

24 VDC Drive
Compact Articulated Robot Arm

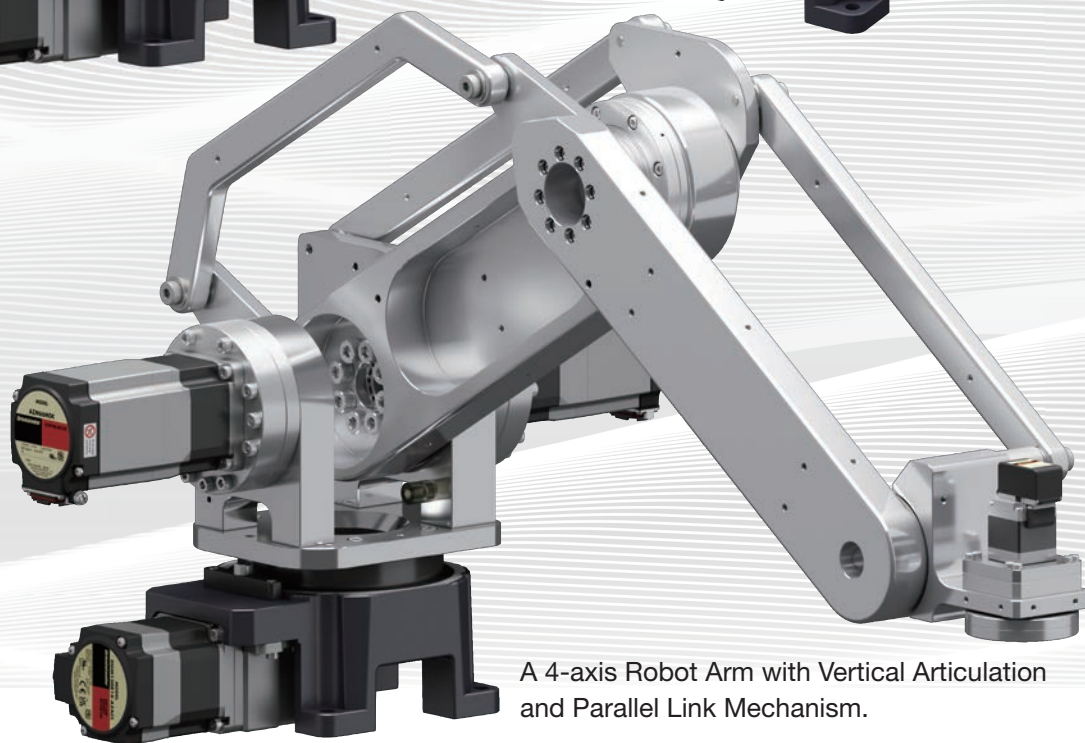
OVR Series

A Simple, Lightweight and Compact
Vertical Articulated Robot Arm Structure
with 5 or 6 Axes of Movement

Save Labor and Costs



A Compact, Lightweight Horizontal
Robot Arm with a Flat, Articulated
Structure.



A 4-axis Robot Arm with Vertical Articulation
and Parallel Link Mechanism.

Features of **OVR**

Easy Control with the Robot Controller **MRC01**

The **α STEP AZ** Series allows the use of Oriental Motor's **MRC01** Robot Controller.

Even inexperienced robot designers can master the programming software **MRC Studio** in about 30 minutes. This includes 10 minutes for initial setup and 20 minutes for learning the software's functionality.



Initial Setting

Operation Programming

Operation Check

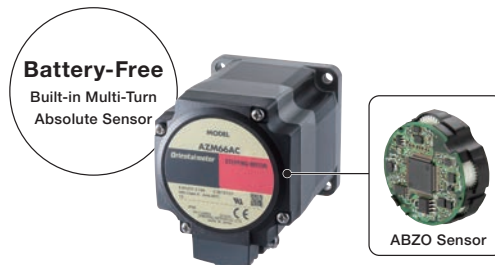


Free
Download!

Uses Oriental Motor's **AZ** Series

All axes utilize the **α STEP AZ** Series

These motors have built-in battery-free absolute sensors, eliminating the need for external sensors. Standard catalog products are utilized, allowing quick procurement for maintenance needs.



DC Input

The drive components contain motors powered by DC input, simplifying power routing and allowing for flexible installation and layout changes. Battery operation is also possible, such as mounting drivers on AGVs/AMRs.

Compact and Lightweight Design

The standard installation area for the arm is 130 mm × 130 mm, roughly the size of three business cards. The **OVR4088K5-V** model has a larger installation area of 160 mm × 190 mm. The arm is also made of an aluminum alloy to reduce weight.

Easy Maintainability and Customization

Motors can be obtained quickly and be replaced by the customer, reducing the cost and time burden of maintenance. Please consult us when changing the motors used, changing the arm length, or additional processing for the arm.

