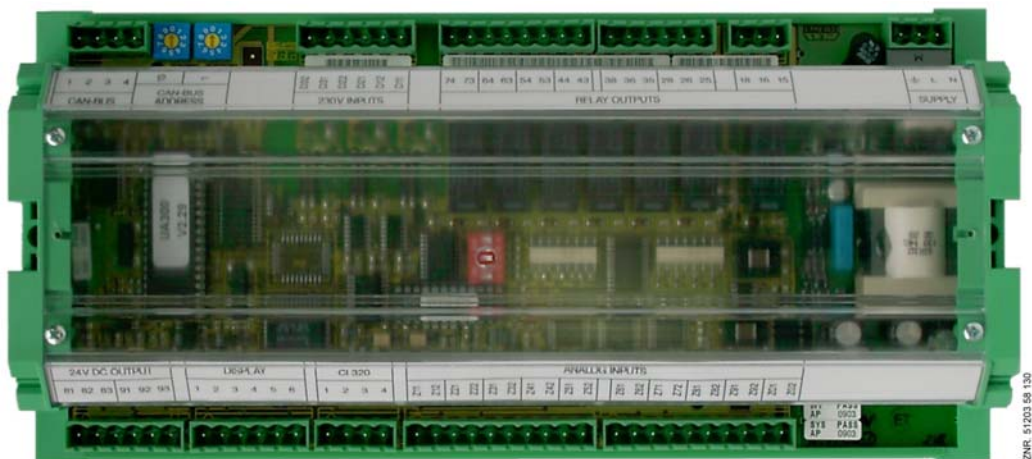


## Operating instruction

### UA 300 L Case Controller

Temperature Data Logging Controller

Version V1.14



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Information on safety and connection instructions are described in detail in chapter 1 "Industrial safety notes".

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Notice:

## Conventions

### Explanation of 'General Instructions'

A general instruction is composed of two elements:

1. A pictogram of a hand at the side of the page as well as
2. The actual text:

For example:



Further information on the device's degree of protection is contained in the chapter "Technical Data".

### Explanation of 'Safety Instructions and Hazard Warnings'

Safety instructions or hazard warnings are composed of four elements:

1. The pictogram (warning sign / symbol) at the edge of the page.
2. A short, concise description of the danger.
3. A description of the possible consequences.
4. A catalogue with prevention measures.

For example:



**Warning - hazardous electrical voltage!**  
**Danger of electric shock! BEFORE and AFTER** connection it must be checked that the 230 V AC relay outputs are **off load!**

On the following pages the warning signs and symbols employed for the safety instructions and hazard warnings in this documentation are described in more detail.

---

## Warning Signs and Symbols Employed

Explanation of the warning signs and symbols employed for the safety instructions and hazard warnings in this documentation:

- **Attention symbol - general hazard warning**



- 1. Hazard warning**

- The attention symbol indicates all safety instructions in this operating and service manual, which, if not observed, could result in danger to life and limb. Carefully comply with the work safety instructions and proceed with special caution in these cases.

- 2. Attention**

- The attention symbol highlights guidelines and regulations, instructions and correct working procedures that must be carefully observed in order to prevent damage to or destruction of LDS components or a malfunctioning (for example to avoid damage to goods).

Failure to observe the attention symbol can result in personal injury (in extreme cases serious injuries or death) and/or material damage!

- **Voltage symbol - warns of hazardous electrical voltage**



This work safety symbol warns of danger from a hazardous electrical voltage, with potential consequences such as serious injury or death.

- **ESD symbol - warns of electrostatic sensitive components and assemblies**



This symbol indicates electrostatic sensitive components and assemblies, for details see chapter 1.5.

- **Note symbol**



The note symbol highlights practice tips and other useful information contained in this operating and service manual.

- **Battery disposal symbol**



Never dispose of this product with other household waste. Please inform yourself of the local regulations for the separate disposal of electrical and electronic products. The correct disposal of your old equipment will protect people and the environment from possible negative effects. You will find further information in the chapter "Decommissioning and Disposal".



# 1 Safety instructions



The safety regulations, codes and notes contained in this section must definitely be observed and complied with at all times. During repairs on the entire LDS system, the accident prevention regulations and general safety instructions must be observed. Important information (safety instructions and hazard warnings) are indicated by corresponding symbols (see page 1 of the chapter "Conventions").

Follow these instructions in order to prevent accidents and danger to life and limb, as well as damage to the LDS system.



## Warning - hazardous electrical voltage!

**Danger of electric shock!** Beware of external voltage at the digital inputs and outputs!

All device connections/plugs are **only** to be plugged in, unplugged and/or wired when **off load**.

- This manual is an integral part of the equipment. It **must** be kept in the proximity of the equipment and must be stored for future use, so that it can be referred to when necessary. To avoid operating errors, the operation instructions must **always** be kept available for operating and maintenance staff, see Chapter 1.2.
- For safety reasons, the equipment must not be used for any application other than described in the manual i.e. only for the intended use, see Chapter 1.3.
- Before using the equipment, always check that its limits are suitable for the intended application.
- The equipment must be installed in an electrically shielded area within the refrigerated display case or control cabinet.
- Check that the electric power supply is correct for the equipment before connecting it to power.
- If required, a reverse voltage protection must be installed by the customer, e.g. by means of a coding of the plug.
- Specified ambient conditions (e.g. humidity and temperature limits) must be observed and complied with in order to avoid malfunctioning (see Section "Specifications").
- Check correct wiring of the connections before switching on power to the equipment.
- Never operate the equipment without its casing. Before opening the casing the equipment must be switched to zero potential.
- Note and observe maximum load on relay contacts (see Section "Specifications").
- Contact the supplier in any malfunction or in case of doubt.
- Note that all leads running to and from the controller- especially those of the CAN bus - must be shielded and installed sufficiently clear of other leads carrying live power. Doing so will avoid faulty measurements and will protect the equipment from external interference via the analog inputs.  
Parallel connection of RC elements is recommended for applications in a critical environment.



1. According to experience, error message transmission is not yet fully functional during commissioning (no telephone line laid etc.) In such cases it is urgently recommended to monitor the controller via the CAN bus using a store computer or an operator terminal AL 300, and enable error message transmission e.g. using a GSM modem via a mobile telephone network. In stand alone operation, or as an alternative to monitoring with the store computer/ operator terminal, an alarm contact on the controller must be used in order to realise error message transmission via a telephone network.

2. In the interests of fire prevention, allowance should be made at the time of planning the system for a suitable shutdown device designed to operate in the event of excessive temperature on the defrost heater (high-temperature cutout).



For further information on the CAN bus, see the manual "Basic and General Safety and Connection Instructions".



Work on electrical equipment may **only be undertaken by authorized and duly trained personnel** (as defined by DIN/VDE 0105 and IEC364) with full observance of the currently valid regulations contained in the following:

- VDE Regulations
- Local safety codes
- Intended use                      see chapter 1.3
- VBG4 - Five Safety Rules        see chapter 1.4
- ESD precautions and rules      see chapter 1.5.
- Operating instructions

## 1.1 Disclaimer in the event of non-compliance

These operating instructions contain information on the commissioning, function, operation and maintenance of the controls and of the associated components.



**Observance** of these operating instructions is a prerequisite for safe and trouble-free operation.

## 1.2 Personnel requirements, requirements on staff

Special skills are required for project planning, programming, assembly, commissioning and maintenance work. This work may be performed by qualified and specially trained staff.

The staff involved in installation, commissioning and maintenance must have received the special training needed for them to work on the unit and on the automation system.

The project planning and programming staff must be familiar with the safety concepts involved in automation technology.

Expertise is a requirement for any work on electrical systems. Work on electrical installations may only be performed by trained electrical specialists (or may only be performed when directed or supervised by them). The applicable regulations (e.g. DIN EN 60204, EN 50178, BGV A2, and DIN VDE 0100/0113) must be followed.

The operating staff who deal with the unit/machine and the controls must be correspondingly trained and familiar with the operating instructions.

### 1.3 Intended use

This control system may only be used for the purpose for which it is intended:

The UA 300 L control system has been designed for use as a data logging controller in commercial and industrial refrigeration systems with the intended functional scope as described in these operating instructions, and it is to be used under the environmental conditions in these instructions.

Follow the safety instructions, as well as the instructions on installation, commissioning, operation and maintenance. Only THEN should you start commissioning or operating the machine/system.

**The safety and function of the machine/unit is only assured in the use for which it has been intended.**

**Never use the machine/unit, its components, assemblies or parts of it for a different purpose.**

**The installation may be only operated for the first time when the entire unit has been shown to conform to the EC Directives.**

### 1.4 VBG4 - Five safety rules

The following rules must be strictly observed:

1. **Disconnect electric power:** Disconnect power at all connections of the entire installation on which work is to be carried out.



**Warning - hazardous electrical voltage!**

Beware of possible external power supplies! **BEFORE and AFTER** connection it must be checked that the controller is **off load!** All device connections/plugs are only to be plugged in, unplugged and/or wired when off load.

2. **Secure against reconnection of power:** Tag the disconnected equipment with the following information:

- What has been disconnected from power
- Why it has been disconnected
- Name of person who disconnected power
- Use a suitable lock-out (e.g. padlock) to prevent reconnection of power.

3. **Make sure that power is off (authorized and duly trained personnel only):**

- Check with voltmeter immediately before use.
- Check that power is off on all connections at the disconnection point.
- Check that power is off on all connections at the place of work.

4. **Ground and short circuit:** Ground and then short circuit all electrical parts at the place of work.

5. **Cover or bar off adjacent power-carrying parts:** Any equipment carrying power adjacent to the work area must be covered by suitable means (e.g. insulating cloths or panels).

## 1.5 Electrostatic sensitive devices (ESDs)



Electronic components and assemblies (e.g. printed circuit boards) are vulnerable to electrostatic discharge. Regulations for handling and working with electrostatic sensitive devices must definitely be observed and complied with, see also section 1.5.1!

All electrostatic sensitive devices (ESDs) are identified by the warning sign illustrated. Electrostatic discharge is caused by friction of insulating materials (e.g. floor coverings, synthetic fiber clothing, etc.).

Even slight charges can cause components to be damaged or destroyed. Damage cannot always be ascertained directly and it may take time for the component to actually fail in operation.

### 1.5.1 ESD - Rules for handling and working

Transport and store ESDs only in the protective packaging provided.

**Avoid materials** that may produce electrostatic discharge, for example

- Plastic containers and table tops
- Synthetic fiber clothing
- Plastic-soled shoes
- Plastic file covers
- Styrofoam packaging
- Computer monitors, etc.

**Preferably wear the following:**

- Cotton work clothes
- ESD shoes with conductive soles or leather soles

**Use the following:**

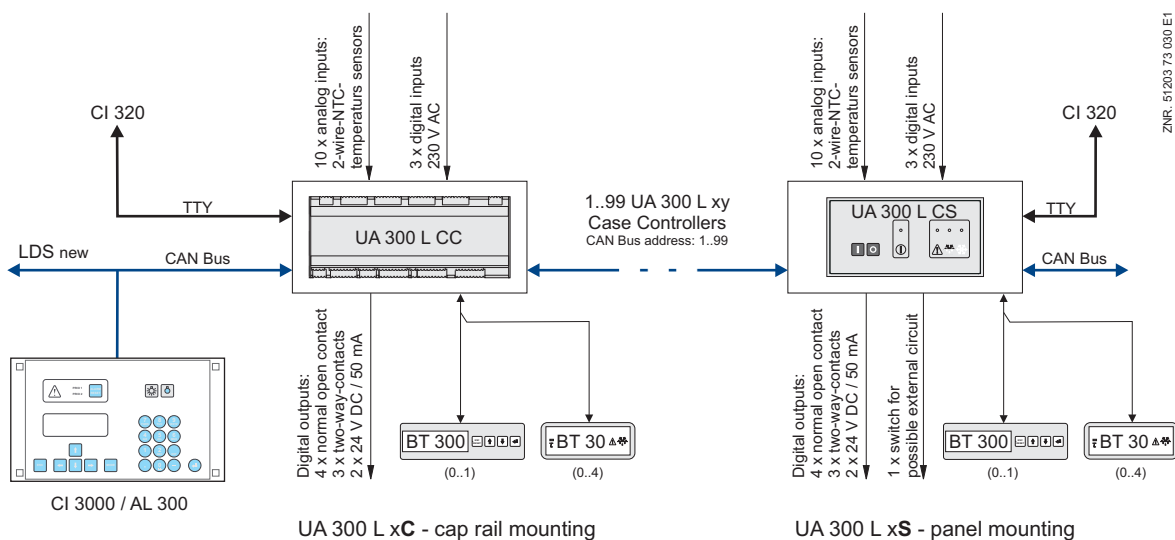
- Conductive flooring
- ESD workstations equipped with suitable tools (grounded soldering guns, antistatic wrist straps, etc.)
- Conductive ESD bags, conductive plastic containers, IC tubes or cartons lined with conductive foam
- Containers and worktops made of wood, metal or conductive plastics or paper bags

## 1.6 Abbreviations used

DIN	Deutsches Institut für Normung e. V.
EGB	Elektrostatisch Gefährdete Bauelemente oder Baugruppen
ESD	Electro-static discharge (Electro Sensitive Devices)
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e.V.
IEC	International Electric Committee
VBG	Vorschrift der Berufsgenossenschaft

## 2 System Design of UA 300 L

The UA 300 L Case Controller is a component of the new LDS System. It is based on the hardware of the UA 300 Controller and has been designed for application as a temperature recording controller. For the first five temperature sensors it provides the option of controlling and defrosting, enabling a total of five refrigeration points to be controlled independently. The controller is a package unit without optional expansion modules. A BT 300x Operator Interface and one to four BT 30 Temperature Displays can be connected to the controller when required. Electrical connections are described in Section 5 – Pin and Terminal Assignments of UA 300 L.



### Interfaces:

- CAN-Bus:** Communication within the LDS System, UA 300 L Cx/ Ax only
- Display:** Connection for BT 300x Operator Interface and maximum 4 BT 30 Temperature Displays
- TTY:** Communication with LDSWin PC software (112 days archive)

### Digital inputs/outputs:

- 3 x digital inputs 230 V, floating
- 7 x relay outputs 230 V / 6 A / (4 N.O., 3 changeover)
- 2 x transistor outputs 24 V DC / 50 mA
- 1 x universal switching contact to control external devices (UA 300 L xS only)

### Analog inputs/outputs:

- 10 x analog inputs Connection for two-wire NTC temperature sensors

### Real-time clock:

- Battery-backed (lithium cell), UA 300 L Tx/ Ax only (stand-alone operation)

Notice:

## 3 Application of UA 300 L

### 3.1 Versions

The UA 300 L Case Controller is produced in different versions varying for networked or stand-alone operation and mounting location:

- UA 300 L CC
- UA 300 L CS
- UA 300 L TC
- UA 300 L TS
- UA 300 L AC
- UA 300 L AS

For control of chiller and freezer coldrooms the UA 300 L CS/TS/AS is designed to install in a casing in the control panel or in the UA 300 L CC/TC/AC cap rail casing on the mounting plate. A digital output (24 V DC / 50 mA) is provided on the controller to connect an external signalling device.

#### Integration in CAN bus

Type UA 300 L CC / CS / AC / AS controllers are designed to be integrated in the CAN bus of the new LDS System. The suffix CC stands for "CAN in Cabinet/DIN rail mounting" (CAN bus connection, controller installs in display case, cap rail mounting). The suffix CS stands for "CAN in Switchbox" (CAN bus connection, controller installs in system control panel).



