



# Operating instruction

## AL 300 W / AL 300 S

The operation terminal in the E\*LDS system - Version V5.08



AL 300 W



AL 300 S



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

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## 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 instruction 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 instruction 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 operating instruction 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 operating instruction 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.
- Check that the electric power supply is correct for the equipment before connecting it to power.
- When using un-coded plug connectors it is possible to connect them so that there is a danger to life and limb! If this cannot be excluded, coded plug connectors must be used.
- 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.



1. According to experience, error message transmission is not yet fully functional during commissioning (no telephone line laid etc.). In such cases, it is strongly recommended to use the available PRIO1/PRI02 alarm contacts at the operator terminal to realise the transmission of alarms via a telephone network.

2. Following the setup of error message transmission, i.e. alarm signalling, it must be tested and inspected to ensure correct functioning.



For further information on the CAN bus, see the operating instruction "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
- BGV A3 - 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 AL 300 control system has been designed for use as operator terminal in commercial, industrial refrigeration systems and building management 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 BGV A3 - 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
BGV A3	Employer's Liability Association regulations for health and safety in the workplace



## 2 Application of AL 300



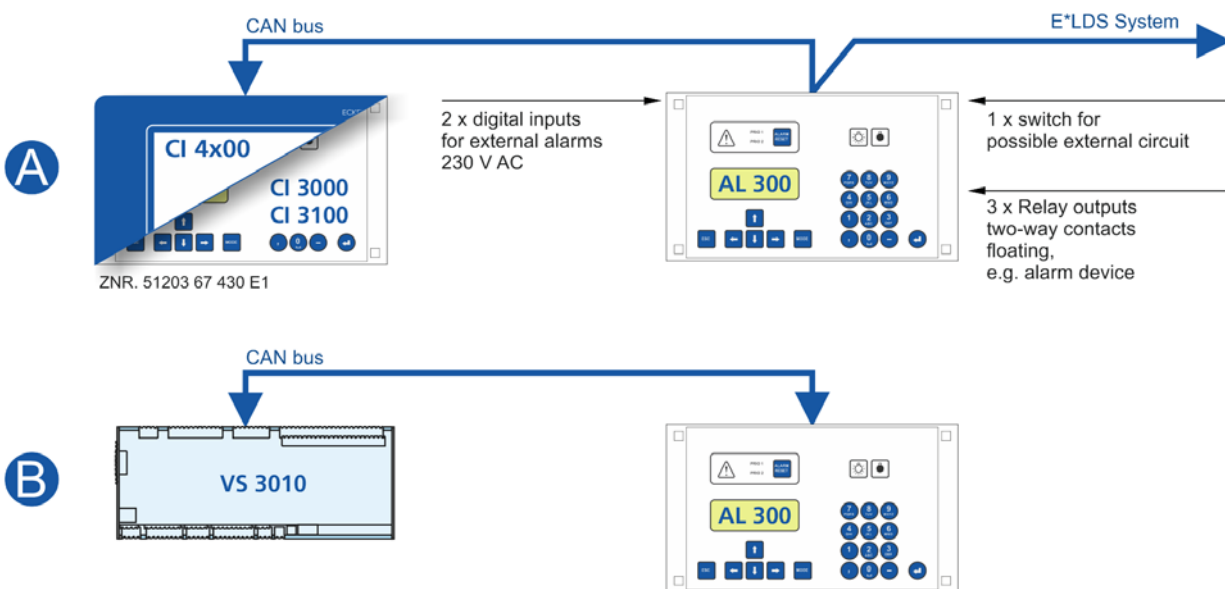
AL 300 W



AL 300 S

The AL 300 Operator Terminal can be used in an E\*LDS system with a CI 4x00 System Centre or a CI 3000 Store Computer (A). However, in contrast to the system centre or store computer, it does not have a modem interface, no archive storage and no connection for SIOX extension modules. Joint operation of up to 9 AL 300 Operator Terminals is possible within an E\*LDS system.

Other possible uses can occur for the modernisation of old systems if type VS 1000 / VS 2000 pack controllers are removed and replaced for example with a VS 3010 where an operator terminal (B) is required for its (remote) operation, parametrisation and alarm signalling.



There are 2 mounting-specific versions of the operator terminal available:

**AL 300 S:** For installation in the control panel; the mechanical dimensions are identical to the dimensions of the CI 4x00 System Centre / CI 3000 Store Computer

**AL 300 W:** For wall mounting in a plastic casing



## 2.1 Applications

Functions	E*LDS components		
	With CI 4x00	With CI 3000 / CI 3100	With for example VS 3010
Centralized parameter setting and configuration of all LDS components via CAN bus. The AL 300 can be used for remote control and configuring of all LDS components from a single location via CAN bus. Exceptions: LAN Gateway, Combi Gateway, CI 4x00	●	●	●
In-use change of the user language can also be made from the central location.	●	●	●
Monitoring of two connected external digital signals (external alarms)	●	●	●
Alarm signalling by indicator light and buzzer and by external horn and two alarm contacts.	●	●	●
Central display of alarms of all E*LDS components	●	●	●
Central display of messages of all E*LDS components	-	●	●
Centralized display of operating data generated by all E*LDS components.	-	●	●
<b>Only if no CI 4x00 System Centre or a CI 3000 Store Computer is available or has failed</b>			
Monitoring of CAN bus and operational status of all E*LDS components. Alarm is generated in fault or failure of CAN bus and failure of components.	●	●	●
The AL 300 Operator Terminal has a real-time clock with power reserve for central time synchronisation. The clock supports the automatic changeover between summer and winter time. The date and time of all E*LDS components can be adjusted system-wide via the CAN bus using the AL 300 Operator Terminal or their internal clocks are synchronised cyclically. This is not possible in systems with a CI 4x00 System Centre.	-	●	●



Application of AL 300

## 2.2 Circuit points

Connectivity for the AL 300 Operator Terminal is as follows (for details see chapter Pin and Terminal Assignments):

### Inputs/outputs:

- 2 x digital inputs 230 V AC e.g. for monitoring of external alarms
- 3 x relay outputs 230 V AC, floating output:
  - 2 x alarm contacts (PRIO1/2) e.g. for connection of a telephone dialling device
  - 1 x audible signalling unit (HORN)
- 1 front button with external wiring option



### Interfaces:

- CAN bus interface for interconnection of all LDS components (CI 4x00 System Centre, CI 3000 Store Computer, other AL 300 Operator Terminal types, UA 300-/UA 400 Family case/coldroom controllers and VS 3010, VS 3010 BS, VS 3010 CT, Vs 3010 WP, FS 3010 or VS 300 Pack Controllers, Receiver Modules WR 300 / WR 400)
- RS232 port for special functions (no function, no connection to LDSWin is possible)

## 2.3 Compatibility with other LDS components

### Version 5.06

Functional adaptation to the CI 4x00 System Centre with Version 6.0.0 or higher

### Version 4.10

When a CI 3000 Store Computer of Version 4.24 or higher is connected to the LDS System, the AL 300 Operator Terminals used must also be Version 4.10 or higher.

### Version 4.08

When a CI 3000 Store Computer of Version 4.19 or higher is connected to the LDS System, the AL 300 Operator Terminals used must also be Version 4.08 or higher.



Application of AL 300

#### **Version 4.06**

When a CI 3000 Store Computer of Version 4.08 or higher is connected to the LDS System, the AL 300 Operator Terminals used must also be Version 4.06 or higher.

#### **Version 4.03**

When a CI 3000 Store Computer of Version 4.03 or higher is connected to the LDS System, the AL 300 Operator Terminals used must also be Version 4.03 or higher.

#### **Version 3.04**

Version 3.04 of the AL 300 Operator Terminal is fully compatible with all LDS components.

### **2.3.1 New features compared to earlier versions**

#### **Version 5.06**

If a CI 4x00 System Centre with Version 6.0.0 or higher or a CI 3000 Store Computer with Version 5.00 or higher is available in the E\*LDS system, AL 300 Operator Terminals with Version 5.06 or higher must also be used. LDSWin with Version 2.4.4008 or higher is required for systems with a CI 4x00 System Centre with Version 6.0.0 or higher.

#### **Version 4.10**

Functionally adaptation to CI 3000 Store Computer version 4.24 or higher.

#### **Version 4.08**

Functionally adaptation to CI 3000 Store Computer version 4.19 or higher.  
(u.a. Integration of the WR 300 / WR 400 receiver modules for TS 30 W wireless sensors)

#### **Version 4.06**

Functionally adaptation to CI 3000 Store Computer version 4.03 or higher  
(e.g. integration of compact controllers UA 30Rx/Dixell/other controllers)

#### **Version 4.03**

Functionally adaptation to CI 3000 Store Computer version 4.03 or higher.

#### **Version 3.04**

- Supports service mode of CI 3000 Store Computer:  
Service technician can suppress remote alarming for a defined time (1 to 255 min.) while maintenance is being carried out.
- Alarm takeover by service center
- Last-in alarm changed on alarm relays:  
New alarms are now reported during the time delay.



### 3 Function of AL 300

#### 3.1 Messages and alarms

##### Use in the E\*LDS system

The AL 300 Operator Terminal, in addition to the CI 4x00 System Centre and the CI 3000 / CI 3100 Store Computer, is the central collection point for messages of all E\*LDS components that are listed in an alarm list and displayed to the operator - see menu 1 "Alarms". The alarm log can store 100 entries. When it is full, the next new message overwrites the oldest entry. Detailed information on the alarm and message texts is provided in chapter 8 Alarms and Messages.

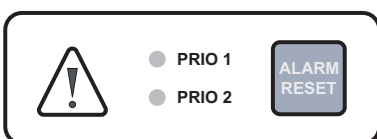
Messages generated by the E\*LDS components are transmitted to the AL 300 Operator Terminal(s) via the CAN bus with one of the following priorities:

- No message is generated, no alerting
- 0, 10, 20,...90 Message - only entry in the message list
- 1, 11, 21,...91 High priority alarm - entry in the alarm and message list, activation of the alarm relay PRIO1 (e.g. in the event of potential damage to goods)
- 2, 12, 22,...92 High priority alarm - entry in the alarm and message list, activation of the alarm relay PRIO2 (e.g. in the event of faults which can be rectified by customer services on the following day)
- 3, 13, 23,...93 Low priority alarm - Alarm entry in the message and alarm list
- 4, 14, 24,...94
- 5, 15, 25,...95
- 6, 16, 26,...96
- 7, 17, 27,...97
- 8, 18, 28,...98
- 9, 19, 29,...99 Low priority alarm - Only for local alarm signal, no modem, can be configured to operate the AUX relay



Messages of Priority 0 are ignored by the AL 300 and are not displayed. **Exception:** Messages generated by the AL 300 Operator Terminal itself! If available in the E\*LDS system, the display is only made in the message list of the system centre / store computer. Messages with the priorities X1 and X2 are designated with "Alarm" below.

