



NXD-4102
March 29, 2024



NXD410TS

Touchscreen Interface Installation and Operation



DESCRIPTION

The NXD410TS provides the means to setup, monitor and display information from the NXF4000 and PPC4000 series of controls as well as any connected accessories. It provides a full touchscreen interface for monitoring, configuration, and commissioning. The NXD410TS touchscreen is panel mounted and connects to the NXF4000 or PPC4000 control using a serial communication cable.

NOTE: This bulletin is intended to be a supplement to bulletins NXF-4001 and PPC-4001, which covers the installation and operation of the NXF4000 and PPC4000 controls, respectively. Please refer to those bulletins for any specific information on installation, features, commissioning, or operation of the connected controls.



WARNING: Failure to properly install, operate, or commission the equipment in this manual could result in significant 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 this manual and other system component manuals, as well with all applicable national and local codes.



WARNING: Boiler operation, maintenance, and troubleshooting shall only be conducted by trained personnel. Persons troubleshooting lockouts or resetting the control must respond properly to troubleshooting error codes as described in this product bulletin. Jumpers being used to perform static test on the system must only be used in a controlled manner and must be removed prior to the operation of the control. Such tests may verify the external controllers, limits, interlocks, actuators, valves, transformers, motors, and other devices are operating properly. Such tests must be conducted with manual fuel valves in the closed position only. Replace all limits and interlocks not operating properly, and do not bypass limits in interlocks. Failure to follow these guidelines may result in an unsafe condition hazardous to life and property.



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TECHNICAL DATA NXD410TS

Screen type:	Projected capacitive
Resolution:	480 x 272
Diagonal screen area:	109.2mm (4.3 in.)
Interface method:	Terminal mode via RS-422
Nominal voltage	24 VDC \pm 20%
Nominal power consumption:	0.21A @ 24VDC (5W)
Operating temperature range:	0°C to +50°C (32°F to +122°F)
Storage temperature range:	-30°C to +80°C (-22°F to +176°F)
Humidity:	5% to 85%, non-condensing
Degree of protection:	Indoor use only, IP40
Installation orientation:	Landscape (horizontal)
Unit dimensions faceplate:	128mm x 87mm (5.03 in. x 3.43 in.)
Unit dimensions depth:	32mm (1.26 in.)
Panel cutout dimensions:	See mounting section for diagram
Weight:	0.34 kg. (0.75 lb.)

ORDERING INFORMATION

Touchscreen Interfaces	
NXD410TS	Touchscreen interface, 4.3 inch diagonal screen size, 24VDC, for use with NXF4000 or PPC4000 parallel positioning system
Accessories	
59-561	Cable to connect NXD410TS to NXF4000 or PPC4000, separate power and communication, sold by the foot.
60-3008	Bezel adapter kit to retrofit NXD410TS to cut out for NXD410.



WARNING: Use of third-party power supply is permitted, provided the power supply meets NEC CLASS 2 to protect against fire and electrical shock.



MOUNTING NXD410TS

Method

The NXD410TS requires a non-symmetrical cutout and is secured using two knurled-head thumb nuts. Refer to the figure below for the layout of these thumb nuts.



View of NXD410TS showing placement of the knurled-head thumb nuts (one on each side)

The thumb nuts attach to threaded posts which are threaded into inserts on each side of the screen. See the figure to the right for a diagram of the thumb nut attached to the post. The post and thumb nuts use M4x0.7 thread and the posts are 25mm long. If a post and thumb nut are lost and need replacement, an M4x0.7 screw that is 10mm long can be used in combination with a washer.



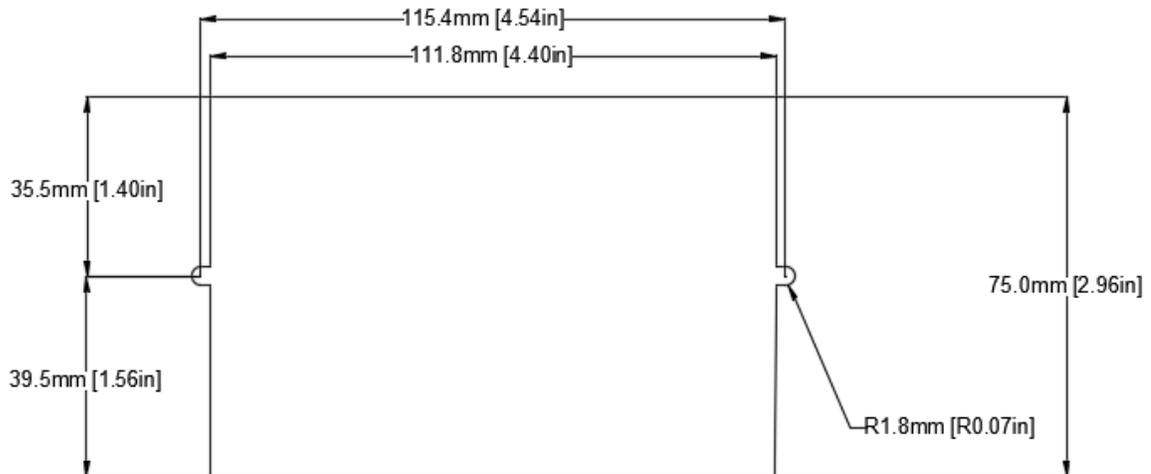
Post with knurled-head thumb nut



Cutout

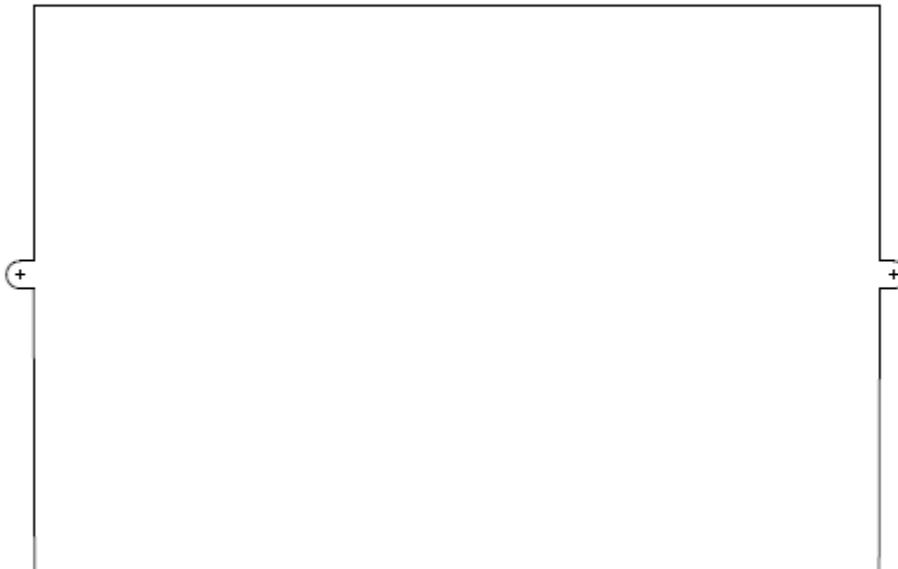
Use the following dimensions to mark the necessary cutout and holes to mount the screen. The orientation of the diagram is from the face of the panel where the cutout is being made. A template is also provided below that may be printed at 100% scale and used to provide a guide.

