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# Instruction manual

## Control and switch panel DT 200

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## 1 Introduction

This instruction manual contains important information for the safe operation of the control and switch panel. It is essential to read and to follow the given safety information.

The instruction manual should always be kept in the motorhome/caravan. All safety information must be passed on to other users.



- ▲ Failure to comply with this sign may lead to the endangerment of persons.



- ▲ Failure to comply with this sign may damage the unit or the connected consumers.



- ▲ This sign indicates recommendations or special features.

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## 2 Safety information

The design of the control and switch panel is state-of-the-art and according to approved safety technology regulations. Nevertheless, if the safety information in this instruction manual is not closely followed, persons might be injured or the control and switch panel might be damaged.

Do not use the control and switch panel if it is not in technically good order and condition. The instruction manual must be followed.

Any technical faults affecting the safety of persons or of the control and switch panel must be dealt with immediately by qualified personnel.



- ▲ The electrical system of the motorhome or the caravan has to meet current DIN, VDE and ISO regulations. Manipulations of the electrical system will endanger the safety of persons and the vehicle, and are therefore prohibited.
- ▲ Never make any modifications to the control and switch panel.
- ▲ Connection work is to be carried out in tensionless condition only.
- ▲ The electrical connection may only be established by qualified personnel and must be carried out according to the Schaudt installation instructions.



- ▲ If the leisure battery is totally discharged or overcharged for a lengthy period, it will be irreparably damaged.
- ▲ Switch off the 12 V main switch when you leave the vehicle. This prevents the leisure battery from unnecessarily discharging.
- ▲ Before starting to drive, check if the step and the supports are retracted and if the roof hood is closed. If the sensors are defective the warning signal can fail.

## 3 Description and appropriate use

The job of the control and switch panel DT 200 is to control the electrical functions in the living area of the motorhome and display various values such as capacity, voltages, battery currents and water tank levels.

This system includes:

- An Electrobloc, consisting of a charger module, the 12 V distribution and the fuses for each circuit
- Tank sensors for measuring the level in the water tanks
- An outside temperature sensor

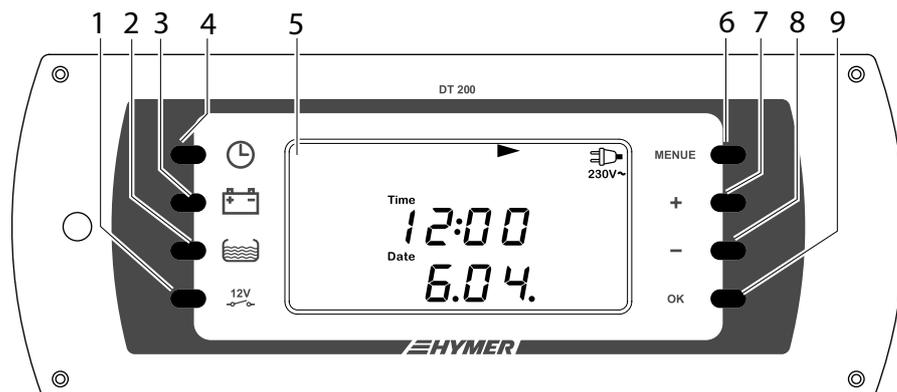


Fig. 1 Control and switch panel DT 200

- 1 12 V main switch button
- 2 Tank button
- 3 Battery button
- 4 Basic display button
- 5 Display window
- 6 "MENUE" button, setting menu
- 7 "+" button (increase indicated value)
- 8 "-" button (reduce indicated value)
- 9 "OK" button (selection/confirm settings)

**Buttons** The various displays and menus are selected and settings made using the 8 buttons on the front of the control and switch panel.

The control and switch panel must first be switched on using the 12 V main switch button, before the other buttons can be used. When the control and switch panel is switched on, the basic display is visible.

If the basic display, tank or battery button is pressed, the corresponding display appears and is illuminated. 20 seconds after pressing the button for the last time, the basic display appears. It is not illuminated.

The "MENUE" button must be pressed for more than 3 seconds to arrive at the desired setting menu.



▲ The control and switch panel can only be switched on, if the leisure battery voltage is above 11.0 V.

▲ For more information, see the section 5.7.

**Symbols on the display** Symbols, measured values and settings of the selected display are indicated in the display window.