Alarms shown in the alarm log can be cancelled and deleted. Each new alarm logged in the alarm log sounds the audible alarm devices (internal buzzer or external horn). These can be cancelled by pressing the *ALARM RESET* key:







**Danger of failure of alarm messaging!** Successful transmission of alarms from E\*LDS components cannot be assured in systems where CAN bus communication is severely disturbed (frequent messages of CAN faults or actual CAN failure).

In order to ensure the correct functioning of individual alarm paths (e.g. via modem and relay contacts), they **must** be checked by triggering test alarms on a cyclical basis, see the chapter Operation.

As a rule, it must be ensured that the alarms are sent via a **number of independent alarm paths**.

The following messages and alarms can be generated by the AL 300 Operator Terminal:

- **Alarms**

- Hardware error
- CAN bus failure/fault
- AL 300 first start
- AL 300 restart
- E\*LDS component failure
- External alarms

- **Messages**

- Changed configuration or date/time

### 3.1.1 Resetting alarms

Alarms can be reset by pressing the ALARM RESET key while the alarm log (Menu 4 - Message and Alarm Log) is displayed. Reset is effective throughout the system, meaning that all alarms that can be reset are in fact reset in all components.



Alarms can only be reset when reported as corrected. Reset alarms are hidden in the alarm log. For subsequent troubleshooting, all previously acknowledged and thus hidden alarms can be displayed on the operator terminal again by pressing and holding (approx. 3 seconds) the buttons MODE + ALARM RESET. These alarms can afterwards be reset and hidden in the normal manner.

## 3.2 Digital inputs

The operator terminal has 2 digital 230 V AC inputs (AL.1: A1/A2 and AL.2: B1/B2).

These can be configured for monitoring and alarm signalling of external maintenance groups (external alarms).



**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!**



Function of AL 300

### 3.2.1 Alarm and signal inputs

The AL 300 Operator Terminal has two digital inputs 230 V AC for monitoring and alarming external systems/alarms (terminals AL.1: A1/A2 / AL.2: B1/B2). The inputs are initially deactivated and must be configured prior to use (Menu 7-5) for N.C. or N.O. operation, i.e. to signal alarm in absence or presence of signal power.

A user-definable message text of 19 characters can be assigned individually to each alarm input to be displayed with the alarm.

Alarm is delayed for a definable time between 0 and 255 min. Each alarm input also has a definable alarm priority between 0 and 99. Alarm inputs of priority X1 and X2 generate normal alarms that are displayed in the alarm log and transmitted via the configured alarm routes.

### 3.3 Relay outputs



**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!**

Low potential voltage **and** safety extra-low voltage may **not** be connected together at the relays outputs 15/16/18, 25/26/28 and 35/36/38!

#### 3.3.1 Alarm relays PRIO1 / PRIO2

The AL 300 Operator Terminal has a digital alarm output (floating relay contacts) for each alarm priority X1 and X2, usable for example to operate a telephone dialer (terminals PRIO.1: 35/36/38 / PRIO.2: 25/26/28). When an alarm is generated by an E\*LDS component, the output assigned to the respective priority is activated.

If the output was already activated, it is deactivated for about 5 seconds and then reactivated (last-in alarm) if previous activation of the output was 5 minutes or more past.

If two or more alarms are received during this interval, the last-in alarm is postponed until the interval has expired. The alarm outputs are automatically deactivated for instance when the alarm log contains no alarm of the respective priority after pressing the ALARM RESET key.

The alarm outputs are the latching type with time-delayed automatic alarming of power failure. The current output states are preserved if power supply to the controller is switched off briefly. If the controller remains off for longer than about 5 minutes, the outputs are switched to the alarm state.

#### 3.3.2 Horn relay 15/16/18

In addition to the prioritised alarm outputs PRIO1 / PRIO2, the controller is also equipped with a changeover contact which can be used to connect an external audible alarm signalling unit (HORN) using the terminals 15/16/18.



### 3.4 CAN bus station monitoring

The AL 300 Operator Terminal performs cyclic check on presence of all E\*LDS components previously detected in the system. Failure of a component is detected by this station monitoring and reported by *Computer Fault* alarm.

Every new E\*LDS component connected to the CAN bus is detected via “plug and play” automatically by the store computer and included in station monitoring (Screen 7-1).

E*LDS components	CAN bus address	Max. no. of E*LDS components on CAN bus
Case controller of the UA 300 and UA 400 series	1..99	99
VS 3010 / VS 3010 BS / VS 3010 CT / VS 3010 WP FS 3010 / VS 300 / VS 3010 C pack controllers	101..109	9
CI 4x000 System Centre	<b>111</b> <b>127</b>	<b>1 System Centre</b> <b>1 integrated LAN Gateway</b>
CI 3000 / CI 3100 Store Computer	<b>111</b>	<b>1</b>
AL 300 Operator Terminal	112 .. 116, 117 .. 120	Max. 9 or max. 5, if 4 receiver modules are present in the system.
Receiver module WR 300 for wireless temperature sensors TS 30 W	117 .. 120	4 (only possible, if NO operator terminal uses these CAN bus addresses)
LDSWin PC via COM port	121	1
DDC modules of building control system (BCS)	122..125	4 Maximum of 4 if there are no Modbus TCP master gateways installed in the system
LDSWin PC via CAN bus PC adapter	126	1
LDSWin PC via LAN gateway (from version 1.1c or higher)	126 or 127	1
Combi-Gateway - LAN-Gateway - XML-Gateway - Modbus TCP-Master 1..4 Gateway	126 or 127 110 122..125	1 1 Maximum of 4 if there are no DDC modules installed in the system.



This takes over the station monitoring in systems with system centres and store computers. If there is no system centre or store computer installed in the system, the AL 300 with the respective lowest CAN bus address cyclically checks the presence of all E\*LDS components once they have been detected in the system.



Function of AL 300

### 3.5 Alarm suppression in manual shutdown of case controllers

Shutdown of a refrigerated case or coldroom is detected by CAN bus station monitoring as a failure (Screen 7-1). The display of all AL 300 and - if present - of the CI 4x00 System Centre or of the CI 3000 / CI 3100 Store Computer then shows the query whether the refrigeration point has been deliberately unloaded.

The user can then confirm shutdown within 5 minutes by pressing ENTER.

If confirmation is made within this interval, monitoring of the case or coldroom concerned will be deactivated and accordingly it will **not** be reported as a failure.

Otherwise, or if the user answers no to the prompt by pressing the ESC key, the case or coldroom will as normal be reported as failed. A case or coldroom that has been shut down is automatically re-included in station monitoring when it is switched on again.



Any disconnection of refrigeration points is registered in the message list of the system centre / store computer (if this is present)!



Function of AL 300

ECKELMANN

Notice:



## 4 Installation and Startup of AL 300



### Important Safety Notes!

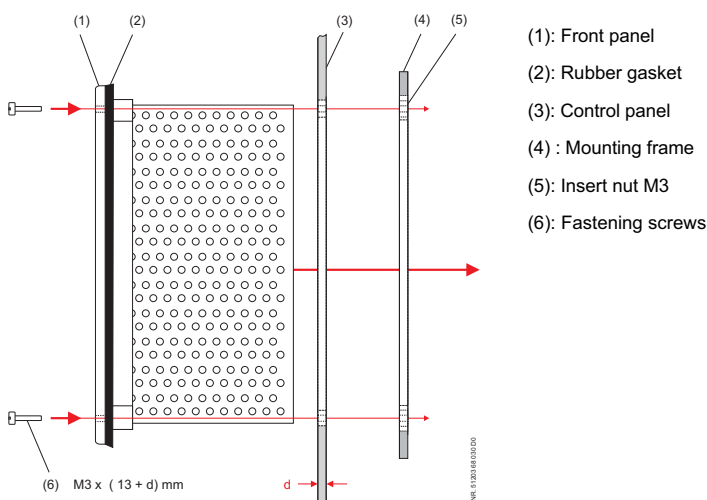
Before installation and startup the chapter 1 must be read. All safety notes and hazard warnings should be noted.

### 4.1 Panel mounting of AL 300 S



The AL 300 S Operator Terminal for panel mounting is installed in a metal cage with plastic front and can be mounted either in a switch cabinet (AL 300 S) or a plastic casing (AL 300 W, see chapter 4.2). The power consumption of the Operator Terminal is 5 VA. When installing, make sure to maintain adequate clearance from the cable duct or device above and below for removal of heat.

The AL 300 S / AL 300 W Operator Terminal with inserted rubber gasket (2) is pushed from outside through the panel cut-out in the control panel or plastic panel (3) and screwed to the mounting frame (4) behind it using 4 fastening screws (6):



See Section "Specifications" for electrical enclosure, measurements and panel mounting cut-out. See the Pin and Terminal Assignments chapter for wiring details.



## 4.2 Wall mounting of AL 300 W



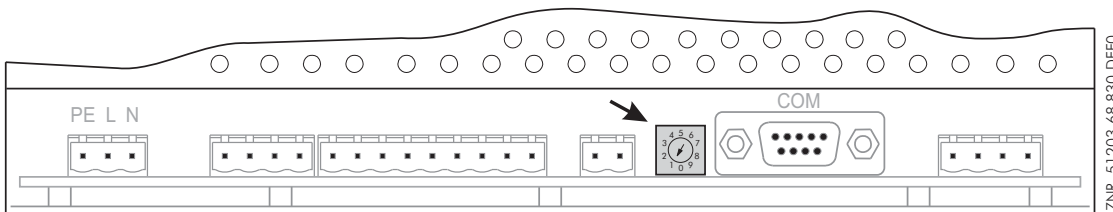
Type AL 300 W Operator Terminal for wall mounting is housed in a plastic casing. The power consumption of the Operator Terminal is 5 VA.



