



NXTSD4xx TOUCHSCREEN INSTALLATION GUIDE USED WITH PPC4000 FUEL AIR RATIO CONTROLLER



DESCRIPTION

The NXTSD407 and NXTSD413 Touch Screen User Interface provides the means to setup, monitor and display all information from the PPC4000 Control and connected accessories. The NXTSD407 is a 7" widescreen TFT color touchscreen while the NXTSD413 is a 13"3 widescreen TFT color touchscreen. The NXTSD4xx is panel mounted and connects directly to the PPC4000 using Fireeye 59-582 and 59-583 cables (included with display but can be ordered separately - 129-196-2 cable kit).

Refer to Bulletin PPC-4001 for a complete description of the PPC4000 control system.

SPECIFICATIONS

	NXTSD407	NXTSD413
Supply Voltage:	24 Vdc (18 to 30 Vdc)	24 Vdc (18 to 30 Vdc)
Power Consumption:	0.65A at 24Vdc(max.)	1.15A at 24Vdc(max.)
Temperature Rating:	32°F to 122°F (0°C to +50°C)	32°F to 122°F (0°C to +50°C)
Protection Category:	NEMA 4X indoors only, IP65	NEMA 4X indoors only, IP65
Unit Dimensions:	Faceplate LxH 187x147 mm (7.36x5.79") Cutout AxB 176x136 mm (6.93x5.35") allow 2.63" (67mm) depth clearance	Faceplate LxH 336x267 mm (13.22x10.51") Cutout AxB 326x256 mm (12.83x10.07") allow 3.00" (77mm) depth clearance
Interface Method:	RS485, 57600 Baud	RS485, 57600 Baud
Shipping Weight:	Approx. 2.2 lbs (1.0 Kg)	Approx. 6.2 lbs (2.8 Kg)



NOTE: Proper operation of the NXTSD4xx Touchscreen display requires a PPC4000 with an Engineering code of 9 or greater or a PPC4000 running main firmware revision v3.7 or greater.

Due to limitations of Modbus RTU, only one master can exist on the Modbus interface. The NXTSD4xx Touchscreen display is considered the master of the bus and the Modbus system should be configured such that the Touchscreen display is the only device speaking to the PPC4000(s) on the bus.

Standards and Approvals:

UL File # E341552 (Programmable Controllers for Use in Hazardous Locations US & Canada)

The products have been designed for use in an industrial environment in compliance with the 2004/108/EC EMC Directive.

The products have been designed in compliance with:

EN 61000-6-4 EN 55011 Class A

EN 61000-6-2 EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special measures are taken in order to ensure conformity to EN 61000-6-3.

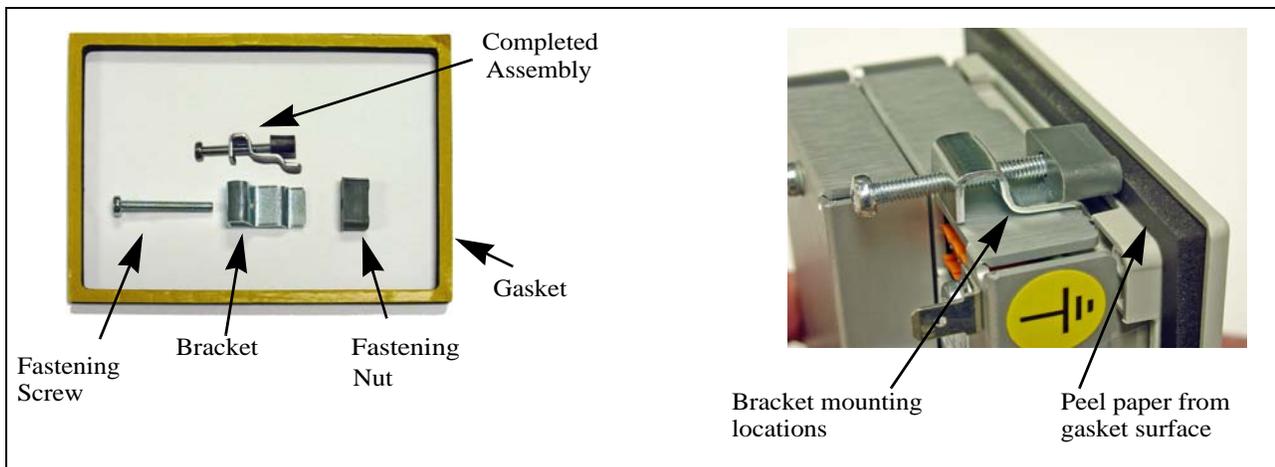
The products are in compliance with the Restrictions on Certain Hazardous Substances (RoHS) Directive 2002/95/EC.

