CAN-MTx2
CAN-MTx2-CO2

CAN MONITOR

Instruction manual

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Safety requirements

These instructions are intended exclusively for authorized contractors.

All installation and wiring work on the device must only be carried out in a zero volt state.

The opening, connection and commissioning of the device may only be carried out by competent personnel. While doing so, they must observe all local safety requirements.

This device is state of the art and meets all necessary safety regulations. It may only be used in accordance with the technical data and the safety requirements and regulations listed below. When using the device, also observe the statutory and safety regulations apposite to the particular use. Any other use will automatically void all warranty rights.

- The device must only be installed in a **dry** interior room.
- Solar thermal systems can become very hot. Consequently there is a risk of burns. Proceed with caution when fitting temperature sensors.
- For safety reasons, the outputs should only be left in manual mode when testing. In this operating mode, no maximum temperatures or sensor functions are monitored.
- Safe operation is no longer possible if the CAN monitor or connected equipment exhibits visual damage, no longer functions or has been stored for lengthy periods in unsuitable conditions. If this is the case, disable the CAN monitor and equipment and secure against unintentional use.

Maintenance

If treated and used correctly, the device will not require any maintenance. Use a cloth moistened with mild alcohol (such as methylated spirits) to clean. Never use corrosive cleaning agents or solvents such as chloroethylene or trichloroethylene.

No components relevant to long term accuracy are subject to loading if the device is used correctly. Consequently long term drift is extremely low. The device therefore cannot be calibrated. Thus applying any compensation is impossible.

The design characteristics of the device must not be changed during repairs. Spare parts must correspond to the original spare parts and must be used in accordance with the build version.

Disposal
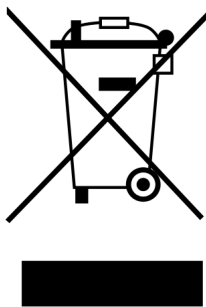
- Devices no longer in use or beyond a state of repair must be disposed of in an environmentally responsible manner by an authorized collection point. They must never be treated as ordinary household waste.
- We can undertake the environmentally responsible disposal of devices sold by Technische Alternative upon request.
- Packaging material must be disposed of in an environmentally responsible manner.
- Incorrect disposal may result in considerable damage to the environment, as many of the materials used require professional handling.

Standard delivery

- CAN-MTx2 CAN monitor
- SD memory card
- Operating instructions
- Installation material

Principles

The **CAN-MTx2** CAN monitor is used as a control and display unit for the freely programmable controllers UVR16x2 and RSM610 as well as all other devices in the x2 series.

The CAN monitor has a combined **temperature and humidity sensor** built in and can therefore also be used as a **room sensor**.

The "**Function overview**" allows user friendly operation and display of x2 devices in the CAN bus network. The function overview is designed using the TA-Designer software and can comprise several pages.

As with the UVR16x2, it is operated via a 4.3" touchscreen. It is also possible for multiple CAN monitors in one CAN network to access the available x2 devices at the same time.

The CAN Mtx2 does not have a real-time clock or power backup and therefore cannot be used as a standalone controller.

Installing and connecting the device

Installing the device

The device must only be installed in a **dry** interior room. For correct detection of the room temperature, the CAN monitor must always be installed vertically.
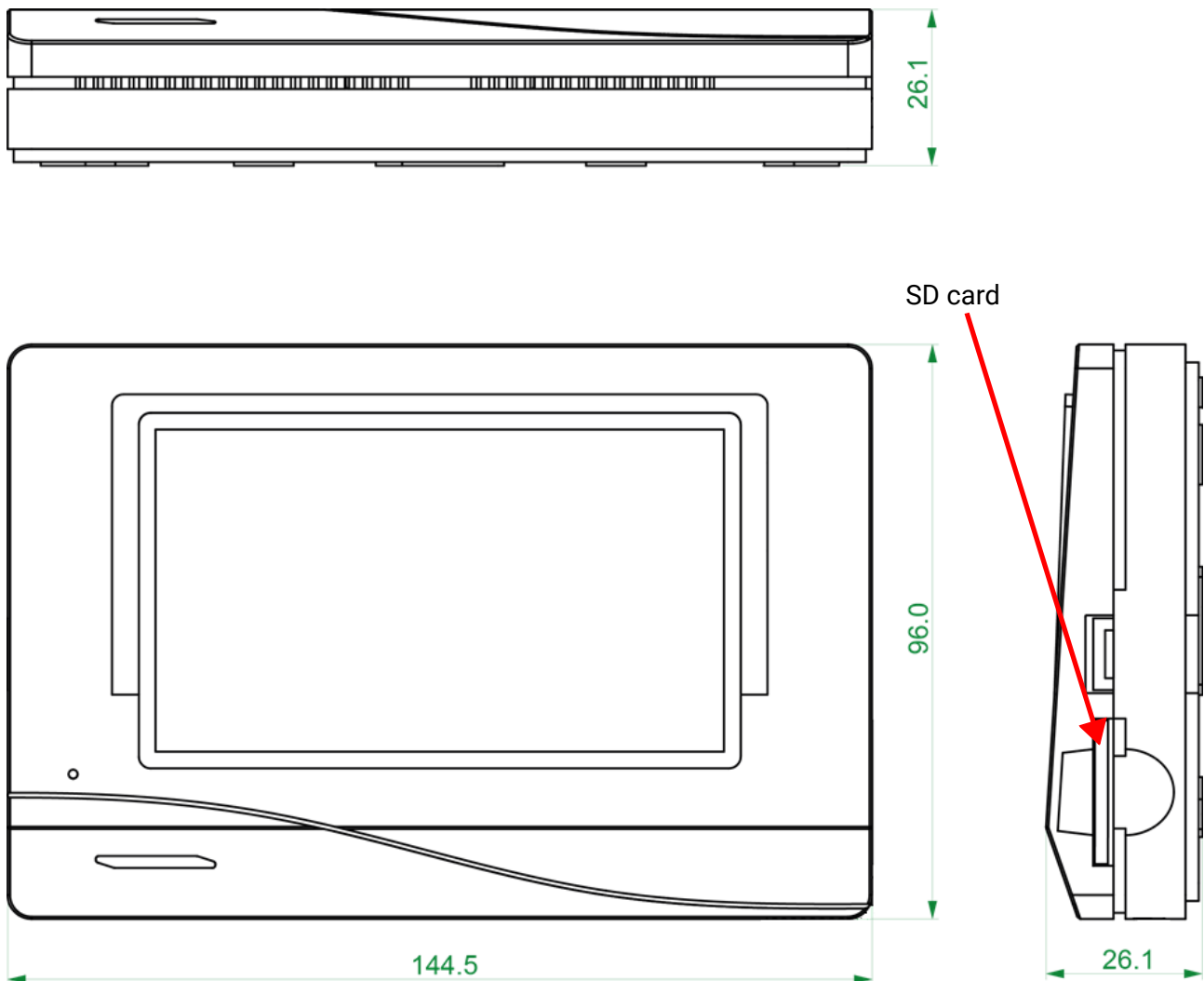
Permissible ambient temperature: +5°C - +45°C

Press the two locking clamps on the left and right and lift the cover. The control electronics are located in the cover.

Screw the base to the flat mounting surface using the supplied fastening materials, ideally with the opening arranged over a mounting box fitted in the wall at eye level (approx. 1.6 m).

Dimensions

in mm

Power supply

The CAN monitor requires a 12 V power supply originating from a freely programmable controller (UVR16x2 or RSM610). No more than three devices (CAN monitor, CAN-I/O module etc.) can be supplied from each controller. With 4 or more devices in the CAN network, a 12 V power unit is required.

CAN bus connection

The screwless terminals for the CAN bus are located **in the base** of the CAN monitor. Pressing the small white button with a screwdriver unlocks the terminal and allows the connected lead to be inserted or removed again. Spring contacts provide the electrical connection to the CAN monitor once it is fitted.
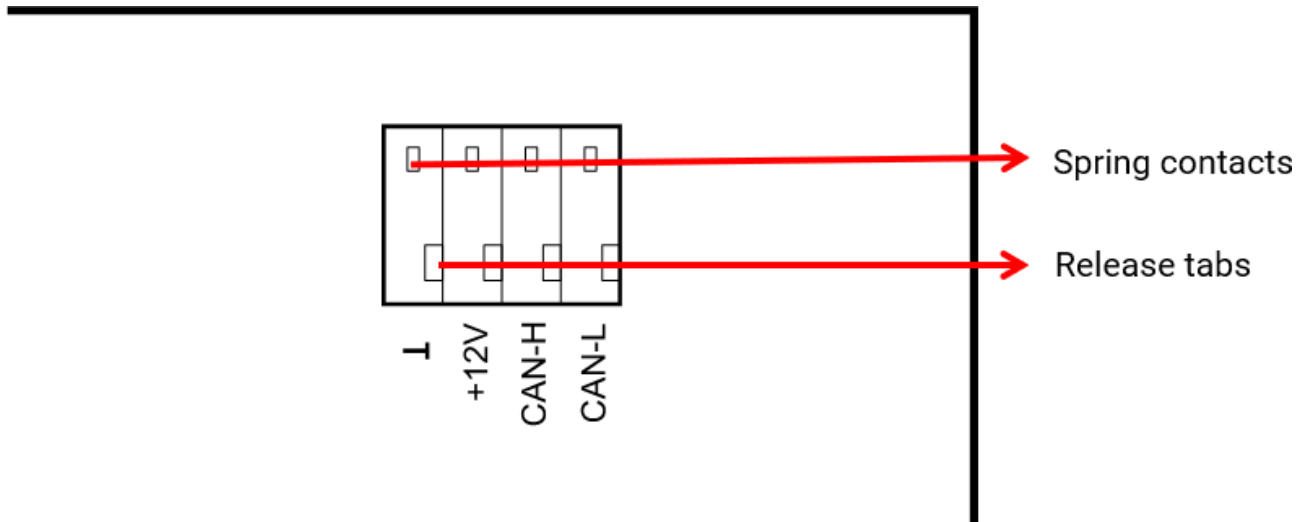

CAN bus cable selection and network topology

The principles of CAN bus cabling are described extensively in the manuals for the freely programmable controllers. Therefore they are not included here in any detail, apart from the termination.

Each CAN network must be provided with a 120 Ω bus terminator at the first and last network node (termination with jumper). A CAN network therefore always has two terminators (one at each end). Spur lines and star-shaped CAN topologies are not permitted by the official specification.

The termination jumper for the CAN monitor is located **on the back of the PCB** and is visible when the upper part is removed from the base.
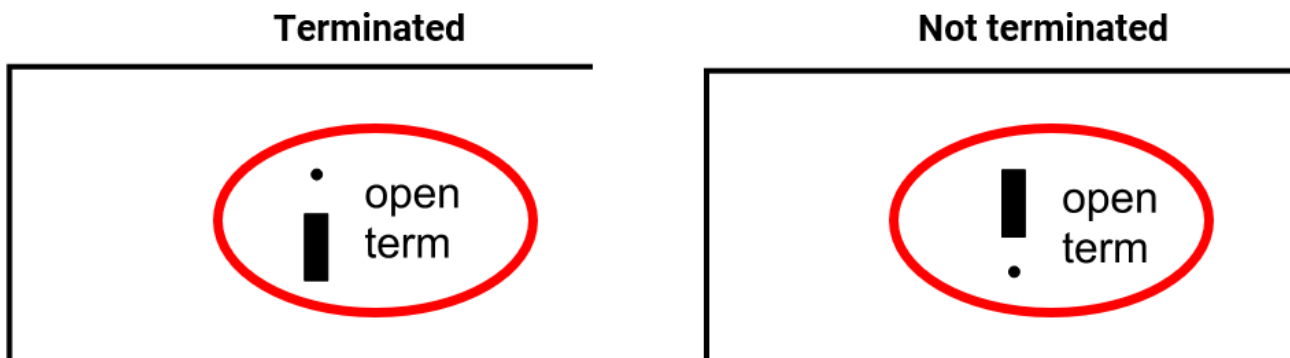
The CAN monitor is terminated if the jumper is set on the side labelled "**term**" (as shown above).
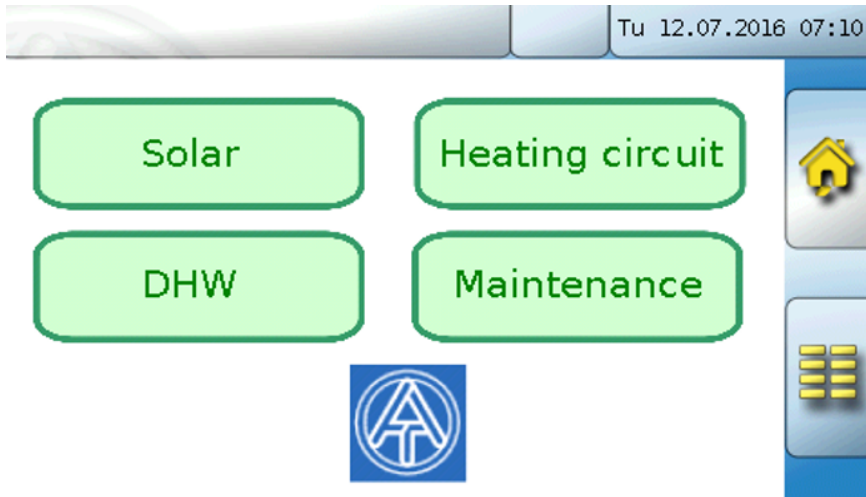
User manual - Technician / Expert

If a function overview was loaded onto the CAN monitor, the display will show the function overview once it is connected to the CAN bus.

