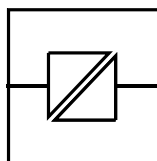


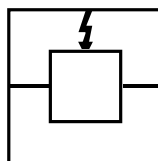
ED-20 PPP

INSTALLATION MANUAL

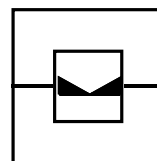
6609-2222



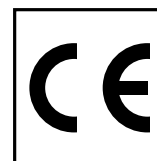
Galvanic
Isolation



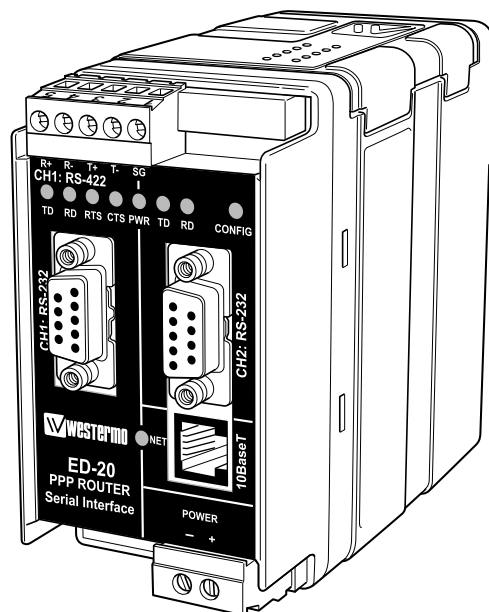
Transient
Protection



Balanced
Transmission



CE
Approved



PPP Router

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1. Description

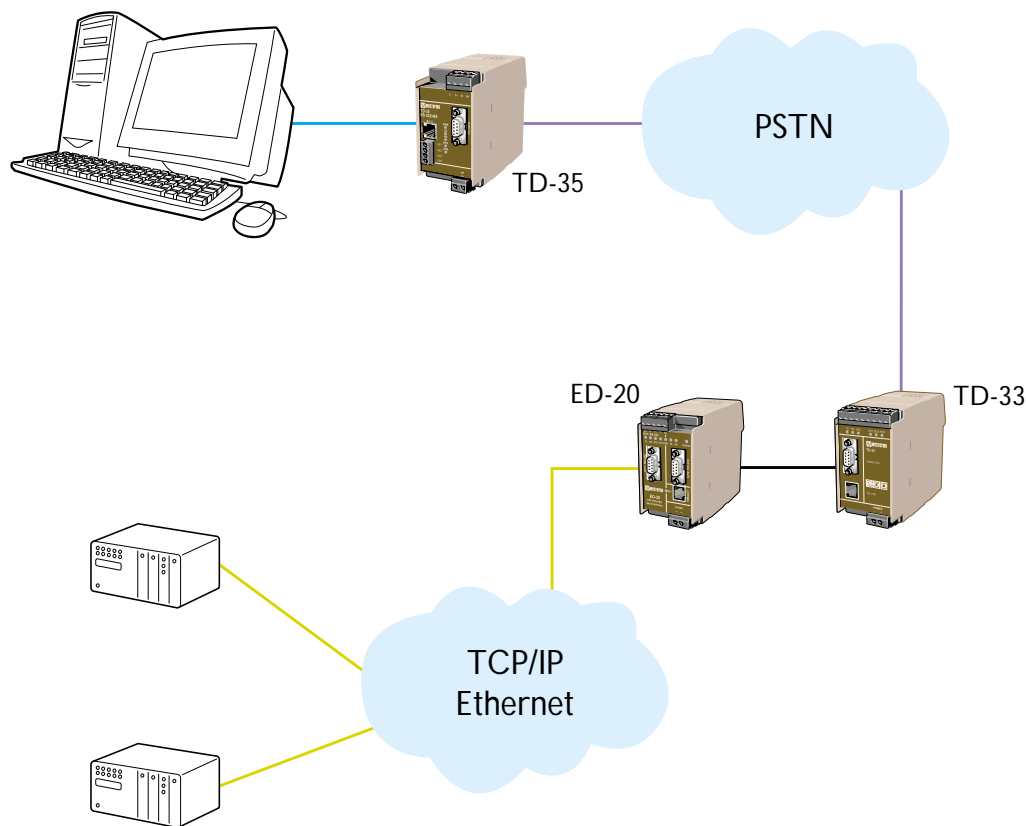
The ED-20 is an industrialised DIN Rail mounted, serial to Ethernet Router. The device will allow access to a remote Ethernet network via a Westermo communication product. The device is easy to set-up using the ED-Tool for ED-20, via TELNET or serial connection.

Standard PPP dial-up networking tools can be used from Microsoft Windows 9x, ME, NT, 2000 or XP. 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 kbit/s.

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.



2. 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.

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

Units with the rated voltage up to 42.4 V peak or 60 VDC, are 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 Installation section).

3. 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).

3.1 Declaration of Conformity



Westermo Teleindustri AB

Declaration of conformity

The manufacturer Westermo Teleindustri AB
SE-640 40 Stora Sundby, Sweden

Herewith declares that the product(s)

Type of product	Model	Art no	Installation manual
DIN-rail	ED-20	3609-1001	6609-2220
		3609-2001	6609-2221
		3609-3001	6609-2222

is in conformity with the following EC directive(s).

No	Short name
89/336/EEG	Electromagnetic Compatibility (EMC)

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 61000-6-2	Immunity for industrial environments	2 (2001)
EN 61000-6-3	Emission standard for residential, commercial and light-industrial environments	1 (2001)

The last two digits of the year in which the CE marking was affixed: 02

Hans Levin
Technical Manager
27th May 2004

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Bankgiro
5671-5550

Org.nr/
Corp. identity number
556361-2604

Registered office
Eskilstuna

4. Specification

Power interface	
	ED-20
Rated voltage	12 – 48 VDC (polarity independent)
Operating voltage	9.6 – 57.6 VDC
Rated current	300 mA @ 12 VDC
Rated frequency	DC
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24-12)

Ethernet TX Interface 10Base-T	
Electrical specification	IEEE std 802.3. 2000 edition
Data rate	10 Mbit
Duplex	Half
Connection	RJ-45
Circuit type	TNV-1
Transmission range	100 m

RS-232 Interface 1 (CH-1)	
Electrical specification	RS-232 V.24
Data rate	1200 bit/s – 115.2 kbit/s
Connection	9-pol. D-sub female DCE
Circuit type	SELV

RS-232 Interface 2 (CH-2)	
Electrical specification	RS-232 V.24
Data rate	19.2 kbit/s
Connection	9-pol. D-sub female DCE
Circuit type	SELV

RS-422 Interface (CH-1)	
Electrical specification	RS-422
Data rate	1200 bit/s – 115.2 kbit/s
Connection	Detachable screw terminal
Connector size	0.2 mm ² – 2.5 mm ² (AWG 24-12)
Circuit type	TNV-1

Mechanical

Dimension (W x H x D)	55 x 100 x 128 mm
Weight	<0.35 kg
Mounting	DIN-rail
Degree of protection	IP 20 (IEC 529)

Isolation between interfaces

Power to all other*	4.2 kV DC, 3 kV RMS @ 50 Hz and 60s duration
TX signal Interface to all other	2.1 kV DC, 1.5 kV RMS @ 50 Hz and 60s duration
TX shield Interface to all other	1.5 kV DC, 1 kV RMS @ 50 Hz and 60 s duration

* Power to network interface, 2.1 kV DC, 1.5 kV RMS @ 50 Hz and 60 s duration.

