



ModuSystems

Product Catalog



Corporate Profile

ABOUT US :

ModuSystems was founded in March 2014 with a goal of creating an easier way to implement everything from simple to complex motion control solutions. Core to ModuSystems Products are Modular Based Controls and Easy to Use Block Based Programming. In order to not limit the controller capabilities, the availability of text based programming was also made available for the advanced user.

In addition to Controls, ModuSystems designs and builds Unique Mechanical Motion Solutions. Heavy emphasis in this area is in designing solutions that solve conventional problems in an unconventional way which adds value for the customer that cannot be attained via existing solutions.

Our management team has over 50 years experience in Electro-Mechanical Engineering and Controls Design as well as Systems Design and Specification.

FOUNDING PRINCIPLE :

ModuSystems was founded on the premise that Motion Control Solutions should be Modular in nature, Flexible in Problem Solving and Accessible to a wide variety of Ability Levels

MODULAR - having parts that can be connected or combined in different ways

FLEXIBLE - easily modified to respond to altered circumstances or conditions

ACCESSIBLE - easy to approach, use, or understand

CORE STRENGTHS :

Control Systems - Single & Multi-Axis Motion Control and I/O Control Systems
Unique Mechanics - Conventional Motion by Unconventional Means

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Controllers

ModuSystems Controllers are separated into Modular and Fixed Axis Count Types referred to as MMC and MAC respectively.

MMC Modules come in Single and 3-Axis forms. All Modules can be connected together for instant multi-axis capability.

Communication for Programming is done through the left most controller in the system and all connected axes appear as resources within Snap2Motion®. As such, any axis can be programmed on its own, but when connected together, the system operates seamlessly as a multi-axis system.

MAC Modules are fixed axis count controllers that can control mixed motor axis types and with many extensibility options available. Axis configuration is in pairs and modules can be connected together via high-speed communication such that complex coordination of over 100 axes is possible.

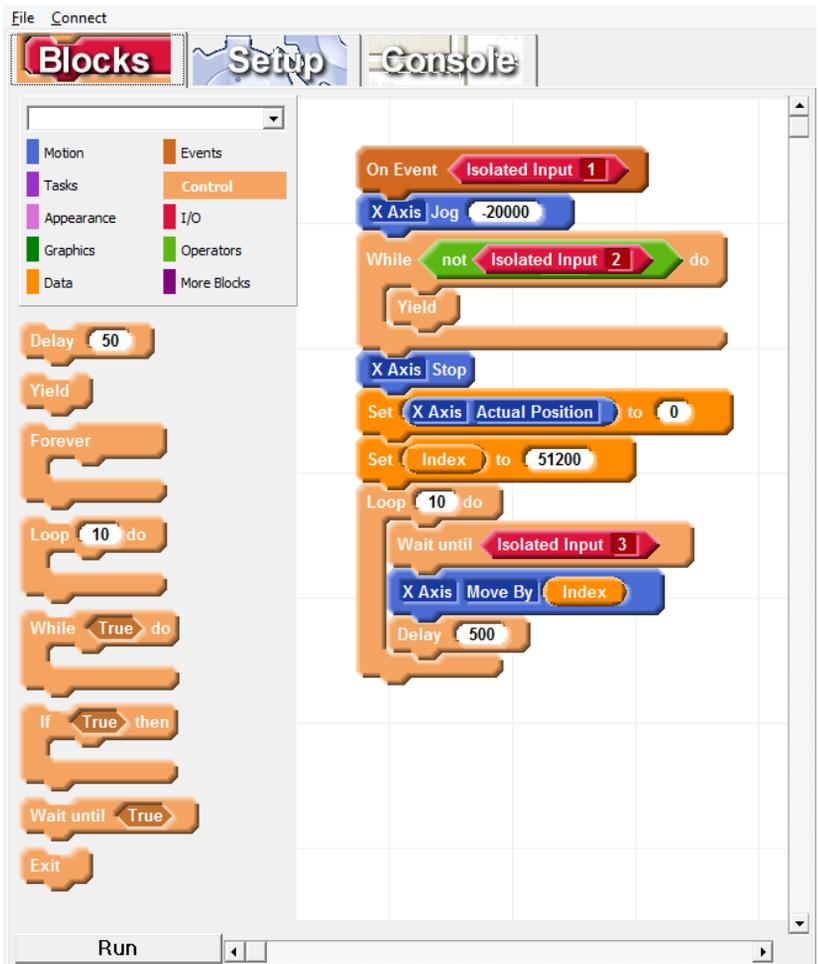
When to use MMC – when you need to “add an axis” or “add I/O” to an existing system. Additionally, if you have 3-axes or less in your machine, ModuSystems Modular Controllers would be most cost effective.