High Positioning Accuracy

The repetitive positioning accuracy is ± 0.05 mm. These can also be used to automate processes that require high precision. If even higher positioning accuracy is needed, customization is also possible. Please contact us for details.

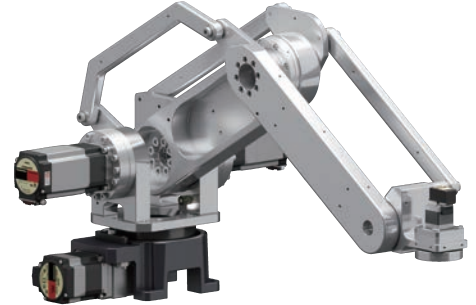
Articulated Robot Arm Product Line

*The **OVR** Series are not collaborative robots (cobots).
When using this series, please consider their safety aspects as industrial robots

4-Axis Vertical Type **OVR4048K5-V/OVR4068K5-V/OVR4088K5-V**

Robot arm with parallel link mechanism

- To keep the arm's end level with the ground, a parallel link mechanism is used.
A flip axis can be added using accessories if the wrist axis angle needs to be changed.
- The motors that drive the two arms are positioned below the joints to reduce the load on the joints and increase the transportable mass to 5 kg.
- The robot arm is available in three types with maximum horizontal reach lengths of 480 mm, 680 mm, and 880 mm. By recombining different arm components, the reach length can also be modified to 580 mm or 780 mm.



5-Axis Vertical Type **OVR5035K1-V**

Compact and lightweight vertical articulated robot arm

- This is a standard vertical articulated robot arm with a body mass of just 12.5 kg.
It is ideal for customizing with electric linear slides.
- The maximum reach length is 350 mm (horizontal) and the transportable mass is 1 kg.



6-Axis Vertical Type **OVR6048K1-V**

Using 6-axis motors allows the robot to approach loads from any angle

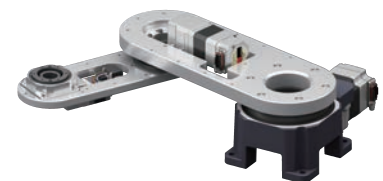
- This is a 6-axis vertically articulated robot arm with one additional axis in front of the wrist.
It can approach from angles that a 5-axis vertical articulated robot arm cannot.
- With harmonic drive® is the arm drive, it has a lightweight design of 12.5 kg even with motors on 6 axes
- The maximum reach length is 480 mm (horizontal) and the transportable mass is 1 kg.



3-Axis Horizontal Type **OVR3041K3-H**

Lightweight and flat horizontal articulated robot arm

- This is a lightweight and thin horizontal articulated robot arm, with a mass of 7.5 kg and a height of just 140 mm.
By elevating and lowering the base, these robot arms can approach locations that are too narrow for standard SCARA robots.
- The maximum reach length is 410 mm and the transportable mass is 3 kg.



*The third arm must be supplied by the customer.

Mounting brackets for the Oriental Motor electric gripper **EH** Series are available.

Product Number

OVR 4 048 K 1 - V

① ② ③ ④⑤ ⑥

① Series	OVR: OVR Series
② Number of Axis	3: Axis 3 4: Axis 4 5: Axis 5 6: Axis 6
③ Max. Reach Length (Horizontal)	035: 350 mm 041: 410 mm 048: 480 mm 068: 680 mm 088: 880 mm
④ Power Supply Voltage	K: DC Power Supply Input Specifications
⑤ Transportable Mass	1: 1 kg 3: 3 kg 5: 5 kg
⑥ Type	V: Vertical Articulated H: Horizontal Articulated

Product Line

Type	Number of Axis	Product Name
Vertical Articulated	4	OVR4048K5-V
		OVR4068K5-V
		OVR4088K5-V
	5	OVR5035K1-V
Horizontal Articulated	6	OVR6048K1-V
	3	OVR3041K3-H

Combined Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name
24 VDC	AZD-KD



◇ mini Driver RS-485 Communication Type

Power Supply Input	Product Name
24 VDC	AZD-KR2D



Other drivers compatible with various networks can be used.

Robot Controller

Product Name
MRC01



The **MRC01** can be used in combination with the drivers listed above are used.

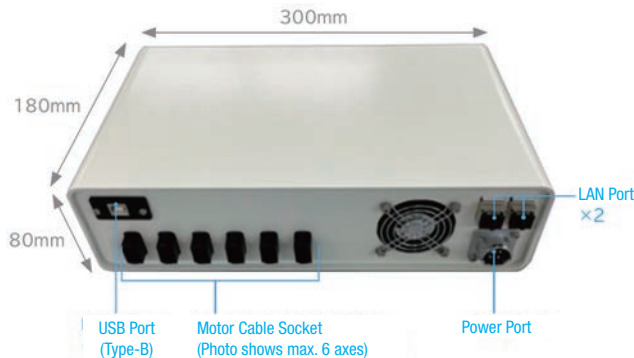
This robot controller allows a custom-built robot to be easily installed and controlled in three steps: initial settings, operation programming, and operation check. Control is possible using Ethernet I/P from the programmable controller.

