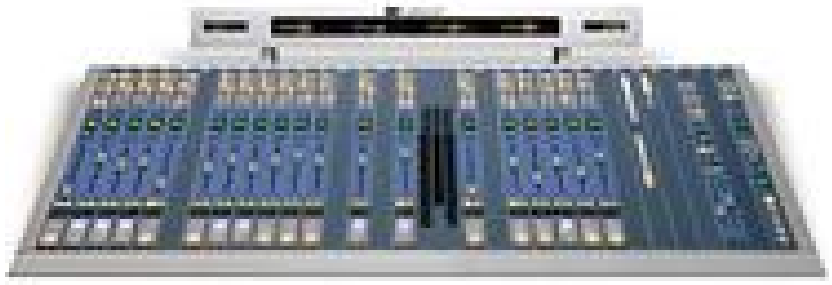
INSTALLATION GUIDE for Rubicon Console



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INSTALLATION GUIDE for Rubicon Console

CONTROL ROOM
RIOLINK AND RUBICON WIRING GUIDE

OVERVIEW

SAS equipment in the typical control room installation will include:

Rubicon Broadcast Console Control Surface

The Rubicon Broadcast Console Control Surface is comprised of a range of independent plug-in modules housed a common, passive mainframe. Rubicon modules communicate to the SAS 32KD system via SAS-standard RS485 protocol on RJ45 connectors.

Rubicon Meter Bridge

The Rubicon Meter Bridge is available in configurations from one to five meters. The audio meters display average level to VU-standard ballistics on a moving bar, with Peak Audio Level (PPM) displayed a floating dot. Most meter bridges include a clock and timer. The one-meter bridge includes one clock or timer.
Each stereo audio level meter requires one AES3 digital audio connection. The clock connects with a shielded twisted wire pair and may be driven by SMPTE or ESE data. The timer is controlled via dry contact inputs, wired with a CAT5 cable that is normally punched down to relay outputs from a RIOLink.

Rubicon Accessory Control Panels

Accessory Control Panels are standard Rubicon-size modules that are physically installed in the Rubicon frame, but that wire separately; they do not plug into the Rubicon motherboard for power or serial communication. These panels include:

Pushbutton Panel: Five, eight, 16, or 24 buttons; each button can be independently programmed as talkback, relay momentary, relay toggle, opto momentary, opto toggle, or source select.

Delay Control Panel: Five button panel, typically labeled and programmed as DELAY IN, DELAY 100% (opto), DELAY 50% (opto), DELAY OUT, DELAY DUMP.

Intercom Panel: Eight, 16, or 24 buttons, with standard SAS intercom functionality including ANSWER.

Nearfield Monitor Control: Six source select buttons plus rotary encoder for level control.

Accessory Control Panels wire to DB9 connectors on the bottom of the Rubicon mainframe.

Pushbutton panels, delay control panels, and nearfield monitor control panels are all “turret-type” panels; up to four turret panels may be wired on one port. See Turret Module wiring details in the Pinouts section.

Intercom panels are “intercom-type;” up to four intercom panels may be wired on one port. Intercom and turret panels cannot share the same port.

RioLink

The RIOLink is hub of the control room.

Each RIOLink provides 32 channels of audio inputs, 32 channels of audio outputs, 16 optos, 16 relays, 16 RS485 serial ports, and two RS232 serial ports. Depending upon the I/O requirements in the control room, one or two RIOLinks are typically used.

Audio Inputs

On two rear-panel plug-in modules. Each module provides 16 mono channels, 8 stereo channels, or any combination. Each module is terminated with an RJ21 (Centronics) 50-pin connector.

RDI-8 RIOLink Digital Input Module provides eight AES/EBU inputs with full sample-rate conversion, outputting 16 digital channels to the SAS system.

RAI-8 RIOLink Analog Input Module provides 16 balanced and floating bridging inputs, outputting 16 digital channels to the SAS system.

Typically, where one digital and one analog module are equipped, the digital module is in the first (lower) slot (channels 1-16), while the analog module is in the second (upper) slot (channels 17-32).

Audio Outputs

On two rear-panel plug-in modules. Each module provides 16 mono channels, 8 stereo channels, or any combination. Each module is terminated with an RJ21 50-pin connector.

RDO-8 RIOLink Digital Output Module provides eight AES/EBU outputs at the system sample rate.

RAO-8 RIOLink Analog Output Module provides 16 balanced and floating analog outputs.

RAD-84 RIOLink Analog/Digital Output Module is a hybrid that provides 16 balanced and floating analog outputs, and additionally, provides four AES/EBU outputs at the system sample rate. The analog outputs provide all sixteen channels of the slot, while the digital output provides the first eight channels (four stereo). Thus, channels 1-8 are outputted both analog and digital. The RAD-84 is used in a mostly analog plant where digital outputs are required to drive the Rubicon meters or a limited number of other digital devices.

Typically, where one digital and one analog module are equipped, the digital module is in the first (lower) slot (channels 1-16), while the analog module is in the second (upper) slot (channels 17-32).

Opto and Relay General Purpose Interface

Each RIOLink is equipped with 16 optos and 16 relays. Optos and relays are terminated with their own separate RJ21 50-pin connectors.

RS485 SAS Serial Control Ports

Each RIOLink is equipped with 16 RS485 SAS-protocol serial interface ports. All 16 are terminated with one RJ21 50-pin connector. The RS-485 ports are used to communicate with console modules, accessory control panels, and turret and surface control panels.

RS232 USI (User Serial Interface) Ports

Two RS232 ports are terminated on DB9 connectors. Additionally, three additional RS232 ports are terminated on J1502 DB25 connector.
The RS232 serial ports are configured for standard USI (user serial interface) protocol suitable for connection to digital audio delivery systems, or other automation-type computers.

SPR-200 Power Supply

The SPR-200 Power Supply is used to power the Rubicon Console Control Surface, the Rubicon Meter Bridge, and up to two RIOLinks. Two supplies may be used to provide full redundancy. Each SPR-200 provides four 24VDC power ports.

Turret and Surface Control Panels

Turret and Surface Control Panels are used to provide control functionality to hosts, co-hosts, producers, and guests.

Turret and surface panels are electrically identical; they differ in mounting. Turret Panels are 6" high, 1.6" wide (the same width as a Rubicon module); multiple panels mount in turret cabinet provided by SAS, or using an SAS-supplied rail in a desktop turret cabinet provided by your furniture vendor. Surface Panels are designed to mount in a rough-cut on the counter tabletop. They include mounting hardware to clamp the panel from below.

Available panels include:

TP-M (SP-M) Microphone OFF-ON-COUGH.
TP-M4 (SP-M4) Microphone OFF-ON plus four programmable buttons.
TP-4 (SP-4) Pushbutton Panel with four buttons; typically used for delay control.
TP-R6 (SP-R6) Monitor/Headphone Panel with six source select buttons and a rotary encoder for level control.
TP-8 (SP-8) Pushbutton Panel with eight buttons; typically used for talkback, or for headphone source select when an under-counter headphone volume control is installed. Can also be used for opto/relay control.
TP-BP Blank Panel.
SP-M/R6: Double-wide surface panel combing Microphone ON-OFF-COUGH and Headphone level control/source select.
SP-M/8: Double-wide surface panel combing Microphone ON-OFF-COUGH and eight fullyprogrammable buttons.

See Page 38 (Turret Panel Section) for wiring details.

Intercom Stations

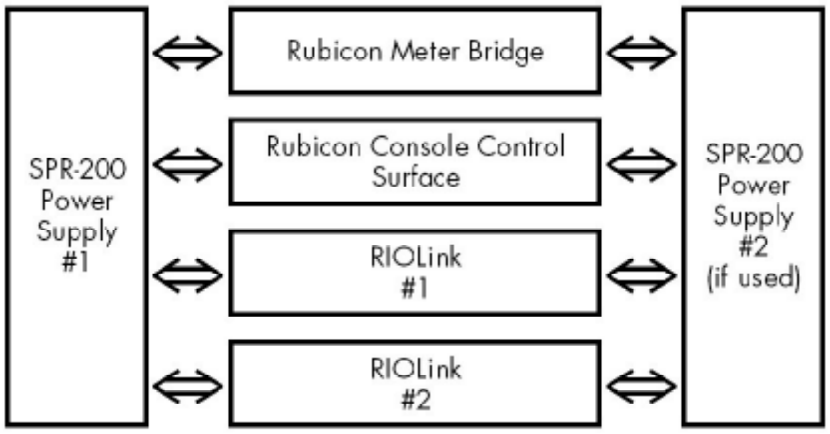
See Page 40 (Intercom Wiring Section) for wiring details.

X-Y and/or Single Output Controllers

See Page 38 (SOC and XY Controller Section) for wiring details.

POWER WIRING

The SAS SPR-200 Power Supply powers the Rubicon Control Surface, Rubicon Meter Bridge, and two RIOLinks. Two supplies are used for redundancy.
Four SpeakOn™ connectors are provided on the rear of each SPR-200. Two SpeakOn connectors are provided on the Rubicon Console Control Surface and the RIOLink to accept power from two supplies. The meter bridge is provided with a smaller cable connector designed to fit through the mounting hole in the tabletop.
The SAS Wiring Kit for *one* SPR-200 includes three SpeakOn-to-SpeakOn cables for the Rubicon Console Control Surface and RIOLinks, and one mini-connector-to-SpeakOn for the meter bridge.
The SAS Wiring Kit for *two* SPR-200s includes six SpeakOn-to-SpeakOn cables for the Rubicon Console Control Surface and RIOLinks, and two mini-connector-to-SpeakOn for the meter bridge.



Power connections illustrated

Rear panel of SPR-200

Power connection to RIO

Power connection to Rubicon8 console (also note the RS485 connection via patch cable)

Meter Bridge Power pigtails

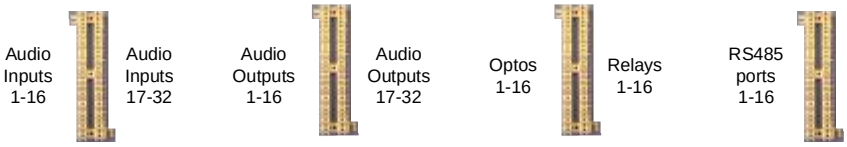
The Power connections shown to the RIO, Rubicon8, and Meter Bridge come from one SPR-200. Power Redundancy can be easily added by connecting a second SPR-200 to the other power connector on each of these units.

RIOLink Krone Blocks

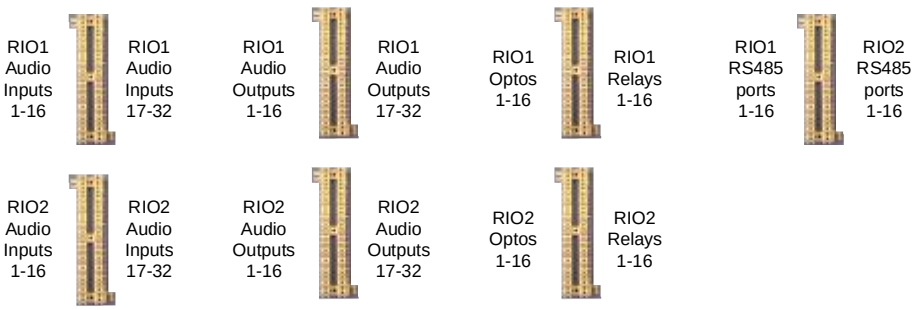
RIOLink audio, opto, relay, and RS485 serial interconnection is via RJ21 connectors on the rear panel of the RIO. See page 10 for SAS RIO CHASSIS CONNECTORS diagram.

The SAS RIO wiring package supplies Krone punch blocks with an RJ21 connector on each side. Install the Krone blocks as shown. Connect a cable from each RJ21 connector on the rear of the RIOLink to the corresponding Krone block as shown in the following drawings:

Typical block layout for one RIO



Typical block layout for two RIOs



RUBICON Control (RS485) Connections

Rubicon Console Modules communicate to the SAS system using RS485 serial ports; one RS485 port to four console slots, addressed internally at the factory A0, A1, A2, A3. Each port requires one pair of conductors. Since addressing is done at the slot, console modules do not require individual addressing.

The Rubicon frame has one to three RJ45 connectors on the bottom of the frame, depending upon the size of the frame. 8- and 16-slot frames have one connector, 24- and 32-slot frames have two connectors, 40-slot frames have three connectors. Each RJ45 carries four RS485 serial ports and serves up to 16 slots on the console.

Use standard CAT5 (T568B wiring) cables. Plug one end into the Console's RJ45 jack, then punch down the cable to the RIOLink RS485 block. Cat5 patchcable is typically made with stranded conductors, making it less susceptible to metal-fatigue breakage, and somewhat easier to dress. If you install your own RJ-45 plugs on the ends of your patchcables make sure they are appropriate for the type of wire being used. Some RJ-45 connectors are only made for solid wire. Stranded-wire RJ-45 plugs and "universal," (stranded or solid) RJ-45 plugs are available.

Make your connections per the following chart:

Rubicon RJ-45, J201/J202/J203 to RIO Link RS485 J1501 (RJ21connector), RJ21 pinouts given; +,-
Example given is typical only and assumes use of SAS blocks and interconnect cables. Also see SAS Drawing 16BW1 for Krone, S-66 pinout on Page 28.

Rubicon J201 (RJ45):

Rubicon Slot	RJ-45 pins		Krone/S-66 Block		RIO	
1-4	1,2 (WHT/ORG, ORG)	to	3,4	to	J1501	pins 27,2
5-8	3,6 (WHT/GRN, GRN)	to	5,6	to	J1501	pins 28,3
9-12	5,4 (WHT/BLU, BLU)	to	9,10	to	J1501	pins 30,5
13-16	7,8 (WHT/BRN, BRN)	to	11,12	to	J1501	pins 31,6

Rubicon J202 (RJ45):

Rubicon Slot	RJ-45 pins		Krone/S-66 Block		RIO	
17-20	1,2 (WHT/ORG, ORG)	to	15,16	to	J1501	pins 33,8
21-24	3,6 (WHT/GRN, GRN)	to	17,18	to	J1501	pins 34,9
25-28	5,4 (WHT/BLU, BLU)	to	21,22	to	J1501	pins 36,11
29-32	7,8 (WHT/BRN, BRN)	to	23,24	to	J1501	pins 37,12

Rubicon J203 (RJ45):

Rubicon Slot	RJ-45 pins		Krone/S-66 Block		RIO	
33-36	1,2 (WHT/ORG, ORG)	to	27,28	to	J1501	pins 39,14
37-40	3,6 (WHT/GRN, GRN)	to	29,30	to	J1501	pins 40,15

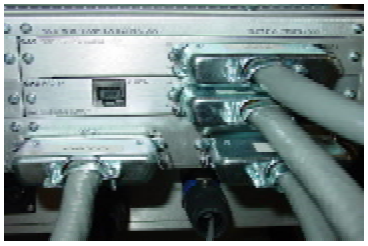
METER BRIDGE

The Rubicon Meter Bridge mounts separately from the Rubicon Console Control Surface. It is supplied with separate cabling for power, AES audio to the meters, clock sync, and timer control. Power connections were covered on pgs 5-6.

Meters

Meters are fed by AES3 audio sources, so each stereo meter requires an associated AES output from the system. These AES meter feeds can come from digital outputs of a RIO or 32KD, but generally they come from a RIO. The blue CAT5 pigtail coming off of the meter pod is for feeding AES audio to the first four stereo meters in the pod. On Meter pods with less than four stereo meters the extra AES inputs are not connected and can be disregarded. Another CAT5 pigtail, this one white, will be present if your meter pod is equipped with 5 stereo meters. The short CAT5 pigtails on the meter pod come with specially wired RJ-45, double-female adaptors so you can just plug in a CAT5 patchcable and have up to four meter feeds on one convenient cable. If the patchcable you use is a standard TIA 568B patchcable, the color code is in the table below. If the RIO is equipped with all analog out outs (or if no digital outputs are available) all is not lost. The RAD-84 output card (analog out) of the RIO has 8 stereo / 16 mono analog outputs PLUS an AES COPY of the first four stereo channels.

Since some systems will use auxiliary AES outputs from a RAD84 card, the RJ-45, double female, wiring adaptor converts the short pigtail-wiring to the same color-code-pairing used on the RAD84 auxiliary AES audio connector. Careful use of the audio resources on the RIO can make this solution work with just a straight-through patch cable connecting the meter pod to the RAD84's AES connector. If you are feeding the meters with outputs from a RIO Digital Output card (RDO) or a 32KD Digital output card (KDO), plug your patchcable into the RJ-45 double female adaptor, cut the other end of the patch cable off to desired length, and punch the pairs down on the appropriate outputs. See your channel/wiring configuration documentation for which outputs feed which meters.



Auxiliary AES outputs of the RAD-84 card. Since this RAD-84 card is in the lower slot, the AES outputs will be copies of the first four stereo outputs of the RIO chassis.

When using an all-analog RIO, the AES Meters can be fed by either 32KD digital (KDO card) outputs or, preferably, by the auxiliary AES outputs on the RAD-84 Analog Output card. These auxiliary AES outputs are simply digital audio "copies" of whatever audio is on the associated analog outputs of the card. The auxiliary digital outputs of the RAD-84 card have their own RJ-45 connector, just left of the Cetronics-50/RJ-21 connector used for the main (analog) audio outputs.

Meter Pod Internal Wiring

Connect AES Audio to specially-wired RJ-45 Coupler

Meters 1-4, CAT5, Blue	***RJ-45 Coupler pins***	***T-568B Patchcable Color Standard*** (same as RAD-84 RJ-45)
+,-		
Program (Meter 1)	1,2	WHT/ORG, ORG
Meter 2	3,6	WHT/GRN, GRN
Meter 3	5,4	WHT/BLU, BLU
Meter 4	7,8	WHT/BRN, BRN

Meter 5 (if provided), CAT 5, White		
+,-		
Meter 5	1,2	WHT/ORG, ORG

Pairs 2,3 & 4 not used

RJ-45 pins
12345678
(tab beneath)

w/o,o,w/g,bl,w/b,g,w/br,br
TIA-568B "straight-thru"
color code / wire order

If you lose or for some reason wish not to use the specially wired, double-female RJ-45 adaptor to extend your meter-feed wiring, please note that the short pigtail's color-code is NOT the same as a TIA568B patch cable plugged into the adaptor. The Short pigtail color code is:

Meter 1	WHT/BRN, BRN
Meter 2	WHT/ORG, ORG
Meter 3	WHT/GRN, GRN
Meter 4	WHT/BLU, BLU

Clock

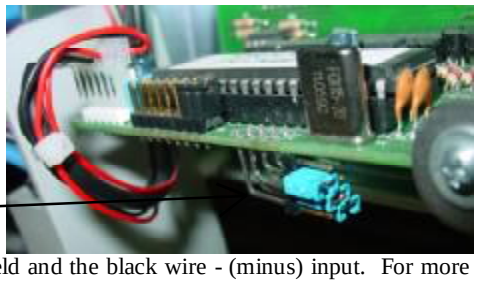
Clock data is supplied independently of the SAS system by the station's master clock system. The clock does *not* connect to the RIOLink or SAS 32KD.
The clock connects with a shielded twisted wire pair and may be driven by SMPTE or ESE data. Small header pluggable jumpers are located inside of the end panel to program the clock for different standards. The clocks are shipped for SMPTE operation unless specified otherwise with the order.

Wiring:

Cable Color	Wire Color	
Red	**RED**	**+**
	BLK	**-**
	shield	**shield**

Jumpers:

The jumpers are accessible by removing the side plate of the Meter Bridge. It is not necessary to remove the meter bridge's rear cover.



Clock Jumpers			
from top to bottom	**SMPTE**	**ESE TC89**	**ESE TC90**
J12	***open***	***open***	**JUMPER**
J11	***open***	***open***	***open***
J10	**JUMPER**	***open***	***open***
J9	***open***	**JUMPER**	**JUMPER**

IMPORTANT NOTE: If feeding unbalanced (ESE) clock sync to the clock, use shield and the black wire - (minus) input. For more options, see the full Torpey clock manual supplied on the SAS CD that ships with the system.

Timer

The timer is controlled via dry contacts typically punched down to relay outputs from a RIOLink. The long, pink CAT5 cable coming from the meter pod is the timer control cable.

See the wiring config spreadsheet supplied for your system for relay numbers. Typically, the timers are on the first three relay channels on the RIOLink:

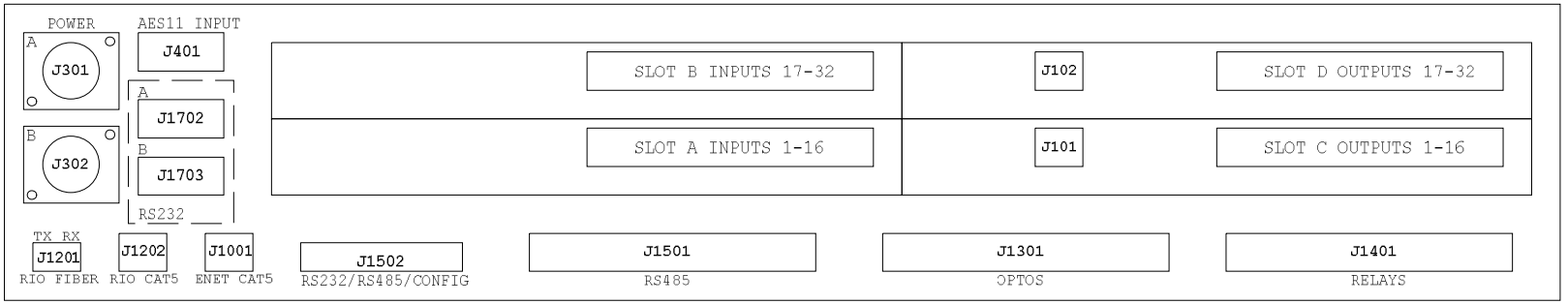
Wiring:

Function	RIOLink Relay Channel	CAT5 Cable Color	Wire Color
Start	**1**	**Pink**	**WHT/GRN, GRN**
Stop	**2**		**WHT/ORG, ORG**
Reset	**3**		**WHT/BRN, BRN**
not used			**WHT/BLU, BLU**

RIO Sample rate Selection

Please notice J1502 on the back of the Rubicon. In addition to providing RS-232 ports 3-5 and RS485 ports 17-19 for general peripheral use, this connector also contains the Sample rate selection pins for the RIO frame. The audio sample rate of the RIO frame and the audio sample rate selected for the 32KD frame ***must match***. The 32KD sample rate is selected using the Router Control software (found on the Switcher Status / Configuration tab). The RIO chassis defaults to 48kHz sample rate if no straps are connected on J1502. Since many radio stations prefer 44.1kHz, we include a pre-strapped "44.1" DSub-25 connector with a shell.

SAS RIO CHASSIS REAR PANEL (External View*)



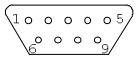
J301 & J302

Function: 24VDC/3.0A POWER INPUT
Connector Type: Neutrik P/N NL4MP-UC (Female)

Mating Connector: Neutrik P/N NL4FX (Male)

J401

Function: AES11 Input
Connector Type: DSUB9 (Male)

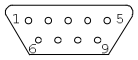


PIN 1 - GROUND
PIN 2 - AES11+
PIN 3 - AES11-

Mating Connector: DSUB9 (Female)

J1702

Function: RS232 PORT 1
Connector Type: DSUB9 (Male)

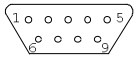


PIN 2 - RS232 PORT 1 TX
PIN 3 - RS232 PORT 1 RX
PIN 5 - GROUND

Mating Connector: DSUB9 (Female)

J1703

Function: RS232 PORT 2
Connector Type: DSUB9 (Male)



PIN 2 - RS232 PORT 2 TX
PIN 3 - RS232 PORT 2 RX
PIN 5 - GROUND

Mating Connector: DSUB9 (Female)

SLOT A INPUTS 1-16
SLOT B INPUTS 17-32

For Analog Input (RAI-8) Card, use SAS Drawing 16BW1.
For AES Input (RDI-8) Card, use SAS Drawing 16BW1 (SIG 1-8 ONLY).

SLOT C OUTPUTS 1-16
SLOT D OUTPUTS 17-32

For Analog Output (RAO-8 or RAD-84) Card, use SAS Drawing 16BW1.

For AES Output (RDO-8) Card, use SAS Drawing 16BW1 (SIG 1-8 ONLY).

FOR RIO LINK, USE FIBER OR CAT5, BUT NOT BOTH SIMULTANEOUSLY

J1201

Function: RIO LINK OPTICAL FIBER INTERFACE
Connector Type: Install Small Form-factor Pluggable (SFP) Optical Module from Stratos Lightwave ™

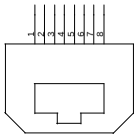
Mating Connector: LC Duplex Fiber Connector

MODULE P/N	MODE/WAVELENGTH	MATE/FIBER CORE	MAX DISTANCE
SPLC-20-4-1-B	Multi-mode/850nm	LC Duplex/50 or 62.5um	300m/985 ft
SPLC-20-1-4-B	Multi-mode/1310nm	LC Duplex/62.5um	2km/1.25 miles
SPLC-20-4-2M-B	Single-mode/1310nm	LC Duplex/9um	10km/6 miles
SPLC-20-4-2L-B	Single-mode/1310nm	LC Duplex/9um	20km/12 miles

Note: Multi-mode --> Orange fiber, Single-mode --> Yellow fiber

J1202

Function: RIO LINK CAT5 INTERFACE
Connector Type: CAT5 (RJ-45)

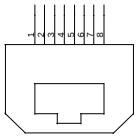


PIN 1 - LINK_IN+ (TO RIO CHASSIS)
PIN 2 - LINK_IN-
PIN 7 - LINK_OUT+ (FROM RIO CHASSIS)
PIN 8 - LINK_OUT-

Mating Connector: RJ-45 (Use CAT5E, up to 180m (600 ft))

J1001

Function: ETHERNET CAT5 INTERFACE
Connector Type: RJ-45

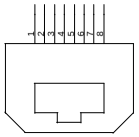


PIN 1 - ENET_TX+
PIN 2 - ENET_TX-
PIN 3 - ENET_RX+
PIN 6 - ENET_RX-

Mating Connector: RJ-45

J101/J102

Function: Four AES outputs (available w/ RAD-84 card only)
Connector Type: RJ-45

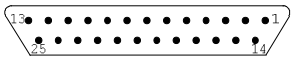


PINS 1/2 - AES Output 1+/- (Slot C), AES Output 9+/- (Slot D)
PINS 3/6 - AES Output 2+/- (Slot C), AES Output 10+/- (Slot D)
PINS 5/4 - AES Output 3+/- (Slot C), AES Output 11+/- (Slot D)
PINS 7/8 - AES Output 4+/- (Slot C), AES Output 12+/- (Slot D)

Mating Connector: RJ-45

J1502

Function: RS232/RS485/CONFIG INTERFACE
Connector Type: DB25 (Female)



Mating Connector: DB25 (Male)

RS232 PORTS 3-5

PIN 18 - RS232 PORT 3 TX
PIN 6 - RS232 PORT 3 RX
PIN 19 - GROUND

PIN 7 - RS232 PORT 4 TX
PIN 20 - RS232 PORT 4 RX
PIN 8 - GROUND

PIN 21 - RS232 PORT 5 TX
PIN 9 - RS232 PORT 5 RX
PIN 22 - GROUND

RS485 PORTS 17-19

PIN 1 - RS485 PORT 17+
PIN 14 - RS485 PORT 17-
PIN 2 - GROUND

PIN 15 - RS485 PORT 18+
PIN 3 - RS485 PORT 18-
PIN 16 - GROUND

PIN 4 - RS485 PORT 19+
PIN 17 - RS485 PORT 19-
PIN 5 - GROUND

STRAPPABLE CONFIGURATION LINES

PIN 13 - MASTER/SLAVE
PIN 25 - GROUND

PIN 13	MODE
NO STRAP	SLAVE
STRAPPED	MASTER

SHARED

PIN 12 - SAMPLE RATE SEL2
PIN 24 - GROUND

PIN 11 - SAMPLE RATE SEL1
PIN 23 - GROUND

PIN 12	PIN 11	RATE
NO STRAP	NO STRAP	48K
STRAPPED	NO STRAP	44.1K
NO STRAP	STRAPPED	32K
STRAPPED	STRAPPED	UNUSED

PIN 10 - FUTURE USE
PIN 22 - GROUND

J1301 (OPTOS 1-16)

USE SAS DRAWING 16BW2.

J1401 (RELAYS 1-16) & J1501 (RS485 PORTS 1-16)

USE SAS DRAWING 16BW1.

*NOTE: All connectors shown are part of RIO rear panel and are drawn as viewed looking at rear panel from outside of unit.

Title: SAS RIOG CHASSIS CONNECTORS		
Size: C	Document Number:	Rev: B
Date: Wednesday, October 27, 2004	Sheet 1 of 1	

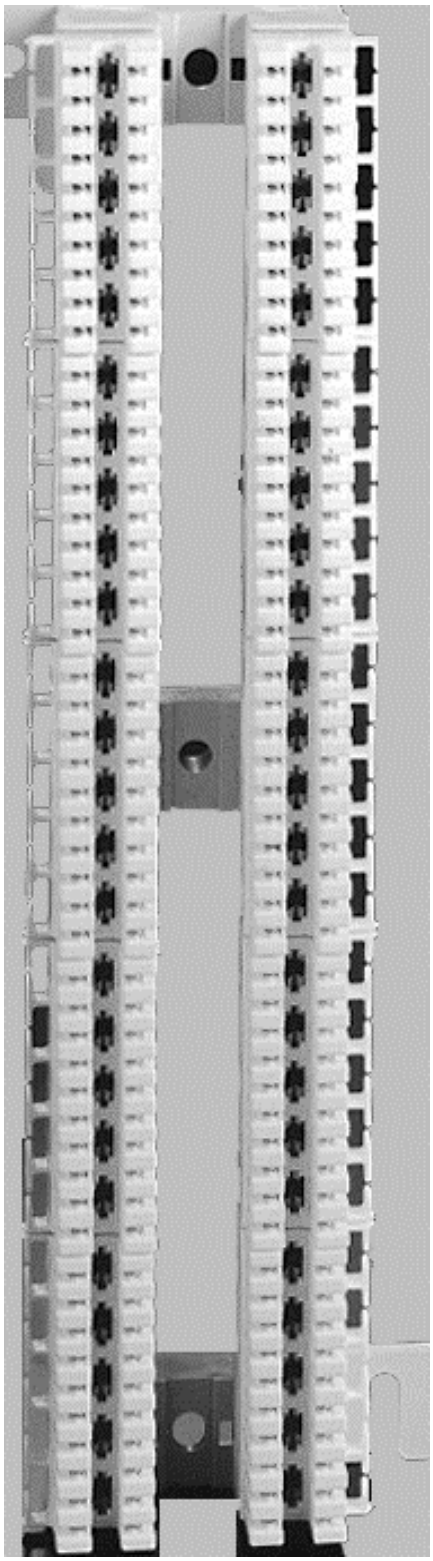
RIOLink Krone Block Wiring Detail: Analog Inputs, Digital Inputs, Relay Outputs, RS485 Serial

The SAS wiring scheme for all punch blocks (except for Optos) is the same:

The first block pair (two pins) is common (shield)
The next two pairs (four pins) are channel wiring
Next block pair (two pins) is common

RIO Channels 1-16. See wiring spreadsheet for System numbers.

1:		Common
2:		Common
3:	+	Channel 1
4:	-	Channel 1
5:	+	Channel 2
6:	-	Channel 2
7:		Common
8:		Common
9:	+	Channel 3
10:	-	Channel 3
11:	+	Channel 4
12:	-	Channel 4
13:		Common
14:		Common
15:	+	Channel 5
16:	-	Channel 5
17:	+	Channel 6
18:	-	Channel 6
19:		Common
20:		Common
21:	+	Channel 7
22:	-	Channel 7
23:	+	Channel 8
24:	-	Channel 8
25:		Common
26:		Common
27:	+	Channel 9
28:	-	Channel 9
29:	+	Channel 10
30:	-	Channel 10
31:		Common
32:		Common
33:	+	Channel 11
34:	-	Channel 11
35:	+	Channel 12
36:	-	Channel 12
37:		Common
38:		Common
39:	+	Channel 13
40:	-	Channel 13
41:	+	Channel 14
42:	-	Channel 14
43:		Common
44:		Common
45:	+	Channel 15
56:	-	Channel 15
57:	+	Channel 16
48:	-	Channel 16
49:		Common
50:		Common



1:		Common
2:		Common
3:	+	Channel 17
4:	-	Channel 17
5:	+	Channel 18
6:	-	Channel 18
7:		Common
8:		Common
9:	+	Channel 19
10:	-	Channel 19
11:	+	Channel 20
12:	-	Channel 20
13:		Common
14:		Common
15:	+	Channel 21
16:	-	Channel 21
17:	+	Channel 22
18:	-	Channel 22
19:		Common
20:		Common
21:	+	Channel 23
22:	-	Channel 23
23:	+	Channel 24
24:	-	Channel 24
25:		Common
26:		Common
27:	+	Channel 25
28:	-	Channel 25
29:	+	Channel 26
30:	-	Channel 26
31:		Common
32:		Common
33:	+	Channel 27
34:	-	Channel 27
35:	+	Channel 28
36:	-	Channel 28
37:		Common
38:		Common
39:	+	Channel 29
40:	-	Channel 29
41:	+	Channel 30
42:	-	Channel 30
43:		Common
44:		Common
45:	+	Channel 31
56:	-	Channel 31
57:	+	Channel 32
48:	-	Channel 32
49:		Common
50:		Common

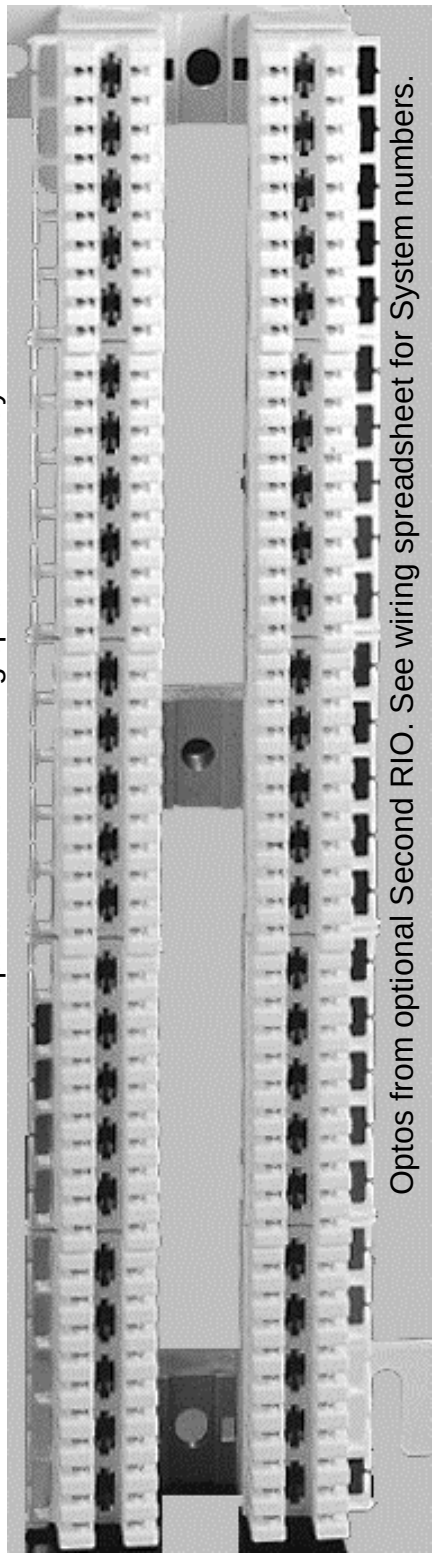
RIO Channels 17-32. See wiring spreadsheet for System numbers.

RIOLink Krone Block Wiring Detail: Opto Inputs

Opto input wiring follows the same SAS wiring scheme, with the exception that the RIOLink provides +5VDC on the first pin of the common pair:

1:		+5VDC
2:		Common
3:	+	Channel 1
4:	-	Channel 1
5:	+	Channel 2
6:	-	Channel 2
7:		+5VDC
8:		Common
9:	+	Channel 3
10:	-	Channel 3
11:	+	Channel 4
12:	-	Channel 4
13:		+5VDC
14:		Common
15:	+	Channel 5
16:	-	Channel 5
17:	+	Channel 6
18:	-	Channel 6
19:		+5VDC
20:		Common
21:	+	Channel 7
22:	-	Channel 7
23:	+	Channel 8
24:	-	Channel 8
25:		+5VDC
26:		Common
27:	+	Channel 9
28:	-	Channel 9
29:	+	Channel 10
30:	-	Channel 10
31:		+5VDC
32:		Common
33:	+	Channel 11
34:	-	Channel 11
35:	+	Channel 12
36:	-	Channel 12
37:		+5VDC
38:		Common
39:	+	Channel 13
40:	-	Channel 13
41:	+	Channel 14
42:	-	Channel 14
43:		+5VDC
44:		Common
45:	+	Channel 15
56:	-	Channel 15
57:	+	Channel 16
48:	-	Channel 16
49:		+5VDC
50:		Common

RIO1 Optos 1-16. See wiring spreadsheet for System numbers.



Optos from optional Second RIO. See wiring spreadsheet for System numbers.

1:		+5VDC
2:		Common
3:	+	Channel 1
4:	-	Channel 1
5:	+	Channel 2
6:	-	Channel 2
7:		+5VDC
8:		Common
9:	+	Channel 3
10:	-	Channel 3
11:	+	Channel 4
12:	-	Channel 4
13:		+5VDC
14:		Common
15:	+	Channel 5
16:	-	Channel 5
17:	+	Channel 6
18:	-	Channel 6
19:		+5VDC
20:		Common
21:	+	Channel 7
22:	-	Channel 7
23:	+	Channel 8
24:	-	Channel 8
25:		+5VDC
26:		Common
27:	+	Channel 9
28:	-	Channel 9
29:	+	Channel 10
30:	-	Channel 10
31:		+5VDC
32:		Common
33:	+	Channel 11
34:	-	Channel 11
35:	+	Channel 12
36:	-	Channel 12
37:		+5VDC
38:		Common
39:	+	Channel 13
40:	-	Channel 13
41:	+	Channel 14
42:	-	Channel 14
43:		+5VDC
44:		Common
45:	+	Channel 15
56:	-	Channel 15
57:	+	Channel 16
48:	-	Channel 16
49:		+5VDC
50:		Common

Introduction - Software for Configuration and more

Normal operation of the 32KD (or RIO Grande) and Rubicon (or RubiconSL) consoles does not require continuous connection to a dedicated PC. However, initial setup (after physical installation) and configuration changes or additions do require a PC running the Sierra Automated Systems Router Control Software and IP Server Module. Most customers dedicate a decent quality Windows™ (XP or 2000) machine to this task because of the many useful tools and features in the Router Control Software and IP Server Module.

The server module coordinates multiple devices "talking" to the Router at one time, including our free SoftPanels and the Router Control Software - it also logs system events and allows for differing PC and Router hardware configurations.

The Router Control Software is the graphical system gateway that allows you to see everything happening in your system, directly control crosspoint routes, edit system, console, and module configurations, change source or destination attributes, and set up extremely powerful router automation events.

A large percentage of SAS customers that have a dedicated Router Control PC also have or install VPN access so that SAS can access the Router Control PC remotely when requested. In this way we can help you with configuration changes, custom features, complicated automation events, or troubleshooting if you encounter a problem. XP's built-in Remote Desktop feature, or VNC programs like UltraVNC are excellent choices.

The following guide will describe the process of installing and setting up the Sever Module, RCS software, and Router Automation module for connection to your 32KD or RIO Grande.

The default username for SAS Router Control Software is SASDefault.
The default password is sas.
Both are case sensitive.

SAS Server Module Installation

System requirements

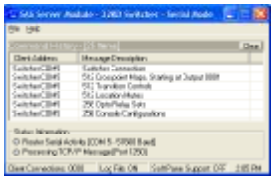
IBM compatible PC with at least a Pentium 4 processor (1GHz or greater)
At least 256 MB RAM. 512M recommended.
Minimum 100 MB available hard disk space.
Windows 2000 SP3 or XP SP1 or higher operating system.
RS-232 connection to the SAS Routing Switcher (57600 Baud).
Network adapter card communicating on a network.

Note: It is recommended that the Computer running the Server Module have a fixed IP address if the Router Control Software or Softpanels will be run on a remote computer.

Router Control Software, Server Module, & Automation Installation

Note: If Windows 2000 is used, AT LEAST Service Pack 3 for Windows 2000 must be installed.

