Oriental motor

Servo Motors

AZX Series

Battery-Free Absolute Mechanical Sensor Equipped Motor

Standard Type / **PS** Geared Type 400 W (1/2 HP), 600 W (4/5 HP)

These servo motors are equipped with a battery-free absolute sensor. They are suitable for positioning applications with a large amount of travel, since they achieve high torque in the high speed range.

The basic operations are the same as the **AZ** Series, making combined use in equipment easy.

Battery-Free Absolute Sensor Equipped Servo Motor

The **AZX** Series is equipped with the same battery-free mechanical absolute sensor (ABZO sensor) as the **AZ** Series. These are dedicated servo motors for positioning and continuous operation.



- Mechanical-Type Sensor Holds positioning information even when powered off
- Multi-Turn Absolute Sensor Absolute position detection is possible with ±900 rotations (1800 rotations) of the motor shaft from the reference home position

For details about the advantages, please see the Oriental Motor website.

EtherNet/IP-Compatible Driver

This driver is EtherNet/IP-compatible. The host control device and driver can be connected with one EtherNet/IP communication cable, reducing wiring.



No External Sensors Required

Thanks to the absolute system, a home sensor or external sensor is not required.

Advantages

- High-Speed Return-to-Home + Improved Return-to-Home Accuracy
- Reduced Cost
- Simple Wiring
- Not Affected by External Sensor Malfunctions

Battery-Free

No battery is necessary for a mechanical-type sensor. Positioning information is managed mechanically by the ABZO sensor.

Advantages

- No Battery Replacement Required
- No Battery Installation Space Required (Unlimited driver installation possibilities)
- Safe for Overseas Shipping

Sequence Function Simplifies Programming

AZX Series positioning operations come with a variety of sequence functions, such as a timer setting between operations and linked operation, conditional branching, and loop counting. These can be set using the support software **MEXEO2**, which helps simplify the host system's sequence program.





Achieves High Torque in the High Speed Range

The **AZX** Series achieves high torque in the high speed range.

It is suitable for positioning applications with a large amount of travel (e.g.: ball screw driving).

Standard Type

PS Geared Type



This is a comparison of the speed – torque characteristics of the **AZX** Series and **AZ** Series.

The AZX Series offers superior torque in the high speed range, the AZ Series is better in the low speed range.

The Basic Operations are the Same as the AZ Series

Using the AZX Series and AZ Series together in the same equipment can eliminate the work of operational changes.

	Wiring Setting Control Operation Functions	Wiring Signal system wiring Setting Switch and parameter functions, setting method (MEXEO2 used) Control Parameter ID when controlling over a network Operation Functions Built-in positioning operation function, etc. in the driver		
AZX Series		Same Operating Method		AZ Series

Product Line

Motor			Cables			
Туре	Output Power	Frame Size	Driver	Cable Type Cat		Cable Length
Standard Standard Type with Electromagnetic Brake	400 W (1/2 HP)	60 mm (2.36 in.)	Connection	Connection	-For Motor / Encoder	
	600 W (4/5 HP)	85 mm (3.35 in.)	Sets	-For Motor / Encoder / Electromagnetic Brake	1 to 20 m	
PS Geared PS Geared Type with Electromagnetic Brake -Gear Ratio 5 10 25	nagnetic 400 W 90 mm (1/2 HP) (3.54 in.) Single-Phase/ Three-Phase 200-240 V	EtherNet/IP Single-Phase/ Three-Phase 200-240 V	Flexible Connection	-For Motor / Encoder	(3.28 to 65.6 ft.)	
600 W (4/5 HP) 90 mm (3.54 in.)*		Cable Sets	-For Motor / Encoder / Electromagnetic Brake			

Motors, drivers, and cables must be ordered individually.

■ EtherNet/IP[™] is a trademark of ODVA. *Gear ratio 5 only

System Configuration

Combination of Standard Type Motor with Electromagnetic Brake and Network Compatible Driver An example of a configuration using I/O control or EtherNet/IP with an EtherNet/IP compatible driver is shown below. Motors, drivers, and connection cable sets / flexible connection cable sets must be ordered individually.



The system configuration shown above is an example. Other combinations are also available.

The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

Product Number

◇PS Geared Type

Driver

1



AZXM 9 40 A C-PS 10

1 2 3 4 5 6 7

1	Motor Type	AZXM: AZX Series Motor
2	Motor Frame Size	6 : 60 mm (2.36 in.) 9 : 85 mm (3.35 in.)
3	Output Power	40 : 400 W (1/2 HP) 60 : 600 W (4/5 HP)
4	Output Shaft Type	A: Single Shaft M: Type with Electromagnetic Brake
5	Motor Type	C: AC Input Specification

1	Motor Type	AZXM: AZX Series Motor
2	Motor Frame Size	9 : 90 mm (3.54 in.)
3	Output Power	40 : 400 W (1/2 HP) 60 : 600 W (4/5 HP)
4	Output Shaft Type	A: Single Shaft M: Type with Electromagnetic Brake
5	Motor Type	C: AC Input Specification
6	Geared Type	PS: PS Geared Type
7	Gear Ratio	

1	Driver Type	AZXD: AZX Series Driver
2	Power Supply Input	S: Single-Phase/Three-Phase 200-240 VAC
3	Product Line	EP: EtherNet/IP-Compatible

1		CC: Cable
	Length	010: 1 m (3.28 ft.) 020: 2 m (6.56 ft.)
ଭ	-	O3O : 3 m (9.84 ft.) O5O : 5 m (16.4 ft.)
Ø		070 : 7 m (22.9 ft.) 100 : 10 m (32.8 ft.)
		150: 15 m (49.2 ft.) 200: 20 m (65.6 ft.)
3	Reference Number	
4	Applicable Model	X: For AZX Series
ß	Cable Type	F: Connection Cable Set
9		R: Flexible Connection Cable Set
0	Description	Blank: For Type without Electromagnetic Brake
0	•	B: For Type with Electromagnetic Brake

Connection Cable Sets / Flexible Connection Cable Sets

CC 010 V X F B 0 2 3 4 5 6

2 3

AZXD-SEP

Product Line

Motors, drivers, and connection cables must be ordered individually.

