



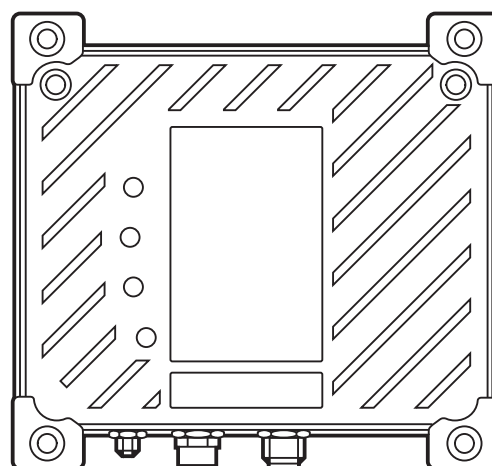
CE

Installation instructions
CANremote

CR3114

UK

80226849 / 00 06 / 2018



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1 Preliminary note

This document applies to devices of the type "CANremote" (art. no.: CR3114).

Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

Adhere to the safety instructions.

1.1 Symbols used

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

1.2 Warnings used

WARNING

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

CAUTION

Warning of personal injury.
Slight reversible injuries may result.

NOTE

Warning of damage to property.

2 Safety instructions

These instructions are an integral part of the device. They contain texts and figures concerning the correct handling of the device and must be read before installation or use.

2.1 General

Follow the operating instructions. 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

Disconnect the device externally before handling it.

In case of malfunction of the unit or queries please contact the manufacturer. Any tampering with the device can seriously affect the safety of operators and machinery. This is not permitted and leads to an exclusion of liability and warranty.

2.2 Target group

These instructions are intended for authorised persons according to the EMC and low-voltage directives. The device must only be installed, connected and put into operation by a qualified electrician.

2.3 Electrical connection

The device is designed for supply via a mobile on-board system (12/24 V DC battery operation).

The connection terminals may only be supplied with the signals indicated in the technical data and/or on the device label and only the approved accessories of ifm electronic may be connected.

2.4 Tampering with the device

In case of malfunctions or uncertainties please contact the manufacturer. Any tampering with the device can seriously affect the safety of operators and machinery. This is not permitted and leads to the exclusion of any liability and warranty claims.

2.5 Air traffic

The device must not be operated on board aircraft.

Using it in an aircraft can affect the navigation and communication systems. An offence can lead to legal action against the offender.

2.6 Explosive substances

In general, radio equipment must not be used in the vicinity of petrol stations, fuel depots, chemical plants or blasting operations.

Do not transport and store any flammable gases, liquids or explosive substances in the part of the vehicle where the device is installed.

2.7 Electronic devices

Operation can affect the function of electronic devices that are not correctly shielded.

Disconnect the unit in the vicinity of medical equipment. Please contact the manufacturer of the corresponding device or equipment in case of problems.

2.8 Antennas

Operation without antennas can lead to destruction of the device.

2.9 FCC (USA)

This device complies with Part 15 of the FCC Rules.

Operation presupposes the two following conditions:

- (1) This device must not cause harmful interference, and
- (2) this device must tolerate interference including interference possibly causing undesired operation.

Cautionary Information:

Any changes made to this device without express consent of ifm electronic gmbh may invalidate FCC approval to operate this device.

3 Functions and features

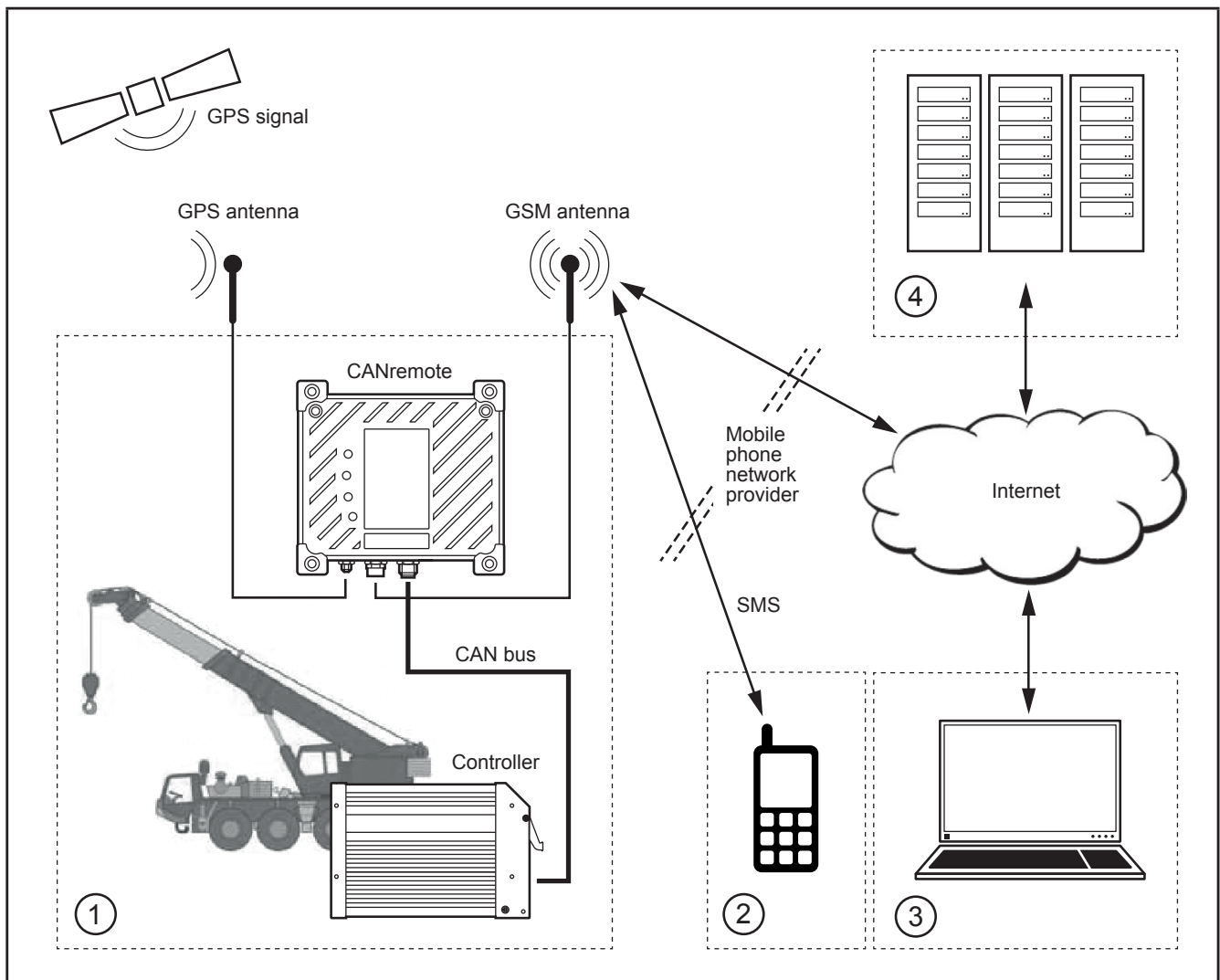
CANremote is a GSM/GPRS/UMTS modem with integrated CAN gateway for direct connection to a controller.

