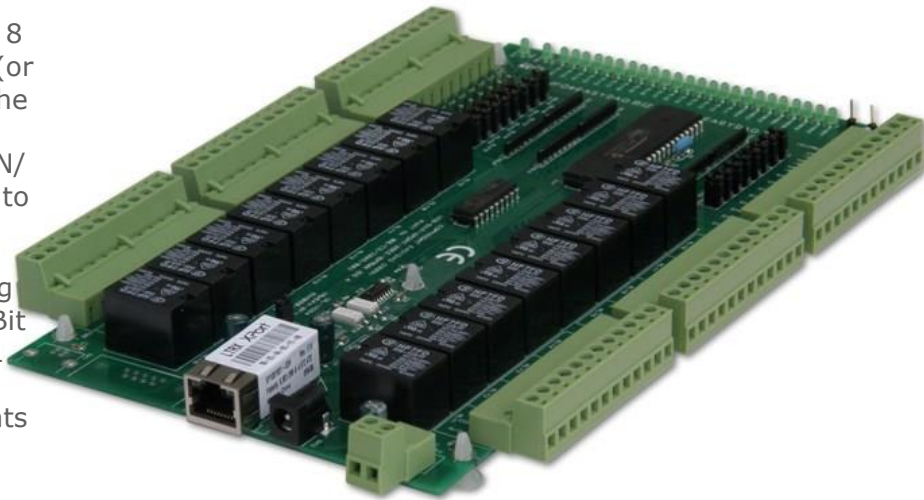


## Features

- Network/LAN/Ethernet connected card, with 8 relays + 8 DIO + 8 Relays or DIO channels (or a mixture, via user selectable links). Uses the industry standard Lantronix XPort module – integral RJ-45 socket for direct Network/ LAN/ Ethernet connection, network opto-isolation to 5000Vrms.
- Lantronix XPort is a powerful module offering embedded/integrated web server, 10/100MBit Ethernet (auto-sensing), customisable HTML web pages, email server – send emails in response to user configurable GPIO pin events
- Lantronix XPort module supports full TCP/IP stack protocol, AutoIP, UDP, DHCP, ARP, ICMP, Telnet & SNMP network + AES encryption communications protocols. IP address can be manually assigned via web interface or AutoIP address assigned
- 3 GPIO pins available – email alerts can be sent via user configurable, pre-defined external trigger events
- Relays & PCB tracking are designed to handle 240VAC @ 10 amps. Stackable design with horizontal entry, 2 part (male/female) screw terminal blocks allowing rapid connect/disconnect of card from target wiring
- Relays are SPDT, Form C, changeover type, with N/O, COM and N/C contacts taken to two part screw terminal blocks
- Command set is identical to our existing range of Serial & USB port products. If you have previously used our products, your code can be easily ported to this product (requires Network- TCP/IP comms protocol - see example downloads)
- Example code downloads available for: LabVIEW. Uses simple ASCII/Hex text command strings & TCP read/write functions. SW overhead & operate/release time 10mS
- OS compatibility: WinXP/Vista/7, Mac OSX and Linux
- Requires external +5V DC/1A power supply
- LED channel & 5VDC status indicators
- Protective perspex cover & base & DIN rail mount option available. Supplied with nylon feet (will take self tapping screws)
- CE & RoHS & BS9001:2000 compliant
- Free shipping (Worldwide)



## Description

General purpose USB (or RS232/ Serial) 16 channel relay card + 8/8 DIO channel. Relays & PCB tracking are designed to handle 240VAC@10A.

Relay & DIO control/ activation is via simple ASCII/Hex characters. IP address can be manually assigned via simple embedded web interface when connected to your network. All relay contacts are connected to two-part screw terminal blocks along each side of the card. These allow rapid connect/disconnect or swap-over in your target system.

5VDC power connection is made via 2.1mm DC jack socket or 2 way screw terminal block in one corner of the card.

The card is stackable, via corner fixing holes. Available with a Perspex cover and DIN rail mount option if required.

DIO channels are normal logic level signals (+5V max) and can supply up to 20mA per channel. DIO channels can be disconnected (isolated) from LED's via jumper links.

Design includes network communication opto-isolators (to 5000Vrms).

## Specifications

### Comms Interface

Network/LAN/Ethernet, 10/100Mbit. RJ45 socket.

