Netbiter® EC150/220/250 Gateways

USER MANUAL

HMSI-168-92 4.3 ENGLISH

Connecting Devices™

Important User Information

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Table of Contents

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1 Preface

1.1 About This Document

This manual describes how to install and configure Netbiter EC150/220/250 gateways.

For additional related documentation and file downloads, please visit the Netbiter support website at www.netbiter.com/support.

1.2 Related Documents

Related documents

Document	Author
Netbiter EC150/250/220 Installation Guides	HMS
Netbiter Argos Administration Manual	HMS
Netbiter Remote Access User Manual	HMS

1.3 Document history

Revision list

Version	Date	Author	Description
1.00	Nov. 2012	SDa	First official release.
1.10	March 2013	SDa	New chapter on Ethernet installation.
2.00	Nov. 2013	SDa	Added EC350.
2.10	Jan. 2014	SDa	Removed EC150-M. Removed info on relay in EC150.
2.11	April 2014	SDa	Minor correction to dimensions. Added Japanese approval information.
2.20	May 2014	SDa	Added EC310. Updated LEDs for EC350.
2.30	Sep. 2014	SDa	Certifications updated for EC310/EC350.
2.40	Nov. 2014	SDa	Added EtherNet/IP support. Updated specs for EC3xx.
2.50	Dec. 2014	ThN	Changed tolerance values.
3.00	May 2015	ThN	Multiple corrections and updates. Revised document structure and layout.
3.10	June 2015	ThN	Added info on symbolic segment addressing.
4.0	Sep. 2015	ThN	New layout Misc. corrections and updates
4.1	Dec. 2015	ThN	Updated for new firmware Misc. corrections and updates
4.2	June 2016	ThN	New IP configuration method for EC310/350 Updated compliance section
5.0	2016-10-03	ThN	Removed EC310 and EC350

Summary of changes in this version

Change	Where (section no.)
Removed sections about EC310 and EC350	—
Corrected typos and minor errors	—
Updated Technical Data appendix	

1.4 Conventions

Unordered (bulleted) lists are used for:

- Itemized information
- Instructions that can be carried out in any order

Ordered (numbered or alphabetized) lists are used for instructions that must be carried out in sequence:

1. First do this,
2. Then open this dialog, and
   a. set this option...
   b. ...and then this one.

Bold typeface indicates interactive parts such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

```
Monospaced text is used to indicate program code and other
kinds of data input/output such as configuration scripts.
```

This is a cross-reference within this document: *Conventions, p. 4*

This is an external link (URL): www.hms-networks.com

This is additional information which may facilitate installation and/or operation.

This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.

Caution
This instruction must be followed to avoid a risk of personal injury.

WARNING
This instruction must be followed to avoid a risk of death or serious injury.

2 Description

> ! This product contains parts that can be damaged by electrostatic discharge (ESD). Use ESD protective measures to avoid equipment damage.

Field wiring terminals shall be connected with minimum wire size 24 AWG.

Netbiter EasyConnect gateways can be connected to Modbus devices via various interfaces and physical connections. Which interface(s) to use is selected in Netbiter Argos.

2.1 Netbiter EC150

2.1.1 Terminal block (12-pin)

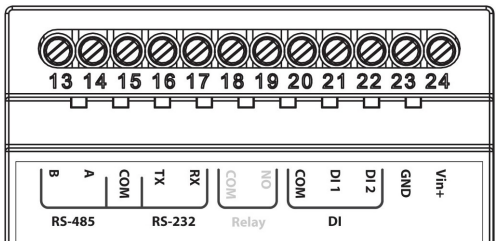

Fig. 1 Terminal block

Terminal block connections

Pin	Label	Function	Note
24	Vin+	Power 9–24 VDC/VAC	EC150 can optionally be powered by 9–24 VAC.
23	Vin-	PE ground	
22	DI:DI 2	Digital input #2	Low = 0–2 VDC, High = 10–24 VDC
21	DI:DI 1	Digital input #1	Low = 0–2 VDC, High = 10–24 VDC
20	DI:COM	Digital input common	
17	RS-232:RX	RS-232 Receive	
16	RS-232:TX	RS-232 Transmit	
15	COM	Serial interface common	Shared between RS-232 and RS-485
14	RS-485:A	RS-485 Line A	
13	RS-485:B	RS-485 Line B	

2.1.2 D-sub Connector

The 9-pin male D-sub connector provides an RS-232 interface for Modbus RTU.

D-sub connector pin layout

Pin	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

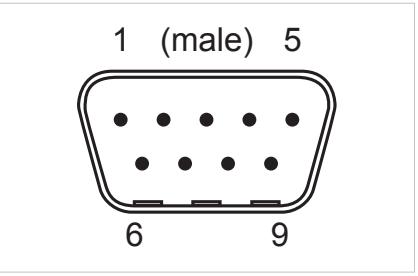

Fig. 2 D-sub connector

2.1.3 Ethernet Connector

The RJ-45 socket provides Ethernet network connection. It also supports Modbus TCP via Ethernet, which can be used at the same time as Modbus RTU units on another interface.

Ethernet connector pin layout

Pin	Function
1	TD+
2	TD-
3	RD+
4, 5, 7, 8	Termination
6	RD-

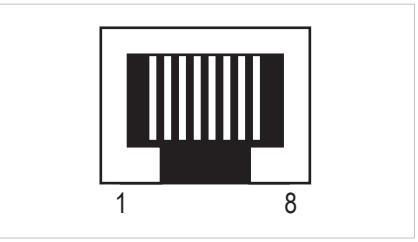

Fig. 3 Ethernet connector

2.2 Netbiter EC220

2.2.1 Terminal Block (12-pin)

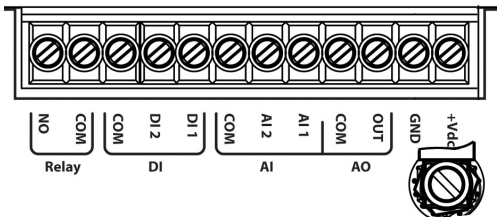

Fig. 4 Terminal block

Terminal block pin layout

Pin	Function	Note
+Vdc	Power 12–24 VDC	
GND	PE ground	
AO:OUT	Analog output	0–10 VDC
AO.COM	Analog output common	Internally connected to GND
AI:AI 1	Analog input #1	PT100, current or voltage (selected with internal switch)
AI:AI 2	Analog input #2	
AI:COM	Analog input common	Internally connected to GND
DI:DI1	Digital input #1	Low = 0–1 VDC, High = 9–24 VDC
DI:DI2	Digital input #2	
DI:COM	Digital input common	
Relay:COM	Relay output common	
Relay:NO	Normally open connected	Rated load: 1 A @ 24 VDC

Analog Input Configuration Switches

Fig. 5 EC220 DIP switch

The analog inputs are configured with two DIP switches inside the unit. Take care not to damage the antenna cable when opening/closing the cover.

EC220 DIP switch setting

Setting	Function	Note
PT100	Temperature sensor (default)	-50 to +150 °C
0–20 mA	Current	Input resistance 270 Ω
0–10 VDC	Voltage	Input resistance 280 Ω

2.2.2 RS-485 Serial Interface (3–pin Connector)

The RS-485 serial interface can be used to connect Modbus RTU devices.

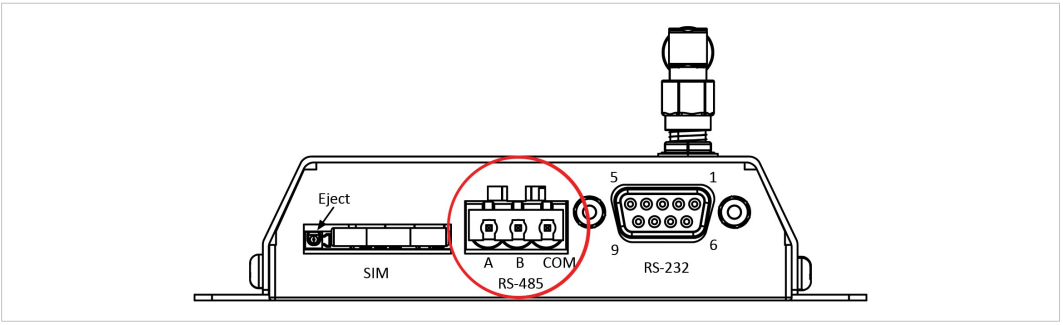

Fig. 6 RS-485 connector

RS-485 connector pin layout

Pin	Function
A	RS-485 A line
B	RS-485 B line
COM	RS-485 common

2.2.3 D-sub Connector

The 9-pin female D-sub connector provides an RS-232 interface for Modbus RTU and for connecting a GPS receiver.

D-sub connector pin layout

Pin	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

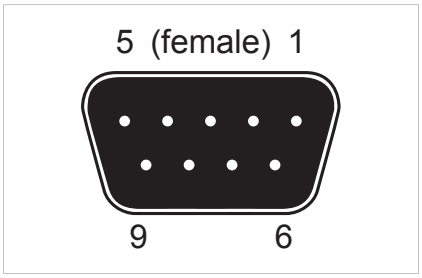

Fig. 7 D-sub connector

2.2.4 Antenna Connector

The antenna connector is a standard SMA screw connector. Optional external antennas are available from your supplier.

2.2.5 SIM Card

Installing the SIM Card

1. Push the yellow button next to the SIM card holder and remove the holder.

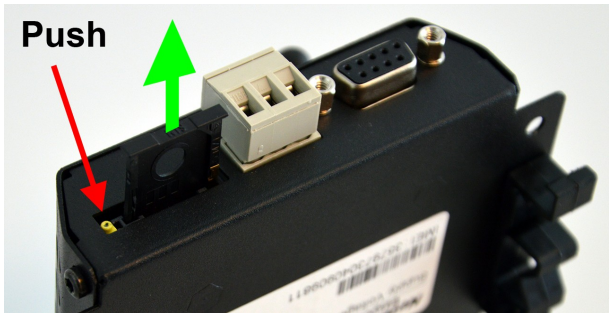

Fig. 8 Removing the SIM card holder

2. Place the SIM card into the holder and insert it into the EC220. Observe the correct position of the cut-off corner and the contact surfaces.

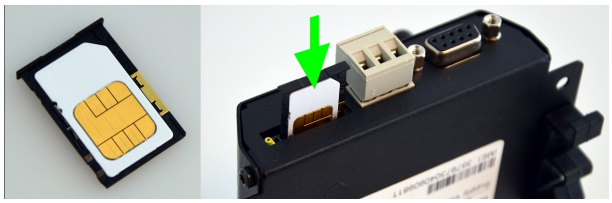

Fig. 9 Inserting the SIM card

SIM Card configuration

The SIM card must be configured in Netbiter Argos before it can be used.