Environmental

Temperature, operating	+5 to +50°C
Temperature, storage and transportation	–25 to +70°C
Relative humidity, operating	5 to 95% (non-condensing)
Relative humidity, storage and transportation	5 to 95% (condensation allowed outside packaging)

Configuration

Configuration of the Router is made with DIP-switches and with ED-tool for ED-20 locally via RS-232 port or remotely via Ethernet.

5. Maintenance

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

6. Installation

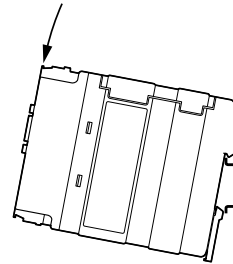
6.1 Mounting / Removal



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.



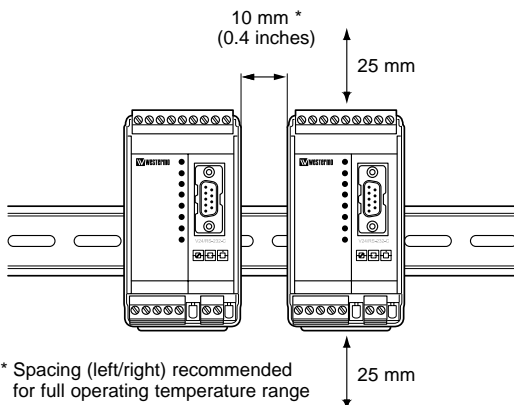
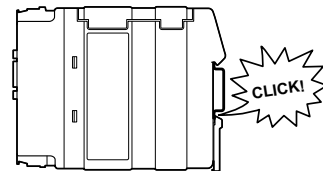
Mounting

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 airflow around the unit, use the following spacing rules.

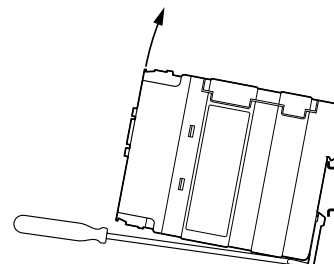
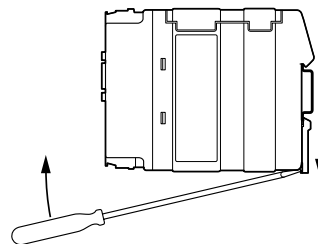
Recommended spacing 25 mm (1.0 inch) above/below and 10 mm (0.4 inches) left/right the unit.

Snap on mounting, see figure

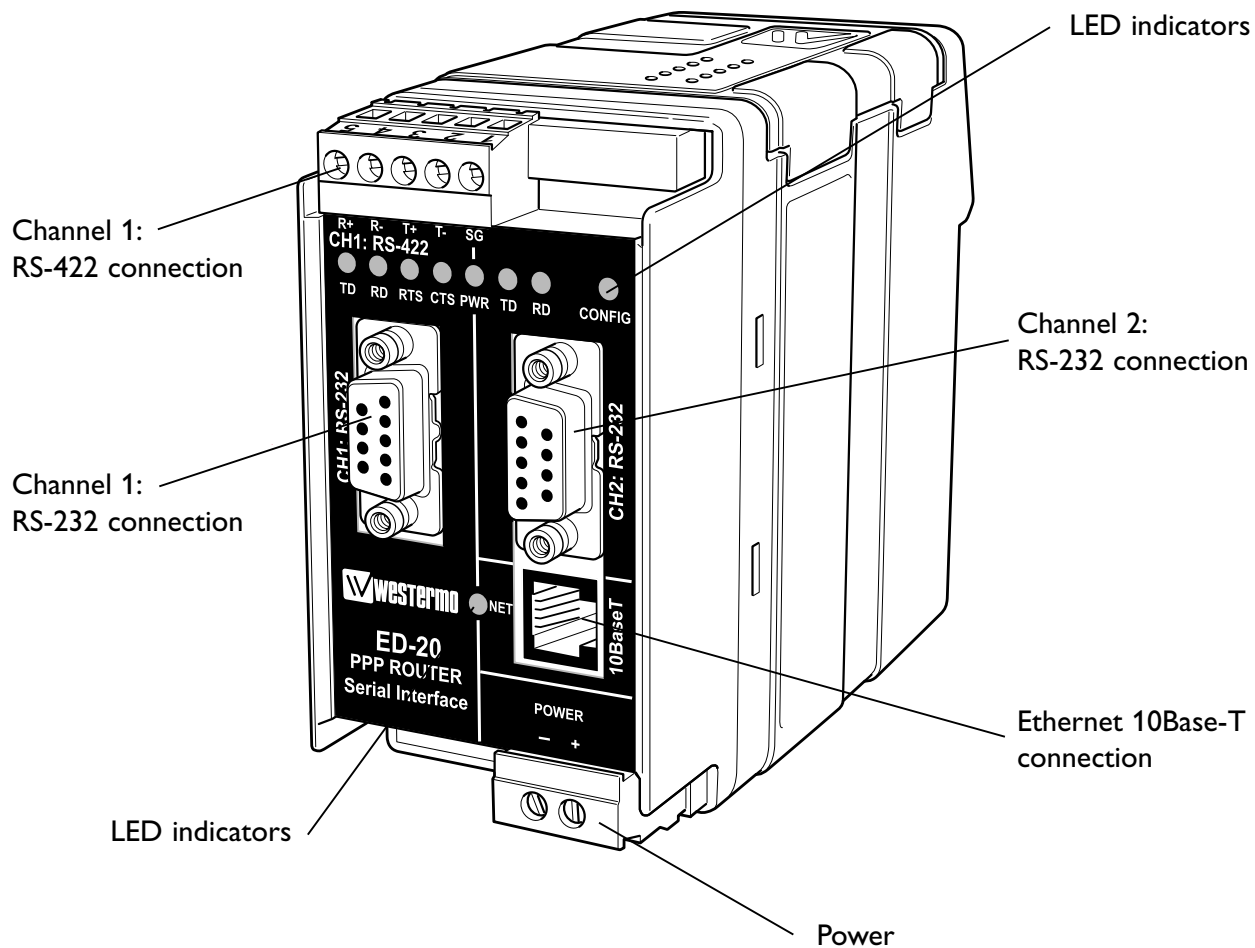


Removal

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

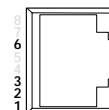


6.2 Connections



Ethernet 10Base-T Connection (RJ-45 connector) Media Dependent Interface (MDI)

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

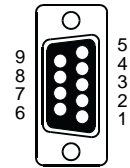


** Direction relative ED-20

NC Not connected

CAT 5 cable is recommended.

Unshielded (UTP) or shielded (STP) cables might be used.

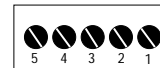


CH1: RS-232 Connections, DCE

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

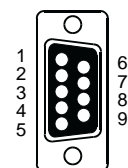


CH1: RS-422 Connections (Upper left screw terminal)

Terminal Number	Signal Name*		Direction**	Description
	Marked on ED-20	According to Standard		
1	SG	–	–	Not connected
2	T–	B	Out	RS-422 4-wire Transmitter
3	T+	A	Out	RS-422 4-wire Transmitter
4	R–	B'	In	RS-422 4-wire Receiver
5	R+	A'	In	RS-422 4-wire Receiver

* Numbered right to left (front view). ** Direction relative ED-20.