The UA 300 L does not allow disabling CAN refrigeration points by the compressor pack controller.

#### Stand-alone operation

Type UA 300 L TC / TS / AC / AS controllers are designed for stand-alone operation independent of the LDS System, meaning that the case or coldroom controller works on its own and is not connected to the CAN bus. The suffix TC stands for "Timer in Cabinet/DIN rail mounting" (internal real-time clock, controller installs in display case, cap rail mounting). The suffix TS stands for "Timer in Switchbox" (internal real-time clock, controller installs in control panel). Type UA 300 L TC / TS / AC / AS controllers have an internal battery-backed real-time clock and internal data recording memory (112 days capacity). The clock continues running in any electric power failure.

#### All-in-one

The controllers UA 300 L AC/ AS have been developed for integration in the CAN bus and for stand-alone operation. The suffix AC stands for All in Cabinet (controller installs in display case, DIN rail mounting), the suffix AS stands for All in Switchbox (controller installs in system control panel).

### 3.1.1 Controller type UA 300 L

UA 300 L Case Controller:

Controller type	Application
UA 300 L	Temperature Data Logging Controller for maximum 10 temperature sensors (with the option of on-off control/defrosting of five independent refrigeration points for the first five sensors).

Controller type UA 300 L is selected by DIP Switch S3 located in the middle of the circuit board (UA 300 xC) or on the rear of the controller (UA 300 xS). (See Section 4.2.2 Setting Controller Type and Master/Slave Mode.)

Selection of controller type UA 300 L defines the controller properties and basic controller settings. The UA 300 L Case Controller can be operated by:

- Host computer via modem connected to CI 3000 Store Computer.
- AL 300 Operator Terminal.
- CI 3000 Store Computer.
- Local BT 300 x Operator Interface connected to the controller.

### 3.1.2 Version update



*Replacement of the EPROM may only be carried out by trained personnel or at the manufacturer's works. Improper EPROM replacement can result in damage to the controller and impairment of controller functions.*

As a rule, all setpoints previously defined will be retained when updating the controller version (inserting a new EPROM).

**Exception:** This does not apply when updating from Version V1.11x or earlier to Version V1.12 or later. All previously defined setpoints will be replaced automatically by the basic settings of the new version when updating.



The previously defined setpoints can be preserved by first saving them to the LDSWin PC software via CAN bus. After inserting the new EPROM, the saved data can then be downloaded to the controller (See the LDSWin User Guide for further details).



## 4 Function of UA 300 L



Parameters mentioned in this section are described in the Menu Structure section. It will normally not be necessary to change the default settings of these parameters. Parameters that do not allow changing are termed fixed parameters below.

### 4.1 Selecting sensor type

The UA 300 L case controller uses temperature sensors to perform control. All sensors connected must be the same type and parameters are not set separately for the sensors. The type of sensor used can be defined by the *Sensor Type* parameter (Menu 6-2-5). The following sensor types are usable:

L243 (K243)	Temperature range -50°C .. 50°C Type K243 sensor can be used in place of type L243. Characteristics of these two sensors are identical.
K277	Temperature range -50 .. 50°C
5K3A1	Temperature range 0 .. 100°C



All due care must be exercised when installing temperature sensors. Sensor leads need not be shielded when installed exclusively within the refrigerated display case to be controlled and when interference is not to be expected (for example from power wires running parallel to the leads. Otherwise suitable precautions must be taken to protect the sensor leads from external interference.

An offset can be applied independently to each temperature sensor and is effective for display and control functions.

#### 4.1.1 Required and optional sensors

On the standard UA 300 controllers the Sensor Scan function determines the number of sensors connected. This enables sensors that are not connected to be removed from sensor break monitoring. However, the following procedure is required with the UA 300 L Case/Coldroom Controller:

If alarm is to be deactivated for selected sensors on the UA 300 L, the sensor priority must be configured accordingly. The priority of each sensor can be set separately to "0" (message) or "-" (alarm suppressed) when no alarm is to be signalled on the UA 300 L.

Additionally, on the UA 300 L the respective alarm priority must be set to 0 (message) or either 1 or 2 (alarm) for sensors that are to be monitored.



In LDSWin (PC software) a sensor is recognized as used when its priority is set to 0 to 2. The sensor is held to be not used in LDSWin (no message, alarm or recording) when set to "--".

Required and optional sensors are listed below:

Controller type	Required sensors	Optional sensors
UA 300 L	None	Rx.1 Rx.2 Rx.3 Rx.4 Rx.5 Rx.6 Rx.7 Rx.8 Rx.9 Rx.0

**Sensor break alarm**

Alarm only takes place for sensors set to a sensor alarm priority of 1 or higher. An alert is generated when sensor alarm priority is set to 0 and no alarm or message is generated when sensor alarm priority is set to "-".



This approach is different from that used with other case/coldroom controllers, on which sensor break alarm can be set by sensor scan.

**4.2 Controller function**

The sections following describe the various functions of the UA 300 L for control and temperature recording of refrigeration points.

**4.2.1 Cooling (solenoid valve)**

**On-off control**

Control is made by one temperature sensor (the first five temperature sensors Rx.1 .. Rx.5 only). The cooling relay de-energizes when temperature reaches the setpoint (switch-off value, Menu 2) on the respective temperature sensor. The cooling relay re-energizes with the set hysteresis.

**Cooling relay operation**

N.O. control, i.e. cooling is OFF when the case controller is de-energized.

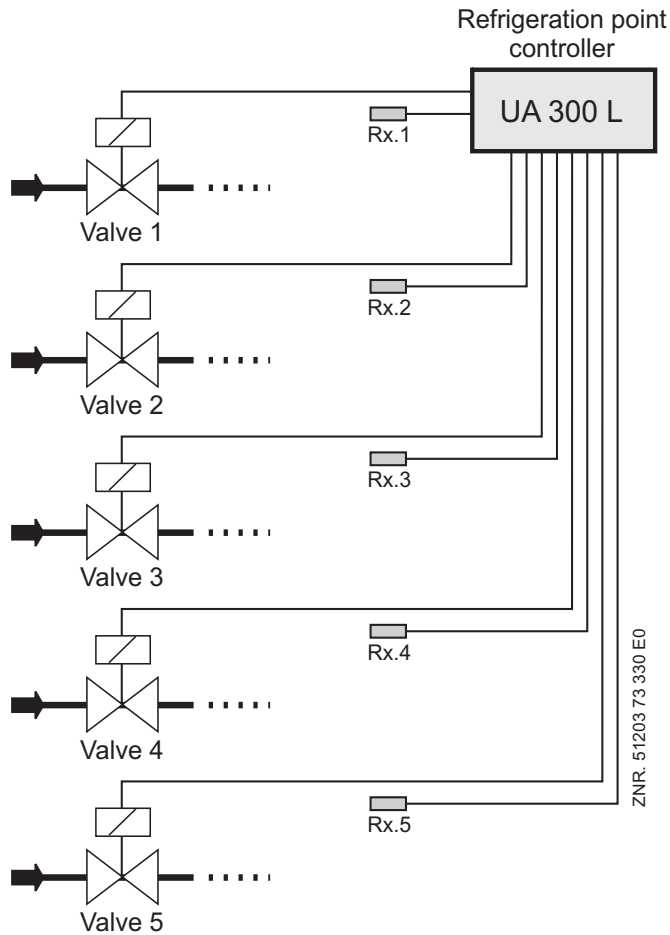


Cooling (not the controller itself) can be stopped via Digital Input 1 (Terminals D11/12). Control is suppressed when a 230 V AC signal is applied to this input. Cooling is active when the input is not connected or not active.



CAN disabling of refrigeration points by the compressor pack controller is not available on the UA 300 L.

### 4.2.1.1 Temperature control (with recording)

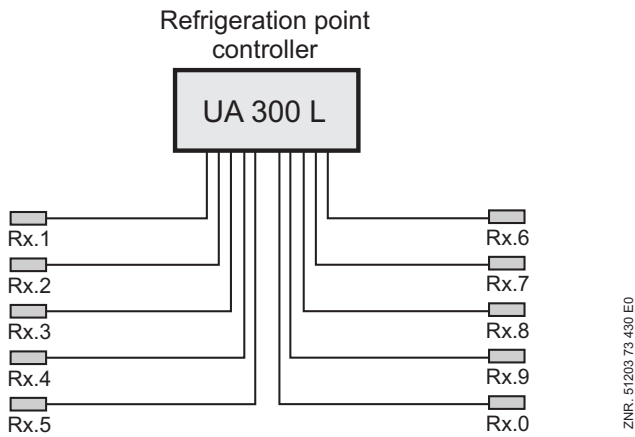


Rx.1 .. Rx.5: 5 temperature sensors for cooling (with recording)

### 4.2.1.2 Emergency operation

In failure of temperature measurement or the control temperature sensors, cooling switches to the continuous state.

### 4.2.1.3 Temperature recording



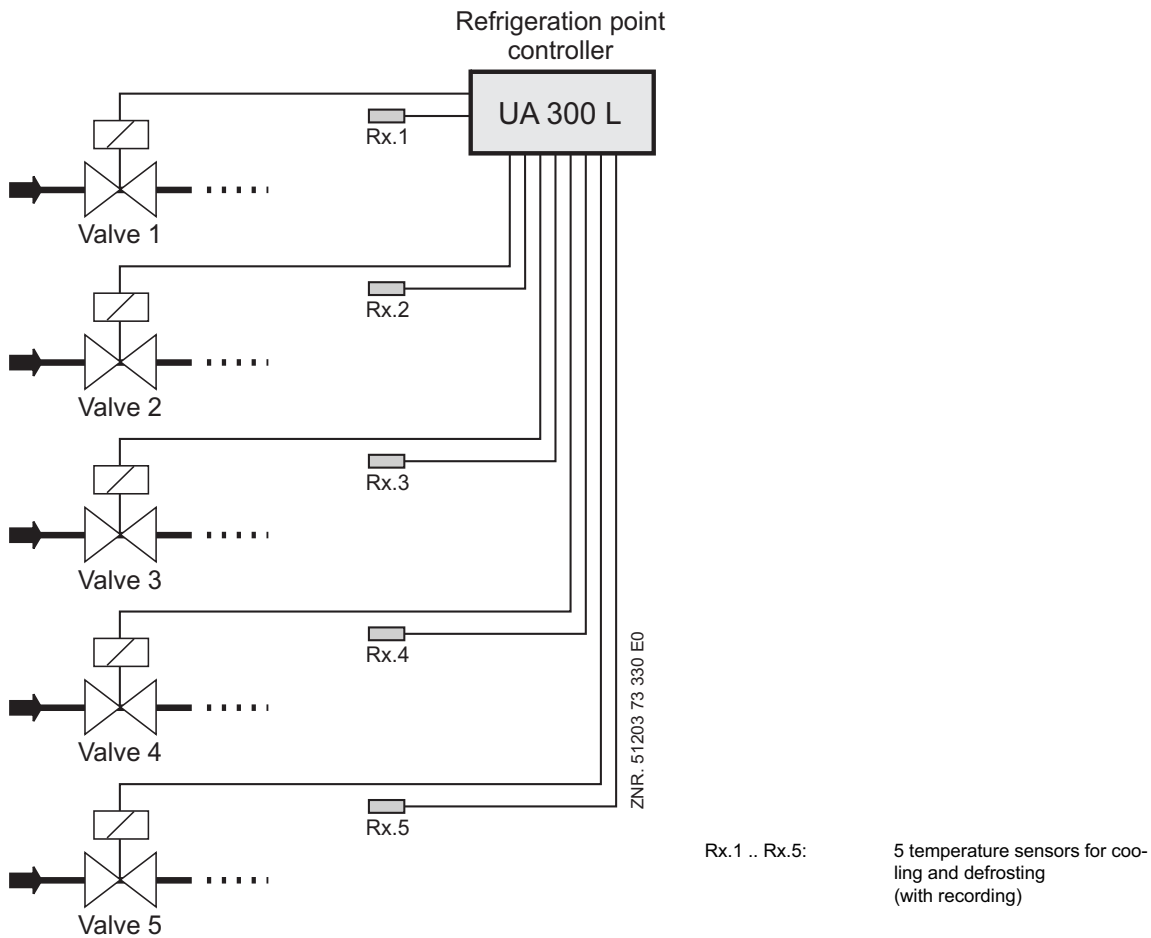
Rx.1 .. Rx.0: 10 temperature sensors for temperature recording



A separate sensor name can be assigned to each sensor for better identification of the measuring location.

### 4.2.2 Defrosting

Defrosting (available only with the first five temperature sensors Rx.1 .. Rx.5) frees the evaporator of ice forming from normal operation. Defrosting always takes place either by off-cycling the compressor. During defrosting, temperature control of the refrigeration point is inactivated.



### Defrost start

Defrosting can only be started by the internal timer (Menu 3-2) and requires temperature to be lower than defrost termination temperature.



The next defrost cycle cannot be started before the safe defrost time (defrost parameter) has expired even when defrosting is terminated by the temperature sensor. Defrost times should preferably not be set between 02:00 and 03:00 hours so as to avoid problems of missed or duplicated defrosting when the clock changes to or from daylight saving time.

The controller checks whether the condition for defrosting is fulfilled before defrosting is actually initiated. The condition is:

Temperature of the temperature sensor lower than defrost termination temperature

## Defrost termination

Defrosting can be terminated by two methods:

- Defrost termination temperature obtained on corresponding temperature sensor
- Expiration of safe defrost time



Defrosting is always terminated by the safe defrost time when the defrost termination temperature is set to "--", in which case no "Defrost Termination By Time" alarm is entered in the message log.

## 4.2.3 Monitoring

Maximum 10 independent refrigeration points can be monitored with the UA 300 L. High and low temperature can be set for each temperature sensor. A time delay and priority can also be set for each sensor. The sensor delay (Menu 2) starts when the temperature measured lies above or below the alarm threshold.



Individual setting of high and low temperature, delay and priority can be made for each of the 10 sensors.

Alarm is generated with the set sensor priority at the end of the set sensor delay. With Priority 1 and 2 the horn is started at an alarm server (e.g. CI 3000 Store Computer) and the alarm is entered in the alarm log with Node No., priority and real language message.

Priority "0" alarms are only entered in the alarm log. Priority "-" alarms are neither reported to the alarm server nor entered in the message log.



Alarms may be lost when priority is set to 0 or "--". Priority and delay apply only to "High Temperature" and "Low Temperature" alarms. Global priority (Menu 6-1) applies to all other alarms.

Alarm can be suppressed for a group of five sensors by means of the digital inputs. Digital Input D21/22 can be used to suppress temperature alarms for sensors 1-5 and Digital Input D31/D32 to suppress temperature alarms for sensors 6-10.

Suppression of alarms suppresses entry in the alarm logs (internal/external on CI 3000 Store Computer) and actuation of the alarm relay.



Alarms already entered in the alarm log will not be deleted if alarms are in effect when the alarm inputs are activated.

Sensor break alarms and other alarms cannot be suppressed through the digital inputs.

## 4.2.4 Temperature reading offset

An offset (parameter *Offset* in Menu 2) can be applied to temperature values as a means of compensating differences between readings on thermometers in the refrigerated display case and on the case controller.



This offset affects the complete functionality (cooling, defrosting, recording, etc.) for which the sensor is used.