SAS Server Module
Installation



CD:

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

Getting Started

Once the Server Module has been installed make sure the computer running the Server Module is connected to the MCU32E card in the 32KD (or the COM A – J1702 – port on RIO Grand).

Start the Server Module and select setup from the File menu. Select the Serial Port that is used to connect to the switcher, the IP Port that will be used by the SAS Windows Router Control Software and SAS SoftPanels (typically Port 1250 in a single frame or Rio Grand system) and the type of Switcher connected to the Server Module.

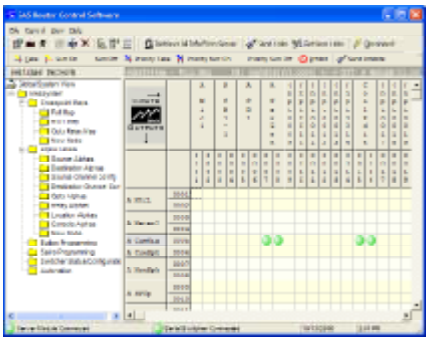
If SAS Softpanels are to be used with the Server Module, click on the More button and check the Soft Panel Mode box.

Once Ok is selected from the Setup screen “Switcher Connection” should appear in the Command History Window followed by several messages received from the SAS Switcher.

The SAS Server Module must be running and connected to the SAS Routing switcher in order to control the Switcher with SAS Windows RCS, SAS Automation engine or any SAS SoftPanels. If the Server module is not running and connected to the switcher, no PC control of the switcher is possible.

SAS Windows Router Control Software Installation

System requirements



Same as IP Server Module

Installation

CD:

Insert the CD containing the SAS Windows Router Control Software into the CD Drive. Using Windows Explorer, go to the SAS Windows RCS directory on the CD and run setup.exe and follow the prompts on the screen.

Getting Started

Once the Windows RCS has been installed make sure the SAS Server Module is running and connected to the Switcher.

Start the Windows RCS with the default user name and password.

You will be prompted for the location and name of the Program Database. It is recommended that this database be kept in the directory that the Windows RCS was installed in.

This Program Database holds the location of the Switcher databases, Users, and Folder definitions.

It is recommended that you add a user to the user database, although the default user name and password may not be changed or deleted. This can be done by selecting the View menu and then selecting User database or selecting Edit/View User Database from the toolbar.

The first time the Windows RCS is run, it will ask if you would like to define a switcher database. Select Yes.

A switcher database will need to be created for each switcher to be controlled by the Windows RCS. This can be done by selecting the View menu and then selecting Switcher database or selecting Edit/ View Switcher Database from the toolbar. Select the type of switcher, size of the switcher, the IP Address and IP Port of the computer running the Server Module (the IP Port must match that selected in the Setup Screen of the Server Module) and the name and path for the Switcher database. If you will be controlling multiple switchers with the Windows RCS, name the Switcher Database file in a manner that will identify which switcher is defined by the file. It is recommended that this database be kept in the directory that the Windows RCS was installed in. NOTE: the defined size of the switcher database must match the size of any SAS-prepared configuration. If you're not sure what the size should be, please contact your sales engineer at SAS for the information.

The Switcher Database contains information about the switcher, including Alpha Labels, Inhibit Maps, Button Templates, Salvos and Display Lists.

Once the new Switcher definition is saved, you will be given the option of allowing the RCS to setup up default folders. Select Ok.

The Windows RCS will create a set of default folders and attempt to connect to the Server Module.

The Windows RCS uses Folders to hold different types of information about the switcher.
Folder types are:

Organizational Folders

These folders contain other folders.

Crosspoint Maps

These folders contain Switcher Crosspoint Maps. These maps display the current output source assignments. These assignments are only displayed when the RCS is connected to a Server Module

actively connected to a switcher. In addition Inhibits may be set in these folders. Inhibits may be edited offline and are only sent to and retrieved from the switcher at the behest of the user.

Source Alpha Labels

These folders contain switcher Source channel alpha assignments and Stereo Links. Alpha labels and links may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Destination Alpha Labels

These folders contain switcher Destination channel alpha assignments and Stereo Links. Alpha labels and links may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Source Channel Configuration

These folders contain switcher Source channel configuration. This may be edited offline. This is only sent to and retrieved from the switcher at the behest of the user. See Page 26 for description.

Destination Channel Cofiguration

These folders contain switcher Destination channel configuration. This may be edited offline. This is only sent to and retrieved from the switcher at the behest of the user. See page 30.

Relay Alpha Labels

These folders contain switcher Relay alpha assignments. Alpha labels may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Opto Alpha Labels

These folders contain switcher Opto alpha assignments and some Opto programming. Alpha labels may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Console Alpha Labels

These folders contain switcher Console alpha assignments. Alpha labels may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Location Alpha Labels

These folders contain switcher Location alpha assignments. Alpha labels may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Button Programming

These folders contain Button Template programming and Template assignments (except 32KD). Button Templates may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

System Salvo Definitions

These folders contain definitions of the System Salvos. Salvos may be edited offline. They are only sent to and retrieved from the switcher at the behest of the user.

Automation Event Lists

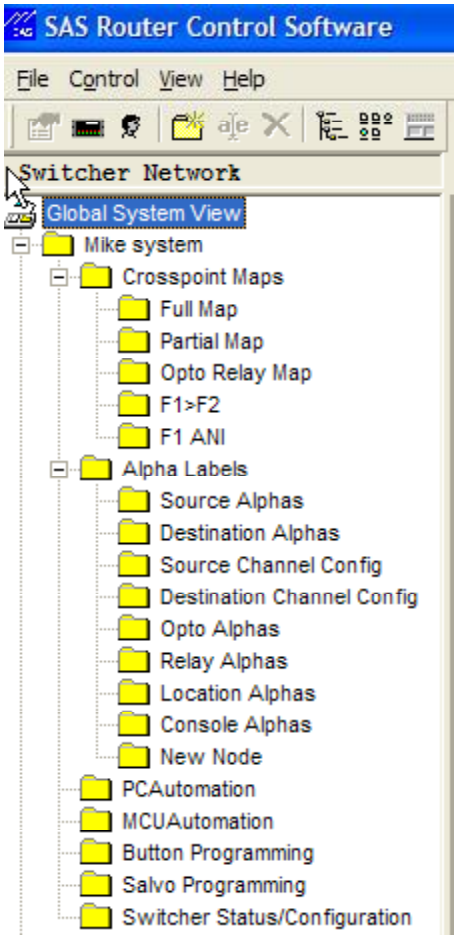
These folders contain definition of Automation Events. These events are not stored in or triggered by the Switcher. These events require the SAS Automation Engine. The Automation Engine must be running and connected to the Server Module for any events defined in the Automation folder to happen.

System Status/Configuration

These Folders display the status of the switcher when attached to the Server Module. In addition configuration of the 32KD cards and attached consoles is done from this folder. The appearance of this folder changes depending on the SWITHER type (eg 32KD or Rio Grand, or 64000). Configuration may only be done while the RCS is connected to the Server Module.

Default Folders

The default folders created by the Windows RCS are as follows:



Switcher Name - Organizational Folder Containing the Following Folders

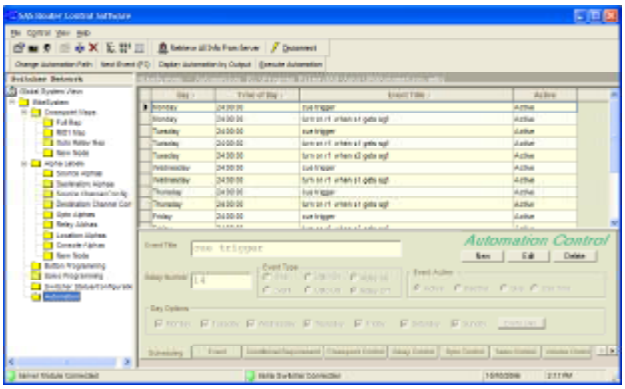
- Crosspoint Maps - Organizational Folder Containing one or two Crosspoint Map Folders
  - Full Map - A Crosspoint map the full size of the switcher (up to 500 x 500)
  - Partial Map - A 32 x 32 Crosspoint Map for showing just what's on a RIO.
- Alpha Labels - Organizational Folder Containing Alpha Label Folders
  - Source Alphas - Source Alpha Labels
  - Destination Alphas - Destination Alpha Labels
  - Source Configuration - Source Channel Configuration
  - Destination Configuration - Destination Channel Configuration
  - Relay Alphas - Relay Alpha Labels
  - Opto Alphas - Opto Alpha Labels
  - Console Alphas - Console Alpha Labels
  - Location Alphas - Location Alpha Labels
- Button Programming - Button Programming
- Salvo Programming - Salvo Programming
- Switcher Status/Configuration - Switcher Status & Configuration

Console Configuration

Router, RIO and Console configuration (applies to 32KD with KRL/RIO or RIO stanadlone only) will be addressed in another section of the documentation.

Every time the RCS is started, it will attempt to log into the Server Module at the IP Address and IP Port identified in the Switcher database.

SAS PC-based Automation Installation



System requirements

Same as IP Server Module

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. Then select Folder Properties from the File menu, select Folder properties on the toolbar or right click on the folder name and select 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.

Select New to create a new automation event.

Important

In order for automation events to run, the Automation Engine must be running and connected to the SAS Server Module connected to SAS Routing Switcher. If either program is not running, Computer-based automation events will **not** happen.

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

The recent 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. **See the “HOW TO ... Guide” for details on both types of automation programming - starting on page 50.**

Basic Console Configuration using Router Control Software

Your console / router system will normally come pre-programmed with a basic configuration that complies with the design goals, equipment lists, and console layouts you discussed with your SAS systems engineer during the purchasing process. This information will normally be pre-loaded on the MCU in a new 32KD system, or the RIO (master RIO if dual) in your RIO Standalone system).

If this is the case, the first things you want to do when you get the Router Control Software running are: a) make sure that RCS is "seeing" your equipment, and b) download the system configuration from the router. For the first step, navigate to Switcher Status/Configuration by clicking on the folder. Verify that you have two green dots (Server Module Connected and Serial Switcher Connected) in the bottom of the window. The first dot indicates communication between the Server Module software and the Router Control Software. The second indicates that the Router is connected and synchronized with the server module. When you first start up the Server Module or the Router Control Software, it can take a while (especially on large systems) to get the second green indicator. Maximizing the Server Module window lets you see that data is flowing from the router.

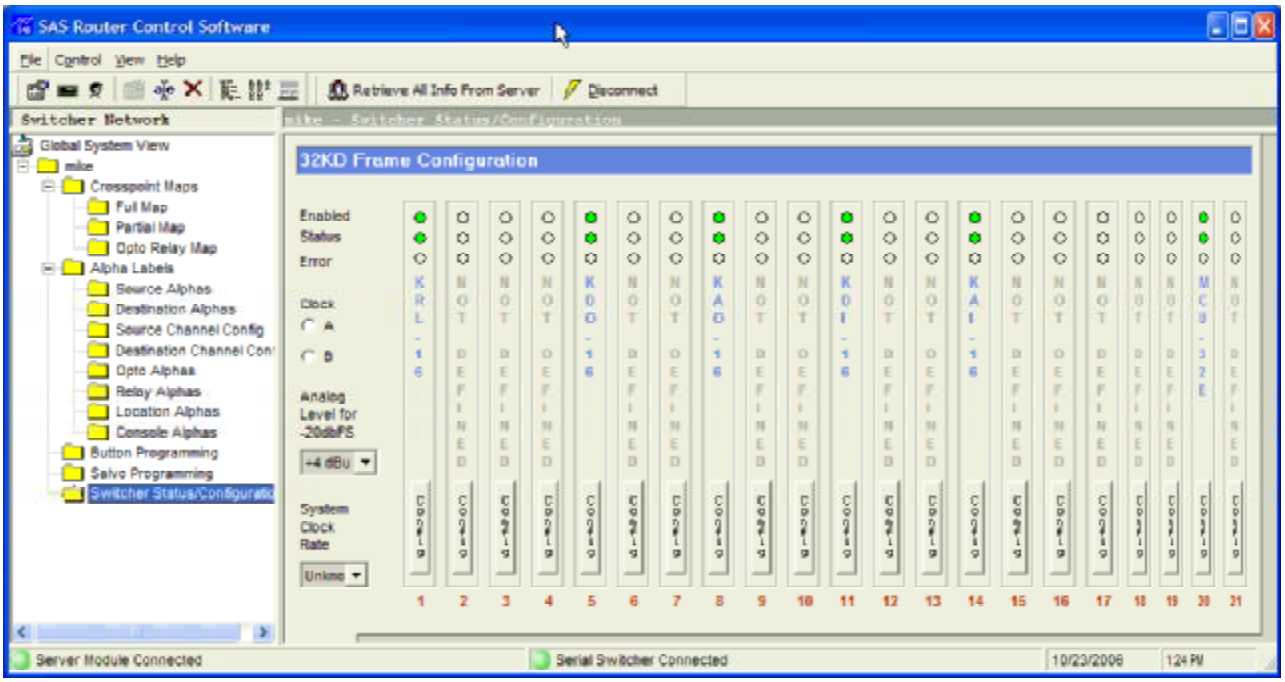


Figure1: Switcher Status/Configuration folder - shows 32KD frame layout including card-types installed and status of server module and connection to the router.

Does the window that opens up show your 32KD frame's card layout correctly? (if your system is a RIO Standalone you will see something like Figure2 below instead. If not, check your serial connection to the 32KD MCU card (or RIO Grand Serial port) and your Server Module settings. Call us if you need assistance.

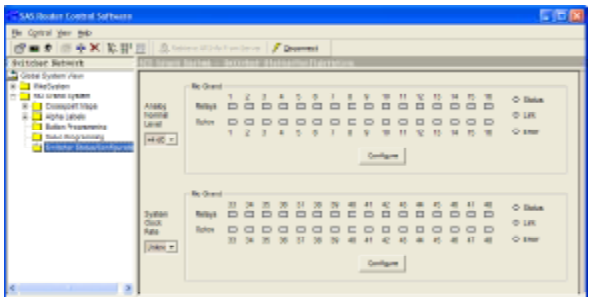


Figure2: Switcher Status/Configuration folder - Rio Standalone system

Downloading the system configuration from the router is simple. Just click on the Retrieve All Info From Server button and you'll see lots of data scroll by on a window that looks like this one:

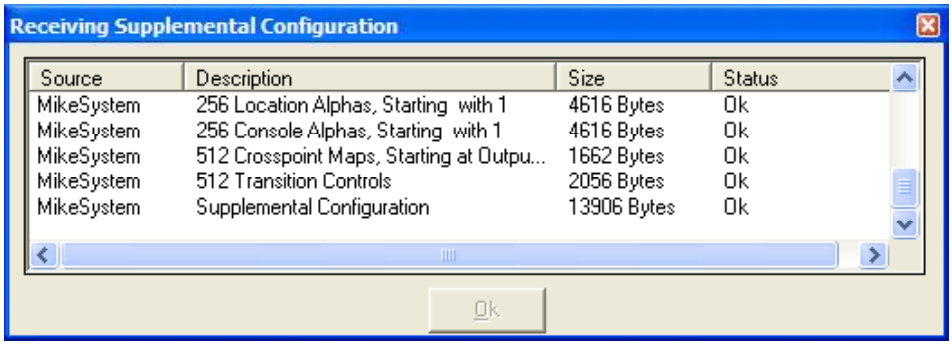


Figure 3. Retrieving data from the Switcher

The process takes a little over a minute on a reasonably fast machine so be patient; system size also affects retrieval time. When the OK box is no longer grayed-out, you can lick OK and your pre-loaded system configuration will have been copied into the Router Control Software database.

Manual Configuration / Console Setup Requirements

There are a few setup items that must be done after installation. These include making some STATIC system crosspoints, viewing and modifying (if needed) the source select button(s) on your console, and adding or modifying any sources or destinations that were not part of your pre-configuration. These Configuration items require that the Router Control Software is running, communicating through the Server Module to the "connected" 32KD or RIO. SAS may have performed some of these steps for you at the factory - so don't be too surprised if one or more of these is already done.

Crosspoints and Inhibits to be made:

The meter bridge will usually have one or two fixed meter-source assignments and one or more programmable-source meters (using the dialup controller on the Console Control Module).
It is common to assign Program1 to meter one. This is generally done on the Full crosspoint map. Before proceeding you will need to know which meters are to have fixed assignments and you'll need to know the Destination (system output) numbers of the Meter outputs and the Source numbers of the Busses or sources you want to send to the meters. Even if you are setting up a Console attached to a 32KD system, follow the instructions below before going on to the METER CROSSPOINTS sections on the next page.

Several required crosspoints, will not show up on the *Full Map.* You will need to make a new Crosspoint map that includes the internal DSP "loopbacks" of your system's busses. This is fairly simple - you can either use the existing Partial Map folder and change its attrributes, or just right-click on the *Crosspoint Maps* folder and select *New Folder.* Whichever route you take, right click on the *New Node* or *Partial Map* folder and click on rename. Give it a name like "RIO 1 Map." Next right-click on it and select *Folder Properties* (Figure 4). Click *Crosspoint Map Grid,* and make sure your Switcher entry shows up in the drop-down *Select Switcher* box. Change the title near the top to the same name you used for the folder. Now click on the View Options tab at the top of the Switcher Data Folder window (Figure 5). Set number of sources to 32, number of destinations to 32, first source to the first source number on your RIO (1 in our example) and first destination to the first destination number on your RIO (again 1 in this example). All check boxes shouldbe checked before clicking OK. Create a new folder for EACH RIO in your system and configure it the same way, so that you have a crosspoint folder for each of your RIOs which shows normal sources and destinations PLUS virtual copies (DSP loopback sources) of your RIOs destinations (this is how a PGM bus gets routed to another destination without having to physically wire it back into the system).

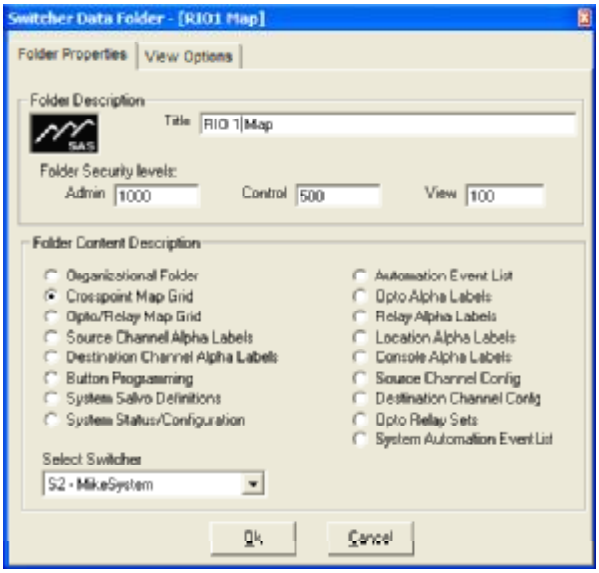


Figure 4. RIO 1 Crosspoint Map

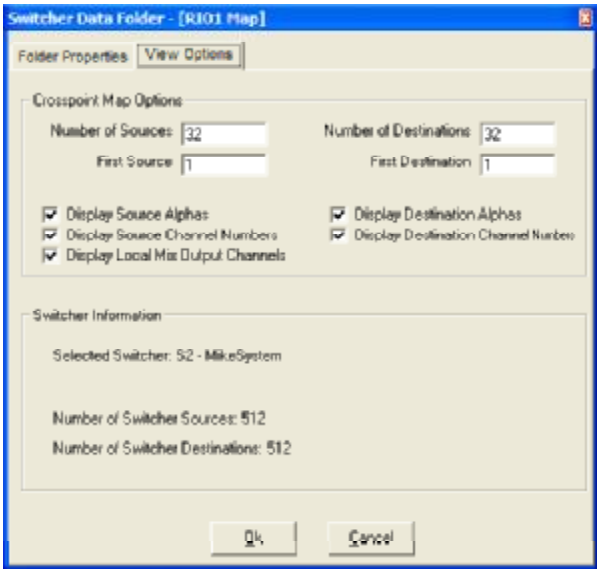


Figure 5. Adding Local mix Output channels (DSP loopback sources) to the map.

IMPORTANT NOTE: DSP LoopBack - Virtual Sources

The 32KD architecture makes a virtual source (aka a DSP loopback source) of every system *OUTPUT. These virtual sources are identified by numbers just like real sources are; and though they can be assigned just about any range of numbers, we always make the (virtual) source number of a destination the same as the destination number to keep confusion to a minimum. So in the case illustrated in Figure 5 below, A PGM 1, SOURCE 129 is a virtual source, or DSP Loopback of the real Program Bus OUTPUT that is developed on outputs 129/130. This mechanism allows us to crosspoint whatever is on a system OUTPUT (destination) to other destinations in the system.*

IMPORTANT NOTE: RIO DSP Loopback sources do not have source numbers, and are only available as sources inside the RIO. The Local Mix Output option in figure 5 above adds the DSP Loopback sources to the RIO crosspoint map (see figure 7 on the next page).

Meter Crosspoints

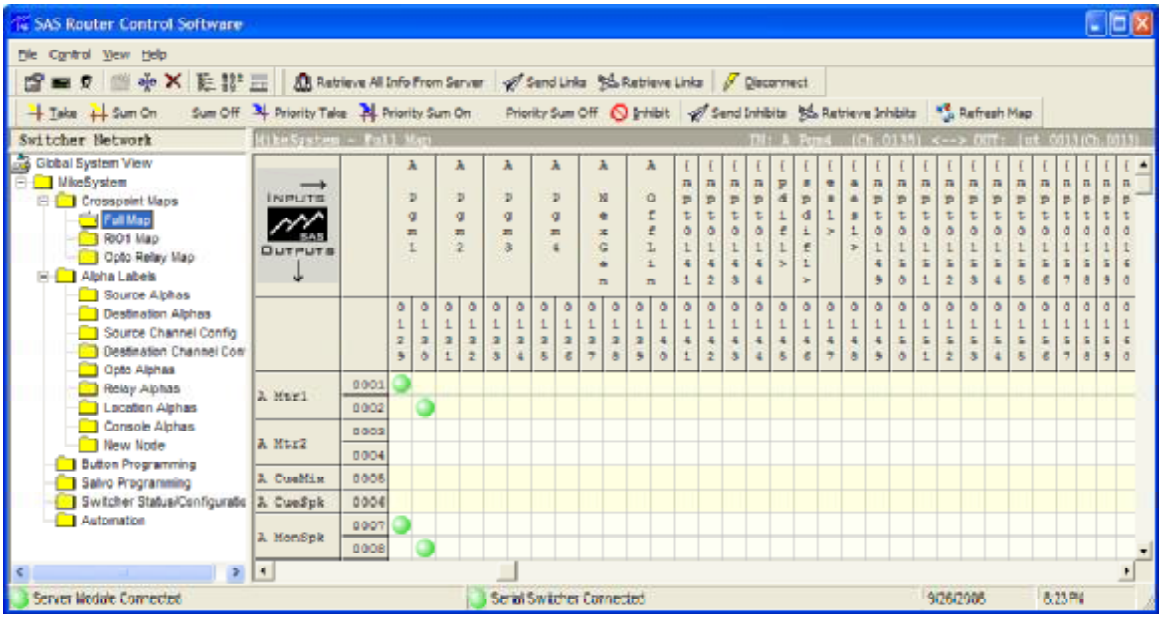


Figure 6. Typical 32KD Program Bus routed to the first meter on your Rubicon/RIO.

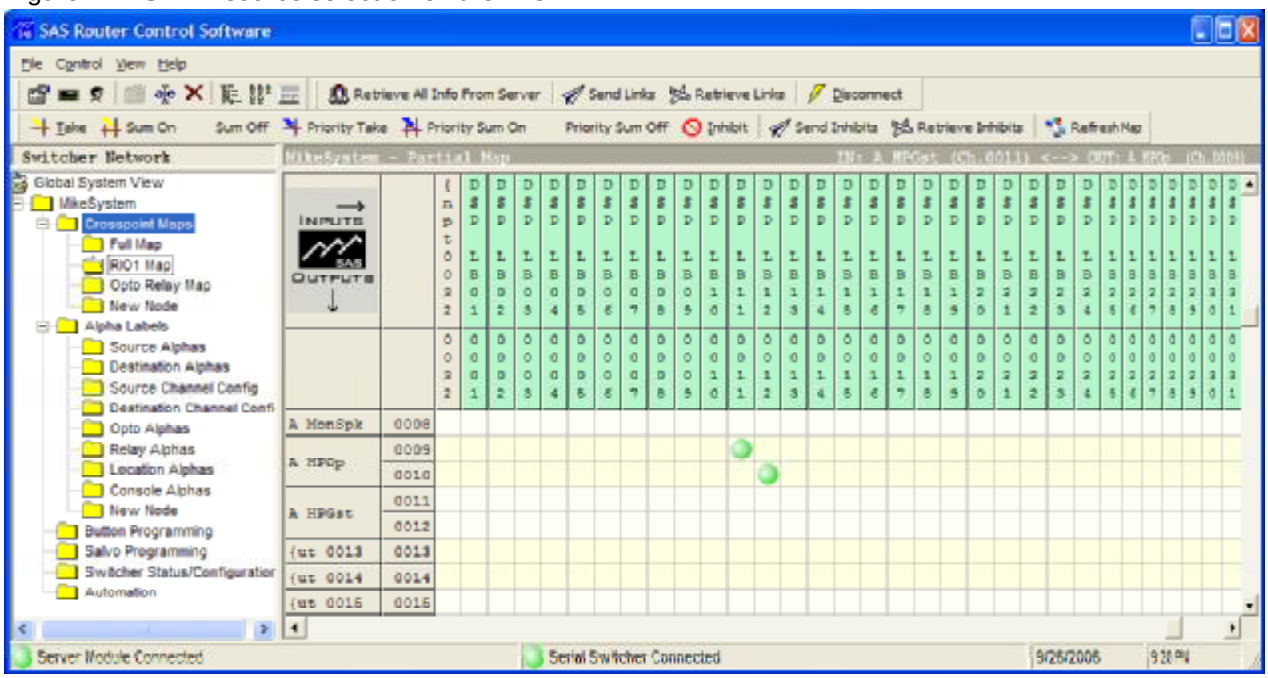
Now that you know the Souce (Program 1 is 129/130) number and the destination number (Meter1 is on Output1/2) simply right-click the intersection of the source and destination and click **TAKE**. Green dots will appear indicating a "normal" crosspoint has been made. Now anything on the Program bus will be routed to the output designated to feed Meter1. Notice that the left and right channels were automatically both illuminated with green dots. Since both the source and the destination are configured (see sections on Source Channel and Destination Channel Configuration beginning on page 23) stereo, the TAKE command automatically routes left to left and right to right.

If you have more than one meter with a fixed source-assigment, make the appropriate crosspoint(s) now. For now, don't worry about the programmable meters - their crosspoints are switched by the system when you select a source for them on the Console Control Module. This will be covered in the "HOW TO ... Guide" section on Advanced Console Configuration.

Headphone Bus Crosspoints

If you have Guest and Operator headphone outputs, chances are good that the Guest Headphone Output has been chosen as the Headphone Bus - this is where the Control Room Monitor Sends audio chosen by Headphone Source Selection. If this is the case, you'll need to find the OUTPUT number of the Guest Headphone output and Crosspoint its virtual source to the Operator Headphones output. This will almost always be done on the Partial Map we created on page 20. Outputs that are on RIOs (like headphone outputs) also have DSP loopback sources, but unlike real sources, these

Figure 7. DSP LB source selection on the RIO.



virtual sources are only available to other outputs within the RIO frame.

So open up the RIO1 Map that you created a few minutes ago and scroll down until you see your Operator Headphone Output. The Guest headphone output is usually close by; note its output number. Now scroll right using the scroll-drag bar along the bottom of the map until you see the green "DSP LB sources" across the top. Find the intersection of the Operator Headphone OUTPUT and the Guest Headphone loopback source (find the DSP LB for the Guest Headphone output number) and hover over it. Note that the LB number is 1-32 and corresponds to the RIO's 1st through 32nd output. If you look just above the green labels, toward the right, you'll see a text display that says something like:

IN: A HPGst (CH. 0011) <--> OUT: A HPOp (Ch.0009) - right click the intersection and click TAKE. If

you don't have a GUEST headphones output, you don't have to make this crosspoint as your configuration will automatically send the correct (chosen by HeadPhone source selection on the Control Room Monitor Module) audio to the HPOp output.

Inbound Talkback Bus Crosspoint.

Another bus that is typically generated on the RIO (for use solely within the RIO) is the Talkback Bus. This is a mixing bus, developed on a RIO Output (usually mono) that accepts audio sources from various (talkback) locations that want to say something to the Operator. Find the number for the Talkback Bus OUTPUT. On the RIO Map, crosspoint the DSP LB source for the Talkback bus into the HPOp output, but this time when you right-click select SUM ON instread of TAKE. You'll notice that the Talkback source has been added to the mix of what feeds the Operator Headphone Output. If you had used TAKE, it would have replaced what was already routed to the output with the new source. Similarly, SUM OFF removes just the source you want to remove form a destination that has several sources crosspointed to it. Most people also like to have the talkback bus routed to the CUE speaker output - so if your operator doesn't have his headphones on he or she will still hear talkback from the Cue speaker.

Cue Mix Bus Crosspoint

Similar to the talkback bus, the cue mix bus is developed on an output (or stereo pair if you use stereo cue) of the RIO and it's virtual source (DSP LoopBack source) is sent to the CUE Speaker output(s). Since you may have Talkback already assigned to the Cue Speaker Output, use SUM ON for this one as well.

Inhibits

Inhibits are like anti-crosspoints. They keep unwanted crosspoints from being made. For example - if you don't want TalkBack to go to both sides of your operator's headphones, inhibit the TB bus on one side. You set Inhibits by right-clicking a taboo Source/Destination intersection on a Crosspoint map and selecting Inhibit, or by highlighting the undesirable intersection and clicking on the INHIBIT button in the ToolBar. Unlike Crosspoint TAKES which occur immediately when made on the Crosspoint map, Inhibits must be SENT (using the Send Inhibits button on the Toolbar) for them to take effect.

Right-click options in the Crosspoint Map:

You can access several different (context sensitive) right-click menus while navigating on the crosspoint map. Right-Click over the Destination Name and you will get a pop-up window like this:

Figure 8. Destination right-click

Input List: shows a list of all Sources crosspointed to the destination.
Mute Locations: lists Frame, slot, port, address of active mute triggers.
Link: See "Linked" attribute under Destination Channel Config.
Send Single Output Inhibit Map: sends just this output's inhibits.
Adjust Analog Gain Trim: Attenuate (analog) Output. Click "Sync Gain..." for equal attenuation of stereo channels.
Adjust DSP Output: Overwrite the existing value - normally 0dB for fixed level outputs; outputs with system volume controls will show and allow you to change the current value of the control. Subsequent changes to the associated level control will "jump" the level to follow the fader/control position in place of any value selected here.
Transition Control: adjust timing and abruptness of crosspoint (source) changes. Call before using.
Channel Info: Summary of status of Output channel - lots of good info.
Take Off: Removes all SOURCES from the highlighted DESTINATION. Be very careful with this one.

Right-click options in the Crosspoint Map (cont'd):

Right-Click over the Source Name and you will get a pop-up window like this:

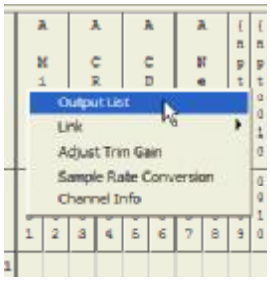


Figure 9: Source right-click

Output List: Shows ALL destinations that asource is routed to.
Link: shows (and lets you change) the link attribute for the source. See "Linked" attribute in the Source Channel Configuration section.
Adjust Gain Trim: Adjust the input gain; boost up to 24dB or attenuate all the way down to off. Click on "Sync Gain..." to adjust equally on stereo sources.
Sample Rate Conversion: Allows user to turn off Automatic Sample rate conversion on inputs. For use ONLY in Dolby 5.1 routing system.
Channel Info: Lots of good information on the Source's current status.

Right-Clicking over a Crosspoint Location (any source-destination intersection) and you will see:

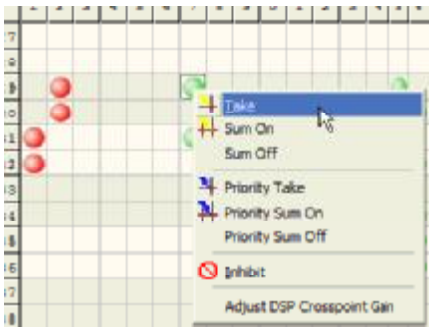


Figure 10: Crosspoint right-click

All of these right-click actions are effected immediately, EXCEPT for changes to inhibits - see below.
Take: establishes a normal crosspoint (seen as a green dot on the crosspoint map) at the high-lighted intersection. This removes any other sources already crosspointed to the destination. Source and Destination Link attributes determine how the crosspoint is made (mono to stereo, etc). If you try to make a manual crosspoint on a destination set up to be a bus, you will get a pop-up warning asking if you are sure you want to continue. Be careful, all other sources on the bus will go away.
Sum On: Adds a source (conforming to Link attributes) to other sources already routed to output, without displacing the already-connected sources.
Sum Off: Removes a source from an output without affecting other sources routed to the output.
Priority Take: Similar to Take above, except generally intended for temporary interruptions to an existing crosspoint - the previous (standard takes) routing state is stored when a Priority Take occurs. Priority Takes are seen as a Blue dot on the crosspoint map. When the Priority take is released (using Priority Sum Off) the previous state is restored to the Output (any previously routed sources are returned). If a Priority Take is replaced by another Priority Take, the original (standard) take information remains stored until there are no Priority Takes are on the output.
Priority Sum On: Adds a priority crosspoint to an output. Like a Priority Take, this "temporarily" displaces any existing normal crosspoints if it is the first Priority Crosspoint added; subsequent Priority Sums add more sources to the output in much the same way Sum On does for normal takes.
Priority sum Off: Removes a Priority-crosspointed source from an output, without affecting other Priority connections to the output. When the last (or only) Priority Crosspointed source is removed from an output, the previously previously routed normal crosspoints are restored automatically.
Inhibit: Place or remove an inhibit. Placing an inhibit keeps a specific source from being routed to a specific output. An inhibit is seen on the crosspoint map as a Red dot. Inhibits (or removal of inhibits) must be sent to the system using the Send Inhibits button to be changed.
Adjust DSP Crosspoint Gain: Overwrites the existing value - normally derived from a fader value on crosspoints to program bus outputs. Subsequent changes to the associated level control will "jump" the level to follow the fader/control position in place of any value selected here. DSP Crosspoint Gain changes only affect the specific crosspoint being controlled. When the affected source is replaced by another (normal) take, the DSP gain adjustment is not remembered by the system; however it is remembered along with other normal take info when a Priority Crosspoint (temporarily) displaces a source.

Source Channel Configuration

Sources are named and their attributes set on the Source Channel Config screen. If you don't see a Source Channel Config folder, click on the plus sign on the Alpha Labels folder to expand and show the folders under it, then click on the Source Channel Config folder.

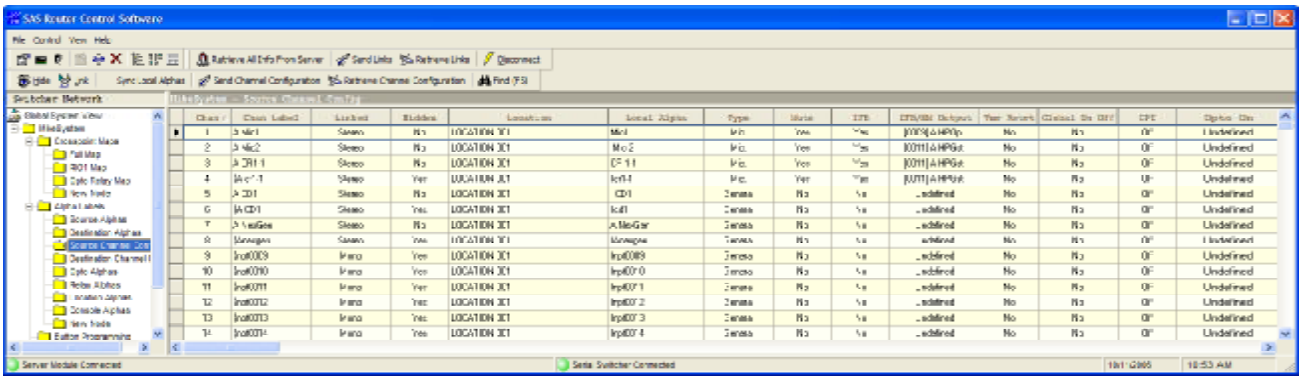
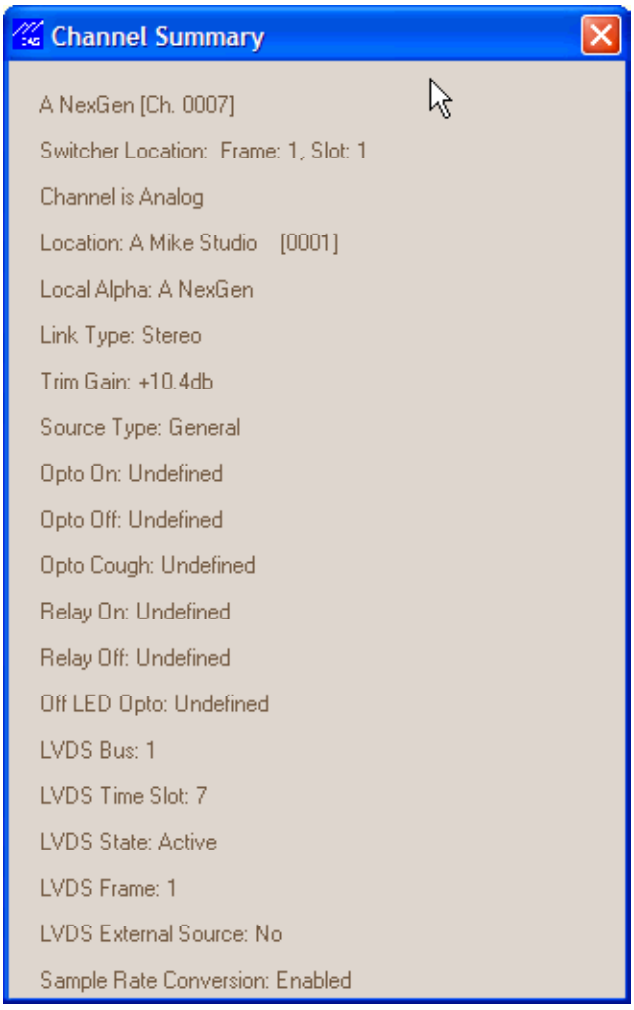


Figure 11. Source Channel Config table

Right-clicking anywhere in the ROW of a source's attributes will allow you to:
A) See the Channel's location (frame, slot, and number associated with the input).
B) See a channel summary (below), including many of the attributes in the table for the source.
C) Sync local alphas (see description of the Local Alpha field under).



The Channel Summary includes:
Name (global name) and system channel number.
Where the resource is located.
Whether source is on analog or digital input.
Location Alpha and number.
Local name.
Link Type.
Analog Trim Gain.
Source type: General, Mic, or Mix-Minus.
Optos associated with the source.
Relays associated with the source.
LVDS (system backplane) resources for source.
Sample Rate Conversion for source.

These summarized Source Attributes are explained in the next section, aptly titled, "Source Attributes."

Figure 12: Source Channel Summary

Source Attributes

An abbreviated version of the Source Channel Configuration table in Figure 11 is available under the Source Alphas folder, allowing only the (global) channel label, the mono or stereo attribute, and a field for channel related notes.
However, since we want to review all source attributes, we'll focus on the Source Channel Config Folder. This editable table allows you to set all attributes for any audio source connected to the system, including sources attached to 32KD input cards (KDI or KAI) or RIO input cards (RAI or RDI). Each column in the table controls a single attribute of the SOURCE. Display of the table can also be sorted (up or down) with any column as the sort key. Clicking on the column title will change the table sort to key on that attribute. Clicking it again will reverse the order of the sort. The meaning of each Source Attribute is discussed below.

Source attributes can be edited offline. Changes do not take effect until the Send Channel Configuration button is clicked on the toolbar while the RCS is connected to the Server module actively connected to the switcher.

Channel Number: The system number (not editable) the source is associated with. The table shows all numbers in the defined size of the system whether the source actually exists in the system or not (an input card or DSP Loopback may not be present for the source number).

