IPL-C

Cellular Router Firewall

_____

USER GUIDE

The IPL-C cellular router is designed and manufactured by

ETIC TELECOM

13 Chemin du vieux chêne
38240 MEYLAN
FRANCE

TEL : + (33) (0)4-76-04-20-05
FAX : + (33) (0)4-76-04-20-01
E-mail : hotline@etictelecom.com
web : www.etictelecom.com

CONTENT

… INSTALLATION

1   Certificate of conformity

The manufacturer, ETIC Telecom – 13 chemin du vieux chêne – 38240 Meylan – France, Hereby declares that the listed product

Type of device :   Cellular router IPL-C

conforms to the Council Directive 1999/5/EC related to radio and telecommunication terminal equipments.

The harmonized standards to which the equipment complies are :

Standard	Title
EN301489-1	Electromagnetic compatibility and Radio spectrum Matters : Part 1 : General requirements
EN301489-7	Electromagnetic compatibility and Radio spectrum Matters : Part 7 : Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio
EN61000-6-2 Ed. 2001	Immunity : EN60100-4-2 Electrostatic Discharge EN60100-4-3 Radiated Immunity EN60100-4-4 EFT/Burst Immunity EN60100-4-5 Surge Immunity EN60100-4-6 Conducted Immunity
EN61000-6-4 Ed 2001	Emission : EN55022 radiated and conducted emission
EN60950	Security
EN50385	Human exposure to radio frequency fields exposure

Philippe DUCHESNE
Quality manager

5th January 2015

2 Products identification

Cellular router without WiFi interface					
IPL-C-	**400-XY**	**220-XY**	**230-XY**	**260-XY**	**261-XY**
Cellular router 4G-3G-GPRS-EDGE 3G, GPRS-EDGE : XY = HG 4G, 3G, GPRS-EDGE : XY =LE	•	•	•	•	•
Firewall SPI	•	•	•	•	•
VPN IPSEC & OpenVPN (16 tunnels au total)	•	•	•	•	•
25 remote users PPTP, L2TP IPSec, OpenVPN, HTTPS	•	•	•	•	•
Serial gateway (Raw TCP & UDP, Telnet, Modbus, Unitelway)	-	•	•		•
Ethernet 10 / 100 BT	4	2	2	2	2
RS232	-	1	2	-	-
RS485	-	1	-	-	-
RS422 isolated	-	-	-	1	-
RS485 isolated	-	-	-	-	1
USB	1	1	1	1	1
NAT	•	•	•	•	•
Port forwarding	•	•	•	•	•
SNMP	•	•	•	•	•
DNS	•	•	•	•	•
DHCP server on the LAN inteface	•	•	•	•	•
Digital input for alarm email	1	1	1	1	1
HTTPS / HTML / SSH configuration	•	•	•	•	•

Cellular router with WiFi interface					
IPL-C-	**400-XY**	**220-XY**	**230-XY**	**260-XY**	**261-XY**
Cellular router 4G-3G-GPRS-EDGE 3G, GPRS-EDGE : XY = HG 4G, 3G, GPRS-EDGE : XY =LE	•	•	•	•	•
WiFi client or access point 2.4 or 5 GHz	•	•	•	•	•
Firewall SPI	•	•	•	•	•
VPN IPSEC & OpenVPN (16 tunnels au total)	•	•	•	•	•
25 remote users PPTP, L2TP IPSec, OpenVPN, HTTPS	•	•	•	•	•
Serial gateway (Raw TCP & UDP, Telnet, Modbus, Unitelway)	-	•	•		•
Ethernet 10 / 100 BT	4	2	2	2	2
RS232	-	1	2	-	-
RS485	-	1	-	-	-
RS422 isolated	-	-	-	1	-
RS485 isolated	-	-	-	-	1
USB	1	1	1	1	1
NAT	•	•	•	•	•
Port forwarding	•	•	•	•	•
SNMP	•	•	•	•	•
DNS	•	•	•	•	•
DHCP server on the LAN inteface	•	•	•	•	•
Digital input for alarm email	1	1	1	1	1
HTTPS / HTML / SSH configuration	•	•	•	•	•

Option	Reference
M2Me_Connect	M2Me pack initial

OVERVIEW

3 Data-sheet

General characteristics	
Dimensions	137 x 48 x 116 mm (h, l, p)
Electrical safety	EN 60950- UL 1950
EMC	ESD : EN61000-4-2 : Discharge 6 KV RF field : EN61000-4-3 : 10V/m < 2 GHz Fast transient : EN61000-4-4 Surge voltage : EN61000-4-5 : 4KV line / earth
RoHS	2002/95/CE (RoHS)
Supply voltage	IPL-C-400, IPL-CW-400 10 to 60 VDC IPL-C-230, IPL-CW-230 10 to 60 VDC IPL-C-260, IPL-CW-260 10 to 60 VDC IPL-C-261, IPL-CW-261 10 to 60 VDC IPL-C-220, IPL-CW-220 10 to 30 VDC
Consumption	<7W
Operating T°	-20°C / + 60°C Humidity 5 − 95 %

Cellular network	
Type	4G / 3G+ / GPRS-EDGE
RF connector	SMA female

Models	LE	LS	LA	HG
LTE 4G	Europe	USA	Asia	-
UMTS 3G+	Yes (*1)	Yes (*1)	Yes (*1)	Yes (*2)
GPRS-EDGE	Yes (*3)	Yes (*3)	Yes (*3)	Yes (*3)

(*1) 850 / 900 / 1900 / 2100 MHz
(*2) 850 / 900 / 1700 / 1900 / 2100 MHz
(*3) 850 / 900 / 1800 / 1900 MHz

Ethernet / routage IP	
Ethernet	10-100 BT Détection de débit 10 ou 100 Mb/s et de câble croisé
Routeur	Connexions distantes - Routes statiques - RIP V2
Translation d'@IP	Translation d'@IP source (NAT) Translation d'@IP destination (DNAT) Translation de port (Port forwarding) Substitution d'@ IP source et destination (version B seulement)
DNS	Gestion du système de nom de domaine
DHCP	Internet : Client ou @IP fixe LAN : DHCP client ou serveur ou @ IP fixe

WiFI	
Type	2.4 et 5 GHz
RF connector	R-SMA female
WiFi transmission	802.11 a/b/g/n

VPN & firewall	

VPN	Client or server IPSEC or OpenVPN Encryption AES256 3DES Certificate X509 or preshared key 16 VPNs maximum of the same type (OpenVPN or IPSec)
Firewall	Stateful packet inspection (50 rules) Deny of service filter Source & destination IP address & port number filter Remote users filter
Logs	Date and time stamped logs

Remote access server (RAS)	
User list	25 users
Connection	PPTP / L2TP-IPSec / Open VPN / HTTPS Login & password Certificate X509
M2Me	VPN Compliant with the M2Me_Secure VPN client Compliant with the M2Me_Connect mediation service
Alarms	1 input : emails or SM (cellular models)

Serial interfaces	
Data rate	1200 to 115200 kb/s parity N / E / O
Gateway	Raw client & server - Modbus master & slave Multicast - Telnet - Unitelway
USB	1 USB host port PPP client over the usb interface

IP router	
Ethernet	10/100 BT − 2 or 4 switched ports
IP router	Static routes − RIP V2
IP address translation	Source IP @ translation (NAT) Destination IP @ translation (DNAT) Port forwarding
DHCP	LAN interface : Fixed IP @ or DHCP client or DHCP server

4   Product overview

The IPL-C cellular router is a security product.

