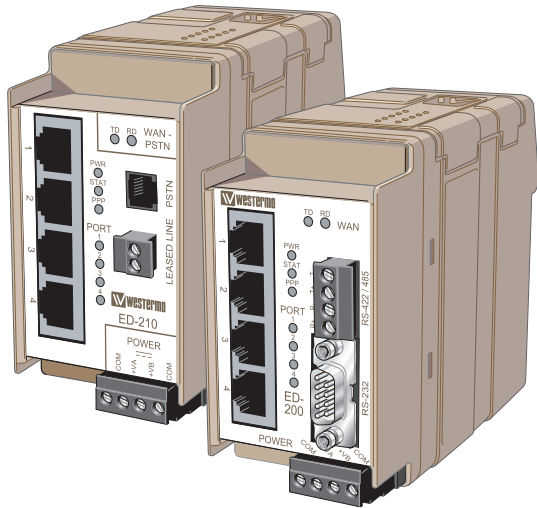




ED-200 S E R I E S



ED-200
DIN-rail Serial router

ED-210
DIN-rail PSTN router

Legal information

The contents of this document are provided "as is". Except as required by applicable law, no warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy and reliability or contents of this document. Westermo reserves the right to revise this document or withdraw it at any time without prior notice.

Under no circumstances shall Westermo be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Westermo can be found at the following Internet address:

<http://www.westermo.com>

Safety



Before installation:

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.

This unit should only be installed by qualified personnel.

This unit should be built-in to an apparatus cabinet, or similar, where access is restricted to service personnel only.

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

This unit uses convection cooling. To avoid obstructing the airflow around the unit, follow the spacing recommendations (see Cooling section).



Before mounting, using or removing this unit:

Prevent access to hazardous voltage by disconnecting the unit from all electrical connections.

Warning! Do not open connected unit. Hazardous voltage may occur within this unit when connected to TNV circuits.

Care recommendations

Follow the care recommendations below to maintain full operation of unit and to fulfil the warranty obligations.

This unit must not be operating with removed covers or lids.

Do not attempt to disassemble the unit. There are no user serviceable parts inside.

Do not drop, knock or shake the unit, rough handling above the specification may cause damage to internal circuit boards.

Do not use harsh chemicals, cleaning solvents or strong detergents to clean the unit.

Do not paint the unit. Paint can clog the unit and prevent proper operation.

Do not expose the unit to any kind of liquids (rain, beverages, etc). The unit is not waterproof. Keep the unit within the specified humidity levels.

Do not use or store the unit in dusty, dirty areas, connectors as well as other mechanical part may be damaged.

If the unit is not working properly, contact the place of purchase, nearest Westermo distributor office or Westermo Tech support.

Warning! This unit may have hot surfaces when used at maximum rated ambient temperature.

Maintenance

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

Agency approvals and standards compliance

Type	Approval / Compliance
EMC	EN 61000-6-2, Immunity industrial environments
	EN 55024, Immunity IT equipment
	EN 61000-6-4, Emission industrial environments
	FCC part 15 Class A
	EN 50121-4, Railway signalling and telecommunications apparatus
	IEC 62236-4, Railway signalling and telecommunications apparatus
Safety	EN 60950-1, IT equipment
PSTN (ED-210)	ETSI TS103 021-1, ETSI TS103 021-2, ETSI TS103 021-3

FCC Part 15.105 Notice:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ⌘ Reorient or relocate the receiving antenna
- ⌘ Increase the separation between the equipment and receiver
- ⌘ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- ⌘ Consult the dealer or an experienced radio/TV technician for help.

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
DIN-rail Serial router	ED-200	3609-5001
DIN-rail PSTN router	ED-210	3609-5010

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

No	Short name
2004/108/EC	Electromagnetic Compatibility (EMC)
2006/95/EC	Low Voltage Directive - LVD
1999/5/EC	RTTE Radio and Telecommunications Terminal Equipment

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 61000-6-2	Immunity for industrial environments	2005
EN 61000-6-1	Immunity for residential, commercial and light industrial environments	2007
EN 55024	Information technology equipment – Immunity	1998 +A1:2001 +A2:2003
EN 61000-6-4	EN 61000-6-4	2007
EN 60950-1	Safety of information technology equipment	2006 +A11:2009

