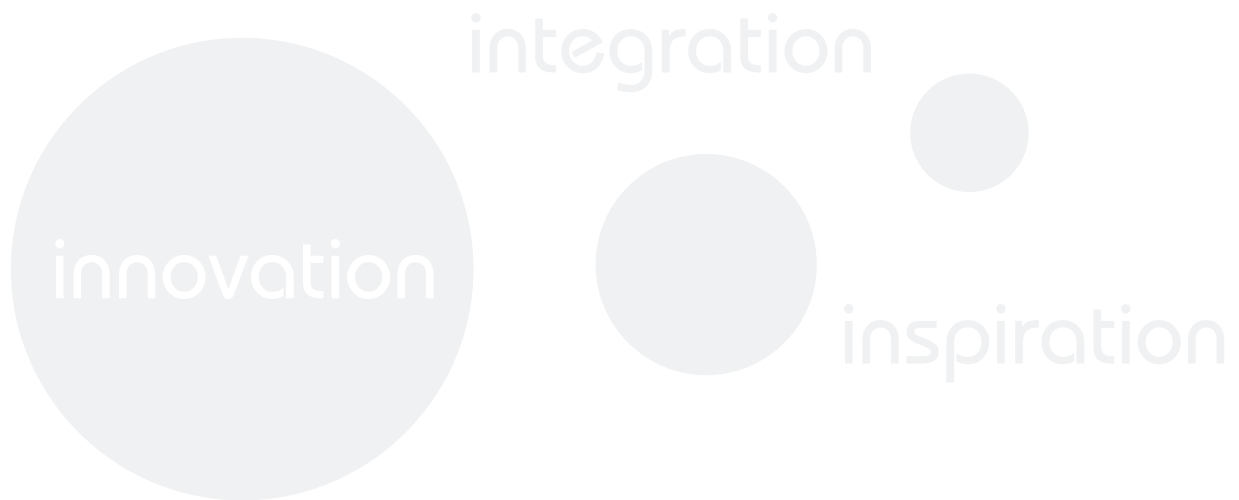


# **AVM Series**

## **Audio and Video Matrix**



**User/Programmer Manual**

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## AVM Matrix RS-232 Quick Guide

This document is intended to provide a beginning programmer with the most commonly used messages in the Intelix AVM matrix RS-232 protocol. It contains ten messages:

### **Are You There**

This message is a general purpose communications check. Your controller should send it to the matrix at the start of any communication session. This message should be answered by:

### **I Am Here**

The I Am Here message indicates that the matrix has successfully received the **Are You There** message. This verifies your communication settings and the communication operations of the matrix.

### **I/O Goto Current Value**

This message allows you to set the audio level of an input or output VCA. When applied to an input, this message affects all columns of crosspoints connected to that input. When applied to an output, this message sets the audio level of an output VCA. An output affects all rows of crosspoints connected to that output.

### **I/O Goto Mute**

This message allows you to mute the audio level of an input or output VCA. When applied to an input, this message mutes all columns of crosspoints connected to that input. When applied to an output, this message mutes the audio level of an output VCA. An output affects all rows of crosspoints connected to that output.

### **Crosspoint Goto Current Value**

The Set Current Value message sets the audio level of the specific crosspoint you wish. Using values of 00h and FFh as the current level essentially acts as an on/off switch; 00h-> off, FFh-> full on. Audio crosspoints that are a part of an AV group *cannot be set with this message*. This message takes immediate effect.

### **Crosspoint Goto Current Value Exclusive**

The Set Current Value Exclusive message sets the audio level of the specific crosspoint you wish, while simultaneously muting all other crosspoints driving that crosspoint's output. Using values of 00h and FFh as the current level essentially acts as an on/off switch; 00h-> off, FFh-> full on.

### **Crosspoint Goto Mute**

This message selects a specific audio crosspoint and mutes/demutes it. The crosspoint's value at mute time is "remembered" so that a demute returns the crosspoint to its former value.

### **Goto Preset**

This message copies the values of the specified preset into the "live" values of the matrix.

### **Video Route**

The video route message directs an AV group to an output. The change to the new groups audio is instantaneous.

### **Video Route with Ramp**

The video route message directs an AV group to an output. The change in audio from the on-air group to the preview group takes place over a time specified in the message.

**Are You There**

**Description:** This message is used as a simple way to verify communication with a Matrix Mixer.

**Class:** 0

**Message ID:** 0

**Source:** external

**Parameters:** none

**Reply:** **I Am Here**

**Notes:** In the following example, the calculated checksum is 255. Since 255 is greater than the RS232\_ESCAPE value of 240, the checksum is escaped and transmitted in two bytes (240 and 15).

