

1 Overview

- The NXTSD104 touch-screen display system has the following options for connectivity.
- USB Port. Always fitted.
- Optional 8P8C(known as RJ45) socket for 100BASETX Ethernet. The Mini USB is not used.
- Modbus TC/IP is supported.

For more information and wiring diagram, consult the NXOGTSD-6101 Operator's Guide for Touch-screen bulletin.

1.1 USB Port

This is currently only used for firmware updates, but in the future could allow burner configuration information and event logs etc, to be copied from the touch-screen for viewing / archiving on a PC.

1.1.1 MMC Card

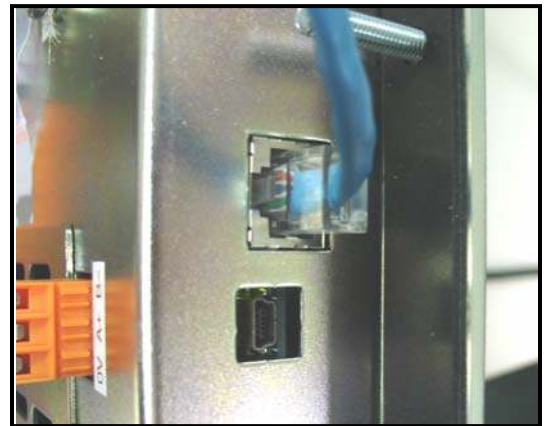
Older NXTSD104 used an MMC card behind a small vented cover to update the screen firmware.

1.2 Ethernet connection

This is the normal, and recommended, method to connect to the touch-screen. Connection is made into a socket at the side of the display module.

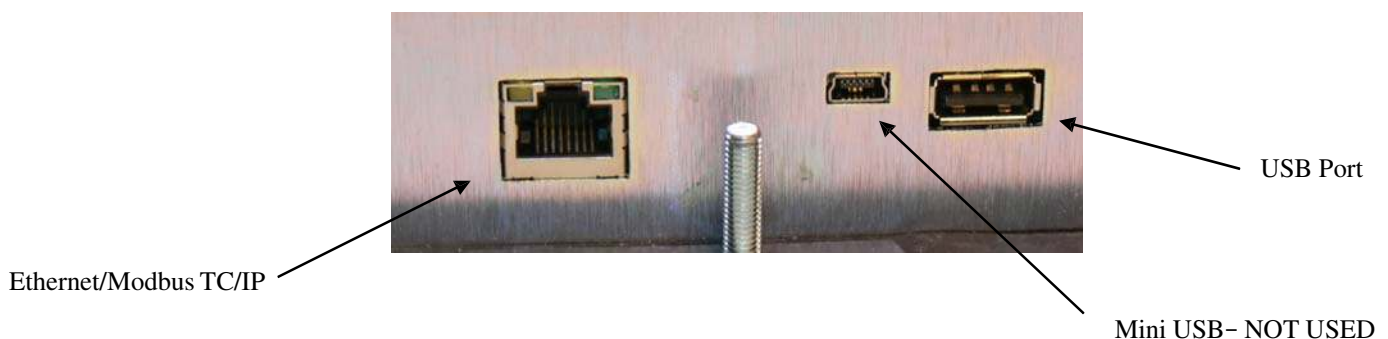
Normally, an Ethernet 'patch' cable (1 to 1) will be required to connect the touch-screen to an Ethernet switch (or router). Another patch cable is then used to connect from the switch (or router) device to PC's.

If a direct connection between the touch-screen and a laptop/PC is required, then an Ethernet 'cross-over' cable should be used, to eliminate the need for an Ethernet switch. A direct connection of the PC and the TSD to a router can also be used rather than a crossover cable.



1.2.1 Modbus TC/IP

Modbus TC/IP is supported on all NXTSD104 with firmware version 2.300 onwards. Modbus communications can be sent over the Ethernet, all Modbus registers listed in Fireye bulletin MOD-6101 are supported.



1.3 CANBUS Display Connection

Connect the touch-screen display to the NX6100 or the PPC6000 using shielded cable from positions PA1-PA4 or PB1-PB4. Terminate wires to the 4 position terminal block on the back of the touch-screen display.

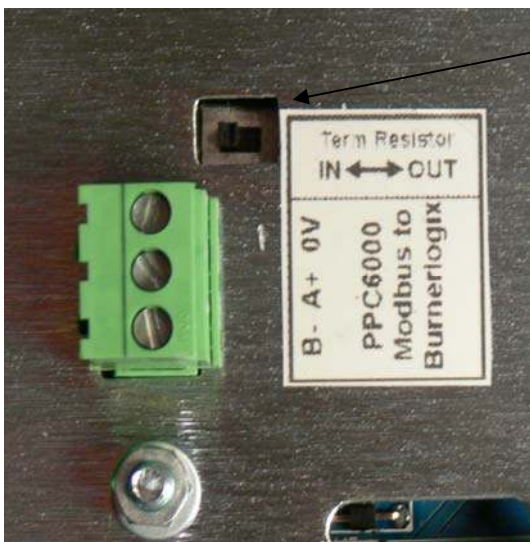


Screen termination (5) at screw.

