MOONS'
moving in better ways

New Products for Automative Industry

Linear Servo Motors

Precision Electric Displacement Stages

Motor Drivers

Milestones

APR. 2023	MOONS' INDUSTRIES (UK), LIMITED was established in Reading,UK.
SEP. 2022	Successful Launch and Operation of MOONS' (Taicang)Intelligent Industry Zone
JUL. 2021	AMP's New Corporate Headquarters relocated from Watsonville to Morgan Hill
FEB. 2020	MOONS' Intelligent motion system India Private Limited was established in Pune.India
MAR. 2019	MOONS' Electric acquired Technosoft Motion AG
MAR. 2018	MOONS' Electric acquired Changzhou Yunkong Electronic CO., LTD.
JUL. 2017	Investment agreement of MOONS'(Taicang) Intelligent Industry Zone offically signed
MAY. 2017	AMP & MOONS' Automation (Germany) GmbH was officially registered in Frankfurt, Germany
MAY. 2017	MOONS' listed on the Shanghai Stock Exchange(Stock Code 603728)
JUN. 2015	MOONS' acquired LIN ENGINEERING
MAY. 2015	MOONS' Electric and PBC Linear officially established Joint Venture
JUN. 2014	MOONS' acquired Applied Motion Products
OCT. 2013	MOONS' Industries Japan was established in Yokohama
JUN. 2010	MOONS' Industries (South-East Asia) Pte Ltd. was established in Singapore
SEP. 2009	MOONS' Industries (Europe) S.R.L was established in Milan, Italy
FEB. 2007	MOONS' established joint venture with Applied Motion Products and a driver company was set up
MAY. 2006	MOONS' new facility was built and factory relocation was completed
JAN. 2005	First LED Driver was introduced to the market
DEC. 2000	MOONS' Industries (America), Inc. was established in Chicago, USA
OCT. 2000	MOONS' Power Supply Factory was set up and production started
APR. 1998	MOONS' International Trading Company was established
FEB. 1998	MOONS' Motor Factory was set up and HB Stepper Motor production started
FEB. 1994	MOONS' was founded

Catalogue

Linear Servo Motors

Linear Servo Motors

MOONS' Linear Servo Motors provide customers with an integrated linear actuator by connecting a high-precision ball screw directly to a high-performance servo motor body. The integrated design eliminates the need for couplings and related adapter components, helping customers to reduce component assembly and tuning processes, while also saving installation space. Compared with general open-loop linear stepper motors, linear servo motors operate more efficiently, reliably, and intelligently, providing greater thrust and higher speeds.

- Four power options：30W，100W，200W，400W
- Each power motor offers a wide range of screw lead options
- Standardized models for fast sample delivery

In addition, MOONS' offers unique and extensive customization services. We are committed to product development, design and technological advancement to provide our customers with more optimized motion control solutions.

■ Naming Rules

SM3L-042A3 - B0801 - 105 - AK1 - 0

①	②	③	④	⑤
Motor Series	Lead Screw Type	Screw Length (mm)	Nut Type	Customization code S=End Machining

Product Characteristics

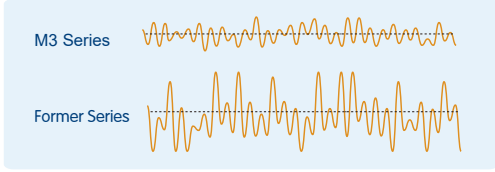
High Precision Encoder

Equipped with high resolution encoder, which makes the servo system run more smoothly and with higher precision. The encoder adopts serial communication mode, simple wiring and strong anti-interference ability.

- 17-bit incremental magnetic encoder
  - ◆ High resolution up to 131,072 pulses/turn
  - ◆ Good resistance to harsh environments
  - ◆ High vibration resistance
  - ◆ Dust and oil resistant

Low Cogging Torque

- The newly designed servo motor greatly reduces the cogging torque of the motor, resulting in less fluctuation of the motor speed and torque.
- Together with the high precision encoder up to 23-bit, the machine runs more smoothly at constant speed and low speed.



Two I/O Connectors Available

50 Pin High Density Connectors
- ◆ Provides a wide range of input/output signals
- ◆ Soldered wiring
- ◆ Connectors are secured with locking screws

26 Pin spring-loaded connectors
- ◆ Fast, reliable wiring
- ◆ Self-locking connectors, no screws required

Product Features

Smaller and More Efficient

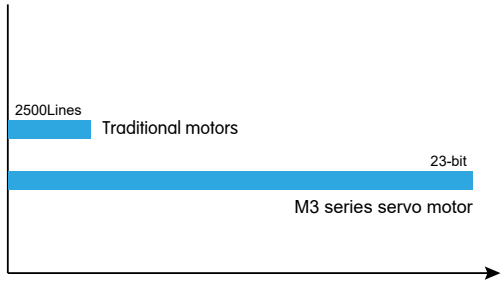
The new magnetic circuit design improves the efficiency of the servo motor and reduces heat generation, while making the motor size smaller.

Inline Connectors

◆ Power line and encoder line adopts inline connector, convenient installation and simple system wiring.
◆ With IP65 protection level (need to choose the model with oil seal).

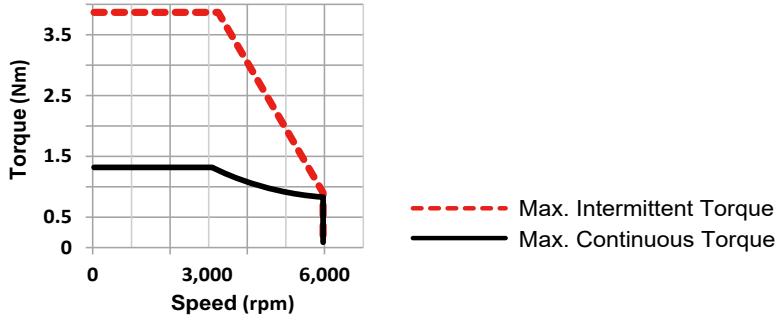
High Precision Positioning

Equipped with high resolution encoder, which makes the servo system run smoother and more accurate.
◆ 23-bit photoelectric encoder, the number of motor feedback pulses per revolution is up to 8388608.
◆ Absolute encoder can record the current position of the motor even if the drive is powered off when using batteries.



High Speed, 300% Overload Torque

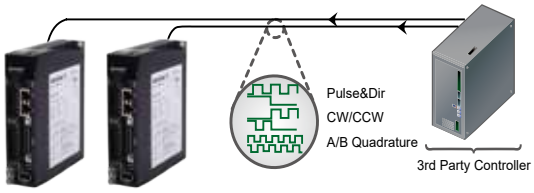
◆ The M3 series is equipped with a servo motor with a maximum speed of 6,000 rpm, resulting in a shorter time for the same running distance.
◆ The 300% overload torque facilitates the provision of higher acceleration and deceleration speeds, which helps to significantly improve production efficiency and capacity.



Multiple Control Methods

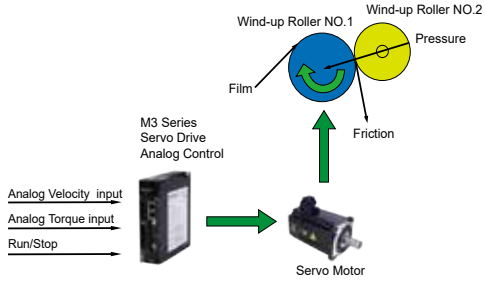
■ Digital pulse position mode

Supports pulse & direction, CW/CCW dual pulse, A/B quadrature pulse inputs
Low-speed open collector pulse input: 500kHz, 24VDC
Low-speed differential pulse input: 500kHz, 5VDC
High-speed differential pulse input: 4MHz, 5VDC



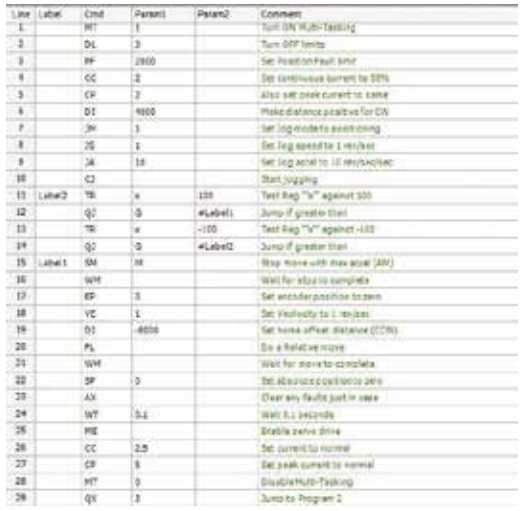
■ Analog signal input and output control

Some models of M3 series have two analog inputs, two analog outputs. The -10~+10V analog inputs can be used for analog speed and analog torque control; the analog outputs can be used to monitor the motor's speed and torque and other information.



■ Built-in soft PLC – unique Q-programming features

Q Program is a specialized platform built on top of SCL instructions, unique to Narumi, that extends the use of SCL instructions and allows users to create and store SCL instructions. These programs can be stored in the drive's non-volatile memory, allowing the drive to run them independently without the need for a host computer. q-programs offer a high degree of flexibility and power for system design, greatly simplifying the programming of controllers such as PLCs.

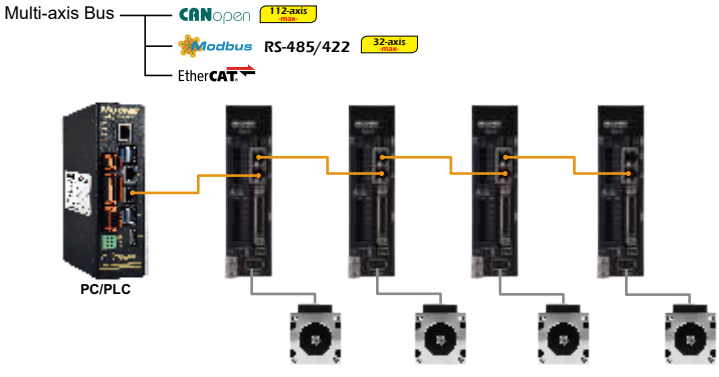


Characteristics

- Motion control instructions (e.g., point-to-point relative motion, absolute motion, home return, etc.).
- Multitasking instructions
- Conditional judgment instructions (e.g., external input interruptinstructions, comparison instructions, etc.)
- Data register arithmetic instructions (e.g., addition, subtraction, multiplication, division, and, or, etc.)
- External I/O processing (e.g., external input judgment, Driver output control, etc.)
- Q program logic operation instructions (e.g., loops, calls)

■ Bus Control

There are many applications based on fieldbus communication in industrial automation, and the M3 series servo system can support EtherCAT bus, Modbus bus based on RS-485 and Ethernet, CANopen bus based on CAN, EtherNet/IP based on Ethernet, and eSCL protocol based on Ethernet, providing a rich fieldbus-type servo system solution. servo system solutions.

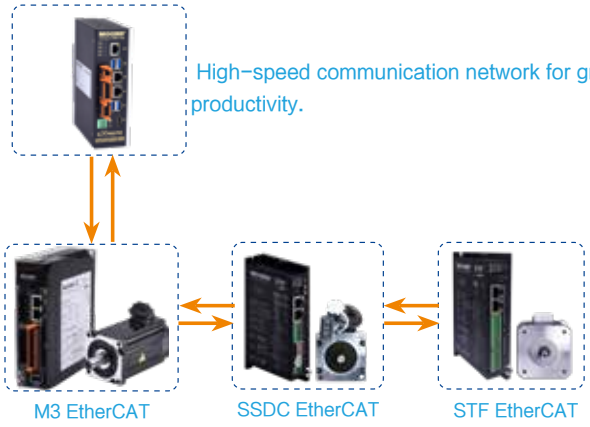


Rich Industrial Fieldbus

■ EtherCAT Fieldbus

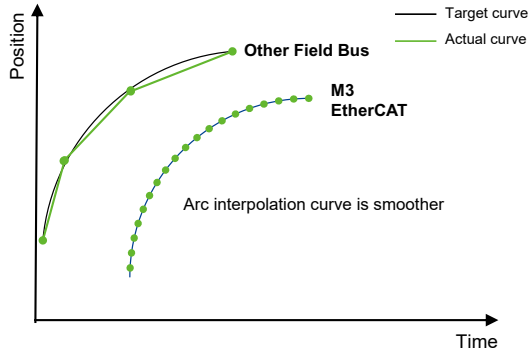
☐ High speed and efficiency

Full duplex, 100Mbps baud rate
Support CoE (CiA 402 protocol), VoE (Vendor Specific Profileover EtherCAT)
Support PP, PV, CSP, CSV, CST, TQ, HM modes, full closed-loop modes with the MOONS' EtherCAT stepping product line to make your equipment more efficient.



☐ High performance

The minimum synchronization cycle for communication of M3 series EtherCAT products is 0.5ms, with more detailed subdivision of position commands and smoother device movements.



■ CANopen

CAN bus is a field bus commonly used for industrial control, and M3 series servo drives have a standard CAN bus interface.

Characteristics	Specifications
Physical Layer Protocol standard	CiA 303-1 Cabling and connector pin assignment
CPL standard	CiA 301 Application Layer and Communication Profile CiA 402 Device Profile Drives and Motion Control
Bus Connector	RJ45
Communication rate	12.5Kbps, 20Kbps, 50Kbps, 125Kbps 250Kbps, 500Kbps, 800Kbps, 1Mbps
Message type	SDO, PDO, SYNC, EMCY, NMT, Heartbeat
Control modes	Profile Position, Profile Velocity, Profile Torque, Homing Mode, Q Program
PDO data	4 RxPDOs, 4 TxPDOs
Supported axes	Up to 112 axes

■ Modbus

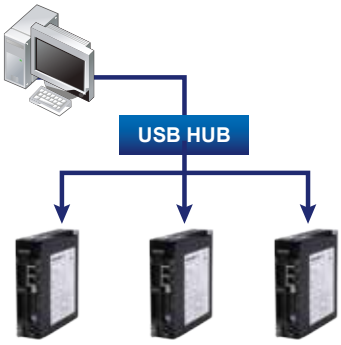
M3 series servo drives support Modbus/RTU communication protocol based on RS-485 and Modbus/TCP communication protocol based on Ethernet. Through the Modbus protocol, you can easily control the motor operation, modify the drive parameters and monitor the status of the servo drive.

Characteristics	Specifications
Physical Layer Protocol standard	RS-485
CPL standard	Modbus/RTU
Bus Connector	RJ45(RS-485)
Communication rate	RS-485: 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Control modes	Position Mode, Velocity Mode, Torque Mode, Homing Mode, Q Program
Supported axes	Up to 32 axes(Serial Interface)

User-friendly software

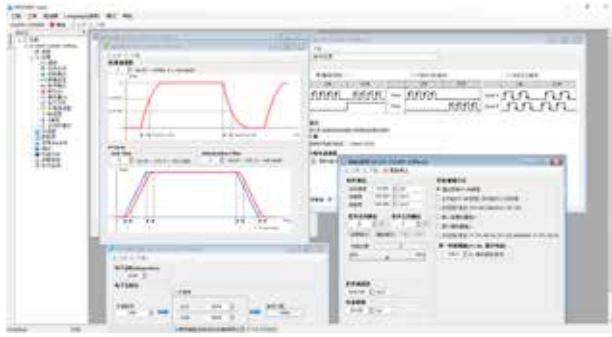
■ USB Multi-Axis Debugging

Based on USB communication mode, it can realize multi-axis debugging, simple and convenient.



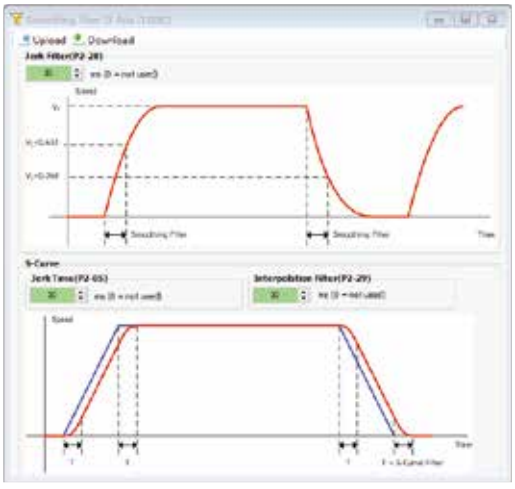
■ Tree structure

Newly designed tree structure software, multi-window display, clear classification of functions, simple and convenient operation.



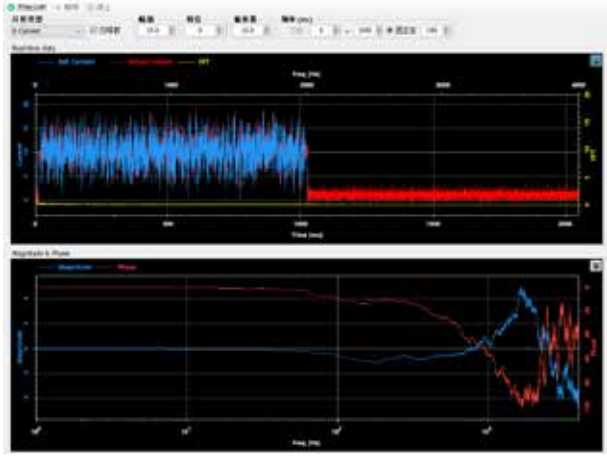
■ Graphical setup interface

The setting interface adopts a simple and clear graphical interface, which allows you to intuitively set the required functions.



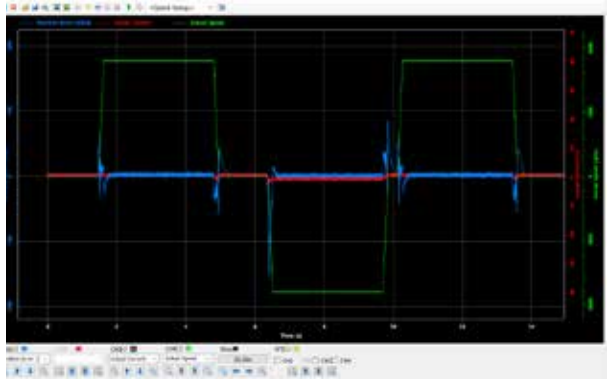
■ Mechanical analysis

It can quickly diagnose the frequency characteristics of mechanical equipment, draw Bode diagrams (Bode), can also be used to detect the resonance point and frequency response characteristics of machinery, and quickly set the parameters of the trap filter.



■ Powerful Oscilloscope Features

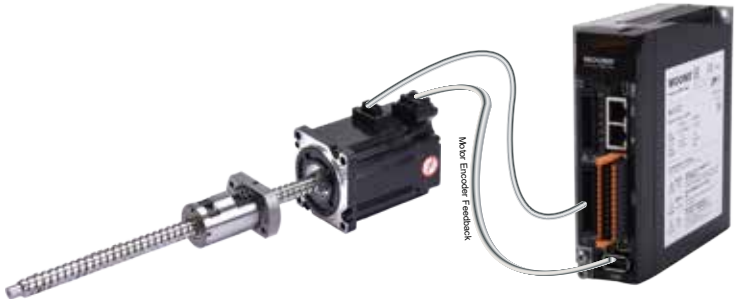
- Real-time data curve display
- When 16bit data is selected, up to 4 channels are displayed, and the maximum refresh frequency is 8kHz.
- When 32bit data is selected, up to 2 channels are displayed, and the maximum refresh frequency is 8kHz.
- Display maximum value, minimum value, root mean square, etc. in the selected cursor area.
- Customize the trigger conditions.
- You can monitor the operation of the Driver and the input/output status.



Other Features

■ Full closed loop

The actual mechanical position of the load equipment is directly fed back through the external scale, and the full closed-loop control based on dual position feedback improves the positioning accuracy of the final positioning of the equipment. It also improves servo response, suppresses mechanical vibration and improves equipment reliability.



■ More functions

Position / Speed / Torque Control
Supports position control, speed control, and torque control. - Position control supports pulse, internal position or communication commands for positioning. - Speed control supports analog, internal multispeed, or communication commands. - Torque control supports analog, internal torque, or communication commands.
Control mode switching
Position control, speed control, and torque control can be switched using external digital inputs. The -P and -R models can be switched to any of the two control modes.
Gain switching function
The gain can be automatically switched between running and stopping under certain conditions, or both sets of gains can be freely switched via digital inputs.
Internal Multi-Segment Speed Command
The drive can store up to 8 speed segments internally and select the corresponding internal speed control commands via digital inputs.
Pulse input inhibit function
When the pulse prohibit input signal is valid, the Driver ignores the external pulse command and the motor decelerates to a stop.
Internal software position limits
In absolute systems, software position limits can be set to protect equipment operation without external hard limits.

Input and output signal distribution function
Input functions can be assigned to any input pin through parameters The output function can be assigned to any output pin through parameters
Encoder feedback output
The motor encoder feedback and the second encoder feedback are output as A/B/Z pulses, and pulse division output is supported. Supports by-pass output of position command pulses.
Analog control inputs
2 analog voltage inputs can be used for analog speed control and analog torque control.
Analog Monitor Output
2 analog voltage outputs, real-time voltage output of motor command speed, command torque, actual speed, actual torque or position error.
Zero-speed clamping function
In the speed control mode, when the zero-speed clamping signal is valid, the servo motor enters the zero-position locked state when the commanded speed is 0 and the actual rotation speed is less than the zero-speed judgment threshold. At this time, the internal position loop control of the Driver will return to the position at the time of clamping even if rotation occurs due to external force.
Stop method setting
You can set the stopping method (e.g., free stop, deceleration stop, dynamic braking) and the status of the motor after stopping when the servo is OFF or when a fault alarm occurs.
Motion command smoothing functio
The command smoothing function filters the commanded position and commanded rotation speed so that the servo motor runs smoothly even if there is a sudden change in the command.

Easy Set-UP

For M3 servo system, our commitment is to improve your work efficiency on every step of the way during system installation, tuning and maintenance.

Unpacking

Wiring

Tuning

Commissioning

Easy wiring

- Spring type I/O and power connector

- Plug-in type IP65 protection level connector

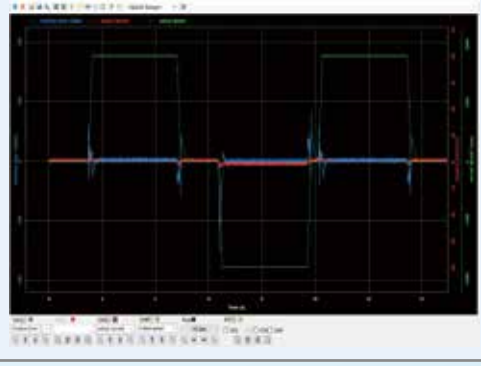
Easy tuning

- High speed USB communication between software and drive
- The drive automatically recognizes motors with smart encoder
- Both auto-tuning and tuning-less adjustment function are available
- Stable and smooth operation without complicated gain setting

Friendly software

- Operating Status Monitor

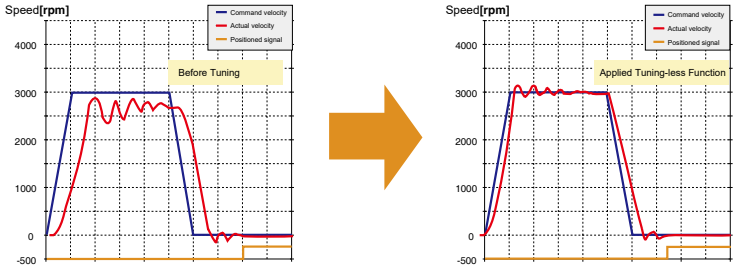
- Real-time Oscilloscope Interface



Easy Tuning

Tuning-less Function

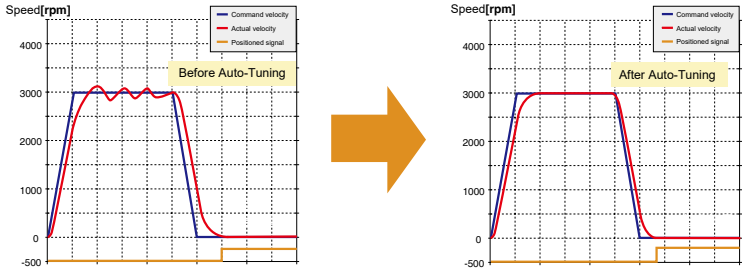
- No tuning is required for load up 30 times of the load inertia ratio.
- No limitation towards any load type and drive control mode.
- High robustness for maximum control of servo system stability.



Auto-tuning

The real-time auto-tuning algorithm can automatically identify the load inertia (ratio), gain and vibration suppression parameters in real time.

The auto-tuning function can greatly shorten your system tuning time, improve system responsiveness and equipment production efficiency.



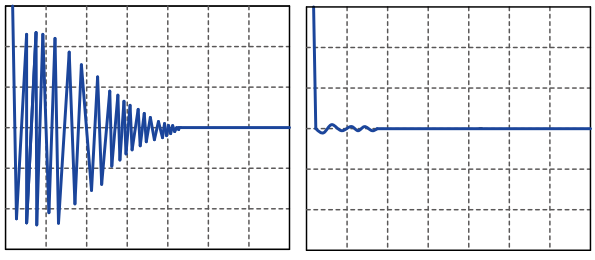
Notch Filters

There are 4 notch filters available for suppress mechanical vibration.

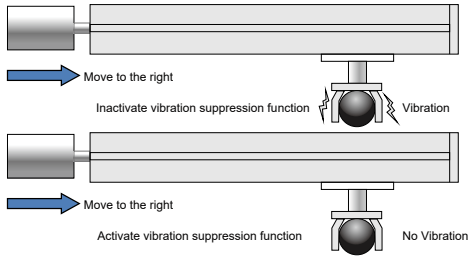
- 2 sets of automatically set notch filters can search and set resonance frequency automatically.
- 2 sets of manual notch filters for more adjust options.

Mechanical End Vibration Suppression

Vibration at the end of the machine will lead to longer system setting time, resulting in the decrease of product precision or production efficiency. With mechanical end vibration suppression control, M3 servo can suppress vibrations at the end of the machine, shortening tuning time, increasing the system precision and productivity.



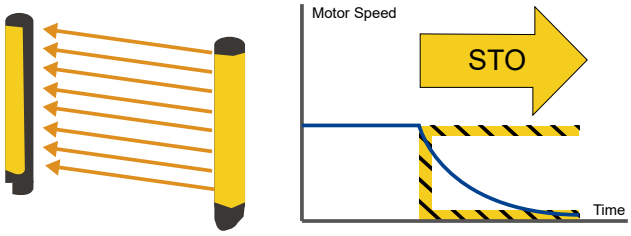
Without Anti Vibration | With Anti Vibration



Reliable Operation

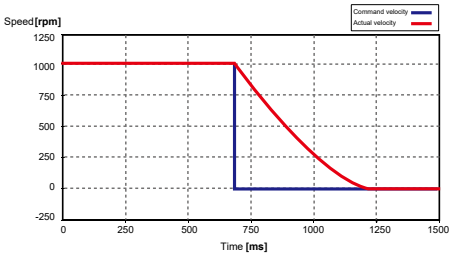
STO

Safe Torque Off (STO) is a hardware level safety protection function. When the STO function is activated, the ability to drive motor current is cut-off. In case of an emergency, this operator can protect human and equipment safety while the drive is continuously powered.
M3 series drive meets UL61800-5-2(SIL 3)，IEC61508(SIL 3)，ISO138491(PL e).

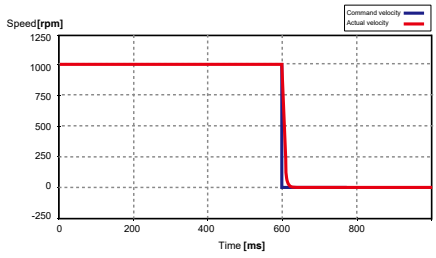


Dynamic Brake

Dynamic brake is a mechanism that stops the motor with the fastest speed by shorting the motor three-phase in case of an emergency, the intention is to protect the safety of equipment and surrounding. Dynamic brake is driven by motor's back EMF current, no external power source is needed to engage or disengage the brake function.



Without Dynamic brake
The drive will disable, decelerate and free stop uncontrollable while a fault occurs. The deceleration time and distance are determined by the system inertia and friction.



Dynamic brake is in effect
The velocity command is set to 0 as soon as the drive is disabled. The actual velocity ramps down immediately as the braking applies.

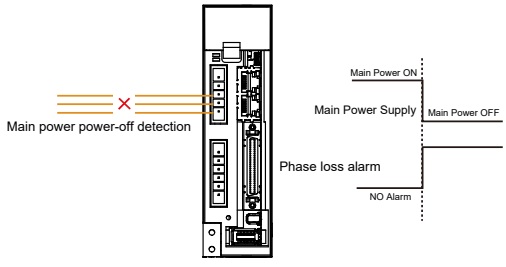
Built-in Regenerative Absorbing Resistor

All M3 drives have built-in regenerative absorbing resistor, it can consume the regenerative energy generated when the motor and load decelerate rapidly, make sure the servo system can stop quickly and operate reliably.

No additional absorbing resistor is required for most applications.

Main Power Power-off & Phase Loss Detection

The power source is monitored during the operation process, it detects whether the main power power-off or phase loss, and provides faster protection measures for the servo system that fail caused by sudden power failure.



Standard Models For Stock

Motor power (W)	Motor Series		Lead Screw Options		Screw length Options		Nut Options		End machining code	Page
30	SM3M-023J3	-	B0601	-	50,65,75,90,105,120,135,150 165,185,205,230,240	-	HF1	-	0, S	P17
			B0602				FF1			
							FF2			
			B0606				FF1			
100	SM3L-042A3	-	B0801	-	50,65,75,90,105,120,135,150 165,185,205,230,240	-	AK1	-	0, S	P20
			B0802				EK1			
			B08025				AK1			
			B0805				FF1			
			B0808				FF1			
200	SM3L-061A3	-	B1202	-	80,90,105,120,140,155,165,180, 200,225,250,285,300,320,350,360	-	EK1	-	0, S	P23
			B1205				ES1			
400	SM3L-062A3		B1210				ES1			
			B1616				AY3			

Note:
When the outer diameter of the screw is 6mm,the length of the screw is <115mm, no shaft end processing; the length of the screw is ⩾ 115mm, standard shaft end processing.
When the outer diameter of the screw is 8mm,the length of the screw is <165mm, no shaft end processing; the length of the screw is ⩾ 165mm, standard shaft end processing.
When the outer diameter of the screw is 12mm or 16mm, the length of the screw is <225mm, no shaft end processing; the length of the screw is ⩾ 225mm, standard shaft end processing.

Ordering Example

① Select Configuration Code

Motor Series		Lead Screw Options		Screw length Options		Nut Options		End machining code
SM3L-042A3	-	B0801	-	50,65,75,90,105,120,135,150 165,185,205,230,240	-	AK1	-	0, S

② Determine the model number to order

SM3L-042A3 - B0801 - 105 - AK1 - 0

* In addition to standard models, a wide range of customized configuration options are available, please contact the factory with any questions.

SM3M-02 Series（30W）

Load Type Low inertia
Encoder Type 17bit incremental
Insulation Class B（130℃）
Environmental Temperature 0℃～+40℃
Environmental Humidity 20～85%（no condensation）
※UL and other standards

■ Ordering Model

SM3M-023J3 - B0601 - 105 - HF1 - 0

Motor Series

Code	Motor Power
SM3M-023J3	30W

Lead Screw Type Code

Code	Nominal Diameter（mm）	Lead（mm）
B0601	6	1
B0602	6	2
B0606	6	6

The length of the screw Lx

###	Defined according to customer requirements, min. 10mm increments, max. 360mm

Special Custom Type Code

Code	Custom Type
0	No end machining
S	Standard End Machining
XX	Special Customized Code

Mating Nut Type

Code	Adaptive Screws
HF1	B0601
FF1	B0602
FF2	
FF1	B0606

Note: It is recommended to select the standard stock model (see P16 for details) to shorten the delivery lead time.

■ Technical Parameters

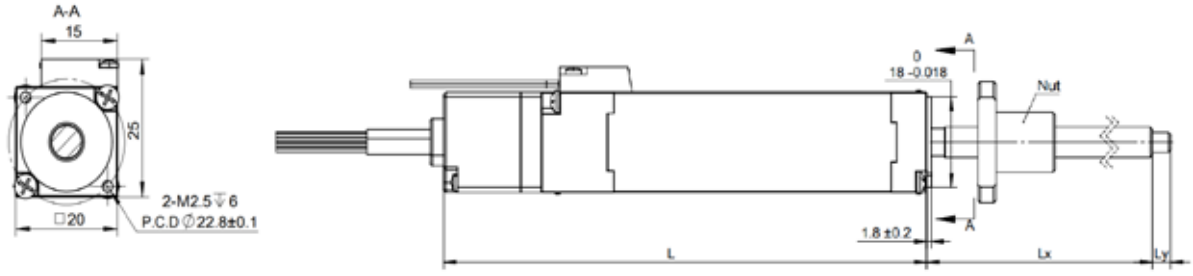
	Size (mm)	Rated Power (W)	Rated torque (N・m)	Peak torques (N・m)	Rated RPM (rpm)	Maximum speed (rpm)	Rated current (A)	Peak current (A)	Moment of inertia (mechanics) (Kg・㎡)	Encoder Type
SM3M-023J3	20	30	0.096	0.288	3000	6000	4.2	12.6	0.0094×10^{-4}	Incremental magnetic encoders

Note: Recommended Driver mode P26-P28。

SM3M-02 Series（30W）

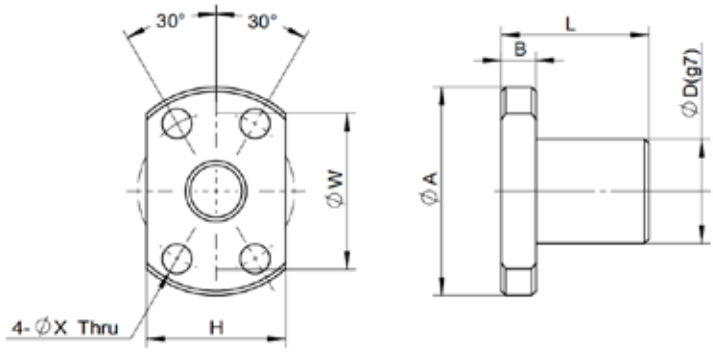
■ Dimension Information

Uniit：mm



Motor type	Dimension “L”
SM3M-023J3	107

Nut Size

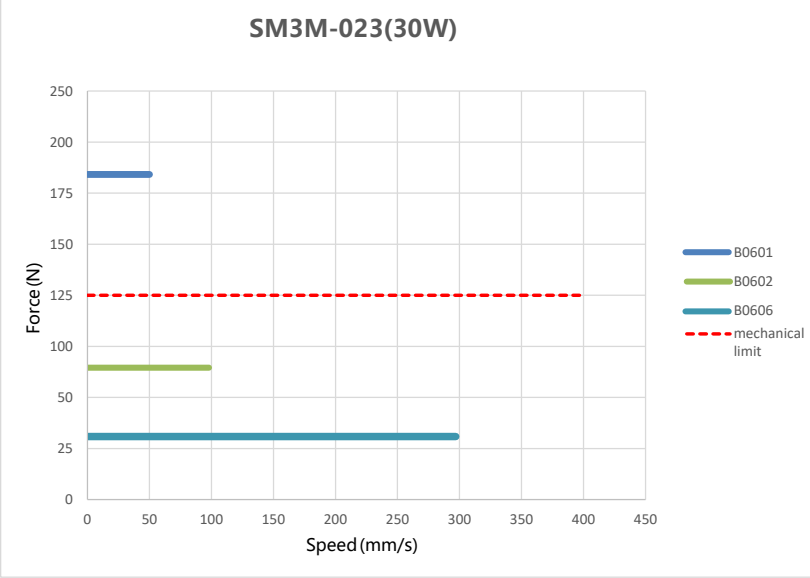


HFI/FF1/FF2

Lead Screw Type	Nut Type		D	A	B	L	W	H	X
B0601	HF	1	12	24	3.5	15	18	16	3.4
B0602	FF	1	12	24	4	17	18	16	3.4
	FF	2	15	28	4	17	22	19	3.4
B0606	FF	1	12	24	4	17	18	16	3.4

SM3M-02 Series（30W）

■ Speed-Force Reference Curve



SM3L-04 Series（100W）

Load Type Low inertia
Encoder Type 17bit incremental (131072 pulses/turn)
Insulation Class B（130℃）
Environmental Temperature 0℃～+40℃
Environmental Humidity 20 ~ 85%（no condensation）
※UL and other standards

■ Ordering Model

SM3L-042A3 - B0801 - 105 - AK1 - 0

Motor Series

Code	Motor Power
SM3L-042A3	100W

Lead Screw Type Code

Code	Nominal Diameter（mm）	Lead（mm）
B0801	8	1
B0802	8	2
B08025	8	2.5
B0805	8	5
B0808	8	8

The length of the screw Lx

###	Defined according to customer requirements, min. 10mm increments, max. 240mm

Special Custom Type Code

Code	Custom Type
0	No end machining
S	Standard End Machining
XX	Special Customized Code

Mating Nut Type

Code	Adaptive Screws
AK1	B0801
EK1	B0802
AK1	B08025
FF1	B0805
	B0808

Note: It is recommended to select the standard stock model (see P16 for details) to shorten the delivery lead time.

