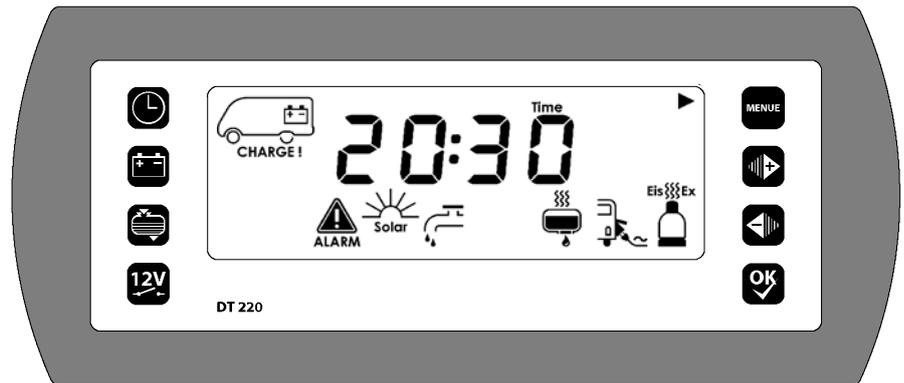


Instruction Manual



Control and Display Panel DT 220 C

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1 Introduction

This instruction manual contains important information on the safe operation of equipment supplied by Schaudt. Make sure you read and follow the safety instructions provided.

The instruction manual should be kept in the vehicle at all times. Ensure that other users are made aware of the safety regulations.

2 Operation

The control and display panel is flush-mounted. It is embedded in a cabinet or a double wall.

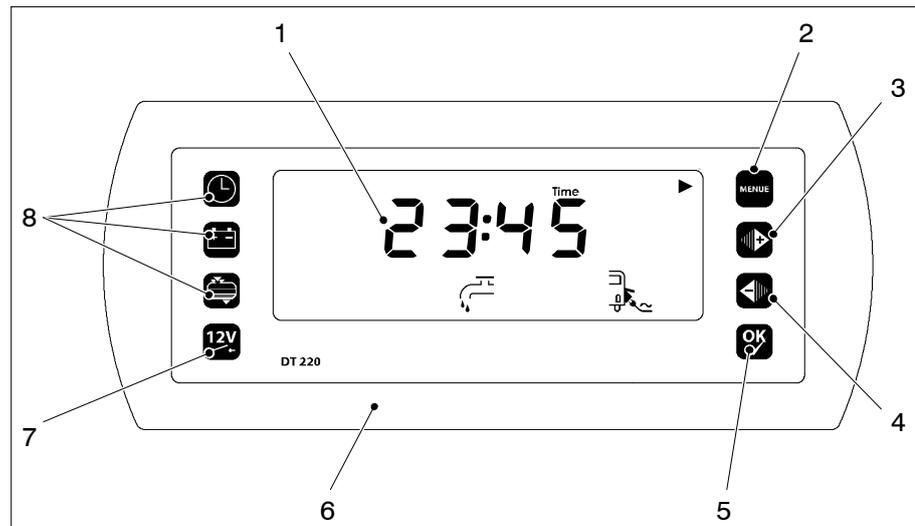


Fig. 1 Layout of the DT 220 C control and display panel

- 1 Background-illuminated LC display
- 2 "Set up" menu button
- 3 "+" button
- 4 "-" button
- 5 "OK" button
- 6 Cover frame
- 7 Main 12V switch
- 8 Menu buttons

2.1 Design

2.2 Control and displays

The DT 220 C control and display panel has the following controls:



Main switch:

Button for switching the 12V supply in the motorhome or caravan on or off.



Menu button: Main menu



Menu button: Battery menu



Menu button: Tank menu



Menu button: Set up



"▶" or "+" button: For paging through the menus or altering the displayed setting



"◀" or "-" button: For paging through the menus or altering the displayed setting



"OK ✓" button: For confirming the entered setting or unit switchover

The different areas of the display are subdivided as follows:

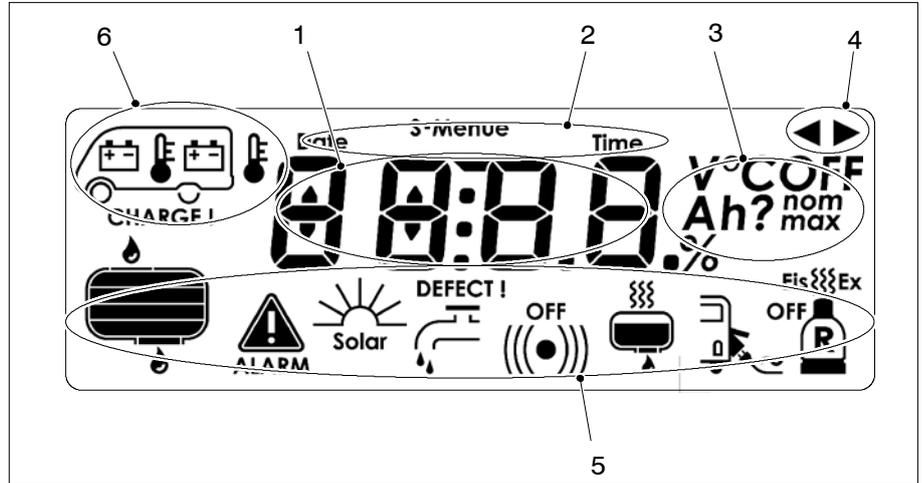


Fig. 2 Display layout (see Section 2.3 for segment test display)

- 1 Main display
- 2 Info line
- 3 Units field
- 4 Continuation arrows
- 5 Symbol line
- 6 Vehicle area (for battery and temperature display)

Symbol meaning

The symbols have the following meanings:

Symbol	Meaning	Symbol	Meaning
	Living area battery		An alarm is on
	Starter battery		Solar charging
	Inside temperature		Water pump
	Outside temperature		Acoustic warning
	Water tank (example shows 50% fill level)		Reserve gas cylinder
	Waste water tank (example shows 25% fill level)		EisEx
	Water tank 2 (example shows 0% fill level)		Tank heater
	Sewage tank (example shows 0% fill level)		Mains indicator 230V supply
	Waste water tank 2 (example shows 0% fill level)		Direction arrows

