

Oxtopus 😵

User Manual

Installation – Router setting

This manual describe the wiring and setting to operate the multi-protocol Oxtopus router EIA-709 and Modbus

This manual is organized in different chapter. Each can be read independently. The annexes are supplements to use routers in their environment.

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Terminology

Lon	Name usually given to the protocol or component working in EIA-709.1.
LonWorks [®]	Name given to the communication system developed by Echelon Corp under denomination EIA-709.1 or ISO-14908.1.
Modbus	Protocol used in building automation and industry for exchange data between two devices.
TP / FT10	Name given to the medium "Twisted Pair Free Topology" and operating at 78125 bits / s.
EIA-709.1	Generic identification for the protocol used between nodes on a network.
Node	Common name given to device exchanging data with protocol EIA-709.1.
EIA-852	Generic name for transport protocol EIA-709.1 over IP.
Config Server	Virtual administrator for "IP Channel" (EIA-852).
Channel IP	Virtual LAN that will be seen in the administrative tools as a communication medium just like a twisted pair.
Modbus	Modbus frames NAT routing function for address translation.
Echelon	Company that created the LonWorks® technology and has deposited the brand Echelon, LonWorks, LNS®, Neuron Chip®.



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1 Introduction



1.2 Range of Oxtopus routers

Oxtopus routers are available in several product references.

	Reference	Ethernet Port	Wifi	Port TP/FT10 EIA-709	Port ElA-485 Modbus
	Ox-1Lo	2 in Switch	No	1	
ЛV	Ox-1Lo-Wi	2 in Switch	Yes	1	
	Ox-2Lo	2 in Switch	No	2	
0	Ox-2Lo-Wi	2 in Switch	Yes	2	
200	Ox-3Lo	2 in Switch	No	3	
-FI	Ox-3Lo-Wi	2 in Switch	Yes	3	
ш	Ox-4Lo	2 in Switch	No	4	
	Ox-4Lo-Wi	2 in Switch	Yes	4	
	Ox-1Mo	2 in Switch	No		1
~	Ox-1Mo-Wi	2 in Switch	Yes		1
luc	Ox-2Mo	2 in Switch	No		2
S 0	Ox-2Mo-Wi	2 in Switch	Yes		2
ndk	Ox-3Mo	2 in Switch	No		3
100	Ox-3Mo-Wi	2 in Switch	Yes		3
2	Ox-4Mo	2 in Switch	No		4
	Ox-4Mo-Wi	2 in Switch	Yes		4
10	Ox-1Lo-1Mo	2 in Switch	No	1	1
sng	Ox-1Lo-1Mo-Wi	2 in Switch	Yes	1	1
po	Ox-1Lo-2Mo	2 in Switch	No	1	2
Σ	Ox-1Lo-2Mo-Wi	2 in Switch	Yes	1	2
+ 6(Ox-2Lo-1Mo	2 in Switch	No	2	1
-70	Ox-2Lo-1Mo-Wi	2 in Switch	Yes	2	1
EIA	Ox-2Lo-2Mo	2 in Switch	No	2	2
ed	Ox-2Lo-2Mo-Wi	2 in Switch	Yes	2	2
Aix	Ox-3Lo-1Mo	2 in Switch	No	3	1
2	Ox-3Lo-1Mo-Wi	2 in Switch	Yes	3	1



Figure 1 Front view of Oxtopus router



1.3 Ethernet connection

All references are equipped with two RJ45 connectors. Communication can be done independently on both sides with network.



Figure 2 Ethernet Connectors Eth0 and Eth1

The two RJ45 Ethernet connectors are configured in factory as Ethernet switch. The main connector is the left ETH0. The Computer must be primarily connected to this port.

In this configuration, the router has only one IP address for all its functions.

1.4 Wifi Connection – Ethernet

The Wifi option proposed in Oxtopus references allows access to Ethernet RJ45.



Figure 3 Architecture Ethernet IP

A computer can connect over WiFi Oxtopus to reach other Oxtopus or other equipment as the LNS server.

If a DHCP server provides an IP address on Ethernet, the computer do not need a fixed IP address, its Wi-Fi connection will assign a network address automatically.



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1.5 Automation protocols supported

The EIA-709.1 and Modbus protocols are supported on Oxtopus router and run on IP separately.

1.5.1 Router EIA-709.1

In Oxtopus routers, the EIA-709.1 protocol is available either on twisted pair or over IP. In order to pass from one media to another, it is implemented in a router function. This is conforms to the EIA-709.1 protocol and ensures the traffic filtering.



Figure 4 Architecture of Oxtopus router

To connect 2 media, a simple router is enough. To connect more than 2 medias a Virtual Media is introduced into the router to follow the installation and operate procedures of the EIA-709.1 networks.

1.5.2 Router NAT Modbus

The Modbus protocol cannot be a router function. It was implemented a frame redirection by changing the slave address. Hence the term NAT Router (Address Translation Router). Depending on the number of EIA-485 Modbus port available on the reference, Modbus master address requests on IP, the request will be redirected to the desired port with a new slave address.

Each EIA-485 port can only support 31 Modbus slaves. The Modbus address space is limited to 247 members. Within the maximum terms it is possible to send 31 * 4 = 124 Modbus slaves on EIA-485.



Configuration example:

Slave source address	Port EIA-485	Slave destination address
10	Port 3	1
11	Port 3	2
20	Port 4	1
21	Port 4	2

1.6 Other protocols supported

1.6.1 EIA-852 Device

This protocol is transparent for the installer and operator of the router. It is used for exchanges between members of a Channel IP.

