

32KD USI Protocol

1. 32KD USI: User Interface

USI (User Serial Interface) protocol allows external control of SAS routing systems. This document details the full communications protocol which interfaces both via RS-232 Serial and TCP/IP.

Serial Connection

RS-232 ports are found on DRC-16E modules or RIO chassis.

The RIO chassis has three serial ports (see RIO connector diagram for pinouts), running at 9600 baud, n, 8, 1 (no parity, 8 data bits, 1 stop bit).

Each DRC module provides 5 RS-232 ports (see 32KD manual for pinouts). All ports run at the same speed, which is programmed via rear interface module hardware jumpers. Port speed is determined by the table below (Port speed, n, 8, 1; no parity, 8 data bits, 1 stop bit):

User IO 26+, Pin C26	User IO26-, Pin B26	
Open	Open	9600 Baud Rate Selection
Gnd-C26-A26	Open	19.2K Baud Rate Selection
Gnd-C26-A27	Gnd-B26-A26	38.4K Baud Rate Selection
Open	Gnd-B26-A26	2400 Baud Rate Selection

TCP/IP Connection

TCP/IP communication is via the SAS Server Module software. When a connection to the IP port is established, the Server Module will return the message 'Login Successful'. The Server Module runs on a PC and connects to the SAS 32KD system via serial port to the MCU-32 module, and provides a gateway into the router for external control as well as SAS RCS Router Control Software and SoftPanels.

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1.1 TAKE COMMAND

To TAKE an audio crosspoint, the following ASCII string is sent:

< CONTROL CHAR > < INPUT > < OUTPUT >

CONTROL CHAR: ^T (ctl-T)

INPUT: Three digit ASCII number between 001 and 999

OUTPUT: Three digit ASCII number between 001 and 999

EXAMPLE: ^T004001 - TAKE Input 4 to Output 1.

RETURNS: OK(CR / LF) -> If only replies are enabled.
Txxx:yyy(CR / LF) -> If tally is numerical ASCII characters only.
Oyy_xx(CR / LF) -> If tally is HEX style (two digit ASCII/HEX).
Txxx:yyy (Input001 - Out 001)(CR / LF) -> If numerical ASCII style and
 -> Alpha labels are enabled.
Oyy_xx (Input001 - Out 001)(CR / LF) -> If 2 digit ASCII/HEX and
 -> Alpha labels are enabled.
ERROR(CR / LF) -> If out of range request and Replies are enabled.
Nothing -> If no Tally or Replies are enabled.

Note: Input 000 is Off when sent to a 32KD

1.1.2 TAKE COMMAND: OPTION TWO – 2 Digit ASCII/HEX Number

< CONTROL CHAR > < ID > < INPUT > < OUTPUT >

CONTROL CHAR: ^DT (ctl-D, T)

ID: 1 (the number 1)

INPUT: Two digit ASCII/HEX number between 00 and FF (001 - 256)

OUTPUT: Two digit ASCII/HEX number between 00 and FF (001 - 256)

EXAMPLE: ^DT10300 - TAKE Input 4 to Output 1.

RETURNS: OK(CR / LF) -> If only Replies are enabled.
Txxx:yyy(CR / LF) -> If tally is numerical ASCII characters only.
Oyy_xx(CR / LF) -> If tally is 2 digit ASCII/HEX style only.
Txxx:yyy (Input001 - Out 001)(CR / LF) -> If numerical ASCII style and
 -> Alpha labels are enabled.
Oyy_xx (Input001 - Out 001)(CR / LF) -> If 2 digit ASCII/HEX and
 -> Alpha labels are enabled.
ERROR(CR / LF) -> If out of range request and Replies are enabled.
Nothing -> If no Tally or Replies are enabled.

1.1.3 TAKE COMMAND: OPTION THREE – 4 Digit ASCII Number

< CONTROL CHAR > < INPUT > < OUTPUT >

CONTROL CHAR: ^ET (ctl-E, T)

INPUT: Four digit ASCII number between 0 and 9997 (0000 -9997)

OUTPUT: Four digit ASCII number between 1 and 9997 (0001 - 9997)

EXAMPLE: ^ET00040001 - TAKE Input 4 to Output 1.