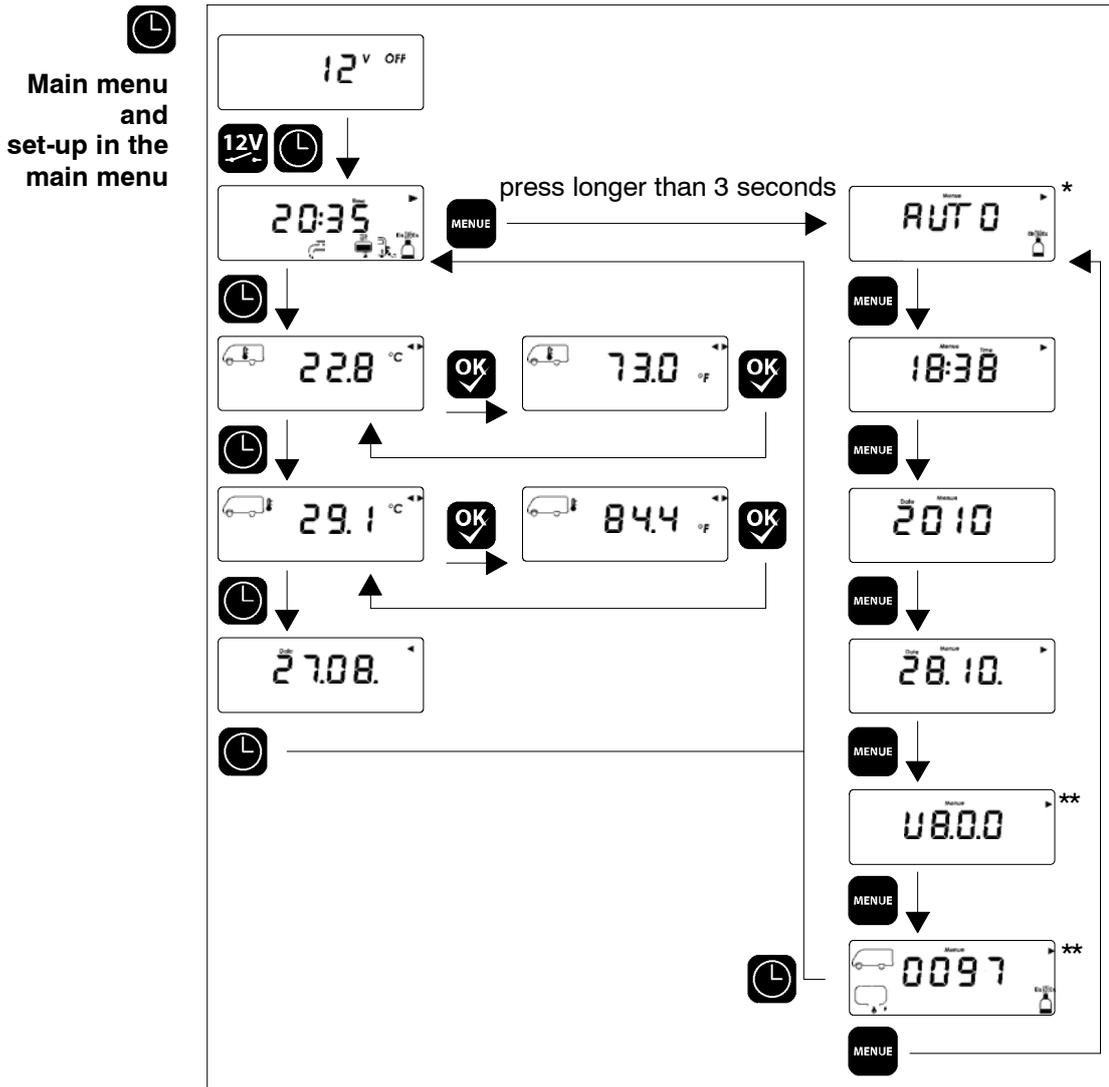


Fig. 3 Main menu - menu structure

* This window is only displayed when the "Truma Duo Comfort" option is fitted and active (see installation instructions).
 ** As example only



▲ Section 2.5.1 describes how to use the main menu.

Tank menu and set-up in the tank menu

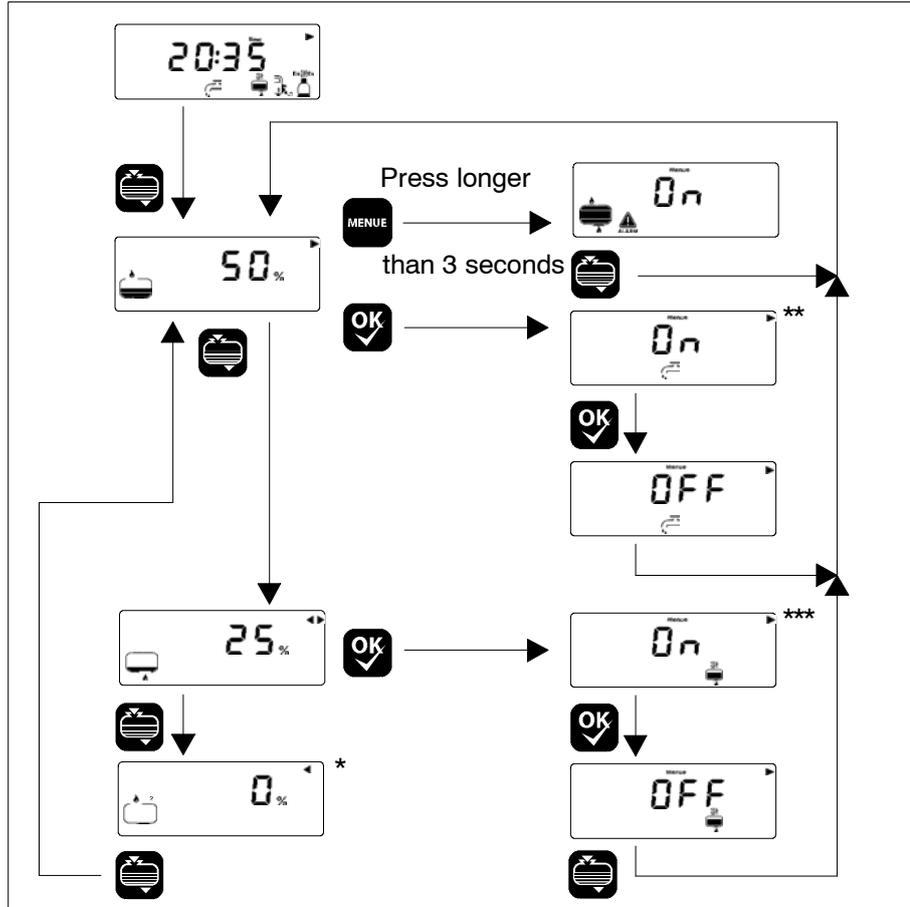


Fig. 5 Menu structure - tank menu

- * Only displayed when the "Extra tank" option is enabled
- ** Only displayed when the "Water pump" option is enabled
- *** Only displayed when the "Tank heater" option is enabled



▲ Section 2.5.3 describes how to use the tank menu.

