

ifm electronic



Operating instructions

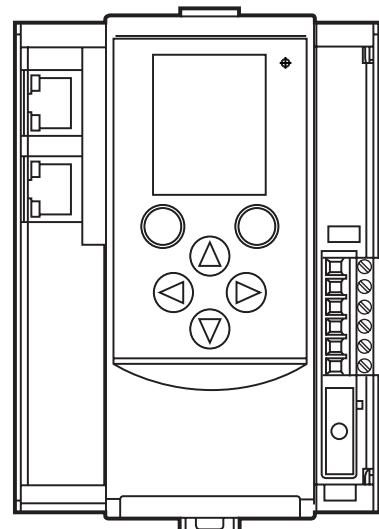
ecomat300[®]

AS-i Ethernet/IP gateway

AC1421 / AC1422

UK

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1 Preliminary note



1.1 Notes on this document

This document applies to devices of the type "AS-i Ethernet/IP gateway" (art. no.: AC1421 / AC1422). It is part of the device and contains information about the correct handling of the product.

This document is intended for qualified electricians. These specialists are people who are qualified by their training and their experience to recognise and to avoid possible hazards that may be caused during operation of the device.

- ▶ Read this document before using the device.
- ▶ Keep this document during the service life of the device.

1.2 Symbols used

- ▶ Instructions
- > Reaction, result
- [...] Designation of pushbuttons, buttons or indications
- Cross-reference
-  Important note
Non-compliance can result in malfunction or interference.
-  Information
Supplementary note

2 Safety instructions

2.1 General

- ▶ Observe these operating instructions.
- ▶ Adhere to the warning notes on the product.

Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation or incorrect handling can affect the safety of operators and machinery.

2.2 Installation and connection

The device must only be installed, connected and put into operation by a qualified electrician as the safe function of the device and machinery is only guaranteed when installation is correctly carried out.

The installation and connection must comply with the applicable national and international standards. Responsibility lies with the person installing the device.



This is a class A product. The unit may cause radio interference in domestic areas. In this case it can be necessary for the user to take appropriate measures.

2.3 Tampering with the device

Tampering with the device is not allowed and will lead to an exclusion of liability and warranty. Tampering with the device can affect the safety of operators and machinery.

- ▶ Do not open the device.
- ▶ Do not insert any objects into the device.
- ▶ Prevent metal foreign bodies from penetrating.

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3 Functions and features

The AS-i Ethernet/IP gateway includes one (AC1421) or two (AC1422) AS-i masters, one WEB server and an Ethernet/IP interface with 2-port switch.

- It controls the exchange of data to the sensor / actuator level.
- It communicates with the superior control level via Ethernet/IP.
- It visualises sensor/actuator data on the integrated WEB server.
- It allows device configuration via the WEB server.

3.1 Configuration interface X3

- 10 Mbps and 100 Mbps
- TCP / IP - Transport Control Protocol / Internet Protocol
- UDP - User Datagram Protocol
- IT functionality: HTTP server
- RJ45, twisted pair

3.2 Fieldbus interface X6 and X7

- Ethernet/IP
- 10 Mbps and 100 Mbps

3.3 Electrical supply

- the unit can be supplied either from 24 V (AUX) or from AS-i
- AS-i power 24 V compatible

4 Installation

- ▶ Fix the AS-i Ethernet/IP gateway onto a 35 mm raised rail.

The protection rating of the unit is IP 20, therefore it should be mounted in a protected location (e.g. control cabinet).



Ensure a condensation-free environment. Avoid excessive dust, vibration and shock. The air circulation through the vents must not be impeded.

Avoid installation in direct vicinity of frequency inverters or other interfering sources.

5 Electrical connection



The unit must be connected by a qualified electrician.

- ▶ Disconnect power before connecting the device.
- ▶ Observe the national and international regulations for the installation of electrical equipment.
- ▶ Connect the device as indicated on the terminals.
- ▶ Ensure an electrical connection between the AS-i Ethernet/IP gateway (terminal FE) and the ground of the installation.
- ▶ Only insert or remove the AUX jumper when the device is disconnected. Otherwise, a device failure may occur.

5.1 Device supply



To operate an AS-i system, an AS-i power supply (e.g. AC1236) or the data decoupling module AC1250 (not supplied) with a DC power supply is required.

- ▶ Supply the device with one of the following versions.