Twisted pair cable is recommended



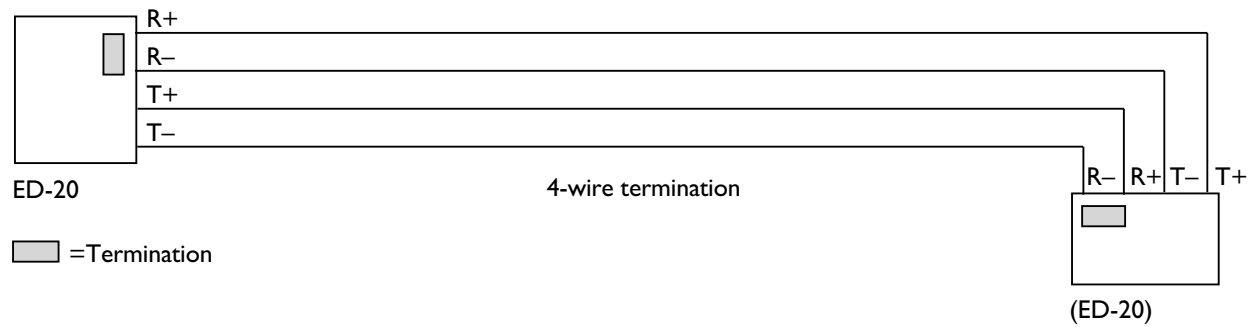
CH2: RS-232 Connections, DCE

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

RS-422 general advice



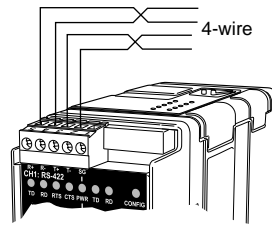
Termination recommendations

The RS-422 line must be terminated. The receiver on each side shall be terminated.

RS-422 connection pins can be differently named. For some brands the T+ corresponds to A, but other brands might use some other naming convention.

If a unit does not work it can help to swap A and B.

Twisted pair cable is recommended



6.3. Settings

6.3.1. Channel 1 serial interface

Settings of the Ethernet Router are made with DIP switches and with ED-Tool for ED-20 (Windows based configuration software).

6.3.1.1. DIP Switch Settings

DIP-switches are accessible under the lid on top of the unit. DIP-switches are used to set-up the serial port.



Warning!

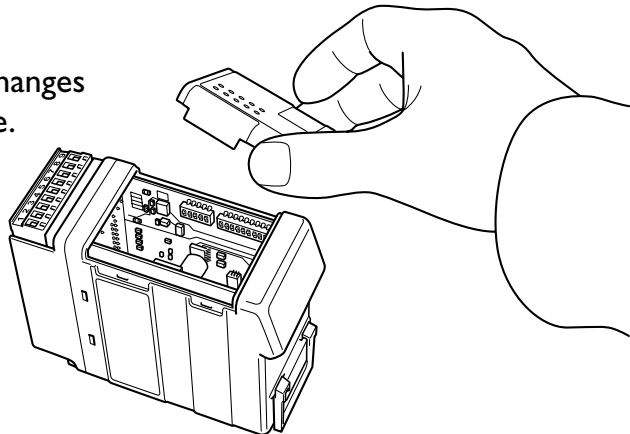
Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap), before the lid on top of the unit is removed.

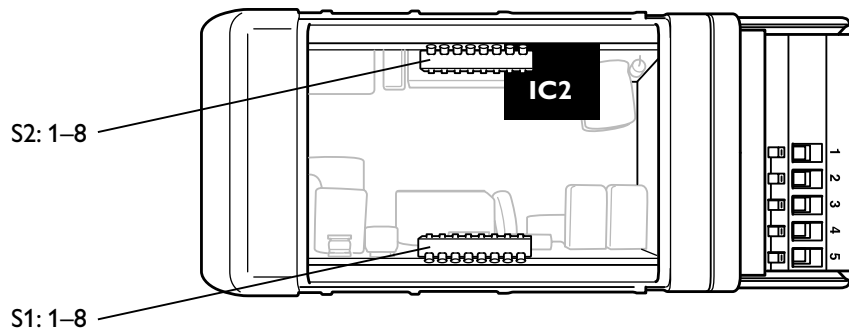


Warning! Do not open connected equipment.

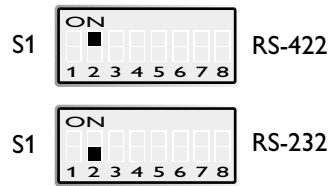
Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

NOTE! Always reboot the unit after any changes of the DIP-switches has been made.

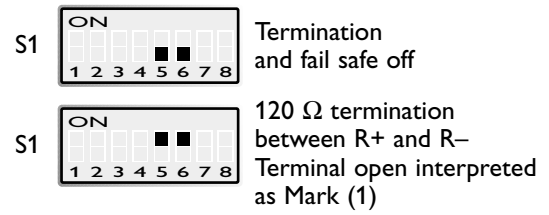




Port type Channel 1

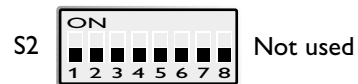


Termination and fail safe (4-wire) Channel 1



Not used with RS-232

Factory settings



6.3.2 Configuration ports

The unit have two configuration ports, locally via the RS-232 port (Channel 2) and remotely via Ethernet (Telnet port).

6.3.3 LED indicators

Indicators (LED) Power (PWR)
 Link (NET)
 Serial status, TD, RD, RTS and CTS
 Configuration

LED	Status	Indication of	
PWR	ON	Power OK	
NET	OFF	No Ethernet link	
	ON	Good Ethernet link	
	Flash*	Ethernet data is transmitted or received, traffic indication	
CONFIG	ON	Configuration mode (unit has been reconfigured, new parameters not valid until a reboot has been made)	
	OFF	Application mode (or during start up of configuration mode)	
		Serial specific indication of	
		RS-232 selected	RS-422 selected**
TD	ON	Received data on serial port	Received data on serial port
RD	ON	Transmitted data on serial port	Transmitted data on serial port
RTS**	OFF	Request To Send deactivated	Always OFF
	ON	Request To Send activated	
CTS**	OFF	Clear To Send deactivated	Shall always be OFF
	ON	Clear To Send activated	Reconfigure flow control

* Constant flashing at constant rate may indicate a speed mismatch

** Only on channel 1

6.4 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 6.3 Switch settings on page 13. 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-20 local IP address before the ARP command.)

6.5 Installation of ED-Tool for ED-20

This section describes the 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, Windows NT 3.51/4.0, or Windows 2000, Windows XP, 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 for ED-20 CD-ROM
- ⌘ Run 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 8.2.

7.1 Application mode

In application mode the ED-20 transfers data between the serial interface (CH1) and the network interface (10Base-T). 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-, 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 Mbit/100 Mbit maximum theoretical throughput, whereas an analogue modem operates at speeds up to 56 kbit.

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 or 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 interface

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'

7.1.2.2 PPP Network interface

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 in chapter 9.

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

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 34.

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 34.

