

SMDS Series Reference Manual



Motor Driver System **Any Combination of Stepper and Servo Motors**



Optimal Engineering Systems, Inc.
6901 Woodley Avenue
Van Nuys, California 91406 U.S.A.

Phone (818) 222-9200
FAX (818) 469-0446
sales@oesincorp.com
www.oesincorp.com

This motor controller is excellent choice for those users who would like to use their own software package to generate the motion profile.

Each system integrates the power supply and the micro-stepper and/or servo motor drivers.

Features

- Compact
- Multi-axis
- Stand-alone
- Plug-and-Play
- Step and Direction Signal Inputs
- Available to Drive Stepper, DC Servo, Three Phase Brushless, and Voice Coil Motors
- Totally Integrated Solution
- MACH 3™ Compatible

General Specifications

- LED Power Indicator
- High Performance Line Filter
- Compact Industrial Enclosure

Mechanical

- Size: 10.0" (250 mm) W X 10.8" (265 mm) D X 4.875" (124 mm) H
- Weight: 10 lbs (4.50 Kg) with 80-Watt Power Supply
- Material: Aluminum, 0.09" (2.3 mm) Thickness
- Available in 19" Rack Mount Enclosure

Power Requirement

- 110 VAC, 50 ~ 60 Hz **Or**
- 220 VAC, 50 ~ 60 Hz **Or**
- +12 VDC to +80 VDC (Optional)

Stepper Motor Driver

- Up to 7 Amp Phase Current
- +24 VDC to +80 VDC Power Supply
- 2 to 256 Micro-steps per Step Resolution
- Size 8 to 42 Motors
- Auto Current Reduction

DC and Three Phase Brushless Motor Driver

- Up to 20 Amps Phase Current
- +24 VDC to +80 VDC Power Supply

Dedicated Inputs

- Step and Direction Signals per Axis
- Enable Signal per Axis

Power Supply

- 80-Watt at Full Load
- Optional 160-Watt, +36 VDC at Full Load
- Optional 240-Watt, +48 VDC at Full Load
- Optional 400-Watt, +48 VDC at Full Load
- Optional 500-Watt, +48 VDC at Full Load

Product Highlight

	Min.	Max.
Number of Axis	1	4
Speed Range, Revolution per Second (RPS)	0.02	40.0
Motor Current (Peak), Amp	0.15	7.0*
Steps / Revolution (200 Steps per Rev. stepping Motor)	400	51200
Micro-stepping Resolution, Micro-steps per Step	2	256
Motor Torque, oz-in N-m	7 0.050	2100 15.0
Line Voltage, VAC	115	230
Line Frequency, Hz	50	60
Power Supply Voltage, VDC	24	80

X-MOTOR

8-pin Circular Connector

The X-axis motor should be connected to this connector.

PIN	NAME	STEPPING MOTOR	DC MOTOR	BRUSHLESS DC MOTOR
1	PHAX+	Phase A+	Arm+	Phase A
2	PHBX+	Phase B+	Not Connected	Phase B
3	PHBX-	Phase B-	Not Connected	Not Connected
4	PHAX-	Phase A-	Arm-	Phase C
5	CHSIS	Connected to the Chassis	Connected to the Chassis	Connected to the Chassis
6		Not Connected	Not Connected	Not Connected
7		Not Connected	Not Connected	Not Connected
8		Not Connected	Not Connected	Not Connected

Y-MOTOR

8-pin Circular Connector

The Y-axis motor should be connected to this connector.

PIN	NAME	STEPPING MOTOR	DC MOTOR	BRUSHLESS DC MOTOR
1	PHAY+	Phase A+	Arm+	Phase A
2	PHBY+	Phase B+	Not Connected	Phase B
3	PHBY-	Phase B-	Not Connected	Not Connected
4	PHAY-	Phase A-	Arm-	Phase C
5	CHSIS	Connected to the Chassis	Connected to the Chassis	Connected to the Chassis
6		Not Connected	Not Connected	Not Connected
7		Not Connected	Not Connected	Not Connected
8		Not Connected	Not Connected	Not Connected

Z-MOTOR

8-pin Circular Connector

The Z-axis motor should be connected to this connector.

