

SAS Automation Guide (Preliminary)

System requirements

Same as IP Server Module (for PC-based Automation)

Installation

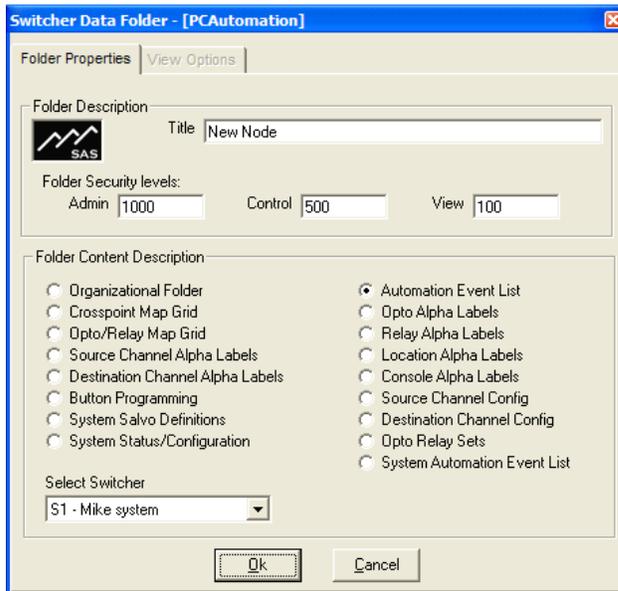
CD:

Insert the CD containing the SAS Automation in to the CD Drive. Using Windows Explorer, go to the SAS Automation directory on the CD and run setup.exe and follow the prompts on the screen.

Getting Started

Automation events are created and maintained within the SAS Windows Router Control Software.

Once the Automation Engine has been installed, start the Windows RCS and create a New Folder. Select the File menu and then select New Folder or select Create a new folder from the toolbar and name the folder "PC Automation." Then select Folder Properties from the File menu, the toolbar or by right-clicking on the folder name and selecting Folder Properties.



Next on the Folder Properties screen, select Automation Event List, select the Switcher from the pull down list and click OK.

You will now be asked for the location of the Automation Engine. This is the directory in which the Automation Engine was installed. Select this location. This will create a database for Automation Events. While this database will be edited from the Windows RCS, it must be in the directory of The Automation Engine software.

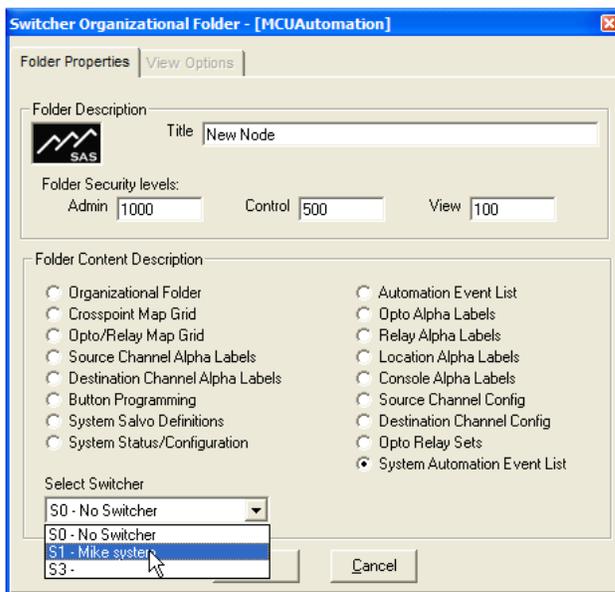
Important

In order for PC-based Automation events to run, the Automation Engine software must be running and connected to the SAS Server Module software, which is in turn connected to the SAS Routing Switcher. If either program is not running, Computer-based automation events will **not** happen. MCU-based System Automation does not require a continuously connected and running computer. For MCU-based System Automation, the PC is only used to create automation events and send them to the MCU.

The IP address and IP Port of the Server Module are retrieved from the RCS and stored in the Automation database.