Machine data is either transferred to the programming or diagnostic system of the machine manufacturer or is buffered on a server. There it is available for 3 months via a web portal.

⚠ WARNING

The device is not approved for safety-related tasks in the field of operator protection.

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- 1: Application
- 2: Send and receive SMS
- 3: Real-time diagnostics and visualisation on the PC
- 4: PROEMION web portal and internet service

3 and 4 can be implemented with concluded ifm CANremote Licence (art. no. ZC00xx)

3.1 Overview of the functions

- Integration into a machine network via CAN interface
- Real-time diagnostics via CODESYS programming system
- Data indication and storage via configurable web portal
- Indication and processing of geographical and route data
- ServiceTool (visualisation tool)
- Send and receive SMS

3.2 SIM card

Important device functions can only be operated with a valid SIM card.

Device function, application	SIM card with telephony contract	SIM card with data contract and ifm CANremote licence
Local recording of the GPS data for position, speed or height determination	–	–
Send and receive SMS	●	–
Real-time diagnostics via CODESYS programming system (real-time-mode)*	–	●

*) delay ≥ 3 s

● needed / – not needed

Obtain the SIM card as well as your personal identification number (PIN) from your network operator or GSM service provider.

With the SIM card and the PIN you can access the GSM net and save texts (SMS) and telephone numbers.



The SIM card only functions with a valid PIN.

The PIN is an integral part of the device configuration.

If the device has a SIM card, never switch on the device with a wrong PIN or without PIN. That would block the SIM card.

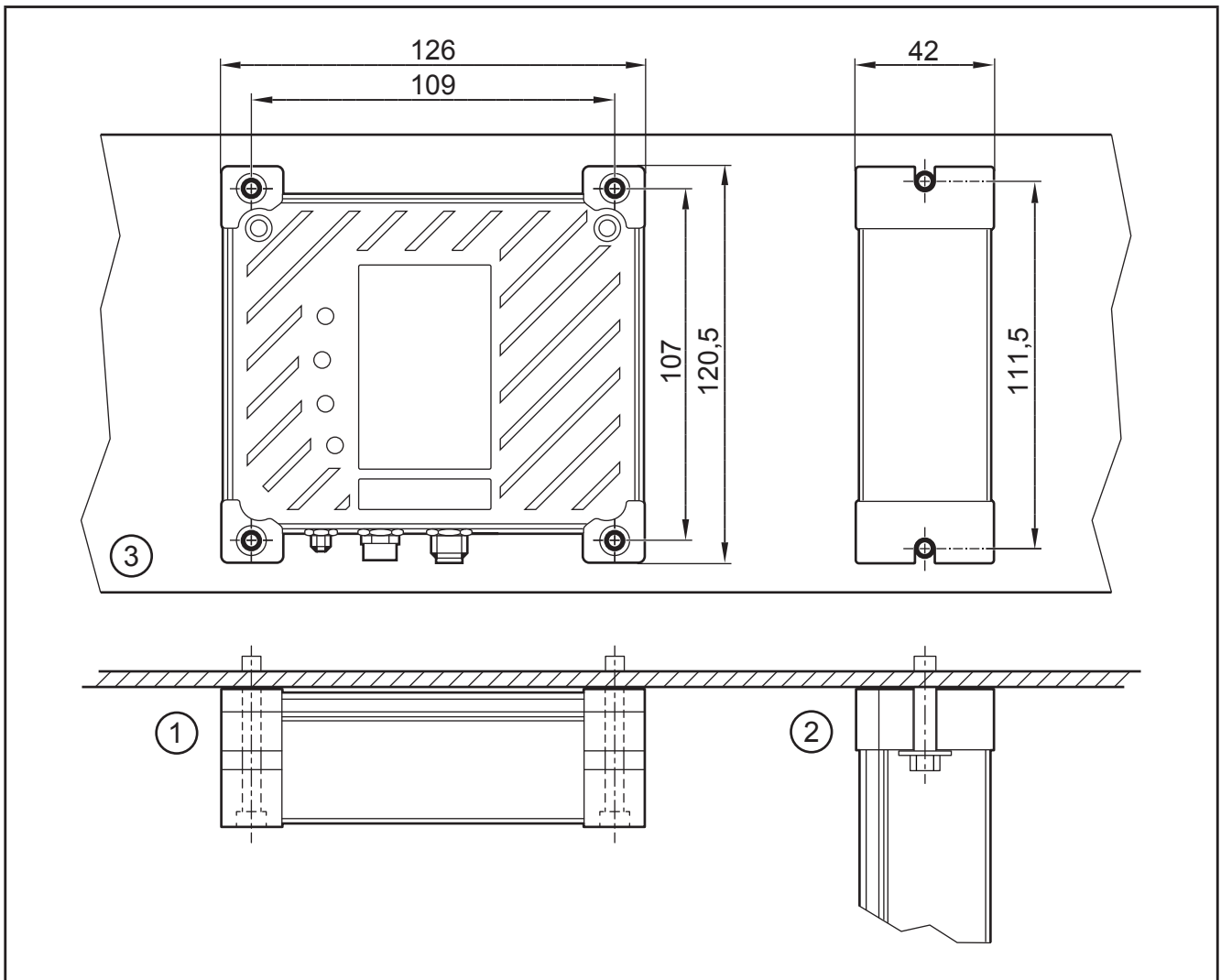
4 Installation

4.1 Fixing the device

- Use screws to fix the device on an even surface.

NOTE

To prevent any penetration of moisture install the device as illustrated. Position of the connectors: bottom.



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Mounting variants

- 1: 4 points (back of the device lies flat)
- 2: 2 points (side of the device lies flat)
- 3: Mounting surface


Required fixing material

4 points	4 M4 x 40 cylinder screws with hexagon socket (to DIN 912)
2 points	2 socket head cap screws M5 x 25 (to DIN 931) 2 washers Ø 5.3 mm (to DIN 125)

The fixing accessories are not included.

