

# JX 5600

## User manual



Release 1.24

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# 1 Generals

The JX 5600 set has to be used in conjunction either with JX 2360 or JX 2600 families Flash Light Power Sets.

## 1.1 Physical wiring

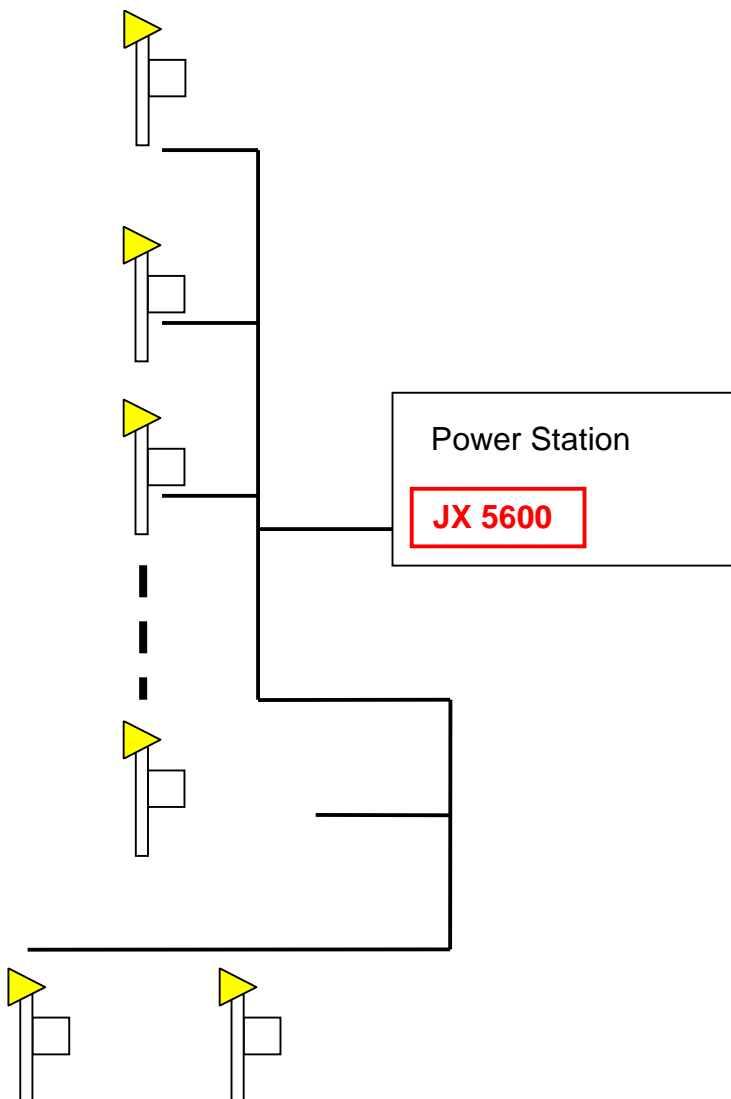
It is used to monitor and remote control a SFLS assembly such as described underneath :

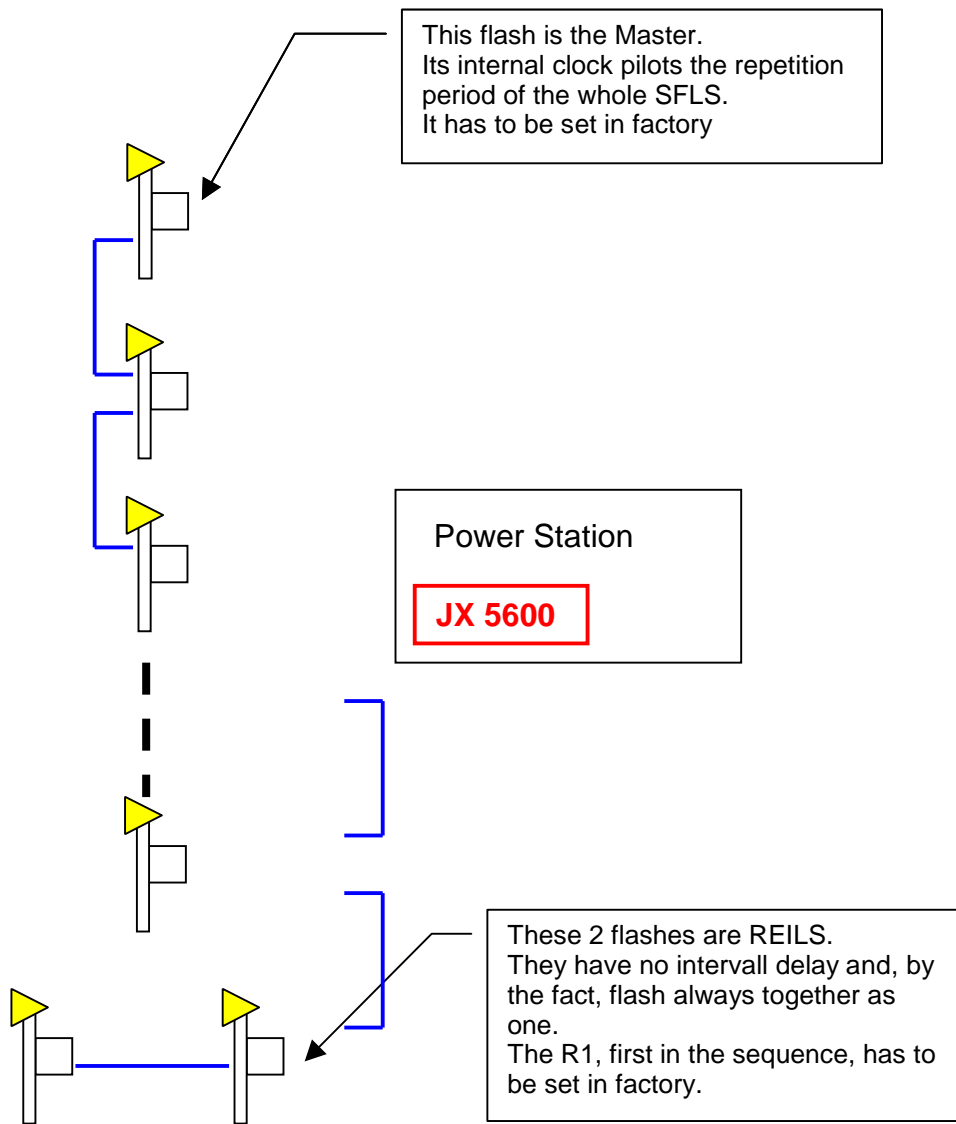
The Power Station supplies the sets with main 240V AC +/- 10 % (Black wire on diagram).