Robot Controller MRCU Series

The **MRCU** Series controller units have drivers (max. 7 units) and the **MRC01** built into the box.

By simply plugging in the connectors, the **MRCU** can be installed and booted up quickly on site, reducing labor hours.

Number of Axis
3
4
5
6
7



Specifications & Operating Range Diagram

Specifications



Product Name		OVR4048K5-V	OVR4068K5-V	OVR4088K5-V
Number of Axes		Axis 4		
Input Voltage		24 VDC		
Max. Reach Length	Vertical	455 mm	729 mm	900 mm
	Horizontal	480 mm	680 mm	880 mm
Transportable Mass* ¹		5 kg		
Standard Cycle Time* ²		0.7 sec		
Moving Range* ³	S-axis (Rotation)	±170 deg		
	L-axis (Lower arm)	-27 ~ +80 deg		
	U-axis (Upper arm)	-58 ~ +35 deg		
	R-axis (Wrist rotation)	±180 deg		
Repetitive Positioning Accuracy* ⁴		±0.05 mm		
Permissible Load Inertia (Wrist rotation axis)		0.069 kgm ²		
Body Mass		16.5 kg	17.4 kg	26.9 kg
Installation Type		Stand Mount		

*1: Value when our company's evaluation load is mounted.

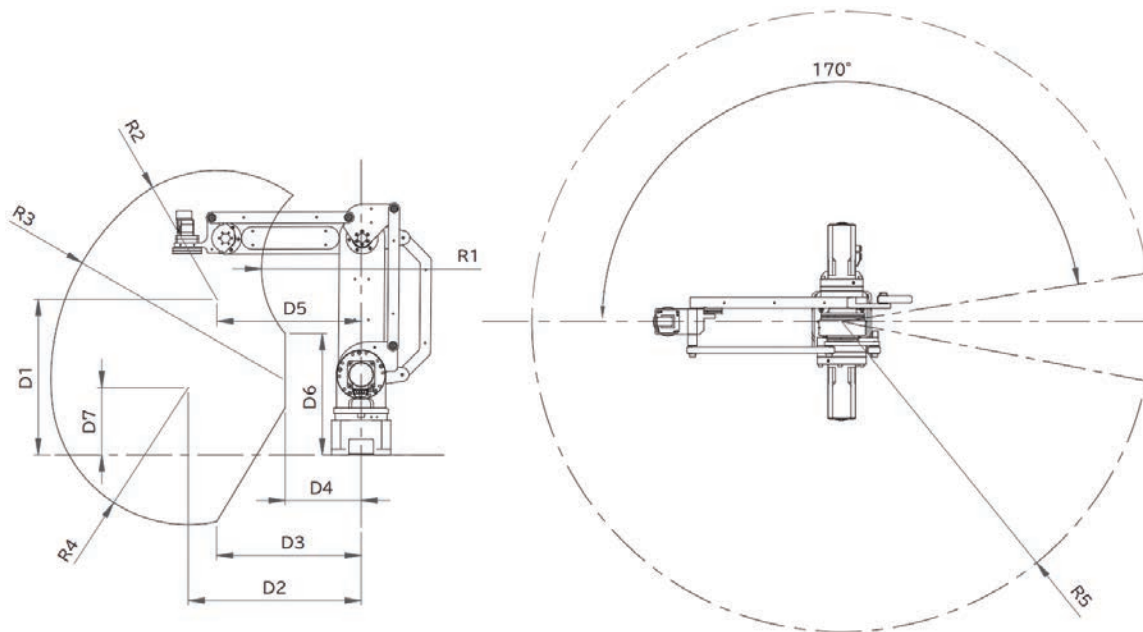
*2: This is the time required to move a 1 kg load back and forth between two points separated by 25 mm in height and 300 mm in horizontal distance. Cycle time when the Oriental Motor robot controller **MRC01** was used.

*3: This is the range of movement in the ± direction with respect to the installation home position (0 deg).

*4: Based on the specification values for each axis gear.

