

HJT Model 340SC Projector Interface and Communications Specification

TABLE OF CONTENTS

- 1.0 GENERAL DESCRIPTION**
- 2.0 HARDWARE DESCRIPTION**
 - 2.1 TERMINAL-IN (RS-232 Port #1)
 - 2.2 CONTROL-OUT (RS-232 Port #2)
 - 2.3 Control Inputs Connector PIN-OUTS and RS-232 Null Modem Cable
- 3.0 VT-100 TERMINAL CONTROL**
- 4.0 PC EMULATION of the VT-100 TERMINAL:**
 - 4.1 Hardware/Software Requirements
 - 4.2 MS DOS Windows SET UP (VT-100 EMULATION)
 - 4.3 MS DOS PROCOMM SET UP (VT-100 EMULATION)
 - 4.4 EXPORT CHANNEL DATA to a PC using MS DOS WINDOWS
 - 4.5 IMPORT CHANNEL DATA from a PC using MS DOS WINDOWS
 - 4.6 EXPORT CHANNEL DATA to a PC using MS DOS PROCOMM Communications Software
 - 4.7 IMPORT Channel DATA from a PC using MS DOS PROCOMM
- 5.0 REMOTE CONTROLLER COMMUNICATION SPECIFICATION (E.G. EXTRON SWITCHER, CRESTRON/AMX CONTROLLERS,ETC.)**
- 6.0 CONTROL-OUT: SWITCHER PORT INTERFACE**

HJT MODEL 340SC PROJECTOR INTERFACE AND COMMUNICATIONS SPECIFICATION

This document describes the interface and control configuration for Model 340SC.

1.0 General Description

Control and interface communications for Model 340SC use two RS-232 ports (Terminal-IN and Control-OUT) a front and a rear mounted IR receiver; and an optional IR remote receiver which can be cable connected to a Modular 6 pin phone plug (RJ-11) in the rear panel of the projector. Figure 1 illustrates the Model 340SC rear panel. Figure 2 illustrates the pin-out for the two RS-232 input control connectors and the optional IR repeater cable connector. The RS-232 ports are 9-pin (DB9/male) connectors and the IR repeater connector is a 6 wire modular phone plug.