7.1.2.5 Proxy ARP function

The Proxy ARP function can be activated and used to divide an existing network into several networks and keep the original IP address settings. I.e the networks would appear to be one single network instead of multiple networks connected to each other. This will allow the connected equipment to communicate to each other without using gateways and is a benefit when attaching equipment not supporting gateway functionality.

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 program 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 for ED-20 under Program/Westermo 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

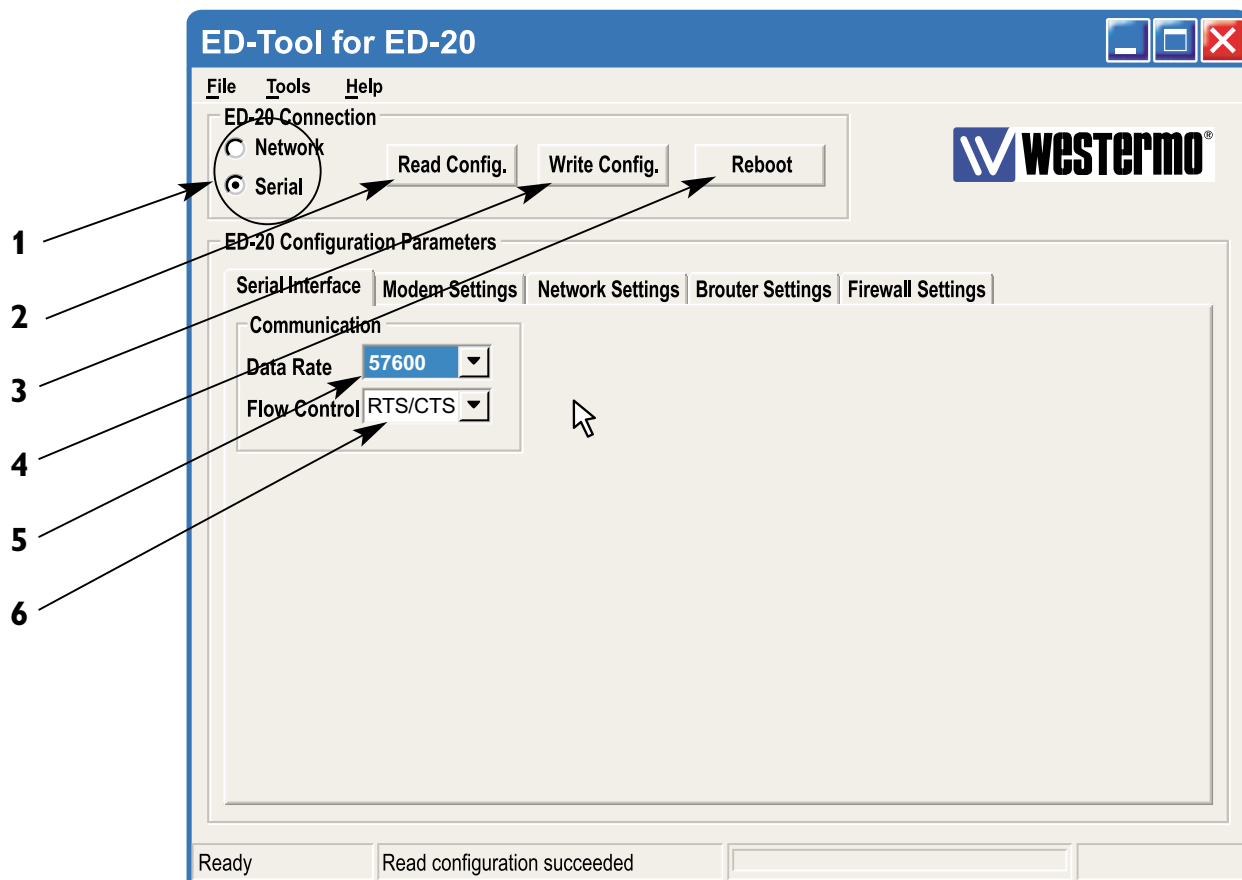
- Set parameters
- Save configuration to a file
- Done

8.1.1 ED-Tool for ED-20 commands

This section describes the ED-Tool for ED-20 commands.

The commands are described by their use.

Details about allowed values and default values is described in section 8.2.



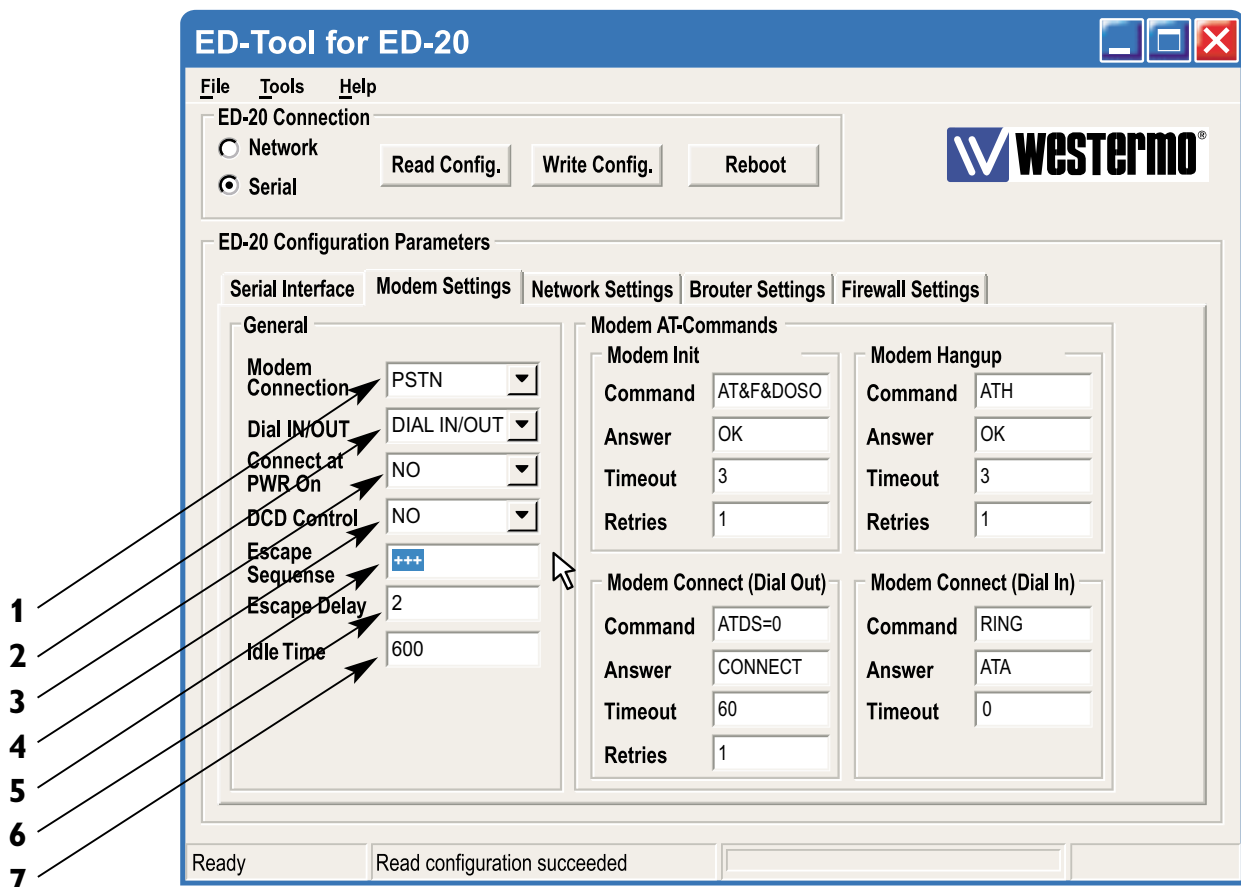
8.1.1.1 General commands

- | | |
|---|--|
| 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 |
| 3 | Write Config |
| | Note! ED-20 must be rebooted before any new configuration is activated. |
| 4 | Reboot |

8.1.1.2 Serial Interface – Channel 1 specific commands

Communication

- | | | |
|---|--------------|---|
| 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. Flow control must be set to none when using RS-422. |



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 '+++'.

