

STARLOG

Solar Powered Recharge System

Model 6904

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1. INTRODUCTION

The Solar Powered Recharge System (Models 6904B/C/D) is designed to allow the long term use of NiCad and 12V DC Gel Cells in the field without the need for recharging from the mains.

The entire system is designed to be maintenance free once installed.

Solar Panel	Battery		Fitted to
6904B	6907A	12V Gel Cell (1.2 Ah)	Model 6509 Water Level Instrument
	6907B*	12V Gel Cell (7 Ah)	Model 6805 Remote Telemetry Unit
6904C	6903A	7.2V (4Ah) NiCad Battery Pack	Model 6003 Portable Data Logger
	7900C/D	7.2V (4Ah) NiCad Battery Pack	Model 7000 MACRO Data Logger
	6910B	7.2V (4Ah) NiCad Battery Pack	Model 6004 STARLOGGER
	6907C	12V Gel Cell (12 Ah)	Model 6003 Portable Data Logger Model 7000 MACRO Data Logger Model 6004 STARLOGGER Model 6526 STARFLOW Ultrasonic Doppler Instrument Model 6518 Conductivity Instrument
6904D	6907D*	12V Gel Cell (24 Ah)	Model 6526 STARFLOW Ultrasonic Doppler Instrument Model 6518 Conductivity Instrument
	2 X 6907D	12V Gel Cell (50 Ah)	Cellular phone and zero power modem

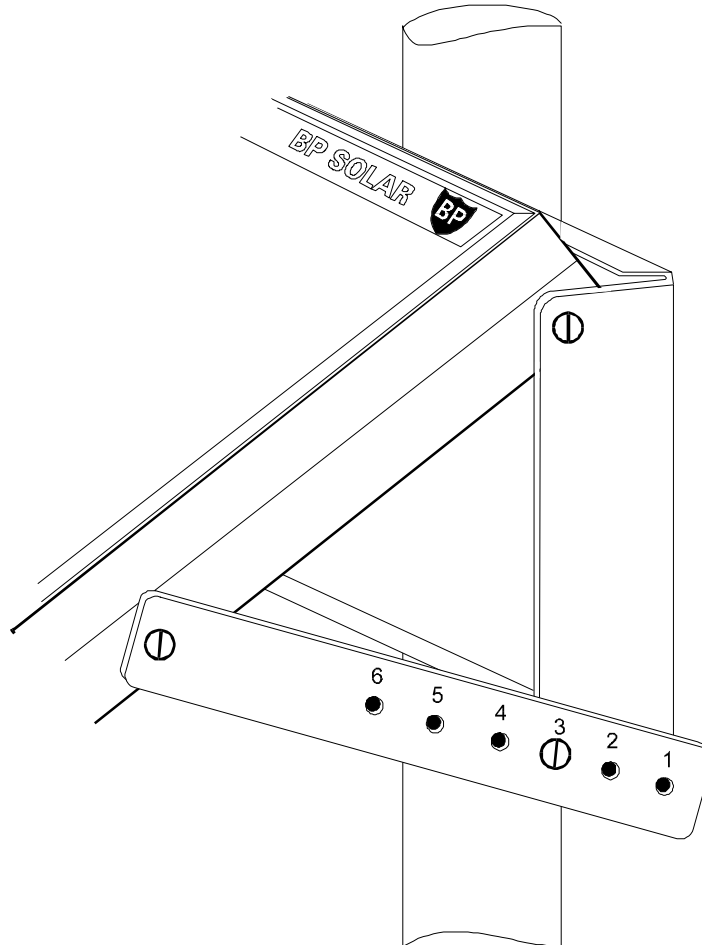
* Recommended for latitudes above 40° or in places where the sun doesn't shine for 20 days.

Operating Life

The operating life of rechargeable batteries is normally three years. (NiCad or Sealed Lead Acid/Gel Cell). The Solar Panel life is at least fifteen years.

2. INSTALLATION

The optimum installation will maximize the solar panels exposure to sunlight, provide good electrical connections, protect the cabling against damage and



allow rain water to cleanse the panel surface.

WARNINGS

Ensure that the battery is housed in a ventilated enclosure to eliminate the possibility of hydrogen gas build-up.

When connecting the solar panel, be aware that sparking may occur if the panel is exposed to sunlight. This may cause an explosion if hydrogen gas from a charging battery is present.

Note that even sealed batteries do vent hydrogen gas.

2.1. Positioning

The solar module should be installed in a position which allows the maximum sunlight to fall on it for the entire day. For maximum performance, face the solar panel towards the equator (North in the Southern Hemisphere, South in the Northern Hemisphere) and tilt at an angle depending on Latitude (see table below). This allows maximum exposure to both the Winter and Summer sun.

Latitude (°)	Tilt Angle	Hole
0 to 15°	15°	#1
16 to 30°	30°	#2
31 to 40°	40°	#3
41 to 45°	45°	#4
46 to 55°	55°	#5
56 to 90°	60°	#6

Some Cities' Latitudes:

Adelaide	35°
Auckland	37°
Berlin	53°
Brisbane	27°
Darwin	12°
Hong Kong	21°
Jakarta	6°
Kuala Lumpur	3°
London	52°
Los Angeles	32°
Madrid	41°
Melbourne	38°
Munich	48°
Osaka	33°
Paris	49°
Perth	32°
Rome	43°
San Francisco	36°
Seattle	48°
Singapore	2°
Sydney	34°
Taipei	23°

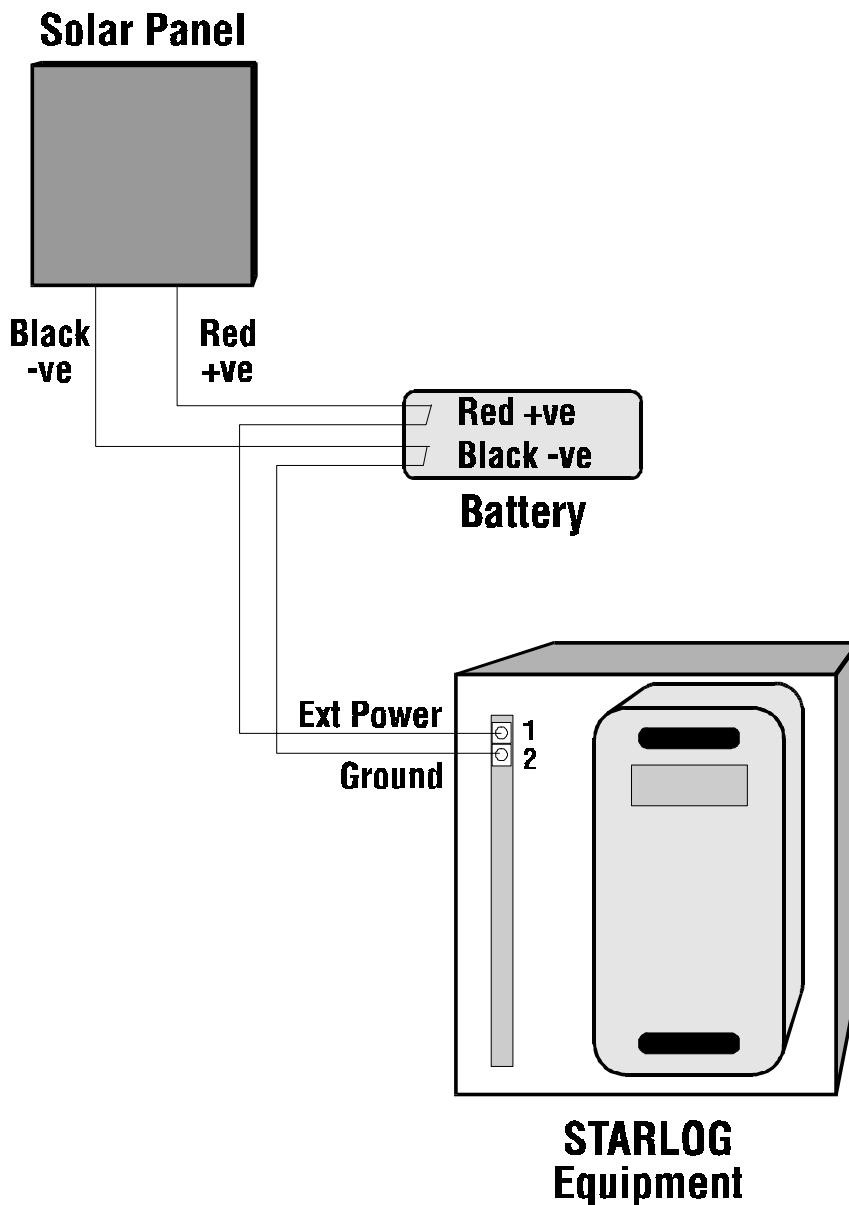
The angle of the face regardless should always be tilted slightly to allow rainwater to wash accumulated dust off the glass face.

If the panel is to be used on a motor vehicle or ship mount the panel horizontally to enable optimum sunlight regardless of vehicle positioning.

2.2. Mounting

The mounts supplied with the system allow the panel to be installed in a number of ways.

- a) By using the U-Bolts the panel may be mounted to a vertical or horizontal pole.
- b) The panel may also be bolted to any vertical or horizontal surface using 6 – 8 mm bolts.



3. ELECTRICAL CONNECTIONS

Self regulating (32 cell) panels may be used with sealed lead acid batteries and normally will not require a charge regulating system. The battery size in Amp Hours should be about 2 to 2.5 times the solar panel size in Watts. {E.g., a Model 6904C (7W) should connect to a Model 6905D (12Ah) battery.}

The Recharge System provides a nominal 12 Volts.

The solar panel connecting cable is fitted with two 6.3mm QC Piggyback Receptacles/Tabs. The positive wire is marked Red and the negative marked Black. The receptacle fits the connecting tab on the 6907 Sealed Lead Acid battery and the tab part of the Piggyback connector allows connection to STARLOG equipment.

3.1. Recharging Internal NiCad Batteries

STARLOG products that contain a rechargeable battery are provided with an "External Power" terminal. In the case of the STARLOG Data Loggers this terminal can be accessed through the input signals connector or a Field Termination Strip.

Data Logger Model #	NiCad Battery Model #	Field Termination Strip		Input Signal Connector	
		Terminal #	Function	Pin #	Function
6004 STARLOGGER	6910B	1	Model 6103B/6103D Ext Power +ve Ext Power -ve	16	Ext Power +ve Ground -ve
		2		23	
6003 Portable Data Logger	6903A				
7000 MACRO Logger	7900C	45	Model 7100B Ext Power +ve Ext Power -ve	16	Ext Power +ve Ground -ve
		44		34	

- » Note: Refer to the relevant Data Logger manual for details of operating with a NiCad Battery Pack.

In the case of the RTU, this terminal is located in the housing under the modem unit. The Water Level Instrument contains a set of terminal blocks on its NiCad battery pack.

3.2. Using External Power with a Data Logger

STARLOG Data Loggers may be operated from an external Solar Power 12V system consisting of a 12V external battery and solar panel. In this mode, the Data Logger may be fitted with an Alkaline Battery Pack (which will provide emergency power, should the external power fail) or no battery pack at all (in which case, recorded data may be lost if the external power fails.)

The external power connection is the same as for NiCad Recharging (above).

- » Note. Do not use a NiCad battery in this mode, as it will discharge the external 12V battery .
- » Note: Refer to the relevant Data Logger manual for details of operating with external power.

3.3. Model 6805-30 – Remote Telemetry Units

The Solar Powered Recharge System is supplied with the Model 6805-30 Remote Telemetry Unit.

Wire	Terminal	Description
Red	Solar +	Recharge power to battery pack
Black	Solar –	Ground (-ve)

3.4. Model 6509 - Water Level Instrument with NiCad Pack

Wire	Terminal	Description
Red	Red marked	Recharge power to battery pack
Black	Black marked	Ground (-ve)

4. SPECIFICATIONS

Inbuilt Protection: Blocking Diode
Voltage: 12V dc self-regulating
Fittings: 2 x 60mm U bolt clamps
Cable: 2 wire, 2m

Model 6904B

Power: 2 Watts, 0.15 Amps at 1000 W/m²
Size: 186 x 150 x 25 mm (L x W x H)
Weight: 900 g

Model 6904C

Power: 7 Watts, 0.45 Amps at 1000 W/m²
Size: 258 x 238 x 25 mm (L x W x H)
Weight: 3 kg

Model 6904D

Power: 12 Watts, 1 Amp at 1000 W/m²
Size: 478 x 238 x 25 mm (L x W x H)
Weight: 4.4 kg

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