2.3 Restarting (following shutdown)

The assumption is that the 12V system was shut down the last time the vehicle was left (battery isolation activated, see Section 2.8). The display does not show anything in this case.



- Press the "12V" button and keep it pressed longer than 5 seconds.
 - The display lights up.
 - The motorhome symbol with living area battery flashes.
 - After 5 seconds: Battery isolation is disabled. The system is now switched on.
- Set date and time (see Section 2.4.2) – the other settings are stored automatically on shutdown.
- Check battery voltage (see Section 2.5.2.2).

230V mains operation

➤ Connect the plug for mains operation to the 230V power supply.



The "Mains indicator" symbol is displayed. The batteries are charged.



▲ Connecting up the battery for the first time:

- The display lights up for approx. 10 seconds.
- All segments and symbols on the display are shown for approx. 10 seconds (segment test).

2.4 Switching on

The assumption is that battery isolation was not activated the last time the vehicle was left. The display shows "12V Off" in this case.

Switch on the 12V supply to the living area using the relevant button (see Section 2.4.1).

These consumers are still operable when the 12V power supply is switched off:

- | | |
|-------------------------------|-------------------------------|
| ● Frost protection valve | ● Foldaway bed |
| ● Heater | ● Awning light |
| ● Step | ● Awning |
| ● Gas alarm/waste water valve | ● Aerial |
| ● Circuit 4 | ● AES/compressor refrigerator |
| ● Wastewater tank heating | ● Refrigerator controller |



▲ To start these consumers for the first time

- after the 12V system has been shut down
- after the battery monitor has shut the system down
- after a battery change
- after reconnecting the living room battery after a long break

the 12V supply on the control and display panel must be switched on briefly (see also Section 2.5.2.2).

2.4.1 12V supply to the living area must be switched on



- ▲ The control and display panel can only be switched on when the battery voltage of the living area battery is greater than 11.0V. Otherwise the living area battery symbol and "CHARGE !" flash. The battery voltage (e.g. "10.2V") is displayed. See also Section 2.6.



- Press the "12V" button briefly.
 - The display lights up.
 - The time is displayed on the main display.
 - Any alarms set (e.g. "CHARGE") are flagged (see Section 2.6).
 - The 12V living area supply is switched on.



- ▲ Section 2.7 describes how to switch off the 12V supply for the living area.

2.4.2 Configuring settings



- ▲ The settings are entered via the setting up modes in the various menus. Setup mode is called from the "Setup" menu button.

Setup mode can be exited from any point by pressing one of the "Main menu", "Battery menu" or "Tank menu" buttons. Pressing the main "12V" switch also has the same effect. Any entries not saved are lost (press the "OK" button to save them) - see Section 2.1 for controls.

2.4.2.1 Date and time



- Press the "Main menu" button.
 - The display lights up.
 - The time and any other symbols are displayed.



- Press the "Setup" menu button and keep it pressed for 3 seconds.
 - The display switches to the main menu setup mode.



- Keep pressing the "Setup" button until the hour display flashes.



- Use the "+" and "-" buttons to set the hours.



- Confirm the entry by pressing "OK".
 - The minute display flashes.



- Set the minutes the same way.



- Press the "Setup" menu button.
 - The year display flashes.

-  ➤ Use the "+" and "-" buttons to set the year.
-  ➤ Confirm the entry by pressing "OK".
-  ➤ Press the "Setup" menu button.
 - The day display flashes.
-  ➤ Use the "+" and "-" buttons to set the day.
-  ➤ Confirm the entry by pressing "OK".
 - The month display flashes.
-  ➤ Set the month the same way.
-  ➤ Press the "Main menu" button once you have finished.
 - The display stays lit up.
 - The main menu is displayed.

2.4.2.2 Setting the installed (nominal) capacity for the living area battery



- ▲ This can only be entered when option "Battery capacity measurement" is enabled.



- Press the "Battery menu" button.
 - The display lights up.
 - The remaining usable capacity of the living area battery is displayed.



- Press the "Setup" menu button and keep it pressed for 3 seconds.
 - The display switches to the battery menu setup mode.
 - The maximum usable capacity of the living area battery is displayed. The system uses the configurable "installed (nominal) battery capacity" to calculate this value.



- Press the Setup button again whilst the display is lit up.
 - The display of the installed (nominal) living area battery capacity flashes.



- ▲ Default factory setting: 90 Ah
The nominal battery capacity (e.g. in the event of retrofitting a battery) can be set in the 50 Ah to 495 Ah range.



- ▶ Use the "+" or "-" buttons to adjust the setting.



- ▶ Confirm the entry by pressing "OK".



- ▲ If the installed battery capacity changes or if the > OK> button in the corresponding setup menu is pressed, the control and display panel initially sets the remaining battery capacity to 50% and places a question mark behind it until the battery is fully recharged (e.g. 36 Ah?).

If the installed battery capacity is to be displayed but not changed, the "OK"-button must **not** be pressed. Press one of the menu buttons to leave the menu (the menu is also automatically exited after 20 seconds).

- The installed (nominal) capacity of the living area battery is displayed at all times.



- ▶ Press the "Battery menu" button once you have finished.
 - The display stays lit up.
 - The remaining usable capacity of the living area battery is displayed. The system uses the current living area battery charge status to calculate this setting.

2.4.2.3 Switching the water pump on and off



- ▲ This function is only available when the relevant "Water pump" option is enabled. Only the vehicle manufacturer can enable it at a later point in time.



- ▶ Press the "Tank menu" button.
 - The display lights up.
 - The fill level of the water tank is displayed.



- ▶ Press the OK button if the display is lit up.
 - The Water pump symbol is displayed or disappears.
 - The power supply for the water pump is switched on/off.



- ▲ The "OK"-button is used to switch the current setting whilst the DT 220 C control and display panel is in this mode.

