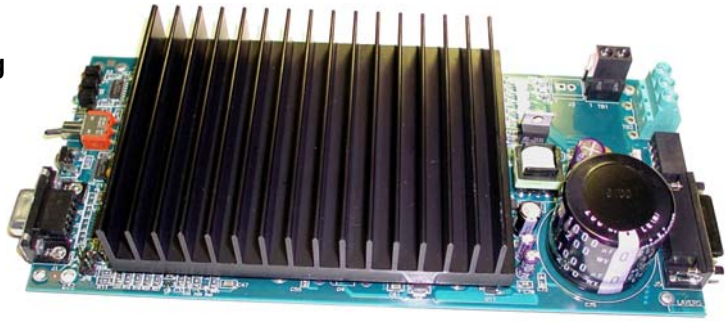
ELTROL CORPORATION

Rev 08/08

SERIES 58 DIGITAL SERVO AMPLIFIER

FEATURES

- **High performance DSP based servo controls motor force or torque. Control of velocity or position using the motor's Hall or encoder signals is an option.**
- **Controls brush-type, brushless-trapezoidal and brushless-sinusoidal motors.**
- **User inputs motor parameters, voltage, peak and continuous current limit, into windows based setup software. Setup software automatically downloads the algorithm for a 2kHz current loop bandwidth via RS-232 Communications.**
- **Proprietary PWM software controlled switching scheme yields ultra-low ripple at low current levels, zero crossover distortion, and minimizes EMI in noise sensitive applications**
- **Differential amplifiers accept a single +/- 10V analog current command for trapezoidal brushless and brush type motors.**
- **Optional inputs allow digital commands through the RS-232 or Serial Peripheral Interface.**
- **3 Output current ranges and scale factors available.**
- **Optically isolated digital inputs for Enable/Reset, Brake, and ± Travel Limits.**
- **Motor Current monitor output, and Optically isolated digital output provides controller Fault indication. Configurator program provides drive status and fault history via RS-232 link.**
- **Fault protection makes this drive virtually indestructible.**
- **Operates from one low cost 24 - 160 VDC unregulated power supply or battery.**



PRODUCT DESCRIPTION

This Digital Servo Amplifier provides DSP based digital closed loop four-quadrant PWM control of force or torque of permanent magnet, linear or rotary, brush or brushless DC motors. Our PWM current control algorithm, current sensing method, and advanced switching scheme yields performance comparable to a linear servo amplifier.

This Digital Drive will reduce expensive motor drive stocking requirements because it will control brush-type, Brushless-trapezoidal and Brushless-sinusoidal motors.

Setup is easy. The operating configuration – motor type, motor parameters, operating voltage, peak and continuous current limits, and system parameters for velocity or position control are all input by the user to a PC based setup program which automatically downloads the information, with the computed algorithm, into the flash memory of the drive via an RS-232 port. The drive can be reconfigured at any time by running the setup program.

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DIGITAL SERVO AMPLIFIER

GENERAL SPECIFICATIONS

LOW VOLTAGE

MODEL	58A-3-2-48	58B-3-4-48	58C-3-6-48
INPUT POWER BUS [2]	24 to 48 VDC	24 to 48 VDC	24 to 48 VDC
CONT. OUTPUT POWER (Max.)	450 watts [1]	675 watts [1]	1350 watts [1]
CONT. OUTPUT CURRENT	10 amps [1]	15 amps [1]	30 amps [1]
PEAK OUTPUT CURRENT	20 amps [1] (1 sec typ.)	30 amps [1] (1 sec typ.)	60 amps [1] (1 sec typ.)
SCALE FACTOR (A / V)	2	4	6
OUTPUT VOLTAGE @ CONT. OUTPUT CURRENT	Input Bus Voltage - 3 Volts Typical	Input Bus Voltage - 3 Volts Typical	Input Bus Voltage - 3 Volts Typical
MAX HEAT SINK TEMPERATURE	Disables if > 70 ◦C	Disables if > 70 ◦C	Disables if > 70 ◦C
CURRENT LOOP BANDWIDTH	2 kHZ Typical	2 kHZ Typical	2 kHZ Typical
SWITCHING FREQUENCY	40kHZ	40kHZ	40kHZ
MINIMUM LOAD INDUCTANCE	120 UH	120 UH	120 UH
WEIGHT	25 OZ	25 OZ	25 OZ