See Section “Specifications” for electrical enclosure, measurements and panel mounting cut-out. See the Pin and Terminal Assignments chapter for wiring details.

## 4.3 Setting the CAN bus address

Use the rotary switch on the left of the COM port to set the CAN bus address:



A unique CAN bus address (Node No. 112 to 120) must be assigned to each AL 300 Operator Terminal (maximum nine terminals).

Switch position	CAN bus address	Function
0	-	CAN bus communication in AL 300 Operator Terminal deactivated.
1 .. 9	112 .. 120	Normal operating mode.



If the system centre / store computer fails or is switched off, the AL 300 Operator Terminal (if present) with the lowest CAN bus address takes over the monitoring for the duration of the disconnection. After changing the switch position, the AL 300 Operator Terminal **MUST** be disconnected briefly from power or restart must be performed by simultaneously pressing the **MODE + ECS + 8** keys for the new settings to take effect!



#### 4.4 Restart - restart of the controller

For a restart, the device is restarted with all configured parameters and the CAN bus address set on the rotary switch. A restart can be initiated using the following procedure:

- disconnection and reconnection of the power supply or
- by simultaneously pressing the buttons **MODE + ESC + 8**

#### 4.5 First start - load factory settings

During a first start, all parameters are replaced by the factory settings in the device; all previous settings are deleted and lost. A first start can be initiated using the following procedure:

- by simultaneously pressing the buttons **MODE + ESC + 9**

#### 4.6 Special functions for startup

A number of special functions can be accessed by key combinations:

- triggering a test alarm with the priority X1..X9 by simultaneously pressing the buttons **MODE + 1..9**  
Note: test alarms are only triggered locally at the operator terminal and are used for testing the alarm wiring at its relay outputs.
- triggering of a restart by simultaneously pressing the buttons **MODE + ESC + 8**
- triggering of a first start by simultaneously pressing the buttons **MODE + ESC + 9**





## 4.7 Replacing the battery

The Operator Terminal contains a backup battery (CR 2450-N, 3V lithium). A Battery Low alarm (Error No. 10) will be signalled when the battery needs replacing.



### Warning - hazardous electrical voltage!

**Danger of electric shock!** The safety instructions and work safety instructions in chapter 1 must be observed when replacing the battery, the safety instructions in chapter 1 of the work safety instructions are to be observed. Power supply to **all** connectors must be switched off before connecting or disconnecting them. Circuit boards may only be replaced when power supply is disconnected. Mark connectors as necessary BEFORE disconnecting them. Grip circuit boards only at the edges.



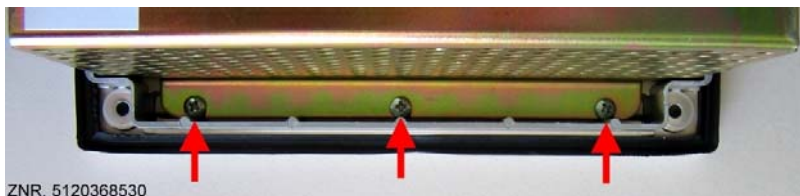
ESD (electrostatic discharge) regulations must be observed and complied with, see section 1.2.

### Battery replacement procedure:



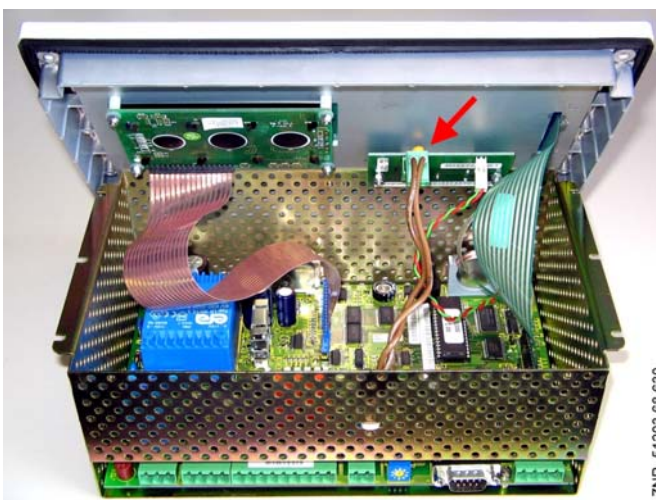
AL 300 connected to CAN bus: The AL 300 Operator Terminal must be removed from the system for battery replacement. The removal of the CAN bus will trigger an error message at the higher level controller (System Centre / Store Computer / other AL 300 Operator Terminals)! Make sure that service mode is activated or the Service Center is appropriately notified in advance.

1. Remove the AL 300 (with disconnected connectors) from the control panel (see chapter 4.1 and 4.2)
2. Place the AL 300 face down on a clean, dry and level surface and undo the six screws fastening the metal cage to the front panel.



ZNR. 5120368530

3. Carefully turn the AL 300 over face up, lift the front panel and disconnect the green two-pin connector (see arrow in the picture) from the small switch wiring board. Leave the other connectors in place!



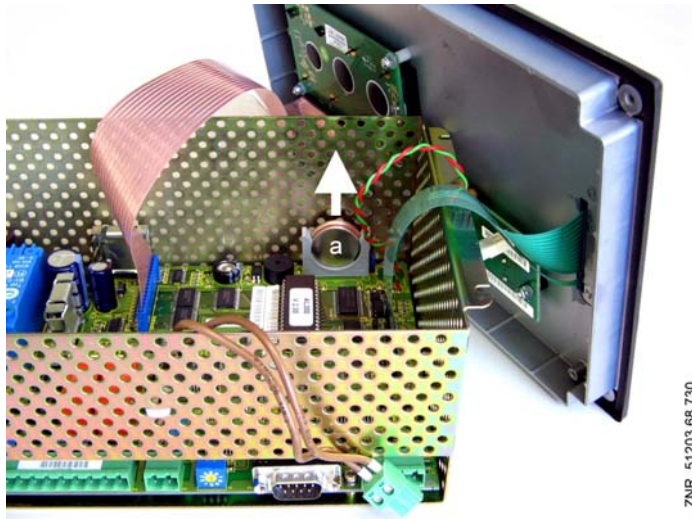
ZNR. 51203 68 630



4. Then carefully lift off the front panel and carefully set it down in upright position (see picture)!



Do not bend the ribbon cable!



5. Pull battery (a) up out of its holder (see arrow in picture) dispose of it in regulation manner.



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".



Do **not** touch the new battery with metal pliers, as it might be short-circuited and destroyed:  
- wipe the new battery with a clean, dry cloth,  
- do **not** touch the contact faces on the edges of the new battery.

6. Pick up the new battery with a cloth and press it in its holder.
7. Re-assemble in the reverse order. Before doing so, make sure the green two-pin connector is properly connected (arrow in picture).
8. Re-install the AL 300 in the control panel and re-connect all connectors.
9. Re-connect the AL 300 to the power supply.
10. After applying the power supply, the AL 300 Operator Terminal with unchanged configuration of the system centre / store computer is detected again automatically via the CAN bus. Date, time and automatic summer time / winter time changeover are set automatically using the central time synchronisation via the system centre / of the store computer if these are present. Otherwise this synchronisation takes place using the operator terminal that has the lowest CAN bus address.



Messages or alarms generated on restarting the AL 300 must be checked and/or cancelled on the System Centre / Store Computer or other AL 300 Operator Terminals!



## 4.8 Firmware update using replacement of the EPROM

The operator terminal has an EPROM with the firmware of the device. It is required to replace the EPROM with a new one with the current firmware for any firmware update.



**Warning - hazardous electrical voltage!**

**Danger of electric shock!** The safety instructions and work safety instructions in chapter 1 must be observed when replacing the EPROM. Power supply to **all** connectors must be switched off before connecting or disconnecting them. Circuit boards may only be replaced when power supply is disconnected. Mark connectors as necessary **BEFORE** disconnecting them. Grip circuit boards only at the edges.



**Gefahr des Ausfalls der Alarmmeldungen! AL 300 am CAN-Bus:** In order to replace the EPROM, it is necessary to remove the operator terminal from the system. The removal of the CAN bus will trigger an error message at the higher level controller (system centre / store computer / other AL 300 Operator Terminals)! Ensure that the service mode has been activated at the AL 300 and/or that the service centre has previously been informed.

**Caution: data loss!** In some cases, a replacement of the EPROM can result in loss of all settings in the operator terminal. As a precaution, the settings should therefore be backed up by saving them using the LDSWin PC software before the replacement. After the EPROM replacement, the settings saved by LDSWin can be reloaded into the operator terminal.

**Risk of damage to the operator terminal!** There is the risk of destruction of the EPROM and the operator terminal when replacing the EPROM due to incorrect handling!

We recommend arranging the replacement of the EPROM by Eckelmann AG or by very well trained personnel who are very experienced with the handling when opening electronics and the replacement of EPROMs.



ESD-Vorschriften (Electrostatic Discharge) beachten, siehe Kapitel 1.5.

Opening the case of the operator terminal is described in chapter 4.7. The EPROM must be replaced very carefully and taking account of electrostatic sensitive devices and components (ESD); see chapter 1.5.