The addition of “System Automation” (in MCU version 6.10 and above) allows for non-time-based automation events (triggered by Opto/Relay action or crosspoints being made) to be stored and executed directly from the MCU card in your system - no PC / Automation engine software required. To access MCU Automation (if your MCU is

version 6.10 or higher AND your Router Control Software is version 2.80 or higher), you should create a folder called “MCU Automation.” Create the folder and name it just like you did for the PC Automation folder. When you go to Folder Properties for MCU Automation, click on System Automation Event List, then select your system in the “Select Switcher” dropdown box and click OK.



Using MCU Automation

When you click on the MCU Automation folder that you've just set up, you'll see that the window is divided into two panes: the upper pane (which will be empty initially) displays automation events that have been created, including the title of the event, and whether it is active (enabled); and the lower pane, showing the specific conditions and actions that define each event, which will be grayed-out until you create a new event or edit an existing one. You can view the characteristics of an existing automation event by clicking on the event in the upper pane and then clicking on the various defining tabs in the lower pane to view the setting for that event.

Event Title	Type	Input / Opto	Output / Relay
ST.A PGM1->STL	Opto Event	1	16383
Skim- pulse	Relay Event	16383	16
Skim+ pulse	Relay Event	16383	16
IFB to 2way->PTT	Xpoint Event	1	228

System Automation

Event Title: ST.A PGM1->STL

Event Type: Opto Event Crosspoint Event Relay Event Any Source to Output

Opto: OPTO0001 [0001]

Event Conditions: Inactive Active

Trigger | Action | Conditional Opto | Conditional Relay | Conditional Crosspoint

For each defined Automation Event, opto activity, relay activity, or crosspoint activity can be used as primary triggers. The MCU-Automation Event defined under the ACTION tab is executed only when the Trigger AND any enabled Conditional tabs are simultaneously TRUE.

The Trigger Tab:

The first tab allows you to select what triggers an MCU-Automation Event.

Opto and Relay triggering: If Event type is set to Opto or Relay, you specify the corresponding opto or relay and its state (event conditions) that should be the trigger. When the specified opto or relay changes to the defined state the event defined under the ACTION tab occurs.

Crosspoint Event: Here you specify a crosspoint source and a destination, along with the state (event conditions) to watch for on that crosspoint. The trigger occurs when the specified source and destination change to the state defined.

The screenshot shows a configuration window titled "System Automation". The "Event Title" field contains "skimmer start". There are "Cancel" and "Save" buttons. Under "Event Type", the "Crosspoint Event" radio button is selected. The "Source" dropdown is set to "A Mic1 [0001]" and the "Destination" dropdown is set to "A Pgm1= [0129]". Under "Event Conditions", the "Active" radio button is selected. At the bottom, there are tabs for "Trigger", "Action", "Conditional Opto", "Conditional Relay", and "Conditional Crosspoint".

Any Source to Output: Here you specify a destination and the event conditions. If the Event Condition is ACTIVE, the trigger occurs if any source is routed to the specified destination. If the Event Condition is INACTIVE, the trigger occurs when the output is cleared (has no source routed to it).

Conditional Tabs:

These are individually selectable conditions that (if set up) must be met (TRUE) for the Trigger to cause an ACTION.

The Conditional Opto tab allows you to specify an OPTO that must be active (turned on) or inactive (not turned on) for the Trigger to effect the Action.

The Conditional Relay tab allows you to specify a Relay that must be active (turned on) or inactive for the Trigger to effect the Action.

The Conditional Crosspoint tab allows you to define a Crosspoint that must be that must be in a specific state (active or inactive) for the Trigger to effect the Action. The Crosspoint can either be a specific Source to a Specific Destination, or Any Source to a specific destination.

Action Tab:

This tab defines what happens when an event is triggered.

Opto Control: selecting Opto Control in the Event Action Box allows you to change the system-perceived state of virtual optos in the system. **CAUTION:** The automation doesn't "know" the difference between real and virtual optos, but should only be used to change the state of virtual optos, which are just data bits that can be set or read by the automation.

