Vertical Second (mathematical) Second	Without accurate temperature sensor, controller cannot prevent the heatsink temperature from exceeding safe levels. Contact distributor for service.	Damage to heatsink temperature sensor	Heatsink temp. sensor open circuit		Heatsink temp sensor open	4	ω	
Type of the formation of the product of the p	Charging See Fault: RTS shorted above. See Fault: RTS disconnected above.	See Fault: RTS shorted above.) See Fault: RTS disconnected above.	Short circuit detected in Remote Temp Sensor Remote Temp Sensor has been disconnected (was properly connected	R/Y – G/Y R/Y – G/Y	RTS shorted RTS disconnected	ωN	2 1	
Type Prior P	RTS not required for operation, RTS can be connected if desired for more accurate temperature compensated	RTS not connected	Remote Temp Sensor Disconnected (always set if no RTS connected)		RTS open	1	0	
Texture Controlution Controlution r Find KD Description PLANE Controlution PLANE Control PLANE					Alarm		Bit	
Texter Construction	See Fault: battery HVD above.		Battery voltage exceeds high voltage disconnect threshold - halt in charging	R – G	Battery HVD Max unused	15 16	14 15	
Case Case<	Alarm returns Contact distributor for service	ment circuit	Erroneous current reading when there should be zero current, could lead to inaccurate load and/or array current measurements	R-Y-G	Current Offset	14	13	
TSAMPT-TSAV Case of the control is a control	Check to make sure master device is configured to send slave commands at least once every 60 seconds Retry, try different RJ-11 cable, try different TS Meter Contact distributor for service pohoet controllar ond allow sweep of array input. Check	ı slave command in over 60 seconds ware update	TS Meter reprogramming bridge mode failure	R-Y-G	R5-232 Serial to Meter Bridge	13	12	
Fund Fund Cancer Cancer 1 overcurrent R/Y-G The charge or load current waves it is controllers rating PV Array is too large 2 FETs shored R-Y-G MOSFET shored R-Y-G Acrivate wave discurrent waves discurrent The current waves discurrent waves discurrent The current waves discurrent 3 schware bug R-Y-G Acrivate error has occurred in the processor Schware bud Schware bud The is an internal short wave problem 4 battery M/D R-Y-G Acrivate error has occurred in the processor Schware bud Acrivate wave discurrent wave discurrent wave discurrent wave discurrent wave in the system is over-charging the batter 5 arry M/D R-Y-G Dir put voltage acceeds high voltage disconnet threshold - halt in Schware batter 6 Dir writch changed R-Y-G Dir writch changed winte running User changed a DIP writch fully in orl/Grit position 7 Custom setting self R-Y-G/Y Biost circuit desender internote Two Sensor has been disconnet fully as problem User barry as integrat winte running the State and connecticut was changed via custom programing. 8 RTS schoneeted R-Y-G/Y Biost	Check physical communications connection to controlle check master device is still powered and sending comm		A power down reset has occurred Slave mode charging control has timed-out	R - Y - G	Reset Slave Control Timeout	11 12	10 11	
TSAMPT-LSV Cancer Cancer Fash Fash Choic action Description PArry is too large 1 overcurrent R_1/rG The carge or load current exceeds the controllers string PArry is too large 2 FETs shorted RYG Record action or load current exceeds the processor The current seawae circular (in training too low concernation in the processor) Solar input voltage too low changing too low changing source in the system is over-changing the battery 3 ashore bug $RY-G$ Battery roltage exceeds high voltage disconnect thrashold - half in this an internal achieve problem Courrent seawae circular (in the processor) Changing source in the system is over-changing the battery 5 arry HOD $RY-G$ Print voltage above safe operating limit Onder changing source in the system is over-changing the battery 6 DP switch changed $RY-G$ Print voltage above safe operating limit Over MOSET anal beat befored and print voltage exceeds high voltage disconnecting limit Over MOSET anal beat befored and print voltage exceeds operation antings 7 Cutron setting setting setting setting setting setting setting setting setting limit Record a DP switch during operation antis and sea anting operation anting is an interocour readi	Contact distributor for service None required							
TSMPF1-TSV Fut $R_{V/-G}$ Conclusion $R_{V/-G}$ Description $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ Case $R_{V/-G}$ The current serie circulity is millicultioning R_{O} with voltage too low R_{O} The current serie circulity is millicultioning R_{O} with voltage too low R_{O} Sale ripet voltage too low robe ripet so robe ripet voltage too low robe ripet voltage too robe ripet voltage ripet voltage ripet voltage ripet voltage ripet vo	Investigate if there is extreme environmental noise pre- in the vicinity of the TSMPPT. Reboot TSMPPT and see in Fault returns.	on-board communications problems with	EEPROM Communications Problem	R-Y-G	EEPROM retry limit	10	ø	
Full Full Description Cause 1 overurent R/Y-G The charge or load current exceeds the controllers rating PV Arry is to large PV Arry is to large 2 FETs shorted R-Y-G The current exceeds the controllers rating PV Arry is to large The current sens circultry is malfunctioning Arrent is over MOSEET and the processor The current sens circultry is malfunctioning An external short has occurred The current sens circultry is malfunctioning An external short has occurred Solar input voltage too low An external short has occurred The current sens circultry is malfunctioning An external short has occurred Solar input voltage too low An external short has occurred The current sens circultry is malfunctioning An external short has occurred Solar input voltage too low An external short has occurred The current sens circultry is malfunctioning An external short has occurred Solar input voltage too low An external short has occurred Solar input voltage too low An external short has occurred Solar input voltage too low Solar input voltage too low Solar input voltage too low Solar input voltage to over charging the battery 3 anty HVD R-Y-G Dir put voltage exceeds high voltage of operating limit Over MOSEETs may be shored Arry input voltage exceed operational ratings Sover Angring to voltage exceed operational ratings	Inspect the RTS connection for loose wires. Inspect the cable for breaks.		Remote Temp Sensor has been disconnected (was properly connected)	R/Y-G/Y	RTS disconnected	Q	60	
Jest Fundication Description Causes rat rate rat rate rat	Inspect RTS cable and connection Inspect RTS terminals for dust/dirt/moisture and clean u alcohol if necessary	ed or othenwise shorted have collected dust/moisture and are	Short circuit detected in Remote Temp Sensor	R/Y-G/Y	RTS shorted	00	7	
In Support Support Canadiant Canadiant 1 Part R/V-G The charge or load current exceeds the controllers rating PM Arry is too large 2 For shorted R-V-G The charge or load current exceeds the controllers rating PM Arry is too large Carrent sense circuitry is mailunctioning 2 For shorted R-V-G Approve rotation accurred in the processor The current sense circuitry is mailunctioning Approver MOSEFE is damaged 3 Software bug R-V-G Approver rotation accurred in the processor Solar input voltage too low Solar input voltage too low 4 Battery H/D R-G Bestery voltage exceeds high voltage discontent theshold - halt in Another charging source in the system is over-charging the battery 5 array H/D R-Y-G DIP switch changed R-Y-G DIP switch changed Solar input voltage exceeds high voltage aloose as fe operating limit Solar input voltage exceeds period as a niver and solar exceeds period as a niver and solar exceeds period and period as a niver and solar exceeds period and period as a niver and solar exceeds period and period as a niver and solar exceeds period and period exceeds period as a niver and solar exceeds period as a niver and solar exceeds period as a niver and solar exceeds period and period exceeds period as a n	Restart/power cycle to reset. MSView Coil Reset comm may also be used.	changed via custom programing	EEPROM settings edited while running	R-Y-G	Custom settings edit	7	σ	
Causes Fault LED Indication Description Causes 1 Vercurrent R/Y-G The charge or load current exceeds the controllers rating PV Array is too large 2 FETs shorted R-Y-G The charge or load current exceeds the controllers rating PV Array is too large 3 software bug R-Y-G Asoftware error has occurred in the processor Salar input voltage too low 4 battery HVD R-G Battery voltage exceeds high voltage disconnect threshold - halt in Another charging source in the system is over-charging the battery 5 array HVD R-Y-G PV input voltage above safe operating limit Power MOSFETs may be shorted 6 DIP switch changed R-Y-G DIP switch changed while running User changed a DIP switch during operation 0 psyltch (s) not fully in on/off position DIP switch changed while running Dip switch (s) not fully in on/off position	position Inspect the PCB around the DIP switches for moisture, porrosion debris							
Cause rait Fait LED Indication Ray of R/V-G The charge or load current exceeds the controllers rating PV Array is too large 2 FETS shorted R-Y-G MOSFETS shorted The current sense circuitry is malfunctioning An external short has occurred in the processor The current sense circuitry is malfunctioning An external short has occurred 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 4 battery HVD R-G Battery voltage exceeds high voltage disconnect threshold - halt in charging An other charging source in the system is over-charging the battery 5 array HVD R-Y-G PV input voltage above safe operating limit Power MOSFETs may be shorted Array input voltage exceeds operating limit	account temperature effects on the array Voc. Return the DIP switches to original position or reset the SMPPT so that the new changes take effect. Check all DIP switches to ensure they are in full 'on' or '	tion	DIP switch changed while running	R-Y-G	DIP switch changed		ы	
Sample Fault Causes Fault LED Indication Description PV Causes 1 overcurrent R/V-G The charge or load current exceeds the controllers rating PV Array is too large PV Array is too large 2 FETS shorted R-Y-G MOSFETs shorted The current sense circuitry is malfunctioning A power MOSFET is damaged An external short has occurred The current sense circuitry is malfunctioning A power MOSFET is damaged A power MOSFET is damaged A setternal short has occurred 3 software bug R-Y-G A software error has occurred in the processor Salar input voltage too low This is an internal software problem 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	Contact distributor for service Consult documentation for maximum array voltage. Ke xrray voltage below maximum rating. Be sure to take ir	ational ratings	PV input voltage above safe operating limit	R-Y-G	array HVD		4	
TSJ.MPPT-ISOV Causes Fault LED Indication Description PV Causes 1 overcurrent R/Y-G The charge or load current exceeds the controllers rating PV Array is too large PV Array is too large 2 FETs shorted R-Y-G MOSFETs shorted The current sense circuitry is malfunctioning 3 software bug R-Y-G Asoftware error has occurred in the processor Solar input voltage too low	Remove the other charging source, check its operation a sharging voltage. Keep the charging voltage at or below SMPPT charging voltage.		Battery voltage exceeds high voltage disconnect threshold - halt in charging	RIG	battery HVD		ω	
TS-MPPT-150V Causes Fault LED Indication Description Causes 1 overcurrent R/V-G The charge or load current exceeds the controllers rating PV Array is too large 1 overcurrent R/V-G The charge or load current exceeds the controllers rating PV Array is too large 2 FETs shorted R-V-G MOSFETs shorted The current sense circuitry is malfunctioning A power MOSFET is damaged An external short has occurred	insure togenier insure PV Voc is greater than battery voltage Jpdate to latest firmware from the Morningstar website	problem		R-Y-G	software bug		2	
TS.MPPT-150V Fault LED Indication Description Causes 1 overcurrent R/V-G The charge or load current exceeds the controllers rating PV Array is too large	riStar Requires Service or replacement refer to the TriStar MOSFET Replacement instructions be sure the positive input/output power terminals are re			R-Y-G	ETs shorted		4	
	Solutions onsult the TriStar documentation for maximum current atings	Causes	Description The charge or load current exceeds the controllers rating	LED Indication R/Y – G	Fault wercurrent		o Bit	
	Delutione				-150V	S-MPPT.		

		20	19	18			17		16	15		14	12-13	11		10			9			00			7		6					S			4	Bit	
		21	20	19			18		17	16		15	13-14	12		11			10			9			00		7					6			S		
		Alarm 21	Controller was reset	ADC input max			High input voltage current limit		P12	MOSFET open			unused	KIS miswire		Uncalibrated			Battery sense disconnected			Battery sense out of range			Current offset		Current limit					High temperature current limit			Heatsink temp sensor shorted	Fault	
														K/T - G/T	2				R/Y - G/Y			R/Y - G/Y														LED Indication	
		EEPROM Communications Problem	A power down reset has occurred	ADC input max			PV input voltage too high, current limiting to protect hardware	correctly, but this is an indication of a potential hardware failure.	P12 Internal power supply out-of-range. Unit should still operate	MOSFET(s) damaged - open circuit		External system wiring error		Remote Lemp Sensor Wired Incorrectly	voltage readings may result	Factory calibration was not performed, inaccurate current and/or			Battery sense was working, now out of range			Battery sense voltage out of acceptable range		lead to inaccurate load and/or array current measurements	Erroneous current reading when there should be zero current, could		Active limiting of charging current					Heatsink High Temperature Warning, reduction of charging current			Heatsink temp. sensor short circuit	Description	
		Comm EEprom lockup (Control & Ethernet processors stop talking)	See Fault: Reset above.	Internal hardware problem			Array input voltage too high for safe operation		Internal hardware problem	Hardware failure		Wiring installation error		pattery sense and/or NTS wired incorrectly		Calibration of measurement circuits not performed at factory		Greater than 5V difference between Sense and Battery Voltage	Disconnected wire on the Battery Sense		Greater than 5V difference between Sense and Battery Voltage	Disconnected wire on the Battery Sense	Damage to current measurement circuit		Failed current offset routine		Input power exceeds controller rating			Excessive ambient temperature		Poor airflow around controller			Damage to heatsink temperature sensor	Causes	
problem with old firmware.	error may be related to the I2C communications lockup	make sure that the unit has the latest A and B firmware - this	See Fault: Reset above.	Contact distributor for service	account temperature effects on the array Voc.	array voltage below maximum rating. Be sure to take into	Consult documentation for maximum array voltage. Keep		Contact distributor for service	Contact distributor for service	circuits and unconnected wires.	Check all wiring for correct connections, check for short	with correct polarity	Elistic pattery being and his when to correct terminals	The same Distance of Distance to source the second terms in the	Contact distributor for service.	power cables and connection.	Inspect Battery sense wires and connection. Inspect Battery	Inspect Battery Sense connection	power cables and connection.	Inspect Battery sense wires and connection. Inspect Battery	Inspect Battery Sense connection	Contact distributor for service	Alarm returns	Reboot controller and allow sweep of array input. Check if	output.	No action required, controller will operate at full rated	SSMPPT. See manual for more information.	Ensure temperature is below maximum temp rating of	Check ambient temperature at the controller location.	clearance on all sides. See manual for more information.	Ensure controller is mounted in a position with enough	levels. Contact distributor for service.	prevent the heatsink temperature from exceeding safe	Without accurate temperature sensor, controller cannot	Solutions	

Solutions

make sure that the unit has the latest A and B firmware - this error may be related to the I2C communications lockup problem with old firmware.

21-23 22-24 unused