Oriental motor

αSTEP AZ Series mini Driver

DC Input

Modular Automation Products

The αSTEP **AZ Series** now includes a **mini driver** option.

Compatible with battery power operation for use in a wider range of applications.

EtherCAT
Drive Profile-Compatible
EtherCAT

AZD-KRED

EtherNet/IP™
EtherNet/IP

AZD-KREP

PROFINET
PROFINET

AZD-KRPN

RS-485 Communication Type
Modbus (RTU)

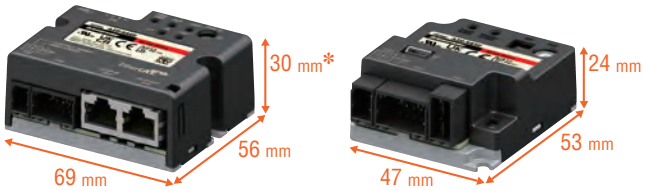
AZD-KR2D

Pulse Input Type with
RS-485 Communication

AZD-KRX

The mini Driver Allows for Smaller and More

Compact Design to Fit in Small Spaces



AZD-KRED **AZD-KREP**
AZD-KRPN **AZD-KRX**

AZD-KR2D

✻The **AZD-KRX** is 25 mm.

Installation Space is Minimized

No DIN rail required. Can be installed directly to equipment with 2 screws.

AZD-KRED **AZD-KREP**
AZD-KRPN **AZD-KRX**

AZD-KR2D

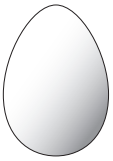
Light Weight Design Reduces Load on Equipment

56 g

AZD-KR2D

● The mass of all models except the **AZD-KR2D** is 84-110 g.

Approx. 60 g



1 medium egg

Example: When mounted inside AMR/AGV.

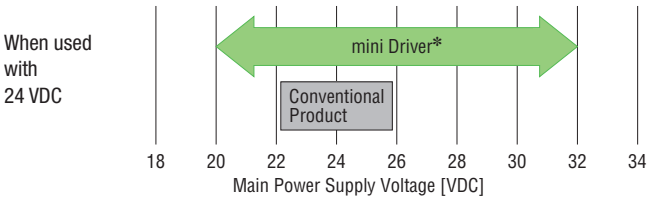
Reduce overall equipment mass
Reduce Power Consumption for Drive Wheels

→ See use examples (Page 4)

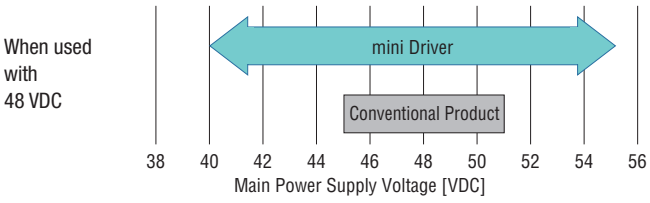
Compatible with Battery Power

Accepts a wide power supply voltage range for battery power operation. Supports 24 VDC and 48 VDC.

● Operable Voltage Range

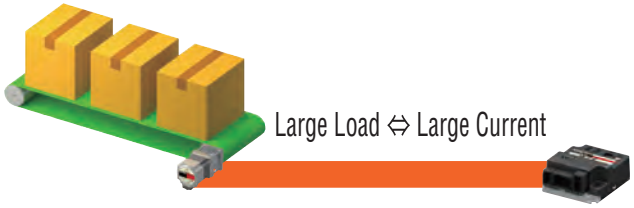


* For a motor with an electromagnetic brake, the range is 22.8 to 32 VDC



Energy Savings through Optimized Current Control

The servo emulation mode optimises the current provided to the motor to match the load conditions.



Example: When mounted inside AMR/AGV.

Reduce Power Consumption.
Increase Battery Life

→ See use examples (Page 4)

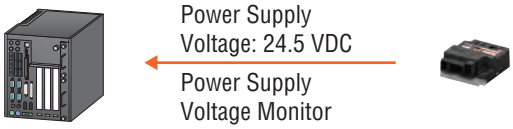
Power-Efficient Devices

What Are Modular Automation Products?

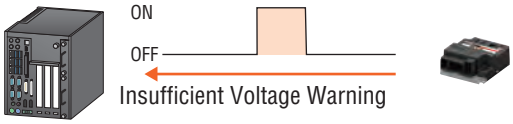
Modular Automation Products are a group of products that share the common features of being battery-powered, compact and lightweight. Optimised for use with self-propelled devices and mobile equipment, they contribute to the realisation of exible automation lines and mobile automation.

Power Supply Voltage Monitoring

It is possible to monitor the driver power supply voltage from the host controller.



If the driver power supply voltage drops below a pre-set threshold a signal is output.



When mounted inside self-propelled devices

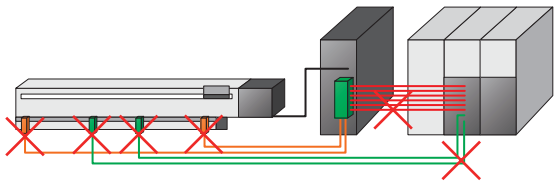
Avoid Stoppages due to Insufficient Battery

→ See use examples (Page 4)

No External Sensors Required

With the **AZ** Series, external sensors and associated wiring are not required.

Example of Wiring when Using External Sensors.
The **AZ** Series eliminates the need for these external sensors and wires shown in green and red.



High positioning accuracy can be achieved by using the mechanical battery-free absolute sensor (ABZO Sensor).

Compatible with Various Interfaces

These are compatible with the major industrial networks used around the globe. Pulse control is also possible.

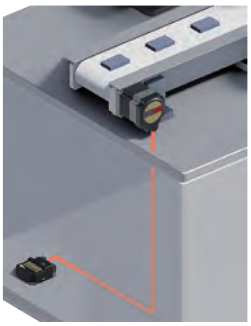
Interface	Driver Type (Driver type name)
EtherCAT	EtherCAT Drive Profile-Compatible
EtherNet/IP	EtherNet/IP
PROFINET	PROFINET
Modbus RTU	RS-485 Communication Type
Pulse	Pulse Input Type with RS-485 Communication

- The **AZD-KRED** passes the official EtherCAT conformance test.
- The **AZD-KR2D** is also compatible with CC-Link and MECHATROLINK control when used with a network converter (gateway).