### Power supply

5V DC (@ /60mA per relay)

### Operating temp range

0 to +70°C

### Relays

See page 3 for technical details of the relays used

### Dimensions

Dimensions approx 245mm (L) 160mm (W) 18mm (H) (exc feet), Weight, 442g

## Order code

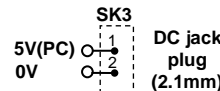
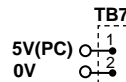
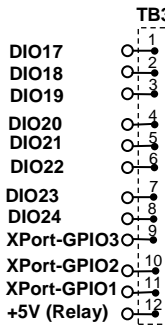
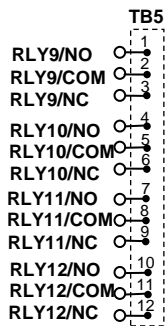
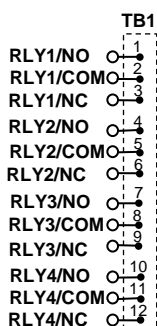
### NET16PRMxN

Network/LAN/Ethernet connected card fitted with 8 relays + 8 relay/DIO + 8 DIO, 240VAC/10Amp relays & two part (male/female) screw terminal blocks giving access to NO/COM/NC relay contacts, the DIO/GPIO channels and 0V/5VDC. Requires an external +5V PSU - connected via 2 way screw terminal block or 2.1mm DC jack connector.

**Product Datasheet 46**

**Connection details**

External & screw terminal block connections to the relay cards are shown below:



PLEASE NOTE:

Note: The NET16PRMx requires an external +5V/1A DC PSU.

**DIO Chans 9 to 16:**

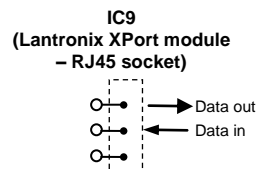
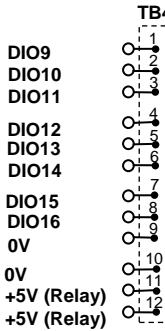
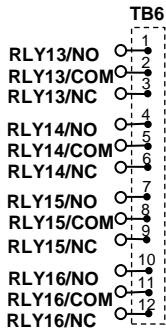
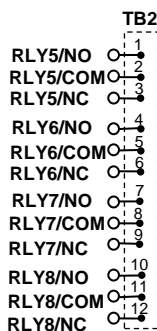
These are user selectable via onboard links. They can be individually connected as either DIO channels or relays. (Default connection is to the relays)

Links allow channels 17 to 24 to be isolated from the LED indicators giving the option of a direct DIO connection. (Default connection is to the LED indicators).

Relays 1 to 8 and DIO chans 17 to 24 are not user selectable.

**XPort-GPIO Chans 1 to 3**

The 3 XPort GPIO signals (PIO1-3) are taken to TB3. These can be used as external 'trigger' inputs (or outputs) for the XPort module. The embedded webpage allows user configuration and setup of the pin functions and embedded email server etc.