NXD410TS non-symmetrical cutout (shown from panel face)



Template

NXD410TS cutout template (print at 100%)



60-3008 Adapter is available for NXD410TS to NXD410 Cutout

This adapter allows mounting of the NXD410TS user interface to a cutout that was previous used for the NXD410 user interface. This adapter is required due to smaller dimensions of the NXD410TS.

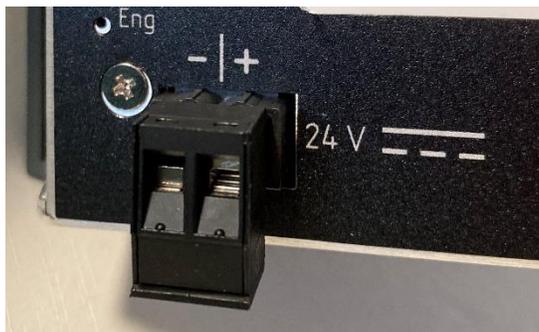


WIRING

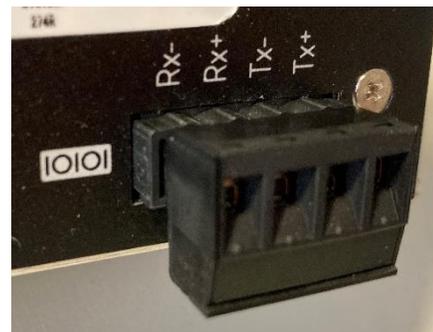
Terminals

The recommended cable (59-561) contains six wires: two power wires (18AWG) and four communication wires (22AWG) in two twisted pairs. There is also a drain wire.

The figures below show the connectors for both power and communications.



Power



Communications

The connector labeled 24V supplies the 24VDC power to the unit. The connection is polarity sensitive and is designated on the legend. It is recommended to use wire between 16AWG and 18AWG for this connection. The connector is a two-position 5.08mm pluggable terminal block with screw terminals.

The connector labeled “10101” (symbol/icon for serial port) is the RS-422 serial port used for the terminal communication to the NXF4000 or PPC4000. The connections are polarity sensitive and are designated on the legend. There are connections required for both send and receive – if one is correct and the other is not, operation may be erratic. It is recommended to use a single cable with two twisted wire pairs between 18AWG and 22AWG for this connection. The connector is a four-position 5.08mm pluggable terminal block with screw terminals.

The connections to the NXF4000 or PPC4000 are to the connectors P2 for power and P12 for communications. Refer to bulletin NXF-4001 or PPC-4001 for further clarification on terminal ratings, power supply considerations and any other issues that may not be covered in this bulletin. Refer to the table below for the required wiring connections between the connected control and the screen.



NXF4000/PPC4000 terminal blocks



Wiring

If the NXD410TS is being used to replace the NXD410, the existing 59-562-2 cable can be used simply by removing and discarding the DSUB connector on the terminal end. The cable itself is identical and may be reused.

The wiring between the devices is shown in the table below:

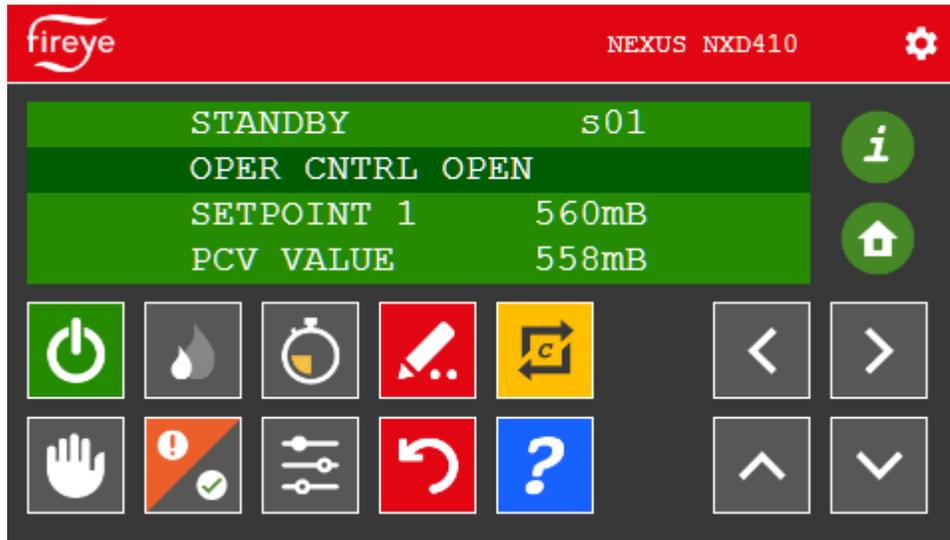
59-561 wire color	Wire gauge	NXF4000/PPC4000 terminal	NXD410TS terminal
Red	18AWG	P2-1 ONLY	24V(+)
Black	18AWG	*P2-4, P2-5, or P2-6	24V(-)
Yellow	22AWG	P12-7	10101(Rx+)
Blue	22AWG	P12-8	10101(Rx-)
Brown	22AWG	P12-9	10101(Tx-)
Orange	22AWG	P12-10	10101(Tx+)

In the event of electrical noise in the cabling, the drain wire inside the 59-561 cable can be connected to earth ground on one end of the cable. Normally this is not required as the twisted pairs used for the communication wiring handles the noise rejection.

*These 3 terminals are internally connected.



OPERATION

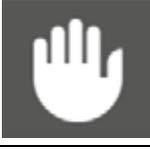
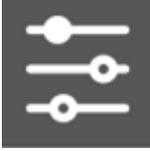


The touchscreen display provides four lines of information. The active area of the display is highlighted on the second line. The four directional keys (located on the right-hand corner) are used to navigate through the menus and to update values. The next section shows the various symbols and their functions.

The NXD410TS contains a number of Quick Keys that allow the user to access that function directly. For these Quick Keys to operate, the installer or operator must first access the KEYPAD SETUP menu where the user defines if a Quick Key is used or unused. Quick Keys are non-volatile meaning the state of the function is retained in memory should a power recycle occur. See Fireeye bulletin *NXF-4001* or *PPC-4001* for additional information on NXF4000 or PPC4000 configuration and functionality.



