ECKELMANN

Operating instruction

Store Computer CI 3000 / CI 3100
Extension module SIOX

Version V5.12

☞ **Before** commissioning and use, please check that this is the latest version of the document. With the publication of a new version of the documentation, all previous versions lose their validity. Errors and technical modifications are expressly reserved.

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

ECKELMANN

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 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 urgently recommended to monitor the controller via the CAN bus using a store computer or an operator terminal, 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. 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.

ECKELMANN

1.3   Intended use

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

The CI 3000 control system has been designed for use as store computer 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	**D**eutsches **I**nstitut für **N**ormung e. V.
EGB	**E**lektrostatisch **G**efährdete **B**auelemente oder Baugruppen
ESD	**E**lectro-**s**tatic **d**ischarge (**E**lectro **S**ensitive **D**evices)
VDE	**V**erband **d**er **E**lektrotechnik **E**lektronik Informationstechnik e.V.
IEC	**I**nternational **E**lectric **C**ommittee
BGV A3	Employer's Liability Association regulations for health and safety in the workplace

ECKELMANN

2   System Design of CI 3000

☞ All the details of the "CI 3000 Store Computer" described in this document always refer to the "CI 3100 Store Computer" as well. Any differences in function or features between these two control components are only explained where they have an effect.
The main features distinguishing the two variants:
The CI 3100 has a third interface (COM3), see Section 2.1.

The CI 3000 Store Computer is the central unit of the LDS System.It can be operated via the integrated keyboard, the operator terminal of the AL 300 and/or remotely via a host system, i.e. on-site service PC with LDSWin software.

A maximum of 4 SIOX Extension Modules (**s**erial **i**nput-**o**utput e**x**tension) can be connected to provide an additional 32 digital outputs and 48 digital inputs.

Depending on the expansion level, the CI 3000 Store Computer has 2 MB, 6 MB or 16 MB of memory.

(The CI 3100 is only available with 6 and 16 MB memory expansions)

It is designed to install in a control panel.

⚠ The CI 3000 store computer is not equipped with a direct interface to the LDS1 system (VS 1000 / VS 2000 and CI 320 / CI 322)! For the integration of LDS1 case controllers LDS1 gateways are required. For more details see the "LDS1 Gateway" operating instruction.

2.1   Circuit points

The CI 3000 Store Computer has the following connections (see also section 5 for further details of - Pin and Terminal Assignment):

Interfaces CI 3000

- CAN bus port to interconnect all LDS components (e.g. case/coldroom controllers of UA 300 / UA 400 Series, pack controllers of type VS 3010 / VS 3010 BS, FS 3010 or VS 300)

- Modem port for remote access by host computer via modem or for connection of service computer

- RS232 interface (COM2) for special functions (e.g. connection of compact controllers UA 30 Rx / Dixell, external controllers or BMS data interface to external systems or M-bus)

- Two connectors (control, power supply) for maximum four 4 optional SIOX Extension Modules

- **CI 3100 only**: RS485 interface (COM3) for direct connection to compact controllers UA 30 Rx / Dixell, so that the RS232-interface (COM2) can be used for external controllers or as a BMS data interface to external systems or for the M-bus:

Inputs and outputs

- 2 x inputs 230 V AC (for external alarm and meter reading)

- 3 x outputs 230 V AC floating
  2 x alarm contacts, e.g. for telephone dialer
  1 x audible signalling unit

- Can be extended with a max. of 4 SIOX extension modules
  each SIOX provides
  - an additional 12 digital inputs (for meter, alarm etc.) and
  - an additional 8 digital inputs (for time switch, load shedding)

- 1 switch (floating 230 V AC) with external wiring option

2.2 New features compared to previous versions

Version 5.12:

- Various corrections

- Support for further M bus meters

Version 5.0:

- Extended alarm and message priorities 3..99

- Sending of alarms and messages (incl. to multiple SMS destinations)

- Sending of alarms and messages via FAX using an ISDN modem

- AUX relay can be used as an alarm relay

- Daily test alarm for inspecting the alarm route

- Fast CAN bus connection between CI 3000 and Combi Gateway

Danger of a loss of the configuration!
Due to more fundamental changes to the store computer, during an update from version < 5.0 to version 5.0 and higher it is necessary to re-enter all settings for the error message transmission. See menu 6-1-4 and all sub-menus.

Version 4.26:

- Terminal mode for BMS possible (only CI 3000)

Version 4.24:

- Calling up temperature archives (HACCP) on the store computer (see menu 6-3)

- M-bus interface for consumption data capture (meter injection) realised

- Integration of LDS1 gateways

- New special inputs

- Text messages from radio sensors now include their sensor ID

- Alteration of the factory settings for the system alarms' alarm priorities (see menu 7-4)

- Password protection by restricted setpoint changes to interlock the entry

Version 4.19:

- SMS text message transmission via a GSM modem

- EU archiving with Data Logging Controller UA 300 L as per EU regulation
  (the UA 300 L records the temperatures **in place of** the refrigeration controller).

- 24-h actual values and energy archives can be reloaded (e.g. following a firmware update)

- Integration of the WR 300 receiver modules for TS 30 W wireless sensors

Until now   New

☞ As a result of technical developments, there are now two hardware versions of the store computer beginning with version 4.08! Please note that the plug-in jumpers on the rear of the previous model have been replaced with DIP switches situated on the top left hand side of the housing (viewed from behind) on the new model (see picture).

Version 4.10:

- The store computer's two 230 V AC digital inputs can be configured for the purpose of meter reading

- Connection to external systems

- Integration of Danfoss SLV controllers

- Archiving of the actual values of
  - UA 30 Rx / Dixell compact controllers
  - AHT cases with worm controllers
  - AHT cases with Danfoss SLV controllers

Version 4.03:

- ISDN Modem

- Integration of Compact Case Controllers (e.g. UA 30 Rx / Dixell)

- Load shed manager

- Service mode implemented, enabling service technician to suppress remote alarm signalling for the duration of maintenance work (limited time duration 1 to 255 min.)

- Alarm takeover (by service center)

- Store computer check initiated by CI 3000

- Access control by Store ID

- Enabling of setpoint adjustment for specific LDSWin dongles

- Fault report forwarding by voice mail to telephone with acknowledgment

- Additional special inputs:
    - Store closed (shunt lock)
    - Emergency power supply
    - Sprinkler alarm

- Limit monitoring for meters (electricity, water, gas)

- Totalization of meters

- Changed last-in alarming of alarm relays:
    - New alarms occurring during the delay are reported on expiration of delay

- Overview archive matched to UA 300 E and UA 300 V

Version 3.05:

- Connection to external systems:
    - Inclusion of AHT controllers for plug-in display cases
    - BMS modbus (e.g. PRIVA connection) extended with meter values
    - Inclusion of ELC55 (DDC - digital direct control) for building control systems

Compatibility with other LDS components

Satisfactory operation of the CI 3000 Store Computer in the LDS System requires the LDS components to be upgraded to the following software versions:

• LDSWin
  - Full functionality: Version 2.2.3.680 or higher
  - Configuration of transmission of alarms not supported
  - Version 2.1 < Earlier than Issue 6: **No** remote access via modem. Direct connection (via null modem cable or CAN bus dongle) available but not recommended

• Operator Terminal AL 300
  When a CI 3000 Store Computer is connected to the LDS System, the AL 300 Operator Terminals used must also be the same Version:

CI 3000	V5.0	$\Rightarrow$ AL 300	V5.0 (Update only necessary when priorities 3..99 are used)
CI 3000	V4.26	$\Rightarrow$ AL 300	V4.10
CI 3000	V4.24	$\Rightarrow$ AL 300	V4.10
CI 3000	V4.x	$\Rightarrow$ AL 300	V4.x
CI 3000	V3.x	$\Rightarrow$ AL 300	V3.x
CI 3000	V2.x	$\Rightarrow$ AL 300	V1.x / V2.x
CI 3000	V1.x	$\Rightarrow$ AL 300	V1.x

• UA 300/UA 400 Series
  Case/coldroom controllers, all versions compatible

• UA 30 Rx Series
  Compact Case/coldroom controllers, all versions compatible

• VS 3010 Series pack controllers
  All versions compatible

• WR 300 / WR 400 receiver module
  All versions compatible

ECKELMANN

3   Application of CI 3000

- Centralized parameter setting and configuration of all LDS components via CAN bus:

  The CI 3000 Store Computer can be used for remote control and configuring of all LDS components from a single location via CAN bus. In-use change of the user language can also be made from the central location.

- The CI 3000 Store Computer's RS232 interface (COM2) with the RS232/RS485 Converter can be used to integrate UA 30 Rx compact controllers / Dixell controllers as well as external controllers into the LDS system.

- CI 3100 only: UA 30 Rx compact controllers and Dixell controllers can be directly integrated in the LDS system via the RS485 interface (COM3). The RS232 interface (COM2) is then available for the integration of external controllers or as a BMS data interface to external systems.

- Centralized display of operating data, messages and alarms generated by all LDS components.

- Alarm signalling by indicator light and buzzer and by external horn and alarm contacts.

- Monitoring of two connected external digital signals (external alarms and meter)

- Monitoring of CAN bus and operational status of all LDS components:

  Alarm is generated in fault or failure of CAN bus and failure of LDS components.

- Centralized time synchronization (master clock):

  Date and time can be set with the CI 3000 Store Computer for the complete system. The CI 3000 Store Computer also performs cyclic synchronization of internal clocks in all LDS components via the CAN bus. The CI 3000 contains a battery-backed real-time clock, which supports automatic daylight saving change.

- Remote maintenance of the installation / store via a central computer (PC) with the PC software LDSWin.

- Energy management:

  Power, water, gas meters and heat meters with a pulse output (S0) can be connected to the CI 3000 Store Computer i.e. also the M-bus meter by means of the M-bus gateway, which then determines and archives current power or flow rate and the daily energy requirement or consumption.

- Load Shedding Manager (LSM)

  Load Shedding Manager can be configured for up to 20 shedding points and optimizes power input of the refrigeration/building control system within a load optimizing interval of 15 min.

- Remote alarming of LDS System Alarm signal transmitted to fault indicator centre

  via modem, GSM, SMS, FAX, voice message and network.

Application of CI 3000

Notice:

4 Function of CI 3000

4.1 Alarms and messages

The CI 3000 Store Computer is the central receiving point for alarms and messages from all LDS components contained within the system. The messages are entered into an alarm and a message list which can be accessed by the user.

The alarm log can store 100 entries and the message log can store 1000 entries.

When a log is full, the next new entry overwrites the oldest entry. Entries are logged in the order of their occurrence.

The alarm list (see Menu 1) provides a quick overview of currently reported alarms. The the message list (see Menu 4) serves as a log of all faults that have occurred and been corrected and reported events. Reports generated by LDS components are transmitted to the CI 3000 Store Computer via the CAN bus with one of the following priorities:

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 4, 14, 24,...94	Alarm entry in the message and alarm list
9, 19, 29,...99	Only for local alarm signal, no modem, can be configured to operate the AUX relay
0, 10, 20,...90	Message - only entry in the message list
--	No message is generated

In addition to the two OFF-delay alarm relays **PRIO1**, i.e. **PRIO2**, the **AUX relay** can also be assigned any desired alarm priority (for example parameter PrioX3 for 3,13,..93 or PrioX9 for 9,19,..99). Factory side the AUX relay is set to HORN and is configured under menu item 6-1-4-1 via the parameter AUX-relay.

For further information on the priority concept see chapter 4.1.2.1.

> ⚠️ If the alarm messaging is to be carried out using a telephone dialling device with the corresponding OFF-delay alarm contacts PRIO1/PRIO2 then these must be subjected to a cyclical monitoring in order to ensure that the contacts still register even in the event of power loss.

> ☞ In the following alarms and messages are indicated using the term "alarm".

If the problem has been rectified the alarms in the alarm list can be acknowledged. For details see chapter 4.1.1. Acknowledging the alarms deletes them from the alarm list. Entries in the message log cannot be cancelled or deleted. With each newly entered alarm the acoustic alarm transmitters (internal buzzer or optional external horn at the AUX relay) are activated. These can be cancelled by pressing the *ALARM RESET* key (see chapter 4.2.2 Multifunctional relay AUX). Operating the *ALARM-RESET* switches off the acoustic alarm transmitter.

Danger of failure of alarm messaging! Successful transmission of alarms from 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**.

Praxis tip: In order to monitor and inspect the alarm destinations a daily test alarm (e.g. via SMS) can be conducted from the store computer at a set time each day (see menu item 6-1-4-1).

The following alarms and messages are generated by the Store Computer CI 3000 itself:

- **Alarms**
  - Hardware error
  - CAN bus failure/fault
  - Modem fault
  - Error in automatic fault report transmission
  - First start of CI 3000
  - Restart of CI 3000
  - LDS component failure
  - External alarms
  - Special inputs

- **Messages**
  - Call made to store
  - Manual/automatic mode of LDS components
  - Changed configuration or date/time

Detailed information on the alarm and message texts of the CI 3000 store computer is provided in the chapter 10 - Alarms and Messages.

4.1.1   Acknowledgement of alarms and messages

Alarms can be reset by pressing the *ALARM RESET* key while the alarm log is displayed (see Menu 1). Reset is effective throughout the system. This means that throughout all LDS components all alarms and messages which can be acknowledged are acknowledged.

Only those alarms, i.e. messages can be acknowledged which have been registered as resolved, i.e. they possess a so called 'cleared time stamp'.
Acknowledged alarms are then deleted from the alarm list and transferred to the message list (see menu item 4). For subsequent error detection all alarms which have been acknowledged and thus masked can be displayed again by pressing the buttons *MODE* and *ALARM-RESET*. These alarms can afterwards be reset and hidden in the normal manner.

ECKELMANN

4.1.2   Remote alarm messaging

16 alarm destinations are available for remote alarm messaging. The destinations can be:

• A PC with the PC software LDSWin

• An SMS recipient

• FAX machine and

• A telephone for the receipt of a voice message

☞   With SMS message transmission the telephone number of the SMS provider must be activated in the telephone system otherwise no SMS transmission is possible:
D1:   0171-20 92 522   0171-25 21 002
D2:   0172-22 78 020
Anny Way: 0900-32 66 90 02

EASY mode

The alarm destinations 1..4 are predominately pre-defined and should be sufficient for the majority of applications. They largely correspond to the remote alarm messaging concept of older store computer versions with firmware versions <5.0.

The alarm destinations of the EASY mode are:
1. The control centre as primary destination (LDSWin PC)
2. Fault clearing service as primary destination or alternative to control centre (LDSWin PC)
3. SMS via the service provider Anny Way
4. Voice message

The following settings (see menu items 6-1-4-4-1 to 6-1-4-4-4) are available for the EASY mode alarm destinations:
- Entering the destination telephone number
- Which priorities are to be registered: 1or 2 or 1+2
- Whether messages are to be sent inside or outside a specifiable time period or at all times

Extended alarm destinations

The alarm destinations 5..16 can be freely configured and can be assigned to destinations as required (also multiple). Information on the extended alarm destinations (5..16) and their function are described in greater detail in chapter 4.1.2.2.

4.1.2.1 The priority concept

Possible priorities for alarms and messages have now been raised from the previous --, 0, 1 and 2 to 99. This priority range is divided into 10 alarm groups (decades 0..9):

	PRIOx1	PRIOx2	PRIOx3..x8	PRIOx9	PRIOx0	PRIO--
DECADE 0	1	2	3..8	9	0	
DECADE 1	11	12	13..18	19	10	
DECADE 2	21	22	23..28	29	20	-
..	..	..	..	..	..	
DECADE 9	91	92	93..98	99	90	
RELAIS	PRIO1	PRIO2	AUX (OPTIONAL)		-	
	INTERNAL SUMMER / BUZZER				-	
	MODEM			-		
LED	PRIO1	PRIO2	-			

ZNG: 102 330 DEF

- The 1 and 2 priorities (1,11,21,...91 i.e. 2,12,22,...92) are reserved for high priority alarms which activate the alarm relays "PRIO1" and "PRIO2" as well as the LEDs "PRIO1", i.e. "PRIO2" on the front of the store computer.

- The priority numbers 3 to 8 are designed for low priority alarms.

- The priority number 9 in each group (9,19,29,...99) is reserved for low priority alarms which are only used to generate local alarm messages (e.g. open coldroom door).

- The lowest priority number in each group (0,10,20,..90) is reserved for messages which are only recorded in the message list.

- If the priority is set to -- no message is generated

This division into alarm groups (decades) facilitates a maintenance-group-oriented alarm management.
For more information see chapter 4.1.2.2.

4.1.2.2 Extended alarm destinations

The extended alarm destinations 5..16 provide significantly more options for a differentiated remote alarm messaging compared to the EASY mode.

The following settings are possible with these alarm destinations:
- (Freely definable) Name of the alarm destination (only possible in LDSWin)
- Destination type/service: LDSWin, SMS via D1, D2, Anny Way or..., voice message and FAX,
- Telephone number with entry as to whether outside line or internal call
- Function as primary or alternative destination
- (When alternative destination) name of the primary destination

☞ With SMS message transmission the telephone number of the SMS provider must be activated in the telephone system otherwise no SMS transmission is possible:
D1: 0171-20 92 522   0171-25 21 002
D2: 0172-22 78 020
Anny Way: 0900-32 66 90 02

Furthermore, individual priorities or priority groups can be assigned:
Individual value or range with start and end values or ALL (without priority X9).

This enables alarms and messages to be specifically directed to the fault clearing service responsible for the maintenance group.

By this means alarm signals are sent selectively, resulting in a reduction of service and maintenance costs and more efficient servicing.

Procedure with example:

1. Specify the alarm destinations
The refrigeration plant is to register with the service centre and the building control technology by the caretaker.

2. Specify the priorities and priority groups and assign them to the alarm destinations
Refrigeration plant: Priorities 0..9
Entire building control technology: Priorities 10..99

3. Set the priorities in the components accordingly (the meaning of the priorities X1 and X2 in combination with the alarm relay is to be observed, see chapter 4.1.2.1)
    Components/controllers of the refrigeration plant send messages with the priorities 0..9
    Building control equipment components (heating, air conditioning,..) with the priorities 10..99

☞   The settings are to be planned and entered with care. In the event of a false configuration there is potential for alarms to be sent to the wrong alarm destinations and not given the necessary attention.

In order to illustrate the priority concept and the decades (priority groups) they are listed in the following table and explained using examples:

Vertical Maintenance-group-dependent allocation of alarm priorities X0..X9 in decades (priority groups)					
Refrig. system	**Heating**	**Air condit-ioning**	**...**	**...**	**Horizontal** **Logical classification of alarms and messages according to alarm No.** **The alarm priorities listed to the left are**
1 * 2 *	11 12	21 22	...	91 92	- interpreted as an alarm - entered into the alarm and the message list - generate remote alarm messages via modem in accordance with the configuration - generate local alarms via horn and buzzer (store computer and operator terminal) - are coupled to the two alarm relays and LEDs "PRIO1", i.e. "PRIO2"
3 ... 8	13 ... 18	23 ... 28	...	93 ... 98	- interpreted as an alarm - entered into the alarm and the message list - generate remote alarm messages via modem in accordance with the configuration - generate local alarms via horn and buzzer (store computer and operator terminal) - depending on the configuration the AUX relay is activated
9	19	29	...	99	- only interpreted as a locally relevant alarm (e.g. open NT coldroom door) - entered into the alarm and message list - generate local alarms via horn and buzzer (store computer and operator terminal) - depending on the configuration the AUX relay is activated - no remote alarm messaging via modem
0 *	10	20	...	90	- interpreted as message - entered into the message list - no alarm signal generated (no signal tone, buzzer)

*: Alarm priorities of a store computer with a firmware version <5.0

4.1.3 Suppressing false alarms caused by maintenance work (service mode)

During maintenance work on the refrigeration plant, various alarms and messages are generated and do not need to be forwarded to the service center. This is accommodated by operating the CI 3000 Store Computer in service mode, during which all remote alarms are suppressed for a defined period of time.

