



**Broadcast Devices, Inc.**

**Technical Reference Manual**

***5.1 + Stereo Monitor Controller***

**Broadcast Devices, Inc.  
2066 E. Main Street  
Cortlandt Manor, NY 10567**

**Tel. (914) 737-5032  
Fax. (914) 736-6916  
World Wide Web: [www.Broadcast-Devices.com](http://www.Broadcast-Devices.com)**

**Rev A. 07/09**

## Table of Contents

I. Introduction	3
II. Unpacking	3
III. Installation and Connections	3-7
IV. Features and Operation	4
V. Remote Control and Programming chart	8
VI. Audio Specifications	9
VII. Warranty	10
VIII. Connector Schematic Diagrams	11

## I. Introduction

The 5.1 + Stereo Monitor Controller is intended for use in professional applications where it is desired to control 5.1 and stereo mix levels fed to powered monitors. The front panel has VU meter indication of each input and controls for 5.1 and stereo mix levels. The 5.1 + Stereo Monitor Controller can be used in professional recording, television or post control room applications. The 5.1 + Stereo Monitor Controller is designed to provide single potentiometer control of a 5.1 surround mix and separate potentiometer control of a stereo pair. Each input accepts +4 dBm and output is a balanced +4 dBm with controls full open. The unit has provision to remotely mute all channels or do selective stereo pair muting of the surround mix channels or the separate stereo paired channels. It is often desirable to be able to turn channels on and off during a mix process. There is also remote provision to provide a group dim control of each input. It is also possible to disable the front panel controls and use remote potentiometers to control the 5.1 and stereo mixes.

## II. Unpacking and Inspection

Carefully inspect the unit after unpacking and make certain that no damage has occurred during shipping. If damage is noted, contact the shipper immediately and file a claim for damages. Each unit is carefully packed and carries full insurance against damage. Inspect the packing list and make sure that the contents of the package match those described on the packing list.

## III. Installation and Connections

As shipped from the factory, the 5.1 + Stereo Monitor is designed to accept +4 dBm balanced audio and produces +4 dBm balanced audio outputs. Audio connections are made to the unit via two DB-25 connectors. Inputs are connected to the input connector utilizing a standard DB-25 to XLR breakout cable with female XLR connectors utilizing the Tascam® ADAT format. Cables and/or a single RU breakout panel for this purpose are available from Broadcast Devices, Inc. or can be purchased from a reseller. Outputs are taken from the "Output" DB-25 connector again utilizing a standard DB-25 breakout cable with male XLR connectors. Remote control connections are made via the "Remote" connector. As shipped from the factory the unit has installed a DB-25 jumper cable from "Remote" to "Front Panel" DB-25 connector. To utilize the features described below, remove this connector and connect remote control connections as per the remote control designations described in the remote control connections section of this manual. In order for the front panel controls to be functional a set of jumpers from the "Remote" and "Front Panel" connector must be made. Refer to the installation section for connection information. If remote control of level is desired then no connections to the "Front Panel" connector need be made. Connections for this purpose are made to the "Remote" connector described in the remote control connections section of this manual. The following remote control and status are available:

**Global Mute** – simultaneously for all channels

**Stereo pair mute** - with corresponding status to light an LED for channels 1 / 2 , 3 / 4 , 5 / 6 and 7 / 8

**Global Dim** – all channels simultaneously by 10, 20, or 30 dB

**Remote level** - control for each of eight channels

When the 5.1 + Stereo Monitor Controller is used in conjunction with the REM-400 series remote control panels simply connect a standard male to female 25 conductor cable Pins 1-25 identical on each end.

See the remote control/status chart for connection information if the REM-400 panel is not used.

## IV. Features and Operation

The 5.1 + Stereo Monitor Controller contains eight VCA level controlled balanced input to balanced output amplifiers. Each channel has provision for front panel or remote control of level using voltage controlled amplifier techniques. Each pair of channels can be turned on and off remotely and there is also provision for a programmable global on/off control of channels. There is also provision for each channel to be dimmed by 10, 20 or 30 dB. This is also a programmable feature whereby any combination of channels can be dimmed by one remote control command. Each remote control command of on/off and dimming function can be programmed to accept a momentary closure for a toggle function or for a maintained closure for operation.

Standard factory default input level for the 5.1 + Stereo Monitor Controller is +4 dBm balanced connection. The unit can also be modified to accept -55dBm sensitivity for microphone input use if desired. Standard output level is +4 dBm balanced. Each output is servo steered such that grounding one of the balanced outputs will not cause any damage or loss of level.

