Anybus® Serial Server

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Table of Contents

1 Preface

1.1 About This Document

This manual describes how to install and configure Anybus Serial Server.

For additional related documentation and file downloads, please visit the Anybus support web-site at www.anybus.com/support.

1.2 Document history

Summary of recent changes

Change	Where (section no.)
Updated CE/UL compliance information	*B*

Revision list

Version	Date	Author	Description
1.00	030302	JOAK	First released version.
1.10	051101	HACA	Update for Modbus support, etc.
1.20	060630	MASA	Update to new design structure.
1.20:1	061117	PeP	Updated layout + misc. minor changes.
1.40:1	080403	PeP	Updated to match new version of product.
1.50	130923	SDa	Added UL specific information. General update.
2.0	Oct 2015	ThN	Minor corrections, updated screenshots New layout and structure
2.1	April 2016	ThN	Updated compliance information Updated layout

1.3   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.

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Monospaced text is used to indicate program code and other
kinds of data input/output such as configuration scripts.
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This is a cross-reference within this document: *Conventions, p. 4*

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

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i   *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.

1.4   Terminology

In this document the TIA-232/485 serial communication standards are referred to as RS-232/485 when describing hardware, and as EIA-232/485 in the software interface.

2   Introduction

A serial server is a device which forwards data between a serial port and an Ethernet network. It can be used to connect serial devices to a LAN or the Internet with no hardware modifications. When also using a special software driver in a personal computer, the serial server can be used as a remote serial port.

Computer applications designed to access devices on a standard serial port can access the remote serial server with no software modifications required. The combination of the LAN/Internet network, the serial server and the driver can be thought of as an extended "virtual" serial cable.
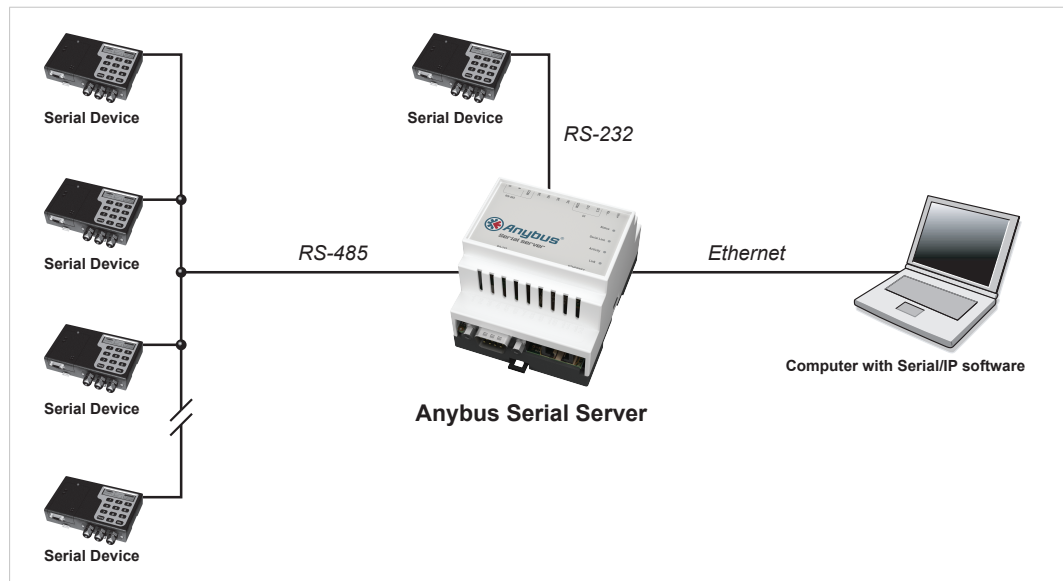
Fig. 1   Overview

The Anybus Serial Server connects serial devices to Ethernet networks using the IP protocol family. Examples of supported types of serial devices are:

- • Scanners

- • Printers

- • PLCs

- • Data collection devices

- • Telecommunications equipment

- • Data display devices

- • Security alarms and access control devices

- • Hand-held instruments

- • Modems

3   Installation

3.1   Mounting on DIN Rail

Mounting

1. Hook the unit onto the upper lip of the rail.

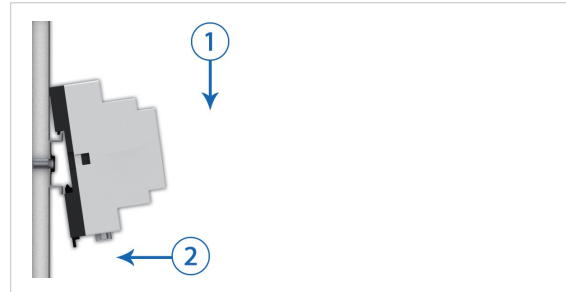2. Press the unit towards the rail until it snaps into place.