5.1.1 Device supply via AUX, AS-i supply via AS-i power supply

- ▶ Supply the device with a voltage of 24 V DC (18...32 V PELV) (e.g. from the 24 V DN3011 power supply of ifm electronic). The connection is made to the terminals X2.
- ▶ Pull out the AUX jumper.
- ▶ To supply the AS-i lines, connect the terminals X1 to one or two AS-i power supplies (AC1421: one AS-i master, AC1422: two AS-i masters).

- ▶ Ensure a low-resistance connection of the symmetry point of the device (terminal X1.5 FE) to the ground of the installation.

5.1.2 Device and AS-i supply via AS-i power supply

- ▶ To supply the AS-i lines, connect the terminals X1 to one or two AS-i power supplies (AC1421: one AS-i master, AC1422: two AS-i masters).
- ▶ Ensure a low-resistance connection of the symmetry point of the device (terminal X1.5 FE) to the ground of the installation.

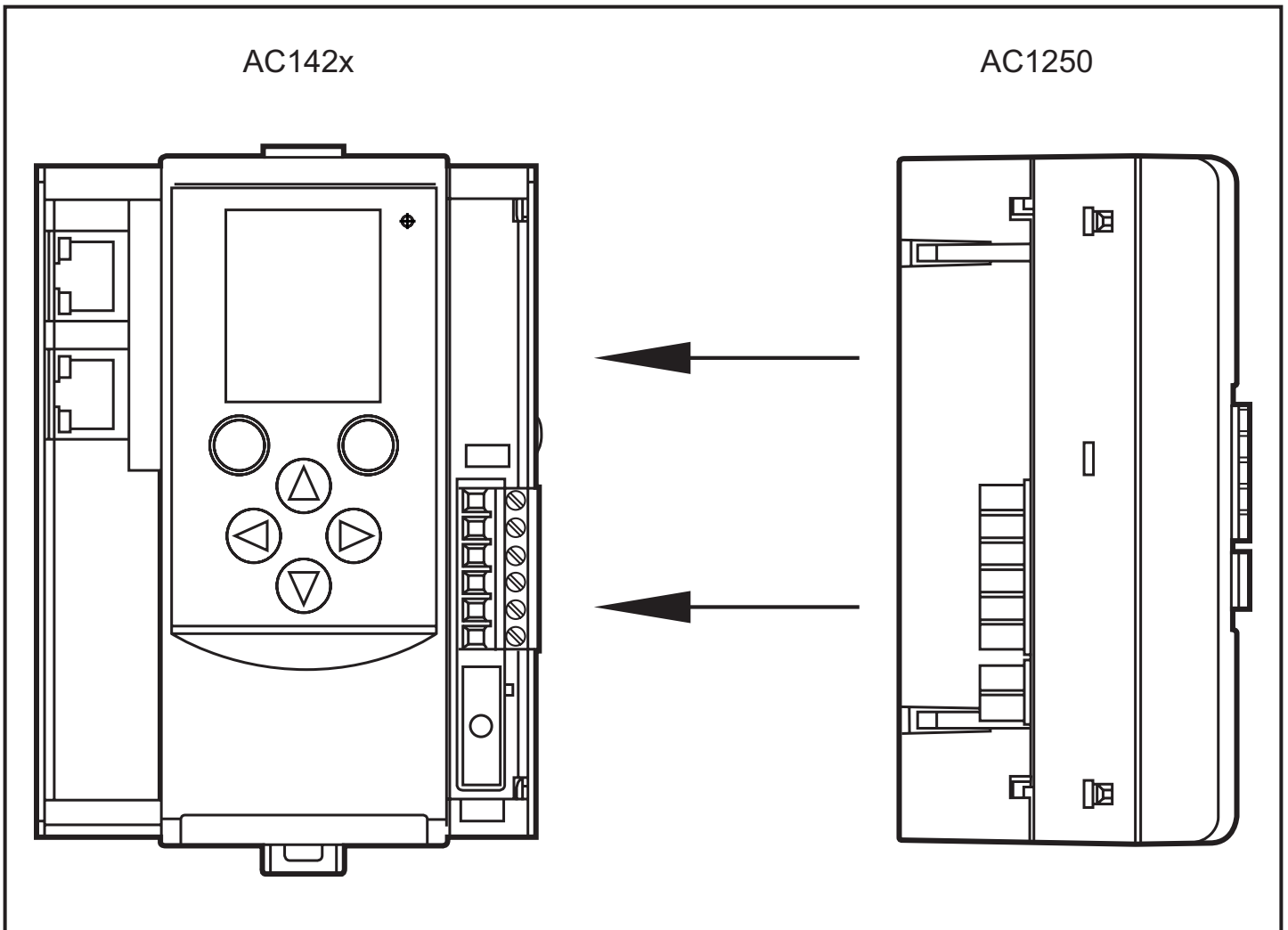


The AUX jumper is plugged onto the connector X2 (factory setting), the device is supplied via AS-i line 1 (X1.3 and X1.4).