## 4.2.5 Archiving operating data

### 4.2.5.1 Temperature recording to EU Regulation 37/2005

Temperature recording is only provided for systems not equipped with higher-level temperature recording (e.g. CI 3000 Store Computer). Temperature readings of the sensors for both temperature zones Rx.1 and Rx.2 and the status of alarm and cooling are saved to a ring buffer at 15-minute intervals for a period of one year.



When the controller is connected to the CAN bus, **only** sensors Rx.1 and Rx.2 are archived on the CI 3000 Store computer. This archiving can cover a full year.

#### Local temperature recording (UA 300 L AC/AS/TC/TS)

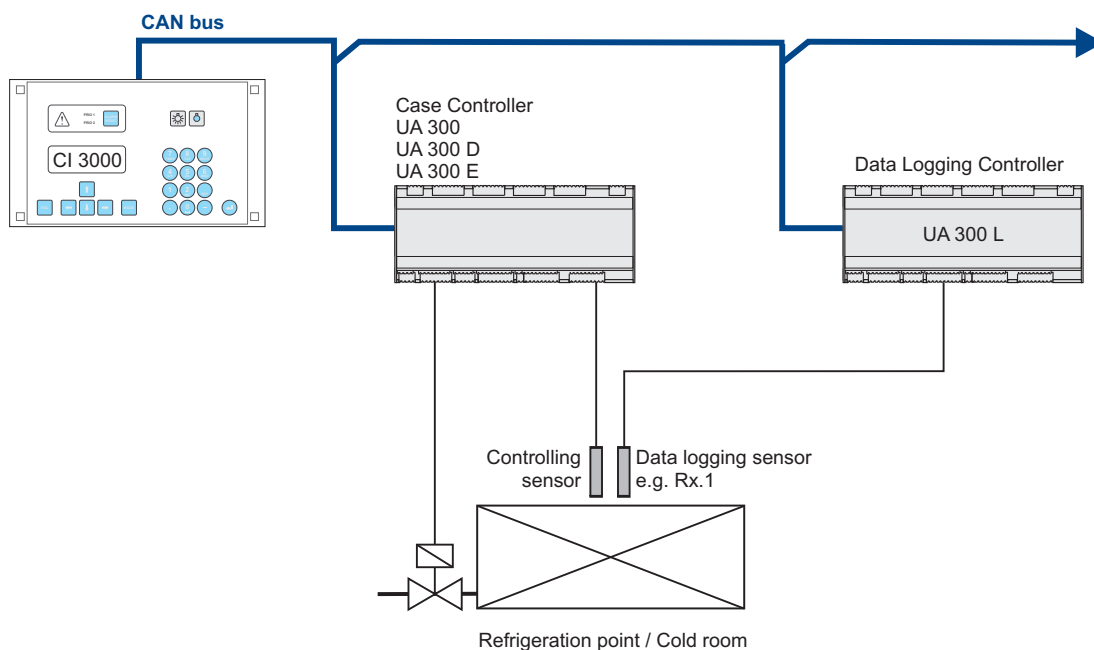
Temperature is recorded at 15-minute intervals in the internal flash memory of the UA 300 L AC/AS/TC/TS. Data is archived for 112 days. Archiving is made for all 10 sensors and for Alarm and Cooling status. The recorded data can be read out on the local BT 300x Operator Interface under Archive (Menu 5). Data readout on a PC is made via the CI 320 interface. A TTY converter (available as accessory) is required for readout on a PC.

#### Temperature recording on CI 3000 Store Computer (UA 300 L AC/AS/CC/CS)

The UA 300 L records temperature at 15-minute intervals and transmits the data via the CAN bus to the CI 3000 Store Computer for archiving. Data is archived for one year. Only the temperatures recorded at 15-minute intervals for the sensors of the two temperature zones Rx.1 and Rx.2 and the Alarm and Cooling status are saved to ring buffer memory for one year.

### 4.2.5.2 Temperature recording to EU Regulation DIN EN 12830

In addition to the case/coldroom controller, e.g. UA 300, an independent temperature-recording controller must be used to comply with EU Regulation DIN EN 12830 on monitoring temperatures in the means of transport, warehousing and storage of quick-frozen foodstuffs. Use of the UA 300 L as a temperature-recording controller is described below.



ZNR: 51/203 73 530 E0

The UA 300 L is generally suitable for recording up to 10 temperatures in compliance with said Regulation. The CI 3000 Store Computer must support EU archives with up to ten temperatures when more than two temperatures are to be archived. Whether the version in use supports this function can be checked in the Store Computer User Guide. Store Computers of all versions are capable of archiving two temperatures. With all, the recording interval is 15 minutes and data is archived for a period of one year.



Temperature sensors of type L243 must be connected to the UA 300 L for temperature recording in compliance with EU Regulation DIN EN 12830! Actual temperature control must always be performed by an **independent** case/coldroom controller, e.g. UA 300.



**Conditions to be fulfilled:**

1. UA 300 L **must** be integrated in the LDS CAN bus system together with a CI 3000 Store Computer (see CI 3000 Store Computer User Guide).
2. UA 300 L must not be used simultaneously for controlling the same refrigeration points.
3. UA 300 L **must** have temperature sensors of its own.



DIN EN 12830 requires regular testing in accordance with DIN EN 13486 for temperature measuring recorders when they are in operation. See Section 9 Specifications for details of usability of the UA 300 L in accordance with DIN EN 12830.

Data from the case/coldroom controller (UA 300, UA 300 D, UA 300 E, etc.) and UA 300 L recording controller is archived on the CI 3000 Store Computer. Operating status of the case/coldroom controller (defrost, cooling, manual shutdown, etc.) is combined with the temperature data recorded by the temperature-recording controller.

**Parameters**

The two parameters EU Archive CAN and EU Archive Zone on the UA 300 L temperature-recording controller are used to allocate each sensor to case/coldroom controller. Temperatures recorded by the UA 300 L are not archived on the CI 3000 Store Computer when EU Archive CAN is set to "-".



Recording of controller temperatures no longer complies with the EU Regulation when the EU Archive CAN parameter is set to "-".

Differentiation is made between two operating modes:

Archiving sensors of UA 300 L	Archiving sensors of external UA 300 x (complies with DIN EN 12830)
When the EU Archive CAN parameter on the UA 300 L is set to the same CAN address as the controller, temperatures and status of the UA 300 L are recorded on the CI 3000 Store Computer. The EU Archive Zone parameter defines the zone of the sensor recorded by the UA 300 L.	When the EU Archive CAN parameter is set to the CAN address of another UA 300 x controller, the status of that controller is recorded together with the temperature of the UA 300 L. The EU Archive Zone parameter defines the zone of the UA 300 x controller, for which the sensors recorded by the UA 300 L is used.



Values 3 to 10 of the EU Archive Zone parameter are to be used only for recording in conjunction with the UA 300 L itself. Only values 1 or 2 may be used for recording in conjunction with a case/EU archiving must also be active on the CI 3000 Store Computer in order to commence recording (See CI 3000 Store Computer User Guide). Make sure that both the CI 3000 Store Computer and the UA 300 L case/coldroom controller are running a software version that supports recording controller operation in compliance with EU Regulation DIN EN 12830. (See description in controller user guides.)



The CI 3000 Store Computer must have sufficient memory for data recording.



### Reading out archived data

Readout of the recorded data can be initiated in Menu 3 Archive on the CI 3000 Store Computer. Archived temperature data can also be retrieved from the Store Computer with the LDSWin PC software and displayed in chart form. (See user guide for CI 3000 Store Computer and LDSWin PC software.)

## 4.2.6 Clock

The internal clock of the UA 300 L registers the date and time of day. Automatic adjustment for daylight saving changes (last weekend in March and October) can be selected.

### Software clock without backup

As standard the internal clock is designed as a pure software clock, which means that time is counted up with the quartz frequency of the processor. Time is stored in cycles in the EEPROM, from where is loaded on restarting the controller. The clock is not battery-backed and stops when power supply to the UA 300 L is interrupted.

### CAN software clock

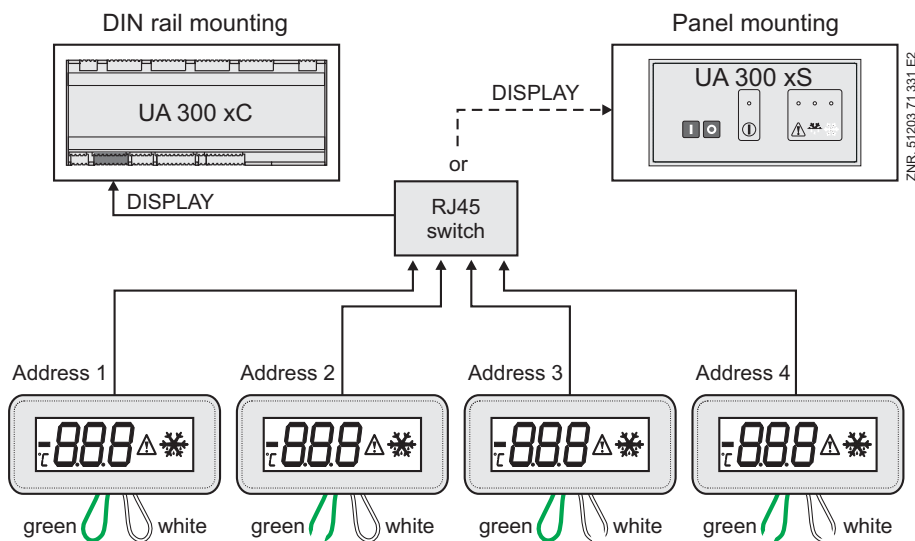
When a CAN bus is connected, the software clock is synchronized in cycles by a higher-order device equipped with a real-time clock (normally the CI 3000 Store Computer or AL 300 Operator Terminal). This means that the correct time is immediately available on restarting the controller and time is exactly the same for all stations of the CAN bus.

### Real-time clock

The UA 300 L can optionally be fitted with a real-time clock (UA 300 L AC/AS/TC/TS). This clock is battery-backed and keeps running in an electric power failure. When a real-time clock is fitted, it synchronizes the above software clock in cycles. This is intended to accommodate stand-alone operation of the UA 300 L. When a CAN bus is connected, the real-time clock and software clock are synchronized via the CAN bus.

## 4.2.7 Connecting BT 30 Temperature Display

Using a RJ45 distributor, one to four BT 30 Temperature Displays can be connected to the UA 300 L at the DISPLAY terminals 1 to 6.




The following temperatures of the UA 300 L case/coldroom controller can be displayed on the BT 30:

Controller type	Temperature readout available on BT 30			
	Address 1	Address 2	Address 3	Address 4
UA 300 L	Rx.1	Rx.2	Rx.3	Rx.4

Before connecting to the UA 300 L case/coldroom controller, all BT 30 Temperature Displays must be addressed by means of the exposed leads (see illustration above):

 Temperature is displayed for the first four sensors.

Lead	Configuration of BT 30			
	Address 1	Address 2	Address 3	Address 4
Green	Closed	Open	Closed	Open
White	Closed	Closed	Open	Open

 See the documentation for the BT 30 Temperature Display for further details and connection notes.

Cooling and Defrost status is indicated in addition to temperature. All data displayed is valid exclusively for the selected sensor. In particular, no cross-controller alarm is indicated.

**Suppressing status display**

The alarm symbol is displayed separately for low and high temperature alarm on each of the four sensors. To suppress the alarm symbol, the setpoints for high and low temperature alarm must be adjusted to a value outside the operating temperature range.

If the Cooling symbol is to be suppressed in pure recording mode, the Cooling setpoint must be adjusted to a value above the operating temperature.

**4.3 FAQs - Frequently asked questions and answers**

Further information about the components described in this manual is provided in the FAQs (Frequently asked questions) on the E•LDS documentations CD.

## 5 Installation and Startup of UA 300 L



### Important safety instructions!

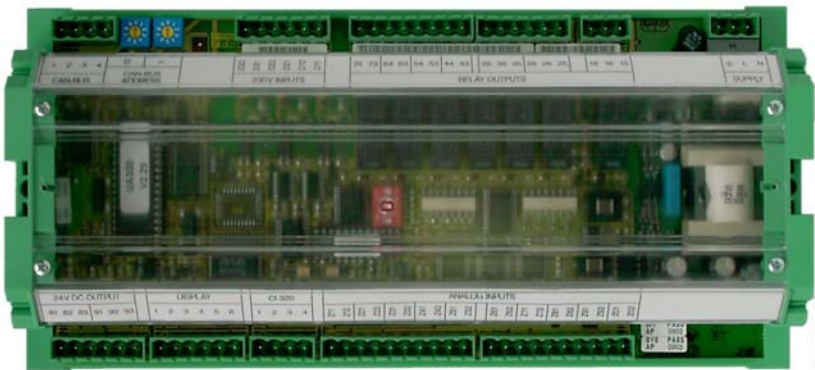
Before the installation and commissioning of the controller, chapter 1 should be carefully read in its entirety and all safety instructions and hazard warnings observed.

### 5.1 Installation

The UA 300 L case controller is produced in two versions:

- UA 300 L xC (C = "In Cabinet", DIN rail mounting)
- UA 300 L xS (S = "Switchbox", control panel mounting)

#### 5.1.1 UA 300 L xC DIN rail mounting



The controller fastens on the cap rail by two screw braces (one each on the underside of the two sides). Power loss is approx. 10 VA and must be allowed for in installation. The controller can be started on completing mechanical and electrical installation.



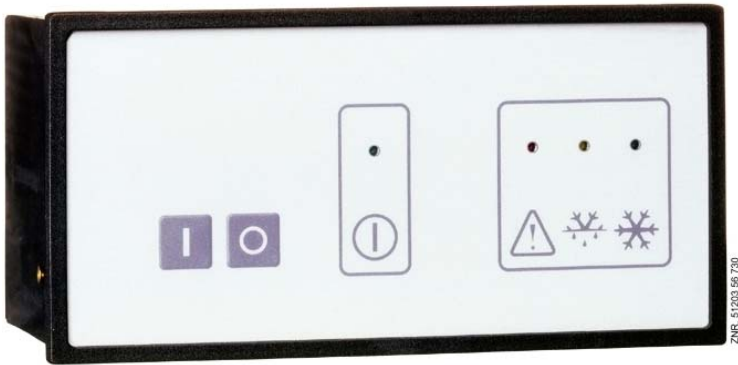
The case controller may only be mounted on a Cap (DIN) rail and operated as an integrated regulation and control device (EN60730).

All leads running to and from the case controller - especially those of the CAN bus - must be shielded (cable type: LiYCY)! No shielding is required on sensor leads when installed exclusively inside the refrigerated display case and when external interference (for example from parallel power wires) is not to be expected (see manual Introduction, General Safety and Connection Instructions). As a general rule, care should be taken to ensure that signal leads and leads carrying a supply voltage are routed through separate cable channels.



Electrical enclosure and dimensions are listed in Section Specifications.

### 5.1.2 UA 300 L xS for control panel mounting



The UA 300 L xS is housed in a plastic casing designed for panel mounting. Power loss is approx. 10 VA. When installing, make sure to provide sufficient clearance between devices or cable ducts above and below the controller for proper removal of heat. The controller can be started on completing mechanical and electrical installation.



The case controller may only be operated as an integrated regulation and control device (EN60730).