The last two digits of the year in which the CE marking was affixed: 11

Herewith declares that product(s) listed above is in conformity with

No	Title	Issue
FCC part 15	Radio frequency devices	

Signature

Pierre Öberg
Technical Manager
7th April 2011

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Org.nr/
Corp. identity number 556361-2604
Registered office Eskilstuna

Type tests and environmental conditions

Electromagnetic Compatibility			
Phenomena	Test	Description	Test levels
ESD	EN 61000-4-2	Enclosure contact	± 6 kV
		Enclosure air	± 8 kV
RF field AM modulated	IEC 61000-4-3	Enclosure	10 V/m 80% AM (1 kHz), 80 – 1 000 MHz
RF field 900 MHz	ENV 50204	Enclosure	20 V/m pulse modulated 200 Hz, 900 ± 5 MHz
Fast transient	EN 61000-4-4	Signal ports	± 2 kV
		Power ports	± 2 kV
Surge	EN 61000-4-5	Signal ports unbalanced	± 2 kV line to earth, ± 2 kV line to line
		Signal ports balanced	± 2 kV line to earth, ± 1 kV line to line
		Power ports	± 2 kV line to earth, ± 2 kV line to line
RF conducted	EN 61000-4-6	Signal ports	10 V 80% AM (1 kHz), 0.15 – 80 MHz
		Power ports	10 V 80% AM (1 kHz), 0.15 – 80 MHz
Power frequency magnetic field	EN 61000-4-8	Enclosure	100 A/m, 50 Hz, 16.7 Hz & 0 Hz
Pulse magnetic field	EN 61000-4-9	Enclosure	300 A/m, 6.4 / 16 µs pulse
Voltage dips and interruption	EN 61000-4-11	AC power ports	10 & 5 000 ms, interruption 10 & 500 ms, 30% reduction 100 & 1 000 ms, 60% reduction
Mains freq. 50 Hz	EN 61000-4-16	Signal ports	100 V 50 Hz line to earth
Mains freq. 50 Hz	SS 436 15 03	Signal ports	250 V 50 Hz line to line
Voltage dips and interruption	EN 61000-4-29	DC power ports	10 & 100 ms, interruption 10 ms, 30% reduction 10 ms, 60% reduction +20% above & -20% below rated voltage
Radiated emission	EN 55022	Enclosure	Class A
	FCC part 15		Class A
Conducted emission	EN 55022	AC power ports	Class A
	FCC part 15	AC power ports	Class A
	EN 55022	DC power ports	Class A
Dielectric strength	EN 60950	Signal port to other isolated ports	2 kVrms 50 Hz 1 min
		Power port to other isolated ports	3 kVrms 50 Hz 1 min 2 kVrms 50 Hz 1 min (@ rated power <60 V)
Environmental			
Temperature		Operating	-25 to +65°C
		Storage & Transport	-25 to +70°C
Humidity		Operating	5 to 95% relative humidity
		Storage & Transport	5 to 95% relative humidity
Altitude		Operating	2 000 m / 70 kPa
Service life		Operating	10 year
Vibration	IEC 60068-2-6	Operating	7.5 mm, 5 – 8 Hz 2 g, 8 – 500 Hz
Shock	IEC 60068-2-27	Operating	15 g, 11 ms
Packaging			
Enclosure	UL 94	PC / ABS	Flammability class V-1
Dimension W x H x D			55 x 100 x 132 mm
Weight			0.3 kg
Degree of protection	IEC 529	Enclosure	IP 20
Cooling			Convection
Mounting			Horizontal on 35 mm DIN-rail

Introduction

The ED-200 and ED-210 are two industrialised DIN Rail mounted Ethernet Routers. The ED-200 has a serial interface that supports data rates up to 115 kbit/s. The ED-210 has an integrated PSTN modem. The device is easy to set-up using the integrated Web tool. The dial-up networking functions in Microsoft Windows 9x, ME, NT, 2000, XP or Vista can be used to make PPP connections to the unit. As well as any other platform supporting the PPP protocol. Passwords can be used to increase the remote site security. Once connected to the remote network all IP based protocols such as TCP, FTP, TELNET and UDP can be used over the router. Ethernet connection to the units is via 100BaseTX with support for QoS. The router features support for PPP (point to point) routing protocol as well as NAT (**N**etwork **A**ddress **T**ranslation) and port forwarding/NAPT (**N**etwork **A**ddress **P**ort **T**ranslation).