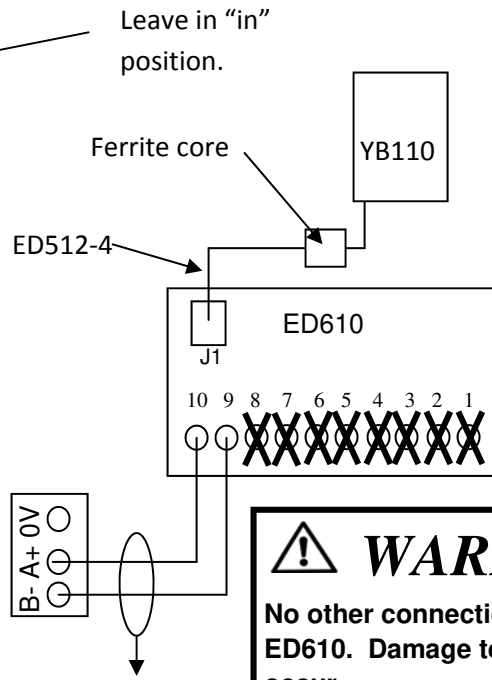
1.4 Display Connection with PPC6000 and BurnerLogix YB110

Connect the touch-screen display to the PPC6000 using shielded cable from positions PA1-PA4 or PB1-PB4. Terminate wires to the 4 position terminal block on the back of the touch-screen display.

Connect the YB110 using the three terminal connector labeled A+, B-, 0 volt. The A+ & B- connections are connected to the Fireye ED610 terminal block (purchased separately) on terminals 10 & 9 (A & B), the 0 volt connection is not used. The ED610 is connected to the YB110 via an ED512-4 cable (purchased separately).



Leave in "in" position.



Screen connection

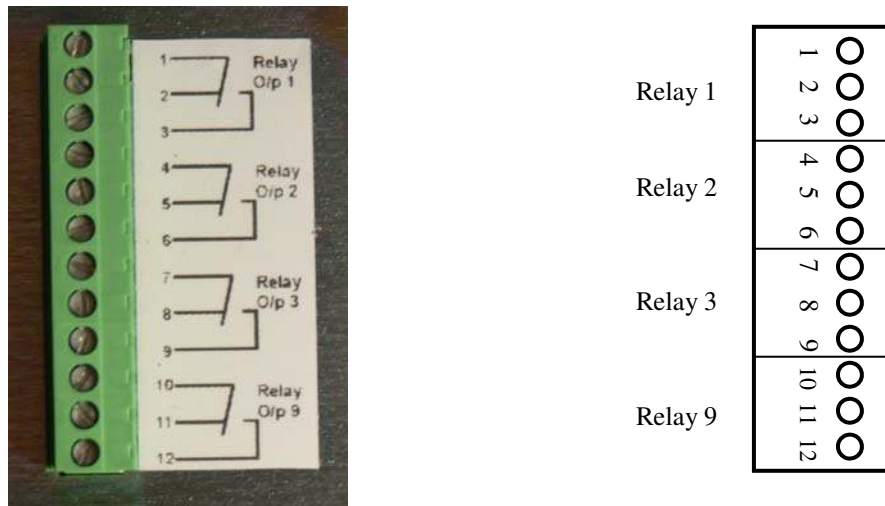
WARNING
No other connections allowed on ED610. Damage to YB110 will occur.

TSD104 setup for use with YB110

After wiring the YB110 to the TSD as shown above, the TSD must be told to communicate to the YB110 via Modbus. With the burner off, enter full commissioning mode. (see section 5.3.1.1) by pressing: Menu, Burner Setting (enter suppliers passcode LV3), then , Menu, Screen Configuration, Display. Press the Modbus Configuration button. The default is Integrated NX6100. Next set the Modbus Node id to match the YB110, for example,1. See Fireye bulletin BL-1001 for details as to configuring the Modbus in the BurnerLogix. At this point you will set the current Modbus configuration to PPC/BurnerLogix. When the dialog box appears, press Change. Next, press the RS485 Comms button and select the baud rate that matches the BurnerLogix YB110. The default is 9600,N,1. The currently displayed message from the YB110 display should now appear in the lower right section of the TSD. Any status or lockout messages for the YB110 will be displayed here also. The fault numbers assigned to YB110 lockouts is the Modbus message number (found in BL-1001) plus 200. For example, if the YB110 locked out during PTFI, the message on the TSD104 would be: F207 LOCKOUT FLAME FAILURE_PTFI. That is, Modbus message number 7+200= F207.

1.5 Relay Connections

The NXTSD104 contains four user programmable relays, 1,2,3 & 9. The relay function is selected by either option 17, various other options or via the Abacus blocks programming software. Abacus is not discussed in this publication. Depending on whether the relay will be used as an alarm output, such as flue temperature, or general purpose such as energized when a particular profile is selected, will determine how the relay is wired. The tables below are taken from the main bulletin, NEX-6101, please refer to that publication for complete details.



For General Purpose use, the following chart shows the correct connections to the “PR” terminals.