The mains cable has to be able to supply 0,5 rms A (220 V AC) or 1 rms A (110 V AC) for each flash lamp.

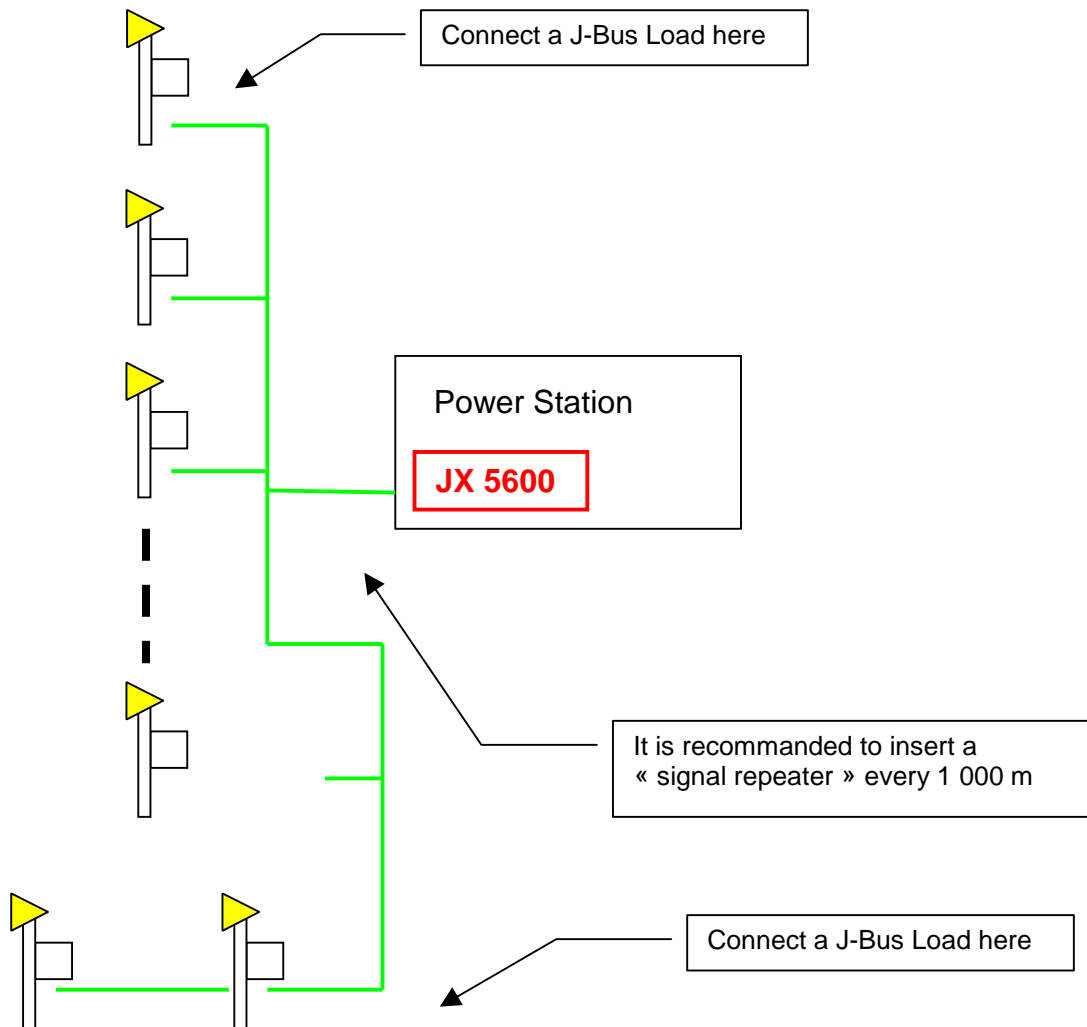
This power supply is maintained continuously on line, as the eventual heater resistor may has to be supplied.

The JX 5600 will be in charge of switching On and Off the flashes.





The sets are hierarchically sequenced via an unique analog time base line (clock signal, blue wire on diagram)  
This signal passes through single shielded wire.  
Each clock top is a 20Vpp pulse of 10 ms duration.

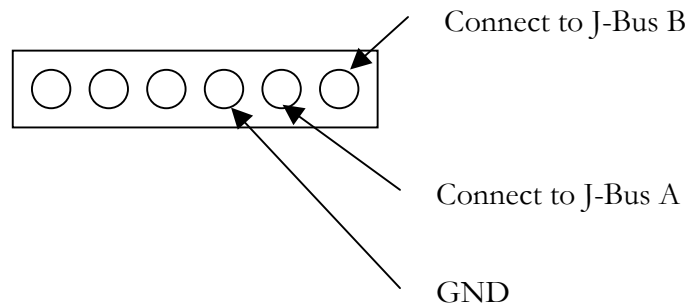


The sets are monitored and controled via a serie (RS485) digital bus called J-Bus (Green wire on diagram)  
 This bus is constructed with a shielded twist pair cable.

This bus allows JX 5600 to :

1. Command the sets
2. Query the sets

JX 5600 Rear panel connector  
 (Jbus connections).



It is necessary to connect a J-Bus Load on each “end of line” to insure a perfect impedance for the digital signal. 3 J-Bus Loads are delivered with each JX 5600<sup>1</sup>.

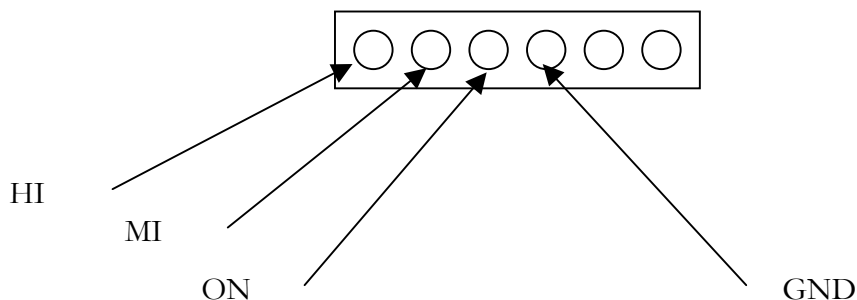
<sup>1</sup> If you need spare parts do not hesitate to ask your reseller or [contact@flashelek.com](mailto:contact@flashelek.com)

A “signal repeater”<sup>2</sup> (symmetrical amplifier) may be necessary when the line is longer than 1 000 m, even if a 1 600 m trial succeeded.