Channel Label: Each source has two name fields. This one is the eight character maximum, GLOBAL label for the Source. This is the label seen on control panels and most channel displays in the system. Since many facilities have, or grow to have, more than one studio with Rubicon consoles or other SAS resources, we give each studio an identifying letter. Any resource in that studio or exclusively related to that studio is prefixed with the identifying letter to avoid confusion when selecting a source that there are several of in different locations ... like CD players.
The First CD player in Studio A would be named A CD1. The first CD player in Studio B would be named B CD1. Resources that are not specific to one studio or another do not generally get a prefix letter. The right channel label of stereo sources are usually hidden (as they are usually routed automatically with the left channel. Channel labels that start with the left curly bracket { are not displayed on controllers. See also - Hidden attribute below.

Linked: Sets whether the channel is a mono source or a stereo linked source. Routing behavior is affected by both the Source and Destination Link attributes. Mono sources show up on both channels of a stereo (destination attribute) destination; only the left channel of a stereo source crosspointed to a mono (destination attribute) destination will show up. A stereo source routed to a monosum (destination attribute) destination will be summed together and reduced in gain by 6dB so the audio level tracks correctly.

Hidden: This attribute is usually set for the right channel of stereo sources and for any sources (from input cards or DSP Loopback sources from output cards) you just don't want seen by a control panel or console. When this attribute is set, the first character of the Channel Label is set to the left curly bracket { character when the Channel labels are SENT to the system. If the channel labels are later retrieved from the system, the first character of the channel label for all hidden sources will be {.

Location: Drop down list of defined locations associated with the system. Sources, destinations, and system devices can have a location attribute.
The location attribute is used along with the mute attribute to mute outputs that are SPEAKER type (see Destination Channel Configuration) when a MICrophone type source (with the Mute attribute set - see below) is turned on and their location matches.
This is how monitor muting works in a studio when a MIC is turned on.
The Location attribute also determines whether a controller's display shows the (global) Channel Label of a source or the Local Label.

Local Alpha: The Display name for a source being displayed on a console when the console and source have defined and matching location attributes.

Type: General, Mic, or Mix-Minus. General is what most sources are set up as. Exceptions are Microphones and sources that require creation of a Mix-Minus feed. Mic type sources allow setting the Mute attribute to yes. Mix Minus type sources must have an associated IFB/MM output. This associated mix-minus output will be fed a the mix-minus base bus (configurable per module) minus the source audio. See Mix-Minus section for more information on mix-minus base buses.

Mute: Only mic sources can have the MUTE attribute set to yes. Mutes speaker type outputs in the same location when the mic is turned on.

IFB: If set (to yes) associates an output (the IFM/MM output) with the source. An IFB button pressed on the module where this source is being controlled will act like a push-to-talk button, sending Console Mic (usually set to be the operator mic) audio to the IFB/MM output. The connection of console mic to IFB/MM output is a priority crosspoint, so when the IFB button is released, the previous source returns to the output. The previous source could be a source selected on a control panel, or a mix-minus autoatically generated by the console, depending on the application.

IFB/MM Output: Dropdown list for choosing the associated Mix Minus or IFB output associated with the source.

Timer Restart: If yes, the timer will reset when the source's ON button is pressed on a console.

Global On/Off: Normally left OFF. If on, all consoles with this source (usually microphone audio) selected on a module will turn on the module when a Turret control On button (for the source) is pressed. When off, only the the console with the same console number as the turret will be controlled.

GPI: Off, Continuous, or Pulse are the available selections. Off disables external (via Opto) control of the on/off state of the source's module. If Continuous, console state can not be changed until the current control Opto is deactivated. If Pulse, activation of the Opto triggers the associated control.

Opto On: Activating the Opto selected in this drop-down will turn ON the module (on any/all consoles) that the source is selected on.

Opto Off:Activating the Opto selected in this drop-down will turn OFF the module (on any/all consoles) that the source is selected on.

Opto Cough: Activating the Opto selected in this drop-down will turn Cough the module that the source is selected on. Cough is a momentary mute of the source's connection to any console bus.

Opto Cue: Activating the drop-down selected opto will put the source's module in CUE.

Opto Off LED: Makes the state of the OFF button's LED follow the Opto selected in the drop-down.

GPO: Off, Continuous, Pulse, or One-Shot are the drop-down choices. Sets the activation characteristic of the Relay On and Relay Off relays.
Off: no relays action.
Continuous: Relay stays activated for the entire time the module is in the On (Relay On) or Off (Relay Off) state.
Pulse: Relay follows the state of the On Button on the module (including multiple presses)
One-Shot: fixed pulse. Occurs only once for each transition from off to on (no multiple relay activation for multiple presses of the ON button)

Relay On: drop-down for selecting which relay indicates module ON.

Relay Off: drop-down for selecting which relay indicates module OFF.

Sample Rate Conversion: On or Off. Leave this attribute On. Only turn this off if you are routing DolbyE. This is only applicable to KDI cards in a 32KD frame.

Destination Channel Configuration

Destinations (also known as router outputs) are named and their attributes set on the Destination Channel Config screen. If you don't see a Destination Channel Config folder, click on the plus sign on the Alpha Labels folder to expand and show the folders under it, then click on the Destination Channel Config folder.

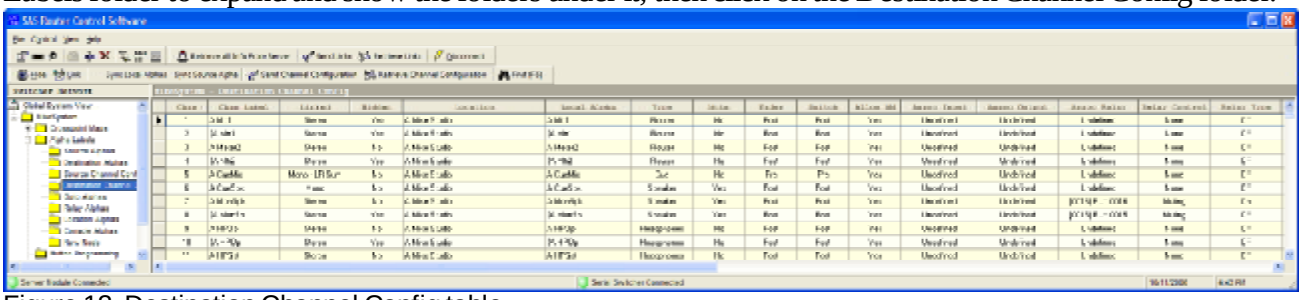


Figure 13. Destination Channel Config table

Right-clicking anywhere in the ROW of a destination's attributes will allow you to:
A) See the Channel's location (frame, slot, and number associated with the output).
B) See a channel summary (including many of the attributes in the table) for the output.

The Channel Summary includes:
Name (global name) and system channel number.
Where the resource is located.
Whether source is on analog or digital output.
Location Alpha and number.
Local name.
Link Type.
Analog Trim Gain.
DSP Master Ouput Gain.
Destination type.
Transistion Control.
Pre or Post fader attribute.
Pre or Post switch attribute.
Muting or not-muting.

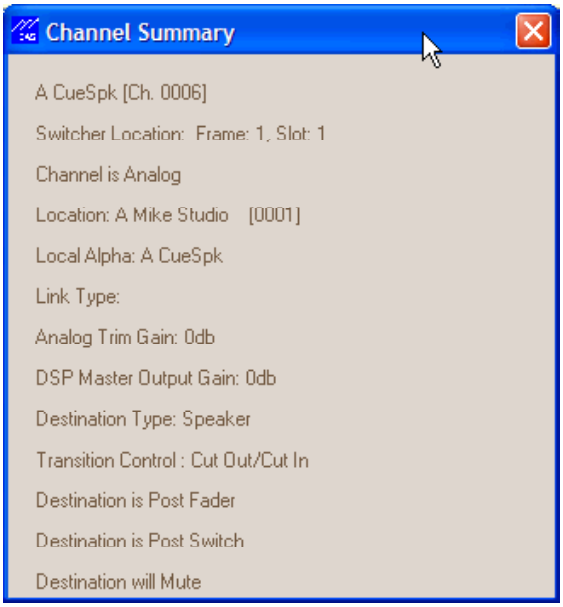


Figure 14. Destination Channel Summary

Most of these summarized Destination Attributes are explained in the next section, aptly titled, "Destination Attributes."

An abbreviated version of the table in Figure 13 is available under the Destination Alphas folder, allowing only the (global) channel label, the Type (mono/stereo/mono-LR sum/source dependent) attribute, the Hidden attribute, and a field for channel related notes.

However, since we want to review all destination attributes, we'll focus on the Destination Channel Config Folder. The editable table that shows up allows you to set all attributes for any audio output from the system, including outputs from 32KD output cards (KDO or KAO) or RIO output cards (RDO or RAO/RAD-84). Each column in the table controls a single attribute of the destination. Display of the table can also be sorted (up or down) with any column as the sort key. Clicking on the column title will change the table sort to key on that attribute. Clicking it again will reverse the order of the sort. The meaning of each Destination Attribute is discussed below.

NOTE: DSP Loopbacks (Virtual Sources) of System Outputs, if available, show up as sources in the Crosspoint map and are configured in Source Channel Configuration.

Destination Attributes

Destination attributes can be edited offline. Changes do not take effect until the Send Channel Configuration button is clicked on the toolbar while the RCS is connected to the Server module actively connected to the switcher.

Channel Number: The system number (not editable) the destination is associated with. The table shows all numbers in the defined size of the system whether the destination actually exists in the system or not (an output card may not be present for the output number).

Channel Label: Each destination has two name fields. This one is the eight character maximum, GLOBAL label for the destination. This is the label seen on control panels and most channel displays in the system. Since many facilities have, or grow to have, more than one studio with Rubicon consoles or other SAS resources, we give each studio an identifying letter. Any resource in that studio or exclusively related to that studio is prefixed with the identifying letter to avoid confusion when selecting a source or destination that there are several of in different locations ... like a bus named Program1.
The Program1 bus in Studio A would be named A PGM1. The Program1 bus in Studio B would be named B PGM1. Resources that are not specific to one studio or another do not generally get a prefix letter. The right channel labels of stereo destinations are usually hidden (as they are usually routed automatically with the left channel. Channel labels that start with the left curly bracket { are not displayed on controllers. See also - Hidden attribute below.

Linked: Sets whether the channel is a Mono, Stereo linked, Mono-LR Sum, or Source Dependent output. Routing behavior is affected by both the Source and Destination Link attributes. Mono (source attribute) sources show up on both channels of a stereo destination; only the left channel of a stereo (source attribute) source crosspointed to a mono destination will show up. A stereo source routed to a Mono-LR Sum destination will be summed together and reduced in gain by 6dB so the audio level tracks correctly. When the Link Parameter of two adjacent Destinations is defined as Source Dependent, the source is selected as follows: If the Source is Stereo Linked, then it will be connected to the Destination as in Stereo Destination link above. If the Source is Mono, it will be connected only to the output channel that was specified with the crosspoint command. In this manner you can specify two independent Mono Sources to each of the Left and Right Outputs of the Source Dependent Destination. To connect the same Mono Source to both channels will require two crosspoint commands, one for each channel of a Source Dependent Destination.

Hidden: This attribute is usually set for the right channel of stereo outputs. When this attribute is set, the first character of the Channel Label is set to the left curly bracket { character when the Channel labels are SENT to the system. If the channel labels are later retrieved from the system, the first character of the channel label for all hidden destinations will be {.

Location: Drop down list of defined locations associated with the system. Sources, destinations, and system devices can have a location attribute.
The location attribute is used along with the mute attribute to mute outputs that are SPEAKER type (see Type below) when a MICrophone type source (with the Mute attribute set - see Source channel config) is turned on and their locations match.
This is how monitor muting works in a studio when a MIC is turned on.

Local Alpha: The Display name (also 8 character max) for a destination being displayed on a console when the console and destination have defined and matching location attributes.

Type: defines several behaviors of outputs.
Router: general router out. No switch, no muting - just a generic output.
Program: Post ON/OFF Switch; Post Fader, Post Assign-switch, Mix bus
Audition: Functionally same as Program Bus.
Send: Post assign, pre-switch & pre-fader (modify on MFD), with send level adjust on each source.
Aux: Post assign, Pre Switch Prefader (fixed), mix bus.
Offline: Post assign, Post Fader, Preswitch (fixed) mix bus.
Record: Post assign, prefader, preswitch mix bus with L/R split capability on each source via MFD.
Utility: Post assign, changeable fader/switch settings, mix bus
Mix-Minus: Mix bus, associated with a particular source, bus-audio mix based on config-defined bus (usually program or Offline) - except that the associated source is not part of the mix.
Cue: post assign, Pre-switch, pre fader - Only one CUE bus per console. Ties into console config for output volume control and CUE assign.
Speaker: Generic router output with mute if mic turned on in same location. Can be used for console monitor out (which gives it a volume control).
Headphones: generic Router output that can be used for console Headphone output (which gives it a volume control).
Mirror: Mix Bus that independently develops a mix equal to another bus (often but not always for getting RIO developed buses into 32KD frames as buses with DSP loopback sources for routing). Associated bus is specified in config.

Mute: Mutes speaker type outputs in the same location as a microphone (with mute attribute set) when the mic is turned on.

Fader: pre or post fader setting for a bus. Not available for some bus types.

Switch: pre or post ON/OFF switch setting for a bus. Not available for some bus types.

Allow Mix-Minus: Yes or No -must be Yes if an output is used to generate a mix-minus bus.

Associated Input: The source associated with the mix-minus for an output. This source will NOT be part of the mix generated on the mix-minus output.

Associated Output: associated output of a mirror type bus. The associated output is the bus that is being duplicated by the mirror bus.

Associated Relay: Drop-down list of relays. Choose the relay (on-air light, skimmer, etc) associated with the output being muted.

Relay Control: none or Muting. Muting makes the associated relay follow the muted status of the output according to relay type below.

Relay Type:
ON - continuous relay activation that occurs when the output is muted.
OFF - continuous relay activation that occurs when the output is NOT muted.
Momentary - pulsed relay activation that occurs when an output to or from the muted state.

Module Configuration:

Source select hotkeys are generally set up by SAS before your system ships. Occasionally we ship prior to having complete console information from the customer, or a customer just wants to change the HotKey (A/B source buttons on the Rubicon or The A source button on the RubiconSL) sources. Going through this process is beneficial even if you do not make any changes - as the steps involved illustrate several features of the Rubicon & Router Control Software.

From the Router Control Software go to the Switcher Status/Configuration screen.
Select the Config button on the KRL the Rio is attached to for the Module Configuration screen.

Click on the Control Module Config tab at the bottom.

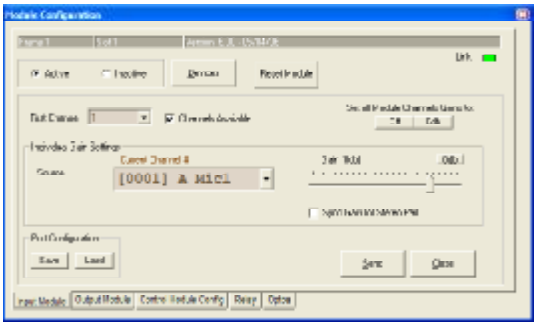


Figure 15. KRL Module Config

Click the first (numbered) port button associated with the Console.

Note: Ports 1&2 in figure 16 represent four console modules (on four addresses - A0, A1, A2, A3) each. Each address in use on each port must have a unique device Id. These will be set automatically by the Router, and will be displayed in the Router Control Software.

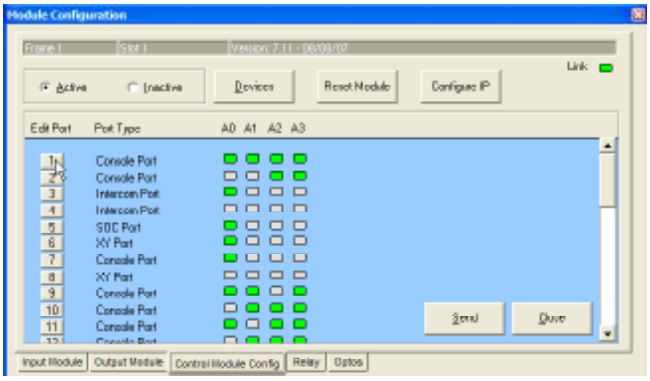


Figure 16. Control Module Config Tab

Click Configure Console.

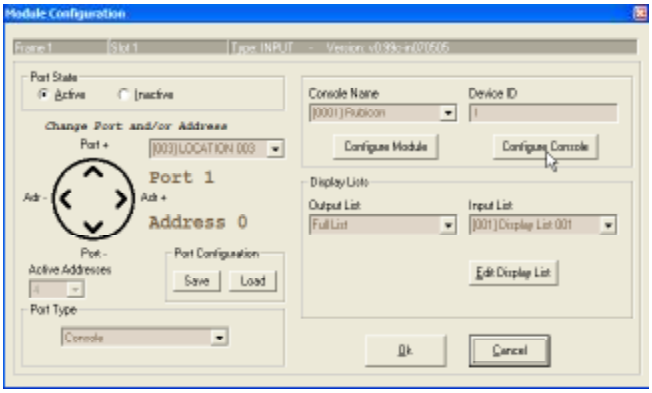


Figure 17. Port Configuration Window

Rubicon and RubiconSL consoles differ in their module programming. If you are programming an SL console skip to RubiconSL Console Module Configuration on page 36.

If you are programming an SL console skip to RubiconSL Console Module Configuration on page 35.

Figure 18. Console Config Window

Rubicon Console Module Configuration:

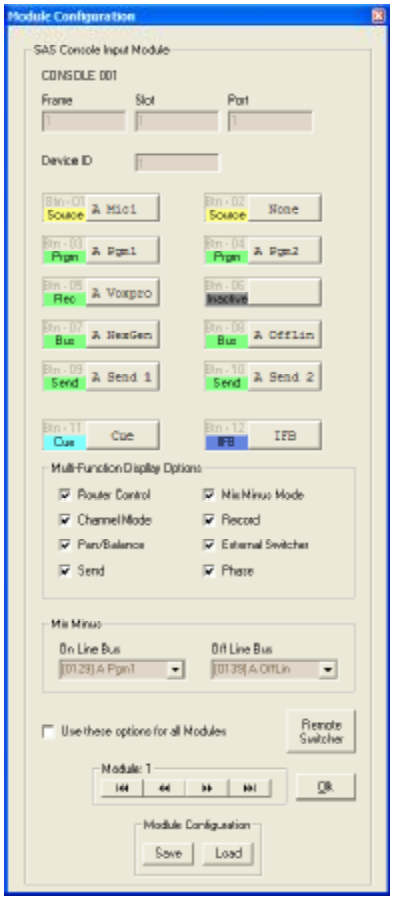
Click the Config button on the first input module displayed in the console layout graphic. The left and right arrow buttons (and beginning/end buttons to the left of the OK button allow you to step through all of the modules in your console.

Rubicon Input Modules:

Click Btn-01.
- Select Button Type
- Select or type Channel Number
- Click Ok.

Repeat for each button.

Figure 19. Input Module Config



Button Types: -
- Source Select – used to select the active source for the module.
- Bus Assign – used to take the active source to a specific bus.
- Cue – used to take the active source to the Cue bus.
- IFB – used to send the console mic to the IFB output associated with the active source.
- Cough – used to momentarily cough the current source while the button is pressed.
- Extrnl Src Slct – used for control of an attached SAS 64000 Router.
- Relay Toggle – used to activate or deactivate a relay.
- Relay Follow Btn – activates relay while button is pressed.
- Opto Toggle – used to mimic the activation or deactivation an opto.
- Opto Follow Btn – momentarily mimic the activation of an opto (for duration of button press).
- Relay Momentary – used to momentarily energize a relay.
- Not Defined – an inactive button.

Typical button configuration:
Buttons 1 and 2 are Source select buttons.
If only one source is required, button 2 is inactive.
Buttons 3 through 10 are bus buttons.
Button 11 is a Cue Button.
Button 12 is an IFB button.

Select the MFD options enabled for this module. See Rubicon Operator's Guide for more information about the MFD options.

Select the Online and Offline Mix Minus base-buses.

Note: If use these options for all Modules is clicked, all information except source select buttons will be copied to all Input modules in this console.

If you are programming an SL console skip to RubiconSL Console Module Configuration on page 35.

Rubicon Control Room Monitor Module:

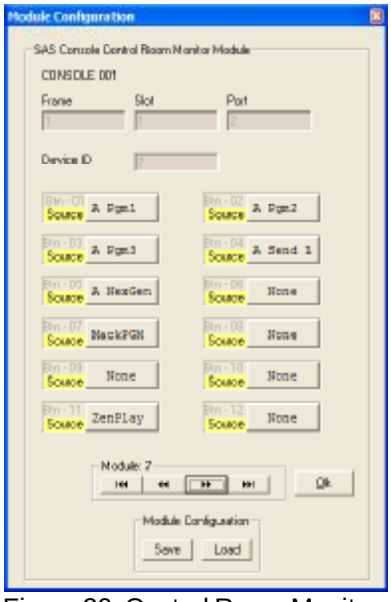


Figure 20. Control Room Monitor Module Config

Click Btn-01.

Select Button Type
Select or type Channel Number
Click Ok.

Repeat for each button.

Button Types: -

Source Select – used to select the source to monitor to the current device (speaker or headphones). This is used to monitor any system source or any system output that has been assigned a DSP channel number.

Local Mix Output – Allows monitoring of an output on the same KRL as the speaker and headphones.

RubiconConsole Control Module:

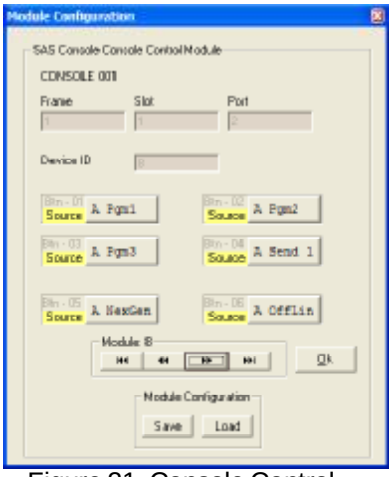


Figure 21. Console Control Module Config

Click Btn-01.

Select Button Type
Select or type Channel Number
Click Ok.

Repeat for each button.

Button Types: -

Source Select – used to select the source to monitor to the current meter. This is used to monitor any system source or any system output that has been assigned a DSP LoopBack channel number.

Local Mix Output – Allows metering of an output on the same KRL as the meter outs.

Active Meter Bus - Quick-select of the meter to be modified. also available from the MFD. See the Rubicon Operator's Guide for more MFD information.

Clicking OK will exit the Console Module Configuration window and drop you back in the Console Configuration window.

If you are programming Rubicon (not SL) console see Rubicon Console Module Configuration on page 33.

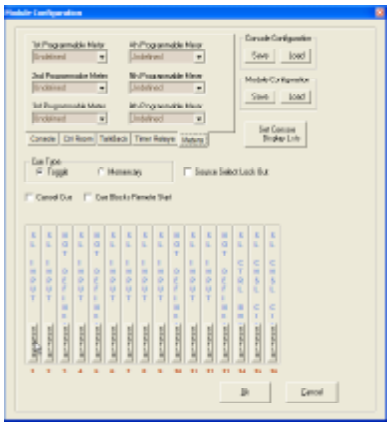


Figure 18(SL). Console Config Window

RubiconSL Console Module Configuration:

Click the Config button on the first input module displayed in the console layout graphic. The left and right arrow buttons (and beginning/end buttons to the left of the OK button allow you to step through all of the modules in your console.

RubiconSL Input Modules:

Click Btn-01.
- Select Button Type
- Select or type Channel Number
- Click Ok.

Repeat for each button.

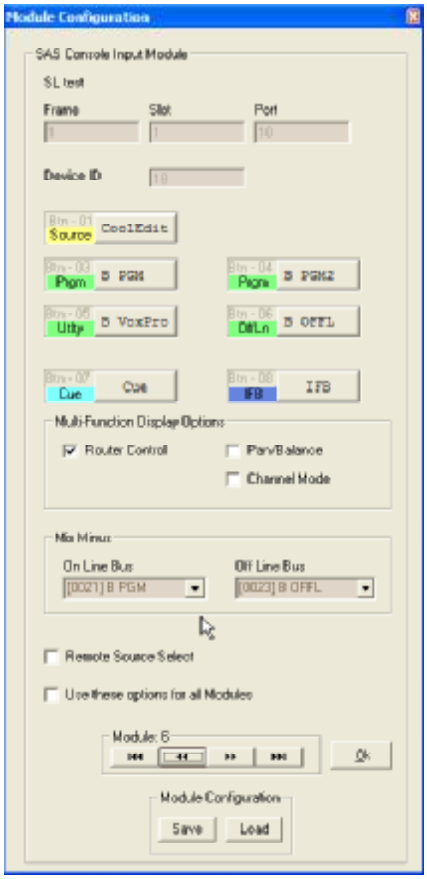


Figure 19(SL). Input Module Config

Typical button configuration:
Buttons 1 is the Primary Source select button.
Button 2 is does not exist on the SL.
Buttons 3 through 6 are bus buttons.
Button 7 is a Cue Button.
Button 8 is an IFB button.

Button Types: -
- Source Select – used to select the active source for the module.
- Bus Assign – used to take the active source to a specific bus.
- Cue – used to take the active source to the Cue bus.
- IFB – used to send the console mic to the IFB output associated with the active source.
- Cough – used to momentarily cough the current source while the button is pressed.
- Extrnl Src Slct – not available in the RubiconSL
- Relay Toggle – used to activate or deactivate a relay.
- Relay Follow Btn – activates relay while button is pressed.
- Opto Toggle – used to mimic the activation or deactivation an opto.
- Opto Follow Btn – momentarily mimic the activation of an opto (for duration of button press).
- Relay Momentary – used to momentarily energize a relay.
- Not Defined – an inactive button.

Select the Multi-Functon Display options enabled for this module.
See RubiconSL Operator's Guide for more information about the MFD options.

Select the Online and Offline Mix Minus base-buses.

Note: If use these options for all Modules is clicked, all information except source select buttons will be copied to all Input modules in this console.

If you are programming Rubicon (not SL) console see Rubicon Console Module Configuration on page 33.

RubiconSL Control Room Monitor Module:

Figure 20(SL). Control Room Monitor Module Config

Click Btn-01.

Select Button Type
Select or type Channel Number
Click Ok.

Repeat for each button.

Button Types: -

Source Select – used to select the source to monitor to the current device (speaker or headphones). This is used to monitor any system source or any system output that has been assigned a DSP channel number.

Local Mix Output – Allows monitoring of an output on the same KRL as the speaker and headphones.

RubiconSL Console Control Module:

Figure 21(SL). Console Control Module Config

Click Btn-01.

Select Button Type
Select or type Channel Number
Click Ok.

Repeat for each button.

Button Types: -

Source Select – used to select the source to monitor to the current meter. This is used to monitor any system source or any system output that has been assigned a DSP LoopBack channel number.

Local Mix Output – Allows metering of an output on the same KRL as the meter outs.

Relay Toggle (Relay Tally) – used to activate or deactivate a relay. Button Tally Lamp follows relay state.

Relay Follow Btn (Relay Tally) – activates relay while button is pressed. Button Tally follows relay state.

Relay Momentary (Relay Tally) – used to momentarily energize a relay. Button Tally follows relay state.

Relay Toggle (Opto Tally) - used to activate or deactivate a relay. Button Tally Lamp follows assigned Opto state.

Relay Follow Btn (Opto Tally) - activates relay while button is pressed. Button Tally follows assigned Opto state.

Opto Toggle – used to mimic the activation or deactivation an opto. Tally follows Opto.

Opto Follow Btn – momentarily mimic the activation of an opto (for duration of button press). Tally follows Opto.

Relay Momentary (Opto Tally) - used to momentarily energize a relay. Button Tally follows assigned Opto state.

Clicking OK will exit the Console Module Configuration window and drop you back in the Console Configuration window.

Be CAUTIOUS - CHANGING these console configuration items can lead to undesirable operation. Call us and ask if you're not sure.

Be CAUTIOUS - CHANGING these console configuration items can lead to undesirable operation. Call us and ask if you're not sure.

Console Wide Configuration (Rubicon and RubiconSL):

Navigating to Console Configuration is described in Figures 16, 17, and 18 on previous pages.

Select the Console tab.

Select the Cue Bus. (Not the cue speaker, but the Cue Mix bus.)
Select the Cue Speaker Output.
Note: The Cue Source will be automatically determined.
Cue level is controlled from the Control Room Module.
A manual crosspoint is needed to connect the Cue Bus to the Cue Speaker.

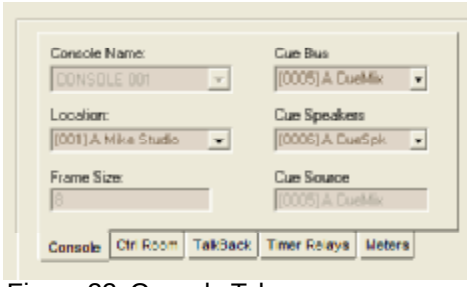


Figure 22. Console Tab

Select the Ctrl Room tab.

Select the Headphone Bus. Select the Headphone output.
Note: The HP Source will be automatically determined.The HP Bus and HP output can be the same channel. They will need to be different if you desire to headphone outputs, one at fixed level and one level controlled by the headset level control, with selection of both controlled by the Control Room Module. Select the Control Room Monitor.
Select the Console Mic. (Used for Talk back and IFB functions.)
Select the Console Dim Value. (This is the amount the Control Room Monitor will Dim when the Control Room Module Dim button is pressed.

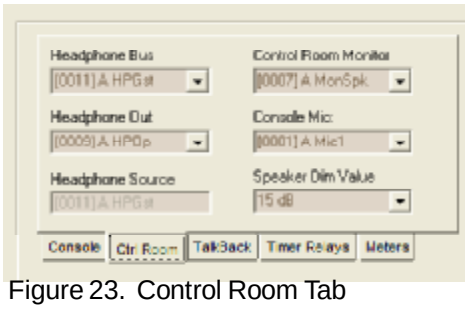


Figure 23. Control Room Tab

Select the TalkBack tab.

Select the TalkBack Bus (if necessary).
Note: The TalkBack Source will be automatically determined. TalkBack level is controlled from the Control Room Module. A manual crosspoint is needed to connect the TalkBack Bus to the Cue Speaker.

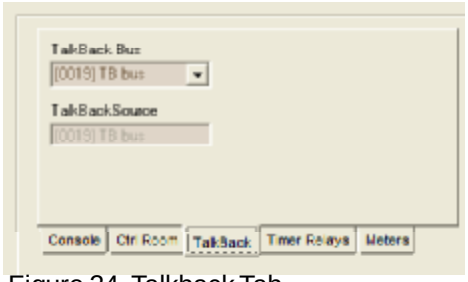


Figure 24. Talkback Tab

Select the Timer Relay tab.

Select the Timer Run Relay. Select the Timer Start Relay.
Select the Timer Stop Relay.
Note: These relays are used to control the timers from the Console Control Module if installe

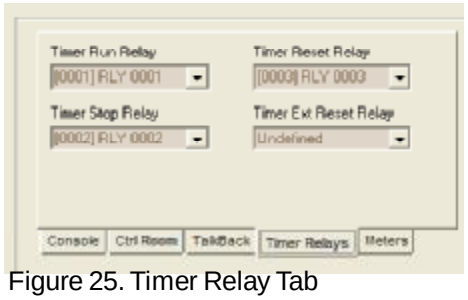


Figure 25. Timer Relay Tab

Select the Meters tab.

Select the 1st Programmable Meter
Repeat for each successive Programmable Meter
Note: These meters are controlled from the Console Control Module if installed. Do not include any meters that are fixed to monitor a specific source or bus.

Figure 26. Meters Tab

If you've made any changes, click OK to exit the console cofiguration window, then click OK to exit the KRL Port configuration. Finally click SEND to execute your changes (send them to the conosole) and exit the KRL. Clicking CLOSE instead will exit the KRL configuration without saving any of your changes.

Console Programming "from scratch" Considerations (Rubcon and SL):

There are a number of things to be determined before programming a Rubicon or RubiconSL Console. Channel numbers of the following:

Cue Bus. - The Cue mix bus source taken to cue will be taken to this bus.

Cue Speaker. – Actual Cue speakers. Level controlled from Control Room Monitor module. Manual connection required of Cue Bus to this output.

Monitor Speaker. – Actual speaker output. Level controlled from Control Room Monitor module.

Headphone bus. – Optional fixed level HP output. If not needed use same channel as HP Output. There are several reasons we include a separate output for Headphone bus and headphone output. Most natably so that the operator's headphones can be variable level while the same audio (the headphone bus) feeds the guest positions with fixed level audio so they can have their own HP amp/volume control. Another benefit of this method is that the operator's headphones can have talkback audio sent to them without sending the talkback audio to the guest's headphones.

Headphone Output. – Actual HP output. Level controlled from Control Room Monitor module. If HP bus is used, you must manually connect HP bus to HP Output on the crosspoint map.

Console Mic. – Source used for console IFB and Talkback operations.

TalkBack Bus. – Optional output for Talkback to Console Operator. If used, must be manually connected to Cue Speaker. Level controlled from Control Room Monitor module.

Meter Outputs – A digital output for each meter.
Each RAD-84 contains digital AES copies of the first four stereo outputs. These may be used in lieu of system digital outputs.

Program Busses – As many outputs as program buses are required.
Note: If the program bus outputs need to be available to other outputs beyond those on the Rio Chassis with the console, they must be assigned to 32KD output cards (KAO or KDO) and the DSP channels for that card must be assigned valid channel numbers.

Timer Relays – Start, Stop and Run relays for control of the Meter with the Console Control Module.

Cue Type –

Toggle – Cue button turns source on or off to Cue.
Momentary – Source is only on cue while button is pressed.

Source Select Lockout – When selected, the active source for a module may not be changed while the module is on.

Cancel Cue – When selected, any source in cue will be removed when the module is turned on.

Cue Blocks Remote Start – When selected, Optos associated with the On function of a source will not be acted upon while the source is in Cue.

Installation Guide for Rubicon Console

Revision: 3 June 2007

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NOTES:

32KD Intercom & Rubicon/Turret panels

1) Intercom stations RCS/DCS-8 will provide 10 programmable buttons (the -16 panels provide 18). The extra buttons are number 17 and 18, whether on a -8 or -16 panel, and are the two leftmost buttons of the group of four under the LED display. Any button on the panel can be programmed to call a group of more than one destination.

2) The 32KD Intercom Software allows for Tally of incoming calls. This tally is used to flash any Talk button that matches the destination and to put the destination name in the alphanumeric display to allow the operator to quickly see who has called. This tally is also used to automatically program the Call Answer button to the last incoming caller. This data is stored in an 'Intercom Callback Table' that provides the destination (to direct return calls) that is associated with each intercom source. This data is extracted from Intercom Port programming, where both the source and destination of intercom stations are programmed.

Note that Intercom Buttons are programmed into Templates using the Button Programming Screen of the RCS Router Control Software. The Button Template is assigned to the Intercom Panel(s) on the Intercom Port/Address programming screen. Also note that Console/Turret panel buttons are programmed directly, versus the Templates which are used for Intercom panels.

There is an Intercom Version of the TP-8 / SP-8, which will connect to an Intercom Port and function with proper tally (intercom function ONLY).
There is no equivalent tally for communication in the Rubicon domain as of this time. We can, however, get the Rubicon and Turret communications to tally at Intercom stations if we can enter the source/destination association into the database. To accomplish this we must program an Intercom Port/Address, even though we will not be physically connecting a panel. To do this, program an Intercom Port/Address with the System Input number corresponding to the Mic Input number of the Rubicon/Turret module which is Talking to the intercom panels and a System Output number corresponding to the Talkback bus to which an Intercom Station would talk to communicate with the Rubicon/Turret position.

NOTES:

Intercom Station Programming:

Connect Intercom Station to a Port on the Rio Chassis.

From the Router Control Software go to the Switcher Status/Configuration screen.
Select the Config button on the KRL the Rio is attached to.
Select the Control Module Config tab.
Click the port button associated with the Intercom station.
Make sure the Port is active.
Set the Port type to Intercom.
Select the Mic channel associated with this intercom from the pull down.
Select the Speaker channel associated with this intercom from the pull down.
Select a Button Template to be used by this Intercom Station.
Click Ok then click Send.
Close the Configuration screen.

Select the Button programming folder.
Select the button template to use.
Click button 1.
Select the button type.

Talk interrupts the audio on the selected output and selects the Intercom Mic to the output.
Listen adds the selected source to the speaker output.

Enter the channel number or select from the pull down.
Move to the next button and repeat.
Once all buttons are programmed, click Send Current Template.

Repeat for the next Intercom station.

Turret / Desk Mount Panel wiring

Turret and Desk Mounted Panels Connector Wiring (CRS-8)
Up to four (properly addressed) CRS-8 type panels can share one RS485 port.
These include the pre-June 2007
9-PIN D DESCRITION

1	RS-485 signal ground / Address ground
2	Power ground
3	+12 volts DC
4	RS-485 positive signal
5	RS-485 negative signal
6	Panel Address Option Bit 0
7	Panel Address Option Bit 1
8	N.C.
9	N.C.

Addressing Options

A0	**Do not jumper pin 6**
A1	Jumper pin 6 to pin 2 (Gnd)
A2	Jumper pin 7 to pin 2 (Gnd)
A3	Jumper both pins 6 and 7 to pin 2 (Gnd)

Single Output Controller and X-Y Controller Wiring

AXC-8, APC-88, CDS-8 SOC Controllers. Note for Single output Controllers, the OUTPUT to be controlled must be set in RCS for port to be active.
Four (properly addressed) APC-88 or CDS-8 panels can share one RS485 port.
9-PIN DDESCRITION

1	RS-485 signal ground / Address ground
2	Power ground
3	+12 volts DC
4	RS-485 positive signal
5	RS-485 negative signal
6	Option Ground
7	Panel Address Option bit 0
8	Panel Address Option bit 1
9	

*contact factory for adressing above four units per port

Panel Type	**A0**	**A1**	**A2**	**A3**
AXC-8/APC/CDS (9 pin D)	No jumper	6-7	6-8	6-7-8

MORE INFORMATION ABOUT SAS CONTROLLER PANEL OPTIONS CAN BE FOUND IN THE 32KD MANUAL.