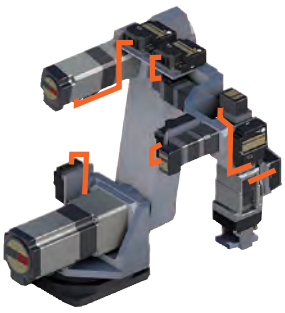
Up to 10 m Connection Cable Extension

Connection cables can be selected to suit the installation environment, with lengths of 0.5 m, 1 m, 3 m, 5 m, 10 m available.

When the motor and driver are far apart, 3 m, 5 m and 10 m cables are recommended.



When the motor and driver are close, 0.5 m and 1 m cables are recommended.



- Flexible connection cables in the same lengths are also available.

Examples of mini drivers in use are shown on the next page

Example A: Incorporation into Self-propelled Devices

Equipment Problem Battery operation time must be maximized.

The equipment's overall power consumption can be reduced by lowering the equipment's overall mass, and by reducing the motor's running current when large amounts of torque aren't required.

With the αSTEP AZ Series mini Driver...

Light Design Reduces Load on Equipment

By reducing the overall equipment mass, the power consumption for the drive wheels can be reduced.

56 g ≒ Approx. 60 g

● The mass of all models except the **AZD-KR2D** is 84-110 g.

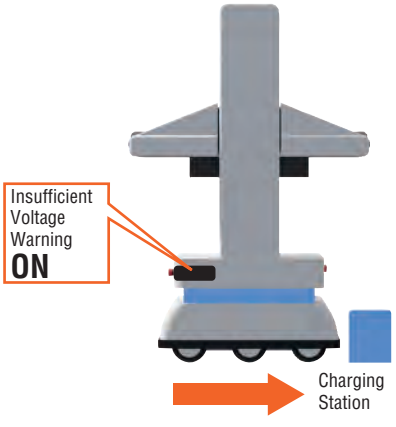
Energy Savings through Optimized Current Control

The current supplied to the motor is optimized to suit the load (also called servo emulation mode), thus reducing power consumption. This allows for a reduction in the number of times the battery must be charged.

When the load is light, the current supplied to the motor is automatically reduced.

Power Supply Voltage Monitoring

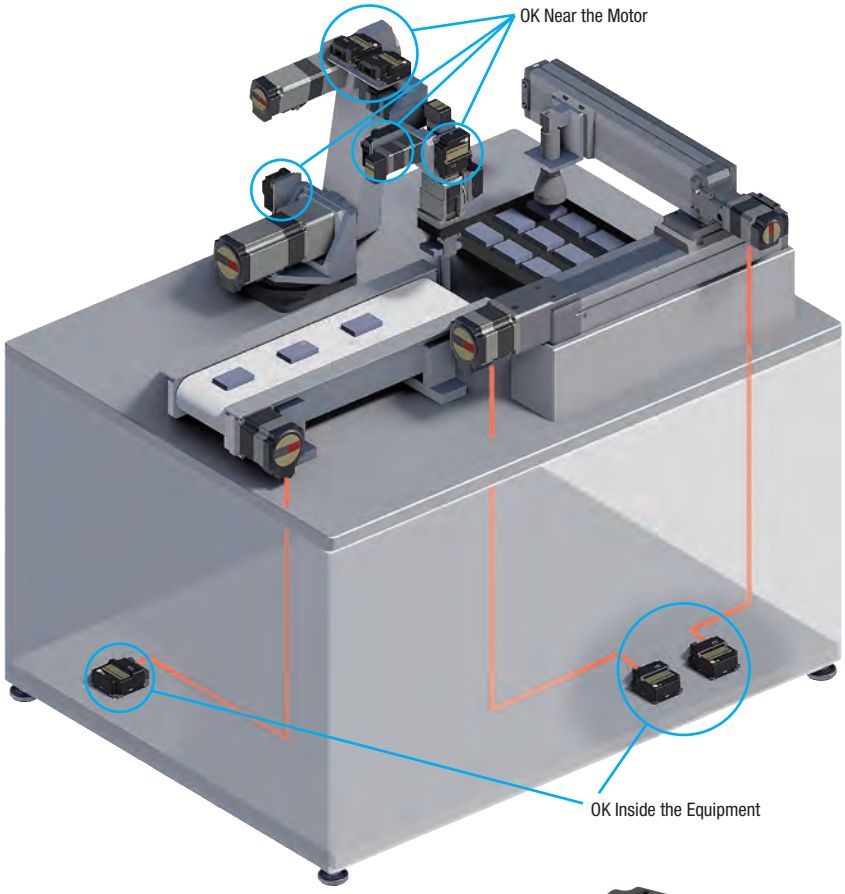
The power supply voltage can be monitored using the monitoring function, and the battery is recharged at the appropriate time.



Example B: Incorporation in Stationary Equipment

Equipment Problem Install the diver and control systems in separate locations to reduce overall equipment size.

Install the mini drivers in the empty enclosure space, or install the mini drivers alongside the work allowing for a smaller control cabinet design.



The αSTEP AZ Series mini Driver Provides

Compact Design to Fit in Small Spaces

Volume is greatly reduced in comparison to a box-type DC driver.

AZD-KD

Size Reduced More Than 60%!

AZD-KR2D

No External Sensors Required

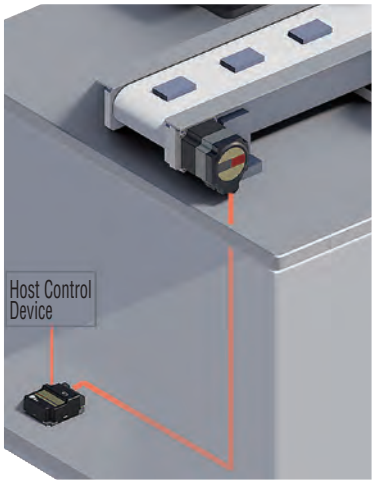
No external sensor or related wiring is necessary. Because there are no external sensors and wiring, the size and weight of the equipment can be reduced. Additionally, the work time for wiring can be reduced.

FA Network Compatible

Common Network Protocals are available to support the host controller, reduce the burden of programing and support quicker installation time.

Up to 10 m Connection Cable Extension

The length of the cable between the motor and driver can be selected to suit the installation environment. Extension of up to 10 m are available.



Applicable Series

The **AZ** Series mini Driver DC Power Input can be used in combination with the following motors and linear & rotary actuators.

