

- ✓ **High Reliability**
- ✓ **High Performance**
- ✓ **Unbeatable Value**



Universal Input

QuiQ is designed with a wide input voltage range from 85 - 265 VAC, making it an ideal choice for any worldwide application. Power Factor Correction and 12A maximum current draw ensures the charger will work reliably from any power outlet in the world, even through surges and sags.

Standardizing on a single universal model reduces component count, saving vehicle OEMs manufacturing and service inventory management costs.

Reduced Operating Costs

The high-efficiency design and near unity Power Factor combine to make the QuiQ charger extremely grid-friendly. Over 88% of power taken from the grid is converted to real power to charge the battery. This saves users in raw electricity costs when compared to ferro-resonant chargers.

Simple Offboard Operation

Configured with standard connectors or an OEM specific DC output cord, the QuiQ can easily be used to (off board) charge almost any vehicle.

Approved Charge Algorithms

The QuiQ's intelligent microprocessor controller can store up to 10 Delta-Q-developed optimized charge algorithms. Delta-Q has designed algorithms for many types of batteries, and is constantly preparing algorithms for new battery types, sizes and chemistries. Delta-Q configures chargers with the most appropriate set of algorithms for each OEM's applications. Manufacturing and field service personnel can easily toggle between algorithms and, with new field reprogrammable chargers, download new algorithms into the charger "on the fly."

Regulatory Compliance

All Delta-Q chargers are UL and CE compliant and have passed stringent EMI, safety, vibration, and water ingress protection (IP) tests. QuiQ offers leading edge efficiency, power factor correction and GFCI compatibility for safe and reliable operation.

Designed for Onboard Use

QuiQ is built for onboard operation in harsh environments. Its rugged, lightweight and intelligent design provides continuous operation in any application. High efficiency power conversion allows the QuiQ to be delivered in a fully sealed enclosure, making it ideal for onboard applications in the dirtiest and wettest environments.

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HF/PFC Battery Chargers

Electric Vehicle Battery Charger



- Advanced high frequency design with > 90% efficiency and >.99 power factor
- Wide range AC input (85 - 265 VAC) for worldwide operation
- Fully sealed enclosure provides improved reliability in demanding environments
- Approved battery charge algorithms for ideal charging
- Integrated Charge Tracking for Advanced Troubleshooting and Charge History Analysis

QuiQ HF/PFC Battery Charger Specifications

subject to change without notice

DC Output	QuiQ Model: 912- or 913-					
	24xx	36xx	48xx	72xx	84xx	96xx
DC Output Voltage - nominal	24 V	36 V	48 V	72 V	84 V	96 V
DC Output Voltage - maximum	34 V	51 V	68 V	100 V	120 V	135 V
DC Output Current - maximum	25 A	21 A	18 A	12 A	10 A	9 A
DC Output Power - maximum	695 W	875 W	1000 W	1000 W	1000 W	1000 W
Interlock Current - maximum	1 A	1 A	1 A	0.5 A	0.5 A	0.5 A
Battery Type	Specific to selected algorithm					
Reverse Polarity	Electronic protection - auto-reset					
Short Circuit	Electronic current limit					

AC Input

AC Input Voltage - range	85 - 265 VAC
AC Input Voltage - nominal	120 VAC / 230 VAC rms
AC Input Frequency	45 - 65 Hz
AC Input Current - maximum/nominal	12 A / 9.5 A rms @ 120 VAC or 5 A rms @ 230 VAC
AC Power Factor - nominal	> 0.99 @ 120 VAC / > 0.98 @ 230 VAC

Mechanical

Dimensions	28.0 x 24.6 x 11.0 cm (11 x 9.7 x 4.3")
Weight	< 5 kg (< 11 lbs) w/standard output cord
AC input connector	IEC320/C14 (require ≥ 1.8m localized cord)
DC output connector	OEM specific w/12AWG wire

Environmental

Enclosure	IP66 (NEMA4)
Operating Temperature	-30°C to +50°C (-22°F to 122°F), derated above 30°C (86°F), below 0°C (32°F)
Storage Temperature	-40°C to +70°C (-40°F to 158°F)

Regulatory

Safety	UL approved to UL1564 3rd Ed., and CSA 107.2, EN 60335-2-29, Designed to meet UL2202 1st Ed.
Emissions	FCC Part 15/ICES 003 Class A, EN 55011, EN 61000-3-2, EN 61000-3-3
Immunity	EN 61000-4-2/-3/-4/-5/-6/-11

Operation

AC ON	Solid YELLOW AC LED
>80% Charge Indicator	Solid YELLOW Charge LED
100% Charge Indicator	Solid GREEN Finish LED
Fault Indicator	Flash RED Fault LED
DC Ammeter	LED Bargraph (6 level)
Long-term Storage Mode	Auto-restart if battery voltage < 2.1 V/cell or 30 days elapse

Special Features

Battery Temperature Monitoring with Multiple Temperature Sensor Options
External Communications
PC-based configuration software for field programmability
Advanced Microprocessor with Integrated Charge Cycle and Event Tracking

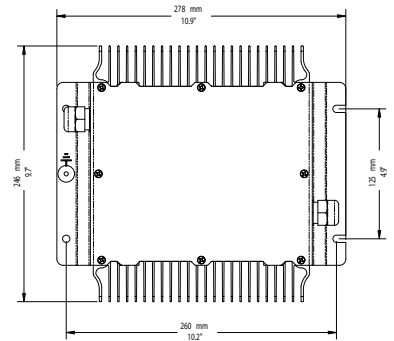
Options

- OEM Specific DC Output Cord
- Localized AC Input Cord
- Reverse or Dry Contact Interlocks
- Handle



Rear view of QuiQ ICON configuration shows inline DC and signal connectors (charger output on left, signal I/O on right). Mate with OEM specific output cords.

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Power in Motion™

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS



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

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, ie. maximum charge rates and if cell caps should be removed while charging.

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 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 otherwise damaged in any way – refer all repair work to the manufacturer, or qualified personnel. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

INFORMATIONS IMPORTANTES DE SÉCURITÉ



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

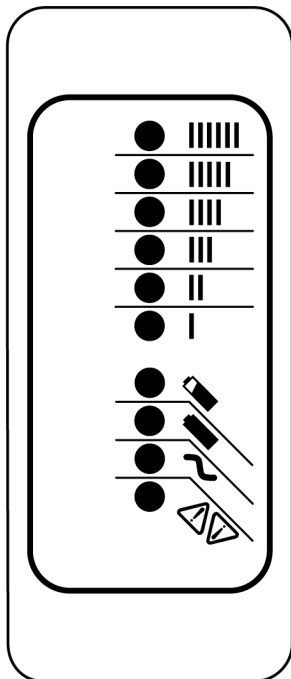
Attention: Utiliser le chargeur seulement avec un algorithme approprié au type spécifique de batterie. D'autres types de batteries pourraient éclater et causer des blessures ou dommages. Les batteries peuvent produire des gaz explosifs en service normal. Ne jamais fumer près de la batterie et éviter 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: 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. 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.

Operating Instructions

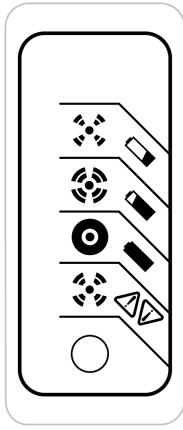
CAUTION: Charger enclosure may be hot during charging. Use hand protection if handling the charger while charging.




1. Extension cords must be 3-wire cord no longer than 30m(100') at 10AWG or 7.5m(25') at 16AWG per UL guidelines.
2. Only connect **ONE** QuiQ charger to a single 15A circuit or the circuit may become overloaded.
3. Charger 10-LED Display:



LED Colour	Indication (following "Power-On Self Test")
Ammeter (Amber)	Solid: Displays approximate scale of current output during bulk phase.
	Flashing: High internal charger temperature. Output reduced. Also displays algorithm #1-6 for 11 seconds if no battery is connected.
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 (see above for guidelines).
Fault (Red)	Flashing: Charger error. Reset charger power and refer to Troubleshooting Instructions below.

4. Optional Charger Single-LED Display (internal or external)









LED Colour	Indication (following "Power-On Self Test")	
Green	 Solid:	Charging complete. Charger in Maintenance Mode.
	 Flashing:	<i>Short:</i> <80% Charge. <i>Long:</i> >80% Charge. When battery is not connected: Algorithm Number display.
Amber	Flashing:	Reduced Power Mode: Low AC Voltage or High internal charger temperature.
Red	 Flashing:	Charger error. Reset charger power and refer to Troubleshooting Instructions below.

Maintenance Instructions

- Do not expose charger to oil, dirt, mud or direct heavy water spray when cleaning vehicle.
- If the detachable input power supply cord set is damaged, replace with a cord that is:
 - for North America - UL or CSA listed/approved detachable cord, 3 conductor, 16AWG minimum, and rated SJT; terminating in a grounding type IEC 60320 C14 plug rated 250V, 13A minimum; or
 - for all other countries – a 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.
- The enclosure of the charger has been tested successfully to EN60529, meeting IP66. The AC supply inlet is rated to IP20, which is suitable for indoor use only. Keep all AC connections clean and dry.

Troubleshooting Instructions

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

Red 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.

Note: This is a Class A product complying with United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 15. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.