Fig. 2   Mounting on DIN rail

Removing

1. Insert a flat-head screwdriver into the slotted tab on the bottom of the unit and pull the tab gently downwards.

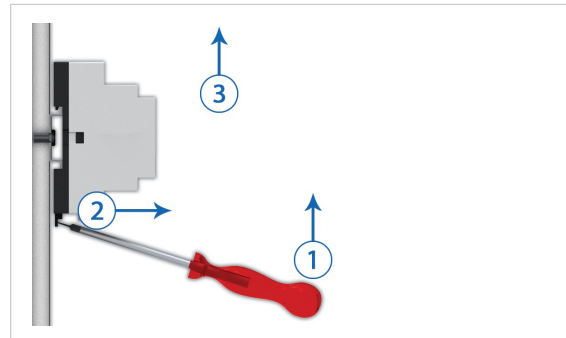2. Pull the bottom end of the unit free of the rail and lift the unit from the rail.

Fig. 3   Removing from DIN rail

3.2   MAC ID and Default IP Address

The default IP address of a Serial Server is **10.200.1.n**, where **n** corresponds to the last number in the MAC ID, which is printed on the label on the side of the unit.

The MAC ID is in hexadecimal format. If the MAC ID is **00:30:11:FA:00:1F**, the IP address will be **10.200.1.31**, since the hexadecimal value 1F = 31.
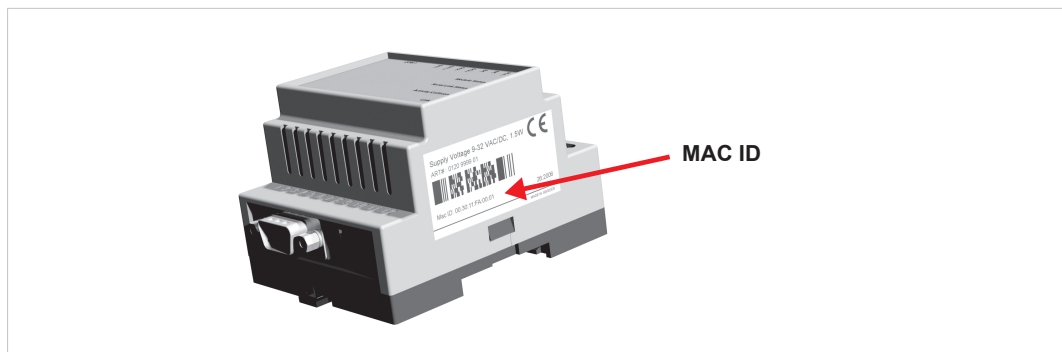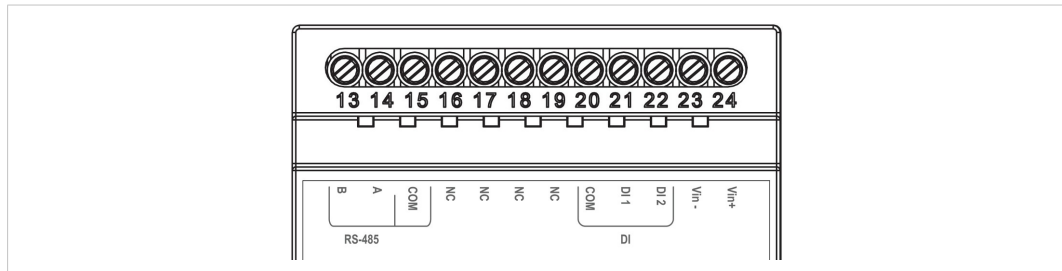

Fig. 4   Label with MAC ID

3.3 Connections

ℹ️ *In this document the TIA-232/485 serial communication standards are referred to as RS-232/485 when describing hardware, and as EIA-232/485 in the software interface.*

3.3.1 Terminal Block


Fig. 5   Terminal block

Terminal block connections

Pin	Label	Description
24	Vin+	Power 9–24 V DC/AC
23	Vin-	PE ground
22	DI:DI 2	Not used
21	DI:DI 1	Not used
20	DI:COM	Not used
19	NC	Not used
18	NC	Not used
17	NC	Not used
16	NC	Not used
15	COM	RS-485 common (signal ground)
14	RS-485:A	RS-485 Line A
13	RS-485:B	RS-485 Line B

3.3.2 D-sub Connector

The 9-pin male D-sub connector provides an RS-232 interface. The Anybus Serial Server is configured as a DTE device.

