

# BL-NET

Version 2.12 EN

## Bootloader



Operation

Winsol

Memory Manager



TECHNISCHE  
ALTERNATIVE



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## Hardware / General Information

### Power supply

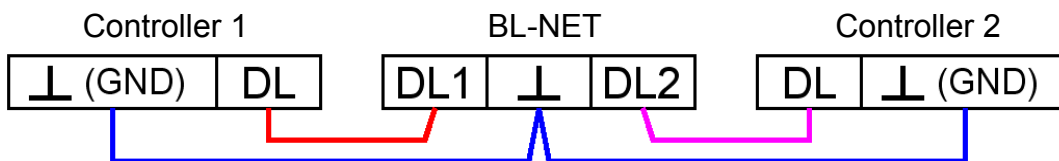
Power is provided via a connection between the controller and Bootloader over a DL (Data Line) or CAN cable. Data retention is guaranteed, even without a power supply. A compartment for an industry-standard 9V battery is provided, allowing it to be used as a portable device without a cable connection to the controller. This allows an infrared-(IR)-CAN interface to a controller and a USB connection to a PC. After the data transfer, the device switches off automatically. This ensures years of use. When operating the **Ethernet** interface or the **GSM module**, power must **always** be provided via the **CAN bus**. To safeguard the power supply where there are more than 2 CAN bus members without their own power supply per UVR1611, the use of a 12V power supply (CAN-NT) is necessary.

Active interfaces	USB	Ethernet	IR-CAN	Module (GSM)
<b>Power supply</b>				
Data line (DL bus)	X			
CAN bus	X	X		X
Battery	X		X	

If the Bootloader is used as a hand device without a cable connection to a controller, it is advisable to remove the BL-NET from the PC after a successful data transfer to avoid unwanted activation of the Bootloader from the PC and ensure long battery life.

### DL bus

Every ESR (ESR21 from version 5.0), UVR and HZR controller has a data line output DL (with the EEG30, TFM66 ⇒ D0) that, together with the (sensor) ground conductor, forms a two-conductor cable (DL bus). The BL-NET has 2 data line (DL) inputs for simultaneously recording measured values from up to two controllers.



Any cable with a cross section of 0.75 mm<sup>2</sup> can be used for the data link (e.g. twin-strand) having a max. length of 30 m. For longer cables, we recommend the use of shielded cable. If the data from two controllers is to be acquired by the Bootloader, then separate shielded cables must be used to provide protection against crosstalk errors. The DL bus must never be in the same cable as the CAN bus.

If only the data line cable (DL-bus) is connected to the BL-NET, then this is also used as the power supply for the Bootloader (bus load = 52%).

When the DL is connected, the Bootloader indicates that a device has been connected to the DL input by briefly flashing the green LED. The Bootloader automatically recognises the number and type of the connected controller(s).

### NOTE:

- ◆ With the UVR1611 controller, output 14 (DL) can be used as both a data connection and a control connection. For data logging via DL-bus, output 14 must therefore always be configured as a "Data Line" via the "Outputs" menu.
- ◆ UVR1611 - controllers from version A2.16 additionally enable the recording of network input variables, which are handled by the Bootloader as a virtual second UVR1611. When parameterizing output 14 as a "Data link", the menu option *NETW.EG.=>DL.:* must be answered by *yes*. Logging of network variables is thus not possible when two physical controllers are connected to the Bootloader (this instruction only applies for data logging via the DL bus).
- ◆ Only the UVR1611 and UVR61-3 devices can supply enough power for the Bootloader via the data line. When there is a simultaneous power supply to a Bootloader and DL sensors, the "bus load" must be monitored. If the bus load is exceeded, the Bootloader must be supplied via a power pack (CAN-NT). The bus load of the BL-NET is 52%.
- ◆ An optional power adaptor (CAN-NT) is available for other devices.
- ◆ Logged data is lost when the number of data connections (DL-bus) or the controller type is changed!
- ◆ If power is removed from the Bootloader then, at most, only data from the last hour is lost.

### CAN bus and IR-CAN infrared interface

The IR-CAN interface (infrared CAN) offers a simple way of transferring functional data. It is located under the two buttons of the UVR1611 and on the lower side of the Bootloader case. During the data transfer, the Bootloader must lie in the correct position on the controller: Bootloader – upper edge = Controller display – lower edge, the sideways position of the display is marked on the Bootloader.

For transferring the functional data the controller must be prepared via the **"Data Administration"** menu. This is only permitted in expert mode. The controller switches to data transfer mode when the *"Upload resp. Download data really start?"* query is confirmed. After this, the Bootloader is placed in the correct position on the controller (at the lower edge of the display and between the markings). As with the CAN cable, the data transfer is started by pressing the START button on the Bootloader. The green LED flashes during the transfer and the functional data takes about 15 seconds to transfer.

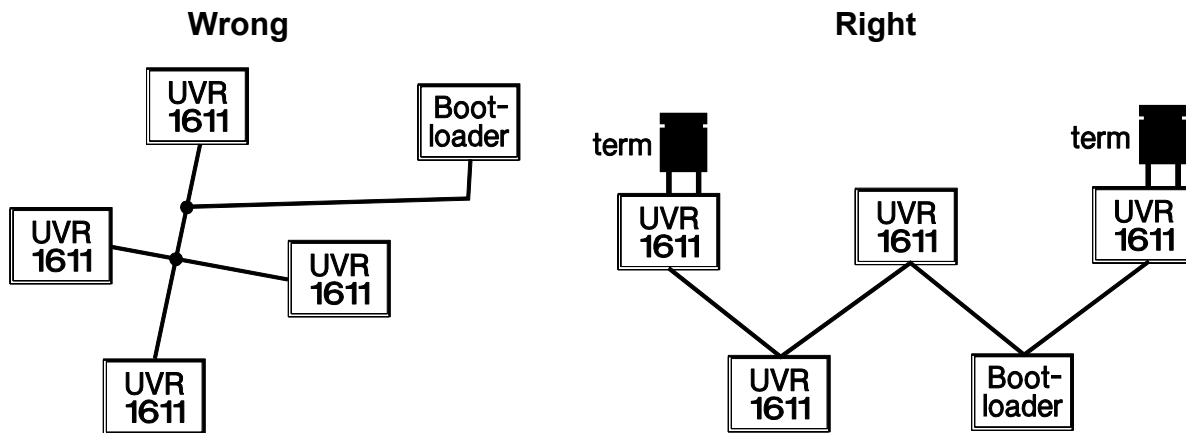
**Since an operating system can take about 5 minutes to transfer, this should always be done via a CAN bus cable connection.** If the loading of the operating system is interrupted then a renewed transfer is only possible via a cable connection!

In addition to data transfer, the Ethernet interface of the CAN bus also allows direct access to the CAN network devices via a browser on the PC. Both LEDs flash briefly when the CAN cable is plugged in and after about 20 seconds, the green LED lights up to indicate that the BL-NET is ready to operate on the CAN bus.

## Hardware / General Information

When using the CAN bus to connect several devices with a total cable length above 5 m, correct termination of the bus is important. The network **terminators** must be connected at the **cable ends**. The lower side of every controller, every CAN device, and the Bootloader (alongside the start button), have a corresponding jumper bridge (*term*) for this. A CAN bus must never be connected from a node (terminal) to other devices in a star formation. The correct layout is a series cable from the first device (with terminator) to the second device, then the third, etc., and the last bus connection must also have a termination jumper.

Additional information on the correct layout of a CAN bus network (e.g.: cable selection, etc.) is provided in the UVR1611 controller handbook.



## USB

The USB interface does **not** represent an electrical connection between the Bootloader and PC. For reasons of safety, it is electrically isolated via optocouplers. The Bootloader thus requires its own power supply, via the DL, CAN or a battery, when communicating via USB.

For communication between the PC and BL-NET via USB, a special driver is also required that creates a virtual COM interface in Windows, which is then used by the *Winsol* or *Memory Manager* programs to access the Bootloader. **See also the section "USB driver".**

## Ethernet/LAN

The Ethernet interface is only active if the CAN connection is present or with a power pack (CAN-NT). When operating with only a data cable (DL-bus) or a battery, Ethernet communication is not possible.

A **crossed** network cable ("Cross-over") must be used for direct connection with a PC. The PC must also be assigned a fixed IP address. The rear side of the BL-NET (the oval window) has a green LED that indicates an Ethernet connection to another device, and a red LED that indicates data transfer.

The Bootloader requires a fixed IP address because it does not support DHCP. **See also the section "Connecting the BL-NET to a LAN network".**

## Software

### GSM module (optional)

An optional GSM module is available for the BL-NET. This can be retrofitted by plugging it into a male socket inside the Bootloader.

**The GSM module has its own operating manual.**

## Software

### Installation

The software on the CD provided (*Winsol*, *Memory Manager*, etc.) can be installed by selecting the desired menu option from the autostart menu that is automatically displayed when the CD is inserted.

The latest versions of the software are available for downloading at <http://www.ta.co.at> and they overwrite the existing software without losing any previously stored data. However, it is recommended to deinstall the existing versions of the software before installing new versions. This only then removes the application and all data created with the application is retained.

CAUTION! Newer software versions are not always compatible with the version of the Bootloader operating system. The homepage provides information on this. It may be necessary to also upgrade the Bootloader operating system (see "*Memory Manager*").

### Deinstallation

The programs can be deinstalled using the <add/remove programs> function in the Windows control panel.

Windows 98, ME, 2000, XP: ... ⇒ Control Panel ⇒ Software (add or remove programs)

Windows Vista, 7: ... ⇒ Control Panel ⇒ Programs and Functions

## USB driver

The USB driver is required for USB communication between the PC and the Bootloader and it creates a virtual COM port on the PC for this purpose.

The driver must be installed on the PC for this (see "**Installation**") and is automatically loaded when a Bootloader is connected to the PC.

The required drivers are contained in the attached CD-ROM in the folder <install\USB-Treiber>, can be downloaded from the homepage <http://www.ta.co.at> or can also be installed via Windows Update.

### **Installation**

When a Bootloader or D-LOGG is connected to the PC with a USB cable, the PC automatically recognises a new hardware component and automatically starts the "Hardware-Assistant" (Hardware Wizard) if a driver has not yet been installed for this device.

If an Internet connection is available, Windows connects automatically to the Windows Update website to install a suitable driver. In this case no further steps are necessary.

If an Internet connection is not available, or no suitable driver has been found or if Windows is configured to prevent the automatic installation of drivers, the required drivers can be manually installed.

If the Wizard does not start automatically, the installation can also be manually started. When the device is connected to the PC but the driver has not been installed, it is displayed in the Windows **Device Manager** with an exclamation mark in one of the <other devices>, <Ports (COM and LPT)> or <USB Controller> lists. The driver installation can be manually started from here.

You can find more information in the USB driver's manual in the attached CD-ROM or under <http://www.ta.co.at>.

## Software

### Configuring the virtual COM port

*Winsol* and *Memory Manager* support the COM ports COM1 – COM6. If the virtual COM port assigned to the driver on installation is not supported by the *Winsol* and *Memory Manager* programs, the driver can be manually assigned a different free port. For a PC with an internal modem, it should be noted that COM3 is usually used for this modem.

The Bootloader must be connected to the PC in order to configure the virtual COM port in the Windows "**Device Manager**".

#### Windows 98:

Start ⇒ Settings ⇒ Control Panel ⇒ System ⇒ Device Manager ⇒ Ports (COM and LPT)

#### Windows 2000, XP (classic view):

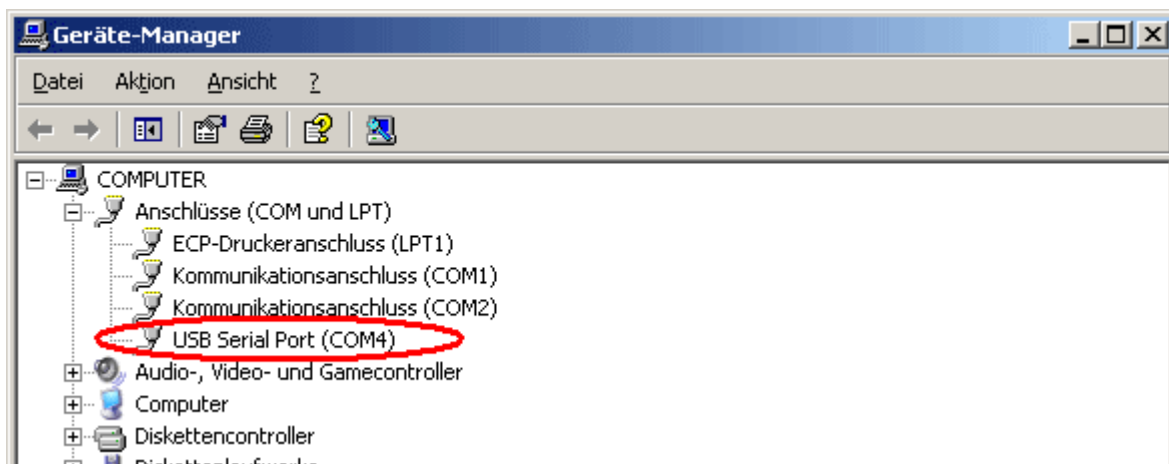
Start ⇒ Settings ⇒ Control Panel ⇒ System ⇒ Hardware ⇒ Device Manager ⇒ Ports (COM and LPT)

#### Windows Vista (classic view):

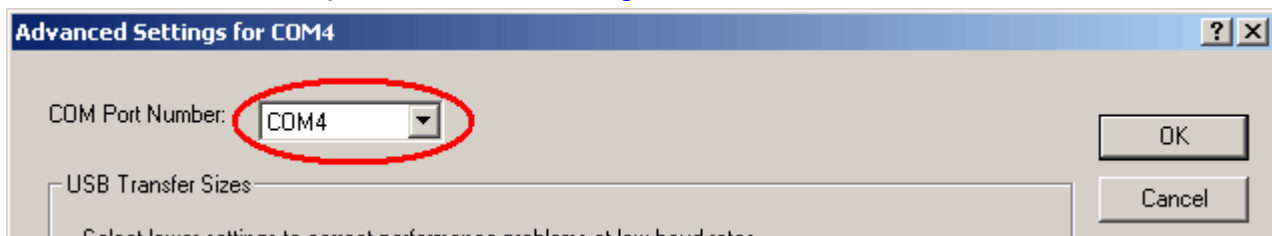
Start ⇒ Settings ⇒ Control Panel ⇒ Device Manager ⇒ Ports (COM & LPT)

#### Windows 7:

Start ⇒ Control Panel ⇒ Hardware and Sound ⇒ Device Manager ⇒ Ports (COM&LPT)



The driver can be assigned a different COM port in the properties of the <USB Serial Port>:  
USB Serial Port ⇒ Properties ⇒ Port Settings ⇒ Advanced...



## Winsol (from version 1.22)

The *Winsol* program allows the acquisition and analysis of measurements recorded by the Bootloader.