4.2 Mounting the antennas

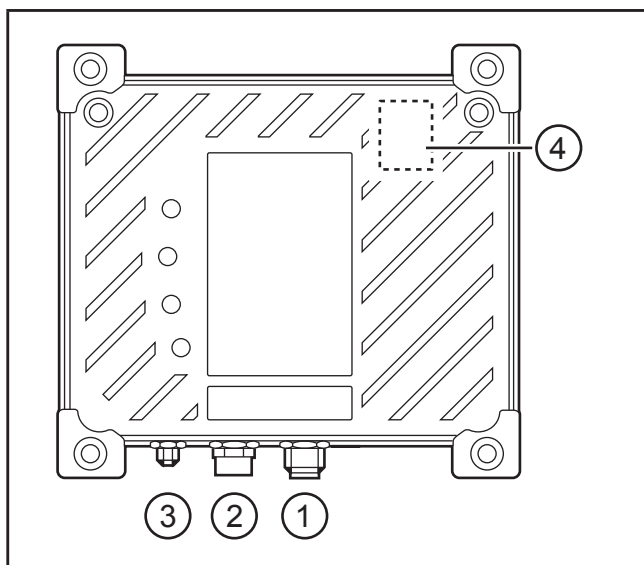
- ▶ When mounting the antennas in vehicles avoid the vicinity of fuel tanks, vessels with explosives or insufficiently screened electronic components (→ 2 Safety instructions).
- ▶ Position the antennas so that a permanent distance of min. 0.2 m from people is ensured during operation.
- ▶ Do not install the antennas in closed metal constructions such as the driver's cab.
- ▶ To reliably receive the GPS signals, position the GPS antenna with unrestricted access to the sky.
- ▶ Please observe the antenna manufacturer's notes.

 Stable data transmission requires a good antenna signal. In case of problems change the position of the antennas or the mobile equipment if necessary.

A loosely tightened antenna connector also causes signal loss.

5 Electrical connection

5.1 Connectors

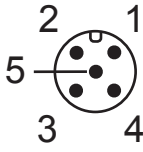


- 1: Operating voltage and CAN interface
- 2: GSM antenna
- 3: GPS antenna
- 4: SIM card (in the device)

NOTE

IP 65 can only be guaranteed if all connectors are connected.

5.2 Operating voltage and CAN interface

M12 connector (5 poles)		Pin	Potential
	Operating voltage	1	GND
		2	6...32 V DC
	CAN interface	3	Clamp 15 Digital input
		4	CAN_H
		5	CAN_L

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- ▶ Connect GND of the M12 connector to CAN_GND.

NOTE

Reverse polarity protection is no longer ensured if the housing is externally grounded.

NOTE

To avoid damage to the device, connect/disconnect the M12 connector only if the device is disconnected from power.

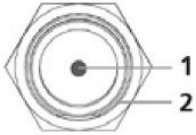
5.3 Antennas

NOTE

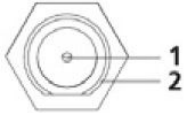
Only connect or remove antennas if the device is disconnected from power. Put the device into operation with connected antennas only.

- ▶ Do not extend or shorten the antenna cable.
- ▶ Please observe the antenna manufacturer's notes.

5.3.1 GSM antenna

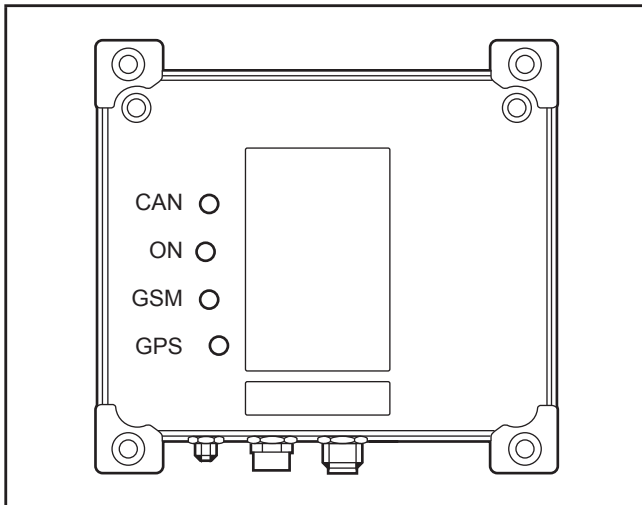
FME connector		Pin	Potential
	Signal	1	GSM
	GND	2	Screen/housing

5.3.2 GPS antenna









SMA socket		Pin	Potential
	Signal	1	GPS
	GND	2	Screen/housing


6 Indicators

6.1 LEDs



CR3114

LED	Colour	Status	Description	
CAN	Green	On	Operational	
		Flashing		Preoperational
				Stopped
	Red	Off	–	
		On	Error	
		Flashing		Receiving/sending data
ON	Green	Off	No operating voltage	
		On	Operating voltage OK	
	Red	Off	–	
		On	Operating voltage outside the specification (→ 9 Technical data)	
GSM	Green	Off	–	
		On	Connection to the server established, TCP/IP active	
		Flashing		Connection to the server being established
				GSM initialisation
				GSM reset status
				Device is ready for a connection to the server
	Red	Off	TCP/IP data transmission not active	
		On	GSM fault, e.g. no SIM card inserted, wrong or no PIN	
		Flashing		TCP/IP data transmission active

LED	Colour	Status	Description
GPS	Green	Off	GPS function off
		On	GPS function active
		Flashing	 Finding GPS signal
	Red	Off	GPS antenna OK
		On	GPS antenna fault, e.g. faulty, not or only loosely connected or short circuit

2-colour LEDs (green/red)

During the initialisation phase (approx. 5 s) the LEDs do not indicate any defined status. If the colours green and red are activated simultaneously, the colour orange is displayed.

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If all green LEDs are constantly "on" and if all red LEDs are flashing synchronously, the device is in the firmware update mode.
Do not switch off the device.