Turret / Desk Mount Panel wiring

CRS-8RJ style panels (TP-M, TP-8, TP-4, TP-R6 and the equivalent surface mounted panels with a D-sub 9 pin connector and two RJ-45 connectors) use the following:

9-PIN D (J3)	**DESCRIPTION**
1	Power ground
2	*Power ground*
3	+12VDC
4	RS-485+ (Primary)
5	RS-485- (Primary)
6	Panel Address Bit 0
7	Panel Address Bit 1
8	Panel Address Bit 3
9	Panel Address Bit 2

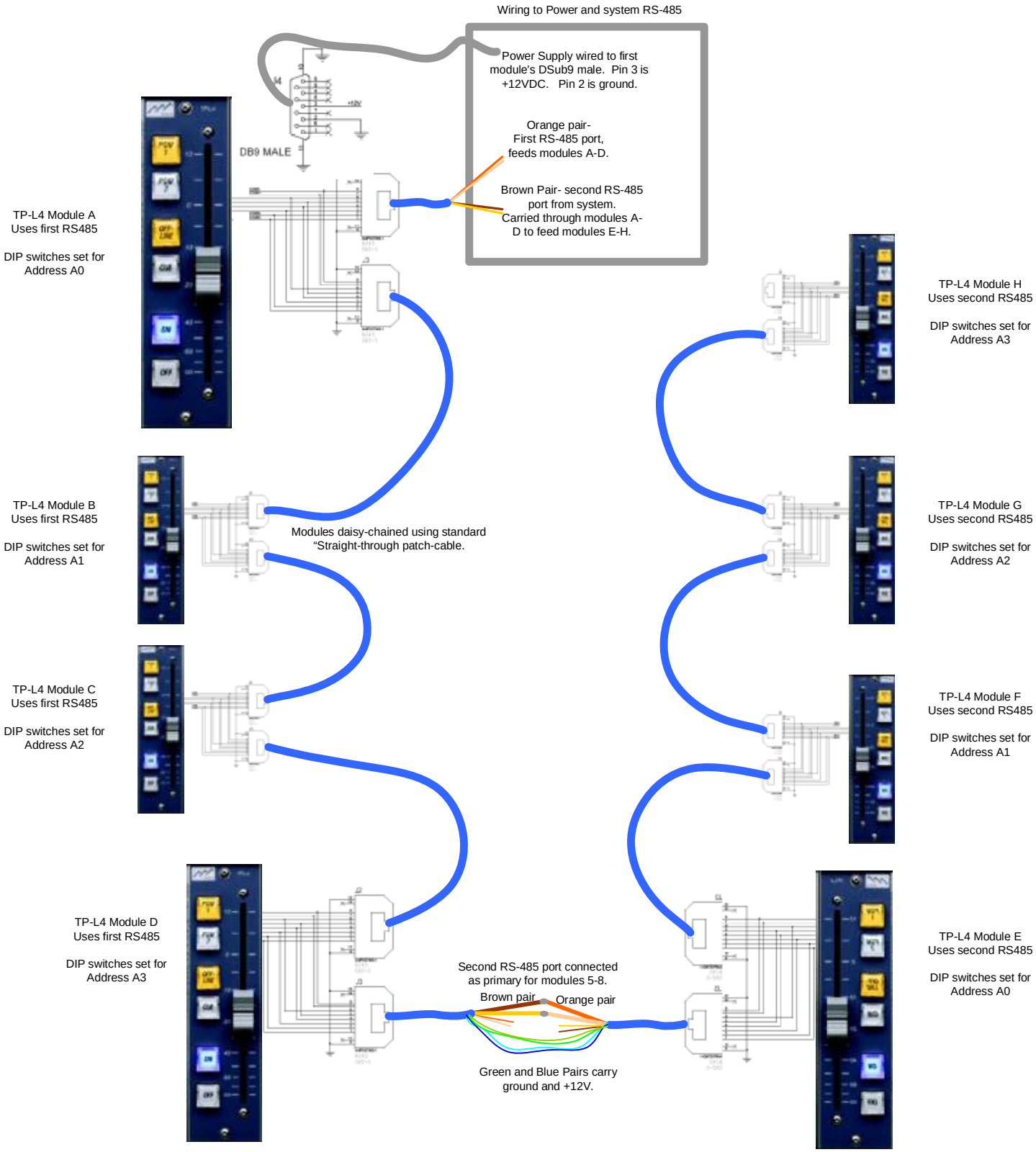
RJ-45 (J1 & J2)	**DESCRIPTION**
1	RS-485+ (Primary)
2	RS-485- (Primary)
3	**Power ground**
4	Power (See Note 2)
5	Power (See Note 2)
6	**Power ground**
7	RS-485+ (Auxiliary)
8	RS-485- (Auxiliary)

Note 1: Apply +12 volts DC using ONLY ONE of J1, J2, or J3.
Note 2: J1 (J2)-pins 4 & 5 are connected to DS1-Switch 7 (8).
Switch 7 (8) must be ON for J1 (J2)-pins 4 & 5 to be connected to +12VDC.
If Switch 7 (8) is OFF, J1 (J2)-pins 4 & 5 are isolated from +12VDC.
See Switch (DS1) description below.

SWITCH (DS1)	**DESCRIPTION**	
1,2,3,4,5,6	Panel Address Bits 0,1,2,3,4,5 respectively	
1,2,3,4,5,6 = OFF,OFF,OFF,OFF,OFF,OFF:		Address = A0
1,2,3,4,5,6 = ON,OFF,OFF,OFF,OFF,OFF:		Address = A1
1,2,3,4,5,6 = OFF,ON,OFF,OFF,OFF,OFF:		Address = A2
1,2,3,4,5,6 = ON,ON,OFF,OFF,OFF,OFF:		Address = A3
7	If ON, connects J1-pins 4 & 5 to +12VDC.	
8	If ON, connects J2-pins 4 & 5 to +12VDC.	

JUMPER (J5)	*DESCRIPTION*
	Placing a jumper on J5 connects +12VDC to J4-pin 4 to provide off-board Auxiliary Power.

Daisy-chaining TP-L4 Modules



RJ-45 (J2 & J3) DESCRIPTION

1 RS-485+ (Primary)	white/orange*
2 RS-485- (Primary)	orange*
3 Power ground	white/green*
4 +12 volts DC	blue*
5 +12 volts DC	white/blue*
6 Power ground	green*
7 RS-485+ (Auxiliary)	white/brown*
8 RS-485- (Auxiliary)	brown*

Note 1: Apply +12 volts DC using ONLY ONE of J2, J3, or J4.
Note 2: +12 volts DC and Power ground is always present at J2 & J3 (pins 3-6), even if J4 is used to supply the power.
* wire colors are applicable to TIA/EIA 568B for UTP cabling/termination.

DIP SWITCH (DS1) DESCRIPTION

1,2 Panel RS-485 Address
1,2 = OFF, OFF: Address = A0
1,2 = ON, OFF: Address = A1
1,2 = OFF, ON: Address = A2
1,2 = ON, ON: Address = A3
Up to four (properly addressed) TP-L4 panels can share one RS485 port.

3,4 Operational Mode
3,4 = OFF, OFF: TP-L4 mode
3,4 = ON, OFF: Rubicon SL Input Module Mode
3,4 = OFF, ON: Test mode for Buttons and LEDs
3,4 = ON, ON: Test mode for Fader and S/W version
5,6,7,8 Not Used

DS1 shown with address A0 selected and module module operational mode set to RubiconSL.

Intercom Control Panel Description / Wiring

This section will describe both RCS/DCS/SCS type and APC/PBS type panels. The RCS/DCS/SCS type panels are complete with communications mic/preamp, loudspeaker/amplifier and associated controls.

The APC/PBS/CDS panels offer control only; talk and listen audio must be provided by the user.

RIOs and 32KD DRC cards each have 16 RS485 ports which can support up to two Intercom panels per port. Note that the RS485 port MUST be configured under RCS as an INTERCOM type port. Intercom ports ONLY service intercom type panels. If connecting two intercom panels to the same RS485 port, the panel address (0 or 1) must be strapped on the mating D subminiature 'Main I/O' connector of the control panel. For the first panel no extra connections are required (binary 0). For the second strap the first address pin to ground (binary 1). See the RCS/DCS/SCS description below for details on summing of talk audio.

Each RCS/DCS/SCS type control panel connects to one audio input (talk), one audio output (listen) and one RS-485 control line. These connections are all made to the 'Main I/O' connector, J7. These panels provide [8 + 2] or [16 + 2] programmable pushbuttons. These pushbuttons can each be programmed to perform Talk (to any Station/output), Listen (to any Input) or Group Talk. The RCS/DCS panels provide pushbuttons arranged in two rows of eight buttons (1 to 8 upper row, 9 to 16 lower row) and one row of four: 17, 18, Call Answer and Dial Up. Note that the RCS/DCS –8 panels do not have pushbuttons 9 to 16, but they do have 17, 18, Call Answer and Dial Up. The SCS-8 has one row of eight pushbuttons and provides Call Answer on button 8.

Each RCS/DCS panel is provided with an alphanumeric eight character LED dot matrix display and shaft encoder. The display provides a means to Talk to any system destination, not just those programmed to direct Talk pushbuttons, and Tally of Last Call received. The alpha display allows selection of any Station/output by using the shaft encoder to dial through the directory in alphabetical order and the 'Dial Up' pushbutton to Talk. The last selected destination on the shaft encoder is always in queue, assigned to the 'Dial Up' pushbutton until a new selection is made. When an incoming call is received the incoming callers location is displayed in the alpha display and the 'Call Answer' pushbutton lluminates. The Call Answer pushbutton is programmed to Talk to this Station which last called. When the Dial Up pushbutton is depressed to talk out or the shaft encoder is moved, the Dial Up pushbutton illuminates and the display changes to the selected destination. Note that the Dial Up and Call Answer pushbuttons are programmed to the last selected values at all times. The illuminated pushbutton indicates which destination is shown in the alpha display. A quick tap on either pushbutton will change the display to show that destination.

Each panel is provided with a footswitch input, relay outputs and opto inputs. The footswitch input activates the Dial Up key on the RCS/DCS panels. This allows the operator to program the desired destination and 'press to talk' with a momentary footswitch for hands free operation. The footswitch input of the SCS-8 activates the Call Answer.

Two relay outputs are provided: one closes during outgoing talk and one closes during incoming speech. These may be useful for steering audio into talkback circuits, muting or dimming monitors or even muting or dimming other intercom stations in close proximity to minimize the potential for feedback. The opto inputs allow speaker mute or dim.

Each panel has an internal loudspeaker, a gooseneck or flush mounted microphone and provision for external mic and headset connections. Up to two panels may be installed on one system port. This technique economizes on ports when two panels are required in one location, such as a large shop or rack room. If two control panels will be installed on one port the listen audio must be connected to both stations and the talk audio must be summed. The lowest address RCS panel talk audio output is connected to the intercom matrix input. Each RCS panel provides a 'Stack Input'. Talk audio from the next panel on the same port is connected to this input and summed to the matrix input. Each panel also has two sets of pins for Listen audio.
The matrix output may be connected to the lowest address panel. A connection may then be made from the other listen audio pins to the second panel. In this manner the panels may be easily 'daisy chained' together.

Intercom Control Panel Description / Wiring

The essential RCS-16/8 pin out is reviewed here for reference: (see dwg RCS16S1 for detail)

J1 Power (panel: 9 pin D male)
* The power supply provided with each panel is pre-wired for direct connection.
Pin 2 Power Ground
Pin 3 +12 VDC In

J4 Mic Programming (panel: 9 pin D female)
* To enable the internal electret mic jumper pins 3 to 4 and 7 to 8 on this connector.
A programmed plug is provided with each panel for this purpose. To connect an external dynamic microphone or line level audio source see Schematic RCS16S1.

J7 Main I/O (panel: 25 pin D male)
Pin 14 RS-485 Shield (Ground reference)
Pin 2 RS-485 -
Pin 3 RS-485 +
Pin 8 Output Shield (Ground reference)
Pin 9 Talk Output - (to matrix input module)
Pin 10 Talk Output + (to matrix input module)
Pin 11 Input Shield (Ground reference)
Pin 12 Listen Input - (from matrix output module)
Pin 13 Listen Input + (from matrix output module)
Pin 4 Address bit 0
Pin 5 Address bit 1
Pin 6 Address bit 2 *contact factory for adressing above four units per port
Pin 16,17,18 Address Grounds

RCS-16/8, DCS-16/8 Intercom Controllers Address Table
Up to eight (properly addressed) RCS-16/8 or DCS-16/8 panels can share one RS485 port.

Panel Type	**A0**	**A1**	**A2**	**A3**
RCS/DCS (25 pin D)	No jumper	16-4	17-5	16-4 17-5

J9 Logic Interface
If using the opto isolated inputs with an external relay or isolated switch connect the '+' side to the +12 VDC pin available on the connector and place the switch across the '-' pin and the ground pin provided to activate.

J3 Auxiliary
Used for connection to program audio sources, telephone handsets, etc. Each control panel has one UL approved remote 12 VDC power supply included. Film legends for the pushbuttons are easily made using a laser printer and 3M CG3300 laser printer clear film.

The APC-88, CDS-8 and PBS-16/32 panels offer control only. The audio in & out must be provided by other means within the facility. The APC-88 console mounted panel provides eight programmable pushbuttons, one 'dial up' or 'Select' pushbutton and one 'Call Answer' pushbutton. The CDS-8 panel provides one 'dial up' pushbutton on the rotary encoder and one 'Call Answer' pushbutton. The PBS-16/32 panel provides 16/32 programmable pushbuttons and one 'Call Answer' pushbutton.

The APC-88 module also provides a solid state relay which closes on 'Incoming Speech' which may be used to trigger listen facilities. A good example would be a talkback input to a console Cue speaker or Monitor. The CDS-8 and PBS panels do not provide such a relay, although relays are available on the AXC-8R which can be programmed to provide the 'Incoming Speech' function.

Intercom Control Panel Description / Wiring

To connect an intercom version of Model APC-88 or CDS-8 to the first 'even' address a jumper must be installed on the mating connector between pins 6 (A gnd) and 7 (A1). Operationally the panel is quite straight forward. Each of the eight pushbuttons may be programmed using the control software (buttons 1 to 8). These pushbuttons operate as momentary push to talk (PTT) or latching listen.

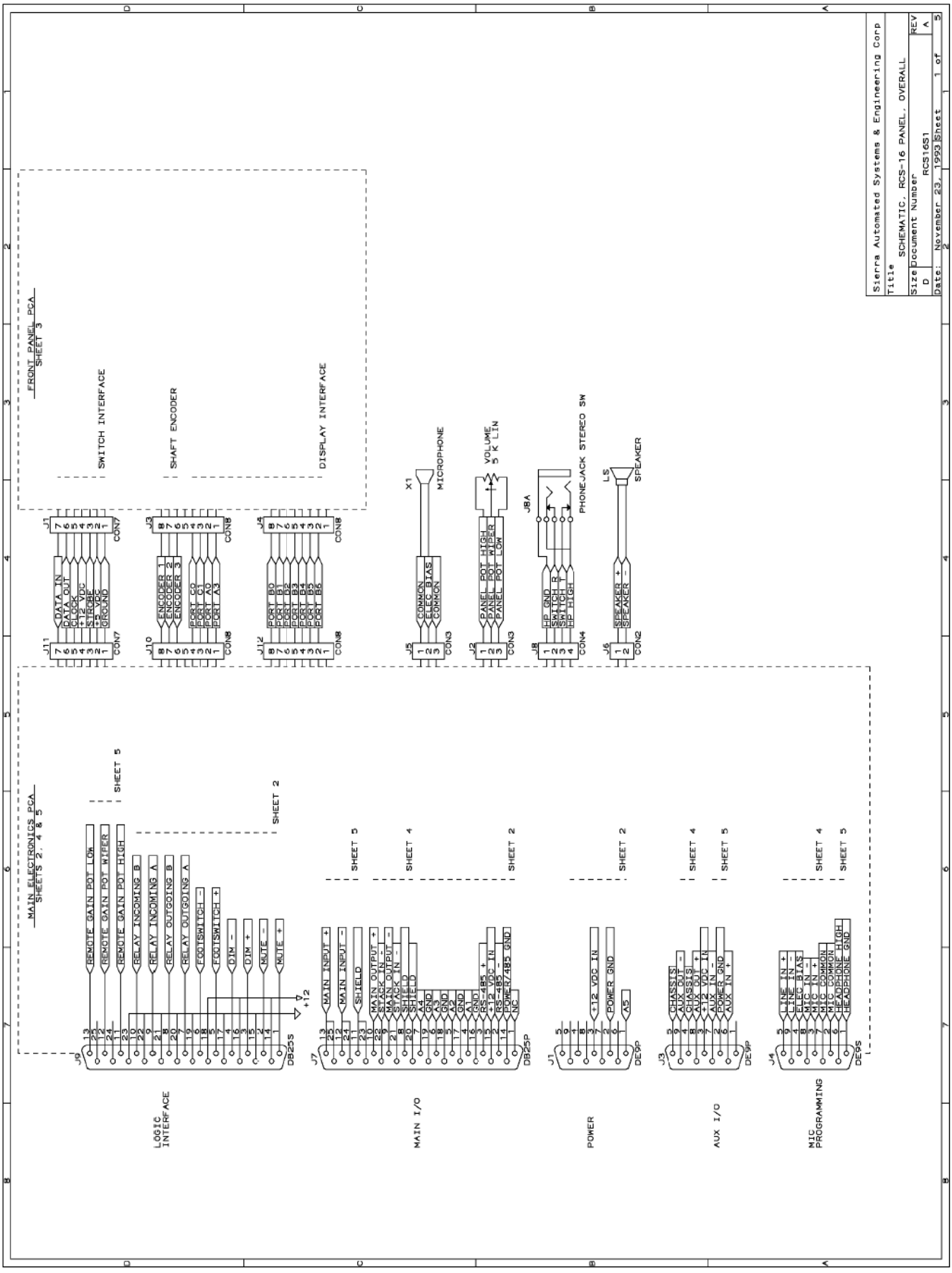
The 'Call Answer' pushbutton is automatically programmed to the last incoming caller. In the APC-88 panels the caller ID will be displayed in the alphanumeric display. This display also allows selection of any destination by using the shaft encoder to dial through the directory in alphabetical order and the 'Select' pushbutton to activate. The last selected destination on the shaft encoder is always in queue, assigned to the 'Select' pushbutton until a new selection is made. When an incoming call is received the incoming callers location is displayed in the alpha display and the 'Call Answer' pushbutton illuminates. When the Select pushbutton is depressed to talk out or the shaft encoder is moved, the Select pushbutton illuminates and the display changes to the selected destination. Note that both pushbuttons are programmed to the last selected values at all times and the LED within indicates which destination is shown in the alpha display. A quick tap on either pushbutton will change the display to show that destination.

The ACP-88 / CDS-8 / PBS-16 pin out is reviewed here for reference:

J1 Power, RS-485 & Address (panel: Dsub9 male)	APC-88	CDS-8	PBS-16
Digital Common (Serial Comm Reference)	pin 1	pin 1	pin1
RS-485 + (Serial Comm)	pin 4	pin 4	pin4
RS-485 - (Serial Comm)	pin 5	pin 5	pin5
Power Common	pin 2	pin 2	-
Power Input	pin 3	pin 3	-
Address common	pin 6	pin 6	pin2
Address bit 1	pin 7	pin 7	pin6
Address bit 2	pin 8	-	pin7
Address bit 3 *	pin 9	-	pin8

J2 Accessory - for APC-88 only	
Relay	pins 7 & 8 (two pins farthest from 9 pin D)

*contact factory for adressing above four units per port.


Sierra Automated Systems & Engineering Corp
Title
SCHEMATIC, RCS-16 PANEL, OVERALL
Size D
Document Number RCS16S1
REV A
Date: November 23, 1993 Sheet 1 of 2
FRONT PANEL PCA
SHEET 3
SWITCH INTERFACE
SHAFT ENCODER
DISPLAY INTERFACE
MAIN ELECTRONICS PCA
SHEETS 2, 4 & 5
SHEET 5
SHEET 2
SHEET 4
SHEET 3
LOGIC INTERFACE
MAIN I/O
POWER
AUX I/O
MIC PROGRAMMING
MICROPHONE
VOLUME 5 K LIN
PHONE JACK STEREO SW
SPEAKER
REMOTE GAIN POT LOW
REMOTE GAIN POT WIPER
REMOTE GAIN POT HIGH
RELAY INCOMING B
RELAY INCOMING A
RELAY OUTGOING B
RELAY OUTGOING A
FOOTSWITCH -
FOOTSWITCH +
DIM -
DIM +
MUTE -
MUTE +
MAIN INPUT +
MAIN INPUT -
SHIELD
MAIN OUTPUT +
MAIN OUTPUT -
STACK IN -
STACK IN +
+12 VDC IN
POWER GND
A5
CHASSIS
AUX OUT -
AUX OUT +
AUX IN -
AUX IN +
LINE IN +
LINE IN -
ELEC BIAS
MIC IN +
MIC IN -
MIC COMMON
HEADPHONE HIGH
HEADPHONE GND
DATA IN
DATA OUT
CLOCK
+12 VDC
+5 VDC
GROUND
ENCODER 1
ENCODER 2
ENCODER 3
PORT C0
PORT C1
PORT A0
PORT A3
PORT B0
PORT B1
PORT B2
PORT B3
PORT B4
PORT B5
PORT B6
COMMON
ELEC BIAS
COMMON
PANEL POT HIGH
PANEL POT WIPER
PANEL POT LOW
HP GND
SWITCH R
SWITCH T
HP HIGH
SPEAKER +
SPEAKER -

INTERFACING THE AIRTOOLS 6100 DELAY TO THE SAS 32KD

2006 July 31
V1.2

OVERVIEW

Increasingly, Rubicon users are controlling their AirTools® 6100 Delay with the SAS Rubicon™ system. This allows control and tally via Rubicon's programmable buttons and turret panels. This installation note presents what SAS' systems engineers and Rubicon users have found to be the most useful control interface.

RUBICON PUSHBUTTON PANEL RPB-5

Where the delay device is not readily accessible to the board operator, a Rubicon Pushbutton Panel is used. The most common model is the RPB-5, which has, on one Rubicon module, five buttons at the top of the panel:

DELAY RAMP UP	Button press: Initiates delay Ramp Up LED: Flashes while delay is ramping up
DELAY 100%	Button press: *no function* LED: Lights when the delay time is at the preset maximum delay
DELAY 50%	Button press: *no function* LED: Lights when the delay time is at the half or greater of the maximum
DELAY RAMP DOWN	Button press: Initiates delay Ramp Down LED: Flashes while delay is ramping
DELAY DUMP	Button press: Initiates Delay Dump LED: Flashes once to indicate delay dump action initiated

RUBICON TURRET PANEL TP-4

The 6" high turret panel is typically installed for operation by a studio hosts, co-hosts, and screeners. For them, DUMP is the most important control. They are also given status indication of HALF and FULL delay.

Typically, control of delay ramp up (delay in) and delay ramp down (delay out) are reserved for the board operator; these controls are left off of the talent control panels.

DELAY DUMP	Button press: Initiates Delay Dump LED: Flashes once to indicate delay dump action initiated
DELAY 100%	Button press: Initiates Delay Dump LED: Lights when the delay time is at the preset maximum delay
DELAY 50%	Button press: Initiates Delay Dump LED: Lights when the delay time is at the half or greater of the maximum delay
DELAY DUMP	Button press: Initiates Delay Dump LED: Flashes once to indicate delay dump action initiated

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Burbank, CA 91504 • USA
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WIRING

The AirTools interfaces to the SAS system through optos and relays. These can be on the RIOLink, or on a GPI-1600 connected to a RIOLink or the 32KD's DRC Serial Control Module. A complete interface utilizes three relays and five optos:

Relay Alpha	AirTools Function	Description	AirTools DB25 pins
xx DyR+	START	Initiates gradual increase of delay time to the preset maximum delay.	1 – 13
xx Dy R-	EXIT	Initiates gradual reduction of delay time until zero delay is achieved. Electrically, the 6100 remains in the circuit.	4 – 13
xx DyDmp	DUMP	Erases a user-determined portion of the delay memory. The delay will then ramp up to the pre-determined delay time.	7 - 13

"xx" indicates a designator for the control room or station

Opto Alpha	AirTools Function	Description	AirTools DB25 pins
xx DyR+	START	Flashes indicating that the delay is ramping up. At full delay time, the start indicator will go out.	8 – 9
xx Dy R-	EXIT	Flashes indicating that the delay time is decreasing. At zero delay, the exit indicator will go out.	11 – 12
xx DyDmp	DUMP	Flashes once indicating that the delay dump was initiated.	15- 16
xx Dy50	HALF	Lights when the delay time is 50% or greater than the preset maximum delay.	2 – 3
xx Dly100	FULL	Lights when the delay time is at the preset maximum delay.	5 – 6

"xx" indicates a designator for the control room or station

PROGRAMMING

Optos and Relays

Determine the opto and relay number range for the RIOLink or GPI-1600 that you will be connecting the delay to. On the Relays Alpha screen, in the range determined above, enter the above three relay alpha names for the delay. On the Optos Alpha screen, in the range determined above, enter the above five opto alpha names for the delay. Leave the opto "Type" as None.

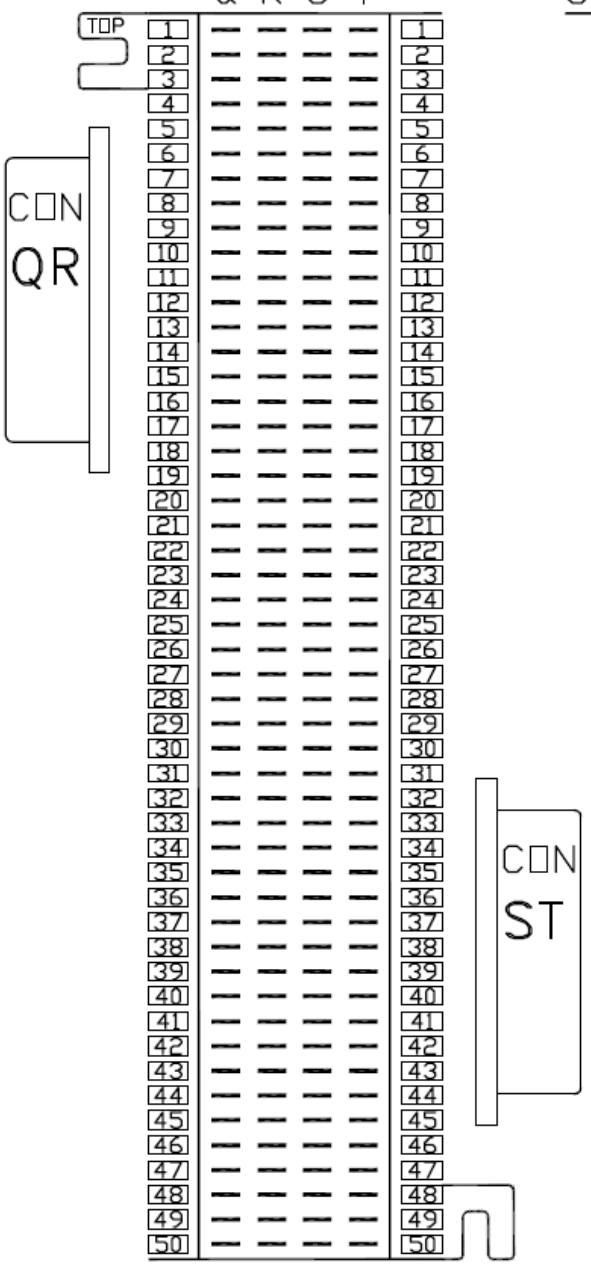
Turret Programming

Program each button as a type "Relay Pulse". Enter the assigned relay and opto number. For those buttons with only opto control (50% and 100%), leave the relay field blank.

BYPASS

The AirTools has a function called BYPASS. This is a hard-relay bypass for both the analog and digital I/O. We do not recommend remote control of BYPASS for two reasons: (1) It is confusing for the operator, in that it will not ramp down, but simply switch the delay out; and (2) when the delay is wired AES/EBU, BYPASS in or out will result in a short-duration dropout of the audio while the AES receiver re-clocks to the switched input signal.

66 / Krone Block layout for Audio, Relays, RS485



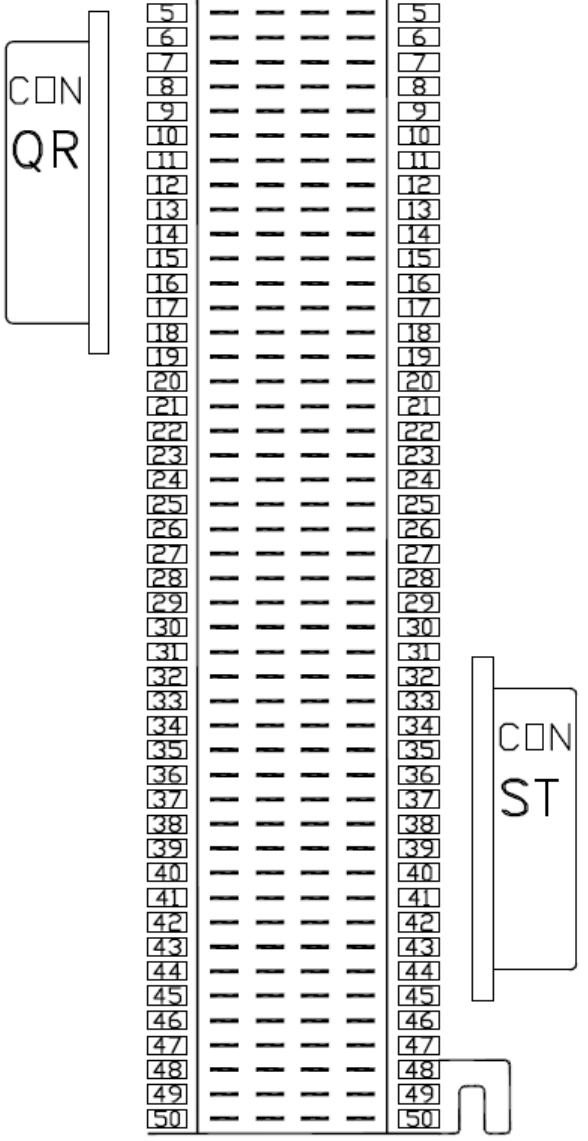
CLIP #	50 PIN CONNECTOR		WIRE COLOR CODE
1	26	COMMON	white / blue
2	1	COMMON	blue / white
3	27	SIG 1+	white / orange
4	2	SIG 1-	orange / white
5	28	SIG 2+	white / green
6	3	SIG 2-	green / white
7	29	COMMON	white / brown
8	4	COMMON	brown / white
9	30	SIG 3+	white / slate
10	5	SIG 3-	slate / white
11	31	SIG 4+	red / blue
12	6	SIG 4-	blue / red
13	32	COMMON	red / orange
14	7	COMMON	orange / red
15	33	SIG 5+	red / green
16	8	SIG 5-	green / red
17	34	SIG 6+	red / brown
18	9	SIG 6-	brown / red
19	35	COMMON	red / slate
20	10	COMMON	slate / red
21	36	SIG 7+	black / blue
22	11	SIG 7-	blue / black
23	37	SIG 8+	black / orange
24	12	SIG 8-	orange / black
25	38	COMMON	black / green
26	13	COMMON	green / black
27	39	SIG 9+	black / brown
28	14	SIG 9-	brown / black
29	40	SIG 10+	black / slate
30	15	SIG 10-	slate / black
31	41	COMMON	yellow / blue
32	16	COMMON	blue / yellow
33	42	SIG 11+	yellow / orange
34	17	SIG 11-	orange / yellow
35	43	SIG 12+	yellow / green
36	18	SIG 12-	green / yellow
37	44	COMMON	yellow / brown
38	19	COMMON	brown / yellow
39	45	SIG 13+	yellow / slate
40	20	SIG 13-	slate / yellow
41	46	SIG 14+	violet / blue
42	21	SIG 14-	blue / violet
43	47	COMMON	violet / orange
44	22	COMMON	orange / violet
45	48	SIG 15+	violet / green
46	23	SIG 15-	green / violet
47	49	SIG 16+	violet / brown
48	24	SIG 16-	brown / violet
49	50	COMMON	violet / slate
50	25	COMMON	slate / violet

NOTES

1. EACH VERTICAL PUNCHBLOCK COLUMN IS WIRED TO ONE OF THE TWO 50 PIN CONNECTORS.
2. THE CLIP NUMBER ON THE CHART IDENTIFIES THE PUNCHBLOCK ROW.
3. THE CONNECTOR PIN NUMBER ON THE CHART IDENTIFIES THE PIN NUMBER OF THE ASSOCIATED CONNECTOR.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX =±0.015 .XXX=±0.005 ANGL ±	
DRAWN	TJH
CHECKED	
APPROVED	
DATE	11/04/97

66 / Krone Block layout for Optos



CLIP #	50 PIN CONNECTOR	WIRE COLOR CODE
1	26 +5 VDC	white / blue
2	1 COMMON	blue / white
3	27 OPTO 1+	white / orange
4	2 OPTO 1-	orange / white
5	28 OPTO 2+	white / green
6	3 OPTO 2-	green / white
7	29 +5 VDC	white / brown
8	4 COMMON	brown / white
9	30 OPTO 3+	white / slate
10	5 OPTO 3-	slate / white
11	31 OPTO 4+	red / blue
12	6 OPTO 4-	blue / red
13	32 +5 VDC	red / orange
14	7 COMMON	orange / red
15	33 OPTO 5+	red / green
16	8 OPTO 5-	green / red
17	34 OPTO 6+	red / brown
18	9 OPTO 6-	brown / red
19	35 +5 VDC	red / slate
20	10 COMMON	slate / red
21	36 OPTO 7+	black / blue
22	11 OPTO 7-	blue / black
23	37 OPTO 8+	black / orange
24	12 OPTO 8-	orange / black
25	38 +5 VDC	black / green
26	13 COMMON	green / black
27	39 OPTO 9+	black / brown
28	14 OPTO 9-	brown / black
29	40 OPTO 10+	black / slate
30	15 OPTO 10-	slate / black
31	41 +5VDC	yellow / blue
32	16 COMMON	blue / yellow
33	42 OPTO 11+	yellow / orange
34	17 OPTO 11-	orange / yellow
35	43 OPTO 12+	yellow / green
36	18 OPTO 12-	green / yellow
37	44 +5VDC	yellow / brown
38	19 COMMON	brown / yellow
39	45 OPTO 13+	yellow / slate
40	20 OPTO 13-	slate / yellow
41	46 OPTO 14+	violet / blue
42	21 OPTO 14-	blue / violet
43	47 +5VDC	violet / orange
44	22 COMMON	orange / violet
45	48 OPTO 15+	violet / green
46	23 OPTO 15-	green / violet
47	49 OPTO 16+	violet / brown
48	24 OPTO 16-	brown / violet
49	50 +5VDC	violet / slate
50	25 COMMON	slate / violet

NOTES

1. EACH VERTICAL PUNCHBLOCK COLUMN IS WIRED TO ONE OF THE TWO 50 PIN CONNECTORS.
2. THE CLIP NUMBER ON THE CHART IDENTIFIES THE PUNCHBLOCK ROW.
3. THE CONNECTOR PIN NUMBER ON THE CHART IDENTIFIES THE PIN NUMBER OF THE ASSOCIATED CONNECTOR.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX =±0.015 .XXX=±0.005 ANGL ± 2	
DRAWN	EOF
CHECKED	
APPROVED	
DATE	11/07/02

System configuration data lives in the mdb file. A backup of the database file is given the swt extension. Console and rs485 module configuration lives in the 32KD MCU card, DRC, and RIO/KRL. The following procedure outlines how to save this data.

This discussion assumes you have current Router Control (version 2.88 or later) and Server Module (version 3.76 or later) software running on your router control computer, and that it has connectivity with your router(s). It is HIGHLY recommended that you contact the factory for backup/restore help if you have MCU versions lower than 6.00.
MCU versions prior to 6.00 did not have a separate configuration data-channel; backup/restore/ configuration operations in the older architecture can slow down control responses dramatically.

All backup / file save functions are done using the router control software.

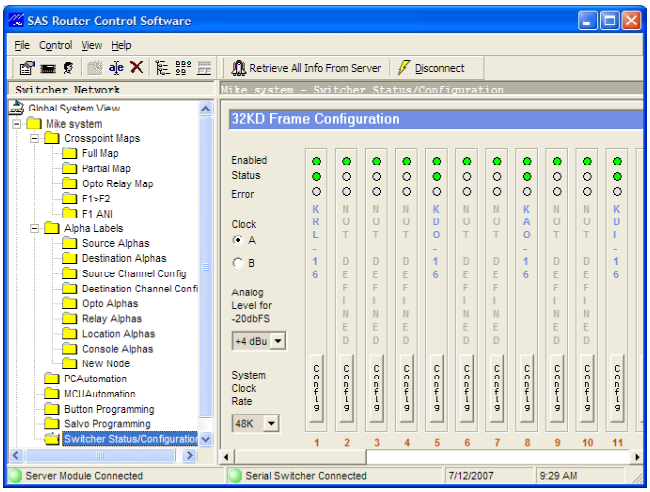
You have several options for saving configuration data – it's not a bad idea to do them all. The Excel exports require you to have Microsoft Excel loaded on your Router Control PC, as the Excel engine is used to generate and save the files.

FULL SYSTEM BACKUP USING SYSTEM SAVE:
This is done once for each frame. It saves just about everything related to your hardware configurations at one time. This process does not save database information (like source and destination information, alpha/ relay labels, etc. It only takes about a minute to do a System Save. System Save is found by selecting the View Menu, clicking on Switcher Database, and selecting the System Tab on the Switcher Definition window that comes up. The default location for storing Saved files is the SASRCS folder under ProgramFiles.

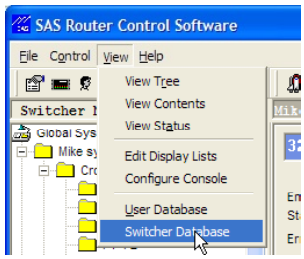
The System Save operation saves the same data that the following procedures save (all detailed individually after System Save and Save All):

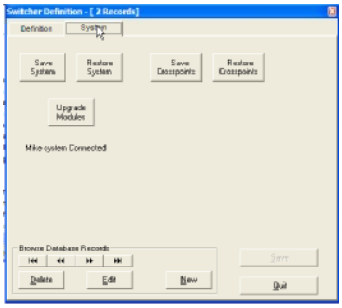
SAVE PORT CONFIGURATION (DRC)
SAVE PORT CONFIGURATION (MCU)
SAVE PORT CONFIGURATION (KRL/RIO)
SAVE PORT CONFIGURATION (KAI, KDI, KAO, KDO)
SAVE RELAY CONFIGURATION
SAVE CONSOLE CONFIGURATIONS
Step by step instructions for doing a System Save

1) Go to Switcher Status / Configuration and verify that you have two green dots at the bottom, "Server Module Connected" and "Serial Switcher Connected."

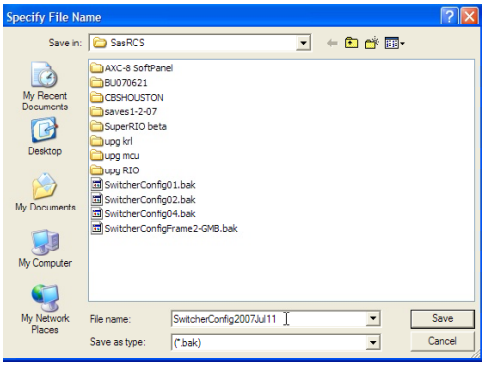


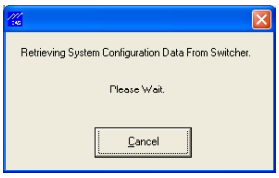
2) If you have made changes in the Router Control Software that have not been sent to the Router, they will be wiped out by the next step. (so send them or abandon them)
3) Click on the SpaceShuttle icon "Retrieve All Info From Server." You may be warned that you are about to overwrite salvos or other files – click ok or yes. This process makes sure that your Router Control Software database is synchronized with the Router.
4) Select the View Menu in the SAS Router Control Software. Click Switcher Database.

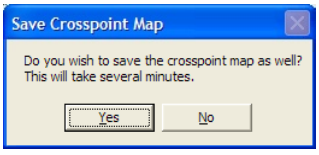




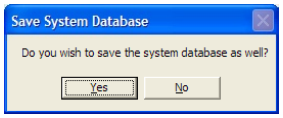
5) Select the System Tab of the Switcher Definition window.
6) Click on Save System. The default filename is ok, but you might want to append the date to the filename so you don't have to change the view properties to see exactly when your backup file was made. Once you've made the name something you'll be happy with, click Save. NOTE: While the system save is occurring PC-based automation will be unavailable.







7) After you initiate the System Save process you will be asked if you also want to save the crosspoint map. It's a good idea to do this, but keep in mind that it will be a snapshot of that instant in time. If you have SAS consoles in your system the snapshot will include what is selected to program, mix-minus busses, and other system outputs when the save occurs.
8) Once the crosspoint map data has been saved (or not if you choose no) you will be asked if you want to save the system database as well. NOTE: While the crosspoint save is occurring PC-based automation will be unavailable.

   Select yes. 

9) If you have more than one 32KD frame, repeat the above steps for additional frames.

The System Tab also has buttons for the following:

System Restore: This is how you do a "one-button" restore. This should not be attempted without SAS supervision. The switcherconfig.bak file generated by System Save can be used to TOTALLY restore a 32KD frame or standalone RIO system. It is a total brain-load process. It takes 15-20 minutes, and should not interrupt audio or console functions until the very end when a system restart (complete power-down) is required as the last step. The restart pushes data that was loaded into the MCU out to the rest of the cards in the frame.

Save Crosspoints: This operation will slow down the PC response and can impact PC-based automation events.

Restore Crosspoints: CAUTION – this will restore crosspoints as they were at the exact instance the crosspoints were saved. This can be dangerous.

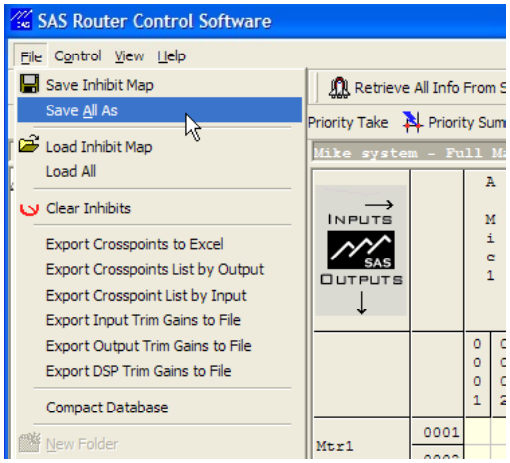
Upgrade Modules: This should not be attempted without SAS supervision.