D-sub connector pin layout

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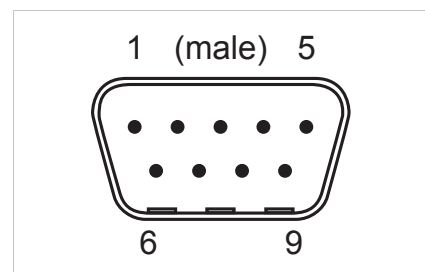
Fig. 6   D-sub connector

3.3.3   Ethernet Connector

The RJ-45 socket provides a 10/100 Mbps Ethernet network connection.

Ethernet connector pin layout

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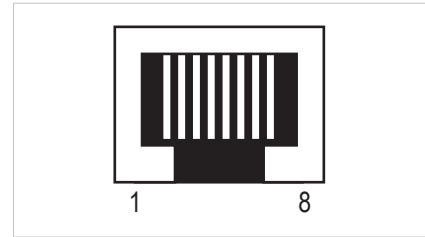
Fig. 7   Ethernet connector

3.4   LED Indicators
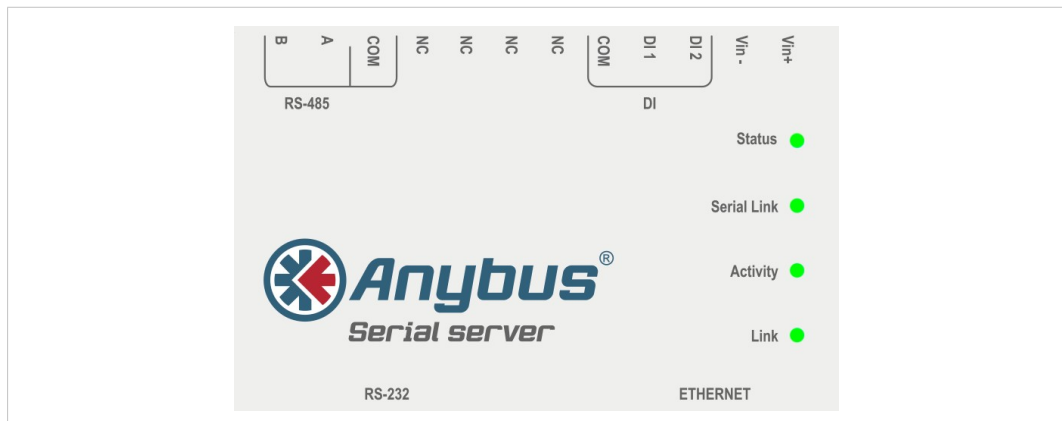
Fig. 8   LED Indicators

LED Indication		Meaning
Status	OFF	No power
	Green	System is operating normally
	Orange	System is starting up
	Red	Hardware fault
	Flashing red	Error during initialization
Serial Link	Flashing green	Receiving serial packet (on either port)
	Flashing red	Transmitting serial packet (on either port)
	Orange	System is starting up
Activity	Flashing green	Receiving Ethernet packet
	Flashing red	Ethernet collision
Link	Green	10 Mbps Ethernet network detected
	Orange	100 Mbps Ethernet network detected

4 Configuration

4.1 IP Configuration

4.1.1 Installing the IPconfig Utility

IPconfig is a Windows-based tool used for TCP/IP network configuration of a HMS devices. The tool will detect all connected devices and allow configuration of their IP address, netmask, default gateway, DNS and hostname.

1. Download IPconfig from www.anybus.com/support.

2. Extract the contents of the zip archive in a folder on your computer and double-click the executable file to run the installer.

