PS-MPPT

Bit	#	Fault	LED Indication — Charging Status	LED Indication — Battery Status	Description	Causes	Solutions
Array Fault							
0	1	Overcurrent	Solid R	Solid R	The charge current exceeds the controller's rating	PV Array is too large	Consult the documentation for maximum current ratings
1	2	FETs shorted	Solid R	Solid R	MOSFET(s) damaged - short circuited	The current sense circuitry is malfunctioning A power MOSFET is damaged (short circuited) An external short has occurred	Contact distributor for service Contact distributor for service Be sure the positive power terminals are not wired together externally
2	3	Software bug	Solid R	Solid R	A software error has occurred in the processor	This is an internal software problem	Update to latest firmware from the Morningstar website
3	4	Battery HVD	Blink R	Blink R	Battery voltage exceeds high voltage disconnect threshold - halt in charging	Another charging source in the system is over-charging the battery	Remove the other charging source, check its operation and charging voltage. Keep the charging voltage at or below the SSMPPT charging voltage.
4	5	Array HVD	Blink R	R - Y - G	PV input voltage above safe operating limit	Array input voltage exceeds operational ratings	Consult documentation for maximum array voltage. Keep array voltage below maximum rating. Be sure to take into account temperature effects on the array Voc.
5	6	EEPROM setting edit (reset required)	Solid R	R - Y - G	EEPROM settings edited while running	A set point was changed via custom programing	Restart/power cycle to reset. MSView Coil Reset command may also be used.
6	7	RTS shorted	Solid R	R/Y - G/Y	Short circuit detected in Remote Temp Sensor	The RTS cable has been pinched or otherwise shorted	Inspect RTS cable and connection Inspect RTS terminals for dust/dirt/moisture and clean with alcohol if necessary
7	8	RTS disconnected	Solid R	R/Y - G/Y	Remote Temp Sensor has been disconnected (was properly connected)	The RTS terminal connections have collected dust/moisture and are causing an erroneous reading. The RTS is no longer detected. Previously a valid RTS signal was present.	Inspect the RTS connection for loose wires. Inspect the RTS cable for breaks. Inspect RTS cable and connection
8	9	Local Temp. Sensor Failed	Solid R	R/Y - G/Y	Damaged local (ambient) temp sensor	Local Temp. Sensor has been damaged	Contact distributor for service
9	10	Battery LVD	Solid R	R/Y - G/Y	Battery voltage below minimum operating range, possible halt to charging possible	Battery Voltage below controller's minimum operating voltage	Consult documentation for minimum battery operating voltage. Resize system as necessary to prevent batteries drained below this minimum level.
10	11	Slave Control Timeout	Blink R	R - Y - G	Slave mode charging control has timed-out	Loss of communications with controller	Check physical communications connection to controller, check master device is still powered and sending commands
11	12	DIP Switch Changed (excl. DIP 8)	Blink R	R - Y - G	DIP switch changed while running	User changed a DIP switch during operation DIP switch(s) not fully in on/off position Dirt/Debris/Condensation	Return the DIP switches to original position or reset the PSMPPT so that the new changes take effect. Check all DIP switches to ensure they are in full 'on' or 'off' position Inspect the PCB around the DIP switches for moisture, corrosion,
Load Fault							
0	17	External Short Circuit		R/G - Y	External wiring short circuit	A short occurred on a power cable A system miswire	Inspect the system wiring for shorts, damaged insulation, etc. Be sure the positive power terminals are not wired together externally
1	18	Load Over-current		R/Y - G	Load current draw exceeds the controllers rating	Damaged load causing excessive current draw Load draws more than SSMPPT rated current	Inspect and test load for proper operation Reduce loads connected to SSMPPT load terminals. Connect these loads directly to battery instead.
2	19	Load MOSFETs damaged		R - Y - G	Load MOSFETs shorted	Damaged load causing excessive current draw Voltage on the Load terminals An external short has occurred A power MOSFET is damaged (short circuited)	Inspect and test load for proper operation Verify there are no other power sources connected to the load output circuit Be sure the positive power terminals are not wired together externally
3	20	Software bug		R - G	A software error has occurred in the processor	This is an internal software problem	Contact distributor for service Update to latest firmware from the Morningstar website
4	21	Load HVD		R - Y - G	Battery voltage exceeds load high voltage disconnect threshold	Another charging source in the system is over-charging the battery	Be sure the positive power terminals are not wired together externally Remove the other charging source, check its operation and charging voltage. Keep the charging voltage at or below the SSMPPT charging voltage.
5	22	Heatsink Over-Temperature		R - Y	Heatsink temperature exceeds safe operating limits - load disconnected	Poor airflow around controller Excessive ambient temperature	Ensure controller is mounted in a position with enough clearance on all sides. See manual for more information. Check ambient temperature at the controller location. Ensure temperature is below maximum temp rating of SSMPPT. See manual for more information.

