

Foxboro[™] DCS

Alarm Shelving Tool Software

PSS 41S-2ALMSHLV

Product Specification

November 2022

	AST - Shel	ved Alarm Displ	lay					
	<u>F</u> ile Edit	View Help						
	13:46	9-20-12	Cu	rrently Shelved Ala	rms			
	CP Name	Compound	i Block	Block Descriptio	n Type	Priority	Expiration Date	
00	5CP27B 5CP27B	EXAMPL EXAMPL	GDEV OHPRESS	THIS IS A GDEV BLOCK OVERHEAD PRESSURE	IOBAD HIDEV	5 5	09-21 12:07:59 09-20 14:07:19	<u>^</u>
R	5CP27B 5CP27B	EXAMPL EXAMPL	RIN RIN	THIS IS A RIN BLOCK THIS IS A RIN BLOCK	IOBAD RANGE	5 5	09-23 12:31:20 09-23 14:43:28	
ТÜ В	ser: jMadison eason:Instrum	ent Problem						
				1	1	1		
	Des	elect All	Unshelve	Extend	Refresh		Block Detail	
			Print/Save Data	Reset Filters	Save Filters			
						12:4	17 9-20-12	



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Overview

The Alarm Shelving Tool (AST) allows you to select an alarm from the alarming applications (Foxboro[™] DCS Current Alarm Display (CAD) or EcoStruxure[™] Foxboro[™] DCS Control HMI's Alarm Panel) and request that it be shelved (inhibited) for a fixed period of time, after which, normal operation is restored.

Additionally, AST permits state-based shelving of alarms for a logical device.

Features

The Alarm Shelving Tool is based on a client/server architecture and supports the concept of an AST domain. An AST domain associates control stations and workstations with a single instance of the AST Configurator.

The tool consists of configuration tools, displays, alarm shelves, and device alarm shelves that facilitate real time alarm shelving.

AST Configurator

🚞 AST- Conf	igurator						
<u>File Edit He</u>	lp						
New	C	trl+N	in Defini	ition			
Open Configu	iration File C	trl+O	mi Demo				
Save Configur	ation File 🛛 🤇	Ctrl+S	SAW70B	-			
<u>D</u> eploy	C	trl+D	51111700				
Quit	- ¹	trl+Q		Ay	vailable W	orkstatio	ns
Clients:	5AW70B 5AW70A 5AW70C		<<< Ac	1d	5AW70A 5AW70B		
<i>a</i>	Name	Proxy	N Total	/laximum S Operator	Shelved Co Engineer	ount Supervi	sor
Stations:	SCP27A	NONE	50	30	50	10	▲
	SCP27B SCP27C	SCP27A	20 75	10 75	20 75	75	•
		Add	Edit		Delete		

The AST Configurator configures and deploys the AST domain.

The AST domain definition identifies control stations for which alarms can be shelved, and provide rules for alarm shelving based on AST roles.

AST clients included in the AST domain receive shelf information and customized feature information at deployment time.

Alarm shelves are configured to exist on either a physical or proxy control station. Alarm shelf size and shelving allocation by AST role is designated.

Shelving rules and AST roles evaluation determine if a shelving request is honored.

AST Roles

The AST roles (Operator, Engineer, and Supervisor) are defined in the Role Definition display. Each AST role definition includes:

- Associated FoxView access level assignments.
- Maximum shelving period for an alarm.
- · Default shelving period for an alarm.
- Highest priority alarm that can be shelved.

Each AST Role definition includes:

- Associated FoxView access level assignments.
- Fixed shelving period per alarm priority (1-5).

Shelving Rules

AST Inclusion Rules determine if an alarm can be shelved based on a combination of the control processor (CP) Name, compound:block, and alarm type.

AST Exclusion Rules determine if an alarm cannot be shelved based on a combination of CP Name, compound:block, and alarm type.

Options

You can customize the AST software with these options:

- Custom Script: Launch a custom script from the Single Alarm Shelving and Block Alarm Shelving displays.
- Historized Alarms: Create predefined User IDs and Reason lists to standardize entry of User ID and Reason information during alarm shelving and unshelving.
- Shelved Alarm GUI: Regulate buttons and timestamp formats on the Currently Shelved Alarm Display.

