



## **XSLAN-140 SHDSL Switch**

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**User manual**  
Document reference : 9017209-01

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The XSLAN-140 SHDSL switch is manufactured by

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**Appendix 1 : Data rate versus line length and cable quality**



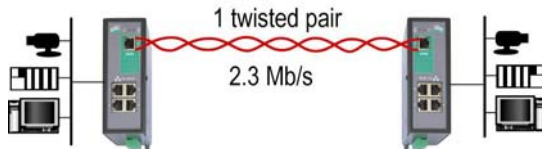
## 1 Delivery content

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## 2 Product overview

**The XSLAN-140 shdsl switch enables to extend an Ethernet network over kilometres using one simple voice-grade twisted pairs (telephone line).**



### Distance and data rate

SHDSL features an adaptive data rate from 128 Kb/s up to 2.3 Mb/s.

The data rate is a function of the cable quality and the distance with the other SHDSL switch. For instance, the maximum distance between 2 switches through a line is 13 Km (8 miles) with a 0.9 mm wire diameter cable.

The table in appendix 1 gives the data rate which can be expected over a line versus the length of the line (distance between 2 switches).

### Ethernet ports

The XSLAN-140 provides 4 ethernet RJ45 interfaces (depending on the product reference).

### DIP swithes configuration

The XSLAN-140 is configured with a few DIP switches.

### An html server for diagnostic

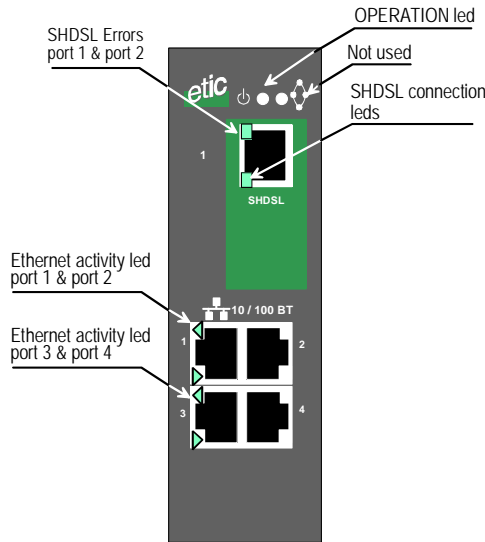
The XSLAN-140 html server provides diagnostic pages giving the guarantee the transmission quality is what it has to be.

### 3 Data sheet

Dimensions	137 x 48 x 116 mm (h, l, d)
C.E.M	EN50082-2
Electrical safety	EN 60950
Thunder	EN61000-4 et -5
Supply voltage	9 to 40 VDC
Consumption	4W
Operating T°	-20°/ + 60°C non condensing
SHDSL	ITU-T G.991.2, 802.3ah : 2BaseTL (EFM) Data rate : 128 kb/s to 2.3 Mb/s with 2 wires
Connection delay	Auto-mode : 1 mn Fixed data rate : 30 s
Latency delay through the line	4 ms at 2.3Mb/s 6 ms at 512 kb/s
Ethernet	4 RJ45 10/100 Mb/s Half/Full duplex Auto MDI/MDIX
Switch	Store and forward - 1024 MAC @
Configuration	Dip switches
Diagnostic	Html server

**1 Product description**

1.1 Leds



Function	Led	Description
Ethernet	LINK/DATA	Ethernet activity
Shdsl line led		<b>Green lower led :</b> Slowly blinking : Shdsl connection in process Lit on : Shdsl connection set Quickly blinking : Traffic over the SHDSL link
Shdsl error led		<b>Red upper led :</b> Off : Error-free transmission Quickly blinking : Transmission errors
Operation		Green : Ready for use Red : Alarm

## 1.2 Connectors

<b>8 pins screw block</b> Supply voltage and input / output		
<b>Pin Nr</b>	<b>Signal</b>	<b>Function</b>
1	Power 1 +	Supply voltage input 1 : 9 to 30 Vdc
2	Power 1 -	0 V
3	Power 2 +	Supply voltage input 2 : 9 to 30 Vdc
4	Power 2 -	0 V
5		
6		
7		
8		