In compliance with the above regulations the products are CE marked.

INSTALLATION

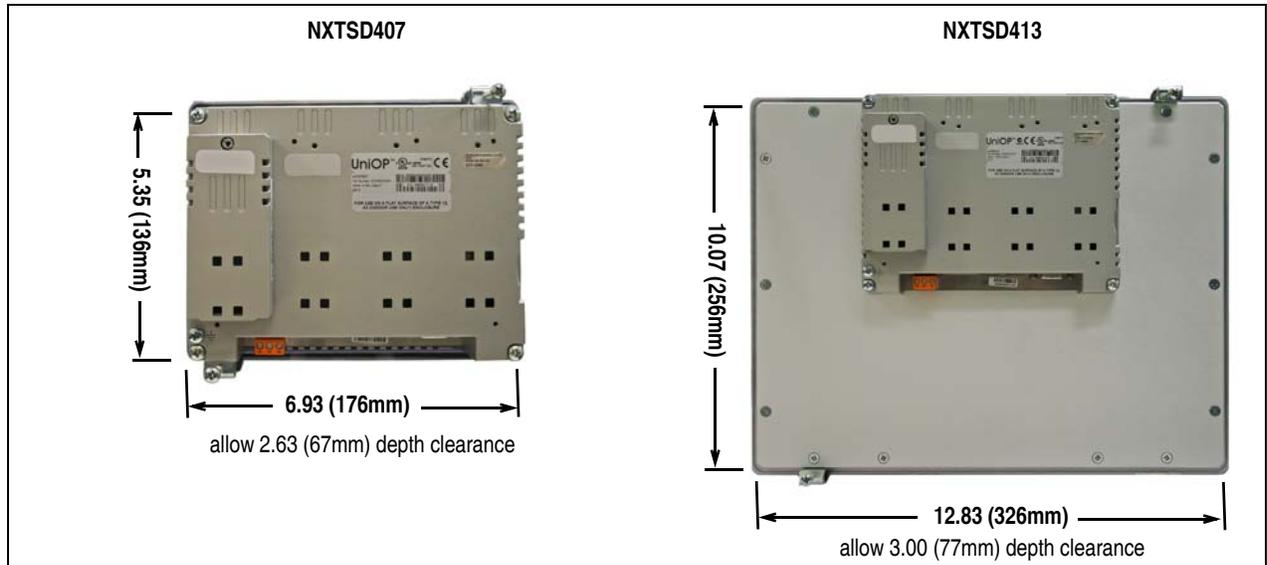
The NXTSD407 and NXTSD413 are panel mounted devices. The device includes a gasket that must be properly seated to assure NEMA 4X (IP66) rating. Packed with every NXTSD4xx device is a gasket and remote mounting bracket kit (not sold separately). NXTSD407 contains four bracket assemblies while NXTSD413 contains twelve bracket assemblies as shown

FIGURE 1. Mounting Kit.