●Motor ◇Standard T	<u>y</u> pe		0
Frame Size	Output Power	Product Name	List Price
60 mm (2.36 in.)	400 W (1/2 HP)	AZXM640AC	\$701.00
85 mm (3.35 in.)	600 W (4/5 HP)	AZXM960AC	Call for pricing
			67

◇PS Geared			
Frame Size	Output Power	Product Name	List Price
90 mm (3.54 in.)	400 W (1/2 HP)	AZXM940AC-PS5 AZXM940AC-PS10	\$1,295.00
		AZXM940AC-PS25	\$1,453.00
	600 W (4/5 HP)	AZXM960AC-PS5	Call for pricing

Driver EtherNet/IP Co	mpatible	
Power Supply Input	Product Name	List Price
Single-Phase/Three- Phase 200-240 VAC	AZXD-SEP	\$1,010.00

Connection Cable Sets / Flexible Connection Cable Sets

Use the flexible connection cable set in applications where the cable is bent and flexed. Extension cable sets and flexible extension cable sets are also available. Refer to page 22.

Included Items

Motor

Type	Parallel Key
Standard Type	-
PS Geared Type	1 piece

List of Combinations

Product	Туре	Product Name	
Matar	Standard Type	AZXM640C, AZXM960C	
	PS Geared Type	AZXM940 C-PS , AZXM960 C-PS5	
	_	<u> </u>	
		1	
Product	Туре	Product Name	
Driver	EtherNet/IP-Compatible	AZXD-SEP	
	_	<u> </u>	
Product	Туре	Product Name	
	Connection Cable Set	For Motor / Encoder: CC VXF	
Connection Cable Sets /	Connection Cable Set	For Motor / Encoder / Electromagnetic Brake: CC VXFB	
Flexible Connection Cable Sets	Elovible Connection Cable Sate	For Motor / Encoder: CC VXR	
	TIENDIE CONTECTION CADIE SELS	For Motor / Encoder / Electromagnetic Brake: CC VXRB	

A letter or number indicating the following is specified where the box is located in the product name.

: Output Shaft Shape

□: Gear Ratio

Type with	an Electroma	netic Brake
Type with	an Electromag	grietic brake

Frame Size	Output Power	Product Name	List Price
60 mm (2.36 in.)	400 W (1/2 HP)	AZXM640MC	\$970.00
85 mm (3.35 in.)	600 W (4/5 HP)	AZXM960MC	Call for pricing

◇PS Geared Type with Electromagnetic Brake

•		•	
Frame Size	Output Power	Product Name	List Price
90 mm 400 W (1/2 HP)	AZXM940MC-PS5 AZXM940MC-PS10	\$1,564.00	
(3.54 in.)		AZXM940MC-PS25	\$1,722.00
	600 W (4/5 HP)	AZXM960MC-PS5	Call for pricing

Driver	

Туре	Included Items	Connector	
Etherblet/ID Competible		-For CN1 (1 piece) -For CN4 (1 piece)	
EtherNet/IP-Compatible		-For CN7 (1 piece) -Connector wiring lever (1 piece)	

How to Read Specifications

		Single Shaft	AZXM640AC	AZXM940AC-PS5	
Motor Pro	oduct Name	With Electromagnetic Brake	AZXM640MC	AZXM940MC-PS5	
Driver Pro	oduct Name		AZXI	D-SEP	
 Rated Out 	tput Power	W (HP)	400 (1/2)	400 (1/2)	
 Rated Sp 	eed	r/min	3000	-	
 Max. Spe 	ed	r/min	5500	-	
 Rated Tor 	que	N·m (lb-in)	1.27 (11.2)	5.72 (50)	
 Maximun 	n Instantaneous Torque	N·m (lb-in)	3.82 (34)	17.1 (151)	
 Permissit 	ole Speed Range	r/min	-	0~1100	
- Rotor Ine	rtia	J: kg⋅m² (oz-in²)	0.294×10 ⁻⁴ (1.61) [0.316×10 ⁻⁴ (1.73)]	0.294×10 ⁻⁴ (1.61) [0.316×10 ⁻⁴ (1.73)]	
 Inertia 		J: kg·m² (lb-in²)	-	0.163×10 ⁻⁴ (0.056)	
 Permissit 	ole Load Inertia	J: kg·m² (lb-in²)	14.7×10 ⁻⁴ (5.0)	0.037 (126)	
 Gear Rati 	0		-	5	
 Resolutio 	n	P/R	100~10000 (Factory setting 1000)	500~50000 (Factory setting 5000)	
Detector			Mechanical Multi-Tu 1 Turn: 16 bit Multi-Turn: ±9	irn Absolute Encoder 900 rotations (1800 rotations)	
 Backlash 		arcmin	-	15	
-	Main Dewer Cumplu	Input Voltage	Single-Phase/Three-Phase 200	-240 VAC -15~+6% 50/60 Hz	
Power	Wall Power Supply	 Rated Current 	Single-Phase: 5.3	Three-Phase: 3.0	
Innut	Control Power	Input Voltage	24 VD	C±5%	
mpar	Supply	Input Current A	0.27 [0.57]		
		Туре	Power Off Activated Type		
		Power Supply Input	24 VDC±10%		
Flootrom	agnotic Proko	Power Consumption W	7	.2	
LICCUOIII	ayricuc brake	Rated Current A	0	.3	
		Static Friction Torque N·m (oz-in)	1.27 (180)		

(1)Rated Output Power

This is the permissible range the temperature rise may not exceed when continuously operated at the motor's rated speed and rated torque.