When to use MAC – when the axis count of the machine is fixed and more than 3 axes. MAC also employs a faster processor capable of more complex kinematic equations and contouring than MMC.

Snap2Motion[®] Overview

Snap2Motion[®]

- *Intuitive Design*
 - *Zero to Motion in 60 sec*
- *Drag – Drop – Edit*
- *Rename Axes, I/O, and Variables as Desired*
- *Geometrically Shaped Blocks Organize Data Types and only Allow Proper Construction*
- *Simple to Complex Capabilities*
 - *Basic Blocks*
 - *User Defined Blocks and Procedures*
 - *Fully Text Based Options*



Inspired by MIT Media Labs "Scratch" software that was developed to teach the fundamentals and structure of programming

* Once Wired Properly



MMC-T



KEY FEATURES:

- Integrated Stepper Motor Controller & Driver
- 12-48Vdc Input, 6A Output
- Microstepping at 256 mSteps/Full Step
- (6) Programmable Digital I/O
- (1) 16-bit Analog Inputs
- Flexible Encoder Inputs (Single, Quad, Serial, etc.)
- Closed Loop Control of a Stepper
- Separate Logic Power Input
- Pluggable for Multi-Axis Configuration
- USB, Ethernet, and Serial Communication

The MMC-T is a Single Axis Modular Stepper Motor Controller with Integrated Amplifiers.

Modular Controllers give users the power of a Multi-Axis Motion Controller with the flexibility to add Axes in a Modular Fashion. A single Axis Controller instantly becomes a multi-axis controller when snapped onto another controller. Due to the nature of the connection, no change of control or programming architecture is needed; the software simply recognizes that it has more available axes and I/O to utilize.

MMC-3T



KEY FEATURES:

- Integrated 3-Axis Stepper Motor Controller & Driver
- 12-24Vdc Input, 2A Output (Per Motor)
- Microstepping at 256 mSteps/Full Step
- (12) Programmable Digital I/O
- (3) 16-bit Analog Inputs
- Dedicated E-Stop Input
- Encoderless Stall Detect
- Pluggable for Additional Axes
- Option Slot for Encoder Inputs or Added I/O
- USB, Ethernet, and Serial Communication

The MMC-3T is a 3-Axis Modular Stepper Motor Controller with Integrated Amplifiers.

Modular Controllers give users the power of a Multi-Axis Motion Controller with the flexibility to add Axes in a Modular Fashion. A single Axis Controller instantly becomes a multi-axis controller when snapped onto another controller. Due to the nature of the connection, no change of control or programming architecture is needed; the software simply recognizes that it has more available axes and I/O to utilize.

MMC Controllers



Controller	Motor Type	Amplifier Included	Motor Power	Encoder Inputs	Inputs/Outputs*
MMC-T	Stepper	Yes	24-48Vdc, 6A	Yes	6 Digital, 1 Analog
MMC-TC**	Stepper or Digital Servo	No	N/A	Yes	9 Digital, 1 Analog
MMC-V**	Servo	Yes	200W	Yes	6 Digital, 1 Analog
MMC-VC**	Servo	No	N/A	Yes	6 Digital, 1 Analog
MMC-3T	Stepper	Yes	24V, 2A (per channel)	Optional	12 Digital, 3 Analog
MMC-3TC**	Stepper or Digital Servo	No	N/A	Optional	12 Digital, 3 Analog
MMC-IO**	N/A	N/A	N/A	No	16 Digital, 3 Analog

*Inputs are 24Vdc, 1A per channel and can be configured as NPN or PNP, Outputs are 24V, 1A per channel PNP. Analog are 16-bit and inputs only.

**Coming Soon

MAC



KEY FEATURES:

- Mix & Match Servo & Stepper Axes
- 2-16 Axes Coordinated Control
- Multi-Tasking (64 Concurrent Threads)
- (18) 24V General Purpose Inputs
- (8) 24V, 1A Sourcing Outputs
- Dedicated E-Stop Input
- Dual Encoders up to 8 MHz
- Optional Integrated Amplifiers
- Option Slot for Additional Axes or I/O

The MAC Fixed Axis Count Multi-Axis Motion and Machine Controllers are ModuSystems' highest performance products. Whether the application is simple point-to-point motion, complex linear or circular interpolation, or even customizable Robot Kinematics; the MAC controllers are up to the task.

