

Rockwell Automation Application Content

Machine Builder Libraries



Quick Start Guide

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://literature.rockwellautomation.com>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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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.

IMPORTANT

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

ATTENTION



Identifies information about practices or circumstances or death, property damage, or economic loss. Attentions avoid a hazard, and recognize the consequence.

SHOCK HAZARD



Labels may be on or inside the equipment, 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.

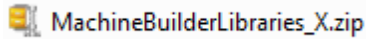
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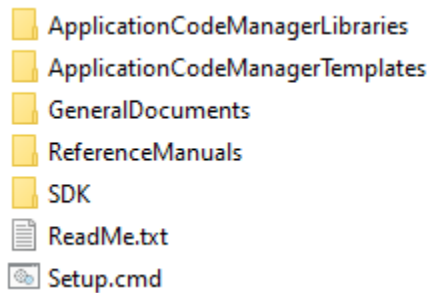
1 Introduction

This document provides a quick reference on how to begin using Machine Builder Library content.

Once the release package has been downloaded from the Product Compatibility and Download Center, extract the files to the PC to a desirable location.



Once extracted, the contents can be browsed.

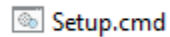


Folder	Contents
ApplicationCodeManagerLibraries	Registerable libraries for use with Application Code Manager 3.0 and forward. (*hsl4)
ApplicationCodeManagerTemplate	Display Template files for Fwkb_DisplayME and Fwkb_DisplaySE display library in Application Code Manager
GeneralDocuments	Quick Start Product Profile Release Notes
Reference Manuals	Reference manuals pertaining to the individual library objects
SDK	Directory containing Software Development Kit files for user to create library objects according to Machine Builder Library standards.
ReadMe.txt	README for setup script
Setup.cmd	Command script to set up library and register all components

2 Deploying Logical Objects

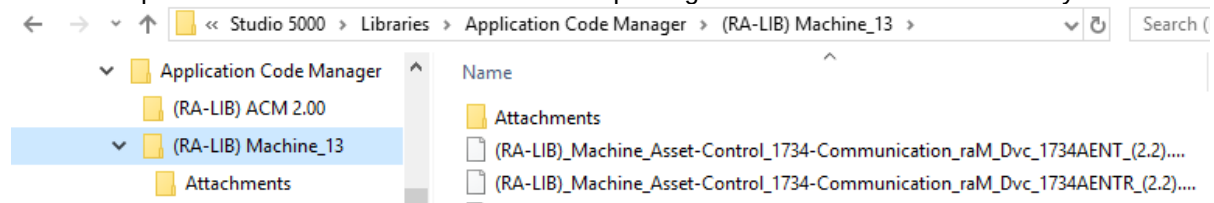
2.1 Registering Machine Builder Libraries

Run the Setup.cmd command script.

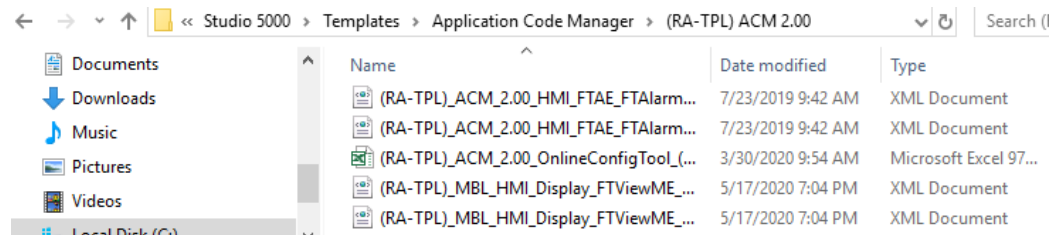


When launched, the Setup.cmd does the following

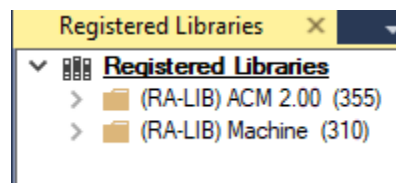
1. Copies libraries from folders in the release package to the default location used by ACM for ACM libraries.



2. Copies templates from folders in the release package to default location used by ACM for templates.



3. Registers libraries in currently active ACM database.



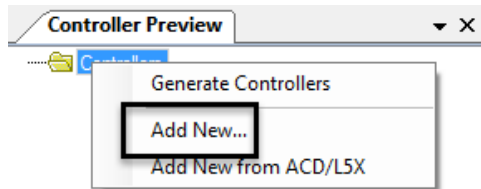
3 Application Example

Below is a simple application example that demonstrates the steps to add a controller, framework and select objects relevant for the application. The steps include both Logix controller objects and visualization objects.

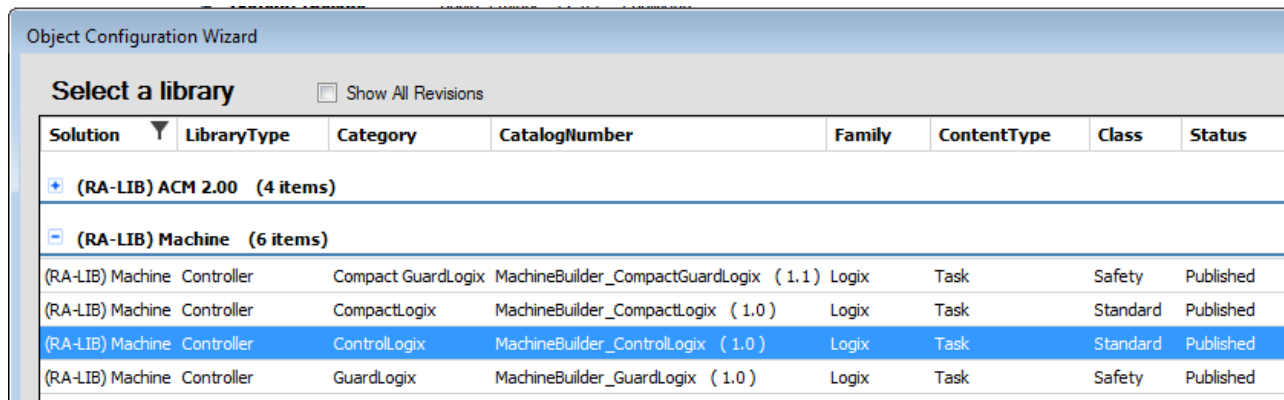
The user will also need to have the **(RA-LIB) Device** library downloaded from the Product and Compatibility Download Center site and registered in ACM. The Power Device library is obtained by searching for “Power Device Library” or optionally selecting this package while downloading the Machine Builder Library. This library provides device objects for hardware modules.

3.1 Add Controller

In either the Controller Preview or the Class View window, select ‘Controllers’, right click, and choose ‘Add New’.



Select the desired controller from the available registered libraries.

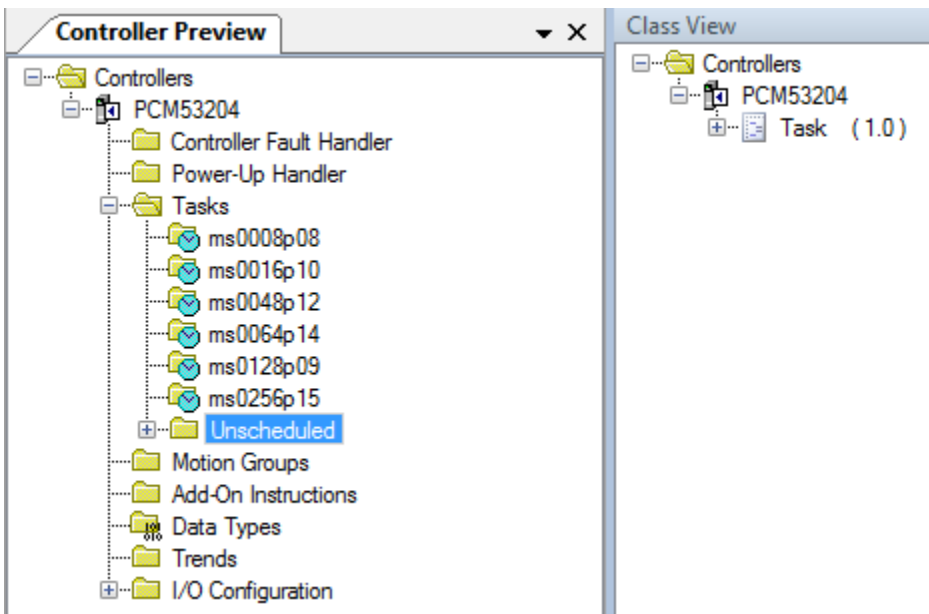


Name the controller “PCM53204” and configure the controller, HMI Area Path, and motion parameters. The AreaPath is the shortcut that will be used in the FactoryTalk View project. For the purposes of this project, the Historian parameters can be left as default.

Parameters

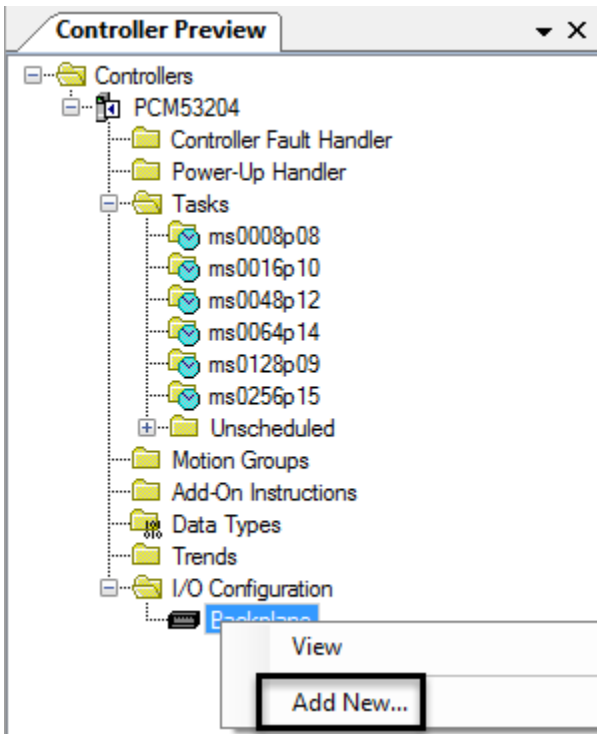
01 - Controller	
ChassisName	Local
Slot	0
Size	17
SoftwareRevision	32
ProcessorType	1756-L85E
02 - HMI	
AreaPath	::[PCM53204]
03 - Historian	
HistorianPath	Application/Area:RSLink Enterprise:[shortcut]
FTLDInterfaceNo	1
Motion	
ConfigureMotion	True
MotionGroupName	MotionGroup

Preview the contents in the Controller Preview window. As the controller library is added, several user tasks are preconfigured for immediate content deployment.



3.2 IO Modules

I/O modules can be also added into the ACM project. In the Controller Preview, select the backplane in the I/O configuration and choose 'Add New'.



Add an Ethernet card by expanding 'Communication' and selecting the desired communication card.

Object Configuration Wizard									
Select a library ☐ Show All Revisions									
Status	SchemaVersion	CatalogNumber	Family	LibraryType	ContentType	Solution	Category	Owner	
+ Analog (20 items)									
- Communication (6 items)									
Published	2.0.0	1756-CN2/C (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
Published	2.0.0	1756-CN2R/C (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
Published	2.0.0	1756-DNB (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
Published	2.0.0	1756-EN2T (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
Published	2.0.0	1756-EN2TR (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
Published	2.0.0	1756-EN3TR (2,0)	1756	Module	Task	(RA-LIB) ACM 2.00	Communication	Rockwell Automation	
+ Digital (42 items)									

Provide the module a name and desired module configuration.

Name:	Local_06
Description:	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-
Catalog Number:	1756-EN3TR (2.0) - Published
Solution:	(RA-LIB) ACM 2.00

Parameters	
Extended Configuration	
Enable Time Sync	True
Module Configuration	
Slot	6
ChassisName	Local
Address	192.168.1.10
RPI	10
Size	17
Unicast	0

Once the module configuration is finished, it will be displayed in the Controller Preview and can be reconfigured at any time.

System View

Project - TestPublish

- Historian
- HMI
- Used Libraries

Controller Preview

Controllers

- PCM53204
 - Controller Fault Handler
 - Power-Up Handler
 - Tasks
 - ms0008p08
 - ms0016p10
 - ms0048p12
 - ms0064p14
 - ms0128p09
 - ms0256p15
 - Unscheduled
 - Unscheduled Routines
 - Motion Groups
 - UngroupedAxes
 - Assets
 - I/O Configuration
 - Backplane
 - [6] 1756-EN3TR Local_06

Class View

Controllers

- PCM53204
 - 1756-EN3TR (2.0)
 - Local_06
 - Task (1.0)

Name:

Local_06

Description:

1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair Mec

Catalog Number:

1756-EN3TR (2.0) - Published

Solution:

(RA-LIB) ACM 2.00

Parameters

Extended Configuration

Enable Time Sync

True

Module Configuration

Slot

6

ChassisName

Local

Address

192.168.1.10

RPI

10

Size

17

Unicast

0

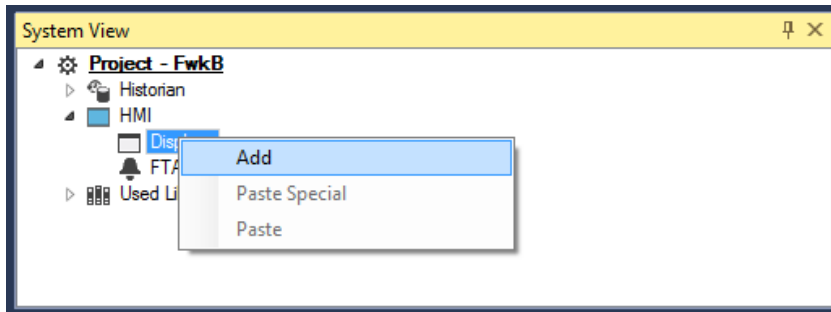
3.3 Equipment Framework

Equipment Framework 'B' provides a machine code framework based on international standards with the Physical Model (equipment hierarchy) derived from ISA-88 and a Procedural Model that follows ISA-TR88.00.02 defined modes and states.

3.3.1 Unit

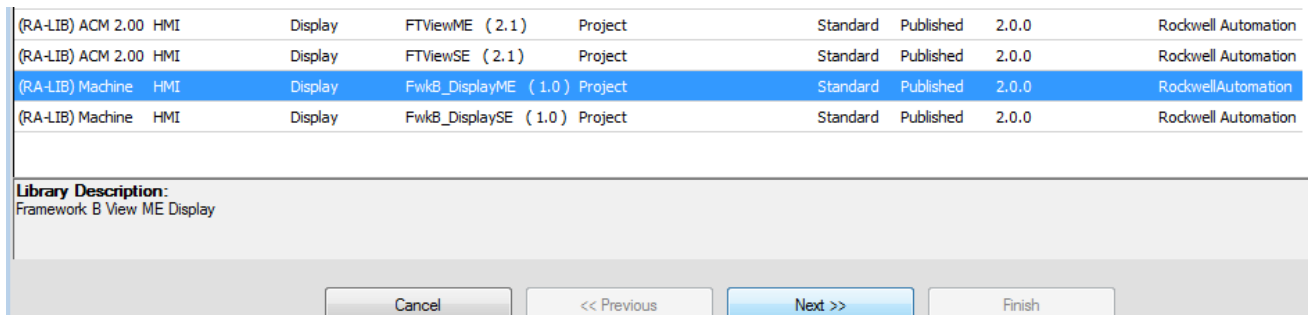
The 'ObjPrg_UnitModule_FB01UN01A' object is a program folder that provides defined inputs for attachment of field devices used to drive the mode/state model contained within, as well as defined outputs of mode and state for use in the rest of the control code. It can be used stand-alone or with one or more equipment modules. The suffix on the object is not meaningful for the user, but is used by ACM to sort out other framework objects for hierarchy.

Prior to Unit instantiation, create two HMI libraries with predefined displays. The Unit library object will automatically place its preconfigured HMI content into these locations. The following steps will explain this further.

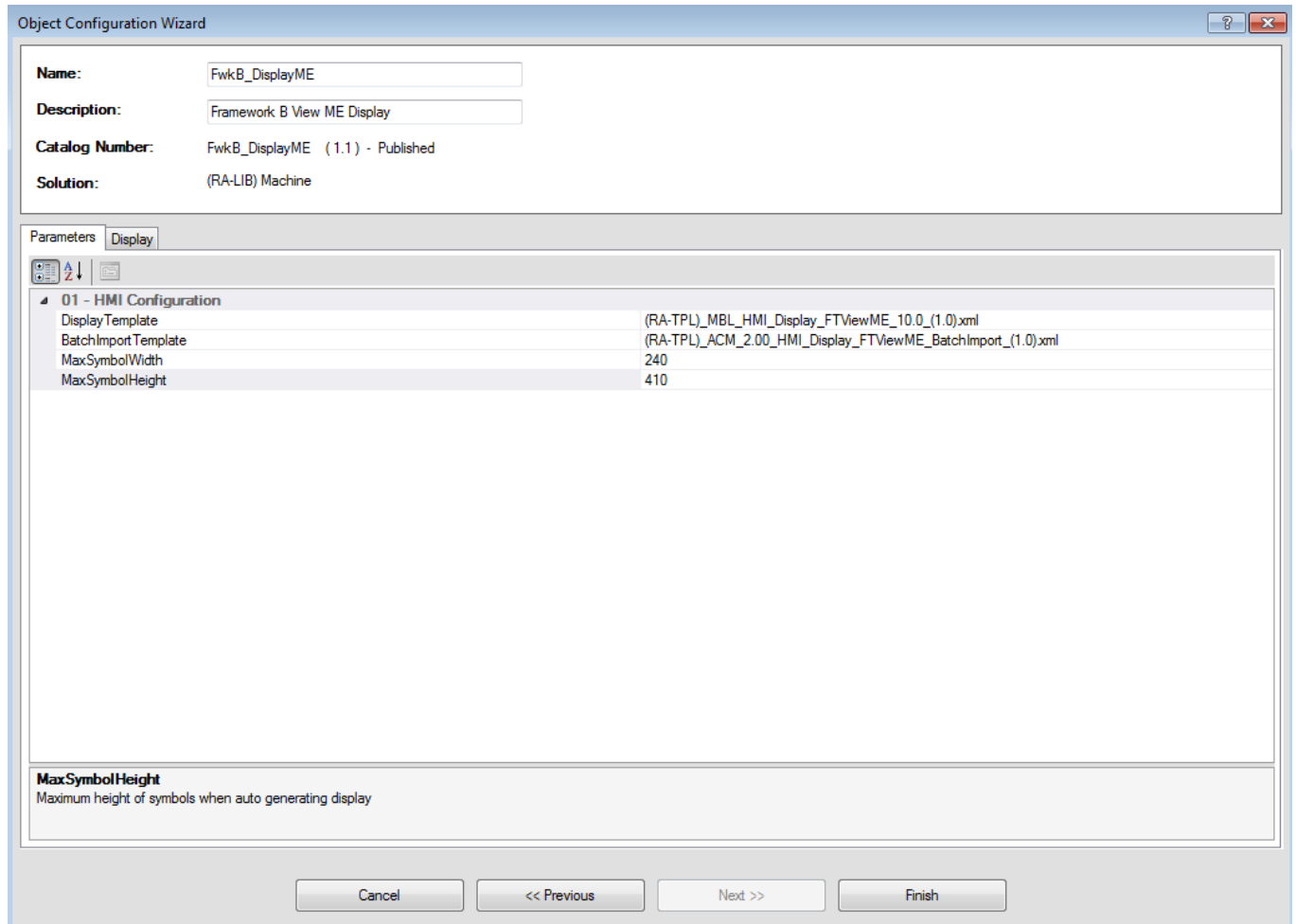


Select the desired Display library object. Library objects are provided for both SE displays and ME displays. User can select the appropriate choice for the application. If the Display libraries are not instantiated before the Unit object, automatic linking to displays will not occur and the user will have to create those links manually. At the onset, instantiate the Display library with default names. Once the Unit is instantiated, Display libraries can be renamed if desired.

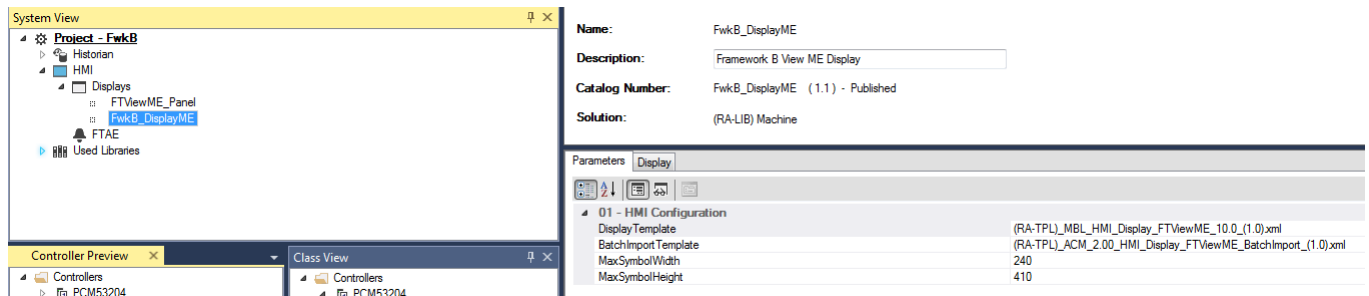
Select FwkB_DisplayME and click Next.



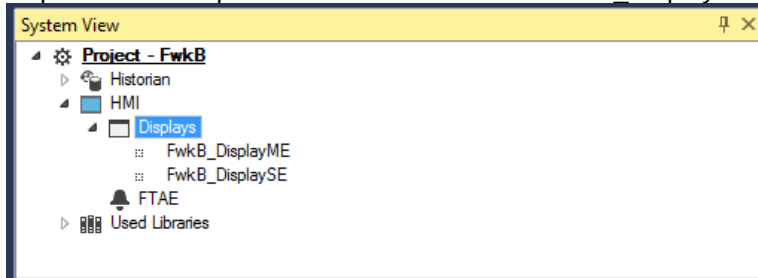
Select the desired template for FTVIEW ME version (this example will use V10) for the project and click Finish. This determines the version of FactoryTalk View Studio for which the displays will be created.



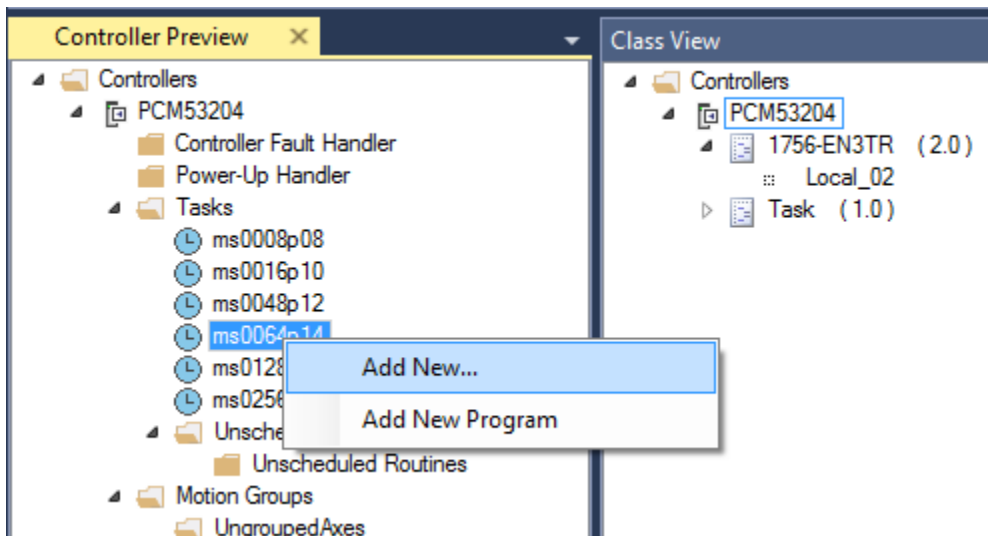
After instantiation, the library instance parameters can be viewed and modified under project HMI Displays in the System View. (In this case, the Display Template settings are not editable because it is a fixed Framework B template, so only Parameters can be changed.)