7 Set-up

7.1 Necessary components

The following components are needed to configure and set up the device:

7.1.1 Hardware

- CANremote CR3114
Ensure that all components necessary for the device configuration are used (→ 7.2.2 Connect the unit).
Remote configuration of the device is not possible.
- GSM and GPS antenna (e.g. GSM/GPS combined antenna, art. no.: EC2116)
- Valid SIM card
- PC
- CAN/PC interface (e.g. CAN/RS232 USB interface CANfox, art. no.: EC2112) and adapter cable for CANfox (art. no.: EC2113)
- CAN bus terminating resistors (2 x 120 Ω)

7.1.2 Software

Device configuration

- ifm maintenance tool as from version V02.02.13
- CANremote AddIn for ifm maintenance tool

Device integration into the application program

- Programming system CODESYS V2.3
- CANremote CODESYS client/gateway (optional)
- Function libraries for remote maintenance and diagnostic functions (optional)
- Electronic data sheet (EDS) (optional)
- ServiceTool (optional)
- CANremote Licence ZC00xx (optional)

7.1.3 Documentation

- Programming manual CODESYS V2.3
(alternatively as online help)
- System manual of the controller used
(alternatively as online help)

The manuals are available on the internet as PDF files by entering the corresponding article number:




www.ifm.com → Data sheet search → Article number → More information

Software, function libraries and manuals (as online help):

www.ifm.com → Service → Download → Systems for mobile machines*

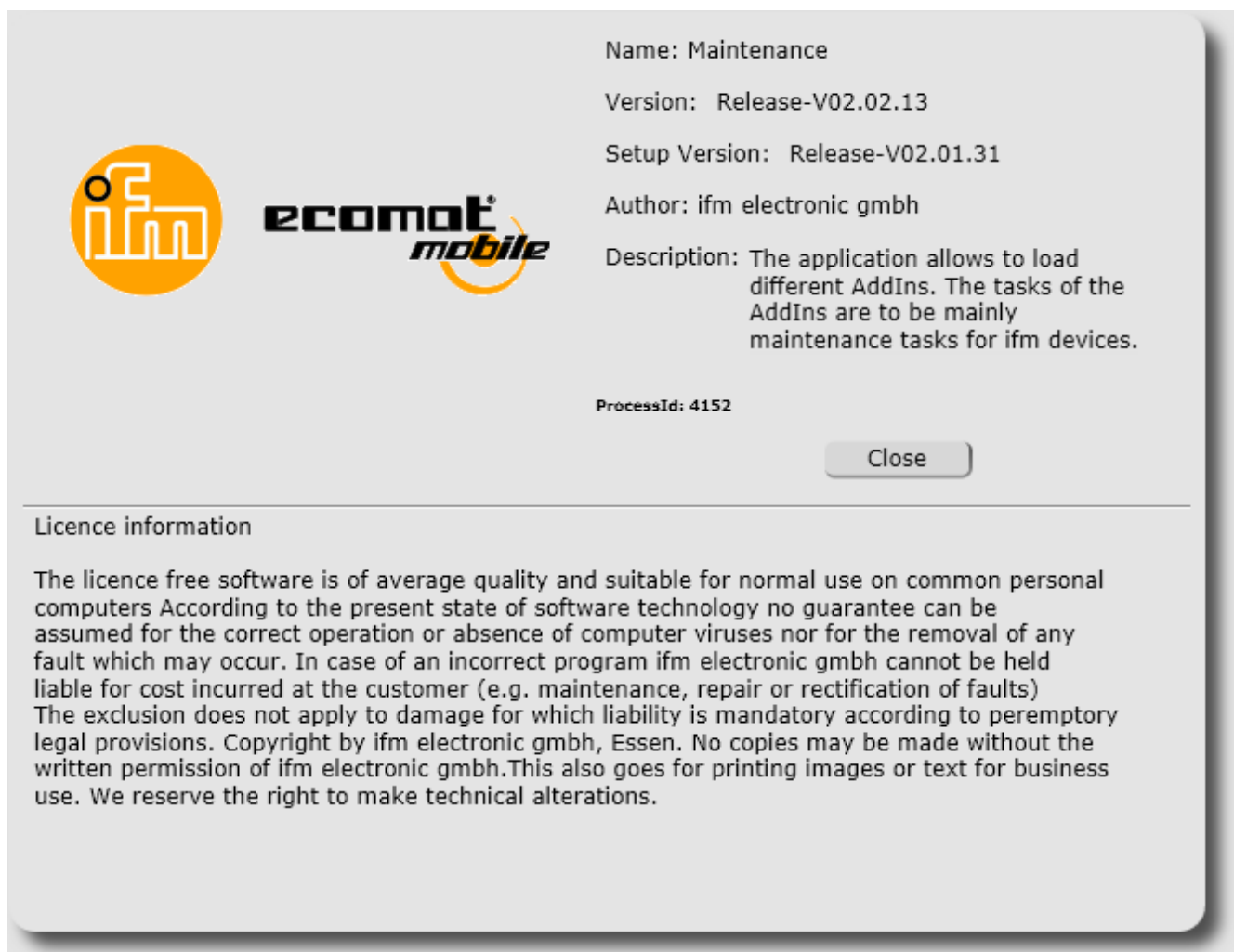
*) Download area with registration

7.2 Device configuration using the ifm maintenance tool

-  The device is configured without SIM card. Insert the SIM card after the device has been configured.
-  Since the device is configured via the CAN interface (SDOs), connection problems may occur with simultaneous use of CAN by a controller. In this case "STOP" the controller and separate other participants from the bus.
-  Software installations and changes to the system settings of the PC require extended user rights. Contact your system administrator.

7.2.1 Software installation

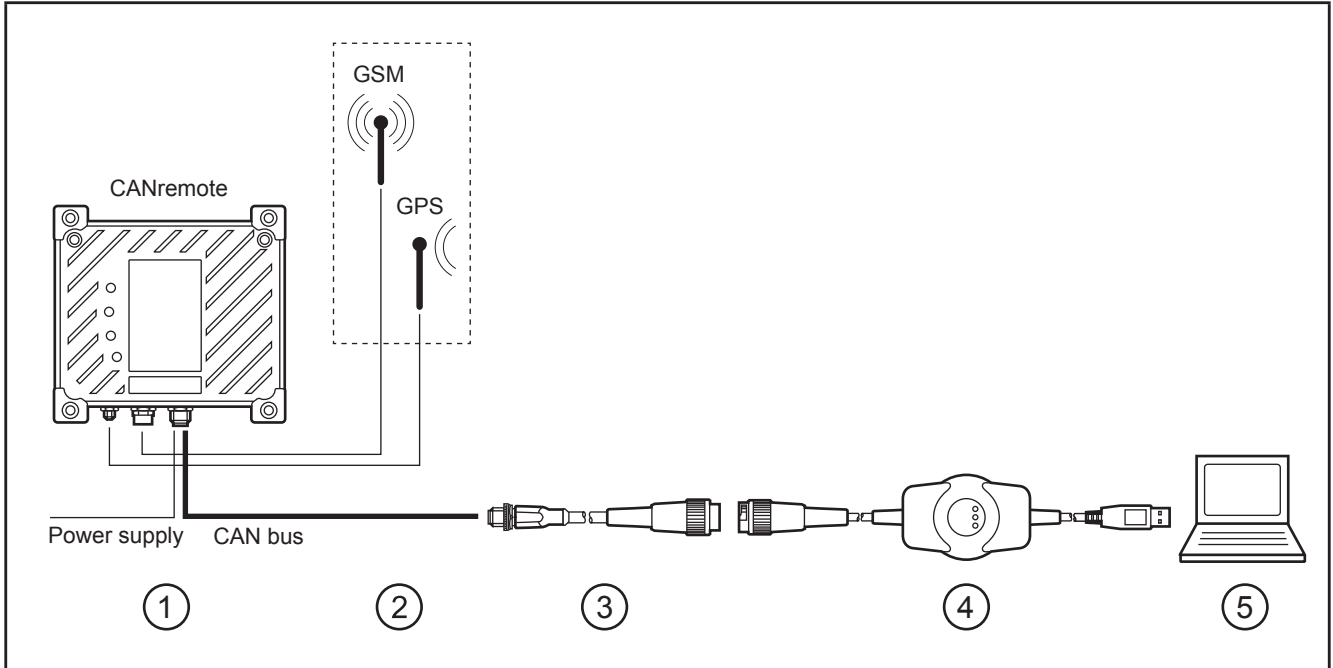
- ▶ Install the maintenance tool.



