SHDSL.bis 2 ETH 2 SHDSL

P/N : ITT-TM048

- Up to 15.2Mbps Data Transmission per Copper Pair
- SHDSL and SHDSL.bis, TC-PAM16/32
- Additional TC-PAM4/8/64/128 Available
- 100 / 1000 Mbps Fiber Optical Tributary Interface
- Integrated Layer 2 Managed Ethernet Switch:
  4x Gigabit Ethernet Uplink (2x TP / 2x SFP)
  8x 10/100Mbps
- Rapid Spanning Tree, Ethernet Ring Protection, Link Aggregation, VLAN, QoS
- Transparent Transmission of Modbus RTU / ASCII, DNP3 and IEC 60870.5 Protocol
- Point-to-Point, Point-to-Multipoint & Ring Operation
- Console Port, Telnet, Web, SNMP Management
- 24/48VDC and/or 110/230VAC Redundant Powered, Low Power Consumption
- Included Primary Protection
- Repeater supported and available
- 19" & 2U Height or Robust DIN-Rail Metal Enclosure
- Industrial Temperature Range Available

The Netex+ SHDSL.bis platform is a special part of the Orion3 product family. Beside of having up to 10 dual Orion3 SHDSL.bis Extended line cards there is a feature-rich managed layer 2 Ethernet switch included. This switch has 8 auto-sensing front accessible 10/100Base-T ports as well as 2 gigabit Ethernet ports with fiber connectivity (SFP) and 2 gigabit Ethernet ports with copper connectivity (RJ-45). The inside backplane connects this switch to all Orion3 line cards through additional 10 Ethernet 10/100 Base-T ports.

The Netex+ SHDSL.bis Extended product family offers a broad range of products, which are based on the latest SHDSL.bis standards (ITU-T G.991.2 & ETS TS 101 524), while also being fully interoperable with all our existing SHDSL equipment .

SHDSL.bis Extended allows symmetrical data transmission at speeds up to 15.2Mbps over a single pair of copper. In addition, the dual Orion3 line card also supports DSL channel bonding for 2 copper pairs in order to achieve speeds to 30.4Mbps! Using the link aggregation feature of the additional integrated switch, the Netex+ SHDSL can transmit up to 300Mbps over 20 copper pairs. This incredible speed makes Fiber installations in a lot of places needless.

In addition to SHDSL.bis, the Netex+ platform supports subscriber access over Fiber Optic. The optical line card has built-in SFP jack for standard 100 or 1000 Mbps Ethernet module. The protocol is compatible with third-party switches, media converters, etc. Like all Netex+ products, the Netex+ SHDSL and its line cards are based on industrial components and are manufactured according to highest quality standards providing additional value due to the extended temperature range and higher reliability. The combination of comprehensive functions providing maximum flexibility together with the higher quality of the Netex+ SHDSL makes it the perfect choice for your access needs.

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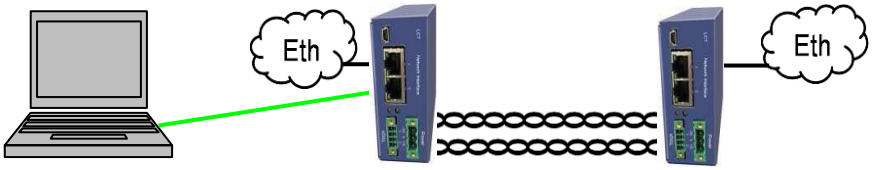
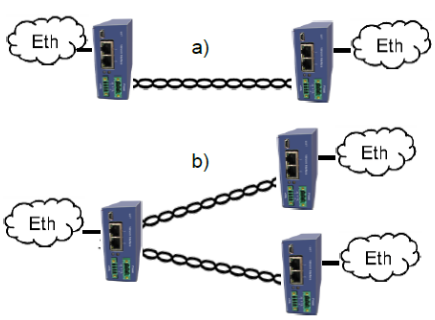
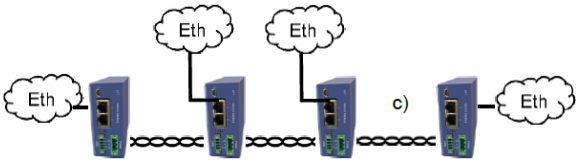


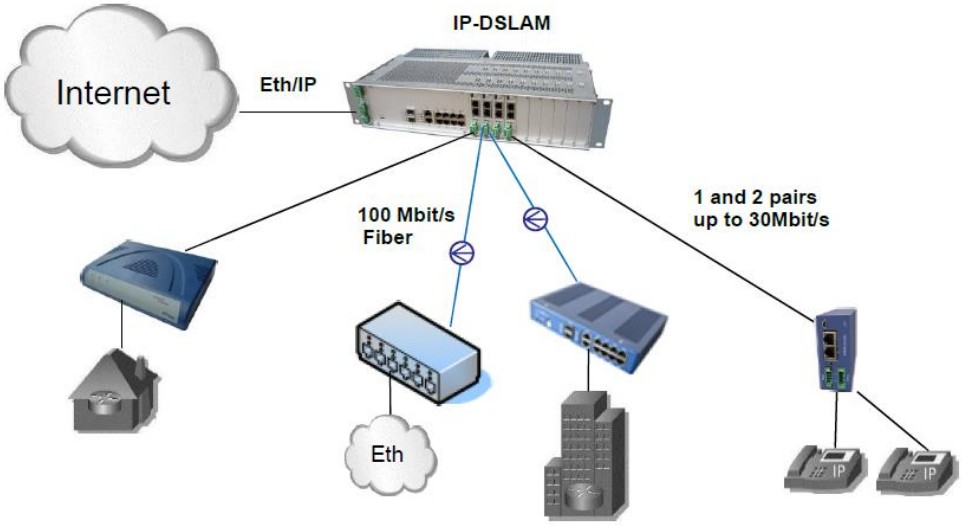
Possible Application: Point-to-Point & Point-to-Multipoint





a) Ethernet Transmission Point-to-Point
b) Ethernet Transmission Point-to-Multipoint
c) Ethernet Add/Drop over a Long Copper Line