When using a SIM card not issued by HMS, make sure that the SIM card has a mobile data plan and allows text messaging and that PIN code security has been disabled.

See the *Netbiter Argos Administration Manual* for further information.

An SMS text message will be sent to Netbiter Argos when a new SIM card is inserted into the Netbiter gateway.

2.3 Netbiter EC250

2.3.1 Terminal Block (12-pin)

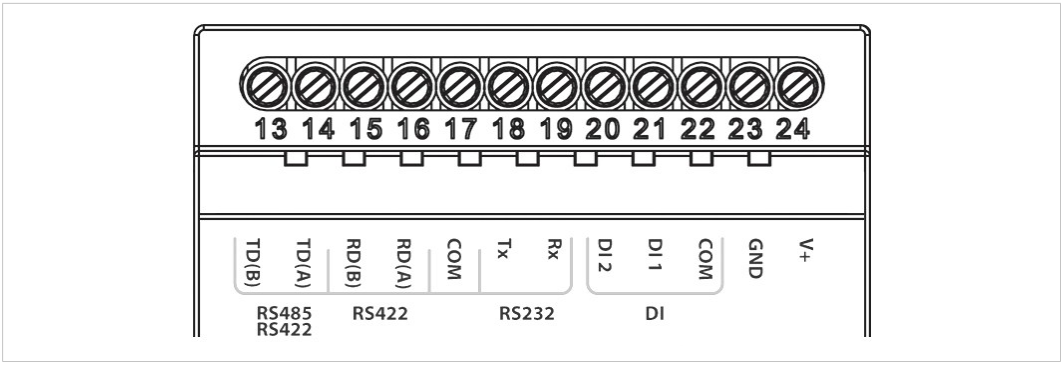

Fig. 10 Terminal block

Terminal block pin layout

Pin	Label	Function	Note
24	V+	Power 9–24 VDC	
23	GND	PE ground	
22	DI:COM	Digital input common	
21	DI:DI 1	Digital input #1	Low = 0–2 VDC, High = 10–24 VDC
20	DI:DI 2	Digital input #2	Low = 0–2 VDC, High = 10–24 VDC
19	RS-232:RX	RS-232 Receive	
18	RS-232:TX	RS-232 Transmit	
17	COM	Serial interface common	Shared between RS-232/422/485
16	RS-422:RD(A)	RS-422 Receive A	
15	RS-422:RD(B)	RS-422 Receive B	
14	RS-485:TD(A) RS-422:TD(A)	RS-485 Line A RS-422 Transmit A	
13	RS-485:TD(B) RS-422:TD(B)	RS-485 Line B RS-422 Transmit B	

2.3.2 D-sub Connector

The 9-pin D-sub connector provides an RS-232 interface for Modbus RTU and for connecting a GPS receiver.

D-sub connector pin layout

Pin	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

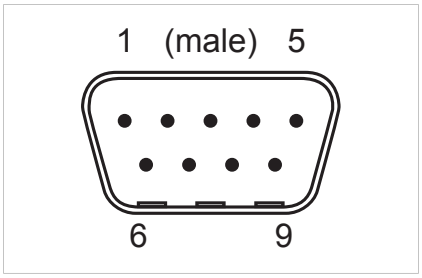

Fig. 11 D-sub connector

2.3.3 Ethernet Connector

The RJ-45 socket provides Ethernet network connection. It also supports Modbus TCP via Ethernet, which can be used at the same time as Modbus RTU units on another interface.

Ethernet connector pin layout

Pin	Function
1	TD+
2	TD-
3	RD+
4, 5, 7, 8	Termination
6	RD-

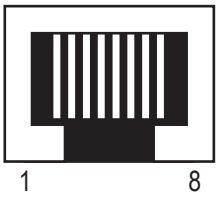

Fig. 12 Ethernet connector

2.3.4 Antenna Connector

The antenna connector is a standard SMA screw connector. Optional external antennas are available from your supplier.

2.3.5 SIM Card

Installing the SIM Card

1. Push the yellow button next to the SIM card holder and remove the holder.

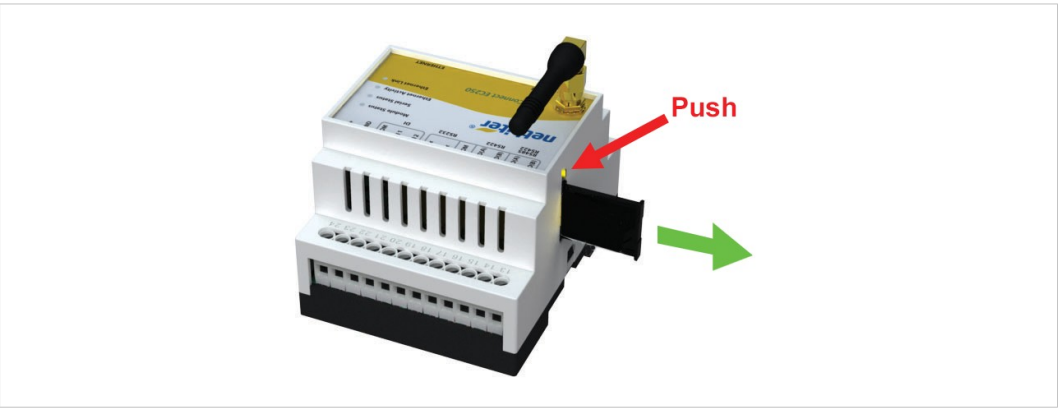

Fig. 13 Removing the SIM card holder

2. Place the SIM card into the holder and insert it into the EC250. Observe the correct position of the cut-off corner and the contact surfaces.

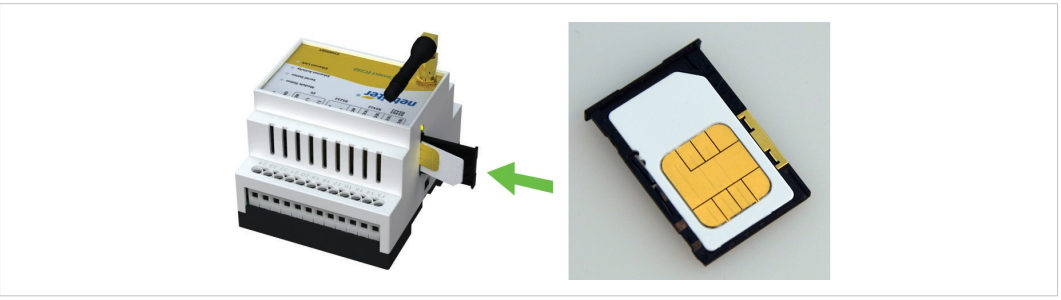

Fig. 14 Inserting the SIM card

SIM Card configuration

The SIM card must be configured in Netbiter Argos before it can be used.

When using a SIM card not issued by HMS, make sure that the SIM card has a mobile data plan and allows text messaging and that PIN code security has been disabled.

See the *Netbiter Argos Administration Manual* for further information.

An SMS text message will be sent to Netbiter Argos when a new SIM card is inserted into the Netbiter gateway.

2.4 Power Supply

> **!** Always make sure that the power supply is correctly connected and of the recommended type. Connecting power with reverse polarity or using the wrong type of power supply may damage the equipment.

2.4.1 Netbiter EC150/EC250

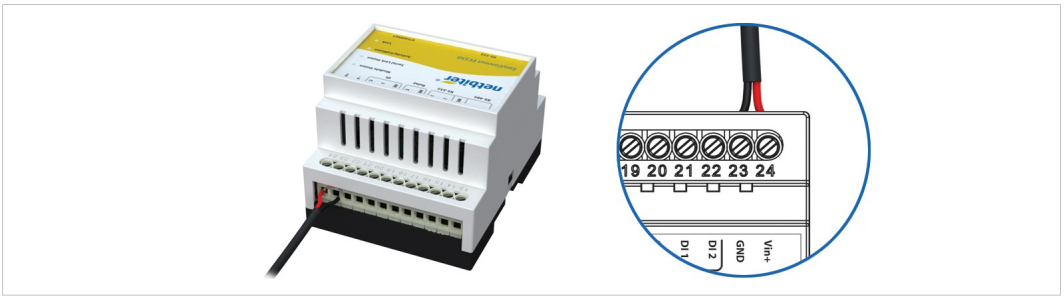

Fig. 15 EC150/EC250 power supply connection

Connect 9–24 VDC to **Vin+** (EC150) or **V+** (EC250), and connect ground to **GND**.

> *Netbiter EC150 can alternatively be powered by 9–24 VAC.*

2.4.2 Netbiter EC220

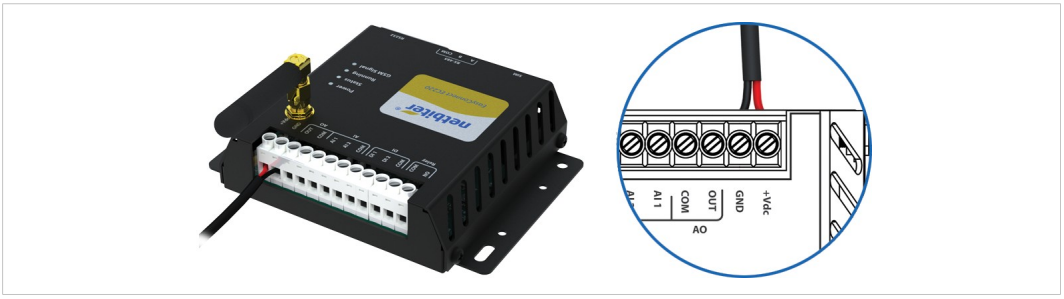

Fig. 16 EC220 power supply connection

Connect 9–24 VDC to **+VDC**, and connect ground to **GND**.

3 LED Indicators

3.1 Netbiter EC150

Fig. 17 EC150 LED indicators

LED Indication		Meaning
Module Status	OFF	No power
	Orange/green	System is starting up
	Green (3 flashes)	System is operating normally
	Red (2 flashes)	Invalid network settings • DHCP: Check that there is a working DHCP server on the network. • Static IP: Check that the IP address, default gateway and DNS are correctly set. • If a proxy is used, check that the proxy settings are correct.
	Red (3 flashes)	No connection to Netbiter Argos • Check the network settings. • If a proxy is used, check that the proxy settings are correct. • Check that at least one of ports 443, 80 or 5222 are open in the firewall.
Serial Link Status	Flashing green	Receiving serial packet
	Flashing red	Transmitting serial packet
Activity/Collision	Flashing green	Receiving Ethernet packet
	Flashing red	Ethernet collision
Link	Steady green	10 Mbps Ethernet network detected
	Steady orange	100 Mbps Ethernet network detected

3.2 Netbiter EC220

All LED indicators will be lit while the gateway is starting up. After the startup sequence has completed they will indicate system status.