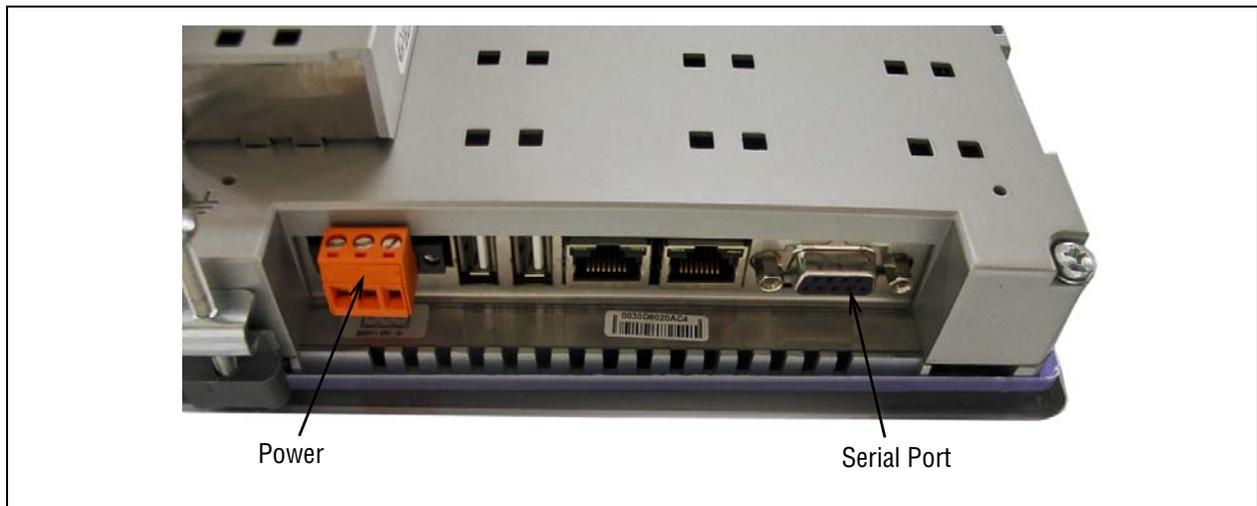
The bracket assembly mounts from the rear of the display with the fastening nut against the backside of the panel. Use the following dimensions for the panel cutout

FIGURE 2. Panel Cutout.



The bottom edge of the display must be mounted at least two inches from any cabinet door edge to allow sufficient clearance for the cables.

FIGURE 3. NXTSD407 Rear View



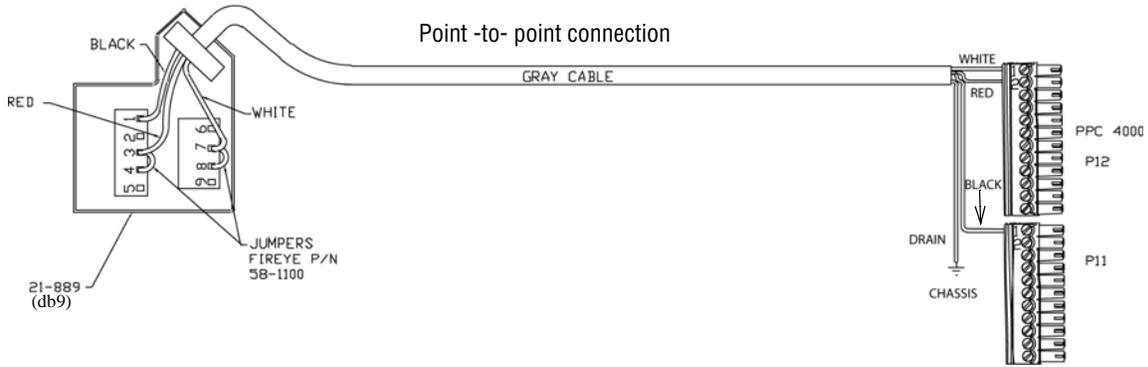
NXTSD4xx CONNECTION TO PPC4000

The included cable accessories consist of: (59-583) one 22 AWG cable for communications and (59-582) one 18 AWG cable for power.

FROM 59-582	TO PPC4000	Description
RED	P2.1	24 VDC POWER
BLACK	P2.4	24 VDC RETURN
WHITE	CHASSIS	EARTH GROUND
FROM 59-583		
WHITE	P12.1	ModBus A
RED	P12.2	ModBus B
BLACK	P11.1	REF GND
DRAIN	CHASSIS	EARTH GROUND

Note: installation of jumpers for 59-583

FIGURE 4. 12 Ft Signal Cable (59-583 gray)



Note: There is a maximum amount of power that may be supplied by the PPC-4000 to externally connected peripherals, including the touchscreen user interface. Please refer to the PPC-4001 bulletin for details.

The Touchscreen display is considered the Modbus master and it can address up to six PPC4000 in a daisy chain fashion. Only the touchscreen can be a master on the Modbus chain.