Motors

· **AZ** Series DC Power Input

Electric Linear & Rotary Actuators

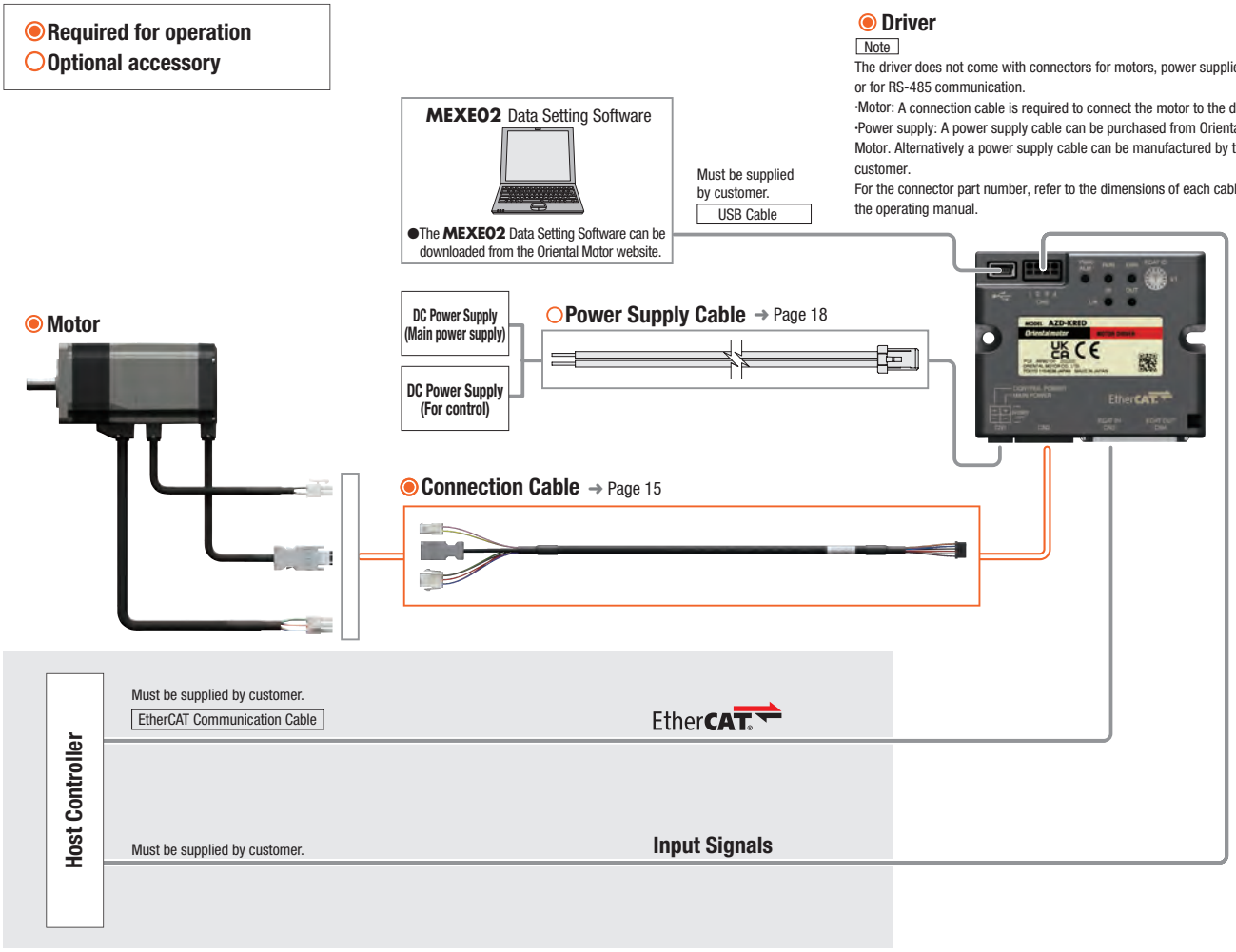
· Electric Linear Slides **EZS** Series DC Power Input **AZ** Series Equipped
· Electric Cylinders **EAC** Series DC Power Input **AZ** Series Equipped
· Compact Electric Cylinders **DR** Series / **DRS2** Series **AZ** Series Equipped
· Electric Grippers **EH** Series **AZ** Series Equipped
· Hollow Rotary Actuators **DGII** Series DC Power Input **AZ** Series Equipped
· Rack and Pinion System **L** Series DC Power Input **AZ** Series Equipped

● For applicable motor and electric linear & rotary actuator combinations, please see the Oriental Motor website or refer to each brochure of product series.

System Configuration

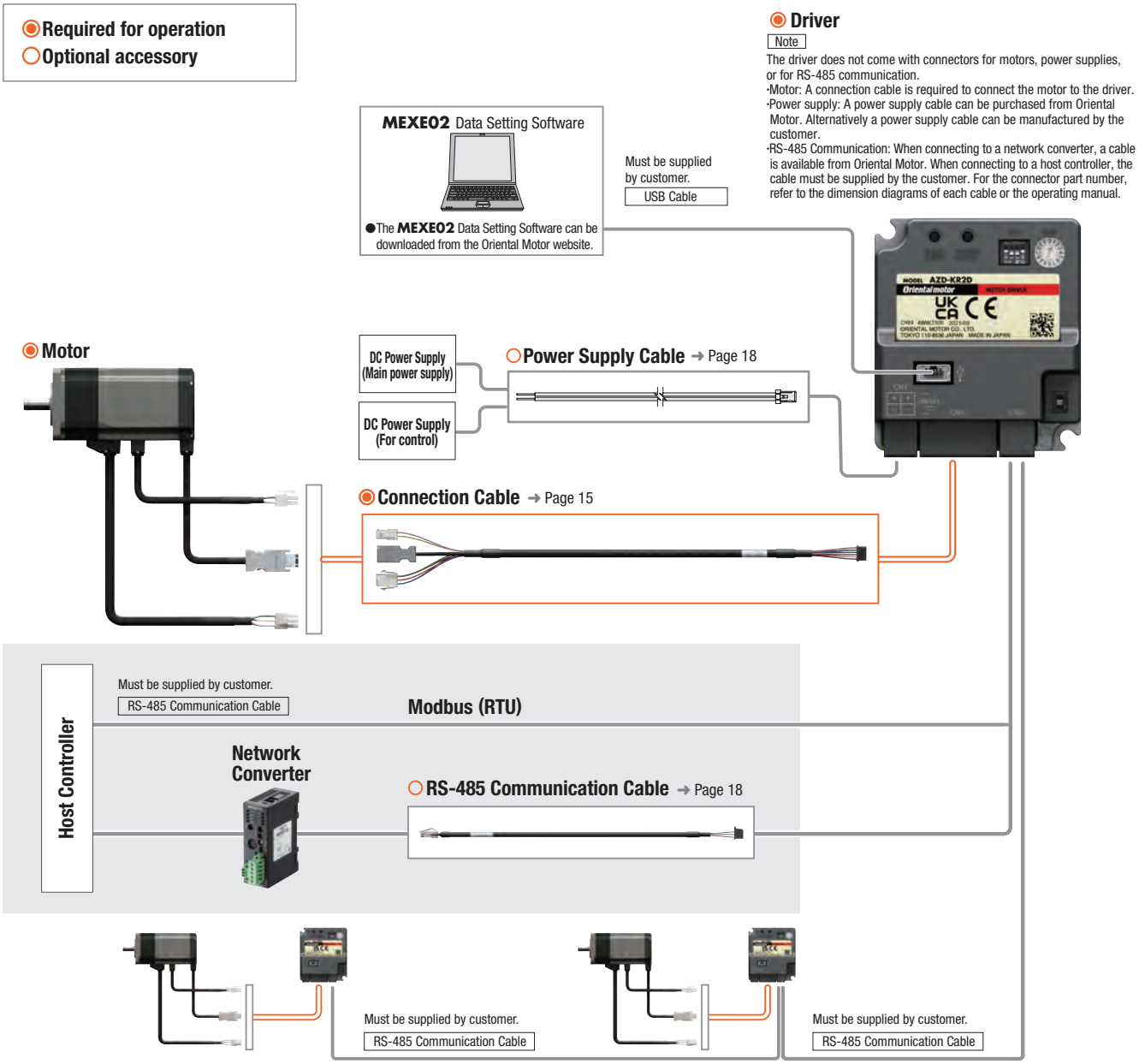
When the Standard Type Electromagnetic Brake Motor Combined with an EtherCAT Drive Profile-Compatible mini Driver