4.1.2 Scanning for Connected Devices

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

When IPconfig utility started it will scan the available local networks. All detected devices will be presented in a list in the main window. To refresh the list, click on **Scan**.
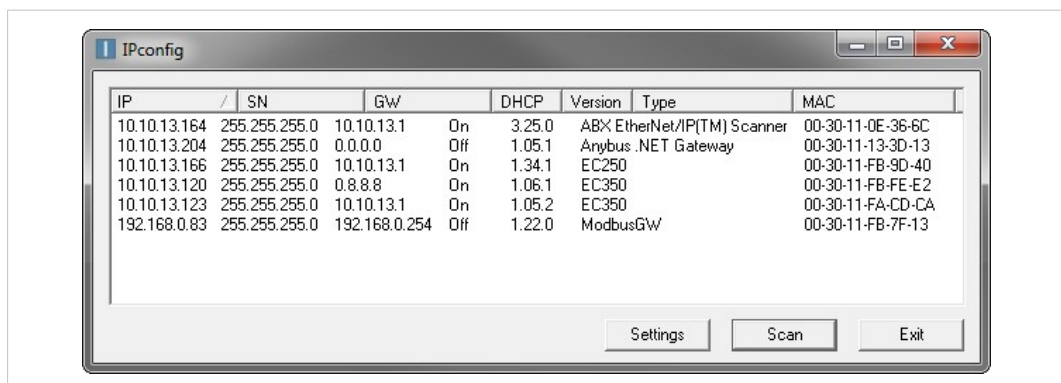

Fig. 9   IPconfig main window

IP	IP address of the device
SN	Subnet mask
GW	Default gateway
DHCP	Automatically managed IP configuration
Version	Firmware version
Type	Product name
MAC	Ethernet MAC address (System ID)

4.1.3 Ethernet Configuration

To change the TCP/IP settings for a device, either double-click on the entry or right-click on it and select **Configuration**.
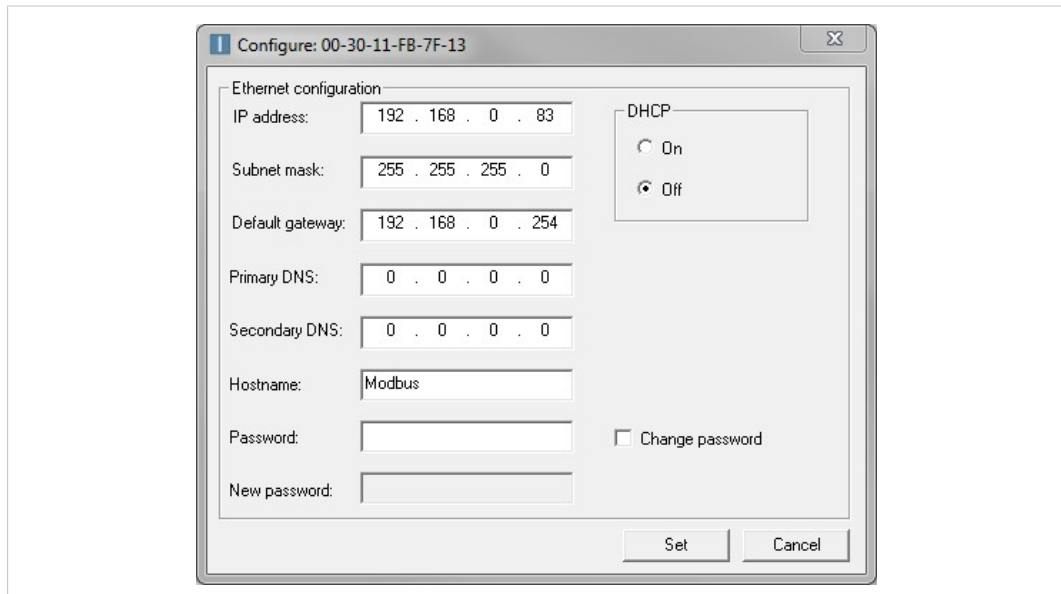

Fig. 10   Ethernet configuration

Notes

- Do not enable DHCP if there is no DHCP server available on the network.
  See also *IPconfig Settings, p. 11*

- You can add a name for the device in the **Hostname** field. Only characters a-z, A-Z, 0–9 and _ (underscore) are allowed.