It is designed to interconnect safely automated devices over the Internet.

The IPL-C is at the same time

- **a double SIM card 4G, 3G, GPRS-EDGE IP router**

- **an IP router** to route IP packets and set VPNs with other routers through the Internet.

- **a remote access server (RAS)** to provide a secure access to the LAN for remote users;

- **a stateful inspection firewall** to filter the IP traffic.

- a WiFi (client or access point) and a serial gateway

4.1   Applications

That features in the same product make the IPL-C a top level solution for remote SCADA systems and remote maintenance through the Internet.
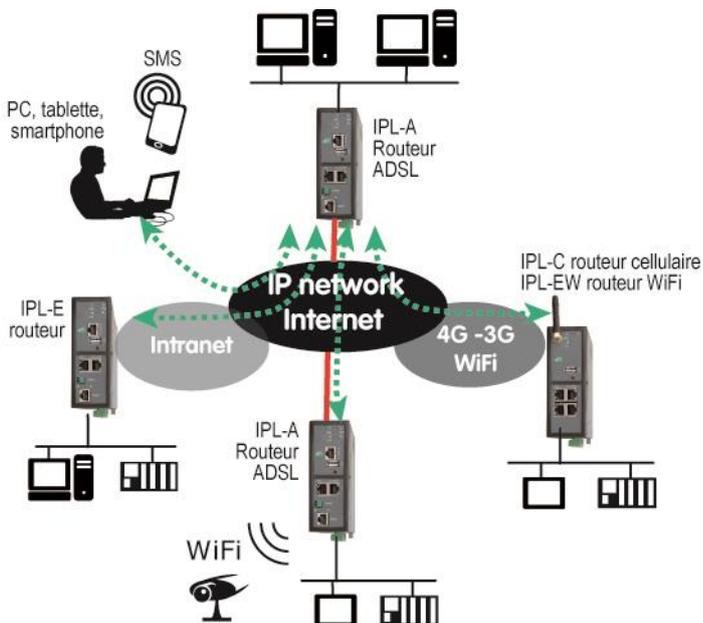
4.2   Product functionnalities

IP router
The IPL-C router provides powerful, flexible and comprehensive solutions to route IP packets from one network to other networks.
The solutions include static routes, RIP protocol and address translation (NAT, DNAT)and port forwarding.

IPSec & OpenVPN tunnels
The IPL-C features IPSec and OpenVPN tunnels to provide a high level of security and also compatibility with existing devices.

Remote access server for PCs, tablets and smartphones
The IPL-C router can also behave like a remote access server.
If he is registered in the user list, a remote user can access to particular devices of a machine network depending on his identity.

The new HTTPS portal make possible to access easily and safely to HMIs or PLCS web servers using a tablet, a PC or a smartphone.

Firewall
The firewall protects against the sophisticated attacks coming from the Internet.
It is also able to filter IP frames between the WAN interface or any VPN interface on one hand, and the LAN interface on the other hand.

VRRP redundancy
VRRP makes possible to use two routers shaping a redundant solution.

DNS server
DNS makes it possible to assign Internet names to devices or organizations independently of their public IP address.
The IPL-C router behaves like a DNS server for the devices connected to the LAN.

DHCP server
On the LAN interface, the IPl-C router can behave like a DHCP server.

WiFI interface
The IPL-C router provides optionally a WiFi interface able to behave like a client or an access point.

Serial gateway
Optionally, the IPL-C router provides 1 or 2 serial RS232, RS485, RS422 interfaces.
Le serial gateway features the following modes :
    Raw TCP client or server
    Raw UDP
    Telnet
    Modbus master or slave
    Unitelway

Emails – SMS
The IPL-C is able to send an email or a SMS when the digital input turns ON or OFF

OVERVIEW

4.3   Router organisation

The IPL-C router provides two IP interfaces : The ADSL interface (WAN interface) to reach the Internet or a private service and the LAN interface to connect the machine.

WAN interface :
The IPL-C router provides three WAN interfaces :
the ADSL interface is the main WAN interface; but the Ethernet interface of the RJ45 Nr1, or the WiFi interface when it is used as a client, can be used as a WAN interface.

Only one interface can be used at the same time (cellular, Ethernet port 1, WiFi).

LAN interface :
The LAN interface consists of Ethernet ports, optionally a WiFi interface when it is used as an access point and serial interfaces.
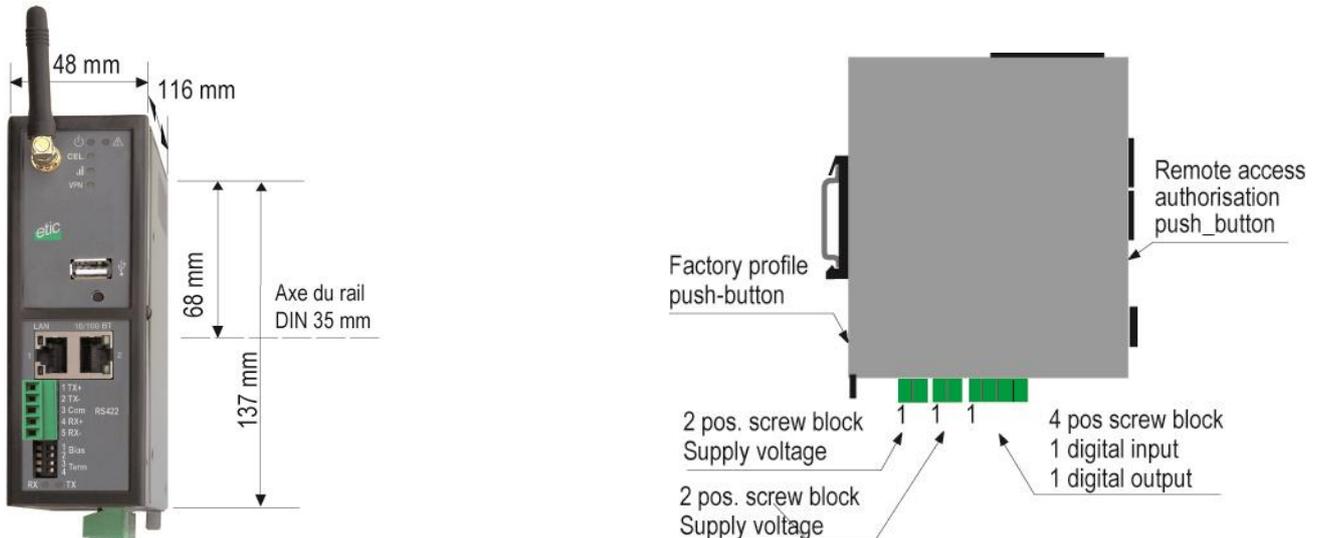
Firewall
The firewall filters the IP frames between the ADSL WAN interface or any VPN interface on one hand, and the LAN interface on the other hand.
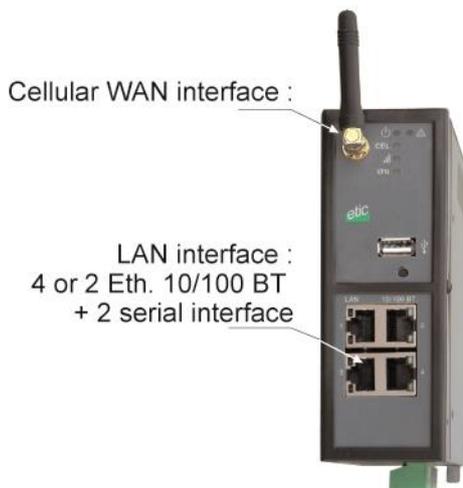
1 Product description