1.6.2 EIA-852 Config Server

It is the virtual administrator of a Channel IP. All nodes or routers members of this channel are declared in a list ("channel list") and may share data.

If a member is forgotten it cannot share with others.

The « Config Server » router must be declared in the channel list as member.

A router cannot belong on two channel lists member.

1.6.3 Web

S

(B

An embedded Web server provides the router setup and provides a view of the general state of the router. It is accessible via its IP address with a browser like Firefox, Chrome or Internet Explorer. You can also access via WiFi with a tablet or smartphone. Web pages are automatically resized according to your device.

The configuration pages are protected by password.

```
Login : « admin », Password: « oxpass »
```

1.6.4 Disk space embedded in FTP

A user disk space is available to store your files or documentation. This space is limited access via FTP with login and password.

```
Login : « ftp », Password: « ftp ».
```



2 Connecting and Material



2.1 Ethernet

The cables used should not exceed 90 meters. The left connector Eth0 must be privileged.

The default address is 192.168.1.254.

2.2 Wifi

The connection can support multiple devices. It can be enabled or disabled on the router with buttons and the LCD display or on the Web page

2.3 Power

The material feed may be made in DC voltage or AC voltage.



Figure 5 The rear power connector

The power connector is a clips connector. Wire are inserted using a screwdriver 2.5mm or a suitable tool.



Figure 6 Insert wire in power connector

2.4 Wiring

According to the reference with 1, 2, 3 or 4 EIA-709 ports, ports are used, starting with the left.



According to reference product 1, 2, 3 or 4 EIA-485 ports, the ports are used starting from left or following EIA-709.

Reference	Port 1	Port 2	Port 3	Port 4
	TP/FT10	EIA-485		
UX-ILO-IMIO	EIA-709.1	Modbus		
	TP/FT10	EIA-485	EIA-485	
Ox-1Lo-2Mo	EIA-709.1	Modbus	Modbus	
	TP/FT10	TP/FT10	EIA-485	
UX-2L0-11010	EIA-709.1	EIA-709.1	Modbus	

2.5 Wired network EIA-709.1 / EIA-485 Modbus

The EIA-709 protocol is not polarized; the front connectors are identified in groups by three, left to right: Earth Net Net A and B.

Modbus over EIA-485 is polarized. Be careful, you must connect the + of all equipment on the right terminal and the - pole on the left terminal.



When the devices are powered by different sources, the third connector must be connected to the reference.



Oxtopus 😵 Ox-3Lo-1Mo						
Lon	Lon	Lon	Mod			
÷ ^{AB}	÷ ^{AB}	÷ A B	÷ - +			

Figure 7 Stick network connector TP/FT10 and EIA-485

Figure 8

Wired connection TP/FT10 CEA_709.1



A polarity inversion does not damage device, but the communication does not works.



2.6 LED signalization

2.6.1 Power LED

The **POWER** LED is ON in Green at the beginning of power on. A red color indicates a fault on the router.

2.6.2 Wifi LED

For Oxtopus routers with wifi option, **WIFI** LED will be green to indicate that wifi is active; the red color indicates that the wifi is inactive.

For routers that do not have wifi, this LED is off.

2.6.3 IP1/IP2 LED

IP LEDs indicates the status of each port and architecture

LED	Ethernet architecture
LED IP1 ON	IP Ports works in « switch » mode
LED IP2 ON	Ports are configured in « double IP »

Regardless of the architecture, the color of the LED indicates the operation of the connection.

A green LED indicates that the Ethernet connection is working properly.

A red LED indicates that the Ethernet connection is not working. This may be due to the inability to retrieve an IP address via DHCP for example.

Finally, an orange LED indicates that the Ethernet connection is working, but a fault has been detected during startup. Services such as CNIP (LON 852) Config Server and Modbus do not work. This may be due to, for example, significant time between the router startup and recovery of an IP address via DHCP. In this case the DHCP worked but the address was acquired too late, the services were launched without IP.

2.6.4 LED Activity (« Act. »)



2.6.4.1 LON FT/TP-10

EIA 709 Port of Oxtopus router has a bicolor LED:

Behavior	Description	Comment
GREEN blinking	Traffic	Receiving or sending frame
GREEN blinking at 1HZ	Port Not configured	
RED blinking	Errors on medium	Lost frame due to:
		- CRC Error
		 Most important Traffic

2.6.4.2 Modbus RS485

A Modbus-RS485 port of Oxtopus router has a bicolor LED:

Behavior	Description	Comment
GREEN blinking	Traffic	Receiving or sending frame
RED blinking	Errors on medium	Lost frame due to: - CRC Error

2.6.5 LED Z

It is used to view the state of the line impedance: fault if line break or termination not connected et each ends.

LED in GREEN indicates that impedance is good.

LED in RED indicates that impedance is fault.

2.7 Screen

The Oxtopus Router has a LCD screen in front. When the router starts, the screen displays the logo "Occitaline" and the name of the router.



Figure 9 : Home screen

The buttons below the display are used to navigate in the menu.



Press one of the buttons to access the menu which indicates the router configuration and bandwidth usage in real time to the ports LON FT / TP10.



Figure 10 : First page menu

Buttons below the arrows are used to select the port. Once selected, press the button under the symbol "**SP**" (Service Pin) to send a service pin of the Neuron Chip of that port.

Whatever the selected port, the button under the symbol "**GSP**" allows you to send a service pin of each external Neuron Chip on router.

Finally, the page after Ports show you the IP address of the router.



Figure 11 : IP page



3 Easy and fast setting



3.1 Wizard for configuration

A wizard has been developed to simplify the configuration of Oxtopus router.