Fig. 18 EC220 LED indicators

LED Indication		Meaning
Power	Off	No power
	Green (steady)	Unit has power
Status	Off	Normal operation
	Red (1 flash)	SIM card not registered on HMS Home Network[1] • Check that the SIM card is correctly inserted and undamaged and that PIN security is disabled. • Check that there is mobile network coverage for your operator.
	Red (2 flashes)	Invalid network settings • Check that the correct APN (Access Point Name) has been set in Netbiter Argos.
	Red (3 flashes)	No connection to Netbiter Argos • Check that the mobile network provider grants access to port 5222.
Running	Off	Contact Netbiter support
	Green (flashing)	Normal operation
GSM Signal	Off	Contact Netbiter support
	Green (1 flash)	Poor mobile network signal • Make sure the antenna is correctly installed and pointing upwards. • Try a different antenna placement. • Use an external antenna.
	Green (2 flashes)	Acceptable mobile network signal
	Green (3 flashes)	Good mobile network signal

1. The Netbiter SIM card will automatically try to connect to a network in the global HMS “home network” group of operators. A list of these network operators can be found at the Netbiter support website.

3.3 Netbiter EC250

Fig. 19 EC250 LED indicators

The Module Status LED alternates between displaying system status and mobile network signal strength for 2 seconds each in a 4-second cycle. If a mobile network connection has not been set up, the LED will stay unlit during the second part of the cycle.

LED Indication		Meaning
Module Status (1)	OFF	No power
	Orange/green	System is starting up (ca. 40 seconds)
	Red (1 flash)	SIM card not registered on HMS Home Network[2] • Check that the SIM card is correctly inserted and undamaged, and that PIN security is disabled. • Check that there is mobile network coverage for your operator
	Red (2 flashes)	Invalid network settings **Mobile** • Check that the correct APN (Access Point Name) has been set in Netbiter Argos. **Ethernet** • DHCP: Check that there is a working DHCP server on the network. • Static IP: Check that the IP address, default gateway and DNS are correctly set. • If a proxy is used, check that the proxy settings are correct.
	Red (3 flashes)	No connection to Netbiter Argos **Mobile** • Check that the mobile network provider grants access to port 5222. **Ethernet** • Check the network settings. • If a proxy is used, check that the proxy settings are correct. • Check that at least one of ports 443, 80 or 5222 are open in the firewall.

2. The Netbiter SIM card will automatically try to connect to a network in the global HMS “home network” group of operators. A list of these network operators can be found at the Netbiter support website.

LED Indication		Meaning
Module Status (2)	Green (1 flash)	Poor mobile network signal • Make sure the antenna is correctly installed and pointing upwards. • Try a different antenna placement. • Use an external antenna.
	Green (2 flashes)	Acceptable mobile network signal
	Green (3 flashes)	Good mobile network signal
Serial Status	Steady orange	System is starting up
	Flashing green	Receiving serial packet
	Flashing red	Transmitting serial packet
Ethernet Activity	Flashing green	Receiving Ethernet packet
Ethernet Link	Steady green	10 Mbps Ethernet network detected
	Steady orange	100 Mbps Ethernet network detected

4 Installation

> ! This product contains parts that can be damaged by electrostatic discharge (ESD). Use ESD protective measures to avoid equipment damage.

4.1 Netbiter EC150/EC250

Netbiter EC150 and EC250 are supplied ready for mounting on a DIN rail.

4.1.1 Mounting on DIN Rail

Mounting

1. Hook the unit onto the upper lip of the rail.
2. Press the unit towards the rail until it snaps into place.

Fig. 20 Mounting on DIN rail

Removing

1. Pull the tab at the bottom of the unit gently downwards (using a screw-driver or similar tool).
2. Pull the bottom end free and lift the unit from the rail.

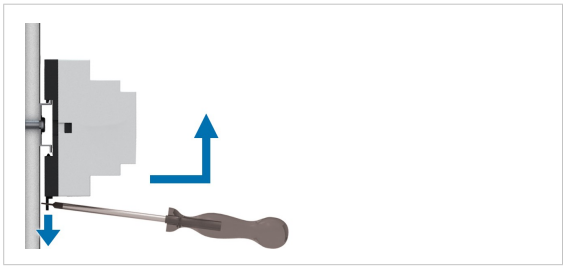

Fig. 21 Removing from DIN rail

4.2 Netbiter EC220

Fig. 22 DIN rail mounting kit (optional)

Netbiter EC220 can either be screw-mounted directly to a flat surface using the screw holes in the metal housing, or on a DIN rail using the optional rail mounting kit.