In menu 9-3 the service personnel must activate the service mode and select the time period (1..255 min.) after which this operating mode is to be automatically exited:

• On the CI 3000 Store Computer, move to Screen 9-3 (see also Section 7 – Menu Structure)

• Start service mode by simultaneously pressing the MODE and ENTER (↵) keys.

• Enter the duration of service mode (1 to 255 min.) and confirm with ENTER (↵).

• Start and end of service mode is logged in the message log and reported to all AL 300 Operator Terminals connected to the LDS System.

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

If alarms are generated during the active service mode these are normally entered in the alarm and messages list of the CI 3000, and, if available, the AL 300 operator terminal. But the horn, buzzer and alarm relays remain deactivated and automatic fault report transmission is not initiated. In addition, no alarm messages are sent to any user PC within the installation connected by direct coupling; modem, LAN gateway, Combi Gateway or CAN bus – PC adapter.

☞   Any alarms that have not been reset in the alarm log 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.

ECKELMANN

4.2   Relay outputs

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

4.2.1   PRIO1 / PRIO2 alarm relay

The CI 3000 Store Computer has a digital alarm output (floating relay contact) for each alarm priority X1 and X2, usable for example to operate a telephone dialer (terminals PRIO1: 35, 36, 38 / PRIO2: 25, 26, 28, see chapter 6.1.3). When an alarm is generated by an LDS component, the output assigned to the respective priority X1 or X2 is activated.

☞   The alarm outputs are the latching type with time-delayed automatic alarming in a 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.

If the output was already activated, it is deactivated for an interval of 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.

4.2.2   AUX Multifunctional relay

In addition to the prioritised alarm outputs, the controller is also equipped with a change-over contact terminal AUX (terminal 15/16/18) which can be used to connect e.g. an external acoustic alarm transmitter via terminals 15/16/18. Via menu item 6-1-4-1 the relay output can be configured with one of the following parameters for the following functions:

Hupe: For the connection of an external acoustic alarm transmitter (factory setting)
            The contact switches when the store computer's internal buzzer sounds (buzzer signals an alarm).
            If the internal buzzer falls silent then the contact also switches to the idle state
            (see also chapter 4.1 Alarms and messages).

Modem: Modem hardware reset see chapter 5.3.3.

Prio. X3..X9:The multifunctional relay has the same functionality as the alarm outputs in chapter 4.2.1,
            with the exception that it can be assigned any alarm priority between X3, X4, … or X9.
            can be allocated. If an alarm with the priority X3,X4, … or X9 is received from one of the LDS
            components then the relay output AUX is only activated when the message priority
            (see also chapter 4.1) corresponds with that configured here.

DDC: For automatic modem switching to the controller (DDC) for the building management system (BMS)

4.3   Digital inputs

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!**

The CI 3000 Store Computer has two 230 V AC digital inputs: A1, A2 and B1, B2.

These can be configured for the monitoring and alarm messaging of external maintenance groups (external alarms), i.e. special inputs (see chapter 4.3.2) or as meter inputs (see chapter 5.5.3).

With the deployment of up to a max. of 4 SIOX extension modules, the number of inputs can be increased to a max. of 50 digital inputs (12 additional digital inputs per SIOX module). With the use of a BMS controller the number of digital inputs, depending on the system, can be further increased.

4.3.1   Message and Alarm Inputs

Configuration

The digital message and alarm inputs are initially deactivated and must be configured before use in menu 6-1-2.

The message and alarm inputs can be configured so that they operate according to either the closed circuit or open circuit principle, i.e. an alarm message is generated when the signal voltage is absent (low active) or present (high active). Each message and alarm input can be assigned an individual, freely configurable 19 character text message which is displayed in the alarm message.

Alarm can be delayed for an adjustable interval between 0 and 255 **minutes**. Each alarm input also has definable alarm priority between 0 and 99. Alarm inputs of priority 1 and 99 actuate normal alarms that are displayed in the alarm log and are forwarded via the alarm routes configured. The lowest priority number in each group (0,10,20,..90) is reserved for messages which are only recorded in the message list. For more information on the priority concept see chapter 4.1.2.1.

If a BMS controller is connected to the store computer, then changes to the SIOX extension modules (e.g. configuration of the alarm outputs, meter etc.) using the LDSWin PC software can only be carried out with a BMS dongle.

Alarm signalling failure! In the event of the failure of a SIOX extension module with connected external alarms then their monitoring also ceases. The failure of a SIOX extension module generates an alarm message. No further alarm will be generated however if an alarm state occurs on any one of the inputs affected.

ECKELMANN

4.3.2 Special Inputs

The special digital inputs are initially deactivated and must be configured before use in menu 6-1-3.
The following special inputs are available:

Block lock: recognises whether the store is open or closed (used for building management control technology applications).

Emergency power operation Recognises whether an emergency power generator has been activated and can be used to reduce the load. The signal currently are interpreted only by BMS. The connection of the emergency power operation for pack controller and refrigeration controller must be chosen by the corresponding pack controller.

Sprinkler alarm: recognises a fire incident, and can be subsequently used e.g. to turn off the power supply.

Store lighting: recognises whether the store lighting has been switched off. Thereupon, a signal is transmitted via the CAN bus to the LDS components' lighting management.

Setpoint switching: recognises whether the setpoints need to be switched. Thereupon, a signal for the setpoint switching is transmitted via the CAN bus.

☞ In order to utilise these functions, LDS components must be used which also support these functions. Details can be found in the handbook of the respective LDS components.

Configuration

The special inputs are initially deactivated and must be configured before use (menu 6-1-3-1 to 6-1-3-5).

The special inputs can be configured so that they operate according to either the closed circuit or open circuit principle, i.e. an alarm message is generated when the signal voltage is absent (low active) or present (high active).

The alarm signal can be delayed for a period which can be set between 0 and 255 **seconds**.

☞ Each input terminal can be used for several special inputs simultaneously.

⚠ **Alarm signalling failure!** In failure of a SIOX Extension Module to which external alarms are connected, monitoring of these alarms will also be disabled! Failure of a SIOX Extension Module is alarmed. No further alarm will be generated however if an alarm state occurs on any one of the inputs affected.

4.4 CAN bus station monitoring

The CI 3000 Store Computer performs cyclic check on presence of all LDS components previously detected in the system. Failure of a component is detected by station monitoring and generates a *Computer Fault* alarm. Every new 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).

The following CAN bus nodes can be present in the LDS system:

LDS components	CAN bus address	Max. no. of 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 3000 Store Computer	**111** (fixed address)	**1**
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 (fixed address)	1
DDC modules of building control system (BCS)	122..125	Maximum of 4 if there are no Modbus TCP master gateways installed in the system
LDSWin PC via CAN bus PC adapter	126 (fixed address)	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 Gateway - Modbus TCP-Master 2 Gateway - Modbus TCP-Master 3 Gateway - Modbus TCP-Master 4 Gateway	 126 oder 127 110 122 123 124 125	 1 1 Maximum of 4 if there are no DDC modules installed in the system.

☞ In failure or shutdown of the CI 3000 Store Computer, the AL 300 Operator Terminal having the lowest CAN bus address (when used) performs monitoring for the duration of the outage.

4.5 Alarm suppression in manual shutdown of LDS components

Shutdown of an LDS component is detected by CAN station monitoring as a failure (Screen 7-1). This causes a prompt to appear on the display of the CI 3000 Store Computer and all AL 300 Operator Terminals (when used) asking whether the LDS component has been shut down intentionally.

The user can then confirm shutdown within 5 minutes by pressing ENTER. If confirmation is made within this interval, monitoring of the LDS component concerned will be deactivated and accordingly it will **not** be reported as failed.

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

☞ The manual shutdown of case controllers is entered in the store computer's message list!

ECKELMANN

4.6 Configuration of the LDS system via the PC software LDSWin

The CI 3000 Store Computer and all LDS components connected to it via CAN bus can be configured conveniently on a PC running the LDSWin software. This includes the option of reading out the configuration of all components and storing this data on the PC (via function "Save Parameter sets") "so that it can be written back to the replacement device if replacement of a component becomes necessary. Further information is contained in the LDSWin operating instruction.

For local configuration the CI 3000 Store Computer is connected to the PC by a null modem cable (EAG No. PCZKABSER2).

In addition, for the purpose of remote adjustment and maintenance, the store computer can also be operated using the PC via a modem or via a network using the Combi-Gateway. The store computer can be used for the storage of store-specific data from LDSWin so that the same store layout can be used for different LDSWin installations.

4.7 Automatic fault report transmission via modem

The CI 3000 Store computer allows of automatically transmitting alarms (in real language) from the LDS System to various destinations via modem. The following information is transmitted in the message: store name, message text, time and date of the time stamp in, i.e. time stamp go, priority, telephone number of the store, item number (CAN Bus address) as well as the name of the LDS component).

In addition to a PC with the software LDSWin the sending of alarms as SMS to mobile telephones is also supported (see chapter 6.3) along with the playing of voice messages over the telephone and the sending of FAXs (only possible with an ISDN modem, see chapter 5.3.2).

⚠️ **Danger of the failure of alarm messaging via SMS and thus no alarm signalling in the event of problems!** There is **no assurance** that text messages will reach the recipient reliably or in due time. Do not configure SMS as the only alarm path! It is also possible that a network operator or mobile phone provider changes its dial-up number or its dial-up procedure from time to time, thus generating additional costs. Precise information can be obtained from the respective mobile phone service provider.

Up to 14 different PCs can be configured as fault signal receivers in the CI 3000 Store Computer. The LDSWin software must be installed and running on PCs used for remote alarming.

☞ The reporting route must be checked regularly by the store computer check function contained in the LDSWin software for the purpose of monitoring reliability of automatic fault report transmission.

4.8 Display of Temperature Archives (HACCP) on Store Computer

Via the menu item 6-3 in the CI 3000 store computer, it is possible to access temperature archives (e.g. for HACCP) from controllers and radio sensors integrated into the LDS system.

By this means it is possible to view these temperature archives for up to 31 days in the past, without the need for the PC software LDSWin.

☞ For retrieving data from temperature archives which extend further into the past, the PC software LDSWin is required.

4.9 EU archive

The Store Computer automatically archives the current operating data of all LDS components, see also chapter 4.8.

In addition, it is possible to archive the temperatures and states of individual refrigeration points according to the EU directive. The configuration is carried out under menu 6-1-5. The archived data can be read out via modem or PC and presented in a chart or a graph using the PC software LDSWin.

Operating data of LDS components is archived in a ring buffer for periods of one week (case/coldroom controllers, e.g. UA 300/UA 400) or one day (pack controllers, e.g. VS 3010). Hourly and daily averages are additionally produced for pack controller operating data and are likewise archived in ring buffers for periods of a week or year. EU archives cover a period of one year.

☞ It is recommended to call up all operating data recorded in the store computer on a cyclical basis using scripts from within the PC software LDSWin. This has the advantage that all relevant operating data (e.g. the HACCP demanded by legislation) is backed up on a second system which can be used to provide a record of the temperatures if required.

4.9.1 Archive memory requirements

Three versions of the CI 3000 Store Computer are available at the present time, differing by size of data memory (2 MB, 6 MB or 16 MB).

(The CI 3100 is only available with 6 and 16 MB memory expansions)

The following points should be considered when choosing adequate memory capacity:

• 2 MB is equivalent to 40 memory units

• Archiving of operating data of a case controller are:

  - UA 300 occupies 1,4 memory unit,

  - UA 300 D occupies 1 memory unit,

  - UA 300 E / UA 400 E occupies 2,3 memory unit,

  - UA 300 L occupies 1 memory unit,

  - UA 410 / UA 410 E occupies 2,5 memory unit,

• Archiving of operating data of a pack controller are:

  - VS 300 occupies 2 memory unit,

  - VS 3010 / VS 3010 BS occupies 2,5 memory unit,

  - FS 3010 occupies 3 memory unit and

• Archiving of **one** case controller with up to 2 control zones according to the EU Directive occupies

  - 2 memory units.

• The archiving of **one** wireless TS 30 W / TS 30 XW temperature sensor:
  - occupies 0,2 memory units. The memory needed by the associated WR 300 / WR 400 receiver module is negligibly small.

• Archiving of GLT 3010 occupies 1 memory unit

Examples (assembled with all sensors):

CI 3000 Store Computer with 2 MB of memory: 40 memory units		
Number	**Memory units required**	
16 refrigeration points UA 300 / UA 300 D/L/V or 10 refrigeration points UA 300 E / UA 400 E	16 x 1,4 ~23	10 x 2,3 = 23
2 compact-refrigeration points UA 30 Rx	2 x 1 = 2	2 x 1 = 2
2 refrigeration packs VS 3010	2 x 2,5 = 5	2 x 2,5 = 5
10 wireless temperature sensors TS 30 W	10 x 0,2 = 2	10 x 0,2 = 2
4 EU-Archive	4 x 2 = 8	4 x 2 = 8
Total	**40**	**40**
CI 3000 Store Computer with 6 MB of memory: 120 memory units		
Number	**Memory units required**	
57 refrigeration points UA 300 / UA 300 D/L/V or 35 refrigeration points UA 300 E / UA 400 E	57 x 1,4 ~ 80	35 x 2,3 ~ 80
2 Compact-refrigeration points UA 30 Rx	2 x 1 = 2	2 x 1 = 2
4 refrigeration packs VS 3010	4 x 2,5 = 10	4 x 2,5 = 10
14 EU-Archive	14 x 2 = 28	14 x 2 = 28
Total	**120**	**120**
CI 3000 Store Computer with 16 MB of memory: 320 memory units		
Number	**Memory units required**	
72 refrigeration points UA 300 / UA 300 D/L/V or 43 **Memory units required UA 300 E / UA 400 E**	72 x 1,4 ~ 100	43 x 2,3 ~ 100
9 refrigeration packs VS 3010	9 x 2,5 ~ 23	9 x 2,5 ~ 23
EU-Archive	94 x 2 = 188	94 x 2 = 188
3 Extension modules SIOX	3 x 0,33 = 1	3 x 0,33 = 1
Total	**312**	**312**

(The CI 3100 is only available with 6 and 16 MB memory expansions)

4.10 Timers

When employing extension modules (SIOX), timers with up to 7 switching times per relay output can be configured in menu 6-1-7. Control times can be set accurate to the minute and can be spread over individual weekdays or groups of weekdays: (Mo-Fr, Mo-Sa, etc.).

Control times		Allowable period
Weekday	Mo, Tu, We, Th Fr, Sa, Su	0:00 - 23:59
Weekday group	Mo-Fr, Mo-Sa, Sa-Su	Start earliest 0:00 End latest 23:59, but not before start time **Rule: Start time must be earlier than end time** Control times extending beyond midnight are **not allowed**: Example: Start 21:00 End 7:00 !!!
	Mo-Su (one Week)	0:00 - 23:59 Control times extending beyond midnight **are allowed** Beispiel: Start 20:00 Ende 8:00

> ☞ If the timer is to run beyond midnight (e.g. 20:00 - 8:00), it must be set for individual days, e.g. Mo 20:00 - 23:59 - Tu 0:00 - 8:00 or for the weekday group Mo-Su, then to 20:00 - 8:00!
>
> Separate control times may overlap: 1st timer Mo-Su 20:00 - 8:00
>   2nd timer Su 0:00 - 23:59

In addition to the switching output each relay output can be assigned a passing contact, either as an alternative or additionally. The passing contacts switch simultaneously with the switching output and back off again after a duration of ca. 5 seconds.

4.11 Energy management

If the digital inputs of the store computer, i.e. of a SIOX module, are configured in menu 6-1-6-1 as S0 or M bus measuring points for energy management, then energy consumption, capacity, water or gas consumption can be recorded.

When evaluating the power tariff signal delivered by the power company, the power can be recorded, evaluated and displayed separately for off-peak and peak tariff.

The recorded daily consumption and capacity are archived in circular buffers for a year and a week respectively. They can be read out via modem or network using a PC and presented in a chart or a graph using the PC software LDSWin (see the PC Software LDSWin Operating instruction).

4.11.1 Totalizer and peak load monitoring

With the assistance of the totalizer (see picture in the following chapter), the values of a number of metering points (e.g. meter for electricity, water, gas and heat) in menu 6-1-6-2 can be combined to generate a total value. Generally, for each totalizer, one limit value monitoring with prioritised alarm/message is possible.

In addition, totalizers can also be assigned the functionality "Watersave". The purpose of this function is to monitor the water consumption and interrupt it if required.

Mode of operation: in the event of an overshoot of a parameterisable flow rate, i.e. total water consumption, caused perhaps by a burst water pipe or a severe leak, a parameterisable SIOX output (menu 6-1-6-2) is switched, activating a solenoid valve which interrupts the water supply. This function can be linked to the block lock so that monitoring of the water consumption is only active during periods when the alarm system is primed (e.g. at night when the store is closed).

4.11.2 Load Shedding Manager (LSM)

The task of a load management system is to minimise the average recorded demand over a 15 minute period (and thus also the demand charge), without compromising operating processes. The purpose of a load management system is to minimize the demand or capacity charge for electric power without negatively affecting operations. Demand peaks should be kept as low as possible by temporary off-cycling or setting-back suitable electric loads during peak demand periods and on-cycling or setting-up other loads during off-peak periods. Above all, demand at any given time should not exceed the defined maximum capacity (contract capacity) for any length of time or by any significant amount. Consumers are shutdown via SIOX relay outputs (menu 6-1-6-3-2).

without optimizing   with optimizing

LSM acts as a peak demand monitor and its control limits are aligned to the current power demand measured within a defined period. It compares the target and actual power level at fixed intervals (15 minutes, synchronized with the power company) and initiates load shedding if and when necessary.

Twenty load shedding stages are prioritized in ascending order. Stage 1 is shed first when load shedding becomes necessary. Should this reduction of load be inadequate, the next stage (Stage 2 to 20) is shut down. This continues until either power load drops to within the neutral zone or the highest load shedding stage is reached (escalation strategy).

On first being started, LSM works in non-synchronized mode and initiates load shedding when maximum demand is exceeded. Energy and demand metering is not synchronized with that at the power company until the next synchronizing signal is received from the power company.

Existing electric loads suitable for load shedding can be assigned at will to any load shedding stage. Using the zero-potential relay outputs of its SIOX, the load shedding manager (LSM) can influence as many consumers as required, using CAN bus messages it can influence the LDS components, and via DDC (Digital Direct Control) the building control technology.

Optimum values can be defined for the *Min. Time* and *Max. Time* parameters of a load shedding stage and thus imposed on Load Shedding Manager. It is appropriate to provide digital feedback also for individual electric loads that are shed via SIOX Extension Module relay outputs.

LSM is then able to recognize whether the unit is in fact working and contributing to peak demand and whether it responds to the load shedding command. For this operating mode a digital relay input and output on the SIOX extension module (SIOX 1 .. 4) is required for each consumer. Each load shedding stage can be configured with the following parameters (see Screen 6-1-6-3-2).