■ Technical Parameters

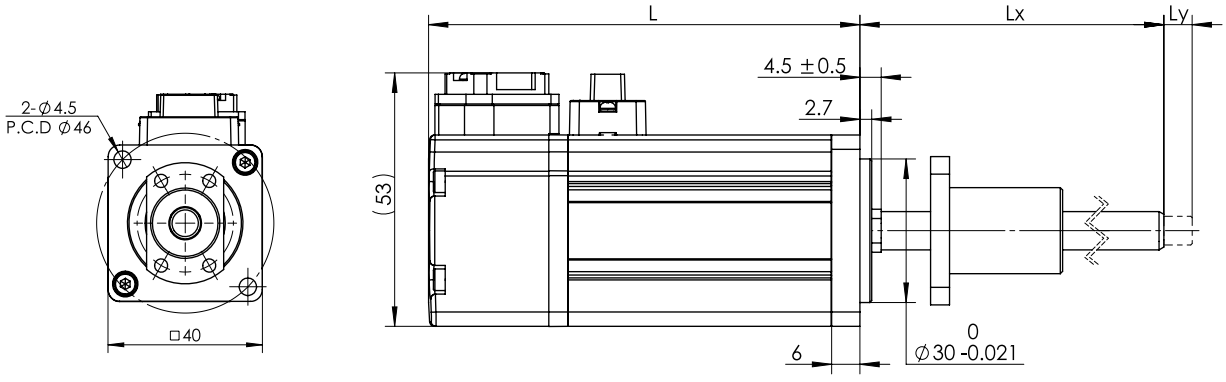
SM3L-042A3	Size (mm)	Rated Power (W)	Rated torque (N · m)	Peak torques (N · m)	Rated RPM (rpm)	Maximum speed (rpm)	Rated current (A)	Peak current (A)	Moment of inertia (mechanics) (Kg · ㎡)	Encoder Type
	40	100	0.32	1.28	3000	6000	1.2	5.9	0.038×10^{-4}	Incremental magnetic encoders

Note: Recommended Driver mode P29-P39。

SM3L-04 Series（100W）

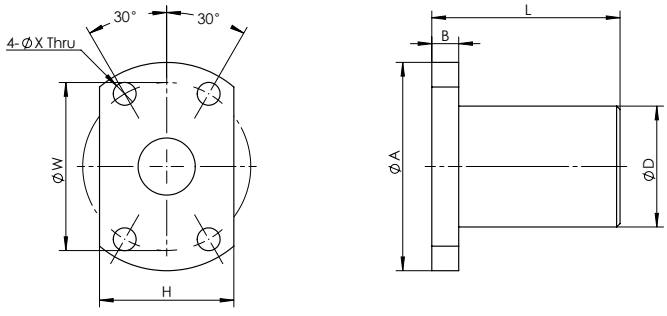
■ Dimension Information

Uniit：mm



Motor type	Dimension "L"
SM3L-042A3	91.5

Nut Size

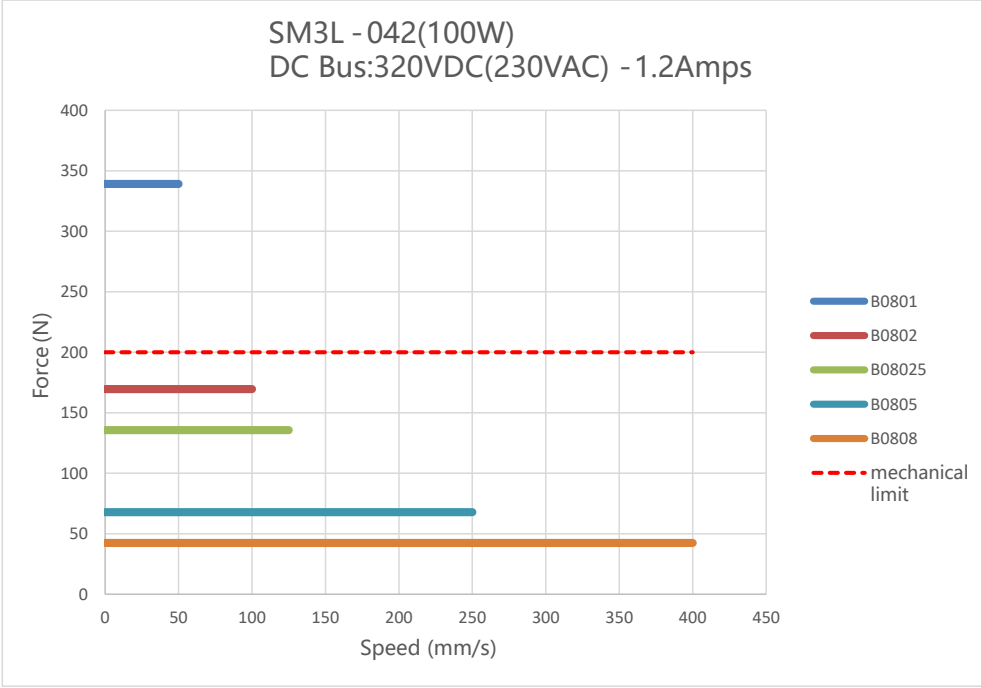


AK1/EK1/FF1

Lead Screw Type	Nut Type		D	A	B	L	W	H	X
B0801	AK	1	14	27	4	16	21	18	3.4
B0802	EK	1	14	27	4	16	21	18	3.4
B08025	AK	1	16	29	4	26	23	20	3.4
B0805	FF	1	18	31	4	28	25	20	3.4
B0808	FF	1	18	31	4	28	25	20	3.4

SM3L-04 Series（100W）

■ Speed-Force Reference Curve



SM3L-06 Series（200/400W）

Load Type Low inertia
Encoder Type 17bit incremental（131072 pulses/turn）
Insulation Class B（130℃）
Environmental Temperature 0℃～+40℃
Environmental Humidity 20～85%（no condensation）
※UL and other standards

■ Ordering Model

SM3L-061A3 - B1202 - 105 - AK1 - 0

Motor Series

Code	Motor Power
SM3L-061A3	200W
SM3L-062A3	400W

Lead Screw Type Code

Code	Nominal Diameter（mm）	Lead（mm）
B1202	12	2
B1205	12	5
B1210	12	10
B1616	16	16

The length of the screw Lx

###	Defined according to customer requirements, min. 10mm increments, max. 360mm

Special Custom Type Code

Code	Custom Type
0	No end machining
S	Standard End Machining
XX	Special Customized Code

Mating Nut Type

Code	Adaptive Screws
EK1	B1202
ES1	B1205
	B1210
AY3	B1616

Note: It is recommended to select the standard stock model (see P16 for details) to shorten the delivery lead time.

■ Technical Parameters

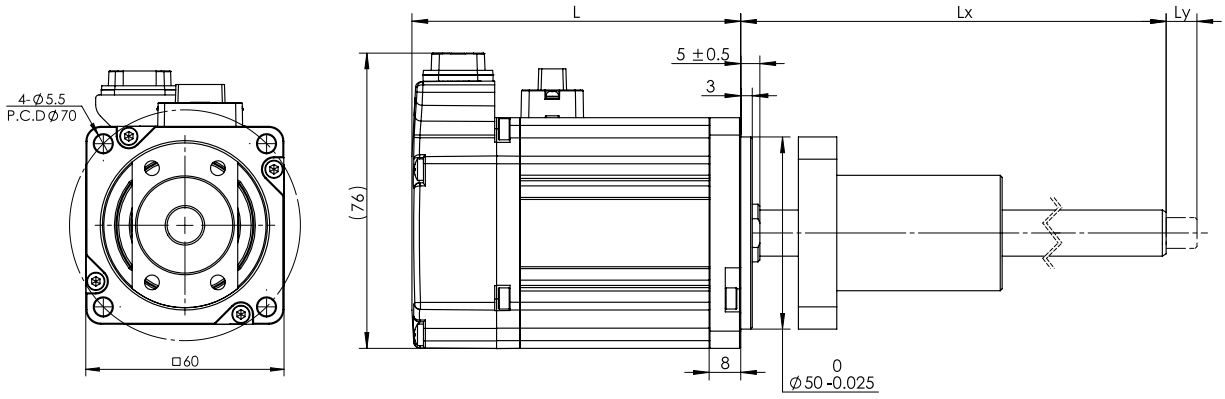
	Size (mm)	Rated Power (W)	Rated torque (N・m)	Peak torques (N・m)	Rated RPM (rpm)	Maximum speed (rpm)	Rated current (A)	Peak current (A)	Moment of inertia (mechanics) (Kg・㎡)	Encoder Type
SM3L-061A3	60	200	0.64	1.9	3000	6000	1.5	5.1	0.152×10^{-4}	Incremental magnetic encoders
SM3L-062A3	60	400	1.27	3.8	3000	6000	2.8	9.6	0.243×10^{-4}	Incremental magnetic encoders

Note: Recommended Driver mode P29-P39。

SM3L-06 Series (200/400W)

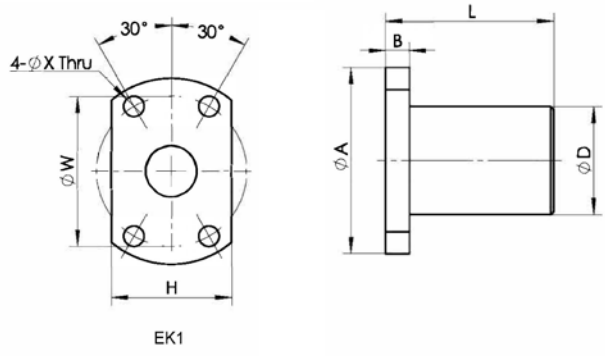
■ Dimension Information

Uniit：mm

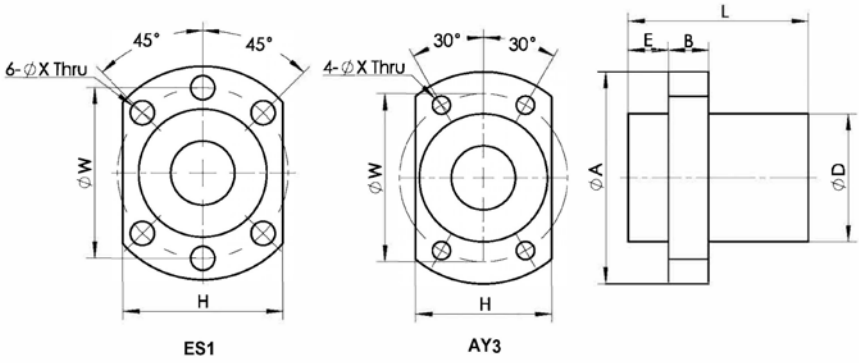


Motor type	Dimension "L"
SM3L-061A3	85.5
SM3L-062A3	104

Nut Size



EK1

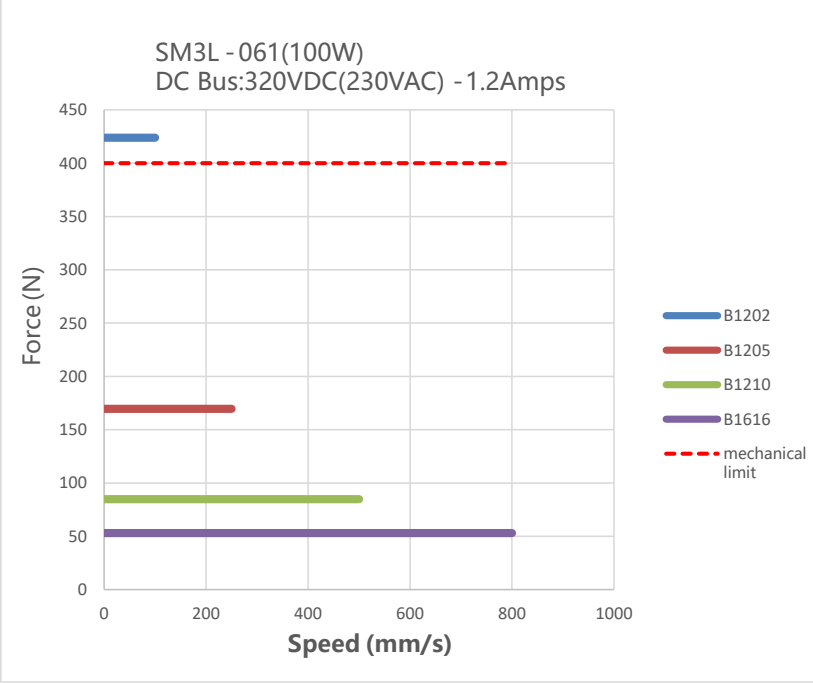


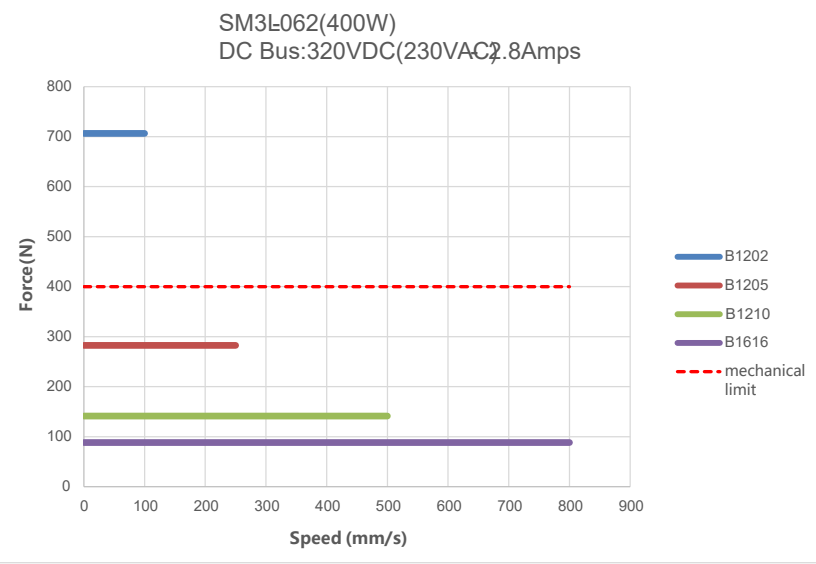
ES1 AY3

Lead Screw Type	Nut Type		D	A	E	B	L	W	H	X	Y	Z
B1202	EK	1	20	37	/	5	28	29	24	4.5	/	/
B1205	ES	1	24	40	/	10	31	32	30	4.5	/	/
B1210	ES	1	24	40	/	10	48.5	32	30	4.5	/	/
B1616	AY	3	32	53	10.1	10	45	42	34	4.5	/	/

SM3L-06 Series (200/400W)

■ Speed-Force Reference Curve





MBDV Servo Driver

■ Numbering System

MBDV - 2X - 5 20A C - *

① ② ③ ④ ⑤ ⑥

① MBDV series
② Multi-axis in One
Blank: Single-axis
2X: Dual-axis
③ Supply Voltage
5: 24~60VDC
④ Current
20A: Rated Current 20A(RMS)
Peak Current 60A(RMS)
⑤ Control Function Type
C: CANopen & RS485
⑥ Custom Code

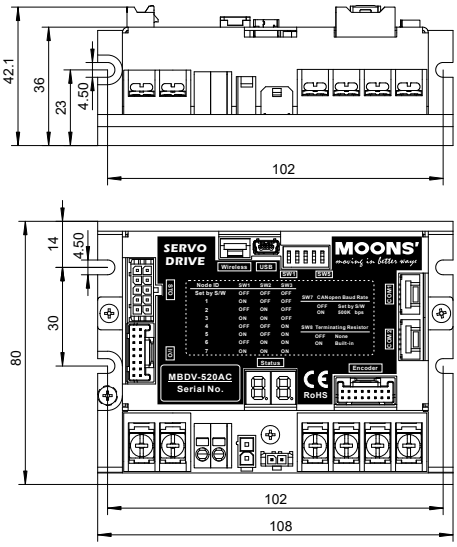
■ Drive Specification

Input Power	Main power supply		24V ~ 60VDC
	Auxiliary power supply		24VDC±10%
Withstand Voltage			Primary to earth: withstand 500 VDC, 1 min
Environment	Temperature		◆ Ambient temperature: 0°C ~ 50°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location) ◆ Storage temperature: -20°C ~ 65°C
	Humidity		Both operating and storage : 10 ~ 85%RH or less
	Altitude		1000m and below
	Vibration		9.8m/s^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			◆ 16-bit Incremental magnetic encoder ◆ 2500line Incremental/optical encoder
I/O *1	Digital Signal	Input	4 Configurable optically isolated digital general inputs, 5-24VDC, 20mA
		Output	◆ 2 Configurable optically isolate digital general outputs, Max.30VDC, 100mA ◆ Dedicated motor brake control output, Max.30VDC, 500mA
	Pulse Signal*2	Output	3 Line Driver output: Encoder A±, B±, Z± feedback output
Comm Port	USB Mini		Connection with PC for configuration
	Wireless		Connection with wireless module to a PC for configuration
	CANopen		CANopen
	RS-485 *3		Modbus/RTU
LED Display			2-digital LED display
Regeneration Resistor			External resistor is available
Control Mode			◆ CANopen communication control mode Complicate with CiA402 Standard and supports PP, PV, PVT,TQ and HM mode ◆ Modbus/RTU communication control mode Command position mode, command speed mode, command torque mode
Control Input Signal			Alarm Reset, CW/CCW Limit, Gain Select, Zero Speed Clamp, Emergency Stop, Torque Limit, Speed Limit, General Purpose Input
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output
Protection			Over Current, Over Voltage, Low Voltage, Low Heating, Bad Encoder Feedback,Over Speed, Position Error, Over Load, Emergency Stop, CW/CCW Limit, Communication Abnormal
Dynamic Brake			Built in
STO			Built in
Certification			RoHS、CE
Drive Weight	MBDV-520AC		0.4Kg
	MBDV-2X-520AC		0.9Kg

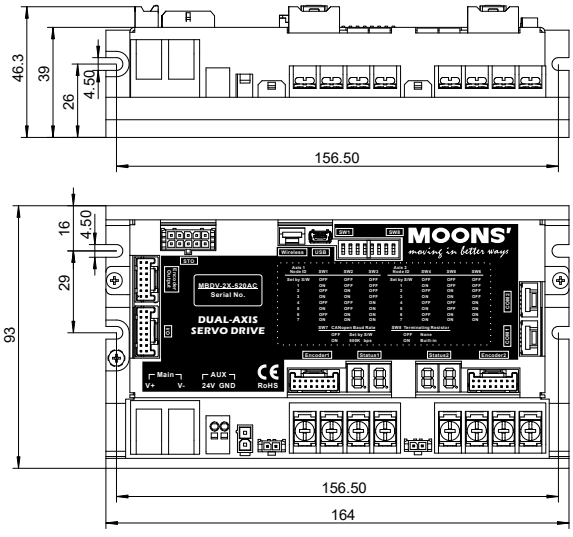
*1 Multi-axis in one drive is described to single-axis
*2 Single-axis drive does not support such function, customization is optional
*3 RS485 and CANopen share the common communication interface

■ Drive Mechanical Dimensions(Unit:mm)

☐ MBDV-520AC

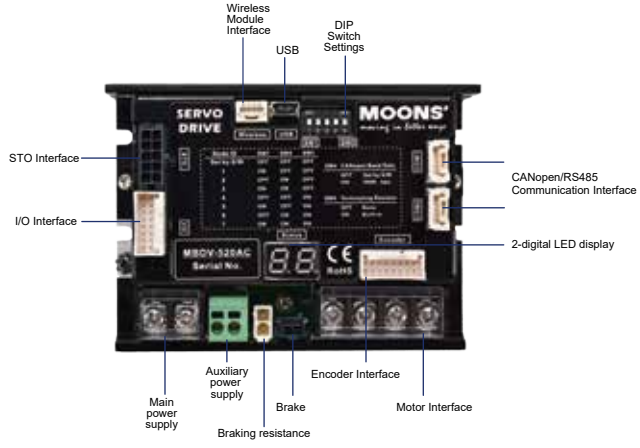


☐ MBDV-2X-520AC

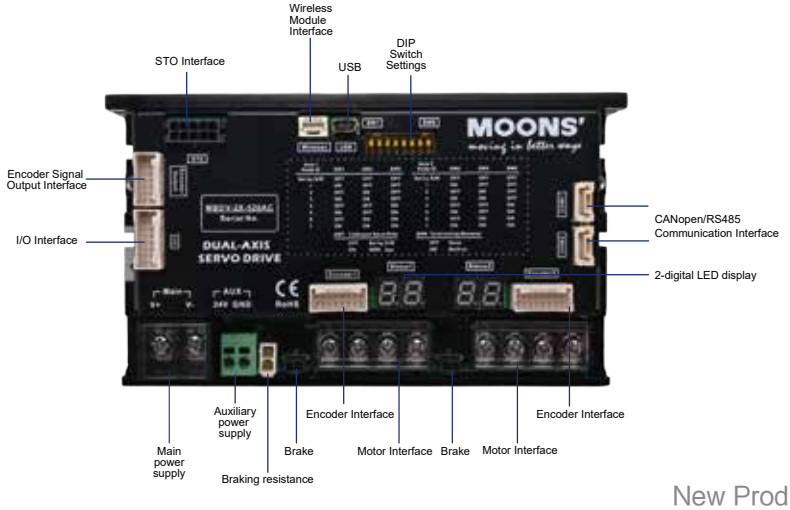


■ MBDV Servo Drive Interface Description

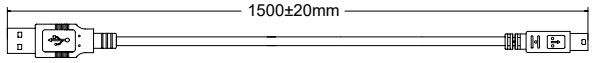
☐ MBDV-520AC



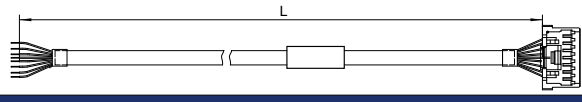
☐ MBDV-2X-520AC

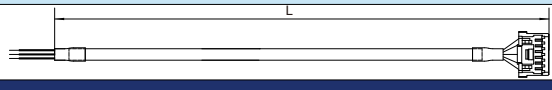


■ Accessories

Mini USB Cable			
Model	Length(L)	Description	Outline
2620-150	1.5m	USB configuration cable connect with PC and servo Driver	

Communication Cable			
Model	Length(L)	Description	Outline
2111-025	0.25m	CANopen / RS485Communication Cable	
2111-050	0.5m		
2111-100	1m		
2111-300	3m		

I/O Signal Cable			
Model	Length(L)	Description	Outline
1653-050	0.5m	16Pin I/O Signal Cable	
1653-100	1m		
1653-200	2m		

Encoders Output Sginal Cable(For MBDV-2X-520AC)			
Model	Length(L)	Description	Outline
1108-100	1m	14Pin Encoders Output Sginal Cable	
1108-200	2m		

No line WIFI communication module			
Model	Length(L)	Description	Outline
MSOP-WLM01	-	For 连接 PC 和伺服 Driver	-

Motor Encoders, Brakes connectors (optional, model MBDV Motor Connector Kit)				
◇ Components included				
Type	Model	Quantity	Manufacturer	Description
Connector	501646-1600	1	Molex	For motor Encoders line
ConnectorPIN 针	501648-1000	16	Molex	For motor Encoders line
Connector	43645-0200	1	Molex	For motor Brakes line
ConnectorPIN 针	43030-0001	2	Molex	For motor Brakes line

STO connector (standard accessory, model STO Connector Kit)				
◇ Components included				
Type	Model	Quantity	Manufacturer	Description
Connector	43025-1000	1	Molex	STO connector molded case
ConnectorPIN 针	43030-0005	10	Molex	STO connector terminals

External regenerative energy absorption resistor connector (optional, model MBDV Regen Connector Kit)				
◇ Components included				
Type	Model	Quantity	Manufacturer	Description
Connector	1586019-2	1	TE	Release resistor connector plastic case
ConnectorPIN 针	2825209-1	2	TE	Discharge resistor connector terminal

I/O connector (standard accessory)				
Type	Model	Quantity	Manufacturer	Description
Connector	501646-1600	1	Molex	I/O interface connector molded case
ConnectorPIN 针	501648-1000	16	Molex	I/O interface connector terminals

Communication connector (standard accessory)				
Type	Model	Quantity	Manufacturer	Description
Connector	ZER-05V-S	1	JST	Comm InterfaceConnectorhousing
ConnectorPIN 针	SZE-002T-P0.3	5	JST	Comm InterfaceConnectorCrimp

Encoders output connector (standard accessory, suitable for MBDV-2X-520AC)				
Type	Model	Quantity	Manufacturer	Description
Connector	501646-1400	1	Molex	Encoders OutputsConnectorhousing
ConnectorPIN 针	501648-1000	14	Molex	Encoders OutputsConnectorCrimp

M3 Servo Driver

■ Numbering System

M3DV - 2 3A0 P F - *

① ② ③ ④ ⑤ ⑥

① M3 Series

② Supply Voltage *1

2 ---Single/Three - Phase 220VAC

④ Function Type

⑤ Model Type

⑥ Customization

③ Current

		Rated Current A(rms)	Peak Current A(rms)	Power
*2	1A8	1.8	5.4	100/200W
*2	3A0	3	12	400W
*2	4A5	4.5	15	750W
*2	6A0	6	21	1.0kW
*3	10A	10	30	1.5kW
*3	13A	13	45	2.5kW

*1 Line to Line Voltage
*2 Available for both single phase or three phase power connection.
*3 Available for single-phase while the motor power is under 1.5kW.

■ Function Type

-P
Pulse Control Type

- Pulse Control
- Positon, Velocity, Torque Contol
- Encoder feedback output
- STO(SIL2)*1
- Dynamic Brake*1
- USB(Configuration)

-R
RS-485 Type

- RS-485 Bus, Support Modbus/RTU
- Pulse Control
- Analog Control
- 2 Analog Inputs*2
- 2 Analog Outputs*2
- Positon, Velocity, Torque Contol
- Encoder feedback output
- Built-in Q program control function
- Full Closed Loop Control*2
- STO(SIL2)*1
- Dynamic Brake*1
- USB(Configuration)

-EC
EtherCAT Type

- EtherCAT
- 2 Analog Inputs*2
- 1 Analog Output*2
- Positon, Velocity, Torque Contol
- Encoder feedback output*2
- Built-in Q program control function
- Full Closed Loop Control*2
- STO(SIL2)*1
- Dynamic Brake*1
- USB(Configuration)

-C
CANopen Type

- CiA 301 & CiA 402 protocols
- 2 Analog Inputs*2
- 1 Analog Output*2
- Positon, Velocity, Torque Contol
- Encoder feedback output*2
- Built-in Q program control function
- Full Closed Loop Control*2
- STO(SIL2)*1
- Dynamic Brake*1
- USB(Configuration)

*1*2 Certain models don't support this function. Please refer to the drive list on page 30 for details.

■ Servo Drive Table

Function Type		P-Pulse Control Type			-R—RS-485Comm Type					
										
Modle Type		F Type	R Type	N Type	F Type	R Type	D Type	X Type	N Type	T Type
Control Mode	Position Mode	●	●	●	●	●	●	●	●	●
	Velocity Mode	●	●	●	●	●	●	●	●	●
	Torque Mode	●	●	●	●	●	●	●	●	●
	Q program				●	●	●	●	●	●
	Full Closed-loop Control				●	●		●	●	
Interface	Pulse Input	●	●	●	●	●	●	●	●	●
	2 Analog Inputs				●	●	●	●	●	●*
	2 Analog Outputs				●	●		●	●	
	10 Inputs/6 Outputs(Digital)	●	●		●	●	●			
	8 Inputs/4 Outputs(Digital)									
	4 Inputs/4 Outputs(Digital)			●				●	●	●
	Encoders Feedback Outputs	●	●	●	●	●	●	●	●	●
	Second Encoders Inputs				●	●		●	●	
Comm Interface	USB(Configuration)	●	●	●	●	●	●	●	●	●
	RS-485				●	●	●	●	●	●
	CANopen									
	EtherCAT									
Safety Function	Safety Dynamic Brake	●			●			●		
	STO	●			●			●		

*: 1 analog input Inputs

Short delivery model Type

Function Type		-EC—EtherCAT Type		-C—CANopen Type	
					
Modle Type		X Type	N Type	X Type	N Type
Control Mode	Position Mode	●	●	●	●
	Velocity Mode	●	●	●	●
	Torque Mode	●	●	●	●
	Q program	●	●	●	●
	Full Closed-loop Control	●		●	
Interface	Pulse Input				
	2 Analog Inputs	●		●	
	2 Analog Outputs	● *		● *	
	10 Inputs/6 Outputs(Digital)				
	8 Inputs/4 Outputs(Digital)	●	●	●	●
	4 Inputs/4 Outputs(Digital)				
	Encoders Feedback Outputs				
	Second Encoders Inputs	●		●	
Comm Interface	USB(Configuration)	●	●	●	●
	RS-485				
	CANopen			●	●
	EtherCAT	●	●		
Safety Function	Safety Dynamic Brake	●		●	
	STO	●		●	

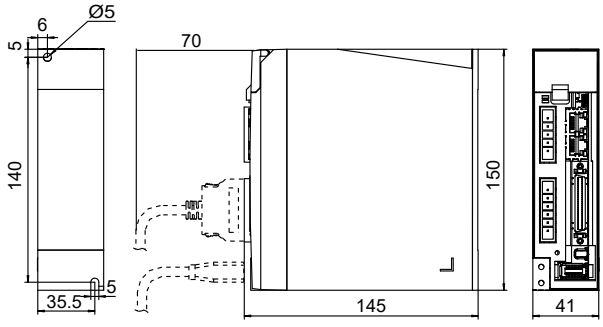
*: 1 analog input Outputs

Short delivery model Type

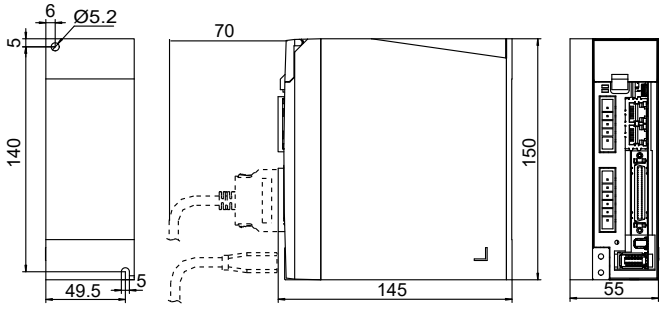
■ Drive Mechanical Dimensions

Uniit：mm

□ M3DV-21A8 ■◆ (100/200W Type)



□ M3DV-23A0 ■◆ (400W Type)



■：Function Type ◆：Modle Type

Comparison table of servo Driver and servo motor models

Motor Series	Frame Size (mm)	Rated Power (watts)	Supporting servo Motor	Supporting servo Driver			
			17-bit incremental magnetic encoders	-P Pulse Type	-R RS-485 Type	-EC EtherCAT Type	-C CANopen Type
SM3L-04	40	100	SM3L-042A3 □ DV	M3DV-21A8P ◆	M3DV-21A8R ◆	M3DV-21A8EC ◆	M3DV-21A8C ◆
SM3L-06	60	200	SM3L-061A3 □ DV				
		400	SM3L-062A3 □ DV	M3DV-23A0P ◆	M3DV-23A0R ◆	M3DV-23A0EC ◆	M3DV-23A0C ◆

