

	JFM Engineering, Inc.		<i>15 February 2016</i>
	Product Technical Bulletin		TB1601
Products Affected			
Product	Model	SN	NOTES
SuperMasterCharger	ALL	---	---
SupersederXG	ALL	---	---
		---	---
Significance of Battery Overvoltage Programming			

1.0 Introduction

- While programming a Battery Overvoltage value during charge operations is typically optional, it may be mandatory under specific conditions.

2.0 Overview

2.1 Battery Overvoltage

- The Battery Overvoltage is defined as the upper limit voltage that is acceptable for the batteries during charge operations.

A Battery Overvoltage can occur under the following conditions:

- Defective battery (cells are worn out or dry)
- Overcharged battery (attempting to charge an already charged battery)
- Applying too high of a current for the type of cells being charged.

2.2 Programming the Overvoltage

- Enter an Overvoltage value consistent with the type of battery being tested.
- A typical Overvoltage value for a battery is 1.75V/cell. Thus, for a 20 cell battery the Overvoltage value is 35V. Consult with the CMM and with the battery's manufacturer for battery specific recommendations.
- When charging two batteries in series, the batteries Overvoltage value should be added (typically 70V for two 20 cell batteries).
- Optionally, if the Overvoltage value is set to zero or left unset, the charger will not monitor the battery or batteries under charge for an Overvoltage condition.

2.3 Benefit of Setting the Battery Overvoltage

- By programming the value of Battery Overvoltage the processor will alert the operator if the battery has reached an abnormally high voltage value and stop the charge process before the battery is damaged.

3.0 System Significance of the programming of Battery Overvoltage

- Beyond being used as a safety limit during charge, the Overvoltage value is used to set the transformer configuration of the charger and limit the maximum short circuit current.
- The charger uses the Overvoltage value is to determine how many batteries are being charged (in series) and therefore the transformer configuration to use. The Overvoltage value is the only way for the charger's processor to determine the number of batteries connected to it when the batteries being charged are totally discharged. Without a programmed Overvoltage value, if the processor does not see a sufficiently high voltage (greater than 45V), then it will assume that it is connected to a single battery. However, based on the Overvoltage value entered, the processor will know that it is working with two batteries even if the voltage reading is below 45V.
- The second use of the Overvoltage value is to limit short circuit current and low voltage charge operations current. Charging a single cell at high current puts a strain on the charger's transformers and the power semiconductors. Therefore, if the processor detects a low battery voltage it will generate an error message if the programmed current is greater than 25A. For batteries where the main charge current is greater than 25A this would not allow full current charge for totally discharged batteries. If,

however, the Battery Overvoltage is defined, then the processor will allow the current as programmed, knowing that it is not dealing with a single cell or a short circuit condition.