FIGURE 5. 12 Ft Signal Cable (59-583 gray)

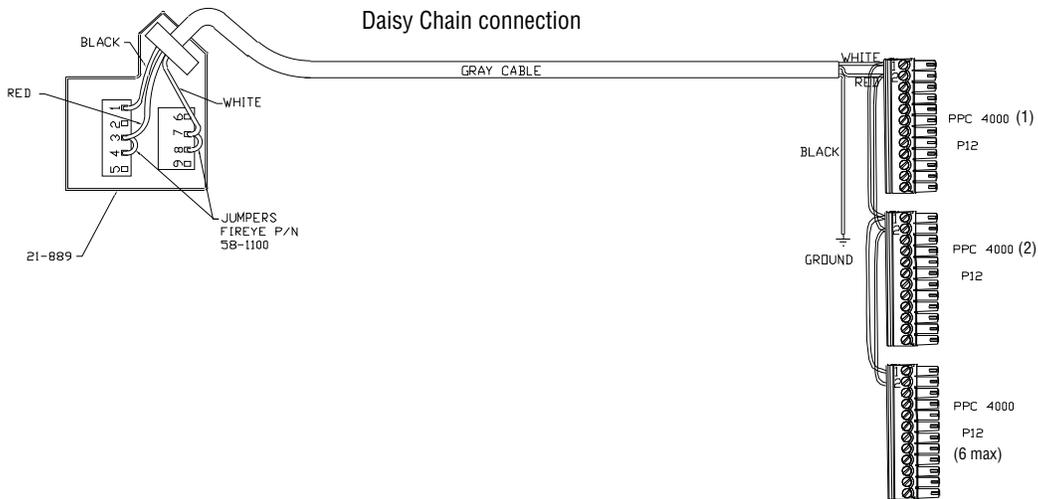


FIGURE 6. 12 Ft Power cable (59-582 blue)

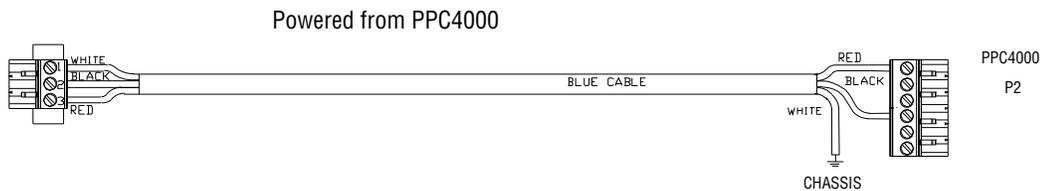
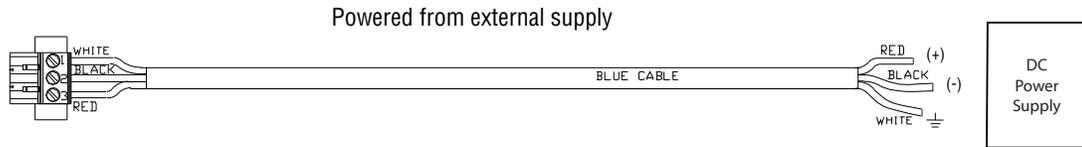


FIGURE 7. 12 Ft Power cable (59-582 blue)



DISPLAY CONFIGURATION

The following information describes the steps needed to configure the NXTSD407 and NXTSD413 Touch Screen displays.

1. Display Configuration Fundamentals

The NXTSD4xx displays maintain a configuration that allows the installer or technician to maintain compatibility between the displays and the PPC4000 controller(s) and the associated burner environments. The configuration is stored in a file on the display. When the display is received from the factory, there is a default configuration already installed. This configuration file can be overwritten by any qualified technician with a configuration more appropriate to the new installation or in the case of a change in the PPC4000 environment or user needs.

2. Configuring the Display

To modify the Display Configuration, one would need to first gain access to the Display Configuration screen. The area filled with the Fireye logo as shown in Figure 8 contains a "Magic" button that will allow a user to get into a separate configuration page.

FIGURE 8. Main Screens



NXTSD407 (Left) and NXTSD413 (Right) Main Screens

Press the "Fireye" logo and a password dialog will pop up as shown in Figure 9. In the password pop up enter the password "fireye". Make sure that all of the characters are lower case and that the quotation marks are left off

FIGURE 9. Configuration Password Entry Screen



Display Configuration Password Entry Dialog

Once the password has been entered and the touch screen keyboard closes, press the "OK" button to continue.