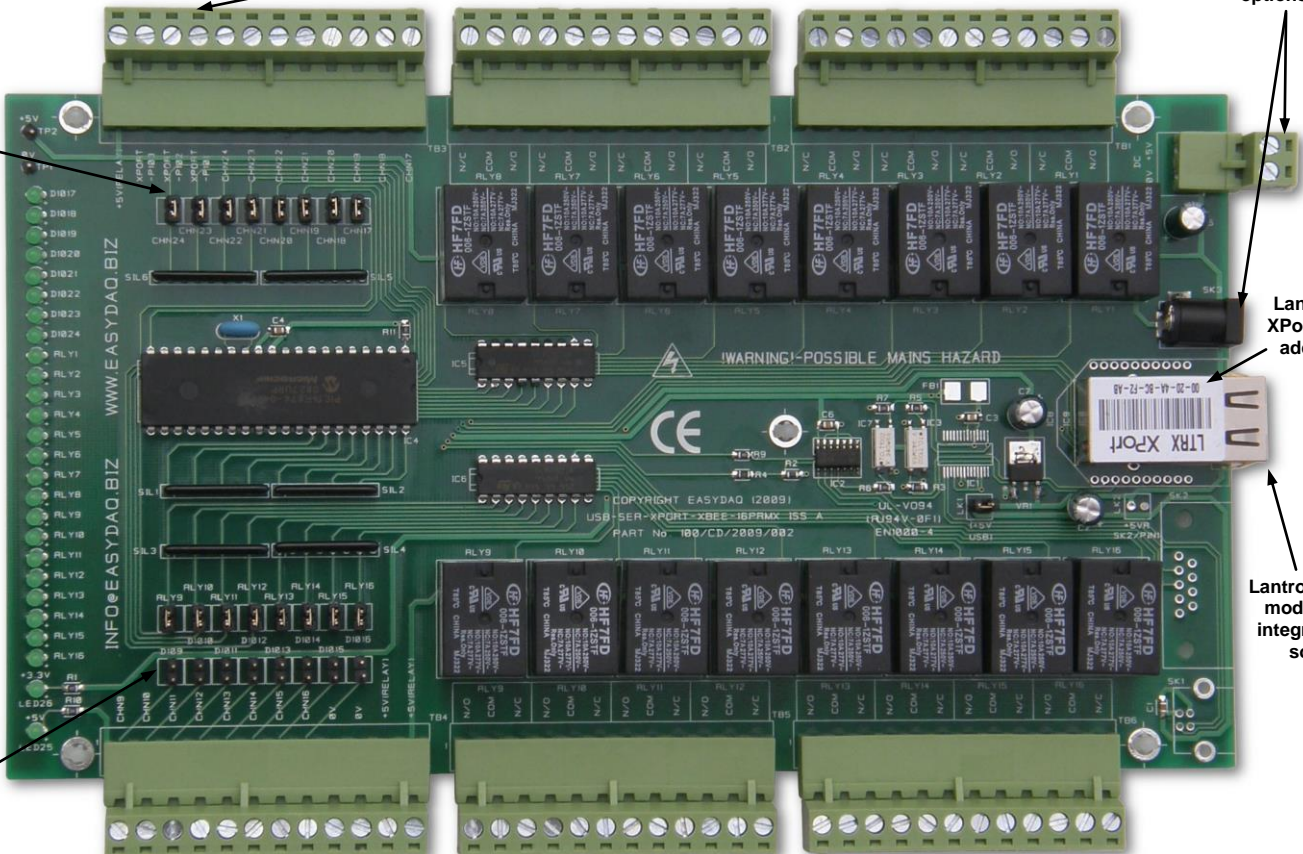
Links for Chans 17 to 24 allow DIO chans to be isolated from LED's