All leads running to and from the case controller - especially those of the CAN bus - must be shielded (cable type: LiYCY)! No shielding is required on sensor leads when installed exclusively inside the refrigerated display case and when external interference (for example from parallel power wires) is not to be expected (see manual Introduction, General Safety and Connection Instructions). As a general rule, care should be taken to ensure that signal leads and leads carrying a supply voltage are routed through separate cable channels.

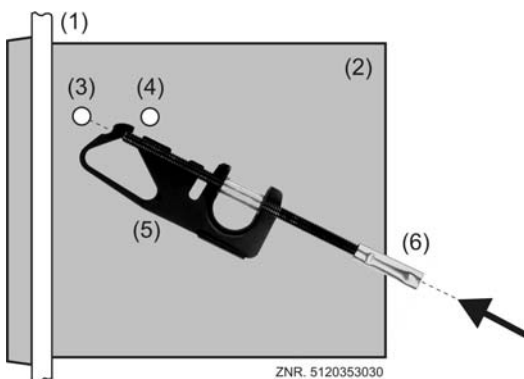


Electrical enclosure and dimensions are listed in Section Specifications.

#### Attaching mounting braces and installation:

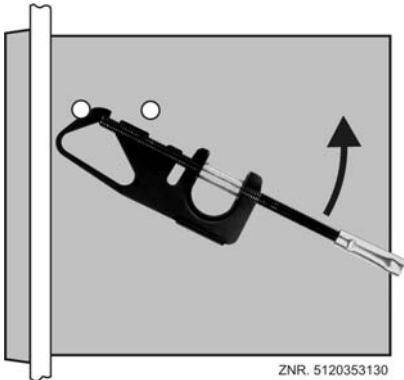
The two mounting braces enclosed with the UA 300 L xS must be attached on the left and right sides of the casing for installation:

1. Push front of UA 300 L xS (2) through cutout in control panel (1).  
Press fastening brace (5) on front support pin (3).

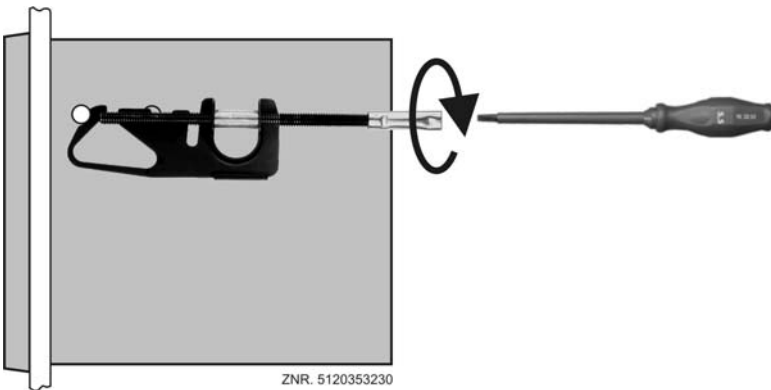


- (1): Control panel with installation cutout  
(See Section 9 - Specifications)
- (2): Casing of UA 300 L xS
- (3): Front support pin
- (4): Rear support pin
- (5): Fastening brace
- (6): Fastening screw

- Turn fastening brace (5) up on front support pin (3) and press slightly to snap on second support pin (4).



- Using a screwdriver, tighten fastening screw (6) on control panel. Then make electrical connections on UA 300 L xS (see Section 5).



After completing installation and electrical connections, parameter settings must be made on the hardware.

## 5.2 Basic parameter settings

The basic parameter settings are made in the hardware and software at the time the UA 300 L case controller is commissioned:

- Setting of Node No. (Nd.nnn = 1 to 99) or CAN bus address by decade switches **S1** and **S2** (UA 300 L CC/CS/AC/AS only). These switches are not fitted on stand-alone controllers (UA 300 L TC/TS/AC/AS) and an address cannot be assigned.
- Setting of controller type by DIP switch **S3** with Coding Switches 1 to 3.
- First start (optional setting of default values to obtain a defined starting state for regular operation).
- Setting of basic parameters.

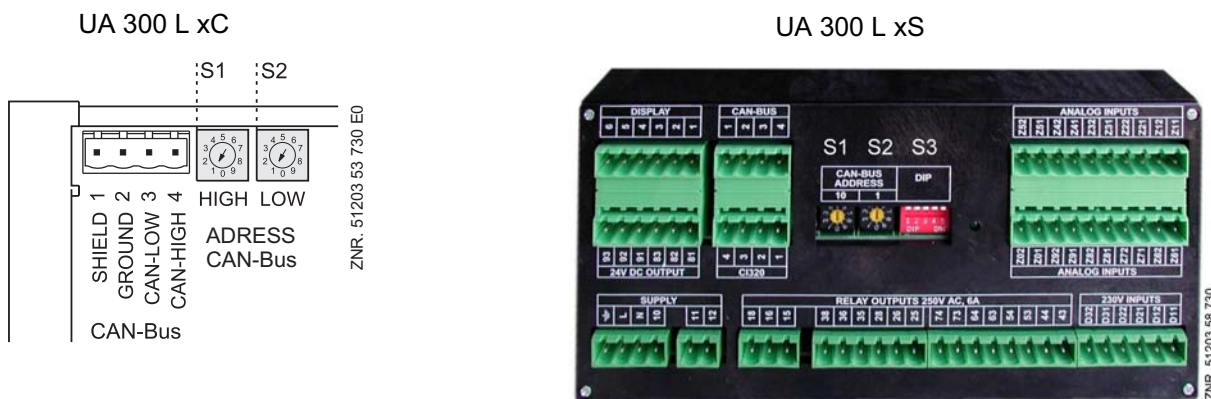
### 5.2.1 Setting the CAN bus address

The Node No. (Nd.nnn = 1 .. 99) or CAN bus address is set by decade switches S1 und S2. Prior to startup, a unique Node No. (Nd.nnn = 1 .. 99) or CAN bus address must first be set by the two decade switches (S1, S2) on all case controllers installed in refrigerated display cases.

The CAN bus address will have been set by the manufacturer on controllers installed in the control panel (UA 300 L xS), but can subsequently be changed.



*So as to avoid confusion, it is recommended to choose the Item ID of the display case as its CAN bus address. When both decade switches are at zero (giving address 00), the CAN bus is inactive and the controller is not recognized as a CAN bus station. A different CAN bus address must be assigned to each refrigeration point and must be unique within the same system.*



Decade switches **S1** and **S2** to set Node No. (Nd.nnn = 1 .. 99) resp. CAN bus address

- S1:** Tens of Node No./CAN bus address
- S2:** Units of Node No./CAN bus address

S1 (tens)	S2 (units)	Set Nd.nnn	Function
0	0	00	CAN-Bus interface inactive (disabled)
0	1..9	01..09	Case controller: Node No. and CAN bus address allocated
1..9	0..9	10..99	



Settings made on decade switches S1 and S2 do not become effective on the UA 300 L until the controller is switched off briefly and back on!

## 5.2.2 Setting the controller type

### Setting controller type

Controller type UA 300 L can be selected to define the basic control action to be performed. The controller is identifiable by a six-digit Device No. stored in the EEPROM. The software version is identified by a Version No. stored in the EPROM (Menu 6-2-1).

The controller type can be set by Coding Switches 1 .. 3 of DIP Switch S3. Functions not required by the selected controller type are hidden. When changing the controller type, all parameters are restored to their basic settings.



All DIP switches must be set OFF in operation. Operation of the controller with a non-supported DIP switch setting is not allowed.

DIP-Switch S3 (Position of Coding Switch 1 .. 3)					Set controller type	
1	2	3	4	5		
OFF	OFF	OFF	-	-	UA 300 L	Temperature recording controller



Settings made on DIP Switch S3 do not become effective on the UA 300 L until the controller is briefly switched off and then back on!

## 5.2.3 First start – Loading basic settings

First start (which replaces all parameters by the basic settings) can be performed as follows:

1. Select a different controller type (see also Section 5.2.2).
2. Briefly switch controller off and back on.
3. Wait about 1 minute for controller to start up.
4. Set the required controller type (after first switching the controller off for safety reasons).
5. Again briefly switch the controller off and back on.



New start is also performed after exchanging the EPROM between the controller versions UA 300 ↔ UA 300 D ↔ UA 300 E ↔ UA 300 L.



EPROM replacement must be carried out only by trained personnel or at the manufacturer's works. Improper replacement of the EPROM can result in damage to the controller and impairment of controller functions.

All DIP switches must be set to the OFF position in operation. Operation of the controller with a non-supported DIP switch setting is not allowed.

### 5.2.4 Setting basic parameters

The following items 1 to 4 are only necessary for operation via CAN bus. Proceed to item 5 if the controller is to be operated by a Operator Interface (BT 300 x).



The menus shown below are intended as a guide only and may differ for certain controller types. Please see Section 7 Menu Structure for a detailed overview.

1. Cancel entry block (only controllers with CAN bus connection can be operated by the CI 3000/AL 300):

In the Main Menu

- Choose 9 Parameter Setting - **3 Block**.
- Press the **ENTER** key (↵) to set the **check mark** (✓). This cancels entry block, allowing settings to be made.
- Press the **ESC** key twice to exit the screen and return to the Main Menu.



Entry block is automatically activated if no key is pressed for 10 minutes and when switching on the operator terminal.

2. In the main menu of CI 3000 Store Computer or AL 300 Operator Terminal:

Choose 5 Remote Operation.

3. Select case controller:

In the selection list, select the UA 300 L case controller to be set by its Node No. (Nd.nnn = 1 .. 99), either by using the cursor or typing in direct. Press the **ENTER** key (↵) to confirm. This displays the main menu of the UA 300 L case controller.

4. Main menu of UA 300 L case controller:

The sensor wanted must first be selected to open the main menu of a temperature sensor (Rx.1 .. Rx0). This differs from other controllers of the UA 300 Series:

Main Menu		
REFR. PT.	POS: XXX	
1 Temp. Rx.1		Selection field 1st temperature sensor Rx.1
2 Temp. Rx.2		Selection field 2nd temperature sensor Rx.2
...		...
0 Temp. Rx.0		Selection field 10th temperature sensor Rx.0



5. Configuration – Select refrigeration point (Menu 6-1)

Various parameters can be entered and checked to define the refrigeration point to be controlled by the UA 300 L:

6 Configuration - 1 Refrigeration Point		
REFR. PT.	POS: XXX	
Refr. Pt. Name:	XXXXXX	Check name of refrigeration point (can only be edited on Store Computer CI 3000)
Item ID:	XXXXX	Check Item ID of refrigeration point (can only be edited on Store Computer CI 3000)
Priority:	X	Alarm priority 0 .. 99 (See notes in Section 8.1 Alarms)
Sensor Fault	0m	Time to elapse before sensor break is reported.
No. Sensors	X	Number of sensors. The number of sensors connected is scanned on exiting the parameter by pressing ENTER.



Alarms can be suppressed by setting the alarm priority to 0.

6. Press the **ESC** key twice to exit Menu 1 Configuration.

Choose 3 Clock - 2 Defrost Timer.

Enter the relevant parameters in the following screen.

3 Clock - 2 Defrost Timer		
DEFRTIMER	POS: XXX	
Safe Defr Time	60m	Safe defrost time; defrost duration does not extend beyond this time
Defr. 1 DD-DD	hh:mm	Enter defrost times
Defr. 2 DD-DD	hh:mm	
...		
Defr. 14 DD-DD	hh:mm	

7. Press the **ESC** key to exit Menu 2 Defrost Timer.

8. Menu 6 Configuration - 2 Select Controller

6 Configuration - 2 Controller		
CONTROLLER	POS: XXX	
1 Type and Version		Type, serial number and master-slave (ON/OFF)
2 Sensor Type		Select temperature sensor type

9. Press the **ESC** key twice to exit the menu.

10. Choose Menu 2 Setpoints.

2 Setpoints		
SETPOINTS	POS: XXX	
High Temp.	X °C	High temperature setpoint
Low Temp.	X °C	Low temperature setpoint
Delay:	2m	High or low temperature delay
Priority:	--	High or low temperature alarm priority
Setpoint	x °C	Temperature setpoint
Hystersis	XK	Hysteresis setpoint
Name:Temp. Rx.y	XK	Name of sensor (can only be edited on CI 3000 Store Computer)
Pos.: Pos.1		Sensor Item IF
Offset	OK	Temperature sensor offset

11. Press the **ESC** key repeatedly to return to the Main Menu of the CI 3000 Store Computer or AL 300 Operator Terminal. This completes basic parameter setting on the UA 300 L Case Controller.

### 5.3 Maintenance and battery replacement

The controller contains a backup battery of Type CR 2450 N, 3V Lithium. The controller must be removed from the system to change the battery. During this time, control and monitoring of the refrigeration point is disabled.

If the case controller is connected via the CAN bus to a higher-level controller, it will no longer be on the CAN bus. In addition to the precautions directly concerning the refrigeration point, consideration must be given to the effects on higher-level controllers on the CAN bus.



When changing the battery, the safety rules contained in the Safety and Connection Notes section must be observed. All connectors may only be connected and disconnected when power is off. Circuit boards may only be exchanged when power is off. Always take hold of circuit boards at the edges.



ESD (Electrostatic Discharge) regulations must be observed; see Manual Safety and Connection Notes!



Note when the controller is connected via CAN bus: Removal of the case controller from the CAN bus generates fault alarm on the higher-level controller (CI 3000 Store Computer or AL 300 Operator Terminal). Make sure the alarm is cancelled in due time or the Service Center is advised accordingly in advance.

### 5.3.1 Replacing battery on UA 300 L xC

1. Disconnect the case controller or refrigeration point from power. Cancel alarm on CI 3000 Store Computer / AL 300 Operator Terminal.
2. Remove connector, remove controller from its support if necessary.

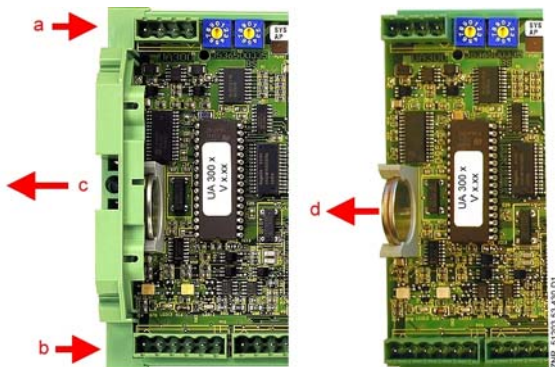


Some connectors may carry 230 V AC power. Connectors should be marked before disconnecting.

3. Undo the four screws on the front panel and remove the plastic cover by pulling up.



4. Undo two screws (a and b) on the lefthand side of the plastic casing.



5. Pull left end of casing (c) away to left.
6. Pull battery up out of its holder (d) and dispose of it in regulation manner.



- Do not grip the new battery with metal pliers, as this may cause it to be destroyed by short circuiting:
- Do not touch the contact surfaces on the edges.
- Wipe with a clean and dry cloth..

7. Grip the new battery with a cloth and press it into place in its holder.
8. Re-assemble in the reverse order. Re-connect all connectors.
9. Turn on power to the refrigeration point to restore it to operational condition.



Messages or fault messages that are output on restarting the UA 300 L must be checked or cancelled on the CI 3000 Store Computer or AL 300 Operator Terminal!

- 10. **Controller in CAN bus system (UA 300 L CC/CS/AC/AS):** Provided there is no change of configuration on the CI 3000 Store Computer or AL 300 Operator Terminal, the controller is automatically re-detected via the CAN bus. Date, time and automatic daylight saving time change are set automatically by central time synchronization.
- 11. **Controller without CAN bus (UA 300 L TC/TS/AC/AS):** Date, time and automatic daylight saving change must be entered for data archiving (EU Archive).

