No320S preamplifier

RS-232 control guide

MADRIGAL

Overview

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The Mark Levinson No320S preamplifier is equipped with an RS-232 control port. A complete set of command inputs and status outputs allow control of the No320S by an external control system (such as AMX or Crestron). This guide contains connection details and the RS-232 command list.

Contacting Technical Support

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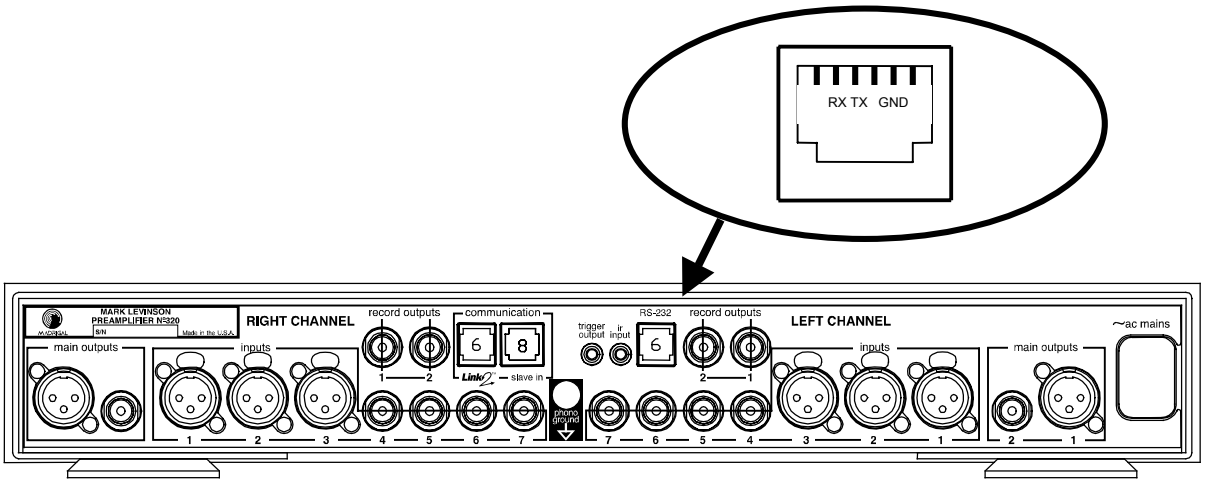
Connection

RS-232 Port Location

RS-232 control is through an RJ-11 connector located on the back of the No320S next to the IR output. This connector has 6 pins of which only three are used for communication.



RS-232 Port Pin Configuration.

The No320S will receive control data on pin 2 Data Receive and transmit status data on pin 3 Data Transmit. The connection Cable between the No320S and the control device will need to be configured so that the No320S's receive is connected to the control devices transmit. Please refer to the product owner's manual for the control device you are using for RS-232 port type and configuration.

Pin 2 Rx from the PC / Data Receive

Pin 3 Tx to the PC / Data Transmit

Pin 5 Digital system ground

RS-232 Control Cable

Madrigal Audio Labs offers several parts to help communicate via RS-232 to the No320S. The following parts can be order from Madrigal Audio Labs Technical Support.

Part #	Description
MRC878	DSUB9 to RJ-11 Adaptor and 2 meter RJ-11 to RJ-11 Cable
MRC808	DUB9 to RJ-11 Adaptor
MLC732	2 meter RJ-11 to RJ-11 Cable

For general purpose and short cable runs to the No320S, Part # MRC878 contains everything needed.

For cable lengths of more then 2 meters - Part # MRC808 and the length of cable needed should be ordered.

RS-232 control units with port types other then DSUB9 will need to have the cable constructed. To construct a cable please follow the example below.

Control Cable Example

As an example on making the cable we will use the most common connector used, which is a DSUB9. The No320S only needs 3 pins to control the unit via RS-232. As mentioned earlier the No320S's pin 2 Data Receive must connect to the control devices Transmit. Please read the notes below before constructing the RS-232 cable.

Before Constructing the Communications Cable

- ❑ Verify Control Devices RS-232 Port Type and Configuration – Refer to Control Device Owners Manual
- ❑ Determine length of cable needed – Check the control device owners manual for length limitations
- ❑ Have all available parts
  - o Length of Cable needed
  - o RJ-11 Connector
  - o Connector type used by RS-232 device

Cable Layout

The following diagram shows how to construct a basic DSUB9 to RJ-11 Cable.