Motors, drivers, and connection cables / flexible connection cables must be ordered separately.



●AZ Series Standard Type Electromagnetic-Brake Motor Combined with RS-485 Communication Type Mini Driver

Motors, drivers, and connection cables / flexible connection cables must be ordered separately.



●AZ Series Standard Type Electromagnetic-Brake Motor Combined with Pulse Input Type with RS-485 Communication Type mini Driver

Motors, drivers, and connection cables / flexible connection cables must be ordered separately.

◉Required for operation
○Optional accessory

◉Driver

Note

The driver does not come with connectors for motors, power supplies, I/O signals, or for RS-485 communication.
· Motor: A connection cable is required to connect the motor to the driver.
· Power Supply: A power supply cable can be purchased from Oriental Motor. Alternatively a power supply cable can be manufactured by the customer.
· I/O Signal: An I/O signal cable can be purchased from Oriental Motor. Alternatively a I/O signal cable can be manufactured by the customer.
· RS-485 Communication: Connector not supplied.
Check either page 14 or the operating manual for connector part numbers.

Support Software **MEXE02**

● The **MEXE02** Data Setting Software can be downloaded from the Oriental Motor website.

Must be supplied by customer.

USB Cable

◉Motor

DC Power Supply (Main power supply)

DC Power Supply (For control)

○Power Supply Cable ➜ Page 18

◉Connection Cables ➜ Page 15

Host Control

○Cables for I/O Signals ➜ Page 17

Not supplied.

RS-485 Communication Cable

Modbus (RTU)

Must be supplied by customer.

RS-485 Communication Cable

Must be supplied by customer.

RS-485 Communication Cable

Product Name

AZD - K R 2 D

① ② ③ ④ ⑤

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24 VDC/48 VDC
③	Driver Figure	**R**: Compact
④	Reference Number	
⑤	Type	**ED**: EtherCAT Drive Profile-Compatible **EP**: EtherNet/IP **PN**: PROFINET **D**: RS-485 Communication Type **X**: Pulse Input Type with RS-485 Communication

Product Line

EtherCAT Drive Profile-Compatible

Product Name
AZD-KRED

EtherNet/IP

Product Name
AZD-KREP

PROFINET

Product Name
AZD-KRPN

RS-485 Communication Type

Product Name
AZD-KR2D

Pulse Input Type with RS-485 Communication

Product Name
AZD-KRX

List of Combinations

Product	Type	Product Name
Motor	Standard Type	**AZM14AK**, **AZM15AK** **AZM24AK**, **AZM26AK** **AZM46**□□**K**□, **AZM48A**□**K**□ **AZM66**□□**K**□, **AZM69**□□**K**□
	TS Geared Type	**AZM46**□**K-TS**□■ **AZM66**□**K-TS**□■
	FC Geared Type	**AZM46**□**K-FC**□■**A** **AZM66**□**K-FC**□■**A**
	PS Geared Type	**AZM24AK-PS**□ **AZM46**□**K-PS**□ **AZM66**□**K-PS**□
	HPG Geared Type	**AZM46**□**K-HP**□□ **AZM66**□**K-HP**□□
	Harmonic Geared Type	**AZM24AK-HS**□ **AZM46**□**K-HS**□ **AZM66**□**K-HS**□

+

Product	Type	Product Name
Driver	EtherCAT Drive Profile-Compatible	**AZD-KRED**
	EtherNet/IP	**AZD-KREP**
	PROFINET	**AZD-KRPN**
	RS-485 Communication Type	**AZD-KR2D**
	Pulse Input Type with RS-485 Communication	**AZD-KRX**

+

Product	Type		Product Name
Connection Cable / Flexible Connection Cable	For **AZM14**, **AZM15**, **AZM24**, **AZM26**	Connection Cable	**CCM**◇◇◇**Z2AAF**
		Flexible Connection Cable	**CCM**◇◇◇**Z2AAR**
	For **AZM46**, **AZM48**, **AZM66**, **AZM69**	Connection Cable	For Motor / Encoder: **CCM**◇◇◇**Z2ABF** For Motor / Encoder / Electromagnetic Brake: **CCM**◇◇◇**Z2ACF**
		Flexible Connection Cable	For Motor / Encoder: **CCM**◇◇◇**Z2ABR** For Motor / Encoder / Electromagnetic Brake: **CCM**◇◇◇**Z2ACR**

● A code or a number indicating either one of the followings is entered where the box is located within the product name.

