Et Trip

This guide pertains to all sizes of Quantum III Drives

**Problem:**
The drive displays \textit{Et} and will not
This can happen during initial commissioning

**Why does an \textit{Et} trip occur?**

On the QIII drive the F6 digital input (terminal 26) is used to trip the drive in the event an External Trip condition has occurred. Often an E-Stop button, motor thermal, blower motor overload or general safety interlocks are interfaced with the drive that when opened results in an \textit{External Trip}. If this safety feature is not desired one could elect to temporarily “jumper out” terminals 1-4 on the AC Interface board (also known as the relay board). But be aware a safety method may have been disabled.

**Where are the connections on the drive that control the \textit{Et} trip?**

Terminal 1 to terminal 4 on the \textbf{AC Interface Board} (P/N 9500-4025) must be connected together to prevent the \textit{Et} trip from occurring. If you have an \textit{Et} trip the first step would be to measure the AC voltage on pin 4 of the AC Interface PCB. If the connection has been made properly you will read about 120vac between pins 4 to earth. (See next page for location)

**NOTE:** Terminals 2 and 3 on the relay board do not serve any function. They are offered as extra terminals to accommodate multiple wires that may not fit on terminals 1 and 4.

**What if I do not have 120vac between terminal 4 on the relay board and earth?**

If you read between terminals 4 to earth and do not see 120vac then read from terminal 1 to earth. There should be 120vac between these two as well. If the voltage shows up on terminal 1 but not on terminal 4 then the connection between these two terminals is not being made. Check your external wiring to these connections. It is possible to install a temporary wire jumper between 1 and 4 to check this and eliminate the drive as the problem.
If you are not getting 120vac to terminal 1 on the relay board then check the voltage on the secondary of the control transformer. The voltage here should also be 120vac. Power down the drive and ohm the transformer fuses. If they read open replace the bad fuses.

Either label and remove all wires that are connected to the AC interface board or carefully pull off the terminal strip with your external wires attached. This will eliminate any fault in external wiring as a possible cause.

Reapply power. At this point verify the 120vac by measuring terminal 1 to earth. Then carefully jumper terminals 1 to 4 with miniature alligator leads or a wire and depress RESET on the drive keypad. The ET trip should go away.
What role does the control transformer play with an Et trip?

The relay board runs off 120vac. This voltage is necessary to energize the coils for run, stop, jog, forward, and reverse. The drive comes with a control transformer installed. This transformer steps the voltage down from your operating line voltage to 120vac for the relay PCB. The wire tap on the transformer must be set accordingly for your specific operating voltage.

If the fuse opens up again with both terminal strips removed from the AC Interface board there could be a problem with the AC Interface board’s bridge rectifier, the input snubber, or a shorted MOV (QVR1).

To check this, remove the A1 wire from the AC Interface board as shown below. Replace the blown fuse and re-apply power. Measure for 120vac on either side of the right most fuse- see next page for Transformer secondary fuse locations

Note: These terminal are removable- they will pull off

Should the 120vacbe present, this would tend to indicate of malfunction on the 9500-4025 AC Interface printed circuit board.

Instructions on how to replace this board can be found at the following link or clicking the link below:

120vac Secondary Control Voltage Location

Quantum III Size 1 Control Transformer

Quantum Size 2 & 3 Control Transformer
Other possible causes for an Et condition:

**JP2 on the Tach Interface PCB must be set to the 2-3 position.** If it is in the 1-2 position the drive will be stuck in an **Et** condition. The location of this jumper is shown below.

As mentioned in the beginning of this document the F6 digital input is responsible for activating the **Et** trip. This digital input is located at terminal 26 on the MDA2B interface PCB. It is possible this digital input has gone bad or the input is programmed incorrectly. Check the DC voltage on pin 26. It should read about 20vdc when the drive is healthy and 0vdc when the drive is tripped **Et**.

Terminal 20 or 40 can be referenced as common.
The state of the input can be viewed at parameter #8.06. If parameter #8.06 is a 1 the drive should be tripped Et. If #8.06 is a 0 the drive should not be tripped with Et after the reset button is pressed on the keypad.

One can test the External Trip input circuity up to terminal 26 by observing #8.06 and jumpering and un-jumpering terminals 1-4 on the AC Interface board.

Note: Parameter #8.16 is the typical destination of the F6 digital input and should contain a value of 1034 in all Quantum III drives received from the factory. Customers however change #8.16 sometimes to a value of 517 to eliminate the Et trip indication following an E-Stop command- ie breaking connection from terminals 1-4 on the AC Interface board.

This eliminates the need to RESET the drive following an External Trip. This method is explained in further detail of the Quantum III User guide June 2002 page 218 or by clicking on the following link.

Quantum III E-Stop with out External Trip

The issue that we are concerned with here is Parameter #10.34. When this parameter becomes a 1, the drive will trip and annunciate is with Et. Sometimes when setting up for this mode, the user makes all of the proper changes, but after doing a save they forget to set Par. #10.34 to the value of 0 to nullify this trip from happening. By not setting this parameter to a 0, the drive will be set in a constant request for an Et trip state.

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