The J-Bus lets the JX 5600 command the flash sets state and query sets infos.

It is also possible to command the set via analog way. (see JX2360 Connection manual for details)

JX 5600 Rear panel connector  
(Analog connections).



To switch on the sets, short-circuit “ON” and “GND”

When ON, to change brilliance levels, short-circuit “MI” or “HI” and “GND”. If both are short-circuited, only “HI” is functional.

The total resistance of the short circuit have to be less than 125 Ohmx for a SFLS of 31 boxes

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<sup>2</sup> Ordered separately. Ask your reseller for details or send a mail at [contact@flashelek.com](mailto:contact@flashelek.com)

## 1.2 Commanding the Flash sets

The JX 5600 may :

- Switch on/off the sets
- Select brilliance level (3% low intensity : LI,  
10% medium intensity : MI  
100% high intensity : HI)

If necessary, the JX 5600 may :

- Change the repetition period of the SFLS from 500 ms to 1 s , 1,5 s or 2 s.
- Change the inter flash intervall delay from 0, 14, 66 or 266 ms.

## 1.3 Querying the Flash sets

The JX 5600 may query the sets for:

- The present brightness set up
- Wether a lamp operates or not (curative maintenance)
- The number of flashes a lamp has done since the last global switch on (preventive maintenance)
- Internal un-documented technical datas

## 1.4 Case of J-Bus fault

When a box do not receive any J-Bus frame during a period longer than 2mn, then it automatically force its internal J-Bus command to the state OFF/Low Intensity.

Analog commands keep their action.

## 2 Dialog with JX 5600

The JX 5600 is internally architected around a web server which allows the maintenance engineer and/or control tower to set up configuration and monitor the present state of the SFLS.

Connecting a standard PC compatible equipped with a web explorer to the JX 5600 allows the user interact with it.

Depending on the request (human level or machine level) the JX 5600 sends user friendly pages or simply encoded variables values datas.

The JX 5600 has a hardware mode which allows an operator to disconnect (local mode) or reconnect (remote mode) the server.

On local mode, the SFLS may be switched on and off directly via a hardware switch on the panel.

This mode allows the maintenance engineer to over drive the control tower orders on the SFLS in order to prevent any un-safety situation when technical operations are proceeded.

## 3 Hardware local mode

On the frontpanel, switching the “local” position configure the JX 5600 in local mode. In this mode, only the switches of the front panel command the SFLS

ON/OFF switches On or Off the SFLS, as Brightness level switches on Low, Medium or High intensity (LI, MI or HI). These modes are confirmed by the leds.

**Do not forget to back switch on “remote” mode, otherwise nobody can pilot the SFLS via Ethernet.**



## 4 Ethernet mode

### 4.1 Machine level

The JX 5600 can dialog with a computer via the ethernet plug.

Two different ways are possible to use.

#### 4.1.1 ASCII mode

In this mode, it acts as a slave and answers to the commands and queries in ASCII mode as described below. The JX 5600 uses port 5556 and UDP protocol. Each message ends with a semicolon.

Query	Answer
ACTIVE_MESSAGE;	SFLC_STATUS0X010Y0a0a.....0j .....; Where : X = <b>0</b> on <u>local</u> mode <b>1</b> on <u>remote</u> mode Y = <b>0</b> when SFLS is <u>Off</u> <b>1</b> when SFLS in <u>On</u> and <u>LI</u> active <b>2</b> when SFLS in <u>On</u> and <u>MI</u> active <b>3</b> when SFLS in <u>On</u> and <u>HI</u> active a to F <sup>3</sup> = alarm on each flash <b>0</b> when Alarm <b>1</b> when OK <b>2</b> when no Box is present at this position <b>3</b> when a lan error occured
FLASH_COUNTERXY;	SFLC_COUNTERXYabcdefghij; Where : XY = Number of selected box (01 to 32 <sup>3</sup> ) abcdefghij = Value of shots done by the selected box (0000000000 to 4294967295)

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<sup>3</sup> when 32 boxes

Command	Action
STEP_CONTROLXY;	<p>This command changes the brightness level of the whole SFLS following XY value :</p> <p>XY = <b>00</b> to switch <u>Off</u> the SFLS</p> <p><b>01</b> to switch <u>On</u> on <u>LI</u> mode</p> <p><b>02</b> to switch <u>On</u> on <u>MI</u> mode</p> <p><b>03</b> to switch <u>On</u> on <u>HI</u> mode</p>
SPEED_CONTROLXY;	<p>This command changes the repetition period time and interflash intervall delay on the whole SFLS</p> <p>X = <b>0</b> for <u>500 ms</u> period</p> <p><b>1</b> for <u>1 s</u> period</p> <p><b>2</b> for <u>1,5 s</u> period</p> <p><b>3</b> for <u>2 s</u> period</p> <p>Y = <b>0</b> for <u>0 ms</u> delay</p> <p><b>1</b> for <u>14 ms</u> delay</p> <p><b>2</b> for <u>66 ms</u> delay</p> <p><b>3</b> for <u>266 ms</u> delay</p>
CAT_CONTROLabcdef ghijklmnopqrstuvwxyzA BCDEF <sup>4</sup> ;	<p>This command specifies each box which will really switch on when a SFLS ON command is sent. (see STEP_CONTROL)</p> <p>(This command allows to use the SFL under various standard modes)</p> <p>a to F = 1 (Box will flash)</p> <p>a to F = 0 (Box will not flash)</p>

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<sup>4</sup> when 32 boxes

### 4.1.2 ModBus-Jbus mode

In this mode, it acts as a slave and answers to the commands and queries in binary following the Modbus standard, as described below. The JX 5600 uses port 502 and TCP protocol.

Variable Table

Register	R/W	
0x00	R	0x00 = Local mode, 0x01 = Remote mode
0x01	R/W	Status of SFSL: 0x00 = SFSL OFF 0x01 = SFSL ON, Brilliance LI 0x10 = SFSL ON, Brilliance MI 0x11 = SFSL ON, Brilliance HI
0x02 and 0x03	R/W	Enabled : each bit is the enabled bit of corresponding box.
0x0A to 0x29	R	Status of boxes 0x00 = Error lamp 0x01 = No error 0x10 = No box 0x11 = Lan error

#### 4.1.2.1 Querying the JX5600

The skeleton of query frame is as follow

**aa aa 00 00 00 0b FF ....**

Is the Modbus header, where :

- aa aa is the transaction number. You can fill it as you want, the JX5600 will send it back in its answer.
- 00 00 is always 00 00 (Modbus protocol)
- 00 0b shows the following bytes quantity
- 0xFF (or 0x01) takes place of module adress. This is unused as JX5600 IP adress is known and unique.

