

1 kW Industrial Battery Charger

QuiQ Charger - Tennant Product Manual

This manual contains important safety and operating instructions for versions of the QuiQ or QuiQ-dci charger / DC-DC converter installed on Tennant floor cleaning machines (Model nos. 912-3610 / 912-3610-T2 / 913-2410-01 / 913-3610-T3. Please read this information before using your Delta-Q QuiQ Charger. For manufacturer contact information and technical support resources, please visit delta-q.com/support.



Warning

Use charger only 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 (e.g. maximum charge rates and if cell caps should be removed while charging).



Attention

Utiliser le chargeur seulement avec un algorithme approprié au type spécifique de batterie. D'autres types de batteries pourraient éclater et causer des blessures ou dommages. Les batteries peuvent produire des gaz explosifs en service normal. Ne jamais fumer près de la batterie et éviter toute étincelle ou flamme nue à proximité des batteries. Fournissez une ventilation adéquate 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, et les taux de chargement.



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 portions of output connector or uninsulated battery terminals. Disconnect the AC supply before making or breaking the connections to the battery. Do not open or disassemble charger. Do not operate this charger if the AC supply cord is damaged or if the charger has received a sharp blow, been dropped, or is damaged in any way – refer all repair work to the manufacturer, or qualified personnel. This charger is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge on electrical systems and battery charging, unless they have been given supervision or instruction concerning use of the charger by a person responsible for their safety. Children should be supervised to ensure that they do not play with the charger.



Danger

Risque de décharge électrique. 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. Déconnectez la source AC avant de faire ou défaire les connexions à la batterie en chargement. Ne pas utiliser le chargeur si le cordon d'alimentation AC est endommagé ou si le chargeur est abîmé suite à une chute ou autre incident. Ne pas ouvrir ni désassembler le chargeur – référer toute réparation aux personnes qualifiées. Cet appareil n'est pas destiné à un usage par des personnes (dont les enfants) avec des facultés motrices, sensorielles ou mentales réduites, ou ayant une expérience et des connaissances insuffisantes, à moins qu'elles sont sous la supervision ou reçoivent les instructions sur l'utilisation de l'appareil d'un répondant garant de leur sécurité. Les enfants devraient être surveillés afin qu'il ne jouent en aucun temps avec l'appareil.

Maintenance Instructions

1. Do not expose charger to high pressure water spray when cleaning the Tennant floor cleaning machine.
2. The enclosure of the charger meets IP66, making it dust-tight and protected against powerful water jets. The AC connection is rated to IP20, which is not protected against water. Protect the AC connection if used in wet or dusty environments.
3. If the detachable input power supply cord set is damaged, replace with a cord that is appropriate for your region:
 - ✦ This charger is provided with a cord set for connection to outlets operating at nominal 120 Volts (or 240 Volts as appropriate). If the input plug does not fit the power outlet, contact Delta-Q Technologies for the proper cord set terminating in an attachment plug of the proper configuration for the power outlet.
 - ✦ 'North America: UL or CSA listed / approved detachable cord, 3 conductor, 16AWG minimum and rated SJT; terminated in a grounding type IEC 60320 C14 plug rated 250V, 13A minimum
 - ✦ For all other regions: Safety approved detachable cord, 3 conductor, 1.5mm² minimum, rated appropriately for industrial use. The cord set must be terminated on one end with a grounding type input connector appropriate for use in the country of destination and, on the other end, an output grounding type IEC 60320 C14 plug.