1.1 Dimensions

1.2 Push-buttons

Rear panel push-button		
Pressing the rear panel PB	**led** ⏻	**Function**
During operation	Flashing red	The default IP address 192.168.0.128 is selected The current configuration remains active
During power-up	Flashing red	The factory configuration and the default IP address 192.168.0.128 are selected. The current configuration is deleted.

Front panel push-button		
Pressing the front panel PB	**led** ⏻	**Function**
During 5 seconds	3 flashes	The hotline of ETICTELECOM is authorised to connect remotely to the router administration server within a 1 hour delay.
During 10 seconds	5 flashes	A remote user is authorised to connect remotely to the router administration server within a 10 mn delay without entering the login r password

INSTALLATION

1.3 Connectors

Supply voltage connector		
Position	**Signal**	**Function**
1	Power 1 +	Supply voltage
2	Power 1 -	0V

Digital inputs & outputs		
Position	**Signal**	**Function**
1	0V	Entrée TOR 0V
2	In	Entrée TOR+
3	F +	Dgital output +
4	F -	Digital output -

RJ45 Ethernet)		
Position	**Name**	**Description**
1	Tx +	Emission polarity +
2	Tx -	Emission polarity -
3	Rx +	Reception polarity +
4	N.C	-
5	N.C	-
6	Rx -	Reception polarity -
7	N.C.	-
8	N.C.	-

WiFi Antenna connector		
Network	**Type**	**Observation**
WiFi	RP-SMA female	

Celular Antenna connector		
Network	**Type**	**Observation**
Cellular	SMA female	

2 positions RS485 screw block		
Position	**Signal**	**Function**
1	A	RS485 polarity A
2	B	RS485 polarity B

RJ45 RS232 DCE interface				RJ45
Pos.	**Signal**		**Function**	
1	DTR - 108	OUT	Data terminal ready	
2	TD - 103	OUT	Data Emission	
3	RD - 104	IN	Data Reception	
4	DSR - 107	IN	Data set ready	
5	SG - 102	-	Ground	
6	Inutilisé	OUT	-	
7	CTS - 106	IN	Clear to send	
8	RTS - 105	OUT	Request to send	
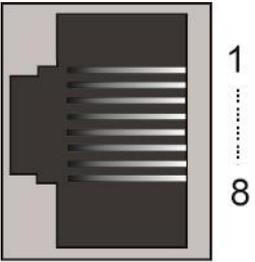
Out = Signal provided by the router.

RJ45 RS232 DTE interface				RJ45
Pos.	**Signal**		**Fonction**	
1	CD - 109	OUT	Carrier detect	
2	RD - 104	OUT	Data Reception	
3	TD - 103	IN	Data Emission	
4	DTR - 108	IN	Data terminal ready	
5	SG - 102	-	Ground	
6	DSR - 107	OUT	Data set ready	
7	RTS - 105	IN	Request to send	
8	CTS - 106	OUT	Clear to send	
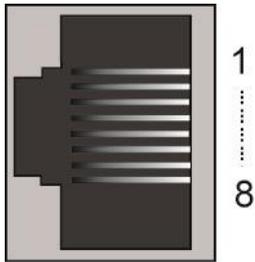
Out = Signal provided by the router.

2 positions RS485 screw block		
Position	**Signal**	**Fonction**
1	A	RS485 polarity A
2	B	RS485 polarity B

INSTALLATION

5 positions RS422 screw block IPL-C-260 IPL-CW-260			
Position	**Signal**		**Function**
1	TX+	Sortie	RS422 transmission polarity +
2	TX-	Sortie	RS422 transmission polarity -
3	Com		Common voltage
4	RX+	Entrée	RS422 Reception polarity +
5	RX-		RS422 Reception polarity -

RS422 DIP switches IPL-C-260 IPL-CW-260		
SW 1	**SW 2**	
ON	ON	The two 470 Ohm polarisation R. are enabled on the reception RS422 signal
OFF	OFF	The two 470 Ohm polarisation R. are disabled on the reception RS422 signal
SW3	**SW4**	
ON	ON	The 120 Ohm termination R. is enabled on the reception RS422 signal
OFF	OFF	The 120 Ohm termination R. is disabled on the reception RS422 signal

2 positions RS485 screw block IPL-C-261 IPL-CW-261		
Position	**Signal**	**Signal**
1	Com	Common
2	B (+)	RS485 polarity B
3	A (-)	RS485 polarity A

Micro-switches RS485 IPL-C-261 IPL-CW-261		
SW 1	**SW 2**	
ON	ON	The two 470 Ohm polarisation R. are enabled
OFF	OFF	The two 470 Ohm polarisation R. are disabled
SW3	**SW4**	
ON	ON	The 120 Ohm termination R. is enabled
OFF	OFF	The 120 Ohm termination R. is enabled

1.4   IPL-C-400 or IPL-CW-400 router (WiFi option)

IPL-C-400

Cellular ant.
USB
Ethernet
4 pos. screw block
1 digital input
1 digital output
Double 2 pos. Sup. V. screw block

