



QuiQ

SERIES

# QuiQ Troubleshooting Guide - JLG



**JLG P/N: 3128829**

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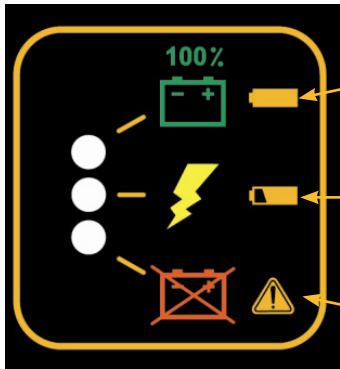
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# 1.0 Indications on the Charger 3-LED Display

- ✦ The charger may become hot during charging. Use hand protection to safely handle the charger during charging.
- ✦ Extension cords must be 3-wire cord no longer than 30m (100') at 10 AWG or 7.5m (25') at 16 AWG per UL guidelines.
- ✦ Only connect one QuiQ Charger to a single 120VAC 15A circuit, or the circuit may become overloaded.
- ✦ The charger will conduct a self-test after being powered on, visible by flashing all of its LEDs in sequence.



## Charge Completion Indicator (Green Light)

✦ When solid: Charging complete. Charger in maintenance mode.

## Charging Indicator (Amber Light)

✦ When solid: Charger output is active.  
 ✦ When flashing: Charging profile is displayed.

## Fault Indicator (Red Light)




✦ Charger error. Refer to troubleshooting information below.

## Troubleshooting Instructions - Overview

If a fault occurs, count the number of red flashes between pauses and refer to the table below.

Flashes	Cause	Solution
⏸️ 🔴 ⏸️	Battery high voltage	Check battery size and condition. This fault will clear automatically once the condition has been corrected.
⏸️ 🔴 🔴 ⏸️	Battery low voltage	Check battery size and condition. This fault will clear automatically once the condition has been corrected.
⏸️ 🔴 🔴 🔴 ⏸️	Charge timeout caused by battery pack not reaching required voltage; or charger output reduced due to high temperatures.	Check connections, that battery type matches selected charge profile and operate the charger at a lower ambient temperature. Reset the charger by interrupting AC power for 15+ seconds.
⏸️ 🔴 🔴 🔴 🔴 ⏸️	Battery could not be trickle charged up to minimum voltage.	Check for shorted or damaged cells. Reset the charger by interrupting AC power for 15+ seconds.
⏸️ 🔴 🔴 🔴 🔴 🔴 ⏸️	Charger shutdown due to high internal temperature.	Ensure sufficient cooling airflow. Reset the charger by interrupting AC power for 15+ seconds.
⏸️ 🔴 🔴 🔴 🔴 🔴 🔴 ⏸️	Internal charger fault	Reset the charger by interrupting AC power for 15+ seconds. Return to service depot if fault persists.

## 2.0 Detailed Fault Indications

Red Flashes	Explanation and Solution
	<p>High Battery Voltage Detected – starting voltage above 2.5V/cell or voltage during charge rose above 2.7V/cell (algorithm dependent).</p> <ul style="list-style-type: none"> <li>+ Check that the battery charger voltage is consistent with the battery pack voltage.</li> <li>+ Check for wiring errors.</li> <li>+ Occasionally a new, fully charged battery pack may cause this condition. Use this pack before charging it again.</li> <li>+ Disconnect any other sources during charging.</li> <li>+ If this problem does not clear after the battery voltage is measured to be less than 2.5V per cell, contact Delta-Q.</li> <li>+ This fault will automatically clear and the charger will restart charging when the voltage drops to within operating range.</li> </ul>
	<p>Low Battery Voltage Detected – starting voltage below 0.5V/cell</p> <ul style="list-style-type: none"> <li>+ Check the battery and connections to the battery.</li> <li>+ Check the nominal battery voltage. Confirm that the nominal battery voltage is the same as the charger voltage.</li> <li>+ If this problem does not clear after the battery voltage is measured to be higher than 1V per cell and all connections are good, contact Delta-Q.</li> <li>+ This fault will clear automatically when the returns within range.</li> </ul>
	<p>Charge Timeout - Indicates the battery failed to charge within the time allowed by the charge algorithm. This could occur if the battery is of larger capacity than the algorithm is intended for. In unusual cases it could mean charger output is reduced due to high ambient temperature. It can also occur if the battery is damaged, old, or in poor condition.</p> <ul style="list-style-type: none"> <li>+ Check the battery for damage such as shorted cells and insufficient water. Try the charger on a good battery.</li> <li>+ If the same fault occurs on a good battery, check the connections on the battery and connection to AC power, and AC voltage.</li> <li>+ Confirm that the nominal battery pack voltage is the same as the battery charger voltage.</li> <li>+ If a charger displays this fault on a battery pack, and the pack is of questionable status, reset the charger by disconnecting AC power for 30 seconds, and then reconnect the AC to start a new charge cycle. After a few charge cycles this problem could stop occurring as the pack “recovers.”</li> <li>+ This fault must be cleared manually by unplugging the AC, waiting 30 seconds and reconnecting the ac power.</li> </ul>