- The default password for authentication of the new settings is *admin*. To change the password, check the **Change password** box and enter the current password in the **Password** field and the new password in the **New password** field.
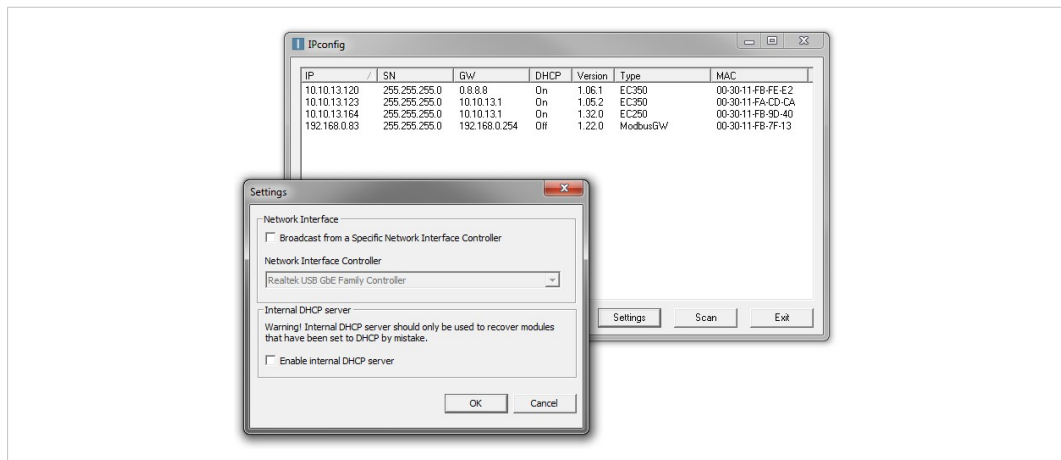
> ❗ For security reasons the default password should always be changed.

Click **Set** to save the new settings. The device will be automatically restarted. The new settings can be tested by opening a web browser and entering the IP address assigned to the device.

4.1.4   IPconfig Settings

Additional settings for IPconfig can be accessed by clicking on **Settings**.

Fig. 11   IPconfig settings

Network Interface	Check this option to select a specific network interface to use when scanning for devices on a computer with multiple interfaces.
Internal DHCP Server	If a device has been set to use DHCP but there is no DHCP server on the network, the device may no longer be detected in a scan. To recover the device, an internal DHCP server in IPconfig can be activated.
	Click the checkbox to enable the option, then click **OK** to close the window. IPconfig will automatically refresh, and the missing device should now be detected. Select the device and change its configuration to use manual addressing instead of DHCP.
	Disable the internal DHCP server after the device has been recovered.

4.2 Installing the Windows Driver (Serial/IP)

To use Anybus Serial Server, the Serial/IP driver software must be installed on a computer. The driver can be downloaded from www.anybus.com/support.

For instructions on how to install and configure the driver, please refer to the *Serial/IP software Quick Start Guide* which is also available on the support website.
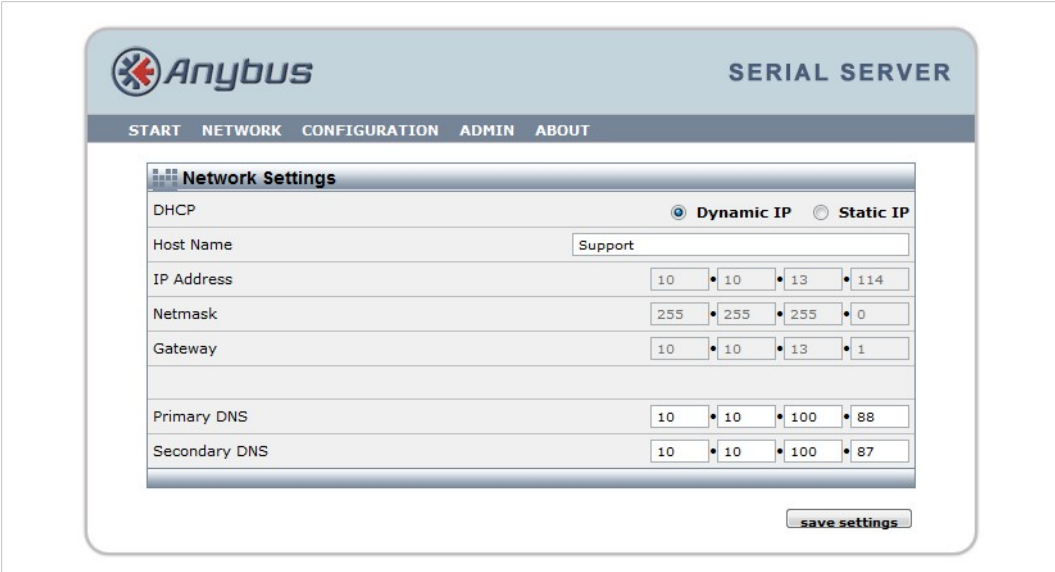
4.3 Configuration Interface

4.3.1 Logging in

Open a web browser and enter the IP address for the Serial Server in the address field.

Log in with username **admin** and the default password **admin**. You can (and should) change the password once you are logged in. See *Admin , p. 14*.