Followed by the content of the transaction, which can be

Reading many registers : code **0x03**

**03 00 cc 00 dd**

- 00 cc is the first register number to be read
- 00 dd is the number of registers to be read

Writing one register : code **0x06**

**06 00 cc xx xx**

- 00 cc is the register number to be written
- xx xx is the value to be written

Writing many registers : **code 0x10**

**10 00 cc 00 ee dd xx xx xx xx....**

- 00 cc is the first register number to be written
- 00 ee the number of registers to be written
- dd the number of bytes to be written
- xx xx xx xx ... are the values : dd bytes

#### 4.1.2.2 Answer from the JX5600

The JX5600 answers with a frame having the following skeleton :

**aa aa 00 00 00 0b FF ....**

Is the Modbus header, where :

aa aa is the transaction number sent in the query.

00 00 is always 00 00 (Modbus protocol)

00 0b shows the following bytes quantity

0xFF (or 0x01) takes place of module adress. This is unused as JX5600 IP adress is known and unique.

Followed by the content of the answer, which can be

Reading many registers : **code 0x03**

**03 dd xx xx xx xx....**

- dd the number of bytes read
- xx xx xx xx ... are the values read : dd bytes

Writing one register : **code 0x06**

**06 00 cc xx xx**

- 00 cc is the register number written
- xx xx is the value written

Writing many registers : **code 0x10**

**10 00 cc 00 ee**

- 00 cc is the first register number written
- 00 ee the number of registers written

#### 4.1.2.3 Error trapping

If an error occurred, the JX5600 adds 0x80 to the operation code.

## 4.2 Human level

The JX 5600 allows the operators to interact via an internal web server.

The LAN factory settings are :

IP adress	192.168.1.130
DNS	192.168.1.1
Sub net mask	255.255.255.0
Passerelle	192.168.1.1
DHCP	Off
Host name	JX5600

The host name is used on title for the web pages, as it is a mean to know which JX 5600 is answering, on a situation where there are many.

For example, naming a JX 5600 “25L” will let the title of the pages become :

### **Supervision 25L**

If DHCP mode is activated then you can navigate to <http://25L/>

Nevertheless, it is recommended to declare the Host name in the hosts file of your computer, eg :

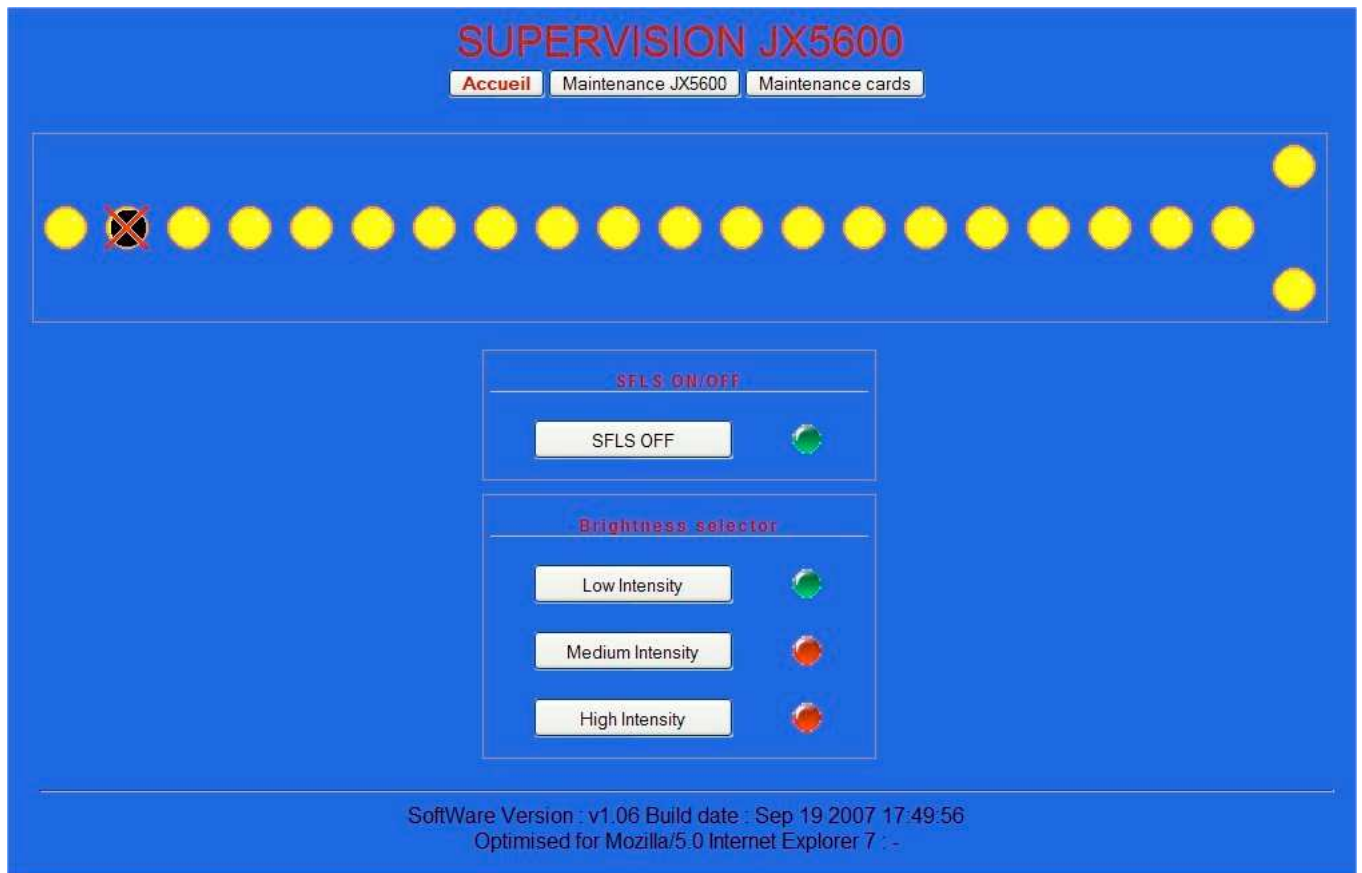
127.0.0.1	localhost
192.168.1.130	25L

On Windows XP the hosts file is located at c:\windows\system32\drivers\etc\  
On Linux it is located at /etc/hosts

When there is no DHCP, type IP adress instead Hostname on your web explorer and the following page will appear.

