

## A quick guide to the EZStepper® starter kit

Revision B1

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

### For these products

- EZ17
- EZHR23
- EZHR17
- EHRZ17EN

### You will need:

- ▶ Your EZStepper® Controller/Driver and stepper motor. A motor rated at about 1/4 of supply voltage is best.
- ▶ 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 (24V typical). For first-time EZStepper users we recommend a current-limited power supply to protect against miswiring.
- ▶ HyperTerminal application (For Windows 98, download HyperTerminal Private Edition 4.0+ from [www.hilgraeve.com](http://www.hilgraeve.com). This corrects echo problem in Windows 98 version.)
- ▶ Crimp tool (recommended): T-handle crimp tool, Digikey part A9982. 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.
- ▶ Allow at least 0.1" air gap when bolting EZStepper to motor, for cooling.
- ▶ Use 4-40 round standoffs to bolt EZStepper to motor, NOT hex (Hex standoffs will touch components).
- ▶ DO NOT disconnect motor wires while power is on, to avoid damage to circuit board.
- ▶ DO NOT place EZStepper 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.

### Starting up

Start with power supply OFF.

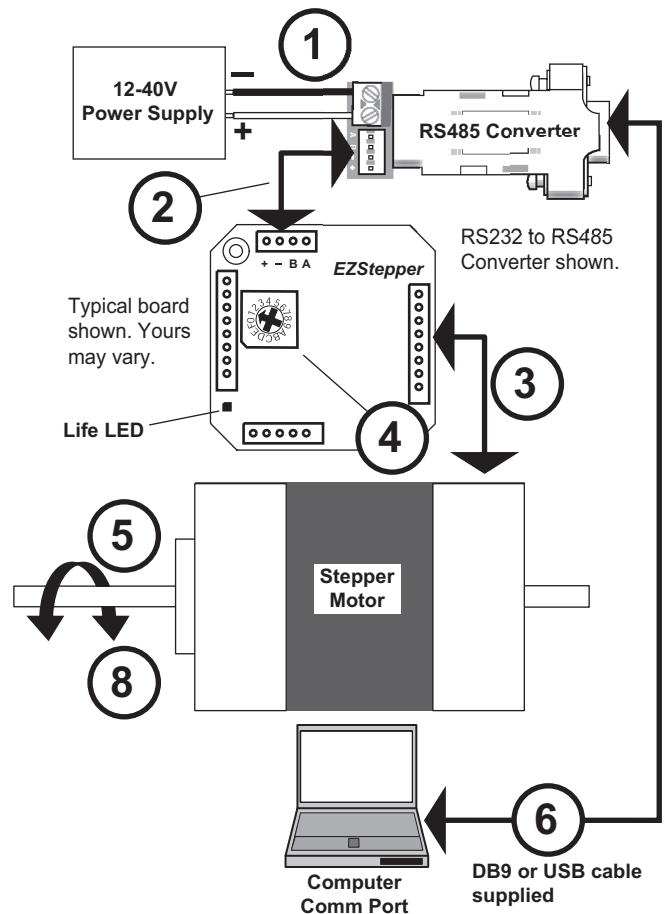
1. Connect power supply to RS485 Converter.
  - ▶ Turn power ON. Confirm current is less than 100mA. Turn power OFF.
2. Connect EZ Stepper to RS485 converter.
  - ▶ If using EZ Start kit, use cable provided. If not using kit, wire mating 4-pin connectors pin-to-pin per the markings on the connector. (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 stepper motor to middle four pins of the motor connector as shown in diagram: (See Wiring Note below.)
 

**CAUTION!**  
Always turn off power before connecting or disconnecting motor to avoid damaging circuit board.
4. Set address switch firmly to number 1 with Philips screwdriver.
5. Turn power ON. Motor should execute a factory stored command. *If this doesn't occur, check for poor motor connections.*
6. Connect RS485 Converter to the pc.
7. Start HyperTerminal or the EZStepper application (see other side of sheet for HyperTerminal).
8. Issue the command /1A10000R <CR> and observe result. This command tells motor to move to absolute position 10000 steps.

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

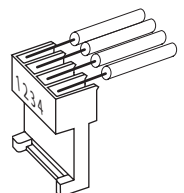
### Troubleshooting

See other side of sheet.



### Wiring Note

Always wire to the mating connectors supplied on circuit board. Use crimp tool if you have it, or else solder. (DO NOT solder to circuit board; damage is likely. Also, DO NOT press in with a screwdriver, because this makes unreliable connections.)



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

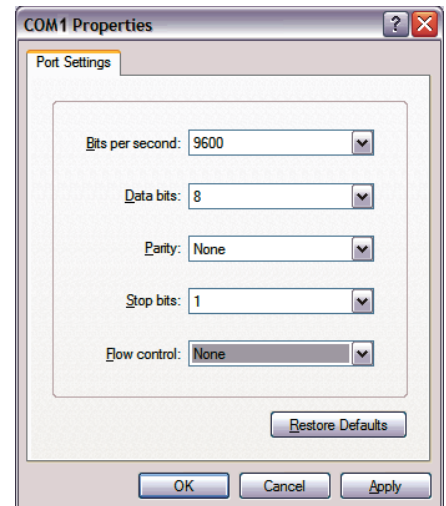
2 Open HyperTerminal by following this (typical) path:  
**Start/All Programs/Accessories/ Communications/ HyperTerminal/ HyperTerminal**  
 The path shown is for Windows XP.



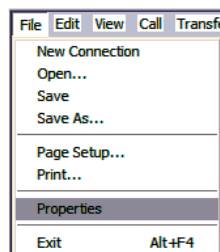
3 Name the new connection and select an icon. Click **OK**.



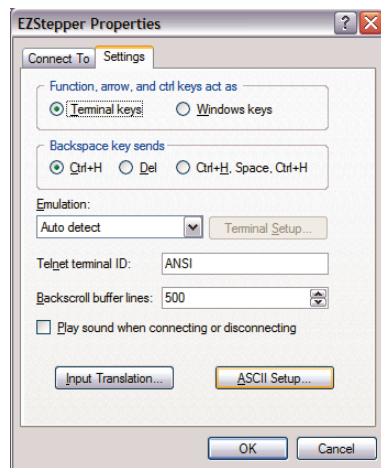
4 Select connection. Click **OK**. Note that USB uses higher port number.



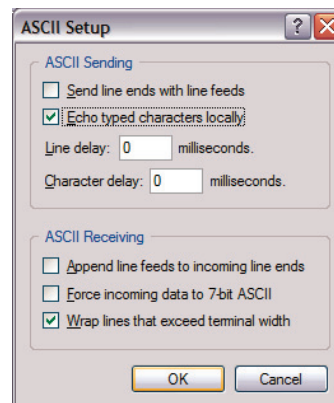
5 Make the port settings shown above. Click **Apply**, then click **OK**.



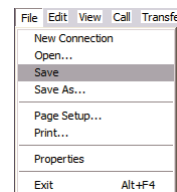
6 In HyperTerminal, choose **File/Properties**.



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



8 Select **Echo typed characters locally**. Click **OK**, then click **OK** again.



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 **Call/Disconnect** icon to terminate the connection.

You can also use the EZStepper® Windows application to control your stepper motor. To obtain the application, visit the part of our website for your product.

## Troubleshooting

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

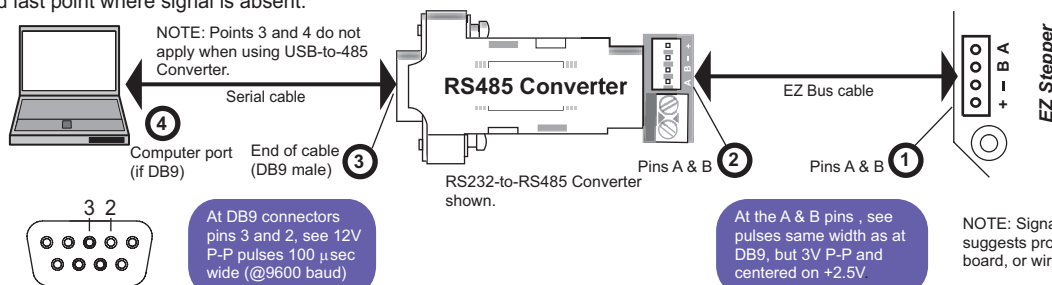
- ▶ Make sure address switch is detented exactly on position number 1.
- ▶ Turn off Palm Pilot Hotsync or other applications that use the comm port.
- ▶ Re-check that correct com port is selected.
- ▶ Issue "reconnect" command from HyperTerminal.
- ▶ Confirm good ground between PC and power supply. First 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 EZStepper 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 misses steps at high speed:**

- ▶ Increase either the Move current or the supply voltage.  
 To increase Move current, issue an "m" for Fast Move Current and/or "l" command (lower case L) for Slow Move Current. Example: `/1m75` = set current to 75% max.  
*Step misses typically happen in the middle of a move, where the motor "catches" in the beginning and end, but stalls in the middle.*

**If motor direction is not consistent:**

- ▶ Check that coils of motor are securely connected at both ends.  
*This is typically caused when one of the coils has a loose connection.*



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