

## Multi-Axis Controller for Electric Actuators ECMG Series



### I/O Unit Added

Realizes "Connectivity" with the electric controller. Control of various I/O devices is consolidated into this single unit.



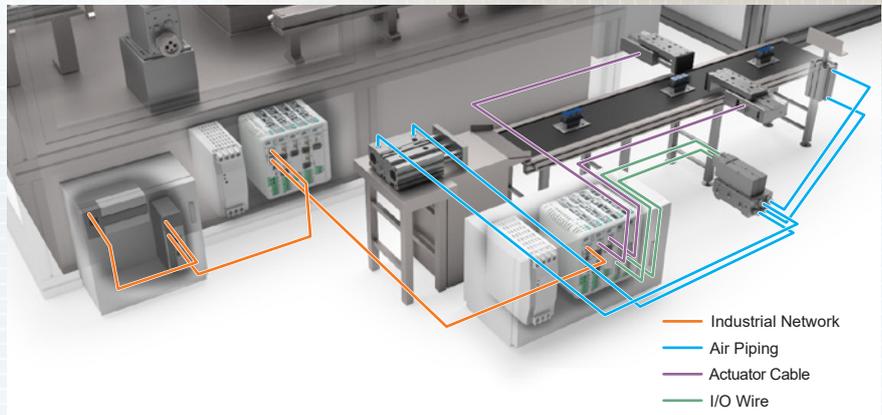
### ROBODEX Pulse

- Space saving
- Reduced design hours
- Reduced man-hours

### Realizes reduced wiring and space saving

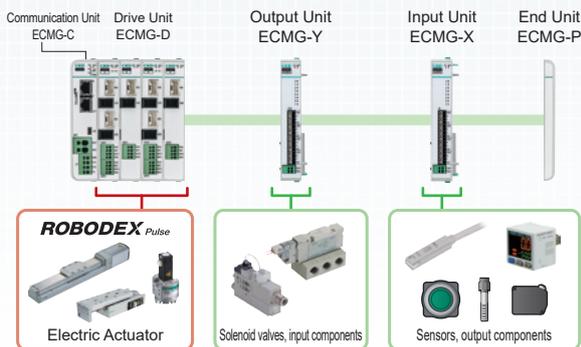
#### Consolidated into the electric controller

Input devices and output devices can be consolidated into the electric controller. Realizes reduced wiring and space saving in transfer processes



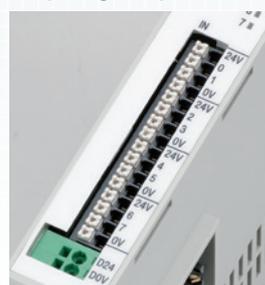
- Industrial Network
- Air Piping
- Actuator Cable
- I/O Wire

### Connection Image

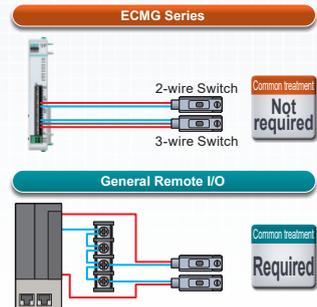


### Simple Wiring

Push-in terminal block requiring no special tools



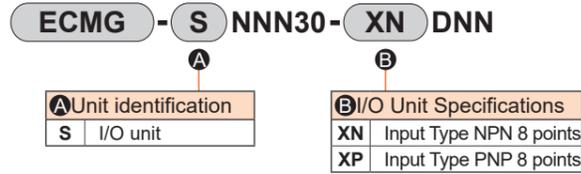
Common terminal block prepared for each contact point



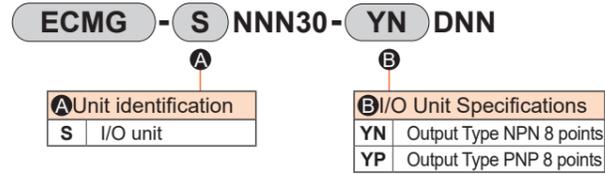


Model No. Notation

• Input Type



• Output Type



General Specifications

Item	Content	
I/O Unit Specifications	Input Type NPN/PNP 8 points	Output Type NPN/PNP 8 points
Connection Target	"Sensors"	"Solenoid valves"
Configuration tool, external interface	Depends on Communication Unit	
Power supply voltage	Control power *3	24 VDC ±10%
	I/O Unit Power Supply	
Current consumption	Control power *3	100 mA *1
	I/O Unit Power Supply	5mA
Insulation resistance	At 500 VDC 10 MΩ or more	
Proof voltage	500 VAC for 1 minute	
Ambient temperature	0 to 40°C No freezing	
Ambient humidity	35 to 80%RH No condensation	
Storage ambient temperature	-10 to 50°C No freezing	
Storage ambient humidity	35 to 80%RH No condensation	
Working atmosphere	No corrosive gas, explosive gas, or dust	
Protection structure	IP20	
Weight	Approx. 295 g	
Max. number of connected units	8 units (excluding Drive Unit)*2	

\*1 Current consumption per I/O unit

\*2 The maximum number of connected units for CC-Link specification is limited by data size. Check the Communication Specifications for details.