Device Alarm Shelves

The Alarm Shelf is a collection of control blocks that stores alarm shelving information. The Alarm Shelf can exist on each control station or a proxy control station can be designated. It consists of:

- 1 compound, 1 sequence block, and 2 CALC blocks
- X * 7 data blocks (6 STRING and 1 REAL) where X is the number of alarms that the customer wants to shelve in the target control station

Single Alarm Shelving

Alarms are shelved from the Current Alarm Display (CAD) using Single Alarm Shelving.

HS Alarm Manager 5AW70B:5AW70 File View Displays Help	B - CAD				_ 🗆 X
11:05 10-30-09		Current Alarms		Aları	ms
EXAMPL:OHTEMP. **MEAS ⁴ 10-28 15:48:14 0	** .0000 % (OVERHEAD TEMPE 20.00) TEMPERATU	RATURE IRE IS LOW.	LOABS	<u>1</u> U
EXAMPL:BLNALM. 10-28 15:48:10		BOOLEAN ALARM B	LOCK	STATE Pnt 8	<u>1</u> U
EXAMPL:BLNALM. 10-28 15:48:10		BOOLEAN ALARM B	LOCK	STATE Pnt 6	<u>1 U</u>
EXAMPL:BLNALM. 10-28 15:48:10	AST - Sing	ROOLEAN ALARM R gle Alarm Shelving *		STATE Pnt 4	<u>1</u> U
EXAMPL:BLNALM. 10-28 15:48:10	Co	Alarm Type Alarm Priority		STATE Pnt 3	<u>1</u> U
EXAMPL:BLNALM. 10-28 15:48:10	Shelvir	IDABS 1 ng Period Maximum Period		STATE Pnt 1	<u>1</u> U
EXAMPL:OHPRESS. **MEAS 10-28 15:48:10 0	S** 0	Days V 7 Days V	V.	LOABS	<u>1</u> U
EXAMPL:OHTEMP. **OUT** 10-28 15:48:14 0	* •.0000 %	OK Cancel	E LOW OUT.	LOOUT	<u>3</u> U
EXAMPL:OHPRESS. **OUT 10-28 15:48:10 0	** .0000 % (S.UU) PRESSURE	IS LOW OUT.	LOOUT	<u>3 U</u>
EXAMPL:TESTPID. **OUT 10-28 15:48:10 0	** .0000 % (TEST PID 5.00) PID LOOUT	ALARM TEXT	LOOUT	<mark>4 U</mark>
Ack Alarm	Ack Compound	Ack Page	Clear Alarm	Clear I	Page
Alarm Detail	Top Priority	User Display	Block Detail	Shelve	Alarm
Match Active	Horns Muted	PAUSED	Alarm 1 of 13	14:36 10	-29-09

Successful filtering of the shelving request through inclusion/exclusion rules associated with the AST Role determine if shelving occurs. When shelving occurs, the alarm's corresponding Alarm Shelf stores information related to the shelving request.

Single Alarm Shelving facilitates the shelving of an alarm selected from the Control HMI.