☞   M bus meters connected to the store computer cannot be used for the LSM, the digital inputs of the store computer, i.e. those of the SIOX are exclusively reserved for this purpose.

Stage shed load

Maximum electrical load for the stage must be configured by parameter (Load), which is used to calculate the stages to be shed. Stages for which the shed load is set to 0 are also shed according to their priority (sequence). This may result in unfavorable switching actions for a time. The correct maximum shed load should therefore be set for each load shedding stage used so as to ensure optimum LSM operation.

Minimum run time

This parameter can be used to configure a minimum run time. The minimum run time defines the minimum time for which a stage must be active before it may again be shed. Setting a time (greater than 0), determines whether a stage can be shed. The time must be set to 0 if limitation of shedding by minimum run time is not to be used.

Minimum shed time

This parameter can be used to configure minimum duration of load shedding. It defines the minimum time for which a stage remains shed before it can be loaded again. If the parameter is set to 0, it has no effect on LSM function. An input can be used and configured for each load shedding stage to signal operating status of the associate electric load. This input is optional. When used, it allows significantly better load optimization. If the input is not configured for a stage, the electric load will always be assumed to be operating. The operating input acts only on load shedding for the respective stage.

Maximum shed time

This parameter can be used to configure maximum duration of load shedding. The time begins on shedding a stage. On elapse of the defined maximum shed time, the stage is again loaded regardless of the power demand or load shed state at that time. Maximum shed times are detected and processed separately for each stage. Setting the parameter to 0 deactivates the function and load shed time is not limited.

Load shed output

A load shed output must be configured for each load shedding stage and is used to shed the respective electric load. Shedding of a stage or load takes place through an active load shed output. A stage will not be shed if no output is configured for it.

Operating input (optional)

For each load shedding a digital input for signalling the operating status of the corresponding consumer can be used and configured. The operating input communicates the current operating status (ON/OFF) of the load to LSM. When used, it allows significantly better load optimization by enabling LSM to optimize demand stage on- and off-cycling. If the input is not configured for a stage, the electric load will always be assumed to be operating. The operating input acts only on load shedding for the respective stage.

Power demand input (optional)

For each load shedding a digital input for signalling the power requirement of a consumer can be used and configured. The demand input signals to LSM the power demand status (YES/NO) of the respectively shed load stage and whether the total power will increase by this demand when enabled. When used, it allows significantly better load optimization by enabling LSM to determine an optimum load shedding strategy. If the input is not configured for a stage, the electric load will always be assumed to be demanding power. The demand input acts only on loading of the respective stage.

☞   Careful planning and startup is vital to successfully installing and configuring load optimization management. The basis for planning is formed by application- and plant-specific information supplied by

the system operator and information gathered by the LDSWin software from the plant power demand profile. Correct adjustment of setpoints, meaning efficiency and reliability of the load optimization system, can readily be reviewed and checked from this recorded data.

The following diagram outlines how load management acts on the various electric loads and how communication takes place between LSM and the electric loads via the CAN bus:

ENERGY METER

SYNCHRON IMPULSE FROM THE POWER COMPANY

SIOX   SIOX   SIOX   DIGITAL SIOX INPUTS

ENERGY RECORD

Σ   TOTALIZER

LSM

CI 3000

SIOX DIGITAL IN-/ OUTPUT

ZNR. 51203 68 230 E0

CAN bus

DIGITAL SIGNALS

VS 3000

UA 300 FAMILY   UA 300 FAMILY   UA 300 FAMILY

OTHER CONSUMERS (E.G. BAKING OVEN, DISHWASHER)

→ LOAD SHEDDING COMMAND BY DIGITAL SIOX OUTPUT

⇠⋯ FEEDBACK BY DIGITAL SIOX INPUT

LOAD MANAGEMENT BY THE VS DELEGATED BY LSM

→ LOAD SHEDDING COMMAND BY CAN BUS

⇠⋯ REQUEST/ FEEDBACK BY CAN BUS

4.12 M-bus Interface for consumption data capture

The M-bus (meter bus) is a field bus for the capture of e.g. gas, water or power consumption data.

It is transmitted serially from the connected meters (slaves / field devices) to a master (M-bus gateway) via a reverse-polarity protected twin wire cable. The M bus gateway itself is connected to the store computer's COM2 interface, the activation of the interface is carried out in menu 6-1-9.

☞   For detailed information see chapter 5.8 "Connection of the M-bus Gateway".

4.13 Integration of refrigeration controllers

The following external controllers can be integrated via Modbus into the LDS system and archived.

- **Compact case controllers**
  UA 30 RC / UA 30 RS
  connected via the store computer's COM2 interface using an RS232-RS485 converter.

☞ The status as well as the configuration of the integrated compact case controllers M1..M50 is carried out via the store computer:
- For the status and temperature indication of the individual refrigeration points see menu item 7-5
- For the configuration of the name as well as the position indicator for the individual refrigeration points see menu item 7-6

- **Case controllers of the LDS1 system**
  UA11/UA111/ UA121/UA131/UA141/UR141/UA132

☞ The status as well as the configuration of the case controllers of the LDS1 system M1..M48 integrated via the LDS1 gateway are carried out via the store computer:
- For the status and temperature indication of the individual refrigeration points see menu item 7-5
- For the configuration of the name as well as the position indicator for the individual refrigeration points see menu item 7-6. For detailed information see the operating manual "LDS1 Gateway".

Connection to the store computer:

CI 3000: connected via the COM2 interface using a RS232-RS485 converter.

CI 3100: connected via the COM3 interface.

☞ For more detailed information, see "Connecting compact case controllers" in Section 5.7.

4.14 Integration of Third-party case controllers

The following third-party case controllers can be integrated into the LDS system and archived. In addition, the temperature archives (see menu 6-3) of the following controllers can be viewed on the store computer.

- **Compact case controllers from Dixell via Modbus:**

Connection to the store computer:

CI 3000: connected via the COM2 interface using a RS232-RS485 converter.

CI 3100: connected via the COM3 interface.

☞ For more detailed information, see "Connecting compact case controllers" in Section 5.7.

- **AHT cases with Danfoss controllers:**
  Connected via the store computer's COM2 interface and via Modbus
- **AHT cases with Wurm controllers:**
  Connected via the store computer's COM2 interface and a gateway

☞ For more detailed information, see "Connection of AHT cases in the LDS system".

4.15 FAQs - Frequently asked questions and answers

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

ECKELMANN

---

5 Installation and Startup of CI 3000 / SIOX

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

Furthermore, it must be noted that the safety of the system, i.e. installation in which the device is integrated is the responsibility of the creator of the system, i.e. installation. If the device is used in a manner not proscribed by Eckelmann AG then the protection supported by the device may be compromised!

5.1 Panel mounting

Important safety instructions!
The store computer is designed exclusively for panel mounting!

The CI 3000 Store Computer is assembled in a metal cage with plastic front. The power consumption of the store computer is 24 VA.

For each of the additional SIOX extension modules, up to a maximum of 4, an additional 2 W of power input is required.

The natural convection of the circulating air, assuming the free exchange of air, is sufficient for the operation of the controller. A sufficiently large air inlet (min. 100 mm) beneath the device and an unobstructed air outlet above it must be provided at all times. If this cannot be guaranteed then forced ventilation is required!

Insert the CI 3000 Store Computer with fitted rubber gasket (2) from the outside into the cutout in the control panel (3) and fasten to the mounting frame behind (4) by four screws (6):

(1): Front panel

(2): Rubber gasket

(3): Control panel

(4) : Mounting frame

(5): Insert nut M3

(6): Fastening screws

(6) M3 x (13 + d) mm

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

5.2   CAN bus

It is not necessary to set a CAN bus address as the store computer has been permanently allocated the address 111. For details on the connection to the CAN bus see chapter 6.1.4.

5.2.1   Fast CAN bus connection

If a plant is monitored remotely using the PC software LDSWin and the intention is e.g. to call up temperature data cyclically via the network then this data can be accessed quicker via a fast CAN bus connection between CI 3000 and Combi gateway.

Requirements:

- The use of a Combi Gateway
- The parameter *CAN bus fast* (menu item 6-1-1) must be set to yes and
  following the store computer must be restartet by simultaneously pressing the **MODE** + **ESC** + **8** keys.

The following sketch illustrates the mode of operation:

👉 Detailed information on the connection and mode of operation of the XML/LAN combi gateway is provided in its operating instruction.

5.3 Modem

If a modem is to be used on the CI 3000 Store Computer for automatic fault report transmission and remote maintenance, the modem type must be set in Menu *6 Store Computer - 1 Configuration - 8 Modem - 1 Modem Type* to one of the following:

• Tone dialing - always for new analog connections and ISDN connections

• Pulse dialing - may be required only for outdated analog telephone systems

The modem must be connected to the serial port labelled *MODEM* (*see Section Pin and Terminal Connections)*.

Provided it is one approved for use with the CI 3000 Store Computer, the modem will be automatically detected and initialized. Other modems generally require the initialization strings to be matched in Menu *6 Store Computer - 1 Configuration - 8 Modem - 2 Inistr.Modem.*

☞ Eckelmann AG recommends the exclusive use of extra-robust high-quality modems as listed above. Other approved plainer consumer-class modems can only be used when availability of the modem-related function does not take priority. Cyclic modem hardware reset should be activated on these types as a means of lastingly improving their operational readiness (see Section 5.3.3 - Modem Hardware Reset).

⚠ **Failure of error message transmission!** Trouble-free operation of fault report transmission and remote maintenance cannot be assured when using a non-approved modem! After the CI 3000 Store Computer and modem have been installed and automatic fault report transmission has been configured, the signalling route should be checked on a cyclical basis by generating test alarms.

Only modems that have been approved by Eckelmann AG should be used in order to ensure satisfactory operation with the CI 3000 Store computer:

• DEVOLO MicroLink 56k i   (analog modem)   (recommended)

• Blatzheim BM 33k6 ISDN pro   (Hybridmodem: analog and ISDN)   (recommended)

• SIEMENS TC35 GSM Modem   (GSM modem, the instructions in chapter 5.3.1 must be observed!)

• CEP CT63   (GSM modem, the instructions in chapter 5.3.1 must be observed!)

• ELSA MicroLink 56k Basic, MicroLink 56k Pro and MicroLink 56k I   (no longer available)

• ACER 56 Surf   (no longer available)

☞ At this time, voice messaging is supported only by the
DEVOLO Microlink 56ki and Blatzheim BM 33k6 ISDN pro modems.

5.3.1   SMS Text Message Transmission via a GSM Modem

☞   A GSM modem should be used if high reliability is called for when transmitting a
SMS text message.

With the GSM modem, an SMS text message is sent in the same way as with a mobile telephone. Because no
additional (land-line) services are needed from the telephone provider, it is quicker and more reliable than a con-
ventional modem.

☞   When using a GSM modem, the following points must be considered, and in this order:

1. In addition to the main telephone number (telephony), the SIM contract of the GSM modem must
be equipped with its **own telephone number for data services** (data service). Prepaid contracts
are therefore generally not suitable!
2. **Firstly**, the **PIN** of the GSM modem must be entered at menu 6-1-8-2 of the store computer.
3. **Only then** may the GSM modem be connected to the store computer. Any other approach may
lead to the card being blocked, as the store computer will try to log in to the GSM modem, though
without possessing a permissible PIN.

5.3.2   FAX transmission via ISDN modem

If, in addition to the classical alarm signal generation using a PC with LDSWIn, the generation of SMSs or a
voice message, the transmission of alarms and messages via FAX is also required then the modem from
Blatzheim BM 33k6 ISDN pro must be used in the plant.

5.3.3   Modem hardware reset

In the event of unreliable modems it is possible to carry out a new start or restart by switching off the power sup-
ply on a cyclical basis. The zero-potential relay contact AUX (terminals 15, 16, 18) can be used as an interrupt
switch for the modem power supply.

In order to do this the following settings must be configured:

1. The parameter AUX relay must be configured to Modem (modem reset, menu 6-1-4-1).
2. Now the time interval (30..120 min.) between 2 resets can be set in menu 6-1-8-3.

The CI 3000 Store Computer now switches off the modem for short periods on a cyclical basis in accordance
with the specified time interval (ca. 10 seconds):

ECKELMANN

5.4 Local configuration LDS-system by service PC

For the configuration of LDS components an on-site service PC (installed with the LDSWin software) can be connected to the CI 3000 store computer via the following routes:

• Connection via CAN bus PC adapter

The CAN bus PC adapter designed for use with the LDS System interfaces between a service PC with the CAN bus for communication with the LDS components. For more information on the CAN bus PC adapter see its operating instruction.

OR

• Connection via Combi Gateway

The Combi Gateway was designed for use within the LDS system. It forms the interface between an on-site service PC in the local network and the CAN Bus, used for communication with the LDS components. For more information on the Combis Gateway see its operating instruction.

OR

• Connection via modem port of CI 3000 Store computer

A null modem cable (EAG No. PCZKABSER2) is required to connect the CI 3000 store computer to the serial interface of a service PC.

If required, the modem cable must first be disconnected from the CI 3000 store computer in order to connect the null modem cable to the interface labelled MODEM:

As soon as LDSWin goes online the store computer automatically switches from the "Modem" coupling mode to the "Direct" coupling mode.

☞ The CI 3000 store computer is only in the "Direct coupling mode" when the LDSWin is actually online! Simply connecting the null modem cable is not sufficient!

If the CI 3000 store computer is unable to detect a modem or has not switched to the "Direct coupling mode", then the alarm *Modem fault* is generated following the elapse of a parameterisable time period (see menu 7-4). The *Modem Fault* alarm is suppressed during the time the LDSWin software is online via the null modem cable.

⚠ **Failure of error message transmission!** Automatic fault report transmission is interrupted as long as direct cable connection is maintained. New alarm messages are then reported directly to the connected Service PC. After restoring the normal state, the CI 3000 Store Computer will report all alarms generated during direct connection to the specified destinations in the usual manner.

5.5 SIOX Extension Modules - for DIN rail mounting

without switches   with switches

A maximum of 4 SIOX (Serial IO-Extension) extension modules can be connected to the CI 3000 store computer. Each SIOX module extends the store computer by an additional 12 digital inputs, i.e. 8 digital outputs. The number of connected SIOX modules must be parameterised in menu 6-1-1.

The SIOX modules are available in two models:
- without manual control switch
- with manual control switch in order to switch the digital outputs manually (see picture)

The modules are connected to the CI 3000 store computer via SIOX power supply cables, i.e. SIOX data cables (see capter 5.5.1).

5.5.1 SIOX - Connecting to the store computer

The individual SIOX extension modules are supplied with power from the CI 3000 store computer via the terminals 91-95 (SIOX-SUPPLY), i.e. connected to one another in series via the SIOX data cables (SIOX OUT and SIOX IN via RJ45).

Danger of destruction of components! SIOX extension modules may **only** be connected to each other or the CI 3000 store computer when no voltage is present!
In the event of an Ethernet network cable with PoE (Power over Ethernet) being used instead of the SIOX data cable (RJ45) damage can occur to participating network devices!

SIOX power supply leads

- For the power supply (terminals 91 - 95), shielded cables with a cross-section > 0.5 mm² must be used. Recommended cables include e.g. **LiYCY 4x0,75** mm^2 with 25 Ohm/km.

- Max. permitted cable length is 50 m.

- The power supply of the CI 3000 store computer is designed for a maximum of 4 extension modules.

SIOX data lines

- The data cables (SIOX IN / SIOX OUT) should **not** be routed in the immediate proximity of high voltage or high frequency cables.

- When routing the cables care must be taken to ensure that the minimum bend radius is complied with and that the cables are not routed **parallel to cables** which have the potential to generate strong **interference coupling**.

- Max. permitted cable length is 50 m.

- CAT5 cable or better must be used.

5.5.2   Configuring of SIOX

The 12 digital inputs (terminals A1, A2 / .. / L1, L2) of each SIOX Extension Module SIOX can be configured for 24/230 V AC using j*umpers* (see wiring examples in the picture).

☞ The inputs only support alternating current signals!
Low-voltage DC signals, e.g. 24 V DC, are not recognized.
Exception: **- 24 V DC** meter pulses are detected (S0 interface, CI 3000/CI 3100 ONLY)!
Condition: 1. Minus 24 V DC MUST be supplied at the terminal level (A2 .. L2)!
Condition: 2. S0 pulses must be spaced at intervals of minimum 50 ms for the to be counted!
                Pulses timed at shorter intervals will not be detected!

⚠ **Warning - hazardous electrical voltage!**
Danger of electric shock! Jumpers **must always** be configured while disconnected from power and with connectors removed from inputs (terminals A1, A2 / .. / L1, L2), because these terminals may carry 230 V AC power! The SIOX Extension Module will be destroyed if 230 V AC power is applied to an input configured for 24 V AC!

Wiring of digital inputs:
230 V AC: The N conductors **must** be connected on one terminal level (A2 .. L2)!

24 V AC/DC: If 230 V AC **and** 24 V AC/DC inputs are required on a SIOX module
                they **must** be seperated by one input which must be connected to PE!

Configuration:

230 V AC
For alarm and message signals

24 V AC
For alarm and message signals

CI 3000/CI 3100 Store Computer ONLY:
To register meter pulses
(S0 interface)

ECKELMANN

5.5.3   SIOX - Connecting to energy, gas and water meters

Only meters having a S0 interface are supported (reed contact or 24 V DC transistor output). Compared to reed contact meters, polarity needs to be observed when connected transistor-output meters. The SIOX Extension Module provides 24 V DC at terminals 93 (-) and 94 (+) for power supply to the S0 interface:

The digital inputs required for this purpose must be configured by jumpers as 24 V AC inputs (see Section 4.3.1).

Warning - hazardous electrical voltage!
Danger external voltage! Jumpers must always be configured while disconnected from power and with connectors removed from inputs (terminals A1, A2 / to / L1, L2), because these terminals may carry 230 V AC power!

Praxis TIP
What can be done in the event of chattering relay contacts: Relay contacts have the disadvantage that they can chatter as a consequence of their mechanical construction. When activated a force is applied to the contact which enables it to open and close, covering a distance in the micro-millimetre range.
Consequence: Repeated impulses at the S0 input, which generally results in excessive values at the electricity meter!
Diagnosis options: Reading off the impulses in menu 6-2 - the incoming impulses are displayed 3 times to the right: If the impulses count e.g. 10, 12, 14, 15, 17.... then this is an indication of chattering contacts.
Remedy: With the parameter „Delay" under menu 6-1-1 it is possible to increase the delay time for the contact's' pulse edges.

Configuring meter and transformer constant (Menu 6-1-6-1):

1. Meter constant   (pulses per kWh or m^3)

2. Unit   (kWh or m^3)

2. Transformer constant   (conversion ratio of current transformer)

Allowance must be made for the meter and transformer constant settings when using electronic meters, as otherwise energy evaluation by the CI 3000 Store Computer will be inaccurate due to faulty meter and transformer ratios!