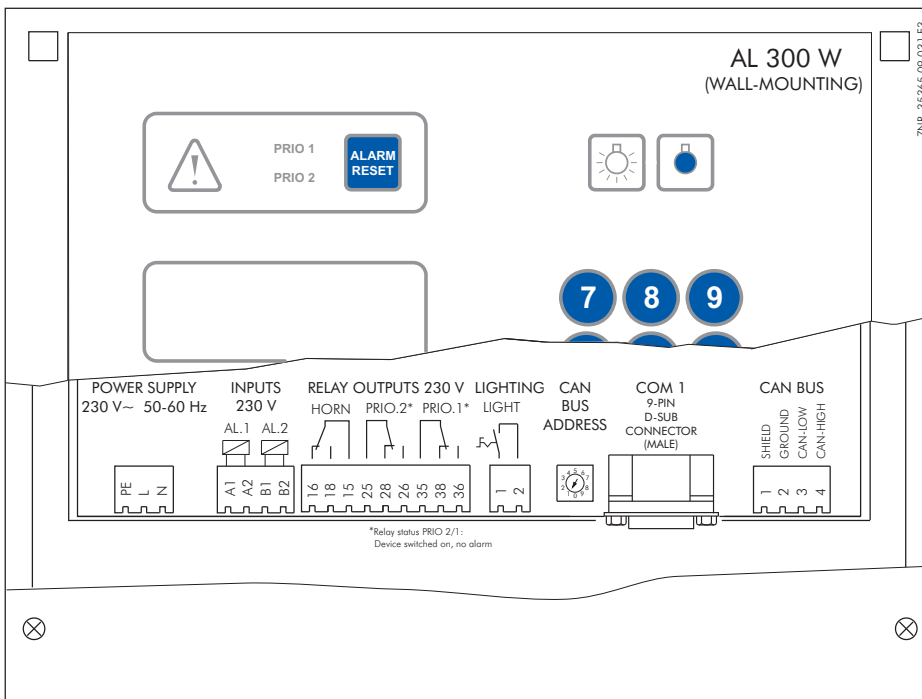
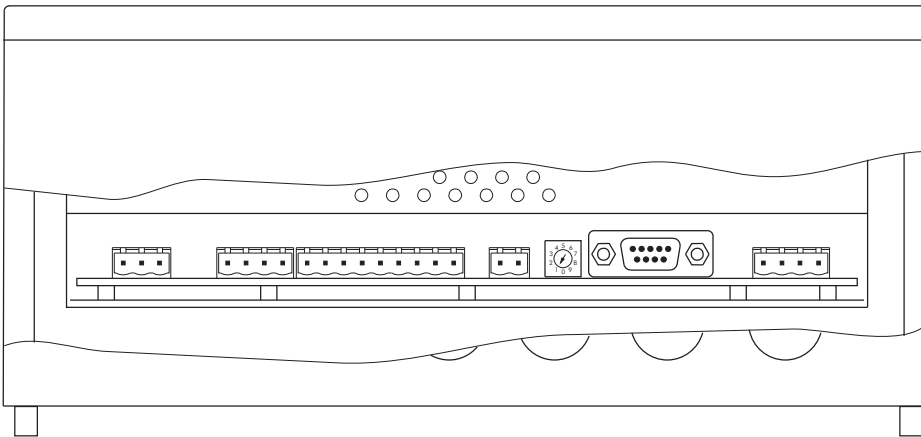
Pay attention to the groove ("polarity") of the old EPROM before removing it as the new EPROM must also be installed exactly the same to prevent its destruction. The groove faces the battery or is marked on the EPROM socket.



## 5 Pin and Terminal Assignments of AL 300

### 5.1 Pin and terminal diagram

The pin and terminal assignment of the AL 300 S and AL 300 W are identically



#### Warning - hazardous electrical voltage!

In order to guarantee reverse voltage protection, only coded mating plugs are to be used on the assembly connections.

A detailed description of the connection and terminal configuration of the store computer and its components is contained on the following pages.



### 5.1.1 Terminal assignment for 230 V AC power supply



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

Terminal No.	Function
L, N PE	Power supply 230 V AC ( <i>SUPPLY</i> ): Phase 230 V AC, neutral conductor, ground conductor

### 5.1.2 Terminal assignment for 230 V AC relay outputs



**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!**  
 Low voltage **and** safety extra-low voltage must **not** be applied together at the relay outputs 15/16/18, 25/26/28 and 35/36/38.

Terminal No.	Function
15 (common) 16 (N.C.) 18 (N.O.)	Horn
25 (common) 26 (contact closed by alarm) 28 (contact opened by alarm)	Alarm output Priority 2 (PRIO.2)
35 (common) 36 (contact closed by alarm) 38 (contact opened by alarm)	Alarm output Priority 1 (PRIO.1)
<b>Light switch</b> (for switching of a protective circuit breaker)	
1, 2	For switching of contactor with suppressor ( <i>LIGHT</i> )

### 5.1.3 Terminal assignment for 230 V AC digital inputs



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

Terminal No.	Function
A1, A2	Alarm input 1 (AL.1), 230 V AC (floating)
B1, B2	Alarm input 2 (AL.2), 230 V AC (floating)



### 5.1.4 Terminal assignment for CAN bus

**Warning - hazardous electrical voltage!**

If mains voltage is connected to the CAN bus terminals, this will result in the destruction of all components connected to the CAN bus!



Leads running of the CAN bus must be shielded (cable type: LiYCY)! 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.

Terminal No.	Function
1	SHLD (Shield)
2	CAN-GND - green
3	CAN-LOW - brown
4	CAN-HIGH - white

### 5.1.5 Terminal assignment for the interface

Terminal No.	Function
<i>Serial port (COM1)</i>	Without function



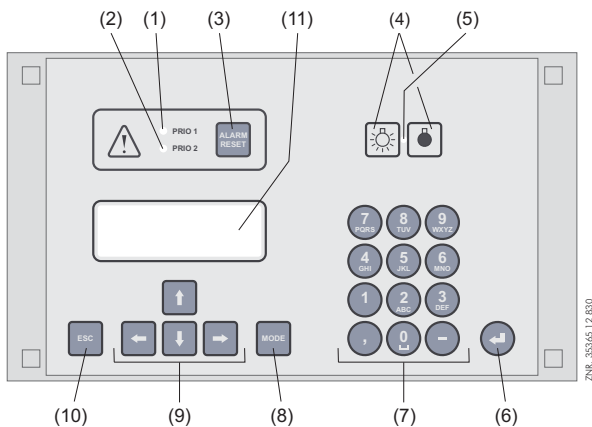
## Pin and Terminal Assignments of AL 300

Notice:



## 6 Operation of AL 300

### 6.1 Operating interface



- (1) Priority 1 alarm indicator light
- (2) Priority 2 alarm indicator light
- (3) Reset key to stop buzzer and horn (HORN) and cancel alarms
- (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)

### 6.2 Menus and screens

Differentiation is made between menus and screens at the operating level.

#### 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.



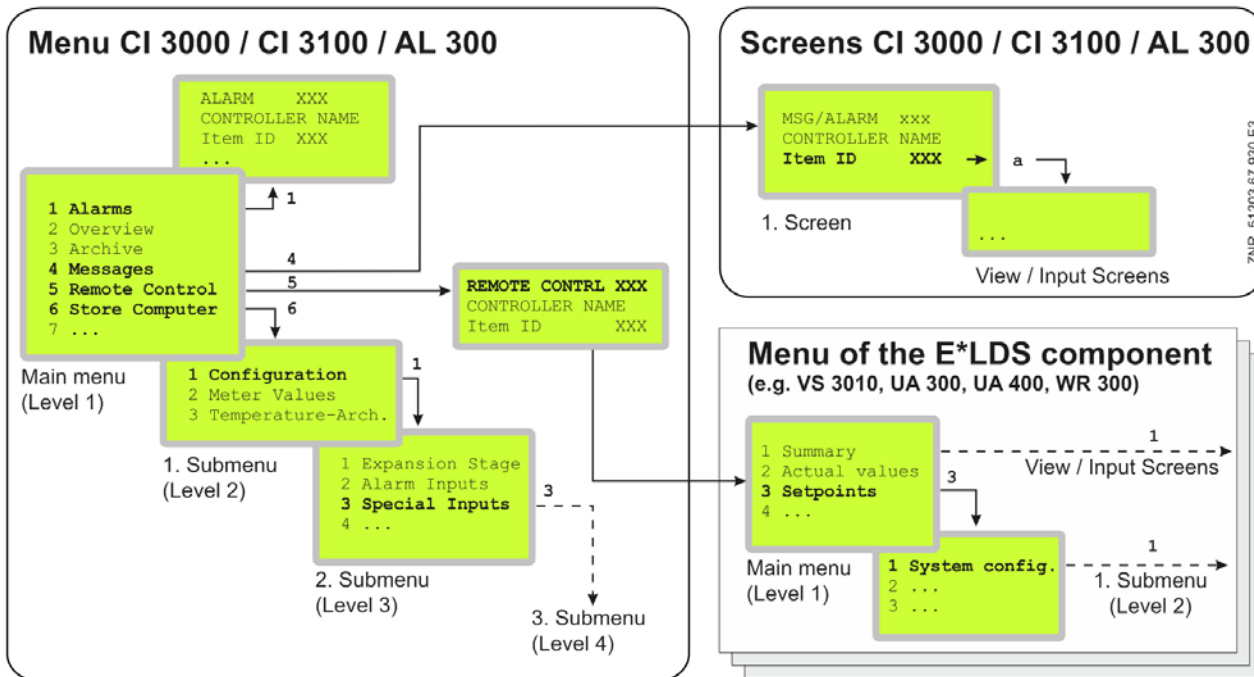


**Example of screen numbering:**

6 - 1 - 3 - ... means that the screen can be opened from the menu tree by entering the numbers 6 - 1 - 3 - ... . This may be a display screen or operating screen.

**Example of operating screen numbering:**

4 - b - a means that the higher-level screen can be opened from the menu tree by entering the number 4. 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.



**Menus**

A menu contains a list of up to ten 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 to 9 and 0 (for menu item 10) 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.

If the menu lists more than three submenus, 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.

**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 cursor keys (↑) and (↓) 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 cursor keys (←) and (→) 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 cursor keys (↑) and (↓).

## Entering values and text

The required line is selected using the cursor buttons (↑) and (↓) that must then be confirmed using the ENTER (↵) button. The cursor then 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. Press the **MODE** key to shift between upper and lower case letters..

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



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With telephone numbers, special characters (0123456789N\*#!&.;,=) can be entered using the cursor buttons (↑) (↓).

## Deleting text entry

Simultaneously press the **MODE + 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.

## Special functions

A number of special functions can be accessed by key combinations:

- triggering a test alarm with the priority X1..X9 by simultaneously pressing the buttons **MODE + 1..9**  
Note: test alarms are only triggered locally at the operator terminal and are used for testing the alarm wiring at its relay outputs.
- triggering of a restart by simultaneously pressing the buttons **MODE + ESC + 8**
- triggering of a first start by simultaneously pressing the buttons **MODE + ESC + 9**



Frequent restarting while the Store Computer is powering up (about 2 min.) can result in errors in archive management.

### 6.2.1 Deactivate entry block



The release of the lock is only to be carried out by service personnel!  
With activated setpoint interlock (restricted setpoint changes) a password is necessary.  
For detailed instructions see menu 9-3.