5 Wiring Examples

5.1 Netbiter EC150/EC250

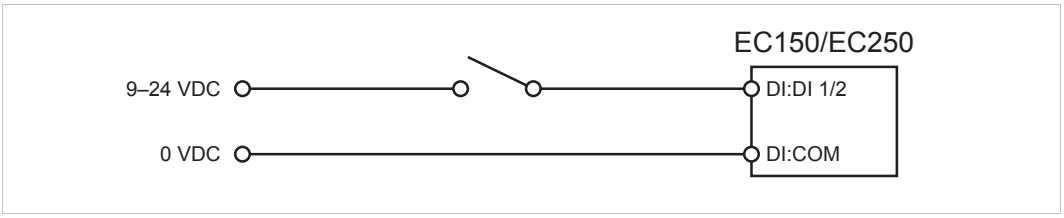

Fig. 23 Digital Input

5.2 Netbiter EC220

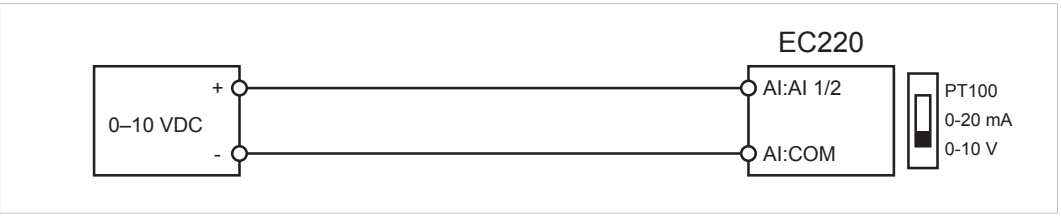

Fig. 24 Analog Input – Voltage Sensor

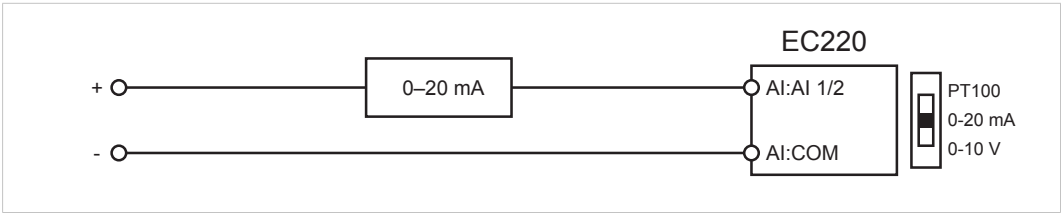

Fig. 25 Analog Input – 2-wire Current Sensor

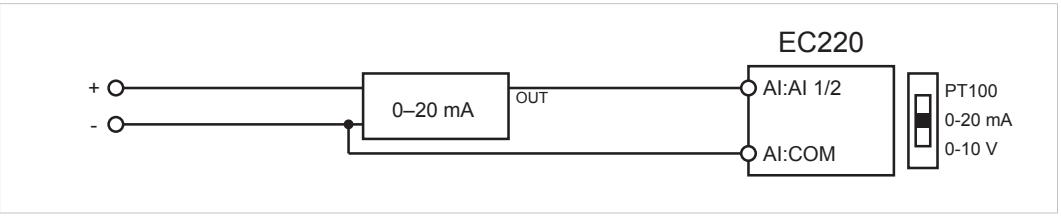

Fig. 26 Analog Input – 3-wire Current Sensor

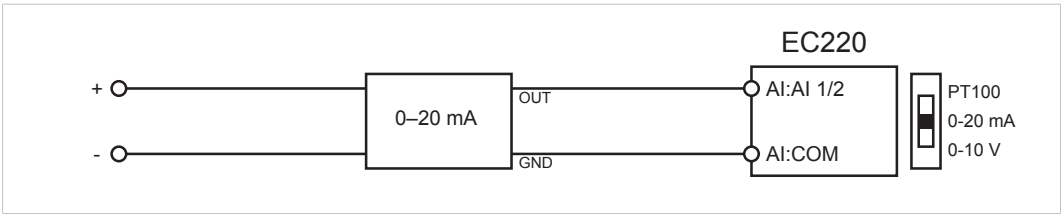

Fig. 27 Analog Input – 4-wire Current Sensor

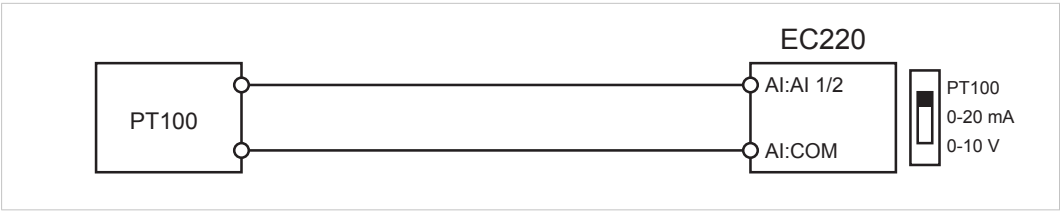

Fig. 28 Analog Input – Temperature Sensor

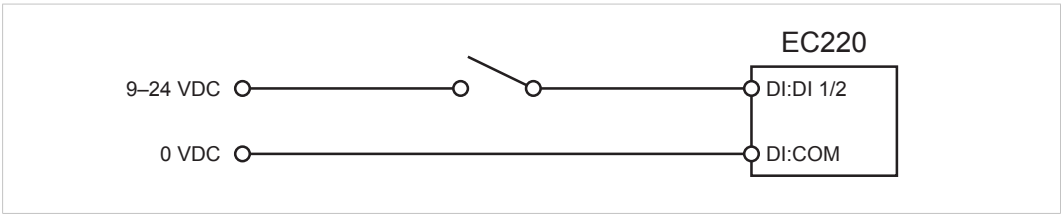

Fig. 29 Digital Input

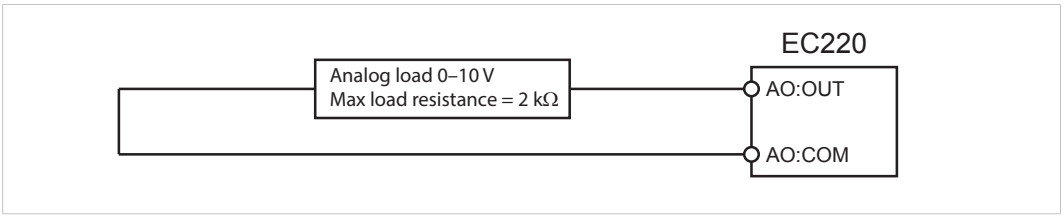

Fig. 30 Analog Output

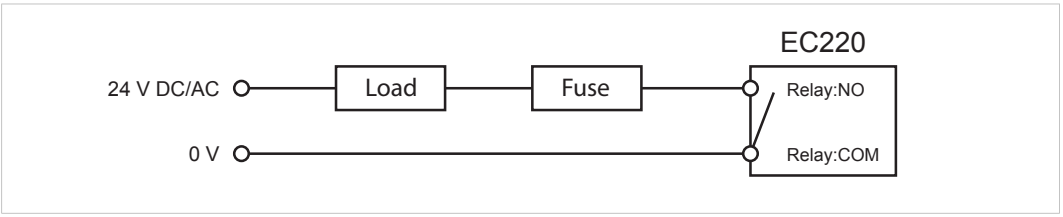

Fig. 31 Relay Output

> **!** The relay output must be supplied from an isolating transformer using a secondary listed fuse rated at maximum 3.3 A and minimum 30 VDC.

6 GPS

GPS functionality must be activated in Netbiter Argos before it can be used. See the *Netbiter Argos Administration Manual* for more information.

6.1 Connecting GPS Devices

6.1.1 Netbiter EC220

Connecting a GPS device to a Netbiter EC220 requires a cable with a 9-pin **male** D-sub connector to connect to the RS-232 port.

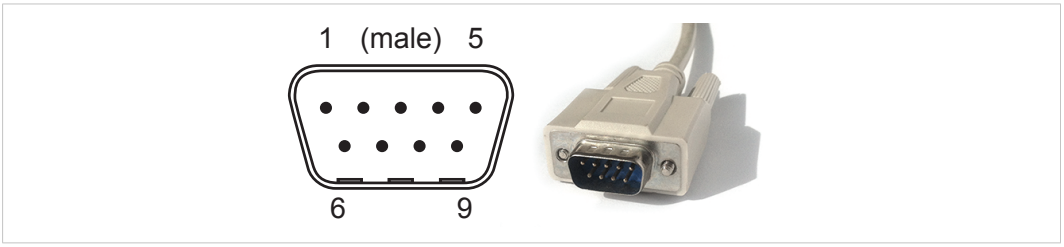

Fig. 32 D-sub connector

GPS cable pin assignment

EC220 RS-232 port		GPS device
2	Rx (Receive)	Tx
3	Tx (Transmit)	Rx
5	GND	GND

6.1.2 Netbiter EC250

Connecting a GPS device to a Netbiter EC250 requires a cable with a 9-pin **female** D-sub connector to connect to the RS-232 port.

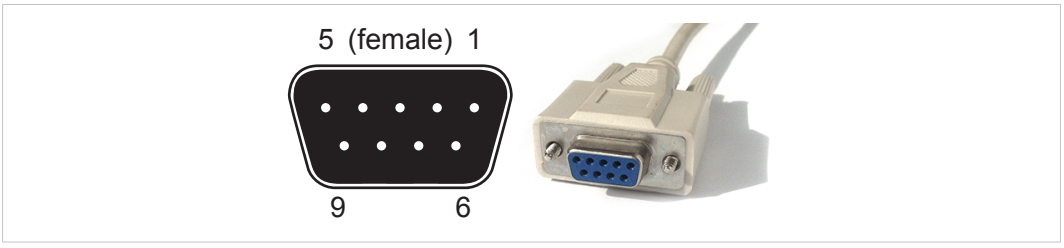

Fig. 33 D-sub connector

GPS cable pin assignment

EC250 RS-232 port		GPS device
2	Rx (Receive)	Tx
3	Tx (Transmit)	Rx
5	GND	GND

7 Ethernet Network Setup

> **!** Netbiter EasyConnect gateways should only be installed in networks with firewall protection. Contact your network administrator if in doubt.

Netbiter EasyConnect gateways require outbound (outgoing) access on TCP ports 5222, 443 and 80 to connect to Netbiter Argos. Connection attempts will be made to 3 different servers with a timeout of 30 seconds for each server. This means that it may take up to 4½ minute to establish a connection (3 ports x 3 servers x 30 seconds).

The following ports may also need to be opened in the firewall:

502 (TCP)	Default port for Modbus TCP
8080 (TCP)	Alternative web server port
53 (UDP)	External DNS

7.1 IP Addressing

Netbiter gateways can use static or dynamic IP addressing (DHCP). When using DHCP, the TCP/IP settings will be configured automatically. DHCP is the default setting.

The TCP/IP settings in Netbiter EC150 and EC250 can be configured using IPconfig, a Windows-based configuration utility that automatically detects Netbiter gateways on a local network.

If the network uses a proxy to connect to the Internet you also need to set up the proxy configuration in the local configuration web interface. See *Local Configuration (EC150/EC250), p. 26*.

7.2 IPconfig

7.2.1 Installing the IPconfig Utility

1. Download IPConfig from www.netbiter.com/support.
2. Extract the contents of the zip archive in a folder on your computer and double-click the executable file to run it.

7.2.2 Scanning for Connected Devices

Make sure that the Netbiter gateways to be installed are connected on the same Ethernet subnet as the computer running IPconfig. Use standard Ethernet cables.

When the IPconfig utility is started it will scan the Ethernet network for Netbiter gateways. All detected units will be presented in a list in the main window. To refresh the list, click on **Scan**.

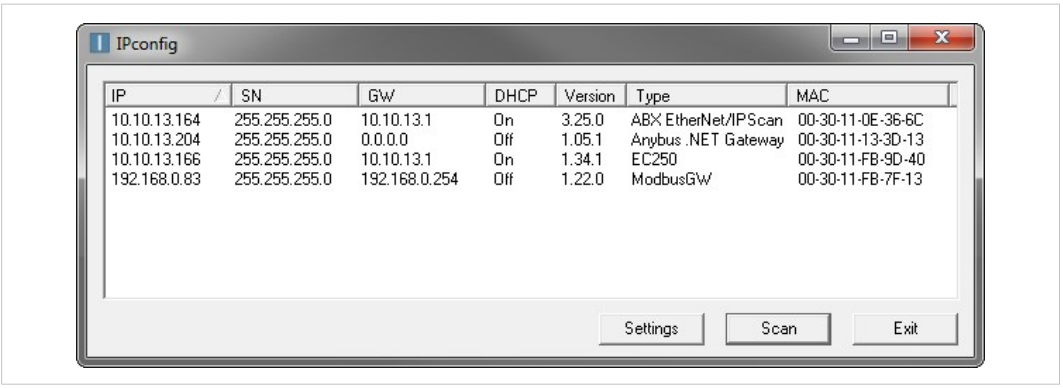

Fig. 34 IPconfig main window

Main window columns	
IP	IP address of the Netbiter gateway
SN	Subnet mask
GW	Default gateway
DHCP	Automatically managed IP configuration
Version	Firmware version
Type	Netbiter model name
MAC	Ethernet MAC address (System ID)

7.2.3 Changing IP settings

To change the IP settings for a unit, either double-click on the entry in the list or right-click on it and select **Configuration**.

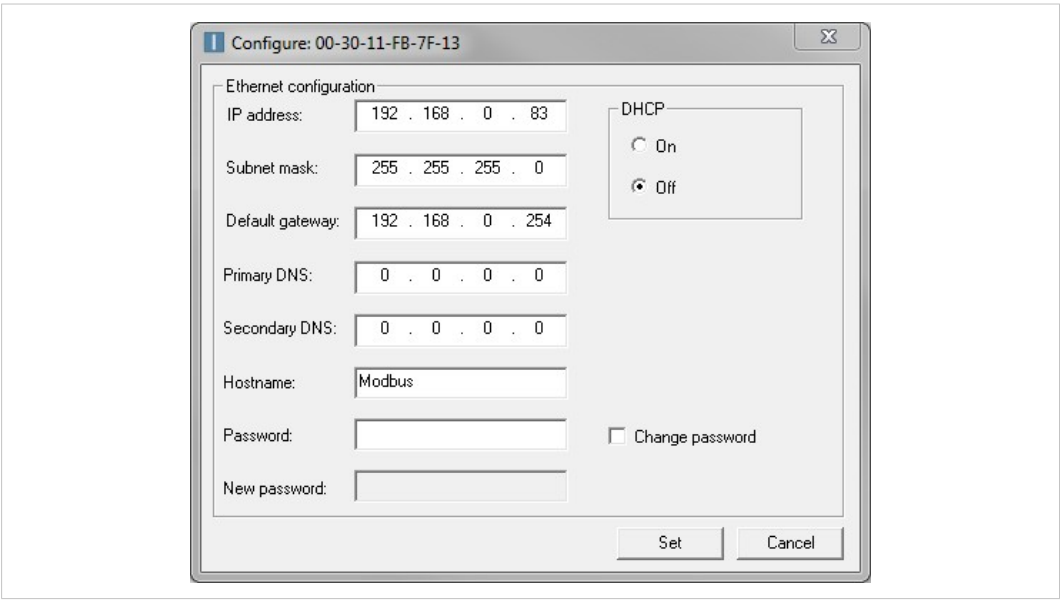

Fig. 35 IPconfig settings

Notes

- Do not enable DHCP if there is no DHCP server available on the network.
- You can add a name for the Netbiter gateway in the **Hostname** field. Only the characters a-z, A-Z, 0–9 and _ (underscore) are allowed.
- The default password for authentication of the new settings in Netbiter EC150, EC250, and WS series gateways is *admin*.