IPL-CW-400

WiFi ant.
USB
Cellular ant.
Ethernet
4 pos. screw block
1 digital input
1 digital output
Double 2 pos. Sup. V. screw block
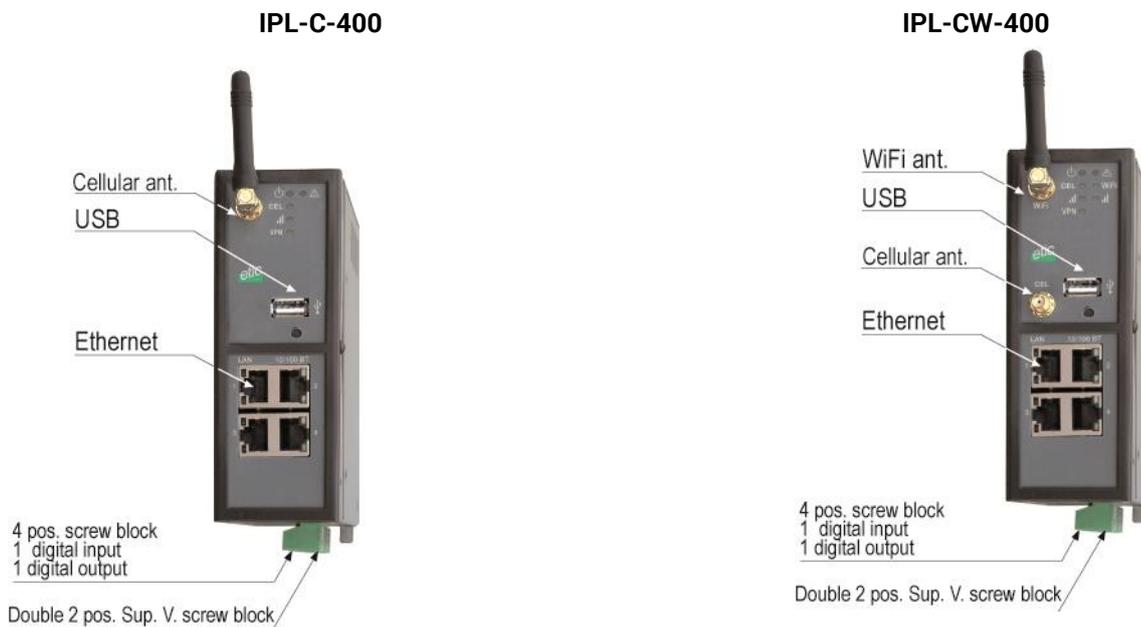
LED INDICATORS IPL-C-400-XY & IPL-CW-400-XY		
	Designation	**Function**
Operation	⏻	Green The unit is ready
		Red Power-up The SIM card is not present Hardware failure or firmware update process
Cellular Connection	Cel	Off SIM card not present – cellular interface disabled Flashing slowly Connection in progress (1st step) Flashing fast Connection in progress (2nd step) Green Connected to the cellular ntwk
Cellular signal level	▮▮▮ Cel	Off Cellular interface disabled 1 flash Faint not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal See detail further: cellular network connection §
	VPN	Off No VPN has been enabled Flashnig VPN processing Green One VPN at least is established
WiFi connection	**WiFi**	Off WiFi Interface not enabled Green WiFi Interface enabled
WiFi Signal quality	▮▮▮ WiFi	Off WiFi not enabled or enabled as an access point 1 flash Weak not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal
Ethernet LAN 1 to 4		Off Ethernet interface not connected Green Ethernet interface connected
Upper led	**Ethernet 1**	Green The RJ45 has been setup as the WAN interface

INSTALLATION

1.5   IPL-C-220 ou IPL-CW-220 router (WiFi option)
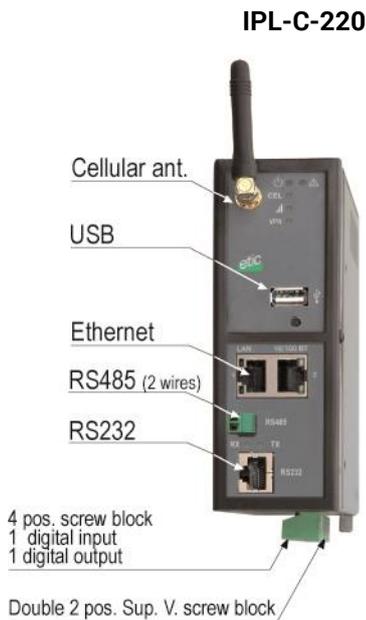
IPL-C-220   IPL-CW-220

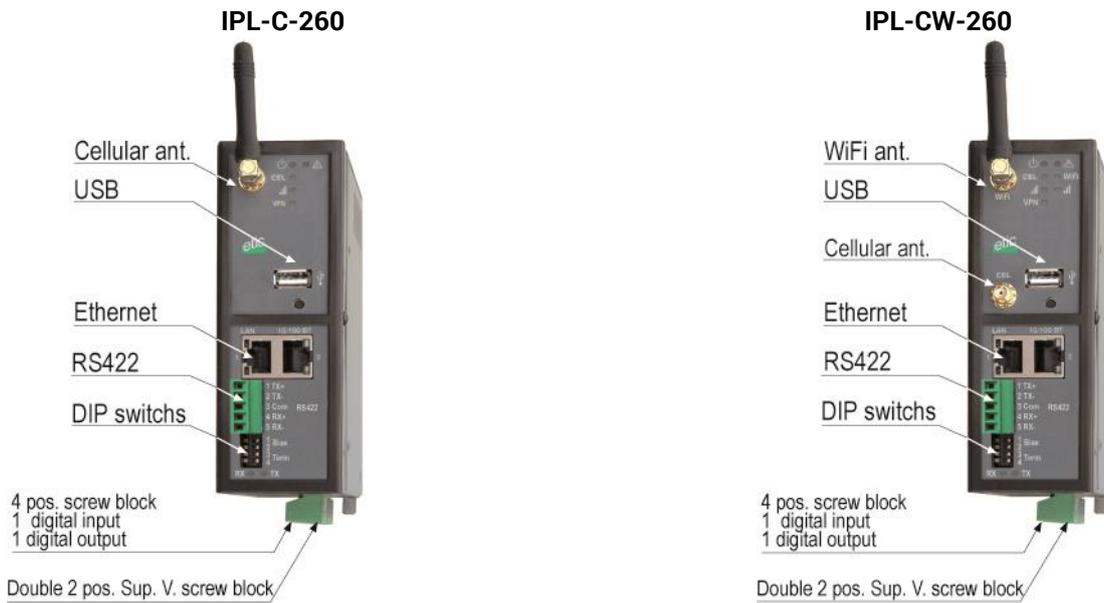| LED INDICATORS IPL-C-220-XY & IPL-CW-220-XY		
	Designation	**Function**
Operation	⏻	Green The unit is ready
		Red Power-up The SIM card is not present Hardware failure or firmware update process
Cellular Connection	Cel	Off SIM card not present – cellular interface disabled Flashing slowly Connection in progress (1st step) Flashing fast Connection in progress (2nd step) Green Connected to the cellular ntwk
Cellular signal level	Cel	Off Cellular interface disabled 1 flash Faint not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal See detail further: cellular network connection §
	VPN	Off No VPN has been enabled Flashnig VPN processing Green One VPN at least is established
WiFi connection	**WiFi**	Off WiFi Interface not enabled Green WiFi Interface enabled
WiFi Signal quality	WiFi	Off WiFi not enabled or enabled as an access point 1 flash Weak not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal
Ethernet LAN 1 & 2		Off Ethernet interface not connected Green Ethernet interface connected
Upper led	**Ethernet 1**	Green The RJ45 has been setup as the WAN interface
RS232 RS485	**Rx**	Characters received from the serial interface (to the router RAS)
	Tx	Characters transmitted to the serial interface (from the router)

