



Operating instructions

edgeController

AE1300

English

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1 Preliminary note

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You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at → www.ifm.com

1.1 Legal and copyright information

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1.2 Symbols used

58277



Important note
Non-compliance can result in malfunction or interference



Information
Supplementary note



Request for action



Reaction, result



"see"

abc

Cross-reference

123

Decimal number

0x123

Hexadecimal number

0b010

Binary number

[...]

Designation of pushbuttons, buttons or indications

1.3 Warnings used

58278



WARNING

Warning of serious personal injury.
Death or serious irreversible injuries may result.



CAUTION

Warning of personal injury.
Slight reversible injuries may result.



NOTICE!

Warning of damage to property

1.4 Change history

61266

Version	Topic	Date
00	New creation of the document	05 / 2021
01	Correction: chapter „Connection technology“ Correction: chapter „Operating voltage and fuses“	10 / 2021
02	Correction: chapter „General installation instructions“	12 / 2022

2 Safety instructions

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- The unit described is a subcomponent for integration into a system. The system architect is responsible for the safety of the system. The system creator undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ **Functions and features** (→ p. 8)).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- In case of malfunctions of the unit, please contact the manufacturer. Tampering with the unit is not allowed.
- Installation, electrical connection, set-up, programming, configuration, operation and maintenance of the product must be carried out by personnel qualified and authorised for the respective activity.
- Protect units, connectors and cables against damage.
- Replace damaged units, otherwise the technical data and safety will be impaired.

2.1 Electromagnetic compatibility

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This is a class A product. It can cause radio interference in domestic areas. In this case, the operator is requested to take appropriate measures.

2.2 Cyber security

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The edgeController offers the following safety functions:

Design:

- Hardened Yocto-Linux distribution

Integrity:

- Convenient update of the complete system (recovery system)
- Backup & restoring the system configuration

Authentication:

- User administration via CODESYS
- Individual rights management for both the programming system and the runtime system via CODESYS
- Authentication with external cloud

Confidentiality:

- Browser-based access to web visualisation via TLS-secured connection
- Cloud communication only via TLS-secured connection

- Identification of data sources in the cloud according to a readable name scheme

Restricted data flow:

- Separation of IT and OT networks using separate network connections
- Communication of the software components via standard protocols (Messaging/REST)

3 Functions and features

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61270

The device serves as a gateway between the Operational Technology (OT) and Information Technology (IT) levels.

The device is designed for use outside of a control cabinet.

It is suited for use at an operating altitude of 3000 m above sea level even under severe conditions, such as an extended temperature range and mechanical stress, see (→ Data sheet) and indicated standards.

Permitted use:

- in an industrial environment as a permanently installed unit with supply from SELV/PELV according to the technical data
- even in wet environments
- also outdoors, if necessary with additional UV protection and protection against direct sunlight

Communication with other system components on the OT level and the IT level takes place via Ethernet and USB interfaces.

3.1 Application example

61271

Networking



4 Mounting

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4.1 Mounting accessories

61272

The unit is supplied without mounting accessories.

Depending on the intended installation location and type of mounting, the following mounting accessories are available:

- EC0733, installation kit for panel mounting
- EC1410...EC1414, RAM® mount system for surface mounting

You can find more information about the available accessories at: → www.ifm.com

4.2 General installation instructions

61273



The following applies to all types of mounting:

The responsibility for the compliance with the requirements concerning mounting of the device in the application lies with the system architect.

NOTICE!

Impact stress on display

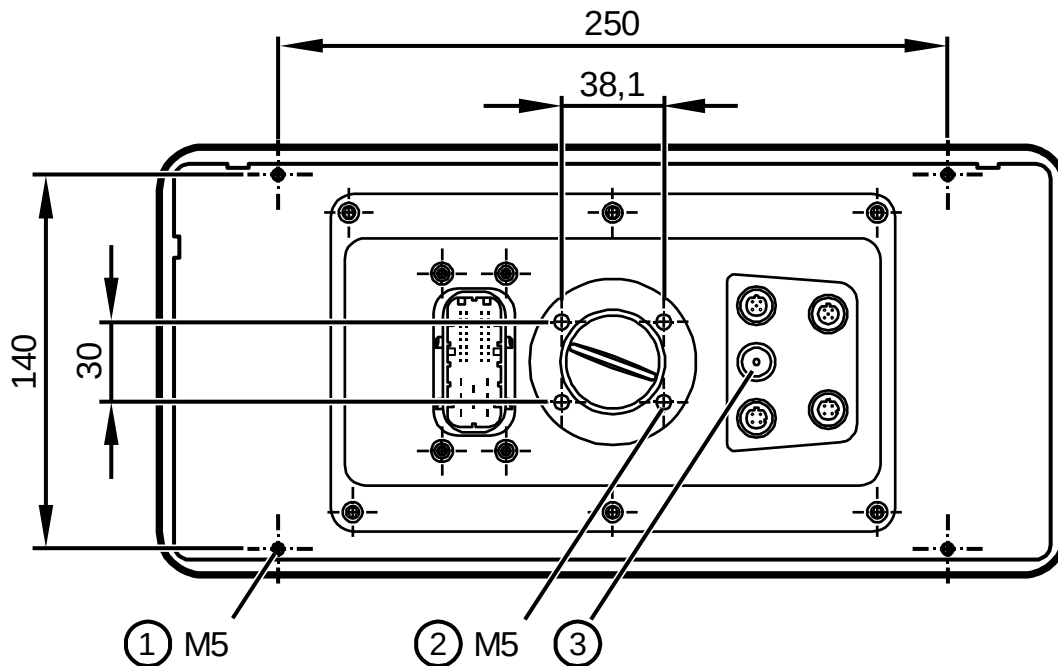
- > Damage possible
- > Protection rating and electrical protection might be impaired
- > Risk of injury possible
- ▶ If necessary, the system creator must take external measures to protect the device depending on the requirements of the corresponding application.
- ▶ Replace damaged units, otherwise the technical data and safety will be impaired.



On the back, the pressure compensation element, the service cover and the connector areas are to be protected by taking external measures, if necessary.

4.2.1 Location for mounting accessories

The back of the unit has been prepared for fixing the mounting accessories.



- 1: 4 x M5 threaded hole for the fixing profiles of the installation kit
2: 4 x M5 threaded hole for RAM ® mount system
3: pressure compensation element

NOTICE!