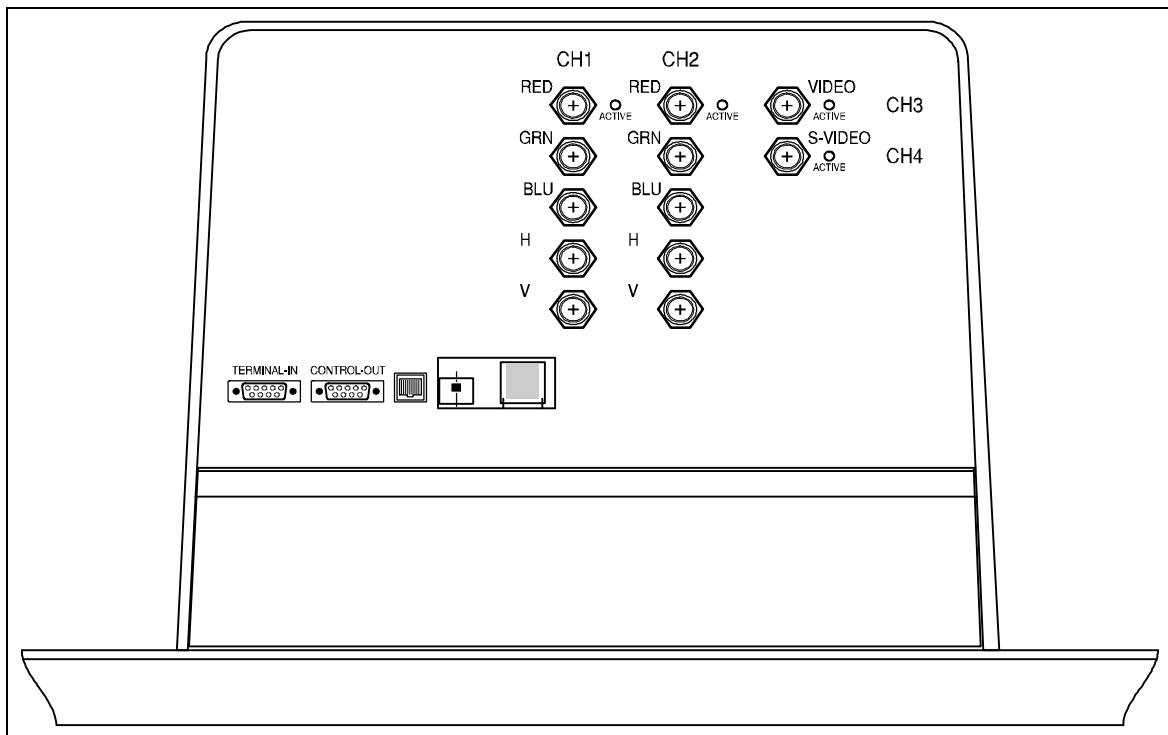


FIGURE 1. Model 340SC Projector, Rear Panel, shown with optional decoder inputs.

2.0 Hardware Description

2.1 TERMINAL-IN (RS-232 port #1)

The **TERMINAL-IN** RS-232 is designed to provide control interface for the projector and accepts the Model 340SC tethered remote, VT-100 Terminal, or a PC configured to emulate the VT-100. **TERMINAL-IN** is also the communications interface/port for external/universal control units such as CRESTRON and AMX.

The Model 340SC Operator's Manual provides information about projector controls available through the tethered remote, IR remote controls, and the VT-100.

2.2 CONTROL-OUT (RS-232 port #2)

The **CONTROL-OUT** RS-232 port provides a control input/channel for communication with the optional EXTRON System 8/10 wideband switcher. The video output(s) of the switcher may be connected to the projector RGB1, RGB2, composite VIDEO, and/or the S-VIDEO inputs of the projector. Switchers can be cascaded to provide many video sources to the projector. **CONTROL-OUT** is designed to accept only channel switching, projector ON/OFF, and video mute commands from the EXTRON Switcher.

The Extron System 8/10 Switcher was specially designed to use with the Model 340SC projector. Use a communication cable to connect from the Projector Control Port of the Extron System 8/10 Switcher to the **CONTROL-OUT** port of the Hughes projector. The Communication Cable may be manufactured by the installer using the following pin configuration using twisted pair up to 200 feet:

<u>15 Pin HD Male</u>		<u>9 Pin D Sub Female</u>
Pin:	to	Pin:
1	to	1
2	to	2
3	to	3
4	to	4
5	to	5
6	to	6
7	to	7
8	to	8
15	to	9

Extron offers the communication cable in two different lengths:

<u>Cable</u>	<u>Part Number</u>
CC50'	26-305-01
CC100'	26-305-02

In addition, a Null Modem Adapter (Female DB9 to Male DB9) is required to connect from the 9 pin side of the communication cable to **CONTROL-OUT** port of the Hughes projector. A Null Modem Adapter is offered by Extron as the Hughes Comm Adapter (HU COM), Part Number 26-341-01.

Control information and commands can flow in both directions between the projector and the System 8/10 Switcher. In addition, information can flow between the projector and devices which are attached to a secondary port of the Switcher. Escape sequences are used to indicate to the Switcher which data are to be passed along and which are to be retained.

While the **CONTROL-OUT** (RS-232 #2) port contains RTS/CTS signals, these connections are not used for hardware flow control. They are reserved to verify that the communications link is complete and the cable is attached to the port. Flow control is accomplished through XON/XOFF software protocol.

2.3 Control Inputs Connector PIN-OUTS and RS-232 Null Modem Cable

Figure 2 Illustrates the pin-outs of the RS-232 #1 (TERMINAL-IN), RS-232 #2 (CONTROL-OUT), and RJ-11 IR Repeater input.