RETURNS: OK(CR / LF) -> If only replies are enabled.
 Cxxxx:yyyy(CR / LF) -> If tally is numerical ASCII characters only.
 ERROR(CR / LF) -> If out of range request and Replies are enabled.
 Nothing -> If no Tally or Replies are enabled.

Note: Input 0000 is Off when sent to a 32KD

1.1.4 ENHANCED TAKE COMMAND WITH GAIN SPECIFIED

< CONTROL CHAR > < MSGID > < INCHAN > < OUTCHAN > < GAIN > < OPTIONS >

CONTROL CHAR: ^Z (Ctl-Z)

MSGID: 00 = Enhanced Take command w/source gain specified & summing allowed

INPUT: System Source Channel Number 0001 to 9999

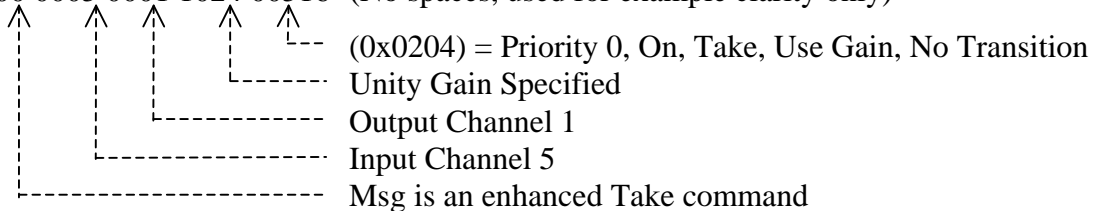
OUTPUT: System Destination Channel Number 0001 to 9999

GAIN: Source Target Gain Level (1/10 db Steps, 1024 = Unity, Valid 0000 to 2048)

OPTIONS: Bitmapped xpoint change options (14 bit value, 00000 - 16383 allowed)

Bit(0) - Bit(1) Priority Level (0 ~ 1, 0 is std non-ifb take priority)
 Bit(2) - Bit(4) Control Options (0=Off, 1=On, 2=Momentary)
 Bit(5) - Bit(6) Action Options (0=Take/Replace, 1=Sum, 2=Direct Relay Ctl)
 Bit(7) - Bit(8) Future (Unused Set to 0)
 Bit(9) Use supplied gain value (0=No, 1=Yes)
 Bit(10) Use current xpoint transition ctl spec (0=No, 1=Yes)
 Bit(11)- Bit(13) Future (Unused Set to 0)

EXAMPLE: ^Z 00 0005 0001 1024 00516 (No spaces, used for example clarity only)



Example Options:

00512 (0x0200)(0000 0010 0000 0000) = Priority 0, Off, Take, Use Gain, No Transition Used
 00548 (0x0224)(0000 0010 0010 0100) = Priority 0, On, Sum, Use Gain, No Transition Used
 00544 (0x0220)(0000 0010 0010 0000) = Priority 0, Off, Sum, Use Gain, No Transition Used

1.1.5 CROSSPOINT TRANSITION CONTROL

< CONTROL CHAR > < SETTING > < IN TIME > < OUT TIME > < CHANNEL >

CONTROL CHAR: ^Q (Ctl-Q)

SETTINGS: 0 = COCI - Cut Out -> Cut In (default)

1 = COFI - Cut Out -> Fade In

2 = FOCI - Fade Out -> Cut In

3 = FOFI - Fade Out -> Fade In

4 = XFADE - Cross Fade

5~8 = Unused (future)

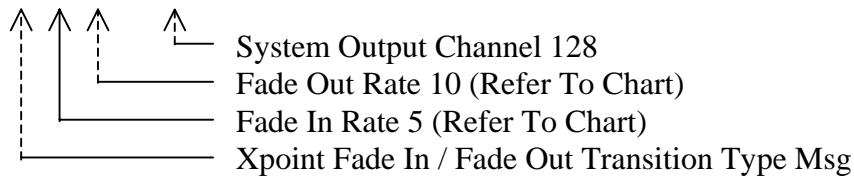
9 = COCI - Cut Out -> Cut In (default) with DSP

IN TIME: Fade In time (Valid Settings 00-15 Refer To Chart)

OUT TIME: Fade Out time (Valid Settings 00-15 Refer To Chart)

CHANNEL: System output channel number to be modified 0001 to 9997

EXAMPLE: ^Q 3 05 10 0128 - (No spaces, used for example clarity only)



RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).