②Rated Speed

This is the rotation speed when the motor is operated at rated output power.

③Max. Speed

This is the maximum rotation speed the motor can turn at.

④Rated Torque

This is the output torque when the motor is operated at rated output power and rated speed.

⑤Maximum Instantaneous Torque

This is the maximum torque that can be used instantaneously (in a short period of time).

It is the maximum for acceleration and deceleration, and up to this torque can be used.

6 Permissible Speed Range

This is the range of the operable rotation speed on the output gear shaft.

⑦Rotor Inertia

This refers to the inertia of the rotor inside the motor.

This is necessary when the required torque (acceleration torque) for the motor is calculated.

⑧Inertia

This is the inertia in the gearhead.

This is necessary when the required torque (acceleration torque) for the motor is calculated.

Permissible Load Inertia

This is the load inertia that the motor can stably control.

Control can become unstable if a load exceeding this value is applied, resulting in speed regulation variation and issues with protection circuit operation, vibration, etc.

①Gear Ratio

This is the ratio of the rotation speed between the input speed from the motor and the speed of the output gear shaft. For example, a gear ratio of 10 indicates that when the input speed from the motor is 10 r/min, the output gear shaft speed is 1 r/min.

(1)Resolution

This indicates the angle of rotation of the output shaft in one pulse. For example, if the resolution = 1000 p/rev, one rotation of the motor (360°) can be divided into 1000.

12 Backlash

This is the play of the output gear shaft when the motor shaft is fixed.

When positioning in bi-direction, the positioning accuracy is affected.

(i) Rated Current

This is the input current of the main power supply required for use in the continuous duty region.

(4)Static Friction Torque

This is the electromagnetic brake specifications. It is the maximum holding torque (holding force) at which the electromagnetic brake can hold position.

How to Read Speed – Torque Characteristics

AZXM640 C



①Continuous Duty Region

This is the region that can be used at continuous rating. The effective load torque must be corrected to this region.

②Limited Duty Region

This is the region used for acceleration and deceleration.

③Rated Torque

This is the output torque when the motor is operated at rated output power and rated speed.

AZXM940 C-PS5



(4) Maximum Instantaneous Torque

This is the maximum torque that can be used instantaneously (in a short period of time).

It is the maximum for acceleration and deceleration, and up to this torque can be used.

Standard Type

Frame Size 60 mm (2.36 in.)

Specifications

Motor Product Name		Single Shaft		AZXM640AC
		With Electromagnetic Brake		AZXM640MC
Driver Product	Name			AZXD-SEP
Rated Output P	ower		W (HP)	400 (1/2)
Rated Speed			r/min	3000
Max. Speed			r/min	5500
Rated Torque		Ν	·m (oz-in)	1.27 (180)
Maximum Insta	ntaneous Torque	Ν	·m (oz-in)	3.82 (540)
Rotor Inertia J: kg·m ² (oz-in ²)		n ² (oz-in ²)	0.294×10 ⁻⁴ (1.61) [0.316×10 ⁻⁴ (1.73)] ^{≉1}	
Permissible Ine	rtia*2	J: kg∙r	n ² (lb-in ²)	14.7×10 ⁻⁴ (5.0)
Resolution			P/R	100~10000 (Factory setting 1000)
Detector				Mechanical Multi-Turn Absolute Encoder 1 Turn: 16 bit Multi-Turn: ±900 rotations (1800 rotations)
	Mala Da cara	Input Voltage		Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz
Power Supply	Main Power Supply	Rated Current*3	A	Single-Phase: 5.3 Three-Phase: 3.0
Input	Control Power	Input Voltage		24 VDC±5%
	Supply	Input Current	Α	0.27 [0.57] ^{*1}
		Туре		Power Off Activated Type
Flashermannskie Durlas*4		Power Supply Input		24 VDC±10%
		Power Consumption	W	7.2
LIEUUUIIIAYIIUU	U DIANG	Rated Current	Α	0.3
		Static Friction Torque	N∙m (oz-in)	1.27 (180)

 $C \in$

*1 The value inside the [] represents the value when connecting an electromagnetic brake motor.

*2 50 times the rotor inertia.

*3 The value when operated in the continuous duty region. When operated in the limited duty region, a maximum of approximately 3 times the current flows. *4 The electromagnetic brake holds position when the power is off. It cannot be used for braking applications. Note

When the motor is continuously operated at rating, a heat sink of a capacity at least equivalent to an aluminum plate of the following size is required. **AZXM640**C: 300 mm×300 mm (11.81 in.×11.81 in.), 10 mm (0.39 in.) thick

Speed – Torque Characteristics

AZXM640 C

Power supply specification: Three-phase/single-phase 200-240 VAC



●A regeneration unit may be needed depending on the operating conditions. Regeneration units → Page 27

Standard Type

Frame Size 85 mm (3.35 in.)