TERMINAL - IN: (DB9/Male) (RS232 #1)	Tethered Technician's Remote/VT-100 Terminal, Crestron/AMX	Pin Out:	1: DCD-1	2: RECV-1	3: XMIT-1
			4: DTR-1	5: GND	6: DSR-1
			7: RTS-1	8: CTS-1	9: +5V DC
CONTROL - OUT: (DB9/Male) (RS232 #2)	Extron System 8/10 Wideband Switcher	Pin Out:	1: DCD-2	2: RECV-2	3: XMIT-2
			4: DTR-2	5: GND	6: DSR-2
			7: RTS-2	8: CTS-2	9: +5V DC
IR - IN:	RJ-11 (Modular Phone Plug - 6 wire)	Pin Out:	1: + Pulse	2: - Pulse	3: N/C
			4: N/C	5: +5V DC	6: GND
IR RECEIVERS (2):	1 Front & 1 Rear				

FIGURE 2. MODEL 340SC INPUT CONNECTOR PIN-OUTS

A Null Modem cable is needed to interconnect leads in such a way as to fool both Data Terminal Equipment (projector and PC/VT-100 terminal, Extron Switcher, or AMX/Crestron) into thinking that they are connected to modems (Data Communication Equipment).

NOTE: Null Modem cables used to connect a switcher to the projector must be used with an adapter that is supplied by the manufacturer to work with the Hughes-JVC projector. When using EXTRON, AMX, or CRESTRON equipment, be sure that the Null Modem cable adapter being used is specifically designed for use with the Hughes-JVC Model 340SC projector.

The Technician's Tethered Remote Cable, part number 102248, is wired as follows:

<u>TETHERED REMOTE</u>		<u>PROJECTOR(TERMINAL-IN)</u>
Modular 6 pin phone plug		DB9 female connector
Pin:	to	Pin
1 (BLACK)	to	9
2 (RED)	to	1 and 7
3 (GREEN)	to	8
4 (YELLOW)	to	3
5 (BROWN)	to	2
6 (GRAY)	to	5

This cable can be extended up to 75 feet with unshielded cable, and up to 150 feet with shielded cable.

3.0 VT-100 Terminal Control

The Model 340SC projector was designed using the VT-100 terminal for control of the projector. The VT-100 is connected to **TERMINAL-IN** (RS-232 #1). The VT-100 command list is provided in both the Model 340SC **OPERATORS MANUAL** and in table 1 of this document. Table 1 lists the control description along with attendant ASCII codes and keyboard characters.

4.0 PC emulation of the VT-100 Terminal:

While the Model 340SC projector was designed using the VT-100 terminal, any communications program that includes a VT-100 terminal emulation can be used with a PC to control the projector. This document includes the procedures to set up a PC to emulate the VT-100 terminal using WINDOWS or PROCOMM Plus communications software.

4.1 Hardware/Software Requirements

Personal Computer XT or AT PC with available Serial port COM1 or COM2

PC Communications Software: MS DOS plus PROCOMM Plus or WINDOWS 3.1.

Serial Cable: Female DB9 connector (to projector) to Female/
Male DB9 connector (to source) wired as RS-232
Null Modem

Model 340SC Projector
Software: Version 5.1.0

4.2 MS DOS WINDOWS SETUP (VT-100 EMULATION)

The parameters shown in this procedure duplicate the format in the WINDOWS software displayed on the monitor. VT-100 emulation with the PC Windows 3.1 Software is accomplished as follows:

- In Window Accessories, select the Terminal Icon.
- From the menu bar, select SETTINGS. From the SETTINGS menu, select TERMINAL EMULATION and click on DEC VT-100[ANSI] (if not already selected).

TERMINAL PREFERENCES

Select **SETTINGS** again from the menu bar. Select Terminal Preferences. Set the following Modes:

<u>Line Wrap</u> :	Yes	<u>CR</u> → <u>CR/LF</u>	
<u>Local Echo</u> :	No	Inbound:	No
<u>Sound</u> :	Yes	Outbound:	No
<u>Columns</u>		<u>Cursor</u>	
80:	Yes	Block:	Yes
132:	No	Underline:	No
		Blink:	Yes
<u>Terminal Font</u>	Courier 12	<u>Translations</u>	NONE
		<u>IBM to ANSI</u>	No
Show Scroll Bars	Yes	<u>Buffer Lines</u> :	100
<u>Use Function Arrow, and</u> <u>Ctrl Keys for Windows</u>	No		

COMMUNICATIONS PROTOCOL

Select **Settings** using the menu bar, then select **Communications**. Set the following communications parameters and modes:

Baud Rate	9600	Stop Bits	1
Data Bits	8	Flow Control	Xon/Xoff
Parity	None	Carrier Detect	No
Parity Check	No		
Connector:	Com1 (This is PC configuration dependent)		

Select **File** from the menu bar and select **New**. Under File Name enter **VT-100.TRM**. This will allow the user to select the file VT-100.TRM with the above parameters saved for ease in future use.