## V. Remote Control and Status Connections

Refer to the following table for remote control and status pin out of the remote DB-25 connector at the rear of the unit:

Pin 1	CH 1 VCA control
Pin 2	CH 2 VCA control
Pin 3	CH 3 VCA control
Pin 4	CH 4 VCA control
Pin 5	Fused +5 VDC VCA source voltage
Pin 6	CH 5 VCA control
Pin 7	CH 6 VCA control
Pin 8	CH 7 VCA control
Pin 9	CH 8 VCA control
Pin 10	Fused +5 VDC VCA source voltage
Pin 11	Group dim control
Pin 12	Group mute control
Pin 13	Chassis Ground
Pin 14	CH 1/2 (Lf/Rf) Mute On/Off control
Pin 15	CH 1/2 (Lf/Rf) Mute On/Off status
Pin 16	CH 3/4 (C/Lfe) Mute On/Off control
Pin 17	CH 3/4 (C/Lfe) Mute On/Off status
Pin 18	Control/Status common ground
Pin 19	CH 5/6 (Lr/Rr) Mute On/Off control
Pin 20	CH 5/6 (Lr/Rr) Mute On/Off status
Pin 21	CH 7/8 (Left) Mute On/Off control
Pin 22	CH 7/8 (Right) Mute On/Off status
Pin 23	Control/Status common ground
Pin 24	Group Dim Status
Pin 25	Group Mute Status

In order to create a set of remote potentiometers that mimic the function of the front panel controls the following wiring convention should be used:

### ***Remote 5.1 mix control***

1. Jumper Pins 1, 2, 3, 4, 6 and 7 together on the remote control connector.
2. Connect the high side of an audio taper 10K Ohm potentiometer to pin 5.
3. Connect the jumpered connections from step 1 to the wiper of the 10K Ohm audio taper potentiometer.
4. Connect the low side of the 10k audio taper potentiometer to Pin 18/23 "control/status common" on the remote control connector.

### ***Remote Stereo mix control***

1. Jumper Pins 8 and 9 together on the remote control connector.
2. Connect the high side of a 10K Ohm audio taper potentiometer to pin 10 of the remote control connector.
3. Connect the jumpered pins from step 1 of this section to the wiper of the 10K Ohm, audio taper potentiometer.
4. Connect the low side of the 10K Ohm audio taper potentiometer to pin 18/23 "control/status common" on the remote control connector.

BDI offers the REM-400 remote panel which contains the potentiometers and muting buttons for the purpose of remote controlling the functions above. It is also possible to provide individual level control of each channel of the unit. This is sometimes desirable for theatre applications where local acoustics dictate a custom mix of levels. The REM-400 can be ordered with from two to eight controls for this purpose. Please contact the factory for availability.

For command lines a simple momentary or maintained closure to control common ground will activate the desired function. See programming instructions for setting up toggle or maintained operation. VCA control of each input is accomplished by connecting the +5 VDC source to the high side of a **10 K ohm audio** potentiometer, the low side to control/status common ground and the wiper to the desired channel VCA control input.

## ***Programming the 5.1 + Stereo Monitor Controller Motherboard***

The 5.1 + Stereo Monitor Controller can be programmed via jumper placement for the following:

1. Toggle or maintained closure of remote control inputs
2. Global mute and dimming assignment

### **Refer to the Jumper Assignment Pictorial Diagram for the following discussion**

Functional description of jumpers:

**JP12-17** Toggle/Maintain control of remote control inputs. Place a jumper to the left if maintained closure to ground will hold a command in the desired function. Place a jumper to the right if toggle control is desired. Toggle control is momentary closure for alternate on/off function.

**JP19 GRP DIM** – assigns by stereo pair which channels will accept a dim command when remote control dim line is pulled low. Place a jumper in each line where a stereo dim is desired. Place all jumpers for group dim

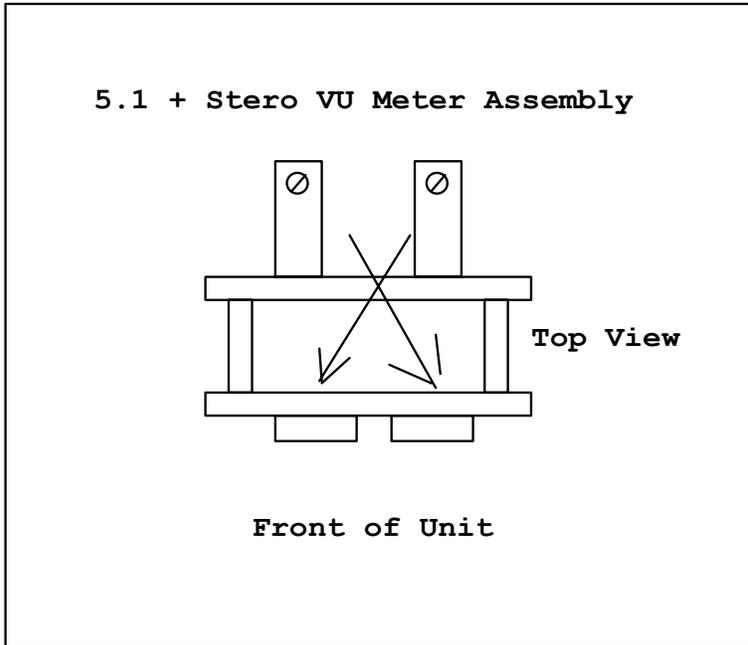
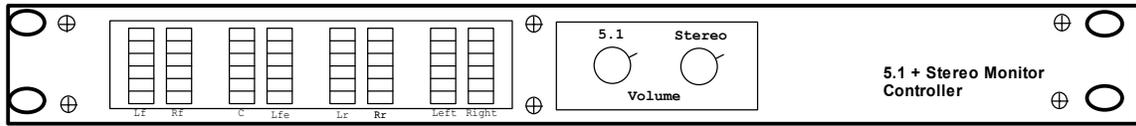
**JP18 GRP MUTE** – assigns by stereo pair which channels will accept a mute command from the remote control group mute control. – This is a separate mute command that can provide a group mute of all channels and is not to be confused with the individual channel mutes which are possible by use of the mute input select jumpers discussed below