Drive Specification -P--Pulse Control Type -R--RS-485 Type

Input Power	M3DV-21A8■ ◆ M3DV-23A0■ ◆	Main Circuit	Single / Three-phase, 200 ~ 240V ±10%, 50/60Hz
		Control Circuit	Single-phase, 200 ~ 240V ±10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1500 VAC, 1 min, (Leakage current: 20 mA) [220V Input]
Environment	Temperature		◆ Ambient temperature: 0°C ~ 50°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location) ◆ Storage temperature: -20°C ~ 65°C
	Humidity		Both operating and storage : 10 ~ 85%RH or less
	Altitude		Lower than 1000m
	Vibration		9.8m/s^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			◆ 23-bit Absolute optical encoder ◆ 20-bit Incremental/Absolute optical encoder ◆ 17-bit Incremental magnetic encoder ◆ 17-bit Battery-less absolute encoder
Second Encoder Feedback			A/B/Z phase signal differential input
I/O	Digital Signal	Input	◆ -F/R type: 10 Configurable optically isolate digital general inputs, 24VDC, 20mA ◆ -X/N type: 4 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	◆ -F/R type: 6 Configurable optically isolate digital general outputs, Max.30VDC, 30mA ◆ -X/N type: 4 Configurable optically isolate digital general outputs, Max.30VDC, 30mA
	Analog Signal*1	Input	2 Analog inputs, -10V ~ +10V, 12bit
		Output	2 Analog outputs, -10V ~ +10V, Max.10mA
	Pulse Signal*2	Input	2 Pulse Inputs (Photo-coupler input, Line receiver input) ◆ Photo-coupler input: 5 ~ 24V, minimum pulse width 1μs, max. pulse frequency 500KHz ◆ Line receiver input: 5V differential signal, minimum pulse width 0.125μs, max. pulse frequency 4MHz(*5)
		Output	4 Outputs (Line Driver: 3 outputs, open collector: 1 output) ◆ Line Driver output: Encoder A±, B±, Z± feedback output ◆ Open collector output: Encoder Z phase
Comm Port	USB		Connection with PC for configuration
	RS-485		Modbus/RTU
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display
Regeneration Resistor			Built-in regenerative resistor (external resistor is also available)
Control Mode*3			1. Pulse Position Mode 2. Analog Velocity Mode 3. Analog Torque Mode 4. Internal Position Mode 5. Internal Velocity Mode 6. Command Torque Mode 7. Full Closed Loop Control Mode 8. Q Program
Control Input Signal			Servo Enable, Alarm Reset, CW/CCW Limit, Control Mode Select, Gain Select, Clear Position Error, Emergency Stop, Zero Speed Clamp, Torque and Velocity Direction Switch, Torque and Velocity Start, Start Homing, Homing Switch, Torque Limit, Speed Limit, Pulse Inhibit, Multi-velocity Switch, Start Q Program, General Purpose Input
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output
Protection			Over Load, Over Heating, Over Current, Over Voltage, Low Voltage, Bad Encoder Feedback, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss
Dynamic Brake*4			-F/X Built in
STO*4			-F/X Built in
Weight			M3DV-21A8■ ◆ : 0.8kg M3DV-23A0■ ◆ : 1.1kg

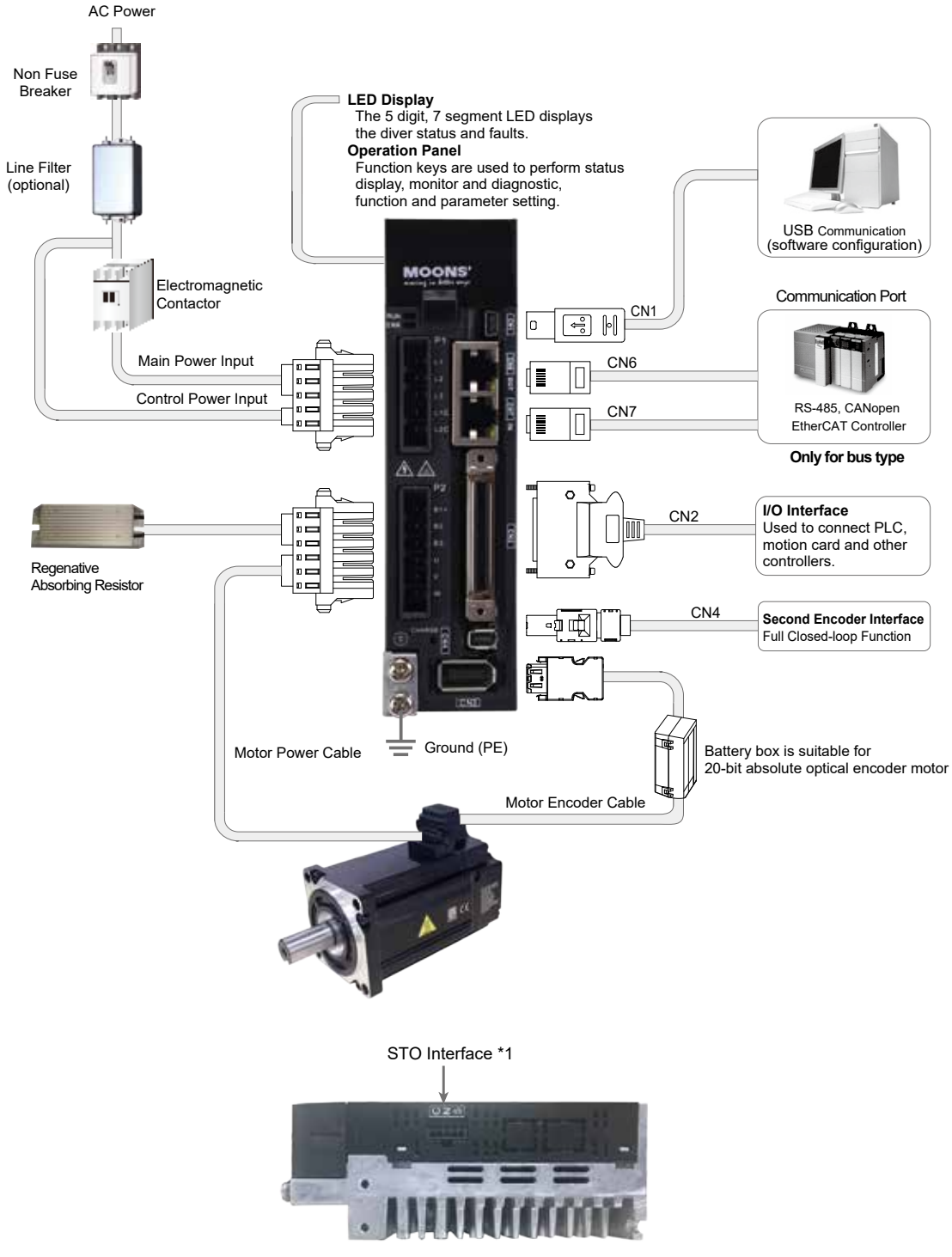
Note: *1、*2、*3、*4 Certain models don't support this function,
■: Function type ◆ : Model type

Drive Specification -EC--EtherCAT Type -C--CANopen Type

Input Power	M3DV-21A8■ ◆ M3DV-23A0■ ◆	Main Circuit	Single / Three-phase, 200 ~ 240V ±10%, 50/60Hz
		Control Circuit	Single-phase, 200 ~ 240V ±10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1500 VAC, 1 min, (Leakage current: 20 mA) [220V Input]
Environment	Temperature		◆ Ambient temperature: 0°C ~ 50°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location) ◆ Storage temperature: -20°C ~ 65°C
	Humidity		Both operating and storage : 10 ~ 85%RH or less
	Altitude		Lower than 1000m
	Vibration		9.8m/s^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			◆ 17-bit Incremental magnetic encoder
I/O	Digital Signal	Input	◆ 8 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	◆ 4 Configurable optically isolate digital general outputs, Max.30VDC, 30mA
	Analog Signal*1	Input	2 Analog inputs, -10V ~ +10V, 12bit
		Output	1 Analog output, -10V ~ +10V, Max.10mA
Comm Port	USB		Connection with PC for configuration
	EtherCAT		EtherCAT
	CANopen		CANopen
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display
Regeneration Resistor			Built-in regenerative resistor (external resistor is also enabled)
Control Mode*2			-EC Function Type: 1.PP 2.PV 3.TQ 4.CSP 5.CSV 6.CST 7.HM 8.Full closed-loop 9.Q programming -C Function Type: 1.PP 2.PV 3.TQ 4.HM 5.Full closed-loop 6.Q programming
Control Input Signal			Alarm Reset, CW/CCW Limit, Virtual CW/CCW Limit, Gain Select, Emergency Stop, Zero Speed Clamp, Homing Switch, Torque Limit, Speed Limit, General Purpose Input
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Positon Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output
Protection			Over Load, Over Heating, Over Current, Over Voltage, Low Voltage, Bad Encoder Feedback, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss
Dynamic Brake*3			-X Built in
STO*4			-X Built in
Weight			M3DV-21A8■ ◆ : 0.8kg M3DV-23A0■ ◆ : 1.1kg

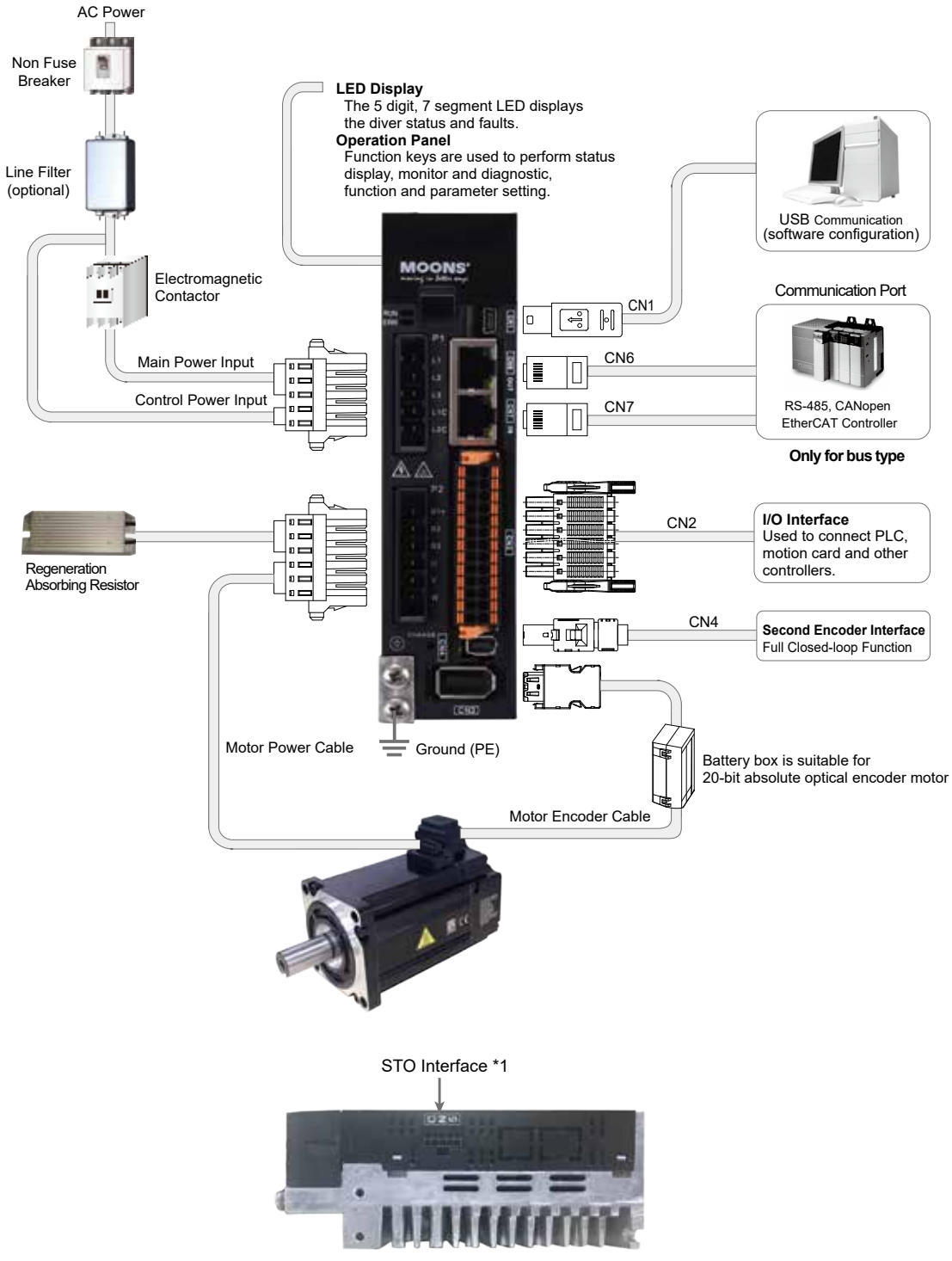
Note: *1、*2、*3、*4 Certain models don't support this function
■: Function type ◆ : Model type

System Configuration High Density I/O Connector Model Type: F, R



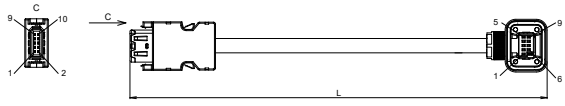
Note: *1 Certain models don't support this function, please refer to page 30.

System Configuration Push-in Spring I/O Connector Model Type: X, N



Note: *1 Certain models don't support this function, please refer to page 30.

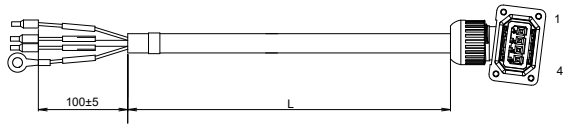
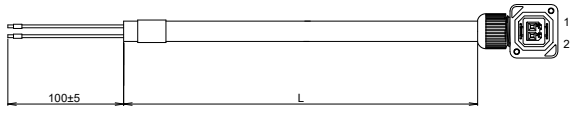
Accessories Encoders Cables For 40mm 60mm Frame Size Motor

Model*	Length	Description	For Servo Motor*	Outline
2640-0100	1m	Encoder Cables Incremental Encoder Standard	SM3L-042A1 ☐ DV SM3L-061A1 ☐ DV SM3L-062A1 ☐ DV SM3L-083A1 ☐ DV SM3L-084A1 ☐ DV SM3M-062A1 ☐ DV SM3M-083A1 ☐ DV	
2640-0200	2m			
2640-0300	3m			
2640-0400	4m			
2640-0500	5m			
2640-0800	8m			
2640-1000	10m			
2640-1500	15m			
2640-2000	20m			
2640-0100-C10	1m	Encoder Cables Incremental Encoder Flexible	SM3L-042A3 ☐ DV SM3L-061A3 ☐ DV SM3L-062A3 ☐ DV SM3L-083A3 ☐ DV SM3L-084A3 ☐ DV SM3M-062A3 ☐ DV SM3M-083A3 ☐ DV SM3H-062A3 ☐ PV SM3H-083A3 ☐ PV	
2640-0200-C10	2m			
2640-0300-C10	3m			
2640-0400-C10	4m			
2640-0500-C10	5m			
2640-0800-C10	8m			
2640-1000-C10	10m			
2640-1500-C10	15m			
2640-2000-C10	20m			

* ☐ **Brake Options**

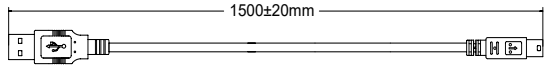
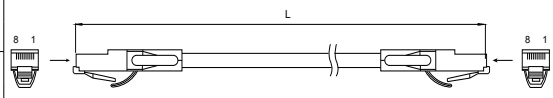
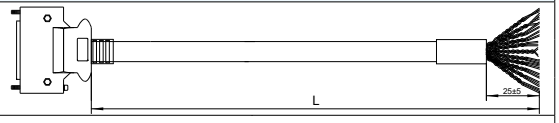
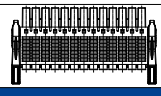
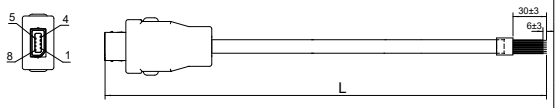
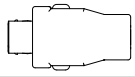
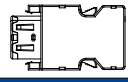
* **Flexible -C10 10 million times**
Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

Accessories Motor Cables Brake Cables For 40mm 60mm Frame Size Motor

Model*	Length	Description	For Servo Motor*	Outline
1645-0100	1m	Motor Cables Standard	SM3L-042A ◇☐ DV SM3L-061A ◇☐ DV SM3L-062A ◇☐ DV	
1645-0200	2m			
1645-0300	3m			
1645-0400	4m			
1645-0500	5m			
1645-0800	8m			
1645-1000	10m			
1645-1500	15m			
1645-2000	20m			
1645-0100-C10	1m	Motor Cables Flexible		
1645-0200-C10	2m			
1645-0300-C10	3m			
1645-0400-C10	4m			
1645-0500-C10	5m			
1645-0800-C10	8m			
1645-1000-C10	10m			
1645-1500-C10	15m			
1645-2000-C10	20m			
1646-0100	1m	Brake Cables Standard	SM3L-042A ◇ BDV SM3L-061A ◇ BDV SM3L-062A ◇ BDV	
1646-0200	2m			
1646-0300	3m			
1646-0400	4m			
1646-0500	5m			
1646-0800	8m			
1646-1000	10m			
1646-1500	15m			
1646-2000	20m			
1646-0100-C10	1m	Brake Cables Flexible		
1646-0200-C10	2m			
1646-0300-C10	3m			
1646-0400-C10	4m			
1646-0500-C10	5m			
1646-0800-C10	8m			
1646-1000-C10	10m			
1646-1500-C10	15m			
1646-2000-C10	20m			

* ◇ **Encoder Options**
  ☐ **Brake Options**
* **Flexible -C10 10 million times**
  Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

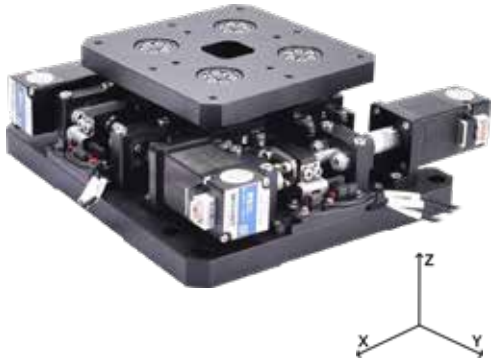
Accessories Servo Drive Accessories

Mini USB Cable			
Model	Length	Description	Outline
2620-150	1.5m	USB configuration cable connect with PC	
CN6/CN7 Communication Daisy Chain Cable			
Model	Length(L)	Description	Outline
2012-030	0.3m	Twisted-pair, Standard type	
2012-300	3m		
2013-030	0.3m	Twisted-pair, Shielded type	
2013-300	3m		
IO Connector, I/O Signal Cable			
Model	Length(L)	Description	Outline
1644-100	1m	CN2 50pin high density I/O cable	
1644-200	2m		
1644-300	3m		
M2-50P	-	CN2 50pin high density I/O connector	
MSOP-CN226P	-	CN2 26pin push-in spring I/O connector	
Second Encoder Connector, Full Closed-loop Accessories			
Model	Length(L)	Description	Outline
1643-300	3m	CN4 Secondary encoder feedback cable	
1643-500	5m		
1643-300-C05	3m		
1643-500-C05	5m		
MSOP-CN408P	-	CN4 Secondary encoder feedback connector	
Motor Encoder Connector (Drive Side)			
Model	Specification	Description	Outline
MSOP-CN310P	-	CN3 Motor encoder connector	
EMI Filter			
Model	Specification	Description	Outline
MSOP-EMI020	10A	EMI filter for AC power of drive side	-
External Regenerative Resistor			
Model	Specification	Description	Outline
REG100W120R	100W, 120Ω	Regenerative absorbing resistor	-
REG200W120R	200W, 120Ω		
REG300W120R	300W, 120Ω		
Drive Connector Kit			
Model	Specification	Description	Outline
M2 Drive Connector Kit	-	P1, P2, JST handle lever	-
STO Connector Kit			
Model	Specification	Description	Outline
STO Connector Kit	-	CN5	-
Motor Connector Kit			
Model	Description		Outline
MSOP-MTKITA	80mm and lower frame size motor (without brake connector)		-
MSOP-MTKITD	80mm and lower frame size motor (with brake connector)		-

Precision Electric Displacement Stages

NPA Series

- **Move along X-axis and Y-axis, rotate along Z-axis**
- **Short Stroke, micro-angle, small lead, high accuracy**
- **Compact, high rigidity**



■ Ordering Information

NPA 200 - 2D2 0 - B AH 5 - 0

Table Size

Code	Table Size
120	120x120mm
180	180x180mm
200	200x200mm
300	300x300mm

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

Standard products default motor without additional items, if you need to motor additional encoder or brake please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

For customization, please contact the factory for this code.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above is the optional guide for standard products, if you need other guides, please contact the factory.

Screw Type Code

Code	Type of Screw
B	Ball screw

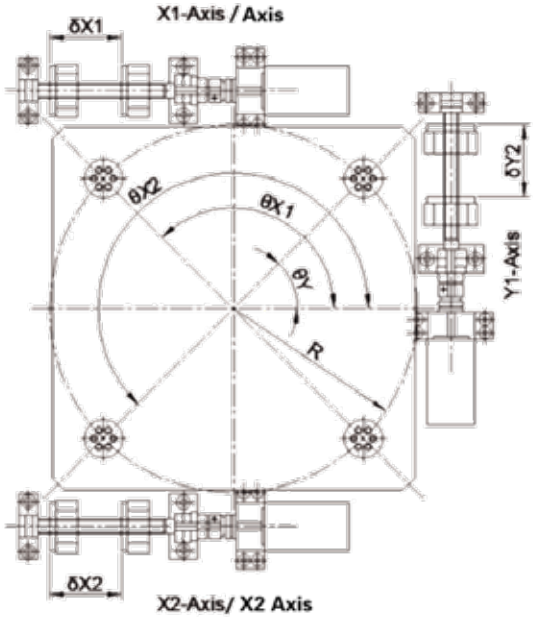
■ Technical Parameters

Product Series	NPA-120	NPA-180	NPA-200	NPA-300
Table Size	120x120mm	180x180mm	200x200mm	300x300mm
Stroke	± 5/ ± 5/ ± 5°	± 10/ ± 10/ ± 5°	± 5/ ± 5/ ± 2.5°	± 5/ ± 5/ ± 2.5°
Guide mechanism	Crossed roller guideways, crossed roller bearings			
Resolution	5 μ m (stepper motor) , 0.244 μ m (stepper servo motor)			
Maximum speed	10mm/s (stepper motor) , 20mm/s (stepper servo motor)			
Drive screw	8x1			
Bidirectional Repeat Positioning Accuracy *	± 3 μ m(Precision grade), ± 3 μ m(Normal grade)			
Bidirectional Positioning Accuracy *	12 μ m(Precision grade), 25 μ m(Normal grade)			
Maximum horizontal load	10Kg	25Kg	25Kg	35Kg
Weight	5Kg	13Kg	15Kg	20Kg
Material	Aluminum			
Surface Finishing	Black anodized			

* Bidirectional repetitive positioning accuracy: tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

Bidirectional positioning accuracy: tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

■ Calculation formula for the feed amount at the rotation angle



Calculation formula for angle rotation - three axis feed rate:

$$\delta X_1 = R\cos(\delta\theta + \theta X_1 + \theta_0) - R\cos(\theta X_1 + \theta_0)$$
$$\delta X_2 = R\cos(\delta\theta + \theta X_2 + \theta_0) - R\cos(\theta X_2 + \theta_0)$$
$$\delta Y = R\sin(\delta\theta + \theta Y + \theta_0)$$

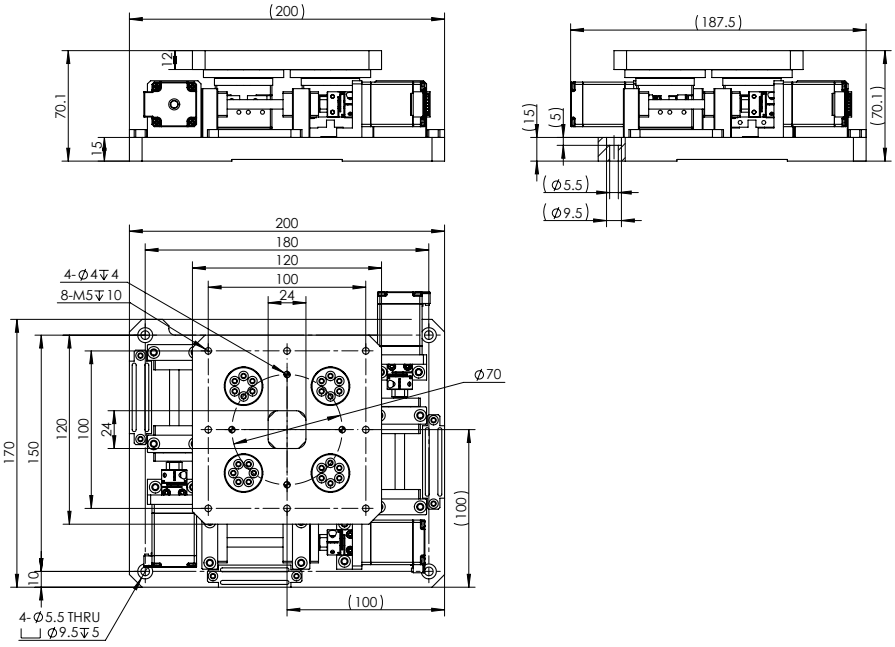
Parameters	Clarification
δX_1	X_1 axis relative feed (mm)
δX_2	X_2 axis relative feed (mm)
δY	Y axis relative feed (mm)
θX_1	Angle of crossed roller bearing centers, connection X_1 axis
θX_2	Angle of crossed roller bearing centers, connection X_2 axis
θY	Angle of crossed roller bearing centers, connection Y axis
θ_0	Initial position angle (°)
$\delta\theta$	Requested angle of rotation (°)
R	Center radius of crossed roller bearings attached to each shaft (mm)

NPA Series

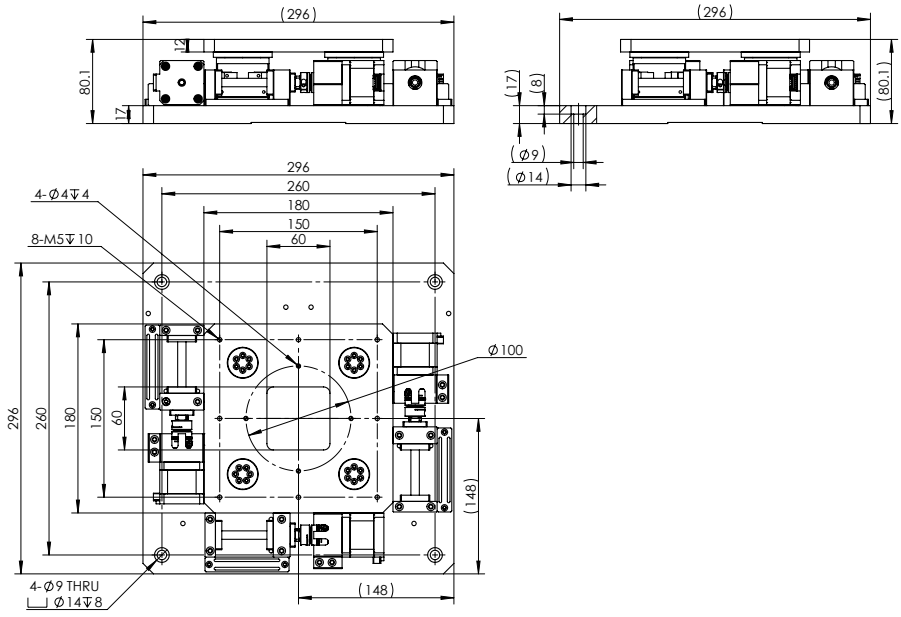
■ Dimension Information

Uniit：mm

NPA-120



NPA-180

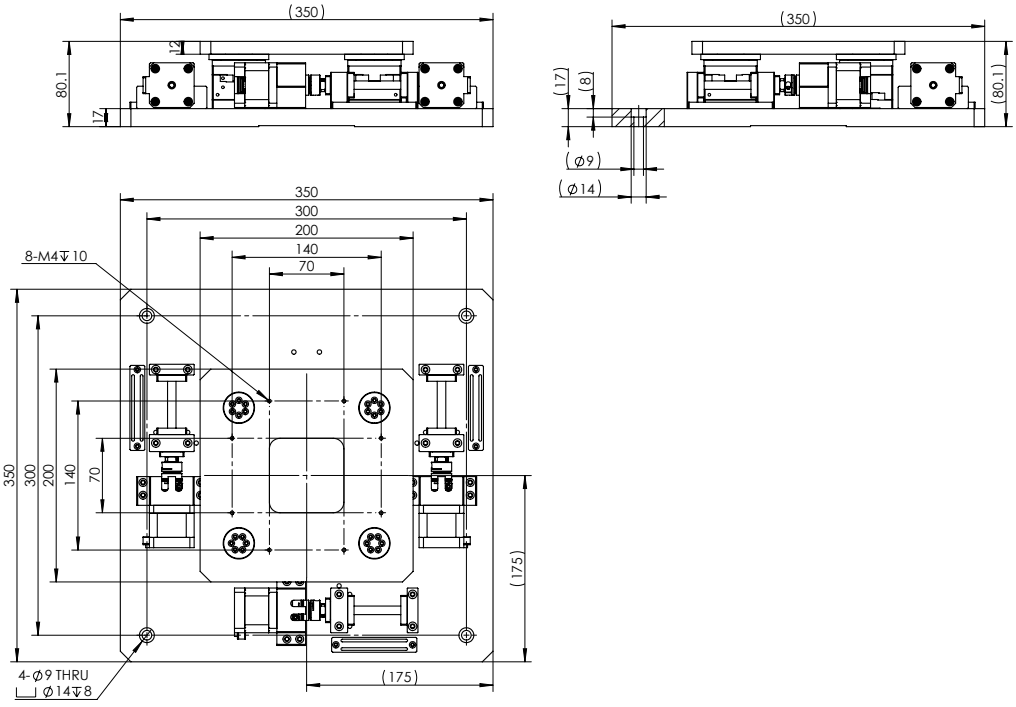


NPA Series

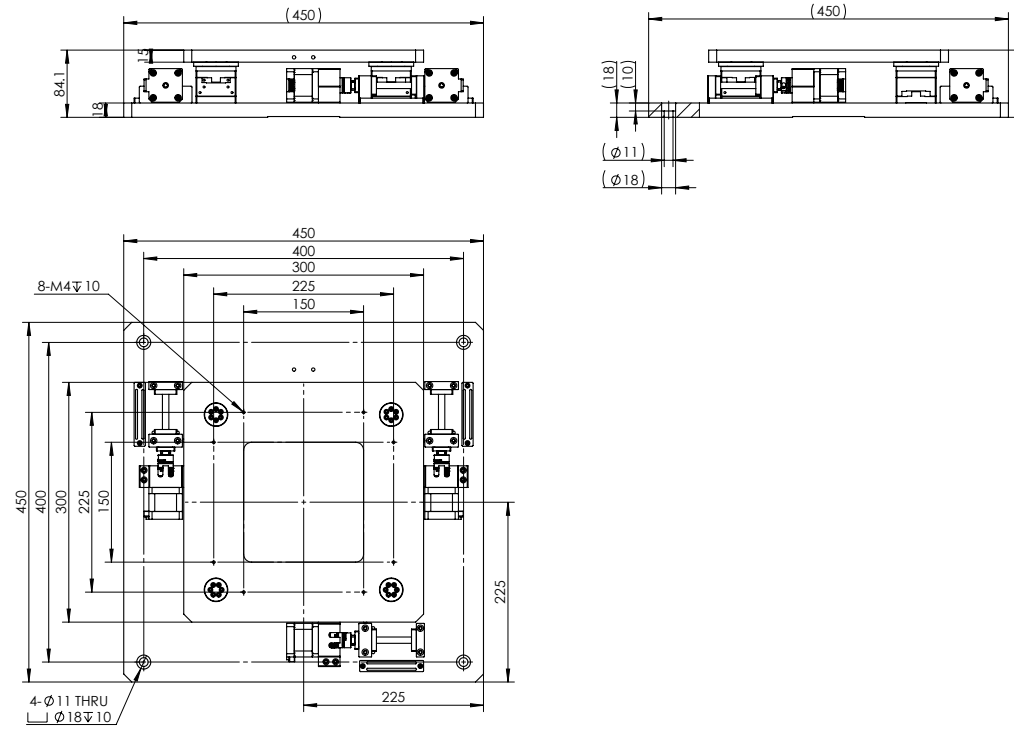
■ Dimension Information

Uniit：mm

NPA-200

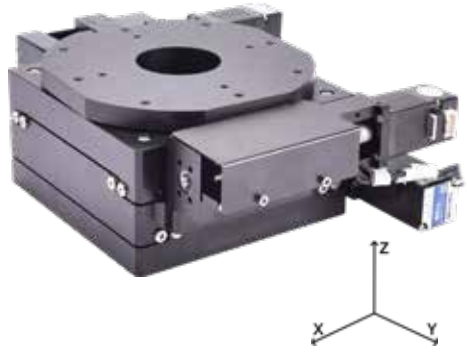


NPA-300



NPU Series

- **Rotation along the X-axis Y-axis Z-axis**
- **Short stroke, micro-angle,small lead, high accuracy**
- **Compact, high rigidity**



■ Naming Rules

NPU 120 – 2D2 0 – B AH 5 – 0

Table Size

Code	Table Size
100	100x100mm
120	120x120mm
150	150x150mm
200	200x200mm

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

The default motor for standard products has no additional items. If you need to add Encoders or Brakes to the motor, please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

If you need to customize this code, please contact the factory.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above are optional leads for standard products. If you need other leads, please contact the factory

Screw Type Code

Code	Type of Screw
B	Ball screw

■ Technical Parameters

Product Series	NPU-100	NPU-120	NPU-150	NPU-200
Table Size	100x100mm	120x120mm	150x150mm	200x200mm
Stroke	± 10/ ± 10/ ± 5°	± 10/ ± 10/ ± 5°	± 20/ ± 20/ ± 5°	± 20/ ± 20/ ± 4°
Guide mechanism	Crossed roller guideways, crossed roller bearings			
Resolution	5μm（stepper motor），0.244μm（stepper servo motor）			
Maximum speed	10mm/s（stepper motor），20mm/s（stepper servo motor）			
Rotary axis angle distance conversion	1.07° /mm	0.9° /mm	0.52° /mm	0.42° /mm
Drive screw	8x1			
Bidirectional Repeat Positioning Accuracy *	± 3μm(Precision grade)， ± 3μm(Normal grade)			
Bidirectional Positioning Accuracy *	12μm(Precision grade)，25μm(Normal grade)			
Maximum horizontal load	8Kg	10Kg	13Kg	23Kg
Weight	3.5Kg	4Kg	5.2Kg	7Kg
Material	Aluminum			
Surface Finishing	Black anodized			

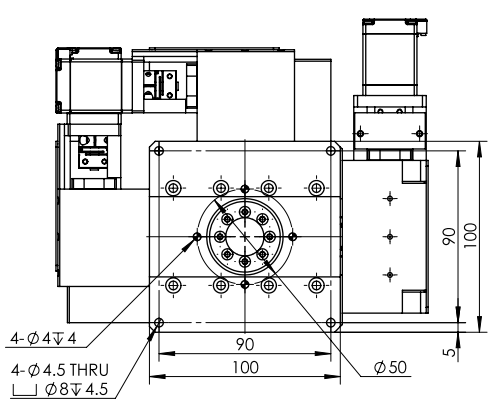
* Bidirectional Repeat Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.
* Bidirectional Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