Repeat the same procedure to also insert the FwkB_DisplaySE object, if desired.

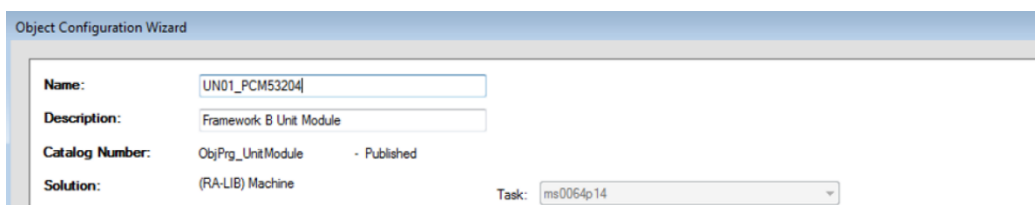


Now the Unit module object will be instantiated. In the Controller Preview window, select the desired Task, right click, and add a new Unit Module to the task.



Solution	LibraryType	Category	CatalogNumber	Family	ContentType	Class	St
☐ (RA-LIB) Machine (5 items)							
(RA-LIB) Machine	EquipmentFramework	Framework-B	ObjPrg_EquipmentModule_FB01EM01P (5.0)	Logix	Program	Standard	Put
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_EquipmentSupervisor_FB01EM01A (5.0)	Logix	Program	Standard	Put
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_EquipmentSupervisorItf_FB01IF02P (5.0)	Logix	Program	Standard	Put
(RA-LIB) Machine	EquipmentFramework	Framework-B	ObjPrg_UnitModule_FB01UN01A (5.0)	Logix	Program	Standard	Put
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_UnitModuleItf_FB01IF01P (5.0)	Logix	Program	Standard	Put

In the Object Configuration window, enter the name of the Unit Module instance, UN01_PCM53204. Then decide whether the FactoryTalk View ME Home Screen display will have resolution 800x480 or 640x480. Also, choose if ISA-TR88.00.02 'PackTags' data structures are to be instantiated into the project, if an Equipment Indicator (Stacklight) will be used and, if so, which code language to include.



Click “Next” to move to the Linked Libraries page. The definition objects for raM_Opr_ISATR880002_2015, raM_Dvc_EAVI5C_ISATR880002_2015, raM_Opr_EventCreate, and raM_CtrlEvtQueue must be created. The remaining linked library provides the Language Pack code and data for the framework if selected. Depending on the user choices on the Parameters tab, different Linked Library selections will be visible. One way to simplify this step is by clicking “Auto Create” button and let ACM do the bulk of the decision making.

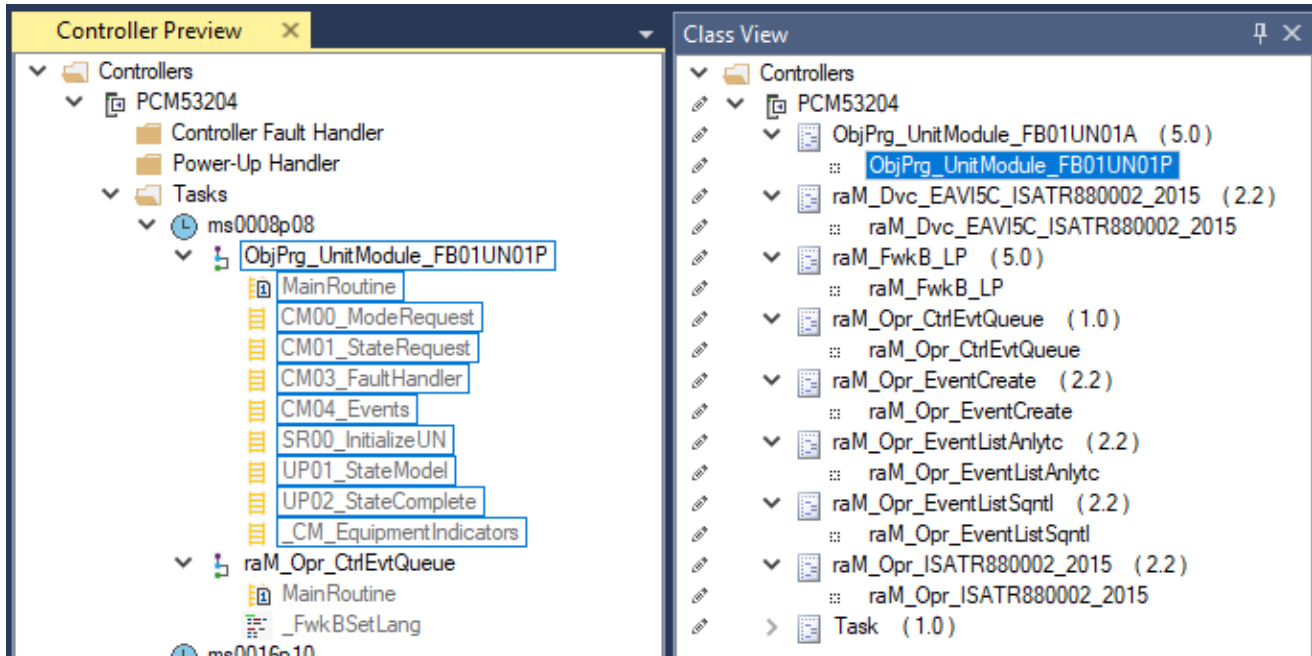
Clicking “Auto Create” button will open the Auto Create Linked Objects window.

Link Name	Library	Action	Object Name	Task Name	Program Name
raM_Opr_ISATR880002_2015	raM_Opr_ISATR880002_2015 (2.2)	Use Existing	raM_Opr_ISATR880002_2015		
raM_Dvc_EAVI5C_ISATR880002_2015	raM_Dvc_EAVI5C_ISATR880002_2015 (2.2)	Use Existing	raM_Dvc_EAVI5C_ISATR880002_2015		
raM_Opr_EventCreate	raM_Opr_EventCreate (2.2)	Create New	raM_Opr_EventCreate		
raM_Opr_CtrlEvtQueue	raM_Opr_CtrlEvtQueue (1.0)	Create New	raM_Opr_CtrlEvtQueue	ms0008p08	
raM_Opr_EventListAnytc	raM_Opr_EventListAnytc (2.2)	Create New	raM_Opr_EventListAnytc		
raM_Opr_EventListSqntl	raM_Opr_EventListSqntl (2.2)	Create New	raM_Opr_EventListSqntl		
raM_FwkB_LP	raM_FwkB_LP (5.0)	Create New	raM_FwkB_LP		
Queue	raM_Opr_CtrlEvtQueue (1.0)	Create New	raM_Opr_CtrlEvtQueue_Copy	ms0008p08	
raM_Opr_EventListAnytc	raM_Opr_EventListAnytc (2.2)	Use Existing	raM_Opr_EventListAnytc		
raM_Opr_EventListSqntl	raM_Opr_EventListSqntl (2.2)	Use Existing	raM_Opr_EventListSqntl		

Click “OK” to complete Auto Create using provided values. This will close the Auto Create window as well.

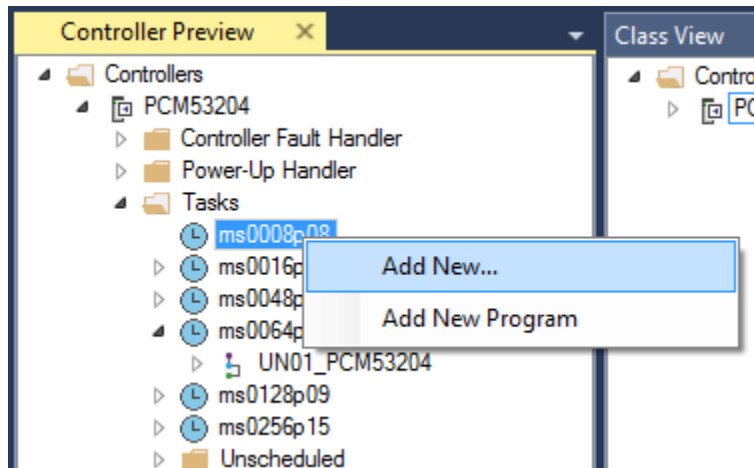
Notice the green check mark indicating linked library condition met. Click “Finish” button to complete the instantiation of Unit object.

When finished, the Unit Module can be viewed in both the Controller Preview window and the Class View window.



3.3.2 Equipment Modules

Next an Equipment Module will be added to the project. Select the desired task in the Controller Preview, right click, and add a new 'ObjPrg_EquipmentModule_FB01EM01P' object.



Solution	LibraryType	Category	CatalogNumber	Family	ContentType	Class	Status	
(RA-LIB) Machine (5 items)								
(RA-LIB) Machine	EquipmentFramework	Framework-B	ObjPrg_EquipmentModule_FB01EM01P (5.0)	Logix	Program	Standard	Published	2
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_EquipmentSupervisor_FB01EM01A (5.0)	Logix	Program	Standard	Published	2
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_EquipmentSupervisorItf_FB01IF02P (5.0)	Logix	Program	Standard	Published	2
(RA-LIB) Machine	EquipmentFramework	Framework-B	ObjPrg_UnitModule_FB01UN01A (5.0)	Logix	Program	Standard	Published	2
(RA-LIB) Machine	EquipmentFramework	Framework-B-Ext	ObjPrg_UnitModuleItf_FB01IF01P (5.0)	Logix	Program	Standard	Published	2

On the Parameters tab, enter the object name as "EM01_Conveyor" and an equipment module ID (EMID) as a unique number between 1 and 31 serving as an identifier for each Equipment Module associated to a Unit.

Object Configuration Wizard

Name:

EM01_Conveyor

Description:

Framework B Equipment Module

Catalog Number:

ObjPrg_EquipmentModule - Published

Solution:

(RA-LIB) Machine

Task:

ms0008p08

Parameters

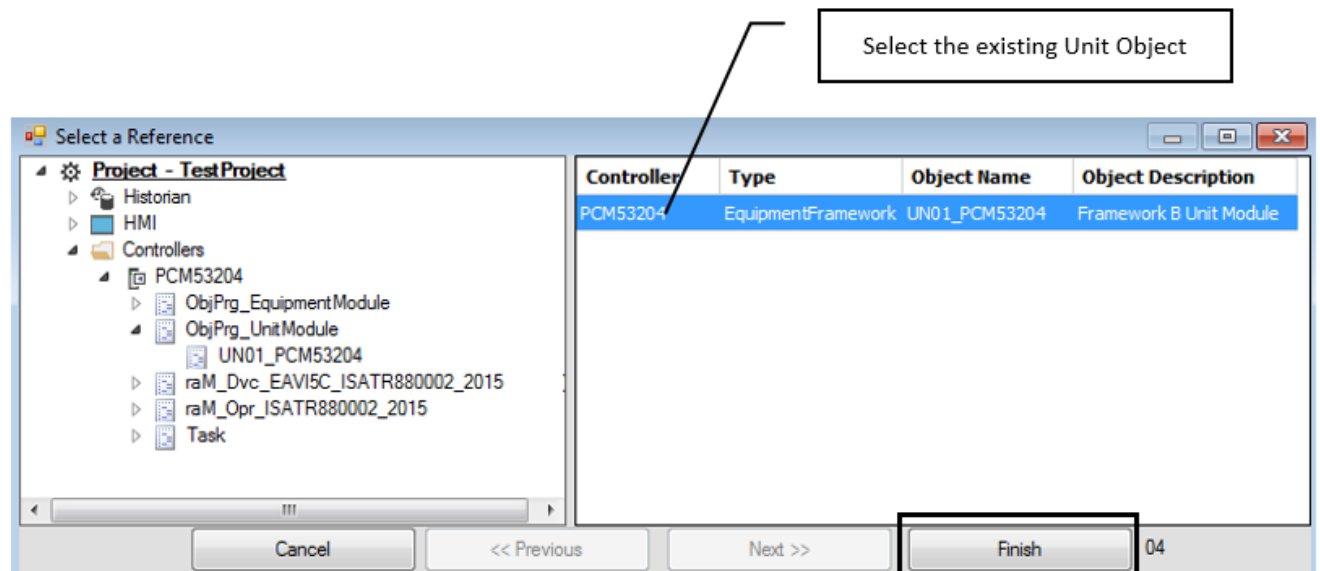
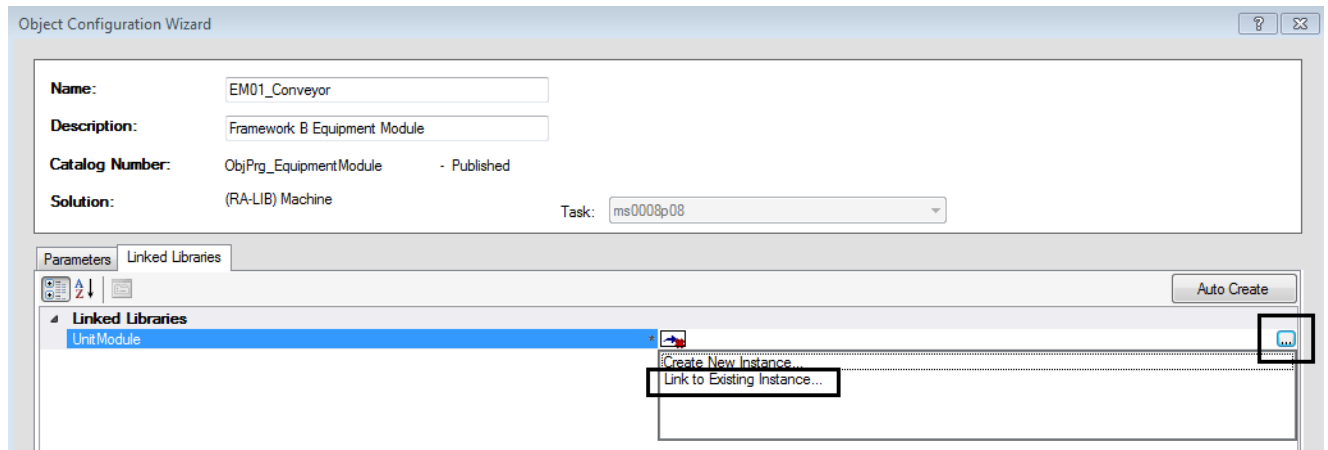
Linked Libraries

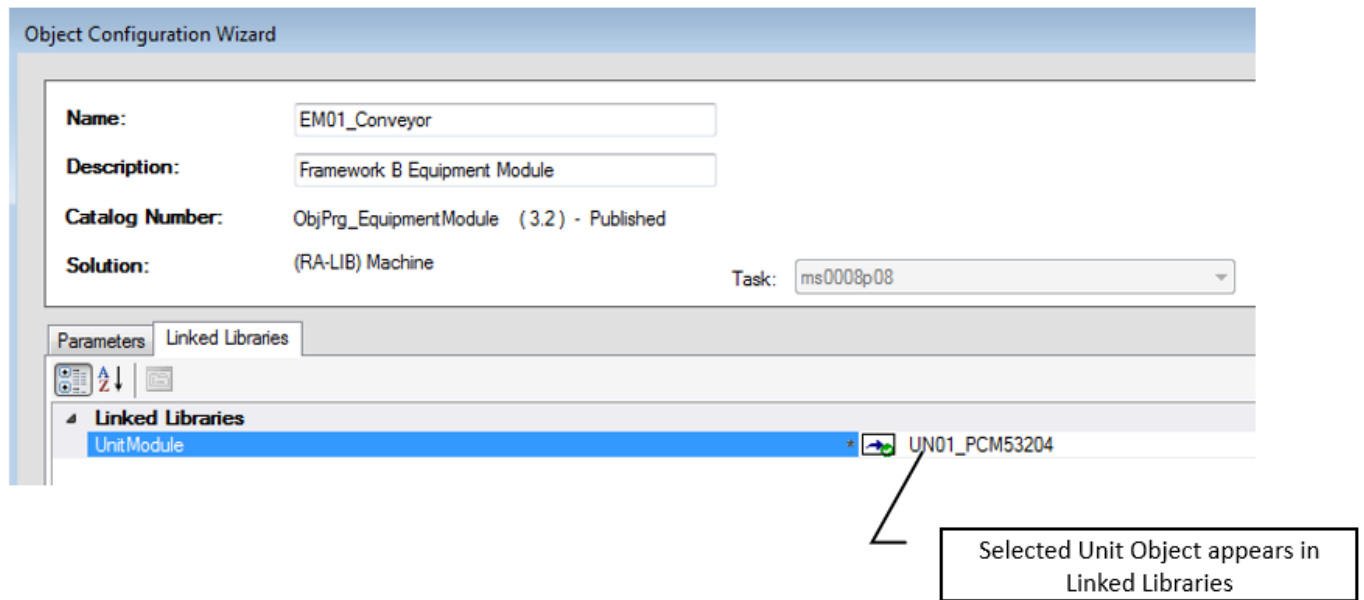
Misc

EMID

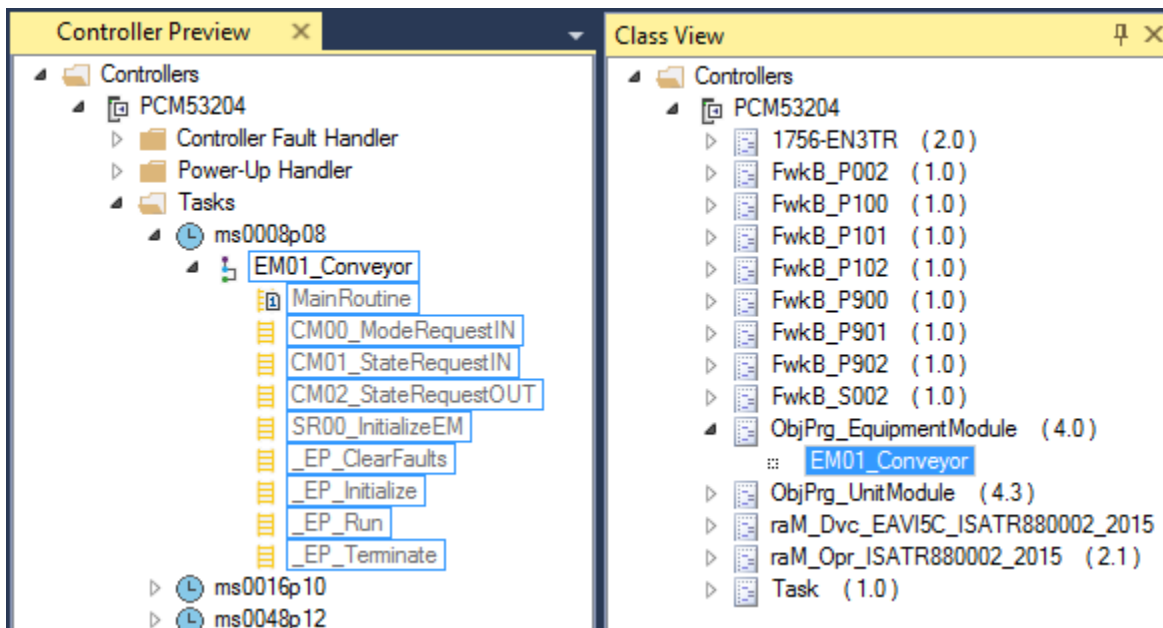
1

On the Linked Libraries tab, associate the Equipment Module with a Unit. This is accomplished by providing is a linked library to a Unit Module object. This linking will make all connections between objects.

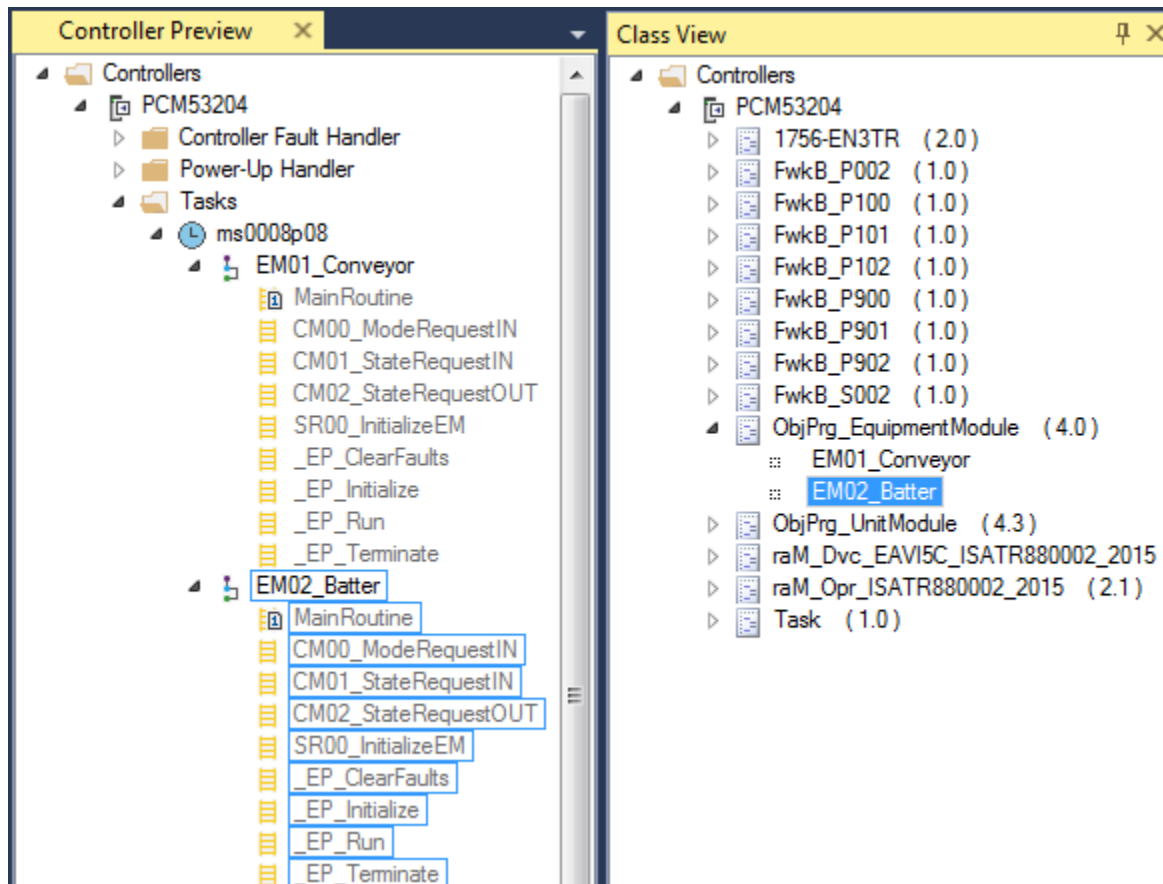




After the Equipment Module is added, it is visible in both the Controller Preview and the Class View windows.