  To change the password: check the **Change password** box, enter the current password in **Password**, enter the new password in **New password**, then click on **Set**.

!	For security reasons, the password “admin” should always be changed.

*The password in IPconfig is **not** related to the password for the local configuration pages.*

Click **Set** to save the new settings and restart the Netbiter gateway. Please note it that may take some time before the gateway is online again after a reboot.

8 Activation

8.1 Adding the Gateway to Netbiter Argos

Before a Netbiter EasyConnect gateway can be used it must be registered and activated from a user account in Netbiter Argos.

For instructions on how to add a Netbiter gateway to Netbiter Argos, please refer to the *Netbiter Argos Administration Manual* which can be downloaded from the Netbiter support website www.netbiter.com/support.

Fig. 36 Netbiter Argos

9 Local Configuration (EC150/EC250)

> **!** Local configuration is normally not required and should only be carried out when necessary. Please read the instructions below carefully.

Netbiter EC150 and EC250 have a built-in web interface that can be used for initial configuration and troubleshooting.

Netbiter Argos is the preferred way of configuring the gateway. The built-in web interface is primarily intended for informational purposes and troubleshooting. The only configuration changes that should be made using the local web interface are:

- Proxy settings (if required)
- Modem/Ethernet connection mode (EC250 only)
- PIN code settings – if using a PIN code for the SIM card (EC250 only)
- Firmware updates

Other configuration changes that are made locally will not be synchronized with Netbiter Argos.

9.1 Connecting to the Web Server

The computer used to access the local configuration must be on the same Ethernet network subnet as the gateway. The computer can also be connected directly to the gateway using a crossover Ethernet cable. This may require the IP address for the Ethernet interface on the PC to be changed.

Use *IPconfig* to detect the IP address of the gateway, then right-click on the entry for the gateway and select **Open Web Interface**. This will open its local web server in your default browser. See also *IPconfig, p. 23*.

If the IP address is known you can also type it directly into the address field of a web browser.

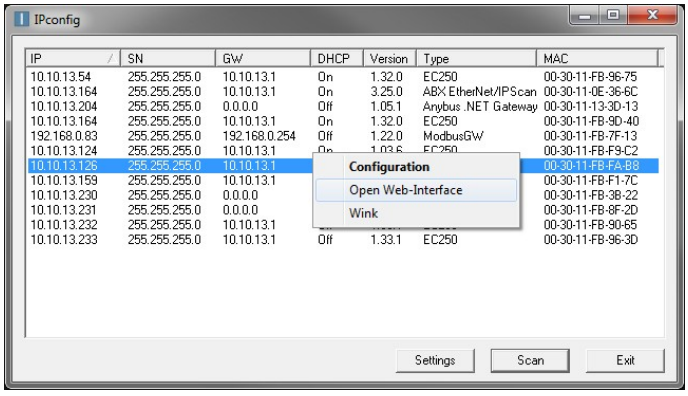

Fig. 37 IPconfig

9.2 Login

Enter the IP address of the gateway in a web browser to log in. The default user name is *admin*, and the password is the activation code supplied with the unit.

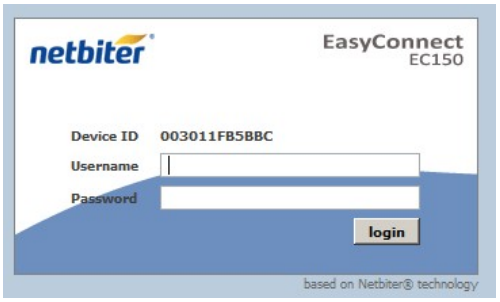

Fig. 38 Local web server login

9.3 Status

The **Status** page presents an overview of the current connection status.

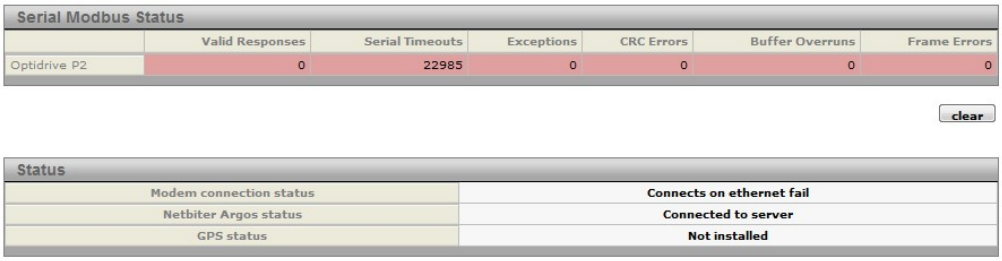

Fig. 39 Status page

9.4 Modbus Settings

Settings for Modbus communication. These settings should normally be made in Netbiter Argos. See the *Netbiter Argos Administration Manual* for more information.

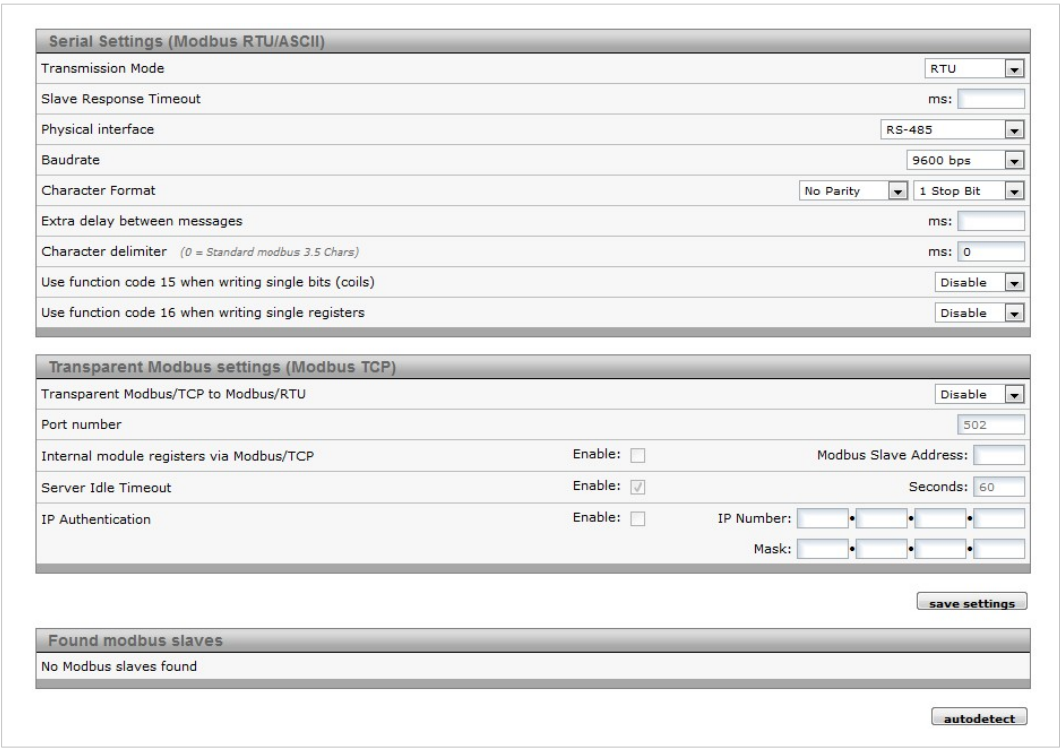

Fig. 40 Modbus Settings

9.5 Ethernet Settings

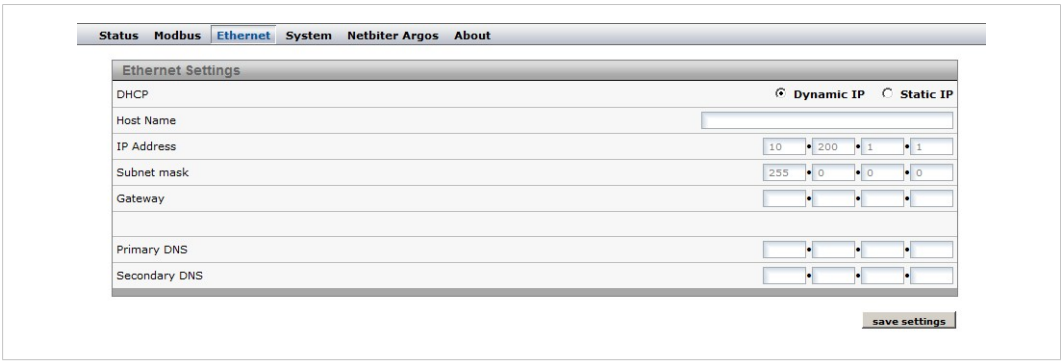

Fig. 41 Ethernet settings

These are the same settings as those entered in IPconfig, see *IPconfig, p. 23*.

When DHCP is enabled the unit will automatically receive the settings for IP address, subnet mask, default gateway, and DNS. Contact your network administrator if in doubt.

9.6 System Settings

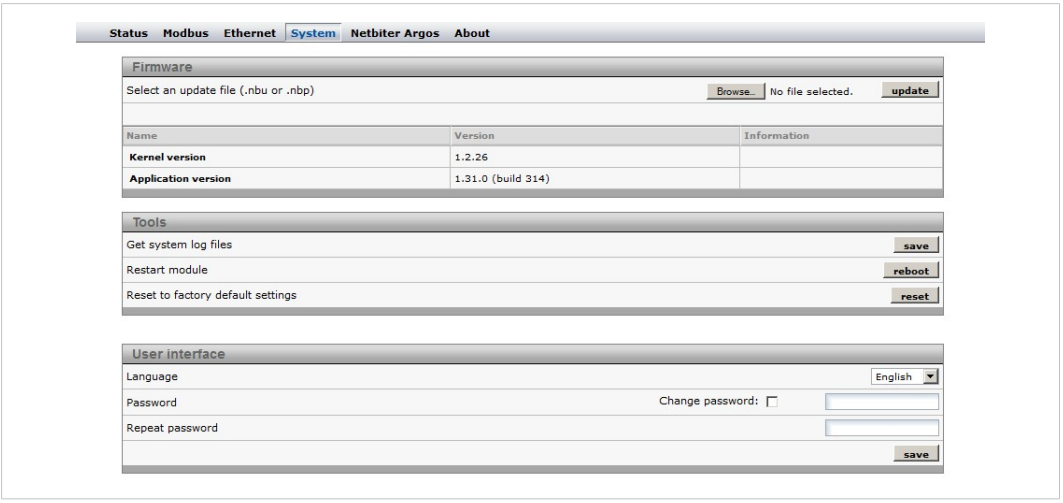

Fig. 42 System settings

This page is intended for troubleshooting and for updating firmware when there is no connection to Netbiter Argos.