Note! All interconnecting wires are required between the ED-20 and the attached modem.
- 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.

The diagram shows a configuration window titled "Modem AT-Commands" with four sections: "Modem Init", "Modem Hangup", "Modem Connect (Dial Out)", and "Modem Connect (Dial In)". Each section contains fields for Command, Answer, Timeout, and Retries. Numbered callouts point to specific fields: 8 points to the Command field of Modem Init; 9 points to the Answer field of Modem Init; 10 points to the Timeout field of Modem Init; 11 points to the Retries field of Modem Init; 12 points to the Command field of Modem Hangup; 13 points to the Answer field of Modem Hangup; 14 points to the Timeout field of Modem Hangup; 15 points to the Retries field of Modem Hangup; 16 points to the Command field of Modem Connect (Dial Out); 17 points to the Answer field of Modem Connect (Dial Out); 18 points to the Timeout field of Modem Connect (Dial Out); 19 points to the Retries field of Modem Connect (Dial Out); 20 points to the Command field of Modem Connect (Dial In); 21 points to the Answer field of Modem Connect (Dial In); 22 points to the Timeout field of Modem Connect (Dial In).

Section	Field	Value
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

Modem Init

- 8 Command Set the modem init string.
- 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

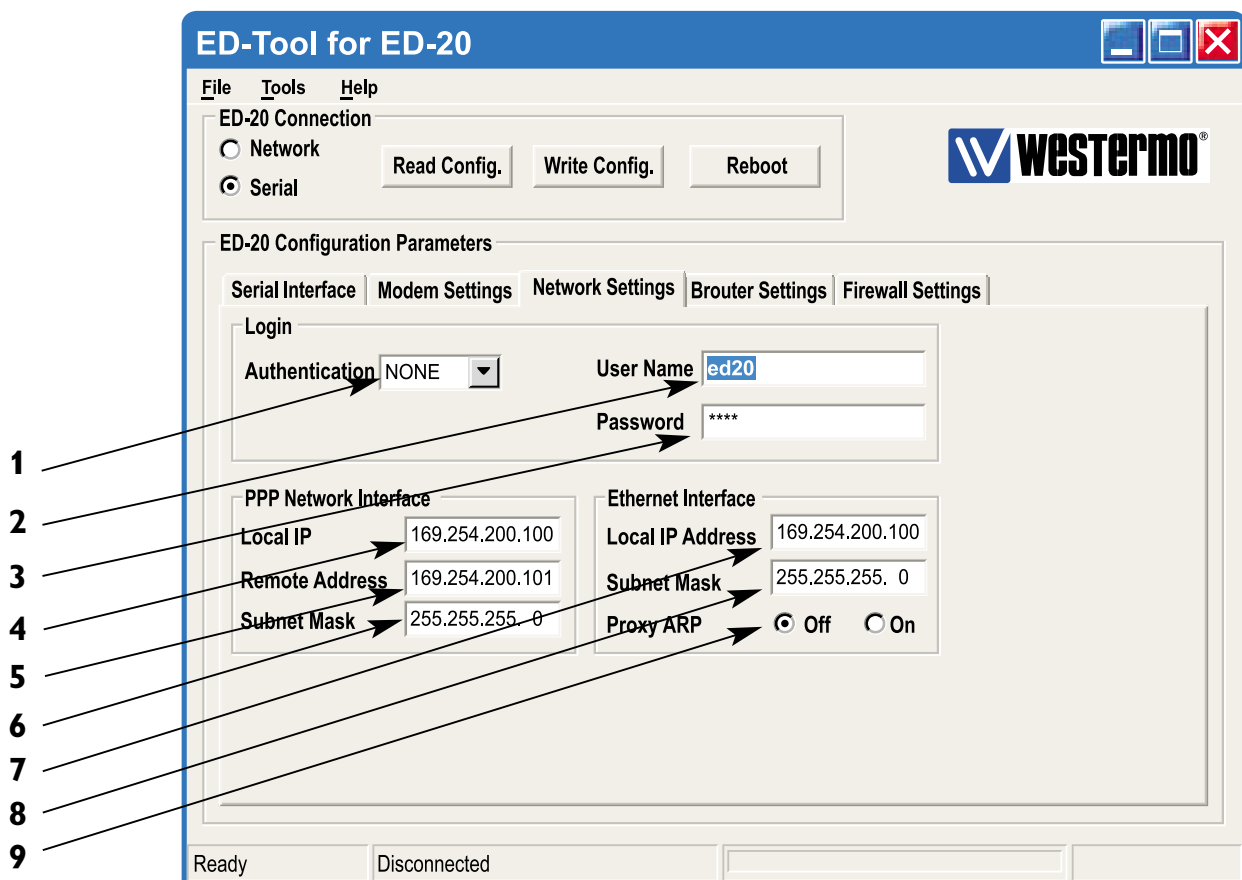
- 12 Command Set the modem hangup string.
- 13 Answer Set the expected answer from the modem on the command string. **Note!** Modem result codes must be enabled.
- 14 Timeout Set the timeout in seconds for how long the ED-20 shall wait for the answer string.
- 15 Retries Set the number of retries before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

Modem Connect (Dial Out)

- 16 Command Set the modem connect string.
- 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.
- 21 Answer Set the expected answer from the modem on the command string.
- 22 Timeout Set the timeout in seconds for how long the ED-20 shall wait for the answer string.



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).