<b>SHDSL RJ45 connector</b>		
<b>Pin Nr</b>	<b>Signal</b>	<b>Function</b>
1	N.C.	-
2	N.C.	-
3	N.C.	-
4	TIP	SHDSL line
5	RING	SHDSL line
6	N.C.	-
7	N.C.	-
8	N.C.	-

<b>Ethernet RJ45 connector</b>		
<b>Pin Nr</b>	<b>Signal</b>	<b>Function</b>
1	Tx +	TX polarity +
2	Tx -	TX polarity -
3	Rx +	Reception polarity +
4	N.C	-
5	N.C	-
6	Rx -	Reception polarity -
7	N.C.	-
8	N.C.	-

1.3 DIP switches

DIP switches			
SW 1	SW 2	Management	
OFF	OFF	The current IP@ of the product is the stored IP @	
ON	OFF	<b>The active IP@ of the product is the factory IP@ : 192.168.0.128 No login and password are required to access to the html server</b>	
OFF	ON	The active IP@ is provided by the BOOTP or DHCP server	
ON	ON	No IP @ is assigned to the product; DIP switch configuration	
SW 3	SW 4	SW 5	Shdsl port
OFF	OFF	OFF	NTU mode
OFF	OFF	ON	LTU mode - Auto
OFF	ON	OFF	LTU mode – 2304 kbit/s
OFF	ON	ON	LTU Mode – 2048 kbit/s
ON	OFF	OFF	LTU Mode – 1536 kbit/s
ON	OFF	ON	LTU Mode – 1024 kbit/s
ON	ON	OFF	LTU Mode – 512 kbit/s
ON	ON	ON	LTU Mode – 256 kbit/s
SW 6 to SW 12		Not used - Must be left OFF	

## 2 Ventilation

To avoid overheating when the ambient temperature is high, leave a 1 cm (0.5 inch) space on each side of the product.

## 3 Supply voltage

The product comes with 2 separate voltage inputs, so that 2 external power supply modules can be connected to the product. If one power supply module fails, the XSLAN-140 will be powered by the other.

The supply voltage must be strictly lower than 30 VDC and higher than 9 VDC. The consumption is 170 mA at 24 VDC.

## 4 Fuse

The product is protected with a 3A fuse located on the electronic board near the supply voltage connectors.

!!! A replacement fuse is available on the board ; it is located over the leds.

## 5 Ethernet ports

The XSLAN-140 features two or four auto-sensing 10/100 Mbps MDI/MDIX LAN ports.

**6 SHDSL line connection**

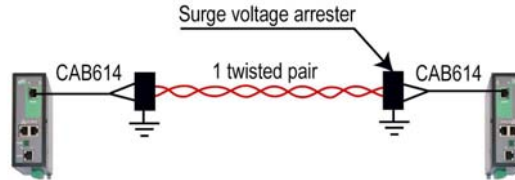
The XSLAN-140 is delivered with 1 line cable (reference CAB614). That cable ends with 2 wires. The 2 wires have to be connected to the 2 wires of the twisted pair line. The wires can be inverted.

**Shield :**

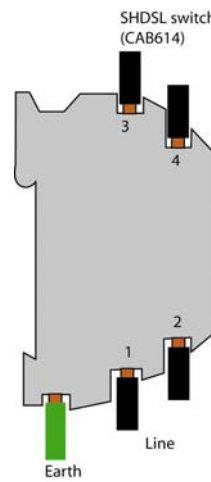
If the cable is shielded, the shield must be connected, at one end, directly to the earth.

**Surge voltage arrester**

if the line is exposed to the lightning, we advise to use an over voltage arrester at each end of the line.



We have selected the Phoenix Contact module TT-2-PE-24D; it must be wired as indicated opposite.



## 1 Setting up the SHDSL connection

The XSLAN-140 is configured with DIP switches.

The DIP switches are located on the top side of the product.

In case of difficulties, the diagnostic html server offers very useful diagnostic functions like Error rate statistics, signal quality and connection logs.

To access to the html server, an IP address must be assigned to the product.