\*3 Control power supply is supplied in a batch from the ECMG-C communication unit. As the required power supply capacity varies depending on the unit configuration, refer to the model selection in "Multi-axis Controllers for electric actuator ECMG Series" (Catalog No.CC-1570AA).

\* This unit is not compliant with UL standards.

I/O Specifications

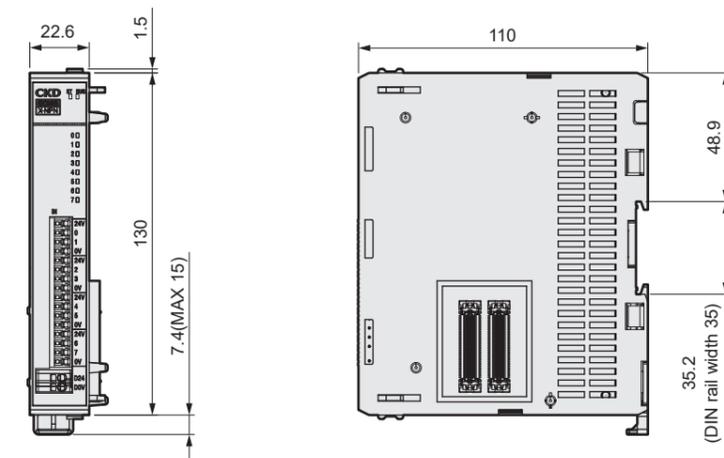
• Input Type

Item	Specifications	
	Input Type NPN 8 points	Input Type PNP 8 points
Number of input points	8 points	
Connection Method	Push-in terminal block	
Connection Terminal	Ferrule terminal	
Input voltage	24 VDC ±10%	
Input current	7.6 mA/point	
ON voltage	15.6 V or more	
OFF current	1 mA or less	
Output method of connection target	NPN Output	PNP Output

• Output Type

Item	Specifications	
	Output Type NPN 8 points	Output Type PNP 8 points
Number of output points	8 points	
Connection Method	Push-in terminal block	
Connection Terminal	Ferrule terminal	
Load voltage	24 VDC ±10%	
Load current	0.1 A or less/point	
Internal voltage drop	1.5 V or less	
Leakage current	0.1 mA or less	
Short circuit protection	Available	
Input method of connection target	Positive Common	Negative Common

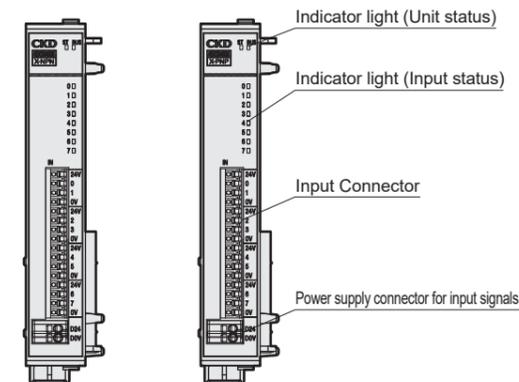
Dimensions



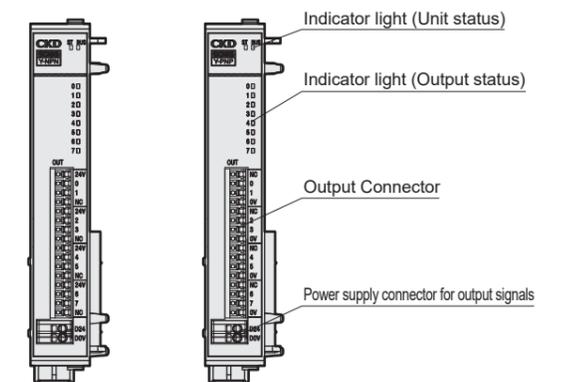
\* Input Type NPN/PNP \*8 points NPN/PNP External dimensions for 8 points are the same.

[Panel Description]

Input Type NPN/PNP 8 points



Output Type NPN/PNP 8 points



\* Signals are configured in blocks of 2 points, with 24 V and 0 V provided for each. 24 V is connected to D24 of the signal power supply connector, and 0 V is connected to D0V of the signal power supply connector. We recommend using the following ferrule terminals for connection. These cannot be purchased from CKD, so please contact each manufacturer.