Specifications

	Manaa	Single Shaft		AZXM960AC
		With Electromagnetic Brake		AZXM960MC
Driver Product	Name			AZXD-SEP
Rated Output P	ower		W (HP)	600 (4/5)
Rated Speed			r/min	3000
Max. Speed			r/min	5500
Rated Torque		١	l∙m (oz-in)	1.91 (270)
Movimum Inoto	ntanagua Tarqua	Single-Phase 200-240 VAC	N·m (oz-in)	3.82 (540)
Maximum Instantaneous Iorque		Three-Phase 200-240 VAC	N·m (oz-in)	7.16 (1020)
Rotor Inertia		J: kg·r	n ² (oz-in ²)	0.948×10 ⁻⁴ (5.2) [1.03×10 ⁻⁴ (5.6)]*1
Permissible Ine	rtia ^{*2}	J: kg∙r	n ² (oz-in ²)	47.4×10 ⁻⁴ (260)
Resolution			P/R	100~10000 (Factory setting 1000)
Detector				Mechanical Multi-Turn Absolute Encoder 1 Turn: 16 bit Multi-Turn: \pm 900 rotations (1800 rotations)
	Main Dever Constru	Input Voltage		Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz
Power Supply	Main Power Supply	Rated Current*3	A	Single-Phase: 7.1 Three-Phase: 3.9
Input	Control Power	Input Voltage		24 VDC±5%
	Supply	Input Current	A	0.27 [0.62] ^{*1}
Flootromognatio Drako*4		Туре		Power Off Activated Type
		Power Supply Input		24 VDC±10%
		Power Consumption	W	8.5
LIEUUUIIAYIIUU	U DIANG	Rated Current	A	0.35
		Static Friction Torque	N·m (oz-in)	1.91 (270)

*1 The value inside the [] represents the value when connecting an electromagnetic brake motor.

*2 50 times the rotor inertia.

*3 The value when operated in the continuous duty region. When operated in the limited duty region, a maximum of approximately 2 times the current flows for single-phase input, and a maximum of approximately 4 times the current flows for three-phase input.

*4 The electromagnetic brake holds position when the power is off. It cannot be used for braking applications. Note

When the motor is continuously operated at rating, a heat sink of a capacity at least equivalent to an aluminum plate of the following size is required. **AZXM960 C**: 350 mm×350 mm (13.78 in.×13.78 in.), 10 mm (0.39 in.) thick

Speed – Torque Characteristics

AZXM960 C

AZXM960□C



Power supply specification: Single-phase 200-240 VAC

 $C \in$



Note

A regeneration unit may be needed depending on the operating conditions. Regeneration units -> Page 27

PS Geared Type

Frame Size 90 mm (3.54 in.)

Specifications

Motor Product Name		Single Shaft		AZXM940AC-PS5	AZXM940AC-PS10	AZXM940AC-PS25	AZXM960AC-PS5	
		With Electromag	netic Brake	AZXM940MC-PS5	AZXM940MC-PS10	AZXM940MC-PS25	AZXM960MC-PS5	
Driver Product	Name				AZ	XD-SEP		
Rated Output P	Power		W (HP)		400 (1/2)		600 (4/5)	
Rated Torque			N·m (lb-in)	5.72 (50)	11.4 (101)	25.7 (220)	8.6 (76)	
Movimum Inst	antonoouo Torguo	Single-Phase 200-240 VAC	N·m (lb-in)	171(151)		77.2 (690)	17.2 (152)	
	antaneous loique	Three-Phase 200-240 VAC	N·m (lb-in)	17.1 (151)	34.3 (300)	11.2 (000)	32.2 (284)	
Permissible Sp	eed Range		r/min	0~1100	0~550	0~220	0~1100	
Rotor Inertia			J: kg·m² (oz-in²)	0.294	×10 ⁻⁴ (1.61) [0.316×10 ⁻⁴ (1.7	73)] *1	0.948×10 ⁻⁴ (5.2) [1.03×10 ⁻⁴ (5.6)] *1	
Inertia*2			J: kg·m² (lb-in²) ∣	0.163×10 ⁻⁴ (0.056)	0.160×10 ⁻⁴ (0.055)	0.175×10 ⁻⁴ (0.060)	0.163×10 ⁻⁴ (0.056)	
Permissible Ine	ertia ^{**3}		J: kg·m² (lb-in²)	0.037 (126)	0.147 (500)	0.919 (3100)	0.119 (410)	
Gear Ratio				5	10	25	5	
Population			D/D	500~50000	1000~100000	2500~250000	500~50000	
nesolution			E/N	(Factory setting 5000)	(Factory setting 10000)	(Factory setting 25000)	(Factory setting 5000)	
Detector				Mechanical Multi-Turn Absolute Encoder 1 Turn: 16 bit Multi-Turn: ±900 rotations (1800 rotations)				
Backlash			arcmin		1	5 (0.25°)		
	Main Dowar	Input Voltage			Single-Phase/Three-Phase 20	00-240 VAC -15~+6% 50/	60 Hz	
Power	Supply	Rated Current*	4 A	Single-Phase: 5.3 Three-Phase: 3.0			Single-Phase: 7.1 Three-Phase: 3.9	
Supply input	Control Power	Input Voltage		24 VDC±5%				
	Supply	Input Current	A		0.27 [0.57] ^{*1}		0.27 [0.62]*1	
Ty		Туре			Power Of	ff Activated Type		
		Power Supply I	nput	24 VDC±10%				
Electromagnet	ic Brake ^{*5}	Power Consump	tion W		7.2		8.5	
		Rated Current	A		0.3		0.35	
		Static Friction Tor	que N·m (oz-in)	1.27 (180)		1.91 (270)		

*1 The value inside the [] represents the value when connecting an electromagnetic brake motor.
*2 This is the value of the internal inertia of the gear converted to the motor shaft.
*3 The square of 50 times the rotor inertia × the gear ratio.