Red Flashes	Explanation and Solution
	<p>Check Battery - This fault indicates the battery pack could not be trickle charged up to the minimum level required for the normal charge cycle to be started.</p> <ul style="list-style-type: none"> <li>✦ Check that none of the battery pack connections between modules are reversed or incorrectly connected.</li> <li>✦ Check that one or more cells in the battery are not shorted.</li> <li>✦ Confirm that the nominal battery pack voltage is the same as the battery charger voltage.</li> <li>✦ Try the charger on a good battery.</li> <li>✦ If this fault occurs the battery pack is likely in poor condition. Try to recover the pack with a charger that can charge the individual batteries – such as an automotive charger. Be sure to set this charger to the appropriate voltage – 6V per 6V battery, 12V per 12V string/battery.</li> </ul>
	<p>Over-Temperature: This fault indicates the charger has become too hot during operation and has shut down. This extra fault indication (as opposed to the flashing ammeter described above), indicates an even higher temperature was reached inside the charger. Though not damaging to the charger, charge time will be extended significantly</p> <ul style="list-style-type: none"> <li>✦ This fault indication will not clear automatically, but the charger will restart charging automatically when the temperature drops. The fault indication must be cleared manually by unplugging the AC power, waiting 30 seconds and reconnecting the AC.</li> <li>✦ If possible, install the charger in a cooler location or increase cooling airflow to the cooling fins.</li> <li>✦ Confirm that dirt or mud is not blocking the cooling fins of the charger. If required, clean the charger by rinsing it with a low-pressure hose.</li> </ul>
	<p>QuiQ Internal Fault: This fault indicates that the batteries will not accept charge current, or an internal fault has been detected in the charger. This fault will nearly always be set within the first 30 seconds of operation. If it occurs after the charger has started charging normally, be sure to make a note of it.</p> <ul style="list-style-type: none"> <li>✦ Try to clear the fault by unplugging AC power, waiting 30 seconds and reconnecting the AC.</li> <li>✦ Check all battery connections. Look for a high resistance connection. The most likely reason for this fault is a fault in the battery such as a bad battery connection, an open cell, or insufficient water.</li> <li>✦ Other electrical hardware such as contactors, switches, etc. which are badly wired may also cause this fault.</li> <li>✦ This fault will occur if an internal fuse inside the charger blows. If the green wire is shorted to ground even momentarily this fuse will blow. To check the fuse, measure with an ohmmeter between the green and red wires with the AC disconnected. If a short circuit is not measured, the fuse has blown. Contact Delta-Q</li> <li>✦ If this fault occurs after battery charging has started, confirm that AC power was not interrupted and that all battery connections are good.</li> <li>✦ If all battery connections are good, an internal fault has been detected. Contact Delta-Q.</li> </ul>

# 3.0 QuiQ-dci Charger/Converter Troubleshooting

The DC-DC converter in the QuiQ-dci is a highly reliable, high performance unit. It has no operating indicators. If abnormal operating conditions arise, consult the symptoms and possible solutions below.

Symptom	Possible Causes and Solutions
<b>No or low output</b>	<ul style="list-style-type: none"><li>+ Input voltage out of range:<ul style="list-style-type: none"><li>+ 35 – 87V for the 48V model</li><li>+ 50 – 130V for the 72V model</li></ul></li><li>+ Unit overheating – increase cooling air flow</li><li>+ Short circuit detected</li><li>+ Poor connections – Inspect connections</li><li>+ Converter damaged</li></ul>
<b>No switched output</b>	<ul style="list-style-type: none"><li>+ Switched input voltage out of range:<ul style="list-style-type: none"><li>+ 8 – 87V for the 48V model</li><li>+ 8 – 130V for the 72V model</li></ul></li><li>+ Switching input circuit damaged from high voltage</li><li>+ Poor connections – Inspect connections</li></ul>
<b>Turn-on or turn-off delay greater than 3 seconds</b>	<ul style="list-style-type: none"><li>+ Switched input circuit variability – no action required</li></ul>
<b>Wiring or connectors overheating</b>	<ul style="list-style-type: none"><li>+ Wire gauge too small (minimum 18AWG)</li><li>+ More than 18A drawn from single connector</li></ul>