The function overview can be programmed as standard view or full screen view.

Function overview display

Standard view

Example: Start page with 4 links

From the **start page** (= first page), tapping takes you to the CAN monitor's **main menu**. If only **technicians** or **experts** are permitted to access the menu, then the relevant **password** must be entered.

If you press the background image for 3 seconds, 2 buttons appear which serve to access the version information and the general settings respectively.

You can go back to the page **displayed previously** by tapping .

Full screen view

In the full screen view, the upper status bar and the side buttons are hidden.

Example: Start page with 4 links

If you press the background image for 3 seconds, 4 buttons appear which enable access to the version information of the CAN monitor, the general settings or the date, time and location settings, and the main menu of the CAN monitor.
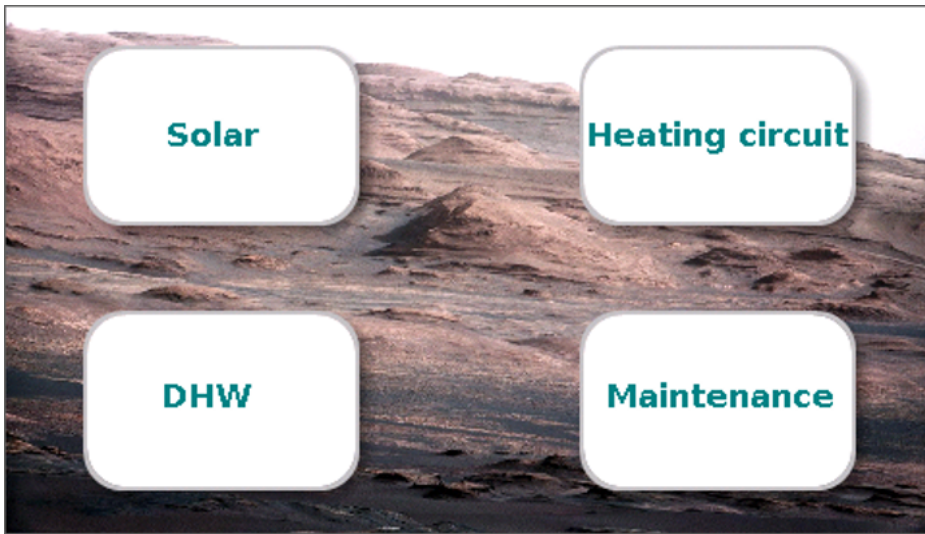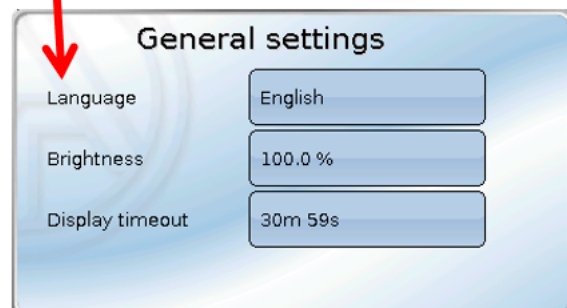

This button takes you to the main menu of the controller. If only **technicians** or **experts** are permitted to access the menu, then the relevant **password** must be entered.

To go back to the **start page** of the function overview, tap .

Date / time / location

Time zone	01:00
Summertime	No
Automatic time change	Yes
Date	12.12.2016

Version

Version: V 1.15
Serial number: UVR16X2-000000
Date of manufacturer: 0.1.1900
Boot sector no.: 0.00
Hardware (cover): 00
Hardware (mains): 00
Rev: A515
Current function data: tmp.dat
Current function overview: Design.x2d
Internal ID: A3CCD4A6

General settings

Language	English
Brightness	100.0 %
Display timeout	30m 59s
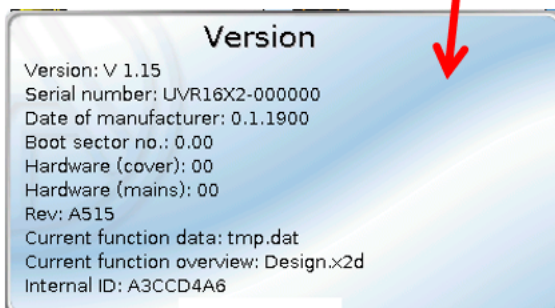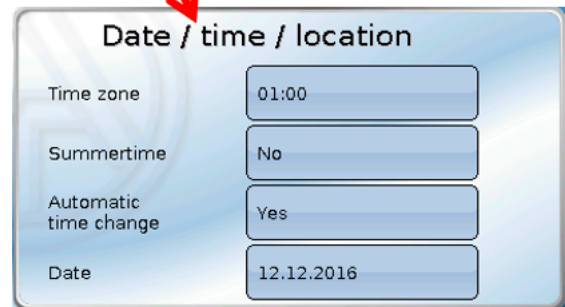
You can go back to the page **displayed previously** by tapping .

Main menu

- **Inputs** – The CAN-MT16x2 CAN monitor has a sensor for temperature and humidity
- **Functions** – Programming of functions. The full range of functions of the x2 series is available.
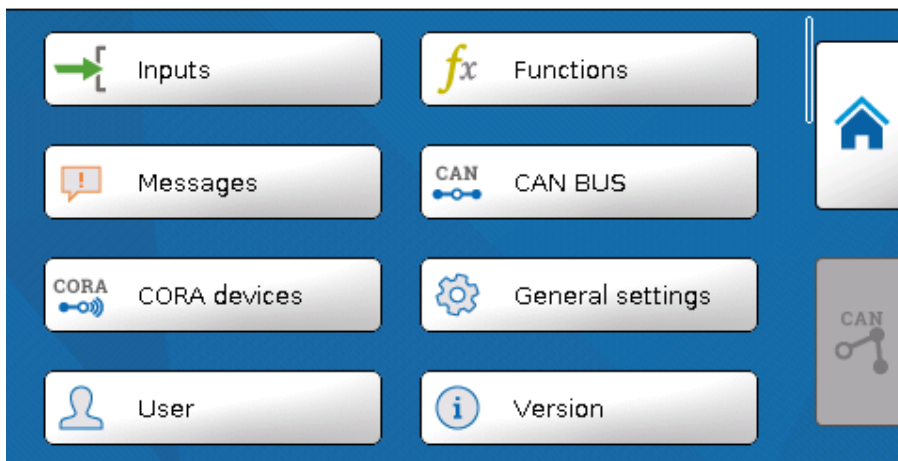- **Messages** – Sensor and network errors from the CAN-MTx2 are displayed here
- **CAN BUS** – CAN settings, definition of CAN inputs and outputs
- **CORA devices** – Configuring devices connected via CORA (wireless system)
- **General settings** – Setting of the language, display screen properties and definitions of user defined designations
- **User** – Setting of the user level, changing of passwords
- **Version** – Information about the device version, serial number, the loaded function overview and the loaded function data
- **Data admin** – Loading and saving of function data and the function overview, loading of firmware, total reset

Tap the "Home icon" 🏠 to go to the **Function overview**.

Date / time / location

The "**Date**" and "**Time**" are shown in the status line at top right.

As the CAN monitor does not have its own clock function, the time and date are taken from network node 1 and cannot be changed in the CAN monitor. For this reason, at least one CAN bus device which has its own clock function must have the node number 1 (UVR16x2, UVR1611, RSM610, C.M.I.).

Tapping that status field takes you to the menu for the date, time and location details.

Display example:

- **Time zone** – Specifies the time zone relative to UTC (= "Universal Time Coordinated", also known as GMT (= Greenwich Mean Time)). In the example, the time zone is set to "UTC + 01:00".
- **Summertime** – "**Yes**" if summertime is active.
- **Automatic time change** – If "**Yes**", the time will switch over automatically to summertime according to the specifications of the European Union.
- **Date** – The current date (dd.mm.yy).

- **Time** – The current time
- **GPS latitude** – Geographical latitude according to GPS (= global positioning system)
- **GPS longitude** – Geographical longitude according to GPS

The values for geographical latitude and longitude are used to determine the location-specific solar data. That data can be used in functions (e.g. shading function).

The factory default settings for the GPS data are for the location of Technische Alternative in Amaliendorf, Austria.

- **Sunrise** - Time
- **Sunset** - Time
- **Solar altitude** – Specified in ° as measured from the geometric horizon (0°), zenith = 90°
- **Direction of the sun** – Specified in ° as measured from the north (0°)
  North = 0° / East = 90° / South = 180° / West = 270°

Inputs

The CAN-MTx2 CAN monitor has a combined temperature, humidity and air pressure sensor built in. In addition, the **CAN-MTx2-CO2** CAN monitor has a CO_2 sensor. 5 values are displayed in the Inputs menu: temperature, relative humidity, dew point temperature, absolute air pressure (in mbar) and CO_2 content (in ppm). These 5 values are already pre-set (as shown in the bottom graphic) at inputs 1 – 5. In CAN-MTx2 (without CO_2 sensor), the fifth value is always 0.
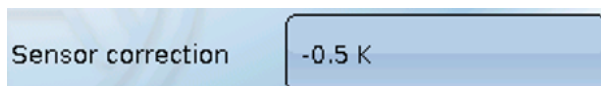

Sensor correction

The option of sensor correction is available for the measured variables The corrected value is utilised for all calculations and displays.

Example:

Average

This setting refers to the average of the measurements **over time**.

Averaging over 0.3 seconds leads to extremely rapid reactions on the part of the display and the unit. However, this can be expected to cause fluctuations of the value.

A high average value results in lagging and is only recommended for special applications.

For simple measuring operations approx. 1-3 seconds should be selected.

Sensor check for analogue sensors

When "**Sensor check**" is active (setting: "**Yes**"), a short circuit or a lead break will **automatically** generate an error message: A **warning symbol** is displayed in the upper status line, and the defective sensor is shown with a red border around it in the "**Inputs**" menu.

Example:

Short-circuit of sensor 1
Standard value

Sensor error

When "**Sensor check**" is active, **Sensor error** is available as the source for digital CAN outputs: status "**No**" for a sensor that is working correctly and "**Yes**" for a defect (short circuit or lead break). This allows the controller to react to the failure of a sensor, for example.

In System values / General, a sensor error for **all** inputs is available.

If the **Standard** thresholds are selected, a short circuit will be indicated if the value falls below the lower **measurement limit** and a lead break will be indicated if the value exceeds the upper **measurement limit**.

The **Standard** values for temperature sensors are -9999.9 °C for a short circuit and 9999.9 °C for a lead break. Those values are utilized in the internal calculations in the event of an error.

By selecting the thresholds and values appropriately, a fixed value can be specified for the controller in the event of sensor failure, in order to allow a function to continue operating in emergency mode.

Example: If the temperature value falls below the threshold of 5.0 °C (= "Threshold value"), a value of 20.0 °C (= "Output value") is issued and displayed for that sensor (fixed hysteresis: 1.0 °C). At the same time the "Sensor error' status is set to "**Yes**".

