ifm electronic

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Contents

UK

1 Preliminary note

1.1 Notes on this document

This document applies to devices of the type „AS-i Profinet gateway" (art. no.: AC1401 /AC1402).
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 see 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.

ⅈ   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.

3 Functions and features

The AS-i Profinet gateway includes one (AC1401) or two (AC1402) AS-i masters, one WEB server and a Profinet interface with 2-port switch.

- It controls the exchange of data to the sensor / actuator level.
- It communicates with the superior control level via Profinet.
- 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

- Profinet RT Device Class B
- 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 Profinet gateway onto a 35 mm DIN 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 device 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 Profinet 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

> ℹ 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 (AC1401: one AS-i master, AC1402: 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 the AS-i power supply

▶ To supply the AS-i lines connect the terminals X1 to one or two AS-i power supplies (AC1401: one AS-i master, AC1402: 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.
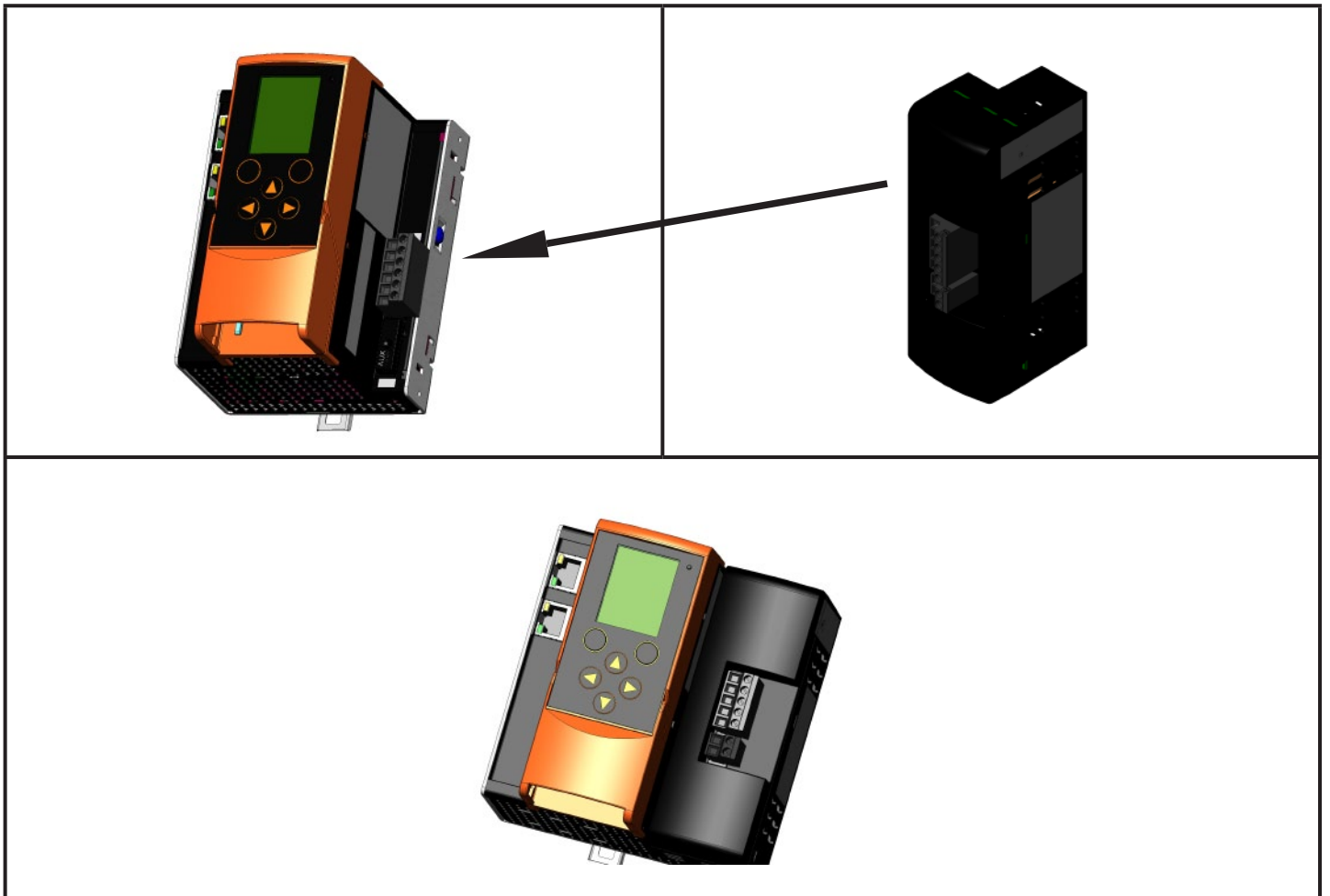
> ⓘ The AUX jumper is plugged onto the connector X2 (factory setting), the device is supplied via AS-i line 1 (x1.3 and S1.4).