MAC Controllers are suited to High Axis Count and Coordination Applications. Utilizing the latest control architecture and proprietary Real Time Operating System (RTOS), ModuSystems is able to achieve update rates that allow even the most complex coordinated motion to be handled with ease.

MAC Part Numbers



PART NUMBER	FAMILY	PULSE/DIR CONTROL ONLY AXES**	ANALOG SERVO CONTROL ONLY	ENCODER AXES**	OPTION SLOT	Example
	MAC			4E	4K	MAC-4E-4K
		[] = BLANK 2TC = Stepper (2-Axes) 4TC = Stepper (4-Axes) 6TC = Stepper (6-Axes) 8TC = Stepper (8-Axes) 10TC = Stepper (10-Axes)* 12TC = Stepper (12-Axes)* 14TC = Stepper (14 Axes)* 16TC = Stepper (16 Axes)*	[] = BLANK 2VC = Servo (2-Axes) 4VC = Servo (4-Axes) 6VC = Servo (6-Axes)*	[] = BLANK 2E = Encoder (2-Axes) 4E = Encoder (4-Axes) 6E = Encoder (6-Axes)*	[] = BLANK 1K = Stepper w/ Drive 2K = 2 Steppers w/ Drives 3K = 3 Steppers w/ Drives 4K = 4 Steppers w/ Drives G8 G16 A8 A16 O8 P2 P4 R1 F1 G12O8 G16R2 O8R2 G12O8R2	(8) 16-Bit Analog Inputs (16) 16-Bit Analog Inputs (8) 12-Bit Analog Inputs (16) 12-Bit Analog Inputs (8) 14-Bit Analog Outputs (2) RS232 Ports (4) RS232 Ports (1) RS485 Port (1) Additional Fiber Optic Port (12) 16-Bit Analog Inputs, (8) 14-Bit Analog Outputs (16) 16-Bit Analog Inputs, (2) RS485 Ports (8) 14-Bit Analog Outputs, (2) RS485 Ports (12) 16-Bit Analog Inputs, (8) 14-Bit Analog Outputs, (2) RS485 Ports

* = OPTION SLOT IS NOT AVAILABLE FOR THIS CONFIGURATION

** = MAX (X)VC+(X)E < 4 without using Option Slot

Accessories



Stepper Motors



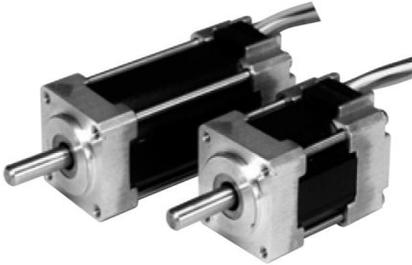
Motor P/N	Frame Size	Step Angle (deg)	Rated Current (A/phase)	Holding Torque (oz-in)	Motor Length (in)	Mass (lbs)
N08-1D	NEMA 8	1.8	0.2	2.5	1.1	0.11
N08-2D	NEMA 8	1.8	0.6	2.5	1.2	0.132
N08-3D	NEMA 8	1.8	0.6	2.8	1.3	0.154
N08-4D	NEMA 8	1.8	0.35	4.5	1.78	0.187
N11-1D	NEMA 11	1.8	0.67	8.3	1.26	0.242
N11-2D	NEMA 11	1.8	0.67	13.2	1.56	0.309
N11-3D	NEMA 11	1.8	0.67	16.7	2.03	0.441
N14-1D	NEMA 14	1.8	1.32	6.94	1	0.198
N14-2D	NEMA 14	1.8	0.47	13.88	1.1	0.265
N14-3D	NEMA 14	1.8	0.5	18.04	1.3	0.309
N1509	PANCAKE	0.9	0.35	5.66	0.551	0.128
N17-1D	NEMA 17	1.8	0.91	21.5	1	0.419
N1709-1D	NEMA 17	0.9	0.91	21.5	1	0.419
N17-2D	NEMA 17	1.8	1.33	30	1.3	0.485
N1709-2D	NEMA 17	0.9	1.33	30	1.3	0.485
N17-3D	NEMA 17	1.8	1.68	50	1.5	0.617
N1709-3D	NEMA 17	0.9	1.68	50	1.5	0.617
N17-4D	NEMA 17	1.8	1.68	62	1.85	0.772
N1709-4D	NEMA 17	0.9	1.68	62	1.85	0.772
N1809	PANCAKE	0.9	0.25	6.372	0.512	0.22
N23-1D	NEMA 23	1.8	2.8	75	1.6	0.992
N2309-1D	NEMA 23	0.9	2.8	75	1.6	0.992
N23-2D	NEMA 23	1.8	2.8	140	2	1.433
N2309-2D	NEMA 23	0.9	2.8	140	2	1.433
N23-3D	NEMA 23	1.8	2.8	175	2.2	1.543
N2309-3D	NEMA 23	0.9	2.8	175	2.2	1.543
N23-4D	NEMA 23	1.8	2.8	262	3	2.205
N2309-4D	NEMA 23	0.9	2.8	262	3	2.205
N34-1D	NEMA 34	1.8	4.2	397	2.36	3.748
N34-2D	NEMA 34	1.8	4.2	634	3.07	5.291
N34-3D	NEMA 34	1.8	4.2	1150	4.6	8.818
N34-4D	NEMA 34	1.8	6	1685	6.14	12.125
N42-1D	NEMA 42	1.8	5.9	1388	3.86	11.023
N42-2D	NEMA 42	1.8	5.9	2776	5.75	18.519