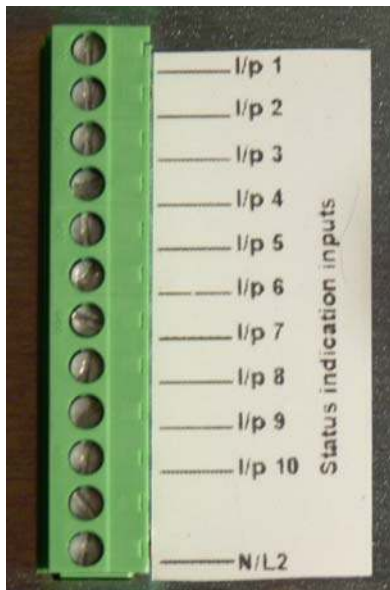
Option Parameter	Relay Output	GENERAL PURPOSE Connection Detail			
17.1	1	Display, Low or Line voltage	PR1	Common	
			PR2	Normally Closed	
			PR3	Normally Open	
17.2	2	Display, Low or Line voltage	PR4	Common	
			PR5	Normally Closed	
			PR6	Normally Open	
17.3	3	Display, Low or Line voltage	PR7	Common	
			PR8	Normally Closed	
			PR9	Normally Open	

17.4	4	NX6100, PE1 PE4 Line voltage output ONLY		
17.5	5	N/A		
17.6	6	N/A		
17.7	7	NXDBVSD, PZ15, PZ16, Low voltage <50V AC/DC, 200mA		
17.8	8	NXDBVSD, PZ17, PZ18, Low voltage <50V AC/DC, 200mA		
17.9	9	Available on NXTSD104 display ONLY	PR10	Common
			PR11	Normally Closed
			PR12	Normally Open

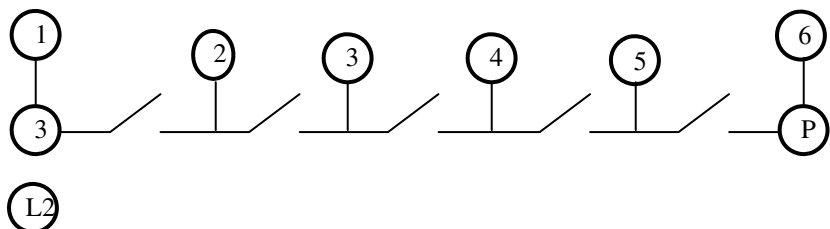
For Alarm Purpose use, the following shows the correct connections to the “PR” terminals.

Option Parameter	Relay Out put	ALARM Function Connection Detail		
17.1	1	Display, Low or Line voltage	PR1	Common
			PR2	Normally Open
			PR3	Normally Closed
17.2	2	Display, Low or Line voltage	PR4	Common
			PR5	Normally Open
			PR6	Normally Closed
17.3	3	Display, Low or Line voltage	PR7	Common
			PR8	Normally Open
			PR9	Normally Closed
17.4	4	NX6100, PE1 PE4 Line voltage output ONLY		
17.5	5	N/A		
17.6	6	N/A		
17.7	7	NXDBVSD, PZ15, PZ16, Low voltage <50V AC/DC, 200mA		
17.8	8	NXDBVSD, PZ17, PZ18, Low voltage <50V AC/DC, 200mA		
17.9	9	Available on NXTSD104 display ONLY	PR10	Common
			PR11	Normally Open
			PR12	Normally Closed

1.6 Line Voltage Status Inputs



The NXTSD104 includes 10 line voltage (120-230 volt) inputs that may be used to indicate the present status of various interlocks or other related devices. For example, many of the items in the non-recycling running interlock circuit can be monitored by the input and their status viewed on the NXTSD104. These inputs can be labeled on the NXTSD104 as required.



2 Software Configuration.

2.1 IP Addresses

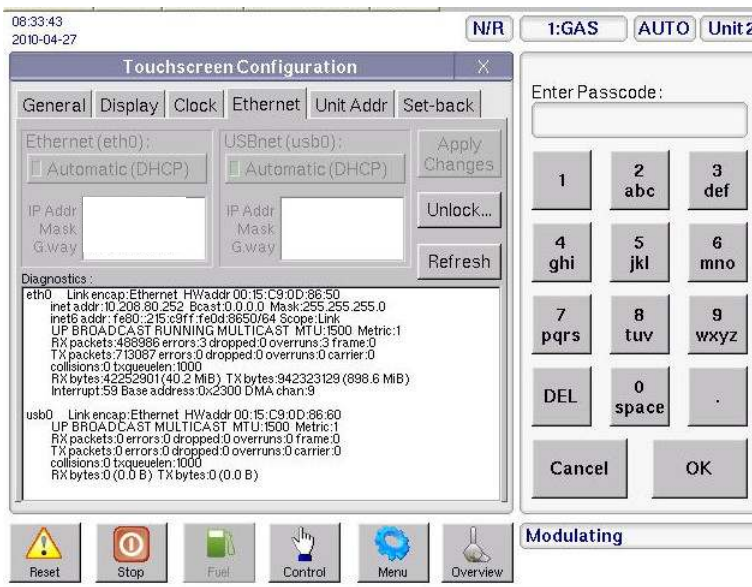
Devices on an Ethernet communicate using IP addresses and these need to be assigned to each device on the network. These addresses can be assigned manually or automatically.