Ex. Weidmüller 1-wire

Item	Model No.	Applicable Wire (mm <sup>2</sup> )
H0,25/12 HBL	9025760000	0.25
H0,34/12 TK	9025770000	0.34
H0,5/14 OR	0690700000	0.5
H0,75/14T HBL	9021040000	0.75

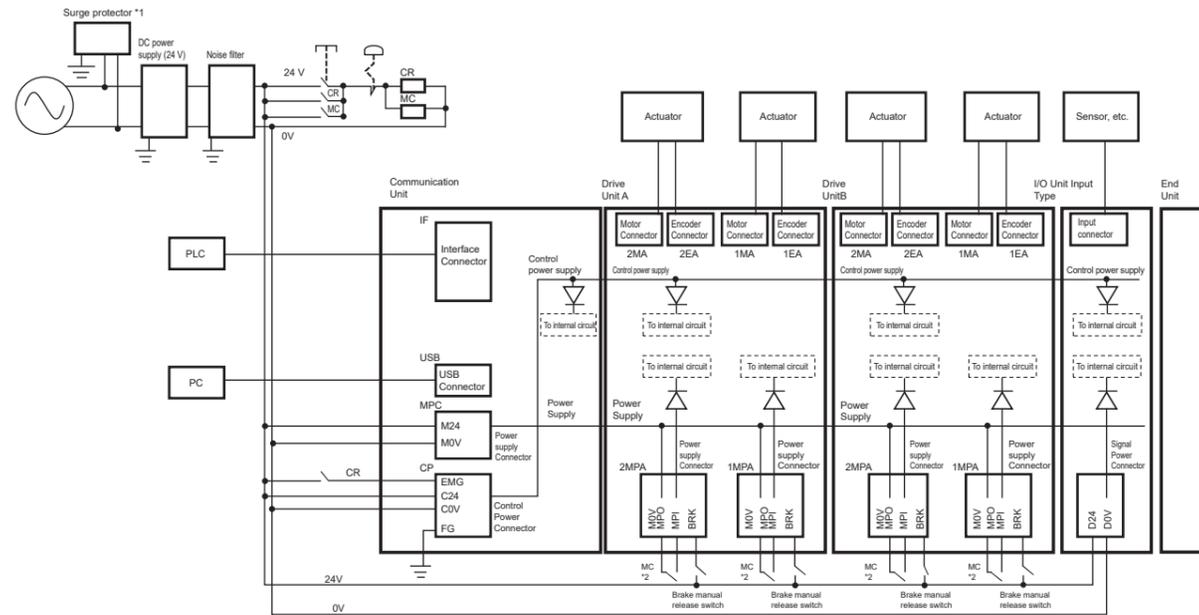
Ex. Weidmüller 2-wire

Item	Model No.	Applicable Wire (mm <sup>2</sup> )
H0,5/16 ZH OR	9037210000	0.5

⚠ Before use, be sure to read "ECMG" → "Safety Precautions" → "Instruction Manual" on the CKD Component Products Site (<https://www.ckd.co.jp/kiki/en/>).

Connection Diagram

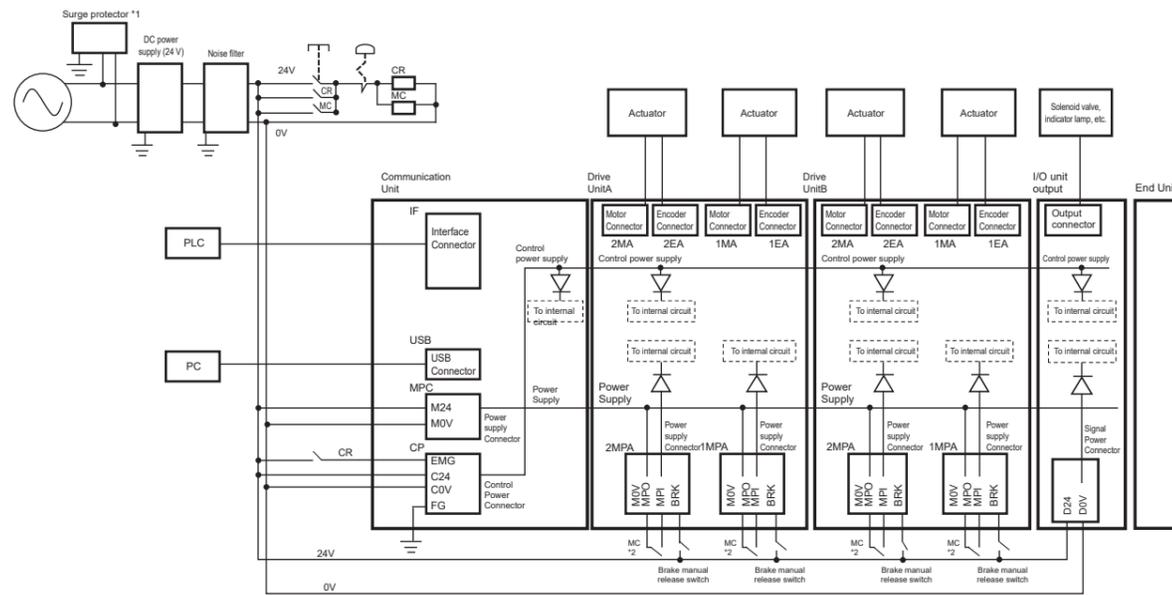
• Connection example for input type



\*1 To comply with CE marking, a surge protector is required. Also, the controller must be installed inside a control panel. Refer to the Instruction Manual for details on installation and wiring methods.