Questions are asked in specific order. At the end of the sequence, the reboot of the router places it in the desired configuration.

The steps are:

- 1. System
- 2. Configure Wifi
- 3. EIA-709 Configuration
- 4. Modbus configuration
- 5. Reboot

When the reference does not have Wifi, EIA-709 or Modbus, the corresponding step is simply skipped (not showed) from the wizard.

All changes in the configuration Wizard will be saved at the last step. You can redo the Wizard as many times as you like without saving. All temporary values are stored until the backup or closing your session with the browser.

3.2 Starting wizard on home page

The actions menu is on the left. The user identification is at the top right of the page.

The home page shows the status of the router. (For more details see chapter 0)

Occita line	2			¥KEN ≜•
⊁ Configuration <	Device-info			
L <u>adi</u> Stats K				
E Log 🔍	Oxtopus (De-4L0-WI)		O Oxtopus	
C Easy installation	Name	Oxtriputs_01	-	
	Date	2015-06-05		Occitaline
	Time	10:10:26	20 C	0 0 0 0
	Architecture ethernet	Switch		
	With	2	-	
	SSID	OxTopers-Wills	1.1.1	
			CERERAL SERVICE PR	Zeet 0 2 8 8 8
	ETHO			
	General	Port LON (Config server)	Port Lbn (Clien/Routeur)	Part Modbus Server

Figure 12 Home page and Easy installation menu



3.3 Login page

When access to a configuration page, if the user is not logged, the login page is proposed. (See Chapter 3.3)

The account is "**admin**", password is "**oxpass**".

3.4 Name of router

The name will be visible on the LCD screen and in the members list of the Channel IP.

Occita line		💥 EN	* *
😤 Device-info			
F Configuration	Configuration system		
🕍 Stats			
≡ Log	Cktopus_01		
C Easy Installation	A Dark	1 200	
		and the second	

Figure 13 Define router name

3.5 IP address

The router can obtain an IP address by DHCP server or you can define a fixed IP address.

occitaline			XX EN	4 -
Device-info				
	i i	Configuration ETH0		
Land Stats	्र	C Partie NUCK C Startis SUCK		
■ Log	.4	e Badi	→ Neor	
at Pater accounter				

Figure 14 Router with dynamic IP address

Bit Debute-Hillo Configuration ETHO Mat Stats Configuration ETHO Debute DHCP® Disable DHCP IP address DNS 1 IS2 168.3.31 Netmask 265 255 255 0 Gateway			
Configuration ETHO Configuratio	B Device-info		
Ait Stats Canabie DHCP © Disable DHCP IP address DNS 1 192.168.3.31 192.168.3.31 Netmask DNS 2 255.255.255.0 Cateway	🗲 Configuration	Configuration ETH0	
Log O Enable OHCP © Disable OHCP IP address DNS 1 oč Easy installation I92 :168 :3 31 Netmask DNS 2 Gateway Gateway	unt Stats		
OC Easy Instalation 192.168.3.31 Netmask DNS 2 256.265.265.0	🛢 Log	IP address	DNS 1
Netmask DNS 2 256 255 256 0 Gateway	oc Easy installation	192.168.3.31	
255 255 255 0 Gateway		Netmask	DNS 2
Gateway		255.255.255.0	
		Gateway	

Figure 15 Router with fixed IP address



3.6 Wifi configuration

This page allows you to enable or disable the Wifi as well and set the access parameters.

Occita line			× EN ≜ •
🏚 Device-info			
Configuration	(C)	Configuration WIFI	
Leal. Stats	(C)	2- ····	
■ Log	¢	Enable WIFI (9 Disable WIFI e Bac	🔸 mest
of Easy instalation			

Figure 16 Disabling Wifi option

If WiFi is activated from the LCD screen, the values stored in the configuration will be used. By enabling WiFi by the Web, you can change its setting.

occitaline		
🚯 Device-info		
✗ Configuration		Configuration WIFI
Lan Stats	: %	© Enable WiFI O Disable WiFI
🔳 Log	<u>\$</u>	SSID
		CixTopus-With
		Pass Phrase
		2336
		WPA
		WPA
		WPA Pairwire
		TKIP
		Channel
		4
		€ Васк

Figure 17 Wifi setting

SSID	It defines the visible name usable by your PC, tablet or smart phone.
Pass Phrase	This is the passcode to enter to validate the connection.
WPA	This is the security mode Wifi access.
WPA Pairwire	This is the encryption connection.
Channel	This is the channel frequency for wireless connection.



3.7 EIA-852 configuration

The router side IP must be a member of an IP Channel. The router can handle this task with its "Server Config".

Default routers come with the "config server" disabled.

occitaline			¥€en ▲ •
a Device-info			
Configuration	Parameter for Lor	Works router	
Lud. Stats	6		
■ Log	Config server rule		
📽 Easy installation	Do you want to activate the config serv	r? ©Yes ©No	
	EIA-852 Client rule		
	EIA-852 Client IP and Port		
	192 168 3 31	1628	
	My config server address		
	192.168.3.31	1629	
	← Back		→ Nmt.
		5. 40	

Figure 18 EIA-852 setting without Config Server

In case of the "config server" is on another device, you must define the IP address of it and the port (default 1629).