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5.1.3 Device and AS-i supply via one common power supply

- ▶ Plug the data decoupling module AC1250 (not supplied) into the terminals X1 and X2 to supply the device and the connected AS-i lines.



- ▶ Ensure a low-resistance connection of the data decoupling (terminal "FE") to the ground of the installation.

The gateway and both AS-i lines are supplied via one power supply (PELV 21.5 V...31.6 V AS-i or AUX). The AS-i lines have a thermal short-circuit protection (4A).



Several gateways can be supplied by one powerful power supply.

5.2 Wiring

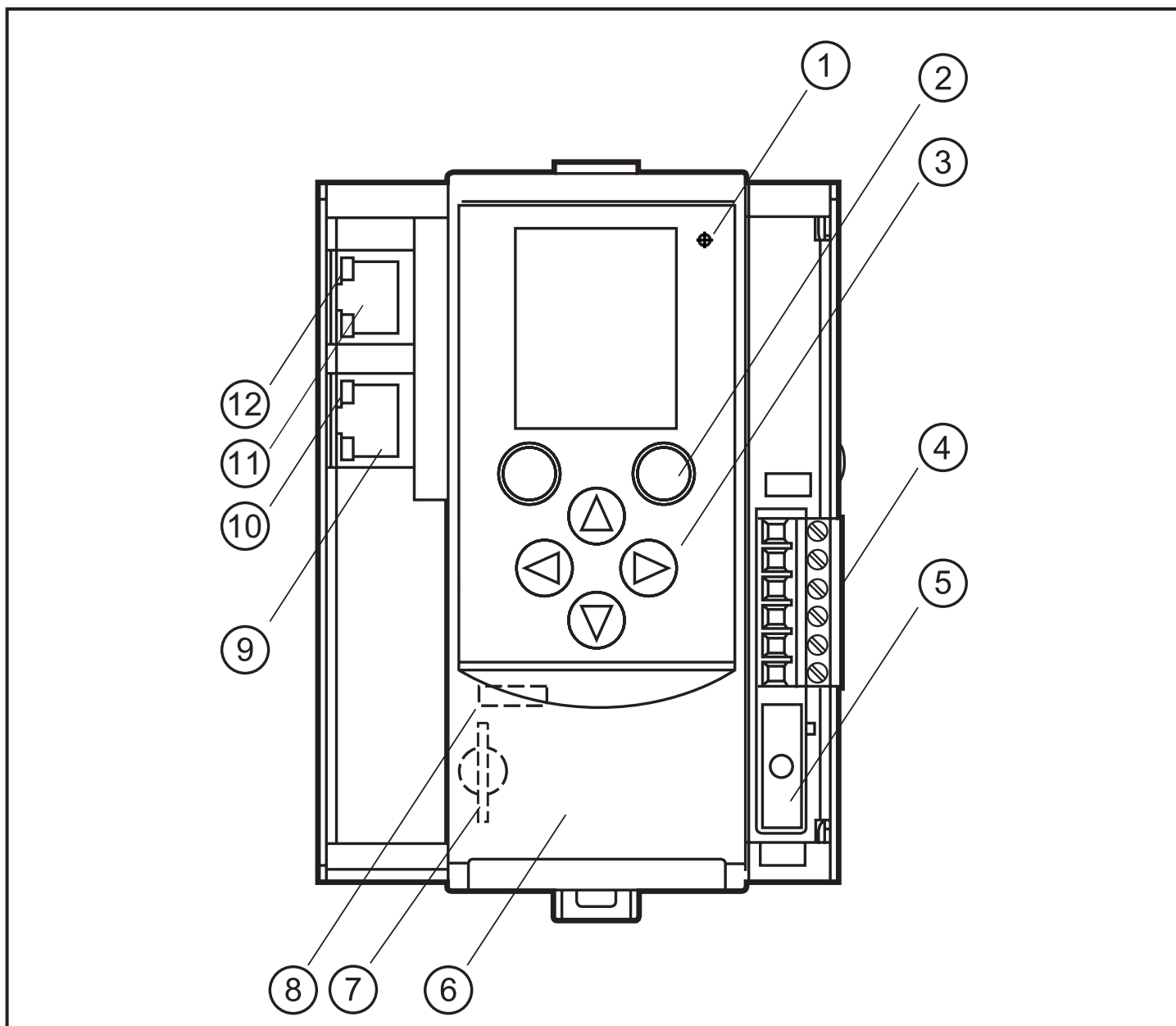
Terminal X1 Combicon	Pin	Description
AS-i 2 +	1	AS-i + for AS-i line 2
AS-i 2 -	2	AS-i - for AS-i line 2
AS-i 1 +	3	AS-i + for AS-i line 1
AS-i 1 -	4	AS-i - for AS-i line 1
FE	5	Functional earth