Possible Application: Typical Internet Service Provider (ISP) Application



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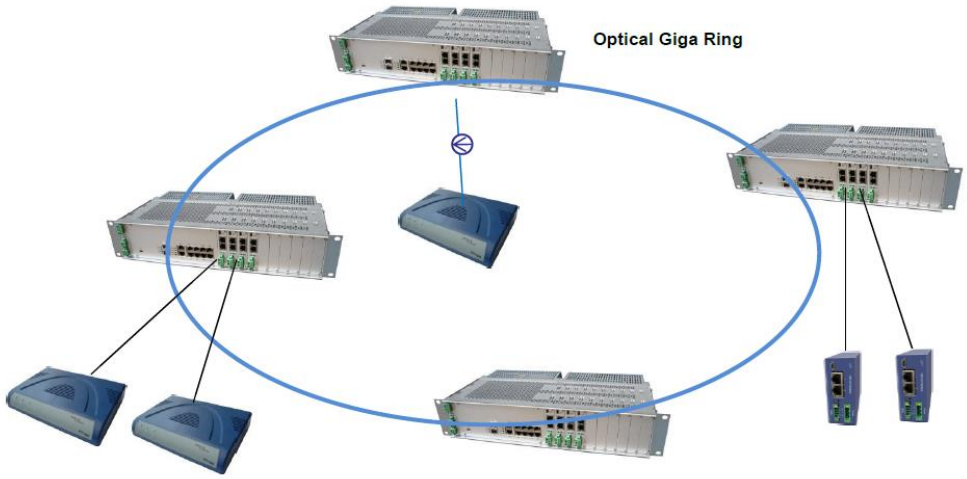
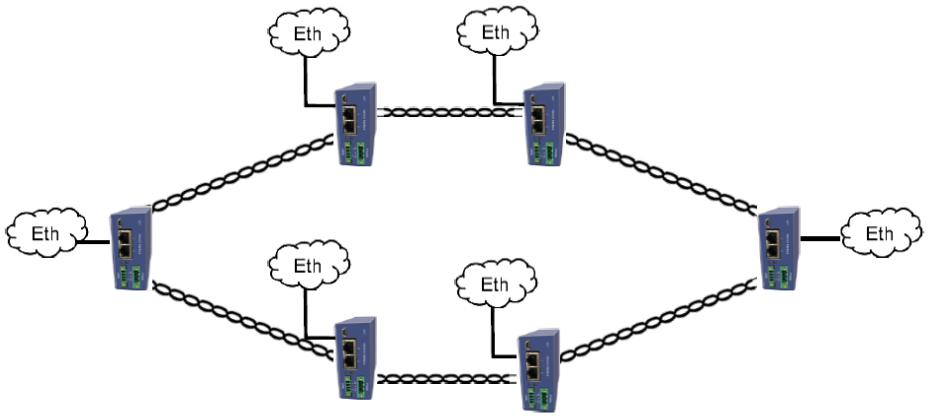
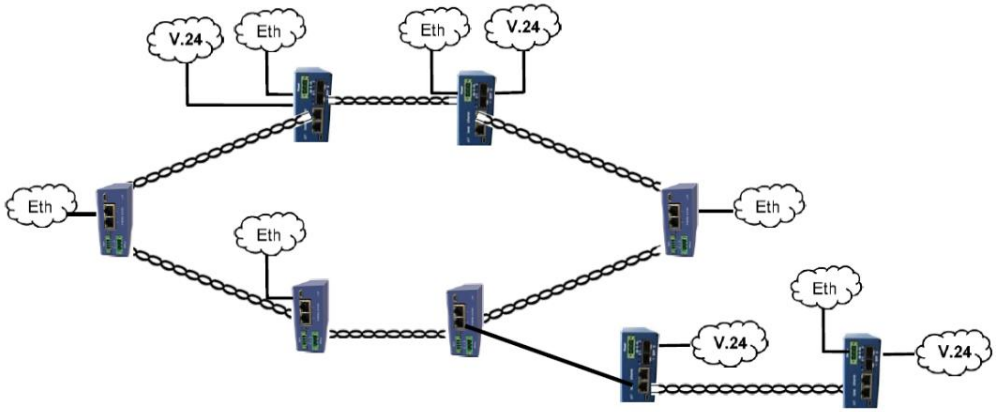
Possible Application: Ring with the 19”Netex+ Racks



Possible Application: Ring with the Netex+ Dinrail Modems





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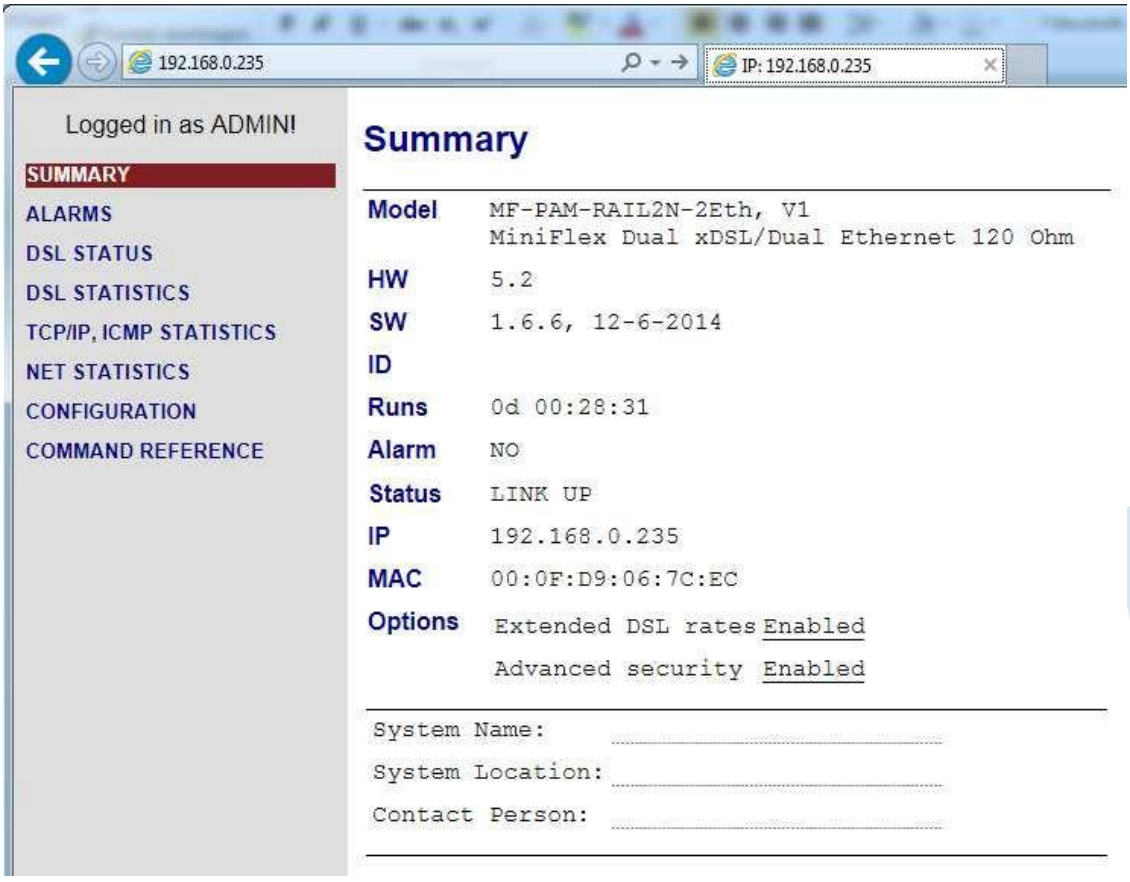
1. WEB Quick Installation Guide