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 products ensures reliability of operation in the harshest of site conditions.

Description

This manual specifies the ED-200 router series, the following products are included:

- ⚡ ED-200 Serial router for connection in point-to-point applications or connection to an external modem like ISDN, GSM etc.
- ⚡ ED-210 PSTN router; a router for connection to a PSTN line. It can be used as a dial in or dial out router or a point-to-point over leased line.

Configuration

The units can easily be configured via the onboard Web based configuration tool. Local IP addresses can also be configured by using the Westermo IP Config tool, from the IP Config tool it is then possible to browse into the unit for further configuration.

In the ED-200 there is the option to use RS-422 for the PPP connection, termination of the RS-422 interface is made using DIP-switches under the lid.

Getting started

IP Address

When delivered, the default IP address of the ED-200 and ED-210 is 192.168.2.200.

Default gateway 192.168.2.200

If the default address of the unit is valid in the connected network it is possible to access the unit directly from a web browser.

Change local IP address

The local address of ED-200/ED-210 can be configured using the IP Configuration tool, then it is possible to browse into the unit for further configuration. The IP Configuration program is available on the CD or for download from the WESTERMO web page:

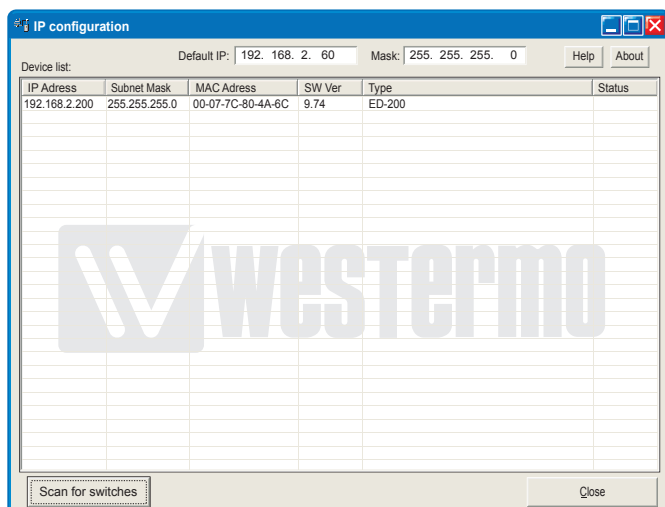
<http://www.westermo.com>, (choose Downloads/Software/Ethernet/ED-200, ED-210

Name: setup.exe

Install the software and start the application from a PC on the network connected to the same network as the ED-200/ED-210. Make sure that the Default IP of the configuration software (see figure below) is in the same subnet as your PC.

Note! If you are not sure about the subnet – consult your network administrator.

Note! IP Config version must be 9.8.4 or higher.



Note! If you are not sure about the settings – consult your network administrator.

Figure 1

By clicking the “Scan for switches” button the IP Configuration tool will detect the switches/routers in the network. The software will list all Westermo managed switches or routers connected to the network. Information as in the figure 1 will appear for each detected unit connected to the same network as your PC.

If you only want to change the IP address and the subnet mask, this can be done within the IP config tool.

By clicking the listed ED-200/ED-210 that you wish be re-configured you will be asked if you would like to access via web figure 2. Click the abort button, enter the preferred IP address, Subnet mask and IP gateway address and click the Set button to confirm the settings in the unit (see figure 3).

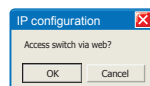
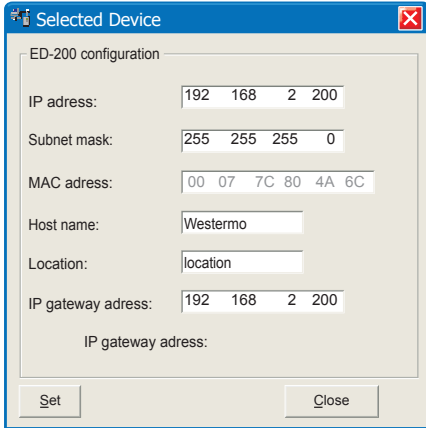


Figure 2



Click the Close button to get back to main view. You will then be asked if you would like to quit. Click the OK button, figure 4, and you will be back to the main view of the IP Configuration program (see figure 1).