The short circuit threshold must be defined below the lead break threshold.

Example: The temperature sensor has fallen below 5.0 °C, so 20.0 °C is issued as the measurement, and a sensor error is displayed at the same time.

Note: In the event of temperature sensor failure, the humidity and dew point will be calculated incorrectly.

Carbon dioxide and safety

Carbon dioxide is a non-toxic and non-flammable gas. However, in higher concentrations it can be life threatening.

For **mechanically ventilated** rooms, the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management requires a target value below 800 ppm and a maximum value of 1400 ppm.

CO2 requirements for mechanically ventilated interior rooms
(Source: Kohlenstoffdioxid als Lüftungsparameter [Carbon Dioxide as a Ventilation Parameter], August 2011, authors: BOOS, DAMBERGER, HUTTER, KUNDI, MOSHAMMER, TAPPLER, TWRDIK, WALLNER)
Target range: Individual values < 800 ppm
Minimum specification: Maximum moving hourly average < 1000 ppm
Minimum specification: All individual values in the evaluation period < 1400 ppm

Calibration of the CO_2 sensor

For calibration, the monitor should be located in a room where a window can be opened to bring the CO_2 level in the room to atmospheric level. In addition, the weather conditions should ideally be such that the room temperature does not deviate too much from the outside temperature (condensation can influence calibration). The monitor must not be exposed to draughts, otherwise the CO_2 content may fluctuate too much. A window located directly next to the monitor is therefore not suitable.

Calibration process

1. Open the window.
2. If there is a large difference between the room temperature and outside temperature, wait about 10 minutes so that any condensation can dissipate.
3. Navigate to Inputs -> Input 5 -> "Calibr. CO2 sensor". This item is at the bottom of the menu.
4. Leave the room.
5. The minimum CO_2 values over 20 minutes are measured and recorded.

The averaged minimum is then taken as the atmospheric CO_2 content and the sensor is calibrated accordingly. The time at which calibration was completed is recorded in the change log.

CO_2 sensor

|	
Measuring range	400 ppm - 10,000 ppm
Measuring accuracy	± 30 ppm + 3%

Functions

Functions can be programmed on the CAN-MTx2. Please note that the monitor has no outputs and that the inputs cannot be changed.

Programming is possible on the device. However, we recommend using the TAPPS2 PC software. Further information about TAPPS2, the function modules and programming in general can be found on our homepage (www.ta.co.at).

Edit existing function

Create a new function
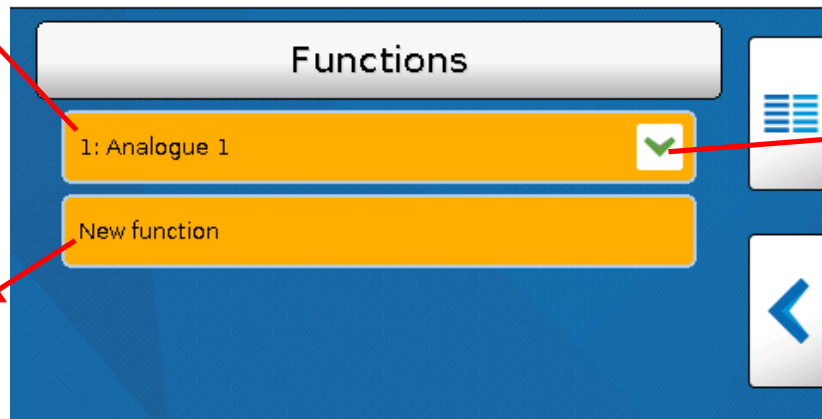
Show function details

You can choose from **43** different functions and create up to **128** functions. Functions can also be created multiple times.
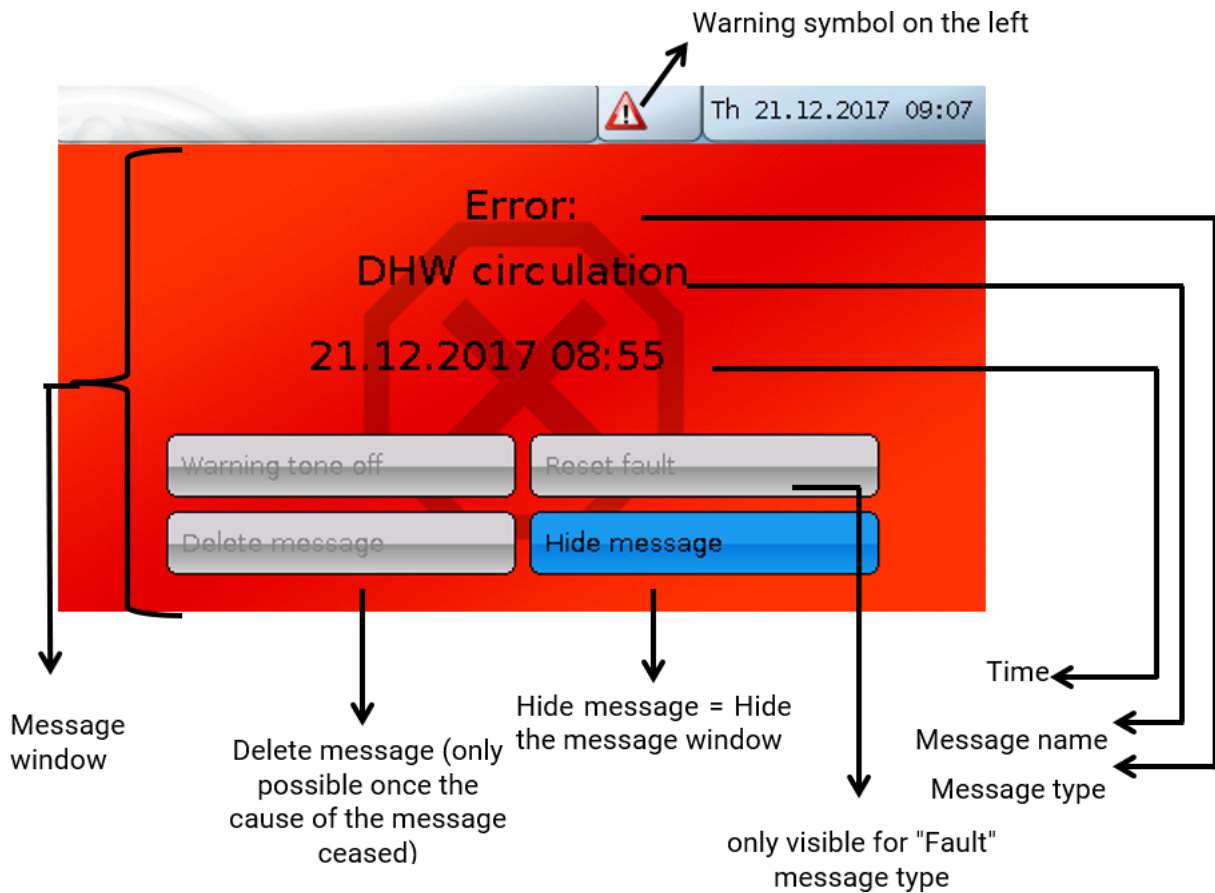
Messages

Messages from other x2 devices

Depending on the setting in the x2 device, messages from other x2 devices can be displayed on the CAN monitor with a pop-up window, a changed status LED and/or a warning tone.

The pop-up window works in the same way as on the display of the UVR16x2 controller.

Example: Message type "**Error**"; warning tone activated

After the message has been triggered and the cause of the fault has been removed, the following display appears (**red**):
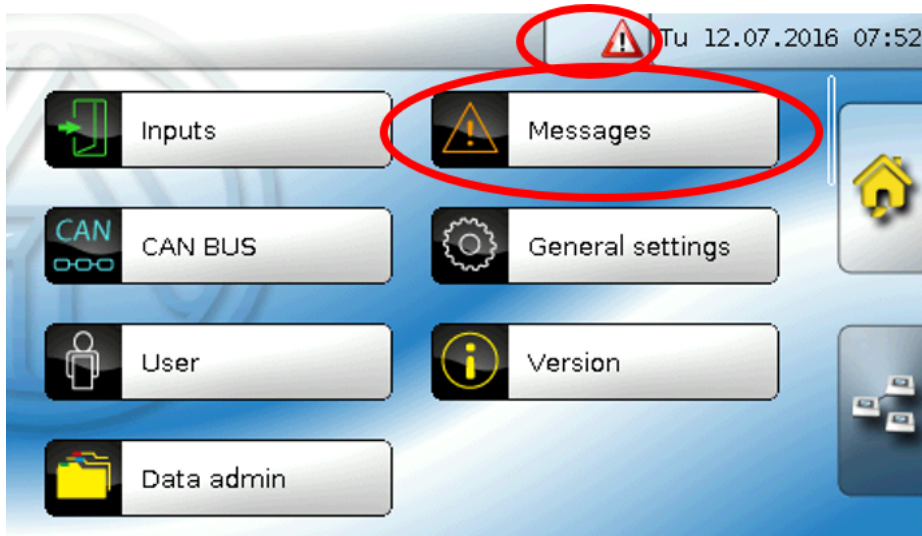

If the pop-up window has been hidden, it can be shown again by tapping the **warning symbol** in the status bar on the left.

More information about generating messages can be found in the programming manuals for the x2-devices.
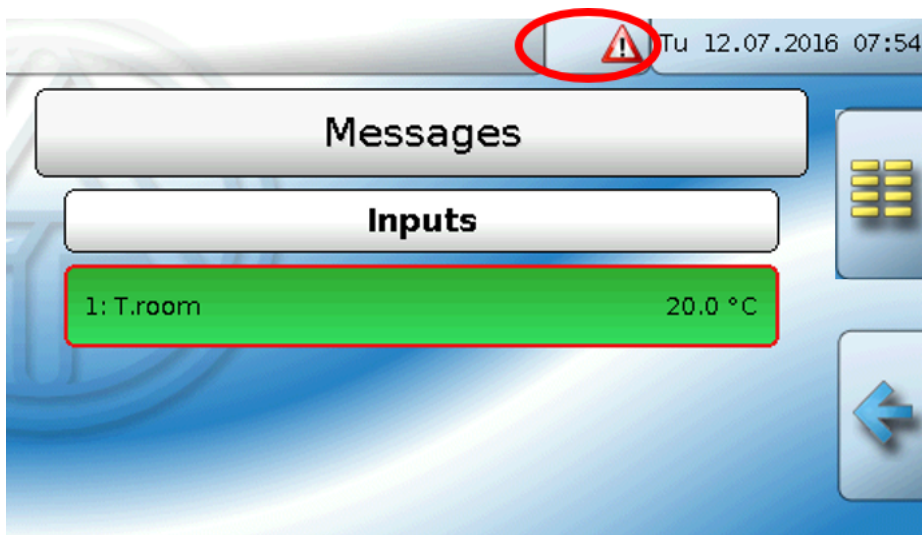
Internal CAN monitor messages

The "**Messages**" menu displays messages that are caused by sensor or CAN bus errors **in the CAN-MTx2**.

Message from other x2 devices are **not** displayed here.

Example: Fault on input 1

If at least one internal message is active, the warning symbol will appear in the upper status line **on the right**. If the message window has been hidden, it can be shown again by tapping the **warning symbol** in the status bar.

CAN bus

The CAN network allows communication between CAN bus devices. When analogue or digital values are sent via CAN **outputs**, other CAN bus devices can utilise those values as CAN **inputs**.

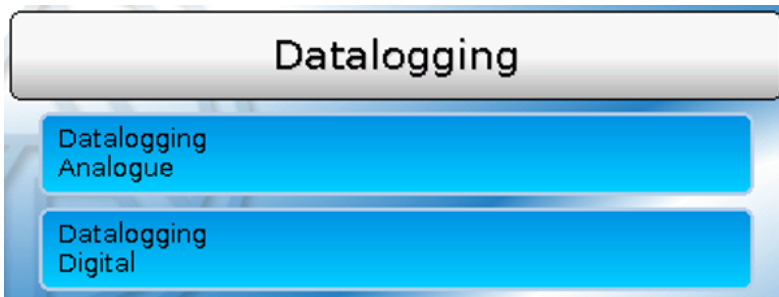Up to 62 CAN bus devices can be operated in one network.