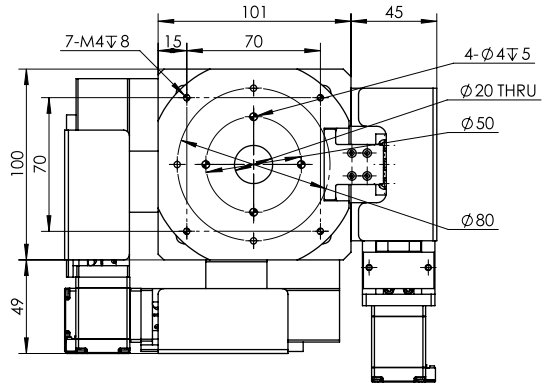
NPU Series

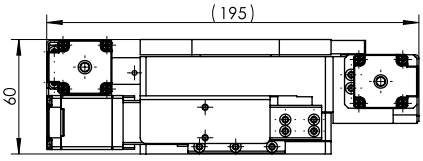
■ Dimension Information

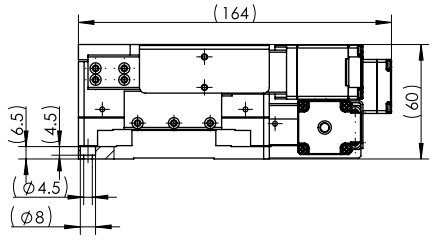
Uniit：mm

NPU-100

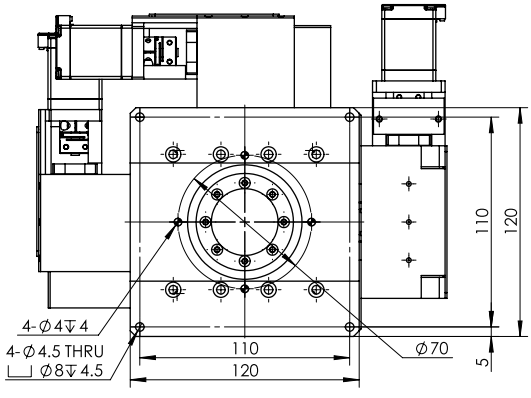


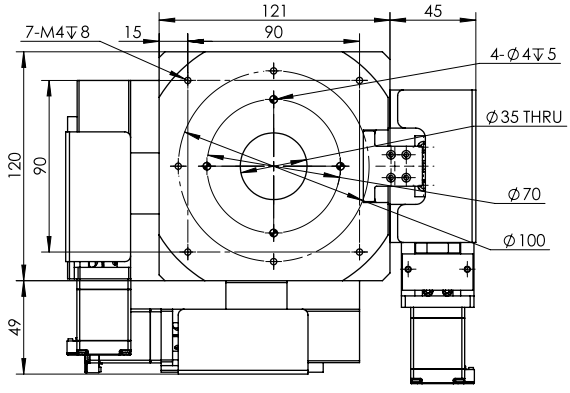


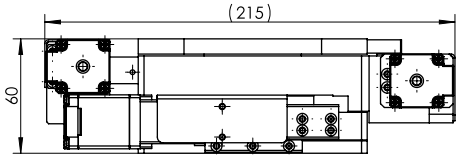


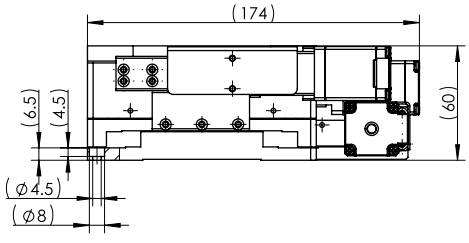


NPU-120







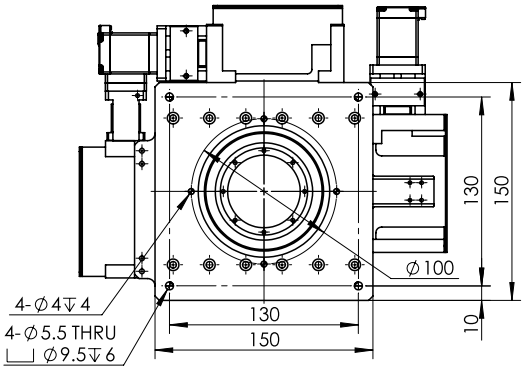


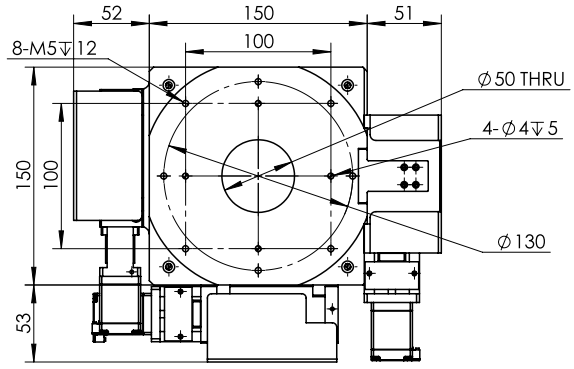
NPU Series

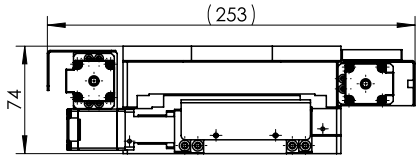
■ Dimension Information

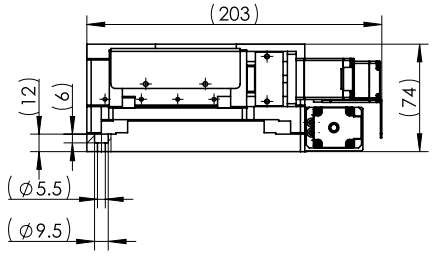
Uniit：mm

NPU-150

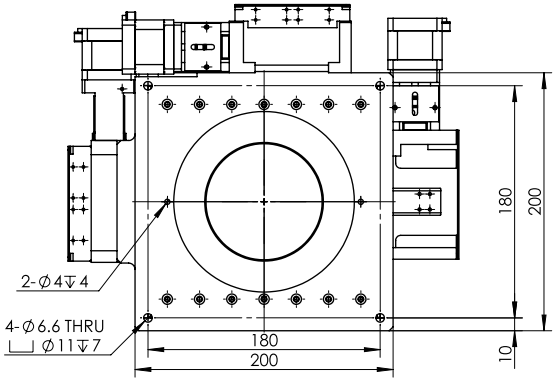


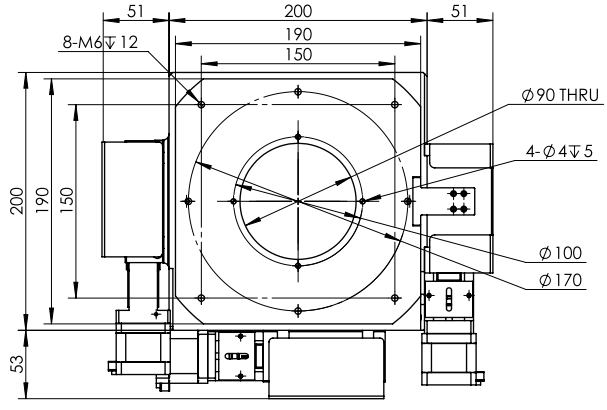


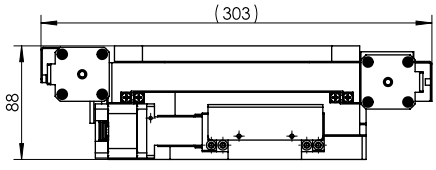


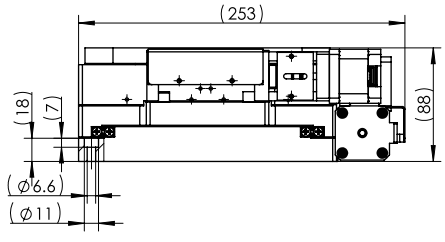


NPU-200



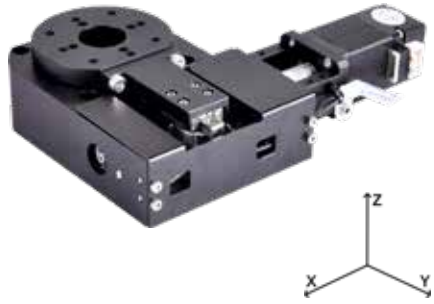






NPR Series

- **Rotation along the Z-axis**
- **Short stroke, small lead, high accuracy**
- **Compact, high rigidity**



■ Naming Rules

NPR 150 L - 2D2 0 T - B AH 5 - 0

Table Size

Code	Table Size
60	60x60mm
80	80x80mm
100	89x89mm
120	120x120mm
150	140x140mm

Sensor position

Code	Outlet Direction
L	Left
R	Right

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

The default motor for standard products has no additional items. If you need to add Encoders or Brakes to the motor, please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

If you need to customize this code, please contact the factory.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above are optional leads for standard products. If you need other leads, please contact the factory

Screw Type Code

Code	Type of Screw
B	Ball screw

Outlet Direction Code

Code	Outlet Direction
T	Top
B	Bottom
L	Left
R	Right

■ Technical Parameters

Product Series	NPR-60	NPR-80	NPR-100	NPR-120	NPR-150
Table Size	60x60mm	80x80mm	89x89mm	120x120mm	140x140mm
Stroke	± 5°	± 6°	± 8°	± 6°	± 15°
Guide mechanism	Linear guides, thrust ball bearings				
Resolution	5μm（stepper motor），0.244μm（stepper servo motor）				
Maximum speed	8.7° /s（stepper motor） 17.4° /s（stepper servo motor）	6.4° /s（stepper motor） 12.8° /s（stepper servo motor）	6.8° /s（stepper motor） 13.6° /s（stepper servo motor）	5.5° /s（stepper motor）11° /s（stepper servo motor）	5.3° /s（stepper motor） 10.6° /s（stepper servo motor）
Angular Distance Conversion	0.87° /mm	0.64° /mm	0.68° /mm	0.55° /mm	0.53° /mm
Drive screw	8x1				
Bidirectional Repeat Positioning Accuracy *	± 0.0027° (Precision grade) ± 0.0027° (Normal grade)	± 0.0020° (Precision grade) ± 0.0020° (Normal grade)	± 0.0021° (Precision grade) ± 0.0021° (Normal grade)	± 0.0017° (Precision grade) ± 0.0017° (Normal grade)	± 0.0016° (Precision grade) ± 0.0016° (Normal grade)
Bidirectional Positioning Accuracy *	0.011° (Precision grade) 0.022° (Normal grade)	0.008° (Precision grade) 0.016° (Normal grade)	0.008° (Precision grade) 0.017° (Normal grade)	0.007° (Precision grade) 0.014° (Normal grade)	0.007° (Precision grade) 0.014° (Normal grade)
Maximum horizontal load	5Kg	8Kg	10Kg	12Kg	20Kg
Weight	1.6Kg	2Kg	2.2Kg	2.8Kg	3.0Kg
Material	Aluminum				
Surface Finishing	Black anodized				

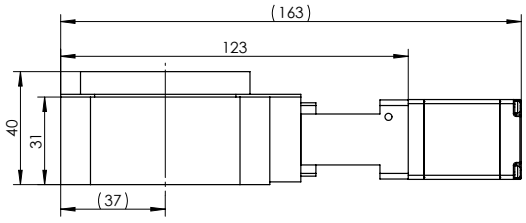
* Bidirectional Repeat Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.
* Bidirectional Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

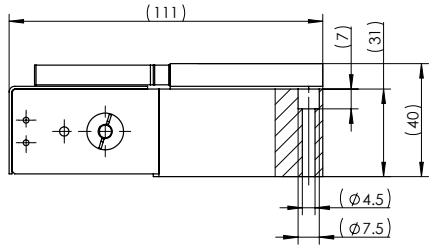
NPR Series

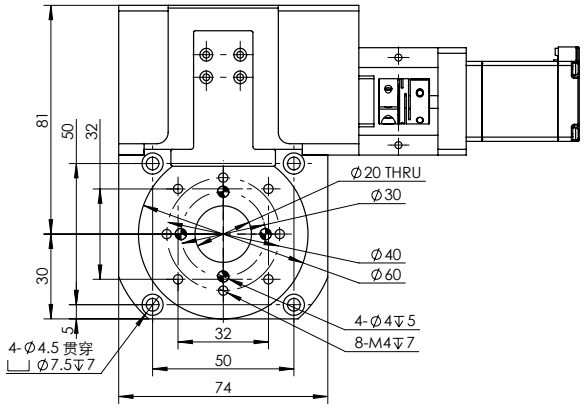
■ Dimension Information

Uniit：mm

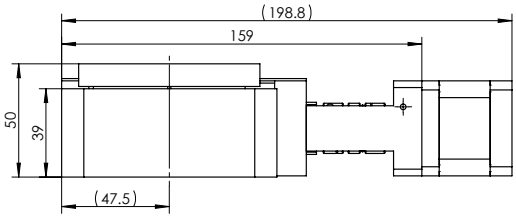
NPR-60

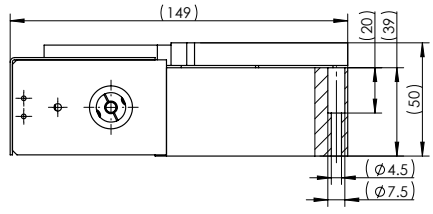


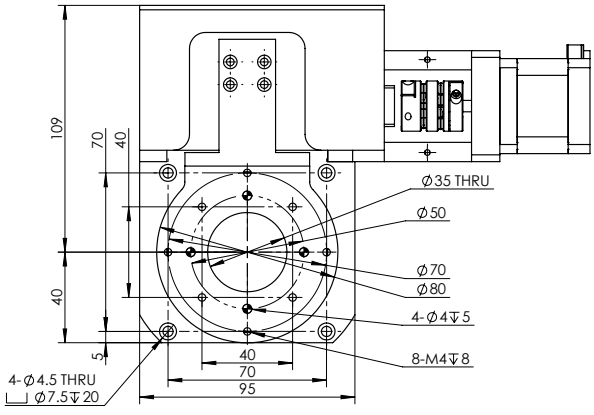




NPR-80





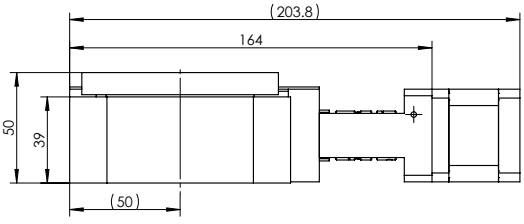


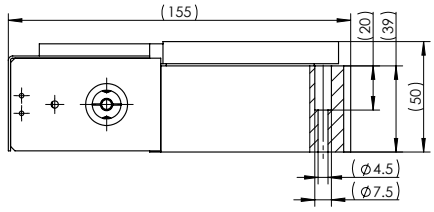
NPR Series

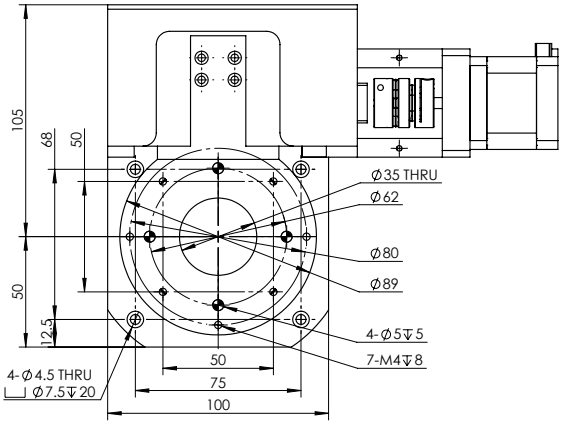
■ Dimension Information

Uniit：mm

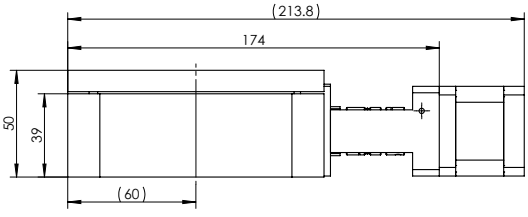
NPR-100

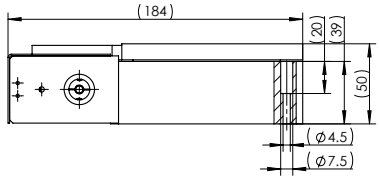


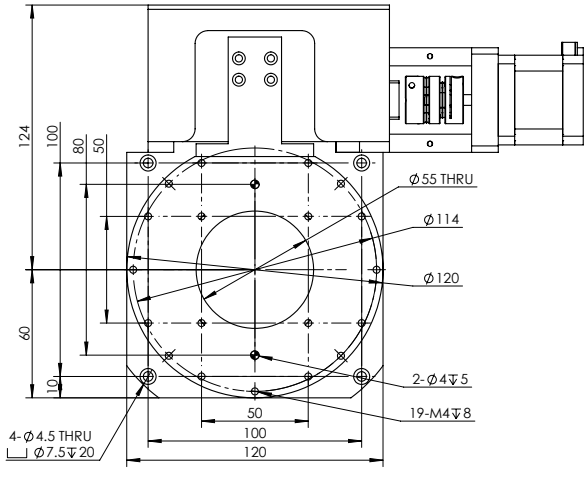




NPR-120





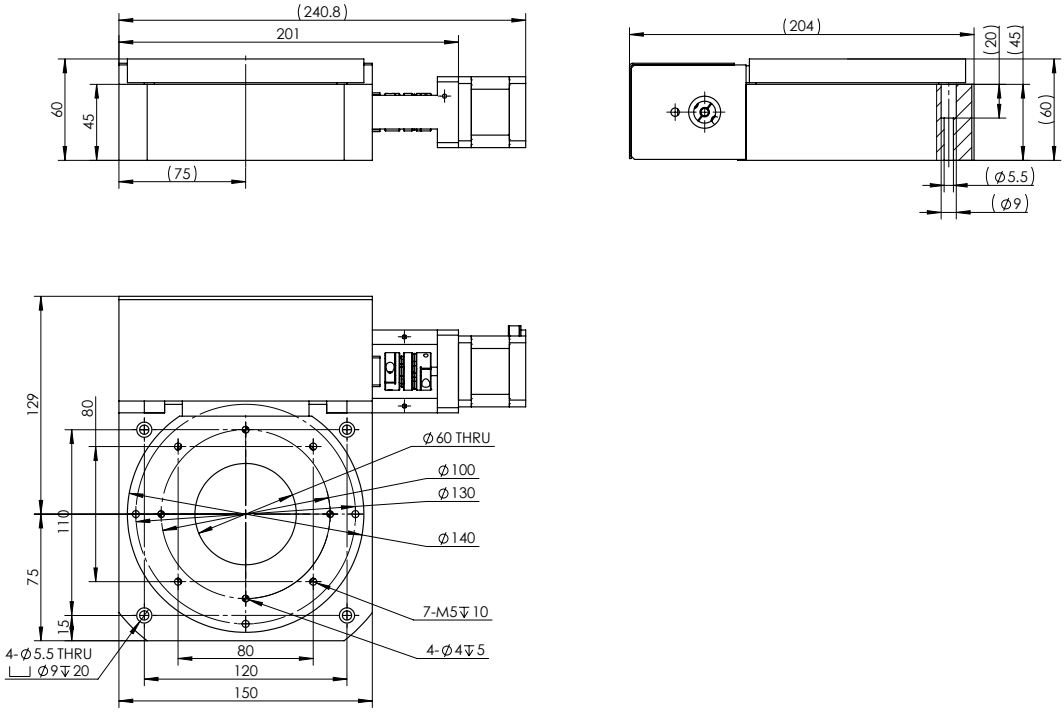


NPR Series

■ Dimension Information

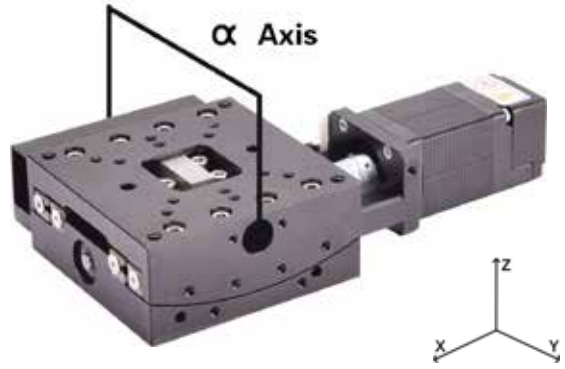
Uniit：mm

NPR-150



NPG Series

- Rotate along α axis
- Micro-angle, Small Lead, High Accuracy
- Compact structure, high rigidity



■ Naming Rules

NPG 7070 L - 2D2 0 T - B AH 5 - 0

Table Size

Code	Table Size
7070	70x70mm

Sensor position

Code	Outlet Direction
L	Left
R	Right

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

The default motor for standard products has no additional items. If you need to add Encoders or Brakes to the motor, please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

If you need to customize this code, please contact the factory.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above are optional leads for standard products. If you need other leads, please contact the factory

Screw Type Code

Code	Type of Screw
B	Ball screw

Outlet Direction Code

Code	Outlet Direction
T	Top
B	Bottom
L	Left
R	Right

■ Technical Parameters

Product Series	NPG-7070
Table Size	70x70mm
Rotation radius	70mm
Stroke	± 8°
Guide mechanism	Curved Cross Roller Guideway
Resolution	0.00372° （stepper motor），0.00182° （stepper servo motor）
Maximum speed	7.44° /s（stepper motor），14.88° /s（stepper servo motor）
Angular Distance Conversion	0.744° /mm
Drive screw	8x1
Bidirectional Repeat Positioning Accuracy *	± 0.0023° (Precision grade)，± 0.0023° (Normal grade)
Bidirectional Positioning Accuracy *	0.009° (Precision grade)，0.019° (Normal grade)
Maximum horizontal load	5Kg
Weight	0.8Kg
Material	Aluminum
Surface Finishing	Black anodized

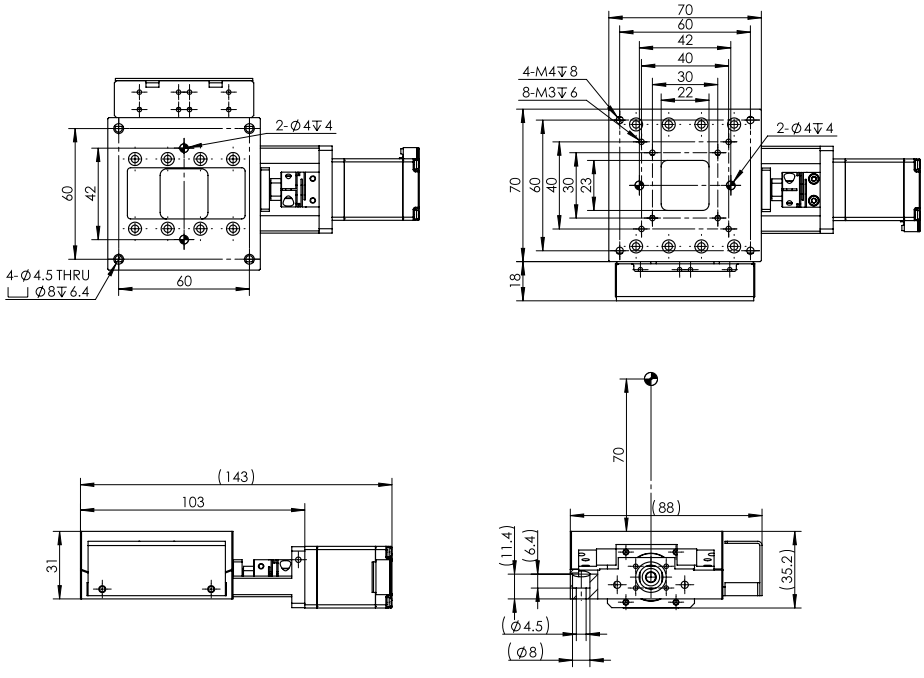
* Bidirectional Repeat Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

* Bidirectional Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

■ Dimension Information

Uniit：mm

NPG-7070L



NPX Series

- Moves along the X axis
- Short Stroke, Small Lead, High Accuracy
- Compact in structure, high rigidity

■ Naming Rules

NPX 812 L - 2D2 0 T - B AH 5 - 0

Table Size

Code	Table Size
40	40x40mm
60	60x60mm
80	80x80mm
812	80x130mm
816	80x160mm

Sensor position

Code	Outlet Direction
L	Left
R	Right

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

The default motor for standard products has no additional items. If you need to add Encoders or Brakes to the motor, please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

If you need to customize this code, please contact the factory.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above are optional leads for standard products. If you need other leads, please contact the factory

Screw Type Code

Code	Type of Screw
B	Ball screw

Outlet Direction Code

Code	Outlet Direction
T	Top
B	Bottom
L	Left
R	Right

■ Technical Parameters

Product Series	NPX-40	NPX-60	NPX-80	NPX-812	NPX-816
Table Size	40x40mm	60x60mm	80x80mm	80x130mm	80x160mm
Stroke	± 6mm	± 10mm	± 15mm	± 30mm	± 50mm
Guide mechanism	Crossed roller guideways				
Resolution	5μm（Lead1mm），10μm（Lead2mm）（stepper motor） 0.244μm（Lead1mm），0.488μm（Lead2mm）（stepper servo motor）				
Maximum speed	10mm/s（Lead1mm），20mm/s（Lead2mm）（stepper motor） 20mm/s（Lead1mm），40mm/s（Lead2mm）（stepper servo motor）				
Drive screw	6x1	8x1	8x1	8x1 8x2	8x1 8x2
Bidirectional Repeat Positioning Accuracy *	± 3μm(Precision grade)，± 3μm(Normal grade)				
Bidirectional Positioning Accuracy *	12μm(Precision grade)，25μm(Normal grade)				
Maximum horizontal load	3Kg	5Kg	10Kg	15Kg	18Kg
Weight	0.3Kg	0.45Kg	1.4Kg	1.8Kg	2.2Kg
Material	Aluminum				
Surface Finishing	Black anodized				

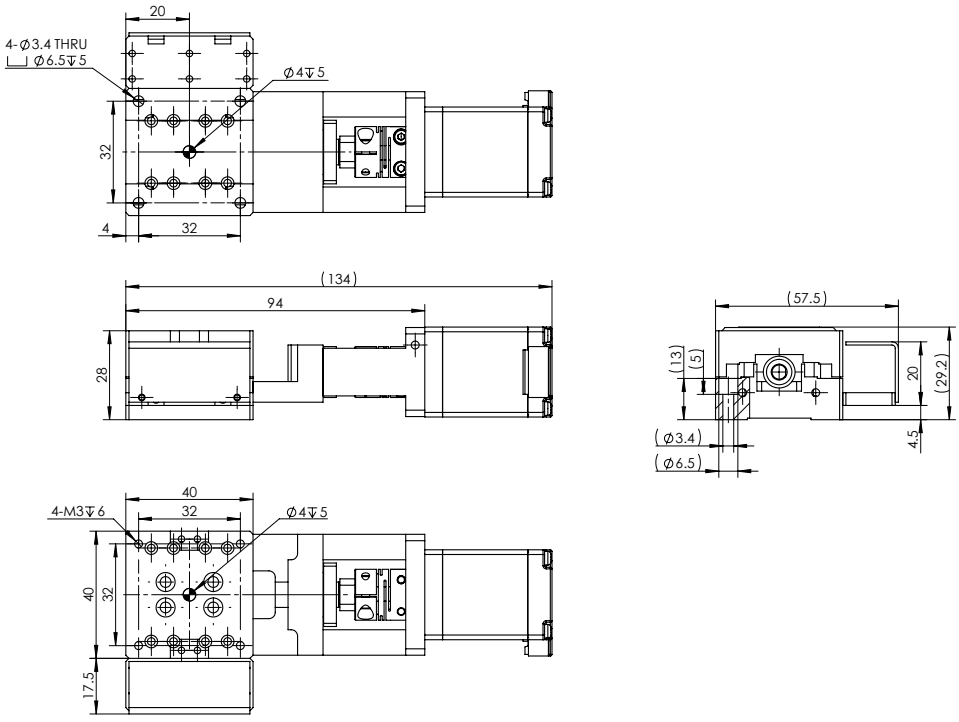
* Bidirectional Repeat Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.
* Bidirectional Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

NPX Series Precision Linear Platforms

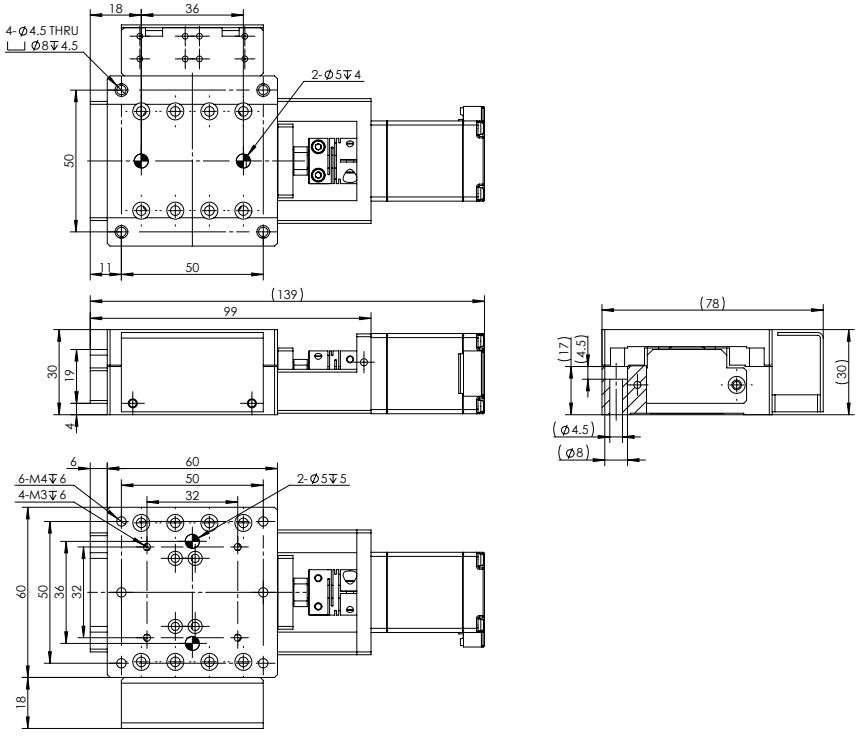
■ Dimension Information

Uniit：mm

NPX-40L



NPX-60L

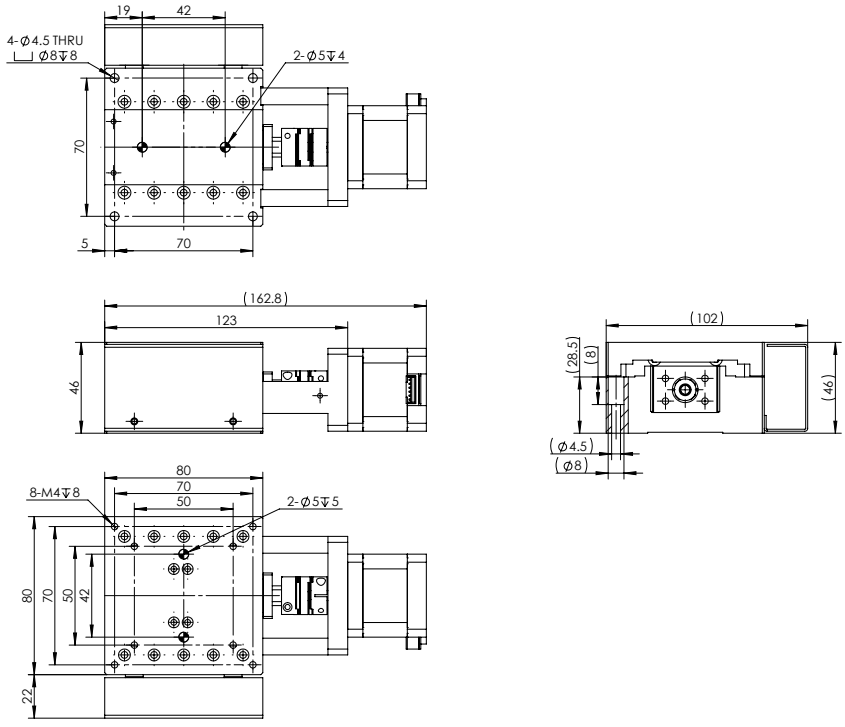


NPX Series Precision Linear Platforms

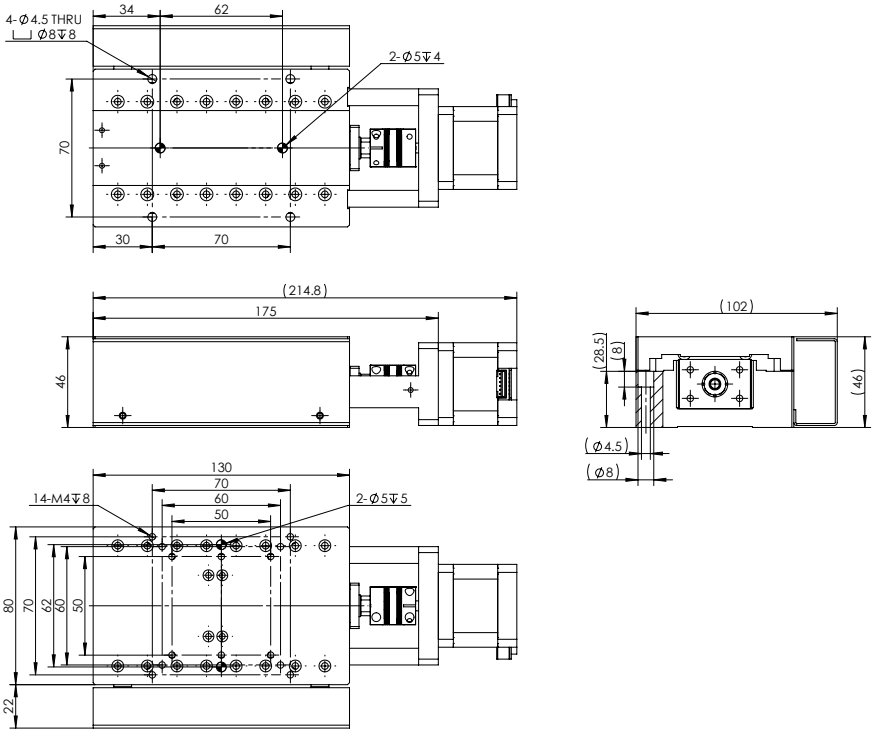
■ Dimension Information

Uniit：mm

NPX-80L



NPX-812L

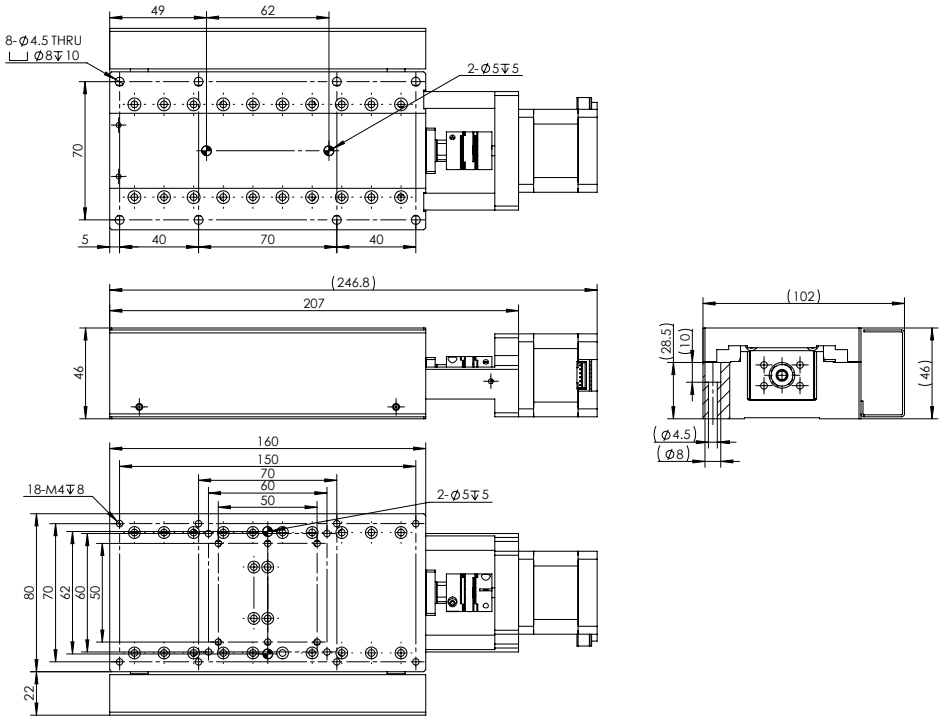


NPX Series Precision Linear Platforms

■ Dimension Information

Uniit：mm

NPX-816L



NPHZ Series Precision Lifting Platform

- Moves along the Z axis
- Short Stroke, Small Lead, High Accuracy
- Compact, High Rigidity

NPHZ 60 - 2D2 0 T - B AH 5 - 0

Table Size

Code	Table Size
60	60x88mm
80	80x100mm
120	120x120mm
200	200x200mm

Motor Option Code

Code	Motor type
2D2	2D2-TSM11Q-2RM
2D1	2D1-AM11RS2DMA
3D2	3D2-MS11HS3P4095
2A1	2A1-AM17RS2DMB
3A1	3A1-MS17HD2P4200
2F1	2F1-AM23RS2DMB
3F1	3F1-ML23HS8P4220

Motor Additional Code

Code	Motor add-ons
0	no additional
B	Brake
E	Encoder

The default motor for standard products has no additional items. If you need to add Encoders or Brakes to the motor, please contact the factory.