*Recommended power supply capacity 24 VDC 500 W

Operating Range Diagram (mm)



Product Name	R1	R2	R3	R4	R5	D1	D2	D3	D4	D5	D6	D7
OVR4048K5-V	182	240	210	206	480	208	276	242	150	224	225	159
OVR4068K5-V	221	281	508	300	680	342	380	317	175	317	266	148
OVR4088K5-V	400	386	483	386	880	280	496	370	156	473	194	151

Specifications



Product Name		OVR5035K1-V
Number of Axes		Axis 5
Input Voltage		24 VDC
Max. Reach Length	Vertical	631 mm (Facing up)
	Horizontal	350 mm (Facing down)
Transportable Mass* ¹		1 kg
Standard Cycle Time* ²		0.9 sec
Moving Range* ³	S-axis (Rotation)	±170 deg
	L-axis (Lower arm)	-55 ~ +105 deg
	U-axis (Upper arm)	-115 ~ +145 deg
	Bp-axis (Wrist vertical oscillation)	-90 ~ +125 deg
	R-axis (Wrist rotation)	±180 deg
Repetitive Positioning Accuracy* ⁴		±0.05 mm
Permissible Load Inertia (Wrist rotation axis)		0.0134 kgm ²
Body Mass		12.5 kg
Installation Type		Stand Mount

*1: Value when our company's evaluation load is mounted.

*2: This is the time required to move a 1 kg load back and forth between two points separated by 25 mm in height and 300 mm in horizontal distance. Cycle time when the Oriental Motor robot controller **MRC01** was used.

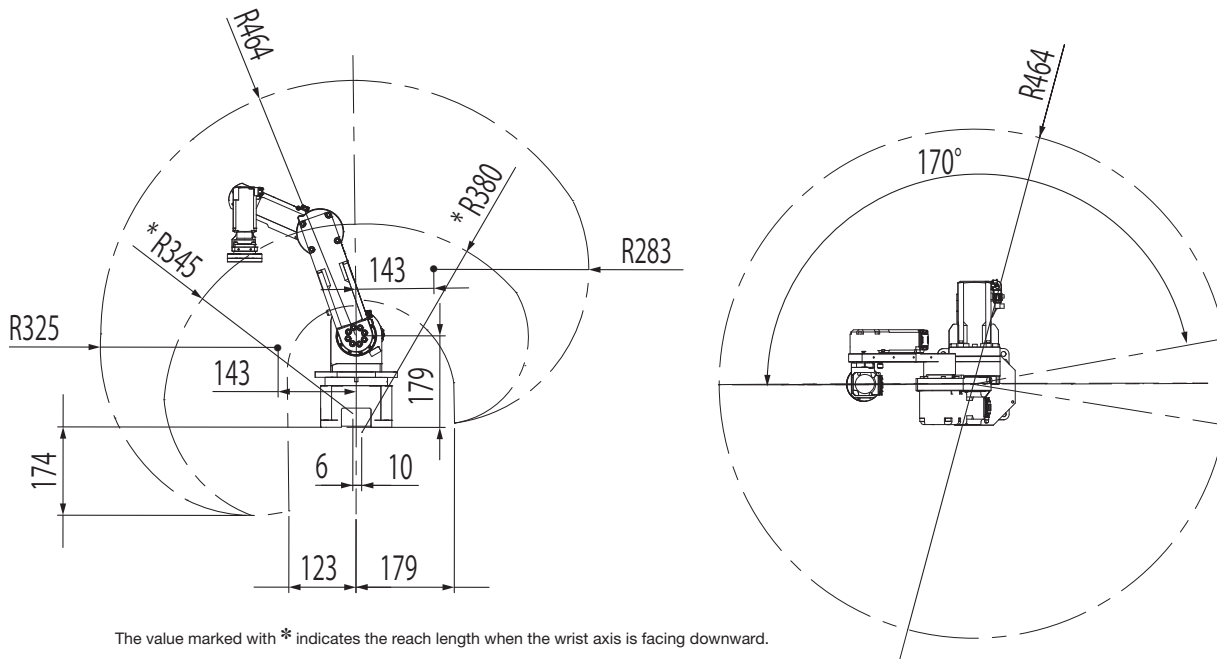
*3: This is the moving range from the installation home position (L, U, and Bp axes vertical) with the positioning pins in the home pin holes.

*4: Based on the specification values for each axis gear.

*Recommended power supply capacity 24 VDC 600 W

*2 kg can be transported when driven using 48 VDC input voltage. Please consult us about drive patterns.

Operating Range Diagram (mm)



Specifications



Product Name		OVR6048K1-V
Number of Axes		Axis 6
Input Voltage		24 VDC
Max. Reach Length	Vertical	735 mm (Facing up)
	Horizontal	568 mm/480 mm (Facing down)
Transportable Mass* ¹		1 kg
Standard Cycle Time* ²		0.7 sec
Moving Range* ³	S-axis (Rotation)	±170 deg
	L-axis (Lower arm)	-59 ~ +108 deg
	U-axis (Upper arm)	-134 ~ +150 deg
	R-axis (Wrist horizontal oscillation)	±180 deg
	Bp-axis (Wrist vertical oscillation)	-106 ~ +117 deg
	T-axis (Wrist rotation)	±180 deg
Repetitive Positioning Accuracy* ⁴		±0.05 mm
Permissible Load Inertia (Wrist rotation axis)		0.069 kgm ²
Body Mass		12.5 kg
Installation Type		Stand Mount

*1: Value when our company's evaluation load is mounted.