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DIGITAL SERVO AMPLIFIER

GENERAL SPECIFICATIONS

HIGH VOLTAGE

MODEL	58D-3-1-160	58E-3-2-160	58F-3-3-160
INPUT POWER BUS [2]	24 to 160 VDC	24 to 160 VDC	24 to 160 VDC
CONT. OUTPUT POWER (Max.)	1570 watts [1]	1570 watts [1]	1570 watts [1]
CONT. OUTPUT CURRENT	10 amps [1]	10 amps [1]	10 amps [1]
PEAK OUTPUT CURRENT	10 amps [1] (1 sec typ.)	20 amps [1] (1 sec typ.)	30 amps [1] (1 sec typ.)
SCALE FACTOR (A / V)	1	2	3
OUTPUT VOLTAGE @ CONT. OUTPUT CURRENT	Input Bus Voltage - 3 Volts Typical	Input Bus Voltage - 3 Volts Typical	Input Bus Voltage - 3 Volts Typical
MAX HEAT SINK TEMPERATURE	Disables if > 70 ◦C	Disables if > 70 ◦C	Disables if > 70 ◦C
CURRENT LOOP BANDWIDTH	2 kHZ Typical	2 kHZ Typical	2 kHZ Typical
SWITCHING FREQUENCY	40kHZ	40kHZ	40kHZ
MINIMUM LOAD INDUCTANCE	400 UH	400 UH	400 UH
WEIGHT	25 OZ	25 OZ	25 OZ

OPERATING CONTROL SIGNALS and INDICATORS

Input analog control signal	± 10 Volts
Digital Input Commands	Rs-232, SPI
Peak Current limit	Software adjustable
Continuous Current limit	Software adjustable
Drive Enable/Reset	5V logic, optically isolated
(+) Travel Limit	5V logic, optically isolated
(-) Travel Limit	5V logic, optically isolated
Brake	5V logic, optically isolated
Fault and/or Brake status	5V logic, optically isolated
Drive Enabled indicator	Green LED
Brake indicator	Red LED
Fault indicator	Red LED
Digital Hall Effect Sensors	3 channels,+5 Volts,Gnd

NOTES: 1. Depends on ambient operating temperature and heat sink.
For the >10 amperes continuous output, we recommend forced convection cooling with a minimum airflow of 100 CFM. Consult factory for assistance. 2. The user should protect the Amplifier and any external circuits from a catastrophic failure by fusing the input power connections to the amplifier. See Application Note Supplementary Fuse Protection.

