

USING THE BMXdigital WITH SAS ROUTER SYSTEMS

Both the RLS/Router and Telco modules on the BMXdigital can work as controllers for the SAS 64000 and 32KD systems.

In terms of their router control operation, both modules are essentially the same. On both types of modules, the user can, select a source signal from a controlled router.

The BMXdigital Server must be running Release 3.xx software or later, for these features to be available.

The router source is identified by the source name. The source names are configured on the router. SAS routers support 8 character source and destination names. The source names are used by the BMXdigital to provide an alphabetized list of source names on the individual 10 character displays.

Display The upper 10 character display indicates the currently selected source, (SOURCE_A) the bottom display indicates a potential new selection, (SOURCE_B) which is chosen with the Rotary Encoder.



Rotary Encoder -

Allows you to choose a named source for selection with the Take button (see below). The encoder is only active when the appropriate configuration DIP switch is set to Switcher.

Take - Selects the source chosen with the Rotary Encoder The Take button is

only active when the appropriate configuration dip switch is set to Switcher.

All 256 names contained in a SAS64000 system can be sequentially searched by using the rotary encoder dial, however this is not always a practical way to use a module specific source selector.

Restricting Source Sections

A session file may be customized to restrict the selection available on each module. For example, one module may provide all the commonly used news sources, another for outside feed sources, yet another for inter-studio sources. Some modules may be left unrestricted, for maximum flexibility.

Telco modules will typically be restricted to telco and/or codec sources, however other uses are possible.

The session files provide means to limit the module's source selection list to be as broad or specific as desired.

Each session may offer a different selection of sources. For the morning show, router modules can offer a restricted list of sources specific to that show, for the midday show, another restricted list. These lists can overlap in any way you choose.

The last source selection carries over to the next restricted list

When a session changes, the last selection is always appended to the new list. In this way, even if a session changes, the last selection is still available to the next user.

If an external X-Y controller makes a source selection that affects a module, that externally invoked source name will also

automatically added to the current selection list.

Labels updated automatically

When label changes are made to a system from the SAS configuration software, each router module will automatically download the new label list. (This is not a common occurrence; still you should try not to do this while the talent is working unless you like to answer lots of questions)

Stereo linking

Many sources may be stereo linked within the SAS configuration setup. If they are linked, the labels are typically setup with the right channel label "masked". These "masked" sources will not be displayed when using the selection dial. The linking is transparent to the user's operation, provided that the SAS router is correctly configured.

Using the TAKE button

Source changes are not permitted while the module is ON. This keeps inadvertent source changes from occurring while on. To change the source, simply turn the channel OFF and then back ON.

When a module is OFF, a route change will be requested immediately. It may take a brief moment for the SAS router to confirm the source selection change. Until the new selection is confirmed, the 8 character source label in the upper display will be bracketed; ie. **[SOURCE_A]**. This indicates that the route has not yet occurred. Once the router confirms the route, the brackets are no longer shown.

Note: Making the same selection a second time will not change the upper display, as the SAS system will not

confirm unless a change in route is requested.

When a module is ON, a route change will NOT be requested until the channel is turned OFF. The upper display will change immediately, however, the ON light will WINK to indicate that this module is PENDING a change. This is the same as the PENDING indication that occurs when a session change is done while a channel is ON. While the selection is pending, the 8 character source label in the upper display will be bracketed -- ie. **[SOURCE_A]**. This will highlight the pending nature of the selection.

Some sources may be inhibited by the current SAS configuration. Inhibits are often set up to prevent a potential feedback path. If a source is inhibited, the display will never clear the brackets. This serves as an indication of an inappropriate source selection.

Note: It would be wise to restrict source selection on a module, only to sources which are not inhibited.

Session Changes

When session change occurs, a new route may appear, or may become pending depending on the ON/OFF state of the module.

Session Saving

When a new session is saved, the current route (or salvo) is saved in the new session file. All session based list restrictions and other router based settings in the previous session will be passed on to the new session.

Advanced operation - Salvos

The SAS system has the ability to execute multiple events with a single request. This command is called a Salvo. The *BMXdigital* supports this.

Salvos may be particularly useful when using a router as a telco or codec signal pre-selector. By using a salvo, one may route a mix-minus output signal to the correct telco hybrid or codec box, in matched coordination with the telco/codec source selection.