\*2 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect a contact such as an electromagnetic contactor between the MPI and MPO terminals. (MPI and MPO are connected by a jumper wire at shipment.)

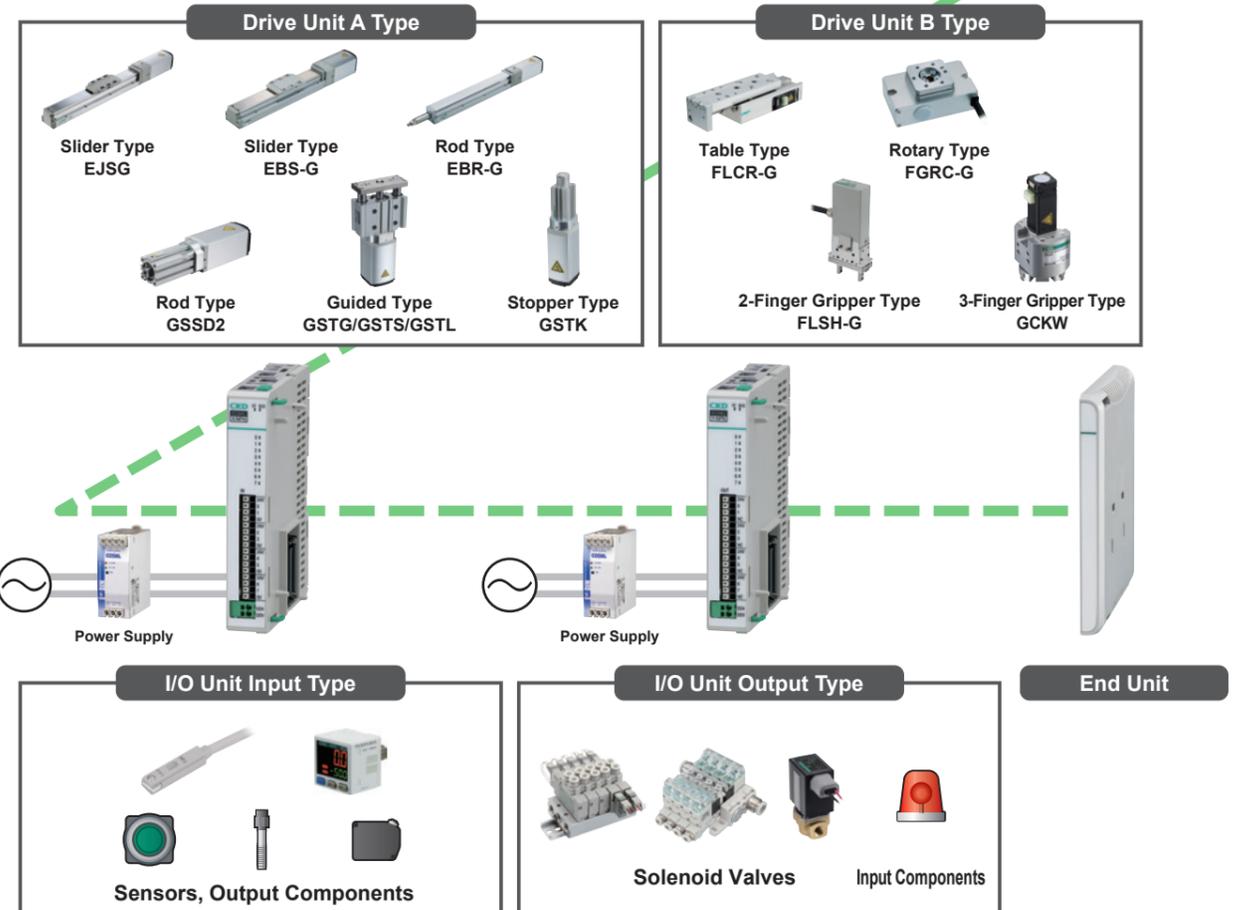
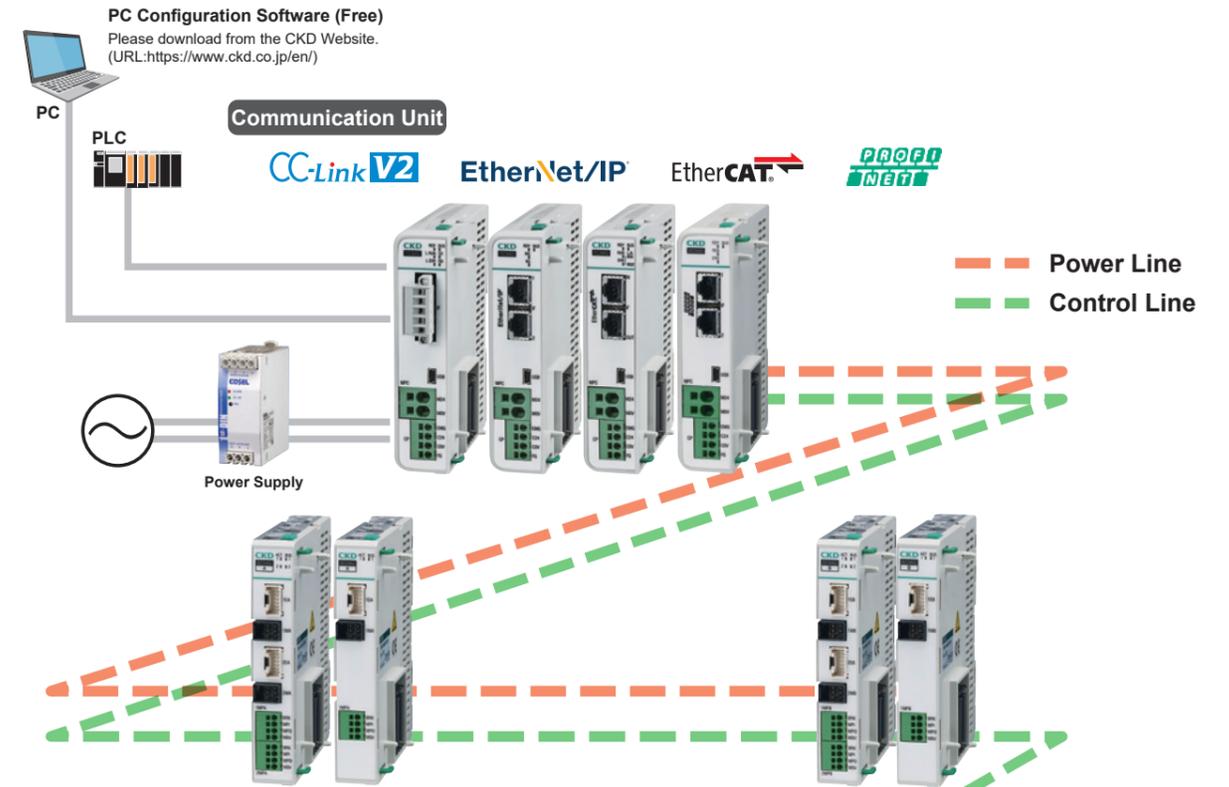
• Connection example for output type