Quick Keys

Button	Key Name	Description
	BURNER ON	Used to turn the burner on or off. The button changes from gray to green when the burner is in the ON mode. This button can be enabled via the KEYPAD SETUP menu. Note that this button does not override any recycle limits.
	LOW FIRE	Used to force the burner into low fire operation. The button changes from gray to green when active. This button can be enabled via the KEYPAD SETUP menu.
	LEAD LAG	Used to make the control the master when sequencing is enabled. The button changes from gray to green when active. This button can be enabled via the KEYPAD SETUP menu. SEQUENCING SETUP → MASTER SLCT must also be set to KEYPAD.
	AUTO MAN	Used to force the burner into manual firing rate operation. The button changes from gray to green when active. This button can be enabled via the KEYPAD SETUP menu.
	C-MODE	Used to go to the Commissioning or Adjust Ratio mode. The mode entered depends upon the passcode used and whether the burner is firing at the time. While in Commissioning Mode or Adjust Ratio mode, this button is also used to exit Commissioning or Adjust Ratio mode.
	ADJUST SETPOINT	Used to go to the setpoint screen for the currently active setpoint.
	RESET	Allows reset of non-volatile lockout.
	CHECK/RUN and FAULT	Normally used to access fault history information. If BURNER CNTRL SETUP → ENABLE RUN/CHECK is set to YES and the current state supports check mode this button will toggle check mode.

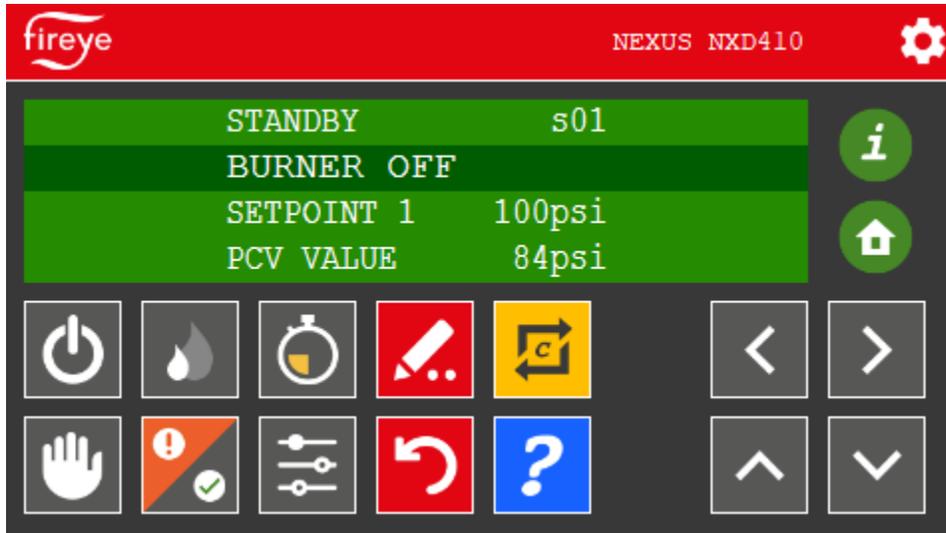


Quick Keys

Button	Key Name	Description
	MODIFY/SAVE	In modify mode the button changes from red to green. In this mode changes to a value are allowed. Pressing again restores the button to red and saves the entry.
	UP/DOWN	Used to navigate up and down through the menu structure. When in modify mode these are used to increment/decrement the values. Most values will scroll from maximum to minimum or from minimum to maximum in a loop.
	BACK/NEXT	Used to move forward or backward through the menu options. This only applies to what is on the second (highlighted) line of the display.
	HOME	Used to return to the home display from any other screen.
	INFO	Used to access the information screen where system and diagnostic information can be accessed.
	HELP	Used to access the help legend on-screen showing the meaning of each Quick Key.

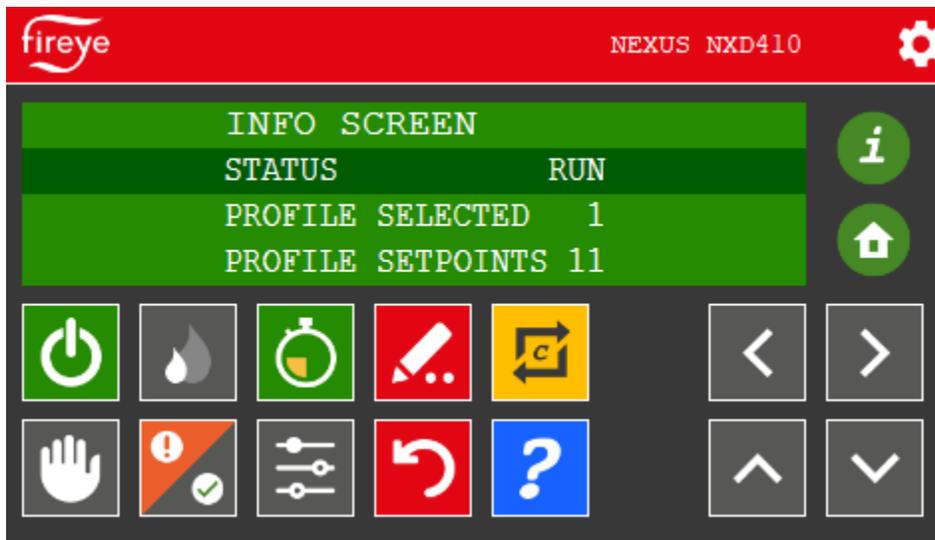


Home Screen - Main Display



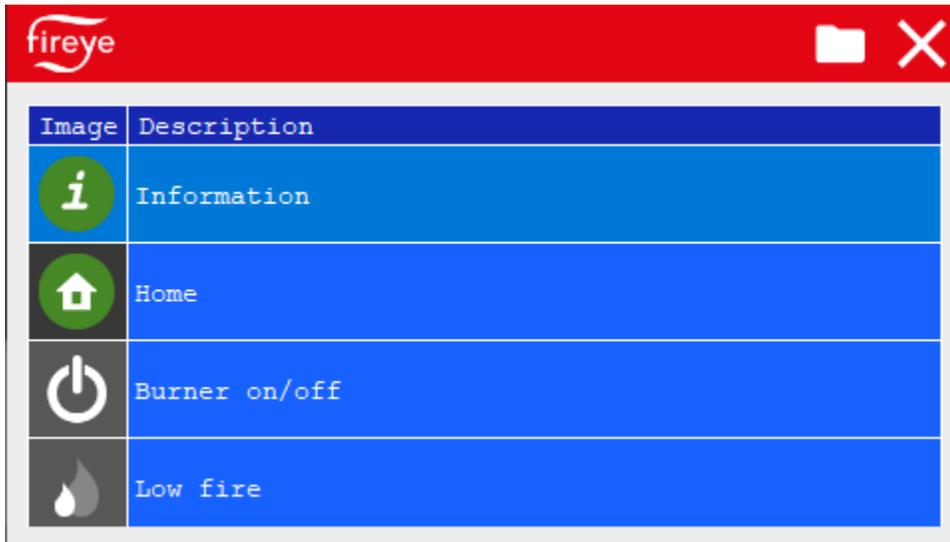
This Home screen may be accessed at any time by selecting the “Home” Icon. Select the up/down arrow keys to scroll the menu and right/left arrow keys to enter sub menus.

