

BATTERY TESTING (V3 OR LATER)

On any module with on-board Power Supply and Battery charger circuit, when an AC Fail condition occurs, the battery is constantly monitored so that a System Input alarm can be generated if the voltage drops below a pre-defined level. (Typically around 10.8V)

These System Inputs (C01:S05 on the Control Module and B/Exx:S05 on Expander Modules) should always be assigned to a "System Area" or "Power Problems Area" with an appropriate Process Group so that an alarm will be reported under Low Battery conditions. This feature has always been available in the product.

Version 3 firmware now introduces dynamic battery testing to also allow periodic testing of batteries under full load conditions, so that reliable battery operation can be guaranteed when an AC fail condition occurs.

This feature enables dynamic Battery testing on the Control Module and the Expander Modules ("B" and "E" Type Expanders only). Battery Testing is activated by a special Diary function and tests each module in sequence for the specified Battery Test Time beginning with the Control Module. i.e. At any one time there will only be one module under test. Battery Testing finishes once all modules set for testing have completed their test.

The battery test turns off the battery charge circuit on the Module, allowing the Module to run off the battery supply only. (The test does not turn off the AC Mains supply to the Module)

Battery testing on a particular Module will be aborted if:

- Siren output/s are activated on the Module.
- An AC Mains failure occurs on the Module.
- A LAN failure occurs on the Module.
- A Low Battery Alarm occurs on the Module.
- The Power Test Menu is entered by a User.

Review messages are generated for each Module tested indicating the Module number and whether the test on that Module was Skipped, Started, Passed, Failed or Aborted.

1. Program the Battery Test Diary Function. [MENU 5, 4]

1.1 Program the Date and Time for the Battery Test to commence.

Utilizing a Diary function for Battery Testing allows the installer to dictate the frequency of Battery Testing based on the system requirements.

For Battery Testing the Time fields should always be programmed to define the Start Time of the Test.

The Date can have certain fields left blank allowing for Battery Testing to occur on a regular basis without the need to re-program the Date and Time.

- e.g. Battery Testing to start at 7 PM on the 1st day of every month of every year: 01 / __ / __ - 19 : 00
 Battery Testing to start at 10:30 AM every day of every year: __ / __ / __ - 10 : 30
 Battery Testing to start at 10:30 AM every Tuesday of every week: (See below) __ / __ / __ - 10 : 30

1.2 Program the Valid Days. Normally all days set to Yes unless you want the Battery Testing to occur weekly on the same day each week. (Or two to six times a week on the same days each week)

If this is the case, program the Date and Time leaving all the Date fields blank and program the Time for the Battery Test Start Time. e.g. __ / __ / __ - 09 : 00

Now program the Valid Days leaving all Days set to No, except for the Day on which testing is to occur.

e.g. If testing is to occur every Tuesday: S M T W T F S
 n n Y n n n n

1.3 In the Diary Function options, select "Battery Test".

2. Program the Control Module Battery Test Time. [MENU 7, 5, 1]

- 2.1 Program a general Battery Test time. This is the time period that will be used to perform battery testing on the Control Module. A Battery Test time of "0" means that the module will not be included in Battery Testing.

3. Program the Expander Module Battery Test Time. [MENU 7, 2, 3] and [Menu 7, 2, 7]

- 3.1 Program the "Battery Test time" required for each Big Expander [MENU, 7, 2, 3] and 16 Zone Expander [MENU, 7, 2, 7] in the system. A Battery Test time of "0" means that the module will not be included in Battery Testing.

Battery Test Times.

Battery Test Times can be programmed for each module from a period of 0 (No Test) to 255 minutes. Test Times should be set after consideration of the Module load. i.e. The total current supplied by the Module's power supply for PCB operation, Detector power, Auxiliary operation and LAN power, etc.

A battery test time of 1 to 10 minutes will effectively test for battery presence. A time of between 60 to 120 minutes (depending on load) would determine that a battery is in good working order. Periods greater than 120 minutes should only be set for deep discharge testing conditions where the reliability of the AC mains supply can be guaranteed. e.g. If a battery was tested for 4 hours and then the AC supply to the building failed shortly after testing was complete, the charge of the battery would be severely affected, and when coupled with the age of the battery, could greatly reduce the integrity of the system.

When choosing a suitable Battery Test Time, the battery Discharge Characteristic should be taken into account. Note that the rated capacity is normally specified under relatively low load conditions. e.g. A 12V 7.0 AH battery is rated at 7 Amp Hours when the load is around 350mA. With a 1 Amp load, capacity reduces to approximately 6 Amp Hours.

The table below provides the typical discharge characteristics for 12Volt 7.0 AH Sealed Lead-Acid Batteries @ 25°C and shows the time taken for the terminal voltage to drop to approximately 12 Volts and 11 Volts.

Battery Test Times should be programmed so that the Battery will not approach the 11 Volt point.

This is important for two reasons:

- 1) This is approximately the voltage where the "Low Battery" System Input is activated.
- 2) The Battery voltage drops off quite rapidly after the 11 Volt point is reached.

If deep discharge testing is required, a general guideline would be to program a Battery Test time of no more than half the time taken for the Battery to drop to 11 Volts. This will ensure that the Battery Voltage during Testing does not drop below 12 Volts and that sufficient charge was still present for Backup operation in the event of AC fail occurring soon after Battery Test.

Load Current	Discharge Time.		Effective capacity
	To ~12V	To ~11V	
350mA	12 Hours	20 Hours	7.0 AH
650mA	6 Hours	10 Hours	6.5 AH
1 Amp	3.5 Hours	6 Hours	6.0 AH
1.2 Amp	3 Hours	4.5 Hours	5.4 AH
1.75 Amp	1.5 Hours	2.5 Hours	4.4 AH
4.2 Amp	30 Minutes	50 Minutes	3.5 AH