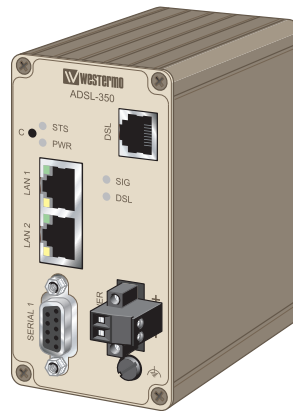


# ADSL-350



*Industrial ADSL Router*

## **Legal information**

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

### **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.

Fibre connectors are supplied with plugs to avoid contamination inside the optical port.

As long as no optical fibre is mounted on the connector, e.g. for storage, service or transportation, should the plug be applied.

### **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 55024, EN 55024 A1, EN 55024 A2, Electromagnetic compatibility – Immunity IT equipment
	EN 55022, EN 55022 A1, Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement
Safety	EN 60950-1, IT equipment

# Declaration of Conformity, ADSL-350



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	
ADSL router / Modem	ADSL 350	3623-0301	

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

No	Short name
1999/5/EC	Radio and Telecommunications Terminal Equipment

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 301489-1	ElectroMagnetic compatibility and Radio spectrum Matters (ERM) - ElectroMagnetic Compatibility (EMC) standard for radio equipment and services – Part 1	2011(1.9.2)
EN 60950-1	Information technology equipment. Safety. General requirements	2006 +A11:2009 +A12:2011 +A1:2010

The last two digits of the year in which the CE marking was affixed: 12

Signature

Pierre Öberg  
Technical Manager  
2<sup>nd</sup> July 2012

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Corp. identity number  
556361-2604

Registered office  
Eskilstuna

## Type tests and environmental conditions

Phenomena	Test	Description	Test levels
ESD	EN 61000-4-2	Enclosure contact	± 4 kV (crit A)
		Enclosure air	± 8 kV (crit A)
RF field AM modulated	IEC 61000-4-3	Enclosure	10 V/m (crit A) (80 – 2700 MHz)
Fast transient	EN 61000-4-4	Signal ports	± 1 kV (crit A)
		Power ports	± 2 kV (crit A)
Surge	EN 61000-4-5	Ethernet ports	± 1 kV (direct) (crit A)
		Power ports	± 0.5 kV (line to earth) (crit A) ± 0.5 kV (line to line) (crit A)
RF conducted	EN 61000-4-6	All ports	10 V/m, (crit A) (0.15 – 80 MHz)
Radiated emission	EN 55022	Enclosure	Class B
Conducted emission	EN 55022	AC power ports	Class B
		DC power ports	Class B
		Ethernet ports	Class B
Temperature		Operating	–25 to +70°C (–13 to +158°F)
		Storage & Transport	–40 to +85°C (–40 to +185°F)
Humidity		Operating	0 to 90% relative humidity non condensing.
		Storage & Transport	0 to 90% relative humidity non condensing.
Altitude		Operating	2000 m / 70 kPa
Service life		Operating	10 year
Dimension W x H x D			53 x 103 x 97 mm (2.08 x 4.05 x 3.81 in)
Weight			0.40 kg
Degree of protection	IEC 529	Enclosure	IP 40
Cooling			Convection
Mounting			Horizontal on 35 mm DIN-rail

## Description

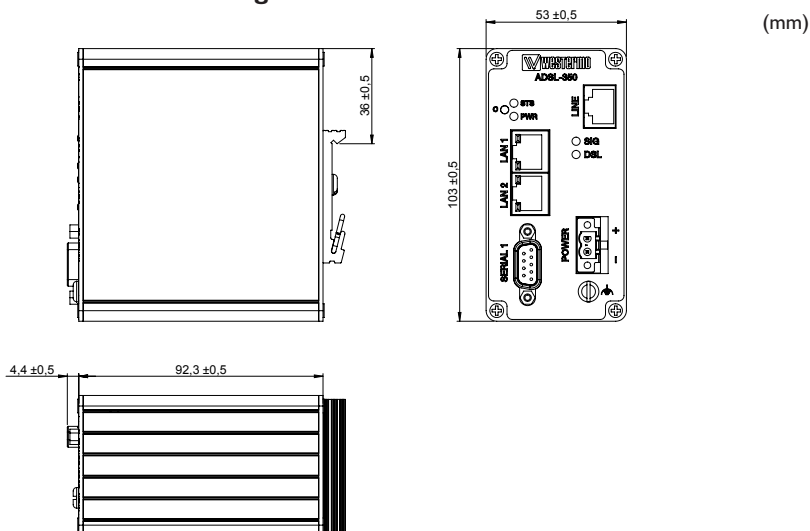
Remote access removes boundaries, eliminates the need for time consuming site visits and provides a network infrastructure suitable for today's "always-on" society. The ADSL-350 is an industrially designed ADSL broadband router built to cope with harsh environments and the characteristics of industrial applications. The unit supports a wide range of ADSL-standards and has support for long lines.

Most devices today comes equipped with an Ethernet port for communications, therefore the ADSL-350 has a built-in two port Ethernet switch. For legacy connectivity the unit also features one RS-232-port to provide multiple connection possibilities for both new and legacy replacement installations. Designed to be installed on a DIN rail all connectors and LEDs have been positioned in the front of the unit, facing the user for easy access and fast status feedback. With the wide power input range the unit can be powered from 10 to 60VDC and has low power consumption.