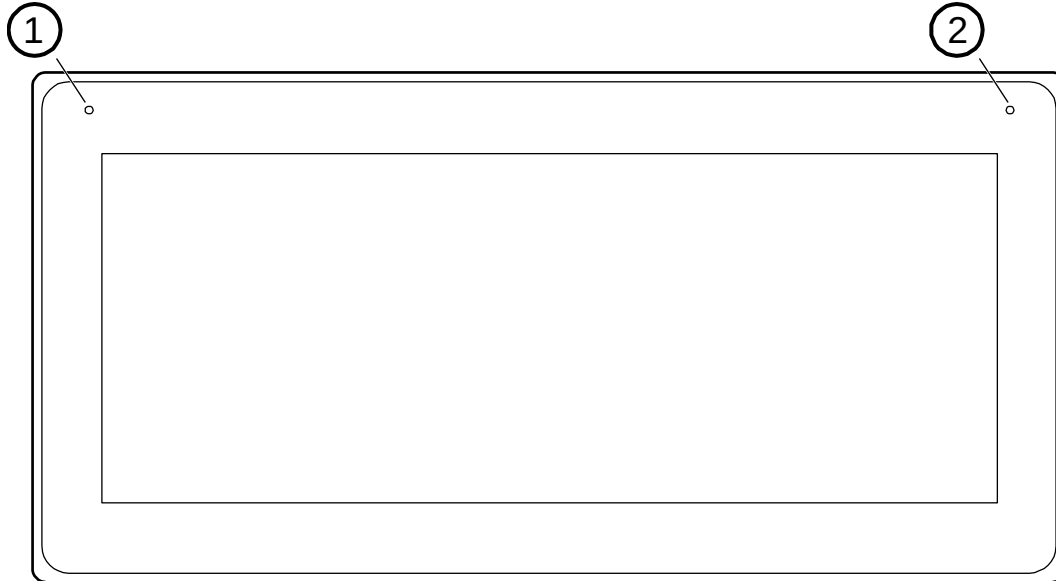
The device is equipped with a pressure compensation element. Sealing or closing the corresponding ventilation ducts with elastic materials may damage the device.

- Do not use any sealing materials in the area around the pressure compensation elements.

4.2.2 Light sensor and status LED

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The device is equipped with a light sensor. This sensor is used for automatic brightness adaptation of the display and the operating elements to the ambient brightness.



1: Light sensor

2: Status LED

► Do not cover up the light sensor by construction measures.

The status LED shows the operating states of the device.

4.2.3 Device temperature

61276

The internal temperature sensor and the light sensor of the device can be read out with the software.

The device primarily heats up due to the following factors:

- Solar radiation
- Ambient temperature
- Installation conditions
- External heating
- Current consumption (display illumination etc.)

The device heats up considerably under demanding operating conditions. The device temperature must not exceed the maximum permissible value of 80°C.

The values provided by the internal temperature sensor can e.g. be used for the following actions:

- ▶ Comply with the maximum permissible ambient temperature
- ▶ Reducing the display brightness to decrease the self-heating
- ▶ Protect the unit from external heat (e.g. from other units).
- ▶ Warning the operator about heating and an upcoming switch-off of the display
- ▶ Switch-off of the display

NOTICE!

Internal temperature exceeds the permissible value (→ Data sheet)

- > Malfunction or damage to the device possible
 - ▶ Reduce device temperature.
 - ▶ Take appropriate measures to prevent further heating up of the device.
-

4.3 Panel mounting / control cabinet installation

61277

4.3.1 Safety instructions for panel mounting / control cabinet installation

61278



The specifications for the operating temperature apply in front of and behind the installation surface.



The dimensions for the control panel cut-out are a basic prerequisite for the requirements concerning electrical protection, fire protection and protection rating of the device / system. However, this alone does not ensure compliance with the requirements. See the following safety instructions. They must be complied with for the risk assessment by the system creator (→ **Safety instructions** (→ p. [6](#))).



WARNING

The housing does not meet the requirements concerning protective earth. Only functional grounding is possible.

- > Risk of electrical shock in case of hazardous active voltages in the control cabinet behind the installation surface.
- ▶ The system creator must separate hazardous active voltages / parts behind the installation surface from the housing of the device and its circuits by means of double / reinforced insulation (air creepage distances, solid insulation).
- ▶ Take single-fault safety into account (e.g. individual core detached from the terminal ▶ use cable ties).
- ▶ The responsibility for the electrical protection of the system lies with the system creator.

When installing the device in a control cabinet, the following requirements concerning fire protection apply:

If installed according to the information given in 4.3, the device itself complies with the requirements of the IEC (or DIN EN) 61010-2-201 for a closed device to prevent fire from spreading.



WARNING

The damping strip (installation kit) has no flammability rating and thus presents no fire obstacle.

- > Fire protection for the system might not be given or might be restricted.
- ▶ The system creator has to ensure the fire protection depending on the requirements of his/her application, if necessary by means of external precautions.
- ▶ The responsibility for the fire protection of the system lies with the system creator.



Using the installation kit does not ensure the protection rating of the system with the installed device. The protection rating depends on the properties of the control panel / control cabinet (e.g. thickness, material, surface characteristics, torsional stiffness).



CAUTION

The use of the installation kit does not ensure the requirements concerning the protection rating of the system with the installed device.

- > Protection rating and electrical protection might be impaired
- ▶ The system creator has to ensure the protection rating depending on the requirements of his application, if necessary by means of external precautions.
- ▶ The responsibility for the protection of the system with the installed device lies with the system creator.

4.3.2 Installation with installation kit

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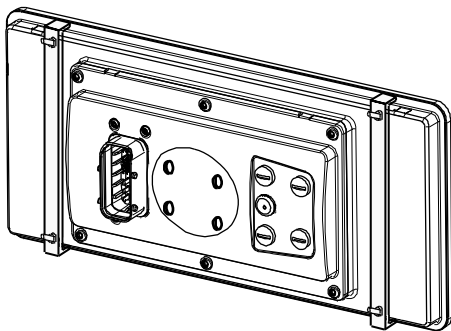
The installation kit enables horizontal or overhead mounting of the device in a panel cut-out.

This type of mounting is suited for materials with a thickness from 1 to 10 mm.

The fixing profiles, M5 hexagon nuts, washers, M5 set screws and damping strips are supplied with the installation kit.



Fixing profiles of the installation kit



Device with mounted installation kit

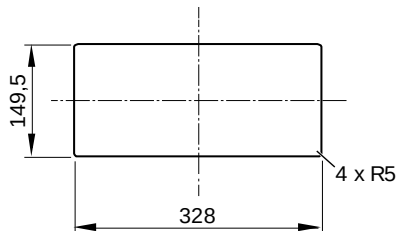


Only insert the fixing profiles from the installation kit in combination with the damping strips.

4.3.3 Panel cutout

61280

- Make a cut-out.



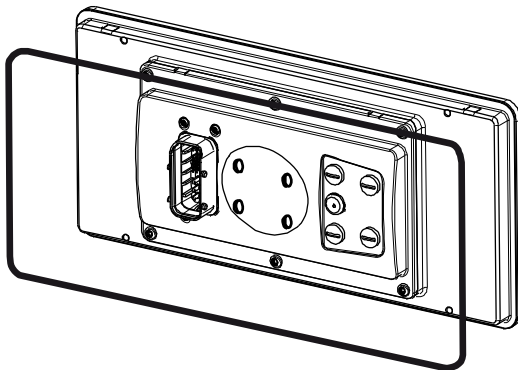
Panel cutout

Tolerances: ± 0.5 mm

4.3.4 Mounting steps

61281

- Screw the set screws into the M5 thread on the back of the device. (→ **Location for mounting accessories** (→ p. [10](#)))
- Attach damping strips to the device.