Special Custom Type Code

Code	Custom Type
0	Standard Product Code

If you need to customize this code, please contact the factory.

Precision Code

Code	Accuracy level
4	Normal grade
5	Precision grade

Screw lead Code

Code	Lead (mm)	Type of Screw
AH	1	Ball screw
AG	2	

The above are optional leads for standard products. If you need other leads, please contact the factory

Screw Type Code

Code	Type of Screw
B	Ball screw

Outlet Direction Code

Code	Outlet Direction
T	Top
B	Bottom
L	Left
R	Right

■ Technical Parameters

Product Series	NPHZ-60	NPHZ-80	NPHZ-120	NPHZ-200
Table Size	60x88mm	80x100mm	120x120mm	200x200mm
Stroke	± 2mm	± 4mm	± 6mm	± 10mm
Guide mechanism	Crossed roller guideways			
Resolution	1.247 μ m (stepper motor) 0.061 μ m (stepper servo motor)	1.820 μ m (stepper motor) 0.089 μ m (stepper servo motor)	1.820 μ m (stepper motor) 0.089 μ m (stepper servo motor)	9.095 μ m (stepper motor) 0.444 μ m (stepper servo motor)
Maximum speed	2.49mm/s (stepper motor) 4.98mm/s (stepper servo motor)	3.64mm/s (stepper motor) 6.28mm/s (stepper servo motor)	3.64mm/s (stepper motor) 6.28mm/s (stepper servo motor)	18.2mm/s (stepper motor) 36.4mm/s (stepper servo motor)
Lap ascent distance*	0.2493mm	0.36397mm	0.36397mm	1.819mm
Drive screw	8x1			12x5
Bidirectional Repeat Positioning Accuracy *	± 0.748 μ m(Precision grade) ± 0.748 μ m(Normal grade)	± 1.092 μ m(Precision grade) ± 1.092 μ m(Normal grade)	± 1.092 μ m(Precision grade) ± 1.092 μ m(Normal grade)	± 1.092 μ m(Precision grade) ± 1.092 μ m(Normal grade)
Bidirectional Positioning Accuracy *	3 μ m(Precision grade) 6.3 μ m(Normal grade)	4.4 μ m(Precision grade) 9.1 μ m(Normal grade)	4.4 μ m(Precision grade) 9.1 μ m(Normal grade)	4.4 μ m(Precision grade) 9.1 μ m(Normal grade)
Maximum horizontal load	5Kg	10Kg	20Kg	25Kg
Weight	1.2Kg	2Kg	3.6Kg	5.2Kg
Material	Aluminum			
Surface Finishing	Black anodized			

* Distance conversion ratio: the distance the platform rises for one revolution of the screw.

* Bidirectional Repeat Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

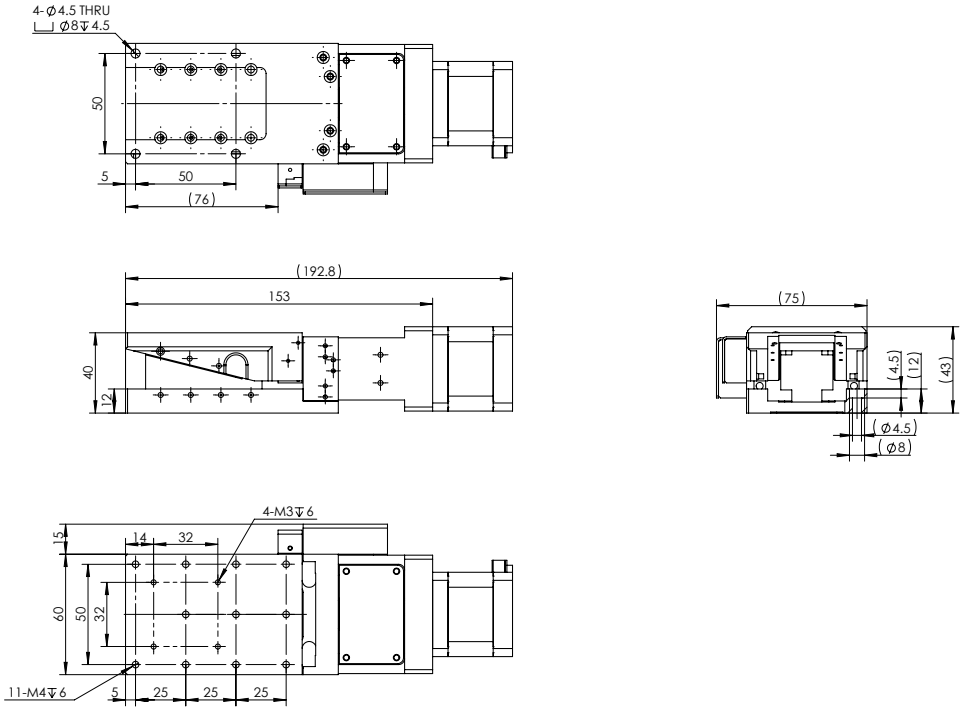
* Bidirectional Positioning Accuracy：Tested according to GB/T 17421.2, the degree of strictness is higher than the industry standard.

NPHZ Series Precision Lifting Platform

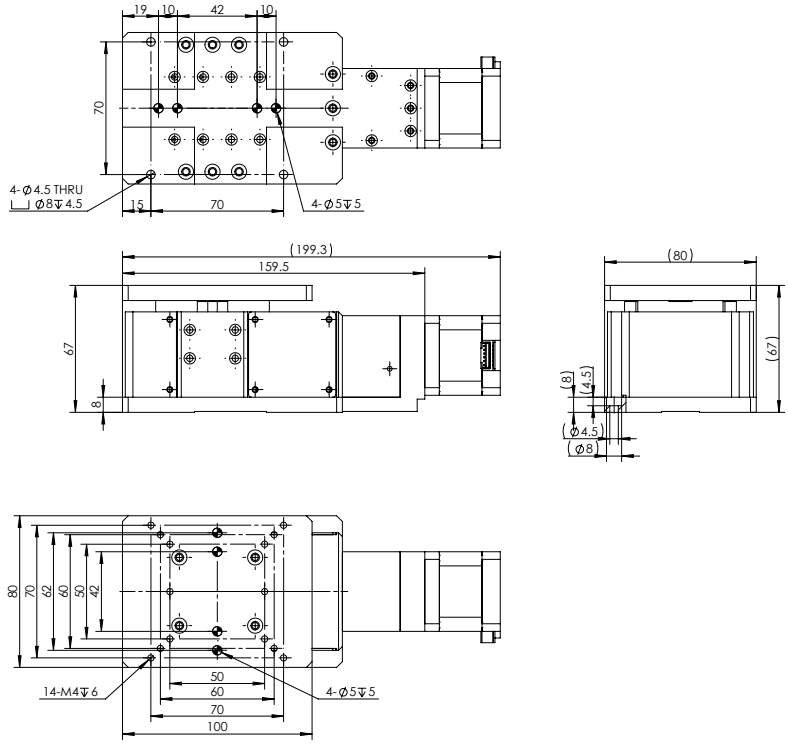
■ Dimension Information

Uniit：mm

NPHZ-60



NPHZ-80

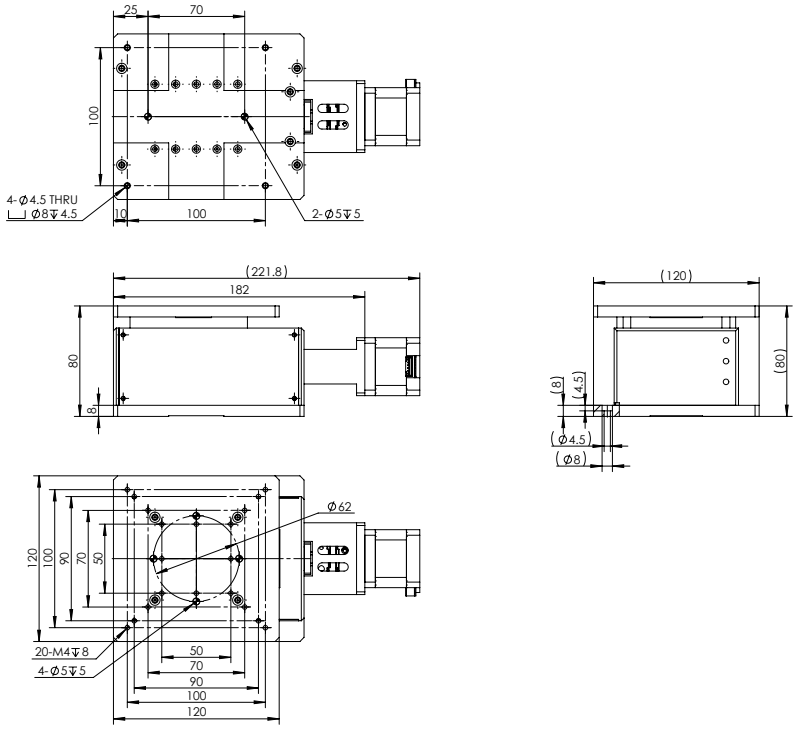


NPHZ Series

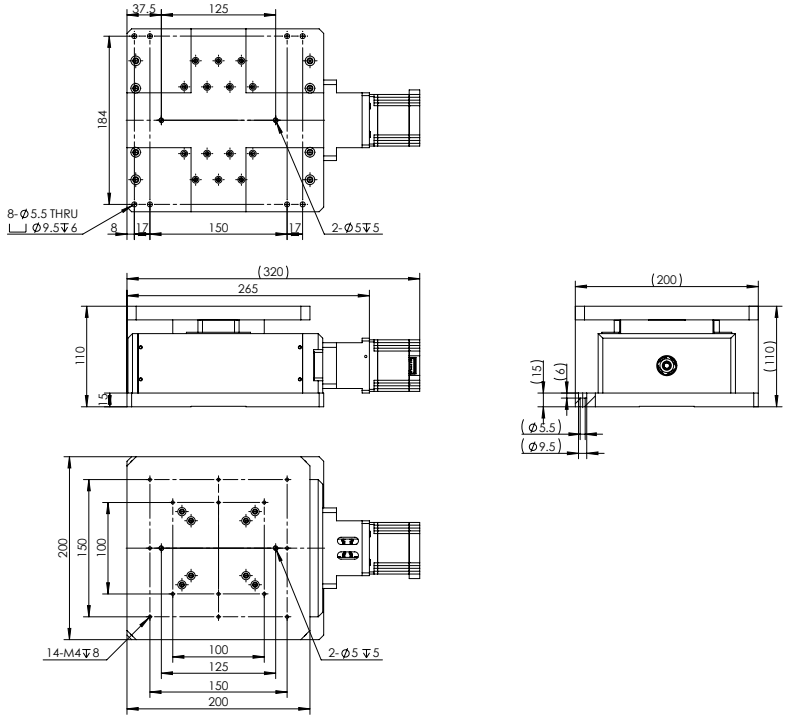
■ Dimension Information

Uniit：mm

NPHZ-120



NPHZ-200

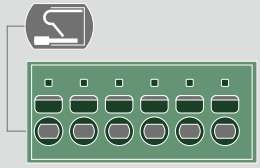


Stepper Motor Drivers

SRX Series

The SRX Series two-phase DC stepper motor Driver is a high-performance and cost-effective segmented Driver designed based on the PID current control algorithm. It has superior performance, high-speed high torque output, low noise, and low vibration. The parameters configuration is selected through switches.

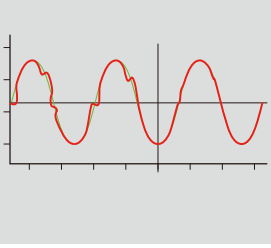
■ Features



Push-in style Connector Solution NEW

Save the wiring time

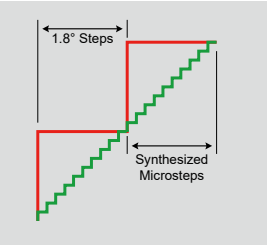
Optimized interface orientation for easy wiring.



Anti-Resonance

Provides better motor performance and higher speeds

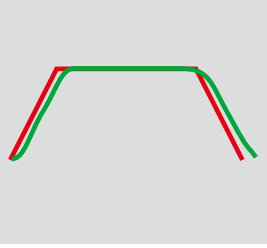
The stepper systems have a natural tendency to resonate at certain speeds. The serials of SRX Driver automatically calculates the system's natural frequency and applies damping to control the algorithm. This greatly improves midrange stability, allows for higher speeds, greater torque utilization and also improves settling times.



Microstep Emulation

Deliver smoother motion in any application.

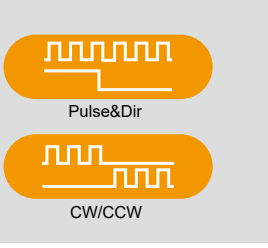
With Microstep Emulation, low resolution systems can still provide smooth motion. The drive can take low resolution step pulses and create fine resolution
motion.



Command Signal Smoothing

Improves overall system performance

Command signal smoothing can soften the effect of immediate changes in velocity and direction, making the motion of the motor less jerky. An added advantage is that it can reduce the wear on mechanical components.

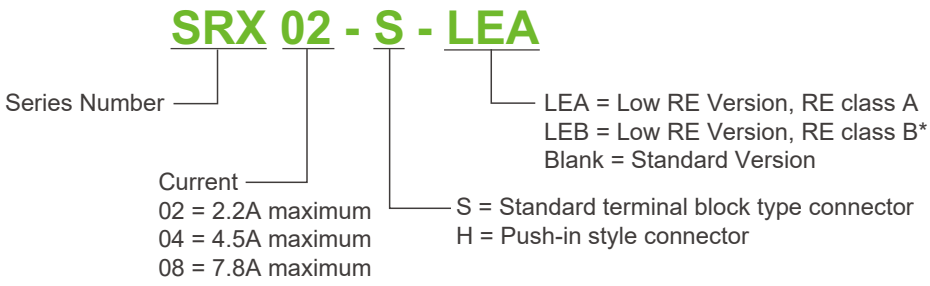


Control Mode Setting

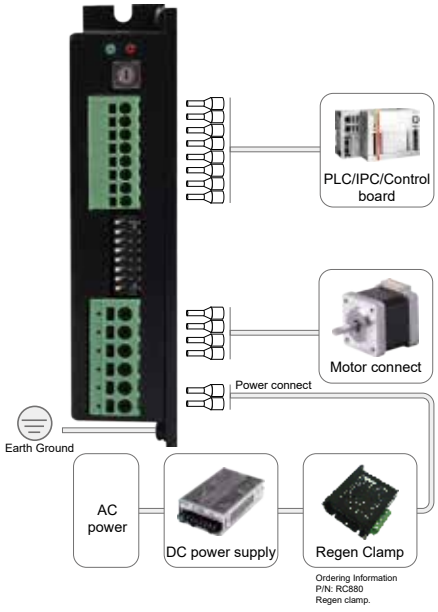
Two control modes setting

Set the Pulse/Direction or CW/CCW via switches.

■ Naming Rules



* Note:
1、Low RE Version is more suitable for 24VDC power supply application.



■ Ordering Information

Mode No.	Current (Peak of sine)	Voltage	Connector Type
SRX02-S	0.3-2.2 A	12-48 VDC	Terminal Block
SRX04-S	1.0-4.5 A	24-48 VDC	Terminal Block
SRX08-S	2.4-7.8 A	24-70 VDC	Terminal Block
SRX04-H	1.0-4.5 A	24-48 VDC	Push-In Style Connector
SRX08-H	2.4-7.8 A	24-70 VDC	Push-In Style Connector
SRX04-□-LEA	1.0-4.5A	24VDC	EMI RE(Radiated Emission) class A 3m darkroom test result，30-230MHz, 50dBμV/m; 230- 1000MHz, 57dBμV/m
SRX08-□-LEA	2.4-7.8A	24VDC	
SRX04-□-LEB	1.0-4.5A	24VDC	EMI RE(Radiated Emission) class B 3m darkroom test result，30-230MHz, 40dBμV/m; 230- 1000MHz, 47dBμV/m
SRX08-□-LEB	2.4-7.8A	24VDC	

□ S: Standard type，terminal block connector； H：Push-in style connector

■ Driver Specification

Power Amplifier	
Amplifier Type	Dual H-Bridge, 4 Quadrant
Current Control	16 KHz PWM control
Power Supply	SRX02: 12-48 VDC Absolute maximum input voltage range 11 - 53 VDC
	SRX04: 24-48 VDC Absolute maximum input voltage range 18 - 53 VDC
	SRX08: 24-70 VDC Absolute maximum input voltage range 18 - 80 VDC
Output Current	SRX02: 0.3 ~ 2.2 A/Phase(Peak of Sine)
	SRX04: 1.0 ~ 4.5 A/Phase(Peak of Sine)
	SRX08: 2.4 ~ 7.8 A/Phase(Peak of Sine)
Idle Current	Automatically reduce motor current after 1 second when motor stop, dip switch for setting: 50% or 90% of rated current
Protection	Over-voltage, under-voltage, over-temp, motor/winding shorts (phase-to-phase, phase-to-ground)
Controller	
Auto Setup	When power up the drive, it will detect the resistance and inductance of motor. The drive uses this information to optimize system performance.
Self-Test	Switch selectable. While self-test, drive will rotate the motor CW and CCW, two turns in each direction
Control Mode	Switch selectable. Pulse & Direction or CW/CCW
Microstep	200, 400, 800, 1600, 3200, 6400, 12800, 25600, 1000, 2000, 4000, 5000, 8000, 10000, 20000, 25000 step/rev, PID switches setting
Microstep Emulation	Switch selectable. Microstep emulation provides smoother, more reliable motion at low speed
Digital Inputs	3 digital inputs
	STEP: Pulse or CW input, Optically isolated, differential, 5-24VDC; Minimum pulse width = 250ns, Maximum pulse frequency = 2MHz
	DIR: Direction or CCW input, Optically isolated, differential, 5-24VDC; Minimum pulse width = 250ns, Maximum pulse frequency = 2MHz
	EN: Enable input, Optically isolated, differential, 5-24VDC; Minimum pulse width = 100μs, Maximum pulse frequency = 5KHz
Inputs Signal Filter	Filter the input signal noise for protecting wrong moving, switch for setting:2MHz or 150KHz
Digital Output	1 digital output
	OUT: Alarm Output, Optically isolated, Open Collector, 30V/100mA max, Turn-on voltage drop: 1.5 VDC @ 100 mA
Status LED	1 red LED and 1 green LED
Physical	
Ambient Temperature	0 to 40° C (32 to 104° F) when mounted to a suitable heatsink
Ambient Humidity	90% Max., non-condensing
Mass	SRX02: 0.15kg SRX04: 0.26kg SRX08: 0.3kg

STF Series

The STF Series is a high−performance bus controlled stepper motor Driver that integrates intelligent motion controller functionality. The Driver motor can be controlled in real−time through SCL instructions, Modbus/RTU, CANopen, eSCL instructions Modbus/TCP, EtherNet/IP, or EtherCAT protocols, or the motion control program can be stored in the Driver in advance (Q programming) and flexibly called through various bus communication commands.

Features

Host Control

- Accepts commands from host PC or PLC
- Real time control
- Multi-axes capable

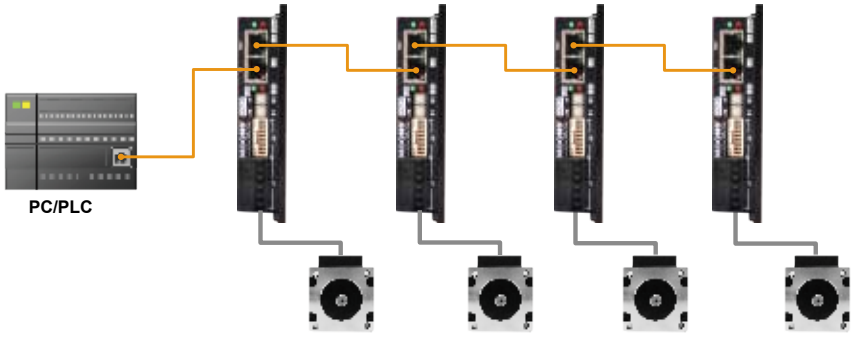
CANopen 112-axis -max-

Modbus SCL RS-485/422 32-axis -max-

EtherCAT EtherNet/IP eSCL

Stand-Alone Programmable

- Stored program execution
- Multi-tasking
- Conditional processing
- Math functions
- Data registers



Safe & Convenient

- Support communication and motor power cables disconnection protection

——***Make equipments safer***

- Support on-line configuration by fieldbus

——***Make operation more convenient***

Abundant and flexible interface

- 8 Digital Inputs, 4 Digital Outputs

——***Support for more feature settings***

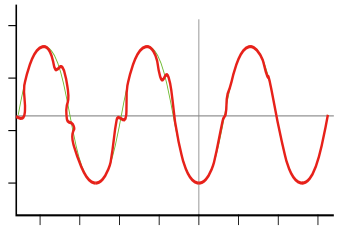
- Dual Port RJ45 Bus Conmmunication Control

——***Support daisy chain connection***

Anti-Resonance

-Provides better motor performance and higher speeds

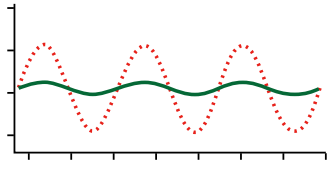
Step motor systems have a natural tendency to resonate at certain speeds. The STF drives automatically calculate the system's natural frequency and apply damping to the control algorithm. This greatly improves midrange stability, allows higher speeds and greater torque utilization, and also improves settling times.



Torque Ripple Smoothing

-Produces smoother motion at low speed running

All step motors have an inherent low speed torque ripple that can affect the motion profile of the motor. By analyzing this torque ripple the system can apply a negative harmonic to counter this effect. This gives the motor much smoother motion at low speed.



Auto Setup & Self Test

At start-up the drive measures motor parameters, including the resistance and inductance, then uses this information to optimize the system performance. The drive can also detect open and short circuits.

■ Naming Rules

STF 05 - 4X - ECX - H

- STF Series
- Output Current (Sine Peak): 03 = 3A; 06 = 6A; 10 = 10A
- Structure type: Blank = Standard Single Axis; 4X = Horizontal 4-Axis*3; 4XU = Vertical 4-Axis*3
- Control Option: R = RS-485; C = CANopen; D = Ethernet; IP = EtherNet/IP; ECX = EtherCAT
- Connector Type: Blank = Pressure Connector; H = Push-in Style Connector*1; mini = Small size drive*2

*1 Note：Only for STF05/10-ECX-H, STF05/10-R-H
*2 Note：Only for STF03-C-mini, STF06-ECX-mini
*3 Note：Only for STF05/10-4X-ECX

■ Ordering Information

Model	Current	Voltage	Control mode								
			RS-485	Modbus/RTU	CANopen	Ethernet	Modbus/TCP	EtherNet/IP	EtherCAT	Profinet	Q Program
★ STF03-C-mini	0.1-3.0 A	24-48 VDC			√						
★ STF06-ECX-mini	0.1-6.0 A	12-48 VDC							√		√
★ STF05-4X-ECX	0.1-5.0 A ※	24-70 VDC							√		√
★ STF10-4X-ECX	0.1-10.0 A ※	24-70 VDC							√		√
★ STF05-4XU-ECX	0.1-5.0 A ※	24-70 VDC							√		√
★ STF10-4XU-ECX	0.1-10.0 A ※	24-70 VDC							√		√
★ STF05-ECX-H	0.1-5.0 A	24-48 VDC							√		√
★ STF10-ECX-H	0.1-10.0 A	24-70 VDC							√		√
★ STF03-ECX	0.1-3.0 A	12-48 VDC							√		√
★ STF06-ECX	0.1-6.0 A	12-48 VDC							√		√
★ STF05-R-H	0.1-5.0 A	24-48 VDC	√	√							√
★ STF10-R-H	0.1-10.0 A	24-70 VDC	√	√							√
STF03-R	0.1-3.0 A	12-48 VDC	√	√							√
STF05-R	0.1-5.0 A	24-48 VDC	√	√							√
STF06-R	0.1-6.0 A	12-48 VDC	√	√							√
STF10-R	0.1-10.0 A	24-70 VDC	√	√							√
STF03-C	0.1-3.0 A	12-48 VDC			√						√
STF05-C	0.1-5.0 A	24-48 VDC			√						√
STF06-C	0.1-6.0 A	12-48 VDC			√						√
STF10-C	0.1-10.0 A	24-70 VDC			√						√
STF03-D	0.1-3.0 A	12-48 VDC				√	√				√
STF05-D	0.1-5.0 A	24-48 VDC				√	√				√
STF06-D	0.1-6.0 A	12-48 VDC				√	√				√
STF10-D	0.1-10.0 A	24-70 VDC				√	√				√
STF03-IP	0.1-3.0 A	12-48 VDC				√	√	√			√
STF05-IP	0.1-5.0 A	24-48 VDC				√	√	√			√
STF06-IP	0.1-6.0 A	12-48 VDC				√	√	√			√
STF10-IP	0.1-10.0 A	24-70 VDC				√	√	√			√
STF05-PN	0.1-5.0 A	24-48 VDC								√	√
STF10-PN	0.1-10.0 A	24-70 VDC								√	√

※： STF05-4X has a continuous output current of 4x5A and an instantaneous current of 4x7.5A; STF10-4X continuously outputs a current of 4x10A and an instantaneous current of 4x15A.
★ : Recommended products

■ Driver Specification

◇ Technical Specification

Driver	STF03	STF05	STF06	STF10
InputsVoltage	12-48VDC	24-48VDC	12-48VDC	24-70VDC
OutputsCurrent (Sine peak)	3A/phase (peak-of-sine) in 0.01 amp increments	5A/phase (peak-of-sine) in 0.01 amp increments	6A/phase (peak-of-sine) in 0.01 amp increments	10A/phase (peak-of-sine) in 0.01 amp increments
Protection	Over voltage, under voltage, over temp, over current, open winding, communication cable disconnection			
Speed range	speed up to 3000rpm			
Wave filter	Digital input noise filter, analog input filter, smoothing filter, PID filter, notch filter			
Non-Volatile Memory	Configure parameters stored in FLASH inside the DSP chip			
Ambient Temperature	0~40℃(32~104°F)(Install a suitable radiator)			
Ambient Humidity	Up to 90%，no condensation			
Driver Weight	About 0.16kg	About 0.3kg	About 0.16kg	About 0.3kg
Matching Motor	AM Seriesstepper motor			

◇ Support Specification

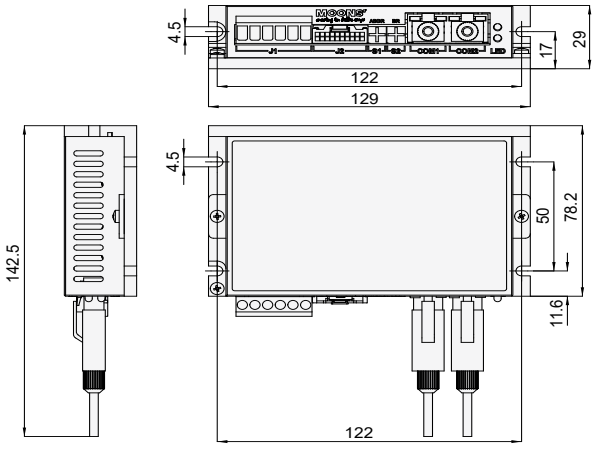
Type	EtherCAT			RS485
Driver	STF**-4X-ECX	STF**-4XU-ECX	STF**-ECX-H	STF**-R-H
Digital Inputs	5DI*4	3DI*4	5DI	5DI
Digital Outputs	3DO*4	1DO*4	2DO	2DO
Bus port	EtherCAT	EtherCAT	EtherCAT	Modbus/RTU SCL
Soft PLC (Q programming)	Support	Support	Support	Support

Type	CANopen		Ethernet	
Driver	STF**-C-mini	STF**-C	STF**-D	STF**-IP
Digital Inputs	2DI	8DI	8DI	8DI
Digital Outputs	1DO	4DO	4DO	4DO
Bus port	CANopen	CANopen	Modbus/RTU eSCL	Ethernet/IP eSCL
Soft PLC (Q programming)	Support	Support	Support	Support

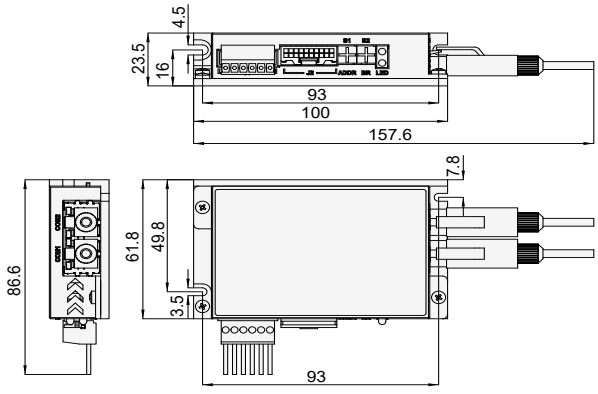
■ Driver mechanical Size

Uniit：mm

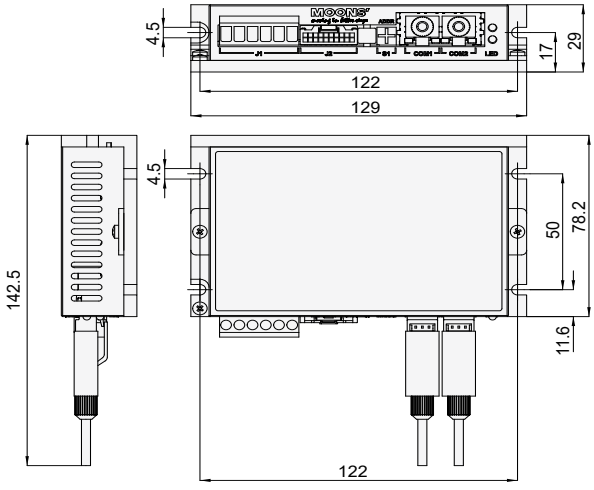
◇ STF05/10-R, STF05/10-C



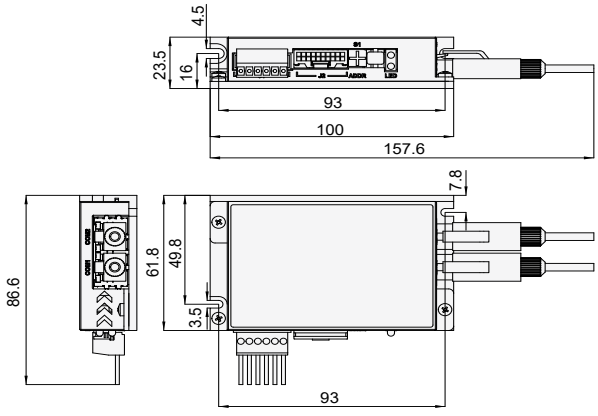
◇ STF03/06-R, STF03/06-C



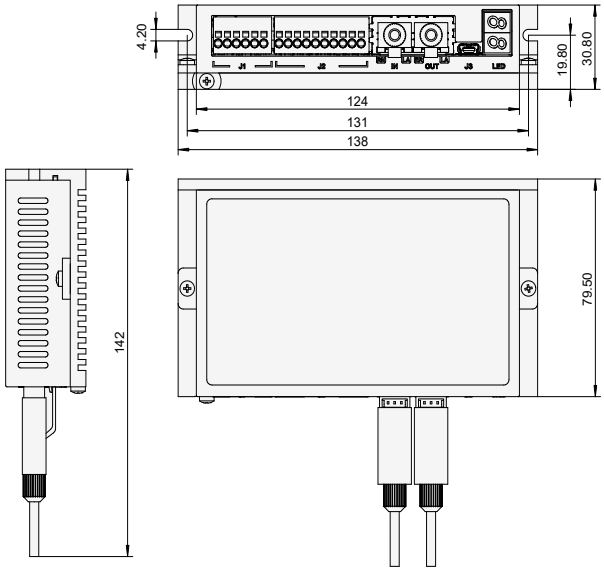
◇ STF05/10-D, STF05/10-IP



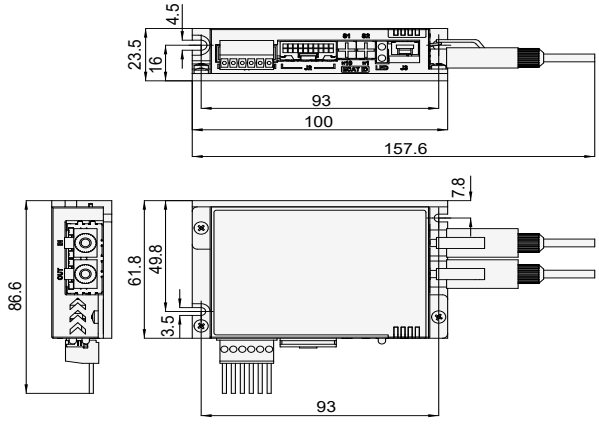
◇ STF03/06-D, STF03/06-IP



◇ STF05/10-ECX-H



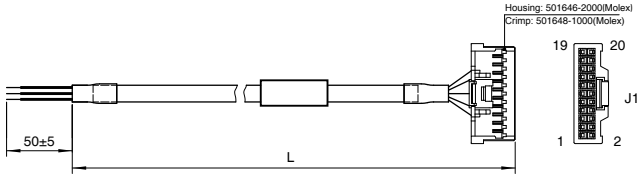
◇ STF03/06-ECX



■ Optional accessories (to be purchased separately)

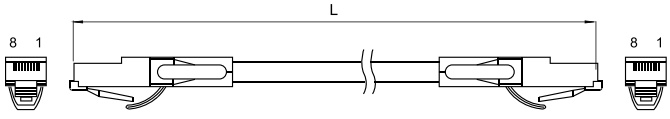
I/O Cable

P/N	Length(L)
1015-030	0.3m
1015-100	1m
1015-200	2m



Pin No.	Assignment	Description	Color	Pin No.	Assignment	Description	Color
1	X1+	X1 Digital Input	Blue/White	11	X7	X7 Digital Input	Yellow
2	X1-		Blue/Black	12	X8	X8 Digital Input	Green
3	X2+	X2 Digital Input	Green/White	13	SHIELD	Shield	-
4	X2-		Green/Black	14	XCOM	X5-X8 Digital Input COM	Red
5	X3+	X3 Digital Input	Yellow/White	15	Y1	Y1Digital Output	Brown
6	X3-		Yellow/Black	16	Y2	Y2 Digital Output	Gray
7	X4+	X4 Digital Input	Orange/White	17	Y3	Y3 Digital Output	White
8	X4-		Orange/Black	18	YCOM	Y1-Y3 Digital Output COM	Black
9	X5	X5 Digital Input	Blue	19	Y4+	Y4 Digital Output	Purple/White
10	X6	X6 Digital Input	Purple	20	Y4-		Purple/Black

◇ Cable

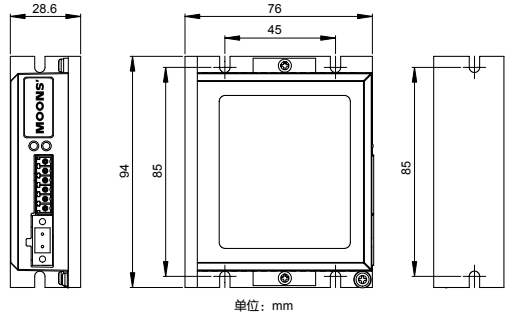


Model	Length(L)	Description
2012-030	0.3m	Standard Type
2012-300	3m	Standard Type
2013-030	0.3m	Shielded Type
2013-300	3m	Shielded Type

◇ Regeneration Clamp

Model：RC880

The use of MOONS' back electromotive force clamp absorption module RC880 (as shown in the figure below) can effectively solve the problem of regenerative discharge. Use RC880 to detect if there is a problem with back electromotive force regenerative power supply in your application. Connect RC880 in series between the SSDC Series and the power supply and operate normally. If the "Regen" LED indicator on RC880 has never flickered and there is not too much back electromotive force in your circuit, there is no need to use RC880.