Module Independent Routing Events

Sessions may be programmed to invoke unrelated source selections and/or salvos independent of module specific selections. In this way session changes can configure routes unrelated to the Router or Telco modules.

Connecting to the Router

To use these modules with a router system, configure the module's dip switches as follows:

RLS/Router Module

<u>Dip Switch Bank</u>	<u>#</u>	<u>Setting</u>
DS1	4	ON
DS1	5	ON

Telco/Codec Module

<u>Dip Switch Bank</u>	<u>#</u>	<u>Setting</u>
DS2	4	ON
DS2	5	ON

The initialization Process

When first connecting to the router, the BMXdigital will go through an initialization process that has four steps. If everything is configured correctly, the first three will happen in quick succession.

Step 1 - Finding the host computer

Each dual 10character display will read as follows:

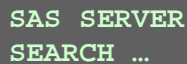


IP ADDRESS
SEARCH ...

If this display persists, it means that the BMXdigital can't find the Router's host computer.

If you have problems check the IPAddress setting of the computer, as well as the ROUTERS.INI file on the BMXdigital Server.

Step 2 - Finding the SAS TCP Server Application



SAS SERVER
SEARCH ...

If this display persists, it means that the BMXdigital cannot find the SAS TCP Server application. Make sure that TCP

Server is running and is correctly configured.

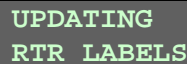
Step 3 - Finding the SAS Router



ROUTER
SEARCH ...

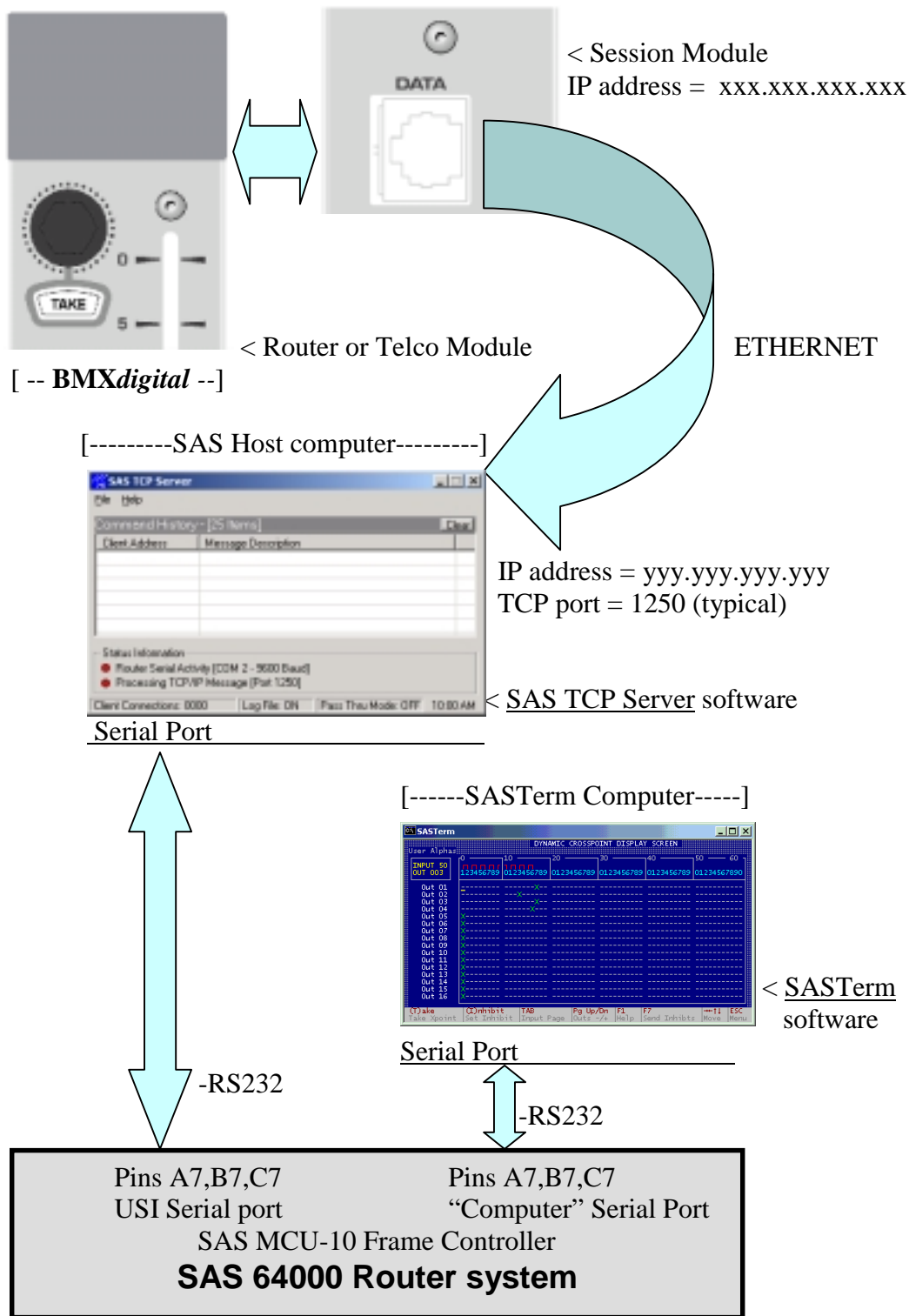
If this display persists, then the SAS TCP Server application cannot find the Router on the computer's serial port. Check the serial connection.