Figure 3

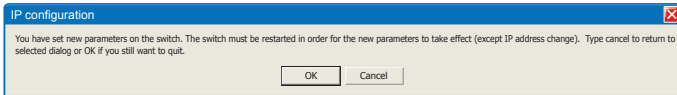


Figure 4

Click the Scan for switches button again and the settings you configured will appear in the list. Now you can access the ED-200/ED-210 via the browser for further configuration by clicking the unit with an IP address that fits your subnet. Figure 2 will appear and when you click the OK button and a web browser will be opened and redirected to the ED-200./ED-210 unit log in page (see figure 5).

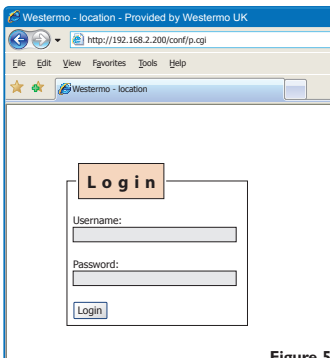


Figure 5

Log in via Web

You will be prompted with a Login screen where the default settings for Username and Password are:

Username: admin

Password: westermo

The unit can be easily configured via the on-board Web based configuration tool. The network interface, serial interface, PSTN, security and switch properties can now be configured and stored. The Web tool has also an extended integrated help function describing all configuration possibilities.

Note! Max 10 characters can be used in the login.

Note! For login, modem init and PPP authentication ASCII characters from 33 to 126 is valid except for ASCII 34=", ASCII 35=#, ASCII 39=", ASCII 40=(and ASCII 92=\.

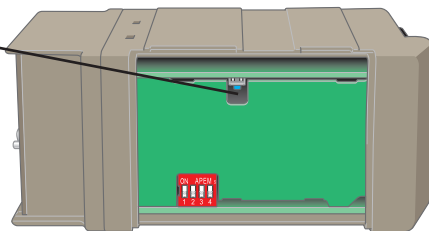
Diagnostic information

Restore Factory default settings

Under the lid there is a reset push button. This will clear your customized settings and restore the factory default settings.

Note! Do not disconnect power during the factory reset process.

The process takes 90 second to complete if the default address of the unit is valid on the connected network it is possible to access the unit directly from a browser.



Simple Network Management Protocol (SNMP)

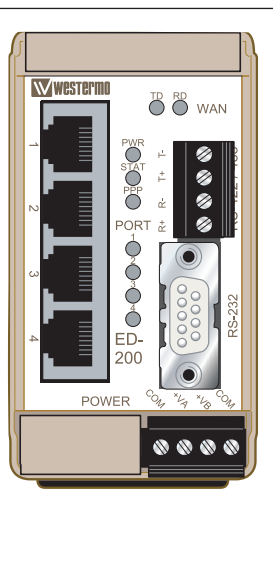
ED-200 and ED-210 supports Simple Network Management Protocol version 2c (SNMPv2c). SNMP is an Internet standard protocol (IP) developed to manage IP nodes (servers, workstations, routers, switches and hubs etc.) on an Ethernet network. SNMP enables network administrators and controls engineers to manage network performance, find and solve network problems, and plan for network growth. The Lynx MIB's are divided into groups allowing the SNMP manager to poll the SNMP agents for information. The parts of the following MIB groups are implemented and can be found on CD.

- ⌘ General MIB
- ⌘ MIB-2

Location of Interface ports, LED's and DIP-switches

LED indicators

LED	Status	Description
RD	Flashing	Receiving data from WAN port
	OFF	–
TD	Flashing	Transmitting data to WAN port
	OFF	–
PWR	ON-green	Start up ready
	ON-yellow	Booting
	Flashing green	Connected with IPconfig tool.
	OFF	No power
STAT	ON-green	Start up ready
	ON-yellow	Indicating active alarm
	OFF	–
PPP	ON	PPP-link established
	OFF	–
Port 1–4	ON-green	Link active
	Flashing-green	Traffic on link
	ON-yellow	Indicating alarm
	OFF	–