SAVE ALL AS –
This procedure saves the database in a backup .swt file. The information saved includes what you would save individually by the following procedures (all detailed individually after System Save and Save All*):

SAVE DESTINATION CHANNEL CONFIG
SAVE SOURCE CHANNEL CONFIG
SAVE OPTO ALPHAS
SAVE RELAY ALPHAS
SAVE BUTTONS PROGRAMMING
SAVE AUTOMATION EVENTS (SYSTEM / MCU AUTOMATION)
SAVE SALVO EVENTS
SAVE INHIBIT MAP
SAVE DISPLAY LISTS

The Save All Procedure:

While viewing a crosspoint map (also works while viewing any of the Alpha folders)
Click File menu, select Save All As



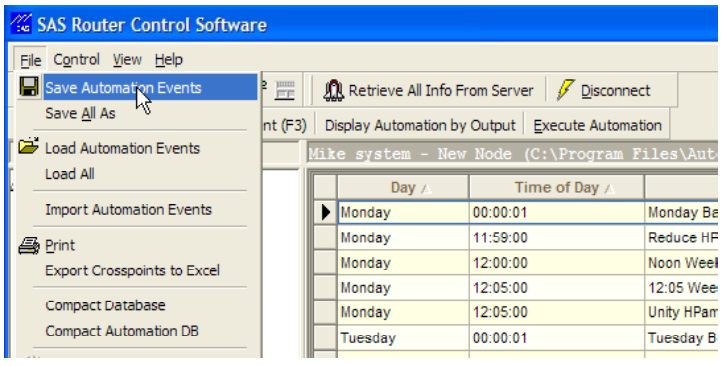
The default save location is in your …/ProgramFiles/SASRCS folder. Give it a more descriptive name than switcher.swt (I like to add the date – like switcher20070722.swt).

Since the database includes the above information for all frames in your system, you only have to do this once.

System operation is not impacted by the Save All As procedure.

OTHER USEFUL DATA TO SAVE/EXPORT:

SAVE AUTOMATION EVENTS (PC AUTOMATION)
While viewing PC Automation events (if you are using PC Automation), click on File Menu and select Save Automation Events



The following three operations require Microsoft Excel to be installed on the Router Control System Computer, as they use the Excel engine for generating the files.

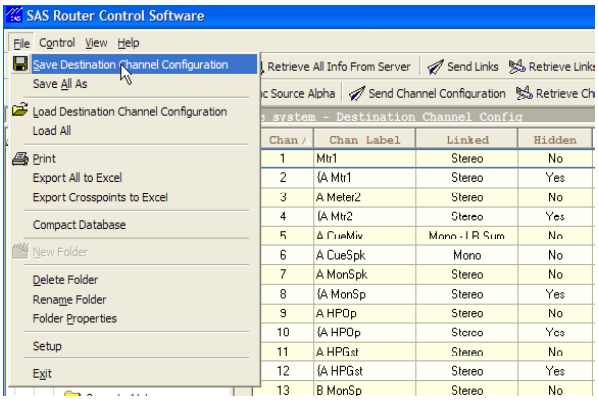
EXPORT ALL TO EXCEL: Available while viewing an Alpha folder. Creates a multi-tab xls file that includes most database information, plus console configurations. Very useful for station documentation.

EXPORT CROSSPOINTS TO EXCEL: Available while viewing a Crosspoint Map. Creates an Excel file "snapshot" of current crosspoints. Note that some of these will be dynamic… like console bus assignments.

EXPORT AUTOMATION (MCU Automation to Excel file): Available while viewing MCU Automation (System Automation) event list. Creates an XLS file that documents the MCU automation events that have been defined.

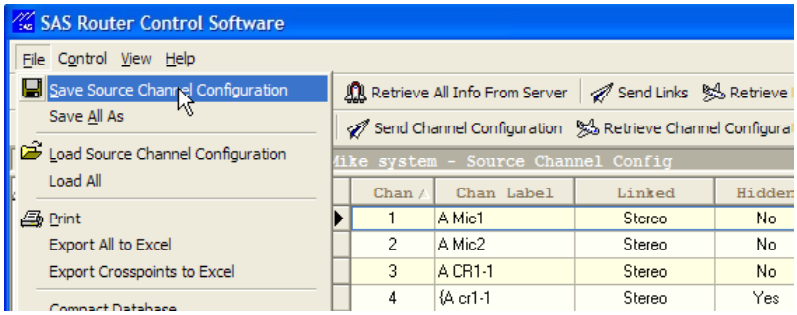
INDIVIDUAL SAVES THAT ARE ALSO PART OF SAVE ALL AS or SYSTEM SAVE:

SAVE DESTINATION CHANNEL CONFIG
Saves just the Destination config and name data (also known as OutChan)
While viewing Destination Channel Config



Click File menu and select Save Destination Channel Configuration. This saves all system outputs' data (across all frames) in a file called OutAlphas.oal. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

SAVE SOURCE CHANNEL CONFIG
Saves just the Source config and name data (also known as InChan)
While viewing Source Channel Config



Click File menu and select Save Source Channel Configuration. This saves all system sources' data (across all frames) in a file called InAlphas.ial. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

SAVE OPTO ALPHAS

Saves just the Opto config and name data (this includes Opto-Crosspoint and Opto-Relay associations). While viewing Opto Alphas, click File menu and select Save Opto Alphas. This saves all system optos' data (across all frames) in a file called OptoAlphas.pal. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

SAVE RELAY ALPHAS

Saves just the relay name data. Does not save opto, crosspoint, or destination associations. While viewing Relay Alphas, click File menu and select Save Relay Alphas. This saves all system Relays' data (across all frames) in a file called RelayAlphas.pal. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

SAVE BUTTONS PROGRAMMING

Saves all button templates defined in the system. These are the button templates assigned to Intercom-Type panels to define button functions.

While viewing templates in the Button Programming folder, click the File Menu and select Save Buttons Programming. This saves all button programming data (across all frames) in a file called Buttons.but in the /ProgramFiles/SasRCS folder. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

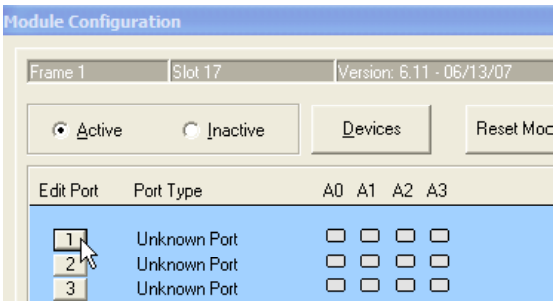
SAVE AUTOMATION EVENTS (PC AUTOMATION)

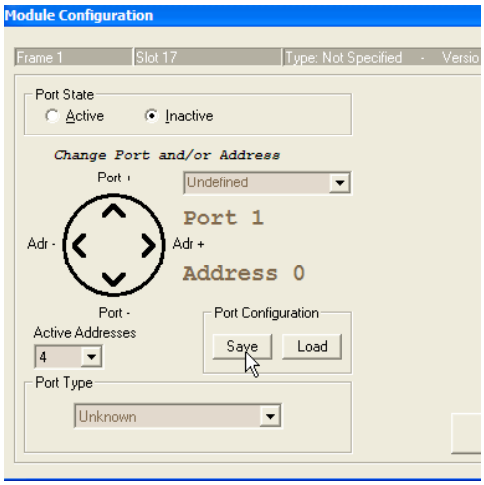
Saves all PC-Based automation event definitions. While viewing the PC Automation event list, click the File Menu and select Save Automation Events. This saves the PC Automation Event definitions (from this PC only) in a file called Automation.aut in the /ProgramFiles/SasRCS folder. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

SAVE AUTOMATION EVENTS (SYSTEM / MCU AUTOMATION)
Saves all MCU automation event definitions. While viewing the MCU Automation event list, click the File Menu and select Save Automation Events. This saves the MCU Automation Event definitions (from this MCU) in a file called Automation.sat in the /ProgramFiles/SasRCS folder. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot. Most systems will only have MCU automation running on one MCU… contact SAS support if you are running MCU automation on multiple MCUs.

SAVE SALVO EVENTS
Saves all Salvo definitions. While viewing the Salvo Programming event list, click the File Menu and select Save Salvo Events. This saves the Salvo Event definitions in a file called Salvos.sal in the /ProgramFiles/ SasRCS folder. If you'd like, you can change the name to something more descriptive, but don't change the text after the dot.

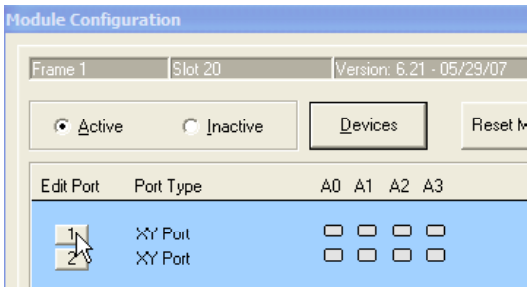
SAVE PORT CONFIGURATION (DRC) From the Switcher Status/Configuration Folder, Click on Config for the DRC card.

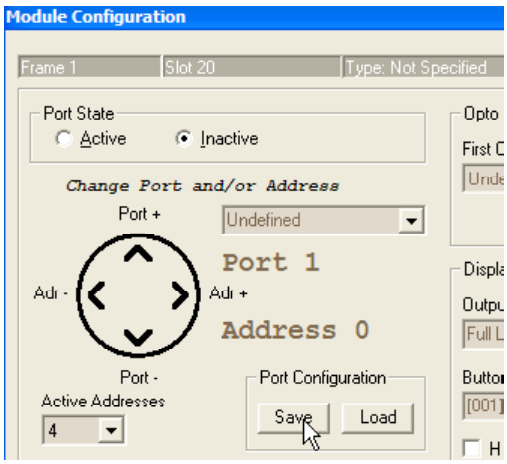




Click one of the numbered ports. Then click on the Save Port Configuration button.
The filename will be Module0117.cfg if the module is in slot 17 of frame 1. Leave this filename as it is and click Save. The file contains settings for all sixteen rs485 ports on the card.

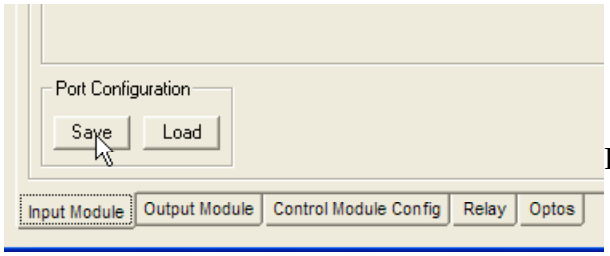
SAVE PORT CONFIGURATION (MCU) The MCU has two RS485 "XY Controller-type" ports. To save the setup information for these, click on Config for the MCU card.





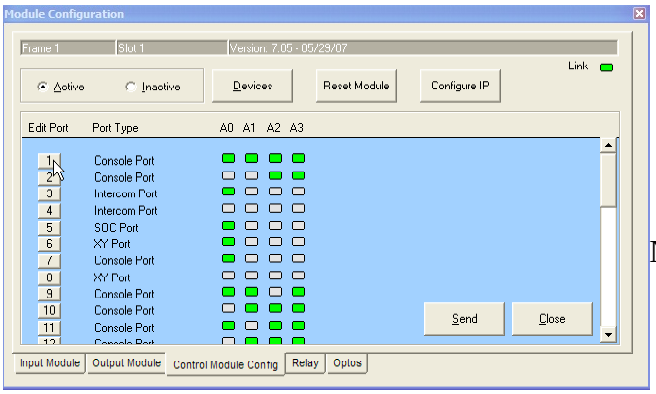
Click on one of the numbered ports. Then click on the Save Port Configuration button.
The filename will be Module0120.cfg if the module is in slot 20 of frame 1. Leave this filename as it is and click Save. The file contains settings for the rs485 ports on the card.

SAVE PORT CONFIGURATION (KRL/RIO)



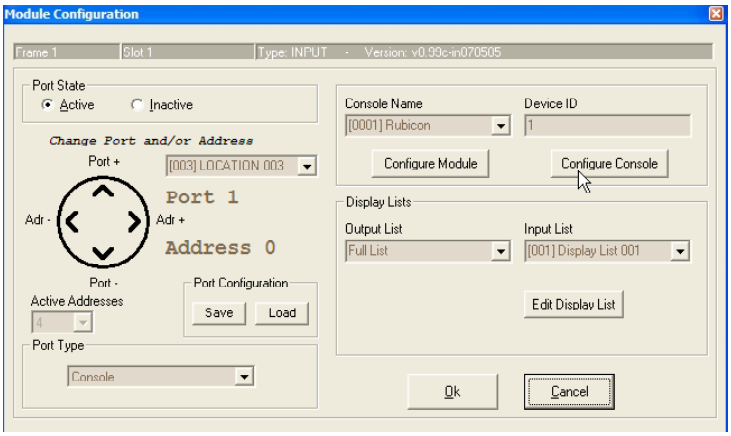
RIO RS485 configuration is saved in a similar fashion to the DRC and MCU. Click on Config for the KRL card. Then click on the Save Port configuration Button. The filename will be module0101.cfg if the module is in slot 1 of frame 1. Leave this filename as it is and click Save. The file contains settings for the rs485 ports on the card, and also channel numbers for optos, relays, inputs, and outputs assigned to the SLOT.

Next click on the Relay Tab (at the bottom) and Click Configure.
Click SAVE RELAY CONFIGURATION. This will save the relay configuration for all relays in the system.

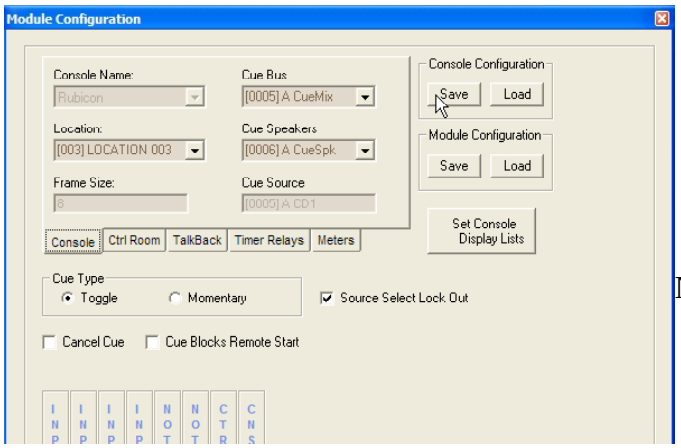


Next click on the Control Module Config tab (skip this step if you have no consoles in your 32KD system.)

This brings up the KRL's RS485 port status window (very similar to the DRC port status window). Next, click on one of the numbered console ports to get to the RS485 Port configuration window.



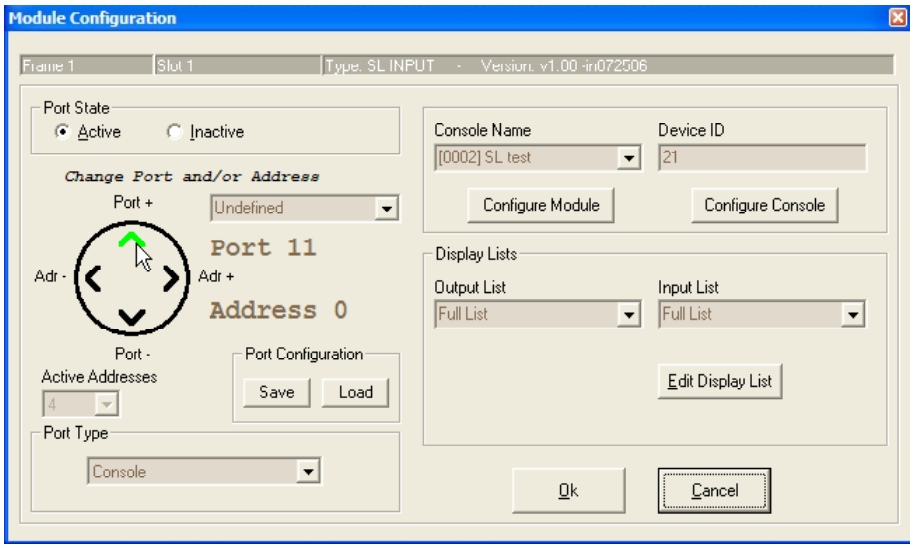
Click Configure Console



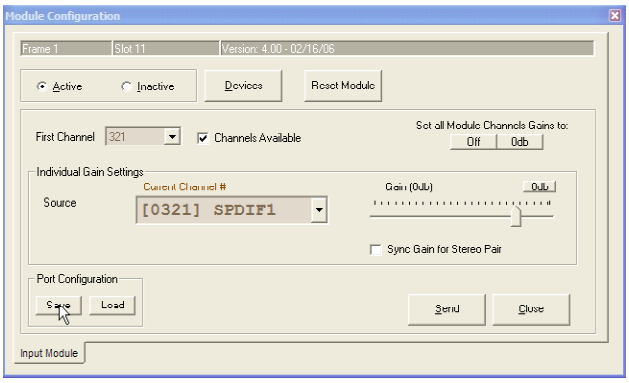
Now the Console Configuration page is displayed.

Click on Save Console Configuration. This will save the tabbed information to the left (console names, locations, resources used for console functions, etc) for all consoles on the system, not just the console(s) attached to this KRL/RIO or this 32kd frame. The filename will be Console01.con.

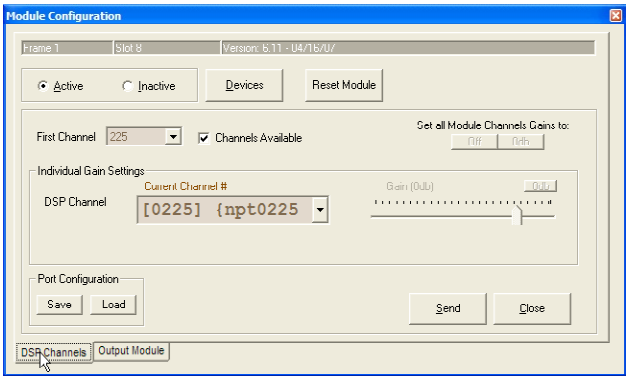
Clicking on the Save Module Configuration button will write a file named Console 001.cns (the number changes depending on what Console Number you are focused on). This file has all of the button programming information (Source selects, buss assignment, monitor select, etc) for the console you are focused on. You will need to navigate to this same location for every console (usually on different KRL cards) in your system and save the .cns file. If you have more than one console on a RIO, change which one you are looking at by selecting a different console port's RS485 port when you click on the numbered console port from the RS485 Port Status window (Control Module Configuration Tab of the KRL), or use the circular Port Navigation control to change the RS485 port that you are looking at until you reach one that is associated with the next console on the RIO.



SAVE PORT CONFIGURATION (KAI, KDI, KAO, KDO)
From Switcher Status/Configuration, click on the Config button for the input or output card you are saving.

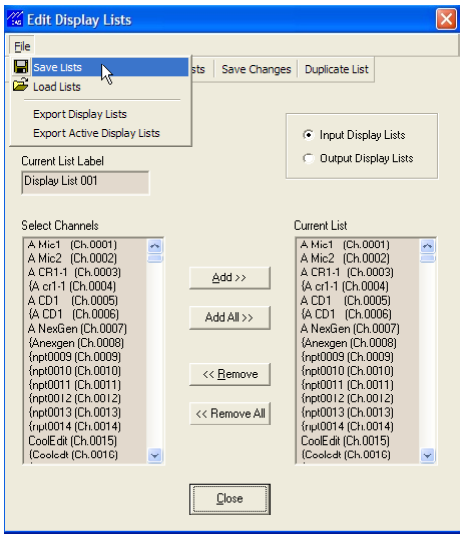


On input cards (KAI and KDI), the Port Configuration Save button is immediately obvious at the lower left corner.



For Output cards, click on the DSP Channels Tab in the lower left corner to find the Port Configuration Save button.

Click save. The system will write a file that defines what system input and output numbers the card uses.



SAVE DISPLAY LISTS

Once you've performed the saves described above for all of the cards in your system, you can click on the View Menu (at the top) and select Edit Display Lists. When the Edit Display Lists window opens, click File and select Save Lists. This saves all input and output display lists.

MULTI-FRAME SYSTEMS

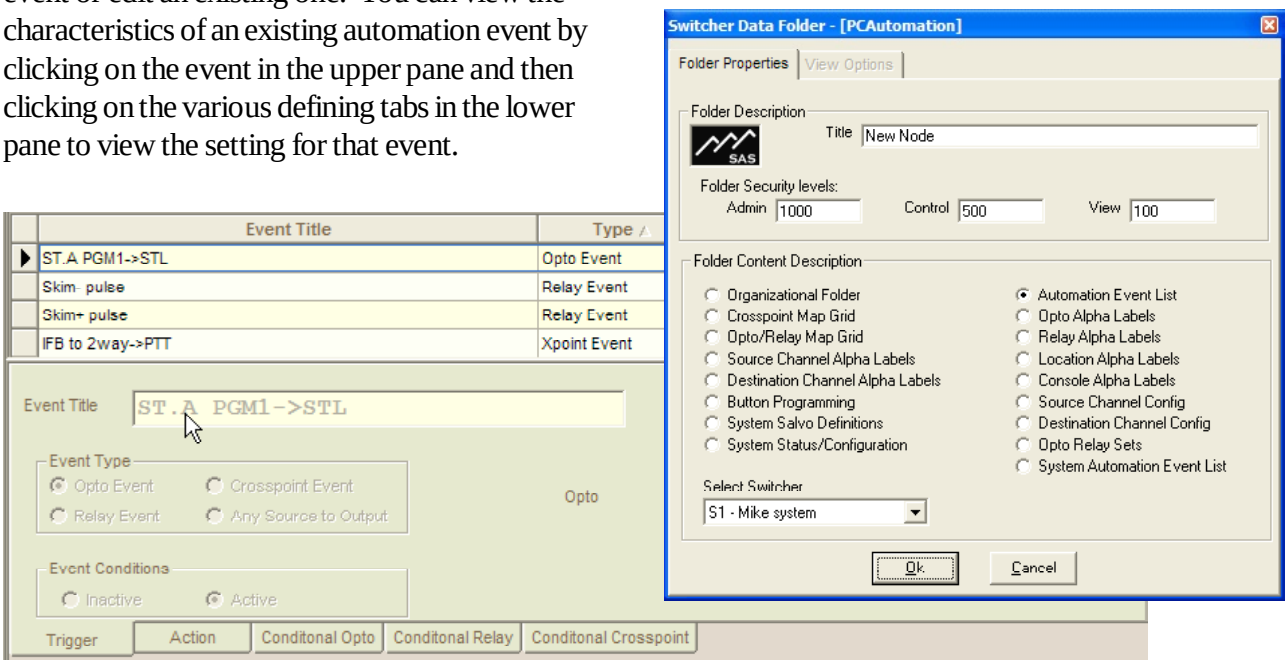
You will want to repeat the steps outlined above for each frame in the system. If your frames are ANI-connected, you do not have to repeat Database backup (alphas, buttons, display lists, inhibits, etc.) Contact tech support if you have any questions.

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.



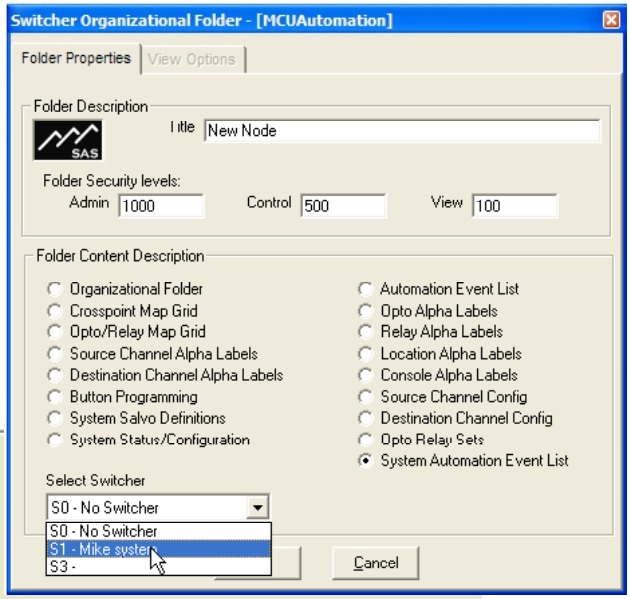
For each defined Automation Event, opto activity, relay activity, or crosspoint activity can be used as primary triggers. The MCU-Automation Event defined under the ACTION tab is executed only when the Trigger AND any enabled Conditional tabs are simultaneously TRUE.

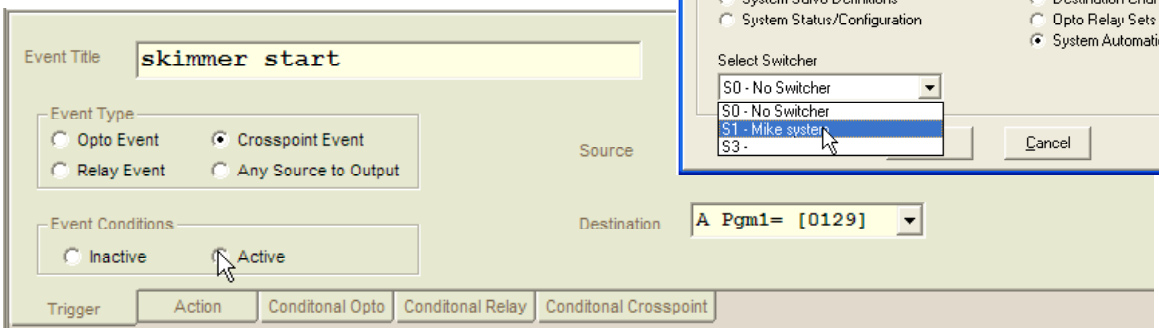
The Trigger Tab:

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.





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.

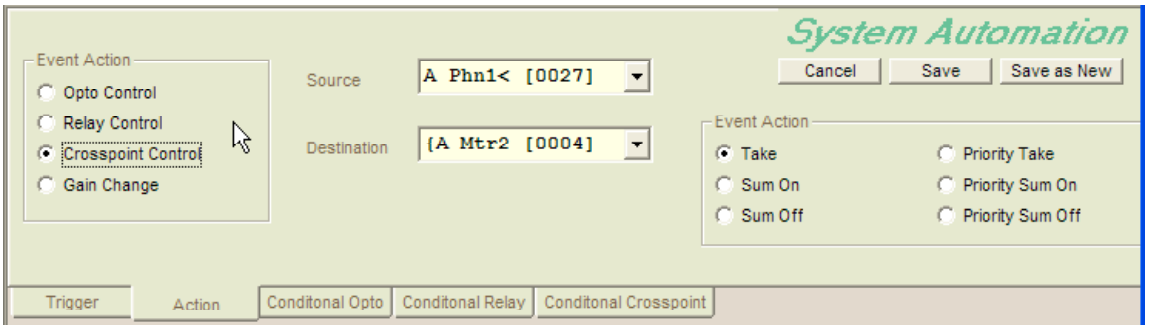
Action Tab:

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:

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.

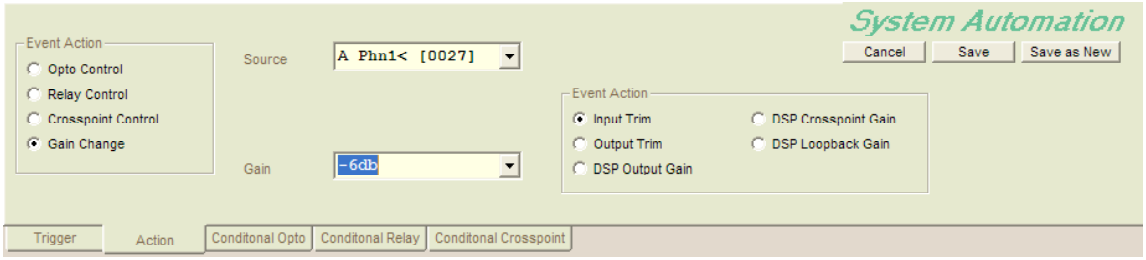
Crosspoint Control:



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.

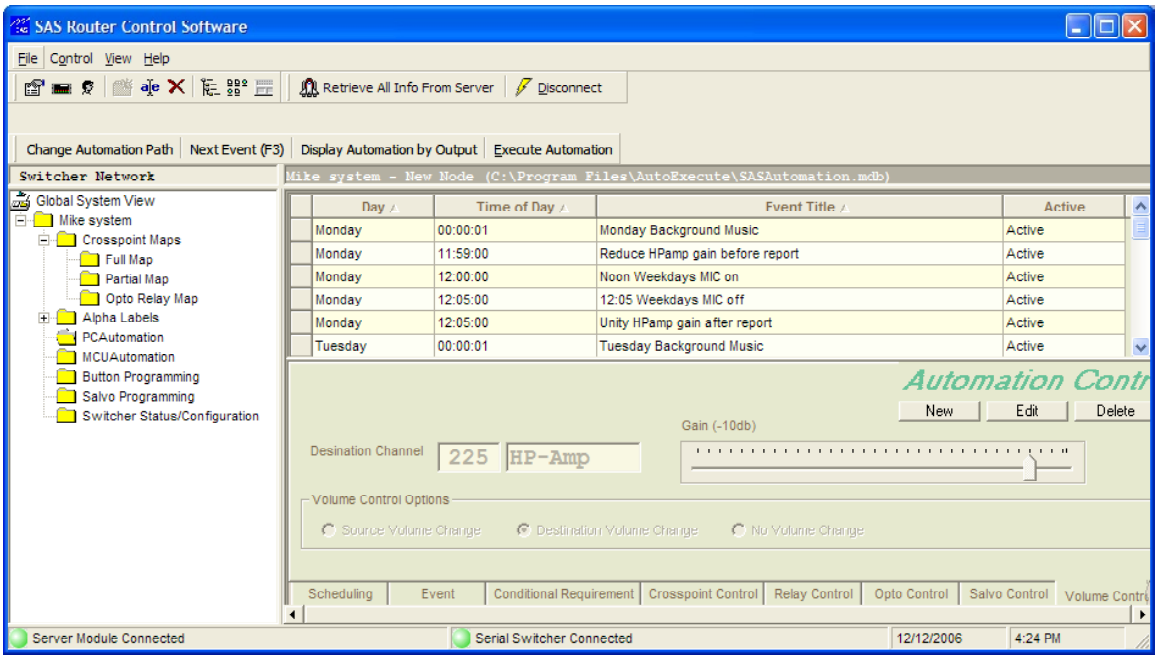
Gain Change:



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

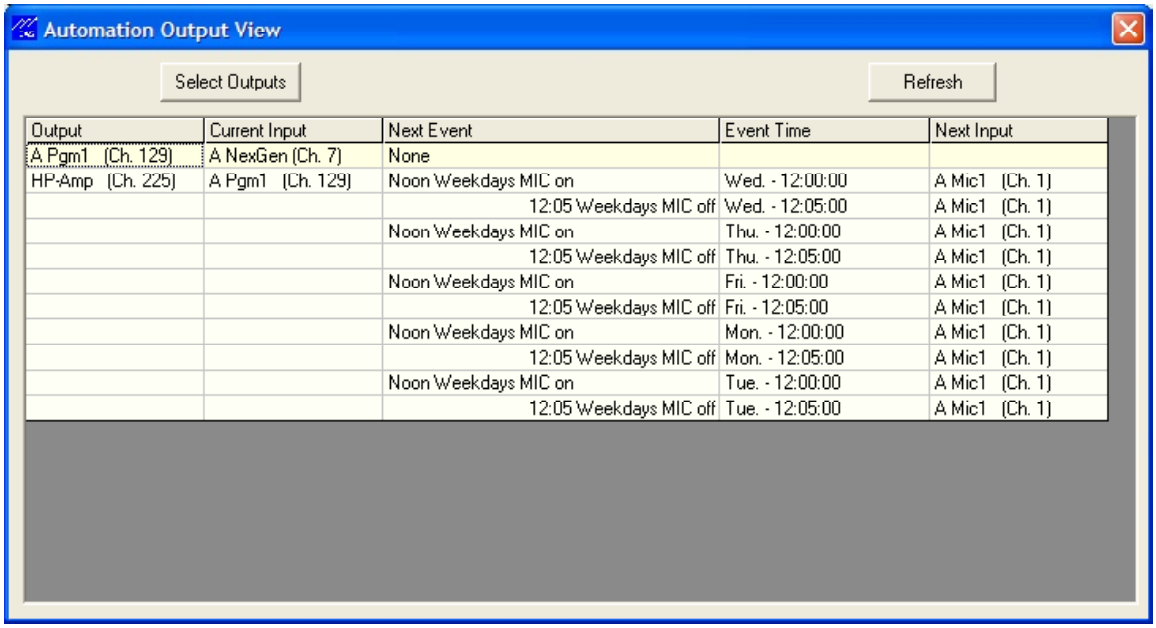
Using PC Automation

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.



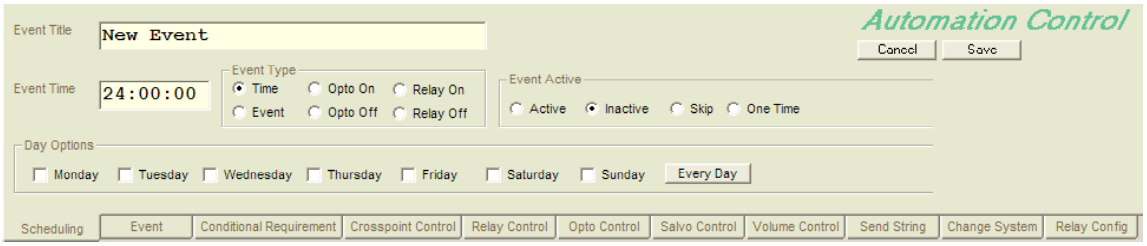
The report shows all Crosspoint changes scheduled (time based automation events) for the listed output(s).

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.

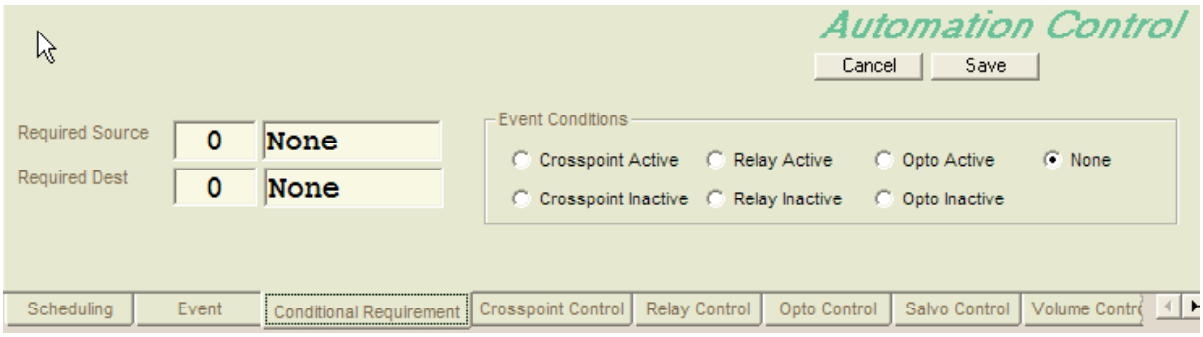
SCHEDULING:



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:

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.

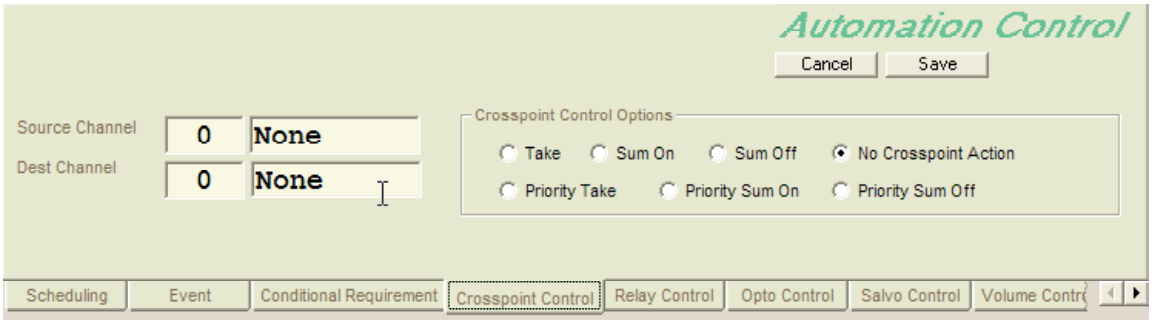


CONDITIONAL REQUIREMENT:
This is an optional, secondary requirement.
If set to anything other than NONE, the conditional requirement and the primary trigger (set under Scheduling and/or Event Tabs) must occur for your Automation Event to be activated.

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:

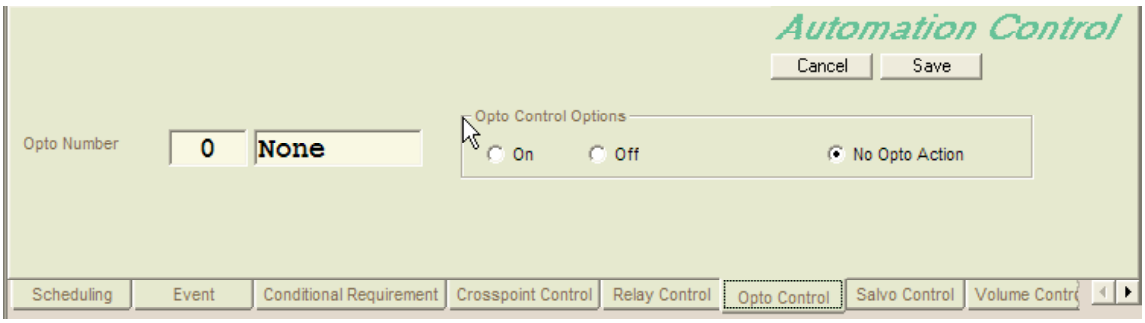


Set the Source and Destination plus the kind of crosspoint control that you want to happen.
Take: Routes the specified Source to the Specified Destination, clearing any other Sources that may have been previously routed there (except for Priority crosspoints – see below).
Sum On: Adds the specified Source 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:

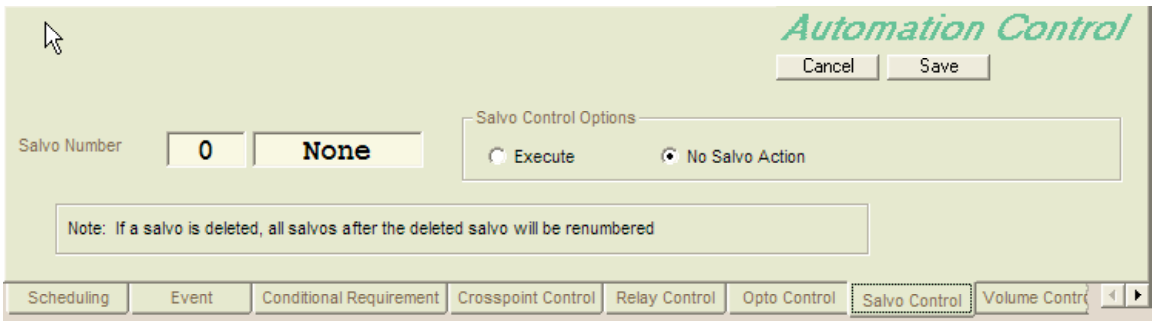
Select the Relay number and whether you want it to latch, release, or momentarily pulse.

OPTO CONTROL:



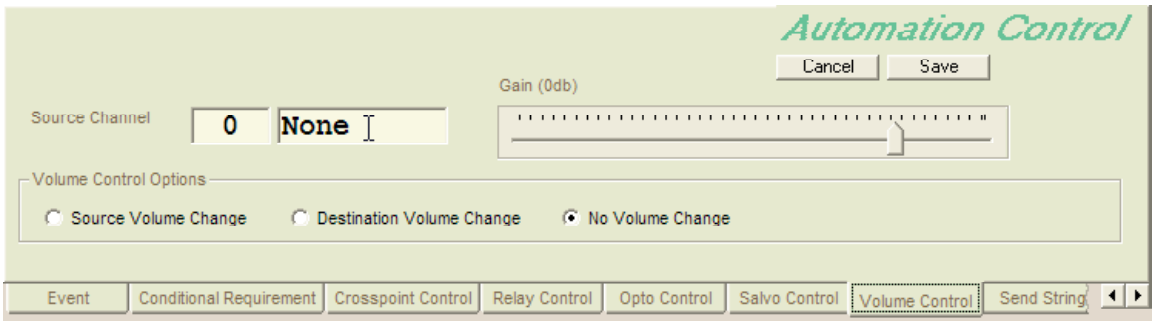
Here your Automation Event can toggle the system's perceived state of an Opto, (real or virtual).