Every CAN bus device must be given its own node number in the network.

The **cable topology** of a CAN bus network is described in the installation instructions.
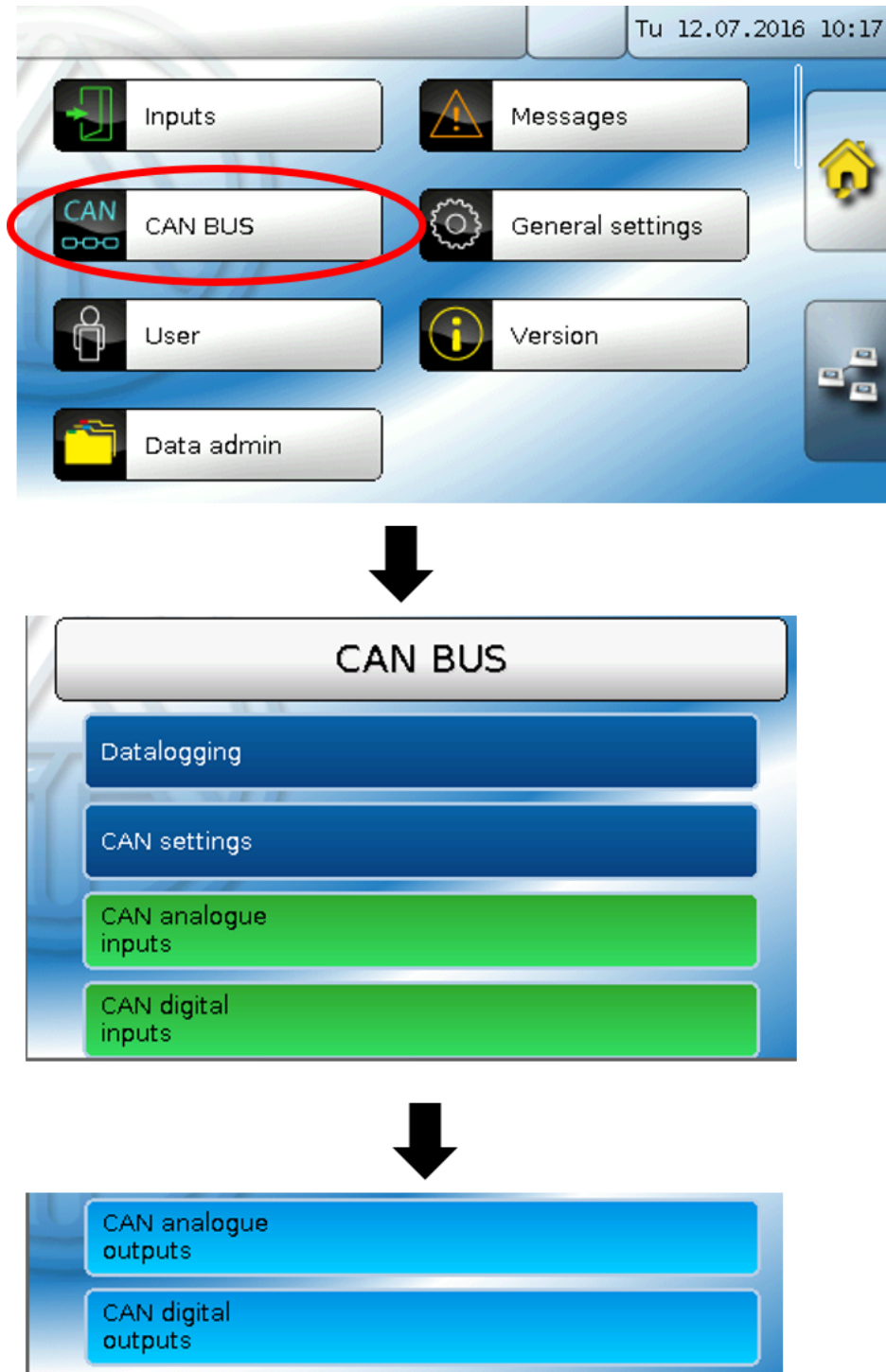
Datalogging

This menu cannot be selected in the User mode.

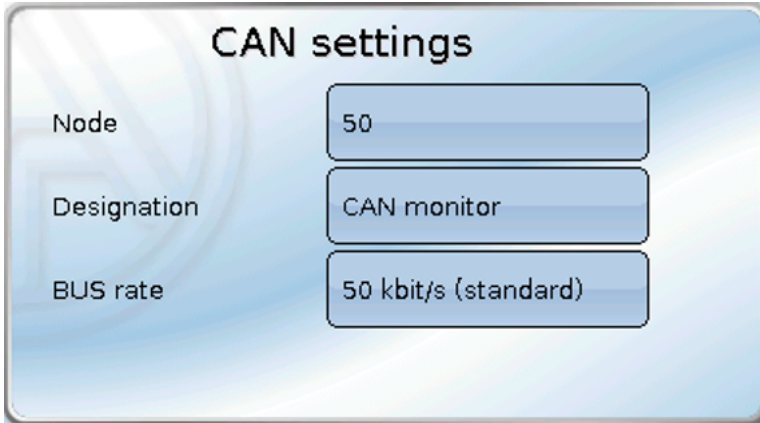This menu is used to define the parameters for CAN datalogging of analogue and digital values.

CAN datalogging requires at least version 1.25 on the C.M.I. datalogger and a Winsol version of at least 2.06.

CAN datalogging is only possible with the C.M.I. datalogger. The data to be logged can be freely selected. There is no constant data output. When requested by a C.M.I., the controller saves the current values to a logging buffer and locks it to prevent it from being overwritten (when requests are received from another C.M.I.) until the data is read out and the logging buffer has been enabled again.

The settings required on the C.M.I. for datalogging via CAN bus are described in the C.M.I.'s online help.

Each CAN-MTx2 can issue a maximum of 64 digital and 64 analogue values that are defined in the menu "**CAN bus/datalogging**" of the CAN-MTx2.

The sources for the logged values can be inputs and CAN bus inputs.

CAN settings

Node

Define a **unique** CAN node number for the device (setting range: 1 – 62). The factory-set node number of the CAN-MTx2 is 50.

Designation

Every device can be given its own designation.

Bus rate

The standard bus rate of the CAN network is **50 kbit/s** (50 kBd), which is specified for most CAN bus devices.

> **Important:** **All** devices in the CAN bus network must have the **same** transfer rate in order to be able to communicate with each other.

The bus rate can be set to between 5 and 500 kbit/s, with lower bus rates allowing longer cable networks (see installation instructions of the controllers).

CAN inputs

As CAN inputs are of no practical use in the CAN monitor, this sub-menu is not described in this manual.

CAN analogue outputs

The 5 analogue inputs are already linked to the first five CAN analogue outputs.

In CAN-MTx2 (without CO_2 sensor), the fifth value is always 0.

As there are no other analogue values available as the source for CAN analogue outputs, no instructions are given here for programming other CAN analogue outputs.

Transmission conditions

Example:

If change > 1.0 K	If the current value has changed by more than 1.0 K compared to the last transmitted value, a new transmission is made. The unit used by the source is applied to the output value (minimum setting: 0.1 K).
Blocking time 10 s	If the value changes by more than 1.0 K within 10 seconds of the last transmission, the value is nevertheless only transmitted again after 10 seconds (minimum setting: 1 sec.).
Interval time 5 m	The value is transmitted every 5 minutes even if it has not changed by more than 1.0 K since the last transmission (minimum setting: 1 minute).

CAN digital outputs

They are defined by specifying the **source** in the CAN monitor.

Example: Source "Sensor error inputs"

CAN digital output 1

System values

1: General

Sensor error inputs

No

Designation

Every CAN digital output can be given its own designation. The designation can be selected from various designation groups or can be user defined.

Example:

Designation

User

Sensor error CAN monitor

Transmission condition

Example:

Transmission condition

If change   Yes

Blocking time   10s

Interval time   5m

If change Yes/No	Transmission of the value if a status change occurs
Blocking time 10 s	If the value changes within 10 seconds of the last transmission, the value is nevertheless only transmitted again after 10 seconds (minimum setting: 1 sec.).
Interval time 5 m	The value is transmitted every 5 minutes even if it has not changed since the last transmission (minimum setting: 1 minute).

Active CAN nodes

Tapping the button displays the active CAN nodes in the CAN bus network.

"**Status**" displays the CAN bus status of the CAN monitor. After starting, the status changes automatically, according to a predefined process, from *init. → preop(erational) → operat(ional)*. Only then is it possible to communicate with other CAN bus devices.

Tapping a CAN bus device of the X2 series takes you to the menu of the device.

Other CAN bus devices and the C.M.I. will be displayed, but it is not possible to access their menus.

To return to the menu of the CAN monitor, tap the CAN monitor in this overview.

 Updating the view

CORA devices

Principles

The CORA wireless system comprises multiple CORA devices (e.g. CAN-EZ3 and EHS), which communicate with one another, exchange data and transfer firmware. This functionality cannot fully replace the CAN bus.

The wireless range is around 1000 m outdoors, and typically 30 m in buildings (through approx. 2 walls/ceilings, depending on thickness and material). Up to 3 additional wireless devices can be used as a bridge to enable data to be exchanged under differing conditions.

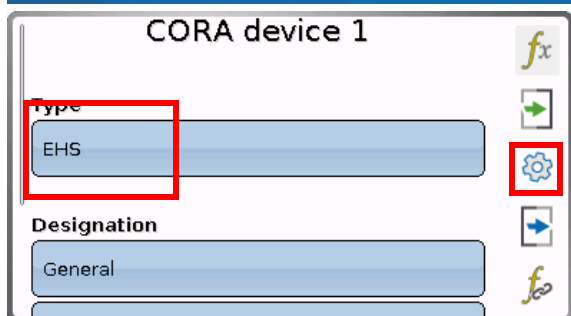A CAN-MTx2 can be paired with up to **16** CORA devices.

RCV-DL, GBS-F and RAS-F devices **cannot** be used.

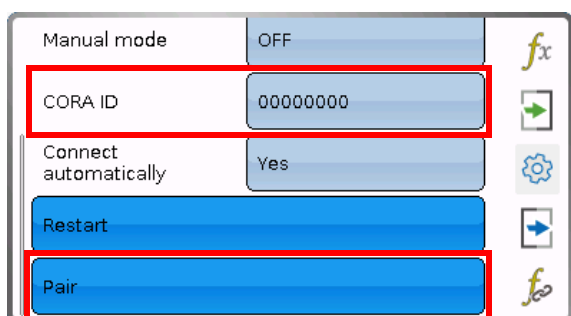All wireless system settings can be found in the main menu item **CORA devices.**

Pairing CORA devices
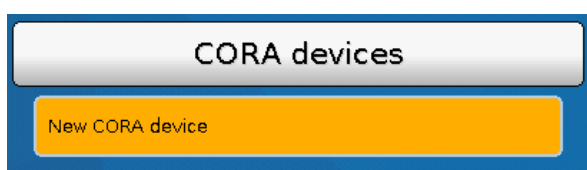
In the main menu, under "**CORA devices**", a **New CORA device** is selected. Once the device type has been selected, additional setting options appear.

Select device type, then switch to parameters

Specify CORA ID from target device...

...and select **Pair**

The target device must have **Allow pairing** enabled. Information about this can be found in the operating instructions for the relevant device.

To pair an additional device, navigate back to the **CORA devices** menu and create another **New CORA device**.

If **Connect automatically** is set to **Yes**, when the wireless signal is lost, the system automatically attempts to restore the connection.

Relaying wireless signals

CORA devices can relay signals from other devices. All required settings for this are carried out at the device, which transmits the signal to be relayed. Pairing with devices that simply relay signals is not required.

When programming the CORA device, simply enter the CORA ID of the relaying devices under the items **HOP1-3** (depending on how many relays need to occur).

RCV-DL, GBS-F and RAS-F devices **cannot** be used.

Example: The **CORA 1** device should control the **CORA 3** wirelessly but cannot reach it due to the local conditions. However, **CORA 1** can reach **CORA 2**, and **CORA 2** can reach **CORA 3**.

