

## 2 CIRCUIT ECLIPSE II SERIES



### High Frequency

#### Eclipse II Plus

*Fast or Opportunity Charging*

#### Eclipse II

*Conventional Charging*

### The Industry Standard For All Your Charging Needs

- ⚡ Utilizes space efficiently – saves valuable floor space
- ⚡ Two independent charging circuits in one cabinet
- ⚡ One input line reduces installation costs
- ⚡ Available in 480 VAC only and 480/600 VAC
- ⚡ High efficiency charging, as high as 93%, reduces energy costs
- ⚡ Adapts to all battery types and applications with user selectable charge algorithms
- ⚡ Easy access to components for service and maintenance
- ⚡ 2 Circuit Eclipse II conventional charger is Datalink2 compatible
- ⚡ 2 Circuit Eclipse II Plus opportunity charger has the Datalink2 wireless module built in
- ⚡ UL and cUL listed

## Eclipse II Series



The Eclipse II series is the most adaptive charging solution on the market, and it maintains the same quality you've come to expect from M-Pulse. The opportunity charging function will sustain the battery between 20% and 80% state of charge via short, opportunistic charges and is able to fully charge your battery in 6 hours or less. Conventional charging mode recharges any fully discharged lead-acid battery within the charger's rated capacity, flooded or sealed, in 8 hours or less.

Advanced IGBT high frequency power conversion circuitry supplies efficient, reliable service in all modes and supports the fast charging capability of the Eclipse II Plus for when you need your battery available as soon as possible.

### Designed for Total Efficiency

The 2 Circuit Eclipse II and Eclipse II Plus are designed to allow efficient charging of two batteries simultaneously with only one compact unit. It holds two full-featured chargers and saves on floor space and installation costs without forfeiting any of the outstanding capabilities of a self-contained charger. Requiring only one electrical input line, the 2 Circuit Eclipse II and Eclipse II Plus facilitates the independent operation of multiple chargers, protecting each from the other circuit housed in the same cabinet.

### Multiple Independent Charging Circuits

The 2 Circuit Eclipse II and Eclipse II Plus have two circuits that operate totally independent of each other while charging up to two batteries. Each circuit is protected by its own set of AC input fuses so that the loss of a fuse in one circuit does not disrupt service in the remaining circuit.



Inside View

### Low Cost Efficient Operation

The high power demands of opportunity chargers require an energy efficient design. The advanced high frequency design of the 2 Circuit Eclipse II and Eclipse II Plus is extremely efficient at up to 93%, converting AC power to usable DC power with the minimum possible impact on the utility grid. The .95 power factor minimizes AC amp draw and thereby reduces installation costs.

### EC2000 Control

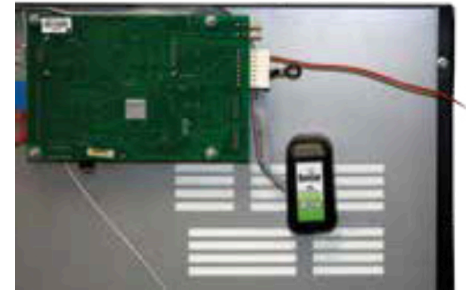
The new EC2000 control is nearly identical in functionality and programmability to M-Pulse's popular UC2000 used in the Ultra product line. With a 40 character, alphanumeric LCD display, easy to read information is always available to follow the charger's status. In addition, 4 bright LEDs provide charge status at a glance and the sealed membrane keypad allows for easy customer interface.

### Energy Saving Features

Further enhance energy savings by utilizing the EC2000's programmable start modes. Using the Delayed or Time-of-Day start modes of the EC2000 to charge your batteries during off-peak hours can yield up to 50% in additional energy cost saving. The EC2000 also offers Time-of-Day Block-Out to lower utility bills and reduce peak demand by blocking out a period of charging time on one or more chargers.

### Minimize Hydrogen Gas Emissions

The No-Gassing feature of the 2 Circuit Eclipse II Plus allows a programmable time to be set so that should the charger reach the gassing portion of the charge cycle within the set time, the charger would stop charging until the set time has elapsed. Only at this point would the charger continue to charge and take the battery to charge complete.



Detail View of CID

Automatic or Manual Equalize Operation All 2 Circuit Eclipse II Series chargers are shipped with Automatic Equalize enabled to ensure that your batteries routinely receive an equalize charge of three hours beyond the normal DV/DT charger termination. Auto Equalize can be set for one of two options, Number of Cycles, or Day of Week.

When any automatic equalize function is selected, the equalize button on the keyboard is disabled to prevent unnecessary equalize charges. The ability to automatically equalize batteries provides an exact schedule of equalize charges for better battery maintenance and longer life.