WARNING: THE INAPPROPRIATE SELECTION OR APPLICATION OF A SYSTEM SETTING COULD RESULT IN AN UNSAFE CONDITION HAZARDOUS TO LIFE AND PROPERTY. Selection of the proper settings for a particular application should be made by a competent professional, such as a Boiler/Burner technician licensed by a state or government agency, engineering personnel of the burner, boiler or furnace manufacturer (OEM) or in the performance of duties based on the information from the OEM.



The equipment described in this manual is capable of causing property damage, severe injury, or death. It is the responsibility of the owner or user to ensure that the equipment described is installed, operated and commissioned in compliance with the requirements of all national and local codes.

3. Display Installation and Configuration Components

Once the "OK" button is pressed, the "Display Configuration" screen will be displayed as shown in Figure 10.¹

FIGURE 10. Display Installation and Configuration Screens

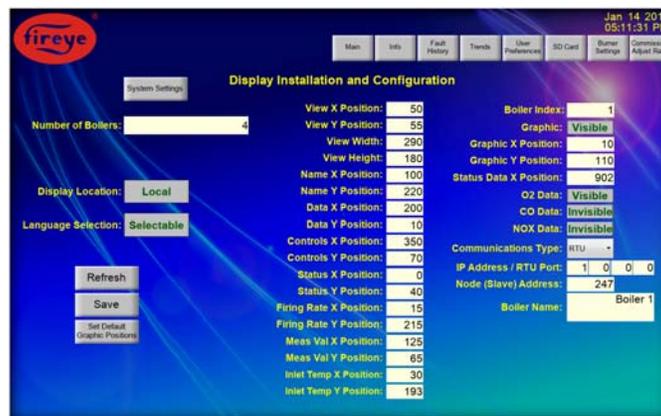
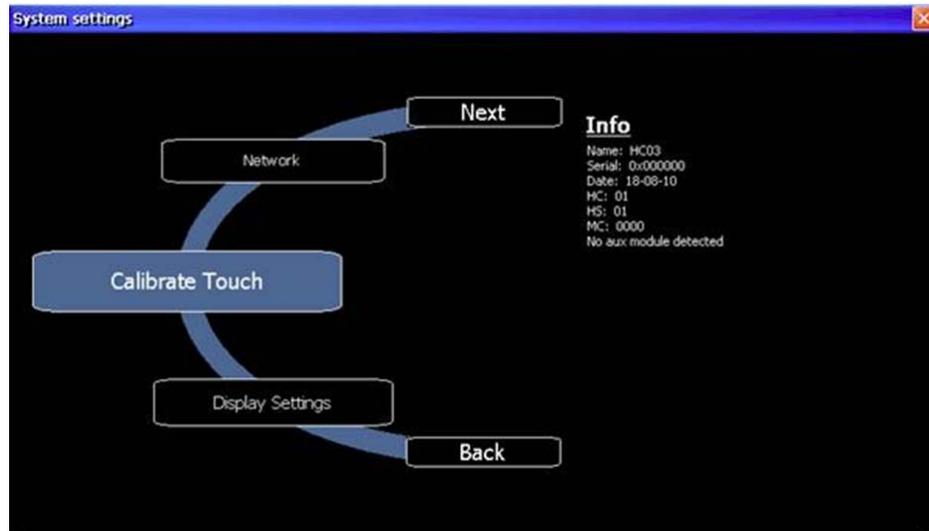


Figure 10: Display Installation and Configuration screen

3.1 System Settings Button

The "System Settings" Button can be used to set up the initial touch screen calibration. When the button is pressed, the screen shown in Figure 11 will be displayed. Unless the display is to be connected to a network, the technician should just use the "Calibrate Touch" selection. The technician should also be aware that the capability to adjust the touch screen calibration is provided to the users on the "Users Preference" screen and the display configuration need not be used. As of this writing, the tcp/ip capability of the Display is not available.

FIGURE 11. System Setting Screen



¹The screen may or may not appear exactly as shown as some revisions will have fewer selections.

The screen utilizes a rotary menu system that provides the desired user selection by presses of the "Next" or "Back" buttons. When the desired function is highlighted (set to the light blue color) then the button can be pressed to enter that functionality.