### 5.3.2 Replacing battery on UA 300 L xS

- 1. Disconnect the case controller or refrigeration point from power. Cancel alarm on CI 3000 Store Computer / AL 300 Operator Terminal.
- 2. Remove connector, remove controller from control panel (see Section 4.1.2 - UA 300 D xS Panel Mounting for details).

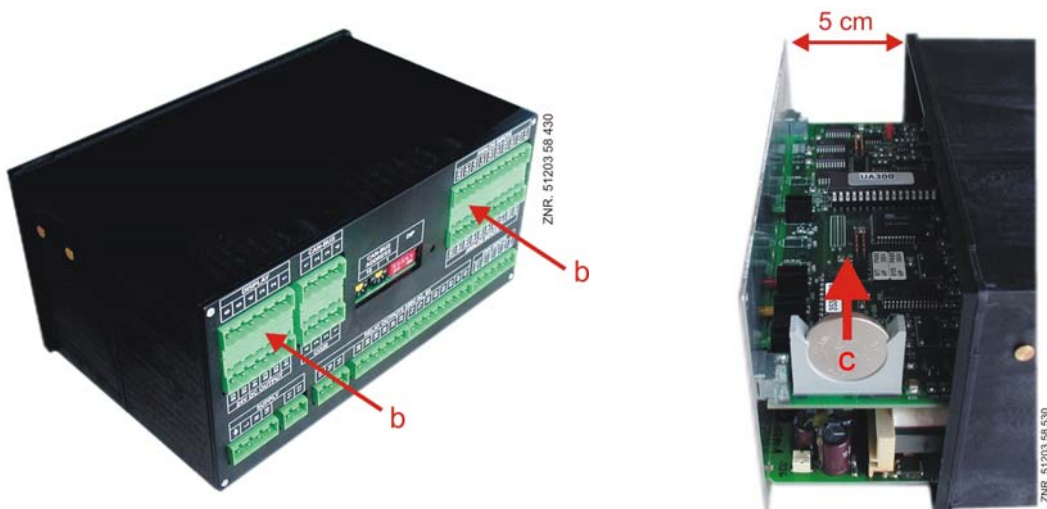


Some connectors may carry 230 V AC power. Connectors should be marked before disconnecting.

- 3. Carefully remove plastic frame (a) and undo the four corner screws.



- 4. Push unit out about 5 cm at front by pressing lightly on the rear connector (b).



5. Pull battery (c) up out of its holder and dispose of it in regulation manner.



- Do not grip the new battery with metal pliers, as this may cause it to be destroyed by short circuiting:
- Do not touch the contact surfaces on the edges.
- Wipe with a clean and dry cloth.

6. Grip the new battery with a cloth and press it into place in its holder.
7. Re-assemble in the reverse order. Re-connect all connectors.
8. Turn on power to the refrigeration point to restore it to operational condition.



Messages or fault messages that are output on restarting the UA 300 L must be checked or cancelled on the CI 3000 Store Computer or AL 300 Operator Terminal!

9. **Controller in CAN bus system (UA 300 L CC/CS/AC/AS):** Provided there is no change of configuration on the CI 3000 Store Computer or AL 300 Operator Terminal, the controller is automatically re-detected via the CAN bus. Date, time and automatic daylight saving time change are set automatically by central time synchronization.
10. **Controller without CAN bus (UA 300 L TC/TS/AC/AS):** Date, time and automatic daylight saving change must be entered for data archiving (EU Archive).

Notice:

## 6 Pin and Terminal Assignments of UA 300 L

### Digital inputs 230 V AC

Controller Type	Digital Input 1	Digital Input 2	Digital Input 3
Terminal No.	D11/D12	D21/D22	D31/D32
UA 300 L	Enable/disable cooling	Enable/disable high/low temperature alarms Rx.1 to Rx.5	Enable/disable high/low temperature alarms Rx.6 to Rx.0

### Sensors

Controller Type	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7	Sensor 8	Sensor 9	Sensor 10
Terminal No.	Z11/Z12	Z21/Z22	Z31/Z32	Z41/Z42	Z51/Z52	Z61/Z62	Z71/Z72	Z81/Z82	Z91/Z92	Z01/Z02
UA 300 L	Rx.1	Rx.2	Rx.3	Rx.4	Rx.5	Rx.6	Rx.7	Rx.8	Rx.9	Rx.0



All leads running to and from the UA 300 L - especially those of the CAN bus - must be shielded! No shielding is required on sensor leads when installed exclusively inside the refrigerated display case and when external interference (for example from parallel power wires) is not to be expected.


### Relay outputs 230 V AC

Controller Type	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7
Terminal No.	15, 16, 18	25, 26, 28	35, 36, 38	43, 44	53, 54	63, 64	73, 74
UA 300 L	Alarm	Cooling 1	Cooling 2	Cooling 3	Cooling 4	Cooling 5	Not used

### Digital outputs 24 V DC

Controller Type	Output1	Output2
Terminal No.	81, 82, 83	91, 92, 93
UA 300 L	Not used	Not used

## Power supply

Controller Type	Power Supply	Protective Conductor
Terminal No.	N, L	
UA 300 L	230 V AC	PE

## 6.1 Relay operation

The following table shows operating direction of the digital outputs for the controller.

Controller Type	Cooling	Alarm
UA 300 L	Positive	Inverted



**Positive** means that operation of the relay is not inverted:

The relay is energized when the controller activates the function output (e.g. Cooling = ON).  
(This means that the contact of a normally open relay is closed.)

The relay is not energized when the controller deactivates the function output (e.g. Cooling = OFF).  
(This means that the contact of a normally open relay is open.)

**Inverted** means that operation of the relay is inverted:

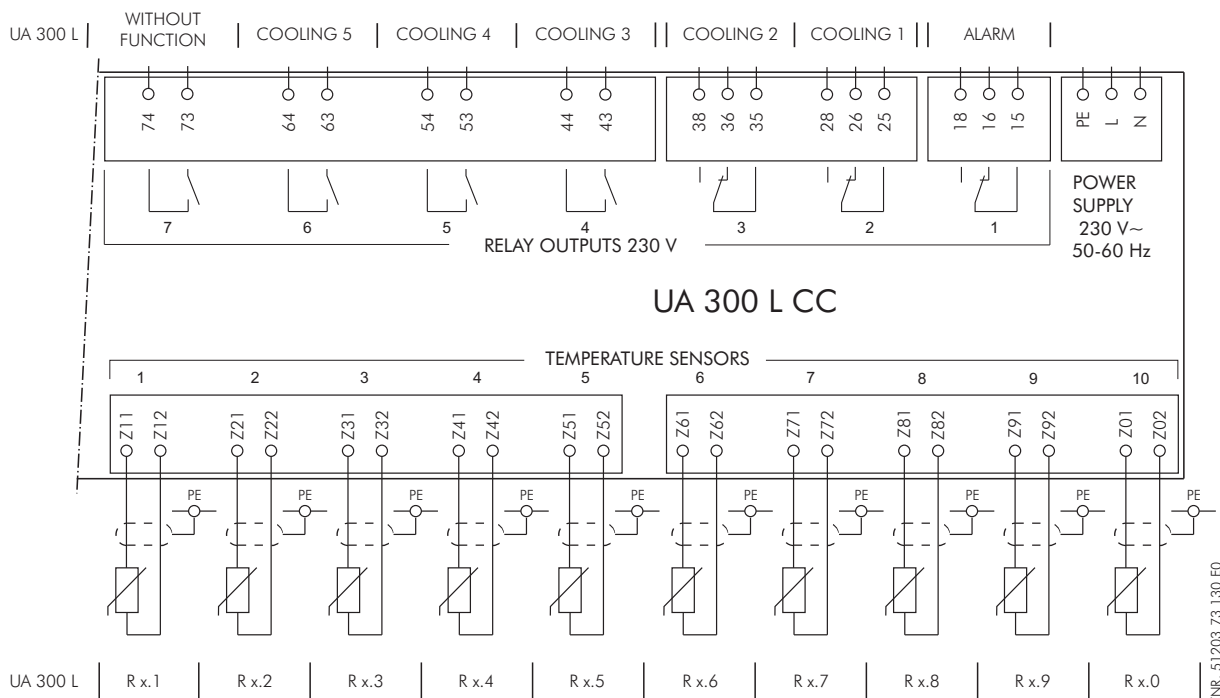
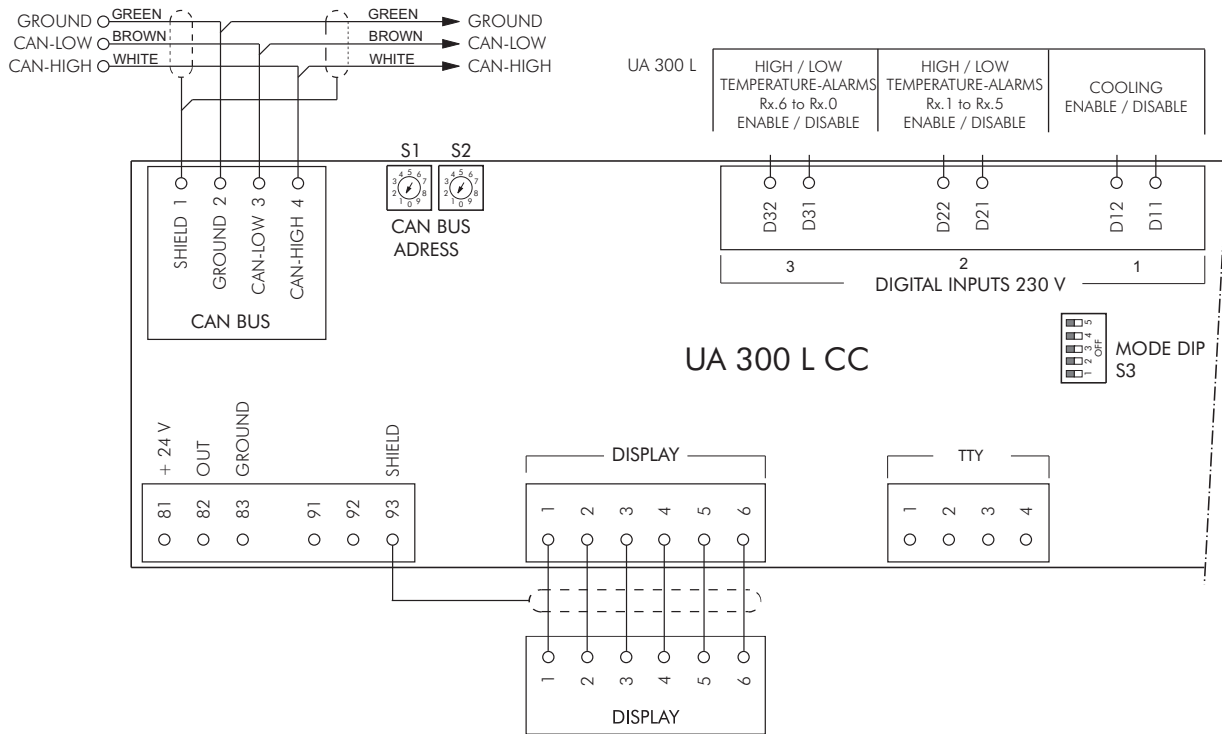
The relay is not energized when the controller activates the function output (e.g. Alarm = ON).  
(This means that the contact of a normally open relay is open.)

The relay is energized when the controller deactivates the function output (e.g. Alarm = OFF).  
(This means that the contact of a normally open relay is closed.)



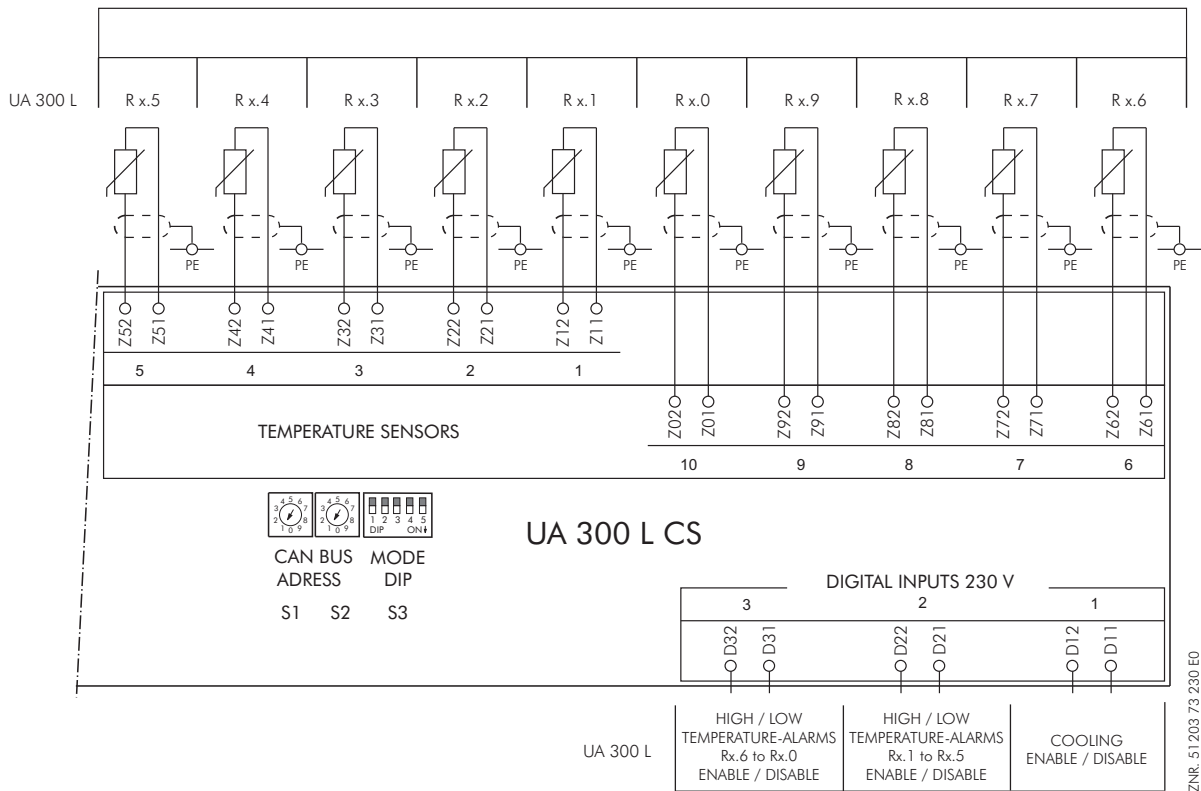
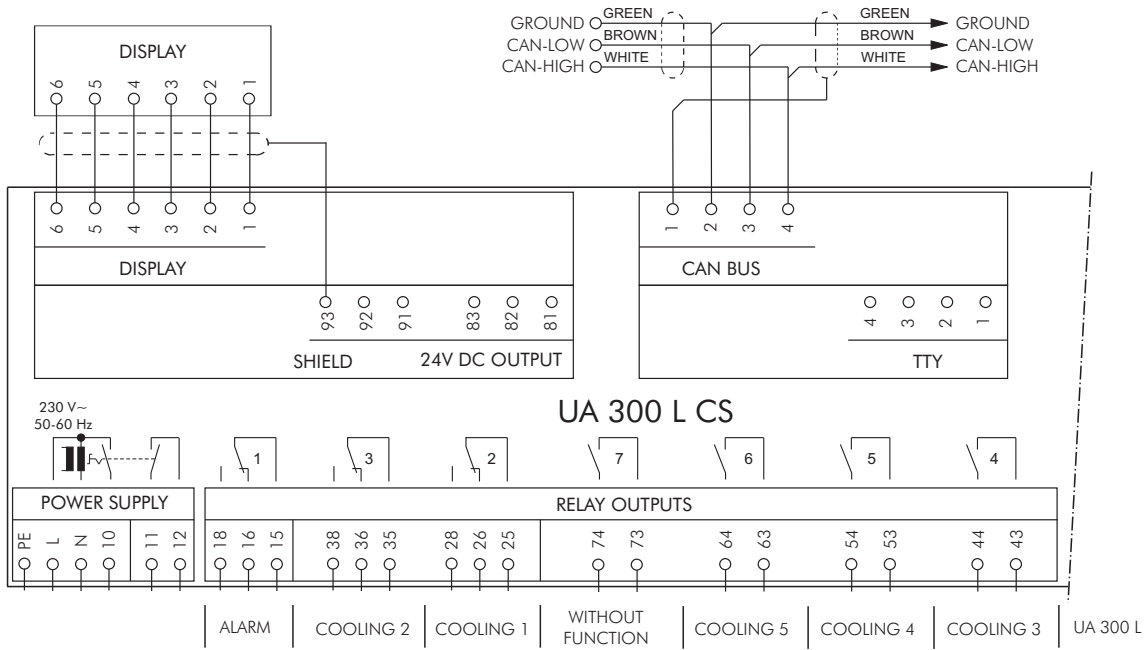
## 6.2 UA 300 L xC