Connection and wiring examples for energy, gas and water meters on SIOX extension module:

EXAMPLE 1:
4-WIRE PHASE POWER SYSTEM, ANY LOAD

GOSSEN METRAWAT
TYPE: U1389

S0 IMPULS OUTPUT

CONVERTER CONNECTIONS

1 2 3 4 5 6 7 8 9 11

21
20

ZNR. 51203 67 731 E1

L1
L2
L3
N

CONVERTER 1 CONVERTER 2 CONVERTER 3

EXAMPLE 2:
3-/4-WIRE PHASE POWER SYSTEM, ANY LOAD

MÜLLER + ZIEGLER
TYPE: EZD

S0 IMPULS OUTPUT

CONVERTER CONNECTIONS

1 2 3 4 5 6 7 8 9 11

13
14

L1
L2
L3
N

CONVERTER 1 CONVERTER 2 CONVERTER 3

1k

EXAMPLE 3:
1-WIRE PHASE POWER SYSTEM

UNIVERSAL COUNTER
IMPULSES BY
REED SWITCH

0234

a b   c d   e f

L1
L2
L3
N

94 93

16 18 15 26 28 25 36 38 35 46 48 45

53 54 63 64 73 74 83 84

A2 B2 C2 D2 E2 F2 G2 H2 I2 J2 K2 L2

A1 B1 C1 D1 E1 F1 G1 H1 I1 J1 K1 L1

+ −
24 V DC

SIOX MODULE FOR CI 3000

24 V AC - S0

24 V AC

5.5.3.1 Calculation of Consumption/Capacity from Meter Values

Settings on the store computer

For the calculation of consumption and capacity from the meter values of energy and quantity meters the meter constant and transformer constant in the store computer must be set under menu 6-1-6-1.

A: Meter constant
The meter constant is used to determine the quantity of energy (consumption). The number of impulses per kWh is determined. The meter constant only needs to be set for impulse meters, M bus meters do not have meter constants!

Unit: Impulses/kWh

B: Transformer constant
Corresponds to the conversion ratio of the current transformer, i.e. the relation of the current through the consumer (K/L) to the measuring current (k/l). With impulse meters the transformer constant can be adjusted in the store computer. Settings for M bus counters cannot be carried out in the store computer as the necessary adjustments must be made in the meter.

Unit: none

E.g. transformer with a conversion ratio of 100:5

☞ The transformer constant **must** be considered within the store computer when the meter at the impulse output does not factor in the transformer constant! If the transformer constant has already been factored-in for the meter's impulse input then a 1 **must** be entered into the store computer. **Note**: Depending on the model and configuration, impulses at the meter output can differ from the consumption displayed in the meter display.

In the following the basis for calculating consumption and capacity is explained in more detail using an example:

Meter constant:	1000 impulses/kWh
Transformer constant:	20 (corresponds to conversion ratio of 100:5 for the current transformer)
Number of impulses measured:	e.g. 600 impulses
Impulse counting period:	e.g. 15 minutes = ¼ h = 0.25 h

Calculation of the consumption*

$$Consumption = \frac{Number\ impulses}{Meter\ constant} \times Transformer\ constant = \frac{600\ Impulses \times kWh}{1000\ Impulses} \times 20 = 12\ kWh$$

Für den Zeitraum von 15 min. wurde ein Verbrauch von 12 kWh ermittelt.

Calculation of capacity*

$$Consumption = \frac{Number\ impulses}{Meter\ constant} \times \frac{Transformer\ constant}{Impulses\ counting\ period} = \frac{600\ Impulses \times kWh}{1000\ Impulse} \times \frac{20}{0,25\ h} = 48\ kW$$

For the period of 15 minutes a power input of 48 kW was calculated.

* An analogous calculation method is used for the consumption, i.e. flow rate of gas and water (in this case m³ or litres).

5.5.4   24 V DC supply via SIOX terminals 93 and 94

In addition to the maximum four SIOX Extension Modules the CI 3000 Store Computer can supply 24 V DC power to other external loads. This power can be taken from terminals 93 (-) and 94 (+) on the SIOX Extension Module.

Danger of failure of alarm messaging! A short circuit on the terminals 91-95 (SIOX-SUPPLY) leads to the failure of the CI 3000 store computer for the duration of the short circuit, and consequently the failure of the alarm messaging!

It is possible to power further external 24 V DC consumers (CAN bus repeater etc.) in addition to the S0 interfaces however this is not recommended!

In the event that consumers are to be supplied via the terminals 93 (-) and 94 (+), then the maximum permissible summation current must be calculated, taking in to consideration the following factors.

- Max. total 24 V DC power supply of CI 3000 Store Computer: 24V DC / 600 mA
- Current each SIOX Extension Modules for 8 relay outputs (24 V DC)   96 mA
  Current each relay output   12 mA
- Tolerance factor   80%

Max. total current [mA] = (600 mA - (No. of SIOX relay outputs * 12 mA)) * 0.8

If other loads to be supplied with power via terminals 93 (-) and 94 (+), the maximum allowable total current of all SIOX Extension Modules must be determined with consideration to the following conditions:

No. of SIOX Extension Modules	No. of relay outputs	Current each SIOX	Tolerance factor 80%	Max. allowable total current on all terminals 93 (-) / 94 (+)
1. SIOX	max. 8	8 * 12 mA = 96 mA	(600 mA - 96 mA) * 0,8	400 mA
2. SIOX	max. 16	16 * 12 mA = 192 mA	(600 mA - 192 mA) * 0,8	320 mA
3. SIOX	max. 24	24 * 12 mA = 288 mA	(600 mA - 288 mA) * 0,8	250 mA
4. SIOX	max. 32	32 * 12 mA = 384 mA	(600 mA - 384 mA) * 0,8	170 mA

5.6 Special functions for startup

A number of special functions can be invoked by combinations of keys:

- Triggering of test alarms:
  Prio X1: by simultaneously pressing the buttons **MODE** and **1**
  Prio X2: by simultaneously pressing the buttons **MODE** and **2**
  Prio X3: by simultaneously pressing the buttons **MODE** and 3
  …
  Prio X9: by simultaneously pressing the buttons **MODE** and 9

- Simultaneously press the **MODE** and **ESC** and **6** keys
  to delete the operating archives and reorganize archive management (is entered in message log).

- Simultaneously press the **MODE** and **ESC** and **8** keys to perform restart.

Frequent restarting while the CI 3000 Store Computer is powering up (about 2 min.) can result in errors in archive management.

Praxis tip
Following the completion of commissioning, delete the operating archive using **MODE** and **ESC** and **6** - **for approx. 2 min following this, do not switch off ANY LDS components!**

5.7   Connecting case controllers

• **Marktrechner CI 3000**
  Modbus connection of compact case controllers (e.g. UA 30) i.e. case controllers of the LDS1 system via LDS1 gateway with RS232-RS485 converter at the COM2 interface:

☞   In order for the compact controller to be integrated in the LDS system, the COM2 interface must be configured in menu 6-1-9

• **Marktrechners CI 3100**
  Modbus connection of compact case controllers (e.g. UA 30) i.e. case controllers of the LDS1 system via LDS1 gateway directly at the COM3 interface:

• Connecting compact case controllers (e.g. UA 30) to the CI 3100 store computer directly at the COM3 interface:

☞   Configuration of the COM3 port is not necessary, since the compact controller is automatically recognized by the CI 3100 store computer and integrated in the LDS system.

5.8 Connection of the M Bus Gateway

M bus meters such as energy, gas, warm water or water meters can be connected to the store computer using the M bus gateway.

In order to do this the M bus gateway must be connected to the store computer's COM2 interface using the included serial cable and must be supplied with power using a 24 V DC power pack (article number KGLNT23024):

The following M bus gateways are available:

For max. 20 M bus meters (article No. KGLZMBUS01)
For max. 60 M bus meters (article No. KGLZMBUS02)

In order for the M-bus meter to be integrated into the LDS system, the store computer's COM2 interface must be configured in menu 6-1-9.

☞ For detailed information on the M-bus in respect of topology, wiring and connection instructions, see the operating instruction "Basic and General Safety and Connection Instructions". M bus meters connected to the store computer cannot be used for the load shedding manager (LSM) (see chapter 4.11.2).

The M bus meters listed below harmonise with the store computer (impulse/S0 and M bus) and are recommended for use:

Meter type	Manufacturer	Type
Electricity	- ABB - ABB / Berg - EMH / Berg - Gossen Metrawatt	A43 DZ+ DCi, DCMi, MIZ Premium U128B
Heat	- Sensus - Minol - allmess - Aquametro	Pooltherm (optional power pack required) Minical Megacontrol (optional power pack required) ST C0
Water	- allmess / Itron - techem - Hydrometer	M-Bus Modul BM4 +m 1 m-bus S III Flypper 4
Impuls modules	- Relay - Schell	PadPuls M2C M-Count 2C

The following transmission rates and distances are possible with the cable type J-Y(ST)Y 2x2x0.8 mm:

Transmission rate	No. of M-bus meters	Length
300 Baud	≤ 10 ≤ 20	max. 4000 m max. 3200 m
2400 Baud	≤ 10 ≤ 20	max. 5100 m max. 3200 m

5.8.1   M-Bus-Gateway status LEDs

Green   Supply voltage 11 .. 28 V DC (Article number: KGLNT23024)

Red   Over-current (short circuit)

yellow   End device transmitting

5.9   DIP Switch / Jumpers

Neue model: **Standard settings for the DIP switches**

The DIP switches are positioned on the top left hand side of the store computer's housing:

⚠️ **Danger of failure of alarm messaging!** During normal operation the DIP switch WDOG (Watchdog) must be set to ON and the DIP switch BOOT set to OFF! Otherwise the watchdog monitoring function is deactivated and reliable operation is not assured. Only in the event of a software update is it permitted to configure the DIP switches differently, i.e. during the course of the update. See chapter 5.10.

Previous model: **Standard settings for the plug-in jumpers**

The two plug-in jumpers BOOT and WDOG (Watchdog) are positioned between the CAN Bus and the LIGHT plug:

⚠️ **Danger of failure of alarm messaging!** In normal operation the BOOT jumper must be open and the WDOG jumper must be closed! Otherwise the watchdog monitoring function is deactivated and reliable operation is not assured. Only in the event of a software update is it permitted to configure the DIP switches differently, i.e. during the course of the update. See chapter 5.10.

5.10 Firmware update

New firmware is loaded to the CI 3000 Store Computer by running the Update *CI3000 Vx.xx.exe* program on a PC connected to the MODEM port of the CI 3000 Store Computer by null modem cable (EAG No. PCZKABSER2).

Operating systems supported are: Windows 2000 / XP / Vista / 7.

Damage to equipment and goods! Before the firmware update the affected component, i.e. equipment must be brought into a safe state as the deactivation of the controller during the firmware update can have undesired effects on the component, i.e. equipment.

Danger data loss! The loading of software via firmware update must not be interrupted. The power cable and the null modem cable must not be disconnected during the firmware update. It must be ensured that power is supplied throughout the entire procedure. An interruption of the firmware update can result in an inoperative controller.

Danger of a loss of the configuration! Due to more fundamental changes to the Store Computer, 1. During the update from version < 5.0 to version 5.0 and higher it is necessary to re-enter all settings for the error message transmission, see menu 6-1-4 and all sub-menus.

E.g.

2. During an update from version 1.x to version 2.x and higher no configuration data (in particular for error message transmission) is transferred!
First start initiated if update from Version 1.x to Version 2.x or higher is detected when starting the Store Computer results in these configurations being deleted! With future updates to Versions 2.0 and higher, fault report transmission configurations are preserved on first start.

5.10.1   Downloading software update

⚠️ **Danger of a loss of the configuration!** All archives and configurations will be lost when updating the software! In order to safeguard the configuration of the CI 3000 Store Computer a complete archiving using the PC software LDSWin must be carried out **before** a firmware update. Following update, the configurations and settings can be written back to the CI 3000 Store Computer.

• Back up the store configuration in the LDSWin software by opening the Store menu and choosing Save Archiving (see the LDSWin operating instruction for details):

• Turn off power to the CI 3000 Store Computer.

• New model::   Set the DIP switch WDOG to OFF
  Previous model: Remove the *WDOG* jumper (next to the *LIGHT* connector).

• New model: Set the DIP switch BOOT to ON.
  Previous model: Connect the *BOOT* jumper (next to the *CAN BUS* connector).
                           In other words, exchange the jumper location.

- Connect the PC via the "**COM1**" serial interface to the CI 3000 **MODEM** interface (remove modem cable if required).

☞ If another interface other than "**COM1**" (e.g. "**COM2**") is to be used, then Update Software must be run as follows via the "Execute" menu item in the Windows start menu: *CI3000_Vx.xx.exe -c2*

- Double click the update software **CI3000_Vx.xx.exe** to run the program.

- Click OK to start download and follow the instructions on the screen, e.g. restart the CI 3000.

- Turn off power to the CI 3000 Store Computer when download is completed.

- New model: Return the WDOG DIP switch to ON and the BOOT DIP switch to OFF
  Previous model: Remove the *BOOT* jumper and reconnect the *WDOG* jumper.
  In other words, restore the jumpers to the **positions occupied prior to downloading**

- Turn on power to the CI 3000 Store Computer, which then performs first start.

- Start the LDSWin software, go online but **DO NOT** update the data on the PC! Open the menu Store/Archiving in order to run the backup of the store configuration saved using the LDS Win software (for further details see the LDSWin operating instruction).

- Disconnect the download cable and reconnect the modem cable if necessary.

- The current software version is shown in Screen 8-3 (*System Info*).

☞ **Restart**: Following a power outage the CI 3000 Store Computer restarts with all settings made by the user.

First start: Restart with all settings deleted.
Exception: Settings made for modem and fault report transmission are preserved, enabling alarms and messages to be signalled.

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

ECKELMANN

5.11 Replacing the battery

☞ Battery replacement is only possible with models supplied after 01 January 2009.

The Store Computer contains a backup battery (type: 1,2 Ah / 1/2 AA / 3,6 V Lithium). A Battery Low alarm (Error No. 10) will be signalled when the battery needs replacing.

⚠ **Warning - hazardous electrical voltage!**
Danger of electric shock! When changing batteries, 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 1.5.

Battery replacement procedure:

⚠ In order to change the battery, it is necessary to remove the store computer from the unit. The removal of the CAN bus (assuming there is a CAN bus at the AL 300 operator terminal) will trigger an error message at the latter! Ensure that the service mode has been activated at the AL 300 and/or that the service centre has previously been informed.
No alarms or messages can be sent from the unit to the service centre for the duration of the battery replacement process, and no EU archives may be created or operating data recorded!

1. Remove the Store Computer (with disconnected connectors) from the control panel
   (see Section 5.1 - Control Panel mounting).

2. Place the store computer front down on a clean, dry and level surface and unscrew the
   six screws that connect the metal cage to the front panel on the right and left.

3. Carefully turn the Store Computer 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!

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. Now unbolt the battery holder carefully on the right and left, gently levering it out with a screwdriver and then lifting it upwards:

6. Then pull the battery from the battery holder and dispose of it in a proper 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.

7. Pick up the new battery with a cloth and press it in its holder.

8. Re-assemble in the reverse order. Before doing so, make sure the green two-pin connector are properly connected (white arrow in picture).

9. Re-install the Store Computer in the control panel and re-connect all connectors.

10. Re-connect the Store Computer to the power supply.

Notice:

6 Pin and Terminal Assignments of CI 3000 / SIOX

6.1 CI 3000 Store computer terminal diagram

SIOX OUT	Data cable output
SHIELD	Shield
SIOX SUPPLY	Power supply for the SIOX module(s)

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.

6.1.1   Terminal assignment for 230 V AC power supply

The connection provides the store computer with power and is located on the underside of the device.

> ⚠️ **Warning - hazardous electrical voltage!**
> **Danger of electric shock! BEFORE and AFTER** connection it must checked
> that the 230 V AC supply cable is **off load**!
> The device may only be connected to the provided mains power supply.

Terminal No.	Function
N, L, PE	Power supply 230 V AC (*SUPPLY*): Nneutral conductor, phase 230 V AC, PE (ground conductor)

Connection to the power suppl

> 👉 In order to fuse the power line a circuit breaker with the following parameters is recommended:
> - Nominal current at 230 V AC: 6 A
> - Tripping characteristic (type): B

Connection cable requirements

As the store computer is not equipped with an integrated disconnecting device in the form of a power switch, the following must be implemented:

a) a switch or circuit breaker must be installed in the system or building installation,
b) this must be suitably positioned and easily accessible for the user, and
c) must be labelled as a disconnecting device for the equipment.

6.1.2   Terminal assignment for 230 V AC digital inputs

The two digital inputs are designed for installation monitoring, i.e. as meter inputs (230 V AC!) and are located on the underside of the device.

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

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

ECKELMANN

6.1.3   Terminal assignment for 230 V AC relay outputs

The two relay outputs PRIO1/PRIO2 can be used for sending alarm messages. The multifunctional output AUX can be freely configured (see table). The terminals are located on the underside of the device.

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.

Falls die Alarmierung über ein Telefonwahlgerät mit den dafür vorgesehenen abfallverzögerten Alarmkontakten PRIO1/PRIO2 erfolgt so sind diese einer zyklischen Kontrolle zu unterziehen um sicherzustellen, dass die Kontakte auch bei Spannungsausfall noch melden.

In order to fuse the cable and relay outputs a circuit breaker with the following parameters is recommended for each relay output:
- Nominal current at 230 V AC: 6 A
- Tripping characteristic (type):   B

Terminal No.	Function
15 (common) 16 (N.C.) 18 (N.O.)	Multifunctional output AUX: Can be configured (menu 6-1-4-1) as follows: - Horn - Modem hardware reset - Additional alarm relay with the priority PrioX3, PrioX4, PrioX5, PrioX6, PrioX7, PrioX8 or PrioX9 or - For switching the modem to the DDC (T-connector required)
25 (common) 26 (closed by alarm) 28 (opened by alarm)	Alarm relay PRIO2: Alarm for messages with priority 2
35 (common) 36 (closed by alarm) 38 (opened by alarm)	Alarm relay PRIO1: Alarm for messages with priority 1
Light switch (for switching of a protective circuit breaker)	
1, 2	For switching of contactor with suppressor (*LIGHT*)

6.1.4 Terminal assignment for CAN bus

The terminals for connecting the store computer to the CAN bus are located on the underside of the device.

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 2x2x0,75 mm[2])! 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	Aderfarbe
1	SHLD (Shield)	Shield
2	CAN-GND	green
3	CAN-LOW	brown
4	CAN-HIGH	white

6.1.5 Terminal assignment for the interfaces

Terminal No.	Function
SIOX power supply (SIOX SUPPLY)	
91	Ground 9V
92	+9 V DC
93	Ground von 24 V [1]
94	+24 V DC [1]
95	Shield
SIOX interface OUT (data cable output, to first SIOX extension module)	
Serial port (MODEM)	*f*or connecting a modem or the PC software LDSWin

Serial port (COM2)	for the connection of UA 30/Dixell controllers, LDS1 Gateways AHT cases with external controllers, M bus or as interface for building automation
Serial port (COM3) - CI 3100 only	for the connection of UA 30/Dixell controllers

[1] for details of 24 V DC supply see section "Installation and Startup"

6.2   SIOX - Extension module terminal diagram

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

The following figure shows a SIOX extension module without switches:

ZNG: 20 019 E0

Detailed safety instructions and information on the configuration of the plug-in jumpers for the digital inputs is provided in chapter 5.5.2.

A description of the connection and terminal configuration for the digital inputs, the relay outputs and the SIOX interface is provided on the following pages.

6.2.1   SIOX - Terminal assignment of digital inputs 24 V AC/DC / 230 V AC

The 12 digital inputs (24 V AC / 230 V AC) are designed for installation monitoring and as meter inputs.

Warning - hazardous electrical voltage!
Danger of electric shock! Jumpers **must always** be configured while disconnected from power and with connectors removed from inputs (terminals A1, A2 / .. / L1, L2), because these terminals may carry 230 V AC power! The SIOX Extension Module will be destroyed if 230 V AC power is applied to an input configured for 24 V AC!