The cyber security features of the ADSL-350 prevent unauthorized access and secure the communication for Internet-enabled applications. The easy to use firewall filters incoming traffic, allowing only approved packets to pass through. To inter-connect units with each other securely over the Internet multiple VPN technologies are supported, including IPsec and OpenVPN.

Upgrading legacy solutions to become IP-enabled can prove both costly and tedious therefore the ADSL-350 includes a wide feature set for various legacy applications including both modem replacement methods as well as serial to Ethernet conversion. If there are applications that require extra attention Westermo's extensive experience from over 35 years within industrial data communications and over 5 years of industrial ADSL expertise will be available to assist you.

## Dimensional drawing



## Interface specifications

<b>Power</b>	
Rated voltage	12 – 48 VDC
Operating voltage	10 – 60 VDC
Rated current (max)	520 mA @ 12 VDC
Start-up current (max)	5500 mA @ 12 VDC
Rated frequency	DC

<b>RS-232</b>	
Electrical specification	EIA RS-232
Data rate	300 bit/s – 115.2 kbit/s
Data format	7 or 8 data bits, Odd, even or none parity, 1 or 2 stop bits
Protocol	Transparent, optimised by packing algorithm
Circuit type	SELV
Transmission range	15 m / 49 ft
Connection	9 pin D-sub female
Shielded cable	Not required
Conductive housing	Yes
Number of ports	1

<b>Ethernet TX</b>	
Electrical specification	IEEE std 802.3. 2005 Edition
Data rate	10 Mbit/s, 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Circuit type	SELV
Transmission range	100 m / 328 ft
Isolation to	All other
Connection	RJ-45 auto MDI/MDIX
Shielded cable	Not required, except when installed in Railway applications as signalling and telecommunications apparatus and located close to rails.*
Conductive housing	Yes
Number of ports	2

\* To minimise the risk of interference, a shielded cable is recommended when the cable is located inside 3 m boundary to the rails and connected to this port.

The cable shield should be properly connected (360°) to an earthing point within 1 m from this port.

This earthing point should have a low impedance connection to the conductive enclosure of the apparatus cabinet, or similar, where the unit is built-in. This conductive enclosure should be connected to the earthing system of an installation and may be directly connected to the protective earth.



<b>DSL</b>	
Data rate	30 Mbit Downlink, 3 Mbit Uplink
Protocol	LLC/VC-MUX encap Ethernet, PPPoA, PPPoE, IPoA
Connection	RJ-11
Shielded cable	Not required, except when installed in Railway applications as signalling and telecommunications apparatus and located close to rails.*
Number of ports	1
<b>Standard</b>	<b>Annex</b>
ITU-T G.992.1 (ADSL)	A (non overlap)
ITU-T G.992.3 (ADSL2)	A, I, L, M (non overlap)
ITU-T G.992.5 (ADSL2+)	A, I, M (non overlap)
ANSI T1.413	N/A

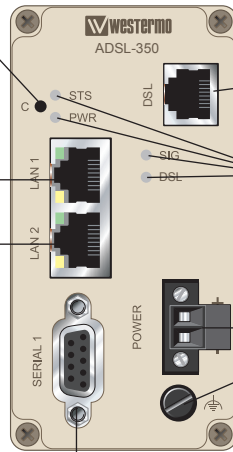
\* To minimise the risk of interference, a shielded cable is recommended when the cable is located inside 3 m boundary or the cable is longer than 30 m and inside 10 m boundary to the rails and connected to this port.

# Connections

Factory default reset switch

## Ethernet TX Connections (RJ-45 connector) LAN1-2

Position	Direction	Description
1	In/Out	TD+
2	In/Out	TD-
3	In/Out	RD+
4	-	Not Connected
5	-	Not Connected
6	In/Out	RD-
7	-	Not Connected
8	-	Not Connected



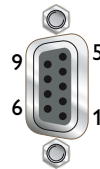
DSL (for details, see page 11)

Led indicators (for details, see next page)

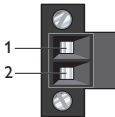
Protective Earth

## Router Serial Port (DCE Female)

Position	Name	Direction	Description
1	DCD	Out	Data Carrier Detect
2	RxD	Out	Receive Data
3	TxD	In	Transmit Data
4	DTR	In	Data Terminal Ready
5	SG	-	Signal Ground
6	DSR	Out	Data Set Ready
7	RTS	IN	Request to Send
8	CTS	Out	Clear to Send
9	RI	Out	Ring Indicator



## Power connector

	2-position	Product marking	Direction	Description
	No. 1	+	Input	Supply voltage input DC
No. 2	-	Input	Common	

