SECTION 12 - ALARM & STATUS CODES

12.1 ALARM CODES

ALARM CODE	DESCRIPTION	REMEDY
HALt	Driver fatal fault	Replace driver.
AL -01 Internal Power Module Error	Driver has detected the following: • Overcurrent • Overheat • Gate voltage drop	Check if the motor wire (A/B/C) is shorted or grounded. Ambient temperature over 55° C. Indicates a fatal fault in the driver power stage. If motor wires are not shorted and temperature is below 55° C contact IIS factory.
AL -02 Overvoltage	DC power bus exceeds 420 VDC.	Power line voltage fluctuation above 264 VAC for "A" model drivers or 126 VAC for "B" model drivers. Excessive regeneration energy. Check line voltage fluctuations. Add additional external regeneration resistor.
AL -03 Under Voltage	DC power bus below 200 VDC.	Power line voltage fluctuation below 170 VAC for "A" model drivers or 85 VAC for "B" model drivers. Check line voltage fluctuations. Check for missing phase of AC line power for 3 phase models DMAX-35 and above.
AL -06 Resolver Open	Resolver feedback signal (R1, R2) drops below 0.34 VAC.	Check for broken resolver wire or loose connection. Voltage between R1-R2 must be above 0.34VAC.
AL -07 Power Stage Error	Main control unit identifies a fault in the power stage of the driver.	Indicates a fatal fault in the driver power stage. Contact IIS factory.
AL -09 Regen Resistor Over Temperature	Excessive regen energy being dissipated by the internal or external regeneration resistor.	The frequency or rate of acceleration/deceleration may be too high. Excessive power line voltage. Add additional regen resistor capacity.
AL -10 Regen Resistor Open (DMAX-35 and above only)	Regen transistor is ON for more than 50ms.	**WITH POWER OFF:** If an internal regen resistor is used, check that the resistance from P to JP2 is less than 20-30 ohms and that a jumper is installed from JP1 to JP2. If an external regen resistor is used, verify the regen resistor is the proper value and that all wiring to the resistor is secure.
AL -12 Watchdog timer	Internal CPU clock has stopped.	Unit is damaged. Contact IIS factory.
AL -14 Brake Alarm	Sequencing of the static or dynamic brake is faulty.	Check wiring connections of the static or dynamic brake. Verify that the external braking relay is functional.
AL -15 Excessive Current	Motor current exceeds the rating by 120%.	Check if the motor wire (A/B/C) is shorted or grounded. Verify that motor shaft or machine system is not jammed. Check that the motor code in the Analyzer is set for the proper motor.

12.1 ALARM CODES (cont'd)

ALARM CODE	DESCRIPTION	REMEDY
AL -16 Speed amp Saturated	Internal speed loop is saturated and max. torque is applied for more than 3 sec.	Verify that motor shaft or machine system is not jammed. Check that the motor code in the Analyzer is set for the proper motor. Acel/decel rate is too large for the inertia load on the motor causing maximum torque during acel/decel.
AL -17 Motor overload	Calculated motor temperature exceeds rating 110%.	Verify that the average torque required to drive the load does not exceed the motor/driver continuous rating. Check if the duty cycle of the machine is too high. Check motor code UP-02 is set for the proper motor. $t = -Tm \left(1 - \frac{1.05^2}{\left(\frac{I}{IR}\right)^2}\right)$ Where: t = time in minutes I = motor current I_R = motor rated current T_M = thermal time constant of motor Status display oL is $\frac{I}{IR} \times 100$ See **Section 3**.
AL -18 Driver Overload	Motor current exceeds intermittent rating of driver or motor whichever is less.	Verify that motor shaft or machine system is not jammed. Check motor code UP-02 is set for the proper motor. Acel/decel rate is too large for the inertia load on the motor causing maximum torque during acel/decel. $t = \frac{K}{\left(\frac{I}{IR*1.2}\right) - 1}$ Where: t = time in seconds I = motor current I_R = motor rated current K = 1.5 for Delta-D30HRA 2.0 for Delta-120HRA & Delta-D50HRA 2.5 for Delta-200HRA & Delta-D100HRA 3.0 for Delta-D200HRA 3.5 for Delta-400HRA 4.0 for Delta-D400HRA 6.0 for all others See Overload Protection Characteristic Curve in **Section 3**.