1.1. Enter a Netex+ Device

WEB access through Ethernet Interface:
Type in Internet address line <192.168.0.235> and press <ENTER>. This is the default Ethernet Address for Netex+ devices.
After a successful entering the main menu of the device will be displayed.



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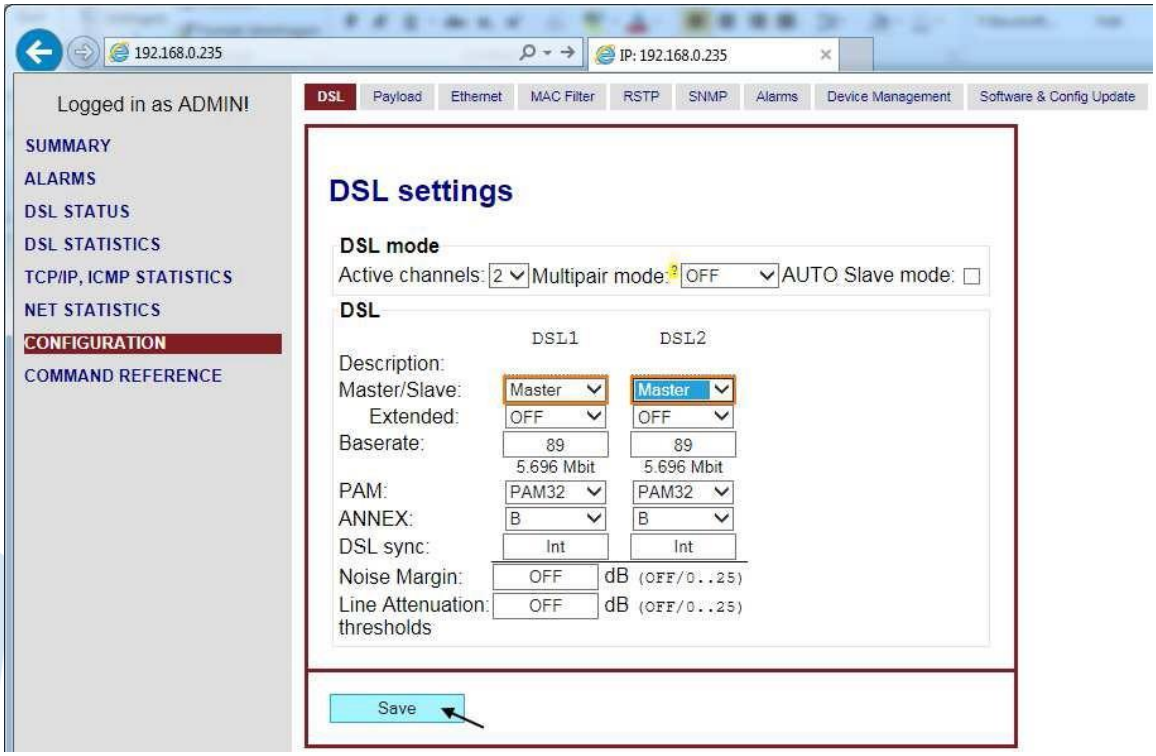
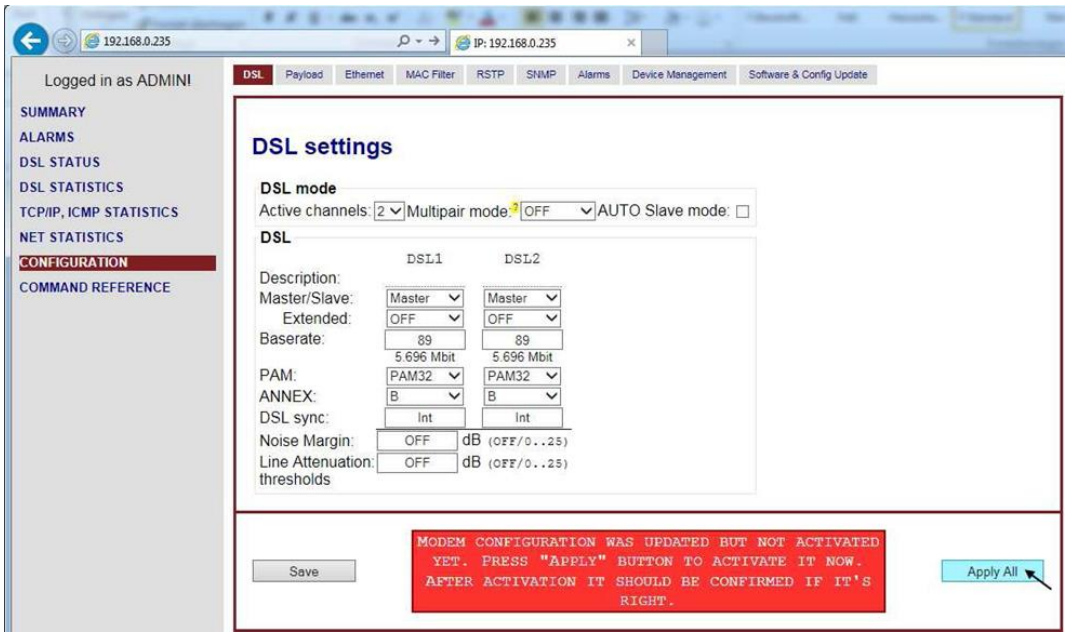
1.2. Configure a Netex+ Device

Enter in device 1 with the WEB access and default IP address 192.168.0.235. Select the CONFIGURATION and DSL tab.