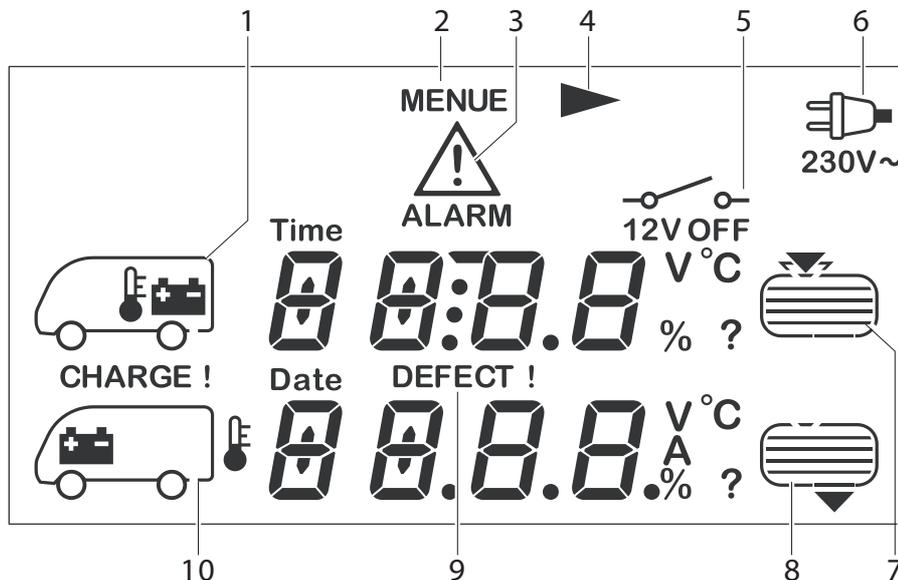


Fig. 2 Display window

- 1 leisure battery/inside temperature
- 2 Setting menu
- 3 Battery and filling level alarm
- 4 Call up next page
- 5 12 V Off display (3 seconds)
- 6 230 V power supply is connected
- 7 Water tank
- 8 Waste water tank
- 9 Fault display for battery, filling level sensors, temperature sensors
- 10 Starter battery/outside temperature

**Calling up the next page** If the arrow is visible in the display window, the next page can be called up with the basic display, tank, battery and menu buttons.



## 4 Technical data

**Operating voltage** 12 V (10 - 14.5 V), powered via Electrobloc

## 5 Operation

### 5.1 Switching the 12 V power supply for the living area on and off

#### 12 V main switch button



The 12 V main switch button switches all consumers and the control and switch panel on and off.

Exceptions:

- Floor light/step
- Frost protection valve
- Heater
- Spare 4
- Compressor refrigerator/AES refrigerator

#### Switching on

- Press the 12 V main switch button. The illuminated basic display appears and the system is ready for use. The basic display is illuminated for 20 seconds. If there is an alarm message, this is also indicated in the basic display.

#### Switching off

- Press the 12 V main switch button. The system shuts down. The text "12 V OFF" appears for 3 seconds.



- ▲ Switch off the 12 V main switch when you leave the vehicle. This prevents the leisure battery from unnecessarily discharging.

### 5.2 Using the basic display

#### Basic display button



The basic display gives information on mains indicator, step, special equipment and temperature as well as date and time.

- Press basic display button.  
The 1st page of the basic display appears.

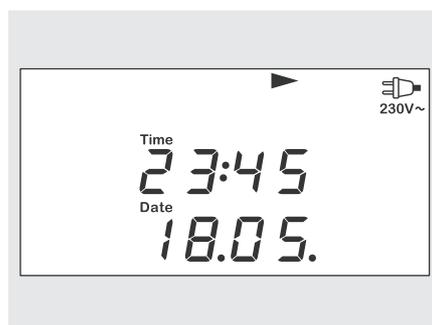


Fig. 3 Basic display



- ▲ If no button is pressed for 20 seconds, the system automatically switches back to the basic display that is not illuminated.

#### 230 V mains indicator



The 230 V mains indicator symbol is displayed, if the input of the Electrobloc is live and if the control and switch panel has been switched on using the 12 V main switch.



▲ For more information, see the instruction manual for the additional equipment.



▲ Before commencing the journey, check if the step is retracted.

### 5.2.1 Checking the temperatures

**Basic display button**



■ Press the basic display button twice briefly.

The inside and outside temperatures are indicated on the 2nd page of the basic display. The display range is between -40 °C and +60 °C.



▲ If no button is pressed for 20 seconds, the system automatically switches back to the basic display that is not illuminated.