😰 Fe	xboro C	ontrol S	oftwa	re InTo	ouch A	pplication									6AW	708 - dproctor	DEV	
File	Vie	w	Tools	H	lelp			Windo	и То	pPriority	Process	12/2	8 06:45 A	AM UNACK	EXAMPLIC	E.TESTPID.LOO	UT	4 🗘
EXAMP	LIDE.OHI	PRESS.L	LABS.			▼	?	I 4) Sys	Manager	System	12/2	8 06:45 A	AM	EXAMPLIC	E:TESTPID ENA	BLE	1 ‡
Alarm I	Panel - F	rocess													\sim			
2	V	н	►	<u>8</u> 1	==		3. \\6	AW70B:\IAS	Series!\$Sys	stern \\6	. 🔻 1	<->	999	* *	4	X	A . A	4
Time	V		S	tate		Name			Pr	ri Valu	e Limit	1	уре	LoopID	Description	Alarm Com	General	Group
12/28/	12 06:45:	10.700 A	M U	NACK		EXAMPLIC	DE.TESTPIC	LOOUT).	4	0.00	5.00	L	.00UT	,		PID LOOU	Parameter	6AVVW
12/27/	12 09:11:	21.400 F	M U	NACK		EXAMPLIE	E.OHPRE	SS.LOOUT	3	0.00	5.00	L	.OOUT			PRESSUR	Parameter	6AWW
12/2//	12 08:42:	44.500 F 34 500 F	M U M II	NACK		EXAMPLIC		SELOARS	5	0.00	20.00		OABS			PRESSUR	Parameter	6AVVVV 6AVAAV
12/26/	12 10:57:	25.800 A	мu	NACK		EXAMPLIC	E.IND.SEC	4 INDDEF	· 5	0.00	0.00	5	SEQ4			TREBOOK	OprErr=-1,	6AWW
12/26/	12 10:57:	13.800 A	M U	NACK		EXAMPLIC	E.EXC.SE	Q3_EXC	5	0.00	0.00	5	GEQ3				OprErr=-1,	6AWW
12/26/	12 10:57:	00.800 A	M U	NACK		EXAMPLIC	E.OHPRE	SS.LLABS	5	0.00	5.00	L	LABS			PRESSUR	Parameter	6AWW
12/26/	12 10:57:	00.300 A	M U	NACK		EXAMPLIC	DE.BLNALM	STATE 8	1	0	0	5	STATE		THIS IS BL			6AWW
12/26/	12 10:57:	00.300 A	M U	NACK		EXAMPLIE	E.BLNALM		ST - Single A	larm Shelv	ing * 📃 😐		83		THIS IS BL			6AWW
12/20/	12 10:57:	00.300 A 00.300 A	м U м II	NACK		EXAMPLIE	E BLNALM	STA	Compou	md	Block				THIS IS BL			6AVAVA
12/26/	12 10:57	00.300 A	M U	NACK		EXAMPLIC	E BI NALM	STA	EXAM	PLIDE	OHPRESS				THIS IS BL			6AWW
12/26/	12 10:57:	00.300 A	мU	NACK		EXAMPLIC	E.AINR.LL	ABS	Alarr	n Type	Alarm Priority				AINR BLOCK	PRESSUR	Parameter	6AWW
12/26/	12 10:57:	00.300 A	M U	NACK		EXAMPLIC	DE.AIN.LLA	IS I	LL	ABS	5				AIN BLOCK	PRESSUR	Parameter	6AWW
12/20/	12 03:17:	34.088 F	PM U	NACK_	RTN	6AW70B_	ADI from 6/	AVV70	Shelving Per	niod	Maximum Per	riod				Lost alarm		6AW70
									1 D:	ays 🔻	30 Days	s 🔻						
									[OK	Cancel							
									<u></u>									
•																		F.
	Displa	avina 1 ti	n 15 of	15 ala	ms			Proc	229					100	% Complete			-78 A.M.
1	- X E			V	Foxb		. A		r								- 📜 🌘 1	/8/2013

Single Alarm Shelving can be configured to invoke a custom script rather than shelve alarms directly.

AIM*Historian Logging

The Alarm Shelving Tool product includes an optional feature to request and record User ID and Reason when an alarm is shelved or unshelved to the message EcoStruxure[™] Foxboro[™] Historian.

When Historian logging is enabled, the **AIMLogging** dialog box appears during Single Alarm Shelving, Block Alarm Shelving, and when extending or unshelving an alarm from the Currently Shelved Alarm Display.

MS AFR Alarm Manager 3AW70	B:3AW70B - CAD			
File View Displays Help	[Current Alarms		
			PLOCK	
01-26 14:44:38		BOULEAN ALANA	DLUCK	Pnt 8
EXAMPL:BLNALM. 01-26 14:44:07		BOOLEAN ALARM	BLOCK	STATE <mark>1 U</mark> Pnt 6
EXAMPL:BLNALM. 01-26 14:43:23		BOOLEAN ALARM	BLOCK	STATE <mark>1</mark> U Pnt 4
EXAMPL:BLNALM. 01-26 14:42:13		AST - Single Alarm Shelvin	ng *	STATE 1 U Pnt 3
EXAMPL:BLNALM. 01-26 14:41:33	AIMLoggin	Compound Blo	ek 📃	STATE 1 U Pnt 1
EXAMPL:OHPRESS. **M 01-26 13:37:28	EAS** -2.00 %			LOABS 1 U
EXAMPL:TESTBADIO. 01-26 12:52:43	L L	Jser ID:		IOBAD <u>1</u> U
EXAMPL:OHPRESS. **M 01-26 13:39:05	EAS** F	Reason:		LODEV 2 U
EXAMPL:TESTCIN. STA 01-25 11:46:29	TE ALARM	ОК		STATE 2 U Pnt
EXAMPL:OHTEMP. **OU 01-25 11:46:29 0	T**	OK	Cancel	LOOUT 🖪 🛛
Ack Alarm	Ack Compound			Clear Page
Alarm Detail	Top Priority	User Display	Block Detail	Shelve Alarm
Match Active	Horns Muted	PAUSED	Alarm 1 of 12	13:18 1-25-10

