Oriental motor

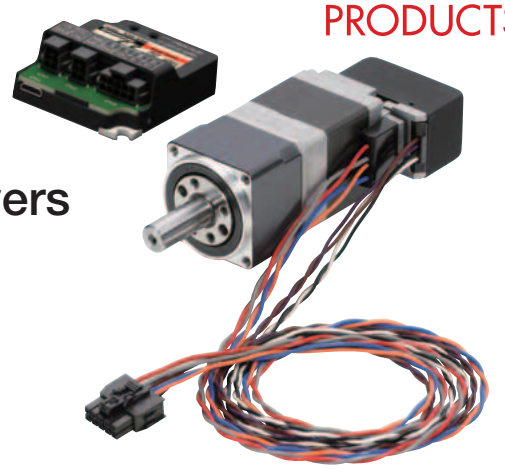
NEW PRODUCTS

αSTEP

AZ Series DC Input

Compact Drivers

Direct-coupled Motors for Compact Drivers



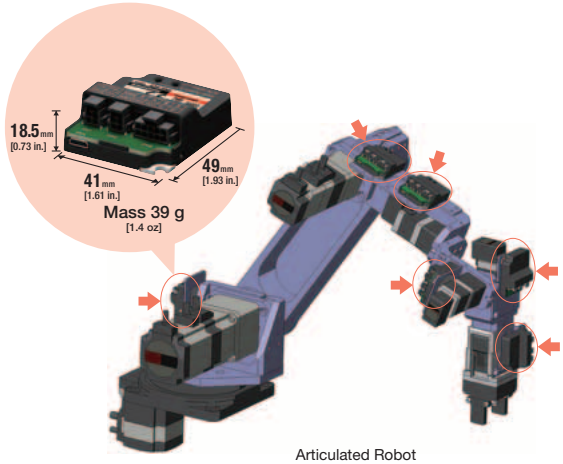
These compact and lightweight drivers can be controlled via RS-485 communication. They can be combined with **AZ** Series motors and actuators equipped with **AZ** Series. Direct-coupled motors for compact drivers that can be used without a connection cable, are also available.

Features

Palm-sized Compact and Lightweight Drivers that are Compatible with RS-485 Communication

Expanded Freedom of Design

The compact design allows for installation in tight spots. Its light weight of 39 g (1.4 oz) also decreases load torque and inertia, allowing for expanded freedom of mechanical and control cabinet design.
The connection cable can also be shortened by installing the driver near the motor, contributing to lighter and less expensive equipment, as well as a decrease in complicated wiring work.



Articulated Robot

Can be Combined with **AZ** Series Motors and Actuators Equipped with **AZ** Series

AZ Series Motors and Actuators Equipped with **AZ** Series

The following products are representative examples.

AZ Series

Hollow Rotary Actuators **DGII** Series

Electric Linear Slides **EAS** Series

Electric Linear Cylinders **EAC** Series

Compact Electric Linear Cylinders **DR** Series / **DRS2** Series

Electric Grippers **EH** Series

Rack-and-pinion Systems **L** Series

Connection Cables → Page 8

LC002Z

LC003Z2

AZ Series Compact Drivers

AZ Series Direct-coupled Motors for Compact Drivers

Improved Routing Freedom | Compact and Lightweight

NEW

Standard Type
Frame Size 28 mm (1.10 in.) / 42 mm (1.65 in.)
Electromagnetic Brake Type
42 mm (1.65 in.)

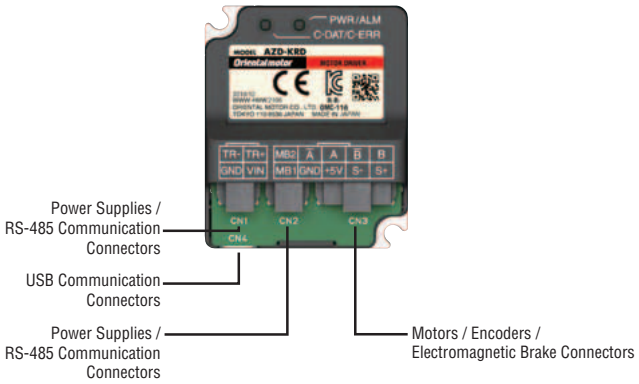
Harmonic Geared Type
Frame Size 30 mm (1.18 in.) / 42 mm (1.65 in.)
Electromagnetic Brake Type
42 mm (1.65 in.)