Wiring of digital inputs:
230 V AC: The N conductors **must** be connected on one terminal level (A2 .. L2)!
24 V AC/DC: If 230 V AC **and** 24 V AC/DC inputs are required on a SIOX module
they **must** be seperated by one input which must be connected to PE!
For further details see chapter 5.5.2!

Note: In the following example the first 3 digital inputs (inputs A / B / C - 230 V AC) of the SIOX extension module are used for installation monitoring and the last input (L - 24 V AC) is used for an electricity meter.

Terminal No.		Input	Function
Without switches	**With switches**		
A1, A2	50, 51	1	Message, alarm, meter, high tarif/low tarif, sync inputs
B1, B2	52, 53	2	
C1, C2	54, 55	3	
D1, D2	56, 57	4	
E1, E2	58, 59	5	
F1, F2	60, 61	6	
G1, G2	62, 63	7	
H1, H2	64, 65	8	
I1, I2	66, 67	9	
J1, J2	68, 69	10	
K1, K2	70, 71	11	
L1, L2	72, 73	12	

6.2.2   SIOX - Terminal assignment for 230 V AC relay outputs

For week timers (e.g. for defrosting, lighting, car park lighting) or for energy management (e.g. load shedding or the enabling of consumers).

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.

In order to fuse the cable and relay outputs a circuit breaker with the following parameters is recommended for each relay output:
- Nominal current at 230 V AC: 6 A
- Tripping characteristic (type):   B

Note: In the example input 1 of the SIOX extension module is used as a defrost timer for a case controller.

Terminal No.	Relay output	Function
15 (common) 16 (N.C.) 18 (N.O.)	1	Timers (e.g. for defrosting, lighting, park lighting) or for load shedding
25 (common) 26 (N.C.) 28 (N.O.)	2	
35 (common) 36 (N.C.) 38 (N.O.)	3	
45 (common) 46 (N.C.) 48 (N.O.)	4	
53, 54 (N.O.)	5	
63, 64 (N.O.)	6	
73, 74 (N.O.)	7	
83, 84 (N.O.)	8	

6.2.3   SIOX - Terminal assignment of the interfaces

The interfaces for connection to the store computer or an additional SIOX (**S**erial **IO E**xtension) are located on the left side of the device.

Danger of destruction of components! SIOX extension modules may only be connected to each other or the store computer when no voltage is present!
In the event of an Ethernet network cable with PoE (Power over Ethernet) being used instead of the SIOX data cable (RJ45) damage can occur to participating network devices!
Only components approved by Eckelmann AG may be connected to the SIOX extension bus (terminals SIOX OUT/SIOX IN i.e. terminals 91..95).

CI 4000

max. 50 m

ZNG: 20 018 DEF0

2. .. max. 4. SIOX

Terminal No.	Function
SIOX power supply (SIOX-SUPPLY)	
91 92 93 94 95	Ground von 9 V +9 V DC Ground von 24 V +24 V DC SHLD (shield)
SIOX 24 V DC - no function	
Not suitable for supplying external consumers!	
93 94	Ground von 24 V DC +24 V DC
SIOX data interface (IN)	
RJ45 connector	Data cable input from store computer i.e. previous SIOX
SIOX data interface (OUT)	
RJ45 connector	Data cable output to the next SIOX (max. 4)

ECKELMANN

7   Operation of CI 3000

7.1   Operating interface

(1)   Priority 1 alarm indicator light

(2)   Priority 2 alarm indicator light

(3)   Reset key to stop buzzer and horn (AUX) 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)

7.2   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.

ECKELMANN

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

Use the 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. 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

ZNR. 51203 68 430 D0

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

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.

Special functions

A number of special functions can be invoked by combinations of keys:

- Triggering of test alarms:
  Prio X1: by simultaneously pressing the buttons **MODE** and **1**
  Prio X2: by simultaneously pressing the buttons **MODE** and **2**
  Prio X3: by simultaneously pressing the buttons **MODE** and **3**
  …
  Prio X9: by simultaneously pressing the buttons **MODE** and **9**

- Simultaneously press the **MODE** and **ESC** and **6** keys
  to delete the operating archives and reorganize archive management (is entered in message log).

- Simultaneously press the **MODE** and **ESC** and **8** keys to perform restart.

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

7.2.1 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.

7.2.2 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*.

7.2.3 Service-Modus

Activating service mode

☞ Service 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.

Service mode enables the service technician to suppress the remote alarm function of the Store Computer for a limited time while carrying out maintenance of repair work (see Section 3.1.2).

- 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.).

- The service mode only remains active for the duration entered above.

☞ 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.

Deactivate service mode

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

7.3   Remote operation/parameter setting of a 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.

```
Main menu
4 Messages              ↑
5 Remote control
6 Store computer        ↓
```

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

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

```
REMOTE CONTROL   Kn.nnn
Node Name                ↑
Item ID        XXXXX↓
```

The 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 LDS component selected. This displays the main menu of the LDS component (UA 400 case controller in the example shown):

```
REFR. PT.               Pos: XXXXX
1 Actual Values             ↑
2 Setpoints
3 Clock
4 Messages
5 Archive
6 Configuration             ↓
```

ECKELMANN

8 Menu structure of CI 3000

8.1 Main menu

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			3	ARCHIVE
4 Messages			4	MSG/ALARM
5 Remote Control			5	REMOTE CONTRL
6 Store Computer			6	STORE COMPUTER
	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
		Alerting	6-1-4	ALERTING
		EU Archive	6-1-5	EU ARCHIVE
		Energy Managmt.	6-1-6	ENERGY MANAGEMENT
		Meas. Points	6-1-6	MEASURING POINTS
		Timer	6-1-7	TIMER
		Modem	6-1-8	MODEM
		COM2	6-1-9	COM2
	Meter Values		6-2	METER VALUES
	Temperature-Arch.		6-3	TEMPERATURE-ARCHIVE
7 Monitoring			7	MONITORING
	Overview		7-1	OVERVIEW
	Status		7-2	STATUS
	Configuration		7-3	CONFIGURATION
	System Alarms		7-4	SYSTEM ALARMS
	Status UA30/Dixel		7-5	STATUS UA30/DIX
	Config.UA30/Dixel		7-6	CONFIG.UA30/DIX
	Status AHT		7-7	STATUS AHT
	Status AHT Danfos		7-8	STATUS DANFOSS

8 I/O Monitor			8	I/O MONITOR
	Digital I/O [1]		8-1 *	DIGITAL I/O
	Analog I/O [1]		8-2 *	ANALOG I/O
	SysInfo [1]		8-3	SYSINFO
	Post Mortem [1]		8-4 *	-
	CAN Test [1]		8-5 *	CAN TEST
	Modbus Status		8-6	MODBUS
	Serial Test [1]		8-7 *	SERIAL IO TEST
	Modem State		8-8	MODEM STATE
	BCS		8-9	I/O MONITOR
		BCS	8-9-1	BCS E/A
		BCS	8-9-2	BCS
9 Parameters			9	PARAMETERS
	Date/Time		9-1	DATE/TIME
	Language		9-2	LANGUAGE
	Interlock		9-3	INTERLOCK
0 HVAC Overview			0	HVAC OVERVIEW

* These display screens are reserved for service personnel use and are not described in more detail herein,
  except for the *System Info, Modbus Status a*nd *Modem Status* screens.

ECKELMANN

8.1.1   Menu Main menu

MAIN MENU	
1 Alarms	Alarm log. Continue to Screen 1
2 Overview	Overview of refrigeration points
3 Archive	EU archive data
4 Messages	Message log
5 Remote Control	Remote operation of LDS components
6 Store Computer	Store Computer configuration menu
7 Monitoring	Configuration of monitoring functions
8 I/O Monitor	Diagnostic tools for service use
9 Parameters	Store Computer parameter setting
0 HVAC Overview	HVAC overview

8.1.2   Menu 1 Alarms

This screen is used to show the alarm log. It contains all alarms reported throughout the system by all LDS components connected via CAN bus. It also contains alarms generated by the CI 3000 Store Computer and external alarms connected to the CI 3000.

Alarms remain listed in the log until they are reported as corrected and reset by the user. If an LDS component reports an alarm while the CI 3000 Store Computer main menu is displayed, the menu changes automatically to show the alarm log and the most recent alarm received.

Use the cursor keys (←) and (→) to change between the two pages.

Display Page 1	
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		
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	

8.1.3   Menu 2 General Overview

This screen is used for quick display of current operating status and temperature of the separate refrigeration points.

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.	

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.

8.1.4   Menu 3 Archive

Use the up and down cursor keys (↑) (↓) to scroll through this list and select EU Archives that have been created and stored.

ARCHIVE Nd.nnn	Shows refrigeration point data archived on Store Computer
Node Name	Name of refrigerated display case
Position XXXXX →	Refrigerated display case location and type. Continue to Screen 3-a
	Current status and temperature for Zone 2

Press the right cursor key (→) to open the records list for the selected archive.

• Screen 3-a

ARCHIVE	Pos: XXXXX	Shows archived data
ARCHIVE Pos. XXXXX Mi 19.12.05 12:06		Date, time
Zone 1: OCDGA ttt°C		Zone 1: Temperature zone 1 - O, C, D, G, A: - Abbreviation for different operating conditions of the refriger point ttt°C: - Display tempera- ture 3 digit in °C
Zone 2: OCDGA ttt°C		Zone 2: Temperature zone 2 - O, C, D, G, A: - Abbreviation for different operating conditions of the refriger point ttt°C: - Display tempera- ture 3 digit in °C
one Zone only: OCDGA ttt°C		

Scroll with the up and down cursor keys (↑) (↓) to view certain data. The ENTER key can also be pressed to view data. Enter the date and time and confirm with the ENTER key. Press the left cursor key (←) to return to the archive.

☞ Automatic clock adjustment for daylight saving changes is ignored for archiving. Records shown are all recorded at normal winter time!

Abbreviations for refrigeration point status:

O =	ON
C =	Cooling
D =	Defrosting
G =	Door
A =	Alarm

8.1.5 Menu 4 Message Log (Event Log)

Messages/events can be selected from this list with the up and down cursor keys (↑) (↓).

MSG/ALARM XXX	Prio p	XXX: Message/Fault No. / Prio p: Message priority p
Node Name		Name of component
Item ID	XXXXX →	Refrigeration point type. Continue to Screen 4-a
Text		Message/alarm text

• Screen 4-a

MSG/ALARM XXX	Nd.nnn	xxx: Message/Fault No. / Nd.nnn: Node No. or CAN bus address
Text		Message/alarm text
dd.mm.jj hh:mm	ON ↔	Message receive date/ and time
dd.mm.jj hh:mm	OFF	Message send date/ and time

Use the up and down cursor keys (↑) (↓) to scroll through the message log in chronological order. The left and right cursor keys (←) (→) can be used to scroll pagewise and display additional messages for the same LDS component.

8.1.6   Menu 5 Remote Control

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

  - By entering the CAN bus address of the 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 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 LDS component	↑, ↓, or number
Item ID XXXXX	Item ID of component	

☞ Terminal mode will be closed automatically if no key is pressed for 10 minutes and the main menu or alarm log of the CI 3000 Store Computer will be displayed.
Any entry made at the time by the user but not yet confirmed will be cancelled.

8.1.7   Menu 6 Store Computer

STORE COMPUTER	
1 Configuration	Store computer configuration submenu
2 Meter Values	Show meter readings
3 Temperature-Arch.	Show temperature archive (controller dependent)

ECKELMANN

• Screen 6-1 Configuration

The separate configuration menus can be selected from this list by the number 1 to 8. Use the up and down cursor keys (↑) (↓) to navigate through the list.

CONFIGURATION	
1 Expansion Stage	Expansion Stage submenu
2 Alarm Inputs	Configure alarm inputs
3 Special Inputs	Configure special inputs
4 Alerting	Configure Alerting
5 EU Archive	Configure EU archive
6 Energy Managmt.	Configure energy management
7 Timer	Configure timer
8 Modem	Configure modem
9 COM2	Configure COM2 port

• Screen 6-1-1 Expansion Stage

When SIOX Extension Modules are connected to the CI 3000 Store Computer, the number of connected modules must be configured in this screen. If this is not done, the modules will not be recognised and supported by the CI 3000 Store Computer.

Archiving of status for all digital inputs and outputs of all SIOX Extension Modules can also be activated in this screen. Archived status data can be read out in LDSWin and displayed in chart form.

EXPANSION STAGE		Entry	Default
No SIOX n	Number of SIOX Extension Modules installed (n=0 to 4)	↑, ↓ number 0..4	0
Delay X	Factor, multiplied by 20 ms, giving the delay time until the next scan of all the digital outputs. Application: Ignoring the chattering of switch contacts so that e.g. the electricity meters only measure the actual impulses.	0..10	0
Archiving N	Archive SIOX inputs/outputs	↑, ↓ (Y/N)	N
CAN-Bus fast N	Changes can only be made by authorised personnel and are only possible in the Superuser mode! Standard (50 kBit) = N Fast (250 kBit) = Y „Yes" may only be set when a Combi Gateway is used (see chapter 5.2.1).	↑ ↓ (Y/N)	N
Num.of DDC n	Number of BCS DDC modules in system (n=1 to 4, READ ONLY) Can only be set when DDC modules connected.	0..4	0

• Screen 6-1-2 Alarm Inputs

This screen is used to configure the message and alarm inputs. An individual message text can be entered for each input and the respective alarm priority and delay can be defined. The first page shows the current alarm status of the inputs. Use the up and down cursor keys (↑) (↓) to select the input.

SIGNAL/ALARM INP	Page 1 – Show status
Text	Message text
Inp: XXXX/k	XXXX: Name of module (Int.I / SIOX n=1 to 4 / DDC n=1 to 4) k: Channel No.
Prio p Status	Input priority p and current status: - **OK** No signal - **WAIT xm** Signal, , x minutes delay remaining - **ALARM** Signal, alarm/message generated

☞   Only modules that have been appropriately configured in Screen 6-1 are shown for selection!

Pressing the ENTER key opens the second page (Screen 6-1-2-a), in which the input shown can be configured. An activated input can be deactivated by choosing *DELETE*. If the input has generated an alarm at the time, the alarm will be reported as sent.

• Screen 6-1-2-a

SIGNAL/ALARM INP		Page 2 - Configuration	Entry	Default
Text		Freely editable message text (max. 19 characters)	Text, number	----
Module	XXXX	Module [1] to which message/alarm signal is supplied	↑, ↓	----
Submodul	XXXX	Submodul [1] to which message/alarm signal is supplied ONLY visible when module=DDC1..DDC4 is selected	↑ ↓	
Channel	k	Channel [1] to which message/alarm signal is supplied	↑, ↓ (number)	----
Priority	p	Message/alarm input priority	↑, ↓ (number 0..2)	2
Delay	255m	Message/alarm delay in minutes	↑, ↓ (number 0 .. 255)	255
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	

[1] Designations of modules/channels supported by the CI 3000 Store Computer for digital inputs:

Int.I   Internal input AL1 (terminal A1, A2) or AL2 (terminal B1, B2) of CI 3000 Store Computer.

SIOX1   1st Extension Module, channel 1 to 12
SIOX2   2nd Extension Module, channel 1 to 12
SIOX3   3rd Extension Module, channel 1 to 12
SIOX4   4th Extension Module, channel 1 to 12

DDC1   1st BCS DDC module 1
DDC 2   2nd BCS DDC module 2
DDC 3   3rd BCS DDC module 3
DDC 4   4th BCS DDC module 4
             Note: (BCS = building control system / DDC = digital direct control)

☞   Only SIOX modules and DDCs that have been appropriately configured in Screen 6-1 are shown for selection!

• Screen 6-1-3 Special Inputs

Special inputs can be selected from this list by the number 1 to 5.

SPECIAL INPUTS	
1 Store closed	Store closed (shunt lock) submenu
2 Emerg. Generator	Emergency Power submenu
3 Sprinkler Alarm	Sprinkler Alarm submenu
4 Store lighting	Store lighting submenu
5 Setpoint toggle	Setpoint toggle submenu

• Screen 6-1-3-1 to 6-1-3-5

The special inputs

- Store closed
- Emergency Generator
- Sprinkler alarm
- Store lighting and
- Toggle Setpoint

can be configured

☞ As the configuration for all the special inputs is identical, the instructions are provided using the example of the "Store closed".

STORE CLOSED			Entry	Default
.Module	XXXX	Module [1] to which input is connected	↑, ↓	----
Submodul	XXXX	Submodul [1] to which message/alarm signal is supplied ONLY visible when module=DDC1..DDC4 is selected	↑↓	
.Channel	k	Channel [1] to which input is connected	↑, ↓ (number)	----
Priority	p	Input priority	↑, ↓ (number 0..2)	----
Delay	0s	Input delay in seconds	↑, ↓ (number) 1 .. 255)	0
Idle Current	J	N.C. input (Y) / N.O. input (N)	↑, ↓ (Y/N)	N
delete		Delete message/alarm input: Displays prompt: Are your sure? No: ESC Yes: ↵	↵, ESC	

For each module[1] input and associated channel (if appropriate, submodule), the respective message priority and delay time can be specified. Each channel can be allocated several special inputs!

If activated, the input can be deactivated under the *DELETE* menu item (parameters are reset to default setting). If the input has generated an alarm at the time, the alarm will be reported as sent.

[1] Designations of modules/channels supported by the CI 3000 Store Computer for the digital input:

SIOX1   1st Extension Module, channel 1 to 12
SIOX2   2nd Extension Module, channel 1 to 12
SIOX3   3rd Extension Module, channel 1 to 12
SIOX4   4th Extension Module, channel 1 to 12

DDC 1   1st BCS DDC module 1
DDC 2   2nd BCS DDC module 2
DDC 3   3rd BCS DDC module 3
DDC 4   4th BCS DDC module 4
               Note: (BCS = building control system / DDC = digital direct control)

☞ Only SIOX modules and DDCs that have been appropriately configured in Screen 6-1 are shown for selection!

• Screen 6-1-4 Alerting

The CI 3000 store computer distinguishes between 100 alarm priorities (0..99) Furthermore it supports 16 alarm destinations (see chapter 4.1).

ALERTING	
1 Alarm Relay	Configuration of the alarm relay, i.e. multifunctional output (AUX)
2 Phone Number	Entry of the telephone number of the store computer
3 Serv. Centr Pres.	Entry of e.g. the service times of the control centre
4 Dest1 SrvcCentr	EASY mode - alarm destination 1: LDSWin - control centre as primary destination
5 Dest2 FaultServ.	EASY mode - alarm destination 2: LDSWin - Fault clearing service as primary destination or - Alternative destination for control centre
6 Dest3 SMS AnnyWay	EASY mode - alarm destination 3: SMS (via provider Anny Way)
7 Dest4 Voice Msg	EASY mode - alarm destination 4: Voice message to telephone
8 Destinat. 5 - 8	Extended alarm destinations 5..10
9 Destinat. 9 - 16	Extended alarm destinations 11..16

☞ With SMS message transmission the telephone number of the SMS provider must be activated in the telephone system otherwise no SMS transmission is possible:
D1:　　　　0171-20 92 522　　0171-25 21 002
D2:　　　　0172-22 78 020
Anny Way:　0900-32 66 90 02

• Maske 6-1-4-1 Alarm Relay

ALARM RELAY		Entry	Default
Hold AlrmRel	Hold Alarm relay: Y: Relays are only deactivated when the cause for the alarm has been rectified and the alarm has been acknowledged. N: Relays are deactivated when the horn is switched off	↑↓ (Y/N)	Y
AUX-Relais Prio　　　　　　XX	For configuration details see chapter 4.2.2	Horn, DDC, Modem, PrioX3, PrioX4, PrioX5, PrioX6, PrioX7, PrioX8 PrioX9	Horn
Testalarm hour	Store computer generates a daily alarm at the hour set here	--, 0,1, 2, .. 23	--
Testalarm prio	Priority of the test alarm	--, 1, 2, .. 8	--

• Screen 6-1-4-2 Phone Number

This screen is used to enter the telephone number for fault report transmission by the keypad and special characters (0123456789N*#!&:;.=) by the cursor keys (↑) (↓).

