, the capacity used is larger than 20 % but smaller than 30 %.

6. Connecting the datalogger

Note:
When the DL2 is used in conjunction with a Gigabit-Network device (laptop, switch, etc.), problems can occur when the connection is being established. In this case, we recommend using a 100 Mbit-switch between the two devices. It is also possible to change the network properties to "10 MBit/s half duplex" (see below).

In order to start the DL2-Discover-Tool, Java version 6 or higher is required.

Example: Changing the network properties

The settings option of the network properties can vary. The following steps are used as an example only:

➜ Select the connection by double clicking on the corresponding icon

➜ Select the "General tab" and click on the "Properties" button

➜ Click on "Extended" and set the media type to "10 MBit/s halfduplex"

6.1 Access via LAN

The datalogger is designed for direct connection to a PC via a LAN connection or a router and is used for remote access. Please carry out the following steps:

1. Install the search tool:
   The search tool can either be started from the CD (DL2DiscoverToolSetup.exe) or from the Internet (http://www.resol-dl2.de/discover/)
   (Confirm the security enquiry about the digital signature)

RESOL®

RESOL devices found:

Heating room_Factory2 (192.168.0.150)
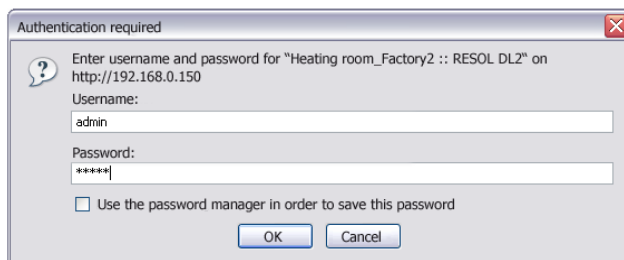
Update   Open

Done

2a. Starting the tool from the Internet:
The datalogger will automatically be searched and displayed as soon as it is found by the search tool. If several dataloggers are found in the local network, they will be listed in the "RESOL devices found" list. The name mentioned in this list is the device name which can be set on the "General" Configuration page of the web interface.

2b. Installation from the CD:

➜ Start "DL2 DiscoverToolSetup.exe". The search tool will be installed under "Programme\RESOL\DL2DiscoverTool"

➜ Start the DL2 Discovertool. The DL2 will automatically be searched and displayed as soon as it is found by the search tool. If several dataloggers are found in the local network, they will be listed in the "RESOL devices found" list. The name mentioned in this list is the device name which can be set on the "General" Configuration page of the web interface.

➜ Mark the datalogger found by the tool by clicking it

➜ Click "Open"

Authentication required   ✕

Enter username and password for "Heating room_Factory2 :: RESOL DL2" on
http://192.168.0.150
Username:
admin
Password:
*****
☐ Use the password manager in order to save this password

OK   Cancel

3. The standard web browser opens

➜ Enter username and password. Username and password are "admin" (factory setting).

6.2   Access via Internet

For accessing the DL2 via Internet, the router has to be setup first. For setup follow the following steps:

Port number	Service
443	Web interface
7053	ServiceCenter access

➜ Carry out port routing in the router. For further information see router documentation.

Note:
The discover tool is not usable for DL2 access.
The IP address must be known. Either a static IP address is used or a dynamic domain server has to be used.
Since the IP address usually changes every day, it is recommend to use a dynamic Domain Name Server (Dyn DNS). For further information on detecting a Dyn DNS, please see corresponding documentation.

7. Quickguide Configuration

➡ Change username and password for web interface access (see 10.1)

➡ Adjust date and time (see 10.3)

➡ Enable firmware update (see 10.4)

➡ Change the remote access password for access to the corresponding controller (see 10.5)

➡ Change the FTP password for file import (see 9.2)

➡ Print configuration (see 10)

The DL2 is now ready for use.

> **Note:**
> Change all passwords! If you do not change the passwords, unconditional access for third persons can be possible!
> The passwords are not visible on the printout of the configuration. Note down the passwords and keep them in an appropriate place!

