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# SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety, operating, and installation instructions – read before using charger.

**Battery Safety Information**

**Warning: Use charger only on battery systems with an algorithm selected that is appropriate to the specific battery type. Other usage may cause personal injury and damage. Lead acid batteries may generate explosive hydrogen gas during normal operation. Keep sparks, flames, and smoking materials away from batteries. Provide adequate ventilation during charging. Never charge a frozen battery. Study all battery manufacturers' specific precautions such as recommended rates of charge and removing or not removing cell caps while charging.**

**Electrical Safety Information**

**Danger: Risk of electric shock. Connect charger power cord to an outlet that has been properly installed and grounded in accordance with all local codes and ordinances. A grounded outlet is required to reduce risk of electric shock – do not use ground adapters or modify plug. Do not touch uninsulated portion of output connector or uninsulated battery terminal. Disconnect the AC supply before making or breaking the connections to the battery while charging. Do not open or disassemble charger. Do not operate charger if the AC supply cord is damaged or if the charger has received a sharp blow, been dropped, or otherwise damaged in any way – refer all repair work to qualified personnel. Not for use by children.**

# INFORMATIONS IMPORTANTES DE SÉCURITÉ

Conserver ces instructions. Ce manuel contient des instructions importantes concernant la sécurité et le fonctionnement.

**Information de Sécurité de la Batterie**

**Attention: Utiliser seulement sur les batteries 72V avec un algorithme approprié au type spécifique de batterie – voire le manuel. D´autres types de batteries pourraient éclater et causer des blessures ou dommages. Les batteries peuvent produire des gaz explosives en service normal. Ne jamais fumer près de la batterie et éviter toute étincelle ou flame nue à proximité de ces derniers. Fournisser la bonne ventilation lors du chargement. Ne jamais charger une batterie gelée. Prendre connaissance des mesures de précaution spécifiées par le fabricant de la batterie, p. ex., vérifier s´il faut enlever les bouchons des cellules lors du chargement de la batterie, et les taux de chargement recommandés.**

**Information de Sécurité Électrique**

**Danger: Risque de chocs électriques. Ne pas toucher les parties non isolées du connecteur de sortie ou les bornes non isolées de la batterie. Toujours connecter le chargeur à une prise de courant mise à la terre. Ne pas ouvrir ni desassembler le chargeur – referer toute reparations aux personnes qualifiés. Pas à l´usage des enfants.**

## Operating Instructions

1. Always use a grounded outlet. When using an extension cord, avoid excessive voltage drops by using a grounded 3-wire 12 AWG cord.
2. The charger will automatically turn on and go through a short LED indicator self-test (Models 912-xx0x will flash all LED's in an up-down sequence and Models 912-xx1x will alternatively flash its LED RED-GREEN) for two seconds. If the charger is connected to battery pack, a trickle current will be applied until a minimum voltage is reached. If the charger is used in an off-board application and the charger is waiting to be plugged into a battery pack, the charging algorithm number will be displayed for 11 seconds (see "Check / Change Charging Algorithm") before ultimately displaying an under-voltage fault (fault disappears when plugged into battery pack).
3. Once a minimum battery voltage is detected, the charger will enter the bulk charging constant-current stage. Models 912-xx0x will display the current to the battery on the bargraph and Model 912-xx1x will flash its LED GREEN off more than on to indicate <80% charge status. The length of charge time will vary by how large and how depleted the battery pack is, the input voltage (the higher, the better), and ambient temperatures (the lower, the better). If the input AC voltage is low (below 104VAC), then the charging power will be reduced to avoid high input currents (Models 912-xx0x 'AC' LED and Models 912-xx1x single LED both flash YELLOW). If the ambient temperature is too high, then the charging power will also be reduced to maintain a maximum internal temperature (Models 912-xx0x bargraph flashes and Models 912-xx1x single LED flashes YELLOW).
4. When the battery is at approximately 80% state of charge, the bulk stage has completed and an >80% charge indication is given (Models 912-xx0x turn on the '80%' LED and Models 912-xx1x will flash its LED GREEN on more than off). In the next phase known as the absorption or constant-voltage phase, the last 20% of charge is then returned to the battery. The charging could be terminated at this point if the vehicle requires immediate usage, however, it is highly recommended to wait until 100% charge indication is given to ensure maximum battery capacity and life.
5. A low current "finish-charge" phase is next applied to return and maintain maximum battery capacity (Models 912-xx0x will flash the '100%' LED).
6. When Models 912-xx0x '100%' LED or Models 912-xx1x single LED is continuously GREEN, the batteries are completely charged. The charger may now be unplugged from AC power (always pull on plug and not cord to reduce risk of damage to the cord). If left plugged in, the charger will automatically restart a complete charge cycle if the battery pack voltage drops below a minimum voltage or 30 days has elapsed.
7. If a fault occurred anytime during charging, a fault indication is given by flashing RED with a code corresponding to the error. There are several possible conditions that generate errors. Some errors are serious and require human intervention to first resolve the problem and then to reset the charger by interrupting AC power for at least 15 seconds. Others may be simply transient and will automatically recover when the fault condition is eliminated. To indicate which error occurred, a fault indication will flash RED a number of times, pause, and then repeat.
   [1 FLASH] Battery Voltage High: auto-recover
   [2 FLASH] Battery Voltage Low: auto-recover
   [3 FLASH] Charge Timeout: the charge did not complete in the allowed time. This may indicate a problem with the battery pack (voltage not attaining the required level), or that the charger output was reduced due to high ambient temperatures.
   [4 FLASH] Check Battery: the battery pack could not be trickle charged up to the minimum level required for the charge to be started. This may indicate that one or more cells in the battery pack are shorted or damaged.
   [5 FLASH] Over-Temperature: auto-recover. Charger has shutdown due to high internal temperature which typically indicates there is not sufficient airflow for cooling – see Installation Instructions 1). Charger will restart and charge to completion if temperature comes within accepted limits.
   [6 FLASH] QuiQ Fault: an internal fault has been detected. If Fault 6 is again displayed after interrupting AC power for at least 15 seconds, the charger must be brought to a qualified service depot.

## Maintenance Instructions

1. For flooded lead-acid batteries, regularly check water levels of each battery cell after charging and add distilled water as required to level specified by battery manufacturer. Follow the maintenance and safety instructions recommended by the battery manufacturer.
2. Make sure charger connections to battery terminals are tight and clean.
3. Do not expose charger to oil, dirt, mud or to direct heavy water spraying when cleaning vehicle.

See flip side for **Product Specifications** and **Installation Instructions** for qualified personnel.

# Specifications

**DC Output – see Operating Instructions**

| QuiQ Model: 912- | 24xx | 36xx | 48xx | 72xx |
|---|---|---|---|---|
| Voltage-nom (V) | 24 | 36 | 48 | 72 |
| Voltage-max (V) | 33.6 | 50.4 | 67.2 | 100 |
| Current-max (A) | 25 | 21 | 18 | 12 |
| Battery Type | Specific to selected algorithm | | | |
| Reverse Polarity | Electronic protection – auto-reset | | | |
| Short Circuit | Electronic current limit | | | |

**AC Input**

| All models | |
|---|---|
| Voltage-max (Vrms) | 85 – 265 |
| Frequency (Hz) | 45 - 65 |
| Current-max (Arms) | 12A @ 104VAC (reduced 20%<104V) |
| Current – nominal (Arms) | 10A @ 120VAC / 5A @ 230VAC |
| AC Power Factor | >0.98 at nominal input current |

**Operation**

| Charger Model: 912- | xx0x (10 LED) | xx1x (1 LED) |
|---|---|---|
| AC ON | Solid YELLOW | LED Active |
| AC LOW | Flash YELLOW | Flash YELLOW |
| Thermal Cutback | Flash Bargraph | Flash YELLOW |
| <80% Charge Indicator | - | Short Flash GREEN |
| >80% Charge Indicator | Solid YELLOW | Long Flash GREEN |
| 100% Charge Indicator | Solid GREEN | Solid GREEN |
| Fault Indicator | Flash RED | Flash RED |
| DC Ammeter | LED Bargraph | - |
| Bat Temp Compensation | Automatic | Optional |
| Maintenance Mode | Auto-restart if V<2.1Vpc or 30 days elapse | |

**Mechanical**

| All models | |
|---|---|
| Dimensions | 28.0 x 24.5 x 11.0 cm (11 x 9.7 x 4.3") |
| Weight | <5 kg (<11 lbs) w/ standard output cord |
| Environmental | Enclosure: IP46 |
| Operating Temperature | -30°C to +50°C (-22°F to 122°F), derated above 30°C, below 0°C |
| Storage Temperature | -40°C to +70°C (-40°F to 158°F) |
| AC input connector | IEC320/C14 (require ≥1.8m localized cord) |
| DC output connector | OEM specific w/ 12AWG wire |

**Regulatory**

| Safety | |
|---|---|
| EN 60335-1/2-29 | Safety of Appliances/ Battery Chargers |
| UL2202 | EV Charging System Equipment |
| UL1564 2nd Edition | Industrial Battery Charger |
| CSA-C22.2 No. 107.2 | Battery Chargers- Industrial |
| **Emissions** | |
| FCC Part 15/ICES 003 | Unintentional Radiators Class A |
| EN 55011 | Radio disturbance characteristics (Class A) |
| EN 61000-3-2 | Limits for harmonic current emissions |
| EN 61000-3-3 | Limits of voltage fluctuations and flicker |
| **Immunity** | |
| EN 61000-4-2 | Electrostatic discharge immunity |
| EN 61000-4-3 | Radiated, radio-frequency, EMF immunity |
| EN 61000-4-4 | Electrical fast transient/burst immunity |
| EN 61000-4-5 | Surge immunity |
| EN 61000-4-6 | Conducted Immunity |
| EN 61000-4-11 | Voltage variations immunity |

# Installation Instructions

**WARNING: The output of chargers with greater than 48V may pose an energy and/or shock hazard under normal use. These units must be installed in the host equipment in such a manner that the output cable and battery connections are only accessible with the use of a tool by qualified personnel.**

**1) Determine Mounting Location:**
While its sealed nature allows the charger to be mounted virtually anywhere, the choice of mounting location and orientation is extremely important. For optimum performance and shortest charge times, mount the charger in an area with adequate ventilation. The charger should also be mounted in an area that will be relatively free of oil, dirt, mud, or dust since accumulations within the fins of the charger will reduce their heat-dissipating qualities. Optimal cooling also occurs when the charger is mounted on a horizontal surface with the fins vertical. More airflow from below the charger will help cool the fins, so mounting above open areas or areas with cut-outs for airflow is desirable. Contact Delta-Q for information on other mounting orientations. As the charger may get hot in operation, the charger must be installed such that risk of contact by people is reduced. The charger's AC plug must be located at least 18" above the floor/ ground surface and the status display must be visible to the user.

**2) Mounting Procedure:**
Mount the charger by the mounting plate using appropriate fasteners (i.e. 1/4" or M6 with locking hardware). For UL2202 compliance, a 12AWG green bonding wire with ring terminals must be attached from the bonding stud located on the front of the charger (identified by ⏚) to the vehicle frame. The vehicle connection must be made using corrosion resistant hardware (e.g., a #10 stainless steel machine screw with at least two threads of engagement and, if required, a paint piercing washer).

**3) DC Battery Connection Procedure:**
a) The green wire outputs battery voltage when the charger is not plugged into AC to provide an interlock function – see Fig. 1. **If used, a user-supplied 1A fast-blow external fuse must be installed inline to prevent damage. Shorting or drawing more than 1A may damage charger and void the warranty.**
b) Securely fasten the black ring terminal from the charger to the negative terminal ("-", "NEG", NEGATIVE") of the battery pack.
c) Check that the correct charge algorithm is being used – refer to section 4). Securely fasten the red ring terminal to the positive terminal ("+", "POS", "POSITIVE") of the battery pack.

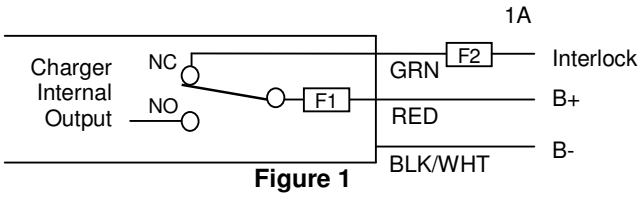


**Figure 1**

**4) Check / Change Charging Algorithm:**
The charger comes pre-loaded with algorithms for batteries as detailed in Table 1. If your specific battery model is not listed, please contact Delta-Q.
Each time AC power is applied with the battery pack NOT connected, the charger enters an algorithm select/display mode for approximately 11 seconds. During this time, the current Algorithm # is indicated on the '80%' LED (Models 912-xx0x) or on the single LED (Models 912-xx1x). A single digit Algorithm # is indicated by the number of blinks separated by a pause. A two digit Algorithm # is indicated by the number of blinks for the first digit followed by a short pause, then the number of blinks for the second digit followed by a longer pause.
To check / change the charging algorithm:
a) Disconnect the charger positive connector from battery pack. Apply AC power and after the LED test, the Algorithm # will display for 11 seconds.
b) To change algorithm, touch positive connector during the 11 second display period to the battery pack's positive terminal for 3 seconds and then remove – the Algorithm # will advance after 3 seconds. Repeat until desired Algorithm # is displayed. A 30 second timeout is extended for every increment. Incrementing beyond the last Algorithm moves back to the first Algorithm. After desired Algorithm # is displayed, touch the charger connector to the battery positive until the output relay is heard to click (~10 seconds) – algorithm is now in permanent memory.
c) Remove AC power from the charger and reconnect the charger positive connector to the battery pack. It is highly recommended to check a newly changed algorithm by repeating step 4) above.

| Alg # | Battery Type |
|---|---|
| 43 | Discover AGM |
| 27 | Crown CR-325 |
| 21 | Exide Flooded |
| 12 | Exide/Sonnenschein Gel |
| 7 | J305 DV/DT CP |
| 6 | DEKA 8G31 Gel |
| 5 | Trojan 30/31XHS |
| 4 | US Battery USB2200 |
| 3 | T105 DV/DT CP |
| 1 | Trojan T105 |

**Table 1.**

**Product warranty is two years - please contact dealer of original equipment for warranty service.**

**Note: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.**

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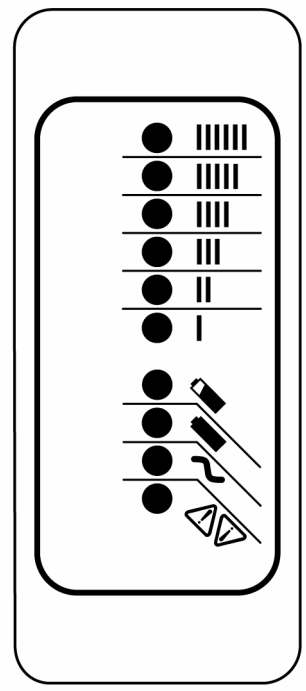
# QuiQ Charger Troubleshooting Guide

Delta-Q's QuiQ charger is designed for a long, trouble-free service life. Occasionally, the user may encounter abnormal operation which can usually be corrected by following the procedures in this guide.

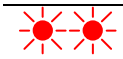
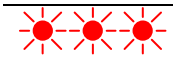
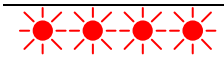
## Indications on the Charger 10-LED Display



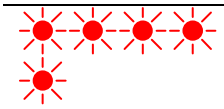
LED indications following "Power-On Self Test":

| | | |
|---|---|---|
| **Ammeter** (Amber) | **Solid:** | Displays approximate scale of current output during bulk phase. Also indicates algorithm #1-6 for 11 seconds if no battery is connected. |
| | **Flashing:** | High internal charger temperature. Current output reduced.<br>• Provide better airflow to the charger.<br>• Try to move the charger to a cooler location.<br>• Confirm that dirt or mud is not blocking the cooling fins of the charger. Clean the charger. Rinse charger with low pressure hose if required. Do not use high pressure. Do not use a pressure washer. |
| **80% Charge** (Amber) | **Solid:** | Bulk charge phase complete, 80% charged. In Absorption phase. |
| | **Flashing:** | With no battery connected, indicates algorithm # selected by number of flashes. |
| **100% Charge** (Green) | **Solid:** | Charging complete. Charger in Maintenance Mode. |
| | **Flashing:** | Absorption phase complete. In Finish phase |
| **AC On** (Amber) | **Solid:** | AC Power good |
| | **Flashing:** | Low AC Voltage, check voltage and extension cord length (max 100', 12-AWG or 50' 14-AWG). |
| **Fault** (Red) | **Flashing:** | Charger error. Check code and refer to troubleshooting guide below. |

## Fault Indications:

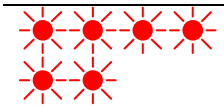
| Fault LED Flashes (Red) | Explanation and Solution |
|---|---|
|  | High Battery Voltage Detected<br>• Check that the battery charger voltage is consistent with the battery pack voltage. The first two digits of the four digit model name indicate the battery voltage the charger supports.<br>• Check for wiring errors.<br>• High battery voltage could also occur if there is another source charging the battery. Disconnect any other sources during charging.<br>• If this problem does not clear after the battery voltage is confirmed to be less than 2.4V per cell, return the charger for service.<br>• This fault will automatically clear and the charger will restart charging when this problem is removed. |
|  | Low Battery Voltage Detected<br>• Check the battery and connections to the battery.<br>• Check the nominal battery voltage. The first two digits of the four digit model name indicate the battery voltage the charger supports. Confirm that a nominal battery voltage is the same as the charger voltage.<br>• If this problem does not clear after the battery voltage is confirmed to be higher than 1V per cell and all connections are good, return the charger for service.<br>• This fault will clear automatically when the low battery voltage problem is rectified. |
|  | Charge Timeout - Indicates the battery failed to charge within the allowed time. 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.<br>• Check the battery for damage such as shorted cells and insufficient water. Try the charger on a good battery.<br>• If the same fault occurs on a good battery, check the connections on the battery and connection to AC power, and AC voltage.<br>• Confirm that the nominal battery pack voltage is the same as the battery charger voltage.<br>• 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.”<br>• This fault must be cleared manually by unplugging the AC, waiting 30 seconds and reconnecting the ac power. |
|  | 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.<br>• Check that none of the battery pack connections between modules are reversed or incorrectly connected.<br>• Check that one or more cells in the battery are not shorted.<br>• Confirm that the nominal battery pack voltage is the same as the battery charger voltage. |

- Try the charger on a good battery.
- 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 cells – such as an automotive charger. Be sure to set this charger to the appropriate voltage – 6V per 6V battery, 12V per 12V string/battery.



Over-Temperature: This fault indicates the charger has become too hot during operation. 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

- 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.
- If possible, install the charger in a cooler location or increase cooling air flow to the cooling fins.
- 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. Do not use high pressure. Do not use a pressure washer.



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.

- Try to clear the fault by unplugging AC power, waiting 30 seconds and reconnecting the AC.
- 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.
- 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. Return unit to a service depot to have this fuse replaced.
- For software revision 0.81 or older, this fault may indicate that the input or output voltage went out of range. Check input and output connections before returning the unit to a service depot. Charger may need to be brought to a service depot to have its software upgraded. Refer to the lower right hand corner on the back of the Product Manual to determine the software revision.
- If this fault occurs after battery charging has started, confirm that AC power was not interrupted and that all battery connections are good.
- If all battery connections are good, an internal fault has been detected and the charger must be brought to a qualified service depot.

## Other Indications:

| Indication | Explanation and Solution |
|---|---|
| **AC On LED Lit, Charger won't start charging.** | Charger has detected a condition that does not allow it to charge |

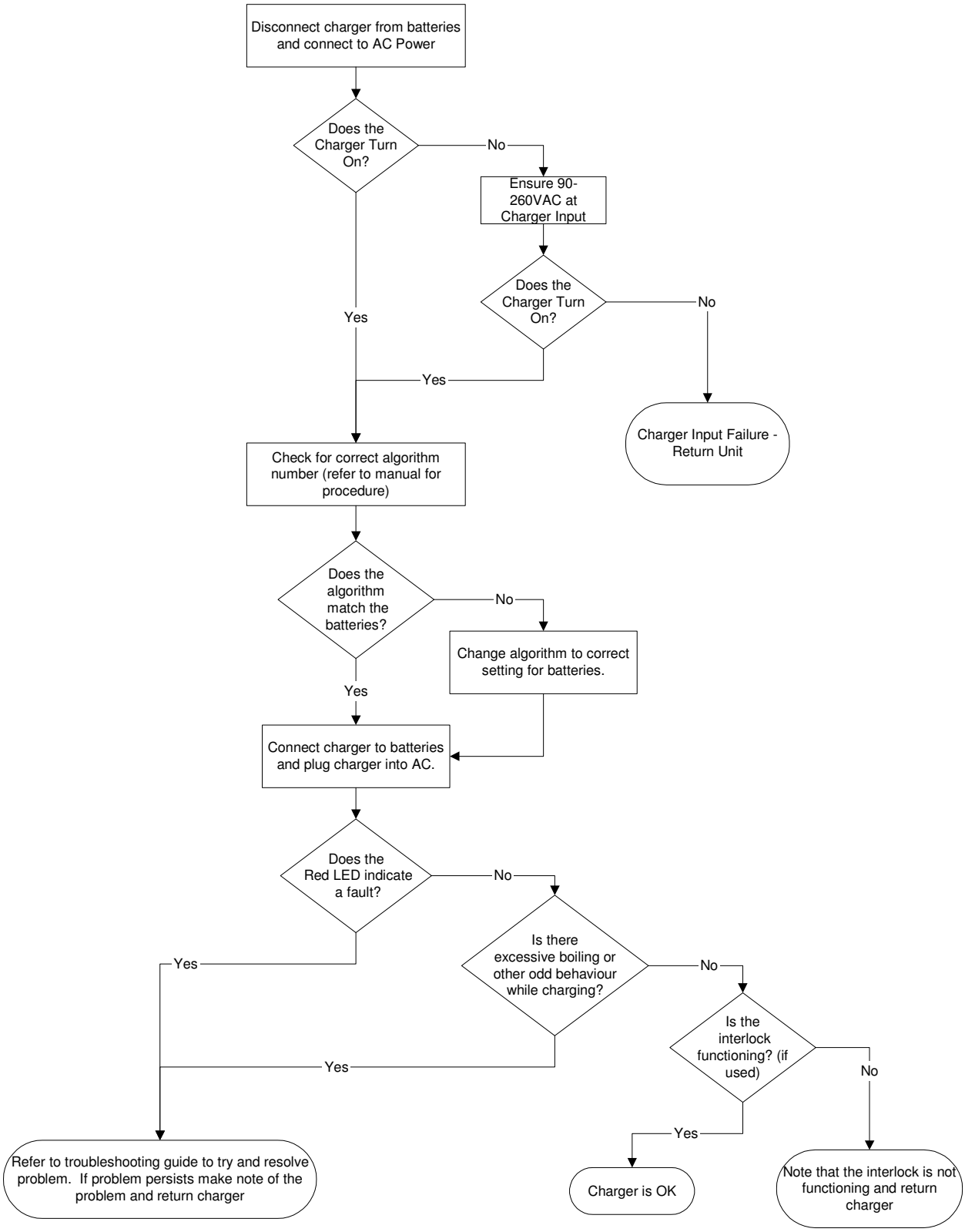
- Confirm battery connections are good.
- The nominal voltage for a lead acid battery is 2 V per cell. For example, a 48V battery will have 48/2 = 24 cells.
- If the battery voltage is greater than 2.5V per cell, the charger will not start charging.
- If the battery voltage is less than 0.5V per cell, the charger will not start.
- For software revisions 0.81 or lower, the charger will not start charging if the battery voltage is less than 1V per cell. Refer to the lower right hand corner of the back of the Product Manual to determine the software revision.
- Check for any fault codes that might be set and refer to the descriptions above.
- A fully charged battery will draw very little current, but will not show 100% charged immediately. The charger will change to Absorption mode in under 5 minutes once the conditions for the end of bulk charge have been met. The 80% LED will illuminate at this time. During the final phase of charging, the battery will only accept a very small current – the charger is unable to accelerate this portion of the charge cycle without damaging the battery.

| | |
|---|---|
| **Excessive Battery Watering or Strong Sulphur (Rotten Egg) Smell** | 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.<br><br>• Confirm that the battery pack is not too small – usually > 50Ah.<br>• Confirm that the nominal battery voltage matches the charger output voltage.<br>• 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.<br>• If the output voltage of the charger seems excessive, return the charger for service. Contact Delta-Q to get the expected battery voltage settings for the charger in question. Be sure to have the charger's serial number and charge algorithm setting available when calling. |
| **Difficulty Changing the Default Battery Charge Algorithm** | 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.<br><br>If the 10 second window is missed, cycle AC power by unplugging the charger, waiting 30 seconds, and reconnecting AC power.<br><br>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. |

## General Troubleshooting

Should the condition of a charger be in doubt, the flow chart on the next page should be followed to check the charger's operating condition.

# Delta-Q Technologies
# QuiQ Charger Troubleshooting Flow Chart



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# QuiQ Programmer User Manual

### *PART ONE – Install QuiQ Programmer Software and Drivers*

Insert the QuiQ Programmer Installation CD into your PC. The setup program should begin automatically, if not run "D:\Setup.exe", where D: is your CD-ROM drive.

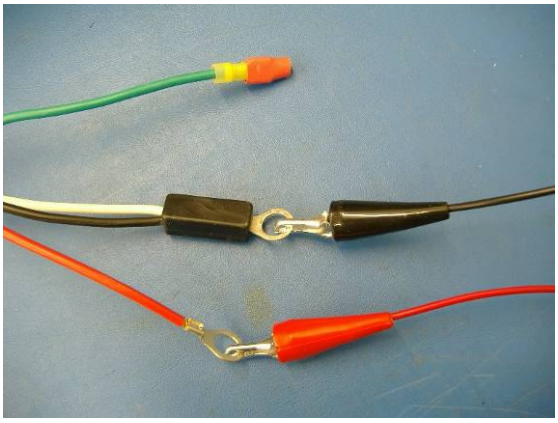
Follow the instructions on screen to complete the installation of the software.


### *PART TWO – Connecting a QuiQ charger to your computer*

After installing the necessary software (see above), you are ready to connect your QuiQ charger to the computer with the QuiQ USB Interface Module.

**Step 1 – Disconnect AC power from QuiQ charger**

**Step 2 – Disconnect QuiQ charger from batteries and connect the crocodile clips**



The actual connectors may be different than shown above.

*NOTE: For most reliable communications, ensure that the bare leads do not touch each other or anything metal.*

**Step 3 – Connect USB connector to PC**

Windows automatically installs the correct drivers upon connection. If Windows does not recognize the device, then you will need to reinstall the drivers (see PART ONE above).

**Step 4 – Re-connect AC power.**

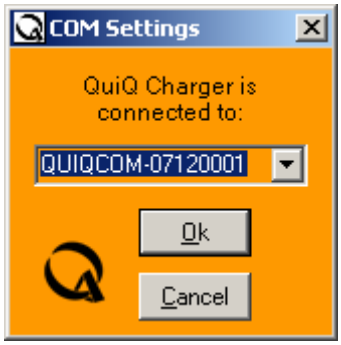
You are now ready to communicate with the QuiQ Charger.

***PART THREE – Using the QuiQ Programmer***

**Step 1 – Launch the QuiQ Programmer from the Windows Start Menu**

Click on Start->Programs->QuiQ Programmer and then select the QuiQ Programmer item.

**Step 2 – Select your COM port**

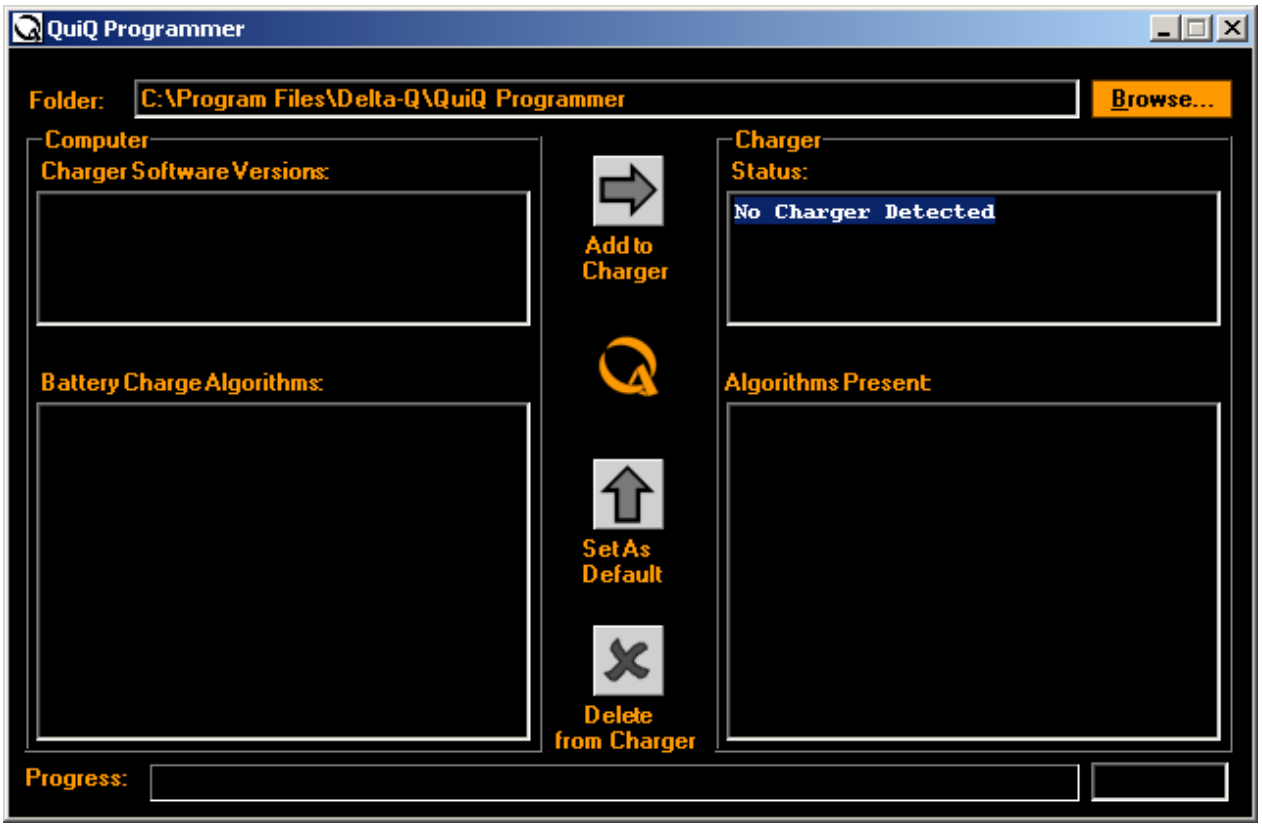



Please select the correct port to use, and click OK to continue. The latest version of the QuiQ USB Interface Module shows up as a "QUIQCOM" device. Older versions show up as "COM" devices, which are assigned by Windows, and detected automatically.

**Step 3 – Verify communications with the charger** (See screen image below)

The "No Charger Detected" message indicates that the QuiQ Programmer is unable to communicate with your charger. This could be due to one of the following reasons:

1. The charger is not connected properly to the PC. Check that all wires are connected and not touching each other.
2. The wrong communication device is selected. Close the QuiQ Programmer and try again with another communication device.
3. The charger does not have AC power.
4. The QuiQ USB Interface Module driver was not installed correctly.



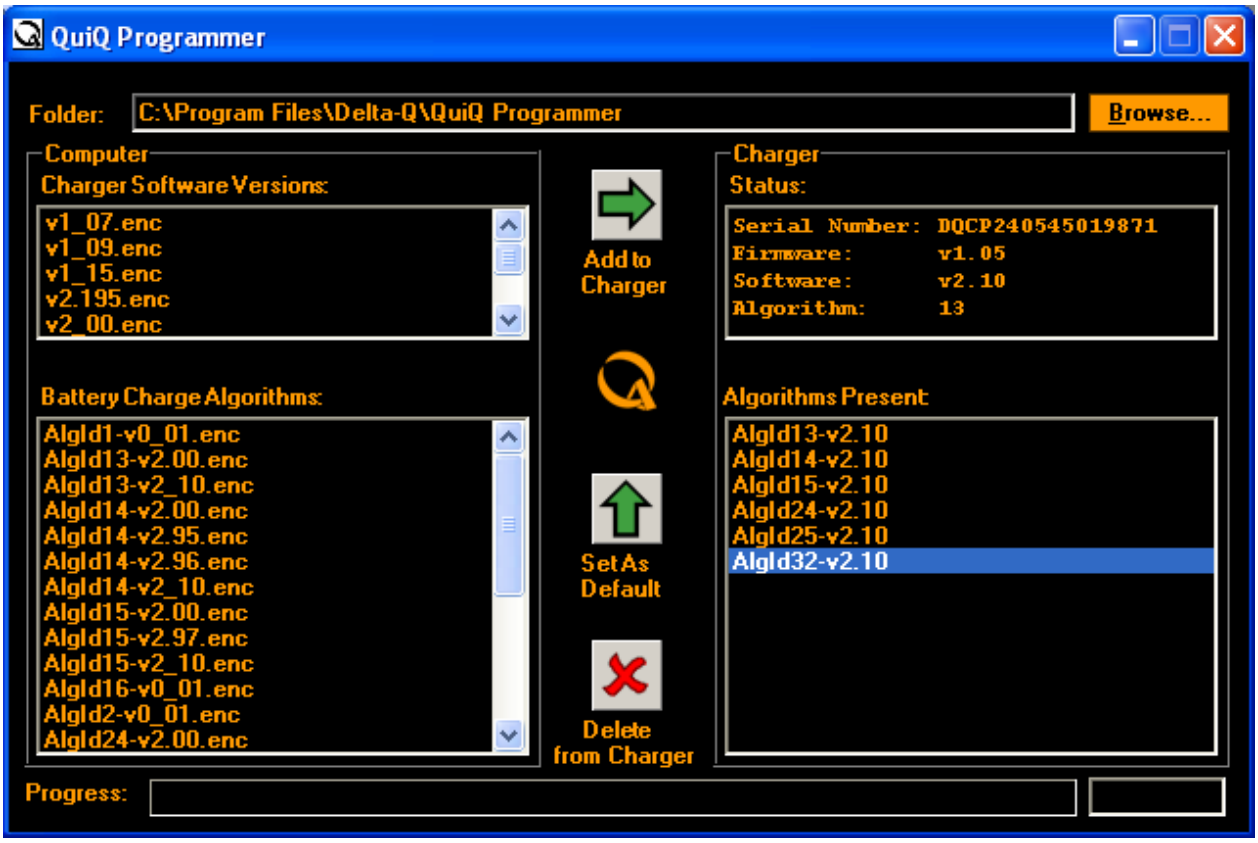
**Step 4 – Update the charger** (See screen image below)

| Icon | Action |
|---|---|
|  | **To delete a charge algorithm from the charger:**<br>Select the algorithm(s) you want to remove from the Charger's list of Algorithms Present, and click the red "X" icon. The algorithm(s) will be removed from the charger. |
|  | **To add a charge algorithm to the charger:**<br>Select the algorithm(s) you want to add from the Computer's list of Battery Charge Algorithms, and click the right arrow icon. The algorithm(s) will be added to the charger. It will take around 1-2 seconds to load.<br>**-or-**<br>**To upgrade the software of the charger:**<br>Select the version of software you want to add from the Computer's list of Charger Software Versions, and click the right arrow icon. It will take around 45 seconds to load. |

| | |
|---|---|
|  | **To selecting a different charge algorithm for charging**<br>Select which algorithm you would like to set as the default charge algorithm from the Charger's list of Algorithms Present, then click the up arrow icon. The default algorithm will be updated. |

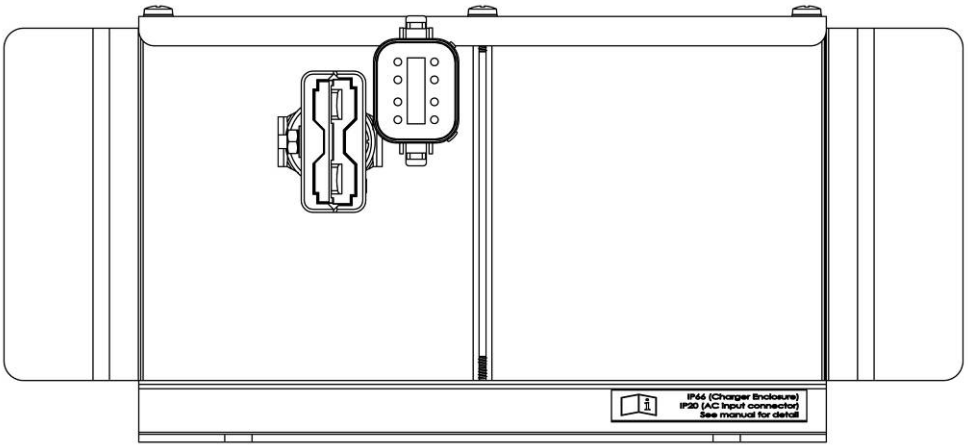
***Enjoy!***



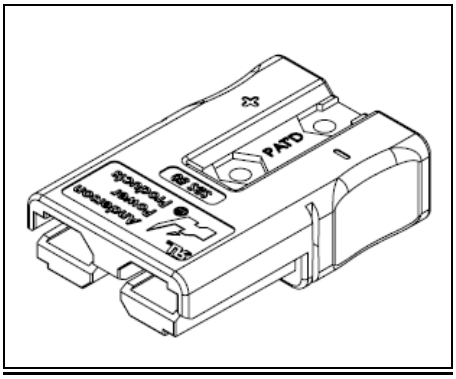


### 3.3.2 24V / 36V / 48V / 72V / 84V / 96V Model

**912-2454, 912-3654, 912-4854, 912-7254, 912-8454, and 912-9654**




## DC Output Connector



**Connector:** 24V – Red (SBS50RED)
36V – Gray (SBS50GRA)
48V – Blue (SBS50BLU)
72V – Green (SBS50GRN)
84V – Black (SBS50BLK)
96V – Brown (SBS50BRN)

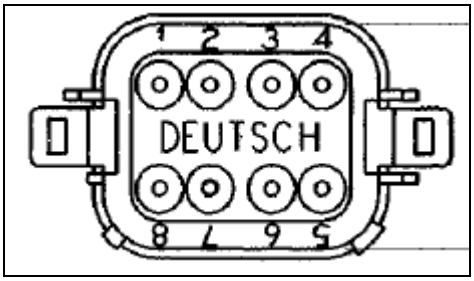
**Mates with:** Same as above, depending on voltage.

**Recommended Contact:** 1339G3 with 12AWG wire

**Pin Configuration**

| Conn. Pin No. | Wire Dia. (AWG) | Description | Notes |
|---|---|---|---|
| "-" | 6 – 16 | Battery Negative | Minimum recommended wire gauges: |
| "+" | 6 - 16 | Battery Positive | 24V / 36V: 12AWG<br>48V / 72V: 14AWG (use 5913 with 1339G2)<br>84V / 96V: 16AWG (use 5913 with 1339G2) |

## Signal Connector




**Connector:** Deutsch DT06-08SA

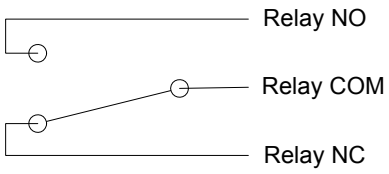
**Mating Connector:** Deutsch DT04-08PA with W8P wedge lock

**Recommended Contacts:** 1060-16-0122, stamped & formed (supports 14-18AWG)
0460-202-16141, solid (supports 16-20AWG)

**Supported Wire Insulation:** 2.24-3.68mm diameter (0.088-0.145" dia)

**NOTE:** Sealing Plug 114017 will be required for pin 8

**Pin Configuration**

| Conn. Pin No. | Wire Dia. (AWG) | Description | Notes |
|---|---|---|---|
| 1 | 14 – 20 | Temp Sense + | Connect to NTC 10k 5% Thermistor.<br>***IMPORTANT:*** Connect to Battery Negative or Temp Sense Negative if not used. |
| 2 | 14 – 20 | Temp Sense - | Internally connected to battery negative;<br>10k NTC 5% Thermistor.<br>See *Accessory Information* below. |
| 3 | 14 – 20 | Relay NC | Normally Closed |
| 4 | 14 – 20 | Relay COM | Common, 1A maximum. Inline 1A fuse installation recommended.<br>  |
| 5 | 14 – 20 | Relay NO | Normally Open |
| 6 | 14 – 20 | LED + | Red Cathode, 4.5mA<br>See *Accessory Information* below. |
| 7 | 14 – 20 | LED - | Green Cathode, 4.5mA<br>See *Accessory Information* below. |
| 8 | - | NOT USED | Install sealing plug 114017 |