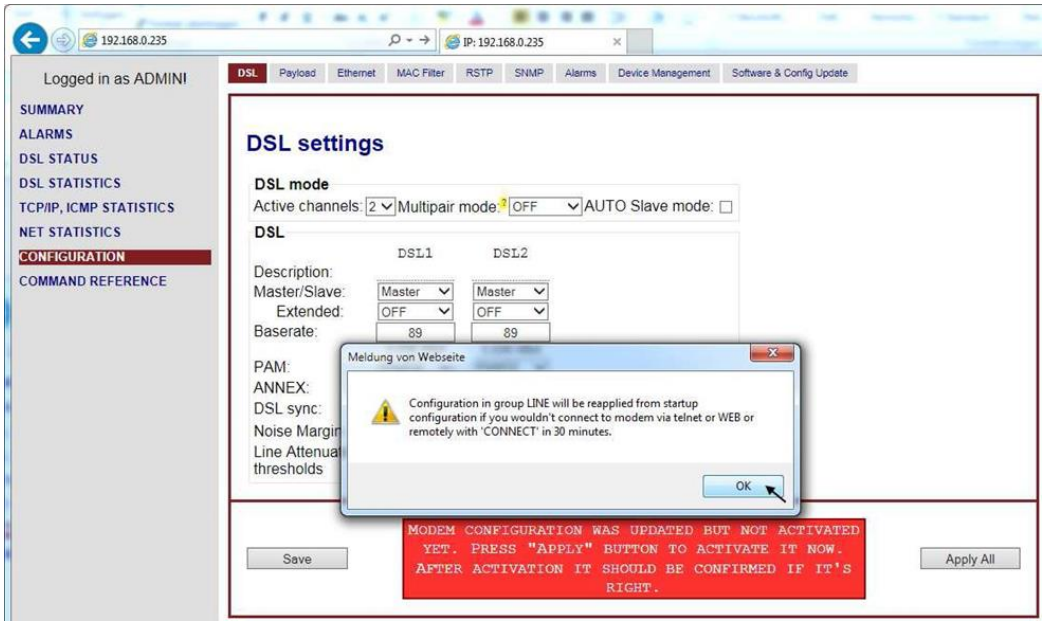
Configure:

- DSL1: Master
- DSL2: Master
- Press Save button



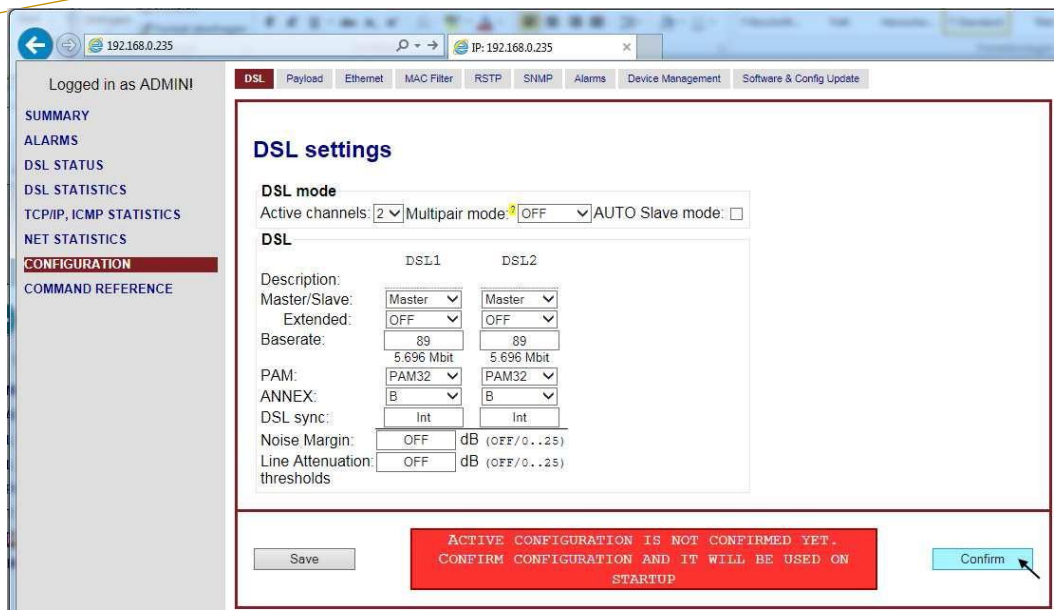
Configure:

- Press Apply All button



Configure:

- Press OK button



Configure:

- Press Confirm button

Select the CONFIGURATION and Payload tab.

Configure:

- Check Payload DSL 1 Ethernet is on
- Check Payload DSL 2 Ethernet is on
- If not, click on and do Save/Apply ALL/Confirm

Select the CONFIGURATION and Ethernet tab.