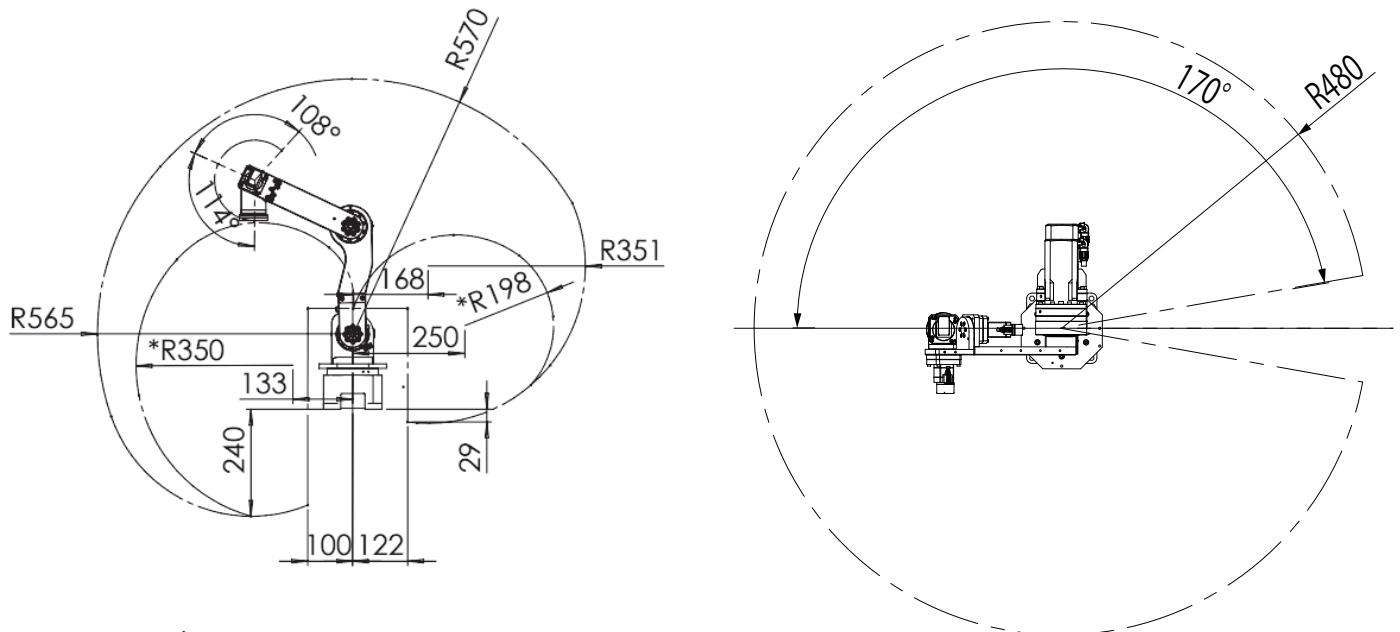
*2: This is the time required to move a 1 kg load back and forth between two points separated by 25 mm in height and 300 mm in horizontal distance. Cycle time when the Oriental Motor robot controller **MRC01** was used.

*3: This is the moving range from the installation home position with the positioning pins in the home pin holes.

*4: Based on the specification values for each axis gear.

*Recommended power supply capacity 24 VDC 600 W

Operating Range Diagram (mm)



The value marked with * indicates the reach length when the wrist axis is facing downward.

Specifications



Product Name		OVR3041K3-H
Number of Axes		Axis 3
Input Voltage		24 VDC
Arm Length	Arm 1	230 mm
	Arm 2	180 mm
Transportable Mass* ¹		3 kg
Moving Range* ²	Axis 1	±170 deg
	Axis 2	±140 deg
Maximum Speed	Axis 1	300 deg/s
	Axis 2	300 deg/s
	Axis 3	720 deg/s
	Composite (TCP)	1000 mm/s
Repetitive Positioning Accuracy* ³		±0.03 mm
Permissible Load Inertia		0.026 kgm ²
Body Mass		7.6 kg
Installation Type		Stand Mount/Ceiling Mount