### Control Equalization Cycles

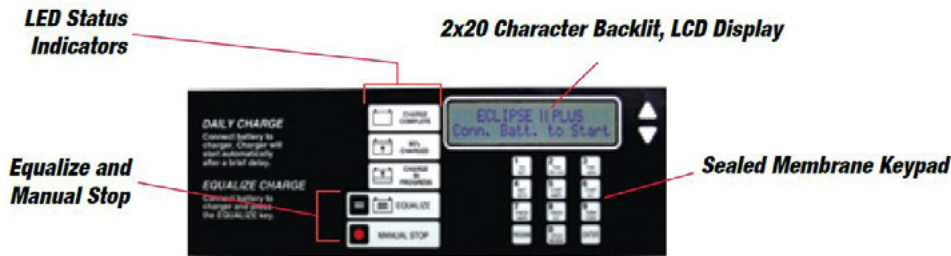
When an M-Pulse BID is attached to the battery, it tracks and records completed charge cycles. When the battery is connected to the charger, it reads the BID information to determine how many charge cycles have been completed since it was last equalized. When the number of completed cycles matches the user selected equalize interval, the charger will equalize that battery. This ensures that each battery is equalized at the intervals selected by the customer regardless of which charger is connected.

### Battery Cool Down

Battery cool down allows the battery to cool down before use, which allows for increased control of battery rotation, resulting in increased battery efficiency and longer life. Battery cool down can be programmed from the EC2000 keypad from 0-8 hours in one hour increments. After the recharge is complete, the display will read "battery cool down" until the predetermined cool down period has ended, at which time the charge complete LED is illuminated.

### Regulation

The 2 Circuit Eclipse II Series is designed to hold the finish current to within +/-2% over a wide range of line voltage variations.



### Mounting Options

Flexible cabinet design allows charger to be mounted on a shelf or the wall without additional brackets.

The legs are simply removed from the bottom of the charger and bolted to the rear panel to convert the charger from shelf mounting to wall mounting. Chargers can be stacked up to three high. Floor stand with bracket to mount pogo stick also available.

### Quiet Fan Cooling

The charger utilizes an advanced fan design to cool the electronics, extending life while providing low sound levels for quiet operation.

### 3 Year Full Warranty

Repair costs are minimized through a 3 year full warranty for the original purchaser.

Warranty covers labor, travel, and parts replacement.

### Prevent Overcharging

Back-up timers protect your batteries from overcharging by shutting the charger off in the event that the battery does not reach 80% charged in 9 hours, or does not reach charge complete within 4 hours of reaching the 80% charged point. The charger also monitors the ampere hours returned and if the ampere hours returned exceed the rated ampere hour capacity by 125%, the charger will shutdown, protecting your battery from harmful overcharging. (150% on equalize cycles.)

### Charge Cycle Archive

The charger will collect and save 21 items of charge cycle information for the last 500 charge cycles. This valuable information can then be reviewed manually from the front panel, or it can also be downloaded wirelessly using our Datalink2 system.

### Operating Modes

Multi-cell: automatically matches output voltage to battery

Fixed-cell: set for specific battery voltage, rejects others

BID mode: information programmed in BID determines charger operation

Timer Start: operated as a manual timer for maintenance and shop charging

### Refresh Charge

Start off the week with fully charged batteries. Anytime the battery is left plugged into the charger for an extended time, such as over a long weekend, the charger will restart automatically and top off the battery to ensure your trucks are running at peak performance.

### Monitor Battery and Charger Operation

With no spare batteries, it's important to know that your batteries are being properly charged and maintained. The M-Pulse BID with Amp-Hour Accumulator measures and records electrolyte temperature and accumulated ampere-hours, both charged and discharged. The accumulated ampere hours are essential to support battery warranty and to predict battery end of life. The functionality of the Eclipse II Series chargers can be greatly enhanced through the addition of the optional Battery Identification Module, BID. The BID is programmed with battery information including rated AH capacity, rated voltage, battery type, and start rate for opportunity charging.

Batteries with BIDs will be automatically recognized by the charger, allowing the charger to charge at the proper voltage and current levels for the type of battery connected. The BID eliminates any manual charger settings. The Eclipse II Series charger charges all battery types.

### BID with Electrolyte Sensor



The addition of an electrolyte sensor to the standard BID allows the charger to sense when the connected battery needs to be checked for electrolyte levels. At charge complete,

the BID will send a signal to the charger that the electrolyte level is low, and the control will display a message instructing the operator to check the battery.

### Wireless Fleet Management System

The 2 Circuit Eclipse II is Datalink2 compatible and the 2 Circuit Eclipse II Plus has the Datalink2 wireless module built-in. Datalink2 gives you the opportunity to monitor battery usage and identify bad situations before they become problems that lead to down time.