Normally Stocked Items



Size 8 Stepper Motors

1.8° Size 08 (20mm) Hybrid Motors



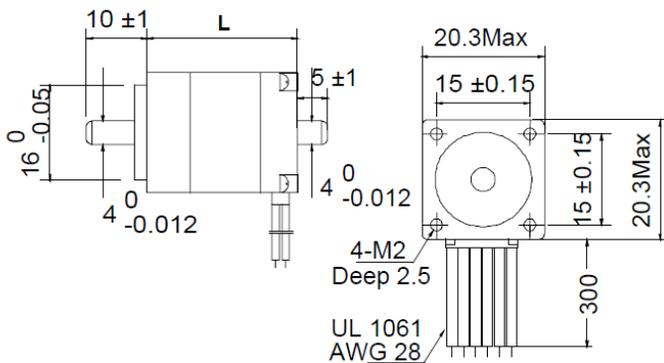
• General Specification for Hybrid Step Motors

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

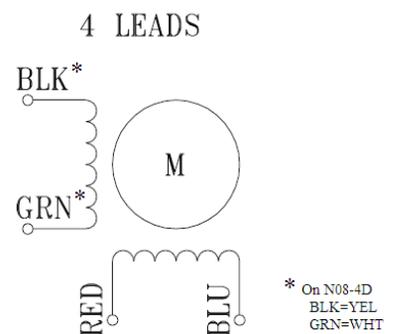
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N08-1D	1.8	0.2	24	8.02	2.5	1.1	0.015	0.11
N08-2D	1.8	0.6	6.5	1.7	2.5	1.2	0.016	0.132
N08-3D	1.8	0.6	6.5	1.7	2.8	1.3	0.018	0.154
N08-4D	1.8	0.35	16	7	4.5	1.78	0.022	0.187

Stocked Item

• Motor Dimensions



• Wiring Diagram



Size 11 Stepper Motors

1.8° Size 11 High Torque Hybrid Motors



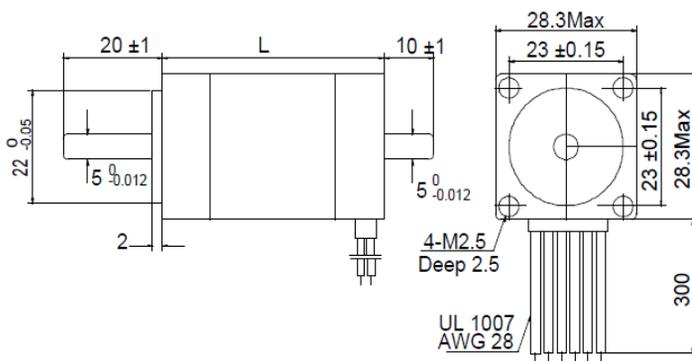
- General Specification for Hybrid Step Motors**