## 4.3 Web site

### 4.3.1 Index page



This is the default page

On this page you can see that :

The SFLS is on (On/Off button caption is "SFLS OFF", the On/Off led is green, the Flashes are Yellow)

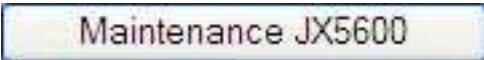
The brightness level is switched on LI level (LI led is green, other are red)

The SFLS has 22 flashes

The flashes number 21 and 22 are configured in REILS mode

The Flash number 2 is defective.

This page has enough information to pilot and supervise the SFLS.

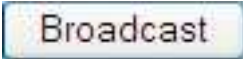
Now click on  button and the following page will appear.

### 4.3.2 Maintenance of the JX 5600



This page is useful to install the JX 5600 the first time, and when, for any reason, a clock panel is changed in a Flash Box of the SFLS.

The reason why is that each Flash Box has its own address on the J-Bus line, allowing JX 5600 to communicate with it.

The first time the whole system is connected on the mains, click on the  button.

This will begin a procedure where JX 5600 knows the address of each Flash Box and the emplacement in the SFLS.

**A Broadcast procedure has to be done each time the JX 5600 have no knowledge of the successive addresses of the Flash Boxes**

This page also lets the repetition period change and the interval delay of the SFLS. It also allows to switch on/off and change the brightness level.

Now click on  button and the following page will appear.

### 4.3.3 Maintenance of the SFLS Clock Cards

This page is mainly used for high level technical maintenance.

The screenshot shows the 'Maintenance cards' page of the SUPERVISION JX5600 interface. It features a table with 8 columns: Card n°, On / Off, Brightness, Error, Mode, Master, Interval, and Repetition. There are 22 rows representing individual cards. Card 2 is marked as defective with an 'X' in the Error column. Card 6 is highlighted as the selected card. Below the table, the 'Selected card : 6' is indicated, and a 'Flash counter' shows the value '12647'.

Card n°	On / Off	Brightness	Error	Mode	Master	Interval	Repetition
1	On	LI	-	-	Master	14	500
2	On	LI	X	-	Slave	14	500
3	On	LI	-	-	Slave	14	500
4	On	LI	-	-	Slave	14	500
5	On	LI	-	-	Slave	14	500
6	On	LI	-	-	Slave	14	500
7	On	LI	-	-	Slave	14	500
8	On	LI	-	-	Slave	14	500
9	On	LI	-	-	Slave	14	500
10	On	LI	-	-	Slave	14	500
11	On	LI	-	-	Slave	14	500
12	On	LI	-	-	Slave	14	500
13	On	LI	-	-	Slave	14	500
14	On	LI	-	-	Slave	14	500
15	On	LI	-	-	Slave	14	500
16	On	LI	-	-	Slave	14	500
17	On	LI	-	-	Slave	14	500
18	On	LI	-	-	Slave	14	500
19	On	LI	-	-	Slave	14	500
20	On	LI	-	-	Slave	14	500
21	On	LI	-	R1	Slave	0	500
22	On	LI	-	R2	Slave	14	500

Selected card : 6

Flash counter 12647

You can use it for preventive flash lamp maintenance on checking how many times a lamp has flashed. To do it, select a lamp by clicking on its button (left column in the table). Then the selected card (nbr. 6 on the picture) will become the one you have chosen and the flash counter will appear.

When you change a flash lamp, either in preventive or curative action, you will reset the counter by resetting the clock card of the flash box. To do that, disconnect then reconnect the mains connector on the Flash Box.

You can also read all important datas about each Flash Box in the table :  
for example :

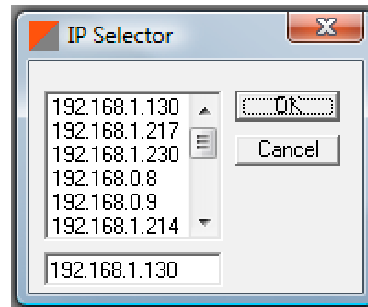
- Lamp nbr. 2 is defective
- the 21<sup>st</sup> and 22<sup>nd</sup> Flash Boxes are configured as RTILS
- the repetition period is 500 ms
- the interval delay is 14 ms (apart from the 21<sup>st</sup> which is 0 ms due to the fact it acts as a RTILS MASTER)