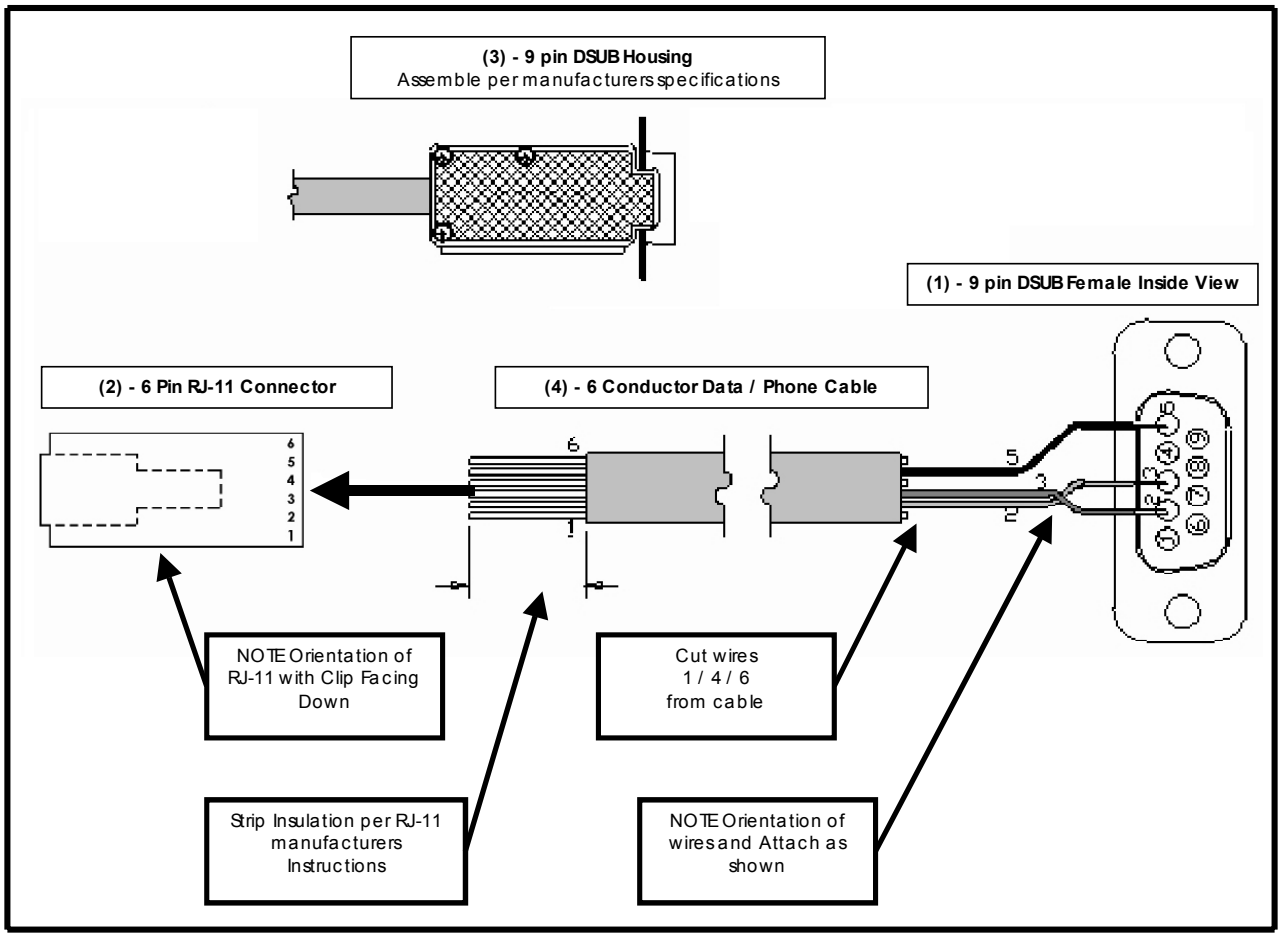
Cable Connections

No320S RS-11 Pins		**Controller DSUB9 Pins**
1 – NOT USED	NO CONNECTION	
2 – Data Receive	––––––Connect to––––––	**3 – Data Transmit**
3 – Data Transmit	––––––Connect to––––––	**2 – Data Receive**
4 – NOT USED	NO CONNECTION	
5 – Digital Ground	––––––Connect to––––––	**5 – Digital Ground**
6 – NOT USED	NO CONNECTION	

