

MiniRenSISO Assembly & User Guide

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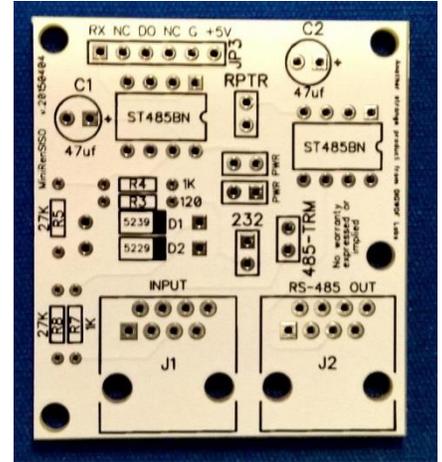
Overview

The MiniRenSISO adapter is a serial input/output device that can accept RS232 or RS485 communication at baud rates up to 5mbps. The adapter outputs a 5vdc TTL signal and can be used as an RS232->RS485 converter or as a repeater whereby a standard RS-485 signal is output. The SISO includes the option of being remotely powered through a common cat5 connection cable or powered through its 6-pin connection header.

MiniRenSISO Assembly

For convenience, parts location information is printed on the circuit board itself. Assemble the SISO from the board up, using the lowest-height parts first and graduation to taller parts. The tallest and last parts to be soldered are the RJ45 jacks at J1 and J2.

1. Install one 120 ohm resistor at R3 (brown-red-brown stripes)
2. Install two 27k ohm resistors at R5 and R8 (red-purple-orange stripes)
3. Install two 1k ohm resistors at R4 and R7 (brown-black-red stripes)
4. Install the two zener diodes; the band end on the diode must match the board marking. Note: higher wattage parts may be included in SISO kits; they are parts 1N4731 (for the 1N5229) and 1N4739 (for the 1N5239). A magnifying glass may be required to read the tiny part numbers.
5. Install the two 8-pin DIP sockets matching the markings on the board.
6. Install the two 47uf capacitors at C1, C2. Make sure the + side is on the + board marking and the square hole. The capacitors are marked with a – stripe on the opposite side.
7. Before installing the 6-pin header at JP3, first consider how the SISO will be used. A female header is also provided with the kit and you may wish to install it facing downward instead of the male header pointing upward. For example, if the board will be used with a Renzilla, the female header mounted on the bottom could easily plug directly onto the Renzilla's J2 header. Connection cables to other boards can be used with the male header. It's also possible that you may want to solder wires directly from the SISO to the target board – lots of possibilities. But the point is to determine what the SISO will be connected to first and then decide what to install at JP3.
8. Install the five 2-pin headers at the RPTR, PWR (2), 232 and 485-TRM locations
9. Install the J1 and J2 RJ45 jacks. (Note: while top-entry RJ45 jacks are provided with the kit; you may decide that side-entry jacks may work better for your application and provide for easier cat5 cable routing. Before installing J1 and J2, you may want to do a test fit for your installation to determine which might be better.)
10. Insert the two, 8-pin 485 chips into their sockets; be sure to orient the chips with the notch end matching the board marking. Note: The ST485BN chip can be replaced with the SP485 (Sipex), the SN65176BP or SN65LBC176PE4 chip.



Connecting the MiniRenSISO to a MiniRen or Renzilla controller

MiniRen and Renzilla controllers include a matching 6-pin header (J2 or JP2) and the SISO can simply be plugged directly onto it, making sure that the SISO's orientation mates its +5v pin to the +5 pin on the controller. Early versions of MiniRen controllers may have only a partial JP2 connector; use these guidelines for those that have only a 3 or 4-pin header:

1. SISO +5v pin to +5v pin on the MiniRen
2. SISO G (ground) pin to the G (ground) pin on the MiniRen
3. SISO DO pin to the MiniRen's DO pin
4. SISO RX pin to the MiniRen's RX, DOH or DOX pin

Connecting the SISO to another serial device or controller

1. The 6-pin row of connection headers (JP3) is clearly marked with connection information.
2. Connect the SISO's +5 pin to a source of +5vdc on the device.
3. Connect the SISO's G pin to GROUND of the device. (Note: The ground connection is essential to create a completely communication circuit. The SISO could be powered by a 5vdc wall wart, for example, but unless the ground connection is made to the device/controller as well, SISO cannot communicate with it.)
4. NC pins have no connection and are unused.
5. Connect the SISO's RX pin to the device's data input. The RX pin outputs a +5vdc TTL signal from the SISO.
 - a. On other Renard controllers, connect the SISO's RX pin to the data input pin of the controller's FIRST PIC.
6. Connect the SISO's DO pin to the device's data output pin. This must be a standard, +5v TTL signal.
 - a. On other Renard controllers, connect the DO pin to the data output pin of the controller's LAST pic.
7. SISO J1 RJ45 (data input) pin/wire connections:
 - a. Pins 1, 2: Ground (on the PCB, pin 6 is also tied to ground)
 - b. Pin 3: open/no connection
 - c. Pin 4: RS232 signal or if RS485, Data- (the 485 adapter may be marked T-, D- or B)
 - d. Pin 5: RS232 ground or if RS485, Data+ (the 485 adapter may be marked T+, D+ or A)
(the following two pins are optional)
 - e. Pin 7: power ground or -V (when powered through Cat5 cable; otherwise open/no connection)
 - f. Pin 8: power +5vdc (when powered through Cat5 cable); otherwise open/no connection
8. SISO J2 (data output) RJ45 pin/wire connections:
 - a. Pins 1, 2, 6: Ground
 - b. Pin 3, 7, 8: open/no connection
 - c. Pin 4: RS485- (or T-, D-, B)
 - d. Pin 5: RS485+ (or T+, D+, A)

What the 2-pin option headers do

- PWR headers (two sets of two pins). Used only with power through Cat5 input cable
 - Input power: +5vdc on input pin 8, power ground (-V) on pin 7
 - Jumper BOTH PWR headers.
 - Leave BOTH PWR headers unconnected if not powering through Cat5 cable.
- RPTR header
 - Power the SISO board with 5vdc, either directly to the +5v and G headers or through the Cat5 cable.
 - Jumper the RPTR header.
 - RS232 or RS485 data input into J1 will be converted into RS485 output and sent out the J2 jack.
- 232
 - This header must be jumpered if an RS-232 signal is being input to the SISO. This effectively shunts the J1 pin 5 connection to ground. If RS-485 data input is used, do not jumper the 232 header.
- 485-TRM
 - It may be necessary to provide 120 ohm termination to the RS-485 signal line. Jumper this connection if your RS485 connection isn't working properly.
 - It may also be beneficial to jumper the 232 connection as well – it's something to try if the 485-TRM header doesn't solve the issue by itself.