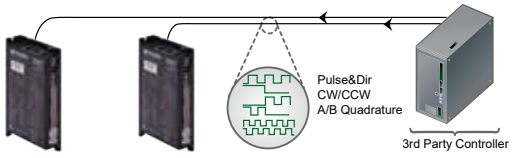


SSDC Series（Paired with AM Series motors）

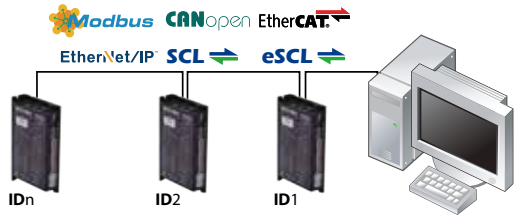
The SSDC series is a high performance, intelligent Step-Servo system with multi-axis field bus control. Enhancing a stepper motor with servo technology has created a product with exceptional features and broad capability. It supports pulse/direction control, analog control and multiple field bus controls such as Modbus, CANopen, SCL/ eSCL commands, EtherNet/IP and EtherCAT protocol. And the SSDC series also supports the stand alone function(Q programmer) called by field bus control.

Multi-functional Capability

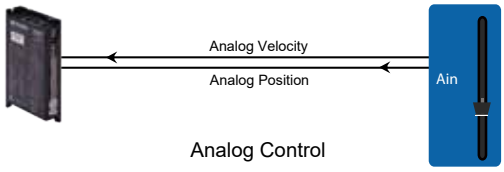
- Pulse control
- Analog control
- Multi axis bus control
- Program Residency (Q Program)



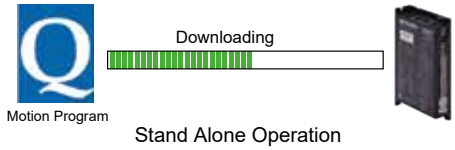
Pulse Control



Muti-Axis Network



Analog Control



Stand Alone Operation

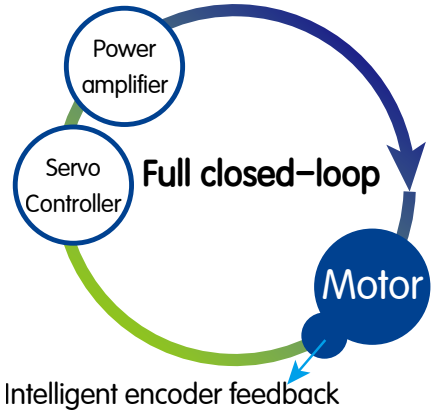
Closed-Loop Control

- Smart encoder

The step servo motor has a built-in high-resolution intelligent encoder. In addition to providing customers with accurate positioning, the drive can automatically identify the motor model and motor parameters after connecting the smart encoder motor, eliminating the need for motor configuration steps. At the same time, a drive can be compatible with a variety of intelligent encoder motors, and has two resolution encoders 20000 pulses/ revolution and 4096 pulses/revolution to choose from, and it can also support multiple closed-loop control modes.

Ordinary encoders only have A/B signals, and the initial alignment of the motor is achieved by energizing the motor windings and locking the shaft. If there is no friction load, the lock shaft alignment is more accurate. However, if there is a friction load (such as the application of a vertical axis), the initial alignment will produce an electrical angle error, which will cause a torque loss. The greater the friction load, the greater the torque loss. When the frictional load is large to a certain degree, it may cause the motor to fail to run or even speed up.

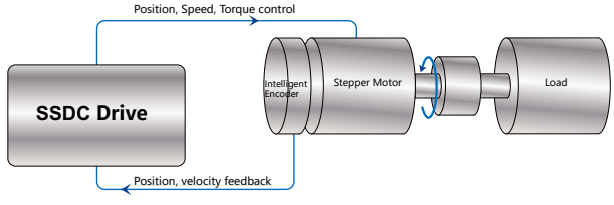
In addition to the A/B signal, the intelligent encoder mounted on the MOONS' step servo motor also has an auxiliary positioning signal. The drive can know the exact position of the motor in real time. Even if there is a friction load, there will be no electrical angle error, and there will be no loss of torque.



- Closed-loop Step-Servo mode

Position, velocity and current closed loop control. Precisely position and velocity control can match the harsh applications.

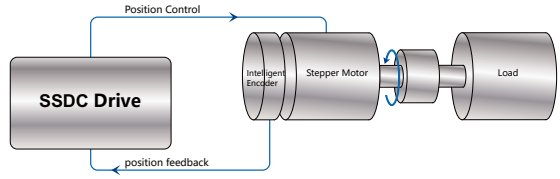
Adjust the current in real time according to the actual load situation. Highly robust servo control accommodates a wide range of inertial loads and friction load changes.



SSDC Series（Paired with AM Series motors）

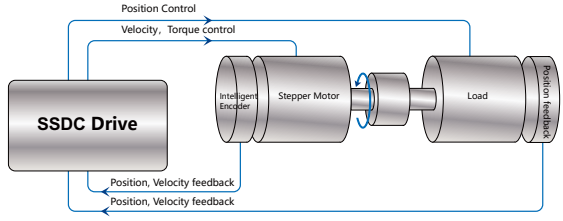
- Closed-loop Step mode NEW

Position Closed-loop control. No tuning, no vibration, stall prevention.
This mode is suitable for some special applications where the vibration is particularly demanding, such as vision systems, nano-technology, semiconductor manufacturing, ink jet printers, and so on.



- Full Closed-loop mode - 2-way feedback NEW

Support 2-way feedback, one way connect to the motor encoder position feedback, the other way connect to the load side position feedback, to avoid the position error caused by the mechanical error of the transmission mechanism, to achieve more precisely position control.
Load side feedback support: single-ended or differential incremental encoder, scale.

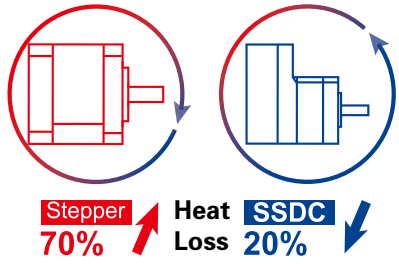


Safe & Convenient

- Support communication and motor power cables disconnection protection - **Make equipments safer** NEW
- Support on-line configuration by fieldbus - **Make operation more convenient** NEW

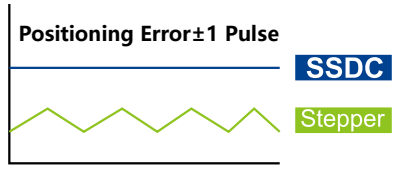
Low heat generation/high efficiency

- The SSDC uses only the current required by the application, generating minimum heat output.
- When the motor is not moving, the current can be nearly zero resulting in extremely low heat output.
- Being able to use almost 100% of the available torque allows for more efficient operation and may allow a smaller motor size.



Smooth and precise

- Space vector current control with a high resolution encoder gives smooth and quiet operation, especially at low speeds - a feature not found with traditional stepper motors.
- High stiffness due to the nature of the stepper motor combined with the highly responsive servo control results in accurate position control both while running and when standing still.

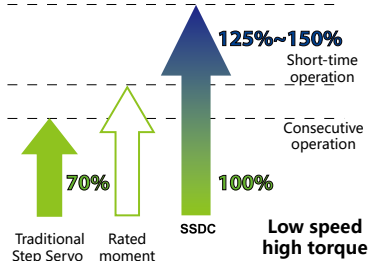


High speed response

- When performing fast point-to-point moves, the high torque output and advanced servo control provides a very responsive system far exceeding what can be done with a conventional stepper system.

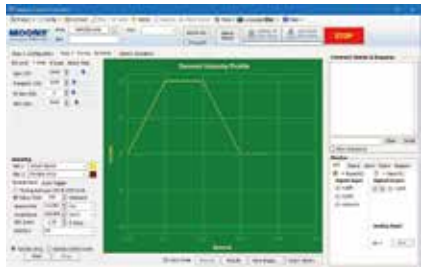
High torque

- Because the TSM operates in full servo mode, all the available torque of the motor can be used. The motor can provide as much as 50% more torque in many applications.
- High torque capability often eliminates the need for gear reduction.
- Boost torque capability can provide as much as 50% more torque for short, quick moves.



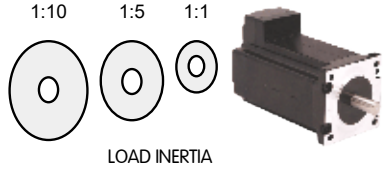
SSDC Stepper Servo Driver（Paired with AM Series motors）

Motion detection



- For applications where extreme real-time motion is critical, the ***Stepper Suite*** provides a simple and practical tool for monitoring actual motion trajectories.
- It can be used to monitor common metrics such as actual velocity and position error to assess the current actual performance of the system.
- An interactive monitoring and tuning interface provides the fastest possible performance output.

Parameters tuning



- Pre-defined tuning parameters quickly allow maximum control performance and stability.
- A selection list provides an easy method to achieve the desired level of control.
- In most cases NO extra manual tuning is required.
- There is no need to do tuning in closed- step mode.

Rich debugging software

Stepper Suite

Software Features

- Friendly User Interface
- Easy setup within just three steps
- Drive setup and configuration
- Servo Tuning and Sampling
- Built-in Q programmer
- Motion testing and monitoring
- Write and save SCL command scripts
- Online help integrated
- Support all products in RSM/SSM/TSM/TXM/RS/SS/SSDC Series and STF Stepper Driver

RS485 Bus Utility

Software Features

- Stream SCL commands from the command line
- Simple interface with powerful capability
- Easy setup with RS-485 for 32 axis network motion control
- Monitoring Status of I/O, drive, alarm and the other nine most
- Useful motion parameters
- Write and save SCL command scripts
- Online help integrated
- Supports all RS-485 drives

CANopen Test Tool

Software Features

- Friendly User Interface
- Multiple operation Mode Support
- Multi-Thread, High Performance
- CAN bus monitor and log function
- Kvaser/PEAK adapter support

■ Naming Rules

SSDC 03 - 4X - ECX - J

- SSDC: SSDC Series
- 03: Output Current
  03 = 3A
  06 = 6A
  10 = 10A
- 4X: Structure type
  Blank = Standard Single Axis
  4X = Horizontal 4-Axis*4
  4XU = Vertical 4-Axis*4
- ECX: Communication Option
  A = RS-232
  R = RS-485
  C = CANopen
  D = Ethernet
  IP = EtherNet/IP
  ECX = EtherCAT
- J: Connector Type
  Blank = Pressure Connector
  H = Push-in Style Connector*1
  J =Push-in Style Connector*2
  mini = Small size drive*3

*1 Note：Only for SSDC06/10-ECX-H, SSDC06-A-H
*2 Note：Only for SSDC06/10-ECX-J
*3 Note：Only for SSDC03-R-mini,SSDC06-ECX-mini
*4 Note：Only for SSDC06/10-4X-ECX, SSDC06/10-4XU-ECX

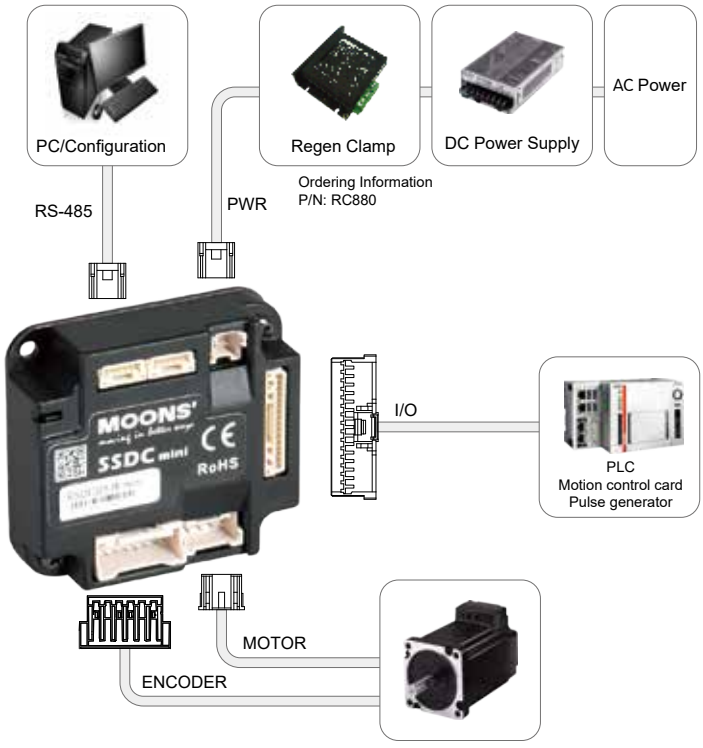
■ Ordering Information

	Model	Current	Voltage	Control mode								
				Pulse	Analog	Modbus/RTU	CANopen	Modbus/TCP	EtherNet/IP	EtherCAT	Profinet	SCL/Q
★	SSDC03-R-mini	0.1-3.0A	12-48VDC			√						√
★	SSDC06-ECX-mini	0.1-6.0A	24-48VDC							√		√
★	SSDC06-4X-ECX	0.1-6.0A ※	24-70VDC							√		√
★	SSDC10-4X-ECX	0.1-10.0A ※	24-70VDC							√		√
★	SSDC06-4XU-ECX	0.1-6.0A ※	24-70VDC							√		√
★	SSDC10-4XU-ECX	0.1-10.0A ※	24-70VDC							√		√
★	SSDC06-ECX-H	0.1-6.0A	24-70VDC							√		√
★	SSDC10-ECX-H	0.1-10.0A	24-70VDC							√		√
★	SSDC06-ECX-J	0.1-6.0A	24-70VDC		√					√		√
★	SSDC10-ECX-J	0.1-10.0A	24-70VDC		√					√		√
★	SSDC06-A-H	0.1-6.0A	24-70VDC	√		√						√
★	SSDC10-A-H	0.1-10.0A	24-70VDC	√		√						√
★	SSDC06-PN-01	0.1-6.0A	24-70VDC		√						√	√
★	SSDC10-PN-01	0.1-10.0A	24-70VDC		√						√	√
	SSDC03-A	0.1-3.0A	12-48VDC	√	√							√
	SSDC06-A	0.1-6.0A	24-70VDC	√	√							√
	SSDC10-A	0.1-10.0A	24-70VDC	√	√							√
	SSDC03-R	0.1-3.0A	12-48VDC	√	√	√						√
	SSDC06-R	0.1-6.0A	24-70VDC	√	√	√						√
	SSDC10-R	0.1-10.0A	24-70VDC	√	√	√						√
	SSDC03-C	0.1-3.0A	12-48VDC				√					√
	SSDC06-C	0.1-6.0A	24-70VDC				√					√
	SSDC10-C	0.1-10.0A	24-70VDC				√					√
	SSDC03-D	0.1-3.0A	12-48VDC	√	√			√				√
	SSDC06-D	0.1-6.0A	24-70VDC	√	√			√				√
	SSDC10-D	0.1-10.0A	24-70VDC	√	√			√				√
	SSDC03-IP	0.1-3.0A	12-48VDC	√	√			√	√			√
	SSDC06-IP	0.1-6.0A	24-70VDC	√	√			√	√			√
	SSDC10-IP	0.1-10.0A	24-70VDC	√	√			√	√			√

※：SSDC06-4X has a continuous output current of 4x6A and an instantaneous current of 4x7.5A; SSDC10-4X continuously outputs a current of 4x10A and an instantaneous current of 4x15A.
★ : Recommended products

■ System composition

◇ SSDC03-R-mini, RS-485Comm Type



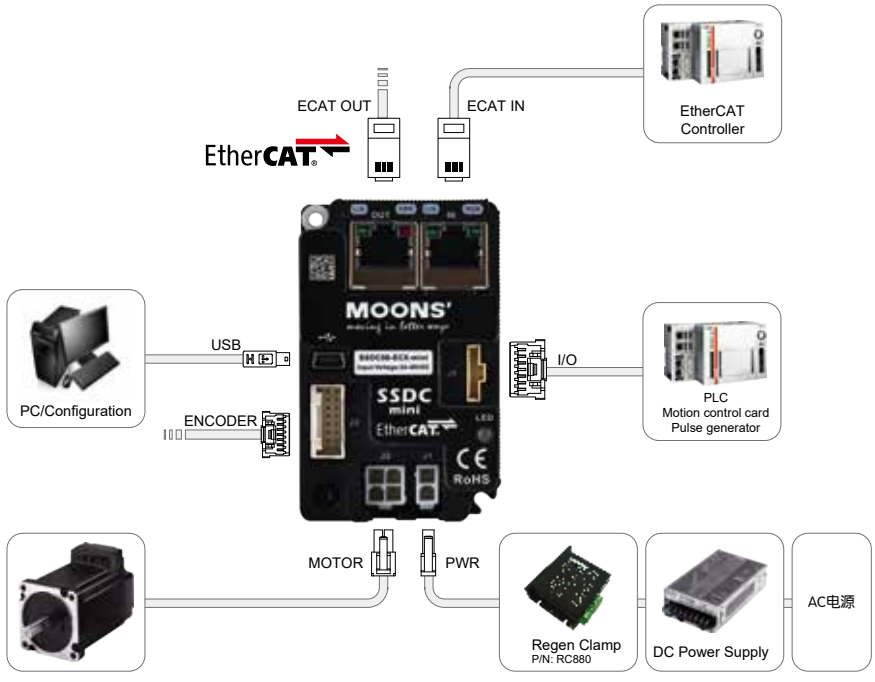
SSDC03-R-mini, RS-485 Communication type

- Supports RS-485 bus, Modbus RTU protocol (multiple Axis)
- Support SCL instruction control
- Support program resident function (Q programming)
- Network support up to 32 axe

SSDC03-R-mini packaging accessories

Model	Quantity	Type	Description
1148-0100	1	Cable	1m power line
1147-0100	1	Cable	1m I/O cable
2144-0100	1	Cable	1m RS-422 Communication Cable
SXA-001T-P0.6	5	Pins	MotorConnector Pins
XAP-04V-1	1	Connector	MotorConnector
501648-1000	20	Pins	Encoders Connector Pins
501646-1600	1	Connector	Encoders Connector

◇ SSDC06-ECX-mini, EtherCATComm Type



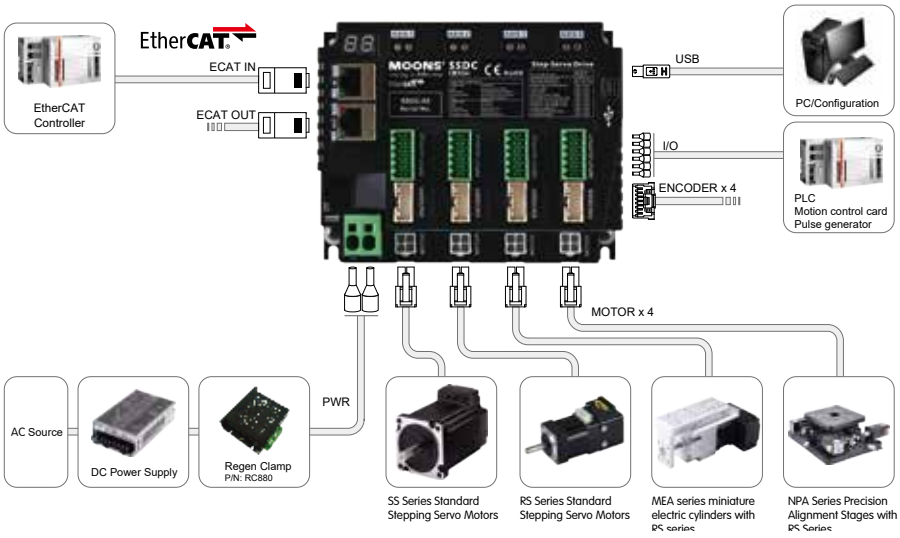
SSDC06-ECX-mini, EtherCATComm Type

- Supports EtherCAT bus and complies with CoE (CiA402 standard)

SSDC06-ECX-mini packaging accessories

Model	Quantity	Type	Description
1103-200	1	Cable	2m power line
1143-0030	1	Cable	0.3m I/O cable
2012-030	1	Cable	0.3m Standard Cable
501646-1600	1	Connector	Encoders Connector housing (J3)
501648-1000	16	Crimp	Encoders Connector Pins

◇ SSDC-4X-ECX, EtherCATComm Type



SSDC-4X-ECX, EtherCAT-Comm Type

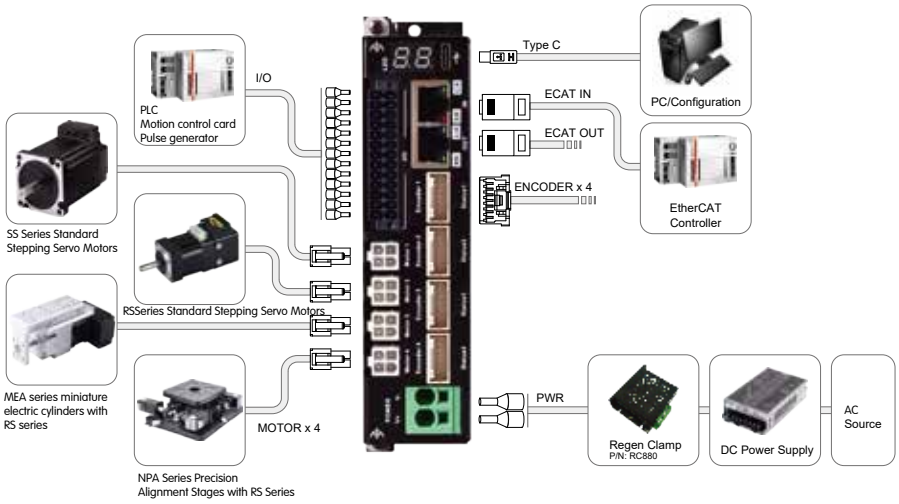
・ Support EtherCAT bus (multiple Axis) , and complies with CoE (CiA402 standard)

SSDC-4X-ECX packaging accessories

Model	Quantity	Type	Description
39-01-3048 *	4*1	Connector	Motor Connector housing
39-00-0038 *	4*5	Pins	Motor Connector Pins
501646-1600 *	4*1	Connector	Encoders Connector housing
501648-1000 *	4*16	Pins	Encoders Pins
15EDGKNH-3.5-12P-14-00A(H)	4	IO Connector plug	/
43025-0600	1	STO connector plug plastic case	Only for models with STO drives
43030-0001	8	STO connector plastic case	Only for models with STO drives

Note: If you do not purchase the motor and Encoders extension cable, the motor and Encoders connector and pin are included with the packaging.

◇ SSDC-4XU-ECX, EtherCATComm Type



SSDC-4XU-ECX, EtherCATComm Type

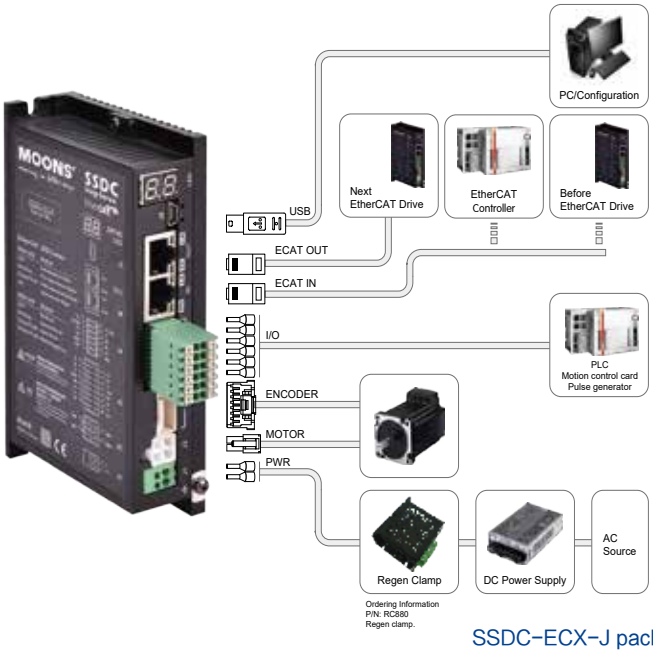
・ Support EtherCAT bus (multiple Axis) , and complies with CoE (CiA402 standard)

SSDC-4XU-ECX packaging accessories

Model	Quantity	Type	Description
39-01-3048 *	4*1	Connector	Motor Connector housing
39-00-0038 *	4*5	Pins	Motor Connector Pins
501646-1600 *	4*1	Connector	Encoders Connector housing
501648-1000 *	4*16	Pins	Encoders Pins
15EDGKNH-3.5-12P-14-00A(H)	4	IO Connector plug	/

Note: If you do not purchase the motor and Encoders extension cable, the motor and Encoders connector and pin are included with the packaging.

◇ SSDC−ECX−J, EtherCATComm Type



EtherCAT

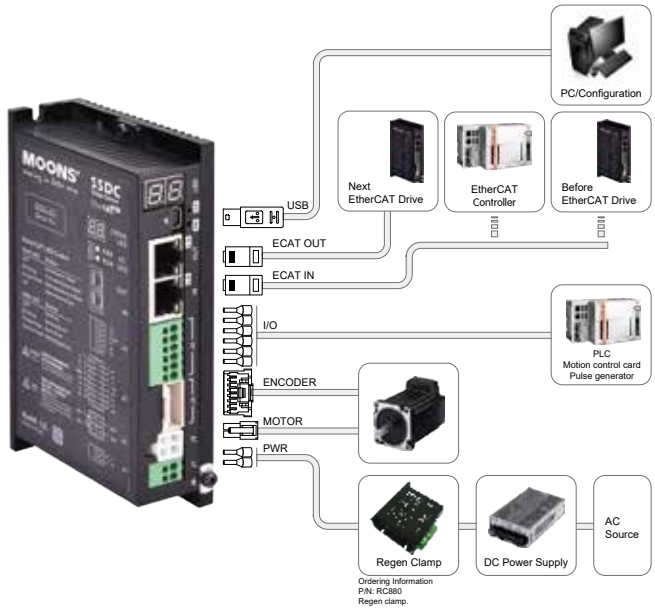
SSDC--ECX-J, EtherCAT Communication type

- Support EtherCAT command and conforms to COE (cia402 standard)
- Stand alone (Q programmer)

SSDC−ECX−J packaging accessories

Model	Quantity	Type	Description
39−01−3048	1	Connector	Motor Connector housing(J2)
39−00−0038	5	Pins	Motor Connector Pins(J2)
501646−1600	1	Connector	Encoders Connector housing(J3)
501648−1000	16	Pins	Encoders Pins(J3)
15EDGKNHB−3.5−12P−14−07A(H)	1	Connector	I/O Connector Plugging and unplugging terminals

◇ SSDC−ECX−H, EtherCATComm Type



EtherCAT

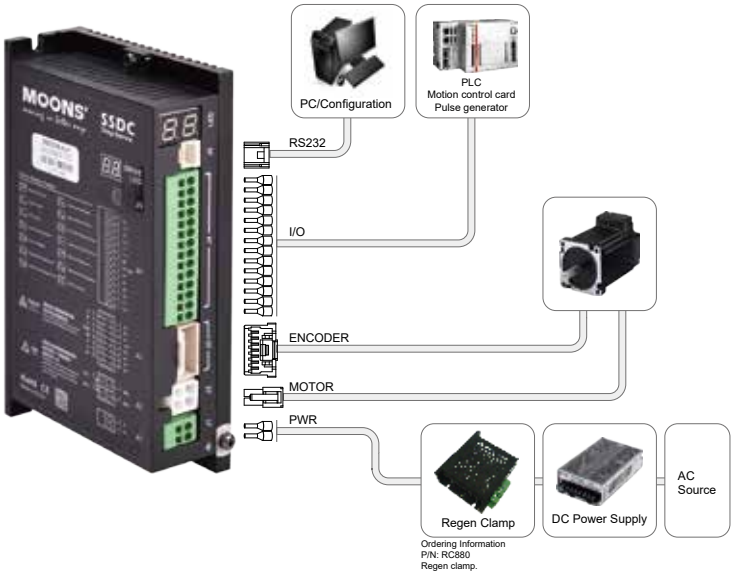
SSDC--ECX-H, EtherCAT Communication type

- Support EtherCAT command and conforms to COE (cia402 standard)
- Stand alone (Q programmer)

SSDC−ECX−H packaging accessories

Model	Quantity	Type	Description
39−01−3048	1	Connector	Motor Connector housing(J2)
39−00−0038	5	Pins	Motor Connector Pins(J2)
501646−1600	1	Connector	Encoders Connector housing(J3)
501648−1000	16	Pins	Encoders Pins(J3)

◇ SSDC-A-H, RS-232Comm Type



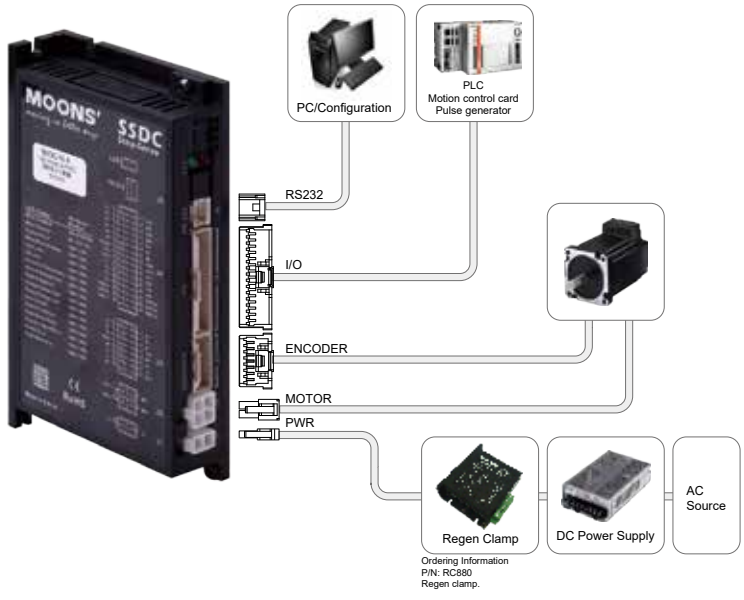
SSDC-A-H, RS232 Communication type

- Support SCL command
- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Stand alone (Q programmer)
- Analog control
- Modbus/RTU (single axis)

SSDC-A-H packaging accessories

Model	Quantity	Type	Description
2101-150	1	Cable	RS-232 Configuration Communication Cable
39-01-3048	1	Connector	Motor Connector housing(J2)
39-00-0038	5	Pins	Motor Connector Pins(J2)
501646-1600	1	Connector	Encoders Connector housing(J3)
501648-1000	16	Pins	Encoders Pins(J3)