Damping strips

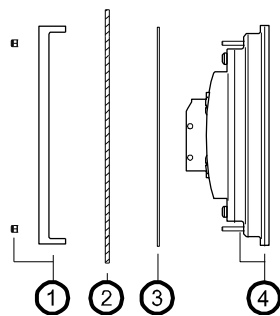
- Insert the device into the cut-out.
- Screw the fixing profiles to the back of the device. Tightening torque of the hexagon nuts: 5 ± 0.5 Nm

NOTICE!

Contact corrosion between the mounting screws and the housing.

> Damage to the device

- Do not use copper or nickel-plated materials for the bolting elements.
- Use zinc-plated screws.
- In very corrosive environments such as extremely salty air, use screws with surface finishing on a zinc/nickel basis with thick-film passivation and sealing.



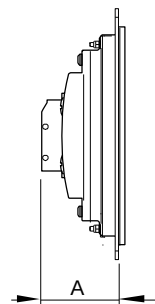
Mounting principle

1: M5 hexagon nuts and fixing profiles

2: Panel cutout

3: Damping strips

4: Device with tightened set screws



Installation depth A = device depth (approx. 54 mm)

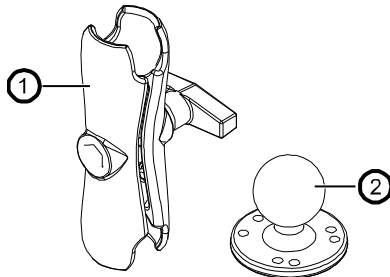
Installation depth with the attached connector: approx. 78 mm

The fixing profiles and set screws from the installation kit do not protrude from the device.

4.4 Surface mounting with RAM® mount system

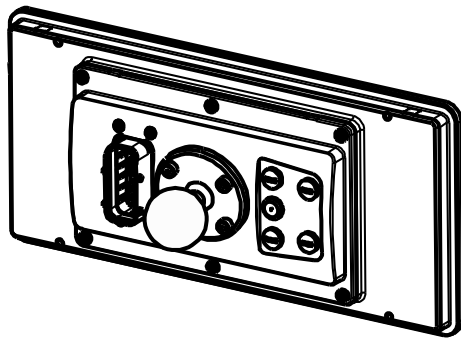
61282

Using the RAM® mount components, available as accessories, the unit can be used as a firmly mounted desktop unit. Two ball heads allow variable orientation of the unit.



RAM® mount components

- 1: Mounting arm with fastening screw
- 2: Mounting plate with ball head



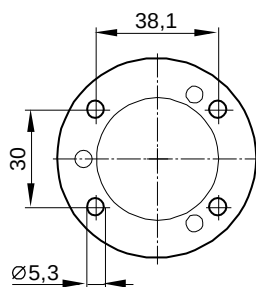
Device with mounted RAM® mount system

You will find more information about the available RAM® mount components at: → www.ifm.com

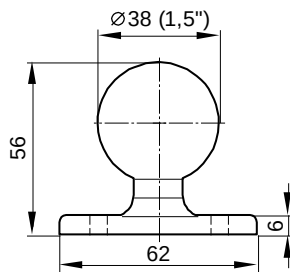
4.4.1 Mounting steps

61283

- ▶ Screw the mounting plate to the back of the device.
 - Usable M5 thread depth: ≤ 8 mm
 - tightening torque M5: 5 ± 0.5 Nm
- ▶ Screw second mounting plate / ball of the selected RAM® Mount component on suitable surface according to RAM® Mount indications.



Mounting plate with ball head



Hole dimensions

Tightening torque: 5 ± 0.5 Nm

- ▶ Slightly loosen the fastening screw of the mounting arm.
- ▶ Place the mounting arm onto the ball heads and tighten the fastening screw.

4.5 Other installation types

61284

Permissible installation types:

- **Panel mounting / control cabinet installation** (→ p. [13](#))
- **Surface mounting with RAM® mount system** (→ p. [17](#))



All other installation types are in the sole responsibility of the system creator.

5 Electrical connection

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61285



- ▶ Disconnect the plant from the mains supply before installation. This also applies to the M12 connectors.
- ▶ Observe the national and international regulations for the installation of electrical equipment.

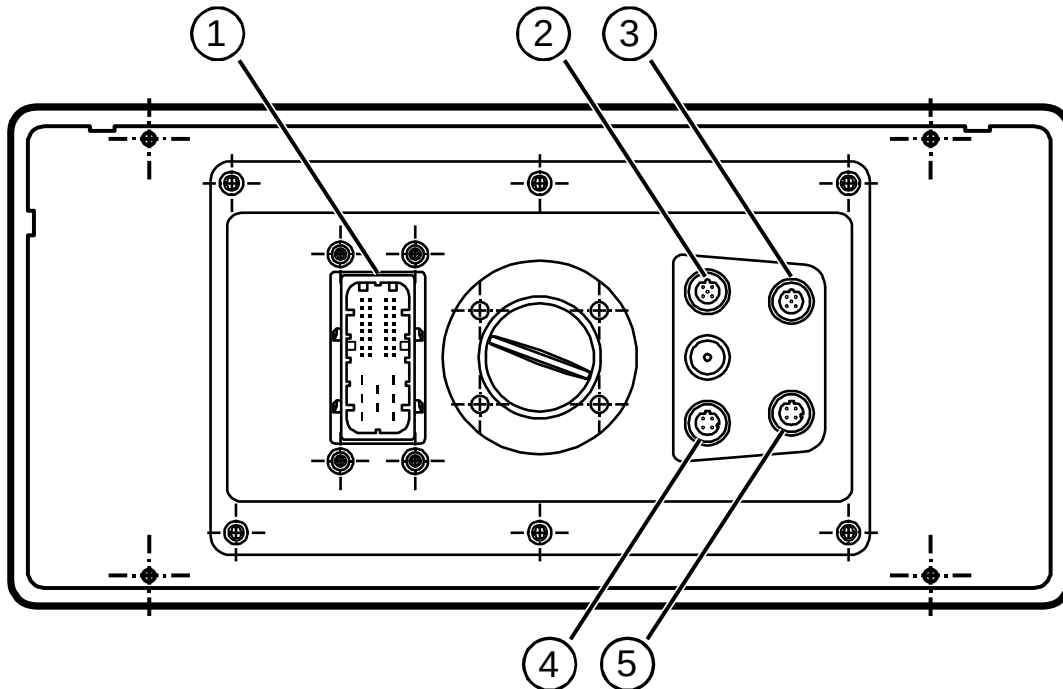
Accessible surfaces of the device are insulated from the circuits with basic insulation to IEC 61010-1 (secondary circuit with max. 32 V DC, supplied from the mains circuit up to 300 V of overvoltage category II).

GND of the supply is connected via EMC suppression capacitors on the shield connection (metal housing) of the device.

The external wiring has to be carried out in a way that ensures the required separation from other circuits.

5.1 General wiring information

Wiring of the connectors (→ Data sheet).



Connectors (back of the device)

- 1: Supply
- 2: USB0
- 3: USB1
- 4: ETH0 (interface for information technology)
- 5: ETH1 (interface for operational technology)

NOTICE!