ERROR(CR / LF) -> If Replies are enabled.

Nothing -> If Replies are not enabled.

Fade Times

0	Instant
1	10ms
2	50ms
3	100ms
4	200ms
5	500ms
6	1s
7	2s
8	3s
9	4s
10	5s
11	6s
12	7s
13	8s
14	9s
15	10s

1.1.6 GAIN CHANGE MESSAGE

< CONTROL CHAR > < MSGID > < INPUT > < OUTPUT > < GAIN > < TIME > < STAGE >

CONTROL CHAR: ^Z (Ctl-Z)

MSGID: 10 = Gain Change Message

INPUT: System Source Channel Number 0001 to 9999

OUTPUT: System Destination Channel Number 0001 to 9999

GAIN: Source Target Gain Level (1/10 db Steps, 1024 = Unity) Valid 0000 to 2048

TIME: Fade time DSP gain stages only (Valid Settings 00-15 Refer To Chart)

STAGE: 01 = Source Input Sensitivity (Input module scaling)(Time N/A)
03 = Output Gain Trim (Output module DAC cut only)(Time N/A)
10 = DSP Source/Destination coefficient level(Time N/A)
11 = DSP Source/Destination coefficient level(Fade Time Allowed)
15 = DSP Mixer Output master level(Time N/A)(Time N/A)
16 = DSP Mixer Output master level(Time N/A)(Fade Time Allowed)

EXAMPLE: ^Z 10 0005 0001 1024 02 10 (No spaces, used for example clarity only)

↑ ↑ ↑ ↑ ↑ ↑
----- DSP Source/Destination coefficient change
----- Change Rate 02 (Refer To Chart)
----- Unity Gain Specified as target
----- Output Channel 1
----- Input Channel 5
----- Msg is a Channel Gain change message

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.1.7 STEREO LINK MODIFIER

< CONTROL CHAR > < OPTIONS > < SETTING > < CHANNEL >

CONTROL CHAR: ^L (Ctl-L)

OPTIONS: 0 = Input Link
1 = Output Link
2-9 = Unused (future)

SETTINGS: 00 = Mono
01 = Stereo
02 = Source Dependent
03 = LR Mono Sum
04-99 = Unused (future)

CHANNEL: System output channel number to be modified 0001 to 9997

EXAMPLE: ^L0 01 0128 - Set Stereo Link for Input Chan 128 to Stereo

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.1.8 CONSOLE MODULE CONTROL MESSAGE

< CONTROL CHAR > < MSG ID > < ACTION > < CONSOLEID > < SOURCE >

CONTROL CHAR: ^Z (Ctl-Z)

MSGID: 20 = Console Source/Module Control Messages

ACTION: Console Source/Module Control Options 0 to 9 Valid

0 = Turn Module OFF with <Source> selected

1 = Turn Module ON with <Source> selected

2 = Turn Cue (Preview) OFF on Module with <Source> selected

3 = Turn Cue (Preview) ON on Module with <Source> selected

4-9 = Future (Unused)

CONSOLEID: System Console Number 001 to 256 (999 = Not Specified, Action on any Console/Module with matching <Source>)

SOURCE: Source Channel Number 0001 to 9998 (9999 = Not Specified, not valid for these commands)

EXAMPLE: ^Z 20 1 001 1024 (No spaces, used for example clarity only)
Turn Module ON in Console 001 with Source 1024 selected
Module must have Source Channel 1024 Active Else No Changes Made

EXAMPLE: ^Z 20 0 999 1024 Turn Module OFF in Any Console with Source 1024 selected
No ConsoleID Specified (All modules with matching Source will be addressed, in any console). Module Must Have Source Channel 1024 Active, else no changes made

EXAMPLE: ^Z 20 2 001 0157 Turn Cue OFF on Module in Console 001 with Source 157 selected. Module must have Source Channel 157 Active, else no changes made.