□: Output Shaft Shape
□: Additional Function
□: Motor Cable Type
□: Gear Ratio
■: Cable Outlet Direction
□: Output Shaft Type
◇: Cable Length

Driver Specifications

Driver Product Name		AZD-KRED	AZD-KREP	AZD-KRPN	AZD-KR2D	AZD-KRX
Main Power Supply	Rated Voltage	· 24 VDC±5% · 48 VDC±5%				
	Input Current*1	**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 **EH3**: 0.4A, **EH4**: 1.4A, **LM2**: 3.7A, **LM4**: 3.7A				
	Permissible Operating Voltage	24 VDC Input: 20 VDC to 32 VDC (22.8 VDC to 32 VDC)*2 48 VDC Input: 40 VDC to 55 VDC				
Control Power Supply	Rated Voltage	· 24 VDC±5% · 48 VDC±5%				
	Input Current	0.15 A (0.4 A)*3				
	Permissible Operating Voltage	24 VDC Input: 20 VDC to 32 VDC (22.8 VDC to 32 VDC)*2 48 VDC Input: 40 VDC to 55 VDC				
Interface	Pulse Input	–				- 2 Points, Photocoupler - Maximum Input Pulse Frequency Line Driver: 1 MHz (50% duty) Open Collector: 250 kHz (50% duty)
	Control Input	24 VDC±10% 2 Points, Photocoupler			–	4.5–32 VDC 5 Points, Photocoupler
	Control Output	–				4.5–32 VDC 3 Points, Photocoupler/ Open Collector
	Field Network	EtherCAT	EtherNet/IP	PROFINET	RS-485 Communication	RS-485 Communication

*1 The value of the input current depends on the motor used in combination.
*2 The values in parentheses ( ) indicate the specifications when connected to the electromagnetic brake motor.
*3 The value in parentheses ( ) indicates the specification when connected to the electromagnetic brake motor. **AZM46** is 0.23 A.
*4 Excluding pulse input type with RS-485 communication.

Driver Functions

EtherCAT Drive Profile-Compatible

Driver Product Name		AZD-KRED
Remote I/O	Input	16 Points
	Output	16 Points
Operation Mode		Profile Position Mode (PP)
		Profile Velocity Mode (PV)
		Return-to-Home Mode (HM)
		Cyclic Synchronous Position Mode (CSP)
		Cyclic Synchronous Velocity Mode (CSV)
Function		Touch Probe (Position Latch) Function
Settings Tool		Data Setting Software **MEXE02**
Coordinates Management Method		Battery-free Absolute System
Monitor/Information		As shown in the table below.
Alarm		○

●EtherNet/IP, PROFINET, RS-485 Communication Type

Driver Product Name				AZD-KREP AZD-KRPN	AZD-KR2D	AZD-KRX
Number of Positioning Data Sets				256 Points		256 Points*1
Remote I/O		Input		16 Points		
		Output		16 Points		
Setting Tool				Data Setting Software **MEXE02**		
Coordinates Management Method				Battery-Free Absolute System		
Operation	Positioning Operation	Operation Method	Positioning Operation	○		
			Positioning Push-Motion Operation*2	○		
		Linked Operation	Independent Operation	○		
			Sequential Operation	○		
			Multi-Speed Operation (Continuous Sequential Operation)	○		
		Sequence Control	Loop Operation (Repeating)	○		
			Event Jump Operation	○		
	Speed Control Operation (Continuous Operation)			○		
	Return-To-Home Operation		Return-To-Home Operation*3	○		
			High-Speed Return-to-Home Operation	○		
	JOG Operation			○		
Monitor and Information			Waveform Monitoring	○		
			Overload Detection	○		
			Overheat Detection (Motor and Driver)	○		
			Position and Speed Information	○		
			Temperature Detection (Motor and Driver)	○		
			Motor Load Factor	○		
			Distance Traveled/Integrating Distance Traveled	○		
Alarm				○		

*1 This can be used via the support software **MEXE02**.
*2 The push-motion operation cannot be operated with the geared motors and the Rotary Actuators **DGII** Series.
*3 The return-to-home operation using direct I/O is not available.

■Communication Specifications

●EtherCAT

Communication Protocol	IEC 61158 Type12
Physical Layer/Protocol	100 BASE-TX (IEEE 802.3)
Baud Rate	100 Mbps
Communication Cycle	Free Run Mode: 1 ms min. SM2 Event Synchronous Mode: 1 ms min. DC Mode: 0.25 ms, 0.5 ms, 1 ms, 2 ms, 3 ms, 4 ms, 5 ms, 6 ms, 7 ms, 8 ms
Communication Port/ Connector	RJ45×2 (Shield-compatible) ECAT IN: EtherCAT Input ECAT OUT: EtherCAT Output
Topology	Daisy Chan (Max. 65,535 nodes)
Process Data	Variable PDO Mapping
Sync Manager	SM0: Mailbox Output SM1: Mailbox Input SM2: Process Data Output SM3: Process Data Input
Mailbox (CoE)	Emergency Message SDO Request SDO Response SDO Information
Synchronous Modes	Free Run Mode (Asynchronous) SM2 Event Synchronous Mode DC Mode (SYNC0 Event Synchronous)
Device Profile	IEC 61800-7 CiA402 Drive Profile

●EtherNet/IP

Communication Protocol		EtherNet/IP (Complies with CT18)
Vendor ID		187: Oriental Motor Company
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
Number of Occupied Bytes	Output (Scanner → Driver)	40 bytes
	Input (Driver → Scanner)	56 bytes
Implicit Communication	Number of Supported Connections	2
	Connection Type	Exclusive Owner, Input Only
	Communication Cycle (RPI)	1～3200 ms
	Connection Type (Scanner → Driver)	Point–to–Point
	Connection Type (Driver → Scanner)	Point–to–Point, Multicast
	Data Trigger	Cyclic
IP Address Setting Method		IP address setting switch, Parameter, DHCP
Compatible Topologies		Star, Linear, Ring (Device Level Ring)

●PROFINET

Communication Protocol		PROFINET IO Ver.2.4
Vendor ID		0x33E: ORIENTAL MOTOR
Transmission Rate		100 Mbps (Autonegotiation)
Communication Mode		Full Duplex (Autonegotiation)
Cable Specifications		Shielded Twisted-Pair (STP) Cable Stroke/Cross, Category 5e min. Recommended
Communication Connector		RJ45×2 (Shield-compatible)
Conformance Class		B
RT/IRT		RT
NetLoad Class		I
Protocol to be supported		DCP, LLDP, SNMP, MRP
Number of occupied bytes	Output (Host Controller → Driver)	40 byte
	Input (Driver → Host Controller)	56 byte
Compatible Topologies		Star, Tree, Line, Ring

●RS-485 Communication

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 Based, Straight Cable Use a shielded twisted pair cable (TIA/EIA-568B CAT5e or higher is recommended) and keep the total wiring distance including extension to 50 m or less.*
Communication Mode	Half duplex, asynchronous communication (data: 8 bits, stop bit: 1 bit or 2 bits, parity: none, even, or odd)
Transmission Rate	Select either from 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps, or 230400 bps.
Connection Units	Up to 31 drivers can be connected to a single programmable controller (master device).