\*1 To comply with CE marking, a surge protector is required. Also, the controller must be installed inside a control panel. Refer to the Instruction Manual for details on installation and wiring methods.

\*2 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect a contact such as an electromagnetic contactor between the MPI and MPO terminals. (MPI and MPO are connected by a jumper wire at shipment.)

System Configuration



\* Refer to the Instruction Manual for the system configuration diagram to comply with European standards.

Communication Specifications

• When connecting Communication Unit CC-Link specification

[Communication Specifications]

Item	Specifications
CC-Link Version	Ver.1.10, Ver.2.00
Station Type	Remote device station
Remote station number	1 to 64(Set by parameter setting)
Remote I/O (RX, RY)	128 points each (Fixed regardless of operation mode)
Remote Register (RW, RWw)	Sum of words corresponding to operation mode for each axis (Max. 128 words each) Drive Unit PIO Mode: 2 words each Simple Direct Value Mode: 4 words each Standard Direct Value Mode: 8 words each Full Direct Value Mode: 12 words each I/O Unit (Fixed regardless of I/O unit specifications) 2 words each
Number of occupied stations *1	1 to 4(Set by parameter setting) ver.1.10 4 stations occupied Remote I/O: Up to 128 points each *2 Remote Register: Up to 16 words each ver.2.00 1 station occupied Remote I/O: Up to 128 points each Remote Register: Up to 32 words each 2 stations occupied Remote I/O: Up to 384 points each Remote Register: Up to 64 words each 3 stations occupied Remote I/O: Up to 640 points each Remote Register: Up to 96 words each 4 stations occupied Remote I/O: Up to 896 points each Remote Register: Up to 128 words each
Communication speed	10 M / 5 M / 2.5 M / 625 k / 156 kbps (Set by parameter setting)
Extended Cyclic Setting	ver.1.10 - ver.2.00 1x / 2x / 4x / 8x
Connecting cable	CC-Link Ver.1.10 compatible cable (Shielded 3-core twisted pair cable)
Monitor Function	Position, speed, current, alarm * 3

\*1 Maximum remote output points and maximum remote registers when selecting occupied stations. Describes the number of words.  
\*2 Select 4 stations for ver.1.10 use.  
\*3 Drive unit Position, speed and current can be monitored when ECMG-D is connected.