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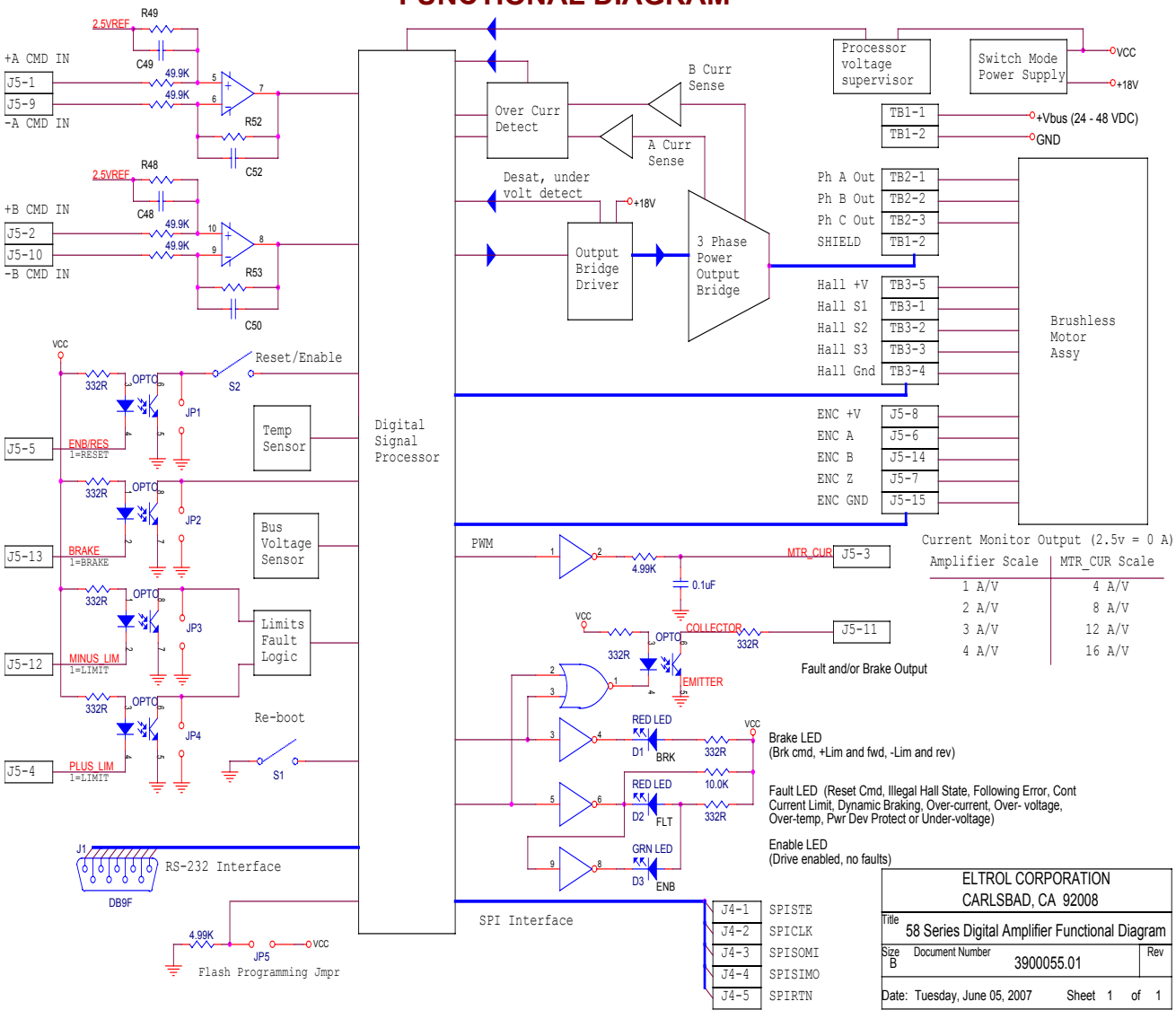
AUXILIARY OUTPUTS

Motor (bus) current monitor	2.5v = 0 amps, 5v = +full scale, 0v = -full scale
Detailed Operation/Fault Status	RS-232 Port Returns current operating status and event history. History cleared when drive re-enabled after fault condition.
Logic supply	5VDC with 25 ma max available for external use.

FAULT PROTECTION CIRCUITS

Controller over-temperature	Under-voltage
Current overload (±25% > Peak Amps)	Over-speed
Short Circuit (Ph-Ph, Ph-Gnd)	Motor stall
Over-voltage	Illegal Hall sensor states