2.4.2.4 Switching the tank heating on and off



▲ This function is only available when a tank heater is installed in the vehicle.



➤ Press the "Tank menu" button.

- The display lights up.
- The fill level of the water tank is displayed.



➤ Re-press the "Tank menu" button if the display is lit up.

- The fill level of the waste water tank is displayed.



➤ Press the "OK"-button if the display is lit up.

- The "Tank heate" symbol is displayed or disappears.
- The power supply for the tank heater is switched on/off.



▲ The "OK"-button is used to switch the current setting whilst the DT 220 C control and display panel is in this mode.

2.4.2.5 Switching the tank alarm on and off



▲ The tank alarm can, for instance, be switched off when the water tank is constantly empty (e.g. city water connection).
The tank alarm can only be switched on/off for all tanks simultaneously.



➤ Press the "Tank menu" button.

- The display lights up.
- The fill level of the water tank is displayed.



➤ Press the "Setup" menu button and keep it pressed for 3 seconds.

- The display switches to the tank menu setup mode.
- The "Alarm" and "Tank" symbols are displayed. The associated "On" or "Off" setting flashes.



➤ Use the "+" and "-" buttons to adjust the setting.



➤ Confirm the entry by pressing "OK".



➤ Press the "Tank menu" button once you have finished.

2.4.2.6 Switching on/off EisEx system



- ▲ This function is only available when a Truma DuoComfort is installed in the vehicle.



- ▶ Press the "Main menu" button.
 - The display lights up.
 - The time and any other symbols are displayed.



- ▶ Press the "Setup" menu button and keep it pressed for 3 seconds.
 - The display switches to the main menu setup mode. The current setting of the EisEx system is displayed, e.g. "AUTO".



- ▶ The setting can be changed with the "+" and "-" buttons:



- "OFF": The EisEx system is switched off.
- "ON": The EisEx system is switched on.
- "AUTO": The EisEx system is switched on automatically at temperatures below 7.5 °C and switched off automatically at temperatures above 7.5 °C.



- ▶ Confirm the entry by pressing "OK". Configure other settings if required.



- ▶ Press the "Main menu" button once you have finished.
 - The display stays lit up.
 - The main menu is displayed.

2.5 Display menus

2.5.1 Main menu



- ▲ The main menu showing the time is displayed automatically 10 seconds after the last button was pressed.



- ▶ Press the "Main menu" button.
 - The display lights up.
 - The time and any other symbols are displayed.



- ▶ Repeatedly press the "Main menu" button (whilst the display is still lit).
 - The display stays lit up.
 - The following information is displayed in sequence:
 - Internal temperature (display range -40 °C ... + 60 °C)
 - External temperature (display range: -40 °C ... + 60 °C)
 - Date (day, month)



- ▶ The "+" button can also be used to move forward to the next screen. Use the "-" button to return to the previous screen.



- ▲ The "OK" button on both temperature display screens can be used to switch between "°C" for Centigrade and "°F" for Fahrenheit.

2.5.2 Battery menu



- ▲ Battery capacity information is only displayed if option "Battery capacity measurement" is enabled.



- Press the "Battery menu" button.

- The display lights up.
- The remaining usable capacity of the living area battery is displayed.



- Repeatedly press the "Battery menu" button (whilst the display is still lit).

- The display stays lit up.
- The following information is displayed in sequence:
 - Charging current for the living area battery from the Electrobloc
 - Living area battery voltage
 - Starter battery voltage
 - Solar controller charging current for the living area battery*
 - Solar controller charging current for the starter battery*



- ▲ *
The solar system functions are only available if the relevant equipment (solar controller and solar cell) is connected up to the EBL ... Electrobloc and option "Read solar current" is enabled. Only the vehicle manufacturer can enable it at a later point in time.



- The "+" button can also be used to move forward to the next screen. Use the "-" button to return to the previous screen.



- ▲ On the screen for the usable battery capacity of the living area battery, the "OK" button can be used to switch between the absolute value (in Ah) and value in %.

2.5.2.1 Battery current

The battery display works in conjunction with the Electrobloc and takes into account all types of battery charging:

- From the Electrobloc via the 230 V power supply
- From the vehicle via the alternator whilst driving
- From the solar controller (if fitted) via the solar modules
- From the fuel cell (if available)



- ▲ The starter battery is charged by the Electrobloc with max. 6A. This charge current for conservation charging is not shown on the control and display panel.

2.5.2.2 Battery voltage

Battery status The following table shows how to correctly interpret the living area battery voltage displayed. These values apply to actual operation, not offload voltage.

Battery voltage	Description
10.4 or less	<ul style="list-style-type: none"> ● Risk of total discharge ● The battery monitor immediately switches off all consumers (apart from the frost protection valve)
11V or greater	12V power supply can be switched on using the main switch
10.5V to 12V	<ul style="list-style-type: none"> ● If the voltage falls below 12V, the battery alarm is triggered ● If the voltage stays below 10.5 - 12V¹⁾ for longer than 1 minute, the battery capacity is set to "Zero". ● If the voltage remains below 10.5 - 12V¹⁾ for longer than 5 minutes, the system is switched off
12V to 13.2V	Battery in off-load status
Greater than 13.2V	Battery is being charged: Main charge
13.8V constant	Trickle charge voltage
14.3V	Final charge voltage

¹⁾ Dependent on the current drain

Off-load voltage Measuring the off-load voltage is another way of assessing the condition of the battery. Off-load voltage is the voltage of the charged battery in a passive state, with no current being supplied or drawn.

Take the measurement several hours after the last charging. In the meantime, no significant load should have been placed on the battery, meaning no current should have been drawn from it. If the off-load voltage of the battery is less than 12.0V, there is a risk of total discharge.



- ▲ Carry out checks in the mornings before 12V consumers are switched on.

The battery voltage is too low if "CHARGE" is displayed and the battery must be recharged (see also Section 2.6.1).



- ▲ After starting up the system again, the voltage of the living area battery should be tested before starting up the engine and before connecting the vehicle to the mains. If idle for a maximum period of 6 months (and if the battery was previously fully loaded), the battery voltage should be greater than 12.7V. The battery is probably faulty if the voltage is below 12V.

The following table shows the correct interpretation of the off-load voltage displayed. The values specified apply for Gel batteries.