Cyclic data from master

DeviceNo.	Signal Name	Input Type	Output Type
RYn	0 to A	-	-
	B	Communication Unit Alarm Reset	-
	C to F	-	-
	RY(n+1)	0 to 3	Axis link status selection bit
	4 to F	-	-
RY(n+2)	0 to F	Write data	-
	RY(n+3)	0 to F	-
	RY(n+4)	0 to F	Data Number
	RY(n+5)	0 to F	-
	0 to 3	-	-
RY(n+6)	4	Data Request	-
	5	Data R/W Selection	-
	6 to 7	-	-
	8 to F	Data R/W Target Designation	-
	RY(n+7)	0 to F	-
DeviceNo.	Signal Name	Input Type	Output Type
RWw0	0	-	Output 0
	1	-	Output 1
	2	-	Output 2
	3	-	Output 3
	4	-	Output 4
	5	-	Output 5
	6	-	Output 6
	7	-	Output 7
	8	-	-
	9	-	-
	A	-	-
	B	Alarm Reset	Alarm Reset
	C	-	-
	D	-	-
	E	-	-
	F	-	-
RWw1	0 to F	-	-

Cyclic data from controller

DeviceNo.	Signal Name	Input Type	Output Type
RXn	0	Temperature abnormality (Warning)	-
	1	Inter-unit communication status 1	-
	2	Inter-unit communication status 2	-
	3	Inter-unit communication status 3	-
	4 to 7	-	-
	8	Communication Unit Status	-
	9 to A	-	-
RX(n+1)	B	Communication Unit Alarm Status	-
	C to F	-	-
	0 to F	Axis link status	-
	0 to F	Read data	-
	0 to F	Read data	-
	0 to F	Data (Alarm)	-
	0 to F	-	-
RX(n+6)	0 to 3	Data Response	-
	4	Data Complete	-
	5	Data Write Status	-
	6 to F	-	-
	0 to F	-	-
	0 to F	-	-
	0 to F	-	-
DeviceNo.	Signal Name	Input Type	Output Type
RWr0	0	Input 0	-
	1	Input 1	-
	2	Input 2	-
	3	Input 3	-
	4	Input 4	-
	5	Input 5	-
	6	Input 6	-
	7	Input 7	-
	8	-	-
	9	-	-
	A	Warning#	Warning#
	B	Alarm #	Alarm #
	C	DIO power status	DIO power status
	D	-	-
	E	-	-
	F	-	-
RWr1	0 to F	-	-

\* Describes signal configuration for individual unit. Index and Sub Index are determined by the number of units to be operated; refer to the Instruction Manual for details.  
\* # indicates a negative logic signal.

• When connecting Communication Unit EtherCAT specification

[Communication Specifications]

Item	Specifications
Communication speed	100Mbps (Fast Ethernet, full-duplex)
Process Data	Variable PDO Mapping
Maximum PDO data length	RxPDO:304Byte TxPDO:304Byte
Station Alias	0 to 65535(Set by parameters)
Connecting cable	EtherCAT compatible cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended))
Node Address	Master automatically assigns
Monitor Function	Position, speed, current, alarm * 1

\*1 Position, speed and current can be monitored when a drive unit ECMG-D is connected.

Cyclic data from master

Index	Sub Index	bit	Input Type	Output Type
0x2001	0x01	0 to 10	-	-
		11	Communication Unit Alarm Reset	-
		12 to 15	-	-
		16 to 19	Axis link status selection bit	-
		20 to 31	-	-
	0x02	0 to 31	Write data	-
		0 to 31	Data Number	-
		0 to 3	-	-
		4	Data Request	-
		5	Data R/W Selection	-
	0x04	6 to 7	-	-
		8 to 15	Data R/W Target Designation	-
		16 to 31	-	-
		0	-	Output 0
		1	-	Output 1
		2	-	Output 2
0x2003	0x01	3	-	Output 3
		4	-	Output 4
		5	-	Output 5
		6	-	Output 6
		7	-	Output 7
		8	-	-
		9	-	-
		10	-	-
		11	Alarm Reset	Alarm Reset
		12	-	-
		13	-	-
		14	-	-
		15	-	-
		16 to 31	-	-

Cyclic data from controller

Index	Sub Index	bit	Input Type	Output Type
0x2005	0x01	0	Temperature abnormality (Warning)	-
		1	Inter-unit communication status 1	-
		2	Inter-unit communication status 2	-
		3	Inter-unit communication status 3	-
		4 to 7	-	-
		8	Communication Unit Status	-
		9 to 10	-	-
	0x02	11	Communication Unit Alarm Status	-
		12 to 15	-	-
		16 to 31	Axis link status	-
		0 to 31	Read data	-
		0 to 31	Data (Alarm)	-
	0x03	0 to 3	Data Response	-
		4	Data Complete	-
		5	Data Write Status	-
		6 to 31	-	-
0		Input 0	-	
0x2007	0x01	1	Input 1	-
		2	Input 2	-
		3	Input 3	-
		4	Input 4	-
		5	Input 5	-
		6	Input 6	-
		7	Input 7	-
		8	-	-
		9	-	-
		10	Warning#	Warning#
		11	Alarm #	Alarm #
		12	DIO power status	DIO power status
		13	-	-
		14	-	-
		15	-	-
16 to 31	-	-		

\* Describes signal configuration for individual unit. Device No. is determined by the number of units to be operated; refer to the Instruction Manual for details.  
\* # indicates a negative logic signal.