ifm maintenance tool - info window

- ▶ Install the CANremote AddIn for the ifm maintenance tool.
 - Start the maintenance tool.
 - Activate the main menu [Tools] → [Install AddIn...].
 - Select the "CANremoteAddIn_vnnnnnnn.addin" file.
 - Confirm with [OK].

7.2.2 Connect the unit



Components for the device configuration

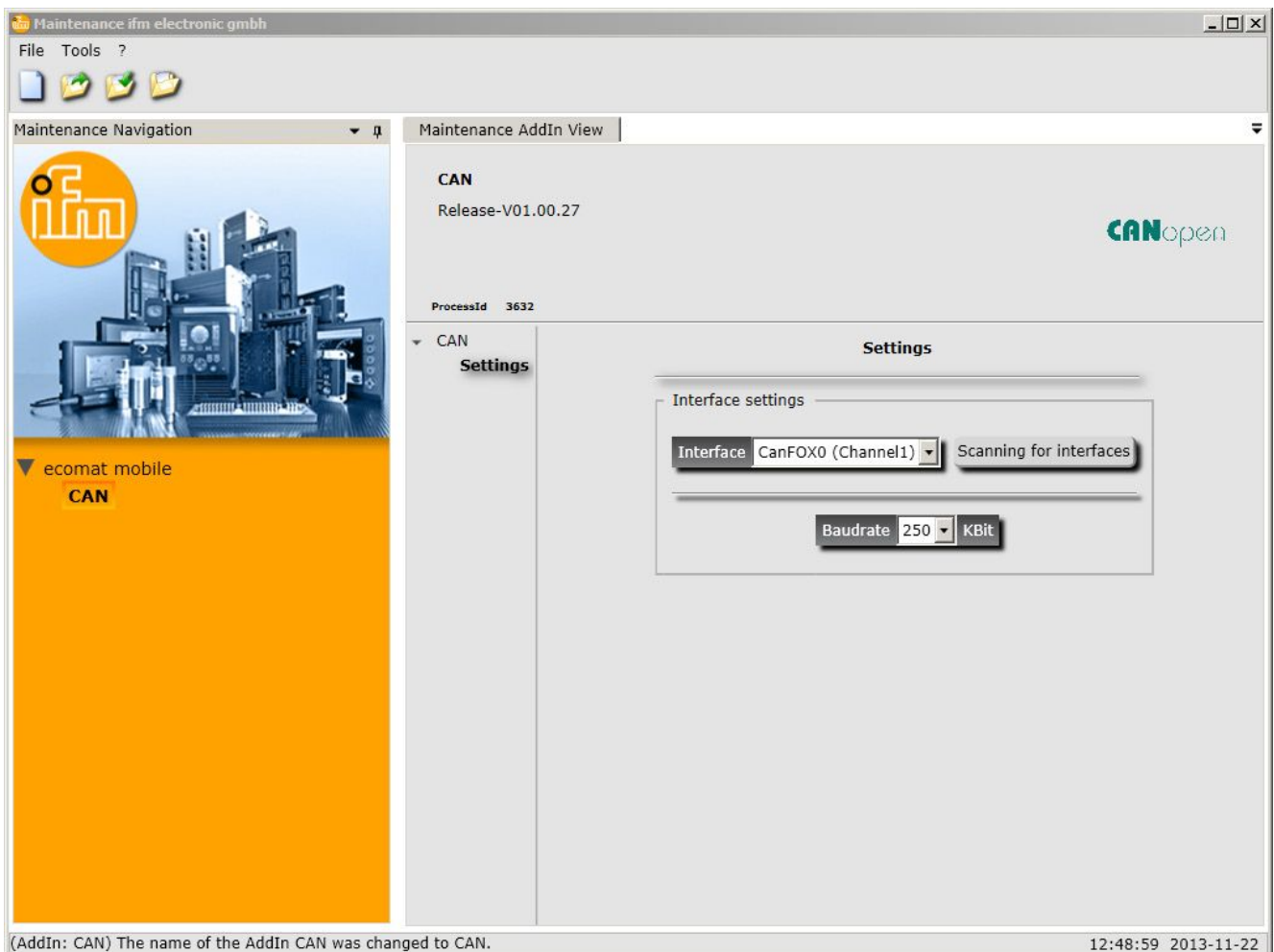
- 1: CANremote CR3114
- 2: GSM and GPS antenna (e.g. GSM/GPS combined antenna, art. no.: EC2116)
- 3: Adapter cable for the CAN/PC interface (e.g. art. no.: EC2113)
- 4: CAN/PC interface (e.g. CAN/RS232 USB interface CANfox, art. no.: EC2112)
- 5: PC

- ▶ Connect the GPS and GSM antennas to the device.
- ▶ Provide the CAN bus with 120 Ω terminating resistors.
- ▶ Connect the CAN/PC interface with the CAN adapter cable to the device and connect it to the PC.
- ▶ Apply the supply voltage.

