

Installation Testing

This chapter introduces procedures of installation testing. The corresponding safety rules shall be adhered to in the test.

1 Installation Check And Startup

Before the test, inform the chief manufacturer representative. Only the trained electrical engineer can maintain and operate this equipment. In operation, the installation personnel are not allowed to wear conductive objects such as watches, bracelets, bangles and rings.

During operation, parts of this equipment carry hazardous voltage. Misoperation can result in severe or fatal injuries and property damage. Before the test, check the equipment to ensure the proper earthing. Installation check must be done before testing. Then the batteries can be charged for the first time.

Make sure that the AC input MCBs, rectifier MCBs and load MCBs are switched off. Make sure that all the devices are properly installed.

Installation check

	OK	Comments
Check all the fuse and cables. Are their models correct?	<input type="checkbox"/>	
Check the bus bar connections, input and output cable connection, and connection between the power system and the system grounding	<input type="checkbox"/>	
Check if the number and connections of the batteries are correct. Check the polarity of the battery string with a voltmeter	<input type="checkbox"/>	
Make sure all the communication cables and alarm cables are connected to M500S. Check that the temperature sensor, if any, has been installed	<input type="checkbox"/>	

Startup preparations

	OK	Comments
Make sure that all the MCB are switched off and all the fuses are removed	<input type="checkbox"/>	
Measure the AC input voltage. Make sure the input voltage is within the allowable range	<input type="checkbox"/>	Umin=___V
Check that the battery string circuit is not closed	<input type="checkbox"/>	
Connect the disconnected batteries to the battery string circuit	<input type="checkbox"/>	
Measure with a voltmeter across the connection points of each battery and make sure that the polarity is right. For a lead-acid battery with 24 cells, the voltmeter should read 2.0-2.1V/cell or 48-51V/battery. If the voltage of certain cell is lower than 2.0V, that cell must be replaced	<input type="checkbox"/>	Umin=___V
Check with an ohmmeter that there is no short circuit between the positive & negative distribution bus bars, or between the positive & negative battery poles (Note: Pull out all modules before the check and restore them after the check)	<input type="checkbox"/>	

Startup

	OK	Comments
Switch on the system AC input MCB. Switch on one rectifier MCB. The green LED on the rectifier will be on and the fan will start running after a certain delay. The monitoring module will show that the power supply voltage is 53.5V	<input type="checkbox"/>	
Check the system voltage and busbar polarity with a voltmeter. The voltage difference between the measured value and displayed value should be less than ! 0.3V	<input type="checkbox"/>	
Start and stop each rectifier of the system by switching on and switching off the rectifier MCBs. Check their output voltages	<input type="checkbox"/>	

2 Basic Settings

When the system is put into service for the first time, the parameters of monitoring module must be set based on the actual system configuration, such as battery number, capacity, user's charge current limit and other functional requirements. Only after that can the monitoring module display system operation information and control the output.

Enter the main menu → Settings (password: 1) → Battery Settings → Batt. Selection submenu. Set the “Mode” parameter to “Manual”. Return to the Settings menu to set the parameters in relative submenus.

	OK	Comments
The system model has been set correctly in factory before delivery, check that the setting agrees with the actual system (PS48300-3B/1800: 48/30A/300/NONE; PS48300-3B/2900: 48/50A/300/NONE; PS48600-3B/2900: 48/50A/500/NONE)	<input type="checkbox"/>	
The battery string number set at the monitoring module should be the same as the number actually connected. (By default: 2)	<input type="checkbox"/>	
Set the battery capacity according to the total capacity of all the battery connected to the system. Default: 400Ah	<input type="checkbox"/>	
Configure the temperature coefficient according to the battery manufacturer's requirement. Setting range: 0-500mV/°C. By default: 72mV/°C. (if no temperature sensor is installed, do not set this parameter)	<input type="checkbox"/>	
Set the charge current limit according to your needs. Setting range: 0.1 ~ 0.25C ₁₀ . (By default: 0.1C ₁₀)	<input type="checkbox"/>	
Set the monitoring module according to the voltage suggested by the battery supplier.	<input type="checkbox"/>	
Floating Charge (FC) voltage range: 42V ~ Boost Charge (BC) voltage. Default: 53.5V.		
BC voltage range: FC voltage ~ 58V. By default: 56.4V.		
For batteries that do not need BC, set the BC voltage to FC voltage plus 0.1V		
Measure the battery voltage with a multimeter and record it. Enter Main menu → Maintenance (password: 1) → RectTrim submenu. Set the output voltage of the rectifier to the value of the battery voltage. Insert the battery fuse. Set the output voltage of the rectifier to 53.5V	<input type="checkbox"/>	
Enter the Batt. Selection submenu. Set the “Mode” parameter to “Auto”		

3 Alarm Check And System Operation Status Check

Alarm check

Check that all functional units can trigger alarms that can be displayed on the monitoring module.

	OK	Comments
Pull out one rectifier. The “Rect N Com Failure” alarm should be triggered. Insert the rectifier in. The alarm should disappear. Repeat the same procedures on other rectifiers	<input type="checkbox"/>	
Remove battery fuse 1. The “Batt1 Failure” alarm should be triggered. Put on the fuse. The alarm should be cleared. Repeat the same on battery fuse 2	<input type="checkbox"/>	
Switch off a load MCB connected to a load route. The alarm “Load Fuse N Failure” should be triggered. Switch on the MCB, and the alarm should be cleared. Repeat the same on the other load MCBs	<input type="checkbox"/>	
Remove all the battery input fuses. Keep only one rectifier in operation. Through the monitoring module, adjust the rectifier FC voltage to make it lower than the alarm point. The alarm “DC Voltage Low” should be triggered	<input type="checkbox"/>	
Keep the rectifiers in operation. Set through the monitoring module the battery management parameter to “Manual”. Enter the maintenance menu at the monitoring module. Select “Disconnect” and confirm it. The battery protection contactor should be open, and the “BLVD” alarm should be displayed at the monitoring module	<input type="checkbox"/>	
Pull out the varistor of the AC SPD. The “SPD fault” alarm should be triggered. Insert the varistor, the alarm should be cleared	<input type="checkbox"/>	
Note: when the preceding alarms are generated, the monitoring module will give alarms after approximately 3s.		

System operation status check

There should be no alarms during normal system operation. The system operation status check can be conducted through the monitoring module.

	OK	Comments
The system model is PS48300-3B/1800: 48/30A/300/NONE; PS48300-3B/2900: 48/50A/300/NONE; PS48600-3B/2900: 48/50A/500/NONE	<input type="checkbox"/>	
The monitoring module should display the correct AC voltage	<input type="checkbox"/>	
The monitoring module should be able to display the DC voltage. The difference between the displayed voltage and that measured at the bus bar with should be less than 1%	<input type="checkbox"/>	

	OK	Comments
The monitoring module should display the battery current. The difference between the displayed and measured battery current should be less than 1%	<input type="checkbox"/>	
Check the number of the rectifier through the monitoring module. The number should be consistent with the actual number	<input type="checkbox"/>	
Check the voltage, current, current limiting point of rectifiers through the monitoring module. They should agree with the actual parameters	<input type="checkbox"/>	
For the system configured with temperature sensor, the monitoring module should be able to display the battery ambient temperature. Hold the probe of the temperature sensor with hand and watch the monitoring module, which should display the change of temperature	<input type="checkbox"/>	

4 Final Steps

	OK	Comments
Make sure that materials irrelevant to the equipment have been all removed	<input type="checkbox"/>	
Fill in the installation report and hand it over to the user	<input type="checkbox"/>	
Fill in the parameter table at the cabinet door	<input type="checkbox"/>	

If any defect is found in this equipment, inform the personnel responsible for the contract.

If repairing is needed, please fill in the FAILURE REPORT and send the report together with the defective unit to the repairing center for fault analysis.