#### 4.4 JX5600Mgr

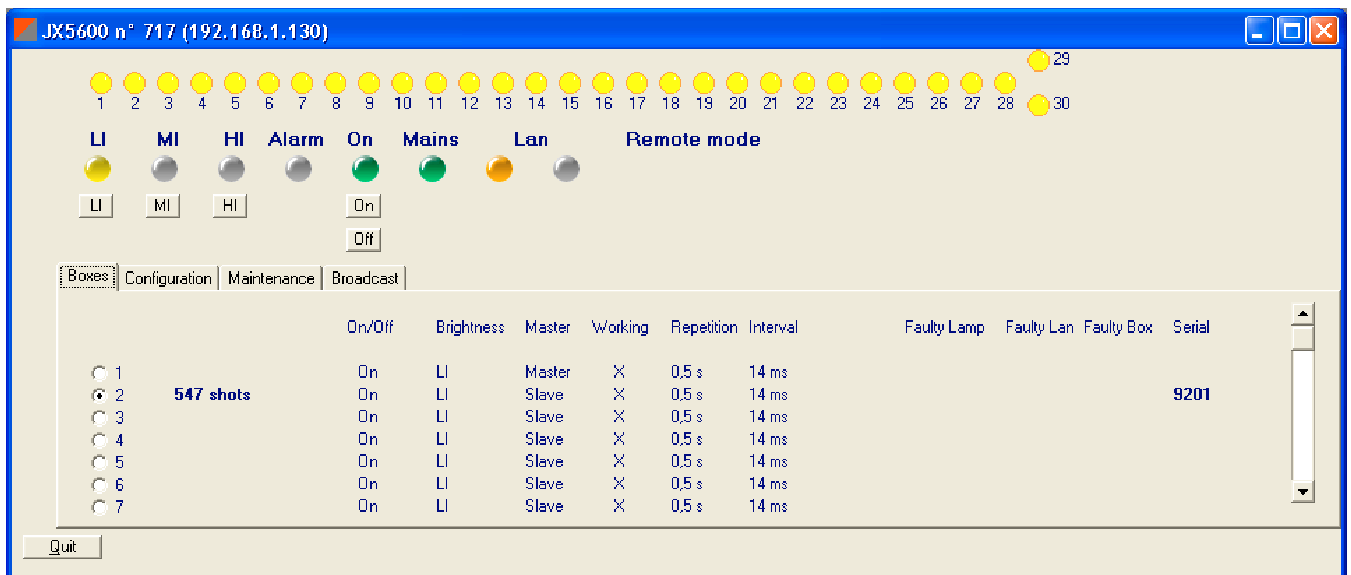
Launch JX5600Mgr

In the menu File/Open



Choose or type the IP address of the JX5600 on which you want to connect

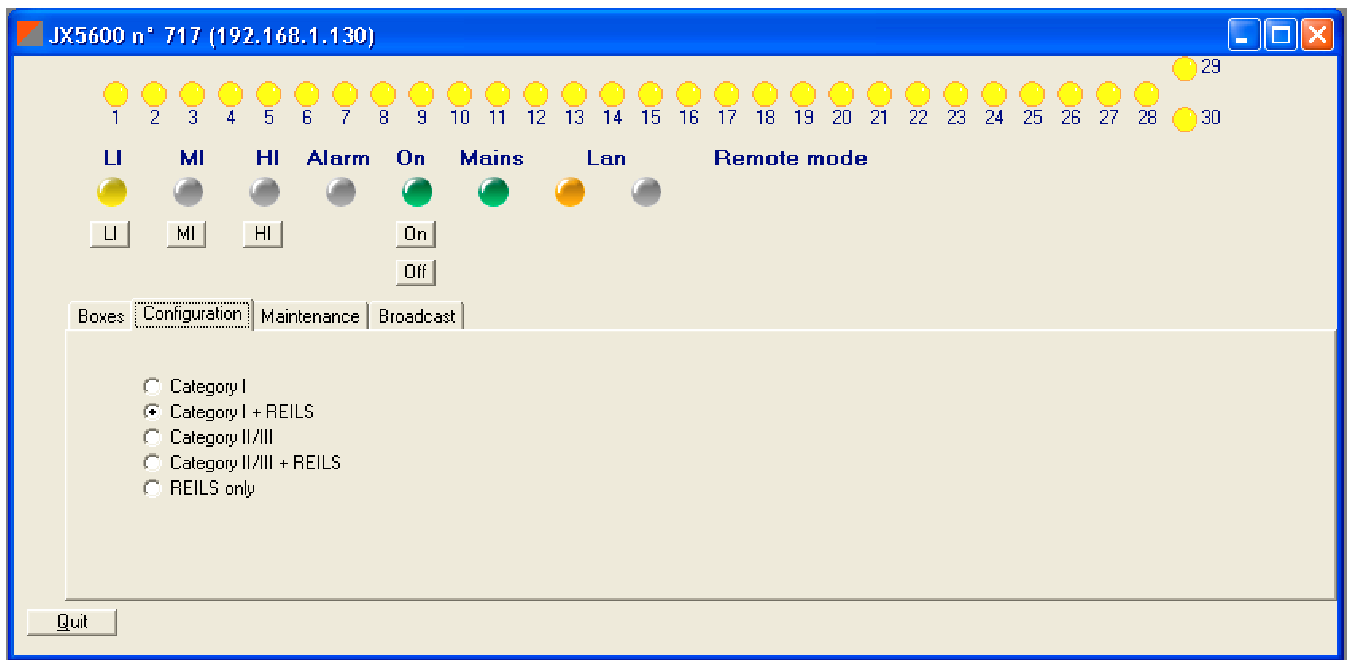
The following window appears.



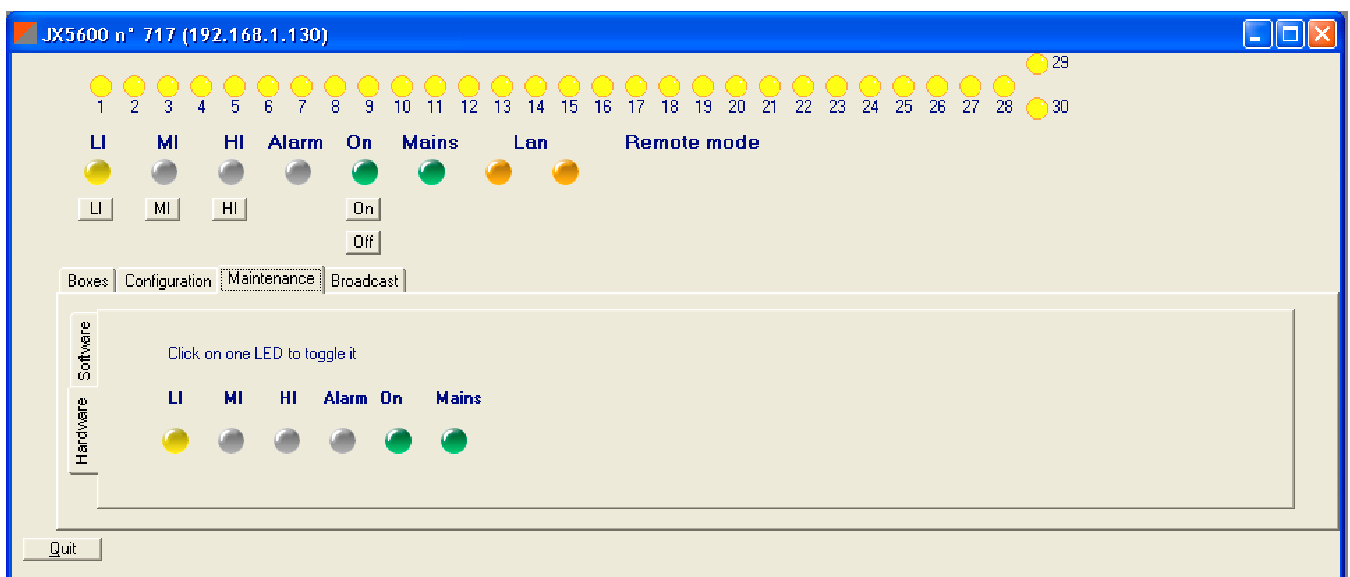
4 frames are present :

