Connection of AHT cases to the
E•LDS system

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Notice:

1   Technical safety information

1. Commissioning and operation of the device may only be performed by qualified personnel. "Qualified personnel" as defined by this technical safety information means persons who have the authorisation to start up, earth and designate devices, systems and electric circuits in accordance with security technology standards.

2. Mounting, positioning and wiring may only be conducted when the electricity supply to the assembly has been cut off.

3. The faultless and safe operation of the product presupposes proper transport, appropriate storage, positioning and assembly, as well as careful operation and maintenance.

4. Voltage must only be supplied by VDE-tested and CE-certified power packs.

5. Ensure that the voltage supply and the data cable are correctly connected.

6. If the product is brought into the working area from a cold environment, condensation may form. The product must be completely dry before being commissioned. Do not assemble or install the product near water or in damp surroundings.

7. Do not take the product apart or remove the enclosure. The guarantee rights will become invalid if the housing is opened.

Notice:

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2 Connection of AHT cases

2.1 AHT cases with Wurm controllers

2.1.1 Tasks

☞ AHT controllers can only be integrated in the CI 3000 / CI 3100 store controller from Version 4.08 and later.

AHT cases are connected to Wurm controllers using the Wurm coupling module and the supplied breakout cable (Article Number: KGLAHTAD02) via the COM2 port of the CI 3000 / CI 3100 store computer. The connector of the breakout cable marked with "Wurm" must be connected to the coupling module for this:
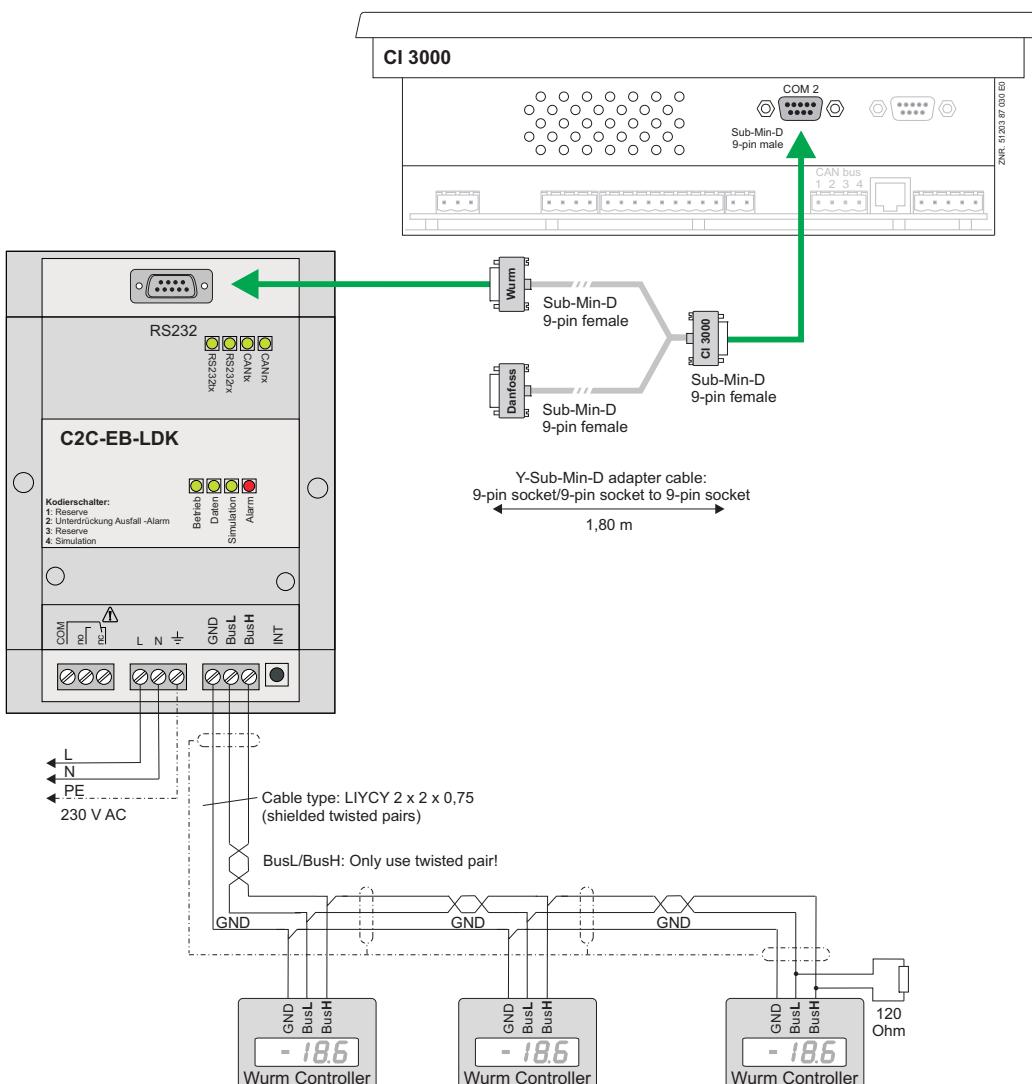
Features