Array Fault

Bit	Array Fault	Charging Status	Battery Status	Description	Causes	Solutions
		Blink R	R - Y - G			
6	23			DIP Switch Changed (excl. DIP 8)	DIP switch changed while running / User changed a DIP switch during operation / DIP switch(s) not fully in on/off position / Dirt/Debris/Condensation	Return the DIP switches to original position or reset the PSMPPT so that the new changes take effect. Check all DIP switches to ensure they are in full 'on' or 'off' position / Inspect the PCB around the DIP switches for moisture, corrosion, debris
7	24	Solid R	R - Y - G	EEPROM setting edit (reset required)	EEPROM settings edited while running / A set point was changed via custom programing	Restart/power cycle to reset. MSView Coil Reset command may also be used.

Alarm

Bit	Alarm	Charging Status	Battery Status	Description	Causes	Solutions
		R - Y - G	R/Y - G/Y			
0	1	RTS open		Remote Temp Sensor Disconnected (always set if no RTS connected)	RTS not connected	RTS not required for operation, RTS can be connected if desired for more accurate temperature compensated charging
1	2	RTS shorted	R/Y - G/Y	Short circuit detected in Remote Temp Sensor	See Array Fault: RTS shorted above.	See Array Fault: RTS shorted above.
2	3	RTS disconnected	R/Y - G/Y	Remote Temp Sensor has been disconnected (was properly connected)	See Array Fault: RTS disconnected above.	See Array Fault: RTS disconnected above.
3	4	Ths open		Heatsink temp. sensor open circuit	Damage to heatsink temperature sensor	Without accurate temperature sensor, controller cannot prevent the heatsink temperature from exceeding safe levels. Contact distributor for service.
4	5	Ths shorted		Heatsink temp. sensor short circuit	Damage to heatsink temperature sensor	Without accurate temperature sensor, controller cannot prevent the heatsink temperature from exceeding safe levels. Contact distributor for service.
5	6	Heatsink Hot (active temp limiting)		Heatsink High Temperature Warning, reduction of charging current	Poor airflow around controller / Excessive ambient temperature	Ensure controller is mounted in a position with enough clearance on all sides. See manual for more information. Check ambient temperature at the controller location. Ensure temperature is below maximum temp rating of SSMPPT. See manual for more information.
6	7	Tind (inductor temp sensor) Open		Inductor temp. sensor open circuit	Damage to one or more inductor temperature sensors	Without accurate temperature sensor, controller cannot prevent the inductor temperature from exceeding safe levels. Contact distributor for service.
7	8	Tind (inductor temp sensor) Short		Inductor temp. sensor short circuit	Damage to one or more inductor temperature sensors	Without accurate temperature sensor, controller cannot prevent the inductor temperature from exceeding safe levels. Contact distributor for service.
8	9	Tind Hot (active temp limiting)		Inductor high temp. warning, reduction of charging current	Poor airflow around controller / Excessive ambient temperature	Ensure controller is mounted in a position with enough clearance on all sides. See manual for more information. Check ambient temperature at the controller location. Ensure temperature is below maximum temp rating of SSMPPT. See manual for more information.
9	10	Current limit		Active limiting of charging current	Input power exceeds controller rating	No action required, controller will operate at full rated output.
10	11	Current offset		Erroneous current reading when there should be zero current, could lead to inaccurate load and/or array current measurements	Failed current offset routine	Reboot controller and allow sweep of array input. Check if Alarm returns. Contact distributor for service
11	12	Battery Sense Out of Range	R/Y - G/Y	Battery sense voltage out of acceptable range	Damage to current measurement circuit / Disconnected wire on the Battery Sense / Greater than 5V difference between Sense and Battery Voltage	Inspect Battery Sense connection / Inspect Battery sense wires and connection. Inspect Battery power cables and connection.
12	13	Battery Sense Disconnected	R/Y - G/Y	Battery sense was working, now out of range	Disconnected wire on the Battery Sense / Greater than 5V difference between Sense and Battery Voltage	Inspect Battery Sense connection / Inspect Battery sense wires and connection. Inspect Battery power cables and connection.
13	14	Uncalibrated		Factory calibration was not performed, inaccurate current and/or voltage readings may result	Calibration of measurement circuits not performed at factory	Contact distributor for service.
14	15	Tb 5V (RTS miswire)	R/Y - G/Y	Remote Temp Sensor wired incorrectly	Battery Sense and/or RTS wired incorrectly	Ensure Battery Sense and RTS wired to correct terminals with correct polarity
15	16	FP10 Supply Out of Range		Floating 10V internal power supply out-of-range. Unit may still operate correctly, but this is an indication of a potential hardware failure.	Internal hardware problem	Contact distributor for service
16	17	unused				
17	18	FET open		MOSFET(s) damaged - open circuit	Hardware failure	Contact distributor for service

Bit	Array Fault	Charging Status	Battery Status	Description	Causes	Solutions
18	19 IA Offset			Erroneous current reading when there should be zero current, could lead to inaccurate array current measurement	Failed current offset routine	Reboot controller and allow sweep of array input. Check if Alarm returns
19	20 IL Offset			Erroneous current reading when there should be zero current, could lead to inaccurate load current measurement	Damage to current measurement circuit / Failed current offset routine	Contact distributor for service / Reboot controller and allow sweep of array input. Check if Alarm returns
20	21 3V Supply Out of Range			P3 internal power supply out-of-range. Unit should still operate correctly, but this is an indication of a potential hardware failure.	Damage to current measurement circuit / Internal hardware problem	Contact distributor for service / Contact distributor for service
21	22 12V Supply Out of Range			P12 internal power supply out-of-range. Unit should still operate correctly, but this is an indication of a potential hardware failure.	Internal hardware problem	Contact distributor for service
22	23 high Va current limit			PV input voltage too high, current limiting to protect hardware	Array input voltage too high for safe operation	Consult documentation for maximum array voltage. Keep array voltage below maximum rating. Be sure to take into account temperature effects on the array Voc.
23	24 Power on Reset			A power down reset has occurred	Controller has lost power	None required
24	25 LVD			Low Voltage Disconnect (load) condition has occurred and the load was disconnected	Battery voltage has dropped below the load low voltage disconnect threshold	None required – condition will recover when battery bank charges up to a higher level
25	26 Log Timeout			Controller has not detected a complete sunrise/sunset cycle in the 24hrs since last log entry write	Could indicate excessively low array voltage, high ambient light conditions at night, or miswiring of the solar array. Check all of these factors.	Reboot controller (power cycle on/off) and check if Alarm returns.
26	27 EEPROM Access Failure			Log data and/or custom charging settings load failure	Hardware failure, no access to log data or custom settings memory	Reboot controller (power cycle on/off) and check if Alarm returns. If yes, contact distributor for service.