



TSD-4001
August 1, 2021



NXTSD507HD, NXTSD512HD

Touchscreen Interface Installation and Operation



DESCRIPTION

This bulletin describes the installation and operation of the NXTSD507HD (7") and NXTSD512HD (12.1") touchscreen interfaces. An overview of navigation through the available data as well as device-specific information is covered.

These optional devices allow for enhanced and expanded connectivity to the NXF4000 and PPC4000 parallel-positioning systems. This bulletin is intended to be a supplement to the specific bulletin for any connected control. Those bulletins may be specified in this document. 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 as well as the manuals of other system components, 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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SYSTEM INFORMATION

The NXTSD507HD and NXTSD512HD are designed to allow for monitoring, setup or commissioning of an NXF4000 or PPC4000 parallel-positioning system. These interfaces can be used in conjunction with or in place of an NXD410 or NXD410TS. More than one NXF4000 or PPC4000 can be connected by using different addresses for each control. Additional controls such as the BurnerLogix, BurnerPRO and ABB ACS550 VFDs can be connected as part of the Modbus network for additional data collection and display.

The NXTSD507HD and NXTSD512HD connect to any connected controls using Modbus RTU via RS-485 in a serial (daisy-chain) network. The NXTSD507HD and NXTSD512HD can receive 24VDC from either a connected NXF4000 or PPC4000 or from an external 24VDC power supply. This allows for either local or remote mounting of these interfaces within sight and sound of the connected burner.

Four serial ports are provided to allow for different wiring topologies depending upon how many controls are connected and where they are located. While there are no defined limits to the number of devices that can be connected to the NXTSD507HD and NXTSD512HD, there will be performance (speed of updates) or visual (information is too small) consequences if too many controls are connected to one serial port or to the NXTSD507HD and NXTSD512HD in general.

The NXTSD507HD and NXTSD512HD provide a Modbus TCP server for connection to building automation or SCADA using the provided Ethernet port.

Before attempting to install, commission or operate this equipment all relevant sections of this document must be read and fully understood, failure to follow them could damage the product or cause a hazardous condition. If in doubt about any requirements consult the supplier.

Check the ratings in the following instructions to ensure the product is suitable for your application.

Installation, commissioning or adjustment of this product **MUST** be carried out by personnel qualified by local, state, regional or national requirements.

After installation is complete, check the product operation is as described in these instructions.



TECHNICAL DATA NXTSD507HD

Screen type:	TFT (a-Si), capacitive
Resolution:	800 x 480
Diagonal screen area:	177.8mm (7 in.)
Active area:	152.4mm x 91.44mm (6 in. x 3.6 in.)
Color depth:	18-bit
Interface method:	Modbus RTU via RS-485
Nominal voltage	24 VDC \pm 20%
Nominal power consumption:	0.45A @ 24VDC (10.8W)
Operating temperature range:	-20°C to +50°C (-4°F to +122°F)
Storage temperature range:	-30°C to +80°C (-22°F to +176°F)
Degree of protection:	Indoor use only, IP67 face, IP40 rear
Installation orientation:	Landscape (horizontal)
Unit dimensions faceplate:	201mm x 140mm (7.91 in. x 5.51 in.)
Unit dimensions depth:	40mm (1.57 in.)
Panel cutout dimensions:	See mounting section for diagram
Weight:	1.1 kg. (2.5 lb.)



TECHNICAL DATA NXTSD512HD

Screen type:	TFT (a-Si), capacitive
Resolution:	1280 x 800
Diagonal screen area:	307.4mm (12.1 in.)
Active area:	261.12mm x 163.2mm (10.28 in. x 6.43 in.)
Color depth:	24-bit
Interface method:	Modbus RTU via RS-485
Nominal voltage	24 VDC \pm 20%
Nominal power consumption:	0.9A @ 24VDC (21.6W)
Operating temperature range:	-20°C to +50°C (-4°F to +122°F)
Storage temperature range:	-30°C to +80°C (-22°F to +176°F)
Degree of protection:	Indoor use only, IP67 face, IP40 rear
Installation orientation:	Landscape (horizontal)
Unit dimensions faceplate:	313.4mm x 215.5mm (12.3 in. x 8.48 in.)
Unit dimensions depth:	50mm (1.97 in.)
Panel cutout dimensions:	300mm x 192mm (11.81 in. x 7.55 in.)
Weight:	2.5 kg. (5.5 lb.)



ORDERING INFORMATION

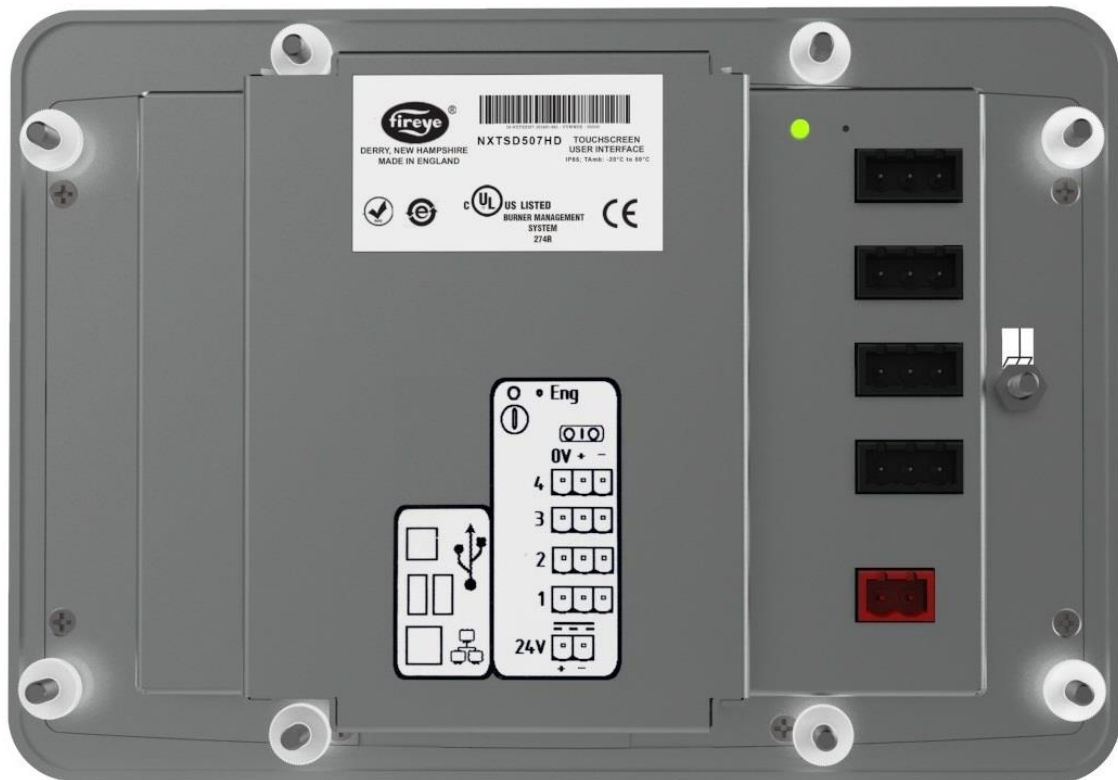
Touchscreen Interfaces	
NXTSD507HD	Touchscreen interface, 7-inch diagonal screen size, 24VDC, for use with NXF4000 or PPC4000 parallel positioning system
NXTSD512HD	Touchscreen interface, 12.1-inch diagonal screen size, 24VDC, for use with NXF4000 or PPC4000 parallel positioning system
Accessories	
59-565	Cable to connect NXTSD5xxHD to NXF4000 or PPC4000, separate power and communication, sold by the foot.
ED610	Multi-port cable adapter for converting BurnerLogix or BurnerPRO modular jacks to terminal blocks.
ED512-2	Modular connection cable to connect BurnerLogix to ED610, 2' length.
ED512-4	Modular connection cable to connect BurnerLogix to ED610, 4' length.
ED512-8	Modular connection cable to connect BurnerLogix to ED610, 8' length.
ED580-2	Modular connection cable to connect BurnerPRO to ED610, 2' length.
ED580-4	Modular connection cable to connect BurnerPRO to ED610, 4' length.
ED580-8	Modular connection cable to connect BurnerPRO to ED610, 8' length.



MOUNTING NXTSD507HD

Method

The NXTSD507HD requires a non-symmetrical cutout and is secured using eight knurled-head thumb nuts. Refer to the figure below for the layout of these thumb nuts.



Rear of NXTSD507HD showing placement of the knurled-head thumb nuts

The thumb nuts attach to threaded posts which are threaded into inserts around the bezel 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.



