ED-20 PPP

WESTERMO ®

INSTALLATION MANUAL

6609-2221
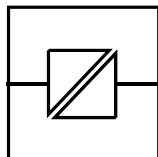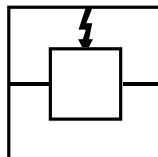
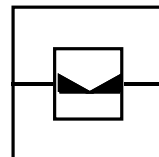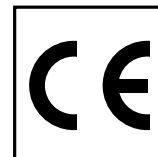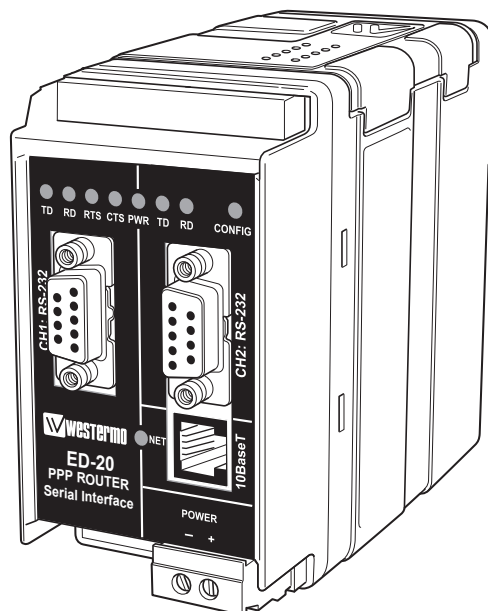|			
Galvanic Isolation	Transient Protection	Balanced Transmission	CE Approved

PPP Router

DigiComm

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Contents

1. Safety

⚠ **General:**
Before using this unit, read this manual completely and gather all information on the unit. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this unit.

⚠ **Before installation, maintenance or modification work:**
Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

⚠ **Installation:**
This unit should only be installed by qualified personnel.

This unit should only be installed in a "restricted access area", for example a lockable cabinet where access is restricted to service personnel only.

This unit is intended for permanent connection to the AC/DC mains supply.

The power supply wiring must be sufficiently fused, and if necessary it must be possible to disconnect manually from the AC/DC mains supply. Ensure compliance to national installation regulations.

Unit with the rated voltage exceeding 42.4 V peak or 60 VDC, is defined as class I equipment with a protective earthing conductor terminal.

Unit with the rated voltage up to 42.4 V peak or 60 VDC, is defined as class III equipment and shall be separated from hazardous voltage by double or reinforced insulation.

This unit uses convection cooling. To avoid obstructing the air flow around the unit, follow the spacing recommendations (see under chapter Installation).

2. Approvals

Conformity with the Directive 89/339/EEC (Electromagnetic compatibility) has been assessed by application of standards EN 61000-6-2 (industrial immunity) and EN 61000-6-4 (industrial emission).

2.1 Declaration of Conformity

Declaration of conformity

The Westermo Teleindustri AB company declares that the listed products conforms to the Council Directive 89/336/EEC, related to Electro Magnetic Compability.

Type of equipment: Industrial Ethernet adapter
Model:

ED-10LV	3609-0001
ED-10LV TCP	3609-0010
ED-10LV Custom	3609-0020
ED-20LV	3609-1001

Standards:

EMC Immunity: EN 50082-1:1997
EN 50082-2:1995
EN 61000-6-2:1999

EMC Emission: EN 50081-1:1992
EN 50081-2:1993

Haus Levin

Technical Manager
April 2002

3. Introduction

The ED-20 is an industrialised DIN Rail mounted, serial to Ethernet Router. The device will allow access to a remote Ethernet network via a Westermo communication product. The device is easily set-up using the ED-Tool for ED-20 configuration program via TELNET or serial connection.

Standard PPP dial-up networking tools can be used from Microsoft Windows 9x, ME, NT, 2000 or XP, Or another ED-20 to connect to the device. Any other platform supporting the PPP protocol could equally be used.

Passwords are provided to increase the remote site security. Once connected to the remote network all TCP/IP, FTP, TELNET and UDP protocol types can be used. Connection to the ED-20 is via 10Base-T on the Ethernet and RS-232 on the serial side. The serial port supports speeds up to 115 k/bit.

Total galvanic isolation ensures that the data communication will not be effected by ground loops or transfer electrical noise between communications ports. The high EMC specification, like all other Westermo production ensures reliability of operation in the harshest of site conditions.
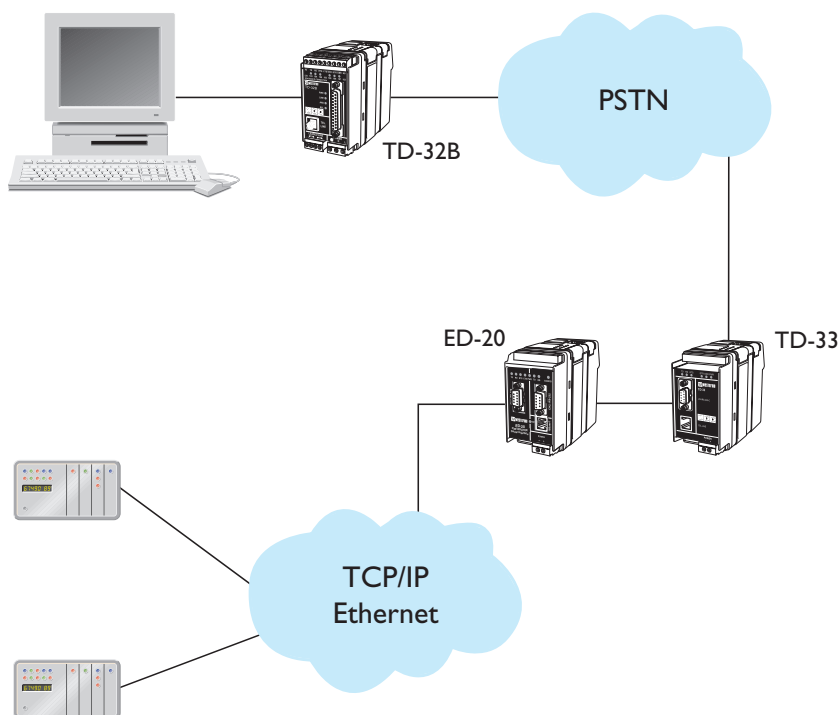
4. Specification

Network Interface	10BASE-T. IEEE std 802.3, 2000 Edition.
Data rate	10 Mbit/s, half duplex.
Mechanical	RJ-45 Modular Jack (ISO/IEC 8877:1992), Unshielded or shielded (UTP/STP).

Serial Interface 1 (CH 1)	RS-232
Data rate	300–115 200 bit/s Full, half duplex or simplex.
Data format	8 Data Bits, No Parity Bit,1 Stop Bit
Control signals	RTS, CTS, DSR, DCD, DTR
Mechanical	9-pin female D-sub, DCE.

Serial Interface 2 (CH 2)	RS-232
Data rate	19 200 bit/s
Data format	8 Data Bits, No Parity Bit, 1 Stop Bit
Control signals	–
Mechanical	9-pin female D-sub, DCE.

Power Interface	
Rated voltage	10–60 VDC polarity independent. / 12–30 VAC
Rated current	350 mA, max @ 10VDC input.
Rated frequency	48–62 Hz
Mechanical	Screw Terminal. 0,2–2,5 mm^2, 24-12 AWG

Isolation	Functional and safety
Power Interface to all other Interfaces*	4.2 kV DC,3 kV RMS @50–60 Hz. EN 60950:2000
Network Interface to serial interface	2.1 kV DC, 1.5 kV RMS @ 50–60 Hz. Applied for 60 sec as specified in 5.3.2 of EN 60950:2000.

Transient Protection

	Power Interface ±4 kV, EN 61 000-4-5:1995 Class 4
Network Interface	±2 kV, EN 61 000-4-5:1995 Class 3
Serial Interface	±0.5 kV, EN 61 000-4-5:1995 Class 1

Application   Serial/Network conversion

Throughput (maximum)	115 kbit/s (1.44 MB data)
Network protocols	TCP, IP, ARP, ICMP, Telnet

Configuration   Remotely over network or locally at serial interface.

Windows based PC-programme.