Occita line		
a Device-info		
🖌 Configuration	Parameter for LonWorl	ks router
Lat. Stats	k	
E Log	Config server rule	
	Do you want to activate the config server ? ③ Yes	O No
	Address and port config server	
	192.168.3.31	1629
	Add the router to the channel list? ④ Yes 〇 No	
	EIA-852 Client rule	
	EIA-852 Client IP and Port	
	192.168.3.31	1628
	My config server address	
	192.168.3.31	1629
	🔶 Back	

Figure 19 EIA-852 setting with Config Server and adding router to the Channel IP

In case of "Config Server" enabled, the router can automatically be added to its list of members and you can no longer enter the address of the "Config Server".



Occitaline		
n Device-into		
🗲 Configuration	 Parameter for Lor 	Works router
🕍 Stats		
≡ Log	Config server rule	
C Easy installation	Do you want to activate the config serve Address and port config server	r? ⊗Yes ◯No
	192.168.3.31	1629
	Add the router to the channel list? • Y EIA-852 Client rule EIA-852 Client IP and Port	es ©No
	192.168.3.31	1628
	My config server address	
		1600

Figure 20 EIA-852 setting with Config Server WITOUT adding router to the Channel IP

If you do not want to add the router to the members of Channel IP managed by this router, you must enter the address of its "Server Config".

Occitaline								HE EN
Device-info								
Configuration	•	Channel list	t					
Stats	÷.							
.og	¢	Channel name						
		Oxtopus_CS						
Easy Installation		Oxtopus_CS						
asy installation		Critapus_CS Show 10 👻 entries Name	IP address	Port	Status	Enable	Edit	Edit
any installation		Cxtopus_CS Show 10 entries Name Oxtopus_01	IP address 192.168.3.31	Port 1628	Status	Enable	Edit	Edit
any installation		Oxtopus_CS Show 10 entries Name Oxtopus_01 Oxtopus02	IP address 192.168.3.31 192.168.3.26	Port 1628 1628	Status 	Enable V	Edit Z Edt	Edit @ Delete
any installation		Oxtopus_CS Show 10 entries Name Oxtopus_01 Oxtopus02 Showing 1 to 2 of 2 entries	IP address 192.168.3.31 192.168.3.26	Port 1628 1628	Status 	Enable 2 2	Edit ØEdt Pro	Edit Delate

Figure 21 Member list of the Channel IP

On the first time on this page, if you have checked the checkbox "Adding the router to the members", only the router is added. In this case, the first line shows the router's name and IP address. The edit and delete buttons are not available.



3.8 Modbus configuration

This page defines the communication port used by the Modbus IP Server (default 502). The protocol is TCP / IP.

A field also sets a rerouted slave address to get Modbus ports and EIA-709.1 statistics of routers's Neuron Chip.

occitaline			HE DI L-
Device-info			
Configuration	 Modbus IP config 	uration	
📶 Stats	•		
Log	<pre>ETH0</pre>		
of Eavy Installation	Address IP and port for Modbus Server		
	192 168 3 31	502	
	Set Modbus slave address for reading	on statistic over iP	
	2		
	€ Back		- Dent
	€- BACK		+ Feed
		Figure 22	

Server Modbus IP setting

If the router is equipped with EIA-485 port for Modbus, for each port you can configure speed, parity, stop bits and size.

occitaline			₩EN ≛•
🚯 Dévice-Info			
F Configuration	 Configuration Serials p 	ports EIA-485	
🔟 Stats	*		
■ Log	* port3	port4	
C Easy installation	Baudrate	Baudrate	
	9600	9600	¥
	Parity	Parity	
	None	None	¥
	Stop	Stop	
	1	✓ 1	*
	Size	Size	
	0	~ 0	~
	RTU	RTU	v
	🗲 Back		→ Next

Figure 23 Serial ports EIA-485 setting

The source address is the address requested by Modbus Client on IP. The port is the line that will be sent. The request destination address is the real slave address of the device connected on line.



occitaline						
de Device-into		annual sa transmis				
✔ Configuration	e.	Modbus NAT	router			
🕍 Stats	×.	-				
ELog	٠	Add a new gateway entry				
ot Easy installation		Show 10 😴 entries				
		Slave addr. source		Slave addr. destination	Edit	Edit
		2	Slave address reserved for LonWorks statistics			
		10	Port3	1	🖉 Edit	🔒 Delete
		11	Port3	2	⊠ Edt	Celete
		20	Port4	U	Edit	Delete
		21	Port4	2	Cak	Delete
		Showing 1 to 5 of 5 entries			Previous	1 Next
		+ Back				→ Next

Figure 24 Translation address table for Modbus

3.9 Confirm and reboot

This page will record into the router all parameters entered by the user.

occitaline		NK EN	4.4
🕫 Device-Info			
🗲 Configuration 🔮	Save all configuration and reboot		
Lal Stats C			
ELog ¢	And 1/21/2 21/22		
C Easy instaliation			
	◆ Back	→ Ne	κŧ.

Figure 25 Validation du Wizard

The values will be used after the reboot or by turning off / on the router.



Figure 26 Router reboot

After validation, wait for 15 to 20 seconds for restart.

If you changed the IP address, the browser cannot find the router. You may need to change the address of your PC to be in the same subnet and enter the new router IP address to find its home page.



(B

4 Details settings



4.1 Resizable page to the screen device

occitaline				🗮 en 🔺
Device-info				
🗲 Configuration 💦 👻	Device-info			
Configuration system				
Configuration ETH0	Oxtopus (Ox-4L0-WI)		Oxtopus	
Configuration WIFI	Name	Oxtique_01		
Configuration LON *	Date	2915-06-03	1	Occitaline
Channel list	Time	20:13:17	20 C	0000
Configuration Modbus Y	Architecture ethernet	Switch		
Server Lon stat	van	65		24 4 4 4
Serials ports	SSID	OxTopus-Will	P=1=1	
NAT Router				
ML Stats 4	1		CENERAL SERVICE PIN	
Log 4				2001 0 0 0 0 0 0
🕫 Easy installation				

The Web site is automatically adapted to the device that consults.