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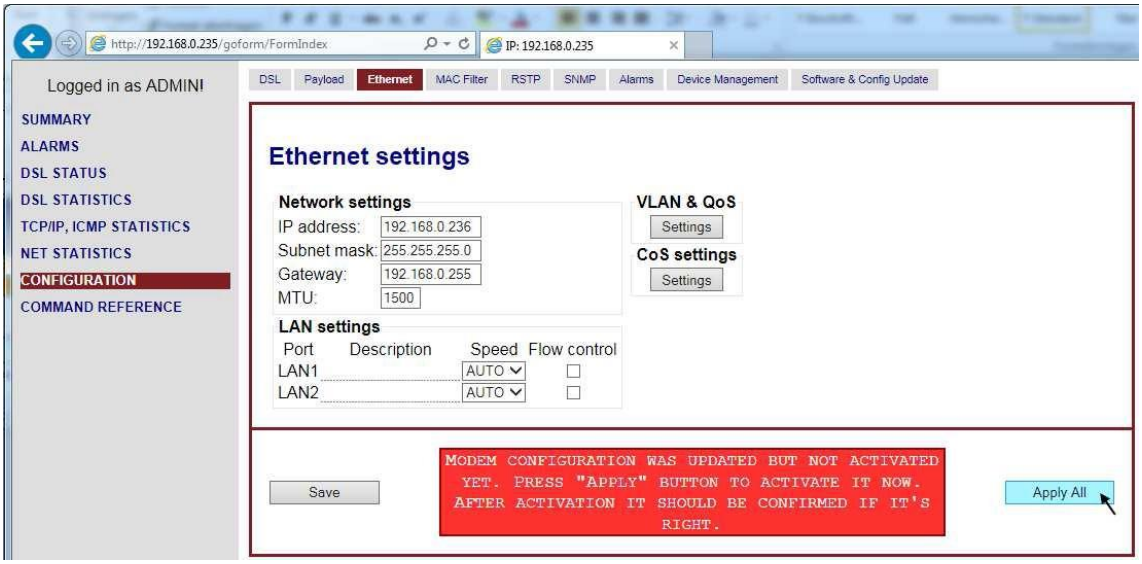
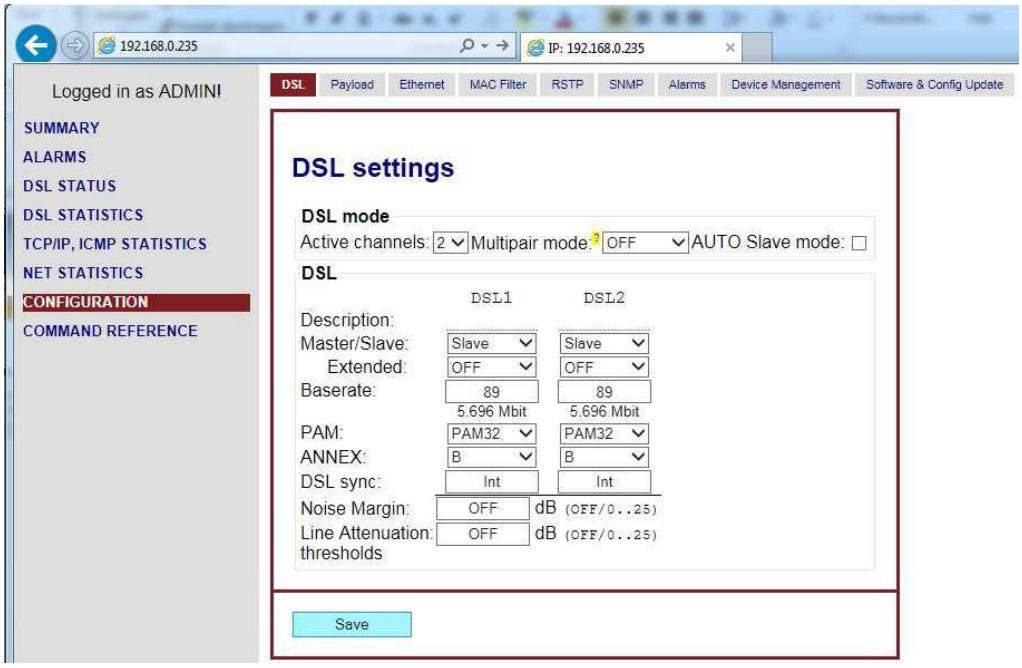


Configure:

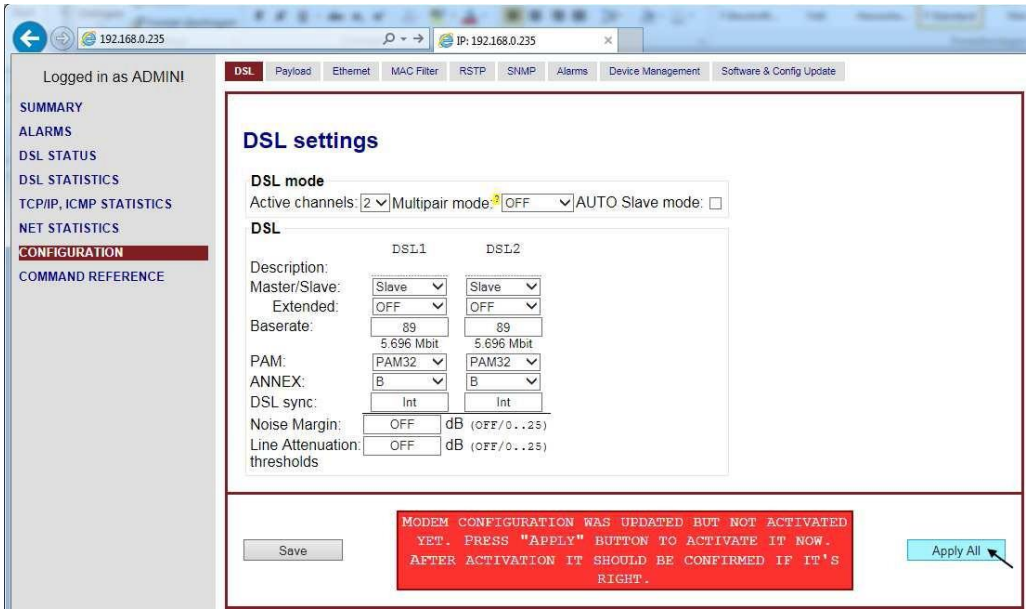
- IP addres 192.168.0.236
- Subnet mask: 255.255.255.0
- Gateway: 192.168.0.255
- click on Save/Apply ALL

Enter in device 1 with the WEB access and new IP address 192.168.0.236. Select the CONFIGURATION and Ethernet tab.



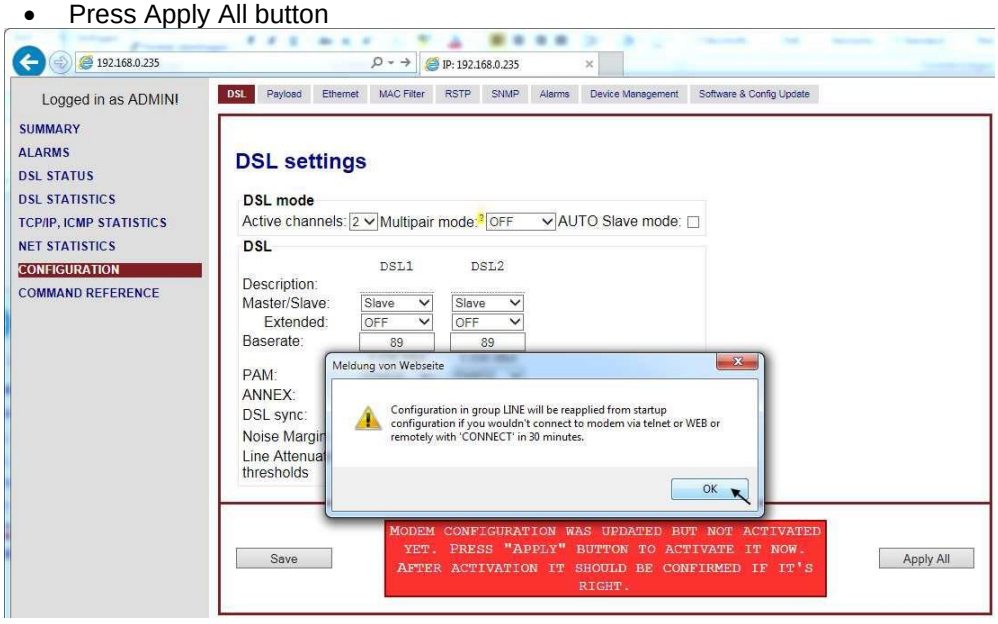
Configure:

- DSL1: Slave
- DSL2: Slave
- Press Save button



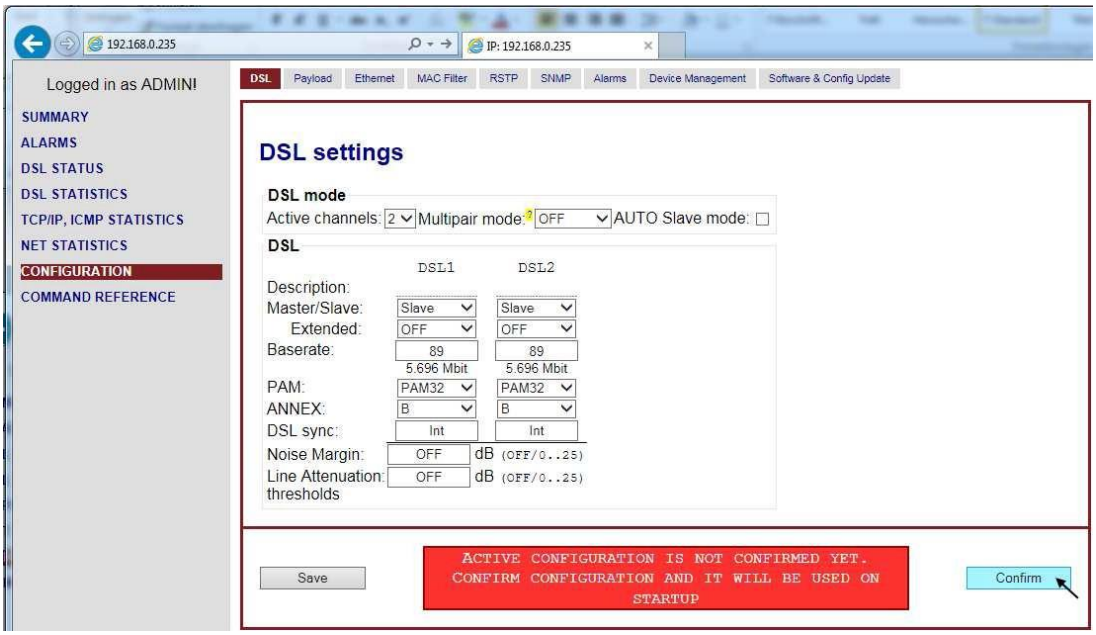
Configure:

- Press Apply All button



Configure:

- Press OK button



Configure:

- Press Confirm button

Select the CONFIGURATION and Payload tab.

Configure:

- Check Payload DSL 1 Ethernet is on
- Check Payload DSL 2 Ethernet is on
- If not, click on and do Save/Apply ALL/Confirm

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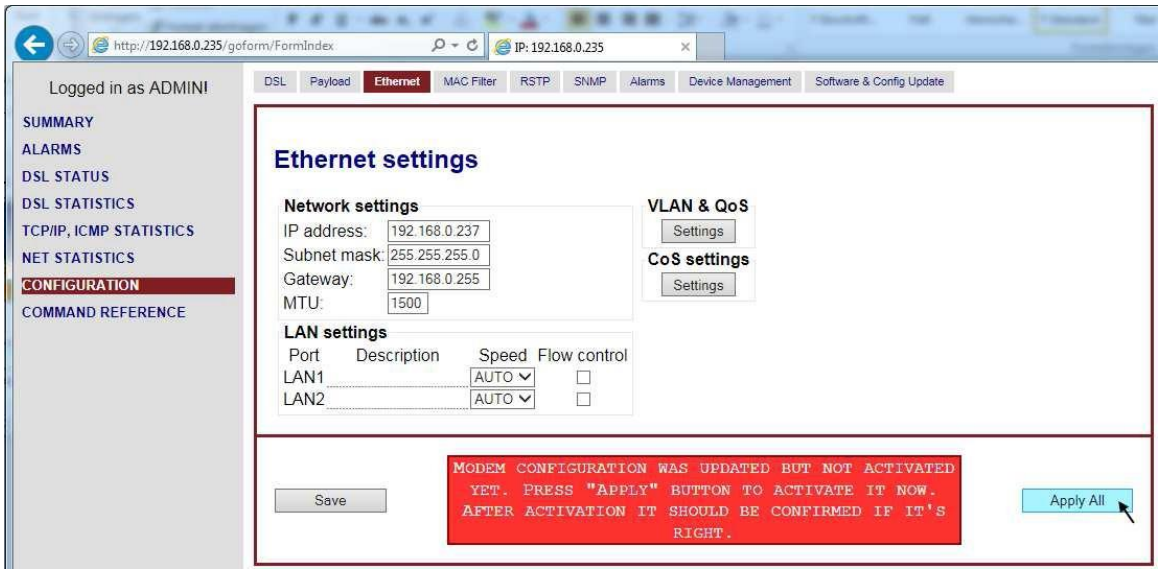
Select the CONFIGURATION and Ethernet tab.