Indicators (LED)   TD, RD, CTS, RTS, PWR, TD, RD, CONFIG, NET

Climatic environment

	Temperature, operating 5–50°C
Relative humidity, operating	5–95% REL non condensing
Dimension (WxHxD)	55 x 100 x 128 mm
Weight	0.35 kg
Mounting	35 mm DIN-rail
Approvals	CE

* Power to network interface, 1.5 kV RMS @50–60 Hz functional isolation.

5. Maintenance

No maintenance is required, as long as the unit is used as intended within the specified conditions.

6. Installation

6.1 Mounting /Removal

⚠ **Before mounting or removing the unit:**

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

Mounting

This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

This unit uses convection cooling. To avoid obstructing the air flow around the unit, use the following spacing rules.
Minimum spacing 25 mm (1.0 inch) above/below and 10 mm (0.4 inches) left/right the unit.

Snap on mounting, see figure.
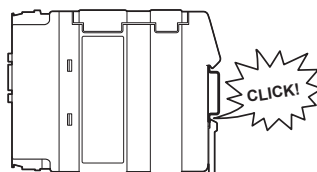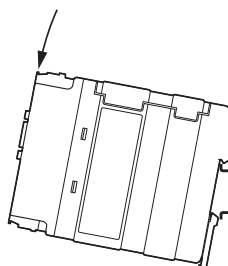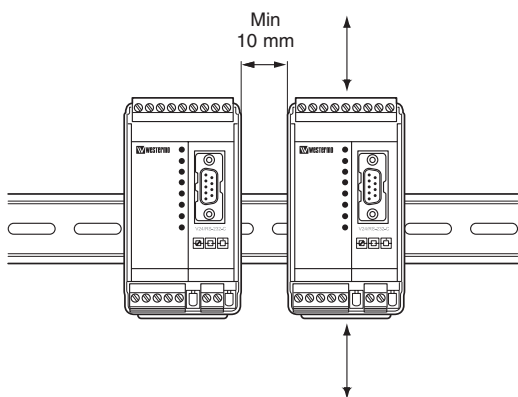
Removal

Press down the black support at the back of the unit using a screwdriver, see figure.

6.2 Connections

Cannel 1:
RS-232 connection

Cannel 2:
RS-232 connection

Ethernet 10Base-T
connection

Power
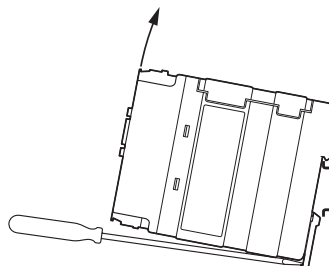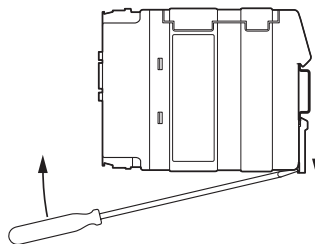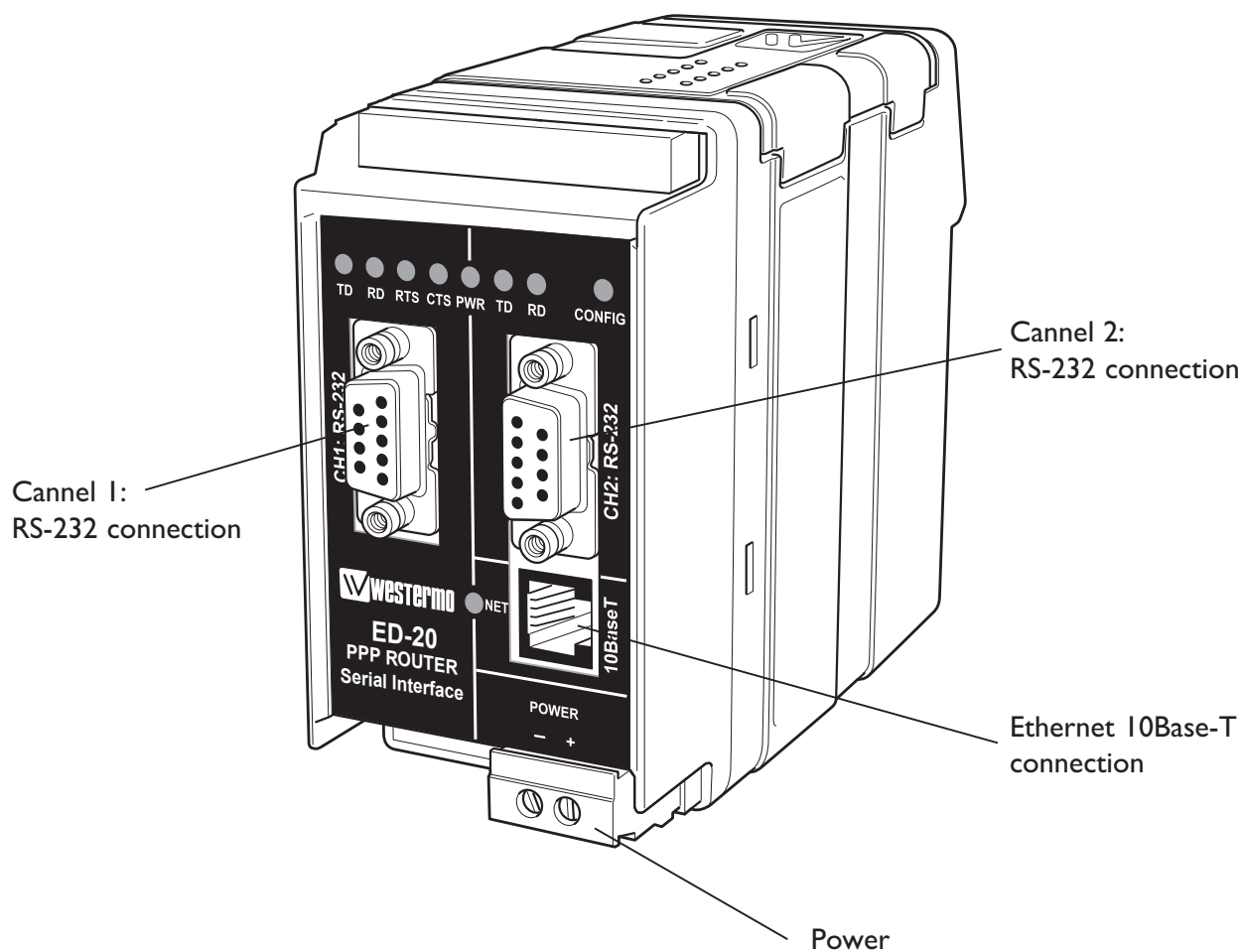
Ethernet 10Base-T Connection (RJ-45 connector), straight function MDI (no crossover)

Contact	Signal Name	Direction**	Description
1	TD+	Out	Transmitted Data
2	TD–	Out	Transmitted Data
3	RD+	In	Received Data
4			NC
5			NC
6	RD–	In	Received Data
7			NC
8			NC
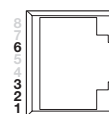
**   Direction relative ED-20

NC   Not connected

CAT 5 cable is recomended.
Unshielded (UTP) or shielded (STP) cables might be used.
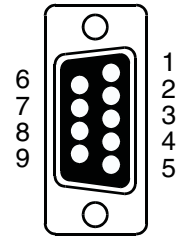
CH1: RS-232 Connections, DCE

Pin Number	Signal Name*			Direction**	Description
	Description	V.24	RS-232C		
1	DCD	109	CF	Out	Data Carrier Detect
2	RD	104	BB	Out	Received Data
3	TD	103	BA	In	Transmitted Data
4	DTR	108.2	CD	In	Data Terminal Ready
5	SG	102	AB	In/Out	Signal Ground
6	DSR	107	CC	Out	Data Set Ready
7	RTS	105	CA	In	Request to Send
8	CTS	106	CB	Out	Clear to Send
9	RI	125	CE	–	Ring Indicator, NC

*   Functionality might differ from standard
**   Direction relative ED-20
NC   Not connected
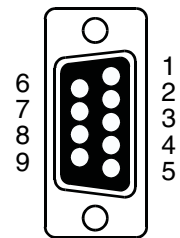
CH2: RS-232 Connections, DCE

Pin Number	Signal Name*			Direction**	Description
	Description	V.24	RS-232C		
1	DCD	109	CF	–	Data Carrier Detect, NC
2	RD	104	BB	Out	Received Data
3	TD	103	BA	In	Transmitted Data
4	DTR	108.2	CD	–	Data Terminal Ready, NC
5	SG	102	AB	In/Out	Signal Ground
6	DSR	107	CC	–	Data Set Ready, NC
7	RTS	105	CA	In	Request to Send, NU
8	CTS	106	CB	Out	Clear to Send, NU
9	RI	125	CE	–	Ring Indicator, NC

*   Functionality might differ from standard
**   Direction relative ED-20
NC   Not connected
NU   Not used

6.3 LED Indicators

From left to right.