4.3 MSDOS PROCOMM SETUP (VT100 EMULATION)

The parameters format shown in this procedure duplicate the format in the PROCOMM software displayed on the monitor. VT-100 emulation with the PC using PROCOMM software is accomplished as follows:

- In PROCOMM strike **ALT Z** to display **COMMAND MENU**.
- Strike **ALT S** to display **SETUP UTILITY**.
- Select **TERMINAL OPTIONS** and set the following modes:

A- Terminal emulation	VT100	J-Enquire (ENQ)	OFF
B- Duplex	FULL	K- EGA/VGA true underline	OFF
C- Soft flow ctrl (XON/XOFF)	ON	L- Terminal width	80
D- Hard flow ctrl (RTS/CTS)	OFF	M- ANSI 7 or 8 bit commands	8 BIT
E- Line Wrap	ON		
F- Screen scroll	ON		
G- CR Translation	CR		
H- RS Translation	DESTRUCTIVE		
I- Break length (milliseconds)	350		

- Strike **ALT D** to display the **DIALING DIRECTORY**.
- Setup next available entry in the directory — strike A (Add Entry):

NAME:	VT-100 Terminal
NUMBER:	
BAUD:	9600
PARITY:	NONE
DATA BITS:	8
STOP BITS:	1
DUPLEX:	FULL
PORT:	COM1 (Note: PC Configuration dependent)
SCRIPT:	
PROTOCOL:	ASCII
TERMINAL:	VT100
MODE:	DIRECT
PASSWORD:	
META FILE:	
KBD FILE:	
NOTE FILE:	

4.4 EXPORT CHANNEL DATA TO A PC USING MS DOS WINDOWS.

The following describes the procedural sequence for exporting Model 340SC channel data to a PC (and disc).

1. Connect VT-100 Terminal or PC (set up to emulate the VT-100) to RS-232 #1 port (**TERMINAL-IN**) using the RS-232 Null Modem Cable.
2. Start VT-100 terminal emulation from the PC. Select File from the menu bar and Select Open. Use filename VT-100 TRM.

NOTE 1. PC will now act as a controller to the projector and all commands are now keyboard characters. A menu list outside the rectangular box will appear on the monitor screen.

NOTE 2. SOFTWARE WILL TIMEOUT IN 10 SECONDS IF ACTIONS ARE NOT COMPLETE.

3. Select an active Projector channel from the channel list to be exported.
4. To export channel data to the PC, select **CHANNEL MENU** from the **MAIN MENU** and select **EXPORT CHAN, DATA**. Enter channel number to be exported when the Projector displays the message: [**ENTER CHANNEL #**].
5. The projector will display the message: [**PREPARE HOST TO RECEIVE DATA. ENTER TO START ESC TO ABORT**].

6. At the PC, select **Transfers** from the main menu bar and select **Receive Text File**. Enter the name of the channel to save, i.e., CH2.TXT. Strike the Enter key twice to begin Transfer.

Transfer is in progress when ASCII data scrolls across the PC's screen.

The Projector displays the message: [**TRANSFERRING ESC TO ABORT**]

7. Terminate transfer when the Projector displays the following message: **TRANSFER COMPLETE WHEN TERMINAL READY FOR NORMAL OPERATION. PRESS ANY KEY**]. At the PC select **Transfers** from the menu bar and select **stop**.

4.5 IMPORT CHANNEL DATA FROM A PC USING MS DOS WINDOWS

The following describes the procedural sequence for importing channel data from a PC (or disc) to the Model 340SC projector.

1. Select an active Projector channel from the channel list.
2. To import channel data to the Projector, select **CHANNEL MENU** from the **MAIN MENU** and select **IMPORT CHAN. DATA** (projector automatically switches to internal sync. Enter channel number to be imported when the Projector displays the message **ENTER CHANNEL #**).