**JP1B-8B MUTE INPUT SELECT** – allows for remote control input lines to be assigned to mute a specific grouping of channels to be muted. There are four remote mute lines A, B, C, and D. Each can be assigned to command a specific channel to be muted. Simply select which channel will be controlled by which remote control input by placing a jumper in the A, B, C, or D, row as desired on the desired channel jumper.

### **VU Meter Description**

The 5.1 + Stereo Monitor Controller has eight identical LED VU meter displays for convenient monitoring. The display is a conventional 23 dB scale VU meter display. The VU meter displays the input level and is independent of the volume controlled output. As shipped from the factory the unit is calibrated to produce 0 VU display for a 0 dBu input level. It is possible to recalibrate the meter circuit by removal of the top cover. Each VU meter assembly is a stereo unit and there are two controls on top of the board for adjustment purposes.

To recalibrate the unit feed the desired nominal level to the unit and adjust each control for a 0 VU indication at the desired input level. Note that on each VU meter display assembly that the potentiometers are reverse ordered as viewed from the front of the unit. That is to say that the left hand control controls the level of the right hand VU display for a given assembly. The right hand control controls the left VU meter. See the diagram on the next page for orientation.



## V. Specifications

Inputs Sensitivity:	0 dBu or -55 dBm any input
Outputs:	0 dBu balanced 600 ohms
Frequency Response:	+/- 0.2 dB from 20 Hertz to 20 KHz
Total Harmonic Distortion:	less than .05% any channel at any frequency At +4 dBm nominal operating level
Maximum Output level:	+17 dBu
Mute Isolation:	70 dB or greater all channels from 20 Hertz to 20 KHz
VU Meter Calibration:	0 VU = 0 dBu Input Standard 23 dB segmented display – Field Adjustable
Remote Control:	Custom remote control via REM-400 Panel
Remote Status:	Active low ground, +5 VDC inactive TTL compatible
Power Requirements:	120/240 V.A.C. @ 0.25A; 50 – 60 Hz.
Operating Environment:	0 – 60 Degrees Celsius Non Condensing Atmosphere
Physical:	19"W X 10"D X 1.75"H Mounted via Standard E.I.A. 19" rack one rack unit occupied. Weight: 12 LBS.

## VI. Warranty

Broadcast Devices, Inc. products are warranted against failure due to faulty materials or workmanship for a period of one year from the date of shipment to the ultimate user. The warranty covers repair or replacement of defective parts at the factory, provided the unit has been returned prepaid by the user. All shipments to the factory shall have affixed to the outside of the container an R. A. number obtained from the factory. The above warranty is void if the unit has been modified by the user outside of any recommendations from the factory or if the unit has been abused or operated outside of its electrical or environmental specifications. If customer conducted field tests suggest that the unit may be faulty, whether or not the unit is in warranty, a full report of the difficulty should be sent to Broadcast Devices, Inc. factory at Cortlandt Manor, New York. The office may suggest further tests or authorize return for factory evaluation.

Units sent to the factory should be well packed in the original packing if possible and shipped to Broadcast Devices, Inc. 2066 E. Main Street, Cortlandt Manor, NY 10567. Remember to affix the R.A. number to the outside of the carton. Any packages received without such R.A. number will be refused. Note: freight collect shipments will also be refused. When the unit has been received, inspected and tested, the customer will receive a report of the findings along with a quotation for recommended repairs, which are found falling outside of the standard warranty. Units returned for in-warranty repairs which are found not to be defective will be subject to an evaluation and handling charge. In-warranty units will be repaired at no charge and returned via prepaid freight.

Out-of-warranty units needing repair require a purchase order and will be invoiced for parts, labor, and shipping charges.

When ordering replacement part, always specify A) Part number or Description, and Quantity; B) Date of Purchase, Where Purchased; C) Any Special Shipping Instructions. Always specify a street address, as shipping companies cannot deliver to a postal box.

Broadcast Devices, Inc. is not responsible for any other manufacturer's warranty on original equipment. Nor are we responsible for any failure, damage, or loss of property that may occur due to the installation or operation of our equipment outside of recommended specifications.

Broadcast Devices, Inc. may from time to time make changes to the materials used in the manufacture of its equipment and reserves the right to do so without further notice.

## VII. Schematic Diagrams

### Audio and Remote Control Connector Designations