9.6.1 Updating Firmware

1. Download the latest firmware from www.netbiter.com/support.
2. Click on **Browse** and select the firmware file you downloaded.
3. Click on **Update** to start the update.

> **!** Do not close the web page while the update is in progress.

The firmware in Netbiter EC150 and EC250 can alternately be uploaded via the RS-232 serial interface. See *Netbiter Update (EC150/EC250), p. 32*.

9.7 Netbiter Argos

This page contains settings for connecting to Netbiter Argos and shows the status of the connection.

9.7.1 Proxy Setup

If you are connecting to the Internet via a proxy, select the proxy type in the drop-down menu **Use proxy to connect to Internet** and fill in the IP address, the port number to use on the LAN side, and (if required) the username and password for the proxy server.

Click on **Save settings** when finished.

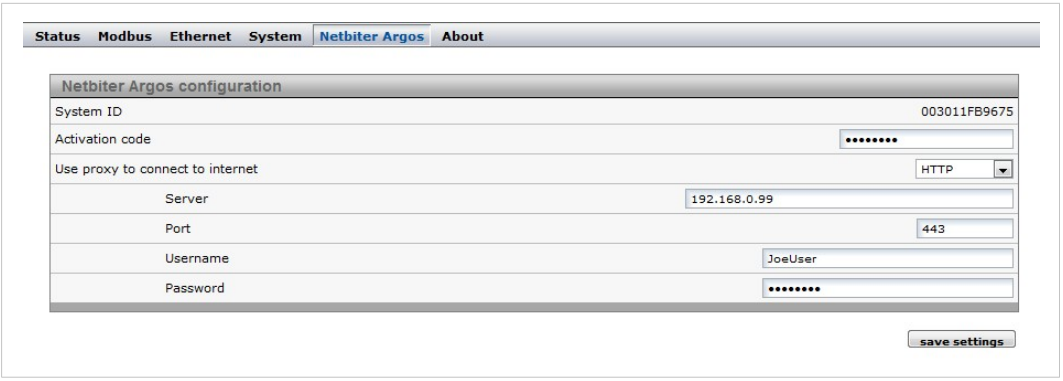

Fig. 43 Netbiter Argos and proxy configuration

WAN Ports

The proxy server must allow traffic on at least one of the following ports:

- Port 443
- Port 80
- Port 5222

> **!** If none of the ports listed above are open on the WAN side, the gateway will not be able to communicate with Netbiter Argos.

9.8 Modem Settings (EC250)

Fig. 44 Modem settings

If you are using a SIM card with PIN code security activated, click on **Enable** and enter the PIN code (provided by the card supplier). To test the PIN code, click on **Test PIN**.

> **!** This setting will **not** enable/disable PIN code security or change the PIN code on the SIM card. To do that, install the SIM card in a mobile phone and follow the instructions from the manufacturer.

9.8.1 GPRS/Ethernet Failover Settings

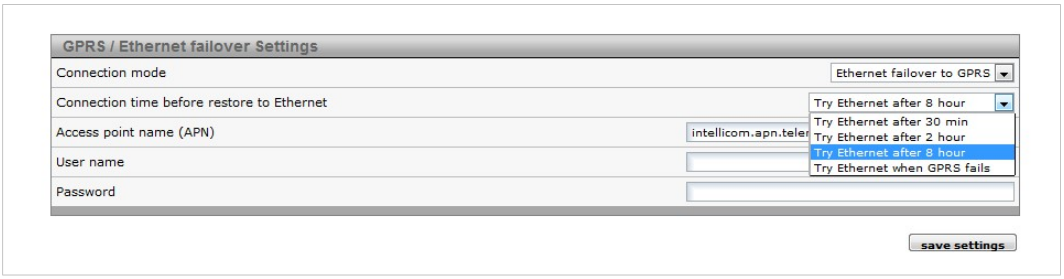

Fig. 45 GPRS/Ethernet failover settings

Netbiter EC250 can be set to temporarily switch to mobile networking if Ethernet fails.

Connection mode	**GPRS only**: Ethernet disabled (default mode) **Ethernet failover to GPRS**: Unit will automatically switch to GPRS if Ethernet connection is lost **Ethernet only**: GPRS modem disabled
Connection time before restore to Ethernet	Sets the time before the gateway should retry the Ethernet connection after a failover to GPRS. The cycle will be repeated until Ethernet communication has been reestablished.
Access point name (APN)	The identifying name used to connect to a mobile network. This information is supplied by the network operator for the SIM card.
User name/Password	Required by some mobile network operators.

Click on **Save settings** when finished.

9.9 GPS Settings (EC250)

Settings for communication with an external GPS device. These settings should normally be made in Netbiter Argos. See the *Netbiter Argos Administration Manual* for more information.

10 Netbiter Update (EC150/EC250)

The easiest way to update firmware is via Netbiter Argos, with the local configuration pages as a backup option if Netbiter Argos cannot be used. In Netbiter EC150 and EC250 firmware can also be uploaded via the RS-232 serial (D-sub) interface using a free Windows-based software tool, *Netbiter Update*.

Updating Firmware with Netbiter Update

Requirements

– Null modem cable

– Computer with RS-232 serial interface (COM port)

1. Download Netbiter Update from www.netbiter.com/support.
2. Connect a null modem cable between the serial port on the computer and the D-sub connector on the Netbiter gateway.
3. Start Netbiter Update. The COM port should already be selected. Leave the **Baudrate** setting at **Auto**.