*If the motor cable or power supply cable generates an undesirable amount of noise depending on the wiring or configuration, shield the cable or install a ferrite core.

■General Specifications

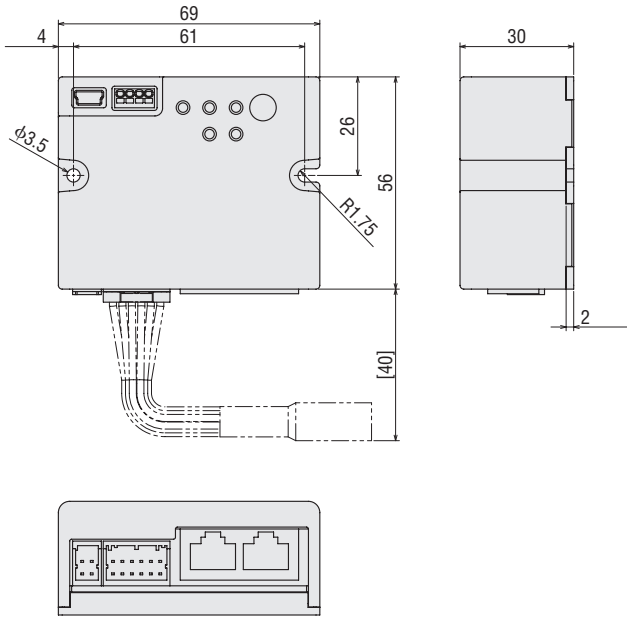
		AZD-KRED, AZD-KREP AZD-KRPN, AZD-KRX	AZD-KR2D
Degree of Protection		IP20	IP10
Operating Environment	Ambient Temperature	0 to +50°C (+32 to +122°F) (Non-freezing)	
	Ambient Humidity	85% or less (Non-condensing)	
	Altitude	Up to 1000 m above sea level	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	
Storage Conditions Transportation Conditions	Ambient Temperature	−25 to +70°C (−13 to +158°F) (Non-freezing)	
	Ambient Humidity	85% or less (Non-condensing)	
	Altitude	Up to 3000 m above sea level	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	

Note

- When measuring insulation resistance or performing dielectric strength test, disconnect the motor and driver.
  Also, do not perform these tests on the ABZO Sensor (Absolute Sensor) part of the motor.

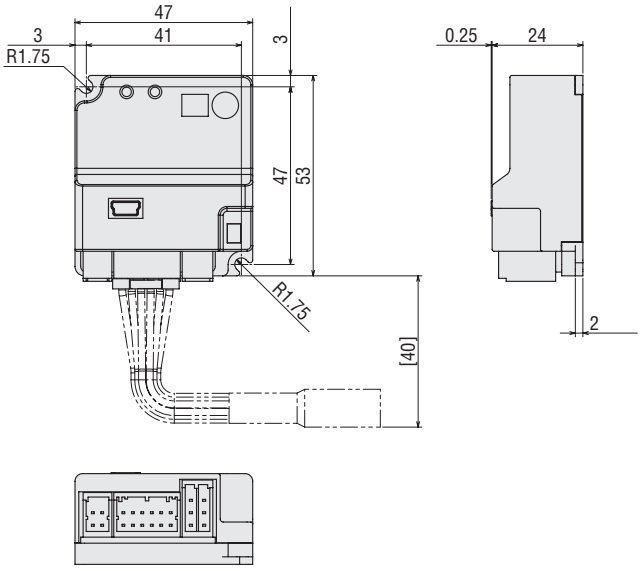
Dimensions Unit: mm

Type	Product Name	Mass [kg]
EtherCAT Drive Profile-Compatible	**AZD-KRED**	0.11
EtherNet/IP	**AZD-KREP**	
PROFINET	**AZD-KRPN**	



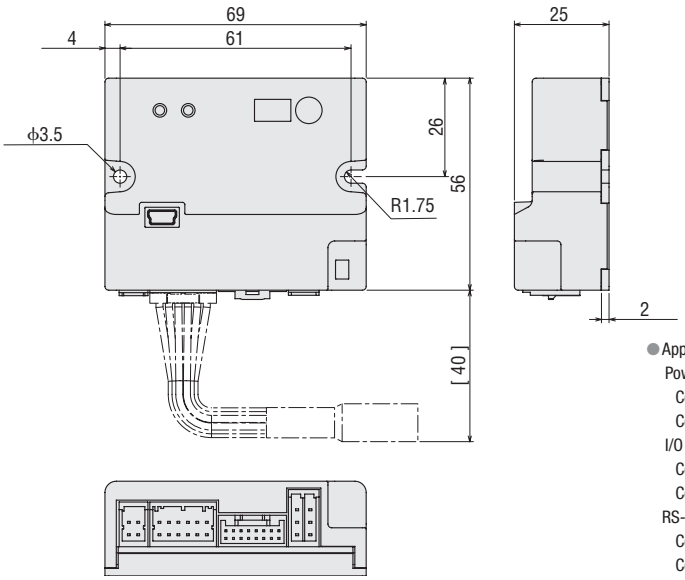
● Applicable Connector
Power Connector (CN1)
Connector Housing: 1-1827864-2 (TE Connectivity)
Contact: 1827589-2 (TE Connectivity)

Type	Product Name	Mass [g]
RS-485 Communication Type	**AZD-KR2D**	56



● Applicable Connectors
Power Connector (CN1)
Connector Housing: 1-1827864-2 (TE Connectivity)
Contact: 1827589-2 (TE Connectivity)
RS-485 Communication Connector (CN3)
Connector Housing: 1-1827579-1 (TE Connectivity)
Contact: 1827588-2 (TE Connectivity)

Type	Product Name	Mass [g]
Pulse Input Type with RS-485 Communication	**AZD-KRX**	84



● Applicable Connectors

Power Connector (CN1)

Connector Housing: 1-1827864-2 (TE Connectivity)

Contact: 1827589-2 (TE Connectivity)

I/O signal connector (CN3)

Connector Housing: 501646-1600 (molex)