CH1:TD		Transmitted Data (incoming serial data):
	LED off	• RS-232 TD =1, Mark (<–3V).
	LED on	• RS-232 TD =0, Space (>3V).
CH1:RD		Received Data (outgoing serial data):
	LED off	• RS-232 RD =1, Mark (<–3V).
	LED on	• RS-232 RD =0, Space (>3V).
CH1:RTS		Request To Send:
	LED off	• RS-232 RTS =Off (<–3V).
	LED on	• RS-232 RTS =On (>3V).
CH1:CTS		Clear To Send:
	LED off	• RS-232 CTS =Off (<–3V).
	LED on	• RS-232 CTS =On (>3V).
PWR		Power:
	LED off	• No internal power, (external power not connected).
	LED on	• Power OK.
CH2:TD		Transmitted Data (incoming serial data):
	LED off	• RS-232 TD =1, Mark (<–3V).
	LED on	• RS-232 TD =0, Space (>3V).
CH2:RD		Received Data (outgoing serial data):
	LED off	• RS-232 RD =1, Mark (<–3V).
	LED on	• RS-232 RD =0, Space (>3V).
CONFIG		ED-20 working mode:
	LED on	• Configuration mode.
	LED off	• Application mode, (or during start up of configuration mode).
NET		Indication of network status:
	LED off	• Link Test failed (no network).
	LED on	• Link Test passed.
	LED flashing	• Data on Network (traffic).

6.4 DIP Switch Settings

DIP-switches are accessible under the lid on top of the unit.

⚠ **Warning!** Prevent damage to internal electronics from electrostatic discharges (ESD)
by discharging your body to a grounding point (e.g. use of wrist strap), before the lid on top of the modem is removed.

⚠ **Warning!** Do not open connected equipment.
Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

NOTE The change of DIP switch settings are valid only after a power on.
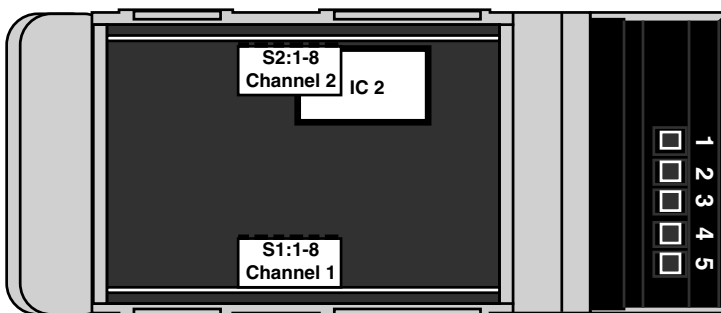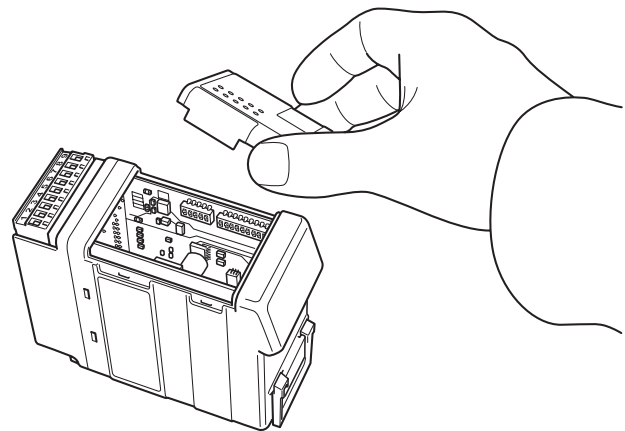
The DIP Swiches is not used in this product, leave as it is.
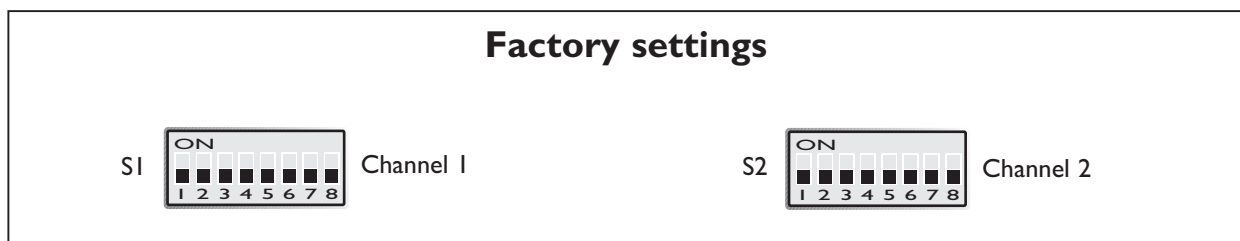
6.4.1 MAC address

The MAC address of the unit can be found on the product label "00 30 56 F" + last 5 digits on IC2 see figure in section 6.4 Switch settings on page 12. Example: Label on IC2 "SC12 RTOS 0092C2" this will give the unit MAC address "00 30 56 F0 92 C2"

The MAC address can also be find out with the DOS command "ARP –a". (Perform the "PING" command with the ED-10 local IP address before the ARP command.)

6.5 Installation of ED-Tool for ED-20

System Requirements:

To install and run the ED-Tool for ED-20 program following requirements are needed.

Minimum:

- 386, 486 or Pentium, Processor-based personal computer
- Microsoft, Windows, 95/98/Me, NT 3.51/4.0, 2000 or XP, Or compatible OS.
- 16 MB of RAM for Windows 95/98/Me systems
- 24 MB of RAM for Windows NT systems
- 32 MB of RAM for Windows 2000/XP systems
- CD-ROM drive
- 8 MB of space on hard drive
- Serial and/or ethernet network connections
- Internet Explorer 5.0 or higher

Recommended:

- Pentium processor-based personal computer
- 32 MB of RAM

Installation:

To install ED-Tool for ED-20

- Insert the ED-Tool for ED-20 CD-ROM into the CD-ROM drive.
- Locate the Setup.exe file on the ED-Tool CD-ROM.
- Start the Setup.exe and follow the instructions.

7. Functional description

The ED-20 can be in either configuration mode or in application mode. Normally the ED-20 is in application mode, where the serial-to-network data transfer is enabled and all configuration settings are readable.

Change of configuration parameters are done in ED-20 configuration mode. Configurable parameters are listed in chapter 6.3.

7.1 Application mode

In application mode the ED-20 transfers data between the serial interface (CH1) and the network interface (10BaseT). At the network interface data is transferred using the TCP/IP protocol suit. At the serial interface data is transferred using PPP.

7.1.1 About PPP

PPP (the Point to Point Protocol) is a mechanism for creating and running TCP/IP over a serial link – a direct serial connection or a link made using one of following: Westermo analogue PSTN-, Leased-line-, ISDN-, GSM-, Radio-, Fibre- or Short-haul modem.

Other computers can connect via the ED-20 and communicate over the PPP link using FTP, Telnet, Web, etc. in the same manner as with an Ethernet TCP/IP link. One major difference between a PPP and an Ethernet connection is of course the speed. A standard Ethernet connection operates at 10 Mbs maximum theoretical throughput, whereas an analogue modem operates at speeds up to 56 kbps.

PPP is strictly a peer to peer protocol; there is no difference between the machine that dials in and the machine that is dialed into. However, it is still useful to think in terms of servers and clients. When you dial into a site to establish a PPP connection, you are a considered the client. The machine to which you connect is considered the server.

Authentication is provided with the protocols PAP and CHAP.

7.1.2 Network interfaces

ED-20 has two network interfaces, Ethernet and PPP, so the unit can forward IP-packets between these interfaces.

7.1.2.1 Ethernet connection

This interface is a part of the local network and the 'Local IP Address'* and 'Subnet Mask' must be set to the right 'Network ID'

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* The IP address must be compliant to the attached network.
  Ask the network administrator when in doubt.

7.1.2.2 PPP connection

The PPP connection can be established over PSTN, Leased Line or private lines.
ED-20 can act as a PPP Server, PPP Client or both. These functions is set on the 'Modem settings' tab in ED-Tool for ED-20. See application example on page 30.