Wrong connection may cause damage to the unit.

- Observe the safety instructions.

NOTICE!

The short-circuit / reverse polarity protection of the unit applies to the operating voltage connections. A short circuit between operating voltage VBB+ and USB might cause damage to the device.

- Lay supply and signal cables away from the device using the shortest possible route.
- Provide all outgoing cables with a strain relief 200 mm behind the cable entry.



Maximum cable lengths:

- USB ≤ 1.8 m
- Ethernet ≤ 25 m

5.2 Wiring

61287

Wiring (→ Data sheet)



The terminals may only be supplied with the signals specified in the technical data or on the device label



Seal the individual cores of unconnected connector pins.

5.3 Connection accessories

61288

The unit is delivered without connection accessories.

The following connection accessories are available:

- E70450, connection cable with connector / M12
- E70451, connection cable with connector / 2 individual wires
- EC2099, USB connection cable USB type A socket / M12

You can find more information about the available accessories at: → www.ifm.com

5.4 Connection technology

61289



Observe all notes on connection technology.

- ▶ Note the device label.
- ▶ Use M12 connectors with gold-plated contacts.
- ▶ The M12 connection parts in the device comply with the ingress resistance requirements of the standard EN 61076-2-101. To adhere to the protection rating, only cables certified to this standard must be used.
- ▶ During installation, place the M12 connectors vertically so that the coupling nut will not damage the thread.
- ▶ Connect the M12 connectors to the sockets. Tightening torque: 1.3 ± 0.1 Nm
- ▶ Unused sockets are equipped with protective caps (included). Tightening torque: 1.3 ± 0.1 Nm
- ▶ Use 40-pole connectors with individually sealed cores to ensure protection rating IP 65.



- ▶ Ensure ingress resistance of self-assembled cables.
- ▶ When using self-assembled cables with 40-pole device plug, only contact pins 119, 121, 114 (VBB+) and pin 120 (VBB-). All other pins must not be used.
- ▶ Always connect the pins 119, 121 and 114 of the VBB+ supply together (connection cables of the ifm accessories are correspondingly connected).
- ▶ Insulate unused cable ends.



Only connect the connector when the supply voltage is disconnected. "Hot plugging" is not permitted.

"Hot plugging" is permitted at the USB type A connector of the connected M12 adapter.

- Use a min. category 5 (Cat 5) cable for the Ethernet connection.

5.5 Operating voltage and fuses

61290



The basic principle of the reverse polarity protection is that the upstream fuses are quickly switched off in case of excessive current.

- To protect the unit, protect the operating voltage.

Designation	Plug	Operating voltage	Nominal value fuse	Required triggering characteristics
VBB	Pin 119	20...32 V	▪ 3 A (flat vehicle fuse) ▪ 2.5 A (5x20 fuse)	$T_{\text{fuse}} \leq 120 \text{ s at max. } 6.25 \text{ A}$
	Pin 121			
	Pin 114			

- Alternatively supply the unit via a limited energy circuit according to IEC 61010-1 or class 2 according to UL1310.

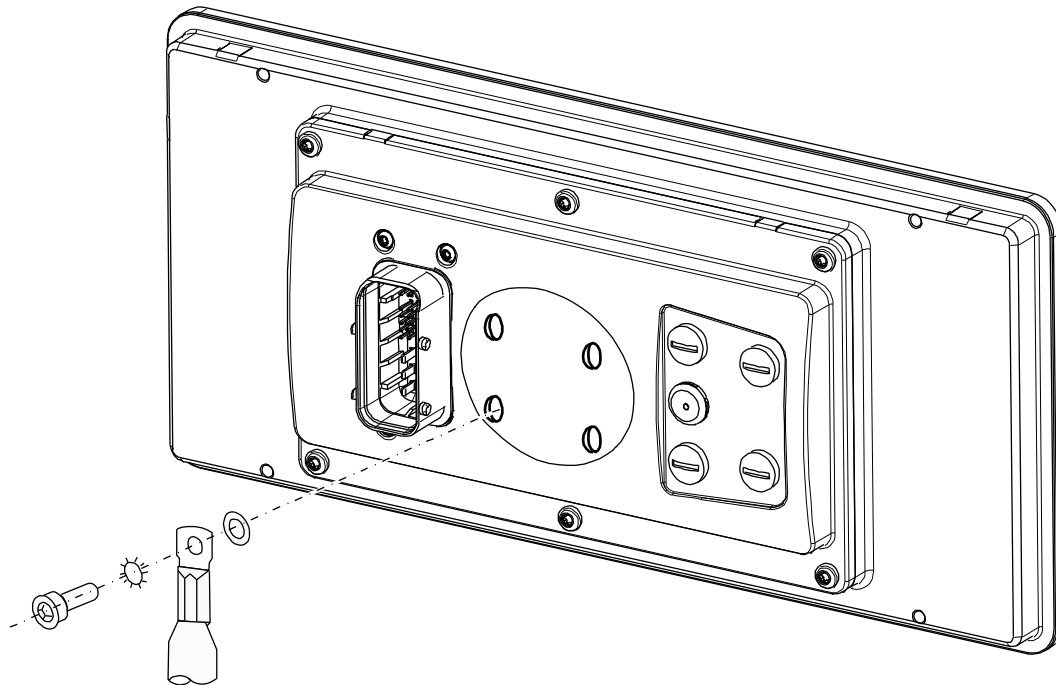
5.6 Shield connection

61291



To ensure the protection of the device against electrical interference and to ensure the safe function of the device, the housing has to be connected to GND of the supply using the shortest possible route.

- Establish the connection between the device and the ground of the installation using the intended screw for RAM® Mount installation. If possible, use the thread next to the 40-pole AMP connector.



Shield connection



To avoid contact corrosion on the shield connection of the device, do not use any copper or nickel-plated materials for the bolting elements!

- In very corrosive environments such as extremely salty air, use screws with surface finishing on a zinc/nickel basis with thick-film passivation and sealing.

5.7 Ethernet interfaces

61292

Communication interfaces are insulated from each other, from other circuits and from touchable device surfaces by means of basic insulation according to IEC 62368-1 (secondary circuit with max. operating voltage (→ Data sheet), supplied from the mains circuit up to 300 V of overvoltage category II).

They are defined as ES1 circuits.

- ▶ Use a screened CAT5 cable.
 - STP (shielded twisted pair), according to EIA/TIA-568.
 - Max. length 25 m



The max. cable length depends, for example, on the bus topology, the selected operating mode (10/100 Mbits/s) or the quality of the connectors.

- ▶ Use screened connector housings and connect the screen of the Ethernet cable to the connector housing.
- ▶ Do not lay the Ethernet cable in parallel to live cables.



Interference due to external influences

Faulty or insufficient radio interference suppressors in other electrical equipment, such as inverters as well as voltage fluctuations when switching on/off electric loads may lead to problems with the data transmission.