2.2 DHCP - automatically assigned IP addresses.

If the touch-screen and PC are connected together via a router device, or on a home / office network, it is likely that the router device (or a DHCP server on a company network) will automatically assign IP addresses to both the PC and the touch-screen. Ensure that the both the PC and the touch screen are set to 'automatic (DHCP)'. Both the touch-screen and PC will have this setting as a default.

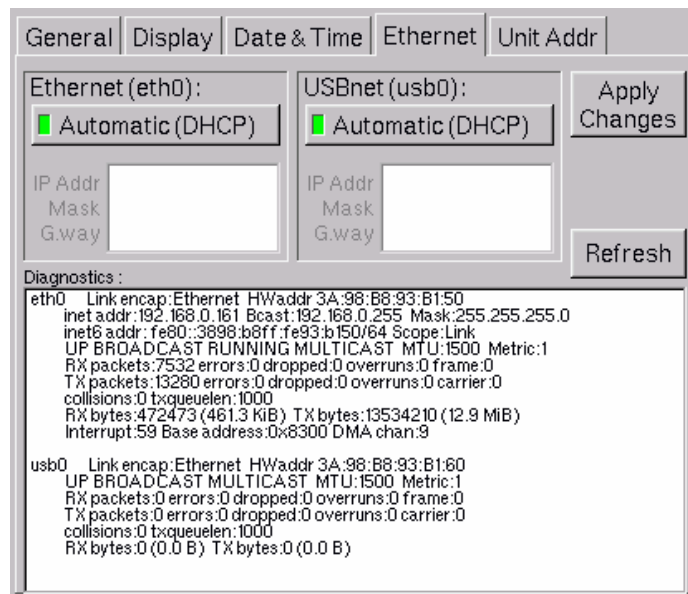
2.2.1 Touch-Screen Ethernet settings :

Select the MENU button and then SCREEN CONFIGURATION button to reveal the setup screen.

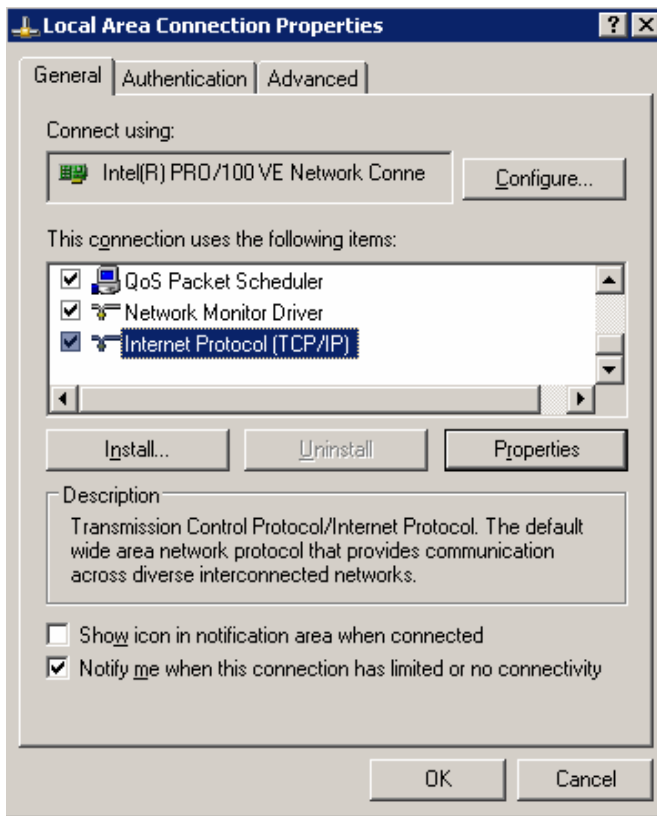


Select the Ethernet tab to reveal the Ethernet settings screen show on the left. Click the Unlock button to enter the commissioning password which will allow you to set DHCP or fixed IP options.

Tap the Automatic (DHCP) button to enable this mode. This is confirmed as set when the indicator within the button is green