- Wurm coupling module for connecting AHT cases including breakout cable (Article Number: KGLAHTAD02)
- AHT case alarm and optional case failure alarms at the alarm relay

Power supply of the coupling module C2C-EB-LDK:

- 230 V AC

2.1.2   Connection of the coupling module to the CAN bus

1. The terminals GND / BusL / BusH of the coupling module must be connected to the CAN-Bus
of the Wurm controller in the AHT cases (see picture in Chapter 2.1.1).

☞ Specific details for the connection to the CAN bus (specification of the type of conductor, permissible conductor length, necessary terminating resistors and correct routing, etc.) are described in detail in the manual of the coupling module and the Wurm controller.

⚠ Improper shielding of the CAN bus results in electromagnetic interference fields. During wiring work, it is essential that the conductors are connected properly and correctly shielded.

2. Depending on where the coupling module is integrated on the CAN bus, the integrated terminating resistor must be activated.

⚠ If the coupling module is located **at the beginning or at the end** of the CAN bus, the resistor must be activated (coding switch in "**ON**" position) or an external terminating resistor of 120 Ohm must be installed between BusL and BusH.
If the coupling module is located **within** the CAN bus line, the coding switch **must not be in the "OFF"** position.

The coding switch (1) for setting the terminating resistor on the CAN bus is located under the cover of the coupling module:
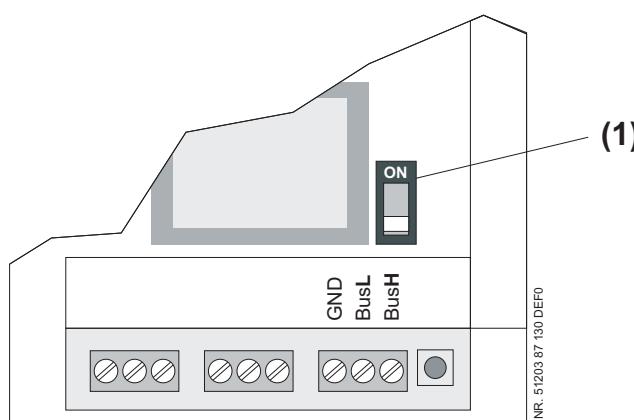
2.1.3 Alarm output of the coupling module

The coupling module has an alarm relay with change-over contact (see picture in Chapter 2.1.1). The relay is activated in the OK condition and drops out in the case of power failure. The alarm relay signals alarms of the connected AHT cases as a group signal. The alarm relay drops out if an error occurs. The red LED "**Alarm**" lights in parallel with the signalisation via the alarm relay in the case of an error. The alarm relay does not signal the OK condition again until all faults of the case have been rectified.

The failure is also detected by connected cases. The cases are automatically registered during operation. If the communication of one or more cases is disrupted, an alarm is activated after a delay time of 3 minutes.

If a case should be removed from the system or if the configuration of the case addresses has to be modified, all cases present must be registered again. The INIT button on the bottom right on the coupling module (see picture in Chapter 2.1.1) must be kept pressed for at least 5 seconds for this. After successful commissioning of all cases, it is recommended to register the connected devices again by pressing the INIT button.

If the failure monitoring is not required, the failure alarm can be deactivated by putting the coding switch 2 "**Deactivate Failure Alarm**" in the "**ON**" position. The signalisation of faults of the AHT cases continues to be performed.

2.1.4 Installation of the coupling module

Before installation, all cable connections and the power supply of the coupling module must be chek-ked again for correctness and contacting.

