SuperMasterCharger vs. RF80M

Comparison between the SuperMasterCharger (JFM Engineering) and the recently announced RF80M (Christie), based on the information recently made available (websites).

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1. Touch Screen

1.1 RF80M

- Looks nice and in theory should provide for more flexible changes but it is the only means of display and requires that it be looked at a close range. (No meters, no status indicators that can be seen from a distance).

1.2 SuperMasterCharger

- The SuperMasterCharger uses dedicated, easy to read, real time displays for Current, Voltage, Time and Status (Nothing to guess – what you see is what you need …)
- A small LCD screen is used for interactive communication between the operator and the processor.

2. Computer Interface

2.1 RF80M

- Optional

2.2 SuperMasterCharger

- The interface for communications with the BTAS is built-in and it is an integral part of the microcontroller.

3. Charge/Discharge Current Capabilities

3.1 RF80M

- 80A Reflex®, 60A Charge, 60A Discharge.
- Reflex may be a good way to achieve fast charging but the objective is not to fast charge a battery but to be able to test how well it accepts the charge current.
- Fast charging (one hour) applies to the Main Charge. To achieve a complete test it is necessary to subject the cells to the Topping Charge to ascertain the integrity of the cell separators.
- Reflex® is a forced method of charging that can easily hide cell problems and it is abusive of older, higher internal resistance cells

3.2 SuperMasterCharger

- 50A Charge and 60A discharge
- The Superseder relies on Constant Current, the charging method basically specified by battery manufacturers in their manuals and CMMs.
- It is designed to test the batteries exactly as specified by battery manufacturers.
- Constant Current is the only way to properly determine the charge acceptance behavior of cells.

4. Manual Mode

4.1 RF80M

- Single or multiple charge/discharge tasks to be run in sequence

4.2 SuperMasterCharger

- A variety of Test Modes are defined that feature complete programming of time, voltage and current.
- Future editions of the control software will incorporate automatic charge start based on battery temperature (charge will start when the battery has cooled sufficiently).
- Additional test automation will be effected through the BTAS16 based on the analysis of cells.

5. Program Mode

5.1 RF80M

- Battery parameters may be stored and custom task sequences saved for automatic processing.

5.2 SuperMasterCharger

- Up to 100 Battery Test Profiles can be stored for easy retrieval.
- Additional automated custom testing to be effected through the BTAS16

6. Charge Modes

6.1 RF80M

- Constant Current, Constant Potential and Reflex® charge modes

6.2 SuperMasterCharger

- Constant Current, (single rate and dual rate), Constant Potential and Peak Voltage (stop on peak) charge modes.

7. Alarm Signals

7.1 RF80M

- Audible signals at each end of task.

7.2 SuperMasterCharger

- Alarm signals for faults and audible signals (beeps) for other events.

8. Alert

8.1 RF80M

- User may program an alert as a reminder to check or water battery.

8.2 SuperMasterCharger

- Entry of water usage information is done through the BTAS16 using the MasterFiller (Manually or automated).

9. Proven Power Section

9.1 RF80M

- Proven RF80K Power Section

9.2 SuperMasterCharger

- Proven Superseder Power Section

10. DigiFLEX Analysis

10.1 RF80M

- Visual indicator of Battery Processing Status
- DigiFLEX is a proprietary part of the Reflex® system

10.2 SuperMasterCharger

- The Timer, Status indicators and LCD screen provide feedback as to where the battery is in the particular test being performed.

11. Safety Features

11.1 RF80M

- Built-in limits for charge, discharge current values, times and termination.

11.2 SuperMasterCharger

- All Battery Test Profiles are programmed with limits.
- Internally fixed (hardware and software) safeguards for current and voltage
- Wide range of safety features to protect the operator, the battery and the Charger-Analyzer (open circuit, short circuit, reverse polarity, overvoltage, overtemperature, open current limiters, etc.)

12. CE Mark

12.1 RF80M

- CE tested and certified

12.2 SuperMasterCharger

- Designed and built to be intrinsically safe and meet international safety standards
- CE Mark pending

13. Number of Batteries

13.1 RF80M

- Limited to a single battery operation
- 24 cells maximum: One 21 cell, two 11 cell, three 7 seven cell.

13.2 SuperMasterCharger

- Capability for up to 50 cells allows for charging of two, 20 cell (or 21 cell) batteries thus doubling the throughput. Correspondingly it can handle four 11 cell batteries and six 7 cell batteries.
- One 20 cell (or 21 cell) battery at full discharge current and two 20 cell (or 21 cell) batteries at reduced discharge current.
- Correspondingly it can also handle multiple 11 cell and 7 cell batteries.
- Using the BTAS16 the task of measuring the cells of so many batteries is greatly facilitated.

14. Notes

- This initial comparison is based solely on the published information.
- Additional comparisons will be generated once detailed manuals become available and feedback from users is received.
- Christie engineers seem to have done a good job at copying/emulating some of the features of the SuperMasterCharger, even down to the choice of words used to describe the functions and features.
- The touch screen is a nice feature but it may not be as useful as a single display device.
- The SuperMasterCharger power section features independently controlled circuits for constant current charge and discharge (no charge/discharge interaction). In addition, the transformers have microprocessor controlled connections that optimize their use to lower the AC input power consumption and for improved reliability of the charge circuits.
- The SuperMasterCharger is part of a total system that uses specialized software and data acquisition hardware (BTAS16) to automate the battery measurement process.
- A companion Charger-Analyzer, the MiniMasterCharger is available for testing of small batteries.
- For additional information see [http://jfmeng.com/SMC.htm], [http://jfmeng.com/btas16.htm] and [http://jfmeng.com/mmc.htm]