Curtis F-Series Controller Troubleshooting

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The Troubleshooting Chart below lists Curtis F-Series controller fault codes. The faults list is in the numerical flash code order. The Flash Code column shows two numbers separated by a hyphen. The flash code consists of two sequences of flashes with a pause between. For example, the first entry “Controller Overcurrent” (1-2) will show as a single flash, pause, then a double flash.

After faults have been resolved, they are usually cleared by cycling the key switch off and on again.

Obtain diagnostics information from the table, and if you are unable to resolve the issue, please contact Thunderstruck Motors and provide the Flash Code and Fault Name listed in the table.

The fault status indicator is a translucent window on the cover, which blinks red and yellow LEDs. Status indicator illumination translates to following information:

Off: Controller is not powered on, or is severely damaged.

Slow yellow blinking: Controller is operating normally.

Solid yellow or orange: Controller is in flash program mode, or corrupted software is preventing the unit from completing the startup sequence.

Red/yellow flashing pattern: This is a Fault Code - review the troubleshooting chart below.

Solid red: Internal hardware fault detected by the processor, or the controller has no software loaded.

Fast flashing red: Using non-production, experimental, or custom device profile software.

Troubleshooting Chart

Flash Code		Fault Name	CAN Index
1-2	0x12	Controller Overcurrent	0x2510
1-3	0x13	Current Sensor	0x2832
1-4	0x14	Precharge Failed	0x2223
1-5	0x15	Controller Severe Undertemperature	0x2141
1-6	0x16	Controller Severe Overtemperature	0x2142
1-7	0x17	Severe B+ Undervoltage	0x2120
1-7	0x17	Severe KSI Undervoltage	0x2122
1-8	0x18	Severe B+ Overvoltage	0x2130
1-8	0x18	Severe KSI Overvoltage	0x2132
1-9	0x19	Speed Limit Supervision	0x2133
1-10	0x1A	Travel Control Supervision	0x2134
2-2	0x22	Controller Overtemperature Cutback	0x2140
2-3	0x23	Undervoltage Cutback	0x2121
2-4	0x24	Overvoltage Cutback	0x2131
2-5	0x25	Ext 5V Supply Failure	0x2531
2-6	0x26	Ext 12V Supply Failure	0x2532
2-8	0x28	Motor Temp Hot Cutback	0x2151
2-9	0x29	Motor Temp Sensor	0x2150
3-1	0x31	Main Driver	0x2222
3-2	0x32	EM Brake Driver	0x2320
3-4	0x34	Load Hold Driver	0x2430
3-5	0x35	Lower Driver	0x2440
3-6	0x36	Encoder Fault	0x2230
3-6	0x36	Sin Cos Motor Feedback	0x2232
3-7	0x37	Motor Open	0x2240
3-8	0x38	Main Contactor Welded	0x2220
3-9	0x39	Main Contactor Did Not Close	0x2221
3-10	0x3A	Motor Setup Needed	0x2103
4-2	0x42	Throttle Input	0x2210
4-4	0c44	Brake Input	0x2310

Troubleshooting Chart, cont'd

Flash Code		Fault Name	CAN Index
4-6	0x46	NV Memory Failure	0x2830
4-7	0x47	HPD Sequencing	0x2211
4-7	0x47	Emer Rev HPD	0x2331
4-9	0x49	Parameter Change	0x2813
4-10	0x4A	EMR Switch Redundancy	0x2817
5-1	0x51	User 1 Fault thru User 32 Fault	0x2710
5-2	0x52	User 2 Fault	0x2711
5-3	0x53	User 3 Fault	0x2712
5-4	0x54	User 4 Fault	0x2713
5-5	0x55	User 5 Fault	0x2720
5-6	0x56	User 6 Fault	0x2721
5-7	0x57	User 7 Fault	0x2722
5-8	0x58	User 8 Fault	0x2723
5-9	0x59	User 9 Fault	0x2730
6-1	0x61	User 10 Fault	0x2731
6-2	0x62	User 11 Fault	0x2732
6-3	0x63	User 12 Fault	0x2733
6-4	0x64	User 13 Fault	0x2740
6-5	0x65	User 14 Fault	0x2741
6-6	0x66	User 15 Fault	0x2742
6-7	0x67	User 16 Fault	0x2743
5-10	0x5A	User 17 Fault	0x2750
5-11	0x5B	User 18 Fault	0x2751
5-12	0x5C	User 19 Fault	0x2752
5-13	0x5D	User 20 Fault	0x2753
5-14	0x5E	User 21 Fault	0x2760
5-15	0x5F	User 22 Fault	0x2761
6-10	0x6A	User 23 Fault	0x2762
6-11	0x6B	User 24 Fault	0x2763
6-12	0x6C	User 25 Fault	0x2770
6-13	0x6D	User 26 Fault	0x2771

Troubleshooting Chart, cont'd

Flash Code		Fault Name	CAN Index
6-14	0x6E	User 27 Fault	0x2772
6-15	0x6F	User 28 Fault	0x2773
7-10	0x7A	User 29 Fault	0x2780
7-11	0x7B	User 30 Fault	0x2781
7-12	0x7C	User 31 Fault	0x2782
7-13	0x7D	User 32 Fault	0x2783
6-8	0x68	VCL Run Time Error	0x2820
7-2	0x72	PDO Timeout	0x2541
7-3	0x73	Stall Detected	0x2231
7-7	0x77	Supervision	0x2840
7-9	0x79	Supervision Input Check	0x2841
8-2	0x82	PDO Mapping Error	0x2542
8-3	0x83	Internal Hardware	0x2835
8-7	0x87	Motor Characterization	0x2850
8-8	0x88	Encoder Pulse Error	0x2234
8-9	0x89	Parameter Out of Range	0x2811
9-1	0x91	Bad Firmware	0x2815
9-2	0x92	EM Brake Failed to Set	0x2321
9-3	0x93	Encoder LOS	0x2233
9-4	0x94	Emer Rev Timeout	0x2330
9-6	0x96	Pump BDI	0x2450
9-9	0x99	Parameter Mismatch	0x2812
9-10	0x9A	Interlock Braking Supervision	0x2332
9-11	0x9B	EMR Supervision	0x2333
10-1	0xA1	Driver 1 Fault	0x2160
10-2	0xA2	Driver 2 Fault	0x2161
10-3	0xA3	Driver 3 Fault	0x2162
10-4	0xA4	Driver 4 Fault	0x2163
10-5	0xA5	Driver 5 Fault	0x2164
10-6	0xA6	Driver 6 Fault	0x2165
10-7	0xA7	Driver 7 Fault	0x2166
10-8	0xA8	Driver Assignment	0x2632

Troubleshooting Chart, cont'd

Flash Code		Fault Name	CAN Index
10-9	0xA9	Coil Supply Fault	0x2169
11-1	0xB1	Analog 1 Out Of Range	0x2620
11-2	0xB2	Analog 2 Out Of Range	0x2621
11-3	0xB3	Analog 3 Out Of Range	0x2622
11-4	0xB4	Analog 4 Out Of Range	0x2623
11-5	0xB5	Analog 5 Out Of Range	0x2624
11-6	0xB6	Analog 6 Out Of Range	0x2625
11-7	0xB7	Analog 7 Out Of Range	0x2626
11-8	0xB8	Analog 8 Out Of Range	0x2627
11-9	0xB9	Analog 9 Out of Range	0x2628
11-11	0xBB	Analog 14 Out Of Range	0x262A
11-12	0xBC	Analog Assignment	0x2631
11-13	0xBD	Analog 18 Out of range	0x262B
11-14	0xBE	Analog 19 Out of range	0x262C
12-1	0xC1	Branding Error	0x2860
12-2	0xC2	BMS Cutback	0x2861
12-7	0xC7	Analog 31 Out of Range	0x2106
12-11	0xCB	PWM Input 28 Out of Range	0x210C
12-12	0xCC	PWM Input 29 Out of Range	0x210D
13-1	0xD1	Lift Input	0x2104
13-2	0xD2	Phase PWM Mismatch	0x2101
13-3	0xD3	Hardware Compatibility	0x2870
13-4	0xD4	Lower Input	0x2105