Controller type: UA 300 L - Pin assignments valid for UA 300 L CC / TC / AC



### 6.3 UA 300 L xS

Controller type: UA 300 L - Pin assignments valid for UA 300 L CS / TS / AS



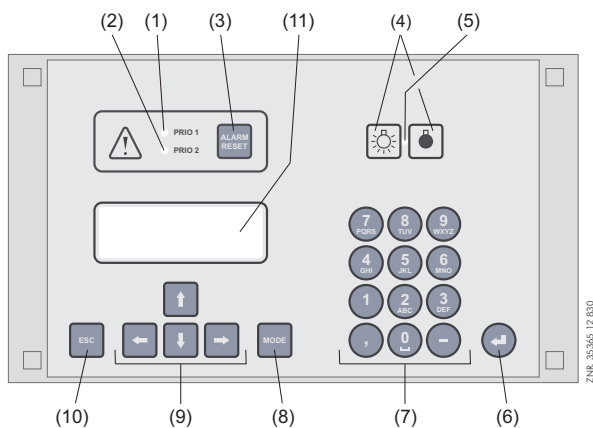
ZNR 51203 73 230 E0

## 7 Operation of UA 300 L

No provision is made for operation on the controller itself. However, several interfaces are available for local operation (BT 300 x Operator Interface) or remote operation via CAN bus (CI 3000 Store Computer / AL 300 Operator Terminal). Operation of the case controller via the TTY interface is not available.

### 7.1 Operation with CI 3000 Store Computer / AL 300 Operator Terminal

Operation is the same whether using the CI 3000 Store Computer or the AL 300 Operator Terminal. The operator interface and the functions are the same on both devices.



- (1) Priority 1 alarm indicator light
- (2) Priority 2 alarm indicator light
- (3) Buzzer and horn stop key and alarm cancel key
- (4) External lighting on/off switch (general lighting)
- (5) Lighting on/off switch indicator light
- (6) **ENTER** key
- (7) Alphanumeric keypad
- (8) **MODE** key; CAPS SHIFT function for text entry
- (9) Cursor keys
- (10) **ESC** key
- (11) Display (4 lines of 20 characters)

## 7.2 Menus and screens

Differentiation is made between menus and screens for operation of the controller. The sensor wanted must first be selected to open the main menu of a temperature sensor (Rx.1 .. Rx0). This differs from other controllers of the UA 300 Series:

Main Menu		Entry
REFR. PT.	POS: XXX	
1 Temp. Rx.1	Selection field 1st temperature sensor Rx.1	1
2 Temp. Rx.2	Selection field 2nd temperature sensor Rx.2	2
...	...	...
0 Temp. Rx.0	Selection field 10th temperature sensor Rx.0	0

### Numbering of menus and screens:

Each menu in the menu tree can be opened by entering a specific number and each operating screen in a menu can be opened by selecting it in the menu. This is achieved by distinct marking by numbers and letters in the menu tree. Numbers 1, 2, etc. identify the menu and the letters a, b, etc. identify the order of the screens in the menu.

### Example of screen numbering:

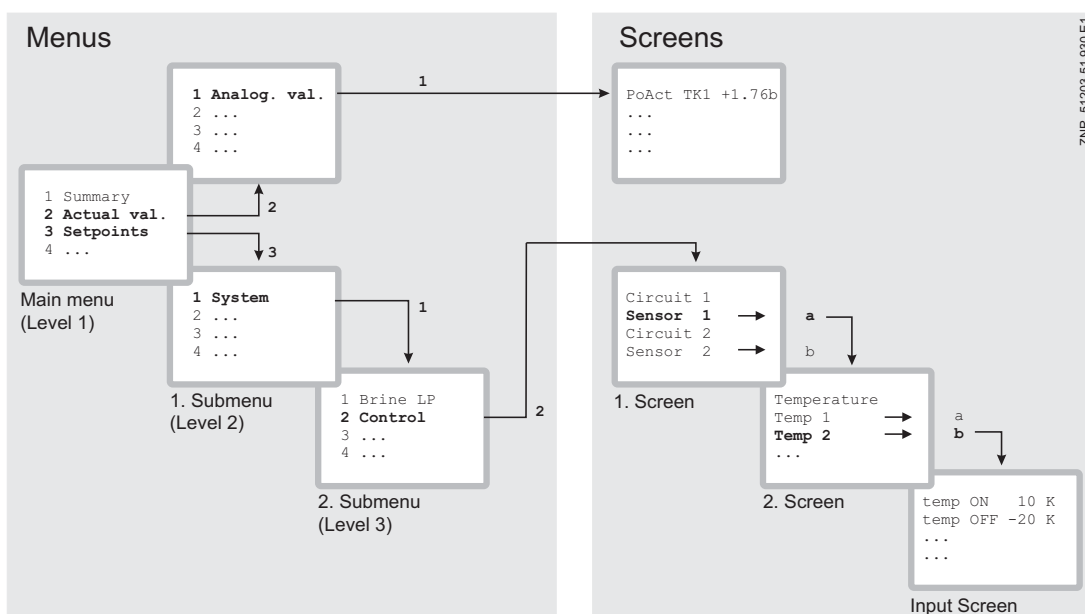
2 - 1 means that the screen can be opened from the menu tree by entering the numbers 2 - 1. This may be a display screen or operating screen.

### Example of operating screen numbering:

3 - 1 - 2 - a - b means that the higher-level screen can be opened from the menu tree by entering the numbers 3 - 1 - 2. The letter or letters following indicate that one or more additional operating screens or selection lists can be opened in the screen by selecting them (→). The letters show their order in the screen.



Each operating screen of the UA 300 L can be opened by entering its respective number.



## Menus

A menu contains a list of up to nine items for selection. Each item selected may contain separate submenus or operating screens.

### Selecting menu items

Each line of the selection list displayed contains a number from 1 .. 9 and 0 and the name of the corresponding item. The separate items can be selected directly by pressing the appropriate numeric key 1 to 9, or 0 for item 10.

If the menu lists more than three items, the cursor keys can be used to scroll through the menu and view the remaining items.



A menu item can be selected by pressing the respective numeric key regardless of whether the item itself is visible on the display.

## Operating screens

An operating screen shows values for output and/or input. There may be more values for output and/or input than fit into the display at one time. The cursor keys can be used to scroll through these additional values. The screen may also contain more than one page, in which case the pages can be viewed one at a time.



Arrows appear on the right of the display to indicate whether you can scroll or page through a menu or screen.

## Scrolling

Use the up and down cursor keys ( $\uparrow$ ) and ( $\downarrow$ ) to:

- Scroll line by line, for example when selecting a variable in a line from a list of predefined variables.
- Scroll block by block to view values that extend beyond the capacity of the display.

## Paging

The left and right cursor keys ( $\leftarrow$ ) and ( $\rightarrow$ ) can be used to page through screens containing more than one page. If a menu contains more than three submenus, the remaining items can be viewed by scrolling with the up and down cursor keys ( $\uparrow$ ) and ( $\downarrow$ ).

## Cancelling entry block

Before any values can be entered, the entry block must be deactivated as follows:

- In the Main Menu choose item 9 Parameter Setting.
- Then choose item 3 Block.
- Press ENTER ( $\downarrow$ ) to set the check mark ( $\surd$ ). When the check mark is set, entry block is deactivated, allowing settings to be entered.
- Press ESC to exit the screen.



Blocking is activated automatically if no key is pressed for 10 minutes and when the operator terminal is switched on.

## Superuser mode (granting Superuser rights)



Superuser mode is reserved exclusively for use by service personnel!

- In the Main Menu choose item 9 Parameter Setting.
- In this menu choose item 3 Block.
- Enter the current date in reverse order (not shown on display).
- Press the ENTER key (↵) to confirm, causing "S" to be shown on the screen.
- Press the ESC key to exit the screen.

### Example:

The current date is *April 17, 2035*, which in order of day-month-year is 17.04.35. In this instance the entry required to grant Superuser rights is 534071.



Unblocking from the main menu cancels entry block for all components of the CAN bus system. If you have moved to the operator interface of a CAN bus station but have omitted to cancel entry block, simultaneously press the **MODE** and decimal ( , ) keys to cancel entry block for the particular controller. Entry block is reactivated on exiting the operator interface for the controller.

## Activating service mode



Service mode is reserved exclusively for use by service personnel!

Service mode enables the service technician to suppress the remote alarm function of the CI 3000 Store Computer for a limited time while carrying out maintenance of repair work.

- In the Main Menu, choose 9 Parameter Setting.
- From this menu item choose 3 Block.
- Simultaneously press the MODE + ENTER (↵) keys to open the screen for suppressing remote alarm and enter the time required for service work (1 to 255 min.).
- This activates service mode for the specified time.



Any alarms (Priority 1 and 2) still active when the set service mode time expires cause the audible signalling devices and alarm relays to be actuated and are forwarded by automatic fault report transmission.



Service mode can be reset/cancelled by entering a time of 0 min.

## Entering values and text

Use the up and down cursor keys (↑) and (↓) to select the line wanted and press the ENTER key (↵). The cursor jumps to the entry field. The cursor keys (↑) and (↓) or numeric keys can then be used to enter or change values.

Keep the cursor key (↑) or (↓) depressed to change values in fast mode.

## Entering text

In fields that allow text entry, text can also be entered by the alphanumeric keypad. Repeatedly press the numeric keys to generate letters. Press the ENTER key (↵) to confirm the entered value or text.

Key	Letter/Character
0	äöüß0 Space
1	1
2	abc2
3	def3
4	ghi4
5	jkl5
6	mno6
7	pqrs7
8	tuv8
9	wxyz9
-	. _ -
,	Insert space



## Alphanumeric key assignments

Press the **MODE** key to shift between upper and lower case letters.

## Deleting text entry

Simultaneously press the **MODE** and minus ( - ) keys to delete a complete line of text. Press the **MODE** and decimal ( , ) keys to delete one character.

## Cancelling an entry

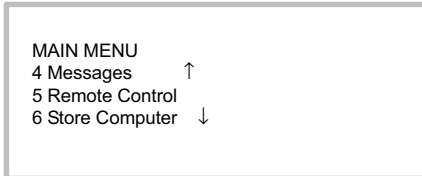
Press the ESC key to cancel an entry at any time. The entry will not be applied.

## Exiting menus and screens

Press the ESC key to exit the menu or screen you are in at any time. This returns you to the next higher menu. All menus and screens are closed automatically if no key is pressed for 10 minutes. The display then jumps to the Main Menu or to the Alarm menu if any fault report is currently active.

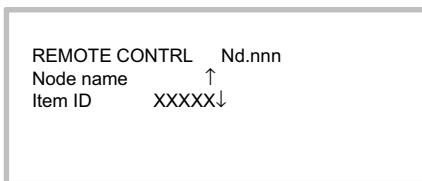
### 7.2.1 Remote operation/parameter setting of case controller

The LCD display contains 4 lines of 20 characters. If a menu or screen contains more than 4 lines, the cursor keys can be used to scroll through the remaining lines.

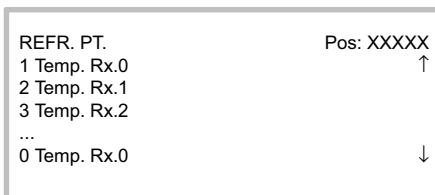


Entry block must first be deactivated before parameters can be set.

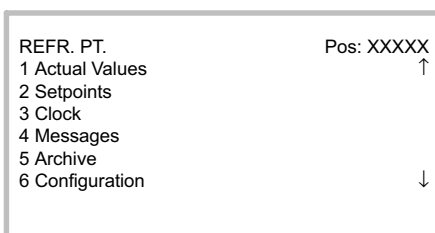
In the Main Menu of the AL 300 Operator Terminal or CI 3000 Store Computer, open submenu *5 Remote Operation*. This displays the following screen:



The case/coldroom controller wanted can be selected using the up and down cursor keys (↑) and (↓) or by entering its Node No. *nnn* (CAN bus address) with the numeric keys. Press the ENTER key to open the case controller selected. Select the temperature sensor wanted (Rx.1 to Rx0) in the screen then opened.



This displays the main menu of the UA 300 L temperature sensor or case controller as below





### 7.3 Entering refrigeration point parameters

Name of refrigeration point

- In the Main Menu choose item 7 Monitoring.
- In the Monitoring menu choose item 3 Configuration.
- Select the case controller to be named by scrolling with the cursor keys or entering the CAN bus address (and confirming with ENTER), then confirm by pressing the ENTER key. The flashing cursor moves from the first line to the second.
- The up and down cursor keys (↑) and (↓) can be used to move the flashing cursor to Line 2, 3 or 4.
- Press the ENTER key to place the cursor at the beginning of the entry field.
- Then enter the name, Item ID and priority (0, 1 or 2) of the refrigeration point and confirm by pressing the ENTER key.



Priority can also be configured from the Main Menu by choosing item 5 Remote Operation (selected case/coldroom controller), 6 Configuration, 1 Refrigeration Point, Priority.

For actual configuration of the refrigeration point, "dial up" the case via remote operation:

- In the Main Menu choose item 5 Remote Operation.
- Select the controller to be configured by scrolling with the cursor keys or entering the CAN bus address (and confirming with ENTER), then confirm by pressing the ENTER key.

This displays the Refrigeration Point menu showing position of the selected case controller. You should first choose item 6 Configuration, as this narrows down the selection of functionalities. See also Section 4 Installation and Startup for basic setting of the controller.

### 7.4 Operation with BT 300 x Operator Interface, handset or co- unter operating panel

When using the UA 300 L in stand-alone mode, the case controller can only be operated with the BT 300 x Operator Interface. An Operator Interface can be connected to a separate interface (display). The operating options are largely the same as those provided in the Remote Operation menu of the AL 300 Operator Terminal and CI 3000 Store Computer (see chapter 6.2).