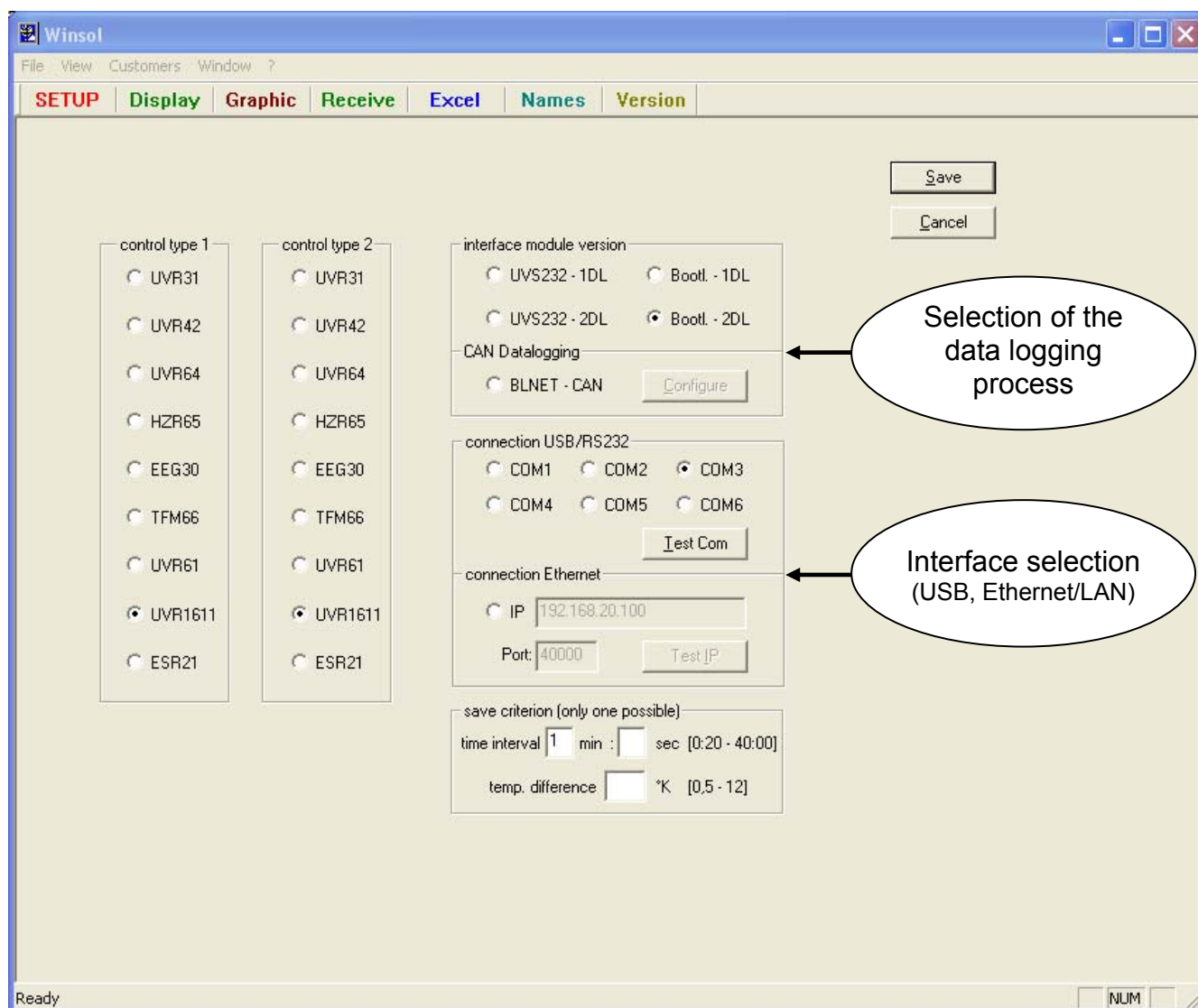
Currently, the programs *Winsol* and *Memory Manager* are only available in German, English and partially in Italian.

Since *Winsol* can also be used as a visualisation program with other interface modules (data loggers), the setup menu allows a choice of different devices and data logging processes.

Logging of the data begins with no more than a minute's delay after switching on or restarting of the Bootloader or changing of the logging process.

### SETUP

The setup contains the settings required for correct communication between the PC and the Bootloader.



## Winsol

### Selection of the data logging process

From here, a selection is made as to whether data logging takes place over the DL bus or the CAN bus (from *Winsol* version 1.20)

Data logging using the DL-bus	CAN - Data logging
The values for each data record are firmly specified in this process. Up to 2 data records can be displayed and logged.	The desired values for CAN data logging must be defined <b>at the controller</b> under the menu "Network/Data logging" or in the program " <b>TAPPS</b> " (requires controller operating system version <b>3.18</b> or greater).

interface module version

UVS232 - 1DL     Bootl. - 1DL

UVS232 - 2DL     Bootl. - 2DL

CAN Datalogging

BLNET - CAN   

} Setting for data logging via DL bus.

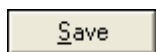
or

CAN Datalogging

BLNET - CAN   

→ CAN - Data logging setting

**Important instructions for CAN data logging:** One controller must be assigned **node number 1** in the CAN network, so that the time stamp of this controller can be accepted from the Bootloader. This controller must be at least version E3.18. The following units are output as the temperature: l/pulse, V, mA, pulse, kOhm, km/h, bar, % humidity. Dimensionless values (e.g. counter states) cannot be logged.



**The Bootloader only changes the data logging process, if the settings are saved.**

When switching between CAN data logging and data logging via the DL-bus, the already logged data are deleted.

After switching over of the data logging process, a reset must be carried out, i.e. the Bootloader must be briefly disconnected from the power supply (unplug the data link or CAN bus, remove batteries if fitted) or a restart of the BL-NET will have to be carried out in the browser via the "Ethernet" sub-menu.

## Data frame configuration (CAN data logging)

Configure

Select the data frames, which should be logged by the Bootloader.

**Number :** Up to 8 data frames can be configured for a number of UVR 1611s.

**CAN Node:** Specification of the controller node number, the data of which are to be logged.

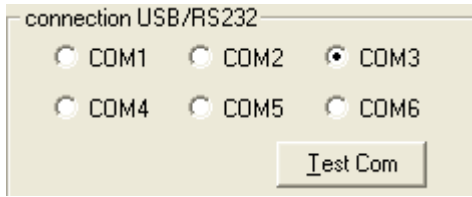
**Dataframe:** Each controller can output a maximum of 26 digital and 32 analogue values that are defined in the menu "**Network/Data Logging**" of the UVR 1611 or in software "**TAPPS**". Each data record comprises 13 digital values, 16 analogue values and 2 heat quantity counters. Therefore the data are divided into 2 data records if more than 16 analogue or 13 digital values or 2 heat quantity counters are to be logged per controller, or if values with numbers corresponding to the 2<sup>nd</sup> data record are entered:

	Digital	Analogue	HQC
<b>Dataframe 1</b>	<b>1 – 13</b>	<b>1 – 16</b>	<b>1 - 2</b>
<b>Dataframe 2</b>	<b>14 – 26</b>	<b>17 – 32</b>	<b>3 - 4</b>

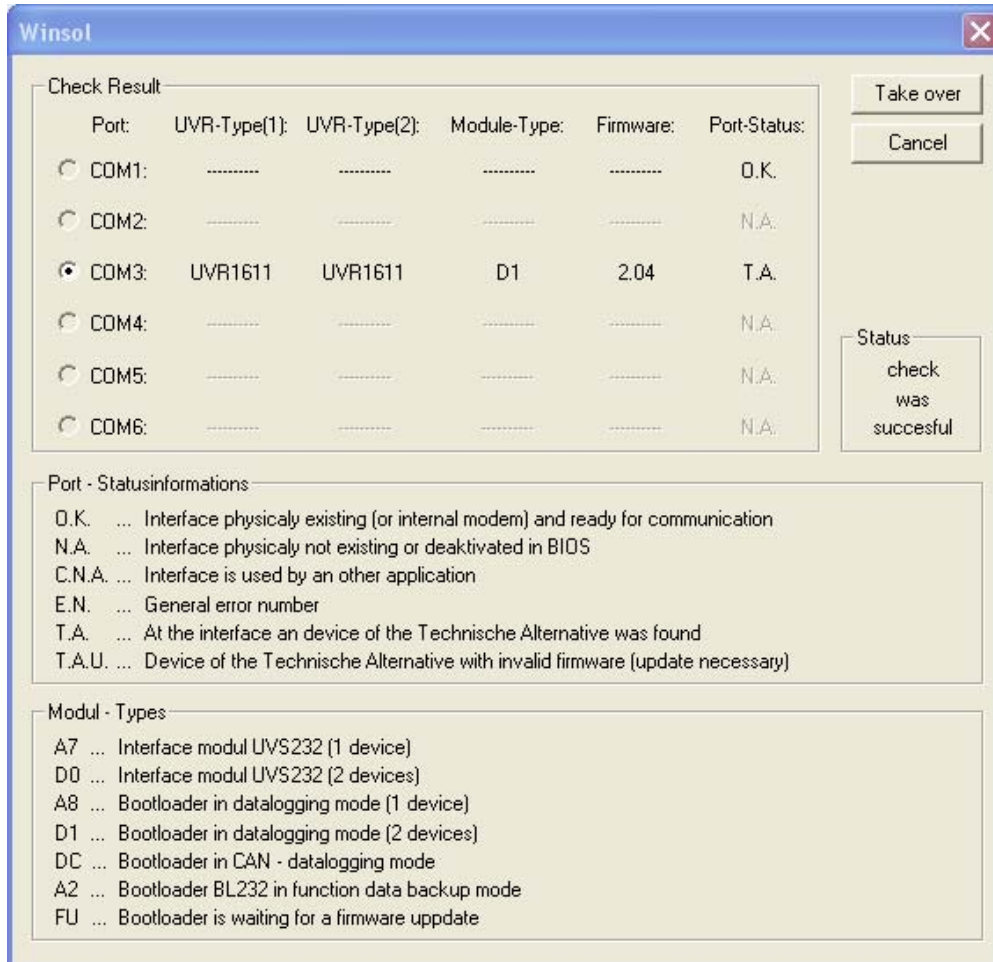
**Selecting input or output identification:** To identify inputs and outputs in the **Display**, the descriptions "Analog/Digital" or "Sensor/Output" are available.

# Winsol

## Connection type selection



BL-Net connection via USB (virtual COM port)  
The "Test Com" command allows an automatic search for the Bootloader at the COM ports (COM 1-6) supported by Winsol, independently of any current setup settings.



The type and number of the controllers to be logged are automatically identified by the Bootloader during DL data logging (module identification "A8" or "D1"). With "Test Com" the Bootloader always shows the type of the last device acquired. During CAN data logging, the number of data frames is displayed here (as in the section "Test IP"). CAN data logging must be activated in the program Winsol (see chapter "Selection of the data logging process"). Clicking "Take over" transfers the determined parameters into the setup.

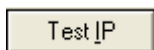
connection Ethernet

IP 192.168.10.100

Port: 40000

With BL-NET it is possible to communicate via Ethernet (LAN/computer network). To do this, the "IP" connection must be selected. The IP address or domain name of the BL-NET and its TA port must also be set. The Ethernet interface is only activated when power for the BL-NET is provided over the CAN bus!

When first commissioning, or if problems occur with the Ethernet interface, please follow the instructions in the section "**Connecting the BL-NET to a LAN Network**".



"**Test IP**" has the same function as "**Test COM**", but for the Ethernet connection. "**Test IP**" only returns a valid result when the Ethernet interface of the BL-NET has already been parameterised and the IP address and port of the Bootloader have been correctly specified in the *Winsol* setup.

**See also the section "Connecting the BL-NET to a LAN network"**

Winsol

Check Result

UVR-Type(1):	UVR-Type(2):	Module-Type:	Firmware:	Port-Status:
2 x	CAN-DL	DC	2.04	T.A.

Status  
check was successful

Port - Statusinformations

- D.K. ... Interface existing
- N.A. ... Interface not available
- C.N.A. ... Interface currently not available
- E.N. ... General error number
- T.A. ... At the interface an device of the Technische Alternative was found
- T.A.U. ... Device of the Technische Alternative with invalid firmware (update necessary)

Modul - Types

- A7 ... Interface modul UVS232 (1 device)
- D0 ... Interface modul UVS232 (2 devices)
- A8 ... Bootloader in datalogging mode (1 device)
- D1 ... Bootloader in datalogging mode (2 devices)
- DC ... Bootloader in CAN - datalogging mode
- A2 ... Bootloader BL232 in function data backup mode
- FU ... Bootloader is waiting for a firmware upppdate

In this example, CAN data logging has been selected (module type "DC"). Consequently the number of data frames is displayed ("2 x CAN-DL" = 2 data frames for CAN data logging). Clicking "**Take over**" transfers the determined parameters into the setup.

# Winsol

## Save criterion

save criterion (only one possible)

time interval  min :  sec [0:20 - 40:00]

temp. difference  \*K [0,5 - 12]

The **save criterion** defines when the Bootloader should store a "data record" (all acquired measurements at a given time) in the \*.log-file.

Two **optional** criteria are available for data logging over the DL bus (one of the two must be selected).

When data logging using the CAN bus, **only** the time interval can be selected.

- **Time interval**

Any value may be entered for the time criterion but the system uses an internal resolution of 20-second steps. Values are always rounded down (e.g.: Entry = 50 sec ⇒ Criterion = 40 sec). A small time period leads to large data volumes and is only recommend for brief detailed examinations

- **Temperature difference (only for data logging over DL)**

A save criterion of 3K is recommended for fault analysis purposes. A "data record" is saved every time a measured temperature changes by more than 3K or when an output state changes. The maximum time resolution is 10 seconds when doing this.

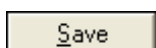
The maximum number of "data records" that the Bootloader can store depends on the type and number of controllers to be acquired.

Max. number of data records (data logging over DL-bus)	Controller type:	with 1xDL:	with 2xDL:
	UVR1611, UVR61-3	8000	4000
	ESR21 ESR31	16000	8000
	All others	32000	16000

Max. no. of data records (CAN- data logging)	1 frame	2 frames	.....	8 frames
Data records:	8000	4000	.....	1000

A storage overrun leads to overwriting of the oldest data.

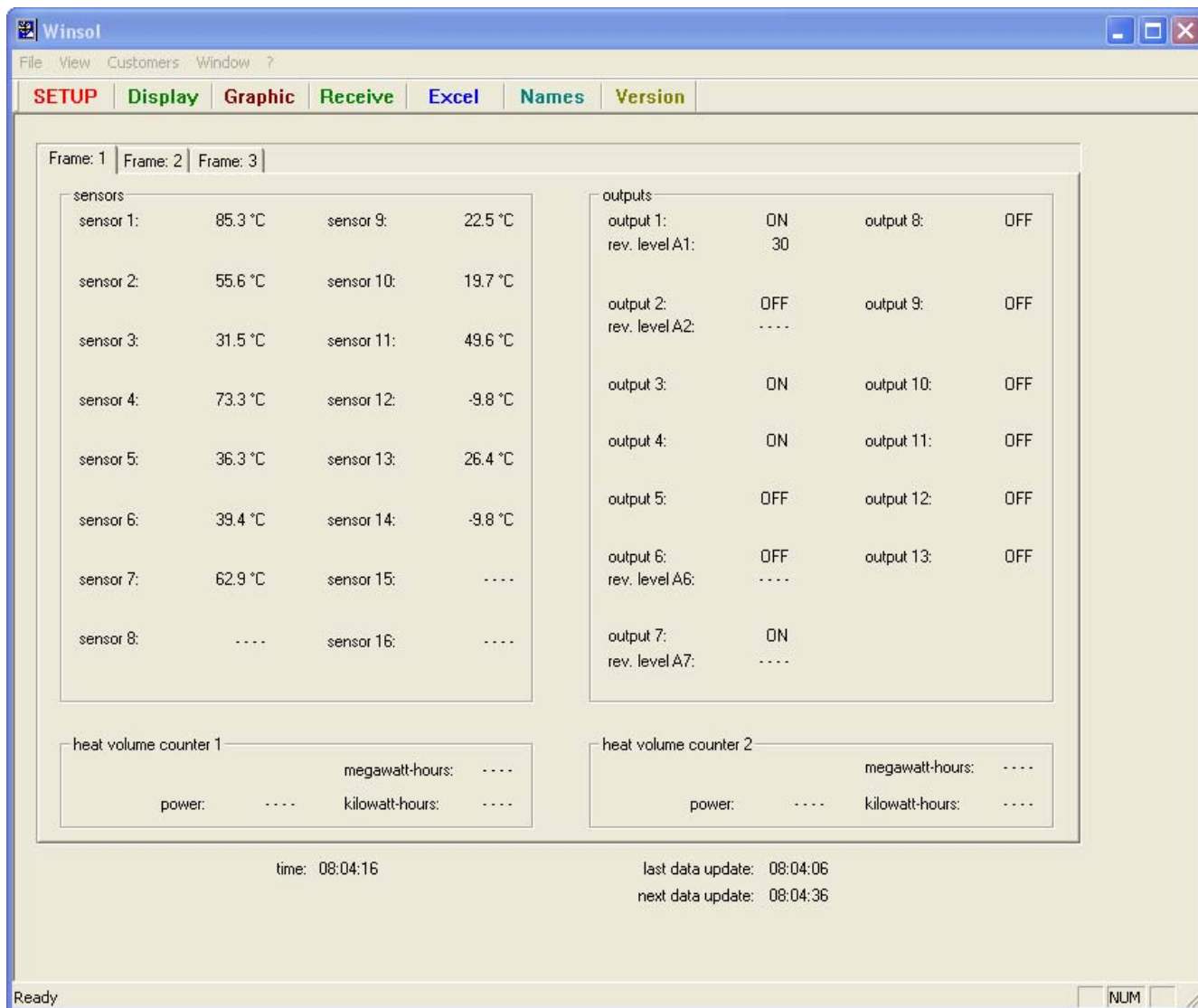
## Save



The **"Save"** command transfers the selected save criterion to the Bootloader and saves all setup settings on the PC.