44 The value when operated in the continuous duty region (the region that can be used at continuous rating). When operated in the limited duty region (the region used for acceleration and deceleration), the following current flows.

•AZXM940: Approx. 3 times max.

AZXM960 single-phase: Approx. 2 times max. AZXM960 three-phase: Approx. 4 times max.

*5 The electromagnetic brake holds position when the power is off. It cannot be used for braking.

Speed – Torque Characteristics

AZXM940 C-PS5 Power supply specification: Three-phase/single-phase 200-240 VAC

AZXM940 C-PS10

Power supply specification: Three-phase/single-phase 200-240 VAC



AZXM960 C-PS5

Power supply specification: Three-phase 200-240 VAC





AZXM960 C-PS5

Power supply specification: Single-phase 200-240 VAC



AZXM940 C-PS25

Power supply specification: Three-phase/single-phase 200-240 VAC

CE



Note

Either A (standard) or M (type with an electromagnetic brake) indicating the configuration is specified where the box 🗌 is located in the product name.

Driver Specifications

Driver Product Name		AZXD-SEP
	Control Input	6 Points, Photocoupler
	Pulse Output	2 Points, Line Driver
Interface	Control Output	6 Points, Photocoupler and Open-Collector
Internace	Power Shut Down Signal Input	2 Points, Photocoupler
	Power Shut Down Monitor Output	1 Points, Photocoupler and Open-Collector
	Field Network	EtherNet/IP

Driver Functions

Driver Product Nam	ie			AZXD-SEP
Number of Position	ing Data Sets			256 Points
Inp		Input		16 Points
Remote I/O		Output		16 Points
Setting Tool				Support Software MEXEO2
Coordinates Manag	ement Method			Battery-Free Absolute System
			Independent Operation	0
		Linked Operation	Sequential Operation	0
	Positioning Operation		Multi-Speed Operation (Continuous Sequential Operation)	0
		Sequence	Loop Operation (Repeating)	0
Operation		Control	Event Jump Operation	0
	Continuous Operation			0
	Deturn To Llomo Operation		Return-To-Home Operation	0
		peration	High-Speed Return-to-Home Operation	0
JOG Operation			0	
			Waveform Monitoring	0
			Overload Detection	0
			Overheat Detection (Motor and driver)	0
			Position and Speed Information	0
Monitor and Information		Temperature Detection (Motor and driver)	0	
			Motor Load Factor	0
		Distance Traveled / Integrating Distance Traveled	0	
Alarm				0

Communication Specifications

Communication Protocol		EtherNet/IP (Complies with CT18)
Vendor ID		187: Oriental Motor Co., Ltd
Device Type		43: Generic Device
Baud Rate		10/100 Mbps (Autonegotiation)
Communication Mode		Full Duplex/Half Duplex (Autonegotiation)
Cable Specifications		Shielded Twisted-Pair (STP) Cable Stroke/Cross, Category 5e min. Recommended
Distan	Output (Scanner→Driver)	40 bytes
Bytes	Input (Driver->Scanner)	56 bytes
	Compatible Connections	2
	Connection Type	Exclusive Owner, Input Only
Implicit Communication	Communication Cycle (RPI)	1~3200 ms
	Connection Type (Scanner-Driver)	Point-to-Point
	Connection Type (Driver->Scanner)	Point-to-Point, Multicast
	Data Reflection Trigger	Cyclic
IP Address Setting Method		IP Address Setting Switch, Parameter, DHCP
Compatible Topologies		Star, Linear, Ring (Device Level Ring)

General Specifications

		Motor	Driver			
Thermal Class		130 (B)	-			
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: -Case–Motor Winding -Case–Electromagnetic Brake Winding ^{≹1}	100 M Ω or more when a 500 VDC megger is applied between the following places: -Protective Earth Terminal–Main Power Supply Terminal -Encoder Connector–Main Power Supply Terminal -I/O Signal Terminal–Main Power Supply Terminal			
Dielectric Strength		Sufficient to withstand the following for 1 minute: -Case-Motor Winding 1.5 kVAC 50 Hz or 60 Hz -Case-Electromagnetic Brake Winding ^{*1} 1.0 kVAC 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: -Protective Earth Terminal–Main Power Supply Terminal 1.5 kVAC 50 Hz or 60 Hz -Encoder Connector–Main Power Supply Terminal 1.8 kVAC 50 Hz or 60 Hz -I/O Signal Terminal–Main Power Supply Terminal 1.8 kVAC 50 Hz or 60 Hz			
Operating Environment	Ambient Temperature	0~+40°C (0~+104°F) (Non-freezing) ^{≵2}	$0 \sim +55^{\circ}$ C (0 $\sim +131^{\circ}$ F) (Non-freezing)* ³ [If the AZXM960 is used at single-phase 200-240 VAC, then $0 \sim +50^{\circ}$ C (0 $\sim +122^{\circ}$ F)]* ³			
(In operation)	Ambient Humidity	85% or less (Non-condensing)				
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.				
Degree of Protection		IP65 (excluding installation surfaces and connectors)	IP10			
Shaft Runout		0.05 (0.002)T.I.R. [mm (in.)]*4	_			
Concentricity of Installation Pilot to the Shaft		0.075 (0.003)T.I.R. [mm (in.)] ^{≉4}	_			
Perpendicularity of Installat Surface to the Shaft	tion	0.075 (0.003)T.I.R. [mm (in.)]*4	-			

*1 Only for products with an electromagnetic brake

*2 Based on Oriental Motor's internal measurement conditions

*3 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm (7.87×7.87 in.) and 2 mm (0.08 in.) thickness

*4 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.