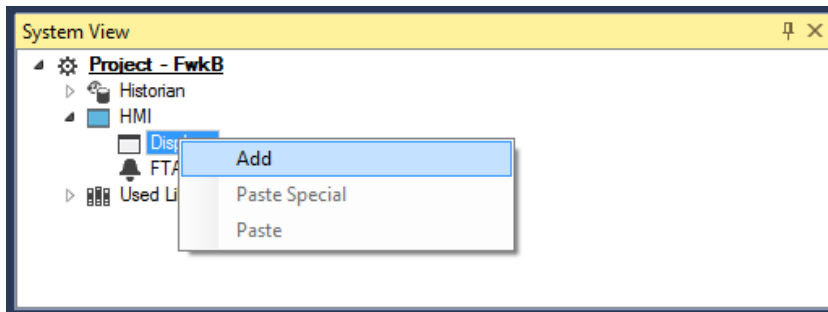
An additional equipment module called 'EM02_Batter' should be added, assigned an equipment module ID of 2, and linked to the same Unit. Once added, the second Equipment Module is visible in both windows.



3.4 Functional Objects

Now that the framework objects have been added and configured, it is necessary to add functional objects to the application. A conveyor application and valve application will be added to the respective control programs.

Before instantiating any additional objects, add a new Display template in order to have displays available for libraries with HMI content. This will be where other library objects can insert their configured faceplate callups. Select the appropriate platform that to be used..



Use generic ACM library for ME displays

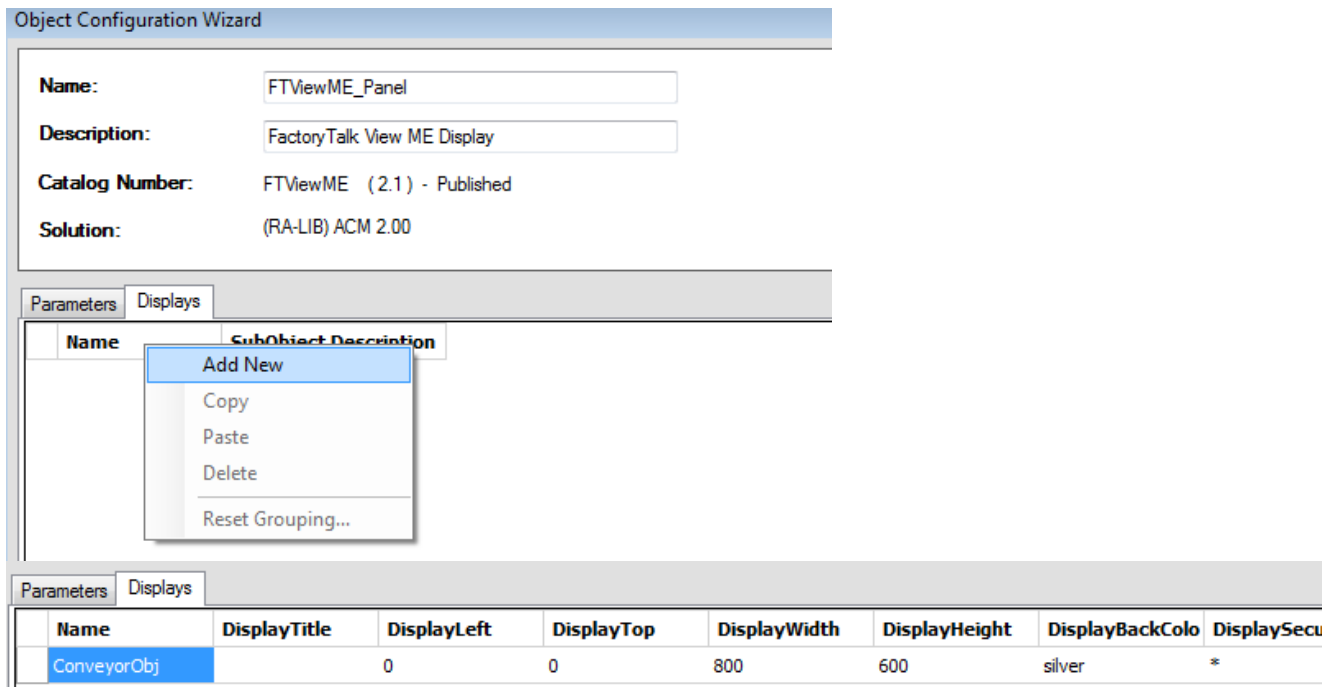
Solution	LibraryType	Category	CatalogNumber	Family	ContentType	Class
HMI (2 items)						
(RA-LIB) ACM 2.00	HMI	Display	FTViewME (2.1)	Project	Standard	
(RA-LIB) ACM 2.00	HMI	Display	FTViewSE (2.1)	Project	Standard	
Object Configuration Wizard						
Name:	FTViewME_Panel					
Description:	FactoryTalk View ME Display					
Catalog Number:	FTViewME (2.1) - Published					
Solution:	(RA-LIB) ACM 2.00					

3.4.1 Conveyor Object

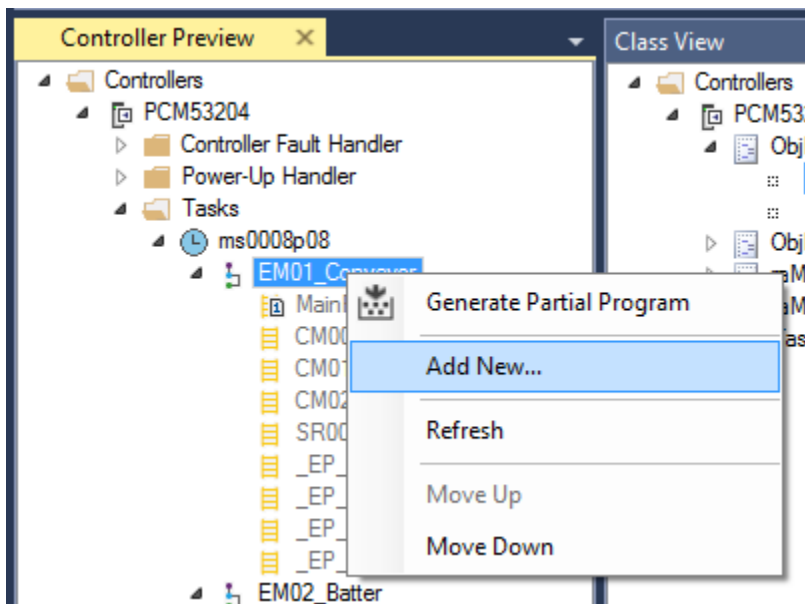
The application requires a Conveyor object to added to the EM01_Conveyor equipment module. The conveyor is driven by Servo Motor and Kinetix 5500 drive. The following are the design parameters:

1. Conveyor speed is commanded in Meters/Minute
2. Direction control is done using a direction bit
3. Conversion constant = 100mm per revolution of motor (this will be configured in Axis Properties Scaling)

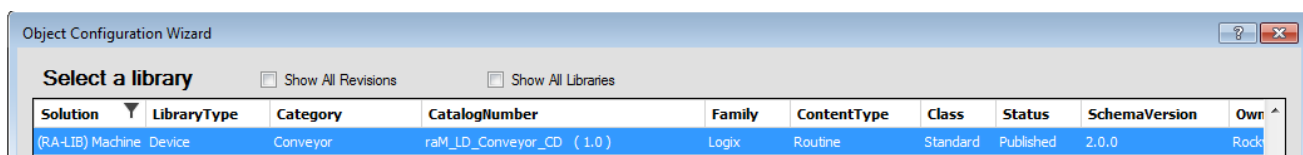
Before adding the Conveyor object, return to the Display template that was added in the previous step. After it has been selected, click the Displays tab, right click and choose Add New. A new subobject which will represent the display for our conveyor objects will appear. Name it ConveyorObj and leave all other settings default as this display is only temporary and will be deleted after configured objects are copied to their final displays.



Now add the Conveyor object by selecting “Add New” in the EM01_Conveyor Equipment of the Controller Preview.



Select raM_LD_Conveyor_CD object from object list.



The Object Configuration Wizard will open with default values in the parameters.

Set the following

- Conveyor Object name as Infeed_Conv
- Description as Infeed Conveyor
- It is desired to insert the run in _CM_Conveyor routine, so adjust the RoutineName parameter accordingly.
- Select Units/Min in Speed Time Base
- Speed profile as S-Curve
- User Unit Name as Meters
- Direction Control Source can be left default at Set_Direction_Input
- Object callout is going to be Detailed
- Select previously created display for ME associated display and navigate to ConveyorObj Display

Controller	Type	Object Name	Object Description
N/A	HMI	FwkB_DisplayME	Framework B View ME Display
N/A	HMI	FwkB_DisplaySE	FTView SE displays for framework B
N/A	HMI	FTViewME_Panel	FactoryTalk View ME Display

Name	DisplayTitle	DisplayLeft	DisplayTop	DisplayW
ConveyorObj		0	0	800

Object Configuration Wizard

Name:

Description:

Catalog Number: raM_LD_Conveyor_CD (2.5) - Published

Solution: (RA-LIB) Machine Task: Program:

Parameters Linked Libraries Interface Links

00 General

RoutineName: _CM_Conveyor

TagName: Infeed_Conv

01 Cfg

Speed_Time_Base: Units/Min

Speed_Profile: S-Curve

User_Unit_Name: Meters

Direction_Control_Source: Set_Direction Input

HMI Configuration

ObjectCalloutSelection: Detailed

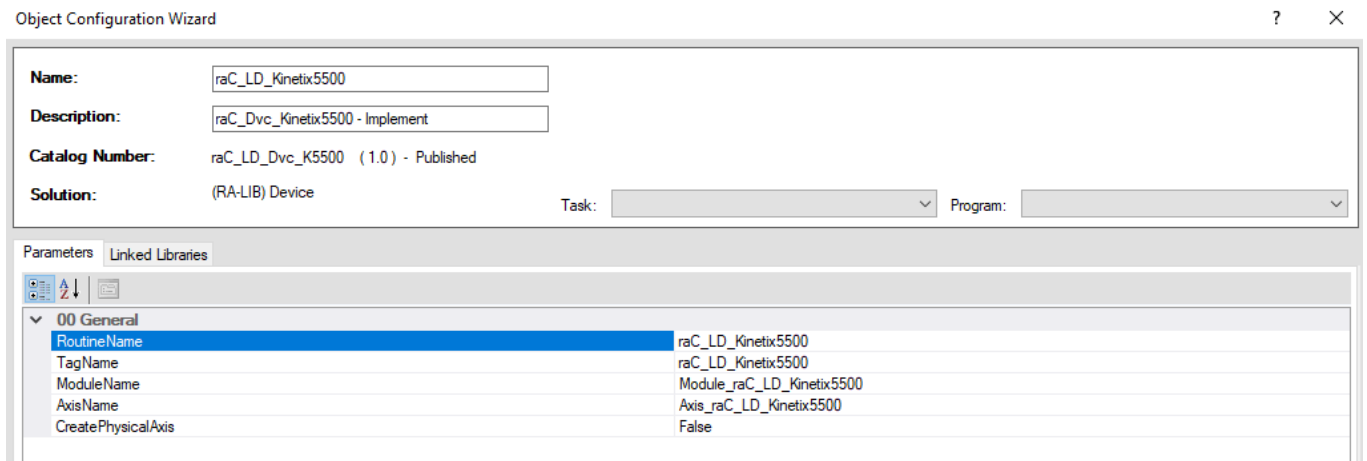
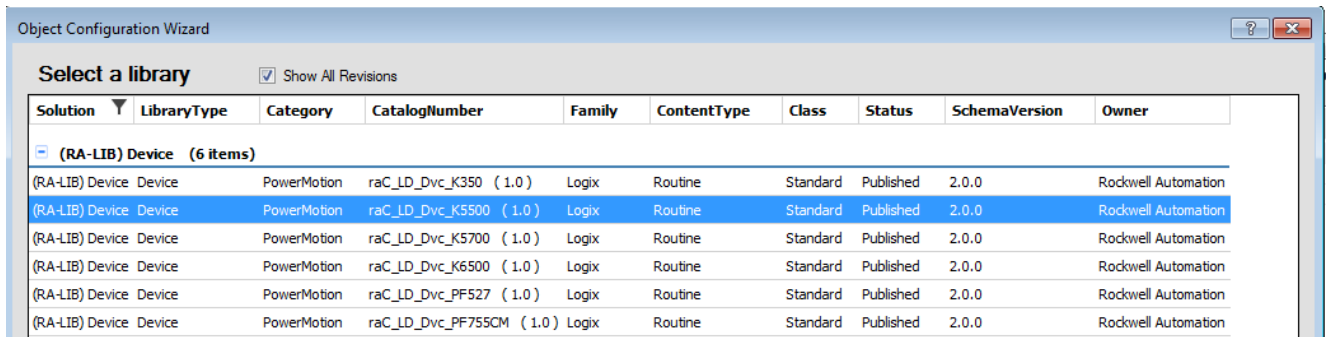
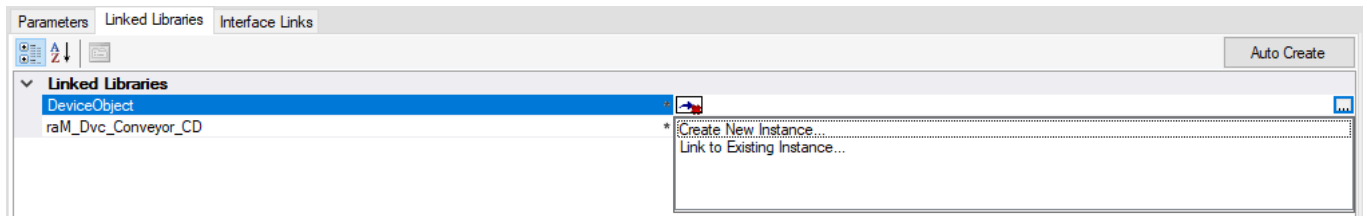
SEAssocDisplay:

MEAssocDisplay: FTViewME_Panel.GraphicDisplays.ConveyorObj

Click Next to link required libraries.

Since the drive hardware is Kinetix 5500, the “raC_Dvc_K5500” Device Object will need to be added. Device Objects are used to handle all communication with the drive hardware so that users do not need to interact with the specific parameters of individual drive products, only a common class interface that operates across a broad set of devices.

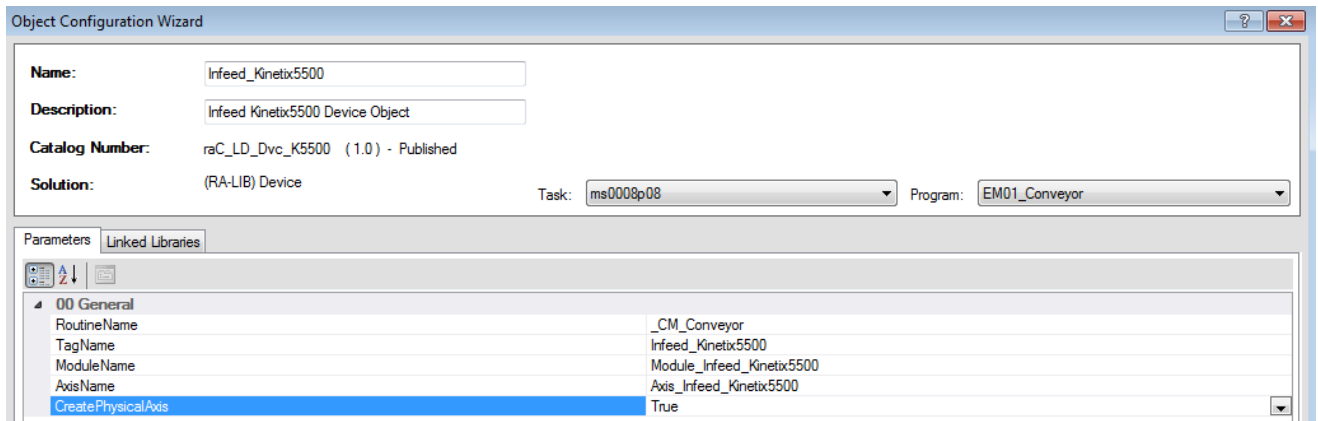
Select Create New Instance in the DeviceObject linked library and select the K5500 object.



Enter the following

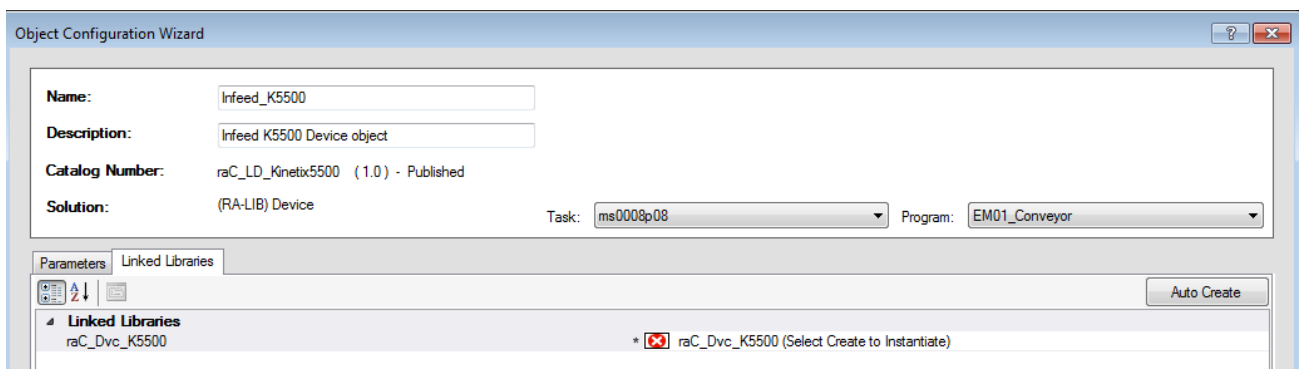
- Object Name – Infeed_K5500
- Description Infeed K5500 Device Object
- Task select from drop down list ms0008p08
- Program – EM01_Conveyor
- Routine Name – Typically this will be entered as the same routine as the Conveyor object, but is open to the user if a separate routine or program is desired.
- Enter values for TagName, Module Name, and Axis Name.
- Select True in CreatePhysicalAxis parameter to create axis in Logix during code generation.

Note: In cases where object is being added to an existing application with a preexisting axis, the CreatePhysicalAxis can be set to False and only AxisName parameter entered to match the existing axis.

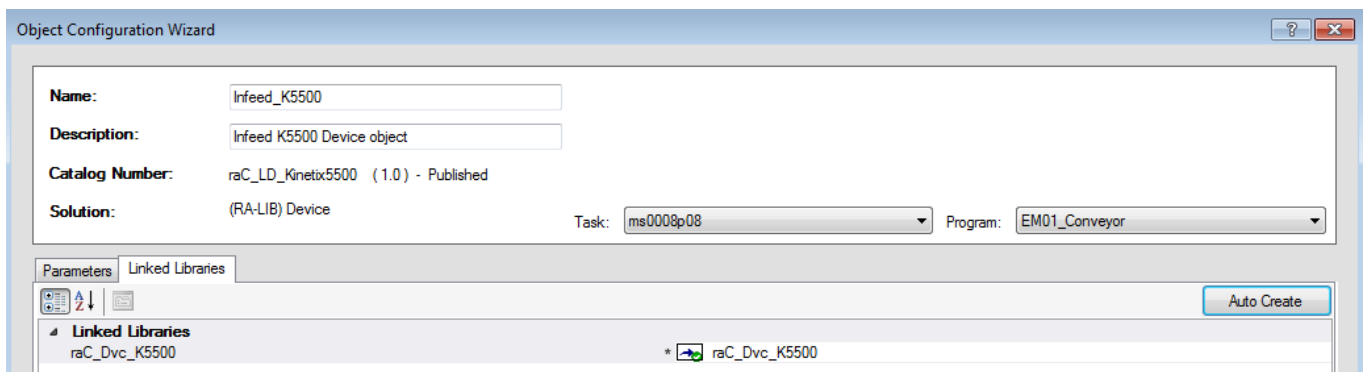


Click Next to add the linked library. For this Device object a definition object is also required. Click “Auto Create” to create the definition object.

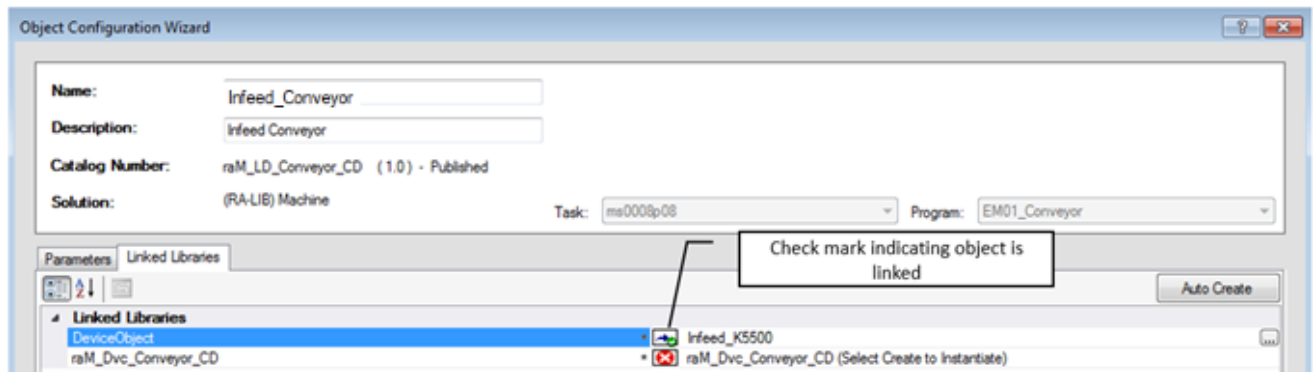
Note: For a definition, the create step is required only for the first instance. In consecutive additions of similar objects, the definition object get automatically linked. For example, if another raC_Dvc_K5500 object is added, the Linked Library will be already linked to the definition as this is already available in the project.



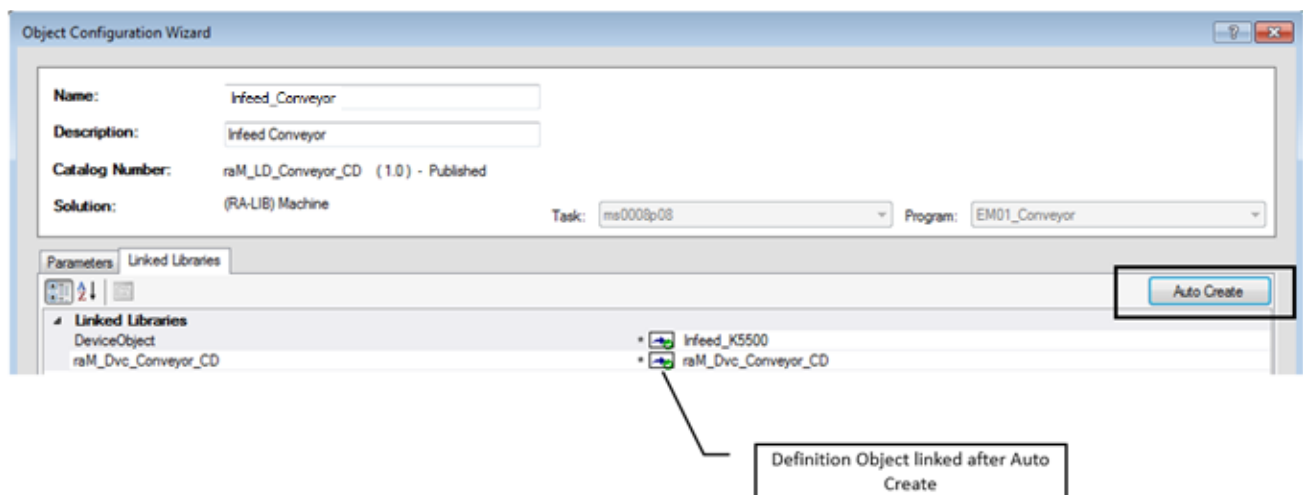
After “Auto Create” process is complete, the object is linked.



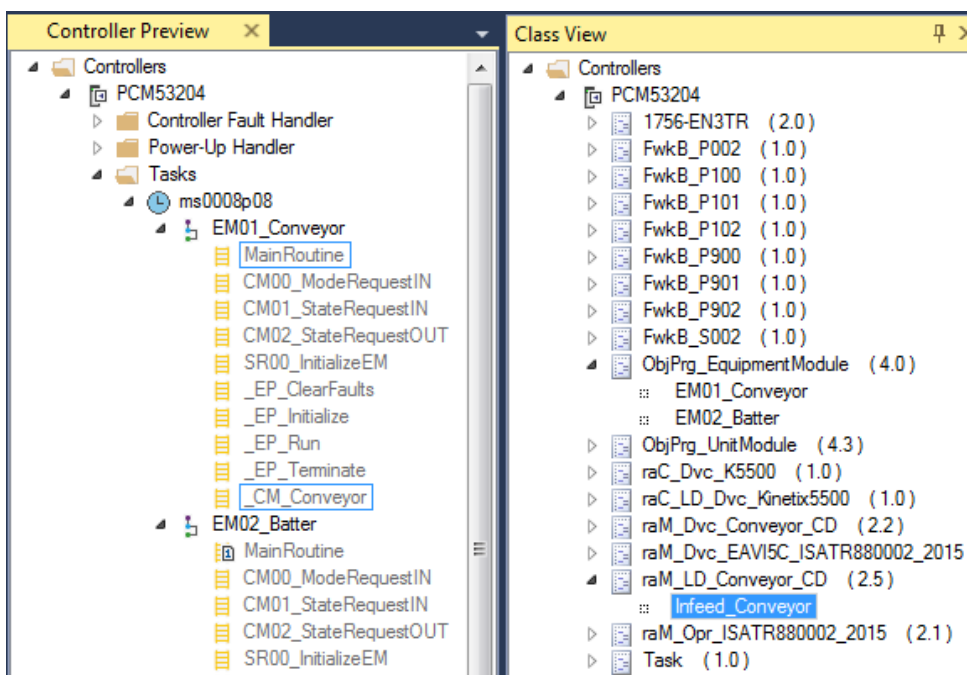
Clicking Finish will close the raC_Dvc_K5500 Object Configuration Wizard, returning back to the Object Configuration Wizard of Infeed_Conveyor.



Click Auto Create button to create the raM_Dvc_Conveyor_CD definition object.

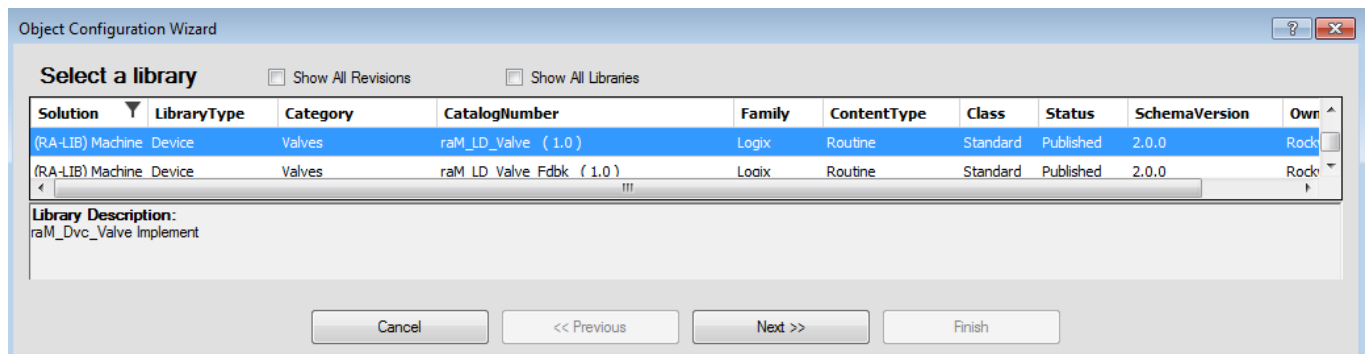
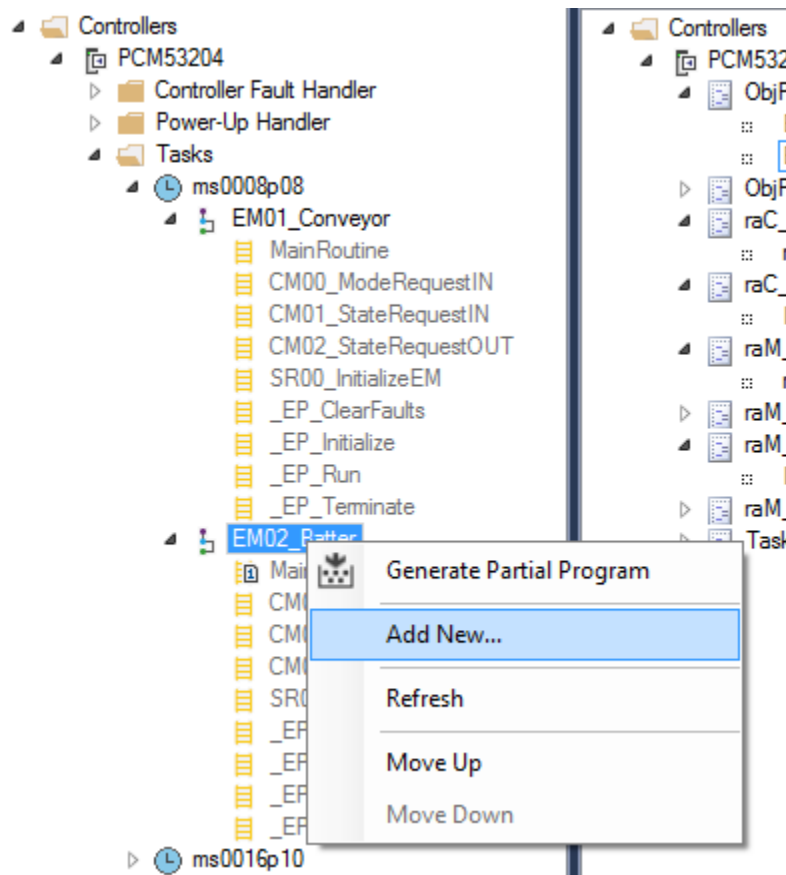


Click Finish to complete the process thereby adding the raM_Dvc_Conveyor_CD and raC_Dvc_K5500 objects to the project.



3.4.2 Valve Object

The application requires a dispensing valve to be added to the EM02_Batter equipment module. Select the EM02_Batter program in the Controller Preview and Add New.



Select raM_LD_Valve and click Next to open the Object Configuration Wizard of the Valve object.

Object Configuration Wizard

Name: raM_LD_Valve

Description: Valve

Catalog Number: raM_LD_Valve (2.3) - Published

Solution: (RA-LIB) Machine

Task: ms0008p08

Program: EM02_Batter

Parameters Linked Libraries

00 General

RoutineName raM_LD_Valve

TagName _raM_LD_Valve

HMI Configuration

ObjectCalloutSelection Default

SEAssocDisplay

MEAssocDisplay

Enter the Object name as Dispense_Valve and Description as Batter Dispense Valve.

Change the ObjectCallOut selection to 2stateValve.

Return to the Displays object created for the Conveyor object, create a new display named ValveObj following the same steps as the ConveyorObj and link MEAssocDisplay to it.

Note: if the application only has a few objects to place, one display can be used for several different objects.

System View

Project - FwkB

Historian

HMI

Displays

FTViewME_Panel

FwkB_DisplayME

FwkB_DisplaySE

FTAE

Used Libraries

Name: FTViewME_Panel

Description: FactoryTalk View ME Display

Catalog Number: FTViewME (2.1) - Published

Solution: (RA-LIB) ACM 2.00

Parameters Displays

Name	DisplayTitle	DisplayLeft	DisplayTop	DisplayWidth	DisplayHeight
ConveyorObj	0	0	800	600	
ValveObj	0	0	800	600	

Object Configuration Wizard

Name: Dispense_Valve

Description: Batter Dispense Valve

Catalog Number: raM_LD_Valve (2.3) - Published

Solution: (RA-LIB) Machine

Task: ms0008p08

Program: EM02_Batter

Parameters Linked Libraries

00 General

RoutineName Dispense_Valve

TagName Dispense_Valve

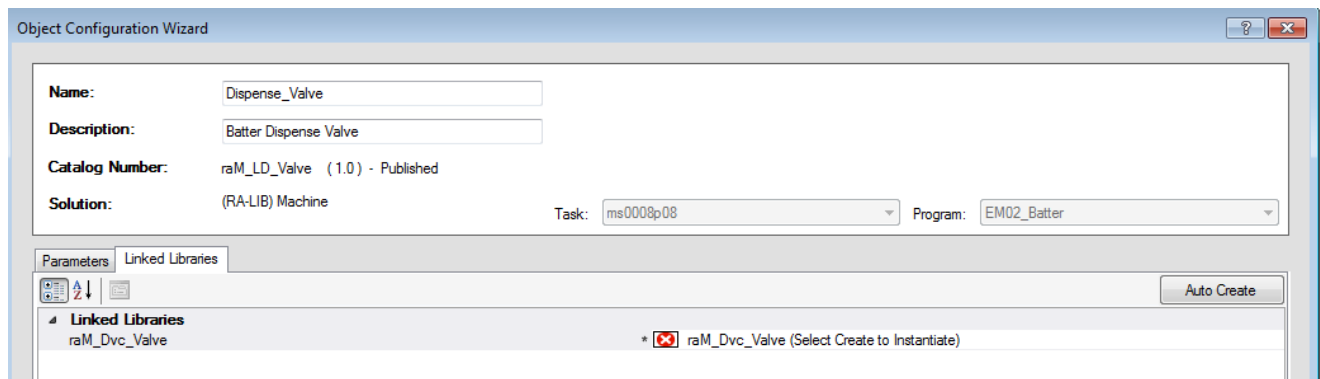
HMI Configuration

ObjectCalloutSelection 2StateValve

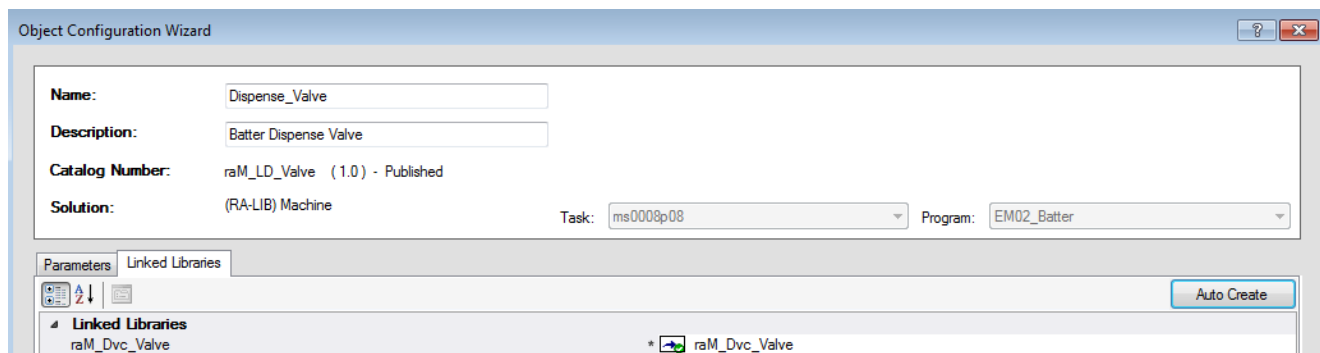
SEAssocDisplay

MEAssocDisplay FTViewME_Panel.GraphicDisplays.ValveObj

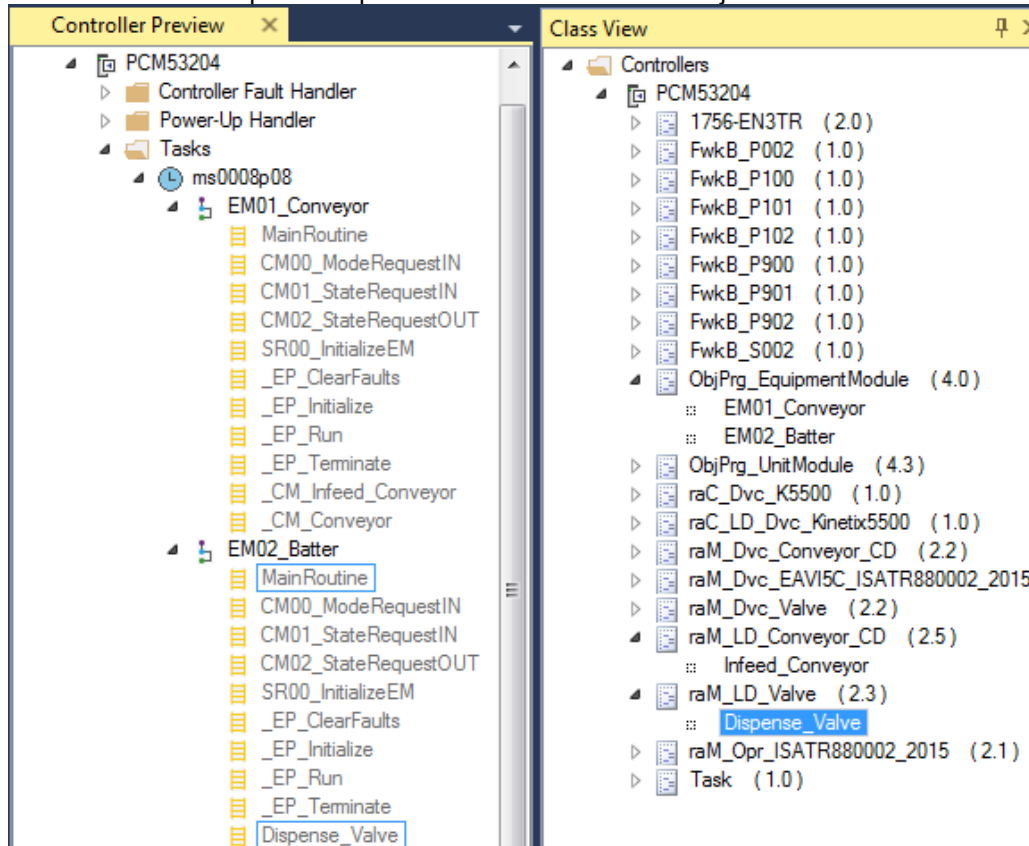
Click "Next" to add Linked Library.



Click “Auto Create” to create the definition object raM_Dvc_Valve”

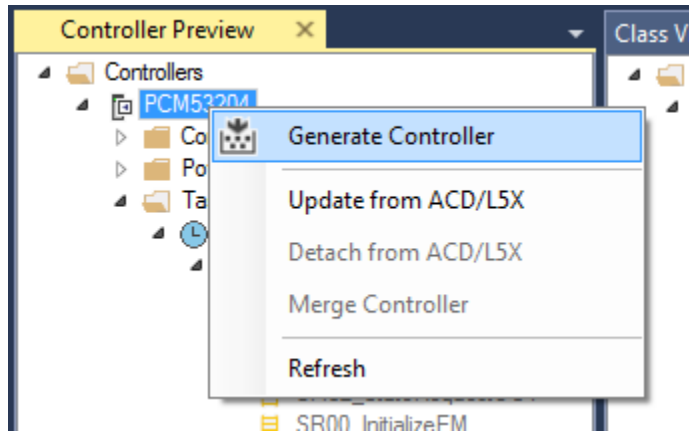


Click “Finish” to complete the process and view the Valve object in Controller Preview and Class View windows.

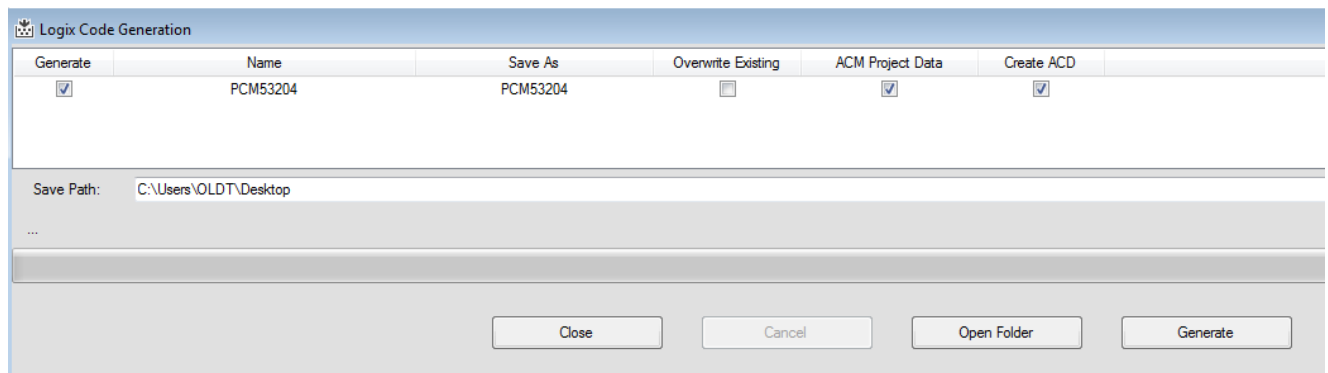


3.5 Generate Code

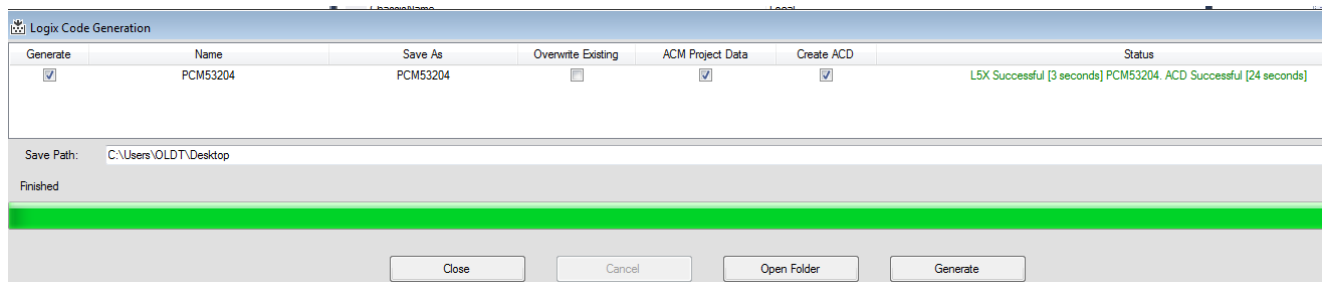
Right click on project and click Generate Controller



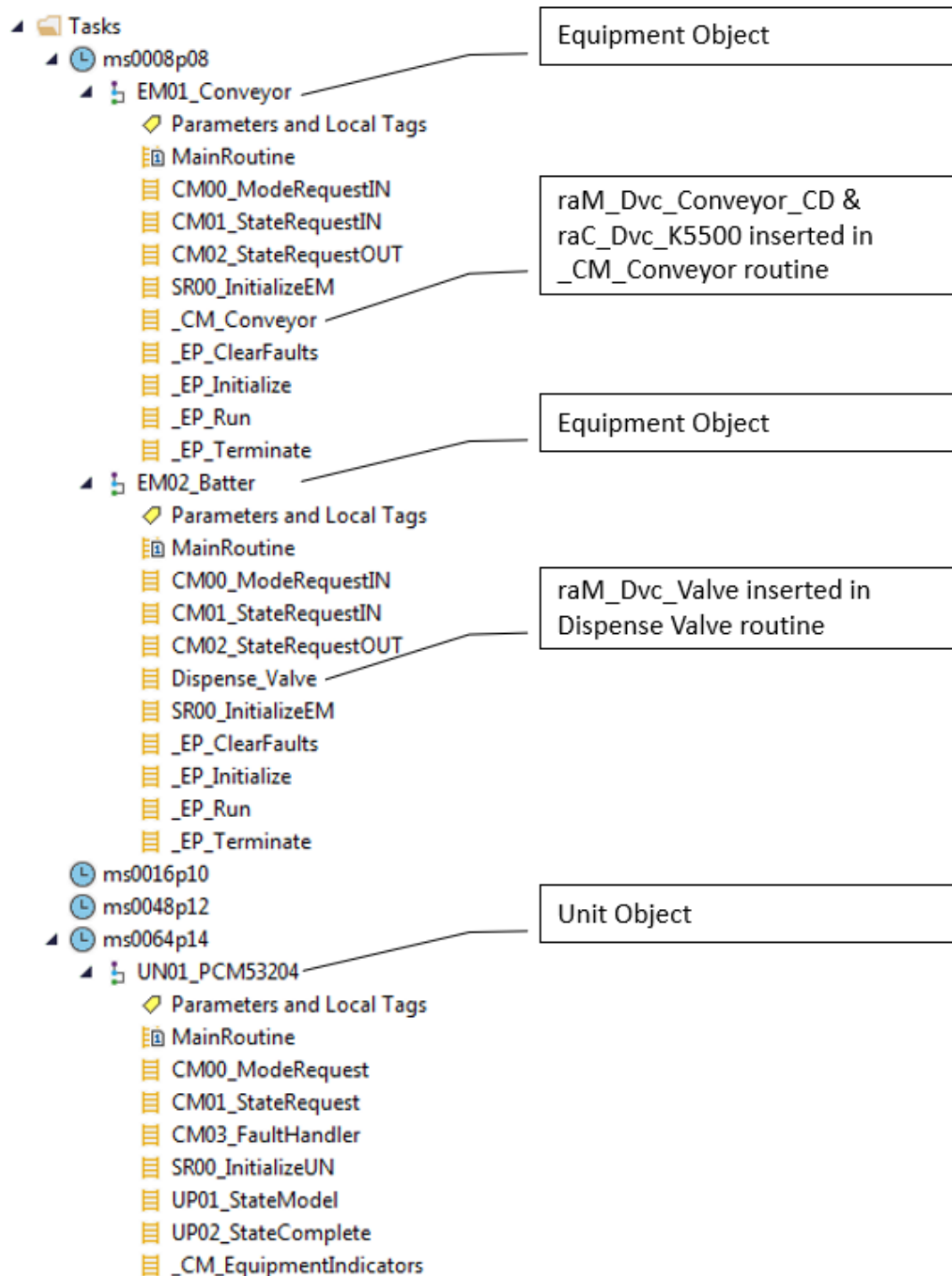
Check 'Create ACD', verify the path to save the output, and then generate the files.



Monitor the process in the status field and when finished, the ACD file can be opened using Logix Designer.



3.6 Explore Logix code



Explore the code to understand how each library object is added in the code. The Conveyor and Valve objects are currently not connected to the framework. Explore the equipment _EP_ routines and insert code to link Conveyor and Valve control commands and status feedback to the state model.

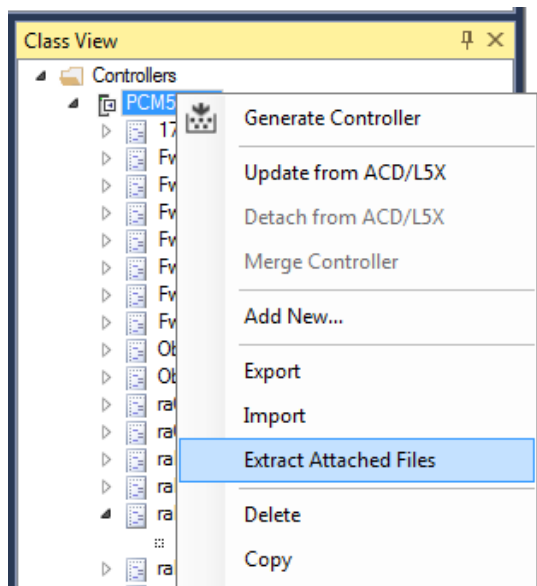
4 Deploying Visualization Objects

Application Code Libraries not only contain Logix code, but also contain Visualization collateral and associated documentation. Every Asset library (and few exceptions such as DxSD or Framework B Unit) contains at least a reference manual (RM). Those libraries which have associated Visualization content also have all required global objects (GO), images, static displays, and View Designer applications added as attachments. In this manner, the user can generate only the necessary visualization and documentation for the objects included in the project.