Information Screen – Icon Display



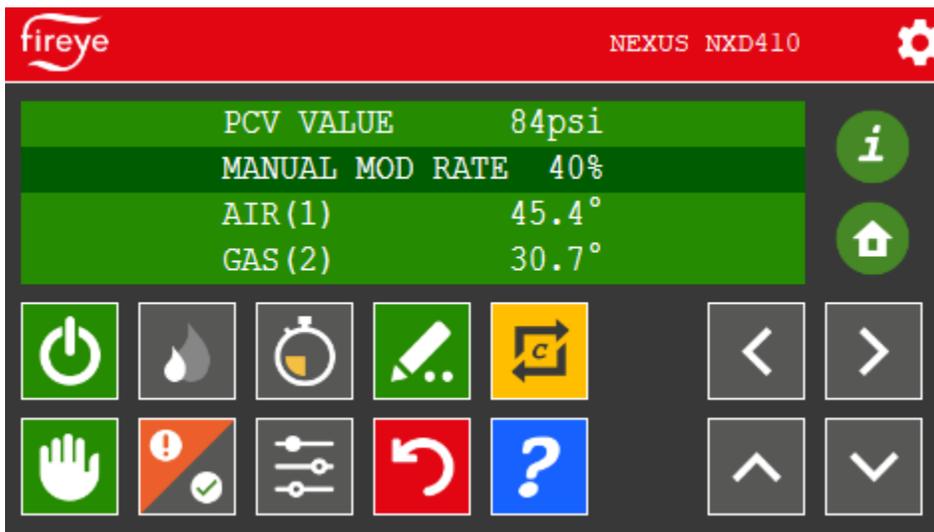
The Info screen may be accessed at any time by selecting the “i” Icon. Select the up/down arrow keys to scroll the menu.

Icon Description Screen



Select the  key describes each key/icon function.
 Select the up/down arrow keys to scroll the menu.

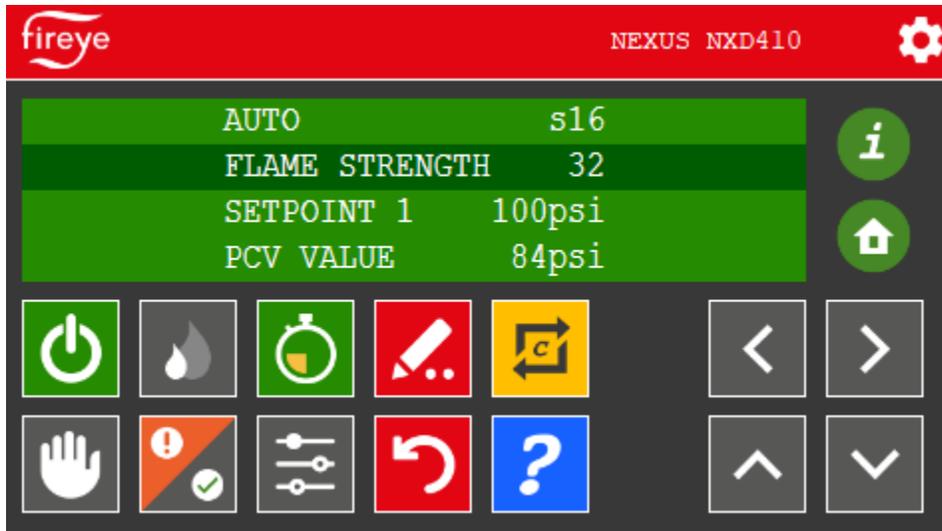
Manual Keys On



Auto/Manual (hand) key will highlight when in manual mode then using the pencil (write) key and up/down arrow keys changes the modulation rate. Selecting the pencil (write) key again will hold at the current modulation setting.

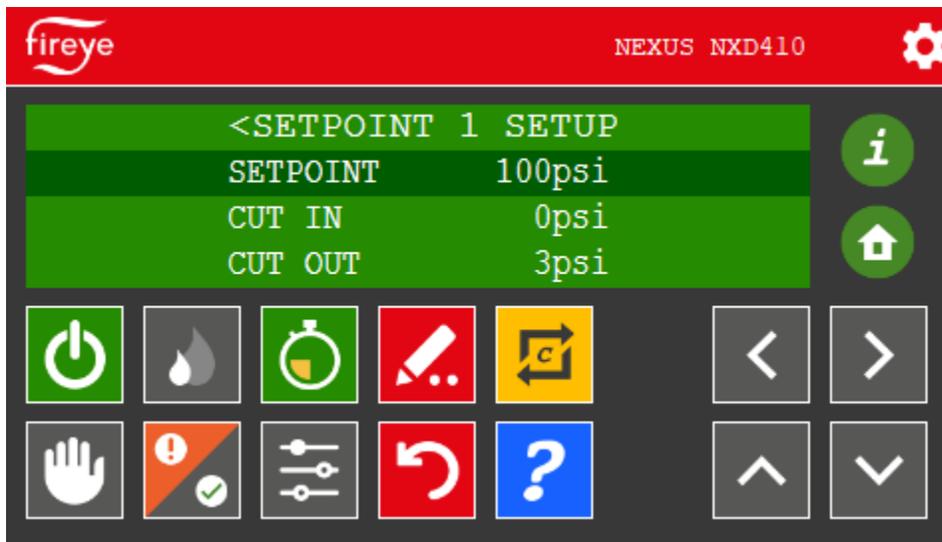
Selecting the Auto manual (hand) key once again will revert-back to Auto.

Sequencing Key Function



Sequencing key is highlighted green indicating lead boiler.
Sequencing key flashes while waiting to establish as lead boiler.

Adjust Menu Screen



Selecting the Adjust Menu key  jumps to the setpoint screen.
It is possible to modify values in this menu by highlighting the value using the up/down arrow keys.
Selecting the pencil (write) key will jump to passcode setup screen.
Selecting the pencil again will allow for entering the operator pass code.
Select the write key again will jump back to adjust menu screen.
Selecting write again will allow for change of the highlighted value using the up/down arrow keys.
Selecting write once more saves the value.

Low Fire Hold Key



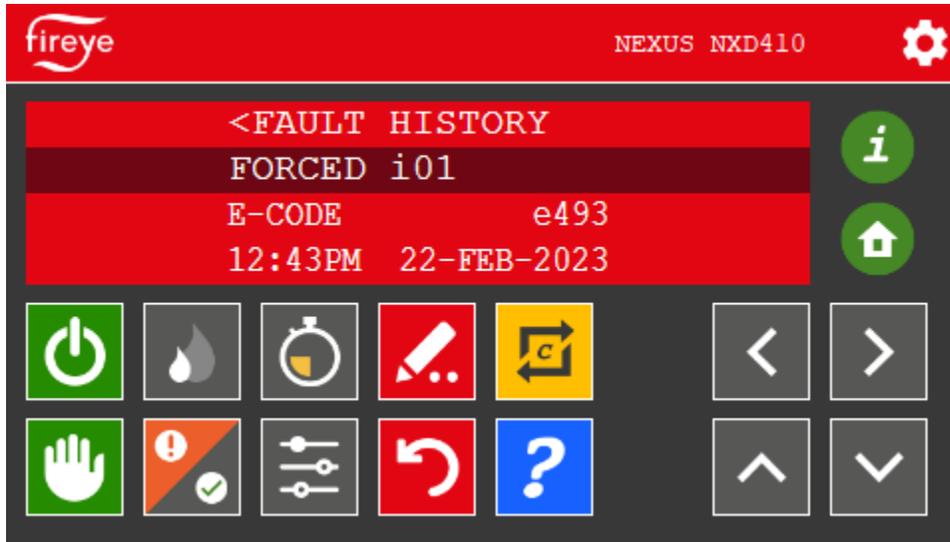
Selecting the low fire key modulates to low fire hold.
Selecting the low fire hold key again will release to auto.