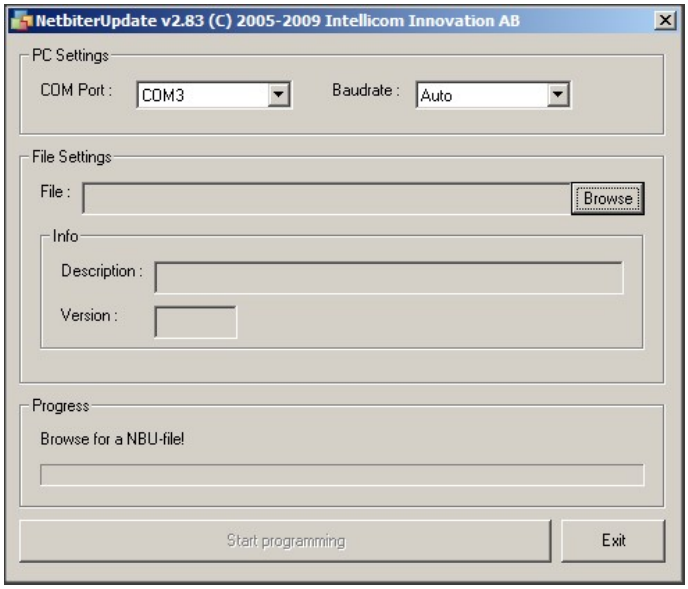

Fig. 46 Netbiter Update

4. Click on **Browse** and locate the firmware file you downloaded, then click **Open**.

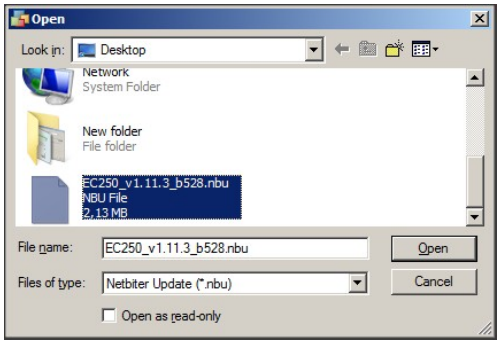

Fig. 47 Select file dialog

5. Power OFF the Netbiter gateway.

6. Click on **Start programming** and wait for the process to complete.

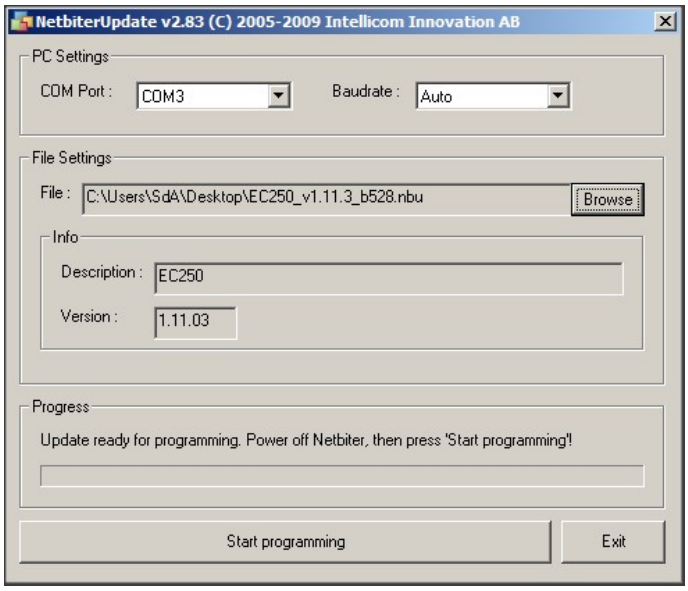

Fig. 48 Start programming

7. Power ON the Netbiter gateway when prompted to do so.

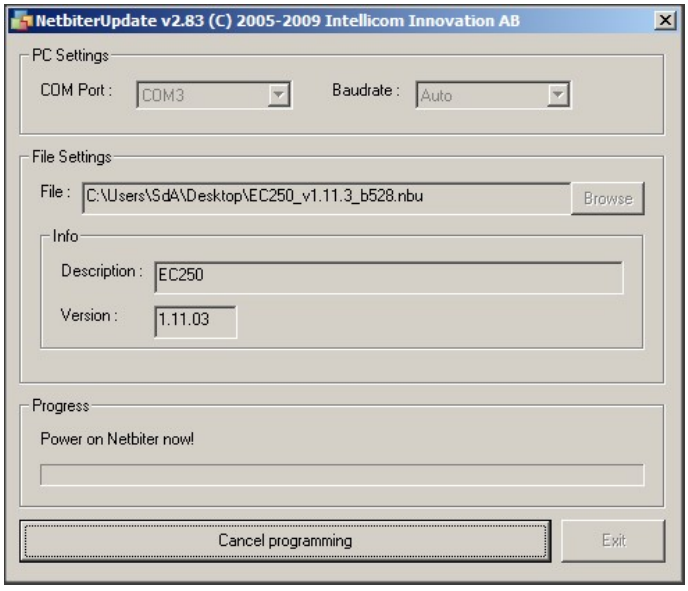

Fig. 49 Power on the Netbiter gateway

8. Wait for the tool to complete the update.

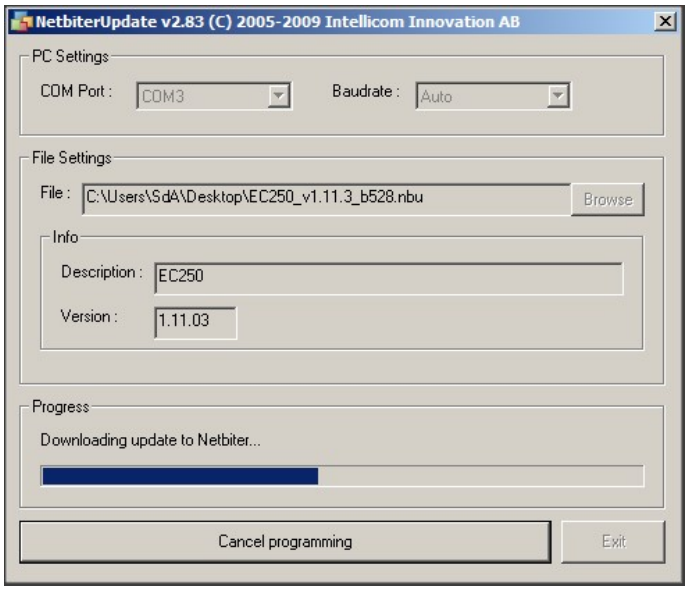

Fig. 50 Updating in process

9. When the update is finished you will be prompted to reboot the Netbiter gateway. Click on **Yes** to reboot.

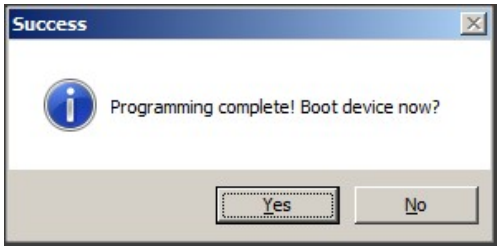

Fig. 51 Reboot the Netbiter gateway

A EtherNet/IP Implementation

See also the *Netbiter Argos Administration Manual* on how to configure EtherNet/IP.

A.1 Client

Connection Type

UCMM (Class 1 and 3 connection not supported)

Adapter Timeout

1000 ms

Services

The following services are implemented:

Code	Service Name	Addressing	Note
0x0E	Get_Attribute_Single	Class, Instance, Attribute	
0x10	Set_Attribute_Single	Class, Instance, Attribute	
0x4C	Read_Tag_Service	Symbolic Segment Addressing	Can be used to access Controller Tags. Vendor specific service code (see note below).
0x4D	Write_Tag_Service		

Read_Tag_Service and Write_Tag_Service using symbolic segment addressing is only supported by some PLCs. Please refer to the PLC vendor's documentation for more information.

A.2 Adapter

A.2.1 Identity Object (0x01)

Class Attributes

No attributes are implemented.

Instances

Instance 1 is implemented with the following attributes:

ID	Access	Name	Value
1	Get	Vendor ID	90
2	Get	Device Type	100
3	Get	Product Code	85
4	Get	Revision	1
5	Get	Status	1
6	Get	Serial Number	...
7	Get	Product Name	Netbiter

Services

The following services are implemented:

Code	Class	Instance	Service Name
0x01	No	Yes	Get_Attribute_All
0x0E	No	Yes	Get_Attribute_Single

A.2.2 TCP/IP Interface Object (0xF5)

Class Attributes

The following class attributes are implemented:

ID	Access	Name
1	Get	Revision

Instances

Instance 1 is implemented with the following attributes:

ID	Access	Name
1	Get	Status
2	Get	Configuration Capability
3	Get	Configuration Control
4	Get	Physical Link Object
5	Get	Interface Configuration
6	Get	Hostname
13	Get/Set	Encapsulation Inactivity Timeout

Services

The following services are implemented:

Code	Class	Instance	Service Name
0x0E	No	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

A.2.3 Ethernet Link Object (0xF6)

Class Attributes

No attributes are implemented (= Rev 1).

Instances

Instance 1 is implemented with the following attributes:

ID	Access	Name
1	Get	Interface Speed
2	Get	Interface Flags
3	Get	Physical Address

Services

The following services are implemented:

Code	Class	Instance	Service Name
0x0E	No	Yes	Get_Attribute_Single

B Technical Data

Technical Specifications

Model name	Netbiter EC150	Netbiter EC220	Netbiter EC250
Order code	NB1001	NB1000	NB1003
Ethernet	10/100 Mbit/s	-	10/100 Mbit/s
GPRS	N/A	Quad band GPRS Class 12 850/900/1800/1900 MHz	Quad band GPRS Class 12 850/900/1800/1900 MHz
Alarms	E-mail, SMS	E-mail, SMS	E-mail, SMS
Relay output (max 24 V AC/DC, 1 A)	N/A	1	N/A
Digital inputs (isolated max 24 VDC)	2	2	2, isolated max 24 VDC
Analog inputs	N/A	2 inputs (PT100/0–10 V/ 0–20 mA) Resolution: 11.25 bit (raw value 0–2400) Input tolerance 0–10 V: R=1.55 %, A/D=2 mV Input tolerance 4–20 mA: 2.14 %, A/D=2 mV	N/A
Analog output (0–10 V)	N/A	1	N/A
Serial port #1	RS-232 up to 115.2 kbit/s	RS-232 up to 115.2 kbit/s	RS-232 up to 115.2 kbit/s
Serial port #2	RS-232/RS-485 up to 115.2 kbit/s (isolated)	RS-485 up to 115.2 kbit/s (isolated)	RS-485 up to 115.2 kbit/s
Antenna connector	N/A	SMA female	SMA female
Protocols	Modbus-RTU/ASCII/TCP	Modbus-RTU	Modbus-RTU/ASCII/TCP
Connected devices	32	16	32
Baud rates	300–115200 baud	300–115200 baud	300–115200 baud
Wall mounting	No	Yes	No
DIN rail mounting	Yes	Yes (optional)	Yes
Dimensions (W x D x H)	90 x 70 x 58 mm	92 x 115 x 25 mm	90 x 70 x 58 mm
Operating temperature	-40 to +65 °C	-30 to +65 °C	-30 to +65 °C
Storage temperature	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C
Housing class	IP20	IP20	IP20
Input voltage	9–24 V DC/AC	9–24 V DC	9–24 V DC
Power consumption	2 W (typical)	2 W (typical)	3 W (typical)
Certifications	CE, RoHS	CE, $_{c}$UL$_{US}$, FCC/IC, PTCRB	CE, RoHS, $_{c}$UL$_{US}$ FCC/IC (pending), PTCRB (pending)

All measurements are in millimeters.

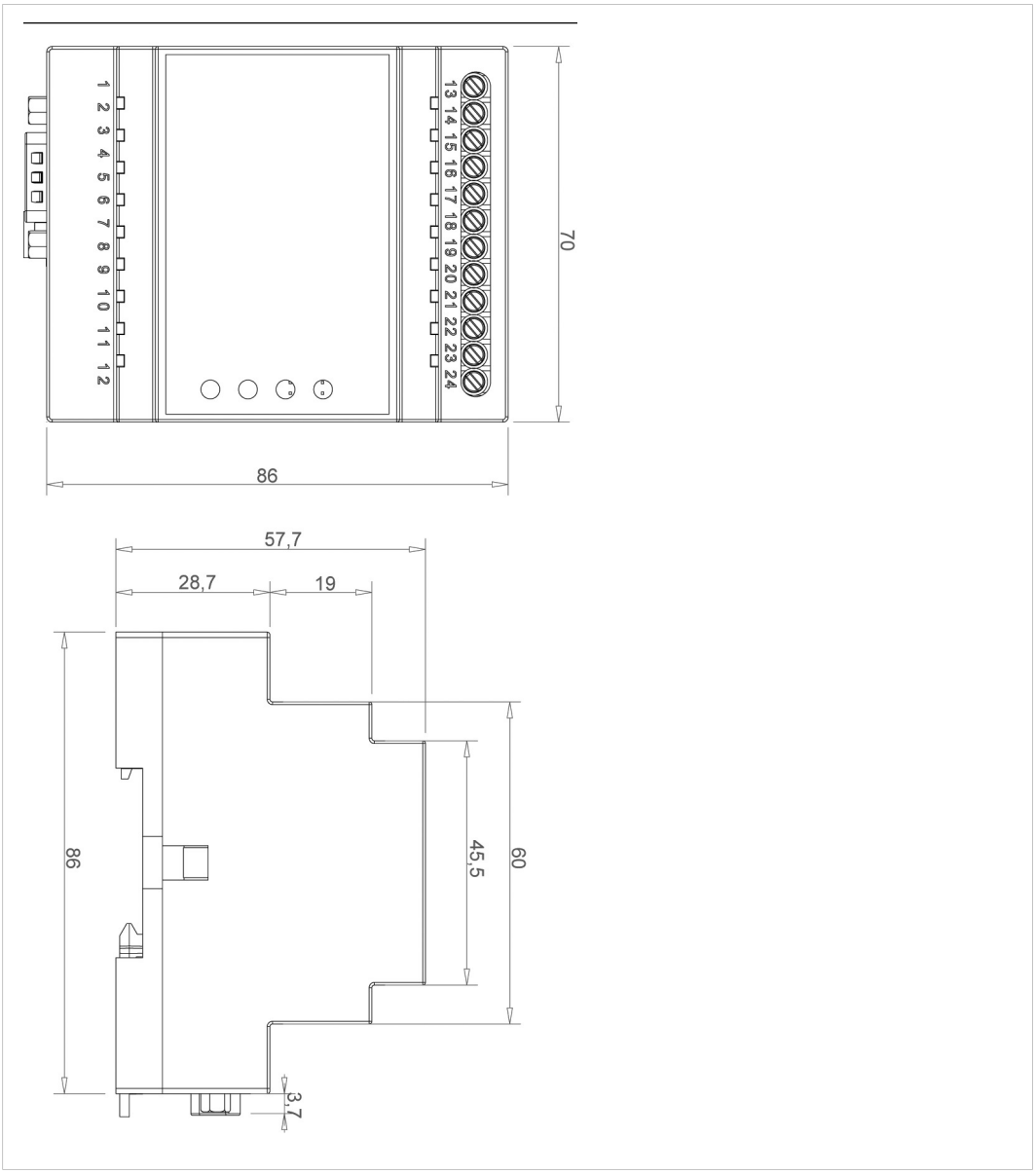

Fig. 52 EC150 dimensions

All measurements are in millimeters.