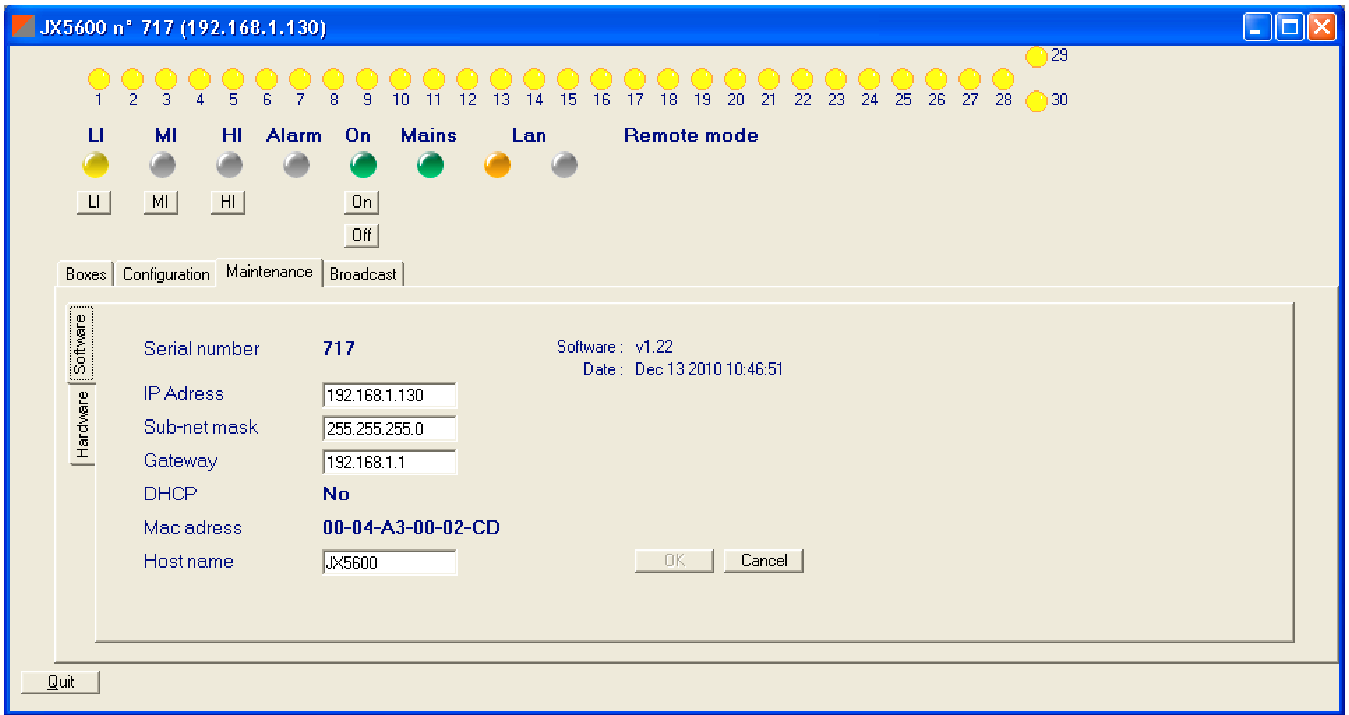
- Boxes : shows the state of each box
- Configuration : parameter the SFLS
- Maintenance : Insure JX5600 maintenance
- Broadcast : Insure SFLS broadcasting.

## Configuration frame

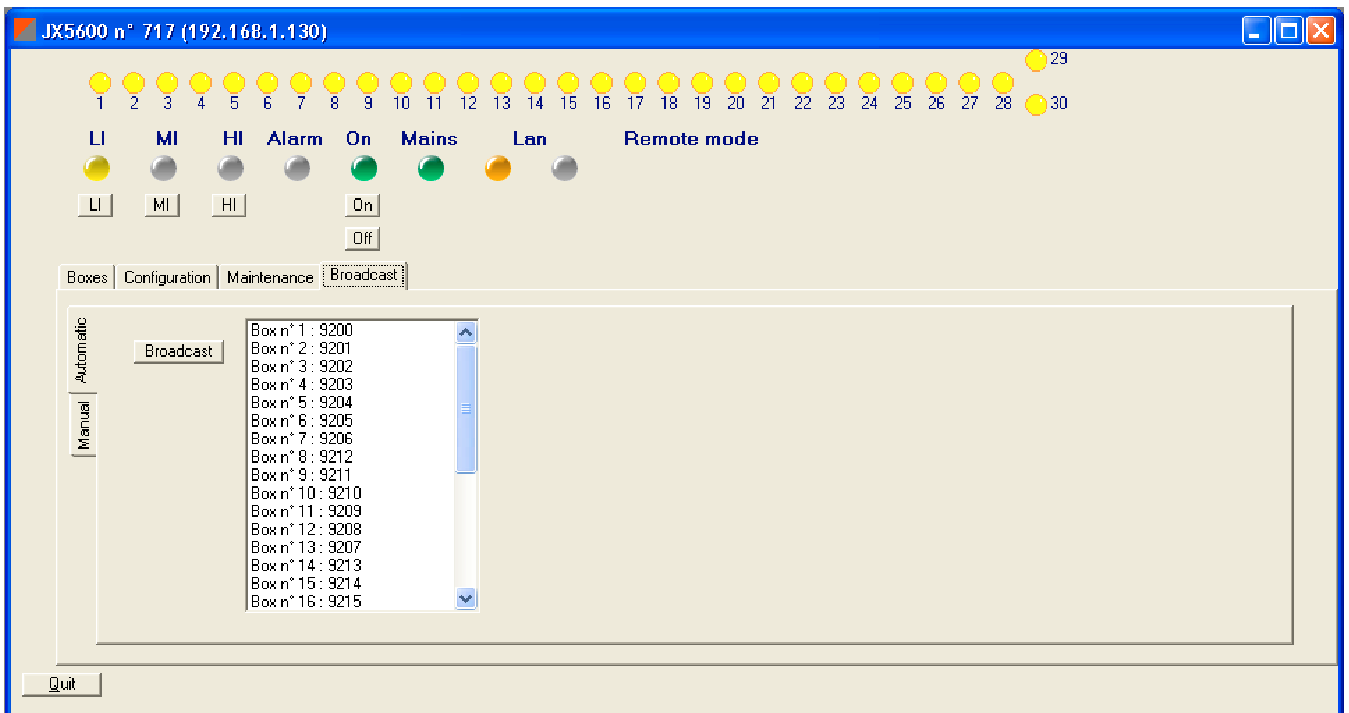


## Maintenance frame





### Broadcast frame



## 4.5 Recovering factory configuration

If lost, you can reset the configuration by using a RS232 cable (plugged at the rear of the box).