Each time a command is executed from the menu bar, **Winsol** accesses the stored settings. **This means that changes must always be saved before a different menu is accessed!**

## Display



This window shows a table of the current measurements of the controllers connected to the Bootloader. The displayed time is that of the PC being used.

The "**Display**" function is the quickest and easiest way of checking the "controller → Bootloader" data connection.

If output 14 of the UVR1611 is set to "**NETW.IP.=>DL.: yes**", then the current measurements at the network inputs during data logging over the DL bus are displayed on an extra tab as device 2. If "**NETW.IP.=>DL.:**" "**yes**" is changed over to "**no**", the Bootloader must be quickly turned off and on and "**Test Com**" or "**Test IP**" executed.

When logging the data over the CAN bus the data for each frame are available on a separate tab for each frame. The analog and digital values are identified similarly in all frames (e.g., "sensor xx" or "analog xx"), therefore it makes sense to give each value its own "**name**" (see next section)

Only the last update values are ever shown. Even when switching from one tab to the next, the current values are only shown when the next update is carried out. The time of the next update is shown at the bottom of the window.

## Winsol

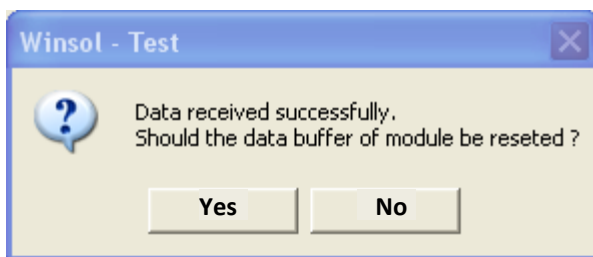
### Names

This menu allows the definition of "**Display**", "**Graphic**" and "**Excel**" user-defined names for the acquired measurements (e.g. external temperature, room temperature etc.).

### Receive

The "**Receive**" command reads the measured data stored in the Bootloader and saves it as a LOG file in the *Winsol* file system on the PC. A separate LOG file is created in the corresponding subdirectory ("...\log") for each month. When logging data from two controllers or some frames, *Winsol* saves the data in separate subdirectories "...log1" and "...log2" etc.. The filenames of LOG files contain year and month information of the data. For example, the file "Y201012.log" contains measurements from **December 2010**.

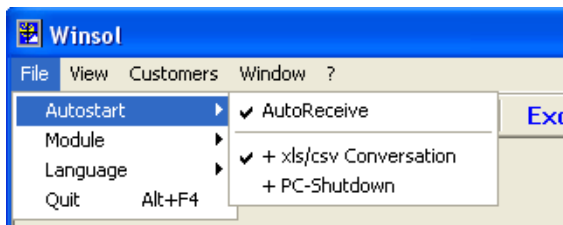
**Note:** When acquiring data from several systems, before reading the data it is essential to select the correct "**customer**" (see *customer mode*)!



The process of reading "**own data**" (customer: "own data") **automatically** deletes the data storage of the Bootloader, but in the customer mode it is possible to specify that the data in the Bootloader is retained. It is recommended that after successfully reading in the data, the data is then deleted from the data converter. The data is deleted in the *Winsol* menu "File/module".

If a power failure occurs when logging data from controllers that do not have an internal clock then only the data recorded by the Bootloader after the power failure can be edited. A timestamp can no longer be generated for earlier data.

### Autostart



The data can be automatically read when the PC starts up, via the options in the "**File \ Autostart**" menu.

#### "AutoReceive"

If this option is activated, the data which have been selected in the menu "Manage customers" are, upon booting of the PC, automatically read in and saved by the Bootloader. The customers selected for the AutoReceive process are read in in alphabetical order (see selection box in "Manage customers" dialogue). After reading-out, the data are automatically deleted from the boot loader.

There is a possibility of using Windows own functions "Scheduled tasks" (Windows XP) or "Task scheduler" (Windows Vista, Windows 7) to initiate automatic reading in on a running PC.

**“AutoReceive + xls/csv Conversation”**

In addition to "AutoReceive" after the reading in, \*.xls- or \*.csv files are automatically created with the settings specified in the function "EXCEL". In this respect, files are created for the months contained in the read-in data. Existing files are overwritten.

**"AutoReceive + PC-Shutdown"**

This option is possible in addition to "**AutoReceive**" and "**AutoReceive + xls/csv Conversation**". Here, as the PC boots up, the data are automatically read in (incl. possible xls/csv conversion) and then the PC shuts down after the subsequent countdown.

This function is intended for computers that are used exclusively for data acquisition. In this case the PC must be automatically powered up at specific times. This can be done with (e.g.) an external power timer that provides power to the PC at appropriate times and by making appropriate BIOS settings (power up when mains voltage is present).

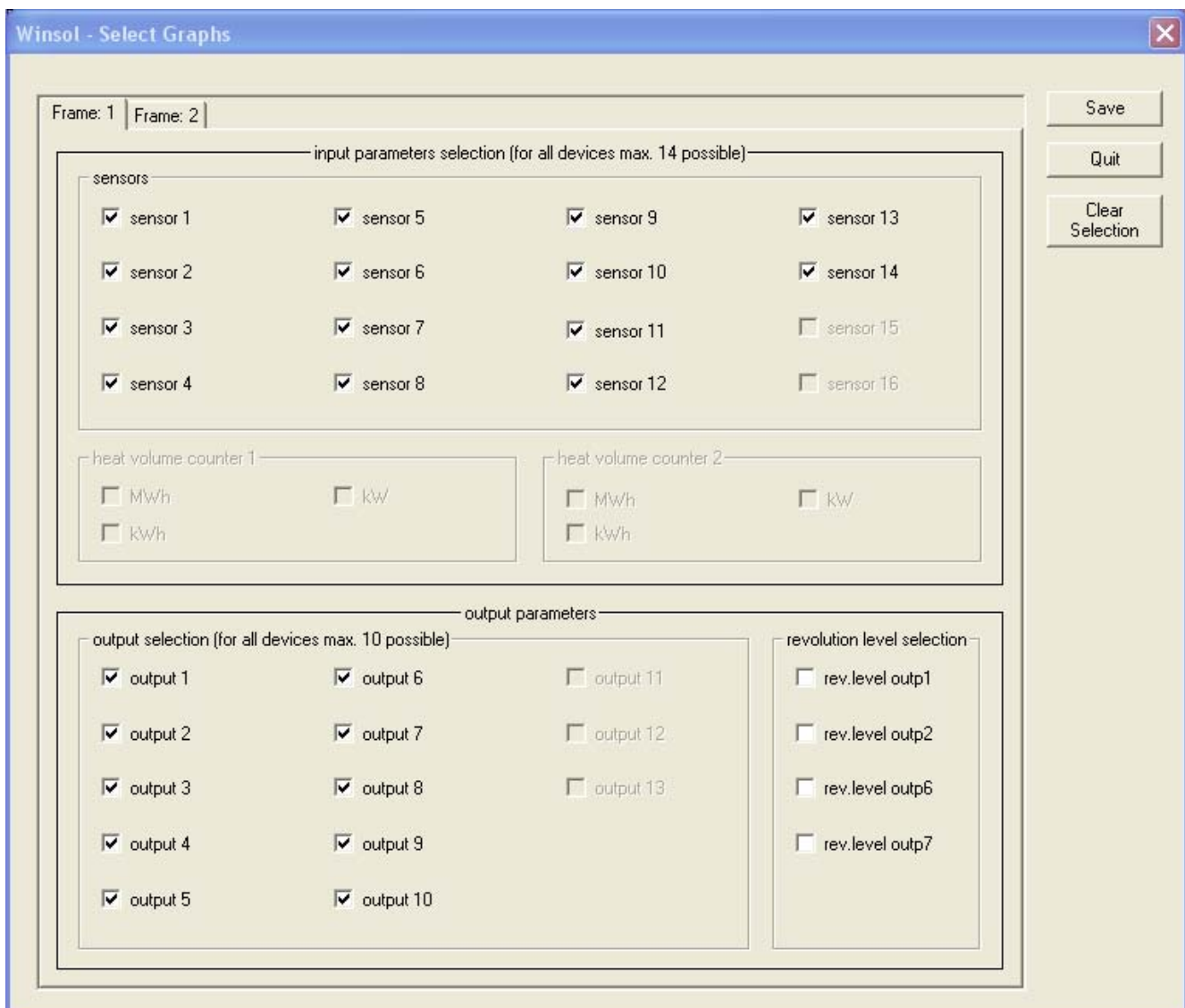
## Graphic

This window shows a daily representation of the recorded data (LOG files).

The "Help" menu item shows a list of the available key commands: It is possible to move the cursor, zoom in and out on the graph, switch auto-scaling, grid and cursor on or off, display "Help", print the graph and display or hide the output or temperature graphs.

In the menu "Graphs \ select graphs..." you can chose those parameters from all the devices or data frames which are to be displayed on the graphic (up to 14 input and up to 10 output parameters simultaneously). Once the maximum number is reached, it is not possible to select any further parameters. This option means the graph can be reduced to a few desired parameters so that it is clearly laid out and easy to understand.

The entire selection is deleted by pressing "Clear selection".



## Actual system example (1 controller, data logging over DL bus):



**Cursor:** The menu item "Help" shows the list of available keyboard commands. Thus for example, the cursor can be moved with the keys "←" and "→", the arrow keys "↑" and "↓" can be used to navigate on the graph forwards or backwards by a day. Moreover the cursor can be moved by left-clicking the mouse at the desired point in time.



The cursor can also be moved using the top right arrow buttons (by one measurement interval, one hour or one day).

All values (date, time, sensor values, output conditions, etc.) at the cursor position are displayed at right or top edge of the screen.

By selecting "Autoscale" in the menu "Graphs" the scale of the Y-axis is matched to the values.

"ZOOM IN" or "ZOOM OUT" or the scroll wheel are used to expand or shorten the time X-axis over the course of the day.

Optimum display resolution is achieved by maximising the window to the screen size.

# Winsol

## Excel

This menu allows conversion of the LOG files into the \*.xls or \*.csv format, for further processing in any desired spreadsheet program supporting these formats. This allows the creation of graphics and statistics using the recorded measurements. To adjust the generated table to suit the language-specific requirements, a comma or a full-stop can be specified as the decimal separator when generating the \*.csv file.

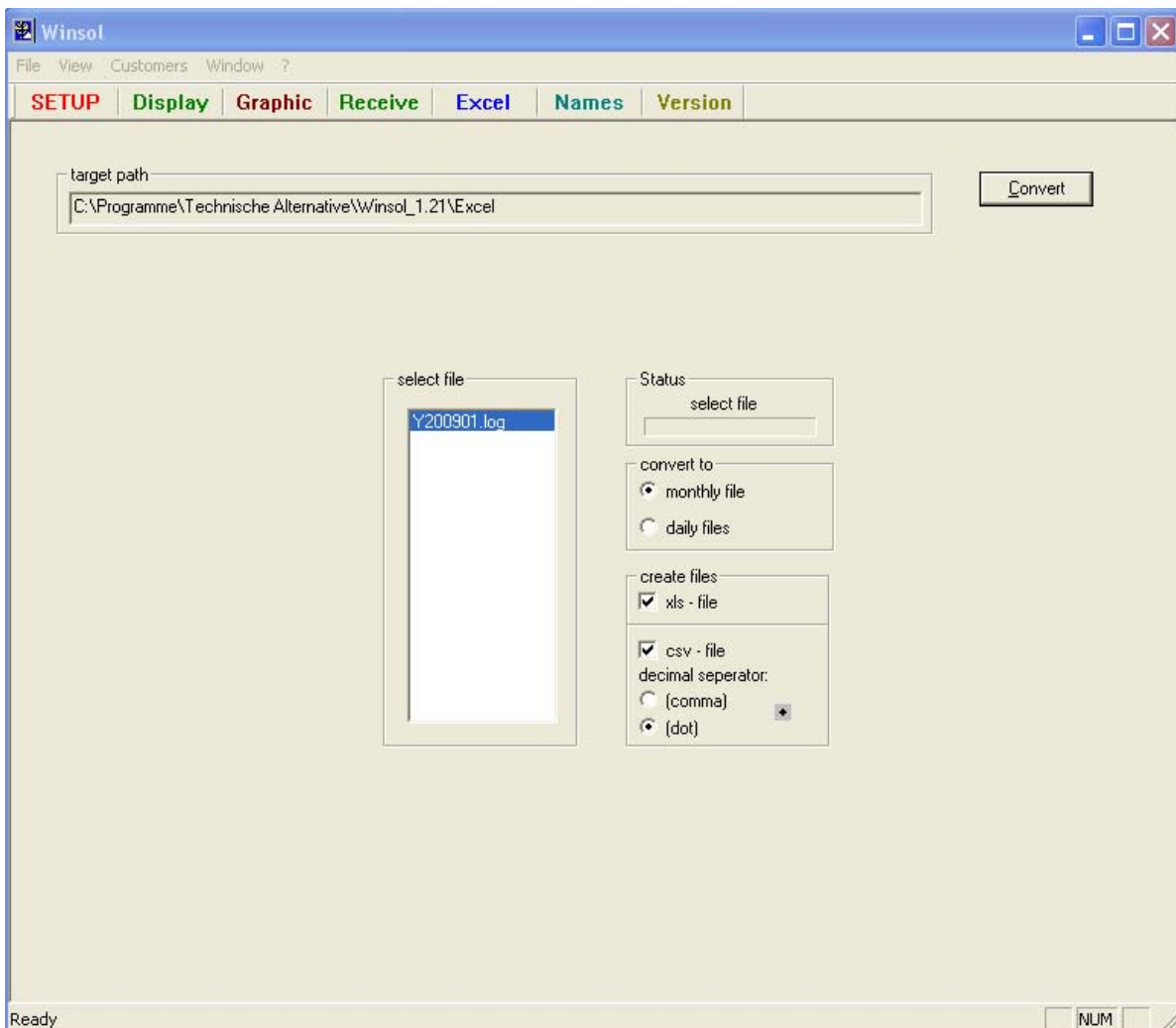
The created files are stored as daily or monthly data in the corresponding *Winsol* subdirectory ("...\Excel"). As with the LOG files, the name of the generated file contains information on the date of the measurements it contains. For example, the day file "E100609.csv" contains measurements acquired on 09th June 2010. An existing file of the same name is overwritten. A month file E1006 contains the measurement data for the month June 2010.