### Step 1 : Adjusting the “management” DIP switches SW01 and SW02 settings

SW01 and SW02 must be usually set ON and ON. In that case, no IP address is assigned to the product.

However, in case of line disconnection or errors, the html diagnostic server will help to solve the difficulties; in that case, an IP address can be assigned to the product according to the table below.

DIP switches		
SW 1	SW 2	Management
OFF	OFF	The current IP@ of the product is the stored IP @
ON	OFF	The active IP@ of the product is the factory IP@ : 192.168.0.128 No login and password are required to access to the html server
OFF	ON	The active IP@ is provided by the BOOTP or DHCP server
ON	ON	No IP @ is assigned to the product; DIP switch configuration

**Step 2 : Adjusting the “SHDSL” DIP-switches SW3, SW4, SW5 settings**

When 2 XSLAN-140 are connected to one another through a line, one has to be configured as an LTU (calling party) and the other one as an “NTU”. (called party).



The product which is named “LTU” negotiates and forces the data rate over the line; the NTU can only accept.

**Setting up the XSLAN-140 1 (LTU) :**

If SW3, SW4 and SW5 are set OFF, OFF and ON (auto mode), the XSLAN 1 (LTU) will negotiate the appropriate data rate with the XSLAN 2 (NTU). The connection delay will be longer.

To reduce the connection delay, select the appropriate position of SW03, SW04, SW05 according to the line length; Refer to the table in appendix 1.

XSLAN 1			
SW 3	SW 4	SW 5	Shdsl port
OFF	OFF	ON	LTU mode – Auto
OFF	ON	OFF	LTU mode – 2304 kbit/s
OFF	ON	ON	LTU Mode – 2048 kbit/s
ON	OFF	OFF	LTU Mode – 1536 kbit/s
ON	OFF	ON	LTU Mode – 1024 kbit/s
ON	ON	OFF	LTU Mode – 512 kbit/s
ON	ON	ON	LTU Mode – 256 kbit/s

**Setting up the XSLAN 2 :**

XSLAN 2			
SW 3	SW 4	SW 5	Shdsl port
OFF	OFF	OFF	NTU mode

**Step 3 : Connecting the products to the line**

Connect the products to the line using the CAB 614 cable.

Nota bene : For test purposes, any straight RJ45 cable can be connected to each XSLAN-140 SHDSL RJ45 connector.

**Step 4 : Check the connection**

The lower green led of the SHDSL RJ45 connector blinks during the SHDSL negotiation and then remains lit when the connection is established.

**If the Line led (lower green led of the SHDSL RJ45 connector) blinks permanently**, it means that the connection cannot be established; check the wires connection and eventually, set a lower data rate with the DIP switches SW03, SW04, SW05.

**If the Error led (upper red led of the SHDSL RJ45 connector) blinks**, it means that errors occur on the line, check the wires connection and eventually, set a lower data rate with the DIP switches SW03, SW04, SW05.

**Step 5 : exchange data through the line**

Connect a PC to one of the XSLAN-140 and transmit periodical PING to the other XSLAN-140.

Check an answer is received within less than 10 ms.

**1 Connecting a PC to the XSLAN server**

**1.1 Connecting the PC directly to the Ethernet RJ45 of the XSLAN**

**Step 1 :** Check the DIP switches SW1 and SW2; they must be set to OFF and OFF to select the stored IP address, or, if necessary, to ON and OFF to restore the factory IP address.

Coming from factory, the IP address of the XSLAN-140 is 192.168.0.128.

**Step 2 : Create or modify the PC TCP/IP connection**

Assign to the PC an IP @ in accordance with the XSLAN-140 IP address. For the first configuration, assign or instance 192.168.0.127 to the PC.

**Step 3 : Connect the PC directly to an XSLAN ethernet interface** using any Ethernet cable (straight or crosswired)



**Step 4 : Launch the html browser** Enter the IP @ of the XSLAN-140.

The Home page of the administration server is displayed



**1.2 Connecting a PC through a LAN**

**Case of a LAN with a BOOTP or DHCP server**



**Step 1 :** Set the DIP switches SW1 OFF and SW2 OFF to select DHCP / BOOTP operation.

**Step 2 : Launch ETIC FINDER to detect the XSLAN over the LAN.**

Click the product once detected.