Direct connection is possible (no connection cable needed)

Simple Wiring & Reduced Cost

●Control with RS-485 Communication

RS-485 communication can be used to set operating data and parameters, as well as input operation commands. The protocol is supported by Modbus (RTU) and can be used to connect to touch screens and computers.

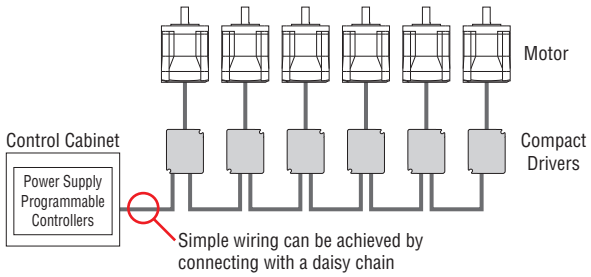


Easy Control | Simple Wiring | Compatible with Serial Communication Modules | Motor Control Using a Computer | Simplified System

●Daisy Chain Connection is Possible*

The host system and power supply can be daisy chain connected to multiple drivers. This has advantages in terms of simple wiring, connection management, and maintenance.

*If connecting a power supply via daisy chain, please limit the total input current of the driver to 6.5 A or less.



Product Number

●Driver

AZD - K R D

① ② ③ ④

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24/48 VDC
③	Configuration	**R**: Compact
④	Product Line	**D**: Built-in Controller Type

●Direct-coupled Motors for Compact Drivers

AZM 2 4 A K W - HS 100

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Motor Type	**AZM**: **AZ** Series Motor
②	Motor Frame Size	**2**: 28 mm (1.10 in.) (30 mm [1.15 in.] for harmonic geared type) **4**: 42 mm (1.65 in.)
③	Motor Case Length	
④	Output Shaft Type	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Motor Type	**K**: DC Input Specifications
⑥	Motor Cable Configuration	**W**: Loose Lead Wires
⑦	Geared Type	Blank: Standard Type **HS**: Harmonic Geared Type
⑧	Gear Ratio	

Product Line

●Drivers

Product Name	List Price
AZD-KRD	$391.00

●Direct-coupled Motors for Compact Drivers

◇Standard Type

Frame Size	Product Name	List Price
28 mm (1.10 in.)	**AZM24AKW** **AZM26AKW**	$311.00
42 mm (1.65 in.)	**AZM46AKW**	$336.00

◇Harmonic Geared Type

Frame Size	Product Name	List Price
30 mm (1.15 in.)	**AZM24AKW-HS50** **AZM24AKW-HS100**	$877.00

◇Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm (1.65 in.)	**AZM46MKW**	$503.00

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm (1.65 in.)	**AZM46MKW-HS50** **AZM46MKW-HS100**	$1,078.00

Standard Type NEW

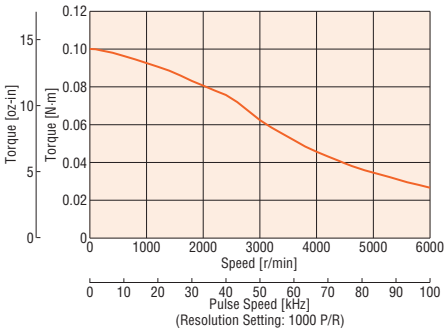
Specifications

Motor Product Name	Single Shaft	AZM24AKW	AZM26AKW	AZM46AKW
	With Electromagnetic Brake	–	–	AZM46MKW
Driver Product Name	**AZ** Series Compact Driver	AZD-KRD		
Max. Holding Torque	N·m (oz-in)	0.095 (13.5)	0.19 (26.9)	0.3 (42.5)
Holding Torque at Motor Standstill	Power ON N·m (oz-in)	0.047 (6.7)	0.095 (13.5)	0.15 (21.2)
	Electromagnetic Brake N·m (oz-in)	–	–	0.15 (21.2)
Rotor Inertia	J: kg·m^2	9.2×10^{-7}	17×10^{-7}	55×10^{-7} (71×10^{-7})*
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse		
Power Supply Input	Voltage	24 VDC±5%		24 VDC±5% / 48 VDC±5%
	Input Current A	1.4		1.6