Connections can be established in several ways depending on the application:
- Standard PPP dial-up networking tool.
- 'Connect' command on CH2: or via TELNET
- Using the 'Brouter' function.

7.1.2.3 Brouter function

The Brouter function will establish a dial-up connection when valid outbound IP address (Defined on the tab 'Brouter Settings' in ED-Tool for Ed-20) is sent to the ED-20.
See application example on page 31.

The connection will be open until one of following is true:
- There is no traffic during and the 'Idle Time' parameter is set to a value greater than zero.
  e.g. Idle Time is set to 600s and there is no traffic sent to the ED-20
  for more than 10 minutes.
- 'Close' command on CH2: or via TELNET

Note! It may be wise to use the Firewall function while the Brouter function being used to reduce the traffic over the PPP link.

7.1.2.4 Firewall function

The Firewall function can be set-up to allow or block certain IP Addresses through the ED-20. See application example on page 31.

7.2 Configuration mode

Local or remote configuration is managed by ED-Tool for ED-20.
ED-Tool for ED-20 is a Windows based set-up programme which provides easy configuration.
Configuration is possible locally by using serial connection and remote using network (telnet) connection. Configuration mode will be entered automatically by ED-Tool for ED-20. 'Config ' LED will lit when ED-20 is in configuration mode. (The unit is not in configuration mode until the 'Write config' button been pushed.)
The unit will be in configuration mode until a reboot is made.

First time configure: ED-20 is shipped with IP-address 169.254.100.100.
Please make sure that 169.254.100.100 is compliant to your network, before ED-20 is connected. Otherwise use serial interface to locally set a valid IP address compliant with the network in use and not chosen arbitrarily, ask your network administrator when in doubt.

8. Configuration

Before read, write or reboot can be made, Select type of connection:
- Network
- Serial com port must be selected from menu 'Tools – Serial COM Port'

8.1 Configuration by ED-Tool for ED-20

This section describes the configuration of the ED-20 with the software ED-Tool for ED-20.

Program Start:

To start ED-Tool for ED-20
- Locate ED-Tool under Program on the Start-Menu.
- Click on the ED-Tool for ED-20 icon

When the ED-Tool for ED-20 has been successful opened the user is presented with an empty configuration screen. The user can now get an existing configuration by reading the configuration from an ED-20, create a new file from default values or by opening a stored configuration file.

After all the parameters are set the user can write the configuration to the ED-20.

Typical configuration procedures:
- Read configuration from an ED-20
- Change some parameters
- Write configuration to the ED-20
- Reboot
- Done

or

- Read configuration from a file
- (Change some parameters)
- Write configuration to the ED-20
- Reboot
- Done

or

- Set parameters
- Write configuration to ED-20
- Reboot
- Done

or

- Set parameters
- Save configuration to a file
- Done

8.1.1 ED-Tool for ED-20 commands

This section describes the ED-Tool for ED-20 commands.
The commands are described by there use.
Details about allowed values and default values is described is section 6.2.
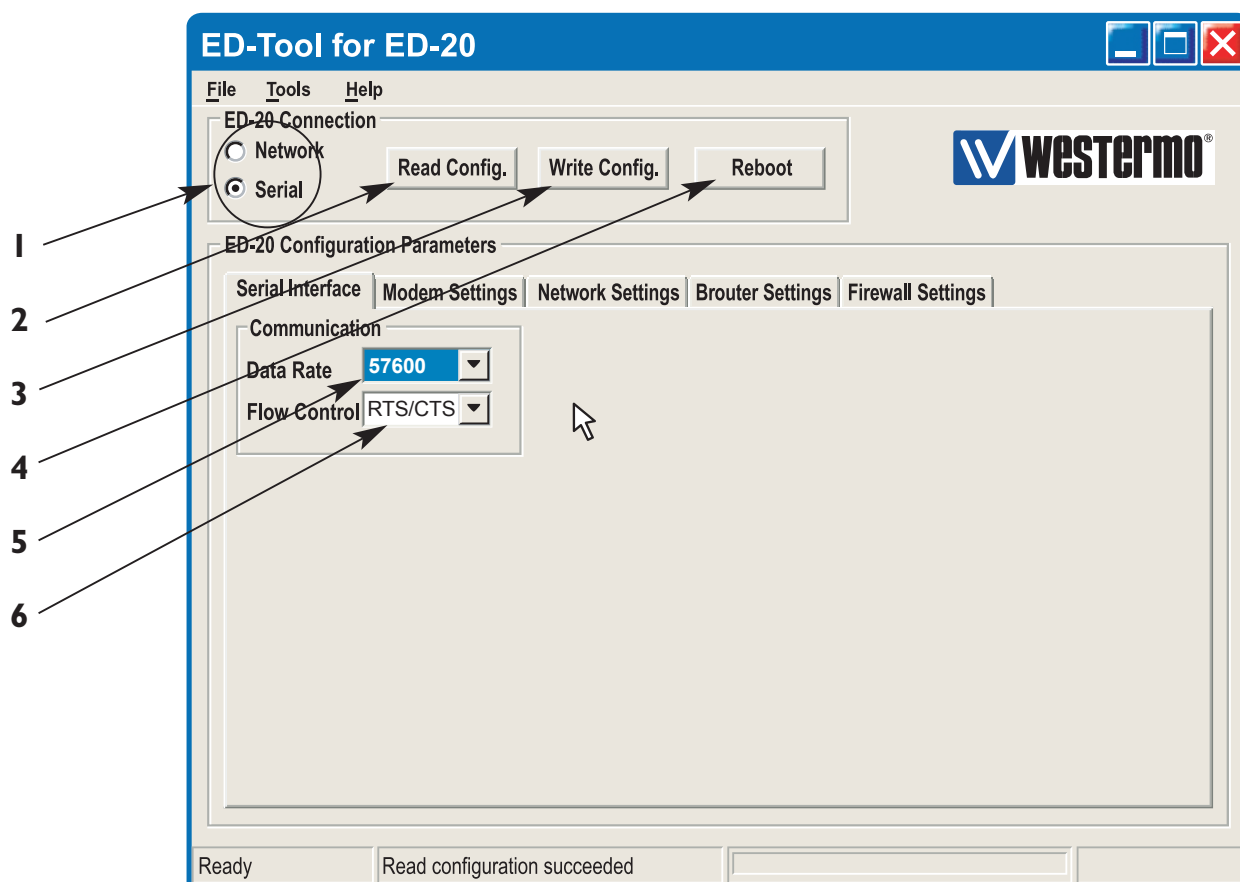
8.1.1.1 General commands

1   Selects type of connection, Serial or over the Network.
                  If 'Serial' is selected, use the "Tools menu – Serial COM port" to
                  select which of COM1:, COM2:, COM3:, or COM4: your serial
                  cable is connected to.
2 Read Config   Reads configuration from the ED-20.
3 Write Config   Writes configuration to the ED-20.
                  Note! ED-20 must be rebooted before any new configuration
                      is activated.
4 Reboot   Reboots the ED-20.

8.1.1.2 Serial Interface – Channel 1 specific commands

5 Data Rate   Selects Data Rate for serial communication, ED-20 – Modem.
6 Flow Control   Selects if flow control is used or not.
                  Note! All interconnecting wires are required between the ED-20
                      and the attached modem.

ED-Tool for ED-20

File   Tools   Help

ED-20 Connection
○ Network   Read Config.   Write Config.   Reboot
● Serial

ED-20 Configuration Parameters

| Serial Interface | Modem Settings | Network Settings | Brouter Settings | Firewall Settings |

General

Modem Connection   PSTN
Dial IN/OUT   DIAL IN/OUT
Connect at PWR On NO
DCD Control   NO
Escape Sequense   +++
Escape Delay   2
Idle Time   600

Modem AT-Commands

Modem Init
Command   AT&F&DOSO
Answer   OK
Timeout   3
Retries   1

Modem Hangup
Command   ATH
Answer   OK
Timeout   3
Retries   1

Modem Connect (Dial Out)
Command   ATDS=0
Answer   CONNECT
Timeout   60
Retries   1

Modem Connect (Dial In)
Command   RING
Answer   ATA
Timeout   0

Ready   Read configuration succeeded

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8.1.1.3 Modem Settings

General

1 Modem Connection — Select Type of connection, PSTN or LL.
• Use PSTN for dial-up connections, e.g. Phone modem, GSM modem or ISDN adapter.
• Use LL for fixed connections, e.g. LeasedLine-, Radio-, Fibre- or any Short-haul- modem.