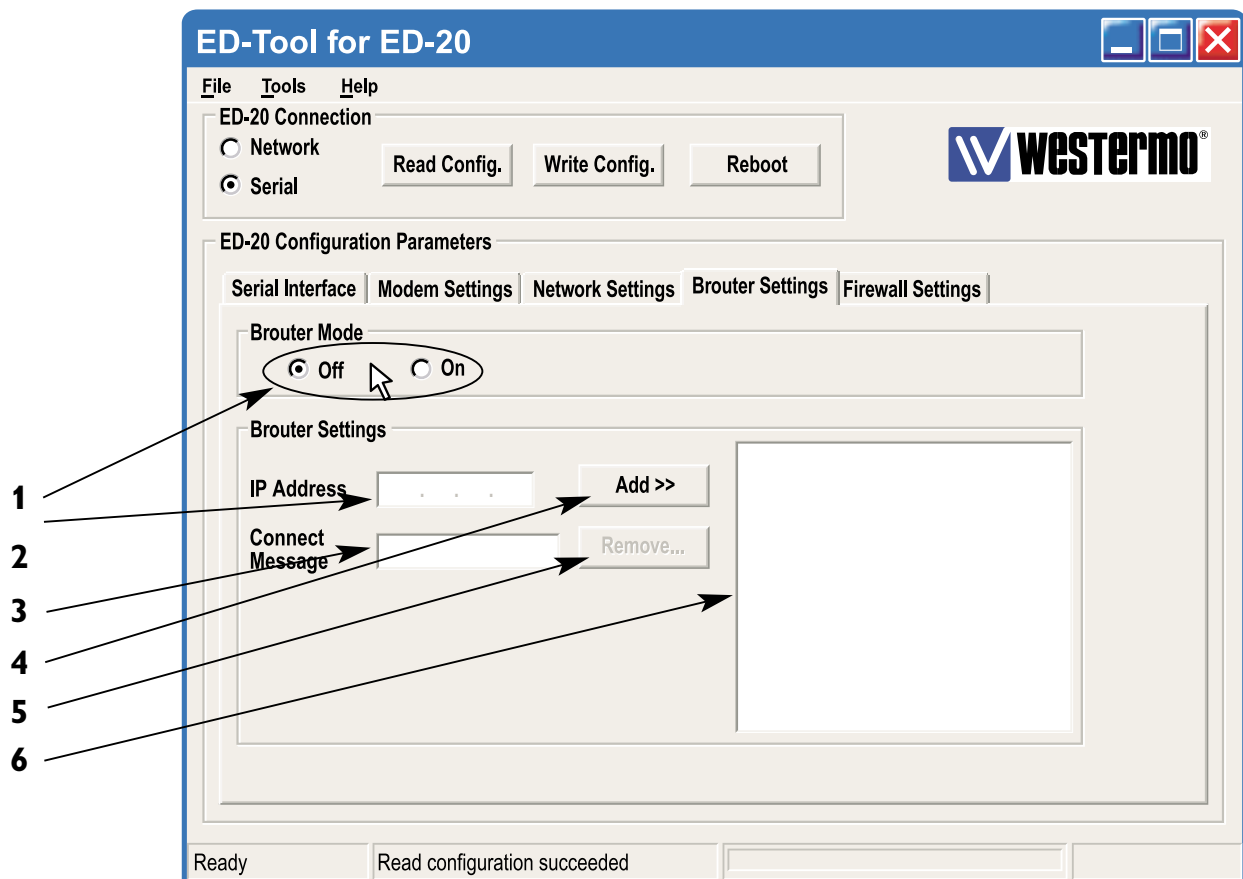
PPP Network Interface*

- 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.
- 9 Proxy Arp Set the Proxy ARP funktion Off/On.

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



8.1.1.5 Brouter Settings

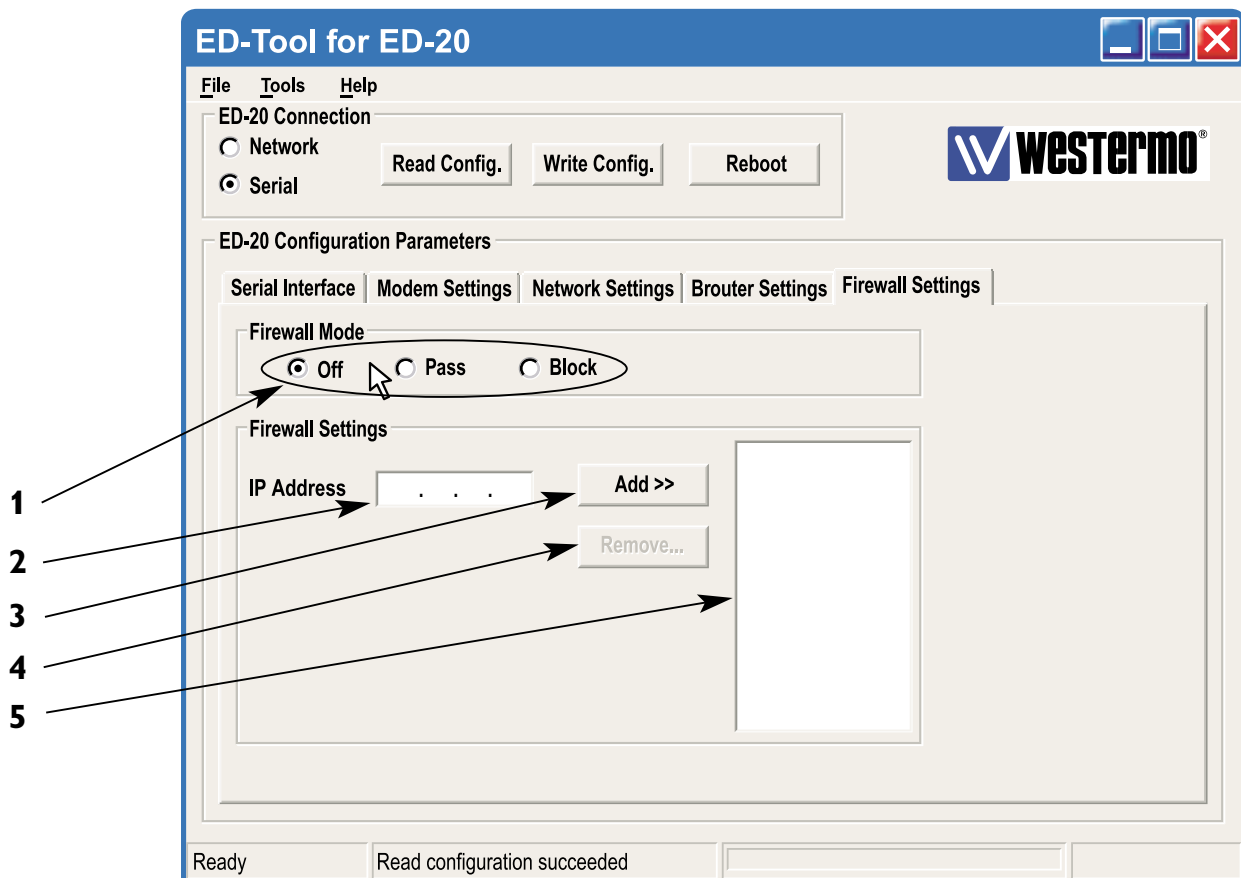
Brouter Mode

- 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 Message Set the Connect message that shall be sent to the attached 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.



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.

Note! When RS-422 is selected for channel 1, set flow control to NONE.

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-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

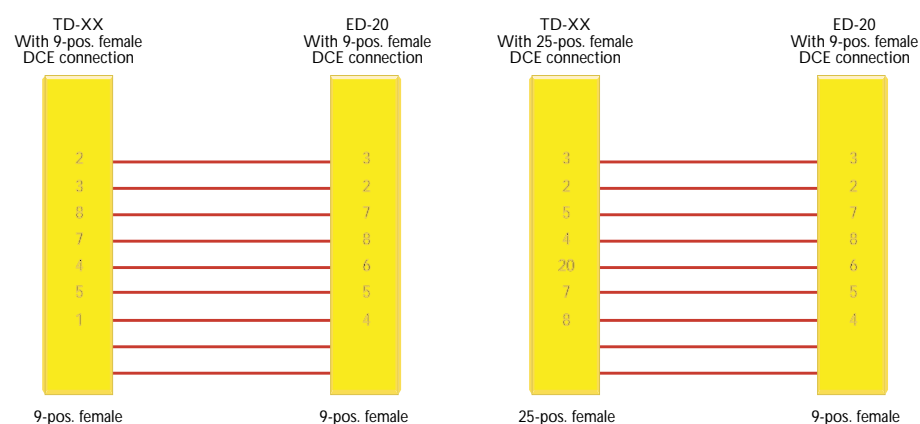
DCD Control

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



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.
Allowed string length: 25 characters.