7.2.3 Configure the device

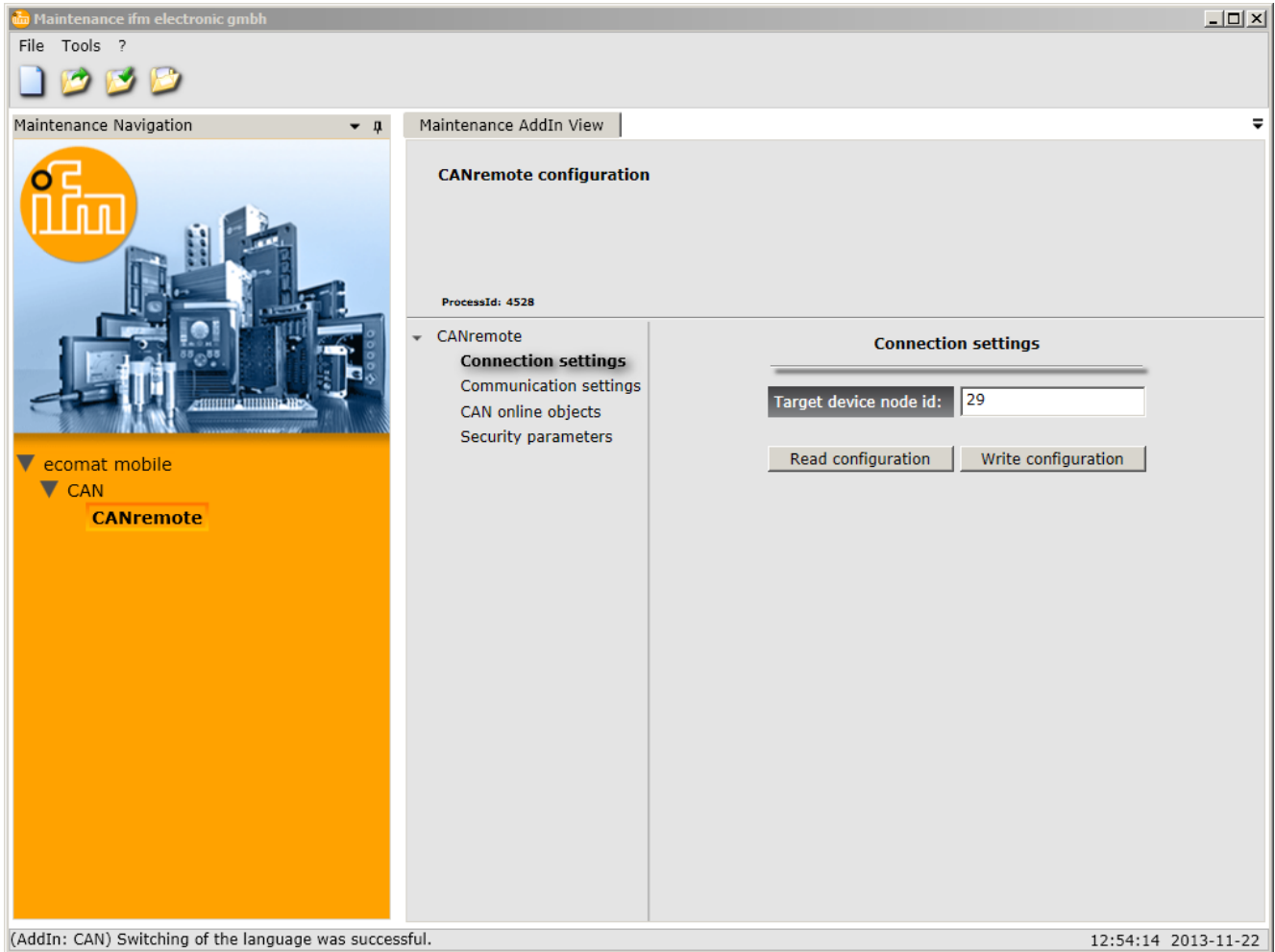
- ▶ Start the ifm maintenance tool.
- ▶ Define the interface.
 - Right-click on [ecomat mobile] in the "Maintenance Navigation" window section.
 - Select [Add] in the context menu.
 - Select [CAN] in the pop-up window
 - Add "ecomat mobile interface CAN".
- ▶ Configure the CAN interface.
 - Select the interface (here e.g. "CanFOX0 (Channel1)").
 - Select the baud rate.
Default setting = 250 Kbits

UK



ifm maintenance tool - CAN settings

- ▶ Define the target device.
 - Right-click on [CAN] in the "Maintenance Navigation" window section.
 - Select [Add] in the context menu.
 - Select [CANremote] in the pop-up window.
 - Add "CANremote configuration AddIn".
- ▶ Select [Connection settings].
 Target device node ID: 29 (default setting)



ifm maintenance tool - CANremote AddIn - Connection settings

- ▶ Select [Communication settings].
 Device node ID: 29 (default value)
 CAN baud rate: 250 Kbits (default setting)



"CAN online objects" is not needed for the device configuration and is not supported.

- ▶ Enter the security parameters.

CANremote configuration

ProcessId: 4552

▼ CANremote

- Connection settings
- Communication settings
- CAN online objects
- Security parameters**

Security parameters

Remote Access Password	GSMONLIN
SIM PIN	0000
GSM Roaming Handling	1
GPRS Remote Server Address	gateway.proemion.com
GPRS Remote Server Port	60200
Online Mode Handling	00000001
GSM Operator Selection Mode	0
GSM Operator Network Code	0
GPRS DNS1	193.254.160.001
GPRS DNS2	208.67.222.222
ISP Username	CAN_GPRS
ISP Password	t-d1
GPRS APN	internet.t-mobile
Service Center Number	+491710760000

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ifm maintenance tool - CANremote AddIn - Security parameters

- Remote access password
Is needed for the real-time mode (real-time mode = direct access to the PLC with CODESYS 2.3).
- SIM PIN
PIN number of the SIM card
- GSM roaming handling
0 = roaming OFF
1 = roaming ON
- GPRS remote server address
Server DNS: gateway.proemion.com or maybe server IP: 62,206,129,131

- GPRS remote server port
Default: 60200
- Online mode handling
Restore the data connection after an interruption:
0 = not automatically
1 = automatically
- GSM operator selection mode
Mobile network provider selection:
0 = manually
1 = automatically