When logging data from **two** controllers or frames *Winsol* generates files in three directories ("...\Excel", "...\Excel1" and "...\Excel2") with a combined data record in one directory and the respective separate data records in the other two directories.

However in the \*.xls file format only a maximum of 2 controllers or data frames can be saved in the **same** file.

If more than 2 data frames are to be logged, it is therefore advisable to create \*.csv files, as here up to 8 possible frames can be stored for the same data record in the directory ".../Excel". Subsequently individual files are likewise created for each data frame in the appropriate number of directories.

The settings are saved during conversion.



### Typical \*.xls file:

A2		fx 04.03.2010 19:22:20									
	A	B	C	D	E	F	G	H	I	J	
1	time stamp	sensor1/1	sensor2/1	sensor3/1	sensor4/1	sensor5/1	sensor6/1	sensor7/1	sensor8/1	sensor	
2	04.03.2010	0,8	67,1	70,2	70,3	42	36,6	61,6	33,9	1	
3	04.03.2010	0,8	67,1	70,2	70,3	41,6	36,6	61,6	33,9	1	
4	04.03.2010	0,8	67,1	70,2	70,3	41,3	36,6	61,6	33,9	1	
5	04.03.2010	0,8	67,1	70,2	70,3	41,1	36,6	61,5	33,8		
6	04.03.2010	0,8	67,1	70,2	70,3	40,9	36,6	61,4	33,8	1	
7	04.03.2010	0,8	67,1	70,2	70,3	40,7	36,6	61,4	33,8	1	

### Typical \*.csv file:

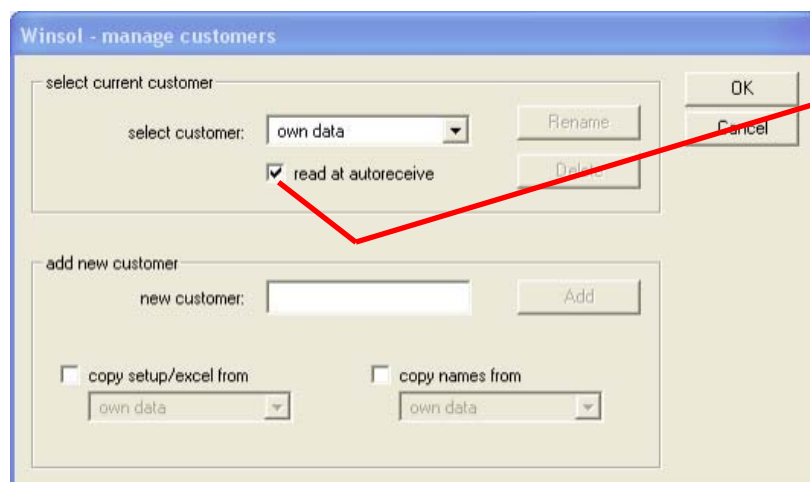
A1		fx date										
	A	B	C	D	E	F	G	H	I	J	K	
1	date	time	device1:	sens1/1	sens2/1	sens3/1	sens4/1	sens5/1	sens6/1	sens7/1	sens8/1	sen
2												
3	04.03.2010	19:22:20		0,8	67,1	70,2	70,3	42	36,6	61,6	33,9	
4	04.03.2010	19:22:50		0,8	67,1	70,2	70,3	41,6	36,6	61,6	33,9	
5	04.03.2010	19:23:10		0,8	67,1	70,2	70,3	41,3	36,6	61,6	33,9	
6	04.03.2010	19:23:30		0,8	67,1	70,2	70,3	41,1	36,6	61,5	33,8	
7	04.03.2010	19:23:50		0,8	67,1	70,2	70,3	40,9	36,6	61,4	33,8	

## Customer mode

*Winsol* allows not only the management and analysis of "own data", it can also be used for analysing the data from other systems. For technical experts, this is an important tool for functional monitoring and troubleshooting customer systems.

Separate customer folders can be created and selected in the "**Customers / manage customers...**" menu. A folder is created in the *Winsol* file system for each customer, in which the corresponding configuration and LOG files are stored. The "**Infosol**" directory in the *Winsol* program folder contains all these customer folders. After creation of a customer, the criteria must be specified in the **SETUP**.

The currently selected customer is displayed in the *Winsol* title bar (e.g. "*Winsol* – Bloggs"). If no customer name is displayed in the title bar, then the "own files" are selected.



From *Winsol* 1.21 the "Manage customers" dialogue can be used to specify for which customers (multiple selection possible) data should be read in during the AutoReceive process. In the factory, the Autoreceive process is carried out for "own data".

## *Winsol*

There are three ways of acquiring the measurements for a customer system:

- 1.** The Bootloader is installed with the system and is regularly read on-site by a service technician using a notebook.
- 2.** If the customer acquires the system measurements, then he/she can email the LOG files to the technical expert.
- 3.** If the recorded data cannot be acquired on-site, then the measurements can be acquired as follows:

### **Preparation of the data logging:**

- 1) Connect the Bootloader to the PC **without** using a DL connection (power supply via CAN-bus or battery). If CAN data logging is activated on own controller, then the CAN connection must also be interrupted and the power supply **only** be provided from the battery.
- 2) Create and select a customer in *Winsol* for the data to be acquired.
- 3) Define the desired save criterion in setup and transfer this to the Bootloader via "**Save**".

### **Data acquisition at the customer site:**

- 4) Connect the Bootloader to the controller (ensure correct polarity!!). With a UVR1611, the data output must be activated (define output 14 as a data line) for output over the DL bus. For output over the CAN bus, the desired values must be set in the menu "Network/data logging".
- 5) As long as the Bootloader is connected to the controller, the measurements are recorded according to the selected save criterion.
- 6) When the Bootloader is disconnected from the controller, the time and date must be noted because *Winsol* requires this information in order to assign the correct time when reading the data. This is not necessary with the UVR1611 and UVR61-3.

### **Read the recorded data:**

- 7) Connect the Bootloader to the PC via USB **without** using a DL- or CAN-connection (power supply via battery).
- 8) Select the corresponding customer in *Winsol*.
- 9) The data stored in the Bootloader can now be read by selecting "**Receive**" and specifying the noted time, then analysed as desired.

## Troubleshooting

◆ The BL-NET Bootloader is not recognized by the *Winsol* "Test IP" function.

1. For communication via Ethernet, the Bootloader must be connected to the CAN bus or supplied with power via a 12V power adaptor (special accessory CAN-NT).
2. Make sure that the Bootloader is connected via Ethernet to the PC or LAN network. An existing Ethernet connection is indicated by a green LED in the oval window on the lower side of the Bootloader. A **crossed** network cable must be used for direct connection with a PC.
3. With a direct Ethernet connection between BL-NET and a PC, the PC must be assigned a fixed IP address. If the PC has a WLAN (wireless network), it must be ensured that the network related part of the IP address differs from the WLAN part.
4. Check the Ethernet configuration of the BL-NET (see chapter "**Connecting the BL-NET to a LAN network**") and note the IP address and TA port of the Bootloader.
5. Make sure that the same IP address and TA port of the Bootloader are set in the *Winsol* setup.
6. Run "Test IP" again. Note the displayed port status.

### 6.1. C.N.A.

If the interface is already being used by another application, this must be ended in order to communicate with the Bootloader. Multiple applications cannot access the interface at the same time.

◆ The Bootloader is not recognised by the *Winsol* "Test Com" function.

1. Make sure that the Bootloader is connected via USB to the PC.
2. In the Windows *Device Manager*, check that the USB driver was correctly installed ([Device Manager](#) ⇒ [Ports](#) (COM und LPT)). In this case the virtual COM port appears in the list as "[USB Serial Port](#)".
  - 2.1. If the driver is not correctly installed, then perform the installation again (see chapter "**USB driver \ Installation**").
  - 2.2. If the driver has been assigned a COM port that is not supported by *Winsol* or *Memory Manager* (e.g. "[USB Serial Port \(COM12\)](#)"), change this setting (see chapter "**USB driver \ Configuring the virtual COM port**").

## *Winsol*

3. Run "**Test Com**" again. Note the displayed status of the COM port assigned to the USB driver.

### **3.1. C.N.A.**

If the interface is already being used by another application, this must be ended in order to communicate with the Bootloader. Multiple applications cannot access the interface at the same time.

4. If no controller is connected to the BL-NET then a 9V battery must be used to provide power for the device.
5. If the Bootloader is connected to at least one device, check the data transfer from the controller to the Bootloader (*see next point*).

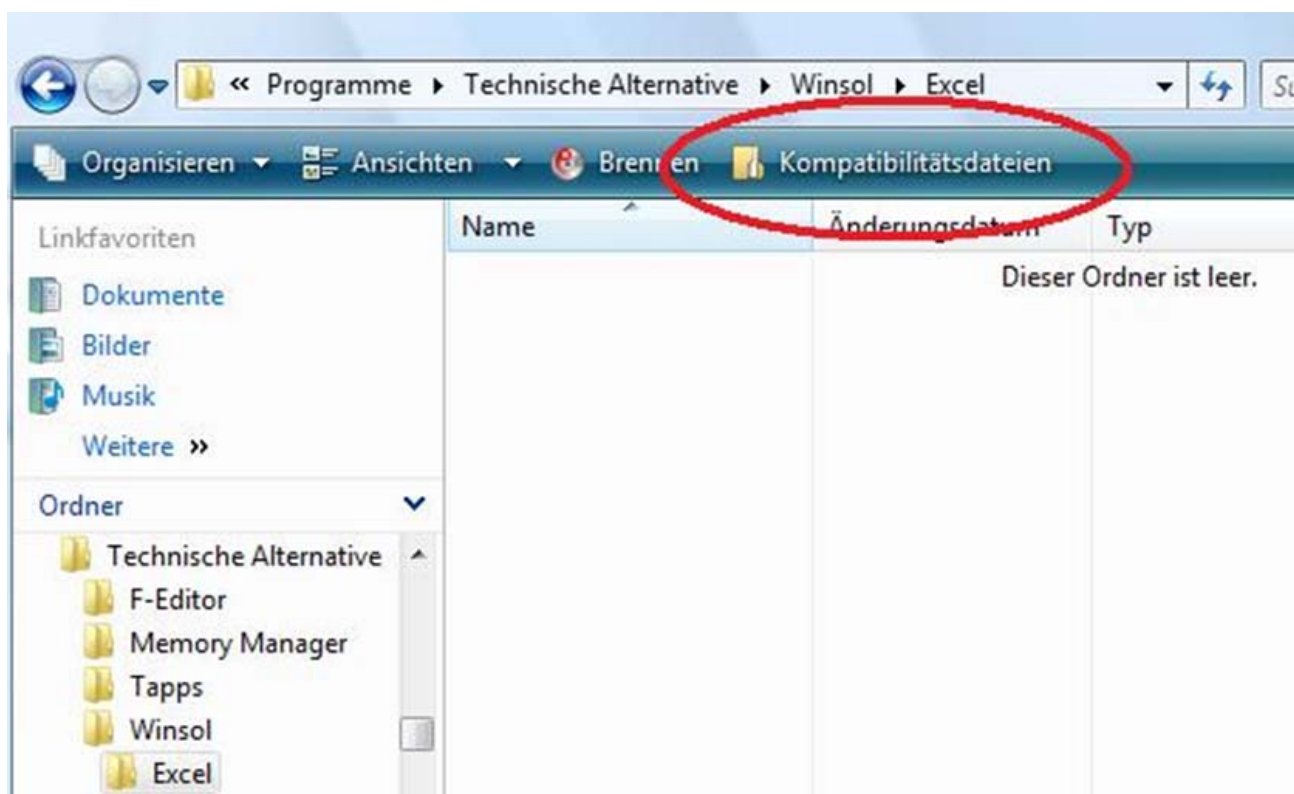
◆ The data transfer from the controller to the Bootloader is not working.  
(No measurements are shown in *Winsol Display*.)

1. Make sure that the Bootloader is connected to the controller via the DL data cable.
2. Check the **wiring** of the data cable and observe the correct polarity.
3. With the UVR1611 data output must be activated if logging over the data link (DL-bus) is to take place (output 14 defined as "**data line**").
4. Ensure that, the BL-NET is configured for the corresponding data logging process (DL bus or CAN bus (*see Winsol* chapter)).
5. If two controllers are to be acquired with the Bootloader, check the data connection with each of them individually in order to isolate the problem. To do this, remove the data cable (DL bus) or the CAN bus from each of the controllers one after another. It is important to disconnect the cable directly at the controller and not at the data input of the BL-NET, otherwise you may get ambiguous results!
  - 5.1. If the data transfer works with each of the two controllers individually, then the problem is caused by crosstalk errors between the two data cables (DL-bus). In this case the cables must be laid separately or at least one cable must be shielded.
6. To isolate data transfer problems with a single cable, test the link using a short cable (< 1 metre).
  - 6.1. If the data transfer works with the short cable then the problem is caused by interference from an external source in the long cable. In this case, the cable must be laid using a different path or a shielded cable must be used.
7. If problems persist after all the above points have been checked then please consult your dealer or directly contact the manufacturer. The problem can only be solved with an **exact fault description!**

- ◆ The data is recorded with the wrong timestamp (date, time).
  1. When logging from an UVR1611 or UVR61-3, the timestamp is generated by the controller and, in this case, the time information at the controller must be corrected.
 