When programming **CORA 1** (= pairing with **CORA 3**), the CORA ID of **CORA 3** is entered under **CORA ID**, and the CORA ID of **CORA 2** is entered under **HOP1**.

No settings are required on **CORA 2**. This device relays the signals independently.

No settings are required on **CORA 3** either.

The only change to the pairing process is that CORA IDs are entered under **HOP1-3**.

To enable additional devices to relay the signal, they should be specified in the corresponding order under **HOP2** and then under **HOP3**. A data packet is sent by the transmitter to HOP1, HOP2, HOP3 and then to the target device (= "CORA ID") (if defined).
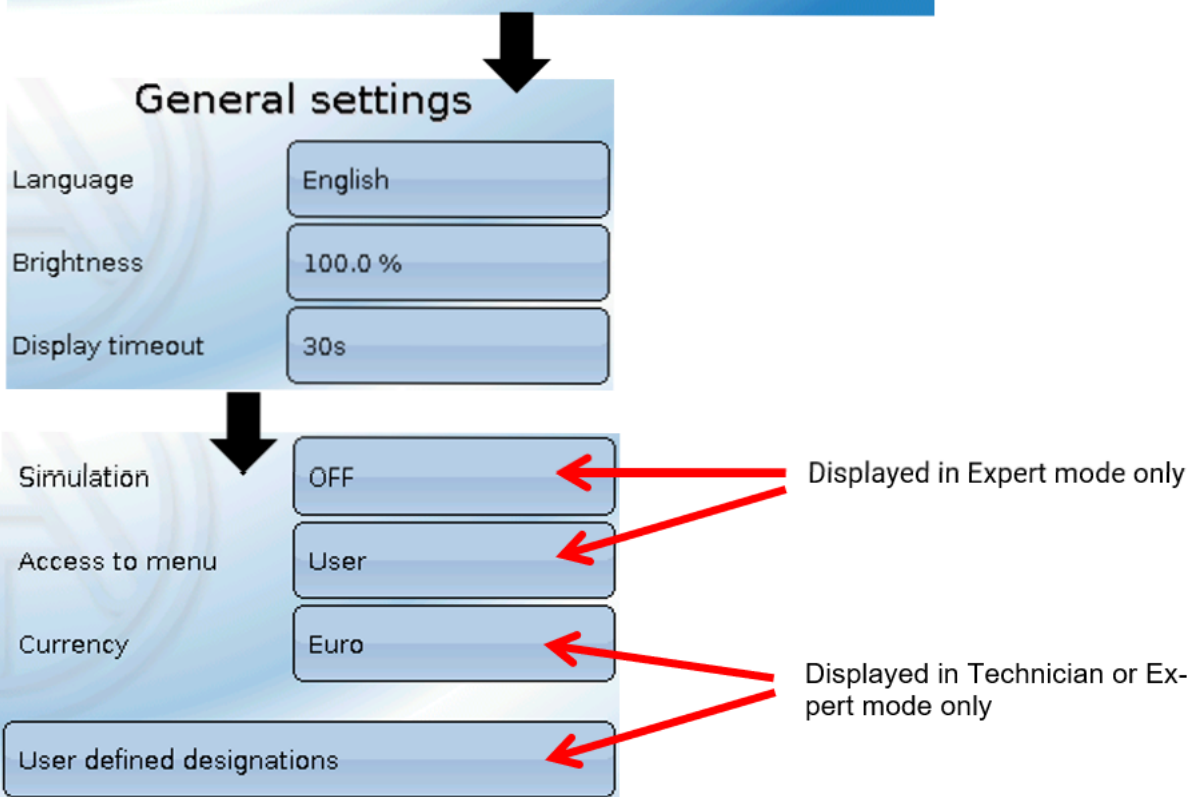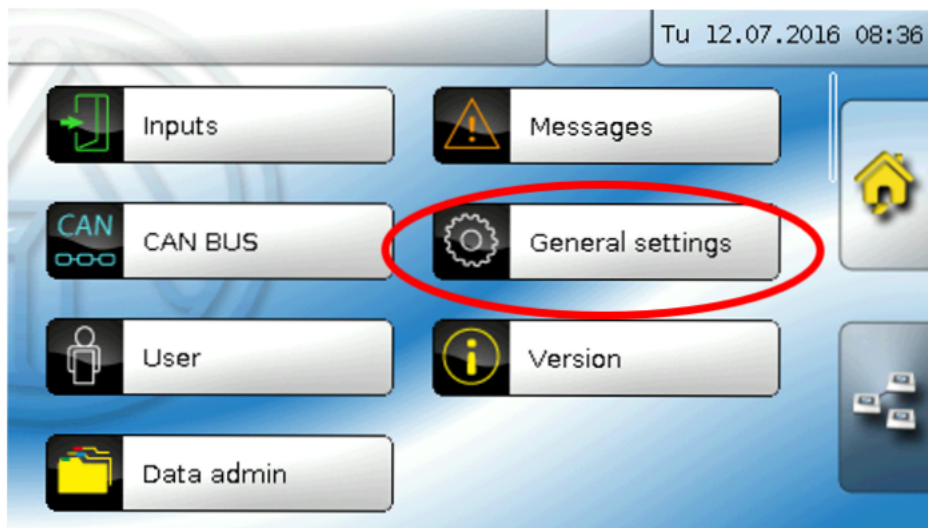
The entry **00000000** means that no relaying will occur.

Deleting a pairing
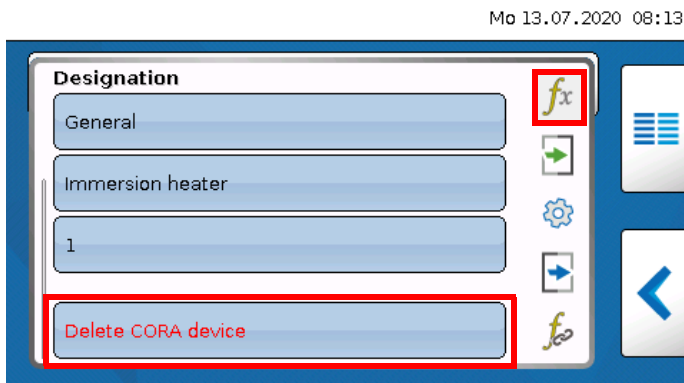
Item **fx** contains item **Delete CORA device**.

General settings

This menu allows settings to be made which then take effect for all other menus and displays.

Language
Select the display language

Brightness
Select the brightness of the display to match the surroundings (setting range: 5.0 – 100.0%)

Display timeout
The display will be switched off if the user does not do anything for the period of time set here. Tapping the touchscreen surface re-activates the display (setting range: 5 seconds to 30 minutes). For the CAN monitor this time should be set to no more than 3 minutes, as otherwise the increasing internal warming will cause the sensor's measurements to be incorrect.

Simulation

No application for the CAN-MTx2.

Access to menu

Definition of the user level from which access to the CAN monitor's **main menu** is permitted.

If only **technicians** or **experts** are permitted to access the menu, then the relevant **password** must be entered when selecting the main menu from the start page of the function overview (▦ button).

When the CAN monitor is **restarted**, either the **function overview** is displayed (if loaded) or, in the case of restricted access, the **keyboard** for the password.
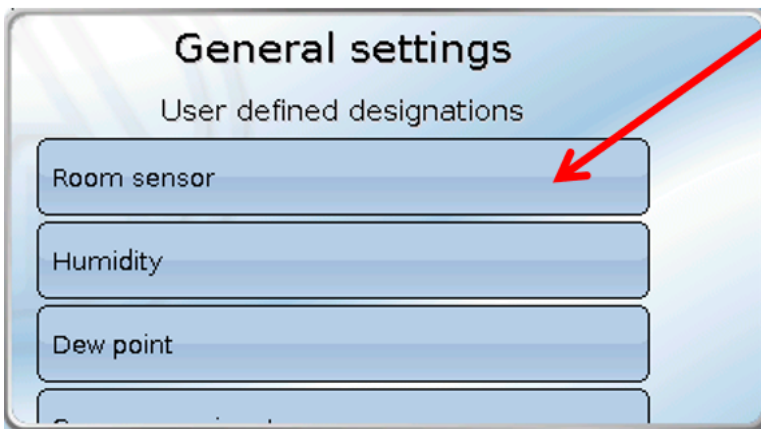

Currency

No application for the CAN-MTx2.

User defined designations

In this menu, you can enter, change or delete user defined designations **for all elements of the CAN monitor**. This menu can only be selected from within the Technician or Expert level.

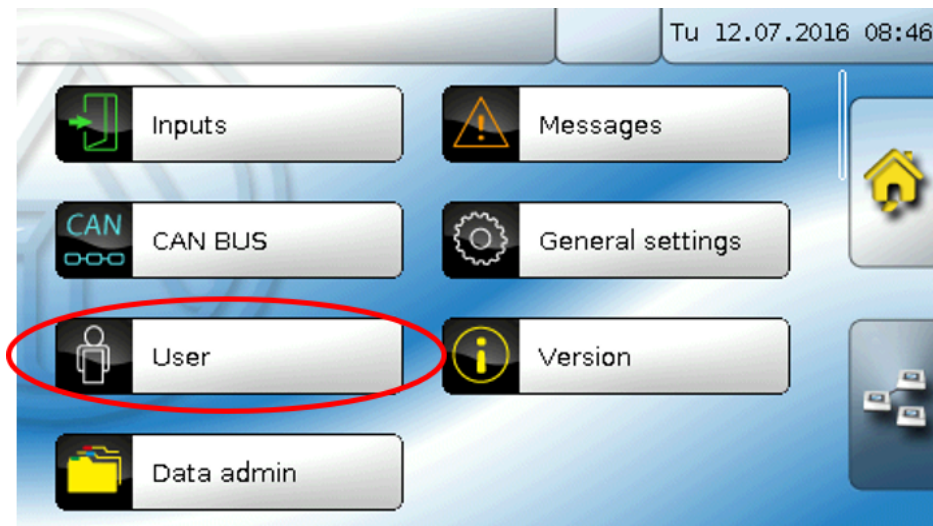View with designations defined previously

An alphanumeric keyboard is provided for changing a designation or creating a new one.

Up to 100 different designations can be defined by the user. The maximum number of characters per designation is **24**.

Designations defined previously are available for all elements.

User

Current user

Select whether the user is an **Expert**, **Technician** or **User**.

To enter the Technician or Expert level a **password** must be entered, which can be set by the programmer.

Following a restart, the CAN monitor is always in the User level.

Changing the password

An **Expert** can change the passwords for Technician and Expert. A **Technician** can only change the Technician password.

There are no restrictions regarding the length of the password or the type of characters that can be used.

To change a password, you must first enter the old password.

List of permitted actions

| User level	Displays and permitted actions
User	• **Function overview** with options for control • **Access to main menu** only if enabled for "**User**" in the "General settings" • **Inputs**: display only, no access to the parameters • **Messages**: display of active messages • **CAN bus**: no access to the parameters • **General settings**: language, brightness and display timeout can be altered • **User**: change of user (with password entry)
Technician	**All of the above plus**: • **Access to main menu** only if enabled for **Technician** or **User** in the "General settings" • Changes to the parameters for **inputs** • **General settings**: Changes to **user defined designations** and creation of new ones • All settings in the **CAN bus** menu • **Data administration** actions
Expert	**All** actions and **all** displays are accessible.

Automatic changeover

Normally, the CAN monitor automatically switches back to **user mode** 30 minutes **after login** as an expert or technician.

For programming or test purposes, this automatic changeover can be switched off. To do so, an expert selects "Change expert password", first enters the old password, then enters **nothing** (not "0" either) and confirms this with the tick.

The same can be done for the Technician password.