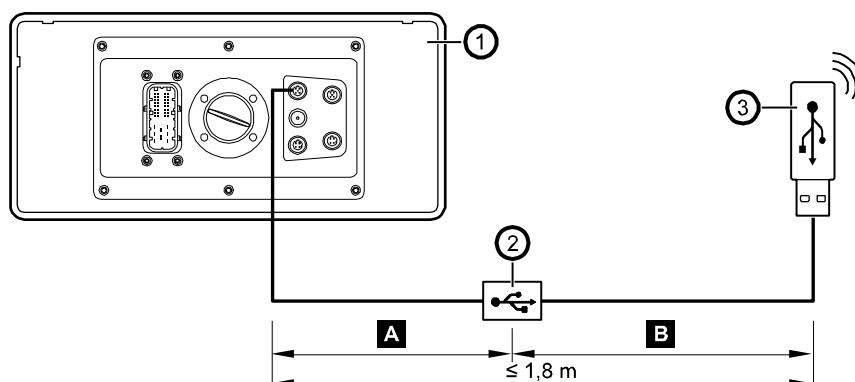
5.8 USB interfaces

61293

Wiring (→ Data sheet)

This USB interface is connected to a USB connector (art. no.: EC2099). It is used for the connection of USB 2.0 devices.

The supply of external USB devices via the USB interface is protected against overload. Max. continuous current: 500 mA



USB connection via M12 connector

1: AE1300

2: USB connector

3: USB device, e.g. LTE stick

- A Permanent connection: device – USB connector
- ▶ Use a prewired cable.
(M12 connector, B-coded on USB socket, type A, watertight, cable length 1.5 m, wires twisted and screened)
 - ▶ If self-assembling cables, please only use cables according to USB 2.0 specification.
Keep length "B" as short as possible and position the USB connector in the immediate vicinity of the device. The length "B" considerably influences the quality of the USB data transmission.
- B ▶ Use a connection cable with the designation "Full Speed/High Speed" (= USB connection cable with twisted and screened cores according to USB 2.0 specification).
- ▶ Do not use more than one USB cable for the connection.

5.8.1 Short-circuit protection

61294

NOTICE!

The USB interface (M12 connector) is not protected against short circuits with a live wire outside the following voltage ranges:

- +5 V DC -0.3...6.0 V DC (pin 1)
- –Data -0.3...3.6 V DC (pin 2)
- +Data -0.3...3.6 V DC (pin 3)
- ID -0.3...3.6 V DC (pin 4)

A short circuit will destroy the USB interface.

6 Set-up

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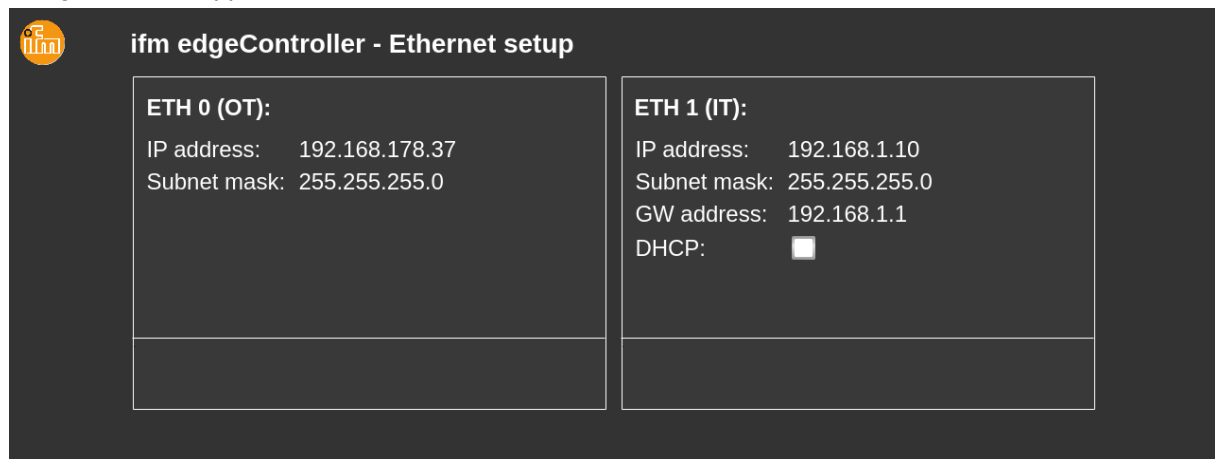
41644

6.1 Getting started

61295

- Switch on the operating voltage of the device.
- > After the unit is switched on, the start image appears for approx. 10 to 15 seconds. During this time, the booting process is running in the background.
- > After the booting process, the saved boot application opens automatically.

Upon delivery, a demo application is stored on the device. The demo application shows the current IP settings of the Ethernet interfaces. The user can change the IP settings of the Ethernet interfaces using the demo application.



ifm edgeController - Ethernet setup	
ETH 0 (OT): IP address: 192.168.178.37 Subnet mask: 255.255.255.0	ETH 1 (IT): IP address: 192.168.1.10 Subnet mask: 255.255.255.0 GW address: 192.168.1.1 DHCP: ☐

The user can replace the demo application with a user-specific application (→ Programming manual AE1300).

6.2 Required documentation

61296

To set up and program the unit, the following documents are required:

- Operating instructions AE1300
- Programming manual AE1300
- Data sheet

The documents can be downloaded from the internet: → www.ifm.com

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7.1 Recovery mode

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7.1.1 Starting the recovery mode

61300

The user can start the recovery mode via the set-up mode.

To start the recovery mode:

- ▶ Boot the unit in the set-up mode (→ **Starting the set-up mode** (→ p. [32](#))).
- ▶ Change to the recovery mode (→ **Starting the recovery mode** (→ p. [43](#))).
- > The edgeGateway boots in recovery mode.

The recovery mode allows access to the following functions:

Button	Description
[UPDATE FROM FILE]	→ Updating the runtime system (→ p. 28) → Restoring the data backup (→ p. 29)
[NETWORK SETUP]	→ Configuring the Ethernet interfaces (→ p. 30)
[RESTART]	→ Quitting the recovery mode (→ p. 31)

7.1.2 Updating the runtime system

61301

NOTICE

Interrupting the update process may result in a loss of the user data stored on the device.

- > Risk of data loss!
- ▶ Do not interrupt the update process.
- ▶ Do not interrupt the voltage supply during the update process.

- ▶ Select one of the following options:
 - **Updating the runtime system via USB interface** (→ p. [29](#))
 - **Updating the runtime system via web browser** (→ p. [29](#))

Updating the runtime system via USB interface

61302

Requirements:

- New runtime system has been downloaded (→ www.ifm.com).
- Runtime system file (*.swu) has been unpacked and copied to the USB memory.
- USB memory is connected to the unit.
- Recovery mode is started (→ **Starting the recovery mode** (→ p. [28](#))).
- ▶ Click on [INSTALL FROM FILE].
- > The file browser appears.
- ▶ Select the runtime system file (*.swu).
- ▶ Click on [OPEN] to start the update process.
- > Recovery mode updates runtime system of the unit.
- > The display shows status messages

If successful:

- > Display shows status message "Success!".
- ▶ Click on [RESTART] to restart the device.