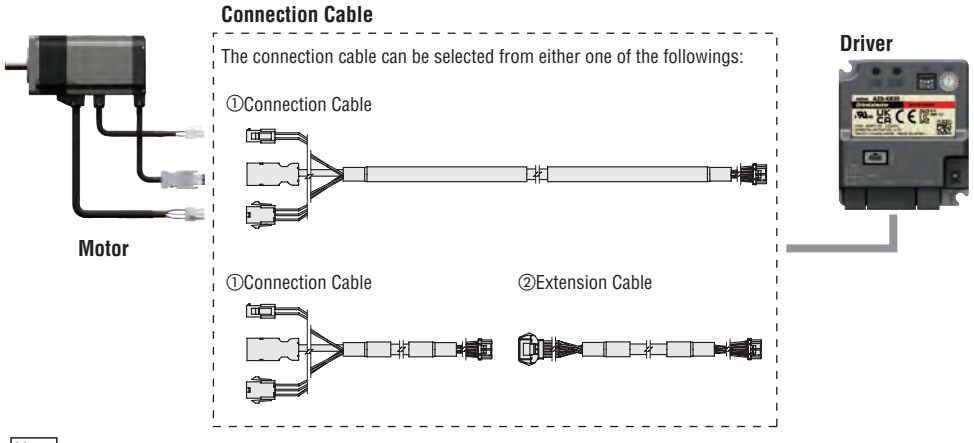
Contact: 501647-1100 (molex)

RS-485 Communication Connector (CN4)

Connector Housing: 1-1827579-1 (TE Connectivity)

Contact: 1827588-2 (TE Connectivity)

Connection Cables



Note
- Up to 3 cables can be used to connect the motor and driver.
- The maximum distance between the motor and driver is 10 m.

①Connection Cables / Flexible Connection Cables

These cables are used to connect the motor and the driver. Use the flexible connection cable in applications where the cable is bent and flexed repeatedly.

Product Line

For **AZM14**, **AZM15**, **AZM24**, **AZM26**

◇Connection Cables

•For Motor / Encoder

Length L [m]	Product Name
0.5	**CCM005Z2AAF**
1	**CCM010Z2AAF**
3	**CCM030Z2AAF**
5	**CCM050Z2AAF**
10	**CCM100Z2AAF**

◇Flexible Connection Cables

•For Motor / Encoder

Length L [m]	Product Name
0.5	**CCM005Z2AAR**
1	**CCM010Z2AAR**
3	**CCM030Z2AAR**
5	**CCM050Z2AAR**
10	**CCM100Z2AAR**

For **AZM46**, **AZM48**, **AZM66**, **AZM69**

◇Connection Cables

•For Motor / Encoder

Length L [m]	Product Name
0.5	**CCM005Z2ABF**
1	**CCM010Z2ABF**
3	**CCM030Z2ABF**
5	**CCM050Z2ABF**
10	**CCM100Z2ABF**

•For Motor / Encoder / Electromagnetic Brake

Length L [m]	Product Name
0.5	**CCM005Z2ACF**
1	**CCM010Z2ACF**
3	**CCM030Z2ACF**
5	**CCM050Z2ACF**
10	**CCM100Z2ACF**

◇Flexible Connection Cables

•For Motor / Encoder

Length L [m]	Product Name
0.5	**CCM005Z2ABR**
1	**CCM010Z2ABR**
3	**CCM030Z2ABR**
5	**CCM050Z2ABR**
10	**CCM100Z2ABR**

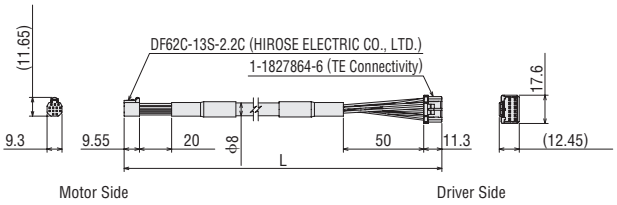
•For Motor / Encoder / Electromagnetic Brake

Length L [m]	Product Name
0.5	**CCM005Z2ACR**
1	**CCM010Z2ACR**
3	**CCM030Z2ACR**
5	**CCM050Z2ACR**
10	**CCM100Z2ACR**

●Dimensions Unit: mm

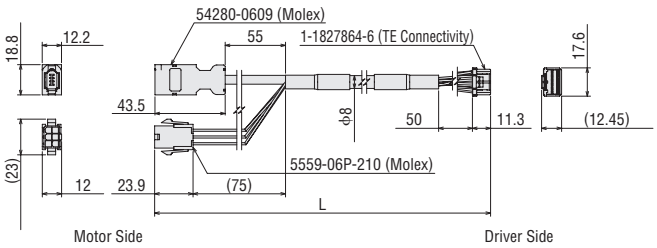
For **AZM14**, **AZM15**, **AZM24**, **AZM26**

•For Motor / Encoder

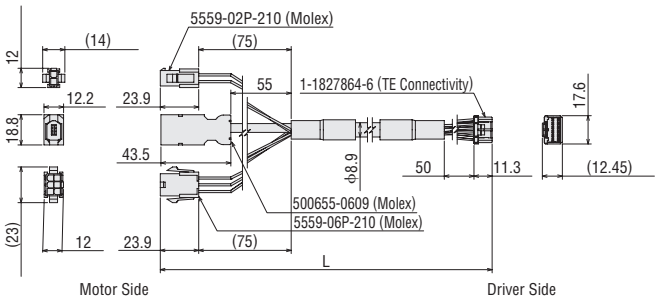


For **AZM46**, **AZM48**, **AZM66**, **AZM69**

•For Motor / Encoder



•For Motor / Encoder / Electromagnetic Brake



②Extension Cables / Flexible Extension Cables Driver Side

These are cables to provide an extension between the connection cable and the driver. When extending the connection, keep the overall cable length at 10 m or less.

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

●Product Line

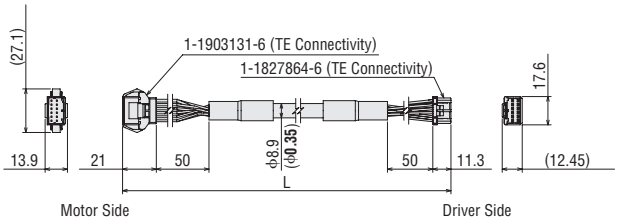
◇Extension Cables

Length L [m]	Product Name
1	**CCM010Z2ADFT**
3	**CCM030Z2ADFT**
5	**CCM050Z2ADFT**

