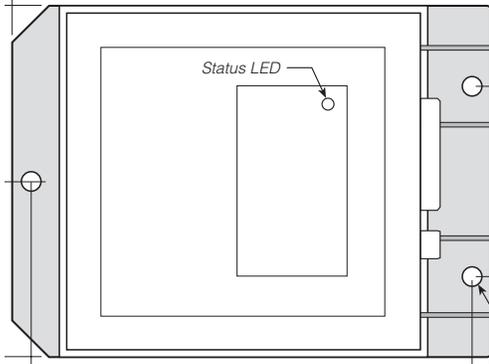


# **1227 Troubleshooting Chart**



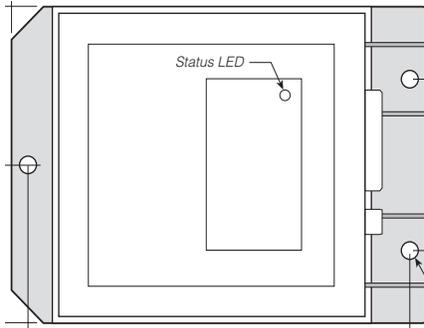
7 — DIAGNOSTICS & TROUBLESHOOTING

**Table 8 TROUBLESHOOTING CHART**

LED CODE	PROGRAMMER LCD DISPLAY	EXPLANATION	POSSIBLE CAUSE
1,1	HARDWARE FAILSAFE 2	output fault	1. Short in motor or in motor wiring. 2. Controller failure.
	HARDWARE FAILSAFE 4	overcurrent fault	1. Short in motor or in motor wiring. 2. Controller failure.
1,2	HARDWARE FAILSAFE 1	EEPROM fault	1. EEPROM failure or fault.
	HARDWARE FAILSAFE 3	main contactor fault	1. Main contactor welded. 2. Main contactor driver fault. 3. Main contactor coil fault.
	PRECHARGE FAULT	precharge fault	1. Internal controller fault. 2. Low battery voltage.
	HW FAILSAFE	motor voltage fault	1. Motor voltage does not correspond to throttle request. 2. M1 or M2 output shorted to B- or B+. 3. Internal motor short. 4. Controller failure.
2,1	SRO	SRO fault	1. Improper sequence of KSI, power enable, and direction inputs. 2. Wrong SRO type selected. 3. Direction switch circuit open.
2,2	HPD	HPD fault	1. Improper sequence of KSI, power enable, and throttle inputs. 2. Misadjusted throttle pot.
2,3	PROC/WIRING FAULT	HPD fault present for >5 sec	1. Misadjusted throttle. 2. Broken throttle pot. 3. Broken throttle mechanism.
2,4	SPD LIMIT POT FAULT	speed limit pot fault	1. Speed limit pot wiper wire broken. 2. Broken speed limit pot.
3,1	BB WIRING CHECK	emerg. reverse wiring fault	1. BB wire open. 2. BB check wire open.
3,2	EM BRAKE DRVR FAULT	electromag. brake driver fault	1. Electromagnetic brake coil shorted or open. 2. Electromagnetic brake wiring open.
3,3	THROTTLE FAULT 1	throttle fault	1. Throttle input wire open. 2. Throttle input wire shorted to B- or B+. 3. Throttle pot defective. 4. Wrong throttle type selected.
4,1	LOW BATTERY VOLTAGE	low battery voltage	1. Battery voltage <16 volts (24V models), <21V (36V models), or <27V (48V models). 2. Corroded or loose battery terminal. 3. Loose controller terminal.
4,2	OVERVOLTAGE	overvoltage	1. Battery voltage >36 volts (24V models), >48V (36V models), or >60V (48V models). 2. Vehicle operating with charger attached.
4,3	THERMAL CUTBACK	over-/under-temp. cutback	1. Temperature >95°C or < -25°C. 2. Excessive load on vehicle. 3. Improper mounting of controller. 4. Operation in extreme environments.

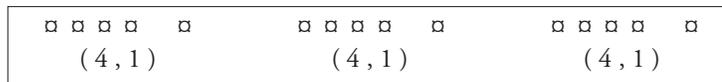
# 1227 LED Fault Codes

## LED DIAGNOSTICS



During normal operation, with no faults present, the Status LED is steadily on. If the controller detects a fault, the Status LED provides two types of information. First, it displays a slow flash (2 Hz) or a fast flash (4 Hz) to indicate the severity of the fault. Slow-flash faults are self-clearing; as soon as the fault is corrected, the vehicle will operate normally. Fast-flash faults (“\*” in Table 9) are considered to be more serious in nature and require that the keyswitch (or power enable switch, if one is used) be cycled to resume operation after the fault is corrected.

Then, after the severity indication has been active for 5 seconds, the Status LED flashes a 2-digit fault identification code continuously until the fault is corrected. For example, code “4,1”—low battery voltage—appears as:



The codes are listed in Table 9.

LEDCODES		EXPLANATION	
	<i>LED off</i>	████████	no power or defective controller
	<i>solid on</i>	□□□□	controller operational; no faults
*	1,1	□ □	output fault or overcurrent fault
*	1,2	□ □□	EEPROM, main contactor, precharge, or motor voltage fault
	1,3	□ □□□	[not used]
	1,4	□ □□□□	[not used]
	2,1	□□ □	static return to off (SRO) fault
	2,2	□□ □□	high pedal disable (HPD) fault
*	2,3	□□ □□□	HPD latching (HPD fault for >5 sec)
	2,4	□□ □□□□	speed limit pot fault
	3,1	□□□ □	emerg. rev. wiring fault (BB wiring check)
	3,2	□□□ □□	electromagnetic brake driver fault
	3,3	□□□ □□□	throttle fault
	3,4	□□□ □□□□	[not used]
	4,1	□□□□ □	battery undervoltage
	4,2	□□□□ □□	battery overvoltage
	4,3	□□□□ □□□	thermal cutback, due to over/under temp
	4,4	□□□□ □□□□	[not used]

\* = “Fast-flash” fault—must cycle keyswitch or power enable switch to clear.

NOTE: Only one fault is indicated at a time, and faults are not queued up.