Terminal X2 Combicon or AUX jumper	Pin	Description
24 V	1	+24 V device supply
0 V	2	0 V device supply

Terminal X3 RJ 45	Configuration interface
Terminal X6, RJ45	Ethernet/IP interface 2
Terminal X7 RJ45	Ethernet/IP interface 1

6 Operating and display elements

6.1 Operating elements



- 1: Device LEDs H1 green / yellow / red
- 2: Softkeys
- 3: Navigation buttons
- 4: Combicon connector X1
- 5: Combicon connector X2 or AUX jumper
- 6: Front flap
- 7: Slot for SD card
- 8: Configuration interface X3 (RJ45)
- 9: Ethernet/IP interface 1 X7 (RJ45)
- 10: Device LED H3 / H5
- 11: Ethernet/IP interface 2 X6 (RJ45)
- 12: Device LED H2 / H4

6.2 LED indicators

6.2.1 Device LED H1

A diagnostic LED on the AS-i Ethernet/IP gateway informs you of the state of the device and the connected systems.

LED status	Description
The green LED is lit:	<ul style="list-style-type: none">> Device has been started.> There is no warning message.> There is no error message.
Yellow LED flashes slowly (0.5 Hz):	<ul style="list-style-type: none">> There is a warning message.> There is no error message.
Red LED flashes quickly (2 Hz):	<ul style="list-style-type: none">> There is an error message.

6.2.2 Device LEDs H2 and H4

LED status	Description
Yellow LED flashes:	Receipt of data

6.2.3 Device LEDs H3 and H5

LED status	Description
The green LED is lit:	Physical connection ok

7 Operation

7.1 Settings

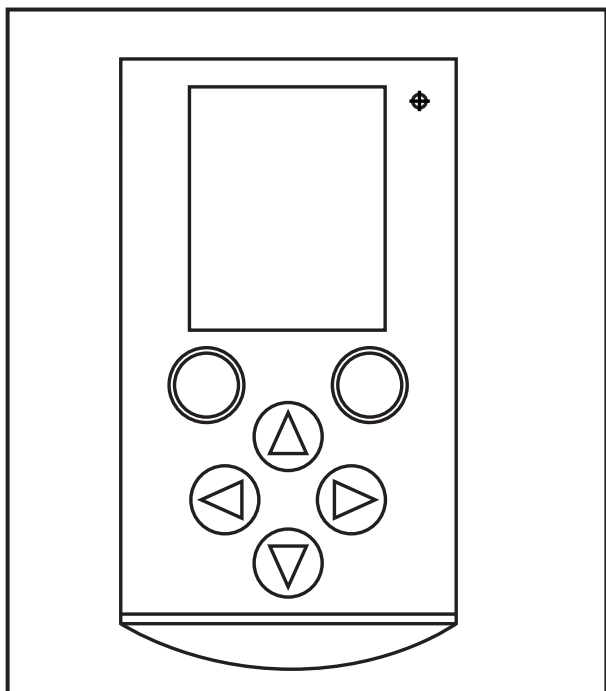


During operation the display is switched off after 10 minutes without operation.

- ▶ Activate the display by pressing any desired button.