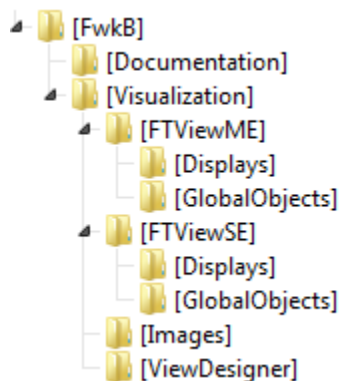
Attachments can be extracted on the Project, Controller or Library Instance level by right mouse clicking and selecting Extract Attached Files and designating a folder into which ACM puts the content.

4.1 Extract attachments from libraries

In this scenario, attachments will be extracted on the controller level. Within the open project in Application Code Manager, Right click on the Controller name and select Extract Attached Files. Then designate a folder to the extraction will take place.



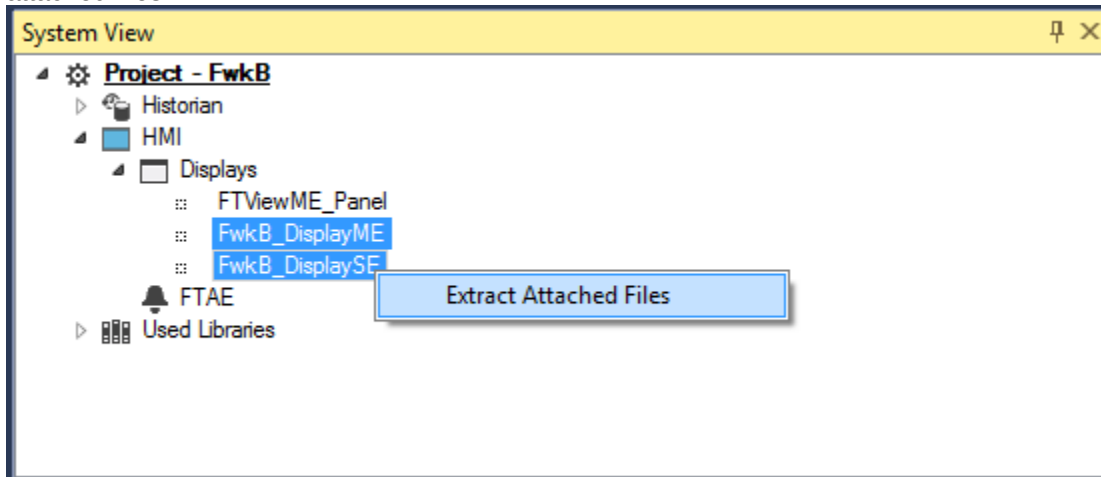
For ease of reference, a predefined folder structure has been established, where the main folder is always the Project Name.



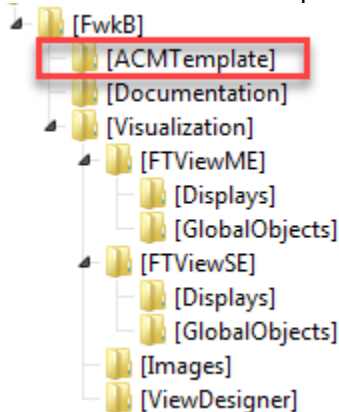
4.2 Extract attachments from display libraries

In order to be able to parametrize all required display parameters MBL template files are required to be in your ACM template folder. If the libraries were added to ACM using the Setup.cmd process, this step can be skipped.

MBL templates are part of the display libraries. To extract them select ME and SE display libs and click Extract attached files.



New folder with all the template files is added to your project folder.



These xml files need to be copied to the ACM template folder, for ease of use just run batch file included in the folder which will copy them for you so there is no need to search for a right path.

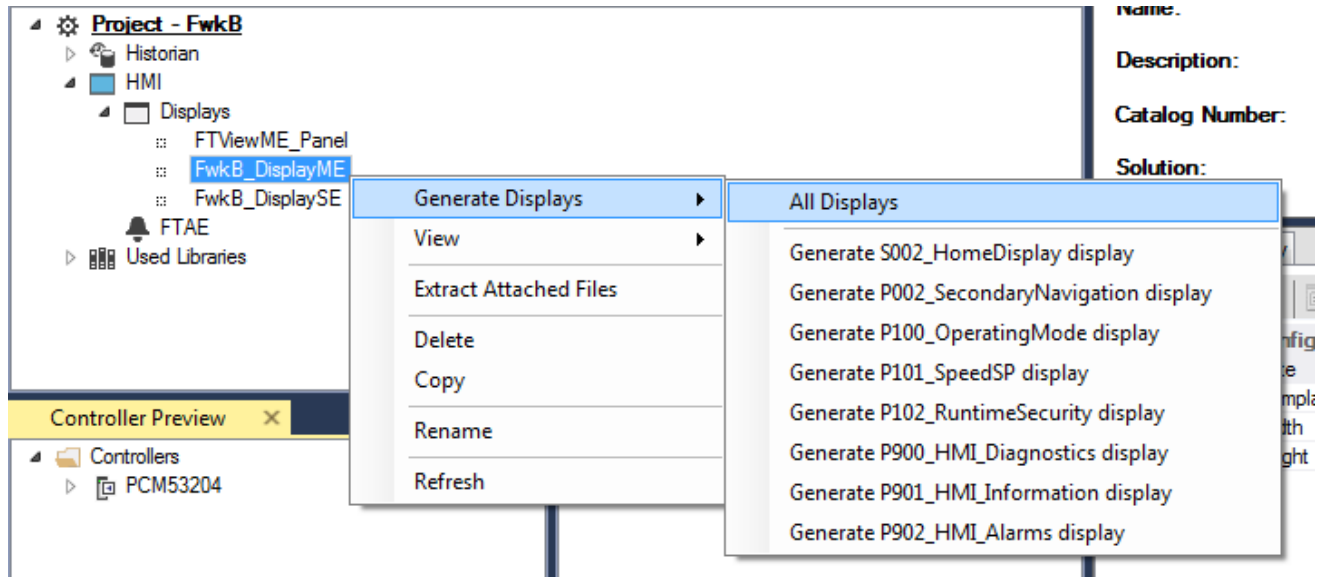
(RA-TPL)_MBL_HMI_Display_FTViewME_7.0_(1.0)	XML File	2 KB
(RA-TPL)_MBL_HMI_Display_FTViewME_9.0_(1.0)	XML File	2 KB
(RA-TPL)_MBL_HMI_Display_FTViewME_10.0_(1.0)	XML File	2 KB
(RA-TPL)_MBL_HMI_Display_FTViewME_11.0_(1.0)	XML File	2 KB
(RA-TPL)_MBL_HMI_Display_FTViewSE_7.0_(1.0)	XML File	3 KB
(RA-TPL)_MBL_HMI_Display_FTViewSE_9.0_(1.0)	XML File	3 KB
(RA-TPL)_MBL_HMI_Display_FTViewSE_10.0_(1.0)	XML File	3 KB
(RA-TPL)_MBL_HMI_Display_FTViewSE_11.0_(1.0)	XML File	3 KB
CopyMBLTemplates	Windows Batch File	1 KB

After running batch file, you are ready to generate the framework displays.

4.3 Generate preconfigured HMI objects

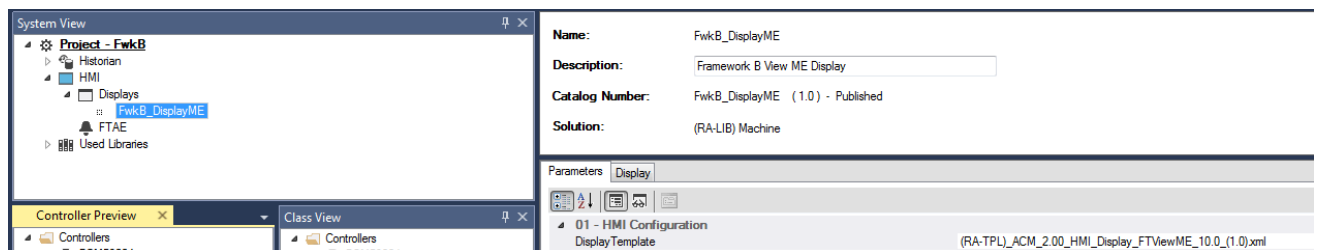
As mentioned above, the extraction process only creates static, generic content required for the visualization platform and general reference documentation. In order to get materials that are tailored to the specific project some additional steps must be taken.

Generate ME framework B template displays

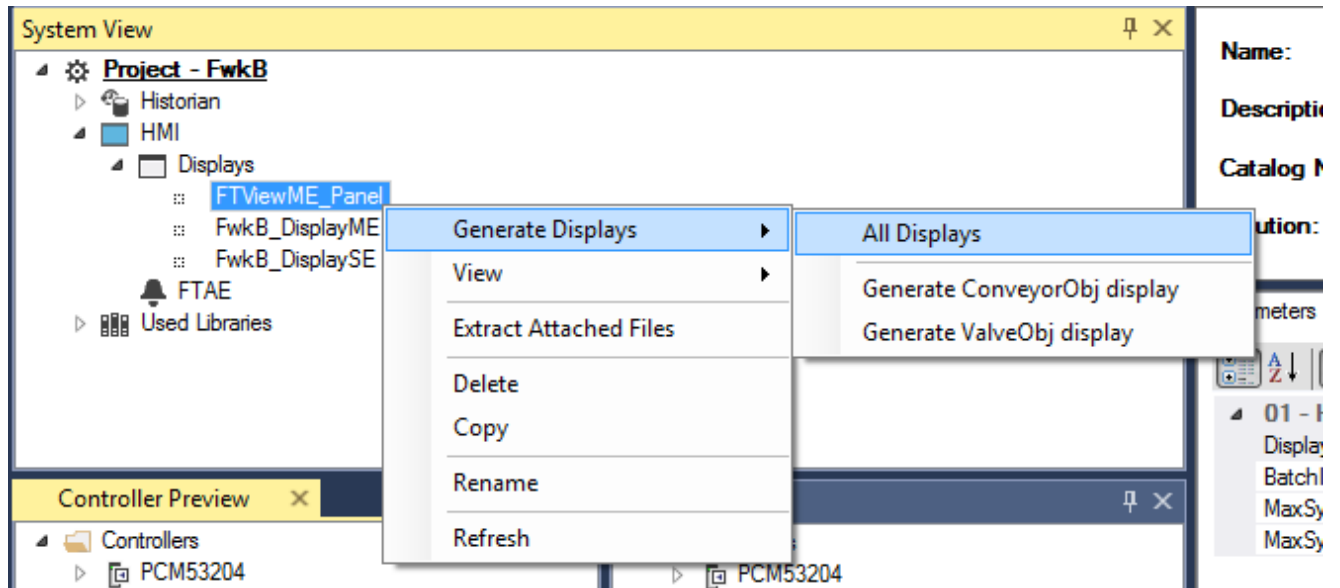


Select/create folder for the Framework B displays and press OK. All displays get generated in one step, fully configured.

Note: If an error occurs that template selected by default doesn't exist, please go to DisplayTemplate parameter of that panel and select v10.0 (or correct one for the installed version of FactoryTalk View).



Generate all other additional ME objects in the project



Select/create folder for the remaining project displays and press OK. All objects get generated in one step, fully configured.

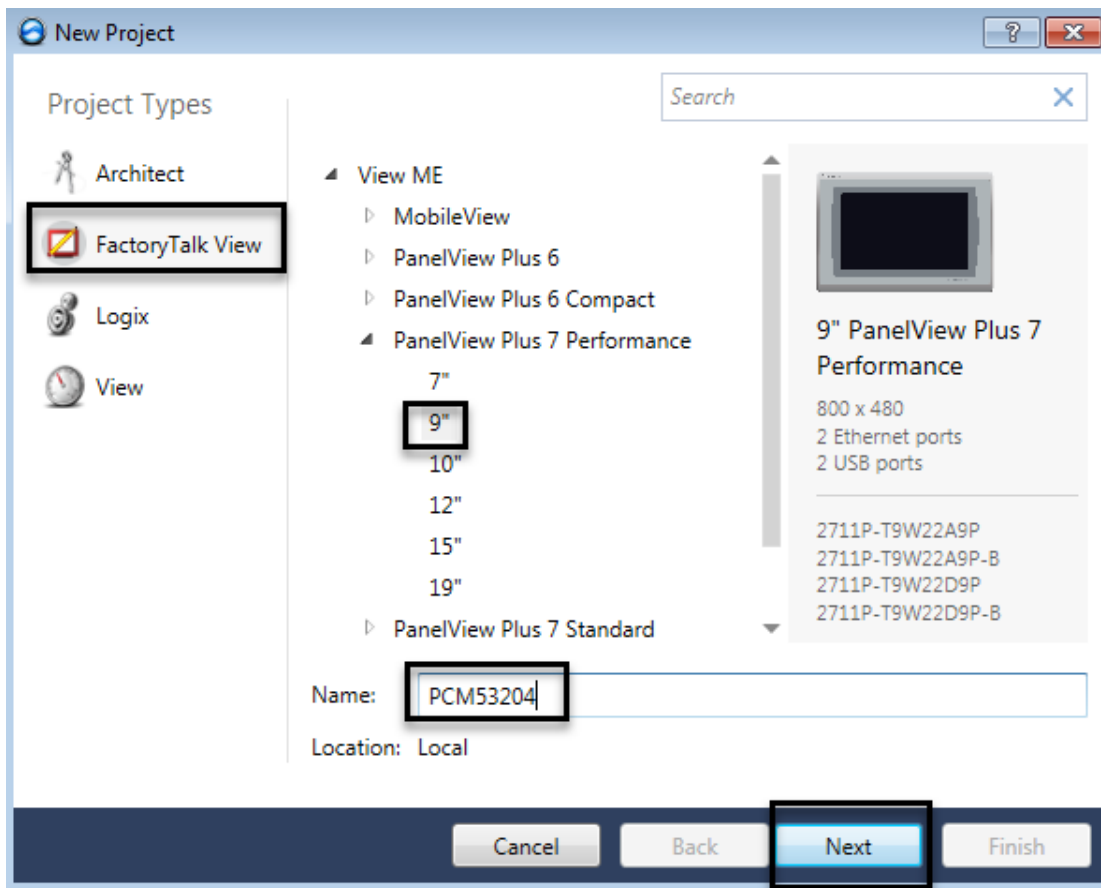
4.4 FactoryTalk View Studio Implementation

4.4.1 Create a new FTView ME project

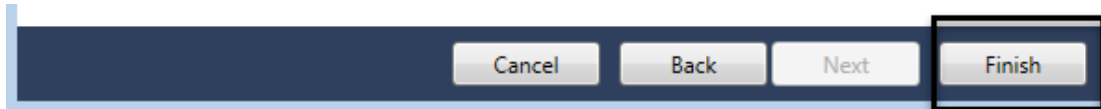
Launch Studio 5000 and create a new project.



Select a FactoryTalk View PVP Plus 7 9" and project name PCM53204.



Click Finish on next screen

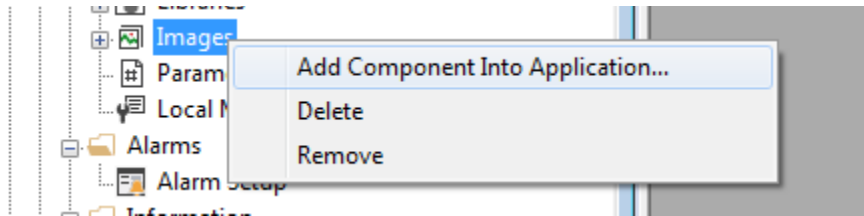


4.4.2 Importing extracted data

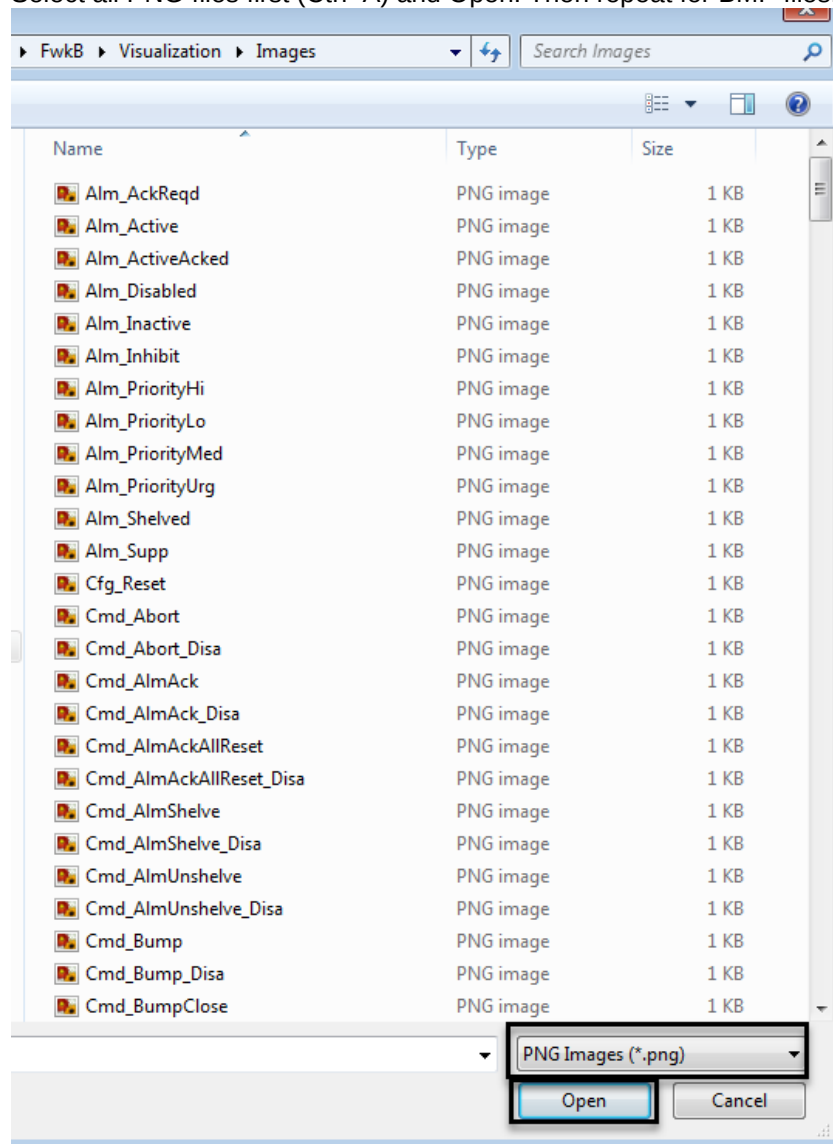
Before importing parametrized HMI content, it is necessary to import images, global objects and static displays. Images are stored as a zip file in the project file extraction. Find the Project file extraction location, locate the Images.zip and unzip folder.

Add Images

Import all files using the Add Component Into Application within FactoryTalk View Studio. All .png and .bmp must be imported.



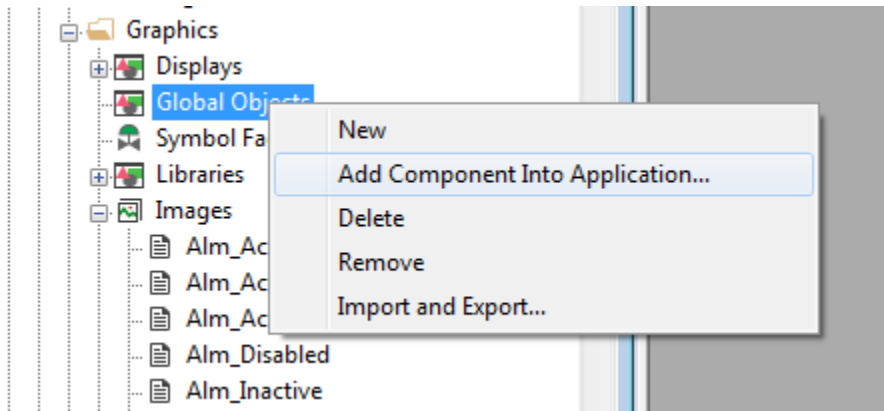
Select all PNG files first (Ctrl+A) and Open. Then repeat for BMP files.



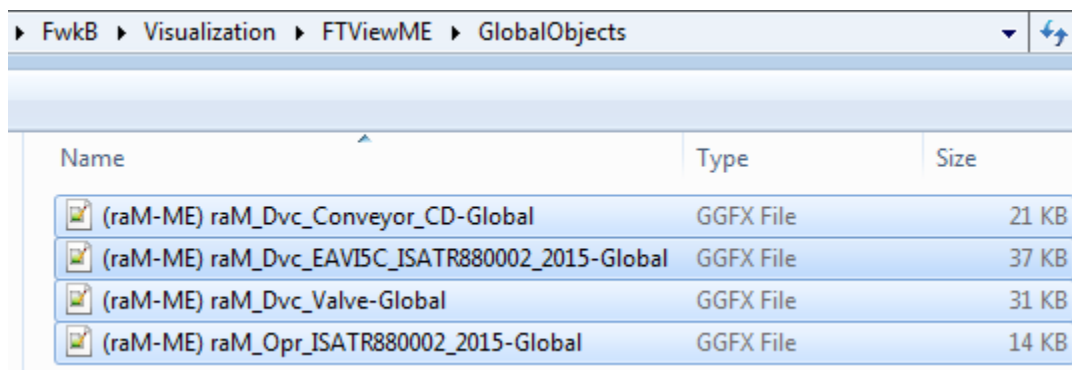
Note: Add images from Device library Images folder.

Add Global Objects

Global objects can be found in the FTViewME\GlobalObjects folder within the Project File Extraction. Include these using the Add Component Into Application option for Global Objects.

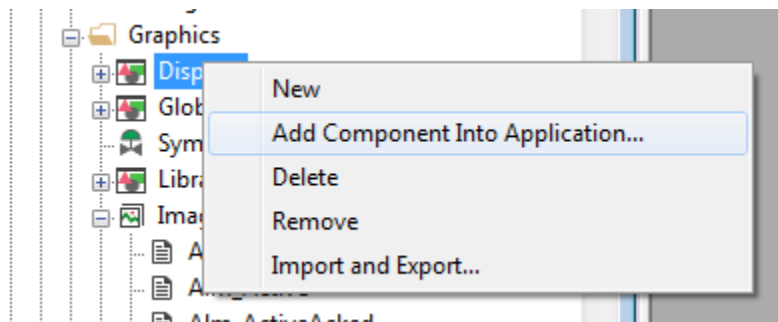


Select all the Global Objects in the folder and click Open.

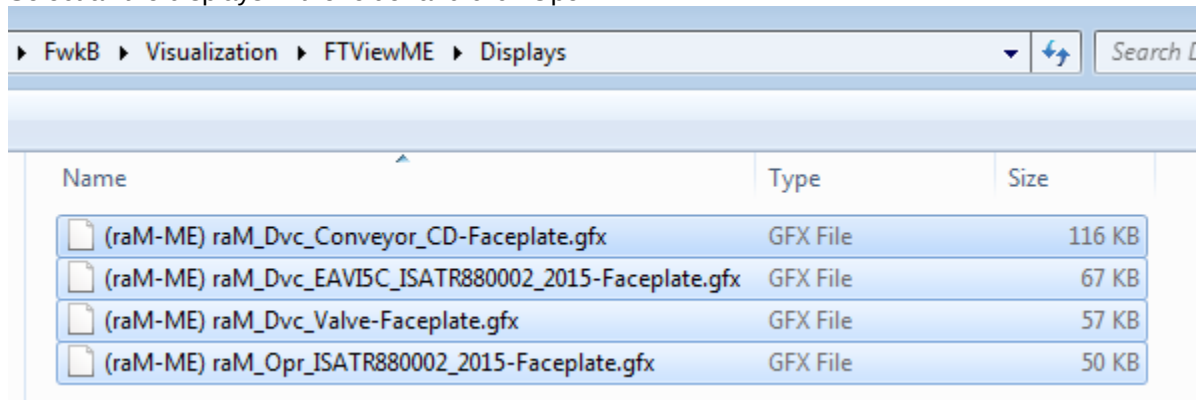


Add Static Displays

Static displays can be found in the FTViewME\Displays folder within the Project File Extraction. Include these using the Add Component Into Application option for Displays.



Select all the displays in the folder and click Open.

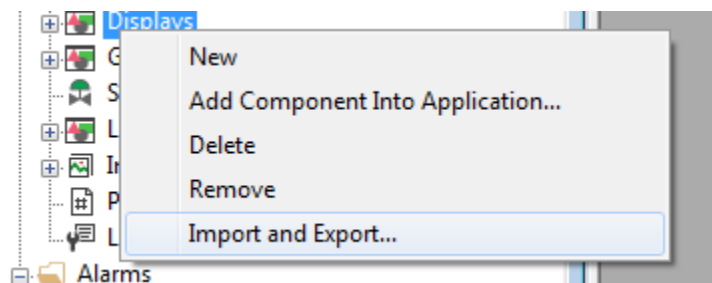


Name	Type	Size
(raM-ME) raM_Dvc_Conveyor_CD-Faceplate.gfx	GFX File	116 KB
(raM-ME) raM_Dvc_EAVIS_C_ISATR880002_2015-Faceplate.gfx	GFX File	67 KB
(raM-ME) raM_Dvc_Valve-Faceplate.gfx	GFX File	57 KB
(raM-ME) raM_Opr_ISATR880002_2015-Faceplate.gfx	GFX File	50 KB

Note: Add Device Object HMI Faceplate (raC-ME) raC_Dvc_K5500-Faceplate.gfx from Power Device Library.

Import Preconfigured FrameworkB Displays

Preconfigured FrameworkB displays and the associated batch import file can be found at the location selected during Display generation in Application Code Manager. Include these using the Import and Export option for Displays and select Import. All displays can be imported at the same time by selecting the “Multiple displays batch import file” option.



Graphics Import Export Wizard - Operation Type	Graphics Import Export Wizard - Import File Type
Select the operation to perform: ☐ Export graphic information from displays ☒ Import graphic information into displays	Select the type of file to import: ☐ Single display import file ☒ Multiple displays batch import file
< Back Next >	< Back Next >

Name	Type	Size
P002_SecondaryNavigation	XML File	16 KB
OptionalUnitObj	XML File	41 KB
S002_HomeDisplay	XML File	59 KB
FwkB_FwkB_DisplayME_BatchImport	XML File	1 KB
P100_OperatingMode	XML File	23 KB
P101_SpeedSP	XML File	10 KB
P102_RuntimeSecurity	XML File	8 KB
P900_HMI_Diagnostics	XML File	11 KB
P901_HMI_Information	XML File	6 KB
P902_HMI_Alarms	XML File	15 KB
ConveyorObj	XML File	28 KB
ValveObj	XML File	20 KB
FwkB_FTVIEWME_Panel_BatchImport	XML File	1 KB

Graphics Import Export Wizard - Multiple Import File

Select the multiple display batch import file:

Z:\E\Projekty\OEM_DEV\ACM\Extract
FwkB_FwkB_DisplayME_BatchImport.xml

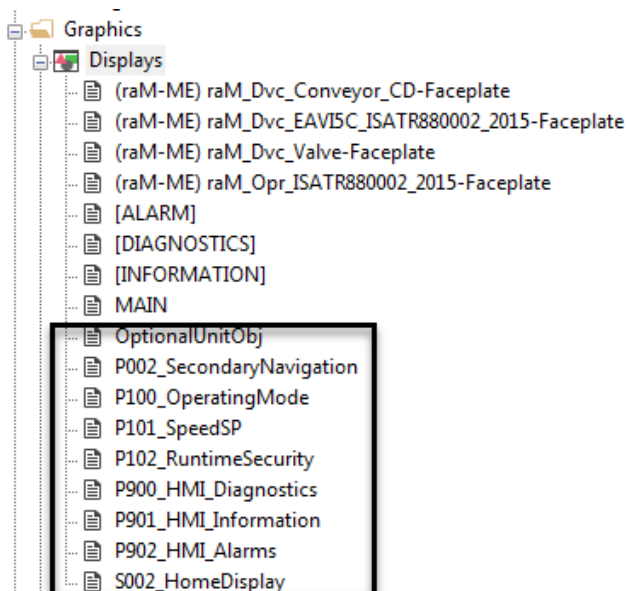
When importing

☒ Create new objects on the display

☐ Update existing objects on the display

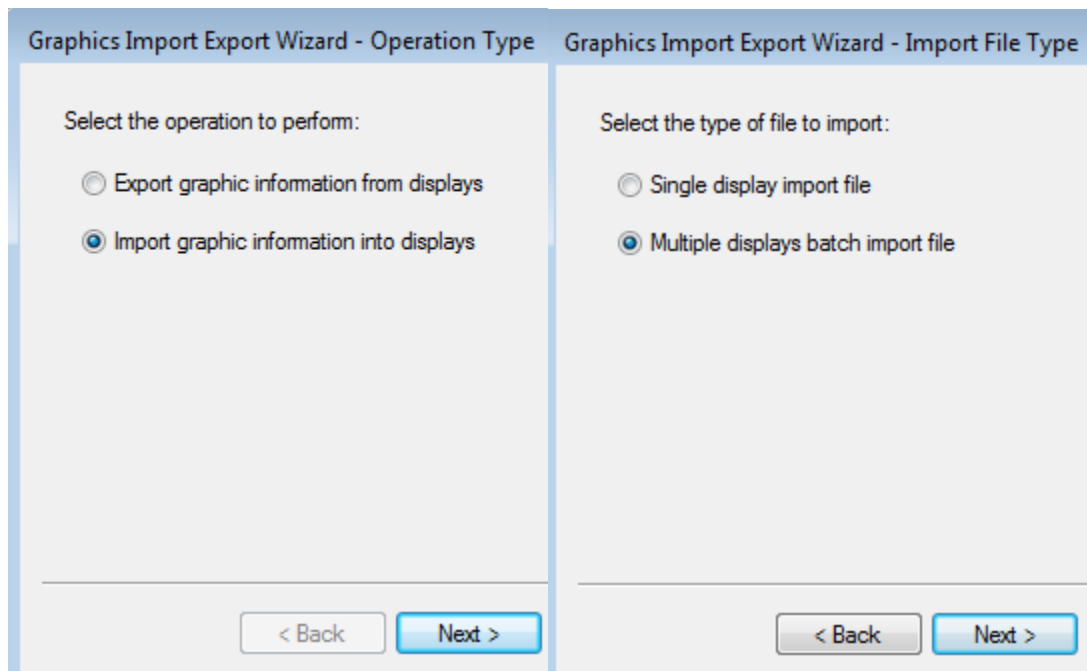
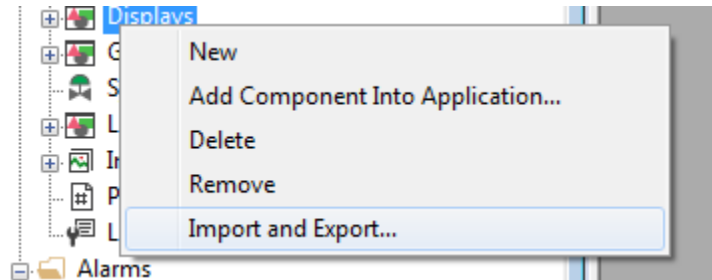
Whether you create new objects or update existing objects on the display can also be specified within the multiple displays batch import file and will override the setting defined above.

< Back Finish Cancel Help

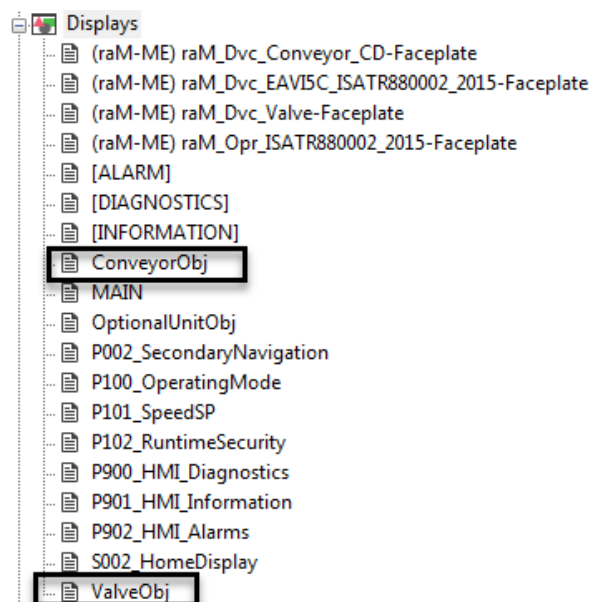
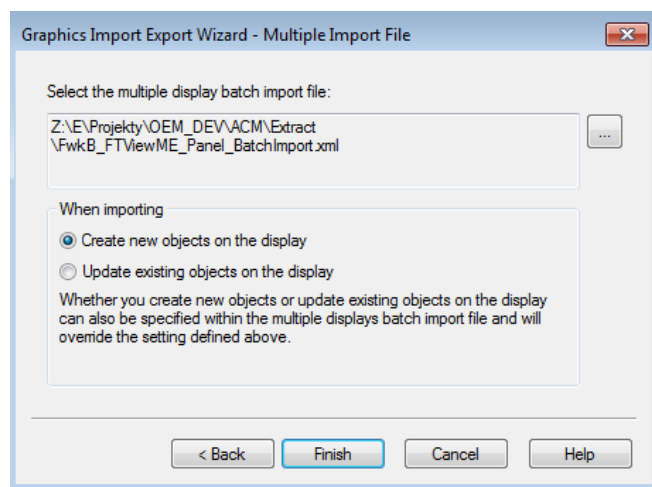


Import Additional Configured Displays

The additional configured displays and the associated batch import file can be found at the location selected during Display generation in Application Code Manager. Include these using the Import and Export option for Displays and select Import. All displays can be imported at the same time by selecting the “Multiple displays batch import file” option.

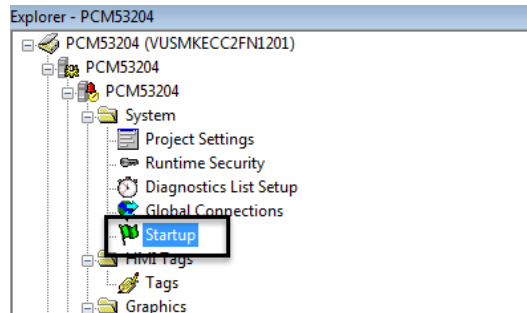


	P002_SecondaryNavigation	XML File	16 KB
	OptionalUnitObj	XML File	41 KB
	S002_HomeDisplay	XML File	59 KB
	FwkB_FwkB_DisplayME_BatchImport	XML File	1 KB
	P100_OperatingMode	XML File	23 KB
	P101_SpeedSP	XML File	10 KB
	P102_RuntimeSecurity	XML File	8 KB
	P900_HMI_Diagnostics	XML File	11 KB
	P901_HMI_Information	XML File	6 KB
	P902_HMI_Alarms	XML File	15 KB
	ConveyorObj	XML File	28 KB
	ValveObj	XML File	20 KB
	FwkB_FTViewME_Panel_BatchImport	XML File	1 KB

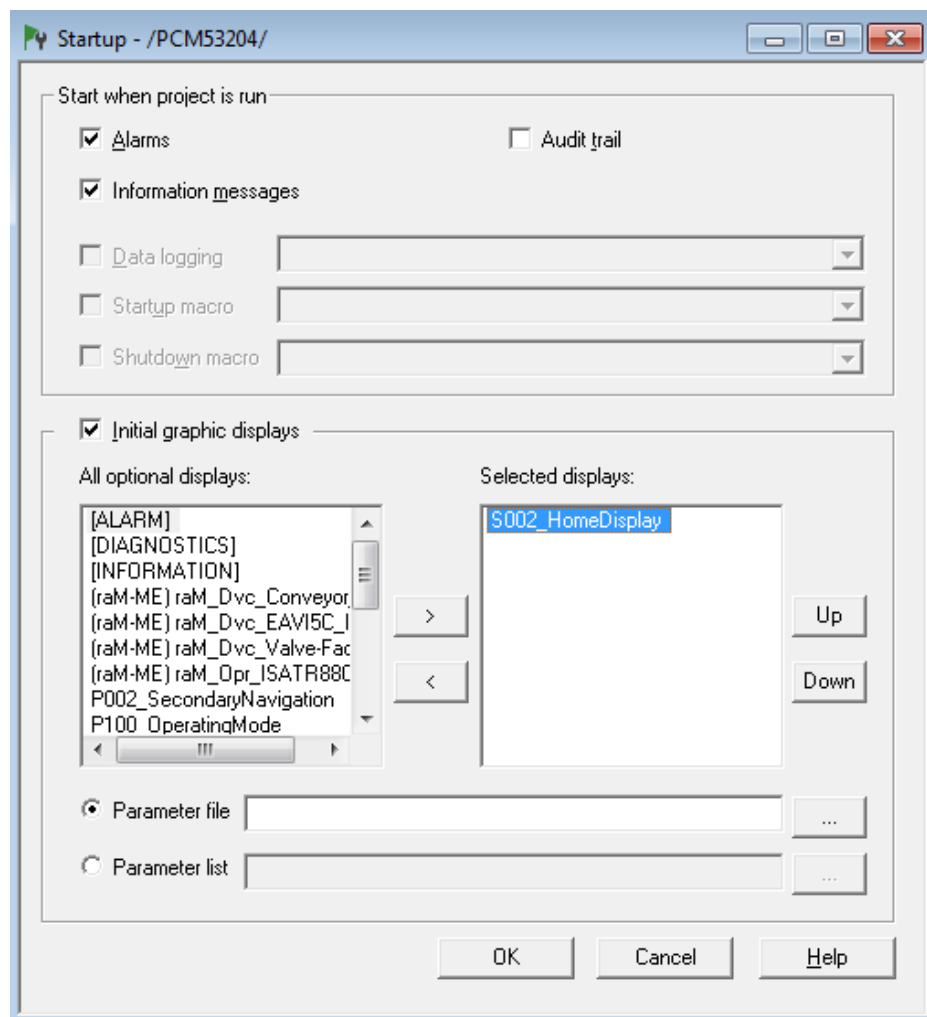


4.4.3 Project Personalization

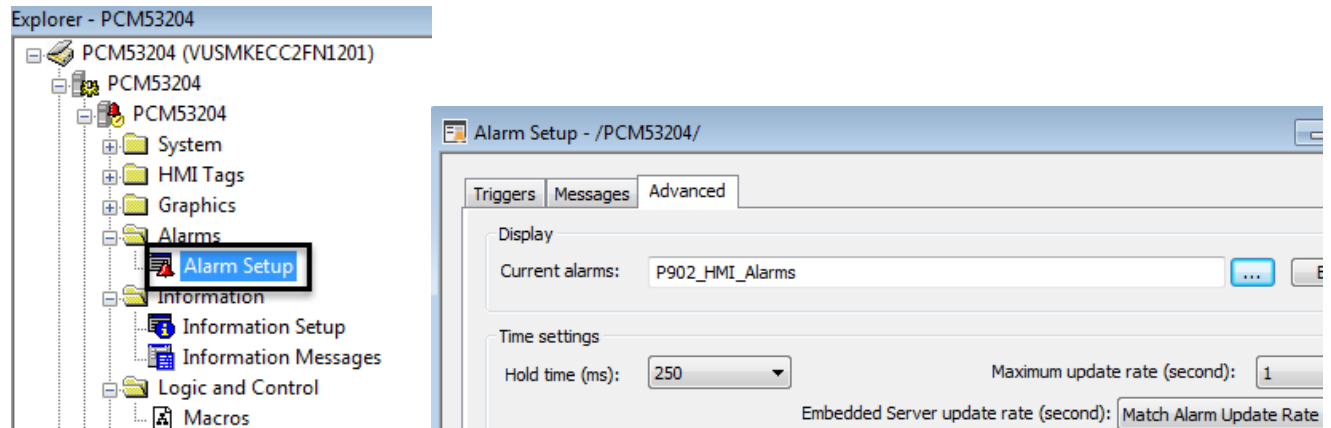
To personalize the equipment framework displays to the specific application, begin by opening the Startup configuration dialogue.



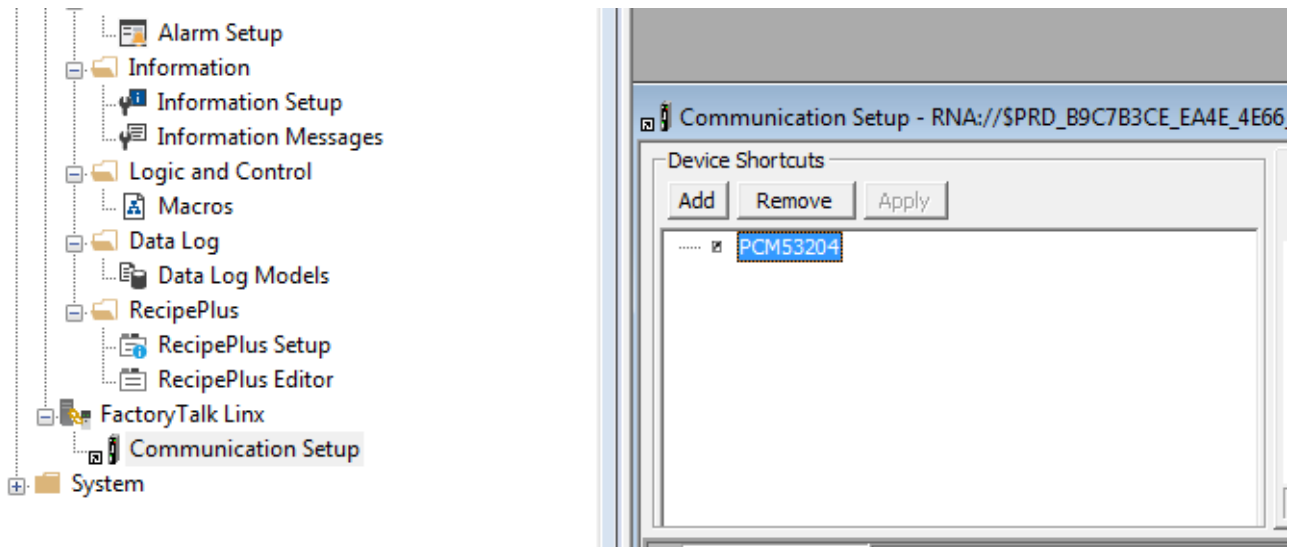
Change the initial graphic from the default 'Main' to 'S002_HomeDisplay'.



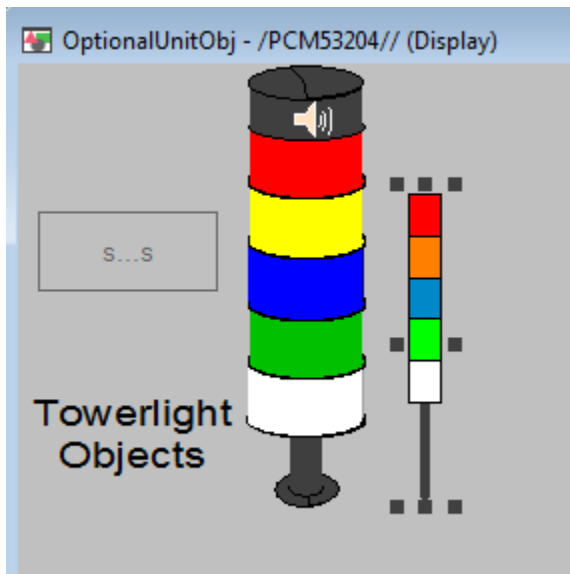
In the Alarm Setup dialogue box, change the alarm display to 'P902_Alarms'



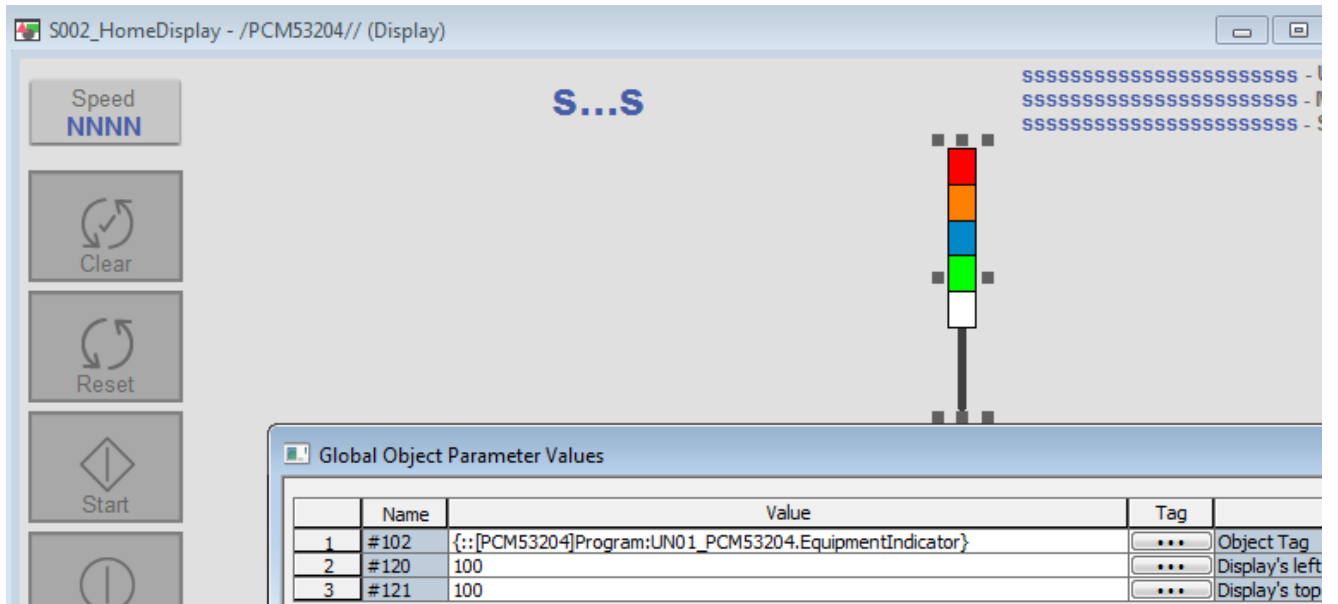
Configure communications by opening 'Communication Setup', adding a device shortcut, and setting the communication path to the controller. Use the same shortcut name as in the Application Code Manager Controller settings (in this case PCM53204).



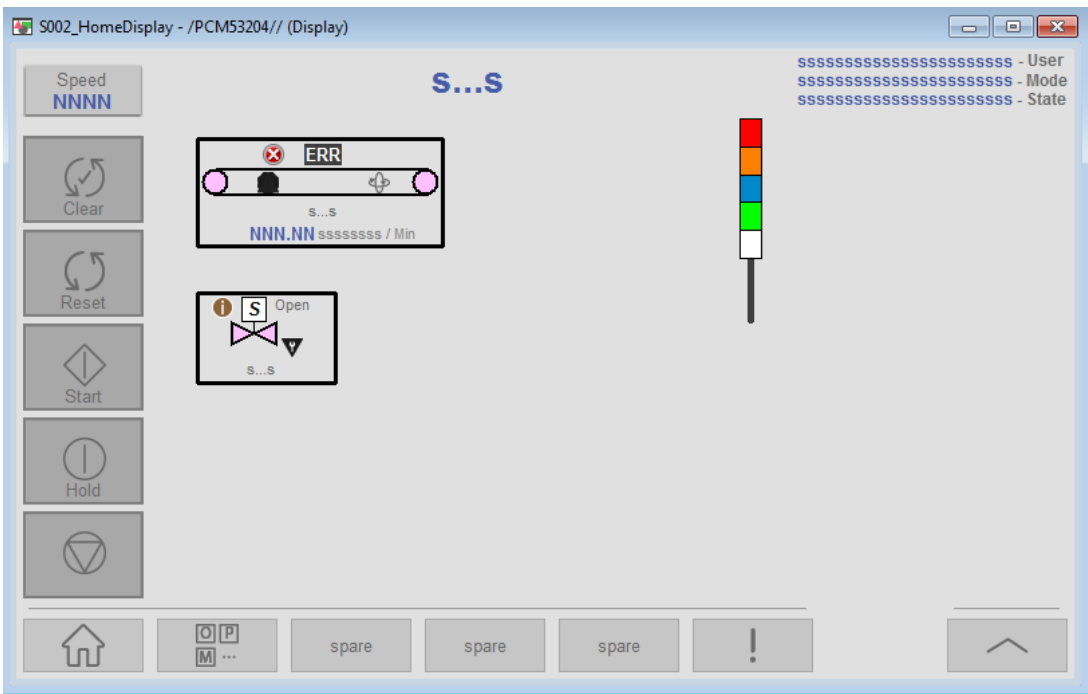
Open the OptionalUnitObj display and add one of the Towerlight launch buttons to the home screen by copy and pasting from the display to the Home Screen.



Verify that object parameters are automatically configured by ACM.



Do the same for the Conveyor and Valve launch buttons from the ConveyorObj and ValveObj displays respectively.



Check that ACM preconfigured all the connections for every object (the appropriate backing tag / backing program and, if desired, set screen location where the faceplate's upper left corner will be located when launched).

The screenshot shows the "Global Object Parameter Values" dialog box for the top status box. The dialog has a table with the following data:

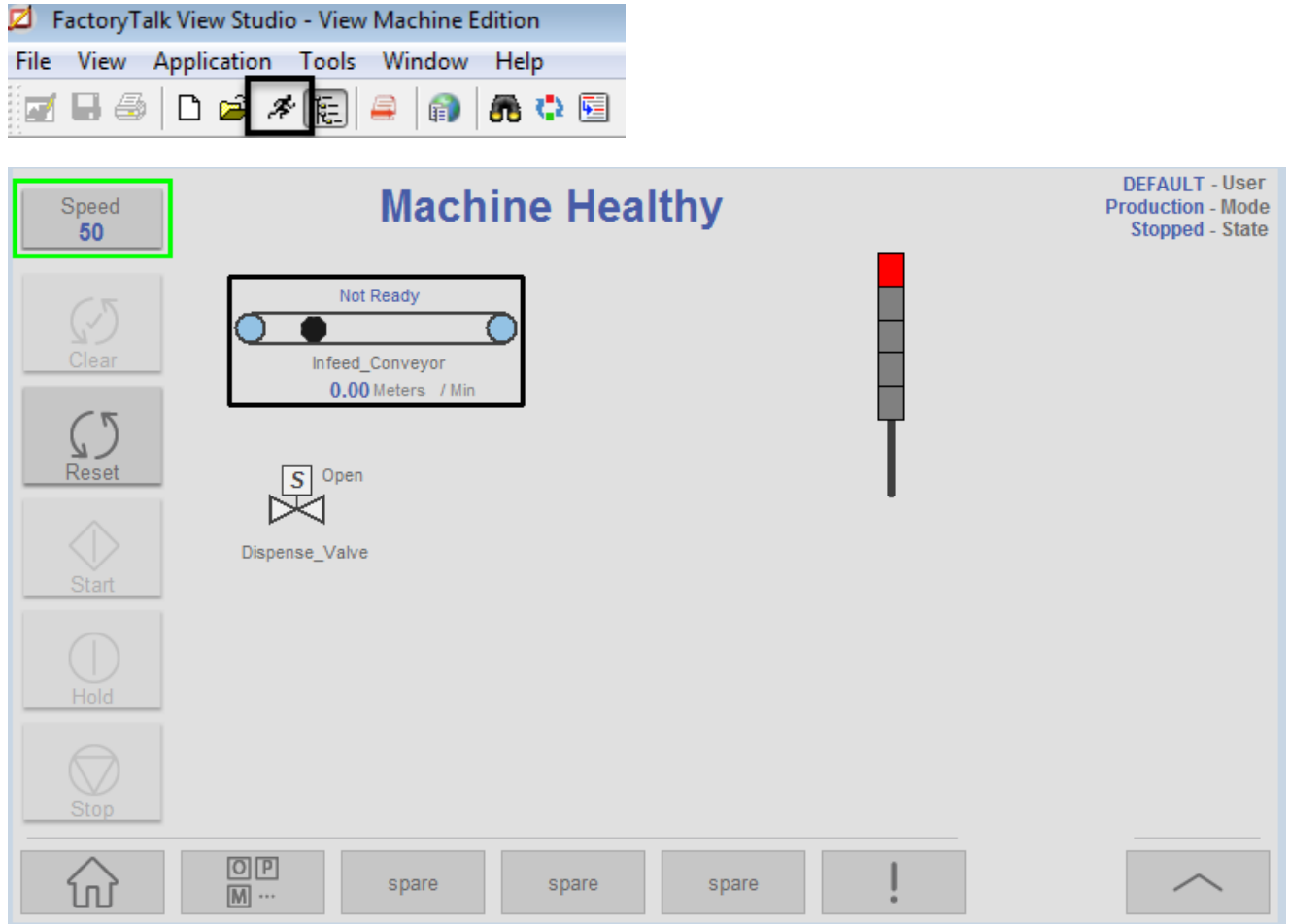
	Name	Value	Tag	Description
1	#102	{::[PCM53204]Program:EM01_Conveyor.Infeed_Conv}	...	Backing Tag
2	#103	{::[PCM53204]Program:EM01_Conveyor.Infeed_Kinetix5500}	...	Device Object Backing Tag
3	#104	Infeed_Conveyor	...	Navigation Label
4	#120	100	...	Display's left position (e.g. 100)
5	#121	100	...	Display's top position (e.g. 100)

The screenshot shows the "Global Object Parameter Values" dialog box for the bottom status box. The dialog has a table with the following data:

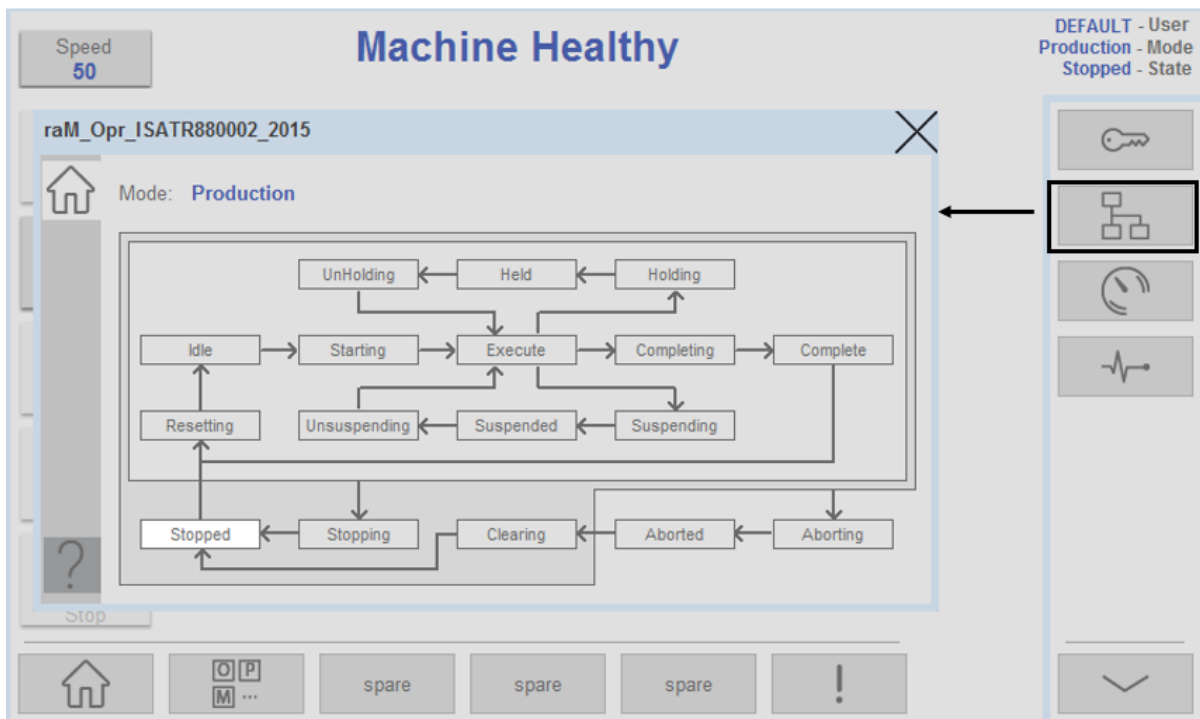
	Name	Value	Tag	Description
1	#102	{::[PCM53204]Program:EM02_Batter_Disense_Valve}	...	Backing Tag
2	#104	Disense_Valve	...	Navigation Button Label
3	#120	100	...	Display's left position (e.g. 100)
4	#121	100	...	Display's top position (e.g. 100)

Developers can now further extend and customize the HMI to fit the application. Developers can also create their own launch buttons or modify the existing Global Objects, if desired. Note that any alterations to Global Object, launch buttons, and Displays will be overwritten if Display content is regenerated from ACM.

Test the application to verify functionality by using the 'Test Application' function.



Using the navigation button, launch the Machine State Model faceplate. The Equipment Framework navigation is pre-configured to call the ISA-TR88.00.02 faceplate.



Explore the raM_Dvc_Conveyor_CD and raM_Dvc_Valve faceplates by clicking on their respective navigation buttons.

4.5 View Designer Implementation

View Designer faceplates are available in the View Designer folder of the Project File Extraction path. Each faceplate is contained in a separate application file.

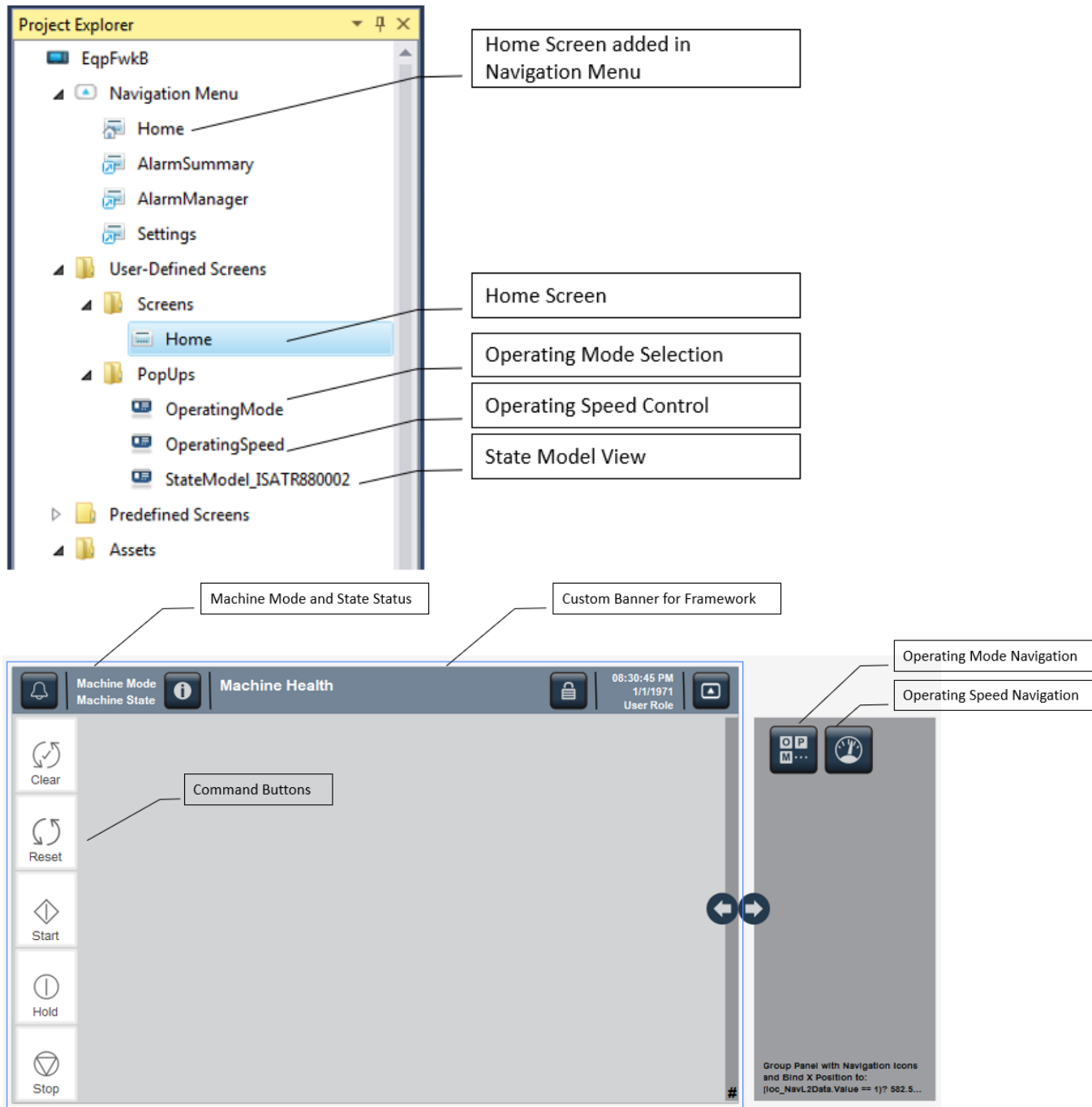
Extract ▶ FwkB ▶ Visualization ▶ ViewDesigner		
Name	Type	Size
 FWK-B_PV5500-800x480_VD4	View Designer	551 KB
 FWK-B_PV5500-800x480_VD5	View Designer	542 KB
 raM_Dvc_Conveyor_CD	View Designer	276 KB
 raM_Dvc_EAVISC_ISATR880002_2015	View Designer	256 KB
 raM_Dvc_Valve	View Designer	254 KB
 raM_Opr_ISATR880002_2015	View Designer	241 KB

Note: All MBL faceplates are created in version 5 of View Designer. To convert a faceplate to higher version, open the file in the desired version of View Designer. A prompt appears to convert the project to the current version of View Designer. Select Convert. When the project converts, View Designer creates a backup of the original project in the same location as the converted file. View Designer appends the name of the backup file with _V#.

4.5.1 Equipment Framework

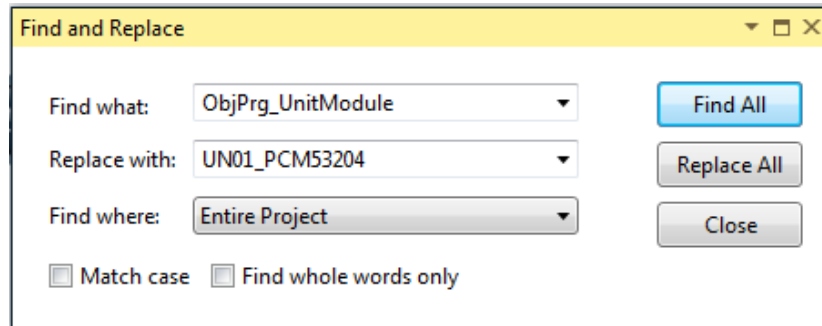
4.5.1.1 Explore Equipment Framework

Open “FWK-B_PV5500-800x480_VD5” file and Save Project As “PCM53204”. Explore the items in the Project Explorer as shown below.



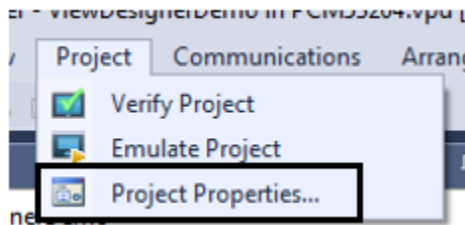
4.5.1.2 Tag Assignment

By default, the Framework objects are linked to `::PAC\ObjPrg_UnitModule`, the default Unit Module name when instantiating the Unit object in Application Code Manager. To change this connection, perform a Find and Replace of this tag with the desired name. In the demo file created from the previous [Application Example](#) section, the unit name is assigned as `UN01_PCM53204`. This should replace the default unit name.

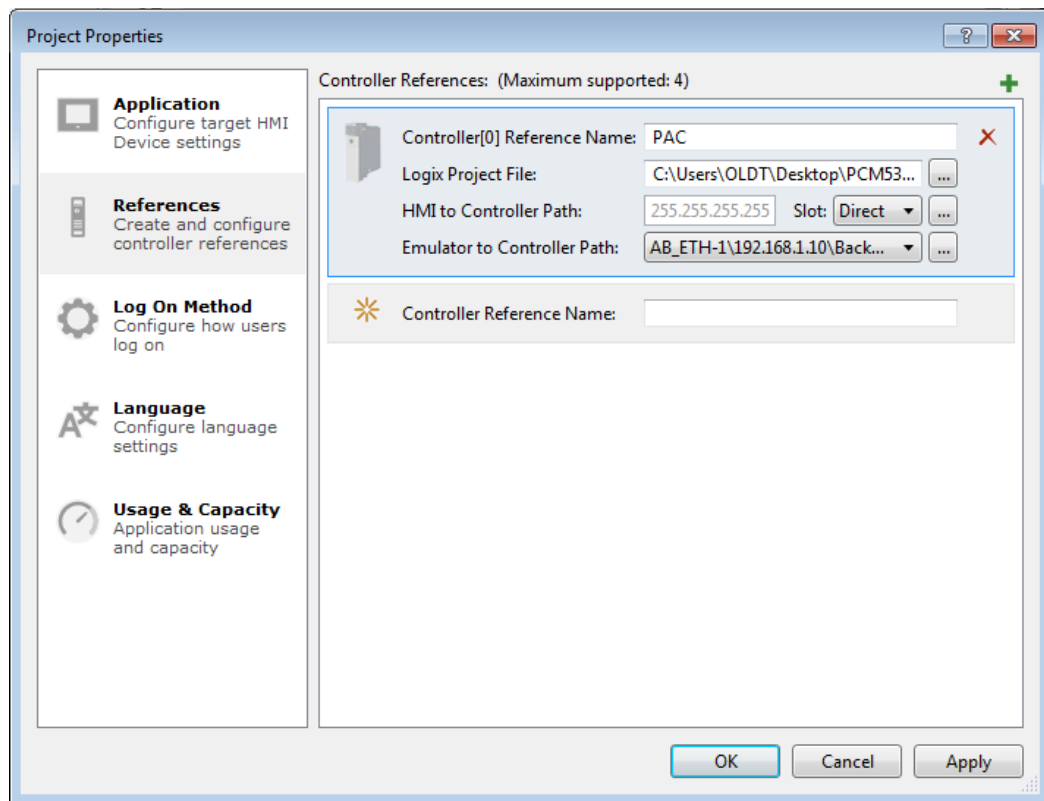


4.5.1.3 Define Project Properties

Open Project Properties window from the Project menu.

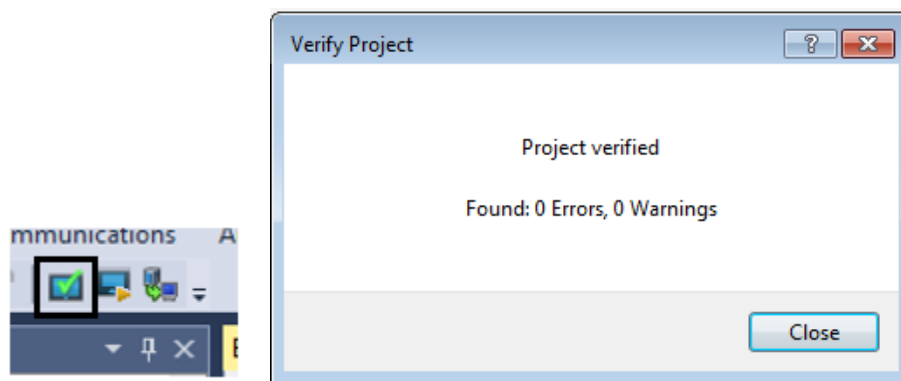


Enter the Controller[0] Reference Name as "PAC". Assign the path of PCM53204.ACD file created from the previous [Application Example](#) section. Assign HMI to Controller Path and Emulator to Controller Path as required.



4.5.1.4 Verify Project

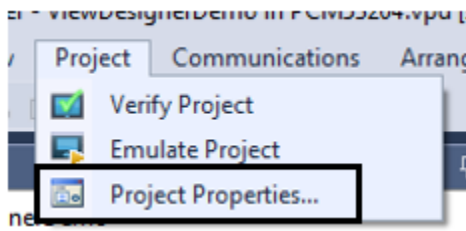
Verify the project and ensure there are no errors or warnings.



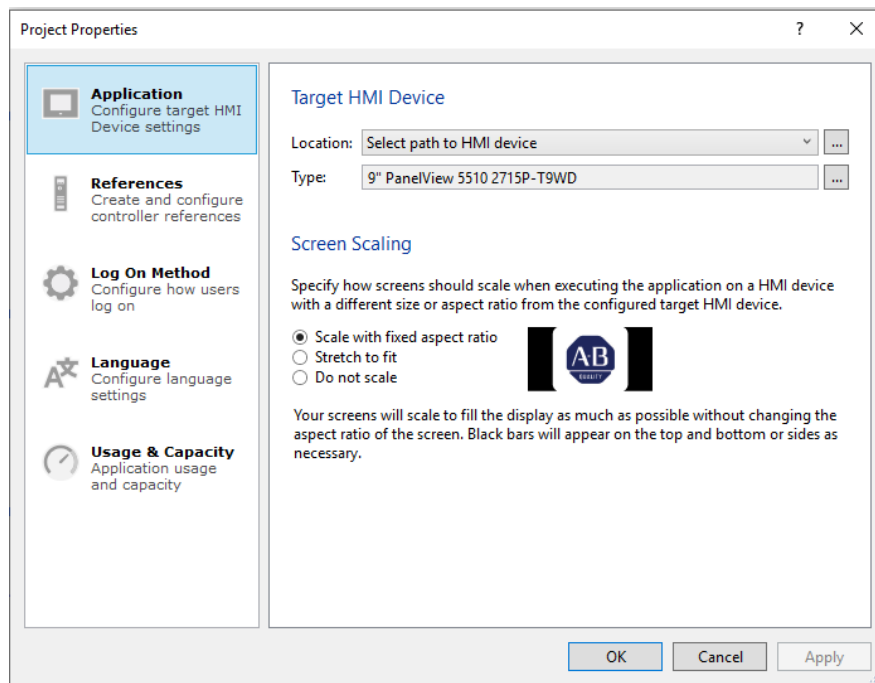
4.5.2 Conveyor CIP Drive and Kinetix5500 Device Object

4.5.2.1 Add Faceplate

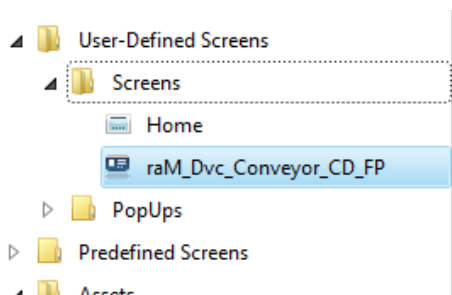
Locate the "raM_Dvc_Conveyor_CD.vpd" file from the File Extraction location. Open the application and Project properties.