Lockout Screen



A Lockout occurred on Digital Input 1. It is the 528th lockout.

Lockout Screen



Arrow key down shows the Error code and Time and date of fault.

Highlighting the Lockout or E-CODE and selecting the “?” key further information will be displayed.

Selecting the Backward arrow key resets the Lockout.

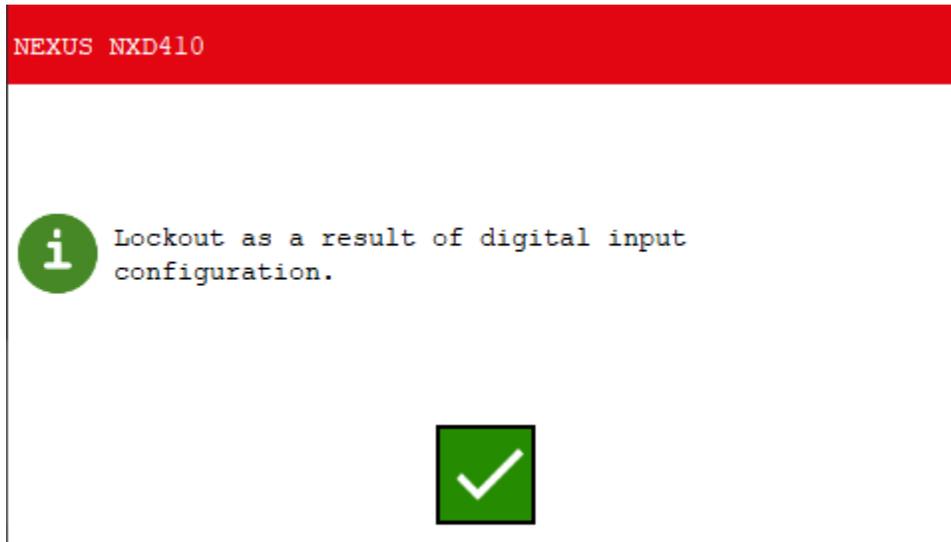
Lockout Error Screen

Error	Displayed	Reason	Solution
e492	FLAME FAIL	Normal Flame Failure	Lockout due to flame failure. Inspect fuel supply
e493	FORCED i01	Forced Lockout on DI 1	Lockout as a result of digital input configuration.
e494	FORCED i02	Forced Lockout on DI 2	Lockout as a result of digital input

When help **?** is selected lock out table is shown as found in the NXF-4001/PPC-4001 manuals.

Selecting X will exit screen.

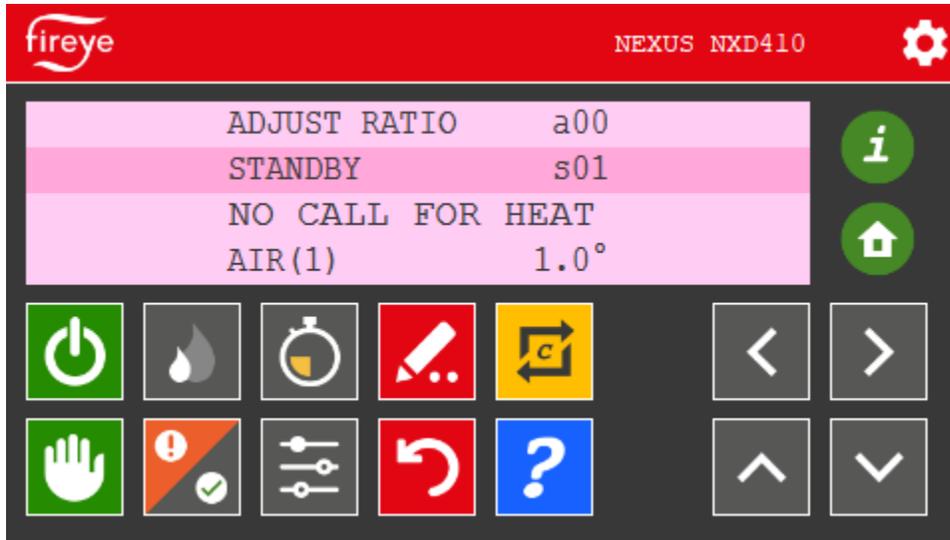
Lockout Description Screen



Selecting an error cell in the chart above results in further details.

Selecting the green check key will revert- back to error code screen and selecting X will revert-back to the Lockout screen.

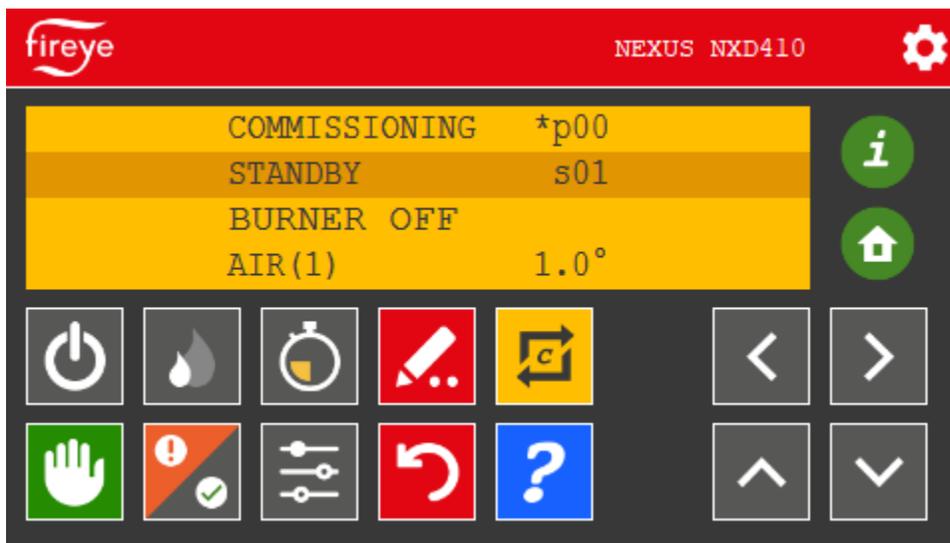
Adjust Ratio Screen



Display color when in Adjust Ratio Mode

Entering adjust ratio is done with the burner. Key/switch on and in auto by selecting the commissioning key.