Communication Specifications

• When connecting Communication Unit EtherNet/IP specification

[Communication Specifications]

Item	Specifications
Communication Protocol	EtherNet/IP
Communication speed	Auto setting (100 Mbps/10Mbps, full duplex/half duplex)
Occupied bytes	Input : 304Byte Output : 304Byte
IP Address	Setting by parameter (0.0.0.0 to 255.255.255.255) Via DHCP server (Arbitrary address)
RPI (Packet Interval)	4 ms to 10000 ms
Connecting cable	EtherNet/IP compatible cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended))
Monitor Function	Position, speed, current, alarm *1

\*1 Position, speed and current can be monitored when a drive unit ECMG-D is connected.

Cyclic data from master

Byte	bit	Input Type	Output Type
0	0 to 7	-	-
	0 to 2	-	-
	3	Communication Unit Alarm Reset	-
	4 to 7	-	-
	0 to 3	Axis link status selection bit	-
2	4 to 7	-	-
	0 to 7	Write data	-
	4 to 7	-	-
	0 to 7	Data Number	-
	0 to 7	-	-
12	0 to 3	-	-
	4	Data Request	-
	5	Data R/W Selection	-
	6 to 7	-	-
	0 to 7	Data R/W Target Designation	-
16	0	-	Output 0
	1	-	Output 1
	2	-	Output 2
	3	-	Output 3
	4	-	Output 4
	5	-	Output 5
	6	-	Output 6
	7	-	Output 7
	0	-	-
	1	-	-
	2	-	-
	3	Alarm Reset	Alarm Reset
	4	-	-
	5	-	-
	6	-	-
	7	-	-
17	0 to 7	-	-
	0 to 7	-	-

Cyclic data from controller

Byte	bit	Input Type	Output Type
0	0	Temperature abnormality (Warning)	-
	1	Inter-unit communication status 1	-
	2	Inter-unit communication status 2	-
	3	Inter-unit communication status 3	-
	4 to 7	-	-
1	0	Communication Unit Status	-
	1 to 2	-	-
	3	Communication Unit Alarm Status	-
	4 to 7	-	-
	0 to 7	Axis link status	-
2 to 3	0 to 7	-	-
	0 to 7	Read data	-
	0 to 7	Read data	-
	0 to 7	Data (Alarm)	-
	0 to 7	Data Response	-
12	0 to 3	Data Complete	-
	4	Data Write Status	-
	5	-	-
	6 to 7	-	-
	0 to 7	-	-
16	0	Input 0	-
	1	Input 1	-
	2	Input 2	-
	3	Input 3	-
	4	Input 4	-
	5	Input 5	-
	6	Input 6	-
	7	Input 7	-
17	0	-	-
	1	-	-
	2	Warning#	Warning#
	3	Alarm #	Alarm #
	4	DIO power status	DIO power status
	5	-	-
	6	-	-
	7	-	-
18 to 19	0 to 7	-	-
	0 to 7	-	-

\* Describes signal configuration for individual unit. Index and Sub Index are determined by the number of units to be operated; refer to the Instruction Manual for details.  
\* # indicates a negative logic signal.

• When connecting Communication Unit PROFINET specification

[Communication Specifications]

Item	Specifications
Communication Protocol	PROFINET IO
Conformance Class	CC-B
Communication speed	100Mbps
Occupied bytes	Input: Max. 304 bytes Output: Max. 304 bytes
Connecting cable	PROFINET compatible cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended))
Monitor Function	Position, speed, current, alarm *1

\*1 Position, speed and current can be monitored when a drive unit ECMG-D is connected.

Cyclic data from master

Byte	bit	Input Type	Output Type
0	0 to 7	-	-
	0 to 2	-	-
	3	Communication Unit Alarm Reset	-
	4 to 7	-	-
	0 to 3	Axis link status selection bit	-
2	4 to 7	-	-
	0 to 7	Write data	-
	4 to 7	-	-
	0 to 7	Data Number	-
	0 to 7	-	-
12	0 to 3	-	-
	4	Data Request	-
	5	Data R/W Selection	-
	6 to 7	-	-
	0 to 7	Data R/W Target Designation	-
16	0	-	Output 0
	1	-	Output 1
	2	-	Output 2
	3	-	Output 3
	4	-	Output 4
	5	-	Output 5
	6	-	Output 6
	7	-	Output 7
	0	-	-
	1	-	-
	2	-	-
	3	Alarm Reset	Alarm Reset
	4	-	-
	5	-	-
	6	-	-
	7	-	-
17	0 to 7	-	-
	0 to 7	-	-