Updating the runtime system via web browser

61303

Requirements:

- New runtime system has been downloaded (→ www.ifm.com).
- The runtime system file (*.swu) has been unpacked and stored in the file system of the computer.
- The computer is connected to the Ethernet interface ETH0 or ETH1 of the unit.
- The unit and the computer are participants of the same IP network segment (→ **Configuring the Ethernet interfaces** (→ p. [30](#))).
- Recovery mode has been started.
- ▶ On the computer: start web browser.
- ▶ Go to the following address: http://<ipaddress>:8080 (e.g. http://192.168.178.35:8080)
- > The website of the recovery mode appears.
- ▶ Drag and drop the runtime system file to the area.
- > The update process starts automatically.
- > Recovery mode updates runtime system of the unit.
- > The display shows status messages

If successful:

- > Display shows status message "Success!".
- ▶ Click on [RESTART] to restart the device.

7.1.3 Restoring the data backup

61304

The user can create a data backup in the set-up mode (→ **Creating a data backup** (→ p. [36](#))). The recovery of the data backup (*.swu) is done via the function of the runtime update.

Requirements:

- A valid runtime system is installed on the unit.
- Recovery mode has been started.
- ▶ Recovering the data backup (→ **Updating the runtime system** (→ p. [28](#))).

7.1.4 Configuring the Ethernet interfaces

61305

To update the runtime system via a network, the unit must be included in the corresponding Ethernet network.



Factory-set IP parameters of the Ethernet interfaces ETH0 and ETH1: → **Factory settings** (→ p. [44](#))

- ▶ Select one of the following options:
 - **Configuring the Ethernet interface manually** (→ p. [30](#))
 - **Configuring the Ethernet interface via DHCP** (→ p. [30](#))

Configuring the Ethernet interface manually

61306

Requirements:

- Recovery mode has been started.
- ▶ Click on [NETWORK SETUP].
- > The configuration screen appears.
- ▶ Select the required Ethernet interface (ETH0 or ETH1) in the overview table.
- > The fields show the currently valid IP settings of the Ethernet interface.
- ▶ Configure the IP parameters manually.
- ▶ Click on [APPLY] to enable the changed settings.
- > The Ethernet interface has valid IP parameters.
- ▶ Click on [CANCEL] to leave the configuration screen.

Configuring the Ethernet interface via DHCP

61307



To configure the Ethernet interfaces via DHCP, a DHCP server must be enabled in the network.

Requirements:

- Recovery mode has been started.
- The Ethernet interface of the unit is connected to the IT network.
- ▶ Click on [NETWORK SETUP].
- > The configuration screen appears.
- ▶ Select the required Ethernet interface (ETH0 or ETH1) in the overview table.
- > The fields show the current IP settings of the Ethernet interface.
- ▶ Enable [DHCP] to set IP parameters via DHCP.
- ▶ Click on [APPLY] to enable the changed settings.
- > The Ethernet interface receives IP parameters from the DHCP server.
- > The Ethernet interface has valid IP parameters.
- ▶ Click on [CANCEL] to leave the configuration screen.

7.1.5 Quitting the recovery mode

61308

Requirements:

- Recovery mode has been started.
- ▶ Click on [RESTART].
- > The unit reboots.

If an application is stored on the unit:

- > The application starts automatically.

If no application is stored on the unit:

- > The recovery app starts automatically.

7.2 Set-up mode

Content

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61310

7.2.1 Starting the set-up mode

61311

Upon delivery, a sample application is stored on the device. When booting the device, this application will start automatically.

To delete the sample application on the unit:

- ▶ Create a project in CODESYS.
- ▶ Connect with the device.
- ▶ Delete the active application on the device with the command "Reset Ursprung".
- ▶ Restart the device.
- > The device starts in the set-up mode.

If no valid CODESYS application is stored on the device, the device automatically boots in the set-up mode.

- ▶ Switch on the device.
For this purpose, terminal 15 and terminal 30 must both be connected to VBB.
- > The device boots in the set-up mode.

To start set-up mode directly and independently of the installed application:

Requirements:

- The user has access to pin SERVICE0 (→ Data sheet)
- ▶ Separate the device from the circuit.
- ▶ Perform the following actions **simultaneously**:
 - Connect the SERVICE0 terminal to VBB.
 - Switch the device on again.
To do so, terminal 15 and terminal 30 must both be connected to VBB.
- > The device starts in the set-up mode.
- > The start screen of the set-up mode appears.

Notes on operation

61312

Set-up: access in case of active password protection

61313

If the password protection of the device is activated, the user must enter the correct password to get access to the functions of the set-up menu.

Requirements:

- Set-up mode is active.
- Password protection is enabled.
- ▶ Click on [Launch Setup].
- > The screen shows the input mask for the password.
- ▶ Enter the correct password.
- ▶ Optional: Click on  to show and check the entered password.
- ▶ Click on  to confirm the entered password.
- > The start screen of the set-up mode appears.
- > The user has unrestricted access to all setup functions.



The access right to the functions of the set-up menu will only be valid until the user leaves the set-up menu.

7.2.2 Start application

61314

Via the start screen of the set-up mode, the user can start the boot application stored on the unit.

Requirements:

- The device is in the set-up mode.
- ▶ Click on [Start Application].
- > The boot application stored on the unit will be started.

If the device cannot find a boot application, the screen stays black.

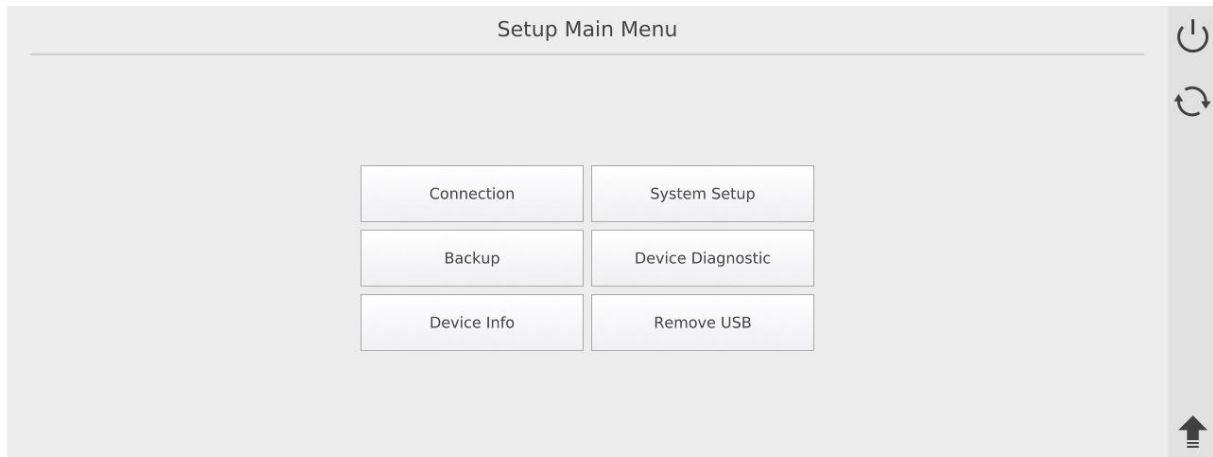
- ▶ Restart the device.