Commissioning Screen

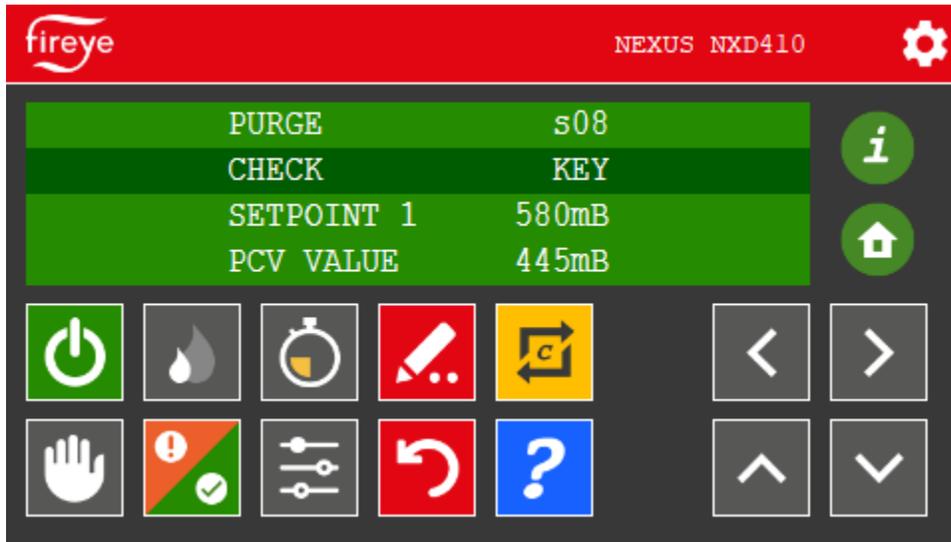


Display color in Commissioning Mode

Entering commissioning must be done with the burner. Key/switch off by selecting the commissioning key.

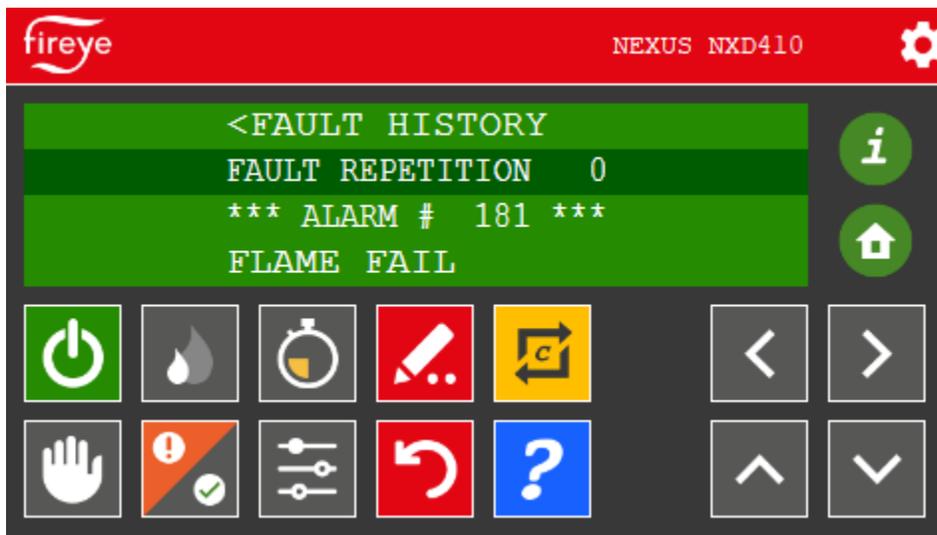


Run/Check Screen



Run Check on – Note the fault history/run check button bottom right hand corner is green.

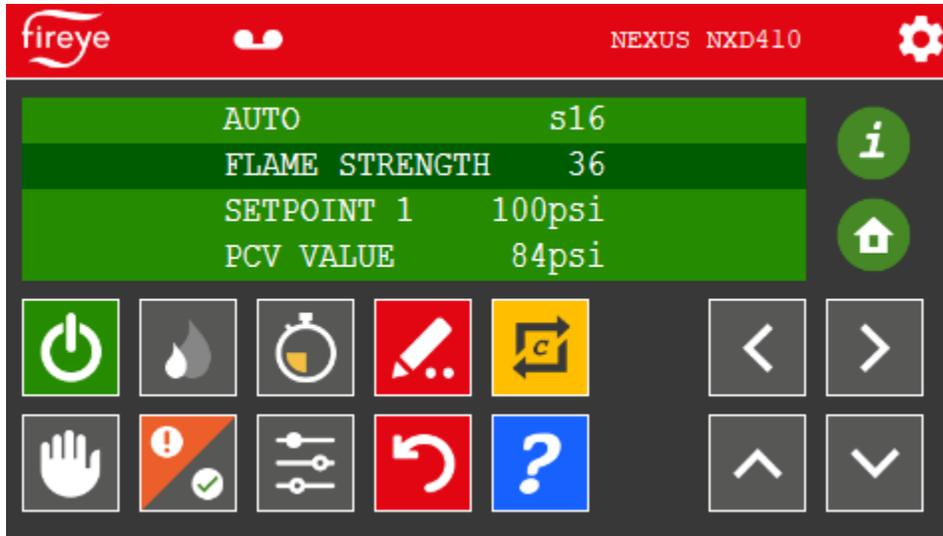
Fault History Screen



Fault History on – Note fault history top left button has been selected.

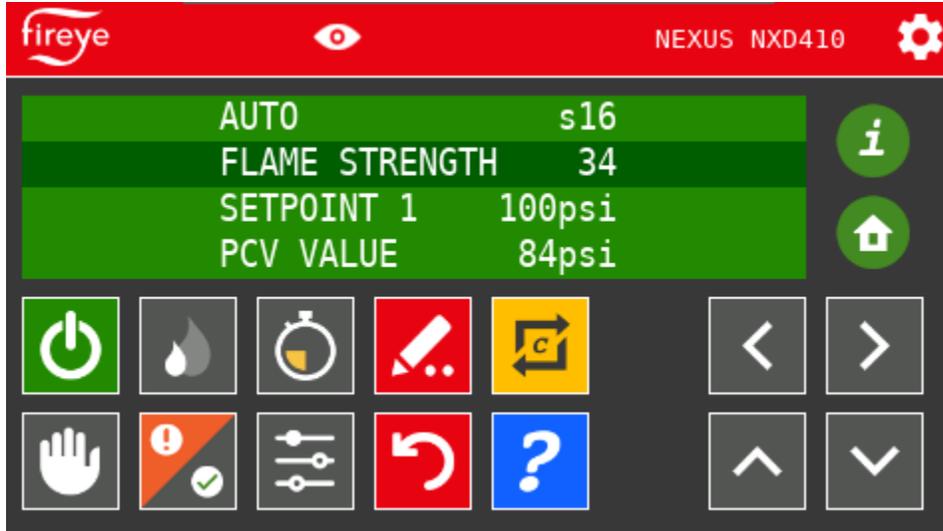


DVR Screen



DRV recording in progress – Note the icon adjacent to Fireeye logo in the title bar.

Remote Virtual Connection Screen



Remote Virtual Network Connection in progress – Note the Eye adjacent to Fireeye logo in the title bar.

Terminating Virtual Connection Screen



Selecting the Eye icon terminates the VNC client connection.