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.1.9 CONSOLE MODULE CHANNEL LABEL OVERRIDE MESSAGE

< CONTROL CHAR > < MSG ID > < CONSOLEID > < SOURCE > < LABEL >

CONTROL CHAR: ^Z (Ctl-Z)

MSGID: 21 = Console Module Source Channel Label Override Messages

CONSOLEID: System Console Number 001 to 256 (999 = Not Specified, Action on any Console/Module with matching <Source>)

SOURCE: Source Channel Number 0001 to 9998 (9999 = Not Specified, not valid for these commands)

LABEL: 8 Character Alpha Label to be displayed by the Addressed Module(s).
NOTE: label will only be displayed until a) new label written by command or
b) new label written due to new source selection.

EXAMPLE: ^Z 21 001 1024 INPUT001 (No spaces, used for example clarity only)
Write LABEL on Module in Console 001 with Source 1024 selected
Module Must Have Source Channel 1024 Active Else No Changes Made
8 Character LABEL To Be Displayed is "INPUT001"

EXAMPLE: ^Z 21 999 0131 SAT-FEED Write LABEL on any Module in any Console with
Source 131 selected (Console Number not specified)
8 Character Label To Be Displayed is "SAT-FEED"

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.1.10 NOTIFICATION OF CONSOLE MODULE ACTION

< CONTROL CHAR > < ACTION > < CONSOLEID > < SOURCE > <CR/LF>

CONTROL CHAR: <M>

ACTION: Console Module Control Options 0 to 9 Valid

0 = Module Was Turned OFF

1 = Module Was Turned ON

2 = Module Cue Function Turned OFF

3 = Module Cue Function Turned ON

4-9 = Future (Unused)

CONSOLEID: System Console Number 001 to 256 (999 = Not Specified, Action on any Console/Module with matching <Source>)

SOURCE: Source Channel Number 0001 to 9998 (9999 = Not Specified, not valid for these commands)

EXAMPLE NOTICE: M 0 001 1024 (no spaces output. Shown for example clarity only)
Module on Console 001 With Source 1024 Was Turned Off

EXAMPLE NOTICE: M 1 001 1024 (no spaces output. Shown for example clarity only)
Module on Console 001 With Source 1024 Was Turned On

System will output the preceding message when a console input module has been controlled. These change notifications are enabled or disabled using the Feedback Command. Refer to section 1.6 for a description of the Feedback Options command.

1.2 SALVO COMMAND

To execute a Salvo of commands stored in the MCU Frame Controller module. Each Salvo is assigned a Number and an Alphanumeric Name when it is created using the Router Control Software. The Salvo serial command sequence allows you to execute the Salvo by Number or by Alphanumeric position in the alphanumerically sorted list.

< CONTROL CHAR > <OPTION> < SALVO NUM >

CONTROL CHAR: ^S (ctl-S)

OPTION: 1 - Actual Salvo number is being specified in SALVO NUM.
2 - Alphanumeric position of Salvo label specified in SALVO NUM.

SALVO NUM: Three digit ASCII/HEX number between 001 and 256.

EXAMPLE: ^S1001 –Execute actual Salvo number 1.

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.2.2 SALVO COMMAND – OPTION TWO – 4 Digit ASCII Number

< CONTROL CHAR > <OPTION> < SALVO NUM >

CONTROL CHAR: ^ES (ctl-E, S)

OPTION: 1 - Actual Salvo number is being specified in SALVO NUM.
2 - Alphanumeric position of Salvo label specified in SALVO NUM.

SALVO NUM: Four digit ASCII/HEX number between 0001 and 9999.

EXAMPLE: ^ES10001 –Execute actual Salvo number 1.

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.3 RELAY COMMAND

To actuate a Relay which may be located in an optional GPI Interface. The Model GPI 1600 interface connects to the MCU-10 frame controller module via RS-485 XY bus. Each GPI can supply 16 relays.

