



## Dynamic Management Module (DM)

The Dynamic Management (DM) module provides the capability to manage the states and state transition of control system settings according to any set of logic. The DM module allows for both macro and micro configuration and provides a dynamic mechanism to reconfigure the system for start-ups, shutdowns and operating mode changes. Alarm parameters can be configured; therefore, the configuration of control and alarm points is always appropriate for the current operating state. Plant processes are dynamic by nature. The DM module gives you the capability to control your process and its alarms through every process state with accuracy and confidence.

DM is a powerful process management tool that allows the alarm configuration to change as the operating state changes. Therefore, it can effectively eliminate alarm floods during upset conditions and operators can focus on stabilizing the plant rather than responding to unnecessary alarms. DM also includes transition management to help enable alarms to activate only as needed during a process mode change. This prevents critical alarms from being missed during a flood and ensures alarms are available upon startup.

DM delivers the control you need to meet larger operational objectives like never before. The logic tools provided as a part of DM make logic implementation or changes simple, fast and easy to follow. Loop logic can be changed and implemented in a fraction of the time with greater robustness without the use of cumbersome proprietary code.

### Dynamics

Every alarm in the Master Control System Database (MCSD) can be configured to change when the plant changes state (case). In order to determine which case the selected system is currently in, DM uses a variety of real-time readings from instruments, valve positions and other systems' operating statuses. By using key parameters to determine the operating state for a system, alarm floods are minimized with no operator assistance required.

#### Manage Branches

System:

Select	Edit	System	Branch	Description	Keyword	Entity	Status	P&ID	Equipment
		HtrRxtr	43AI0302	LD PEL FX					
		NucRxtr	43AI0672	O3 to Atmosphere					
		SepScrb	43FC0107	H2O TO SCRBR FM NUKE RX					
		HtrRxtr	43FC0507	NAT GAS TO PREHTR					
		HtrRxtr	43FC0527	NAT GAS TO HTR					
		HtrRxtr	43FC0550	MOLTEN PB TO SWT RX					
		NucRxtr	43FC0605	U238 FM STORAGE					
		HtrRxtr	43FC0608	PB FM STORAGE		MANLOAD			
		NucRxtr	43FC0618	H2 FM NUKE RX					
		HtrRxtr	43FC0668	SUGAR FM STORAGE					

43AI0302=>43FC0668

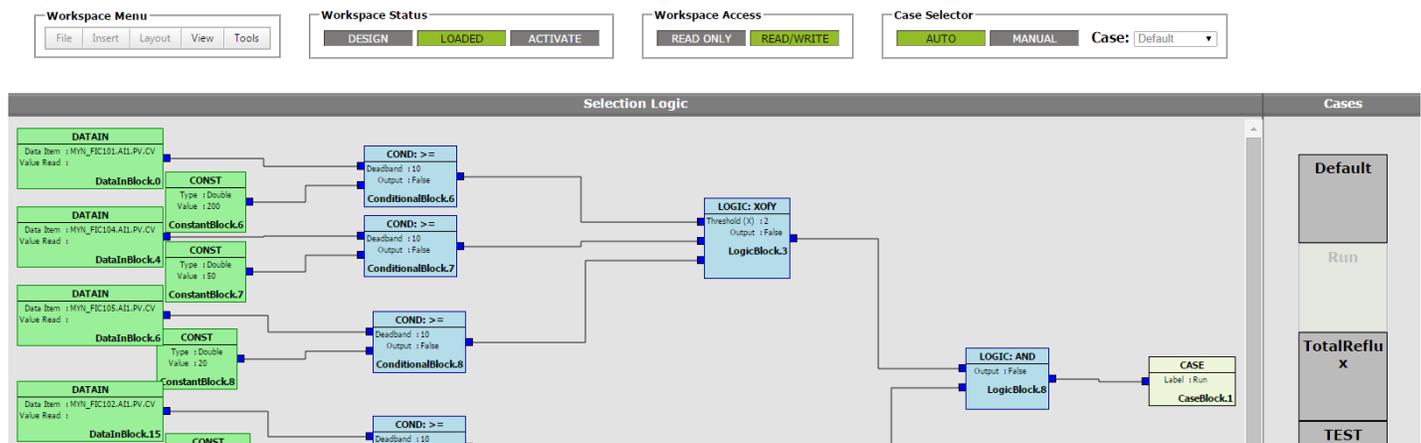
Parameter Data	DM	Boundaries	Alarms
	<b>Alarm</b>	<b>Actions for Case 1 (Default)</b>	<b>Actions for Case 2 (Run)</b>
	ADVDEV (PIDA) (CDA)	<b>Asserted State:</b> Set Alarm Status = Normal	<b>Asserted State:</b> Set Alarm Status = Normal
	BADCTL (PIDA) (CDA)	<b>Asserted State:</b> Set Alarm Status = Normal	<b>Asserted State:</b> Set Alarm Status = Normal if Active == Inactive for 5m or after 4h timeout
			<b>Actions for Case 3 (WarmUp)</b>
			<b>Asserted State:</b> Set Alarm Status = Normal
			<b>Actions for Case 4 (Shutdown)</b>
			<b>Asserted State:</b> Set Alarm Status = Shelved

In addition to alarm suppression on case change, the DM module has intelligent enabling built-in. Without intelligent enabling present, minor alarm floods could occur on operating mode change due to some process variables responding slower or faster to a change in operating mode. As shown below, the clear-to-enable and delay timers allow alarms to follow their normal operating path without having an alarm sounding unless it's an abnormal condition. With clear-to-enable and delay timers on parameters that are being changed from case to case, there will not be any more nuisance alarms annunciating before the process variable has time to adjust to the case change.

## Interface

Dynamic management logic is configured through an easy-to-use drag and drop interface. Each case can be created using any of the parameters in the control system. Using the logic blocks given, the user can create any case determinacy logic required. The Dynamic Management module includes case transition logic as well. In order to prevent cases from chattering the logic includes deadbands and indeterminacy rules.

### DM Workspace Configure [Debut]



## Perspectives

From an operator's perspective, everything has already been configured and implemented behind the screen. The operator will not have to perform any actions in order for DM to function. The DM module will follow key process parameters and suppress any alarms that will be irrelevant to the operator depending on which operating state he is in. The operator will be able to access helper screens to see the current status of the DM module and verify that all of the instruments are reading correctly. If the operator believes too many instruments are reading incorrect or are unreliable, he will have the ability to push a system into a 'Default' case which has no dynamic management enabled.

Engineers will be able to use the above interface to configure each system and their respective cases based upon the process conditions. They will also be able to change the alarm configuration based upon the operating condition. Because the DM module has controlled access, it can be configured so that an engineer for unit A will not be able to edit the DM for unit B.