2 Dial IN/OUT — Select if the ED-20 shall act as a PPP Server, PPP Client or both. When the unit is set to be a server, it will answer incoming calls.

3 Connect at PWR On — Select if the ED-20 shall initiate a connection at power on with the Modem Connect (Dial Out) command.

4 DCD Control* — Select if the ED-20 shall disconnect the PPP link at modem DCD loss.
Note! All interconnecting wires are required between the ED-20 and the attached modem.

5 Escape Sequence — Set the modem escape sequence wich switches the modem into command mode. Not used for Leased Line mode. Usually '+++'.

6 Escape Delay — Set the delay time in seconds after the escape sequence before any other command.

7 Idle Time — Set the idle time in seconds, after which the PPP server closes the connection if no data being sent.

Modem AT-Commands

Refer to the user guide or installation manual to the attached modem.
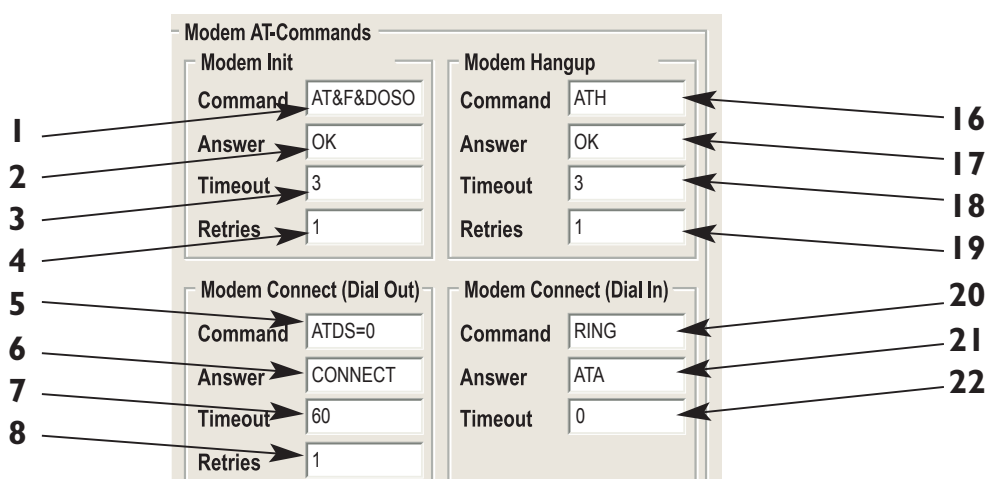
Modem Init

8	Command	Set the modem init string, max string length:25 characters.
9	Answer	Set the expected answer from the modem on the command string. **Note!** Modem result codes must be enabled.
10	Timeout	Set the timeout in seconds for how long the ED-20 shall wait for the answer string.
11	Retries	Set the number of retries before the modem init fails.

Modem Hangup

12	Command	Set the modem hangup string, max string length:25 characters.
13	Answer	Set the expected answer from the modem on the command string. **Note!** Modem result codes must be enabled.
14	Timeout	Set the timeout in seconds for how long the ED-20 shall wait for the answer string.
15	Retries	Set the number of retries before the modem hangup fails.

Modem Connect (Dial Out)

16	Command	Set the modem connect string, max string length:25 characters.
17	Answer	Set the expected answer from the modem on the command. string. **Note!** Modem result codes must be enabled.
18	Timeout	Set the timeout in seconds for how long the ED-20 shall wait for the answer string.
19	Retries	Set the number of retries before the modem connect fails.

Modem Connect (Dial In)

20	Command	Set the modem connect string, max string length:25 characters.
21	Answer	Set the expected answer from the modem on the command.
22	Timeout	Set the timeout in seconds for how long the ED-20 shall wait for the answer string.

ED-Tool for ED-20

File   Tools   Help

ED-20 Connection
○ Network   Read Config.   Write Config.   Reboot
◉ Serial

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ED-20 Configuration Parameters

| Serial Interface | Modem Settings | Network Settings | Brouter Settings | Firewall Settings |

Login

Authentication NONE ▼   User Name ed20

                              Password ****

PPP Network Interface   **Ethernet Interface**

Local IP   169.254.200.100   Local IP Address   169.254.100.100

Remote Address   169.254.200.101   Subnet Mask   255.255.255. 0

Subnet Mask   255.255.255. 0

Ready   Read configuration succeeded

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8.1.1.4 Network Settings

Login

1 Authentication   Select if authentication shall be used or not.
2 Username   Set the login username.
                        This is also used for Telnet sessions (Network configuration).
3 Password   Set the login password
                        This is also used for Telnet sessions (Network configuration).

PPP Network Interface*

4 Local IP   Set the Server IP address.
5 Remote Address   Set the Client IP address.
6 Subnet Mask   Set the Subnet mask.

Ethernet Interface*

7 Local IP Address Set the Local IP address i.e. the address of the ED-20.
8 Subnet Mask   Set the Subnet mask.

* The IP address must be compliant to the attached network.
   Ask the network administrator when in doubt.
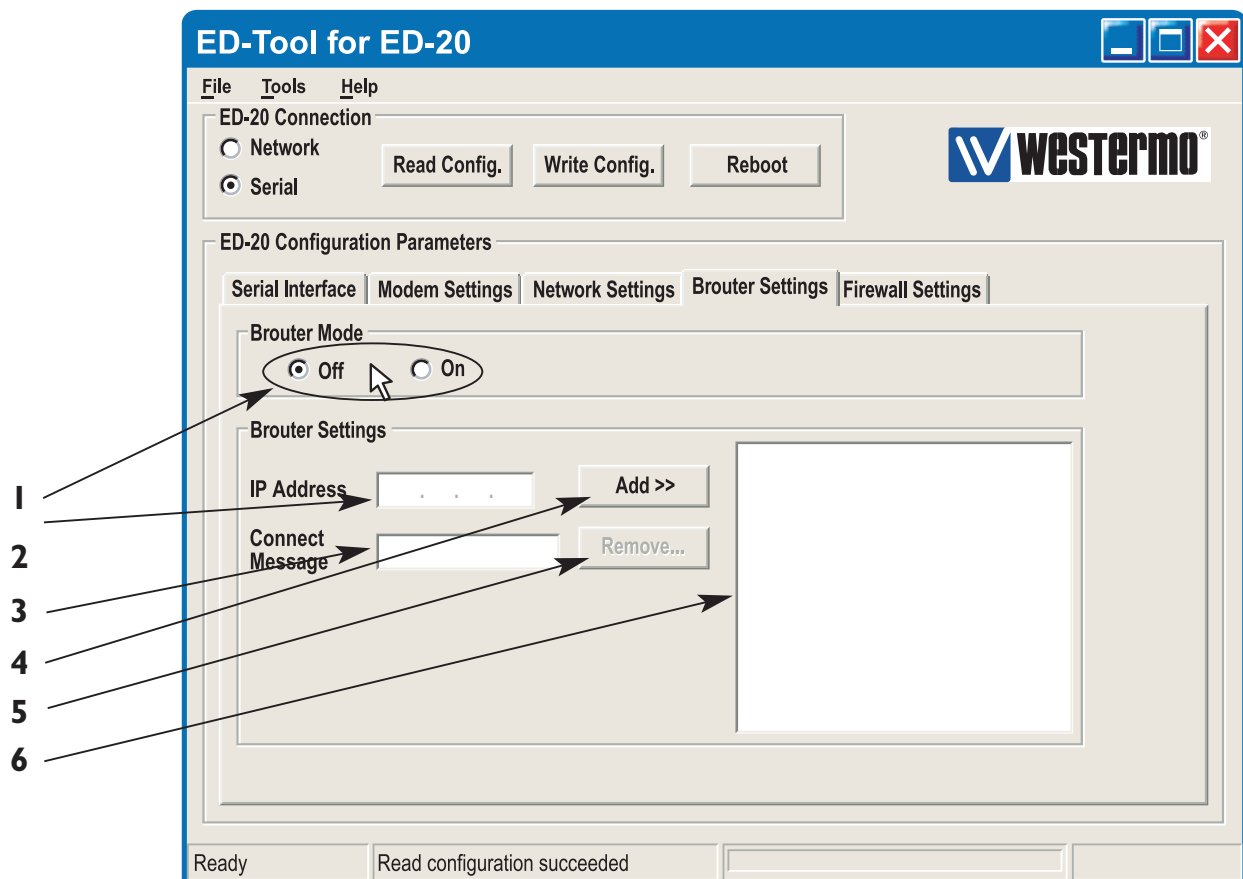
8.1.1.5 Brouter Settings

Brouter Mode

1   Off / On   Disables or enables the Brouter mode.
                      See 8.2.4

Brouter Settings

2   IP Address   Set the target IP address that shall initiate a connection.
3   Connect   Set the Connect message that shall be sent to the attached
    Message   modem. E.g. ATDnnnnnn
4   Add >>   Adds the values IP Address and Connect message to the
                      brouter entry list
5   Remove …   Remove marked entry from entry list.
6   Brouter Entry List
                      Displays the Brouter entry's: IP Address, Connect message.
                      Up to 32 entry's can be added.