The User ID/Reason is logged as part of a standard Operator Action Journal (OAJ) message that can be handled by both the AIM*Historian and InTouch Alarm Logger. Additionally, it is possible to display the User ID/Reason for the currently shelved alarms by hovering over the gray buttons to the left of the Currently Shelved Alarms display.

Block Alarm Shelving

Shelving or unshelving of current or anticipated alarms can be initiated from Foxboro DCS process graphics.

🔲 AST - Block Ala	rm Shelving		
Compound EXAMPL Shelvi 10	Block OHPRI ing Period Hours	Block Type PID Maximum Period 7 Days	
 ☐ LOABS ☐ HIABS ☑ LLABS ☐ HHABS ☐ LODEV ☐ HIDEV 	IDBAD STATE LOOUT HIOUT RATE RANGE	PTARG Pnt_1 TARG Pnt_2 BAD_P Pnt_4 BAD_S Pnt_5 BAD_M Pnt_6 IND/DEP Pnt_8 EXC	
J	Process Chgs	Exit	

The Block Alarm Shelving display can be configured to invoke a custom script rather than shelve and unshelve alarms.

Tag Search Shelving

The Tag Search Shelving feature allows the ability to search compound:blocks on the control network for potential shelving/unshelving targets, without regard to control station host.

🔜 AST - Tag Search	
Blocks	Compounds
CIN_6B CIN_CLS CIN_OPN CINR	EXAM6A EXAM6B EXAM6C EXAM6D EXAM6F EXM6F2
Filter: CIN	Rebuild Lists
Shelve/Unshelve	Exit

Currently Shelved Alarms

The Currently Shelved Alarm display shows all alarms in the Alarm Shelves and their anticipated unshelve date. It can be invoked from the CAD or from the Control HMI. After the shelving period for an alarm expires, the alarm is automatically unshelved.

You can filter the alarm information by selecting any of the data column headers (CP Name, Compound, Block, Alarm Type, Alarm Priority, and Expiration Date). You can also:

- Manually unshelve an alarm
- Extend the shelving period for a shelved alarm
- · View the Detail Display for a selected alarm
- Print the alarm shelving information displayed
- Save the information to a file

SBAM Configurator

The AST Engineer Role can use the **SBAM Configurator** to configure and deploy a state-based Device Alarm Shelf.

SBAM - Configurator		
File Edit Help		
New Open Configuration File Save Configuration File	Equipment Definition	
Deploy		
DevMonitor	20	
Quit	a test example that uses 6CP27C.	
CP Host: 6CF Galaxy Information: (if required) Gal Alarm Destinations: 6AWA	P27C axy Node Galaxy Name User Name VPC	

Equipment Definition

The **SBAM Configurator Equipment Definition** window allows the logical device to be named and control station that will hold the Device Alarm Shelf to be identified.

Device Alarm Shelves can be created in any control station.

State Definition

The **SBAM Configurator State Definition** window and **Criteria Definition** window permit the device states/events to be named and the triggers and re-enable criteria for each to be defined.

Sequence logic syntax is required when defining these criteria.

Affected Parameter Definition

The **SBAM Configurator Affected Parameter Definition** window allows the specification of the compound:block alarms affected by the device state/event trigger, as well as the alarm shelving actions required. The input is loaded from an exported spreadsheet. When a device state trigger criteria evaluates to true, the Affect Parameter Definition shelving actions are performed.

When a device state re-enable criteria evaluates to true, the Affect Parameter Definition shelving actions are reversed.

Device Alarm Shelf

The Device Alarm Shelf is a collection of control blocks that stores device alarm shelving information. Each state-based device has its own Device Alarm Shelf.