8. Start screen of the DL2 Web Interface

> **Note:**
> If the automatic firmware update is activated (see 10.4), the Web Interface will be updated regularly. With each new version, the operation and the graphical user interface may change and hence differ from those described in this manual.
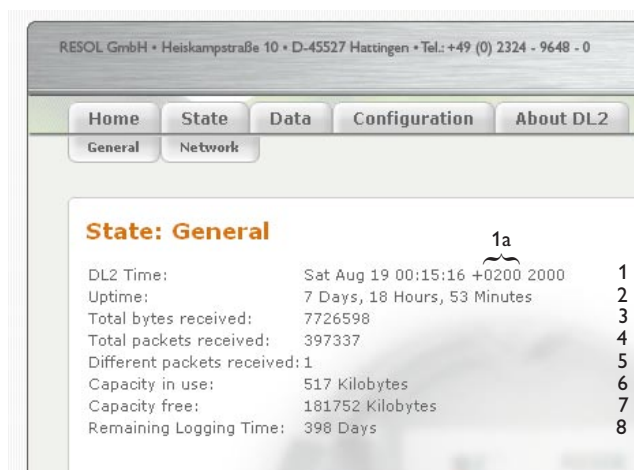> Previous adjustments will not be reset or overwritten when a firmware update is carried out.

navigation bar

language selection

variable main window

➡ Click on the tab in the navigation bar in order to access the different sub-windows of the web interface

8.1   State

The state window consists of two different sub-windows: "General" and "Network".

State: General

1:   Current time setting of the DL2

1a: Time shift to GMT (in hours)

2:   Time since last reset

3:   Sum of all bytes received since last reset

4:   Sum of all data packets received since last reset

5:   Number of packets in a communication cycle

6:   Sum of all data logged in the internal memory of the DL2

7:   Free memory capacity

8:   Estimated remaining logging time

State: Network
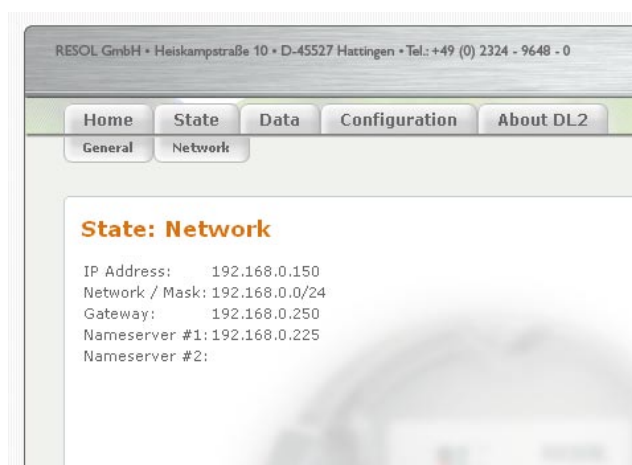
example

This window shows the current network configuration of the DL2.

9.   Data

In this sub-window, the data stored in the internal memory of the DL2 can be read.

The DL2 web interface provides different tabs which are described in the following section.

Live-Data

The current data of the connected VBus® devices are displayed, such as: temperature, pump speed, heat quantity, etc. The values will automatically be updated every 10 seconds.

Data download

Select the data format for data download.

> **Note:**
> The download time depends on the selected file format. For large amounts of data, we recommend downloading the data in the VBus Protocol Data format and converting them afterwards by means of the RESOL ServiceCenter Software (see RESOL ServiceCenter Software manual) included with the DL2.