• To Add an entry: Fill in the field IP Address and the field Connect message, Press add.

• To Edit an entry: Double click the entry that shall be edited, Edit the values in the fields to the left, Press add.

• To Remove an entry: Click the entry that shall be removed, Press remove.

ED-Tool for ED-20

File   Tools   Help

ED-20 Connection
- ○ Network
- ⊙ Serial

[Read Config.] [Write Config.] [Reboot]

westermo®

ED-20 Configuration Parameters

| Serial Interface | Modem Settings | Network Settings | Brouter Settings | Firewall Settings |

Firewall Mode
- ⊙ Off   ○ Pass   ○ Block

Firewall Settings

IP Address   . . .   [Add >>]

[Remove...]

1
2
3
4
5

Ready   Read configuration succeeded
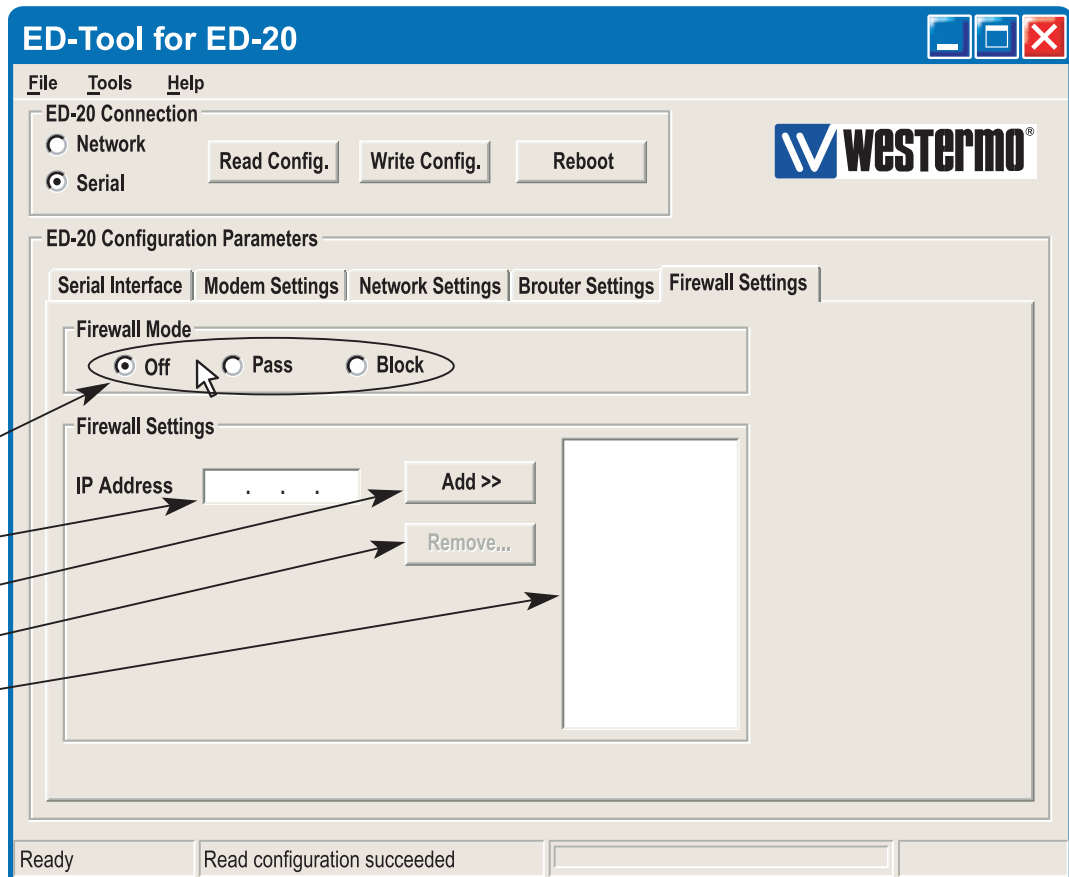
8.1.1.6 Firewall Settings

Firewall Mode

1 Off / Pass / Block   Disables or enables the Firewall mode and selects if the firewall shall work in Block or Pass mode. See 8.2.5

Firewall Settings

2 IP Address   Set the source and destination IP addresses that shall be allowed to pass through the ED-20, or set the source or destination IP addresses that shall be blocked from passing through the ED-20.

3 Add>>   Adds the values IP Address and Connect message to the Firewall entry list.

4 Remove …   Remove marked entry from entry list.

5   Firewall Entry List.
                 Displays the Firewall entry's: IP Address.
                 Up to 32 entry's can be added.

8.2 Configurable parameters

8.2.1 Serial interface

Communication

Data Rate

The data rate can be set from 1 200 bit/s to 115.2 kbit/s.

Allowed values:
1 200, 2 400, 4 800, 7 200, 9 600, 14 400, 16 000, 19 200, 38 400, 56 000, 57 600 and 115 200 bit/s.
Default: 57 600 bit/s.

Flow Control

Flow control can be chosen between none or RTS/CTS.
If the RTS/CTS being used then the cable must have all interconnecting wires between the ED-20 and the modem connected and the modem shall have the flow control enabled.
Allowed values: None, RTS/CTS
Default: RTS/CTS.

8.2.2 Modem settings

General

The general settings is used to set the fundamental modes of the ED-20.

Modem Connection

Type of modem connection can be selected between PSTN (Public Switched Telephone Network) and LL (Leased Line).
PSTN shall be used for dial-up/dial-in connections with PSTN, ISDN or GSM modem.
LL shall be used in fixed connections, e.g. short-haul-, fibre-, LL-, or Radio-modem.
In LL mode the unit will not use any modem AT-commands, Modem escape sequence, AT-commands and the Brouter function will be disabled. The modem will be handled as a transparent connection.
Allowed values: LL, PSTN
Default: PSTN.

Dial IN/OUT

Select the operating mode of the ED-20.

-Dial IN,

The unit will act as an PPP Server and only accept incoming calls.

Modem Connect (Dial OUT) and the Brouter function will be disabled.

-Dial IN/OUT,

The unit will act both as an PPP Server and an PPP Client.

When an incoming call is detected then the PPP Client is disabled.

–Dial OUT,

The unit will act as an PPP Client and not accept incoming calls.

Modem Connect (Dial IN) and the function Connect at PWR on will be disabled.

Allowed values: Dial IN, Dial IN/OUT, Dial OUT
Default: Dial IN/OUT

Connect at PWR on

Selects if the ED-20 shall establish a connection at Power on or not.

In PSTN mode the ED-20 will dial up using the command string defined in Modem Connect (Dial OUT) and when the modem link is ready, Establish the PPP link.

In LL Mode the ED-20 will establish the PPP link.

This function is disabled in Dial IN mode.

Allowed values: NO, YES
Default: NO

DCD Control

When the signal DCD is lost the ED-20 will close the PPP link and when PSTN mode is selected the AT commands for Modem hangup and Modem init will be sent to the modem.

This function requires a special cable.