Values for off-load voltage	Charge state of the battery
Less than 12V	Totally discharged
12.2 V	25 %
12.3 V	50 %
More than 12.8V	Full

Voltage display Starter battery

When the vehicle is moving, the voltage of the starter battery for basic vehicles fitted with a 12V starter battery is displayed marginally too low when the refrigerator is run with 12V. For basic vehicles fitted with a 24V starter battery, the voltage display is correct when the refrigerator is switched off or gas-powered, or when the engine is switched off.

On-board supply overloaded

When the 12V on-board supply is overloaded (i.e. when the battery voltage drops below 12V), switch off some of the consumers.

2.5.2.3 Battery capacity



▲ Battery capacity information is only displayed if option "Battery capacity measurement" is enabled.

The maximum usable capacity of the living area battery is displayed. This value can not be changed. The display shows the % of the nominal capacity (can be changed, see below). The (pre-set) value of 80% represents the maximum battery capacity usable in practical motorhome usage. This value can also increase to over 80%.

Maximum possible battery capacity

Query:

- Switch the system on (see Section 2.4.1).
- Press the "Battery menu" button.
- Press the "Setup" menu button and keep it pressed for 3 seconds.
 - The display switches to the battery menu setup mode.
 - Symbol "Living area battery" is displayed. The associated maximum value is displayed.



The full or flat battery status is detected by the control and display panel. The maximum capacity is recalculated after each complete discharging cycle (complete charging/ discharging cycle). The default setting can no longer be attained due to the increasing age of the battery. The condition of the living area battery can be determined from this. The battery must be checked and, if necessary, replaced when the maximum capacity is less than 50% of the nominal capacity.



- ▲ A brand new battery does not reach its full capacity until after several charge cycles.

The lower the battery temperature (and hence the greater the difference from the ideal temperature of 20° C), the greater the capacity display error.

At very low battery temperatures, the battery is no longer fully charged and the system's full or flat indicator no longer works correctly as the battery capacity becomes lower at low temperatures (see information provided by the battery manufacturer).

Resetting the battery capacity after a battery change

When a living area battery is replaced, the "Settings" menu is used to adjust the nominal capacity and to set the corresponding value of the new battery - save with "OK". This must be carried out even when the capacities of the new and old batteries are identical. This resets the control and display panel to the "Battery new value" for the max. usable capacity (80% of nominal capacity) - see also section 2.4.2.2.

The control and display panel has a real "fill level display" for the living area battery. The battery capacity display gives direct information on how much power is stored in the battery.

Example The motorhome can run for 3 days (without solar system or fuel cell) after a full charge (100%) without having to be connected up to a 230V supply. 40% battery capacity is now displayed (for example). This means:

- The battery can supply the motorhome with power for about 2 more days at most.

Other functions:

- The capacity display is automatically set to "full" when the full charge state is reached.
- A warning is generated if the battery capacity drops to approx. 15%.
- Automatic determination of the maximum attainable battery capacity (in %) for defined maximum discharging of the battery.
- Charge request if the last full charge was more than 20 days ago.
- Variable nominal capacity setting (e.g. if a battery with a greater capacity is retrofitted).



- ▲ The battery should be recharged at regular intervals. Otherwise a request is issued (see also Section 2.6.1 for "Charge" and "Date").

2.5.2.4 Solar current



- ▲ The solar current display is only available if a Schaudt LR(S)... solar charger is fitted and the "Read solar current" option is active.



Solar charging current is displayed when it rises above 200 mA. The "Sun" symbol is displayed if the sum of the solar charging current into the living area and starter batteries is greater than 0.3 A.

2.5.2.5 Battery monitor

Dynamic battery monitor if option "Battery capacity measurement" is enabled:

- The battery monitor (with dynamic voltage threshold) continually checks the living area battery. The cut-off point is "earlier" for lower discharge currents than for larger currents. This provides improved total discharge protection. Monitoring is also performed in the switched-off state. A warning is displayed if it drops below 11.8 V (depending on the current being drawn) - see Section 2.6 "Alarms".
- If the voltage of the living area battery sinks further, falling below 10.5V, the battery monitor immediately switches off all 12V consumers. The control and display panel also switches itself off. Only the frost protection valve continues to be powered (so it stays closed).

Prior to switch-off, all switch states are saved and then restored on switch-on. The remaining battery capacity is set to 0%.

Static battery monitor if option "Battery capacity measurement" is disabled:

- The battery monitor alarm is always displayed below 10.8V.
- The cut-off threshold is fixed at 10.5V.

2.5.3 Tank menu



➤ Press the "Tank menu" button.

- The display lights up.
- The fill level of the water tank is displayed.



➤ Repeatedly press the "Tank menu" button (whilst the display is still lit).

- The display stays lit up.
- The following information is displayed in sequence:
 - Fill level of the waste water tank
 - Fill level of the extra tank*



* The extra tank fill level display is only available if the relevant fitting (water tank 2, waste water tank 2 or sewage tank) is available and "Extra tank 2 - waste water", "Extra tank 2 - sewage" or "Extra tank 2 - water" is active. Only the vehicle manufacturer can enable it at a later point in time.



➤ The "+" button can also be used to move forward to the next screen. Use the "-" button to return to the previous screen.



Tank monitor

The tank monitor automatically checks the water and waste water fill levels once a minute or when changing to the tank menu.

An alarm is triggered when the water tank is empty or the waste water tank is full. Warnings are displayed on the screen (see Section 2.6 "Alarms").



▲ Monitoring does not take place if the 12V power supply is switched off and whilst the vehicle is moving. This prevents false tank alarms from being generated by the liquid slopping around inside the tanks.

2.6 Troubleshooting and remedies

2.6.1 Alarms



A flashing warning triangle in the main menu denotes an alarm. When an alarm is set, a flashing symbol is displayed in the relevant function area in the main menu and the display is also illuminated for 20 seconds. More detailed information on alarms is displayed in the battery and tank menus. The relevant symbols are also displayed simultaneously if several alarms are set at the same time.



▲ CAUTION!

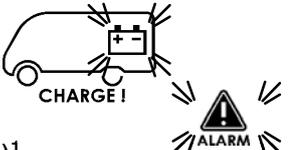
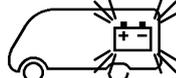
Extended steps can be damaged or cause injury to persons when the vehicle is moving. Do not rely solely on the acoustic warning signal. Always ensure that the step has been retracted before driving off.

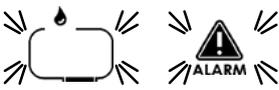


▲ CAUTION!