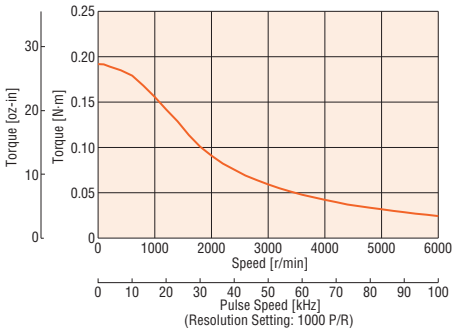
* The brackets ( ) indicate the specifications when an electromagnetic brake motor is connected.

Speed – Torque Characteristics (Reference values)

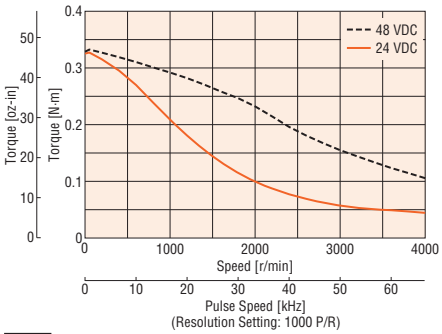
AZM24



AZM26



AZM46



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less.

Harmonic Geared Type

Specifications

Motor Product Name	Single Shaft	AZM24AKW-HS50	AZM24AKW-HS100	–	–
	With Electromagnetic Brake	–	–	AZM46MKW-HS50	AZM46MKW-HS100
Driver Product Name	**AZ** Series Compact Driver	AZD-KRD			
Max. Holding Torque	N·m (lb-in)	1.8 (15.9)	2.4 (21.2)	3.5 (31)	5 (44.3)
Rotor Inertia	J: kg·m^2	12×10^{-7} (0.066)		88×10^{-7} (0.48)	
Gear Ratio		50	100	50	100
Resolution	Resolution setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m (lb-in)	1.8 (15.9)	2.4 (21.2)	3.5 (31)	5 (44.3)
Maximum Instantaneous Torque*	N·m (lb-in)	3.3 (29.2)	4.8 (42.5)	8.3 (73.5)	11 (97.4)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	1.8 (15.9)	2.4 (21.2)	3.5 (31)	5 (44.3)
	Electromagnetic Brake N·m (lb-in)	–	–	3.5 (31)	5 (44.3)
Speed Range	r/min	0~70	0~35	0~70	0~35
Lost Motion (Load Torque)	arcmin N·m (oz-in)	1.5 max. ±0.09 N·m (12.7)	1.5 max. ±0.12 N·m (17)	1.5 max. ±0.16 N·m (22.7)	1.5 max. ±0.20 N·m (28.3)
Power Supply Input	Voltage	24 VDC±5%		24 VDC±5% / 48 VDC±5%	
	Input Current A	1.4		1.6	

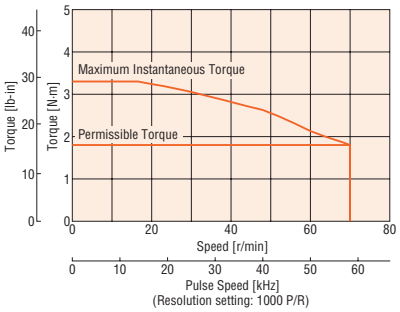
*For the geared motor output torque, refer to the speed–torque characteristics.