- Text (Tabulator character, Windows):
  generates a text file which is optimised for further processing in Windows. A tabulator character separates the data from each other.
- Text (Semicolon, Windows):
  generates a text file which is optimised for further processing in Windows. A semicolon separates the data from each other.
- Text (Tabulator character, Linux):
  generates a text file which is optimised for further processing in Linux / MacOS X, etc. A tabulator character separates the data from each other.
- Text (Semicolon, Linux):
  generates a text file which is optimised for further processing in Linux / MacOS X, etc. A semicolon separates the data from each other.
- HTML Table:
  data are represented in a table in a HTML file
- HTML List:
  data are represented in a HTML file as a nested list.
- Spreadsheet processing:
  data are issued in .xls format for direct processing with a compatible spreadsheet software (max. 60.000 data records)
- VBus Protocol Data:
  data are issued in a file format suitable for further processing in the RESOL ServiceCenter or in the RESOL Data Center
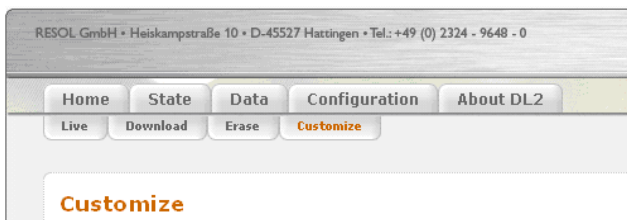
Erase data

In order to delete all data, click on the "Yes, erase all logged data" button.
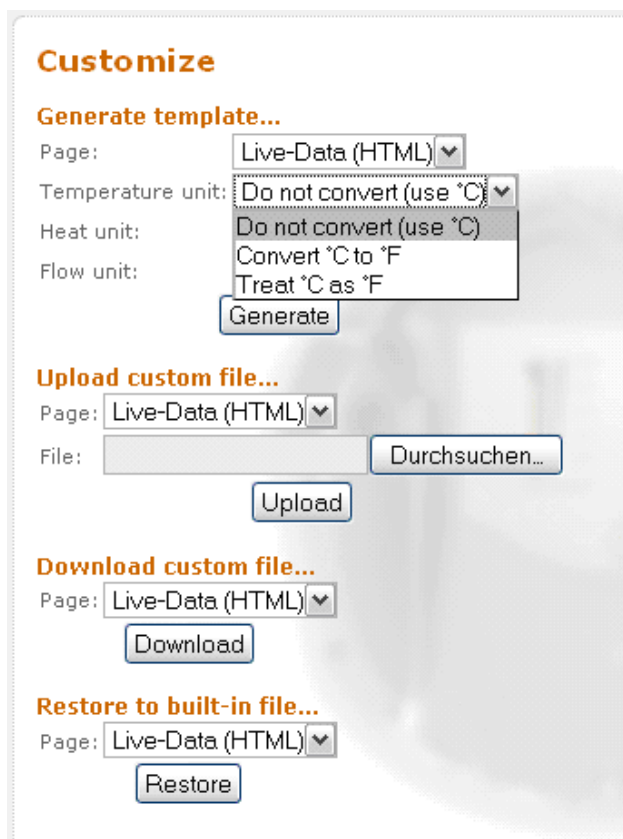
9.1 Adapting live data

Adapting the units of the live data display

➜ Search and discover DL2
➜ Open web interface DL2
➜ Select the "Data" tab

➜ Select "Customize"

➜ Select "Temperature unit"

Do not convert (Use °C) =

All temperatures are displayed in °C

[example: 30°C are displayed as 30°C]

Convert °C to °F =

The unit is changed from °C to °F and the numeric values are converted

(recommended for control units which are set to the temperature unit °C or which have no temperature unit adjustment)

[example: 30°C are displayed as 86°F]

Treat °C as °F =

The unit is changed from °C to °F without converting the numeric value

(recommended for control units which are set to the temperature unit °F)

[example: 30°C are displayed as 30°F]

➜ Click on "Generate"
   A new tab or page in your web browser appears. Save this template (HTML format), select your folder, rename the template, if you want to. Go back to the web interface of your DL2. Select "Data" / "Customize"
➜ Click on "Browse"
➜ Select the template generated in the previous step
➜ Click on "Upload"

Adapting the units of the live data display

➜ Click on "Generate"
A new tab or page in your web browser appears. Save this template (HTML format), select your folder, rename the template, if you want to. Go back to the web interface of your DL2. Select "Data" / "Customize"

➜ Open the template in HTML format generated in the previous step using a text editor, carry out the desired changes and save them. Further information about "HTML" can be found via Google®

➜ Click on "Browse"