The Home page of the administration server is displayed.

Note :

If the home page cannot be displayed, refer to paragraph 4 below.

**Case of a LAN without BOOTP or DHCP server**

That method must be avoided for the first configuration, because the factory IP address of the XSLAN-140 can also have been assigned to another product.

Otherwise, launch the html browser and enter the IP address assigned to the XSLAN-140.

Or, launch the ETICFINDER utility.

### 1.3 Wrong IP address or password

When launching the html browser, the homepage of the html server may not be displayed; the cause may be the IP address you enter or the password you use are wrong.

**if the XSLAN-140 IP address you enter is wrong**, you can recover the factory IP address by setting SW01 ON and SW2 OFF.

The factory IP address 192.168.0.128 will be restored as long as the SW01 micro-switch will be left ON. Once, SW01 will be set OFF, the stored IP address (the IP address which is displayed) will be used by the product.

**Wrong Login to the administration server**

The access to the administration server can be protected by a login and password; If the Login & or password entered to access to the administration server have been rejected, it is possible to recover a **free access**, by setting SW01 ON and SW2 OFF.

Careful : The factory IP address 192.168.0.128 will also automatically be assigned to the product as long as SW01 will remain ON and SW2 OFF.

## 2 Checking the transmission quality

The transmission quality can be summarized by two data :

The signal quality and the error rate.

Select the Diagnostic menu and then Network status.

### **Signal quality**

Once the connection is set, the "Link state" line gives the signal quality from 1/5 (bad quality), to 5/5 (excellent).

If the signal quality is 1/5 or 2/5, errors and disconnection can occur; decrease the data rate (DIP switches of the XSLAN-140 declared as LTU) and check the line.

If the signal quality is 3/5, the connection quality is sufficient. Nevertheless the data rate can be decreased with the DIP switches to get a 4/5 signal quality.

### **SHDSL errors rate**

To check the error rate, click the "Show statistics" button.

Click the Reset button to reset the counters.

The "CRC SHDSL errors" counter gives the numbers of errors on the line. If the quality is good, the number of errors must not increase more than once every minute.

## 3 Checking SHDSL line disconnections

The log menu shows dated connections and disconnections of the XSLAN-140.

When the quality is good, the XSLAN-140 must not disconnect.

## 4 Updating the firmware

### **Step 1 : Before starting, you need,**

A PC with a Web browser.

An Ethernet cable or a switch

The FTP server software which can be downloaded from the « firmware page » of the ETIC « download area » web server.

### **Step 2 : Download the release of the firmware from our download area to your PC**

### **Step 3 : Prepare the PC**

Check the Ip address of the PC is compatible with the one of the router.

Connect the router to the PC.

Launch the TFTP server (tftp32.exe) software and select the new release (L026xxx/img) by using the "Browser" button.

Click on "Show dir" to check the files of the directory : (jffs2root, rfsmini.tgz, u-boot.bin and ulmage).

### **Step 4 : Update the firmware**

Launch the web browser

Enter the IP address of the ETIC product ; the home page of the ETIC configuration server is displayed.

Select the "System" menu and then " firmware Update". In the field "IP address of the TFTP server", enter the IP address of your PC.

Note : The IP address of the PC is written in the field "Server Interface" in the TFTP server windows.

Click "Save" and then "Update".

The first file should begin to be downloaded from the PC to the router.

During the operation, the led blinks

When the download is finished, the product automatically reboots.

To be sure the new release has been installed, go to "About" in the administration web page of the IP product.



		Distance (Km)						
		3	4	6	7	8	10	12
Wire diam. mm	0,9	2.3Mb/s	2.3Mb/s	2.3Mb/s	1.5Mb/s	1.1Mb/s	512Kb/s	128Kb/s
	0,6	2.3Mb/s	2.3Mb/s	1.1Mb/s	256Kb/s	128Kb/s		
	0,4	2.3Mb/s	1.1Mb/s	256Kb/s	128Kb/s			







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