Language Selection Screen



Select the gear icon top righthand corner, select folder icon to access. Select X to exit.



Language Chinese



Select the Chinese radio button option.

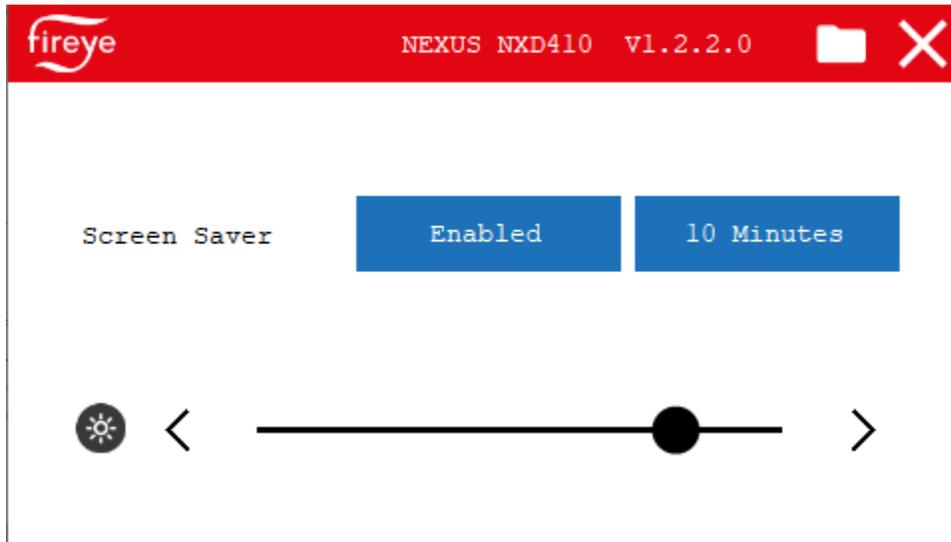
Language Spanish



Select the Spanish Radio Button.



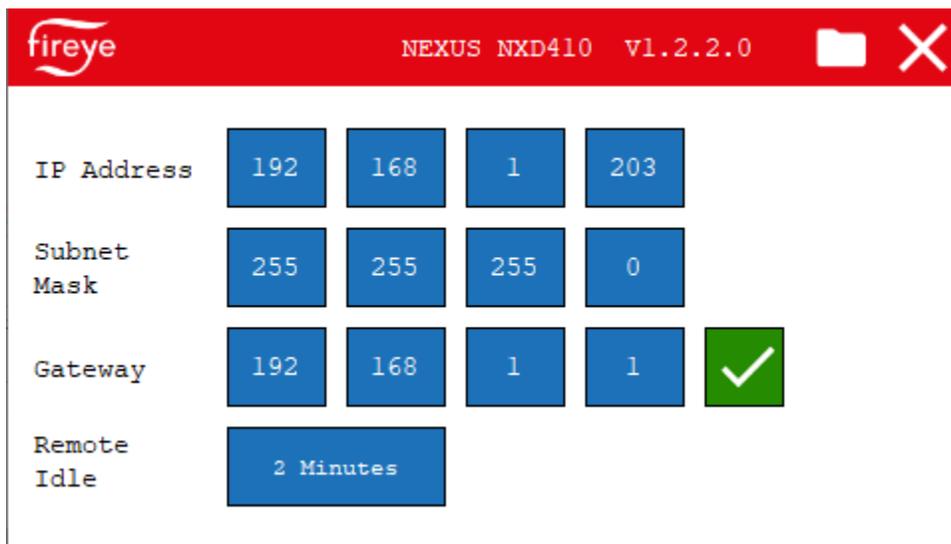
Screen Saver



Screen Saver Options

Select folder icon to access. Select X to exit.

Network Screen



Network Option

Select folder icon to access. Select X to exit.

Change to desired values then select check mark to save.

DVR & USB Screen



DVR and USB Option:

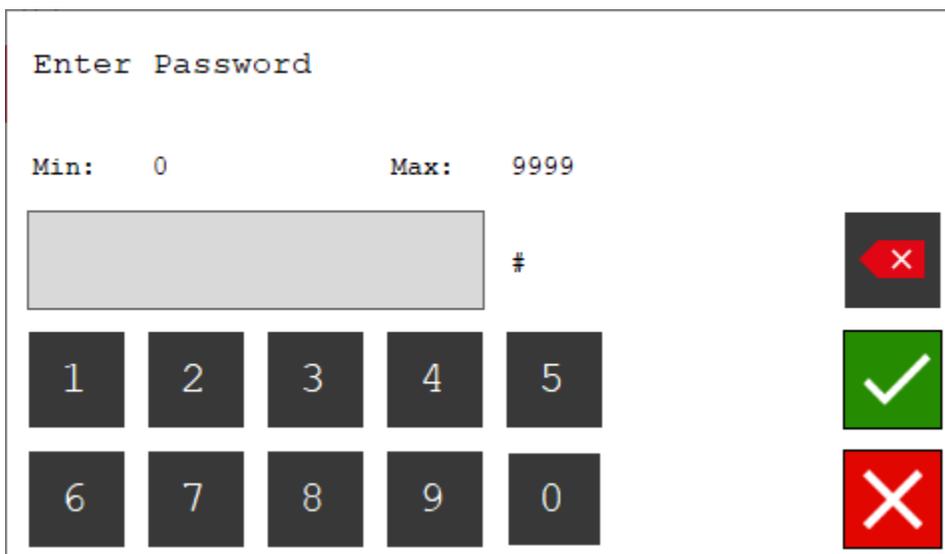
All buttons disabled (dark blue, like the 'stop' button) when there is NO USB drive attached.

Stop is only enabled during recording.

Record is only enabled when not recording.

Data playback can be accomplished by using NXD410TS Theme Editor.

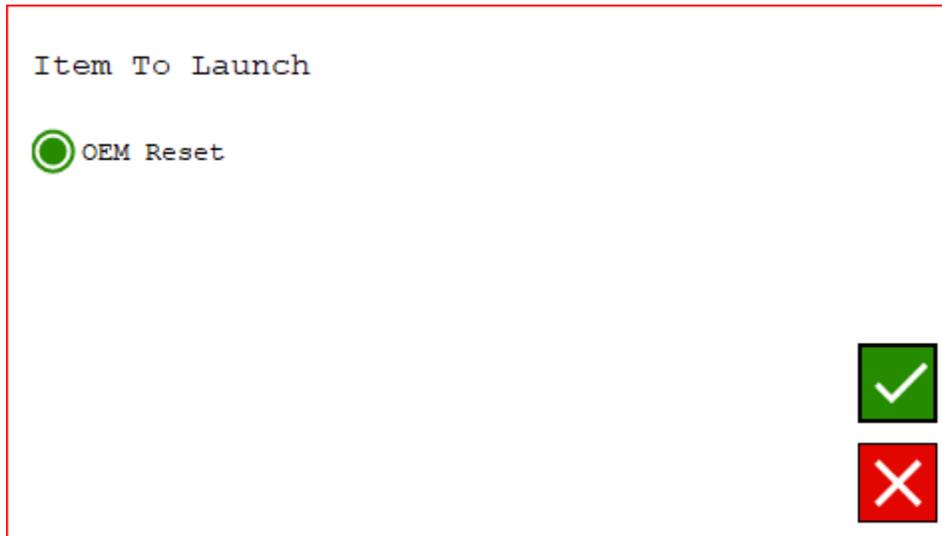
OEM Reset



Accessed by clicking on the OEM logo when in the OPTIONS screen.