➜ Select the template generated in the previous step

➜ Click on "Upload"

9.2 Displaying live data in a system scheme
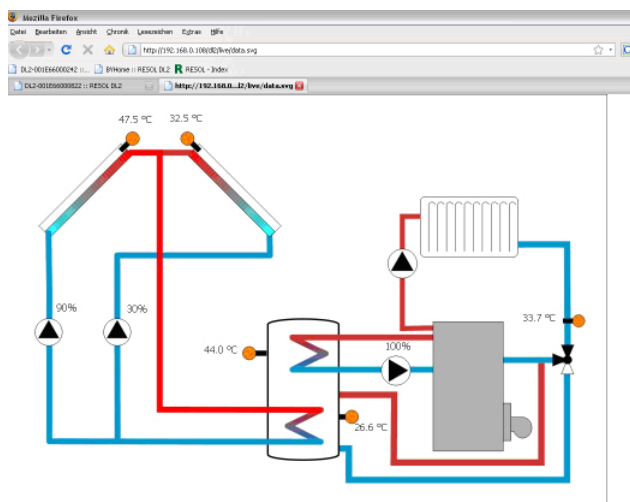
Live data can also be displayed in a graphical system scheme in the web interface.

To do that, a system scheme of the individual solar thermal system has to be tagged with the necessary VBus® display boxes in the RESOL ServiceCenter software and then exported into the DL2.

To do so, proceed as follows:


➜ Select the tab "Configuration" in the DL2 web interface

➜ Adjust "Enable FTP access??" to "Yes" in the "FTP access" screen

➜ Click "Save changes" to save the adjustment

Now the FTP access, which is required for the export of the system scheme, is enabled.

The next steps have to be carried out in the RSC software.
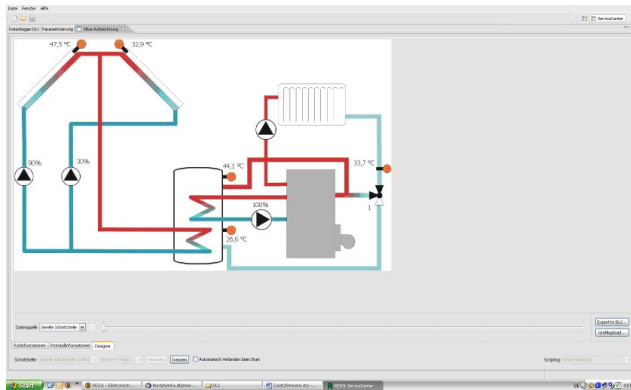
→ Assign a jpeg-formatted system scheme as background graphic in "VBuslogging / Designer"
→ Place the VBus® display boxes into the system scheme
→ Click „Export to DL2" when ready

Now the dialogue window „Export designer document to DL2" appears.

→ Enter the IP address in which the system scheme is to be displayed into the box marked "DL2 host name"
→ Enter user name and password into "DL2 user name" and "DL2 password"
→ Select "USE DL2…" if the system scheme is to be displayed in the DL2 web interface
→ If the system scheme is to be saved outside the DL2, select "Use custom URL" and enter the path
→ Confirm by clicking "OK"
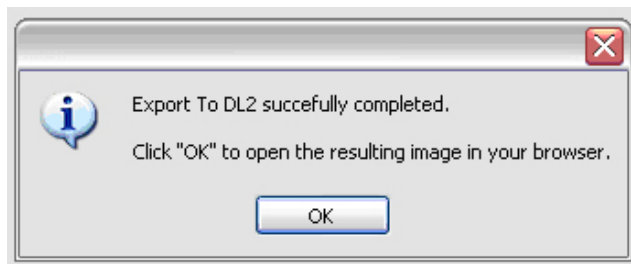
This window confirms the successfully completed export. By clicking "OK", the web interface with the new system scheme will open automatically.

When opening the web interface conventionally, the system scheme display can be accessed by clicking the button "Live data as SVG image" under "Data" / "Live".

10. Configuration

In the following sub-windows of the web interface, the settings of the DL2 can be changed.