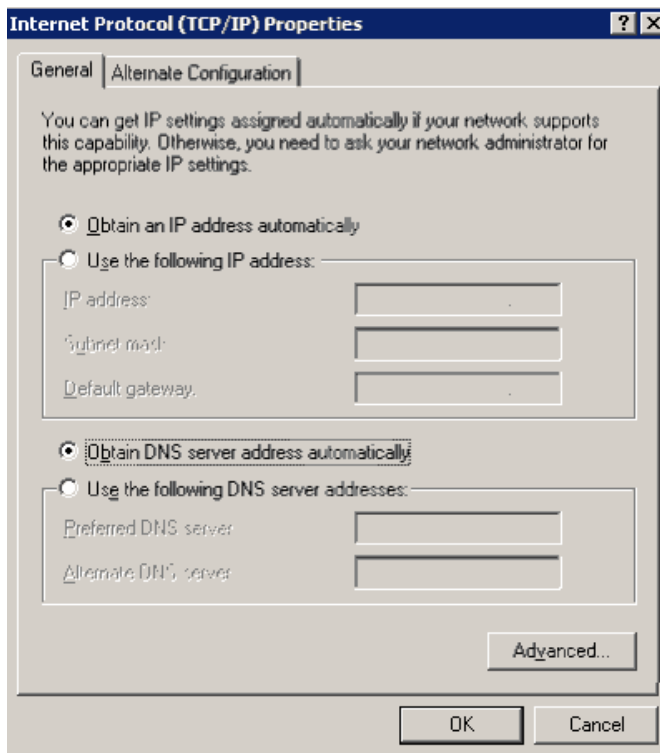
2.2.2 Windows Ethernet settings :



To check the Ethernet settings for the PC, select 'Network Connections' from 'Control Panel' and then right click on the 'Local area connection..' icon. From the menu select 'Properties' to reveal the window shown on the left.

Scroll through the list of connection protocols until 'Internet Protocol (TCP/IP)' is highlighted.

Select the 'Properties' button to setup the connection settings.

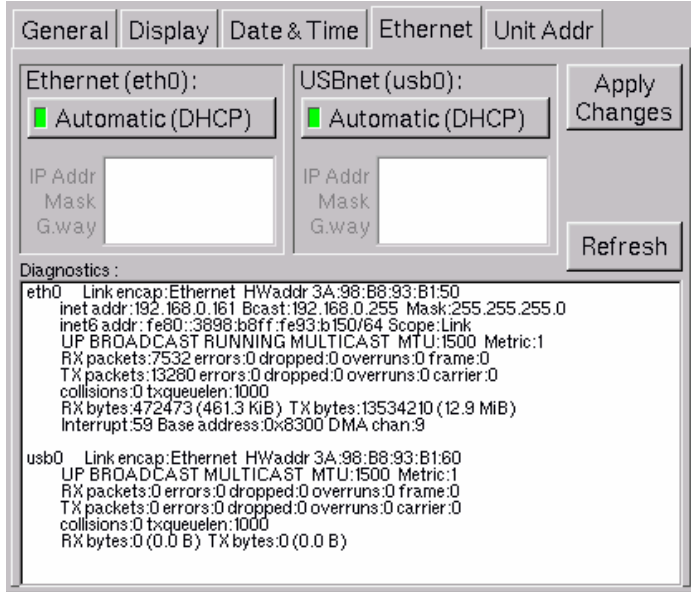


select the 'radio' buttons for automatic IP addressing and automatic server addressing as shown in the picture on the left, then click on 'OK'.

Once these settings have been made then the connection may be diagnosed via the 'diagnostics' box on the touch-screen Ethernet page. As in the example below, the diagnostics for 'eth0' (Ethernet) contains the line :

```
inet addr : 192.168.0.161
```

This means that the touch-screen has made acquired it's IP address successfully. If it does not show 'inet addr', then tap the 'refresh' button a few times to prompt the touch-screen to fix the connection.



