

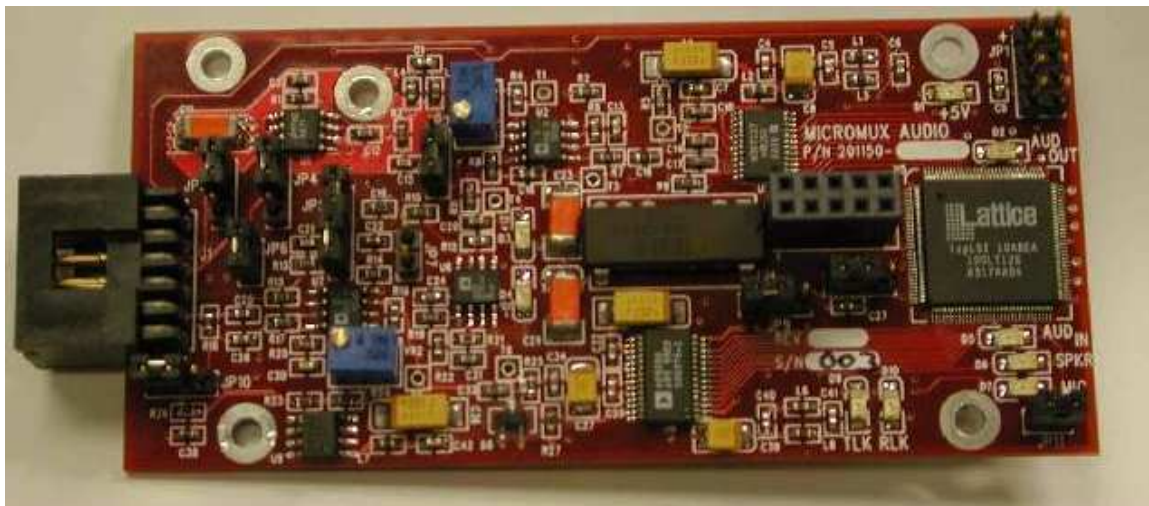
# PRIZM™

## MicroMux Audio Daughterboard

### User's Manual

(201150-xxx)

### And Troubleshooting Guide



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Rev C.

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## 1 MicroMux Audio Daughterboard P/N – 201150-xxx

The MicroMux Audio daughterboard must be used with a MicroMux motherboard. This daughterboard set provides a single bi-directional audio channel with a selectable 1Watt audio output power amp. The daughterboard also contains push-to-talk (PTT) microphone keying circuitry that can be selected to turn off the local speaker automatically when the microphone is keyed (enabled). This feature can be used to break the microphone

### 1.1 MicroMux Audio Daughterboard Manual Revision History

The MicroMux Audio Daughterboard User's Manual and Troubleshooting Guide has gone through the following revisions:

Jan. 2004	Preliminary	
Jan. 2004	Rev A	
Sep. 2005	Rev B	
Feb.2009	Rev C	Updated contact information to reflect Moog Components Group.

### 1.2 MicroMux Audio Daughterboard Dash (-) Number Definitions

The MicroMux Video Input and Output boards have a Dash Number appended to the part number. This Dash Number identifies the specific board configurations:

#### MicroMux Audio Daughterboard 201150-xxx

Dash Number	Board Rev.	Assy. Rev.	Specific Options
-001C	A	A	PTT Logic Enabled
-002C	A	A	No connectors
-002D	A	A	With connectors
-003B	A	A	Pressure Tolerant

### 1.3 MicroMux Audio Daughterboard Operation

The MicroMux Audio daughterboard requires +5VDC power that is supplied by the motherboard via the daughterboard connector. The daughterboards also have an on-board +5VDC to +12VDC/-12VDC converter to provide power for the analog amplifiers.

## 1.4 MicroMux Audio Daughterboard Indicators and Controls

LEDs: There are 9 surface mount (SMD) LED indicators on the MicroMux Audio daughterboard to indicate different statuses that are covered by function below.

*NOTE: D8, D12 thru D14 are protection diodes not LEDs.*

LED	Indication
D1 (Green)	labeled “5V”: ‘ON’ if +5VDC is available to the board
D2 (Green)	labeled “AUD OUT”: ‘ON’ if output signal level exceeds approximately 1.15V
D3 (Green)	labeled “+12V”: ‘ON’ if +12VDC is available on the board
D4 (Green)	labeled “-12V”: ‘ON’ if -12VDC is available on the board
D5 (Green)	labeled “AUD IN”: ‘ON’ if input signal level exceeds approximately 1.15V
D6 (Green)	labeled “SPKR”: ‘ON’ if speaker (or audio output) is enabled
D7 (Green)	labeled “MIC”: ‘ON’ if PTT is pressed keying the microphone
D9 (Green)	labeled “TLK”: ‘ON’ if the transmit link is synchronized on the daughterboard
D10 (Green)	labeled “RLK”: ‘ON’ if the receive link is synchronized on the daughterboard

For normal operation the following LEDs MUST be lit solidly:

- “+5V” LED
- “+12V” LED
- “-12V” LED
- “RLK” LED
- “TLK” LED

*NOTE: If the above LEDs are NOT lit, refer to the Troubleshooting Section*

FUSE: There are no fuses on this board, only on the motherboard

SWITCHES: There are no switches on this board.





Analog Output: selectable single-ended or differential (balanced)

#### Power Amplifier

Selectable: jumper selectable for amplifier or voltage output

Audio Power: 1 Watt into 8-ohm speaker

#### Electret Microphone

Selectable: jumper selectable Electret Mic amplifier

Audio Input Level: 5milliVolts, typical

Mic DC Power: 1.2Vdc power supply

Power Options: 2-wire or 3-wire configuration

#### Push-to-Talk

Selectable: jumper selectable for Local or Remote

-- Local for control console location

-- Remote for robot location

*NOTE: optionally the PTT function can be disabled to provide full-time (un-switched) bi-directional audio.*

#### Daughterboard DC Operating Power

Voltage: +5VDC supplied via daughterboard connector from motherboard

Current Required: 750milliAmps, typically

#### Misc.

Operating Temperature: 0 degree C to 65 degree C  
(except high temp version which is -20 deg C to 70 deg C)

### **1.4.2 MicroMux Audio Daughterboard Dimensions**

Printed circuit board (PCB): 4.01 in x 1.9 in x 0.60 in board-to-board  
(101.854 mm x 49.26 mm x 15.24 mm)

### **1.4.3 MicroMux Audio Daughterboard Power Requirements**

+5 Volts at 1.0 Amps (5.0 Watts), maximum

## **1.5 MicroMux Audio Daughterboard PTT Selections**

The PTT function assumes that the audio daughterboard is used to operate a robot from a control console. The control console (LOCAL location) is assumed to have a microphone controlled by a PTT switch and a speaker output – with or without an external audio power amp. The robot (REMOTE location) is assumed to have a microphone and a speaker output – with or without an external audio power amp – but there is no PTT function at this un-manned location.





PTT Switch	Microphone	Speaker	Microphone	Speaker
Open/not pressed	Disabled	Enabled	Enabled	Disabled
Closed/pressed	Enabled	Disabled	Disabled	Enabled

## 1.6 MicroMux Audio Inputs Selections

The audio input stage has several selectable options:

1. Either unity-gain or high-gain Electret amplifier
2. Either single-ended (un-balanced) or differential (balanced) amplifier input
3. Either 1.2VDC or 5VDC microphone power

1. If the audio input is a high-level output device (anywhere between approximately 0.1Vp-p to 10Vp-p) then the unity-gain input is appropriate. If the input is an Electret microphone then the high-gain selection is appropriate. This is selected by setting both JP5 and JP7.

**JP5:** Electret Microphone Amplifier Input Enable/Disable (**set also JP7**)

1 o	1 o
Disables Electret Amp	
2 o	2 o
	Enables Electret Amp
3 o	3 o
4 o	4 o

**JP7:** Electret Microphone Amplifier Output Enable/Disable

1 o	1 o
Enables Electret Output	Disables Electret Output
2 o	2 o

2. If the input source is single-ended (i.e. signal referenced to ground or un-balanced) or if the input is differential (i.e. a positive and a negative version of the signal or balanced) this can be selected by moving the shunt on JP6

**JP6:** Single-ended/Differential Input Selection

1 o	1 o
Single-ended Selected	Differential (balanced) Selected
2 o	2 o

*NOTE: If Single-ended selected then attach input signal to IN+ and its return to IN- (grounded by the jumper).*

*If Differential input is selected then attach positive input signal to IN+ and the negative input signal to IN-. Shield (if used) can be attached to any Ground pin.*



2 o  
| Enables Power Amp  
3 o

**JP3: OUT+ Source Selection (also JP2 and JP4)**

1 o  
| Selects Power Amp Output  
2 o  
  
3 o

**JP4: OUT- Source Selection (set also JP2 and JP3)**

1 o  
| Selects Power Amp Output  
2 o  
  
3 o

**1.8 MicroMux Audio Daughterboard Adjustment and Troubleshooting**

For normal operation the following LEDs MUST be lit solidly:

“+5V” LED  
“+12V” LED  
“-12V” LED  
“RLK” LED  
“TLK” LED

**1.8.1 Power Section Testing**

If the "+5V", "+12" and "-12" Power LEDs are out:

- Check for continuity of fuse F1 on the MicroMux motherboard with an ohmmeter.
- Replace fuse if blown.

If only the "+5V" Power LED is out:

- Verify +5V DC is present at the source
- If +5V is not available replace the board with a spare.
- If +5V is available check the display LED (D1).

If only the "+12" Power LED is out:

- Verify +12V DC is present at the source U4 DC-DC converter at pin 5
- If +12V is not available replace the board with a spare.
- If +12V is available check the display LED (D3).

If only the "-12" Power LED is out:

- Verify -12V DC is present at the source
- If -12V is not available replace the board with a spare.
- If -12V is available check the display LED (D4).