Thank you for purchasing our precision products for your motorized project. Please review our **Documentation** link on our website www.excitron.com, where you will find the motor/controller Manual and related documentation.

Here are some notes for proper installation, setup, and operation. CNC Gcode/Robot file reading and execution is included inside the controller.
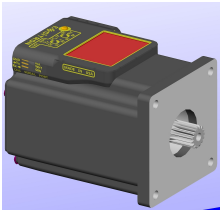
Power Supply hookup:

It is very important that you provide an *Emergency AC Power Off Switch* for safety reasons. An inline fuse on the AC power line is recommended. Excitron's motors, controllers, power supplies may not be used for life support equipment. Due to manufacturing, small scratches may be present on the controller or motor. Your controller and motor is absolutely new, so please ignore any scratches. Please read all instructions first.

AC voltages are high and very dangerous; always seek competent help in wiring your power supply. A grounded 3 wire AC power cord or a 2 prong cord is included. Use an AC rated power switch to turn the power supply off and on— do not plug and unplug the Controller cable with power on. DO NOT USE A SWITCH IN THE DC output, this isolates the power supply capacitors from the motor, and may result in high voltage.

Our enclosed power supplies include a jacketed AC 2 or 3 wire cable. Check your DC grounds, so that no item is "floating". If proper grounding does not exist, then serial communications, input/output pins, and the controller itself may not function, and could be damaged. Always seek professional help.

New DC power round barrel plug with cable. This plugs into motor DC 2.1mm round jack located on motor side. Warranty is void if your wires are lengthened.

Please download the datasheet for your motor/controller, usually X86 datasheet or X57 datasheet. X86-118:

All stepper motors require a filter capacitor to reduce electrical noise and for smooth stepping. We add capacitors inside the X Controller, 330 uF to 1,800 uF, depending on motor size.

The X controllers have 1 or 2 3-pin I/O headers. These are 24K gold plated pins. The 3 pin I/O cable only goes into the **3 pin Input headers**, 3.3v TTL, and are provided open-ended for your connector choice. **DO NOT plug** into CNC or CNC2, which are 3.3v TTL **serial ports**.

Items included, if checked:
- integrated motor/controller/driver
- AC/DC power supply with matching DC plug
- AC power cord
- USB-TTL-3pin cable adapter, electronics inside USB housing
- USB-micro OTG smart phone cable
- USB tiny new micro to USB C adapter
- 3 pin Input cable, quantity 1 or 2
- 2 velcro strips
- 2 cable clamps
- 10-key hex wrench set

Rotary Table Items included, if checked:
- Set of T-nuts
- Eccentric Lock: 2 barrels, screw, washer, or lever
- Gear Plate with grease zerk
- Silicone rubber hi-temp sheet for spray protection
- 4 M5 x 14 & 2 M5 x 20 socket screws & thin washers
- 2 M5 x 18 flat head screws, assembled
- Stainless steel Motor 486 Plate 3mm thick
- Gear Black Coupler
- Coupler Spacer Plate
- 4 M5 x 35 (or longer) for 90:1 gearbox

Excitron's stepper motor Controllers make your motion control simple. They contain all the electronics and power for thousands of motorized applications—and they run right out of the box by simply typing a "G". If you also purchased our Switch Assembly, or add your own switches, then pushing a switch will cause motion. Stepper motors rotate one small step at a time, and are special because both position and speed can be precisely controlled, unlike any other type of motor. Our motors can run continuously for 30 years.

V5.25 & v5.26 includes new/revised commands:
- Enhanced DRO digital readout.   Enable/disable on the little **c** menu, value is global. L=1 (enable) if your motor has a DRO, else L=0.

Included is a smart phone USB cable for control with your smart phone or tablet! Download the recommended USB serial app from our Serial Programs link https://www.excitron.com/webdocs/serialportprograms.cfm. Use the small micro USB for some phones.

Our part number system indicates the stepper motor size. All X controllers have 2 TTL 3.3v serial ports, named CNC and CNC2, for communication to other X Controllers and to any computer or smart phone. See Serial Programs link for details.

Our experts are happy to assist you in selecting the best controller, stepper motor, and accessories for your project. Remember to check out our Leadscrew Sliders, Belt Sliders, Wire Sliders, Rotary Chucks, and Rotary Tables for your motorized projects.

See online the latest X Controller Manual.pdf and the Excitron_X_Features.pdf for all details of our exciting new X Controller. Also see Sw1-2D pdf drawing. For a quick start:

- Make sure the AC-DC power supply is off or unplugged.
- Twist and wiggle the Power supply DC round black plug to the round power jack on motor side.
- Turn on your power supply. The small X Controller LED on the top cover should be ON medium bright.
- Plug in the **USB-TTL-3pin adapter into side Serial** CNC header, note green, white, and black wires.
- Start smart phone serial app, or Realterm, Putty, Hyperterminal (or any equivalent program) with 115,200 baud, 8 bits, no hardware handshaking. Download from internet or from our Serial Programs link. At power-up the X Controller displays:

```
Excitron ExROS v5.26 X86-118                    (controller name varies)

17C   24V      Cycles= 0000000
GR= 0486    Steps/rev= 0194400  Steps/degree= 0540   values for MRT6, 8, 10,12 rotary tables
 P= +0000000

P# D G A Brk  Number Repeat Vsps tmsec pinMode Na  RPM     Na is Name of Motion Profile
01 C G 0 000 0000400 00000 01000 00200  0 00  01 000.30

X>
```
- Type G to run the stepper motor.
- Type I to see some Controller information and the current motion profile #01 values.
- Change direction (C or W), Vsps, or number of steps N, type G, and see the difference.
- Type ? for a brief command help list.
- The Controller is in Profile Mode on power-up, and will respond to any serial command. Input Profile, and Auto-Home Modes create standalone functionality, whereupon no PC is needed.
- The new Gcode/Robot commands are accessed with by typing Q. You return to Motion Profiles with a Q.
- You can view and change global Controller variables on c submenu: type little c then ~.

Absolute Encoder:
The Encoder value is shown after each run, and the J command also shows the encoder value. *If you ordered* the optional Encoder installed inside the motor, then the values change, otherwise you do not have an internal encoder. Enable the Encoder, if you have one, via the little c submenu command E. Set E=000 to disable, else E=030 or so is a normal value.

Enjoy!   Feel free to contact us at vern@excitron.com.

…make it a great day!
Excitron's Engineering Team