

A quick guide to the EZSV10 starter kit

Revision B2

This guide applies when using the RS232-to-RS485 Converter, or the USB-to-RS485 Converter after USB driver is installed.

For these products

- EZSV10

Encoder Note

An encoder of 400-1000 lines/channel, giving 1600-4000 quadrature encoder counts per revolution, is recommended. (Other line counts could require changing PID coefficients.)

You will need:

- ▶ Your EZServo® Controller/Driver, servo motor, and encoder. A motor 2" or smaller rated at about 1/2 of supply voltage is best. See Encoder Note.
- ▶ RS232 to RS485 Converter or USB to RS485 Converter, with cables supplied
- ▶ PC with port to match cable supplied, with USB driver installed if USB to RS485 Converter is being used.
- ▶ Power supply, 12 to 40V. For first-time EZServo users we recommend a current-limited power supply set to 12V to protect against miswiring.
- ▶ HyperTerminal application (For Windows 98, download HyperTerminal Private Edition 4.0+ from www.hilgraeve.com. This corrects echo problem in Windows 98 version.)
- ▶ Crimp tool (recommended): Digkey part H9924-ND. Otherwise, soldering equipment.
- ▶ Small Philips screwdriver for operating address switch
- ▶ If troubleshooting is required: ohmmeter, oscilloscope

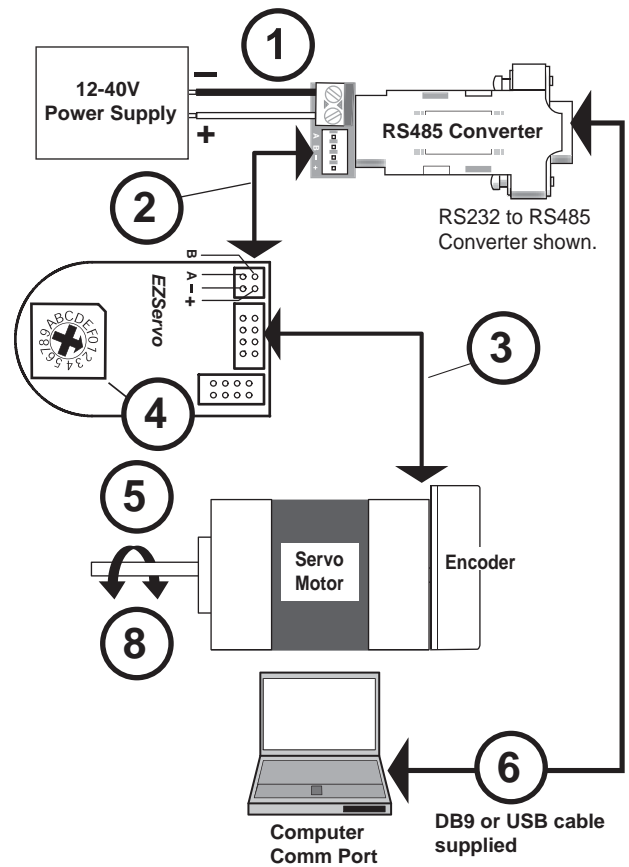
Precautions

- ▶ Observe all electrostatic discharge precautions to avoid damaging circuit boards.
- ▶ DO NOT disconnect motor wires while power is on, to avoid damage to circuit board.
- ▶ DO NOT place EZServo board or RS485 Converter on metal surface when powered (to prevent shorts).
- ▶ DO NOT run Palm Pilot Hotsync on the computer. It will take over the comm port.
- ▶ Avoid bundling encoder or IO wires with motor power wires, as this may cause noise pickup from motor wires. If bundling is necessary, put motor wires in a separate shielded twisted-pair cable.
 - For 10' or longer, shield each IO line individually.
 - If using ribbon cable, add grounds between signal wires and motor wires.

Starting up

Start with power supply OFF.

1. Connect power supply to RS485 Converter.
 - ▶ Turn power ON. Confirm current is less than 100mA. Turn power OFF.
2. Connect EZServo to RS485 converter.
 - ▶ If using EZ Start kit, use cable provided. If not using kit, wire mating 4-pin connectors pin-to-pin, for example pin 1 to pin 1. (See Wiring Note below.)
 - ▶ Turn power ON. Ensure current is less than 0.25A, and green Life LED blinks. *If not, look for bad power connection.* Turn power OFF.
3. Connect servo motor and encoder to the eight pins of the motor connector as shown in diagram. Use the pigtailed provided for this purpose. (See Wiring Note below.)
4. Set address switch firmly to number 1 with Philips screwdriver.
5. Turn power ON.
6. Connect RS485 Converter to the pc.
7. Start HyperTerminal or the EZCommander™ application (see other side of sheet for HyperTerminal).
8. Issue the command /1P1000R <CR> and observe result. This command tells motor to turn 1000 encoder counts and stop.



You're on your way! For other commands and hookups, see the full command set and wiring diagram on our website.

Troubleshooting
See other side of sheet.

Connect to motor, etc.
Pigtail with connector pin (provided)
Mating Connector (typical)
On-board Socket

Wiring Note
Crimp or solder motor, etc. to pigtails supplied. Insert pigtails into mating connector as shown, observing pin numbers. Then insert mating connector into socket on board.

Pin numbering on RS485 Converter

Starting HyperTerminal

1 Make sure no other programs are using the comm port you will be connecting to with HyperTerminal.

2 Open HyperTerminal by following this (typical) path:
Start/All Programs/Accessories/ Communications/ HyperTerminal/ HyperTerminal

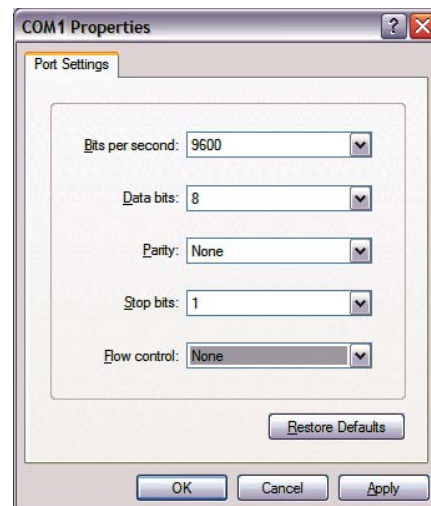
The path shown is for Windows XP.



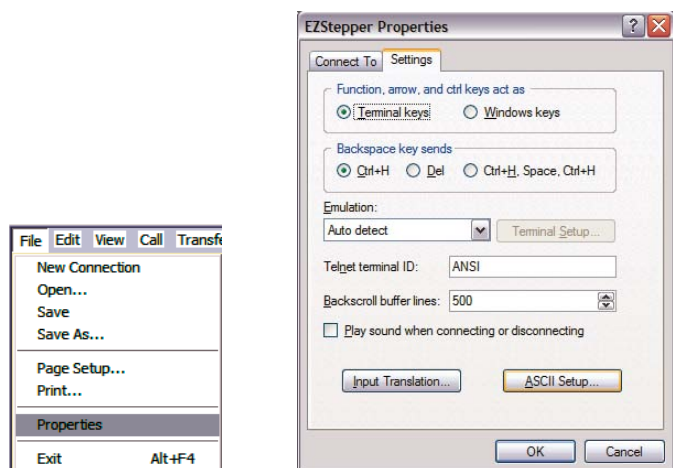
3 Name the new connection and select an icon. Click **OK**.



4 Select connection. Click **OK**. Note that USB uses higher port number.

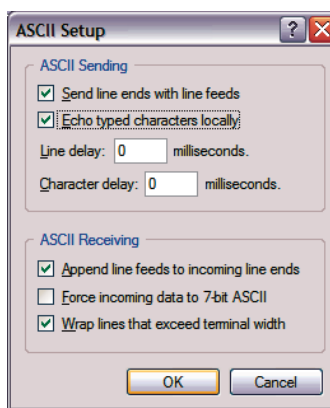


5 Make the port settings shown above. Click **Apply**, then click **OK**.

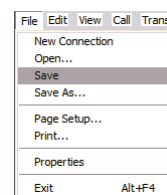


6 In HyperTerminal, choose **File/Properties**.

7 Click the **ASCII Setup** button on the **Settings** tab.



8 Make selections shown above. Click **OK**, then click **OK** again. Commands and responses will be displayed as separate pairs.



9 Click **File/Save** to store this connection. Now you're ready to send commands.

You can open this connection later by choosing **File/Open** from the HyperTerminal menu.

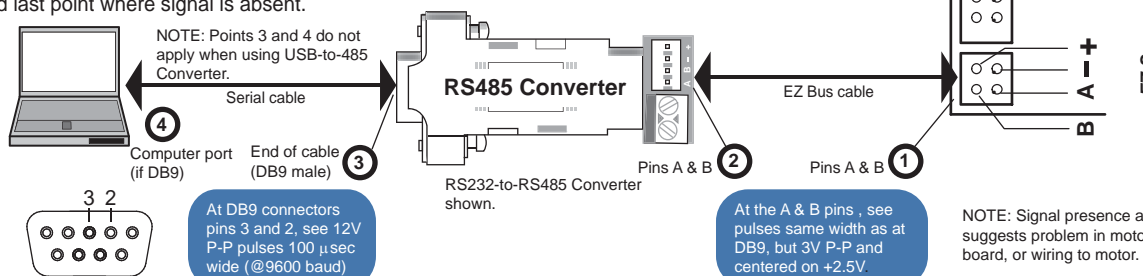
To change connection properties later, first click the **View/Call** icon to terminate the connection.

You can also use the EZCommander™ Windows application to control your servomotor. To obtain the application, visit the part of our website for your product.

Troubleshooting

If motor does not respond to commands:

- ▶ Make sure address switch is detented exactly on position number 1. (After resetting, power must be cycled to establish new address).
- ▶ Turn off Palm Pilot Hotsync or other applications that use the comm port.
- ▶ Re-check that correct com port is selected.
- ▶ Issue "reconnect" command from HyperTerminal.
- ▶ Confirm good ground between PC and power supply. First measure resistance with power off; then check for voltage drop with power on. Repair poor ground connections.
- ▶ Issue command /1<CR> and verify that the response "/0b" is received. If ok, motor connection may be miswired or loose. If not, continue to next item.
- ▶ Check continuity of communication data to EZServo board at point 1 in diagram below. If not present, check at other points shown. Suspect failed component or faulty wiring/connector between point where signal is present and last point where signal is absent.



If motor does not stop and hold position, but spins fast for a few seconds then stops:

- ▶ Reverse motor leads and try again.

If motor gives up partway through a move:

- Query by issuing command /1Q. Overload error will be returned (upper or lower-case i). Motor cannot keep up with the trajectory specified in the command. Try the following:
 - ▶ Increase maximum move current with the "m" command to allow the motor to move faster. For example /1m100R allows 100% current.
 - ▶ Reduce the velocity (V) and/or acceleration (L).