

Presto Series Reference Manual



Joystick and Trackball Controlled Motion Control System



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The Presto series of motion control systems is capable of moving a group of motors via controlling the movement of a joystick or trackball. The speed of the motor is proportional to the tilt angle of the joystick or the rotational speed of the trackball.

This series is complete multi-axis, multi-speed, stand-alone, easy-to-use, plug-and-play, and low cost for manual motor control applications. They can replace or upgrade manual systems, motorizing them with precision joystick and/or trackball control.

Each system integrates the power supplies, controller, motor drivers and motors.

Controlling devices include analog joystick, trackball, two-phase quadrature signals, digital potentiometer, DC voltage, and external step and direction signals.

NO PROGRAMMING IS NECESSARY.

These series are also available without the drivers. The outputs from the system would be power, enable, step and direction signals. This configuration is suited to interface with the "integrated motor and drivers".

Features

- Compact
- Multi-axis
- Stand-alone
- Plug-and-Play
- Built-in Self Test
- Three Speed Ranges, Fast, Medium, and Slow Mode
- Sixteen Sets of Selectable Speed Ranges
- Selectable Micro-step Resolutions
- Proportional Speed Control
- Positive and Negative Limit Switches per Axis
- Zero Adjustment of Joystick on Power-up
- Pre-wired Motors, Joystick, Trackball
- Quadrature Encoder Feedback
- Optional Trackball Interface
- Optional Step and Direction Inputs
- Optional LCD Display
- Available also to Drive DC Servo, Brushless, and Voice Coil Motors
- Totally Integrated Solution

Typical Applications

- Positioning Tables
- Linear and Rotary Stages
- Pick and Place
- Animation
- CNC Machines
- Inspection Systems
- Robotics
- Automated Assembly Systems
- Winders
- Machine Tools
- Optical Comparators and CMMs
- Security Cameras
- Motion Control Camera Boom Systems
- Telescope Drive Mechanism
- Flight Simulation

TECHNICAL DATA

Controlling Devices

- Analog Joystick
- Trackball (Optional)
- Two-phase Quadrature Signals (Optional)
- DC voltage
- External Step and Direction Signals
- Digital Potentiometer (Optional)

Supported No. of Axes

- Up to 4 Axes

Joystick

- Single Handed 2 or 3-axis Control
- Speed Selection Keys [more info...](#)
- Long Life

Trackball

- Precision Positioning
- Speed Selection Keys
- Long Life

General Specifications

- LED Status 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

Dedicated Inputs

- Positive and Negative Limit Switches per Axis
- Analog Joystick per Axis
- Joystick Fast, Medium, and Slow Speed Selection Keys
- Two 2-Phase Quadrature Signals or Trackball (Optional)
- Trackball Fast, Slow and Z-Select Speed Selection Keys (Optional)

Dedicated Outputs

- 2-Phase Stepping Motor Driver Outputs per Axis; Motor PhA+, Motor PhA-, Motor PhB+, and Motor PhB-
- DC Motor Driver per Axis; Armature+ and Armature-

Stepper Motor Driver

- Up to 7 Amps Phase Current
- 2 to 256 Micro-steps per Step Resolution
- Size 11 to 42 Motors
- Auto Current Reduction

Servo Motor Driver

- Up to 20 Amps Phase Current
- Built-in PID Controller

Power Requirement

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

Power Supply

- 80-Watt, +24 VDC 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

PIN ASSIGNMENT AND DESCRIPTION

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

JOYSTICK

25-pin DB-25, Female Connector

This port is used to connect an analog joystick

PIN	NAME	DESCRIPTION
1	ANALOG-X	Analog-X Input
2	ANALOG-Y	Analog-Y Input
3	HIGH-SPEED	High Speed Selection Input
4	MEDIUM-SPEED	Medium Speed Selection Input
5	LOW-SPEED	Low Speed Selection Input
6	W-SELECT	W-axis Selection Key
15	ANALOG-Z	Analog-Z Input
16	GND	System Ground
17	GND	System Ground
18	GND	System Ground
19	+5 VDC	+5 VDC
20	+5 VDC	+5 VDC
21	+5 VDC	+5 VDC

X-LIMITS

9-pin DB-9, Male Connector

The X-axis positive, negative and home switches should be connected to this port.

PIN	NAME	DESCRIPTION
1	POS-LIMIT-X *	X-Axis Positive Limit Switch Input
2	GND	System Ground
3	+5 VDC	+5 VDC
4	NEG-LIMIT-X *	X-Axis Negative Limit Switch Input
5	GND	System Ground
6	+5 VDC	+5 VDC
7	HOME-X **	X-Axis Home Switch Input
8	GND	System Ground
9	+5 VDC	+5 VDC

Y-LIMITS

9-pin DB-9, Male Connector

The Y-axis positive, negative and home switches should be connected to this port.

PIN	NAME	DESCRIPTION
1	POS-LIMIT-Y *	Y-Axis Positive Limit Switch Input
2	GND	System Ground
3	+5 VDC	+5 VDC
4	NEG-LIMIT-Y *	Y-Axis Negative Limit Switch Input
5	GND	System Ground
6	+5 VDC	+5 VDC
7	HOME-Y **	Y-Axis Home Switch Input
8	GND	System Ground
9	+5 VDC	+5 VDC

* A normally closed or normally low switch should be placed between this pin and GND.

** A normally closed or normally low switch should be placed between this pin and GND, if homing operation is required.

A 10 KOHM pull-up resistor is placed between all inputs and +5 VDC.

Z-LIMITS

9-pin DB-9, Male Connector

The Z-axis positive, negative and home switches should be connected to this port.

PIN	NAME	DESCRIPTION
1	POS-LIMIT-Z *	Z-Axis Positive Limit Switch Input
2	GND	System Ground
3	+5 VDC	+5 VDC
4	NEG-LIMIT-Z *	Z-Axis Negative Limit Switch Input
5	GND	System Ground
6	+5 VDC	+5 VDC
7	HOME-Z **	Z-Axis Home Switch Input
8	GND	System Ground
9	+5 VDC	+5 VDC

W-LIMITS

9-pin DB-9, Male Connector

The W-axis positive, negative and home switches should be connected to this port.

PIN	NAME	DESCRIPTION
1	POS-LIMIT-W *	W-Axis Positive Limit Switch Input
2	GND	System Ground
3	+5 VDC	+5 VDC
4	NEG-LIMIT-W *	W-Axis Negative Limit Switch Input
5	GND	System Ground
6	+5 VDC	+5 VDC
7	HOME-W **	W-Axis Home Switch Input
8	GND	System Ground
9	+5 VDC	+5 VDC

* A normally closed or normally low switch should be placed between this pin and GND.

** A normally closed or normally low switch should be placed between this pin and GND, if homing operation is required.

A 10 KOHM pull-up resistor is placed between all inputs and +5 VDC.

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

Specifications are subject to change without notice.

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