Interface specifications ED-200

Power	
Rated voltage	12 to 48 VDC
Operating voltage	10 to 60 VDC
Rated current	ED-200 360 mA @ 12 VDC ED-200 180 mA @ 24 VDC ED-200 100 mA @ 48 VDC
Rated frequency	DC
Inrush current, I _{2t}	ED-200 0,51 A ² s
Startup current*	ED-200 1 A
Polarity	Reverse polarity protected
Redundant power input	Yes
Isolation to	Ethernet, RS-232, RS-422
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 12)
Shielded cable	Not required

* External supply current capability for proper startup

RS-422	
Electrical specification	EIA RS-422 4-wire twisted pair
Data rate	300 bit/s - 115.2 kbit/s
Data format	8 data bits, none parity, 1 stop bit
Protocol	PPP
Transmission range	≤ 1200 m, depending on data rate and cable type (EIA RS-422)
Settings	120 Ω termination and failsafe biasing 680 Ω
Protection	Installation Fault Tolerant (up to ±60 V)
Isolation to	Power and Ethernet
Galvanic connection to	RS-232
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 12)
Shielded cable	Not required

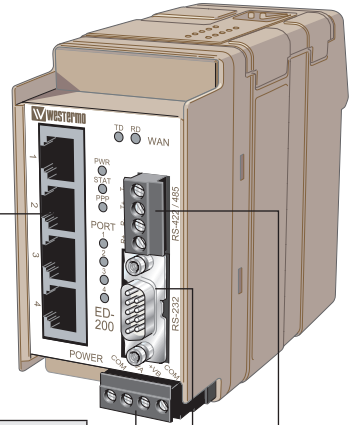
RS-232	
Electrical specification	EIA RS-232
Data rate	300 bit/s - 115.2 kbit/s
Data format	8 data bits, none parity, 1 stop bits
Protocol	PPP
Transmission range	15 m
Isolation to	Power and Ethernet
Galvanic connection to	RS-422
Connection	9-pin D-sub male (DTE)
Shielded cable	Not required

Ethernet TX	
Electrical specification	IEEE std 802.3, 2000 Edition
Data rate	10 Mbit/s, 100 Mbit/s, manual or auto. IEEE 802.3 2000 edition.
Duplex	Full or half, manual or auto
Transmission range	100 m
Isolation to	Power, RS-232 and RS-422
Connection	RJ-45
Shielded cable	Shielded cable is required if unit is used in harsh environment
Number of ports	4 ports marked as 1, 2, 3, 4

ED-200 Connections

Ethernet TX

Position	Direction*	Description
1	In/Out	Transmitted/Received data
2	In/Out	Transmitted/Received data
3	In/Out	Transmitted/Received data
4	–	NC
5	–	NC
6	In/Out	Transmitted/Received data
7	–	NC
8	–	NC



Power screw terminal

Position	Direction*	Description	Product marking
1	In	Common voltage	COM
2	In	Voltage A	+VA
3	In	Voltage B	+VB
4	In	Common voltage	COM

RS-232 D-sub**

Position	Direction*	Description
1	In	Data Carrier Detect (DCD)
2	In	Received Data (RD)
3	Out	Transmitted Data (TD)
4	Out	Data Terminal Ready (DTR)
5	–	Signal Ground (SG)
6	In	Data Set Ready (DSR)
7	Out	Request To Send (RTS)
8	In	Clear To Send (CTS)
9	In	Ring Indicator (RI)

RS-422 screw terminal**

Position	Direction*	Description	Product marking
1	In	R+ (EIA RS-422 A')	R+
2	In	R- (EIA RS-422 B')	R-
3	Out	T+ (EIA RS-422 A)	T+
4	Out	T- (EIA RS-422 B)	T-

* Direction relative this unit

** TShielded cable is required if unit is used in harsh environment.

Interface specifications ED-210

Power	
Rated voltage	12 to 48 VDC
Operating voltage	10 to 60 VDC
Rated current	ED-210 370 mA @ 12 VDC ED-210 190 mA @ 24 VDC ED-210 110 mA @ 48 VDC
Rated frequency	DC
Inrush current, I ² t	ED-210 1,1 A ² s
Startup current*	ED-210 1,1 A
Polarity	Reverse polarity protected
Redundant power input	Yes
Isolation to	Ethernet and PSTN
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 12)
Shielded cable	Not required

