

Bit	Fault	LED Indication	Description	Causes	Solutions
2	RTS disconnected	R/Y – G/Y	Remote Temp Sensor has been disconnected (was properly connected)	See Fault: RTS disconnected above.	See Fault: RTS disconnected above.
3	Heatsink temp sensor 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	Heatsink temp sensor 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	High temperature current limit		Heatsink High Temperature Warning, reduction of charging current	Poor airflow around controller	Ensure controller is mounted in a position with enough clearance on all sides. See manual for more information.
6	Current limit		Active limiting of charging current	Excessive ambient temperature	Check ambient temperature at the controller location. Ensure temperature is below maximum temp rating of SSMPPT. See manual for more information.
7	Current offset		Erroneous current reading when there should be zero current, could lead to inaccurate current measurements	Input power exceeds controller rating Failed current offset routine	No action required, controller will operate at full rated output. Reboot controller and allow sweep of array input. Check if Alarm returns
8	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	Contact distributor for service Inspect Battery Sense connection Inspect Battery sense wires and connection. Inspect Battery power cables and connection.
9	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.
10	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.
11	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
12-13	unused				
14	Miswire		External system wiring error	Wiring installation error	
15	MOSFET open		MOSFET(s) damaged - open circuit	Hardware failure	Check all wiring for correct connections, check for short circuits and unconnected wires.
16	P12		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
17	High input voltage current limit		PV input voltage too high, current limiting to protect hardware	Array input voltage too high for safe operation	Contact distributor for service
18	ADC input max		ADC input max		Consult documentation for maximum array voltage. Keep array voltage below maximum rating. Be sure to take into account temperature effects on the array Voc.
19	Controller was reset		A power down reset has occurred	Internal hardware problem See Fault: Reset above.	Contact distributor for service
20	Alarm 21		EEPROM Communications Problem	Comm EEPROM lookup (Control & Ethernet processors stop talking)	See Fault: Reset above. make sure that the unit has the latest A and B firmware - this error may be related to the I2C communications lookup problem with old firmware.
21	P3 voltage 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.	Internal hardware problem	Contact distributor for service
22	De-rate limit		Input power/voltage triggering operation at a de-rate limit	System configuration/design causing the controller to operate in a derated mode, full output power not achieved	Consult documentation for deratings. If desired, evaluate system design to adjust operating points to prevent encountering a derate condition.
23			Erroneous current reading when there should be zero current, could lead to inaccurate current measurements	Failed current offset routine	Reboot controller and allow sweep of array input. Check if Alarm returns
24	Array current offset		EEProm detected data packet error(it should recover but will be show up on internal log file under Daily Alarms ')	Damage to current measurement circuit	Contact distributor for service
25	Ethernet alarm		Ethernet communications problem	Various	If repeatedly showing this alarm after reboot, contact distributor for service.
26	unused				If repeatedly showing this alarm after reboot, contact distributor for service.
27	Alarm 28 (software)		Internal software error	Various	
28			Floating 12V internal power supply out-of-range. Unit should still operate correctly, but this is an indication of a potential hardware failure.	Internal hardware problem	If repeatedly showing this alarm after reboot, contact distributor for service.
29	Flash Memory Failure		Flash memory read/write failure, unable to access memory	Internal hardware problem	Contact distributor for service
30-31	unused				

TS-MPPT-600V

Bit	Fault	LED Indication		Description	Causes	Solutions
		R/Y – G	The charge or load current exceeds the controllers rating			
0	1	overcurrent			PV Array is too large	Consult the Tristar documentation for maximum current ratings
1	2	FETs shorted	R – Y – G	MOSFETs shorted	The current sense circuitry is malfunctioning A power MOSFET is damaged An external short has occurred	Tristar Requires Service or replacement Refer to the Tristar MOSFET Replacement instructions Be sure the positive input/output power terminals are not wired together
2	3	software bug	R – Y – G	A software error has occurred in the processor	Solar input voltage too low This is an internal software problem	Ensure PV Voc is greater than battery voltage Update to latest firmware from the Morningstar website
3	4	battery HVD	R – G	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 SSMPT charging voltage. Contact distributor for service
4	5	array HVD	R – Y – G	PV input voltage above safe operating limit	Power MOSFETs may be shorted 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. Return the DIP switches to original position or reset the SSMPT so that the new changes take effect.
5	6	DIP switch changed	R – Y – G	DIP switch changed while running	User changed a DIP switch during operation	Check all DIP switches to ensure they are in full 'on' or 'off' position
6	7	Custom settings edit	R – Y – G	EEPROM settings edited while running	Dirty/Debris/Condensation A set point was changed via custom programming	Inspect the PCB around the DIP switches for moisture, corrosion, debris Restart/power cycle to reset. MSView Coil Reset command may also be used.
7	8	RTS shorted	R/Y – G/Y	Short circuit detected in Remote Temp Sensor	The RTS cable has been pinched or otherwise shorted 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 RTS cable and connection Inspect RTS terminals for dust/dirt/moisture and clean with alcohol if necessary Inspect the RTS connection for loose wires. Inspect the RTS cable for breaks.
8	9	RTS disconnected	R/Y – G/Y	Remote Temp Sensor has been disconnected (was properly connected)	Environmental noise causing on-board communications problems with EEPROM (long term memory)	Investigate if there is extreme environmental noise present in the vicinity of the TSMPT. Reboot TSMPT and see if fault returns.
9	10	EEPROM retry limit	R – Y – G	EEPROM Communications Problem	Hardware failure Controller has lost power Loss of communications with controller	Contact distributor for service None required Check physical communications connection to controller, check master device is still powered and sending commands
10	11	Reset	R – Y – G	A power down reset has occurred	Hardware failure Controller has lost power Loss of communications with controller	Check to make sure master device is configured to send slave commands at least once every 60 seconds Retry, try different RL-11 cable, try different TS Meter
11	12	Slave Control Timeout	R – Y – G	Slave mode charging control has timed-out	Battery Voltage below controller's minimum operating voltage	Contact distributor for service Consult documentation for minimum battery operating voltage. Resize system as necessary to prevent batteries drained below this minimum level.
12	13	RS-232 Serial to Meter Bridge	R – Y – G	TS Meter reprogramming bridge mode failure	Controller has not received a slave command in over 60 seconds	If repeatedly showing this alarm after reboot, contact distributor for service.
13	14	Battery LVD		Battery voltage below minimum operating range, possible halt to charging possible	TS Meter not accepting firmware update Hardware failure Battery Voltage below controller's minimum operating voltage	Contact distributor for service Consult documentation for minimum battery operating voltage. Resize system as necessary to prevent batteries drained below this minimum level.
14	15	unused			Various	
15	16	Power-board communication fault		Communications between the power board and control board interrupted and retry limit exceeded	Various	
16	17	Fault 17 (software)		Internal software error	Various	
17	18	unused			Hardware failure	
18-21	19-22	Fault 19-22 (software)		Internal software error	Hardware failure	
22	23	FPGA Version		FPGA version not correct and could not be updated	Hardware failure	
23	24	Current sensor reference out of range		Input current sensor inaccurate and unreliable for correct operation	Hardware failure	
24-31	25-32	unused				

Bit Alarm

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 Fault: RTS shorted above.

See Fault: RTS shorted above.