NetIO Configuration

NetIO is a LaserLinc all-in-one EtherNet based I/O box. Functions include: Proportional Control - both pulse width and pulse count, Digital I/O – 8 inputs / 8 outputs, and Counter Inputs, connected to a TotalVu PC by Ethernet. The NetIO requires a supplied 12VDC power adapter and EtherNet patch (or crossover) cable. The benefit of a NetIO over the previous version is that a NetIO no longer needs motherboard resources and bulky cables. This allows the NetIO to run on smaller computers and/or laptops, which do not contain PCI Express slots. The NetIO also simplifies long connections by allowing the use of standard Ethernet switches. EtherNet switches also allow connecting multiple LaserLinc network devices such as gauge heads, Ultragauge+ and NetIOs to the same computer.

Expandability

Multiple NetIOs may be connected to one TotalVu PC allowing easy expansion to add I/O and control loops.

Hardware Setup

1. Connect the NetIO 12VDC power adapter to the NetIO's rear panel +12VDC input. This is a twist-lock connection, insert and slowly rotate until the connector fully seats.

2. Plug the universal A/C wall adapter into an A/C power receptacle.

3. Connect the supplied EtherNet *patch* cable into the NetIO's rear panel - EtherNet port. Connect other end into your selected Network Interface Adapter. **Your NetIO device may come with a USB to EtherNet adapter. In this case plug into any USB port and configure per manufacturer's instructions.**

Note: In rare cases, some Network Interface Adapters DO NOT "auto sense" the TX/RX wires, and in this case, Windows may report " No Cable Attached".   Use a *Crossover* cable or *crossover adapter* available from LaserLinc.

<div style="background:#8B0000;color:white;padding:8px;font-family:monospace;font-weight:bold;">TotalVu Setup</div>

TotalVu version 5.15.4.2 or greater is required.

1. Start TotalVu.

2. Select the menu `TotalVu->Full Configuration...` or hit `Ctrl+C`

3. Double click on `NetIO`

4. Double click on `Add NetIO Device`

5. Enter the serial number of the NetIO, e.g., "`p00011`"

6. **Host IP Address** This tells TotalVu which Ethernet interface of the computer to use by naming the associated IP address. Select a `Host IP Address` from the drop down menu.

   You must find your IP address to fill out this field. If you are using a dedicated crossover direct connection, you must first set a static IP Address for this network. You may use 10.50.50.1 as specified in Crossover Direct below. Ensure you do not confuse this Ethernet network with a separate wireless network.

7. **Device IP Address** The NetIO is assigned this IP address each time the connection from TotalVu is made. The IP address for the NetIO is not saved in the NetIO between power cycles. Thus you do not need "match" this IP address with the NetIO, as this field is authoritative. If the NetIO is connected to the general network as opposed to a crossover connection, you must acquire this IP address from a Network Administrator. The Network Admin should provide an IP from an IP range reserved for Static IPs in the DHCP configuration. If the NetIO is connected directly to the PC with a patch cable, first establish the Host IP Address below before finishing this step. The NetIO IP Address must match that of the PC except for the last octet. In this case 10.50.50.2 is suggested. See General Network and Crossover Direct below.

8. Click `Next`

9. Hardware Resources – Defaults are correct except for custom applications. No changes should be necessary.

   Port A –   Not configurable
   Port B –   Outputs (8)

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Port CL – Inputs(4)
Port CH – Inputs (4)

10. Click `Finish` and follow restart instructions

11. Configure Alarms, control loops and digital inputs per the PTRB User's Manual

Network Setup

Here are two of the many methods for connecting a NetIO to the TotalVu PC.

General Network

This method uses the facility network as the medium for connecting the NetIO to the TotalVu PC.

Benefits

This method provides the following benefits:

- A NetIO may be connected to any network switch available within the plant as long as it is on the same subnet as the TotalVu PC.

- The TotalVu PC's network card does not need to be configured with a static IP. The PC can automatically get its IP address by DHCP. This IP address must be determined and copied into the TotalVu configuration mentioned above.

Drawbacks

Using this method presents the following drawbacks:

- The NetIO IP address must be acquired from a Network Admin as the IP address must be reserved to prevent another device from using it.

- Using a larger network provides more chances for configuration problems, IP address conflicts, and possible data restrictions due to router or firewall configuration.

Setup

Follow the following steps to setup a general network connection

1. Connect the TotalVu PC into the network.
2. Connect the NetIO into the network.
3. Ask the Network Admin for an IP address for the NetIO.

Crossover Direct

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This method physically connects the NetIO directly to the PC by connecting one end of a network cord into the NetIO and the other end into the PC. **Either a EtherNet patch cable or crossover cable will work. The NetIO "auto senses" the cable.** If multiple NetIO's are desired, an Ethernet switch (not a router) may be used to combine multiple NetIOs onto one network cable, which then connects to the PC. This method has the following benefits:

Benefits

- The network is private to the NetIO and the PC, so the IP address does not need to be reserved by a Network Administrator.

- The configuration is not affected by the nuances of different plant networks.

- The connection is point-to-point, so fewer packets will be lost and the connection is more reliable.

- The IP address of the PC can be known ahead of time, thus allowing the system to be preconfigured before setting it up in the plant.

Drawbacks

- A directly connected system requires a dedicated Ethernet card on the PC, which usually means multiple Ethernet interfaces. This can cause confusion among users, who may switch the Ethernet cables for the plant network and NetIO data purposes.

- If the NetIO is connected at a distance, a long Ethernet cable may be required.

- The TotalVu PC needs custom configuration on the dedicated network card.

Setup

To use this method a Static IP must be assigned to the TotalVu PC's network card, which will be directly connecting to the NetIO. The steps for this are the same as for connecting to an UltraGauge+ (UG+) Digital Signal Processor (DSP).

1. Bring up the `Network Connections` dialog by selecting `Start->Run`, type `ncpa.cpl` and hit enter.

2. Right click the network connection in question and hit properties.

3. Find the entry `Internet Protocol Version 4 (TCP/IPv4)` or `Internet Protocol (TCP/IP` on XP and select `Properties`

4. Tick the option next to `Use the following IP address:`

5. Set the IP address to `10.50.50.1` or your own choosing. If you have a UG+ on a different NIC make sure you don't reuse the same subnet.

6. Set the Subnet mask to `255.255.255.0`.

7. Click `Ok` and `Ok` to confirm these changes.

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