Note

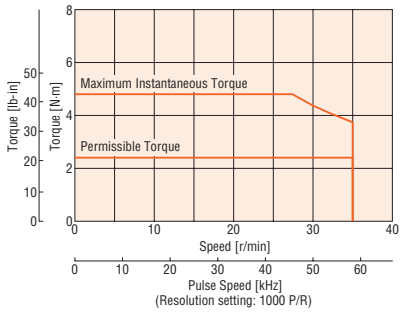
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

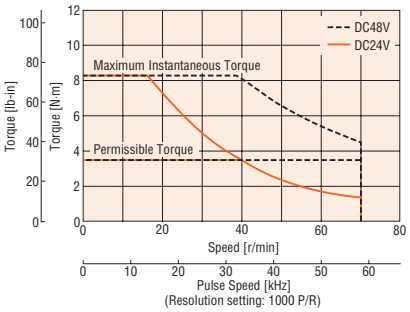
AZM24 Gear Ratio **50**



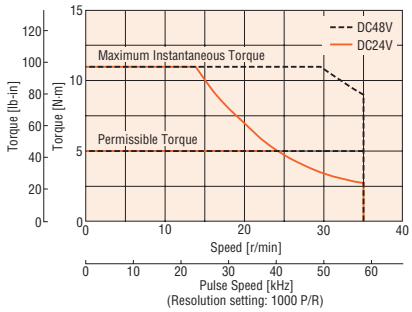
AZM24 Gear Ratio **100**



AZM46 Gear Ratio **50**



AZM46 Gear Ratio **100**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less.

Driver Specifications

Driver Product Name		AZD-KRD
Main Power Supply	Input Voltage	・24 VDC±5% ・48 VDC±5%
	Input Current*	**AZM14**: 0.4A, **AZM15**: 0.5A, **AZM24**: 1.4A, **AZM26**: 1.4A **AZM46**: 1.6A, **AZM48**: 2.1A, **AZM66**: 3.7A, **AZM69**: 3.5A **DGM60**: 1.4A, **DGM85**: 1.6A, **DGM130**: 3.7A, **DGB85**: 1.6A, **DGB130**: 3.7A, **DR20**: 0.4A, **DR28**: 1.3A, **DRSM42**: 1.5A, **DRSM60**: 2.6A, **EH4**: 1.4A, **LM2**: 3.7A, **LM4**: 3.7A
Interface		Modobus RTU (RS-485 communication)
I/O Function	Number of Positioning Data Sets	256 Points
	RS-485 Communication Remote Input	16 Points
	RS-485 Communication Remote Output	16 Points
Maximum Cable Extension Lengths		Power Supply / Communication Cable: 5 m (16.4 ft) Motor / Encoder / Electromagnetic Brake Cable: 0.5 m combined with length of motor's own cable

* Differs depending on the combined motor.

RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	Complies with EIA-485. Use twisted-pair cables. The max. total extension length is 5 m (16.4 ft).
Communication Mode	Half duplex and start-stop synchronization (data: 8 bits, stop bit: 1 bit or 2 bits, parity: none, even, or odd)
Baud Rate	9600 bps/19200 bps/38400 bps/57600 bps/115200 bps/230400 bps are available
Connection Type	Up to 31 units can be connected to a single host system.

General Specifications

		Driver
Operating Environment	Ambient Temperature	0～50 ˚C (32˚～+122˚F) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Max. 1000 m (3280.8 ft) above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Storage Conditions Transportation Conditions	Ambient Temperature	−25～70 ˚C (−13˚～+158˚F) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Max. 3000 m (9842.5 ft) above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Degree of Protection		IP00