Constraints result from the use of a smaller display and a smaller number of keys. Naming of the refrigeration point is only possible with controllers of type UA 300 D and UA 300 L. If no key is pressed, the display of the local set-up unit will show case operating status and return air temperature.

Differences between the displayed value and the thermometer reading can be compensated by entering an offset for this value. Press the ENTER key (↵) to change from the status display to the operating menus.

A jumper is fitted next to the keypad ribbon cable inside the unit. Removing or shifting this jumper results in the unit no longer being usable to make settings.



A local set-up unit can also be used to operate case controllers in a CAN bus system. This is however less convenient than using the CI 3000 Store Computer, AL 300 Operator Terminal or LDSWin software.

### 7.4.1 Defining the refrigeration point

Various parameters can be entered to define the refrigeration point controlled by the UA 300 L:

- Refrigeration point name (via CAN bus, 19 characters freely editable)
- Refrigeration point Item ID (via CAN bus 5 characters freely editable)
- Alarm priority (0, 1, 2, --)



*Alarms can be suppressed by setting the alarm priority to 0.*

### 7.4.2 Defining the controller

Controller type UA 300 L can be selected to define the basic control action to be performed. The controller is identifiable by a six-digit Device No. stored in the EPROM. The software version is identified by a Version No. stored in the EPROM (Menu 6-2-1).



Changing the controller type resets all parameters to their default settings.

## 8 Menu Structure of UA 300 L

The sensor wanted must first be selected to open the main menu of a temperature sensor (Rx.1 .. Rx0).

REFR. PT.	POS: XXX		Entry
1 Temp. Rx.1		Select 1st temperature sensor Rx.1	1
2 Temp. Rx.2		Select 2nd temperature sensor Rx.2	2
...		...	...
0 Temp. Rx.0		Select 10th temperature sensor Rx.0	0

### 8.1 Controller type UA 300 L – Menu tree (Rx.1 to Rx.0)

With few exceptions, the screens of the menu tree have the same structure for all 10 temperature sensors. The sensors are referred to as Rx.y when the details apply to all sensors (Rx.y = Rx.1 .. Rx.0).

Level 1	Level 2	Level 3	Screen No.	Screen Name
Main menu				Temp. Rx.y
Actual Value			1	ACT VALUES
Setpoints			2	SETPOINTS
Clock			3	CLOCK
	Current Time		3-1	CLOCK
	Defrost Time		3-2	DEFR.TIMER
Messages			4	MESSAGES
	View		4-1	MESSAGES
	Acknowledge		4-2	MESSAGES
	Delete		4-3	MESSAGES
Archive			5	ARCHIVE
	Temp Rx.1		5-1	Temp Rx.1
	Temp Rx.2		5-2	Temp Rx.2
	...		...	...
	Temp Rx.0		5-0	Temp Rx.0
Configuration			6	CONFIGURAT
	Refriger. Point		6-1	REFR. PT.
	Controller		6-2	CONTROLLER
		Type and Version	6-2-1	VERSION
		Sensor Type	6-2-2	SENSORS
		Language	6-3	LANGUAGE

## 8.2 Menu 0 Main menu

Temp. Rx.y	POS: XXXXX		Entry
1 Actual Value		Continue to Screen 1	1
2 Setpoints		Continue to Screen 2	2
3 Clock		Continue to Screen 3	3
4 Messages		Continue to Screen 4	4
5 Archive		Continue to Screen 5	5
6 Configuration		Continue to Screen 6	6

## 8.3 Menu 1 Actual Value

ACT VALUES	POS: XXXXX	
Temperat. Rx.y	xxx °C	Temperature at sensor Rx.y
Cooling x	ON/OFF	Cooling status, x=1 .. 5 (only shown for sensors Rx.1 to Rx.5)
Defrost x	ON/OFF	Defrosting status, x=1 .. 5 (only shown for sensors Rx.1 to Rx.5)
Alarm x	ON/OFF	Alarm status
Last Defrst	dd hh:mm	Day and time of last defrost cycle started (only shown for sensors Rx.1 to Rx.5)

## 8.4 Menu 2 Setpoints

SETPOINTS	POS: XXXXX		Entry	Default
Overtemp:	xxx °C	High temperature setpoint	-50..100	10°C
Undertemp:	xxx °C	Low temperature setpoint	-50..100	-5°C
Delay:	xxm	High or low temperature delay	0..150	2m
Priority:	xx	High or low temperature alarm priority <sup>1)</sup>	↑, ↓, --, 0..2	--
Setpoint:	xxx °C	Refrigeration point temperature setpoint (only shown for sensors Rx.1 .. Rx.5)	-50..80	5°C
Hysteresis:	xK	Refrigeration point hysteresis (only shown for sensors Rx.1 .. Rx.5)	1..20	1K
Name:Temp. Rx.y		Name of sensor Rx.y (max. 10 characters)	Numbers	Rx.y
Pos.:Pos.y		Item ID of sensor Rx.y (max. 5 characters)	Numbers	Pos.y
Offset	xK	Temperature sensor offset	-50..100	0K
Def. End. Tmp.	xxx °C	Defrost termination temperature setpoint (only shown for sensors Rx.1 .. Rx.5)	--, 5..20	12°C
EU Arch. CAN		CAN bus address of case/coldroom controller for which temperature is to be recorded. No recording takes place when set to "-".	--, 1..99	CAN bus ad- dress of con- troller
EU Arch. Zone		Temperature zone of case/coldroom controller for which temperature is to be recorded: 1 to 2    Temperature zone of case/coldroom controller 3 to 10    Temperature sensor of UA 300 L.	1..10	



1) In the LDSWin (PC software) a sensor is recognized as used when its priority is set to 0, 1 or 2 and is held to be not used (no message, alarm or recording), when set to "--".

## 8.5 Menu 3 Clock

CLOCK	POS: XXXXX		Entry
1	Current Time	Continue to Screen 3-1	1
2	Defrost Timer	Continue to Screen 3-2	2

### • Screen 3-1 Current Time



Time default is set by the time master (CI 3000, AL 300) when CAN bus is connected. Any entry made will then be overwritten by the default value.

CLOCK	POS: XXXXX		Entry	Default
Date: XX dd.mm.yy		Display and enter current weekday, date	dd.mm.yy	
Time: hh.mm		Display and enter current time	hh.mm	
Daylight Saving	X	Display and enter automatic daylight saving change (Y/N)	↑, ↓, (Y/N)	J

### • Screen 3-2 Defrost Timer

DEFR.TIMER	POS: XXXXX		Entry	Default
Safe Defr. Time	XXX m	Safe defrost time for maximum allowed duration of internal defrosting	0..120	60 min
Defr. 1 xxxxx hh:mm		Defrost start time with internal defrosting; weekday, time	↑, ↓, (Mo-Su etc.) or numbers (hh:mm)	Mo-Su 06:00
Defr. 2 xxxxx hh:mm		Defrost start time with internal defrosting; weekday, time	↑, ↓, (Mo-Su etc.) or numbers (hh:mm)	Mo-Su 18:00
...				
Defr. 14 xxxxx hh:mm				

## 8.6 Menu 4 Messages

MESSAGES	POS: XXXXX		Entry
1 View		Continue to Screen 4-1 Show message log	1
2 Acknowledge		Messages in message log are cancelled; alarms are cancelled after being shown: press ESC to go back	2
3 Delete		Continue to Screen 4-3	3

- Screen 4-1 View messages

MESSAGES	POS: XXXXX		
Error Message 1:		Fault 1 message text	
dd.mm.yy hh:mm ON/OFF		Start of Fault 1	
dd.mm.yy hh:mm ON/OFF		End of Fault 1 (only when Fault 1 terminated)	
...			
Error Message n:		Fault n message text	
dd.mm.yy hh:mm ON/OFF		Start of Fault n	
dd.mm.yy hh:mm ON/OFF		End of Fault n (only when Fault n terminated)	

- Screen 4-2 Acknowledge messages

Alarms Cancelled! is displayed.

- Screen 4-3 Delete messages

MESSAGES	POS: XXXXX		Entry
Delete ! Are you sure ? NO: ESC YES: ↵		Safety prompt for deleting messages; press ESC to go back after cancelling messages	↵, ESC

## 8.7 Menu 5 Archive

The sensor wanted must first be selected to open the archives of a temperature sensor (Rx.1 .. Rx0):

ARCHIVE	POS: XXX		Entry
1 Temp. Rx.1		Select 1st temperature sensor Rx.1	1
2 Temp. Rx.2		Select 2nd temperature sensor Rx.2	2
...		...	...
0 Temp. Rx.0		Select 10th temperature sensor Rx.0	0

Temp. Rx.y	POS: XXXXX	
dd.mm.yy	hh:mm	Time of archiving Record 1
Zone 1: ab	x °C	Status and temperature of Zone 1, see Note *)



\*) Status ab covers following states of the refrigeration point. Display will be "--" if state is not active.

	Status
a	R = Cooling (with sensors Rx.1 .. Rx.5 only)
b	A = Alarm

## 8.8 Menu 6 Configuration

CONFIGURAT	POS: XXXXX		Entry
1 Refriger. Point		Continue to Screen 6-1	1
2 Controller		Continue to Screen 6-2	2
3 Language		Continue to Screen 6-3	3

### • Screen 6-1 Refriger. Point

REFR. PT.	POS: XXXXX		Entry	Default
Refr. Pt. Name:		Text only		
xxxxxxxxxxxxxxxx		Free text entry describing refrigeration point (see note following table)		Case controller
Item ID:	XXXXX	Free text entry displayed in screens after ITEM ID (see note following table)		UA300
Priority:	XX	Alarm priority in failure of refrigeration point or when global controller priority is set (Screen 6-5)	↑, ↓, or numbers (0..99)	1
Sensor Fault	XXX	Sensor break alarm delay	0..15	0m
No. Sensors	XX	Number of temperature sensors connected. After entering ↵ sensor scan is performed to redetermine the number of sensors.	↵	



A meaningful name that describes the refrigeration point in more detail should be entered, e.g. Cheese Counter 2 and CC2. The name is entered in the screens of the CI 3000 Store Computer or AL 300 Operator Terminal. Direct entry cannot be made in the UA 300 L screens displayed on operator terminals. The name also cannot be entered with the BT 300 x Operator Interface.

- Screen 6-2 Controller

CONTROLLER	POS: XXXXX		Entry
1 Type and Version		Continue to Screen 6-2-1	1
2 Sensor type		Continue to Screen 6-2-5	2

- Screen 6-2-1 Type and Version

VERSION	POS: XXXXX		Entry	Default
CTRLR. Type	XXXXXXXX	Set by DIP switch S3	-	UA300L
Software Vers.:	XXXX	Software version of case controller (EPROM)	-	
Serial No.:	XXXXXX	Device No. of case controller (from EEPROM)	-	

- Screen 6-2-2 Sensor Type

Entry chooses between values. Checkmark indicates current setting.

SENSORS	POS: XXXXX		Entry	Default
K243	√	Temperature range -50 .. 50°C Sensor type K243 is identical with L243	↵	√
K277		Temperature range -50 .. 50°C	↵	
5K3A1		Temperature range 0 .. 100°C	↵	

- Screen 6-3 Language

LANGUAGE	POS: XXXXX		Entry	Default
Deutsch D	√		↵	√
English GB			↵	
Francais F			↵	
Finnish FIN			↵	



## 9 Decommissioning and disposal

### 9.1 Decommissioning / Demounting

The disassembly of the equipment is only to be carried out by trained and authorised personnel.



**Warning - hazardous electrical voltage!**

**Danger of electric shock!** During disassembly the same safety instructions and hazard warnings are to be observed as in the case of installation, commissioning and maintenance, see chapter 1, "Industrial safety notes".



During disassembly the reverse procedure is to be observed as that during assembly, see chapter "Installation and Startup".

### 9.2 Disposal

The scope of our delivery is designated as a component exclusively for further processing.

As a consequence of this fact, ECKELMANN AG does not undertake any measures for the taking back or municipal recycling of this product as it is not supplied directly to the free market.




Never dispose of this product with other household waste. Please inform yourself of the local regulations for the separate disposal of electrical and electronic products. The correct disposal of your old equipment will protect people and the environment from possible negative effects.



The provisions and regulations for the disposal of the equipment are to be observed. In accordance with the contractual agreement, the customer is beholden to dispose of electrical and electronic waste in compliance with the statutory regulations based on the Directive 2002/96/EC on waste electrical and electronic equipment.

Notice:

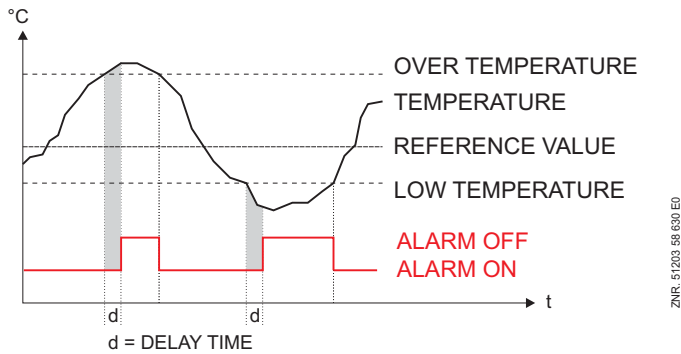
## 10 Alarms and Messages of UA 300 L

No.	Message	Cause	Correction
<b>Hardware faults</b>			
4	EEPROM Fault	Component for saving configuration defective or configuration data in EEPROM implausible.	Save parameters in LDSWin software, perform first start if necessary and load parameters from LDSWin. Contact Service Organization if fault recurs
6	Flash Fault	Flash memory module defective.	Please contact Service Organization - Replace device
8	RTC Fault	Real-time clock defective.	Please contact Service Organization - Replace device
10	Battery Voltage	Real-time clock and RAM backup battery dead	Replace battery (see Section 4 - Installation and Startup)
<b>Messages</b>			
50	First Start	Controller performed first start (basic settings loaded).	-
51	Power Failure	Controller performed restart after power outage.	-
125	No Defrost	Defrosting not performed within alarm interval.	Check parameter settings: Internal/external defrost timer, defrost times, alarm delay
126	Timer-Term. Defrost	Defrosting terminated by safe defrost time. Heater defective, contactor defective, evaporator iced.   Defrosting is always terminated by safe defrost time on controllers working with off-cycle defrosting. Alarm may be displayed at intervals on these controllers without an actual fault occurring.	Check parameter settings: Defrost termination temperature too low, check evaporator for icing, check location of defrost sensor, set defrost termination temperature to "--"
128	Sensor Fault	Sensor disconnected, short circuiting of sensor or external interference. Temperature on sensor outside set measuring range.	Check connecting cable, check cable screening, replace sensors affected
132	Name HighT.Sx	Temperature above upper limit on monitored control sensor (S) of Zone x	Check parameter setting, sensors, system
133	Name LowT.Sx	Temperature below lower limit on monitored control sensor (S) of Zone x	Check parameter setting, sensors, system
141	Wrong ctrlr type	Controller type set on DIP switch is not supported.	Change controller type (see Section 4. Setting Controller Type).
240	Setpoint Change	Setpoint changed.	-

## 10.1 Alarms

### High or low temperature alarm

High or low temperature is alarmed when temperature rises or falls to the alarm setpoint and the set delay has expired.



The high and low temperature setpoints are entered in °C. High and low temperature setpoints can be set separately for each temperature zone. The time delay applies to all. This alarm is inactive during defrosting.