FUNCTIONAL DIAGRAM



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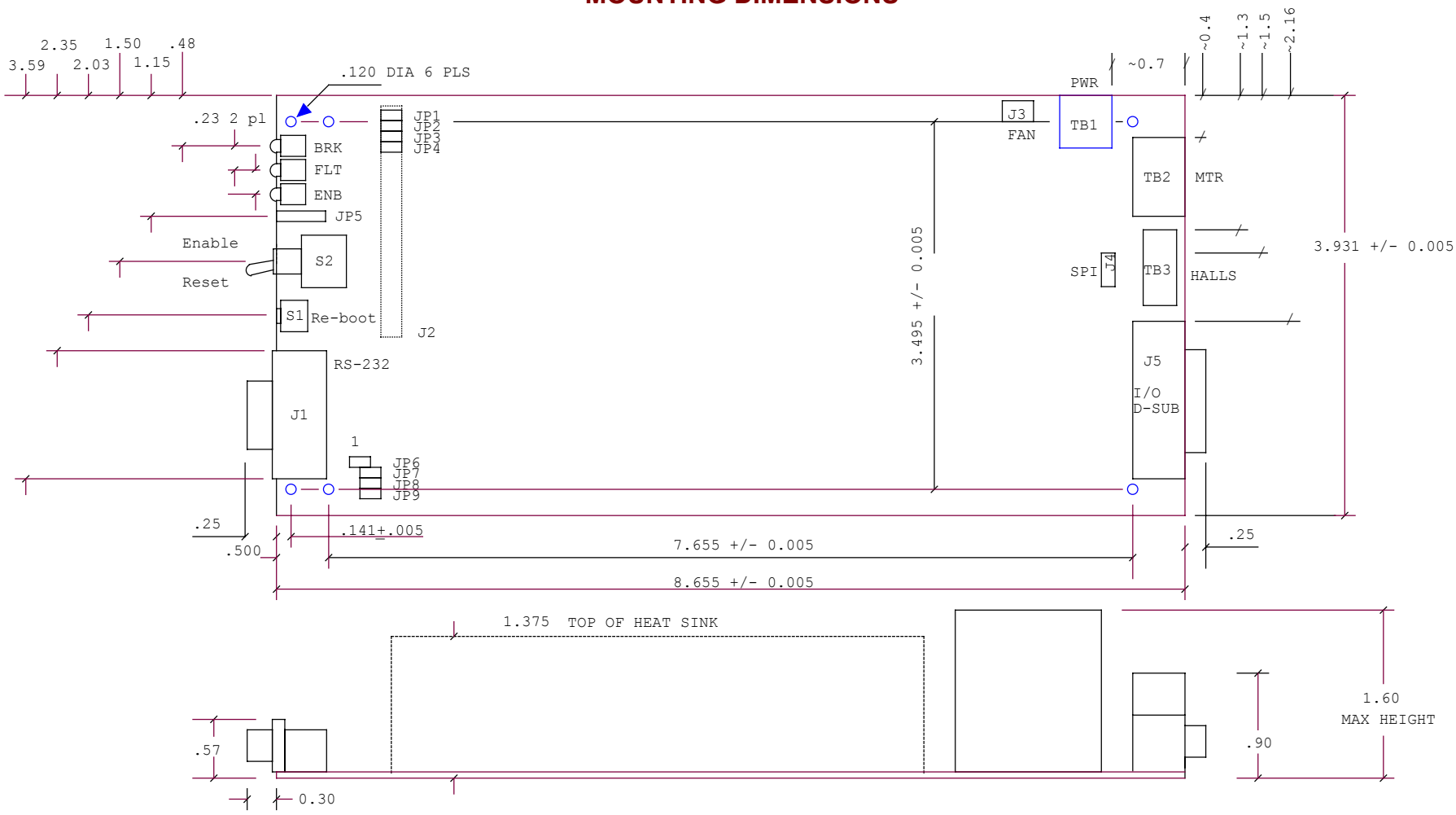
MOUNTING DIMENSIONS



NOTES:1. ALL DIMENSIONS SPECIFIED IN INCHES

ELTROL CORPORATION CARLSBAD, CA	
Title: Mounting Dimensions	
Size: B	Document Number: 3850058.OL — Rev:
Date: Tuesday, June 05, 2007	Sheet 1 of 1

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