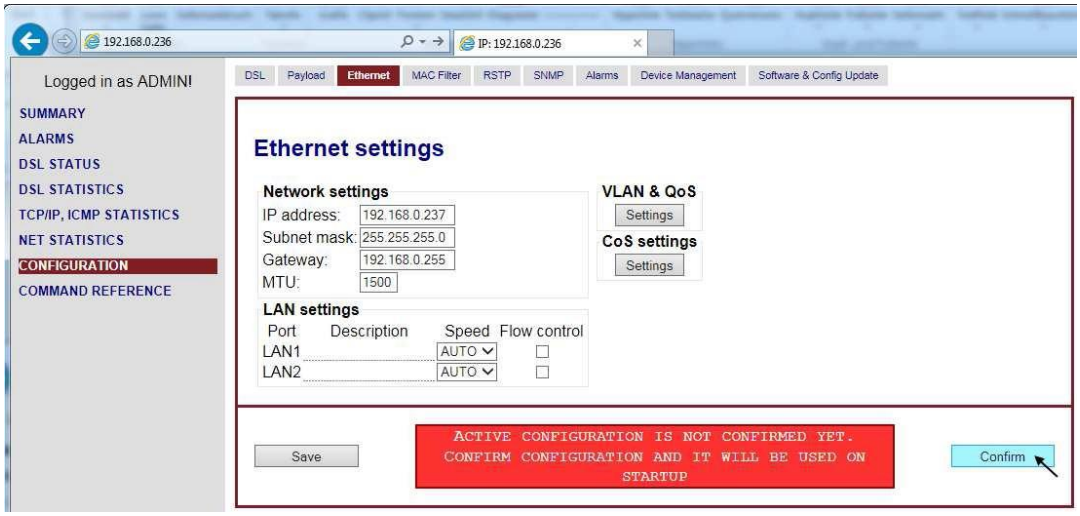


Configure:

- IP addres 192.168.0.237
- Subnet mask: 255.255.255.0
- Gateway: 192.168.0.255

click on Save/Apply ALL

Enter in device 1 with the WEB access and new IP address 192.168.0.237. Select the CONFIGURATION and Ethernet tab.



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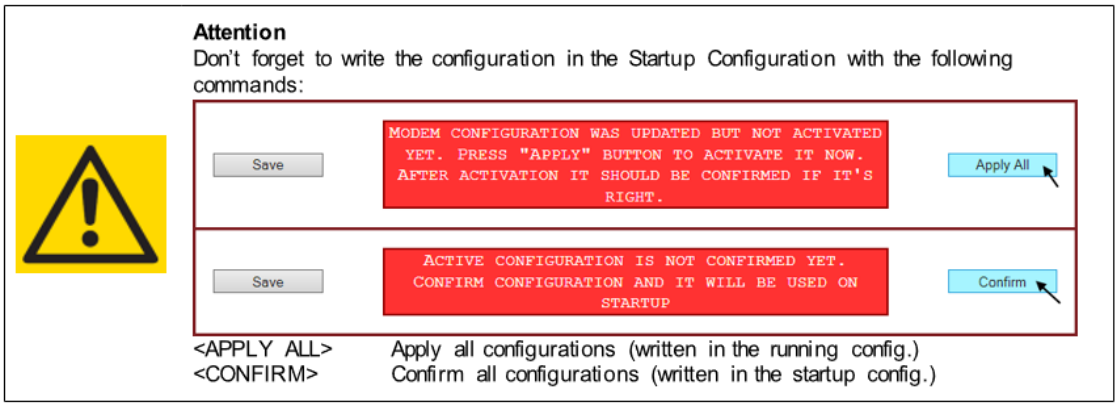
Configure:

- click on Confirm

The idea is the following: First enable the MASTER/SLAVE mode on the modem, then configure the transmit data, then do the network settings (IP address, default subnet mask and default gateway) and finally, these settings are applied and then are written in the EEPROM.

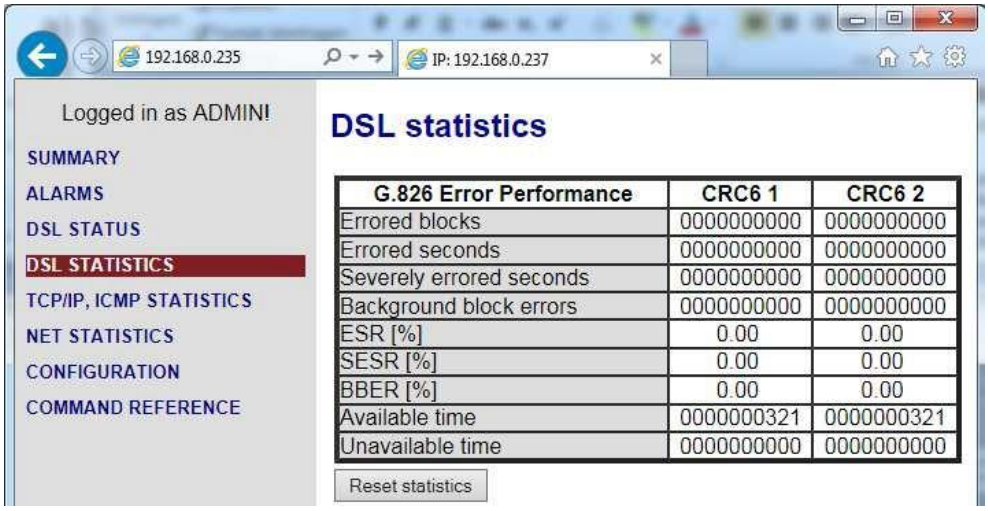


Checking the Correct Working

After the installation and configuration of the link you have to check at least the two following parameters.

The digital channel quality:

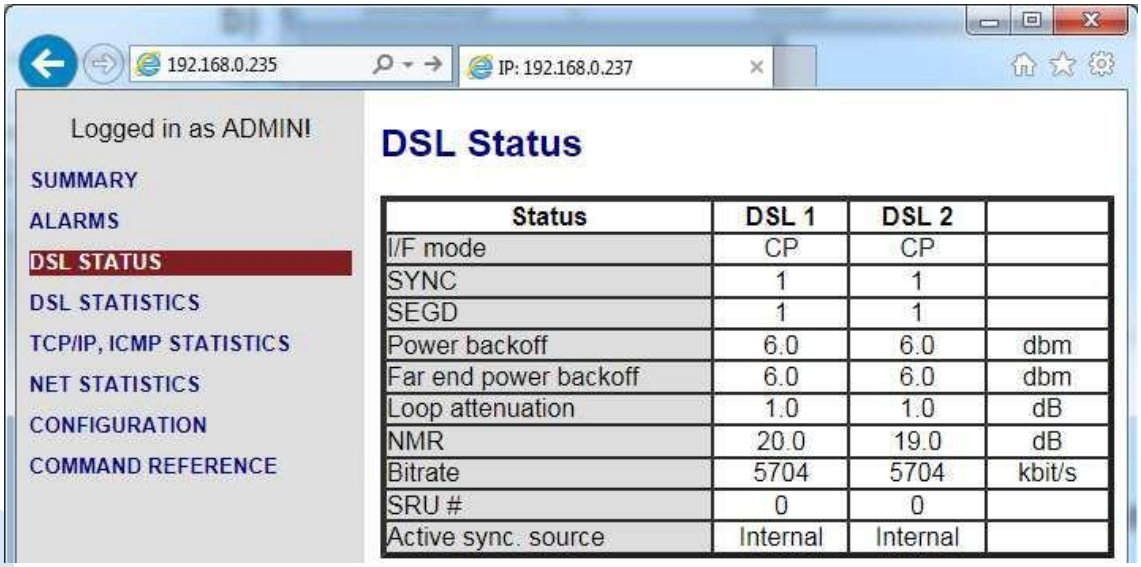
The ITU-T Rec. G.826 error performance (G826) monitoring of a SHDSL link is performed according to ITU- T Rec. G.704, based on CRC (Cyclic Redundancy Check) error detection. Six CRC6 check bits are generated per SHDSL frame. CRC6 errors are used by the software to count the block errors of the SHDSL channel. Reset the statistics and then check if you have any errors during the data transmission.