Version and serial number

The display shows the **serial number**, internal production data and the names of the current function data and function overview.
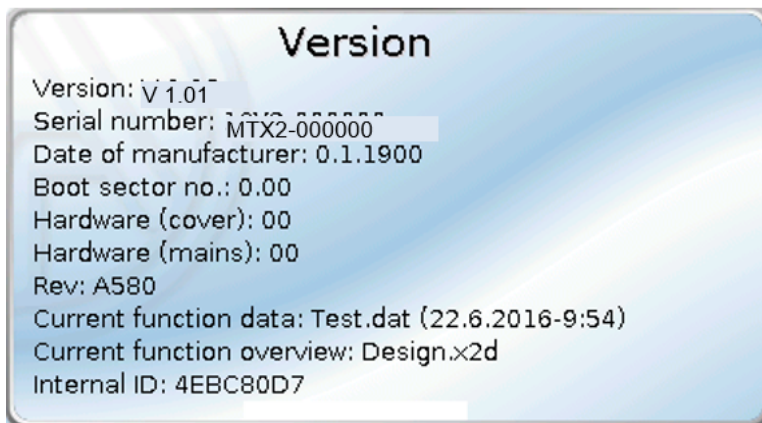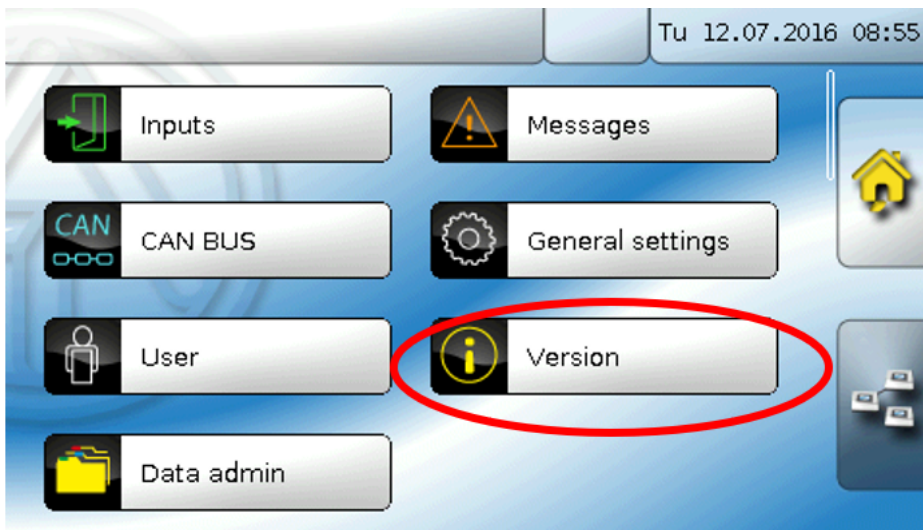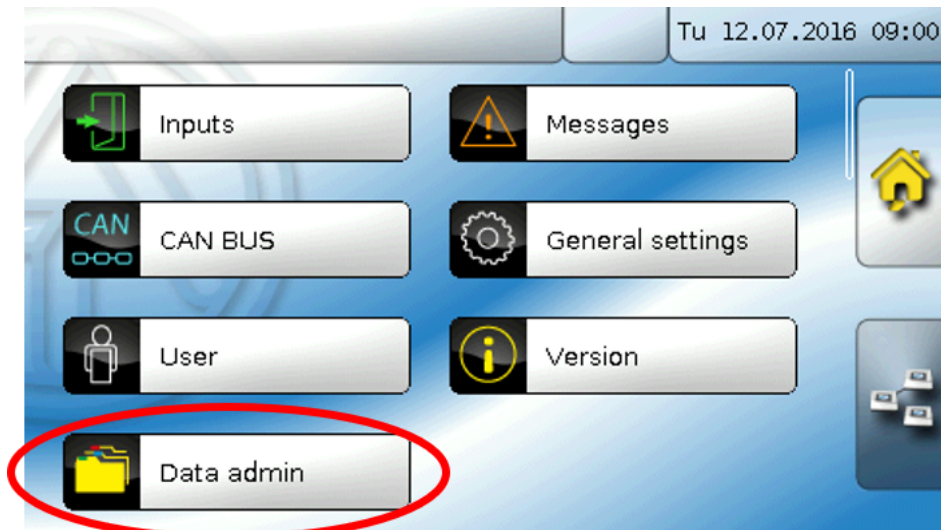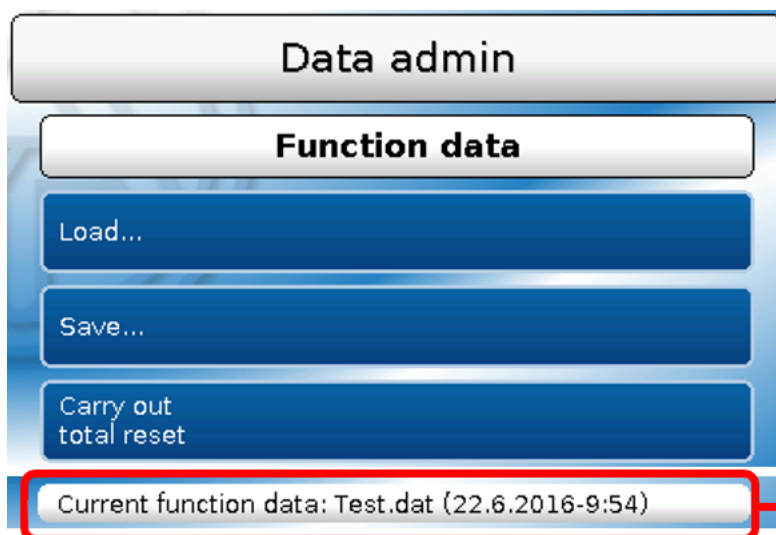
Data administration

Only visible in Technician or Expert mode

You can perform the following actions in this menu:

- Save, load or delete function data
- Load firmware
- Load or delete a function overview
- Display the status of the data transfer

Function data

Display the current function data with the time of loading

This menu is used for loading function data and for backing up the settings of the CAN monitor (=function data) on the SD card ("Save").

A **total reset** deletes all settings and resets the CAN monitor to its condition when delivered from the factory.
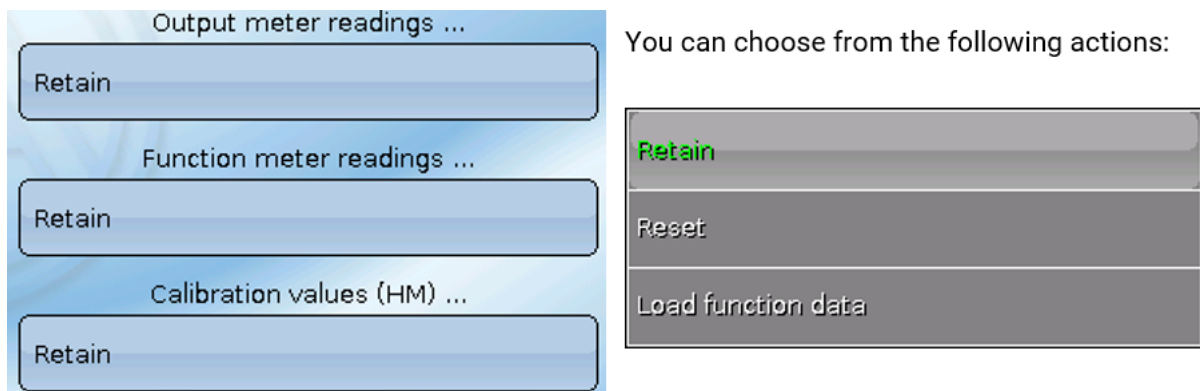
Load...

Function data can be loaded from the SD card onto the CAN monitor or other x2 devices. More than one set of function data can be saved on the SD card.

The data transfer is only possible after a **technician** or **expert password** has been entered for the target device.

After selecting the function data required (*.dat file), you will be prompted to specify how the meter readings and the heat meter's calibration values should be treated.
This prompt is irrelevant when loading function data onto the CAN monitor.

Retain	The meter readings and calibration values in the controller will be applied. **Example of use**: After programming is changed using TAPPS2
Reset	The meter readings and calibration values will be reset **to zero**.
Load function data	The meter readings and calibration values applied will be taken from the function data being loaded onto the controller. **Example of use**: Replacement of a controller. The function data is taken from the old controller and its meter readings are to be loaded onto the new controller.

Tapping ✔ loads the new function data; ✖ cancels the action.
Once the function data is loaded, the controller returns to the User level.

Deleting, renaming and sending saved files

In order to rename or delete a saved file, tap the plus icon. The following options then appear for selection:
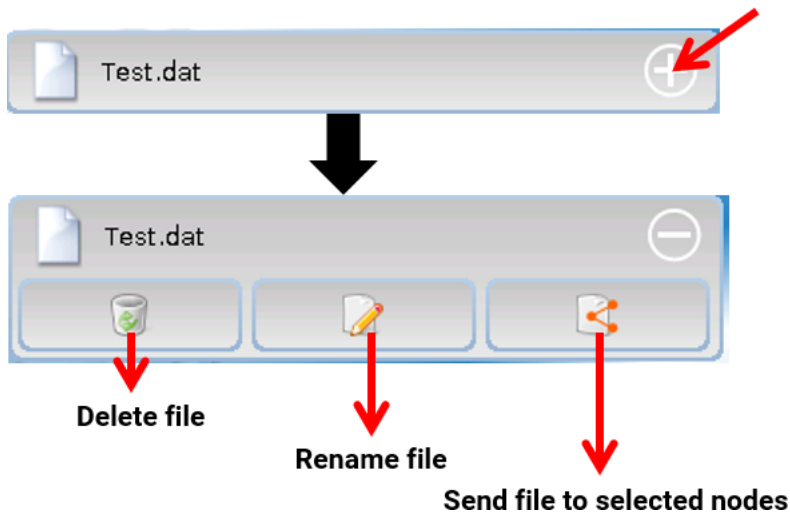
Return from this selection by tapping the plus icon again.

Delete file

A confirmation prompt appears, which you can confirm by tapping ✅ .
Tapping ❌ cancels the action.

Rename file

The file name can be changed using a keyboard (Umlauts are not possible). The file name may have up to 63 characters.

Send file to selected nodes

This allows you to send function data to other CAN bus subscribers with X2 technology (e.g. RSM610, CANEZ2, CAN-I/O45).
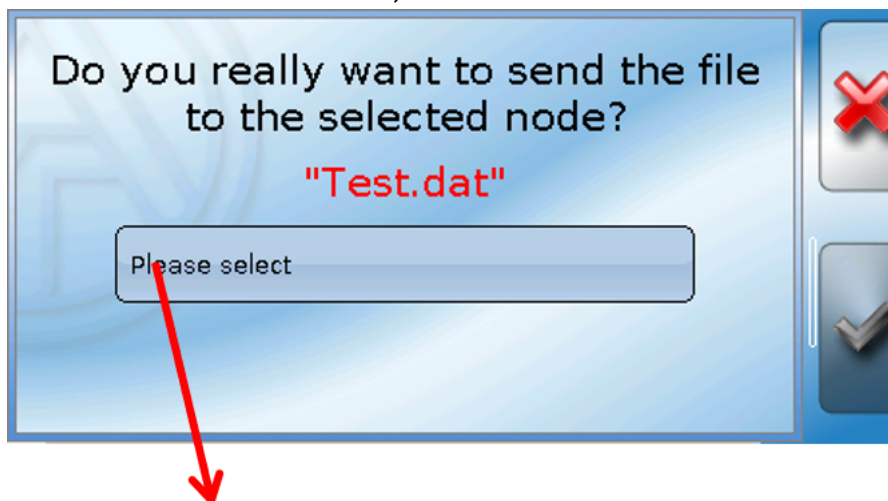
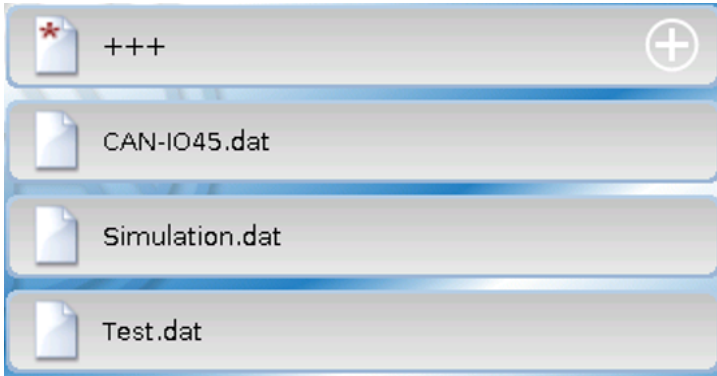Select the **node number** and then tap ✅.

