

RSB RS-232 Serial Booster



Users Guide

Revision 1.01

By Ryan Sheldon



Disclaimer:

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Special Thanks:

I would like to thank Kima Dirks for the many hours she has spent editing and refining all of my written literature. I would also like to thank Tom Maier for his dedication to this project. Without his help our products would not be possible. --Ryan Sheldon

Introduction and Overview:

Thank you for purchasing the NCD-RSB. The RSB is a simple device used for two important functions. First, the RSB boosts the incoming RS-232 data from your computer to the stronger levels required for interfacing to 16 NCD devices. We have been able to successfully send data with the RSB over a distance of 700 feet using low-quality telephone wire. The RSB is necessary for driving many NCD devices that have optoisolators because standard RS-232 signals do not have enough drive current.

The other important function of the RSB is to convert open-collector RS-232 data sent by NCD devices to RS-232 levels. Open-collector transmission allows several devices to attach to the same receive line and send data back to the host system without having to "OR" data together. So, rather than having several complicated "OR" gates and many wires, the user can use the RSB to translate incoming signals to a signal most computers can understand.

What You Will Need:

To use the RSB, you will need the following items: Computer with 3.5" drive (Amiga, PC, or Macintosh), modem cable, and at least one NCD device to control (such as an R5 relay controller or AVS8 audio/video switcher). Macintosh users will need the TR32 to convert the RS-232 outputs of the RSB to the true RS-232 signals required by Macintosh systems. The TR32 is not required to send data from the computer to control NCD devices; it is required only to convert received data to the required Macintosh levels.



Helpful hint.



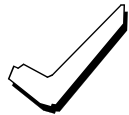
Could cause problems later under normal operation.



Fatal mistake.



The X tells about common assembly and operation errors as well as other things to watch out for.



The check is a guide to help the user with assembly and operation. Use them to prevent mistakes.

Assembly:

Power supply connections: We recommend using a 12 volt DC power supply for this connection. Make sure power supply is NOT connected backwards.

DB25 Female connects to the serial port of your computer using a modem cable.



Open-Collector Input. Connects to the output of devices that send data back into the computer.

Ground. Connect the ground lead of this device to the RS-232 ground of each device. Do NOT connect to power supply ground.

Output is capable of driving 16 NCD devices several hundred feet. Connect to RS-232 input of each device. RS-232 inputs are polarity sensitive. Set jumper on remote device to PC/Amiga system when using the RSB.



Make sure you NEVER connect the power supply to this device backwards. Also, verify part orientation before proceeding. Watch for shorted solder connections. Verify component placement before you continue.

Initial Test:

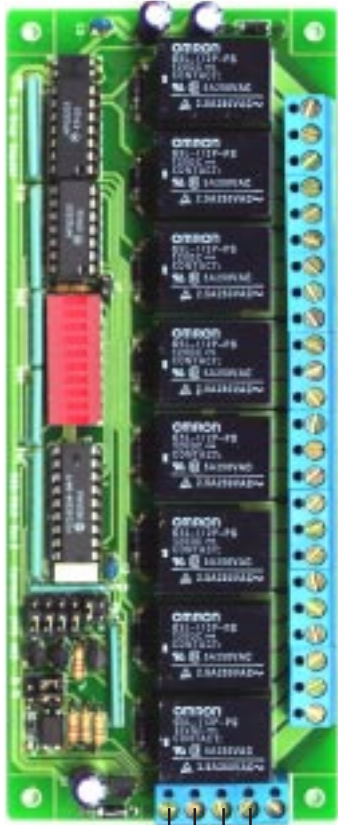
Upon power-up, one LED should glow brightly, the other should be dimmer. Disconnect power and recheck your work if LEDs are not correctly lit.

Note: Device I/O errors can occur in QBasic when used with devices that send data back to the computer. To prevent this, make sure wiring is secure and baud rates are properly set. In addition, software error trapping should be implemented. Software examples not yet available.

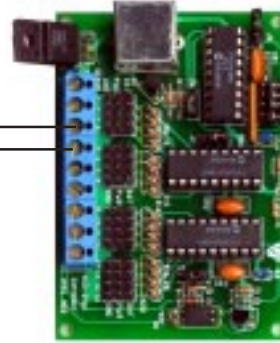


Set jumpers on all devices as if they were connected to a PC/Amiga system, even if you are interfacing to a Macintosh system.

R85/R810 Relay Driver



SV16 Servo Controller



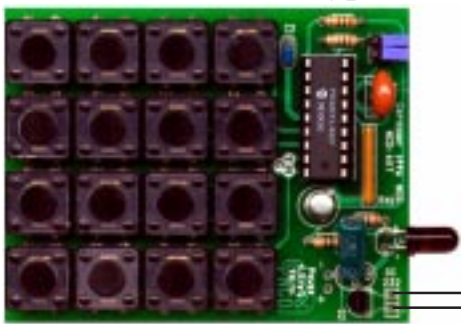
8SC Input Scanner



STP Stepper Controller



AKT ASCII Keypad



ABT Users: Connect the ABT as shown for the AKT, polarity is not specific.

**Tested Electrical Capacity:
1,000 Feet, 20 Isolated Devices, 9600 baud.**

Longer distances may be achieved by using 16 gague copper (stranded or solid) wire at 1200 baud communications. Do not exceed 38.4K baud. Do NOT use capacitive wire such as COAX or highly resistive wire. Maximum 20 optoisolated devices, or 50 non-optoisolated devices. Maximum tested distance is 1,000 feet.



Debugging:

Basic checks: Verify that all parts are installed according to the directions and that your serial cable is functioning properly. Also verify that there are no shorted solder connections on the RSB board. We will also assume the RSB board is oriented in the direction shown on the previous page.

Problem: Remote Device Does Not Respond to Transmissions:

- Try:
- Make sure modem cable is properly connected.
 - Make sure the correct "COM" port is chosen in your software.
 - Make sure software baud rate is set to the same baud rate as hardware settings.
 - Make sure remote device is not set to infrared communications.
 - Check address jumpers on remote device against address jumpers set in software.
 - Make sure RS-232 connection polarity is not reversed.

Problem: Data is Not (or is Incorrectly) Received by the Computer:

- Try:
- Make sure the correct "COM" port is used in your software.
 - Macintosh systems will require the T32 to convert the outputs of the RSB to true RS-232 outputs.

Special Notes: PC users we have encountered have not needed the T32, but some very new systems may have RS-232 ports that require true RS-232 signals. The RSB produces positive RS-232 data pulses. True RS-232 signals are positive AND negative. The logic inside most computers converts these signals to positive pulses, stripping away the negative side of the transmission. Macintosh systems require positive and negative data pulses to properly receive the incoming data. Please let us know if you have problems with the RSB interfaced to your PC compatible system. The T32 (True RS-232) converter will add the negative side of the RS-232 pulses for around \$10.00.

Notes:

We welcome suggestions and recommendations. Please tell us about any errors or omissions you may find in this manual. All recommendations become the property of NCD Inc.

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