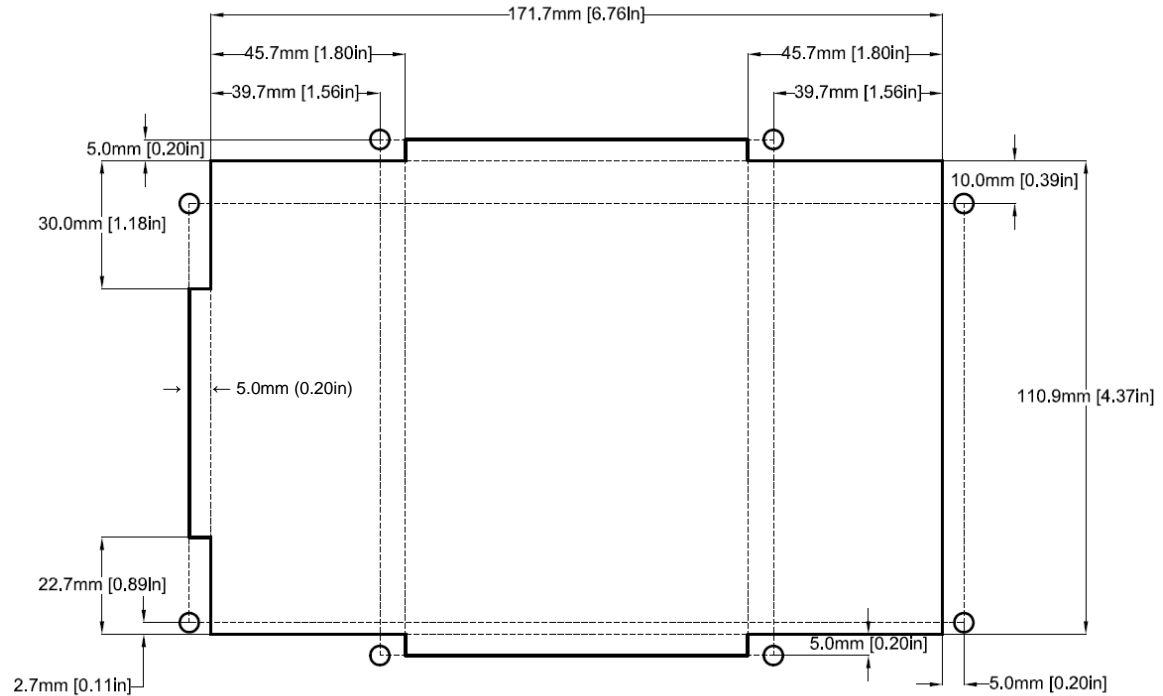
Post with knurled-head thumb nut



Cutout

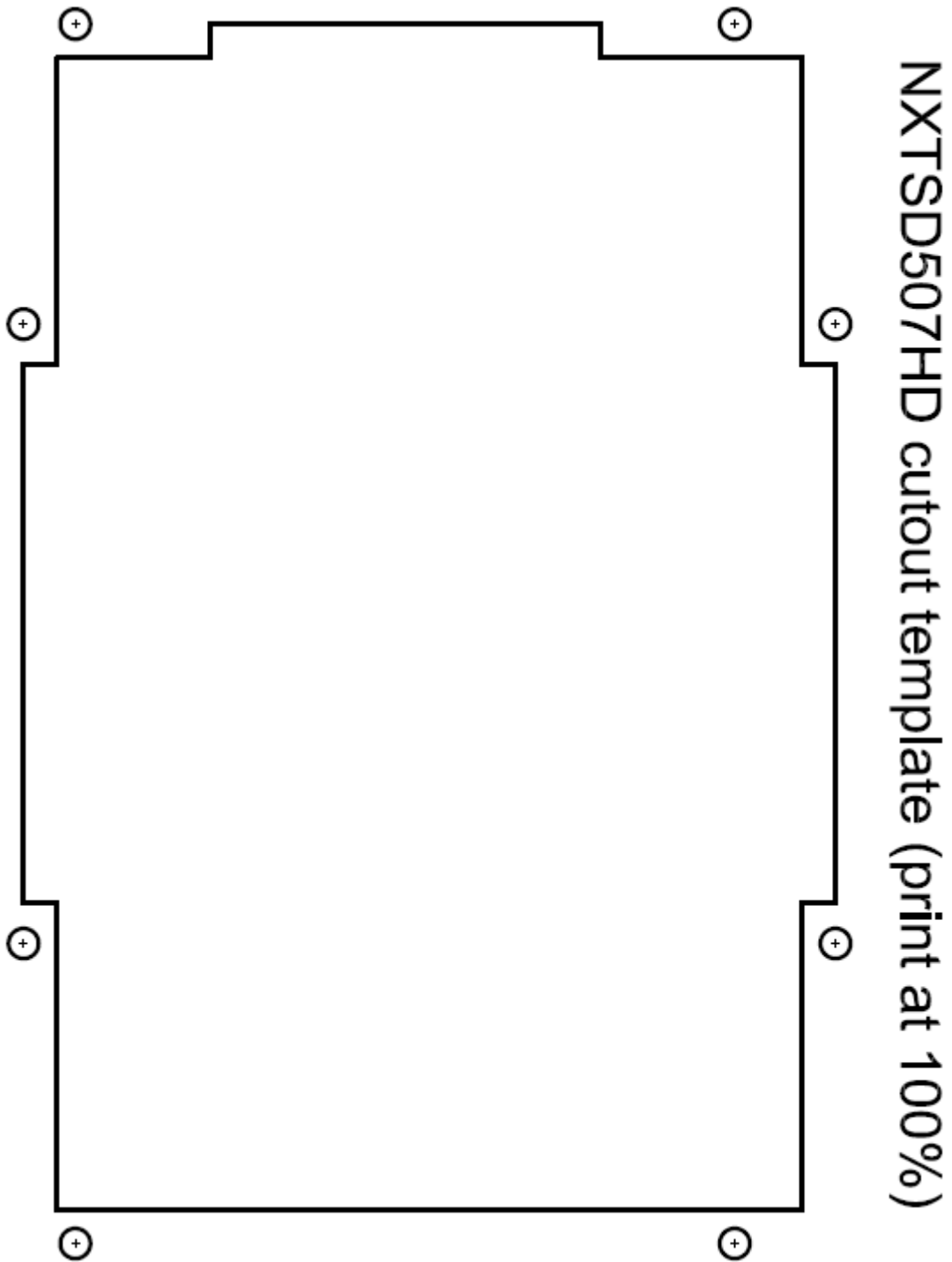
Use the following dimensions to mark the necessary cutout and holes to mount the screen. The orientation of the diagram is from the face of the panel where the cutout is being made. A template is also provided on the following page that may be printed at 100% scale and used to provide a guide.

NXTSD507HD non-symmetrical cutout (shown from panel face)





Template

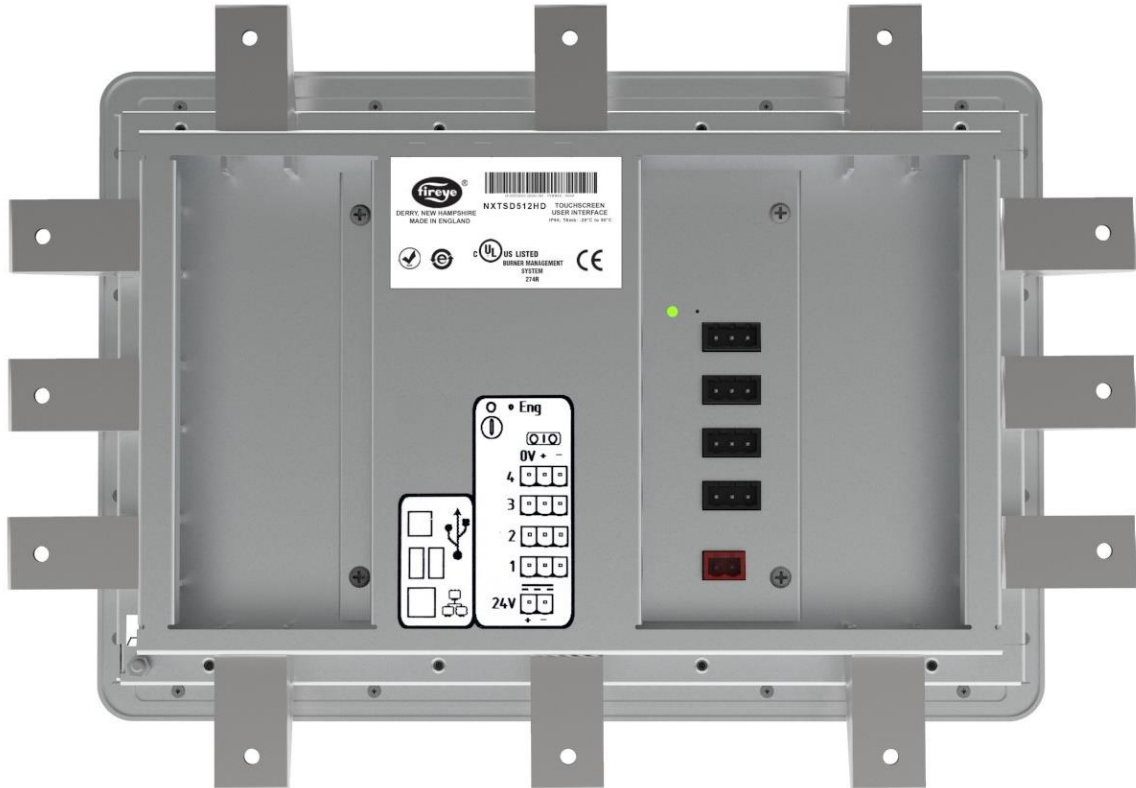




MOUNTING NXTSD512HD

Method

The NXTSD512HD requires a rectangular cutout and is secured using up to 12 retaining clips with securing screws. Refer to the figure below for the layout of these clips. Note that it may not be necessary to use all of the clips to achieve a proper fit.



NXTSD512HD showing placement of the retaining clips

The retaining clips accept an M4x0.7 threaded screw (40mm length provided). The figure below shows the retaining clip. The clips first latch into the perimeter of the screen from the rear using hooks. As the screws are tightened, they push against the back of the panel. As this happens, pressure is applied to the retaining clips to secure the screen. Tighten the screws evenly and only to a sufficient pressure to ensure that they remain in position. A medium strength thread-locking compound (commonly referred to as “blue”) may be used to prevent loosening of the screws if the equipment is subject to vibration or will be in transit.



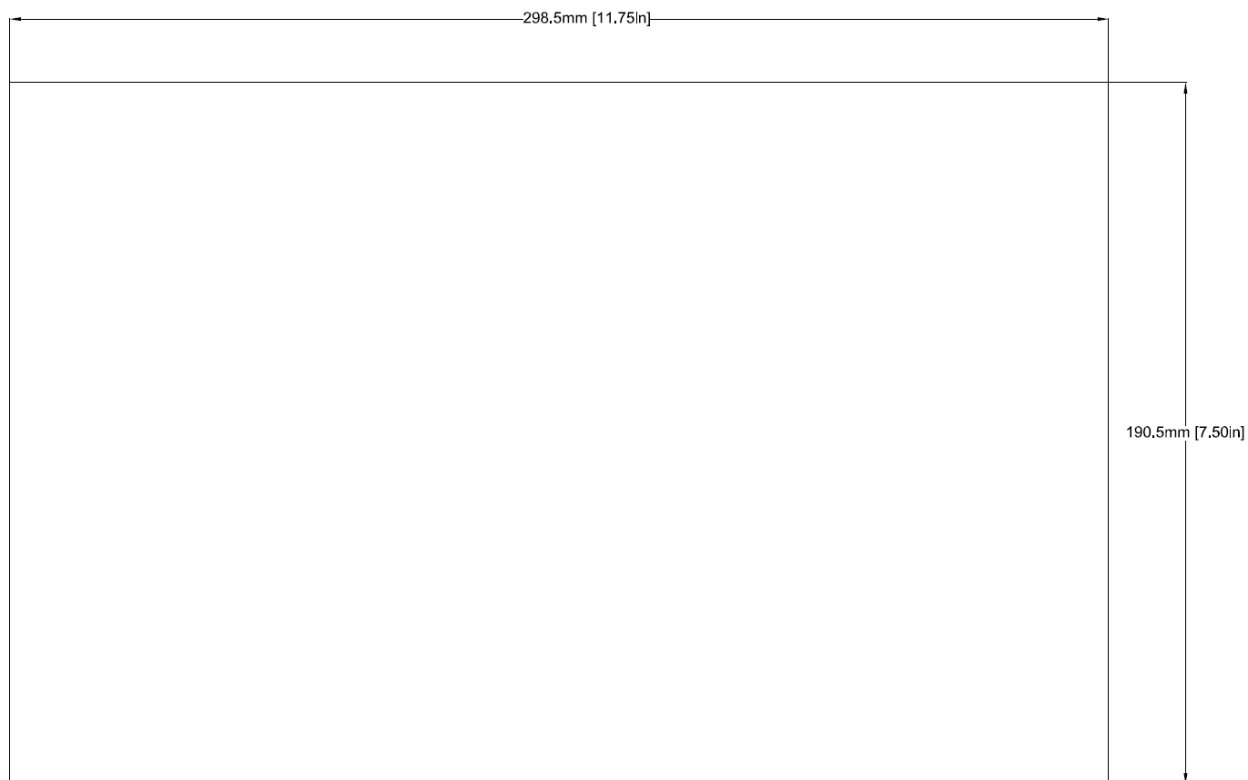
Post with knurled-head thumb nut



Cutout

Use the following dimensions to mark the necessary cutout to mount the screen. The orientation of the screen is with the widest dimension horizontal.

NXTSD512HD symmetrical cutout



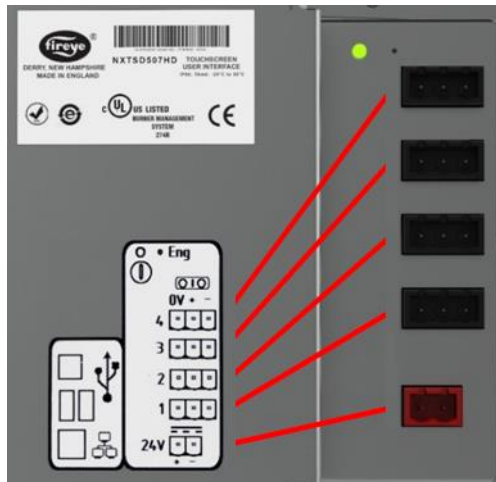


WIRING

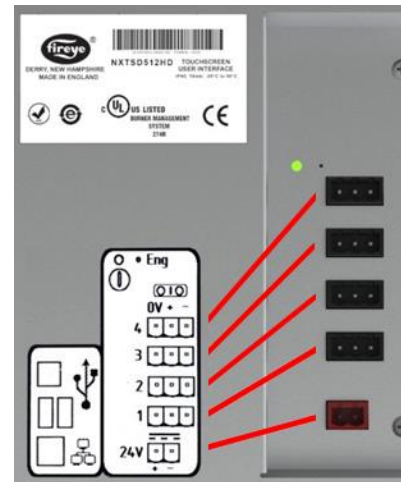
Terminals

The recommended cable (59-565) contains four wires: two power wires (18AWG) and two communication wires (22AWG) in a twisted pair, plus a bare drain wire. This cable is available by the foot.

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



NXTSD507HD



NXTSD512HD

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 connectors labeled 1 through 4 are the RS-485 serial ports used for Modbus RTU communication to the connected devices. These connections are polarity sensitive and are designated on the legend. It is recommended to use a twisted pair wire between 18AWG and 22AWG for this connection. These connectors are three-position 5.08mm pluggable terminal blocks 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-4100* 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 controls and the screen.



NXF4000/PPC4000 terminal blocks



Wiring

There are four serial ports available for connecting remote devices. The topology to each serial port should be that the devices are wired in a serial configuration (daisy-chain). This means that each device is connected to the next, with only one device wired back to the NXTSD507HD or NXTSD512HD. The best practice when choosing which serial ports to use for an installation with multiple devices is to try to use as many of the serial ports as possible and connect as few devices as possible to each.

Example: If there are four NXF4000 controls to connect to one NXTSD507HD, one option would be to wire them in a daisy-chain to a single serial port. If this method was chosen, then each device would have to take turns sending data to the NXTSD507HD which would result in a slower update time. The preferred method would be to connect each NXF4000 directly to a different serial port on the NXTSD507HD, so data could simultaneously be updated.

Example: There are three burners in a system, and each has a PPC4000 with a BurnerLogix YB110/YP138 with YZ300 annunciator, plus an ABB ACS550 for the combustion air fan. The best way to connect all of these devices to the NXTSD512HD would be to wire each burner's controls to a different serial port but wire the three devices per burner in a daisy-chain.

