



MAPS 4

Quick Start Guide

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1. Introduction

The MAPS Quick Start Guide document is designed to help the new user install, configure and get an understand of the various MAPS sub-systems. In addition to assist a new user in understanding the MAPS approach to SCADA/HMI project development and concepts surrounding the MAPS product.

1.1. General Overview

In order to understand MAPS it is important to understand the basic architecture of the product. Below is a diagram, which represents the basic standalone architecture.

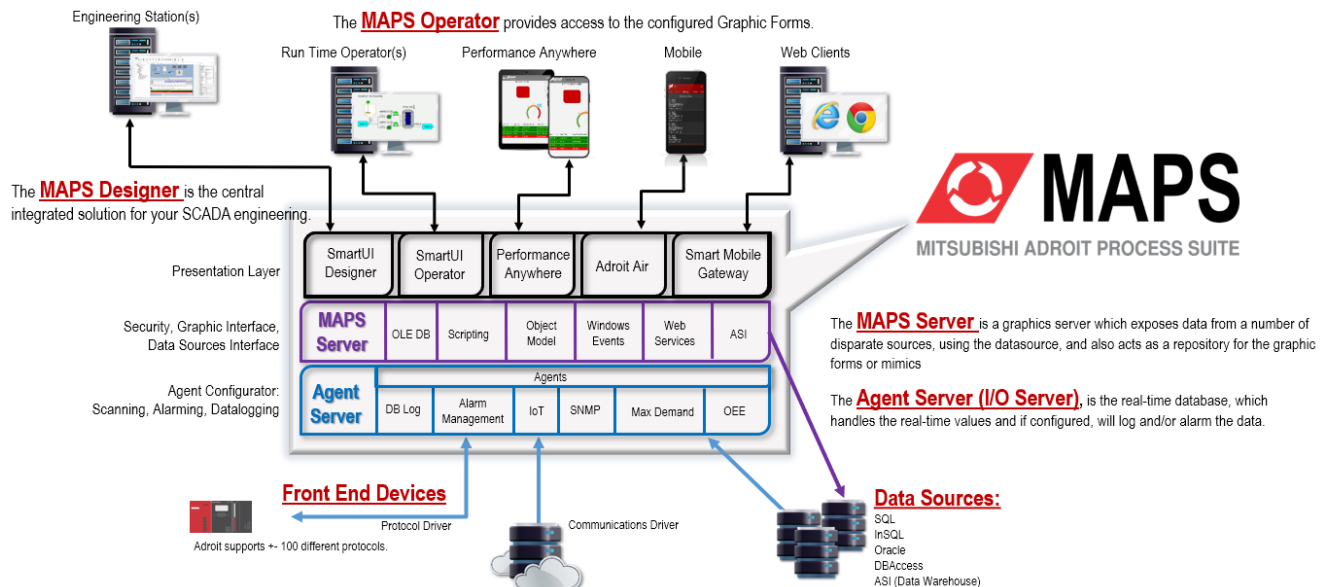


Figure 1: Basic Stand Alone Architecture

- **Front end device (FED):** The front-end device is a general term used for a PLC; OPC server; RTU; a controller; or any software package that allows third party communication (i.e. OPC, SIMATIC NET).
- **Protocol driver:** MAPS supports +- 100 different protocols. Once a new driver has been installed and configured to talk to a FED, it is called a Device. A single protocol can support multiple Devices. An example of this is the user can have multiple FEDs which use the same protocol (i.e. MODBUS Ethernet), each FED will have its own IP address/Address. A device will need to be created for each FED.
- **Agent Server (AS):** The Agent Server (I/O Server), is the real-time database, which handles the real-time values and if configured, will handle all post-processing, logging and/or alarming the data.
- **SmartUI Server (SUIS):** The SUIS is a middleware server which exposes data from a number of disparate sources, using the datasource, and also acts as a repository for the graphic forms or mimics. It also acts as the manager of access, and broker for the unified data model implemented across all data types that may end up in the
- **Datasource:** Each source of data (i.e. MAPS Agent Server) requires a datasource plugin before it can be associated with the SmartUI Server. This provides the ability to expose its data as data elements. An example of a data element is Adroit.Analog.SAMPLEANALOGUE.value. The SmartUI Server connects to data using two different types of datasources:
- The SmartUI Server allows multiple sources of data to be available to the configuration of a system in a unified manner. It basically converts all datatypes into universally usable elements (dataelements).

Datasource	Purpose
MAPS	Exposes the configured agents and their slots, of the connected MAPS Agent Server.
Event Log	Exposes the events within the Windows event logs of the connected specific computer.
OLE DB	Exposes the data within a specific OLE DB compliant database or data store.
Server Scripts	Stores scripts that can be run on the Server.
Simulation	Exposes a wide variety of different types of generated data
WebServices	Exposes a wide variety of data available in web services

Note: For further information on the available datasource see the MAPS help.

- Clients: The MAPS SUI comes with a number of types of clients which can securely connect to the SmartUI Server:
 - a. Designer: The SmartUI Designer allows the user to configure datasources as well as create and design graphic forms.
 - b. Operator (View Clients) allows the user to operate graphic forms
 - c. Performance Anywhere: An HTML5 web reporting client for building dashboards
 - d. Adroit Air: Mobile App for push notifications such as operator messages, alarms and process data (runs on Android and iOS)

When connecting to the SUI the user will be prompted for login credentials. The default credentials are the same as the Windows credentials that the user installed MAPS SUI under.

2. Initial Setup of MAPS

2.1. Hardware & Software Requirements

2.1.1. Recommended Hardware & Software

Please refer to the Hardware & Software Specification document available from our website.

<https://adroittech.co.za/downloads-tree-view/>

2.1.2. Software download

Download the software, available from our website.

<https://www.mapsscada.com/downloadsacc/>

2.1.3. Additional Software

Additional software that will expand the functionality of MAPS:

- Internet information services (IIS): Required for web service and distribution service.
- SQL with advanced reporting services: used for historical data logging and reporting. MAPS ships with the free SQL Express that can be used for these purposes.

2.2. Licensing

Typically, the Agent Server is licensed via a HASP software protection hardware key, which is inserted into the USB port of the computer on which the Agent Server is running. This HASP is then programmed in accordance with your specific license agreement.

In situations where it is not possible to use a physical HASP, it is also possible to license MAPS via a software license, which is only available on request. For further details, contact your MAPS representative for details.

2.2.1. Licensing definitions

- Scan points: When a memory address is scanned/attached in the PLC and for every DBAccess Agent; Script Agent; and SNMP Agent a Scan Point is consumed.
- Version: HASPs are licensed against versions of MAPS.

IMPORTANT: The former Remote Nodes licenses that applied to all types of clients have been DISCONTINUED. These have now been replaced by the following client specific node licenses, each of which have different costs:

- Clients: typically Operators and/or Designers and
- Mobile/Web Clients: typically Performance Anywhere or Adroit Air clients.
- OEM: Additional components that are separately licensed are specified as separate textual entries in the product license e.g. MAPS Alarm Management enablement, MAPS Historian enablement; Max Demand Agent, OEE Agent; Siemens Ethernet driver; DNP 3.0 driver.

A time limit is set on development HASPs. Production HASPs have no time limit.

2.3. Prerequisites for installing MAPS software

1. Ensure that the Windows operating system on which you intend to install MAPS has been and remains legally licensed and ACTIVATED, since MAPS is not supported when it is run on an unlicensed Windows operating system.
2. Ensure that you are not using the built-in Administrator account to run MAPS, since UAC is automatically disabled whenever this built-in Administrator account is used.

3. When installing and running MAPS on an operating system that provides User Account Control (UAC), such as Windows 7 or Windows Server 2008, please ensure that UAC is always ENABLED, since MAPS is not supported when it is run with UAC disabled.
4. MAPS 4 requires the Microsoft .NET Framework 4.6.2
5. The Web Service component can ONLY be installed on a computer that has IIS (Internet Information Services) installed.

2.4. Installation

1. Install the MAPS software from either the download or media supplied.
2. Click on the MAPS installation executable option.

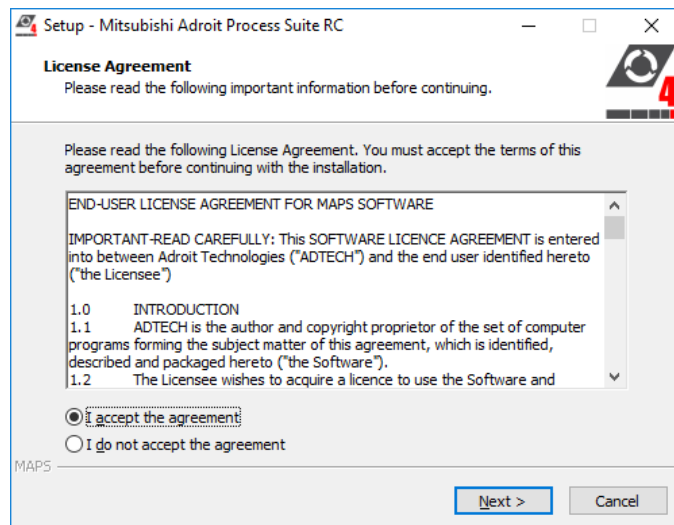


Figure 2 - License Agreement

3. Select the "I accept the agreement" to accept the EULA, then click the next button.

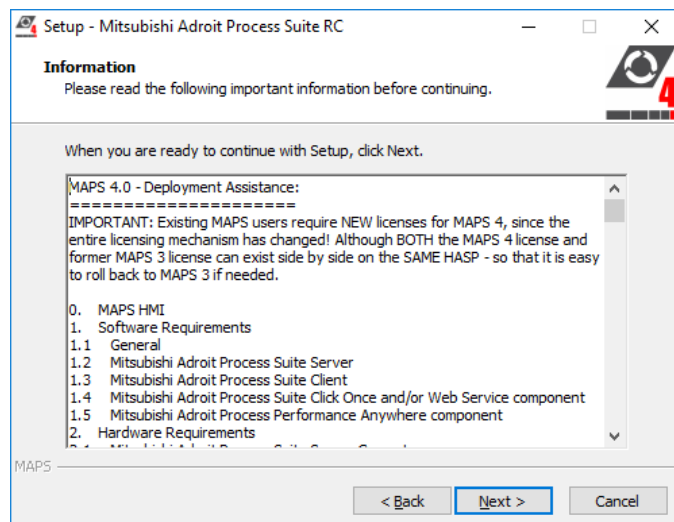


Figure 3 – Release Notes

NOTE: The release notes contain all the information regarding the new version of MAPS. It is recommended that the user familiarise themselves with this document, then click the Next button.

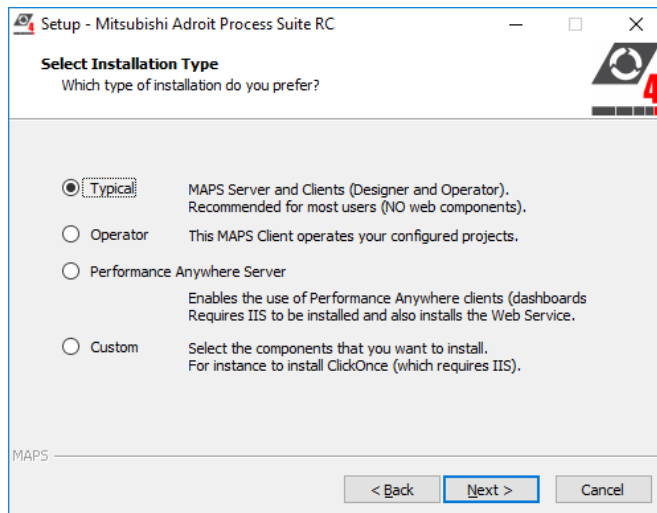


Figure 4 - Select Installation Type

4. The user will now be prompted to select which type of installation they require. The Typical installation will install a stand-alone MAPS. Click the Next button.

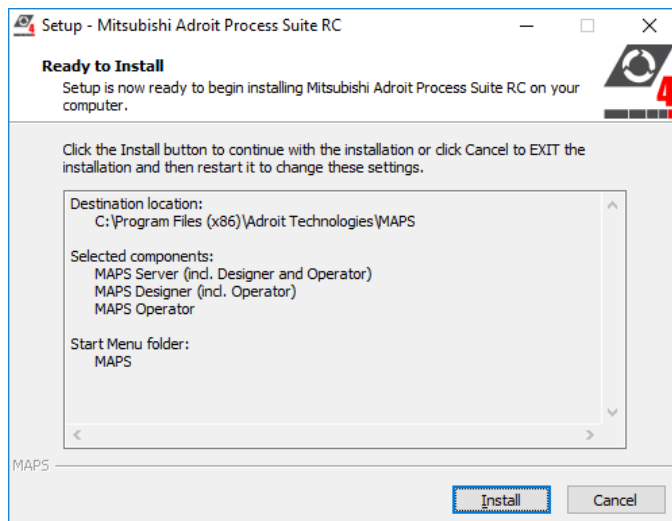


Figure 5 - Ready to Install

The Ready to Install screen give the user a summary of what will be installed.

5. Click on the Install button.

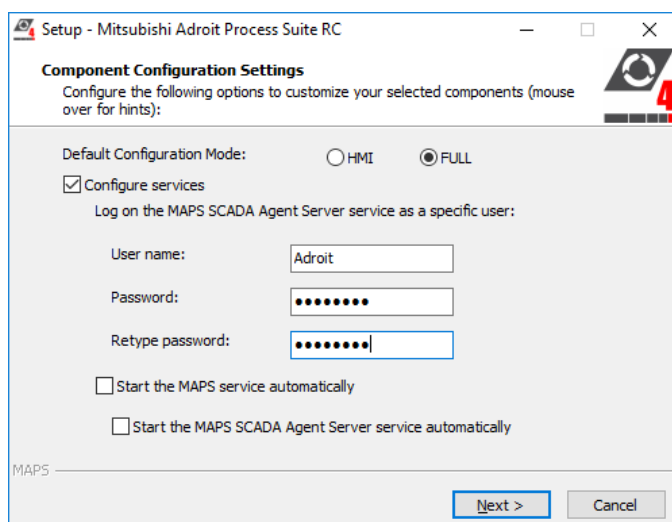


Figure 6 - Component Configuration Settings

6. The component configuration screen will give the user the option to setup the agent server and SmartUI server services.
7. Make sure that the Configure services is checked.
8. Set the Username to the current logged on user, supply the password in the corresponding text boxes.

NOTE: If the user requires the agent server and SmartUI server to start automatically then check the "Start the Agent Server service automatically".

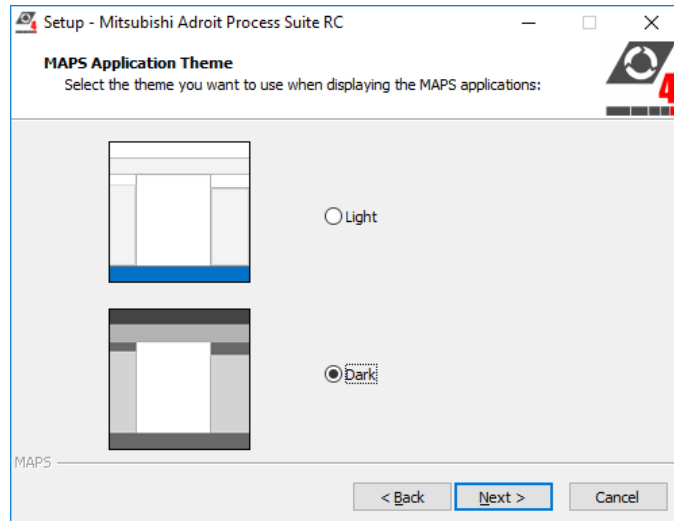


Figure 7 - SmartUI Theme

9. Select the preferred Theme, then click Next button.
The installation will begin.
10. Once the installation is complete restart the PC/server.

3. Configuring MAPS

3.1. New Configuration

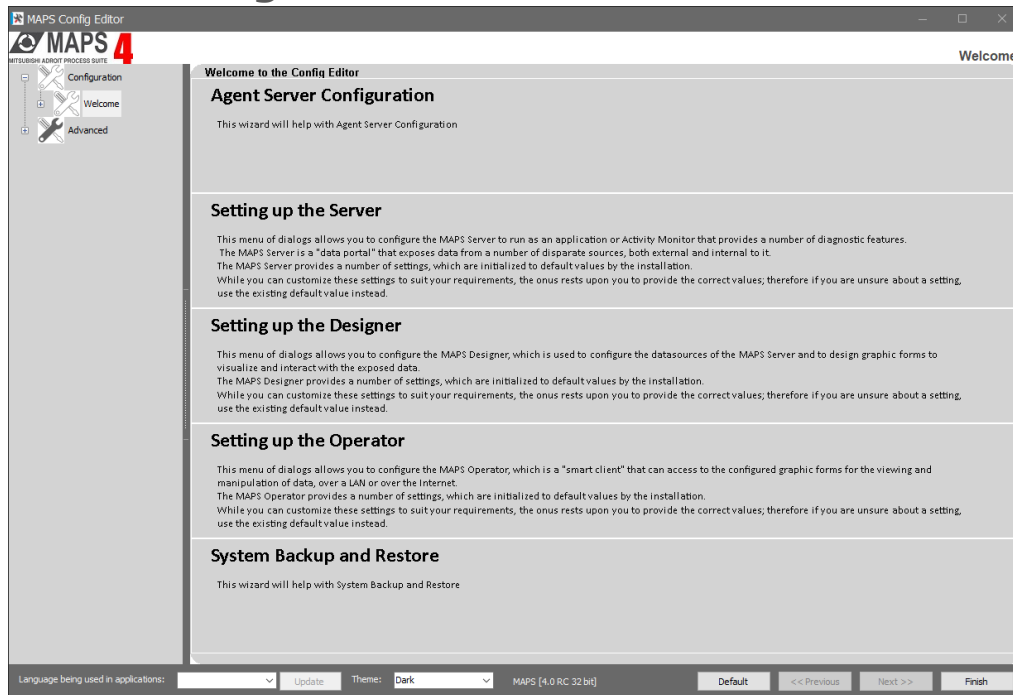


Figure 8 - MAPS Config Editor

The MAPS Config Editor application is used to customize the installed applications and/or services by modifying their default settings. First create a new configuration by following these steps:

1. Select the Configuration menu item on the top left and check on "Allow Multiple Configurations" option.

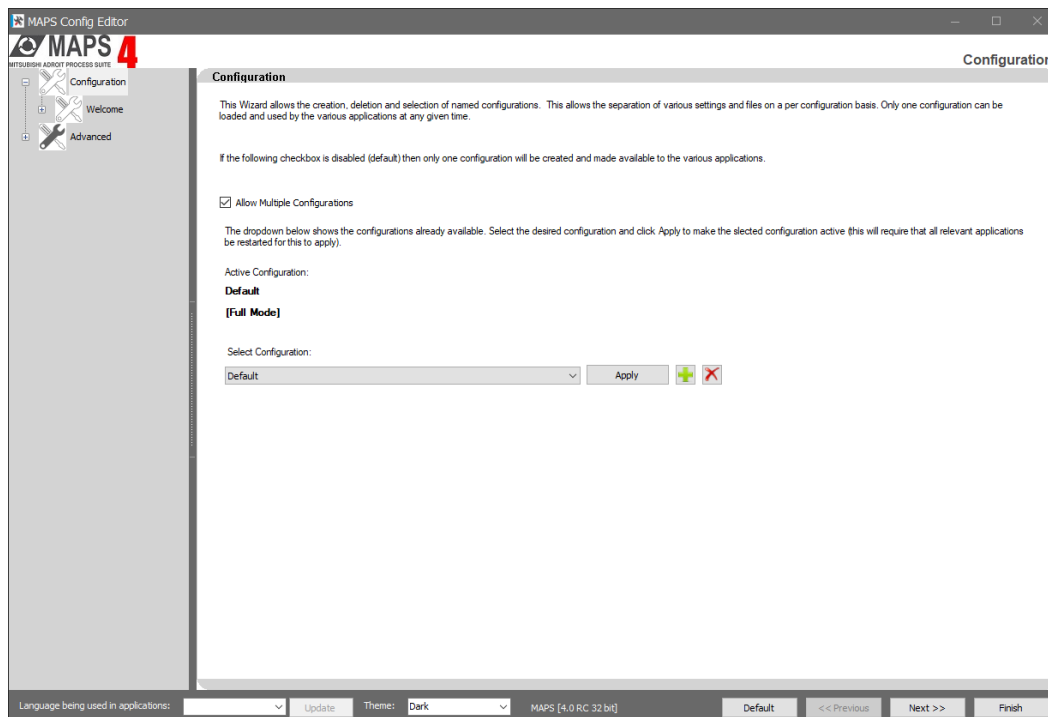


Figure 9 - Allow Multiple Configurations

2. Select the Add new configuration button. 

3. Give the new configuration a name. Then click the Ok button.

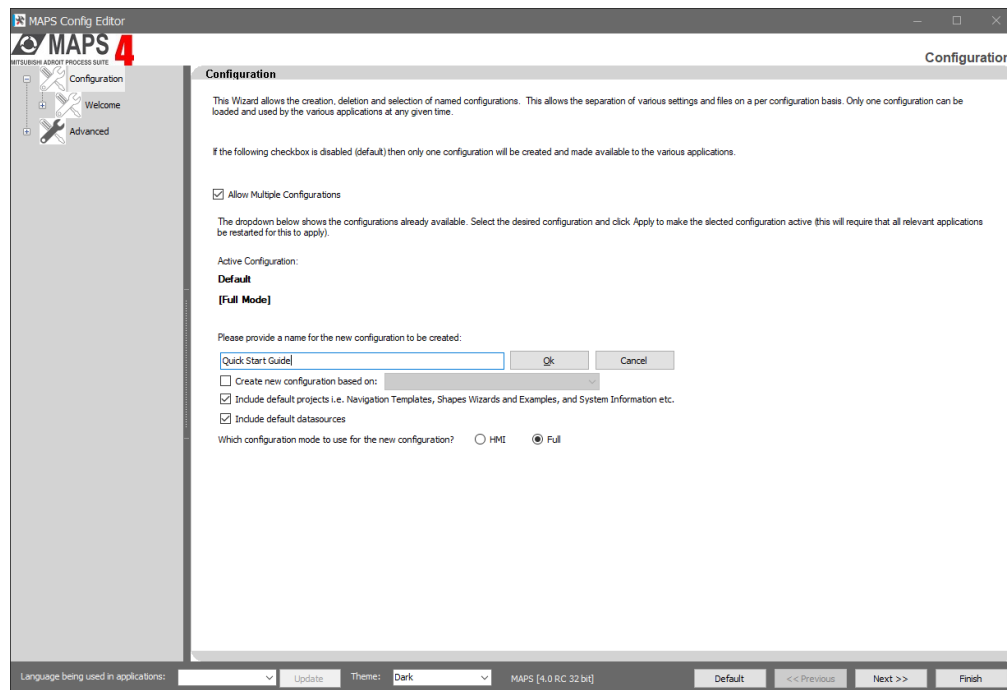


Figure 10 - Create a new configuration

4. Once the configuration has been created click the Ok button.

3.2. Creating a Device

Setup the OPC Client to the MAPS BatchOPC Server demo application. This application is part of the MAPS install.

1. Open the Driver configuration in the MAPS Config Editor, under the Agent Server Configuration.

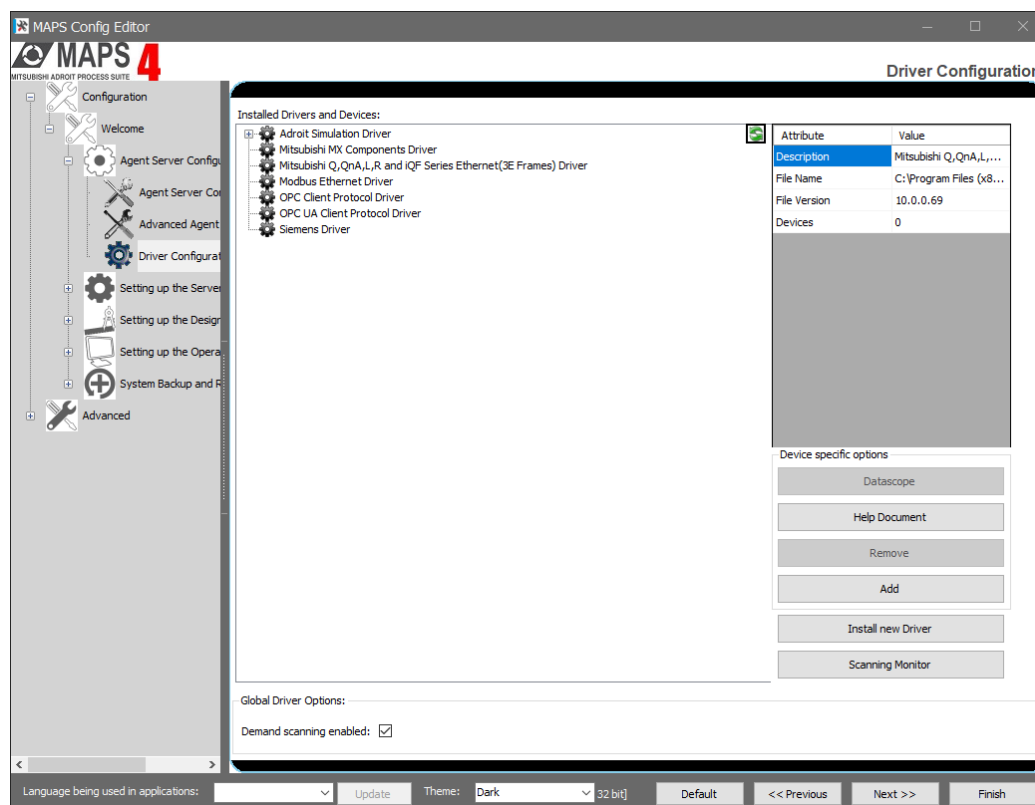


Figure 11 - Driver Configuration

2. Select the OPC Client Protocol driver, then click on the Add button.
3. Enter the device name BAT_01

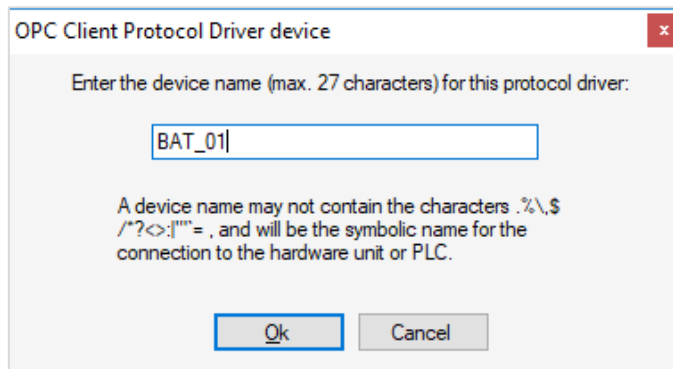


Figure 12 - Device Name

4. In the OPC client driver configuration select the MAPS Batch OPC Server in the OPC server drop down box.
5. Click Ok.
6. Click Ok on the performance counter installation.

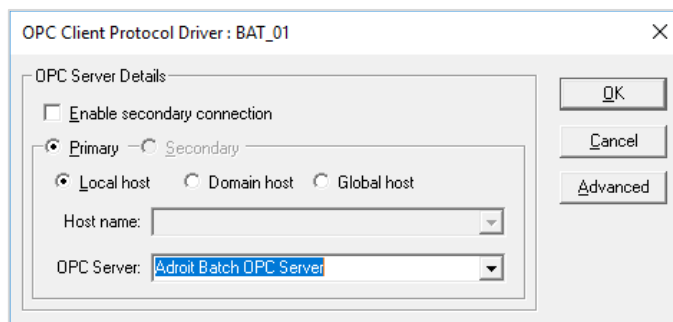


Figure 13 - OPC client configuration

4. Running MAPS

MAPS is a client/server application and as such in a distributed architecture, particularly in large systems the Agent Server and SmartUI Server would typically reside on a separate machine and all the Operators on separate PC's. In smaller stand-alone applications the Agent Server, SmartUI Server, Designer and Operator would reside on a single PC. For this reason you need to start The Agent Server and the Client Applications (Designer/Operator) separately. The SmartUI Server will start automatically when you start the Agent Server application.

1. On the desktop start the MAPS Agent Server.



2. If the PC does not have MAPS Licensing, then the server will start with a timed limited demo license. Click OK on the agreement.

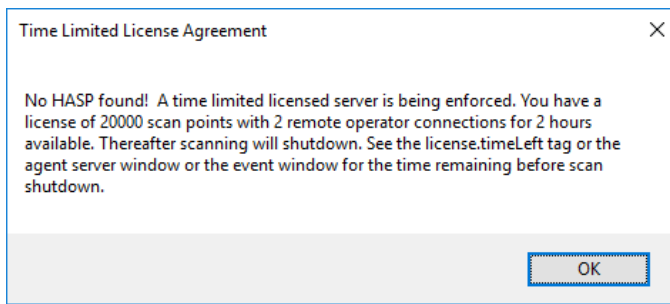


Figure 14 - Time Limited License Agreement

3. The MAPS Agent Server (AS) will load. Check that the server loads without any errors and that the AS displays a LOAD complete.

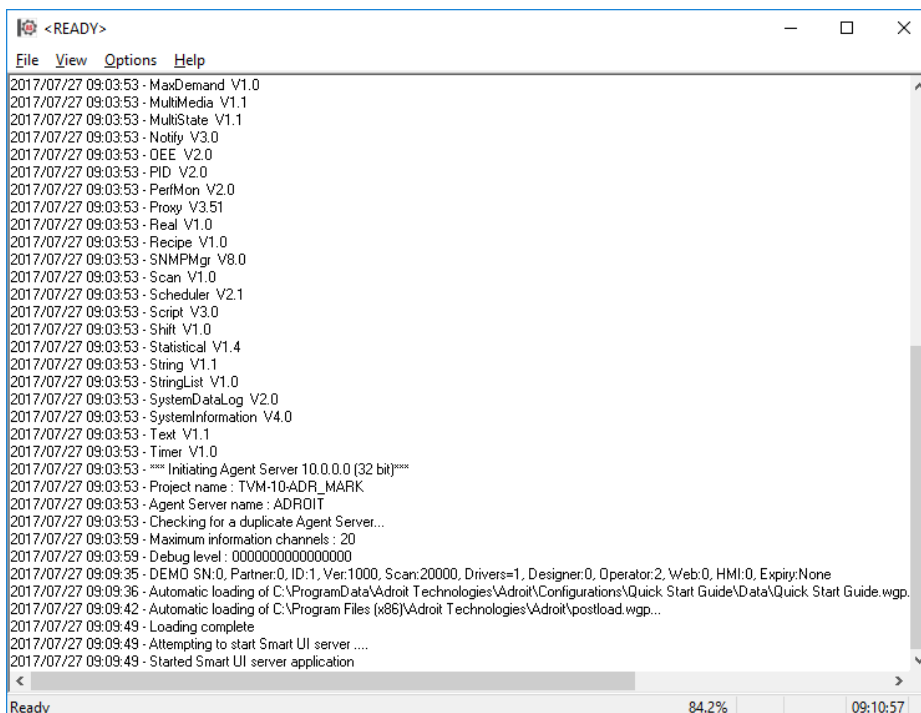


Figure 15 - MAPS Agent Server

4. Once the AS has finished loading the AS will start the SmartUI Server. Check to make sure that the SmartUI Server shows it is Running. This can be done by launching the SmartUI

Server application window from its icon on the desktop. In normal conditions you don't need to do this but for starters it's worthwhile understanding each component within the system.

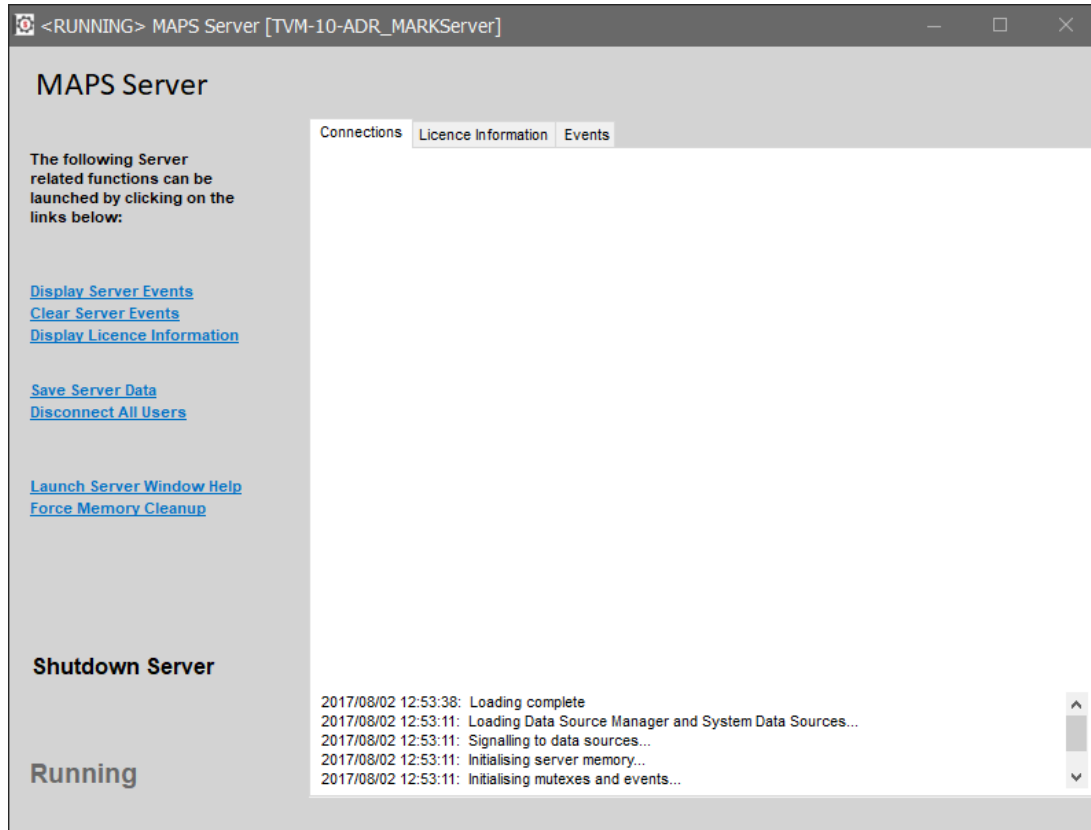


Figure 16 - MAPS SmartUI Server

5. Configuring a Project

5.1. MAPS SmartUI Designer

1. To begin creating a project the user will need to run the MAPS SmartUI Designer by clicking on the Icon on the desktop.



2. The user will then be prompted to login to the local SmartUI server. The user login is the same as the user's Windows OS credentials.
3. Enter the Login Name and Password, typically your Windows configured credentials.
4. Click on the Finish button.

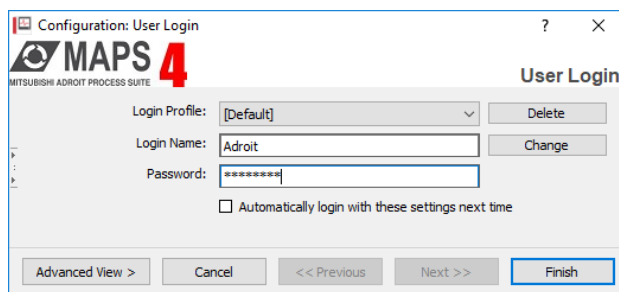


Figure 17 - SmartUI Designer User Login

Note: by checking the "Automatically Login" check box the designer will auto login in future launches.

The Designer environment is where the user will spend most of their time. It is a single engineering window to your entire project. The user will manage connections to datasources, access the Agent Server for Agent/Tag configuration, manage and apply security and build the graphical forms for the project.

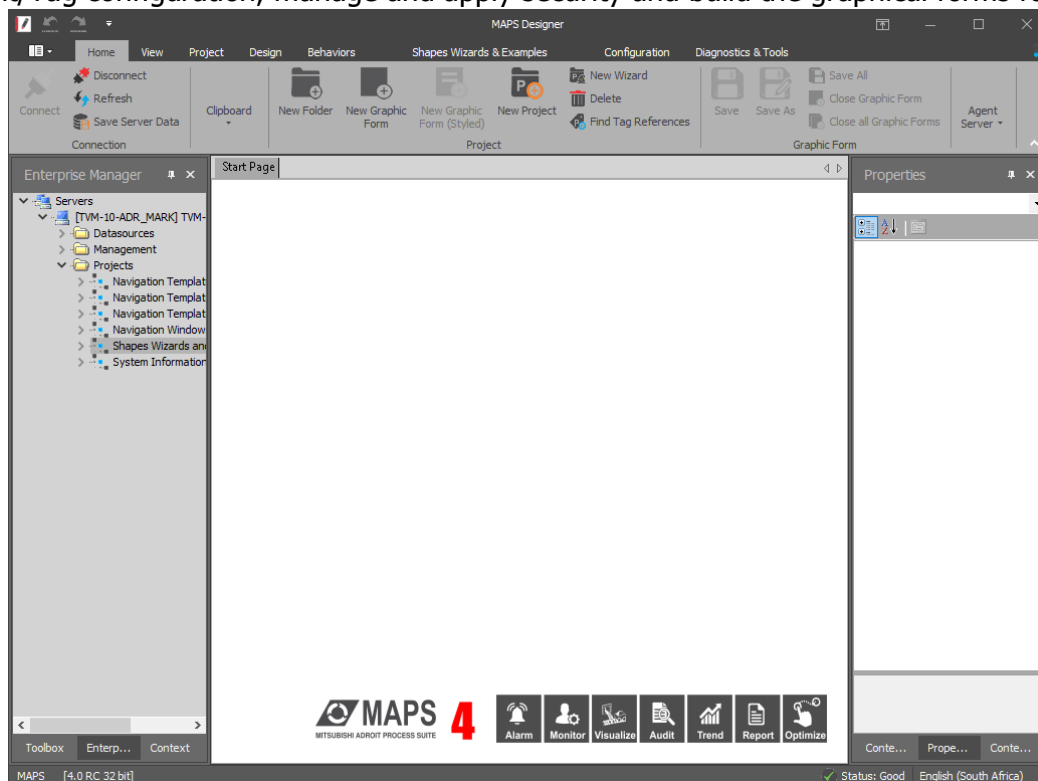
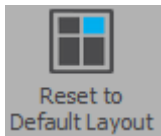


Figure 18 - SmartUI Designer

The Designer has views that are docked around the centre design area. The most important of these is the Enterprise Manager.

To reset the Designer layout, open the View ribbon and click on the "Reset to Default Layout" button.



5.1.1. Enterprise Manager

The Enterprise Manager view is where the user configures the MAPS Project.

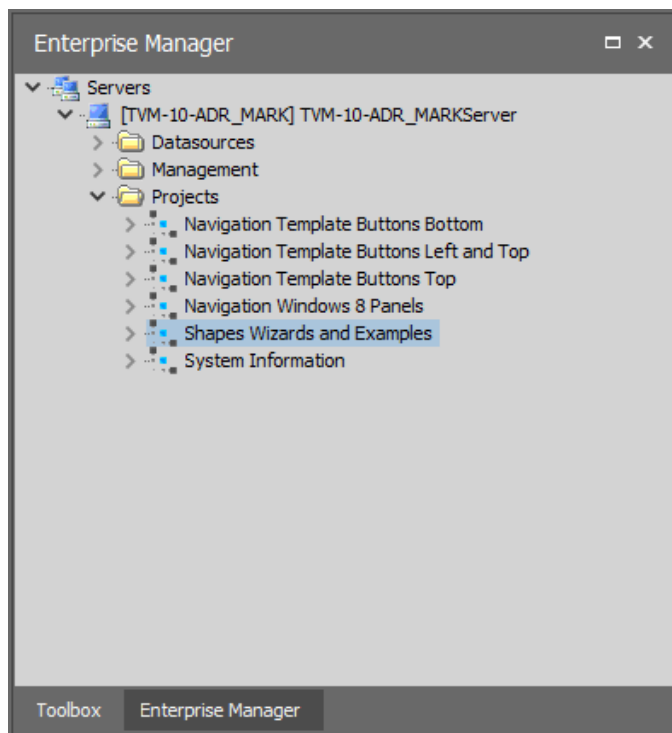


Figure 19 - Enterprise manager

The Enterprise Manager has three areas, they are:

Datasources

This area is where the user can create and manage the datasources. There are 3 default datasources which are created automatically, these are:

- MAPS – This datasource connects to the local Agent Server.
- Eventlog – This datasource connects to the local Windows event log.
- ObjectModel - The object model datasource enables you to enhance your existing wizards, by adding SCADA configuration to them. Its main function is to save you engineering time when bulk creating objects, such as items of equipment, which require similar HMI/SCADA configuration.

Management

Management consists of 3 sub-settings:

- a. Profile – a default profile is created at installation which is used to manage user-specific configuration of the SmartUI Designer and SmartUI Operator. The profile manages all user-specific settings like language, scripting, colour settings, menu settings and SmartUI Operator settings to the graphic form.

- b. Security – Security in SmartUI is user-centric and operates on top of the traditional Windows operating system security, using a configurable sub-set of the existing users and groups on each Server computer, known as the “allowed” users and groups. For instance, when a Client (Designer or Operator) is launched, it is necessary to login to a Server and only a user that is either an allowed or a member of an allowed group on this Server is able to log into it. In addition to controlling the access of these “allowed” users and groups to the Server, its configured datasources and their data, it is possible to control or limit the access that these users have within each Client (Designer or Operator).
- c. System – is mainly only for system monitoring reasons. This allows you to display which clients are connected, subscription pool, message queues, etc.

Projects

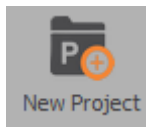
The Projects area is where you create, build and store your own Graphic Forms. The Projects directory by default will have Shapes Wizards and Examples and System Information graphic forms useful for incorporating for technicians to manage the HMI/SCADA project at runtime. (all the sample project layouts incorporate these system management elements)

Note: Projects can have sub-folders containing your graphic forms and it is important to give this structure some thought. We advise the use of the ISA95 as a guideline which defines the physical structure of your plant, including enterprise, plant area, site, etc.

5.1.2. Adding a New Project and Graphic Form

To create a new project:

1. Select the Projects folder in the Enterprise Manager.



2. On the Home ribbon click on the New Project icon.
3. Give the new project a name, Plant A.
 - a. Please note, although we are not using them in this Quick Start Guide we recommend choosing a template on which to base your project by checking “Show Project Navigation and Style Configuration” and selecting a project layout that suits the application you are building. This will give you a very good navigation and folder structure as a basis for an actual project implementation. We have set these up with correct Properties in order to deal with most scenarios where for example you are using different resolution screens for Operators and scaling is important (a whole complex subject by itself).
4. Click the Finish button.

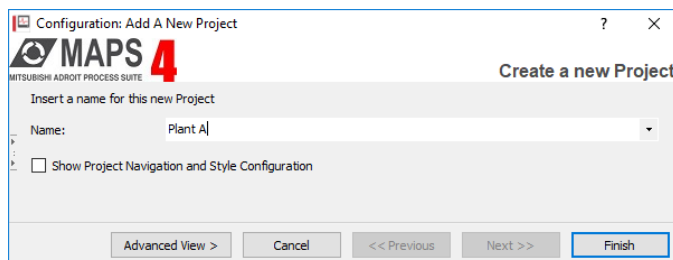


Figure 20 - Add a new project

Note: if the project does not appear straight away click on the Refresh icon on the Home ribbon.



- Select the new project Plant A. On the Home ribbon select the New Graphic Form Icon



- Name the graphic form "Overview". The new graphic form is now open in the design area.

Note: It is possible to rename by right clicking on the GF and selecting Rename in the menu.

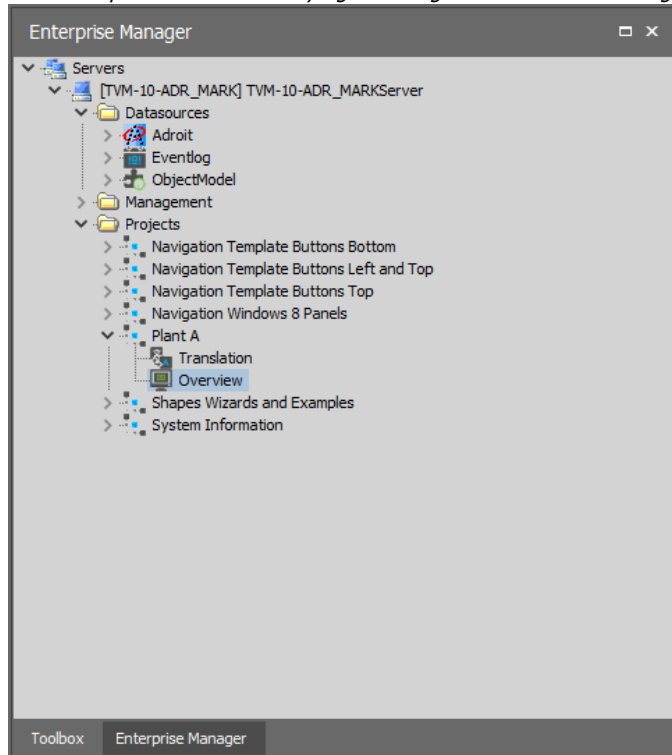


Figure 21 - Enterprise Manager with new project

5.1.3. Properties

The Properties view contains all properties of the selected object that is placed on the GF. The GF properties are displayed by default.

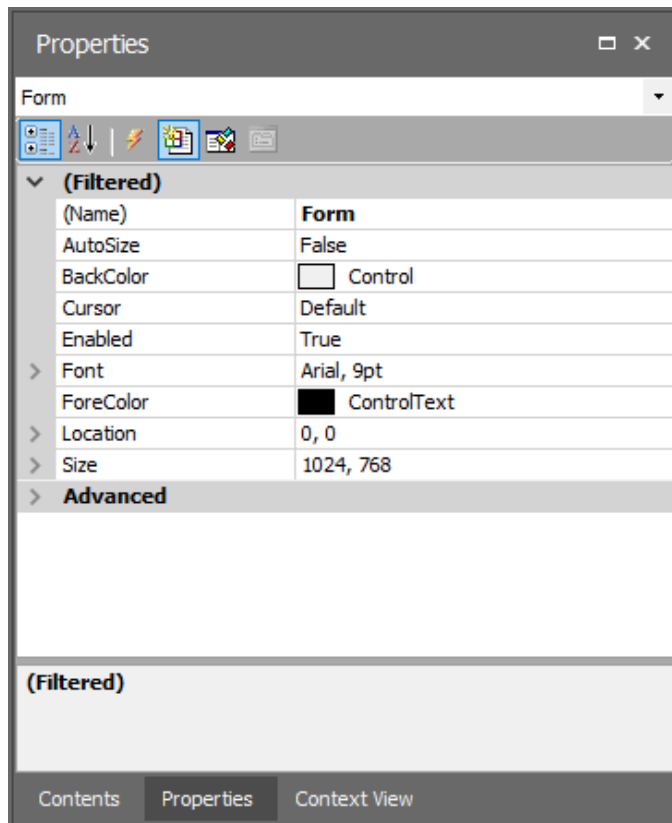


Figure 22 - Properties View

5.1.4. Toolbox

The Toolbox view contains all the base objects that the user will add to the graphic form. The Toolbox view can be found below the Enterprise Manager view.

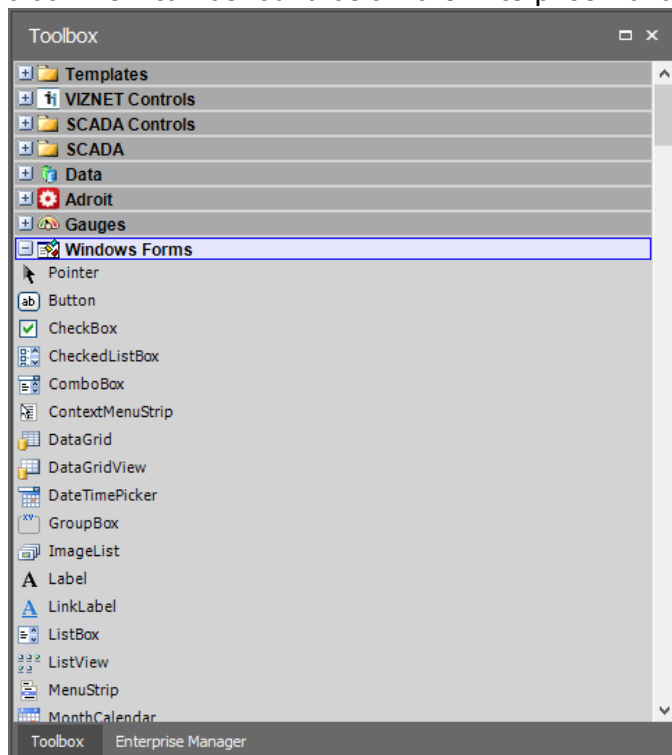


Figure 23 - Toolbox View

Note: Objects are grouped by their function and class.

Add an Object to the Graphic Form (GF)

To place a new Object on the GF "Overview":

1. Make sure that the GF "Overview" is open.
2. Under Windows Forms in the Toolbox select the control Label and click on the opened GF.
3. Set the following properties of the label.
 - (Name):lblActTempValue
 - AutoSize:True
 - Backcolor:White
 - Font:Arial, 9pt, style=Bold
 - Text:00.00 deg C
4. Clicking on the Save icon  on the top left of the design area. This will save the current selected GF.

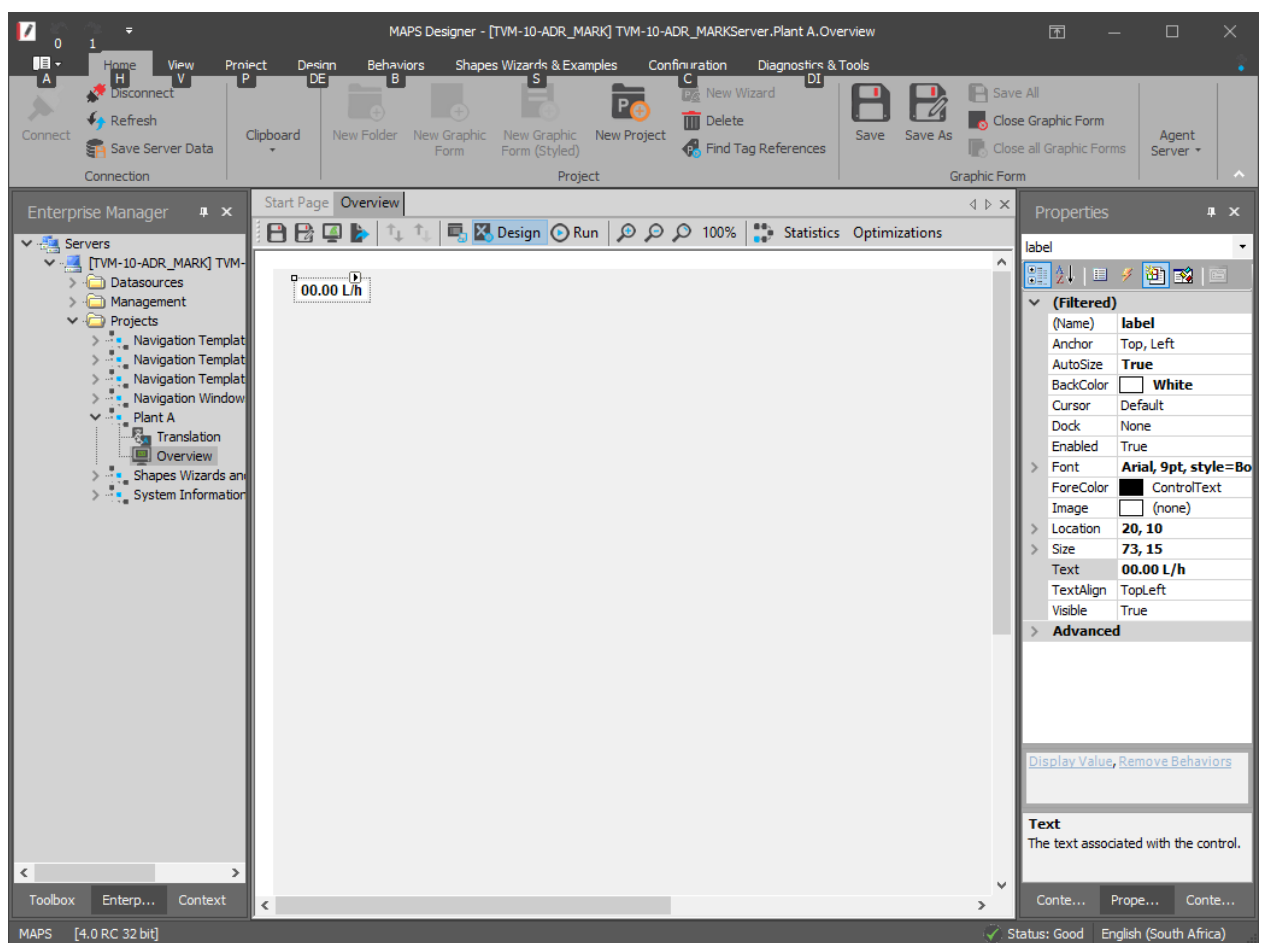


Figure 24 - Added New Object to GF

6. Configuring the Agent Server

To interact with the Agent Server (AS) the user will need to launch the MAPS Configurator by clicking on the Open Configurator icon on the Home ribbon.

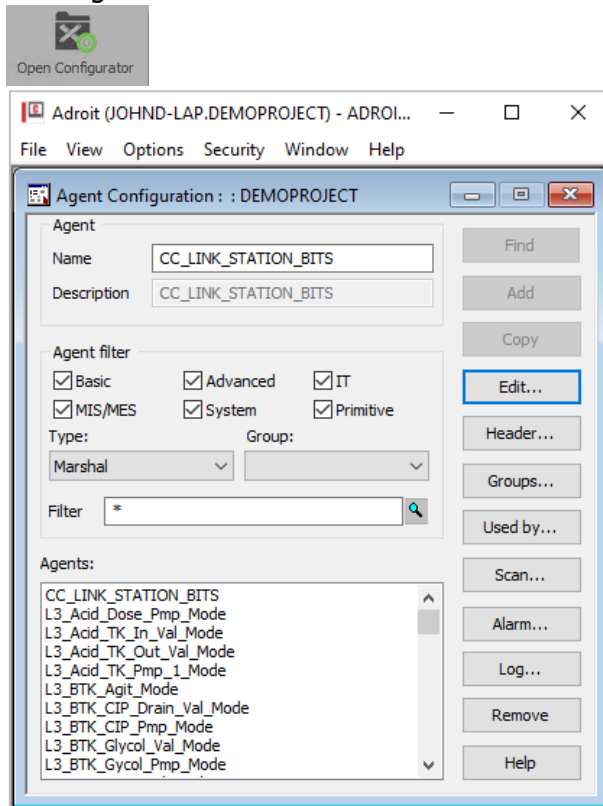


Figure 25 - Agent Server Configurator

6.1. Agents

The most fundamental building blocks of MAPS Agent Server are intelligent objects called Agents. In addition to being able to manipulate their own data, they can read and write from the FED and to other agents and so influence them. All Agents are grouped into three Agent groups, to allow easier access to Agents that are needed for a project, they are:

- **Primitive Agent types**
Boolean, Frame, Integer, Real, Text
- **Basic Agent types**
Analog, Counter, Date, Digital, Expression, Marshal, MultiState, String, StringList, Timer
- **Advanced Agent types**
AgentGroup, Alarm, AlarmList, AlarmManagement, ARec, Command, DBAccess, DBLog, DBQuery, EventLog, EventOutput, MultiMedia, Notify, Recipe, Scheduler, Script, Shift, Shift_Adv, Statistical Agent
- **MIS/MES Agent types**
Accumulator, MaxDemand, OEE, OEE_Adv, PID
- **IT/IoT Agent types**
Audit, DumpConfig, ICMP, IoT, Perfmon, SNMPMgr
- **System Agent types**

Alias, Beeper, DataLog, Device, Hasp, Proxy, Scan, SystemDataLog, SystemInformation

6.1.1. Adding an Agent

To create a new Analog agent in the AS:

1. Open the Configurator.
2. Check Basic Agents and expand the selection of the Agent Types that belong to this group.
3. In the Configurator change the selected agent Type to Analog
4. Using a pre-defined Naming strategy give the new agent the name:
BAT-01-MIX-01-TEM with a description: Batch Mixing Temperature.
5. Click on the Add button to create the agent.
6. Select File and Save, to save the agent server.

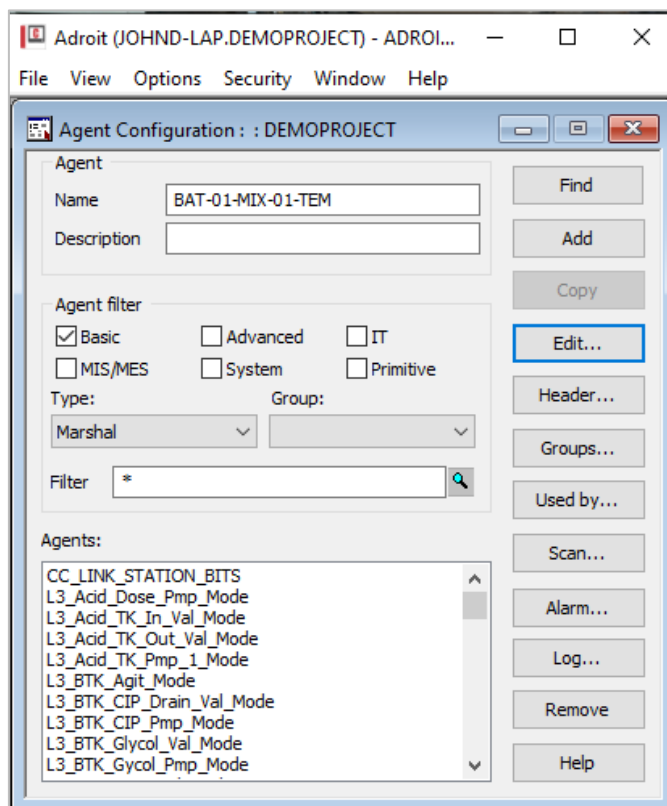
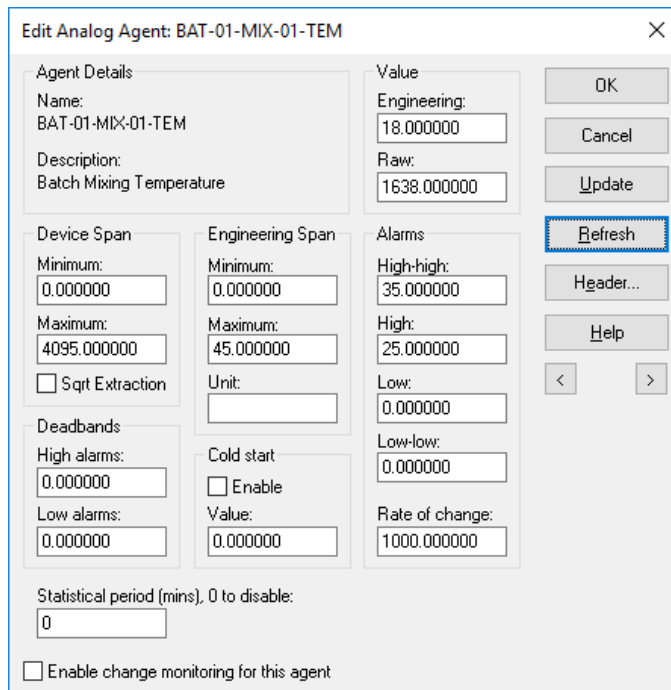


Figure 26 - New Analog Agent

7. Select the Agent BAT-01-MIX-01-TEM the click on the Edit.

8. Change the Analog set points as follows:

- a. Device Span
 - Minimum:0
 - Maximum:4095
- b. Engineering Span
 - Minimum:0
 - Maximum:45
- c. Alarms
 - High-high:35
 - High:25
 - Low:0
 - Low-Low:0



Edit Analog Agent: BAT-01-MIX-01-TEM

Agent Details
 Name: BAT-01-MIX-01-TEM
 Description: Batch Mixing Temperature

Value
 Engineering: 18.000000
 Raw: 1638.000000

Device Span
 Minimum: 0.000000
 Maximum: 4095.000000
☐ Sqrt Extraction

Engineering Span
 Minimum: 0.000000
 Maximum: 45.000000
 Unit:

Alarms
 High-high: 35.000000
 High: 25.000000
 Low: 0.000000
 Low-low: 0.000000
 Rate of change: 1000.000000

Deadbands
 High alarms: 0.000000
 Low alarms: 0.000000

Cold start
☐ Enable
 Value: 0.000000

Statistical period (mins), 0 to disable:

☐ Enable change monitoring for this agent

Buttons: OK, Cancel, Update, Refresh, Header..., Help, <, >

Figure 27 - Edit Analog Agent

6.1.2. Slots

Agents are made up of Slots. Slots of an Agent are values (attributes) or fields within an Agent that can be retrieved and/or set. The slots within an Agent can drive the logic/function of the Agent.

6.1.3. Tag

A fully qualified named value in MAPS made up of an agentName.slotName and in the MAPS world are then known as Tags All tags within MAPS can be driven, changed internally or externally.

6.2. Scanning

Scanning values simply means communicating using a predefined protocol from a memory address of a FED to a TAG.

6.2.1. Scanning a Tag

To scan the RawValue slot of the of BAT-01-MIX-01-TEM Analog Agent to the MAPS Batch OPC Server:

1. Open the MAPS Configurator.
2. Select the Analog Agent BAT-01-MIX-01-TEM.
3. Click on the Scan button.
4. In the scanning configuration, select the device BAT_01 in the Device dropdown box.
5. The user will be prompted to create the device.
6. Click the Yes button. The MAPS Batch OPC Server will automatically start.

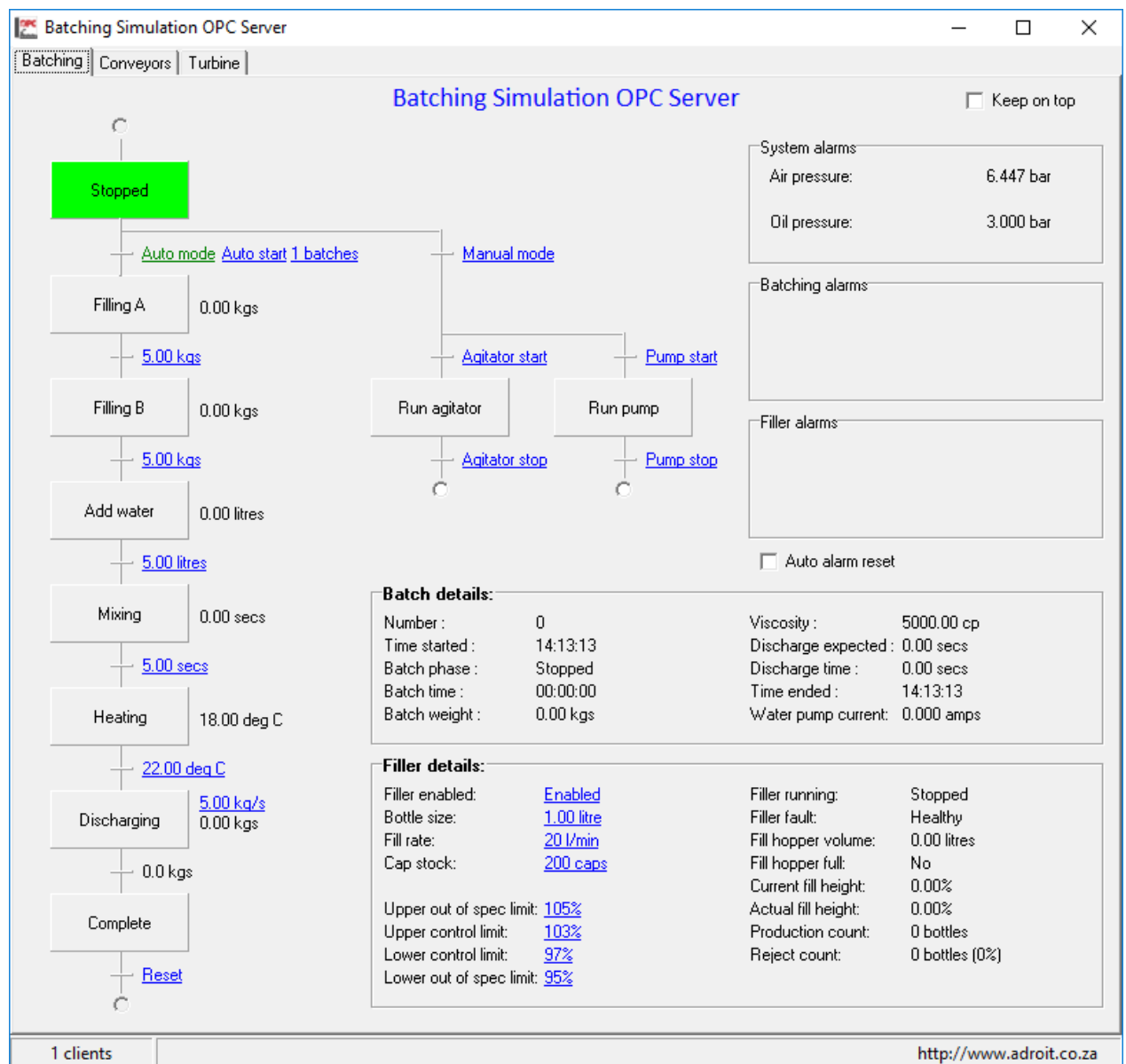


Figure 28 - Batch OPC Server

7. Enter the OPC address ActualMixTemp into the address field and change the Scan rate to 0.
8. Click on the Scan button to add the scan job to the device.

9. Select the Started radial button to start communicating with the OPC server.
10. Click OK on the scanning dialogue and save the Agent Server Configuration.

Tag scanning configuration

Device: BAT_01

Agent: BAT-01-MIX-01-TEM

Slot: rawValue

Address: ActualMixTemp

Scan rate (ms): 0

Deadband: 0

Input disabled: ☒ Demand scan: ☒ Output enabled: ☐ Output initialize: ☐

Currently scanned tags:

Tag	Address	Rate	Deadband	IO flags
BAT-01-MIX-01-TEM	ActualMixTemp	0	0	1

Figure 29 - TAG Scanning Configuration

6.3. Data logging

MAPS allows the value of a fully qualified named TAG value in MAPS AS (Agent.Slot) to be recorded or logged to either proprietary log files or an OLE DB-compliant database.

6.3.1. Datalog an Analog value

To datalog the value slot of the Analog agent BAT-01-MIX-01-TEM:

1. Select the agent BAT-01-MIX-01-TEM, then click on the Log button.
2. Set the datasource path by clicking on the browse button , then browse the path:
C:\ProgramData\Adroit Technologies\MAPS\Configurations\Quick Start Guide\Datalogs
3. Create the log file Temperature.LGD. Then click Open.

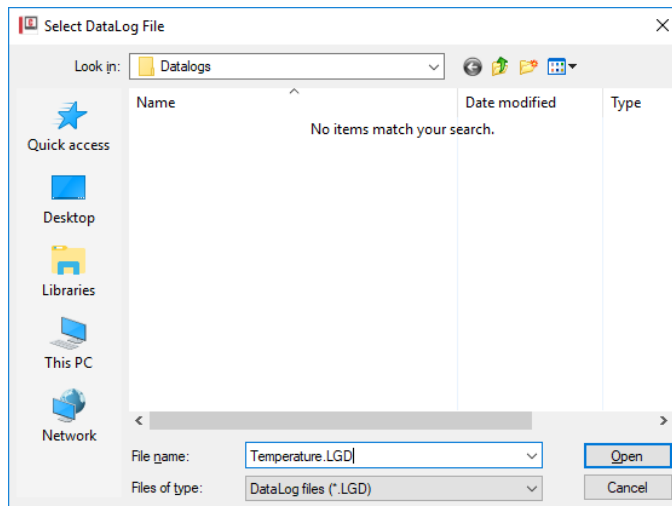


Figure 30 - Select DataLog File

4. Click on the length button and set the log length to 1 month.
5. Under Deadbands click the Time button and set the period to 1 second.
6. Click on the Start radial button to start the datalog. Then click on the OK button and save the Agent Server.

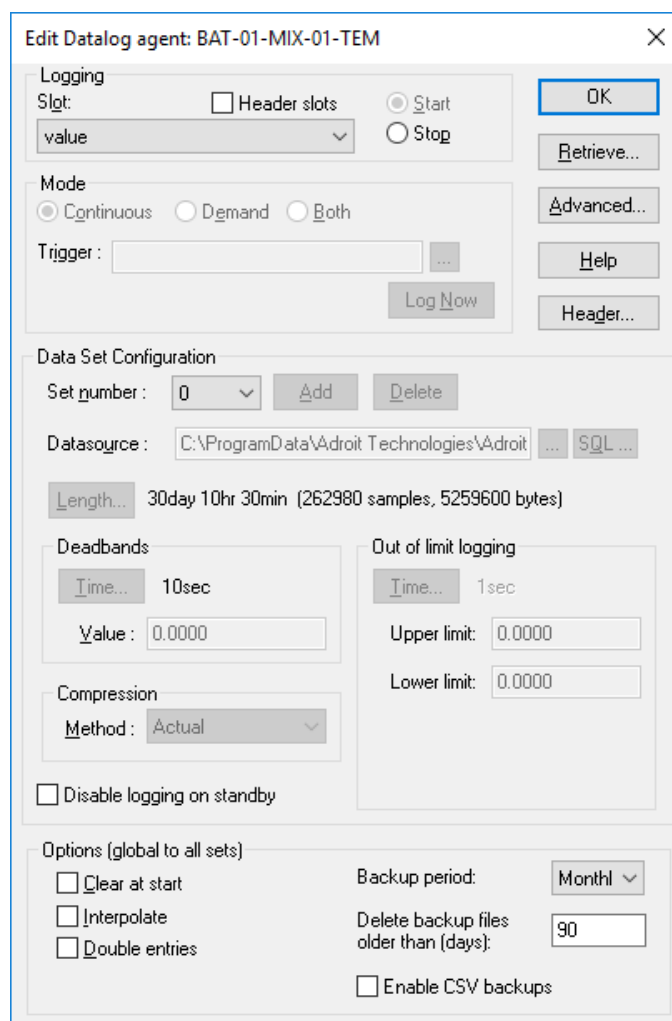


Figure 31 - Edit Datalog Agent

6.4. Alarming

The alarming capability of the MAPS SCADA is exceptionally powerful and needs careful attention. Alarming can simply be explained by breaking the system down in to two parts.

6.4.1. Alarm Routing

Alarm routing, which is configured in the Alarm agent, is where the user will configure the outputs of an alarm. MAPS Alarming supports multiple routing outputs such as Alarm Lists; SMSs; Emails; Event logs; Multimedia notifications.

Setting up an Alarm Agent Route

Configuring a route in the default alarm agent, which will send all configured alarms to an Alarm list:

1. Open the MAPS Configurator.
2. Select the agent type Alarm list.
3. Create a new alarm list agent called BAT-01-MIX-01-ALM-LST.

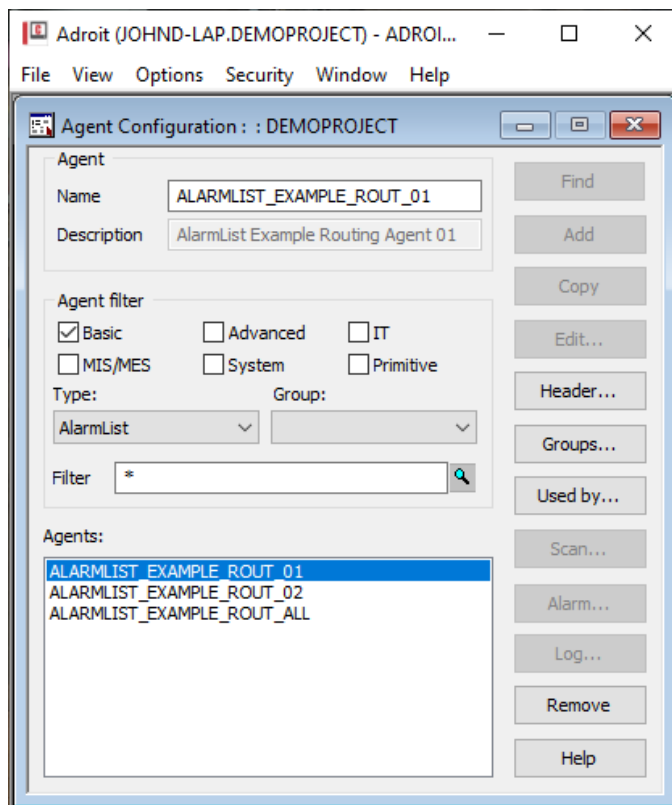


Figure 32 - Alarm List Agent

4. Select the Agent Type Alarm, edit the DEFAULTALARMAGENT. Make sure the selected route number is set to 2.
5. In the Alarm List route definition click on the browse button .
6. In the Agent browser select the Alarm list agent BAT-01-MIX-01-ALM-LST.
7. Click Ok.
8. Click on the defaultAlarmAgent agents' Ok button and save the Agent Server configuration.

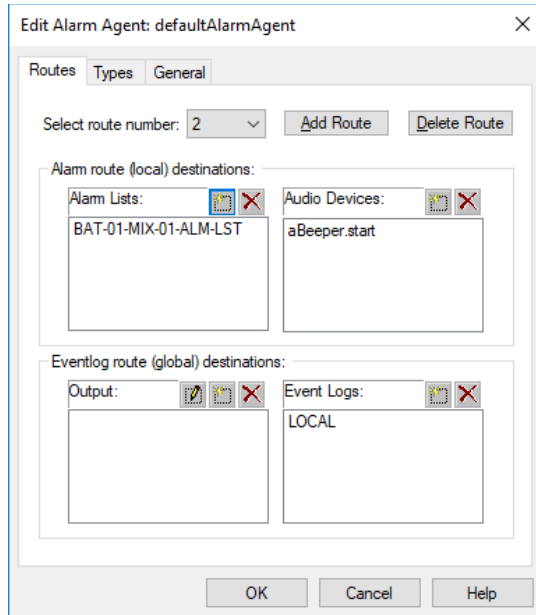


Figure 33 - Default Alarm Agent

6.4.2. Alarm Types

Alarm Agents can monitor other Agents with pre-set Alarm Types. An alarm type is simply the required condition or state of an Agent's header slots. A default Alarm Agent, created on start of a blank AS database, contains a number of pre-defined alarm types.

Alarming an Analog Agent

To alarm the high and High-high slots of the Analog Agent BAT-01-MIX-01-TEM, using the default alarm agent:

1. Open the MAPS Configurator.
2. Select the Analog Agent BAT-01-MIX-01-TEM.
3. Click on the Alarm button.
4. Move the Available Alarm type High from Available to Current by double clicking the alarm type. Make sure that the Select route is set to 2.
5. Repeat the process for the alarm type High-high.

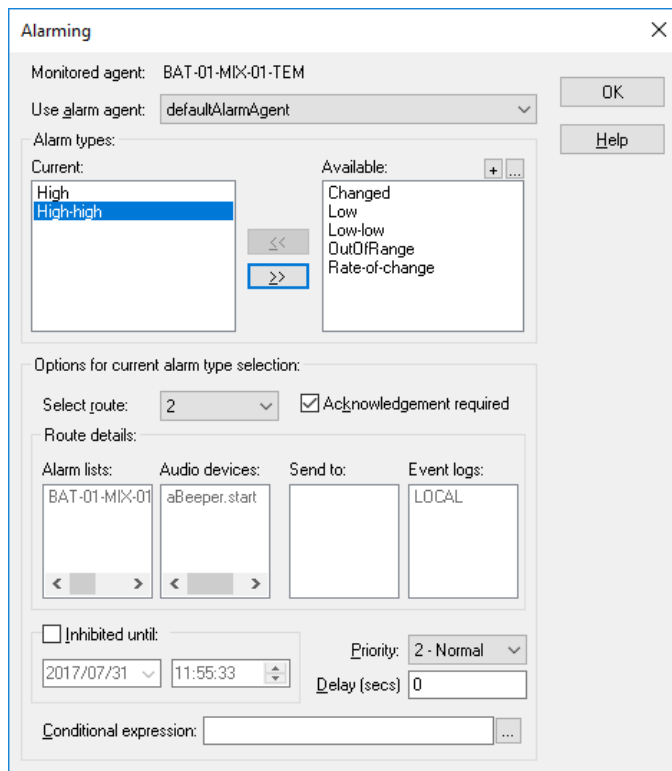


Figure 34 - Alarming an Analog Agent

7. Displaying Data

Once the Agent Server has been configured the user can now display and manipulating the data on a graphic form using behaviours. Behaviours are used to create the dynamics pertaining to the Tag and how Operators interact with the graphical representation on any screen.

7.1. Behaviours

Behaviours are used to display and manipulate data elements. The MAPS SmartUI supports the following behaviours:

- **Bind Value** - Drive a data element (value) to and/or from the value of a property of a control or vector.
- **Color** - Assign colors to the two states of a digital (Boolean) value; to blink a specific Color property or the VISIBILITY property either continuously or triggered by a value. Also define states of color based on specific value ranges to provide a visual indication of a value, as well as define states of color based on a bit mask - a specific sequence of bits that are set for up to 32 bits to provide a visual indication of each bit mask.
- **Display Value** - Display and if necessary, format a value.
- **Execute Command** - Perform commands, such as launching an application or opening, closing or printing a graphic form or logging a user on or off and/or switching users.
- **Flip Bitmap** - Create a defined sequence of images or a multi-image display, this behaviour can only be added to a Picture vector object.
- **Location** - Dynamically move the object linearly in a defined X-Y direction by means of a monitored value.
- **Operator Action** - Typically provides methods that allow end users to change a value at runtime.
- **Percentage Fill** - Dynamically fill an object by means of a monitored value.
- **Rotation** - Dynamically rotate the object by means of a monitored value.
- **Size** - Dynamically resize the object linearly by means of a monitored value.
- **Tooltip** - Display additional information when the mouse cursor hovers over the object.
- **Visibility**: Display or hide an object depending on a Boolean value.
- **Database**: To execute a database query from a graphical form, without writing a script

Note: The behaviour configuration dialogue provides an Advanced View button that displays more advanced configuration options.

7.1.1. Displaying a value

Display the analog value of the Agent BAT-01-MIX-01-TEM using a display value behaviour.

1. In the Designer open the graphic form Overview that you previously created.
2. Select the label placed in the previous exercise.
3. Select the Behaviours ribbon.
4. Click on the Display Value button.



5. In the Display Value dialog click on the Input Data Element browser button. Browse for the data element Adroit.Analog.BAT-01-MIX-01-TEM.value.
6. Click the Finish button.

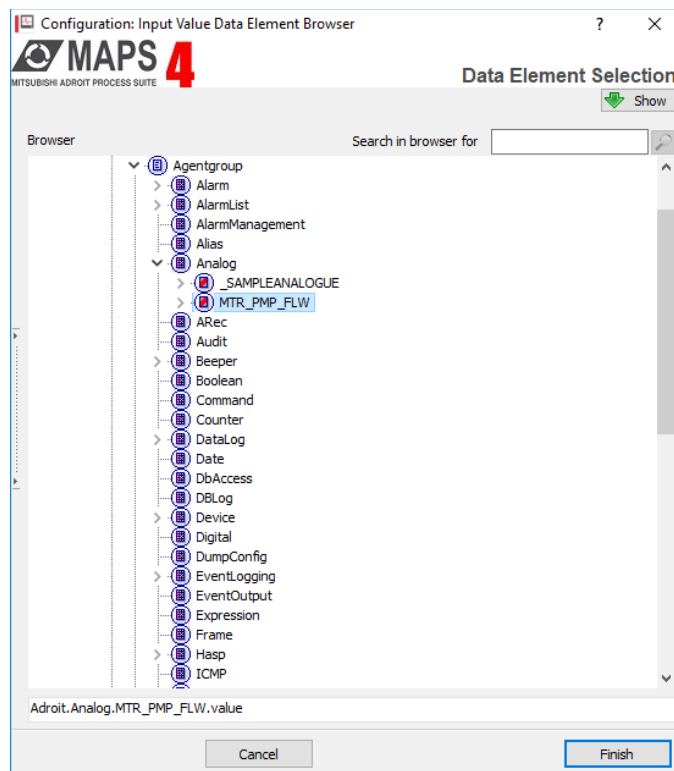


Figure 35 - Data Element Browser

7. Change the String format to {0:F2} deg C.
8. Click the Finish button.

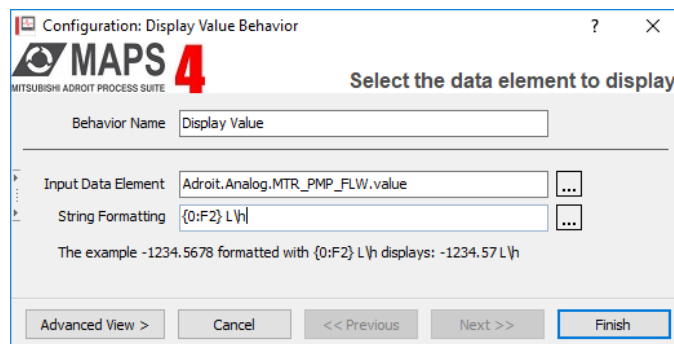
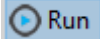


Figure 36 - Display Value Behaviour

9. Save the graphic form and test by clicking on the Run button , in the design area menu bar. The label should display the value 18.00 deg C. The user can run the batch plant simulator by clicking on the Auto start label in the OPC simulator.

Note if the value is not displaying correctly make sure that the time license on the agent server has not run. If so, restart the Agent Server.

7.1.2. Changing a value setpoint

Changing the Analog agents BAT-01-MIX-01-TEM alarm setpoints using the Operator Action behaviour.

- Open the graphic form Overview, place two more labels on the graphic form with the following properties:
 - (Name):IblActTempHihi
 - AutoSize:True
 - Backcolor:White
 - Font:Arial, 8pt
 - Text:High high alarm SP: 00.00 deg C
 - (Name):IblActTempHi
 - AutoSize:True
 - Backcolor:White
 - Font:Arial, 8pt
 - Text:High alarm SP: 00.00 deg C

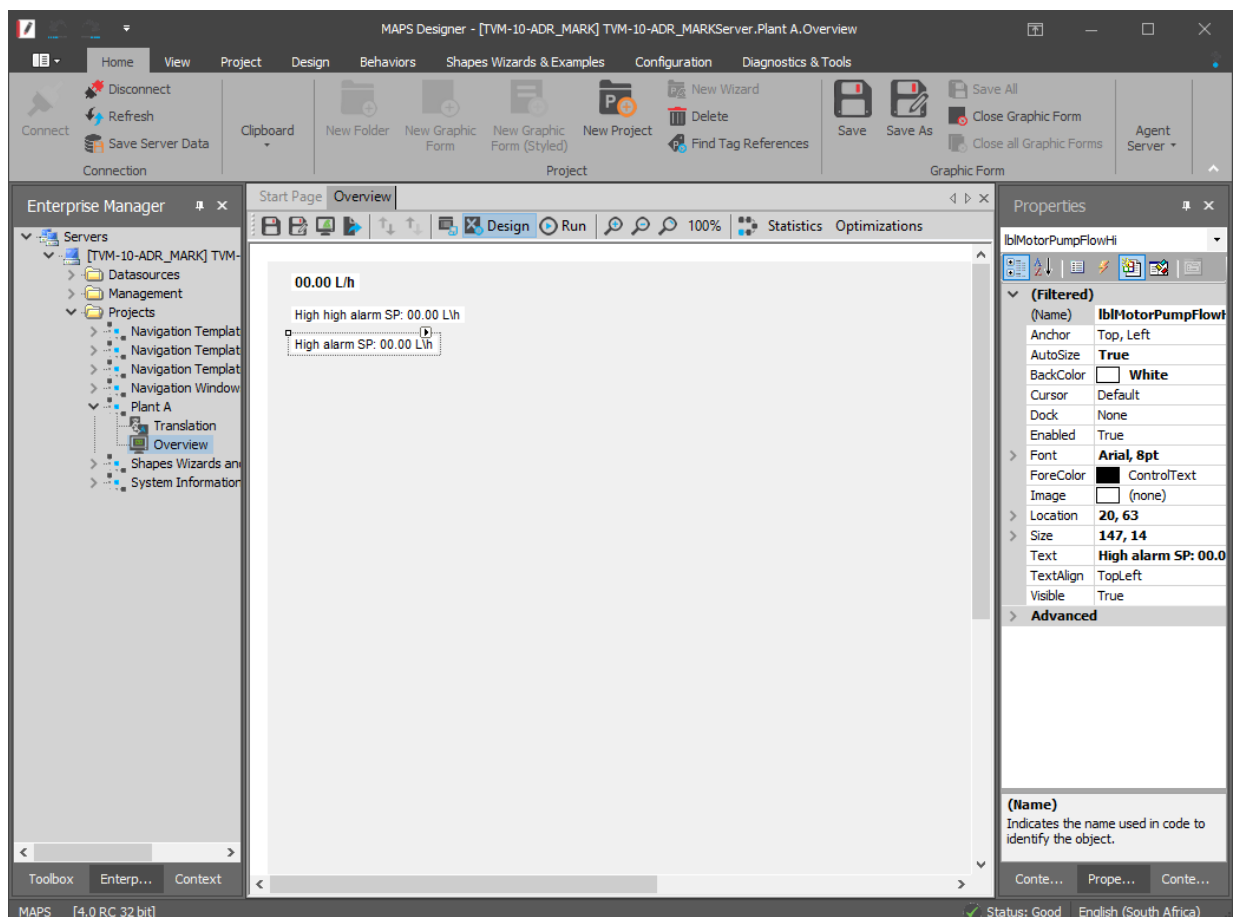


Figure 37 - Graphic Form Displaying Alarm Setpoints

- Select the label lblActTempHihi. Add a new Display Value behaviour to the object.
 - The Input Data Element is
 - Adroit.Analog.BAT-01-MIX-01-TEM.hiHi,
 - And the String formatting is
 - High high alarm SP: {0:F2} deg C
- Select the label lblActTempHi. Add a new Add a new Display Value behaviour to the object.
 - The Input Data Element is
 - Adroit.Analog.BAT-01-MIX-01-TEM.hi,
 - And the String formatting is
 - High alarm SP: {0:F2} deg C
- Select the label lblActTempHihi. Add a new Operator action behaviour, set the inputs as follows:
 - Data Element:Adroit.Analog.BAT-01-MIX-01-TEM.hiHi
 - Minimum DE:Adroit.Analog.BAT-01-MIX-01-TEM.hi
 - Maximum DE:Adroit.Analog.BAT-01-MIX-01-TEM.engMax
- For the Action Type Select Data Entry. Click the finish button.

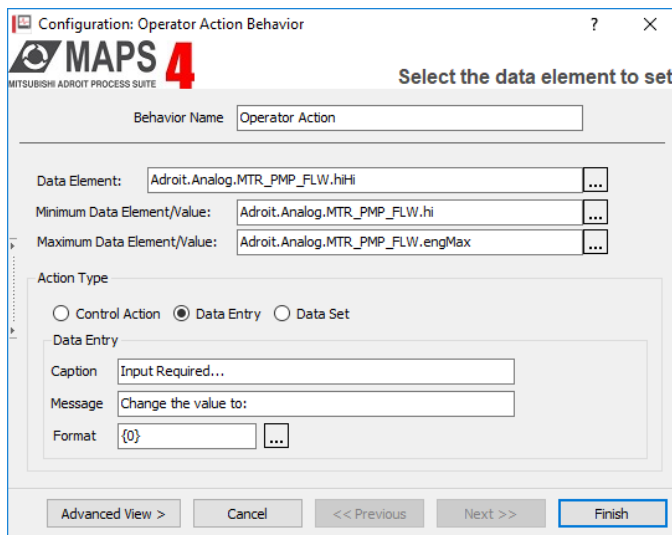
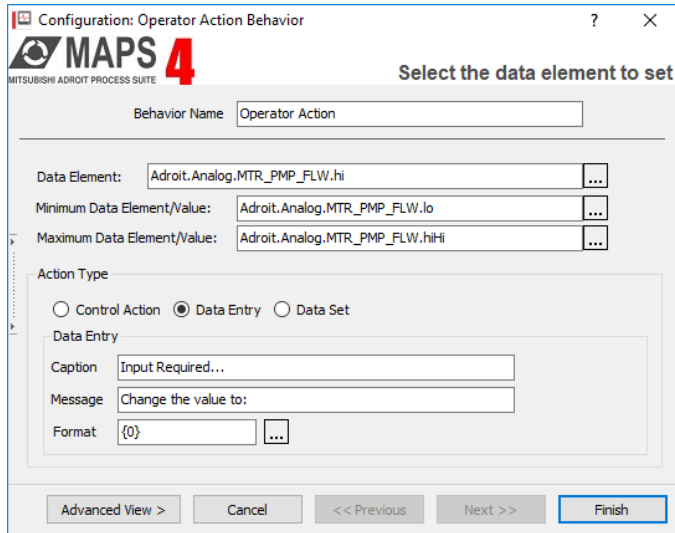


Figure 38 - Operator Action Behaviour for Alarm High-high Set Point

- Select the label lblActTemphi. Add a new Operator action behaviour, set the inputs as follows:
 - Data Element:Adroit.Analog.BAT-01-MIX-01-TEM.hi
 - Minimum DE:Adroit.Analog.BAT-01-MIX-01-TEM.lo
 - Maximum DE:Adroit.Analog.BAT-01-MIX-01-TEM.hiHi
 - For the Action Type Select Data Entry. Click the finish button.



Configuration: Operator Action Behavior

Select the data element to set

Behavior Name: Operator Action

Data Element: Adroit.Analog.MTR_PMP_FLW.hi

Minimum Data Element/Value: Adroit.Analog.MTR_PMP_FLW.lo

Maximum Data Element/Value: Adroit.Analog.MTR_PMP_FLW.hihi

Action Type

☐ Control Action ☒ Data Entry ☐ Data Set

Data Entry

Caption: Input Required...

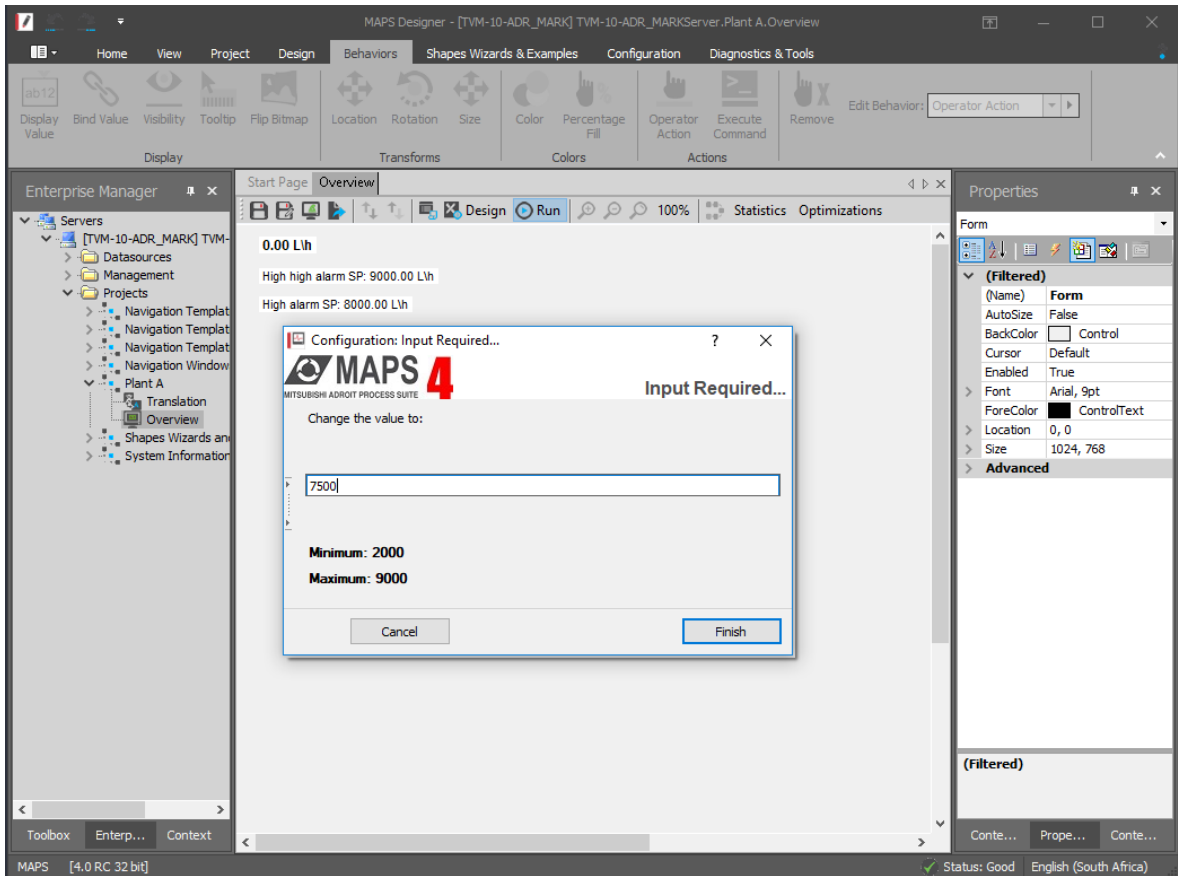
Message: Change the value to:

Format: {0}

Advanced View > Cancel << Previous Next >> Finish

Figure 39 - Operator Action Behaviour For Alarm High SP

- Save and run the graphic form. Adjust the High Alarm SP by clicking the appropriate label and entering a new setpoint.



MAPS Designer - [TVM-10-ADR_MARK] TVM-10-ADR_MARKServer.Plant A.Overview

Enterprise Manager

Servers

- [TVM-10-ADR_MARK] TVM-10-ADR_MARKServer.Plant A.Overview

Start Page Overview

0.00 L/h

High high alarm SP: 9000.00 L/h

High alarm SP: 8000.00 L/h

Configuration: Input Required...

Input Required...

Change the value to:

7500

Minimum: 2000

Maximum: 9000

Cancel Finish

Properties

Form

(Filtered)

(Name)	Form
AutoSize	False
BackColor	Control
Cursor	Default
Enabled	True
Font	Arial, 9pt
ForeColor	ControlText
Location	0, 0
Size	1024, 768

Advanced

(Filtered)

Conte... Prope... Conte...

MAPS [4.0 RC 32 bit] Status: Good English (South Africa)

Figure 40 - Change Alarm High Setpoint

7.2. Line Charts

The line chart control is used to display live as well as logged data from the MAPS Agent Server.

7.2.1. Display Historical Data

Using the Line Chart control to display the logged data of the Analog Agent BAT-01-MIX-01-TEM.

1. Confirm that the graphic form Overview is open and not in run mode.
2. From the toolbox view under Data select the LineChart control and place it on the graphic form. Once the control has been placed the LineChart configuration will open.
3. Change the Title of the series from Line to Actual Mixing Temperature by double clicking on the series name Line.

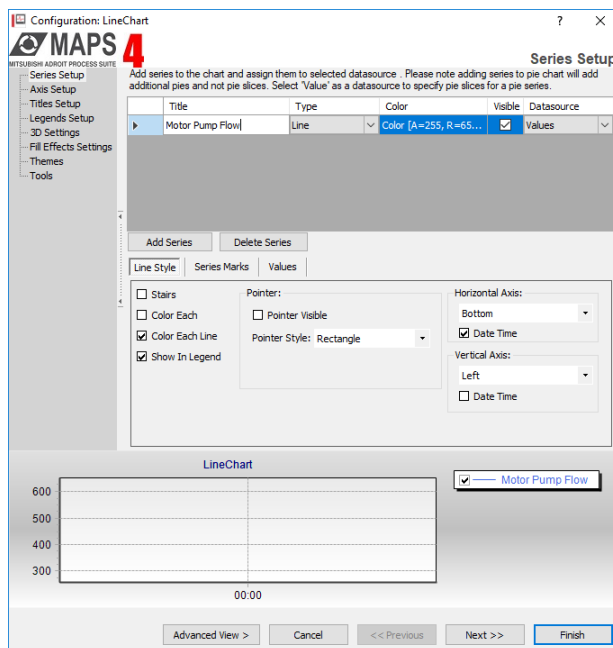


Figure 41 - Configuration Line Chart Series Name

4. Select the Values tab in the series setup. Then setup the values as follows.
 - Values:Adroit.Analog.BAT-01-MIX-01-TEM.value
 - Min:Adroit.Analog.BAT-01-MIX-01-TEM.engMin
 - Max:Adroit.Analog.BAT-01-MIX-01-TEM.engMax
 - Units:Adroit.Analog.BAT-01-MIX-01-TEM.unit
 - Description:Adroit.Analog.BAT-01-MIX-01-TEM.agentDescription

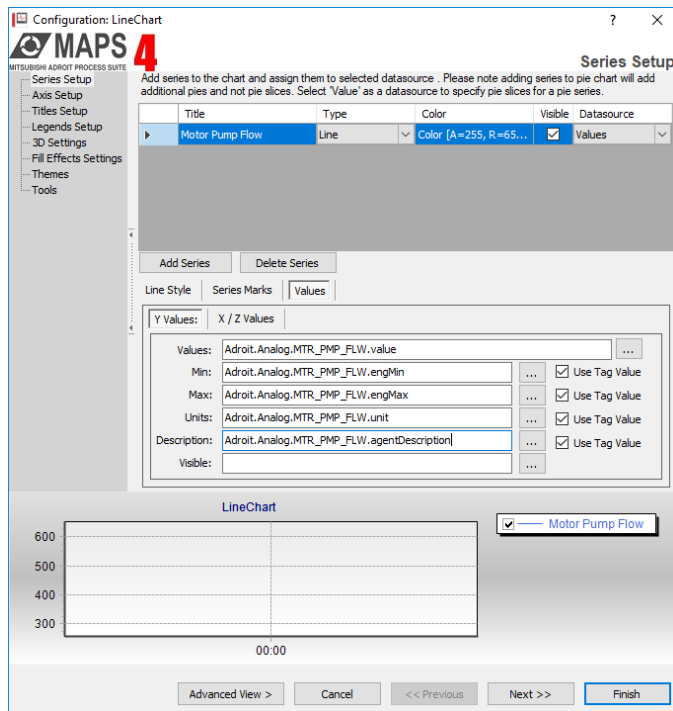


Figure 42 - Configuration Line Chart Series Values

- Click the finish button save the graphic form.
- Click on the Run button.
- Start the batching process to change the Mixing Temperatures Value.

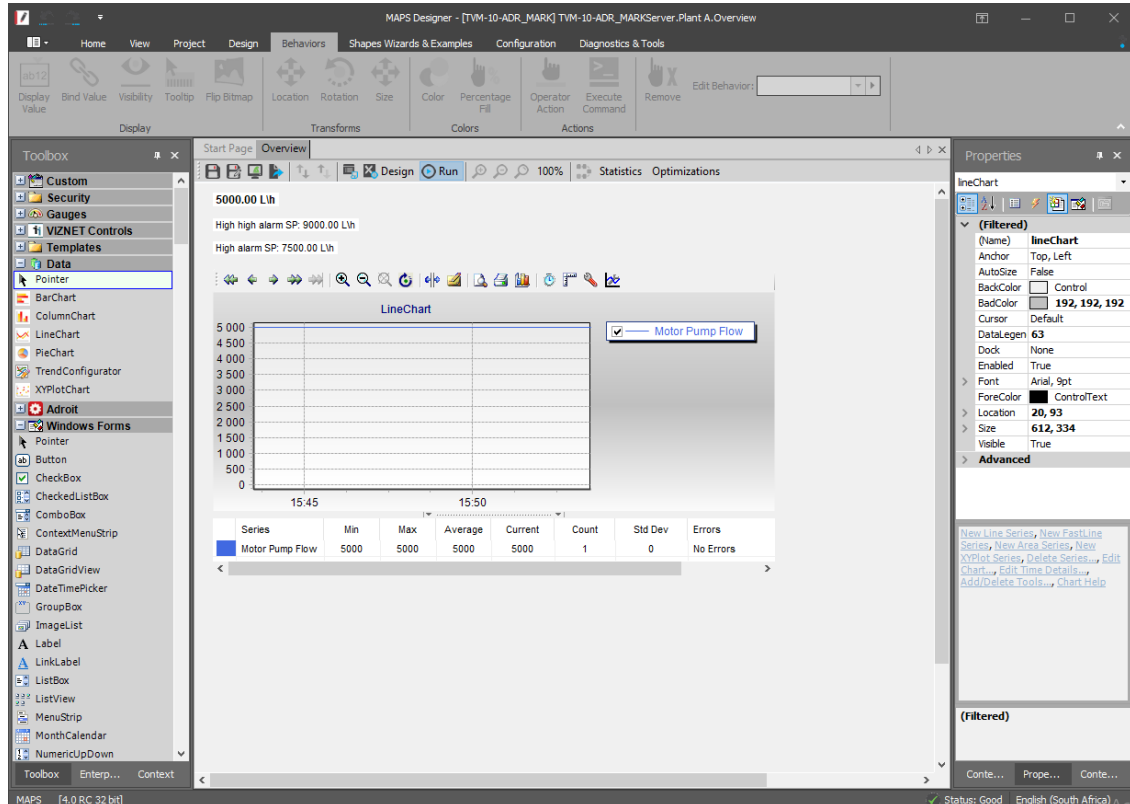


Figure 43 - Displaying Logged data

7.3. Alarm Viewer Control

The Alarm viewer control allows the user to connect to either an Alarm Agent or an Alarm list agent in the MAPS Datasource. The control, once connected to a valid alarm list, will display all routed alarms and allows the user to acknowledge and filter the displayed alarms.

7.3.1. Displaying an Alarm list

Using the Alarm viewer control to display alarms routed to the alarm list agent BAT-01-MIX-01-ALM-LST.

1. Confirm that the graphic form Overview is open and not in run mode.
2. From the toolbox view under MAPS select the AlarmViewer control and place it on the graphic form.
3. Select the task icon  on the top right of the alarm control, this will open the task menu.

Figure 44 - MAPSAlarmViewer Tasks menu

4. Click on the General Configuration, which will open the MAPS alarm viewer Configuration.
5. Change the Alarm type to AlarmListAgent.
6. Set the Alarm List / Alarm Agent to Adroit.AlarmList.BAT-01-MIX-01-ALM-LST.alarmList.

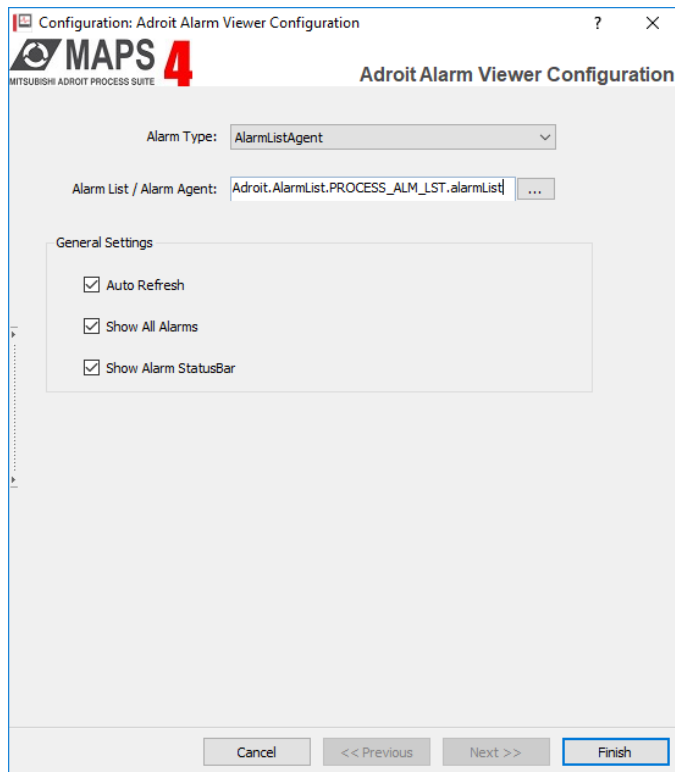


Figure 45 - MAPS Alarm Viewer Configuration

7. Click the Finish button, save and run the graphic form.
8. To test the Alarm view drop the High alarm set point below the value.

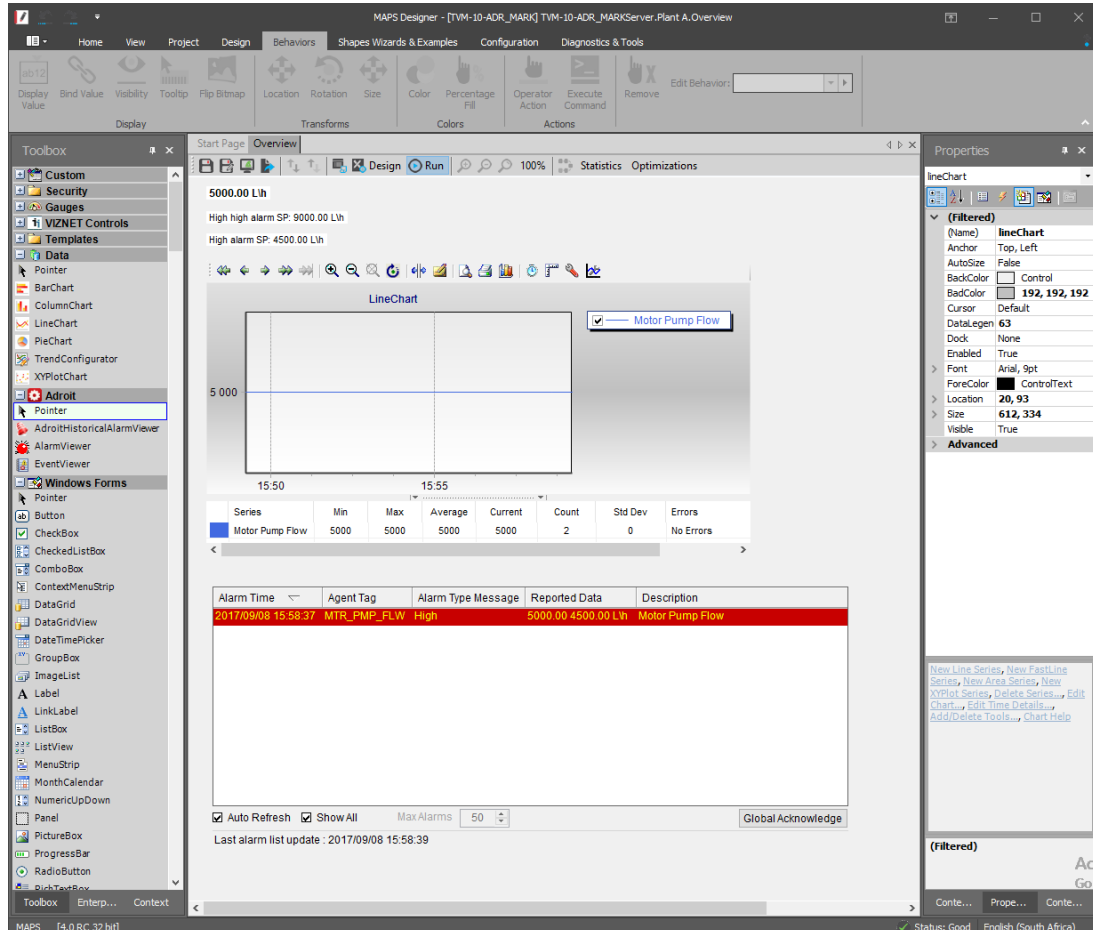


Figure 46 - Displaying Alarm Incident

8. Reusable Objects

MAPS has a two mechanism that allow for re-usable objects, Wizards and Templates.

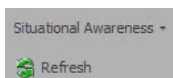
8.1. Wizards

Are user defined/created objects such as pumps; motors; analogue displays. The behaviours of a wizards can contain substitution. MAPS contains a library of Shapes Wizards and Examples that contain a number of pre-defined wizards.

8.1.1. Adding a Pre-defined Wizard

Adding the wizard `wzdAnalogueIndicator_Large_Horizontal_v01` from Situational awareness library to the Overview graphic form.

1. Confirm that the graphic form Overview is open and not in run mode.
2. Select the Shapes Wizards & Examples ribbon, Select the Situational Awareness in the drop down box on the left of the ribbon.



3. Click on the Indicators dropdown box, select the wizard `wzdAnalogueIndicator_Large_Horizontal_v01` then click on the Overview graphic form.
4. The user will then be prompted to supply a substitution for the Analogue Agent, Click the browse button and select the data element `Adroit.Analog.BAT-01-MIX-01-TEM` make sure that the data element does not contain a slot. The result should be green to display a valid data element.

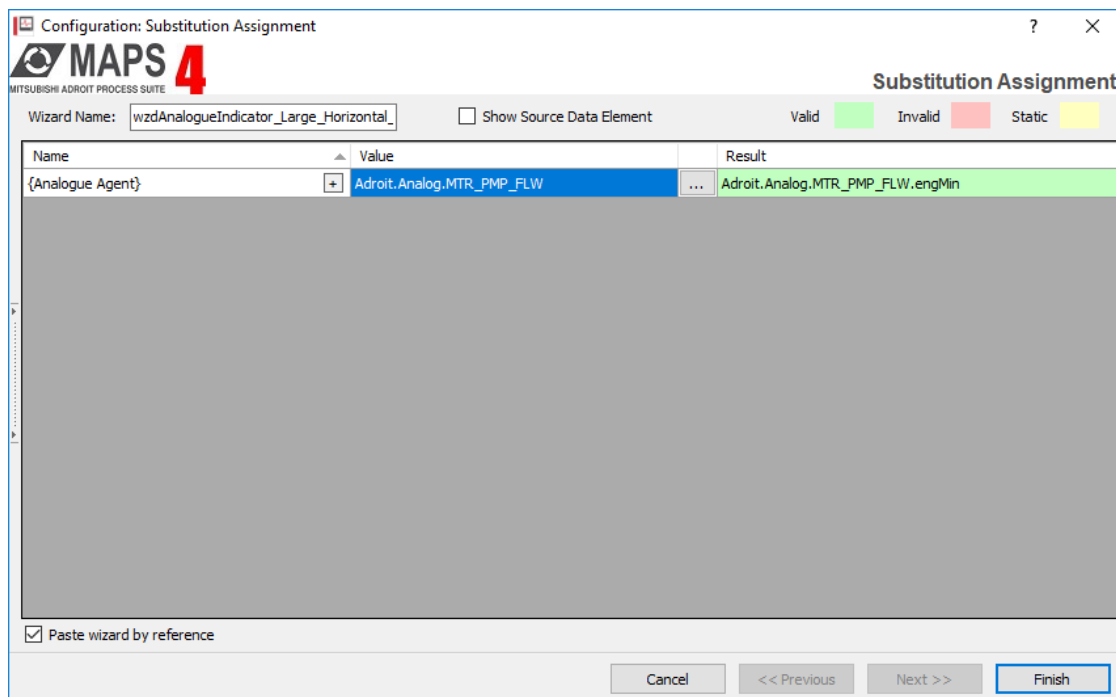


Figure 47 - Substitution Assignment

5. Click the Finish button, save and run the graphic form.

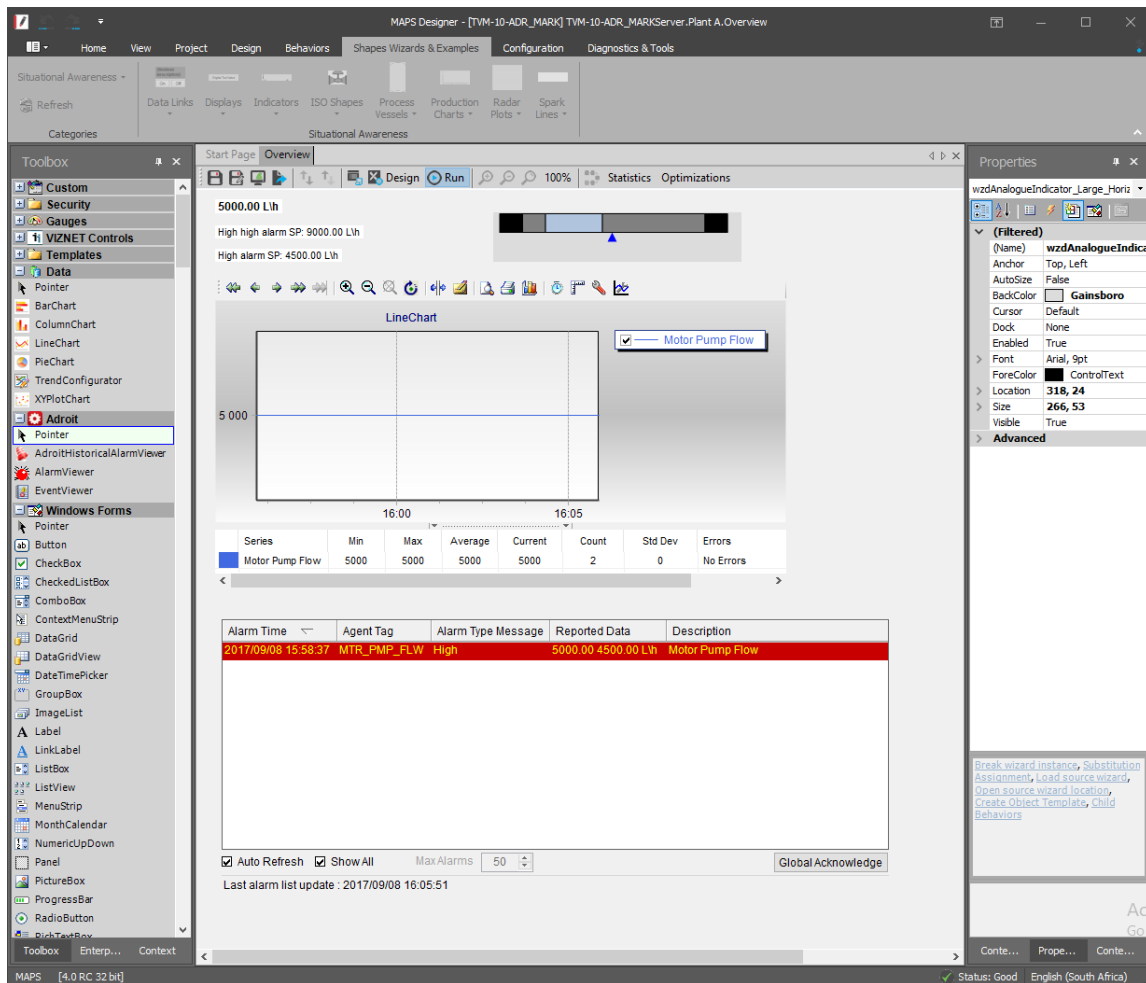


Figure 48 - Display the Analogue indicator Wizard.

8.2. Templates

Adroit Templates are re-usable graphic forms that can be used at run-time. The fundamental difference between a graphic form and a Template is that a Template has substitution abilities. This really means that wherever you have repeatability for displays, such as machine process values you can effectively create a single trend configured as a Template and at runtime when you click on a certain machine you can simply launch the Trend and substitute that machines values.

8.2.1. Opening a Template

Open the template Analogue Faceplate Template from a button on the graphic form Overview.

1. Confirm that the graphic form Overview is open and not in run mode.
2. From the toolbox view under Windows Form select the button control and place it on the graphic form. Set the following properties of the button
 - a. (Name):btnActTempValue
 - b. Font:Arial, 9pt
 - c. Size:107, 45
 - d. Text:Analog Faceplate
3. With the button btnActTempValue selected, add a new Execute Command behaviour.
4. Set the Command dropdown box to Open graphic form. Browse for the Graphic Form to Shapes Wizards and Examples.Templates.Analogues.Analogue Faceplate Template

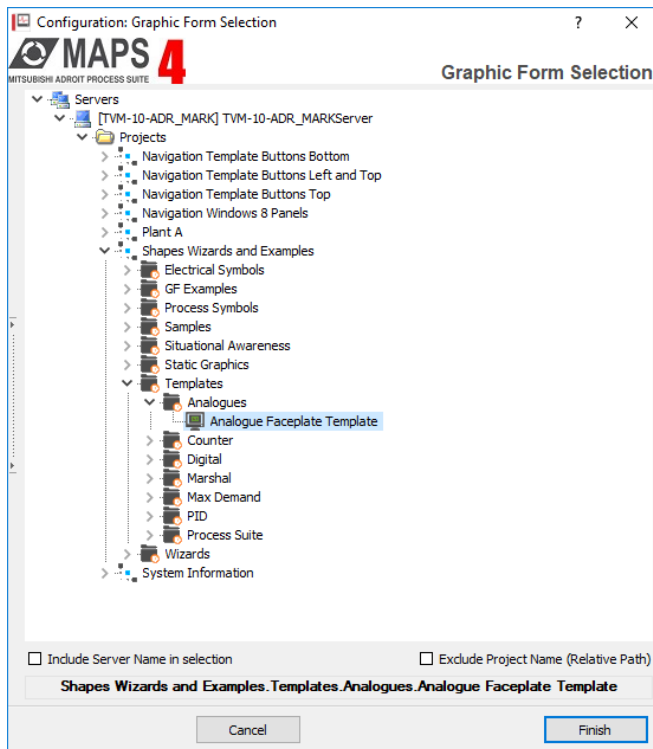


Figure 49 Graphic Form Selection

5. Change the Open as: dropdown box to Modeless Form.
6. Click the Finish button.

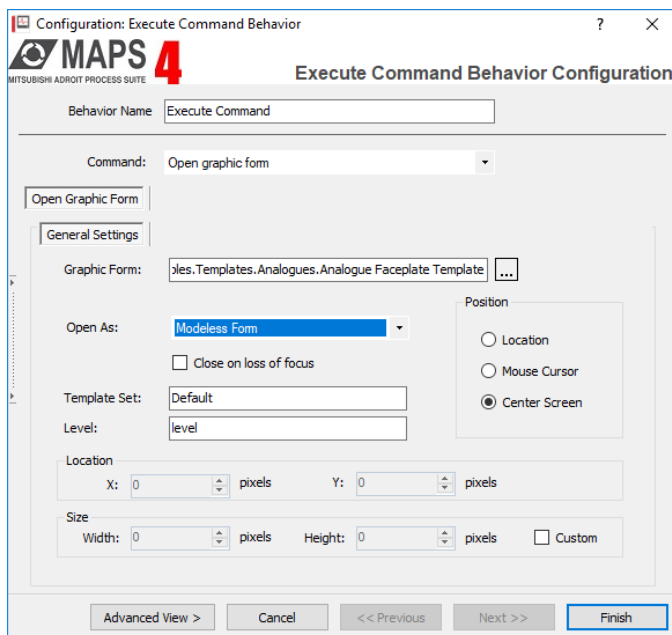


Figure 50 - Execute Command Behaviour

7. Click on the Advanced View > button, then select the Aliases tab. The Analogue Data Element Substitution should be available in the Alias list. If not click on the get Aliases button.
8. Click on the input field and select the Browse button and browse the data element Adroit.Analog.BAT-01-MIX-01-TEM.

Configuration: Execute Command Behavior

MAPS 4 Execute Command Behavior Configuration

Behavior Name: Execute Command

Command: Open graphic form

Open Graphic Form

General Settings | Aliases

Alias	Input	Use tag value
I Analogue Data El...	Adroit.Analog.MTR_PMP_FLW	☐

☐ Use parent form alias values Get Aliases

Confirmation
☐ Log Action ☐ Confirm Action

Security Data Element/Value
 ... Security

☐ Enable Security on Form for the associated component Configure

Event Trigger: Click ...

< Simple View Cancel << Previous Next >> Finish

Figure 51 - Execute Command Behaviour Substitution

- Click the Finish button, save and run the graphic form. When the user clicks the button, the user will see an error "This action is only available in the Operator".

Information

MAPS 4 Perform Action - Open

This action is only available in the Operator

Close

Figure 52 - Operator Action Error

The User will need run the SmartUI Operator application to start the Operator view.

9. SmartUI Operator

To view a project the user will need to run the MAPS SmartUI Operator by clicking on the Icon on the desktop.



The user will then be prompted to login to the local SmartUI server. The user login is the same as the users Windows credentials. Enter the login Name and Password. Click on the Finish button. Just like the Designer, the Operator has an Enterprise Manager view which will allow the user to open a run time version of the graphic forms created in the Designer.

9.1. Running the Operator

Open the graphic form Overview in the Operator.

1. Run the SmartUI operator by double clicking on the Icon on the desktop.
2. Login using the same user's credentials as used with the designer.
3. In the enterprise manager double click on the Overview graphic form in the Plant A project.
4. Click on the Button Analog Faceplate.

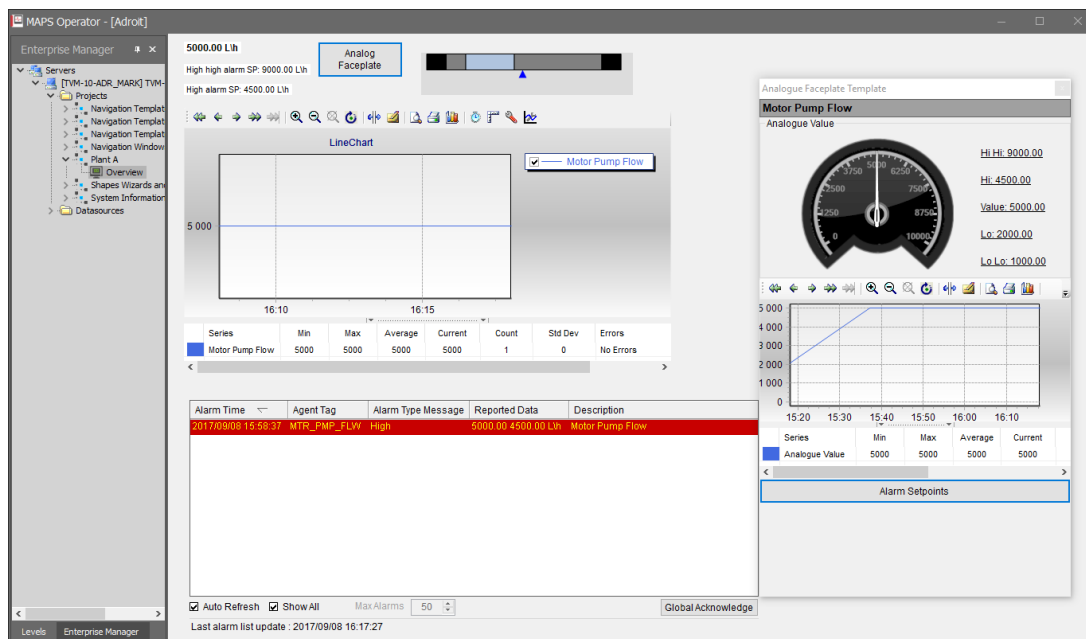


Figure 53 - MAPS Operator

10. Configuring an end-to-end MAPS Life Cycle Project

Planning is the key to creating a successful automation project. Using MAPS forces the engineer to think through and plan the following, before creating a project.

10.1. Pre-configuration Requirements

When using MAPS to engineer a project, the following will need to be defined.

- Create a list of all electrical and instrumentation equipment required in the plant and match them to the available template library. [Appendix B](#) has a complete list of all templates.
- Use the extended physical model of the S88/S95 hierarchical structure to organize this list of equipment.

Define a Hierarchical structure

For the demo MAPS project, this list of equipment is organized using the following MAPS-specific S88 hierarchy:

S88 Structure Name	MAPS Description	Name
Enterprise	Configuration	ACME
Site	Project Name	ABC_Foods
Plant Area	Plant Area Name	Manufacturing
Process Cell	PLC Name	PLC_Q
Unit	Process Unit	Batching Filling Packaging
Equipment Model	Equipment	DOL_A_v1_0 x 4 VALVE_S_A_v1_0 x 1 AI_A_v2_0 x 2 GS_A_v1_0

10.2. Configuring the MAPS Project

A new configuration is required, which will allow the servers to start a new blank project.

Creating a new MAPS Configuration

- Open the MAPS Config Editor. Select the Configuration menu item.

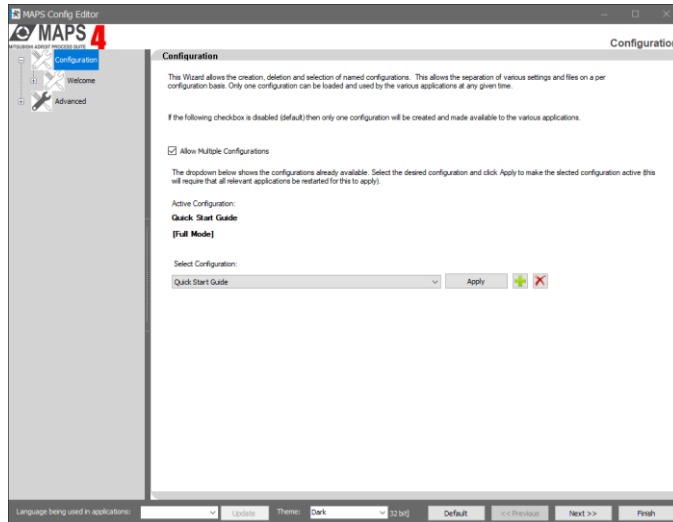


Figure 54 - MAPS Config Editor Configuration

- Select the Add new configuration button. 
- Give the new configuration a name ACME (S88 Configuration). Then click the Ok button.

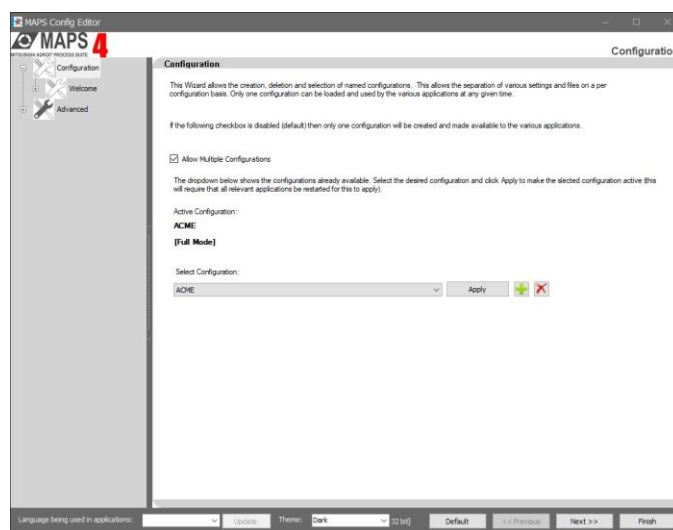


Figure 55 - MAPS Config Editor New Configuration ACME

- The device PLC_Q, created in the previous section [Creating a Device](#), will be used in the new configuration.
- Click the Finish button to save and close the MAPS Config editor.
- [Start the MAPS server](#), once the servers are started start and login to the MAPS designer.

10.3. MAPS life cycle project.

The user/engineer will now work with a new View called the Context view in the designer to create a MAPS life cycle project.

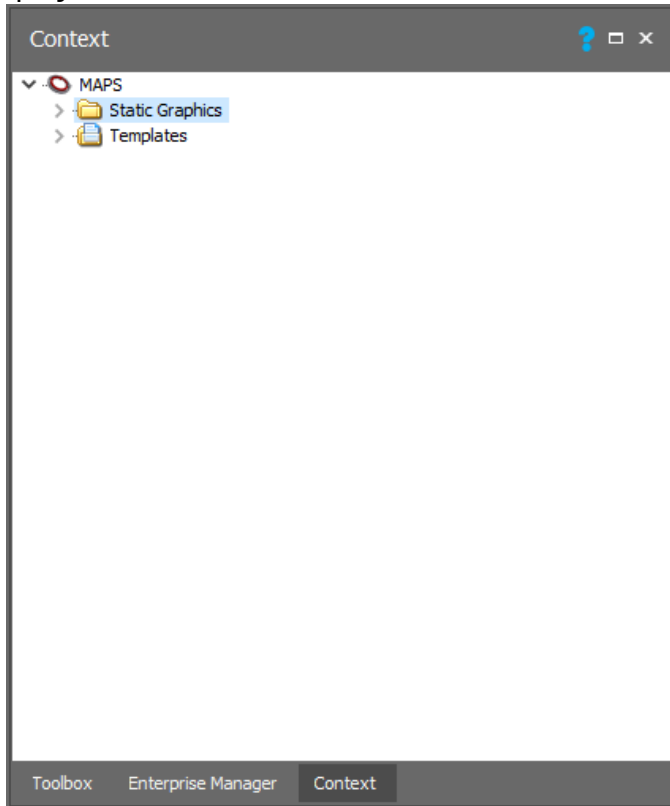


Figure 56 - MAPS Context view

The user can find the MAPS Context on the right side of the Designer below the Enterprise Manager. The Context view contains two default sections, Static Graphics which contains a library of static vector objects and the Templates library which contains the Electrical and Instrumentation templates as documented in [appendix B](#). Any MAPS life cycle project that is created will also appear here.

Creating a MAPS Life cycle project.

- In the Context view, right click on the MAPS icon then select Add Project. Give the project a name ABC_Foods as defined in the pre-configuration, and a description, ABC_Foods Manufacturing and distribution.

Notes: Project Path – this is the projects path where files for GX Works2 will be placed together with other project related files.

Figure 57 - Project Configuration, project name.

- Click the next Button.
- Add the following Plant Area Data (S88 Plant Area).
 - Name: Manufacturing
 - Description: Manufacturing process
 - MAPS Server: Default
 - Plant Area Code: A01

Notes: Plant Area Code is a unique alphanumeric code (typically 3 characters) that are prefixed to tag names to ensure unique and identifiable tag names in the project.

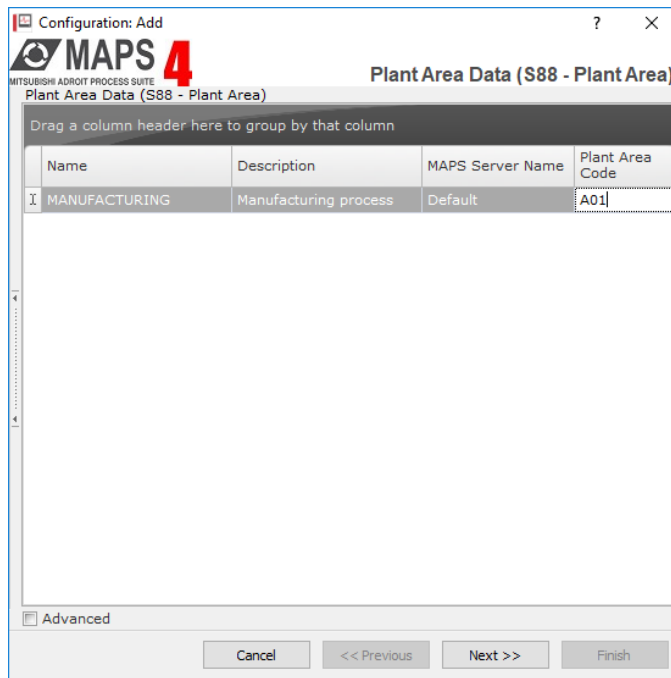


Figure 58 - Project Configuration, Plant Area

- Click the next button.
- Add the following PLC Data (S88 Process Cell).
 - a. Name: PLC_Q
 - b. description: Manufacturing PLC
 - c. Plant Area Name: Manufacturing
 - d. MAPS Device Name: PLC_Q
- Once the PLC_Q entry has been accepted the PLC's address range can be set. Make sure the required PLC is selected. Set the range for the digital inputs.
 - a. Start: X0000
 - b. Finish: Y003F
- Set the Digital Outputs
 - a. Start: Y0040
 - b. Finish: Y007F

Configuration: Add ? X

MAPS 4
MITSUBISHI ADROIT PROCESS SUITE

PLC Data (S88 - Process Cell)

Drag a column header here to group by that column Refresh Devices

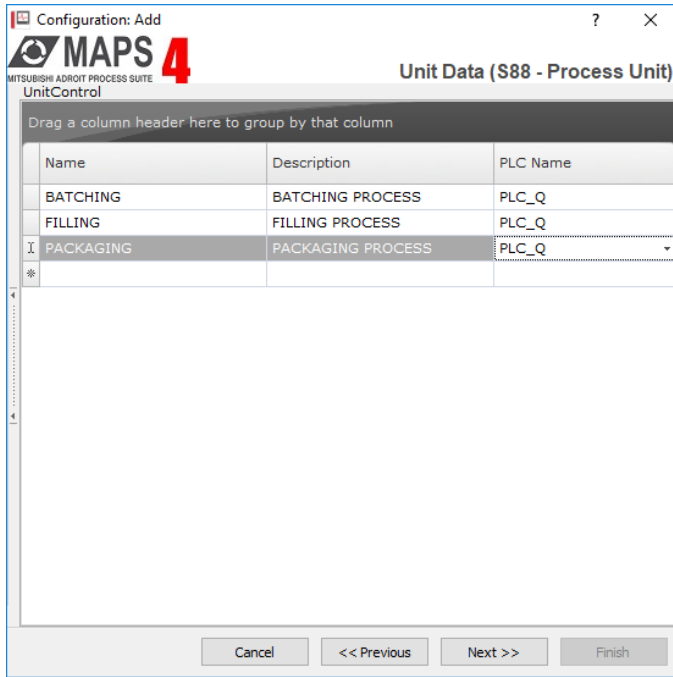
Name	Description	Plant Area Name	Adroit Device Name
PLC_Q	Manufacturing PLC	MANUFACTURING	PLC_Q
*			

Description	Start	End
Digital Inputs	X0000	X003F
Digital Outputs	Y0040	Y007F
Analog Inputs	D01024	D01407
Analog Outputs	D01408	D01535
Remote Inputs	D01536	D02559
Remote Outputs	D02560	D03583
SCADA Control Low	D03584	D04607
SCADA Control High	D04608	D04863
SCADA Status Low	D05120	D06143
SCADA Status High	D04864	D05119

Cancel << Previous Next >> Finish

Figure 59 -Project Configuration, PLC Data

- Click the next button.
- Add the following Unit Data (S88 Process Unit).
 - a. Name: Batching
 - b. Description: Batching Process
 - c. PLC Name: PLC_Q
- Add another Unit with the following details.
 - a. Name: Filling
 - b. Description: Filling Process
 - c. PLC Name: PLC_Q
- Add another Unit with the following details.
 - a. Name: Packaging
 - b. Description: Packaging Process
 - c. PLC Name: PLC_Q



Configuration: Add

MAPS 4

MITSUBISHI ADROIT PROCESS SUITE

UnitControl

Unit Data (S88 - Process Unit)

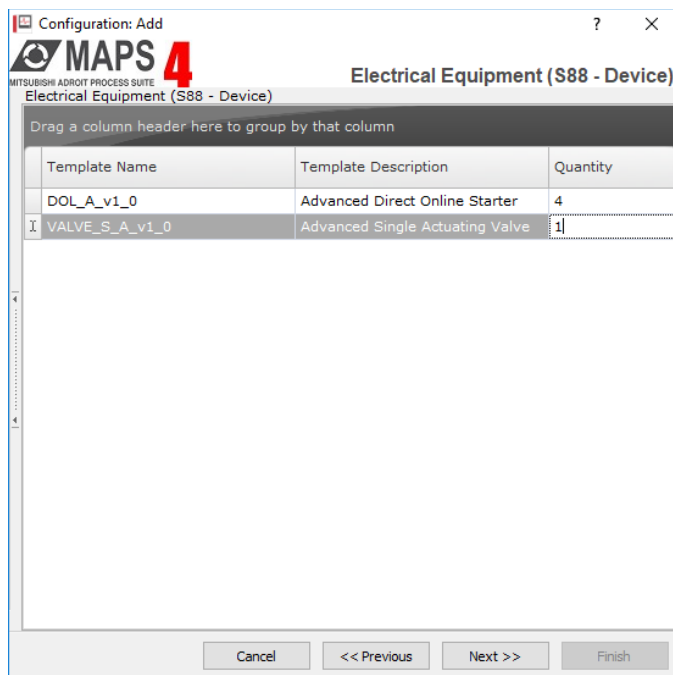
Drag a column header here to group by that column

Name	Description	PLC Name
BATCHING	BATCHING PROCESS	PLC_Q
FILLING	FILLING PROCESS	PLC_Q
I PACKAGING	PACKAGING PROCESS	PLC_Q

Cancel << Previous Next >> Finish

Figure 60 - Project Configuration, Unit Data

- Click the next Button.
- The Electrical Equipment (S88 Device) dialogue is the area were the number and type of electrical templates can be defined (from a pre-defined list of [equipment templates](#)). Set the following.
 - Template Name: DOL_A_v1_0
 - Quantity: 4
- Add another line and set the following:
 - Template Name: VALVE_S_A_v1_0
 - Quantity: 1



Configuration: Add

MAPS 4

MITSUBISHI ADROIT PROCESS SUITE

Electrical Equipment (S88 - Device)

Electrical Equipment (S88 - Device)

Drag a column header here to group by that column

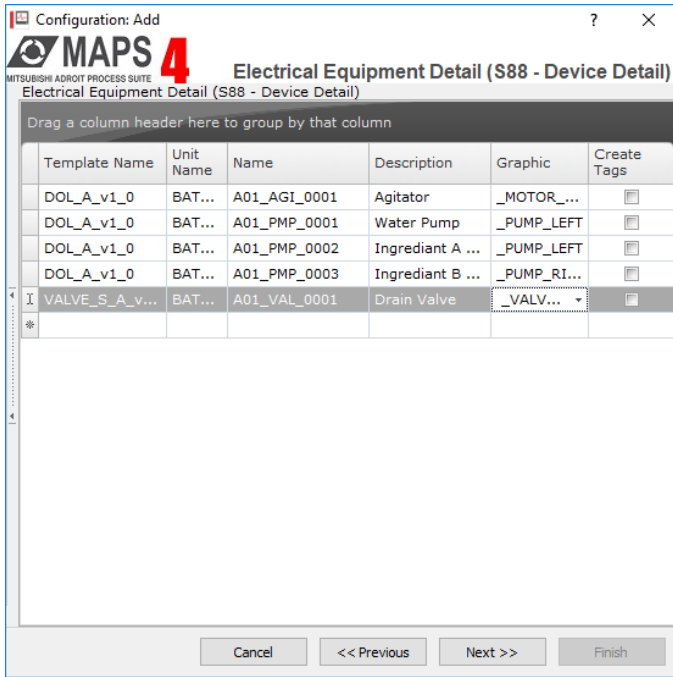
Template Name	Template Description	Quantity
DOL_A_v1_0	Advanced Direct Online Starter	4
I VALVE_S_A_v1_0	Advanced Single Actuating Valve	1

Cancel << Previous Next >> Finish

Figure 61 - Project Configuration, Electrical Equipment

- Click the next button.

- Edit the Electrical Equipment Detail (S88 Device), each item of equipment is now displayed, edit the details for each item as follows.
 - a. DOL_A_v1_0
 - i. Unit Name: Batching
 - ii. Name: A01_AGI_001
 - iii. Description: Agitator
 - iv. Graphic: _MOTOR_Vertical
 - b. DOL_A_v1_0
 - i. Unit Name: Batching
 - ii. Name: A01_PMP_001
 - iii. Description: Water Pump
 - iv. Graphic: _PUMP_LEFT
 - c. DOL_A_v1_0
 - i. Unit Name: Batching
 - ii. Name: A01_PMP_002
 - iii. Description: Ingredient A Pump
 - iv. Graphic: _PUMP_RIGHT
 - d. DOL_A_v1_0
 - i. Unit Name: Batching
 - ii. Name: A01_PMP_003
 - iii. Description: Ingredient B Pump
 - iv. Graphic: _PUMP_LEFT
 - e. VALVE_S_A_v1_0
 - i. Unit Name: Batching
 - ii. Name: A01_VAL_001
 - iii. Description: Drain Valve
 - iv. Graphic: _VALVE_RIGHT



Configuration: Add

MAPS 4 Electrical Equipment Detail (S88 - Device Detail)
 Electrical Equipment Detail (S88 - Device Detail)

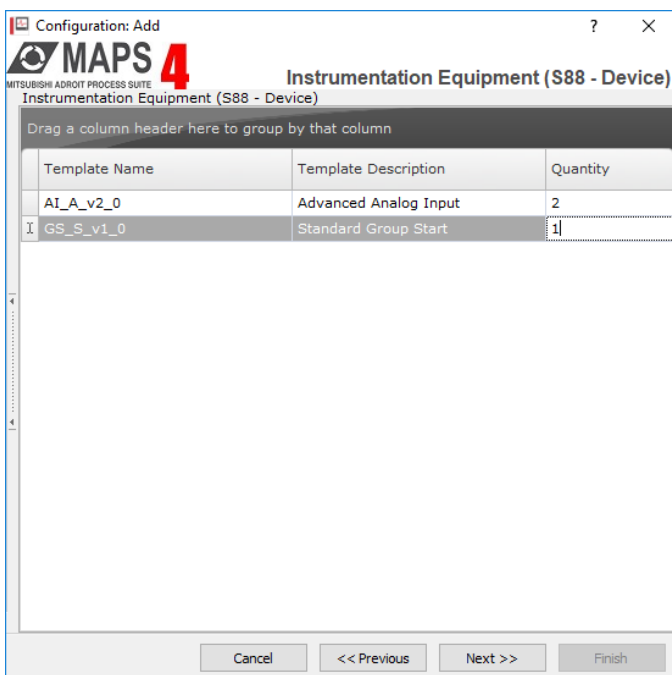
Drag a column header here to group by that column

Template Name	Unit Name	Name	Description	Graphic	Create Tags
DOL_A_v1_0	BAT...	A01_AGI_0001	Agitator	_MOTOR_...	☐
DOL_A_v1_0	BAT...	A01_PMP_0001	Water Pump	_PUMP_LEFT	☐
DOL_A_v1_0	BAT...	A01_PMP_0002	Ingredient A ...	_PUMP_LEFT	☐
DOL_A_v1_0	BAT...	A01_PMP_0003	Ingredient B ...	_PUMP_RI...	☐
VALVE_S_A_v...	BAT...	A01_VAL_0001	Drain Valve	_VALV...	☐

Cancel << Previous Next >> Finish

Figure 62 - Project Configuration, Electrical Equipment Details.

- Leave the Create Tags checkbox unchecked. Click the next Button.
- The Instrumentation Equipment (S88 Device) dialogue is the area were the number and type of Instrumentation templates can be defined (from a pre-defined list of [Instrumentation templates](#)). Set the following:
 - Template Name: AI_A_v2_0
 - Quantity: 2
- Add another line and set the following:
 - Template Name: GS_A_v1_0
 - Quantity: 1



Configuration: Add

MAPS 4 Instrumentation Equipment (S88 - Device)
 Instrumentation Equipment (S88 - Device)

Drag a column header here to group by that column

Template Name	Template Description	Quantity
AI_A_v2_0	Advanced Analog Input	2
GS_S_v1_0	Standard Group Start	1

Cancel << Previous Next >> Finish

Figure 63 - Project Configuration, Instrumentation Equipment

- Click the next button.
- Edit the Instrumentation Equipment Detail (S88 Device), each item of equipment is now displayed, edit the details for each item as follows.
 - a. AI_A_v2_0
 - i. Unit Name: Batching
 - ii. Name: A01_MAS_001
 - iii. Description: Tank Weight
 - iv. Graphic: _AI
 - b. AI_A_v2_0
 - v. Unit Name: Batching
 - vi. Name: A01_TEM_001
 - vii. Description: Tank Temperature
 - viii. Graphic: _AI
 - c. GS_A_v2_0
 - ix. Unit Name: Batching
 - x. Name: A01_STT_001
 - xi. Description: Process Start
 - xii. Graphic: _GS

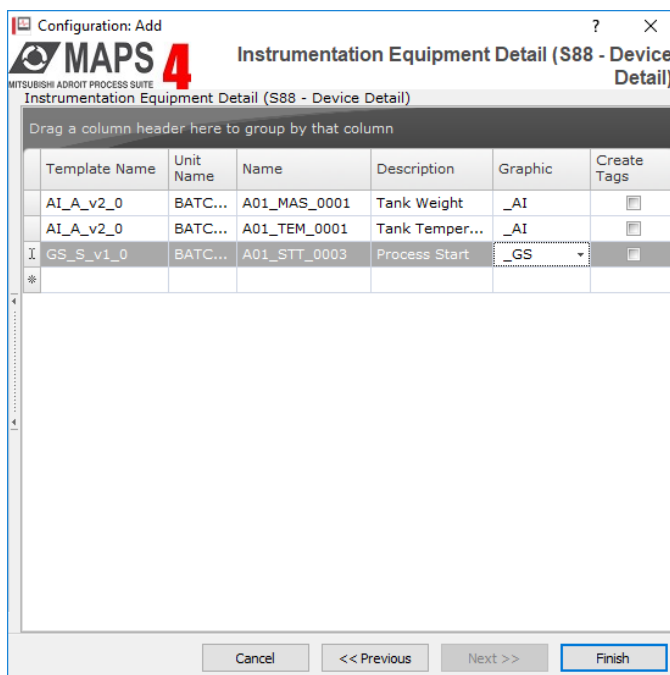


Figure 64 -Project Configuration, Instrumentation Equipment Details

- Leave the Create Tags checkbox unchecked. Click the Finish Button to automatically build the project and the SCADA screens.

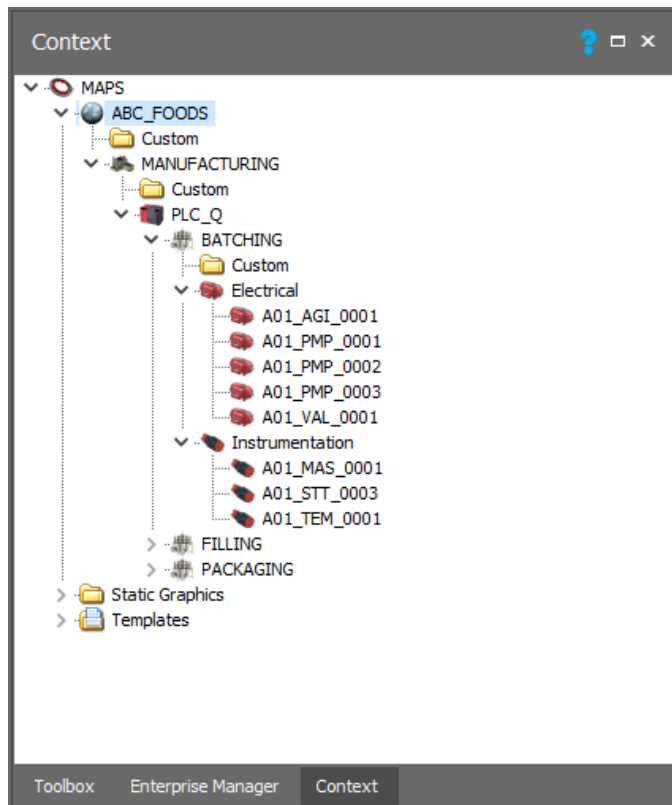


Figure 65 - MAPS Context view with project

Note: The Context view might need to be refreshed to view any newly created projects.

10.3.1. Bulking Configuration

MAPS also supports bulking configuration through an Excel export and import mechanism. To export a Project need to exist with a completed [ISA 88 Project structure](#) with at least one [template](#). To Export to Excel

Exporting and Importing a Project to excel

Note: Excel must be installed to export or import the MAPS life cycle project.

- Right click on the project and select Export to Excel.

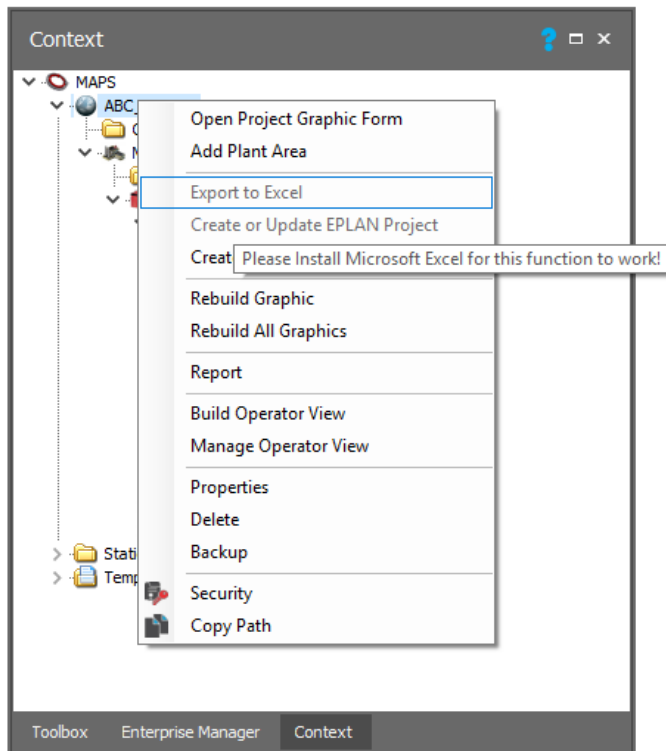


Figure 66 - Context View Export to Excel

- Save and Open the Excel Spreadsheet. Edit the spreadsheet as required then close and save the spreadsheet.
- Right click on the MAPS Icon in the Context view then select Import from Excel.

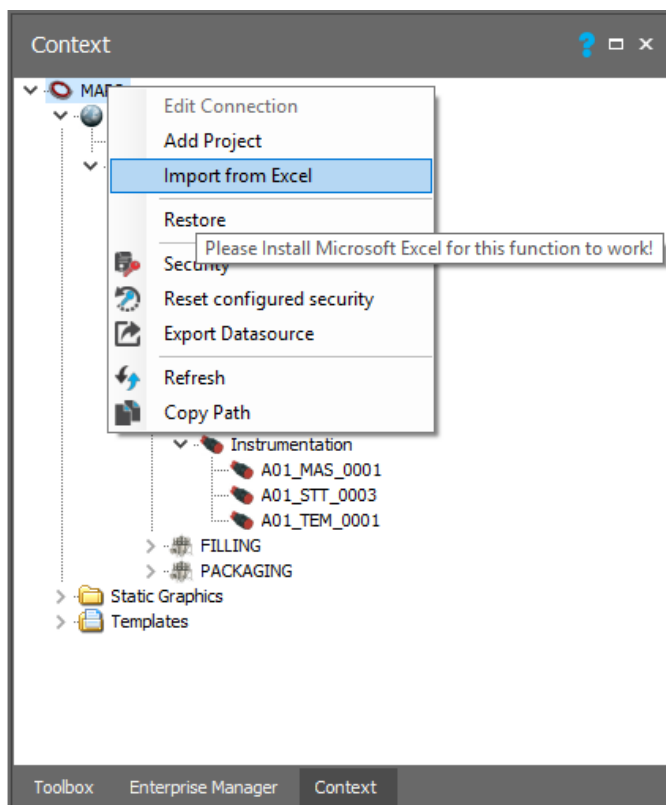


Figure 67 - Context View Import to Excel

10.3.2. Generating the Project Files

Once the MAPS Life cycle Project has been created the project files need to be generated.

Generating the PLC Program

Note: MAPS will be unable to generate a PLC project if GX Works2 is not installed.

- In the MAPS context view right click on the PLC Name PLC_Q (Process Cell) icon. Select the Build PLC Project.

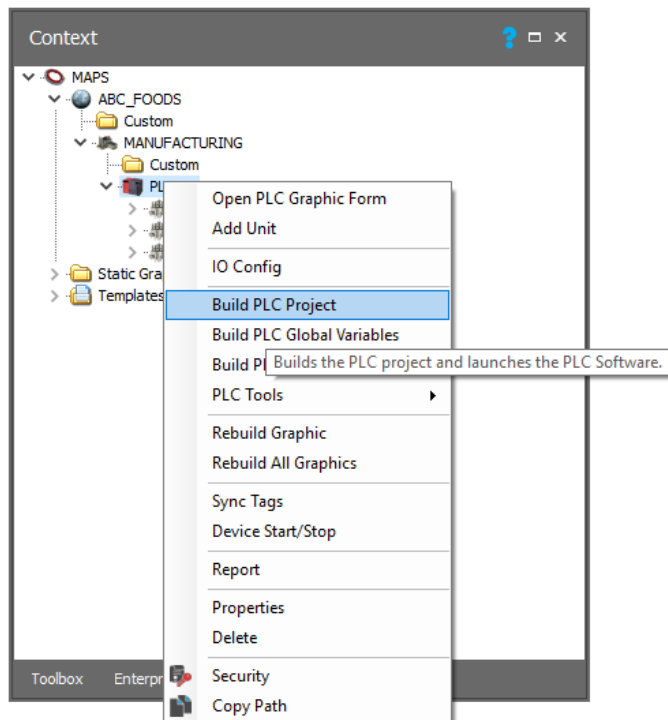


Figure 68 - Context View Build PLC Project

- MAPS will generate a PLC project and open the project in GX Works2.
- [Setup the PLC communication](#) in the projects Connection Destination.
- Edit the PLC Project as required and download to the PLC.

Generating the MAPS SCADA agents

Note: MAPS Agent Server must be running to generate the required agents.

- In the MAPS context view right click on the Plant Area Name Manufacturing (Plant Area) icon . Select the Sync Tags.

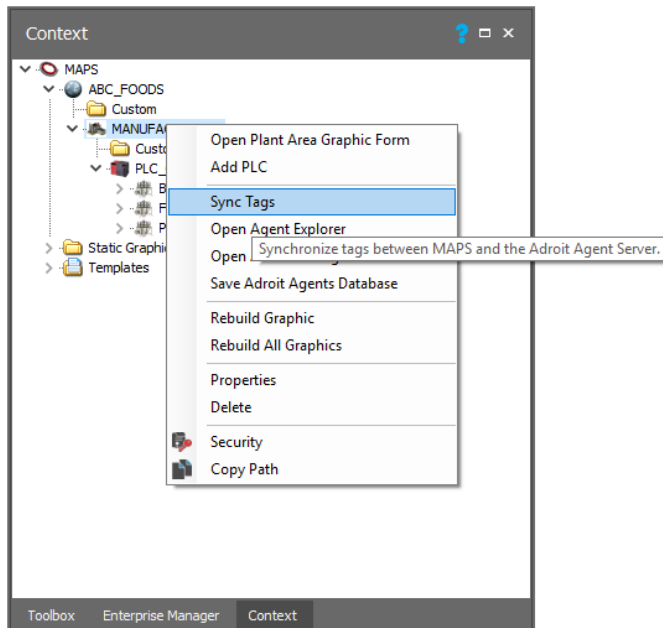


Figure 69 - Context View Sync Tags

- Enable the Sync process to run in silent mode by clicking the yes button in the Sync dialogue. This process will take a few minutes so please be patient.

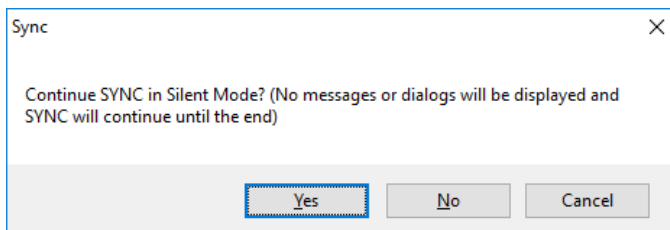


Figure 70 - SYNC in Silent Mode

- Once the agents have been created, Save the MAPS Agent Server.
- In the MAPS context view right click on the PLC Name PLC_Q (Process Cell) icon . Select the Device Start/Stop.

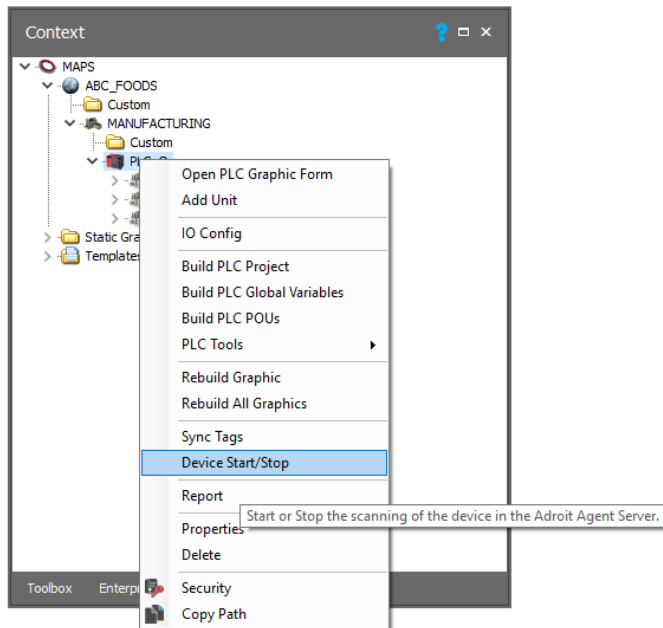


Figure 71 - Context View Device Start/Stop

- MAPS will then prompt the user to start the PLC_Q device. Click on the Yes button to start communication to the device.

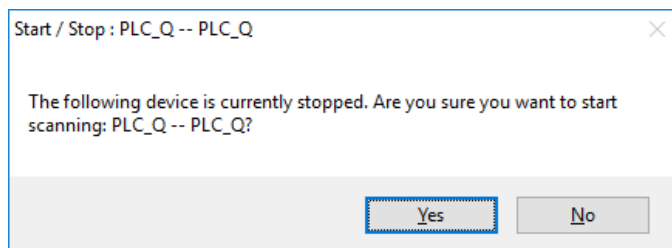


Figure 72 - Start communication to the PLC

- Open the MAPS Config Editor and check the Agent Server Configuration\Driver Configuration. The PLC_Q device should display a green icon to indicate healthy communication between the MAPS Agent Server and the PLC.

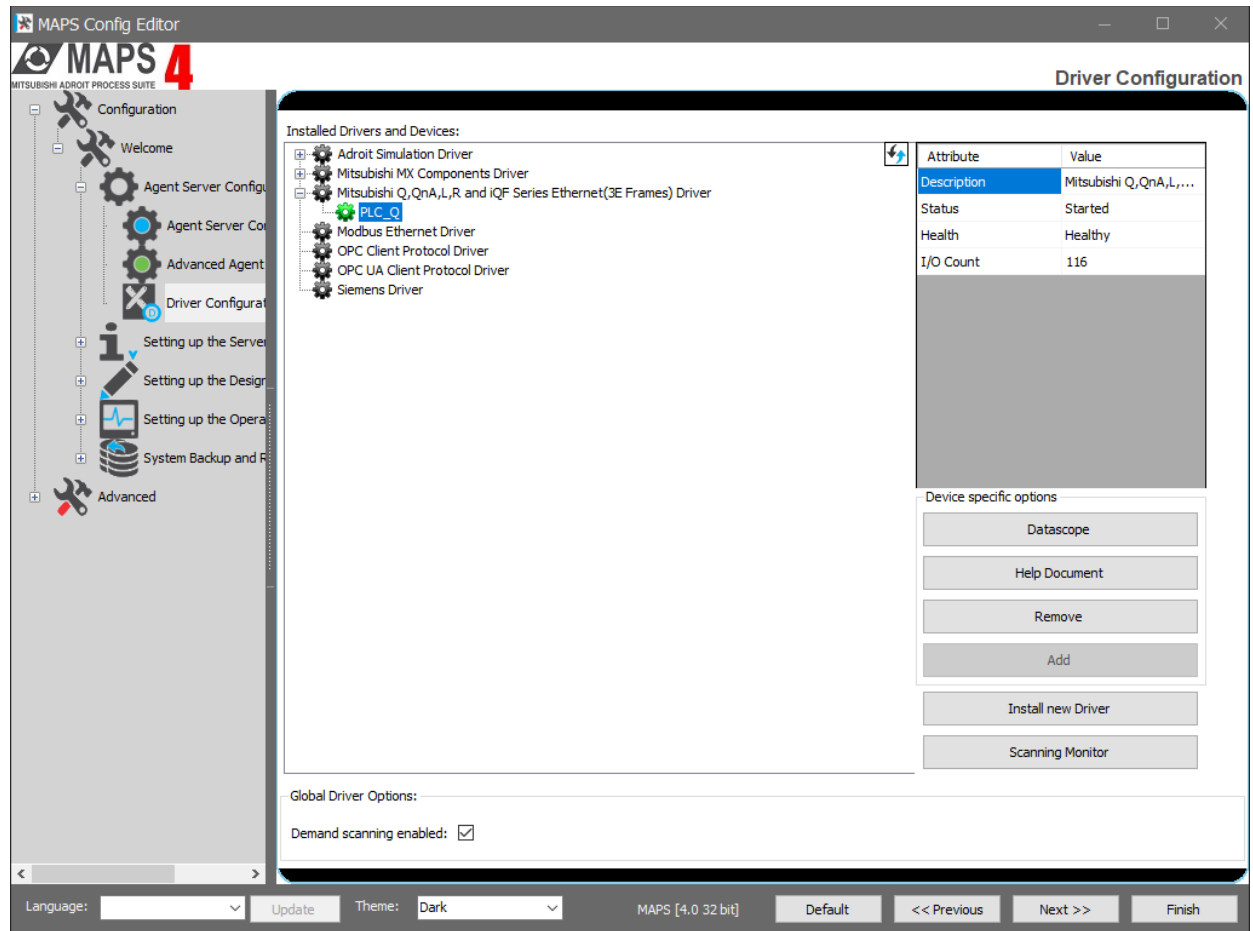


Figure 73 - MAPS Config Editor displaying healthy communication

- If the Icon displays is red then communication is unhealthy and the communication settings in the [PLC](#) and the [PLC Q device](#) need to be checked.

Note: The MAPS Agent Server time license might have expired so a restart of the MAPS Server might be required.

Generating the MAPS Graphic Forms and the navigation.

- In the MAPS context view right click on the Project Name ABC_FOODS (Site) icon. Select the Rebuild all Graphics. Click the Yes button to acknowledge the Overwrite All Graphics warning.

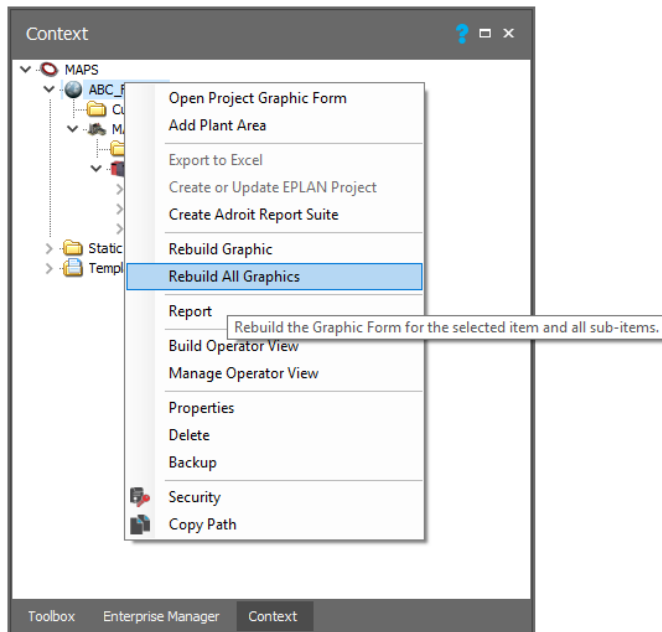


Figure 74 - Context View Rebuild All Graphics

- Right click on the Process Unit Batching icon.
- Select the Open Unit Graphic Form.

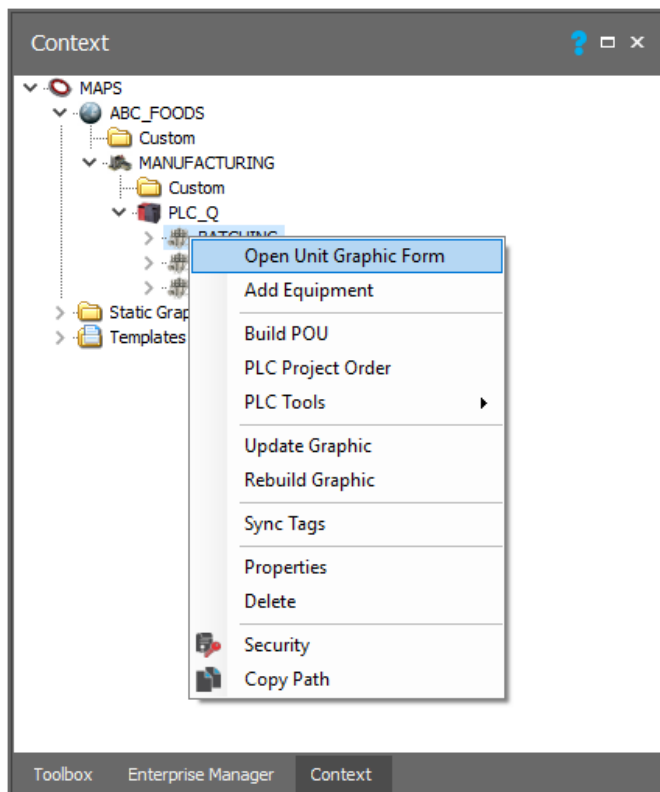


Figure 75 - Context View Open Unit Graphic Form

- Once the Batching Unit's Graphic Form is open select the FlowLayoutPanel, click on the Task menu Icon and select the Move Controls.

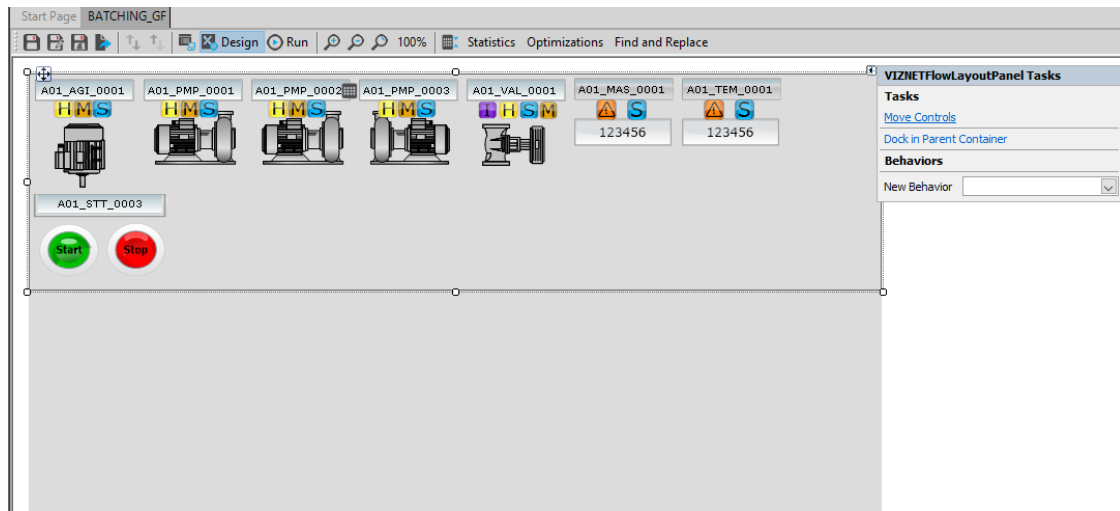


Figure 76 - FlowLayoutPanel Task Move Controls

- The "Shapes Wizards and Examples.Static Graphics.MAPS_Demo_Static.MAPS_Batching_Plant_Statics" Graphic Form can be added to the BATCHING_GF by dragging the MAPS_Batching_Plant_Statics GF from the enterprise manager and dropping on to and the BATCHING_GF (Select Paste Graphic Form Contents in the context menu). Templates can be dragged to the corresponding positions.

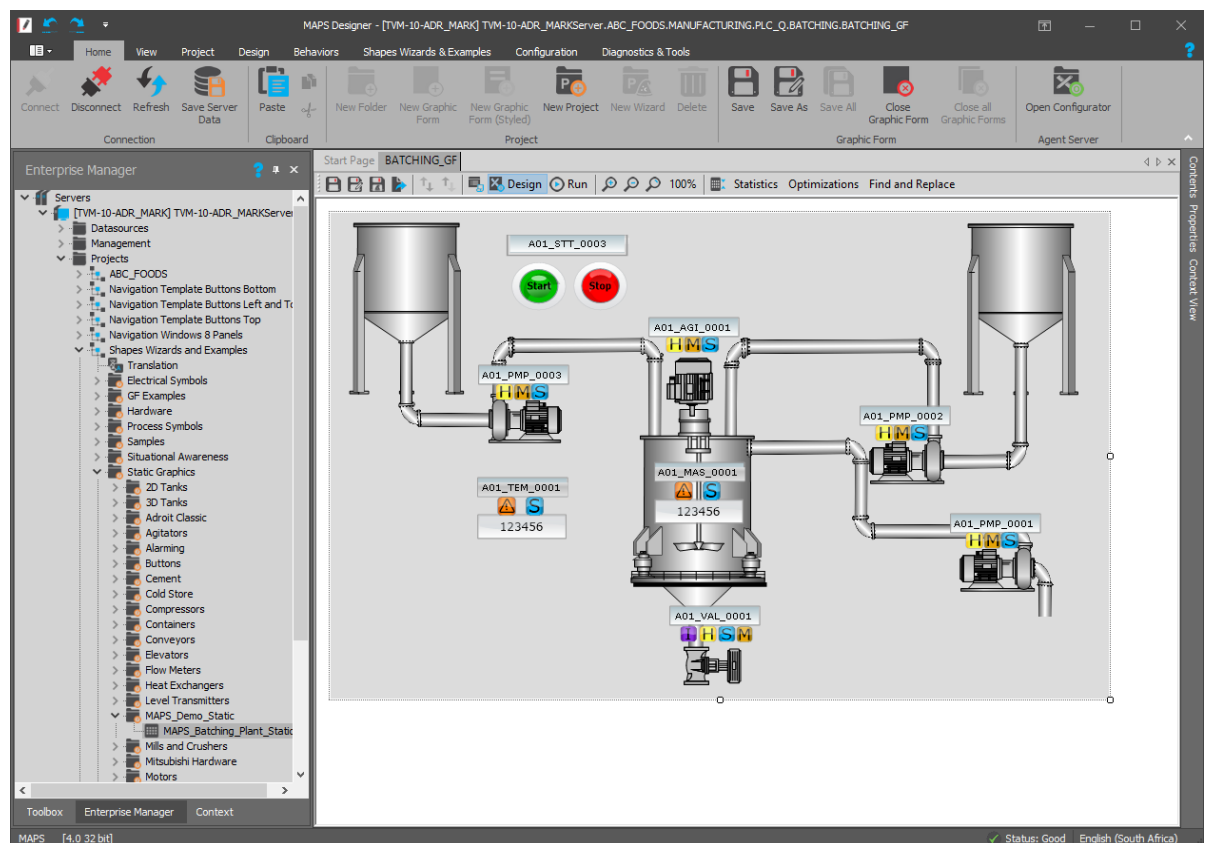


Figure 77 - Completed Batching Graphic Form

- Close and Save the BATCHING_GF.