### 5.2.2 Settings in the basic menu

Time, date and nominal battery capacity can be set and software version and parameter number displayed.

**"MENUE" button**

■ In the basic display, press the "MENUE" button for more than 3 seconds. The 1st page of the basic display appears. The adjustable values flash in the display.

- If the step alarm is emitted, it can be switched off on the 1st page (page is only visible if the warning signal is emitted).
- If the defroster unit is installed, the defroster option can be switched on and off on the next page (page is only visible if the defroster unit is installed).
- The time can be set on the next page.

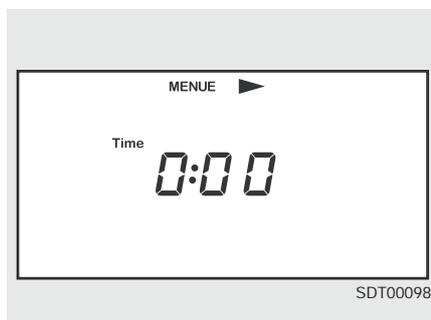


Fig. 4 Basic menu

- The date can be set on the next page.
- Software version and parameter number are displayed on the next page.

- Change the flashing value with the "+" or "-" button.
- Press "OK" button.  
The entry of the new value is confirmed, the next adjustable value begins to flash and can be changed or confirmed.



- ▲ If no button is pressed for 20 seconds, the system automatically switches back to the basic display that is not illuminated. Entries that are not confirmed with "OK" are not saved.
- ▲ Changed values are only saved if the entry was confirmed using the "OK" button.  
If one switches to another display before pressing the "OK" button, the changed values are not saved.

- Press "MENUE" button.  
The next page is displayed.
- To exit the menu, press any button or wait for 20 seconds until the display automatically switches to the basic display.

### Setting the time

- Press the "MENUE" button for more than 3 seconds.  
The basic display is displayed.
- Press the "MENUE" button several times until the "TIME" page of the basic menu is displayed. The hour display flashes.
- Set the hours with the "+" or "-" button.
- Press "OK" button.  
The hour entry is confirmed. The minute display flashes.
- Set the minutes with the "+" or "-" button.
- Press "OK" button.  
The minute entry is confirmed. The time is set.

### Setting the date

- Press the "MENUE" button several times until the "DATE" page of the basic menu is displayed. The year display flashes.
- Set the year with the "+" or "-" button.
- Press "OK" button.  
The entry of the year is confirmed. The day display flashes.
- Set the day with the "+" or "-" button.
- Press "OK" button.  
The entry of the day is confirmed. The month display flashes.
- Set the month with the "+" or "-" button.
- Press "OK" button.  
The entry of the month is confirmed.

**Software version and parameter number**



- Press the "MENUE" button several times until the software version and the four-digit parameter number are displayed. These settings cannot be changed.
- ▲ Software version and parameter number are required for queries at the dealer or customer service. Always have these settings ready for queries.
- ▲ For the correct functionality, the parameter number must be modified if special equipment is installed at a later date. You can obtain further information at your dealer.
- To exit the menu, press any button or wait for 20 seconds until the display automatically switches to the basic display.
- Press "OK" button.

**5.3 Battery display**

The battery display indicates the load current of the leisure battery as well as the battery voltage of leisure battery and starter battery.

**5.3.1 Checking battery voltage and load current**

**Battery button**



- Press battery button.  
Battery voltage and charge current of the leisure battery appear on the 1st page of the battery display.

**Battery button**



- Press battery button twice briefly.  
The voltages of leisure battery and starter battery appear on the 2nd page of the battery display.



Voltage of the leisure battery



Voltage of the starter battery

The off-load voltage of the starter battery is only displayed if the engine is switched off and if no consumers are using the starter battery.



- ▲ If no button is pressed for 20 seconds, the system automatically switches back to the basic display that is not illuminated. Entries that are not confirmed are not saved.
- ▲ In mobile operation, the voltage of the starter battery is indicated slightly too low, if the refrigerator is in use with 12 V. If the refrigerator is switched off or operated using gas, the voltage display of the starter battery is correct. In stationary operation, the voltage of the starter battery is also displayed correctly.

The following table will help you correctly interpret the leisure battery voltages displayed by the control and switch panel. These values apply to actual operation, not off-load voltage and for lead gel batteries only.