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 (↵) to set the check mark (✓). When the check mark is set, entry block is deactivated, allowing settings to be entered.
- Press ESC to exit the screen.



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

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



## 6.2.2 Superuser mode (granting Superuser rights)



Superuser mode is reserved exclusively for use by service personnel!  
With activated setpoint interlock (restricted setpoint changes) a password is necessary.  
For detailed instructions see menu 9-3.

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

- 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, indicated by "S" displayed on the screen.
- Press the ESC key to exit the screen.

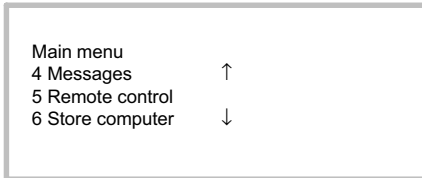
### Example:

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.



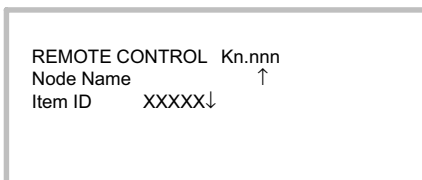
## 6.3 Remote operation/parameter setting of a E\*LDS component

The LC 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.

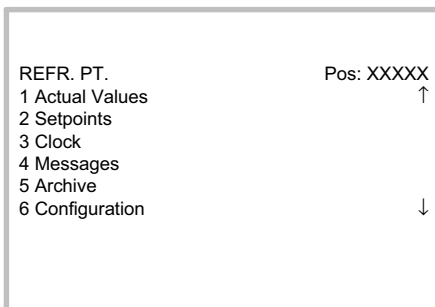


Entry block must first be deactivated before parameters can be set.

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



The E\*LDS component wanted required can be selected using the cursor keys (↑) and (↓) or by entering its CAN bus address (node No. *nnn*) with the numeric keys. Press the ENTER key to open the E\*LDS component selected. The main menu of the required E\*LDS component is then displayed (here case controller UA 400):





## 7 Menu structure of AL 300

### 7.1 Main menu AL 300

Level 1	Level 2	Level 3	Screen No.	Screen Name
Main menu			-	MAIN MENU
1 Alarms			1	ALARM XXX
2 Overview			2	OVERVIEW
3 Archive <sup>1)</sup>			3	ARCHIVE
4 Messages <sup>1)</sup>			4	MSG/ALARM
5 Remote Control			5	REMOTE CONTRL
6 Store Computer <sup>1)</sup>	Configuration		6-1	CONFIGURATION
		Expansion Stage	6-1-1	EXPANSION STAGE
		Alarm Inputs	6-1-2	SIGNAL/ALARM INP
		Special Inputs	6-1-3	SPECIAL INPUTS
		Alarm Type	6-1-4	ALARM TYPE
		EU Archive	6-1-5	EU ARCHIVE
		Energy Managmt.	6-1-6	ENERGY MANAGEMENT
		Timer	6-1-7	TIMER
		Modem	6-1-8	MODEM
	COM2	6-1-9	COM2	
	Meter Values		6-2	METER VALUES
Temperature Archive		6-3	TEMPERATUR-ARCHIV	
7 Monitoring			7	MONITORING
	Overview		7-1	OVERVIEW
	Status		7-2	STATUS
	Configuration		7-3	CONFIGURATION
	Alerting		7-4	ALERTING
		Alarm relay	7-4-1	ALARM RELAY
		Systemalarms	7-4-2	SIGNAL/ALARM INP
	Status UA30/Dixel <sup>1)</sup>		7-6	STATUS UA30/DIX <sup>1)</sup>
	Config.UA30/Dixel <sup>1)</sup>		7-7	CONFIG.UA30/DIX <sup>1)</sup>
	Status AHT <sup>1)</sup>		7-8	STATUS AHT <sup>1)</sup>
Status AHT Danfos <sup>1)</sup>		7-9	STATUS DANFOSS <sup>1)</sup>	



Menu structure of AL 300

Level 1	Level 2	Level 3	Screen No.	Screen Name
8 I/O Monitor <sup>2)</sup>			8	I/O MONITOR
9 Parameters			9	PARAMETERS
	Date/Time		9-1	DATE/TIME
	Language		9-2	LANGUAGE
	Interlock		9-3	INTERLOCK
0 BMS <sup>3)</sup>			0	BMS Overview

1): Only CI 3000 / CI 3100 - no CI 4x00: This screen can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

2): No further details are given for this menu, as it is reserved for use by service personnel.

3): Only CI 3000 / CI 3100 - no CI 4x00: This screen can only be opened when a CI 3000 / CI 3100 Store Computer and a DDC component are installed in the E\*LDS system and are active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

### 7.1.1 Menu 0 Main menu

MAIN MENU	
1 Alarms	Continue to screen 1
2 Overview	Continue to screen 2
3 Archive <sup>1)</sup>	Continue to screen 3
4 Messages <sup>1)</sup>	Continue to screen 4
5 Remote Control	Continue to screen 5
6 Store Computer <sup>1)</sup>	Continue to screen 6
7 Monitoring	Continue to screen 7
8 I/O Monitor	Continue to screen 8
9 Parameters	Continue to screen 9
0 BMS Overview <sup>3)</sup>	Continue to screen 0

1): Only CI 3000 / CI 3100 - no CI 4x00: This screen can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

3): Only CI 3000 / CI 3100 - no CI 4x00: This screen can only be opened when a CI 3000 / CI 3100 Store Computer and a DDC component are installed in the E\*LDS system and are active. See the CI 3000 Store Computer operating instruction for further details concerning this item.



## 7.1.2 Menu 1 Alarms

This screen is used to display the alarm log. The alarm log contains all alarms reported by all E\*LDS components connected to the system via the CAN bus. It also contains alarms generated by the AL 300 Operator Terminal and external alarms connected to the AL 300.

Alarms are retained in this log until reported as corrected and subsequently reset by the user. If an E\*LDS component reports an alarm while the AL 300 Operator Terminal main menu is displayed, the menu automatically jumps to the alarm log to display the newest alarm.

The individual entries of the alarm list can be scrolled forwards and backwards using the cursor buttons (↓) and (↑). You can switch between the following two screens for each individual entry using the (→) and (←) cursor buttons.

Display Page 1			Entry
ALARM XXX	Prio p	Heading with Alarm No. and alarm priority p ( p = 0 to 2 )	↑↔↓
Node Name		Name of alarm-generating component	
Item ID	XXXXX →	Item ID of alarm-generating component. Move to Screen 1-a	
Text		Real language / Alarm text	

- Screen 1-a

Display Page 2 - Alarm still active			Entry
ALARM XXX	Nd.nnn	Heading with Node No. of alarm-generating component	↑↔↓
Node Name		Name of alarm-generating component	
dd.mm.jj hh:nn	ON ←	Time of alarm occurrence	
		Use cursor keys to move to next alarm	
Display Page 2 - Alarm terminated			Entry
ALARM XXX		Heading with Node No. of alarm-generating component	↑↔↓
Node Name		Name of alarm-generating component	
dd.mm.jj hh:nn	ON ←	Time of alarm occurrence	
dd.mm.jj hh:nn	OFF	Send time stamp. Use cursor keys to move to next alarm	





## 7.1.3 Menu 2 Overview

This screen is used for quick display of current operating status and temperature of the separate refrigeration points (display cases or coldrooms). On opening this screen, the case or coldroom having the lowest CAN bus address (0 to 99) is shown first. Use the up and down cursor keys (↑) (↓) to move to the next refrigeration point and back.

OVERVIEW	Pos : xxxxx	Heading with item ID of refrigeration point	Entry
Overview of refrigeration point with 1 zone			
Node Name		Name of refrigeration point	↑↓
Status	XXX °C	Current controller status and current temperature: Status may be shown as Cooling, Defrost or Alarm.	
Overview of refrigeration point with 2 zones			
Node Name		Name of the refr. point	↑↓
Status 1	Z1: XXX °C	Current controller status and current temperature for Zone 1: Status may be shown as Cooling, Defrost or Alarm.	
Status 2	Z2: XXX °C	Current controller status and current temperature for Zone 2: Status may be shown as Cooling, Defrost or Alarm.	

## 7.1.4 Menu 3 Archive



**Only CI 3000 / CI 3100:** This screen can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

**Only CI 4x00:** This function is not currently supported in systems with a CI 4x00 System Centre.

## 7.1.5 Menu 4 Messages (Event Log)



**Only CI 3000 / CI 3100:** This screen can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

**Only CI 4x00:** This function is not currently supported in systems with a CI 4x00 System Centre.



Menu structure of AL 300

### 7.1.6 Menu 5 Remote Control

This screen is used to select E\*LDS components that are to be remotely operated. Selection can be made in two ways:

- By entering the CAN bus address of the E\*LDS component and confirming with the ENTER key.
- By the up and down cursor keys (↑) (↓).

After selecting the station wanted, press the ENTER key to start terminal mode and show the main menu for the selected component. After that the operating principle with menus and screens is the same for all E\*LDS components.

To terminate terminal mode, press the ESC key in the main menu for the respective component.

REMOTE CONTRL	Nd.nnn	Nd.nnn = Node No. (CAN bus address of component wanted)	Entry
Node Name		Name of E*LDS component	↑, ↓, or number
Item ID	XXXXX	Item ID of component	



If no button has been pressed for a period of 10 minutes, the terminal mode is automatically aborted and the main menu or its alarm list of the AL 300 Operator Terminal is displayed. Any entry made at the time by the user but not yet confirmed will be cancelled.

### 7.1.7 Menu 6 Store Computer



**Only CI 3000 / CI 3100:** This screen can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the Store Computer operating instruction for further details concerning this item.

**Only CI 4x00:** This function is not currently supported in systems with a CI 4x00 System Centre.



## 7.1.8 Menu 7 Monitoring

Overview and configuration of E\*LDS components and system and alarm inputs of AL 300 Operator Terminal.