Links for Chans 9 to 16 allow Relay or DIO selection

+5V DC connection options

Lantronix XPort MAC address

Lantronix XPort module with integral RJ-45 socket

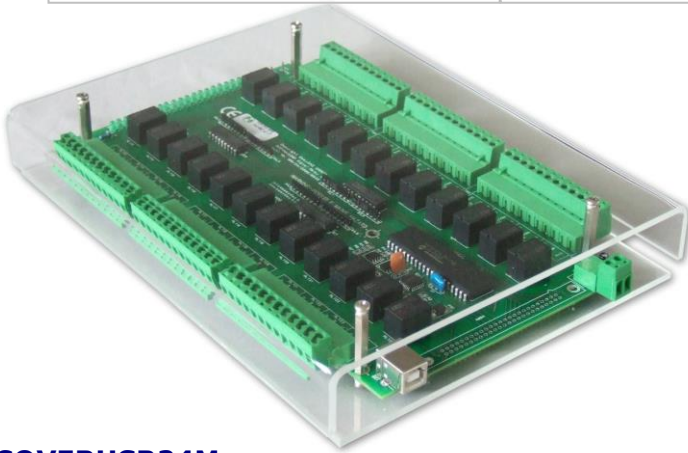


Face view showing screw terminal connectors & LED locations

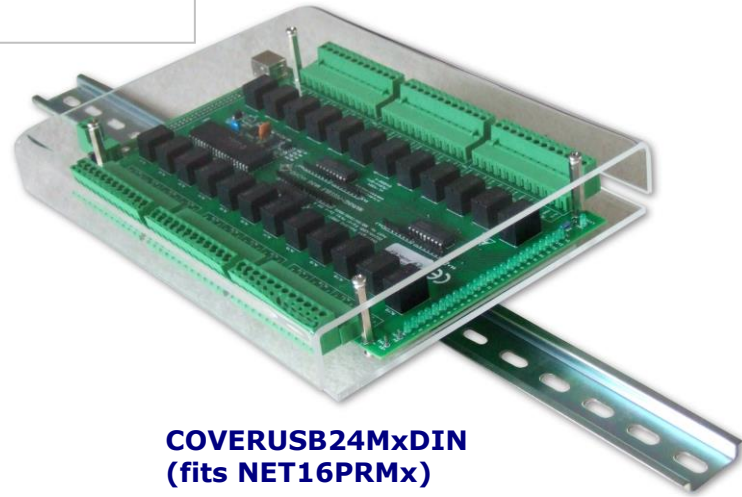
**Product Datasheet 46**

*Specifications: Relays*

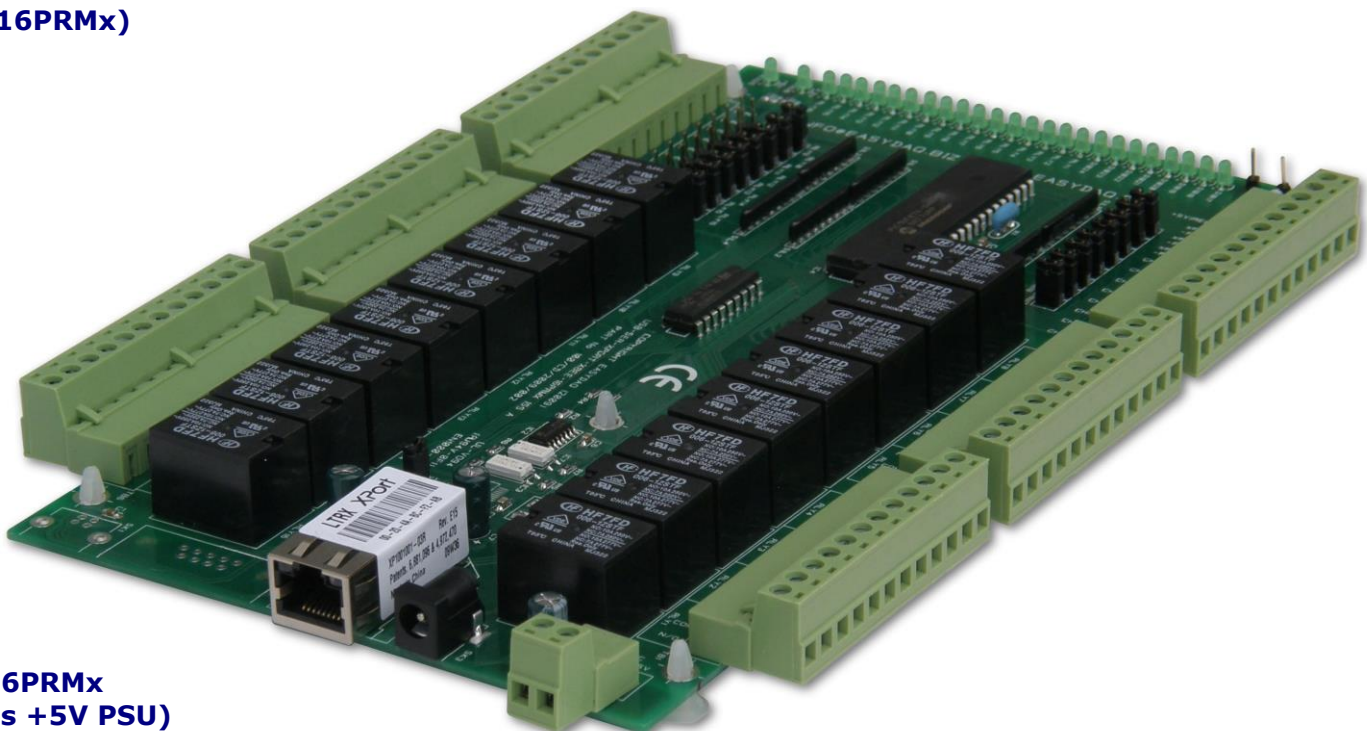
Parameter	Specification (Power relays)
Rated voltage/current	5VDC/80mA
Must operate/release voltage	75%/10% of rated voltage
Contact ratings	10A/240VAC/8A 30VDC
Contact resistance	100mΩ max
SW overhead/ Operate/ release time	10mS
Contact bounce period	0.6mS operate/ 7.2mS release
Contact material	AgSnO <sub>2</sub>
Operational life (min)	Mechanical 10 <sup>7</sup> / Electrical 10 <sup>5</sup>
Contact arrangement	SPDT, Form C



