BRUSH-TYPE

MSA-12-80

FEATURES

- For brush servo motors
- Miniature size; only 5" x 3" x 1"
- 2000 watts peak; 20 to 80 VDC, 12 amps continuous, 25 amps peak
- Pulse-width-modulated at 22 KHz, 97% efficiency
- Protection against over-voltage, over-current, over-heating, and short circuits across motor, ground, and power leads
- Adjustable loop gain, current limit, and offset
- Four-quadrant regenerative operation
- Operates off single, unregulated DC supply, also available from Galil
- Surface mount technology for high reliability
- No external heatsink required

DESCRIPTION

The MSA-12-80 miniature servo amplifier is a low-cost, easy-to-use amplifier for driving brush-type servo motors at high switching frequencies. The amplifier utilizes power MOSFETs and surface mount technology to produce high power in a small package. The MSA-12-80 accepts a ±10 V range input signal directly from Galil programmable motion controllers, or it can be configured as a stand-alone drive. An unregulated DC power supply is required to drive the MSA-12-80, which is available from Galil as the CPS Series described at the end of this section.

MSA-12-80 Servo Amplifier

POWER RATING

DC supply voltage: 20 V minimum
80 V maximum

Peak current: 25 amps, 2 sec. maximum

Continuous current: 12 amps, internally limited

ELECTRICAL SPECIFICATIONS

Minimum load inductance: 250 µH

Power dissipation at max. continuous current: 15 W

Over-voltage shut-down: 90 V

Current loop bandwidth: 2.5 KHz typical

Heatsink temperature range: -25 to 65° C; shuts off if above 65° C

Switching frequency: 22 KHz

PHYSICAL

Dimensions: 5.09" x 2.98" x .94"

Weight: 10 ounces

MODES OF OPERATION

The MSA-12-80 can operate in three modes: current, voltage, or velocity. These modes are set by two switches, SW1 and SW3. SW2 is always off.

	SW1	*SW2*	*SW3*
Current mode	OFF	OFF	ON
Voltage mode	ON	OFF	OFF
Velocity mode	OFF	OFF	OFF

The current mode of operation is the most common setting for use with Galil motion controllers.

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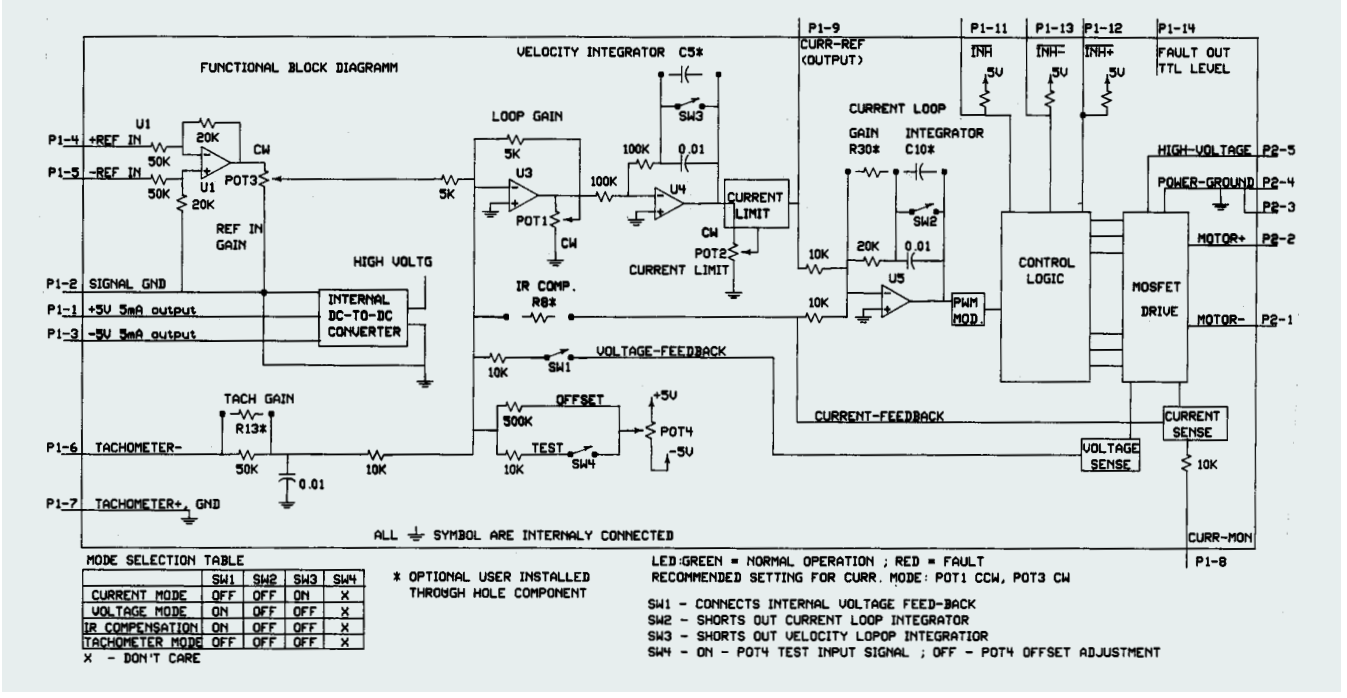
MSA-12-80 SCHEMATIC



ADJUSTMENTS

The MSA-12-80 has four potentiometers that can be adjusted. The output voltage of each potentiometer is measured at the respective probe hole in front of the potentiometer.

Potentiometer 1—Loop Gain

CW rotation increases the amplifier gain.
At extreme counterclockwise setting, the gain is 1

Potentiometer 2—Current Limit

CW rotation increases the current limit
Range: 0-10 V, where 10 V give 12 amps continuous
The peak current limit equals twice the continuous limit and lasts for 2 sec.

Potentiometer 3—Reference Input Gain

CW rotation increases the input gain.
At extreme clockwise setting the gain is 1.

Potentiometer 4—Offset Voltage

The sensitivity of the offset voltage is increased 50 times by closing SW4.
Range: ±5 V

CONNECTORS

POWER CONNECTOR; 5-PIN SCREW-TYPE:

1 Motor armature +
2 Motor armature -
3 Power ground
4 Power ground
5 Supply voltage +

SIGNAL CONNECTOR; 16-PIN MOLEX:

1 5 V, 5 mA out (available for customer use, short-circuit protected)
2 Ground
3 -5 V, 5 mA out (available for customer use, short-circuit protected)
4 +Reference input (differential analog input from Galil controller; ±15 V max; 50KW input resistance)
5 -Reference input
6 -Tachometer feedback ±60 V analog signal max; 60KW input resistance
7 +Tachometer ground
8 Current monitor .25 V = 1 A
9 Current command .3 V = 1 A
10 NC
11 Inhibit* (low-level TTL inhibits amplifier; internal pull-up)
12 +Inhibit* (low-level TTL inhibits +half of bridge; internal pull-up)
13 -Inhibit* (low-level TTL inhibits -half of bridge; internal pull-up)
14 Fault out (TTL level; high designates fault)
15 NC
16 NC

** Active low*