Relay Control:

The screenshot shows the 'System Automation' software interface. In the 'Event Action' section, the 'Relay Control' radio button is selected. The 'Relay' dropdown menu is set to 'LED4Ye1 [0004]'. To the right, another 'Event Action' section has the 'Release' radio button selected. The bottom navigation bar includes buttons for 'Trigger', 'Action', 'Conditional Opto', 'Conditional Relay', and 'Conditional Crosspoint'. The 'System Automation' logo is in the top right corner, and 'Cancel', 'Save', and 'Save as New' buttons are also present.

Selecting Relay Control in the Event Action Box allows you to Latch, momentarily close (~500msec), or release a (latched) relay when the event's trigger occurs.

Crosspoint Control:

The screenshot shows the 'System Automation' software interface. In the 'Event Action' section, the 'Crosspoint Control' radio button is selected. The 'Source' dropdown menu is set to 'A Phn1< [0027]' and the 'Destination' dropdown menu is set to '{A Mtr2 [0004]'. To the right, another 'Event Action' section has the 'Take' radio button selected. The bottom navigation bar includes buttons for 'Trigger', 'Action', 'Conditional Opto', 'Conditional Relay', and 'Conditional Crosspoint'. The 'System Automation' logo is in the top right corner, and 'Cancel', 'Save', and 'Save as New' buttons are also present.

Selecting Crosspoint Control in the Event Action Box allows you to perform crosspoint controls when the event's trigger conditions are met.

The user specifies the source and destination then the crosspoint command desired.

Take: Routes the specified Source to the Specified Destination, clearing any other Sources that may have been previously routed there (except for Priority crosspoints – see below).

Sum On: Adds the specified Source to the Destination without removing other sources already routed to the destination.

Sum Off: Removes the specified source from the destination (unless it is a Priority Crosspoint)

Priority Take: When a Priority Take is issued, the system "remembers" any normal crosspoints - Sources previously routed to the Destination – then routes the new Source to the Destination, setting a flag identifying the crosspoint as a Priority Crosspoint. As long as a Priority-crosspoint exists, only Priority Take, Priority Sum On or Priority Sum

Off will have any affect on what is feeding the Destination. When all Priority crosspoints have been cleared from a Destination, the previously routed normal source(s) will be returned to the output.

Normal Crosspoints show up as green dots on Crosspoint maps, Priority Crosspoints are Blue.

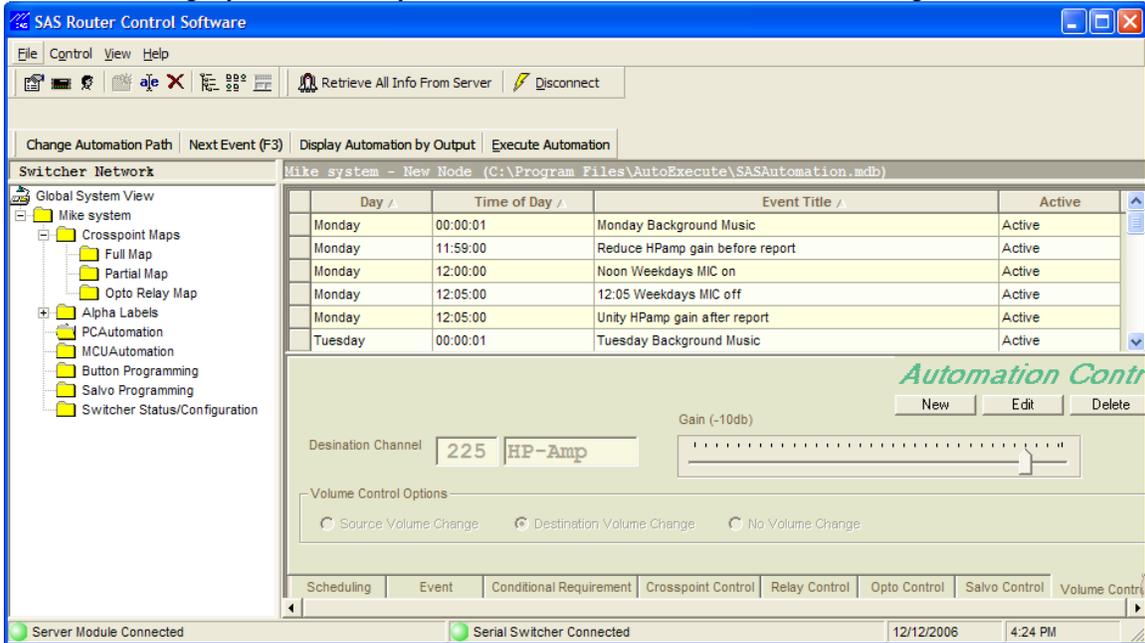
Gain Change:

The screenshot displays the 'System Automation' software interface for configuring an event action. The main window has a light green background. On the left, there is a panel titled 'Event Action' with four radio button options: 'Opto Control', 'Relay Control', 'Crosspoint Control', and 'Gain Change'. The 'Gain Change' option is selected. To the right of this panel, there are two dropdown menus: 'Source' with the value 'A Phn1< [0027]' and 'Gain' with the value '-6db'. Further right, there is another 'Event Action' panel with four radio button options: 'Input Trim', 'Output Trim', 'DSP Output Gain', and 'DSP Crosspoint Gain'. The 'Input Trim' option is selected. At the top right of the window, there are three buttons: 'Cancel', 'Save', and 'Save as New'. At the bottom of the window, there is a navigation bar with five tabs: 'Trigger', 'Action', 'Conditional Opto', 'Conditional Relay', and 'Conditional Crosspoint'. The 'Action' tab is currently selected.

Changing the audio level of a source, destination, or crosspoint can be accomplished with this Event Action.

Using PC Automation

When you click on the PC Automation folder that you've just set up, you'll see that the window is divided into two panes: the upper pane (which will be empty initially) displays automation events that have been created, including their day and time of day (if applicable), the title of the event, and whether it is active (enabled); and the lower pane which will be grayed-out until you create a new event or edit an existing one.



The list of Automation Events is in chronological order Monday through Sunday. You can jump to the next Event (scheduled) to Run by pressing F3 or by clicking the button of the same name.

Clicking on Display Automation by Output opens up a report window that you can customize to show all outputs or just a selected list.

Output	Current Input	Next Event	Event Time	Next Input
A Pgm1 (Ch. 129)	A NexGen (Ch. 7)	None		
HP-Amp (Ch. 225)	A Pgm1 (Ch. 129)	Noon Weekdays MIC on	Wed. - 12:00:00	A Mic1 (Ch. 1)
		12:05 Weekdays MIC off	Wed. - 12:05:00	A Mic1 (Ch. 1)
		Noon Weekdays MIC on	Thu. - 12:00:00	A Mic1 (Ch. 1)
		12:05 Weekdays MIC off	Thu. - 12:05:00	A Mic1 (Ch. 1)
		Noon Weekdays MIC on	Fri. - 12:00:00	A Mic1 (Ch. 1)
		12:05 Weekdays MIC off	Fri. - 12:05:00	A Mic1 (Ch. 1)
		Noon Weekdays MIC on	Mon. - 12:00:00	A Mic1 (Ch. 1)
		12:05 Weekdays MIC off	Mon. - 12:05:00	A Mic1 (Ch. 1)
		Noon Weekdays MIC on	Tue. - 12:00:00	A Mic1 (Ch. 1)
		12:05 Weekdays MIC off	Tue. - 12:05:00	A Mic1 (Ch. 1)

The report shows all Crosspoint changes scheduled (time based automation events) for the listed output(s).