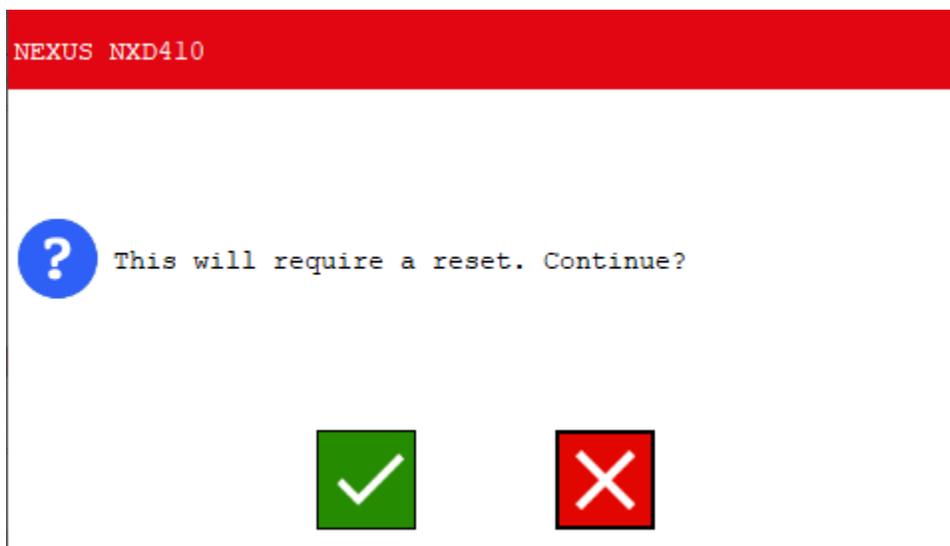
This presents a keypad entry screen.

OEM Reset



When the PASSCODE '903' is entered, the following screen is displayed.

Note: This can have multiple options, such as being able to change between NXD410TS and NXTSD mode these are disabled at present.



Selecting green check above or when the Network IP/Sub Mask/Gateway settings are changed and accepted prompts for a re-start.

OEM Screen



Upon reboot, the OEM selection screen is displayed. If you've used the theme editor to create your own OEM, this will also appear.

If a USB drive is connected upon power up and update files are detected, the user will be prompted to install each.

E.g., Customization of Forced DI lockouts:



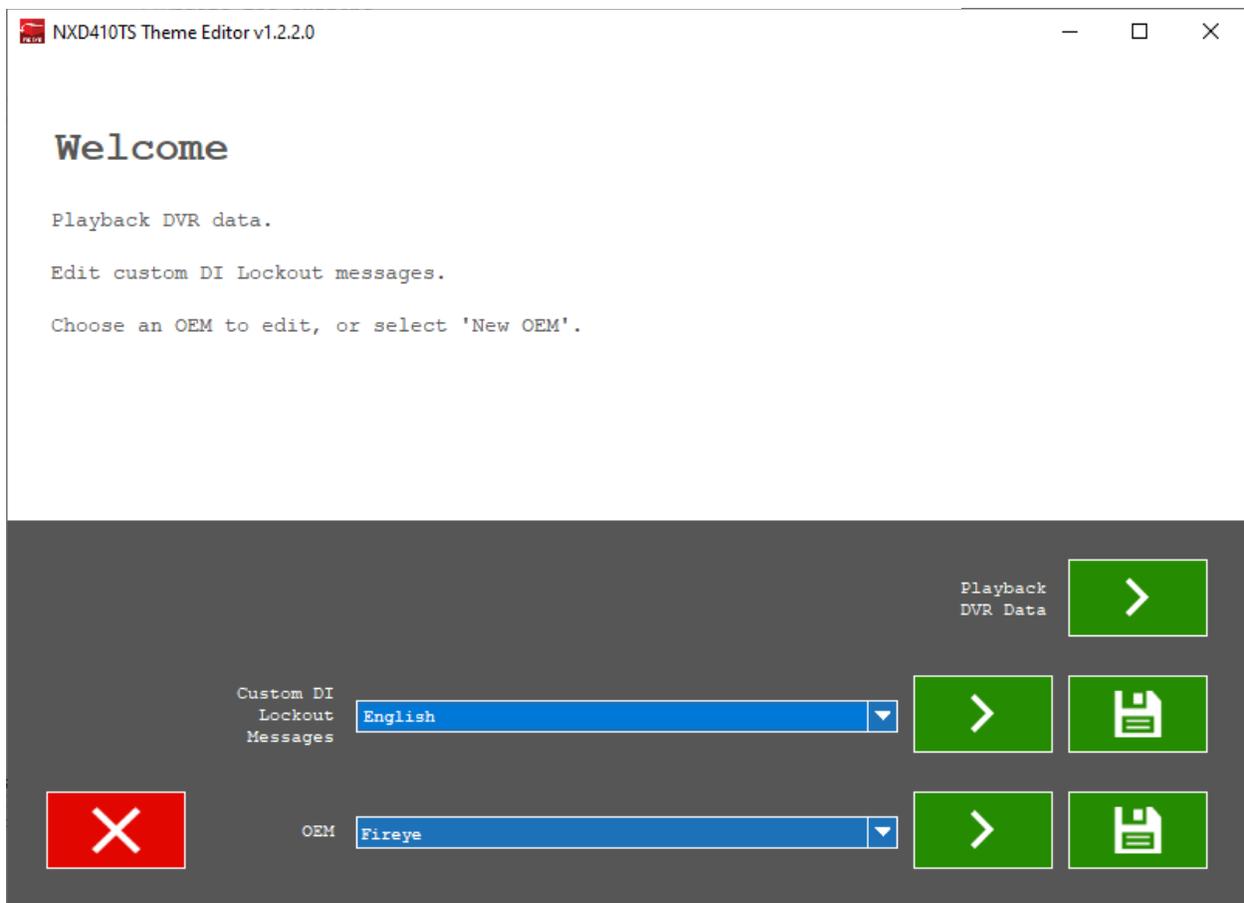
`NXD410TS_CustomEnglish.zip`



E.g., Custom OEM theme:



NXD410TS_CUSTOM_OEM.zip



Theme Editor is used to customize digital input lockout messages and playback DVR data utilizing a USB Thumb drive.



CERTIFICATIONS NXD410TS

UL File # MP1537

The products have been designed for use in an industrial environment in compliance with the 2014/30/EU EMC Directive.

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 2011/65/EU.

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



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 & Conditions of Sale, pertains only to the Fireeye products and not to any other equipment or to the combined system or its overall performance.

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