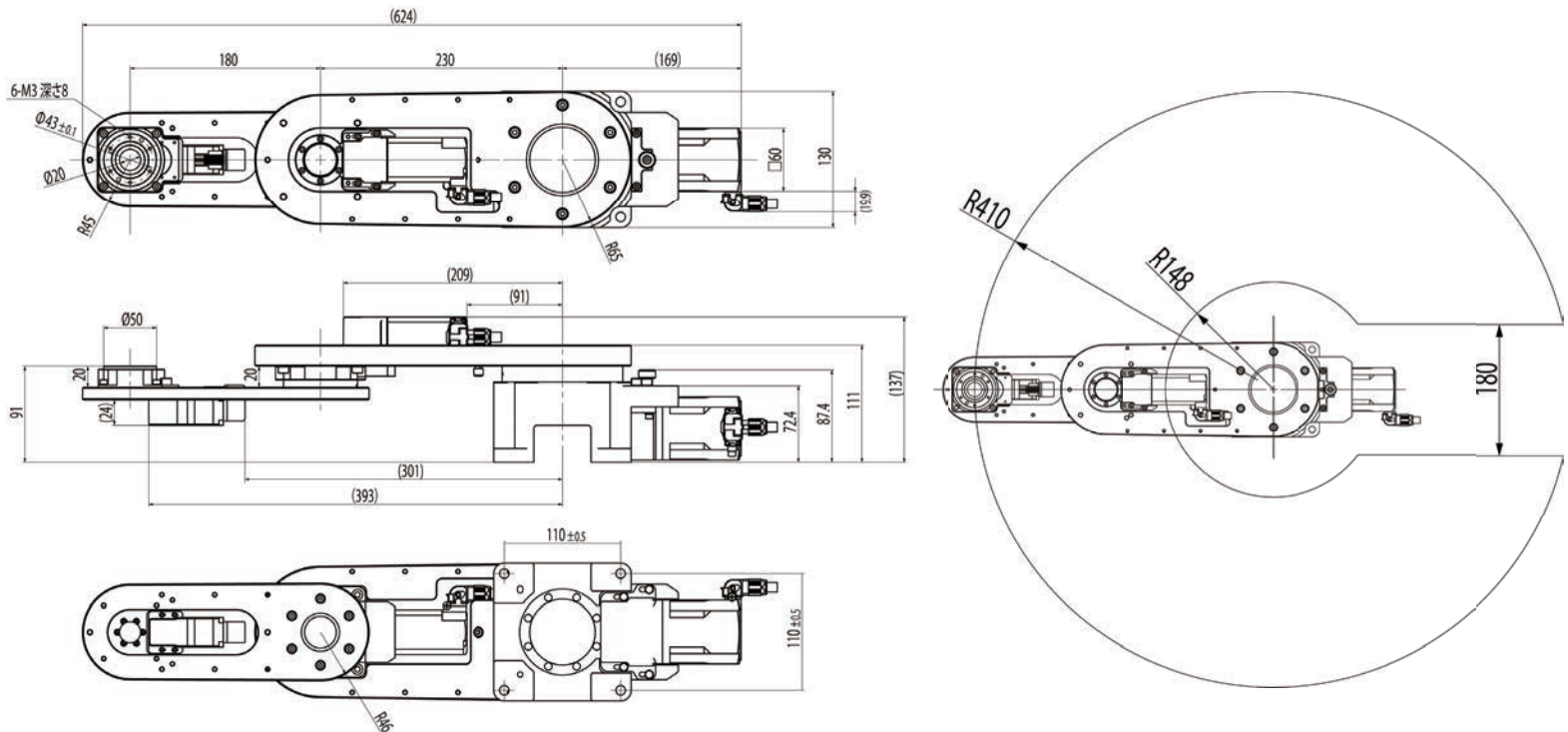
*1: Value when our company's evaluation load is mounted.

*2: This is the moving range from the installation home position with the positioning pins in the home pin holes.

