

# Solar Power System Installation and Testing Procedures

## Description:

### 1A/1J 12V Power System (Single Panel)

- 1 ea. 48W Solar Module (Siemens M75)
- 1 ea. Side-of-Pole Mount (DP-SPM1-M75)
- 1 ea. 12V, 8 A charge/load controller (ASC)
- 1 ea. 85 Ah gel-cell battery
- 1 ea. NEMA 3R enclosure (single battery box)  
Module Wiring

### 2A/2J 12V Power System (Dual Panel)

- 2 ea. 48W Solar Module (Siemens M75)
- 1 ea. Side-of-Pole Mount (DP-SPM2-M75)
- 1 ea. 12V, 16 A charge/load controller (ASC)
- 2 ea. 85 Ah gel-cell battery
- 1 ea. NEMA 3R enclosure (dual battery box)  
Module Wiring

## Installation:

1. Attach solar panel mounting bracket to pipe.
2. Install battery box just below panel mounting bracket. In this configuration the solar panel provides shade for the battery box.
3. Place battery or batteries in box. Caution: There is a glass encapsulated temperature sensor attached by a wire to the ASC; it is easily broken. Tape the temperature sensor halfway up the side of the battery.
4. Wire up system. The main wiring terminal block is mounted in the battery box to the right of the ASC regulator. Three sets of connections will be made to this terminal block. From top to bottom they are as follows:

**Solar Panel -**  
**Solar Panel +**  
**Load (GARS Blower) +**  
**Load (GARS Blower) -**  
**Battery -**  
**Battery +**

First, hook up the connections for the GARS.

Second, hook up the connections to the battery and solar panels as outlined below. In the two 2A/2J systems the batteries should be connected in parallel

using the thick cables: positive to positive, negative to negative. Similarly, the solar panels in 2A/2J systems should also be connected in parallel.

The charging system incorporates an auxiliary relay for Low Voltage Disconnect (LVD). The relay is activated and switches power to the load off when the battery drops to the low-voltage disconnect threshold; and, the relay deactivates and switches the power to the load on when the battery rises to the reconnect threshold. A light on the ASC indicates activation of the LVD. The system will not begin providing power to the GARS until the battery has reached the reconnect charge level.

When the CHARGING light blinks on and off, the battery is charged and the regulator is operating normally.

## **Field Test Procedure for the ASC**

Equipment Required:  
Digital Multimeter  
Active Solar array

1. Connect the array plus and minus wires to the appropriate terminals on the ASC. Measure the voltage at the solar panel plus and solar panel minus terminals. Voltage must be at least 17 volts for test to be valid.
2. Measure voltage at battery plus and battery minus terminals on the ASC with the battery disconnected. The reading should be between 14 and 15 volts. If the reading is very high, 16-20 volts, or very low, 2-5 volts, the ASC may be defective.

## **Field Test Procedure for the Solar System**

Equipment Required:  
Digital Multimeter  
Active Solar array

1. Measure and record the battery voltage before connection to charging system. Voltage should be > 12 V.
2. Connect solar system as described under Installation.
3. Record panel number, battery number, ASC number, GARS number.
4. Perform ASC field test outlined in previous section. Record voltage from ASC field test.
5. Run system for two days. Check operation each day.