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

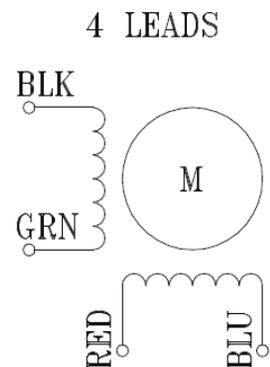
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N11-1D	1.8	0.67	5.6	4.2	8.3	1.26	0.049	0.242
N11-2D	1.8	0.67	6.8	4.9	13.2	1.56	0.066	0.309
N11-3D	1.8	0.67	9.2	5.7	16.7	2.03	0.098	0.441

Stocked Item

- Dimensions:**



- Wiring Diagram:**



Size 14 Stepper Motors

1.8° Size 14 Hybrid Motors



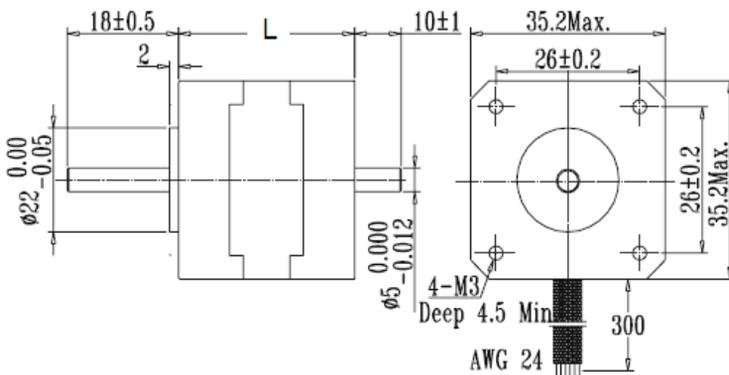
- **General Specification for Hybrid Step Motors**

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

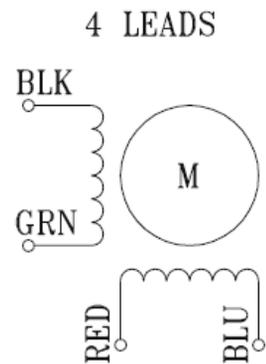
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in^2)	Mass (lbs)
N14-1D	1.8	1.32	1.75	1.2	6.94	1	0.055	0.198
N14-2D	1.8	0.47	20	19	13.88	1.1	0.066	0.265
N14-3D	1.8	0.5	18.5	26	18.04	1.3	0.077	0.309

Stocked Item

- **Motor Dimensions**



- **Wiring Diagram**



Size 17 Stepper Motors

1.8° Size 17 High Torque Hybrid Motors



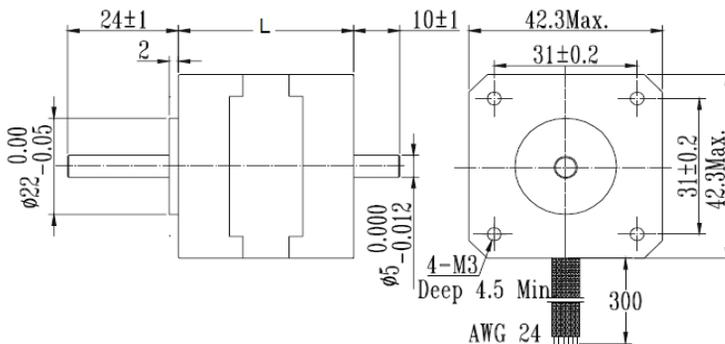
- General Specification for Hybrid Step Motors**

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

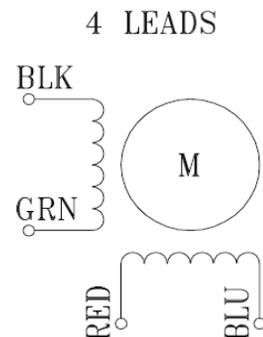
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N17-1D	1.8	0.91	3.3	8	21.5	1	0.153	0.419
N1709-1D	0.9	0.91	3.3	8	21.5	1	0.153	0.419
N17-2D	1.8	1.33	2.1	2.5	30	1.3	0.191	0.485
N1709-2D	0.9	1.33	2.1	2.5	30	1.3	0.191	0.485
N17-3D	1.8	1.68	1.65	3.2	50	1.5	0.295	0.617
N1709-3D	0.9	1.68	1.65	3.2	50	1.5	0.295	0.617
N17-4D	1.8	1.68	1.65	2.5	62	1.85	0.372	0.772
N1709-4D	0.9	1.68	1.65	2.8	62	1.85	0.372	0.772