**Example**

RS232_START	length	data fields		Checksum
		class	message ID	
FAh	00h 04h	00h	00h	F0h 0Eh

**I Am Here**

**Description:** This message is sent by the Matrix Mixer as a reply to an Are You There message. It is also sent when the Matrix Mixer is powered up or reset.

**Class:** 0

**Message ID:** 1

**Source:** Matrix Mixer

**Parameters:** none

**Reply:** none

**Example**

RS232_START	length	data fields		Checksum
		class	message ID	
FAh	00h 04h	00h	01h	F0h 0Fh

**I/O Goto Current Value**

**Description:** This message sets the current value of an input or an output. The message takes effect immediately; i.e. the I/O goes to the new current value as soon as the message is received. The message takes effect immediately; i.e. the I/O goes to the new current value as soon as it is received.

**Class :** 1  
**Message ID:** 9  
**Source:** external  
**Parameters:**

Name	Size	Range	Description
i/o flag	1	0-1	0 = output 1 = input
i/o num	1	1-129	number of i/o to alter
current value	1	0-255	new current value

**Example:**

RS232_START	length	data fields	
		class	message ID
FAh	00h 05h	01h	09h

data fields			checksum
i/o flag	i/o num	current value	
00h	03h	F0h, 0Fh	0Bh

**I/O Goto Mute**

**Description:** This message sets the I/O mute switch of all crosspoints that are tied to the input or output. The I/O mute is independent of the mute switch of individual crosspoints. The matrix “remembers” the value present at mute time, so a demute restores the current value at the time of muting.

**Class:** 1

**Message ID:** 11

**Source:** external

**Parameters:**

Name	Size	Range	Description
i/o flag	1	0-1	0 = output 1 = input
i/o num	1	1-129	number of i/o to alter
mute status	1	0-1	0 = demute; 1 = mute;

**Example:**

This example contains the I/O number 81h (129). This “wild card” means that the message refers to all inputs. All inputs will be unmuted by this message.

RS232_START	length	data fields	
		class	message ID
FAh	00h 05h	01h	0Bh

data fields			checksum
i/o flag	i/o num	mute status	
01h	81h	00h	8Dh

**Crosspoint Goto Current Value**

**Description:** This message sets the current value of an audio crosspoint. This message cannot be used to set audio values of a crosspoint that is part of an A/V group. Such levels are set as part of the **Route Video** message (class 12). *This message takes immediate effect.* Target value changes to match current value. Current values can also be manipulated with the **Crosspoint Goto Current Value Exclusive**, **Crosspoint Goto Multiple Current Values** and **Crosspoint Goto Multiple Current Value Same** messages.

**Class:** 2  
**Message ID:** 9  
**Source:** external  
**Parameters:**

Name	Size	Range	Description
input	1	1-129	input coordinate of crosspoint
output	1	1-129	output coordinate of crosspoint
current value	1	0-255	crosspoint current value

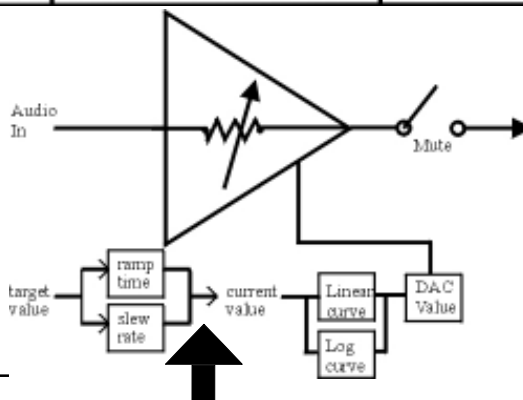
**Reply:** none  
**Notes:** This message is useful for “show control” applications.

**Example:**

RS232_START	length	data fields		
		class	message ID	input
FAh	00h 05h	02h	09h	01h

data fields		checksum
output	current value (escaped)	14h
0Ah	F0h 0Fh	



**Crosspoint Goto Current Value Exclusive**

**Description:** This message turns on a specified crosspoint to a specified level *and turns off all other inputs to the specified output*. The change takes place immediately. *No crosspoint that is part of an input video group and a video output group will be turned off by this message*. Target value changes to match current value. Current values can also be manipulated with the **Crosspoint Goto Current Value**, **Crosspoint Goto Multiple Current Values** and **Crosspoint Goto Multiple Current Value Same** messages.