The living area battery is damaged by a total discharge so :

- Prevent low battery charge (indicated by low voltage).
- Carry out regular checks of the battery capacity (see Section 2.5.2.3 for preferred method, only when option "Battery capacity measurement" is enabled).
- Check the voltage regularly (see Section 2.5.2.2 for alternative).

Alarm	Possible cause	Remedy
) ¹ (alarm is also displayed when 12V supply is switched off)	Battery voltage is too low  The display panel can only be switched on if the battery voltage is greater than 11V, otherwise the living area battery voltage is displayed after an attempt is made to switch on.	The system automatically shuts down after approx. 15 minutes. Connect the vehicle to the 230V power supply.
Main menu:) ¹  Battery menu: CHARGE! with battery capacity rating	Battery flat (remaining capacity is less than 15%).	Recharge the battery.
Main menu:) ¹  Battery menu:  DEFECT!	Full living area battery capacity is less than 50% of the default nominal capacity setting. Battery has reached the end of its working life.	Replace battery.

Alarm	Possible cause	Remedy
Battery menu:) ¹ CHARGE! and 	Unknown battery capacity: Battery capacity is unknown (e.g. after starting the system or having changed the battery).	Use the 230V power supply to fully charge the battery. This will provide a defined charge status.  The display is illuminated for 20 seconds after the charging process has finished and when the 230V power supply has been switched off. Both displays are then cleared.
Battery menu:) ¹ CHARGE! and DATE	Time-dependent charging request.	Use the 230V power supply to charge the battery.
Tank menu: 	With engine stopped: Water tank sensor fault.	Clean the sensors and check as necessary.
Main menu:) ² 	Battery voltage too high/low	Determine from the battery menu whether the voltage is too high or too low: <ul style="list-style-type: none"> ● High voltage: Check Electrobloc. ● Low voltage: Charge battery.
Main menu: 	230V power supply has failed or has been disconnected from the motor-home.	230V supply must be connected or switched on. Start engine. Acknowledge the alarm if you have deliberately disconnected it/switched it off <ul style="list-style-type: none"> ➤ Press the "OK" button. ● The symbol disappears.
Main menu: 	Water tank is empty or waste water tank is full.	See tank menu.
Tank menu: 	Water tank is empty.	Refill the water tank.
Tank menu: 	Waste water tank is full.	Empty the waste water tank.
Only when an extra tank is fitted: The relevant display appears depending on which tank is available: <ul style="list-style-type: none"> ● Water tank 2 display is the same as the water tank display ● Waste water tank 2 display is the same as the waste water tank display ● Sewage tank display is the same as the waste water tank display 		
Main temperature display menu: 	Unreliable measurement; defective sensor.	Inform customer service/dealer

Alarm	Possible cause	Remedy
Main menu: 	No date has been entered.	Enter date (see Section 2.4.2.1).
Acoustic warning (intermittent) and main menu: 	Step is extended out whilst engine is running. Operating fault (false alarm) caused by defective sensor or no D+ signal: Step is retracted whilst the engine is running.	Retract the step. Only in the event of an operating fault: <ul style="list-style-type: none"> ▶ Press the "Main menu" button. ▶ Press the "Setup" menu button and keep it pressed for 3 seconds. ● The setup mode of the main menu opens. ▶ Repeatedly press the "Setup" menu button with the engine running until the screen from where the buzzer can be switched off is displayed. ▶ Press the "-" button. ● The buzzer is on OFF. ▶ Press the "OK" button. ● The alarm signal is muted. The symbol disappears. Inform customer service/ dealer The acoustic alarm signal must be switched off after every engine start until the malfunction has been rectified.
Only with Truma DuoComfort:		
Main menu: 	Gas cylinder is empty.	Replace the empty gas cylinder with a full one.

)¹ Alarm can only be generated when option "Battery capacity measurement" is enabled.

)² Alarm due to overvoltage or undervoltage when option "Battery capacity measurement" is disabled

Emergency plug

In the event of a complete failure of the control and display panel, the Electrobloc can no longer be operated. An "Emergency plug" is provided for this situation. It is connected directly to the Electrobloc with a cable tie on the connection plug of the control and display panel.

- ▶ Carefully remove the emergency plug from the cable (e.g. cut cable ties with wire cutters).
- ▶ Disconnect both DT 220 C connection plugs on the EBL ... Electrobloc.
- ▶ Connect the emergency plug to the two free sockets on the EBL ... Electrobloc.

This switches on all supply voltages.

2.6.2 Faults

Flat vehicle fuses

The majority of power supply system faults are caused by blown fuses (refer to the instruction manual for the relevant electrobloc for information on voltage distribution and fusing).

Please contact our customer service address if you cannot rectify the fault using the following table.

If this is not possible (such as when you are abroad), you can have the control and display panel repaired at a specialist workshop. Please note that the warranty becomes void if incorrect repair work is carried out. Schaudt GmbH can not accept liability for any damages resulting from such repairs.

Fault	Possible cause	Remedy
12V supply does not function (or some areas are not powered).	12V main switch is switched off.	12V main switch must be switched on.
	Fuse blown.	See Electrobloc EBL... instruction manual. .
System can not be switched on.	Living area battery has not been charged (voltage less than 11.0V); battery monitor has switched off.	Charge the living area battery.
	Fuse blown.	See Electrobloc EBL... instruction manual. .
Living area battery is flat.	Living area battery is discharged.	Charge the living area battery immediately. The living area battery will be damaged beyond repair if it remains totally discharged for a lengthy period.
	The battery can be discharged by inactive consumers such as the frost protection valve in the heater system	Fully charge the living area battery before taking the motorhome out of service for a longer period.
The "Check mains" symbol is not displayed although 230V power supply is connected.	The mains connection is dead.	Check the mains connection (e.g. camping site).
	The power cut-out in front of the Electrobloc has tripped or is switched off.	Reset the power cut-out.

2.6.3 Check the software version (SW vers.)

The software version must be known for servicing purposes or for answering the manufacturer's questions. It can be determined as follows:



➤ Press the "Main menu" button.

- The display lights up.
- The time and any other symbols are displayed.



➤ Press the "Setup" menu button and keep it pressed for 3 seconds.

- The display switches to the main menu setup mode.



➤ Repeatedly press the "Set up" button until a letter appears in the first position.

- The software version is displayed, e.g. "U8.00".

2.7 Switching off



- ▲ 12V power supply must always be switched off when leaving the motor-home. This prevents the living area battery from discharging unnecessarily.