## LED Indicators

LED	Status	Description	
STS Status	RED	Indicates a fault, except during boot-up	○ STS ○ PWR  ○ SIG ○ DSL
	RED FLASH	Indicates a fault, except during boot-up	
	GREEN	All OK	
	GREEN & ONE RED FLASH	All OK but no VPN peer connected	
PWR Power	OFF	Unit has no power	
	GREEN	All OK	
SIG Connection status	RED	No ADSL connection configured or network fault	
	GREEN / RED	Network connection fault	
	GREEN 1 BLINK	Connection link speed indication  1 Low 3 Normal 6 High (≥24 Mbit/s)	
	GREEN 2 BLINKS		
	GREEN 3 BLINKS		
	GREEN 4 BLINKS		
	GREEN 5 BLINKS		
GREEN 6 BLINKS			
DSL ADSL link status	OFF	No ADSL connection	
	GREEN FLASH	Negotiating with the provider DSLAM	
	GREEN	All OK, ADSL link established	

### STS LED – Status indicator

The status indicator reports the health of the unit. In normal operation the indicator will be green, however, if a fault is detected, either at boot-up or during normal operation, the indicator will light red. When the unit is first switched on or is reset the indicator will first light red, then flash red in sequence with the SIG LED, this is normal behavior during boot-up and does not indicate a fault.

Configuring a VPN connection in the ADSL-350 and activating the service will cause the STS LED to be lit GREEN but FLASH RED every third (3) second to indicate that no peer is connected on the VPN. The feature of the VPN status in the STS LED makes it easy for staff to see whether or not the VPN connection is working without having to login to the device.

### PWR LED – Power indicator

The power indicator will light green when power is applied. If the indicator does not light when power is applied check the power supply voltage and connections, refer to see page 8 for details.

### SIG LED – Connection status

The Signal Strength Indicator reports the state of the ADSL network connection. The ADSL sync speed is indicated by the number of green flashes of the indicator within an indicator period. Each indicator green flash will be followed by a short off time, an extended off time indicates the end of the indicator period.

An indicator period starts with a green flash followed by up to 5 additional flashes, then an extended off time, the cycle will then repeat. The maximum number of flashes in an indicator period is 6.

The indicator may be red during the extended off time following the green flashes indicating an ADSL network connection fault. The LED will be lit solid red if an ADSL connection cannot be established.

When the unit is first switched on, or is reset, the indicator will first light red, then flash red in sequence with the STS LED, this is normal behavior during boot-up and does not indicate a fault.

### DSL LED – ADSL link status

The DSL LED reports the status of the connection to the network. When powered up the indicator will be off, the indicator will then flash green whilst the unit tries to negotiate the link with the provider DSLAM, once successfully connected to the provider the indicator will light green to indicate that everything is ready and functioning on the ADSL link level.

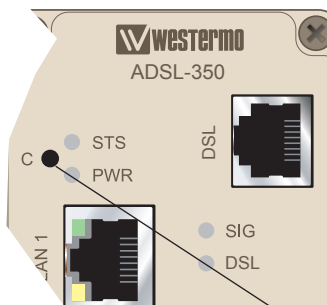
### Factory Default Reset Switch

The reset switch is used to restore the configuration of the ADSL-350 to the factory default settings (for details about the default settings see the Getting started section). The switch is accessed through a small hole, adjacent to the PWR and STS LEDs, labeled C on the front of the unit.

#### To reset the configuration:

- Power down the unit.
- Using a suitable tool depress the reset switch.
- Power up the unit ensuring the switch remains depressed for approximately 5 seconds after power is applied. The STS LED will flash twice (2) times to indicate a reset.
- Once the unit has booted-up it will use the default settings.

**Note:** Using the factory default reset switch will erase all existing configuration settings and restore the factory default settings.



Factory default reset switch

## Protocols and Functionality

Ethernet Technologies	<p>IEEE 802.3 for 10BaseT          IEEE 802.3u for 100BaseTX          Layer-2 QoS          IEEE 802.1p Class of Service</p>
ADSL Technologies	<p>ITU-T G.992.1 ADSL (Annex A (non overlap))          ITU-T G.992.2 ADSL Lite (Annex A (non overlap))          ITU-T G.992.3 ADSL2 (Annex A, I, L, M (non overlap))          ITU-T G.992.5 ADSL2+ (Annex A, I, M (non overlap))          RFC2684 Bridged LLC and Bridged VC-MUX ATM encaps. (ADSL)          ADSL2++ Quad spectrum downstream and double upstream          TR-067 Compliance          Dying Gasp support          ITU K.21 Support          Rate adaptive modem at 32 Kbps steps          ATM Layer with traffic shaping QoS support (UBR, CBR, VBR-rt, VBR-nrt)          AAL5 – AAL          F5 OAM Loopback/Send and receive          RFC2364 PPPoA client support          RFC2516 PPPoE client support          RFC2225 / RFC1577 Classical IP Support          PAP/CHAP/MS-CHAP for Password Authentication support</p>
Serial Port Technologies	<p>RS-232          Serial Over IP (Serial Extender and Virtual Serial Port)          Modem emulation          AT command interpreter          MODBUS          DNP3</p>
IP Routing, Firewall, VPN and Cyber Security	<p>Static IP routing          Dynamic IP routing          • RIPv1/v2          VRRP          GRE          Stateful inspection Firewall / ACL, NAT, Port Forwarding          25 x IPsec VPN, PSK &amp; X.509          1 x L2TP client          1 x PPTP client          1 x OpenVPN / SSL VPN client          RADIUS          PPP Dial in/Dial out</p>
Manageability	<p>Management tools          • Web-interface (HTTP and HTTPS)          • Command Line Interface (CLI) via SSHv2 and TELNET          • SNMPv1/v2c          Syslog (log files)          SNMP (NTP client)          DHCP client          DHCP server          DDNS (Dynamic DNS update client)</p>

For more information on the features and functionality, please refer to the Management Guide on the product website.