7.2.3 Show the main set-up menu

61315

Requirements:

- The device is in the set-up mode.
- Click on [Launch Setup].
- > The display shows the main set-up menu:



Available options:

Symbol / button	Description
[Connection]	Configuring the Ethernet interfaces (→ p. 35)
[Backup]	Creating a data backup (→ p. 36)
[System Setup]	Configuring the system (→ p. 37)
[Device Info]	Displaying the device information (→ p. 42)
[Remove USB]	Removing the USB stick safely (→ p. 42)
	Rebooting the device
	Leaving the main set-up menu (→ p. 43)
	Starting the recovery mode (→ p. 43)



The settings in the [Device Diagnostic] menu have no effect on the device function.

7.2.4 Configuring the connections

61316

Requirements:

- The main set-up menu is active.
- ▶ Click on [Connection].
- > The menu page shows the available option:
 - **Configuring the Ethernet interfaces** (→ p. [35](#))
 - **Selecting network services** (→ p. [36](#))

Configuring the Ethernet interfaces

61317

Requirements:

- The [Connection] menu page is active.
- ▶ [LAN & Ethernet]
- > The menu page shows the current IP settings of the Ethernet interfaces ETH0 and ETH1.



The unit cannot be used with activated bridge mode.

- ▶ Disable [Bridge Mode].

Available options:

- **Configuring the IP settings via DHCP** (→ p. [35](#))
- **Configuring IP settings manually** (→ p. [35](#))

Configuring the IP settings via DHCP

61318

Requirements:

- The menu page [Connection] has been selected.
- A DHCP server is enabled for automatic IP configuration.
- ▶ Select the required Ethernet interface.
- ▶ Enable [DHCP Mode].
- > The DHCP server configures the IP settings of the Ethernet interface.
- > IP settings are displayed.

Configuring IP settings manually

61319

Requirements:

- The menu page [Connection] has been selected.
- ▶ Select the required Ethernet interface.
- ▶ Disable [DHCP Mode].
- ▶ Enter the IP address in [IP Address].
- ▶ Enter the network mask in [Netmask].
- ▶ Enter the IP address of the network gateway in [Gateway].
- ▶ Click on [APPLY] to save the changes.
- > The new IP settings are enabled.

Selecting network services

61320

Requirements:

- The [Connection] menu page is active.
- ▶ Click on [Network Services].
- > The menu page shows the available network services.

Service	Description
TELNET	Service for non-secure access to the device panel
FTP	Service for non-secure data transmission
SSH/SCP	Services for secure access to the device panel and secure data transmission
NTP	Service for automatic time synchronisation
NTP server addresses	List of NTP addresses for time synchronisation



The activation / deactivation of the NEP service has no effect on the system time. The manually set system time applies.

- ▶ Enable required network services.
- > Selected network services are enabled.
- ▶ Disable network services that are not needed.
- > Selected network services are disabled.
- ▶ Optional: Enter additional servers for the address resolution.
- > The displayed servers are used for the address resolution.
- ▶ Click on  to change to the higher-level menu page.

7.2.5 Creating a data backup

61321

Requirements:

- The main set-up menu is active.
- ▶ [Backup]
- > The menu page shows the available options.
- ▶ Select the data and settings to be backed up:

Name	Description
[Retain Memory]	Data that is stored in the FLASH memory of the device
[Ethernet Settings]	Settings of the Ethernet interfaces
[Brightness Setting]	Brightness settings
[Screen Orientation Setting]	Settings for display orientation (rotation).

- ▶ Click on  to save the selected data.
- > The [USB Select] window appears.
- ▶ Select USB stick and click on  to start the backup process.
- > The data will be transferred to the USB stick.
- > The data will be saved in a file (*.swu).
- > The menu page visualises the memory progress.

- > When the backup is finished, a message appears to indicate whether the backup was successful.



The backup (*.swu) can be restored in recovery mode.
→ **Updating the runtime system** (→ p. [28](#))

7.2.6 Configuring the system

61322

Requirements:

- The main set-up menu is active.
- ▶ [System Setup]
- > The menu page shows the available option:

Button	Description
[Date and Time]	▪ Setting the time zone (→ p. 37) ▪ Setting the system time (→ p. 38)
[Password]	▪ Enabling / disabling password protection (→ p. 39) ▪ Changing the password (→ p. 40)
[Boot Screen]	Changing the start screen (→ p. 40)
[Display Brightness]	Setting the display brightness (→ p. 41)
[Display Orientation]	Setting the display orientation (→ p. 41)
[Touch Configuration]	Configuring the touch screen (→ p. 41)

Setting the time zone

61323

Requirements:

- The menu page [System Setup] is active.
- ▶ [Date and Time]
- ▶ Selected the [Time Zone] tab.
- > The menu page shows the active time zone.
- > The menu page shows the current time of the active time zone (date, time).
- ▶ Select the required time zone category from the list.
- ▶ Select the required time zone from the list.
- > The selected time zone is active.
- > The menu page shows the current time of the selected time zone (date, time).
- ▶ Click on  to leave the menu page.

Setting the system time

Requirements:

- The menu page [System Setup] is active.
 - ▶ [Date and Time]
 - ▶ Select the [System Time] tab.
 - > The menu page shows the current system time (date, time).
 - > The menu page shows the current time zone.
 - ▶ Click on the input box for which value is to be changed.
 - > On-screen keyboard appears.
 - ▶ Change the value as required.
 - ▶ Repeat the steps to change further values.
 - > All fields show the required values.
 - ▶ Click on  to save the changed values.
 - > The changed system time of the device is valid.
 - ▶ Click on  to leave the menu page.

Enabling / disabling password protection

61325



On delivery, the password protection for the setup menu is disabled.

If the password protection is enabled after the first setup, the password set at the factory will be valid: pdm3

► To ensure effective protection, change this password set at the factory!

The programming software CODESYS can access the IEC project saved on the device even if password protection is enabled.

Requirements:

- The menu page [System Setup] is active.
- [Password]
- > The menu page shows the available options.
- Enable [Enable Password] to activate password protection.

OR

- Disable [Enable Password] to deactivate password protection.
- > The last valid password is requested.
- Enter the correct password.
- Optional: Click on  to show and check the entered password.
- Click on  to confirm the input.
- > Password protection is enabled / disabled.
- > The screen shows a status message.



The password protection will be active the next time the setup menu is opened.

- Change to the set-up start page.
- Click on  to leave the set-up.
- > The start screen of the set-up mode appears.
- Click on [Launch Setup] to start the set-up.
- > Password protection is effective.

Changing the password

61326



If the password is forgotten, it is necessary to carry out a recovery update.

- ▶ Reinstalling the runtime system of the device (→ **Updating the runtime system** (→ p. [28](#))).
- ▶ Restoring stored data (→ **Updating the runtime system** (→ p. [28](#))).