**Note:** To ensure a high time resolution, the Bootloader synchronises its clock with the controller during commissioning, or once an hour, and updates the timestamp internally. If the time in the controller is changed, the Bootloader must therefore be briefly powered off for a few seconds (remove DL) so that it immediately synchronises after a restart.
  2. When logging data from controllers without internal clocks, the time on the PC, or the time at which the Bootloader was disconnected from the controller, is assigned to the recorded data.
- ◆ The log and Excel files are not displayed in the corresponding path or the searched for folder itself does not even exist

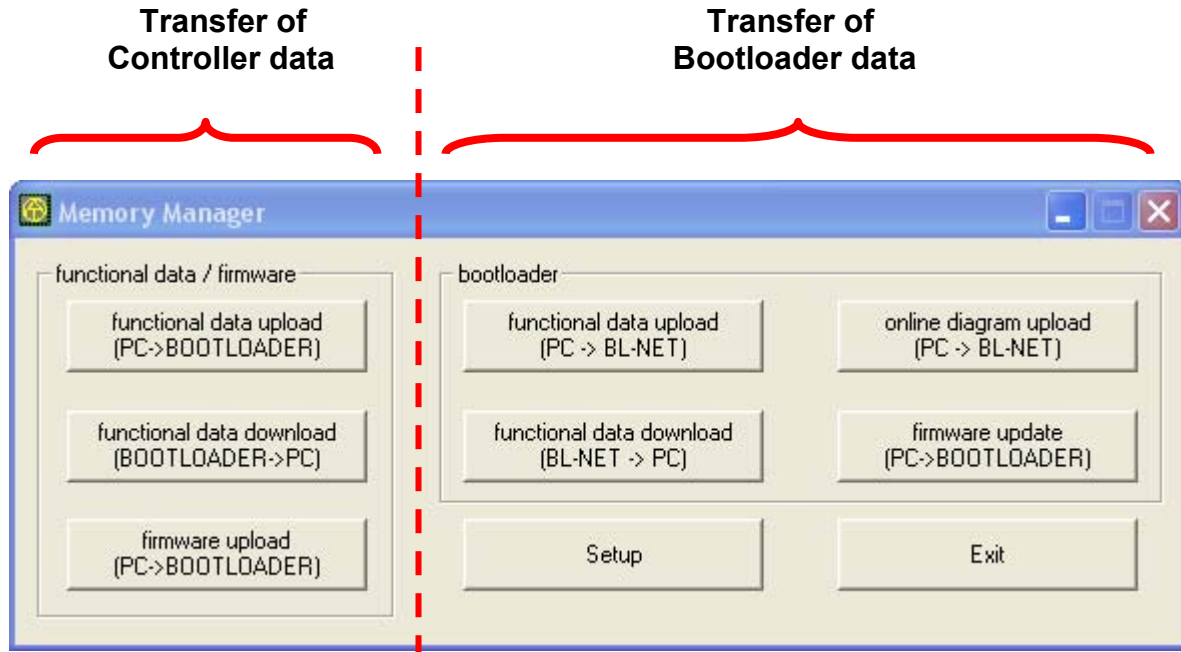
Under certain circumstances, Windows 7 and Windows Vista, create the files in a "virtual program path". In Windows Explorer, the searched for files are reached by pressing the button "**Compatibility files**":



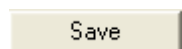
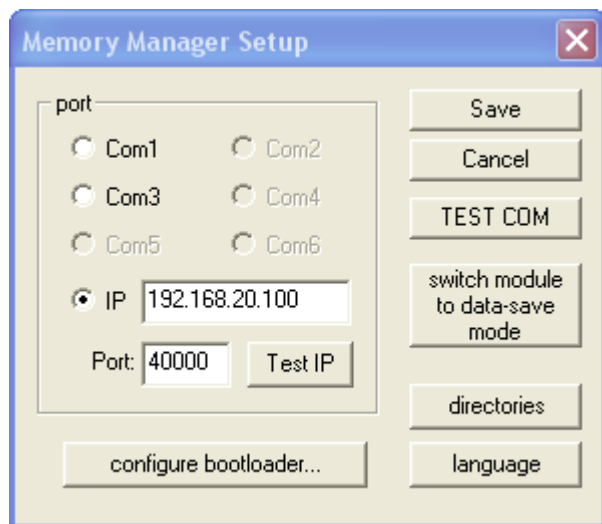
The files are then actually stored in the following path:  
 C:\Users\USERNAME\AppData\Local\VirtualStore\Programs\Technische Alternative\Winsol\...

# Memory Manager (from version 2.07)

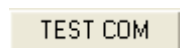
The *Memory Manager* program allows updating of the operating system of the Bootloader, and other devices connected to the CAN bus (UVR1611, CAN Monitor, etc.). Functional data can also be copied in both directions (data upload and download).



The **Setup** contains the settings required for correct communication between the PC and the Bootloader.



**Saves** the set interface parameters



The "**Test Com**" command allows an automatic search for the Bootloader at the COM ports supported by *Memory Manager*, independently of any current setup settings (connection via USB).

Test IP

"**Test IP**" has the same function as "Test COM", but for the Ethernet connection. "**Test IP**" only returns a valid result when the Ethernet interface of the BL-NET has already been parameterised and the IP address and port of the Bootloader have been correctly specified.

switch module  
to data-save  
mode

This is only required for the BL232 Bootloader, with the BL-NET the storage is large enough to save both the logged data and the system data at the same time.

directories

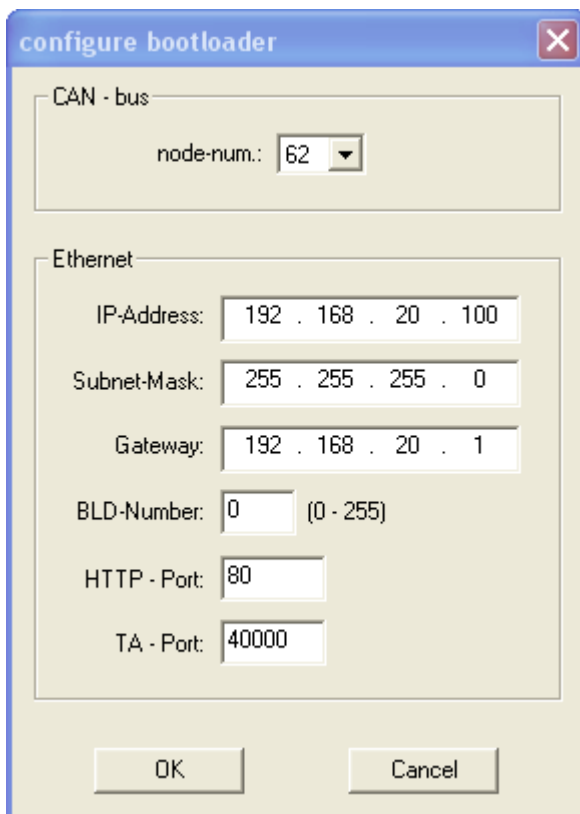
Selection of the **standard directories**

language

*Memory Manager* language selection

configure bootloader...

The menu is used for configuring the basic settings of the BL-NET (see "**Connecting the BL-NET to a LAN network**"):



Node number of the BL-NET in the CAN network

IP address of the BL-NET

Subnet mask of the BL-NET (not used)

Gateway of the BL-NET (not used)

Bootloader number (= last position of the MAC address)

HTTP port for web browser access

TA PORT for communication with *Memory Manager* and *Winsol*

**Warning!** The IP address is not transferred when downgrading from version 2.12 to 1.43 and also when a new upgrade to version 2.12 is carried out. Hence a USB connection is essential!

## Memory Manager

### Transfer of controller data

Transfer of the controller data is started from the left area of the *Memory Manager*:

functional data / firmware	
functional data upload (PC->BOOTLOADER)	Functional data upload (PC→Bootloader)
functional data download (BOOTLOADER->PC)	Functional data download (Bootloader→PC)
firmware upload (PC->BOOTLOADER)	Firmware upload (PC→Bootloader)

The Bootloader has 7 memory positions for functional data and one memory position for the operating system. All memory positions can be used simultaneously!

### Functional data upload (PC→Bootloader)

Transfers functional data (\*.dat) from the PC to the Bootloader.

memory position / designation at bootloader:	overwrite	source file at PC:
1: otte Delete	<== <input checked="" type="checkbox"/>	otte select properties...
2: PR01420 Delete	<== <input type="checkbox"/>	 select properties...
3: Funktionsdaten CAN - Monitor Delete	<== <input type="checkbox"/>	 select properties...
4: Funktionsdaten 09.06.2009 13_30 Delete	<== <input type="checkbox"/>	 select properties...
5: no valid data Delete	<== <input type="checkbox"/>	 select properties...
6: no valid data Delete	<== <input type="checkbox"/>	 select properties...
7: no valid data Delete	<== <input type="checkbox"/>	 select properties...

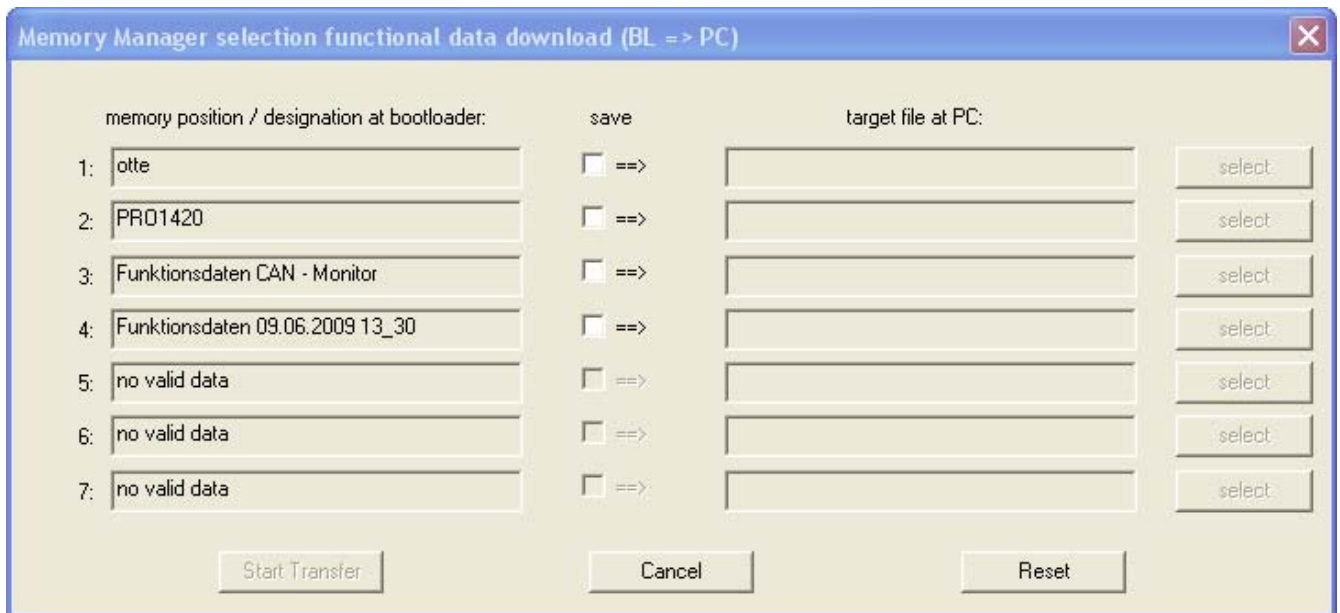
Start Transfer      Cancel      Reset

The left column shows the data that is currently stored in the Bootloader. Setting a tick in the "**overwrite**" column selects the functional data on the PC that will then be written to the corresponding memory position in the BL-NET.

Clicking "**Start Transfer**" loads the selected data into the Bootloader.

### Functional data download (Bootloader→PC)

The functional data previously loaded from the controller into the Bootloader is stored on the PC.



The data stored in the Bootloader is shown in the left column. Setting a tick in the "save" field allows specification of the path and name of the file on the PC where the functional data is to be stored.

Clicking "Start Transfer" stores the selected data on the PC.

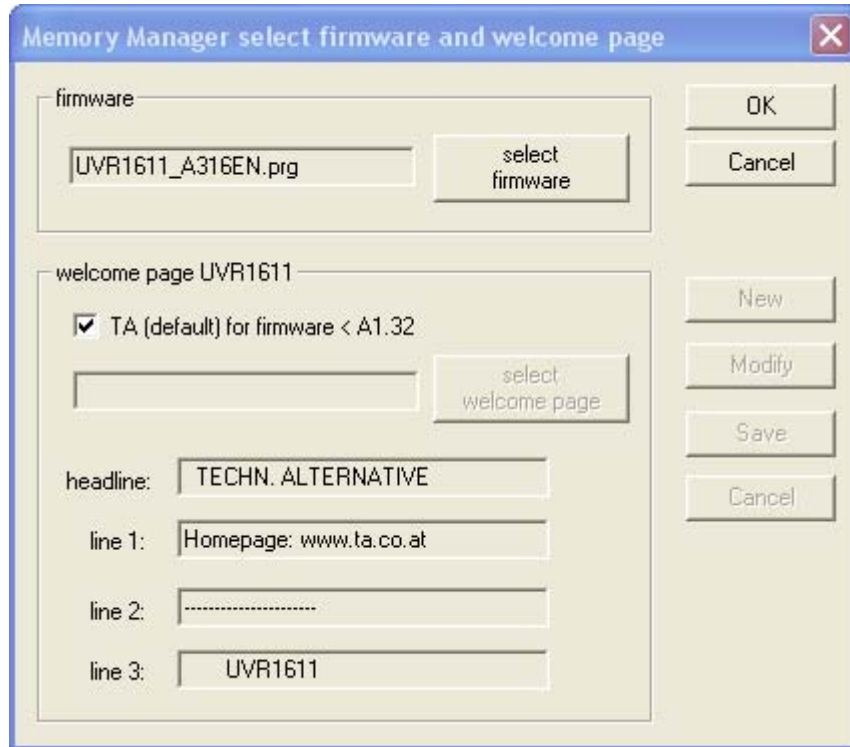
**The functional data (\*.dat) stored on the PC must be regarded as a backup copy and cannot be edited on the PC.**

Using the *TAPPS* programming software an option exists to create and print out a \*.txt file from the \*.dat file containing a list of all the setting parameters used in programming (→see *TAPPS* tutorial).

## Memory Manager

### Operating system upload (PC→Bootloader)

Transfer of an operating system (UVR1611, CAN Monitor, CAN-I/O Module or Bus converter CAN-BC) from the PC to the Bootloader. Since a common memory position is used for the operating system, the transfer overwrites the existing operating system stored in the BL-NET. The latest operating system at any point in time can be downloaded to a PC from our homepage <http://www.ta.co.at>.

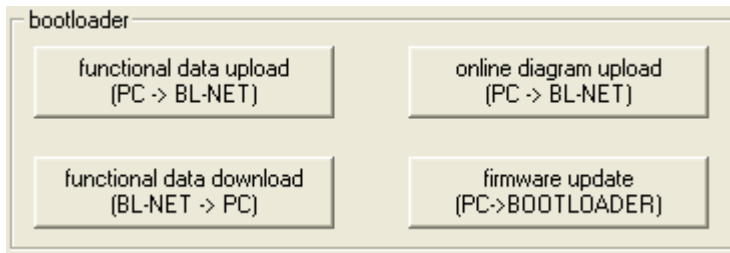


The desired operating system (\*.prg) on the PC is selected with the “**select firmware**” button. When uploading an operating system for a UVR1611, a user-defined welcome page for the controller can also be defined. This greeting page can be created during creation of a function data record ("Export to the translator") using the programming software *TAPPS*. If a welcome page is already defined in the controller functional data then this is retained and the welcome page specified when transferring the operating system is not adopted by the UVR1611.

Clicking “**OK**” starts the data transfer and stores the selected operating system on the Bootloader.

## Transfer of Bootloader data

The right part of the *Memory Manager* is responsible for the transfer of Bootloader data:



### Functional data upload (PC ⇌ BL-NET)

Transfer of BL-NET functional data from the PC to the Bootloader.

The BL-NET configuration can be created directly on the device via web browser or using the software "F-Editor" on the PC.

### Functional data download (BL-NET ⇌ PC)

The BL-NET Bootloader functional data is stored on the PC.

### Online diagram upload (PC ⇌ BL-NET)

Transfer of the files for the BL-NET online diagram from the PC to the Bootloader. After selecting the file type (\*.gif or \*.html), the corresponding file can be selected and loaded into the Bootloader. **Both files** must be loaded sequentially. The files must not exceed the maximum permitted size of 196 kilobytes each.

More details about the online diagram can be found in tutorial for the *TAPPS* programming software.

### Operating system update (PC⇌Bootloader)

**When updating a Bootloader from version 1.xx to 2.xx, all saved controller function data are lost.** Therefore, before updating the operating system, it is necessary to backup the data stored on the Bootloader to the PC.

The latest BL-NET operating system (\*.frm) can be downloaded from <http://www.ta.co.at>.

**Observe the update instructions on our homepage!**

**CAUTION:** Newer operating systems are not necessarily compatible with the software already present on the PC. The homepage provides information on this. The software on the PC should always be brought up to date **before** an operating system update.

If the update is started in the *Memory Manager*, the Bootloader first loads the program into the internal memory (progress bar in *Memory Manager* is full) and then the processor is written with the new operating system. This procedure is indicated by alternate flashing of both LEDs on the Bootloader.

This is followed by a restart and the Bootloader is then ready for operation again.

### Troubleshooting

- ◆ The BL-NET Bootloader is not recognised by the *Memory Manager* "Test IP" function.