# Getting started

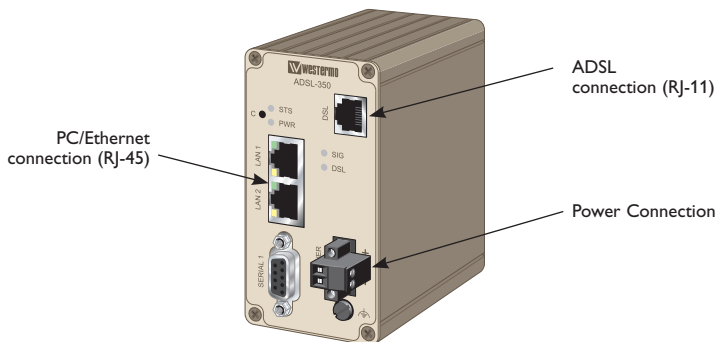
## Default Network Settings

IP address (Ethernet ports)	192.168.2.200
Netmask (Ethernet ports)	255.255.255.0
Username	admin
Password	westermo

## Power Supply

The ADSL-350 requires a DC power source in the voltage range of 10 to 60 VDC. The unit is designed to self protect from permanent damage if the voltage exceeds 60VDC or if reverse polarity is applied. The router may need to be returned for service if this occurs. The router can also be damaged if there is any potential difference between the chassis-ground, RS-232 signal ground, power (-) input, or antenna shield. Before connecting any wiring, ensure all components are earthed to a common ground point. An external isolator will be required if a positive earth power supply is used.

## Step-by-step guide to configure an ADSL-connection using the web-interface



### Step 1 – Power-up the unit and wait for it to become ready

Connect the ADSL-350 to the DSL-network using the RJ-11. Then connect an RJ-45 cable from one of the two Ethernet-ports to your PC, and finally connect the unit to an appropriate PSU and power it up. As soon as the STS LED is lit GREEN the unit is ready to be configured, it should take about 30 seconds.

## Step 2 – Configure your PC

Make the following changes on your PC.

IP address	192.168.2.100*
Netmask	255.255.255.0
Gateway	192.168.2.200
Preferred DNS server	192.168.2.200

\* Can be any address in the 192.168.2.0-255-range except 192.168.2.200.

**Note!** If you are unsure or unable to change the above – consult your network administrator.

## Step 3 – Accessing the unit

Start a web browser on your PC and type in the following address

http://192.168.2.200



## Step 4 – Login screen

After step 3 an authorization box will popup which asks for a username and a password. Please type in the following

Username **admin**

Password **westermo**

## Step 5 – Welcome screen

You have now successfully logged into the unit and reached the Status-page that lists the current status of the unit and the services.

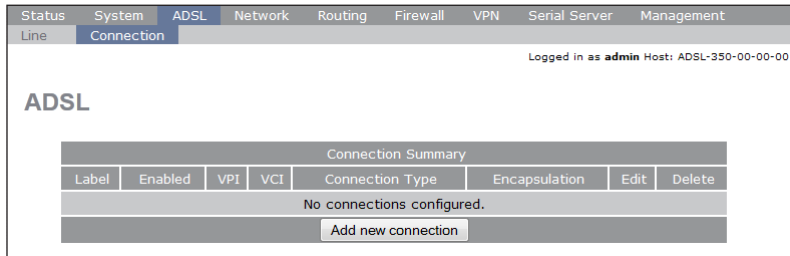
System	
Power On Self Test	Passed
Uptime	00:05:37
ADSL	
Line Status	Fault
Connection Status	No Fault
Network	
LAN	No Fault
Loopback	No Fault
Services	
DHCP Server	Disabled
VPN	Disabled
Serial Server	Disabled

**Note!** The Line Status may indicate a fault, as in the screenshot, but this is completely normal since there isn't any connection configured yet. Follow the steps below to configure your ADSL connection.

## Step 6 – Change to the ADSL setup menu

Start by clicking on **ADSL** in the top-menu followed by **Connection** in the sub-menu.

Then click on **Add new connection**.



## Step 7 – Find your ADSL connection settings

Refer to the table below to find your settings for the ADSL connection. If you cannot find your specific connection in the table, please contact your local provider and ask them about the settings. Sometimes you also get the information in your “start-package” from the provider. If you are unable to find these settings, please do not hesitate to contact Westermo Support, see the last page for details in your country, or have a look on the Westermo website.

Use the VPI,VCI,ATM Enc. and Connection Type settings to configure your ADSL connection in the next steps.