< CONTROL CHAR > <ACTION> < RELAY NUM >

CONTROL CHAR: ^R (ctl-R)

- ACTION:**
- 1 - Momentary activation of RELAY NUM (approx 1 sec).
 - 2 - Latch On RELAY NUM.
 - 3 - Release RELAY NUM.
 - 9 - Inquiry RELAY NUM – Returns the current state of the relay

RELAY NUM: Three digit ASCII/HEX number between 001 and 999.

EXAMPLE: ^R1001 – Momentary activate Relay 1.

- RETURNS:** OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
Z01:yyyy:z(CR / LF) -> 01 = Relay Tally, yyyy = Relay Number, z = state
 (If XptTally Enabled)
- ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.3.2 RELAY COMMAND – OPTION TWO – 4 Digit ASCII Number

< CONTROL CHAR > <ACTION> < RELAY NUM >

CONTROL CHAR: ^ER (ctl-E, R)

- ACTION:**
- 1 - Momentary activation of RELAY NUM (approx 1 sec).
 - 2 - Latch On RELAY NUM.
 - 3 - Release RELAY NUM.
 - 9 - Inquiry RELAY NUM – Returns the current state of the relay

RELAY NUM: Four digit ASCII/HEX number between 0001 and 9999.

EXAMPLE: ^ER10001 – Momentary activate Relay 1.

- RETURNS:** OK(CR / LF) -> If Replies are enabled (refer to section 1.6).
Z01:yyyy:z(CR / LF) -> 01 = Relay Tally, yyyy = Relay Number, z = state
 (If XptTally Enabled)
- ERROR(CR / LF) -> If Replies are enabled.
Nothing -> If Replies are not enabled.

1.3.3 OPTO COMMAND

< CONTROL CHAR > < CTL > < OPTO NUM >

CONTROL CHAR: ^O (ctl-O)

CTL: 0 - Off

1 - On

9 - Inquiry OPTO NUM – Returns the current state of the Opto

OPTO NUM: Three digit ASCII/HEX number between 001 and 999.

EXAMPLE: ^O1001 – Activate Opto 1.

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).

Z00:yyyy:z(CR / LF) -> 01 = Opto Tally, yyyy = Opto Number, z = state
(If XptTally Enabled)

ERROR(CR / LF) -> If Replies are enabled.

Nothing -> If Replies are not enabled.

1.3.4 OPTO COMMAND – OPTION TWO – 4 Digit ASCII Number

< CONTROL CHAR > < CTL > < OPTO NUM >

CONTROL CHAR: ^EO (ctl-E, O)

CTL: 0 - Off

1 - On

9 - Inquiry OPTO NUM – Returns the current state of the Opto

OPTO NUM: Four digit ASCII/HEX number between 0001 and 9999.

EXAMPLE: ^EO10001 – Activate Opto 1.

RETURNS: OK(CR / LF) -> If Replies are enabled (refer to section 1.6).

Z00:yyyy:z(CR / LF) -> 00 = Opto Tally, yyyy = Opto Number, z = state
(If XptTally Enabled)

ERROR(CR / LF) -> If Replies are enabled.

Nothing -> If Replies are not enabled.

1.3.5 OPTO TALLY NOTIFICATION.

< CONTROL CHAR > < TALLY TYPE > < OPTO# > < STATE > <CR/LF>

CONTROL CHAR: <Z>

TALLY TYPE: 00 = Opto Tally

OPTO#: Four digit ASCII number between 1 and 9997 (0001 - 9997)

STATE: 0 = Opto Off, 1 = Opto On

EXAMPLE NOTICE: Z00:0001:1 = Opto(0001) was turned On

EXAMPLE NOTICE: Z00:0099:0 = Opto(0099) was turned Off

System will output the preceding message when an Opto changes state. These change notifications are enabled or disabled using the Feedback Commands specified for Xpoint Tally. Refer to section 1.6 for a description of the Feedback Options command.

1.3.6 RELAY TALLY NOTIFICATION

< CONTROL CHAR > < TALLY TYPE > < RELAY# > < STATE > <CR/LF>

CONTROL CHAR: <Z>

TALLY TYPE: 01 = Relay Tally

OPTO#: Four digit ASCII number between 1 and 9997 (0001 - 9997)

STATE: 0 = Relay Off, 1 = Relay On

EXAMPLE NOTICE: Z01:0001:1 = Relay(0001) was turned On

EXAMPLE NOTICE: Z01:0099:0 = Relay(0099) was turned Off

System will output the preceding message when a Relay changes state. These change notifications are enabled or disabled using the Feedback Commands specified for Xpoint Tally. Refer to section 1.6 for a description of the Feedback Options command.