MONITORING	
1 Overview	Overview of number of configured and active E*LDS components
2 Status	Detailed status of all E*LDS components
3 Configuration	Configure name and item ID of all E*LDS components
4 Alerting	<b>Configuration of the alarm alerting of the AL 300 Operator Terminal</b>
5 Alarm inputs	Configure AL 300 <b>Operator Terminal</b> alarm and signaling inputs
6 Status UA30/DIX	Status of the compact controller connected via COM2 at the CI 3000 / CI 3100 <sup>1)</sup>
7 Config.UA30/Dixel	Configuration of the compact controller connected via COM2 at the CI 3000 / CI 3100 <sup>1)</sup>
8 Status AHT	Status of the AHT devices connected via COM2 at the CI 3000 / CI 3100 <sup>1)</sup>
9 Status Danfos	Status of the AHT/Danfoss devices connected via COM2 at the CI 3000 / CI 3100 <sup>1)</sup>



1)

**Only CI 3000 / CI 3100:** This screens can only be opened when a CI 3000 / CI 3100 Store Computer is installed in the E\*LDS system and is active. See the CI 3000 Store Computer operating instruction for further details concerning this item.

**Only CI 4x00:** This function is not currently supported in systems with a CI 4x00 System Centre.

- Screen 7-1 Overview

This screen shows the current station monitoring status.

OVERVIEW		
Aktivated	XXX	Number of activated E*LDS components
Present	XXX	Number of available E*LDS components
Not present	XXX	Number of failed E*LDS components

The number of E\*LDS components registered via the CAN bus (activated), the number detected as functional (available) and the number detected as failed are shown.



Refrigeration points that have been shut down and removed from station monitoring (manual shut-down) are counted among the failed stations.



Menu structure of AL 300

• Screen 7-2 Status

Select an E\*LDS component either by entering its CAN bus address and confirming with the ENTER key or by using the up and down cursor keys (↑) (↓). You can switch between the following two screens using the (→) and (←) cursor buttons.

**Page 1 – Show current status of CAN bus stations**

STATUS	Nd.nnn	Heading and Node No. of E*LDS components	Entry
Name of E*LDS component		Name of E*LDS component	↑ ↓ →
Item ID	XXXXX →	Item ID of E*LDS component. Move to Page 2 – Software Version	
Operating Shut down manually Component alarmed	ALARM IEOF√	Status: Component operating Refrigeration point shut down manually Component alarmed as failed	

The bottom line shows the current operating status of the selected E\*LDS component. If the component is working, detailed information on its status is given:

ALARM	A minimum of one fault still exists.
I	Operating archive has been created.
e/E	EU archive has been created / and is active.
O	CAN bus failure
F	CAN bus fault
√	Communication enabled

**Page 2 - Software version**

STATUS	Nd.nnn	Heading and Node No. of E*LDS component	Entry
Typ	XXXXXXXXXX	Type of E*LDS component	↑ ↓ ←
Version X.XX	←	Software Version No.	
S.Nr.	XXXXXXXXXXXXXXXXXXXXXX	Serial No. of component	

• Screen 7-3 Configuration

This screen is used to change station details such as name, ID and alarm priority for every E\*LDS component connected to the CAN bus.

CONFIGURATION Nd.	Nd.nnn	Heading and Node No. of E*LDS component
Name of component	→	Name of E*LDS component
Item ID	XXXXX →	Item ID of E*LDS component
Priority	p	Alarm priority of E*LDS component
delete		Remove E*LDS component from system: Delete E*LDS component: Displays prompt: Are you sure? No: ESC Yes: ↵



A station can only be deleted after it has been shut down and subsequently reported as failed or manually shut down.



## Menu structure of AL 300

- Screen 7-4 Alerting

ALERTING	
1 Alarm relay	Configuration of the alarm relay 15/16/18 (HORN)
2 System alarms	Configuration of the system alarms

- Screen 7-4-1 Alarm relay

ALARM RELAY		Entry	Default
Hold AlmRel	x	Alarm relay stop: Y: Relays are only deactivated when the cause for the alarm has been rectified and the alarm has been acknowledged: Relays are deactivated when the horn is switched off	↑ ↓ (Y/N) Y
AUX relay	xxx	Configuration of the alarm relay	Horn, PRIO X3, PRIO X4, PRIO X5, PRIO X6, PRIO X7, PRIO X8, PRIO X9 Horn

- Screen 7-4-2 System alarms

Use the up and down cursor keys (↑) (↓) to select the alarm or group of alarms. Parameters can be changed after pressing the ENTER key.

SYSTEM ALARMS		Entry	Default
Power Failure		Fault report on restart	
Priority	0	Fault priority	↑, ↓ (0 .. 99) 0
Delay	0m	Delay in minutes	↑, ↓, (0..255) 0
First Start		Fault report on first start	
Priority	1	Fault priority	↑, ↓ (0 .. 99) 2
Delay	0m	Delay in minutes	↑, ↓, (0..255) 0
CAN Error		Fault group for CAN bus faults and errors	
Priority	0	Fault priority	↑, ↓ (0 .. 99) 0
Delay	0m	Delay in minutes	↑, ↓, (0..255) 0
Hardware Errors		Fault group for archiving fault report	
Priority	1	Fault priority	↑, ↓ (0 .. 99) 2
Delay	0m	Delay in minutes	↑, ↓, (0..255) 0



System, hardware and CAN bus faults are fault groups. Changing the settings of these fault groups affects the settings of several individual faults, see section Alarms and Messages.



Menu structure of AL 300



**Danger of failure of alarm messaging!** The priorities for system and first start must not be set to 0, otherwise critical alarm messages cannot be transmitted! Successful transmission of alarms from E\*LDS components is not assured in systems where CAN bus communication is severely disturbed (frequent reports of CAN faults or actual CAN failure).

• Screen 7-5 Alarm Inputs

This screen can be used to configure the two device-specific alarm inputs (AL.1 und AL.2). An individual alarm text can be entered for each alarm input and the respective alarm priority and delay can be defined.

The first page shows the current alarm status:

- OK - Power on
- WAITNG - Signalling, delay running, xxx minutes left
- ALARM - Power off
- Inactive! - Input not activated

An activated input can be deactivated by the DELETE command. The other settings remain unchanged. If the input has generated an alarm at the time this is done, the alarm is reported as sent. Use the cursor keys (↑) and (↓) to alternate between the two pages.

SIGNAL/ALARM INP	Page 1 – Show status	Entry
Text	Message text	↑, ↓
Inp: XXXX/k	XXXX: Name of input (1 = AL.1 and 2 = AL.2) k: Channel No.	
Prio p Status	Input priority p and current status: - <b>OK</b> No signal - <b>WAIT xm</b> Signal, , x minutes delay remaining - <b>ALARM</b> Signal, alarm/message generated	

Press the ENTER key to move to the second page (Screen 7-5-a). The input displayed can be configured. An activated input can be deactivated by the DELETE command. If the input has generated an alarm at the time this is done, the alarm is reported as sent.

• Screen 7-5-a

SIGNAL/ALARM INP	Page 2 - Configuration	Entry	Default
Text	Freely editable message text (max. 19 characters)	Text, numbers	----
Priority p	Message/alarm input priority	↑, ↓ (number 0..99)	2
Delay 255m	Message/alarm delay in minutes	↑, ↓ (number 0 .. 255)	0
Idle Current J	N.C. input (Y) / N.O. input (N)	↑, ↓ (Y/N)	J
delete	Delete message/alarm input: Displays prompt: Are your sure? No: ESC Yes: ↵	↵, ESC	

• Screen 7-6 .. 7-9



It is only possible to call up these screens if a system centre or a CI 3000 / CI 3100 Store Computer is present and active in the E\*LDS system. Further information about this menu item can be found in the operating manuals of the System Centre and the Store Computer.



### 7.1.9 Menu 8 Monitor



No further details are give for this menu, as it is reserved for use by service personnel.

### 7.1.10 Menu 9 Parameters

Entry screen to access submenus for date/time, user language and cancelling entry block for E\*LDS components.

PARAMETERS	
1 Date/Time	Configure date and time
2 Language	Select user language in complete E*LDS System
3 Interlock	Cancel entry block

- Screen 9-1 Date/Time

This screen is used to specify the date and time for all E\*LDS components. Note that the day of the date cannot be changed.

DATE/TIME		Entry	Default	
Date:	Mo 19.12.05	Enter current date	↑, ↓, number	Date
Time:	14:36	Enter current time	↑, ↓, number	Time
Daylight Saving	Y	Auto adjust daylight saving toggles between automatic adjustment for daylight saving change on (Y) or off (N).	↑, ↓, (Y/N)	Y



If there is a CI 4x00 System Centre or a CI 3000 / CI 3100 Store Computer in the system, the adjustment of the date and time is locked for protection of the archiving. Time can only be adjusted up or down in increments of 15 minutes.



Menu structure of AL 300

• Screen 9-2 Language

**CI 3000 / CI 3100:** This screen is used to change the user language for the complete system during operation. The selected language is indicated by a check mark. Use the up and down cursor keys (↑) (↓) to select the language wanted and confirm by pressing the ENTER key.

**CI 4x00:** Version 6.0.0 of the system centre only knows the German and English languages!

If the language is changed using the AL 300 Operator Terminal, this can be seen briefly on the display of the AL 300 until the CI 4x00 switches all languages unknown to it back to English.

LANGUAGE			Entry	Default
Deutsch	D	√	√ = Select language	√
English	GB			
Francais	F			
Espanol	E			
Finnish	FIN			
Türkce	TR			
Cesky	CZ			



If any E\*LDS component does not support the selected language, this component changes over to the default setting of English.

• Screen 9-3 Interlock and Superuser Mode

**Deactivate/activate lock:**

With this input screen the input options lock can be released and setpoint values changed.



The release of the lock is only to be carried out by service personnel!

**As a general rule:** The lock is reactivated no later than 10 minutes after the last keystroke and the switching on of the operator terminal.

**Case A: Without setpoint interlock - without password request:**



Press the ENTER key to toggle between block and unblock.

After entering, exit the operating screen by pressing the ESC button.

INTERLOCK			Entry	Default
Settings Possible:		√	√ = Cancel block to allow settings to be made	-

**Case B: With setpoint interlock - with password request - only CI 3000 / CI 3100:**



With activated setpoint interlock (restricted setpoint changes) a password is necessary. The password (6 to 7 characters) must be requested from the manufacturer in conjunction with the specification of the CI 3000 / CI 3100 serial number (see menu 7-2 or the rating plate). It only authorises access for the current and following day. Afterwards, a new password must be requested! After entering the password, exit the operating screen by pressing the ESC button.

