

## A quick guide to the EZSV10

Revision C1

This guide applies using the USB-to-RS485 Converter or RS232-to-RS485 Converter.

**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. Also see Encoder Note.
- ▶ RS485 Converter: USB-to-RS485 or RS232-to-RS485, with cable supplied.
- ▶ PC with port to match RS485 Converter being used (USB or serial D).
- ▶ Power supply, 12 to 40V. For first-time EZServo users we recommend a current-limited power supply set to 12V to protect against miswiring.
- ▶ Crimp tool (recommended): Digikey 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).
- ▶ 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**

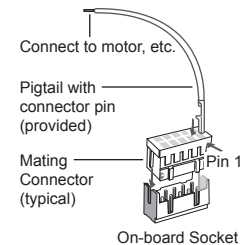
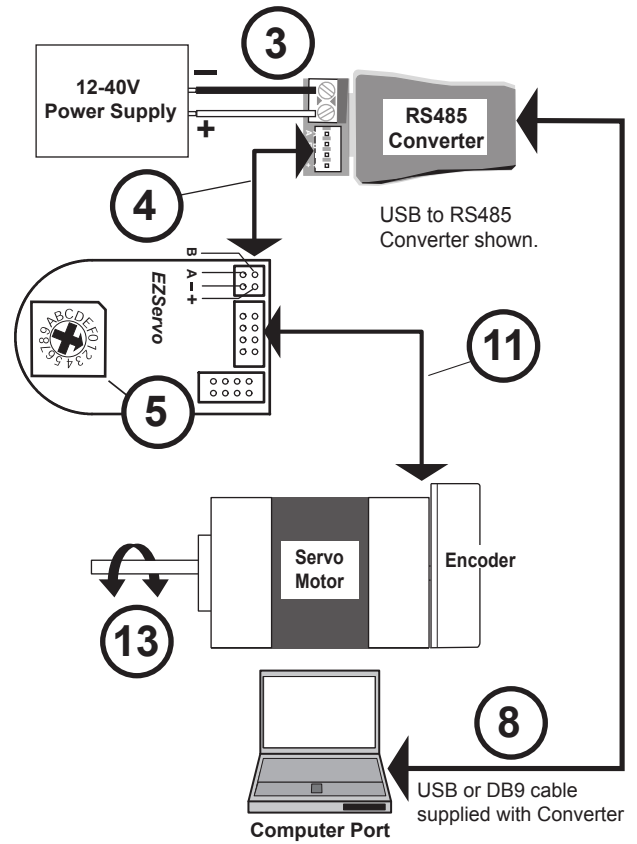
Start with power supply OFF.

NOTE: If using RS232 Converter, disregard instructions for USB.

- Download and install the EZCommander™ application from [www.allmotion.com/support](http://www.allmotion.com/support).
- If using USB-to-RS485 Converter, download and install appropriate USB driver from [www.allmotion.com/support](http://www.allmotion.com/support).
- Connect power supply to RS485 Converter. Ensure power is OFF. ➡
- Connect EZ Servo 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. Confirm that green Life LED slowly blinks. *If not, look for bad power connection.*
- Set address switch firmly to number 1 with Philips screwdriver. ➡
- Cycle power OFF/ON if address switch was moved in preceding step.
- With USB cable from Converter to PC unplugged: Start the EZCommander application (see other side of sheet for instructions if needed). Click Settings, then Re-scan Ports. Note available ports, then click OK.
- Connect RS485 Converter to a PC USB port with the cable supplied. ➡
- In EZCommander, click Settings, then Re-Scan Ports. Select the new port that becomes available, and click OK. (For RS232 converter, the new port will be com1.) *If no new port appears, a problem with the USB driver is indicated. Re-install the driver for your system.*
- In EZCommander, click Send String 0 to issue the command /1&. Confirm return message showing product name and firmware version. *If return message says "No EZStepper (or EZServo) Found", troubleshoot communications (page 2) before connecting motor.*
- With power OFF, connect servo motor and encoder to the eight pins of the motor connector as shown in diagram. Use pigtailed provided for this purpose. (See Wiring Note below.) ➡
- Turn power ON.
- In EZ Commander, click Send String 2 to issue the command /1A1000A0R. Confirm that motor goes back and forth. ➡

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

**Troubleshooting:** See page 2. ➡



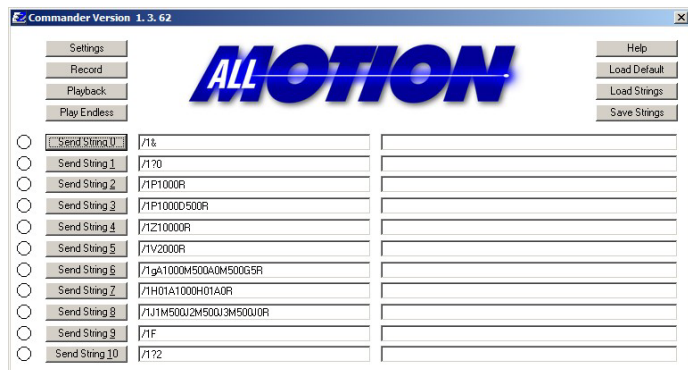
**Wiring Note**  
Crimp or solder motor, etc. to pigtailed supplied. Insert pigtailed into mating connector as shown, observing pin numbers. Then insert mating connector into socket on board.

**Using EZCom Commander™**

Start with USB cable unplugged.

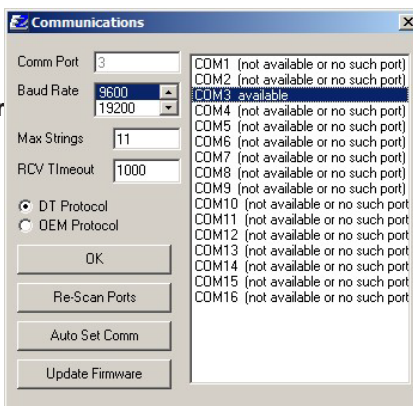
NOTE: If using RS232 Converter, disregard instructions for USB.

**1** Open EZCom Commander.



**2** Click the **Settings** button to open the Communications window.

- Click Re-Scan Ports; note available ports; then click OK to close.



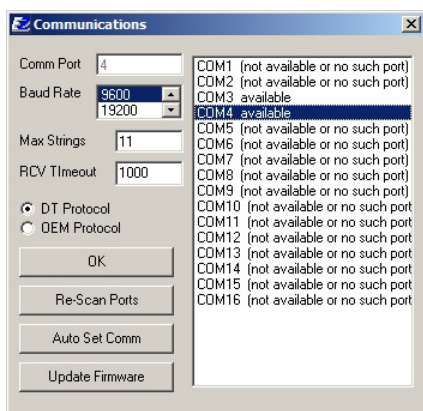
NOTE: USB cable is disconnected for this step.

**3** Plug USB cable into the PC.

- Click Settings button, then Re-scan Ports. A new comm port will become available (will be com1 if using RS232 Converter).
- Select the newly available comm port and click OK to close the Communications Window.

**4** Issue commands :

- Enter string in a left-hand field.
- Press adjacent **Send String** button to issue command.
- See return message in field to right.



Command strings ↑

Return messages ↑

**Troubleshooting**

**If motor does not respond to commands:**

NOTE: If using RS232 Converter, disregard instructions for USB.

- ▶ Make sure address switch is detented exactly on position number 1. (After resetting, power must be cycled to establish new address.)
- ▶ Re-check that correct comm port is selected.
- ▶ Confirm good ground between PC and negative terminal of power supply. First measure resistance with power off; then check for voltage drop with power on. Repair poor ground connections.
- ▶ Issue command /1& and verify that a response identifying the product and firmware version is received. If ok, motor connection may be miswired or loose. If not ok, re-install USB driver. Continue to next item if not resolved.
- ▶ Check continuity of communication data to AllMotion circuit board at point 1 in diagram below. If not present, check at other points indicated. Suspect failed component or faulty wiring/connector between point where signal is absent and last point where signal is present.

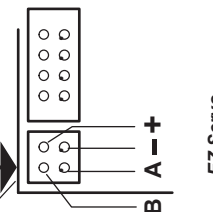
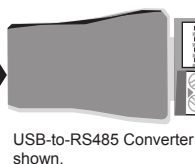
**If motor does not stop and hold position, but spins fast for a few seconds then stops:**

- ▶ Reverse motor leads or encoder A, B leads and try again.

**If motor gives up partway through a move:**

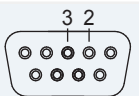
Query by issuing command /1Q. Overload error will be returned (Error 9 in EZCom Commander). Motor cannot keep up with the trajectory specified in the command. Try the following:

- ▶ 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).



If using RS232-to-485 Converter

At DB9 connectors pins 3 and 2, see 12V P-P pulses 100 μsec wide (@9600 baud). Check at cable end and at Converter connector.



At both sets of A & B pins, confirm 3V P-P pulses centered on +2.5V. See points 1 and 2.

NOTE: Signal presence at point 1 suggests problem in motor, EZServo® board, or wiring to motor.