**COVERUSB24Mx**  
(fits NET16PRMx)



**COVERUSB24MxDIN**  
(fits NET16PRMx)



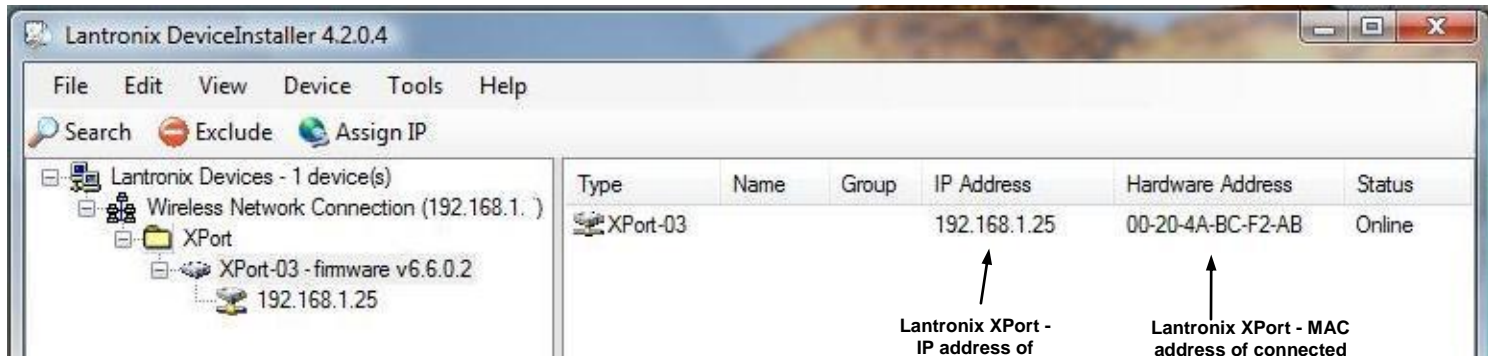
**NET16PRMx**  
(requires +5V PSU)

**Product Datasheet 46****Auto detection & setup**

When you connect this card to a Network router or switch, we recommend that you use the Lantronix XPort Device Installer software application to detect and configure your connected module. You can download the latest version from the following Lantronix Device Installer Support link:

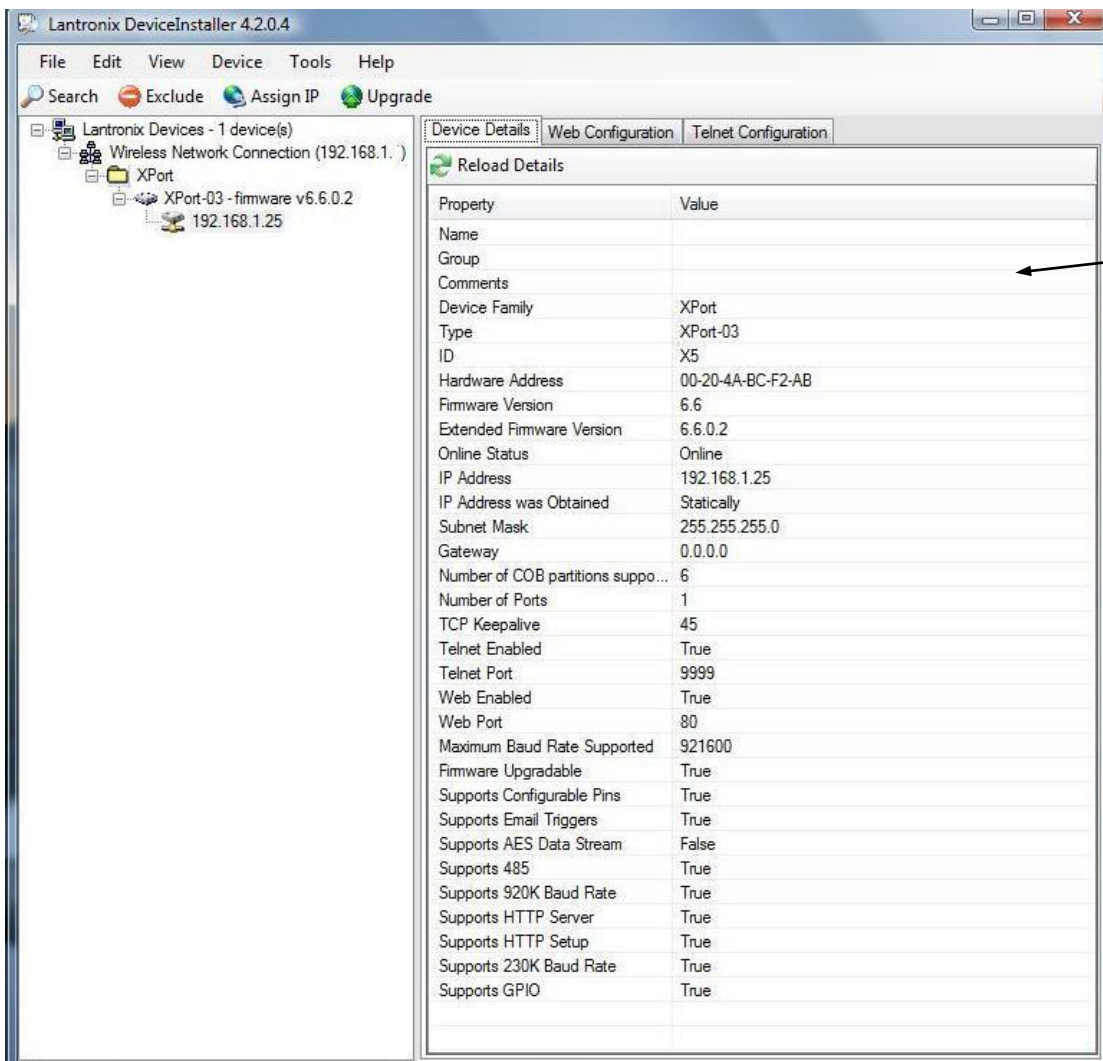
<http://www.lantronix.com/device-networking/utilities-tools/device-installer.html>