The lower pane consists of eleven tabs that define all characteristics of an automation event. The characteristics of an event can be reviewed while the event is not being edited (it will be grayed-out) by clicking on the various tabs that define the event. New events can be defined by clicking NEW; Existing Events can be Edited by clicking Edit; Events can be deleted by Clicking Delete. If an event is defined for more than one day (see Scheduling Tab below) it will show up multiple times in the Event List; deleting the event will delete it on ALL days for which it was defined.

The Trigger Tabs:

The first three tabs allow you to select what triggers an Automation Event.

SCHEDULING:

Automation Control

Event Title:

Event Time: Event Type: Time Opto On Relay On
 Event Opto Off Relay Off

Event Active: Active Inactive Skip One-Time

Day Options: Monday Tuesday Wednesday Thursday Friday Saturday Sunday Every Day

Scheduling | Event | Conditional Requirement | Crosspoint Control | Relay Control | Opto Control | Salvo Control | Volume Control | Send String | Change System | Relay Config

Here you see (or enter) a descriptive event name, control whether the event is active, and select whether the Automation Event will be triggered by time (or day/time combination), by opto or relay activity (including “virtual optos” or “virtual relays”), or by an audio routing event occurring (crosspoint being made or released). If Time is selected, set the event time and day (select any combination of days of the week or Every Day).

EVENT:

Automation Control

Event Source:

Event Dest:

Event Conditions: Crosspoint Active Crosspoint Inactive None

Scheduling | Event | Conditional Requirement | Crosspoint Control | Relay Control | Opto Control | Salvo Control | Vol

If Event is selected for Event Type on the scheduling tab, this tab is where you choose the source and destination that should be “watched” and whether to look for a crosspoint being made or a crosspoint being cleared as the trigger for your Automation Event.

CONDITIONAL REQUIREMENT:

Automation Control

Required Source:

Required Dest:

Event Conditions: Crosspoint Active Relay Active Opto Active None
 Crosspoint Inactive Relay Inactive Opto Inactive

Scheduling | Event | Conditional Requirement | Crosspoint Control | Relay Control | Opto Control | Salvo Control | Volume Control

This is an optional, secondary requirement.

If set to anything other than NONE, the conditional requirement and the primary trigger (set under Scheduling and/or Event Tabs) must occur for your Automation Event to be activated.

The Action Tabs:

The next eight tabs define what you want to happen when your trigger requirements are met for the Automation Event. More than one tab can be set up, allowing your trigger(s) to initiate more than one action. The default setting on all tabs (for new events) is for no action. You define at least one action to occur or your event will be meaningless.

CROSSPOINT CONTROL:



Set the Source and Destination plus the kind of crosspoint control that you want to happen.

Take: Routes the specified Source to the Specified Destination, clearing any other Sources that may have been previously routed there (except for Priority crosspoints – see below).

Sum On: Adds the specified Source to the Destination without removing other sources already routed to the destination.

Sum Off: Removes the specified source from the destination (unless it is a Priority Crosspoint)

Priority Take: When a Priority Take is issued, the system “remembers” any normal crosspoints - Sources previously routed to the Destination – then routes the new Source to the Destination, setting a flag identifying the crosspoint as a Priority Crosspoint. As long as a Priority-crosspoint exists, only Priority Take, Priority Sum On or Priority Sum Off will have any affect on what is feeding the Destination. When all Priority crosspoints have been cleared from a Destination, the previously routed normal source(s) will be returned to the output.

Normal Crosspoints show up as green dots on Crosspoint maps, Priority Crosspoints are Blue.

RELAY CONTROL:



Select the Relay number and whether you want it to latch, release, or momentarily pulse.

OPTO CONTROL:

Automation Control

Cancel Save

Opto Number 0 None

Opto Control Options

On Off No Opto Action

Scheduling Event Conditional Requirement Crosspoint Control Relay Control Opto Control Salvo Control Volume Control

Here your Automation Event can toggle the system's perceived state of an Opto, (real or virtual).