		Motor
Thermal Class		130 (B)
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: ・Case – Motor Windings ・Case – Electromagnetic Brake Windings*
Dielectric Strength		Sufficient to withstand the following for 1 minute: **AZM24**, **AZM26** ・Case – Motor Windings: 0.5 kVAC, 50 Hz or 60 Hz **AZM46** ・Case – Motor Windings: 1.0 kVAC, 50 Hz or 60 Hz ・Case – Electromagnetic Brake Windings*: 1.0 kVAC, 50 Hz or 60 Hz
Operating Environment	Ambient Temperature	0～40 ˚C (32˚～+104˚F) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 1000 m (3280.8 ft) above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Storage Conditions Transportation Conditions	Ambient Temperature	−20～60 ˚C (−13˚～+158˚F) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 3000 m (9842.5 ft) above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Degree of Protection		**AZM24**, **AZM26**: IP40 (Excluding installation surfaces and connector locations) **AZM46**: IP20 (Excluding installation surfaces and connector locations)
Stop Position Accuracy		**AZM24**, **AZM26**: ±5 min. (±0.083˚) **AZM46**: ±4 min. (±0.067˚)
Multiple Rotation Detection Range in Power OFF State		**AZM24**, **AZM26**: ±450 rotations (900 rotations) **AZM46**: ±900 rotations (1800 rotations)

* Only for types with an electromagnetic brake

Note

● Disconnect the motor and driver when measuring insulation resistance or running a dielectric voltage withstand test.
Also, do not perform these tests on the absolute sensor part of the motor.

Electromagnetic Brake Specifications

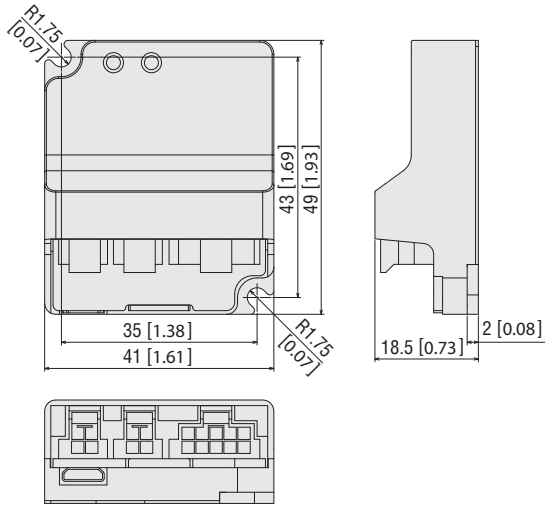
Product Name		AZM46
Type		Power Off Activated Type
Power Supply Voltage		24 VDC±5%
Power Supply Current	A	0.08
Time Rating		Continuous

Dimensions Unit = mm (in.)

Driver

Product Name	Mass g (oz)
AZD-KRD	39 (1.4)

Mass: 39g (1.4 oz)