NOTE: Import Data cannot be performed to the current active channel.

3. The projector will display the following message: [READY TO RECEIVE BEGIN UPLOAD NOW ESC TO ABORT]
4. At the PC, select **Transfers** from the menu bar and select **Send Text File**. Select the drive letter where the floppy disc is located. Select the file name of the channel to send. Press Enter to begin Transfer.
5. The PC will display send rate at bottom of screen and the message: **SENDING CHAN#.TXT**].
6. Terminate transfer when the Projector displays the following message: **TRANSFER COMPLETE CHANNEL BANK XFER SUCCESSFUL PRESS ESC**]. Strike the **ESC** key to terminate transfer.

4.6 EXPORT CHANNEL DATA to a PC using MD DOS PROCOMM communications software.

The following is the procedure for exporting Model 340SC channel data to a PC (and disc). This assumes PC has been set up to emulate the VT-100.

1. Connect the RS-232 null modem cable from the PC serial comm port connector to the projector RS-232 port #1 (**TERMINAL-IN**) connector.
2. Start PROCOMM at the MS DOS prompt.
3. Select ALT=D from the DIALING DIRECTOR. Use file name VT-100 Terminal.

NOTE 1: PC will now act as a controller to the Projector and all commands are now keyboard characters. A menu list outside of the rectangle box will appear on the PC's screen.

NOTE 2: SOFTWARE WILL TIME-OUT IN 10 SECONDS IF ACTIONS ARE NOT COMPLETED

4. Select an active Projector channel from the channel list to be exported. From the **MAIN MENU** select the **STATUS MENU** and set projector to internal sync by toggling [5].
5. To Export channel data to the PC, select **CHANNEL MENU** from the **MAIN MENU** and select **EXPORT CHAN.DATA**. Enter channel number to be exported when the Projector displays the message: **[ENTER CHANNEL#]**.
6. The Projector will display the message: **[PREPARE HOST TO RECEIVE DATA.. ENTER TO START ESC...TO ABORT]**.
7. At the PC, strike the **Pg Dn** key for the **DOWNLOAD** menu and select **Receive Text File**. Enter the name of the channel to save, i.e.; **CH2.TXT**. Press the **ENTER** key twice to begin transfer.
8. Transfer is in progress when ASCII data scrolls across the PC's screen. The Projector displays the message: **[TRANSFERRING ESC TO ABORT]**. Terminate transfer when the Projector displays the following message: **[TRANSFER COMPLETE WHEN TERMINAL READY FOR NORMAL OPERATION. PRESS ANY KEY]**. At the PC strike the **ESC** key twice.

4.7 IMPORT CHANNEL DATA FROM A PC USING MSDOS PROCOMM

The following is the procedure for importing channel data from a PC (and disc) to the Model 340SC projector.

1. Select an active Projector channel from the channel list. From the **MAIN MENU** select the **STATUS MENU** and set projector to internal sync by toggling [5].
2. To import channel data to the Projector, select **CHANNEL MENU** from the **MAIN MENU** and select **IMPORT CHAN.DATA**. Enter channel number to be imported when the projector displays the message: **ENTER CHANNEL #**. Note: Import Data cannot be performed to the current active channel.
3. The projector will display the following message: [READY TO RECEIVE BEGIN UPLOAD NOW ESC TO ABORT].
4. At the PC, select **Pg Up** from the menu bar and select ASCII. Enter the file name of the channel to send. Strike the Enter key to begin Transfer.
5. The PC will display send rate at bottom of screen and the message: [UPLOAD IN PROGRESS...].
6. Terminate transfer when the Projector displays the following message: [TRANSFER COMPLETE CHANNEL/BLANK XFER SUCCESSFUL PRESS ESC]. Strike the ESC key to terminate transfer.

5.0 REMOTE CONTROLLER COMMUNICATION SPECIFICATION (E.G. EXTRON SWITCHER,CRESTRON/AMX CONTROLLERS,ETC.)

Table 1, list of commands, describes the interface with the Hughes-JVC Model 340SC projector. These commands are recognized when they arrive via the TERMINAL-IN, RS-232 number 1 port (Remote controller/VT-100, Crestron/AMX) and can be used literally as described below.