SETPOINT INTERLOCK				
Release Password: XXXXXXXX		√	√ = lock released password entry.	





## **Activate/deactivate Superuser mode (release superuser rights)**

With this input screen the input options lock can be released and setpoint values changed in the Superuser mode.



The release of the lock is only to be carried out by service personnel!

With activated setpoint interlock (restricted setpoint changes) a password is necessary.

**As a general rule:** The lock is reactivated no later than 10 minutes after the last keystroke and the switching on of the operator terminal.

### **Case A: Without setpoint interlock - without password request:**

INTERLOCK		Entry	Default
Settings Possible:	√	√ = Cancel entry block to allow settings to be made	MODE and ↵ -

- Enter the current date in reverse order (not shown on display).
- Press the ENTER key (↵) to confirm, indicated by S displayed on the screen.
- After entering, exit the operating screen by pressing the ESC button.

**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.

### **Case B: With setpoint interlock - with password request - only CI 3000 / CI 3100:**



With activated setpoint interlock (restricted setpoint changes) a password is necessary. The Superuser password (6 to 7 characters) must be requested from the manufacturer in conjunction with the specification of the CI 3000 / CI 3100 serial number (see menu 7-2 or the rating plate). It only authorises access for the current and following day. Afterwards, a new password must be requested! After entering the password, exit the operating screen by pressing the ESC button.

SETPOINT INTERLOCK		
Release Password: XXXXXXX	√	√ = lock released Superuser password entry.

## **7.1.11 Menu 0 BMS Overview**

BMS = Building Management Systems



**Only CI 3000 / CI 3100:** This screen can only be opened when a Store Computer and a DDC component are installed in the E\*LDS system and are active. See the Store Computer operating instruction for further details concerning this item.

**Only CI 4x00:** This function is not currently supported in systems with a CI 4x00 System Centre.



## 8 Decommissioning and disposal

### 8.1 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".

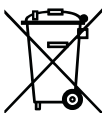


During disassembly the reverse procedure is to be observed as that during assembly, see chapter "Installation and Startup".

### 8.2 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.



Decommissioning and disposal

ECKELMANN

Notice:



## 9 Alarms and Messages of AL 300

No.	Messages	Cause	Correction
<b>Hardware faults</b>			
0	internal Fault <i>nn</i>	The system centre / store computer has performed a restart due to a severe error. Details can be found in the operating manual of the system centre or store computer.	Please contact Service Organization
3	RAM Battery Def.	RAM battery failure while controller off.	Notify Service Organization
4	EEPROM Fault	Configuration saving component defect.	Replace device
5	EEPROM Contents	Configuration data in EEPROM implausible.	Please contact Service Organization
8	RTC Fault xxx	Real-time clock of E*LDS component xxx defect.	Please contact Service Organization - Replace device
10	Battery Voltage	Real-time clock and RAM backup battery dead.	Replace device
<b>CAN bus faults</b>			
41	CAN Bus Overflow	Communication fault on CAN bus, short circuit between CAN-LOW (terminal 3) and CAN-HIGH (terminal 4)	Check: - Wiring of the CAN bus - CAN bus length (max. 500 m) - No branch lines - CAN-GND must be available everywhere - CAN bus termination 100 ohms - Colour scheme complied with - Correct cable type (LiYCY 2x2x0,75 mm <sup>2</sup> with 120 ohms wave impedance)
42	CAN Bus MSGLOST (= Message lost)		
43	CAN Bus Fault		
44	CAN Bus Failure		
45	CAN Address Conflict	Same CAN bus address assigned to two E*LDS components.	Change address of one component
<b>Messages</b>			
46	Time Error	Real-clock time implausible on restart.	-
47	Adjust Time	The time in the system centre / in the store computer has been adjusted. The timestamps show the time before and after the adjustment.	-
48	Adjust Date	The date in the system centre / in the store computer has been adjusted. The timestamps show the date before and after the adjustment.	-



## Alarms and Messages of AL 300

No.	Messages	Cause	Correction
50	First Start	The operator terminal has performed a first start. All parameters have been deleted and replaced with the factory settings.	-
51	Power Failure	The operator terminal has been powered off or has performed a reset. Time stamps show times of power off and on.	-
<b>Monitoring</b>			
52	Controller Failure xxx	No response by LDS-component to Store Computer requests.	Check power supply and LDS component connection to CAN bus.
<b>Alarm- and Special inputs</b>			
90	xxxxxxxxxxxxxxxxxxxx	Internal message or alarm input e.g. Input: Int.I/1 (first input on-board).	Correct external alarm fault



## 10 Specifications of AL 300

### 10.1 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!

	AL 300
<b>Power supply</b>	230 V AC, 200 - 265 V AC, 50/60 Hz
<b>Rated power</b>	5 VA
<b>Leakage current over PE</b>	Max. 1 mA
<b>Relay outputs <sup>1)</sup></b>	3 x changeover for reporting system, floating  2 x 230 V AC min. $\geq 10$ mA / max. 6 A (24 V DC / max. 5 A DC) For outputs PRIO.1 and PRIO.2 with bistable relays and 5 min. operate delay on device shutdown  1 x 230 V AC      min. 5 V / 10 mA max 230 V AC / 6 A max. 24 V DC / 5 A For output HORN, e.g. for acoustic signal transmitter
<b>Digital inputs</b>	2 x 230 V AC, floating, for external alarms (inputs AL.1 and AL.2)
<b>Front switch</b>	1 N.O., floating, 230 V AC, for external wiring option, max. 2.4 A with incandescent lamps max. 4 A with inductive load max. 6 A with resistive load
<b>Field bus port</b>	CAN bus, floating
<b>Data ports</b>	1 serial RS232, floating (connection to LDSWin is not possible)
<b>Monitoring function</b>	Watchdog
<b>Real-time clock</b>	Battery-backe, Lithium cell Typ CR 2450N, 3 V, (shelf life 10 years at 23 °C ) Accuracy typ. 12 min/yr at 25 °C



**<sup>1)</sup> Warning - hazardous electrical voltage!**

**Danger of electric shock! BEFORE and AFTER** connection it must checked that the 230 V AC relay outputs are **off load!**

Low voltage **and** safety extra-low voltage must **not** be applied together at the relay outputs 15/16/18, 25/26/28 and 35/36/38.



Specifications of AL 300

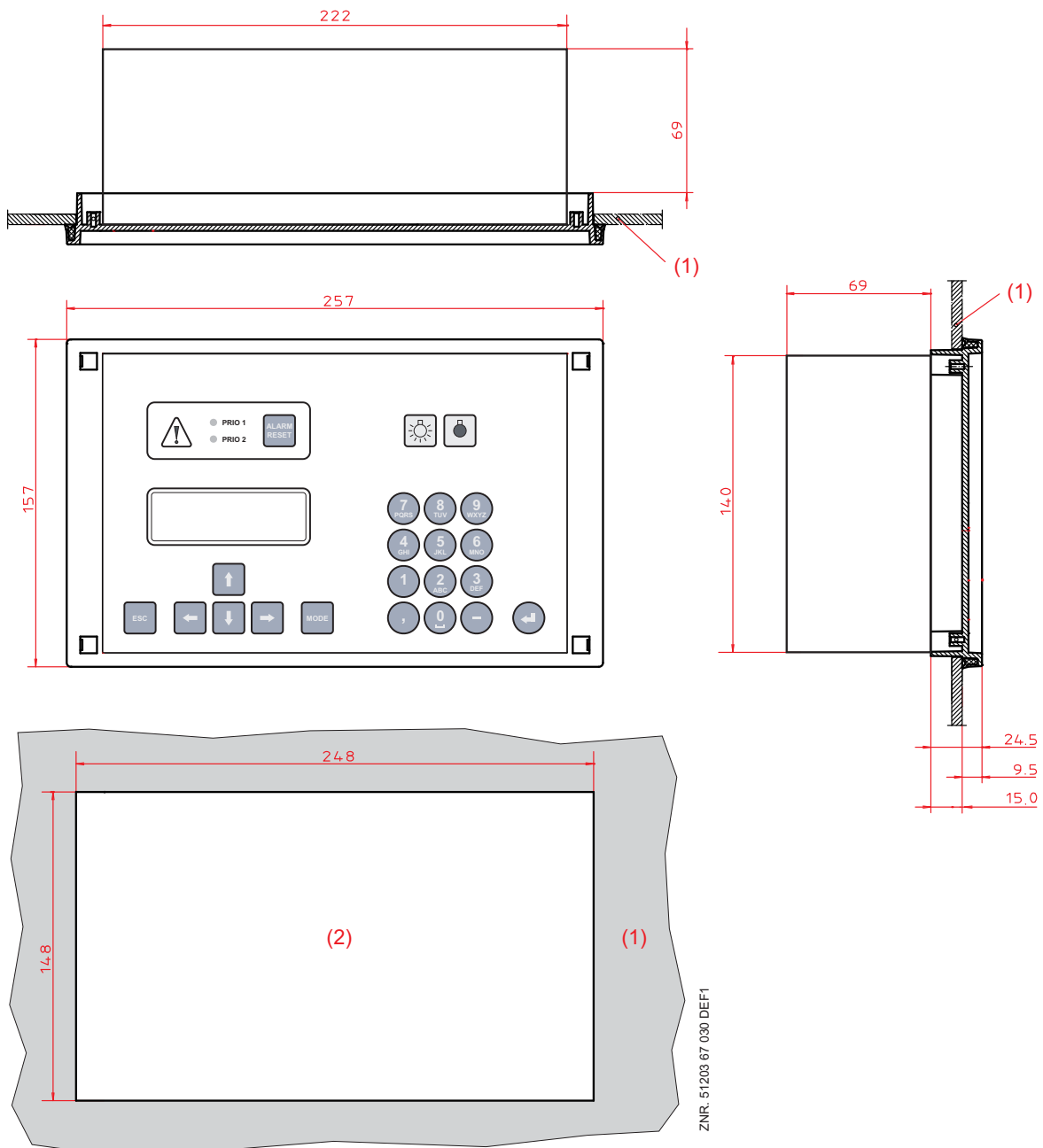
	<b>AL 300</b>
<b>Temperature range</b>	Transport: -20°C...+80°C / Operating: 0°C...+50°C <b>The device must be protected from direct sunlight!</b>
<b>Temperature change</b>	Transport: max. 20 K/h / Operating: max. 10 K/h
<b>Relative humidity (non-condensing)</b>	Transport: 8 % ... 80 % / Operating: 20 % ... 80 %
<b>Shock to DIN EN 60068-2-27</b>	Transport and operating: 30 G
<b>Vibration 10-150 Hz to DIN EN 60068-2-6</b>	Transport and operating: 2 G
<b>Atmospheric pressure</b>	Transport: 660 hPa ... 1060 hPa / Operating: 860 hPa ... 1060 hPa
<b>Weight</b>	AL 300 S: ca. 1500 g AL 300 W: ca. 2100 g
<b>Enclosure</b>	<b>AL 300 S for panel mounting:</b> Front (with rubber gasket and mounting frame): IP54 Otherwise: IP20 <b>AL 300 W for wall mounting:</b> IP 54
<b>CE conformity</b>	Complying with EU Directives 73/23/EEC (Low Voltage Directive) 89/336/EEC (EMC Directive)