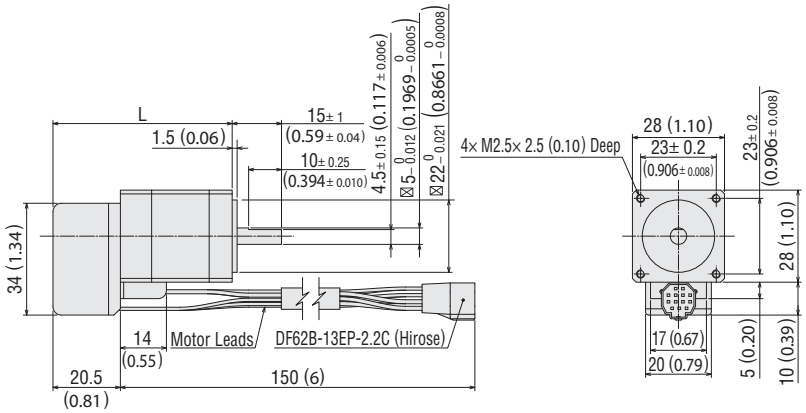


Direct-coupled Motors for Compact Drivers

◇Standard Type

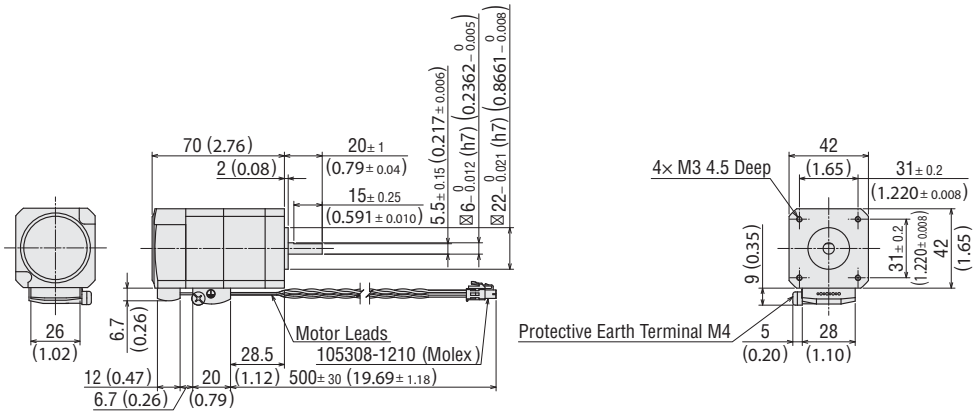
Frame Size 28 mm (1.15 in.)

Product Name	mm (in.)	Mass kg (lb)
AZM24AKW	54.5 (2.15)	0.15 (0.33)
AZM26AKW	74 (2.91)	0.24 (0.53)



Frame Size 42 mm (1.65 in.)

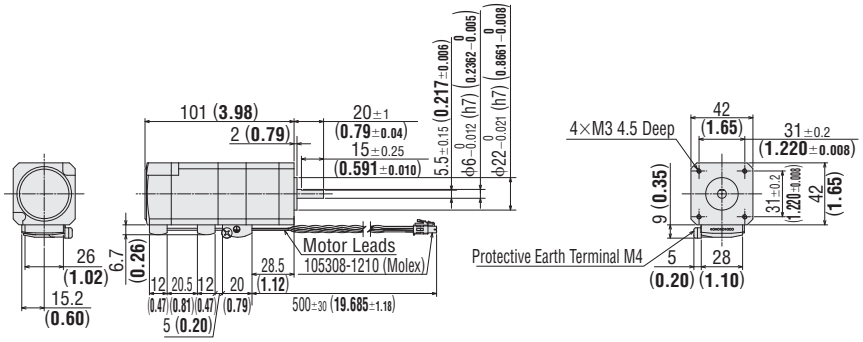
Product Name	Mass kg (lb)
AZM46AKW	0.38 (0.84)



◇Standard Type with an Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name	Mass kg (lb)
AZM46MKW	0.53 (1.17)

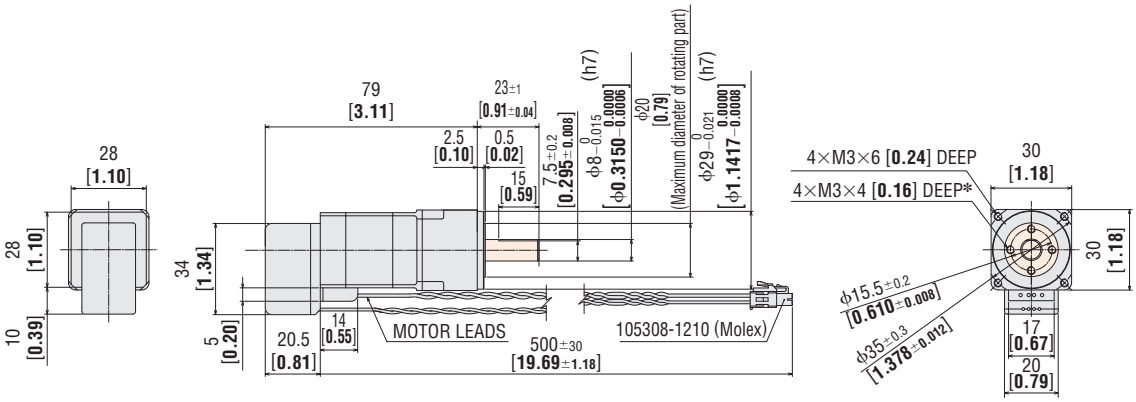


◇Harmonic Geared Type

Frame Size 30 mm (1.18 in.)