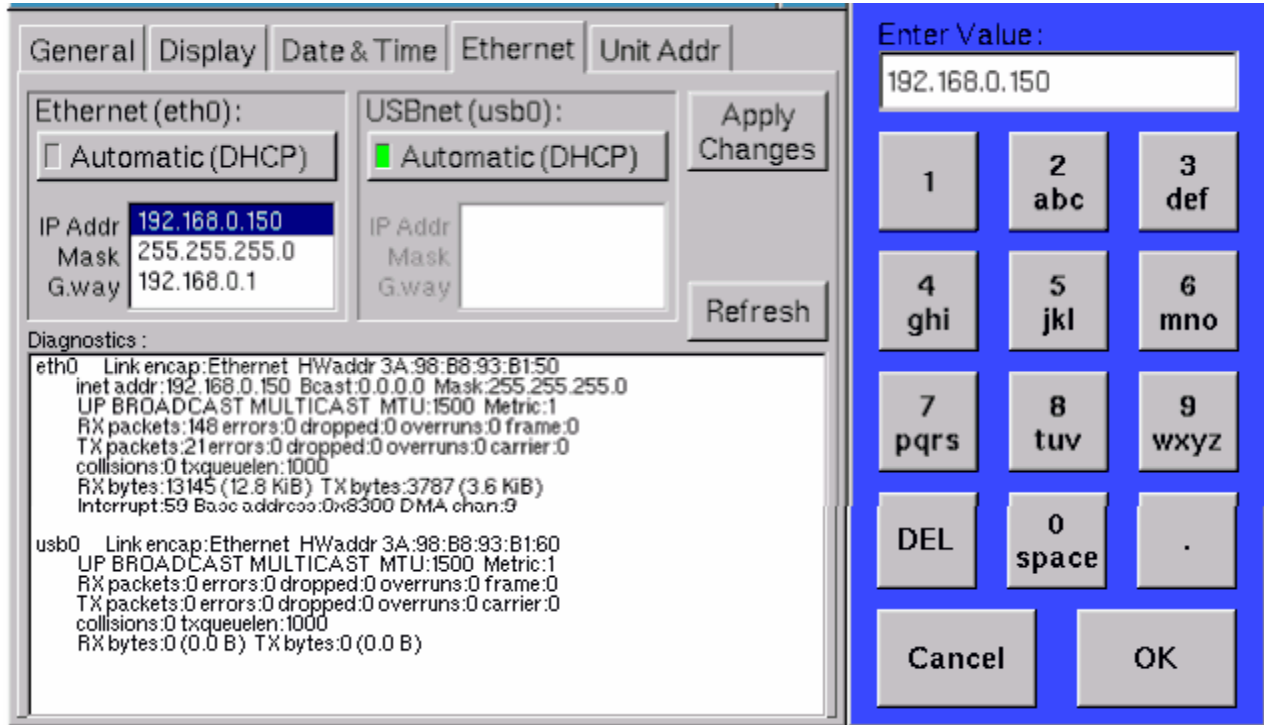
2.3 Manual assignment of IP addresses

If the Touchscreen and PC are not connected to a network which assigns addresses automatically (for example: a cross-over cable is used to make a direct connection between them, or a basic switch device is used only), then the addresses must be assigned manually.

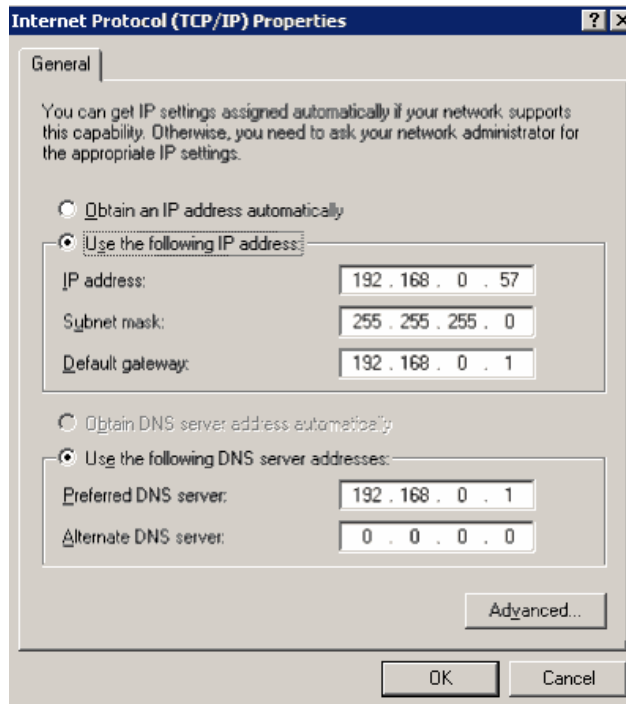
In the Touchscreen, turn 'Automatic (DHCP)' off for the Ethernet (eth0) interface. Next, enter IP Addr, Mask and Gateway in the box below this, using the keypad :

It is vital that ALL three lines are entered with valid data if automatic is turned off. For local area networks, it is normal to use 192.168.x.x or 10.10.x.x for IP addresses. Other ranges are used for the internet. In the example above, I have chosen 192.168.0.150 as the address for the screen. The network mask is 255.255.255.0 – this mask is ok to use in nearly all circumstances. The gateway here is 192.168.0.1. A valid IP address must be entered here, but it will only be used if the Touchscreen requires internet access (for example for a firmware update or to allow remote access from the internet). It is ok to use a gateway address that doesn't actually exist if neither of these are required – or you can just use the IP address of your PC.

Once you have entered the required information, don't forget to 'Apply Changes'. Note that the USBnet should be left at Automatic since this is unsupported at the moment.



The IP settings information must then be entered into the PC, if it does not have an address assigned already :



The subnet mask and gateway must be the same as in the Touchscreen, but the last three digits (only) of the IP address must be different (assuming the mask is 255.255.255.0). Here I have used 192.168.0.57 for my pc.

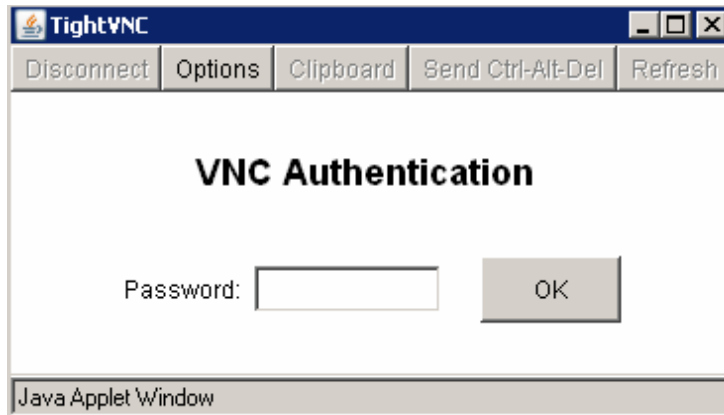
Using the Ethernet features

Open a web browser on your PC and enter the IP address of the Touchscreen into the URL line, followed by: 5800
192.168.0.150:5800