The sensor name is included in the alarm report for better identification of the measurement location.

### Disabling high or low temperature alarm

Temperature alarms can be suppressed by means of Digital Input 2 (Terminals D21, D22) and 3 (Terminals D31, D32):

When Digit Input 2 is active, all temperature alarms for sensors Rx.1 to Rx.5 are suppressed.

When Digit Input 3 is active, all temperature alarms for sensors Rx.6 to Rx.0 are suppressed.

This does not affect other alarms, in particular *Sensor Break* alarm. Alarm is enabled when the digital inputs are not connected or not active.

### No defrost alarm

Alarm is generated if defrosting does not take place during a definable interval, but not if defrosting is suppressed due to high temperature or by demand defrosting.



The delay for the **No Defrost** alarm is fixed at 24 hours.

### Sensor break alarm

Alarm is generated after the set delay expires (*Menu 6-2-3*) if the controller detects breakage or short circuit on a sensor. The time delay is global for all controllers.



Sensor break alarm is only generated when priority of the sensor concerned is set to a value other than "-".

### Hardware fault alarm

Alarm is generated without delay if the controller detects hardware problems. Malfunction of the following components is detected:

- Temperature measurement
- General fault
- Loss of setpoint (memory problems)
- Time/date
- First start

Priority for transmitting the alarm is governed by the controller priority and type of alarm.

### Alarm routes

A detected alarm state is transmitted by the UA 300 L case controller by the following routes:

- Alarm relay (floating changeover contact)
- Local BT 300 x Operator Interface connected to display port
- CAN bus interface (LDS System)

Manual reset can be performed as follows:

- Via the CAN bus interface
- On a local BT 300 x Operator Interface connected to the display port
- By switching off the controller, regardless of whether the alarm is still active

## 10.1.1 Messages

States outside normal operating conditions but not constituting an alarm state are reported via the interfaces and entered in the message log.

Examples of messages:

- Electric power failure / restart
- Change of setpoint
- Defrosting terminated by safe defrost time

## 10.1.2 Transient alarms and messages

Transient alarms are one-time event alarms and are not time stamped for send time. As a result, transient alarms are not deleted automatically after the event and must be cancelled manually. This applies regardless of the setting made for *Selfholding* (Menu 6-2-3).

The following are transient alarms:

- Time-terminated defrosting
- Change of setpoint
- Electric power failure
- First start

### 10.1.3 Message log

A maximum of 25 alarms and messages with receive and send date and time are entered in the message log and are stored in a ring buffer. When the ring buffer is full, the next new entry deletes the oldest entry.

Priority 0 alarms are only entered in the message log. Priority "--" alarms are neither reported to the alarm server nor entered in the message log.



Alarms may be lost by setting priority to 0 or "--". Priority and time delay apply only to High Temperature and Low Temperature alarms. The global priority (Menu 6-1) applies to all other alarms.

## 11 Specifications of UA 300 L

### 11.1 Electrical data



**Warning - hazardous electrical voltage!**

**Danger of electric shock! Overvoltage category III / pollution degree 2:**

All device connections designed for use with 230 V AC supply voltage **must** be connected to the same phase conductor.

400 V AC between neighbouring connection terminals is **not** permitted!

**Overvoltage category II / pollution degree 2 or**

**Overvoltage category II / pollution degree 1:**

Different phase conductors may be used.

400 V AC between neighbouring connection terminals is permitted!

	UA 300 L xC	UA 300 L xS
<b>Power supply</b>	230 V AC, 200 - 265 V AC, 50/60 Hz, (+/- 3 Hz)	
<b>Rated power</b>	10 VA	
<b>Leakage current over PE</b>	max. 1 mA	
<b>Relay outputs</b>	7 x 250 V AC, 6 A (4 N.O., 3 changeover), floating	
<b>Transistor outputs</b>	24 V DC pull down Switching transistor with internal current limiting to 50 mA for auxiliary alarm output	
<b>Lighting switch with external connection option</b>	---	1 double-pole, floating
<b>Digital inputs</b>	3 x 230 V AC, floating	
<b>Analog inputs</b>	10 temperature sensors, two-wire type for controller types K243/L243, K277, 5K3A1 (No shielding is required on sensor leads when installed exclusively inside the refrigerated display case and when external interference (for example from parallel power wires) is not to be expected)	
<b>Analog outputs</b>	---	
<b>Fieldbus port</b>	CAN bus, floating	
<b>Data ports</b>	For BT 300 x Operator Interface and one to four BT 30 Temperature Displays TTY (inverted)	
<b>Other ports</b>	---	
<b>Archive memory (internal)</b>	For UA 300 L TC/AC: Archiving 112 days	For UA 300 L TS/AS: Archiving 112 days
<b>Monitoring function</b>	Watchdog	
<b>Real-time clock</b>	For UA 300 L TC/AC Battery-backed Lithium cell CR 2450N 3 V (shelf life 10 years) typically 8 min/yr at 25 °C	For UA 300 L TS/AC Battery-backed Lithium cell CR 2450N 3 V (shelf life 10 years) typically 8 min/yr at 25 °C

	UA 300 L xC	UA 300 L xS
<b>Temperature range</b>	Transport: -20 °C ... +80 °C / Operation: 0 °C ... +50 °C	
<b>Temperature change</b>	Transport: max. 20 K/h / Operation: max. 10 K/h	
<b>Relative humidity (non-condensing)</b>	Transport: 5 % ... 85 % / Operation: 5 % ... 85 %	
<b>Shock to DIN EN 60068-2-27</b>	Transport and operation: 30 g	
<b>Vibration 10 - 150 Hz to DIN EN 60068-2-6</b>	Transport and operation: 2 g	
<b>Atmospheric pressure</b>	Transport: 660 hPa ... 1060 hPa / Operation: 860 hPa ... 1060 hPa	
<b>Weight</b>	ca. 750 g	
<b>CE conformity</b>	Conforming to EU Directive 73/23/EEG (Low Voltage Directive) 89/336/EEG (EMC Directive)	
<b>Supplement to standard DIN EN 12830 for temperature recorders (UA 300 L xy with L243 temperature sensor)</b>		
<i>Type of recorder</i>		
<b>Suitable for storage</b>	S	
<i>General requirements</i>		
<b>Measuring range</b>	-50 °C ... +50 °C	
<b>Degree of protection provided by the enclosure</b>	IP 20	
<b>Supply voltage</b>	230 V AC +10 % .. -15 %	
<b>Frequency</b>	50 Hz +/- 3 Hz	
<b>Power cut-offs</b>	Data permanently preserved (flash memory technology)	
<i>Metrological characteristics</i>		
<b>Accuracy class</b>	2	
<b>Maximum permissible error</b>	+/- 1 °C <sup>1)</sup>	
<b>Resolution</b>	internal: 0.1 °C / display and recording: 1 °C	
<b>Recording interval</b>	15 min.	
<b>Recording duration</b>	1 year (only in conjunction with CI 3000 Store Computer)	
<b>Maximum relative time error</b>	< 0.1 %	
<b>Response time</b>	< 10 min.	
<b>Type of climatic environment</b>	A	

1) Tolerance for complete measuring loop including calibrated sensors.



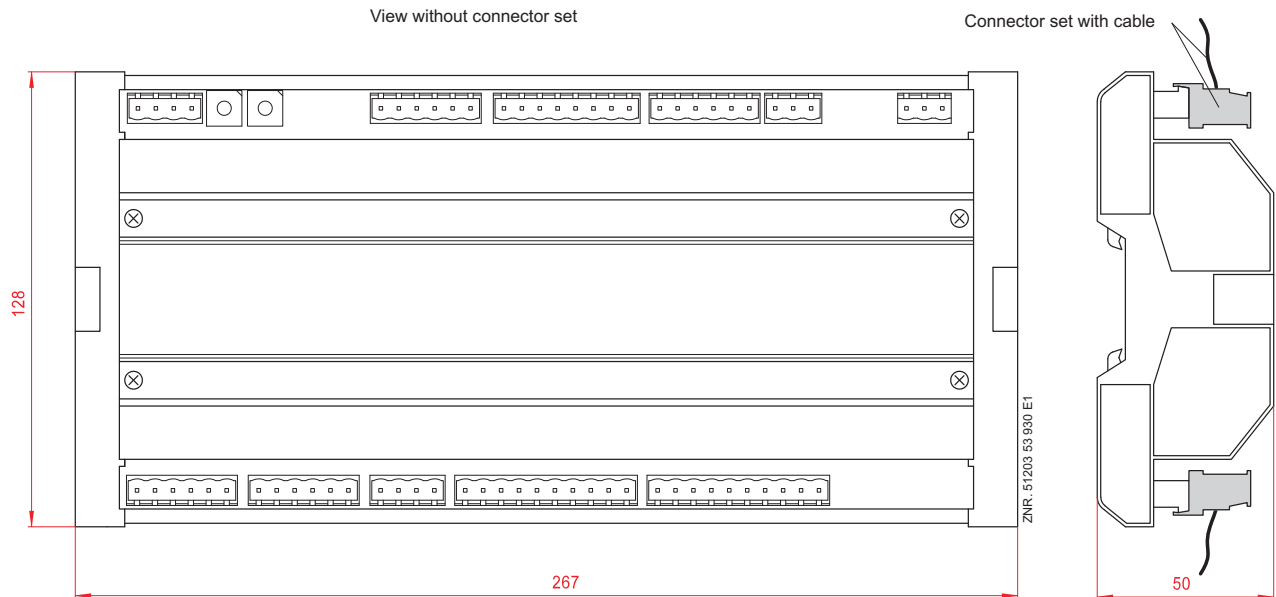
DIN EN 12830 requires recorders for measurement of temperatures to be regularly tested in accordance with DIN EN 13486 when in operation.



## 11.2 Mechanical data

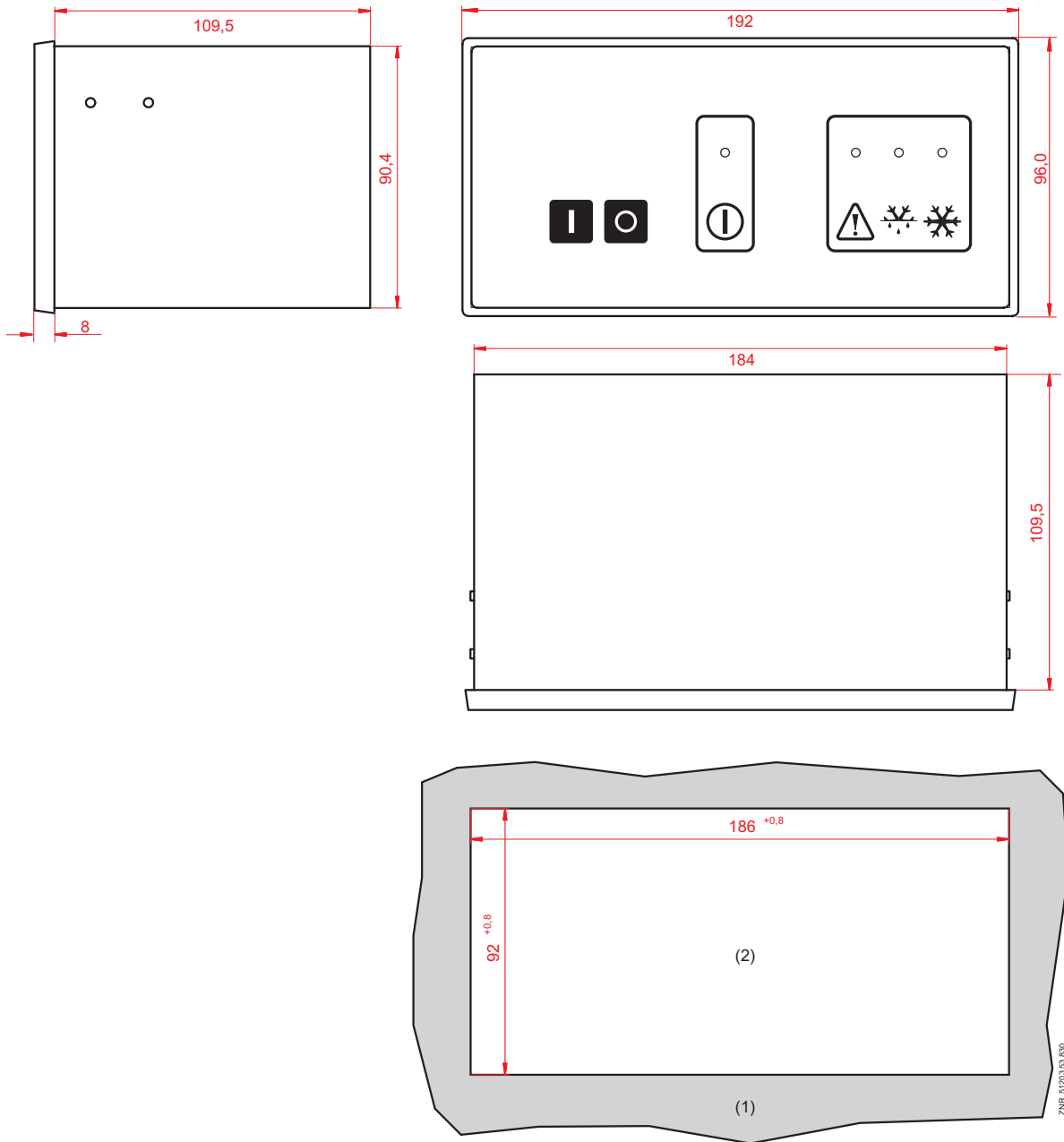
### 11.2.1 DIN rail mounting of UA 300 L xC

C stands for "In Cabinet", meaning DIN rail mounting.



### 11.2.2 Panelmounting of UA 300 L xS

S stands for "Switchbox", meaning control panel mounting



(1): Control panel

(2): Panel cutout

## 12 Order numbers and accessories of UA 300 L

### 12.1 Case Controller

Type	Description	Order number
UA 300 L AC	For DIN rail mounting, with CAN bus, real time clock, internal archive	LIUA3L0011
UA 300 L CC	For DIN rail mounting, with CAN bus	LIUA3L0012
UA 300 L TC	For DIN rail mounting, real time clock, internal archive	LIUA3L0014
UA 300 L CS	For panel mounting, with CAN bus	LIUA3L0S52
UA 300 L TS	For panel mounting, real time clock, internal archive	LIUA3L0S54

### 12.2 Accessories

Accessories	Description	Order number
Temperature sensors (NTC)	L243 (Standard)    3,0 m	KGLZTEMP56
	5,8 m	KGLZTEMP58
	5K3A1                    8,5 m	KGLZ5K3A1
	K243                    Block sensor (older version)	KGLZL243
BT 300 x Operator Interface and Temperature display	BT 300 M    Operator Interface handheld operating terminal for customer service with 2,8 m connecting cable	LIBDTUA052
	BT 300 S    Operator Interface for panel mounting	LIBT300S51
	BT 300 C    For cabinets and serve over counters	LIBDTUA051
	BT 300 U    Integrated operating terminal	LIBT300U51
BT 30 Temperature display	Temperature display with 7 m connecting cable (RJ45)	BT30LC0002
	RJ45 splitter for the connection of up to four BT 30 on an case controller	KGLVERT001
Connector set	UA 300 CC UA 300 TC UA 300 CS UA 300 TS	STVSETUA01 STVSETUA02 STVSETUA03 STVSETUA04

Notice: