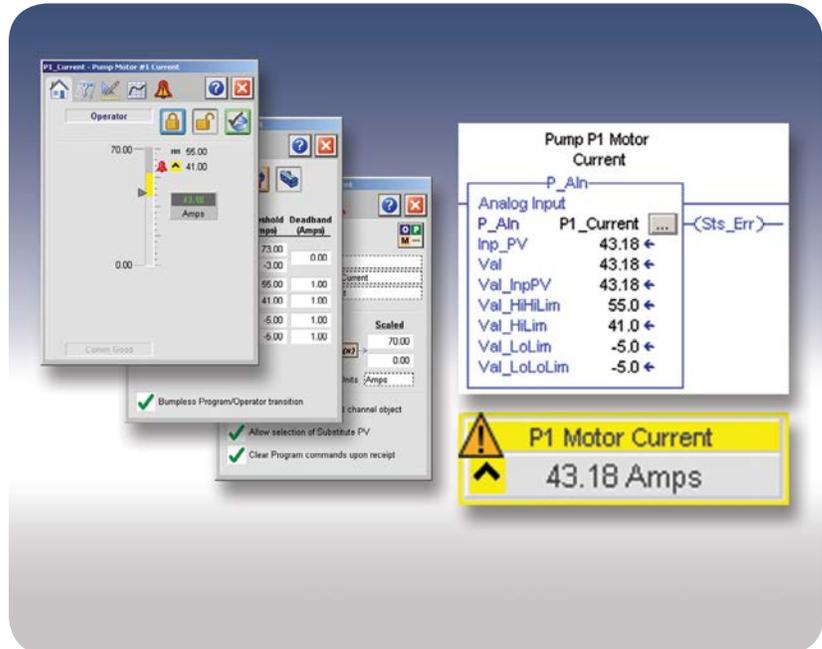


Rockwell Automation Library of Process Objects

Reducing Development Time

Features and Benefits

- Process objects for a range of field devices and functions
- Standards-based display elements with consistent user interface
 - Quickly identify abnormal situations
- Includes consistent modes of operation, overrides and simulation options
 - Assist maintenance operations without having to open controller code
- Modular design eases construction of complex control strategies
 - Reduced development and maintenance time
- Comprehensive documentation and support



Efficient Design and Operation

The Rockwell Automation® Library of Process Objects is a predefined library of controller code (Add-On Instructions), display elements (global objects), and faceplates that let you quickly assemble large applications with proven strategies, rich functionality, and known performance.

Built with consideration given to international standards such as color, functionality and symbols, these objects are a good fit for many industry sectors.

LISTEN.
THINK.
SOLVE.®

Rockwell
Automation

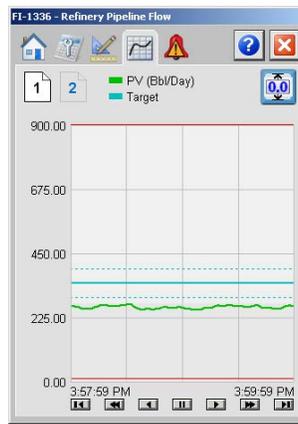
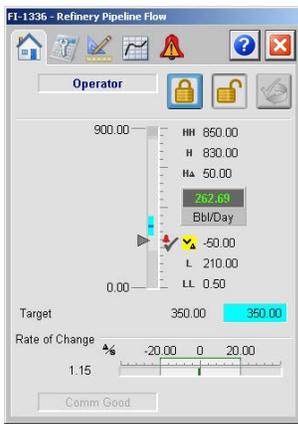
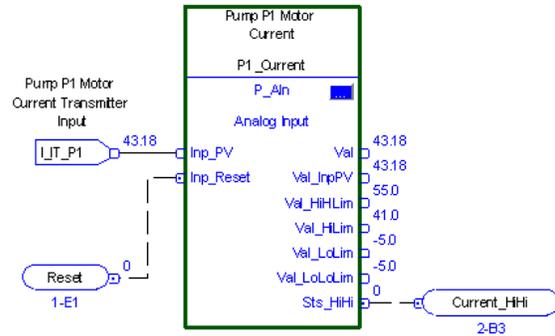
Library Resources

LIBRARY OBJECT	LIBRARY OBJECT	LIBRARY OBJECT
I/O PROCESSING	Discrete 2-, 3-, or 4-state Device (P_D4SD) (also used for valves)	Steam Properties Given Pressure and Enthalpy (P_Steam_ph)
Basic Analog Input (P_AIn)	PowerFlex® 523/525 VF Drives (P_PF52x)	Steam Properties Given Pressure and Entropy (P_Steam_ps)
Analog Input Channel (P_AIChan)	PowerFlex 753 Drive (P_PF753)	CROSS FUNCTIONAL
Advanced Analog Input (P_AInAdv)	PowerFlex 755 Drive (P_PF755)	Condition Gate Delay (P_Gate)
Dual Sensor Analog Input (P_AInDual)	SMC™-50 Smart Motor Controller (P_SMC50)	Interlocks with First Out and Bypass (P_Intlk)
Multiple Analog Input (P_AInMulti)	SMC™ Flex Smart Motor Controller (P_SMCFlex)	Permissives with Bypass (P_Perm)
Discrete Input Object (P_DIn)	Variable-speed Drive (P_VSD)	Central Reset (P_Reset)
Discrete Output (P_DOut)	E1 Plus™ Electronic Overload Relay (P_E1PlusE)	Common Alarm Block (P_Alarm)
Analog Output (P_AOut)	E3/E3 Plus Overload Relay (P_E3Ovld)	Common Mode Block (P_Mode)
Pressure/Temperature Compensated Flow (P_PTComp)	E300 Overload Relay (P_E300Ovrd)	Operator Prompt (P_Prompt)
Tank Strapping Table (P_StrapTbl)	Run Time and Start Counter (P_RunTime)	Boolean Logic with Snapshot (P_Logic)
HART Analog Input (P_AInHART)	Restart Inhibit for Large Motor (P_ResInh)	LOGIX DIAGNOSTIC OBJECTS
HART Analog Output (P_AOutHART)	VALVES	Logix Change Detector (L_ChangeDet)
REGULATORY CONTROL	Analog/Pulsed Control Valve (P_ValveC)	Logix Controller CPU Utilization (L_CPU)
Proportional + Integral + Derivative Enhanced (P_PIDE)	Hand-operated Valve (P_ValveHO)	Logix Redundant Controller Monitor (L_Redun)
Analog Fanout (P_Fanout)	Motor-operated Valve (P_ValveMO)	Logix Task Monitor (L_TaskMon)
High or Low Selector (P_HiLoSel)	Mix-proof Valve (P_ValveMP)	Logix Module Status (L_ModuleSts)
Deadband Controller (P_DBC)	Solenoid-operated Valve (P_ValveSO)	GRAPHICS FOR BUILT-IN INSTRUCTIONS
PROCEDURAL CONTROL	2-state Valve Statistics (P_ValveStats)	Built-in Autotuner
Sequencer Object (P_Seq)	n-Position Device (P_nPos)	Coordinated Control (CC)
Flowmeter Dosing (P_DoseFM)	Discrete 2-, 3-, or 4-state Device (P_D4SD) (also used for motors)	Internal Model Control (IMC)
Weigh Scale Dosing (P_DoseWS)	STEAM TABLE	Modular Multivariable Control (MMC)
Lead/Lag/Standby Motor Group (P_LLS)	Saturated Steam Pressure (P_Sat)	Proportional + Integral + Derivative Enhanced (PIDE)
MOTORS	Saturated Steam Temperature (P_TSat)	Ramp Soak (RMPS)
Single-speed Motor (P_Motor)	General Steam Table (P_Steam)	Totalizer (TOT)
Two-speed Motor (P_Motor2Spd)	Steam Properties Given Enthalpy and Entropy (P_Steam_hs)	
Reversing Motor (P_MotorRev)		
Hand-operated Motor (P_MotorHO)		

Objects Based Configuration

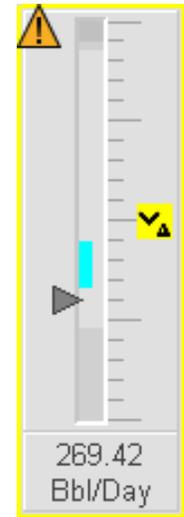
By using the Rockwell Automation Library of Process Objects, the end user is able to configure a control application using pre-defined objects for common functions helping to reduce engineering time. The Add-On Instructions allow modules of code, with pre-defined functionality, to be connected together in a drag and drop environment to rapidly define a control function.

When coupled to global objects and faceplates in FactoryTalk® View Studio, these objects enable configuration of a device from I/O to operator interface in a few mouse clicks. When coupled with FactoryTalk® VantagePoint®, the application can be scanned and the process objects are automatically mapped to a business information model. This allows monitoring and reporting on the device status, along with the ability to map additional asset management and maintenance information.



Raw Input	Threshold (Bbl/Day)	Deadband (Bbl/Day)
PV Fail Status	925.00	0.10
PV High-High	850.00	0.50
PV High Status	830.00	0.50
PV Low Status	210.00	0.50
PV Lo-Lo Status	150.00	0.50
PV Hi Dev Status	50.00	0.20
PV Lo Dev Status	-50.00	0.20
PV Hi Rate of Change	20.00	0.20

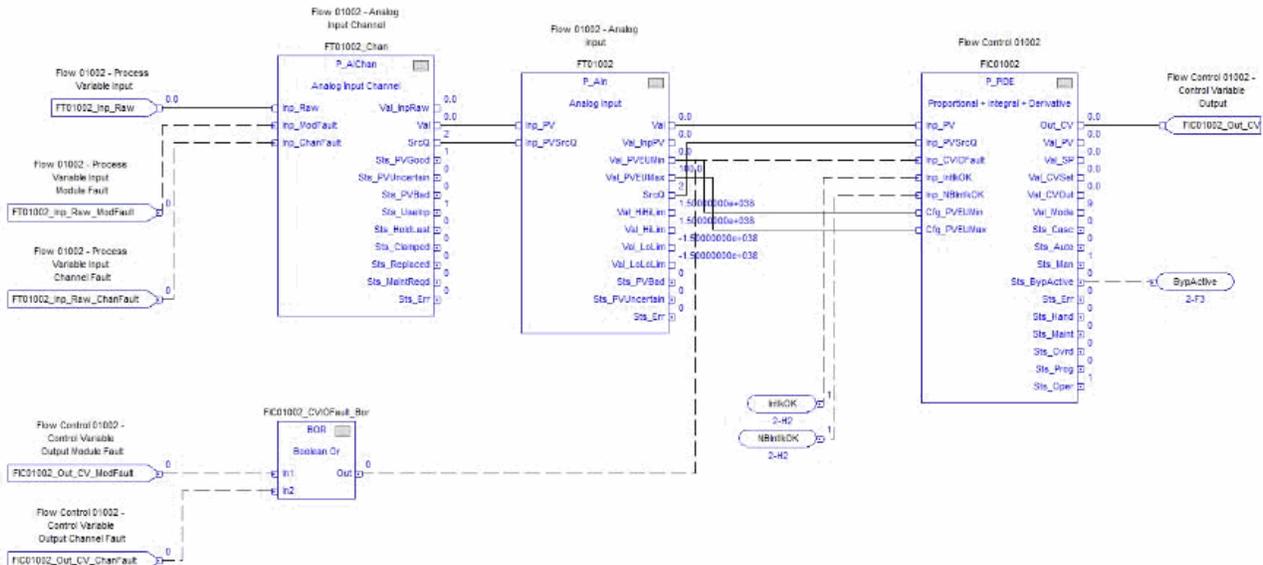
✓ Bumpless Program/Operator transition



Examples: Analog Input Object Add-On Instruction, Global Object and Faceplate

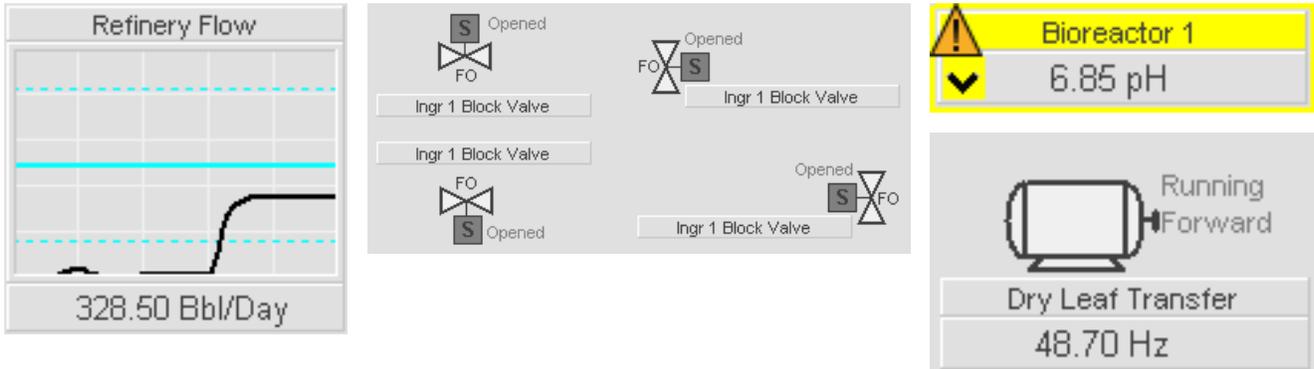
Process Strategies

To reduce implementation time and minimize risk, Process Strategy templates are available from PlantPAx that provide pre-connected functionality to meet control system needs. These individually importable Function Block Diagrams include instructions from the Rockwell Automation Library of Process Objects that have been configured to represent many common control and equipment scenarios encountered in process automation (i.e. I/O monitoring, regulatory control, motor and valve control).



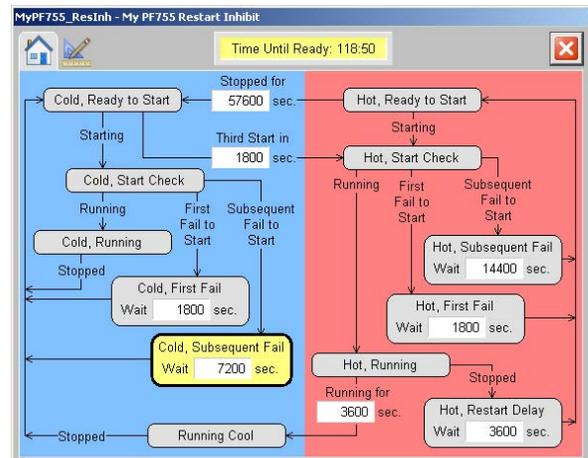
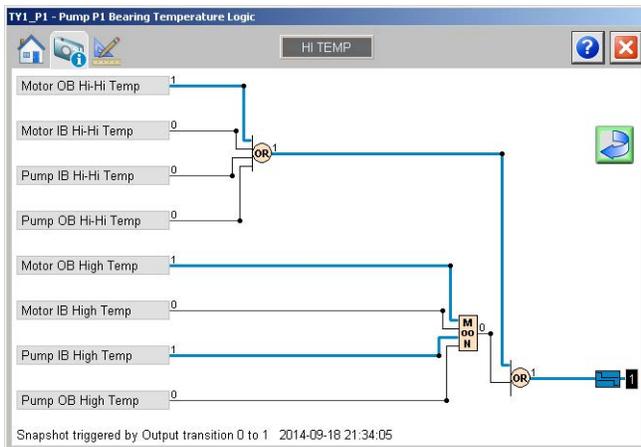
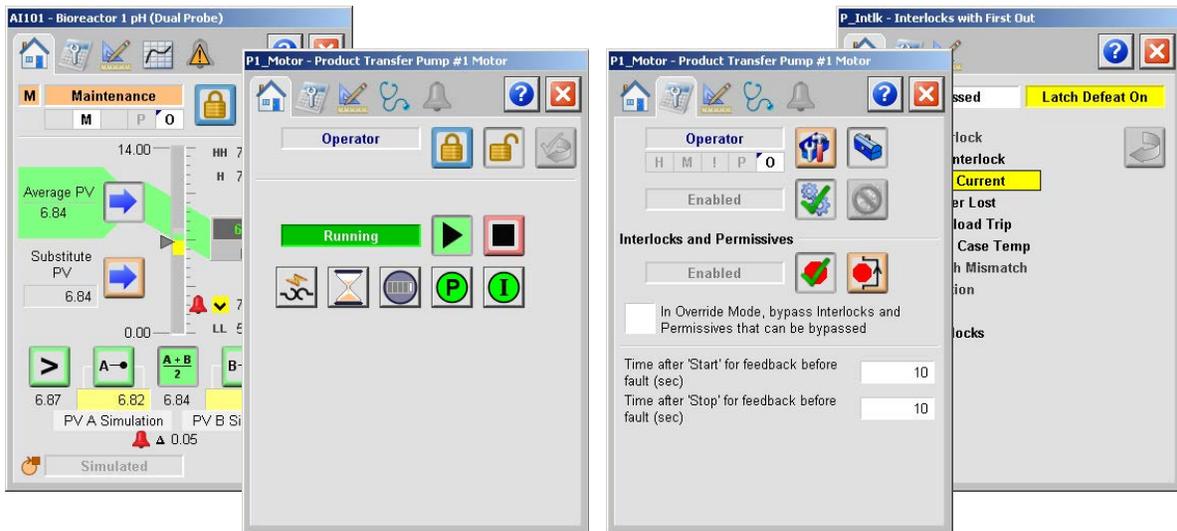
Global Objects

For rapid development of information-rich operator displays, the Rockwell Automation Library of Process Objects provides a collection of display objects that are linked to the Add-On Instructions with a drag and drop wizard. This allows rapid development of main plant display graphics.



Faceplates

All global objects have an associated faceplate which appears when the global object is clicked. These faceplates require no additional configuration. When an object has additional support functions linked, such as Run Time Monitor, Interlock Block, or others, the faceplate for these extended functions will also be accessible from the faceplate.



Using Library Object Documentation

Each Library object has its own reference manual that defines the parameters and display elements that are specific to the object. The manuals are structured with the following subsections (bookmarks in the PDFs as shown in Figure 2):

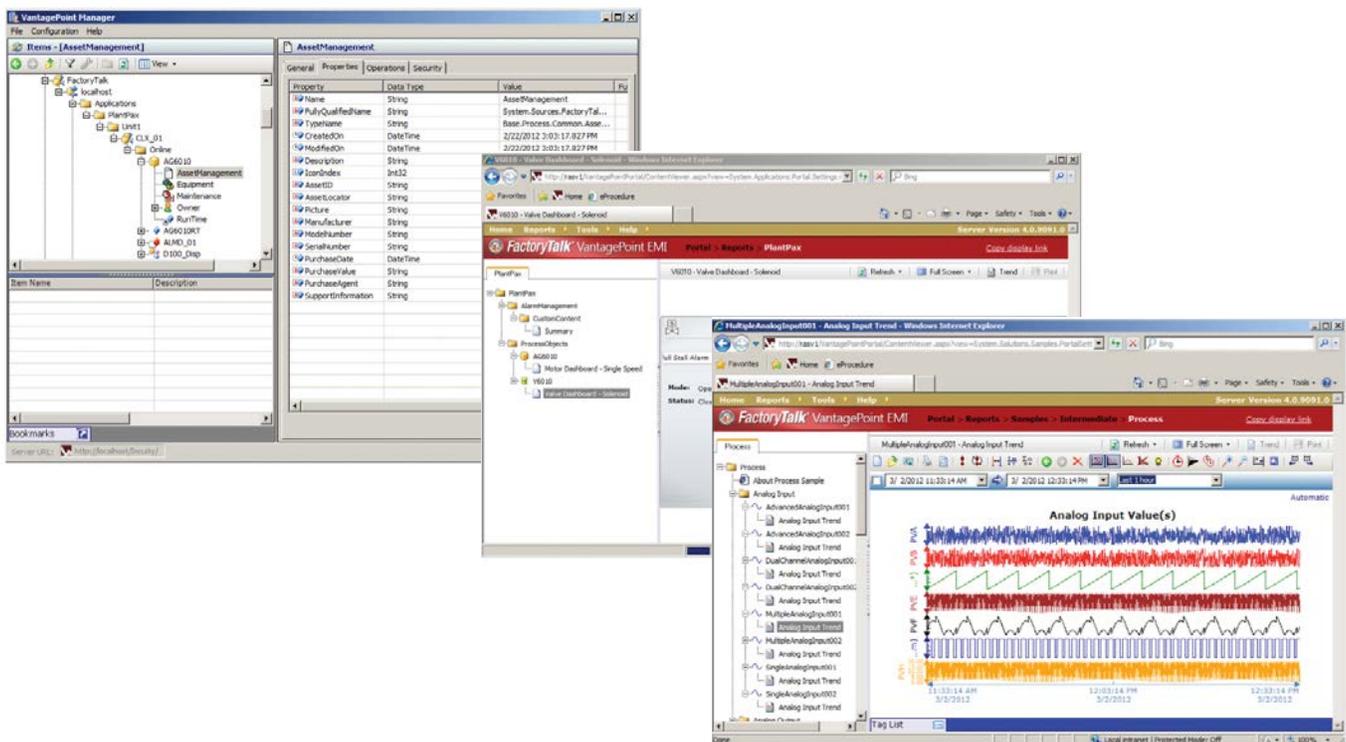
- Guidelines – Explains when to use this instruction and alternative Add- On instructions for situations that do not apply for this instruction.
- Functional Description – Provides details on how the instruction operates to acquaint you with the capabilities of the instruction.
- Required Files – Includes the controller and visualization files that you must import into your project to use this instruction.
- Controller Code –Describes the input and output parameters and local configuration tags for controller configuration and maintenance.
- Operations – Describes primary operations for Add-On Instructions, including modes, alarms, and simulation.
- Programming Example (selected manuals) – Illustrates the use of the instruction for a better understanding of the instruction logic.
- Display Elements – Depicts the display elements to aid in choosing the ones that you need.
- Quick Display – A small screen that lets operators perform simple interactions with the respective instruction. From the Quick Display, you can navigate to the faceplate for full access for operation, maintenance, and configuration.
- Faceplate – Explains how to use and understand the faceplate.

A brief description of each Library object is provided in the following pages to help you select functionality for your system. The overviews include sample displays and links to the respective Add-On Instruction manual.

Business and Maintenance Information

Take advantage of the out-of-the-box mobile and reporting capabilities with FactoryTalk VantagePoint EMI Integration. Within the FactoryTalk VantagePoint portal, standard content makes it easy to associate control objects with additional information in a plant model. Asset information is able to be associated with the object including asset costs, maintenance information, spare part ordering information, etc. This information model can be directly entered or linked to data in other systems.

Once the model is built, this information is accessible via the FactoryTalk VantagePoint portal as a report, dashboard or trend, as required.



Modes of Operation and Security

A comprehensive security model is implemented allowing different functions to be granted or denied access based on a defined user or group. This is fully configurable to allow highly defined security schemes to be implemented.

All objects operate within a pre-defined set of modes, these include:

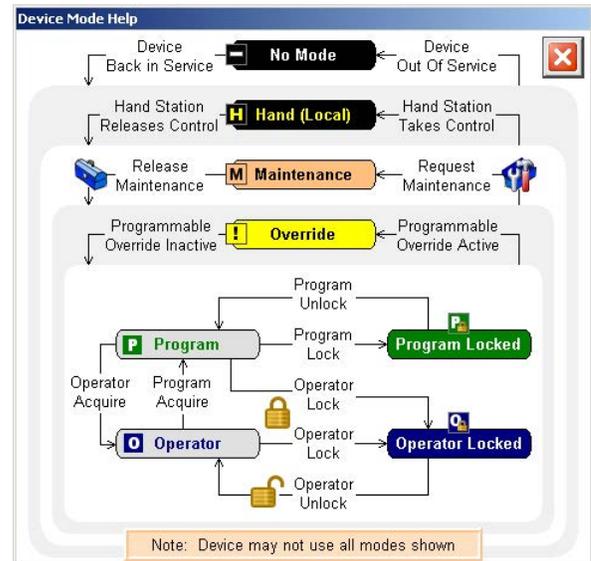
Operator – Controlled from the HMI

Program – Controlled from the application code

Override – Where selected interlocks and permissive conditions can be bypassed

Maintenance – Where all interlocks, permissive conditions and internal checks are bypassed

Hand – Under control of hardwired control stations



Alarm State Model

The PlantPax® system implements the complete state model defined in ANSI/ISA-18.2-2009, Management of Alarm Systems for the Process Industries. This implementation provides three mechanisms to prevent prolonged indications of an alarm: Suppress, Shelve, and Disable. The Shelve mechanism provides an **operator initiated** means to prevent an alarm from indicating for a configurable period of time.

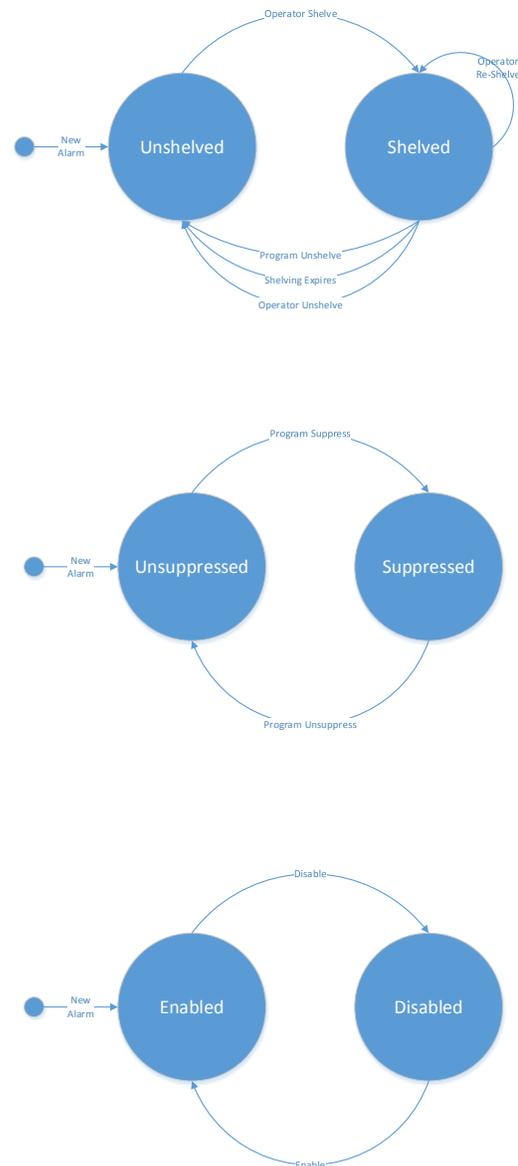
Alarms which are shelved continue to function normally except that, once acknowledged, they do not transition to the unacknowledged state. Alarms can be unshelved by the operator, when the shelving timer expires, or by program logic. The latter makes it possible to ensure that alarms are not inadvertently shelved by creating unshelved logic that is triggered by an event such as shift change.

The Suppress mechanism provides a **control logic initiated** means to programmatically prevent an alarm from indicating based on process state or condition.

Alarms which are suppressed continue to function normally except that, once acknowledged, they do not transition to the unacknowledged state. The suppress state makes it possible to implement "suppress by design" logic which, for examples, suppresses alarming when a piece of equipment is not in use.

The Disable mechanism provides a **maintenance initiated** means to take an alarm out of service without modifying the underlying control logic.

Alarms which are disabled do not transition alarm status and are not logged in the historical database.



Where To Get The Rockwell Automation Library of Process Objects

The Rockwell Automation Library of Process Objects can be downloaded from the Product Compatibility Download Center at:

<http://www.rockwellautomation.com/rockwellautomation/support/pcdc.page>

A TechConnect™ contract is required for access

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