When the device menu width no longer fits to the left, it is reduced and can be opened by the top right button.

evice-info	
Oxtopus (0x-4Lo-W)	
Name	Ostopus_01
Date	2015-06-03
Dime:	23:03:20
Architecture ethernet	Switch
Man	18
99D	OxTopus With

Figure 28 Home page on tablet in portrait



4.2 Home page

The home page displays the router's condition: configuration, impedance mismatches, sending services pin of each EIA-709.1 ports.

This page is not protected by password.

Occitaline			FF 🔺 Connect
en-cro			
nguration	Device-info		
5	4		
	O Deserve (Construction)	O Ostopus	
y installation	Nom	0:#444_01	
	Date	2915-46-85	Occitaline
	neure	11.41390	0000
	Architecture ethernet	Switch	
	ven		
		FT-1	
	ETHO		
	Général Port LON (Config	server) Port Lon (Client/Routeur)	Port Modbus Server
	IP 127.4.4.1 Channel name	Oxtopus_CS ND externe 380000	90100 Port 592
	Nb de membre	2 ND interne 3890000	00101 Protocoles TCP
		Mode Confi	gured Statistique LON Archive
		A SERVICE PIN	Statistique Modbus Archève
	Ports Perts (LONI) NO interne 3100000 Type routeur	Pett2 (LCM) HID esteme 9933 - Configured Configured Type routeur	3000000 ULL Configuent 3000000 USL Configuent Configuent
	C SERVICE FIN	C SERVICE PIN	

Figure 29 Complete home page

Several panels are displayed according to the reference product.



4.2.1 Device info Device-info

Nom	Oxtopus_01
Date	2015-06-05
Heure	11:41:00
Architecture ethernet	Switch
Anti	Π

Figure 30 General Information

Reference of the product is shown in banner title.

Date/Time This is the current time of the router. It is used for log errors and statistics.

Architecture It is the use of the two RJ45 connectors for Eth0 Eth1. The current mode is "Ethernet switch."

Wifi indicates if WiFi is active or No.

SSID When WiFi is active, this is the name of the visible WiFi access in devices used for connection.



Figure 31 Oxtopus router

Under the image, the button "GENERAL SERVICE PIN" sends the service pin of all ports simultaneously. Red or green circles at the bottom right indicates the ports fault impedance on each line.

4.2.2 Ethernet chapter

Chapter Eth0 indicates all services provided by the router via Ethernet



IP 127.0.0.1			
	Channel name Oxtopus_cs	NID externe 3800000100	Port 50
	Nb de membre 2	NID interne 3800000101	Protocoles TCF
		Mode Configured	Statistique LON Archive



4.2.2.1 General panel

IP

IP address of router.

4.2.2.2 Config Server panel

Channel name This is the name of channel IP for rule « Config Server ». This name is only used by the user. He has no rule in the protocol.

Nb member Number of members declared in channel list.

4.2.2.3 Router EIA-852 Client panel

NID externe	Neuron ld on router EIA-709 IP side.
NID interne	Neuron Id on IP router internal side.
Mode	Routing mode EIA-709. (Configured, Repeater, Learning,)

4.2.2.4 Modbus server IP panel

Port	Communication port for Modbus IP server.
Protocol	TCP: IP Protocol used for Modbus IP server.
Stat Lon	Indicates logs router EIA-709 statistics to view them graphically.
Stat Modbus	Indicates Modbus Router logs Modbus statistics to view them.



4.2.3 Ports chapter

In accordance with the reference product, the ports used are from 1 to 4. Each of them can be supplied for use in EIA-709 or Modbus.

	1650	100	1
\mathbf{r}	n	n	rc
	v		ເວ
	-	÷.,	

rtt (LON)		Port2 (LON)	
NID externe	38000000102 - Configured	NID externe	38000000104 - Configure
NID interne	3800000103 - Configured	NID interne	3800000105 - Configure
Type routeur	Configured	Type routeur	Configure
	38000000106_Configured	Port4 (MODBUS)	11520
✓ SERVICE PIN nts (LON) NID externe	3800000 106 - Configured	Port4 (MODBUS)	11520
MID interne	38000000106 - Configured 30000000107 - Configured	Port4 (MODBUS) Baudrate Parity	11520 Non
NID externe NID interne Type routeur	38000000106 - Configured 20000000107 - Configured Configured	Port4 (MODBUS) Baudrate Parity Stop	11520 Non
SERVICE PIN Its (LON) IID externe IID interne Type routeur SERVICE PIN	38000000106 - Configured 3000000107 - Configured Configured	Port4 (MODBUS) Baudrate Parity Stop Size	11520 Nor

Figure 33 General on ports

4.2.3.1 EIA-709 port

NID external	External Neuron ld of router.
NID internal	Internal Neuron ld of router.
Type router	Routing mode choosen by your manager tool.