The wiring to an NXF4000 or PPC4000 is shown in the table below:

59-565 wire color	Wire gauge	NXF4000/PPC4000 terminal	NXTSD5xxHD terminal
Red	18AWG	P2-1	24V(+)
Black	18AWG	P2-4	24V(-)
Orange	22AWG	P12-1	1(+), 2(+), 3(+) or 4(+)
Brown	22AWG	P12-2	1(-), 2(-), 3(-) or 4(-)

The wiring to a BurnerLogix is shown in the table below:

59-565 wire color	Wire gauge	ED610 terminal	NXTSD5xxHD terminal
Red	18AWG	Not connected	Not connected
Black	18AWG	Not connected	Not connected
Orange	22AWG	10	1(+), 2(+), 3(+) or 4(+)
Brown	22AWG	9	1(-), 2(-), 3(-) or 4(-)

Refer to Fireeye bulletin *BL-1001* for further clarification on setting up the required Modbus settings.

The wiring to a BurnerPRO (generation 4 and newer) is shown in the table below:

59-565 wire color	Wire gauge	ED610 terminal	NXTSD5xxHD terminal
Red	18AWG	Not connected	Not connected
Black	18AWG	Not connected	Not connected
Orange	22AWG	5	1(+), 2(+), 3(+) or 4(+)
Brown	22AWG	4	1(-), 2(-), 3(-) or 4(-)

Refer to Fireeye bulletin *BP-1004* for further clarification on setting up the required Modbus settings.



The wiring to an ABB ACS550 VFD is shown in the table below:

59-565 wire color	Wire gauge	ACS550 terminal	NXTSD5xxHD terminal
Red	18AWG	Not connected	Not connected
Black	18AWG	Not connected	Not connected
Orange	22AWG	X1-29 (B)	1(+), 2(+), 3(+) or 4(+)
Brown	22AWG	X1-30 (A)	1(-), 2(-), 3(-) or 4(-)

Refer to the ABB ACS550 documentation for further clarification on setting up the required Modbus settings.

In the event of electrical noise in the cabling, the drain wire inside the 59-565 cable can be connected to earth ground on one end of the cable. Normally this is not required as the twisted pair used for the communication wiring handles the noise rejection.

If either a third-party power supply or a different cable than the one recommended above is used, connect NXTSD5xxHD terminal 1(0V) to the 24VDC common of the NXF4000 or PPC4000 (P2.4). This will ensure that the Modbus connection and the power supply have the same earth potential.



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



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

Ethernet/USB

The figures below show the connectors for Ethernet and USB. There is one Ethernet port for connecting to a network and two type-A USB ports for connecting to a keyboard, mouse or USB drive. A USB hub can be connected if needed to increase the capacity or accessibility of these ports.



NXTSD507HD



NXTSD512HD



ESTABLISHING COMMUNICATION

The NXTSD507HD and NXTSD512HD screens both use Modbus RTU via RS-485 to connect to the connected devices. The screen is the master device (client) and the connected devices are the slave devices (servers). There can be only one master device on a Modbus RTU network so if additional Modbus connectivity is needed (for building management, etc.), this can be done using the Modbus TCP/IP server function from the screen. See section *MODBUS TCP/IP SERVER* for additional information on this.

If there is only going to be a single NXF4000 or PPC4000 connected to the NXTSD507HD or NXTSD512HD, it should simply be connected to serial port 1. This configuration is the default as shipped and the control will immediately communicate if it is set to the default communication settings. If the unit is not set for the default communication settings, initiate the device discovery process as outlined for multiple controls in the *SYSTEM → Options → Miscellaneous → Device Configuration* section. Note that the only reason the communication settings may have changed is if the control has been installed for some time and the settings were previously changed for building automation use. If the control is new and communication isn't established immediately, first check the wiring.

The NXTSD507HD and NXTSD512HD will automatically discover any connected NXF4000 or PPC4000 controls connected when the device discovery is initiated. It is important that each connected NXF4000 or PPC4000 has a different unit address when multiple controls are connected. The default unit address of 247 can be retained when there is only one control or if each is connected to a different serial port. The reason for unique unit addressing is to avoid conflicts.



OVERVIEW SCREEN (NXF4000 and PPC4000)

The overview screen contains the most relevant information for an overall view of the chosen control's status. This screen is also accessible by pressing the right-most dropdown on the left menu bar and choosing **OVERVIEW**. The FIREYE logo button will return to the device selection screen if multiple devices are connected. The first menu to the right of the FIREYE logo allows quickly changing the selected device, while the next menu allows navigation of parameters or options within the defined control.





INFORMATION SCREEN (NXF4000 and PPC4000)

Pressing the right-most dropdown on the left menu bar and choosing **INFORMATION** will display the information screen. All the same information from the home screen is available, but there are also additional tabs for more detailed status information. See Fireye bulletin *NXF-4100* for additional information on NXF4000 or PPC4000 configuration and functionality.

The screenshot displays the Fireye INFORMATION screen. At the top, there is a navigation bar with 'fireye', 'NXF', 'INFORMATION', and 'ALARMS' tabs. The 'INFORMATION' tab is selected. Below the navigation bar, the screen shows a 3D model of the burner unit on the left. To the right of the model are three status icons: a flame, a timer, and a hand. Below these icons, the following status information is displayed:

- Status: Auto
- Firing Rate: 65%
- PCV: 93.54 PSI
- Set Point1: 100.0 PSI

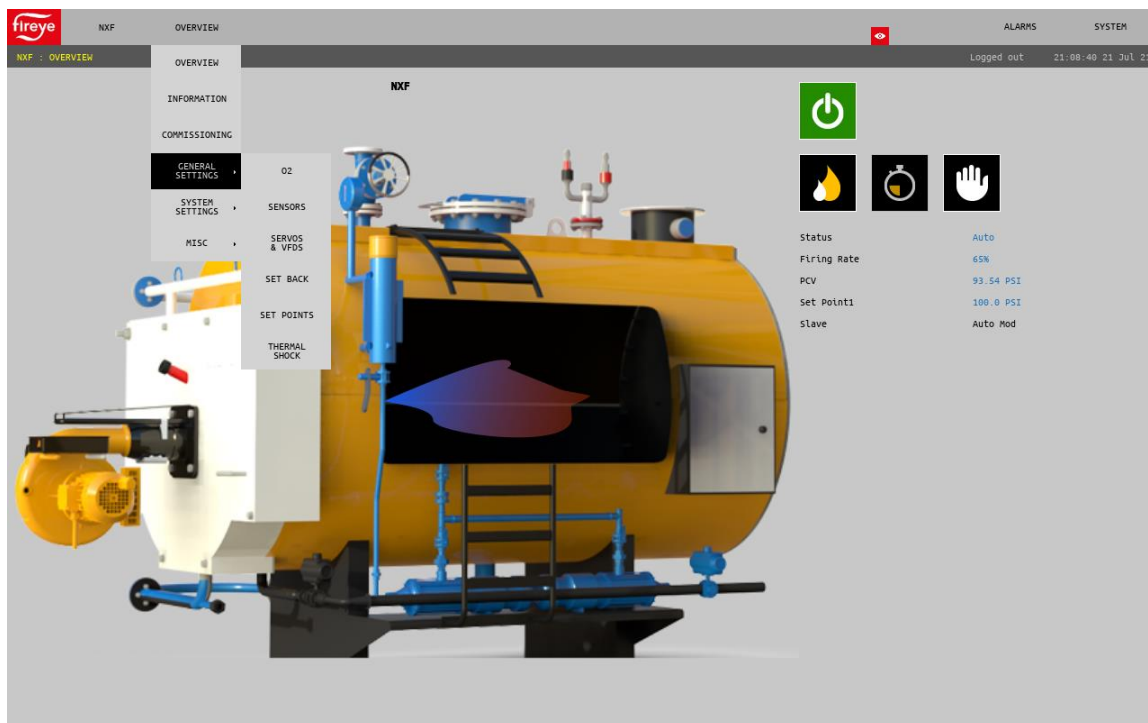
Below the status information, there is a table with the following columns: General, Sensors, Servos and VFDs, Digital Inputs, Outputs, O2, and Version. The table contains the following data:

General	Sensors	Servos and VFDs	Digital Inputs	Outputs	O2	Version
Profile	1	Points	1	Current Point	0.0	
Mod Input	Primary Sensor	Internal Temp	100.0 PSI			
System Hours	100	Burner Hours	00	Burner Cycles	00	



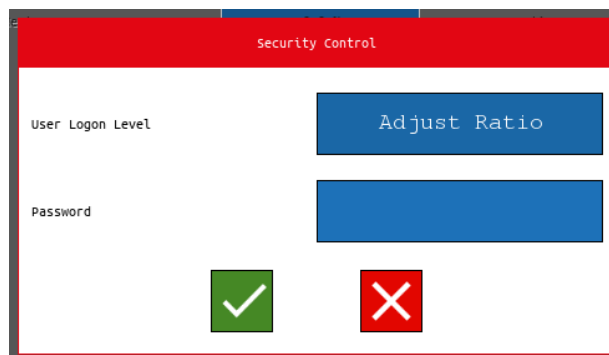
GENERAL SETTINGS (NXF4000 and PPC4000)

Pressing the right-most dropdown on the left menu bar and choosing **GENERAL SETTINGS** will display the submenu options for general settings. Each of these submenu options will display a screen dedicated to a specific setting function. See Fireye bulletin *NXF-4100* for additional information on NXF4000 or PPC4000 configuration and functionality.



Changing values

Changing a value requires entering the appropriate user level passcode. If this is needed, a “Security Control” popup will prompt for this. The user logon level can be changed but will automatically be set for the minimum appropriate security level. See Fireye bulletin *NXF-4100* for additional information on NXF4000 or PPC4000 configuration and functionality. Also note that you may have to provide a log in at the screen level as well, which will be indicated by a LOCK icon when trying to change a value. See section *SYSTEM → SECURITY* for additional information on how to log in.



Security control popup



SYSTEM SETTINGS

Pressing the right-most dropdown on the left menu bar and choosing **SYSTEM SETTINGS** will display the submenu options for system settings. Each of these submenu options will display a screen dedicated to a specific setting function. See Fireye bulletin *NXF-4100* for additional information on NXF4000 or PPC4000 configuration and functionality.





ALARMS

Pressing the **ALARMS** button right menu bar will display the alarms submenu.



Active

Active alarms will appear on any screen as a red banner with a button to dismiss the alarm banner. The active alarm page accessible here will list any active alarms. Dismissing the alarm banner will not remove an active alarm from this list.

fireye

ACTIVE ALARMS

ALARM

ALARMS

SYSTEM

Tag	Description
NXF_A_Lockout	SENSOR1 UNDER RING @ Move To Low Fire

07/21/2021 21:30:11

NXF_A_Lockout
SENSOR1 UNDER RING @ Move To Low Fire



Log

The alarm log screen will show the list of alarms sorted by date. The date show is at the top of the screen and can be adjusted using the left and right arrows. Each entry is date and time stamped. Alarms for the past 30 days are stored.

Wednesday, 21 July 2021		
DateTime	Tag	Alarm
07/21/2021 21:30:11	NXF.A.Lockout	SENSOR1 UNDER RNG @ Move To Low Fire
07/21/2021 21:18:33	NXF.2050	Invalid User Name or Password.
07/21/2021 18:30:16	NXF.A.Incompatible	Incompatible Version
07/21/2021 18:30:16	NXF.A.Comms	Comms Failed
07/21/2021 18:23:42	NXF.A.Incompatible	Incompatible Version
07/21/2021 18:23:42	NXF.A.Comms	Comms Failed
07/21/2021 18:22:48	NXF.A.Comms	Comms Failed
07/21/2021 18:22:46	NXF.A.Incompatible	Incompatible Version
07/21/2021 17:11:40	NXFPFC1.A.Lockout	An Error Occurred @ System Startup
07/21/2021 17:11:40	NXFPFC1.A.Incompatible	Incompatible Version
07/21/2021 17:08:08	BurnerLogix.A.Alarm	SENSOR2 HIGH LIMIT
07/21/2021 17:08:08	NXFPFC1.A.Lockout	CHECK WIRING @ Standby



Fault History

Pressing the right-most dropdown on the left menu bar and choosing **MENU → FAULT HISTORY** will display the complete fault history from the NXF4000 or PPC4000.

fireye

NXF

MISC

FAULT HISTORY

ALARMS

SYSTEM

NXF : FAULT HISTORY

Fireye21:39:22 21 Jul 21

#	Error Code	Description	State	Position	Date MM/DD/YYYY	Time	Fault Repeat 0
173	35	SENSOR1 UNDER RNG	Move To Low Fire	3	07/21/2021	21:30:10	
172	14	CHECK WIRING	Standby	0	07/20/2021	06:04:09	
171	89	NOT COMMISSIONED	wait For Profile	0	07/17/2021	03:22:59	
170	14	CHECK WIRING	Standby	0	07/17/2021	03:19:20	
169	89	NOT COMMISSIONED	Move To Purge	1	01/01/2020	00:01:11	
168	14	CHECK WIRING	Standby	0	07/06/2021	03:02:41	
167	89	NOT COMMISSIONED	Move To Purge	1	07/02/2021	20:46:12	
166	14	CHECK WIRING	wait For Profile	0	07/02/2021	20:46:05	
165	6	RELAY B ON	Auto	4	07/01/2021	00:54:39	
164	14	CHECK WIRING	Standby	0	06/28/2021	06:37:18	



HELP

Pressing the right-most dropdown on the left menu bar and choosing **MENU → HELP** will display the icon legend. This will help to identify what the icons designate if that is not known. See Fireeye bulletin *NXF-4100* for additional information on NXF4000 or PPC4000 configuration and functionality.





SYSTEM

Pressing the **SYSTEM** button on the right menu bar will display the system submenu. Depending upon the user login level, different options will be presented.

The camera icon will take a screen capture and save the resulting file to the internal memory. The file is a .jpg type with a resolution that matches the connected screen. This is 800x480 for the NXTSD507HD and 1280x800 for the NXTSD512HD. These screen captures can be exported to USB – see the section *SYSTEM* → *OPTIONS* → *Miscellaneous* → *Export* for additional information.

The **SHUTDOWN** menu option will perform a soft shutdown on the screen. If this is done, power will have to be recycled to power the screen back on.





Log

A system event log can be displayed to show not only all alarms but also every system event such as logins, etc.

Wednesday, 21 July 2021			
DateTime	Tag	Value	Event
07/21/2021 21:45:10	Security Control	Admin	Login
07/21/2021 21:44:59	Security Control	Start	VNC
07/21/2021 21:44:47	Security Control	Stop Recording Data	VNC
07/21/2021 21:44:42	Security Control	Default	Login
07/21/2021 21:35:17	NXF.1000	1	/dev/ttyUSB0.NXF.1000 Was set to 1
07/21/2021 21:16:23	Security Control	Fireeye	Login
07/21/2021 21:16:13	Security Control	Start	VNC
07/21/2021 21:16:11	Security Control	Stop Recording Data	VNC
07/21/2021 21:16:09	Security Control	Start	VNC
07/21/2021 21:15:52	Security Control	Stop Recording Data	VNC
07/21/2021 21:15:40	Security Control	Default	Login
07/21/2021 18:34:07	Security Control	Start	VNC
07/21/2021 18:32:49	NXF.COMMS	OK	
07/21/2021 18:32:36	Security Control	Default	Login
07/21/2021 18:30:21	NXF.COMMS	OK	
07/21/2021 18:24:14	Security Control	Fireeye	Login
07/21/2021 18:23:56	Security Control	Default	Login
07/21/2021 18:23:19	Security Control	Admin	Login
07/21/2021 18:22:32	Security Control	Default	Login
07/21/2021 18:21:01	Security Control	Stop Recording Data	VNC
07/21/2021 18:17:02	NXFPPC1.1190	1	/dev/ttyUSB0.NXFPPC1.1190 Was set to 1
07/21/2021 18:16:55	NXFPPC1.1190	3	/dev/ttyUSB0.NXFPPC1.1190 Was set to 3
07/21/2021 17:17:02	NXFPPC1	1	Clock Sync success.
07/21/2021 17:17:02	NXFPPC1.2324	2	/dev/ttyUSB0.NXFPPC1.2324 Was set to 2



Security

The **SECURITY** menu option allows the user to log in with the proper level of access. There are three different levels available: Logged out, Eng and Admin. Note that the usernames are case sensitive – the first letter must be capitalized. By default, the passwords match the usernames. After typing in the username and password, touch the UNLOCK icon to complete the login.

The **KEY** icon allows the current user password to be changed. Be careful when changing the Admin password since there is no way to restore the password to the default without erasing the current programming.

The **GEAR** icon will display the **SECURITY CONFIGURATION** screen. This screen allows adding or deleting users, creating access permissions for each user as well as changing passwords. Access permission allows specific users to be able to take specific actions without having to enter a higher-level password.

Security Control: Logged out

User Name: Logged out

Password:

Icons: Gear, Key, Lock, Unlock, Close

Security Control: Admin Logged in

User Name: Admin

Password:

Icons: Gear, Key, Lock, Unlock, Close

Security Configuration

Logged out: Gear icon

Eng: Gear icon, Key icon, Edit icon, Delete icon

Admin: Gear icon, Key icon, Edit icon

Close button (X)

Plus button (+)



Options for what each user can do are presented and may be changed. Shown below is an example of granting the “Logged out” user rights to adjust parameters or click buttons. This would allow the user to reset a lockout without logging in. Note that any NXF4000 or PPC4000 parameter that requires local user security with the Commissioning, Adjust Ratio or Site passcode will still require those passcodes to be entered.

'Logged out' User Permission Configuration

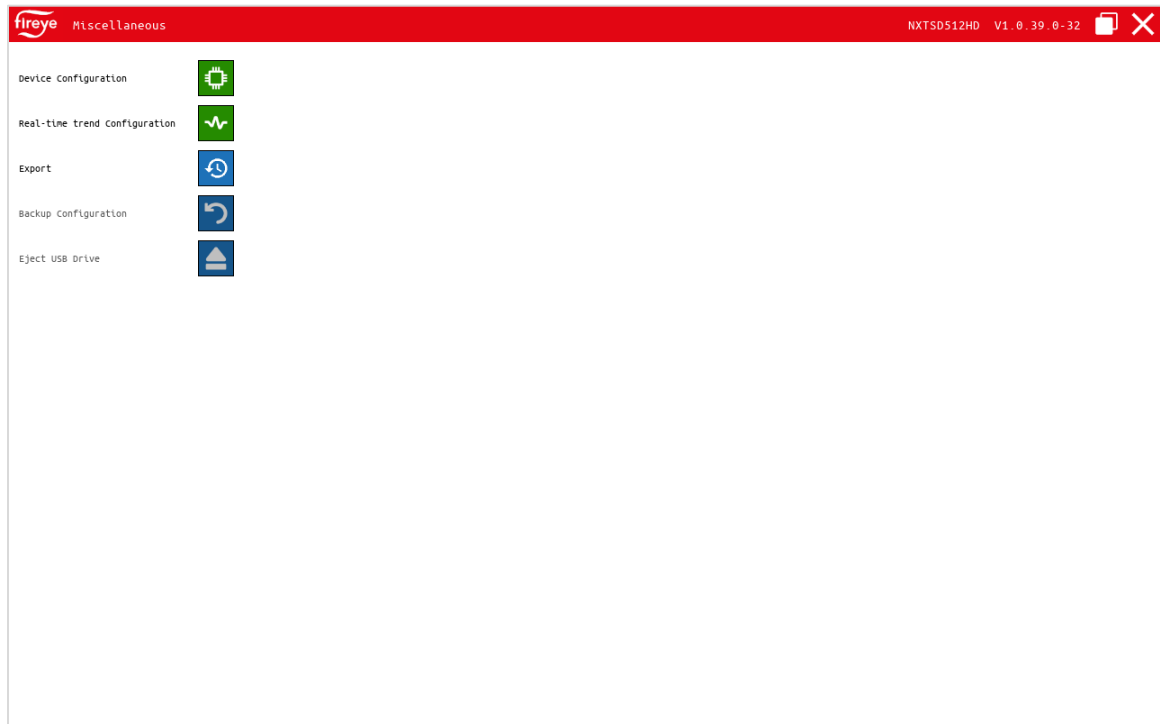
<input type="checkbox"/>	Access Options Dialogue
<input type="checkbox"/>	Allow Shutdown
<input checked="" type="checkbox"/>	Adjust Parameters/Click Buttons
<input type="checkbox"/>	Edit Security Configuration
<input type="checkbox"/>	DVR Features



Options

Pressing the **OPTIONS** button will allow the user to change screen options. There are multiple pages within the options – pressing the **folder icon** at the upper right corner will move between options pages.

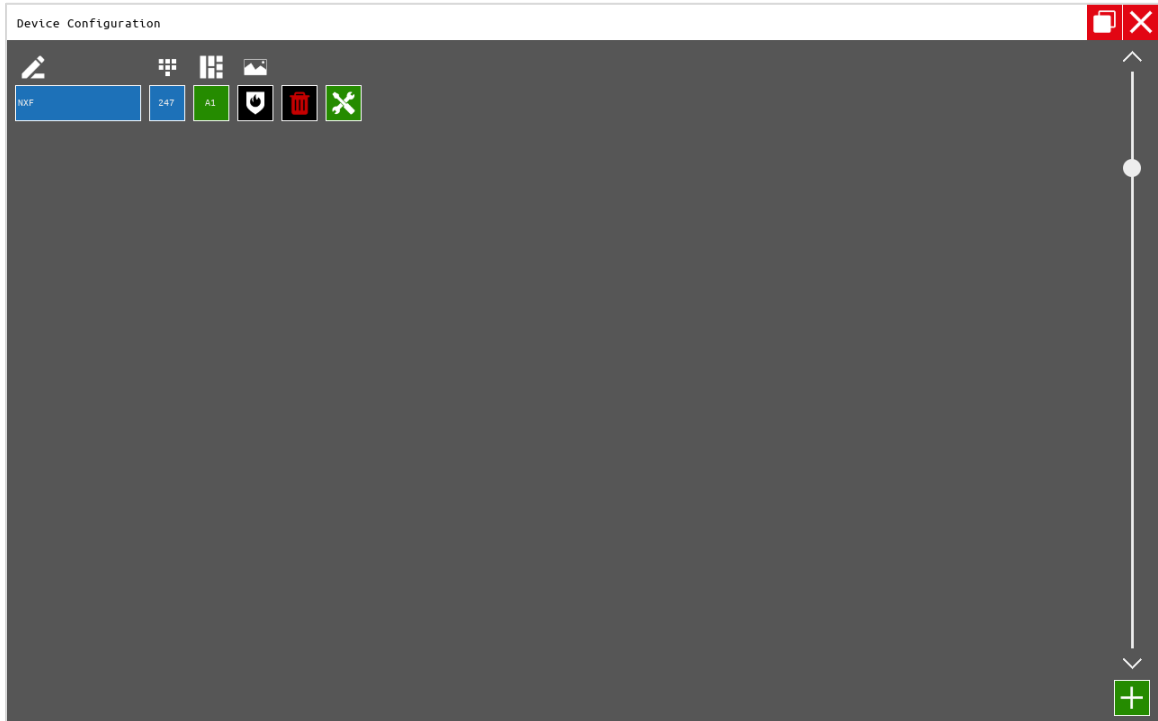
Miscellaneous





Device Configuration

Devices can be added and deleted from this screen.



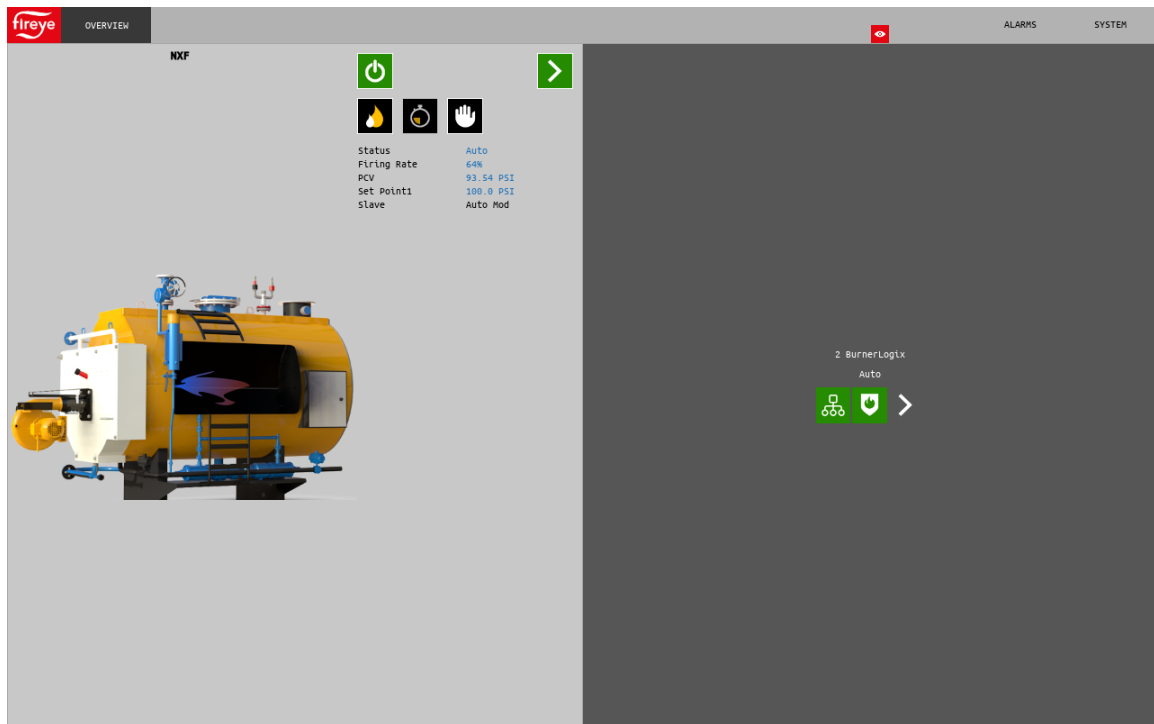
The unit address of connected NXF4000 and PPC4000 units can be changed by entering a new address. It will be written through to the control. To add a new device, press the ADD icon (plus sign) located in the lower right corner. The screen will then prompt for a device type. Next, the serial port that the device is connected to must be selected. If the device is an NXF4000 or PPC4000, it will

be automatically discovered as the NXTSD507HD or NXTSD512HD scans the serial port. If the device is a BurnerLogix, BurnerPRO (generation four) or an ACS550, the baud rate and unit address must be manually entered. Note that the baud rates don't have to match for devices on the same daisy chain as the baud rate is dynamically adjusted with each message sent.

Device Type	Select the comm port the device is connected to:
<input checked="" type="radio"/> Burner Logix	<input checked="" type="radio"/> Port No1
<input type="radio"/> NXF PPC	<input type="radio"/> Port No2
<input type="radio"/> BurnerPro 32x	<input type="radio"/> Port No3
<input type="radio"/> ACS550	<input type="radio"/> Port No4

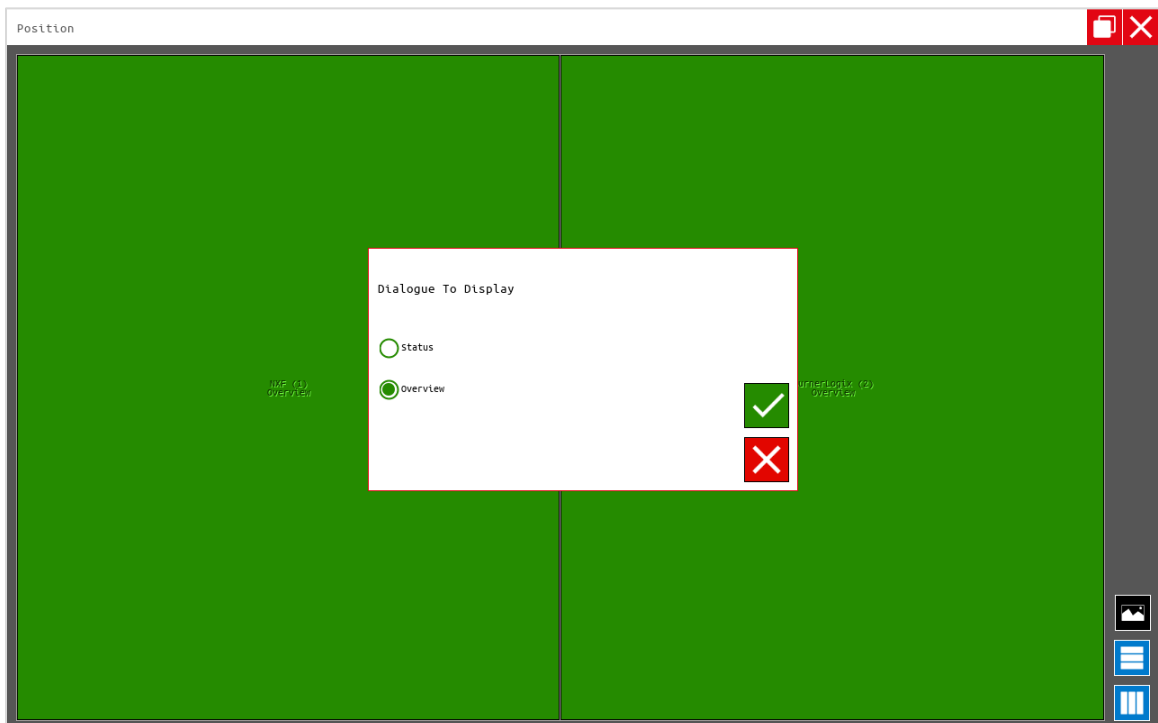


If there is more than one device connected, the FIREYE logo button on the upper left corner will display an overview of all devices. Each device can then be navigated from here.





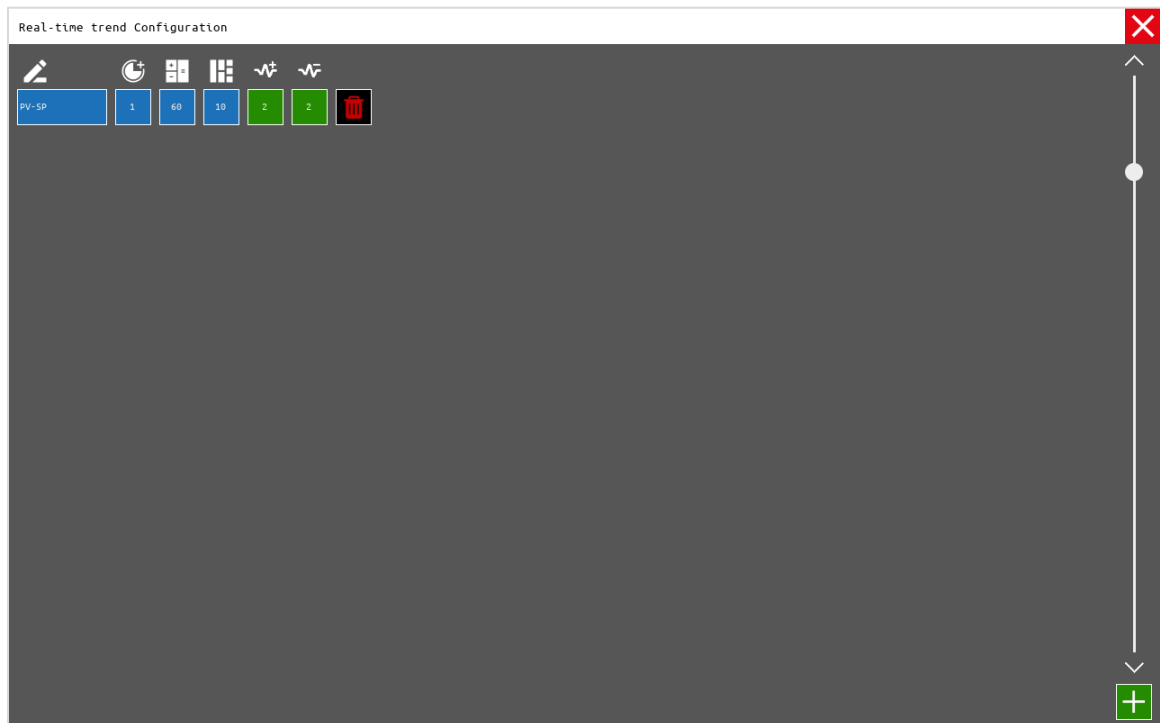
The grid positions and the type of image shown on the generic overview can be manipulated from the DEVICE CONFIGURATION screen to allow for custom layouts. The type of information to display on the general overview can be selected between Overview (type shown on left in previous image) or Status (type shown on right in previous image). This is chosen by pressing the folder icon on the upper right beside the CLOSE (X) icon, then pressing the specific grid position/device. Grid boxes can be merged as well so that certain controls can be larger than others or not shown at all on the overview. All controls can also be viewed from the drop-down menu just the right of the FIREYE logo button.





Real-Time Trend Configuration

Multiple real-time trend graphs can be created with multiple pens per graph. The data points that each pen represents can be selected from the Modbus data points of any connected device. Data can be mixed on the same graph between multiple devices and multiple different graphs and be created and named.



For each graph, a maximum of 300 data points can be saved per pen with an interval from 1 to 600 seconds per capture.



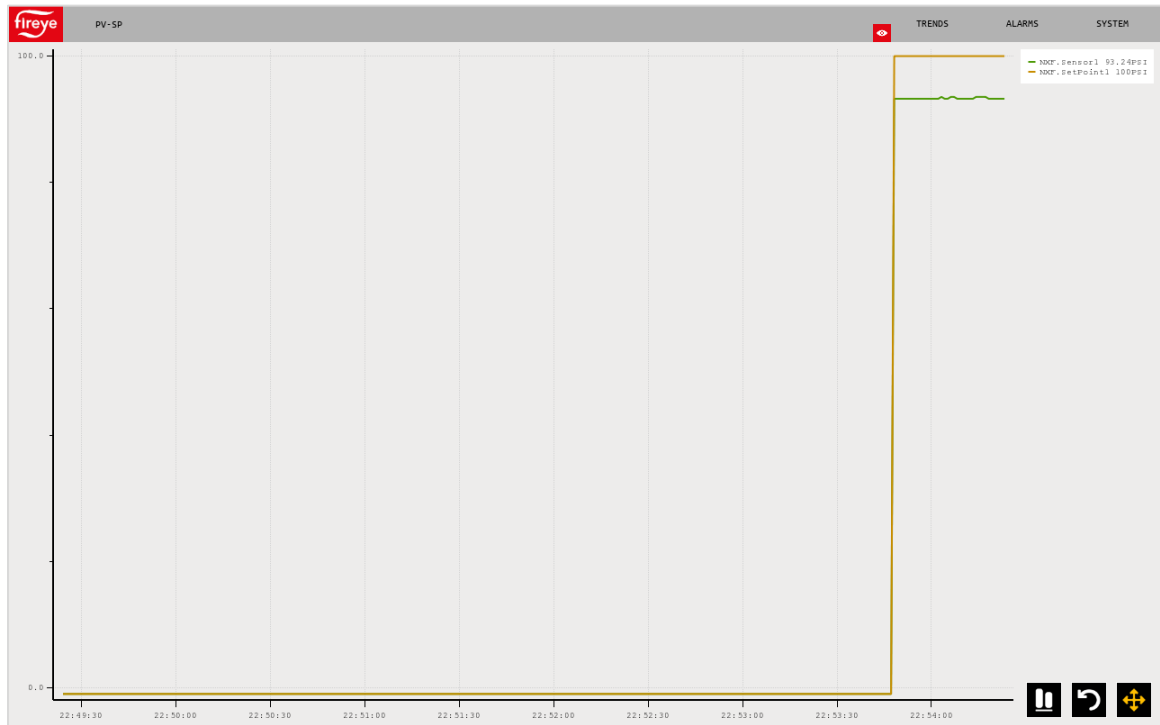
Up to eight data points can be selected per graph. Once selected, they can be removed, or new points added if the total doesn't exceed eight points.

NXF : Select items to add

	MiscFunctions	Clock features
	O2Failed	O2 Probe Failed
<input checked="" type="checkbox"/>	Sensor1	Sensor1 Value
	Sensor1Ena	Sensor1 Enabled
	Sensor2	Sensor2 Value
	Sensor2Ena	Sensor2 Enabled
	Sensor3	Sensor3 Value
	Sensor3Ena	Sensor3 Enabled
	Sensor4	Sensor4 Value
	Sensor4Ena	Sensor4 Enabled
	Sensor5	Sensor5 Value
	Sensor5Ena	Sensor5 Enabled
	ServoCount	Number of Servos installed
	SetPoint	SetPoint In Use
<input checked="" type="checkbox"/>	SetPoint1	SetPoint1 Value
	SetPoint2	SetPoint2 Value
	SetPoint3	SetPoint3 Value
	CommsHealth	



Once one or more trend graphs have been configured, there will be a new menu item TRENDS that will list all the configured graphs on the submenu.

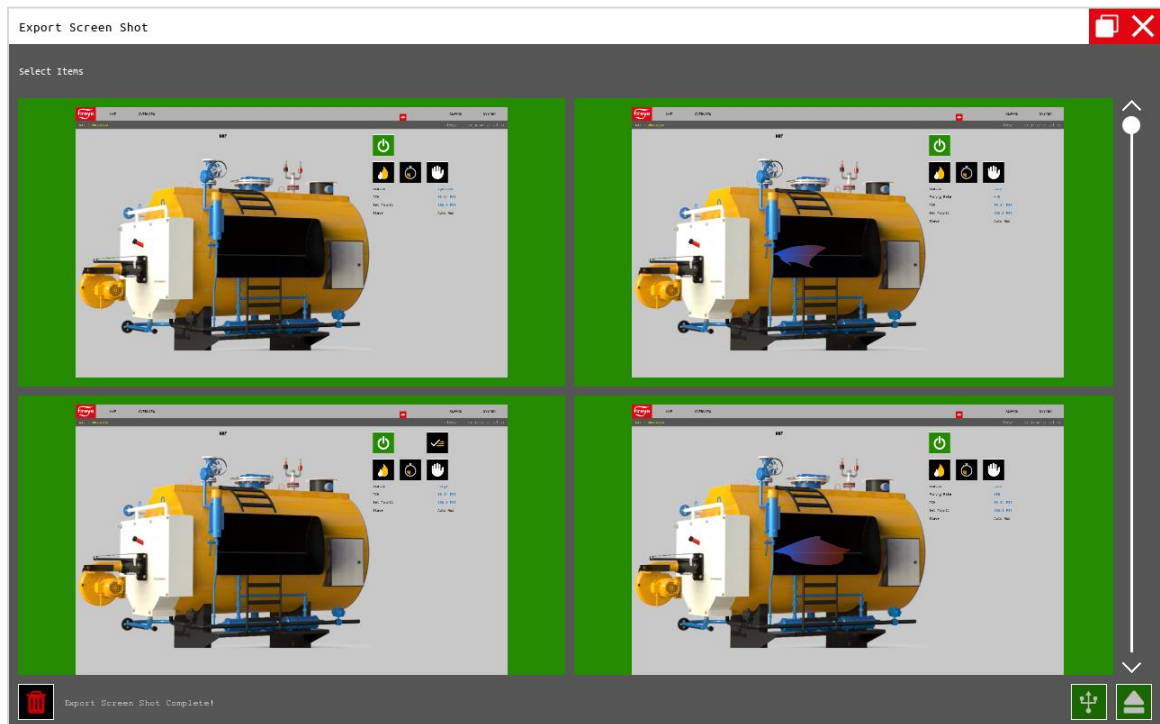




Export

Screen captures saved can be exported to USB or deleted from this screen. Press the USB icon to save to a connected USB. Press the EJECT icon to unmount the USB before removal. The status of the USB save operation is noted in the status message.

The exported image files will be saved to the USB drive in the path **FireyeHMI\Export\xxx.jpg**, where xxx is a date/time stamp `yyyymmddhhmmss` followed by the device name and then the screen name. An example of a file name would be `20210721213553_NXF_OVERVIEW.jpg`.



Backup Configuration

The device configuration can be saved to a USB file. The file will be saved in the path **FireyeHMI\Backup.cfg**.

The backup file can be used to restore a known configuration by copying the file `Backup.cfg` to a USB drive with the path `FireyeHMI\Backup.cfg`. If this file is present during the startup sequence, it will be loaded. Note that this file will be erased from the USB drive after it is copied to memory.

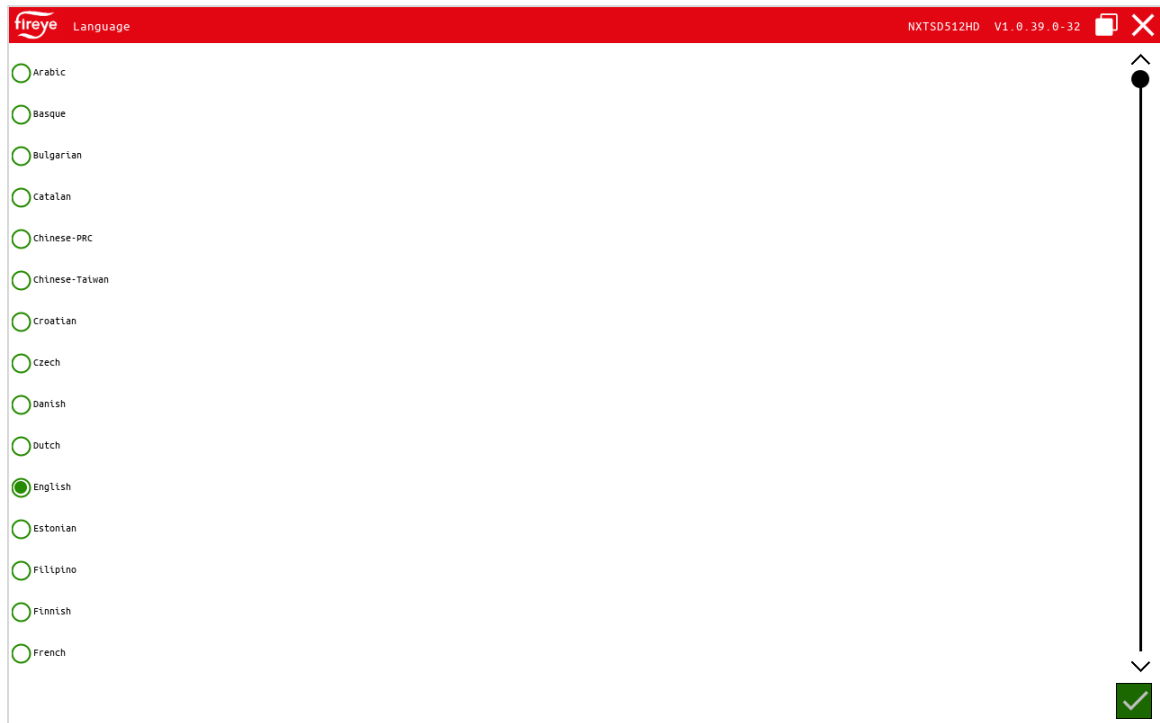
Eject USB Drive

Selecting this option will unmount the USB drive and prompt that it is safe to remove. This is preferred over simply removing the drive, which may corrupt data or cause failure to recognise USB drives.



Language

The selected language can be changed from this screen.





Screen Saver / Date

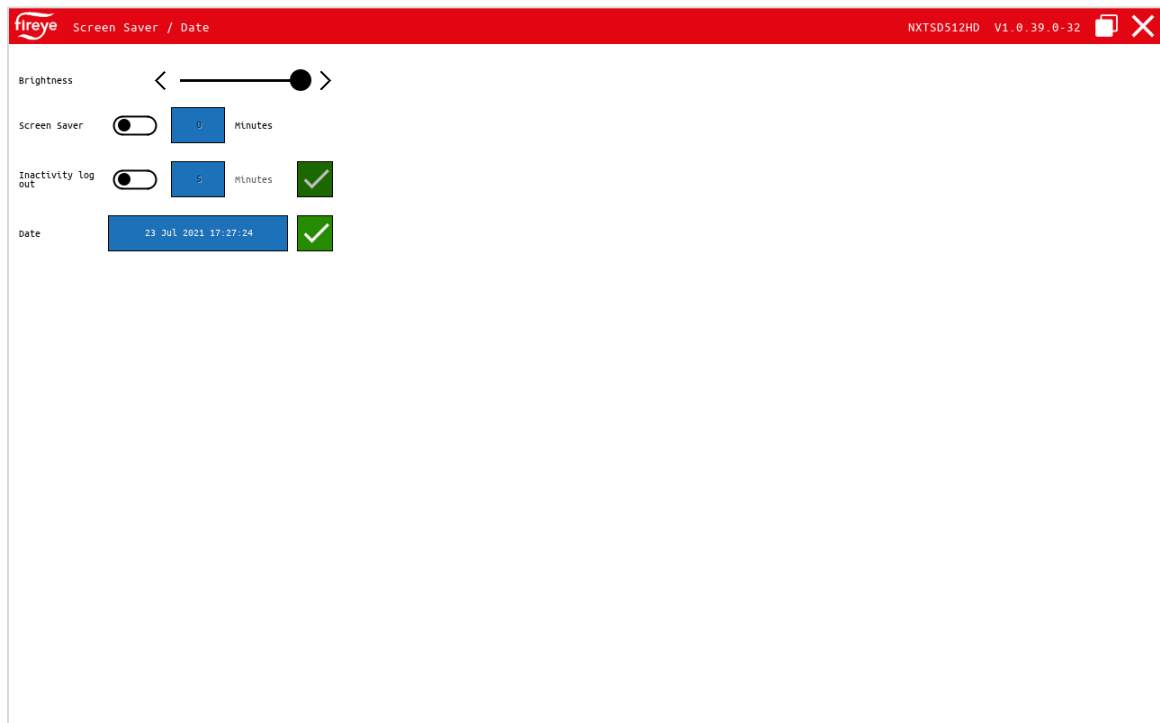
Screen settings can be adjusted from this screen.

Brightness: The brightness can be adjusted with a slider.

Screen saver: The screen saver causes the screen to black out – a touch will wake the screen back up. This feature can be turned on and off as well as the inactivity duration set.

Inactivity log out: The log in level can be set to automatically log out after a specified period of duration. This feature can be turned on and off as well as the inactivity duration set.

Date: The date and time can be set here. The time will also be written to the connected NXF4000 or PPC4000.



A common error when connecting to a newer NXF4000 or PPC4000 is that the NXTSD507HD or NXTSD512HD may be trying to send a date to the control that is outside of the valid range. Newer NXF4000 and PPC4000 units must have a year that is 2020 or later. This may result in errors that reference the device name, a parameter number and the message “Invalid Parameter”. If the device is named NXF, an example of this would be **NXF.2319 Invalid Parameter**. To correct, simply enter the correct date and time.



Network

The network settings (IP address, subnet mask, default gateway) can be set from here. These settings are used when connecting the Modbus TCP/IP server or when using the remote VNC viewing protocol.

IP Address	192	168	1	204
Subnet Mask	255	255	255	0
Default Gateway	192	168	1	1



Modbus Data Server

The Modbus TCP/IP functionality can be enabled or disabled from this screen. The device address and port number can be changed from this screen as well.

The Modbus TCP/IP server is available and is enabled by default using node address 1 and port 502. These settings as well as the IP address settings can be changed. See the section *SYSTEM* → *OPTIONS* → *Network* → *Modbus Data Server* for how to change these settings.

The Modbus server uses function code 3 for all reads and function code 6 or 16 for all writes. Writing multiple consecutive registers is allowed using function code 16.



Mapping

Due to the dynamic device configuration that is available, the Modbus mapping needs to be exported from the NXTSD507HD or NXTSD512HD as a .csv file. This file will show the following:

- Server address in 4x format
- Connected device name (name assigned during device configuration)
- The original Modbus address of the source data (from the original device documentation)
- A description of the data
- The gain, which indicates if the data needs to be divided
- How many registers the data occupies
- The data type (signed, unsigned, etc.)
- If the data is writable

To export the data, navigate to the **SYSTEM → OPTIONS → NETWORK → Modbus Data Server** page and press the button “Export Tags”. This button will only be shown if there is a USB drive installed. The data will be exported to the USB drive as two files:

- **FireyeHMI\Export\EnumMap.csv**, which shows enumerations for registers that contain values based upon a state.
- **FireyeHMI\Export\MBServerMap.csv**, which shows the complete list of registers present for all connected devices. See the specific device bulletins for additional information on what each register represents.

The resulting .csv files can be read with any text editor or a spreadsheet program such as Microsoft Excel. Below is an example of MBServerMap.csv, viewed using Microsoft Excel:

	A	B	C	D	E	F	G	H
1	Server Address	Device Name	Device Tag	Description	Gain	Registers	DataType	Writeable
2	40001	Boiler 1	CommsHealth		1	1	Short	FALSE
3	40002	Boiler 1	0	Current operational state	1	1	UShort	FALSE
4	40003	Boiler 1	1	Flame Signal Value	1	1	UShort	FALSE
5	40004	Boiler 1	2	Operational Hour Counter	1	2	Int	FALSE
6	40006	Boiler 1	4	Burner Running Hours Counter	1	2	Int	FALSE
7	40008	Boiler 1	6	Burner Cycle Counter	1	2	Int	FALSE

In this case, the device named “Boiler 1” is a PPC4000 so this must also be known since there can be multiple devices present.



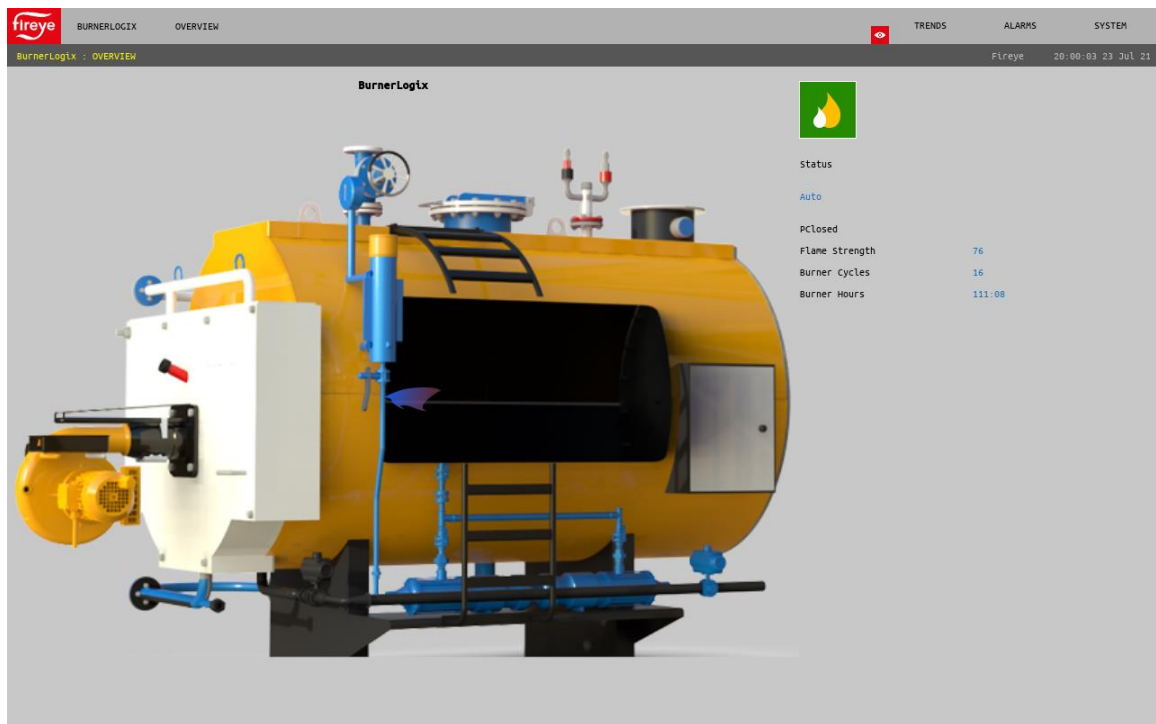
Register 40002 (representing “Current operational state”) can contain a value from 0 to 18. This number represents which functional state the NXF4000 or PPC4000 is in. There needs to be a definition for each value to get meaning from this register. To determine what each value means, the file EnumMap.csv is used.

	A	B	C	D
1	Server Address	Description	Value	Text
2	40002	Current operational state	0	System Startup
3	40002	Current operational state	1	Standby
4	40002	Current operational state	2	Wait For Profile
5	40002	Current operational state	3	Gas Valve Prove1
6	40002	Current operational state	4	Gas Valve Prove2
7	40002	Current operational state	5	Gas Valve Prove3
8	40002	Current operational state	6	Gas Valve Prove4
9	40002	Current operational state	7	Move To Purge
10	40002	Current operational state	8	Purge
11	40002	Current operational state	9	Move To Ignition
12	40002	Current operational state	10	Ignition
13	40002	Current operational state	11	PTFI
14	40002	Current operational state	12	Pilot
15	40002	Current operational state	13	MTFI
16	40002	Current operational state	14	MFEP
17	40002	Current operational state	15	Move To Low Fire
18	40002	Current operational state	16	Auto
19	40002	Current operational state	17	Post Purge
20	40002	Current operational state	18	Lockout



OVERVIEW SCREEN (BurnerLogix)

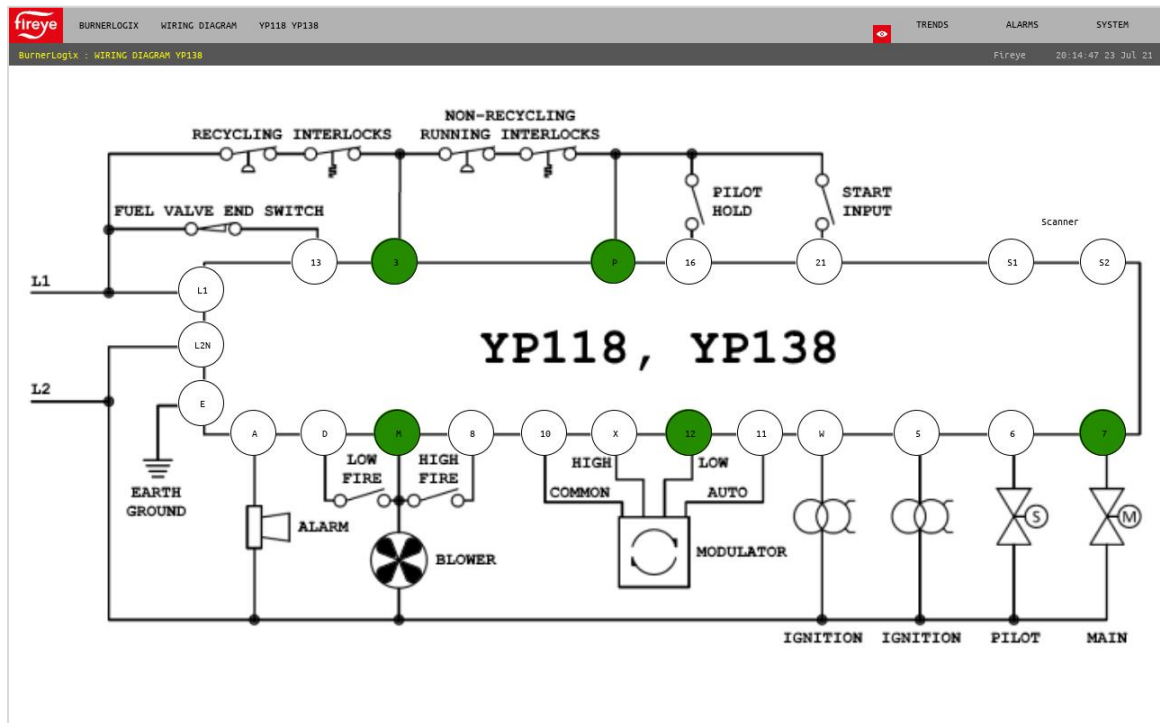
If the BurnerLogix is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **OVERVIEW** will display the device overview screen. See Fireye bulletin *BL-1001* for additional information on configuration and functionality of these controls.





WIRING DIAGRAM SCREEN (BurnerLogix)

If the BurnerLogix is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **WIRING DIAGRAM** will display the wiring diagram screen. This screen will use green status lamps to indicate which inputs and outputs are active. Once this screen is selected and additional dropdown menu allows selection of the proper programmer or model. Selecting the correct programmer or model is necessary to ensure that the data shown is correct. See Fireye bulletin *BL-1001* for additional information on configuration and functionality of these controls.





FAULT HISTORY SCREEN (BurnerLogix)

If the BurnerLogix is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **MISC → FAULT HISTORY** will display the fault history screen. The internal fault history of the BurnerLogix flame safeguard is shown.

#	Error Code	Description	Module	Burner Hours	Cycles
1	29	LOCKOUT T13 FVES OPEN	1	66:48	13
2	29	LOCKOUT T13 FVES OPEN	1	66:48	13
3	29	LOCKOUT T13 FVES OPEN	1	66:48	13
4	17	LOCKOUT M-8 LIMIT OPEN	3	66:48	13
5	29	LOCKOUT T13 FVES OPEN	1	66:48	13
6	29	LOCKOUT T13 FVES OPEN	1	66:48	13
7	29	LOCKOUT T13 FVES OPEN	1	66:48	13
8	29	LOCKOUT T13 FVES OPEN	1	66:48	13
9	17	LOCKOUT M-8 LIMIT OPEN	3	66:48	13
10	17	LOCKOUT M-8 LIMIT OPEN	3	66:48	13



SETTINGS SCREEN (BurnerLogix)

If the BurnerLogix is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **MISC → SETTINGS** will display the settings screen. Options for the BurnerLogix are set from this screen. The main options are if the YZ300 annunciator is connected, as well as specifying the type of flame amplifier fitted. If the YZ300 is enabled, the specific messages for each input can be edited and this edit will show on both the YZ300 status as well as the display connected to the BurnerLogix.

Range	Description	Status	Actions
L1-40	Oper Ctrl Open	Oper Ctrl Open	↑ ↺ ✎
40-41	Aux#1	Aux#1	↑ ↺ ✎
41-42	Aux#2	Aux#2	↑ ↺ ✎
42-3	Aux#3	Aux#3	↑ ↺ ✎
3-43	High Water	High Water	↑ ↺ ✎
43-44	Low Water	Low Water	↑ ↺ ✎
44-46	High Oil Temp	High Oil Temp	↑ ↺ ✎
46-47	Low Oil Temp	Low Oil Temp	↑ ↺ ✎



YZ300 SCREEN (BurnerLogix)

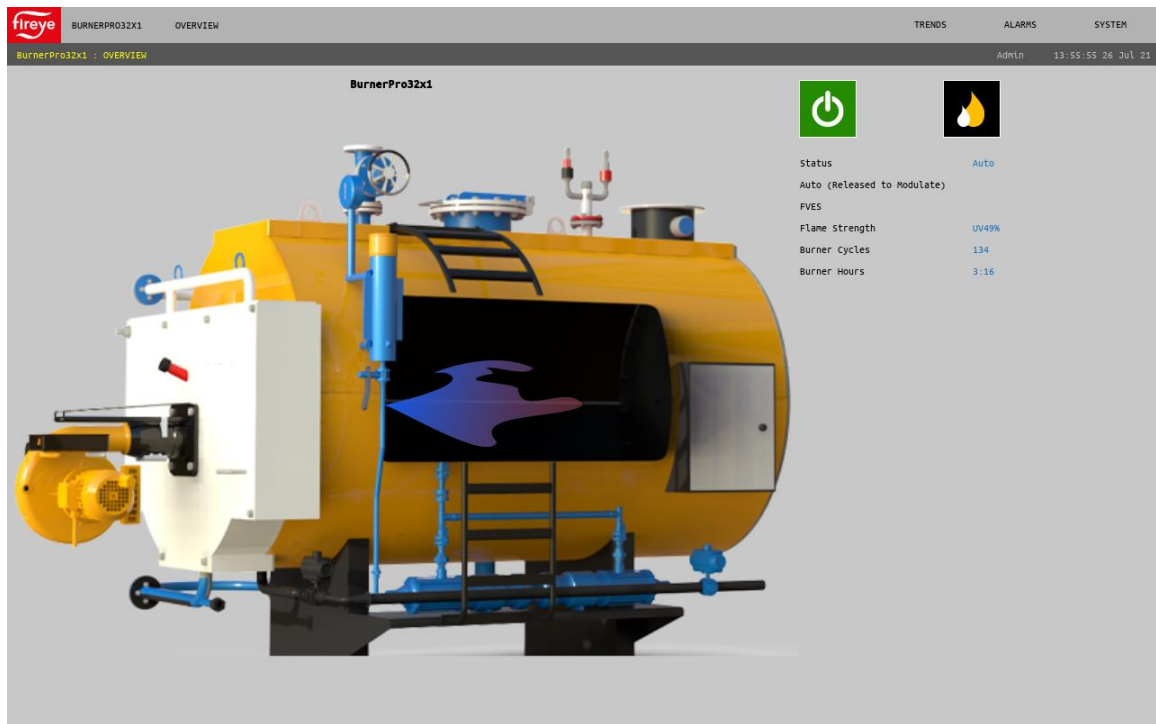
If the BurnerLogix is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **YZ300** will display the YZ300 status screen. The first limit that does not have the green status lamp on is the source of the shutdown. In the example below, the limit “High Gas Pressure” is the first lamp out and is the source of the shutdown.