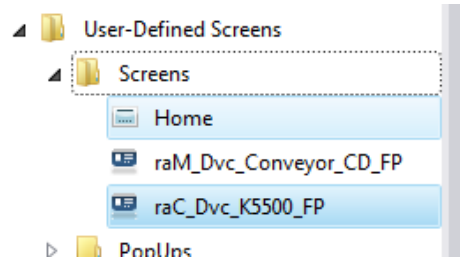
Select Target HMI Device Type as 9" PanelView 5510. Ensure the Screen Scaling is selected as "Scale with fixed aspect ratio". Press Apply and OK. This action will scale the application display for 9" device.



Copy the "raM_Dvc_Conveyor_CP_FP" faceplate into the PCM53204 project.

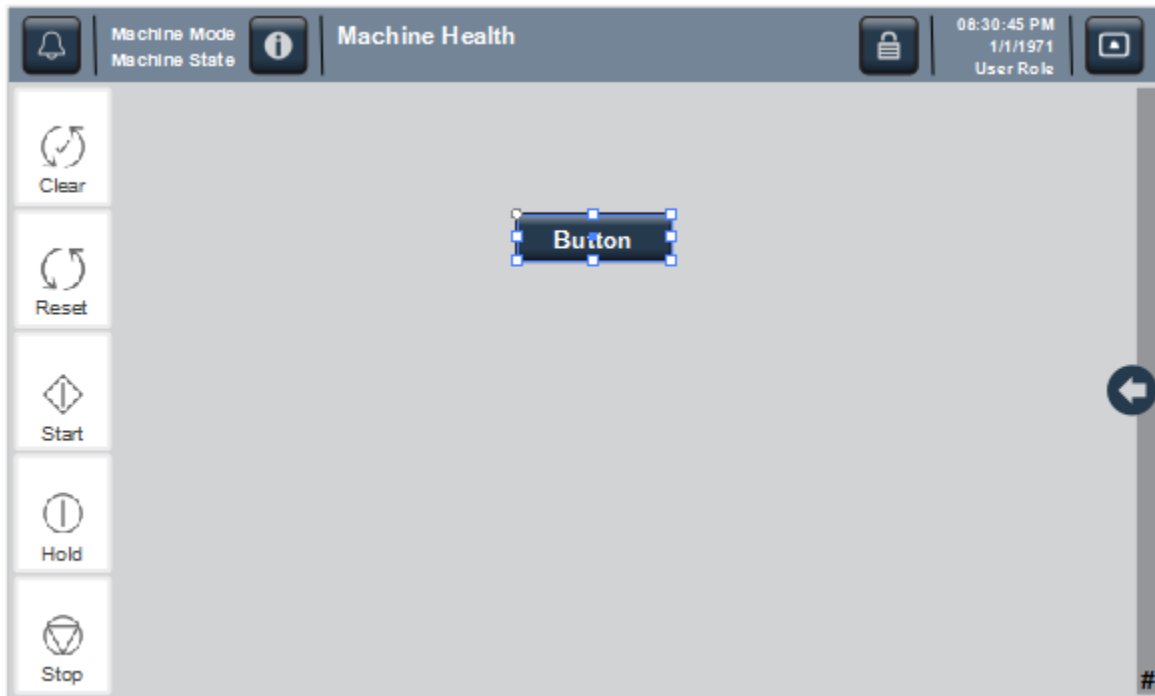


Locate the raC_Dvc_K5500.vpd file from Device Library folder. Open the application and copy "raC_Dvc_K5500_FP" faceplate into the PCM53204 project.

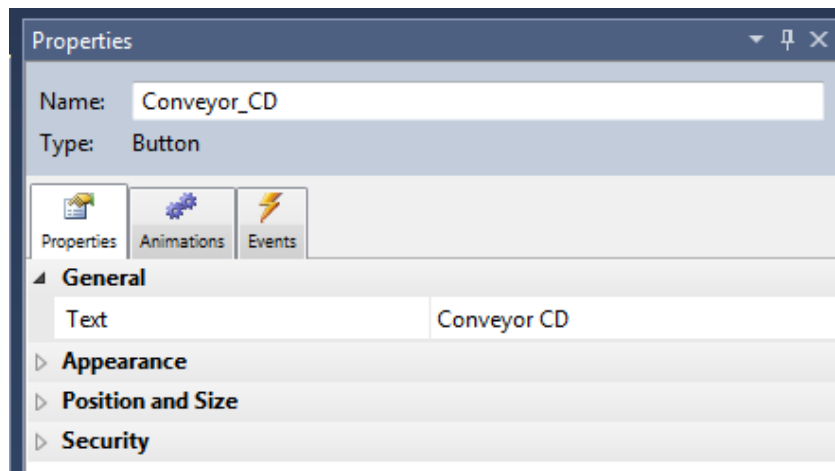


4.5.2.2 Add Navigation Button

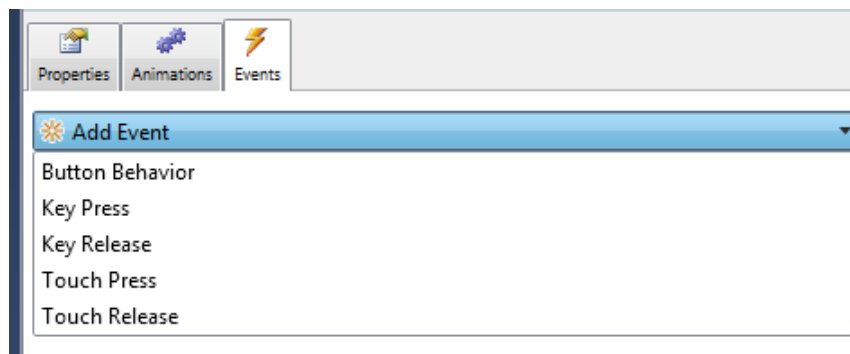
To add a navigation button to raM_Dvc_Conveyor_CD_FP faceplate, insert a button object on the “Home” Screen.



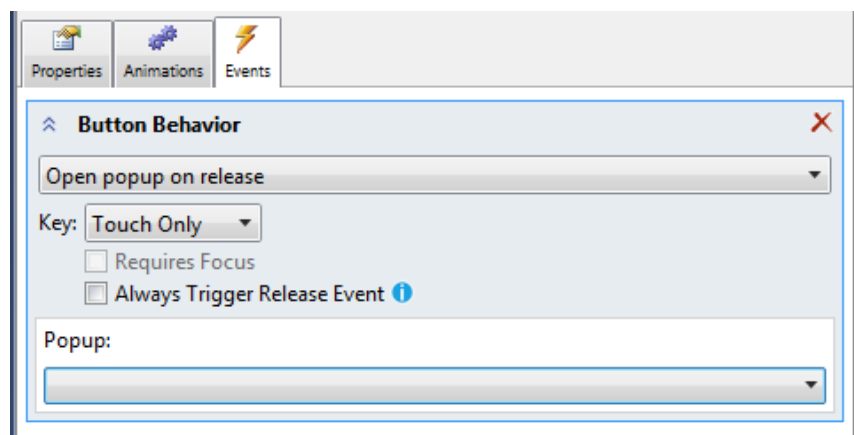
Name the object as Conveyor_CD and edit the Text property as Conveyor CD.



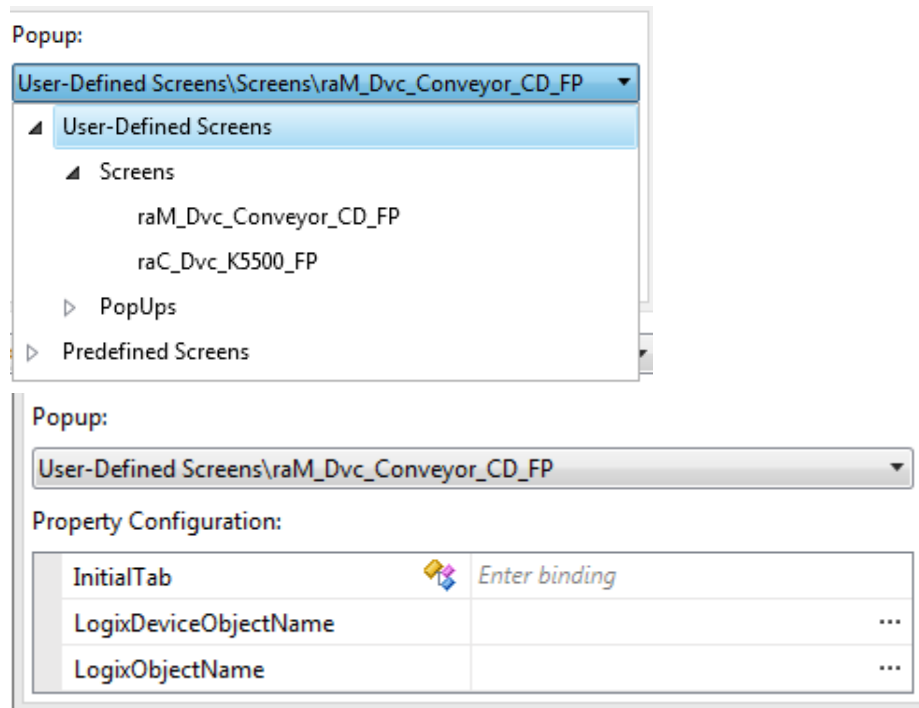
In the Events tab, choose Add Event and select Button Behavior.



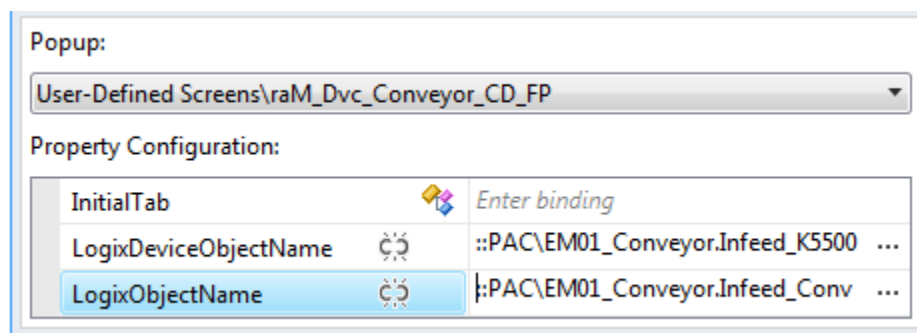
Choose Behavior as “Open popup on release”



Open Popups and select “raM_Dvc_Conveyor_CD_FP” from User-Defined Screens.

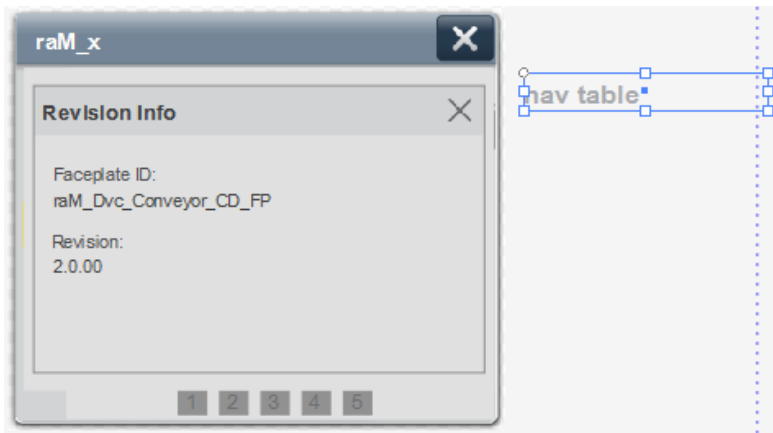


The Conveyor faceplate contains secondary navigation to the Device Object, so connection to both raC_Dvc_K5500 and raM_Dvc_Conveyor_CD are assigned here. Select the “Infeed_K5500” instance of raC_Dvc_K5500 object in the LogixDeviceObjectName connection. Select “Infeed_Conv” instance of raM_Dvc_Conveyor_CD object in the LogixObjectName connection.

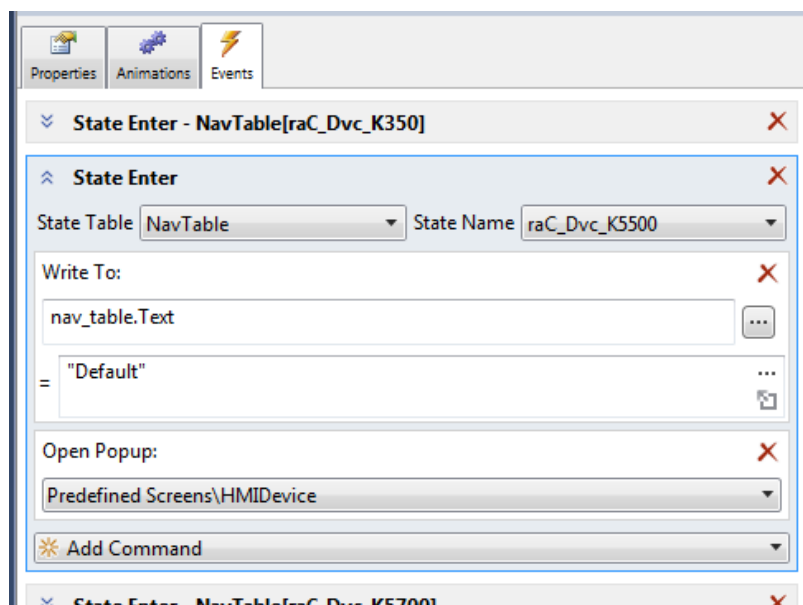
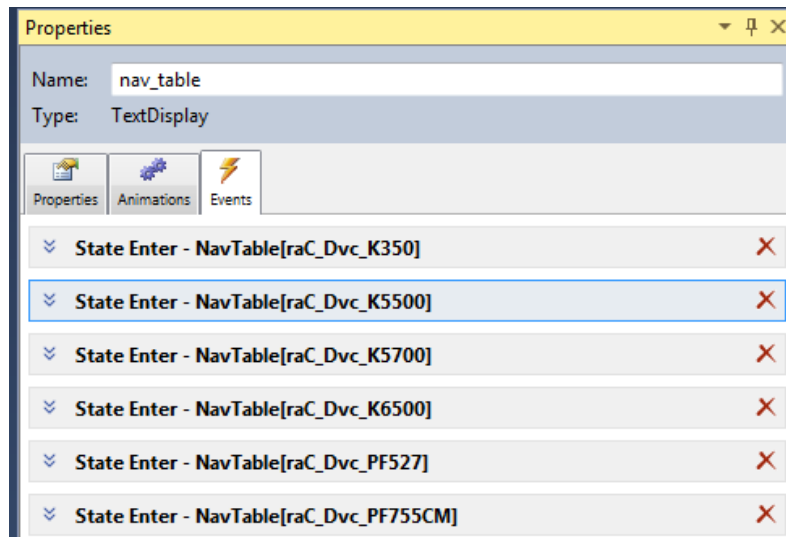


4.5.2.3 Link Secondary Faceplate

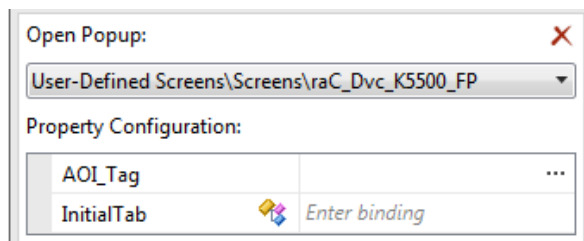
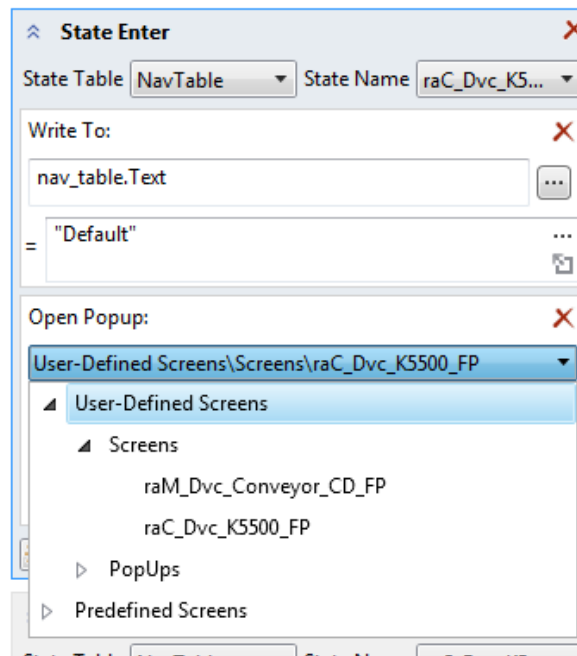
Open “raM_Dvc_Conveyor_CD_FP” screen and select the “nav table” text.



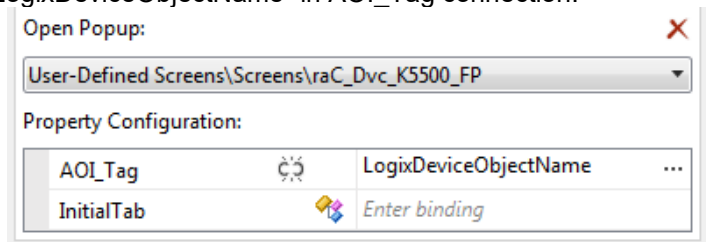
Open the “Events” tab and expand “State Enter – Nav Table[raC_Dvc_K5500]”



In the Open Popup configuration, change the screen to “raC_Dvc_K5500_FP” from User-Defined Screens

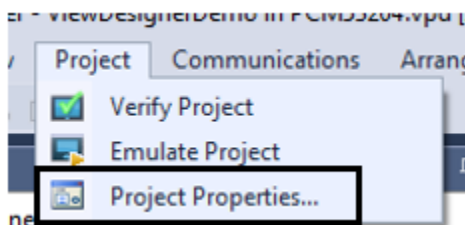


Enter "LogixDeviceObjectName" in AOI_Tag connection.

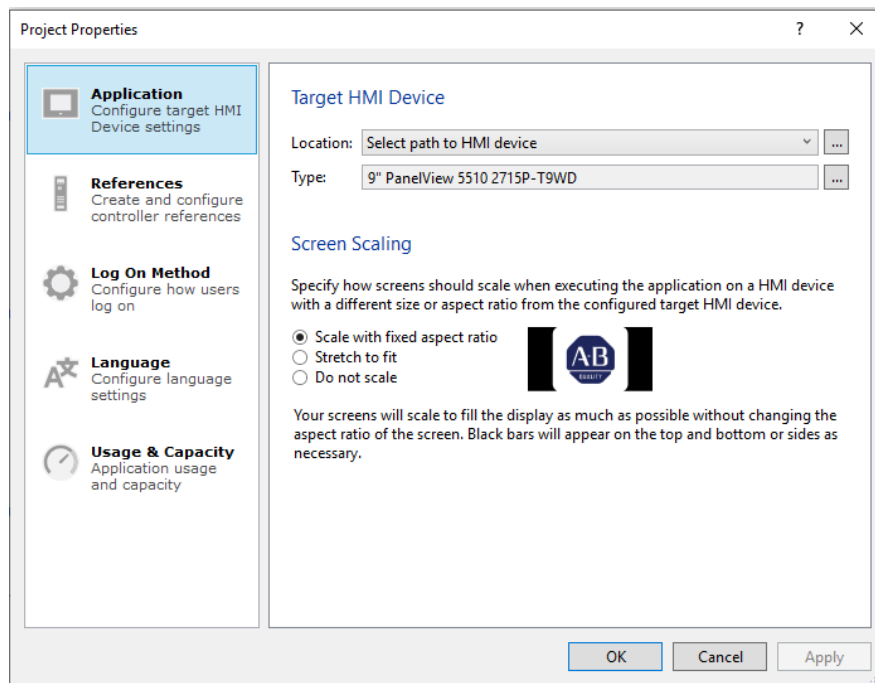


4.5.3 Valve

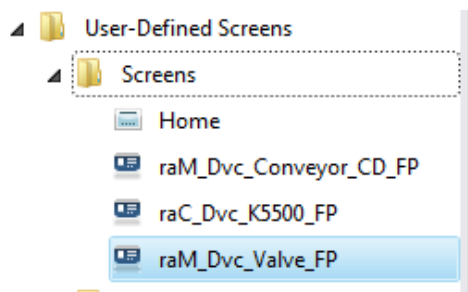
Locate the "raM_Dvc_Valve.vpd" file from the File Extraction location. Open the application and Project properties.



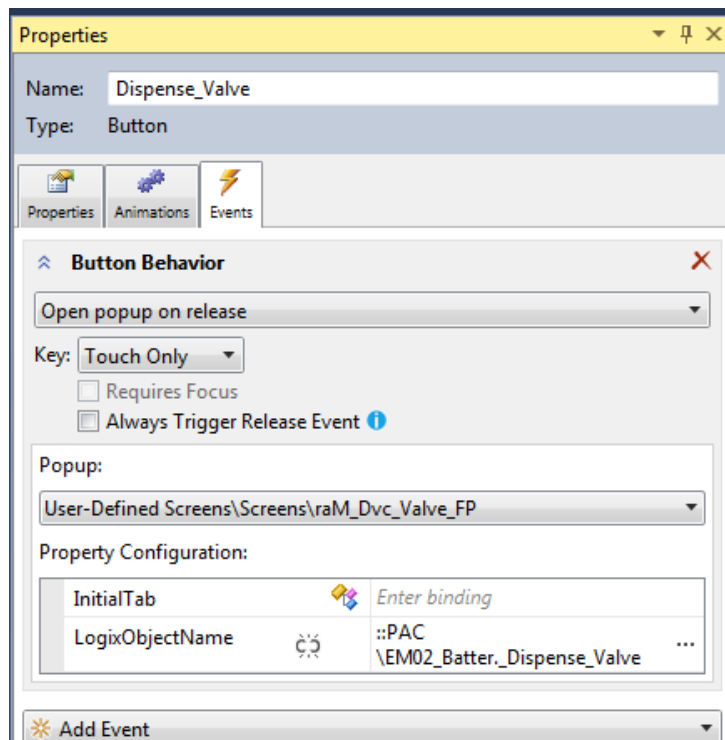
Select Target HMI Device Type as 9" PanelView 5510. Ensure the Screen Scaling is selected as "Scale with fixed aspect ratio". Press Apply and OK. This action will scale the application display for 9" device.



Copy the "raM_Dvc_Valve_FP" faceplate into the PCM53204 project.



Repeat the above steps to add a navigation button for Valve faceplate. Since there is no secondary faceplate navigation in the Valve faceplate, user needs to assign only LogixObjectName connection.



4.5.4 Test Application

Verify the project and ensure there are no errors or warnings. Select Emulate Project to test the application.





Explore the Conveyor and Valve faceplates by clicking the respective Navigation buttons.

5 For More Information

Contact the Machine Builder Libraries team at oemlibraries@ra.rockwell.com.