4.2.3.2 Modbus port

Baudrate	Speed of serial port.
Parity	Parity of serial port.
Stop	Number of stop bit for serial port.
Size	Size of each word for serial port (Modbus 8 bits).
Mode	Mode usage of serial port in Modbus « RTU »



4.3 Menus

Menus are displayed on the left with a sufficient width terminal. If the width does not allow it, they fold out with the top right button. We find:

Device info	Home page
Configuration	Organized in system, Ethernet, Wifi, EIA-709.1 and Modbus
Stats	Graphical statistics
Log	Logs of communication and error
Easy Installation	The wizard



Figure 34 Menus example

4.4 Login page

When access to a configuration menu, if the user is not logged in, a login page is proposed. It is also possible to call this page from the top right menu: "Connection." The account is "**admin**" password is "**oxpass**".

occitaline			FR FR	A Connection
2 Device-info				
F Configuration	Connection	1		
🕍 Stats 🔇 <				
■ Log <		Nom		
o ^o Easy installation		Not do posso		
		muc de passe		
		▲ Connection		





4.5 User modification account

occitaline			Men 4.
B Device-info			
F Configuration	User Profile		
M Stats	< Name	New password	
Log	< admin		
🞗 Easy installation	Level	Language	
	Admin	EN	-
	Guest user		
	Name	Language	

Figure 36 User modification page

With this page, the user can change his password and his language used after connection.

(F	The language for « guest user» modifies the default language for not logged users.

4.6 Reboot page

This page will log into the router all the parameters entered by the user.

occitaline		NK EN	
 B Device-Info ✓ Configuration 	 Save all configuration and reboot 		
Lad Stats ■ Log C Easy Instatistion	Are your sure? and the second secon	⇒ Ne	ut .

Figure 37 Wizard confirmation

The values will take effect after the reboot page or by turning off / on the router. After validating this page, you need to wait 15 to 20 seconds to reboot.





If you changed the IP address, the browser cannot find the router. You may need to change the address of your computer in same subnet and enter the new router IP address to find its home page.



4.7 System configuration

Occitaline 🚯 Device-Info Configuration system Configuration Name Configuration ETH0 Oxtopus_01 Configuration LON 🖺 Save 🛛 😢 Cance Channel list Configuration Modbus Date/Time La Stats 🖺 Enable NTP 🔳 Log Date c Easy installation 08/06/2015 Time 17:18 🖺 Save 🛛 😣 Cancel

This page allows you to change the router's name, date and time.

Figure 39 Configuration system

4.8 Configuration

This page allows to select the router's addressing mode. Either the IP address is dynamically assigned on the network by a DHCP server or it is manually assigned and called "static IP" address.



Figure 40 ETH0 configuration with DHCP

All modification of IP address takes effect after reboot.



(P

occitaline			¥€ EN	۵٠
n Device-Info				
F Configuration	 Configuration ETH0 			
Configuration system				
	E Emaile Cerc.P IP address	DNS 1		
Configuration LCN	192.168.1.252			
	Netmask	DNS 2		
Configuration Modous	200 200 204 0			
😹 Stats	Gateway			
■ Log	•			
o; Easy installation			E Love O Ca	the st

Figure 41 Configuration ETH0 with fixed IP

4.9 Port EIA-709

This page serves only to display the configuration of the EIA-709 router ports.

occitaline			💥 en 🔺
Device-Info			
F Configuration	 Ports EIA-709 		
Configuration system Configuration ETH0 Configuration LCN	Port1 Status	Port2 status	
Ports EIA-709	Not configured	Naticonfigured	
Port EIA-852 Client	Router mode Configured	Router mode Configured	-
Channel list Configuration Modbus	Port3		
ial Stats	Not configured		
■ Log	Router mode		
🕰 Easy installation	Configured	-	

Figure 42 Configuration des ports EIA-709

4.10Port EIA-852 Client

This page allows you to change the communication port for data exchange in EIA-852 Client (1628 by default) and the IP address and port (1629 by default) for the config server.



🏚 Device-Info			
Configuration	÷.	Port EIA-852 Clie	nt
Configuration system			
Configuration ETH0		ETH0	
Configuration LON			
Ports EIA-709		EIA-852 Client IP and Port	
		192 168 1 252	1628
Port Ex-852 Coent		My config server address	
Config server		192.168.3.31	1629
Channel list		Agregation time	
Configuration Modbus	ं ६ः	Off	
<u>nl</u> Stats	٠.	Reorder time	
E Log	¢	Off	
•••• •••••••••••••••••••••••••••••••••			formation in the second

Figure 43 EIA-852 client configuration

Its config server is not necessarily the router itself. That may be another router or a computer. It will specify the IP address and port used for this function.



4.11The config server

The router is delivered with the Config Server disabled. To enable and configure it, just click the button. "**Enable the config server**."







The IP address of the config server is IP address of the router itself. The port can be changed. The default value is 1629.



Figure 45 Config server activated

4.12Channel list

This page allows adding, removing, enabling, exporting, importing and test members of IP channel. All members of the list are likely to share data. They will be installed in one or more LNS databases.

occitaline								X en	4-
n Device-info									
Contiguration		Channe	l list						
Configuration system		Channel name							
Configuration ETH0		Oxtopus_CS							
Contiguration LON	- C	E Sare 0	Cancer						
Creation 15:									
Configuration Modbus	<u></u>	Cont.	att all @1 Export	- import					
Lat. State	e	Show w and	The						
■ Log	•	Name	IP address	Port	Status	Enable			-
og Easy installation		AND SER	S. March 1985	Sec.	CENTRAL CONTROL	10			
		Oxtopus_01	192 168 3 31	1628		E	la £ot.	C Dente	
		Cxtopus02	192.168.3.26	1628	Registered		🖬 Edit	😫 Delete	
		Showing 1 to 4 of 4	entries					< 1	>

Figure 46 Liste des membres du Channel

The role of the Config Server is like a "virtual electrician" that will connect all devices on the same wired network.

4.13Configuration of Modbus server Stat EIA-709

This page provides the Modbus slave address to query the router on the statistics of external Neuron Chip of routers, status and Modbus Serial ports as impedance.



