# SMB-Auxiliary

## Smart Battery Testing Interface in Arbin Testing System

The SMB auxiliary module is designed to communicate via the SMBus (System Management Bus) interface with the electronic devices residing in smart battery to read the information stored in the electronic devices during the battery charging or discharging process. This module is an optional auxiliary available with Arbin testing system. Figure 1 shows the layout of smart battery testing with Arbin system.

Both the behavior of electronic devices residing in smart battery and the performance of smart battery can be tested with this function.

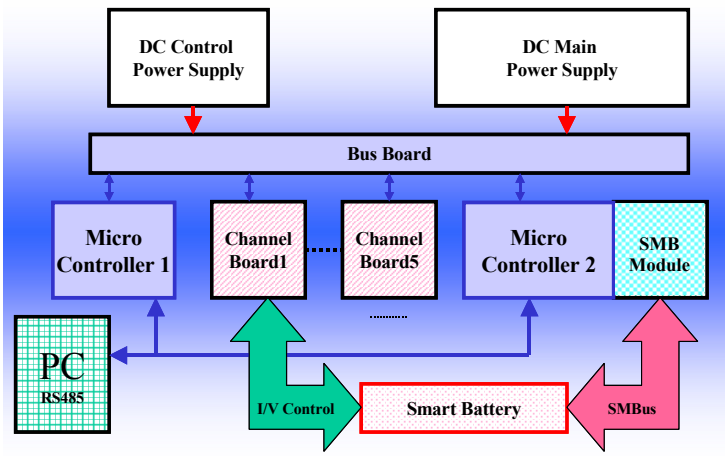


Figure 1. Block diagram of smart battery testing layout

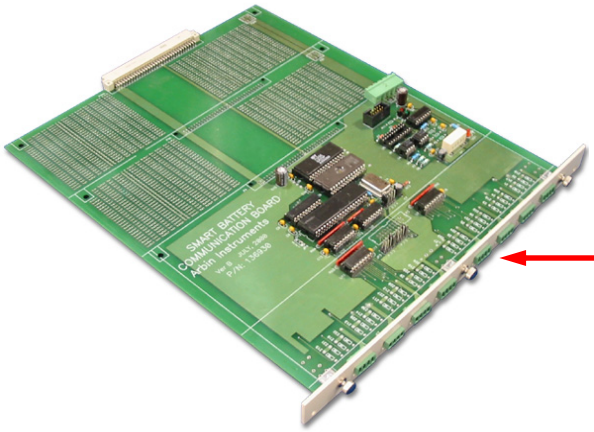

Figure 3. SMB auxiliary module containing 8 inputs.

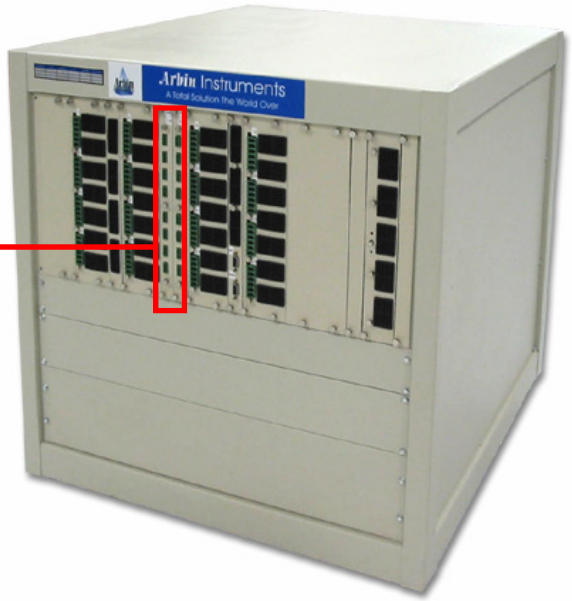


Figure 2. 16 channel-2V/24V-0.1A/4A-96W system with 16 SMB auxiliary inputs.

### *SMB Auxiliary Module Features*

- **Capacity,** each board contains 8 or 16 independent smart battery inputs operating on 8 or 16 smart battery packs simultaneously. Twenty four maximum number of inputs can be controlled under one PC.
- **Compatible** with Smart Battery System Management Bus (SMBus) Revision 2.0 or 1.1.
- **Tested** with commonly employed Gas Gauge ICs, such as Texas Instruments, BQ 2000 series (BQ2060, BQ2083, BQ2040), Power Smart, PS401, etc.
- **Plug & play board**. Each board also contains an individual micro-controller to communicate directly with RS485 COM port of PC. Easy to maintain.

Arbin INSTRUMENTS


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# SMBus Setting in MITS Pro Software

The smart battery testing function is performed using MITS Pro testing software. Figure 4 shows the **Channel View** window which displays both the main I/V channel's parameters (in white background) and the SMBus register functions (in yellow background). Readable and write-able SMBus registers can be read and/or written in this window. Table 1 presents all the readable and/or write-able register functions in the software (customized revision for other register arrangement is available). MITS Pro can read/write, log, as well as utilize these SMBus register functions as control variables in testing schedule to set charge/discharge output or direct scheduling steps in the same way as using parameters from the system main I/V channel.

Table 1. Existing register functions in Arbin SMB software, based on TI BQ 2060

| Variable | SMBus Access | Variable | SMBus Access |
|---|---|---|---|
| ManufacturerAccess | Read/write/control/program | ChargingCurrent | Read/control |
| RemainCapacityAlarm | Read/write/program | ChargingVoltage | Read/control |
| RemainTimeAlarm | Read/write/program | BatteryStatus | Read |
| BatteryMode | Read/write/program | CycleCount | Read/Control |
| AtRate | Read/write/program | DesignCapacity | Read |
| AtRateTimeToFull | Read | DesignVoltage | Read |
| AtRateTimeToEmpty | Read | SpecificationInfo | Read |
| AtRateOK | Read | ManufacturerDate | Read |
| Temperature | Read/control | SerialNumber | Read/control |
| Voltage | Read/control | Reserved | Read/write/control |
| Current | Read/control | ManufacturerName | Read |
| AverageCurrent | Read | DeviceName | Read/write |
| MaxError | Read | DeviceChemistry | Read |
| RelativeStateOfCharge | Read/control | ManufacturerData | Read/write |
| AbsoluteStateOfCharge | Read/control | Pack Status | Read/write |
| RemainCapacity | Read/control | Pack Configuration | Read/write |
| FullChargeCapacity | Read/control | VCELL4 | Read/control |
| RunTimeToEmpty | Read | VCELL3 | Read/control |
| AverageTimeToEmpty | Read | VCELL2 | Read/control |
| AverageTimeToFull | Read | VCELL1 | Read/control |

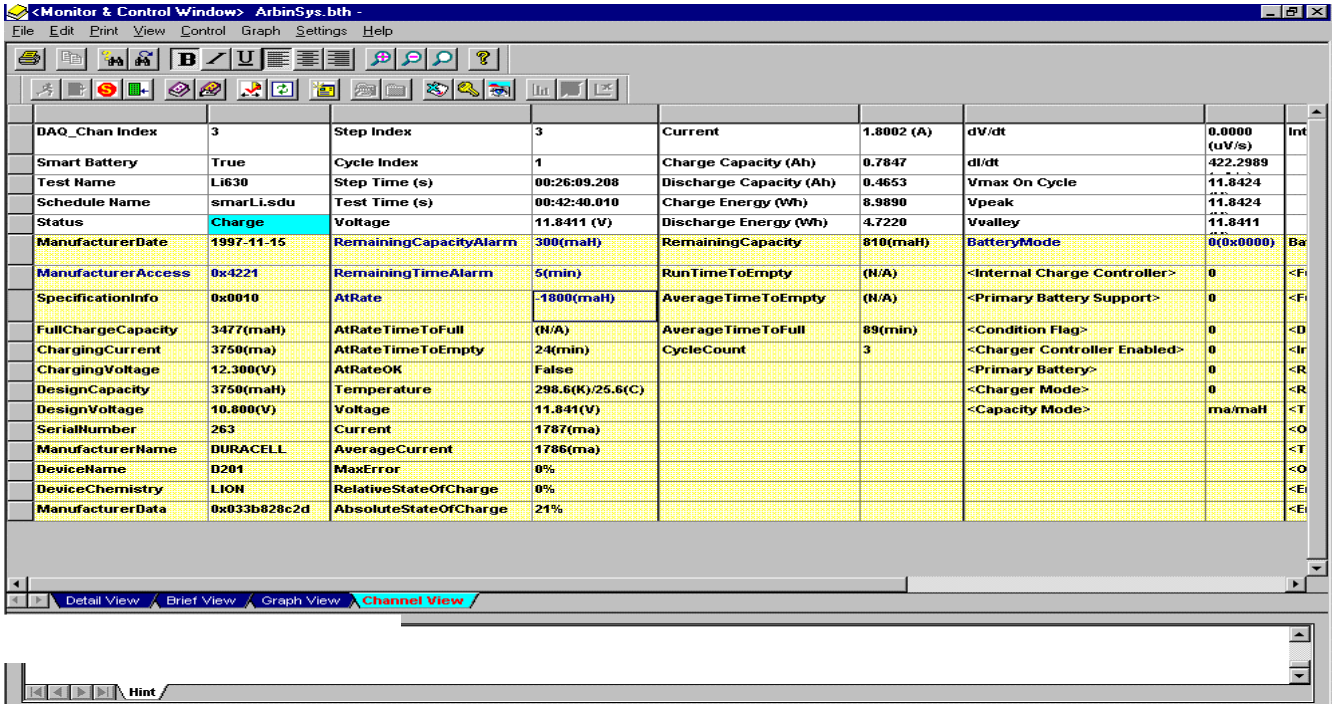


Figure 4. Running smart battery functions with MITS Pro testing software.