Battery voltage	Description
10.5 or less	<ul style="list-style-type: none"> <li>• Risk of total discharge</li> <li>• The battery monitor switches off all consumers (apart from the frost protection valve)</li> </ul>
11 V or less	The alarm symbol appears in the display window.
11 V or more	The 12V power supply can be switched on using the main switch
12 V to 13.2 V	Battery off load
More than 13.2 V	Battery is being charged: Main charge
13.8 V constant	Trickle charge voltage
14.3 V	Final charging voltage (equalising charge) <ul style="list-style-type: none"> <li>• 1 h for lead acid battery</li> <li>• 8 h for lead gel battery</li> </ul>

1) depending on the current load



- ▲ If the leisure battery is totally discharged or overcharged for a lengthy period, it will be irreparably damaged.
- ▲ If the 12 V power supply is overloaded, switch off some of the consumers.
- ▲ Inactive consumers can gradually discharge the battery.

### Checking the condition of the battery

Measuring the off-load voltage is a simple and reliable method 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, which means no current should have been drawn from it. If the off-load voltage of the battery is less than 12.0 V, there is a risk of total discharge.

The following table will help you interpret the off-load voltage displayed. These values apply for lead gel batteries.

Values for off-load voltage	Charging condition of the battery
12 V	0 %
12.2 V	25 %
12.3 V	50 %
More than 12.8 V	Full

## 5.4 Battery monitor

### Automatic disconnecter

The battery monitor compares the leisure battery voltage to a reference voltage. Monitoring is continued, even when the control and switch panel is switched off.

Depending on the current drain an alarm message is displayed or the system is shut down sooner or later. This improves protection against total discharge of the battery.

As soon as the battery voltage falls below 11 V, an alarm message appears in the display window. As soon as the battery voltage falls below 10.5 V, all 12 V consumers are immediately switched off. Only the frost protection valve is still powered. The control and switch panel also shuts down. Before shutting down, all switching conditions and the battery capacity value are saved. The automatic disconnecter is not triggered by short-term low voltage, caused by high current when switching on consumers.

If an overload or an insufficiently charged leisure battery causes the voltage to fall so low that the automatic disconnecter is triggered, any consumers which are not essential should be switched off.

You may be able to switch on the 12 V power supply for a short time.

- Press the 12 V main switch button.  
The 12 V power supply is switched on.

If the battery voltage remains below 11.0 V, you cannot switch on the 12 V power supply. The battery symbol and "CHARGE !" flash. The battery voltage is also displayed.

Fully charge up the leisure battery as soon as possible.



- ▲ The saved switching conditions and the battery capacity value are restored on switching the unit on.
- ▲ For more information, see the section 5.7 and the table "Battery voltage".

## 5.5 Tank display

The tank level can be indicated and the tank alarm switched on and off in the tank display.

### 5.5.1 Checking the tank level

Tank button

- Press tank button.

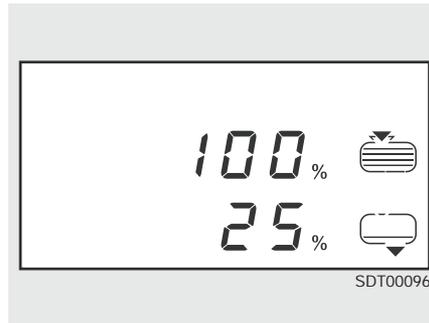


Fig. 5 Tank display

The tank level is indicated as a numerical value in steps of 0 %, 25 %, 50 %, 75 % and 100 % and also as graphical symbol with 1 to 4 filling level marks.

Filling level of the water tank



Filling level of the waste water tank



The following table will help you correctly interpret the tank levels indicated by the symbols.

Symbol on display	Tank level
	Full or almost full
	Roughly 3/4 full
	Roughly 1/2 full
	Roughly 1/4 full
	Empty or almost empty

### 5.5.2 Settings in the tank menu

**Tank alarm** The tank alarm can be switched on and off in the tank menu.

- In the tank display, press the "MENUE" button for more than 3 seconds. The tank menu is displayed.
- Switch the tank alarm on or off with the "+" or "-" button. When the tank alarm is switched on, "ON" appears in the display window. When the tank alarm is switched off, "OFF" appears.
- Press "OK" button. The entry is confirmed.



- ▲ If no button is pressed for 20 seconds, the system automatically switches back to the basic display that is not illuminated.
- ▲ For more information, see the section 5.7.

### 5.6 Tank monitor

The tank monitor checks the water tank and waste water tank levels. This check is carried out every minute or on switching to the tank display. As soon as the water tank is empty or the waste water tank is full, the tank alarm is triggered.