**Class:** 2  
**Message ID:** 13  
**Source:** external  
**Parameters:**

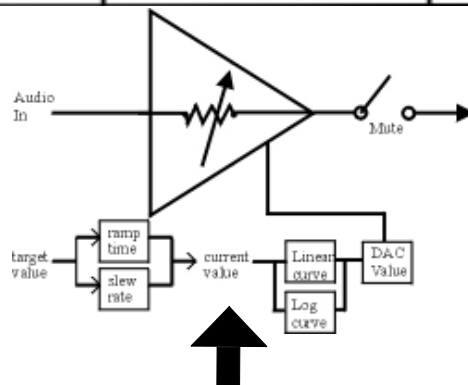
Name	Size	Range	Description
input	1	1-128	input
output	1	1-128	output
value	1	0-255	crosspoint value

**Reply:** none  
**Notes:** none

**Example:**

RS232_START	length	data fields		
		class	message ID	input
FAh	00h 05h	02h	0Dh	01h

data fields		checksum
output	current value	
0Ah	25h	3Eh



**Crosspoint Goto Mute**

**Description:** This message sets the mute value of a specified crosspoint. The coordinates of the crosspoint are transmitted in the input and output parameters.

**Class:** 2  
**Message ID:** 11  
**Source:** external  
**Parameters:**

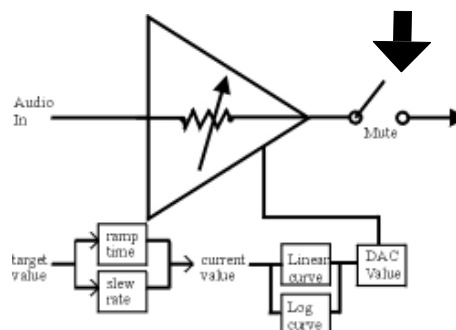
Name	Size	Range	Description
input	1	1-129	input coordinate
output	1	1-129	output coordinate
mute	1	0-1	0 = unmute 1 = mute

**Reply:** none  
**Notes:** none

**Example:** This example mutes crosspoint (3,5).

RS232_START	length	data fields		
		class	message ID	input
FAh	00h, 05h	02h	0Bh	03h

data fields		checksum
output	mute	15h
05h	01h	



**Goto Preset**

**Description:** This message copies the values of one preset into the “live” crosspoints. All 8 X 8 section of the matrix and all video boards are affected by the **Goto Preset** message.  
 If a preset’s ramp time is zero, the live values change immediately. Otherwise, the live values are ramped to the preset’s crosspoint values.  
 This message is also known as the “Take” message.  
 Crosspoints that have their “no-change” bit set( in the AVM Designer software) will not be affected by this message.

**Class:** 3  
**Message ID:** 9  
**Source:** external  
**Parameters:**

Name	Size	Range	Description
preset number	1	1-64	Target Preset

**Reply:** none  
**Notes:** This example loads preset 5 into the live values.

**Example:**

RS232_START	length	data fields	
		class	message ID
FAh	00h 03h	03h	09h

data fields		checksum
preset number		0Dh
05h		

**Video Route**

**Description:** This message routes a specified AV group to a specified output, and changes the target value of the audio associated with the AV group. The audio change takes place immediately on reception of this message.

**Message ID:** 4  
**Source:** external  
**Parameters:**

Name	Size	Range	Description
AV input	1	1-32	AV input group to be routed; 0 = off
AV output	1	1-32	output that is changed
Audio target value	1	0-255	new audio target value of AV group

**Example:**

RS232_START	length	data fields	
		class	message ID
FAh	00h 05h	0Ch	04h

data fields			checksum
AV input	AV output	audio target	
01h	01h	F0h, 00h	01h

**Video Route with Ramp**

**Description:** This message routes a specified AV group to a specified output, and changes the target value of the audio associated with the AV group. The video will switch at the point on the audio ramp specified by the percent of ramp parameter. This switch allows a smooth transition from the on-air to the preview input group. For information on calculating ramp times and slew rates see Appendix D of the AVM RS232 manual.

**Message ID:** 5  
**Source:** external  
**Parameters:**

Name	Size	Range	Description
AV input	1	1-32	AV group to be routed; 0 is off
AV output	1	1-32	AV output group that is changed
ramp time	2	0-30,000 ms.	new ramp time of AV group
percent of ramp	1	0-100; 00h-64h	where on audio ramp to switch video
Audio target value	1	0-255	new target value of AV group audio

**Example:**

RS232_START	length	data fields			
		class	message ID	AV input	AV output
FAh	00h 08h	0Ch	05h	00h	01h

data fields			checksum
ramp time	percent of ramp	audio target value	
1Fh, 00h	32h	F0h, F0h	64h