Note

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

Permissible Radial Load and Permissible Axial Load

	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load				Permissible	
Туре				Distance from Shaft End mm (in.)				Axial	
				0 (0)	5 (0.2)	10 (0.39)	15 (0.59)	20 (0.79)	Load
Standard Type	60 mm (2.36 in.)	AZXM640	-	230 (51)	245 (55)	262 (58)	281 (63)	304 (68)	98 (22)
	85 mm (3.35 in.)	AZXM960	-	376 (84)	392 (88)	408 (91)	426 (95)	446 (100)	147 (33)
PS Geared Type			5	380 (85)	420 (94)	470 (105)	540 (121)	630 (141)	
		A7XM040	10 480 (108) 530 (1	530 (119)	590 (132)	680 (153)	790 (177)	600 (135)	
	90 mm (3.54 in.)	AZAM740	25	650 (146)	720 (162)	910 (192)	020 (200)	1070	000 (133)
			25	030 (140)	120 (102)	010 (102)	920 (200)	(240)	
		AZXM960	5	380 (85)	420 (94)	470 (105)	540 (121)	630 (141)	600 (135)

The product names are listed such that the product names are distinguishable.

When the PS geared type with an input speed of 3000 r/min operates with either a radial load or axial load,

a lifetime of 10000 hours is the permissible value.

For the life of gearhead, please contact the nearest Oriental Motor sales office, or visit the Oriental Motor website.

Radial Load and Axial Load

Distance from Shaft End [mm (in.)]



Rotation Direction

This indicates the rotation direction when viewed from the output shaft side of the motor.

Please check the following table for the rotation direction of the output gear shaft when viewed from the output shaft side of the standard type motor.

Туре	Gear Ratio	When Viewed from the Output Shaft Side of the Motor Rotation Direction
PS Geared Type	Total Gear Ratio	Same Direction

Standard Type Motor



Dimensions [Unit = mm (in.)]

Motor





\diamondsuit Standard Type with an Electromagnetic Brake





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

$\diamondsuit \textbf{PS}$ Geared Type with Electromagnetic Brake



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



Included Items

Connector for Main Power/Regeneration Unit (CN4)

Connector: 1-2271454-6 (TE Connectivity)

· Connector Wiring Lever

I/O Signals Connector (CN7)

· Connector: DFMC1,5/12-ST-3,5 (Phoenix Contact)

Control Power Supply Input/Electromagnetic Brake Connection/Regeneration Unit Thermal Input/Power Shut Down Signal I/O Connector (CN1) · Connector: DFMC1,5/7-ST-3,5-LR (Phoenix Contact)

Connection and Operation

Names of Driver Parts

For details about each function, refer to the operating manual for the **AZX** Series. Either download operating manuals from the Oriental Motor website or contact your nearest Oriental Motor sales office.

\bigcirc EtherNet/IP-Compatible



USB Cable Connection

A USB cable is required for connecting the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB 2.0 (Full Speed)	
Cables	Length: 3 m (9.84 ft.) or less Configuration: A to mini B	

Connection Diagrams

⇒EtherNet/IP-Compatible

• Diagram for Connection with Current Sink Output Circuit

Host System



Note

Use 24 VDC for the input signals.

Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor R0 to reduce the current to 10 mA or less. Provide a distance of 200 mm (7.87 in.) or more between the signal lines and power lines (power supply lines, motor lines).

Do not run the signal lines in the same piping as power lines or bundle them with power lines.

If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

• Diagram for Connection with Current Source Output Circuit



Note

Use 24 VDC for the input signals.

Do not run the signal lines in the same piping as power lines or bundle them with power lines.

If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor R0 to reduce the current to 10 mA or less.
 Provide a distance of 200 mm (7.87 in.) or more between the signal lines and power lines (power supply lines, motor lines).

Cable System Configuration

Network Compatible Driver



*1 Flexible connection cable sets and flexible extension cable sets with excellent durability are also available.

*****2 Required for motors with an electromagnetic brake.

*3 Not supplied.

Note

Up to 3 cables can be used to connect the motor and driver.

The maximum extension distance between the motor and driver is 20 m (65.6 ft.).

The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

Connection Cable



Note

Up to 3 cables can be used to connect the motor and driver.

The maximum extension distance between the motor and driver is 20 m (65.6 ft.).

(1) Connection Cable Sets / Flexible Connection Cable Sets

This is a connection cable set used to connect the motor and the driver. Use a flexible extension cable set in applications where the cable is bent and flexed repeatedly. The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

Product Line

♦ Connection Cable Set



• For Motor / Encoder

Length L [m (ft.)]	Product Name	List Price
1 (3.3)	CC010VXF	\$102.00
2 (6.6)	CC020VXF	\$119.00
3 (9.8)	CC030VXF	\$134.00
5 (16.4)	CC050VXF	\$166.00
7 (23)	CC070VXF	\$198.00
10 (32.8)	CC100VXF	\$245.00
15 (49.2)	CC150VXF	\$324.00
20 (65.6)	CC200VXF	\$403.00

♦ Flexible Connection Cable Sets



For Motor / Encoder

	+
Product Name	List Price
CC010VXR	\$110.00
CC020VXR	\$134.00
CC030VXR	\$158.00
CC050VXR	\$205.00
CC070VXR	\$253.00
CC100VXR	\$324.00
CC150VXR	\$443.00
CC200VXR	\$562.00
	Product Name CC010VXR CC020VXR CC030VXR CC050VXR CC070VXR CC100VXR CC150VXR CC200VXR

■Note on use of flexible cables → Page 26

Dimensions [Unit = mm (in.)]