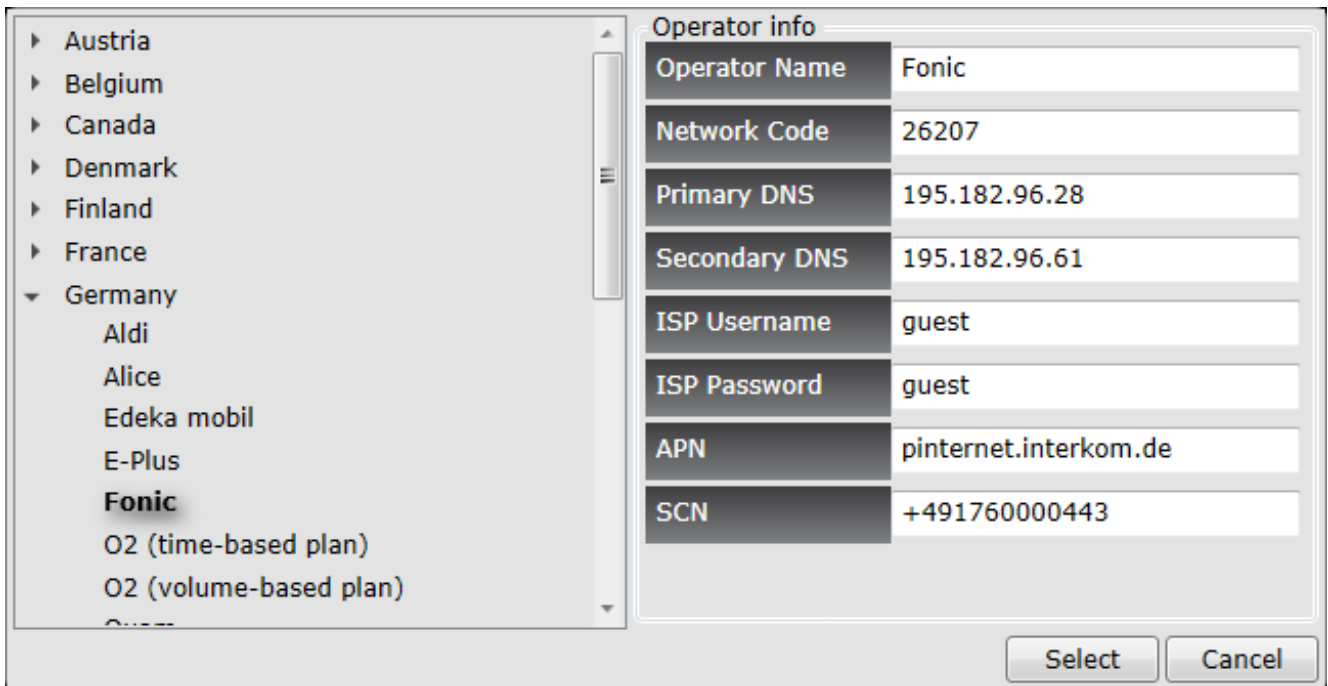
A mobile network provider must be specified with a country-specific "GSM Operator Network Code" and a "Service Center Number (SCN)".

- ▶ Define a mobile network provider.
 - Select [Import GPRS Network Provider].





ifm maintenance tool - CANremote AddIn - Import GPRS network provider

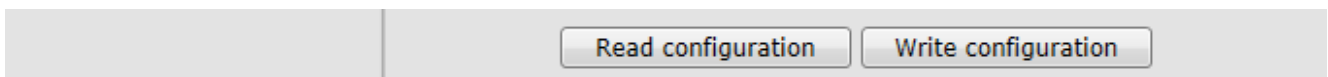
- ▶ Select the country and a mobile network provider from the list.
- ▶ Apply with [Select].



ifm maintenance tool - CANremote AddIn - Import GPRS network provider - dialogue window

-  The mobile network provider list is automatically updated via the internet.
-  Should the desired provider not be listed, the data can also be entered manually.

- ▶ Save entries with [Write configuration].



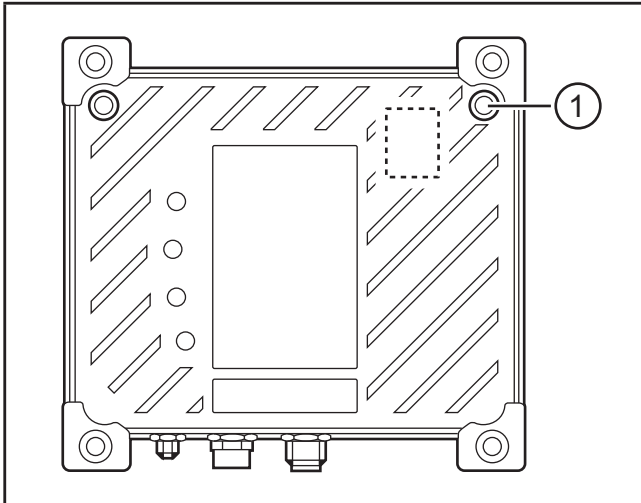
ifm maintenance tool - CANremote AddIn - Save the settings

- ▶ Separate the supply voltage and the CAN PC interface from the device.

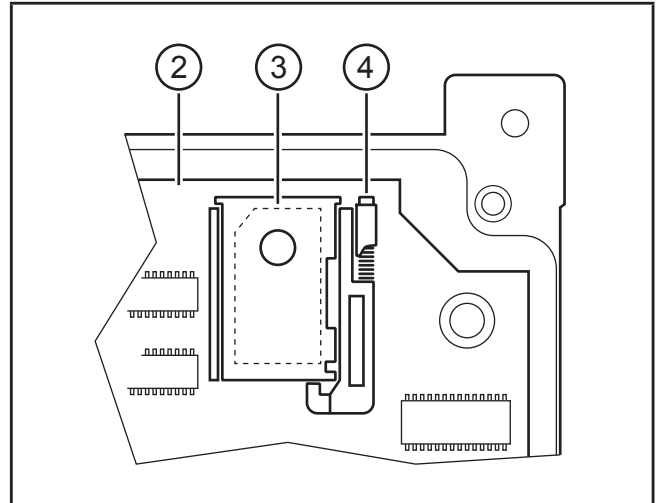
7.3 Insert the SIM card

NOTE

Insert the SIM card after the device has been configured (→ 7.2).
 Always disconnect the radio modem before you insert or remove the card.
 The SIM card and its contacts can be easily damaged by scratching or bending.
 Therefore use the card carefully and avoid touching the contacts.



1: Housing screw connections (4)



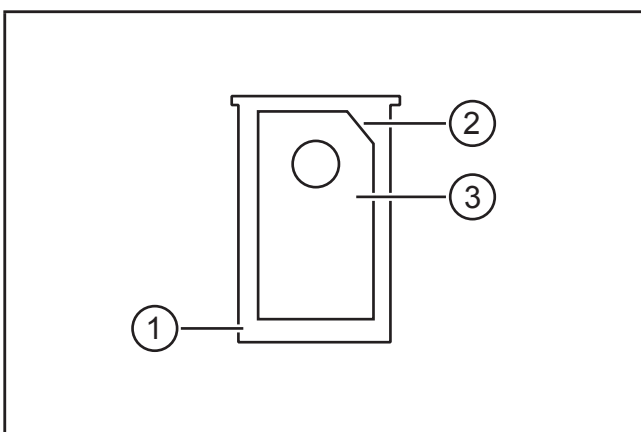
2: PCB
 3: SIM card holder
 4: Eject button for the SIM card holder

- ▶ Disconnect the device.
- ▶ Open the 4 housing screw connections and open the housing.