G.826 Error Performance	CRC6 1	CRC6 2
Errored blocks	0000000000	0000000000
Errored seconds	0000000000	0000000000
Severely errored seconds	0000000000	0000000000
Background block errors	0000000000	0000000000
ESR [%]	0.00	0.00
SESR [%]	0.00	0.00
BBER [%]	0.00	0.00
Available time	0000000321	0000000321
Unavailable time	0000000000	0000000000

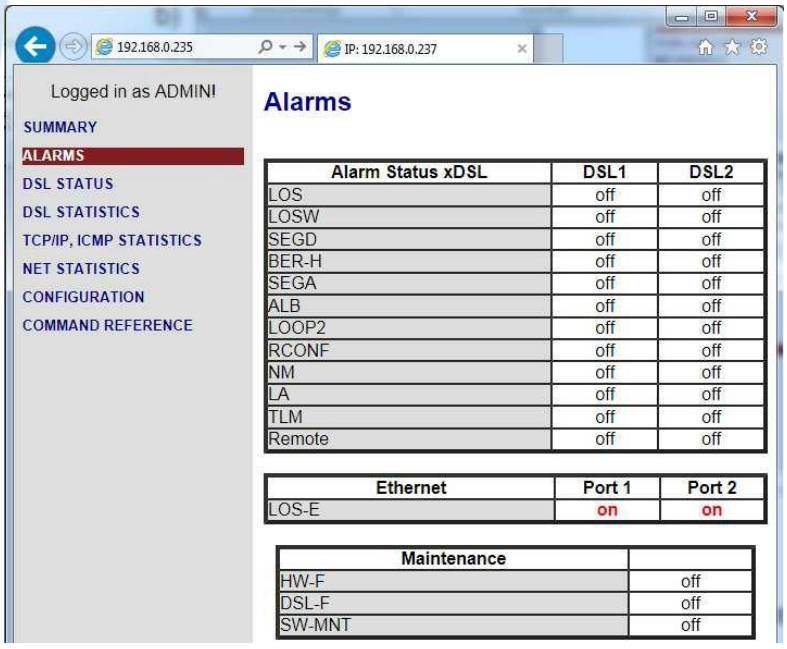
The Noise Margin (NM) performance monitoring:

The Noise Margin (NM) provides qualitative performance information of a specific SHDSL link according the ITU-T Rec. G.991.2. The recommended NM values should be no less than 6 dB. This value provides the necessary reserve of the signal/noise margin. It is recommended to perform the Noise Margin performance monitoring during acceptance tests and in case the system operates not stable.



Status	DSL 1	DSL 2	
I/F mode	CP	CP	
SYNC	1	1	
SEGD	1	1	
Power backoff	6.0	6.0	dbm
Far end power backoff	6.0	6.0	dbm
Loop attenuation	1.0	1.0	dB
NMR	20.0	19.0	dB
Bitrate	5704	5704	kbit/s
SRU #	0	0	
Active sync. source	Internal	Internal	

Please also check in case that any of the LED 1 or 2 is not green, if you have any alarm:



Alarm Status xDSL	DSL1	DSL2
LOS	off	off
LOSW	off	off
SEGD	off	off
BER-H	off	off
SEGA	off	off
ALB	off	off
LOOP2	off	off
RCONF	off	off
NM	off	off
LA	off	off
TLM	off	off
Remote	off	off

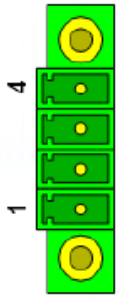
Ethernet	Port 1	Port 2
LOS-E	on	on

Maintenance	
HW-F	off
DSL-F	off
SW-MNT	off

Connector Description:
SHDSL Technical Specification

Specification	ITU-T G.991.2 G.shdsl and G.shdsl.bis
Line Code	TC-PAM16/32, Extended: TC-PAM4/8/64/128
Impedance	135 ohm
Transmit Power	13.5 (Annex A) or 14.5 (Annex B) dBm @ 135 ohm
Number of Pairs	2
Bit Rate	192 to 5704kbit/s, Extended: 128 to 15232kbit/s
Overvoltage Protection	ITU-T Rec. K.20/K.21
Connector Type	Phoenix Mini Combicom MC 1,5/4-GF-3,5 (female), 4 pins.
Matching Type for the cable	FK-MCP 1,5/ 4-STF-3,5 For AWG 16-26, Area 0.14–1.5 mm2 or Diameter 0.4-1.4 mm

SHDSL Connector Specification



Pin No	Description
1	SHDSL interface A
2	SHDSL interface A
3	SHDSL interface B
4	SHDSL interface B

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Power Supply Technical Specification

Specification	ETSI ETS 300 132-2
Voltage (-12V models)	9-18VDC local power
Voltage (-24V models)	18-72VDC local power
Voltage (-230V models)	85-264VAC, 100-370VDC local power
Connector Type	Phoenix Combicom MSTB 2,5/ 3-GF-5,08(male), 3 pins.
Matching Type for the cable	FKCT 2,5/ 3-STF-5.08 For AWG 12-24, Area 0.2–2.5 mm2 or Diameter 0.5-1.75 mm
Power Consumption	Typically 4-7 Watts, depending on unit

SHDSL Connector Specification

Pin No	Description
1	Negative power terminal or N (Neutral power terminal)
2	Protection ground
3	Positive power terminal or L (Life power terminal)

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