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.
Allowed string length: 25 characters.

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.

Allowed string length: 25 characters

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.

Allowed string length: 25 characters

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

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

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

Prox Arp

Enable or disable the Proxy ARP function with the radio buttons.

Default: OFF

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.

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

Router Mode

Enable or disable the router function with the radio buttons.

Note! The router 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

Router 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 examples on page 34.

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

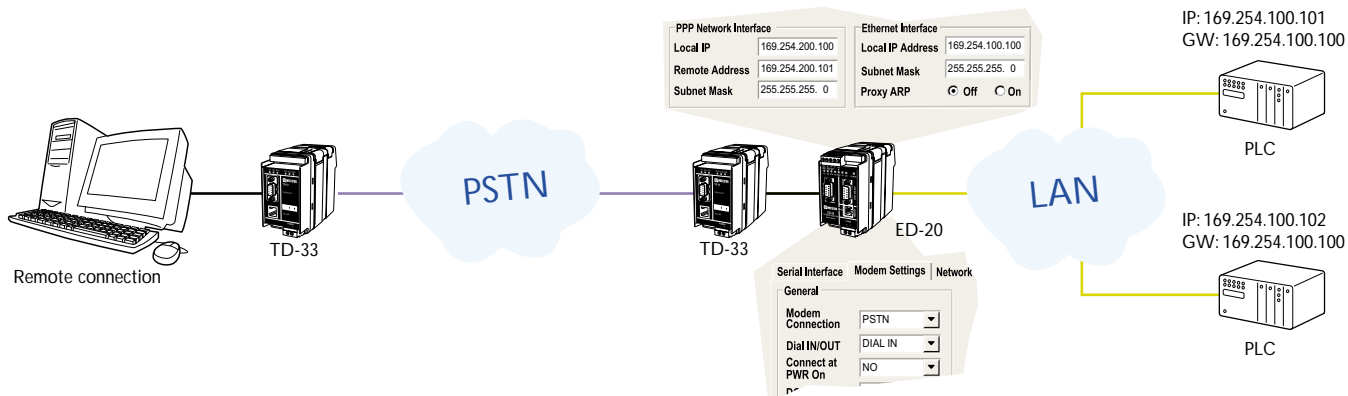
IP Address

Allowed values: Should be in decimal dotted notation.

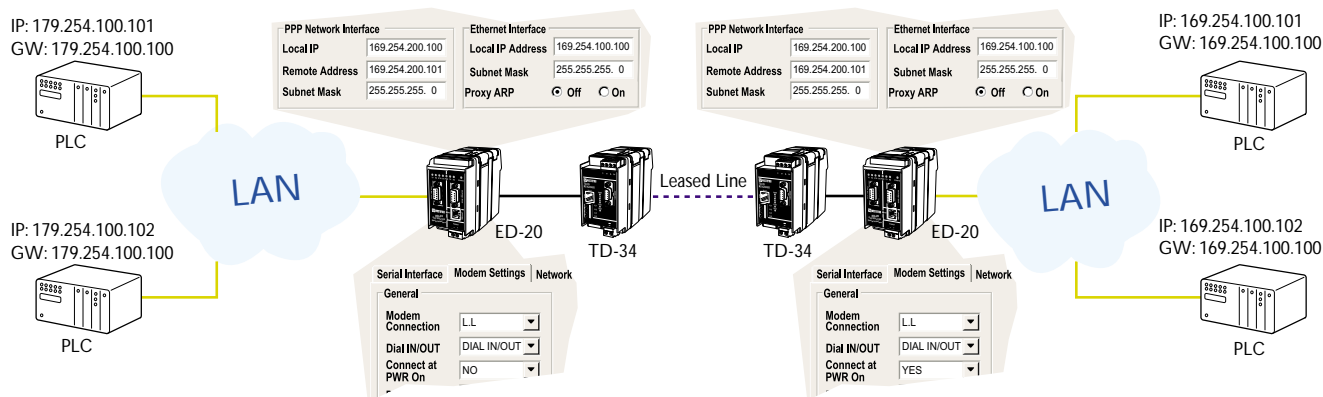
9. Application examples

Example of application with IP address settings.

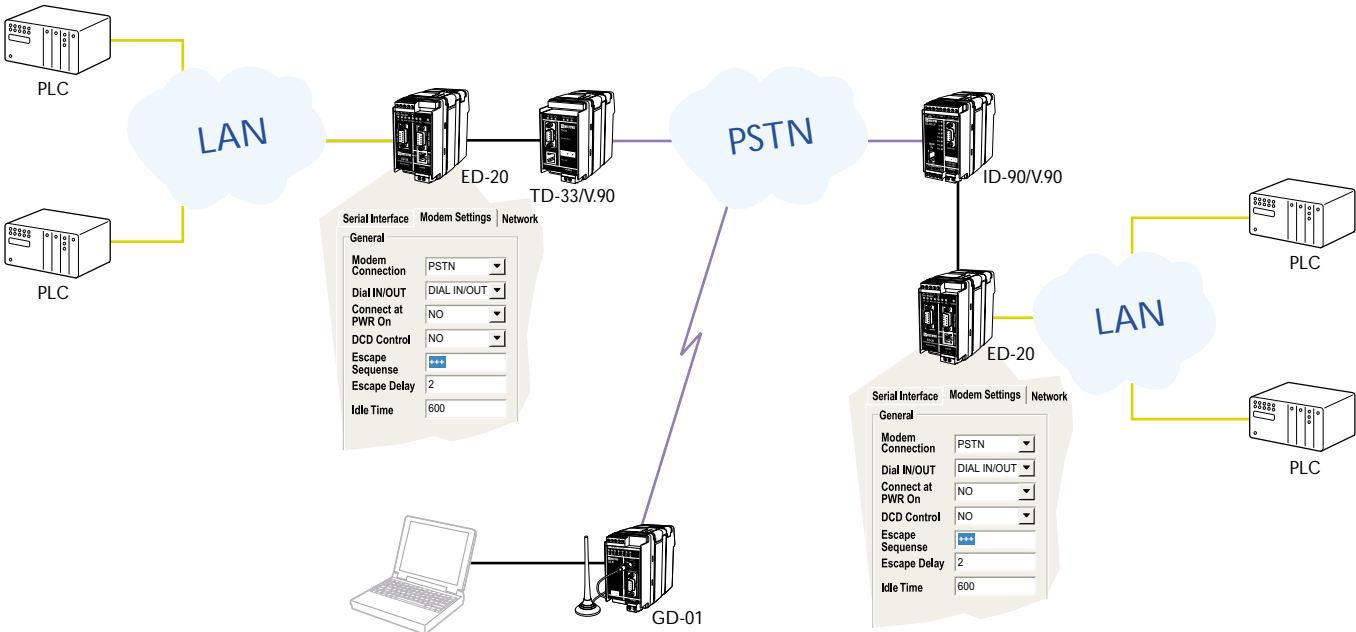
Remote connection – LAN (Dial In)



