

Presto Series Reference Manual



Joystick and Trackball Controlled Motion Control System

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 3 Axes

Communication Interface

- RS-232 Interface (Optional)

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-Axis Stepping Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	PHAX+	Phase A+ of X-Axis Motor
2	PHBX+	Phase B+ of X-Axis Motor
3	PHBX-	Phase B- of X-Axis Motor
4	PHAX-	Phase A- of X-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

Y-Axis Stepping Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	PHAY+	Phase A+ of Y-Axis Motor
2	PHBY+	Phase B+ of Y-Axis Motor
3	PHBY-	Phase B- of Y-Axis Motor
4	PHAY-	Phase A- of Y-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

Z-Axis Stepping Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	PHAZ+	Phase A+ of Z-Axis Motor
2	PHBZ+	Phase B+ of Z-Axis Motor
3	PHBZ-	Phase B- of Z-Axis Motor
4	PHAZ-	Phase A- of Z-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

Analog Joystick Interface

25-pin DB-25, female Connector

PIN	NAME	DESCRIPTION
1	ANALOG-X	Analog-X, Wiper of 5 KOhm Potentiometer
2	ANALOG-Y	Analog-Y, Wiper of 5 KOhm Potentiometer
3	HIGH-SPEED	Upper Right Hand Switch, Normally Open
4	MEDIUM-SPEED	Middle Right Hand Switch, Normally Open
5	LOW-SPEED	Lower Right Hand Switch, Normally Open
6	Z-SELECT	Lower Left Hand Switch, Normally Open
7		Not Connected
8		Not Connected
9		Not Connected
10		Not Connected
11		Not Connected
12		Not Connected
13		Not Connected
14		Not Connected
15	ANALOG-Z	Analog-Z, Wiper of 5 KOhm Potentiometer
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
22		Not Connected
23		Not Connected
24		Not Connected
25		Not Connected

X-Axis DC Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	X+	Armature+ of X-Axis Motor
2	X-	Armature- of X-Axis Motor
3	X-	Armature- of X-Axis Motor
4	X+	Armature+ of X-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

Y-Axis DC Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	Y+	Armature+ of Y-Axis Motor
2	Y-	Armature- of Y-Axis Motor
3	Y-	Armature- of Y-Axis Motor
4	Y+	Armature+ of Y-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

Z-Axis DC Motor to Driver Connection

8-pin Circular Connector

PIN	NAME	DESCRIPTION
1	Z+	Armature+ of Z-Axis Motor
2	Z-	Armature- of Z-Axis Motor
3	Z-	Armature- of Z-Axis Motor
4	Z+	Armature+ of Z-Axis Motor
5	Chassis	Connected to the Chassis
6		Not Connected
7		Not Connected
8		Not Connected

X-Axis Positive Limit and Negative Limit Switch Connection

9-pin DB-9, male Connector

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		Not Connected
8		Not Connected
9		Not Connected

* A normally closed switch should be placed between this pin and GND.
A 10 KOHM pull-up resistor is placed between all inputs and +5 VDC.

Y-Axis Positive Limit and Negative Limit Switch Connection

9-pin DB-9, male Connector

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		Not Connected
8		Not Connected
9		Not Connected

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

** A normally closed switch should be placed between this pin and GND, if this operation is required.
A 10 KOHM pull-up resistor is placed between all inputs and +5 VDC.

Z-Axis Positive Limit and Negative Limit Switch Connection

9-pin DB-9, male Connector

IN	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		Not Connected
8		Not Connected
9		Not Connected

* A normally closed switch should be placed between this pin and GND.
A 10 KOHM pull-up resistor is placed between all inputs and +5 VDC.

X-Motor Encoder Connection

9-pin DB-9, male Connector

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	Chassis	Connected to the Chassis
3	XPHB	X-Motor Phase-B Quadrature Input
4	XPHA	X-Motor Phase-A Quadrature Input
5	GND	System Ground
6		Not Connected
7		Not Connected
8		Not Connected
9		Not Connected

Y-Motor Encoder Connection

9-pin DB-9, male Connector

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	Chassis	Connected to the Chassis
3	YPHB	Y-Motor Phase-B Quadrature Input
4	YPHA	Y-Motor Phase-A Quadrature Input
5	GND	System Ground
6		Not Connected
7		Not Connected
8		Not Connected
9		Not Connected

Z-Motor Encoder Connection

9-pin DB-9, male Connector

PIN	NAME	DESCRIPTION
1	+5 VDC	+5 VDC
2	Chassis	Connected to the Chassis
3	ZPHB	Z-Motor Phase-B Quadrature Input
4	ZPHA	Z-Motor Phase-A Quadrature Input
5	GND	System Ground
6		Not Connected
7		Not Connected
8		Not Connected
9		Not Connected

Specifications are subject to change without notice.