1. For communication via Ethernet/LAN, the Bootloader must be connected to the CAN bus or supplied with power via a 12V power adaptor (special accessory CAN-NT).
2. Make sure that the Bootloader is connected via Ethernet to the PC or LAN network. An existing Ethernet connection is indicated by a green LED in the oval window on the lower side of the Bootloader. A crossed network cable must be used for direct connection with a PC.
3. With a direct Ethernet connection between BL-NET and a PC, the PC must be assigned a fixed IP address. If the PC has a WLAN (wireless network), it must be ensured that the network related part of the IP address differs from the WLAN part.
4. An existing WLAN (wireless network) must have a network address different from the Ethernet connection of the Bootloader (the first 3 number blocks of the IP address).
5. Check the Ethernet configuration of the BL-NET (see chapter "**Connecting the BL-NET to a LAN network**") and note the IP address and TA port of the Bootloader.
6. Make sure that the IP address and TA port of the Bootloader are set in the *Memory Manager* setup.
7. Run "Test IP" again. Note the displayed port status.

#### 7.1. C.N.A.

If the interface is already being used by another application, this must be ended in order to communicate with the Bootloader. Multiple applications cannot access the interface at the same time.

- ◆ The Bootloader is not recognised by the *Memory Manager* "Test Com" function.

1. Make sure that the Bootloader is connected via USB to the PC.
2. In the Windows "**Device manager**", check that the USB driver was correctly installed ("**Device manager**" ⇒ "**Ports**" (COM und LPT)). In this case the virtual COM port appears in the list as "**USB Serial Port**".
  - 2.1. If the driver is not correctly installed, then perform the installation again (see chapter "**USB driver \ Installation**").
  - 2.2. If the driver has been assigned a COM port that is not supported by *Winsol* or *Memory Manager* (e.g. "**USB Serial Port (COM12)**"), change this setting (see chapter "**USB driver \ Configuring the virtual COM port**").
3. Run "Test Com" again. Note the displayed status of the COM port assigned to the USB driver.
  - 3.1. C.N.A.

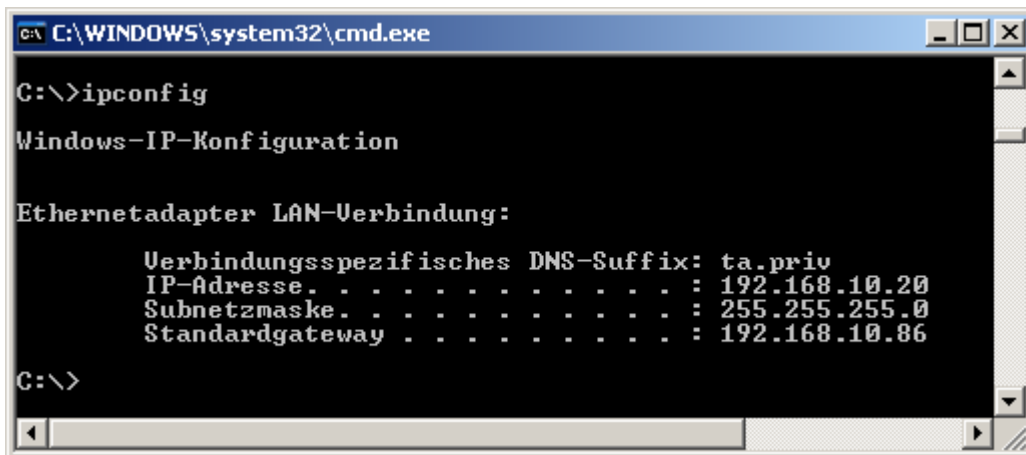
If the interface is already being used by another application, this must be ended in order to communicate with the Bootloader. Multiple applications cannot access the interface at the same time.
4. If no controller is connected to the BL-NET then a 9V battery must be used to provide power for the device.

## Connecting the BL-NET to a LAN network

In case of intranets the IP address must be requested from the administrator. The following instruction is written for home networks.

Before connecting a BL-NET to a LAN network, it must first be configured **via the USB interface**:

1. The *Winsol* and/or *Memory Manager* program(s) must be installed on the PC.
2. Connect the Bootloader to the PC via USB. If the required USB driver is not installed on the PC, then this must be done now (see "**USB driver installation**").
3. For configuration, the Bootloader must be supplied with power via the CAN bus, a DL or a battery.
4. Start one of the abovementioned programs and click "TEST COM" in the setup area. The program searches for the Bootloader at the (virtual) COM interfaces (COM 1 to COM 6).
5. If a BL-NET is found, the interface can be automatically adopted in the setup via "**Take over**" and the setting can be saved via "**Save**". If the software does not find a BL-NET then either the device does not have a power supply (see 3.) or the software of another USB device is preventing recognition. In this case, the software of the relevant device must be exited during the recognition process.
6. In Windows, start a command shell via Start → "Run" by entering "**cmd**".
7. Determine the network settings of the PC via the "**ipconfig**" command:



```
C:\WINDOWS\system32\cmd.exe
C:\>ipconfig

Windows-IP-Konfiguration

Ethernetadapter LAN-Verbindung:

    Verbindungsspezifisches DNS-Suffix: ta.priv
    IP-Adresse . . . . . : 192.168.10.20
    Subnetzmaske . . . . . : 255.255.255.0
    Standardgateway . . . . . : 192.168.10.86

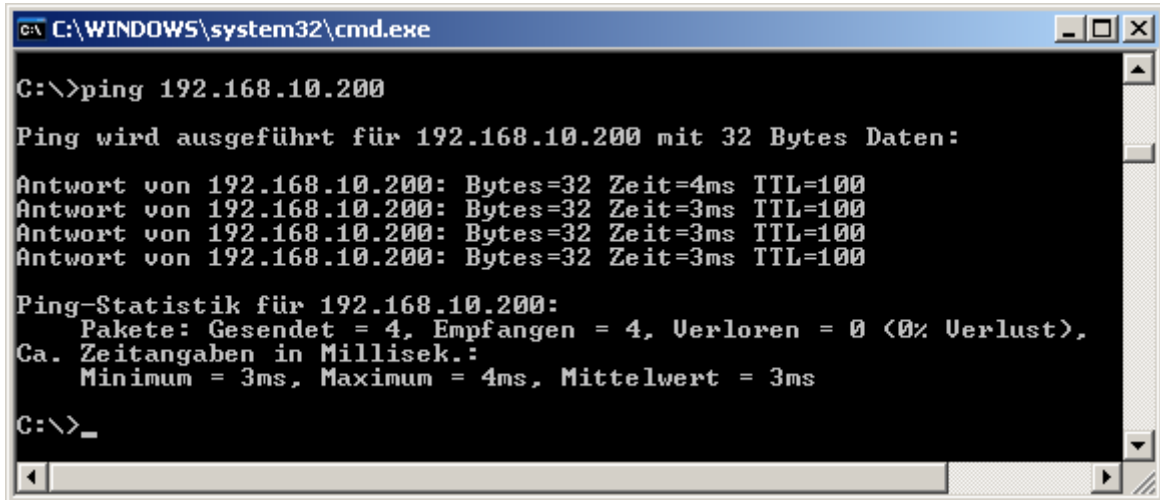
C:\>
```

Note the IP address of the PC (e.g. 192.168.10.20) and the subnet mask of the LAN network (e.g. 255.255.255.0).

From the subnet mask and the IP address of the PC, it can be seen that all IP addresses in this network must begin with 192.168.10.xxx.

## Connecting BL-NET to LAN network

- The Bootloader must be assigned an IP address that does not yet exist in the network. The "**ping**" command in the command shell can be used to check if (e.g.): the desired IP address 192.168.10.**200** is free:



```
C:\WINDOWS\system32\cmd.exe
C:\>ping 192.168.10.200


Ping wird ausgeführt für 192.168.10.200 mit 32 Bytes Daten:

Antwort von 192.168.10.200: Bytes=32 Zeit=4ms TTL=100
Antwort von 192.168.10.200: Bytes=32 Zeit=3ms TTL=100
Antwort von 192.168.10.200: Bytes=32 Zeit=3ms TTL=100
Antwort von 192.168.10.200: Bytes=32 Zeit=3ms TTL=100

Ping-Statistik für 192.168.10.200:
    Pakete: Gesendet = 4, Empfangen = 4, Verloren = 0 (0% Verlust),
    Ca. Zeitangaben in Millisek.:
        Minimum = 3ms, Maximum = 4ms, Mittelwert = 3ms

C:\>_
```

Since the "**ping**" command above received an answer, the IP address 192.168.10.**200** is already assigned to a device in the network and cannot be used for the BL-NET. A new attempt with the IP address 192.168.10.**210** is therefore started:



```
C:\WINDOWS\system32\cmd.exe
C:\>ping 192.168.10.210

Ping wird ausgeführt für 192.168.10.210 mit 32 Bytes Daten:

Zeitüberschreitung der Anforderung.
Zeitüberschreitung der Anforderung.
Zeitüberschreitung der Anforderung.
Zeitüberschreitung der Anforderung.

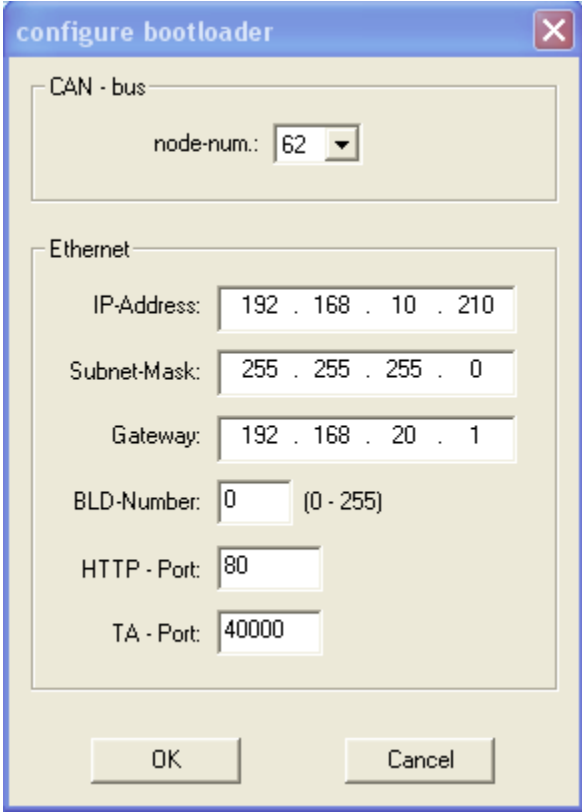
Ping-Statistik für 192.168.10.210:
    Pakete: Gesendet = 4, Empfangen = 0, Verloren = 4 (100% Verlust),

C:\>
```

The IP address 192.168.10.**210** is not yet used (no answer to the "ping") and can thus be assigned to the BL-NET.

## Connecting BL-NET to LAN network

9. In the *Memory Manager*, the configuration of the BL-NET Ethernet interface is done in "SETUP" under "configure Bootloader" and in *Winsol* this form is located under (File → Module → configure Bootloader):



The screenshot shows a dialog box titled "configure bootloader". It is divided into two main sections: "CAN - bus" and "Ethernet".

- CAN - bus:** Contains a "node-num." field with a dropdown menu set to "62".
- Ethernet:** Contains several input fields:
  - IP-Address: 192 . 168 . 10 . 210
  - Subnet-Mask: 255 . 255 . 255 . 0
  - Gateway: 192 . 168 . 20 . 1
  - BLD-Number: 0 (with a range of 0 - 255)
  - HTTP - Port: 80
  - TA - Port: 40000

At the bottom of the dialog are "OK" and "Cancel" buttons.

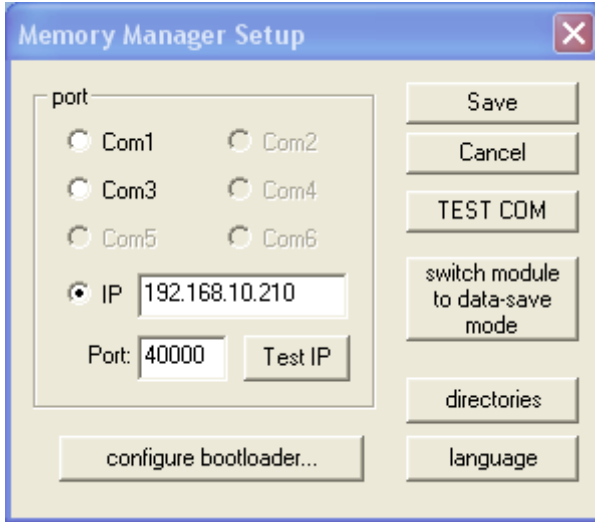
IP address:	The BL-NET is assigned the free IP address determined via "ping".
Subnet mask:	The subnet mask of the network is not used.
Gateway:	The gateway is not used.
BLD number:	If several Bootloaders are connected to the LAN network then each Bootloader must be assigned a different BLD number!
HTTP port	The port used to access the Bootloader via a browser can be set to any desired value (default is port 80)
TA port:	Communication between <i>Winsol</i> and <i>Memory Manager</i> with the BL-NET occurs via this port. It is recommended to leave this port at the factory setting of 40000.

Clicking "OK" transfers the settings to the Bootloader and this restarts with the changed configuration (IP address, etc.).

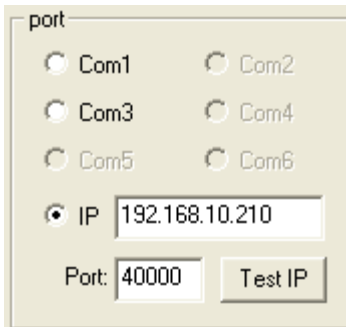
10. The Bootloader is now correctly configured for the network and can be integrated into the network. **Note that the Ethernet interface of the BL-NET is only active when a CAN bus connection exists!**

## Connecting BL-NET to LAN network

11. After the Bootloader has been prepared, the PC software must also be configured with the correct IP address and corresponding port. Point 9 describes configuration of the device only. Since several Bootloaders can be connected in a LAN network, this information must be specified again in the software (*Winsol* or *Memory Manager*) in order to address the correct BL-NET.



12. The Ethernet connection can then be checked via "Test IP". Access to the BL-NET via a browser (Opera, Internet Explorer, etc.) using the IP address is now possible, and thus also to the CAN network (UVR1611).



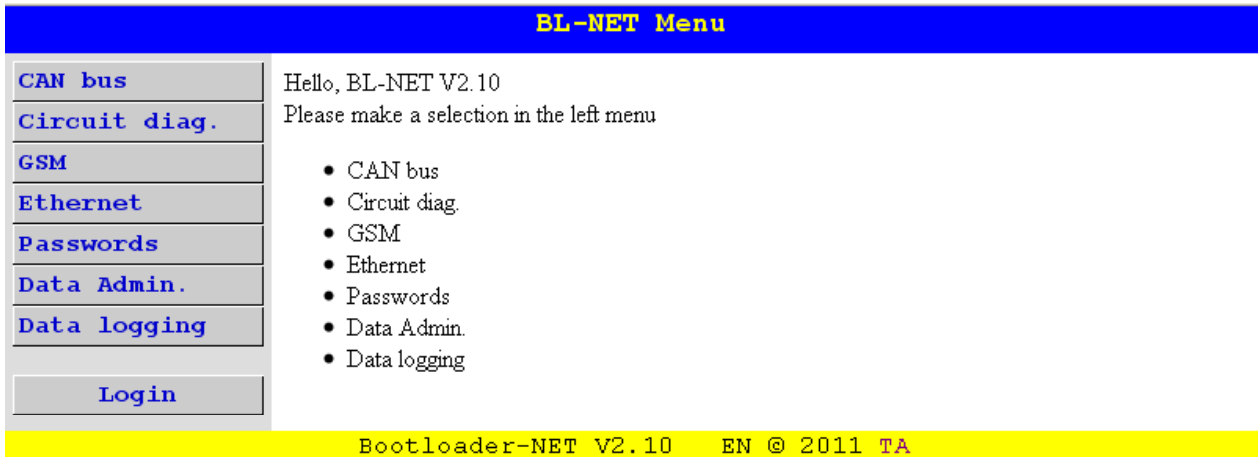
**Warning!** The IP address is not transferred when downgrading from version 2.12 to 1.43 and also when a new upgrade to version 2.12 is carried out. Hence a USB connection is essential!