The water tank is not monitored if the 12 V power supply of the consumers is switched off.



- ▲ For more information, see the section 5.7.

## 5.7 Alarm messages



Alarm messages are indicated in the basic display by a flashing warning triangle and the corresponding symbol. In addition, the display window lights up for 20 seconds. More information on the alarm message is displayed in the battery menu and tank menu.

If there are multiple alarm messages, they are indicated simultaneously with the corresponding symbols.

### 5.7.1 Leisure battery alarm



The battery alarm is triggered if the leisure battery is nearly totally discharged.



- ▲ If the leisure battery is totally discharged for a lengthy period, it will be irreparably damaged.

#### Total discharge

If the leisure battery voltage falls below the critical limit of 11 V, the warning triangle and the word "ALARM" flash in the basic display.

The leisure battery symbol and the charge request "CHARGE !" also flash.

- Switch off all consumers.
- Recharge the leisure battery by driving or by connecting it to the 230 V mains.



- ▲ If the battery is empty, the control and switch panel cannot be switched on. As soon as the 12 V main switch button is pressed, the charge request "CHARGE !" and the battery symbol flash. The motorhome symbol and the battery voltage are also indicated.
- ▲ For more information see section 5.4, the table "Battery charge" as well as the instruction manual for the Electrobloc.

### 5.7.2 Tank alarm



If the water tank level falls below 12 % or if the waste water tank level exceeds 87 %, the warning triangle, the word "ALARM" and the tank symbol flash in the basic display.



The tank symbol and the tank level percentage indicator also flash in the tank display.

- Fill up water tank or drain waste water tank.



- ▲ If the water tank remains empty due to an external water supply, the tank alarm can be switched off.
- ▲ For more information, see the section 5.5.

### 5.7.3 Tank sensor fault message

If there is a malfunction of the water or waste water sensors, a "?" flashes in the tank display.

- Clean the tank sensors of the respective tank.

If the fault message is still displayed after cleaning, customer service must be informed.

### 5.7.4 Temperature fault message

If there is a malfunction of the temperature sensors or if a temperature is not within the range of between -40 °C and +60 °C, a "?" is indicated in the temperature display.

### 5.7.5 Date message

**DATE** If no date has been entered in the basic menu, the word "DATE" flashes. The date display is required for the capacity display to work properly.

## 6 Starting up

The control and switch panel DT 200 can only be started up with the Electrobloc EBL 100-2 and the accessories for measuring the water tank levels.

### Starting up the system

- Set the battery cut-off switch on the Electrobloc to "Batterie Ein" (battery on). Follow the instruction manual of the Electrobloc.
- Press the 12 V main switch on the control and switch panel.



- ▲ After switching on the battery cut-off switch or after changing batteries: Switch on the 12 V main switch on the control and switch panel briefly to start up the consumers.

### After shutting down

If the battery is disconnected from the system (battery cut-off switch is turned off on the Electrobloc or a battery pole is disconnected): Check the off-load voltage of the battery immediately after start up. Do **not** connect the vehicle to the 230 V mains, do **not** start the engine and do **not** switch on any consumers until the off-load voltage of the battery has been checked.

After an off-load time of maximum 6 months, the battery voltage should be above 12.7 V if the battery was fully charged before shut down. If voltage is below 12.0 V then the battery might be defective and need to be replaced.



- ▲ Connection work is to be carried out in tensionless condition only.

## 7 Maintenance

The control and switch panel requires no maintenance.

### Cleaning

Clean the front plate of the control and switch panel with a soft, slightly damp cloth and a mild detergent.

Never use spirit, thinners or similar substances.

Do not allow any fluid to penetrate the inside of the control and switch panel.

## 8 Shutting down



- ▲ Before using the battery cut-off switch on the Elektrobloc or before disconnecting the leisure battery from the 12 V power supply, the 12 V power supply must be switched off with the 12 V main switch on the control and switch panel!

Switch off the system if you are not going to use the motorhome for a lengthy period (for example during the winter).

### Shutting down the system for up to 6 months

Fully charge up the leisure battery before shutting down the system. The leisure battery is then protected against total discharge. This applies only if the battery is intact. Follow the instructions of the battery manufacturer.

Carry out the following work steps in the correct order:

1. Switch off the 12 V main switch on the control and switch panel.
2. Turn off the battery cut-off switch on the Elektrobloc.