The browser should insert http:// at the beginning, so you get :

http://192.168.0.150:5800

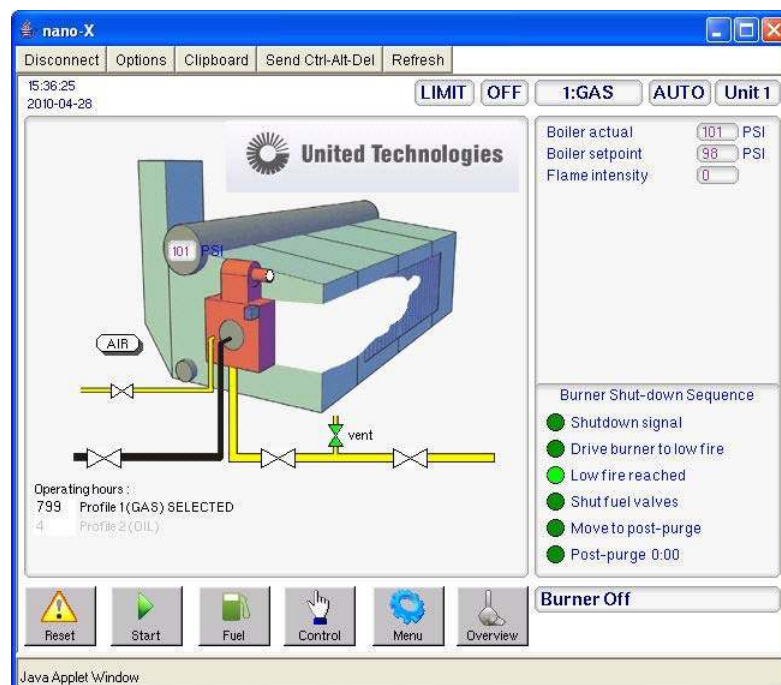
A 'java' page should open and then shortly after (give it a couple of minutes if necessary), a new window titled 'TightVNC' will open asking for a password. On some browsers, this window may open behind the main browser window, so you may have to go looking for it on your desktop.



Enter the remote access password (the default is 'test', but this may change) and you should almost immediately get access to the Touchscreen from your PC.

From this window, you can perform all actions that you can on the Touchscreen except for :

- Entering the full commission ratio passcode
- Initiating 'safety tests'.
- Calibrating the Touchscreen



On firmware versions 1.100 onwards (products shipped after summer 2008), you can simply enter the IP address into your browser without the :5800 on the end. You will get a menu page where you can directly read fault I event logs and some other information. You can click the 'remote control' link from that screen to get the screen access as given by the ':5800'.

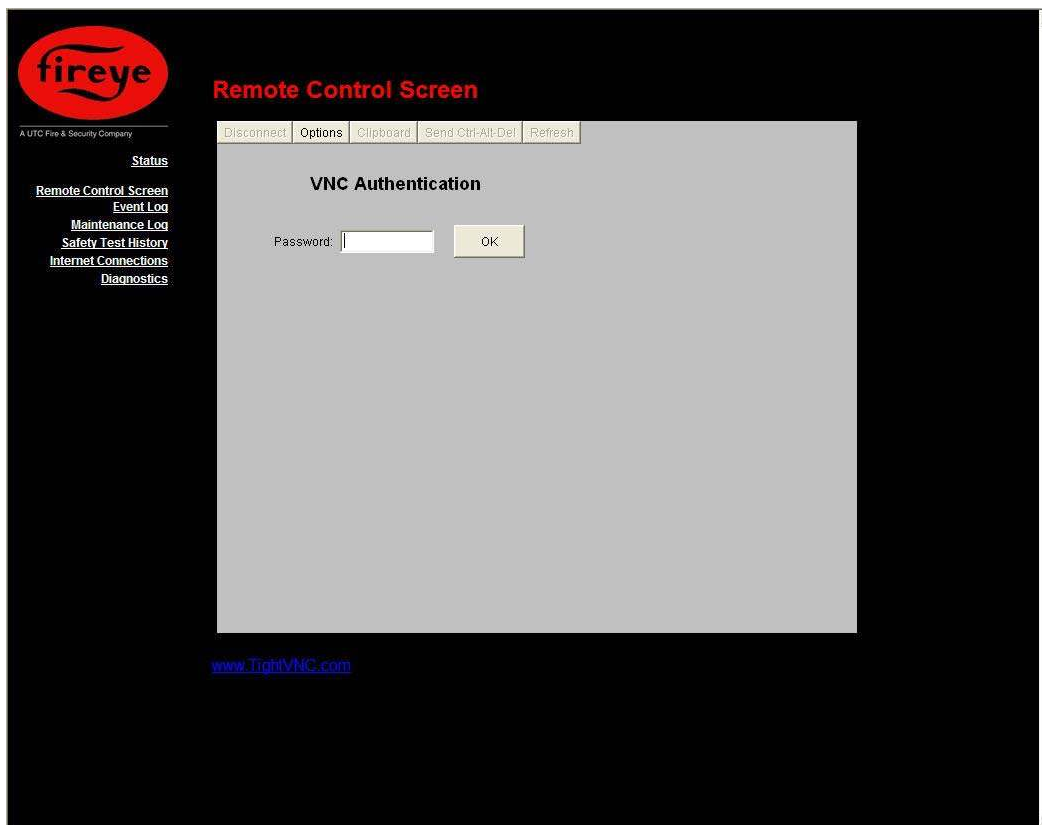
If the Touchscreen Ethernet settings seem ok, but it does not work, try rebooting the Touchscreen by powering off for a few seconds.