## Accessing the BL-NET via a browser

Any browser (Internet Explorer, Mozilla Firefox, Opera, etc.) can be used to access the BL-NET. By using the back function, the last **displayed** page is made visible, which may possibly no longer be displaying the latest values. To ensure that the latest values are displayed, the button "Refresh" in the menu views must always be used.

### Accessing main menu page (BL-NET Menu)

Entering the IP address of the BL-NET into any browser will display the BL-NET main page.

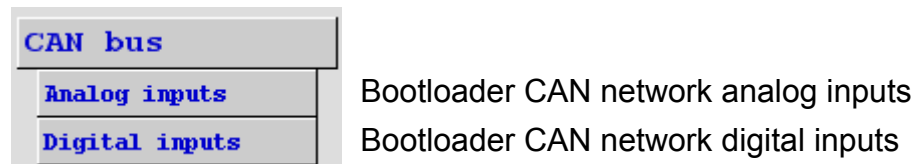


By selecting one of the menu points on the left, the next described menu is accessed. The link "TA" at the bottom right opens the "Technische Alternative" homepage.

#### Menu points:

**"CAN bus":** The "CAN bus" menu shows all active devices (nodes) connected to the Bootloader via the CAN bus. Selecting a node allows direct access to the menu pages of the node.

If this menu point is selected, 2 sub-menus drop down:



**"Circuit diag.":** The Bootloader offers online visualisation, which provides a graphical representation of the current state of the system when viewed with a browser over the LAN or the Internet (see chapter „**Online diagram**“).

**"GSM ":** The status of BL-NET network inputs can be queried and the values for network outputs can be set via SMS. The "**GSM**" menu allows configuration of each of 16 analog and 16 digital CAN network inputs/outputs of the BL-NET and GSM settings. Events can also be defined that cause the Bootloader to send an SMS and/or e-mail when they occur. A built in GSM module is essential for all these functions. **The GSM module has its own operating manual.**

**"Ethernet":** The Ethernet settings can also be changed using a browser. However, since an Ethernet connection to the Bootloader must already exist, configuration of the Ethernet settings during **first-time commissioning** via USB interface is essential.

## Accessing BL-NET via browser

**"Passwords":** To prevent unauthorised external access (Internet, Intranet, etc. ) the BL-NET has a password system. **To ensure protected and safe access via the Internet, additional safety precautions at the router are absolutely necessary.**

**"Data Admin.":** ("Data administration") The BL-NET Bootloader allows the transfer of functional data or operating systems to devices in the CAN network (UVR1611, CAN monitor and CAN-I/O module) over Ethernet using a browser.

**„Data logging“:** Display of the used memory capacity and specification of a percentage, the exceeding of which causes a text message or email to be sent (where a GSM module is fitted).

## MENU Passwords

### WARNING:

**As long as no passwords have been defined, all persons knowing the IP address have unlimited access to the system, including all options for changing programs and settings!**

No password is saved in the factory setting. If an expert password has been assigned, the other operating levels can also only be reached via passwords. If passwords are set, then when calling the main menu page the operating level must first be selected in the **Login** menu and the password entered.

If an incorrect password is entered or an unpermitted access made when calling a sub-menu the following message appears:

**Access denied!!!**

Expert :	<input type="text" value="m1m2m3"/>	<input checked="" type="checkbox"/>
Client:	<input type="text" value="r1r2r3"/>	<input checked="" type="checkbox"/>
View only:	<input type="text" value="a1a2a3"/>	<input checked="" type="checkbox"/>

The save button must be pressed after entry of each password.

Password entry is case-sensitive and special characters are not permitted.

### Operating levels:

- „Expert “:** Expert users can change all parameters and settings.
- „Client“:** The user has the option of accessing the function overview at the controller and then changing parameters and times there.
- „View only“:** The user has the only possibility to view the Online diagram. Setting the password **“12345”** allows access to Online diagram without password input.

When work with the BL-NET is finished, it is recommended to end the session via the logout button. The session is automatically ended after 2.5 minutes without communication. Re-entry is only possible through a renewed login.

**If the browser is closed without clicking the logout button, then no other login can occur for the next 2.5 minutes!**  
**Only one user can work on the Bootloader at any given time.**

## Menu CAN bus

The "**CAN bus**" menu shows all active devices (nodes) connected to the Bootloader via the CAN bus. Selecting a node and then executing the "Load menu page" command allows direct access to the menu pages of the node.

Network - Node number BLD :

---

Active nodes on the CAN bus :

1  
 32  
 50

---

Vend.ID: 00 00 00 CB  
 Pr.Code: 00 00 10 0B  
 Rev.No.: 00 01 00 00  
 DES.: UVR1611

According to the illustration, the Bootloader is node 62 of the CAN network.

Nodes 1, 32 and 50 are active in the network.

Node 1 is selected, in this case an UVR1611.

**Select :** Select the desired active node, by clicking the button "**Load menu page**" to access the node.

The menu page of the device is then displayed.

**Network - Node number BLD:** This is where the Bootloader node number is changed (factory setting: 62). Enter and confirm the new number by clicking the save button.

**Vend. ID:** Manufacturer identification number (CB for Technische Alternative GmbH)

**Pr.Code:** Product code of the selected node (here for a UVR 1611)

**Rev.No.:** Revision number

**DES.:** Node product designation

These data are fixed values specified by Technische Alternative GmbH and cannot be changed.

Access to the menu page of a CAN monitor is not possible.

## Accessing BL-NET via browser

### UVR1611 menu page

Only the values current at the time of loading of the page are displayed. In order to display the actual (latest) values, the page must be updated.




As with the controller, the top line shows the status of the outputs:

**Green:** Output on

**Red:** Output off

The **hand symbol** means manual mode.

Clicking a link symbol  accesses the corresponding selected sub-menu.

These buttons allow direct selection of the most important submenus. (Exception: menu "User").

**Update** The actual values will be reloaded with this button.

**MENU** Getting back to main menu of CAN device with „MENU“.

**back** The **last displayed** page will be visible using the „back“ function. Perhaps it does not show actual values.

Navigating, parameterizing and configuring in sub-menus are made in the same way as at the controller itself. But it is not possible to insert or delete function modules. A manual adjustment of mixer outputs is not possible.

Example: Parameterizing input 1

1 2 3 4 5 6 7 8 9 10 11		
INPUTS		
1: TCollector	82,7 °C	PAR? <=
2: TWarm Water1	53,3 °C	PAR? <=
3: TWarm Water2	42,9 °C	PAR? <=
4: TSTLower1	37,7 °C	PAR? <=
5: TSTLower2	44,6 °C	PAR? <=
6: TSTCenter	51,1 °C	PAR? <=
7: TSTUpper	56,9 °C	PAR? <=
8: -----	unused	PAR? <=
9: TBoiler Flow	62,8 °C	PAR? <=
10: THeat.Cir.F1	31,7 °C	PAR? <=
11: THeat.Cir.F2	39,8 °C	PAR? <=
12: TOutdoor	- 8,8 °C	PAR? <=
13: TRoom1	20,9 °C	PAR? <=
14: TRoom2	19,5 °C	PAR? <=
15: -----	unused	PAR? <=
16: -----	unused	PAR? <=

Update	MENU	back
--------	------	------

After selection of the menu item "Inputs" this page is displayed, which has the same layout as in the controller.

By clicking the link symbol next to the desired input, the following display is brought up:

## Accessing BL-NET via browser

1 2 3 4 5 6 7 8 9 10 11 12 13  
INPUT 1

TYPE: ANALOG <>  
MEAS VAR: Temperat. <>

DESIGNATION  
GROUP: General <>  
DES: TCollector <>

SENSOR: Pt 1000 Pt1000 <v>  
SENSOR CHECK: no KTY10  
SENSOR CORR: 0,0 K Pt1000  
MEAN VAL: 1,5 Sec RAS  
RAS PT

Update MENU back

Clicking the link symbol of the corresponding parameter displays a selection list with the available adjustment parameters.

After making a selection (identifiable by colour highlighting) by mouse clicking, the new controller parameter is immediately transferred via the CAN-bus. The controller stores the parameter and then returns the corrected menu page, which is then redisplayed by the browser.

### Sub-menu Analog inputs

In this sub-menu of the "CAN bus", the CAN network analog inputs of the Bootloader BL-NET are configured:

Analog input no.: 1 <v>

Network - nodes (source) 1 <v>  
Network - output (source) 1 <v>

Current value : 82,6 °C

**Example:** Configuration CAN network input Analog 1:

Network node and Network output of the source

Current value (if there is no decimal point display or units, the Bootloader must be briefly disconnected from the CAN bus)

### Sub-menu Digital Inputs

In this sub-menu of the "CAN bus", the CAN network digital inputs of the Bootloader BL-NET are configured:

Digital input no.: 1 <v>

Network - nodes (source) 1 <v>  
Network - output (source) 4 <v>

Current value : 0

**Example:** Configuration CAN network input Digital 1:

Network node and Network output of the source

Current value (1 = ON, 0 = OFF)

## MENU Ethernet

The Ethernet settings can also be changed using a browser. However, since an Ethernet connection to the Bootloader must already exist, configuration of the Ethernet settings via the USB interface during first-time commissioning is recommended. **See also the section "Connecting the BL-NET to a LAN network"**

IP:

BL no. :

HTTP-Port :

TA-Port :

Settings only become active after a restart!

Enter and confirm the new number by clicking the save button

Changes do not take effect until the restart of the BL-NET!!!

**NOTE:** Setting of an IP address where the first three number combinations differ from the LAN network (here 192.168.20.xxx) or of an address which already exists in the network, means that it will no longer be possible to access the Bootloader **in this** network. New parameterisation of the Ethernet connection via a USB connection is required before normal Ethernet access is possible once more.

- BL- no.:** If several Bootloaders are connected to the LAN network, each Bootloader must be allocated a different BL number!
- HTTP-Port** The port, via which the Bootloader is accessed using the browser, can be freely set (default, port 80).
- TA- Port:** *Winsol* and *Memory Manager* communicate with BL-NET via this port. It is recommended that the setting for this port is left at the factory setting, 40000.
- MAC-Address** 02 50 C2 5C 60 xx (xx = BL-number)

## Accessing BL-NET via browser

### MENU Data Admin. (Data administration)

The BL-NET Bootloader allows the transfer of functional data or operating systems to devices in the CAN network (UVR1611, CAN Monitor and CAN-I/O Module and Bus converter CAN-BC) over Ethernet using a browser.

For security reasons, we recommend carrying out a local operating system update rather than via the Internet (remote maintenance). A transfer using the browser via the controller menu "Data Administration" should **not** be carried out.

#### Page in browser:

Active nodes on the CAN bus :

1  
 32  
 50

Vend.ID: 00 00 00 CB  
Pr.Code: 00 00 10 0B  
Rev.No.: 00 01 00 00  
DES.: UVR1611

[Load menu page](#)

Data transfer:  ▼

Function data (Node No.)

1: FISCHER1 (1)  
 2: Funktionsdaten CAN - Monitor (50)  
 3: Funktionsdaten I/O - Modul 44 (32)  
 4: test441 (32)  
 5: Funktionsdaten CAN - Monitor (50)  
 6: --- (-)  
 7: Funktionsdaten 21.04.2011 12\_16 (1)

Operating system

A3.25EN, UVR1611

[Start transfer](#)

#### Selection process:

Select the node with which the data transfer is to occur

Option for loading the node menu page

Select the transfer direction of the functional data

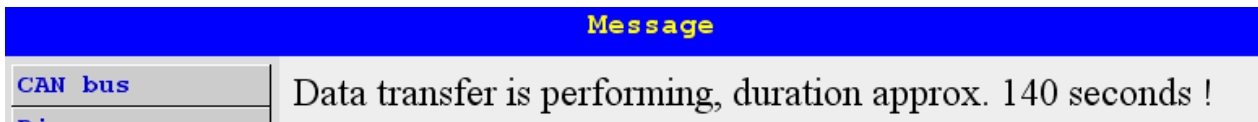
Select the memory position of the Function data. The name of the data is displayed next to the memory position number; in addition the node is given in brackets from the saved function data.

During a data upload (Device -> BL-NET) the data of the selected Bootloader memory location is overwritten, if any data was already stored there.

Operating system transfer

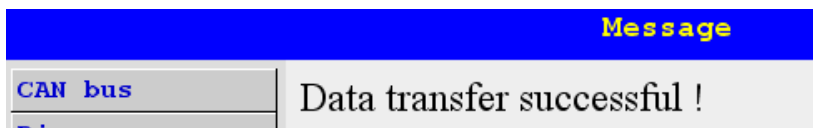
Start transfer

The following message appears once the transfer has started:



Function data require approx. 25s and operation systems approx. 140s transfer time. If the boot sector is also updated, the transfer time is longer and a browser message can also be generated, stating that the connection has failed.

Once the transfer is ended, the status of the transfer is automatically displayed in the browser ("...successful" or " Error during data transfer on the CAN bus ")



Once the transfer is complete, the page is displayed by pressing one of the buttons. Note that, after the transfer, the controller is restarted and the node is not visible at the BL-NET for about 20 seconds

### MENU Data logging

Occupied memory: 15%	→ Display of memory used in percent
Message to GSM contact if memory full: 70 %	→ Setting of the percentage value, the exceeding of which results in a message to the GSM contacts, for which the option "data logging" in the Menu <b>GSM</b> has been selected (when a GSM module is fitted).

## Data transfer BL-NET ↔ UVR1611

### Selection of the interface for the data transfer

#### CAN bus line

To transfer the data via CAN, all four CAN conductors (H, L, +, ⊥) must be connected. The battery is unimportant here.

Key to CAN symbols:    H.....CAN high  
                                  L.....CAN low  
                                  +.....+12 volt  
                                  ⊥.....Mass

#### Infrared interface

A cable is not required for infrared transfer, only a 9V battery is required. The infrared interface is primarily intended for service purposes. It is recommended that this only be used for transferring functional data! An operating system download requires the Bootloader to be held motionless on the controller for several minutes (**if this is not successful, transfers can then only be done using a cable!**)



#### Position of the BL-NET on the controller for infrared transfers:

- Upper edge of the BL-NET lies at the lower edge of the UVR display
- Display side edges are marked with → | **DISPLAYPOSITION UVR1611** | ← on the BL-NET

#### NODE 63:

Data transfer of the operating system and functional data is always performed by the Bootloader using node 63 of the CAN network.

This special node number is used exclusively for these data transfers and must not be assigned to any device in the CAN network.

The device waiting for data transfer with the Bootloader automatically uses node number 63 for this period of time.

#### Data transfer procedure

The device that is to exchange data with the Bootloader must be prepared for the data transfer. Once the device is ready for communication, the data transfer is started by pressing the **START** button on the BL-NET.

When the START button is pressed, the green LED on the front of the BL-NET begins to flash rapidly. This indicates that the BL-NET is attempting to establish communication with the controller (no data is transferred at this point!).

If the red LED lights up cyclically during an infrared transfer then the battery voltage has reached a critical level and the battery must be replaced as soon as possible.

## Functional data download (BL ⇒ UVR1611)

Data down- and upload to and from the controller are started at the controller. The Bootloader has 7 memory positions for functional data. These can be written with data from the controller or functional data from the PC (using the *Memory Manager* program). The functional data upload differs only in the selection of the transfer direction (CONTR. => BOOTLD.) and is not described here in detail.