Occitaline				M Ri
Device into				
🗲 Contiguration 👻	Modbus se	rver for Lon stats		
Configuration system				
Configuration ETH0	Set Modbus slave addre	ss for reading Lon statistic over IP		
Contguestion LON				
Channel list	El Bave O. Carcell			
Configuration Modeus	Show 🔗 entries			
Derver Lon stat	Reuter	Neuron	Start Address	50x
Serials ports	PortIP1	External	1000	100
NAT Drater	PortIP1	internal	1500	100
	Port1	External	2000	100
Stats *	Port1	internal	2500	100
Log (Port9	Puternal	9000	100
ELog < Easy installation	Port2	Puternal	3000	100
E Log <	Port2 Port3	Puternal Internal External	3500 4000	100 100

Figure 47 Configuration of slave address for statistics.

Each Neuron Chip has a base address and each counter is set to a 16-bit word.

The reading is done by a read command on an "Input Register" Modbus.

4.14Configuration Modbus serial Ports

This page allows to change all the serial parameters for Modbus serial ports

Device-info			
Configuration		Serials ports	
Configuration system			
Configuration ETH0		Port4	
Configuration LON	¢	Baudrate	
Channel list		115200	
Configuration Modbus	140	Parity	
Server Lon stat		None	
Senals ports		Stop	
NAT Router		1	
Stats		Size	
		8	
Log	<u></u>	Router mode	
Easy installation		RTU	

Figure 48 ModBus serial port configuration

4.15Configuration Modbus NAT router

This page allows to add, delete, edit, export and import translations Modbus Source slave address to a destination slave address on a serial port to join device.



(P

occitaline						NKEN A
Device-Info						
€ Configuration	÷.	NAT Route	er			
Configuration system			_			
Configuration ETH0		C Add C Excort 1 m	sport;			
Configuration LON	98	Show entries				
Channel list		Slave addr. source	Port	Slave addr. destination		
Configuration Modbus	÷	10	з	4	S EOL	g Delete
Server Lon stat			з	2	S Eat	B Delete
Senals ports		20			R For	C Taline
		20			C.C.M.	C. Allenad
Stats	16	.21	4	2	Edit.	D Dolese
t Log	н,	Showing 1 to 6 of 6 entries				< 1 >
Ean installation						

Figure 49 Router NAT Modbus configuration

To each source slave address matches a serial port and a destination slave address on that port. This table allows to use the same destination slave addresses on all serial ports.



5 Configuration via USB



5.1 General Information

For the USB driver installation and terminal, refer to the annexes 7.2 and 7.3.

When your device is running and configured, press the "Enter" key to display the menu. There are two choices:

- Restore the default IP address 192.168.1.254
- To restart



Figure 50 Screen on terminal connected to the router

5.2 Default IP address

To force the default IP address, select "1" on your keyboard, and confirm by pressing "enter"





Figure 51 Confirmation load manufacturer values by "Y"

The interface asks you to confirm by pressing "Y" or "N" to return to main menu



The changing IP address will be effective after restart. Please note that restart is not done automatically after the IP address change

5.3 Restarting

To reboot, select the "2" key on your keyboard, and confirm by pressing "enter".





Figure 52 Confirm Reboot by "Y"

The interface asks you to confirm by pressing "Y" or "N" to return to main menu



6 Smart Channel usage



6.1 Preamble

(P

To simply use the Oxtopus routers in NL220 or NLFacilities you must have placed specific files in the directory NLSmartChannel. See Appendix 7.1

These routers are equipped with an Ethernet port with an Ethernet switch on two RJ45 connectors and 1, 2, 3 or 4 ports TP / FT10. Some models can be equipped with 1, 2 or 3 Modbus ports. These are considered invisible in NL220.

Model to be installed in Smart Channel

	M	odèle à installer c	lans Smart Chanr	nel
Référence	Ox-1Lo	Ox-2Lo	Ox-3Lo	Ox-4Lo
Ox-1Lo	\checkmark			
Ox-1Lo-Wi	\checkmark			
Ox-1Lo-1Mo	\checkmark			
Ox-1Lo-1Mo-Wi	\checkmark			
Ox-2Lo		\checkmark		
Ox-2Lo-Wi		\checkmark		
Ox-2Lo-1Mo		\checkmark		
Ox-2Lo-1Mo-Wi		\checkmark		
Ox-3Lo			\checkmark	
Ox-3Lo-Wi			\checkmark	
Ox-3Lo-1Mo			\checkmark	
Ox-3Lo-1Mo-Wi			\checkmark	
Ox-4Lo				\checkmark
Ox-4Lo-Wi				\checkmark

6.2 Main channel modification

If the channel type on which you want to install the router is not IP10L, you can modify it by editing it.



Figure 53 Editing Channel type



The name and type can be changed to fit to your project.

<u>l</u> ame	Backbone		Update
fedia type	IP-10L	~	Cancel
Application Devices	Host_Oxtopus01		Help

Figure 54 Name and type of channel

Once entered, you need to update by clicking the "Update" button.