1.6 IPL-C-230 or IPL-CW-230 router (WiFi option)

IPL-C-230	IPL-CW-230

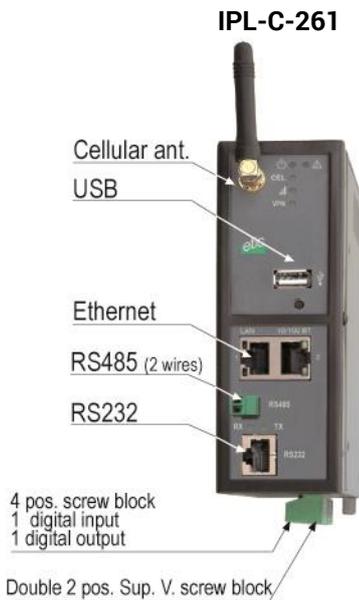|	LED INDICATORS IPL-C-230-XY & IPL-CW-230-XY	
	Designation	**Function**
Operation	⏻	Green — The unit is ready
		Red — Power-up / The SIM card is not present / Hardware failure or firmware update process
Cellular Connection	Cel	Off — SIM card not present – cellular interface disabled Flashing slowly — Connection in progress (1st step) Flashing fast — Connection in progress (2nd step) Green — Connected to the cellular ntwk
Cellular signal level	ⅲ Cel	Off — Cellular interface disabled 1 flash — Faint not sufficient signal 2 flashes — Sufficient signal 3 flashes — Strong signal See detail further: cellular network connection §
	VPN	Off — No VPN has been enabled Flashnig — VPN processing Green — One VPN at least is established
WiFi connection	WiFi	Off — WiFi Interface not enabled Green — WiFi Interface enabled
WiFi Signal quality	ⅲ WiFi	Off — WiFi not enabled or enabled as an access point 1 flash — Weak not sufficient signal 2 flashes — Sufficient signal 3 flashes — Strong signal
Ethernet LAN 1& 2		Off — Ethernet interface not connected Green — Ethernet interface connected
Upper led	Ethernet 1	Green — The RJ45 has been setup as the WAN interface
RS232	Rx	Characters received from the serial interface (to the router)
	Tx	Characters transmitted to the serial interface (from the router)

INSTALLATION

1.7 IPL-C-260 ou IPL-CW-260 router (WiFi option)

IPL-C-260   **IPL-CW-260**

LED INDICATORS IPL-C-260-XY & IPL-CW-260-XY		
	Designation	**Function**
Operation	⊕	Green The unit is ready
		Red Power-up The SIM card is not present Hardware failure or firmware update process
Cellular Connection	Cel	Off SIM card not present – cellular interface disabled Flashing slowly Connection in progress (1st step) Flashing fast Connection in progress (2nd step) Green Connected to the cellular ntwk
Cellular signal level	▏▍Cel	Off Cellular interface disabled 1 flash Faint not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal See detail further: cellular network connection §
	VPN	Off No VPN has been enabled Flashnig VPN processing Green One VPN at least is established
WiFi connection	**WiFi**	Off WiFi Interface not enabled Green WiFi Interface enabled
WiFi Signal quality	▏▍WiFi	Off WiFi not enabled or enabled as an access point 1 flash Weak not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal
Ethernet LAN 1 & 2		Off Ethernet interface not connected Green Ethernet interface connected
Upper led	**Ethernet 1**	Green The RJ45 has been setup as the WAN interface
RS422	**Rx**	Characters received from the serial interface (to the router)
	Tx	Characters transmitted to the serial interface (from the router)

## 1.8 IPL-C-261 or IPL-CW-261 router (WiFi option)

IPL-C-261

IPL-CW-261

| LED INDICATORS IPL-C-261-XY & IPL-CW-261-XY		
	Designation	**Function**
Operation	⏻	Green The unit is ready
		Red Power-up The SIM card is not present Hardware failure or firmware update process
Cellular Connection	Cel	Off SIM card not present – cellular interface disabled Flashing slowly Connection in progress (1st step) Flashing fast Connection in progress (2nd step) Green Connected to the cellular ntwk
Cellular signal level	▮▮▮ Cel	Off Cellular interface disabled 1 flash Faint not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal See detail further: cellular network connection §
	VPN	Off No VPN has been enabled Flashnig VPN processing Green One VPN at least is established
WiFi connection	**WiFi**	Off WiFi Interface not enabled Green WiFi Interface enabled
WiFi Signal quality	▮▮▮ WiFi	Off WiFi not enabled or enabled as an access point 1 flash Weak not sufficient signal 2 flashes Sufficient signal 3 flashes Strong signal
Ethernet LAN 1 & 2		Off Ethernet interface not connected Green Ethernet interface connected
Upper led	**Ethernet 1**	Green The RJ45 has been setup as the WAN interface
RS485	**Rx**	Characters received from the serial interface (to the router)
	Tx	Characters transmitted to the serial interface (from the router)

2 DIN rail mounting

Mounting the unit on the 35 mm horizontal DIN rail
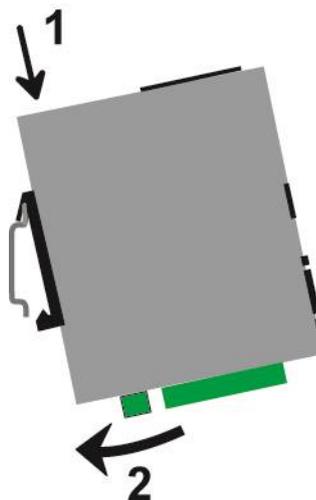
Removing the unit from the DIN rail
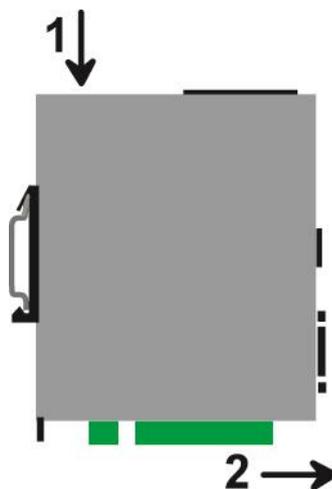
3 Cooling

To avoid obstructing the airflow around the unit, the spacing must be at least 25 mm above and below, and 10 mm left and right.