Allowed values: NO, YES
Default: NO

TD-XX With 9-pos. female DCE connection	ED-20 With 9-pos. female DCE connection	TD-XX With 25-pos. female DCE connection	ED-20 With 9-pos. female DCE connection
2	3	3	3
3	2	2	2
8	7	5	7
7	8	4	8
4	6	20	6
5	5	7	5
1	4	8	4
9-pos. female	9-pos. female	25-pos. female	9-pos. female
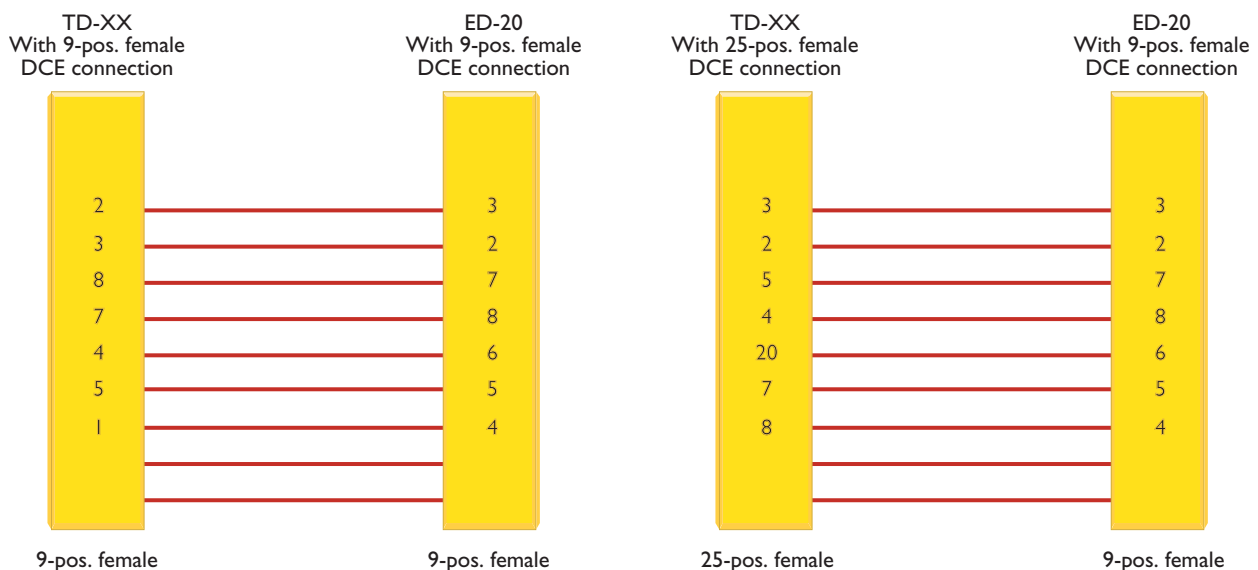
Escape Sequence

When communication is established with another modem it is still possible to reach the command mode by sending an escape sequence to the modem.

Note! Refer to the user guide or installation manual to the attached modem.

Default: +++

Escape Delay

Define the delay time in seconds after the escape sequence been sent until the next AT-command will be sent.

Allowed values, 1 to 9999

If this value is set to zero, the unit will do nothing but wait!

Default: 2 (seconds)

Idle Time

If no data is being sent over the PPP link the ED-20 will close the connection. Define the time in seconds.

Allowed values, 0, 1 to 9999
Default: 0 (function disabled)

Modem AT-Commands

Commands used in PSTN mode for controlling the behaviour of the attached modem.

Note! Refer to the user guide or installation manual to the attached modem.

Modem Init
Command

Init string that will be sent to the modem.

Default: AT&F&D0S0=0&K3+MS=V34;&W

Answer

Expected answer from the modem on the sent command.

Default: OK

Timeout

Define the time in seconds between the sent command and the expected answer before the command have failed.

Allowed values: 0 to 9999
Default: 3

Retries

Define the number of retries in case if a failed command.

Allowed values: 0 to 9999
Default: 1

Modem Hangup

Command

Hangup string that will be sent to the modem.

Default: ATH

Answer

Expected answer from the modem on the sent command.

Default: OK

Timeout

Define the time in seconds between the sent command and the expected answer before the command have failed.

Allowed values: 0 to 9999
Default: 3

Retries

Define the number of retries in case if a failed command.

Allowed values: 0 to 9999
Default: 1

Modem Connect (Dial Out)

Command

Dial out string that will be sent to the modem.

Default: ATDS=0 (dials the stored number in location 0, stored with AT&Z command)

Answer

Expected answer from the modem on the sent command.

Default: CONNECT

Timeout

Define the time in seconds between the sent command and the expected answer before the command have failed.

Allowed values: 0 to 9999
Default: 60

Retries

Define the number of retries in case if a failed command.

Allowed values: 0 to 9999
Default: 1

Modem Connect (Dial In)

Command

Dial in string that will be sent from the modem on an incoming call.

Default: RING

Answer

Command that will answer the incoming call.

Default: ATA

Timeout

Define the time in seconds, For how long time the ED-20 will accept incoming calls from power-up. Normally not used, leave as is.

Allowed values: 0-9999
Default: 0

8.2.3 Network Settings

Login

The login username and password is used on the dial-in connection and when the ED-20 is configured with ED-Tool for ED-20 over a network connection.

Authentication

Select if authentication shall be used over the PPP link or not.
Authentication can be used with either the PAP (Password Authentication Protocol) or CHAP protocols (Challenge Handshake Authentication Protocol)
If a invalid Username or password is entered the ED-20 will disconnect the PPP link and cause the modem to disconnect.

Allowed values: NONE, PAP, CHAP
Default: NONE

Username

Allowed string length: 1 – 19 characters.
Allowed characters: '0' to '9', 'a' to 'z' lower case.
Default: ed20

Password

Allowed string length: 1 – 19 characters.
Allowed characters: '0' to '9', 'a' to 'z' lower case.
Default: ed20

PPP Network Interface

These values is used when the ED-20 is in Server mode.

The server will provide the IP addresses for the PPP link.

Note! When connecting to a private remote network via the ED-20 using Windows network connection wizard, Always Obtain an IP address automatically

Local IP*

When the ED-20 is in server mode, this will be the Servers IP address on the PPP link

Note! The Network ID must be different than the Network ID on the remote network and the Network ID locally.

Allowed values: Should be in decimal dotted notation in one off the following ranges:

1.0.0.0   126.0.0.0
128.1.0.0   191.255.0.0
192.0.1.0   223.255.255.0
Default: 169.254.200.100

Remote address*

When the ED-20 is in server mode, this will be the Clients IP address on the PPP link

Allowed values: Should be in decimal dotted notation And have the same Network ID as Local IP and different then Local IP

Default: 169.254.200.101

Subnet Mask*

Set a valid subnet mask in decimal dotted notation.

Default: 255.255.255.0

Ethernet Interface
Local IP Address*

This is the address of the router and this address shall be used as default gateway in the units that will use the ED-20 as a gateway.

Set the local IP address in the rage of the Network ID.

Note! The Network ID must be different than the Network ID on the PPP link and the Network ID on the other network.

Allowed values: Should be in decimal dotted notation in one off the following ranges:

1.0.0.0   126.0.0.0
128.1.0.0   191.255.0.0
192.0.1.0   223.255.255.0
Default: 169.254.100.100

Subnet Mask*

Set a valid subnet mask in decimal dotted notation.

Default: 255.255.255.0

* The IP address must be compliant to the attached network.
   Ask the network administrator when in doubt.

8.2.4 Brouter settings

The brouter function will initiate outgoing connections.
This function is only available in PSTN + Dial Out mode
(Refer to section 8.2.2 – General – Modem settings and Dial IN/OUT.)
When a IP packet sent to the ED-20 have a IP Address that match a IP Address in the entry list, the ED-20 will send the connect message to the attached modem. This will result in an connection to another location and establishment of a PPP link.
Note! Since the ED-20 and the attached modems need some time to establish a modem connection and a PPP link, The IP packets sent before the PPP link is ready may be lost depending of the application used.

Brouter Mode

Enable or disable the brouter function with the radio buttons.
Note! The brouter function can only be enabled when the ED-20 is allowed to act as a PPP client. (Refer to section 8.2.2 – General – Dial IN/OUT.)
Default: Off

Brouter Settings

IP Address

Allowed values: Should be in decimal dotted notation and in another Network ID than the Local IP Address of the ED-20.

(Refer to section 8.2.3 – Ethernet Interface – Local IP Address)

Connect Message

This message will establish the modem connection.
Allowed values: Is decided by the attached modem.
Note! Refer to the user guide or installation manual to the attached modem.

8.2.5 Firewall settings

The firewall function will allow the network administrator to control the network access and limit the traffic on the PPP link. It's possible to accomplish this in two modes.
- Pass, Will only allow traffic where the source and destination IP address is present in the entry list.
- Block, Will block traffic where either source or destination is present in the entry list.
See application exampes on page 31.