Motor Side







· For Motor / Encoder / Electromagnetic Brake

• For Motor / Encoder / Electromagnetic Brake

Length L [m (ft.)]	Product Name	List Price		
1 (3.3)	CC010VXFB	\$124.00		
2 (6.6)	CC020VXFB	\$142.00		
3 (9.8)	CC030VXFB	\$161.00		
5 (16.4)	CC050VXFB	\$198.00		
7 (23)	CC070VXFB	\$234.00		
10 (32.8)	CC100VXFB	\$290.00		
15 (49.2)	CC150VXFB	\$383.00		
20 (65.6)	CC200VXFB	\$475.00		

· For Motor / Encoder / Electromagnetic Brake

 For Motor / Encoder / 	
Electromagnetic Brake	

\sim		\sim	
	<u></u>	_	

Length L [m (ft.)]	Product Name	List Price
1 (3.3)	CC010VXRB	\$136.00
2 (6.6)	CC020VXRB	\$166.00
3 (9.8)	CC030VXRB	\$196.00
5 (16.4)	CC050VXRB	\$257.00
7 (23)	CC070VXRB	\$318.00
10 (32.8)	CC100VXRB	\$409.00
15 (49.2)	CC150VXRB	\$560.00
20 (65.6)	CC200VXRB	\$713.00

● Note on use of flexible cables → Page 26

2 Extension Cable Set - Motor Side / Flexible Extension Cable Set - Motor Side

This is a cable to extend the connection cable to the motor. When using an extension, the total length of the cable must be less than 20 m (65.6 ft.).

Use the flexible extension cable set in applications where the cable is bent and flexed repeatedly.

Product Line

♦ Extension Cable Sets



•For Motor / Encoder

Length L [m (ft.)]	Product Name	List Price		
1 (3.3)	CC010VXFT	\$109.00		
2 (6.6)	CC020VXFT	\$125.00		
3 (9.8)	CC030VXFT	\$140.00		
5 (16.4)	CC050VXFT	\$173.00		
7 (23)	CC070VXFT	\$204.00		
10 (32.8)	CC100VXFT	\$252.00		
15 (49.2)	CC150VXFT	\$331.00		

♦ Flexible Extension Cable Sets Motor / Encodor

FOI WOLDI / EI	louel
\bigcirc	\bigcirc

• For Motor / Encoder

Length L [m (ft.)]	Product Name	List Price
1 (3.3)	CC010VXRT	\$116.00
2 (6.6)	CC020VXRT	\$140.00
3 (9.8)	CC030VXRT	\$164.00
5 (16.4)	CC050VXRT	\$212.00
7 (23)	CC070VXRT	\$259.00
10 (32.8)	CC100VXRT	\$331.00
15 (49.2)	CC150VXRT	\$450.00

· For Motor / Encoder / Electromagnetic Brake

For Motor / End Electromagneti	coder / c Brake	$\bigcirc \bigcirc \bigcirc$
Length L [m (ft.)]	Product Name	List Price
1 (3.3)	CC010VXFBT	\$136.00
2 (6.6)	CC020VXFBT	\$154.00
3 (9.8)	CC030VXFBT	\$173.00
5 (16.4)	CC050VXFBT	\$209.00
7 (23)	CC070VXFBT	\$246.00
10 (32.8)	CC100VXFBT	\$301.00
15 (49.2)	CC150VXFBT	\$394.00

· For Motor / Encoder / Electromagnetic Brake

• For Motor / Encoder / **Electromagnetic Brake**

■Note on use of flexible cables → Page 26

		and the second se	
N			
	Δ		
		_	

-		
Length L [m (ft.)]	Product Name	List Price
1 (3.3)	CC010VXRBT	\$148.00
2 (6.6)	CC020VXRBT	\$178.00
3 (9.8)	CC030VXRBT	\$208.00
5 (16.4)	CC050VXRBT	\$269.00
7 (23)	CC070VXRBT	\$330.00
10 (32.8)	CC100VXRBT	\$420.00
15 (49.2)	CC150VXRBT	\$572.00

4

■Note on use of flexible cables → Page 26

Dimensions [Unit = mm (in.)]

Motor Side





◇Cable for Electromagnetic Brake



Cable for I/O Signals





(2) General-Purpose Type

0.5 (1.6)

1 (3.3)

2 (6.6)

24

- Multi-core Shielded Cable
- Unbundled wires on both ends
- Easy shield grounding using ground wire with a round terminal
- The number of lead wire cores can be selected to suit the functions that will be used