Stocked Item

- Dimensions:**

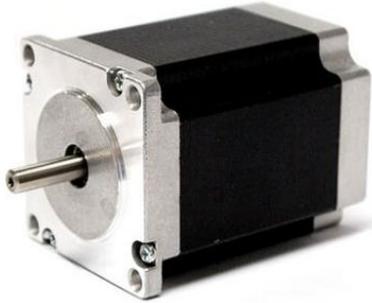


- Wiring Diagram**



Size 23 Stepper Motors

1.8° Size 23 High Torque Hybrid Motor



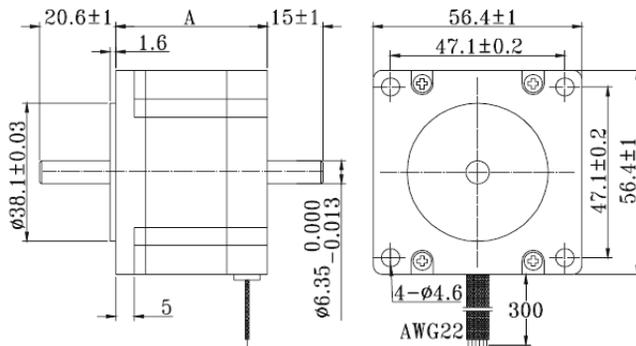
- General Specification for Hybrid Step Motors**

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

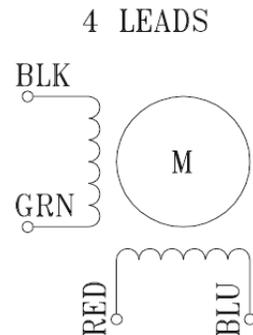
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N23-1D	1.8	2.8	0.7	1.4	75	1.6	0.656	0.992
N2309-1D	0.9	2.8	0.7	1.4	75	1.6	0.656	0.992
N23-2D	1.8	2.8	0.83	2.2	140	2	1.503	1.433
N2309-2D	0.9	2.8	0.83	2.2	140	2	1.503	1.433
N23-3D	1.8	2.8	0.9	2.5	175	2.2	1.64	1.543
N2309-3D	0.9	2.8	0.9	2.5	175	2.2	1.64	1.543
N23-4D	1.8	2.8	1.13	3.6	262	3	2.624	2.205
N2309-4D	0.9	2.8	1.13	3.6	262	3	2.624	2.205

Stocked Item

- Dimensions:**



- Wiring Diagram**



Size 34 Stepper Motors

1.8° Size 34 High Torque Hybrid Motors



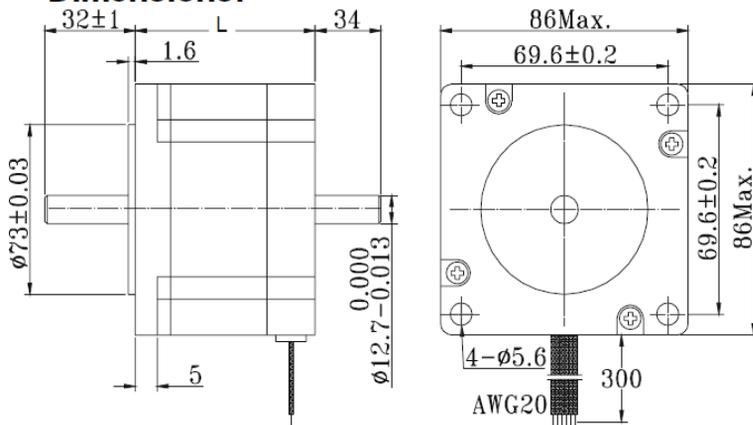
• General Specification for Hybrid Step Motors

Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

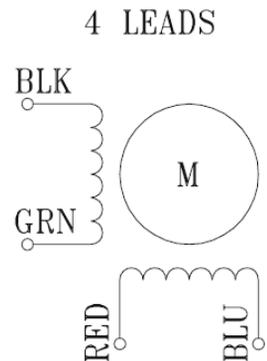
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N34-1D	1.8	4.2	0.57	3.1	397	2.36	5.467	3.748
N34-2D	1.8	4.2	0.8	13.6	634	3.07	7.654	5.291
N34-3D	1.8	4.2	1.04	12.2	1150	4.6	14.761	8.818
N34-4D	1.8	6	0.75	9.5	1685	6.14	21.868	12.125