1.4 INQUIRY COMMAND (XPOINT STATE)

Returns the source number which is connected to the output requested.

< CONTROL CHAR > < OUTPUT >

CONTROL CHAR: ^I (ctl-I)

OUTPUT: Three digit ASCII number between 001 and 256. Or 999 for all outputs.

EXAMPLE: ^I001 - Show the Input assigned to Output 1.

RETURNS: xxx(CR / LF) -> Three digit ASCII input assigned to specified output.
xxx_xxx_ ... _xxx(CR / LF)-> Inputs assigned to each output in order
(001 thru 256). _ is a space character.

Note: Input 000 indicates Off

1.4.2 INQUIRY COMMAND: OPTION TWO – 2 Digit ASCII/HEX Number

< CONTROL CHAR > < OUTPUT >

CONTROL CHAR: ^DI (ctl-D, I)

OUTPUT: Two digit ASCII/HEX number between 00 and FF (001 - 256)

EXAMPLE: ^DI00 - Show the Input assigned to Output 1.

RETURNS: Oyy_xx(CR / LF) -> yy = ASCII/HEX Output,
-> xx = ASCII/HEX Input (00 to FF).

Note: Input 0000 indicates Off

1.4.3 INQUIRY COMMAND: OPTION THREE – 4 Digit ASCII Number

< CONTROL CHAR > < OUTPUT >

CONTROL CHAR: ^EI (ctl-E, I)

OUTPUT: Four digit ASCII number between 0001 and 9997 or 9999 for all outputs.

EXAMPLE: ^EI0001 - Show the Input assigned to Output 1.

RETURNS: Dyyyy_xxxx(CR / LF) -> yyyy = ASCII Output (0000 to 9997)
-> xxxx = ASCII Input (0000 to 9997).
_ is a space character.

1.4.4 EXPANDED CHANNEL INQUIRY - Multiple Sources (IP Only)

< CONTROL CHAR > < MSG ID > < DESTINATION >

CONTROL CHAR: ^Z (Ctl-Z)

MSGID: 50 = Expanded Channel Inquiry

DESTINATION: Destination Channel Number 0001 to 9998 (9999 = Not Specified, not valid for this command)

EXAMPLE: ^Z 50 0005 (No spaces, used for example clarity only)
Shows all sources currently assigned to Output 5.

RETURNS: Uyyyy:Pp:nn:xxxx,xxxx,....xxxx(CR / LF) yyyy = ASCII Output (0000 to 9997)
Pp = P and current priority level
nn = Number of source on the Output
xxxx = ASCII Input (0000 to 9997)

1.5 ALPHANUMERIC NAME INQUIRY COMMAND

To obtain the alphanumeric names which have been programmed to sources and destinations.

< CONTROL CHAR > < CHANNEL # >

CONTROL CHAR: ^X (ctl-X) for Input
^Y (ctl Y) for Output

CHANNEL #: Three digit ASCII number between 001 and 256 for single channel.
999 for all channels in order of channel number (1 to 256).
998 for all channels sorted alphabetically.

EXAMPLE: ^X001 - Show the Alpha for Input Channel 1.

RETURNS: ^X\$nAbcdefgh -> ^X (ctl-X) for Input,
\$n is a single digit true hex number for input from 00 to FF
Abcdefgh is the alpha label for the input

1.5.2 ALPHANUMERIC NAME INQUIRY: OPTION TWO – 4 Digit ASCII Number

To obtain the alphanumeric names which have been programmed to sources and destinations.

< CONTROL CHAR > < CHANNEL # >

CONTROL CHAR: ^EX (ctl-E, X) for Input
^EY (ctl E, Y) for Output

CHANNEL #: Four digit ASCII number between 001 and 9997 for single channel.
9999 for all channels in order of channel number (1 to 256).
9998 for all channels sorted alphabetically.