Controller view	Comment
<pre> MENU ----- : Data Administration ◀ </pre>	<p>Select Data Administration in the main menu of the UVR1611 controller</p>
<pre> DATA ADMINISTRATION ----- : DATA &lt;=&gt; BOOTLOADER: Upload Data: CONTR. =&gt; BOOTLD. Download Data: BOOTLD. =&gt; CONTR. ◀ </pre>	<p>select Download Data: BOOTLD. =&gt; CONTR.</p>
<pre> BOOTLD. =&gt; CONTR. ----- DATA SOURCE: BOOTLD. Storage Point: 1 ◀ TARGET: Contr. Funct. Data Overwrite?      yes Factory Settings Overwrite?      no  !!! CAUTION !!! ALL COUNTER STATES ARE LOST!  DOWNLOAD DATA REALLY START?  yes ◀ </pre>	<p>Select the desired storage point for the functional data at the BL-NET</p> <p>Overwrite the controller functional data?</p> <p>Adopt the functional data as the factory setting?</p> <p>The controller switches to transfer mode</p>
<pre> NODE: 63  READY FOR DOWNLOAD  ABORT </pre>	<p>The controller is ready for the data transfer. When the <b>START</b> button on the Bootloader is pressed, the green LED begins flashing rapidly and the data transfer starts.</p> <p><b>ABORT</b> = Last option for cancelling the data transfer (press right key)</p>
<pre> NODE: 63  1: Functional Data XXX  PROGRAMMING 000700 / 007FB0 </pre>	<p>The transfer is running</p> <p>Name of the functional data</p> <p>Progress display</p>

## Data transfer

```

NODE: 63

1: Functional Data XXX

SUCCESSFUL DOWNLOAD
    
```

The functional data was successfully loaded into the controller.

## Operating system download (BL ⇒ UVR1611)

The latest operating system versions can be downloaded from the homepage at [www.ta.co.at](http://www.ta.co.at). The Bootloader can only manage one operating system. This download contains the boot sector and operating system for the controller. The boot sector can be compared with the BIOS on a PC. The boot sector can also change for technical reasons. In this case, when updating an operating system the boot sector is loaded first and the download of the actual operating system is then automatically started after this. If the boot sector is the same then only the new operating system is loaded.

### Controller view

### Comment

```

MENU
-----
:
Data Administration ◀
    
```

Select Data Administration in the main menu of the UVR1611 controller

```

DATA ADMINISTRATION
-----
:
OPER.SYSTEM<=BOOTLD.:
Download Oper.System:
BOOTLD. => CONTR. ◀
    
```

select Download Oper.System: BOOTLD. => CONTR.

```

BOOTLD. => CONTR.
-----
DOWNL. OPERAT.SYSTEM
REALLY START? yes ◀

WARNING: Use
Cable Wiring
    
```

The controller switches to transfer mode

A cable connection should normally be used for transferring the operating system!

```

NODE: 63

READY FOR DOWNLOAD

ABORT
    
```

The controller is ready for the data transfer. When the START button on the Bootloader is pressed, the green LED begins flashing rapidly and the data transfer starts.

**ABORT** = Last option for cancelling the data transfer (press right key)

```

NODE: 63

PROGRAMMING
005400/ 020000
    
```

The transfer is running.

Progress display

```

NODE: 63

SUCCESSFUL DOWNLOAD

RESET
    
```

The data was successfully transferred to the controller

```

TECHN. ALTERNATIVE
-----
Homepage: www.ta.co.at
-----
      UVR1611
Operat.Syst.: Ax.xx

```

**Note:** if the boot sector and operating system are updated the steps 4 to 6 are repeated without the START button being pressed again

After the operating system update is finished, the start page is displayed on the controller.

## Data transfer via Ethernet using a browser

With the BL-NET it is also possible to start the data transfer using any desired web browser. A precondition for this is that an Ethernet connection has already been set up (see chapter "Data Admin. (Data administration)").

### Procedure:

- a) Select "**Data Admin.**" (Data administration) in the BL-NET main menu
- b) Select the node (the controller with which communication is to occur)
- c) Select the transfer direction
- d) Select the data (functional data or operating system)
- e) Start the transfer

When the transfer is finished, an appropriate message is displayed in the browser ("...successful" or "Error during data transfer on the CAN bus").

## Troubleshooting data transfers

### Operating system download (BL → UVR)

If an error occurs when transferring the operating system, after an automatic restart the controller continues to wait as "**NODE 63**" for the operating system data transfer to begin again ("**READY FOR DOWNLOAD**"). As long as the operating system has not been fully loaded into the UVR1611, the controller has no other functionality.

Pressing the START button on the Bootloader starts the data transfer again.

**For this reason, an operating system update should not be carried out by remote maintenance for security reasons.**

### Functional data download (BL → UVR)

If an error occurs when downloading functional data, the controller automatically performs a total reset of the configuration. The "*Node No.*", "*Enable*" and "*Autooperat.*" network settings are not changed.

The data transfer of the functional data must be performed again.

**WARNING!** If a transfer fault occurs in a network with multiple devices, a data transfer to a different device must not be started until the fault is fixed!

In general, an operating system should only be updated when functions that are only contained in the newer operating system are required (Never change a running system!). Similar to PC BIOS updates, an operating system update always represents a certain small risk.

## Online diagram

### Online diagram

The Bootloader offers online visualisation that provides a graphical representation of the current state of the system when viewed with a browser over the LAN or the Internet.

This online diagram consists of a graphic file (e.g. hydraulic schematic) and the associated HTML file defining the parameters to be displayed.

The files (\*.gif and \*.html) can be stored in the Bootloader using the *Memory Manager* program (see chapter "**Transfer of Bootloader data**").

### Creating a graphic for the online diagram

The graphic can be created using any desired graphics or drawing program, or with *TAPPS*, whereby the following points should be observed:

1. The graphic must be provided to the BL-NET in \*.gif format. (For creation of the online diagram in *TAPPS* the same graphic in \*.bmp format (24 bit) is required). Conversion of the file into the various formats can be simply carried out using the Windows accessories program "Paint".
2. The file must not exceed the maximum size of 196 kilobytes! To reduce the loading time when displaying the online diagram, the graphic file should be kept as small as possible.

### Creating the HTML file

A HTML file containing all information defining the appearance of the page is required for displaying the online diagram.

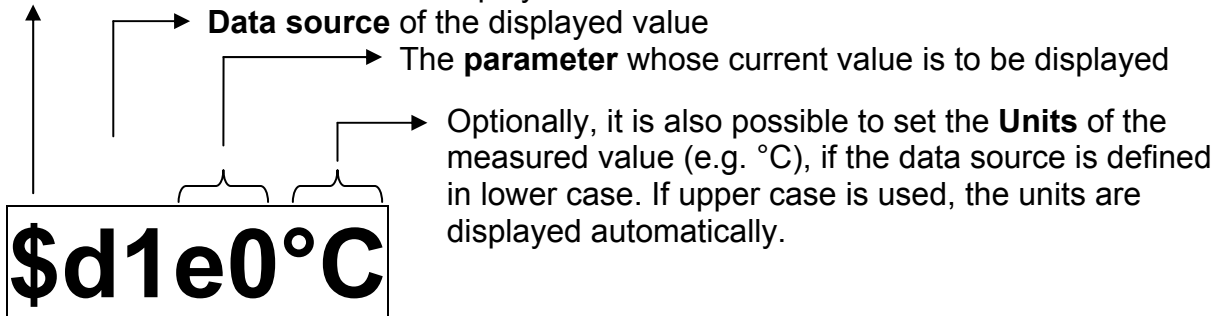
The HTML file can be easily created using the *TAPPS* program. *TAPPS* creates the required HTML file based on graphical positioning and assignment of the values to be displayed. The exact procedure is described in the *TAPPS* operating manual.

The HTML file must not exceed the maximum size of 196 kilobytes and should be kept as small as possible to reduce the loading time!

## Definition of display values

The syntax for defining a displayed value is as follows (Case sensitive!):

Identifier for the definition of a displayed value



The definition of a displayed value **always** begins with the “\$” character, followed by the definition of the **data source** and the **parameter** whose current value is to be displayed.

The definitions are replaced with corresponding current measurements when BL-NET displays the online diagram. The current (latest) values are displayed upon calling the online diagram and, upon changing or refreshing the page.

If no measurements are available, "NO-DL" is displayed in the online diagram. An invalid definition causes "ERROR" to be displayed.

### Data source:

Display without units (lower case)			Display with units (upper case)		
d1	...	DL bus 1	D1	...	DL bus 1
d2	...	DL bus 2	D2	...	DL bus 2
n1	...	CAN network inputs of the BL-NET	N1	...	CAN network inputs of the BL-NET
c1...c8	...	CAN Data logging	C1...C8	...	CAN Data logging

Simultaneous use of the data sources DL bus and CAN bus in an online diagram is not possible. The CAN network inputs of the BL-NET can be used by both methods.

### Parameter:

#### Data logging using the DL bus:

Depending on the device type of the controller to be acquired, the following parameters are available for visualisation:

Input:	e0...ef	Inputs 1...16
Output:	a0...ac	Outputs 1...13
Speed setting:	d1 ,d2 ,d6 ,d7	Speed stage for output 1, 2, 6 or 7
Power:	l1 ,l2	kW of heat meter 1 or 2
kWh:	k1 ,k2	kWh of heat meter 1 or 2
MWh:	m1 ,m2	MWh of heat meter 1 or 2
Date:	t1	
Time:	z1	

## Online diagram

### CAN data logging:

The following parameters are available for visualisation:

The selection of the controller whose data is to be displayed (can be set by selecting a controller data frame) and

<b>Analog</b> values of the <b>first</b> data record	a0...af	Sensors 1...16
<b>Analog</b> values of the <b>second</b> data record	A0...Af	Sensors 1...16
<b>Digital</b> values of the <b>first</b> data record	d0...dc	Output 1...13
<b>Digital</b> values of the <b>second</b> data record	D0...Dc	Output 1...13
Date:	t1	
Time:	z1	

**Example** of a definition of a display value from the **CAN data logging**:

→ **c4**: Data from each controller, to which data frame **4** relates, are displayed.

\$c4Ae

→ **Analog** value of the **second** data record

→ Sensor 15 (see „hexadecimal table“)

### BL-NET CAN network inputs:

In addition to the values obtained from data logging over DL or CAN buses, the values at the network inputs of the BL-NET can also be displayed. The network inputs can be defined using a browser in the „**CAN bus/Analog resp. Digital inputs**“ menu (see the relevant chapter).

Analog input:	a0...af	Analog network inputs 1...16
Digital input:	d0...df	Digital network inputs 1...16

**NOTE:** The inputs and outputs are **numbered from zero in hexadecimal** (see hexadecimal table)!

Consequently, for example when data logging over the DL bus, the definition "e0" results for input **1** and for input **16** the definition "ef".

### Definition table:

Input/output	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Definition	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f

### Examples:

\$d1ef ... DL bus 1, input 16 of the controller, display without unit

\$D2a0 ... DL bus 2, output 1 of the controller, display with unit

\$n1a1 ... Network, analog network input 2 of the Bootloader, display without unit

\$c1da ... CAN data logging, controller of the frame 1, digital value (output) 11 of the data frame 1, display without unit

\$C2A1 ... CAN data logging, controller of the frame 2, analog value (sensor) 1 of the data frame 2, display with unit

## Factory settings

To load the BL-NET factory settings, the battery must first be removed and, when the CAN bus connection is plugged in, the START button on the Bootloader must be pressed and held pressed until only the green LED lights up.

The factory settings include the following parameters:

### CAN bus:

Node No.: 62

### Ethernet:

MAC-address 02 50 C2 5C 60 xx  
(xx = BL-number)

IP address: 192.168.0.1

BLD - No.: 0

HTTP port: 80

TA port: 40000

### Passwords:

Expert no password specified

Client no password specified

View only no password specified

**Dimensions** (W x H x D) 125 x 75 x 27 mm

We reserve the right to make technical changes

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**TECHNISCHE ALTERNATIVE**

ELEKTRONISCHE STEUERUNGSGERÄTEGESELLSCHAFT M. B. H.

A-3872 Amaliendorf, Langestraße 124

## EC- DECLARATION OF CONFORMITY

*Document- Nr.: / Date* TA10014 / 03.09.2010  
*Company / Manufacturer:* Technische Alternative  
elektronische SteuerungsgerätegesmbH.  
*Address:* A- 3872 Amaliendorf, Langestraße 124  
*Product:* BL-NET  
*The stated above product complies with the following essential requirements:*  
*EU requirements:* 2006/95/EG *Low voltage standard*  
2004/108/EG *Electromagnetic compatibility*

*Employed standards:*

EN 60730-1:2009 08 01 Automatic electrical controls for household and similar use -  
Part 1: General requirements  
EN 61000-6-3:2007 11 01 Electromagnetic compatibility (EMC) - Part 6-3: Generic  
standards - Emission standard for residential, commercial  
and light-industrial environments  
EN 61000-6-2:2006 05 01 Electromagnetic compatibility (EMC) - Part 6-2: Generic  
standards - Immunity for industrial environments  
*Position of CE - label:* On packaging, manual and type label



*Issuer:* Technische Alternative  
elektronische SteuerungsgerätegesmbH.  
A- 3872 Amaliendorf, Langestraße 124

*This declaration is submitted by:*

*General management*

This declaration certifies the agreement with the named standards, contains however  
no warranty of characteristics.  
The security advices of included product documents are to be considered.

UIDNr.: ATU 17986204, Firmenbuch-Nr.: FN37578m, DVR-Nr.:1011553, ARA-Lizenz-Nr.:1996

Telefon ++43(0)2862/53635 Fax ++43(0)2862/53635-7 E-mail: mail@ta.co.at <http://www.ta.co.at>







## **Guarantee conditions**

**Note:** The following guarantee conditions do not in any way limit the legal right to a guarantee; rather expand your rights as a consumer.

1. The company Technische Alternative elektronische Steuerungsgerätegesellschaft m. b. H. provides a two-year guarantee from the date of purchase by the end consumer for all the devices and parts which it sells. Defects must be reported immediately upon detection and within the guarantee period. Technical support knows the correct solution for nearly all problems. In this respect, contacting us immediately will help to avoid unnecessary expense or effort in troubleshooting.
2. The guarantee includes the free of charge repair (but not the cost of on site fault-finding, removal, refitting and shipping) of operational and material defects which impair operation. In the event that a repair is not, for reasons of cost, worthwhile according to the assessment of Technische Alternative, the goods will be replaced.
3. Not included is damage resulting from the effects of overvoltage or abnormal ambient conditions. Likewise, no guarantee liability can be accepted if the device defect is due to: transport damage for which we are not responsible, incorrect installation and assembly, incorrect use, non-observance of operating and installation instructions or incorrect maintenance.
4. The guarantee claim will expire if repairs or actions are carried out by persons who are not authorised to do so or have not been so authorised by us or if our devices are operated with spare, supplementary or accessory parts which are not considered to be original parts.
5. The defective parts must be sent to our factory with an enclosed copy of the proof of purchase and a precise description of the defect. A filled in "service advice note", which can be downloaded from our homepage [www.ta.co.at](http://www.ta.co.at), will accelerate processing. A prior clarification of the defect with our technical support is necessary.
6. Services provided under guarantee result neither in an extension of the guarantee period nor in a resetting of the guarantee period. The guarantee period for fitted parts ends with the guarantee period of the whole device.
7. Extended or other claims, especially those for compensation for damage other than to the device itself are, insofar as a liability is not legally required, excluded.

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