Firewall Mode

Disables or enables the Firewall mode with the radio buttons.
And selects if the firewall shall work in Block or Pass mode.
Default: Off

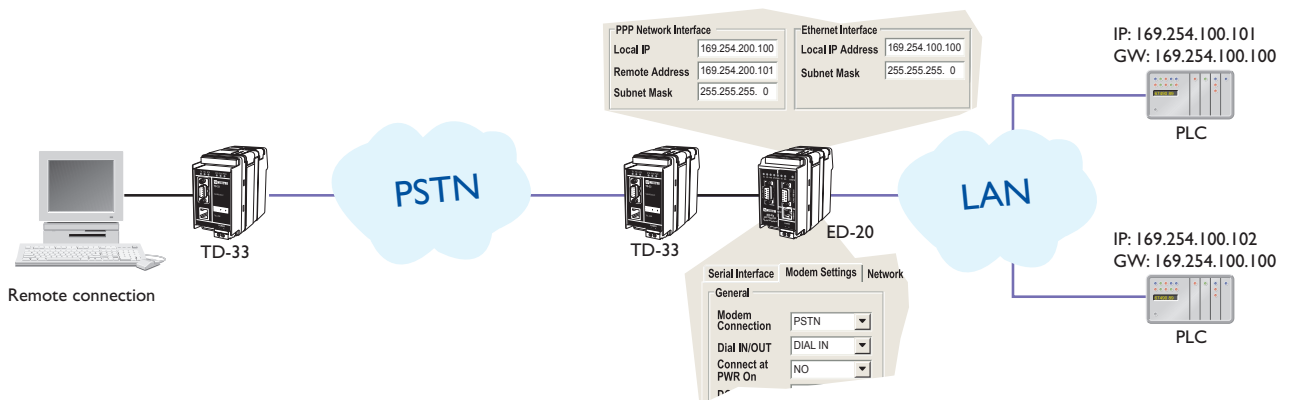**Firewall Settings**

IP Address

Allowed values: Should be in decimal dotted notation and in another Network ID than the Local IP Address of the ED-20.
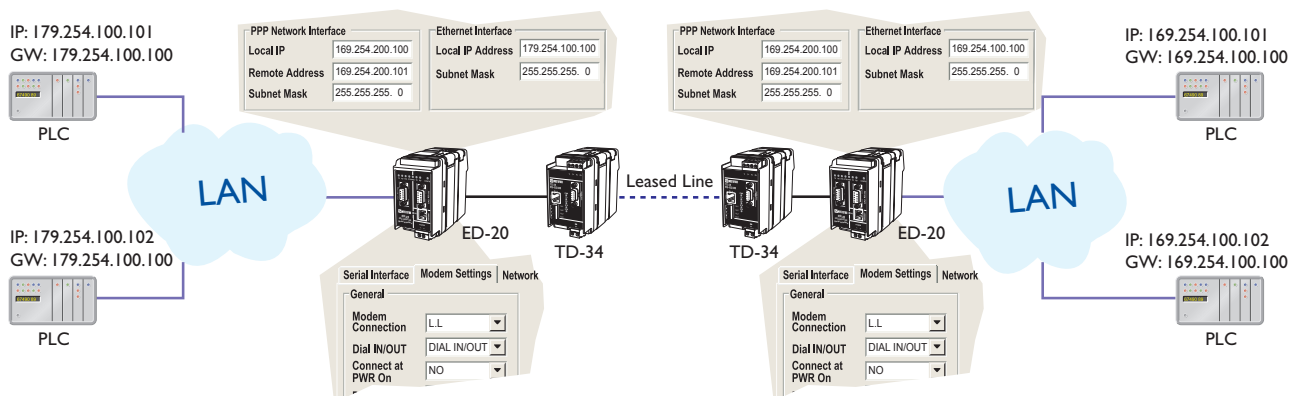(Refer to section 8.2.3 – Ethernet Interface – Local IP Address)

9. Application examples
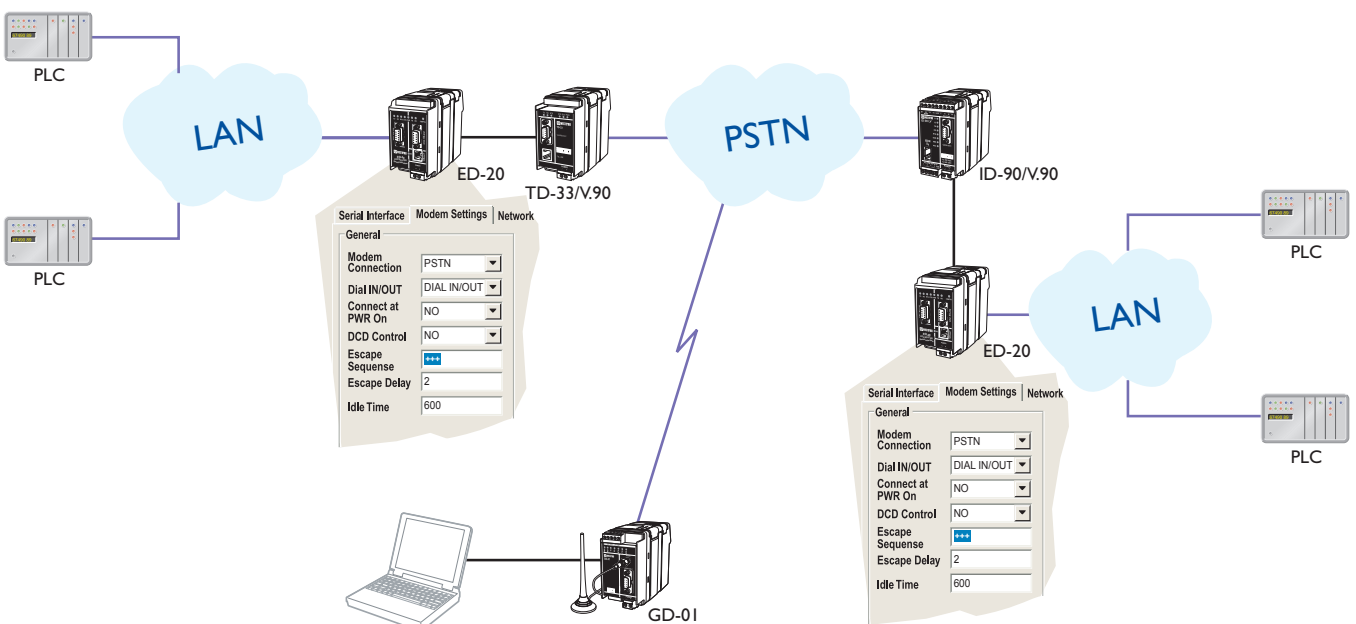
Example of application with IP address settings.

Remote connection – LAN (Dial In)

LAN – LAN (Leased Line)

LAN – LAN (PSTN, GSM)

LAN – LAN (PSTN, Brouter, Firewall)

IP: 179.254.100.101
GW: 179.254.100.100

PLC

IP: 179.254.100.102
GW: 179.254.100.100

PLC

LAN

PPP Network Interface

Local IP	169.254.200.100
Remote Address	169.254.200.101
Subnet Mask	255.255.255. 0

Ethernet Interface

Local IP Address	179.254.100.100
Subnet Mask	255.255.255. 0

ED-20

TD-34

ED-20 Configuration Parameters

Serial Interface | Modem Settings | Network Settings | Brouter Settings | Firewall Settings

Brouter Mode
○ Off   ◉ On

Brouter Settings

IP Address	169.254.100.101	Add >>	169.254.100.101 ATDnnnnnn
Connect Message	ATDnnnnnn	Remove…	

PSTN

PPP Network Interface

Local IP	169.254.200.100
Remote Address	169.254.200.101
Subnet Mask	255.255.255. 0

Ethernet Interface

Local IP Address	169.254.100.100
Subnet Mask	255.255.255. 0

IP: 169.254.100.101
GW: 169.254.100.100

PLC

TD-34

ED-20

LAN

IP: 169.254.100.102
GW: 169.254.100.100

PLC

ED-20 Configuration Parameters

Serial Interface | Modem Settings | Network Settings | Brouter Settings | Firewall Settings

Firewall Mode
○ Off   ○ Pass   ◉ Block

Firewall Settings

IP Address	. . .	Add >>	179.254.100.101

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