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 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)



Screenshot Expanded  
view of Lantronix XPort  
connected device details  
(view after clicking on  
XPort-03 symbol 'Type'  
column in above  
screenshot)

### ***Command format***

The card is initialised & commanded by sending a single ASCII character followed by a hex number (representing the required port status). The commands address each port of the PIC device (there are three 8 bit ports. ASCII character Hex equiv shown in brackets). You must first set the port direction (as either input or output). If a channel is set as an input, your software must send a read command (of that channel) followed by a read of the serial port. The card can also be commanded via HyperTerminal – see below.

### **Command summary:**

ASCII A x (41H) = Read Port B (Channels 1-8)  
 ASCII B x (42H) = Configure Port B (Channels 1-8)  
 ASCII C x (43H) = Write Port B (Channels 1-8)

ASCII D x (44H) = Read Port C (Channels 9-16)  
 ASCII E x (45H) = Configure Port C (Channels 9-16)  
 ASCII F x (46H) = Write Port C (Channels 9-16)

ASCII G x (47H) = Read Port D (Channels 17-24)  
 ASCII H x (48H) = Configure Port D (Channels 17-24)  
 ASCII J x (4AH) = Write Port D (Channels 17-24)

### **Port B, C & D (Channels 1-8, 9-16 & 17-24) command detail:**

ASCII 'B' (42H), X Initialises the card (sets the port & channel I/O directions). Set direction of Port B, 1=Input, 0= output. (i.e. where X=10111111 (AFH) = sets bit 7 as an output, the rest as inputs).  
 ASCII 'C' (43H), X Write data X to Port B (i.e. X=00000001 (01H), sets channel 1 to active). Valid data bytes are latched by the card until a further valid data byte is written to it.  
 ASCII 'E' (45H), X Initialises the card (sets the port & channel I/O directions). Set direction of Port C  
 ASCII 'F' (46H), X Write data X to Port C (i.e. X=00000001 (01H), sets channel 1 to active).  
 ASCII 'H' (48H), X Initialises the card (sets the port & channel I/O directions). Set direction of Port D  
 ASCII 'K' (4AH), X Write data X to Port D (i.e. X=00000001 (01H), sets channel 1 to active).

### ***Using Windows HyperTerminal***

In order to test operation, the card can be connected to a serial port and controlled from Windows HyperTerminal. Ensure port configuration is set as shown above, type (ASCII) characters shown above to achieve port direction and read or write command/data.

### ***Example downloads***

Example driver files and executables are available from the 'downloads' button for the NET16PRMx webpage (<http://www.easydaq.co.uk/>). Example programs are currently only available for LabVIEW.

### ***Uses existing USB & serial port software examples***

This card uses the same software drivers & command interface that is used in our existing range of USB/Serial port relay & DIO card products, but using the TCP/IP comms protocol not USB/Serial). Therefore, if you have already used our USB or serial port products on a previous project, you may be able to re-use some or all of your code (or use a USB card in place of a serial port card).

If you are a Mac or Linux user, please refer to this web link for additional information and low level details on how to address and command the cards (paste this link into your browser):

[https://www.easydaq.co.uk/datasheets/Data%20Sheet%2034%20\(Using%20Linux%20with%20EasyDAQ%20USB%20Products\).pdf](https://www.easydaq.co.uk/datasheets/Data%20Sheet%2034%20(Using%20Linux%20with%20EasyDAQ%20USB%20Products).pdf)