The only commands that are recognized via the CONTROL-OUT, RS-232 number 2 port (Extron Switcher) are for channel switching, projector ON/OFF, and video mute.

TABLE 1

COMMAND DESCRIPTION	KEYBOARD INPUT	DECIMAL	HEX
AUTO-SELECT TO ON	CTRL-A	1	1
AUTO-SELECT TO OFF	CTRL-B	2	2
DEFAULT	CTRL D	4	4
ELECTRONICS TOGGLE ON/OFF	CTRL E	5	5
ALL POWER OFF (STANDBY)	CTRL F	6	6
BACKSPACE KEY	CTRL-H	8	8
ON-SCREEN DISPLAY OFF	CTRL-I	9	9
PROJECTOR LAMP TO ON	CTRL-J	10	A
PROJECTOR LAMP TO OFF	CTRL-K	11	B
LAMP ONLY ON/OFF TOGGLE	CTRL L	12	C
ENTER	CTRL M	13	D
POWER STATUS REQUEST*	CTRL O	15	F
ALL POWER ON/OFF TOGGLE	CTRL P	16	10
SET TETHERED	CTRL R	18	12
VT100 RS-232 ENABLE	CTRL V	22	16
SET PRODUCTION (Factory use)	CTRL T	20	14
ESCAPE	ESC	27	1B
PROJECTOR POWER TO ON	CTRL U	21	15
ELECTRONICS POWER TO ON	CTRL-W	23	17
ELECTRONICS POWER TO OFF	CTRL-X	24	18
PROJECTOR MUTE TO ON	CTRL-Y	25	19
PROJECTOR MUTE TO OFF	CTRL-Z	26	1A
UP ARROW	UP ARROW	27 91 65	1B 5B 41
DOWN ARROW	DOWN ARROW	27 91 66	1B 5B 42
RIGHT ARROW	RIGHT ARROW	27 91 67	1B 5B 43
LEFT ARROW	LEFT ARROW	27 91 68	1B 5B 44
VT 100 REFRESH	(shift +/)	124	7C
MENU	SPACEBAR	32	20
COLOR	A	65	41
BLUE	B	66	42
CONTRAST	C	67	43
MOVE-DATA	D	68	44
EDGE LINEARITY	E	69	45
CUTOFF	F	70	46
GREEN	G	71	47
PHASE	H	72	48
BRIGHTNESS	I	73	49
KEystone	K	75	4B
LINEARITY	L	76	4C
CONV-SIZE	M	77	4D
PINCUSHION	N	78	4E
ONSCREEN	O	79	4F
POSITION	P	80	50
RED	R	82	52
SIZE	S	83	53
TEST PATTERNS	T	84	54
TINT	U	85	55
MUTE	V	86	56
SHARPNESS	X	88	58
BLANK	Z	90	5A
0	0	48	30
1	1	49	31
2	2	50	32
3	3	51	33
4	4	52	34
5	5	53	35
6	6	54	36
7	7	55	37
8	8	56	38
9	9	57	39

*Use this to query current Power ON or OFF status. Projector responds with 2 characters followed by carriage return. The first indicates the Electronics power state and the second the lamp state. "N"=ON, "F"=OFF. Note that NN=full projector power ON and FF means that the projector is OFF (standby mode). This feature is in Software Version 5.0.3. It does not respond while a menu or any other operator interaction is active.

WARNING!!! When using the VT-100 terminal or other external control systems (e.g. Crestron/AMX), the lamp assembly can be turned off independent of the electronics including the CRTs. In this mode, the CRTs and ILA[®] can have images displayed on their surfaces. Since there will be no projected image on the screen (with lamp off), the operator may not be aware of the image on the CRTs and the ILA[®]. This condition may result in CRT and/or ILA[®] burn-in, particularly if high contrast static images are being displayed. **Do not turn off lamp power independently unless performing necessary maintenance!**

IMAGE BURN-IN IS NOT COVERED UNDER WARRANTY!!!