4 Supply voltage

IPL-C-400, IPL-CW-400 **IPL-C-230, IPL-CW-230** **IPL-C-260, IPL-CW-260** **IPL-C-261, IPL-CW-261**	Minimum input voltage : 10 V DC Maximum input voltage : 60 VDC
IPL-C-220, IPL-CW-220	Minimum input voltage : 10 V DC Maximum input voltage : 30 VDC

The consumption is lwer than 6 W.

5 Digital input and output
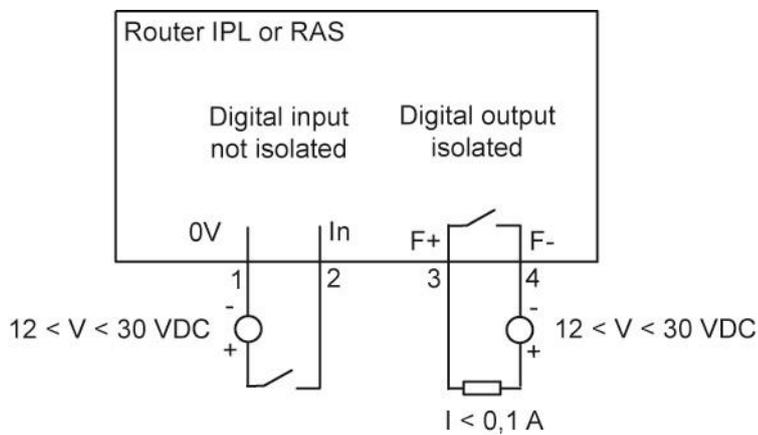
To check that the input and the output are correctly wired, select

Diagnostic > Hardware > Input / Output

The status of the input is displayed and the output can be switched ON or OF.

6 RS232

The RS232 cable must be shorter than 10 meters.

Cables can be provided to connect the product to DTE and DCE as follows :

RS232 cables (L=1m)		
Code	**User connector**	**Cable function**
CAB592	SubD 9 male	To connect a DCE to the router RAS
CAB593	SubD 9 female	To connect a DTE to the router RAS
CAB609	Wires	To connect a device providing a specific connector

INSTALLATION

7   RS485 connection (IPL-C-220 or IPL-CW-220)
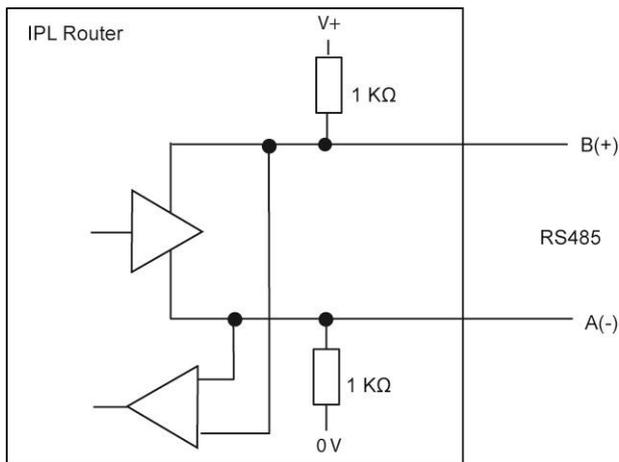
The RS485 serial interface is provided on the front panel 2 positions screw-block.

It is not isolated.

Long RS485 line or high data rate
if the RS485 line is longer than10 meters or if the data rate is greater than 19200 b/s, it is necessary to connect one 120 Ohm matching resistor at each end of the line and two 390 Ohm polarisation resistors at one of the two extremities of the line.

8   RS422 isolated interface (IPL-C-260 or IPL-CW-260)

The RS422 interface is isolated.

When two devices or more are connected to the RS422 interface of the IPL router, the IPL router must be the only device to transmit data ont the TX+/TX- line towards all the other devices.
It means that the TX+/TX- line of the IPL router must be connected to the RX+/RX- of all the other devices of the bus.

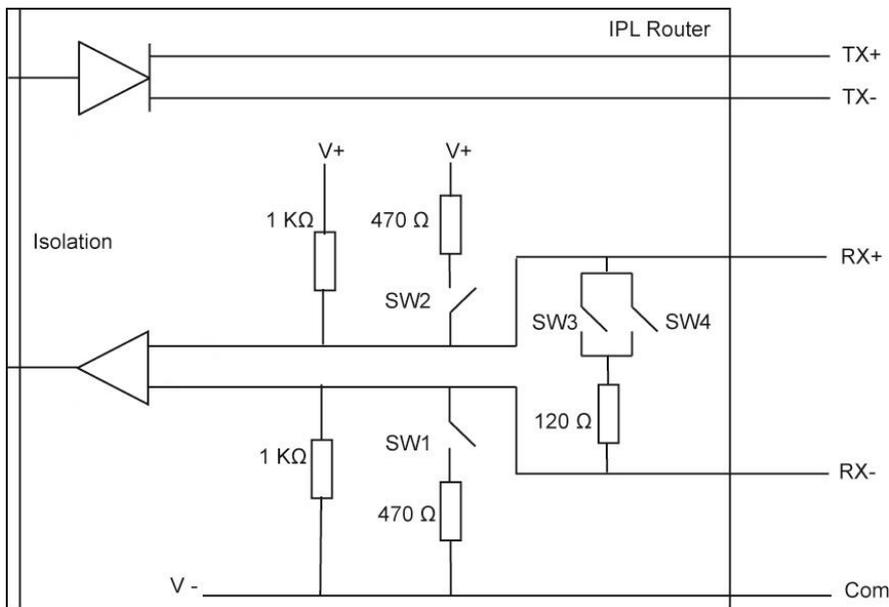The polarisation and termination resistors can be selected with DIP switches.
The polarisation resistors must be enabled by one device of the bus.
The termination resistor must be enabled with SW3 & SW4 when the router is located at the extremity of the bus.

Up to 16 devices can be connected to the bus.

We recommend to use a shielded cable and twisted pairs.
If the line is exposed to lightning, we recommend to protect the router with a surge arrester.