RETURNS: ^UxxxxAbcdefgh -> ^U (ctl-U) for Input,
^VyyyyAbcdefgh -> ^V (ctl-V) for Output,

EXAMPLE: ^EX0001 - Show the Alpha for Input Channel 1.

RETURNS: ^UxxxxAbcdefgh -> ^U (ctl-U) for Input,

1.5.3 NOTIFICATION OF ALPHA LABEL CHANGE

< CONTROL CHAR > < NOTICE >

CONTROL CHAR: <^G>

NOTICE: IAC (When a system Input Alpha Label has been changed).

OAC (When a system Output Alpha Label has been changed).

System will output the preceding message when there has been a change made to either the Input or the Output Alpha Channel Labels. These change notifications are enabled or disabled using the Feedback Command. Refer to section 1.6 for a description of the Feedback Options command.

1.6 FEEDBACK COMMAND

This command controls the system responses which will be output from the serial interface:

- Replies acknowledge receipt of serial commands.
- Tallies provide confirmation or notification of system changes. As crosspoint changes occur, tally can be output to notify you of the change. If Alphanumeric Labels are changed, the system may notify you that a change has occurred, although it cannot tell you the specific change which has occurred.

<CONTROL CHAR> <REPLY'S > <TALLY > <PROTOCOL>

CONTROL CHAR: ^F (ctl-F)

REPLY'S: 1 or 0 (1- Enables Replies 0- Defeats Replies)

- TALLY:**
- 0 - No Tally of xpoint activity or Alpha Change Notification will be output.
 - 1 - Xpoint Tally will be output in Numerical format only
- Txxx:yyy(CR / LF).
 - 2 - Xpoint Tally will be output as channel Alpha Labels only
- (Input001 - Out 001)(CR / LF).
 - 3 - Xpoint Tally will include both Numerical and Alpha Labels.
- Txxx:yyy (Input001 - Out 001)(CR / LF).
 - 4 - Notification of changes to the Alpha Labels shall be made.
- <^G>IAC (for Input Changes) or <^G>OAC (for Output Changes).
 - 5 - Numerical Tally and Alpha Change notification will be output.
 - 6 - Alpha Label Tally and Alpha Change notification will be output.
 - 7 - Numerical & Alpha Label Tally with Alpha Change Notice will be made.
 - 8 - Notice Of Console Module Operations Only Shall Be Made (No Other Tally)
 - 9 - Notice Of Console Module Operations and Numerical Tally and Alpha Change notification will be output.

PROTOCOL: 1 or 0

- 0 - 3 Digit ASCII style xpoint Tally
- 1 - 2 Digit ASCII/HEX style xpoint Tally
- 2 - 4 Digit ASCII style xpoint Tally

EXAMPLE: ^F170

- Enable Command Replies
- Output both Numerical & Alpha Label Xpoint Tally and
- Alpha Label Change Notification.
- Use 3 digit ASCII style for Numerical Tally.

RETURNS: OK(CR / LF) -> If Replies are enabled.

ERROR(CR / LF) -> If incorrect entry and Replies are enabled.

Note: Tallies are a function of the action, not simply a confirmation of a command. *All* crosspoint changes will result in a Take Tally (if Tally enabled via Feedback command above), regardless of whether it is initiated by serial communication, remote control panel or the router control software.

1.7 HELP SCREEN

< CONTROL CHAR >

CONTROL CHAR:^H (ctl-H)