ADSL Settings per country (Verified July 2012)					
Country	Provider	VPI	VCI	ATM enc.	Connection type
Austria	Telecom Austria	8	48	VC MUX	PPPoA
Ireland	Eirecom	8	35	LLC	PPPoE
Italy	Libero	8	35	VC MUX	PPPoA
Italy	Telecom Italia	8	35	VC MUX	PPPoA
Italy	Tiscali	8	35	VC MUX	PPPoA
Italy	Tele2	8	35	VC MUX	PPPoA
Netherlands	KPN (MXStream)	8	48	VC MUX	PPPoA
Netherlands	KPN (Business)	2	32	VC MUX	PPPoA
Netherlands	Bbnd (Fast)	0	35	VC MUX	PPPoA
Netherlands	BBNed	0	35	LLC	Mac encapsulation routing / DHCP
Netherlands	Versatel	0	32	VC MUX	PPPoA
Netherlands	Telfort	0	34	LLC	Mac encapsulation routing / DHCP
Sweden	TeliaSonera	8	35	LLC	Mac encapsulation routing / DHCP
<b>United Kingdom</b>	<b>British Telecom (BT)</b>	<b>0</b>	<b>38</b>	<b>VC MUX</b>	<b>PPPoA</b>

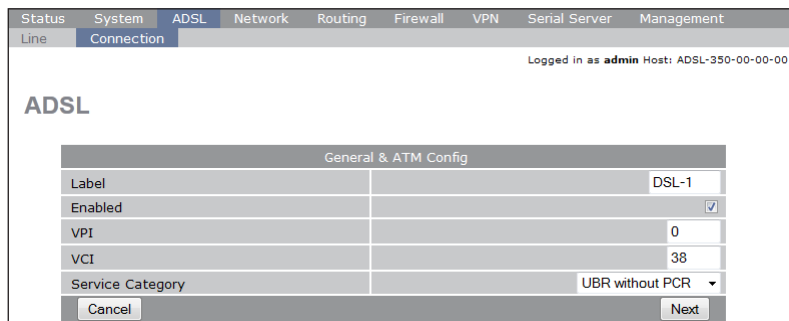
**Note!** The default settings of the unit are UK & BT (marked in bold in the table above).



## Step 8 – Configure the ADSL connection – part 1

Using your specific provider details you may need to change the **VPI**, and **VCI** settings on this first screen.

When you have verified that the settings match, please click on **Next**.

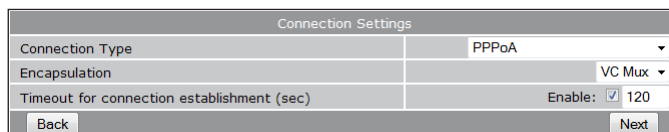


The screenshot shows a web-based configuration interface for ADSL. At the top, there are navigation tabs: Status, System, ADSL (selected), Network, Routing, Firewall, VPN, Serial Server, and Management. Below the tabs, there is a sub-menu with 'Line' and 'Connection' (selected). The main content area is titled 'ADSL' and shows 'Logged in as admin Host: ADSL-350-00-00-00'. The configuration is divided into a 'General & ATM Config' section with the following fields:

General & ATM Config	
Label	DSL-1
Enabled	<input checked="" type="checkbox"/>
VPI	0
VCI	38
Service Category	UBR without PCR
<input type="button" value="Cancel"/> <input type="button" value="Next"/>	

## Step 9 – Configure the ADSL connection – part 2 (Connection Type and Encapsulation)

On this page you use your **Connection Type** and **ATM** enc. settings. As before, make sure these settings match the ones you received from your provider.



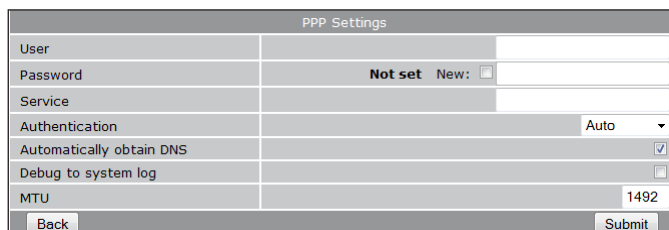
The screenshot shows the 'Connection Settings' interface with the following fields:

Connection Settings	
Connection Type	PPPoA
Encapsulation	VC Mux
Timeout for connection establishment (sec)	Enable: <input checked="" type="checkbox"/> 120
<input type="button" value="Back"/> <input type="button" value="Next"/>	

## Step 10 – Configure the ADSL connection – part 3 (Extra settings depending on Connection Type)

In our example, using PPPoA, the following page is presented. If you are using another Connection Type you will see a different page here.

Your provider will give you any username, password, and/or service name you might need.



The screenshot shows the 'PPP Settings' interface with the following fields:

PPP Settings	
User	
Password	Not set New: <input type="checkbox"/>
Service	
Authentication	Auto
Automatically obtain DNS	<input checked="" type="checkbox"/>
Debug to system log	<input type="checkbox"/>
MTU	1492
<input type="button" value="Back"/> <input type="button" value="Submit"/>	

Complete the required fields for your connection and then click on **Submit**. The ADSL-350 will then reconfigure the ADSL settings of the unit and set up the connection. You can follow the process by either looking at the SIG and DSL LEDs on the physical unit, or look at the ADSL Status page by clicking on the top level menu **Status**, followed by the **ADSL** sub-menu.