The "Calibrate Touch" will show a new off-white screen with instructions and a "cross-hair" that the user must press to align the position of the finger press to coincide with the position that the touch screen will associate with a finger press in that area of the display. Once the finger press has been registered by the display, the "cross-hair" cursor will move to each corner of the display requiring the user to press the cursor each time. Once the user has registered a press on the last cursor position, the user will be asked to tap the screen to confirm the changes before the displayed timer expires. If the timer expires before the user registers a tap to the screen, then the previous calibration settings will become valid again.

The time selection can also be set from this screen. The most notable of the items that can be changed are the time zone and the ability to have the display automatically adjust for daylight savings time. The date and time can also be set in this selection but these can also be set from the Fireye Display Screens.

The Display Settings selection provides the user with the ability to adjust the display brightness and to set the backlight to automatically turn off after a period of idle time. Turning the backlight off after a period of inactivity is not recommended as this could make the screen impossible to read should there be an aberrant condition in the associated burner control. Care should also be exercised if the user adjusts the display brightness as the setting could work for some levels of ambient light but not for others so be sure to check any of these changes in all available lighting conditions.

All other selections in the menu are either informational in case the display needs to have its operating system upgraded or are settings that will not provide any more capability to the user of the display.

Once all desired changes have been made, the screen can be closed by pressing on the "X" box in the upper right-hand corner of the screen. If the user has trouble activating this button then the user may need to go back to the calibration screen and re-calibrate the touch screen to allow the user to accurately activate this button.

3.2 Number of Boilers control

This control is only available on the NXTSD413 display. This control provides the technician with the ability to set how many Boiler Graphics to display. As of the release of this document, the maximum number of Boiler Graphics that can be displayed is six.

3.3 Display Location control

The "Display Location" button provides the user with the ability to select the location of the display.

"Local" should be selected if the display is placed within the general vicinity of the boiler and burner controls.

"Remote" should be selected if there is an appreciable distance or obstruction between the display and boiler and burner controls.

When the display is local to the connected burner control(s) then the display can be used to configure the burner controller settings, perform a commissioning operation, or perform an adjust ratio operation on the burner control. In most jurisdictions a remote display will not be usable to perform these same operations for safety reasons. By setting the control to the remote setting, the technician guarantees that the user cannot inadvertently access the burner setup, commissioning, or adjust ratio operations from the display².

3.4 Language Selection Control

The language selection button is currently not functional.

3.5 Graphics Position Controls

It is recommended that any modifications to the positions be made by a technician that is familiar with display coordinates. In most cases, the default settings should be adequate and in general will provide a good customer experience. Should changes to these settings cause issues with the Boiler Graphic layout, the "Set Default Graphic Positions" button can be pressed to restore the default settings.

3.6 Individual Boiler Properties

The right hand column of the configuration screen as seen in Figure 6 provides the technician with the ability to change the graphic settings of each of the individual boilers and their associated communications configuration.

3.6.1 Boiler Index

The boiler Index is a numeric field (available on the NXTSD413 Displays only) that allows the technician to select the boiler that the right hand column is referencing. The appropriate selectable values are dependent on the "Number of Boilers" entry as described in section 3.2. If there are two or more boilers, then this entry can be set to any of the boilers as they are entered and configured. The boiler number is arbitrary and completely under the control of the person entering the data in this column. For instance, if the technician wishes the boiler in a particular location to be the first boiler, then all the technician has to do is set the Node (Slave) Address associated with the boiler control in that location in the right hand column while the "Boiler Index" is set to "1". This is described in more detail in section 3.6.7.

3.6.2 Graphic Visibility

The Boiler Graphic on the main page needs to be made visible before the main screen will show the graphic. If this is set to "invisible" then the Boiler Graphic will not be visible even though the data for the graphic is still being collected. Graphics are turned off by default.

3.6.3 O2 Data Visibility

Each Boiler Graphic can display the O2 saturation value if the associated controller has an O2 Probe installed. If the O2 Probe is present, then the O2 Data Visibility control will allow the O2 data to be displayed on the associated boiler graphic. O2 visibility is turned off by default.

3.6.4 CO Data Visibility

Each Boiler Graphic can display the CO concentration if the associated controller has a CO Probe installed. If the CO Probe is present, then the CO Data Visibility control will allow the CO data to be displayed on the associated boiler graphic.

3.6.5 Communications type

Currently only the RTU connection is supported but future enhancements will allow the Display to communicate via the Ethernet port.