Specifications of AL 300

## 10.2 Mechanical data

### 10.2.1 Panelmounting of AL 300



(1): Control panel

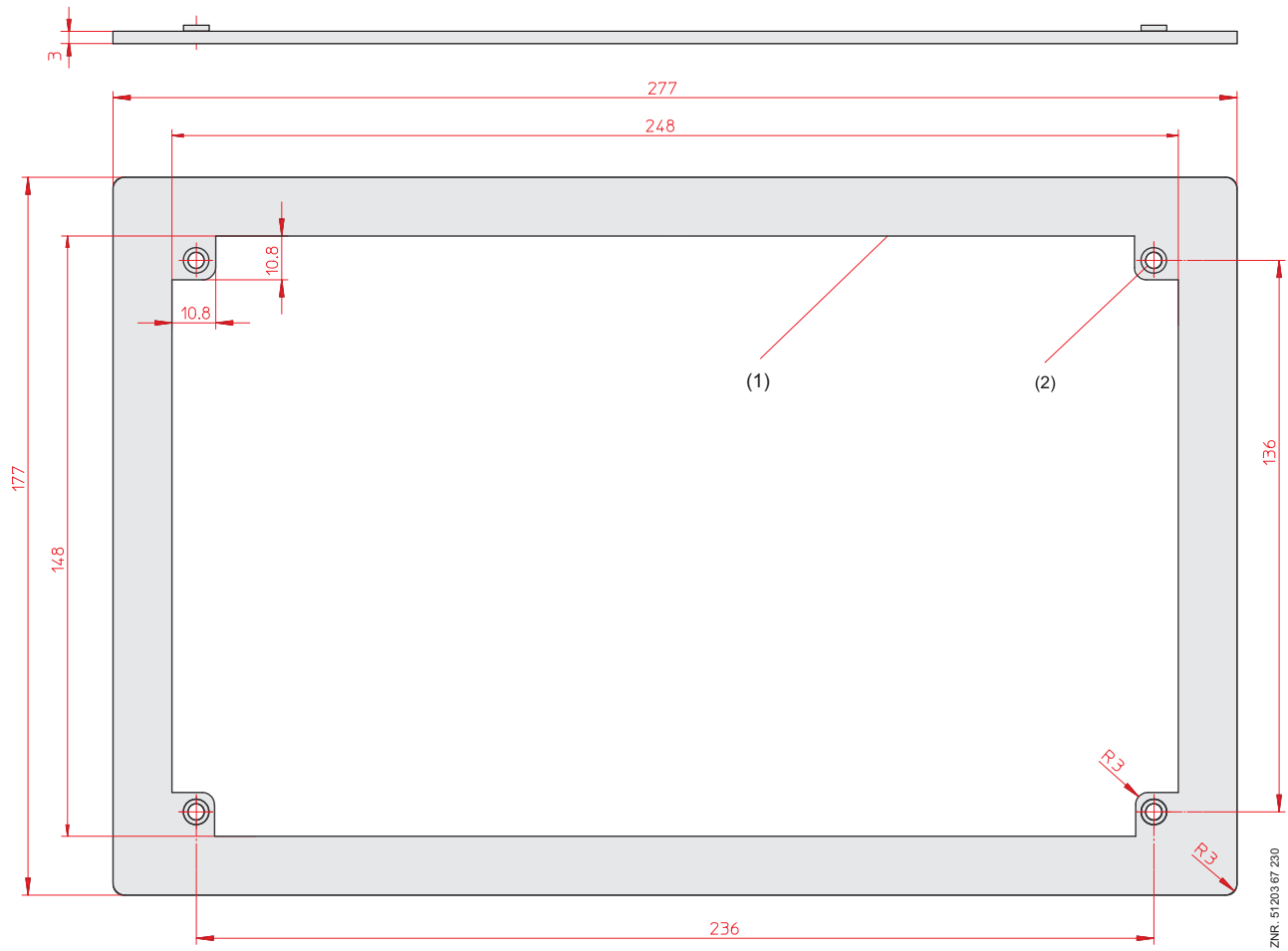
(2): Panel cutout

All dimensions in mm





## 10.2.2 Mounting frame for panel mounting AL 300 S



(1): Mounting frame

(2): Insert nut M3

All dimensions in mm

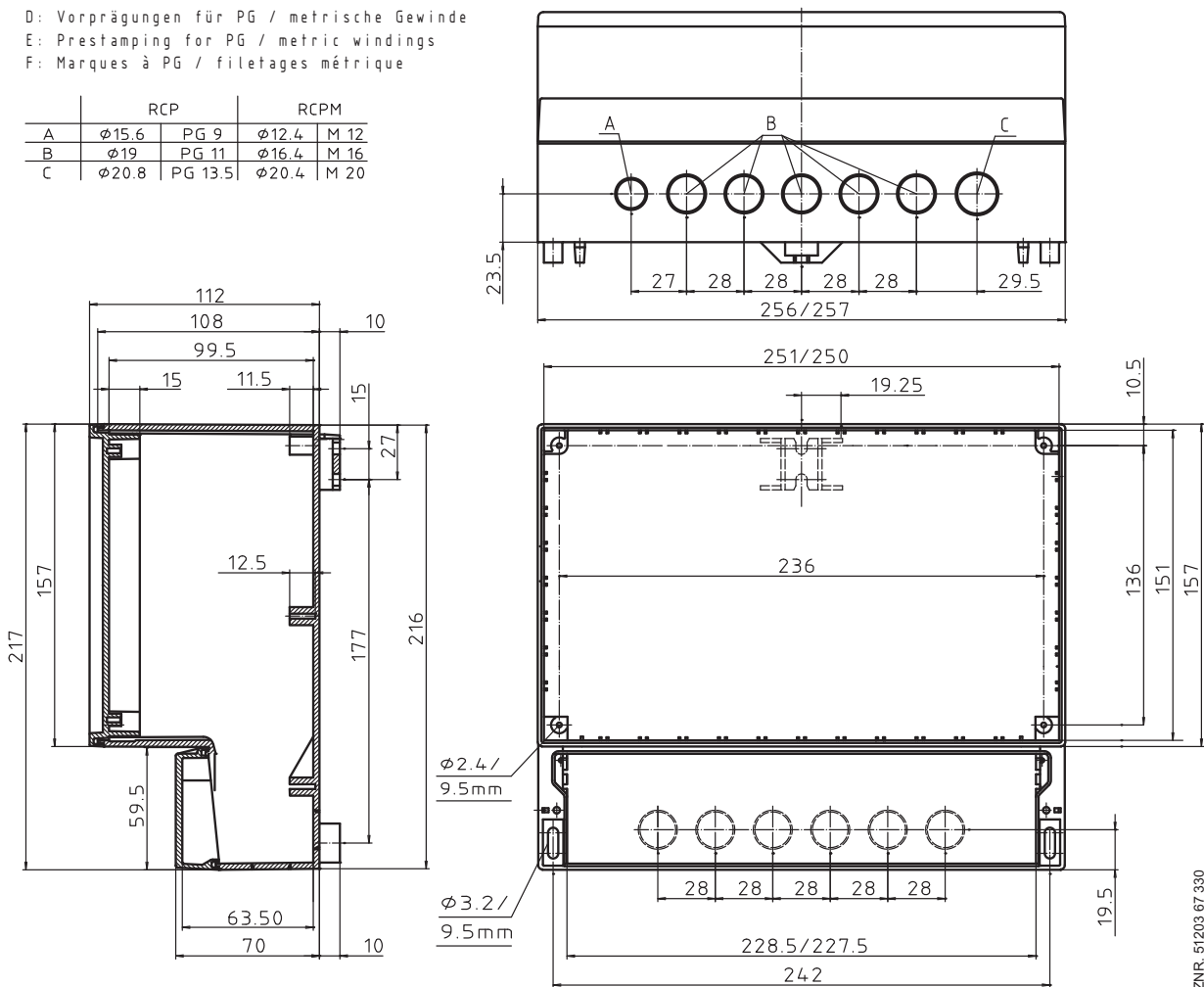


Specifications of AL 300

10.2.3 AL 300 W for wall mounting

D: Vorprägungen für PG / metrische Gewinde  
 E: Prestamping for PG / metric windings  
 F: Marques à PG / filetages métrique

	RCP		RCPM	
A	∅15.6	PG 9	∅12.4	M 12
B	∅19	PG 11	∅16.4	M 16
C	∅20.8	PG 13.5	∅20.4	M 20



ZNR-51203 67 330

All dimensions in mm



Specifications of AL 300

ECKELMANN

Notice:



## 11 Order numbers and accessories of AL 300

### 11.1 Operator Terminal AL 300

Type	Description	Order number
AL 300	Operator Terminal AL 300 S for panel mounting Operator Terminal AL 300 W for wall mounting	LIAL300051 LIAL300052

Additional information such as data sheets, more detailed documentation and FAQs are available for you online in E°EDP (Eckelmann ° Electronic Documentation Platform) at [https://edp.eckelmann.de/edp/lids/\\_l6x6nQYvsu](https://edp.eckelmann.de/edp/lids/_l6x6nQYvsu).



### 11.2 Accessories for Operator Terminal

Component	Description	Order number
Mounting rack	Mounting rack for panel mounting	KGLZRAHMEN
EPROM	EPROM for firmware update	PROMELIAL1



Order numbers and accessories of AL 300

Notice: