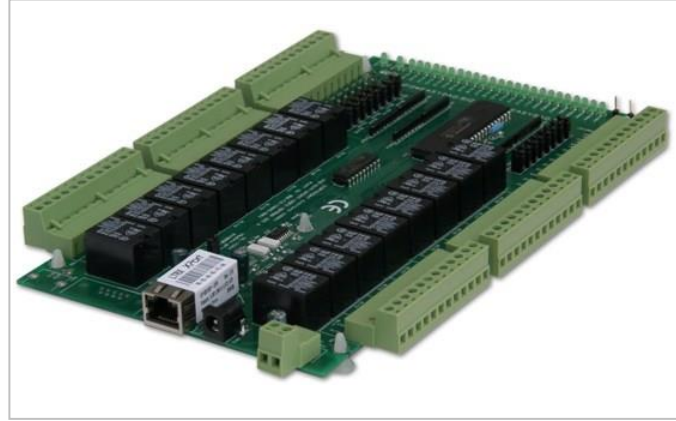### Installing your NET16PRMx (XPort) Relay/DIO card - (only applicable first time you connect to a PC):

First stage - Xport Device Installer - (download/installation):

- Download and install the Lantronix Device Installer software. You can download the latest version from the following location:
- http://www.lantronix.com/device-networking/utilities-tools/device-installer.html
- After installation of the above SW application, ensure that the card is connected to a live network port (using a standard network patch lead) and ensure that the card it is powered up. It will appear as a connected device, together with the IP & MAC address – see screenshot below:

Lantronix DeviceInstaller 4.2.0.4

File   Edit   View   Device   Tools   Help

Search   Exclude   Assign IP

Lantronix Devices - 1 device(s)
  Wireless Network Connection (192.168.1.)
    XPort
      XPort-03 - firmware v6.6.0.2
        192.168.1.25

| Type	Name	Group	IP Address	Hardware Address	Status
XPort-03			192.168.1.25	00-20-4A-BC-F2-AB	Online

Lantronix XPort - IP address of connected device

Lantronix XPort - MAC address of connected device. (MAC address is factory programmed and is printed on the label attached to the XPort module)

Second stage - Xport Device Details:

- Double click on the 'XPort-03' item (shown in right window above) to expand the properties of the connected/powered NET16PRMx (XPort) relay card. See screenshot on following page:
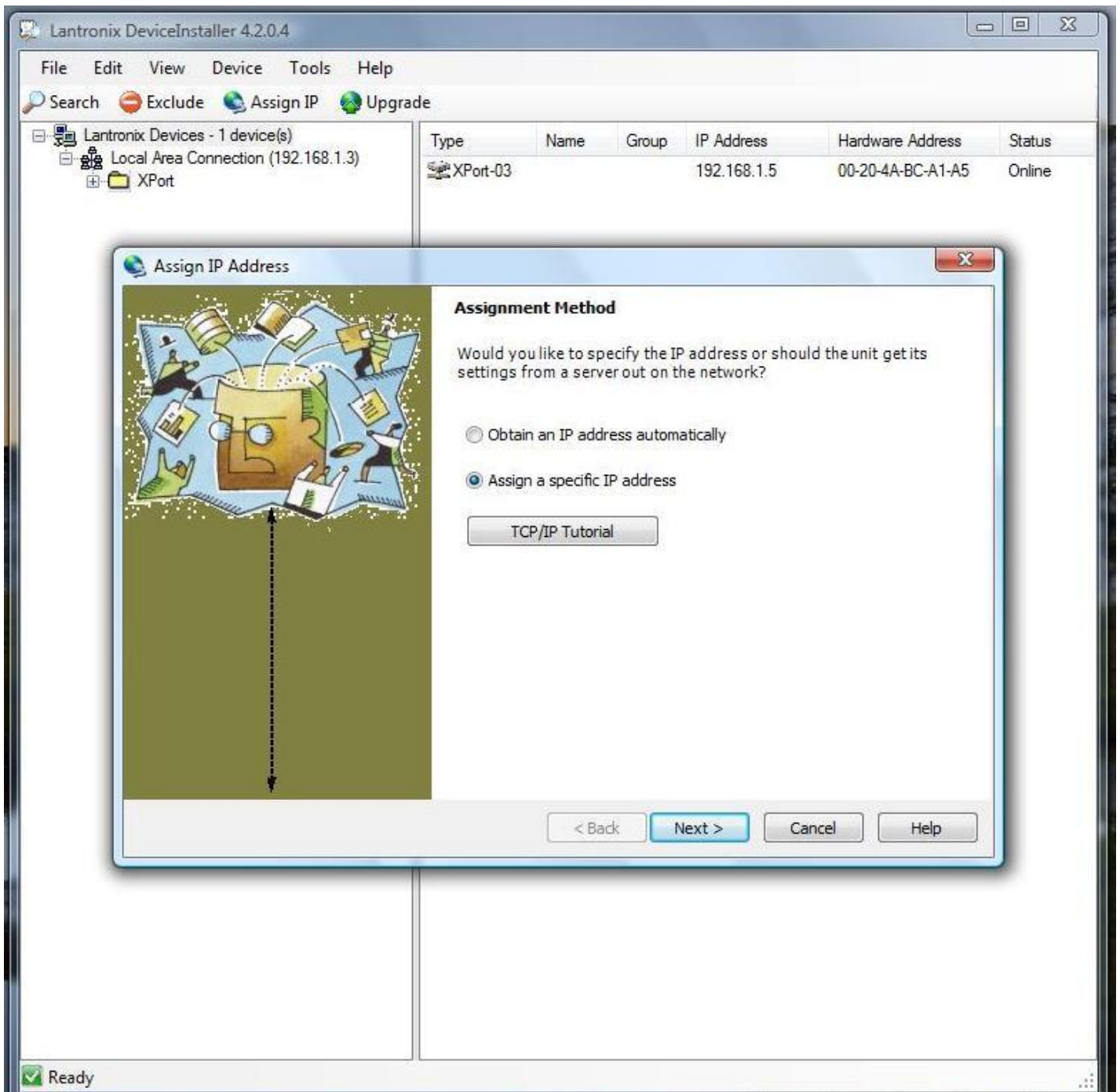
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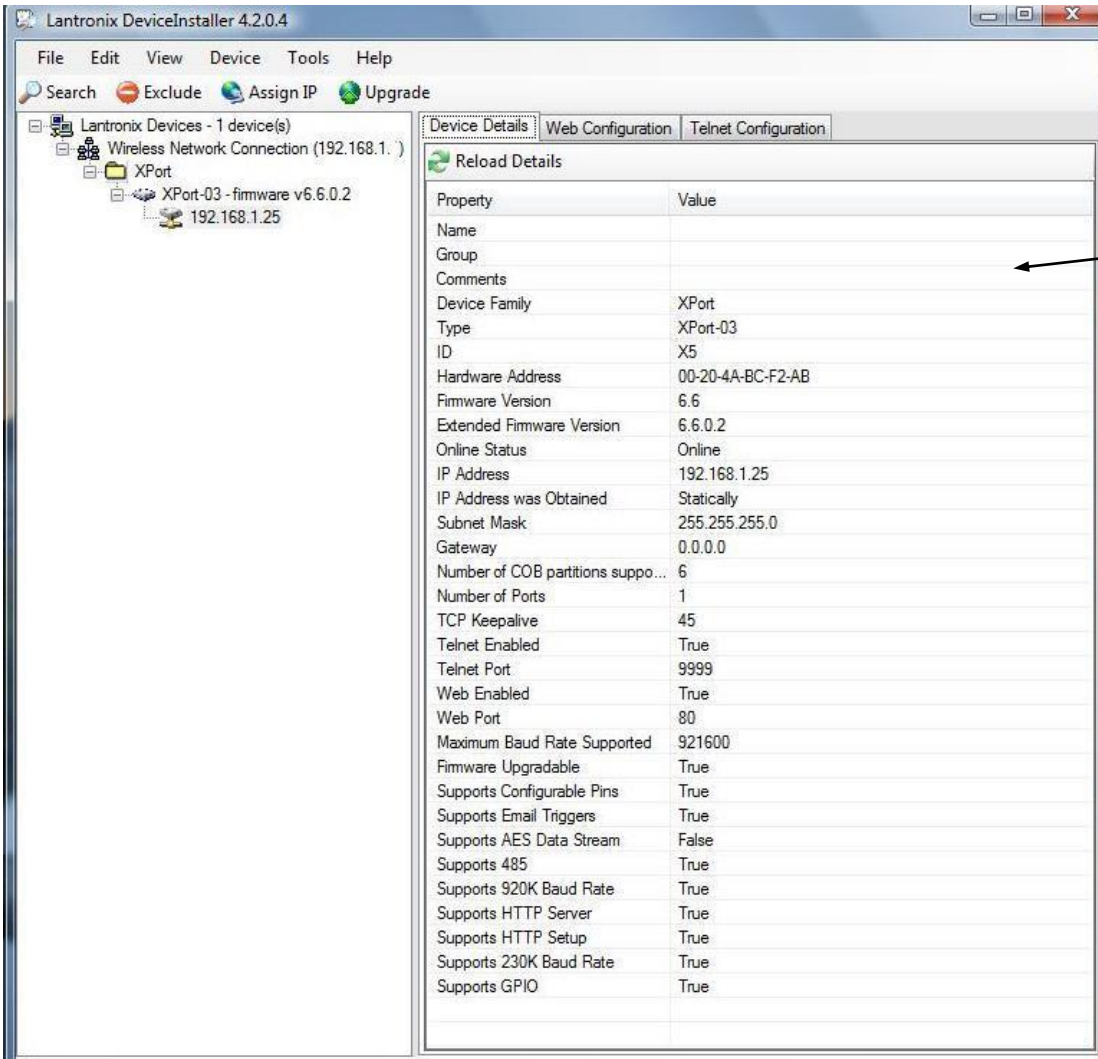
Screenshot Expanded view of Lantronix XPort connected device details (view after clicking on XPort-03 symbol 'Type' column in above screenshot

| Property	Value
Name	
Group	
Comments	
Device Family	XPort
Type	XPort-03
ID	X5
Hardware Address	00-20-4A-BC-F2-AB
Firmware Version	6.6
Extended Firmware Version	6.6.0.2
Online Status	Online
IP Address	192.168.1.25
IP Address was Obtained	Statically
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
Number of COB partitions suppo...	6
Number of Ports	1
TCP Keepalive	45
Telnet Enabled	True
Telnet Port	9999
Web Enabled	True
Web Port	80
Maximum Baud Rate Supported	921600
Firmware Upgradable	True
Supports Configurable Pins	True
Supports Email Triggers	True
Supports AES Data Stream	False
Supports 485	True
Supports 920K Baud Rate	True
Supports HTTP Server	True
Supports HTTP Setup	True
Supports 230K Baud Rate	True
Supports GPIO	True

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Third stage – IP address assignment for NET16PRMx (Xport) Device:

- The NET16PRMx card is shipped with a default IP 'Obtain an IP address automatically' option selected. That is, the IP address is dynamically assigned (by your local network/router/DHCP server) when you connect & power the card. You can use this IP address with our example programs – if you haven't already downloaded them, they can be downloaded from the following location:
- http://www.easydaq.biz/Download%20Contact%20Details/indexUSB24Mx.htm

- If you want to assign a specific (fixed) IP address, you can do it as follows:
- Click on the 'Assign IP' icon shown below the menu bar (see screenshot below)
- An 'Assignment method' sub-screen will open (see screenshot below)
- Click on 'Assign a specific IP address' option if you want to assign a fixed (known) IP address to your NET16PRMx (XPort), then click 'Next':

- A 2nd sub-screen will now appear (see below)
- Enter your fixed IP address in the upper data entry window (in our example, the IP address is being changed from 'Auto assigned' - 192.168.1.5 to 192.168.1.25 see below)
- You can also change the Subnet mask and Default gateway here if you wish (see below)
- Click on the 'Next' button to continue
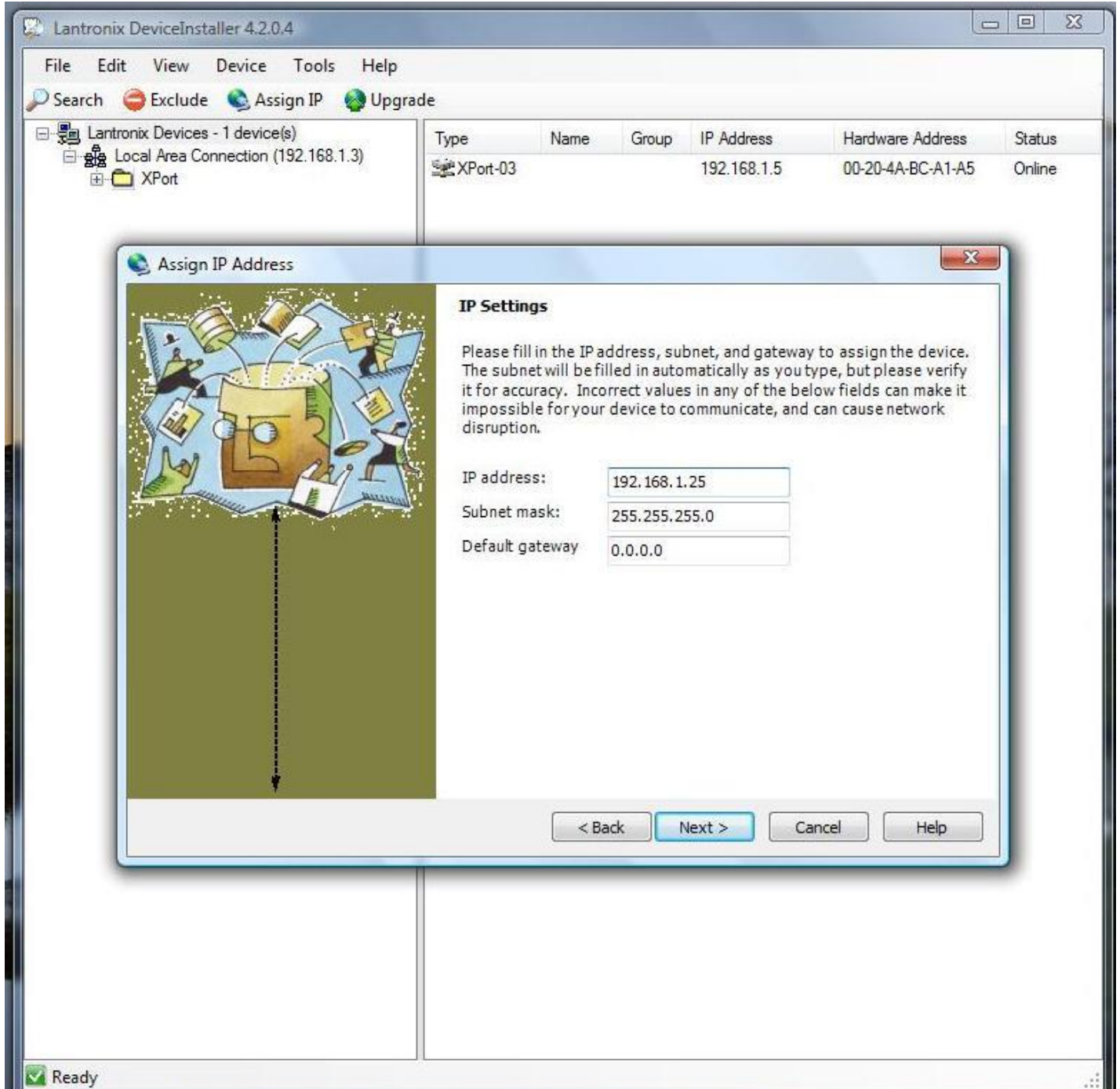
- A 3rd sub-screen will now appear – click on the 'Assign' button to proceed and complete the fixed IP address assignment to the XPort device – in our example, the IP address will change from the 'Auto Assigned' address of 192.168.1.5, to 192.168.1.25 (see image below):
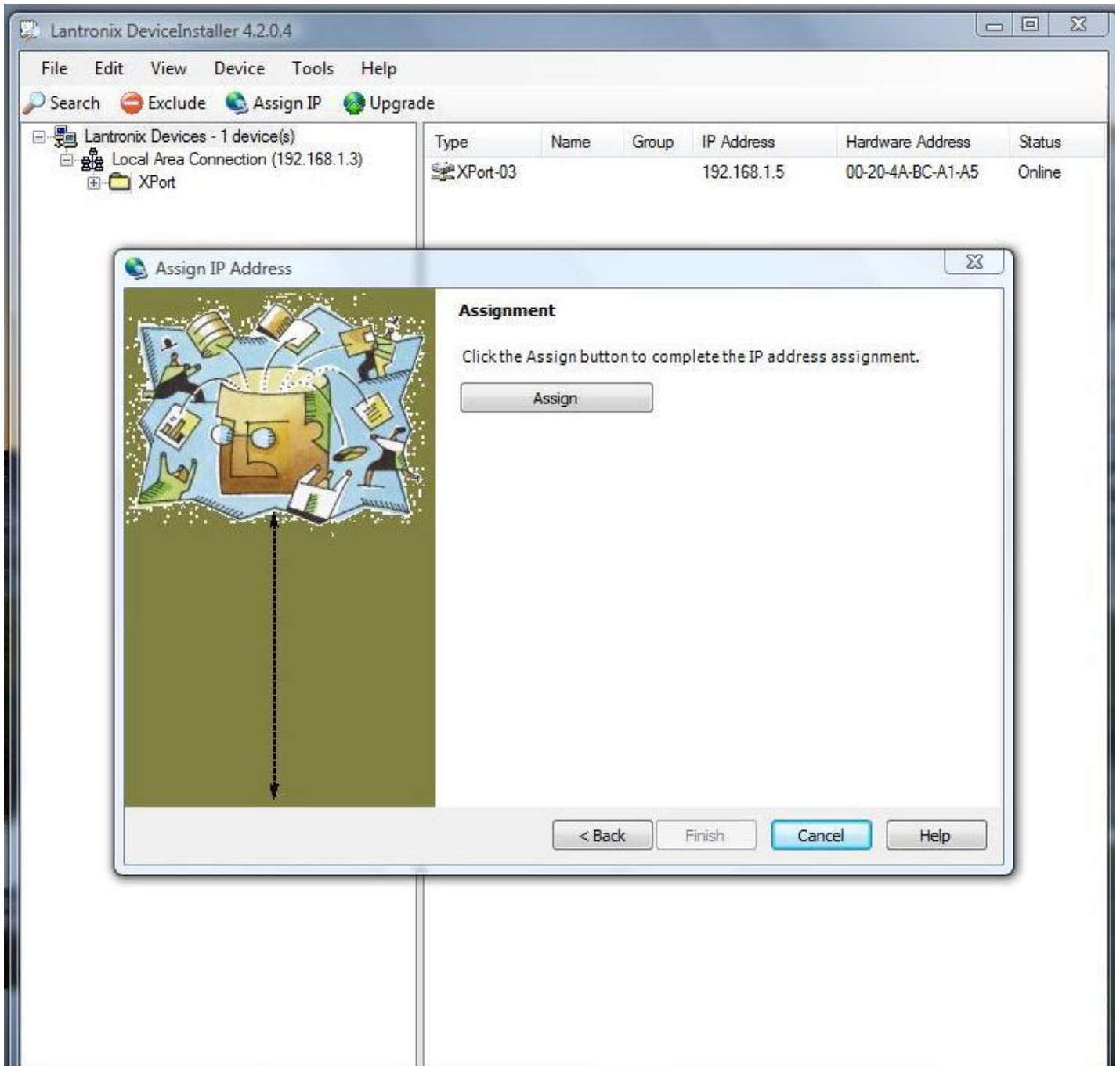
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- A 4th sub-screen will now appear – in our example, the IP address has now changed from 192.168.1.5 to 192.168.1.25 (see image below)
- Click on the 'Finish' button to complete the IP address assignment function
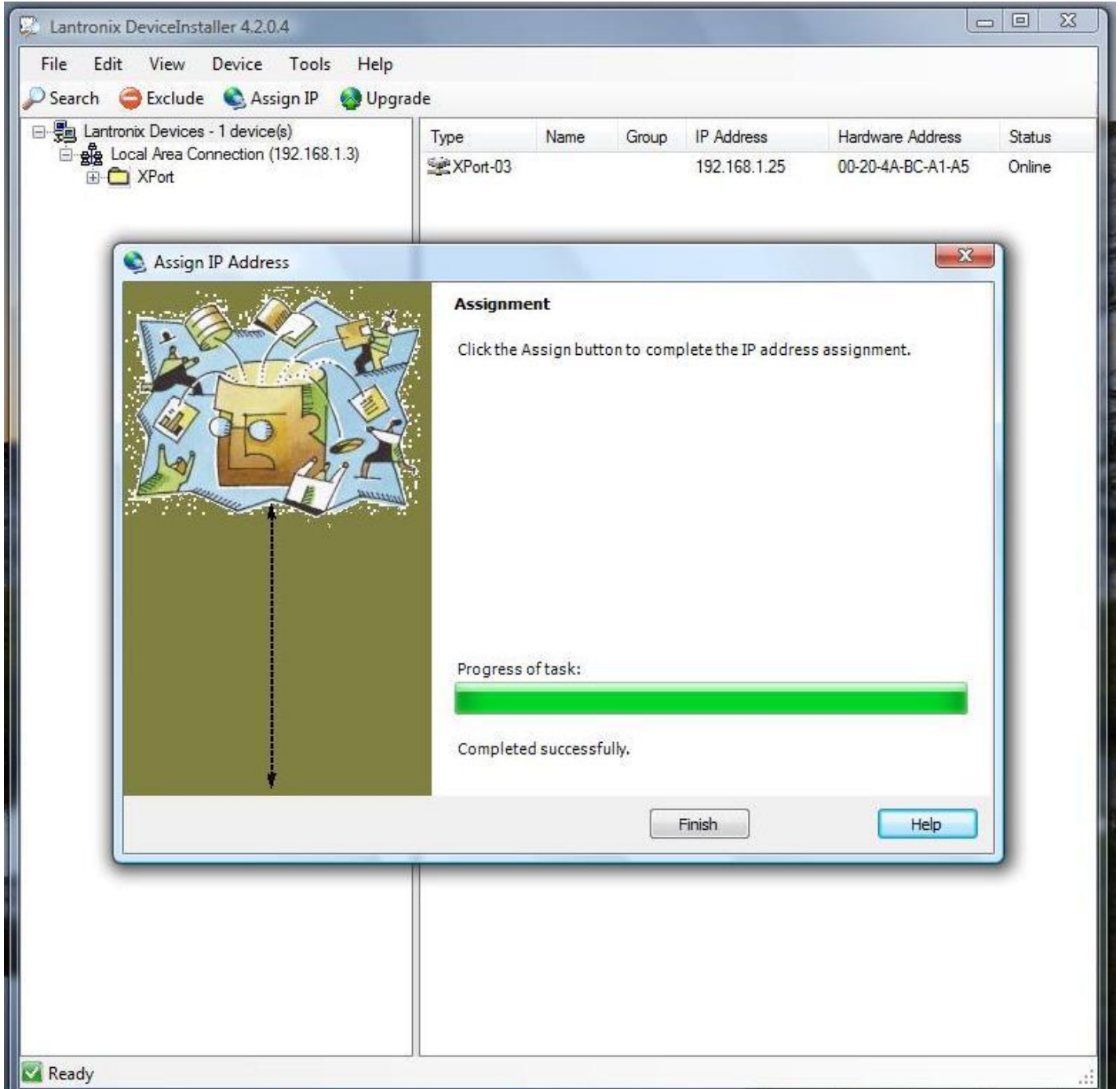
- The IP address has now changed to a 'fixed' IP address of 192.168.1.25 (see image below)
- At this point, you should be able to run our example programs (see following pages) with the newly assigned IP address or 'ping' the IP address
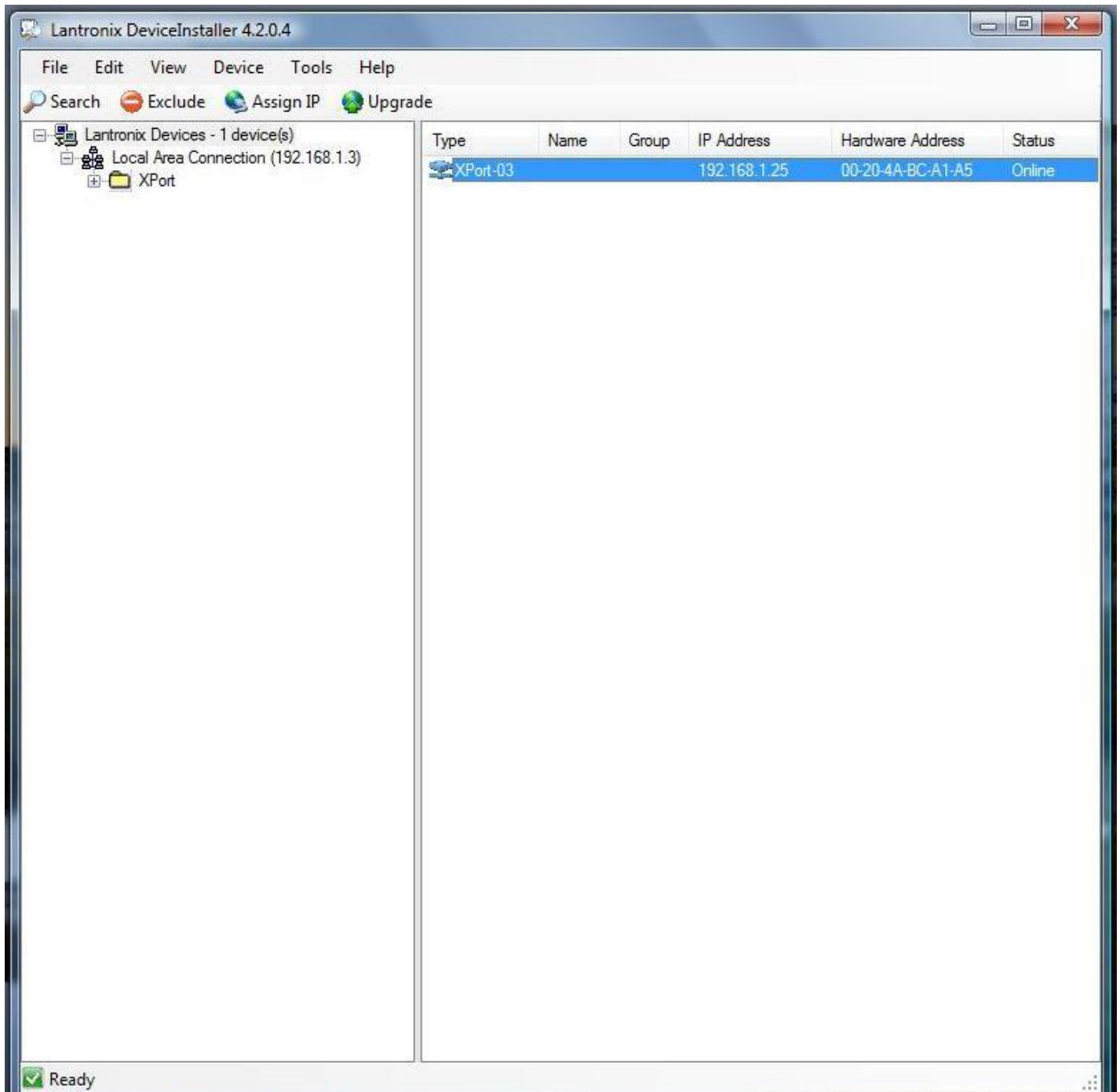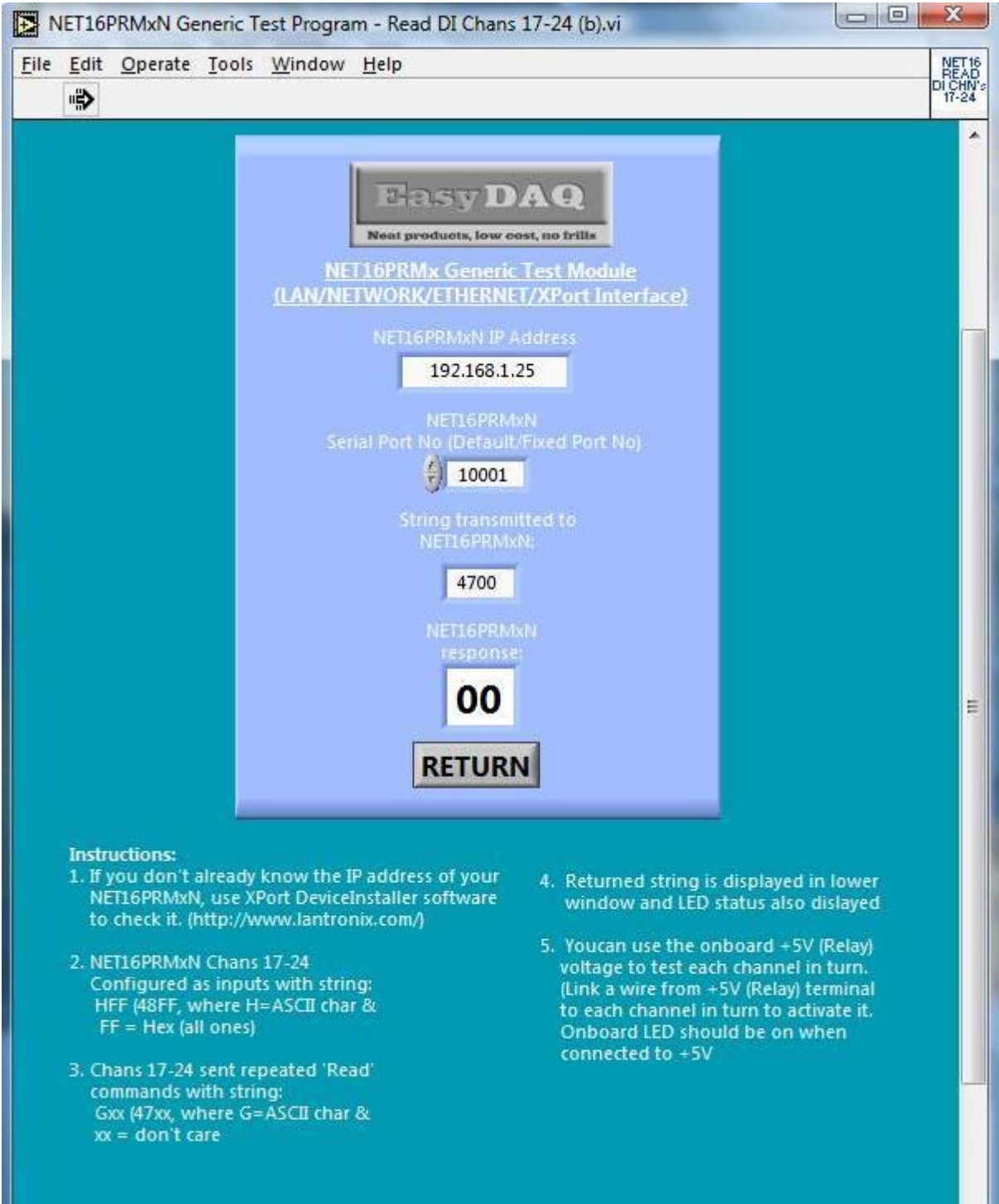
Fourth stage – running one of our NET16PRMx (Xport) demo programs:

- The screenshot below shows one of our NET16PRMx demo programs which is designed to activate the 16 onboard relays (channels 1-16) and read the status of the 8 digital input channels (channels 17-24, see next page)
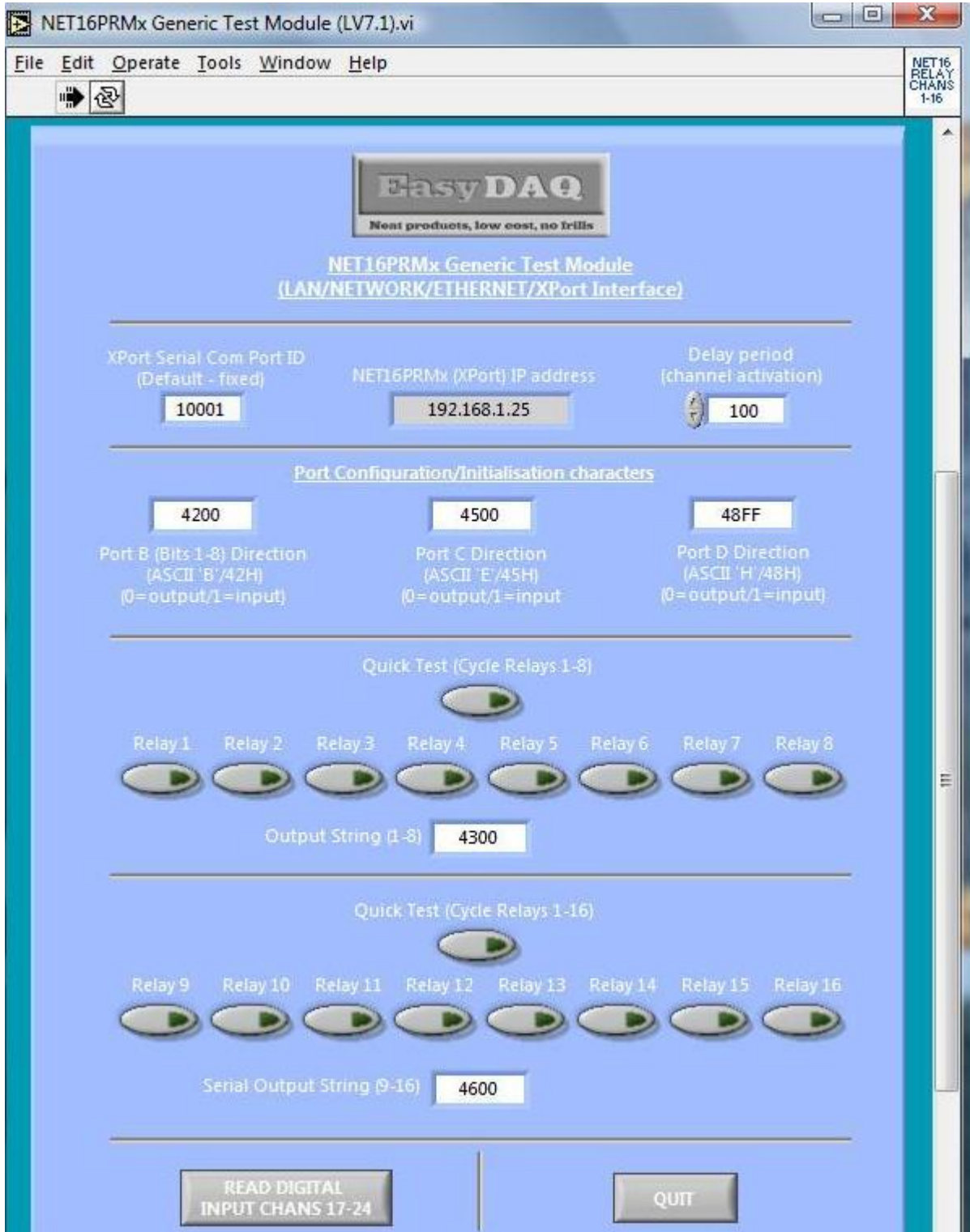
- The screenshot below shows the read the status of the 8 digital input channels (channels 17-24, see next page)

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Commanding the cards and writing your own software:

- In general our USB and serial port cards are designed to be easy to use. There are example programs (available from the downloads area of our website) in LabVIEW, Visual Basic, Visual C, Delphi & Agilent VEE. If you are not using/adapting one of our programming examples, and wish to write your own software, the cards can be commanded by simple ASCII/Hex based command characters. All of our USB/serial products use the command format so you should find it easy to port your software from one product or application to another.

- The cards have either a single 8 bit port (USB4/8 = Port B), two 8 bit ports (USB16 = Ports B & C) or three 8 bit ports (USB24 = Ports B, C & D). In the case of the USB4Mx cards, the lower 4 bits are used to control the relays (therefore they need to be set as outputs) and the upper 4 connect to the four general purpose (uncommitted) DIO channels. These can be configured as either inputs or outputs, depending on your requirements.

- **Steps required to command/control the cards:**

  1) Configuring the 8 bit port (set the port direction):

- ASCII B (42H) (Config Port B), followed by the hex character 00H (all zeroes) – this sets all 8 bits of the port as outputs (i.e. to control the relays). Your code only needs to do this once during initialization (only needs to be done following power up - if card is unplugged or powered down it will loose it's config settings).

- (ASCII B (42H) followed by the hex character F0H will set the lower four channels as outputs and the upper four as inputs).

  2) Setting/reading individual channels:

- ASCII C (43H) (Write Port B), followed by the individual bit status for whichever relay you want to switch on: 43H01H will switch on relay 1, 43H02H will switch on 2nd relay, 43H03H will switch on the 1st and 2nd relay at the same time and so on.

- ASCII A (41H) (Read Port B), followed by a 'don't care' character will perform a port read function. If you send this character sequence to the card, it will perform a read of the current status of 8 bit port (even if channels are set as outputs - therefore, your software does not need to 'remember' what you previously sent to the card). When you perform a port read function, you will also need to immediately follow the command by a serial port read in order to read the characters that are transmitted back from the card to your PC.

- 16 and 24 channel cards work in exactly the same way, but use the following additional ports:

- Port C = ASCII Exx (45H) (Config Port C), Fxx (46H) (Write Port C), & Dxx (44H) (Read Port C).

- Port D= ASCII Hxx (48H) (Config Port D), Jxx (4AH) (Write Port D), & Gxx (47H) (Read Port D).

- xx = 8 bit hex number (00H to FFH, where 00H = all channels off, FFH = all channels on)

- **Note 1: It is recommended that you first try the card out on a PC (using our generic demo program) to ensure that you can see it running. The demo program allows you to set individual relays or auto-cycle them. It also has a numeric display window which shows the Hex characters that are being sent to the card in order to configure & control the card.**

- **Note2 : The USBDO96 card uses the same commands but uses a latching function. Please email us for more details**