Stocked Item

• Dimensions:



• Wiring Diagram

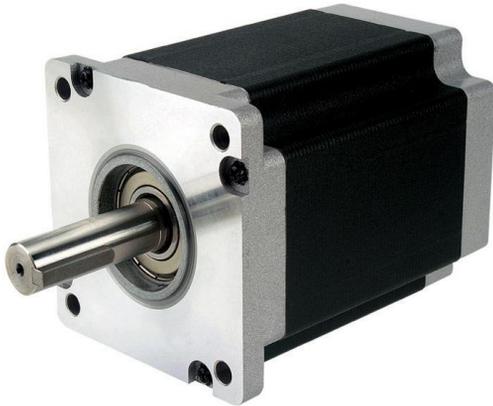


Size 42 Stepper Motors

1.8° Size 42 High Torque Hybrid Motors

- General Specification for Hybrid Step Motors**

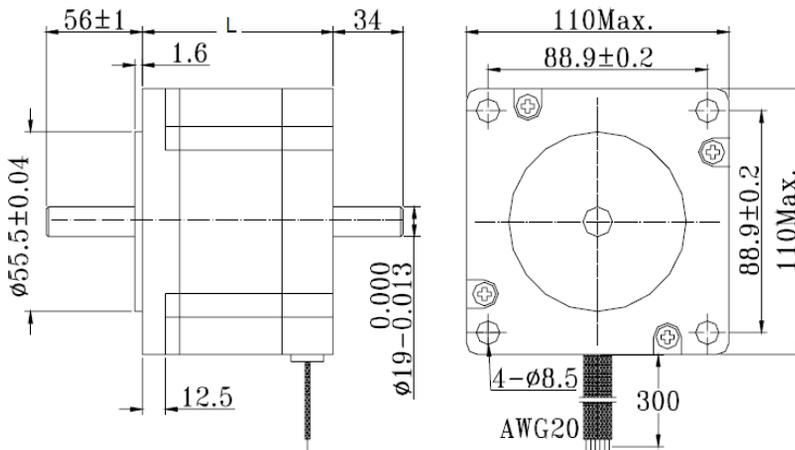
Item	Specifications
Step Angle Accuracy	± 5% (full step, no load)
Resistance Accuracy	± 10%
Inductance Accuracy	± 20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	- 10°C ~ +50°C
Insulation Resistance	100 MΩ Min., 500 VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.06 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



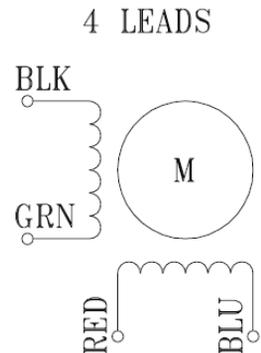
Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in^2)	Mass (lbs)
N42-1D	1.8	5.9	0.88	13.2	1388	3.86	30.069	11.023
N42-2D	1.8	5.9	1.35	26.5	2776	5.75	60.137	18.519