➜ In order to save the changes, click on "Save changes".

The "Print Configuration" button:

➜ In order to print the current configuration of the web interface, click on "Print Configuration".

10.1 Configuration: General

In the configuration window "General" carry out the following settings:

➜ Enter username

➜ Enter password

➜ Repeat password

➜ Enter device name (characters permitted: letters, numbers, underline character)

➜ Adjust logging interval (1 ... 86400 s; the smaller the interval, the more capacity is required)

➜ Adjust logging mode

Username and password are required for the next access to the web interface

Note:
If you have forgotten your password, please carry out the following steps: Copy the data onto an SD card (see chapter 6) and afterwards reset the DL2 (see chapter 5). The DL2 will then be set back to the factory settings.

Logging mode
There are two types of logging modes:

• **Cyclic** (factory setting):
If the internal memory of the DL2 is full, the oldest data packets will be overwritten.

• **Linear:**
If the internal memory of the DL2 is full, no further data will be logged.

10.2 Configuration: Network

In the configuration window "Network", the settings mentioned below have to be carried out. When the auto-configuration is not enabled, all network parameters have to be entered manually into the fields below.

➜ Enable / disable the LAN auto configuration

➜ Information such as IP address, IP netmask, etc. is indicated.

10.3   Configuration: Time

In the configuration window "Time", carry out the following settings:

➜ Enter the timezone

➜ Adjust the update interval

➜ Enable / disable the network time synchronisation function

➜ Enter NTP server address

➜ Manually adjust the time settings

10.4   Configuration: Firmware Update

In the configuration window "Firmware Update" , carry out the following settings:

➜ Enable / disable automatic firmware update

➜ Enter update URL

➜ Adjust update interval

The firmware update ensures that the internal software of the DL2 is always up to date.

10.5   Configuration: Remote access

➜ Enter old remote access password (factory setting: vbus)

➜ Enter new remote access password

➜ Confirm new password

These adjustments are required for accessing the controller via the datalogger by means of the Service Center Software or the RESOL Data Center.

10.6   About DL2

In this window, details about open source applications and libraries covered are shown.

11.   Source code

You can order a copy of the corresponding source codes and compilation scripts on DVD for a handling and shipping fee of EUR 20,- from:

RESOL - Elektronische Regelungen GmbH
Heiskamstraße 10
45527 Hattingen
GERMANY

Please include the version number of your firmware in your order. (e.g.:"1.0 (200805241128)" indicated at the bottom of every web interface page). You must not specify more than one version per order.

RESOL®

Distributed by:
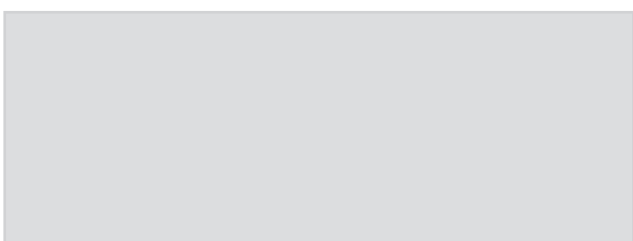
RESOL - Elektronische Regelungen GmbH

Heiskampstraße 10
45527 Hattingen / Germany

Tel.: +49 (0) 23 24 / 96 48 - 0
Fax: +49 (0) 23 24 / 96 48 - 755

www.resol.de
info@resol.de

Important notice:
We took a lot of care with the texts and drawings of this manual and to the best of our knowledge and consent. As faults can never be excluded, please note: Your own calculations and plans, under consideration of the current standards and directions should only be basis for your projects. We do not offer a guarantee for the completeness of the drawings and texts of this manual - they only represent some examples. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and / or the resulting damages.

Reprinting / copying
This mounting- and operation manual including all parts is copyrighted. Another use outside the copyright requires the approval of RESOL - Elektronische Regelungen GmbH. This especially applies for copies, translations, microfilms and the storage into electronic systems.
Editor: RESOL - Elektronische Regelungen GmbH

Please note:
The design and the specifications may be changed without notice.
The illustrations may differ from the original product.