Save...

The current function data of the CAN monitor can be backed up on the **SD card**.

You can give the function data a name of your own. More than one set of function data can be saved.

Example:

In this example there are already several sets of function data saved on the SD card.
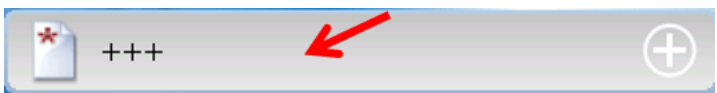
 If you want to save the function data under a **new** name, tap the button. You can then enter a new name and save the file (umlauts cannot be entered). The file name may have up to 63 characters.
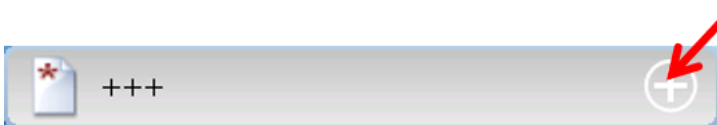
 Tap the plus icon to load function data from a different x2 device onto the CAN monitor SD card.
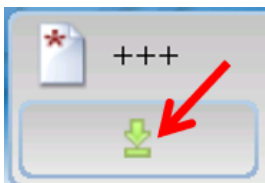
 When the button expands, tap the green arrow.

Now a node query appears and it is possible to enter a new file name.

Firmware Load...

Firmware (= operating system, file ***.bin**) can be loaded from the SD card onto the CAN monitor or other x2 devices on the CAN bus (**exception: UVR16x2**). More than one operating system version may be saved on the SD card.

The data transfer is only possible after a **technician** or **expert password** has been entered for the target device.

As when loading function data, the saved firmware files can be deleted, renamed or loaded onto other x2 devices.

Delete file

Rename file

Send file to selected nodes

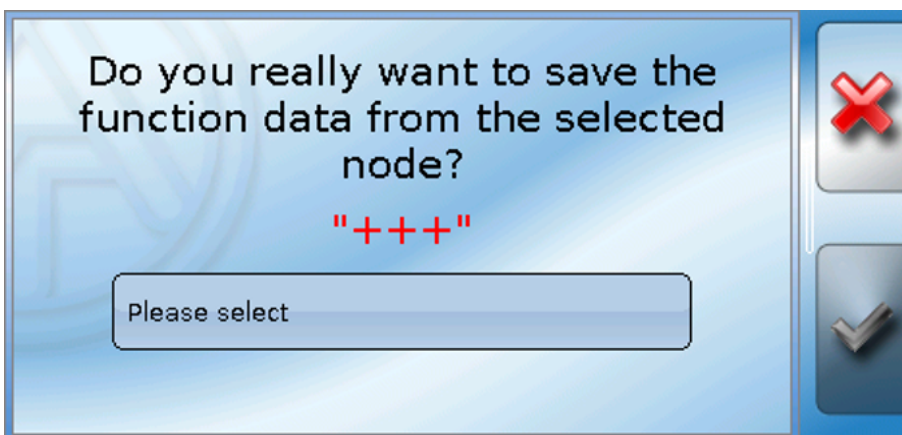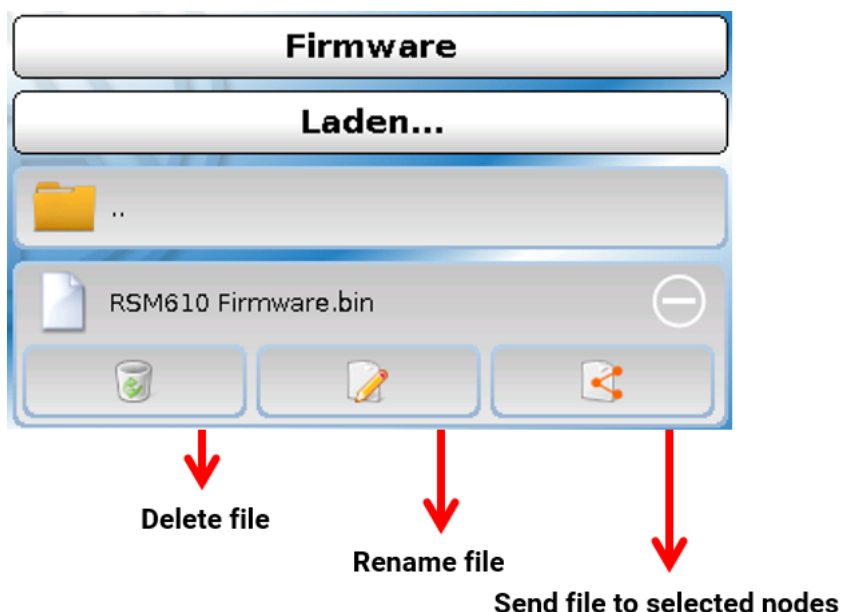**Return** from this selection by tapping the icon again.

Function overview Load.../Delete...
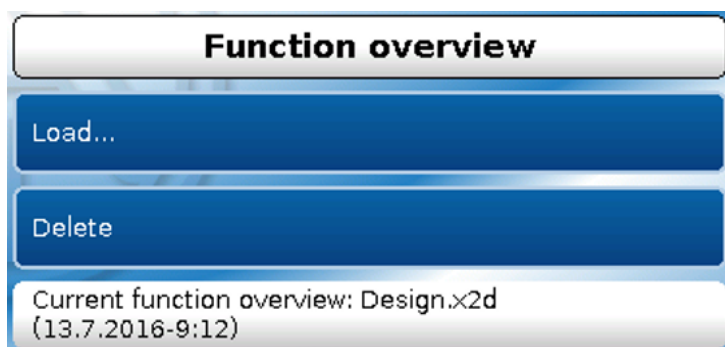
The function overview (*.x2d file, **TA-Designer minimum version: 1.15**) can be loaded onto the device from the SD card or deleted in the device. Multiple files can be saved to the SD card.

When you select the file a confirmation prompt will appear, as the function overview currently on the device will be overwritten.

"**Delete...**" deletes the function overview saved on the device. When you select the file a confirmation prompt will appear.

Answer the confirmation prompt by tapping either ✓ (= Yes) or ✗ (= No).

Status

This indicates whether a data administration transfer of data from the SD card to the CAN monitor or vice versa was successful or not.

This status display does not apply to data transfers **from** another controller, a C.M.I. or another CAN monitor.

Total reset
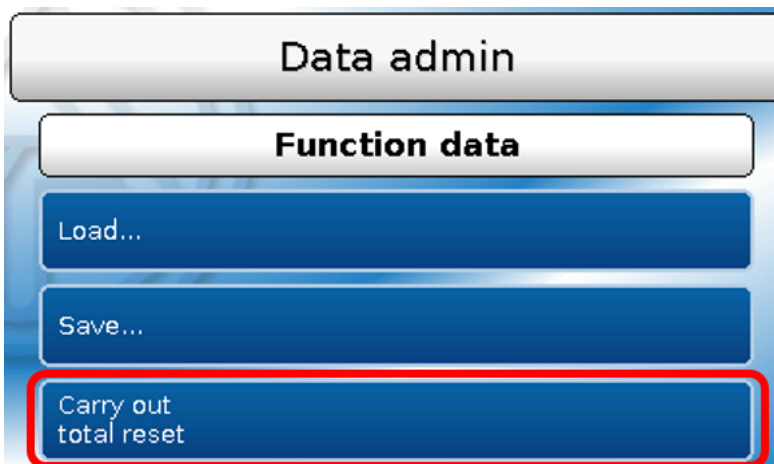
A **total reset** deletes all settings and resets the CAN monitor to its condition when delivered from the factory. The settings for the CAN node number and the CAN bus rate are retained.

After tapping the screen you will be asked to confirm that you want a total reset to be carried out.
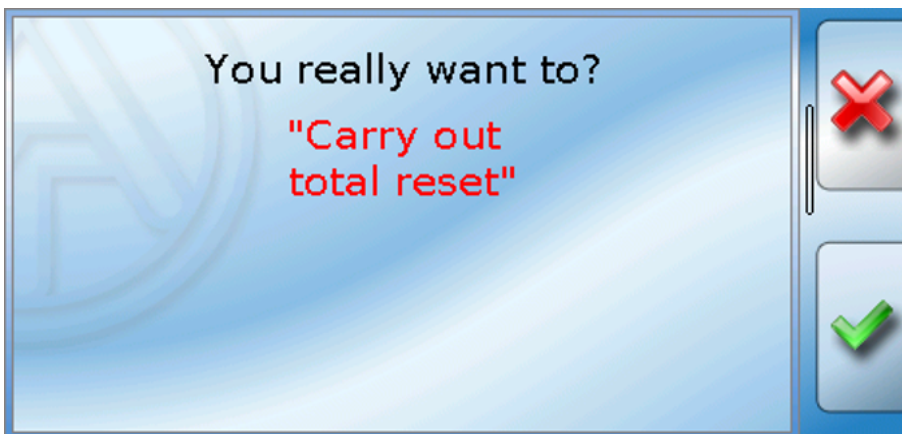
Answer by tapping either ✔ (= Yes) or ✖ (= No).

Restart
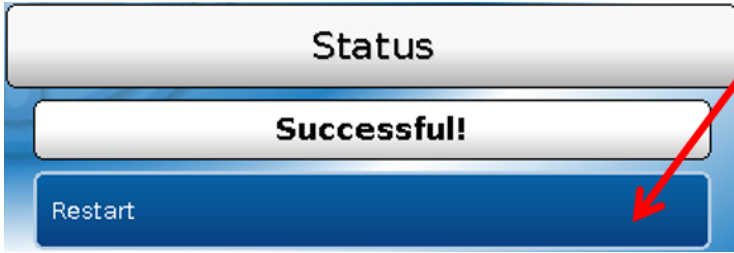
At the end of the "Data admin" menu, there is an option to restart the monitor following a confirmation prompt, without disconnecting the monitor from the network.

LED indicator light
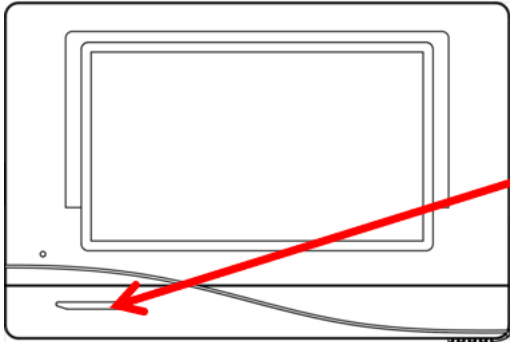
LED indicator light

LED status indicators at start

Indicator light	Explanation
Steady red light	The CAN monitor is booting (= start routine after switching on, resetting or updating) **or**
Steady orange light	Hardware is initialising after booting up
Flashing green light	After hardware initialisation, the CAN monitor waits about 30 seconds to receive all the information necessary for operation (sensor values, network inputs)
Steady green light	Normal operation of the CAN monitor

Reset

Pressing the reset button on the front of the CAN monitor **briefly** (with a narrow-tip pen) and releasing it **before** the beep ends will restart the CAN monitor (= reset).

Loading the firmware of the factory settings
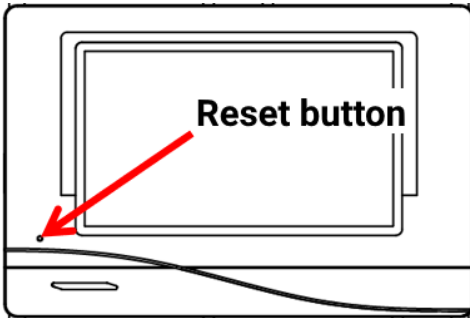
Reset button

In special cases, it may be necessary to restore the CAN monitor's **firmware** to its condition when delivered from the factory. A total reset is carried out at the same time.

Pressing the reset button on the front of the CAN monitor (with a narrow-tip pen) **when switching it on** will initiate loading of the original firmware at the time of delivery.

The button must be pressed until the beep stops.

Calibration

If the touch-sensitive points on the touchscreen no longer align with the background graphics, making it difficult to operate the CAN monitor, you can re-adjust the touchscreen using "**Calibration**".