Step 4 - Downloading Source Labels from Router



UPDATING
RTR LABELS

This may take 20 seconds or so. When labels on the router are changed this will cause the BMXdigital Server to automatically update the labels again. Fortunately this does not need to happen very often.



Installation BMXdigital w/ SAS64000 Audio Routing Switcher

Required SAS material

SAS64000 Manual

SAS TCP Server Application Software

SAS Automation Software (SASTERM)

ROUTERS.INI.ini file

What this file does:

This file identifies each router associated with the BMXdigital and defines which router destinations are connected to which modules.

Location of ROUTERS.INI file on BMXServer:

Storage Card/Data/SysFiles/

Sections within this ROUTERS.INI file:

[Routers]

This section is required in the routers.ini file, it identifies each of a number of router systems

There are no additional parameters to this line.

[Router Control]

This section is required in the routers.ini file, it associates console modules with a particular router, and with specific router outputs (destination) to these modules.

There are no additional parameters to this line.

Entries within the [Routers] section:

Type_n=router_id

Parameters:

n is a positive integer starting with n=1, enumerating each router

routerid is "sas64k" to identify the SAS64000 Router system

routerid is "sas32kd" to identify the SAS32KD Router system

Other router id codes will be established when and if they are supported

Examples:

Type_1=sas64k

Type_2=sas32kd

Notes:

Currently SAS Router systems are supported through the SAS TCP Server application software from SAS. Routing matrices of 256 x256 are supported.

Hostname_*n*=*hostname*

Parameter:

n is a positive integer starting with *n*=1, enumerating each router

hostname is the computer name of the networked computer hosting the SAS TCP Server application.

Examples:

Hostname_1=sassver1

Hostname_2=sassver2

Notes:

If the host name is not found the *BMXdigital* looks for the IP address

HostIP_*n*=*yyyy.yyyy.yyyy.yyyy*

Parameter:

n is a positive integer starting with *n*=1, enumerating each router

yyyy.yyyy.yyyy.yyyy is the computer IP addresss of the networked computer hosting the SAS TCP Server application.

Examples:

HostIP_1=192.168.100.201

HostIP_2=192.168.100.202

Notes:

If the host name is not found the *BMXdigital* looks for the HostIP address

Port_*n*=*m*

Parameter:

n is a positive integer starting with *n*=1, enumerating each router

m is the computer IP port number of the SAS TCPServer application.

Examples:

Port_1=192.168.100.201

Port_2=192.168.100.202

Notes:

If this entry is missing, the default value is assumed to be 1250.

Please refer to SAS documentation on the TCP Server Application

Entries within the [Router Control]section:

Router_ $n=m$

Parameters:

n is a positive integer indicating the module identification number.

- For RLS/Router modules used with a router:
 n would be 129 to 143, indexed as installed, left to right.
- For TELCO modules used with a router:
 n would be 81 to 86, indexed as configured by Switch DS1 1-6

m is a positive integer starting with $n=1$, enumerating each router

Examples:

Router_129=1

Router_130=2

Router_81=1

Router_82=2

Notes:

none

Output_ $n=m$

Parameters:

n is a positive integer indicating the module identification number.

- For RLS/Router modules used with a router:
 n would be 129 to 143, indexed as installed, left to right.
- For TELCO modules used w a router:
 n would be 81 to 86, indexed as configured by Switch DS1 1-6

m is a positive integer starting with $n=1$ thru 256, identifying the audio output port on the respective router which is connect to the associated RLS/Router or TELCO modules.