SALVO CONTROL:



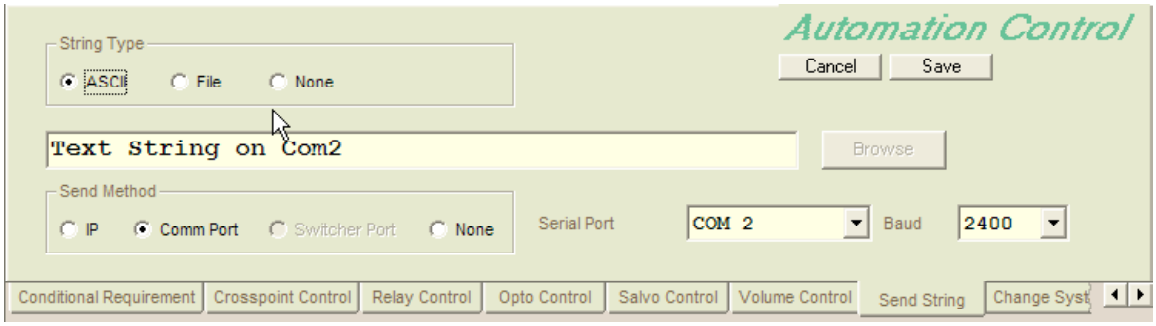
The automation event can fire a Salvo (defined separately in the Salvo Programming Folder). Salvos are lists of routing commands that can be triggered simultaneously from the Router Control Software, by SAS Automation, or from certain SAS control panels. For Salvos explained in greater detail, see the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

VOLUME CONTROL:



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:

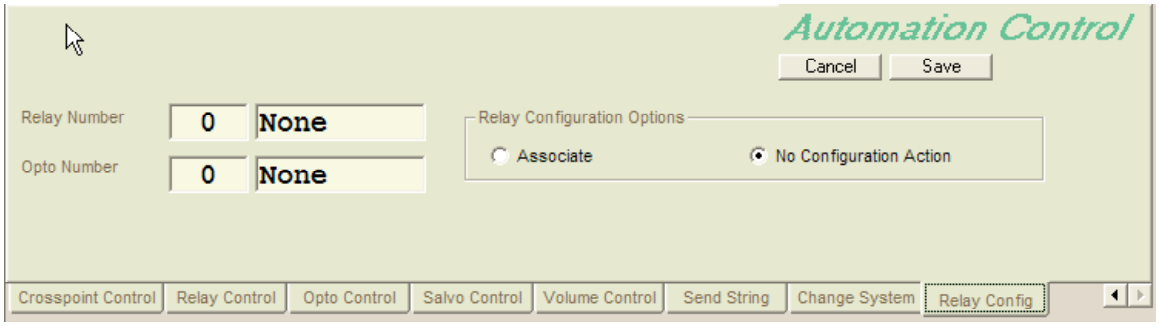


Sends a string or text file through the defined communications path.
The paths can be an IP address / port, or a PC com port.

CHANGE SYSTEM:

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:



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.

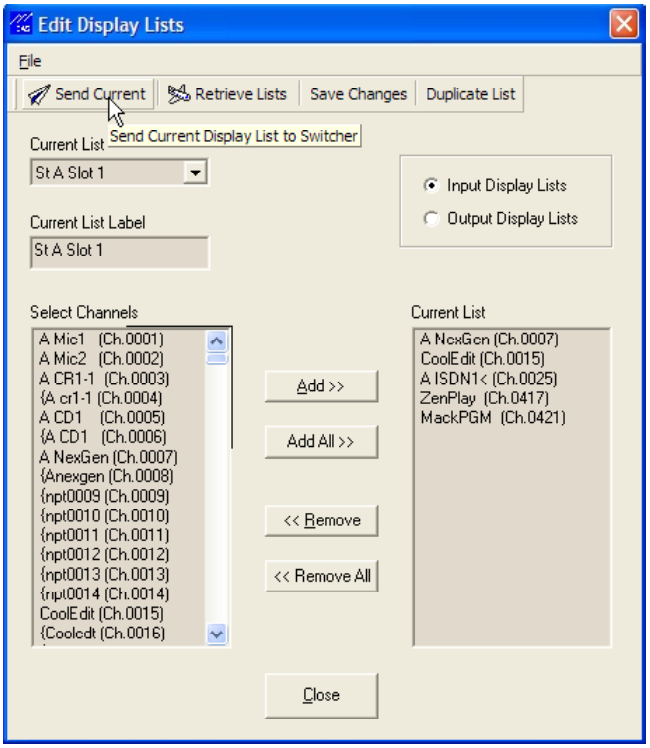
Display Lists Explained

Display lists are a way to limit what sources or destinations can be seen / accessed by router control panels, including Source Selectors on consoles.

The EDIT Display Lists screen can be accessed from the View menu in the Router Configuration Software. Here you can view, edit, duplicate and SEND both input and output display lists to the system.

The system database supports up to 256 input display lists and 256 output display lists.
Each (numbered 1-256) display list has a 16 character label which can be entered by the user. Try to make the label meaningful – typical input display lists might be: "St A MICS only" "St A Slot 7" "TOC CODECs" "All Remote Srcs."
Typical Output Display lists might include: "TOC CODEC Dests" "Stream encoders" "All ICM Dests" "5th flr monitors"

Creating display lists is fairly intuitive – select Input Display Lists or Output Display Lists, then use the Current List drop-down to select an unused list. By default ALL sources are included in the CURRENT LIST until you edit it, save it, and SEND it. If your new list should include all but a few router sources, scroll through the Current list and remove the unwanted ones. If your new list will have only a few sources, you can click Remove All to clear the list, then add individual sources as you see fit. When you are done, enter a meaningful Current List Label, click Save Changes, then click Send Current – so the database and the Router system will be updated.



Display List Assignment

Since display lists are associated with controllers, Display List Assignment is found under Switcher Status/ Configuration by clicking on Config for the DRC card or KRL/RIO the controller (or console module) is attached to. Here you can specify the Input Display list (and if it's an X-Y controller, the Output Display List) for the controller. To assign display lists, you'll need to know what RS-485 port and address the controller in question is connected to. The Router Configuration Software can help you determine this very easily for console modules.

Once you've clicked Config for the DRC or KRL/RIO module your controller is connected to, look at the window that pops up. If you are on a KRL/RIO module, you will need to click the middle (bottom) tab labeled Control Module Config. If you are on a DRC module, the Control Module Config screen is already up.

Click on the RS-485port your controller is connected to.

Console Input Modules

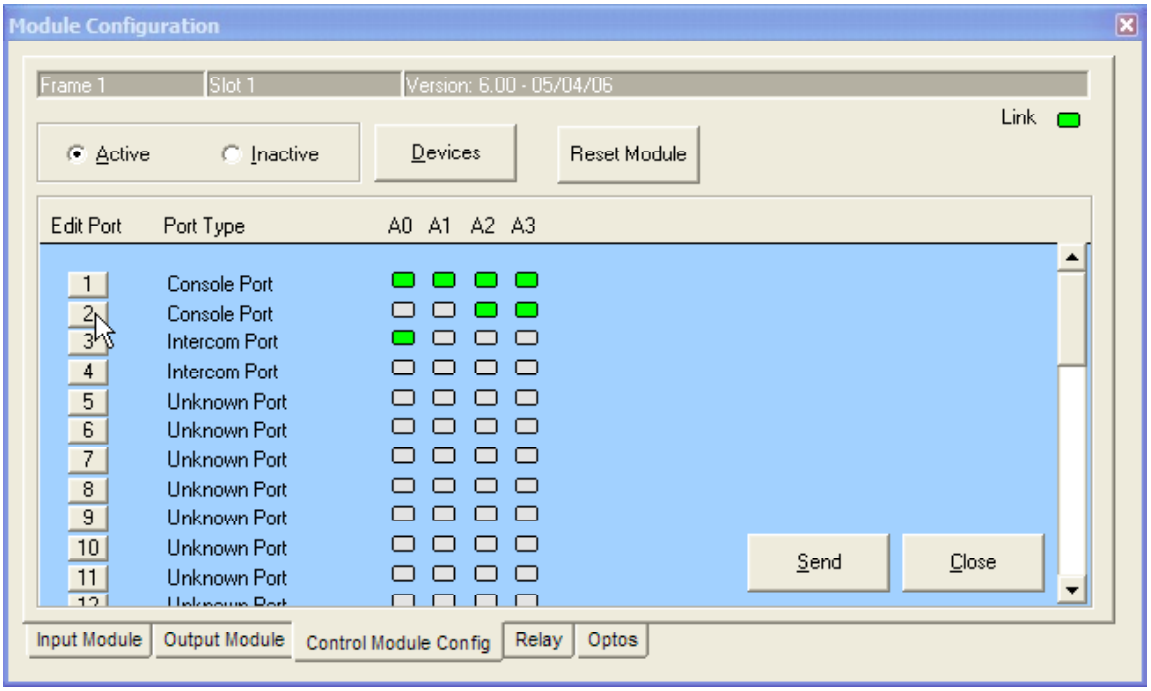
Which RS485 Port is my Console Input Module On?

If you are configuring display lists for a console input module, your console ports will be identified as such under Port Type. Each port supports a block of four console slots. If your console is a 24 slot frame, six RS-485 ports will be set up as console type. The four RS-485 addresses on each port are named A0 through A3, so in our example the console slots (including "blank" slots with no module present) will be like this.

Example of Rubicon Console RS-485 ports and addresses for a 24 slot Console

Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8	Slot 9	Slot 10	Slot 11	Slot 12	Slot 13	Slot 14	Slot 15	Slot 16	Slot 17	Slot 18	Slot 19	Slot 20	Slot 21	Slot 22	Slot 23	Slot 24
A0	A1	A2	A3	A0	A1	A2	A3	A0	A1	A2	A3	A0	A1	A2	A3	A0	A1	A2	A3	A0	A1	A2	A3
RS-485 Port 1 Address	RS-485 Port 1 Address	RS-485 Port 1 Address	RS-485 Port 1 Address	RS-485 Port 2 Address	RS-485 Port 2 Address	RS-485 Port 2 Address	RS-485 Port 2 Address	RS-485 Port 3 Address	RS-485 Port 3 Address	RS-485 Port 3 Address	RS-485 Port 3 Address	RS-485 Port 4 Address	RS-485 Port 4 Address	RS-485 Port 4 Address	RS-485 Port 4 Address	RS-485 Port 5 Address	RS-485 Port 5 Address	RS-485 Port 5 Address	RS-485 Port 5 Address	RS-485 Port 6 Address	RS-485 Port 6 Address	RS-485 Port 6 Address	RS-485 Port 6 Address

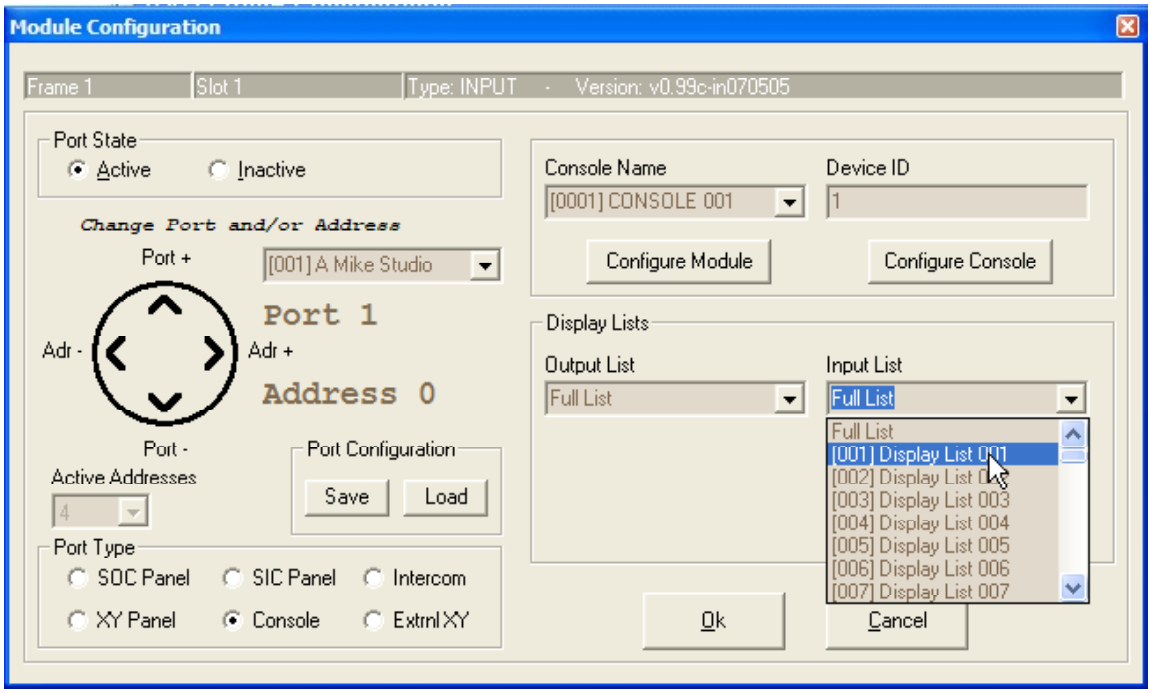
The Control Module Config Tab of the RIO/KRL is the same as the DRC (in a 32KD) card's Config page. It looks like this:



This RIO/KRL shows an eight slot console being run from the first two RS485 ports and an intercom panel connected to the third. You can see that there are active modules in the first four slots of the console, followed by two slots with nothing connected, ending with modules in the last two slots. In most cases the Control Room Monitor Module and the Console Control Module are the last two active slots.

Determine which Console Port supports the input module that you want to assign a Display List for, and click on the numbered rectangle for that port. This opens up the Port Config page where you can assign Input Display Lists.

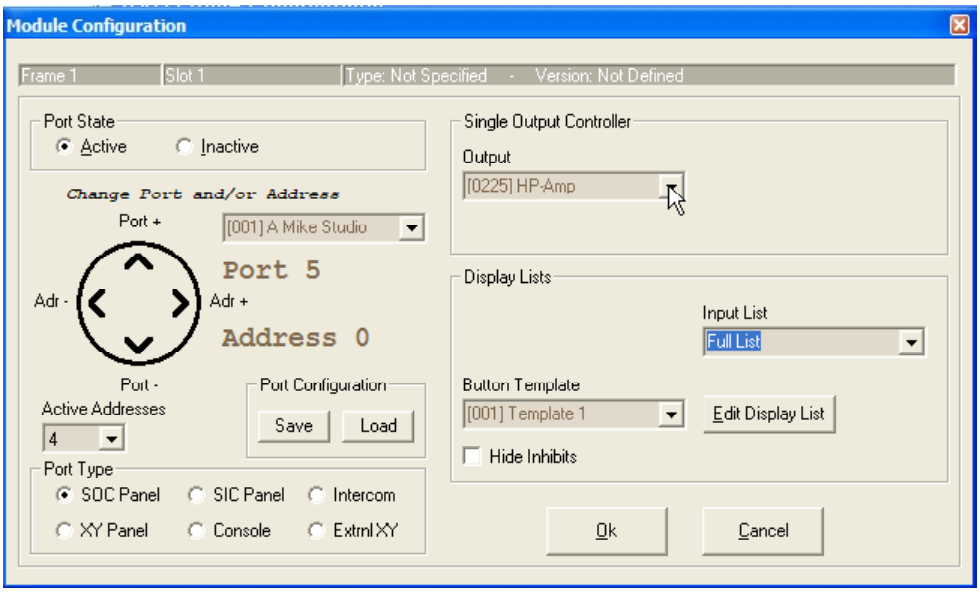
Port Configuration



Note that the Port and address numbers are displayed just to the right of the Port Navigation Circle. You can click on the arrows inside the Port Navigation Circle to move among other ports and addresses, so from this screen you can set the Input Display Lists for each slot in your console or for any controller panel attached to an RS485 port on this card. You can also EDIT display lists by clicking the Edit Display List button (obscured in this figure by the Input List drop-down box). The Edit Display Lists screen accessed this way is the same as the Edit Display Lists screen you access from the View Menu (described above).

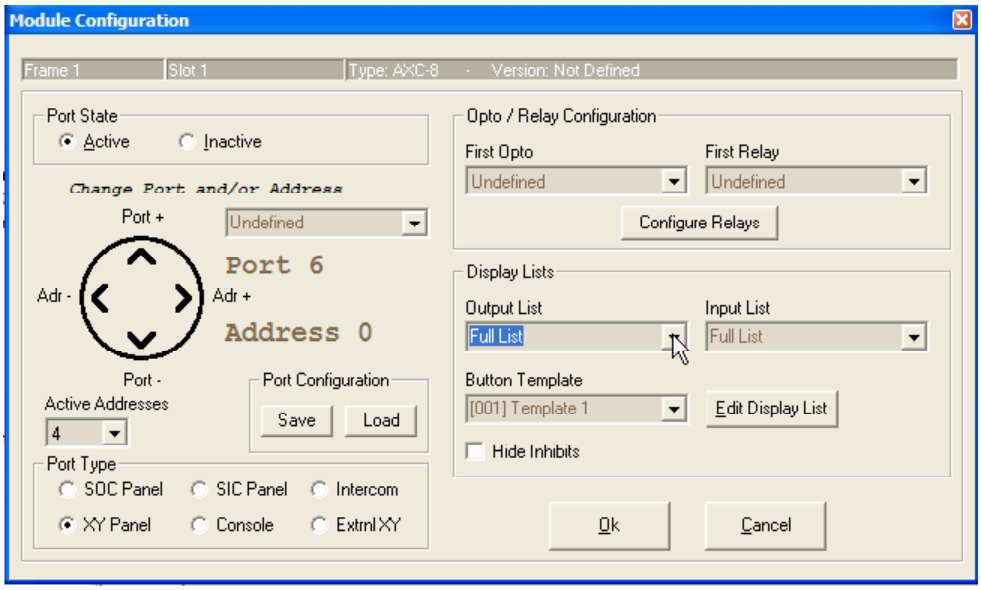
When you are finished assigning Input Lists to modules, click OK, then click SEND on the Control Module Config tab. Once the software finishes sending the display lists to your system, the input modules that you have set up will be able to "see" only the sources you specified in the module's Input List.

Single Output Controllers like the ANC-8, APC-88, CDS-8, and CPI-80 get their display lists assigned in much the same way that console input modules do. In addition to selecting the Input Display List, the Port Configuration Screen also allows you to choose which destination (system output) your controller is assigned to control. If your controller has buttons on it (like the APC-88), you can assign the button template here as well.



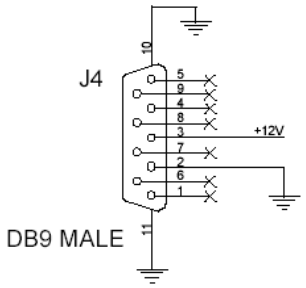
X-Y Controller

The AXC-8 system X-Y controller can also have display lists assigned. For the AXC-8, Input Display Lists and Output Display lists can be used. The Opto, Relay, and Button template config options are not applicable to the AXC-8.



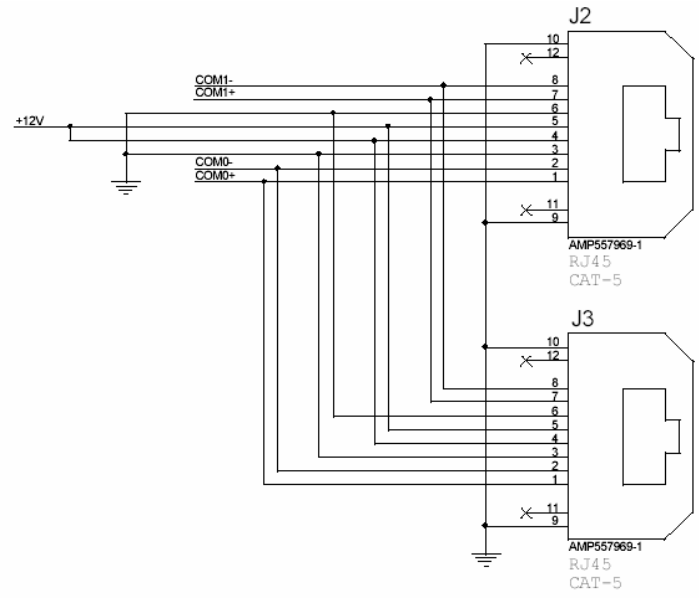
TPL-4 modules install much like other SAS control panels, using an RS485 port from your system, and a 12V DC power supply.

Power is typically wired to the unit's D-Sub 9 connector (male on the TPL-4, so your power supply will have a female) on pins 2 and 3. 2 is ground and 3 is +12. SAS can provide regulated 12V supplies with multiple, pre-wired, nine pin females that can power several TPL4s.



Power can optionally be wired using the RJ45 connectors. These two connectors are in parallel and carry +12V power and RS-485 bus signals. Typically, when several TPL-4 modules are grouped together (as in a Turret or Rubi-T installation) one of the RJ-45 connectors is used to daisy chain to the next module, providing power and RS-485. Up to four TPL-4 modules can share one RS-485 port. Up to eight TPL-4 modules can be powered by the SAS 12V 3A regulated supply.

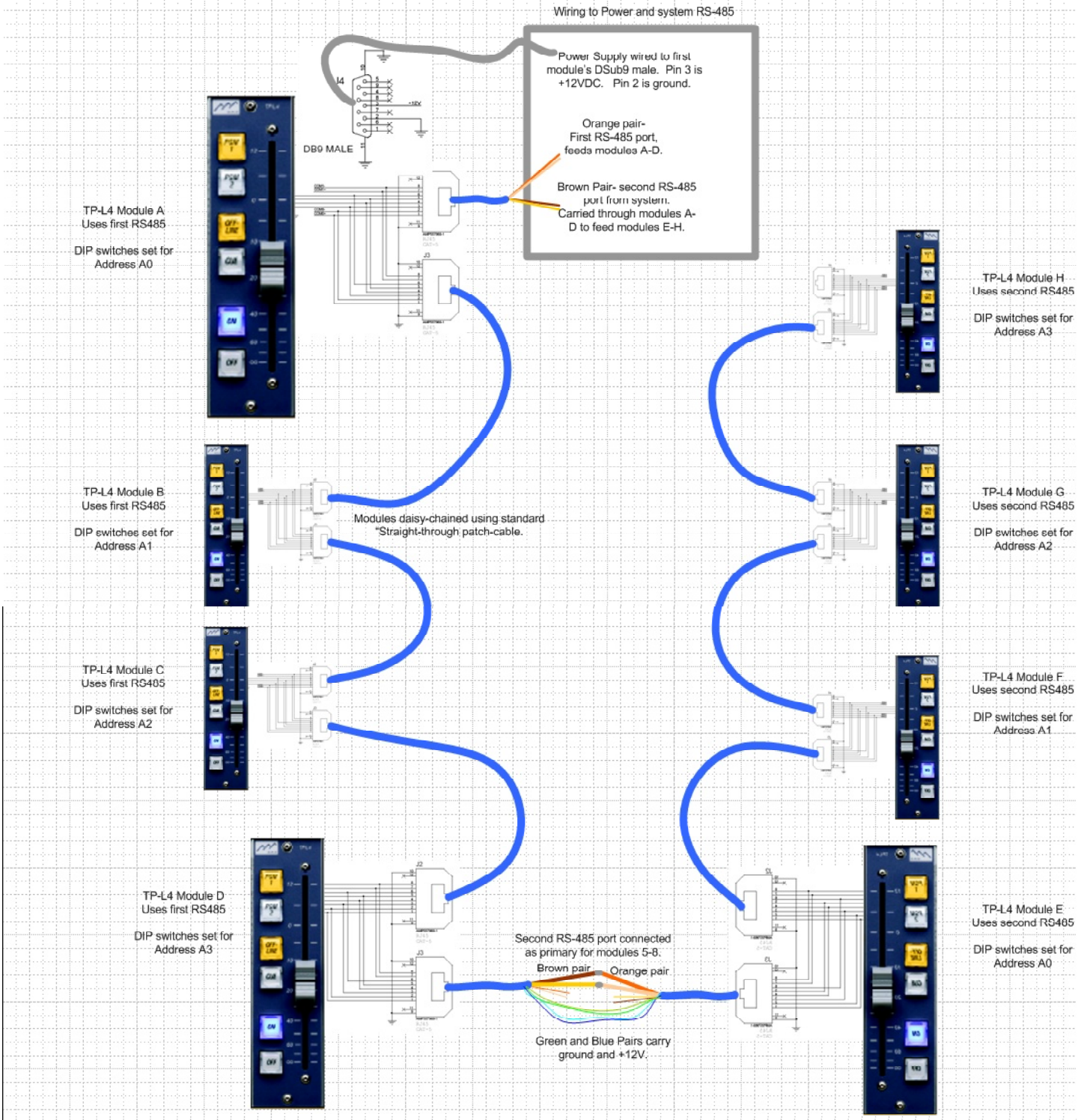
Apply +12 volts DC using ONLY ONE of J2, J3, or J4.



+12 volts DC and Power ground is always present at J2 & J3 (pins 3-6), even if J4 is used to supply the power.

Com0 (pins 1 & 2 – typically the orange pair on a standard 568B-wired patch cable) is the RS485 bus used by the TPL-4; Com1 (pins 7 & 8 – 568B brown pair) is unused by the TPL-4, but can be useful for wiring convenience if daisy chaining more than four TPL-4s. It can "carry" a second RS-485 port through the first four modules, using the common daisy-chained wiring. Between the fourth and fifth units, the first RS-485 bus is abandoned and the second RS-485 port is crossed over to the Com0 wires for the next four modules.

Daisy-chaining TP-L4 Modules



RJ-45 (J2 & J3) DESCRIPTION

1 RS-485+ (Primary)	white/orange*
2 RS-485- (Primary)	orange*
3 Power ground	white/green*
4 +12 volts DC	blue*
5 +12 volts DC	white/blue*
6 Power ground	green*
7 RS-485+ (Auxiliary)	white/brown*
8 RS-485- (Auxiliary)	brown*

Note 1: Apply +12 volts DC using ONLY ONE of J2, J3, or J4.
Note 2: +12 volts DC and Power ground is always present at J2 & J3 (pins 3-6), even if J4 is used to supply the power.
* wire colors are applicable to TIA/EIA 568B for UTP cabling/termination.

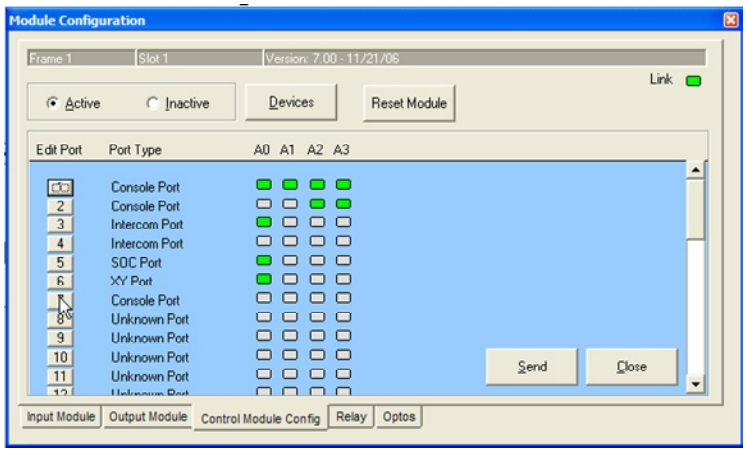
DIP SWITCH (DS1) DESCRIPTION

1,2 Panel RS-485 Address
1,2 = OFF, OFF: Address = A0
1,2 = ON, OFF: Address = A1
1,2 = OFF, ON: Address = A2
1,2 = ON, ON: Address = A3
Up to four (properly addressed) TP-L4 panels can share one RS485 port.

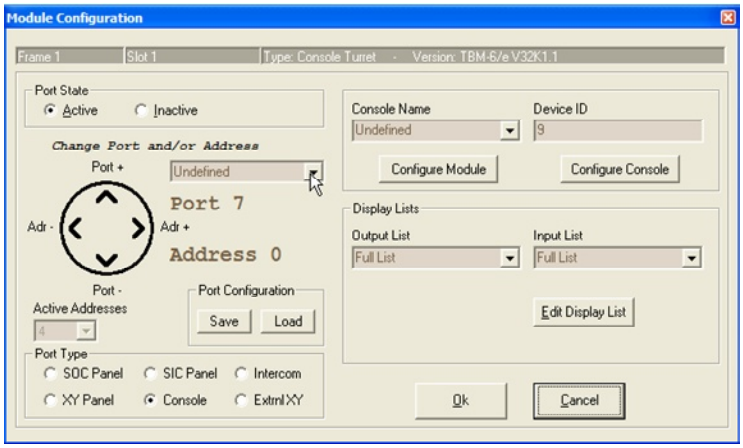
3,4 Operational Mode
3,4 = OFF, OFF: TP-L4 mode
3,4 = ON, OFF: Rubicon SL Input Module Mode
3,4 = OFF, ON: Test mode for Buttons and LEDs
3,4 = ON, ON: Test mode for Fader and S/W version
5,6,7,8 Not Used

DS1 shown with address A0 selected and module module operational mode set to RubiconSL.

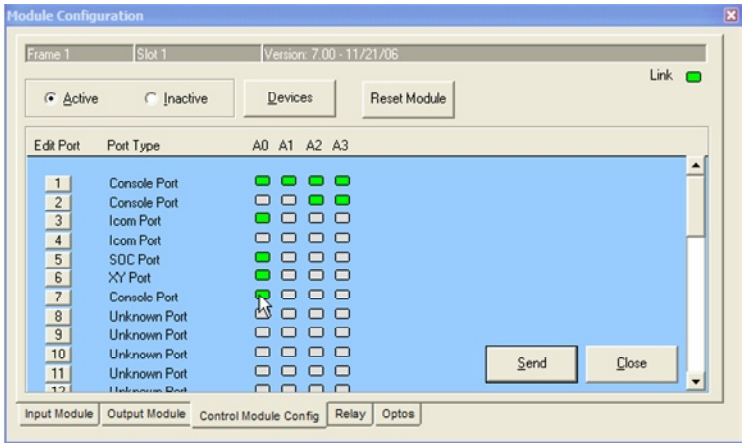
Configuration of your TPL-4 modules is done in the Router Control Software.
Start out in the Switcher Status/Configuration folder. Click Config for the DRC or RIO/KRL module that you've wired the TPL-4 RS-485 connections to. If you've wired the RS-485 to a RIO, click on the KRL for that RIO then select the (middle) Control Module Config tab.



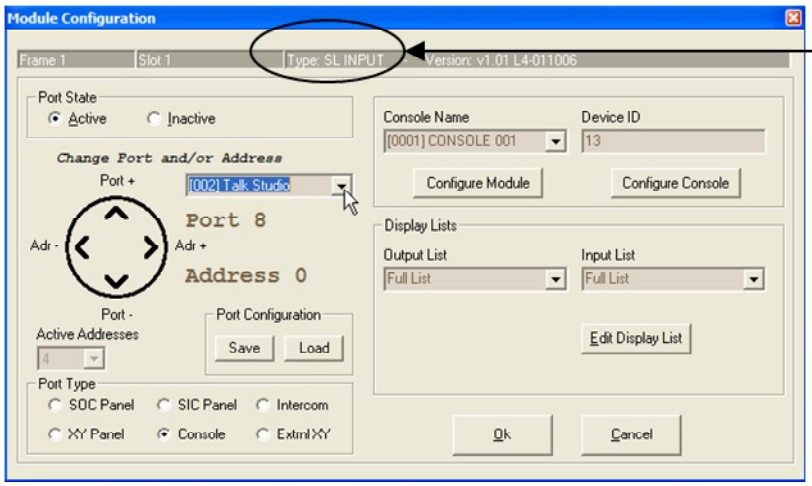
Click on the numbered rectangle for the port you wired the TPL-4 to.



Set the Port State to Active; Set the Port Type to Console, and click OK. Click SEND.



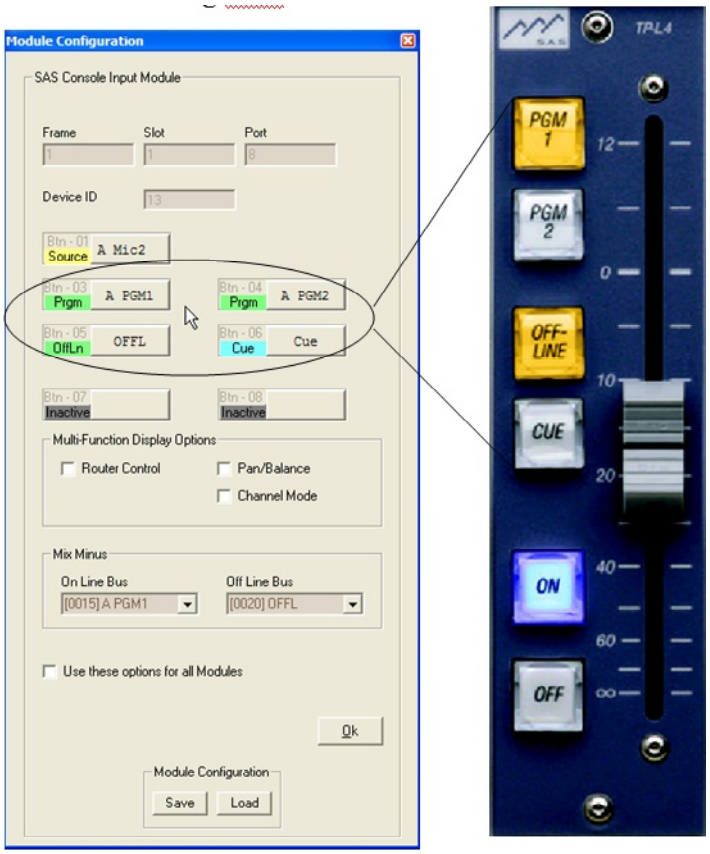
You should now see a Green dot for any active addresses on the RS-485 port.
Click on the rectangle port number again to go back to RS-485 Module Configuration.



The module type should show up as an SL INPUT. Note the Port and Address control. If you have more than one TP-L4 connected to this RS485 port, you can toggle between them using the Adr+ and Adr- (left and right) arrows. If you want to configure modules on other physical RS485 ports (for the same RIO or DRC), you can change ports with the Port + and Port – (Up and Down) arrows.

Make sure you are looking at the correct port and address for your new panel, then set the Location of the panel (highlighted above).

Next, associate the module with a console. This can be an existing full-size console (basically adding another input module to an existing Rubicon or RubiconSL console) or a new or existing Rubi-T console.



Click Configure Module.
The SL Input Module configuration tab opens up. The TP-L4 has four programmable buttons. The bottom two buttons are set to be the On and Off buttons – just like on a "normal" Rubicon or RubiconSL input module.

The upper four buttons on the TP-L4 module are represented by buttons three through six on the Input Module Configuration Tab.

These buttons can be set up just like the buttons on full-size input modules. Typically the TP-L4 buttons are used to assign the default source (see below) to various console buses. Please read the Bus Topology section below and understand how TP-L4 modules interact with existing consoles before you set up bus assigns.

Button one on the Input Module Configuration screen is where you can set a default source for the TP-L4 module. If none of your programmable buttons will be used as source select buttons – you must assign the module's source. To do this click button one, set the button type to Source Select, and select the source that this module will control.

Button one can be left blank (undefined) if any programmable buttons on the TP-L4 (buttons 3-6 on the Input Module Configuration screen) are set to be source selects.

Once your buttons (and optionally the default source) are programmed the way you want them, set the Mix Minus options for the module if required (if controlling a source that gets a mix-minus return feed).

Click OK on the Input Module Configuration screen. Now that you have programmed the module on address 0; if you have other TP-L4 modules to set up, you can change addresses and/or ports as needed using the Port and Address control arrows and program others. When you are finished programming modules (or just want to "save" your progress to try out what you've done) click ok on the RS485 Module Configuration screen and click SEND on the KRL/RIO or DRC Module Config screen.

Bus Topology:
The TP-L4 modules can act as extensions to existing full-size consoles (basically adding another input module to an existing Rubicon or RubiconSL console) or can be part of a new or existing Rubi-T console. The Rubi-T console has its own buses, creates its own mix minuses, and behaves independently of other consoles. These Rubi-T buses behave just like other console buses. They are developed on system (RIO or 32kd) outputs and can also be seen elsewhere as SOURCES if the DSP Loopback source is available to the other destination or console.

When set up as an independent console (Rubi-T): Just like selecting the same source on two different Rubicon or RubiconSL consoles … If you assign (or select) a source to control with your TP-L4 that can also be selected on another console, keep in mind that the last one to select the source has control over the any mix-minuses associated with the source. This can make for abrupt changes in what's feeding a mix-minus device if it is selected in Studio B while the source is actively being used in Studio A.

When set up as an auxiliary input module for an existing console:
A source can only be assigned to an output bus by one module at a time. So if you have a source that you want to control in the main control room OR on a talent turret elsewhere – the source must be deselected on all other modules of the console (actual console modules and TP-L4 modules alike) before you can select it / assign it to a bus on any other input module (including the TP-L4) on the same console. Since there is no way to deselect a default source (one assigned using the RCS instead of selected by pressing a source select button) on the TP-L4, we recommend that you set up A source and B source buttons for TP-L4s used in this manner. The A source can be the source that you want to be able to control from either location, while the B source can be another source or a dummy source; you can even use a non-existent source number, just be sure it doesn't exceed the number range used on your system and that it doesn't reference a virtual (DSP Loopback) source derived from one of your existing outputs. If the talent in the talk studio wants to control the on/off and levels on his microphone, it must be deselected on its usual module in the control room before the talent can control it with the TP-L4. Similarly when you want to return control of that microphone to the operator in the control room, the TP-L4 must not have the source selected (push the B – dummy source – button to deselect it) for the control room operator to gain control of it.

Dynamic Mix Minus setup with Blocking
(requires minimum RCS3.0 or higher, SM5.0 or higher, MCU 6.18)

Comrex Matrix as the shared codec.

Actual source audio channel coming from the equipment:
Incoming Matrix audio is connected to a KAI (or KDI or RIO input) card. The source channel config for that input is set up as a Dynamic Mix Minus source, either Dynamic16 or Dynamic32. Blocking attribute is also set (only for the actual SOURCE)
Set the associated output to the KAO (or KDO) channel that physically connects to the MATRIX send port.

Destination Audio Feeding the equipment:
This associated output can be set up as a Mix Minus type (12) or it CAN be set up as a router type since it will just be getting a crosspoint of the mix-minus being generated elsewhere.

The source and destination actually attached to the equipment can be anywhere in the 32KD system – no specific need for any particular mixer block, or even for DSP resources. They can even be on RIOs. If on a different frame from some of the consoles using them, make sure the Source is mapped to ANI (so the console can get the inbound audio from the Matrix) and make sure the Dynamic mix-minus busses for the (other frame) consoles are mapped to ANI on the other frame, so the mix minus will be available to be routed to the physical output feeding the Matrix.

Dynamic mix-minus busses:
These are console specific OUTPUT/DSP resources that must be located on the console's PGM/ OFFLINE mixer block. The number of these used depends on how many shared mix minus devices you need to use at the same time. Each of these outputs is set up as a type 11 Dynamic MM output. The corresponding DSP loopback source is set up as normal router type. The MCU will route the DSP loopback source (where the dynamic mix-minus audio is) of this dynamic mix-minus bus to the physical output feeding the Matrix.

Notes on Dynamic16 vs Dynamic32:
Although this is a SOURCE channel config attribute that is set on the actual audio source, it refers to how the mixer blocks (of the consoles using the source) are set up.
If the dynamic mix minus busses and the console online and offline busses are in the same mixer block (first or last half of an output card) the attribute is set to Dynamic16; if the dynamic mix minus busses and the online and offline busses are on the same card as the online and offline busses (but not the same mixer block) the attribute is set to Dynamic32.

SAS Console Button Legends

A long time ago in a console far, far away… the evil galactic empire decided to change formats… and ad an HD channel. OK, the legend we're talking about is not some sci-fi spoof, it's the button labeling for that bus assign button that just went from blank or UTIL2 to HD. One of the keys to making a console user-friendly is making the button legends (labels) make sense. All SAS Console models feature easy to customize button legends. The lens caps on our consoles can be removed with simple hand tools, the existing legend can be removed and a new and improved (or just more accurate) legend can be inserted.