The screenshot shows the ADSL-350 web interface. At the top, there is a navigation menu with tabs for Status, System, ADSL, Network, Routing, Firewall, VPN, Serial Server, and Management. Below this is a sub-menu with tabs for Alarms, ADSL, LAN, VPN, GRE, Serial Server, and System Log. The user is logged in as 'admin' and the host is 'ADSL-350-00-00-00'. The main content area is titled 'ADSL' and contains two tables: 'Line Status' and 'Connection Status'. Below the tables is a 'Show Advanced Stats' button.

Line Status					
Status					Showtime
Mode					ADSL2+
Download Sync (Kbps)	21535	Upload Sync (Kbps)	1129		

Connection Status					
Label	Status	Uptime	IP Address	Bytes Tx	Bytes Rx
DSL-1	Up	00:00:02	78.72.35.188	1.82 kB	984 B

### Step 11 – Verify the Internet-connection

As the above screenshot shows, the ADSL-350 is now connected to the Internet and has successfully received an IP-address from the provider. From the attached PC you should now be able to access the Internet, verify by going to your favorite website (e.g. [westermo.com](http://westermo.com)) using your browser on the PC.

**The ADSL-350 is now ready to be used!**

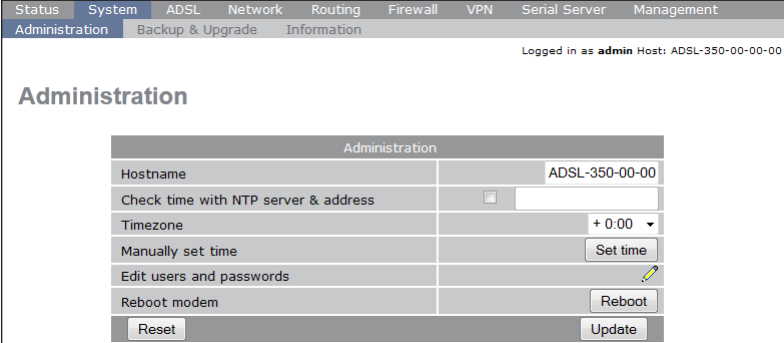
**Note!** The ADSL-350 is by default cyber secured by the built-in firewall, meaning that any connections originating from the Internet is stopped in order to protect against some of the online threats. Should you need to open up the firewall this can easily be done by going to the top-menu **Firewall**, and then clicking on the **Access Control** sub-menu. For more details about the firewall and how to setup other scenarios, please refer to the Management Guide on the product website.

## Additional configuration guides

In this section a few common use-cases and their configuration is listed. For more information about protocols and features of the ADSL-350 please refer to the Management Guide on the Westermo product website.

### Changing the default password

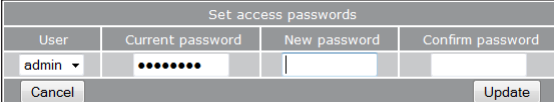
Westermo strongly recommend users to change the default password of the unit in order to increase the security. Navigate to the top-level menu **System** followed by the sub-menu **Administration**, once there, please click on the little pen-icon next to the field **Edit users and passwords**.



The screenshot shows the 'Administration' page of the ADSL-350 web interface. The top navigation bar includes 'Status', 'System', 'ADSL', 'Network', 'Routing', 'Firewall', 'VPN', 'Serial Server', and 'Management'. The 'Administration' sub-menu is active, with 'Backup & Upgrade' and 'Information' also visible. The user is logged in as 'admin' on host 'ADSL-350-00-00-00'. The 'Administration' section contains a table with the following rows:

Administration	
Hostname	ADSL-350-00-00
Check time with NTP server & address	<input type="checkbox"/>
Timezone	+ 0:00
Manually set time	Set time
Edit users and passwords	
Reboot modem	Reboot
Reset	Update

After clicking on the pen, a new page will be shown where the password of both the **admin** and **guest**\* user. Unless the ADSL-350 should use a Radius server to centrally authenticate the login, the Radius configuration details can be ignored.



The 'Set access passwords' dialog box has the following structure:

User	Current password	New password	Confirm password
admin	••••••		
Cancel	Update		

Type in the current password of the user and then select a new secure password and type it into both the **New password** field as well as the **Confirm password** field. Then click on **Update** to activate the changes.

**Note!** The guest-user-account is by default disabled; once the password is set for the guest user it becomes active.

## Changing the LAN IP address

Sometimes the default IP address range does not fit the current IP plan of the application. Changing the LAN IP address of the ADSL-350 is very easy. Start by navigating to the top-menu **Network**, followed by the sub-menu **LAN**.

Status	System	ADSL	Network	Routing	Firewall	VPN	Serial Server	Management
LAN	Loopback	DNS	GRE	Diagnostics				

Logged in as admin Host: ADSL-350-00-00-00

### LAN

Interface Configuration	
Enabled	<input checked="" type="checkbox"/>
IP Address	192.168.2.200
Netmask	255.255.255.0
MTU	1500

DHCP Server Configuration	
Enabled	<input type="checkbox"/>
Start address	192.168.2.210
End address	192.168.2.240
Default lease time (mins)	1440
Maximum lease time (mins)	1440

In the IP Address input box the default IP is listed, 192.168.2.200. Change this to the new IP address that the unit requires and, if needed, also update the Netmask, then click on Update. The ADSL-350 will then display a page with a link to the new IP address and then change its IP, no reboot is required.