If a stereo pair is used, use only the left (odd) number of the stereo linked pair.

Examples:

Output_129=31
Output_130=33
Output_81=35
Output_82=37

Notes:

The above example shows the first RLS/Router type module connected to output 31, the second RLS/Router type module is connected to output 35.

The first TELCO type module is connected to output 33, the second TELCO type module is connected to output 37.

Important:

If a stereo pair is used, it is customary to use only the left (odd) numbered output of the stereo linked pair.

Using the SASTERM software, the right alpha names are typically masked when used as a stereo pair. To mask the right label, a left hand brace symbol”{“ is used as a first character of the label.

The stereo linkage information is defined through the SASTERM software configuration. Please consult the SAS manual for additional details.

ROUTERS.INI file content example:

The following example shows three routers,

- 2 SAS 64000 devices
- 1 SAS 32KD device

... these routers are used with 4 console modules...

- 2 RLS/Router modules
- 2 TELCO module

The first two routers use a common host computer, running two instances of the SAS TCP Server application software, each set to separate network port numbers. (Separate serial comm. Ports would be needed too.) The third router uses a different host computer.

Example, Routers.ini File

```
[Routers]
Type_1=sas64k
Hostname_1=Sserver1
HostIP_1=137.237.207.101
Port_1=1250

Type_2=sas64k
Hostname_2=Sserver1
HostIP_2=137.237.207.101
Port_2=1251

Type_3=sas32kd
Hostname_3=Sserver2
HostIP_3=137.237.207.102
Port_3=1250

[Router Control]
Router_129=1
Output_129=31

Router_130=2
Output_130=33

Router_81=3
Output_81=55

Router_82=3
Output_82=57
```

Explanation:

We identify the Routers here.
First Router is a 64000 system
Host PC name
Host PC IP address
Network Port (default value)

Second router is also a 64000
Host PC name (same PC)
Host PC IP address (same PC)
Network Port (different!)

Third router is also a 32KD
Host PC name (different PC)
Host PC name (different PC)
Network Port (default value)

We identify the Modules here.
1st Router Module is on RTR #1
...& is connected to output #31

2nd Router Module is on RTR #2
...& is connected to output #33

1st Telco Module is on RTR #3
...& is connected to output #55

2nd Telco Module is on RTR #3
...& is connected to output #57

Session file entries specific to router operation

Session files may contain entries that configure router operations

Sections within a session file:

There are two general classes of router entries

- **Module Specific entries**
These entries establish module specific selection specifications, routes and salvos to be established when a particular session is invoked. This is the most common type of router control entry, as it directly associates RLS/Router and Telco modules to the router.
- **Non-Module Specific entries**
These entries establish routes and salvos that are not specific to a module, but are established when a particular session is invoked. The use of this type of entry is far less common than the Module Specific entry, as it deals with route changes that are not associated w/ Router or Telco modules.

Module Specific entries

[Router_n]

This section defines a Module Specific entry section.

n is a positive integer indicating the module identification number.

- For RLS/Router modules used with a router:
n would be 129 to 143, indexed as installed, left to right.
- For TELCO modules used with a router:
n would be 81 to 86, indexed as configured by Switch DS1 1-6

Entries within the [Router_n] section:

Include=*a-b, c-d, e, f...*

Parameters:

a-b and *c-d* represent ranges of SAS router sources which are to be presented as source alphabetic labels on this module's 10 character display.

E, f... represent individual SAS router sources which are to be presented as source alphabetic labels on this module's 10 character display

Examples:

Include=17-32, 37, 39

Notes:

If the Include entry is missing, then all 256 unmasked sources will be displayed by the 10 character display.

Using the range *a-b* parameter format, it is permissible for the range to span both even and odd numbered sources even when

they are linked as stereo pairs. Masked labels will always be excluded from the include list.

Using the SASTERM software, the right alpha names are typically masked when used as a stereo pair, and thus not displayed by the 10 character display. To mask the right label, a left hand brace symbol “ { “ is used as a first character of the label.

The stereo linkage information is defined through the SASTERM software configuration. Please consult the SAS manual for additional details.