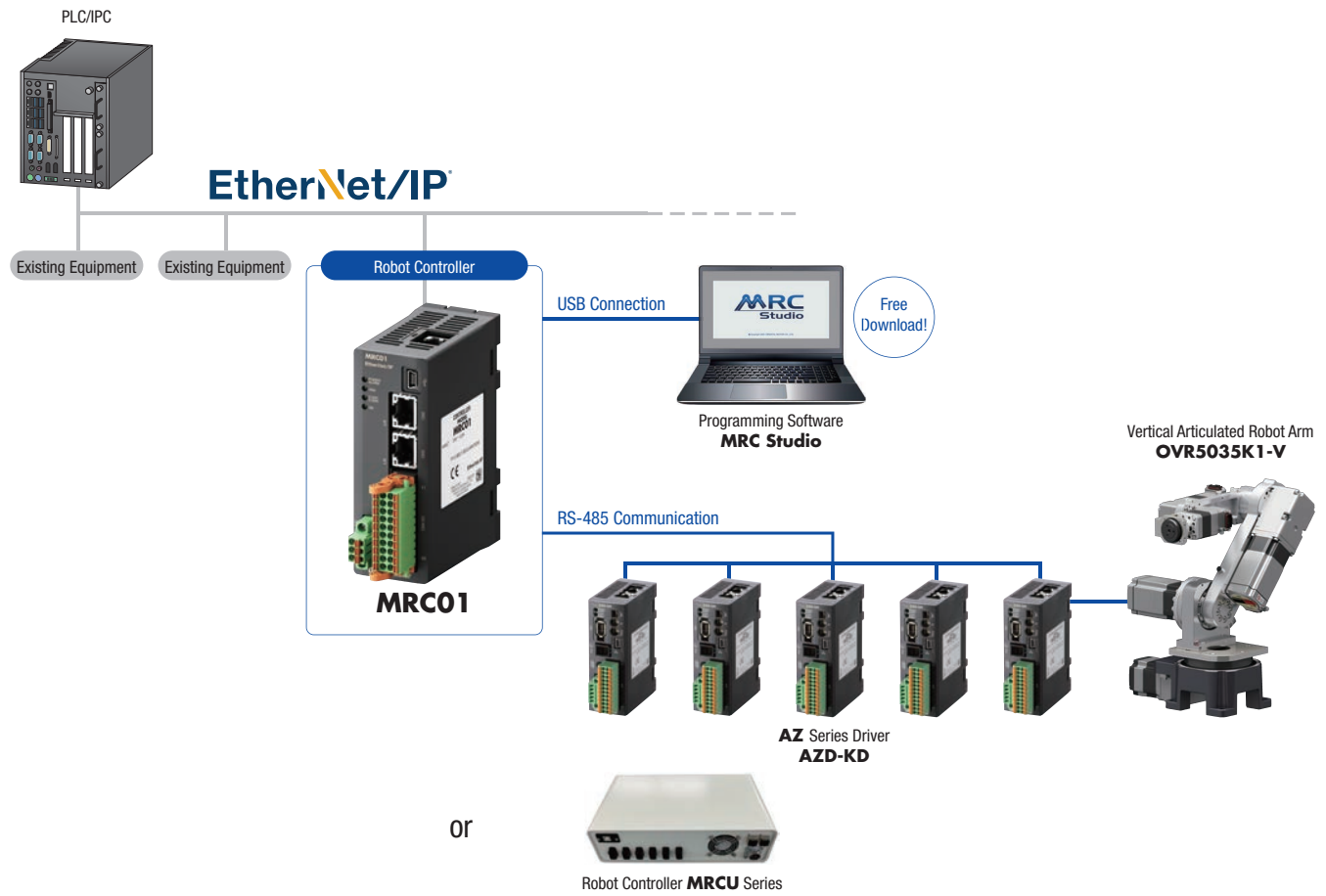
*3: Based on the specification values for each axis gear.

*Recommended power supply capacity 24 VDC 170 W

External Dimensions & Operating Range Diagram (mm)



System Configuration Example



Example Configuration

	Product Name	Quantity
Robot Arm	OVR5035K1-V	1
Robot Controller	MRC01	1
Driver	AZD-KD	5
Cables between motor drivers (when a 2 m cable is used)	CC020VZF2	1
	CCM020Z1DFR	2
	CCM020Z1CFR	2

*In addition, a DC power supply and an end effector are required.

Easy Setup in About 10 Minutes

Robot Controller **MRC01** *Orientalmotor*

This robot controller allows a robot to be easily installed and controlled in three steps: initial settings, operation programming, and operation check.
The controller is compatible with **QSTEP AZ** Series/linear & rotary actuators equipped with **AZ** Series, or robots utilizing **AZ** Series components.



Robot Controller
MRC01



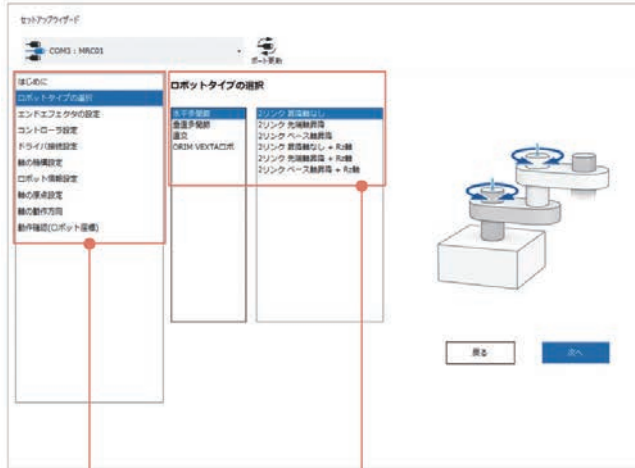
Programming Software
MRC Studio

Easy Setup & Data Setting, Even for Beginners

The programming software **MRC Studio** is available to simplify the configuration of robots from initial setup to the operation programming. Initial settings are made using an intuitive wizard to select the robot type and input mechanism information. Illustrated step-by-step guidance enables beginners to easily set up their robot. Setting operating data is easy too—just select a command and enter the value.