### Shutting down the system for more than 6 months

Fully charge up the leisure battery and remove the connecting terminals on the battery poles. Carry out the following work steps in the sequence mentioned below. The battery alarm is then no longer active.

### Disconnecting the leisure battery from the 12 V power supply

Carry out the following work steps in the correct order:

1. Switch off the 12 V main switch on the control and switch panel.
2. Turn off the battery cut-off switch on the Elektrobloc.
3. Remove the clamps from the battery poles.



- ▲ For other shutdown tasks, see the instruction manual for the Elektrobloc.



**10 Connection diagram - for specialist workshop only**

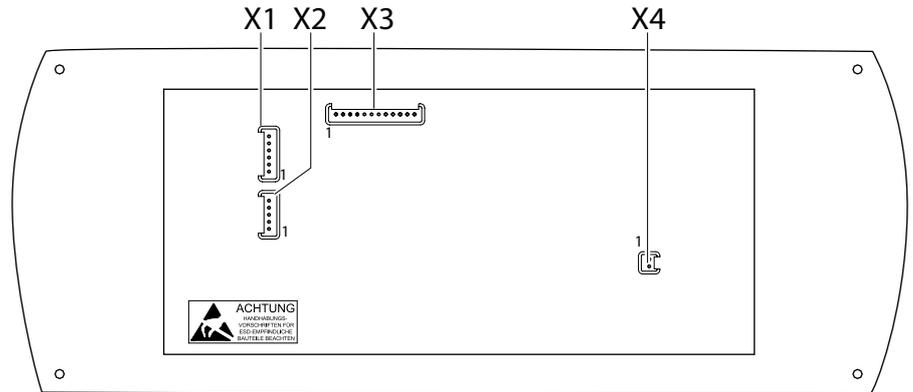


Fig. 6 Connection diagram for control and switch panel DT 200

**Plug assignment for the circuit plan**

<p><b>X1 Lumberg MSFQ/0 6 x to water tank</b></p> <ol style="list-style-type: none"> <li>1. Full</li> <li>2. 3/4</li> <li>3. 1/2</li> <li>4. 1/4</li> <li>5. Base water tank</li> <li>6. Not assigned</li> </ol>	<p><b>X2 Lumberg MSFQ/0 5 x to waste water tank</b></p> <ol style="list-style-type: none"> <li>1. Full</li> <li>2. 3/4</li> <li>3. 1/2</li> <li>4. 1/4</li> <li>5. Base waste water tank</li> </ol>
<p><b>X3 Lumberg MSFQ/0 12 x to Electrobloc BL 3</b></p> <ol style="list-style-type: none"> <li>1. Main switch relay 1 OFF</li> <li>2. Main switch relay 1 ON</li> <li>3. Main switch relay 2 OFF</li> <li>4. Main switch relay 2 ON</li> <li>5. Mains indicator</li> <li>6. Shunt consumer</li> <li>7. Shunt battery</li> <li>8. Negative leisure battery sensor</li> <li>9. Negative lighting</li> <li>10. + leisure battery sensor</li> <li>11. + Starter battery</li> <li>12. + Lighting</li> </ol>	<p><b>X4 Lumberg MSFQ 2 x (3114) to outside temperature sensor</b></p> <ol style="list-style-type: none"> <li>1. Connection 1</li> <li>2. Connection 2</li> </ol>

## **11 Customer service**

**Customer service address** Schaudt GmbH, Elektrotechnik & Apparatebau  
Daimlerstraße 5  
88677 Markdorf  
Germany  
Phone: +49 7544 9577-16  
Email: kundendienst@schaudt-gmbh.de  
Opening hours Mon to Thu 8 to 12 a.m., 1 to 4 p.m.  
Fri 8 to 12 a.m.

**Sending in the device** Returning a defective device:

- Use ESD protective bag and well-padded packaging.
- If there is no ESD protective bag, ask Schaudt GmbH for a suitable protective bag.
- Fill in and enclose the fault report, see section 12.
- Send it to the addressee delivered free.

**Disposal instruction** When the product service life is over, dispose of the device in accordance with the applicable regulations.

## 12 Fault report

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

Device type: DT 200

Type no.:  
(please enter)

There is the following defect:  
(please tick)

The following electrical consumers do not work:						
Malfunction of control and switch panel		Tank		Voltage/current		Which display?

Constant fault	
Temporary fault/loose contact	

Other remarks:

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