3 More Information

The Touchscreen access is provided using the VNC protocol (virtual network computing). This uses port 5900 so if the Touchscreen is behind a firewall I NAT, this port must be forwarded. You can download a free VNC viewer from <http://www.tightvnc.com> and use this directly to access the Touchscreen. This allows the screen to be stretched to fit the PC screen, which is useful for demonstration etc.

On port 5800 (and later firmware, port 80), the Touchscreen runs a web server which can be used to download a Java version of the VNC viewer program. This will allow screen access as described above in any Java-enabled browser on almost any personal computer platform. This has been tested on windows 98, 2000, XP, Vista, Apple Mac OSX and Linux. It has been tested with Firefox, Internet explorer and Safari web browsers – however, you may need to download Sun Java (free) if it is not installed already from <http://www.java.com>

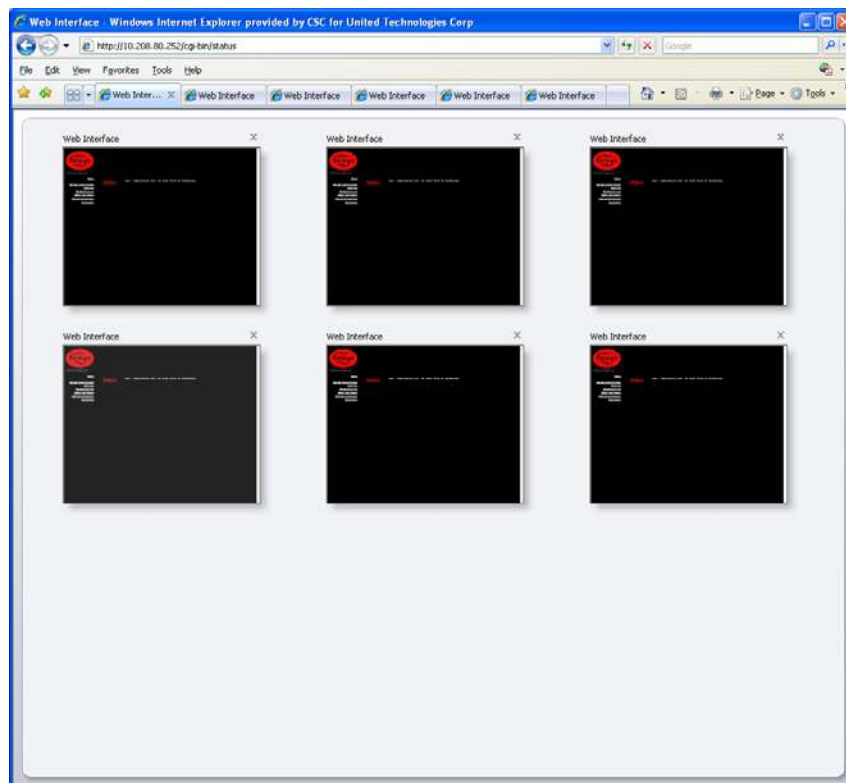
If the touch-screen is behind a firewall or NAT device, then port 5800 (or port 80 on later firmware) must be forwarded to allow the VNC program to be downloaded from the touch-screen.



Internet Explorer version 7 and later will allow you to view multiple tabs to keep track of many boilers on the same screen. To set up multiple tabs, go to Tools, Internet Options, General and enter each IP address on a separate line.



When you start the browser all of your touch-screens will appear, each in a separate tab. You must login to each control screen.





Troubleshooting:

Communication issues: If the communication light on the router fails to come on with the touch-screen attached, first, check that the Ethernet cables are plugged in to each port. Next, change cables to rule out a bad cable. Next, check that the router is in DHCP mode and is transmitting IP addresses. (In command mode on the attached PC, run `ipconfig /all` in command mode to determine the broadcast IP address) On the touch-screen configuration page, Ethernet tab, check to see if there is an `inet addr:`, `Bcast:` and `Mask:` line present in the Diagnostics box. If there are no values showing in `inet addr:`, switch to Fixed IP mode (press Automatic (DHCP) button to shut off) - enter valid addresses (see section 2.3). With cables detached and a valid fixed IP address, press Apply Changes and then Refresh—you should immediately see your IP address (`inet addr:`) in the second line of the diagnostics window. If you do not see any values at this time, contact your local Fireeye representative.

On some fixed IP networks, the remote (VNC) screen will freeze after several minutes of inactivity. If the screen is frozen, press the disconnect button to close the session, then restart the session.



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