

NXTSD104-CG Touch-Screen Connectivity Guide April 5, 2013

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 touchscreen. 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.



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).





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	

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17.4	4	NX6100, PE1 PE4 Line voltage output ONI	LY	
17.5	5	N/A		
17.6	6	N/A		
17.7	7	NXDBVSD, PZ15, PZ16, Low voltage <50	V AC/DC, 2	00mA
17.8	8	NXDBVSD, PZ17, PZ18, Low voltage <50	V AC/DC, 2	00mA
17.9	9	Available on NXTSD104 display ONLY	PR10 PR11 PR12	Common Normally Closed 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 devises. 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

General Display Date & Time Ethernet Unit Addr							
Ethernet (eth0): Automatic (DHCP) IP Addr Mask G.way	USBnet (usb0): Automatic (DHCP) IP Addr Mask G.way	Apply Changes					
Diagnostics :		Refresh					
eth0 Link encap:Ethernet HWad inet addr:192.168.0.161 Bcast inet6 addr:1680.13898.b8ff.f UP BROADCAST RUNNING RX packets:7532 errors:0 dro TX packets:15280 errors:0 dro collisions:0 txqueuelen:1000 RX bytes:472473 (461.3 KiB) Interrupt:59 Base address:0xi usb0 Link encap:Ethernet HWaa UP BROADCAST MULTICA: RX packets:0 errors:0 droppe TX packets:0 errors:0 droppe collisions:0 txqueuelen:1000 RX bytes:0 (0.0 B) TX bytes:0	Idr 3A.98:88:93:81:50 :192.168.0.255 Mask:255.255.255 :93:b150:64 Scope:Link MULTICAST.MTU:1500 Metric:1 pped:0 overruns:0 carrier:0 TX bytes:13534210 (12.9 MiB) 8300 DMA chan:9 ddr 3A.98:88:93:B1:60 ST MTU:1500 Metric:1 d:0 overruns:0 frame:0 d:0 overruns:0 carrier:0 0(0.0 B)	.0					



2.2.2 Windows Ethernet settings :

🚣 Local Area Connection Properties	? ×
General Authentication Advanced	
Connect using:	
Intel(R) PR0/100 VE Network Conne	
This connection uses the following items:	
🗹 📇 QoS Packet Scheduler	-
✓ T Network Monitor Driver	
March 1 Internet Protocol (TCP/IP)	_
	<u> </u>
I <u>n</u> stall <u>U</u> ninstall P <u>roperties</u>	ן ר
Install Uninstall Properties	
Install Uninstall Properties Description	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity OK Cancel	

Internet Protocol (TCP/IP) Properties

? ×



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 though 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 touchscreen 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.

	General Display Date & Time Ethernet Unit Addr							
Ethernet (eth0): Automatic (DHCP)		USBnet (usb0): Automatic (DHCP)	Apply Changes					
	IP Addr Mask G way	IP Addr Mask Gway						
	Diagnostics :		Refresh					
eth0 Link encap:Ethernet HWaddr 3A:98:88:93:B1:50 inet addr:192.168.0.161 Bcast:192.168.0.255 Mask:255.255.255.255.0 inet& addr:192.068.0.161 Bcast:192.168.0.255 Mask:255.255.255.255.0 inet& addr:192.0680:3698:b8ff;fe93:b150/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:7532 errors:0 dropped:0 overruns:0 frame:0 TX packets:1280 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:472473 (461.3 KiB) TX bytes:13534210 (12.9 MiB) Interrupt:59 Base address:0x6300 DMA chan.9								
Interrupt:59 Base address:0x8300 DMA chan:9 usb0 Link encap:Ethernet HWaddr 3A:98:B8:93:B1:60 UP BROADCAST MULTICAST MTU:1500 Metric:1 BX packets:0 errors:0 dropped:0 overruns:0 frame:0 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)								

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.



left at Automatic since this is unsupported at the moment.

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General Display Date	Addr	Enter Va 192.168.0	lue :), 150		
Automatic (DHCP)	ernet (eth0): USBnet (usb0): App sutomatic (DHCP) Automatic (DHCP) Chan ddr 192.168.0.150 IP Addr		1	2 abc	З def
Mask G.way 192.168.0.1 Diagnostics :	Mask G.way	Refresh	4 ghi	5 jkl	6 mno
eth0 Link encap:Ethernet HWa inet addr:192.168.0.150 Bca UP BROADCAST MULTICA RX packets:148 errors:0 dropp TX packets:21 errors:0 dropp collisions:0 txqueuelen:1000	eth0 Link encap:Ethernet HWaddr 3A:98:88:93:81:50 inet addr:192.168.0.150 Bcast:0.0.0.0 Mask:255.255.255.0 UP BROADCAST MULTICAST MTU:1500 Metric:1 RX packets:148 errors:0 dropped:0 overruns:0 frame:0 TX packets:21 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 trouvales:1000			8 tuv	9 wxyz
RX bytes:13145 (12.8 KiB) TX bytes:3787 (3.6 KiB) Interrupt:59 Base address:0x8300 DMA chan:9 usb0 Link encap:Ethernet HWaddr 3A:98:B8:93:B1:60 UP BROADCAST MULTICAST MTU:1500 Metric:1 RX packets:0 errors:0 dropped:0 overruns:0 frame:0			DEL	0 space	·
TX packets :U errors :U droppi collisions :0 txqueuelen : 1000 RX bytes :0 (0.0 B) TX bytes :	ed:U overruns:U carrier:U O (0.0 B)		Cance	:1	ок

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

net Protocol (TCP/IP) Prop	perties
neral	
ou can get IP settings assigned is capability. Otherwise, you ne e appropriate IP settings.	automatically if your network supports ad to ask your network administrator fo
O Obtain an IP address autor	natically
 Use the following IP addres 	<u> </u>
IP address:	192.168.0.57
Sybnet mask:	255 . 255 . 255 . 0
Default gateway:	192.168.0.1
Obtain DNS server address Use the following DNS serv Preferred DNS server:	eutomatically er addresses: 192.168.0.1
Diremere prito server.	0.0.0.0
	Advanced.

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.

🕌 Tight¥NC					_ 🗆 🗡
Disconnect	Options	Clipboard	Send	Ctrl-Alt-Del	Refresh
	VNC	Authen	ticat	ion	
Pas	ssword:			ОК	
Java Applet Wi	indow				

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.

		~
fireve		
	Remote Control Screen	
A UTC Fire & Security Company	Disconnect Options Clipboard Send-Ctrl-Alt-Del Refresh	
Status Remote Control Screen	VNC Authentication	
Event Log Maintenance Log		
Safety Test History	Password: OK	
Diagnostics		
		2



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.

Internet	Options				? 🛛
General	Security Priva	acy Content	Connections	Programs	Advanced
Home p	age				
	http://10.2 http://10.2 http://10.2	ome page tabs 208.80.252/ 208.80.253/ 208.80.254/	, type each ado	iress on its (own line.
	Us	e current	Use default	Use	blank
Browsir	ng history ——				
	Delete temp and web for	orary files, his m information.	tory, cookies, s	aved passw	ords,
Search		[Delete	Set	tings
P) Change sea	rch defaults.		Set	tings
Tabs –				-	
	Change how tabs.	v webpages ar	e displayed in	Set	tings
Appear	ance	Languages	Fonts	Acce	ssibility
Let :		0	K Ca	ancel	Apply

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 Fireye 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.



FIREYE[®] 3 Manchester Road Derry, New Hampshire 03038 USA www.fireye.com

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