² It is always prudent to have a display that is local to the burner control so that a user can get immediate feedback as to the state of the burner, the control, and their operational condition.



3.6.6 IP Address / RTU Port

The "IP Address / RTU Port" control is used to set the port used by the Display to communicate with the Boiler Controllers. The control consists of four individual fields that are set according to the setting in the Communications Type control (see section 3.6.5). If the Communications Type is set to "RTU" then the RS485 port needs to be entered into the left hand field of the "IP Address / RTU Port" and the remaining three fields to the right can be left as is. In previous display models, this address could be set to either port 1 or port 2. The current display models will only allow port 1 to be used so the only acceptable entry in the far left field is "1". If the Communications Type is set to "TCP" then the tcp/ip address of the Ethernet port of the associated burner controller is to be entered in the four fields. As of this writing, the TCP/IP capability of the Display is not available so the RTU port must be used.

3.6.7 Node Slave Address

The Node (Slave) Address is the address used by the Burner Control to communicate with the display. The default address is always 247. If the display has just one burner control connected, then this number can be left at the default address. If there is to be more than one burner controller attached to the display then there has to be a unique address for each burner control. Valid addresses range from 1 to 247 and no two burner controls can have the same address.

In new installations, it can be difficult to set each boiler address. For these situations it may be necessary to either connect each control to the RS485 Serial bus one at a time or to leave all boiler controls unpowered until each boiler is configured with a new slave address. This necessitates the need for the technician to set up the boiler configurations on the display to the default 247 slave addresses then go into the Burner Settings and change the address of the boiler to a number that will be unique to that boiler and control. Once the address has been changed in the control, it will no longer communicate with the display until the technician goes back into the Display Installation and Configuration screen and changes the Node (Slave) Address for the desired Boiler Index to match the setting. This process needs to be performed on each burner and control until all burners are configured.

3.6.8 Boiler Name

The Boiler Name is used as an identifier for the Boiler Graphics and the Status Data so that in an environment where more than one burner is available, a unique identifier can be used so that the user can associate the Boiler Graphic to the correct boiler. In a single burner environment, this item can be left blank. It is strongly recommended that the Boiler Name be used as a unique name entered for each boiler to minimize any confusion.

3.7 Configuration data Controls

There are three button controls on the Display Installation and Configuration screen in the lower left hand corner of the screen that provide the functionality to store or restore the configuration or set the default position settings for the Boiler Graphics. When one of these buttons is pressed, then a status line will show the progress of the function associated with the particular button press.

3.7.1 Refresh Button

The "Refresh" Button reloads the previously saved configuration. When the display is started for the first time, the configuration will contain a default setup that can be retrieved by pressing the refresh button. Any modifications that have been entered into the configuration controls will be lost when the button is pressed unless the "Save" button was pressed first. While the refresh operation is being performed, the status display will show the message "Reading Configuration File" unless there is a problem with the file such as a corrupted or non-existent file.

3.7.2 Save Button

The "Save" button stores the displayed configuration settings into a configuration file so that the display setup will be available after a power cycle or upon the press of the "Refresh" button. While the save operation is being performed, the status display will show the message "Saving Configuration".

3.7.3 Set Default Graphic Positions Button

The "Set Default Graphic Positions" button will restore the graphic position settings to a usable default setup. These settings will not take effect until the "Save" button has been pressed. While this operation is being performed, the status display will show the message "Setting Graphics Positions".



NOTICE

When Fireeye products are combined with equipment manufactured by others and/or integrated into systems designed or manufactured by others, the Fireeye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireeye products and not to any other equipment or to the combined system or its overall performance.

WARRANTIES

FIREYE guarantees for *one year from the date of installation or 18 months from date of manufacture* of its products to replace, or, at its option, to repair any product or part thereof (except lamps, electronic tubes and photocells) which is found defective in material or workmanship or which otherwise fails to conform to the description of the product on the face of its sales order. **THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES AND FIREYE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.** Except as specifically stated in these general terms and conditions of sale, remedies with respect to any product or part number manufactured or sold by Fireeye shall be limited exclusively to the right to replacement or repair as above provided. In no event shall Fireeye be liable for consequential or special damages of any nature that may arise in connection with such product or part.



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