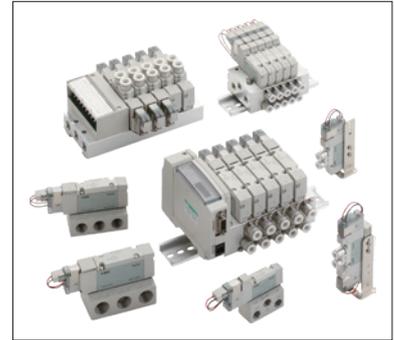
Cyclic data from controller

Byte	bit	Input Type	Output Type
0	0	Temperature abnormality (Warning)	-
	1	Inter-unit communication status 1	-
	2	Inter-unit communication status 2	-
	3	Inter-unit communication status 3	-
	4 to 7	-	-
1	0	Communication Unit Status	-
	1 to 2	-	-
	3	Communication Unit Alarm Status	-
	4 to 7	-	-
	0 to 7	Axis link status	-
2 to 3	0 to 7	-	-
	0 to 7	Read data	-
	0 to 7	Read data	-
	0 to 7	Data (Alarm)	-
	0 to 7	Data Response	-
12	0 to 3	Data Complete	-
	4	Data Write Status	-
	5	-	-
	6 to 7	-	-
	0 to 7	-	-
16	0	Input 0	-
	1	Input 1	-
	2	Input 2	-
	3	Input 3	-
	4	Input 4	-
	5	Input 5	-
	6	Input 6	-
	7	Input 7	-
17	0	-	-
	1	-	-
	2	Warning#	Warning#
	3	Alarm #	Alarm #
	4	DIO power status	DIO power status
	5	-	-
	6	-	-
	7	-	-
18 to 19	0 to 7	-	-
	0 to 7	-	-

## Related Products

### Pilot operated 3, 5-port valve 4G□R Series

- **Safety** : With protective cover to prevent accidental operation of manual device due to external force  
Prevents cylinder malfunction due to back pressure wrap-around when using single acting cylinder.
- **Reliability** : · Life 100 million cycles or more (at 0.5 MPa pressure with clean air)  
· Responsiveness 12 ms ±2 ms (Our data values for 4G1 Series)  
Adoption of a new sliding mechanism reliably improves reliability performance such as life and responsiveness.
- **Ease of use** : · Wiring connector Top/Side shared  
Supports both upward and horizontal directions just by inserting.
- **Power saving** 0.35 W 0.1 W (Low exoergic/energy circuit)
- **Versatile options** 10 types available
- **Versatile communication** Supports 12 types of communication



### Vacuum Components Ejector System VS□ Series

- Vacuum ejectors and vacuum units that are the core of vacuum systems
- Various types available from single unit types to unit types combining various related devices



### Electric Actuator ROBODEX pulse

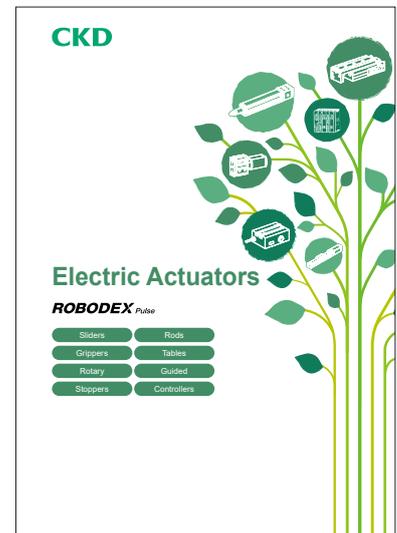
Catalog No. RJ-014AA

Wide lineup of electric actuators with motor specification

- Slider Type EJSG/EBS Series
- Rod Type EBR Series
- F Series FLCR/FGRC/FLSH/FFLD Series
- G Series GSSD2/GSTK/GSTG/GSTS/GSTL/GCKW Series
- D Series DSSD2/DSTK/DSTG/DSTS/DSTL/DMSDG/DLSH/DCKW Series

Lineup of 4 types of controllers for electric actuators

- Multi-Axis Controller ECMG Series
- Single Axis Controller ECG/ECR/ESC4 Series



For details, refer to "Model No." on the CKD Component Products Site (<https://www.ckd.co.jp/kiki/en/>).

The goods and/or their replicas, the technology and/or software found in this catalog are subject to complementary export regulations by Foreign Exchange and Foreign Trade Law of Japan. The law requires a license from Ministry of Economy, Trade and Industry to export them.

## CKD Corporation

[Website]

<https://www.ckd.co.jp/en/>

Head Office · Plant  
Tokyo Office

Osaka Office

2-250, Ouji, Komaki, Aichi 485-8551  
4F, Bunkahousou Media Plus, 1-31-1, Hamamatsu-cho,  
Minato-ku, Tokyo 105-0013  
6F, PMO EX Shin-Osaka, 4-2-10 Miyahara,  
Yodogawa-ku, Osaka 532-0003

TEL(0568)77-1111 FAX(0568)77-1123  
TEL(03)5402-3620 FAX(03)5402-0120

TEL(06)6396-9630 FAX(06)6396-9631