- ▶ Press the "12 V" button briefly.
 - The display lights up.



- ▶ Press the "12 V" button briefly once again.
 - The system has now been switched off.
 - "12V OFF" is displayed.

2.8 Closing down the system

2.8.1 Closing down for up to 6 months

- ▶ Fully charge the living area battery before closing down the system.

The living area battery is then protected against total discharge. This only applies if the battery is intact. Follow the battery manufacturer's instructions. Once shut down, the system requires approx. 4 Ah per month.

Disconnect the living area battery from the 12V on-board supply

Disconnect the living area battery from the 12V power supply if the motor-home is not used for a longer period (during the winter for example). For this, the system has a battery cut-off mechanism that isolates the living area battery from the vehicle.



- ▶ Press the "12 V" button briefly.
 - The display lights up.



- ▶ Press the "12 V" button briefly once again.
 - The system has now been switched off.
 - "12V OFF" is displayed.



- ▶ Press the "Battery menu" button and keep it pressed for 10 seconds.
 - The display lights up for 5 seconds.
 - The leisure battery symbol flashes for 3 seconds.
 - Then the display shows nothing else and the system is switched off.



- ▲ The heater system's frost protection valve opens when the living area battery is isolated from the Electrobloc by the battery isolation. The boiler and water tank empty when the frost protection valve is open. See the instruction manual for the heater system for further information.
- ▶ Follow the other instructions in the EBL ... Electrobloc instruction manual.

2.8.2 Shutdown period longer than 6 months

- Fully charge the living area battery before closing down the system.
- Disconnect the living area battery from the 12V power supply (see Section 2.8.1).
- Remove the clamps from the battery poles.
- Follow the other instructions in the EBL ... Electrobloc instruction manual.

3 Application and function

The DT 220 C control and display panel is the central operating unit for the EBL ... Electrobloc which supplies power to all of the 12V consumers in the electrical system on board the motorhome or caravan. It is usually installed in an easily accessible spot high up near the door of the motorhome or caravan.

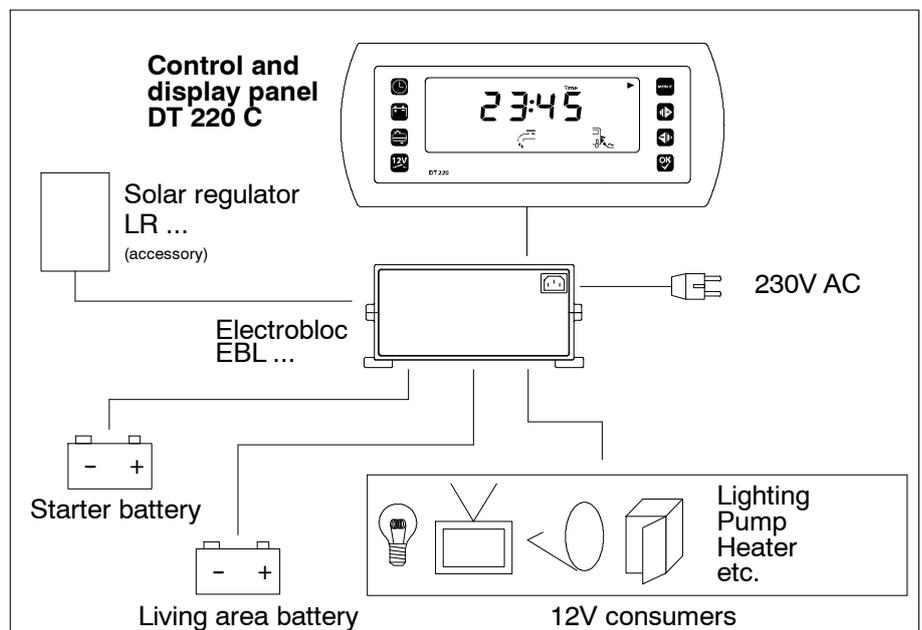


Fig. 6 On-board power supply system

Modules The control and switch panel includes:

- A background-illuminated display with bright contrast
- A control that switches on and off the 12V supply and the battery isolator
- Buttons for selecting different menus
- Buttons to configure settings

System devices An Electrobloc EBL ... must be connected for operation. This powers the 12V devices in the motorhome/caravan and charges the living area battery and starter battery.

The following connection options are available:

- Electrobloc EBL ...
- Water tank (a capacitive sensor is optional)
- Waste water tank

- Extra tank, optional (can be installed as a water tank, waste water tank or sewage tank)
- Truma Duo Comfort
- Inside and outside temperature sensors

The DT 220 C control and display panel is responsible for controlling the electrical functions in the motorhome's living area and for displaying various readings.

Display functions The following data can be displayed:

- Various voltages
- Various currents
- Leisure battery capacity
- Tank fill levels
- Temperatures
- Alarms
- Status of the various onboard units

4 Maintenance

The control and display panel requires no maintenance.

Cleaning Clean the front plate with a soft, slightly damp cloth and a mild detergent. Never use spirit, thinners or similar substances. Do not allow fluid to ingress the control and display panel.

**Tank sensors/
tank probes** Clean the sensors/probes (the sensor/probe surfaces must always be clean). Inform the customer service department at Schaudt GmbH if there is still a problem.

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Appendix

A EC Declaration of Conformity

Schaudt GmbH hereby confirms that the design of the DT 220 C control and display panel complies with the following relevant regulations:

Directive on electromagnetic compatibility

2004/104/EC dated 14.10.2004

2005/49/EC dated 25.07.05

and

2005/83/EC dated 23.11.05

The original EC Declaration of Conformity is available for reference at any time. Used as the basis for this declaration (application submitted for approval; date 05/2010):

Typgen. no.: e1*72/245*2006/28*2762* __

EC-gen. mark.: e1 032762

Manufacturer Schaudt GmbH, Elektrotechnik & Apparatebau

Address Planckstraße 8
88677 Markdorf
Germany

B Special fittings/accessories

Rod tank probes Per tank:
1 x rod-type tank probe, 1 x seal
1 x locking nut, 1 x probe cable (5 x 0.5)

Capacitance probes Alternative (per tank):
1 x capacitance tank probe for infinitely variable display of water tank fill level

Tank sensors Alternative (per tank):
5 x tank sensor, 1 x sensor cable 5 x 0.5

Mixed operation Mixed operation of tank probes and tank sensors is possible.