After applying the operating voltage, the green LED "**Operation**" lights continuously (see picture in Chapter 2.1.1). If the CAN bus has been wired correctly and is in operation, the green LED "**CANrx**" flickers. If tele-grams from AHT cases are detected, the green LED "**Data**" lights.

The provided and converted information is output afterwards on the RS232 interface of the coupling module to the CI 3000 / CI 3100 store computer. The green LED "**RS232tx**" signals data output.

2.2 AHT cases with Danfoss controllers

2.2.1 Tasks

☞ Danfoss controllers can only be integrated in the CI 3000 / CI 3100 store controller from Version 4.08 and later.

AHT cases are connected to Danfoss controllers using the Danfoss Gateway and the supplied breakout cable (Article Number: KGLAHTAD01) via the COM2 port of the CI 3000 / CI 3100 store computer. The connector of the breakout cable marked with "Danfoss" must be connected to the Danfoss Gateway for this. The Danfoss Gateway is supplied with 24 V DC using a mains adapter (Article Number KGLNT23024):
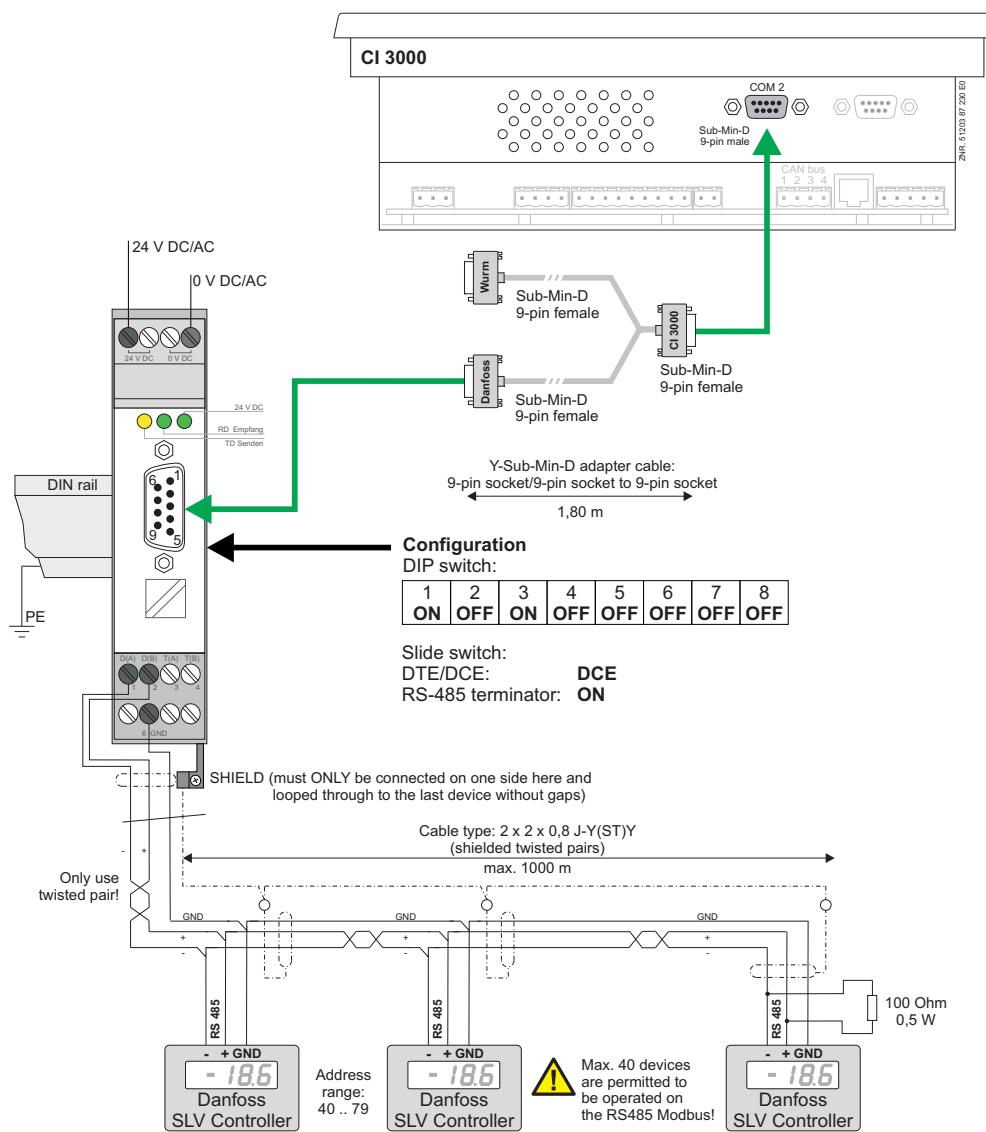
Features

