



Graphic Framework Guidelines



Allen-Bradley

by ROCKWELL AUTOMATION

User Manual

Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.




WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.




ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.


These labels may also be on or inside the equipment to provide specific precautions.



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.




BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

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About This Publication

This document provides the information to configure the PlantPAx® Graphic Framework.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
PlantPAx Process Solutions Technical Documentation	Quickly access and download technical specifications, installation instructions, and user manuals.
Configuration and Implementation User Manual, publication PROCES-UM100	Provides system guidelines and instructions to assist with the development of your PlantPAx system.
Rockwell Automation Sequencer Object, Publication PROCES-RM202	Provides an overview of how to use the Rockwell Automation Sequencer Object. The manual includes a Sequencer programming demonstration, example, and configuration instructions.
PlantPAx Process Control Instructions, publication PROCES-RM215	This manual provides a programmer with details about the available Process instruction set for a Logix-based Process controller.
FactoryTalk View Display Implementation Guidelines, publication PROCES-RM250	Describes the PlantPAx Add-On Instructions, and associated faceplates that are available in FactoryTalk® View SE to develop applications.
FactoryTalk Optix Display Implementation Guidelines, publication PROCES-RM260	Describes the PlantPAx Add-On Instructions, and associated faceplates that are available in FactoryTalk® Optix™ to develop applications.
Process Object parameters Spreadsheet, publication, PROCES-RD200	Describes the PlantPAx Process object parameters.
PlantPAx Visualization Files, publication, PROCES-RD201	Describes the visualization files that are required for the Library of Process Objects.
FactoryTalk Optix Solutions, OPTIX-AT001	Provides an overview of the system, application examples, and ordering guidelines to help you choose exactly what you need. It also guides you through the basics of creating and deploying your own application.
System Security Design Guidelines Reference Manual, publication SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
ProposalWorks™ configuration software, rok.auto/systemtools	Helps configure complete, valid catalog numbers and build complete quotes based on detailed product information.
Rockwell Automation Global SCCR tool, rok.auto/sccr	Provides coordinated high-fault branch circuit solutions for motor starters, soft starters, and component drives.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Notes:

Graphic Framework Overview

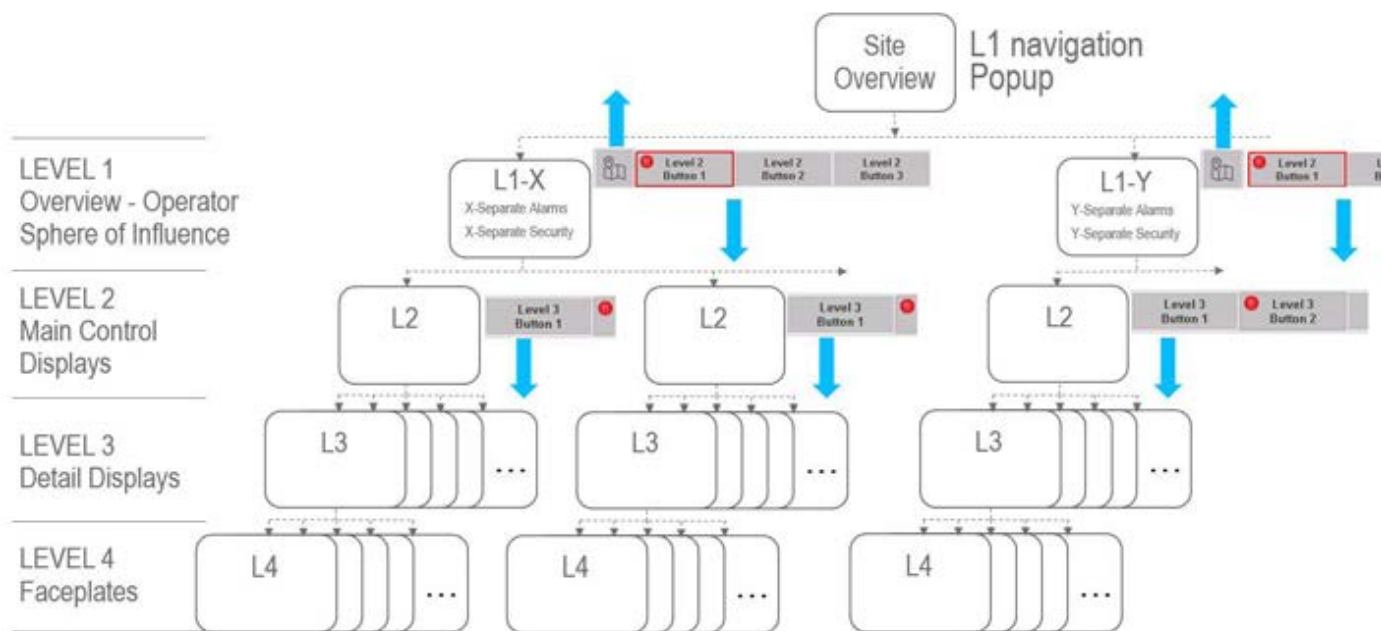
PlantPAx Graphic Framework

A graphic framework:

- Provides basic structure for HMI applications
- Hierarchical display levels for ease of access
- Follows ANSI/ISA-101-2015 guidelines
- Display templates include navigation and support customization and duplication

The Graphic Framework is:

- Modularly flexible with headers and default displays that can be deployed as needed, from small to big systems. Button options let you swap out buttons depending on needs
- Deployed intuitively with clearer instructions for global object files
- Configurable instead of programmed, which decreases the time and expertise needed to deploy



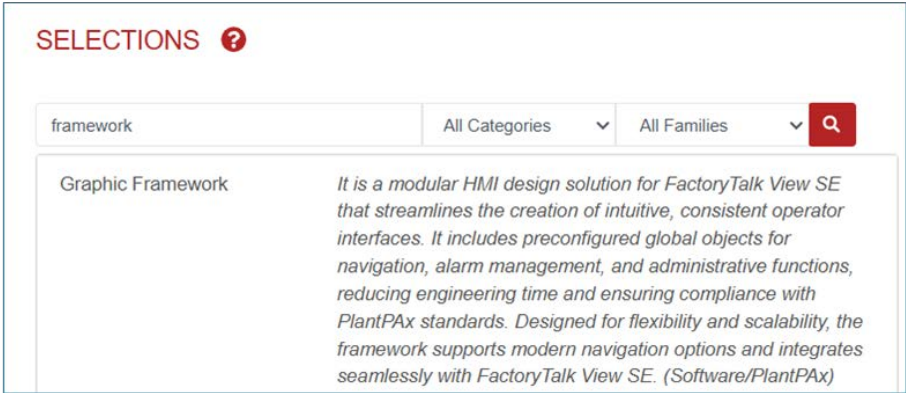
The Graphic Framework provides four levels of displays.

Level	Description
Level 1 (L1)	Overview Display Provides an overview of the operator's entire span of responsibility
Level 2 (L2)	Process Unit Control Display Operator's primary operating display. Used during normal operations, routine changes, and monitoring.
Level 3 (L3)	Process Unit Detail Display Non-routine operations. Provides sufficient information to facilitate process diagnostics
Level 4 (L4)	Process Unit Support Display Interlocks, diagnostics, help, and documentation; delivered on faceplates or popup displays

For more information on HMI philosophy, style guide contents, and the various display types/levels, see Rockwell Automation Process HMI Style Guide, [PROCES-WP023-EN-P](#)

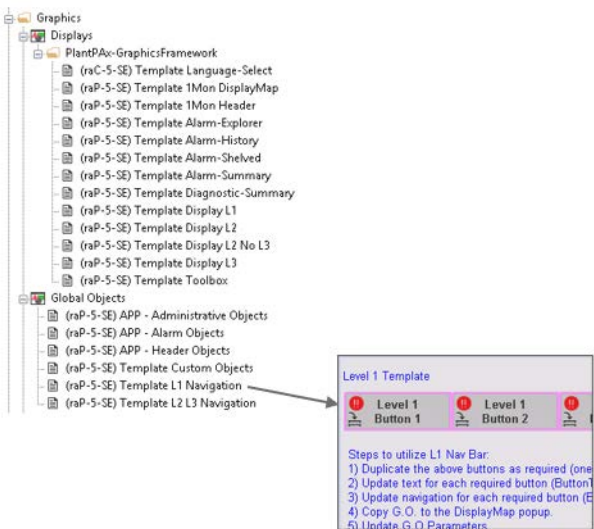
Access the Graphic Framework

The Graphic Framework is available as an individual download.



Graphic Framework Directories

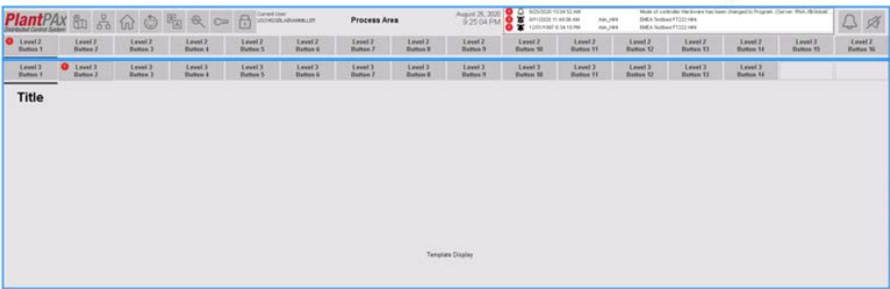
The directories use descriptive names and the files have configuration descriptions.



Displays Overview

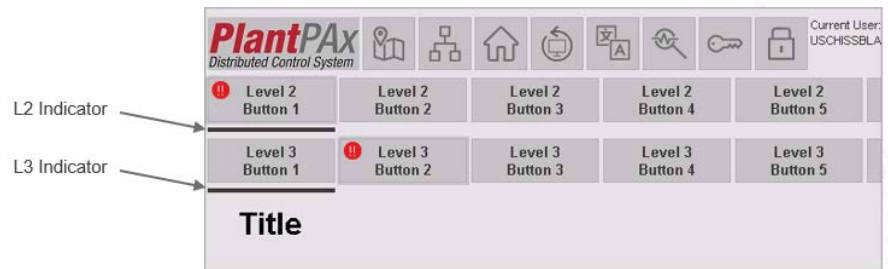
The Graphic Framework consistently uses L2 and L3 displays.

- L2 Navigation bar always on Header
- L3 Navigation bar always on L2/L3 graphic



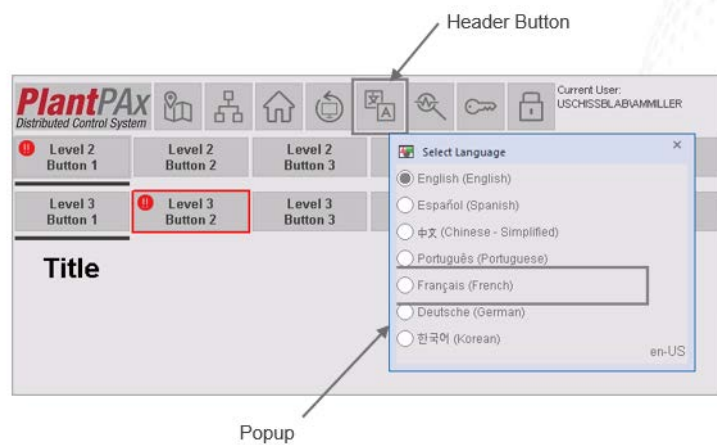
Active Display Indicators

Active display indicators are built into the L2 and L3 navigation bars.



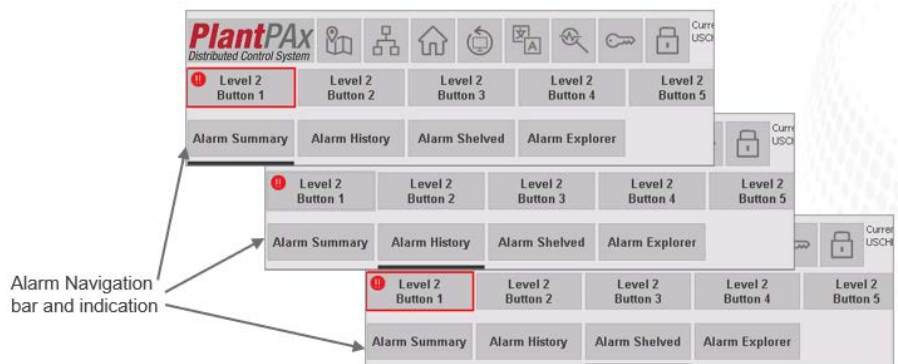
Language Switching

The displays include a header icon and pop up for language switching.



Alarms

The displays provide navigation between alarm screens.

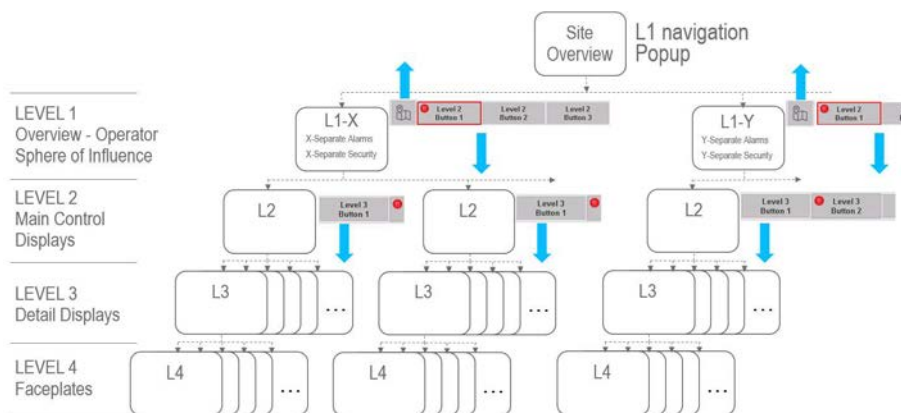


Notes:

Graphic Framework Structure

It is important to organize an HMI application in a hierarchical way, to provide the operator and/or End User with a logical progression of complexity from main area overview down to detailed device information. ANSI/ISA-101.01-2015 outlines basic HMI design guidelines and recommends a progressive disclosure methodology with up to four levels of displays. The PlantPAx® Graphic Framework was created to assist the End User by providing a basic structure that can be used to follow the ANSI/ISA-101.01-2015 recommendations.

For more information on HMI philosophy, style guide contents, and the various display types/levels, see Rockwell Automation Process HMI Style Guide, [PROCES-WP023-EN-P](#).



The Graphic Framework is composed of four main components, Header, Process Control Displays, Navigation, and Alarm Indication.

IMPORTANT

The Graphic Framework was developed at the specific resolution of 1920x1080. The display files are a specific size and defined to open at a specific location. This should not be changed and could result in the Graphic Framework not functioning properly.

Header Display

The Header is a perpetual graphic display that is positioned at the top of each HMI client monitor to provide major navigation, annunciation, and status information for the process and the control system.

The Header is composed of several modular objects that can be selectively used to meet the needs of the End User. The following list indicates the available components in the Graphic Framework that can be used to create the Header display:

- Logo Object
- L1 Navigation Object
- Diagnostics Object
- Home Navigation Object
- Close Client Object
- Login / Logout Object
- Alarm Banner (Default sized Alarm Banner Object – 3 lines)
- Alarm Summary Navigation with Visual Alarm Indication Object
- Alarm Silence Object
- Date / Time Object

- Windows Navigation Objects
- Help Object
- Language Switching Objects
- Report Navigation Object
- Trend Navigation Object
- Documentations Navigation Object
- L2 Navigation Bar (required if not using the built-in navigation menu)

A separate header must be used for each L1 area, reflecting information within a specific operator's sphere of influence. The header will typically have a similar look and feel for each L1 area with different configurations to provide information only relevant to the operator of that L1 Area.

Process Control Displays

Process control displays are the main displays in the system that the operator interacts with. The Graphic Framework provides template displays, or default displays, that can be used to build the main graphics. These template displays can be duplicated for customization in each application. All default displays are sized the same and include different navigation and indication to allow operations to quickly assess the process status and take required actions.

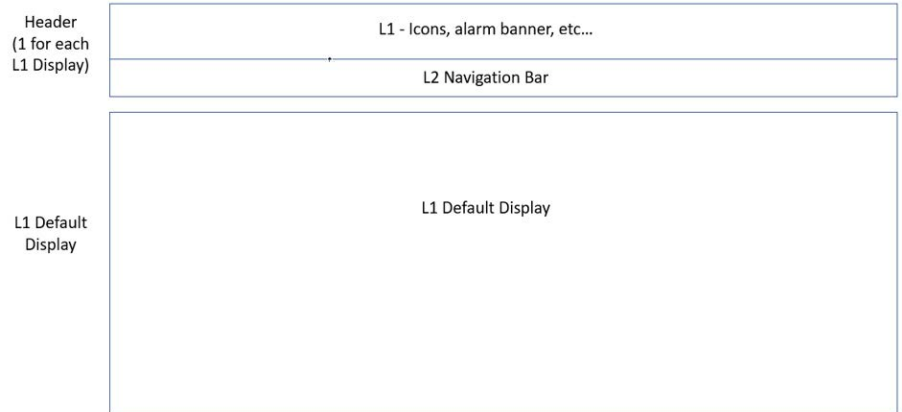
There are three process controls displays available as templates:

Display	Description
L1 Default Display Template	<ul style="list-style-type: none">• This is an overview of a specific operator's sphere of influence (Overview Display)• Full graphic displays with L2 Navigation Bar visible• The first display that is populated when the operator refreshes the FactoryTalk® View SE client• Intended to be a high-level process area display typically consisting of key performance indications using trends and display objects (not just lists of numerical data)
L2 Default Display Template	<ul style="list-style-type: none">• An operator's main control display designed to support typical operation modes often arranged like a process flow diagram (PFD).• Control for main operation variables and annunciation to prompt operator to access associated L3 display when necessary• Full graphic display with L2 and L3 Navigation Bar present• Typically, there are multiple L2 displays required to cover a specific operator's sphere of influence, which is represented by the L1 display.
L3 Default Display Template	<ul style="list-style-type: none">• A more detailed display that is designed for troubleshooting abnormal scenarios. The L3 display design presents data that best matches to current task at hand.• Full graphic display with L2 and L3 Navigation Bar present. Simple L2 areas may not require an L3 display and therefore L3 Navigation Bar may not be required.
Display Template for use with Navigation Menu	<ul style="list-style-type: none">• Full graphic display used to build L1, L2, and L3 level displays when used with the built-in FactoryTalk® View SE navigation menu.• Must configure the navigation menu in FactoryTalk View SE to use this display.

L4 displays provide finer detail and are opened as Faceplate or pop-up display from L2 and L3 displays. These would include PlantPAx standard faceplates or custom pop-up displays.

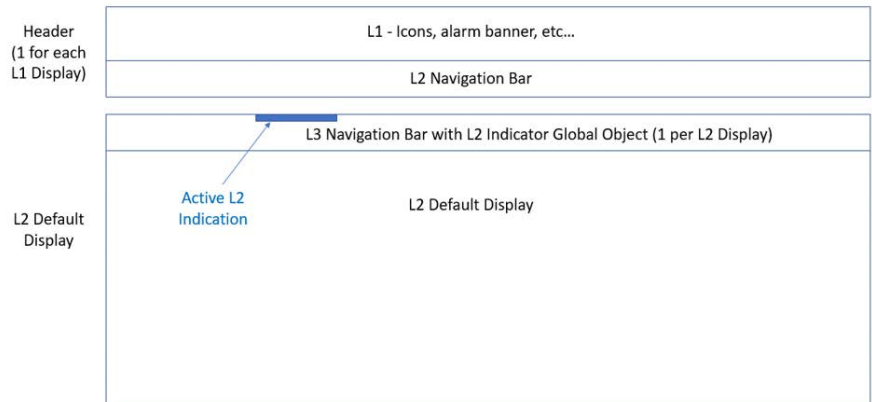
L1 Display

L1 Process Control Display is used as an overview for a single operator's sphere of influence. This is the first screen that the operator sees when the HMI client starts up and contains a high-level overview of the operator's sphere of influence as well as KPIs and indications. There will typically be one L1 Process Control Display for each L1 Area in the project. The display is typically designed to represent the various process units with key indications, trends, and rolled-up alarm status to help drive the operator to the appropriate L2 displays to address abnormal conditions.



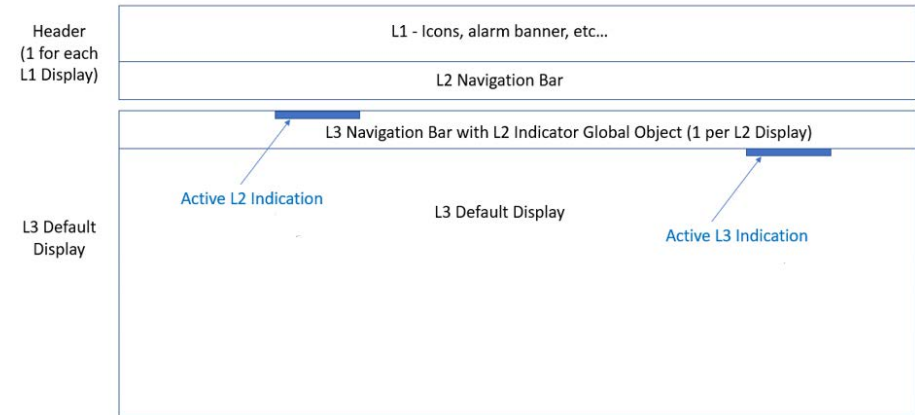
L2 Display

L2 Process Control Displays are used as the operators' main control screens. These displays provide access to the main operating parameters while concurrently providing annunciation when abnormal conditions exist. If necessary, the operator can access the associated and more detailed L3 displays to address the situation. The L2 display includes the L3 Navigation bar at the top with an indicator of the selected L2 display.



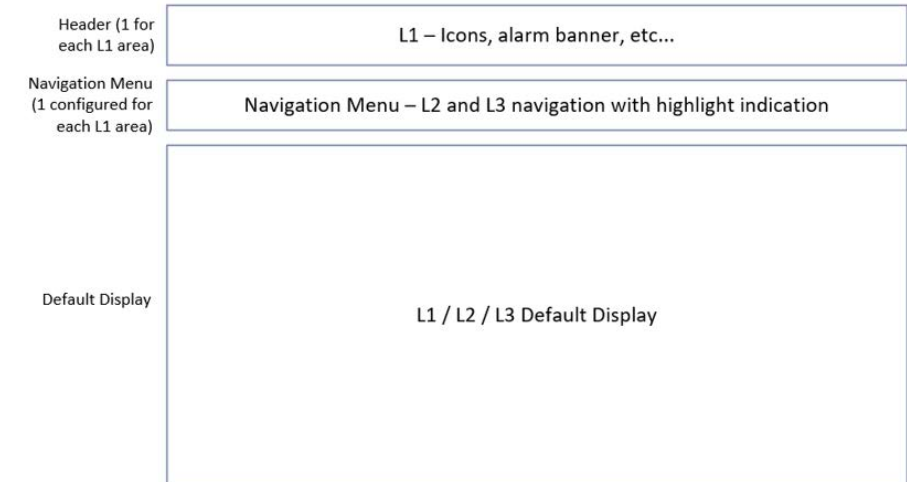
L3 Display

L3 Process Control Displays are used to access in-depth equipment details and diagnostics that may not be needed while the process is running normally. These displays are often similar to the traditional P&ID style of displays allowing the operator access to all control and monitoring information for that specific area of the plant. The L3 display includes the L3 Navigation bar at the top with an indicator of the selected display and an indicator of its associated L2 display.



Display with Navigation Menu

FactoryTalk View SE has a built-in navigation menu that can be configured for navigation to L2 and L3. When using the navigation menu, the functionality is the same, but the layout of navigation is slightly different. The default display can be used for L1, L2, or L3 detailed display.



Navigation

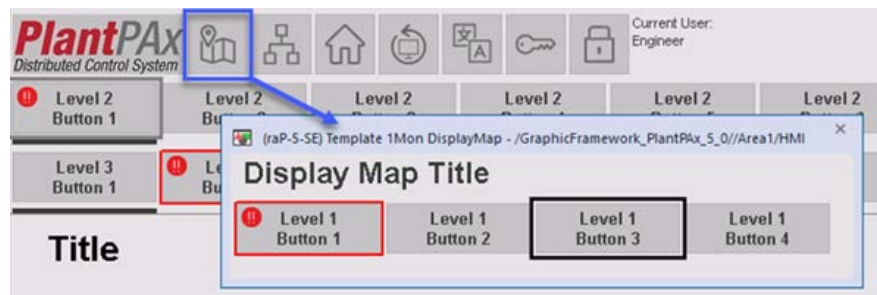
Starting with Graphic Framework version 1.00, which is independent from the PlantPAx Process Library, the graphic framework allows for selection of either the relatively new navigation menu system provided by FactoryTalk View or the legacy PlantPAx navigation system. There is no need to migrate from legacy to the navigation menus. For new projects either option can be considered. The navigation menus are not well suited for systems with multiple monitors or contextual navigation buttons. See [Versioning and Design Considerations on page 22](#) for more information.

The Graphic Framework provides an intuitive and 'easy to configure' navigation strategy. Navigation among displays as part of the Graphic Framework can be configured and accessed from:

- L1 Navigation
- L2 Navigation
- L3 Navigation
- Navigation Menu
- Alarm Navigation
- Diagnostic Navigation
- Graphic Off-Screen Connectors

L1 Navigation

L1 Navigation allows operators to navigate to other areas of the facility. This moves the operator to another sphere of influence. The Display Map Button is used to open a pop-up display - the Display Map. This is the L1 Navigation display. This display can be expanded to include as many L1 areas as necessary for an application. Four buttons are provided by default.



L2 Navigation

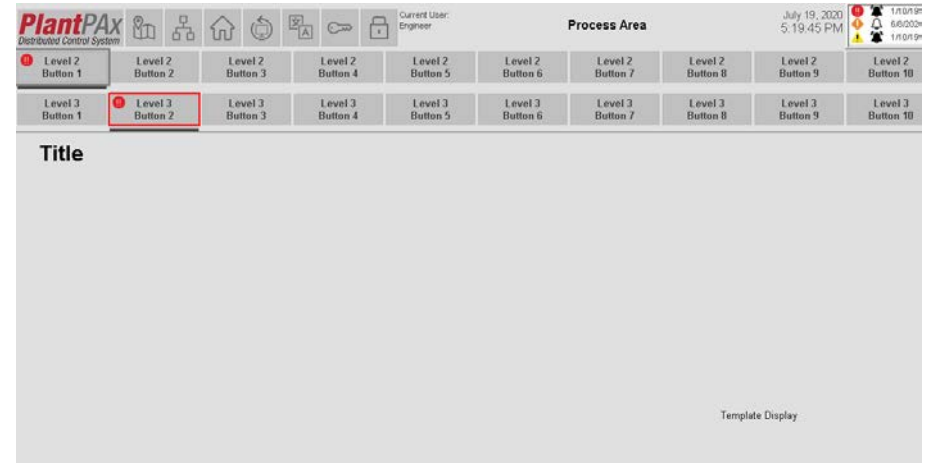
L2 Navigation is the first level of display access within a given L1 area. There is just one L2 Navigation bar used for each L1 area. The L2 Navigation bar resides within the header display and is always visible. The L2 Navigation Bar is composed of 16 buttons and can navigate to up to 16 different displays.



When the operator clicks the desired L2 button, that L2 display opens. On that L2 display, the associated L3 navigation bar opens. Each L2 button has alarm indications and these are rolled up from the L3 alarms. The L2 Navigation button text can be modified for each specific application.

L3 Navigation

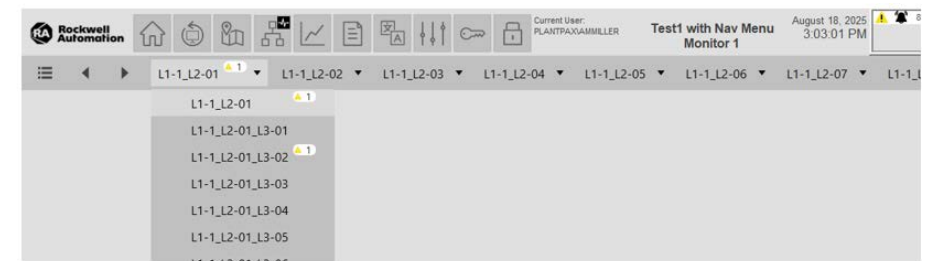
L3 Navigation is the second level of display access within a given L1 area. There are multiple L3 Navigation bars - one for each L2 button used. The L3 Navigation bar resides within the L2 and L3 Displays. Each L3 Navigation Bar is composed of 16 buttons and can navigate to up to 16 different displays. Included in the L3 Navigation bar is an indicator that shows which L2 and L3 area the operator is viewing.



When the operator clicks a desired L3 button, that L3 display opens. Each L3 button has alarm indications and these are rolled up into the associated L2 alarms. The L3 Navigation button text can be modified for each specific application.

Navigation Menu

The FactoryTalk View SE built-in Navigation Menu can be used instead of L2 and L3 Navigation bars. One navigation menu must be configured for each L1 area. As many buttons as needed can be configured (over 16), making the navigation menu a flexible option. The navigation menu is highlighted to indicate which display is currently active.



The navigation menu can be configured to include alarm indication and roll up to the associated L2 display. All text and appearance is modifiable from the navigation menu configuration.

Alarm Navigation

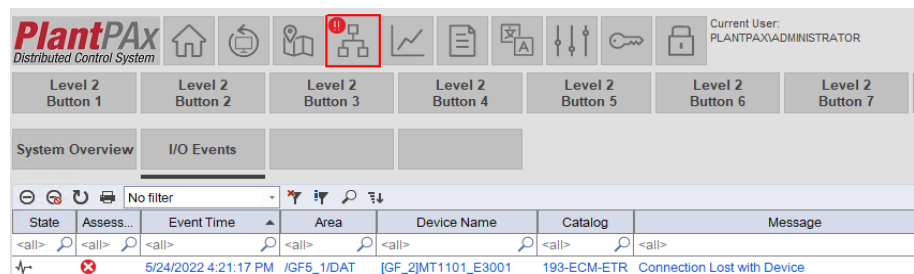
Alarm information is accessed by pressing the Alarm Button on the header. This opens the Alarm Summary display. From the Alarm Summary display, other alarm information displays can be accessed, including the Alarm History, Alarm Shelved, and Alarm Explorer (with proper runtime security). There is a display that is associated with each of the four alarm buttons - see [Global Objects](#) for more information on Alarm Global Objects. See [Displays](#) for more information on template Alarm displays.



The Alarm Navigation has an indication below each button to show which alarm display the operator is viewing.

Diagnostic Navigation

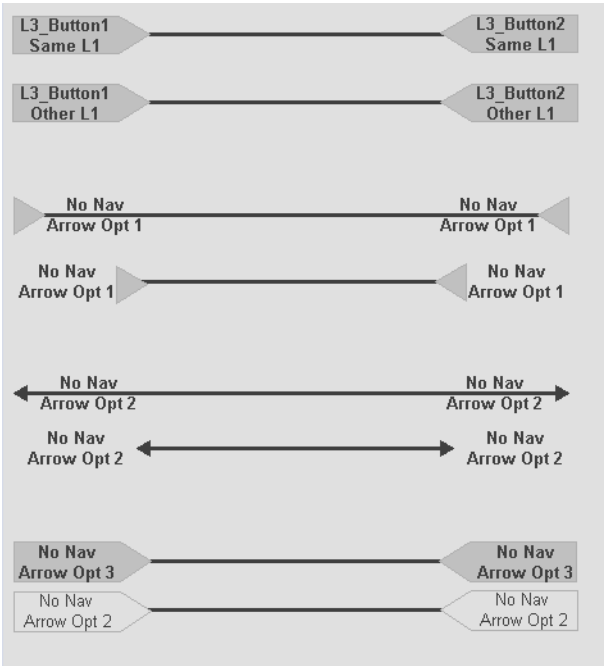
Diagnostic information is accessed by pressing one of the Diagnostic related buttons on the header (for example the System Status button). This opens the related diagnostics display with associated diagnostic navigation bar. Other diagnostic information displays can be accessed, including the System Status and Automatic Diagnostic Event Viewer. There is a display that is associated with each diagnostic type and two buttons available to be customized for additional diagnostics. See [Global Objects](#) and [Displays](#) for more information on Diagnostic Objects. See [Displays](#) for more information on template Diagnostic displays.



The Diagnostic Navigation display has an indication below each button to show which diagnostic display the operator is viewing.

Off-Screen Navigation

Graphic Off-Screen Connectors are used to supplement navigation for Operators to follow the process progression (to the left or to the right of the current display) on P&ID style screens. Various styles of off-screen navigation can be found in a Toolbox graphic.



There are three different off-screen navigation functionalities available.

Functionality	Description
Navigation to Same L1 area	This is used if the off-screen navigation is within the same L1 area. The button simply opens a new L2/L3 display within that L1 area.
Navigation to Other L1 area	This is used if the off-screen navigation is outside the current L1 area. The button needs to execute several commands to open the destination L1 area header and the desired L2/L3 display.
No Navigation (static)	The static off-screen connector does not navigate to any display. It is used as an indicator of a process inflow or outflow with no accompanying graphic - just a static indication. Various styles are offered in the toolbox.






Multi-Monitor Support

The Graphic Framework provides the structure and configuration that is needed to use multi-monitor applications during runtime. Applications utilizing the framework can be run on single, dual, or quad monitor hardware. Each monitor is formatted as described in the earlier section of this chapter - there is one header and a process display. The user can configure the header of each monitor as described in the earlier Header Display section, with one Header Display dedicated to each monitor for each L1 area. Alternatively, the user can configure all headers to be the same. See [Multi-Monitor](#) for more information on configuring an application for multi-monitor.

IMPORTANT	Multi-monitor functionality is not currently supported in the Graphic Framework when using the FactoryTalk View SE built-in Navigation Menu.
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Alarm Indication

Alarm indication is embedded throughout the Graphic Framework. As mentioned in the L1/L2/L3 Navigation section, each navigation button has alarm indication available, with alarms rolled-up from L3 to L1. The Alarm button on the Header display also indicates to the operator if alarms are active in that L1 area. The following displays give the operator information on specific alarms and alarm configuration.

Display	Description
Alarm Banner	There is one Alarm Banner for each L1 area. The Alarm Banner, which resides on the Header display, will show up to three alarms. <div> <div> July 19, 2020 6:14:16 PM </div> <div>   1/10/1998 4:56:50 PM Alm_HiHi EMEA Testbed FT222 HiHi 6/8/2020 2:43:27 PM Alm_HiHi L85EP Testbed FT555 HiHi 1/10/1998 4:56:50 PM Alm_Hi EMEA Testbed FT222 Hi </div> <div>    </div> </div>
Alarm Summary	Each L1 area has a corresponding alarm summary. The purpose of the alarm summary is to indicate alarms within the L1 area (by severity and time) and provide the ability for the operator to interact with these alarms. Navigation to the alarm summary is accomplished by clicking the Alarm Summary Navigation button from the associated Header. The alarm summary must be configured to subscribe to alarms specific to the L1 area. Filters can be configured for each L2 alarm group for additional alarm functionality.
Alarm History	Alarm History display contains a configured Alarm and Event Log Viewer object that accesses the alarm and events historical data. Note: The alarm and event server must be configured to log the alarm data for this display to work properly. This display filters based on predefined filters.
Alarm Shelved	Alarm Shelved display contains an Alarm and Event Status Explorer object that is preconfigured to access alarm and event databases within the application with the status of "Shelved". This display can be further filtered based on alarm names. The shelved alarm display displays the alarm grouping tree to allow easy access to each alarm group.
Alarm Explorer	Alarm Explorer display contains an Alarm and Event Status Explorer object preconfigured to access A&E databases within the HMI application. This display can be further filtered based on alarm names. The alarm explorer displays the alarm grouping tree to allow easy access to each alarm group. The button to access this display has security that is built in. Only users with ability to enable/disable alarms can access this display.

Alarm Grouping and Supporting Logic

To create alarm groupings that align with the Navigation bars, additional upfront effort must be made in each controller to support this function. This effort requires using the Logical organizer in the controller files to align to the same hierarchy as in the graphical hierarchy.

Figure 1 - Pre-defined Graphical Layout

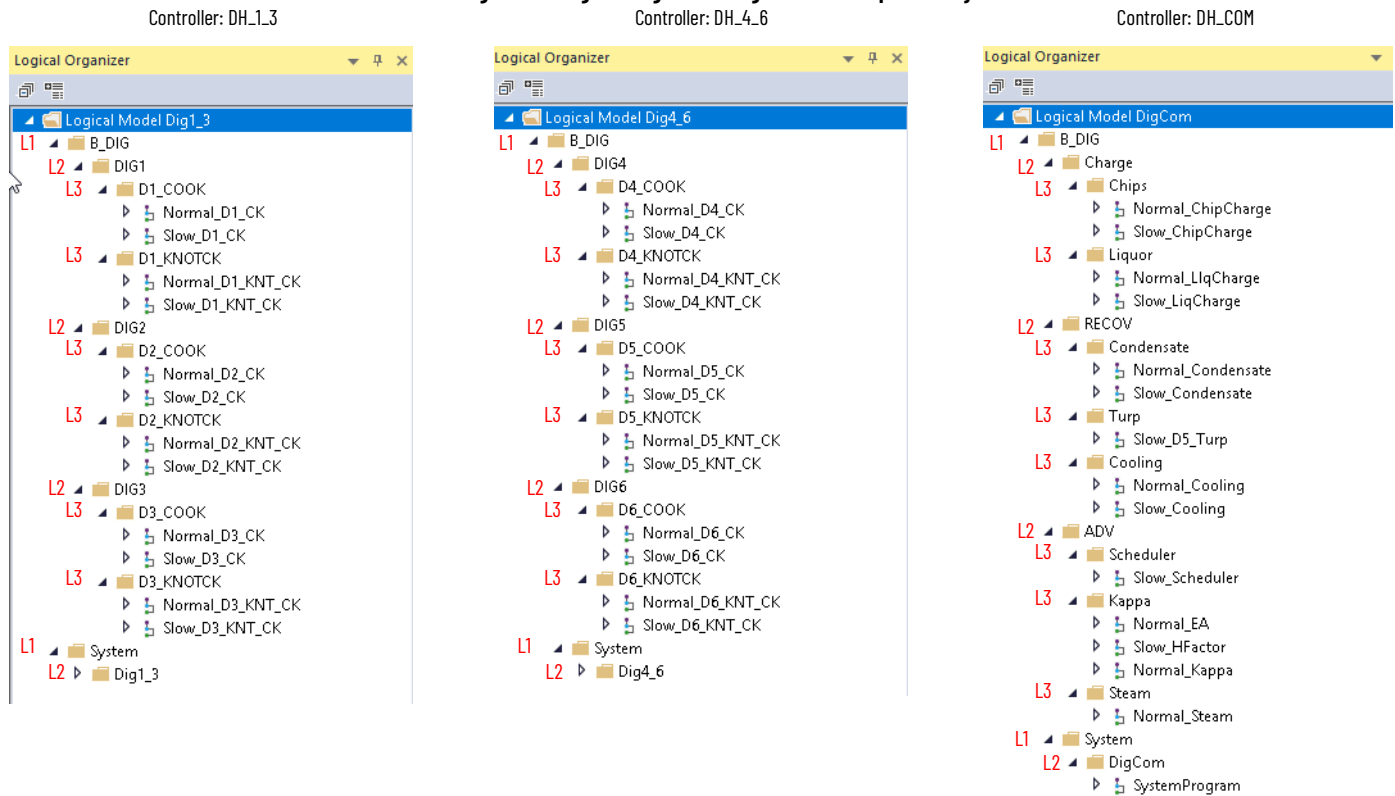
Displays		
L1	L2	L3
B_DIG	DIG1	D1_COOK
		D1_KNTCK
	DIG2	D2_COOK
		D2_KNTCK
	DIG3	D3_COOK
		D3_KNTCK
	DIG4	D4_COOK
		D4_KNTCK
	DIG5	D5_COOK
		D5_KNTCK
	DIG6	D6_COOK
		D6_KNTCK
	Charge	Chips
		Liquor
System	RECOV	Condensate
		Turp
		Cooling
	ADV	Scheduler
		Kappa
		Steam
	Dig1_3	n/a
	Dig4_6	n/a
	DigCom	n/a

The Logical Organizer folder structure must align with the predefined Graphical Hierarchy. That is, a folder in the Logical Organizer must be created for each process display that is used in the HMI. If multiple controllers are used within a single operator's sphere of influence, the same L1 - L2 - L3 architecture must be represented within each controller.

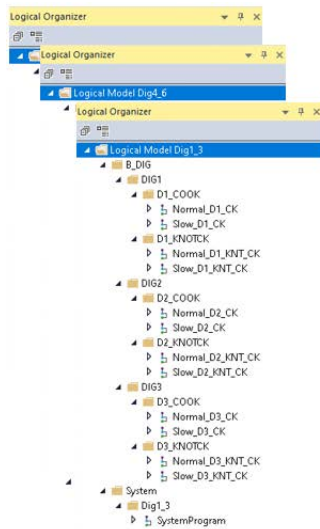
IMPORTANT

If alarm grouping contains numbering, it is recommended to add a padded zero or else an unexpected alarm indication occurs. For example, if you have alarm groups D1_1, D1_10, and D1_11, the first alarm group should be modified to D1_01.

Figure 2 - Logical Organizer Aligned with Graphical Layout



Once the folders are created, the PlantPax Configuration Tool can be used to merge the alarm groups appropriately so that the process alarm indication displays are control equipment agnostic. In addition, if a single controller contains logic that is used by multiple operators, the folder structures of each area must be created in the Logical organizer to represent the multiple L1 hierarchies.



PlantPax Tools

Alarm Builder

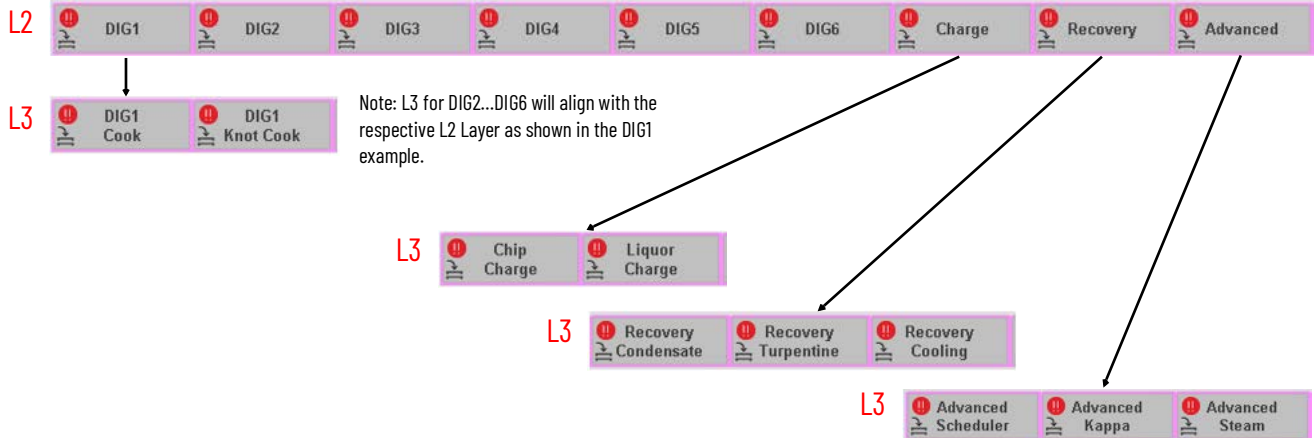
- Alarms sources:
- Tag Based alarms
 - Server based alarms

seamlessly merged from multiple sources in the various alarming constructs (banner / summary)

L1	Alarm Groupings		Controller Source
	L2	L3	
B_DIG	DIG1	D1_COOK	Dig1_3
		D1_KNTCK	Dig1_3
	DIG2	D2_COOK	Dig1_3
		D2_KNTCK	Dig1_3
	DIG3	D3_COOK	Dig1_3
		D3_KNTCK	Dig1_3
	DIG4	D4_COOK	Dig4_6
		D4_KNTCK	Dig4_6
	DIG5	D5_COOK	Dig4_6
		D5_KNTCK	Dig4_6
	DIG6	D6_COOK	Dig4_6
		D6_KNTCK	Dig4_6
	Charge	Chips	DigCom
		Liquor	DigCom
RECOV	Condensate	DigCom	
	Turp	DigCom	
ADV	Cooling	DigCom	
	Scheduler	DigCom	
	Kappa	DigCom	
System	Steam	DigCom	
	Dig1_3	n/a	Dig1_3
	Dig4_6	n/a	Dig4_6
	DigCom	n/a	DigCom

The following navigation bars must be configured to align with the information in [Figure 1](#). Alarm groupings enable the appropriate alarm roll-ups to the navigation buttons.

L1 B_DIG



The alarm grouping configuration in the Logical Organizer should then be reflected on the L2 / L3 navigation for button naming and alarm breadcrumb (alarm groups).

Server Status Monitoring

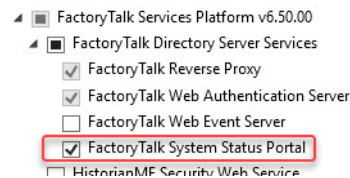
Server status monitoring is an important diagnostic tool that is helpful for maintenance and troubleshooting any system. There are two main options available with FactoryTalk View SE: System Status Portal and FactoryTalk Resource and Status Server.

IMPORTANT

Both server monitoring options are compatible with the Graphic Framework [v1.00]. Only the System Status Portal is available to Graphic Framework [Legacy].

System Status Portal

The system status portal is installed by default when you install any product that has FactoryTalk Services Platform v6.30 and later. Make sure that the box is checked to include the system status portal with installation.



The system status portal can be accessed from any workstation in the system joined to the FactoryTalk Directory. The portal is viewable in a web browser or web browser object in FactoryTalk View runtime, by typing `https://IPAddress/FTSystemStatus`, where `IPAddress` is the IP address of the FactoryTalk Directory server computer. See FactoryTalk Services Platform Help for more information.

The system status portal is limited to displaying the status of HMI servers, data servers (including FactoryTalk Linx, OPC UA, and OPC-DA servers), and Factory Alarm and Events servers.

FactoryTalk Resource and Status Server

FactoryTalk Resource and Status Server can be used on any system with FactoryTalk Services Platform v6.50 and later. Included in the Graphic Framework [version 1.00] are graphic symbols and faceplates for common devices and infrastructure to monitor in a system.

See [FactoryTalk Resource & Status Server Configuration on page 87](#) for more information on configuration recommendations.

With the FactoryTalk Resource and Status server, each resource that is monitored becomes programmatically accessible in FactoryTalk View, where additional functions can be added on such as conditional alarming or tag historization. Additionally, the server can monitor network connection to devices that are not part of the FactoryTalk Directory (i.e vCenter, ESXi, iDRAC, switches, etc) which makes it a powerful tool for gathering diagnostics of an entire system.

Network Status	Workstation Status	Processes Status
Monitor status from workstation in the FactoryTalk Directory with FTRSS installed to any device on the network.	Monitor CPU, memory, storage space, NIC status, on any workstation on the FactoryTalk Directory with FTRSS installed.	Monitor any process / task available in Task Manager on any workstation on the FactoryTalk Directory with FTRSS installed

Versioning and Design Considerations

The Graphic Framework has evolved with iterations of the Process Library and PlantPAx System releases. The reason for this change is that it modularizes the key components of the system, reducing the time for updates being accessible to users and making it easier to adopt new product capabilities (FactoryTalk View and FactoryTalk® Optix™)

The following is a brief explanation of the Graphic Framework release history and versioning:

PlantPAx v5.30 release and earlier (Process Library v5.30 and earlier).

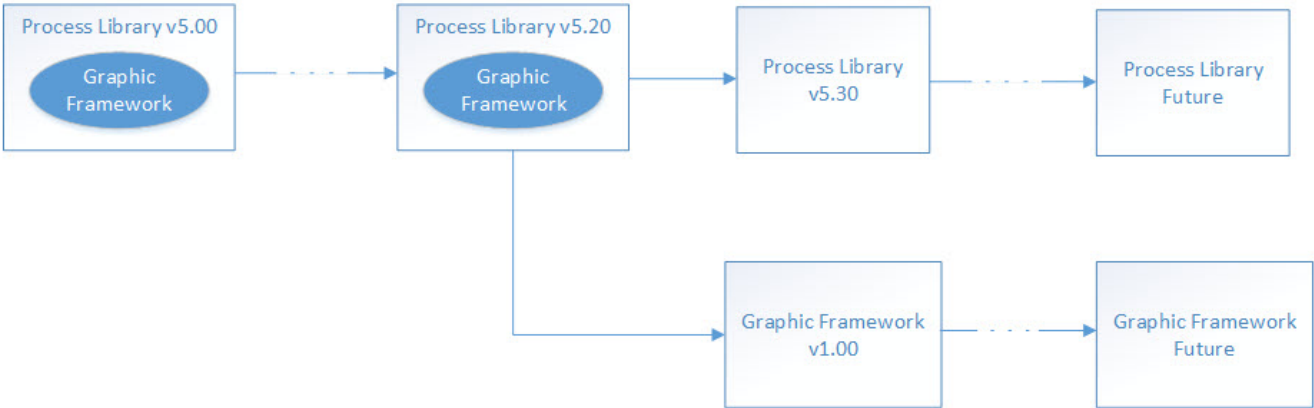
- The Graphic Framework files were included in the Process Library download from PCDC under "Process Library".
- These releases are referred to as the "Graphic Framework [Legacy]"

PlantPAx v5.40 release and later.

- The Graphic Framework files are now included as a standalone download from PCDC under "Graphic Framework".
- These releases are referred to as the "Graphic Framework [v1.00]"

IMPORTANT

New major and minor releases of the Process Library (for example, Process Library 5.30 and later), will no longer include the Graphic Framework [Legacy] content.



Graphic Framework [Legacy]

Pros	Cons
<ul style="list-style-type: none"> • Can be used with single, dual, or quad monitor clients. • Bulk Configuration with the Graphic Framework tool. • Alarm indication and rollout. • Button indication of which display is selected. 	<ul style="list-style-type: none"> • No tag search or built-in forward/backward/historical navigation • Limited to 16 buttons per L2 and 16 buttons per each L3. • Configuration is time-consuming and an opportunity for mistakes if created without the use of the Graphic Framework Tool. • It can be cumbersome if trying to add a button into the middle of an L2/L3 nav bar. • Lots of clicks to set up each button command on the L2/L3/L1 buttons.

Graphic Framework [v1.00]

Added support of FactoryTalk View SE v15 Navigation Menu.

You have a choice to use the legacy Graphic Framework templates or use the built-in Navigation Menu of FactoryTalk View SE.

The following table is for the Navigation Menu of FactoryTalk View SE.

Pros	Cons
<ul style="list-style-type: none"> • Uses the Built-in Navigation Menu of FactoryTalk View SE. • Configurable all in one place. • Ability for built-in tag search. • Ability for built-in forward, backward, and historical navigation. • Unlimited number of displays per L2 and L3 area. • Simple workflow to move, add, and reconfigure L2 and L3 areas. • Easily configure display commands directly in the navigation menu configuration. • Built in alarm source and automatic diagnostic indication and rollout. • Ability to use icons instead of text on dropdown and display navigation. 	<ul style="list-style-type: none"> • Currently only supported for single monitor with the Graphic Framework. • Limited Bulk Configuration – Graphic Framework Tool can generate the displays, but the Navigation Menu configuration is separate. • In FactoryTalk View SE v15, if more L2 folder areas are configured than fit on a single monitor, the alarm indication is not visible for those L2 areas (The issue is fixed in v16).

Notes:

Configure the Graphic Framework

The Graphic Framework is a flexible tool that is highly configurable to each specific user. This chapter outlines the options for how to get started configuring the Graphic Framework and how to configure a project. As noted in the previous chapter, there are two varieties of the Graphic Framework that are currently supported: Graphic Framework [Legacy] and Graphic Framework [version 1.00]. See [Versioning and Design Considerations](#) for more detail.

The following table shows what topics apply to which design path.

Graphic Framework [Legacy]	Graphic Framework [version 1.00] with Legacy navigation	Graphic Framework [version 1.00] with Navigation Menu
Graphic Framework [Legacy] Configuration	Graphic Framework [v1.00] Configuration	
	PlantPax Process Library Dependencies Build Your PlantPax HMI Application Recommended Application Naming Structure Global Objects: APP - Administrative Objects Global Objects: APP - Alarm Objects Global Objects: APP - Diagnostic Objects Global Objects: APP - Header Objects	
—	Global Objects: APP - Resource and Status Objects (raC-1.00-SE)	
	Global Objects: Template Custom Objects Global Objects: Template L1 Navigation	
Global Objects: Template L2 L3 Navigation		Global Objects: Template L2 L3 Navigation (Only Diagnostic and Alarm navigation needed)
Displays		
Multi-Monitor		Multi-Monitor: Create HMI Tags for Multi-Monitor and Repaint
—		Navigation Menu
—	FactoryTalk Resource & Status Server Configuration Macros Client File Setup (.CLI)	

The following table defines common terms that are used in the configuration.

Term	Description
Template	The term “Template” within a filename indicates that the file should be duplicated when used in the application. The duplicated file should be renamed to a title that is meaningful for the specific area or sub-subarea of the facility of your application. The original template file is to be used as a starting point for multiple files in the application and should not be modified.
App	When a file in the application contains the term “APP”, the objects in these files can be used directly out of this file - the file name does not need to be duplicated or renamed.

Graphic Framework Builder Tool

The Graphic Framework Builder Tool can be used to quickly develop FactoryTalk® View SE files to import into a base application. This tool can be used to automate most of the steps explained in this chapter. For more details on the Graphic Framework Tool and how to use it, See the [Product Compatibility and Download Center](#) and search “PlantPax Tools”.

Graphic Framework [Legacy] Configuration

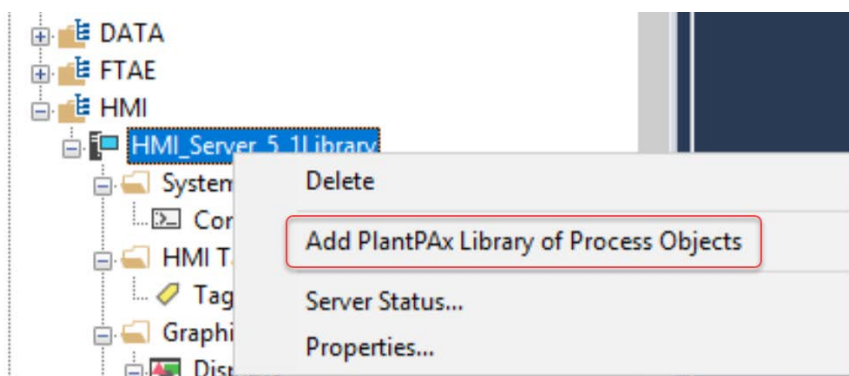
For Process Library versions 5.20 and earlier, the Process Library download provides the following files to use as a starting point for the Graphic Framework. Templates are provided both with and without the PlantPAx Process Object library faceplates included.

- FTVSE_{version}_Template_{version}.APB (for example, FTVSE_13_0_Template_5_10_00.APB)
- FTVSE_{version}_TemplateWLibrary_{version}.APB (for example, FTVSE_12_0_TemplateWLibrary_5_00_00.APB)
- FTVSE_{version}_Template_{version}.zip (for example, FTVSE_12_0_Template_5_00_00.zip)
- FTVSE_{version}_TemplateWLibrary_{version}.zip (for example, FTVSE_13_0_TemplateWLibrary_5_10_00.zip)

The Graphic Framework [Legacy] can be used in one of two ways from the template files in the Process Library download:

- Restore the provided Local Station project templates (.APB) using the FactoryTalk View SE Application Manager.
- Create your own project as a Distributed or Network Station application and import the HMI server or individual files as needed.

If using FactoryTalk View SE version 13 and later, there is a third option to use the Graphic Framework [Legacy]. After creating an HMI server, right-click on the server and select “Add PlantPAx Library of Process Objects”. For this option, no download from PCDC is necessary as one specific version of the Process Library is built into FactoryTalk View.

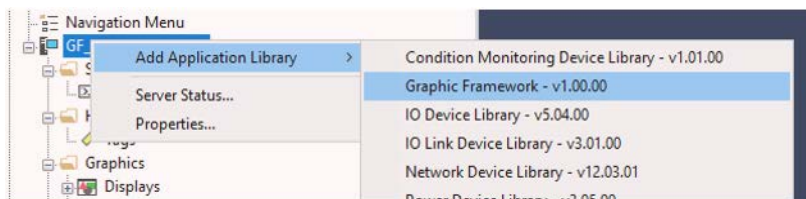


Graphic Framework [v1.00] Configuration

The Graphic Framework [v1.00] is compatible with FactoryTalk View SE v15 and later. The download provides all required content and a Windows® command script file to move the content to the FactoryTalk View SE Application Library folder.

The Graphic Framework [v1.00] can be used in one of two ways to create a starting point for a new application:

- Use the Graphic Framework builder tool to create your application.
- Run the provided CMD file to move the content to the Application Library folder in FactoryTalk View SE. Then create a project, right-click the HMI server and “Add Application Library”.



PlantPax Process Library Dependencies

The Graphic Framework [Legacy] is dependent on the following files from the Library of Process Objects:

- Display Files (.gfx)
 - (raP-5_30-SE) raP_Opr_OrgView-TreeView
 - (raP-5_30-SE) raP_Opr_OrgView-Select
 - (raP-5_30-SE) raP_Opr_OrgView-Config
 - (raP-5_30-SE) raP_UDT_Opr_Bus-Advanced
 - (raP-5_30-SE) raP_UDT_Opr_Bus-Faceplate
- Global Object Files (.ggfx)
 - (raP-5_30-SE) Toolbox - Common Adv Objects
 - (raP-5_30-SE) Toolbox - Organization Objects
 - (raSDK-1-SE) Toolbox - Common Objects
- Macros (.mcr)
 - DefineShowHWTTreeCmd
 - DefineShowTreeCmd
 - ShowTreeForObject
 - ToggleWithRemark
 - NavToFaceplate
 - NavToDisplay
- All Images files
- HMI Tag import

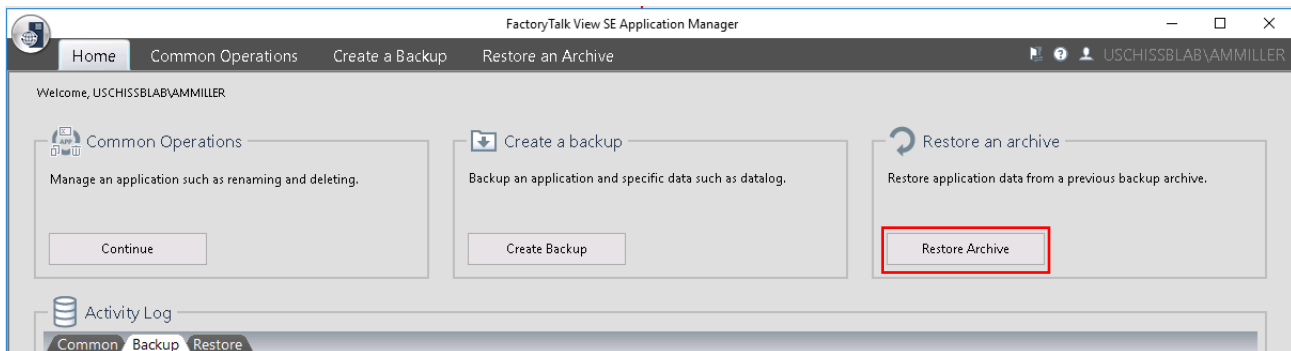
The Graphic Framework [v1.00] and later is dependent on the following files from the Library of Process Objects:

- Global Object Files (.ggfx)
 - (raSDK-1-SE) Toolbox - Common Objects
- All Images files
- HMI Tag import

Build Your PlantPax HMI Application

Local Station Applications

1. Go to FactoryTalk® View SE Application Manager > Local Station and select Restore Archive.



2. Browse to the APB file.
3. Name the new application and select Restore.

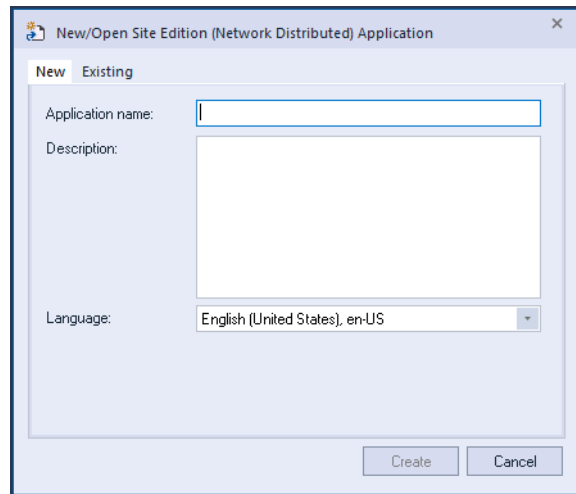
You can now open FactoryTalk® View SE Local Station and build out the application using the PlantPax Graphic Framework.

Distributed or Network Station Applications

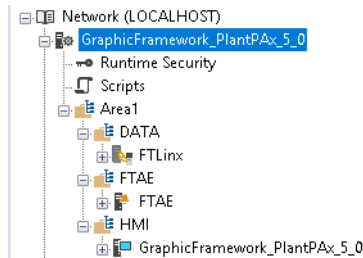
The HMI Server backup can be used for Distributed or Network Station applications. The following assumes that the server system is configured correctly and to PlantPAx recommendations. The following also assumes that the FactoryTalk® Directory is configured and all applicable servers are joined to the directory.

IMPORTANT This should be used as a rough guide only. See PlantPAx Distributed Control System Configuration and Implementation User Manual, publication [PROCES-UM100](#) and FactoryTalk View documentation for best practice and proper system configuration.

1. Go to FactoryTalk View Studio and select either Distributed or Network Station.
2. Create an application.

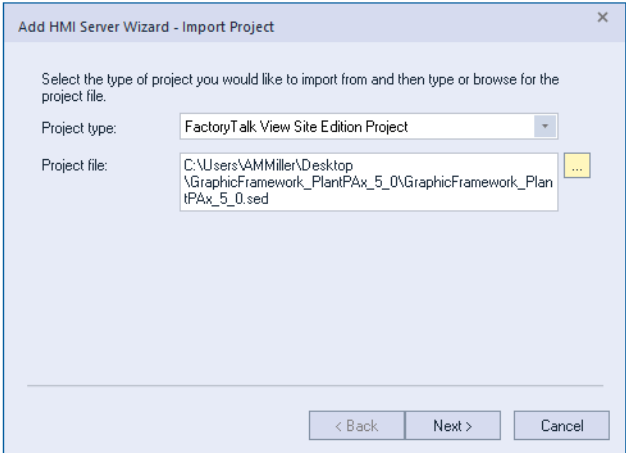
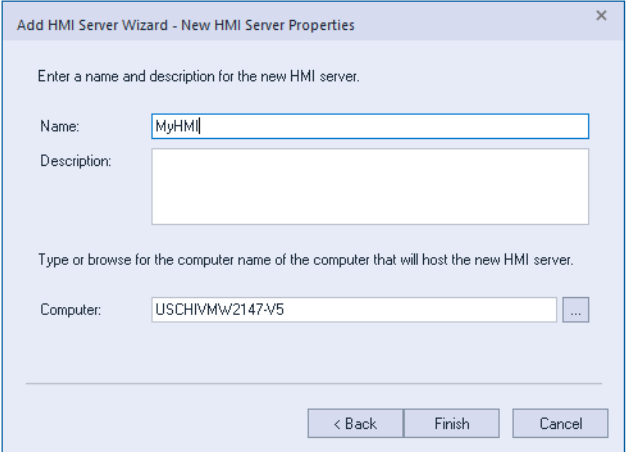


3. Build out the Area folder structure. Place only one server in each area folder



4. Extract the graphic framework - either with or without the Process Library. (Found in the library download at \Process Library\Templates\FactoryTalk View SE).

5. Right-click the HMI area folder. Select Add New Server > HMI Server. The Add HMI Server Wizard opens. Select Import a project and click Next.

On this Page	Action
Warning pop-up	Select OK
Import Project	<div><ul style="list-style-type: none">Select FactoryTalk View Site Edition Project.Navigate to the HMI server backup that was extracted in step 4.</div>
New HMI Server Properties	<div><ul style="list-style-type: none">Name the HMI serverSelect the computer that hosts the new HMI server</div>

The HMI server takes a few minutes to import. Once the import is complete, the application is ready to build out with the Graphic Framework.

Recommended Application Naming Structure

The following is a table of recommended naming structures for files that are provided in the Graphic Framework. The files with a suggested naming structure needs to be duplicated from the original file and renamed with the structure specific for your project.

Template Display Name	Suggested Name Structure	Example:
Template Display Map	[App_Name]_DisplayMap	ABC-Chem_DisplayMap
Template Diagnostic-IOEvents	[App_Name]_Diagnostic-IOEvents	ABC-Chem_Diagnostic-IOEvents
Template Diagnostic-Summary	[App_Name]_Diagnostic-Summary	ABC-Chem_Diagnostic-Summary
Template Diagnostic-SysSts	[App_Name]_Diagnostic-SysSts	ABC-Chem_Diagnostic-SysSts
Template Language-Select	[App_Name]_Language-Select	ABC-Chem_Language-Select
(raP-5.30-SE) Common-Redirect-to-4_10 ⁽¹⁾	N/A	Use file as is
(raP-5.30-SE) Common-Redirect-to-5_00 ⁽¹⁾	N/A	Use file as is
Template Reports	[App_Name]_Reports	ABC-Chem_Reports
Template Trend_Full	[App_Name]_Trend_Full	ABC-Chem_Trend_Full
Template Trend_Popup	[App_Name]_Trend_Popup	ABC-Chem_Trend_Popup
Template Admin-SysSecurity	[App_Name]_Admin-SysSecurity	ABC-Chem_Admin-SysSecurity
Template Header Mon1	[L1_Name]Header_Mon1	Mixing_Header_Mon1
Template Header Mon2	[L1_Name]_Header_Mon2	Mixing_Header_Mon2
Template Header Mon3	[L1_Name]_Header_Mon3	Mixing_Header_Mon3
Template Header Mon4	[L1_Name]_Header_Mon4	Mixing_Header_Mon4
(raC-1.00-SE) Template Header Nav Menu ⁽²⁾	[L1_Name]_Header_Mon1	Mixing_Header_Mon1
Template Display L1	[L1_Name]	Mixing
Template Display L2	[L1_Name]_[L2_Name]	Mixing_IngredAdd
Template Display L2 no L3	[L1_Name]_[L2_Name]	Mixing_Agitate
Template Display L3	[L1_Name]_[L2_Name]_[L3_Name]	Mixing_IngredAdd_Weigh
(raC-1.00-SE) Template Display Nav Menu ⁽²⁾	[L1_Name]_[L2_Name]_[L3_Name]	Mixing_IngredAdd_Weigh
Template Alarm-Explorer	[L1_Name]_Alarm-Explorer	Mixing_Alarm-Explorer
Template Alarm-History	[L1_Name]_Alarm-History	Mixing_Alarm-History
Template Alarm-Shelved	[L1_Name]_Alarm-Shelved	Mixing_Alarm-Shelved
Template Alarm-Summary	[L1_Name]_Alarm-Summary	Mixing_Alarm-Summary
(raC-1.00-SE) RSSNetworkDevice-Faceplate ⁽²⁾	N/A	Use file as is
(raC-1.00-SE) RSSProcessMonitor-Faceplate ⁽²⁾	N/A	Use file as is
(raC-1.00-SE) RSSWorkstation-Faceplate ⁽²⁾	N/A	Use file as is

(1) Only available in Graphic Framework [Legacy].

(2) Only available in Graphic Framework [v1.00] and later.

Global Object Files	Suggested Name Structure	Example:
APP - Administrative Objects	N/A	Use file as is
APP - Alarm Objects	N/A	Use file as is
APP - Diagnostic Objects	N/A	Use file as is
APP - Header Objects	N/A	Use file as is
(raC-1.00-SE) APP - Resource and Status Objects ⁽¹⁾	N/A	Use file as is
Template Custom Objects	[App_Name]_CustomObjects	ABC-Chem_CustomObjects
Template L1 Navigation	[App_Name]_L1Navigation	ABC-Chem_L1Navigation
Template L2 L3 Navigation	[L1_Name]_L2L3Navigation	Mixing_L2L3Navigation

(1) Only available in Graphic Framework [v1.00] and later.

Macro File	Suggested Name Structure	Example:
Template_ClientStartup_SingleMon	[L1_Name]_ClientStartup_SingleMon	Mixing_ClientStartup_SingleMon
Template_ClientStartup_DualMon	[L1_Name]_ClientStartup_DualMon	Mixing_ClientStartup_DualMon
Template_ClientStartup_QuadMon	[L1_Name]_ClientStartup_QuadMon	Mixing_ClientStartup_QuadMon
Template_NavMenu_ClientStartup_SingleMon ⁽¹⁾	[L1_Name]_ClientStartup_SingleMon	Mixing_ClientStartup_SingleMon
Template_Repaint_SingleMon	[L1_Name]_Repaint_SingleMon	Mixing_Repaint_SingleMon
Template_Repaint_DualMon	[L1_Name]_Repaint_DualMon	Mixing_Repaint_DualMon

Macro File	Suggested Name Structure	Example:
Template_Repaint_QuadMon	[L1_Name]_Repaint_QuadMon	Mixing_Repaint_QuadMon
Template_NavMenu_Repaint_SingleMon ⁽¹⁾	[L1_Name]_Repaint_SingleMon	Mixing_Repaint_SingleMon
SetRepaint	N/A	Use file as is
NavToDisplay with mixed library	Optional macros - use only for applications with both Process Library 4.10 and Process Library 5.00 or later. See Macros section for detail.	
NavToFaceplate with mixed library		


(1) Only available in Graphic Framework [v1.00] and later.

Global Objects

The following section outlines each of the global object files available in the Graphic Framework and how each object should be used and configured. The purpose of this section is to provide the application developer with details on each global object and how to configure them. Not all global objects are required to be used in the application.



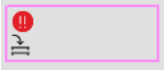
APP - Administrative Objects

The following objects are used for administrative control.

Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Close Client		The purpose of the Close Client object is to shut down the client.	No configuration required. This object can be placed on the Header or on a separate administrator display.		


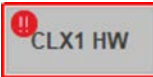



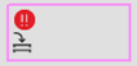
APP - Alarm Objects

The following objects are used for alarm navigation and annunciation.

Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Alarm Summary Navigation		The purpose of the Alarm Summary Navigation object is to visually alert operators of current active alarms in their L1 process area and to provide navigation to the Alarm Summary. This object navigates to another Alarm Summary screen in each L1 area. This button should already be populated on the template Header display. The global object parameter values must be updated on the Header display.	101	Alarm Summary Display Name	Enter full Alarm Summary display name
			102	Alarm Group Name (Level 1)	Enter the L1 area alarm group name (for indication)
Alarm Silence Button		The purpose of the Alarm Silence Button object is to silence any active audible alarms that are assigned to that L1 area for that specific client. This button should already be populated on the Header display. The global object parameter values must be updated on the Header display.	101	Alarm and Event Banner Display Name	Enter the associated L1 Header display name that contains the alarm banner. "Invoke #101.FactoryTalkAlarmandEventBanner.SilenceAll"
Alarm Group Annunciation		The alarm annunciation objects are available for L1, L2, or L3 alarm groups. These annunciation objects are built into template objects for L1, L2, and L3 navigation objects, but can be added to additional buttons if desired. There are also larger objects available for an L1 Overview display.	101	Alarm Group Name (Level 1)	L1 Group name in FTAE and/or FTLinx (required for L1, L2, and L3 annunciation objects)
			102	Alarm SubGroup Name (Level 2)	L2 Group name in FTAE and/or FTLinx (required for L2 and L3 annunciation objects)
			103	Alarm SubSubGroup Name (Level 3)	L3 Group name in FTAE and/or FTLinx (required for L3 annunciation objects)

APP - Diagnostic Objects



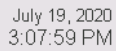




The following objects are used for hardware and software diagnostics as well as L4 trend display access.









Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Software Tree View Navigation ⁽¹⁾		The purpose of the Software Organization Tree View button is to view the entire organization tree view for each controller in one central location.	101	SW Tree Identification	Enter a text string, not a tag. This displays on the button.
		This button is used with organizational bus instructions raP_Opr_OrgView and raP_Opr_OrgView. See [appropriate section name] for more information on the configuration of the organizational bus.	102	Processor Shortcut Name	Enter the shortcut name where tree view is located. Include the area name in the parameter entry (for example, '[MyCLX]' or '/Area1/SubArea1::[MyCLX]')
Hardware Tree View Navigation ⁽¹⁾		The purpose of the Hardware Organization Tree View button is to view the hardware organization tree view for each controller.	101	HW Tree Identification	Enter a text string, not a tag. This displays on the button.
		This button is used with organizational bus instructions raP_Opr_OrgView and raP_Opr_OrgView as well as raP_Dvc_LgxModuleSts. See [appropriate section name] for more information on configuration of the organizational bus.	102	Processor Shortcut Name	Enter the shortcut name where tree view is located. Include the area name in the parameter entry (for example, '[MyCLX]' or '/Area1/SubArea1::[MyCLX]')
Pop-up Display Trend Navigation		The trend pop-up button is intended to be placed throughout L1, L2, or L3 process displays to display TrendPro templates that are specific to the user's process.	101	Trend pop-up Display Name	Full name of the pop-up trend name. This should be (raP-5_30-SE) Template Trend_Popup or a display that is created from duplicating this display.
			102	Trend Template (Optional)	Name of the TrendPro template that should be invoked when the pop-up display opens. This can be left blank if no TrendPro templates are created yet.
			103	HMI Server Name	The exact name of the HMI server. The name next to this icon in your application: 
			104	PASS Server Name	The exact name of the server that is hosting your HMI Server (usually the PASS). You can find this name by examining the top of the application tree: 
Tree View Alarm Annunciation		The alarm annunciation object for the tree view is the same as for an L2 alarm annunciation object (see previous section). It is recommended to use with the Hardware Tree View button to annunciate any hardware-related alarms.	101	Alarm Group Name (Level 1) (for example, 'System')	L1 Group name in FTAE and/or FTLinX
			102	Alarm SubGroup Name (Level 2) (for example, 'CLXT')	L2 Group name in FTAE and/or FTLinX




(1) Only available in Graphic Framework [Legacy].

APP - Header Objects

The following objects are recommended to be placed on the Header display and provide information and specific navigation.

Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
PlantPAx Logo		The logo object is pre-built using the PlantPAx logo or the Rockwell Automation logo. The logo object is populated in the Header display by default but can be removed to free up space on the Header.	No configuration required.		
Rockwell Automation logo		If users prefer to add their own logo, See Template Custom Objects for more information.			
Time Date		The Time-Date object indicates the current time and date. This object is populated in the Header display by default.	No configuration required.		
System Status		<p>The System Status object is used for navigation to the control system status display. The system status screen is a custom display that is developed to show diagnostics and hardware information. See Displays for more information on the template display. Use (raP-5_30-SE) Template Diagnostic-Summary as a starting point.</p> <p>There is an optional System Status breadcrumb that can be added to the System Status button (see Displays for Template Toolbox display). There is also an L1 alarm breadcrumb that could be used for this button (see APP - Alarm Objects for Alarm Group annunciation).</p> <p>Alarm bread crumb objects - L1 for the System Status header button and L2 for each individual Hardware Tree button - are provided in the alarm global object file that fits on top of the buttons for System Status. See APP - Alarm Objects for alarm group annunciation details. It is recommended that an L1 alarm group be for overall system diagnostics and that L2 subgroups be created for each controller and hardware under that controller.</p>	101	System Status Display Name	Enter the whole display name into the parameter. Display "#101"
			The system status breadcrumb is configured as follows: Replace "[MyCLX]" with the shortcut defined for your application. If you have multiple processors, duplicate the function for each processor and use a logical "or" to combine the expressions. The system status breadcrumb should be placed on top of the System Status Button in the Header bar.		
Repaint Screen		The Repaint Screen object is used to refresh the display client. The button uses defined symbol "Repaint" to build the proper repaint macro command for that L1 area and client.	No configuration required. See Macros and Multi-Monitor to verify that the "Client Startup" macro is configured properly and repaint macros are created as required. "Repaint #2"		
Home Navigation		The purpose of the Home Navigation object is to provide a link allowing an operator to go to their "Home" area or sphere of influence. Navigates to Client Home displays (not the current L1 home displays).	No configuration required. See Macros to verify that the "Client Startup" macro is configured properly. "GoHome"		
L1 Navigation		The purpose of the L1 Navigation object is to link to a pop-up display that provides access to other L1 Process Areas within the facility. This object configured the same for all L1 Headers (it will always call up the same pop-up, regardless which L1 area is being displayed).	101	Display Map Display Name	Enter the whole display name for the Display Map display pop-up. Display "#101" /cc See Displays for more details on configuring the display map pop-up.

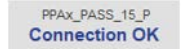
Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Administrator		The Administrator Button can be used to navigate to a custom administrator display or the provided Administrator System Security pop-up template display.	101	Administrator Display Name	Enter the whole display name for the Administrator display Display "#101"
Generic Trend Navigation		The purpose of the Generic Trend Navigation Button object is to navigate to a display prepopulated with navigation buttons to various prebuilt trends or generic trend display to allow building of ad-hoc trend displays.	101	Trends Display Name	Enter the whole display name for the Trends display Display "#101"
Full Display Trend Navigation		The purpose of the Full Display Trend Navigation button object is to navigate to the display created from the template display (raP-5_30-SE) Template Trend_Full. This display can use TrendPro templates and trend security. The user will typically use this style of display for system trend of that L1 area or for key performance indicators.	101	Trends Full Screen Display Name	Full name of the full screen trend name. This should be (raP-5_30-SE) Template Trend_Full or a display that is created from duplicating this display.
			102	Trend Template (Optional)	Name of the TrendPro template that should be invoked when the display opens. This can be left blank if no TrendPro templates are created yet.
			103	HMI Server name	The exact name of the HMI server. The name next to this icon in your application: 
			104	PASS Server name	The exact name of the server that is hosting your HMI Server (usually the PASS). You can find this name by examining the top of the application tree: 
			Display "#101" / T #102, #103, #104, \$Security\ConfigTrend\$		
Diagnostic Events Summary		The Diagnostics Events Summary object is used as a navigation button to access the Automatic Diagnostic Event Summary object. It is recommended to use this button to navigate the display created from "(raP-5_30-SE) Template Diagnostic-IOEvents".	101	Diagnostic Display Name	Enter the whole display name for the Diagnostic display Display "#101"
Language Switching		The purpose of the Language Switching Button object is to provide ability for the user to change the HMI text to use their preferred (previously configured) language. The selection is client based and each client can choose another language if the data sources are configured with the selected language. The dynamic text is provided by the controller and the static text is provided by the HMI Server (both sources can provide information in multiple languages concurrently).	101	Language Select Display Name	Enter the whole display name for the Language Selection display Display "#101" / RP
Reports Navigation		The purpose of the Reports Navigation button object is to access web-based SQL Server Reporting Services (SSRS) reports. Once these reports are configured, you can access alarm and events reports and diagnostic reports.	101	Computer Name for the report	Enter the name of the server hosting the SSRS reports, for example "PPLib-ASIS".
			102	Port Number	Enter the port number that is used for accessing reports. Typically, by default this is 80 for HTTP.
			103	Reports Display Name	Enter the whole display name used for reports. Reports display.
			Display "#103" / T"http:// #101:#102/Reports"		


Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Help Button		The purpose of the Help Button object is to provide access to a User-defined Help display or PDF file. There are two separate buttons available depending on if you want to use a Help display (FTView-based) or PDF. These buttons can be added to the Header display or any other display.	Display: 101	Help Display Name	Enter the whole display name for the help display. Display #101
			PDF: 101	Help File Full file path For example: C:\Users\public\documents\help.pdf or \\PRC-PASS\Shared\help.pdf	Enter the file path to the Help PDF. The file can reside on the OWS that the client is run on or on a shared file directory. AppStart #101
Windows Navigation Button		The purpose of the Windows Navigation Button objects is to provide Windows like navigation capability within the HMI. Note: For multi-monitor applications, the display history is shared with all configured monitors. Therefore, this navigation should be concerned as a common group monitor history.	None. Buttons are ready to use and must only be added to the Header display.		
Login / Logout		The Login / Logout object is used to allow logging in and out of various users and includes an indication of the current user. Logging out will log in as a View Only User.	This object is already populated on the default Header display. Note: For log out to the view only user to work correctly, the view only user must be configured in security and added to the view only user group. The logout button is configured for user "default" password "default".		

APP - Resource and Status Objects (raC-1.00-SE)

IMPORTANT This is only available with Graphic Framework v1.00 and later.

The following objects are to be used with FactoryTalk Resource and Status Server. More information on recommended configuration of the FactoryTalk Resource and Status Server can be found here: [FactoryTalk Resource & Status Server Configuration on page 77](#).

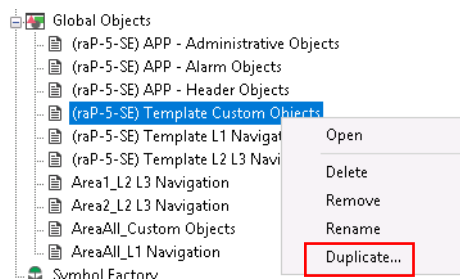
Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Workstation Monitoring		Use this object to navigate to "RSSWorkstation-Faceplate". The object provides basic information on a system workstation or virtual machine when used with FactoryTalk Resource and Status Server (FTRS server), including memory, CPU, and storage space. The object gives a visual indication when connection is lost to the workstation.	101	Workstation path	Provide the file path to the FTRS server of the workstation being monitored. For example: • "/AreaFolder/AreaSubfolder:[Workstation] • "/SysSts/PASS_P:[Workstation]
			102	Network connection verification path	• "Provide the file path to the FTRS server that is monitoring the network connection to this workstation (Note: this should not be the same path as parameter 101). For example: • /AreaFolder/AreaSubfolder:[NetworkDevices]\DeviceIPAddress • /SysSts/FTD:[NetworkDevices]\172.18.1.75
			103	Number of CPU	Provide the number of CPU configured for this workstation (Max of 8 - Note: This must be a tag). For example: Const\Num4
			104	Number of NIC	Provide the number of network interface cards configured for this workstation (Max of 2 - Note: This must be a tag). For example: Const\Num1
			105	Letter of additional disk drive	Provide the letter of a second storage drive if used (Optional - Leave blank of only C drive). For example: E or F
			120	Additional display parameters	Optional parameter for opening display at a specific location. For example: /RP, /CC
			121	Additional display parameters	Optional parameter for opening display at a specific location. For example: /RP, /CC
Network Connection Monitoring		Use this object to navigate to "RSSNetworkDevices-Faceplate". The object provides basic information on network connection of a system workstation, virtual machine, switch, or other device when used with FactoryTalk Resource and Status Server (FTRS server). The object will give a visual indication when connection is lost to the workstation.	102	Network connection verification path	Provide the file path to the FTRS server that is monitoring the network connection to this workstation. For example: • "/AreaFolder/AreaSubfolder:[NetworkDevices]\DeviceIPAddress • "/SysSts/FTD:[NetworkDevices]\172.18.1.75
			120	Additional display parameters	Optional parameter for opening display at a specific location. For example: /RP, /CC
			121	Additional display parameters	Optional parameter for opening display at a specific location. For example: /RP, /CC
Processes Monitoring		Use this object to navigate to "RSSProcessMonitor-Faceplate". The object provides basic information on configured processes running on a workstation or virtual machine when used with FactoryTalk Resource and Status Server (FTRS server). The object gives a visual indication when a process is not running. Note: See FactoryTalk Resource & Status Server Configuration on page 77 for information on recommended processes to monitor on typical system servers.	101	Workstation path	Provide the file path to the FTRS server of the workstation being monitored. For example: • "/AreaFolder/AreaSubfolder:[Workstation] • "/SysSts/PASS_P:[Workstation]
			102	Number of Tasks	Provide the number of processes on the workstation that will be monitored (Max of 10 - Note: This must be a tag). For example: Const\Num2
			1010	Workstation Name for Display	Provide text that will be displayed on the global object at runtime (Entered as text). For example: OWS FTDirectory
			103 ... 112	Task Name	Enter the name of the system process being monitored. For example: RnDirServer, RnDirMultiplexor, and so on.
			120	Additional display parameters	Optional parameter for opening the display at a specific location. For example: /RP, /CC
			121	Additional display parameters	Optional parameter for opening display at a specific location. For example: /RP, /CC

Object	Graphic	Description	Configuration		
			Parameter Number	Description	Explanation
Server Redundancy and Switchover		Use this object to provide redundancy status on HMI, data, and alarm servers in the FactoryTalk View system. Objects can initiate server switchover if user has proper security rights.	101	HMI Server Path	Provide the path to the HMI server including any area folders between the application and the server. For example: /PlantA/HMIServerName
			102	Data Server Path	Provide the path to the Data server including any area folders between the application and the server. For example: /PlantA/DataArea/FTLinux
			103	Alarm Server Path	Provide the path to the Alarm server including any area folders between the application and the server. For example: /PlantA/FTAEServer

Template Custom Objects

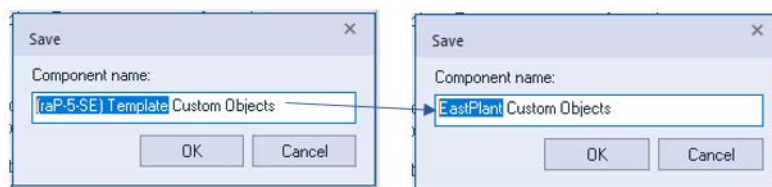
The following objects are customizable to customer's specific needs. Before customizing, duplicate and rename the file to preserve the original template file. The following steps are not required if you are not using any of the custom global objects within the file.


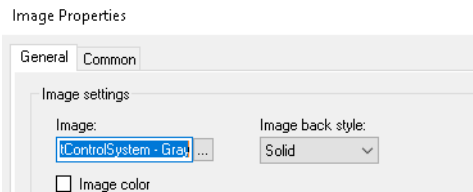


1. Go to file > Duplicate.



2. Name the new global object file.

Use a filename that represents the application/facility. Replace only the '(raP-5_30-SE) Template' or '(raC-1_00-SE) Template' portion of the filename. This creates a file for your specific application and preserves the original template file.



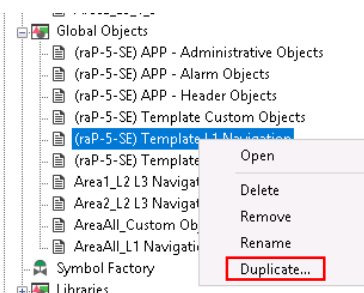
Object	Graphic	Description	Configuration
Custom Company Logo		<p>The logo object in the Custom Objects files can be replaced with the customer's logo. The customer logo must first be imported into the application Images folder. Once the image is imported, open the object in Custom Objects file and replace with customer logo.</p> 	Once the image file is correct, copy the updated global object and paste it onto the header after deleting the default PlantPax logo.
Custom Report Navigation		The purpose of the Custom Report Navigation Button object is to navigate to a display with pre-populated navigation buttons to access various prebuilt reports.	Copy and paste the button on the Header display (or any other display) in the desired location. Update the navigation as necessary.
URL Reports Navigation		The purpose of the URL Reports Navigation Button object is to pop open a web browser over the client to access the specified URL. This allows the user access to the default web browser.	Copy and paste the button on the Header display in the desired location. Update the hyperlink, as necessary.

Template L1 Navigation

This global object file is a template. The template file for L1 Navigation will only need to be utilized once for each application. This file defines the navigation to each L1 Area - one button per each L1 area. The following steps are required for all applications using the graphic framework, creating one new file for each application.

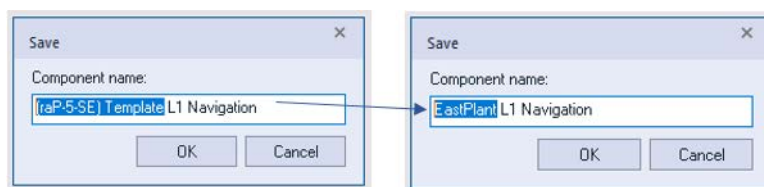
To utilize this file, use the following steps:

1. Go to file > Duplicate.



2. Name the new global object file.

Use a filename that represents the application/facility. Replace only the '(raP-5-SE) Template' or '(raC-1-00-SE) Template' portion of the filename. This creates a file for your specific application and preserves the original template file.



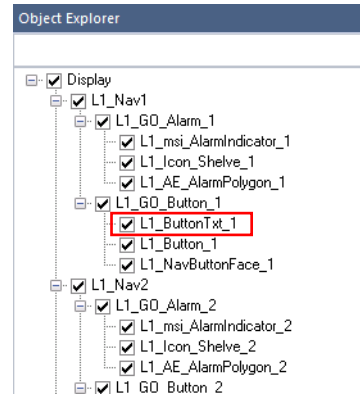
3. Duplicate the buttons as required (one for each L1 area).

Four buttons are provided by default - not all buttons need to be used.

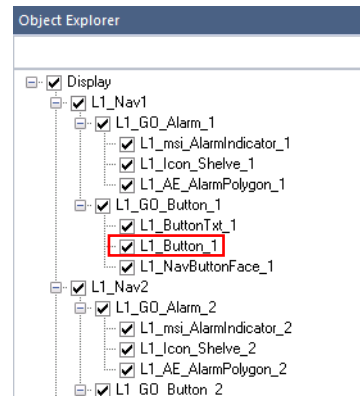


4. To update the text on the button, go to Object Explorer and select the L1.ButtonTxt_# object and modify as required.

Repeat for each button.

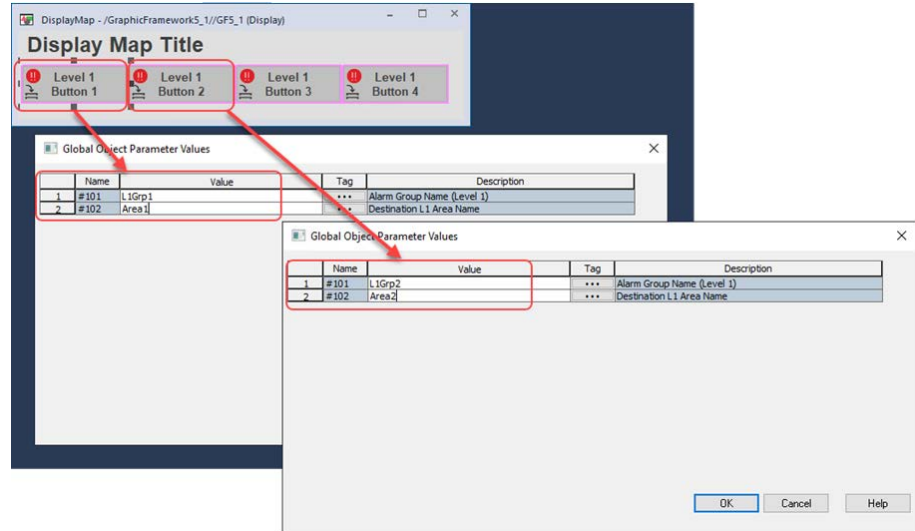


5. The navigation for each button should be left as is. The symbol "Repaint" is used with parameter #2 to call "SetRepaint" macro to the build the command for the proper macro to repaint all screens. See [Macros](#) for more information on configuration. See [Multi-Monitor](#) for more information on navigating between L1 areas with multi-monitor client workstations.



6. After you finish updating the button text, select the updated buttons in the L1 Navigation global object file and copy them to the application-specific display that is developed from the template file (raP-5_30-SE) Template Display Map or (raC-1_00-SE) Template Display Map. Delete any existing buttons and paste the new buttons.
7. For all buttons, enter the L1 alarm group parameters in the global object parameters. Also enter the name of the destination L1 area. This name should match the area name that is used for the repaint macros that are used in that L1 area. See [Alarm Grouping](#).

and [Supporting Logic](#) for more information on alarm grouping. See [Macros](#) for more information on configuration.

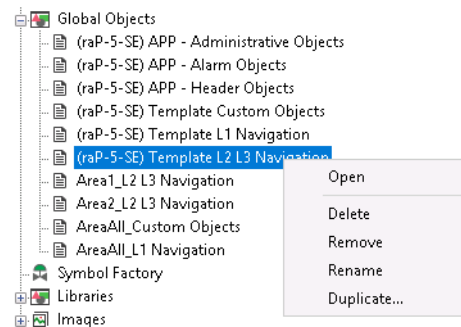


Template L2 L3 Navigation

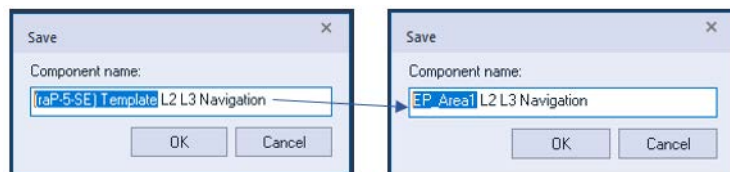
This global object file is a template. Utilize the template file for L2 / L3 Navigation once for every L1 area. This file defines the navigation to each L2 and L3 display within a given L1 Area. The following steps are required for all applications using the graphic framework, create a new file for each L1 Area.

For each L1 Area, perform the following steps:

1. Go to file > Duplicate.



2. Name the new global object file. Use a filename that represents the specific L1 area. Replace only the '(raP-5-SE) Template' or '(raC-1-00-SE) Template' portion of the filename. This creates a file for your specific L1 area and preserves the original template file.



There are four sets of buttons to update in the newly created global object file for each L1 Area:

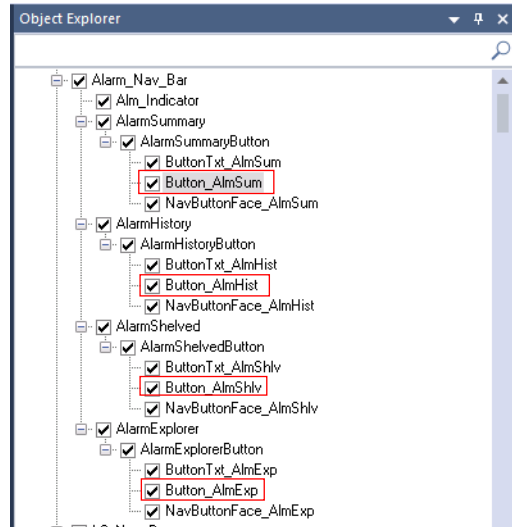
- Alarm Navigation Bar
- Diagnostic Navigation Bar
- L2 Navigation Bar

- L3 Navigation Bars

Alarm Navigation Bar

Only one Alarm Navigation bar is needed for each L1 area. For the Alarm Navigation, the button text does not need to be updated. Only the navigation must be updated.

1. To update the navigation for each button, go to the alarm button > Action tab and update the display names for each of the alarm screens.

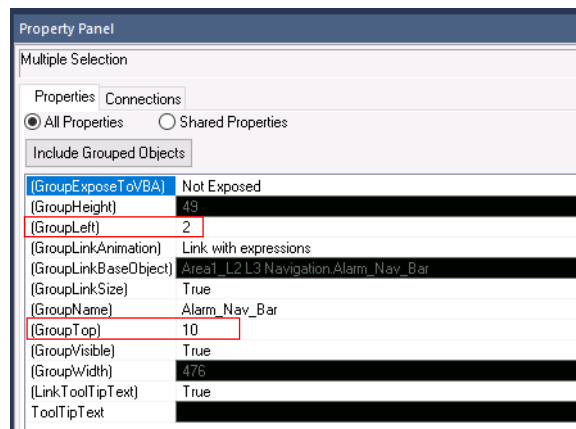


This should match the Alarm Displays created for this L1 area (see [Displays](#) for more information on the alarm template displays).



If the alarm display names match the recommended naming convention, you can do a "Tag Substitution" and simply replace "(raP-5_30-SE) Template" or "(raC-1_00-SE) Template" on the whole Alarm Navigation bar instead of updating each button individually.

2. Copy the button bar and paste the bar in each of the four alarm displays:
 - [L1Area] Alarm-Summary
 - [L1Area] Alarm-History
 - [L1Area] Alarm-Shelved
 - [L1Area] Alarm-Explorer
3. To update the location for the alarm navigation bar in the alarm displays, go to the Alarm Navigation bar and place the Alarm Navigation bars in this location on each of the four alarm displays:
Left - 2, Top - 10.



4. Update the global object parameter for the Alarm Button indication.

This shows the operator what alarm display is being viewed. Update the global object parameter for each alarm display:

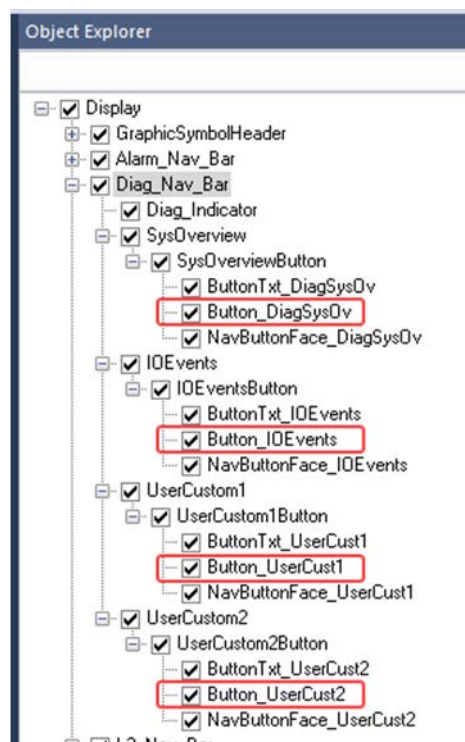
- Alarm Summary = 1
- Alarm History = 2
- Alarm Shelved = 3
- Alarm Explorer = 4

Alarm Summary Alarm History Alarm Shelved Alarm Explorer				
Global Object Parameter Values				
	Name	Value	Tag	Description
1	#108	4	...	Alarm Button Clicked (Indicator - Enter 1 t

Diagnostic Navigation Bar

Only one Diagnostic Navigation bar is needed for each L1 area. For the Diagnostic Navigation, the button text does not need to be updated. Only the navigation must be updated.

1. To update the navigation for each button, go to the diagnostic button > Action tab and update the display names for each of the diagnostic screens. Note: There is one user-customizable button available on this navigation bar, to be used for additional diagnostic displays as needed.



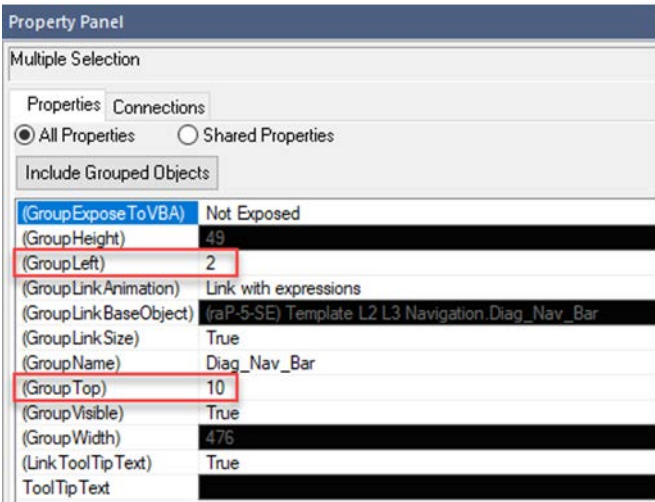
This should match the Diagnostic Displays created for this L1 area (see [Displays](#) for more information on the diagnostic template displays).



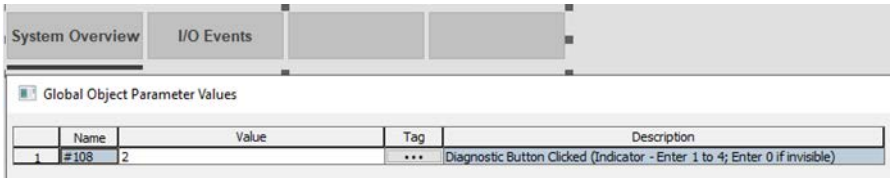
If the diagnostic display names match the recommended naming convention, you can do a "Tag Substitution" and simply replace '(raP-5.30-SE) Template' or '(raC-1.00-SE) Template' on the whole Diagnostic Navigation bar instead of updating each button individually.

2. Copy the button bar and paste the bar in each of the two diagnostic displays, as well as any user custom diagnostic displays that have been created:
 - [L1Area] Diagnostic-Summary

- [L1Area] Diagnostic-IOEvents
3. To update the location for the diagnostic navigation bar in the diagnostic displays, go to the Diagnostic Navigation bar and place all Diagnostic Navigation bars in this location on each of the diagnostic displays: Left - 2, Top - 10.



4. Update the global object parameter for the Diagnostic Button indication.
- This shows the operator what diagnostic display is being viewed. Update the global object parameter for each diagnostic display:
- Diagnostic Summary = 1
 - IO Event Viewer = 2
 - User custom = 3
 - User custom =4



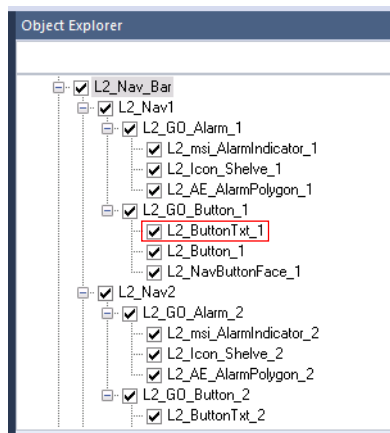
L2 Navigation Bar

Only one L2 Navigation bar is needed for each L1 area. Update the text on the buttons that are being used.

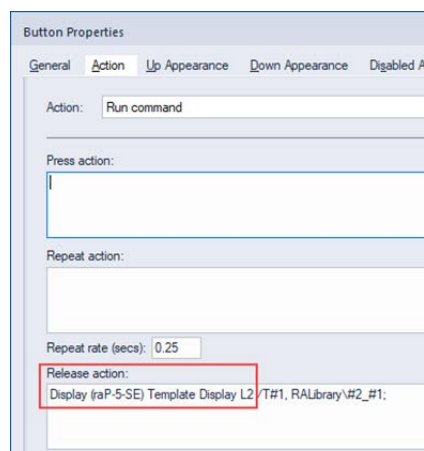
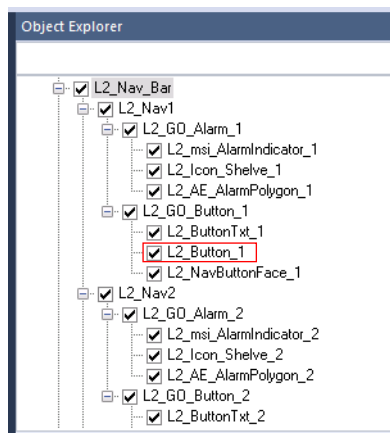
IMPORTANT If using Graphic Framework v1.00 with the built-in navigation menu, the L2 Navigation Bar is not needed.

1. To update the text on the button, got to Object Explorer and select the L2_ButtonTxt_# object.

Repeat for each button.



- To update the navigation for each button, go to the L2_Button_# object > Action tab and replace the Release Action to point to the correct L2 display. Repeat for each button used.



- After you finish updating the button text and actions, select the updated button bar and copy.
- Go to the application-specific display developed from the template files (raP-5_30-SE) Template Mon# Header or (raC-1_00-SE) Template Header Mon#, delete the existing L2 Navigation bar, and paste the new L2 Navigation bar.

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Property Panel

Multiple Selection

Properties | Connections

☒ All Properties ☐ Shared Properties

Include Grouped Objects

(GroupExposeToVBA)	Not Exposed
(GroupHeight)	44
(GroupLeft)	0
(GroupLinkAnimation)	Link with expressions
(GroupLinkBaseObject)	(raP5-SE) Template L2 L3 Navigation.L2_Nav_Bar
(GroupLinkSize)	True
(GroupName)	L2_Nav_Bar
(GroupTop)	61
(GroupVisible)	True
(GroupWidth)	1320
(LinkToolTipText)	True
ToolTipText	

- These fields MUST be entered with text or errors populate in FactoryTalk®

Diagnostics. Enter the appropriate alarm group name for the buttons used. If button is not used, simply enter "NotUsed" as shown below. This acts as a dummy alarm group.

PlantPAx
Distributed Control System

Current User:
ssssssssssssssssssssssssssss
ssssssssssssssssssssssssssss

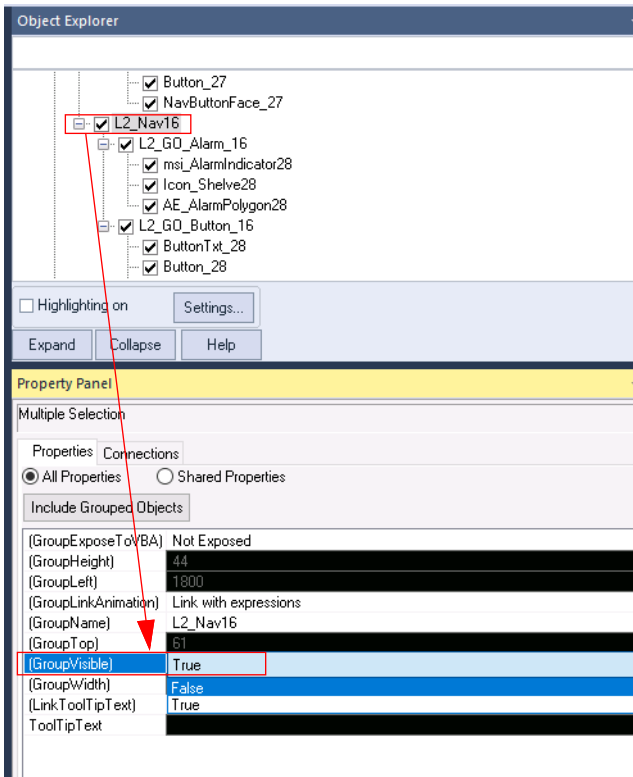
Level 2 Button 1 Level 2 Button 2 Level 2 Button 3 Level 2 Button 4 Level 2 Button 5 Level 2 Button 6

Global Object Parameter Values

	Name	Value	Tag	Description
1	#101	L1Grp1	...	Alarm Group Name (Level 1)
2	#1010	L2Sub1	...	Alarm SubGroup Name (Level 2-Button1)
3	#1020	L2Sub2	...	Alarm SubGroup Name (Level 2-Button2)
4	#1030	NotUsed	...	Alarm SubGroup Name (Level 2-Button3)
5	#1040	NotUsed	...	Alarm SubGroup Name (Level 2-Button4)
6	#1050	NotUsed	...	Alarm SubGroup Name (Level 2-Button5)
7	#1060	NotUsed	...	Alarm SubGroup Name (Level 2-Button6)
8	#1070	NotUsed	...	Alarm SubGroup Name (Level 2-Button7)
9	#1080	NotUsed	...	Alarm SubGroup Name (Level 2-Button8)
10	#1090	NotUsed	...	Alarm SubGroup Name (Level 2-Button9)
11	#1100	NotUsed	...	Alarm SubGroup Name (Level 2-Button10)
12	#1110	NotUsed	...	Alarm SubGroup Name (Level 2-Button11)
13	#1120	NotUsed	...	Alarm SubGroup Name (Level 2-Button12)
14	#1130	NotUsed	...	Alarm SubGroup Name (Level 2-Button13)
15	#1140	NotUsed	...	Alarm SubGroup Name (Level 2-Button14)
16	#1150	NotUsed	...	Alarm SubGroup Name (Level 2-Button15)
17	#1160	NotUsed	...	Alarm SubGroup Name (Level 2-Button16)

OK Cancel Help

Repeat for each button that should be invisible.



L3 Navigation Bar

One L3 Navigation bar is needed for each L2 Navigation button that is used (or up to 16 L3 Navigation bars per L2 Navigation bar). Update and configure each of the L3 Navigation bars.

IMPORTANT If using Graphic Framework v1.00 with the built-in navigation menu, the L3 Navigation Bar is not needed.

1. Go to the L3 Navigation bar in the global object file and copy and paste as many L3 Navigation bars as needed.
The first L3 Navigation bar correlates to the first L2 Navigation button; the copied L3 navigation bar correlates to the second L2 Navigation button, and so on, for additional copies.

There can be as many as 16 L3 Navigation bars in the global object file for the L1. This example shows four L3 Navigation bars (only four L2 buttons are used in this example).

The screenshot displays the 'Alarm Template' configuration interface. It features a header with tabs for 'Alarm Summary', 'Alarm History', 'Alarm Shelved', and 'Alarm Explorer'. Below the header, there are sections for 'Level 2 Template' and 'Level 3 Template'. The 'Level 2 Template' section shows four buttons labeled 'Level 2 Button 1' through 'Level 2 Button 4'. The 'Level 3 Template' section shows four buttons labeled 'Level 3 Button 1' through 'Level 3 Button 4'. Red arrows point from the 'Level 3 Button 1' to 'Level 3 Button 4' in the template section to the corresponding buttons in the main display area. The main display area shows a grid of buttons labeled 'Level 3 Button 1' through 'Level 3 Button 16'. The 'Level 3 Button 1' through 'Level 3 Button 4' are highlighted in pink, indicating they are the active buttons. The 'Level 3 Button 5' through 'Level 3 Button 16' are greyed out, indicating they are not active.

Alarm Template, place on alarm screens at x2, y10

Level 2 Template - place on HEADER at x0, y61

Steps to utilize L2 Nav Bar:

- 1) Update text for each required button (ButtonTxt_#) - note not all buttons need
- 2) Update navigation for each required button (Button_#) - note not all buttons need
- 3) Copy G.O. to Header display. Copy/Paste button bar on header screen @ x0,
- 4) Update G.O Parameters. These need to be filled out to ensure no errors during runtime:
 - (a) Alarm L1 Group and
 - (b) Alarm L2 Group and
- 5) Once instantiated on header display, buttons not used change in property panel

Level 3 Template, place on L2/L3 screen at x0, y0

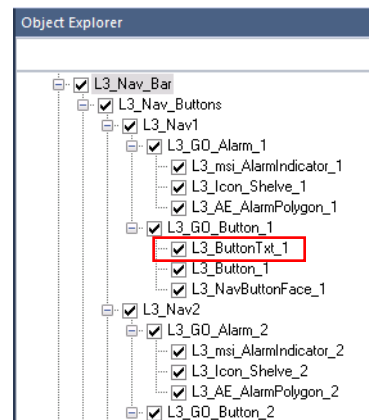
Level 3 Template, place on L2/L3 screen at x0, y0

Steps to utilize L3 Nav Bar:

- 1) Duplicate L3 Nav Bar
- 2) Update text for each required button (ButtonTxt_#) - note not all buttons need to be updated if not used. If not used, leave default
- 3) Update navigation for each required button (Button_#) - note not all buttons need to be updated if not used. If not used, leave default
- 4) Copy G.O. to Header display. Copy/Paste button bar on header screen @ x0, y62
- 5) Update G.O Parameters. These need to be filled out to ensure no errors during runtime:
 - (a) Alarm L1 Group and
 - (b) Alarm L2 Group and
- 6) Once instantiated on header display, buttons not used change in property panel - (Group Visible): False.
- 7) Once all above

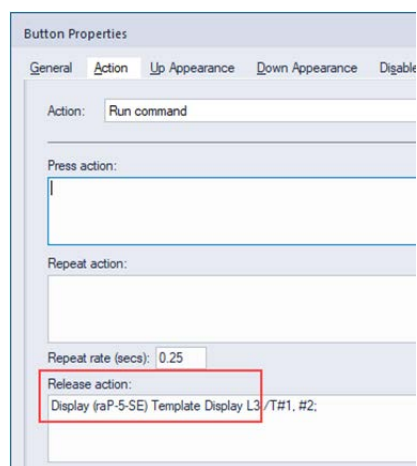
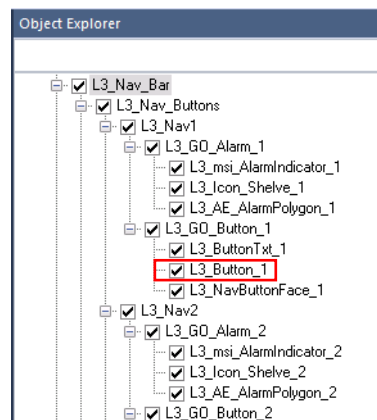
2. To update the text on the button, go to Object Explorer and select the L3_ButtonTxt_# object.

Repeat for each button.



3. To update the navigation for each button, go to the L3_Button_# object > Action tab and replace the Release Action to point to the correct L2 display.

Repeat for each button used.

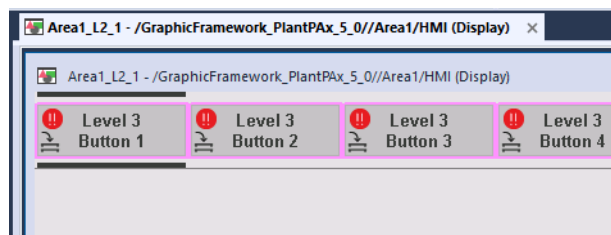


The object names in the L3 Navigation bars that are copied from the first L3 Navigation Bar do not populate new button numbers in order. Take care when configuring buttons that the correct one is selected.

4. Select the updated button bar and copy.

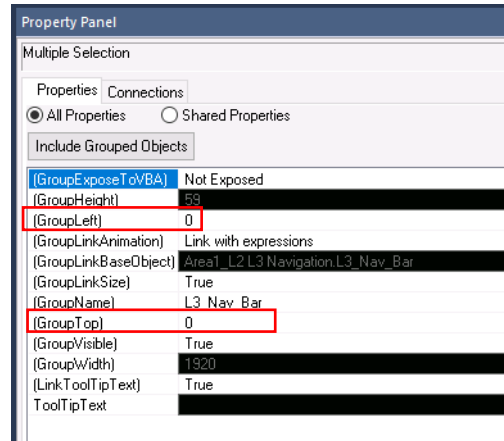
The object names in the L3 Navigation bars that are copied from the first L3 Navigation Bar do not populate new button numbers in order. Take care when configuring buttons that you select the correct bar.

5. Go to the application-specific display developed from the template file (raP-5-30-SE) Template Display L2 or (raC-1-00-SE) Template Display L2 for this L2 area in this L1 area, delete the existing L3 navigation bar, and paste the new L3 navigation bar.



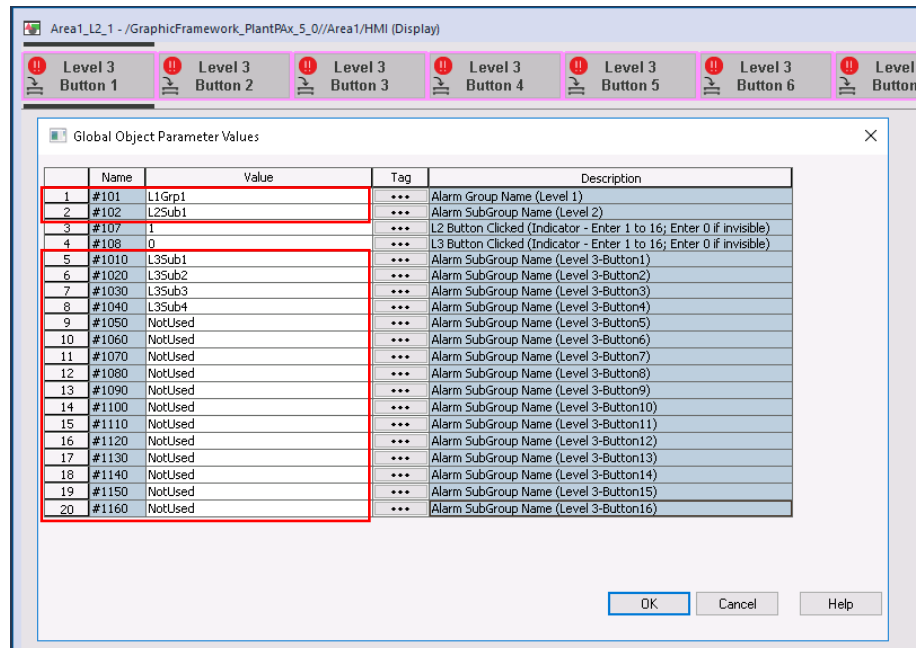
6. Place the button bar in this location on the L2 and L3 displays: Left-0, Top-0.

You can update the location on the property panel for the L3 Navigation bar while in the Header display.



- For all buttons (used or not used), the L1, L2, and L3 alarm group parameter must be entered in the global object parameters. See [Alarm Grouping and Supporting Logic](#) for more information.

These fields **MUST** be completed with text or errors populate in FactoryTalk Diagnostics. Enter the appropriate alarm group name for the buttons used. If a button is not used, simply enter "NotUsed" as shown in the following display. This acts as a dummy alarm group.



8. Edit parameters 107 and 108. Parameters #107 and #108 are used for active display indication. The indicators are horizontal dark gray lines that appear beneath the L2 and L3 navigation bars to indicate the active display.

Parameter	Description
107	<p>Parameter #107 is a component of the L2/L3 display and is used to position the indicator for the active L2 display (It appears below the L2 Navigation bar). Valid values for #107 range from 0 to 16:</p> <p>L2 or L3 Display Active</p> <p>#107 = 0: no indication</p> <p>#107 = 1...16: locates the indicator in position 1 to 16 (left to right) to indicate the active L2 selection or the L2 associated with the active L3 display.</p>
108	<p>Parameter #108 is a component of the L2/L3 display and is used to position the indicator for the active L3 display (it appears under the L3 Navigation bar). Valid values for #108 range from 0 to 16:</p> <p>L2 Display Active</p> <p>#108 = 0: no indicator appears as no L3 display is yet selected</p> <p>L3 Display Active</p> <p>#108 = 1...16: locates the indicator in position 1 to 16 (left to right) to indicate the active L3 selection.</p>

The indicator uses horizontal animation with the parameter to indicate the button selected.

Level 3 Overview Called from L2 Nav Bar

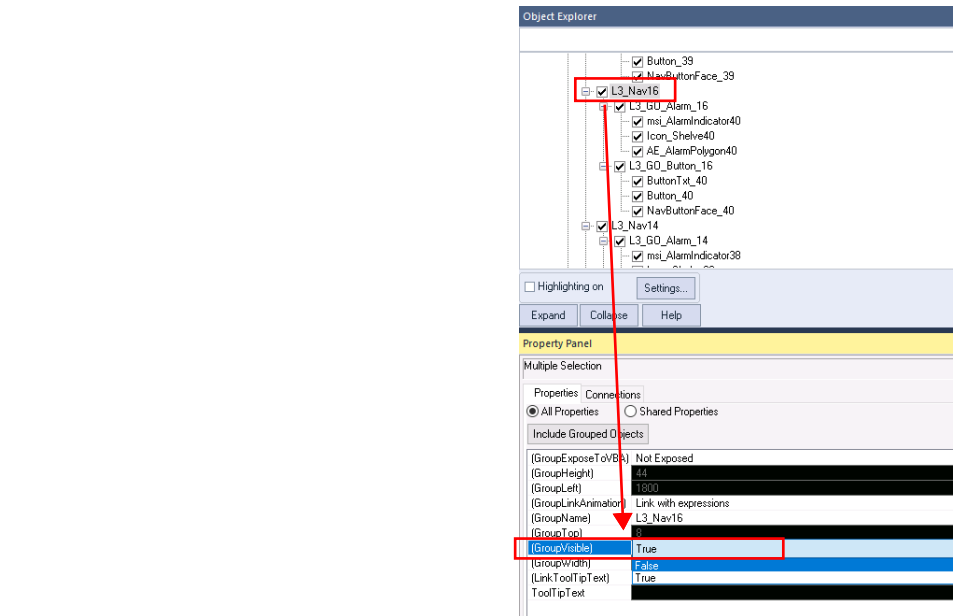
Level 3 Button 1	Level 3 Button 2	Level 3 Button 3	Level 3 Button 4	Level 3 Button 5	Level 3 Button 6
Global Object Parameter Values					
1	2	3	4	5	6
#101	#102	#103	#104	#105	#106
L1Grp1	L2Sub1	L3Sub1	L3Sub2	L3Sub3	L3Sub4
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20

Level 3 Button 1	Level 3 Button 2	Level 3 Button 3	Level 3 Button 4	Level 3 Button 5	Level 3 Button 6
Global Object Parameter Values					
1	2	3	4	5	6
#101	#102	#103	#104	#105	#106
L1Grp1	L2Sub1	L3Sub1	L3Sub2	L3Sub3	L3Sub4
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20

Name	Value	Tag	Description
#101	L1Grp1	...	Alarm Group Name (Level 1)
#102	L2Sub1	...	Alarm SubGroup Name (Level 2)
#107	1	...	L2 Button Clicked (Indicator - Enter 1 to 16; Enter 0 if invisible)
#108	2	...	L3 Button Clicked (Indicator - Enter 1 to 16; Enter 0 if invisible)
#1010	L3Sub1	...	Alarm SubGroup Name (Level 3-Button1)
#1020	L3Sub2	...	Alarm SubGroup Name (Level 3-Button2)
#1030	L3Sub3	...	Alarm SubGroup Name (Level 3-Button3)
#1040	L3Sub4	...	Alarm SubGroup Name (Level 3-Button4)
#1050	NotUsed	...	Alarm SubGroup Name (Level 3-Button5)
#1060	NotUsed	...	Alarm SubGroup Name (Level 3-Button6)
#1070	NotUsed	...	Alarm SubGroup Name (Level 3-Button7)
#1080	NotUsed	...	Alarm SubGroup Name (Level 3-Button8)
#1090	NotUsed	...	Alarm SubGroup Name (Level 3-Button9)
#1100	NotUsed	...	Alarm SubGroup Name (Level 3-Button10)
#1110	NotUsed	...	Alarm SubGroup Name (Level 3-Button11)
#1120	NotUsed	...	Alarm SubGroup Name (Level 3-Button12)
#1130	NotUsed	...	Alarm SubGroup Name (Level 3-Button13)
#1140	NotUsed	...	Alarm SubGroup Name (Level 3-Button14)
#1150	NotUsed	...	Alarm SubGroup Name (Level 3-Button15)
#1160	NotUsed	...	Alarm SubGroup Name (Level 3-Button16)

9. If a button on the L3 Navigation bar is not used, the button can be made invisible. While in the L2 graphic, select the populated L3 Navigation bar. In the Object Explorer, select the button to be made invisible. In the Property Panel, modify the "Group Visible" parameter from True to False.

Repeat for each button that should be invisible.



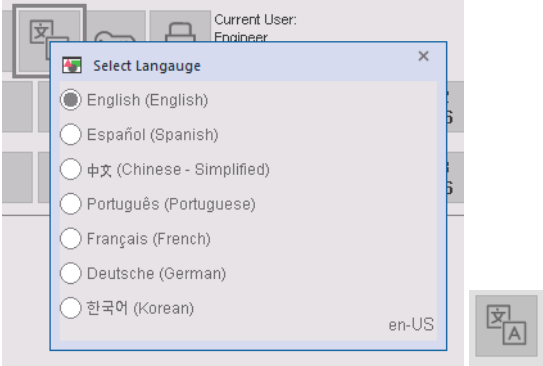
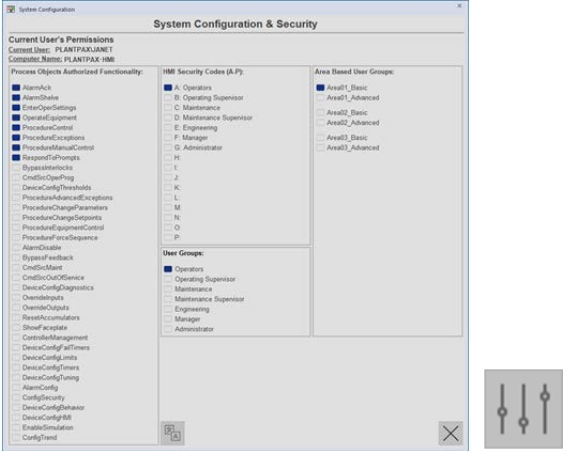
10. While in the L2 graphic, select the L3 Navigation bar and copy.
 - a. In the L2 area, open all L3 graphics that are associated with this L2 area, delete the L3 Navigation bar in each of the L3 graphics and paste the updated L3 Navigation bar.
 - b. Update the global object parameter #108 for each L3 graphic.
- Repeat this section for each L3 Navigation bar in the global object file.

L2 Indication Only

On displays where the L3 navigation bar is not utilized, a single indicator for the selected L2 screen will be used. This is placed by default on the display "(raP-5_30-SE) Template Display L2 No L3" or "(raC-1_00-SE) Template Display L2 No L3". No configuration is required in the global object file. See [Displays](#) for configuration on the default display

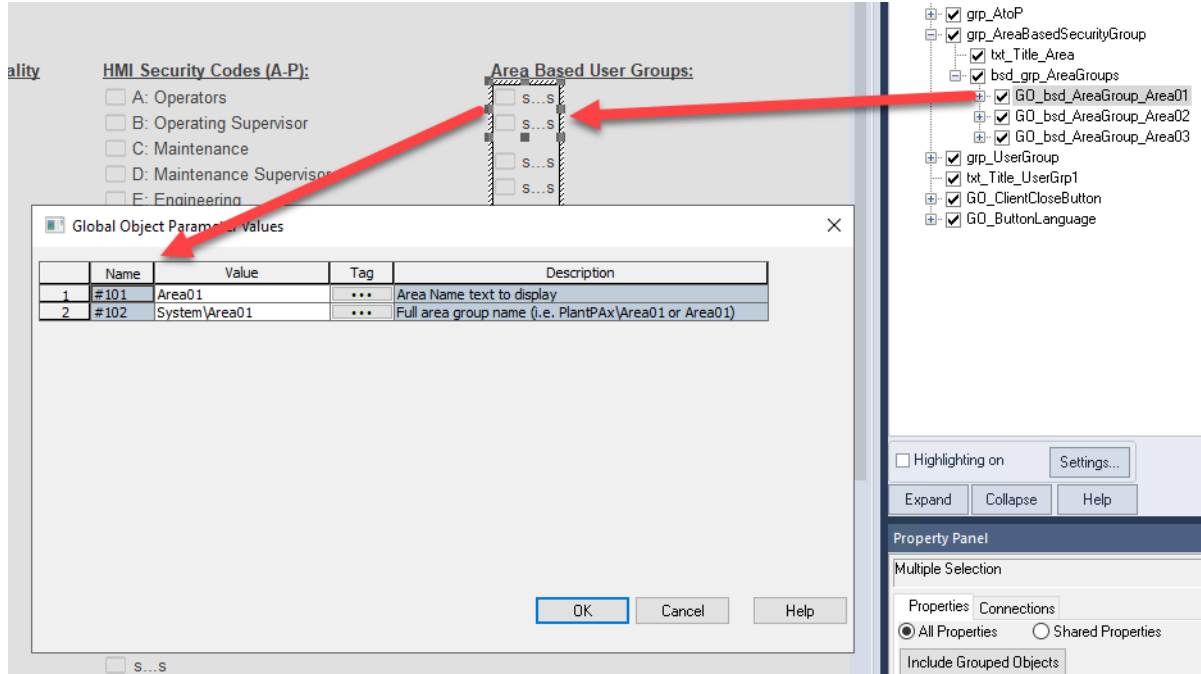
Displays


Each display is a template except for those appended with “Faceplate”. The template display should be duplicated and the prefix “(raP-5.30-SE) Template” or “(raC-1.00-SE) Template” replaced with meaningful name for each L1 area in the application. This preserves the original template to use as a starting point on additional screens. See [Build Your PlantPAx HMI Application](#) for more information on naming structure.


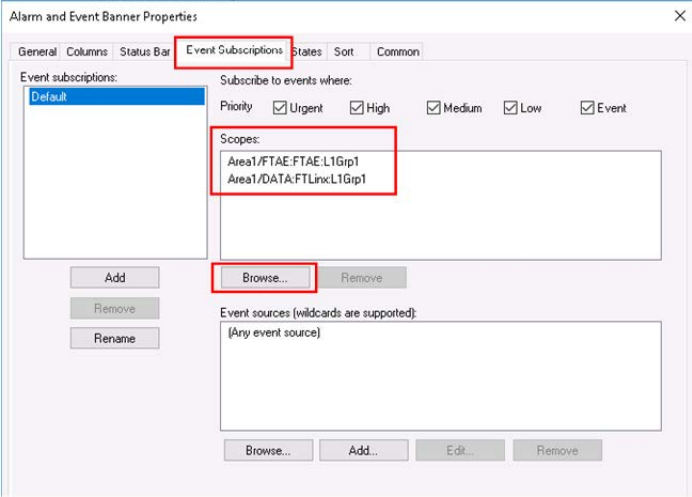
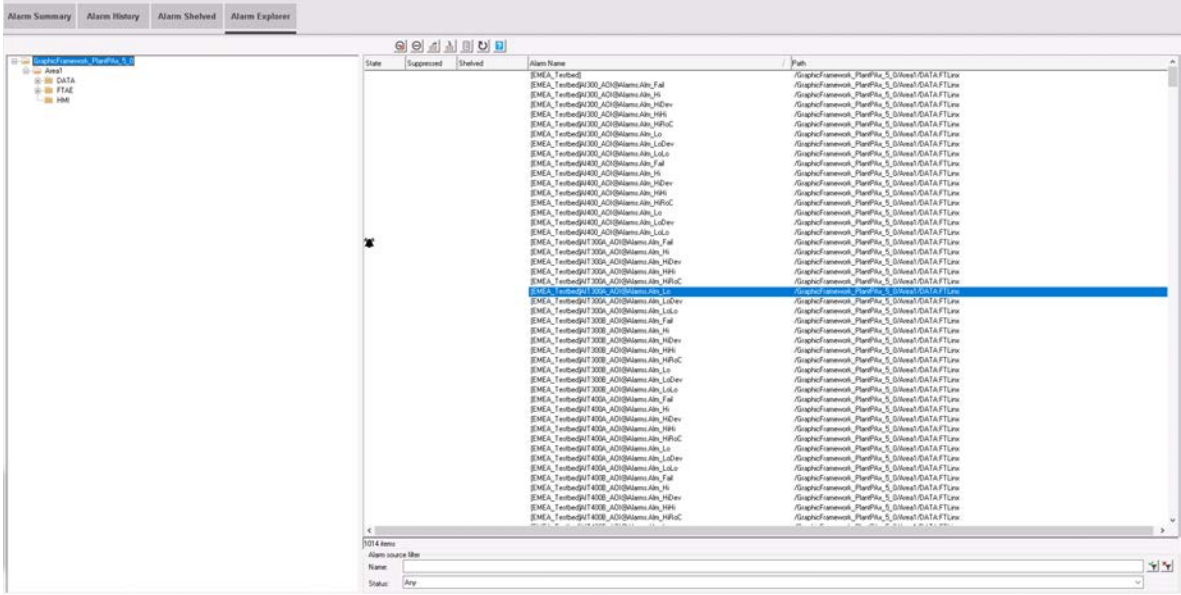
Display	Graphic	Description
Template Language-Select		<p>This template can be used if language switching is used in the application. Only one per application is required. This should be used with the Header button for Language Switching. The display is pre-populated with typical languages used but can be modified for application-specific needs.</p> <p>Link this display to the Language Switching Header button. Languages that are not used for this application can be removed if desired.</p>
Template Admin-SysSecurity		<p>This template is used as a pop-up display for a summary of the current user's security access for A-P security, area security, and basic information such as user group and computer name. This should be used with the Header button for Administrator.</p> <p>Link this display to the Administrator Header button. The sections on the display (Process Objects Authorized Functionality, HMI Security Codes (A-P), and User Groups) are configured with recommended PlantPAx configuration and should not need to be modified. Update the section for Area-Based User Groups to reflect the areas used in the application. There is space at the bottom right of the pop-up display for users to add additional administrator-level content.</p> <p>See (Template Admin-SysSecurity (Continued))</p>

Display	Graphic	Description
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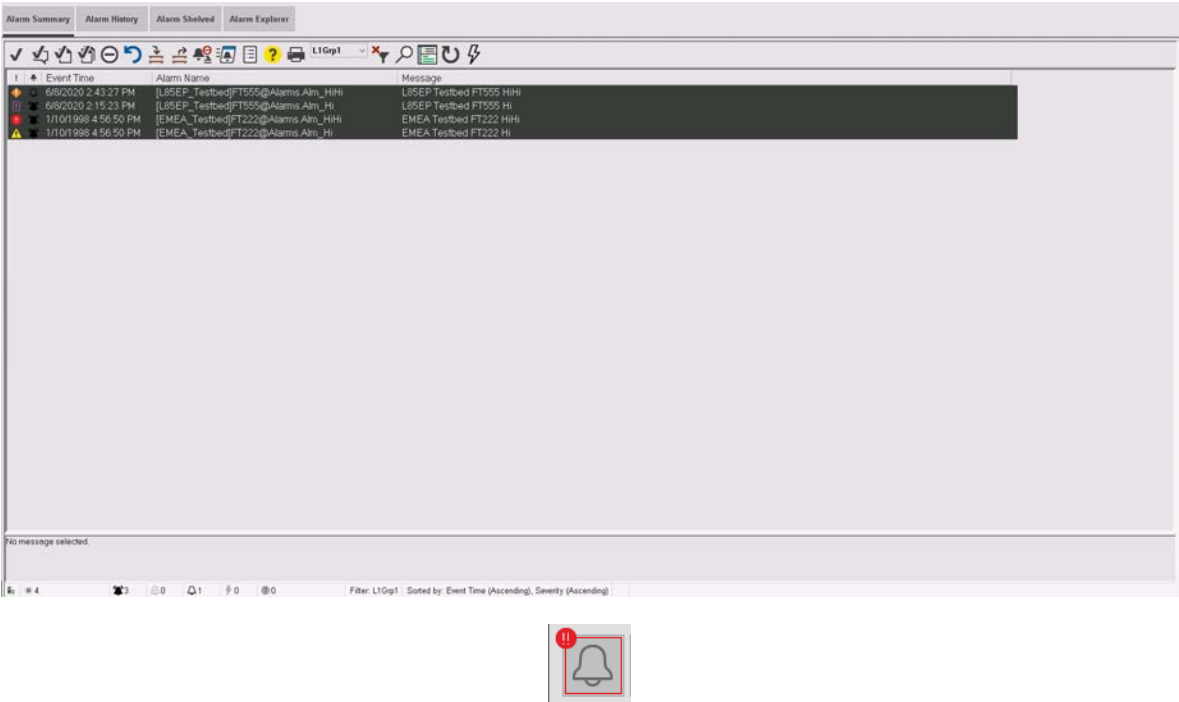
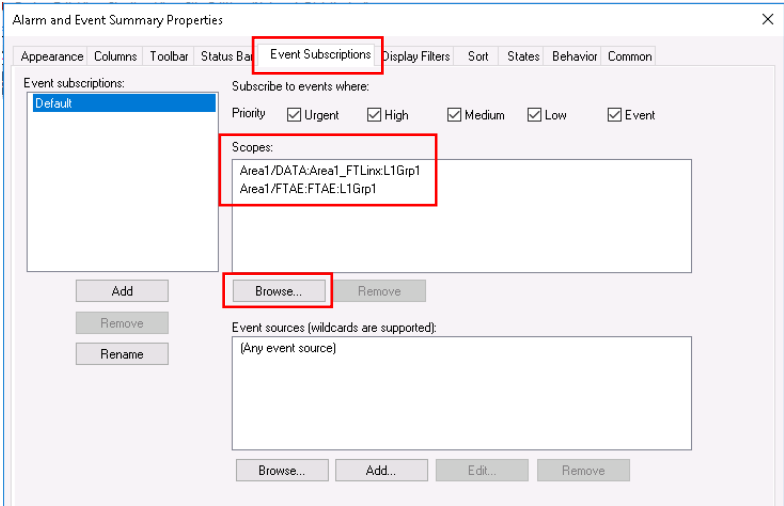
(Template Admin-SysSecurity (Continued))



<p>Template Display Map</p>		<p>This template is used for navigation between different L1 areas. Only one per application is required. This should be used with the Header button for L1 Navigation.</p> <p>Link this display to L1 Navigation Header button. Update the Display title for the specific application. See Global Objects for more information on configuring the buttons on this display.</p>
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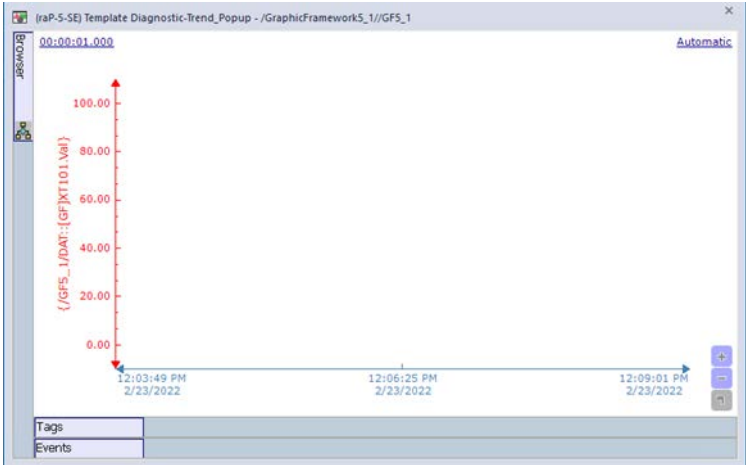
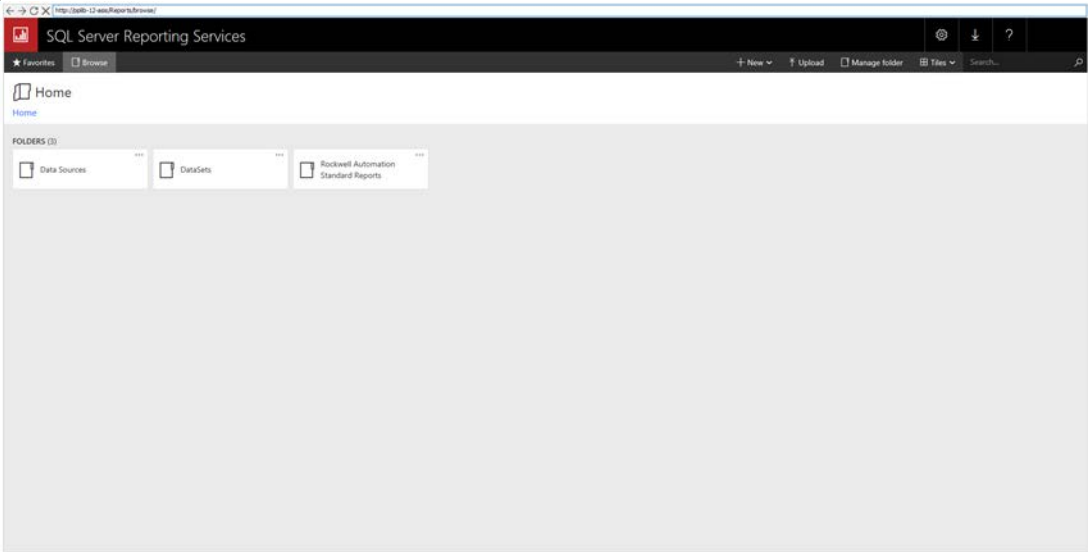
Display	Graphic	Description
Template Header Mon1	 <p>These templates are used for Headers for each L1 area. Depending on the monitor configuration for the operator for the L1 area, one or more Header displays can be used for each L1 area. It is up to the user whether all Headers in a multi-monitor configuration use the same Header display or use a different header for each monitor. See Multi-Monitor for more information on configuring a multi-monitor system. The buttons on the header can be modified using objects that are provided in the global object files. The L2 Navigation bar resides on this screen and is always visible.</p> <p>The alarm banner object must be configured for alarms in that L1 area. Open the Alarm and Event Banner Properties and select the Event Subscriptions tab. Then select the "Browse" button under "Scopes" box. Select the L1 area groups that correlate with that Header. Note: If there are alarms that are both controller based and server based, both subscriptions must be added. Every Alarm or Data server that has alarms for this L1 area must be added to the scope of the alarm banner.</p>	
Template Header Mon2		
Template Header Mon3		
Template Header Mon4		
Template Header Nav Menu		
		
	The L2 Navigation bar must be configured properly - See Global Objects to configure the L2 Navigation.	
Template Alarm-Explorer		
	This template is used for Alarm Explorer for each L1 area. This template should be used once for each L1 area.	
	The Alarm Navigation bar must be configured - see Global Objects for more information.	

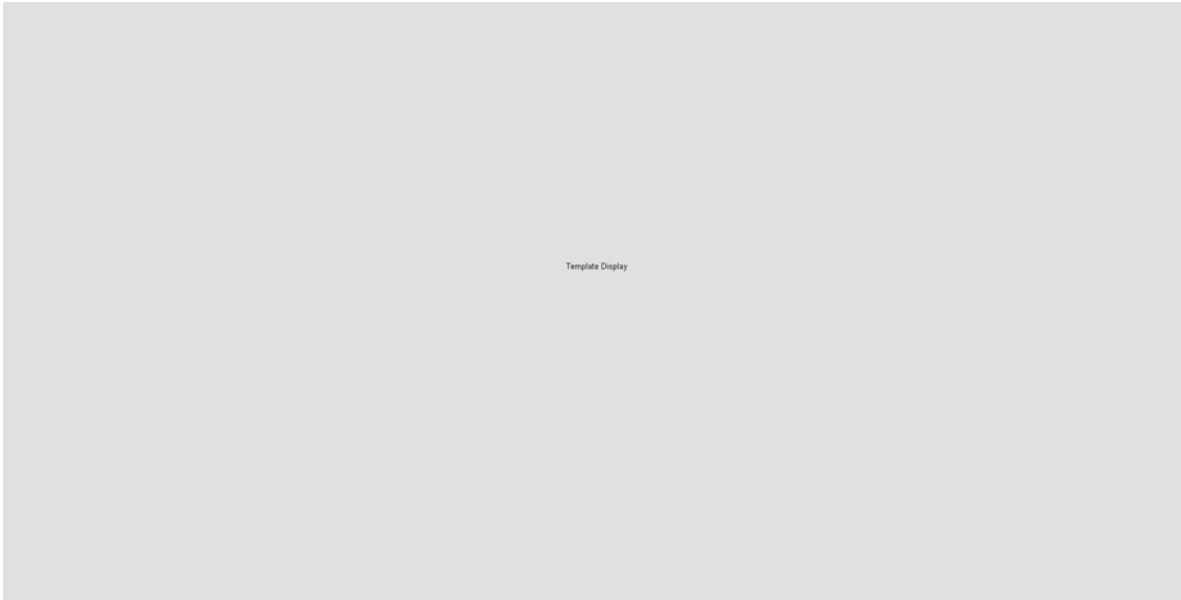
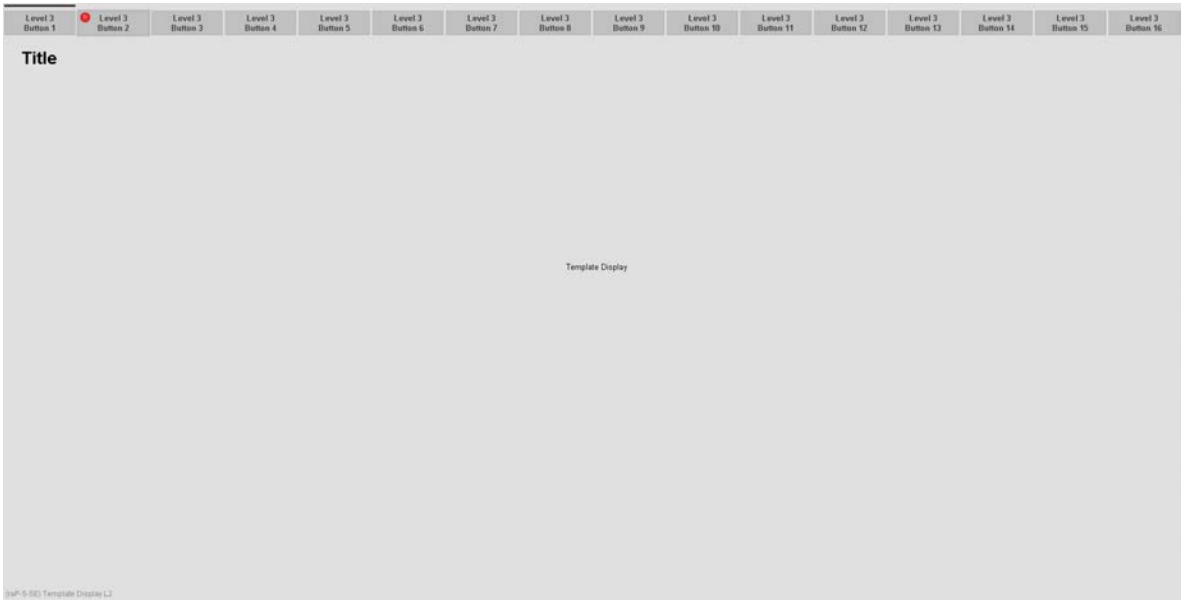
Display	Graphic	Description
Template Alarm-History		<p>This template is used for Alarm History for each L1 area. This template should be used once for each L1 area.</p> <p>The Alarm Navigation bar must be configured - see Global Objects for more information. Filters can be added to the Alarm History object if desired from the Alarm History properties.</p>
Template Alarm-Shelved		<p>This template is used for Shelved Alarms for each L1 area. This template is be used once for each L1 area.</p> <p>The Alarm Navigation bar must be configured - see Global Objects for more information.</p>

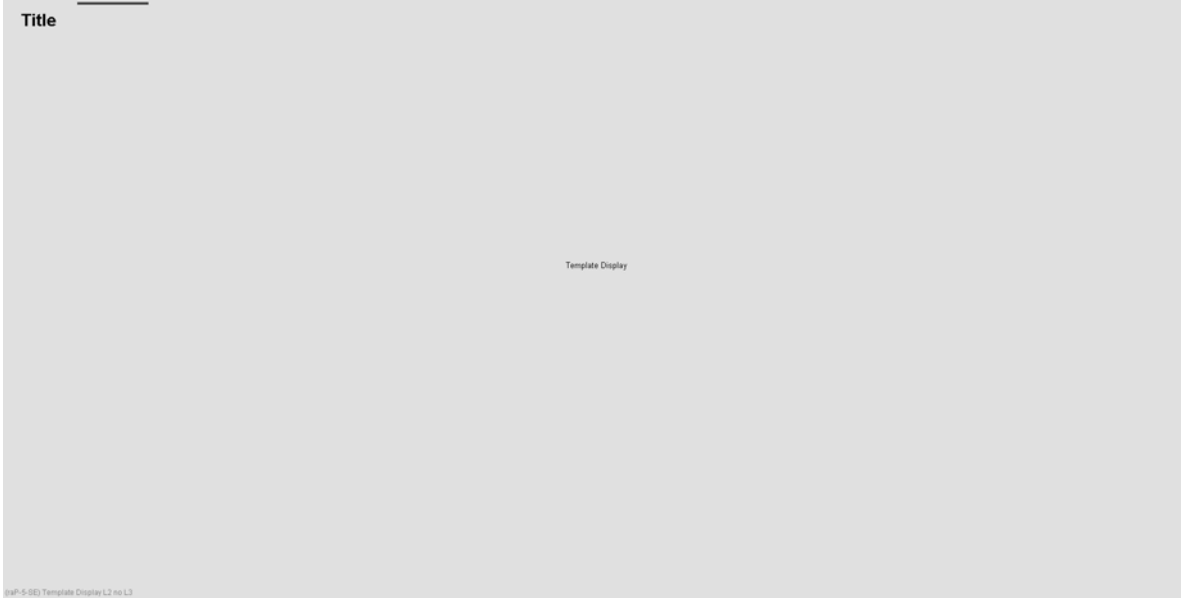

Display	Graphic	Description
Template Alarm-Summary		
	<p>This template is used for Alarm Summary for each L1 area. This template is used once for each L1 area.</p> <p>Link this display to the Alarm Header button. The Alarm Navigation bar must be configured - see Global Objects for more information. Display filters can be added if desired in the Alarm and Event Summary properties.</p> <p>The alarm summary object must be configured for alarms in that L1 area. Open the Alarm and Event Summary Properties and select the Event Subscriptions tab. Then select the “Browse” button under “Scopes” box. Select the L1 area groups that correlate with that Header. Note: If there are alarms that are both controller based and server based, both subscriptions must be added.</p> 	

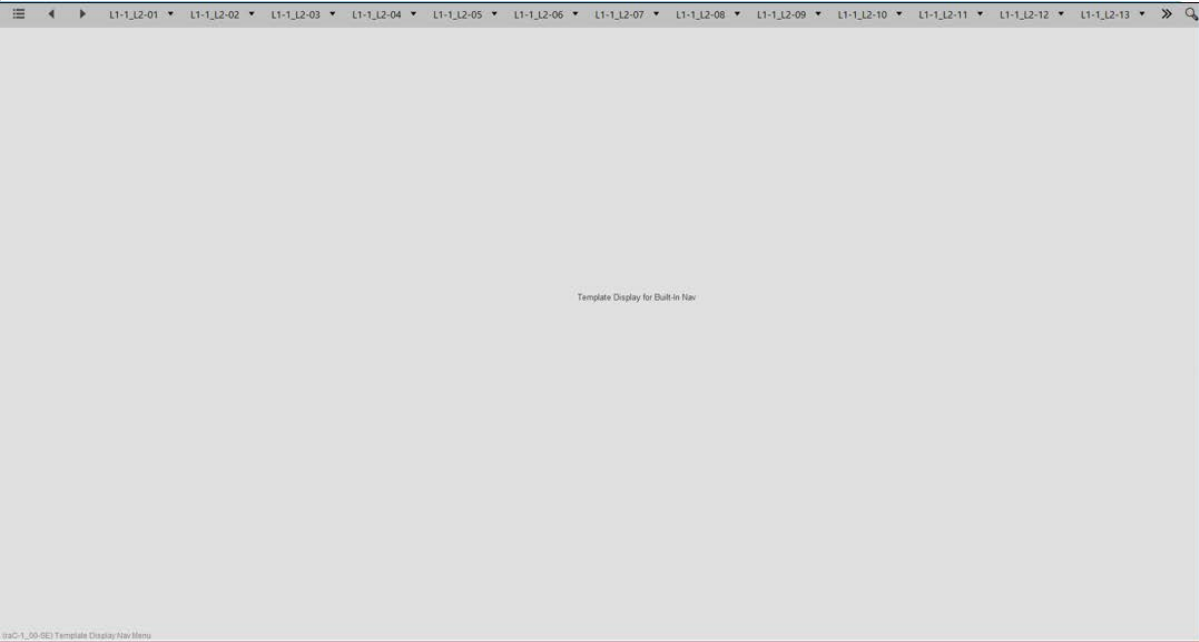
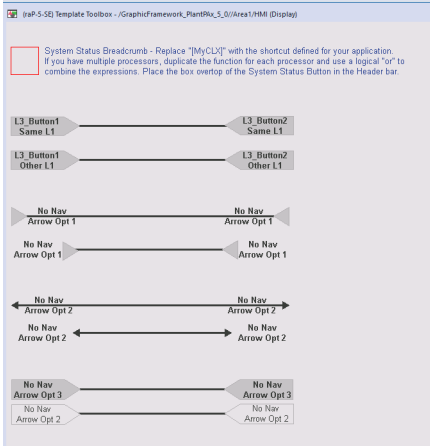
Display	Graphic	Description
Template Diagnostic-Summary		
	<p>This template is used for access to hardware organizational tree view and examples of FactoryTalk Resource and Status server objects as well as additional custom diagnostic objects that a user may want to add. There is also an Automatic Diagnostic Event Summary object at the bottom of the display. This template can be used either one for the whole facility or one for each L1 area. If a display is created for each L1 area, then the event subscription scope must be adjusted for each L1 display. Otherwise, no configuration is required. See Organization, Ownership, Arbitration, and Propagation (OOP) in PROCES-RM200 for configuration of the software and hardware organizational tree view objects.</p> <p>Link this display to the Diagnostic Events Summary Button or access via the Diagnostic Navigation bar.</p>	

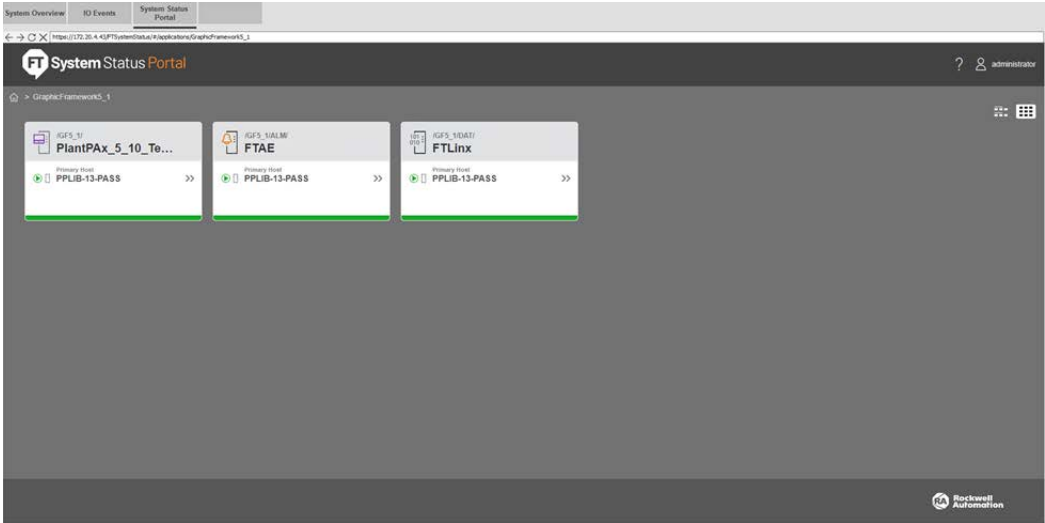
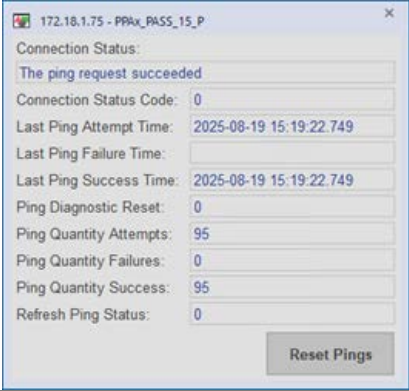
Display	Graphic	Description
Template Diagnostic-IOEvents		<p>This template is used for full-page Automatic Diagnostic Event Summary. This template can be used either one for the whole facility or one for each L1 area. If a display is created for each L1 area, then the event subscription scope must be adjusted for each L1 display. Otherwise, no configuration is required.</p> <p>Link this display to the Diagnostic Events Summary Button or access via the Diagnostic Navigation bar.</p>
Template Trend_Full		<p>This template is used for full screen display of the TrendPro object. It is recommended to use one per application and use various TrendPro templates to view different trend configurations. The desired initial TrendPro template view can be entered as a parameter into the Trend navigation button, but different TrendPro templates can be applied from the TrendPro toolbar. No direct configuration is required for this display.</p> <p>Link this display to the Trend header button - see Global Objects for details on navigation configuration.</p>

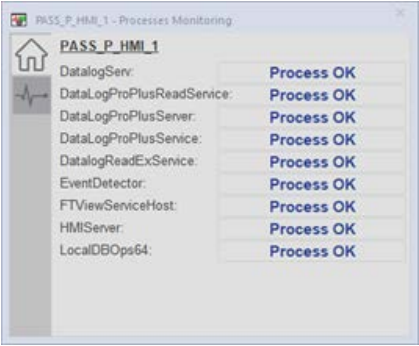
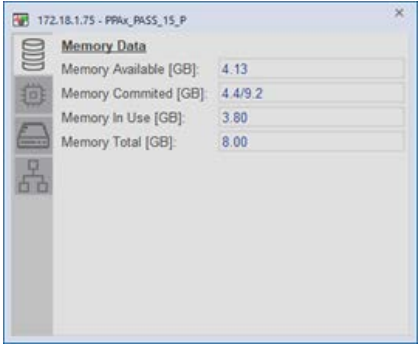
Display	Graphic	Description
Template Trend_Popup		<p>This template is used for pop-up display of the TrendPro object. It is recommended to use one per application and use various TrendPro templates to view different trend configurations. The desired TrendPro template view can be entered as a parameter into the Trend pop-up navigation button. No direct configuration is required for this display.</p> <p>Link this display to the Trend pop-up button. The Trend pop-up button can be placed across L1, L2, or L3 process displays - see Global Objects for details on navigation configuration.</p>
Template Reports		<p>This template is used to access SSRS reports via the SE Web Browser object. The template is used once for each system. The SSRS reports must be installed and configured before using this display.</p> <p>Link this display to the Reports Header Button. See Global Objects for more information on configuring the buttons on this display.</p>

Display	Graphic	Description
Template Display L1		<p>This template is used for each L1 Display. There will be one L1 display for every L1 area. Typically, this display has an overview of that L1 area and is the first display that the operator will see when the client starts up. This display is flexible - alarm indicators can be added if desired.</p> <p>Link this display to the appropriate macros for client startup and screen repaint - see Macros for information.</p>
Template Display L2		<p>This template is used for L2 Displays that have L3 displays associated. There will be one L2 display for every L2 Navigation button that is utilized. The template will automatically display the GFX file name in the lower left corner. Typically, this graphic contains the necessary controls and indication for the operator to run the facility.</p> <p>Link each L2 Display to the appropriate L2 Navigation Button - see Global Objects for details on navigation configuration.</p>

Display	Graphic	Description
Template Display L2 No L3		<p>This template is used for simple L2 Displays that do not have L3 Displays associated (no L3 navigation bar). There will be one L2 display for every L2 Navigation button that is utilized. The template will automatically display the GFX file name in the lower left corner. Typically, this graphic contains the necessary controls and indication for the operator to run the facility.</p> <p>Link each L2 Display to the appropriate L2 Navigation Button - see Global Objects for details on navigation configuration. The parameter for the global object for L2 button indication must be configured. There is one parameter (#107) and is configured the same as with the L3 navigation bar. See Global Objects for details on this parameter.</p>
Template Display L3		<p>This template is used for each L3 Display. There is one L3 display for every L3 Navigation button that is utilized. The template will automatically display the GFX file name in the lower left corner. Typically, this graphic contains more detailed information on devices that are on associated L2 display.</p> <p>Link each L3 Display to the appropriate L3 Navigation Button - see Global Objects for details on navigation configuration.</p>

Display	Graphic	Description
Template Display Nav Menu		<p>This template is used for any L1, L2, and L3 Display when using the built-in Navigation Menu. It is only used when the application is using the built-in Navigation Menu. The template will automatically display the GFX file name in the lower left corner.</p> <p>See Navigation Menu on page 75 for recommended configuration of the built-in Navigation Menu with the Graphic Framework v1.00.I</p>
Template Toolbox		<p>This display is used as a toolbox of objects that can be copied and placed on other displays. This screen is not used on any active clients.</p> <p>If the off-screen navigation objects are used, then the button action and text must be updated.</p> <ul style="list-style-type: none">• Same L1<ol style="list-style-type: none">1. Copy the object onto the desired screen.2. Update the text.3. Update the button action - navigate directly to display.• Other L1<ol style="list-style-type: none">1. Copy the objected onto the desired screen.2. Update the text object.3. Update the button action - use several commands to close current L1 view and opened desired L1 header and process display. These commands are developed to work with multi-monitor. See Multi-Monitor for more information. <p>If the system status breadcrumb is used, the animation must be updated. Replace <code>/Area1/DATA:[MyCLX]</code> with the shortcut defined for your application. If multiple processors are used, duplicated the function for each processor and use a logical OR statement to combine the expression.</p>

Display	Graphic	Description
Template Diagnostic-SysSts Only available in FactoryTalk View v13 and later templates.		<p>This template is used to access the FactoryTalk System Status Portal via the SE Web Browser object. The template should be used once for each system. The FactoryTalk System Status Portal utility must be installed on system servers when installing FactoryTalk Services Platform.</p> <p>This display should be accessed via the Diagnostic Navigation bar. The parameter path must be updated to the IP address of the FactoryTalk Directory server.</p>
Common-Redirect-to-4_10	<p>These two displays are optional and only needed in applications that are using both the Process Library 4.10 and Process Library 5.00 or later. The redirect displays are used with modified navigation macros - See Macros for more information. No configuration, modification, or renaming is needed to use these displays. They only need to be added into the application if the application is using both the Process Library 4.10 and Process Library 5.00 or later</p> <p>Note: This is not available in the Graphic Framework v1.00 release</p>	
Common-Redirect-to-5_00		
(raC-1_00-SE) RSSNetworkDevice-Faceplate		<p>This faceplate can be used with FactoryTalk Resource and Status server (FTRS server) to view the connection status of a configured device.</p> <p>The faceplate shows connection information and includes a button to reset the ping count if the user has the correct security.</p>

Display	Graphic	Description
(raC-1.00-SE) RSSProcessMonitor- Faceplate		<p>This faceplate can be used with FactoryTalk Resource and Status server (FTRS server) to monitor the status of up to 10 windows processes running on a configured workstation or virtual machine.</p> <p>The faceplate shows a general status of each process that is configured and more detailed information on each process on the diagnostic tab.</p>
(raC-1.00-SE) RSSWorkstation- Faceplate		<p>This faceplate can be used with FactoryTalk Resource and Status server (FTRS server) to monitor basic information of a workstation or virtual machine including:</p> <ul style="list-style-type: none">• Memory available, committed, in use, and total• CPU processes• Individual speed and utilization of up to 8 CPUs• Total disk space available and used• Disk space available and used on the C drive• Disk space is available and used on an additional configurable drive (for example, E or F drive, etc)• Detailed information on up to 2 network interface cards (NICs) including adapter name, IP address, send and receive speeds.

Multi-Monitor

The Graphic Framework provides template options for single, dual, or quad-monitor client workstations. There are several adjustments to button commands, startup macros, and displays as well as additional configuration that allows the multi-monitor functionality to operate smoothly.

IMPORTANT

Multimonitor is not supported with use of the built-in Navigation Menu.

HMI Tags, Headers, and Macros

There are HMI tags that must be created for multi-monitor to work correctly. Each tag is a string that stores the file name of the header displays used in each L1 area. All four tags should be created for each L1 area, regardless of the number of monitors used by workstations in that area. For example, if there is an Area 1 with one quad-monitor workstation, Area 2 with one dual-monitor workstation, and an Area 3 with one single monitor workstation, the following tags, macros, and displays should be created.

To begin, determine the area in the system that is using the maximum number of monitors. In our example, Area 1 is a quad monitor, so the maximum number of monitors would be four. Four header displays must be created for each area to ensure that the workstation in Area 1 operates correctly. Header displays can be identical or modified to show different information on each monitor. For each of the HMI tags, the value is each Header display file name.

L1 Area	HMI Tag Name	HMI Tag Value	Macros Needed	Displays Needed
Area 1	RALibrary\Area1_M1	Area1_Mon1_Header	<ul style="list-style-type: none">• Area1_ClientStatup• Area1_Repaint_QuadMon• Area2_Repaint_QuadMon• Area3_Repaint_QuadMon	<ul style="list-style-type: none">• Area1_Mon1_Header• Area1_Mon2_Header• Area1_Mon3_Header• Area1_Mon4_Header• Any required process, diagnostic, or alarm display
	RALibrary\Area1_M2	Area1_Mon2_Header		
	RALibrary\Area1_M3	Area1_Mon3_Header		
	RALibrary\Area1_M4	Area1_Mon4_Header		

L1 Area	HMI Tag Name	HMI Tag Value	Macros Needed	Displays Needed
Area 2	RALibrary\Area2_M1	Area2_Mon1_Header	<ul style="list-style-type: none"> Area2_ClientStatup Area2_Repaint_DualMon Area1_Repaint_DualMon Area3_Repaint_DualMon 	<ul style="list-style-type: none"> Area2_Mon1_Header Area2_Mon2_Header Area2_Mon3_Header Area2_Mon4_Header Any required process, diagnostic, or alarm display
	RALibrary\Area2_M2	Area2_Mon2_Header		
	RALibrary\Area2_M3	Area2_Mon3_Header		
	RALibrary\Area2_M4	Area2_Mon4_Header		
Area 3	RALibrary\Area3_M1	Area3_Mon1_Header	<ul style="list-style-type: none"> Area3_ClientStatup Area3_Repaint_SingleMon Area1_Repaint_SingleMon Area2_Repaint_SingleMon 	<ul style="list-style-type: none"> Area3_Mon1_Header Area3_Mon2_Header Area3_Mon3_Header Area3_Mon4_Header Any required process, diagnostic, or alarm display
	RALibrary\Area3_M2	Area3_Mon2_Header		
	RALibrary\Area3_M3	Area3_Mon3_Header		
	RALibrary\Area3_M4	Area3_Mon4_Header		

Area 1 Macro Files

The following tables show the macros that are used for each Area. Screen displays are shown for Area 1 to provide clarity. The displays for Area 2 and Area 3 will follow the same format.

Table 1 - Area1_ClientStartup

Command	Description
Display Area1_Mon1_Header /TM1,Area1 /M1 Display Area1_L1 /TM1,RALibrary\Area1_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area1_Mon2_Header /TM2,Area1 /M2 Display Area1_L1 /TM2,RALibrary\Area1_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.
Display Area1_Mon3_Header /TM3,Area1 /M3 Display Area1_L1 /TM3,RALibrary\Area1_M3 /M3	Display commands for monitor 3 (header and process display) with required tag parameters.
Display Area1_Mon4_Header /TM4,Area1 /M4 Display Area1_L1 /TM4,RALibrary\Area1_M4 /M4	Display commands for monitor 4 (header and process display) with required tag parameters.
Define GoHome Area1_Repaint_QuadMon	Define action of "GoHome" symbol used on Home Navigation Button
Define Repaint SetRepaint QuadMon	Define action of "Repaint" symbol that is used on Repaint Button and L1 Navigation

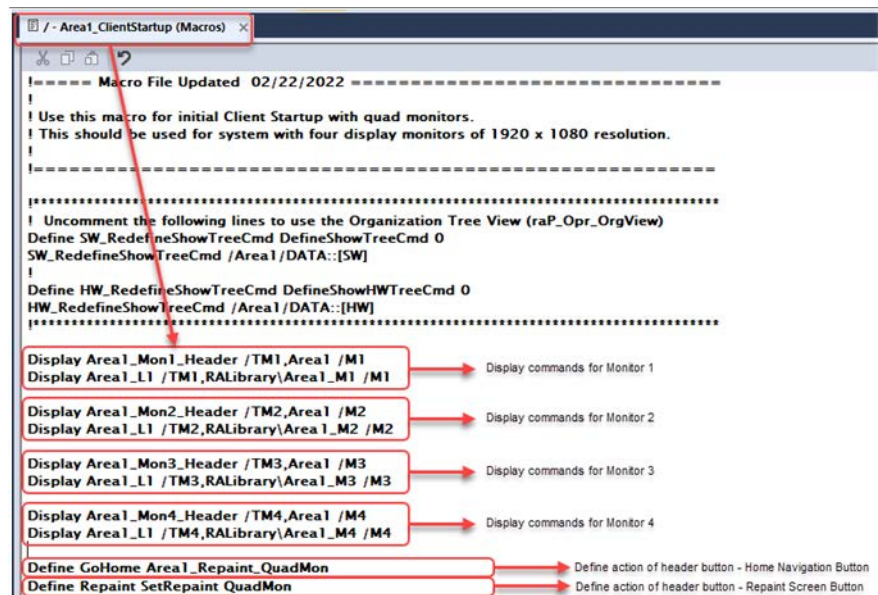


Table 2 - Area1_Repaint_QuadMon

Command	Description
Abort * /D	Abort all current displays running on the Quad monitor client
Display Area1_Mon1_Header /TM1,Area1 /M1 Display Area1_L1 /TM1,RALibrary\Area1_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area1_Mon2_Header /TM2,Area1 /M2 Display Area1_L1 /TM2,RALibrary\Area1_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.
Display Area1_Mon3_Header /TM3,Area1 /M3 Display Area1_L1 /TM3,RALibrary\Area1_M3 /M3	Display commands for monitor 3 (header and process display) with required tag parameters.
Display Area1_Mon4_Header /TM4,Area1 /M4 Display Area1_L1 /TM4,RALibrary\Area1_M4 /M4	Display commands for monitor 4 (header and process display) with required tag parameters.

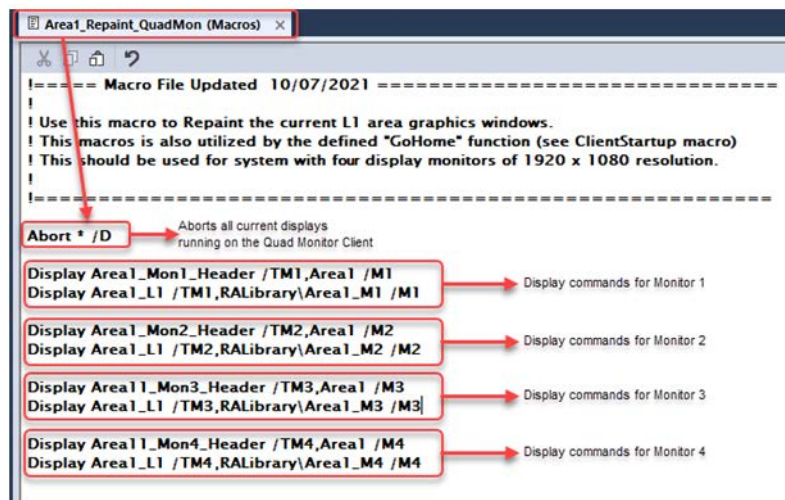


Table 3 - Area1_Repaint_DualMon

Command	Description
Abort * /D	Abort all current displays running on the dual monitor client
Display Area1_Mon1_Header /TM1,Area1 /M1 Display Area1_L1 /TM1,RALibrary\Area1_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area1_Mon2_Header /TM2,Area1 /M2 Display Area1_L1 /TM2,RALibrary\Area1_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.

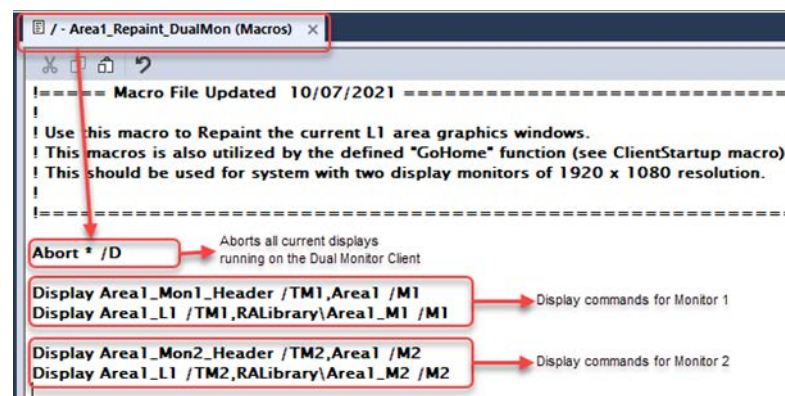
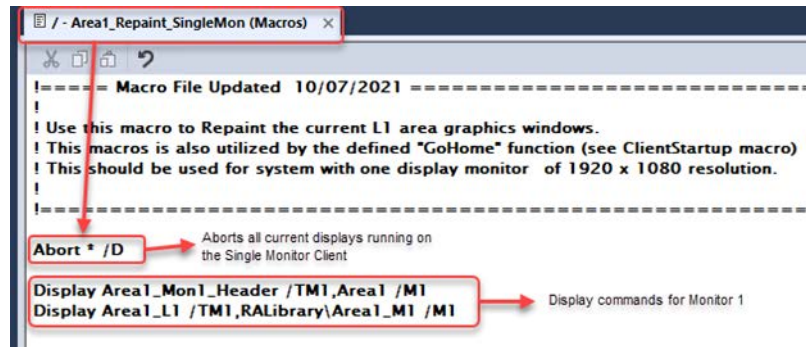


Table 4 - Area1_Repaint_SingleMon

Command	Description
Abort * /D	Abort all current displays running on the single monitor client
Display Area1_Mon1_Header /TM1,Area1 /M1 Display Area1_L1 /TM1,RALibrary\Area1_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.



Area 2 Macro Files

Table 5 - Area2_ClientStartup

Command	Description
Display Area2_Mon1_Header /TM1,Area2 /M1 Display Area2_L1 /TM1,RALibrary\Area2_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area2_Mon2_Header /TM2,Area2 /M2 Display Area2_L1 /TM2,RALibrary\Area2_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.
Define GoHome Area2_Repaint_DualMon	Define action of "GoHome" symbol used on Home Navigation Button
Define Repaint SetRepaint DualMon	Define action of "Repaint" symbol that is used on Repaint Button and L1 Navigation

Table 6 - Area2_Repaint_QuadMon

Command	Description
Abort * /D	Abort all current displays running on the quad monitor client
Display Area2_Mon1_Header /TM1,Area2 /M1 Display Area2_L1 /TM1,RALibrary\Area2_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area2_Mon2_Header /TM2,Area2 /M2 Display Area2_L1 /TM2,RALibrary\Area2_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.
Display Area2_Mon3_Header /TM3,Area2 /M3 Display Area2_L1 /TM3,RALibrary\Area2_M3 /M3	Display commands for monitor 3 (header and process display) with required tag parameters.
Display Area2_Mon4_Header /TM4,Area2 /M4 Display Area2_L1 /TM4,RALibrary\Area2_M4 /M4	Display commands for monitor 4 (header and process display) with required tag parameters.

Table 7 - Area2_Repaint_DualMon

Command	Description
Abort * /D	Abort all current displays running on the dual monitor client
Display Area2_Mon1_Header /TM1,Area2 /M1 Display Area2_L1 /TM1,RALibrary\Area2_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area2_Mon2_Header /TM2,Area2 /M2 Display Area2_L1 /TM2,RALibrary\Area2_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.

Table 8 - Area2_Repaint_SingleMon

Command	Description
Abort * /D	Abort all current displays running on the single monitor client
Display Area2_Mon1_Header /TM1,Area2 /M1 Display Area2_L1 /TM1,RALibrary\Area2_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.

*Area 3 Macro Files***Table 9 - Area3_ClientStartup**

Command	Description
Display Area3_Mon1_Header /TM1,Area3 /M1 Display Area3_L1 /TM1,RALibrary\Area3_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Define GoHome Area3_Repaint_SingleMon	Define action of "GoHome" symbol used on Home Navigation Button
Define Repaint SetRepaint SingleMon	Define action of "Repaint" symbol that is used on Repaint Button and L1 Navigation

Table 10 - Area3_Repaint_QuadMon

Command	Description
Abort * /D	Abort all current displays running on the quad monitor client
Display Area3_Mon1_Header /TM1,Area3 /M1 Display Area3_L1 /TM1,RALibrary\Area3_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area3_Mon2_Header /TM2,Area3 /M2 Display Area3_L1 /TM2,RALibrary\Area3_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.
Display Area3_Mon3_Header /TM3,Area3 /M3 Display Area3_L1 /TM3,RALibrary\Area3_M3 /M3	Display commands for monitor 3 (header and process display) with required tag parameters.
Display Area3_Mon4_Header /TM4,Area3 /M4 Display Area3_L1 /TM4,RALibrary\Area3_M4 /M4	Display commands for monitor 4 (header and process display) with required tag parameters.

Table 11 - Area3_Repaint_DualMon

Command	Description
Abort * /D	Abort all current displays running on the dual monitor client
Display Area3_Mon1_Header /TM1,Area3 /M1 Display Area3_L1 /TM1,RALibrary\Area3_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.
Display Area3_Mon2_Header /TM2,Area3 /M2 Display Area3_L1 /TM2,RALibrary\Area3_M2 /M2	Display commands for monitor 2 (header and process display) with required tag parameters.

Table 12 - Area3_Repaint_SingleMon

Command	Description
Abort * /D	Abort all current displays running on the dual monitor client
Display Area3_Mon1_Header /TM1,Area3 /M1 Display Area3_L1 /TM1,RALibrary\Area3_M1 /M1	Display commands for monitor 1 (header and process display) with required tag parameters.

There is a naming convention that must be followed when creating each repaint macro. The file name must be in the following format, as shown in the macro file SetRepaint:

```

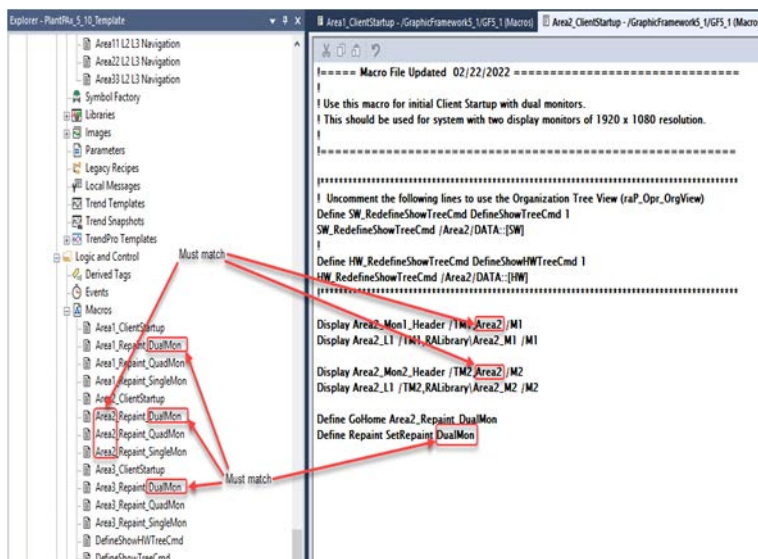
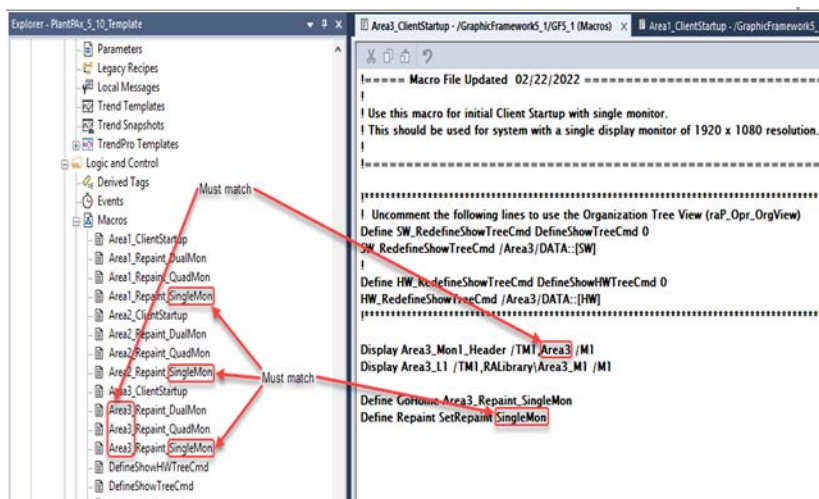
===== SetRepaint created 05/20/2022 =====
! Builds the Repaint Macro to be used by specific client based on the current
! L1 area and monitor quantity (defined from startup client macro)
! =====

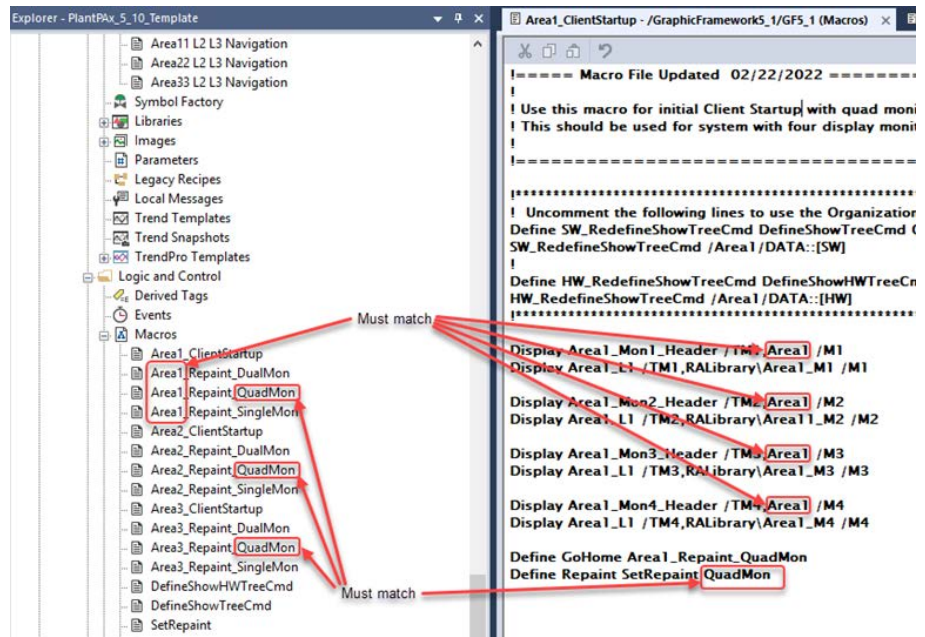
! Parameters
! %1 - Monitor Quantity (i.e. "QuadMon" or "4Mon", "DualMon" or "2Mon", "SingleMon" or "1Mon")
! %2 - Area Name

%2_Repaint_%1

```

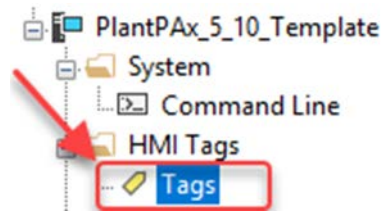
The %1 and %2 are defined in each client startup macro, as shown in the following examples.



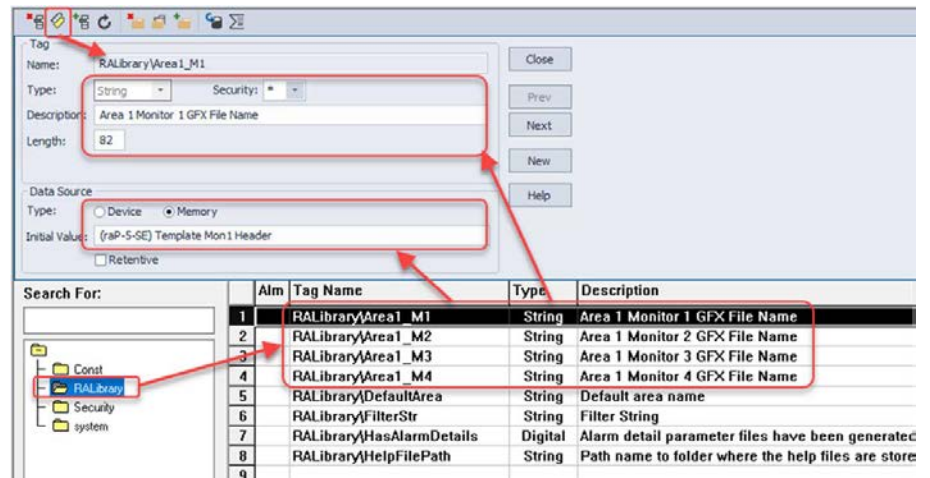


Create HMI Tags for Multi-Monitor and Repaint

1. Open Tags under HMI Tags in the application in FactoryTalk View Studio.



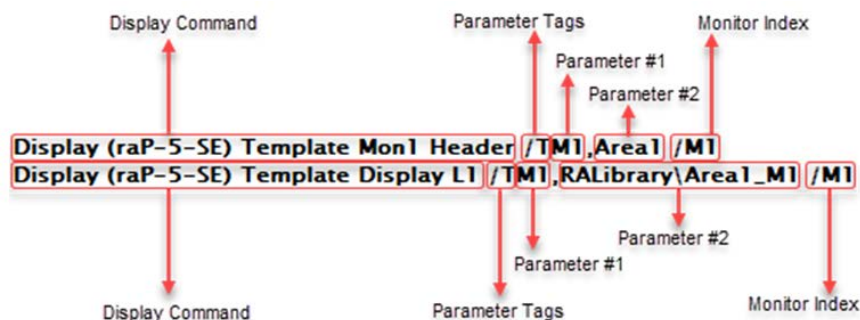
2. Open the folder "RALibrary". There are four sample tags that are created in this folder. Duplicate each tag - groupings of four tags for each L1 area, one for each possible monitor. "Area1" should be replaced with the name of your L1 area. Update the description field and enter the header file display name (*.gfx) in the initial value field for each header in the appropriate tag. Repeat for each L1 area.



Parameter Explanation

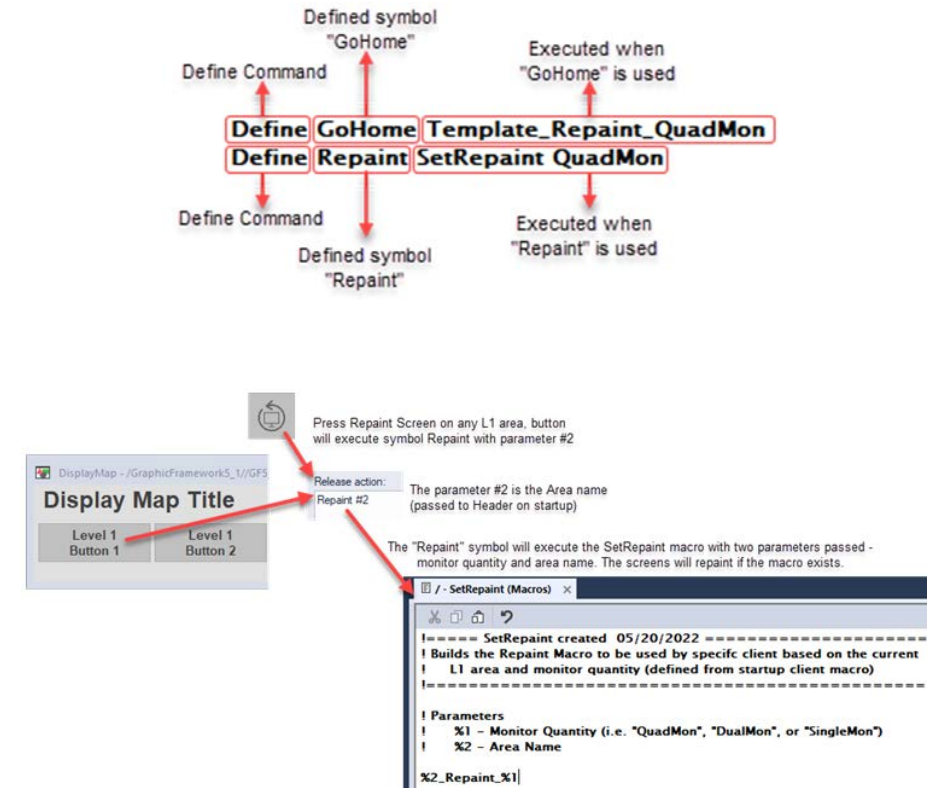
Client Startup Macro

Each monitor has two button command lines that are associated with the first time that the displays are opened on the given monitor of the client. It is important that these parameters are configured correctly in the client startup macro and when switching between L1 areas. The following is an explanation of what the commands and parameters mean for each monitor, in this example for monitor 1. This needs to be duplicated for each monitor used in the client.



Display Command	Item	Description and Configuration
Display (Header Display)	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	M1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the Header Display. The parameter must be updated to M1, M2, M3, or M4 depending on which monitor the display opens on.
	Area1	Parameter #2 - Parameter is used to pass the current L1 area name to commands executed on the Header Display. The parameter must correspond to the area name for that L1 and match the area name that is used in the HMI Tags for multimonitor.
	/M1	Monitor Index - A built-in parameter in FactoryTalk View to command the display to open on a particular monitor. The parameter must be updated to /M1, /M2, /M3, or /M4 depending on which monitor it opens on.
Display (Process Display)	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	M1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the Process Display. The parameter must be updated to M1, M2, M3, or M4 depending on which monitor the display will open on.
	RALibrary\Area1_M1	Parameter #2 - Parameter is used to pass the HMI tag name for the current L1 area and current monitor. The value of the tag will be used to identify what the Header display file name is for that monitor. The parameter must be updated to the specific L1 area and monitor for this client. See HMI Tags, Headers, and Macros for more details on how to configure the HMI tags for multi-monitor.
	/M1	Monitor Index - A built-in parameter in FactoryTalk View to command the display to open on a particular monitor. The parameter must be updated to /M1, /M2, /M3, or /M4 depending on which monitor it opens on.

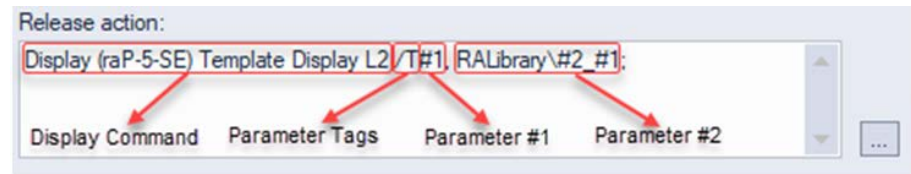
There are two defined symbols in the startup macro that are crucial for the client to operate as expected. As noted in FactoryTalk View Studio help documentation, the system command Define creates a symbol at run time on the FactoryTalk View SE Client. This command is only run on the FactoryTalk View SE Client. Symbol definitions are valid only during the current client session; they must be redefined each time that the client is restarted. Symbols are typically defined in a startup or login macro.



Define Command	Description and Configuration
Define GoHome	<p>The "GoHome" symbol is used exclusively for the Home Button that is used on the header display. The "GoHome" symbol is defined when the client starts up and the definition is specific to that client. Regardless of which L1 area an operator might end up navigating to, when the Home Button is pressed, it executes the defined macro. The macro that is used for this symbol should be configured to open on the correct number of monitors for that client. The "GoHome" symbol should be used on every startup macro.</p> <p>Replace "Template_Repaint_QuadMon", "Template_Repaint_DualMon", or "Template_Repaint_SingleMon" with the Repaint macro to be used for this specific client.</p>
Define Repaint	<p>The "Repaint" symbol is used for both the Repaint Screen Button header display and L1 Navigation from the display map pop-up. The "Repaint" symbol is defined when the client starts up and the definition is specific to that client. When navigating to another L1 area or repainting the screen on any area, the symbol executes the pre-defined macro "SetRepaint", with two parameters passed to the macro.</p> <p>%1 Parameter - This is configured in the definition of in the startup client and should be either "QuadMon", "DualMon", or "SingleMon" depending on how many monitors that client has. User must update this in the startup client file.</p> <p>%2 Parameter - This is passed automatically when the button is pressed. No configuration is required as long as the display commands are configured as required in the startup macro.</p>

L2 Navigation

Each button on the L2 Navigation bar needs the following button command constructed to pass the proper Parameter Tags to the process display.



Command	Item	Description and Configuration
Display [L2 Process Display]	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	#1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the L2 process display. The "#1" will use the Parameter #1 pushed into the Header Display when it was initially opened. No configuration required; leave #1 as is.
	RALibrary\#2_#1	Parameter #2 - Parameter is used to pass the HMI tag name for the current L1 area and current monitor. The value of the tag will be used to identify what the Header display file name is for that monitor. The "#1" and "#2" will use the Parameter #1 and Parameter #2 pushed into the Header Display when it was initially opened. No configuration required; leave #1 and #2 as is. See HMI Tag, Headers, and Macros for more details on how to configure the HMI tags for multi-monitor.

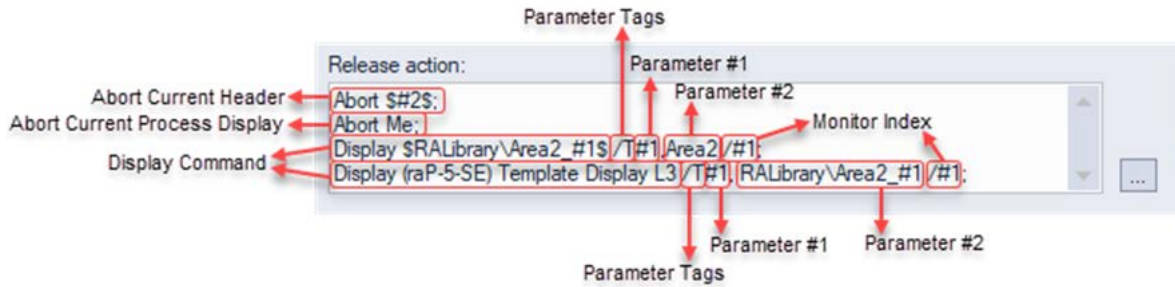
L3 Navigation

Each button on the L3 Navigation bar needs the following button command constructed to pass the proper Parameter Tags to the process display. This will also be used for any Off-Screen navigation buttons within the same L1 area.



Command	Item	Description and Configuration
Display [L3 Process Display]	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	#1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the L3 process display. The "#1" uses the Parameter #1 pushed into the Process Display when it was initially opened. No configuration required; leave #1 as is.
	#2	Parameter #2 - Parameter is used to pass the HMI tag name for the current L1 area and current monitor. The value of the tag is used to identify what the Header display file name is for the monitor active for this display. The "#2" uses the Parameter #2 pushed into the Process Display when it was initially opened. No configuration required; leave #2 as is. See HMI Tags, Headers, and Macros for more details on how to configure the HMI tags for multi-monitor.

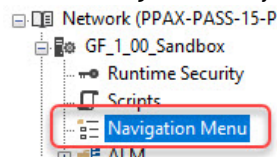
Off-Screen Navigation




Command	Item	Description and Configuration
Abort [Header Display]	Abort \$#2\$	This command aborts the header that is open above the process display. The "\$#2\$" inserts the value of the parameter "#2" that was passed into the display that the button is executing from. The value of "#2" is the HMI tag for the header display file name.
Abort [Process Display]	Abort Me	This command aborts the process display that the button is executing from.
Display [Header Display]	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	#1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the Header Display. In this instance, we take the parameter that is passed from when the display was originally opened. No configuration required.
	Area2	Parameter #2 - Parameter is used to pass the destination L1 area name to commands executed on the destination Header Display of the other L1 area. The parameter must correspond to the area name for the destination L1 area and match the area name that is used in the HMI Tags for multimonitor.
	/#1	Monitor Index - A built-in parameter in FactoryTalk View to command the display to open on a particular monitor. In this instance, it takes the parameter that is passed from when the display was originally opened. No configuration required.
Display [Process Display]	/T	Parameter Tags - A built-in parameter that indicates the next items that are listed in the command will be Parameter Tags. No configuration required.
	#1	Parameter #1 - Parameter is used to pass the monitor number to commands executed on the Header Display. In this instance, we take the parameter that is passed from when the display was originally opened. No configuration required.
	RALibrary\Area2_#1	Parameter #2 - Parameter is used to pass the HMI tag name for the destination L1 area and current monitor. The value of the tag is used to identify what the Header display file name is for that monitor in the other L1 area. The parameter must be updated to the specific L1 area, but the "#1" should be left as is. See HMI Tags, Headers, and Macros for more details on how to configure the HMI tags for multi-monitor.
	/#1	Monitor Index - A built-in parameter in FactoryTalk View to command the display to open on a particular monitor. In this instance, it takes the parameter that is passed from when the display was originally opened. No configuration required.

Navigation Menu

FactoryTalk View SE has a built-in navigation menu that can be used with the Graphic Framework v1.00 in place of the L2 and L3 navigation, with one navigation menu configured for each L1 area. The navigation menu is configured directly in FactoryTalk View SE.

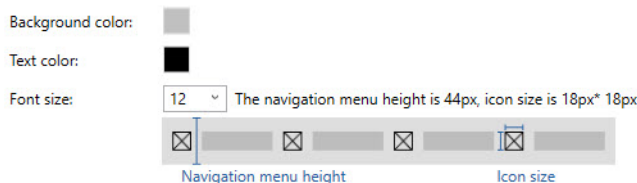



The following are recommendations for how to configure the navigation menu when using it with the Graphic Framework [v1.00]. These directions assume that all L1, L2, L3, and header displays have been populated for the user's application. When using the navigation menu, the headers should be developed using the template file "(raC-1.00-SE) Template Header Nav Menu" and L1, L2, and L3 displays should be developed using the template file "(raC-1.00-SE) Template Display Nav Menu".

1. Open the Navigation Menu by double-clicking it in the application explorer.
2. Select the "Add navigation menu" button . Create a navigation menu for each L1 area.
3. Double-click one of the navigation menus created in the previous step. The following settings are recommended for each navigation menu.

Property	Recommended setting
Background color	RGB {192,192,192}
Text color	RGB {0,0,0}
Font size	12
Enable Backward, Forward, and History buttons	Feature is optional
Enable search	Feature is optional

Navigation menu appearance



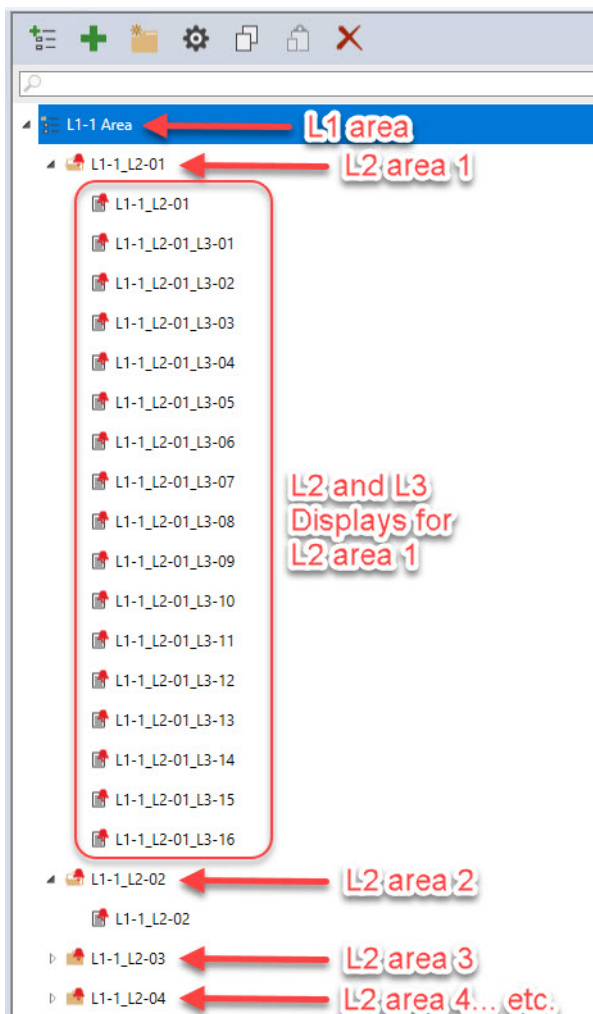
4. Click the OK button to save the settings and return to the main configuration menu.
5. Click the "Add menu items" button . Add all L2 and L3 displays that are available in this L1 area.

Note: It is OK if the displays are added in any order. They can be reorganized after being added.



You can save time by pre-organizing your L2 and L3 into L2 folders in application explorer before adding the display to the navigation menu and the tool pre-populates the navigation folders in the same way.

6. Organize your navigation menu into folders if they are not already organized. Each L2 area should have a folder as shown.



7. Click the first L2 folder and then select "Settings". Add the following alarm source to create alarm indication roll-up on that folder. Replace "L1_Name1" with the alarm group name for this L1 area and replace "L2_Name01" with the alarm group name for this L2 area.

L1_Name1.L2_Name01..*

IMPORTANT Include the "*" as shown. This is a wildcard that allows any alarm in these groups to indicate on this folder.

8. You can optionally add a device path to create automatic diagnostic indication on the folder. Click OK when done configuring the L2 folder settings to return to the main navigation menu configuration window.
9. Repeat the previous two steps for each L2 folder.
10. Click the first L3 display in the first L2 folder and then select "Settings". Click "Notification" tab at the top. Add the following alarm source to create alarm indication roll-up on that display. Replace "L1_Name1" with the alarm group name for this L1 area, replace "L2_Name01" with the alarm group name for this L2 area, and replace "L3_Name01" with the alarm group name for this L3 area.

L1_Name1.L2_Name01.L3_Name01..*

IMPORTANT Include the "*" as shown. This is a wildcard that allows any alarm in these groups to indicate on this folder.

- 11. You can optionally add a device path to create automatic diagnostic indication on the display. Click the “Command” tab to return back to the main L3 display settings.
- 12. Verify that the “Name” and “Linked Display” are correct.
- 13. Add the following “Parameter Tags” and “Monitor Index”. Click OK to close the display settings once the display commands are configured.

Display Command:

☐ Parameter File

☒ Parameter Tags

M1,RALibrary\TestNavMenu1_M1

☐ /B - Display In Background

☐ /E - Disable Enter Key

☐ /U - Upload Data Entry Fields

☐ /O - Disable Key List

☒ /M - Monitor Index

Monitor 1

☐ /H - Height

☐ /W - Width

Note: See section [Create HMI Tags for Multi-Monitor and Repaint on page 70](#) for details on creating HMI tags to allow navigation to function properly between L1 areas.

Note: Only single monitor is supported with navigation menu and Graphic Framework v1.00. The monitor index selection is recommended to be configured for future multimonitor functionality.

- 14. Repeat steps 10...13 for each L2 display call under each L2 folder. The alarm source entry should match step 7. The display commands should match step 13.
- 15. Exit the Navigation Menu configuration when all folders and displays are configured.

Make sure that the following macro files are used to create the application macros when using the Navigation Menu:

 - Template_NavMenu_ClientStartup_SingleMon
 - Template_NavMenu_Repaint_SingleMon

These macros contain the correct call for header, navigation menu, and main display.

The following is a summary of pros and cons to using the Navigation Menu compared to legacy button navigation with L2 and L3 button bars:

Pros	Cons
<ul style="list-style-type: none">• Built into FactoryTalk View SE• Configurable in one place• Built-in tag search• Built-in forward, backward, and historical navigation• Unlimited number of displays per L2 and L3 area• Simple to move, add, and reconfigure L2 and L3 areas• Easily configure display commands directly in the navigation menu configuration• Built in alarm source and automatic diagnostic indication and rolup• Option to use icons instead of text on dropdown and display navigation	<ul style="list-style-type: none">• Currently only supported for single monitor with the Graphic Framework• No tool to bulk configure the navigation - must manually be configured directly in FactoryTalk View SE• If more L2 folder areas are configured than fit on a single monitor, the alarm indication is not visible for those L2 areas.

FactoryTalk Resource & Status Server Configuration

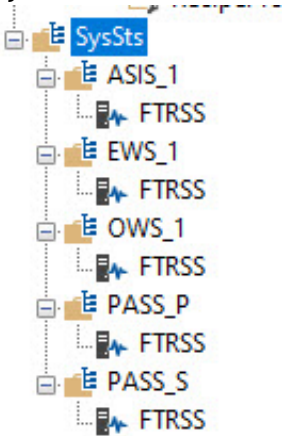
The FactoryTalk Resource and Status server (FTRS server) is a new feature available starting in FactoryTalk View SE v15 with FactoryTalk Services Platform v6.50 and later. Faceplates and global object for use with FactoryTalk Resource and Status server is only available with the Graphic Framework v1.00. The following section outlines recommendations for setup and configuration of the Resource and Status server on your system.

Setup

The FactoryTalk Resource and Status server can monitor three main items:

- Performance of the workstation it is installed on, including CPU usage, storage space, and memory capacity.
- Status of specific system processes of the workstation if configured to do so.
- Connection of the workstation to other devices in the system including other workstations, network switches, and infrastructure components.

The Resource and Status server can be installed on any workstation or virtual machine that is joined to the FactoryTalk Directory. It is recommended to place each instance of the Resource and Status server in a separate area - this will optimize data reference lookup. Here is an example of a recommended configuration:



Device Status Configuration

On the “Device Status” tab of the FTRS server configuration, network connection to different devices can be set up. Here are some recommendations for the device status configuration:

- It is best practice to keep the update rates slow (large intervals between pings and large intervals of each cycle) to reduce the loading on the system network.
- It is recommended to configure a device once per system. For instance, pick the workstation that hosts the FactoryTalk Directory and check the connection from that server to all other devices in the system from there. This reduces duplicate network connection checking to the same device.
- Fill out the Alias Name so that it is populated on the global object.

Process Configuration

On the “Process” tab of the FTRS server configuration, specific tasks or processes running on a system can be set up to be monitored. Here is a list of recommended tasks to monitor based on typical servers and workstations in a system:

System Device	Process Name	Purpose
FactoryTalk Directory server	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	

System Device	Process Name	Purpose
Process Automation System Server (PASS)	DatalogServ.exe	HMI Failure
	DataLogProPlusReadService.exe	
	DataLogProPlusServer.exe	
	DataLogProPlusService.exe	
	DatalogReadExService.exe	
	EventDetector.exe	
	FTViewServiceHost.exe	
	HMIServer.exe	
	LocalDBOps64.exe	
	RuntimeSearch.Service.Host.exe	
	RuntimeSearchListenService.exe	
	SAUserServ.exe	
	ServerFramework.exe	
	ServerScriptService.exe	
	TagSrv.exe	
	ViewSharedService.exe	
	w3wp.exe	
	RSlinxNG.exe	FactoryTalk Linx Failure
	RnaAeServer.exe	FTAE Failure
	RnaAlarmDetector.exe	
	FTAE_HistServ.exe	
	DataAccessServiceHost.exe	
	FTAEArchiver.exe	
	FTAE.Web.DataProvider.Service.exe	
	FTAE.Web.DataProvider.RunTime.exe	
	FTAE.Web.DataProvider.Historian.exe	
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
Thin Manager server	ThinServer.exe	TM Failure
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
Engineering Workstation	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
Operator Workstation	DisplayClient.exe	Client Failure
	SAUserServ.exe	
	SEGfxVBACli.exe	
	CommandCliSrv.exe	
	RPMClientSideService.exe	
	RSOAAServer.exe	Activation Failure
	RnaAlarmMux.exe	FTAE Failure
	FTAEExpressionServer.exe	
	FTAECommandServer.exe	
	RnaAlarmMailRuleConfig.exe	
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
Information Management Server (SQL)	sqlservr.exe	SQL Failure
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	

System Device	Process Name	Purpose
Information Management Server (FactoryTalk Historian)	pibasess.exe	FactoryTalk Historian Failure
	piogsvr.exe	
	pinetmgr.exe	
	pisnapss.exe	
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
FactoryTalk Asset Centre Server	RA.FTAC.Server.exe	FTAC Server Failure
	Rsvchost.exe	FTAC Diagnostic Failure
	w3wp.exe	FTAC Web Service Failure
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	
FactoryTalk Asset Centre Agent	RA.FTAC.AgentControllerService.exe	FTAC Agent Controller Failure
	RA.FTAC.InventCrawler.Server.exe	FTAC Asset Inventory Disaster Recovery Failure
	RA.FTAC.MonitorRuntime.exe	FTAC Change Detect Service Failure
	Rsvchost.exe	FTAC Diagnostic Failure
	VerificationAgent.exe	FTAC Logix Disaster Recovery Failure
	RnaDirServer.exe	FTD Failure
	RNADirMultiplexor.exe	

Macros

Macros are an important component in the graphic framework. There are several macros that are provided as a template.

- Template_ClientStartup_SingleMon
- Template_ClientStartup_DualMon
- Template_ClientStartup_QuadMon
- Template_NavMenu_ClientStartup_SingleMon
- Template_Repaint_SingleMon
- Template_Repaint_DualMon
- Template_Repaint_QuadMon
- Template_NavMenu_Repaint_SingleMon
- SetRepaint

The following are optional macros that are used for applications using both Process Library 4.10 and Process Library 5.00 or later.

- NavToFaceplate with mixed library
- NavToDisplay with mixed library

Template_ClientStartup

Number of Monitors	Commands
1	<pre> ===== Macro File Updated 02/22/2022 ===== ! ! Use this macro for initial Client Startup with single monitor. ! This should be used for system with a single display monitor of 1920 x 1080 resolution. ! ===== !***** ! Uncomment the following lines to use the Organization Tree View (raP_Opr_OrgView) ! Define SW_RedefineShowTreeCmd DefineShowTreeCmd 0 ! SW_RedefineShowTreeCmd /Area1/DATA::[Hardware] ! ! Define HW_RedefineShowTreeCmd DefineShowHWTreeCmd 0 ! HW_RedefineShowTreeCmd /Area1/DATA::[Hardware] !***** Display (raP-5-SE) Template Mon1 Header /TM1,Area1 /M1 Display (raP-5-SE) Template Display L1 /TM1,RALibrary\Area1_M1 /M1 Define GoHome Template_Repaint_SingleMon Define Repaint SetRepaint SingleMon </pre>
1 - With Navigation Menu	<pre> ! — Template_NavMenu_ClientStartup_SingleMon Macro — Revision 1.00-00 ————— ! ! Use this macro for initial Client Startup with single monitor. ! This should be used for system with a single display monitor of 1920 x 1080 resolution. ! ===== Display (raC-1_00-SE) Template Header Nav Menu /TM1,Template_NavMenu /M1 /DT DisplayNavigationMenu "L1-1 Area" /DT Display (raC-1_00-SE) Template Display Nav Menu /TM1,RALibrary\Template_NavMenu_M1 /M1 Define GoHome Template_NavMenu_Repaint_SingleMon Define Repaint SetRepaint SingleMon </pre>
2	<pre> ===== Macro File Updated 02/22/2022 ===== ! ! Use this macro for initial Client Startup with dual monitors. ! This should be used for system with two display monitors of 1920 x 1080 resolution. ! ===== !***** ! Uncomment the following lines to use the Organization Tree View (raP_Opr_OrgView) ! Define SW_RedefineShowTreeCmd DefineShowTreeCmd 0 ! SW_RedefineShowTreeCmd /Area1/DATA::[Hardware] ! ! Define HW_RedefineShowTreeCmd DefineShowHWTreeCmd 0 ! HW_RedefineShowTreeCmd /Area1/DATA::[Hardware] !***** Display (raP-5-SE) Template Mon1 Header /TM1,Area1 /M1 Display (raP-5-SE) Template Display L1 /TM1,RALibrary\Area1_M1 /M1 Display (raP-5-SE) Template Mon2 Header /TM2,Area1 /M2 Display (raP-5-SE) Template Display L1 /TM2,RALibrary\Area1_M2 /M2 Define GoHome Template_Repaint_DualMon Define Repaint SetRepaint DualMon ! </pre>

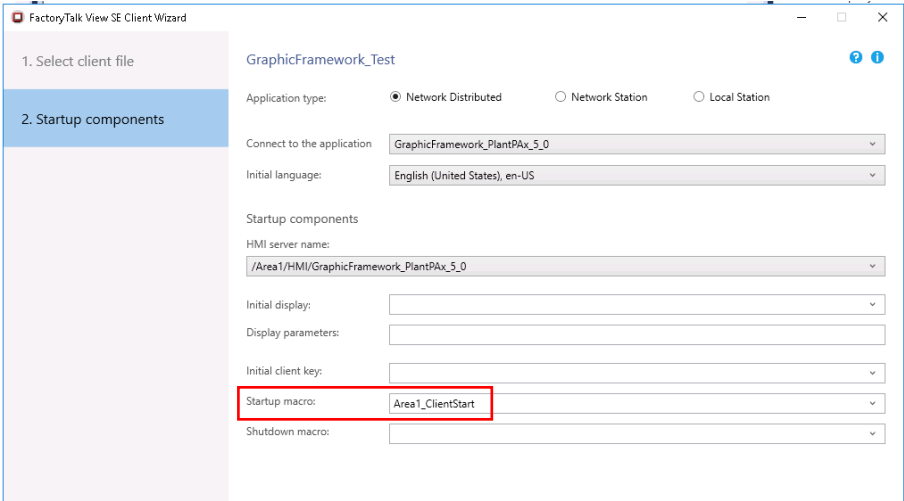
Number of Monitors	Commands
4	<pre>!===== Macro File Updated 02/22/2022 ===== ! ! Use this macro for initial Client Startup with quad monitors. ! This should be used for system with four display monitors of 1920 x 1080 resolution. ! !===== !***** ! Uncomment the following lines to use the Organization Tree View (raP_Opr_OrgView) ! Define SW_RedefineShowTreeCmd DefineShowTreeCmd 0 ! SW_RedefineShowTreeCmd /Area1/DATA::[Hardware] ! ! Define HW_RedefineShowTreeCmd DefineShowHWTreeCmd 0 ! HW_RedefineShowTreeCmd /Area1/DATA::[Hardware] !***** Display (raP-5-SE) Template Mon1 Header /TM1,Area1 /M1 Display (raP-5-SE) Template Display L1 /TM1,RALibrary\Area1_M1 /M1 Display (raP-5-SE) Template Mon2 Header /TM2,Area1 /M2 Display (raP-5-SE) Template Display L1 /TM2,RALibrary\Area1_M2 /M2 Display (raP-5-SE) Template Mon3 Header /TM3,Area1 /M3 Display (raP-5-SE) Template Display L1 /TM3,RALibrary\Area1_M3 /M3 Display (raP-5-SE) Template Mon4 Header /TM4,Area1 /M4 Display (raP-5-SE) Template Display L1 /TM4,RALibrary\Area1_M4 /M4 Define GoHome Template_Repaint_QuadMon Define Repaint SetRepaint QuadMon</pre>

The Client Startup macro should be linked to the Startup Macro selected in the client file configuration. There should be at least one Client Startup macro for every L1 area.

```
Define SW_RedefineShowTreeCmd DefineShowTreeCmd 0
SW_RedefineShowTreeCmd /Area1/DATA::[Hardware]

Define HW_RedefineShowTreeCmd DefineShowHWTreeCmd 0
HW_RedefineShowTreeCmd /Area1/DATA::[Hardware]
```

The two "Define" functions that are shown in the preceding screenshot are used to configure the Client Startup Macro for use with the Hardware and Software Tree Views. For each client used, the number at the end of these "Define" calls should increment by one (for example, if you have five clients in a system, each client would be assigned a different number: 0, 1, 2, 3, 4, etc). The shortcut that is defined for each in the second line should be a valid shortcut that is used for to initialize on. The shortcut should include the full area and short name.



The main purpose of this macro is to open the header and the L1 overview display for each monitor. The specific displays must be updated for each macro that is created to point to the Header and screen for that L1 area.

The macro is also used to define the GoHome and Repaint symbol commands. GoHome is used for Home button on the Header. The definition of the GoHome has to be updated to point to the specific L1 area and client repaint macro. The Repaint symbol is used for Repaint Screens button as well as the L1 Navigation. The number of monitors that are used by the client should be updated here (QuadMon, DualMon, or SingleMon)

Template_Repaint

The repaint macro is identical to the client startup macro, except the symbol definitions are not executed. At least one repaint macro should be created for every L1 area. If there multiple clients per L1 area with differing number of monitors, one repaint macro per each client, with specified monitor quantity, should be created for each L1 area. The repaint macro is used by the Repaint symbol, which executes the macro SetRepaint. The repaint macro should be created regardless of if the Repaint button is used, because it will be used by the Home button and for navigation between L1 areas.

The following example shows a system with four display monitors.

```
!===== Macro File Updated 10/07/2021 =====
!
! Use this macro to Repaint the current L1 area graphics windows.
! This macros is also utilized by the defined "GoHome" function (see ClientStartup macro)
! This should be used for system with four display monitors of 1920 x 1080 resolution.
!
!=====

Abort * /D

Display (raP-5-SE) Template Mon1 Header /TM1,Area1 /M1
Display (raP-5-SE) Template Display L1 /TM1,RALibrary\Area1_M1 /M1

Display (raP-5-SE) Template Mon2 Header /TM2,Area1 /M2
Display (raP-5-SE) Template Display L1 /TM2,RALibrary\Area1_M2 /M2

Display (raP-5-SE) Template Mon3 Header /TM3,Area1 /M3
Display (raP-5-SE) Template Display L1 /TM3,RALibrary\Area1_M3 /M3

Display (raP-5-SE) Template Mon4 Header /TM4,Area1 /M4
Display (raP-5-SE) Template Display L1 /TM3,RALibrary\Area1_M4 /M4
|
```

SetRepaint

The SetRepaint macro is used to build the correct repaint macro to use based on the area parameter and quantity of monitors that are configured in the startup client macro. No configuration of this macro is required. It must exist in the macro list for navigation to work properly.

```
!===== SetRepaint created 05/20/2022 =====
! Builds the Repaint Macro to be used by specfic client based on the current
! L1 area and monitor quantity (defined from startup client macro)
!=====

! Parameters
! %1 - Monitor Quantity (i.e. "QuadMon", "DualMon", or "SingleMon")
! %2 - Area Name

%2_Repaint_%1
```

NavToDisplay with Mixed Library / NavToFaceplate with Mixed Library

The two macros "NavToDisplay with mixed library" and "NavToFaceplate with mixed library" are only necessary for applications that are using both the Process Library 4.10 and Process Library 5.00 or later. There is added logic in these two macros to ensure that navigation is possible between 4.10 object faceplates and 5.00 object faceplates and vice versa. The macros work with two redirect displays - "(raP-5_30-SE) Common-Redirect-to-4_10" and "(raP-5_30-SE) Common-Redirect-to-5_00".

The macros are used in place of the NavToDisplay and NavToFaceplate. To use:

1. Rename the existing NavToDisplay and NavToFaceplate to a temporary name such as NavToDisplay_Original and NavToFaceplate_Original. This is in case the macros are needed for review in the future, they will already be available.
2. Rename "NavToDisplay with mixed library" and "NavToFaceplate with mixed library" to NavToDisplay and NavToFaceplate respectively. The macros are ready use.

```
! Macro "NavToDisplay with mixed library"
! version 5.10-00 Release
! Rockwell Automation Library of Process Objects
!
! *** Alternate version for compatability with 4.10 Library objects ***
! *** Rename this macro to "NavToDisplay" when you have 4.10 and 5.00 (or newer) objects in the same application ***
!
! This macro navigates to the faceplate for the object specified by the by the given Path and Tag names
! The parameters are separated by spaces. Parameters are as follows:
!
! %1 - Object Tag Name
! %2 - Pass thru information (or "{x}" if not used)
! %3 - Display Type
! %4 - Display Parameter
! %5 - Display Parameter
!
! An example:
! NavToDisplay [MyPath]MyObject {x} "Faceplate" /X100 /Y200
!
! Copyright © Rockwell Automation, Inc. All Rights Reserved

! If the @Library Extended Tag Property is not found, then assume this is a 4.x object
If Comm_Err( {%1.@Library} ) Then
  Display (raC-5-SE) Common-Redirect-to-4_10 /T%1 /RP
Else
  Display ($%1.@Library$-SE) $%1.@Instruction$-%3 /T{Const\Num2},%1,%2,%4,%5,{x} %4 %5
Endif;

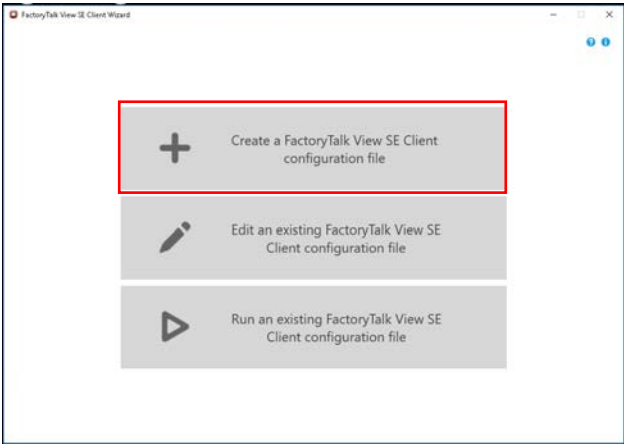
! Macro "NavToFaceplate with mixed library"
! version 5.10-00 Release
! Rockwell Automation Library of Process Objects
!
! *** Alternate version for compatability with 5.00 or newer Library objects ***
! *** Rename this macro to "NavToFaceplate" when you have 4.10 and 5.00 (or newer) objects in the same application ***
!
! This macro navigates to the faceplate for the object specified by the by the given Path and Tag names
! The parameters are separated by spaces. Parameters are as follows:
!
! %1 - Object Tag Name
! %2 - Pass thru information (Usually Object Path Name not including tag)
! %3 - Display Parameter
! %4 - Display Parameter
!
! An example:
! NavToFaceplate [MyPath]MyObject [MyPath] /X100 /Y200
!
! Copyright © Rockwell Automation, Inc. All Rights Reserved

! If the tag HMI_Lib is not found, then assume this is a 5.x object
If Comm_Err( {%1.HMI_Lib} ) Then
  Display (raC-5-SE) Common-Redirect-to-5_00 /T%1 /RP
Else
  Display ($%1.HMI_Lib$) $%1.HMI_Type$-Faceplate /T{Const\Num2},%1,%2,%3,%4,{x} %3 %4
Endif;
```


Client File Setup (.CLI)

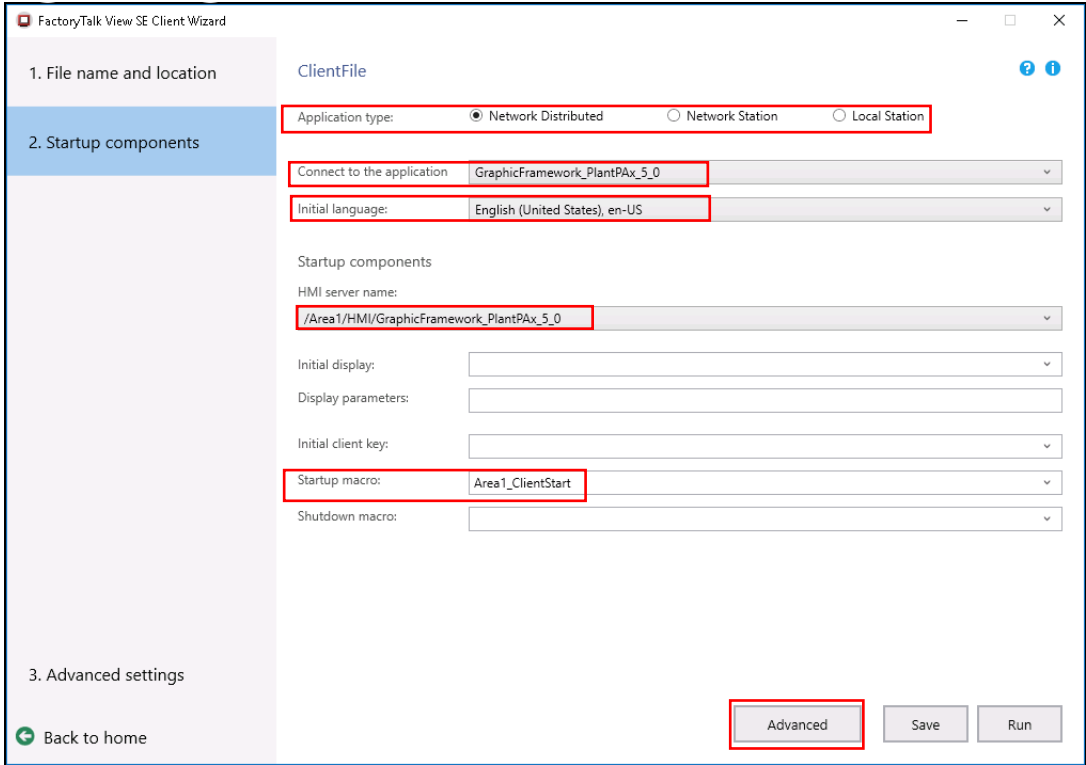
Configure a basic client file to use with the Graphic Framework.

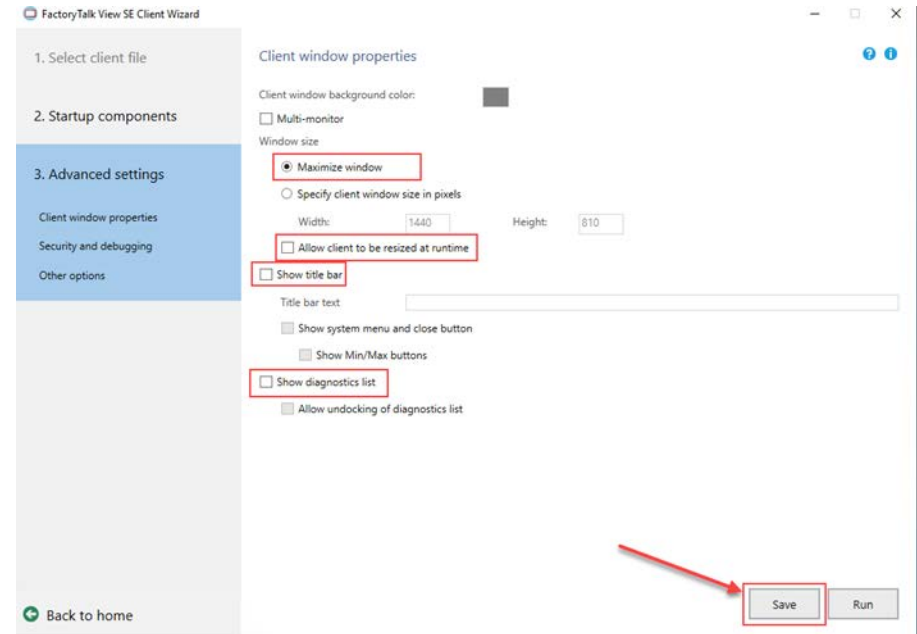
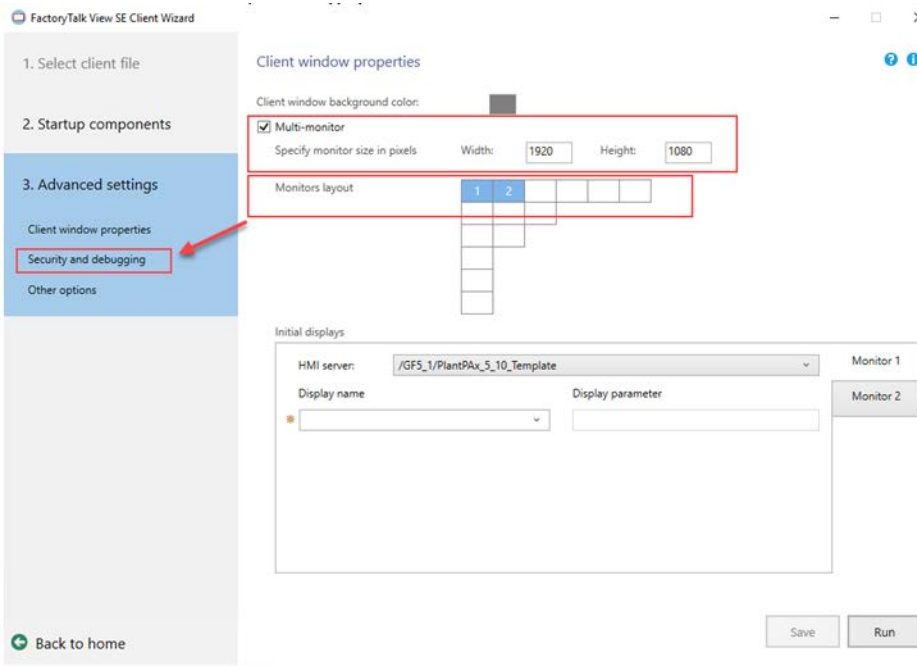
1. Go to FactoryTalk View SE Client Wizard and select Create a FactoryTalk View SE Client configuration file.

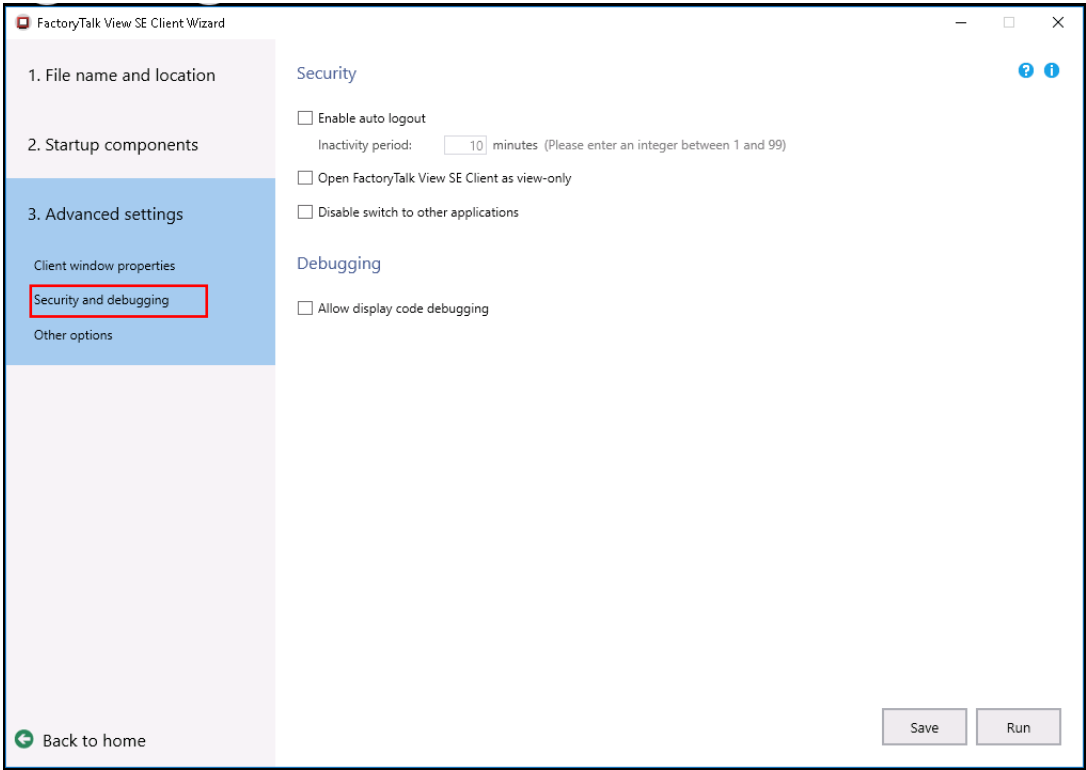
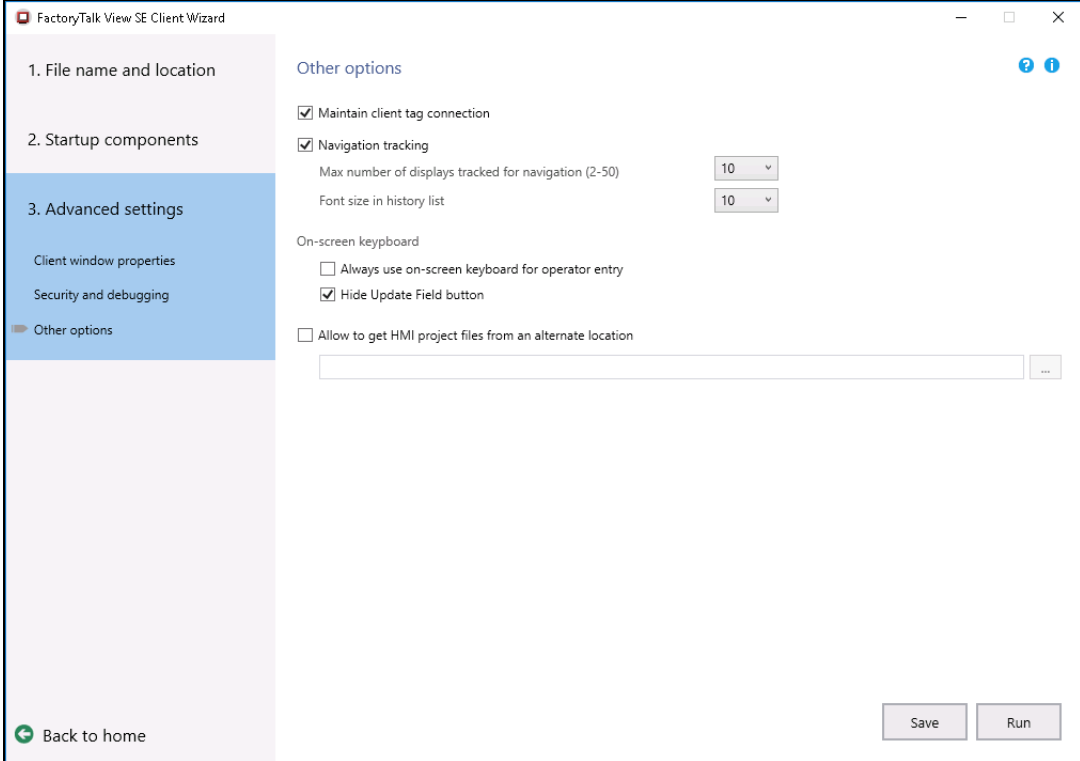


2. In the wizard, set the following:

On this Page	Action
File Name and Location	Name the client file and select the store location. In most cases, the store location should be the OWS desktop.
Startup Components	Select the appropriate application type. Connect to the correct application and select the initial language. Select the HMI server name within your application. Select the Startup Macro created in Macros . Select Advanced.



On this Page	Action
Advanced Settings	<p>Select "Maximize Window" - Note: It is assumed that all monitors in the system have a resolution of 1920x1080. The PlantPAx Graphic Framework is designed to work with this resolution. Unselect "Allow Client to be resized at runtime". Unselect "Show title bar" and unselect "Show diagnostic list". Save the configuration.</p> 
Advanced Settings - Multi-Monitor	<p>If multiple monitors are used for the station that will run this client, check the box for "Multi-monitor". Additional options appear. Specify the monitor size as 1920x1080 and pick the desired monitor layout. In the following example, dual monitors side by side are being used. No additional configuration is required for each monitor - the startup macro that is selected on the Startup Components tab configures the screens when the client starts. Save and select the "Security and debugging".</p> 

On this Page	Action
<p data-bbox="121 569 227 619">Security and Debugging</p>	<p data-bbox="310 149 1502 210">Depending on application requirements, select or unselect the “Enable auto logout”, “Open FactoryTalk View SE Client as view-only”, or “Disable switch to other applications”. The Debugging feature is only used for troubleshooting. Select “Other Options” tab.</p> <div data-bbox="358 222 1437 987">The screenshot shows the 'FactoryTalk View SE Client Wizard' window with the 'Security and debugging' tab selected in the left sidebar. The 'Security' section on the right contains three checkboxes: 'Enable auto logout' (unchecked), 'Open FactoryTalk View SE Client as view-only' (unchecked), and 'Disable switch to other applications' (unchecked). The 'Enable auto logout' option has an 'Inactivity period' of 10 minutes. The 'Debugging' section contains one checkbox: 'Allow display code debugging' (unchecked). At the bottom right are 'Save' and 'Run' buttons. At the bottom left is a 'Back to home' button with a green arrow icon.</div>
<p data-bbox="121 1451 235 1480">Other Options</p>	<p data-bbox="310 1035 1502 1096">Review the options and modify if necessary. Leave at default if there are not application-specific requirements. Save and close or Select Run to run the Client file.</p> <div data-bbox="391 1108 1464 1864">The screenshot shows the 'FactoryTalk View SE Client Wizard' window with the 'Other options' tab selected in the left sidebar. The 'Other options' section on the right contains several settings: 'Maintain client tag connection' (checked), 'Navigation tracking' (checked), 'Max number of displays tracked for navigation (2-50)' (set to 10), 'Font size in history list' (set to 10), 'On-screen keyboard' section with 'Always use on-screen keyboard for operator entry' (unchecked) and 'Hide Update Field button' (checked), and 'Allow to get HMI project files from an alternate location' (unchecked) with an empty text field and a browse button. At the bottom right are 'Save' and 'Run' buttons. At the bottom left is a 'Back to home' button with a green arrow icon.</div>

Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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