NOTE

Open the housing only if switched off and in a dry and clean environment.
 Do not touch the PCB and electronic components. They could be destroyed by electrostatic discharge.

- ▶ Press the SIM eject button using a pointed object (e.g. ballpoint pen).
- > The SIM card holder will then slightly protrude from the slot and can be removed.



1: SIM card holder
 2: Chamfer for the correct positioning of the SIM card
 3: Cut-out for the SIM card

- ▶ Insert the SIM card into the cut-out of the card holder.
- ▶ Insert the card holder with the SIM card into the slot without much pressure until you feel a stop.
When inserting the card, make sure that the SIM card holder is exactly in the guides of the slot and that it is not jammed.
- ▶ Close the housing.

NOTE

Before closing the housing again, make sure that the washer is clean and undamaged.

IP 65 can only be guaranteed if the housing is correctly screwed.

Tightening torque of the housing screw connection: 1.2...1.5 Nm

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7.3.1 Remove the SIM card

- ▶ Disconnect the device.
- ▶ Open the housing.
- ▶ Press the SIM eject button using a pointed object.
- ▶ Remove the card holder.
- ▶ Remove the SIM card from the card holder.
- ▶ Close the housing.
- ▶ Observe the warning (→ 7.3 Insert the SIM card).

8 Operation

The device is operational after configuration and when the SIM card has been inserted. After power on the device logs in to the GSM network.

If the automatic server dialling was selected in the parameter settings, the device logs in automatically to the PROEMION web portal.

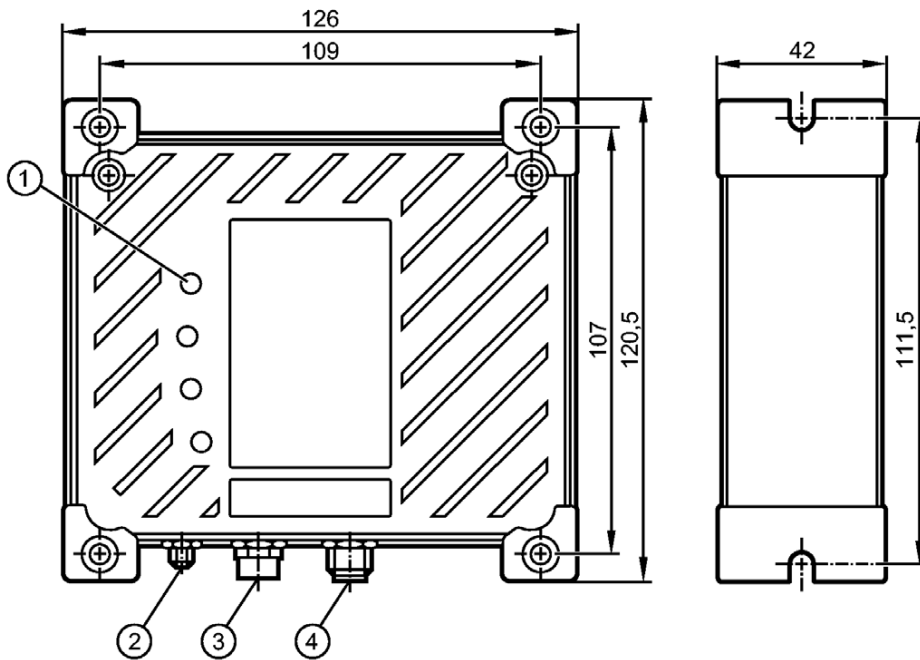
As an alternative, this selection can also be made from the application.

9 Technical data

9.1 CR3114

R360/CANremote 3G/GPS

Control systems for mobile vehicles



- 1: LEDs
- 2: SMA socket, GPS antenna
- 3: FME connector, GSM antenna
- 4: M12 connector, 5-pole

Made in Germany



Product characteristics

CAN 3G/GPS radio modem
 GSM/GPRS/EDGE (850/900/1800/1900 MHz)
 UMTS/HSDPA (800/850/900/1700/1900/2100 MHz)
 for the transfer of SMS messages and data packages
 with GPS/Glonass receiver for location tracking
 Shock sensor

display

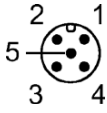
Display 4 LEDs

Electrical data

Operating voltage [V]	6...32 DC
Current consumption [mA]	≤ 600; Ø 210 (24 V DC)
Real-time clock	yes (with sleep und wakeup mode)
Buffering [h]	> 48 (25 °C)
Memory allocation [bytes]	1 M / 32 M / 704 k *
GPS channels	56
GPS accuracy [m]	2.5
Shock sensor	3 axes, 16 g

Interfaces

CAN	1
Profiles	CAN Interface 2.0 A/B; ISO 11898-2
Protocol	CANopen, Layer 2, SAE J 1939

Environment		
Ambient temperature [°C]	-30...75 °C	
Protection	IP 65; for unit with screwed-on connectors	
Tests / approvals		
EMC	EN 61000-4-2 ESD:	6 kV contact discharge / 8 kV air discharge
	EN 61000-4-4 Burst:	2 kV on supply lines / 1 kV on signal lines
	EN 61000-4-5 Surge:	0.5 kV on supply lines
	EN 61000-4-6 HF conducted:	10 V
	EN 61000-4-3 HF radiated:	10 V/m (80...1000 MHz) / 3 V/m (1.4...2.7 GHz)
	ISO 10605: 2008	8/15 kV / 8 kV
	ISO 11452-4	60 mA (20...80 MHz) / 30 V/m (80...1000 MHz)
	ISO 7637-2	1, 2a, 2b, 3a, 3b, 4, 5
	CISPR 16-2	class B
CISPR25	radiated / met	
Mechanical data		
Housing materials	aluminium powder-coated	
Electrical connection		
Connection	M12 connector, 5-pole; FME connector, GSM antenna; SMA socket, GPS antenna	
Wiring		
1: GND		
2: 6...32 V DC		
3: Terminal 15 / Digital input		
4: CAN_H		
5: CAN_L		
		
Remarks		
Remarks	Put the device into operation with connected antennas only. *) Program / configuration / data	
Pack quantity	[piece] 1	



10 Maintenance, repair and disposal

10.1 Servicing

The device does not contain any components that need to be maintained by the user.

10.2 Cleaning the housing surface

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

10.3 Repair

- ▶ The device must only be repaired by the manufacturer.
Observe the safety instructions (→ 2.4 Tampering with the device).

10.4 Disposal

- ▶ Dispose of the device in accordance with the national environmental regulations.

11 Approvals/standards

Test standards and regulations (→ 9 Technical data)

The EC declaration of conformity and approvals can be found at:
www.ifm.com