- Danfoss Gateway for connecting AHT cases   (Article Number: KGLAHTAD01)

Power supply of the Danfoss Gateway:

- 24 V AC/DC   (Article Number: KGLNT23024)

2.2.2   Connection of the Danfoss Gateway

1. The terminals D(A)- / D(B)+ / GND of the Danfoss Gateway must be connected
to the bus of the Danfoss controller in the AHT cases (see picture in Chapter 2.2.1).

Specific details for the connection to the bus (specification of the type of conductor, permissible conductor length, necessary terminating resistors and correct routing, etc.) are described in detail in the manual of the Danfoss controller.

Improper shielding of the bus results in electromagnetic interference fields. During wiring work, it is essential that the conductors are connected properly and correctly shielded.

2. If the Danfoss Gateway is located **at the beginning or at the end** of the CAN bus, the slide switch RS-485 Terminator must be set to "**ON**". If the Danfoss Gateway is located **within** the bus line, the slide switch must be in the "**OFF**" position.

2.2.3   Installation of the Danfoss Gateway

Before installation, all cable connections and the power supply of the Danfoss Gateway must be checked again for correctness and contacting.

After applying the operating voltage, the green LED "**24 V DC**" lights continuously (see picture in Chapter 2.2.1).
If telegrams from AHT cases are sent, the green LED "**RD**" lights.

Notice:

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3   Settings on the store computer

1. Before entering the values, the input locking of the CI 3000 / CI 3100 store computer must first be unlocked using the screen **9 (Parameterisation) -> 3 (Locking)** with the ENTER key so that a checkmark becomes visible:

```
1 Alarms
2 Overview
3 Archive
4 Messages
5 Remote Control
6 Store Computer
7 Monitoring
8 I/O Monitor
9 Parameters
0 HVAC Overview
```
Main menu

```
PARAMETERS
1 Date/Time
2 Language
3 Interlock
```
1. Submenu

```
INTERLOCK
Settings
Possible:        √
```
2. Submenu
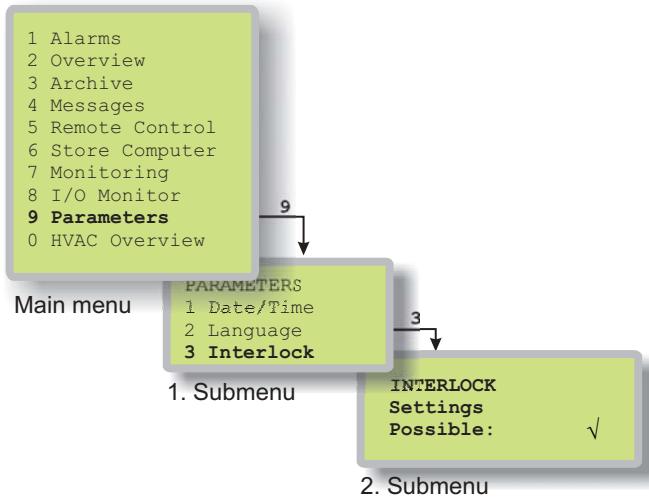
☞   See the documentation of the CI 3000 / C3100 store computer for further information about the operation.

2. Afterwards the interface protocol for Wurm or Danfoss controllers must be activated using the screen
6 (Store Computer) -> 1 (Configuration) -> 9 (COM2)