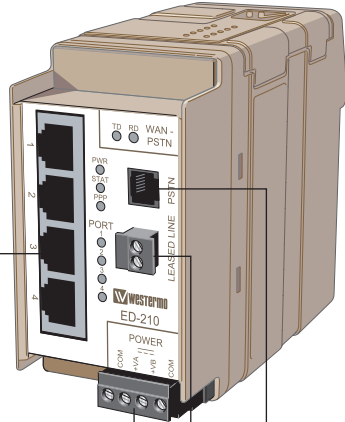
Ethernet TX	
Electrical specification	IEEE std 802.3. 2000 Edition
Data rate	10 Mbit/s, 100 Mbit/s, manual or auto. IEEE 802.3 2000 edition.
Duplex	Full or half, manual or auto
Transmission range	100 m
Isolation to	Power, RS-232 and RS-422
Connection	RJ-45
Shielded cable	Shielded cable is required if unit is used in harsh environment
Number of ports	4 ports marked as 1, 2, 3, 4

PSTN	
Electrical specification	Public Switched Telephone Network
Data rate	600 bit/s – 33.6 kbit/s
Protocol	Bell103, Bell212, V.21, V.22, V.22Bis, V.23C, V.32, V.32Bis, V.34
Protection	Installation Fault Tolerant (up to ±60 V)
Connection	RJ-11C
Shielded cable	Not required

ED-210 Connections

Ethernet TX

Position	Direction*	Description
1	In/Out	Transmitted/Received data
2	In/Out	Transmitted/Received data
3	In/Out	Transmitted/Received data
4	-	NC
5	-	NC
6	In/Out	Transmitted/Received data
7	-	NC
8	-	NC



Power screw terminal

Position	Direction*	Description	Product marking
1	In	Common voltage	COM
2	In	Voltage A	+VA
3	In	Voltage B	+VB
4	In	Common voltage	COM

Leased line connection**

Position	Direction*	Description
1	In/Out	2-wire Receive/ Transmit
2	In/Out	2-wire Receive/ Transmit

PSTN connection

RJ-11C	Direction*	Description	Product marking
a		NC	
b		NC	
c	In/Out	PSTN Transmit/ Receive	
d	In/Out	PSTN Transmit/ Receive	
e		NC	
f		NC	

* Direction relative this unit

** Tested leased line speed in harsh environmental is 9600 bit/s.

DIP-switch settings for ED-200



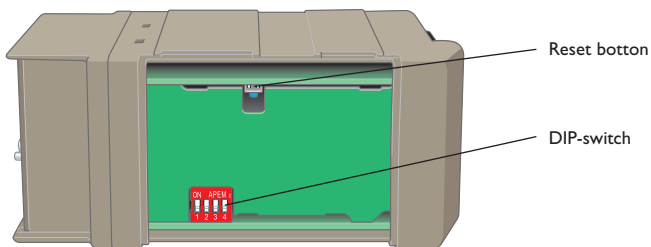
Before setting DIP-switches:

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

Reset switch

The reset button can be used to make a factory reset of the unit. All settings will return to factory default.

Note! Do not disconnect power during the factory reset process. The process takes 90 second to complete.



RS-422 termination



No termination or failsafe



Not used



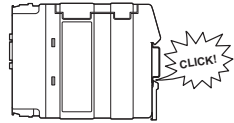
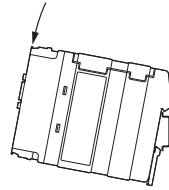
Termination of receiver with failsafe; R+ and R-

Factory settings



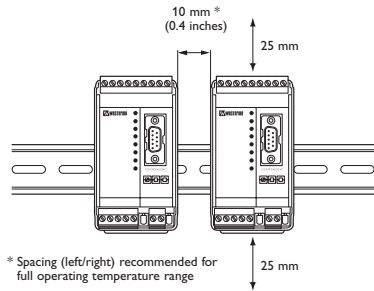
Mounting

This unit should be mounted on 35 mm DIN-rail, which is horizontally mounted inside an apparatus cabinet, or similar. Snap on mounting, see figure.



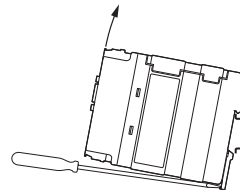
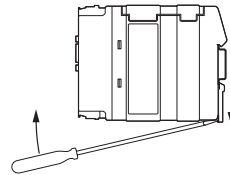
Cooling

This unit uses convection cooling. To avoid obstructing the airflow 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. Spacing is recommended for the use of unit in full operating temperature range and service life.