To do it, two method can be used :

### 4.5.1 Using reset button

Unplug the mains

Let pushed the red button located on rear panel, and plug again the mains, during 4 seconds

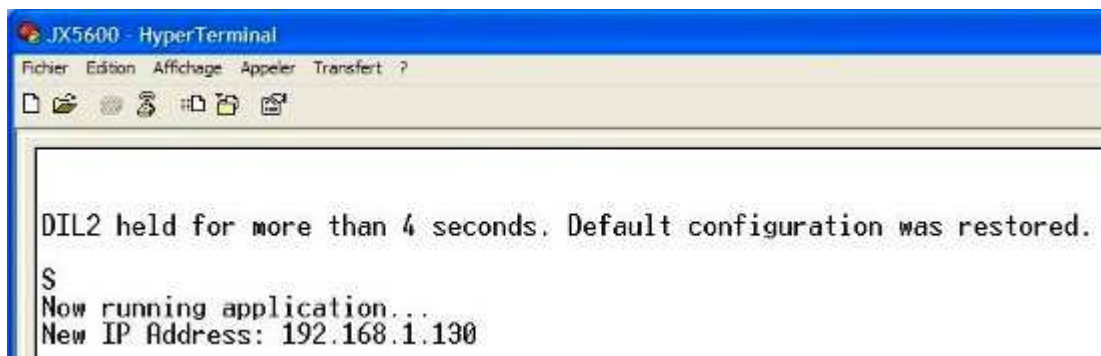
After at least 4 seconds, the default parameters (Factory settings ) are restored.

Factory settings are :

Serial number                   0  
Be Carefull, the MAC adress is made with the serial number

IP adress :                    192.168.1.130  
Gateway adress :            192.168.1.1  
Subnet mask :                255.255.255.0  
DHCP :                        Inactive

If you have a RS232 connection, you will read :



```
JX5600 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
DIL2 held for more than 4 seconds. Default configuration was restored.
$
Now running application...
New IP Address: 192.168.1.130
```

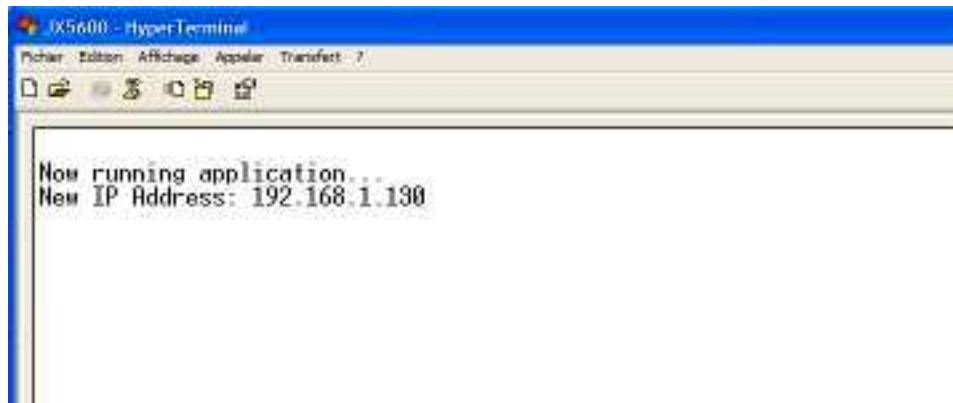
## 4.5.2 Entering parameters

- Unplug the mains
- Plug the cable
- Launch hyper terminal on your PC (19 200 Bauds, 8 bits, No parity, Stop)
- Plug back the mains
- If the JX5600 is under DHCP mode, hyper terminal shows :

...D

...D

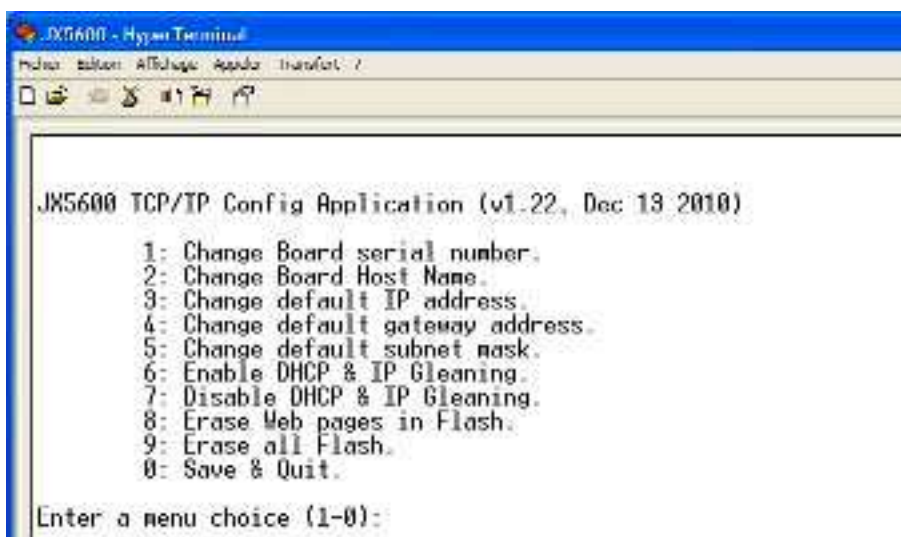
- otherwise its shows :



(or the adress you have given before)

If you need to configure back the set, and you cannot do it via web pages or JX5600Pilot for any reason, do as follow :

- Unplug the mains
- Open the box
- Find the 4 mini switches (near the front panel), and configure switch 1 as “ON” (back side)
- Launch hyper terminal on your PC (19 200 Bauds, 8 bits, No parity, Stop)
- Plug back the mains
- Hyper terminal shows



- Choose menu 3 and type the desired IP address, then menu 4 and 5 and type the gateway address and subnet mask., followed by **ENTER** key
- Choose between menu 6 and 7 according to your need of DHCP.
- Then choose menu 0

Factory settings are :

Serial number                    0  
Be Carefull, the MAC address is made with the serial number

IP address :                    192.168.1.130

Gateway address :            192.168.1.1

Subnet mask :                255.255.255.0

DHCP :                         Inactive

**Be carefull, you must not choose menu 8 nor 9,  
otherwise the set will have to be re-programmed in  
factory**

- Unplug the mains
- Configure switch 1 as “OFF” (front side)