INSTALLATION

9 RS485 isolated interface (IPL-C-261 or IPL-CW-261)

The RS485 interface is isolated (3 wires : A- / B+ plus the common voltage wire).

The polarisation and termination resistors can be selected with DIP switches.
The polarisation résistors must be enabled by one device of the bus.
The termination resistor must be enabled with SW3 & SW4 when the router is located at the extremity of the bus.

Up to 16 devices can be connected to the bus.

We recommend to use a shielded cable and twisted pairs.
If the line is exposed to lightning, we recommend to protect the router with a surge arrester.
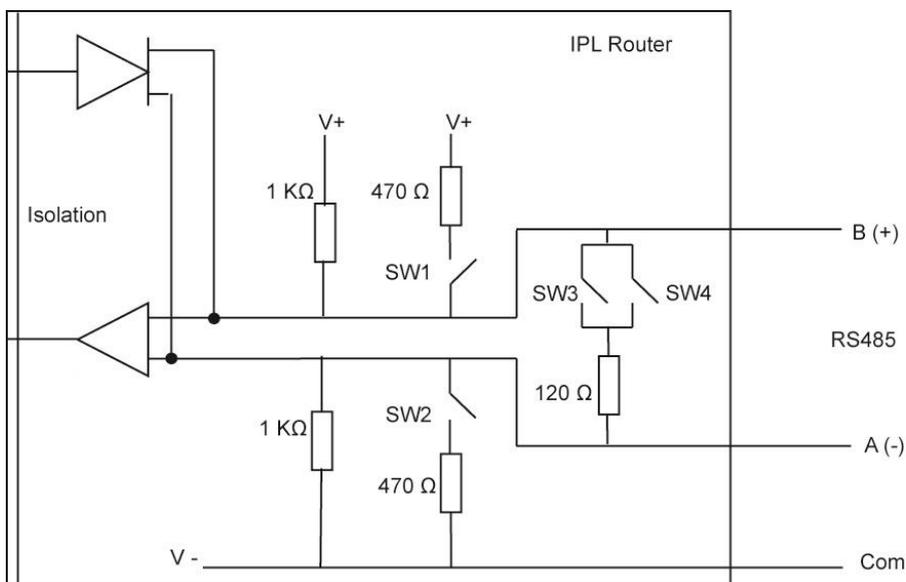
10 Connecting the router to the cellular network

10.1 Controls before installing the router

Authorisations to use a cellular connection
Check the cellular connection is authorised at the location where the router RAS is supposed to be installed.

Control of the reception level before installing the machine
Before installing the router, refer to a cell map over the Internet to check that the cellular reception signal is strong enough at the location where the machine is supposed to be installed.

Select the right mobile service provider.

Reception level confirmation
If the reception seems possible, confirm with a control on site.
The reception level can be measured with a smartphone.
Most smartphones provide the reception level information (parameters or diagnostic menu).

To carry-out that control, use mandatorily a SIM card subscribed with the mobile service provider selected for the router RAS.

Remark :
The IPL router itself provides the reception level information in two ways :
    A reception level led indicator
    The diagnostic menu of the administration web server of the router

10.2 Cellular antenna

We provide a complete catalogue of cellular antennas :
    Magnet mount antenna,
    roof antenna,
    ground plane antenna,
    directive antenna,
    omnidirectional antenna.

10.3 Coaxial cable

If necessary, the antenna can be connected to the IPL-C router through a coaxial cable.

The signal attenuation in a usual coaxial cable is 0.2 to 0.4 dB / m diameter , mm), that is to say 2 to 4 dB for a 10 meter long cable.

If a coaxial cable must be used to connect the antenna to the router, the attenuation in the cable has to be taken into account to calculate the effective RF signal received by the router RAS.

Refer to our cables and antennas catalogue.

INSTALLATION

10.4 Cellular service subscription

The router RAS is designed to connect to the LTE-UMTS-GPRS data transmission service like the one used by the tablets.
The subscription should also provide the SMS service if SMS alarms are required.
A telephone service subscription is not needed.

One will take care to subscribe to a service authorizing the right volume of data per month (MB/month) and to check the price of the MB exceeding the limit of the subscription plan, if it exists.

The subscription must be preferably signed in the country where the machine is supposed to be installed to avoid roaming costs.

10.5 Installing the SIM card

The router provides two SIM card holders. If you use only one SIM card, use the SIM card holder No 1.

- Power off the router.
- Remove the anti-steal lid at the top of the product
- Insert the SIM card according to the drawing
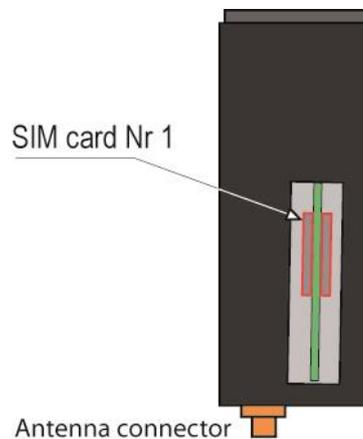
10.6 Controlling the conformance of the connection

After installing and setting up the router, control the conformance of the connection :

Reception level
The reception level must be better than -90 dBm (two flashes of the reception level led indicator).
See the table below.

PING error rate
Each PING request must receive an answer.

Network response delay to a PING request
The response delay must be better than 500 ms.
If the delay is longer than one second, it means the network is overloaded or that the signal level is weak.

If the connection is not conform, change the position of the antenna or select an alternative service like UMTS instead of LTE for instance.

Cellular network reception level		
Led	**Reception level dBm (*)**	
3 flashes	-50 à - 80	Strong signal
2 flashes	-81 à −90	Sufficient signal
1 flash	-91 à -110	Weak not sufficient signal
Off	< -111	No signal

(*) See the web server menu Diagnostic > Network > Interface.
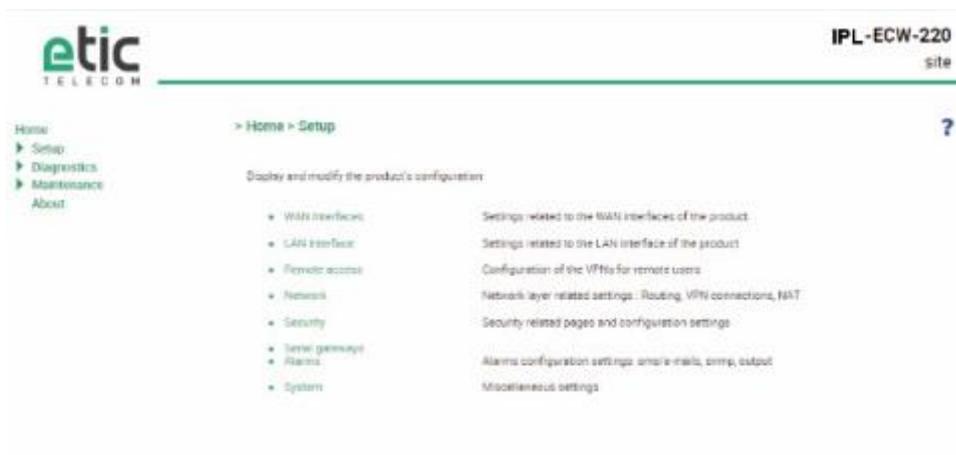
1   First setup

from factory, the IP address of the router is 192.168.0.128.