**Note!** Make sure the PC network settings are updated accordingly so that it is possible to access the new ADSL-350 IP address.

## Enabling the DHCP server

For easy administration the ADSL-350 can act as a DHCP server to any LAN connected devices. The DHCP server allows clients on the local network to be automatically allocated IP addresses from the ADSL-350. The unit will also provide the clients with network settings like their default route and DNS servers.

To enable the DHCP server please navigate to the top-menu **Network**, followed by the sub-menu **LAN**. By default the DHCP server is **disabled** but if enabled it will be configured to serve IP addresses in the range 192.168.2.210 through 192.168.2.240, and the Default and Maximum lease times have been set to 1440 minutes. Should these values be consistent with the network that the ADSL-350 is connected to, the DHCP server can be enabled by ticking the Enabled field followed by clicking the **Update** button.

If the default settings do not match the application network, make the appropriate changes, and remember to tick the **Enabled** box. Then click **Update** and the DHCP server is started.

For those that may need to configure static IP addresses based on attached devices MAC addresses, the ADSL-350 will display a section for that once the server is started, i.e. after ticking the **Enabled** box and clicking on **Update**.

**Note!** The DHCP server will automatically use the LAN IP address of the ADSL-350 as the default gateway for clients.

## Configure LAN clients to use the ADSL-350 as their gateway

The ADSL-350 will act as a gateway for connections destined to the Internet. The default configuration will provide Network Address Translation and firewalling to protect clients on the local network.

In order to configure any LAN clients to use the ADSL-350 as their gateway the following methods can be used;

If the clients have a DHCP address allocated by the ADSL-350, they will have learned the necessary settings. No further configuration is needed.

Or, if clients have static IP addresses, set their default route and DNS server to the IP address of the ADSL-350, by default 192.168.2.200.

## The ADSL-350 sometimes changes the ADSL IP address / Our provider cannot offer us a fixed IP address

In some applications there is a need to connect to the ADSL-350 from the Internet, either via a VPN (recommended) or by opening up the firewall for some specific services / ports. Either way, the connecting systems / devices need to know where to connect to and if the service provider keeps changing the ADSL IP address that the unit receives from their servers it can become a nightmare to constantly update any settings in the systems / devices. Luckily there is a solution to this that is very commonly used on the Internet and it is called Dynamic DNS, or DDNS.

It works in roughly the following way; once the ADSL-350 notices that it has a new IP-address on the ADSL interface it will send an update to the DDNS service provider that will update the domain name that have been associated with the unit.

The most common DDNS provider is called Dyn™ (earlier DynDNS™) – <http://dyn.com> – but there are others out there as well. The ADSL-350 supports a few different providers that can be found on the configuration page of DDNS.

Register an account with the provider of choice and then configure a domain name with that provider to be used on the ADSL-350. Then it is time to configure the ADSL-350 to use the domain name so that it can be accessed instead of the direct IP address, removing the need to actually know the IP address.

Navigate to the top-menu **Network** followed by the sub-menu **DNS**.

For the purpose of this example the following details will be used;

*Domain name*    server.mine.nu

*Username*        user

*Password*        pass

Status	System	ADSL	Network	Routing	Firewall	VPN	Serial Server	Management
LAN	Loopback	DNS	GRE	Diagnostics				

Logged in as **admin** Host: ADSL-350-00-00-00

## Domain Name Service

Manual DNS Configuration	
Primary DNS Server	<input type="text"/>
Secondary DNS Server	<input type="text"/>
DNS Domain	<input type="text"/>

Dynamic DNS Client Configuration	
Enabled	<input checked="" type="checkbox"/>
Service	dyndns.com ▼
Domain	server.mine.nu
Username	user
Password	Not set New: <input checked="" type="checkbox"/> pass

Finish and activate the settings by clicking on **Update**, the DDNS client will now track the changes of the ADSL interface of the ADSL-350 and update the domain *server.mine.nu* should the unit get a new IP address.

**Note!** Even though any changes usually are updated / replicated quite quickly, there can be issues, e.g. at the DDNS service provider, that prevents updates, or introduces delays. For more critical applications a fixed IP address may prove more reliable, or the use of other methods to guarantee connectivity. Feel free to contact Westermo Support should you have any questions about this, or refer to the Westermo website.

### How can the ADSL-350 be configured from the Internet?

In some scenarios the user might want to configure the ADSL-350 from the Internet, either by accessing a DDNS name, or using a fixed IP address from a PC on the Internet. Since the ADSL-350 is cyber secured by a firewall by default, the user must first allow traffic from the Internet trying to access the web-interface / webserver of the ADSL-350 to pass through.

Westermo strongly recommends any user opening up the firewall to change the default password of the ADSL-350 before doing so.

To open the ADSL-350 for access to the web-interface from the Internet just navigate to the top-menu **Firewall** followed by the sub-menu **Access Control**.