What you will need:
A generic pair of pliers
A flat blade jeweler's screwdriver (a greenie or reddie works well)
An Exacto knife
A sharp pair of scissors
Laser or inkjet transparency film (get the good stuff like 3M)
A compatible printer for the transparency film
Microsoft Word on a Windows PC
Downloaded Fonts and Word Templates from the SAS website. http://www.sasaudio.com/downloads/buttonlegends.zip

We use three sizes of button assemblies - .400 and the larger .500 are the two sizes that generally get customized legends – the .625 size is used for On and OFF buttons. The .400 lens caps are used extensively on most console modules, with the .500 size used on some turret panels, console button panels, and intercoms. They all come apart the same way, so although these instructions are illustrated with photos of the .400 series buttons, the process is the same for both sizes.

Install the ttf fonts supplied in the SASbuttons.zip file. Font installation in windows is done under Fonts in the Windows Control Panel. If you are unfamiliar with the process, get help from an IT person.

Load the correct Template into Word and edit the contents of the labels.
Always populate a few more labels than you think you will need.

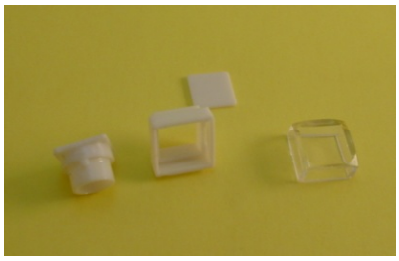
Print. Then carefully cut them out. They fit best if you cut just inside the lines; don't leave even a trace of the line edge in your cut-out legends. If you make them too large they will be difficult to use and really tough to remove later if you need to change them again.

SAS Console Button Legends (cont'd)

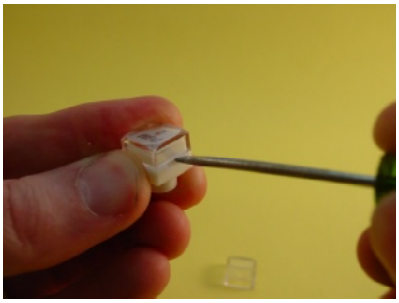
Once you've printed and cut out your legends, start removing the buttons you want to re-legend. For best results, grasp the lens with the pliers and wiggle them slightly as you pull the cap straight up. Usually the entire cap assembly will come off, sometimes just the lens cap, and sometimes the lens cap, the white diffuser chip, and the lens base will separate from the assembly base.

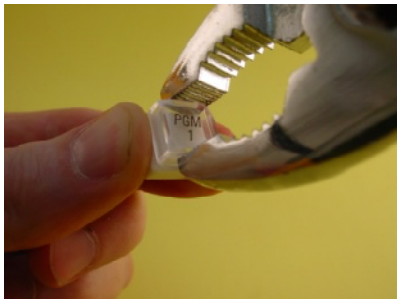
Pull straight up.

Sometimes you just get the lens.



Assembly base, lens base, white diffuser, and lens.

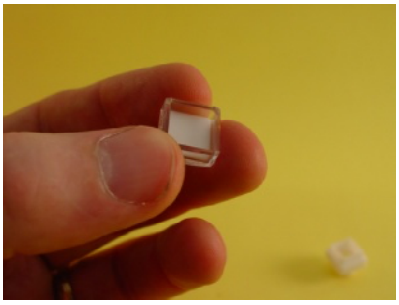


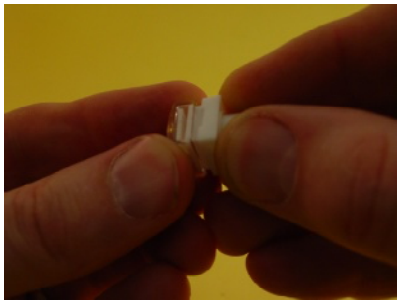


Sometimes a greenie helps, but usually you can grasp the base, and pull the lens off gently with the pliers.

Once the lens is removed, the white diffuser chip will probably fall out – don't lose it. Next, you'll need to get the old legend out. If you're lucky it will fall out when you open up the lens cap. Usually you have to help it out. An Exacto blade or sometimes even a greenie screwdriver can make this easier. We have the best luck with the Exacto, but it's easy to scratch the inside of the lens if you get in a hurry, and they hurt a lot when you jam one into your finger-tip. Or so we're told… Try to find an edge or corner of the legend that you can get under with the fine tip of the blade and it should come out without further fuss.

Re-assembly with the new legend is simpler – put the new legend in (make sure it reads right from the front), replace the white diffuser, and snap the lens and base back together.





Phone Editor system on the RubiconSL Console

Recording and editing radio station callers before putting them on the air has become a standard practice. Several capable products are available to satisfy the recorder/editor role. Most of these products are intended to record the inbound caller audio on one side and the desired console sources on the other.

There are several ways to accomplish the audio switching for Phone Editors within the RubiconSL system. Four scenarios are presented here. In these descriptions we may call for using the left channel feed to the Phone Editor for Caller Audio and the Right side for Mic and other audio… feel free to swap those if you'd like – the choice is completely yours and may end up being completely talent-driven. The four scenarios are summarized first then covered in more detail individually.

1) Fixed routing of all sources feeding the Phone Editor.
Pros: no bus assign buttons needed on the console.
Cons: lack of simple, dynamic level control for Phone Editor feeds. Sources are fixed, making it more difficult to add other sources (sound effects, etc) to the recording.
Router control software or special "sum on" controllers required to change what feeds the editor on which channel.

2) Fixed routing of caller audio and use of Offline bus for other console sources.
Pros: level control and mixing possible for all sources except for the caller audio. Offline bus is pre-switch, post-fader console bus.
Cons: If you have more than one hybrid, do you use one or both to feed the Phone Editor? Level of Caller Audio not adjustable from console.

3) "Edit Left" bus for inbound caller audio and Offline bus for mics and other console sources.
Pros: setting up the "Edit Left" bus button is simple and gives you the ability to assign any console source to the Phone Editor's "caller" side. This way you can use the bus for recording other console sources as well… including other mix-minus sources, satellite feeds, or whatever you want to record. Can be pre or post switch and pre or post fader.
Cons: takes up two bus assign buttons on the console. Operator must keep track of which side each source is going to.

4) Mono Edit-Left bus for inbound caller audio and mono Edit-Right bus for mics and other console sources. Uses a bus assign button in the same position on all console input modules – for the point of illustration we'll say button four is the EDITOR button on all input modules. Button four is set up as a mono (or mono-sum) bus (pre or post fader and pre or post switch) that feeds the left side of the Phone Editor, but only for the input modules used for hybrids and mix minus devices like codecs or other bidirectional devices. All of the other input modules on the console have a different mono-sum bus assigned by button four – this one feeds the other side of the Phone Editor. It can be set to be pre or post fader and pre or post switch.

Phone Editor system on the RubiconSL Console (cont'd)

How to implement each of these four methods follows. Note – this should only be undertaken by SAS support or by a "power-user" of the system. If you plan to set one of these methods up yourself, make sure you understand all of the steps involved. Do yourself a favor and make the changes after you've discussed the process with SAS support. Plan to make the changes during a time when we'll be readily available to assist you if you need help.

Fixed routing of all sources feeding the Phone Editor.

This one is easiest to set up. You'll need to know the system output (destination) numbers of the outputs that feed the Phone Editor. You'll also need to know the source numbers of your talent mics and your hybrids' caller audio outputs.

Under Destination Channel Config find the output that feeds the Phone Editor. Normally we hide the right channel label, but in this circumstance you may wish rename the right channel and unhide it. You can use Priority Take / Priority Sum On to assign sources to the outputs if you don't have display lists sets up for your XY controllers and you are concerned about someone accidentally changing what is being fed on these outputs. Priority crosspoints can be seen, but not changed on an XY controller. Only the Router Control Software can change Priority crosspoints; they show up as blue dots instead of green on the crosspoint map.

Both outputs should be set as Mono-LR Sum.

Scroll right until you find the attribute labeled "Type." Both should be Router type.

Click Send Channel Configuration.

Use the crosspoint map (probably the Full Map) to assign the desired microphone audio to the Left side of the Phone Editor feed. If you have more than one mic that you want to feed, use SUM ON instead of Take.

Repeat the process for assigning the desired caller audio source(s) to the Right side of the Phone Editor feed.

Since these assignments are done outside the realm of the console, they will be like pre-fader / pre-switch buses. This means that your operator will have no control over levels coming from the mics or the hybrids (caller audio). Most phone-intensive studios have some variety of leveling processor on the caller audio – some better hybrids have this feature built-in. The same goes for your mics, the microphone audio feeding the SAS system is probably already processed and enjoys consistent levels when operators employ decent mic technique.

Test for proper operation.

Fixed routing of caller audio and use of Offline bus for other console sources.

This option gives you fixed routing of caller audio sources to the Left channel as described above, but assigns the Offline bus of your console to the Right channel of the Phone Editor. If you don't have an OFFLINE bus already, contact us to help you create one. Having your Mics and other console sources assignable to the Offline bus allows for basic level control of the mics (if your Offline bus is set up post-fader) into the Phone Editor without having to turn the mic channels ON (which would mute the control room monitors and risk putting the mic audio on the air inadvertently). Typically the Caller Audio Source is monitored in Cue (kept as low as practical to prevent acoustic coupling into the Mics) while the Operator carries on a conversation with the caller. Since the ON/OFF control for the channel will be OFF, the automatic mix-minus features of the Rubicon and RubiconSL seamlessly generate a mix minus feed to the caller that's based on the OFFLINE bus. So the caller will hear only what's selected into OFFLINE, and potted up for level control (if your OFFLINE bus is set post-fader). The mics and other sources you have in Offline will feed the right channel of the Phone Editor.

In this scenario you'll need to know the System Output number of your OFFLINE bus, and WHERE in the system it is generated (on a 32KD output card or on a RIO). You'll also need to know the system output numbers of the feed to your Phone Editor, and the system source numbers of your hybrids' caller audio outputs. If your OFFLINE bus is generated on a RIO, your feed to the Phone Editor must be on the same RIO. If your OFFLINE bus is generated on a 32KD output card, your feed to the Phone Editor can be on ANY output of your router system.

Under Destination Channel Config find the output that feeds the Phone Editor. Normally we hide the right channel label, but in this circumstance you may wish to hide both channels so that XY controllers in your plant cannot "see" the outputs and change what's on them. Alternately you can leave them both unhidden and use Priority Take / Priority Sum On to assign sources to the outputs. Priority crosspoints can be seen, but not changed on an XY controller. Only the Router Control Software can change Priority crosspoints; they show up as blue dots instead of green on the crosspoint map.

Both outputs should be set as Mono-LR Sum.

Scroll right until you find the attribute labeled "Type." Both should be Router type.

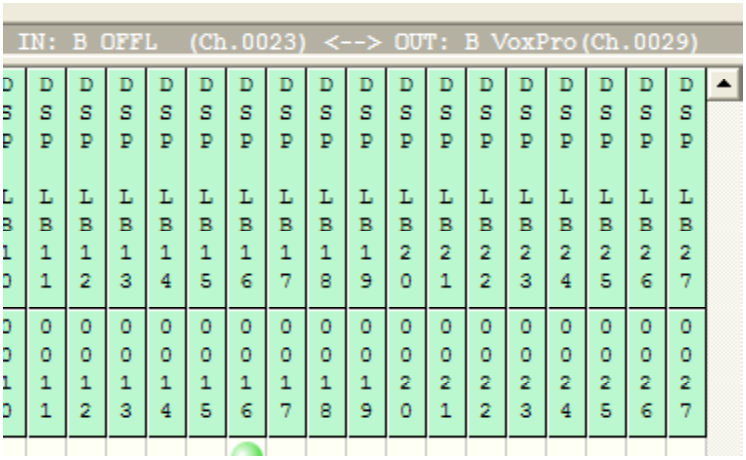
Click Send Channel Configuration.

Locate the Left side of the Phone Editor Feed in the OUTPUT column on the left edge of the Full Crosspoint Map. Scroll right until you find the caller audio source you want to assign to it, and click TAKE. If you have more than one Caller audio source that you want to feed to the Editor, use SUM ON instead of Take.

Phone Editor system on the RubiconSL Console (cont'd)

For the right side of the Phone Editor feed you'll need to know where your OFFLINE bus is generated. If the Offline bus is generated on a 32KD output card, use the Full Crosspoint Map as you did with the left side of the Phone Editor Feed. Scroll across until you find the SOURCE for your Offline bus (this is actually a virtual copy, or DSP Loopback source, of the OFFLINE bus). This Source should be the same number as the Offline Bus' system output number. TAKE this source, the virtual copy of the Offline bus to the right channel output feeding your Phone Editor. If it is a stereo OFFLINE bus, SUM ON the second channel to the same output.

If your OFFLINE bus is generated on a RIO, it is only available as a virtual source within the same RIO, so your output feeding your Phone Editor must be on the same RIO. To crosspoint a RIO DSP loopback source, you must go to the RIO Crosspoint Map for the RIO. RIO crosspoint maps have 32 numbered outputs down the left side, 32 numbered sources across the top, and then an additional 32 sources to the right of these which are the DSP Loopback Sources (Virtual copies) of the 32 Outputs down the left side. One of these will be the OFFLINE bus source (two if it's stereo) that you want to crosspoint to the right channel of the OUTPUT feeding the Phone Editor. Unfortunately the DSP LoopBack sources are not numbered with system numbers (only 32KD output-card-generated DSP Loopback sources have system numbers), so you'll have to count over to it – if you hover over the intersection of the output feeding your Phone Editor and the DSP loopback that you think is the Offline bus, you can verify it's correct by looking up at the top border of the crosspoint map near the righthand edge – there you will see
IN: Source name (and RIO channel number) **ß -- à** OUT: Destination Name (ch #).
It should look something like this:



Since the caller audio assignments are done outside the realm of the console, they will be like pre-fader / pre-switch buses. This means that your operator will have no control over levels coming from the hybrids (caller audio). Most phone-intensive studios have some variety of leveling processor on the caller audio – some better hybrids have this feature built-in.

"Edit Left" bus for inbound caller audio and Offline bus for mics and other sources.

This method requires two bus assign buttons on the console's input modules. Also if your OFFLINE bus is generated on a RIO, the feed to your Phone Editor must come from the same RIO.

Here we will turn the left side of your feed to the Phone Editor into a console-controlled bus. Each module will have one of its bus assign buttons designated as the "Editor Left" button.

The right channel feed to your Phone Editor will remain as a ROUTER type and will get a mono or mono-summed copy of the OFFLINE bus sent to it. If you don't have an OFFLINE bus already, contact us to help you create one. Having your Mics and other console sources assignable to the Offline bus allows for basic level control of the mics (if your Offline bus is set up post-fader) into the Phone Editor without having to turn the mic channels ON (which would mute the control room monitors and risk putting the mic audio on the air inadvertently). Typically the Caller Audio Source is monitored in Cue (kept as low as practical to prevent acoustic coupling into the Mics) while the Operator carries on a conversation with the caller. Since the ON/OFF control for the channel will be OFF, the automatic mix-minus features of the Rubicon and RubiconSL seamlessly generate a mix minus feed to the caller that's based on the OFFLINE bus. So the caller will hear only what's selected into OFFLINE, and potted up for level control (if your OFFLINE bus is set post-fader).

First the "Editor Left" bus. Under Destination Channel Config find the output that feeds the Phone Editor. First change this stereo output to two "Mono-LR Sum" outputs. The names will need to be set to something like A VxP-L> and A VxP-R>, or just B VoxPro, leaving the right channel name hidden. Click Send Channel Configuration. Go to the Full Crosspoint Map and locate the Output you just changed. Verify that it shows up as two mono-sum outputs instead of one stereo. Go back to Destination Channel Configuration, find the Left channel output, scroll across until you find the Type attribute, and set it to UTILITY. Next set the fader and switch options the way you want them; we recommend pre fader and pre switch for this application, though some prefer post fader and pre switch. Leave the right channel output as a ROUTER type. Click Send Channel Configuration.

To set up the bus assign button for the Editor Left bus (which we named "A VxP-L>") we'll first decide which button will be used on the console. If there's already a bus that's using the button, you'll need to clear the bus by pressing the bus assign button on any modules where the bus is active so that none of the buttons for the bus are lit up. You can verify that the bus is clear by right-clicking over the bus name found down the left-hand side of the full crosspoint map, and selecting Input List.

Next, get into the console configuration window for the console being changed– if you don't know how, you probably shouldn't be doing this without direct SAS supervision, so call us. Click on the config button on any one of your console input modules. This will bring up the familiar Input Module Config window where you can re-assign the button to its new bus. Once you've made the change on one module, you should be able to check the "Use these options for all modules" check box.

Scroll right or left through several modules to make sure that the new bus button appears on the other input modules.

When done, click OK

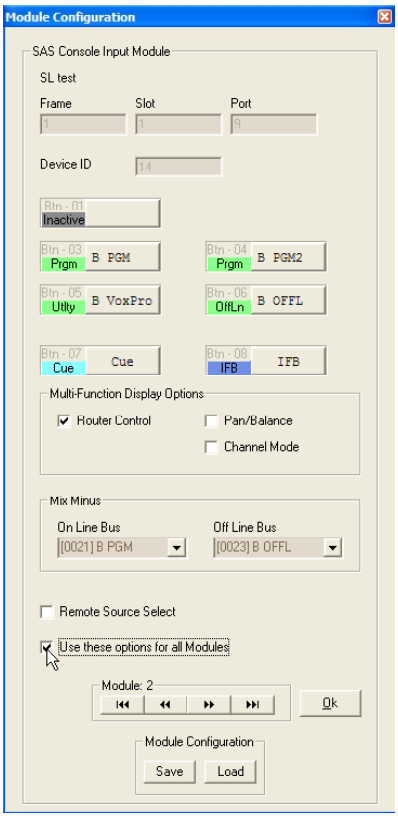
Phone Editor system on the RubiconSL Console (cont'd)

Click OK again when the entire console graphic shows up.

Click OK at the Port configuration window.

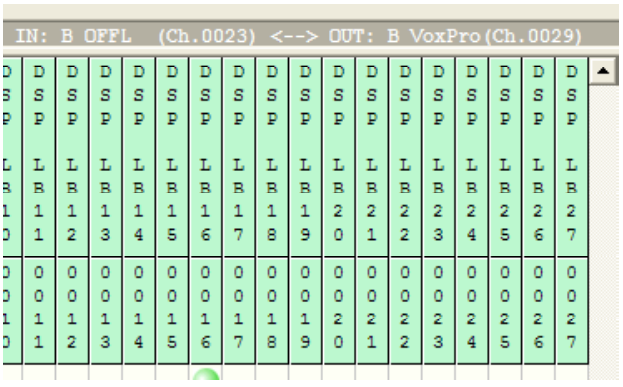
Click Send when the KRL/RIO's control module config tab shows back up.

Now you are done with the left channel. Test it by selecting an active console source with the new bus button. The source should show up on the left channel record input of your Phone Editor.



For the right side of the Phone Editor feed you'll need to know where your OFFLINE bus is generated. If the Offline bus is generated on a 32KD output card, use the Full Crosspoint Map as you did with the left side of the Phone Editor Feed. Scroll across until you find the SOURCE for your Offline bus (this is actually a virtual copy, or DSP Loopback source, of the OFFLINE bus). This Source should be the same number as the Offline Bus' system output number. TAKE this source, the virtual copy of the Offline bus to the right channel output feeding your Phone Editor. If it is a stereo OFFLINE bus, SUM ON the second channel to the same output.

If your OFFLINE bus is generated on a RIO, it is only available as a virtual source within the same RIO, so your output feeding your Phone Editor must be on the same RIO. To crosspoint a RIO DSP loopback source, you must go to the RIO Crosspoint Map for the RIO. RIO crosspoint maps have 32 numbered outputs down the left side, 32 numbered sources across the top, and then an additional 32 sources to the right of these which are the DSP Loopback Sources (Virtual copies) of the 32 Outputs down the left side. One of these will be the OFFLINE bus source (two if it's stereo) that you want to crosspoint to the right channel of the OUTPUT feeding the Phone Editor. Unfortunately the DSP LoopBack sources are not numbered with system numbers (only 32KD output-card-generated DSP Loopback sources have system numbers), so you'll have to count over to it – if you hover over the intersection of the output feeding your Phone Editor and the DSP loopback that you think is the Offline bus, you can verify it's correct by looking up at the top border of the crosspoint map near the right-hand edge – there you will see
IN: Source name (and RIO channel number) ß -- à OUT: Destination Name (ch #).
It should look something like this:

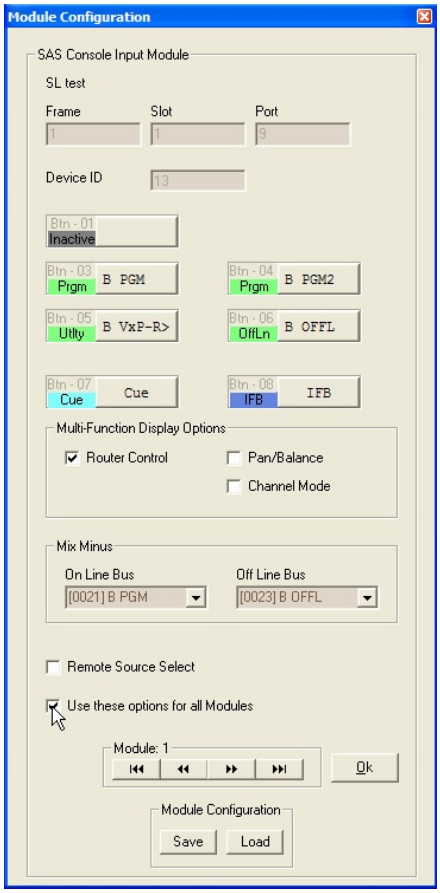


Mono Edit Left bus for inbound caller audio and mono Edit Right bus for mics and other console sources – using one bus assign button.

This method is similar to the method just described except in this method we won't use the OFFLINE bus at all. Instead, two Mono-LR Sum buses are made from the stereo output used to feed your Phone Editor.

Under Destination Channel Config find the output that feeds the Phone Editor. First change this stereo output to two "Mono-LR Sum" outputs. The names will need to be set to something like A VxP-L> and A VxP-R. Click Send Channel Configuration. Go to the Full Crosspoint Map and locate the Output you just changed. Verify that it shows up as two mono-sum outputs instead of one stereo. Go back to Destination Channel Configuration, find the Left channel output, scroll across until you find the Type attribute, and set it to UTILITY. Do the same for the Right output. Next set the fader and switch options the way you want them for both channels; we recommend pre fader and pre switch for this application, though some prefer post fader and pre switch. Click Send Channel Configuration.

To set up the bus assign button for the Editor buses we'll first decide which button will be used on the console. We only need one free button per module because each input module on the console will either have a VxP-L> button or a VxP-R> button, not both. As far as the operator is concerned they'll just press the VxPro> button for any source they want to go to the Phone editor and it will go there. Whether it goes to the left or to the right will be decided module by module based on which bus you use the bus assign button for, VxP-L> or VxP-R>.
If there's already a bus that's using the button you've selected, you'll need to clear the bus by pressing the bus assign button on any modules where the bus is active so that none of the buttons for the bus are lit up. You can verify that the bus is clear by right-clicking over the bus name found down the left-hand side of the full crosspoint map, and selecting Input List.



Next, get into the console configuration window for the console being changed – if you don't know how, you probably shouldn't be doing this without direct SAS supervision, so call us. Click on the config button on any one of your console input modules. This will bring up the familiar Input Module Config window where you can re-assign the button to its new bus. For now set the button up as a bus assign button for the VxP-R>bus, this is the bus assign button that will be on every module except the Caller Audio module(s). Once you've made the change on one module, you should be able to check the "Use these options for all modules" check box.

Scroll right or left through several modules to make sure that the new bus button appears on the other input modules.

Next go directly to the module used for your Caller Audio (hybrid output) source. Change the VxP-R> bus assign button on this module to VxP-L>. Do not check the "Use this option for all modules" check box this time.

Then, if you have more than one hybrid or mix-minus source that you wish to record this way (on the left side of the Phone Editor) go directly to those input modules and change the bus there as well.

When done, click OK.

Click OK again when the entire console graphic shows up.

Click OK at the Port configuration window.

Click Send when the KRL/RIO's control module config tab shows back up.

Test by selecting caller audio and some other active console source with the new bus button. The caller should show up on the right (only) and the other source should show up on the left channel (only) of your Phone Editor.

Final Notes:

You might consider creating a Control Room Monitor or Meter quick select button for some of these buses or outputs. Often this output does not need a monitor select button (the monitors will mute if a bus containing live mics is being monitored) or a metering quick select, since the Phone Editor's recording levels are viewable. But if you prefer to set either up, you can find information on configuring the Control Room Monitor and Console Control Module functions elsewhere in the Rubicon Installation Guide

There's also a section on how to legend / label the console buttons.

Phone Editor System on the Rubicon Console

Recording and editing radio station callers before putting them on the air has become a standard practice. Several capable products are available to satisfy the recorder/editor role. Most of these products are intended to record the inbound caller audio on one side and the desired console sources on the other.

There are several ways to accomplish the audio switching for Phone Editors within the Rubicon system. In addition to the four methods presented in the RubiconSL version of this document, the Rubicon console enables control of an innovative bus type that allows each input module to assign its source to a phone editor bus in either stereo, summed to left, or summed to right. The setting has no effect on any other buses, just the "Record-type" bus we set up to feed the phone editor. By definition the RECORD type bus is pre- or post-fader and pre-switch. If you select Pre-Fader, the only control your operator will need to worry about is the bus assign button for your Phone Editor bus.

Being pre-fader means that your operator will have no control over levels coming from the mics or the hybrids (caller audio). Most phone-intensive studios have some variety of leveling processor on the caller audio – some better hybrids have this feature built-in. The same goes for your mics, the microphone audio feeding the SAS system is probably already processed and enjoys consistent levels when operators employ decent mic technique. On a module by module basis, you can change the fader and switch settings. Almost universally, pre-switch (this setting referes to the On/OFF state of the Module) is selected. The choice of Pre or Post Fader varies widely for this application.

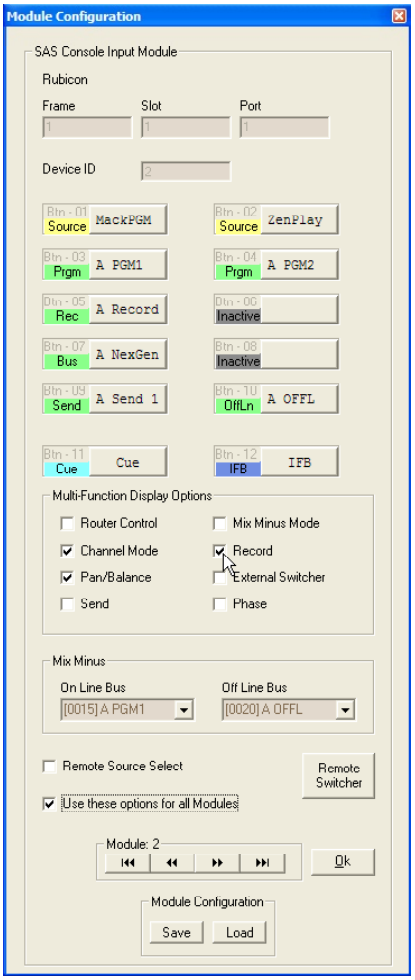
The stereo output bus feeding your Phone editor will be a RECORD type bus – this can be verified or modified in the Router Control Software under Destination Channel Configuration. Find the output that feeds your Phone Editor, then scroll across until you find the Type attribute, and set it to RECORD. Verify that the left and right channel attributes changed. Click Send Channel Configuration.

Creating the Bus

To set up the bus assign button for the Editor bus we'll first decide which button will be used on the console. We need one free button, the same one on every input module. As far as the operator is concerned they'll just press the Phone Editor bus assign button for any source they want to go to the Phone editor and it will go there. Whether it goes to the left or to the right will be decided module by module based on settings you will make during setup.

If there's already a bus that's using the button you've selected, you'll need to clear the bus by pressing the bus assign button on any modules where the bus is active so that none of the buttons for the bus are lit up. You can verify that the bus is clear by right-clicking over the bus name found down the left-hand side of the full crosspoint map, and selecting Input List.

Phone Editor System on the Rubicon Console (cont'd)



Next, get into the console configuration window for the console being changed – if you don't know how, you probably shouldn't be doing this without direct SAS supervision, so call us.

Click on the config button on any one of your console input modules. This will bring up the familiar Input Module Config window where you can re-assign the button to its new bus. Set the button up as a bus assign button for the Phone Editor bus. For setup, you'll need to enable the Record feature check-box found in Multi-Function Display Options. Once you've made these changes on one module, you should be able to check the "Use these options for all modules" check box. It is located just above the Scroll left and right buttons, near the bottom of the window.

Scroll left or right a few modules and make sure the changes propagated to the other input modules. Also check them to make sure the Mix Minus On Line and Off Line buses are defined as expected.

Then click Ok.

Click OK again when the entire console graphic shows up.

Click OK at the Port configuration window.

Click Send when the KRL/RIO's control module config tab shows back up.

Assigning Left Split, Right Split or Stereo for each module is accomplished from the Multifunction display on each input module.

A brief primer on the MultiFunction display follows:

That square, green LCD display and the knob above it make up the Multi Function Display, or **MFD**. The LCD display is kind of a mini control panel for the deeper options of each input module. It is here that you can access features like Source Select, Channel Mode, Pan, Phase, Record Bus settings, and Mix-Minus controls. The square display's color is used to indicate safe (green), orange (a setting is being changed) or red (indicating a communications failure with console's brain); the display is also a Pushbutton. When you are making a change to one of the MFD features, you generally execute the change by pressing the display itself. The Select Knob is a rotary encoder, a kind of super-reliable, many-position switch. It
can be pressed to act as a pushbutton switch for some of the functions. Currently the Control rotary encoder is not necessary for MFD functions. It will be used in the future for additional advanced features.

Phone Editor System on the Rubicon Console (cont'd)

The modules default (not yet set up) Record bus settings are viewable by scrolling (turning the Select Knob) until you reach the RECORD label (you'll also see your Record bus name above the word RECORD - this is so you can have multiple RECORD type buses if needed). Once you reach the RECORD screen, press the display to see a summary of the settings as they are right now.Scroll left a click and then back to the RECORD screen. Press down on the Select Knob to enter Edit mode for the settings.

While in Edit mode the screen will have an orange backlight. Turn the Select Knob to choose how you want this module's sources to feed the Phone Editor bus. OFF means the source will feed the Phone Editor bus in normal stereo. L or R will sum the source's left and right channels and feed the sum to just the selected channel of the Phone Editor bus. When you've made your selection, press the display to save the selection.

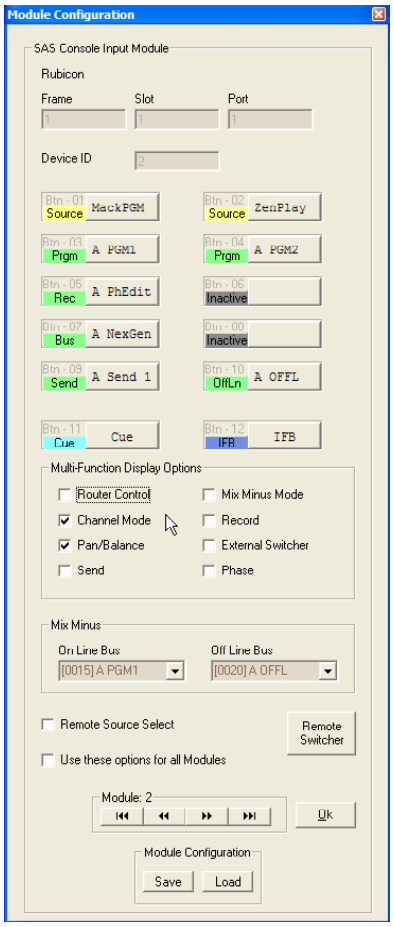
Saving the Split options will bring up the Fader option window. Turn the Select Knob to highlight either Pre or Post. Press the display to save the selection. This will bring up the Switch option window. Again, turn the Select Knob to highlight Pre or Post, then press the display to save your selection. This will cycle you back to the Split option window, which you've already set. Press the Select Knob to exit Edit mode.

When you exit the Edit mode you will see the setting summary again for a few seconds. You can scroll left a few clicks to get back to the SAS Logo Screen.

Repeat this procedure for all input modules in the console then test your new Phone Editor bus to make sure it behaves according to your wishes.

Phone Editor System on the Rubicon Console (cont'd)

Once you've modified all of the input modules' settings for the Phone Editor bus you should go back into the console configuration window for the console being changed to disable the Record box under Multi-Function Display. Instead of using the checkbox "Use the options for all Modules," this time, scroll through each input module individually to remove the Record function. This will allow you to double-check and re-enable any MFD functions you want available to your operators on each input module. As usual, when you are all done, click OK until you get to a SEND box then click it.



You might consider creating a Control Room Monitor or Meter quick select button for the bus. Often this bus type does not need a monitor select button (the monitors will mute if a bus containing live mics is being monitored) or a metering quick select, but if you prefer to set either up, you can find information on configuring the Control Room Monitor and Console Control Module functions elsewhere in the Rubicon Installation Guide

There's also a section on how to legend / label the console buttons.

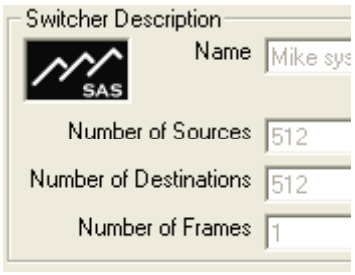
Server Module and Router Control Software in Demo Mode

You've used the CDs that came with your system or downloaded the files from the SAS website and installed the software. But now you want to install it again, on some other machine, in Demo mode so you can "play," without fear of breaking anything.

Install the Server Module and Router Control Software with Automation as if you were setting it up for your router. There's a section in the Installation Guide that describes installation. Once you've finished the installation, you'll want a copy of your existing database, and you'll need to know what your existing router database size is.

The easiest way to get a copy of your database is to go to your functional system and, while viewing a crosspoint map, channel configuration, or the Switcher Status and Configuration page, click on File and select Save All As. Save the default named file somewhere that you can get to it easily from the other machine (thumb drives are great for this). While you're in the Router Control Software for your functioning system, click on the View menu and select Switcher Database. Note the number of sources and destinations.

You'll set this the same way in your Demo setup.



If you have PC based Router Automation running, you can also get a copy of that database so you'll have the same automation events in your Demo software. To save the automation database, click on your automation folder in the Router Control Software, then click File and select Save Automation Events. Do the same if you are running System (MCU) Automation.

Now – on to the machine you're installing the demo software on. The software is installed already right? Now make sure the Router Control Software and the Server Module are shut down on the demo system. Open up windows explorer and browse to the //Program Files/SAS Server Module folder.

Right-click on the file named tcpserve.ini. (if you don't have tcpserve.ini, then you haven't tried to run the server module at all yet – go ahead and start server module then shut it back down – this should generate a tcpserve.ini file)

Go all the down to the bottom of the file and find the line that says
Demo Mode = No
It's usually the last or next to the last line in the file.

Change this to Demo Mode = Yes

Save the file.

Server Module and Router Control Software in Demo Mode (cont'd)

When you restart the server module, the application will say DEMO MODE in the bottom-center of the window. Click on File, go to Setup and verify that the Switcher is set to 32KD serial, and that the IP Port is set to 1250. Click Ok, then minimize (but don't close) the server module window.

Now's a good time to copy the switcher.swt file into your //Program Files/SasRcs folder.

Now open up the Router Control Software.

Click on View – Switcher Database and let's load set your switcher data. To do this click Edit at the bottom of the page- this un-grays the switcher definition allowing you to specify the correct Switcher type (SAS 32K Digital Switcher), the correct IP Port # (1250), the correct number of Sources and Number of Destinations, and then click on Save down in the lower right corner. If it complains and wants you to select a switcher database file (you may have done this previously during installation) just go through the motions and use the suggested default. When you are done you should be able to click save and quit.

Load your SWT file: While viewing a crosspoint map, Source Channel or Destination Channel Configuration, or the Switcher Status and Configuration page, click File and select Load All. You'll get a warning – tell it to proceed. If the window doesn't automatically open up on your //Program Files/SasRcs/ folder, browse there and select your swt file that you copied in a few steps ago. Click Open.

If all went well you now have the source and destination data from your Live system loaded into your Demo system.

"Phoenix" Connector - Audio In

5 R+
4 R-
3 Gnd
2 L-
1 L+

Power Requirements: Regulated 9-12VDC

RJ-45
(two connected in paralell for "daisy-chaining" audio and power to multiple HP amps)

Pin#	568B color
1 L+	wht/org
2 L-	orange
3 Gnd	wht/grn
4 V+	blue
5 V+	wht/blue
6 Gnd	green
7 R+	wht/brn
8 R-	brown

Turret Meter Connections

Balanced Analog Audio feeds the Turret Stereo LED Vu Meter.

The RJ-45 and DB9 male connectors on the Turret meter are wired in parallel.

Note that the power wiring is the same as for other SAS modules using these connectors, but there is no RS485 connectiuon on the Turret meter.