C Customer service

Customer service address Schaudt GmbH, Elektrotechnik & Apparatebau
Planckstraße 8
D-88677 Markdorf

tel.: +49 7544 9577-16 email: kundendienst@schaudt-gmbh.de

Office hours Mon to Thurs 08.00 – 12.00, 13.00 – 16.00
 Fri 08.00 – 12.00

Send in the device Returning a defective device:

- Always use well padded packaging.
- Determine the software version (see Section 2.6.3).
- Fill in and enclose the fault report, see Appendix D.
- Send it to the addressee (free of charge).



The switch panel must be transported in the ESD protective bag as supplied by us. The PCB of the control and switch panel contains components that can be destroyed by electrostatic discharge (ESD). Do not touch the components on the PCB. A suitable bag can be ordered from Schaudt GmbH if you do not have one available.

D Fault report

In the event of damage, please return the defective device together with the completed fault report to the manufacturer.

Device type: _____
 Item no.: _____
 Software version: _____ (see Section 2.6.3)
 Vehicle: _____ Manufacturer: _____
 Model: _____
 Own installation? Yes No
 Upgrade? Yes No

There is the following defect:
 (please select)

no Battery-charge during mains operation					
no Battery-charge during mobile operation		Tank		Voltage	Current
The following electrical consumers do not work:					
Control and switch panel does not work correctly					
Permanent fault					
Intermittent fault/loose contact					

Other remarks:

E Block diagram/connection diagram

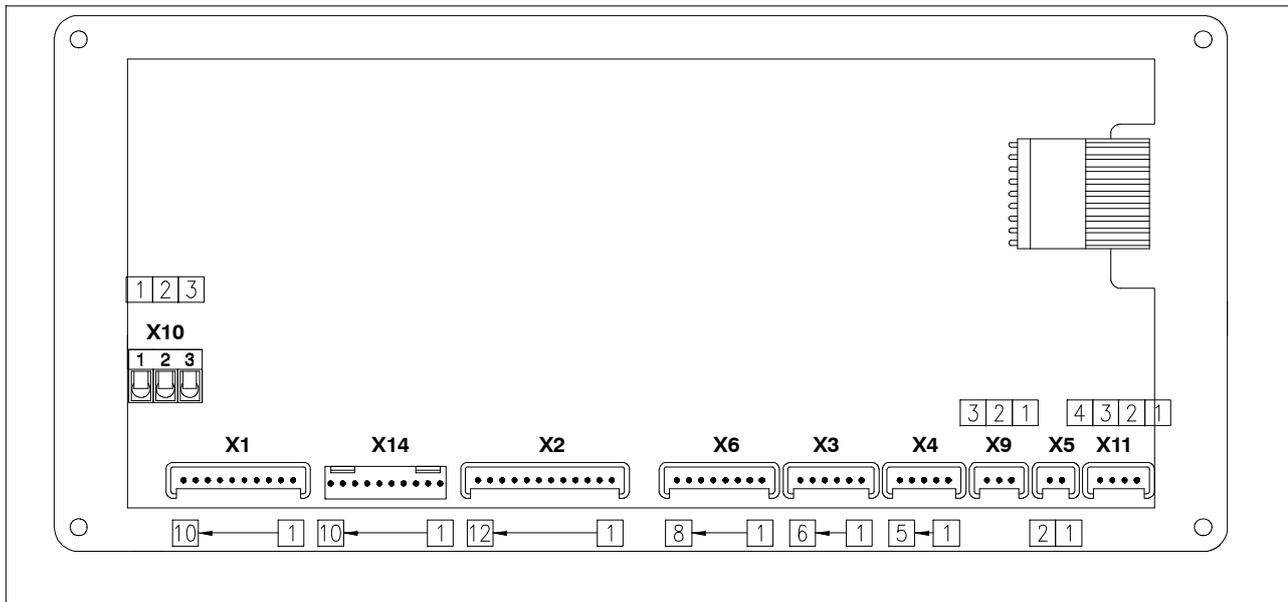


Fig. 7 Connection diagram of DT 220 C control and switch panel

<p>X1 Lumberg MSFQ 10-way</p> <ol style="list-style-type: none"> 1 D+ 2 Pump 3 Tank heater 4 Frost protection valve 5 Step 6 Solar starter battery 7 Solar living area battery 8 Gas Reserve 1 9 Gas Reserve 2 10 Eis-Ex 	<p>X6 Lumberg MSFQ 8-way</p> <ol style="list-style-type: none"> 1 full 2 3/4 3 1/2 4 1/4 5 Extra tank base 6 n.c. 7 n.c. 8 n.c.
<p>X2 Lumberg MSFQ 12-way</p> <ol style="list-style-type: none"> 1 Main switch relay 1 Off 2 Main switch relay 1 On 3 Main switch relay 2 Off 4 Main switch relay 2 On 5 Mains signal 6 Shunt consumer 7 Shunt battery 8 Negative living area battery sensor 9 Lighting negative 10 +sensor, living area battery 11 + starter battery, 12V 12 +lighting 	<p>X14 ELCO 8263 10-way</p> <ol style="list-style-type: none"> 1 n.c. 2 n.c. 3 Minus Eis-Ex 4 Minus Eis-Ex 5 n.c. 6 n.c. 7 +Eis-Ex 8 n.c. 9 Gas Reserve 1 10 Gas Reserve 2
<p>X3 Lumberg MSFQ 6-way</p> <ol style="list-style-type: none"> 1 full 2 3/4 3 1/2 4 1/4 5 Fresh water tank base 6 n.c. 	<p>X9 Lumberg MSFQ 3-way</p> <ol style="list-style-type: none"> 1 Capacity tank probe signal 2 Minus 3 +
<p>X4 Lumberg MSFQ 5-way</p> <ol style="list-style-type: none"> 1 full 2 3/4 3 1/2 4 1/4 5 Base waste water tank 	<p>X10 Plug-in/screw terminals 3-way</p> <ol style="list-style-type: none"> 1 Minus 2 Step 3 + starter battery, 24 V
<p>X5 Lumberg MSFQ 2-way</p> <ol style="list-style-type: none"> 1 Outside temperature sensor 2 Outside temperature sensor 	<p>X11 Lumberg MSFQ 4-way</p> <ol style="list-style-type: none"> 1 Internal temperature sensor (optional) 2 Internal temperature sensor (optional) 3 n.c. 4 n.c.