> **i** *If you cannot log in using the default username and password, check that Caps Lock is not enabled on your keyboard.*

4.3.2 Network Settings

Fig. 12   Network settings

The **Network** page allows you to view and change the TCP/IP settings. These settings are the same as those defined in IPConfig.

> **!** Do not enable DHCP if there is no DHCP server available on the network.

Contact your network administrator if in doubt about which network settings to use.

Click on **Save settings** to update the configuration. If you changed the IP address you will have to log in again using the new address in the browser address field.

4.3.3   Serial Port Settings

Fig. 13   Serial port settings

The **Configuration** page contains settings for each of the two serial ports.

ℹ️ *In this document the TIA-232/485 serial communication standards are referred to as RS-232/485 when describing hardware, and as EIA-232/485 in the software interface.*

Serial Port Settings	
Serial Port Number	The port number that the Serial Server listen on, used when connecting from the Serial/IP driver, telnet, or other applications that connect to a socket port. The default port numbers are 2000 for EIA-232 and 2001 for EIA-485.
Modbus Mode	Controls fragmentation of received messages on the serial port. When set to **On**, the low level serial driver will wait 3.5 characters (standard Modbus message break time) before forwarding the received characters.
	Transmission in a single TCP/IP packet prevents fragmentation on the receiving side. The 3.5 char time is calculated from the current baud rate. When set to **Off**, the time can still be selected in milliseconds (see below).
Silent Time	The time in milliseconds to wait before forwarding the received characters to the application in the Serial Server. A value of 0 disables the feature. If so, characters received during approximately 10 ms will be sent in each TCP/IP packet. This may mean less delay for each received byte, but more TCP/IP overhead and possible fragmentation of the serial packet.
Manual Serial Settings	Locks the settings on the serial port. This is useful when (for example) connecting to an application that does not perform setup of the remote serial port.
	If the application does not perform setup of the serial port it defaults to 19200 bps, 8 data bits, no parity, 1 stop bit.

ℹ️ *The Serial Port Number must match the value entered in the Serial/IP Driver configuration.*

Manual Serial Settings	
Baudrate	Sets the communication baud rate on the serial port.
Character Format	Sets the the number of data bits, parity, and stop bits.
Flow Control (EIA-232)	Specifies flow control to be handled by the UART. If enabled, transmit is automatically stopped/continued when the serial buffer is full/available.
	NONE = UART flow control is disabled.
	CTS/RTS = The two UARTs involved use two dedicated wires in the serial cable to control the flow.
	The Serial Server uses RTS to transmit and gets CTS back when it is clear to send. Be sure to use a serial cable with these wires connected.
	XON/XOFF = The remote UART should send characters to signal its buffer state.
Modem Control Lines (EIA-232)	**On** = The modem control lines will be taken into account (DCD, DTR).
	Off = The modem control line states will be ignored.

Click on **Save settings** to update the configuration. The next view will prompt you to click **Reboot** to restart the Serial Server.

After rebooting the Serial Server, wait for about 20 seconds then click on **Start** in the main menu to return to the start page.

4.3.4   Admin

Fig. 14   Modify User (password settings)

This page allows you to change the default password for the gateway. The user name cannot be changed.

> ! For security reasons the default password should be changed after the first login.

A Technical Data

Technical Specifications

Model name	Anybus Serial Server
Order code	AB7701
Ethernet	10/100 Mbit/s
Serial Interfaces	EIA-232 with full modem control (RTS, CTS, DCD, DTR, DSR, RI) EIA-485
Protocols	Modbus RTU, ASCII, TCP
Baud rates	300–115200 bps
Mounting	DIN rail (EN 50022)
Housing	Grey plastic (LEXAN 940) Self-extinguishing according to UL94–V0
Dimensions (W x D x H)	90 x 70 x 58 mm
Operating temperature	-40 to +65 °C
Storage temperature	-40 to +85 °C
Humidity range	5–95 % RH, non-condensing
Housing class	IP20
Power supply	9–24 V DC or AC, SELV
Power consumption	2.0 W
Certifications	CE, $_cUL_{US}$

B   Regulatory Compliance

$C\epsilon$

This product is in compliance with the EMC directive 2014/30/EC through conformance with the following standards:

EN 61000-6-4 (2007)
Emission standard for industrial environment

- EN 55016-2-3, Class A (2010)

- EN 55022, Class A (2011)

EN 61000-6-2 (2005)
Immunity for industrial environment

- 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)

c (UL) US LISTED

E214107

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

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