Stocked Item

- Dimensions:**

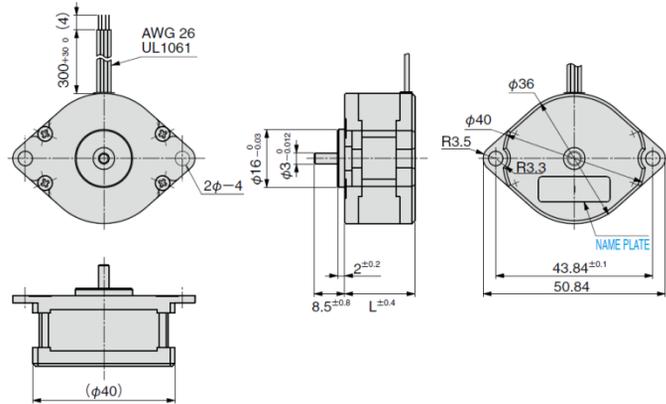


- Wiring Diagram**

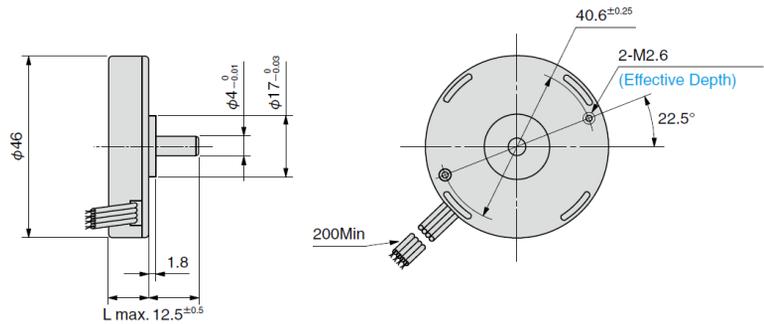


Specialty Stepper Motors

N1509



N1809



Motor P/N	Step Angle (deg)	Rated Current (A/phase)	Winding Resistance (ohm/phase)	Inductance (mh/phase)	Holding Torque (oz-in)	Motor Length (in)	Rotor Inertia (oz-in ²)	Mass (lbs)
N1509	0.9	0.35	17.5	13	5.66	0.551	0.052	0.128
N1809	0.9	0.25	20	16.5	6.372	0.512	0.049	0.22

Stocked Item

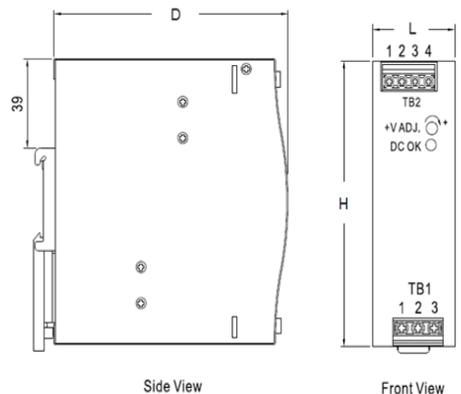
Power Supplies



KEY FEATURES:

- Universal AC Input (90-264VAC)
- 24VDC & 48VDC Outputs
- Din Rail Mountable
- Load Regulation = 1%
- Protection: Over Voltage / Over Temp
- Automatic Current Limiting
- Operating Temperature = -20 C to +60 C

Model Number	Output Power	Output Voltage	Rated Current	Dimensions L x H x D (mm)
PS75-24-DIN	75W	24VDC	3.2A	35 x 125.2 x 102
PS120-24-DIN	120W	24VDC	5A	40 x 125.2 x 113.5
PS120-48-DIN	120W	48VDC	2.5A	40 x 125.2 x 113.5
PS240-24-DIN	240W	24VDC	10A	125.5 x 125.2 x 100
PS240-48-DIN	240W	48VDC	5A	125.5 x 125.2 x 100
PS480-24-DIN	480W	24VDC	30A	85.5 x 125.2 x 128.5
PS480-48-DIN	480W	48VDC	15A	85.5 x 125.2 x 128.5



Joysticks



This high quality 3 Axis Joystick comes equipped with rubber boot, momentary push-button, and M12 circular connector for quick and flexible connectivity.

The JOY-3B was designed as a desktop joystick fully compatible with all ModuSystems controller products and comes with a removable 2m cable.

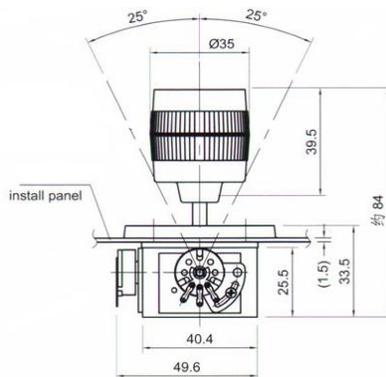
Panel Mount versions and alternate cable lengths are available.

KEY FEATURES:

- 3 Axis Potentiometer Based Joystick
- 5k ohm Potentiometers for Each Axis
- Automatic Spring Return
- Momentary Push Button (Optional)
- Linearity = +/- 1%
- Resistance Tolerance = 5%
- Operational Torque Required = 440 gf
- Life Expectancy = 5,000,000 cycles
- Operating Temperature = -10 C to +80 C

Joystick P/N	Description
JOY-2	2-Axis Desktop Joystick
PM-JOY-2	Panel Mount 2-Axis Joystick
JOY-3	3-Axis Desktop Joystick
PM-JOY-3	Panel Mount 3-Axis Joystick
JOY-3B	3-Axis Desktop Joystick with Momentary Pushbutton
PM-JOY-3B	Panel Mount 3-Axis Joystick with Momentary Pushbutton

Additional Hardware Required for Mounting



Custom Solutions

