

Battery Conditioning Equipment

A Battery Conditioning Equipment provides a safe and reliable tool to prepare several types of spacecraft batteries.

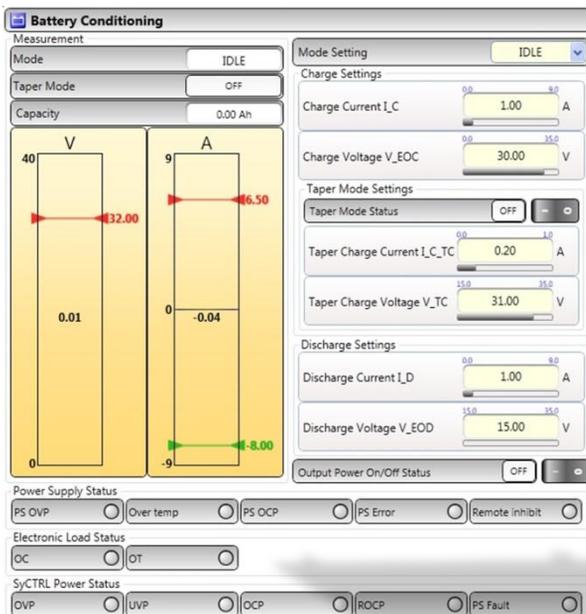
As a baseline, it provides:

- Standard over voltage and over current protection
- Global charge and global discharge
- Data monitoring and archiving
- Charge and discharge cycles
- Battery capacity calculation
- Off line evaluation
- Watchdog

The BCE is based on COTS items (power supplies, electronic loads, PC, ...) enhanced by Clemessy's SyCTRL products. It is designed as a self standing equipment with its own local GUI. It is fitted with self test and safety loop, embedded in standard 19 inch rack and container.

As options, it can be fitted with:

- Second level over voltage / over current / under voltage protection
- Battery trickle charge
- Remote control via TCP/IP interface (CCSDS, FEECP, EDEN, PUS Services etc.)
- Mains insulation transformer unit
- Individual cell deep discharge
- Mini rack
- Reusable container
- Interface harness:
 - Ambient harness for ISO8 clean rooms
 - Savers



Function

- Battery charging (full and trickle charge)
- Sink current for whole battery (normal discharge) as well as for individual battery cells (deep discharge)
- Battery overall voltage, current and temperature monitoring
- Battery cell voltage monitoring
- User defined script features
- Off line evaluation
- Over-voltage, over-current, under-voltage, reverse-over-current protection
- Watchdog
- Self test capability
- Interface cables to battery

Implementation

- Battery charge current provided by DC power supply
- Battery discharge current sink by DC electronic load
- Second Level Protection based on SyCTRL
- Ethernet TCP/IP interface for remote control
- Windows man machine interface for local control
- 19" rack integrated

Performance

- Typical voltage up to 200V (other on request)
- Typical discharge current up to 300A (other on request)
- Typical charge current up to 300A (other on request)
- Protection reaction time down to 30 μ sec

Used technology

- Keysight, H&H or other power supplies / electronic loads
- Clemessy's SyCTRL second level protection and TM/TC features
- LXI interface with instruments
- Software controlled charge / discharge with user settable profiles
- Python script language

