

Gel Battery Charging		
STAGE	END CONDITIONS	ERROR
<p style="text-align: center;">Bulk Stage I₁</p> <p>Maintain Current ≤ 30 A per 100 Ah C₂₀</p> <p>Typically, Constant Current, but Constant Power, or Taper Charge Permitted</p>	<p>End when voltage = 2.30 to 2.35 V/cell (20°C) Max time (h) = 1.2 * DoD (Ah) / Avg. Current (A)</p>	<p>If Max time is exceeded: STOP</p>
<p style="text-align: center;">Absorption Stage V₁</p> <p>Maintain Constant Terminal Voltage (Adjusting only for changing battery temperature)</p> <p>Voltage = 2.30 to 2.35 V/cell (20°C)</p>	<p>Without the optional accelerated finishing stage, maintain charge until current acceptance drops by less than 0.10 ampere over a 1 hour period Max Time: 12h</p> <p>With optional accelerated finishing stage end when current = I₂ Max Time: 6h</p> <p style="color: red;">Note: time will depend on step 1 current to some extent. If step 1 were only 10A/100Ah, this step would need less time (4 hours).</p>	<p>If Max time is exceeded: Go to next stage</p> <p>If Current exceeds 8 A after dropping below 6 A: STOP</p> <p style="color: red;">Alternate cutoffs are also acceptable. Not allowing current to rise in this step (positive dI/dt) is a good feature.</p>
<p style="text-align: center;">Optional Accelerated Finishing Stage I₂</p> <p>Maintain Constant Current: 1 to 1.5 A per 100 Ah C₂₀</p>	<p>Charge for 1 to 4 hours based on Ah accumulated in first two stages: $<25\%$ of C₂₀ – 1 hour 25% to 50% of C₂₀ – 2 hours $>50\%$ of C₂₀ – 4 hours</p> <p style="color: red;">Ending this step based on level voltage is acceptable as long as the maximum time limit (4 hours) is not exceeded.</p>	<p>If Voltage exceeds 2.80 V/cell: Go to next stage</p>
<p style="text-align: center;">Optional Float Stage V₂</p> <p>Maintain Constant Terminal Voltage (Adjusting only for changing battery temperature)</p> <p>Voltage = 2.25 V / cell (20°C)</p>	<p style="text-align: center;">No time limit</p> <p>This step is generally unneeded if (1) zero load is present when device is not in operation, and (2) device duty cycle does not include periods of non-use exceeding 3 months.</p>	

To compensate for battery temperature not at 20°C, subtract 0.005 V/cell for each 1°C above 20°C; add 0.005 V/cell for each 1°C under 20°C.

If charging is halted due to an error, the user should understand that this does not indicate a battery failure. A halt should prompt the user to check battery condition.