3.1   Settings for AHT cases with Wurm controllers:

```
1 Alarms
2 Overview
3 Archive
4 Messages
5 Remote Control
6 Store Computer          6
7 Monitoring
8 I/O Monitor
9 Parameters
0 HVAC Overview
```
Main menu

```
STORE COMPUTER           1
1 Configuration
2 Zählerwerte
```
1. Sub menu

```
CONFIGURATION
7 Timer
8 Modem                  9
9 COM2
```
2. Sub menu

```
COM2
NONE
Modbus GLT
AHT            √
UA30/Dixell
Danfoss/AHT
```
3. Sub menu
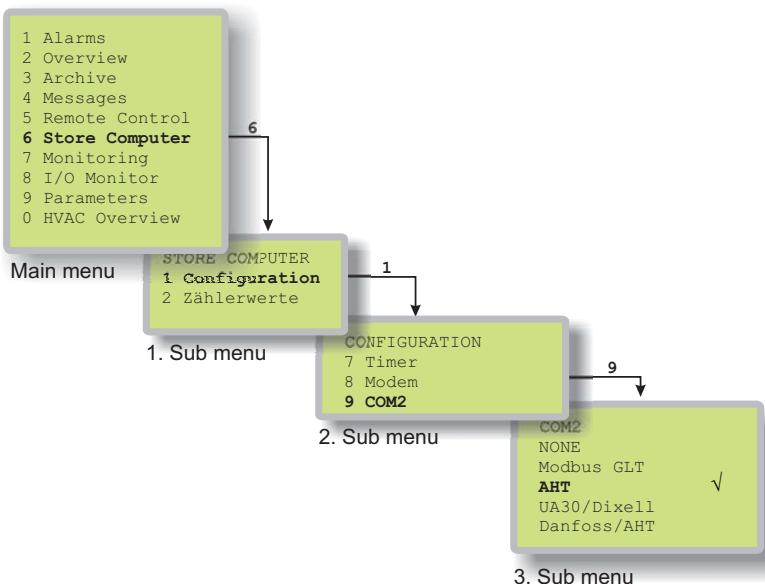
☞   There is a global message priority for AHT cases with Wurm controllers. This is configured in the
CI 3000 / CI 3100 using the External Controller Alarms parameter (menu 7-4).
If AHT cases which are equipped both with AHT as well as with Danfoss controllers should be integrated in the LDS System, the COM2 port must be configured for Danfoss/AHT.

3.2   Settings for AHT cases with Danfoss controllers (and Wurm controllers):

```
1 Alarms
2 Overview
3 Archive
4 Messages
5 Remote Control
6 Store Computer          6
7 Monitoring
8 I/O Monitor
9 Parameters
0 HVAC Overview
```
Main menu

```
STORE COMPUTER           1
1 Configuration
2 Zählerwerte
```
1. Sub menu

```
CONFIGURATION
7 Timer
8 Modem                  9
9 COM2
```
2. Sub menu

```
COM2
NONE
Modbus GLT
AHT
UA30/Dixell
Danfoss/AHT    √
```
3. Sub menu
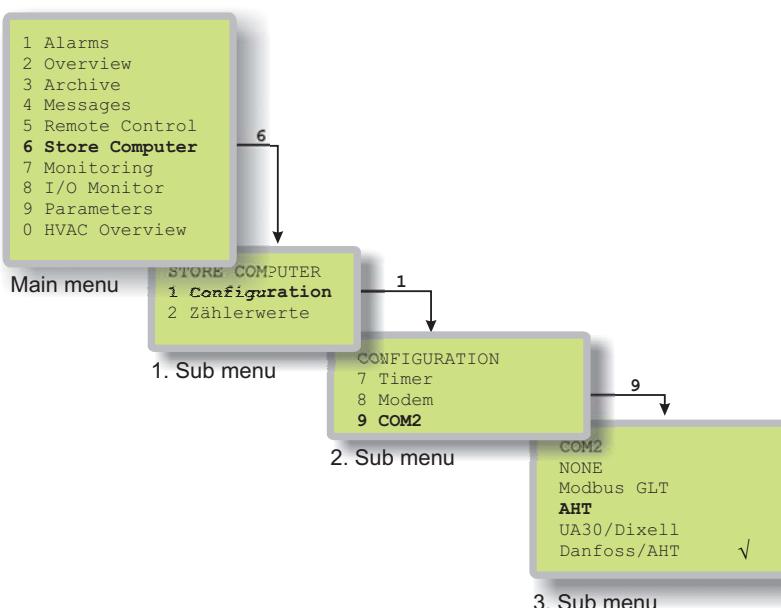
3.3   Diagnostics options

👉 Diagnostics options for examining the Modbus are possible in the CI 3000 / CI 3100 store controller from Version 2.09 and later.

