CONTROL OPTIONS

Besides providing the capability of using external devices, such as switches and potentiometer to control Audia and Nexia, there's the possibility of having the audio system control external devices such as LEDs and Relays or drive logic inputs of other devices. Since LEDs and Relays are analog devices, these need to be connected to Audia/Nexia thru a Logic Box or Voltage Control Box. This note covers the details on wiring LEDs and Relays to the Logic Box and Voltage Control Box.

THE LOGIC BOX

The Logic Box provides 20 logic connections that can be programmed in the software to work as either inputs or outputs. A logic output can be used to provide indication such as microphone activity or control external devices by using relays such as speaker level control. These logic outputs are "open collector" with an internal pull-up. This means that when not active, they will measure 5V but will not provide current. Upon activation (from a logic signal within the Audia/Nexia program), the logic output goes low, allowing current flow. Logic outputs are rated at 24V and 500mA of sinking capability. Looking at the back panel of the Logic Box, you will notice a group of 5 connectors, each with 4 logic pins and a ground pin labeled with a down pointing arrow. Also note that these pins are numbered above and below the connector. Logic pins that are being used as outputs are counted from right to left, so you will be looking at the numbers on the bottom to reference the logic output.
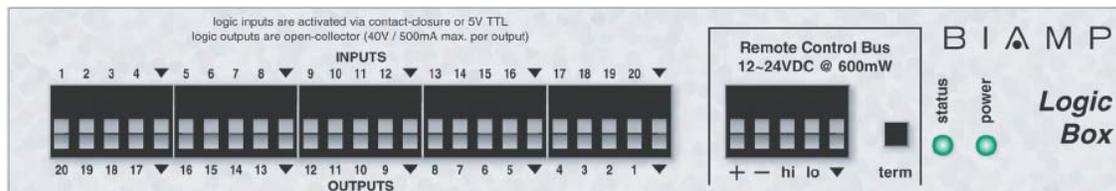

Figure 1 – Logic Box back panel

THE VOLTAGE CONTROL BOX

The Voltage Control Box provides 4 analog inputs plus 4 logic connections. Logic connections in the Voltage Control Box work as explained above. On the back of the Voltage Control Box, you will notice two analog connectors and one logic connector. The logic connector follows the same format as logic connectors in the Logic Box.
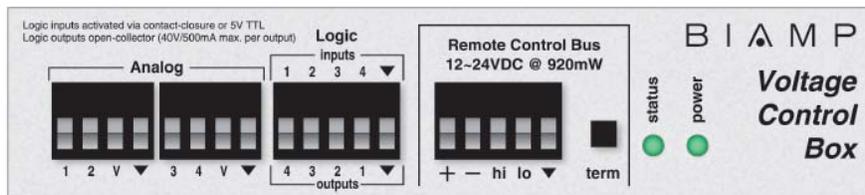

Figure 2 – Voltage Control Box back panel

WIRING AN LED

Since the Logic Box and Voltage Control Box can not supply voltage, you will need an external power supply. As explained above, logic inputs can sink up to 24V. However, a 12V supply should be sufficient for most applications. To wire an LED to a Logic Box or Voltage Control Box, do the following connections as shown in figure 3.

• Connect the negative terminal of the power supply to the ground terminal on the Logic Box or Voltage Control Box

- Connect the positive terminal of the power supply to a 1.2K ohms resistor
- Connect the resistor to the LED's Anode (long lead)
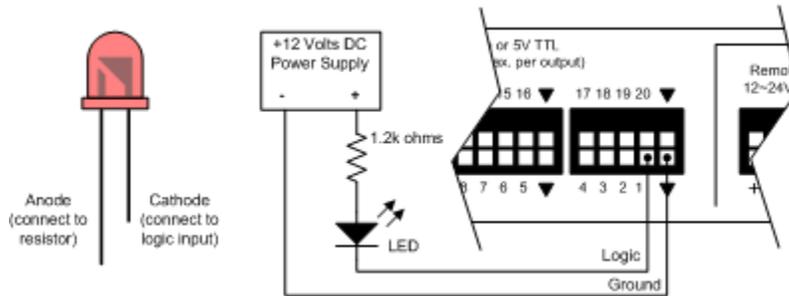- Connect the LED's Cathode (short lead) to the Logic Box or Voltage Control Box logic input

Figure 3 – LED wiring

WIRING A RELAY

Wiring a relay is in essence very similar as wiring an LED. The only differences are that a resistor is not needed but a diode needs to be connected between the terminals of the relay coil to suppress high voltage transients that are generated when the relay turns off. To wire a Relay to a Logic Box or Voltage Control Box, do the following connections as shown in figure 4.

- Connect the negative terminal of the power supply to the ground terminal on the Logic Box or Voltage Control Box
- Connect the positive terminal of the power supply to one of the relay's coil terminals
- Connect the other relay coil terminal to the Logic Box or Voltage Control Box logic input
- Connect the diode's Anode to the logic input of the Logic Box or Voltage Control Box
- Connect the diode's Cathode to the positive terminal of the power supply
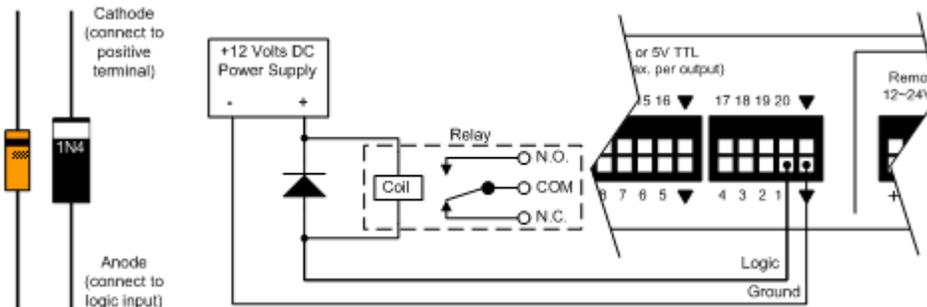

Figure 4 – Relay wiring

If this application note did not answer your questions on the topic of "Wiring LEDs and Relays to the Logic Box and Voltage Control Box", please contact Biamp Technical Support Group by phone at + 1 800 826 1457 or by email at support@biamp.com.