



**GLOBAL**  
**FIRE EQUIPMENT**

*J-NET-INT-TCP-IP Documentation*  
*Revision 2 - 2006/11/24*



# J-NET-INT-TCP-IP Documentation

Revision 2 - 2006/11/24

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## Abstract

In order to fully support *TCP-IP* as a medium for the *JunoNET* data loop communications, a custom version of the *SERIAL <-> TCP-IP* converter was created, based on the *Lantronix XPort* device.

This document explains what the custom firmware version does and how to correctly configure the system to use these converters.

## Versions

To fully use the *JunoNET* system with data loop communication through *TCP-IP*, the following versions are needed:

- *JunoNET* panel: *Main Panel*, *Repeater* and *Subpanel* firmware version 2.07 or 3.07, build 043 or higher.
- *J-NET-INT-TCP-IP* version 1.0 or higher, firmware version 0.0 beta 6 and above.

## Configurations

### • Panels

The *Main Panel* and *Repeaters* should be configured normally, except for the Main Panel communication mode set in the installation menu needs to be *TCPIP* instead of *NORMAL*.

- Power up the *Main Panel* while holding the *SYSTEM RESET* switch. The following screen will appear:

```
DIAGNOSTICS MODE
Select option with ▲ or ▼

Calculate Checksums
```

- Press *ESC* on the remote to see:

```
CODE: .
```

- Enter the installer code followed by *ENTER*
- Press ▼ twice to see:

```
DIAGNOSTICS MODE
Select option with ▲ or ▼

Installation menu
```

- Press *ENTER*. You are now in the *Installation Menu*:

```
prot:APOLLO DISCOVERY comms:NRMAL
en54secfuse:Y en54:N sams:N ody:96 8N1
```

- Press **▶** so the cursor is located right after *comms*.
- Use **▼** to set the communication mode to *TCPIP*:

```
prot:APOLLO DISCOVERY comms:TCPIP
en54secfuse:Y en54:N sams:N ody:96 8N1
```

- Press *ENTER* 5 times until the panel says it's saving changes.
- Wait for the message:

```
Settings saved
Press ESC
```

- Press *ESC* and restart the panel by power cycling or by using **▲** until you see the following screen, and then press *ENTER*:

```
DIAGNOSTICS MODE
Select option with ▲ or ▼

Reset
```

## • J-NET-INT-TCP-IP

The converter has 4 connections and one jumper. The connections are:

- 2 serial connectors for 5 wire flat cable connection to the panel's *J-NET-CONN* RS-485 connector.
- 1 ethernet RJ45 connector for the network cable.
- 1 serial DB-9 connector link to a PC serial port.

The DB-9 connector is only used for configuring the converter in certain conditions and for firmware upgrading of the converter. In these two situations the jumper should be set to the *PC* position.

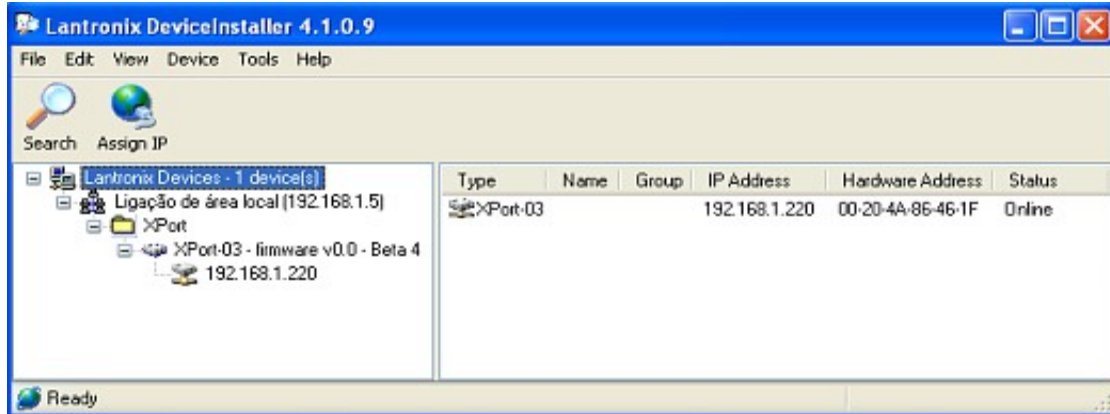
On all other events, including normal system operation, the jumper **must** be set to the *PANEL* position.

Only one of the 5 wire flat cable connections is needed, and either one can be used.

There are 2 different ways of accessing the configuration options for the converter. Through telnet or the DB-9 serial port. If you know the converter IP address and have a PC inside the same network (both physical and logical) then telnet is the simplest method. You can use any telnet



program available in your system, but for simplicity you can use the *Lantronix DeviceInstaller*<sup>1</sup> software which will list all found devices and also supply a *TELNET* utility for configuring them.



*Lantronix DeviceInstaller with one visible device*

Clicking on the left pane device IP address and then on the right pane *TELNET* tab followed by *Connect* will give you access to the converter's configuration interface.

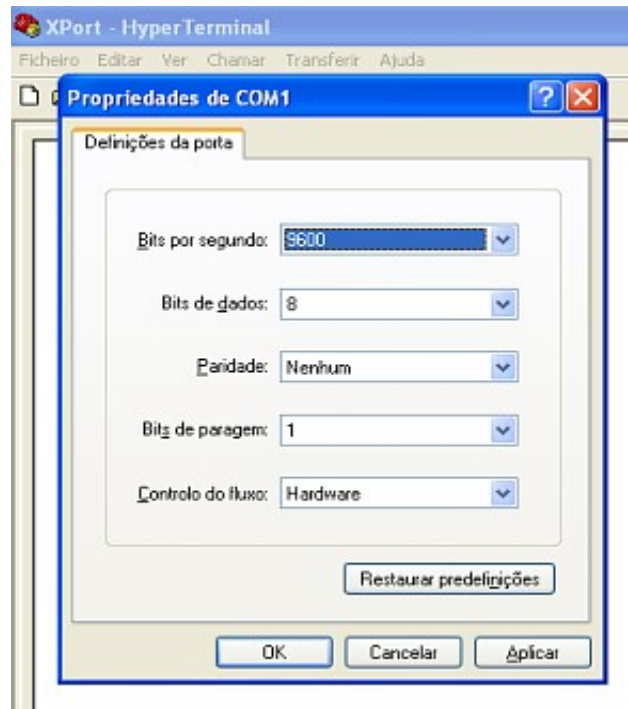


*Lantronix DeviceInstaller telnet interface*

The same configuration interface can be access with a serial terminal program, such as Microsoft's *HyperTerminal* which comes bundled with Microsoft Windows, provided you have a free serial port and a straight serial cable with a DB-9 mail connector to attach to the converter.

To use the serial interface, connect the serial cable to the converter and PC, with the converter unpowered (by removing power from the attached Panel). Next move the converter's jumper to the *PC* position and configure the terminal software to use 9600 bauds, 8 data bits, 1 stop bit and no parity. You can use *Hardware Flow Control* or *No Flow Control*, as in some terminal programs one will work while the other will not.

<sup>1</sup> The Configuration Utility for the XPort-03 available at <http://www.lantronix.com/support/downloads.html>



*Sample configuration for HyperTerminal*

After confirming the above configurations, press *OK* and, while pressing the '*x*' key, power up the converter by applying power to the attached Panel.

The rest of this chapter applies equally to both serial and telnet access methods. You will see something like the following appear:

```
* Global Fire Equipment *
*** JNET-INT-TCP-IP ***
MAC address 00204A864649
Software version V0006 (061120) CPK6101_XPTEX

Press Enter for Setup Mode
```

Press *Enter* as instructed:

```
***** Channel 1 *****
Baudrate 38400, I/F Mode 7C, Flow 00
CPU performance : Standard

-- Menu --

1 - IP Address: 10.0.0.220
2 - Netmask: 255.0.0.0
3 - Gateway: none
4 - Base Port: 10001
5 - Mode: Master (Main Panel)

9 - Exit without saving
0 - Save and restart
```

To change the IP address, gateway or netmask, select the option on the menu. IP address input is done by entering each of the four decimal address bytes separated by either the *ENTER* key or the



dot '.' symbol. If gateway is set to 0.0.0.0 it will appear as 'none' like in the example above, and no gateway will be used.

Setting the netmask is done by specifying the number of bits that are part of the network used. So setting it to 8 results in a netmask of 255.255.255.0, meaning the network is class C. In the example below the netmask uses 24 bits so we are using a class A network.

```
-- Menu --  
1 - IP Address: 10.0.0.221  
2 - Netmask:    255.0.0.0  
3 - Gateway:   none  
4 - Base Port: 10001  
5 - Mode:      Slave (Repeater/Subpanel)  
6 - Remote IP: 10.0.0.220  
  
9 - Exit without saving  
0 - Save and restart  
  
Netmask: Number of Bits for Host Part (0=default) (24)
```

To set if this converter is connected to a *Main Panel* or a *Repeater* use option 5. *Subpanels* and *Repeaters* with integrated *Subpanel* should all use *Slave* mode and *Main Panels* use *Master* mode. If the converter is in *Master* mode and option 5 is selected, the Remote IP will be requested.

The Remote IP can always be changed while on *Slave* mode by using option 6, that is only shown in the menu on this particular mode.

There must be exactly one *Main Panel* converter per installation, and all *Repeaters* should point their Destination IP address to the IP address of the *Main Panel* converter. Of course each converter needs to have a unique IP address.

The *Main Panel* converter listens for *Repeater* connections on 13 *TCP* ports, starting on *Base Port* (10001 in the examples above). The *Repeaters* will sequentially try to connect to each of these ports until successful in one of them. This means that for the current version a total of 14 *Panels* including the *Main Panel* can be connected through *TCP-IP*.

Once satisfied with the option settings, use menu option 0 to save the changes made, after which the converter will restart.

## Complete System Setup

After everything is configured and connected for the first time one has to wait for all panels to start talking with each other or, in other words, for each *Repeater* converter to connect to the *Main Panel* converter. This can only be traced by visiting each *Panel* and verify that it does not have a *NO COMMS TO MAIN PANEL* fault.

Once communication is established, reset the *Main Panel* (but don't remove power from it, as this will power off the converter too and kill all the connections). All panels will follow that restart and the system is ready for usage.

## TCP-IP network details

The *J-NET-INT-TCP-IP* converter creates multiple *TCP* streams, one for each *Panel* connected to the *Main Panel*, and tunnels the serial communication through them. Since the round trip time for IP communication cannot be predicted there is an almost constant negotiation between the *Main Panel* and the converter to set the conversation time outs correctly. However, certain bounds still need to be taken under consideration.

A dedicated network should be used for panel communication. Although the communication layer itself will work on a shared network without any issue, the fact that other network uses may induce a delay above the permitted for the *JunoNET* data loop communications has to be considered.

As a rule of thumb, round trip delays (as seen with a 'ping' command) should never have an average above 5ms or a maximum above 10ms for accurate and responsive usage of the repeaters and subpanels.

The system will handle round trip delays of up to 1000ms (1 second) but repeater key presses will take too long to enter an access code and alarms will take several seconds to be displayed. Initializing an installation with such a communication delay in active mode can actually fail, as subpanels will take too long to reply on start up before the tcp timeout is set on the *Main Panel*.

But the worst case scenario comes from having a high rate of change on the round trip delay, because if the delay increases severely multiple data loop commands will be lost until the panel and the converter can sync themselves to the new conditions. No alarm will be lost, but temporary communication with the subpanels will probably occur.

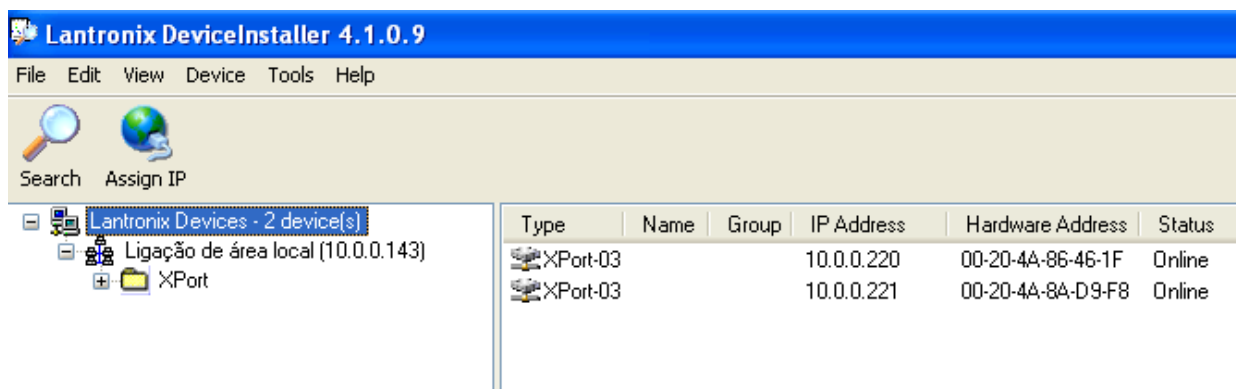
## Firmware Update

When new features or bug fixes are introduced to the firmware of the *J-NET-INT-TCP-IP* device, installers need a way to update the units. This is achieved by using either a network or serial connection to the unit and the *Device Installer* software from Lantronix.

- **Network update**

The simplest solution is using the network approach. Set up the computer hosting the *Device Installer* software to be part of the same network as the unit being updated and start the software.

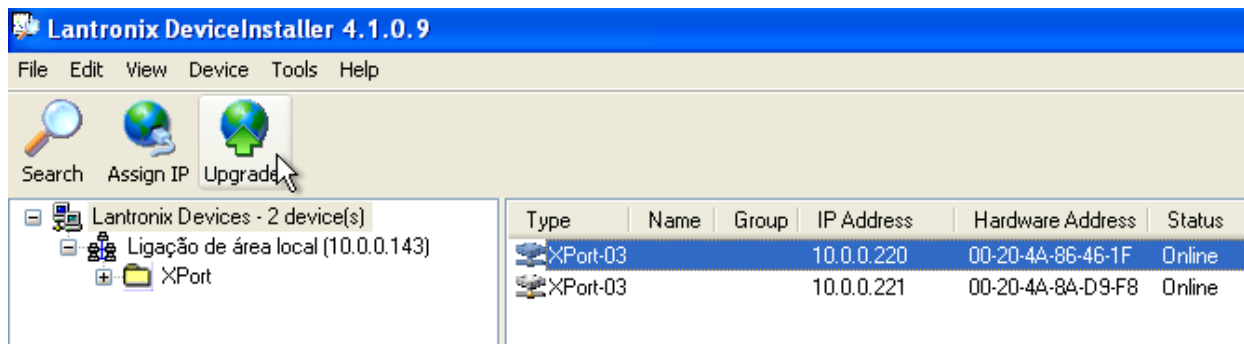
All the devices accessible through the network should appear in the device list.



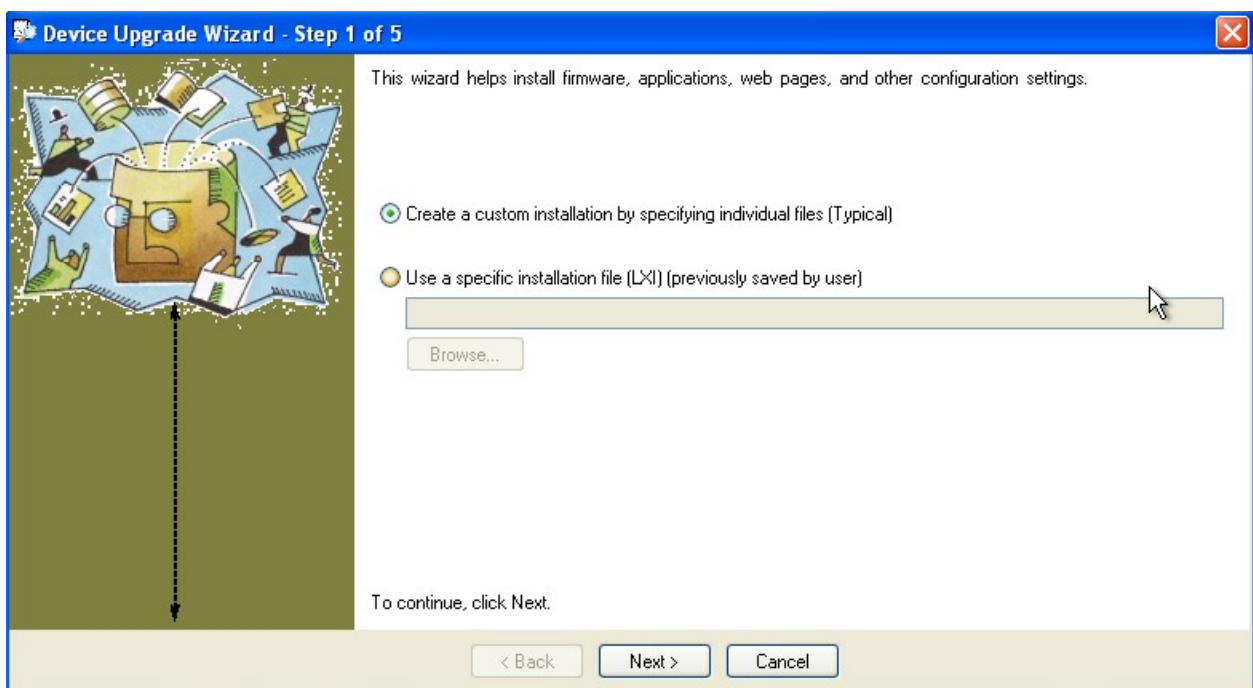
*Device list*

Click on the device you want to update and then on the *Upgrade* button. A window will appear with the upgrading options.





Click on upgrade



Upgrade window

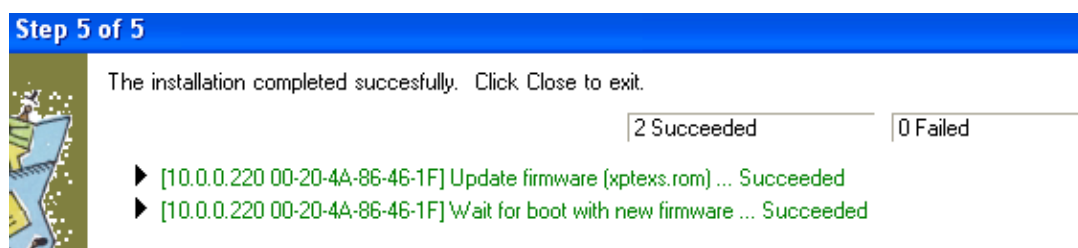
Select *Create a custom installation by specifying individual files (Typical)* and click on *Next*

>.

In the following window select the upgrade file supplied by GFE using the *Browse...* button and click on *Next >* again.

Now select *No other files to install (Typical)* and click *Next >*.

Clicking *Next >* one more time starts the actual upgrade process. Once it has finished you should see something like:



Upgrade complete

## • Serial Port Update

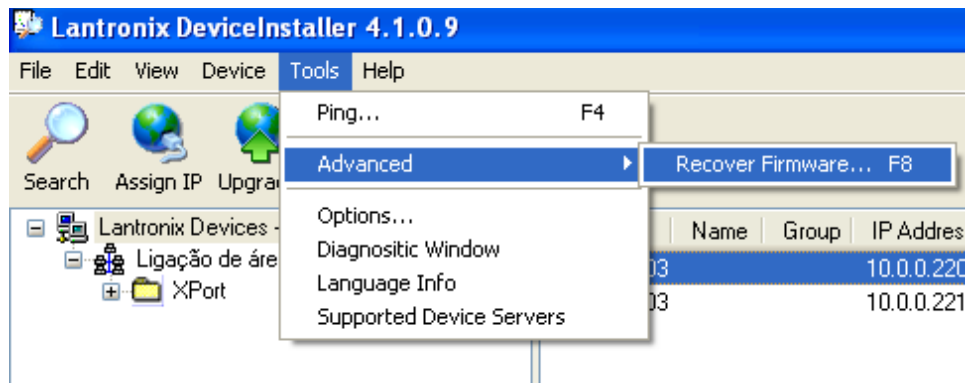
There are 2 occasions when upgrading through the serial port is the correct option:

- A previous upgrade failed and the device doesn't appear in the device list.
- The installer can't access the network or configure the computer to use the network address space where the device is running.