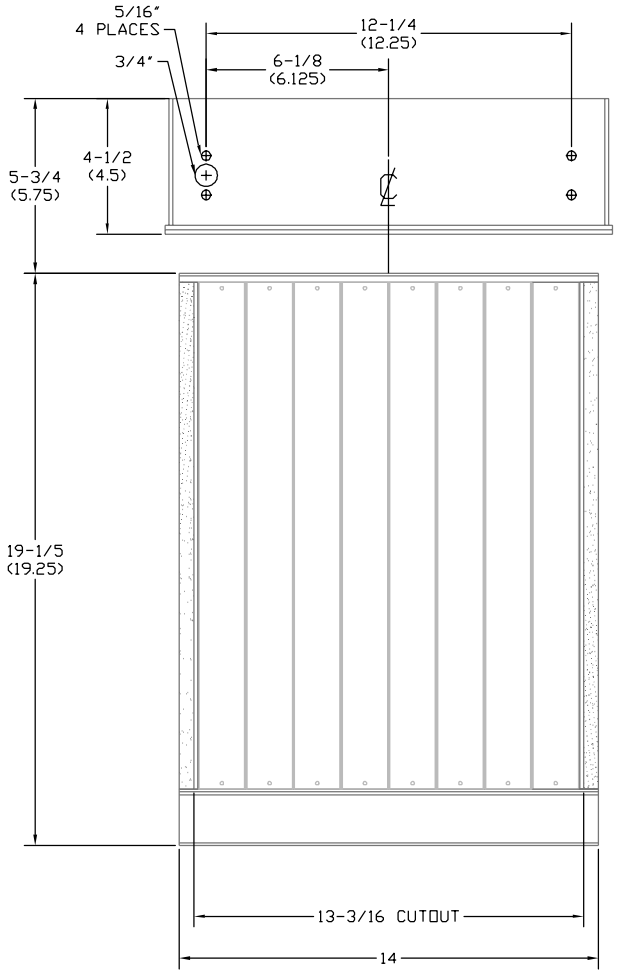
RJ-45 Wiring
When looking into the female connector on the meter, tab down, from left to right:

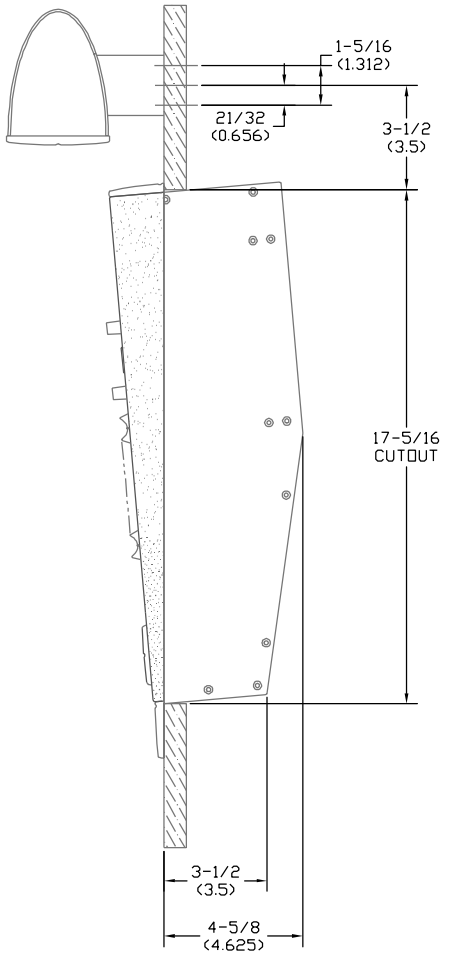
Pin#	568B color
1 L+	wht/org
2 L-	orange
3 Gnd	wht/grn
4 V+	blue
5 V+	wht/blue
6 Gnd	green
7 R+	wht/brn
8 R-	brown

9Pin D-Sub Male

1	signal ground
2	power ground
3	V+
4	Left+
5	Left-
6	signal ground
7	n/c
8	Right+
9	Right-

REVISIONS	
DATE	DESCRIPTION





NOTES:
1. CUTOUT DIMENSIONS ALLOW FOR VARIATIONS.
   DO NOT CUT LARGER THAN SHOWN.
   ENSURE OPENING IS SQUARE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX =±0.015 .XXX=±0.005 ANGLES ± 2°	
DRAWN	EOF
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APPROVED	
DATE	01/2004

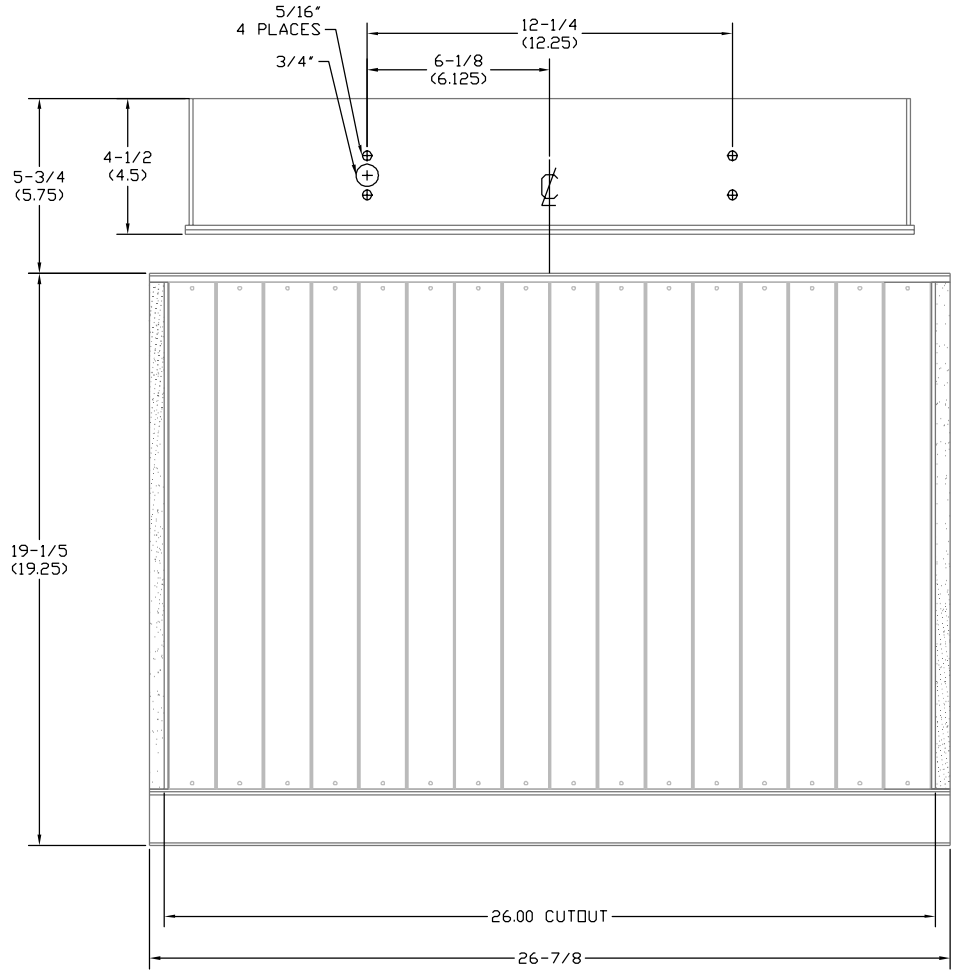
Sierra Automated Systems

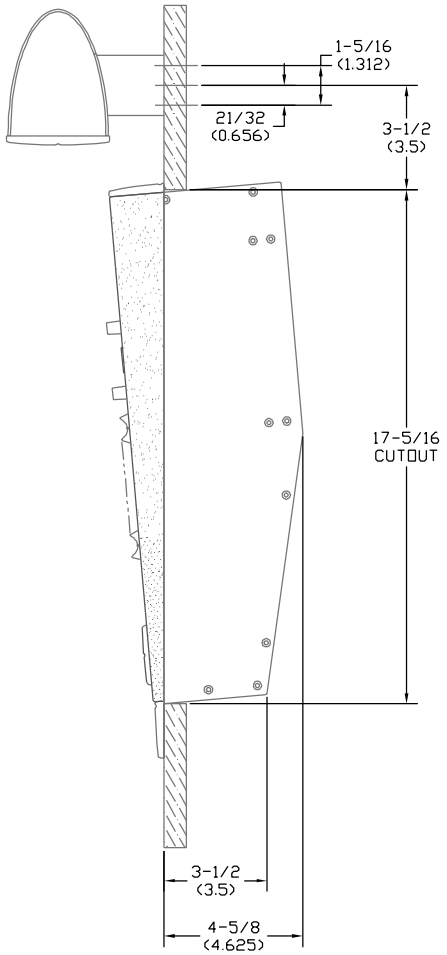
RUBICON OUTLINE DRAWING,
8 MODULE FRAME WITH 1 METER POD

SHEET 1 OF 1

CRUBI08OL

REVISIONS	
DATE	DESCRIPTION





NOTES:
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX = ±0.015 .XXX = ±0.005 ANGLES ± 2°	
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APPROVED	
DATE	01/2004

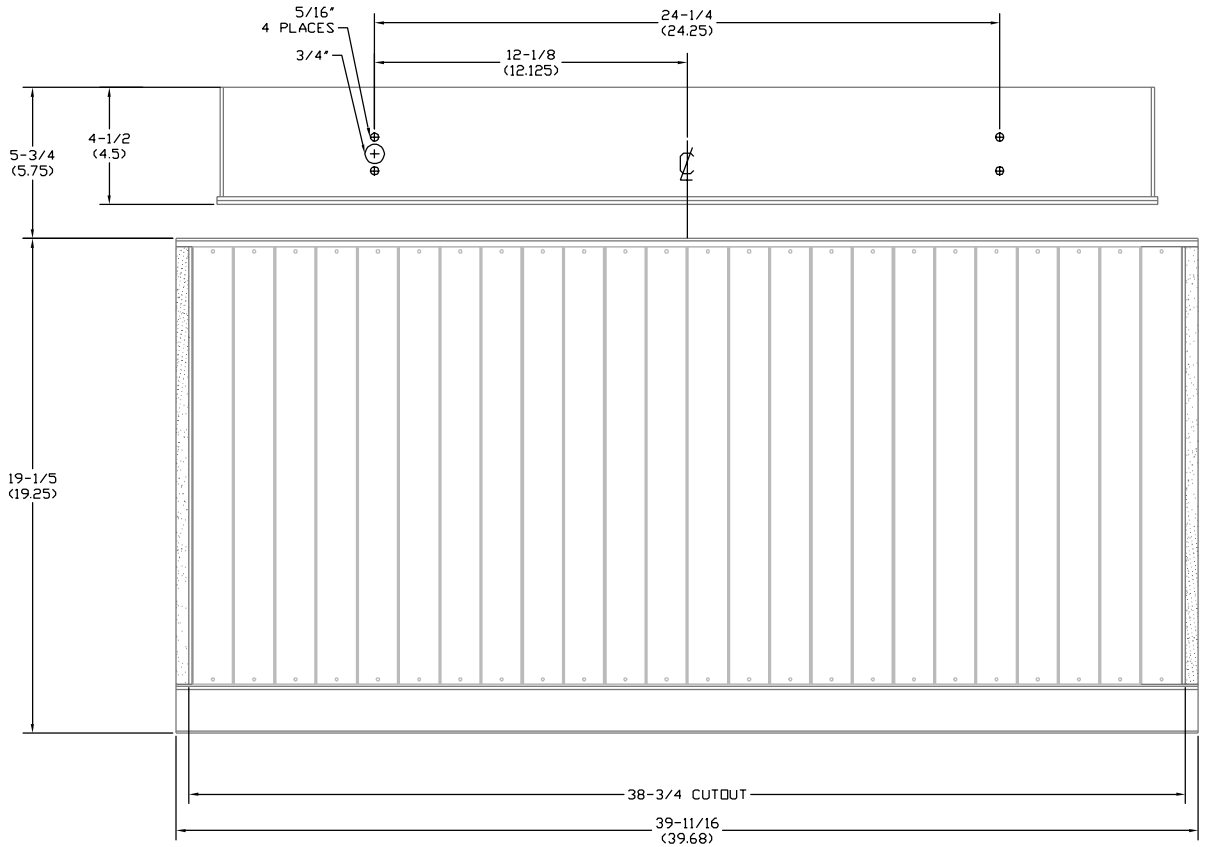
Sierra Automated Systems

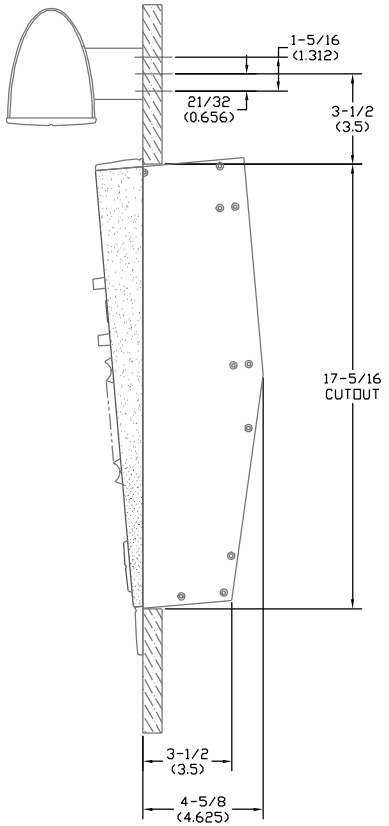
RUBICON OUTLINE DRAWING,
16 MODULE FRAME WITH 2 METER POD

SHEET 1 OF 1

CRUBI160L

REVISIONS	
DATE	DESCRIPTION





NOTES:
1. CUTOUT DIMENSIONS ALLOW FOR VARIATIONS.
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   ENSURE OPENING IS SQUARE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX = ±0.015 .XXX = ±0.005 ANGLES ± 2°	
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APPROVED	
DATE	02/04

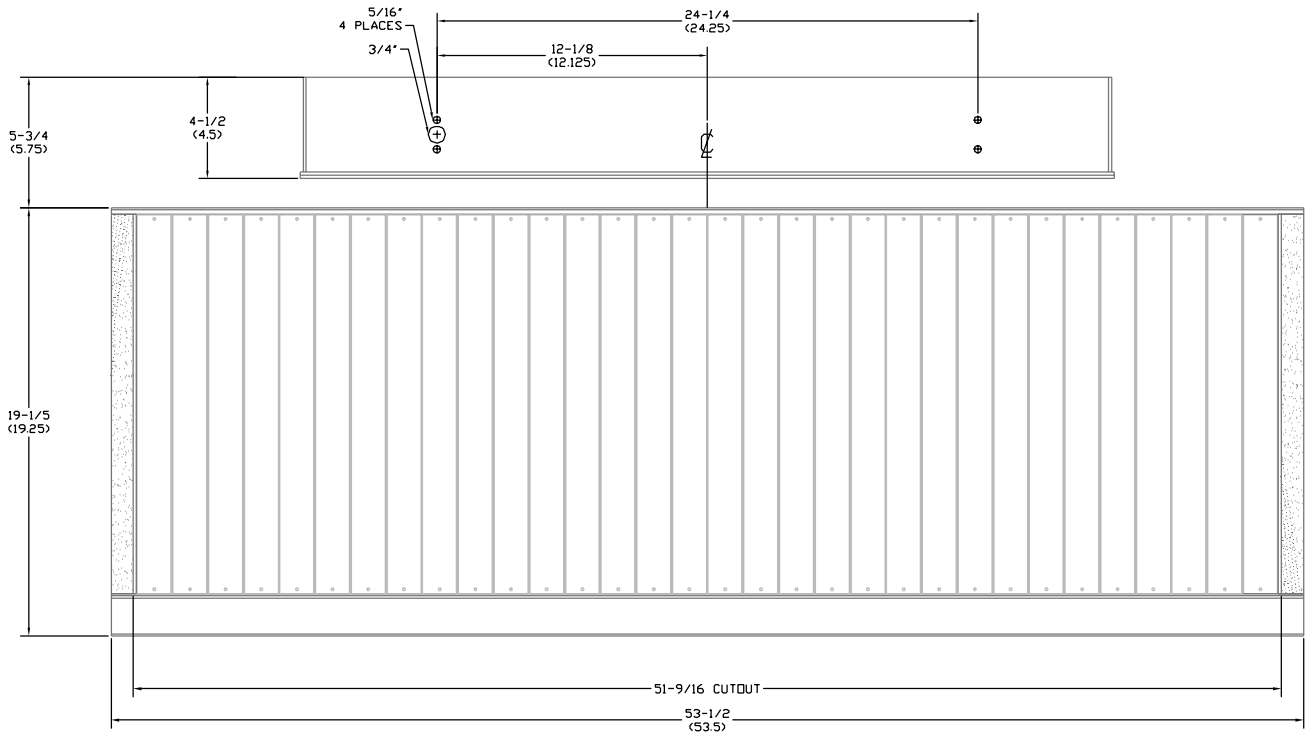
Sierra Automated Systems

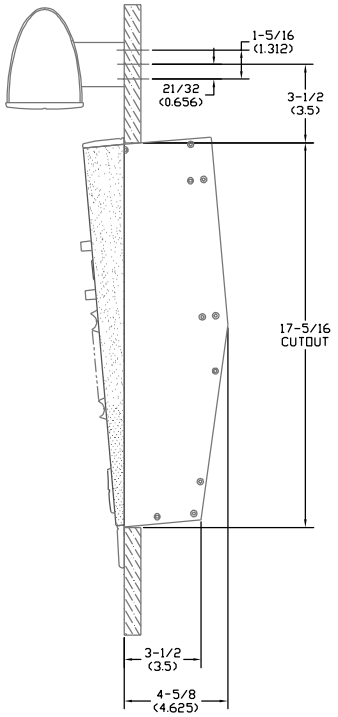
RUBICON OUTLINE DRAWING,
24 MODULE FRAME WITH 4 METER POD

SHEET 1 OF 1

DRUBI2440L

REVISIONS	
DATE	DESCRIPTION





NOTES:
1. CUTOUT DIMENSIONS ALLOW FOR VARIATIONS. DO NOT CUT LARGER THAN SHOWN. ENSURE OPENING IS SQUARE.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX ±0.015 .XXX±0.005 ANGLES ± 2°		Sierra Automated Systems
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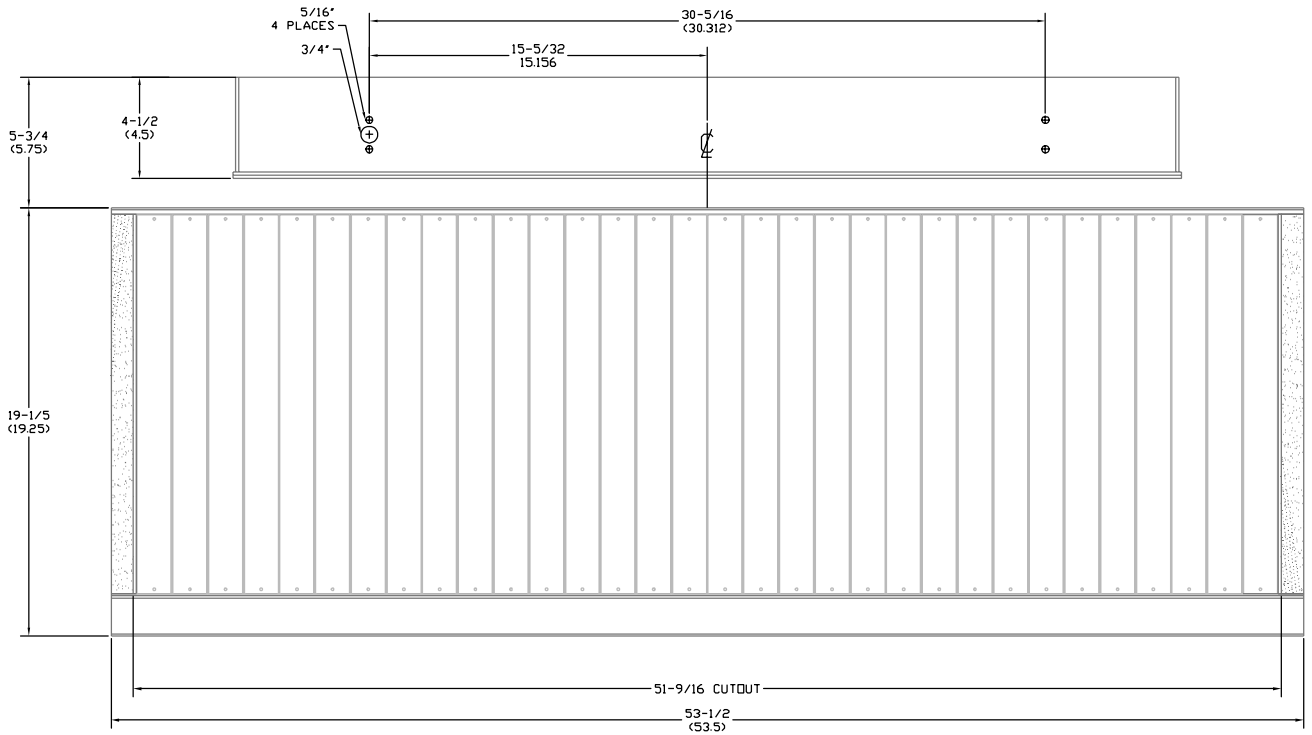
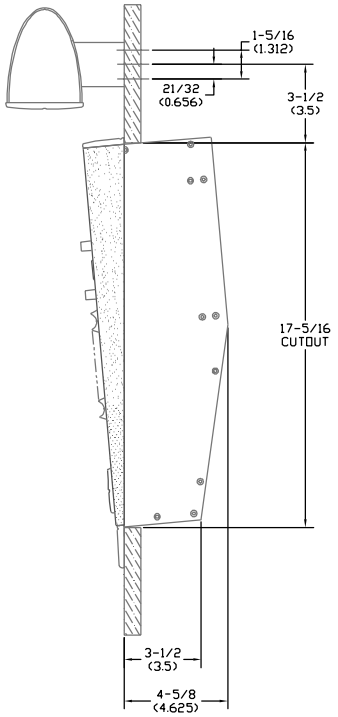
APPROVED		
DATE	02/04	SHEET 1 OF 1 — DRUBI3240L

REVISIONS	
DATE	DESCRIPTION





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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX ±0.015 .XXX±0.005 ANGLES ± 2°	
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CHECKED	
APPROVED	
DATE	02/04

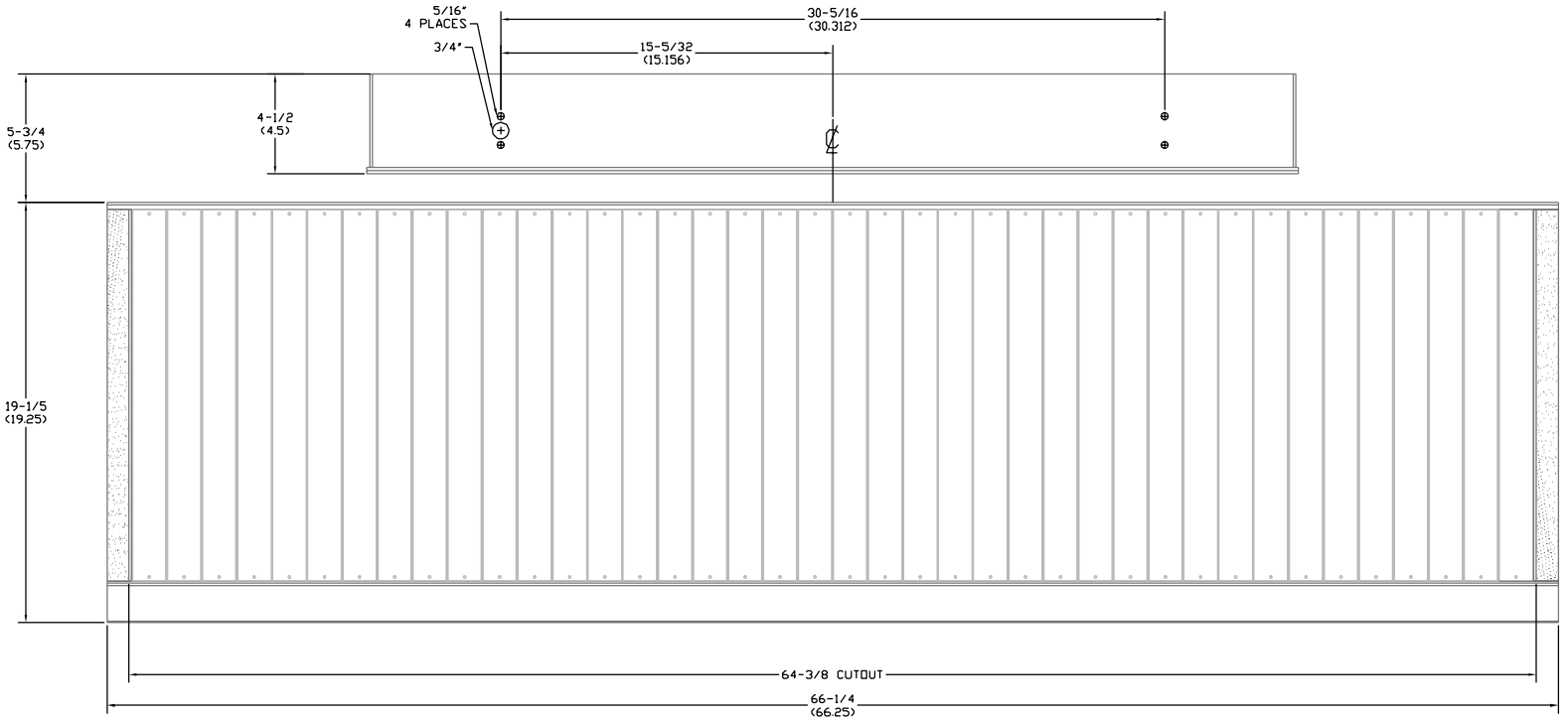
Sierra Automated Systems

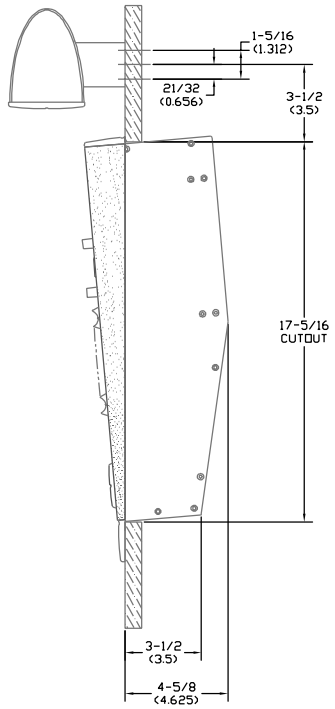
RUBICON OUTLINE DRAWING,
32 MODULE FRAME WITH 5 METER POD

SHEET 1 OF 1

DRUBI3250L

REVISIONS	
DATE	DESCRIPTION





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/64 DECIMALS .XX ±0.015 .XXX±0.005 ANGLES ± 2°	
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APPROVED	
DATE	02/04

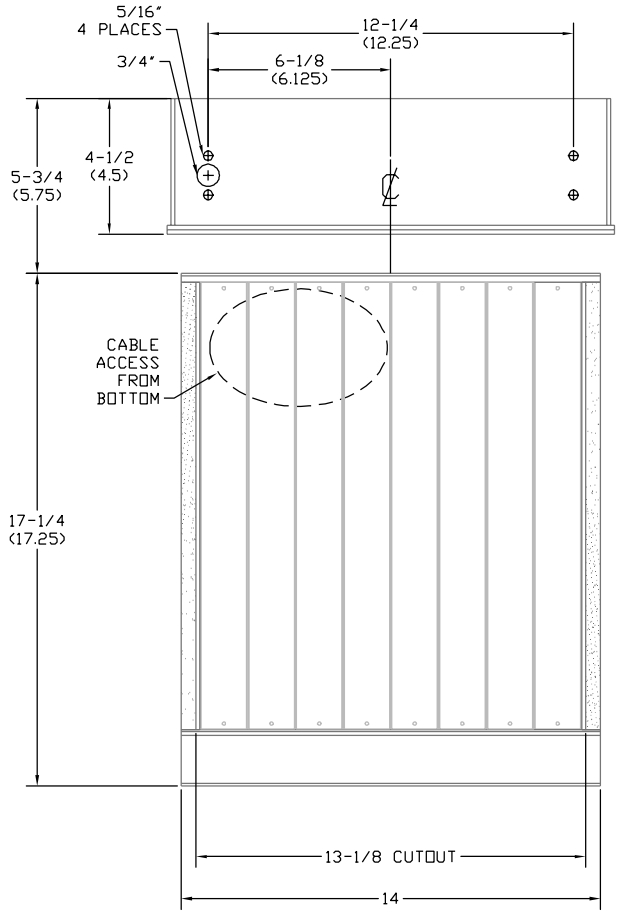
Sierra Automated Systems

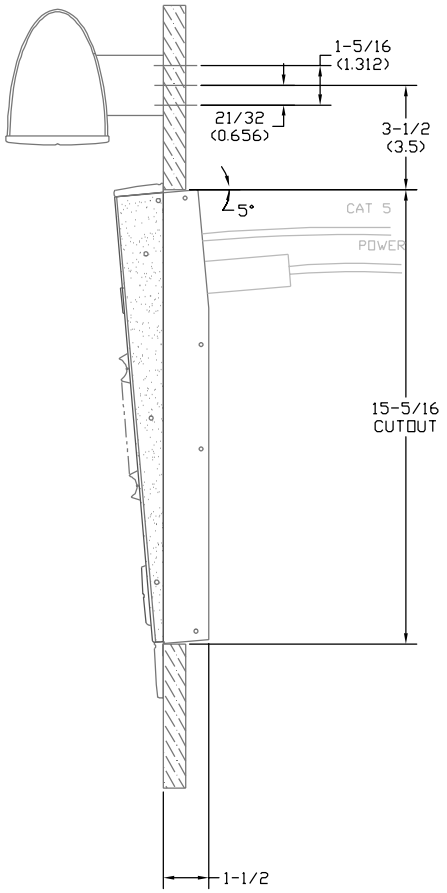
RUBICON OUTLINE DRAWING,
40 MODULE FRAME WITH 5 METER POD

SHEET 1 OF 1

DRUBI400L

REVISIONS	
DATE	DESCRIPTION





NOTES:
1. CUTOUT DIMENSIONS ALLOW FOR VARIATIONS.
   DO NOT INCREASE 15-5/16 DIM. USE 5° FOR THICK TOPS.
   ENSURE OPENING IS SQUARE.

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CHECKED	
APPROVED	
DATE	01/2004

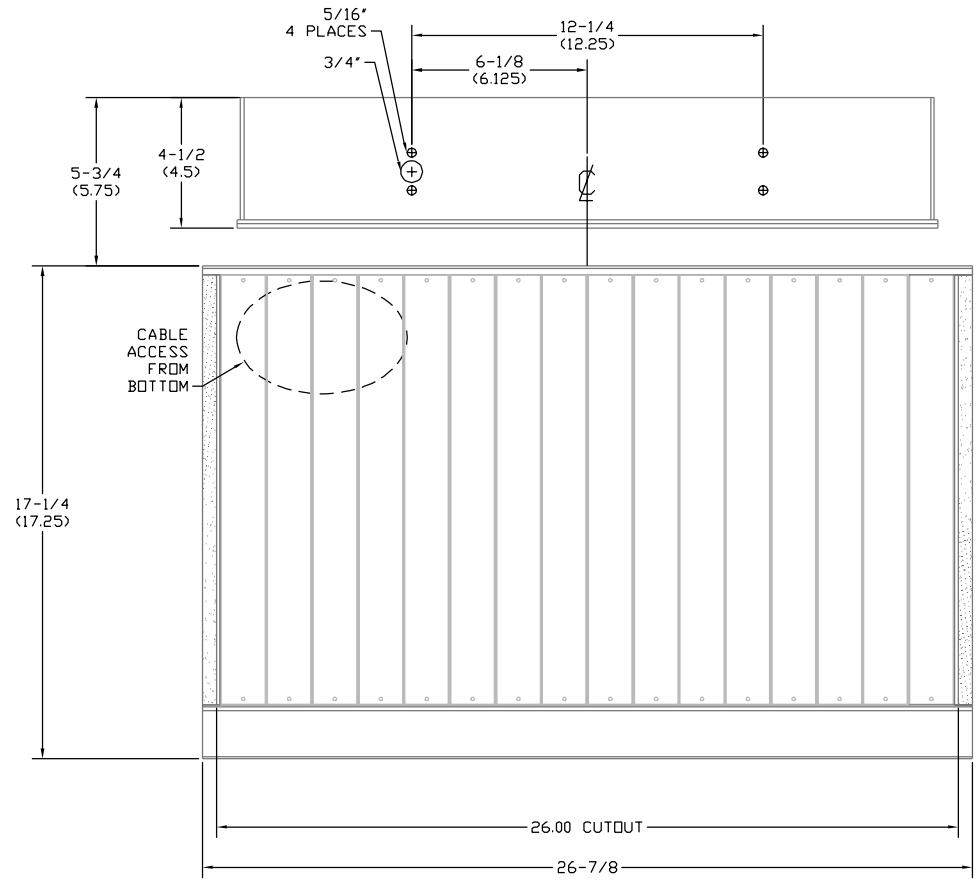
Sierra Automated Systems

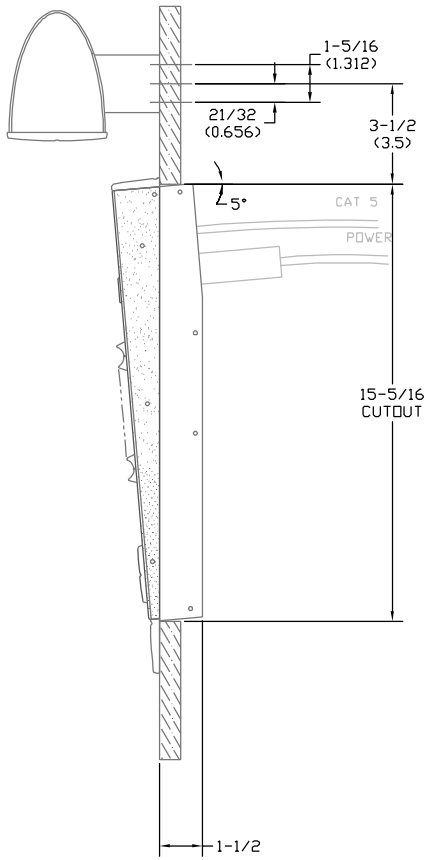
RUBICON SL OUTLINE DRAWING,
8 MODULE FRAME WITH 1 METER POD

SHEET 1 OF 1

CRSL080L

REVISIONS	
DATE	DESCRIPTION





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APPROVED	
DATE	07/05

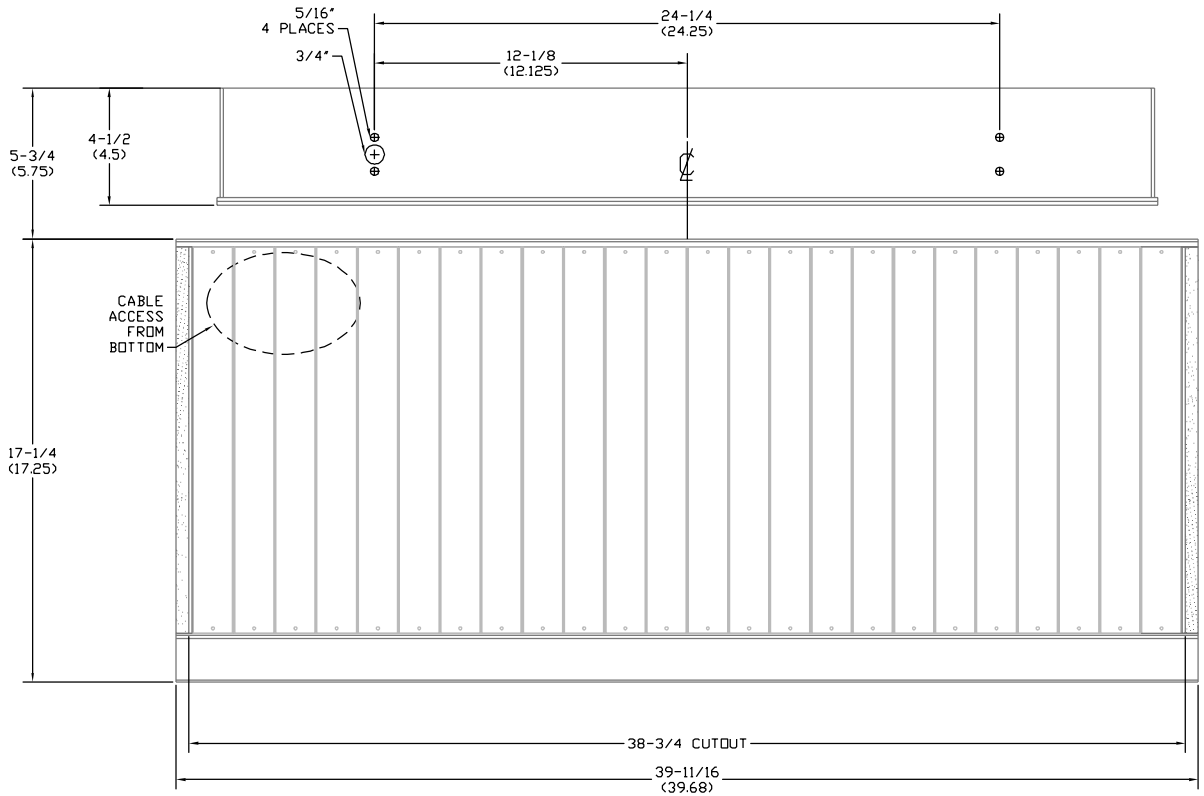
Sierra Automated Systems

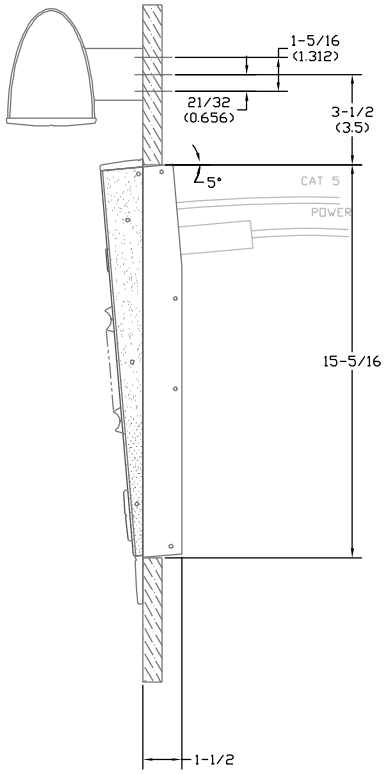
RUBICON SL OUTLINE DRAWING,
16 MODULE FRAME WITH 2 METER POD

SHEET 1 OF 1

DRSL1620L

REVISIONS	
DATE	DESCRIPTION





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CHECKED	
APPROVED	
DATE	07/05

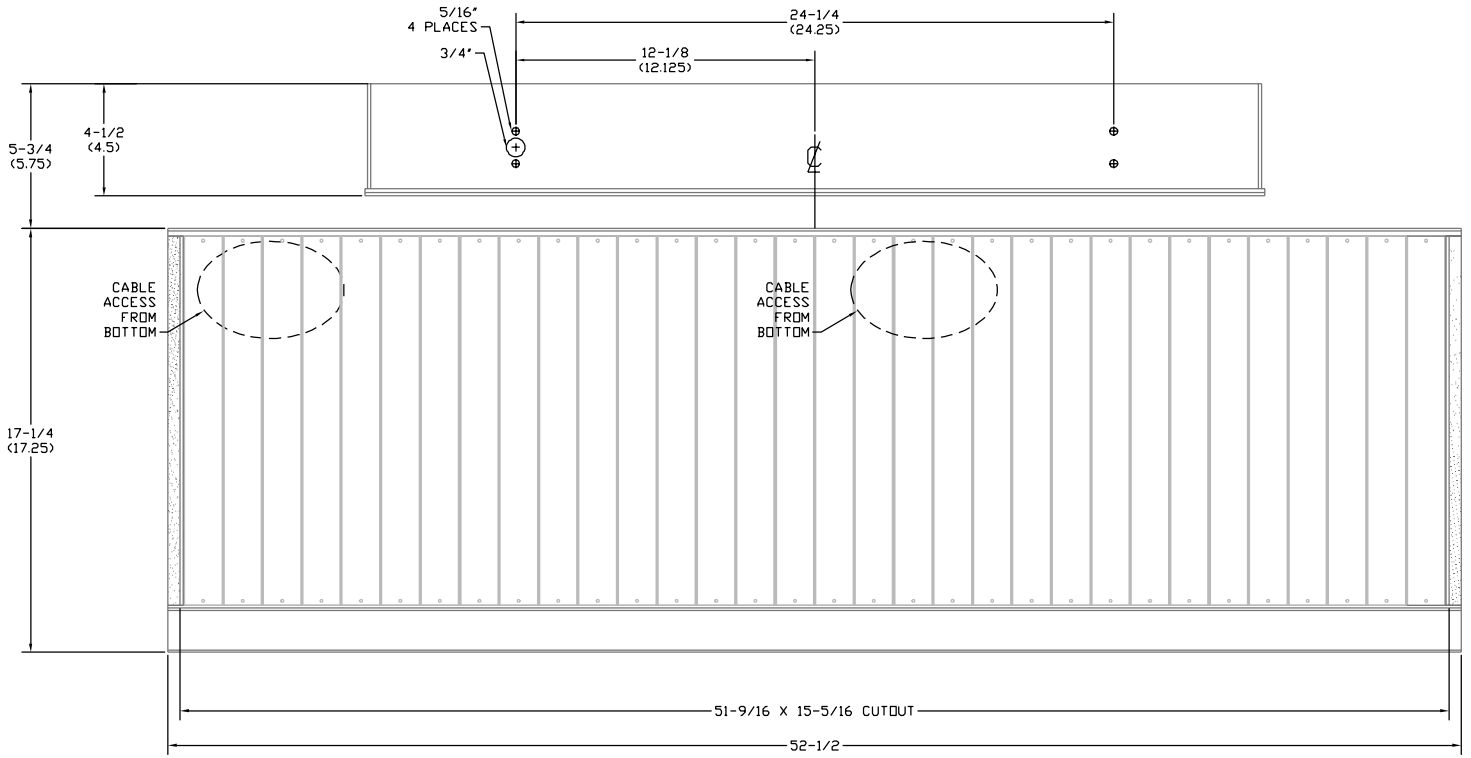
Sierra Automated Systems

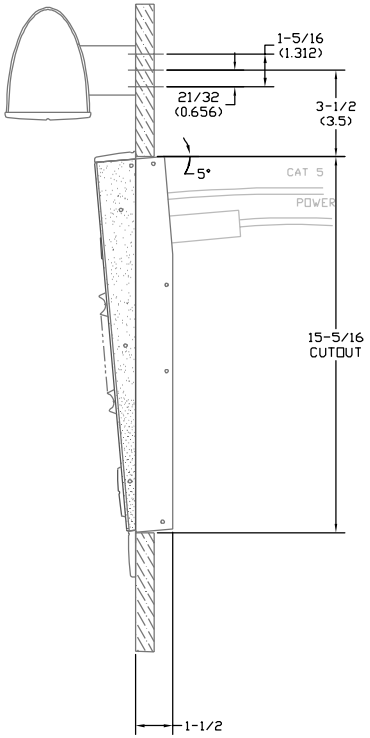
RUBICON SL OUTLINE DRAWING,
24 MODULE FRAME WITH 4 METER POD

SHEET 1 OF 1

DRSL2440L

REVISIONS	
DATE	DESCRIPTION





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DRAWN	EOF
CHECKED	
APPROVED	
DATE	07/05

Sierra Automated Systems

RUBICON SL OUTLINE DRAWING,
32 MODULE FRAME WITH 4 METER POD

SHEET 1 OF 1

DRSL3240L