Step 1 : Create or modify the PC IP connection.
Assign to the PC an IP @ in accordance with the router RAS IP address.
For the first configuration, assign for instance 192.168.0.127 to the PC.

Step 2 : Connect the PC directly to the LAN interface of the router RAS.

Step 3 : Launch the HTML browser : http://192.168.0.128

2   Protecting the access to the administration web server

- Select Set-up > Security > Administration rights.
- Enter an administration identifier and password.

PREPARING THE SETUP

3 HTTPS set-up modifications through the WAN interface

The administration web server is located at the LAN IP address.
Coming from factory, access to the administration web server is not allowed through the WAN interface

To use HTTPS instead of HTTP to setup the product or to authorise access to the administration web server through the WAN interface,

- Select Configuration > Security > Administration rights.
- Enter an administration identifier and password.
- Check the "HTTPS configuration" box.
- Check the "WAN access" box if you wish to access to the administration web server through the WAN interface.

Remark : the port No used to access to the administration web server with HTTPS is 4433.

Example : https://192.168.38.191:4433.

4 Recovering the factory LAN IP address

- Press the rear panel push-button ;

The OPERATION led indicator will flash.

The factory IP address 192.168.0.128 will be restored but the current configuration remains active.

5 Restoring the factory set-up

If firewall rules have been created finally preventing from reaching any IP address on the LAN interface including the router itself, it may be necessary to restore the factory configuration of the router.

To restore the factory configuration,

- Switch OFF the power supply of the router RAS.

- Press the rear panel push button and, switch-on the power supply.

- Keep the push button pressed until the operation led turns red.

Remark: The current configuration is cleared and the factory IP address 192.168.0.128 is restored.

6   Saving or restoring a set of parameters

Once a product has been set-up, the current set of parameters can be stored inside the router.
In a second step, any set stored inside the router and displayed with the <u>Configurations table</u> can be saved as an editable file stored outside the ETIC router.

Inversely, a saved file can be loaded to the product Configurations table and then, if necessary, declared as the active set of parameters.

- Select the Maintenance > configuration management menu

To store the current configuration set of parameters in the configurations table,

- Assign a name for the current set of parameters ("configuration name" field) and click the Save button.

The updated Configurations table is displayed with an additional line.

To save a stored set of parameters as an editable file

- Select the set of parameters name in the Configurations table,
- Click the Export to the PC button.

The set_of_parameters.txt file is created.

To import an editable **.txt file

- Click the Select a file button,
- Browse the PC and select the file,
- Click the Import from PC button.

The updated Configurations table is displayed with an additional line.

To select a configuration set of parameters in the Configuration table, as the current configuration

- Select the set of parameters name in the Configurations table,
- Click the Load button.

The selected set of parameters is now the current set of parameters.

7 Configuration steps

To configure the router, we advise to proceed as follows :

- Cellular interface setup

- LAN interface setup

- VPNs setup

- Routing and IP address translation functions setup

- Remote users connections, the user list and the access rights setup

- Serial or USB gateway setup

- Firewall setup

For detail about the configuration, refer to the IPL routers setup manual reference 90 234 09.

1   Diagnostic

1.1   Logs

- Select the Diagnostic > Logs menu

Main logs
It registers
the ADSL connections & disconnections
the VPN connections & disconnections
theremote users connections & disconnections
The router starts

OpenVPN & IPSec Logs
These logs registers the detail of the VPN connections

Advanced logs
That logs registers details about the following events :
> ADSL events
> M2Me
> RIP
> DHCP
> VRRP
> Telnet gateway
> Alarm emails

The filter checkbox allow to display particular classes of events.

MAINTENANCE

1.2   Network status

To display the Interfaces status pages ,

- Select The Diagnostic > Network status>Interfaces menu.

The Interfaces page summarizes the current information of each interface of the router, like for instance :

LAN interface :   MAC and IP address
                                   Ethernet ports status
                                   …

Ethernet WAN interface :   MAC and IP address, default gateway address
                                   Priority level
                                   …

ADSL interface :   Connection Status
                                   IP address and remote IP address
                                   Reception level
                                                …

WiFi interface :   Wifi mode (client or base station
                                   Connection status
                                   SSID
                                   RF Frequency
                                   …

To display the M2Me page,

- Select The Diagnostic > Network status> M2Me menu.

The M2Me page summarizes the current status of the M2Me connection and also displays the M2Me logs.

To display the remote users page,

- Select The Diagnostic > Network status> Remote users menu.

This page displays the table of the remote users currently connected.

To display the VPN connections page,

- Select The Diagnostic > Network status> VPN (IPSec or OpenVPN)   menu.

This page displays the table of the Open VPN or IPSec VPNs currently connected.

To display the Routes page,

- Select The Diagnostic > Network status > Routes   menu.

This page displays the table of the routes set-up by the router and the ARP table.

1.3   Serial gateways status

- Select the Diagnostic > Serial gateway menu

That page displays the current status of the serial gateways :
Type of the gateway (Modbus, RAW UDP or TCP, Telnet …),
serial port set-up (data rate etc…),
number of characters received or sent,
Number of TCP frames or UDP datagrams received or sent,
Number of TCP connections enabled.

> The View link displays a window which shows the hexadecimal received and transmitted traffic over each serial COM port.
> It can be a great help for trouble shooting.

.

1.4   « Ping » tool

Select the Diagnostic > Tool > Ping menu.

 Enter the PING destination IP address.

1.5   « WiFi » scanner tool

The Wifi scanner displays the main information about each WiFi network :

MAC address of the access point, SSID, reception level.

 Remark : The WiFi interface of the ETIC router needs to be registered as a <u>WiFi client</u> interface.

MAINTENANCE

2   Firmware update

The firmware update can be carried-out locally or remotely.

If the firmware update operation do not succeed, for instance if the connection fails, the ETIC router restarts with the current firmware.

Once the firmware update has been carried-out, the ETIC router restores the previous current set of parameters.

To update the firmware,

- Select Maintenance > Firmware update menu,
- Click the Select the firmware file button,
- Click Upgrade now.

When the firmware is updated, the product automatically reboots.

ETIC TELECOM
13 chemin du vieux Chêne
38240 Meylan
France
contact@etictelecom.com