◇ SSDC-A, RS-232Comm Type



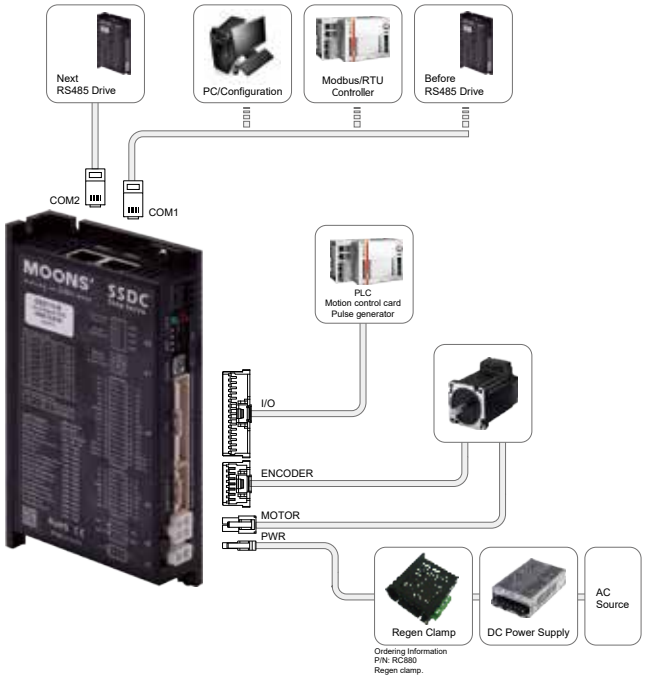
SSDC-A, RS232 Communication type

- Support SCL command
- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Stand alone (Q programmer)
- Analog control
- Modbus/RTU (single axis)

SSDC-A packaging accessories

Model	Quantity	Type	Description
1103-200	1	Cable	2mpower line
2101-150	1	Cable	RS-232 Configuration Communication Cable
39-01-3048	1	Connector	Motor Connector housing(J2)
39-00-0038	5	Pins	Motor Connector Pins(J2)
501646-1600	1	Connector	Encoders Connector housing(J3)
501646-3200	1	Connector	I/O Connector housing(J4)
501648-1000	52	Pins	Encoders I/O Connector Pins(J3和J4)

◇ SSDC-R, RS-485Comm Type



Modbus

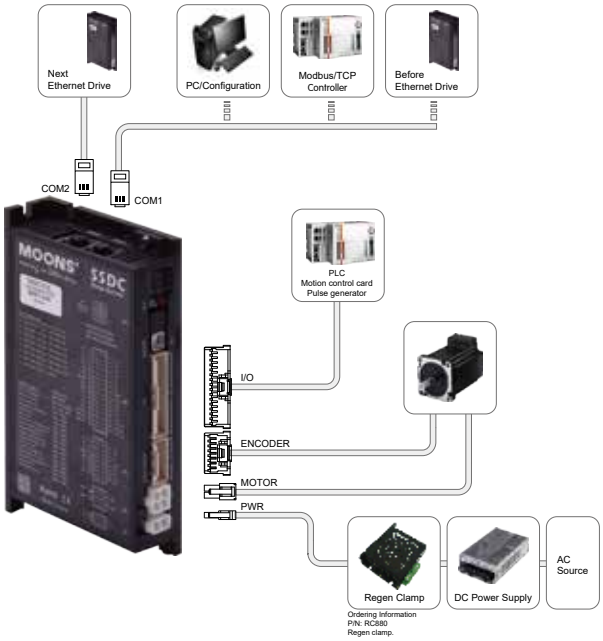
SSDC-R, RS-485 Communication type

- RS-485field bus control
- Modbus/RTU (Multi-axes) network, up to 32 axes per channel
- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Analog control
- Stand alone program (Q programmer)

SSDC-R packaging accessories

Model	Quantity	Type	Description
1103-200	1	Cable	2 m power line
2012-030	1	Cable	0.3m Standard Cable
39-01-3048	1	Connector	Motor Connector housing(J2)
39-00-0038	5	Pins	Motor Connector Pins(J2)
501646-1600	1	Connector	Encoders Connector housing(J3)
501646-3200	1	Connector	I/O Connector housing(J4)
501648-1000	52	Pins	Encoders I/O Connector Pins(J3、J4)

◇ SSDC-D/IP/PN



EtherNet/IP™

PROFINET®

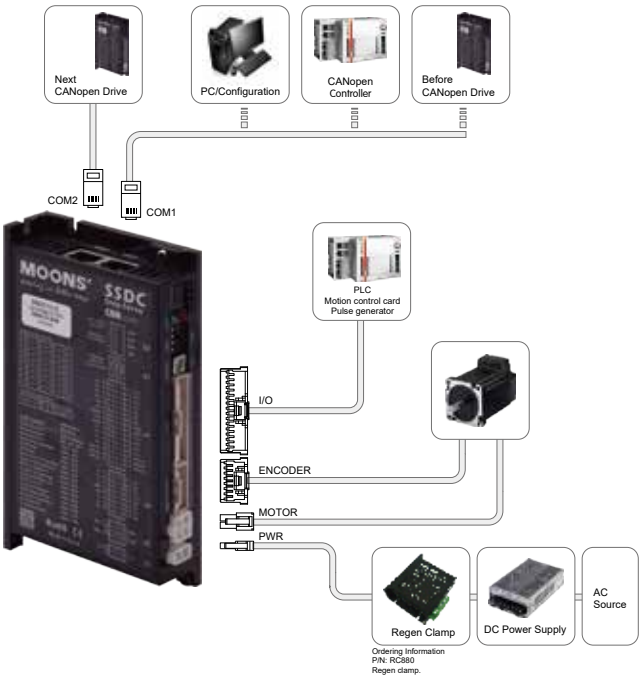
SSDC-D/IP/PN

- Ethernet field bus control
- Pulse control
- Analog control
- eSCL, Modbus/TCP protocol
- Stand alone (Q programmer)

SSDC-D/IP/PN packaging accessories

Model	Quantity	Type	Description
1103-200	1	Cable	2 m power line
2012-030	1	Cable	0.3m StandardCable
39-01-3048	1	Connector	Motor Connector housing(J2)
39-00-0038	5	Pins	Motor Connector Pins(J2)
501646-1600	1	Connector	Encoders Connector housing(J3)
501646-3200	1	Connector	I/O Connector housing(J4)
501648-1000	52	Pins	Encoders I/O Connector Pins(J3、J4)

◇ SSDC-C, CANopenComm Type



CANopen

SSDC-C, CANopen Communication type

- Operates on a CANopen communication network and conforms to CiA301 and CiA402. It supports running stored Q programs via MOONS'-specific CANopen objects.
- Up to 112 axes per channel
- Analog control

SSDC-C packaging accessories

Model	Quantity	Type	Description
1103-200	1	Cable	2m power line
2012-030	1	Cable	0.3m Standard Cable
39-01-3048	1	Connector	Motor Connector housing(J2)
39-00-0038	5	Pins	Motor Connector Pins(J2)
501646-1600	1	Connector	Encoders Connector housing(J3)
501646-3200	1	Connector	I/O Connector housing(J4)
501648-1000	52	Pins	Encoders I/O Connector Pins(J3、J4)

Driver Specification

Specifications

Driver	SSDC03	SSDC06	SSDC10
Input Voltage	12-48VDC	24-70VDC	
Output Current	continuous 3A, boost 4A(1.5s)	continuous 6A, boost 7.5A(1.5s)	continuous 10A, boost 15A(1.5s)
Protection	Over-voltage, under-voltage, over-temp, motor/winding shorts (phase-to-phase, phase-to-ground)		
Speed Range	Up to 3000rpm		
Filters	Digital input noise filter, Analog input noise filter, Smoothing filter, PID filter, Notch filter		
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP		
Ambient Temperature	0 to 40° C (32 to 104° F) when mounted to a suitable heatsink		
Ambient Humidity	90% Max., non-condensing		
Mass	0.25kg		
Encoder Resolution	20000 counts/rev(for AM17/23/24/34SS-N motors)		
	4096 counts/rev(for AM11/17/23/24/34RS motors)		

Technical specifications

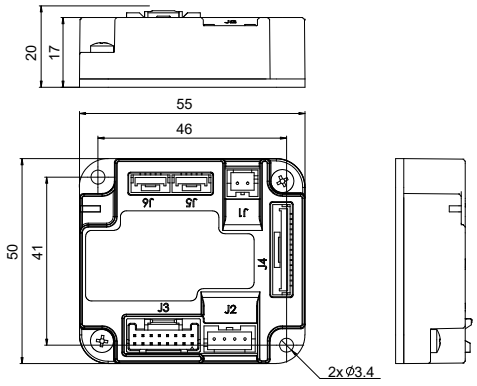
Type	RS232		EtherCAT	
Driver	SSDC**-A	SSDC**-A-H	SSDC**-ECX-H	SSDC**-ECX-J
Digital Inputs	8DI	4DI	3DI	5DI
Digital Outputs	4DO	3DO	1DO	2DO
Analog Inputs	2 analog inputs	NO	NO	1 analog inputs
Encoder Outputs	ABZ differential	NO	NO	
+5V Output	5VDC,100mA	NO	NO	5VDC,100mA
Bus Control	SCL	SCL	EtherCAT	
Counts/IO	YES	YES	NO	
PLC(Q programmer)	YES	YES	YES	

Type	RS485	CANopen	Ethernet		
Driver	SSDC**-R	SSDC**-C	SSDC**-D	SSDC**-PN	SSDC**-IP
Digital Inputs	8DI	8DI	8DI		
Digital Outputs	4DO	4DO	4DO		
Analog Inputs	2 analog inputs	2 analog inputs	2 analog inputs		
Encoder Outputs	ABZ differential	ABZ differential	ABZ differential		
+5V Output	5VDC,100mA	5VDC,100mA	5VDC,100mA		
Bus Control	Modbus/RTU SCL	CANopen	Modbus/TCP eSCL	Profinet Modbus/TCP eSCL	Ethernet/IP Modbus/TCP eSCL
Counts/IO	YES	NO	YES		
PLC(Q programmer)	YES	YES	YES		

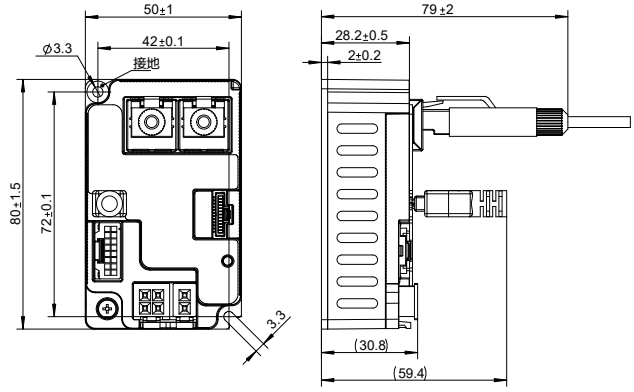
■ Driver mechanical Size

Uniit：mm

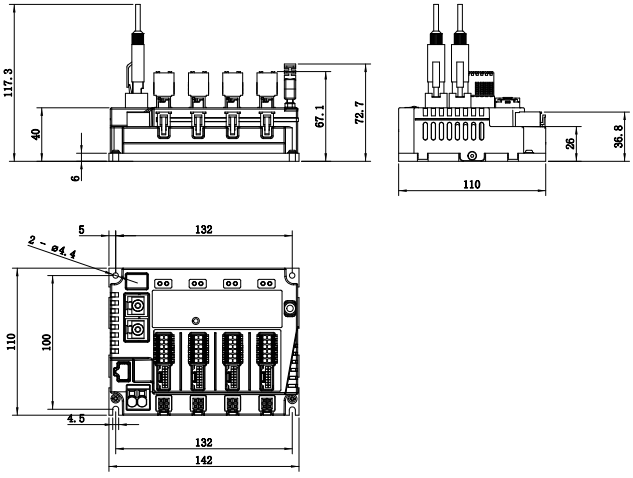
◇ SSDC03-R-mini



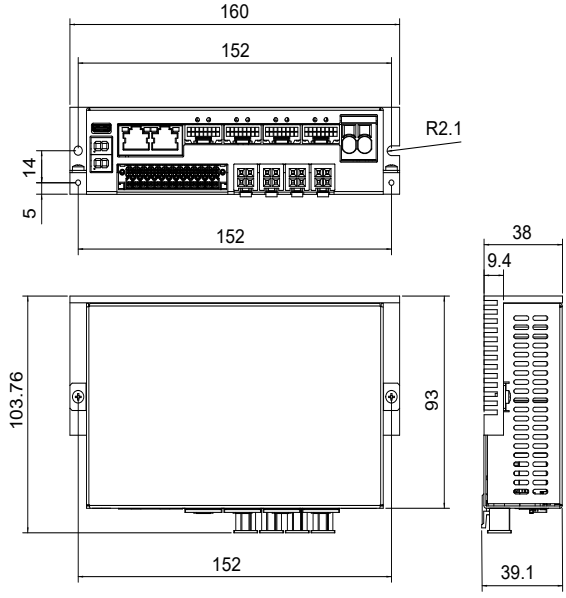
◇ SSDC06-ECX-mini



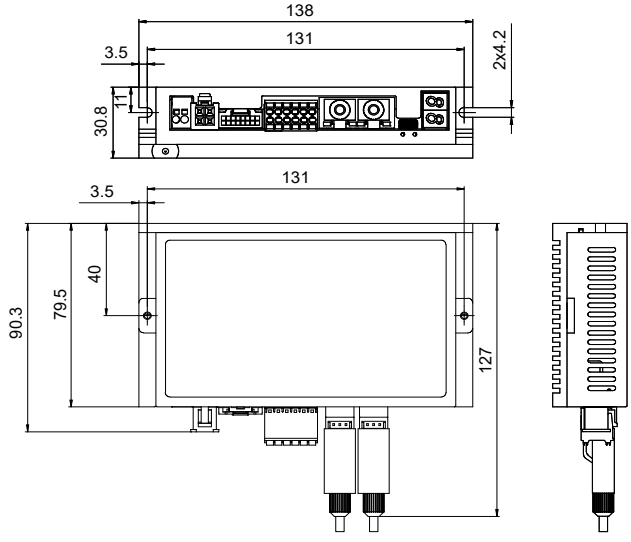
◇ SSDC-4X-ECX



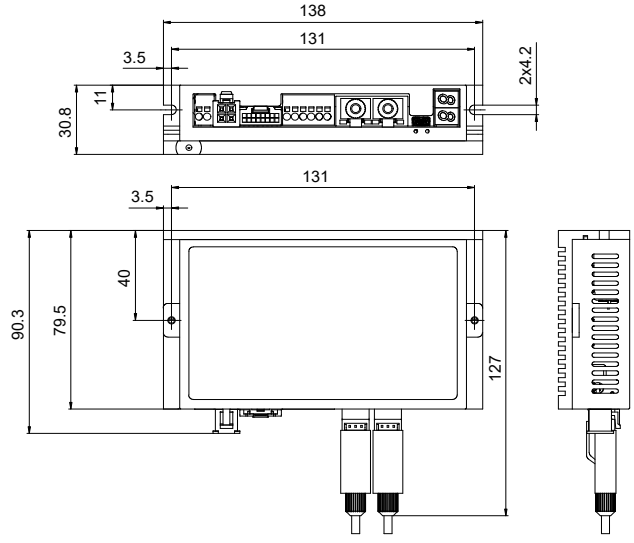
◇ SSDC-4XU-ECX



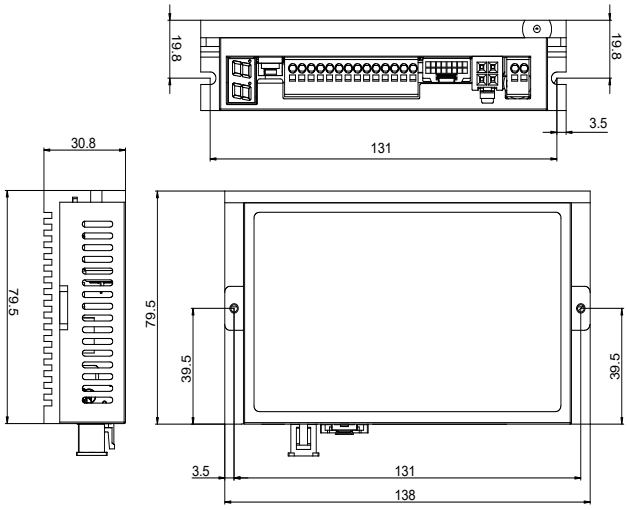
◇ SSDC06/10-ECX-J



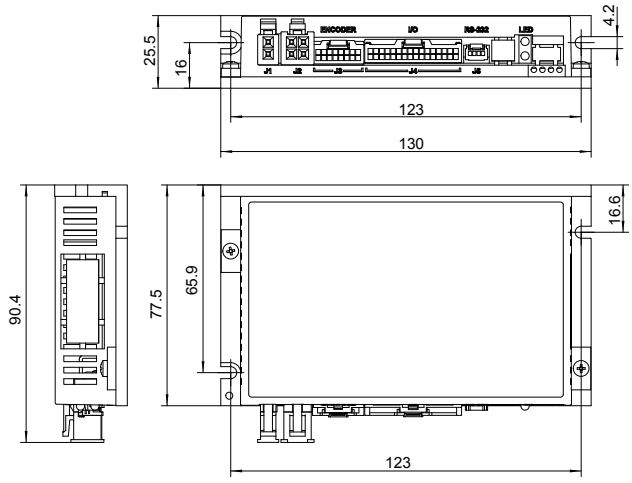
◇ SSDC06/10-ECX-H



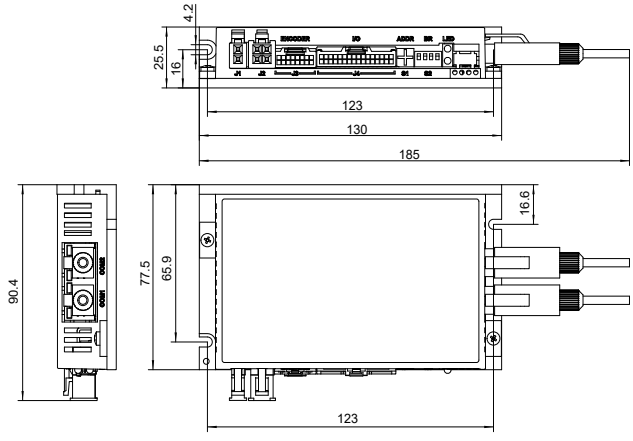
◇ SSDC06/10-A-H



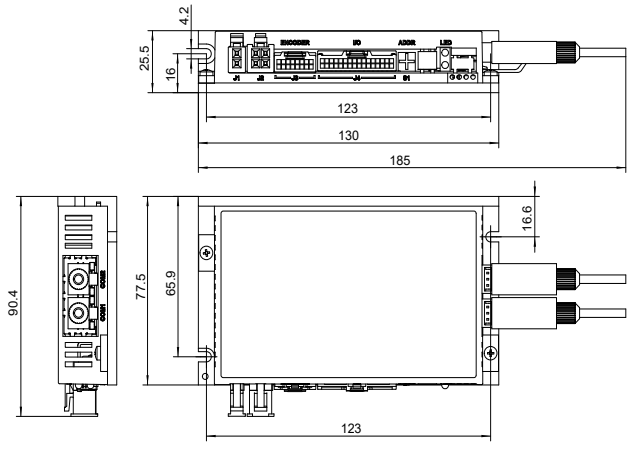
◇ SSDC03/06/10-A



◇ SSDC03/06/10-R，SSDC03/06/10-C

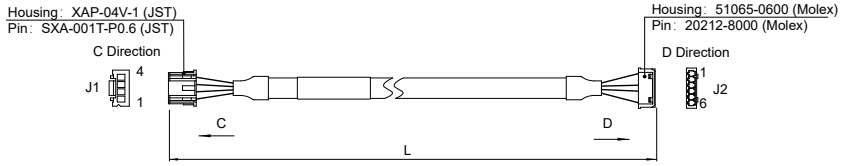


◇ SSDC03/06/10-D/IP/PN



■ Optional accessories (to be purchased separately)

◇ Motor extension cable (for AM11RS motors) (dedicated to SSDC03-R-mini Series drives)

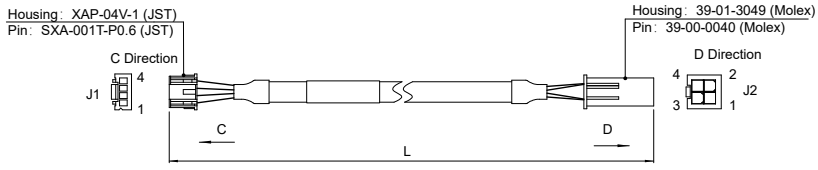


Model	Length(L)	Description
2142-0100-C05	1m	Super flexible type,5 million times
2142-0300-C05	3m	Super flexible type,5 million times
2142-0500-C05	5m	Super flexible type,5 million times
2142-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition		
Plastic shell tag number	Colour (Super flexible type)	Plastic shell tag number (J2)
1	Blue / Black (B-)	1
2	Blue (B+)	3
3	Black (A-)	4
4	Red (A+)	6

◇ Motor extension cable (for AM17RS motors) (dedicated to SSDC03-R-mini Series drives)

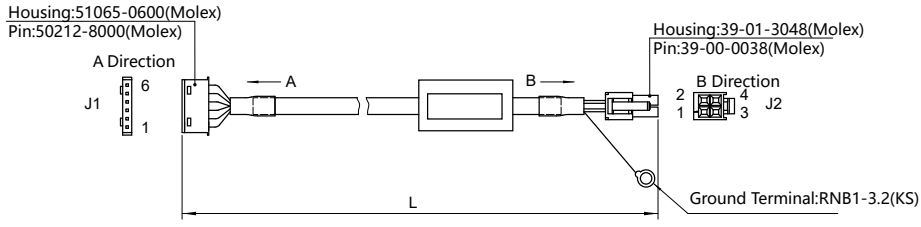


Model	Length(L)	Description
2143-0100-C05	1m	Super flexible type,5 million times
2143-0300-C05	3m	Super flexible type,5 million times
2143-0500-C05	5m	Super flexible type,5 million times
2143-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition		
Plastic shell tag number	Colour (Super flexible type)	Plastic shell tag number (J2)
1	Blue (B-)	1
2	Red (B+)	2
3	Green (A-)	3
4	Black (A+)	4

◇ Motor extension cable (For AM11RSMotor)

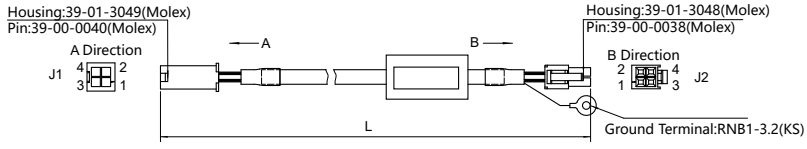


Model	Length(L)	Description
2109-100	1m	Standard Type
2109-300	3m	Standard Type
2109-500	5m	Standard Type
2109-1000	10m	Standard Type
2109-100-C05	1m	Super flexible type,5 million times
2109-300-C05	3m	Super flexible type,5 million times
2109-500-C05	5m	Super flexible type,5 million times
2109-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition			
Plastic shell tag number	Colour (Standard Type)	Colour (Super flexible type)	Plastic shell tag number (J2)
1	Blue (B-)	Blue/Black (B-)	1
3	Red (B+)	Blue (B+)	2
4	Green (A-)	Black (A-)	3
6	Black (A+)	Red (A+)	4

◇ Motor extension cable (For AM14/17/23RS motors)

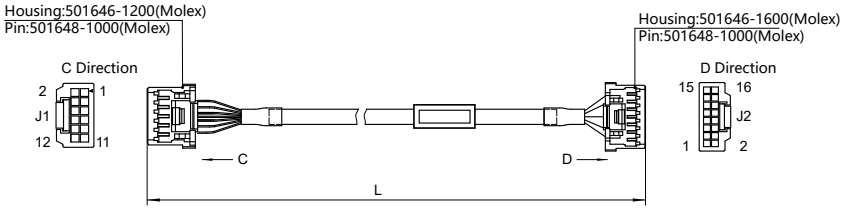


Model	Length(L)	Description
2103-100	1m	Standard Type
2103-300	3m	Standard Type
2103-500	5m	Standard Type
2103-1000	10m	Standard Type
2128-100-C05	1m	Super flexible type,5 million times
2128-300-C05	3m	Super flexible type,5 million times
2128-500-C05	5m	Super flexible type,5 million times
2128-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition			
Plastic shell tag number	Colour (Standard Type)	Colour (Super flexible type)	Plastic shell tag number (J2)
1	Blue (B-)	Blue (B-)	1
2	Red (B+)	Red (B+)	2
3	Green (A-)	Yellow/Green(A-)	3
4	Black (A+)	Yellow (A+)	4

◇ Encoders extension cable (For AM11RSMotor)

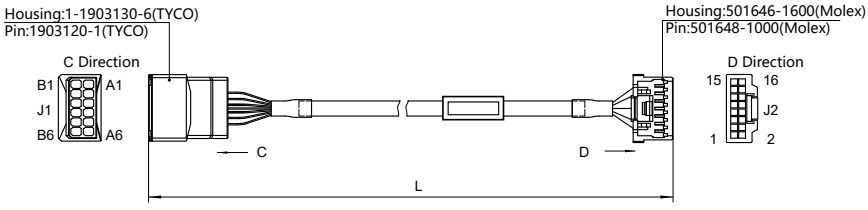


Model	Length(L)	Description
2118-100	1m	Standard Type
2118-300	3m	Standard Type
2118-500	5m	Standard Type
2118-1000	10m	Standard Type
2118-100-C05	1m	Super flexible type,5 million times
2118-300-C05	3m	Super flexible type,5 million times
2118-500-C05	5m	Super flexible type,5 million times
2118-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition		
Plastic shell tag number	Colour	Plastic shell tag number (J2)
10	Blue (A+)	1
9	Blue/Black (A−)	2
8	Green (B+)	3
7	Green/Black(B−)	4
6	Yellow (Z+)	5
5	Yellow/Black (Z−)	6
3	Red (+5V)	7
4	Black (GND)	8
12	Shielded wire	10
NC	Brown	NC
NC	Brown/Black	NC
NC	Grey	NC
NC	Grey/Black	NC
1	White (W+)	15
2	White/Black (W−)	16

◇ Encoders extension cable (For AM14/17/23RSMotor)

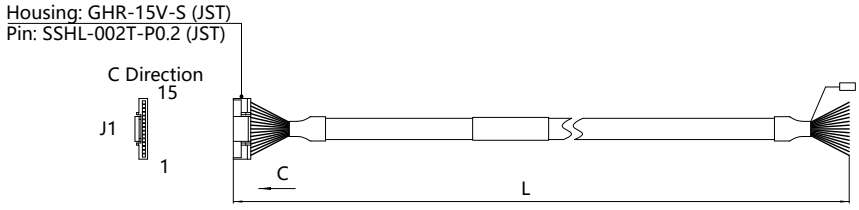


Model	Length(L)	Description
2116-100	1m	Standard Type
2116-300	3m	Standard Type
2116-500	5m	Standard Type
2116-1000	10m	Standard Type
2116-100-C05	1m	Super flexible type,5 million times
2116-300-C05	3m	Super flexible type,5 million times
2116-500-C05	5m	Super flexible type,5 million times
2116-1000-C05	10m	Super flexible type,5 million times

Note: The flexible line has a bending radius of 100mm and a stroke of 600mm. At a frequency of 60 cycles per minute, it can bend 5 million times.

Wiring Definition		
Plastic shell tag number	Colour	Plastic shell tag number (J2)
A6	Blue (A+)	1
B6	Blue/Black (A−)	2
A5	Green (B+)	3
B5	Green/Black(B−)	4
A4	Yellow (Z+)	5
B4	Yellow/Black (Z−)	6
A3	Red (+5V)	7
B3	Black (GND)	8
A1	Shielded wire	10
NC	Brown	NC
NC	Brown/Black	NC
NC	Grey	NC
NC	Grey/Black	NC
A2	White (W+)	15
B2	White/Black (W−)	16

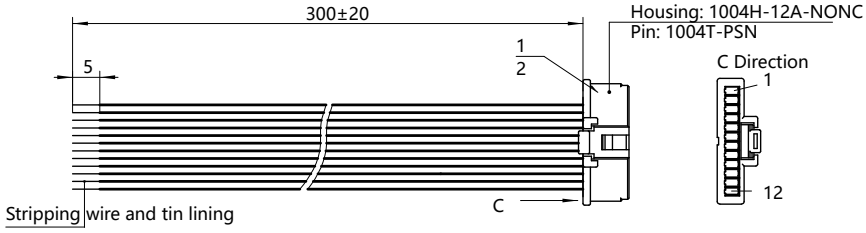
◇ Technical IO cable (Dedicated to SSDC03-R-mini Series drives)



Model	Length(L)
1147-0100	1m
1147-0200	2m
1147-0300	3m

Wiring Definition			
Plastic shell tag number	Colour	Plastic shell tag number	Colour
1	Black (X1+)	9	Grey (XCOM)
2	Brown (X1-)	10	White (Y1+)
3	Red (X2+)	11	Pink (Y1-)
4	Orange (X2-)	12	Black / White (Y2+)
5	Yellow (X3)	13	Brown / White (Y2-)
6	Green (X4)	14	Red / White (Y3+)
7	Blue (X5)	15	Blue / White (Y3-)
8	Purple (X6)	16	Green / White (Cut)

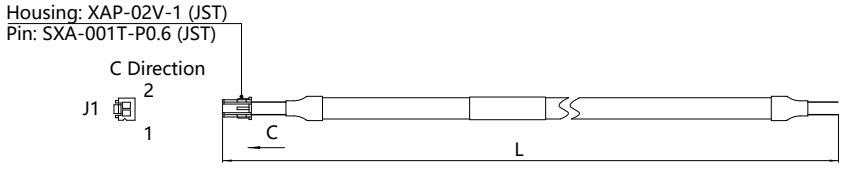
◇ Technical IO cable (Only for SSDC06-ECX-mini Series Driver)



Model	Length(L)
1143-0030	0.3m

Wiring Definition			
Plastic shell tag number	Colour	Plastic shell tag number	Colour
1	Purple (X1+)	7	Green/White (XCOM)
2	Orange (X1-)	8	Green (Y1)
3	White (X2+)	9	Blue/White (Y2)
4	Brown (X2-)	10	Blue (YCOM)
5	Yellow (X3)	11	Red (V+)
6	Grey (X4)	12	Black (V-)

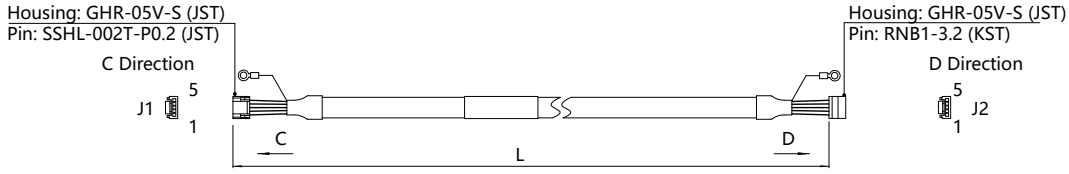
◇ Power line (Dedicated to SSDC03-R-mini Series drives)



Model	Length(L)
1148-0100	1m
1148-0200	2m
1148-0300	3m

Wiring Definition			
Plastic shell tag number	Colour	Plastic shell tag number	Colour
1	Brown	2	Blue

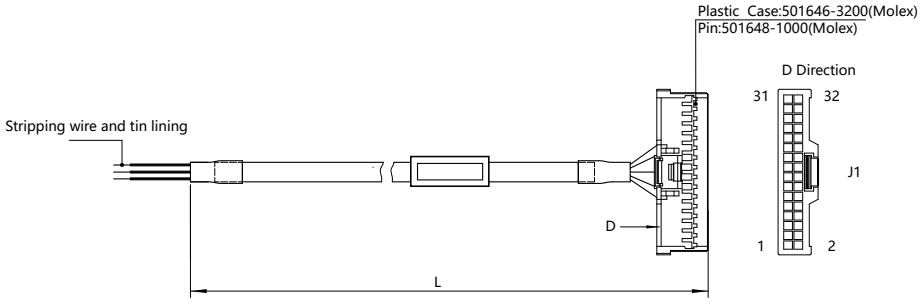
◇ Communication Cable (Dedicated to SSDC03−R−mini Series drives)



Model	Length(L)	Description
2144−0100	1m	Shielded wire
2144−0300	3m	Shielded wire
2144−0500	5m	Shielded wire
2144−1000	10m	Shielded wire

Wiring Definition		
Plastic shell tag number	Colour	Plastic shell tag number (J2)
1	Blue (RX+)	1
2	Blue/Black (RX−)	2
3	Yellow (TX+)	3
4	Yellow/Black (TX−)	4
5	Black (GND)	5
Cut	Red	Cut
Cut	Green	Cut
Cut	Green/Black	Cut

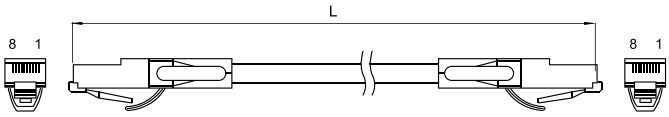
◇ Technical IO cable



Model	Length(L)	Description
1117−100	1m	Shielded wire
1117−200	2m	Shielded wire

Wiring Definition			
Plastic shell tag number	Colour	Plastic shell tag number	Colour
1	Blue/White(X1+)	17	no connect
2	Blue/Black(X1−)	18	no connect
3	Green/White (X2+)	19	Brown/White (Y1+)
4	Green/Black (X2−)	20	Brown/Black (Y1−)
5	Red (X3+)	21	Grey/White (Y2+)
6	Orange (X3−)	22	Grey/Black (Y2−)
7	Blue (X4+)	23	Purple/White (Y3+)
8	Purple (X4−)	24	Purple/Black (Y3−)
9	Yellow (X5)	25	Pink/Red (Y4+)
10	Green (X6)	26	Yellow/Green (Y4−)
11	Brown (X7)	27	Red/White (ENC A+)
12	Grey (X8)	28	Red/Black (ENC A−)
13	Shielded wire	29	Orange/White (ENC B+)
14	White (XCOM)	30	Orange/Black (ENC B−)
15	Black (GND)	21	Yellow/White (ENC Z+)
16	no Connect	32	Yellow/Black (ENC Z−)

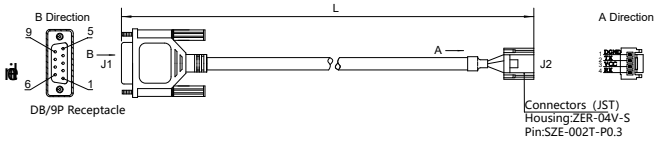
◇ Network cable



Mode	Length(L)	Description
2012−030	0.3m	General Type
2012−300	3m	General Type
2013−030	0.3m	Shielded Type
2013−300	3m	Shielded Type

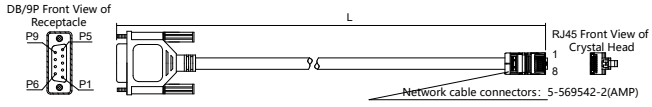
◇ Configuration communication cable for software configuration

■ SSDC-A configuration communication



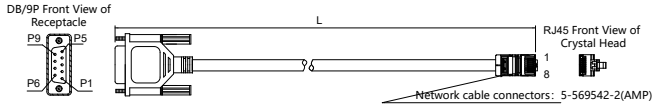
Mode	Length(L)	Description
2101−150	1.5m	General Type

■ SSDC-R configuration communication



Mode	Length(L)	Description
2102−150	1.5m	General Type

■ SSDC-C configuration communication



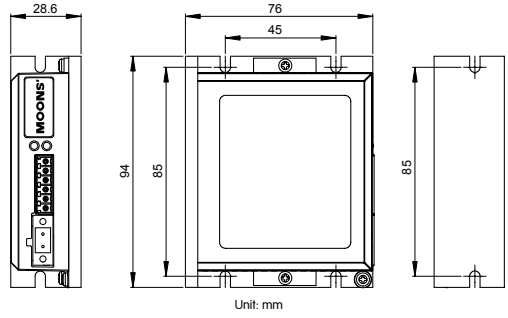
Mode	Length(L)	Description
2019−150	1.5m	General Type

◇ Egeneration Clamp

P/N：RC880

When using a regulated power supply you may encounter a problem with regeneration. The kinetic energy caused by regeneration is transferred back to the power supply. This can trip the over-voltage protection of a switching power supply, causing it to shut down.