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 5.08	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 5.08 or AUX jumper	Pin	Description
24 V	1	+24 V device supply
0 V	2	+0 V device supply

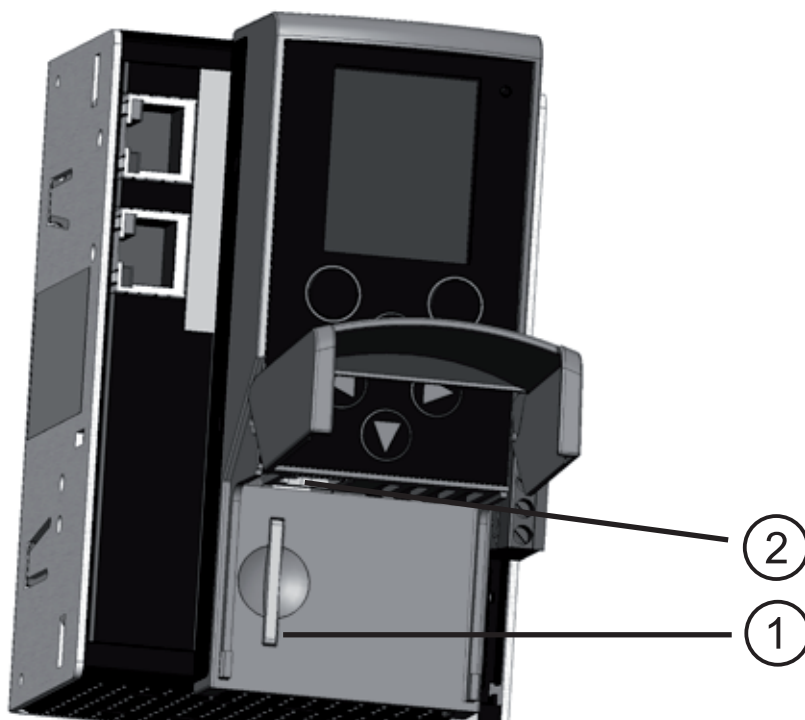| Terminal X3 RJ 45	Configuration interface
Terminal X6 RJ 45	Profinet interface 2
Terminal X7 RJ 45	Profinet interface 1

6 Operating and display elements

6.1 Operating elements
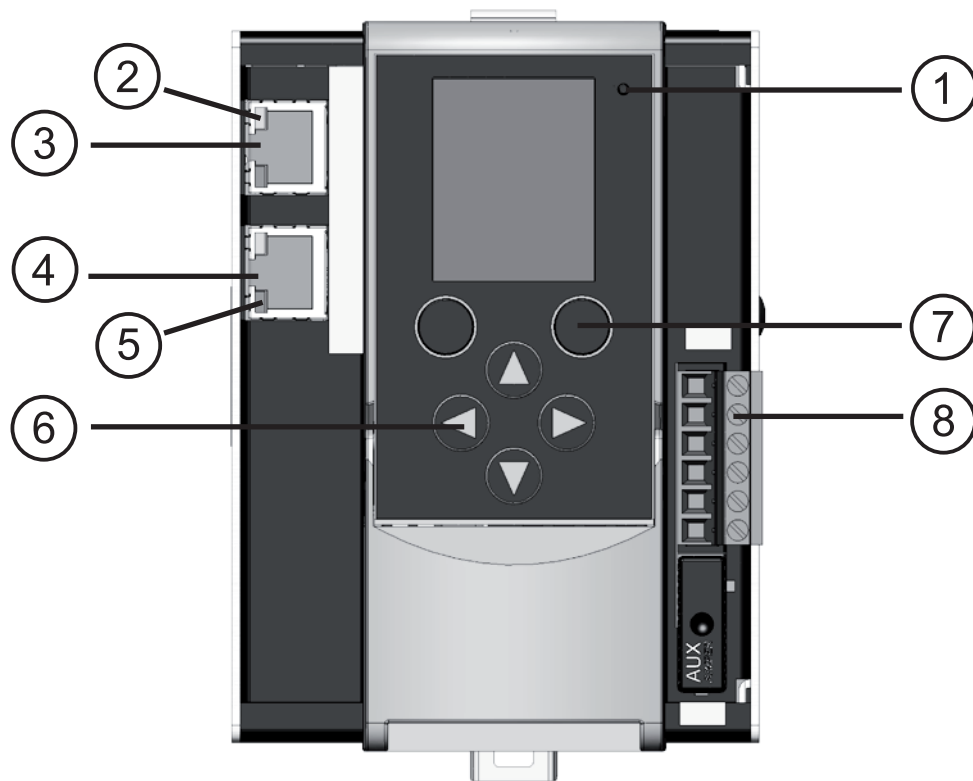
1: LEDs H1
2: LEDs H2 / H4
3: Profinet interface 2 (RJ 45)
4: Profinet interface 1 (RJ 45)
5: LEDs H3 / H5
6: Navigation buttons
7: Softkeys
8: Combicon connector