Product Line

Product Line

Product Name

CC24D005C-1

CC24D010C-1

CC24D020C-1

Product Name	Length L [m (ft.)]	Number of Lead Wire Cores	Outer Diameter D [mm (in.)]	AWG	List Price
CC06D005B-1	0.5 (1.6)				\$18.00
CC06D010B-1	1 (3.3)	6	+5 4 (+0.21)		\$20.00
CC06D015B-1	1.5 (4.9)		φ5.4 (φ0.21)		\$23.00
CC06D020B-1	2 (6.6)	1			\$24.00
CC10D005B-1	0.5 (1.6)				\$20.00
CC10D010B-1	1 (3.3)	10	+67(+0.26)		\$22.00
CC10D015B-1	1.5 (4.9)		φ0.7 (φ0.20)		\$25.00
CC10D020B-1	2 (6.6)]		24	\$29.00
CC12D005B-1	0.5 (1.6)			24	\$23.00
CC12D010B-1	1 (3.3)	10	175(10.20)		\$25.00
CC12D015B-1	1.5 (4.9)	1 12	φ1.5 (φ0.30)		\$29.00
CC12D020B-1	2 (6.6)]			\$33.00
CC16D005B-1	0.5 (1.6)				\$24.00
CC16D010B-1	1 (3.3)	16	+7 5 (+0.20)		\$28.00
CC16D015B-1	1.5 (4.9)	01	φ1.5 (φ0.30)		\$30.00
CC16D020B-1	2 (6.6)]			\$33.00
		·			•

Dimensions [Unit = mm (in.)]



The figure depicts 16 core wires.

Cables for DC Power Supplies

These cables are used to connect the driver and the DC power supply.



Product Line

Product Name	Length L [m (ft.)]	List Price	
CC02D005-3	0.5 (1.6)	\$16.00	
CC02D010-3	1 (3.3)	\$18.00	
CC02D015-3	1.5 (4.9)	\$20.00	
CC02D020-3	2 (6.6)	\$22.00	
CC02D050-3	5 (16.4)	\$25.00	

Dimensions [Unit = mm (in.)]



Note on Use of Cables

Note when Connecting Connectors

When inserting or removing connectors, always hold the connector. Pulling on the cable may result in connection faults.

\diamondsuit When Inserting the Connector

Hold the connector body and insert as straight as possible. If the connector is angled while inserted, it may result in damage to the terminals or connection faults.

♦ When Removing the Connector

Disengage the connector's lock and pull straight out. If the connector is disengaged by pulling the cable, it may result in damage to the connector.

Notes on Routing of Flexible Cables

Do not bend the cable at the connector. This will apply stress to the connector and the terminal, and may result in connection faults or disconnections.

Please fix in 2 locations to prevent movement of the connector.



Wide clamps are also permitted

\bigcirc Cable Routing Length and Bend Radius

When routing cables, use an appropriate length that prevents pulling when the cable is moved.

The bend radius must be at least 6 times the cable diameter



When routing cables inside a cable holder, ensure that the cables do not interfere with each other. This will apply stress to the connector and the terminal, and may result in premature disconnection. Please carefully check the cautions when using cable holders.

$\diamondsuit \mathsf{Twisting} \text{ of Cables}$

Route the cables so that they do not become twisted. Premature wire breaking may occur if they are bent while twisted. After routing the wires, use the markings on the surface of the cable to ensure that the cables are not twisted.

Peripheral Equipment

Regeneration Unit

The regenerative power generated by the motor may exceed the driver's regenerative power absorption capacity. In such case, a regeneration unit is connected to the driver to dissipate the regenerative power.

<Conditions in Which a Regeneration Unit is Likely Required>

-Vertical drive

-Acceleration or deceleration with an inertial load installed

Prices	
Product Name	List Price
RGB200	\$180.00



Specifications

Item	Description
Continuous Regenerative Power	200 W (1/4 HP)
Resistance Value	50 Ω
Thermal Protector Operating Temperature	Operation: 175±5°C (347±41°F) Return: 115±15°C (239±59°F) (Normally closed)
Thermal Protector Electrical Rating	227 VAC 8 A 115 VAC 22 A

Install the regeneration unit in a place that has the same heat radiation capability as the heat sink (material: aluminum, 350×350 mm (13.8×13.8 in.), 3 mm (0.12 in.) thick).

Motor Mounting Brackets

Mounting brackets convenient for installing motors are available. Pilot holes on the motor are used to allow for snug mounting. Motor installation screws are included.

Product Line

For PS Geared Type

Product Name	List Price	Motor Frame Size	Applicable Product
PLBW5PS	\$120.00	90 mm (3.54 in.)	AZXM9



Connector Cover

<Application Example>

This is a resin cover for protecting and securing the connected connector part of the cable.

- · Protection level equivalent to IP20
- · It can be installed after connecting the motors and drivers.
- · It is a structure to secure cables and protect lead wires.
- · It can be attached to the equipment using two mounting holes [ϕ 4.5 (ϕ 0.18)].



Material: Polyamide

Product Name	List Price
MAC-D*	\$11.00
MAC-D02	\$21.00
*Excluding encode	r cable and motor c



Specifications are subject to change without notice. This catalog was published in August 2023.

ORIENTAL MOTOR U.S.A. CORP.

Western Sales and Customer Service Center Tel: (310) 715-3301 Fax: (310) 225-2594

Los Angeles Tel: (310) 715-3301 San Jose Tel: (408) 392-9735 Midwest Sales and Customer Service Center Tel: (847) 871-5900 Fax: (847) 472-2623 Chicago

Tel: (847) 871-5900

Eastern Sales and Customer Service Center Tel: (781) 848-2426 Fax: (781) 848-2617 Boston Tel: (781) 848-2426 Toronto Tel: (905) 502-5333

Technical Support

Tel: (800) 468-3982 / 8:30 A.M. to 5:00 P.M., P.S.T. (M–F) 7:30 A.M. to 5:00 P.M., C.S.T. (M–F) E-mail: techsupport@orientalmotor.com Obtain Specifications, Online Training and Purchase Products at: www.orientalmotor.com