The Device Alarm Shelf consists of:

- 1 compound, 1 IND block, and 2 CALC blocks
- X * 5 blocks (STRING, BOOL, LONG, TIM, and CIN) where X is the number of device states
- Y * 4 blocks (3 STRING and 1 LONG) where Y is the number of affected variables for device states (1-X)

DevMonitor Display

The DevMonitor display provides a static view of any existing Device Alarm Shelf on the control network. It provides the status of each defined state/event for the Device Alarm Shelf and the current values of the affected compound:block alarms.

Device St	ate: SHUTD	own 🗸	State Active	
Parameter Name	Expected Value	Actual Value	Inhibited Alarms	
INHALM	0x0101	0x0000		
INHALM	0x0101	0x0101	LOABS LLABS	
INHALM	0x0101	0x0101	LOABS LLABS	
INHALM	0x0101	0x0101	LOABS LLABS	
INHALM	0x0101	0x0101	LOABS LLABS	
	Device St Perameter Name INHALM INHAL	Device State: SHUTD	Device State: SHUTDOWN Parameter Name Expected Value Actual Value INHALM 0x0101 0x0000 INHALM 0x0101 0x0101 INHALM 0x0101 0x0101	Device State: SHUTDOWN State Active Parameter Name Expected Value Actual Value Inhibited Alarms INHALM 0x0101 0x0000 INHALM INHALM 0x0101 0x0101 L0ABS LLABS INHALM 0x0101 0x0101 L0ABS LLABS

Summary Statistics

The Summary Statistics display provides a view of the number of currently shelved alarms for each Alarm Shelf and the maximum number of alarms configured for each AST Role. It is available from any AST Client workstation.

AST - Summary	Statistics	5			
Control Star	tion:	ALL	•	Role Name: OPERATOR -	
Number	of Shelved A	Alarms			
	Curren	<u>t</u>	<u>Maximum</u>		
Operator:	0	1	22	Associated I/A Access Level:	10
Engineer:	0	1	27	Maximum Shelf Time:	12 Hours
Supervisor:	4	1	27	Default Shelf Time:	3 Hours
Total:	4	1	27	Highest Priority Alarm Allowed to be Shelved:	1
				OK	

Command Line Shelving and Unshelving

AST provides the ability to shelve current or anticipated alarms from an AST client workstation by running a command line shelving script.

It is also possible to unshelve current shelved alarms from an AST client workstation by running a command line unshelving script.

Requirements

- A control station that supports the block types required for the Alarm Shelf and that has enough space to hold the Alarm Shelf.
- These EcoStruxure[™] Foxboro[™] DCS Control Core Services software versions are supported:
 - v9.0 and later Local Edition
 - v9.0 and later Enterprise Edition with default domain group policies.
- These I/A Series software versions are supported:
 - v8.5 -v8.8 Standard
 - v8.5 v8.8 Security Enhanced with default domain group policies.
- Foxboro Control Software (FCS) v4.0.2 or Foxboro Evo Control Software v5.0 or later is needed to support Control HMI alarm shelving.

NOTE: When using Security Enhanced or Enterprise Edition software, changing the default domain group policies or improperly using or configuring a firewall, including the authorized McAfee[®] ePolicy Orchestrator (ePO) firewall, can adversely affect the operation of the Foxboro DCS and FoxBridge applications. Only qualified personnel should modify Active Directory Group Policies and configure firewalls.

Limitations

- AST does not support Foxboro[™] DCS bridge nodes
- AST Domain are comprised of Foxboro DCS workstations and servers with the same level of security
- · State-based alarming is not supported for IACC-hosted control stations

Ordering Information

The Alarm Shelving Tool is sold based on the number of control stations. A control station is a station that runs control blocks. For existing systems and plants, count the number of lines in the /etc/cplns file on each CSA host.

Product	Number of Control Stations	Part Number
AST Config. 1	5	Q0303AB
AST Config. 2	15	Q0303AC
AST Config. 3	25	Q0303AD
AST Config. 4	50	Q0303AL
AST Config. 5	100	Q0303AM
AST Config. 6	150	Q0303AN
AST Config. 7	200	Q0303AP
Upgrade AST Config. 1	5	Q0303BA
Upgrade AST Config. 2	15	Q0303BB
Upgrade AST Config. 3	25	Q0303BC
Upgrade AST Config. 4	50	Q0303BD
Upgrade AST Config. 5	100	Q0303BE
Upgrade AST Config. 6	150	Q0303BF
Upgrade AST Config. 7	200	Q0303BG

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