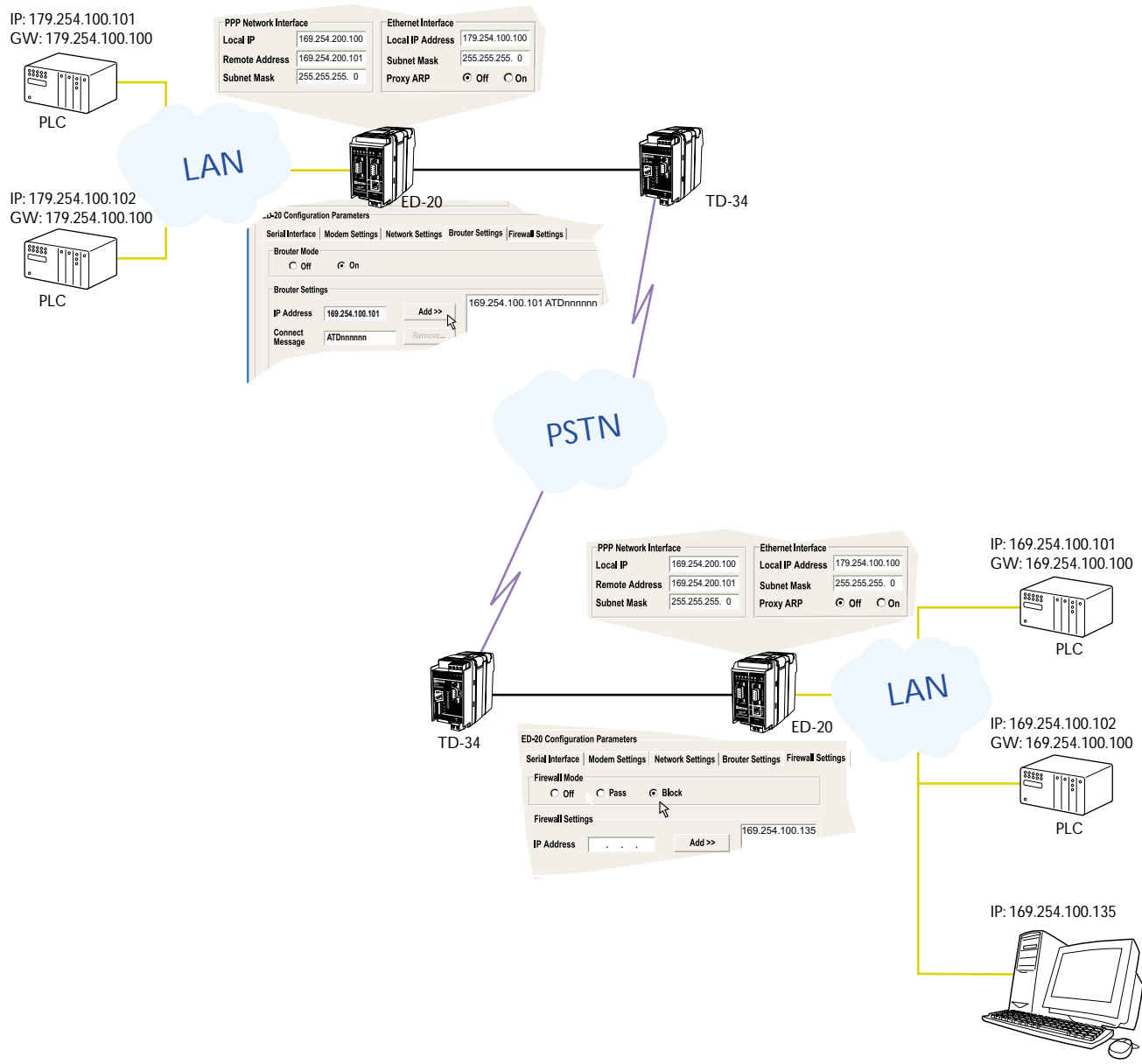
LAN – LAN (Leased Line)



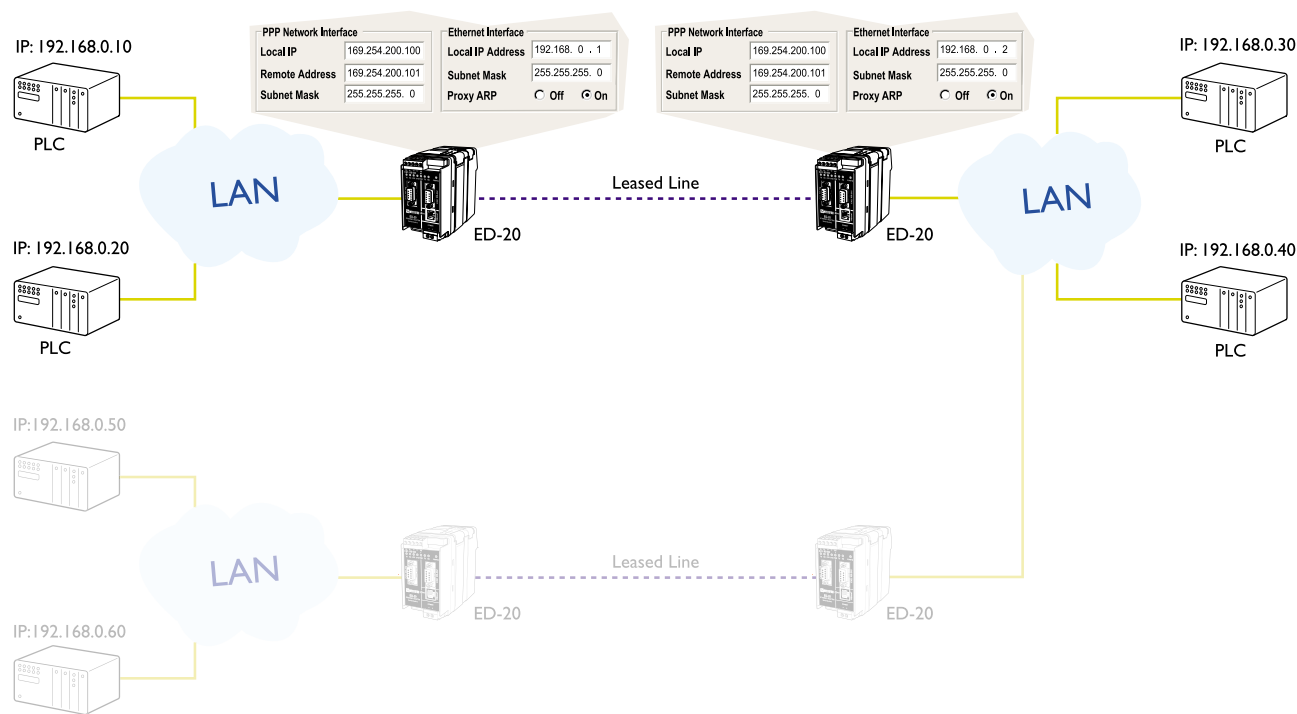
LAN – LAN (PSTN, GSM)



LAN – LAN (PSTN, Router, Firewall)



LAN – LAN (LL, Brouter, Firewall)





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