Generating the MAPS Navigation.

- In the MAPS context view right click on the Project Name ABC_FOODS (Site) icon. Select the Build Operator View. This action will generate the navigation for the Operator.

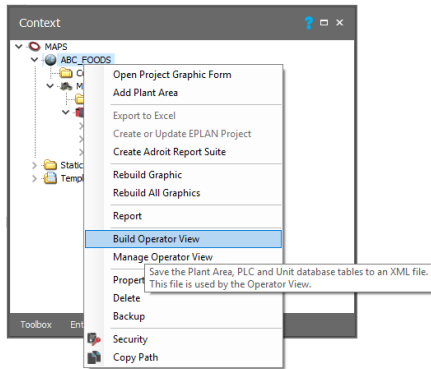


Figure 78 - Context View Build Operator View

- Launch the MAPS Operator and log on to the MAPS Server. In the MAPS Operator's Enterprise manager view open the Graphic Form "ABC_FOODS.ABC_FOODS_OperatorView". Use the navigation buttons to open the Batching Graphic Form.

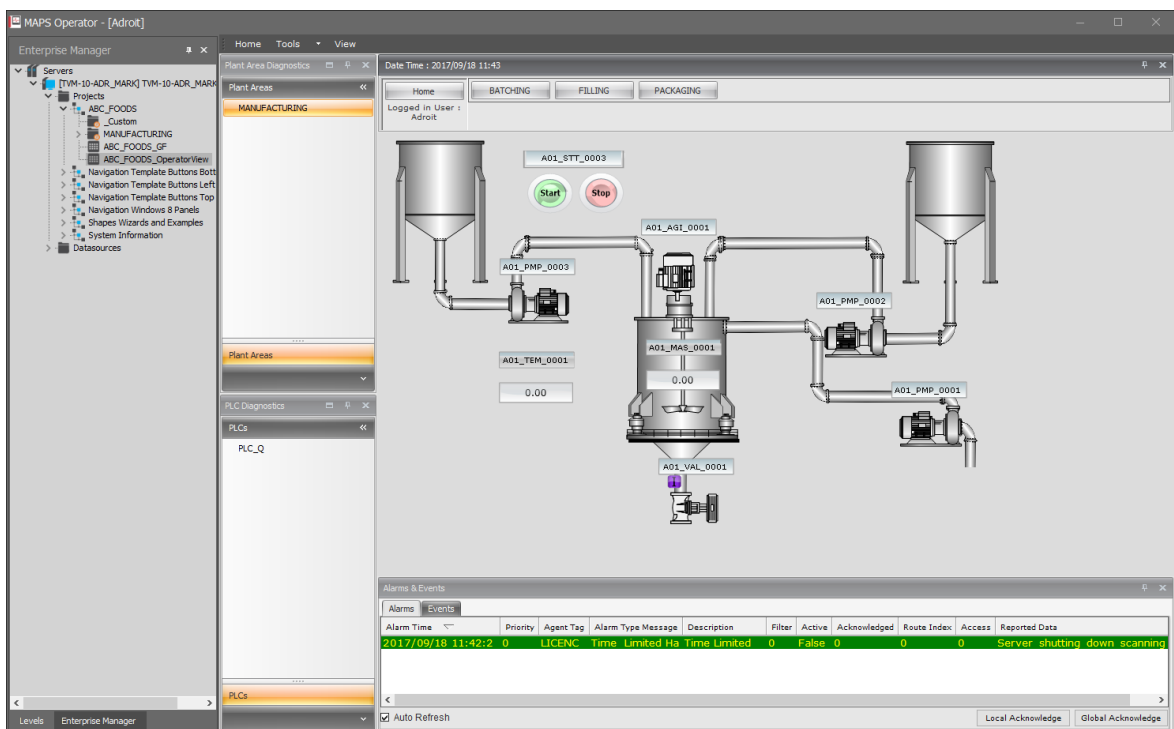


Figure 79 - MAPS Operator with MAPS Life Cycle Project

Additional [resources](#) and online help can be found on the Adroit [website](#).

11. Appendix A – Configure the PLC

The GX Works2 software package will be used to configure the Mitsubishi PLC Q03UDE CPU.

- Start GX Works2 and create a new project. Select the QCPU series and the PLC type Q03UDE. Click the Ok button.

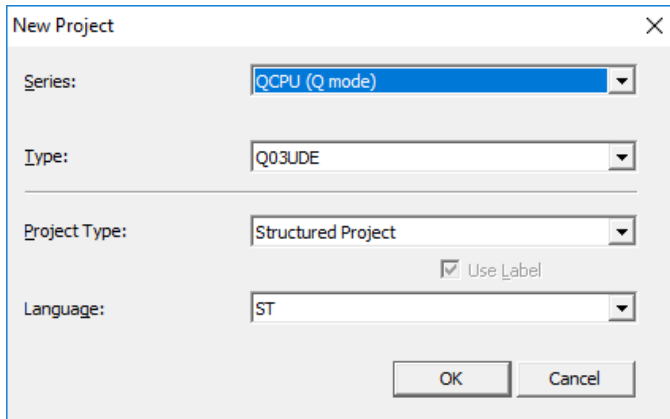


Figure 80 - GX Works2 New Project

- Double click on the PLC parameters in the project navigation view.

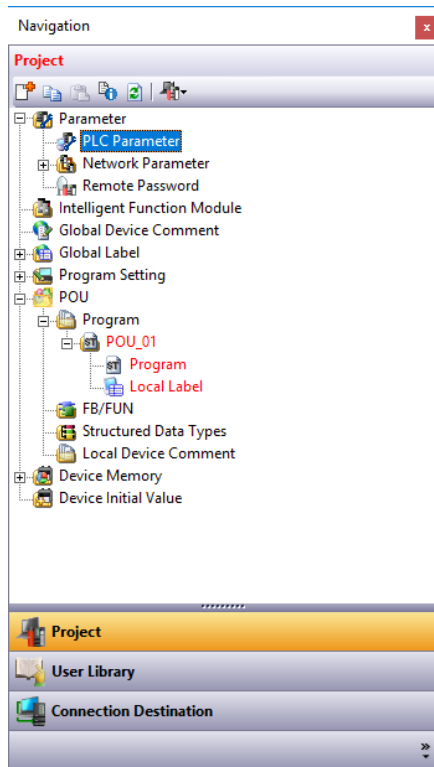


Figure 81 - Project navigation view.

- Select the Built-in Ethernet Port Settings tab in the Parameter Setting. Enter the Required IP address. Make sure that the Communication data code is set to binary and the Enable online change is checked.

Q Parameter Setting

PLC Name | PLC System | PLC File | PLC RAS | Boot File | Program | SFC | Device | I/O Assignment | Multiple CPU Setting | Built-in Ethernet Port Setting

IP Address Setting

Input Format: DEC

IP Address: 192 168 3 39

Subnet Mask Pattern: [][][][]

Default Router IP Address: [][][][]

Open Setting

FTP Setting

Time Setting

Communication Data Code

☒ Binary Code

☐ ASCII Code

☒ Enable online change (FTP, MC Protocol)

☐ Disable direct connection to MELSOFT

☐ Do not respond to search for CPU (Built-in Ethernet port) on network

IP packet transfer setting

IP packet transfer setting

Set if it is needed(Default / Changed)

Print Window... | Print Window Preview | Acknowledge XY Assignment | Default | Check | End | Cancel

Figure 82 - Q Parameter Setting

- Click on the Open setting button to open the Built-In Ethernet Open Settings, to set up the ports on the network interface card. At entry 16 set the Protocol to TCP; Open System to MC Protocol, and set the Host Station to 1280. Click on the end button to accept the changes.

Built-in Ethernet Port Open Setting

IP Address/Port No. Input: DEC

	Protocol	Open System	TCP Connection	Host Station	Destination IP Address	Destination Port No.	Start Device to Store Predefined Protocol
1	UDP	MELSOFT Connection					
2	TCP	MELSOFT Connection					
3	TCP	MELSOFT Connection					
4	TCP	MELSOFT Connection					
5	TCP	MELSOFT Connection					
6	TCP	MELSOFT Connection					
7	TCP	MELSOFT Connection					
8	TCP	MELSOFT Connection					
9	TCP	MELSOFT Connection					
10	TCP	MELSOFT Connection					
11	TCP	MELSOFT Connection					
12	TCP	MELSOFT Connection					
13	TCP	MELSOFT Connection					
14	TCP	MELSOFT Connection					
15	TCP	MELSOFT Connection					
16	TCP	MC Protocol		1280			

(*) IP Address and Port No. will be displayed by the selected format.
Please enter the value according to the selected number.

End Cancel

Figure 83 - Built-In Ethernet Open Settings

- Click the End button to close and accept the new Q Parameter Setting. Save the new PLC project and Compile the project by clicking on the Compile\Build menu.
- Open the Connection Destination in the navigation view.

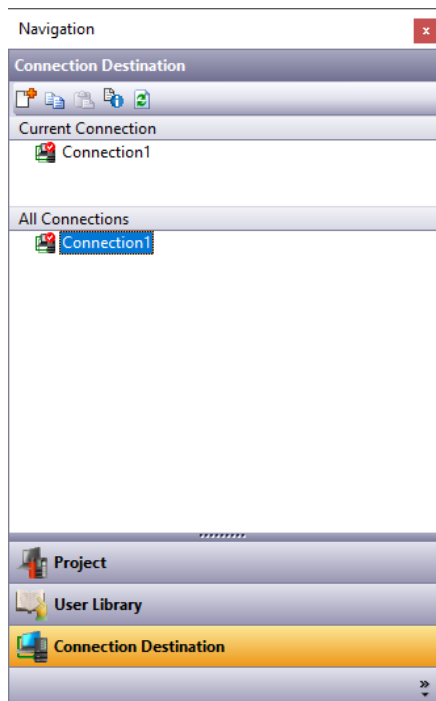


Figure 84 - Connection Destination view

- Double click on the Connection1, to configure the connection to the Q PLC.
- Make sure that the USB cable is connected from the Q PLC to the computer. In the Transfer Setup Connection1 dialogue, check on Serial USB on the PC and check on the PLC module on the PLC side.

Other Station Settings must be set to No Specification. Click on the Connection Test to check the communication settings.

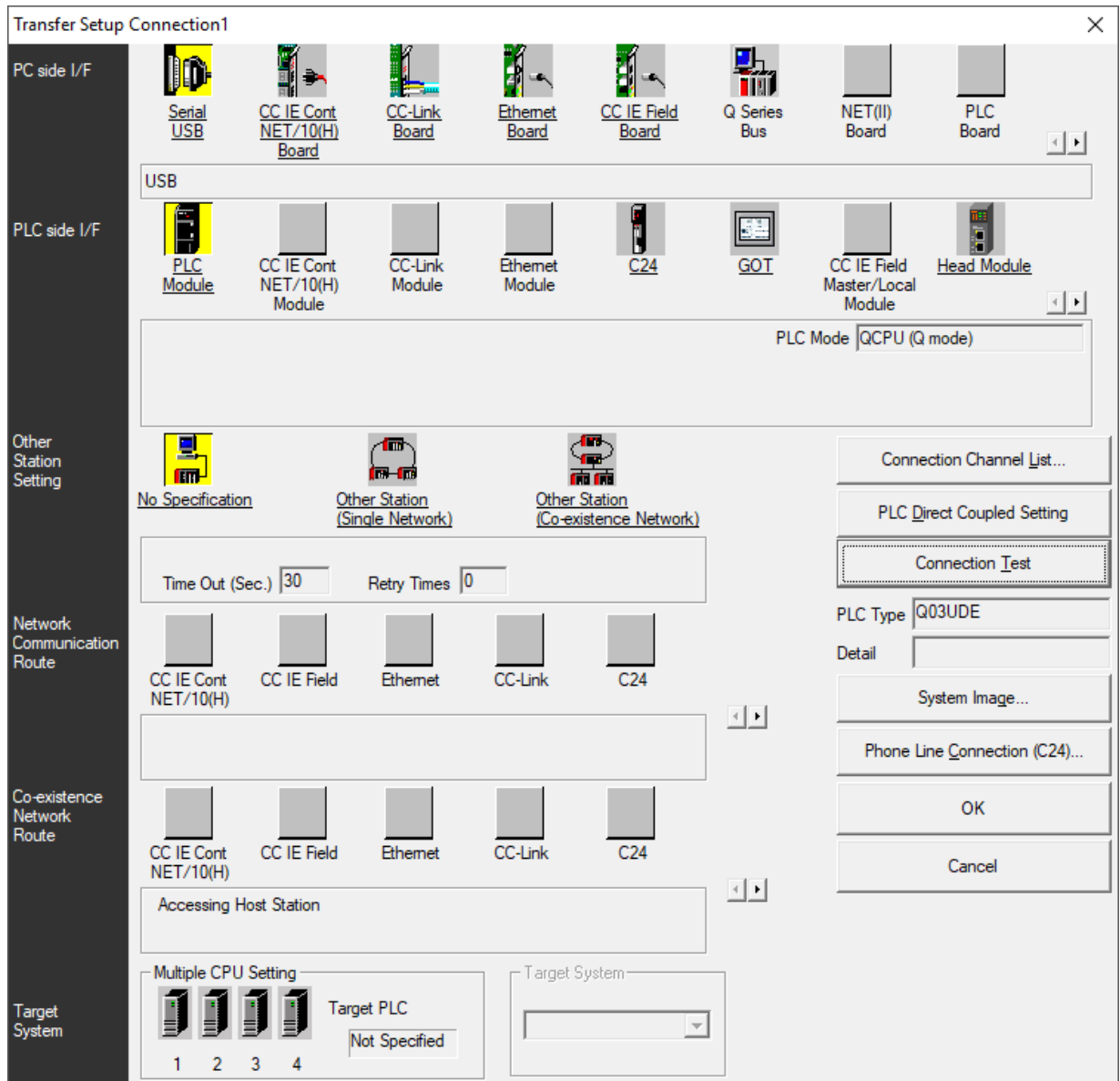


Figure 85 - Transfer Setup Connection1

- Click the download button from the menu bar to start the program transfer to the PLC.



- Click on the Select All button in the Online Data Operation, then click on the Execute button to start the transfer.

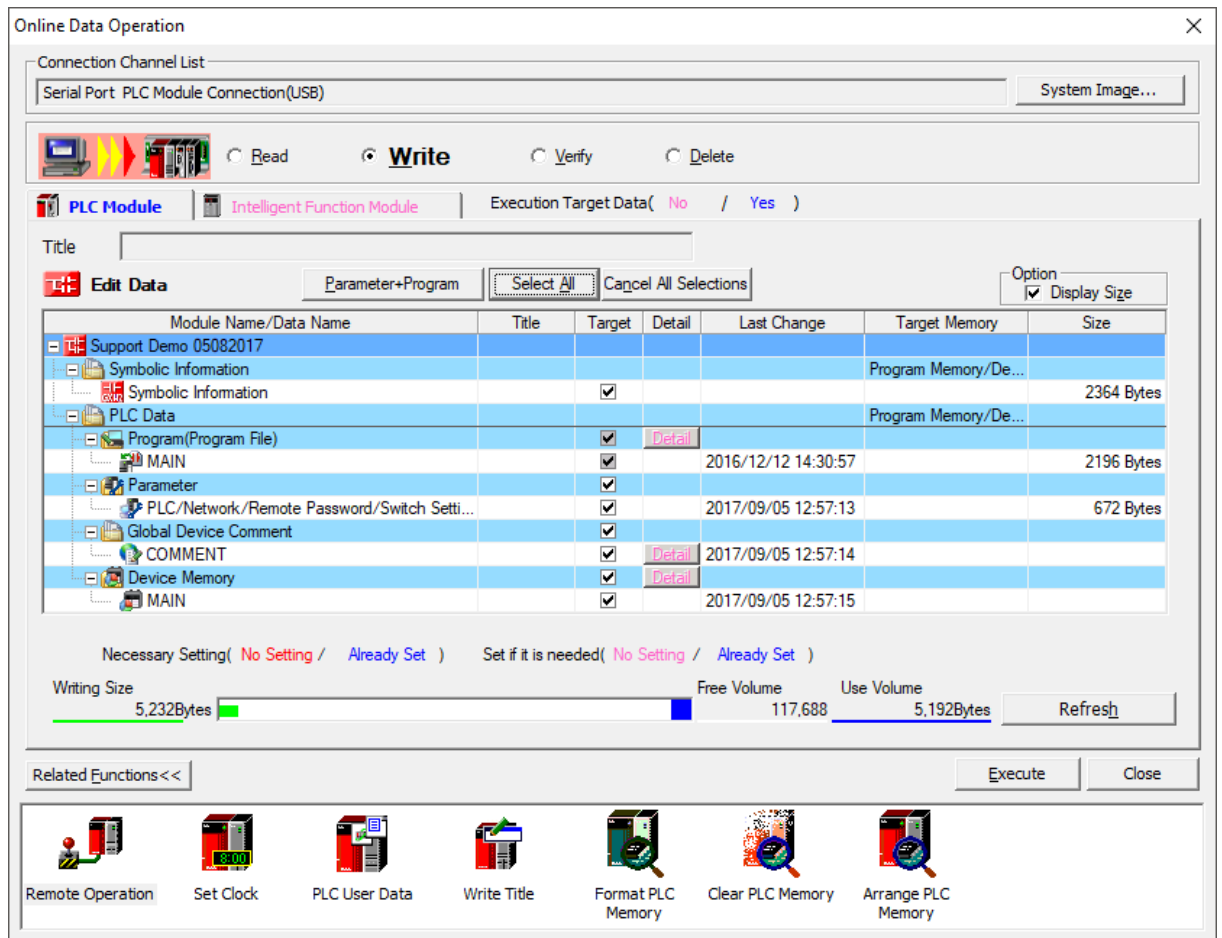


Figure 86 - Online Data Operation

12. Appendix B – MAPS Supported Equipment and Instrumentation template library

MAPS has an extensive template library; the library is made up of two parts.

12.1.1. Instrumentation equipment templates

Template	Name	Type	Description
Analog Input	AI_A_v1_0	Advanced	The Analog Input MAPS template is designed to control an analog that is connected to an analog control unit.
	AI_S_v1_0	Standard	
	AI_B_v1_0	Basic	
	AI_A_v2_0	Advanced	
	AI_S_v2_0	Standard	
	AI_B_v2_0	Basic	
Analog Output	AO_A_v1_0	Advanced	The Analog Output MAPS template is designed to control an analog that is connected to an analog control unit.
	AO_S_v1_0	Standard	
	AO_B_v1_0	Basic	
	AO_A_v2_0	Advanced	
	AO_S_v2_0	Standard	
	AO_B_v2_0	Basic	
Digital Input	DI_A_v1_0	Advanced	The Digital Input MAPS template is designed to control a digital input.
	DI_S_v1_0	Standard	
	DI_B_v1_0	Basic	
Digital Output	DO_A_v1_0	Advanced	The Digital Output MAPS template is designed to control a digital output.
	DO_S_v1_0	Standard	
	DO_B_v1_0	Basic	
Flow Meter	FM_A_v1_0	Advanced	The Flow Meter MAPS template is designed to capture the data from a Flow meter and calculate the different flow rates.
	FM_B_v1_0	Basic	
Group Start	GS_A_v1_0	Advanced	The Group Start MAPS template is designed to control a process.
	GS_S_v1_0	Basic	
Janitza Power Meter	JPM_B_v1_0	Basic	The Janitza Power Meter MAPS template is designed to capture the data from a Janitza Power Meter and display the different values.
PID Control	PID_A_v1_0	Advanced	The PID MAPS template is designed to control a device that is connected to an analog output.
	PID_S_v1_0	Standard	
	PID_A_v2_0	Advanced	
Totalizer	TOTALIZER_A_v1_0	Advanced	The Totalizer MAPS template is designed to control a totalizer that is connected with digital inputs that increments and decrements the totalizer accumulated value.
Vessel	VESSEL_A_v1_0	Advanced	The Vessel MAPS template is designed to control a vessel that is connected to digital and/or analog level control units.
	VESSEL_S_v1_0	Standard	
	VESSEL_B_v1_0	Basic	
	VESSEL_A_v2_0	Advanced	
	VESSEL_S_v2_0	Standard	

12.1.2. Electrical equipment templates

Motor Templates	Name	Type	Description
Direct On Line Starter	DOL_A_v1_0	Advanced	The Direct On Line (DOL) Motor MAPS template is designed to control a motor that is connected as a DOL.
	DOL_S_v1_0	Standard	
	DOL_B_v1_0	Basic	
	DOL_VB_v1_0	Very Basic	
2 Speed Direct On Line Starter	DOL_2S_A_v1_0	Advanced	The Direct On Line 2 Speed Motor MAPS template is designed to control a motor that is connected as a DOL, which is controlled by two outputs: one for slow speed and another for high speed.
Forward Reverse Direct On Line Starter	DOL_FR_A_v1_0	Advanced	The Direct On Line Forward - Reverse Motor MAPS template is designed to control a motor that is connected as a DOL, which is controlled by two outputs: one for forward direction and another for the reverse direction.
	DOL_FR_VB_v1_0	Very Basic	
Modbus Variable Speed Drive	VSD_Modbus_B_v1_0	Basic	The Modbus Variable Speed Drive [VSD] MAPS template is designed to control a motor that is connected to a Mitsubishi VSD on Modbus.
Profibus Variable Speed Drive	PBVSD_A_v1_0	Advanced	The Profibus Variable Speed Drive (VSD) Motor MAPS template is designed to control a VSD motor that is connected via a Profibus network.
	PBVSD_S_v1_0	Standard	
	PBVSD_B_v1_0	Basic	
Variable Speed Drive	VSD_A_v1_0	Advanced	The Variable Speed Drive (VSD) Motor MAPS template is designed to control a VSD motor that is connected by five outputs one for forward direction and one for reverse direction and three for the speed selection.
CC-Link Variable Speed Drive	CCVSD_A_v1_0	Advanced	CC-Link Variable Speed Drive (VSD) Motor MAPS template is designed to control a VSD motor that is connected via a CC-Link network.
	CCVSD_S_v1_0	Standard	
	CCVSD_B_v1_0	Basic	
Analog Variable Speed Drive	VSD_A_B_v1_0	Basic	The Analogue Variable Speed Drive (VSD) Motor MAPS template is designed to control a motor that is connected to a VSD with Analogue Set point and feedback.

Valve Templates	Name	Type	Description
Control Valve	VALVE_C_A_v1_0	Advanced	The Control Valve MAPS template is designed to control a valve that has an analog output with an analog feedback and two end limit switches.
Double Actuating Valve	VALVE_D_A_v1_0	Advanced	The Double Actuating Valve MAPS template is designed to control a valve that has two solenoids and two limit switches
	VALVE_D_S_v1_0	Standard	
	VALVE_D_B_v1_0	Basic	
Single Actuating Valve	VALVE_S_A_v1_0	Advanced	The Single Actuating Valve MAPS template is designed to control a valve that has one solenoid and two limit switches.
	VALVE_S_S_v1_0	Standard	
	VALVE_S_B_v1_0	Basic	

13. Appendix C – Additional Resources

- Technical description documents available on the MAPS DVD
- Context sensitive [online support forum](#).
- [Online Quick Start videos](#)
- [Help desk](#)

Note: The more advanced the template the greater the number of signals (scanned tags) required to represent this item of equipment. This can increase the size (and cost) of your required MAPS license - so assign these templates to your equipment carefully.

14. MAPS Product Suite Documentation

The following related documentation is also available on the Adroit website:-

<https://www.mapsscada.com/downloadsacc/>