MOONS' offers the RC880 "regeneration clamp"to solve this problem. If in doubt, use an RC880 for your first installation. If the "Regen" LED on the RC880 never flashes, you don't need the clamp.



◇ USB Converter

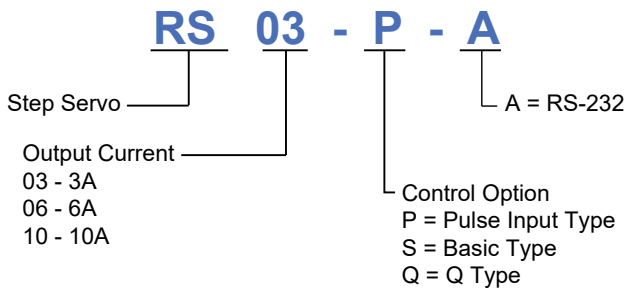
Model: MS-USB-RS232-01
Description: USB-RS232 Converter

Model: MS-USB-RS485-01
Description: USB-RS485 Converter

Model: MS-USB-CAN-01
Description: USB-CAN Converter

RS Series（Paired with AM Series motors）

■ Ordering Model

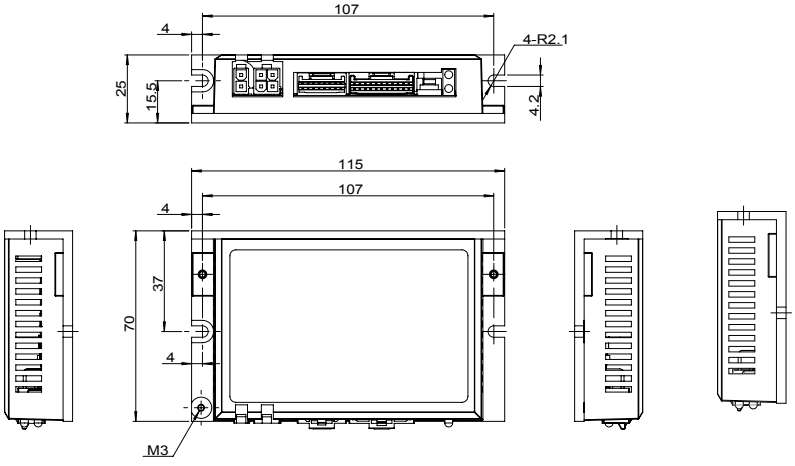


DriverModel	Match Motor	Control
RS03-P-A	AM11RS2DMA	P Type Pulse Inputs Type RS-232 software debugging 4 Digital Inputs 3 Digital Outputs Encoders Outputs
	AM17RS2DMA	
RS06-P-A	AM23RS2DMA	
RS03-S-A	AM11RS2DMA	S Type Basic Type RS-232 Comm 4 Digital Inputs 3 Digital Outputs
	AM17RS2DMA	
RS06-S-A	AM23RS2DMA	
RS03-Q-A	AM11RS2DMA	Q Type Programmable Type RS-232 Comm 4 Digital Inputs 3 Digital Outputs
	AM17RS2DMA	
RS06-Q-A	AM23RS2DMA	

■ Driver mechanical Size

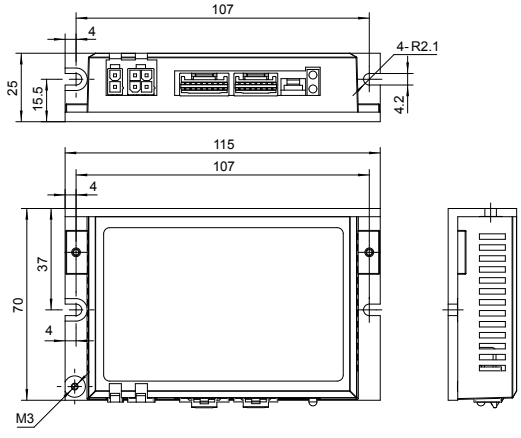
Uniit：mm

◇ RS03/06/10-P



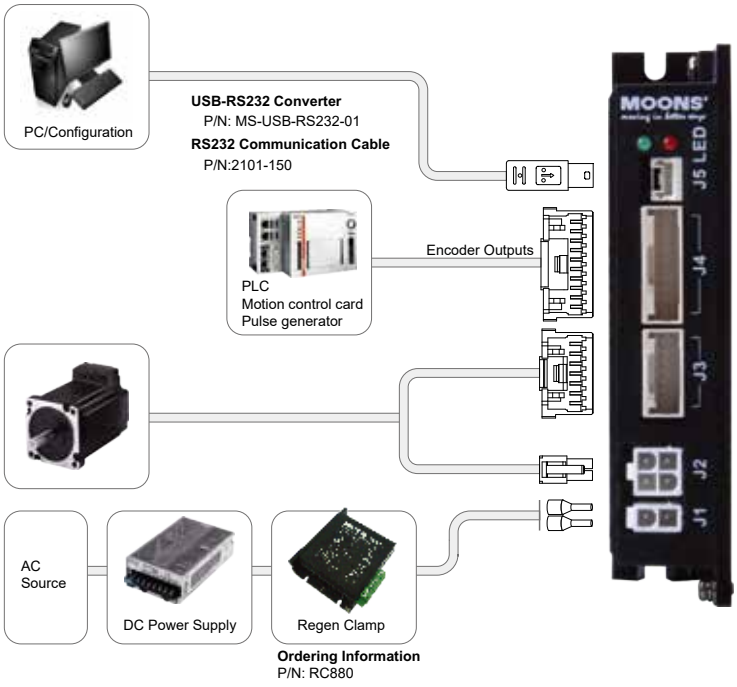
Model		
RS03-P-A	RS06-P-A	RS10-P-A

◇ RS03/06/10-S/Q



Model		
RS03-S-A	RS06-S-A	RS10-S-A
RS03-Q-A	RS06-Q-A	RS10-Q-A

System Configuration

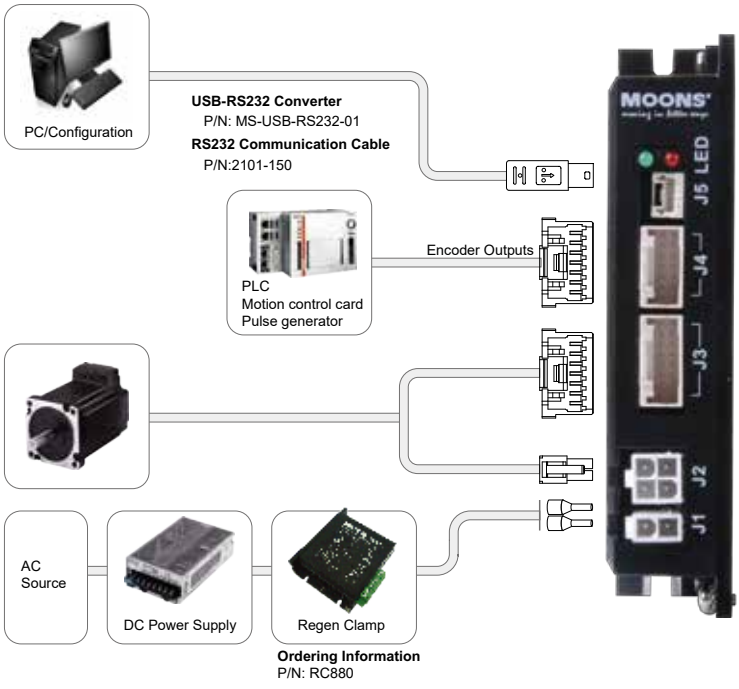


◇ -P Software Setting Pulse Input Type

Controlled via pulse generator.

Main Features

- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Encoder Outputs

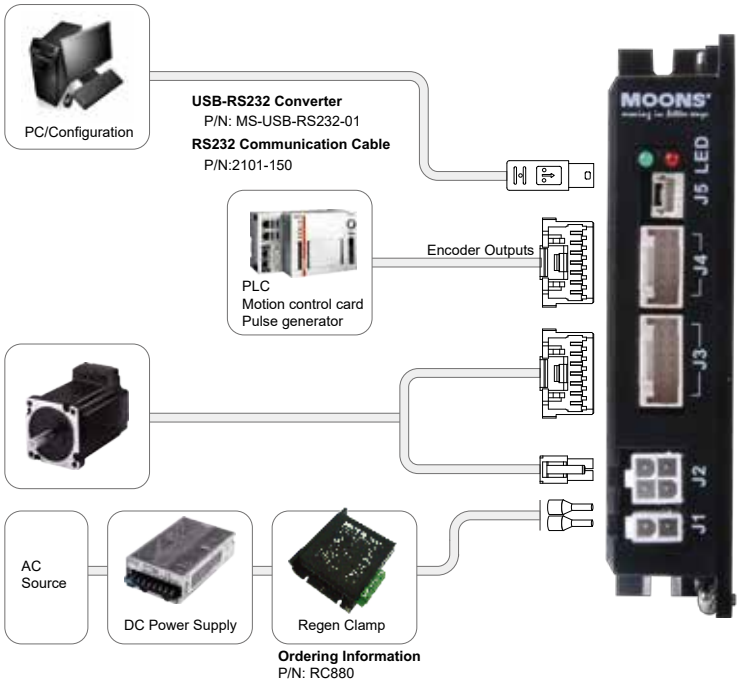


◇ -S Basic Type with Serial Communication

Controlled via pulse signals, or MOONS' SCL streaming series commands.

Main Features

- Pulse control
- Host real time control using SCL via RS-232



◇ -Q Built-in Programmable Motion Controller

Run stand-alone with sophisticated and functional programs. Commands for controlling motion, inputs & outputs, drive configuration and status, as well as math operations, register manipulation, and multi-tasking.

Main Features

- Stand-alone operation plus Serial host control
- Math operations
- Register manipulation
- Multi-tasking
- With all features in S type

Drive Specifications

Power Amplifier	
Amplifier Type	Dual H-Bridge, 4 Quadrant
Current Control	4 state PWM at 20 KHz
Output Current	RS03: Continuous Current 3A max, Boost Current 4.0A max (1.5s), current limitation auto set-up by attached motor
	RS06: Continuous Current 6A max, Boost Current 7.5A max (1.5s), current limitation auto set-up by attached motor
	RS10: Continuous Current 10A max, Boost Current 12A max (1.5s), current limitation auto set-up by attached motor
Power Supply	External nominal 24 - 70 volt DC power supply required, Absolute maximum input voltage range 18 - 75 VDC
Protection	Over-voltage, under-voltage, over-temp, motor/winding shorts (phase-to-phase, phase-to-ground)
Controller	
Electronic Gearing	Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev
Filters	Digital input noise filter, Smoothing filter, PID filter, Notch filter
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP
Modes of Operation	P type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature) S type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature); Torque Mode, Velocity Mode, SCL Mode Q type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature); Torque Mode, Velocity Mode, SCL Mode, Q Programming
Digital Inputs	P/S/Q type: X1/STEP, X2/DIR, Optically isolated, differential, 5-24VDC; Minimum pulse width = 250 ns, Maximum pulse frequency = 2 MHz; X3,X4:optically isolated, single-ended, sinking or souring, 5-24VDC, minimum pulse width 50μs, maximum pulse frequency 10KHz;
Digital Outputs	P/S/Q type: Y1/Alarm, Y2/In Position, Y3/Brake; Optically isolated, 30V/100 mA max
Encoder Outputs	P type: Differential encoder outputs (AOUT+/- BOUT+/- ZOUT+/-), 26C31 line Driver, 20 mA sink or source max
Communication	RS-232
Physical	
Ambient Temperature	0 to 40°C (32 to 104°F) when mounted to a suitable heatsink
Ambient Humdity	90% Max., non-condensing
Mass	Approx 0.2 Kg

Standard Accessories (Within the package)

P/N	Catagory	Technical Specification
1103-200	Cable	Power Supply Cable
2101-150	Cable	RS-232 Communication Cable

Optional Accessories (Sold separately)

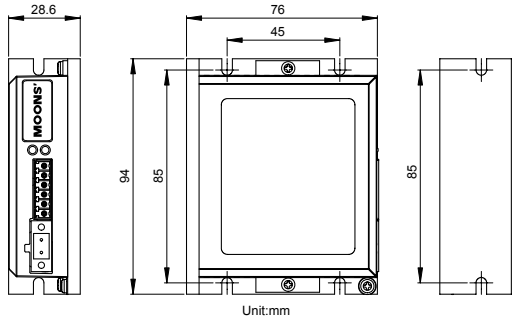
P/N	Catagory	Technical Specification
RC880	Regenaration Clamp	80VDC Max. 50W
MS-USB-RS-232-01	USB Converter	USB-RS-232
1108-□□□	Cable	RS-S/Q Standard I/O Cable, Shield
1115-□□□	Cable	RS-P Standard I/O Cable, Shield
2103-□□□	Cable	Motor Extension Cable for AM17/23/24/34RS motor
2109-□□□	Cable	Motor Extension Cable for AM11RS motor
2116-□□□	Cable	Encoder Extension Cable for AM17/23/24/34RS motor
2118-□□□	Cable	Encoder Extension Cable for AM11RS motor
2136-□□□		Motor Extension Cable for AM08RS motor

◇ Regeneration Clamp (Unit:mm)

P/N: RC880

When using regulated power supply you may encounter a problem with regeneration. The kinetic energy caused by regeneration is transferred back to the power supply. This can trip the overvoltage protection of a switching power supply, causing it to shut down.

MOONS' offer the RC880 “regeneration clamp” to solve this problem. If in doubt, use an RC880 for your first installation. If the “regen” LED on the RC880 never flashes, you don’t need the clamp.

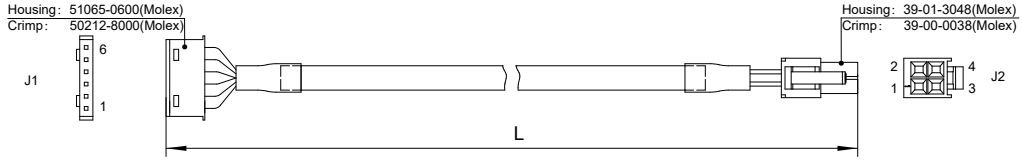


◇ USB Converter

Model: MS-USB-RS-232-01

Description: USB-RS-232 converter

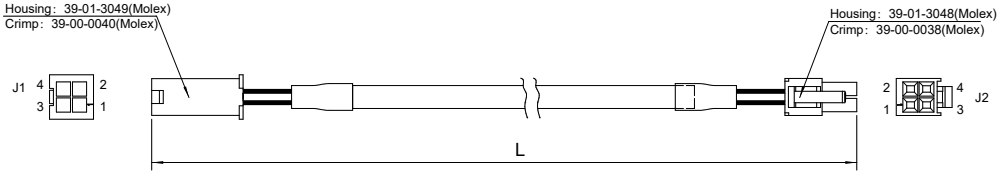
◇ Motor Extension Cable for AM11RS motor



Model	Length (L)
2109-100	1m
2109-300	3m
2109-500	5m
2109-1000	10m

Wiring Definition		
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)
1	Blue(B-)	1
3	Red(B+)	2
4	Green(A-)	3
6	Black(A+)	4

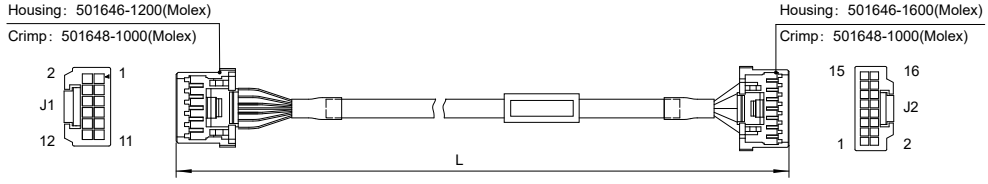
◇ Motor extension cable(For AM14/17/23RSMotor)



Model	Length (L)
2103-100	1m
2103-300	3m
2103-500	5m
2103-1000	10m

Wiring Definition		
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)
1	Blue(B-)	1
2	Red(B+)	2
3	Green(A-)	3
4	Black(A+)	4

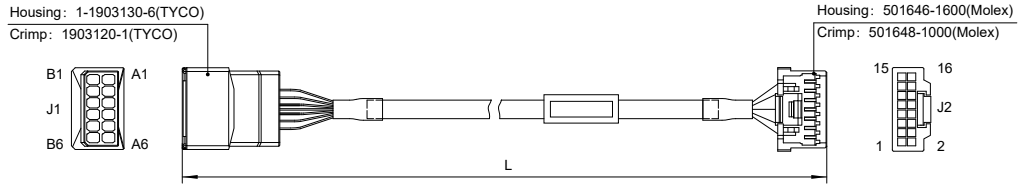
◇ Encoders extension cable(For AM11RSMotor)



Model	Length (L)
2118-100	1m
2118-300	3m
2118-500	5m
2118-1000	10m

Wiring Definition					
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)	Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)
10	Blue(A+)	1		Brown(U+)	
9	Blue/Black(A-)	2		Brown/Black(U-)	
8	Green(B+)	3		Grey(V+)	
7	Green/Black(B-)	4		Grey/Black(V-)	
6	Yellow(Z+)	5	1	White(W+)	15
5	Yellow/Black(Z-)	6	2	White/Black(W-)	16
3	Red(+5V)	7	12	Shielded wire	10
4	Black(GND)	8			

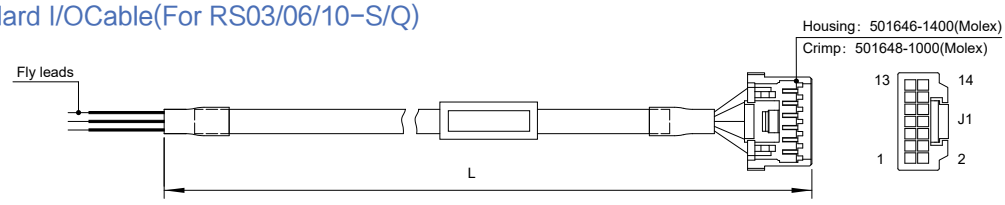
◇ Encoders extension cable(For AM14/17/23RSMotor)



Model	Length (L)
2116-100	1m
2116-300	3m
2116-500	5m
2116-1000	10m

Wiring Definition					
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)	Plastic shell tag number(J1)	Colour	Plastic shell tag number(J2)
A6	Blue(A+)	1		Brown(U+)	
B6	Blue/Black(A-)	2		Brown/Black(U-)	
A5	Green(B+)	3		Grey(V+)	
B5	Green/Black(B-)	4		Grey/Black(V-)	
A4	Yellow(Z+)	5	A2	White(W+)	15
B4	Yellow/Black(Z-)	6	B2	White/Black(W-)	16
A3	Red(+5V)	7	A1	Shielded wire	10
B3	Black(GND)	8			

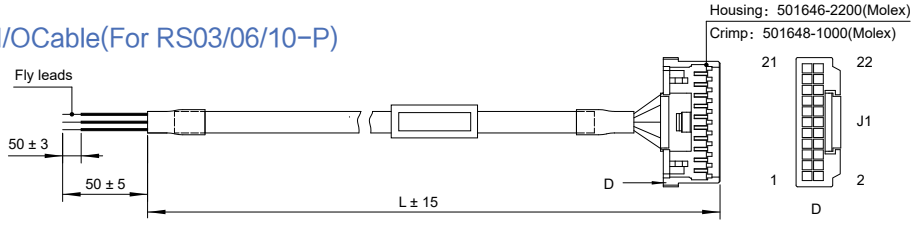
◇ Standard I/OCable(For RS03/06/10-S/Q)



Model	Length (L)
1108-030	30cm
1108-100	1m
1108-200	2m

Wiring Definition			
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J1)	Colour
1	Blue(STEP+)	8	Black(XCOM)
2	Blue/Black(STEP-)	9	Brown(Y1+)
3	Green(DIR+)	10	Brown/Black(Y1-)
4	Green/Black(DIR-)	11	Grey(Y2+)
5	Yellow(X3/EN)	12	Grey/Black(Y2-)
6	Yellow/Black(X4/AR)	13	White(Y3+)
7	Shielded wire	14	White/Black(Y3-)

◇ Standard I/OCable(For RS03/06/10-P)



Model	Length (L)
1115-030	30cm
1115-100	1m
1115-200	2m

Wiring Definition			
Plastic shell tag number(J1)	Colour	Plastic shell tag number(J1)	Colour
1	Blue/White(STEP+)	12	Grey/Black(Y2-)
2	Blue/Black(STEP-)	13	Purple/White(Y3+)
3	Green/White(DIR+)	14	Purple/Black(Y3-)
4	Green/Black(DIR-)	15	空
5	Purple(X3)	16	Black(GND)
6	Blue(X4)	17	Red/White(AOUT+)
7	Shielded wire	18	Red/Black(AOUT-)
8	Brown(XCOM)	19	Orange/White(BOUT+)
9	Brown/White(Y1+)	20	Orange/Black(BOUT-)
10	Brown/Black(Y1-)	21	Yellow/White(ZOUT+)
11	Grey/White(Y2+)	22	Yellow/Black(ZOUT-)

How To Get Samples Quickly

If you require a specific configuration, and wish for our engineering department to provide samples that meet your critical parameters, please fill out the application data sheet below and sent to PBC&MOONS' .

(E-mail : info@moons.com.cn)

Customer Info.

Customer: _____ Contact Info.: _____

Project No.: _____ Telephone: _____

Project Info.

Products Category : ☐ Linear Step Motors ☐ Linear Slides ☐ Stepper Drive

Background: ☐ New Design ,Competitor: _____ ☐ Substitution Project ,Current State: _____

Quantity of samples: _____ EAU: _____ Pain: _____

Expected Delivery Time: _____ Target Price: _____ USD/EA

Design Info.

Installation: ☐ Horizontal ☐ Vertical

Driving Condition: Voltage : _____ V Current : _____ A

Thrust Force: _____ N Working Speed: _____ mm/s

Stroke: _____ mm Repeatability: ± _____ mm

Working Frequency: _____ cycles per hour, _____ hours per day.

Additional Options : ☐ Add Encoder ☐ Add Brake ☐ No additional

Environment : ☐ Indoor(Normal) ☐ Indoor(Dust-free) ☐ Medium or Heavy Dust ☐ Sticky Substance

☐ High Humidity ☐ Salt Spray ☐ High Temp. _____ ℃ ☐ Low Temp. _____℃

☐ Vacuum ☐ Others: _____

Industry

☐ Factory Automation ☐ Biochemical Analysis ☐ Medical Science ☐ 3D Printer ☐ Automatic Vending

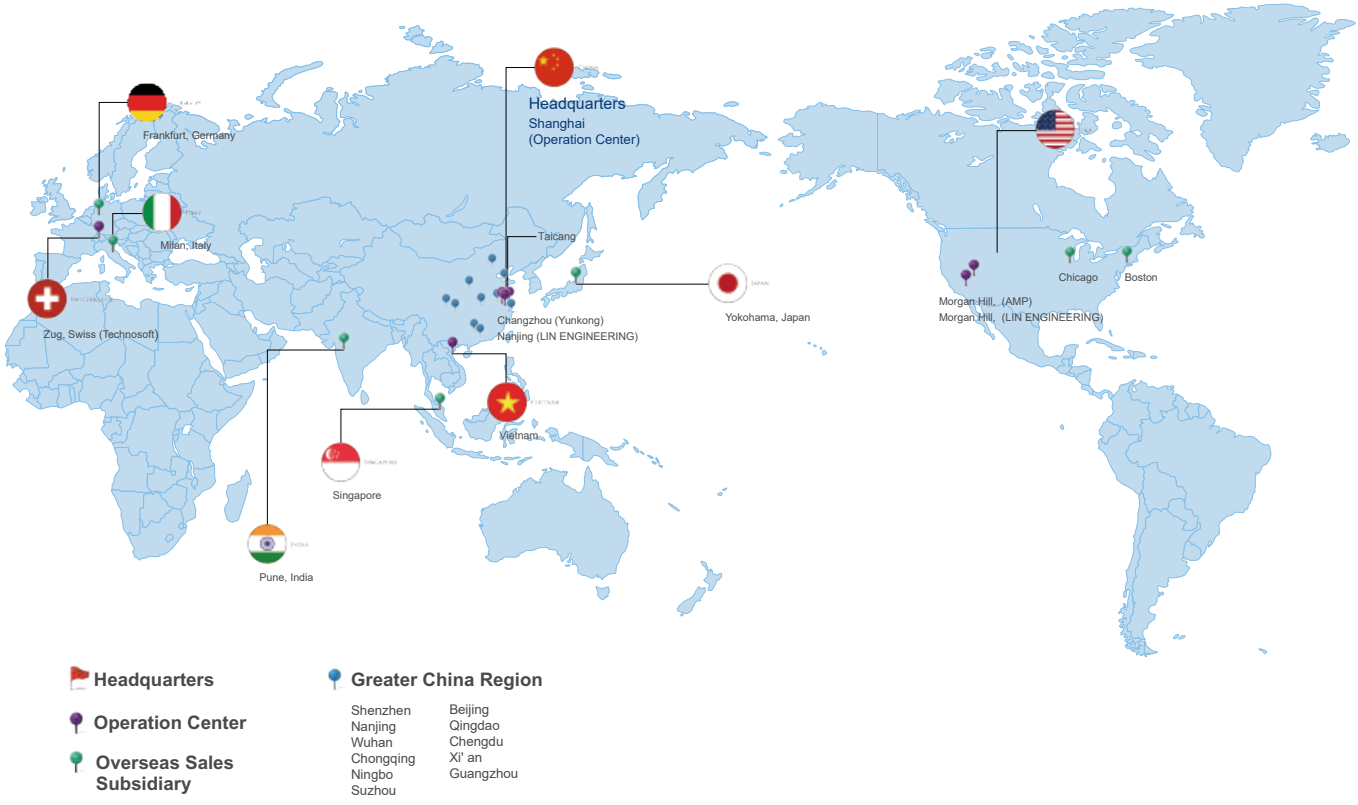
☐ Semiconductor Mfg. ☐ Lithium Battery Mfg. ☐ Photovoltaic Mfg. ☐ Electron Mfg. ☐ Measuring Instrument

☐ Coordinate Robot ☐ Packaging Equipment ☐ Others: _____

Application Description

(Please describe your application so we can ensure the best possible solution.)

Worldwide Service Map



MOONS' Business Philosophies

• Customer satisfaction

MOONS' aims to enhance customer satisfaction through the provision development of innovative solutions, manufacture of high quality products, on-time delivery and outstanding customer support.

• Employee satisfaction

MOONS' values and respects our employees' input and encourages them to grow together with the company. We have been working to develop tools and trainings to build a thriving culture of excellence internally to support the future growth of our employees and the company.

• Partnership

MOONS' strongly believes in a true integrated partnership between all partners in business including customers, distributors and all these in supply chain. As a result of this philosophy, we endeavor to provide the best value contribution to all partners, which can help our partners improve their competiveness to achieve the win-win situation.

MOONS' Headquarter

Shanghai
168 Mingjia Road, Minhang District,
Shanghai 201107,P.R. China
Tel: +86 (0)21 52634688
Fax:+86 (0)21 52634098

MOONS' Taicang
No. 18 Yingang Rd, Fuqiao Town,
Taicang City
Jiangsu Province, 215434, P.R. China
Tel: +86 (0)512 80601118
Fax:+86 (0)512 80606808

Domestic Sales Offices

Shenzhen
Room 3901,39/F Building A,Zhongguan
Times Square,No 4168 Liuxian Avenue,
Nanshan District,
Shenzhen 518000 P.R. China
Tel: +86 (0)755 25472080
Fax:+86 (0)755 25472081

Beijing
Room 1206,Jing Liang Mansion, No.16
Middle Road of East 3rd Ring, Chaoyang
District, Beijing 100022, P.R. China
Tel: +86 (0)10 87661889
Fax:+86 (0)10 87661880

Nanjing
Room 1101-1102, Building 2, New Town
Development Center, No.126 Tianyuan
Middle Road, Jiangning District,
Nanjing 211106, P.R. China
Tel: +86 (0)25 52785841
Fax:+86 (0)25 52785485

Qingdao
Room1913,Scientific and Technological
Innovation Builing,Floor19,
No.171,ShanDong Road,Shibei District,
Qingdao 266033, P.R. China
Tel: +86 (0)532 80969935
Fax:+86 (0)532 80919938

Wuhan
Room 3001, World Trade Tower,
686 Jiefang Avenue, Jianghan District,
Wuhan 430022, P.R. China
Tel: +86 (0)27 85448742
Fax:+86 (0)27 85448355

Chengdu
Rm. 3907, Maoye Plaza, No.19,
Dongyu Street, Jinjiang Distrit,
Chengdu 610066, P.R. China
Tel: +86 (0)28 85268102
Fax:+86 (0)28 85268103

Xi' an
Room 1006, Tower D, Wangzuo
International City, 1 Tangyan Road,
Yanta District, Xi' an 710065, P.R. China
Tel: +86 (0)29 81870400
Fax:+86 (0)29 81870340

Ningbo
Room 309, Tower B, Taifu Plaza,
565 Jiangjia Road,Jiangdong District,
Ningbo 315040, P.R. China
Tel: +86 (0)574 87052739
Fax:+86 (0)574 87052365

Guangzhou
Room 4006, Tower B, China Shine Plaza,
No.9 Linhe Xi Road, Tianhe District,
Guangzhou 510610, P.R. China
Tel: +86 (0)20 38010153
Fax:+86 (0)20 38103661

Chongqing
Rm. 2108, South yuanzhu Buliding 20,
No.18 Fuquan Rd. , Jiangbei District,
Chongqing 400000, P.R. China.
Tel: +86 (0)23 67601782
Fax:+86 (0)23 67085997

Suzhou
Building 4, Huilin Square, 758 South Ring
East Road, Gusu District, Suzhou
Room 1103-1105, North Building,
Suzhou 215000 P.R. China.
Tel: 400-820-9661

MOONS' International Trading (Shanghai) Co., Ltd.

4/F, Building 30, No. 69 Guiqing Road,
Caohejin Hi-Tech Park, Xuhui District,
Shanghai 200233, P.R. China
Tel: +86 (0)21 64952755
Fax:+86 (0)21 64859949

Changzhou Yunkong Electronic Co., Ltd.

BLDC.2, Henglin Technology Innovation
Center No. 88 East Changhong Road Wujin
District, Changzhou 213100, P.R. China
Tel: +86 (0)519 88700355
Fax:+86 (0)519 88700229

Lin Engineering At Nanjing

No. 9 Science and Technology Innovation
Avenue, Jiangbei New Area, Nanjing
Intelligent F1- F3, Building C14,
Manufacturing Industrial Park,
Nanjing 210032, P.R. China
Tel: +86 (0)25 58844665

North America

MOONS' INDUSTRIES (AMERICA), INC.
Head Office
1113 North Prospect Avenue, Itasca,
IL 60143 USA
Tel: +1 630 8335940
Fax:+1 630 8335946

Boston Office
36 Cordage Park Circle, Suite 310
Plymouth, MA 02360 USA

APPLIED MOTION PRODUCTS, INC.
18645 Madrone Parkway.Morgan Hill,
CA 95037 USA
Tel: +1 831 7616555
+1 800 5251609

LIN ENGINEERING, INC.
16245 Vineyard Blvd., Morgan Hill, CA 95037
Tel: +1 408 9190200
Fax:+1 408 9190201

Europe

MOONS' INDUSTRIES (EUROPE) S.R.L.
Via Torri Bianche n.1 20871
Vimercate(MB) Italy
Tel: +39 (0)39 6260521
Fax:+39 (0)39 9631409

AMP & MOONS' AUTOMATION
(GERMANY) GMBH
Börsenstraße 15
60313 Frankfurt am Main Germany

TECHNOSOFT S.A.
Technosoft (Suisse) SA
Avenue des Alpes 20, 2000 Neuchâtel,
Switzerland.
Tel: +41 (0)32 7325500
Fax:+41 (0)32 7325504

TECHNOSOFT International
Strada Paduretu nr. 50, Sector 6 061992
Bucuresti ROMANIA
Tel: +40 (0)21 4259095
Fax:+40 (0)21 4259097

Singapore

MOONS' INDUSTRIES (SOUTH-EAST
ASIA) PTE. LTD.
33 Ubi Avenue 3 #08-23
Vertex Singapore 408868
Tel: +65 66341198
Fax:+65 66341138

Japan

MOONS' INDUSTRIES JAPAN CO., LTD.
Room 602, 6F, Shin Yokohama Koushin
Building, 2-12-1, Shin-Yokohama,
Kohoku-ku, Yokohama,Kanagawa,
222-0033, Japan
Tel: +81 (0)45 4755788
Fax:+81 (0)45 4755787

India

MOONS' INTELLIGENT MOTION SYSTEM
INDIA PVT. LTD.
Rm. 908, 9th Floor, Amar Business Park,
Tal. Haveli, Baner, Pune,India, 411045
Tel: +91 8698390002

Vietnam.

MOONS' INDUSTRIES (VIETNAM) CO., LTD.
Addr: Factory C1&D1, Lot IN3-11*A, VSIP
Hai Phong Industrial Park in Dinh Vu – Cat
Hai Economic Zone, Lap Le Commune,
Thuy Nguyen District, Hai Phong City, Vietnam
Tel: +84 (0)225 3533 168

http:// www.moonsindustries.com
E-mail: info@moons.com.cn

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NO.32533010000299EN

• All specifications and technical parameters of the products provided in this catalog are for reference only, and are subject to change without notice. For details, please contact our sales team.

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