## 4.0 Other Conditions

Indication	Explanation and Solution
<p><b>AC on LED lit, charger won't start charging.</b></p>	<p>Charger has detected a condition that does not allow it to charge</p> <ul style="list-style-type: none"> <li>✦ This condition is generally corrected by resetting the charger by removing AC power for 30 seconds and reconnecting it.</li> </ul>
<p><b>Excessive battery watering or strong sulphur (rotten egg) smell</b></p>	<p>Overcharging or high battery temperature. These symptoms are unlikely to be caused by too high a charge current since the maximum charge current of the charger will be small compared to even a moderately sized battery pack. The most likely cause for this problem is incorrect charge algorithm setting and/or high ambient temperatures.</p> <ul style="list-style-type: none"> <li>✦ Confirm that the battery pack is not too small – Delta-Q chargers are usually used with batteries larger than 50Ah.</li> <li>✦ Confirm that the nominal battery voltage matches the charger output voltage.</li> <li>✦ Confirm the correct battery charge algorithm. If the battery pack is new, the algorithm will need to be changed if the pack is not the same as the old one. Refer to the Product Manual for instructions on how to determine and change the battery charge algorithm.</li> <li>✦ If the pack is older, it is possible sulphation has taken root. Increased resistance of the battery pack due to this will cause excessive heat and water usage.</li> </ul>
<p><b>Charger operates at low current only</b></p>	<p>Delta-Q charge algorithms only operate at a low current, usually 2-5A if the battery voltage is less than 2.0V/cell. This is to slowly recharge an over discharged battery to avoid damaging it.</p> <ul style="list-style-type: none"> <li>✦ Check the battery pack voltage, if it is &lt;2.0V/cell then this low current is normal.</li> </ul>
<p><b>Charger restarts automatically</b></p>	<p>There are two features of algorithms that may cause this:</p> <ul style="list-style-type: none"> <li>✦ Maintenance Mode – charger automatically restarts after 14d or 30d, or when the battery voltage falls below 2.08V/cell or 1.5V/cell. These settings are algorithm dependent.</li> <li>✦ Battery overvoltage – If the battery is very resistive, sometimes in new batteries, the voltage may rise so quickly the charger trips off due to overvoltage. It will then restart the charge cycle when the voltage falls back into range.</li> </ul>
<p><b>Difficulty changing the default battery charge algorithm</b></p>	<ul style="list-style-type: none"> <li>✦ The mode to change the battery charge algorithm can only be selected during the first 10 seconds of operation. Refer to the Product Manual for instructions.</li> <li>✦ If the 10 second window is missed, cycle AC power by unplugging the charger, waiting 30 seconds, and reconnecting AC power.</li> <li>✦ To extend Battery Charge Algorithm Change Mode by 30 seconds (120 seconds on newer models), connect the charger output to a good battery for approximately 1 second and then disconnect the battery again.</li> </ul>

# 5.0 QuiQ Charging Profiles

## QuiQ™ Charging Profiles

JLG Part Number:	0400236C 1001102932 1001136381 1001112111 1001171918
No.	Battery Type
5	Trojan 30/31XHS
8	Concorde 10xAh AGM
11	Generic 200-255Ah flooded constant power DV/DT
17	150-255Ah flooded or sealed lead acid
21	Exide flooded
23	Douglas flooded DV/DT
42	Discover AGM 80-150Ah
43	Discover AGM
151	Fullriver AGM 200-260Ah

JLG Part Number:	0400238E 0400241D 1001095003
No.	Battery Type
1	Trojan Flooded
2	Trojan T105 Tapped
3	Trojan T105 cp DV/DT
4	U.S. Battery Flooded
5	Trojan 30XHS
6	Deka 8G31 Gel
7	Trojan J305 cp DV/DT
8	Concorde 10xAh AGM
23	Douglas Flooded DV/DT
35	Concorde 2xxAh AGM

JLG Part Number:	1001103105
No.	Battery Type
42	Discover AGM 80-150Ah
43	Discover AGM
73	Generic 400Ah DV/DT
141	Fullriver 300Ah AGM
143	JLG Discover 400Ah
173	Accelerated 400Ah flooded cp DV/DT

JLG Part Number:	1001152650 1001197707
No.	Battery Type
23	JLG/Douglas constant power dv/dt
42	Discover AGM 80-150Ah
43	Discover AGM
73	Generic 400Ah DV/DT
141	Fullriver 300Ah AGM
143	JLG Discover 400Ah
173	Accelerated 400Ah flooded cp DV/DT

JLG Part Number:	1001129847 1001171917
No.	Battery Type
17	150-255Ah flooded or sealed lead acid

## Part Number Reference

JLG Part Number	Current Status	Factory Set Algorithm	Delta-Q Part Number
0400236C	In production	23	912-2400-J1
0400238E	Replaced by 1001112111	23	912-2400-J2
0400241D	Replaced by 1001102932	8	912-2400-J3
1001095003	Obsolete	8	912-2400-J4
1001103105	In production	8	912-4800-J5
1001102932	In production	8	912-2400-J6
1001136381	In production	42	912-2400-J6
1001112111	In production	23	912-2400-J7(B)
1001129847	In production	17	912-2400-06(B)
1001171917	In production	17	912-2400-11/12
1001171918	In production	23	912-2400-13/14
1001152650	In production	23	922-4854-05
1001197707	In production	43	922-4854-08

# 6.0 Charging Profile (Algorithm) Matrix

	Description	Optimised Battery	JLG Part Number (if available)	Approved Battery Manufacturers	Other Tested Batteries	May be Compatible with *
#1	150 - 260Ah Trojan flooded Temperature compensated	T105			T875, T1260, T1275, T145	Flooded 150-260Ah
#3	150 - 260Ah Trojan flooded non-temperature compensated	T105			T875, T1260, T1275, T145	Flooded 150-260Ah
#5	80 - 150Ah Trojan flooded Temperature compensated	Trojan 31XHS			30XHS, 27TMX, SC225	Flooded 12V "Marine" batteries
#6	80 - 150 Ah Gel cell temperature compensated	DEKA 8G31			n/a	80-15Ah gel
#7	300 - 400Ah Trojan Flooded Batteries non-temperature compensated	Trojan J305			Trojan L16	Flooded 300-400Ah
#8	10XAh AGM, temperature compensated	Concord AGM	0400209	DOUGLAS DG12-100M US BATT 12V100AH AGM FULL RIVER HGL100-12X UNIVERSAL BATTERY UB121000	n/a	n/a
#11	180Ah - 250Ah Flooded batteries non-temperature compensated	US125's			US2200, US12VXC, US8VCX	Flooded 180-250Ah
#17	General Flooded/AGM battery charging Non Temperature compensated	180-260Ah batteries	100112112 0400215	HARRIS BATT. DISCOVER EVGC6A-A GES BATTERY A 1055 TROJAN T105 EAST PENN GC-110-WNL TROJAN T105 PLUS CHAMPION CHGC2 GC2 USBATT 2200 XC	Interstate GC2, Trojan T105, US2200XC, Deka 8CGG2	AGM, gel or Flooded 180-250Ah
#21	Exide Flooded 200-250Ah Temperature compensated	Exide 3ET200	ST2719	OLDHAM 3PZS240HP +CY	Exide FF06255, Exide 185PZB210	n/a
#23	JLG 200Ah Flooded, no-temperature compensated	Douglas Flooded	0400215 0400216 100112112 510089 510093	GES BATTERY A1055 TROJAN T105 EAST PENN GC-110-WNL TROJAN T105 PLUS CHAMPION CHGC2 GC2 US BATT 2200 XC US BATT EV-145-WNL HARRIS BATT. DISCOVER EVGC6A-A BATTERY 6V 225Ah TROJAN T145 (6V 260Ah)	n/a	n/a
#26	180-220Ah Gel Temperature compensated	Deka 8GCC2			n/a	150-230Ah gel
#28	180-220Ah Gel Float finish Temperature compensated	Deka 8GCC2			n/a	150-230Ah gel

## 6.0 Charging Profile (Algorithm) Matrix Continued

	Description	Optimised Battery	JLG Part Number (if available)	Approved Battery Manufacturers	Other Tested Batteries	May be Compatible with *
#42	Discover AGM 80-150Ah Temperature compensated	Discover EV31A	1001136380 1001178278	DISCOVER EV27A-A VISION EV27-90A-AM	n/a	80-150Ah AGM
#43	Discover AGM 200-400Ah Temperature compensated	Discover EVGC6A	1001112112 1001120445 1001114782 510094 1001177558	HARRIS BATT. DISCOVER EVGC6A-A US AGM 6V27 (210AH) DISCOVER EV 305A-A DISCOVER EVGT-6A (6V 255Ah) VISION 3FM180D-X	EVL16A, EV185A	200-400Ah AGM
#51	Exide 150-200Ah gel Temperature compensated	Sonnenschein 180Ah gel			n/a	150-200Ah gel
#52	Exide 80 -130Ah gel Temperature compensated	Sonnenschein 105Ah gel			n/a	80-130Ah gel
#62	Trojan Group 31 Flooded non-temperature compensated	Trojan 31XHS			30XHS, 27TMX, SC225	Flooded 12V "Marine" batteries
#71	140-200Ah Flooded non-temperature compensated	US8VCX			US2200, US12VXC	Flooded 140-200Ah
#72	250-335Ah Flooded non-temperature compensated	US305HC			n/a	Flooded 250-330Ah
#73	300-400Ah Flooded non-temperature compensated	USL16HC	1001105091	US BATT 6V-305-S	n/a	Flooded 330-400Ah
#125	FullRiver 160-200Ah AGM Temperature compensated	FullRiver DC180-6, DC224-6			n/a	160-200Ah AGM
#126	FullRiver 85-145Ah AGM Temperature compensated	FullRiver DC115-12			n/a	85-145Ah AGM
#141	FullRiver 300-370Ah AGM Temperature compensated	FullRiver DC335-6			n/a	300-370Ah AGM
#143	Discover AGM (200-400Ah), temperature compensated	Discover AGM	1001102534	DISCOVER EVL16A-A	n/a	200-400Ah AGM
#151	FullRiver 220-290Ah AGM Temperature compensated	FullRiver DC250-6			n/a	220-290Ah AGM
#173	JLG 400Ah flooded, non temperature compensated	US Battery L16	0400055 0400202	US BATT L16 US Batt L16HC	n/a	n/a

# 7.0 Instructions for using the Delta-Q QuiQ Programmer CT

## Contents of the QuiQ Programming Kit

JLG Part Number: 2915230

Delta-Q Part Number: 900-0089-02

- + QuiQ USB Interface Module
- + QuiQ Programmer CT Installation CD
- + USB Cable
- + Wire Assembly
- + QuiQ Programmer CT Instructions




## QuiQ Programming Kit

The QuiQ Programmer CT software is the preferred solution to easily program a QuiQ or QuiQ-dci charger. With QuiQ Programmer CT you can:

- + Add a battery charge algorithm
- + Select a different algorithm for battery charging
- + Delete a battery charge algorithm
- + Upgrade the software in your QuiQ or QuiQ-dci charger
- + View charge tracking data from charger
- + Upload Charge Events to Delta-Q's Online Charge Event Database

## Installing QuiQ Programmer CT Software and Drivers

You will find the QuiQ Programmer CT application on the QuiQ Programmer CT installation CD. QuiQ Programmer CT requires a PC with a minimum of 512 MB of RAM, running 32-bit or 64-bit edition of Windows XP, Vista, or 7.

To install QuiQ Programmer CT Insert the QuiQ Programmer Installation CT CD into the CD or DVD drive of your PC (label must be facing up). If the setup application does not launch the QuiQ Programmer CT installer automatically (this will depend on your computer's security settings and configuration), click the Start button (or  icon) on the taskbar; click My Computer; double click the drive labeled QuiQ Programmer CT; double click Setup.exe to launch the installer. You may also use Windows Explorer to navigate to Setup.exe. Then follow the instructions on your screen to complete the software installation.

**Note:** If your computer is running Windows XP Professional 64-bit, you must install x64 .NET Framework 2.0 before installing QuiQ Programmer CT. You will find x64 .NET Framework 2.0 on the CD in the subfolder Net64Fx. Double click Net64Fx.exe to start installing the software.

# Connecting a QuiQ Charger to your Computer

## ⚠️ WARNING

Charger outputs greater than 40 VDC pose an energy and/or shock hazard under normal use. Do not energize charger with AC until wire assembly clips are securely connected to charger output, and all leads are secured against movement.

## ⚠️ CAUTION

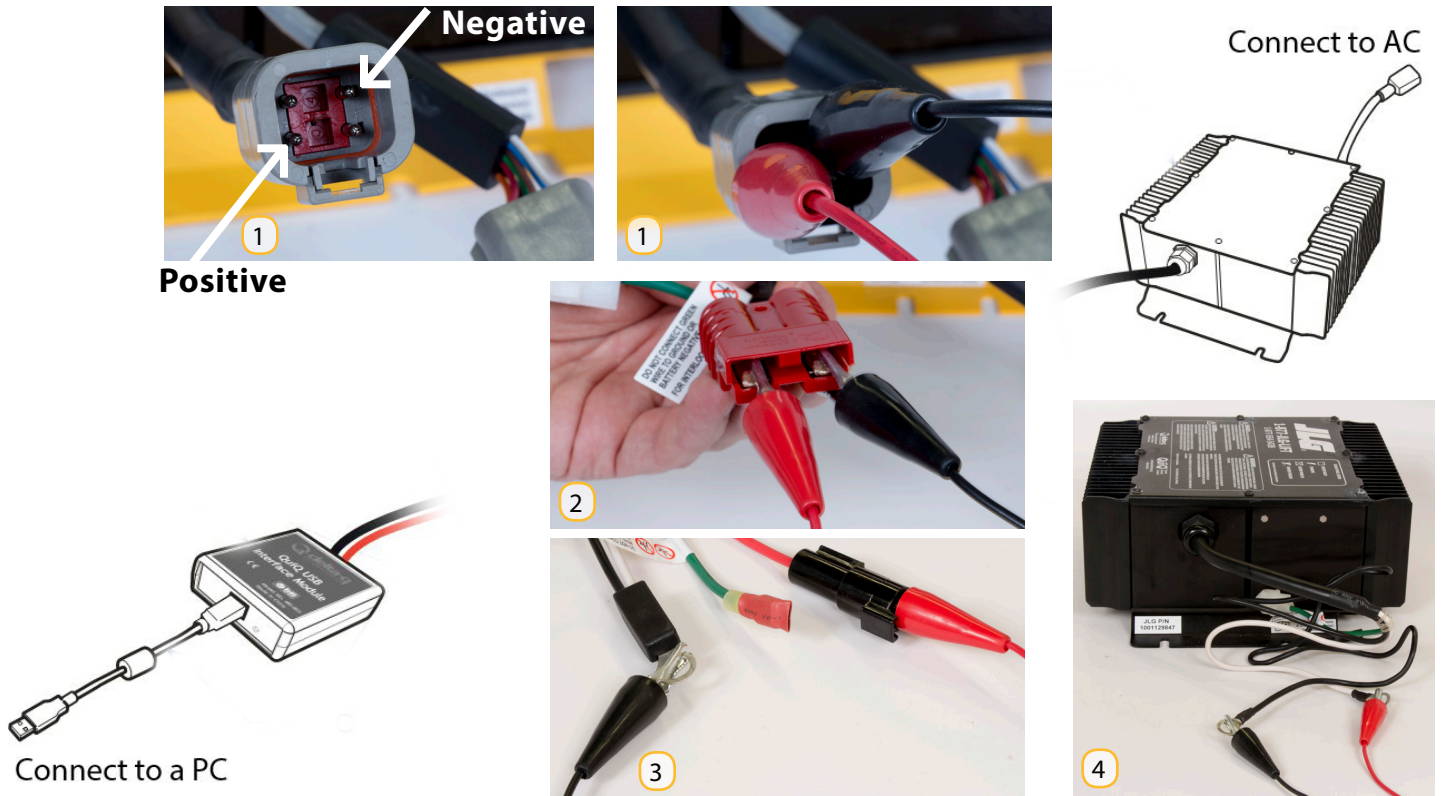
Ensure that the battery leads from the USB Interface Module are protected from sources of electrostatic discharge that may damage the unit.

To connect a QuiQ charger to your computer:

QuiQ Programmer CT must be installed on your computer before you connect a QuiQ charger. See Figure 1.

1. Disconnect AC power from the QuiQ charger.
2. Disconnect the QuiQ charger from all batteries.
3. Connect the Wire Assembly red clip to the charger positive wire (red).
4. Connect the Wire Assembly black clip to the charger negative wire (black).
5. Connect the Wire Assembly to the QuiQ USB Interface Module.
6. Connect the USB cable upstream end to an open USB port on your PC.
7. Connect the USB cable downstream end to the QuiQ USB Interface Module.
8. Upon connection, Windows will detect the QuiQ USB Interface Module and install drivers for it. If Windows does not detect the QuiQ Module you will need to reinstall QuiQ Programmer CT. See section Installing QuiQ Programmer CT Software and Drivers.
9. Connect the QuiQ charger to AC power.

**Note:** For a reliable connection, ensure that the bare leads do not touch each other or other metallic objects.

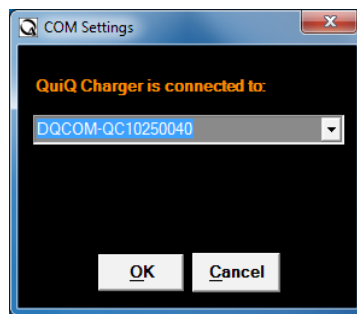


#	JLG Part No.	Delta-Q Part No.	Description
1	1001103105	912-4800-J5	Grey Deutsch connector
	1001102932	912-2400-J6	
2	1001136381	912-2400-J6_01	Red Anderson SB50 connector
	1001112111	912-2400-J7B	
3	400236	912-2400-J1	Positive Black Deutsch connector and negative ring terminal
4	1001129847	912-2400-06B	Black Charger (white and black ring terminals)

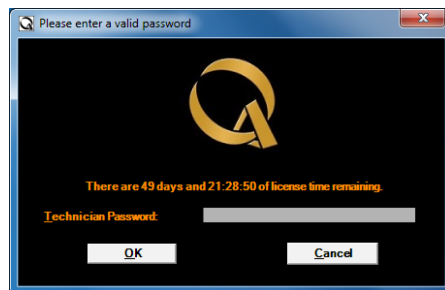
# Starting QuiQ Programmer CT

## Start Application in User Mode

1. To start QuiQ Programmer CT, select Program/QuiQ Programmer CT/QuiQ Programmer CT from the Start Menu.
2. If your installation has not been registered with a license key, starting the application in User Mode is the only option. First select the Dongle you wish to connect in the COM Setting dialog.



3. Then, the QuiQ Programmer CT starts. If your installation has been registered with a license key, then upon starting the application the login dialog appears:



Click on "Cancel" to start the application in User Mode.

4. The QuiQ Programmer CT interface will appear. The connection status area at the bottom of the window will indicate if the QuiQ USB Interface Module is properly connected to your PC and the QuiQ charger.

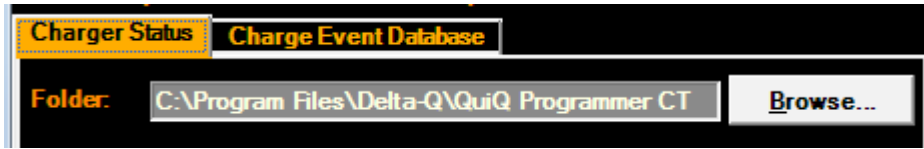


If the connection area displays Status: No Connection, then QuiQ Programmer is unable to communicate with your charger. This may be due to one of the following:

- ✦ The charger is not connected to the PC. Ensure that all wires are connected (see section Connecting a QuiQ Charger to your Computer).
- ✦ The wrong COM port was chosen. Exit QuiQ Programmer CT; restart QuiQ Programmer CT and choose the correct COM port (see step 2 above).
- ✦ The USB connection may be temporarily disabled. Exit QuiQ Programmer CT; disconnect the USB cable from your PC; wait 5 seconds, then re-connect the USB cable to your PC. Start QuiQ Programmer CT and choose the correct COM port. See Starting QuiQ Programmer step 2.
- ✦ The charger is not connected to an AC power source. Ensure that the charger is connected to AC.
- ✦ The QuiQ USB Interface Module driver was installed incorrectly. Exit QuiQ Programmer CT. Disconnect the QuiQ USB Interface Module USB cable from your PC. Remove QuiQ Programmer software from your computer. Reinstall QuiQ Programmer CT.

# Programming Delta-Q QuiQ and QuiQ-dci Chargers

Click on the Charger Status tab to activate the Charger Status tab. Then click Browse, to select the folder on your PC containing the QuiQ charger software and algorithms.



What do you want to do?	Icon	Action
Add a charge algorithm to the charger		In the Battery Charge Algorithms list, on the QuiQ Programmer CT user interface, select the algorithms that you want to add to the charger; click the Add to Charger icon.
Upgrade the charger software		In the Charger Software Versions list, on the QuiQ Programmer CT user interface, select the software version that you want to add to the charger; click the Add to Charger icon. Software may take up to 90 seconds to load.
Select a different default algorithm		In the Algorithms Present list on the QuiQ Programmer CT user interface, select the algorithm that you want to set as the default charge algorithm; click Set as Default icon.
Delete an algorithm from the charger		In the Algorithms Present list on the QuiQ Programmer CT user interface, select the algorithms that you want to delete from the charger; click the Delete from Charger icon. <b>Note:</b> You cannot undo an algorithm deletion.

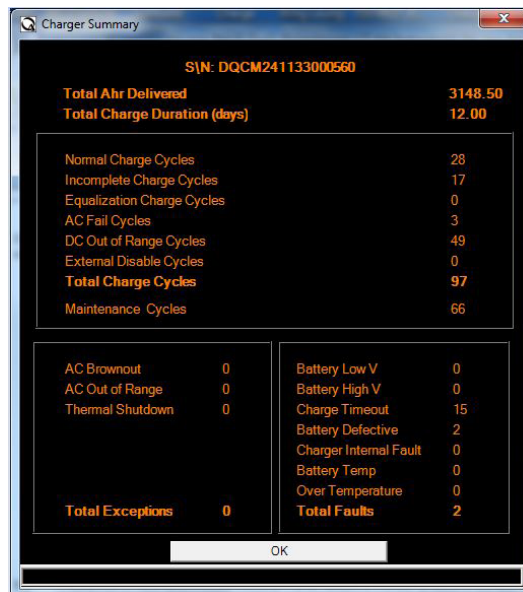
**Tip:** To select two or more items one after the other in a list, select the first item, press and hold down the SHIFT key on your keyboard, then select the last item. To select two or more items in a list that may not be one after the other, press and hold down the CTRL key, and select the items.

## View Charge Tracking Data with QuiQ Programmer CT

**Requirement:** To view the charge tracking data in your charger, your charger must have version 3.X software. Note that only chargers with serial number beginning with "DQCM" may have version 3.X software programmed in it.

### Start Application in User Mode

- Click on the Charge Event Database tab. This will display the Charger Summary Dialog for that summarizes charge data for the connected charger.



# 8.0 Selecting a Charge Profile

Delta-Q's QuiQ Charger can store up to 10 charging profiles, also called charge algorithms. This section shows how to identify the default profile and select a new profile using the "tap method."

QuiQ chargers are reprogrammable using the QuiQ Programmer supplied by Delta-Q to its OEM partners. Pre-2006 QuiQ chargers with serial number prefix DQCP allow pre-loaded profiles to be selected, but cannot be reprogrammed with new profiles.

## Identify the default profile

1. Required supplies include an insulated wrench, eye protection and gloves.



Figure 1: Insulated wrench and gloves

2. Disconnect the AC power source from the charger, either from the wall outlet, or from the IEC320 connector on the charger.

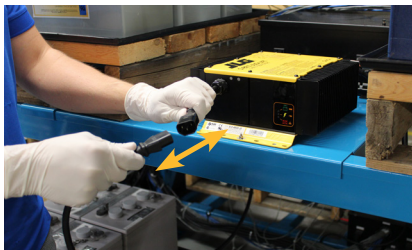


Figure 2: Disconnect AC power.

3. Use your insulated wrench to remove the positive lead from the positive terminal on the battery pack.

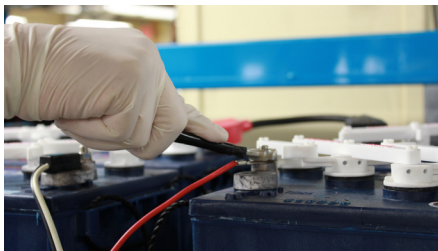


Figure 3: Remove positive lead from positive terminal on the battery pack

4. Reconnect AC power.



Figure 4: Reconnect AC power to the charger

5a. For 11 seconds after the self-test, the charger will display its default charge profile. Profiles are indicated by the number of consecutive flashes followed by a pause (e.g. #2 = ☀️☀️⏸️☀️☀️⏸️☀️☀️).



Figure 5: Default charge profile is displayed by the amber charging indicator light

5b. Charge profiles in the double digits will display in the same way, by one or more flashes, a pause, then one or more flashes (e.g. #42 = ☀️☀️☀️☀️⏸️☀️☀️).

6. After 11 seconds the the red fault light will then blink.



Figure 6: Red fault light blinking

## Select a new profile

7. Disconnect AC power (see Figure 2).

8. Reconnect AC power (see Figure 4).

9. Touch the positive lead to the positive terminal for 3 seconds (+/- 0.5 seconds), then remove the lead. You will see the next profile displayed on the charger's display. Repeat this step until you reach the desired charge profile.



Figure 7: Touch the positive lead to the positive terminal for 3 seconds

10. When the charger displays the desired charge profile, apply the positive lead to the positive battery terminal for 10 seconds. When the charge profile is locked, you will hear a click from the charger. See Figure 7 for how to apply the positive lead to the positive terminal.

11. Disconnect AC power, wait for the LED indicator display to turn off, then reconnect AC power. (See Figure 1,3)

12. Check the LED display to ensure that the desired charge profile is selected.

13. Disconnect the charger from AC power and wait for the LED indicator display to turn off. (See Figure 1)

14. Reconnect the positive lead to the positive battery terminal.



Figure 8: Reattach positive lead to the positive terminal after disconnecting AC power.

# 9.0 Battery Testing

As part of regular maintenance, battery testing using a discharge tester or calibrated load is recommended. Battery condition can be determined by comparing actual discharge capacity versus a battery manufacturer's stated reserve capacity (RC). Discharge testing can also help identify defective batteries or cells in battery packs which need attention. Industry standard battery discharge machines use the following rates of discharge to measure battery capacity:

Battery Pack Size (Nominal)	24V	36V	48V
Discharge Rate (Amps)	75	75	56
Cutoff Voltage (1.75Vpc)	21	31.5	42

### Procedure:

- + Check electrolyte levels in each cell and add distilled water as required to just ensure that the plates are not exposed. Do not overfill as electrolyte levels typically rise during charging
- + Using Delta-Q charger, fully charge the battery pack (indicated by solid green 100% LED)
- + Check electrolyte levels in each cell and add distilled water as required to restore each cell to the proper level (typically 1/8-1/4" below the bottom of the fill well)
- + Reconnect the charger and allow it to run to normal completion (indicated by solid green 100% LED)
- + Using a discharge tester/load rated for the nominal battery pack size, discharge the pack at a rate appropriate for the type of battery modules in use (see chart above) until the pack voltage reaches 1.75 volts per cell (see chart above)
- + Compare the duration of the discharge test (in minutes) to the manufacturer's rated reserve capacity for your specific battery make and model. A Trojan T-105 battery reserve capacity specification @75A is shown as an example:

## PRODUCT SPECIFICATIONS

BCI GROUP SIZE	TYPE	CAPACITY <sup>A</sup> Minutes		CAPACITY <sup>B</sup> Amp-Hours (AH)			
		@25 Amps	@75 Amps	5-Hr Rate	10-Hr Rate	20-Hr Rate	100-Hr Rate
<b>6 VOLT DEEP CYCLE BATTERY - W</b>							
GC2	T-105	447	115	185	207	225	250

There is no set pass/fail criteria for battery discharge times but use the following results as a guide:

- + 80 - 100 % rated capacity minutes - Good
- + 50 -80 % rated minutes - Acceptable
- + Under 50 % - One or more defective batteries. Battery service recommended

A method used to identify a battery with a weak or shorted cell(s) is to restart a discharge tester after reaching the cutoff voltage. Measure the voltage of each battery with the discharge tester running (or under load). A battery with a weak cell under load will have a lower voltage compared to other batteries in a pack.