Product Name	Gear Ratio	Mass kg (lb)
AZM24AKW-HS□	**50**, **100**	0.24 (0.53)

● A number indicating the gear ratio is specified where the box □ is located in the product name.



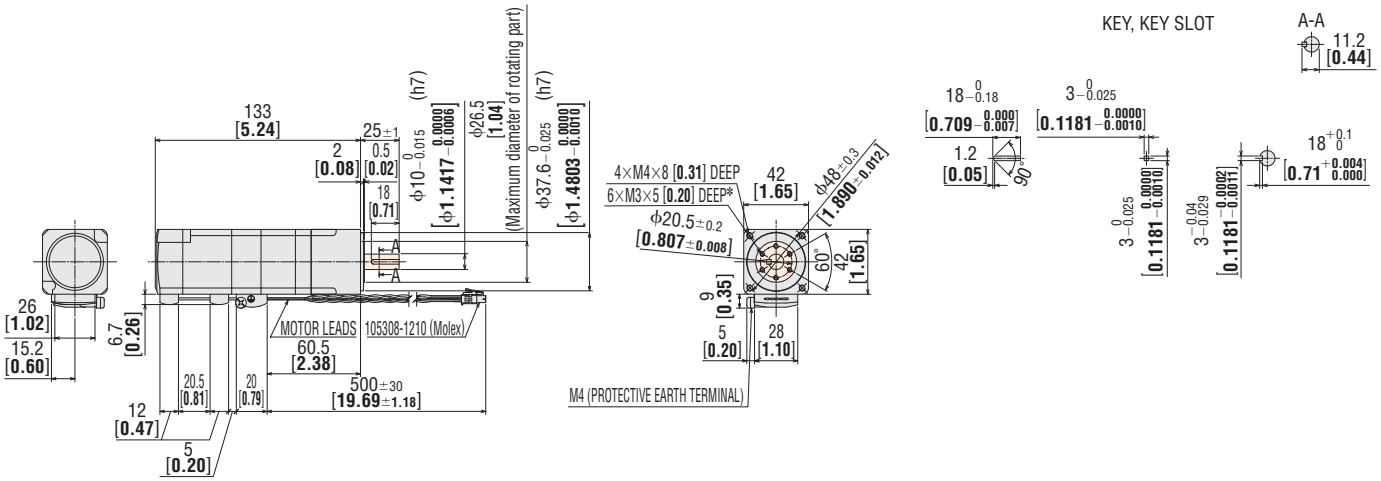
*The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name	Gear Ratio	Mass kg (lb)
AZM46MKW-HS□	**50**, **100**	0.73 (1.61)

● A number indicating the gear ratio is specified where the box □ is located in the product name.



*The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

● The ▭ shaded areas in the dimensions are rotating parts.

AZ Series DC Input

Cables for Compact Drivers

Connection Cables & Power Supplies / Communication Cables

The use of loose lead wires results in a cable with superior routing. This contributes to both lighter weight and space saving.

Connection cable

For Connection between a Motor and Driver

Product Name	Product Line	Length m (ft)	List Price
LC002Z	Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.) For Motors	0.2 (0.7)	$23.00
LC002ZB	Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.) For Electromagnetic Brake Motors	0.2 (0.7)	$29.00
LC003Z2	Frame Size 20 mm (0.79 in.), 28 mm (1.10 in.) For Motors	0.35 (1.1)	$23.00

LC002Z

LC003Z2

Power Supplies / Communication Cables

For Connection to Host Systems and DC Power Supplies

These are one-sided loose lead wire type cables for connection to a connector on the driver side.

Product Name	Length m (ft)	List Price
LC010-RS	1 (3.3)	$14.00
LC020-RS	2 (6.6)	$17.00

LC010-RS

Power Supplies / Communication Cables

For Connection between Drivers

Multiple drivers can be connected with a daisy chain.

These are two-sided connector lead wire type cables.

Product Name	Length m (ft)	List Price
LC005-RW	0.5 (1.6)	$14.00

LC005-RW

Specifications are subject to change without notice. This catalog was published in May, 2021.

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