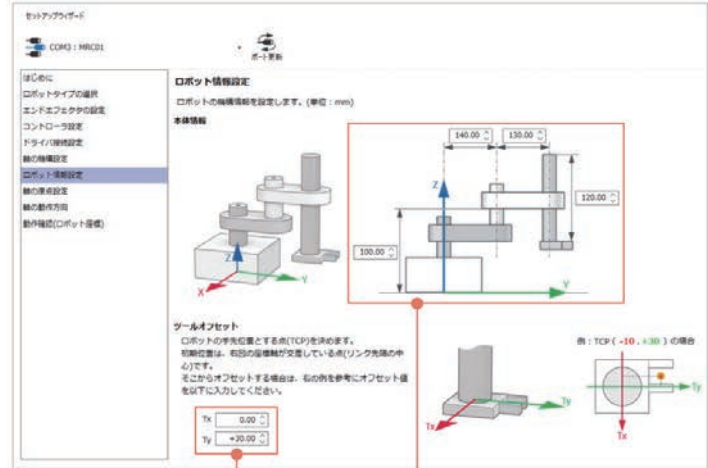
■ Follow the procedure to set up

■ Use guidance from the robot illustration to input the dimensions



Proceed through the initial setup of the robot by following the wizard menu.

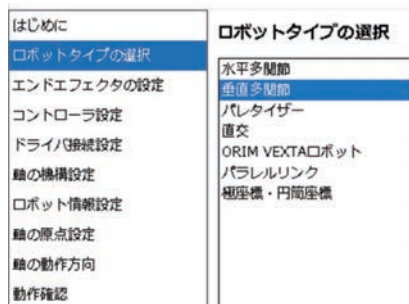
Select the robot type.



Dimensions are entered directly into the text input fields on the illustrations.

Supports 59 Different Robotic Mechanisms in a Single Unit

A wide variety of mechanisms for horizontal articulated, vertical articulated, and Cartesian robots are supported. Even if the robot type is changed because of process improvement or expansion of the line, the settings can be changed just as easily, which contributes to decreased start-up times.



Select the Robot Type

Select one of the **OVR** Vertical Articulated Robot Arms.

The dimensions, including arm length, are already set, reducing setup time.



OVR5035K1-V



OVR4068K5-V

Peripheral Equipment & Accessories

Electric Gripper EH Series Mounting Accessories for Vertical Articulated Robot Arm

The **OVR** Series vertical articulated robot arms conform to the Mechanical Interface No. 2: ISO9409-1-31.5-4-M5 standard for mounting end-effectors.

EH Series electric grippers can be installed using Oriental Motor's mounting flanges for robots.

Product Name
P3F1 (For EH3-AZAKH)
P3F2 (For EH4-AZAKH, EH4T-AZAKH)



Orientalmotor

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αSTEP Hybrid Step-Servo
Robot Controller EtherNet/IP™ (DC Input)

The MRC01 robot controller supports easy programming and control of in-house designed custom built robots with 3 simple steps: "Initial Setup", "Operating Programming" and "Operational Checking". Use the AZ Series family of products to support your in-house design for improved performance and ease of use.

- Easily introduce custom-built robots to existing systems
- Direct control via EtherNet/IP™
- Easy setup even for beginners (no ladder logic)
- Experience the "MRC Studio" programming software (trial version) before purchase
- Use with AZ Series drivers: built-in controller type (AC/DC) or mini driver RS-485 communication type (24/48 VDC)

EtherNet/IP

EtherNet/IP™ is a trademark of OCVIA.

Robot Controller MRC01
Programming Software MRC Studio

0:00 / 1:12


Need Help Sizing?

Please fill out and submit the appropriate product recommendation request form, and our technical support team will follow up with details on motor selection and software feasibility. We can also use your design drawing or CAD file if it works better for you.

- [Articulated Robot](#)
- [Parallel Link \(Delta\) Robot](#)
- [SCARA Robot](#)


Robot Application Sizing Support

Robot sizing request forms are available. Our technical support team is ready to support you.

Item	Network	Power Supply	Control Power Supply
 EtherNet/IP™ Robot Controller	EtherNet/IP™	24 VDC	24 VDC

Videos

Parallel Robot Using AZ Series Stepper Motors



[Watch Now](#)

Stepper Motors

AZ Series Stepper Motors

Specifications are subject to change without notice. This catalog was published in May 2024.

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