1: Slot for SD cards
2: Configuration interface (RJ45)

6.2 LED displays

6.2.1 Device LED H1

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

LED status	Description
The green LED is lit:	> Device has been started
	> There is no warning message
	> There is no error message
Yellow LED flashes slowly (0.5 Hz):	> There is a warning message
	> There is no error message
Red LED flashes quickly (2 Hz):	> There is an error message

6.2.2 Ethernet LEDs H2 and H4

LED status	Description
Yellow LED flashes:	Receipt of data

6.2.3 Connection LEDs H3 and H5

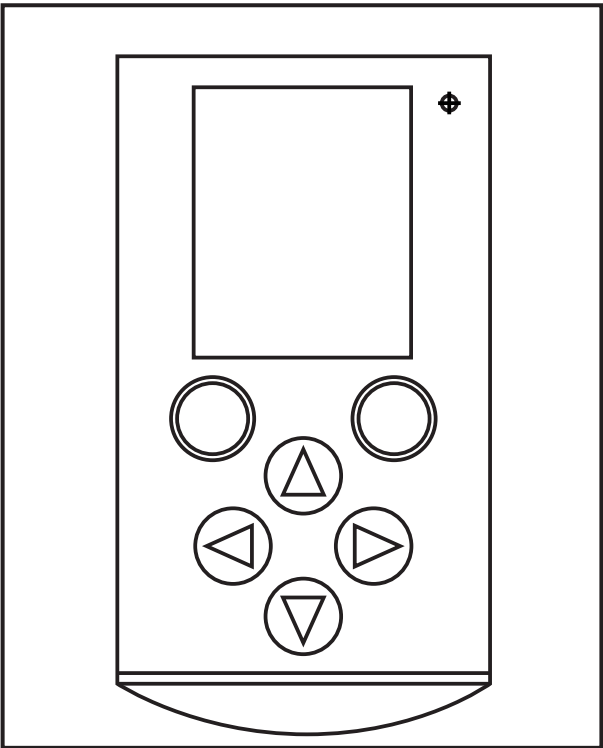| LED status	Description
The green LED is lit:	Physical connection ok

7 Operation

7.1 Settings

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

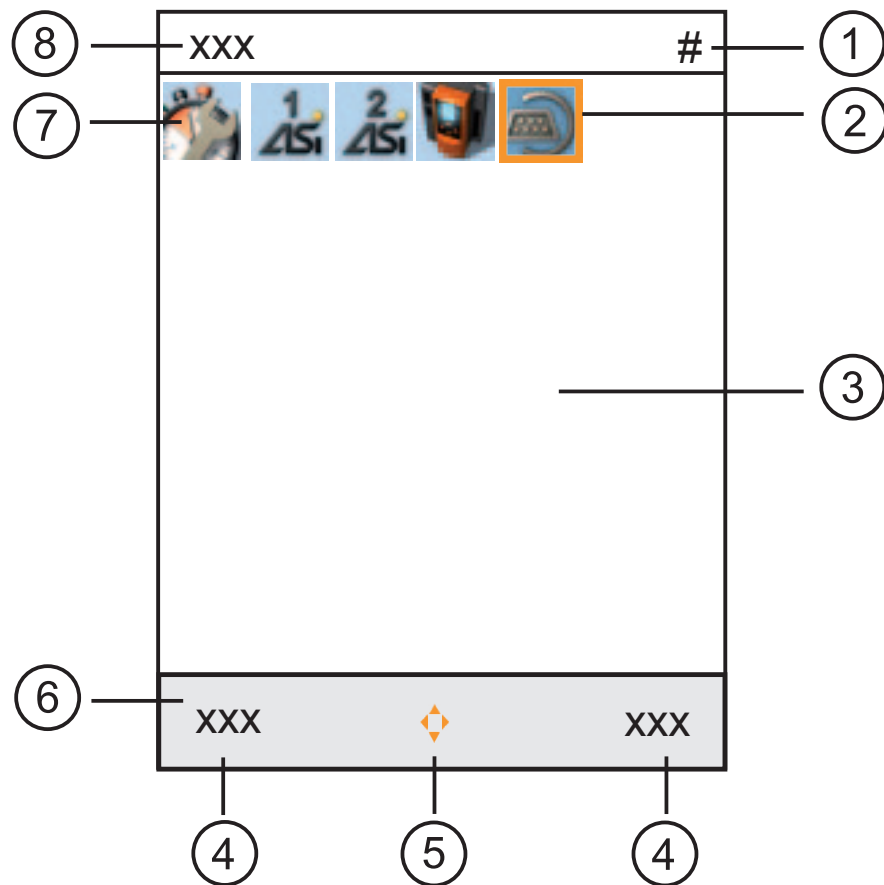▶ Activate the display by pressing any desired button.