Limit	Description	Status
L1-40	Oper Ctrl Open	Green
40-41	Aux#1	Green
41-42	Aux#2	Green
42-3	Aux#3	Green
3-43	High Water	Green
43-44	Low Water	Green
44-46	High Oil Temp	Green
46-47	Low Oil Temp	Green
47-48	Low Oil Pressure	Green
48-50	Low Atomizing Media	Green
50-51	Low Gas Pressure	Green
51-52	High Gas Pressure	Grey
52-54	Aux Gas	Grey
54-55	High Pressure	Grey
55-56	High Temp	Grey
56-57	Aux#4	Grey
57-58	Aux#5	Grey
58-59	Aux#6	Grey
59-60	Aux#7	Grey
60-P	ATF Flow	Grey



OVERVIEW SCREEN (BurnerPRO)

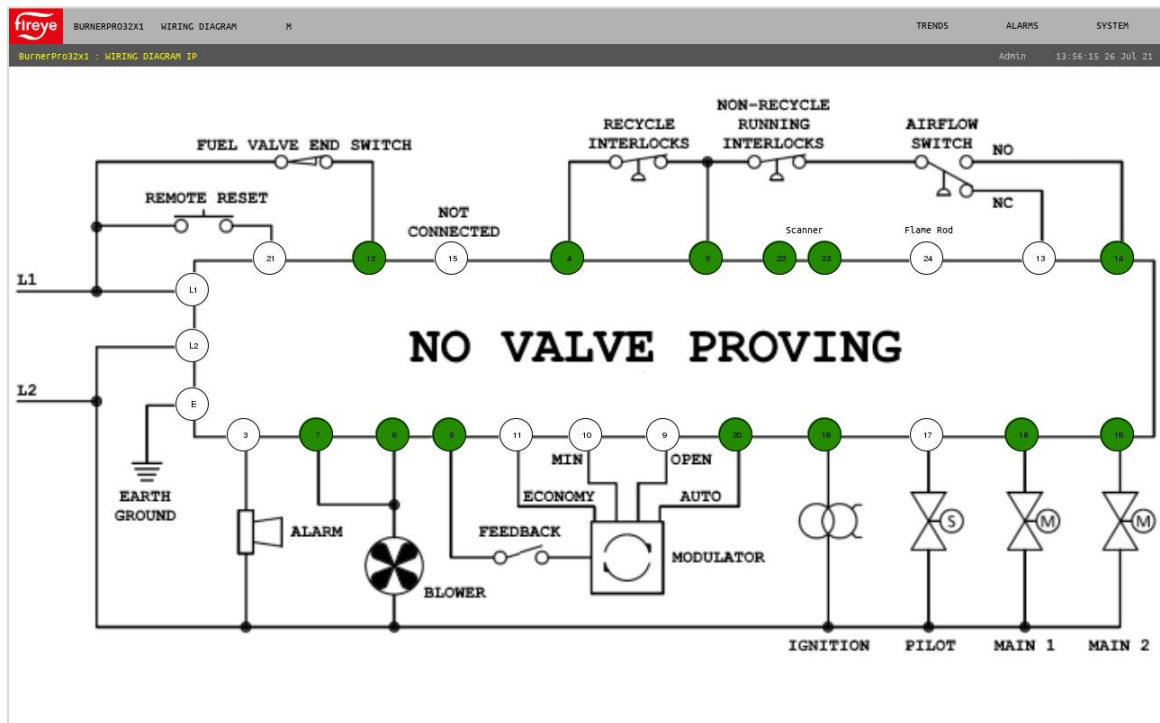
If the BurnerPRO is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **OVERVIEW** will display the device overview screen. See Fireye bulletin *BP-1004* for additional information on configuration and functionality of these controls.





WIRING DIAGRAM SCREEN (BurnerPRO)

If the BurnerLogix or BurnerPRO is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **WIRING DIAGRAM** will display the wiring diagram screen. This screen will use green status lamps to indicate which inputs and outputs are active. Once this screen is selected and additional dropdown menu allows selection of the proper programmer or model. Selecting the correct programmer or model is necessary to ensure that the data shown is correct. See Fireye bulletin *BP-1004* for additional information on configuration and functionality of these controls.





SETTINGS SCREEN (BurnerPRO)

If the BurnerPRO is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **MISC → SETTINGS** will display the settings screen. Options for the BurnerPRO can be set from this screen. These are the same options that can be set using the *Config Wizard for BurnerPRO* software. See Fireye bulletin *BP-1004* for additional information on configuration and functionality of these controls.

The screenshot displays the 'SETTINGS SCREEN (BurnerPRO)' interface. At the top, there is a navigation bar with tabs: 'fireye', 'BURNERPRO32X1', 'PARAMETERS', 'BASIC', 'TRENDS', 'ALARMS', and 'SYSTEM'. Below the navigation bar, the title 'BurnerPro32x1 : BASIC' is visible. The main area contains a list of parameters, each with a corresponding value in a blue box:

Parameter	Value
Pre-Purge Time (t1)	3 Secs
Pre-Ignition Time (piloted/t3')	3 Secs
Pre-Ignition Time (direct spark/t3)	5 Secs
First Safety Time (PTFI/TSA')	2 Secs
Second Safety Time (HTFI/t9)	3 Secs
Pilot to Main Fuel Time (t4)	0 Secs
Main Fuel To Auto Time (t5)	5 Secs
Post Purge Time (t6)	3 Secs
FFRT	1 Secs

At the bottom, there is a 'Continuous Pilot' toggle switch, which is currently turned off.



OVERVIEW SCREEN (ABB ACS550)

If the ABB ACS550 VFD is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **OVERVIEW** will display the device overview screen. See ABB ACS550 documentation for additional information on configuration and functionality of these controls.





MOTOR SCREEN (ABB ACS550)

If the ABB ACS550 VFD is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **MOTOR** will display the motor data screen. See ABB ACS550 documentation for additional information on configuration and functionality of these controls.

The screenshot shows the Fireye interface for the MOTOR screen of an ABB ACS550 VFD. The top navigation bar includes the Fireye logo, "ACS550", "MOTOR", and tabs for "TRENDS", "ALARMS", and "SYSTEM". The main content area displays five motor nominal specifications in a two-column format.

ACS550 - MOTOR		Fireye	20:50:34 23 Jul 21
Motor Nominal Voltage	230 V		
Motor Nominal Current	1.3 A		
Motor Nominal Frequency	50 Hz		
Motor Nominal Speed	1725 rpm		
Motor Nominal Power	0.3 kW		



SETTINGS SCREEN (ABB ACS550)

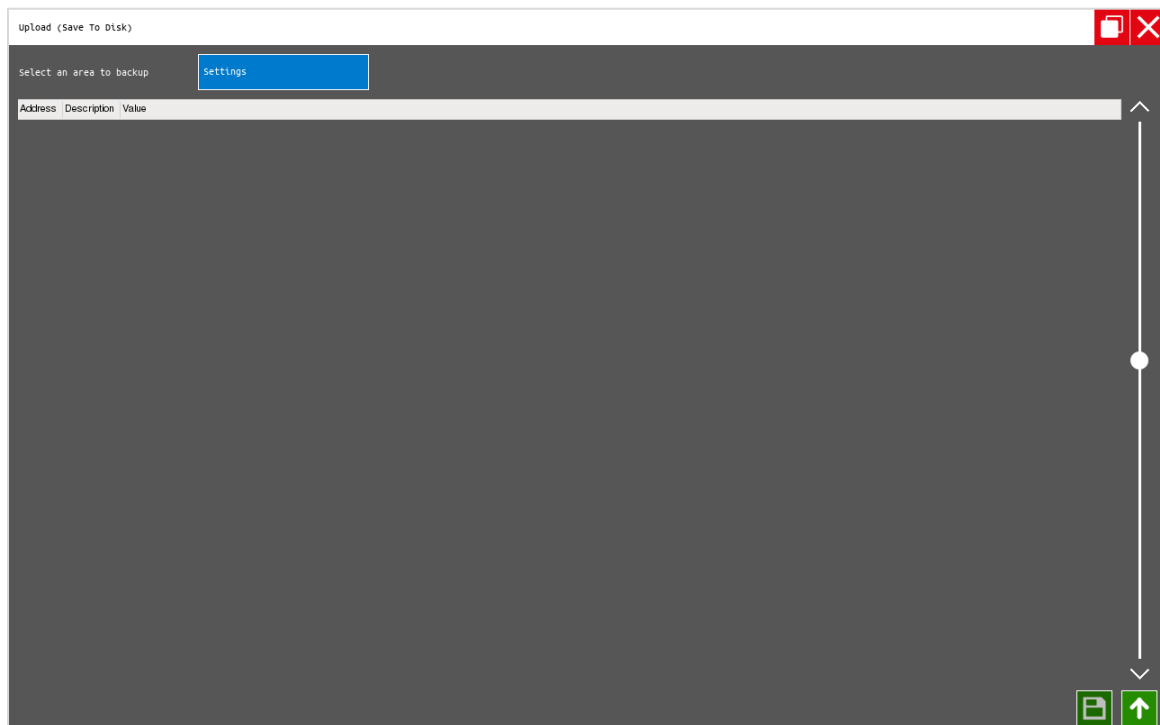
If the ABB ACS550 VFD is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **SETTINGS** will display the device settings screen. All the registers that require modification as shown in Fireye bulletin *NXF-4100* can be directly modified from this screen. See ABB ACS550 documentation for additional information on configuration and functionality of these controls.

Parameter	Value
Motor Control Mode	Scalar Speed
External1 Commands	D11,2
Drive Direction	Request
Reference1 Select	A11
Reference1 Minimum	0.0 Hz
Reference1 Maximum	78.3 Hz
Analogue Input1 Minimum	20 %
Analogue Input1 Maximum	100 %
Analogue Input1 Filter	0.1 Secs
Analogue Output1 Content Selection	Output Frequency
Analogue Output1 Content Minimum	0 Hz
Analogue Output1 Content Maximum	60 Hz
Analogue Output1 Minimum	0 mA
Analogue Output1 Maximum	20 mA
Local Lock	Not Selected
Minimum Frequency	0 Hz
Maximum Frequency	78.3 Hz
Start Function	Ramp
Accel/Decel Ramp Select	DIS
Acceleration Time	5 Secs
Deceleration Time	5 Secs



BACKUP / RESTORE SCREEN (ABB ACS550)

If the ABB ACS550 VFD is selected as a device, pressing the right-most dropdown on the left menu bar and choosing **BACKUP / RESTORE** will display the backup/restore parameters screen. The full set of modifiable settings for use with the NXF4000 or PPC4000 as described in Fireye bulletin *NXF-4100* will be saved internally to the specified file name. The folder icon located at the upper-right corner changes the dialog to download, where one of the saved configuration or the default Fireye 50Hz or 60Hz configuration can be loaded.

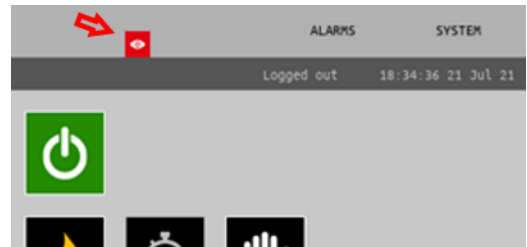




REMOTE VIEWING VIA VNC PROTOCOL

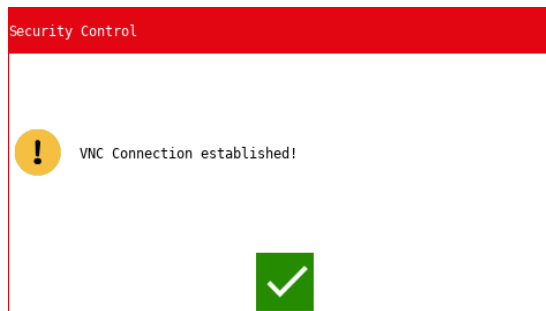
The screen can be remotely viewed and controlled using any standard VNC viewing software. VNC software allows remote viewing as if the user was at the screen and any interaction between a user at the actual screen or at one of the remote connections will show the same display. Multiple remote users can connect simultaneously using VNC.

This software can run on any smartphone, tablet or PC with the only prerequisite being that the screen is connected to the same network as the device connecting. The port used by VNC is the standard port 5900. To connect, simply enter the screen's IP address into the VNC viewer software and then connect. When prompted for a password, use the VNC password "fireye" (all lowercase). If the eyeball icon appears on the upper right corner to the left of the SYSTEM submenu, that indicates that a connection is active.

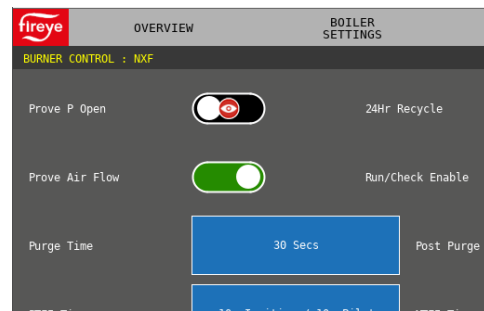


VNC connection is active

VNC can be connected either as a view-only connection or with remote control capability. If connected with remote control capability, most features that allow changing settings are disabled. Either an eyeball icon (indicating view-only) or a pop-up message will indicate that the change is not allowed. Moving between screens is the primary function allowed with remote control. Note that since a VNC connection is the same at the actual screen or at a remote connection, control at the actual screen will also be disabled while a VNC viewer is connected.



Changes disabled popup



Individual change disabled



CERTIFICATIONS NXTSD507HD AND NXTSD512HD

UL: MP1537

CE

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.

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FIREYE guarantees for one year from the date of installation or 18 months from date of manufacture of its products to replace or repair (Fireeye's option) any product or part thereof (except lamps 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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