Multi-function digital amplifier with Bluetooth®

**INTRODUCTION**

The MICRO-PRO2-BT digital stereo amplifier is designed with Bluetooth capability as an additional audio source which can be used to broadcast audio signals and microphone signals wirelessly. This feature is especially useful in schools where wireless interference between classrooms can be problematic. The MICRO-PRO2-BT can also accept one wired microphone and two wired stereo line level audio inputs. Switching between inputs is made easy using the included IR remote control. The MICRO-PRO2-BT is an excellent companion amplifier to TV’s and displays where extra amplification is needed. The unit can be easily concealed behind equipment or in cabinetry.

**MICRO-PRO2-BT**
Amplifier with BT receiver module

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**IRS-3060A02**
IR RECEIVER
SPECIFICATIONS AND FEATURES:

INPUTS:
1 x stereo audio input via 2xRCAs jacks in parallel with the wireless BT-input
1 x stereo audio input via 3.5mm jack
1 x microphone input via 6.3mm jack unbalanced

OUTPUTS:
1 x loop/pre-amp output via 3.5mm stereo jack. Link up to 3 units or external amplifier
1 x 4-P screw connector for speaker outputs

3 SELECTABLE SPEAKER OUTPUT MODES:
- STEREO
- MONO
- BRIDGE

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## Specification

### Audio General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Response</td>
<td>40Hz ~ 20kHz</td>
</tr>
<tr>
<td>Input Sensitivity</td>
<td>1.7V</td>
</tr>
<tr>
<td>Volume Control Range</td>
<td>75dB</td>
</tr>
<tr>
<td>SNR</td>
<td>&gt;80dB</td>
</tr>
<tr>
<td>Bass Control Range</td>
<td>12dB</td>
</tr>
<tr>
<td>Treble Control Range</td>
<td>12dB</td>
</tr>
<tr>
<td>Power Output</td>
<td>2 Ω15W(RMS) @ 4Ω(Stereo)</td>
</tr>
<tr>
<td></td>
<td>2 Ω 7W(RMS) @ 8Ω(Stereo)</td>
</tr>
<tr>
<td></td>
<td>1 Ω35W(RMS) @ 8Ω(Bridge)</td>
</tr>
<tr>
<td>Stereo Channel Separation</td>
<td>&lt; 50dB</td>
</tr>
<tr>
<td>THD</td>
<td>&lt;1% @ 1kHz (1W)</td>
</tr>
<tr>
<td></td>
<td>&lt;10% @ 1kHz (max power)</td>
</tr>
</tbody>
</table>

### Audio Input

| Input                  | 2 Stereo audio               |
|                       | 1 MIC                         |
| Input Connector       | RCA Ω2                       |
|                       | 3.5mm jack Ω1                |
|                       | 6.5mm jack Ω1                |
| Input Impedance       | >20kΩ(Stereo audio)          |
|                       | 600Ω(MIC)                    |

### Audio Output

| Output                | 1 Amplifier(Speaker)         |
|                       | 1 Stereo audio(Loop)         |
| Output Connector      | 4-P screw connector Ω1       |
|                       | 3.5mm jack Ω1                |
| Speaker Output Impedance | 4Ω(Stereo & Mono)            |
|                       | 8Ω(Bridge)                   |
| Loop Output Impedance | >20kΩ                        |

### Bluetooth Receiver Module (MICRO-PRO2-BT only)

| Version               | 2.1 ΩEDR(3M/bps)             |
|                       | Profile Support              |
|                       | A2DP profile                 |
| Reception Range       | Up to 30ft (depending on environmental conditions.) |

### Control Parts

| IR Remote             | RMC-110                       |
|                       | IR Receiver                  |
|                       | IRS-3060(38kHz)              |
| RS-232                | Pin Configurations           |
|                       | 2=TX, 3=RX, 5=GND            |

### General

| Power Supply          | DC 24V, 2.5A                 |
|                       | Product Weight               |
|                       | 397g ~ MICRO-PRO2-BT         |
| Case Dimension        | 125mm(L) x 90mm(W) x 45mm(H) | MICRO-PRO2-BT(BT module included) |

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CONTROL INTERFACES:
Three different inputs are available plus control of treble, bass & volume. Control the unit from the front panel buttons, IR remote or RS-232.

Source selection using the IR remote control
- Input 1: Stereo RCA (default source) and Bluetooth. (Note the RCA and Bluetooth inputs are paralleled together. It’s best to turn your RCA source off when using Bluetooth
- Input 2: Stereo 3.5mm
- MIC 6.3mm unbalanced

Audio levels and tone settings using the remote control
- The overall volume range (0 lowest - 20 highest), the factory preset power up value is 5
- Bass (L.1 lowest - L.9 highest), the factory preset value is 5
- Treble (H.1 lowest - H.9 highest), the factory preset value is 5
- Mute : No signal output.

Note: The unit has a handy memory function for the following functions: Source Selection, Volume, Bass, Treble and Mute. When the unit is powered OFF then ON all your previous settings will be restored. All functions can be reset back to the factory default settings again. Press and hold the “Mute” button for 3 seconds until the red LED illuminates steadily after flashing 3 times. Use the amplifier front panel MUTE button or the IR remote control MUTE button to activate the reset feature.