7.1.1 Language selection

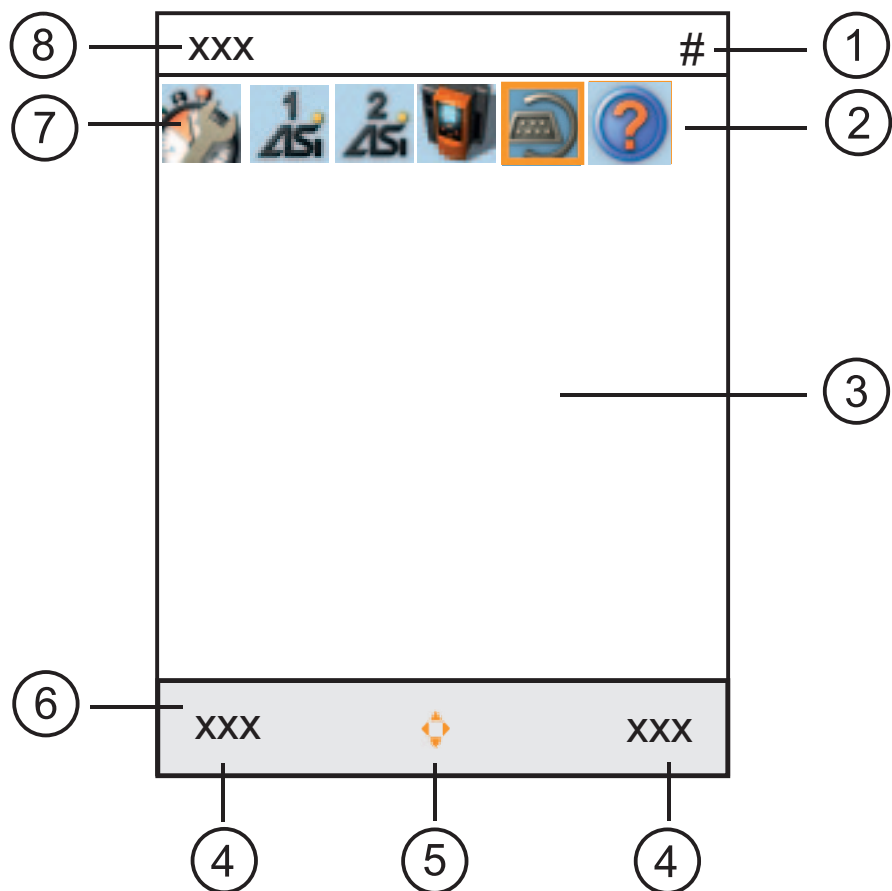
- ▶ Change the user language of the device by pressing the ▶ button and the ▲ button or ▼ button simultaneously.



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7.2 Navigation

7.2.1 Navigation elements



- 1: User level
- 2: Focus

- 3: Operating area
- 4: Softkey labelling
- 5: Navigation compass
- 6: Navigation status bar
- 7: Main navigation bar
- 8: Info bar

7.2.2 Pictograms and main navigation



Quick setup (Summary of the menu points required for a basic configuration)

- Project all
 - Projection adaptation for AS-i master 1 and AS-i master 2 (only AC1422)
- Operating mode
 - Selection of the operating modes for
 - AS-i master 1,
 - AS-i master 2 (only AC1422),
 - System (gateway, manual)
- Fieldbus
 - Display / modify the parameters of the Ethernet/IP interface
 - IP address, subnet mask, gateway address
- Configuration interface
 - Display / modify the parameters of the Ethernet configuration interface
 - DHCP
 - IP address
 - Subnet mask
 - Gateway address
- Addressing 1
 - Slave overview AS-i line 1 (with the option to change AS-i addresses)
- Addressing 2
 - Slave overview AS-i line 2 (with the option to change AS-i addresses)



AS-i 1

- AS-i master settings
- AS-i diagnosis
- AS-i slaves



AS-i 2

- AS-i master settings
- AS-i diagnosis
- AS-i slaves



System

- Information
- Settings
- Diagnosis



Interfaces

- Settings and information of the configuration interface
- Settings and information of the Ethernet/IP interface



OSC (Online Support Center)

- Display of plain text messages with time stamp information

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Further details see programming manual → chapter 9.2

8 Diagnosis

Any warning or error message is indicated in the display of the device. The pictogram of the function unit concerned is superposed by a warning or error symbol. If for one function unit a warning and an error message exist at the same time, only the error symbol is displayed.



Warning message



Error message



All messages are displayed in plain text and in the Online Support Center (OSC).

9 Technical data

9.1 Data sheets



Data sheets can be found at:
www.ifm.com → Data sheet search → AC1421/AC1422

9.2 Programming manual



The programming manual can be found at:
www.ifm.com → Data sheet search → AC1421/AC1422 → Operating instructions

10 Maintenance, repair and disposal

- ▶ Replace the buffer battery of the real-time clock as required, type CR2032.
- ▶ Dispose of the device in accordance with the national environmental regulations.

11 Approvals/standards



The EC declaration of conformity and approvals can be found at:
www.ifm.com → Data sheet search → AC1421/AC1422 → Approvals

12 Scale drawing