12.1 ALARM CODES (cont'd)

ALARM CODE	DESCRIPTION	REMEDY
AL -19 Resolver Error	Resolver feedback error.	Check resolver cable and connectors. Check if resolver is loose on motor shaft. Verify that resolver cable is separated from power wiring to prevent noise coupling to resolver signals.
AL -20 Overspeed	Motor speed exceeds maximum rating by 120%.	Check resolver cable and connectors. Check if resolver is loose on motor shaft. Verify that resolver cable is separated from power wiring to prevent noise coupling to resolver signals. Overshoot is generated due to improper setting of AJ2, AJ3 & AJ4 parameters.
AL -21 Deviation counter overflow	Motor is unable to follow the commanded profile. Deviation counter exceed $\pm 2^{21}$.	Excessive load. Load inertia is too large for acceleration/deceleration rate. Position gain (AJ4) is too high. Torque limit is too low.
AL-22 Absolute encoder phase error	Absolute encoder CHA and CHB have been detected out of phase.	Replace motor.
AL-23 Absolute encoder disconnected	Absolute encoder connection is broken.	Check absolute encoder/resolver cable C-253YYY. If cable is OK, replace motor.
AL-25 Option	Self-diagnostic checks of options failed.	14-bit A/D converter not functioning to specification. Return to factory.
AL-26 Parameter setting error	Motor code is not set or is set improperly.	Motor code must be set to operate. Set UP-02 then cycle power to have the parameters take effect.
AL-27 Absolute encoder fault	CHA or CHB of absolute encoder is non-functional.	Check absolute encoder/resolver cable C-253YYY. If cable is OK, replace motor.
AL-32 Absolute Home Position not set	Absolute Home Position has not been established using the MacroPro II Software tools. Also set with AL-6, 19, 22, 23.	Check for cause of fault in the case of AL-6, 19, 22, 23. Correct fault and set Absolute Home Position using MacroPro II Software tools.
AL-33 Absolute Home Position setting error	Absolute Home setting procedure is not correctly completed. Also set with AL-6, 19, 22, 23, 27.	Check for cause of fault in the case of AL-6, 19, 22, 23, 27. Correct fault and set Absolute Home Position using MacroPro II Software tools.
AL-36 Battery missing	Battery has been disconnected when the power was OFF.	Check for detached battery or cable short.
AL-40 Encoder Signal Short	A, B, Z, U, W or V phases of encoder not functional.	Check encoder cable and connections.

12.1 ALARM CODES (cont'd)

ALARM CODE	DESCRIPTION	REMEDY
AL-41 Encoder Communication error	Communication problem with absolute encoder	Check encoder cable, replace driver, motor.
AL-42 Encoder Power	Absolute encoder backup power low	Replace battery.
AL-43 Encoder Checksum	Encoder communication checksum error at power up	Replace motor/encoder.
AL-44 Battery low	Absolute battery voltage has fallen below 2.8 V.	Replace absolute battery.
AL-45 Absolute encoder error	Signal sequencing problem in the absolute encoder.	Replace motor.

12.2 CONTROLLER STATUS

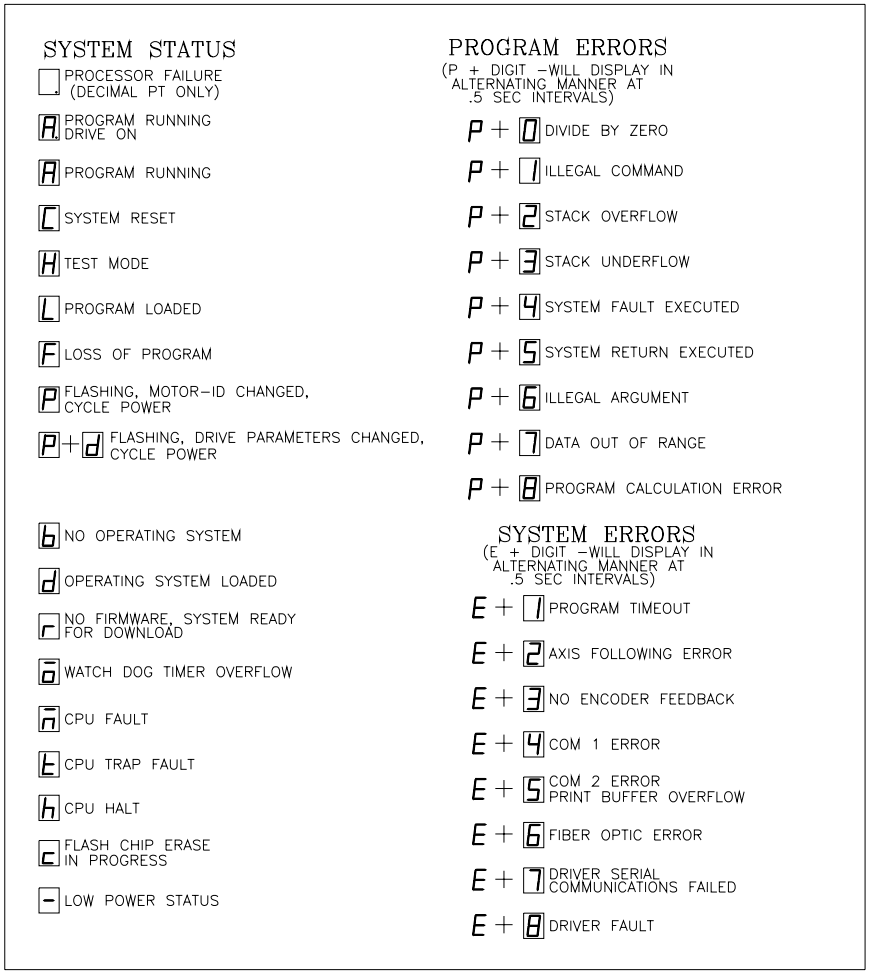

Figure 12.1 - Controller Status