PIN	NAME	STEPPING MOTOR	DC MOTOR	BRUSHLESS DC MOTOR
1	PHAZ+	Phase A+	Arm+	Phase A
2	PHBZ+	Phase B+	Not Connected	Phase B
3	PHBZ-	Phase B-	Not Connected	Not Connected
4	PHAZ-	Phase A-	Arm-	Phase C
5	CHSIS	Connected to the Chassis	Connected to the Chassis	Connected to the Chassis
6		Not Connected	Not Connected	Not Connected
7		Not Connected	Not Connected	Not Connected
8		Not Connected	Not Connected	Not Connected

W-MOTOR

8-pin Circular Connector

The W-axis motor should be connected to this connector.

PIN	NAME	STEPPING MOTOR	DC MOTOR	BRUSHLESS DC MOTOR
1	PHAW+	Phase A+	Arm+	Phase A
2	PHBW+	Phase B+	Not Connected	Phase B
3	PHBW-	Phase B-	Not Connected	Not Connected
4	PHAW-	Phase A-	Arm-	Phase C
5	CHSIS	Connected to the Chassis	Connected to the Chassis	Connected to the Chassis
6		Not Connected	Not Connected	Not Connected
7		Not Connected	Not Connected	Not Connected
8		Not Connected	Not Connected	Not Connected

* Motor current up to 10 Amp. is available.

X-ENCODER

9-pin DB-9, Male Connector

The X-axis motor encoder and Hall effect sensors, if available, should be connected to this port.

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	CHSIS	Connected to the Chassis
3	XCHB	X-Motor Channel-B Quadrature Input
4	XCHA	X-Motor Channel-A Quadrature Input
5	GND	System Ground
6	XHALL-B	X-Motor HALL-B Sensor Input
7	XHALL-C	X-Motor HALL-C Sensor Input
8	XHALL-A	X-Motor HALL-A Sensor Input
9		Not Connected

Y-ENCODER

9-pin DB-9, Male Connector

The Y-axis motor encoder and Hall effect sensors, if available, should be connected to this port.

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	CHSIS	Connected to the Chassis
3	YCHB	Y-Motor Channel-B Quadrature Input
4	YCHA	Y-Motor Channel-A Quadrature Input
5	GND	System Ground
6	YHALL-B	Y-Motor HALL-B Sensor Input
7	YHALL-C	Y-Motor HALL-C Sensor Input
8	YHALL-A	Y-Motor HALL-A Sensor Input
9		Not Connected

Z-ENCODER

9-pin DB-9, Male Connector

The Z-axis motor encoder and Hall effect sensors, if available, should be connected to this port.

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	CHSIS	Connected to the Chassis
3	ZCHB	Z-Motor Channel-B Quadrature Input
4	ZCHA	Z-Motor Channel-A Quadrature Input
5	GND	System Ground
6	ZHALL-B	Z-Motor HALL-B Sensor Input
7	ZHALL-C	Z-Motor HALL-C Sensor Input
8	ZHALL-A	Z-Motor HALL-A Sensor Input
9		Not Connected

W-ENCODER

9-pin DB-9, Male Connector

The W-axis motor encoder and Hall effect sensors, if available, should be connected to this port.

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	CHSIS	Connected to the Chassis
3	WCHB	W-Motor Channel-B Quadrature Input
4	WCHA	W-Motor Channel-A Quadrature Input
5	GND	System Ground
6	WHALL-B	W-Motor HALL-B Sensor Input
7	WHALL-C	W-Motor HALL-C Sensor Input
8	WHALL-A	W-Motor HALL-A Sensor Input
9		Not Connected

Input Connection

25-pin DB-25, female Connector

PIN	NAME	DESCRIPTION
2	STEP-X	X-Axis Step Signal
3	DIR-X	X-Axis Direction Signal
4	STEP-Y	Y-Axis Step Signal
5	DIR-Y	Y-Axis Direction Signal
6	STEP-Z	Z-Axis Step Signal
7	DIR-Z	Z-Axis Direction Signal
8	STEP-W	W-Axis Step Signal
9	DIR-W	W-Axis Direction Signal
23	GND	System Ground
24	GND	System Ground
25	GND	System Ground