PHONE NUMBER		Entry	Default
Store Computer 1234567890123456789	Store Computer (SC) and phone number	↑,↓, number max. 19 digits	-
SC Extension N DialOut No 12345678	Outside line access required during duty hours? Outside line access number (max. 8 digits)	↑,↓, (Y/N) number max. 8 digits	N -

☞ If the store computer is connected to a telephone system that has automatic outside line access, specify **YES** for **Store Computer PBX** and leave the entry for the outside line access number blank. The Service Center and Fault Service can also be configured as in-house destinations, which requires **N** to be entered before the telephone number.
If the remote station is an analog station and standard dial-up with the Blatzheim BM 33k6 ISDN pro modem does not work, the modem can be made to perform analog dialing by entering the character ”=” before the telephone number of the alarm reporting destination:
Examples: =06117103
                N=7103

• Screen 6-1-4-3 Serv. Centr Pres. (hours during which Service Center is present)

This screen is used to define the duty hours of the Service Center (hours during which Service Center is attended). Use the up and down cursor keys to select the separate parameters (↑) (↓).

SERVICE CENTR PRES.		Entry	Default
Mo-Fr 08:00 20:00 Sa 08:00 Sa 14:00 -------- --------	Service Center duty hours	↑, ↓ (Mo-Su,Mo-Fr Mo-Sa,Sa-Su, ------, Mo, Th, We, Th, Fr, Sa, Su)	----
1: --.--.-- 2: --.--.-- ... 30: --.--.--	1 to 30 special days (dd.mm.yy), on which Service Center is **NOT** attended:	↑, ↓ Numbers	----

☞ If no times are entered, the Service Center will be considered permanently unattended.

• Screen   6-1-4-4 Destination 1   Control centre as primary destination (LDSWin PC)
            6-1-4-5 Destination 2   Fault clearing service as primary destination or
                                     alternative destination for control centre (LDSWin PC)
            6-1-4-6 Destination 3   SMS via the service provider AnnyWay
            6-1-4-7 Destination 4   Voice message

☞   As the configuration of all EASY alarm destinations is identical
           the following explanation is based on the example of "Destination 1" (screen 6-1-4-4).
           NOTE: EASY mode only supports the priorities 1 and 2.

DEST1 SRVCCENTR		Entry	Default
Priority		--,1,2, 1+2	-
Typ LDSW	Type of alarm destination, cannot be edited		
Phone Numbers 1234567890123456789	Telephone number of the alarm destination	Ziffern max. 19 Stellen	-
Serv. Centr xxxxx	- Never deactivated - Always: No regard for the time period - out of: outside the time period - during during the time period	never, always, out of, during	-

☞   With SMS message transmission the telephone number of the SMS provider must be activated in
           the telephone system otherwise no SMS transmission is possible:
           D1:   0171-20 92 522   0171-25 21 002
           D2:   0172-22 78 020
           Anny Way: 0900-32 66 90 02

           When using the *Voice message* fault report destination, the CI 3000 Store Computer calls a tone-
           dial telephone and plays a prerecorded voice message that has previously been saved to the
           CI 3000 Store Computer with the LDSWin software. The party receiving the call MUST acknowledge
           receipt of the voice message by pressing the 5 key.
           The Voice message operating is not supportet from all modems, see chapter 5.3.

- Screen   6-1-4-8 Destinations 5 - 8
         6-1-4-9 Destinations 9 - 16

DESTINAT. 1 - 8	
1 Destination 5	Further to menu item 6-1-4-8-1 for the configuration of alarm destination 5
2 Destination 6	Further to menu item 6-1-4-8-2 for the configuration of alarm destination 6
3 Destination 7	Further to menu item 6-1-4-8-3 for the configuration of alarm destination 7
4 Destination 8	Further to menu item 6-1-4-8-4 for the configuration of alarm destination 8
DESTINAT. 9 - 16	
1 Destination 9	Further to menu item 6-1-4-9-1 for the configuration of alarm destination 9
...	...
8 Destination 16	Further to menu item 6-1-4-9-8 for the configuration of alarm destination 16

- Screen   6-1-4-8-1 .. 6-1-4-8-4
         6-1-4-9-1 .. 6-1-4-9-8

☞ As the configuration of the alarm destinations 5 .. 16 is identical
the following explanation is based on the example of "Destination 5" (screen 6-1-4-8-1).
NOTE: The extended alarm destinations can only be edited via the PC software LDSWin.
For further information see the LDSWin operating instruction.

DESTINATION 5		Entry	Default
	Free text describing the alarm destination	-	-
Prio A	Priority settings for this destination	-	-
Prio A		-	-
Prio B		-	-
Prio B		-	-
Typ ---	Type of alarm destination : LDSW LDSWin LDSW i LDSWIN to internal extension SMS D1 SMS via D1 SMS D2 SMS via D2 SMS AW SMS via Anny Way SMS U1 SMS via user configured provider 1 SMS U2 SMS via user configured provider 1 Voice Voice message to telephone FAX Fax (only with Blatzheim ISDN hybrid modem)	-	-
Phone Number 1234567890123456789	Telephone number of the alarm destination	-	-
Serv. Centr xxxxx	- Never deactivated - Always: No regard for the time period - out of: outside the time period - during during the time period	-	-

☞ When using the *Voice message* fault report destination, the CI 3000 Store Computer calls a tone-dial telephone and plays a prerecorded voice message that has previously been saved to the CI 3000 Store Computer with the LDSWin software. The party receiving the call MUST acknowledge receipt of the voice message by pressing the 5 key.
The Voice message operating is not supportet from all modems, see chapter 5.3.

• Screen 6-1-5 EU Archive

This screen is used to select the refrigeration points (UA 300 Series) that are to be archived in accordance with the EU Directive. Use the up and down cursor keys (↑) (↓) to select the refrigeration points and press the EN-TER key to toggle between active (Y) and not active (N). The remaining memory available for further EU archives is shown for orientation.

EU ARCHIVE Nd.nnn	Heading with Node No. of component (0 to 99)	Entry	Default
Node Name	Name of refrigeration point	xxxxx	xxxxx
Item ID XXXXX	Item ID of refrigeration point	xxxxx	xxxxx
free:xx aktiv:J/N	Free:= Free archive memory space (number of archives) Active = EU archiving active for this refrigeration point?	xxxxx	xxxxx

☞ When EU archiving is activated for a refrigeration point, the archive will be created in memory at the latest after 15 minutes when the first measurement is received. An archive that has been created cannot be deleted manually. If EU archiving is deactivated for a refrigeration point in this screen, the archive will be preserved for the time being and will be deleted automatically after a year.

• Screen 6-1-6 Energy Managmt. (Energy management)

ENERGIEMANAGEMENT	
1 Meas. Points	Measuring Locations submenu
2 Summing Unit	Totalizer submenu
3 Load Rejection	Load Shedding Manager (LSM) submenu

• Maske 6-1-6-1 Measuring points

MEASURING POINTs	
1 Parameterisation	Configuration of the measuring points submenu
2 Search M-bus	Search M-bus submenu

• Maske 6-1-6-1-1 Parameterisation (of measuring points)

Use the up and down cursor keys (↑) (↓) to scroll through the separate measuring locations. Press ENTER to configure the measuring location.

Page 1 Select measuring location

MEASURING POINT	
Name of measuring location	Name of measuring location/ Select
Item ID XXXXX	Item ID of measuring location ID

Page 2 – Configure measuring location

Press the ENTER key to configure the measuring location.

MEASURING POINT			Entry	Default
Type Power	Select meter type: Power, water, gas		↑, ↓	Power
Name of measuring location	Enter freely editable name (max. 19 characters) **A name should always be entered for the measuring location!**		Text	
Item ID XXXXX	Enter a freely editable item identification (ID) (max. 5 characters)			-
Meter Input .Module XXXXX .Channel k	Configuration of meter input (required entrie !) XXXX: Name of module (Int.I / SIOX n=1 to 4) k: Channel No. to which meter signal is transmitted		↑, ↓, number	-
XXXXX Tariff Input .Module XXXXX .Channel k	Configure tariff input, XXXX: Name of module (Int.I / SIOX n=1 to 4) k: Channel No. to which optional tariff signal is transmitted			-
Sync Input .Module XXXXX .Channel k	Configure sync input, XXXX: Name of module (Int.I / SIOX n=1 to 4) k: Channel No. to which synchronizing signal is transmitted			-
Record. power X	Specifies whether a load profile is recorded for the M bus meter		Y/N	N
Meter No. xxxxxxxxxx	Enter Meter No. (max. 10 characters)		↑, ↓, number	-
Unit kWh	Select unit of measurement: kWh, m^3		↑, ↓	-
Pulses/Unit XXXX	Only for impulse meters: Enter meter constant (pulses per kWh or m^3) 1 to 9999 M bus meter: Must be set on the meter!		↑, ↓, number	-
Transf.Factor XXX	Only for impulse meters: Enter conversion ratio of current transformer: 1 to 255 M bus meter: Must be set on the meter!			10
delete	Delete measuring location: Displays prompt: Are you sure? No: ESC Yes: ↵		↵, ESC	1

Warning - hazardous electrical voltage!
Danger of destruction of components! When the meter signal is connected to the SIOX input via a S0 port of the meter, the jumper of the input must be set to 24 V AC. (See Section 5.5.3 SIOX - Energy, gas and water meters).

Allowance must be made for the meter and transformer constant settings when using electronic meters, as otherwise energy evaluation by the CI 3000 Store Computer will be inaccurate due to faulty meter and transformer ratios!

• Maske 6-1-6-1-2 Search M-bus

Info screen for displaying existing M-bus nodes. The nodes must be connected to the M-bus and the COM2 interface of the M-bus must be activated. The configuration of the M bus interface is conducted via menu 6-1-9.

Following the selection of this screen an automatic search run is conducted. The screen can only be exited once the cycle (up to a total of 250 nodes) has been completed and the ESC button subsequently pressed.

M-bus	
Search : xxx	Once the search for 250 nodes has been completed, the screen displays "finished". This can then be exited via ESC.
Found: xxx	Number of M-bus nodes found

If no M-bus is configured, then the following screen appears.

NO M bus configured ! Please press ESC	Exit screen via ESC!

• Screen 6-1-6-2 Totalizer

Use the up and down cursor keys (↑) (↓) to scroll through the separate totalizers.

Page 1: Select totalizer, current display - page 1, with → button, scroll to page 2, with ← button, back.

Press ENTER to configure the totalizer.

SUMMING UNIT XY	**X:** ! = alarm system primed (block lock input not active)
	. = deprimed (block lock input active)
	- = block lock (input not defined)
	Y: √ (checkmark) = OK
	X = activated
Name of totalizer	Name and selection of the totalizer, i.e. its status.
Summ. power XXX.X	Display
	current capacity in [kW/h]* i.e.
	current flow rate in l/h* i.e.
	current gas flow rate in m3 /h*
	*: depending on which measuring point is selected
Power limit XXX.X	Display
	Capacity limit in [kW/h] / flow rate limit in [l/h] / gas flow rate in m3/h
	at which an alarm is activated, i.e. a message is sent.

Page 2: Select totalizer, current display - page 2, with ← button, back to page 1
(only shown when watersave is set to Y, see page 3)

Press ENTER to configure the totalizer.

SUMMING UNIT XY	**X:** ! = alarm system primed (block lock input not active)
	. = deprimed (block lock input active)
	- = block lock (input not defined)
	Y: √ (checkmark) = OK
	X = activated
Name of totalizer	Name and selection of the totalizer, i.e. its status.
Actual Val. XXX.X	Display
	current cumulative consumption in [kW]* i.e.
	current cumulative flow rate volume in l* i.e.
	current cumulative gas volume in m3 **
	*: depending on which measuring point is selected
Max. Consum. XXX.X	Display
	Limit value for the consumption in [kW] / flow rate in [l] / gas volume in m3,
	at which an alarm is activated, i.e. a message sent.

Page 3: Configuration totalizer

Press ENTER to configure the totalizer.

SUMMING UNIT XY		Entry	Default
Name of totalizer	Name and select totalizer (max. 19 characters) **A name should always be entered for the totalizer!**	↑↓ number	
Watersave X	Watersave function	↑↓ (Y/N)	N
Priority x	Alarm priority	↑↓ (0 .. 2)	
Meas. Points →	Select associate measuring locations	Continue to Screen 6-1-6-2-a	
Power limit	Limit value for the consumption in [kW] / flow rate in [l] / gas volume in m3, at which an alarm is activated, i.e. a message sent. Only shown when watersave is set to N	↑↓ number	0.0
max. flow x.x	Max. flow rate in l/h to be monitored (when 0.0 is parameterised, then the function is deactivated). Only shown when watersave is set to Y	l/h	0.0
max. Consum. x.x	Max. consumption to be monitored (when 0.0 is parameterised, then the function is deactivated). Only shown when watersave is set to Y	l	0.0
Store close x	Only to be monitored when the alarm is primed? Only shown when watersave is set to Y For configuration of the block lock see menu 6-1-3-1	Y/N	N
.Module n .Channel k	Digital output of the SIOX module and channel via which the solenoid valve activates the watersave Only shown when watersave is set to Y	↑↓ number	
Idle Curren x	Quiescent current input (Y): the solenoid valve is closed voltage free Operating current input (N): the solenoid valve is open voltage free Only shown when watersave is set to Y	↑↓ number	J
Unlock	Release/enable solenoid valve following activation. Only functions when the store is open again, i.e. when the block lock is deactivated. By pushing the ENTER button the request screen appears for the release command: Are you sure? *No: ESC Yes: ↵* Only shown when watersave is set to Y	↵ ESC	
Delete	Delete totalizer: Displays prompt: Are you sure? No: ESC Yes: ↵	↵ ESC	

• Screen 6-1-6-2-a Measuring Locations

MEASURING POINTS	
Name of measuring location	Select measuring location associated with totalizer by ENTER (↵) key

☞ Only measuring locations that have been appropriately configured in Screen 6-1-6-1 as a measuring location (ideally with a measuring location name) are shown for selection!

• Screen 6-1-6-3 Load Rejection

From this list, select the Configuration and Stages submenus for the Load Rejection Manager (LRM) by number 1 or 2.

LOAD REJECTION	
1 LRM Configuration	LSM Configuration submenu
2 LRM Levels	LSM Stages submenu

• Screen 6-1-6-3-1 LRM Configuration

LRM CONFIGURATION			Entry	Default
Max. Load NT	XXXXkW	Max. OPT power demand (OPT = off-peak tariff)	↑, ↓, number 1..6000	-
Max. Load HT	XXXXkW	Max. PT power demand (PT = peak tariff)		
Meas. Points	→	Select associate measuring locations 6-1-6-3-1-a	Continue to Screen 6-1-6-3-1-a	
Sync Input .Module SIOXn .Channel k		Configure sync input, Extension Module (SIOX n=1 to 4) and channel to which synchronizing signal for LSM is transmitted	↑, ↓, number	---
Tarifff Input .Module SIOXn .Channel k		Configure tariff input, Extension Module (SIOX n=1 to 4) and channel to which tariff signal for LSM is transmitted	↑, ↓, number	---

• Screen 6-1-6-3-1-a Measuring Locations

MEAS. POINTS		Entry	Default
Name of measuring location	Select measuring location associated with LSM by ENTER (↵) key	↑, ↓,↵, ESC	-

☞ Only measuring locations that have been appropriately configured in Screen 6-1-6-1 as a measuring location (ideally with a measuring location name) are shown for selection!

• Screen 6-1-6-3-2 LRM Levels

Use the up and down cursor keys (↑) (↓) to scroll through the separate load shedding stages. Press ENTER to configure the load shedding stage selected.

Page 1 - Configure load shedding stage

LOAD REJECTION		Entry
Level 1	Name of load shedding stage / Select	↑→↵
Name output	Name output (e.g. Ventilation Stage 1)	
SIOXn/k	Extension Module (SIOX n=1 to 4) / c = channel	

Page 2 - Configure load shedding stage

Press the ENTER key to configure the load shedding stage.

LOAD REJECTION		Entry	Default
Name of load shedding stage	Name and select load shedding stage (max. 19 characters) **- A name should always be entered for the load shedding stage!**	↑, ↓, number	-
Priority x→	Alarm priority	Continue to Screen 6-1-6-3-2	
Power XX.XkW	Load shed in kW	↑, ↓, number	-
min.run.time XXXm	Minimum run time (0 to 1440 min.)		-
min.duration	Minimum allowed duration (0 to 1440 min.)		-
max.duration	Maximum allowed duration (0 to 1440 min.)		-
RejectOutput .Module SIOXn .Channel k	Configure load shed output, Extension Module (SIOX n=1 to 4) and channel to which load shed output is transmitted		---
Operation input .Module SIOXn .Channel k	Configure operating input, Extension Module (SIOX n=1 to 4) and channel to which operating input is transmitted		---
Demand input .Module SIOXn .Channel k	Configure demand input, Extension Module (SIOX n=1 to 4) and channel to which load demand input is transmitted		---
delete	Delete load stage: Displays prompt: Are you sure? No: ESC Yes: ↵	↵, ESC	1

• Screen 6-1-6-3-2-a Priority

PRIORITY		Entry	Default
1 √ 2 ... 20	Assign priority (1 to 20) to load shedding stage: Prio 1: First load shed .... Prio 20: Last load shed	↑, ↓,↵, ESC	√

• Screen 6-1-7 Timer

Each timer channel works as an independent week timer with up to 7 control times and can be assigned to a switching output and/or a pulse output. The output is active when the current time is within one of the 7 configured control times.

Page 1: Select timer channel

TIMER hh:mm	Heading and current time	Entry
Text	Name of timer channel	↑, ↓
SK: * SIOX1/1 WK: * SIOX1/2	Name of switching contact channel (SC, if configured) Name of pulse contact channel (PC, if configured Currently active output is indicated by *	

☞ Only SIOX Extension Modules and DDCs that have been appropriately configured in Screen 6-1are shown for selection!

Page 2: Configure timer channel

TIMER		Entry	Default
Name of timer channel	Enter freely editable name (max. 19 characters)	↑, ↓, Text	----
Make Contact .Module SIOXn .Submodul .Channel 1	Configure switching contact, Extension Module (SIOX n=1 to 4) or (ONLY visible when module=DDC1..DDC4 is selected) and Channel of switching contact	↑, ↓	----
Wiping Contct .Module SIOXn .Channel 1	Configure pulse contact, Extension Module (SIOX n=1 to 4) and channel of pulse contact (pulse duration 5 sec)	↑, ↓ number	----
Mo-Fr 08:00 20:00 Sa 14:00 Mo 08:00 ----- ----- ----- ... ----- ----- -----	Enter max. 7 control times: Start time (day hr:min) End time (day hr:min) OR Start time (day combination hr:min) End time (hr:min)	↑, ↓ (Mo-Su,Mo-Fr Mo-Sa,Sa-Su, ------, Mo, Th, We, Th, Fr, Sa, Su)	----
delete	Delete timer channel: Displays prompt: Are you sure? No: ESC Yes: ↵	↵, ESC	

Entering control times

Use the up and down (↑) (↓) cursor keys to select the weekday or combination of weekdays. Press the ENTER key to apply the entry and enter the hour of the start time. Press the ENTER key again to enter the minutes of the start time and the hour and minutes of the end time.