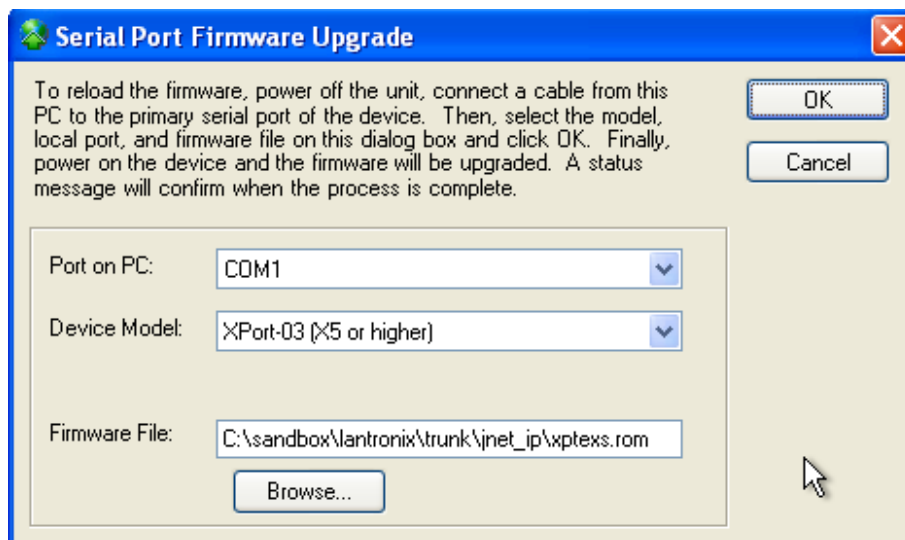
To use the serial port from the device, one has to have physical access to it and have a serial port available on the computer.

Disconnect the power from panel having it's *J-NET-INT-TCP-IP* unit being upgraded and connect the computer to the unit's DB9 connector using a simple straight serial cable. Move the jumper on the unit from the *PANEL* position to the *PC* position.

Start the Device Installer software and select the menu *Tools->Advanced->Recover firmware*. You can also press the *F8* shortcut key.



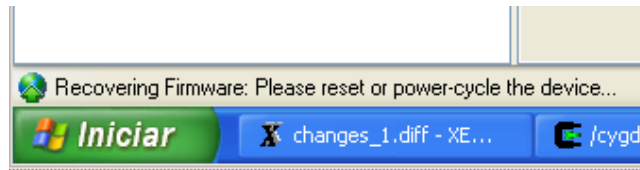
*Recover Firmware menu*



*Recover Firmware window*

Next, select the COM port you are using to connect to the unit. Select the *Device Model XPort-03 (X5 or higher)* and browse to the firmware (\*.rom) file supplied by GFE.

Press *OK* and wait for the message *Recovering Firmware: Please reset or power-cycle the device...* on the *Device Installer* status bar (lower left corner).



*Status bar: waiting for device power up*

Apply power to the panel. A progress bar will appear in the lower right corner status bar. After it finishes a window will appear saying the process ended.

**Don't forget to move the jumper on the *J-NET-INT-TCP-IP* back to the *PANEL* position!**

Repeat process with all *J-NET-INT-TCP-IP* units on the installation. This is very important, as having multiple versions running might make the communications unstable or even completely stop.

Also important is the order for doing this; always start with the *Main Panel*. If that is not possible, the upgrade itself will not suffer, but the panels may fail to communicate afterwards. To make them talk to each other again, all panels should be disconnected from the power source and then the *Main Panel* should be turned on before any of the other panels in the installation.

## Troubleshooting

Pressing switches or keys on repeaters does nothing.	Check the Main Panel communication mode is TCPIP. Check the J-NET-INT-TCP-IP jumper is set to PANEL on the Repeater.
Repeaters keep saying 'NO COMMS TO MAINPANEL'	Check the J-NET-INT-TCP-IP jumper is set to PANEL on the Main Panel. Make sure the network is correctly configured. Check network cabling. If all the above is correct and the issue still exists, remove power from all panels and reapply it to each panel again, starting with the Main Panel.