Removal

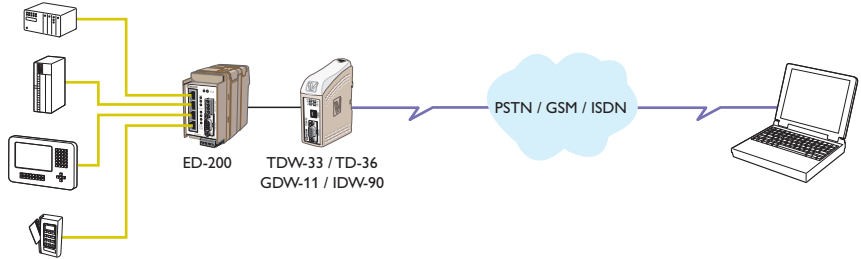
Press the black support at the back of the unit using a screwdriver, see figure.



Application examples

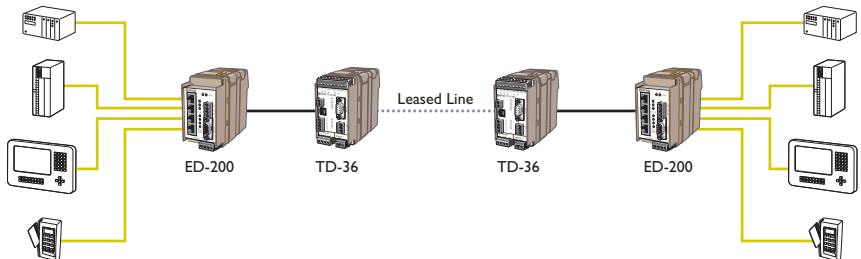
Remote connection dial in router

The ED-200 has an RS-232 serial interfaces that allows connection of different types of modem to the router.



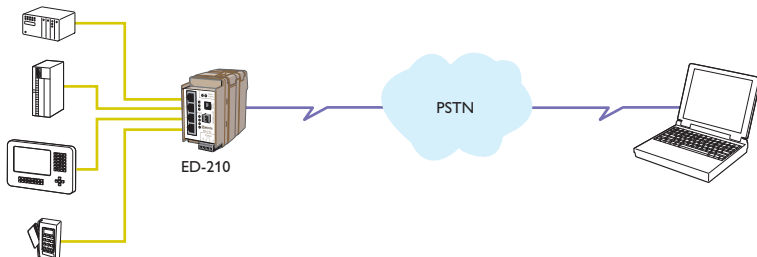
LAN- LAN (on leased line)

The ED-200 can be used to connect two different IP networks together. The leased line connection can be established by using a PSTN modem with support for leased line (TD-36) or by direct connection via the RS-422 interface on the ED-200. If RS-422 is used, the range is limited to 1200 metres according to the RS-422 standard.



Remote connection dial in router using ED-210

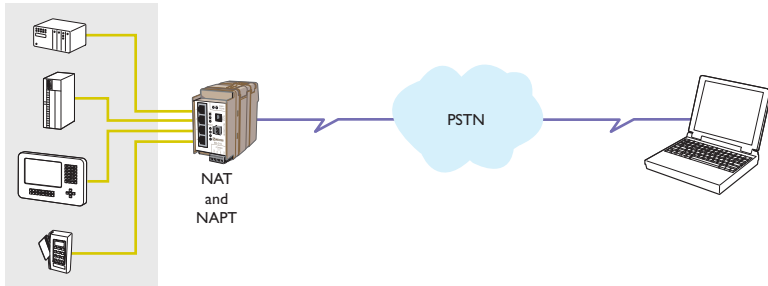
The ED-210 has an integrated PSTN modem with support for V.34. The integrated modem has the same specification as the Westermo TDW-33 telephone modem.



⌘ Routing with NAT and port forwarding (NAPT)

By using NAT (Network Address Translation) it is possible to “hide” all local IP addresses. Access to all devices is via the IP address of ED-200/ED-210.

Port forwarding makes it possible to access different ports (applications) on a unit located on the local network eg the HTTP (port 80) or a Telnet session (port 23).



For more information on applications and technical data visit www.westermo.com.

The Web tool also includes an integrated help where all functions and modes are described in details.

More help can be found inside the web tool and the ”?” button on each configuration page.



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