Available combinations of weekdays are:

Control times		Allowable period
Weekday	Mo, Tu, We, Th Fr, Sa, Su	0:00 - 23:59
Weekday group	Mo-Fr, Mo-Sa, Sa-Su	Start earliest 0:00 End latest 23:59, but not before start time **Rule: Start time must be earlier than end time** Control times extending beyond midnight are **not allowed:** Example: Start 21:00 End 7:00
	Mo-Su (one Week)	0:00 - 23:59 Control times extending beyond midnight **are allowed** Beispiel: Start 20:00 Ende 8:00

☞   If the timer is to run beyond midnight (e.g. 20:00 - 8:00), it must be set for individual days, e.g. Mo 20:00 - Tu 8:00 <u>or</u> for the weekday group Mo-Su, then to 20:00 - 8:00!

• Screen 6-1-8 Modem

From this list, select the Modem Configuration submenus by number 1 to 3.

MODEM	
1 Modem Type	Configure modem type
2 Modem Init. Strg.	Optional: Set modem Initialization string
3 Modem HW-Reset	Configure relay output for modem hardware reset

• Screen 6-1-8-1 Modem Type

This screen is used to specify whether a modem is connected to the CI 3000 Store Computer and the dial type to be used. As supplied, the configuration is *Tone Dial.* With this configuration, communication with the LDSWin software can only be made via null modem cable. Detailed information on the activated modems is provided in chapter 5.3.

MODEM TYPE		Entry	Default
No Modem √	No modem connected	↑,↓, ↵	
Pulse Dial	Modem connected – Use pulse dial		
Tone Dial	Modem connected – Use tone dial		√

☞ Tone dial is recommended (default).

• Screen 6-1-8-2 Modem Init Str (Modem initialization string)

☞ This screen can be used to change the initialization string for the modem. **Change can only be made by authorized personnel and only in Superuser mode**.
Exception: MSN is always shown.

MODEM Init Strg.		Entry	Consigné
	Enter initialization string, e.g. E0V1S31 = 128	↑,↓,Text, number	-
Default	Reset initialization string to standard initialization. Displays prompt: Are you sure? No: ESC Yes: ↵	↵	
Default Slow	Reset initialization string to standard initialization (slow). Displays prompt: Are you sure? No: ESC Yes: ↵		
MSN XXXXXXXXXXXXXXXXXXXXXXXXXXX	19 digit end device code number - with direct outside call this is the telephone number (without area code) - In normal cases (i.e. extensions) this is the extension number	↑,↓ number	
PIN XXXX	Four-digit PIN code of GSM modem (only shown if Superuser mode is activated)	↑,↓ number	

☞ When the modem initialization string is set to standard slow, the baud rate is limited to 9600 baud (as required for example when dialing over "poor" phone lines).

ECKELMANN

• Screen 6-1-8-3 Modem HW-Reset (Hardware reset)

Unreliable modems can be restarted periodically (hardware reset) by switching off the power supply. In order to do this, the zero potential contact *AUX* (terminals 15/16/18) is configured/deployed as an interrupt switch for the modem power supply (see chapter 5.3.3 Modem Hardware-Reset).

MODEM HW-RESET			Entry	Default
AUX-Relais xxxxxx	In order to activate the modem hardware reset the AUX relay must be configured to Modem.		Horn, DDC, Modem, PrioX3, PrioX4, PrioX5, PrioX6, PrioX7, PrioX8 PrioX9	Horn
Interval 120m	Setting the interval between 2 resets in minutes (only visible when the AUX relay is set to Modem)		↑, ↓,number (30..120)	120

• Screen 6-1-9 COM2

This screen is used to configure the COM2 port, which is used for data exchange with compact controllers (e.g. UA 30/Dixell), case controllers of LDS1 system or thrid party systems.

COM2			Entry	Default
NONE √	No Interface protocol activated		√	√
UA30/Dixell/LDS1	Interface protocol for compact controllers UA 30/Dixell and case controllers of the LDS1 system			
	Note: This line is not visible in the CI 3100 store computer, because the compact case controllers in it are connected directly to the COM3 interface and integrated in the LDS system without the need for configuration.			
M-bus 300Baud	M-bus interface protocol for 300 baud			
M-bus 2400Baud	M-bus interface protocol for 2400 baud			
AHT W wthout YCabl	Interface protocol for AHT case with Wurm controller			
AHT D+W	Interface protocol for AHT case with Danfoss (and Wurm) controller, Y cable required			
Modbus BCS	Interface protocol for the higher order BCS (i.e. Priva HX 8E)			

☞ **M-bus praxis tip:** In order to support servicing, the number of nodes (meters) connected to the M-bus can be determined via the screen 6-1-6-1-2.

• Screen 6-2 Meter Readings

Use the up and down cursor keys (↑) (↓) to scroll chronologically through the archived data. Use the right cursor key (→) to move between pages.

Page 1: Select measuring location

METER VALUES	
Name of measuring location	Name of measuring location
Item ID XXXXX→	Item ID of measuring location

☞ Only measuring locations that have been appropriately configured in Screen 6-1-6-1 are show for selection!

Page 2: Show readings of energy consumption or quantity

CONSUMPTIONIte	
Name of measuring location →	Name of measuring location
dd.mm.jj NT/HT↔	Date of measurement
XXX kWh↓ **bzw.** XXXX.XX m3↓ **bzw.** XXXX.XX l↓	Energy consumption [kWh] or quantity [m^3] for one day, separate for off-peak and peak tariff (OPT/PT)

Page 3: Show readings of hourly energy consumption or quantity

POWER Ite	
Name of measuring location →	Name of measuring location
dd.mm.jj hh:mm ←	Date and time of measurement
XXXX.XX kW↓ **bzw.** XXXX.XX m3/h↓ **bzw.** XXXX.XX l/h↓	Energy [kW] or quantity [m^3/h] per hour averaged over 15 minutes

- Screen 6-3 Temperature archive

From this list the temperature archive from different controller types and sensors can be selected.

TEMPERATURE ARCHIVE	
1 UA + WR	Selection display for LDS components: UA 300 / UA 400 case controller and WR 300/WR 400 receiver module
2 UA30/Dixell	Selection display for UA 30/Dixell controller
3 AHT W	Selection display for AHT case with worm controllers
4 Danfoss	Selection display for AHT case with Danfoss controllers

☞ As all of the components in the system first have to register with the store computer, no data is available in the first few minutes following the start of the CI 3000 (first start or restart)!

If during this time a submenu is selected, then the message
"Function currently not available! WAIT" appears.

- Maske 6-3-1 Temperature archive UA + WR

Page 1 - Selection of the desired case controller (UA 300 or UA 400) and receiver module (WR 300 oder WR 400), in addition to their associated radio sensors.

TEMP-ARCHIV KN.nnn	
Node name ↑	Name of LDS components
Position XXXXX →	Position of LDS components, continue to page 2: - HACCP temperature archive of the selected controller (i.e. case)
Case No. aaa/bbb ↓	Case No.: aaa current case bbb max. No. of cases for this LDS component

Using the cursor buttons (↑) (↓) it is possible to scroll from controller (i.e. case) to controller (i.e. case).

If during scrolling the maximum number of cases for an LDS component has been reached, then it is switched to the next component. After reaching the case controller (UA 300 or UA 400) with the highest CAN bus address (node No. 1..99), it is switched to the first (WR 300 or WR 400) receiver module (node No. 117..120).

☞ The MODE button combined with a cursor button (↑) (↓) springs to the start, i.e. end of the list. This list contains entries on all the cases, i.e. radio sensors within the system.

Page 2 - HACCP temperature archive (hourly averages) of the selected controller (i.e. case)

`TEMP-ARCHIV          KN.nnn`		
`P: XXXXX M: aaa` ↑		Position and case number of the LDS component

`dd.mm.yy 00-03 h` ←
`         04-07 h`
`         08-11 h`
`         12-15 h`
`         16-19 h`
`         20-23 h`
		Date and time period (4 hours) of the temperature values

`--- -22  -D-  -27` ↓		4 temperature values as hourly averages for the time period shown in line 3 `---` no valid value available `-D-` Defrost

4 hourly averages are always shown per screen. No averages are available for periods less than an hour. With the cursor buttons (↑) (↓) it is possible to scroll chronologically through the archived values. This switches to the next/previous set of 4 temperature values. The list contains figures for 31 days.

☞ **Praxis tip:** The MODE button combined with a cursor button (↑) (↓) springs to the start, i.e. end of the list.

- Screens 6-3-2 to 6-3-4 temperature archive

☞ The temperature archives from UA 30/Dixell controllers, AHT controllers and Danfloss controllers can be selected via the 3 screens 6-3-2 to 6-3-4.
As the case selection and the associated display of the temperature archive is identical for all these controllers, the instructions are provided using the example of the "UA30/Dixell" temperature archive.

Page 1 - Selection of the desired case controller (i.e. case)

TEMP-ARCHIV　　　　　　　Nr.nnn	
Node name　　　　　　　　　↑	Name of the controller
Position　　　　　　XXXXX →	Position of controller, continue to page 2: - HACCP temperature archive of the selected controller -
Case no.　　　　　aaa/bbb ↓	Case No.: aaa　　　current case bbb　　　max. No. of cases for this LDS component

Using the cursor buttons (↑) (↓) it is possible to scroll from controller (i.e. case) to controller (i.e. case).

☞ The MODE button combined with a cursor button (↑) (↓) springs to the start, i.e. end of the list. This list contains entries on all available controllers.

Page 2 - HACCP temperature archive (hourly averages) of the selected controller (i.e. case)

TEMP-ARCHIVE DIXELL	
P: XXXXX M: aaa　　　　　↑	Position and case number of the LDS component
dd.mm.yy 00-03 h　　　　← 　　　　04-07 h 　　　　08-11 h 　　　　12-15 h 　　　　16-19 h 　　　　20-23 h	Date and time period (4 hours) of the temperature values
---　-22　-D-　-27　　　↓	4 temperature values as hourly averages for the time period shown in line 3 ---　　　no valid value available -D-　　　Defrost

4 hourly averages are always shown per screen. No averages are available for periods less than an hour. With the cursor buttons (↑) (↓) it is possible to scroll chronologically through the archived values. This switches to the next/previous set of 4 temperature values. The list contains figures for 31 days.

☞ **Praxis tip:** The MODE button combined with a cursor button (↑) (↓) springs to the start, i.e. end of the list.

8.1.8   Menu 7 Monitoring

MONITORING	
1 Overview	Overview of number of configured and active LDS components
2 Status	Detailed status of all LDS components
3 Configuration	Configure name and item ID of all LDS components
4 System Alarms	Configure CI 3000 Store Computer system alarms
5 Status UA30/DIX	Status of the compact controller connected via COM2
6 Config.UA30/DIX	Configuration of the compact controller connected via COM2
7 Status AHT	Status of the AHT cases connected via COM2
8 Status AHT DANFOSS	Status of the AHT/Danfoss cases connected via COM2

• Screen 7-1 Overview

This screen shows the current station monitoring status.

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

The number of 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.

• Screen 7-2 Status

Select an LDS component either by entering its CAN bus address and confirming with the ENTER key or by using the up and down cursor keys (↑) (↓).

Page 1: Show current status of CAN bus stations

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

The bottom line shows the current operating status of the selected 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 LDS component
Typ XXXXXXXXX	Type of component
Version X.XX ←	Software Version No.
S.Nr. XXXXXXXXXXXXXXXXXXXXX	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 LDS component connected to the CAN bus.

CONFIGURATION Nd. Nd.nnn	Heading and Node No. of LDS component
Name of component →	Name of component
Item ID XXXXX →	Item ID of component
Priority p	Alarm priority of component
delete	Remove LDS component from system: Delete 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.

• Screen 7-4 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
3rd-party alarm	Alarm from the 3rd-party controller at COM2 (only AHT cases with Wurm controllers)	↑, ↓ (0..2)	2
Priority 0	Fault priority		
Delay 0m	Delay in minutes	↑, ↓, (0..255)	0
Archiv Error	Group of faults for archiving relevant fault messages	↑, ↓ (0..2)	0
Priority 0	Fault priority		
Delay 0m	Setting a delay has not effect!	↑, ↓, (0..255)	0
Error Recipient	Fault report in remote alarm problems	↑, ↓ (0..2)	2
Priority 2	Fault priority		
Delay 5m	Delay in minutes	↑, ↓, (0..255)	5
Modem Fault	Fault report in modem problems	↑, ↓ (0..2)	2
Priority 0	Fault priority		
Delay 5m	Delay in minutes	↑, ↓, (0..255)	5
Power Failure	Fault report on restart	↑, ↓ (0..2)	0
Priority 0	Fault priority		
Delay 0m	Delay in minutes	↑, ↓, (0..255)	0
First Start	Fault report on first start	↑, ↓ (0..2)	1
Priority 1	Fault priority		
Delay 0m	Delay in minutes	↑, ↓, (0..255)	0
CAN Error	Fault group for CAN bus faults and errors	↑, ↓ (0..2)	0
Priority 0	Fault priority		
Delay 0m	Delay in minutes	↑, ↓, (0..255)	0
Hardware Errors	Fault group for archiving fault report	↑, ↓ (0..2)	1
Priority 1	Fault priority		
Delay 0m	Delay in minutes	↑, ↓, (0..255)	0

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

Danger of failure of alarm messaging! The priorities for system and hardware faults, first start, modem failure and fault alarm destination must not be set to 0, otherwise critical alarm messages cannot be transmitted! Otherwise the system will not alarm failure of vital functions such as clock synchronization or failure of a SIOX Extension Module with any external alarms that may be connected to it! Successful transmission of alarms from 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 Status UA30/Dixell

This menu contains display screen reserved for use by service personnel.

This screen will only be shown when
- *UA30/Dixel* is selected in Screen 6-1-9 and
- the compact controller, i.e. the case controller integrated via LDS1 Gateway is connected to the
  COM2 interface using the RS232-RS485 converter:

STATUS UA30/DIX M:xx	
Modbus xx ↑	Move to next case controller (xx = 01 ... max. 50)
Position Mxx →	Move to Screen 7-5-a Show controller type version and actaul values of compact controller:
	UA 30. Temperatur-Istwert Fühler 1, 2 und 3 in °C
	LDS1 Gateway Temperature sensor 1, 2, 3, and a max. of 4 °C above a case controller integrated via LDS1 gateway. Dependent on the type of controller the temperature of the return air sensor is generally displayed. If there is no return air sensor the temperature of the supply air sensor is displayed.
xxxxxxxxxxxxxxx 5	Status report in real language

• Screen 7-5-a Position Mxx

STATUS UA30/Dixel M:xx	
Typ xxxxxxx ↑	Show controller type: e.g. UA30RC, UA30RS
Version X.Y i.e. xxx°C xxx°C xxx°C	UA 30. Actual value of sensor 1, 2 and 3 in °C
	LDS1 gateway Temperature sensor 1, 2, 3, and a max. of 4 °C above a case controller integrated via LDS1 gateway. Dependent on the type of controller the temperature of the return air sensor is generally displayed. If there is no return air sensor the temperature of the supply air sensor is displayed.

• Screen 7-6 Conf. UA30/Dixell

This screen will only be shown when
- *UA30/Dixel* is selected in Screen 6-1-9 and
- the compact controller, i.e. the case controller integrated via LDS1 Gateway is connected to the
  COM2 interface using the RS232-RS485 converter:

CONFIG.UA30/DIX M:xx	Press ENTER key to open menu	Entry	Default
xxxxxxxxxxxxxxxxxxxxxxxxxxxx ↑	Name refrigeration point (max 19 characters) Move to next compact controller (01 ... max. 50)	↑ , Text	Modbus xx
Position Mxx	Position of the compact controller i.e. case controller integrated via LDS1 Gateway		Mxx
Priority 1	Alarm priority	0 ... 2	1
Delete	Remove compact controller from system: Displays prompt: *Are you sure?* *No: ESC Yes: ↵*	↵ ESC	

• Screen 7-7 Status AHT

This menu contains display screens reserved for use by service personnel.

STATUS AHT		Entry	Default
Status →	Continue to Screen 7-7-a	→	-
Delay 5	Delay in minutes	↑, ↓, (0..99)	5

• Screen 7-7-a

This screen will only be displayed when AHT is selected in Screen 6-1-9 **and** an AHT gateway is connected.

STATUS AHT Mxxx	
Name X XXXXXX	Name refrigeration point (can only be entered in LDSWin)
iiiii °C sssss °C eee	iiiii = Actual temperature in °C sssss = Temperature setpoint in °C eee = On time in minutes
C D Alarm tttt	Status: C = Cooling / D = Defrost / Alarm tttt = Communication timeout, failure alarmed at 0

• Screen 7-8 Status AHT Danfoss
  This menu contains display screens which are reserved for the service personnel.
  This screen is only shown when Danfoss/AHT is selected in the screen 6-1-9.

STATUS DANFOSS M:xx		Eingabe	Vorgabe
Position →	Position des Kompaktreglers, weiter zur Maske 7-8-a	→	

• Screen 7-8-a
  This screen is only shown when Danfoss/AHT is selected in the screen 6-1-9.

STATUS DANFOSS M:xx	
Type --	Controller type
Version	Version of the Danfoss controller, back with ← button
Setp: x°C Act: x°C	Temperature setpoint and actual value

8.1.9   Menu 8 I/O Monitor

This menu contains display screens reserved for use by service personnel. No further details are given for these screens except *System Info, Modbus Status* and *Modem Status*.

• Screen 8-3 SysInfo

`SYSINFO                CAN:Nd.nnn`	Heading with Node No. of LDS component	
`VX.XXX              EA: dd.mm.yy`	VX.XX: FS:	Firmware version Date of the first start

`SIOX: n CMOS: X                    →`	SIOX: n
	CMOS xy
		n: Number of SIOX extension modules (0.. max. 4)
		x: Number of MB for the archive memory
		y: - not enough memory available (i.e. too many LDS components,
		    too many EU archives.
		    Remedy: Replace with a store computer with
		    a larger main memory.
		y: ! memory error
		    Remedy: backup operating archives using LDSWin.
		    Then delete the operating archive and reorganise the
		    archive administration by pressing the buttons MODE + ESC + 6

`LEC: X        UT:XXXXXXXXXXXXXXX`	LEC: X UT:	Last Error Code Update time, time in minutes since the last start

• Maske 8-6 Modbus Status

This screen is designed for LDS specialists and will not be described here in detail. This screen also contains very useful information for the on-site assembler when searching for faults in the Modbus (e.g. the value "RE").

```
MODBUS COMx zzz Txxx

RXxxx  RExxx.xxx.xxx

TXxxx ERxxx yxx Axxx
Sxx Fxx Axxxx BCxxxx
```

Modbus Status:

`MODBUS COMx zzz Txxx`
    zzz = Status_Master
    Txxx = Timeout_Master: WTG = Waiting / IDL = Idle (operational)

`RXxxx  RExxx.xxx.xxx`
    RXxxx = number of telegrams received
    RExxx.xxx.xxx = number of receive faults
    (3 counters for different fault causes)

    Praxix TIP: Should the value RE display a relatively rapid increase,
    this is an indication of the repeated use of Modbus addresses by external controllers!