Datalink2 greatly enhances the ability to collect charge and discharge data from the charger.

The transfer of data occurs wirelessly utilizing our proprietary wireless network in combination with a powerful transceiver. Typical communication range is 1,500 ft in a normal operating environment and with communication between chargers, this range is doubled to a 3,000 ft radius. The actual range in your facility can vary greatly based on numerous factors. It is not necessary for the system to be integrated into the customer's network.

### Battery Identification Module



The functionality of the Eclipse II Series chargers can be greatly enhanced through the addition of the optional Battery Identification Module, BID.

The BID is programmed with battery information including rated AH capacity, rated voltage, battery type and more.

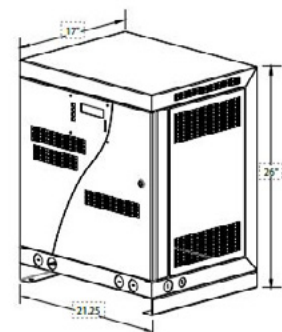
### BID with Ampere Hour Accumulator



When equipped, a battery with an ampere-hour accumulator BID will transmit to the EC2000 control, the updated AH data.

The accumulated AHs for both charge and discharge cycles are stored in the BID along with the lifetime average battery temperature, and is readable from the EC2000 control and through the Datalink2 System.

### Dimensions



### ECLIPSEII – 2 Circuit series (480VAC ONLY Chargers)

| Number Battery Cells                                    | Model Number | Amp-Hour Capacity in 8 hours | Maximum DC Output Amps | Phase | AC Input Amps at 480 VAC 60 Hertz-3 ph | Approx. Weight (lbs.) |
|---|--------------|------------------------------|------------------------|-------|--|-----------------------|
| <b>ECLIPSEII- 2 circuit: (conventional charger)</b>     |              |                              |                        |       |  |                       |
| 6,9,12  | 600EC3-12S2  | 600                          | 100                    | 3     | 7.8                                    | 134                   |
| 6,9,12  | 800EC3-12S2  | 750                          | 130                    | 3     | 10.4                                   | 134                   |
| 6,9,12  | 925EC3-12S2  | 925                          | 150                    | 3     | 12                                     | 142                   |
| 6,9,12  | 1050EC3-12S2 | 1050                         | 170                    | 3     | 13.8                                   | 142                   |
| 6,9,12,18   | 600EC3-18S2  | 600                          | 100                    | 3     | 11.8                                   | 134                   |
| 6,9,12,18   | 800EC3-18S2  | 800                          | 130                    | 3     | 15.6                                   | 134                   |
| 6,9,12,18   | 925EC3-18S2  | 925                          | 150                    | 3     | 18.2                                   | 142                   |
| 6,9,12,18   | 1050EC3-18S2 | 1050                         | 170                    | 3     | 20.6                                   | 142                   |
| 6,9,12,18   | 1200EC3-18S2 | 1200                         | 196                    | 3     | 23.6                                   | 148                   |
| 6,9,12,18   | 1275EC3-18S2 | 1275                         | 208                    | 3     | 25                                     | 148                   |
| 6,9,12,18,24  | 600EC3-24S2  | 600                          | 100                    | 3     | 15.6                                   | 134                   |
| 6,9,12,18,24  | 800EC3-24S2  | 800                          | 130                    | 3     | 20.8                                   | 134                   |
| 6,9,12,18,24  | 925EC3-24S2  | 925                          | 150                    | 3     | 24.2                                   | 152                   |
| 12,18,24,36,40**  | 375EC3-40S2  | 375                          | 60                     | 3     | 16.4                                   | 130                   |
| 12,18,24,36,40**  | 575EC3-40S2  | 575                          | 98                     | 3     | 25.1                                   | 134                   |
| <b>ECLIPSEII PLUS– 2 circuit: (opportunity charger)</b> |              |                              |                        |       |  |                       |
| 6,9,12  | 550EC3-12S2P | 550                          | 138                    | 3     | 11                                     | 142                   |
| 6,9,12  | 680EC3-12S2P | 680                          | 170                    | 3     | 13.6                                   | 148                   |
| 6,9,12  | 800EC3-12S2P | 800                          | 200                    | 3     | 16                                     | 148                   |
| 6,9,12  | 900EC3-12S2P | 900                          | 225                    | 3     | 18                                     | 148                   |
| 6,9,12,18   | 550EC3-18S2P | 550                          | 138                    | 3     | 16.6                                   | 142                   |
| 6,9,12,18   | 680EC3-18S2P | 680                          | 170                    | 3     | 20.2                                   | 142                   |
| 6,9,12,18   | 825EC3-18S2P | 825                          | 206                    | 3     | 24.8                                   | 148                   |
| 6,9,12,18,24  | 550EC3-24S2P | 550                          | 138                    | 3     | 22                                     | 134                   |
| 6,9,12,18,24  | 625EC3-24S2P | 625                          | 156                    | 3     | 25                                     | 142                   |
| 12,18,24,36,40**  | 375EC3-40S2P | 375                          | 94                     | 3     | 25                                     | 134                   |

### ECLIPSEII – 2 Circuit series (480/600VAC Chargers)

| Number Battery Cells                                    | Model Number  | Amp-Hour Capacity in 8 hours | Maximum DC Output Amps | Phase | AC Input Amps at 480 VAC 60 Hertz-3 ph | AC Input Amps at 600 VAC 60 Hertz-3 ph | Approx. Weight (lbs.) |
|---|---------------|------------------------------|------------------------|-------|--|--|-----------------------|
| <b>ECLIPSEII- 2 circuit: (conventional charger)</b>     |               |                              |                        |       |  |  |                       |
| 6,9,12  | 600EC3-12S2C  | 600                          | 100                    | 3     | 7.8                                    | 6.2                                    | 134                   |
| 6,9,12  | 800EC3-12S2C  | 750                          | 130                    | 3     | 10.4                                   | 8.3                                    | 134                   |
| 6,9,12  | 925EC3-12S2C  | 925                          | 150                    | 3     | 12                                     | 9.6                                    | 142                   |
| 6,9,12  | 1050EC3-12S2C | 1050                         | 170                    | 3     | 13.8                                   | 11.0                                   | 142                   |
| 6,9,12,18   | 600EC3-18S2C  | 600                          | 100                    | 3     | 11.8                                   | 9.4                                    | 134                   |
| 6,9,12,18   | 800EC3-18S2C  | 800                          | 130                    | 3     | 15.6                                   | 12.5                                   | 134                   |
| 6,9,12,18   | 925EC3-18S2C  | 925                          | 150                    | 3     | 18.2                                   | 14.6                                   | 142                   |
| 6,9,12,18   | 1050EC3-18S2C | 1050                         | 170                    | 3     | 20.6                                   | 16.5                                   | 142                   |
| 6,9,12,18   | 1200EC3-18S2C | 1200                         | 196                    | 3     | 23.6                                   | 18.9                                   | 148                   |
| 6,9,12,18   | 1275EC3-18S2C | 1275                         | 208                    | 3     | 25                                     | 20.0                                   | 148                   |
| 6,9,12,18,24  | 600EC3-24S2C  | 600                          | 100                    | 3     | 15.6                                   | 12.5                                   | 134                   |
| 6,9,12,18,24  | 800EC3-24S2C  | 800                          | 130                    | 3     | 20.8                                   | 16.6                                   | 134                   |
| 6,9,12,18,24  | 925EC3-24S2C  | 925                          | 150                    | 3     | 24.2                                   | 19.4                                   | 152                   |
| 12,18,24,36,40**  | 375EC3-40S2C  | 375                          | 60                     | 3     | 16.4                                   | 13.1                                   | 130                   |
| 12,18,24,36,40**  | 575EC3-40S2C  | 575                          | 98                     | 3     | 25.1                                   | 20.1                                   | 134                   |
| <b>ECLIPSEII PLUS– 2 circuit: (opportunity charger)</b> |               |                              |                        |       |  |  |                       |
| 6,9,12  | 550EC3-12S2PC | 550                          | 138                    | 3     | 11                                     | 8.8                                    | 142                   |
| 6,9,12  | 680EC3-12S2PC | 680                          | 170                    | 3     | 13.6                                   | 10.9                                   | 148                   |
| 6,9,12  | 800EC3-12S2PC | 800                          | 200                    | 3     | 16                                     | 12.8                                   | 148                   |
| 6,9,12  | 900EC3-12S2PC | 900                          | 225                    | 3     | 18                                     | 14.4                                   | 148                   |
| 6,9,12,18   | 550EC3-18S2PC | 550                          | 138                    | 3     | 16.6                                   | 13.3                                   | 142                   |
| 6,9,12,18   | 680EC3-18S2PC | 680                          | 170                    | 3     | 20.2                                   | 16.2                                   | 142                   |
| 6,9,12,18   | 825EC3-18S2PC | 825                          | 206                    | 3     | 24.8                                   | 19.8                                   | 148                   |
| 6,9,12,18,24  | 550EC3-24S2PC | 550                          | 138                    | 3     | 22                                     | 17.6                                   | 134                   |
| 6,9,12,18,24  | 625EC3-24S2PC | 625                          | 156                    | 3     | 25                                     | 20.0                                   | 142                   |
| 12,18,24,36,40**  | 375EC3-40S2PC | 375                          | 94                     | 3     | 25                                     | 20.0                                   | 134                   |