`Salvo_n=salvname , a`

Parameters:

n is a positive integer, starting at 1 to enumerate one or more salvo command specific to this module.

salvname is the display name for this salvo command.

a select the Salvo number as defined in the SAS configured SALVO NUM

Examples:

`Salvo_1=Atlanta,2`

`Salvo_2=Boston,3`

`Salvo_3=Chicago,4`

Notes:

Only 8 Character salvo names are permitted, longer strings are truncated.

Salvo labels are not provided though the SAS communication protocols. This limitation is actually a blessing in disguise. Setting the label here allows one to set the label to clearly reflect the source's name presented at this module, regardless of any otherwise confusing actual salvo label.

When a salvo is invoked, the name assigned here will appear on the upper display only until the router responds with the name of the actual source to which this module is connected. (While this module is PENDING the salvo name will be displayed enclosed in [] brackets.) When the router responds , confirming a route change, the upper display will change to the actual source name.

Naming the salvo the same as the name of the actual source for this module would be an intuitive choice.

SalvosOnly=*n*

Parameters:

n is either a 1 or a 0 to indicate True or False respectively

Examples:

SalvosOnly=1

Notes:

This entry limits the module display list to salvo labels only. This is helpful when no include entry is desired, yet a selection of salvos is required.

This may be the case when salvos are used to route telco sources in to a TELCO module, in coordination with sending mix minus outputs back to the telco

This entry may be omitted if not forcing a True condition. False is assumed if no entry is provided

Take=*n*

or

Take=*Salvo_n*

Parameters:

n is the SAS source number which is to be provided on this module when this session starts.

Salvo_n is the requested salvo as previously enumerated and labeled.

Examples:

Take=15 defines source 15

Take=Salvo_3 defines Salvo_3

Notes:

This is automatically created when a session is saved, so it rarely needs to be edited by hand. When saving a new session, this entry is updated to reflect the currently selected source (or Salvo) at the time the session is saved.

Non-Module Specific entries

These entries establish routes and salvos that are not specific to a module, but are established when a particular session is invoked. The use of this type of entry is far less common than the Module Specific entry, as it deals with route changes that are not associated w/ Router or Telco modules.

[RouterCommand_*n*]

This section defines a non-module specific entry section.

Where *n* is a positive integer starting with *n*=1, identifying a specific router

Entries within the [RouterCommand_*n*] section:

Salvo_*n*=*a*

Parameters:

n is a positive integer, starting at 1 to enumerate one or more salvo commands which will be issued when this session is invoked.

a selects the Salvo number as defined in the SAS configured SALVO NUM

Examples:

Salvo_1=2

Salvo_2=3

Salvo_3=4

Notes:

This structure should only be used for salvos that do not have a direct impact on the routing of a Router or Telco module.

Take_*n*=*a*,*b*

Parameters:

a is a positive integer, to identify a router input number

b is a positive integer, to identify a router output number

Examples:

Take_1=10,1

Take_2=20,2

Notes:

This structure should only be used for routes that do not have a direct impact on the routing of a Router or Telco module.

Example, excerpt from Session File

```
[RouterCommand_1]
Salvo_1=2
Salvo_2=5
Take_1=11,3

[RouterCommand_2]
Salvo_1=1
Take_1=21,3
Take_2=23,5
Take_3=35,7

[Router_129]
Take=16

[Router_130]
Include=17-32,55,57,59
Take=19

[Router_131]
Include=17-32
Salvo_1=Denver,1
Salvo_2=Encino,2
Take=17

[Router_81]
SalvosOnly=1
Salvo_1=Atlanta,1
Salvo_2=Boston,2
Salvo_3=Chicago,7
Take=Salvo_3
```

Explanation:

Not module specific, for RTR # 1
Perform SALVO NUM 2
Perform SALVO NUM 5
Route source 11 to destination 3

Not module specific, for RTR # 2
Perform SALVO NUM 1
Route source 21 to destination 2
Route source 23 to destination 3
Route source 35 to destination 7

First Router Module
Start session routed to src 16
(list all labels provided from router)

Second Router Module
Restrict the selections to these sources only
Start session routed to src 19

Third Router Module
Restrict to these sources
Label SALVO NUM 1"Denver"
Label SALVO NUM 1"Encino"
Start session routed to src 17

TELCO module 1
Restrict to salvo list only
Label SALVO NUM 1"Atlanta"
Label SALVO NUM 2"Boston"
Label SALVO NUM 7"Chicago"
Start session with Salvo_3 (Chicago)