6.0 Control-Out : Switcher Port Interface

General Description

The Control-Out (RS-232 #2) port provides a control channel for communication with the Extron System 8/10 Wideband Switcher used to select video sources for the Projector. The Projector Control port of the Switcher is connected to the Control-Out port located at the rear of the Projector. Switchers can be cascaded to provide many video sources to the Projector.

Information and commands can flow in both directions between the Projector and the Switcher. In addition, information can flow between the Projector and devices which are attached to a secondary port on the Switcher. Escape sequences are used to indicate to the Switcher which data are to be passed along and which are to be retained.

Hardware Description

The Switcher Port is a basic RS232 interface. Although the port contains RTS/CTS signals, these lines will not be used for hardware flow control. They are reserved for use by the port in determining whether a cable is attached to the port. Flow control is accomplished through XON/XOFF software protocol.

Signals are provided on a nine-pin male D type connector as follows:

Pin Number	Signal
2	Receive Data (to Projector)
3	Transmit Data (from Projector)
5	Ground
7	RTS
8	CTS

Signaling is as follows:

Data transfer rates: 19200 Baud

Data Bits: 8

Stop Bits: 1

Parity: None

Interface Protocol

Low Level Protocol

XON/XOFF

A software technique of flow control shall be used by both devices. The receiving device, when its capacity for receiving characters diminishes below some threshold, shall send an XOFF character to the transmitting device to stop the transmission. The device sending the XOFF character should realize that several more characters may arrive before the flow is stopped due

to a combination of data transmission rates and processor overhead in the device receiving the XOFF character.

The flow is resumed when the receiving device sends an XON character to the transmitting device.

The character codes for XON and XOFF are:

XON	0x11
XOFF	0x13

Character Duplication

Each character transmitted will be sent in duplicate (except ACK/NAK and XON/XOFF flow control characters). This technique provides a method of checksumming on a character by character basis.

If a character sequence of <A><CR> is to be sent, the sequence on the interface will be <A><A><CR><CR>.

High Level Protocol

Data Frame

All data transmissions will take the following format:

Header	Data	Terminator
(1 character)	(0 to n characters)	(1 character)

The header character will define the nature of the data to follow (see Table of Data Frame Types). The data field can contain no data at all, as in the case of a command, or several bytes, as in the case of a channel number. The terminator is always a <CR> (0x0D).

Transparent Data Frame

Some transmissions from the Projector are not meant for the Switcher. These transmissions are passed along by the Switcher to a second port. These transparent transmissions take the following format:

Header	Data	Delimiter
(1 character)	(0 to n characters)	(1 character)

Transparent Data Frame Control Codes

Header	0xA0
Delimiter	0xA1

Control codes are duplicated in transmission.

Transparent Data Characters

The data characters can be any ASCII codes except the Delimiter character. Data characters are not duplicated like all other transmissions.

Table 2. Data Frame Types

Function	Originator	Header Code	Data Field	Notes
Status Request	Projector	0xEF	None	Used to poll Switcher
Change Channel	Projector	0xEE	1 or 2 ASCII characters	Commands Switcher channel change
Power Lamp Control	Projector	0xED	1 binary character 0x00=OFF,0x01=ON	
Mute Lamp Control	Projector	0xEC	1 binary character 0x00=OFF,0x01=ON	
Currently Selected Channel	Switcher	0xDF	1 or 2 ASCII characters	Response to status request
Maximum Channel Number	Switcher	0xDE	1 or 2 ASCII characters	Response to status request
Request Channel Change	Switcher	0xDD	1 or 2 ASCII characters	Sent in response to front panel channel selection on Switcher
Request Power ON	Switcher	0xCD	None	Requests Projector Power State Change to ON
Request Power OFF	Switcher	0xCC	None	Requests Projector Power State Change to OFF
Request Mute ON	Switcher	0xCF	None	Requests Projector Mute State Change to ON
Request Mute OFF	Switcher	0xCE	None	Requests Projector Mute State Change to OFF
Request Power Change	Switcher	0xDC	None	Requests Projector Power State Change (off to on or on to off)
Request Mute Change	Switcher	0xDB	None	Requests Projector Mute State Change (off to on or on to off)