WI TT-1016 100A / 200A Controller Trouble Shooting Guide

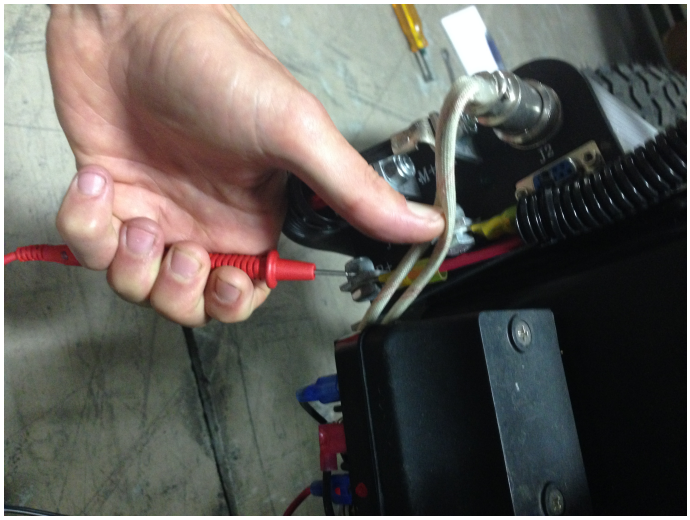
11. Thumb Throttle / Twist Grip Test:
With the Unit ON, test the ground wire by touching the Positive (+) probe to the terminal of the brown wire (opposite the green wire). It should read 0 Volts until the Throttle or Twist Grip is pushed or turned. When it is pushed or turned, it should increase proportionately to how much you engage the Thumb Throttle / Twist Grip up to 4.3 volts / full throttle.

If not, replace the Thumb Throttle / Twist Grip

12. Power to Controller Test:
Ensure there is the same voltage at the B+ terminal of the controller as the initial 24V battery voltage of Step 4.

If not, check the connections back to the battery.

If so, go to Step 14.



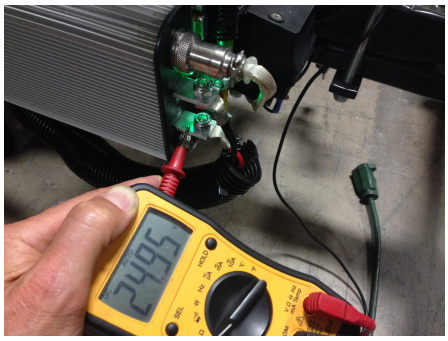
13. 200 A Fuse to Controller Test:
With the Positive (+) probe, touch the ground wire side of the 200A fuse (inside the black fuse holder) to see if it has the same terminal voltage as in step 4.

If not, replace fuse or check connections.

WI TT-1016 100A / 200A Controller Trouble Shooting Guide

14. J2 Cable Test:
The J2 cable attaches to the controller at the J2 plug. Remove the plug from the controller and identify pin 1 - this is in the 1 o'clock position with the half moon cut out at 12 o'clock.

With the On/Off Switch turned to the "On" position, place the Red probe from mutlimeter in the Pin 1 position to test. The reading should be the same as terminal voltage in step 4. If not, and assuming all the other tests where good, there is a problem with the J2 cable.



15. Controller Test:
With the unit powered ON, test the terminal voltage of the M+ terminal of the controller. It should read 0 volts until you begin to push the thumb throttle or twist the twist grip. The voltage should increase proportionately to how much throttle you are giving it up to the max 24V battery terminal voltage seen in Step 4.

If not, and there is 24V battery voltage at the B+ terminal of the controller (Step 12), then the controller is faulty. Replace controller.

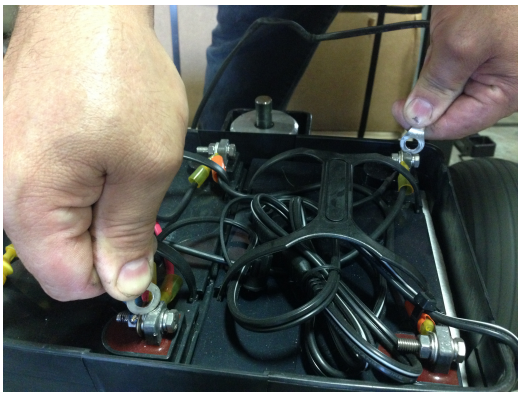
Caution: ensure the drive wheels are raised off the ground so the unit can not move if the drive wheels spin.

16. Electric Transaxle Test:
Take the loom off the wires from the transaxle to the controller and make sure all connections between the transaxle and controller, if any, are good. Test the unit again, if there was a loose or bad connection.

If the unit has a Parking Brake, mechanically disengage the brake by pulling the lever aft or back towards the tug handle.

Disconnect the wires from the controller at the M+ and M- terminals.

Test the leads from the motor directly to the 24V terminals - firmly press one lead to either terminal, and then firmly and quickly press the other lead to the opposite 24V terminal. If you switch the leads to the opposite terminals, the transaxle will spin in the opposite direction.



If there is no response when touching the 24V terminals, then the motor is bad and needs replaced.

Table 1: LED CODES

Green LED Code

LED Code	Explanation	Solution
Green Off	No power or switched off	1. Check if all wires are correct. 2. Check fuse and power supply.
Green On	Normal operation	That's great! You got solution!
Green & Red are both On		1. Software still upgrading. 2. Supply voltage too low or battery too high 3. The controller is damaged. Contact Kelly about a warranty repair.

Red LED Code

1,2	¤ ¤¤	Over voltage error	1. Battery voltage is too high for the controller. Check battery volts and configuration. 2. Regeneration over-voltage. Controller will have cut back or stopped regen. 3. This only accurate to ± 2% upon Overvoltage setting.
1,3	¤ ¤¤¤	Low voltage error	1. The controller will clear after 5 seconds if battery volts returns to normal. 2. Check battery volts & recharge if required.
1,4	¤ ¤¤¤¤	Over temperature warning	1. Controller case temperature is above 90℃. Current will be limited. Reduce controller loading or switch Off until controller cools down. 2. Clean or improve heatsink or fan.
2,2	¤¤ ¤¤	Internal volts fault	1. Measure that B+ & PWR are correct when measured to B- or RTN. 2. There may be excessive load on the +5V supply caused by too low a value of Regen or throttle potentiometers or incorrect wiring. 3. Controller is damaged. Contact Kelly about a warranty repair.
2,3	¤¤ ¤¤¤	Over temperature	The controller temperature has exceeded 100℃. The controller will be stopped but will restart when temperature falls below 80℃.
2,4	¤¤ ¤¤¤¤	Throttle error at power-up	Throttle signal is higher than the preset 'dead zone' at Power On. Fault clears when throttle is released.
3,1	¤¤¤ ¤	Frequent reset	May be caused by over-voltage, bad motor intermittent earthing problem, bad wiring, etc.

3,2	¤¤¤ ¤¤	Internal reset	May be caused by some transient fault condition like a temporary over-current, momentarily high or low battery voltage. This can happen during normal operation.
3,3	¤¤¤ ¤¤¤	Hall throttle is open or short-circuit	When the throttle is repaired, a restart will clear the fault.
3,4	¤¤¤ ¤¤¤¤	Non-zero throttle on direction change	Controller won't allow a direction change unless the throttle or speed is at zero. Fault clears when throttle is released.
4,1	¤¤¤¤ ¤	Regen or Start-up over-voltage	Motor drive is disabled if an over-voltage is detected at start-up or during regen. The voltage threshold detection level is set during configuration. The max threshold is about 1.25 times of controller rated voltage. I.e. you may set threshold lower than 60V for 48V controller.
4, 3	¤¤¤¤ ¤¤¤	Motor over-temperature	Motor temperature has exceeded the configured maximum. The controller will shut down until the motor temperature cools down.
The Red LED flashes once at power on as a confidence check and then normally stays Off. "1, 2" means the Red flashes once and after a second pause, flashes twice. The time between two flashes is 0.5 second. The pause time between multiple flash code groups is two seconds.			

WI TT-1016 100A / 200A Controller Trouble Shooting Guide

Please Record Readings Below

Step:	What is tested:	Reading:	What you should have:
4	24V Terminal Voltage.....	_____	26 - 29 Volts
	12V Battery 1.....	_____	13-14.5 Volts
	12V Battery 2	_____	13-14.5 Volts
5	Charger Test	_____	Good Charger
6	Is the Green Light on the Controller?	Y / N	Yes(Y)
7	Voltage	_____	Same as Step 4
8	Voltage	_____	Same as Step 4
9	J2 Cable Tight	Y / N	Yes
10	Connections Tight	Y / N	Yes
11	Voltage Increase?	Y / N	Yes
12	Power to Controller	_____	Same as Step 4
13	Fuse	_____	Same as Step 4
14	J2 Plug - Pin 1.....	_____	Same as Step 4
15	Controller	_____	Same as Step 4
16	Transaxle Response:	Y / N	Yes

1350 Chester Industrial Pkwy
Avon, OH 44011
1-216-941-9781
www.airtug.com
airtug@gmail.com