SALVO CONTROL:

Automation Control

Cancel Save

Salvo Number 0 None

Salvo Control Options

Execute No Salvo Action

Note: If a salvo is deleted, all salvos after the deleted salvo will be renumbered

Scheduling Event Conditional Requirement Crosspoint Control Relay Control Opto Control Salvo Control Volume Control

The automation event can fire a Salvo (defined separately in the Salvo Programming Folder). Salvos are lists of routing commands that can be triggered simultaneously from the Router Control Software, by SAS Automation, or from certain SAS control panels. For Salvos explained in greater detail, see the SAS document 32KD SALVOS EXPLAINED.

VOLUME CONTROL:

Automation Control

Cancel Save

Source Channel 0 None

Gain (0db)

Volume Control Options

Source Volume Change Destination Volume Change No Volume Change

Event Conditional Requirement Crosspoint Control Relay Control Opto Control Salvo Control Volume Control Send String

Changes Source or Destination gain.

For sources, this change is made to a programmable gain stage on the input module, and is adjustable from Off to +24dB in relatively fine increments.

For destinations, adjustment is available as attenuation only, from unity gain downward to Off.

SEND STRING:



The 'SEND STRING' dialog box in Automation Control features a 'String Type' section with radio buttons for 'ASCII' (selected), 'File', and 'None'. Below this is a text input field containing 'Text String on Com2' and a 'Browse' button. The 'Send Method' section includes radio buttons for 'IP', 'Comm Port' (selected), 'Switcher Port', and 'None'. To the right, 'Serial Port' is set to 'COM 2' and 'Baud' is set to '2400'. At the bottom, a tabbed interface shows 'Send String' as the active tab, with other tabs including 'Conditional Requirement', 'Crosspoint Control', 'Relay Control', 'Opto Control', 'Salvo Control', and 'Volume Control'. 'Cancel' and 'Save' buttons are located in the top right corner.

Sends a string or text file through the defined communications path. The paths can be an IP address / port, or a PC com port.

CHANGE SYSTEM:



The 'CHANGE SYSTEM' dialog box in Automation Control has a 'File Type' section with radio buttons for 'Input Labels', 'Output Labels', 'Opto Labels', 'Relay Labels', 'Inhibits', 'Salvos', 'Button Templates', 'Module Config' (selected), 'In Display Lists', 'Out Display Lists', 'Relay Config', and 'None'. To the right are 'Frame 1' and 'Slot 1' dropdown menus. Below is a 'File Name' field with 'C:\Program Files\SasRCS\Module0101.cfg' and a 'Browse' button. The bottom tabbed interface shows 'Change System' as the active tab, with other tabs including 'Crosspoint Control', 'Relay Control', 'Opto Control', 'Salvo Control', 'Volume Control', 'Send String', and 'Relay Config'. 'Cancel' and 'Save' buttons are in the top right corner.

Causes the system to LOAD a configuration file. The possible file types are Input Labels, Output Labels, Opto Labels, Relay Labels, Inhibits, Salvos, Button Templates, Module Configuration, Input Display Lists, Output Display Lists, and Relay Configuration.

RELAY CONFIG:



The 'RELAY CONFIG' dialog box in Automation Control includes 'Relay Number' and 'Opto Number' fields, both set to '0' and 'None'. To the right is a 'Relay Configuration Options' section with radio buttons for 'Associate' and 'No Configuration Action' (selected). The bottom tabbed interface shows 'Relay Config' as the active tab, with other tabs including 'Crosspoint Control', 'Relay Control', 'Opto Control', 'Salvo Control', 'Volume Control', 'Send String', and 'Change System'. 'Cancel' and 'Save' buttons are in the top right corner.

Creates an association between a Relay and an Opto so that the relay follows the state of the opto. When the opto is triggered, the relay is activated. To clear an OPTO from a Relay-Opto association, select opto number zero (none) as the opto associated with the relay. Opto-Relay associations can be viewed on the Opto Relay Map in the Crosspoint Maps folder.