Operating Instructions

- ✦ Always connect the charger to a grounded outlet. When using an extension cord, avoid excessive voltage drops by using a grounded 3-wire 12 AWG cord no longer than 30m (100').
- ✦ Avoid connecting a QuiQ charger and another device to a single 15A/20A circuit or the circuit may become overloaded.
- ✦ Charger Single-LED Display (internal or external)



LED indications following "Power-On Self Test":

Green	Solid:	Charging complete. Charger in Maintenance Mode.
	Flashing:	Short: <80% Charge. Long: >80% Charge. When battery is not connected: Charge profile (or algorithm) number display as indicated by the number of flashes between each pause. See the next page for details
Amber	Flashing:	Reduced Power Mode: Low AC Voltage or High internal charger temperature.
Red	Flashing:	Charger error: Reset charger power and refer to Troubleshooting below

Troubleshooting Instructions

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 and reset charger (interrupt AC power for 15 seconds).
	Battery low voltage	Check battery size and condition and reset charger (interrupt AC power for 15 seconds).
	Charge timeout caused by battery pack not reaching required voltage. Charger output was reduced due to high temperatures.	Check connections. Operate charger at a lower ambient temperature.
	Check battery: battery could not be trickle charged up to minimum voltage	Check for shorted or damaged cells.
	Over-temperature: charger shut down due to high internal temperature.	Ensure sufficient cooling air flow and reset charger (interrupt AC power for 15 seconds).
	Charger internal fault	Reset charger (interrupt AC power for 15 seconds). Return to qualified service depot if fault persists.

QuiQ™ Charging Profiles

Model: 912-3610	
No.	Battery Type
1	Trojan flooded
3	T105 constant power dv/dt
5	Trojan 30XHS
6	DEKA 8G31 gel
7	J305 constant power dv/dt
8	Concorde 10xAh AGM
11	Generic 200-255Ah flooded constant power dv/dt
27	NSS/Crown CR-325 dv/dt
43	Discover AGM
73	Generic 400 Ah flooded constant power dv/dt

Model: 912-3610-T2 / 913-2410-01 / 913-3610-T3	
No.	Battery Type
1	Trojan flooded
3	T105 constant power dv/dt
7	J305 constant power dv/dt
12	Exide/Sonnenschein gel
28	Tennant DEKA 8GGC2 gel
43	Discover AGM

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.

Selecting A Charge Profile

Delta-Q's QuiQ Charger can store multiple 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 eye protection and gloves.

2. Disconnect DC power from the batteries.



Figure 1: Disconnect DC power

3. Connect the AC power source to the charger, either from the wall outlet, or from the IEC320 connector on the charger.

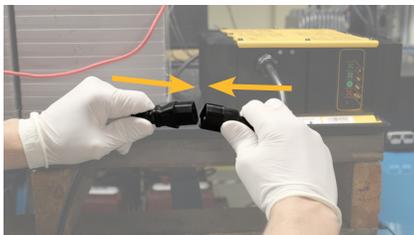


Figure 2: Connect AC power to the charger.

4. Charger will conduct a self-test of its LED indicators.

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 3: Default charge profile is displayed by the green flashing LED

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 4: Red fault light blinking

Select a new profile

7. Disconnect AC power.

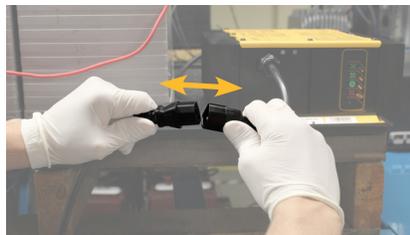


Figure 5: Disconnect AC power

8. Make sure DC power is disconnected, then reconnect AC power (see Figure 2).

9. Connect DC power for three seconds (+/- 0.5 seconds), then disconnect. You will see the next profile displayed on the charger's display. Repeat this step until you reach the desired charge profile.



Figure 6: Connect DC power for 3 seconds.

10. When the charger displays the desired charge profile, connect DC power 10 seconds. When the charge profile is locked, you will hear a click from the charger.

11. Disconnect AC power. (See Figure 5)

12. Allow the charger to power down, then disconnect DC power. (See Figure 1)

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

14. Disconnect the charger from AC power and wait for the LED indicator display to turn off. (See Figure 5)

15. Reconnect AC power and observe the sequence to verify the charge profile.