

# LIFEPLUS<sup>®</sup> TC3

High-Frequency Smart Charger



# LIFEPLUS® TC3

## First in the Business...Best in the Business.

LIFEPLUS® TC3 is the latest generation of high-frequency smart charger from HAWKER – the world leader in high frequency charging technology. Patented LIFEPLUS® chargers are the product of over two decades of high-frequency smart charging experience. Only HAWKER has the extensive, proven track record of substantially reducing charging costs and the cost of operation with high-frequency smart chargers.

### HIGHLIGHTS

The LIFEPLUS® TC3 charger offers unrivaled features to take your business to the next level with benefits like:

**Cost Savings** – LIFEPLUS® TC3 technology offers the highest conversion efficiency and highest power factor available in the industry – *significantly* reducing electrical consumption and demand charges. The TC3 operates at efficiencies of 92% and a power factor of 96% across the entire operating range.

**Plug 'n Play Flexibility** – Responding dynamically to the voltage and ampere-hour capacity of the battery attached to it, LIFEPLUS® TC3 automatically delivers the optimal charge every time – *without user intervention*. LIFEPLUS® is the easiest high-frequency charger in the industry to operate.

**Opportunity Charging** – The LIFEPLUS® TC3 offers three user-friendly ways to employ opportunity charging – or charging during idle periods – to extend battery run times.

**Internet Readiness** – The LIFEPLUS® TC3 has its own IP address, allowing remote access to and programming of the charger through a local network. LIFEPLUS® TC3 maintains a data bank of 17 different charge parameters from the last 100 operating cycles for easy analysis and optimization.

**Extended Battery Warranty** – Because LIFEPLUS® delivers an optimal charge with less heat gain, the warranty on POWERLINE™ and ENERGY-PLUS™ batteries charged on LIFEPLUS® chargers is extended to *6-years or 1,800 cycles* – an additional 20% life on your battery investment.



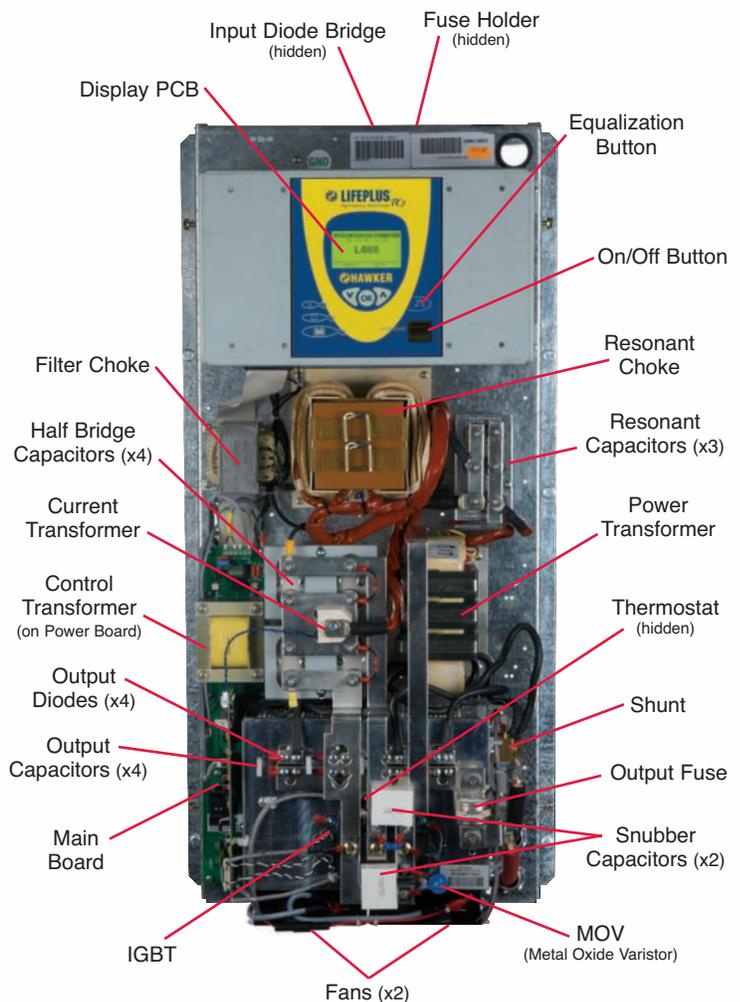
### ADVANCED CAPABILITIES

In addition to being the only charger series that combines the knowledge of a patented method for diagnosing and recharging batteries with the unparalleled power factor and efficiency of a high-frequency switching power platform, LIFEPLUS® TC3 offers these unique capabilities and benefits:

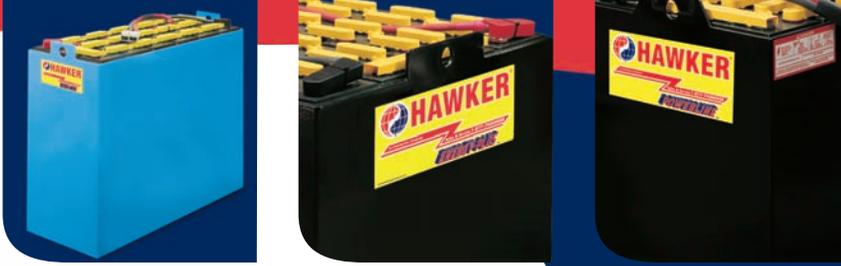
#### Selectable Charge Profile

The new LIFEPLUS® TC3 offers four different charge profile options based on your individual operational requirements:

- 1. IONIC** – This patented HAWKER exclusive is the preferred choice for most applications. Employing periodic current pulses which both identify the battery's true capacity and state of charge and mix the electrolyte throughout charge to avoid acid stratification, this profile provides the optimal recharge with minimal heating. The IONIC profile is also the preferred choice for many opportunity charging applications.
- 2. GEL** – This profile is designed for industry-standard gel batteries.
- 3. VRLA** – This profile is specifically designed for the HAWKER ENVIROLINK™ valve-regulated lead acid (VRLA) battery.



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**4. OPPORTUNITY** – When the output of the IONIC profile is not sufficient for satisfactory opportunity charging, the OPPORTUNITY profile may be required. The OPPORTUNITY profile employs a start rate of 25% of battery capacity or the maximum output capacity of the charger, whichever is less (as opposed to 18-20% in the IONIC) for faster return during opportunity charging breaks. The OPPORTUNITY profile may be used in one of two ways:

- **Battery Boss®** – a Battery Boss® data collection device mounted on the battery will communicate with the charger and identify the proper charging rate for the battery.
- **Control Panel** – the battery's size may be programmed through the charger's control panel. Please note: this has the disadvantage of making only that battery size suitable for the charger.

Whether using the Battery Boss® or the Control Panel, the charger will only charge up to 80% state of charge during the day and then complete an IONIC finish charge daily, as programmed in the profile set up.

### Data Management Capability

The new LIFEPLUS® TC3 will put these exciting new capabilities to work for you:

**Internet Readiness** – The LIFEPLUS® TC3 has its own IP address and can be remotely accessed via local network for immediate information access.

**Data Management** – The LIFEPLUS® TC3 maintains a database of 17 different charge parameters from the last 100 cycles of use, including battery type and ID, capacity, state of charge and temperature prior to charge, voltage before and after charge, current and state of charge at termination, and more.

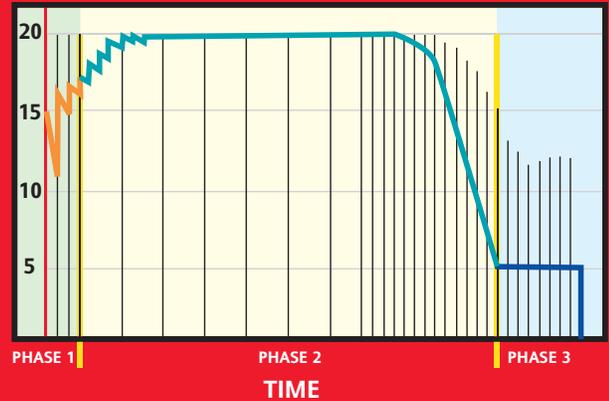
**Battery Boss® Control** – The LIFEPLUS® TC3 can also interface with the optional HAWKER Battery Boss® control module. Battery Boss® is a permanently mounted communication device that links the battery to the charger. The charger, coupled with the Battery Boss®, adapts to the battery based on capacity, temperature, and state of charge in order to maximize overall battery performance and life. The Battery Boss® also maintains a 3000 cycle database of charge parameters which can be retrieved via PDA or computer.

### Other Selectable Features

- Temperature adjustment
- Built-in real time clock
- Programmable delay start, either a period of time after plugged-in or specific time of day
- Auto equalization setting utilizes the real time clock
- Adjustable cable length setting
- Adjustable cable gauge setting

For the right HAWKER power solution to meet your needs, please call **1-877-7HAWKER** for a HAWKER representative in your area.

**CHARGING CURRENT AS A % OF BATTERY CAPACITY**



**Phase 1** – Battery Diagnosis and Determination of Charge Profile

**Phase 2** – Implementation of Charge Profile through High Rate and Taper

**Phase 3** – Electomix through Termination of Charge

### THE BOTTOM LINE

LIFEPLUS® TC3 chargers are the smartest and most energy-efficient chargers in the business. The TC3 charger series reduces your battery recharge costs, reduces water consumption, and reduces battery maintenance and repair costs.

**Energy Savings** – LIFEPLUS® TC3's precise profile charge, its IONIC profile and lower charge factor, and its unmatched electrical efficiency means that you can save on your electrical costs.

**Maintenance Savings** – With the LIFEPLUS® charger IONIC technology and lower charge factor, you will spend at least 25% less time and less money watering your batteries.

**Battery Savings** – LIFEPLUS® TC3 chargers can extend the life of your battery fleet by a minimum of 20%. Less heat generation during recharge means longer battery life, less downtime, and less money spent on battery repairs and replacements.

**Obsolescence Savings** – LIFEPLUS® TC3's plug 'n play flexibility means that your chargers may not need to be replaced when your present trucks or batteries are replaced. LIFEPLUS® TC3 covers three voltage ranges and a wide range of ampere-hour capacities in one unit – automatically.



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