BT RECEIVER MODULE
- Play back audio signals from any BT-enabled device Version 2.1 Use PC’s, note book’s or MP3 players or Smart phones that support the A2DP profile
- The blue LED indicator shows the modes of operation for the BT receiver as follows: blinking for pairing mode, a steadily light ON means a successful connection has been completed between the BT-enabled device and the receiver
- A Unique 4-digit alpha-numeric ID for identifying each individual receiver is provided when multiple units are used in one location.
- Reception Range: of up to 30 feet can be achieved depending on the building structure and environmental conditions.

More on setting up your Bluetooth devices later in this manual under BLUETOOTH OPERATIONS
- For indoor use only. Keep away from extreme temperatures, humidity, and moisture.

System power requirement: 24V, 2.5A

Dimensions: 125mm (L) x 90mm (W) x 45mm (H) BT module included –MICRO-PRO2-BT

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FUNCTIONS MICRO-PRO2-BT:

- Stereo Phone Inputs
- MIC 6.3mm Jack Input
- 3.5mm Jack Input
- Bluetooth audio receiver
- VOLUME UP & DOWN
- Mute
- Speaker Output Connectors
- Power input jack
- Loop/pre-amp output
- 3 Selectable speaker outputs: Stereo / mono / bridge
- Source selection
- Bass/Treble
- 3.5mm IR Jack Input
- Audio Control over RS-232
- Connectors
- Loop/amp output

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INSTALLATIONS AND WIRING DIAGRAMS:

INSTALLATIONS:

Step 1: Audio connections
Connect line level audio devices such as MP3, CD, DVD, notebooks...etc., to the unit using the Dual-RCA L/R jacks or stereo 3.5mm jack, 6.3mm MIC input is also provided. Or wireless audio sources from BT-enabled devices can also be connected using Bluetooth.

Notes:
The wireless audio input for the MICRO-PRO2-BT is in parallel with dual-RCA inputs; if both inputs are used at the same time the two sources will be mixed together.

Step 2: Speaker connection
Connect 14-18 AWG cable to the speaker outputs (R+, R-, L+, L-)

Step 3: power connection
Connect the included power supply. The system will power up in Mute status/ with RED LED indicator at the top of “Mute” button illuminated. The input 1 LED stereo RCA will also be illuminated. This is the default factory preset power ON status.

Note: Power requirements 24V at the current rating of 2.5A is the minimum recommended. Using a power supply with a lower rating will result in the power supply shutting down or overheating due to power overloaded.

Step 4: IR receiver connection
Plug in the 3.5mm IR receiver to the IR input jack. Please the IR receiver in a line of sight location to the remote control. Use the remote control to select sources, volume control up & down, treble & bass.

OPERATIONS:

• Press the “Mute” button (the red LED will go off). The amplifier is un-muted and ready to use.
• When playing your audio sources, we suggest starting with the volume set at half way 50%. Then adjust to achieve the desired volume level.
• How to pair your Bluetooth® device
  a. Switch the source to input 1
  b. Place your Bluetooth® device within 1m of the unit.
  c. Perform the pairing procedure from your Bluetooth® device to detect the MICRO-PRO2-BT. The ID name “Audio adapter XXXX” will appear on the list of devices. If not, switch to a different source and go back to the BT-source input which resets the BT functions and then repeat the pairing operation.
  d. Select “Audio adapter XXXX” on the display of the Bluetooth® device.
  e. Input the passkey/pin code “0000” which is always required for first time connections from a new device.
  f. Start the Bluetooth® connection from the Bluetooth® device.

Note: The Bluetooth is capable of storing up to 8 pairings and also the unit is able to automatically reconnect to the previously paired device automatically.

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Notes on Bluetooth operations

1) Working mode/sleep mode:
The Bluetooth unit provides 3 minutes time for pairing or making connections when the Bluetooth receiver is powered on and enters its working mode.

If there is no pairing/connection made within 3 minutes, the Bluetooth receiver will enter sleep mode which means the “pair” function is no longer available until the Bluetooth receiver has been reset usually via power off and power on again to re-start the 3 minutes of initial pairing time.

However the Bluetooth receiver can be woken up manually by any one of “8 previously paired” devices even if the Bluetooth receiver is in the sleep mode. Simply open your Bluetooth device’s pairing functions and connect to AUDIO ADAPTOR XXXX

2) Automatic connection:
The Bluetooth receiver will enter search mode after being powered on. The Bluetooth receiver will sense and connect automatically to the previously last-paired device.

3) Memory function:
The Bluetooth receiver is capable of storing up to 8 pairings and any new pairing over 8 will override the last or most recent pairing.

4) The Bluetooth connection between the receiver & transmitter may disconnect when the transmitter is out of the reception range of the receiver (approximately 30 feet). The Bluetooth receiver is able to automatically connect to the transmitting device if the reception range is returned to 30 feet again within 30 seconds of the connection being lost. If the Bluetooth connection is lost for over 30 seconds the receiver and transmitter will need to re-pair.
• IR control through RS232 interface with a reference picture pasted below from a computer:

RS232 Pins Configuration using a DB9 connector:

2 = TX, 3 = RX, 5 = GND

Setting up the control software:

**Step1:** Wire the RS232 to the connector using the above configuration. Make sure the wiring of TX/RX is not reversed. The TX should be connected to PIN-2 and RX to PIN-3 to avoid control malfunctions.

**Step2:** Plug in the connector to the PC.

**Step3:** Set the baud rate to 9600 in your PC and install the control software from the provided CD. Your PC will display the Control Panel see above shown. The installation operation has been successfully completed.

**Step4:** Press “Connect” to access the RS232 control. Press the “Refresh” button to feedback the control information for volume, bass, treble & source.

**Notes:**

a) It is possible to control up to nine units from one PC using RS232 Use COM1 to COM9 as the assigned ports for each unit.

b) If the RS232 cable needs to be extended always insure the correct wiring 2 = TX, 3 = RX.

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RS232 communication ASCII CODE protocol:

**Note:** Coding system: 8n1: 1 start bit + 8 data bits + 1 stop bit per byte = 10 bits per byte.
The serial port speed/baud rate: 9600

<table>
<thead>
<tr>
<th>Group</th>
<th>Command</th>
<th>Function Description</th>
<th>Feedback Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Switch Setting</td>
<td>1A1</td>
<td>Switching the source to input 1</td>
<td>A:1-&gt;1←</td>
</tr>
<tr>
<td></td>
<td>2A1</td>
<td>Switching the source to input 2</td>
<td>A:1-&gt;2←</td>
</tr>
<tr>
<td></td>
<td>3A1</td>
<td>Switching the source to input 3</td>
<td>A:1-&gt;3←</td>
</tr>
<tr>
<td>Mute Setting</td>
<td>1A0</td>
<td>Mute All</td>
<td>Mute All←</td>
</tr>
<tr>
<td></td>
<td>0A0</td>
<td>unMute All</td>
<td>UnMute All←</td>
</tr>
<tr>
<td>Step Setting</td>
<td>600%</td>
<td>Volume Up</td>
<td>Volume:15←</td>
</tr>
<tr>
<td></td>
<td>601%</td>
<td>Volume Down</td>
<td>Volume:15←</td>
</tr>
<tr>
<td></td>
<td>602%</td>
<td>Base Up</td>
<td>Base:02←</td>
</tr>
<tr>
<td></td>
<td>603%</td>
<td>Base Down</td>
<td>Base:02←</td>
</tr>
<tr>
<td></td>
<td>604%</td>
<td>Treble Up</td>
<td>Treble:03←</td>
</tr>
<tr>
<td></td>
<td>605%</td>
<td>Treble Down</td>
<td>Treble:03←</td>
</tr>
<tr>
<td>Initialization</td>
<td>609%</td>
<td>Initialization, back to the default setting</td>
<td>A:1-&gt;1← Volume:00← Base:05← Treble:05←</td>
</tr>
<tr>
<td>Request</td>
<td>690%</td>
<td>Checking the working status</td>
<td>A:1-&gt;1← Volume:15← Base:02← Treble:03←</td>
</tr>
<tr>
<td></td>
<td>691%</td>
<td>Checking the Source status</td>
<td>A:1-&gt;1←</td>
</tr>
<tr>
<td></td>
<td>692%</td>
<td>Checking the Volume status</td>
<td>Volume:15←</td>
</tr>
<tr>
<td></td>
<td>693%</td>
<td>Checking the Base status</td>
<td>Base:02←</td>
</tr>
<tr>
<td></td>
<td>694%</td>
<td>Checking the Treble status</td>
<td>Treble:03←</td>
</tr>
<tr>
<td></td>
<td>7[x][x]%</td>
<td>Preset Volume, [x][x] is arranging from [0][0] to [1][9], 20 degree in total</td>
<td>Volume:15←</td>
</tr>
<tr>
<td></td>
<td>8[x][x]%</td>
<td>Preset Base, [x][x] is arranging from [0][1] to [0][9], 9 degree in total</td>
<td>Base:02←</td>
</tr>
<tr>
<td></td>
<td>9[x][x]%</td>
<td>Preset Treble, [x][x] is arranging from [0][1] to [0][9], 9 degree in total</td>
<td>Treble:03←</td>
</tr>
</tbody>
</table>

**EX:**

**MUTE ALL : 1A0**

**Volume Up : 600%**

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WIRING DIAGRAMS:
A) EXAMPLES

- Speaker R L
- Power 24V

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B) 3 SPEAKER OUTPUT WIRING:

**STEREO**

“STEREO” mode with 4ohm speakers

**MONO**

“MONO” mode with one 4ohm speaker

**BRIDGE** mode with one 8ohm speaker

Note:

When using the bridge connection, please ensure the total speaker load is not below 8ohms

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3) LOOP UPTO 3UNITS USING THE LOOP/PRE-AMP OUTPUT :

Note:
The loop output can also be used as a fixed line level output to feed additional higher power amplifiers, pre-amps, mixers or receivers.

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