7.1.1 Language selection

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

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

Quicksetup (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 AC1402)
- Operating mode
  Selection of the operating modes for
  - AS-i master 1,
  - AS-i master 2 (only AC1402),
  - system (gateway, manual)
- fieldbus
  - display / modify the parameters of the Profinet 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
- Diagnostics

Interfaces
- Settings and information of the configuration interface
- Settings and information of the Profinet interface

Further details see programming manual → chapter 9.2

8 Diagnostics

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

9 Technical data

9.1 Data sheets

Data sheets can be found at:
www.ifm.com → Data sheet search → AC1401/ AC1402

9.2 Programming manual

The programming manual can be found at:
www.ifm.com → Data sheet search → AC1401/ AC1402
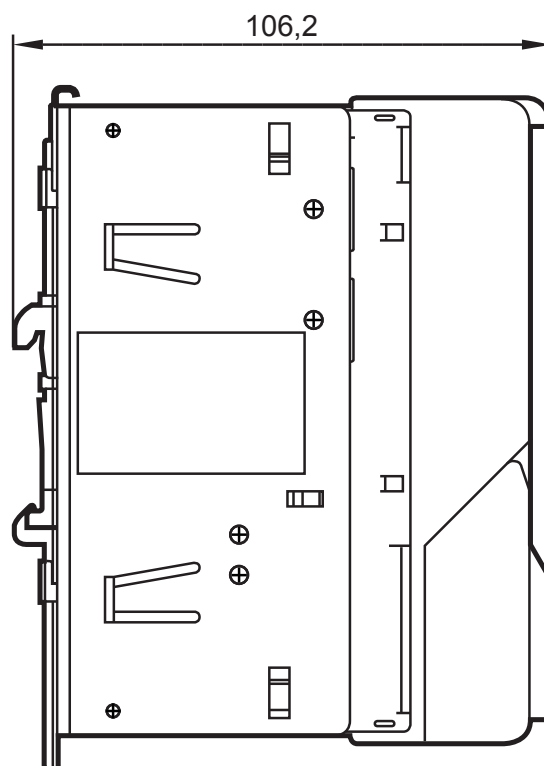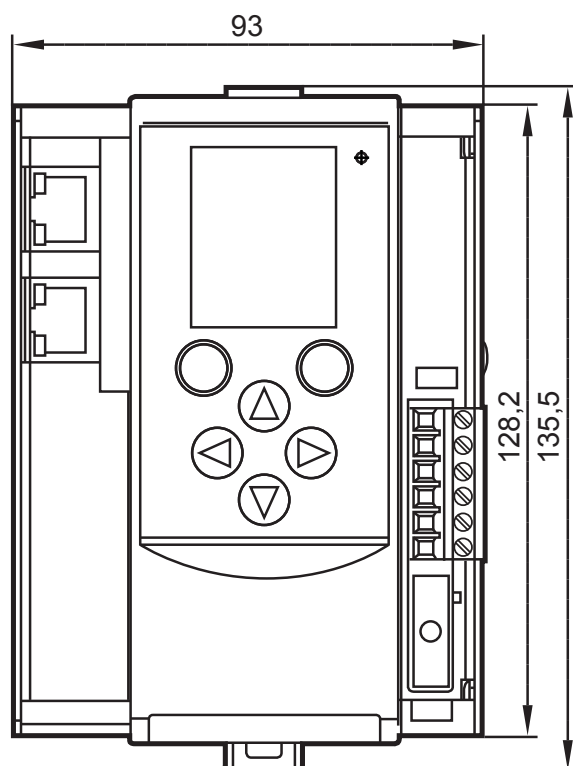→ Operating instructions

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 → AC1401/ AC1402 → Approvals

12 Scale drawing