Figure 55 Channel modified following your needs

NLSmartChannel assists you in adding your project infrastructure products. Media types are checked. By adding an Oxtopus router, the IP port will always be connected to a channel IP-10L



Figure 56 Adding an infrastructure device



Channel	Backbone (IP-10L)				
Name	Ox-2Lo-B				
Lype	Occitaline : Oxtopu	s 1 Ethernet port Sw	itch, 2 ports TP/FT	10	
	(Sime)	Niccom.	allocation and	Courses .	1
	LS-11C	LS-13300C	LS-13333C	LS-13338C	
		(inclusion)			
	LS-13C	LS-33300C	LS-33C	LS-38C	
	MPR50	Ox-1Lo	Ox-2Lo	0×3Lo	
	Ox-4Lo			test.	~
Number	1 🗄	Rgnk 1st devi	ice 1		
Options	🖯 Near side por	t.			1
	Port		IP Port		
	E Mode				
	Mode		Router mode		
	Class.				
	IP Port		Configured		
	Port #1		Configured		
	Port #2		Configured		-
	E Documentado		http://www.ee	man anile for	
	LUGD ORG		A REAL COMMONIAL OCC	and an and the second second	

Figure 57 Oxtopus routers

You only have to choose the router version you want to install.

After validation, you can resume operations to add another router of the same type or a different one.



Figure 58 Plusieurs routeurs de type différents peuvent être ajoutés.

With "CTRL-"" shortcut or the installation menu, you can access the installation window below.



	0.01.0		-
ame	UX-3LO-B		_
<u>T</u> ype	0	×3Lo	
	Port	Neuron ID	_
	IP Port	00000000000	
	Port #1	00000000000	
	Port #2	00000000000	
	Port #3	00000000000	
	Enter the Neu	ronID of the router port to commission.	
	Enter the Neuron	tonID of the router port to commission. ID without commissioning e pin on programID	

Figure 59 Entering the NEURON Id

If the router is turned on and connected to the Ethernet network, you can get its IP address by navigation with the buttons under LCD screen of router.



Figure 60 IP address of Oxtopus router.

This address is used in your Web browser to view the embedded Web server in the router Oxtopus.

occitaline				FR 🔺 Connection
🗰 Device into				
✗ Configuration	Device-info			
Laal Stats (1 Press and the second second		0= 000000	
E Log (Oxtepus (Di-4Lo-W)		Oxtopus	
og Easy installation	Nom.	Oxtopus_01dz	(1997)	
	Date	2015-06-03	117 1	Occitaline
	Heure	12:56:41	20 m 1	0 0 0 0
	Architecture ethernet	Switch		
	wn	10		** * * *
	SSID	OscTopus-Milli	FTT-1	

			CONTRACTOR PIN	
			<u> </u>	
	ETH0			
	Général	Port LON (Config server)	Port Lon [Client/Routeur]	Port Modbus Server
	IP 127.8.8.1	Channel name Oxtopus_CS	NID externe 38000000100	Port 502
		Nb de membre 0	NID interne 33000000101	Protocoles TCP

Figure 61 Home page of Oxtopus router

On the home page you have a "General Service Pin" button.



Each port sends its Neuron Id outside of the router. You will therefore be able to install the IP router in first. Then, for the other ports, you can activate the buttons on the home page or choose the port on the LCD screen and press the "[SP]."

When you have entered all the Neuron Id and closed the window, you will find that the router is green in the tree. It is now operational.



Figure 62 Router installed in LNS database



7 Appendix



7.1 Resources installation for NLSmartChannel

The compressed file "NL220_Resources.rar" allows software tools NL220 and NLFacilities to easily install the range of Oxtopus routers.



Figure 63 Contain compressed file for NLSmartChannel

Each directory in the compressed file contains files for defining Oxtopus routers.



Figure 64 Directory where the files must be installed

When the files are installed you will find the following directories:









Figure 67 Directory Document

7.2 USB driver installation

7.2.1 On Windows 8

Under Windows 8 when you plug the USB cable, the device is recognized automatically.

7.2.2 On Windows XP / 7

Under Windows XP, it is necessary to install the USB driver manually. To do this, connect the USB cable to the router and on the computer. When the "Wizard Add Hardware" appears, select "No, not this time" then click "Next".



On new windows, check "Install from a list or a specific location" then click on "Next".





To finish, check « search the best pilotes in location » and specify the location of the file « Linux_acm_inf ». This file is available with the documentation of router. Click on « Next ».

hoisissez	vos options de recherche et d'installation
• Rech	ercher le meilleur pilote dans ces emplacements.
Utilise inclut instal	iz les cases à cocher ci-dessous pour limiter ou étendre la recherche par défaut qu les chemins d'accès locaux et les médias amovibles. Le meilleur plote trouvé sera é.
2	Rechercher dans les médias amovibles (disquette, CD-RDM)
	Inclure cet emplacement dans la recherche :
	C:\Documents and Settings\DanieZ0TTI\Bureau 💌 Parcourir
ONep	as rechercher. Je vais choisir le pilote à installer.
Chois Wind péripi	issez cette option pour sélectionner la pilote de pérphérique à partir de la liste, ows ne garantit pas que le pilote sélectionné sera le plus performant pour votre érique.

7.3 Terminal installation (Tera Term)

To view information from the USB communication, a terminal must be used. If you do not have a terminal, you can use TeraTerm available on www.occitaline.com web site. Start Tera Term. A window appears, click on "File" then "New Connection".



○ T CP/IP	Hôte: myhost.example.com				Ŷ
	Service	 ✓ Historique ● Telnet 		rt#: 23	
		© SSH	SSH version:	SSH2	Ŷ
		 Autre 	Protocole:	UNSPEC	Ŷ
Série	Port:	COM7: ELMO	GMAS (COM7)		¥

Figure 68 Start Tera Term configuration

Select « Serial » and in port the nom of device connected.



The terminal configuration is made by clicking on "Settings" then "Serial Port", below the values to be set. Confirm by clicking "OK"



Figure 69 Configuration of serial port USB



END OF DOCUMENT



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