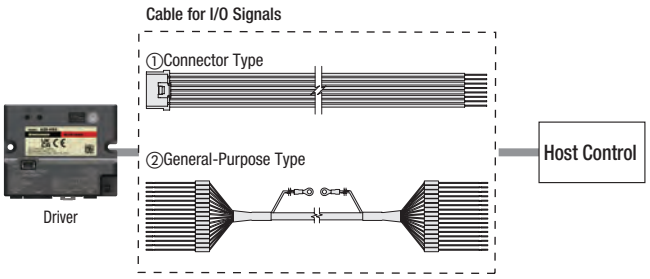
◇Flexible Extension Cables

Length L [m]	Product Name
1	**CCM010Z2ADRT**
3	**CCM030Z2ADRT**
5	**CCM050Z2ADRT**

●Dimensions Unit: mm



Cable for I/O Signals



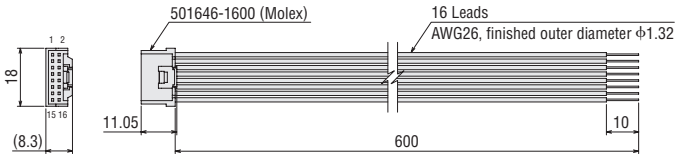
①Connector Type

- Unbundled wires on one end

Product Line

Product Name	Applicable Drivers	Number of Lead Wire Cores	AWG
LCD06Z2BY	Pulse Input Type with RS-485 Communication	16	26

Dimensions Unit: mm



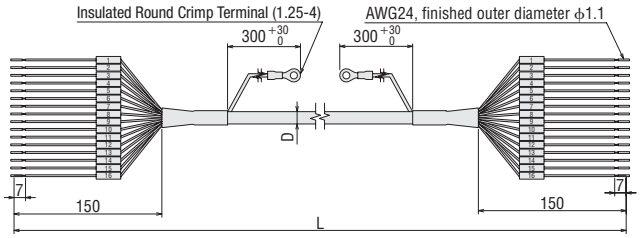
②General-Purpose Type

- 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 Name	Length L [m]	Number of Lead Wire Cores	Outer Diameter D [mm]	AWG
CC06D005B-1	0.5	6	ϕ5.4	24
CC06D010B-1	1			
CC06D015B-1	1.5			
CC06D020B-1	2			
CC10D005B-1	0.5	10	ϕ6.7	
CC10D010B-1	1			
CC10D015B-1	1.5			
CC10D020B-1	2			
CC12D005B-1	0.5	12	ϕ7.5	
CC12D010B-1	1			
CC12D015B-1	1.5			
CC12D020B-1	2			
CC16D005B-1	0.5	16	ϕ7.5	
CC16D010B-1	1			
CC16D015B-1	1.5			
CC16D020B-1	2			

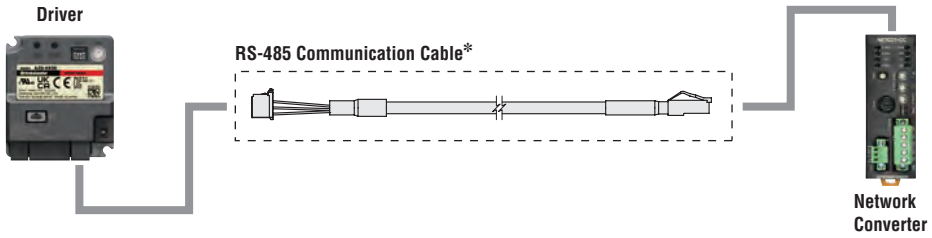
Dimensions Unit: mm



The figure depicts 16 core wires.

RS-485 Communication Cables

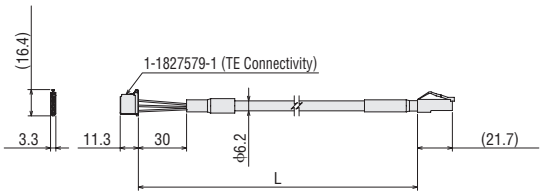
These cables are used to connect the driver to a network converter or a robot controller **MRC01**.



Product Line

Product Name	Length L [m]
CC02FLT6	2
CC05FLT6	5

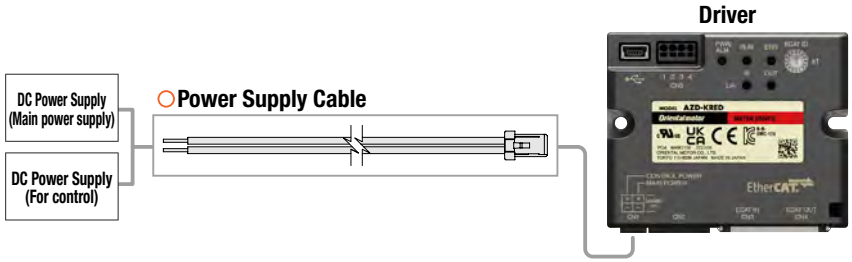
Dimensions Unit: mm



*This cable cannot be used to connect the drivers together.

Power Supply Cable

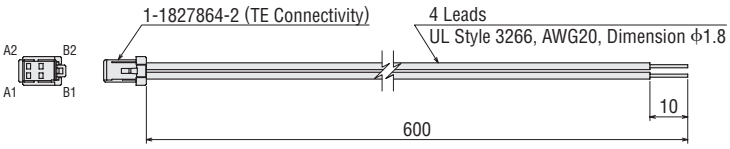
These cables are used to connect the driver and the power supply. Connecting with the main power supply and control power supply is simple.



Product Line

Product Name
LCD06Z2AY

Dimensions Unit: mm



Robot Controller

The **MRC01** robot controller supports easy programing and control of in-house designed custom built robots with 3 simple steps: “Initial Setup”, “Operation Programing” and “Operational Checking”.
Use the αSTEP **AZ** Series family of products to support your in-house design for improved performance and ease of use.

Robot Controller

MRC01

• Easily introduce custom-built robots to existing systems
The connection between the **MRC01** and host system is controlled directly via EtherNet/IP™. Custom-built robots can be added easily, without the need to make major changes to the control system from the existing equipment.

Suitable for Mobile Automation

This product line has been designed under the concept of being compact, lightweight, and able to be battery driven. Ideal for installation in transportation devices such as autonomous mobile robots and automated guided vehicles. These products contribute to the creation of an automation line that can be easily altered as desired, as well as achieving modular automation, both of which are expected to become key elements of production lines in the future.

Brushless DC Motors
BLV-R Series

These are DC power input brushless motors that contribute to machine downsizing and weight reduction.
Low-speed operation from 1 r/min can be performed. Operation by battery-drive is also possible.

- Output Power: 60 W, 100 W, 200 W, 400W
- Speed Control Range: 1 to 4000 r/min
- Modbus (RTU) and CANopen Communications Compatible

Oriental motor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in January 2024.

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