Calibration can be started by pressing anywhere on the **screen** while the monitor is starting up (= power supply).

The following display appears for five seconds after the monitor is started (the seconds will count down):

Touch the screen for calibration
5 sec
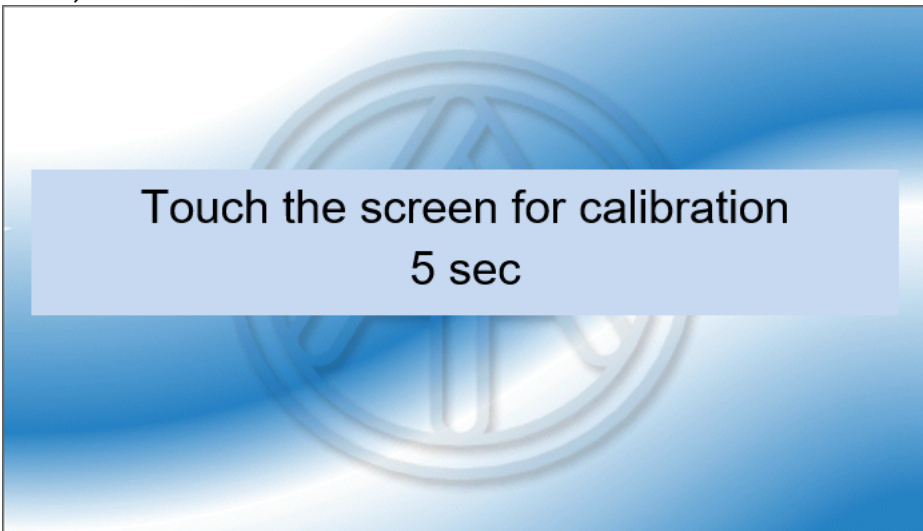
The screen no longer needs to be touched while this display is shown.
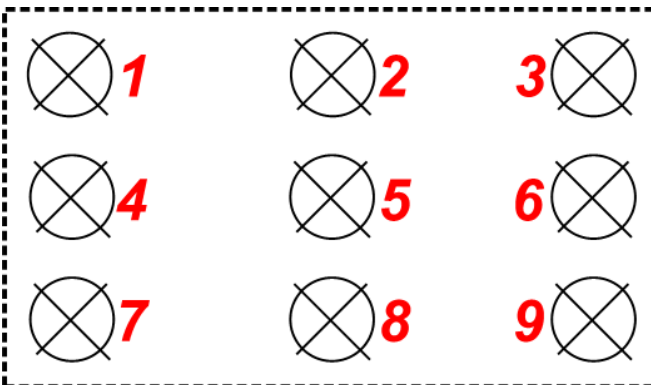
Touching the screen **again once** within this time will start the calibration procedure.

To calibrate, you must touch all 9 target points separately one after the other.

You then have the option of a total reset or continuing to the main menu of the CAN monitor.

User manual – final user

The **CAN-MTx2** CAN monitor is used as a control and display unit for the freely programmable controllers UVR16x2 and RSM610 as well as all other devices in the X2 series.

The CAN monitor has a combined **temperature and humidity sensor** built in and can therefore also be used as a **room sensor**.

The wide variety of systems means that a single instruction manual for all application scenarios is not possible. You should therefore always seek instructions from your heating system installer.

The programmer can create a "**Function overview**" for user operation. This function overview may include all X2 devices in the CAN bus network. In the function overview, you can check all important measurements and change settings in selected functions which are important to you as the user.

In this manual, we explain how to select the function overview. For further information about functions and modifying values, see the operating manuals of the freely programmable controllers (UVR16x2, RSM610).

Note: Your personal system will normally vary from the examples in the manuals.

User levels

To prevent incorrect operation of the controller, three different user groups can log onto the controller: **User**, **Technician** or **Expert**. Access by Technicians and Experts requires a password.

User level	Displays and permitted actions
User	• **Function overview** with options for control • **Access to main menu** only if enabled for "**User**" in the "General settings" • **Inputs**: display only, no access to the parameters • **Messages**: display of active messages • **CAN bus**: no access to the parameters • **General settings**: language, brightness and display timeout can be altered • **User**: change of user (with password entry)
Technician	**All of the above plus**: • **Access to main menu** only if enabled for **Technician** or **User** in the "General settings" • Changes to the parameters for **inputs** • **General settings**: Changes to **user defined designations** and creation of new ones • All settings in the **CAN bus** menu • **Data administration** actions
Expert	**All** actions and **all** displays are accessible.

The CAN monitor is operated via a 4.3" **touchscreen**.

Function overview

The function overview is **freely designed** by the programmer and can therefore look different on every system. It can be displayed with the aid of **graphics** or simply as a **table**.

Values selected by the programmer can be changed either by all users, by Experts only or by Experts and Technicians. Many values (e.g. sensor values) can generally never be changed.

If multiple UVR16x2 controllers or other X2 devices in the system are linked by CAN bus, the function overview can also be programmed to display the values of other devices.

The function overview can comprise several pages, in which case a **Link** (= link on the screen linking to another page) is required for switching to a different page. The appearance of links can be freely designed by the programmer. Access to some pages may be restricted to certain user groups (with or without password entry).

The function overview can be programmed with the first page showing an overview of the following pages with links to those pages.

Touching the relevant link takes you to the display on the required page.

If a function overview was loaded onto the CAN monitor, the display will show the function overview once it is connected to the CAN bus.

From the main menu, you can access the function overview by tapping the 🏠 button.

The function overview can be programmed as standard view or full screen view.

Standard view

Example: Start page with 4 links
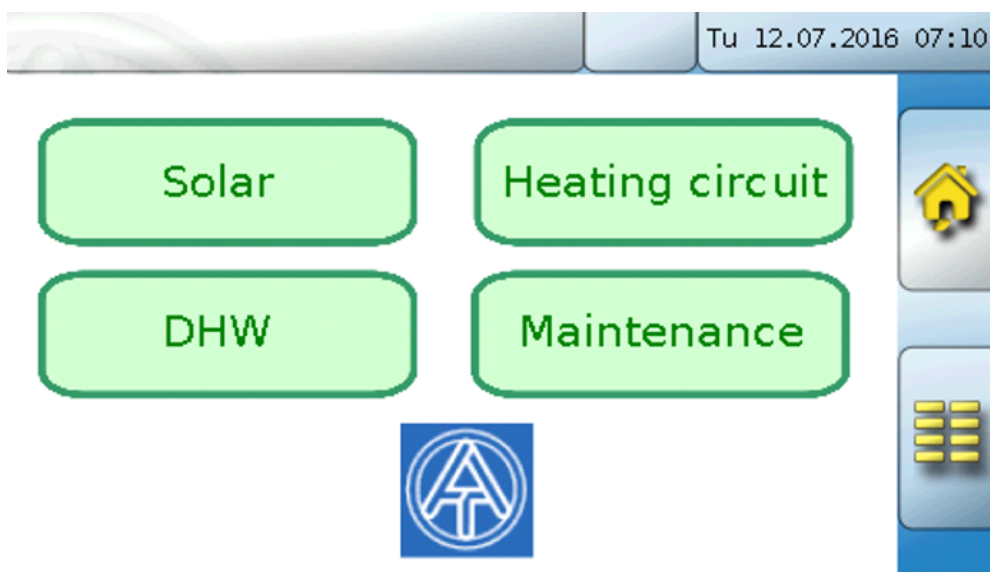
You can go back to the page **displayed previously** by tapping ⬅ .

To go to the **start page** of the function overview, tap 🏠 .

From the **start page** (= first page), tapping ☰ takes you to the CAN monitor's **main menu**. If only **technicians** or **experts** are permitted to access the menu, then the relevant **password** must be entered.

If you press the background image for 3 seconds, 2 buttons appear which serve to access the version information and the general settings respectively.

You can go back to the page **displayed previously** by tapping .

Full screen view

In the full screen view, the upper status bar and the side buttons are hidden.

Example:

Start page with 4 links

If you press the background image for 3 seconds, 4 buttons appear which enable access to the version information of the CAN monitor, the general settings or the date, time and location settings, and the main menu of the CAN monitor.

This button takes you to the main menu of the CAN monitor. If only **technicians** or **experts** are permitted to access the menu, then the relevant **password** must be entered.

To go back to the **start page** of the function overview,

tap .

Datum / Uhrzeit / Standort

Zeitzone	01:00
Sommerzeit	Nein
automatische Zeitumstellung	Ja
Datum	29.09.2016

Version

Version: V 1.01
Serial number: MTX2-000000
Date of manufacturer: 0.1.1900
Boot sector no.: 0.00
Hardware (cover): 00
Hardware (mains): 00
Rev: A515
Current function data: tmp.dat
Current function overview: Design.x2d
Internal ID: A3CCD4A6

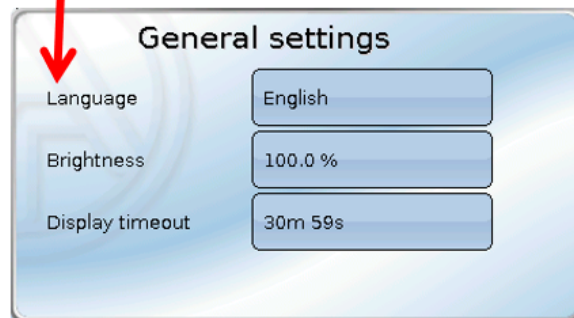**General settings**

Language	English
Brightness	100.0 %
Display timeout	30m 59s
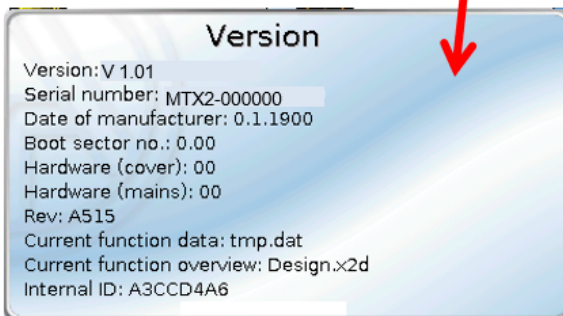
You can go back to the page **displayed previously** by tapping .

For more details about functions and modifying values, see the operating manuals of the freely programmable controllers (UVR16x2, RSM610).

EU Declaration of conformity

Document- Nr. / Date: TA17030 / 02.02.2017
Company / Manufacturer: Technische Alternative RT GmbH
Address: A-3872 Amaliendorf, Langestraße 124

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product name: CAN-MTx2, CAN-MTx2-CO2
Product brand: Technische Alternative RT GmbH
Product description: CAN Monitor

Der oben beschriebene Gegenstand der Erklärung erfüllt die Vorschriften der Richtlinien:

2014/35/EU   Niederspannungsrichtlinie
2014/30/EU   Elektromagnetische Verträglichkeit
2011/65/EU   RoHS Beschränkung der Verwendung bestimmter gefährlicher Stoffe

Employed standards:

EN 60730-1: 2011	Automatic electrical controls for household and similar use – Part 1: General requirements
EN 61000-6-3: 2007 +A1: 2011 + AC2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN 61000-6-2: 2005 + AC2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 50581: 2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Position of CE - label: On packaging, manual and type label

$$C \in$$

Issuer: Technische Alternative RT GmbH
    A-3872 Amaliendorf, Langestraße 124

This declaration is submitted by

Schneider Andreas

Dipl.-Ing. Andreas Schneider, Geschäftsführer,
02.02.2017

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.

Warranty conditions

Note: The following warranty conditions do not in any way limit the legal right to warranty, but rather expand your rights as a consumer.

1. The company Technische Alternative RT GmbH provides a one-year warranty from the date of purchase 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 warranty includes the free of charge repair (but not the cost of on site troubleshooting, 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 the Technische Alternative company, the goods will be replaced.

3. Not included is damage resulting from the effects of over-voltage or abnormal ambient conditions. Likewise, no warranty 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, disregard of operating and installation instructions or incorrect maintenance.

4. The warranty 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. Processing is accelerated if an RMA number is applied for via our home page www.ta.co.at. A prior clarification of the defect with our technical support is necessary.

6. Services provided under warranty result neither in an extension of the warranty period nor in a resetting of the warranty period. The warranty period for fitted parts ends with the warranty 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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