Requirements:

- The menu page [System Setup] is active.
- ▶ [Password]
- ▶ Click on [Change Password].
- > The menu page shows the input box and the on-screen keyboard.
- ▶ Enter the current password.
- ▶ Click on  to confirm the input.
- ▶ Enter new password.
- ▶ Click on  to confirm the input.
- ▶ Enter the password again.
- ▶ Click on  to confirm the input.
- > The new password is active.
- > The menu page shows the success message.
- ▶ Click on  to leave the menu page.

Changing the start screen

61327



Information about the image file:

- Image format: BMP 24 bit version 3 (RLE compression is allowed)
- Max. image size: resolution of the display → Data sheet
- Observe upper and lower case for path and file name. Linux is case sensitive.
- Transfer new file with the CODESYS file browser to the device.

Requirements:

- Image file has been stored on the device or USB stick.
- Optional: USB stick with the image file is connected to the device.
- The menu page [System Setup] is active.
- ▶ [Boot Screen]
- > The menu page shows the current start image.
- ▶ Optional: Click on  to show the current start screen in original size.
- ▶ Click on .
- > The file browser appears.
- ▶ Select the storage location of the image file with .
- ▶ Highlight the image file.
- ▶ Click on  to confirm the selection.

- > The device loads the selected image file.
- > The menu page shows the new start image.

Setting the display brightness

61328

Requirements:

- The menu page [System Setup] is active.
 - ▶ [Display Brightness]
- > The menu page shows the current relative brightness of the screen (in %).
 - ▶ Set the slider with the required value.
 - ▶ Click on  to verify the set value.
 - ▶ Click on  to save the set value.
- > The screen works with the selected screen brightness.

Setting the display orientation

61329

Requirements:

- The menu page [System Setup] is active.
 - ▶ [Display Orientation]
- > The menu page shows the available options for the visualisation of the display content.
 - ▶ Click on the required option.
- > Set-up informs about required reboot.
 - ▶ Click on [Yes] to enable the selected option.
- > The unit reboots.
- > The selected display orientation is effective.

OR

- ▶ Click on [No] to undo the selected option.
- > The menu page shows the available options for the visualisation of the display content.

Configuring the touch screen

61330

Requirements:

- The menu page [System Setup] is active.
 - ▶ [Touch Configuration]
- > The menu page shows the following setting options.

Name	Description
[Water optimized (default)]	Optimised for operation in wet conditions
[Glove optimized]	Optimised for use with gloves

- ▶ Select the required options.
- ▶ Click on  to save the changes.
- > The selected options are enabled.

7.2.7 Displaying the device information

61331

Requirements:

- The main set-up menu is active.
- ▶ [Device Info]
- > Menu page shows the following information:

Name	Description
[Firmware]	Firmware version
[Serial Number]	Serial number of the device
[MAC Address]	MAC addresses of the Ethernet interfaces
[External Voltage (supply clamp 15)]	Value of the connected supply voltage on terminal 15 in mV
[Internal Voltages]	Internal voltage values
[Board Temperature]	Temperature on the PCB
[CPU Core Temperature]	CPU core temperature
[Memory Usage Harddisk]	Memory size / memory used

7.2.8 Removing the USB stick safely

61332

Requirements:

- The main set-up menu is active.
- ▶ [Remove USB]
- > The menu page shows the USB sticks connected to the device.
- ▶ Click on .
- > The USB memory is disconnected from the file system (unmount).
- > The USB memory can be removed safely from the USB interface.

7.2.9 Leaving the main set-up menu

61333

Requirements:

- The set-up menu is active (→ **Show the main set-up menu** (→ p. [34](#))).
- ▶ Click on .
- > The device leaves the set-up main menu.
- > The screen shows the start page of the set-up mode.

7.2.10 Starting the recovery mode

61334

Requirements:

- The set-up menu is active (→ **Show the main set-up menu** (→ p. [34](#))).
- ▶ Click on .
- > The device changes to the recovery mode (→ **Recovery mode** (→ p. [28](#))).

7.2.11 Rebooting the device

61335

To reboot the device:

Requirements:

- The set-up menu is active (→ **Show the main set-up menu** (→ p. [34](#))).
- ▶ Click on .
- > The device reboots.



If a valid project is loaded on the device, this project will be started automatically after a reboot.

If no valid project is stored on the device, the set-up menu will appear after rebooting.

8 Factory settings

61336

Parameter	ETH0 (interface to OT level)	ETH1 (interface to IT level)
IP address	192.168.82.247	192.168.83.247
Network mask	255.255.255.0	255.255.255.0
Gateway address	192.168.82.1	0.0.0.0

9 Maintenance, repair and disposal

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61337

9.1 System update

61338

- The runtime system update is done in **Recovery mode** (→ p. [28](#)).

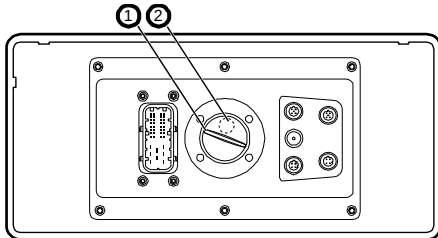
9.2 Battery change

61339



The battery may only be changed by a qualified person

- ▶ Before changing the battery, fully separate the device from supply voltage.



1: service cover

2: battery

- ▶ Replace the battery if the displayed time is permanently wrong after the unit is switched on.

NOTICE!

The protection rating does not apply if the service cover is open and there is no ESD protection of the accessible contacts inside

- > Damage to the device possible
- ▶ Clean the area around the service cover before opening it.
- ▶ Remove the service cover on the back of the unit.
- ▶ Protect inside of device, sealing areas and sealing of the service cover from soiling and humidity.
- ▶ When changing the battery, take ESD precautions.
- ▶ Remove the battery and replace it with a new one.
 - Observe the polarity: positive side up
 - Battery type (→ Data sheet)
- ▶ Check sealing areas and sealing for soiling. Clean them, if necessary.
- ▶ Unscrew the service cover until the end stop is reached to restore the protection rating.
- ▶ Reset the system time via device set-up or application.

Disposal of used batteries (→ **Disposal** (→ p. [47](#)))

9.3 Cleaning the display surface

61340



Unsuitable cleaning agents and chemicals may damage the display surface.

The following agents are not suited for cleaning the display:

- Chemicals dissolving plastics such as methylated spirit, benzine, thinner, alcohol, acetone or ammonia
- paper towels, crepe paper, etc.
- abrasive cleaners, etc.
- polish or wax

- ▶ Clean the device from dirt using a soft, chemically untreated and dry cloth.
- ▶ In case of severe soiling, use a damp cloth.



Micro-fibre cloths without chemical additives are recommended.

9.4 Cleaning the housing surface

61341

- ▶ Disconnect the device.
- ▶ Clean the device from dirt using a soft, chemically untreated and dry cloth.
- ▶ In case of severe soiling, use a damp cloth.

9.5 Repair

61342

- ▶ The device must only be repaired by the manufacturer. Observe the safety instructions (→ **Safety instructions** (→ p. [6](#)))

9.6 Disposal

61343

- ▶ Dispose of used batteries in accordance with the national environmental regulations. Do not dispose of used batteries as household waste.
- ▶ Dispose of the unit in accordance with the national environmental regulations.