

# AC1000

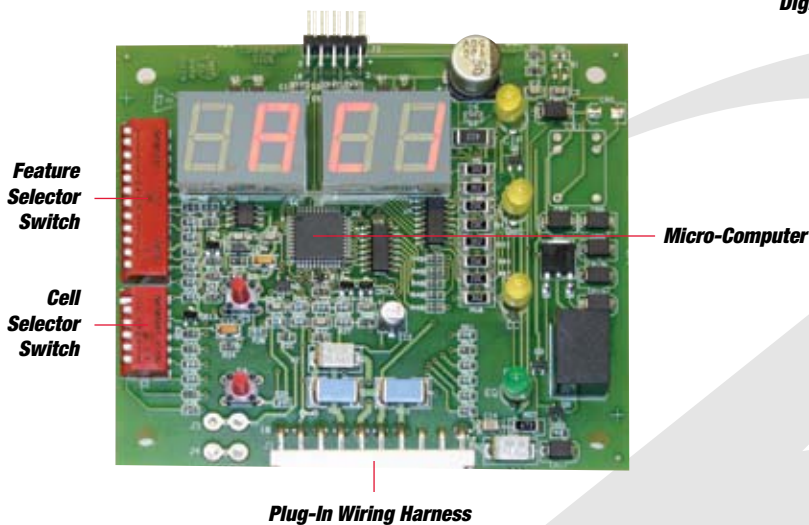
## Programmable Charger Control



### **Full-featured control provides useful options and maximum protection.**

- **Interchangeable with other compatible controls**
- **10 programmable functions**
- **Reviews each charge cycle and displays 9 items of cycle information for the last charge cycle**
- **User-selectable charge termination**
- **Programmable delayed start, cool down and refresh options**
- **Programmable automatic or manual start operation**
- **Programmable 80% voltage point**
- **Battery/charger voltage mismatch protection**
- **Quality built for years of trouble-free service**

 **PRESTOLITE  
POWER™**



Digital Ammeter

Manual Equalize Key

Stop Key



### Charge cycle review

Displays 9 items of cycle information for the last charge cycle including:

1. Amp-hours returned
2. Start to 80% time
3. 80% to termination time
4. Battery open circuit voltage
5. Start current
6. Start volts/cell
7. Finish current
8. Finish volts/cell
9. Charge termination code

### User adjustable 80% voltage point

The AC1000 control may be set for an average 80% voltage point of 2.31 volts/cell to 2.59 volts/cell. In cold storage applications, ensure a complete charge by using the dip switch on the PC board to program the proper 80% point.

### Automatic or manual equalize operation

An equalize charge of three hours beyond a normal charge termination can be selected manually or automatically. Automatic equaliza-

tion can be programmed by the number of charge cycles, from 0 to 30. When the automatic equalize function is selected, the manual pushbutton is disabled to prevent unnecessary equalize charges.

### Delayed start

Program the AC1000 to delay the start of charge for up to 24 hours. With the selection of delayed start and upon connection of a battery "dS" appears on the digital display and flashes until the delay time reaches zero at which time charging will start. Use delayed start for battery cool-down before recharging to increase battery efficiency and extend battery life. Program different delay times to stagger-start charging of batteries to ease high-peak energy demands.

### Refresh charge

Featuring an adjustable 8 to 99 hour refresh charge timer, the AC1000 can be used to provide a refresh charge to stored batteries to replace normal losses associated with storage. Similarly, in situations where it is anticipated that the battery and charger will be left connected for a period of time after charging – for instance, in the event of a long weekend or a

week-long company shutdown – the AC1000 can be programmed to automatically provide a refresh charge to ensure a fully charged battery when you need it.

### Push-to-start operation

In push-to-start operation, the charge cycle will not start until the stop/review pushbutton is pressed. This allows the operator to have complete control when starting the charge cycle.

### Fault lock-out operation

With fault lock-out, in the event of an abnormal shutdown, disconnecting and reconnecting a battery will not clear the status lamp and the charger will not resume normal operation. Pressing the stop/review pushbutton will clear the status lamp and the charger will begin normal operation.

### Cool down option

The AC1000 can be programmed to delay illumination of the "Charge Complete" LED until after a specified cool down time has elapsed. Adjustable from 0-8 hours, this efficient feature helps to prevent battery overheating and extend battery life.

### Extended run time

In severe battery applications such as cold storage, the AC1000 can be programmed to extend charge time for up to one additional hour past normal termination.

### Back-up timer protection

The AC1000 is equipped with two backup timers for additional battery protection. These backup timers terminate the charge if (1) the battery is not 80% charged in 10 hours or (2) the charge is not completed within 5 hours after reaching 80% charged. These timers protect the battery from excessive overcharging – and possible permanent damage.

### New battery recognition after AC fail

After an AC fail during the battery charging process, charging will resume provided there has not been a battery change. If a change occurred, the AC1000 will recognize the presence of a “new” battery and begin a new charge operation.

### AC power charge cycle reset option

When this option is enabled the charge cycle will completely restart anytime AC power is removed and then restored. This is valuable in situations where the battery and charger are hard wired together.

### Quality built for years of trouble-free service with energy-saving options

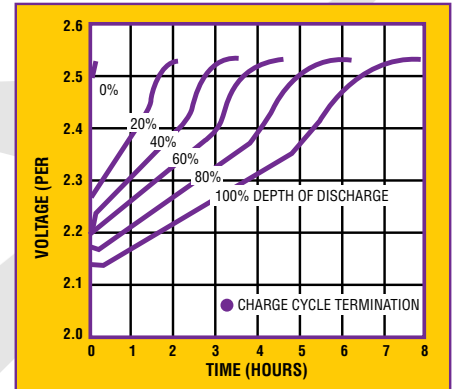
Quality is the driving force behind our products. Engineered to be the best, our chargers and controls are designed to meet the many challenges associated with charging batteries. Unmatched in reliability and value, our products are subject to intensive quality control and test procedures to ensure many years of trouble-free service. Reduce charging costs with programming options that can result in savings of time and energy.

### Automatic start/stop

When the battery is connected to the charger, the AC1000 automatically begins charging after an initial 5 second delay to allow for safe connection. The AC1000 also automatically terminates the charge cycle when complete – and the green CHARGE COMPLETE LED is illuminated for easy identification.

## PT/DV/DT Charge Termination

The AC1000 utilizes our patented charge termination technique, DV/DT, or rate of change of battery voltage with respect to time, with proportional time (PT) to determine when to terminate a charge cycle. The length of time it takes the battery to reach the 80% charged point determines the sampling rate. This termination method ensures a precise charge every time, never under or over charging, even on lightly discharged batteries. This technique used in conjunction with the tapered curve of the ferroresonant chargers, ensures that the rate of change for both battery voltage and current always provides an efficient and accurate termination of charge.



Should the user prefer a voltage/time charge termination, the AC1000 can be set for this popular termination method through available programming options.

### One control for 6, 12, 18, 24, 36 or 40 cell batteries with 100, 200, or 400 ampere full-scale digital ammeter

The AC1000 can be programmed to charge 6, 12, 18, 24, 36 or 40 cell batteries with 100, 200, or 400 ampere full-scale digital ammeter. The AC1000 is pre-programmed at the factory when it is

purchased with a charger. If the control is purchased separately or needs to be changed to match a battery, it is programmed by simply selecting the appropriate cell's dip switch and programming the appropriate ammeter scale on the control printed circuit board. This flexibility reduces spare parts inventory expense.

PROGRAMMING	
S1-1	- 80% VOLTS/CELL
S1-2	- DVDT/VT
S1-3	- DELAYED START
S1-4	- REFRESH DELAY
S1-5	- PUSH TO START/FAULT LOCKOUT
S1-6	- FORMING CYCLES
S1-7	- COOL DOWN
S1-8	- EXT. RUN TIME
S1-9	- AC RESET OPTION
S1-10	- 100 A SH
S1-11	- 400 A SH
S1-12	- AUTO-EQ

SELECTION	
S2-1	- 6 CELL
S2-2	- 12 CELL
S2-3	- 18 CELL
S2-4	- 24 CELL
S2-5	- 36 CELL
S2-6	- 40 CELL/OPTION

The dip switch panel consists of two columns of switches. The top column has 12 switches labeled 1 through 12, corresponding to the programming options S1-1 through S1-12. The bottom column has 6 switches labeled 1 through 6, corresponding to the selection options S2-1 through S2-6. Each switch is currently in the 'down' position.

### Feature Comparison Checklist

Control Features	AC1000	AC2000
Automatic start/stop	X	X
Modular design for interchangeability	X	X
Five second safety delay after connection	X	X
Universal control for 6, 12, 18, 24 and 36 cell batteries	X	X
Universal control for all AH capacity batteries	X	X
Digital display	X	X
Alphanumeric display		X
LED lamp test	X	X
Maximum over and undercharge protection (pt/dv/dt) termination	X	X
Voltage/time charge termination	X	X
Delayed start capability	X	X
Time of day start capability		X
Time of Day block-out capability		X
Push to start capability	X	X
<b>Charge Cycle Review</b>		
One touch review of charge cycle information	X	X
Ampere hours returned to the battery recorded and displayed	X	X
Battery voltage at start & finish recorded and displayed	X	X
Battery amperage at start & finish recorded and displayed	X	X
Open circuit voltage recorded and displayed	X	X
Charge termination code recorded and displayed	X	X
Elapsed charging time recorded and displayed	X	X
<b>Charge Status Indicators</b>		
Low current shutdown signaled by display or LED indicators	X	X
0-80% backup timer signaled by display or LED indicators	X	X
80%-end backup timer signaled by display or LED indicators	X	X
Manual stop indicated by display or LED indicators	X	X
AC power applied indication	X	X
Selectable display of readout during the charge cycle		X
80% charged LED	X	X
Charge complete LED	X	X
Equalize in progress indicator (LED)	X	X
Battery forming, programmable (0 to 30 cycles)	X	X
Fault lockout capability	X	X
New battery recognition during an AC power failure	X	X
AC fail recovery protection	X	X
Adjustable 80% point (2.30-2.59)		X
Adjustable 80% point (2.31-2.59)	X	
Battery/charger voltage mismatch discrimination, (hi/lo batt)	X	X
Full battery reject		X
Low battery voltage override	X	X
Battery/charger disconnect shutdown	X	X
Backup timer protection	X	X
Refresh charge programmable (8-99 hours)	X	X
Extended run time, programmable (0-60 minutes)	X	X
Cool down time, programmable (0-8 hours)	X	X
2 x's input voltage protection	X	X
Push-button stop	X	X
Manual equalize push-button	X	X
Automatic equalize by cycle adjustable	X	X
Automatic day of week equalize		X
Minimal charging on fully charged batteries	X	X
CDAC system compatibility (with exp. pcb)		X
DataMate system compatibility		X
Battery I.D. programming capability		X
High current shutdown protection		X
Password protection of features settings		X
AC power/charge cycle reset	X	

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