`TXxxx ERxxx yxx Axxx`
    TXxxx = number of telegrams sent
    ERxxx = Anzahl Anforderungsfehler
    yxx: Fxx = Danfoss
                Xxx = UA30/Dixell
    Axxx   = number of AHT blocks received

`Sxx Fxx Axxxx BCxxxx`
    Sxx = Slave address
    Fxx = Function
    Axxxx = Register address
    BCxxxx = Bytecount (content of current telegram)

• Screen 8-8 Modem State

MODEM STATE 0 0	
Modem state X XXXXXX	
XXXXXXXXXX X XX XX	
CTS DSR DCD XX XXX X	

Modem - Status:

DIRECT   Configured for direct connection by null modem cable
(DIRECT)   Temporary direct connection by null modem cable with configured modem
IDLE   Modem configured and operational
RINGING   Incoming call
DIALING   Outgoing call
CONNECT   Call connected
ILL   Modem configured but not operational (switched off or not physically connected)
CTS / ---   Clear To Send handshake line status
DSR / ---   Data Set Ready handshake line status
DCD / ---   Data Carrier Detect handshake line status

Display with direct connection by null modem cable:

Modem State XXX XXX		Modem State XX XXX
Direct X XXXXXX	or	(Direct) X XXXXXX
XXXXXXXXXX X XX XX		XXXXXXXXXX X XX XX
CTS --- DCD XX XXX X		CTS --- DCD XX XXX X

Store Computer display with modem operational and call connected:

Modem State XXX XXX		Modem State XX XXX
IDLE X XXXXXX		CONNECT X XXXXXX
XXXXXXXXXX X XX XX		XXXXXXXXXX X XX XX
CTS DSR --- XX XXX X		CTS DSR DCD XX XXX X

Version 2.09 09. April 2014

8.1.10 Menu 9 Parameters

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

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

• Screen 9-1 Date/Time

This screen is used to specify the date and time for all 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

☞ Change of date is blocked for protection of archiving (see Screen 9-3 for cancelling block). Time can only be adjusted up or down in increments of 15 minutes.

Changing the date may result in loss of correlation between recorded operating data (EU archives, etc.) and the actual time stamp!

• Screen 9-2 Language

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.

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

☞ If an LDS component installed in the system does not support the selected language, it will change to the default language, English.

• Screen 9-3 Interlock, Superuser and Service 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:

☞ 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 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 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:

👉 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 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.

Activate/deactivate service mode

Using this input screen the service mode is activated for a desired period.
During this specified period all remote alarms are suppressed.

☞ The activation of the service mode is only to be carried out by service personnel! 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.

Case A: Without setpoint interlock - without password request:

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

Case B: With setpoint interlock - with password request:

☞ 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 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.

Case A and case B:

By simultaneously pressing the buttons MODE + ENTER (↵)
the operating screen for entering the service period appears.

Suppress Remote Alarm			Entry	Default
Duration 60m		Time in minutes during which Store Computer is operated in service mode. All remote alarm transmission is suppressed during the time specified: 1 to 255: Time for which service mode is to be activated 0: Deactivate service mode	Number (0..255) and ↵	60

The following screen opens to show service mode status:

Case A INTERLOCK			Input
Settings Possible	√	√ = Cancel entry block to allow settings to be made	MODE and ↵
Service Mode XXXm		Time remaining for activated service mode.	
Case B SETPOINT INTERLOCK			
Release Password: XXXXXXX	√	√ = lock released password entry.	
Service Mode XXXm		Time remaining for activated service mode.	

8.1.11 Menü 0 HVAC Overview

Screen showing overview of store HVAC data.

👉 Screen will only be shown when DDC (digital direct control) is connected to the LDS System.

HVAC OVERVIEW		
Außentemp.	xx.x°C	Outside temperature
Soll Raumt.VR	xx.x°C	Salesroom (VR=SR=sales room) temperature setpoint
Raumtemp VR	xx.x°C	Salesroom (SR) actual temperature
CO2 VR	xxp	Salesroom (SR) CO_2 level
Soll Raumt.KB	xx.x°C	Cooling zone (KB=CZ=cooling zone) temperature setpoint
Raumtemp. KB	xx.x°C	Cooling zone (CZ) actual temperature
Raumt. Lager	xx.x°C	Storeroom actual temperature
Zulufttemp.	xx.x°C	Supply air actual temperature
Abluftemp.	xx.x°C	Exhaust air actual temperature
Soll Zuluftt.	xx.x°C	Indication of the setpoint temperature of the supply air
WWBoil. oben	xx.x°C	Indication of the upper temperature for the boiler's warm water
WWBoil. unten	xx.x°C	Indication of the lower temperature for the boiler's warm water

xxx yyy ZLG: Btxsc		Indication of central ventilation device (ZLG) operating mode:
		 xxx kbv Cooling sales area
		       HBV Heating sales area
		 yyy sbn Summer operation adjoining room
		       WBN Winter operation adjoining room
		 ZLG: B ZLG operation
		       t ZLG operation due to temperature requirements
		       x ZLG operation due to external requirements
		       s ZLG operation due to flushing
		       c ZLG operation due to CO_2 requirements

Menu structure of CI 3000

Notice:

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.

Decommissioning and disposal

Notice:

ECKELMANN

10 Alarms and Messages of CI 3000

No.	Messages	Cause	Correction
Hardware faults			
0	int. error *01 0000*	CPU hardware problem	With repeated occurrence replace the device
	int. error *02 0000*	CPU or ROM hardware problem	With repeated occurrence replace the device
	int. error *04 0000*	Problem with the archiving (invalid information structures in RAM)	Delete the operating archive with MODE + ESC + 6 if required delete the meter archive with MODE + ESC + 3
	int. error *08 0000*	CPU or ROM hardware problem	With repeated occurrence replace the device
	int. error *10 0000* int. error *20 0000*	Stack error – can only occur in developer version, otherwise CPU or ROM hardware problem	With repeated occurrence replace the device
	int. error *40 001A*	Problem with the archiving (invalid information structures in RAM)	Delete the meter archive with MODE + ESC + 3
	int. error 40 0010 int. error 40 0011 int. error 40 0012 int. error 40 0013 int. error 40 0014 int. error *40 0021*	Problem with the archiving (invalid information structures in RAM)	Delete the operating archive with-MODE + ESC + 6
	int. error *80 0000*	CPU or ROM hardware problem	With repeated occurrence replace the device
1	ROM Fault or Hardware Fault Mxx	A chip for saving the configuration is defect. The AHT case with Danfoss controller has a fault	Replace device Check device Mxx
2	RAM Fault	A chip for saving the configuration is defect.	Replace device
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
6	FLASH Error	Configuration saving component defect.	Replace device
7	FLASH I Cont. Fault	Configuration data in FLASH memory implausible.	Please contact Service Organization

No.	Messages	Cause	Correction
Hardware faults			
8	RTC Fault xxx or RTC Fault Mxx	Real-time clock of component xxx defect.	Please contact Service Organization - Replace device Check device Mxx
9	SIOX *X* Fault	A SIOX extension module (X =1 ...4) has failed or a cable (terminals 91 - 95, i.e. patch cable) is defect.	Please contact Service Organization - Check cabling - Check patch cable (broken?) - Replace device
10	Battery Voltage or Battery Fault	Real-time clock and RAM backup battery dead.	- Change battery (see chapter 5.11) Check device Mxx
CAN bus faults			
41	CAN Bus Overflow	Communication fault on CAN bus, short circuit between CAN-H and CAN-L.	Check: CAN bus wiring correct cable type CAN bus lenght (max. 500 m) CAN-GND must be connected every-where, termination of CAN bus, wire color scheme everywhere the same, no branch lines
42	CAN Bus MSGLOST (= Message lost)		
43	CAN Bus Fault		
44	CAN Bus Failure		
45	CAN Address Conflict or Bus collision Mxx	Same CAN bus address assigned to two com-ponents. Two components have the same Modbus ad-dress	Change address of one component Check device Mxx
Messages			
46	Time Error	Real-clock time implausible on restart.	-
47	Adjust Time	Time changed on Store Computer. Time stamps show times before and after chan-ge	-
48	Adjust Date	Date changed on Store Computer. Time stamps show dates before and after chan-ge	-
50	First Start	Store Computer performed first start. All configuration settings and operating archives deleted.	-
51	Power Failure	Store Computer switched off or performed re-set. Time stamps show times of power off and on.	-

No.	Messages	Cause	Correction
Monitoring			
52	Controll.Fail. xxx or Controll.Fail. Mxx	No response by LDS-component to Store Computer requests.	Check power supply and LDS component connection to CAN bus, i.e. Modbus.
53	Failure AHT xxx	No response by AHT component. Possible causes: - Controller failure - AHT gateway failure - Failure of link between AHT gateway and CI 3000 Store computer	Check power supply and connections on AHT components.
Communication			
60	*Call nnnnnnnn*	Call to Store Computer from PC. nnnnnnnnnn is number of LDSWin dongle. Remote PC phone number is shown as station name.	-
Archive faults			
81	Archive Fault *nn*	Archive management error detected on restart.	Please contact Service Organization
82	Archive Error *nn*	During operation an error occurred in the archiving (error number nn only for internal use)	1. All archives must be saved using LDSWin (see chapter 6.10.1) 2. Following this, a reorganisation is to be carried out using the key combination MODE + ESC + 6 In the event of uncertainty please contact the Service Organization
83	Insuff. Memory	Archive could not be created for new component.	Please contact Service Organization
84	Insuff. Memory EU	EU archive could not be created for new component.	Please contact Service Organization

No.	Messages	Cause	Correction
Modem faults			
85	Modem Fault	Modem not recognized, not switched on or not connected.	Check modem and connection to CI 3000 Store Computer
86	Error Recipient (*n*) n = 0..7	Store Computer cannot transmit alarms to specified remote station. Typical cause: Remote station busy or modem does not recognize dial tone. The following alarm destinations are possible: 0 Service Center 1 Fault Service 2 LDSWin Internal 1 3 Voice Message 4 LDSWin Extern 1 5 LDSWin Extern 2 6 SMS 7 FAX	Up to version 4.28: Check phone number and remote station Assignment only applies up to version 4.28! Due to the new priority concept no fixed assignment applies from version <= 5.0!
87	Direct link	Modem link temporarily replaced by direct connection between LDSWin PC and CI 3000 Store computer (e.g. for local configuring of LDS System by service technician).	-
Alarm- and special inputs			
90	*xxxxxxxxxxxxxxxxx*	Internal message or alarm input e.g. Input: Int.I/1 (first input on-board).	Correct external alarm fault
91	*xxxxxxxxxxxxxxxxx*	Message or alarm input on SIOX e.g. Input: SIOX2/5 (2nd SIOX module / channel 5).	Correct external alarm fault
93	Emerg. Generator	Emergency power special output activated.	-
94	Sprinkler Alarm	Sprinkler alarm special output activated.	-
95	Store lighting	Store lighting special output activated.	-
96	Shunt lock	Shunt lock special output activated.	-
97	Meter control	Meter limit exceeded.	-
98	Load Rejection	Load shedding initiated.	-
99	Archives delete	Archives deleted.	-
	Messages delete	Message log deleted.	-

ECKELMANN

No.	Messages	Cause	Correction
Error messages of Modbus components			
124	Coldroom door Mxx	Coldroom door of component Mxx open	Close door, check door switch or connecting cable
125	Defrost Fault Mxx	Defrost fault of an AHT case with Danfoss controller	Check device Mxx
126	Defrost therm. Mxx	Safty thermostat of component Mxx activ	Check defrosting
128	Sens. Fault x Mxx oder Sens. Fault AHT xxx	Sensor break of AHT component xxx. Possible causes: - Sensor disconnected - Sensor short-circuited - External electrical interference	Check connecting lead. Check cable shielding. Replace sensor concerned
132 133	High Temp. Mxx or Low Temp Mxx or High Temp. AHT xxx	High temperature on component xxx	Check parameter setting, temperature sensor, system
150	Compr. Fault Mxx	Compressor fault on an AHT case with Danfoss controller	Check the compressor for the component Mxx
160	Pressostat Mxx	Pressure fault of component Mxx	Compressor polluted, check compressor
164	Low LP Mxx	Low limit of t_0 exceeded	Check compressor
179	External Alarm Mxx	Message of component Mxx	Check componente Mxx
Other			
180	Service-Mode	Automatic fault reports transmission temporarily deactivated during service work.	Reset service mode (Screen 9-3) by pressing MODE + ↵ (ENTER) keys and entering 0 min
241	Setp. changed XXX or Setp. changed Mxx	XXX configuration was changed Comment: - XXX stands for the CAN bus address - Mxx stands for the Modbus addresses M1..M50	-

Alarms and Messages of CI 3000

Notice:

11 Specifications of CI 3000 / SIOX

☞ For safety reasons and to guarantee important functions (e.g. alarm forwarding to a service centre via modem) only accessories approved by Eckelmann are to be used with the store computer.

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!

	CI 3000 Store Computer	SIOX Extension Module
Power supply	230 V AC, 200 - 265 V AC, 50/60 Hz	24 V DC / 9 V DC, Supplied by CI 3000
Rated power	24 VA	2 W
Leakage current over PE	Max. 1 mA	

Relay outputs [1]	3 x changeover for reporting system, floating:
	
	2 x 230 V AC min. ≥10 mA
	Lastart: max. 6 A (ohmic)
	          max. 3 A (inductive)
	          (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 AUX,
	e.g. for acoustic signal transmitter
		4 x N.O., 4 x changeover floating:
		
		2 x 230 V AC, min. 5 V / 10 mA
		              max 230 V AC / 6 A
		              max. 24 V DC / 5 A

Digital inputs	2 x 230 V AC, floating, for external alarms (inputs AL.1 and AL.2)	12 x 230 V AC / 24 V S0 meter inputs internally convertible by jumper [2], floating

[1] **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.

[2] See also Section 5.5.2

	CI 3000 Store Computer	SIOX Extension Module
Front switch	1 x N.O. 230 V AC, with external connection option, floating Max. 2.4 A for incandescent lamps Max. 4 A for inductive load Max. 6 A for ohmic load	-
Fieldbus port	CAN bus, floating	
Data ports	1 x Data port for SIOX Extension Module	Internal port to CI 3000
	2 x serial RS232 (SUB-Min-D), floating - MODEM: Interface to modem or PC - COM2: for the connection of UA 30/Dixell controllers, AHT cases with external controllers, M-bus or as an interface for building automation	-
	CI 3100 ONLY: In additional, 1 x serial RS232, floating: - COM3 - for the connection of UA 30/Dixell controllers	
Archive memory	Standard 2 MB, 6 MB or 16 MB Battery-backed (lithium cell)	-
	CI 3100: 6 MB or 16 MB,only Battery-backed (lithium cell)	
Monitoring function	Watchdog	
Real-time clock	Battery-backed (lithium cell) Accuracy typ. 12 min/yr at 25 °C	With/without manual control switch approx. 800 g
Temperature range	Transport: -20 °C ... +80 °C Operation 0 °C ... +50 °C **The device must be protected from direct sunlight!**	
Temperature change	Transport: max. 20 K/h Operation max. 10 K/h	
Relative humidity (non-condensing)	Transport: 8 % ... 80 % Operation 20 % ... 80 %	
Shock to DIN EN 60068-2-27	Transport and operation 30 G	
Vibration 10 - 150 Hz to DIN EN 60068-2-6	Transport and operation 2 G	

	CI 3000 Store Computer	SIOX Extension Module
Atmospheric pressure	Transport: 660 hPa .. 1060 hPa Operation 860 hPa .. 1060 hPa	
Weight	CI 3000 2 MB: approx. 1350 g CI 3000 6 MB: approx. 1380 g CI 3000 16 MB: approx. 1450 g CI 3100 6 MB: ca. 1400 g CI 3100 16 MB: ca. 1470 g	With/without manual control switch approx. 800 g
Enclosure	Panel mounting Front (with rubber gasket and mounting frame): IP54 Otherwise: IP20	DIN rail mounting IP20
CE conformity	Conforming to EU Directives 73/23/EEC (Low Voltage Directive) 89/336/EEC (EMC Directive)	

11.2 Mechanical data

11.2.1 Dimensions of the CI 3000

(1): Control panel (2): Panel cutout

11.2.2 Mounting frame for panel mounting

(1): Mounting frame   (2): Insert nut M3

11.3 Mechanical data, SIOX Extension Module

Without manual control switches

With manual control switches

12 Order numbers and accessories of CI 3000

12.1 Store Computer

Type	Description		Order number
CI 3000	Store Computer (2 MB) Store Computer (6 MB) Store Computer (16 MB)		LICI300051 LICI300053 LICI300054
CI 3100	Store Computer (6 MB) Store Computer (16 MB)	with COM3 interface with COM3 interface	KGLCI31003 KGLCI31004
SIOX	SIOX Extension Module SIOX Extension Module	without switches with switches	LISIOX0011 LISIOX0012

12.2 Accessories for Store Computer

Component	Description	Order number
Mounting rack	Mounting rack for panel mounting	KGLZRAHMEN
SIOX Supply cable	Supply cable for SIOX Lenght: 2 m	KABLIND006
SIOX Data cable	Data cable from VS 3010 BS/SIOX to SIOX, lenght: 0,4 m 0,7 m 2,0 m 5,0 m	KABLIND001 KABLIND002 KABLIND003 KABLIND007
Modem 56 KI	Modem 56 KI - Analog	PCZMODEM02
Modem ISDN	Modem ISDN / analogue hybrid (i.e. for sending alarms and messages via FAX)	PCZMODEM03
Null modem cable	Connects the flash cable with the serial interface of the PC / notebook, lenght: 3,0 m	PCZKABSER2
Null modem cable extension	Extension for null modem cable, Lenght: 1,8 m	PCZKABSER3
RS232-RS485 Converter	RS232-RS485 converter to connect UA 30 Rx controller in the LDS-System	EAGADP485
SUB-Min-D plug	9 pole SUB-Min-D plug (male) with screw terminals for Modbus activation (only required with CI 3100)	STSUBCON9M

Component	Description	Order number
Package for the integration of AHT cases	- AHT cases with Danfoss SLV controller - AHT cases with Wurm controller - AHT cases with Danfoss SLV and Wurm controller	KGLAHTAD01 KGLAHTAD02 KGLAHTAD03
CAN bus-PC Adapter	For integration of user PC or service PC in the LDS System.	LICANBUSAD
CAN bus-Y-cable	CAN bus-Y-cable for PC to CAN bus connection.	LICANYKAB
LAN Gateway	Network connection (LAN) for User / service PCs (e.g. store manager/remote PC) in the LDS-System.	KGLLDSGW02
Combi-Gateway	Network connection (LAN) for User / service PCs (e.g. store manager/remote PC) in the LDS-System. Connection of external applications to the LDS system via the XML interface.	KGLLDSGW03
Cable for fast CAN bus connection	Cable for fast CAN bus connection between Combi Gateway and Store Computer, 2,0 m	KABHICAN2M
M-bus gateway	For consumption data capture incl. serial interface cable (an external power pack KGLNT23024 is required) M-bus gateway 20 (max. 20 m bus meters) M-bus gateway 60 (max. 60 M bus meters)	 KGLZMBUS01 KGLZMBUS02
Power supply	Power supply 100-240 V AC / 24 V DC / 1,3 A	KGLNT23024