Status							
System	ADSL	Network	Routing	Firewall	VPN	Serial Server	Management
Setup	Access Control	DoS Filters	Custom Filters	Port Forwards	Custom NAT	MAC Filters	
Logged in as admin Host: ADSL-350-00-00-00							
<h2>Access Control</h2>							
External Access Control	Incoming Interface						
	DSL-1		VPN		GRE		
Default policy	Deny ▾		Allow ▾		Deny ▾		
Services	Allow	Port	Allow	Port	Allow	Port	
Web Server	<input checked="" type="checkbox"/>	80	<input checked="" type="checkbox"/>	80	<input type="checkbox"/>	80	
Secure Web Server	<input type="checkbox"/>	443	<input checked="" type="checkbox"/>	443	<input type="checkbox"/>	443	
Telnet Server	<input type="checkbox"/>	23	<input checked="" type="checkbox"/>	23	<input type="checkbox"/>	23	
SSH	<input type="checkbox"/>	22	<input checked="" type="checkbox"/>	22	<input type="checkbox"/>	22	
SNMP	<input type="checkbox"/>	161	<input checked="" type="checkbox"/>	161	<input type="checkbox"/>	161	
GRE	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Dynamic routing	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
DNP3	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
IPsec VPN	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Serial Server	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Respond to ICMP (Ping)	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Reset		Update					

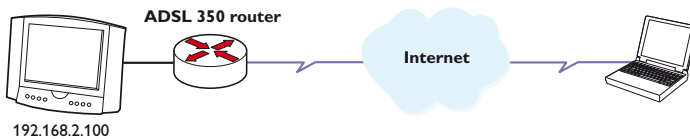
In this view some of the most common services are listed and their current firewall status. In our example we wanted the unit to respond to incoming requests destined to the web-interface on the ADSL interface IP (DSL-1). Just tick the **Allow** tickbox and then click on **Update**. The settings are activated immediately and the ADSL-350 can now be accessed from the Internet.

### How to access a device connected to the LAN or Serial port of the ADSL-350 / How to open up a port in the firewall.

For any type of communication with devices connected to the LAN ports, or the Serial port, Westermo strongly recommends the use of Virtual Private Networks (VPNs). Refer to the product website at Westermo for application notes and the detailed Management Guide for more information about VPNs.

Sometimes there may be a need for a simpler, but less secure approach, either for testing or for non-critical applications. With the use of portforwarding a connecting system / device can use the IP address of the ADSL-350 to communicate with devices attached to the LAN, or Serial, side of the unit.

In our example an HMI is connected to the LAN port of the ADSL-350, and has been configured with the ADSL-350 as its default gateway;



The HMI has a built-in webserver on TCP port 80, our goal is to access the HMI's webserver from the Internet on our laptop.

Start by configuring a DDNS account, and a domain name, for this example the *server.mine.nu* name will be used. Once DDNS is configured in the ADSL-350 it is time to create a firewall rule that allows traffic coming from the Internet to the ADSL-350 on a specific port to be forwarded to the HMI. For the purpose of this example the incoming port that the PC will be using is 12345.

Navigate to the top-menu **Firewall** followed by the sub-menu **Port Forwards** and then click on **Add new port forward**. In the screenshot below the information above has been used to create a port forward to the HMI. The user on the laptop would open his browser and type in the domain name followed by a colon and then the custom port, e.g. *http://server.mine.nu:12345*.

Logged in as admin Host: ADSL-350-00-00-00

### Port Forwards

Add new port forward

Enabled	<input checked="" type="checkbox"/>
Protocol	TCP
Incoming interface	DSL-1
Source address (blank for any)	
Original destination port or range	12345
New destination address	192.168.2.100
New destination port (blank to use original port)	80
Insert this entry at position	Last

Cancel Update

Once **Update** is clicked the port forward is active. If the HMI has been configured properly it would now be accessible.

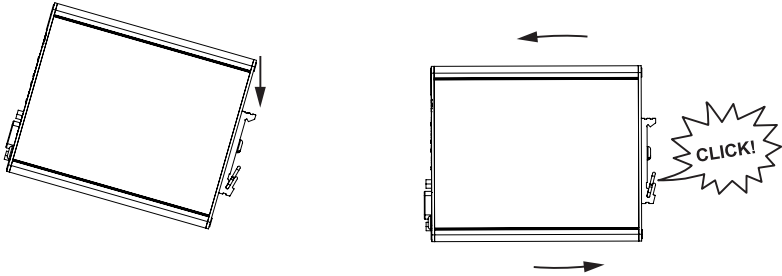
**Note!** If the connected LAN device, e.g. the HMI or PLC, does not have the possibility to set a default gateway the use of 1:1 NAT can be used. For more information about how to achieve this please refer to the Management Guide.



## Mounting

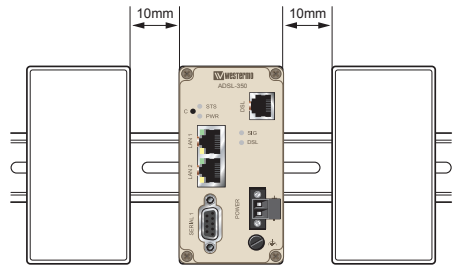
This unit should be mounted on 35 mm DIN-rail, which is horizontally mounted inside an apparatus cabinet or similar. Snap on mounting, see figure.

Mounting the ADSL-350 with integrated DIN-clip:



## Cooling

The router should be mounted in a clean and dry location, protected from water, excessive dust, corrosive fumes, extremes of temperature and direct sunlight. Allow sufficient ventilation to ensure adequate cooling of the router.









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