A diagnostics display can be found in the CI 3000 / CI 3100 store computer under the menu item
8 (I/O Check) -> 6 (Modbus Status):

```
1 Alarms
2 Overview
3 Archive
4 Messages
5 Remote Control
6 Store Computer
7 Monitoring
8 I/O Monitor          8
9 Parameters
0 HVAC Overview

Main menu        4 Post Mortem
                 5 CAN Test
                 6 Modbus                6
                 7 Serial Test

              1. Submenu      MODBUS COM2   x1   x2
                              RXxx3   RExx4     DX 5
                              TXxx6   ERxx7   AHT 8
                              Sx7 Fx8 Axx9   BCx10

                           2. Submenu
```
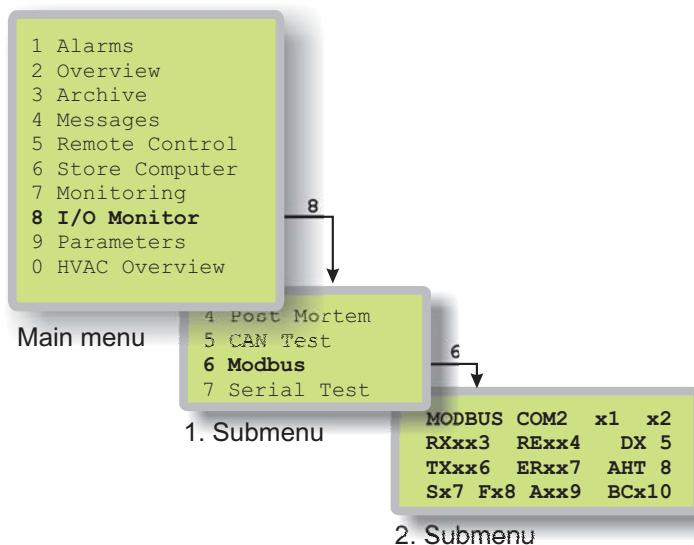
Line 1 (title):

| MODBUS COMx zzz Txxx | zzz | = State_Master |
| Txxx | = Timeout_Master: WTG = Waiting / IDL = Idle (operational) |

Line 2:

RXxxx RExxx.xxx.xxx	RXxxx	= number of telegrams received
	RExxx.xxx.xxx	= number of receive errors (checksum)
		(3 counters for different error causes)

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

Line 3:

TXxxx ERxxx yxx Axxx	TXxxx	= number of telegrams sent	
	ER xxx	= number of request errors	
	yxx	Fxx	= Danfoss
		Xxx	= UA30/Dixell
	Axxx	= number of AHT blocks received	

Line 4:

Sxx Fxx Axxxx BCxxxx	Sxx	= slave address (hexadecimal)
	Fxx	= function
	Axxxx	= register address
	BCxxxx	= Byte count (content of current telegram)

Notice:

4 Technical Data

4.1 Data of the coupling module C2C-EB-LDK

Technical Data [1]	
Article Number	KGLAHTAD02 *
Power supply	230 V AC, +10 % / - 20 %
Power consumption	approx. 3 VA
Interfaces	3-wire CAN bus (galvanically isolated) with switchable termination RS232 Sub-D 9-pin
Alarm relay	1 x change-over contact, 230 V AC, 4(2) A
Enclosure	Plastic, for DIN rail mounting
Dimensions [mm]	W 90 x H 127 x D 50
Permitted temperature range	0 .. 45°C
Weight	ca. 350 g
CE conformity	Conforms with EMC Directive 89/336/EEC

4.2 Danfoss Gateway

Technical Data [1]	
Article Number	KGLAHTAD01 * and KGLNT23024
Power supply	24 V DC ± 20%, frequency DC-60 Hz, typical 85 mA
Power consumption	approx. 2.1 W
Interfaces	RS232 Sub-D 9-pin, according to ITU-T V.28 RS485 screw terminals, according to EIA/TIA, DIN 66 259-4 and shield clamp
Enclosure	Plastic, IP20 for DIN rail mounting
Dimensions [mm]	W 22,5 x H 99 x D 118,6
zulässiger Temperaturbereich	0 .. 45°C
Weight	approx. 120 g
CE conformity	Conforms with the EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC

[1]: Manufacturer information

* Article numbers for the connection of AHT cases with Danfoss and Wurm controllers: KGLAHTAD03 and power supply KGLNT23024

We reserve the right to make technical changes.

Notice: