TRIPS AND FAULT FINDING

Trips

Trip Warning Message

The trip display message is flashed repeatedly on the screen to warn of an imminent trip. Some trip conditions need time to take effect. The warning can allow you time to rectify the situation.

The message will clear when you use the Keypad, but after a short time will reappear until the problem is resolved, or the drive trips.

What Happens when a Trip Occurs

When a trip occurs, the drive's power stage is immediately disabled causing the motor and load to coast to a stop. The trip is latched until action is taken to reset it. This ensures that trips due to transient conditions are captured and the drive is disabled, even when the original cause of the trip is no longer present.

Keypad Indications

If a trip condition is detected the activated alarm is displayed on the MMI display.

Resetting a Trip Condition

All trips must be reset before the drive can be re-enabled. A trip can only be reset once the trip condition is no longer active, i.e. a trip due to a heatsink over-temperature will not reset until the temperature is below the trip level.

You can reset the trip as follows:

1. Press the  (STOP) key to reset the trip and clear the alarm from the display.
2. Remove and then re-apply the RUN command and the drive will run normally.

Success is indicated by either rdy or the Local Setpoint being displayed.

Using the Keypad to Manage Trips

Trip Messages

If the drive trips, then the display immediately shows a message indicating the reason for the trip. The possible trip messages are given in the table below.

ID	Trip Name	Possible Reason for Trip
1	OVERVOLTAGE OVOLT	*The drive internal dc link voltage is too high:* • The supply voltage is too high • Trying to decelerate a large inertia load too quickly; DECEL TIME time too short The brake resistor is open circuit
2	UNDERVOLTAGE UVOLT	*DC link low trip:* Supply is too low/power down

ID	Trip Name	Possible Reason for Trip
3	OVERCURRENT A OC	*The motor current being drawn from the drive is too high:* • Trying to accelerate a large inertia load too quickly; ACCEL TIME time too short • Trying to decelerate a large inertia load too quickly; DECEL TIME time too short • Application of shock load to motor • Short circuit between motor phases • Short circuit between motor phase and earth • Motor output cables too long or too many parallel motors connected to the drive • FIXED BOOST level set too high
4	HEATSINK AHOt	*Drive heatsink temperature > 100ºC:* • The ambient air temperature is too high Poor ventilation or spacing between drives
5	EXTERNAL TRIP AEt	*The external trip input is high:* • Check configuration to identify the source of the signal (non-standard configuration)
6	INVERSE TIME A It	*A prolonged overload condition, exceeding the Inverse Time allowance, has caused the trip:* • Remove the overload condition - refer to Chapter 5: P12
7	CURRENT LOOP ALOOP	*A current of less than 1mA is present when 4-20mA setpoint is selected:* • Look for a wire break
8	MOTOR STALLED AStLL	*The motor has stalled (not rotating) Drive in current limit >200 seconds:* • Motor loading too great • FIXED BOOST level set too high
9	ANIN FAULT At 3	*AIN2 overload on terminal 3:* • Overcurrent applied in Current mode to terminal 3
12	DISPLAY/KEYPAD Ad ISP	*Keypad has been disconnected from drive whilst drive is running in Local Control:* • Keypad accidentally disconnected from drive (indicated over Comms, or by second keypad)
13	LOST COMMS ASCI	*Lost communications:* • COMMS TIMEOUT parameter set too short • Master device failed • Wiring broken • Incorrect Comms setup
14	CONTACTOR FBK ACntC	*Contactor feedback signal lost:* • Check connection to the terminal wired to "contactor closed" parameter in Sequencing Logic (non-standard configuration)
17	MOTOR OVERTEMP A Ot	*The motor temperature is too high:* • Excessive load • Motor voltage rating incorrect • FIXED BOOST level set too high • Prolonged operation of the motor at low speed without forced cooling • Break in motor thermistor connection

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7-3 Trips and Fault Finding

ID	Trip Name	Possible Reason for Trip
18	CURRENT LIMIT A1 H1	*Software overcurrent trip:* • If the current exceeds 180% of stack rated current for a period of 1 second, the drive will trip. This is caused by shock loads. Remove the shock load. • ACCEL TIME and/or FIXED BOOSTset too high • DECEL TIME set too low
21	LOW SPEED OVER I ALSPd	*The motor is drawing too much current (>100%) at zero output frequency:* • FIXED BOOST level set too high
22	10V FAULT At 4	*10V fault:* • +10V REF overload warning (terminal 4) - 10mA maximum
24	DESATURATION AShrt	*Desaturation:* • Instantaneous overcurrent. Refer to OVERCURRENT in this table.
25	DC LINK RIPPLE AdCrP	*The dc link ripple voltage is too high:* • Check for a missing input phase
26	BRAKE SHORT CCT AdbSC	*Brake resistor overcurrent:* • Check brake resistor value is greater than minimum allowed
28	ANOUT FAULT At 5	*AOUT overload on terminal 5:* • 10mA maximum
29	DIGIO 1 (T9) FAULT At 9	*DIN3 overload on terminal 9:* • 20mA maximum
30	DIGIO 2 (T10) FAULT At 10	*DOUT2 overload on terminal 10:* • 50mA maximum
31	UNKNOWN AtrIP	Unknown trip
33	ICAL AICAL	*Zero I Current Calibration:* • Current sensor calibration fault. Switch unit off/on. If persistent, return to factory.
-	Product Code Error ACOdE	Switch unit off/on. If persistent, return unit to factory
-	Calibration Data Error ACAL	Switch unit off/on. If persistent, return unit to factory
-	Configuration Data Error AdAtA	Press the E key to accept the default configuration. If persistent, return unit to factory

Hexadecimal Representation of Trips

The tables below show the possible parameter values for the AUTO RESTART TRIGGERS and AUTO RESTART TRIGGERS+ parameters, SST23 and SST24 respectively. Refer to the 650V Software Product Manual, "Trips Status" (on our website: www.SSDdrives.com) for additional trip information that is available over the Comms.

Each trip has a unique, four-digit hexadecimal number number as shown in the tables below.

SST23 : AUTO RESTART TRIGGERS				
ID	Trip Name (MMI 6901)	Trip Name (MMI 6511 & 6521)	Mask	User Disable
1	OVERVOLTAGE	DCHI	0x0001	
2	UNDERVOLTAGE	DCLO	0x0002	
3	OVERCURRENT	OC	0x0004	
4	HEATSINK	HOT	0x0008	
5	EXTERNAL TRIP	ET	0x0010	✓
6	INVERSE TIME	S I t	0x0020	
7	CURRENT LOOP	S LOOP	0x0040	✓
8	MOTOR STALLED	S StLL	0x0080	✓
9	ANIN FAULT	S t 3	0x0100	✓
12	DISPLAY/KEYPAD	S dI SP	0x0800	✓
13	LOST COMMS	SCI	0x1000	✓
14	CONTACTOR FBK	CNTC	0x2000	✓

SST24 : AUTO RESTART TRIGGERS+				
ID	Trip Name (MMI 6901)	Trip Name (MMI 6511 & 6521)	Mask +	User Disable
17	MOTOR OVERTEMP	S Ot	0x0001	✓
18	CURRENT LIMIT	I HI	0x0002	
21	LOW SPEED OVER I	LSPD	0x0010	
22	10V FAULT	T 4	0x0020	✓
24	SHRT	SHRT	0x0080	
25	DC LINK RIPPLE	DCRP	0x0100	✓
26	DBSC	DBSC	0x0200	
28	ANOUT FAULT	T 5	0x0800	✓
29	DIGIO 1 (T9) FAULT	T 9	0x1000	✓
30	DIGIO 2 (T10) FAULT	T 10	0x2000	✓
31	UNKNOWN	TRIP	0x4000	
33	ICAL	ICAL	0x8000	

Keypads (MMIs):

Trips shown as MMI displays in the tables above, i.e. S LOOP, can be disabled using the keypads in the TRIPS menu. Other trips, as indicated, can be disabled over the Comms.

6901

6511

6521