Diagram 2 – RJ-11 to DSUB9 Cable

Parts Used for Cable

	Digikey Part#	Radioshack Part #
(1) - 9 pin DSUB Female Connector	A2047-ND	276-1537
(2) - 6 pin RJ-11 Connector	A9027-ND	279-421
(3) - 9 pin DSUB Housing	A9001-ND	276-1539
(4) - 6 Conductor Data / Phone Cable	H0063 (length in feet)-ND	910-2319



Command list

Settings: 38.4K baud, 1 stop bit, no parity

Format: **!<command><cr>** *or* **!Vxx.x<cr>**

The '!' is used as a framing character and can be sent any time to reset the packet reception code. Note that all commands are 5 bytes ('!' + 3char command + <cr>) with the exception of the direct volume command which is 7 bytes ('!' + 'V' + 4 bytes data + <cr>) <cr> = 0x0d, carrage return.

Example: **!GI1<cr>** (selects input 1 on No320S)

Keys:

COMMAND	DESCRIPTION
KVD	Volume "key" down
KVU	Volume "Key" up
KBA	Balance Key
KSU	Setup Key
KEN	Enter Key
KST	Standby Key
KMU	Mute Key
KMO	Mono Key
KIP	Input select previous "key"
KIN	Input select next "key"
KPO	polarity key
KDI	Display Intensity key

Note on ramping volume:

Repeated “EV_VOL_DOWN” or “EV_VOL_UP” key commands must be sent at less than 150mS intervals to cause a smooth, accelerated ramping of volume like the effect of holding the volume up or down key on the remote control.

Directs:

COMMAND	DESCRIPTION
GOP	Go to Operate mode
GST	Go to Standby mode
GMU	Go to mute
GMN	Restore volume
GI1	Go to input 1

GI2	Go to input 2
GI3	Go to input 3
GI4	Go to input 4
GI5	Go to input 5
GI6	Go to input 6
GI7	Go to input 7
Note: "**GI7**" selects either input 7 or phono input if installed.	
GBA	Go to balance mode
GBE	Exit balance mode
IOF	Go to display intensity 0
I25	Go to display intensity 25%
I50	Go to display intensity 50%
IFU	Go to display intensity 100%

Status:

COMMAND	DESCRIPTION
MON	Enable RS232 status updates (default)
MOF	Disable RS232 status updates
Note: The monitor on/off setting is not saved and restored through power off->on cycles	

Volume direct:

COMMAND	DESCRIPTION
Vxx.x	Set volume level directly
Note: Rounds to nearest whole dB step for volumes less that 23.0	

Example: V65.0<cr> (sets No320S volume to 65.5)

Query:

COMMAND	DESCRIPTION
QAL	Request entire current No320S status
Note: Sends all 6 status lines shown below regardless of monitor on/off	

Status Update:

Any change in the following 6 control keys will automatically send out the corresponding ASCII string.

CONTROL KEY	RETURNED VALUE	COMMENT
Select knob	**1:IN:<1-7>:<input alias><cr>** or **1:IN:NONE<cr>** if no current valid input selection input alias> is max 7 chars, no null termination	input alias = first 7 ascii characters from No320S LED display.
Volume knob	**2:VOL:xx.x<cr>** or **2:VOL:OFF<cr>**	xx.x = last 4 ascii characters from No320S display
Mute	**3:MUTE:ON<cr>** or **3:MUTE:OFF<cr>**	ON = user mute engaged, OFF = normal volume
Mono	**4:MONO:ON<cr>** or **4:MONO:OFF<cr>**	ON = mono , OFF = normal stereo
Polarity	**5:POL:ON<cr>** or **5:POL:OFF<cr>**	ON = polarity reversed, OFF = normal
Standby	**6:STDBY:ON<cr>** or **6:STDBY:OFF<cr>**	ON = standby active, OFF = normal operating mode

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