SIERRA AUTOMATED SYSTEMS USI HELP SCREEN

^Txxxxyy - Take Command (xxx=input)(yyy=output) In/Out in ASCII format
^DTlxyy - Take Command (xx=input)(yy=output) In/Out in ASCII HEX format
^ETxxxxyyyy - Take Command (xxxx=input)(yyyy=output) In/Out in ASCII format
^Iyyy - Inquiry Command (yyy=output) Returns numerical ASCII format
^DIyy - Inquiry Command (yy=output) Returns ASCII HEX format
^EIyy - Inquiry Command (yyyy=output) Returns ASCII
^Xxxx - Request Input Alpha (xxx=in#) 999=All, 998=All in alpha order
^EXxxxx - Request Input Alpha (xxxx=in#) 9999=All, 9998=All in alpha order
^Yyyy - Request Output Alpha (yyy=out#) 999=All, 998=All in alpha order
^EYyyyy - Request Output Alpha (yyyy=out#) 9999=All, 9998=All in alpha order
^Stxxx - Trigger Salvo. (t=1 real, t=0 alpha number)(xxx=Salvo Num)
^ESTxxx - Trigger Salvo. (t=1 real, t=0 alpha number)(xxxx=Salvo Num)
^Rcxxx - Trigger Relay. (c=1 mom, c=2 latch, c=3 release)(xxx=Relay Num)
^ERCxxx - Trigger Relay. (c=1 mom, c=2 latch, c=3 release)(xxxx=Relay Num)
^Ltvvcccc - StLink (t - 0=In/1=Out)(vv - 00=M/01=St/02=SD/03=LRsum)(cccc=Ch#)
^Qsiooyyyy - Xpoint Transition Ctl (s - 0=CICO/1=FICO/2=CIFO/3=FIFO/4=XFADE)
(ii=FadeIn Time)(oo=FadeOut Time)(yyyy=output channel)
^Zttxxxxyyyyggggoooo - Enhanced Take Cmnd w/Gain And Additional Options
(tt=00, xxxx=Inpt, yyyy=Outpt, gggg=Gain, ooooo=Take Options)
(1024 = Unity Gain Change in 1/10th db steps)
(Take Options Bitmapped, Refer To USI Protocol Document)
^Zttxxxxyyyyggggffss - Gain Command (tt=10, xxxx=Inpt, yyyy=Outpt)
(gggg=Gain, ff=Fade Time * 100mS, ss=GainStage)
(1024 = Unity Gain Change in 1/10th db steps)
(For Gain Stage Values Refer To USI Protocol Document)
^Frtp - Feedback Settings (r=replies 0/1)(t=tally bmap)(p=protocol 0/1)
- Tally Bit(0) Numeric, Bit(1) Alpha, Bit(2) Alpha Notify
- Protocol For Tally 0=ASCII (Txxx:yyy), 1=Hex (Oyy xx)
- 2=Four digit ASCII (Cxxxx:yyyy)
^EVx - Version Inquiry (x=1 USI Ver, x=2 Switcher Type, x=3 Server Ver
t=3 Server Module Version)
^H - Display this help screen.

Valid numbers are 001-256 (ASCII), 00-FF (HEX) and 0000-9999 (4 digit ASCII). If Tally is enabled (^Fxxx), each unique xpoint change will be tallied in one of several formats;

"Txxx:yyy" - Tally(1) Protocol(0) (ie ^Fx10) xxx=Input, yyy=Output
"Input001 - Out 001 " - Tally(2) Protocol(x) (ie ^Fx2x)
"Txxx:yyy (Input001 - Out 001)" - Tally(3) Protocol(0) (^Fx30)
"Oyy xx" - Tally(1) Protocol(1) (ie ^Fx11) xx=Input, yy=Output
"Oyy xx (Input001 - Out 001)" - Tally(3) Protocol(1) (^Fx31)
"Cxxxx:yyyy" - Tally(1) Protocol(0) (ie ^Fx10) xxx=Input, yyy=Output

1.8 SAS READY PROMPT

<ENTER>

The System will respond to the <ENTER> key (0x0D) by issuing the “Clear Terminal Screen” ASCII Escape Sequence Command (ESC[2J) and the “Cursor Home” Escape Sequence (ESC[H) followed by the “SAS READY>” prompt. This action is only intended as a convenient way to clear a terminal screen and verify serial communications. It is NOT necessary that the ready prompt be displayed before a command can be entered.

1.9 VERSION REQUEST COMMAND

< CONTROL CHAR >

CONTROL CHAR: <^EV> (ctl-E, V)

OPTIONS: 1 - USI Version
2 - Switcher Type
3 - Server Module Version

RETURNS: 1 - VERSION 2 (CR / LF)
2 - 32KD (CR / LF), 64000(CR / LF), etc.
3 - VER 3.39 (CR / LF)