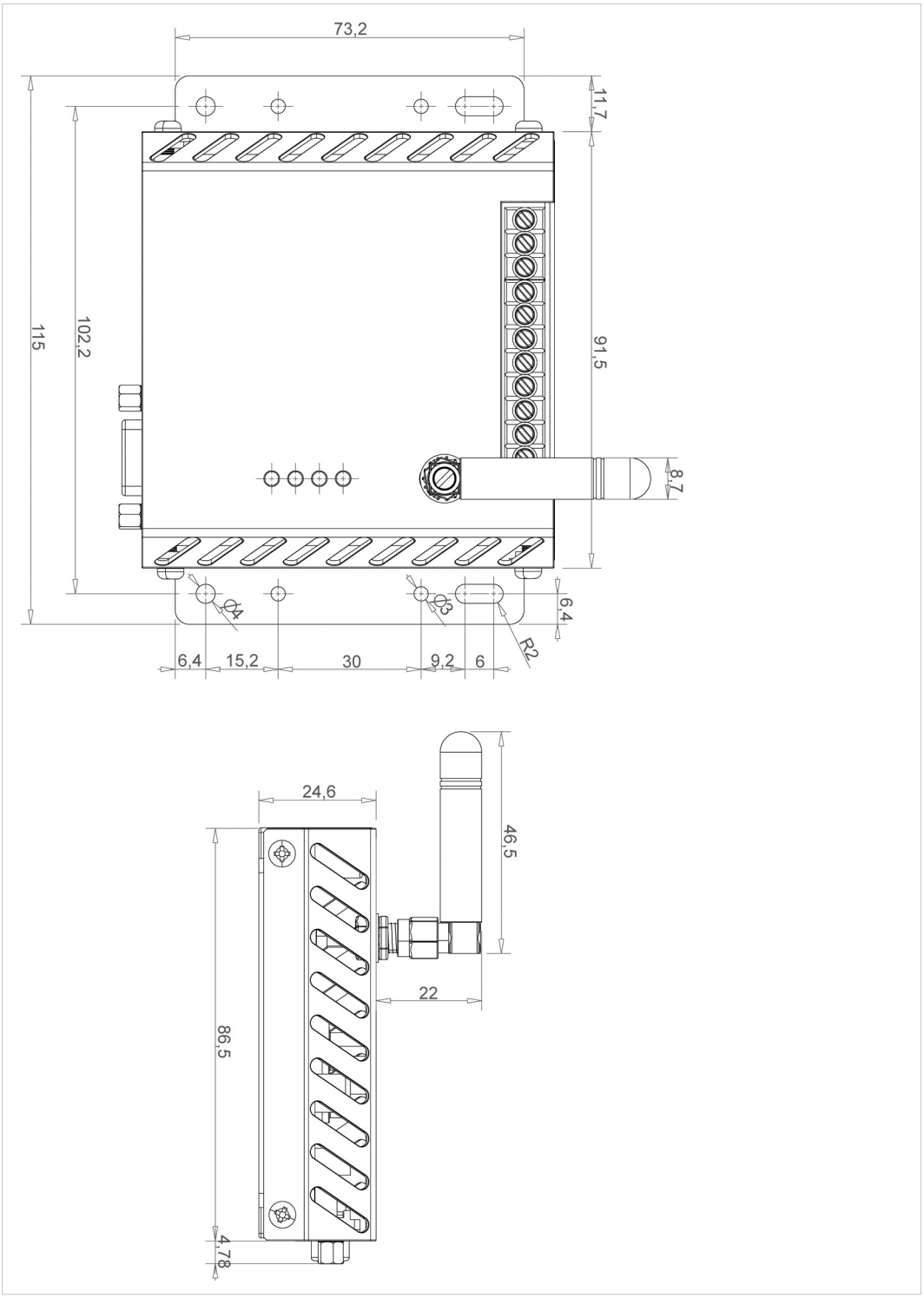

Fig. 53 EC220 dimensions

All measurements are in millimeters.

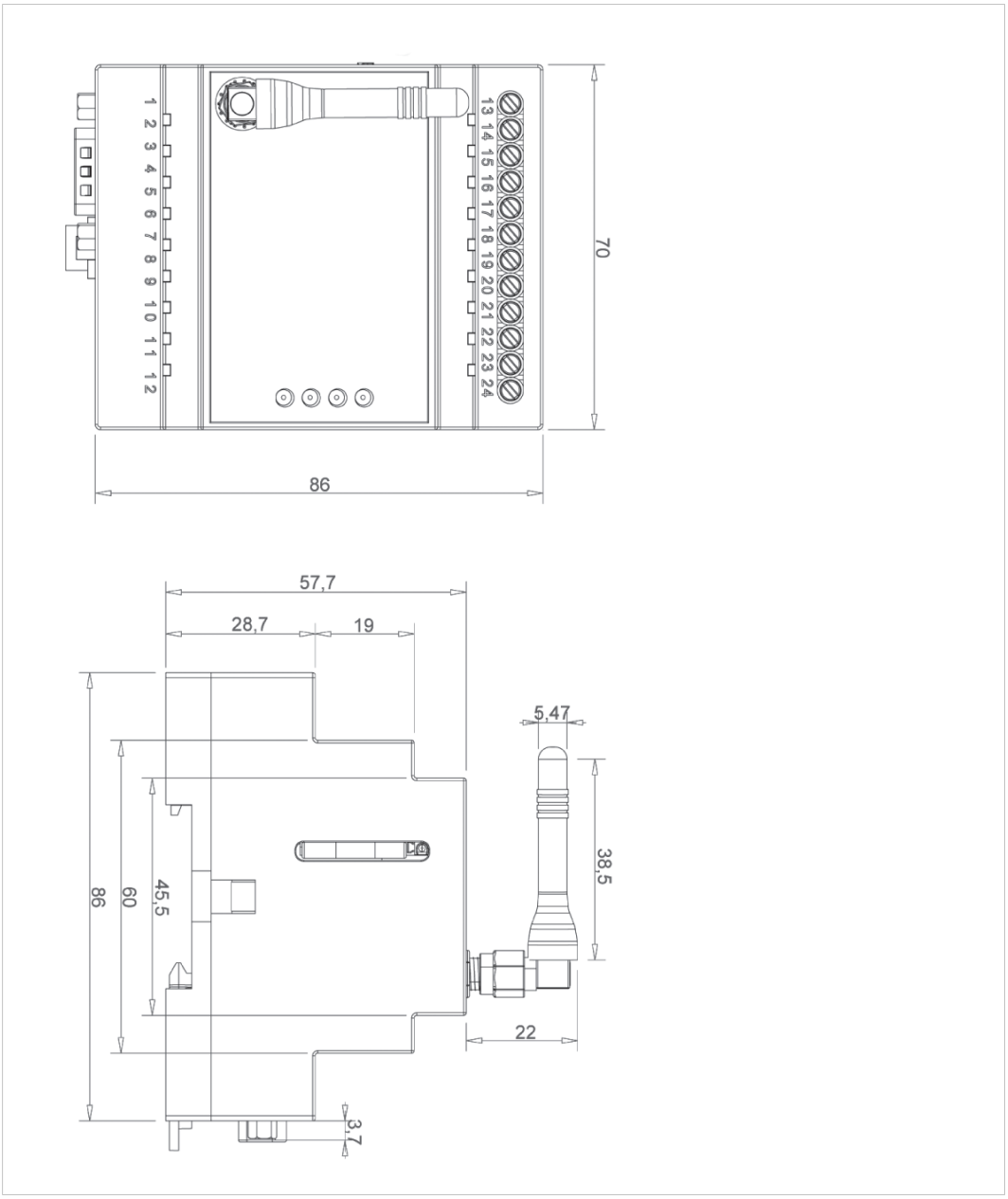

Fig. 54 EC250 dimensions

C Regulatory Compliance

EMC Compliance (CE)

The products Netbiter EC220 and EC250 are in compliance with the RED Directive 2014/53/EU through conformance with the following standards:

EMC

EN 55022 (2011)
EN 301 489-1 v1.9.2
EN 301 489-3 v1.6.1
EN 301 489-7 v1.3.1
EN 301 489-24 v1.5.1
EN 300 440-1 v1.6.1
EN 300 440-2 v1.4.1

EN 61000-6-2 (2005)
- EN 61000-4-2 (2009)
- EN 61000-4-3 (2006)
- EN 61000-4-4 (2012)
- EN 61000-4-5 (2014)
- EN 61000-4-6 (2014)

Effective use of frequency spectrum

EN 301 511 v9.0.2
EN 301 908-1 v6.2.1
EN 301 908-2 v6.2.1

Safety

EN 60950-1 (2006)

The product Netbiter EC150 is in compliance with the EMC Directive 2014/30/EU through conformance with the following standards:

Emission standard for industrial environment

EN 61000-6-4 (2007)
- EN 55016-2-3, Class A (2010)
- EN 55022, Class A (2011)

Immunity for industrial environment

EN 61000-6-2 (2005)
- EN 61000-4-2 (2009)
- EN 61000-4-3 (2006)
- EN 61000-4-4 (2012)
- EN 61000-4-5 (2014)
- EN 61000-4-6 (2014)

The Declaration of Conformity is available at www.netbiter.com/support.

Disposal and Recycling

You must dispose of this product properly according to local laws and regulations. Because this product contains electronic components, it must be disposed of separately from household waste. When this product reaches its end of life, contact local authorities to learn about disposal and recycling options, or simply drop it off at your local HMS office or return it to HMS.
For more information, see www.hms-networks.com.

UL Certification

c UL US LISTED

The products Netbiter EC220 and EC250 are Listed to applicable UL Standards and requirements by UL. See complete marking on product.

FCC Compliance Statement (EC220, EC250)

The design of this equipment complies with U.S. Federal Communications Commission (FCC) guidelines respecting safety levels of radio frequency (RF) exposure for Mobile devices.

This product contains FCC ID:	
QIPTC65i	(EC220)
QIPTC63i	(EC250)

> **!** **RF Exposure** – This device is only authorized for use in a mobile application. At least 20 cm of separation distance between the device and the user's body must be maintained at all times.

> **!** Any changes or modifications not expressly approved by HMS Industrial Networks AB could void the user's authority to operate the equipment.

> **!** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Statement (EC220, EC250)

This product contains IC ID:	
7380A-TC65i	(EC220)
7380A-TC63i	(EC250)

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