Controller

ECG

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• Connectable Actuators

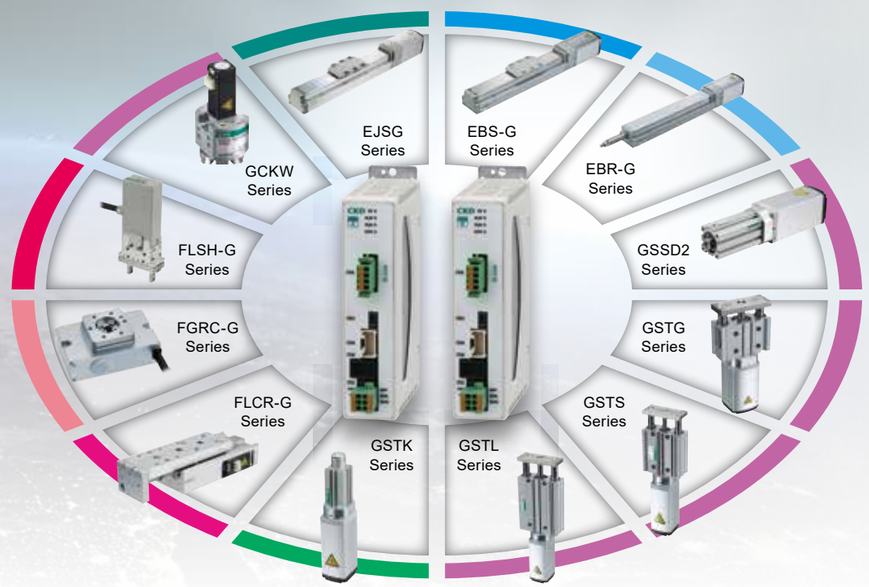
EJSG, EBS-G, EBR-G, GSSD2,
GSTK, GSTG, GSTS, GSTL

ECG-B 581

• Connectable Actuators

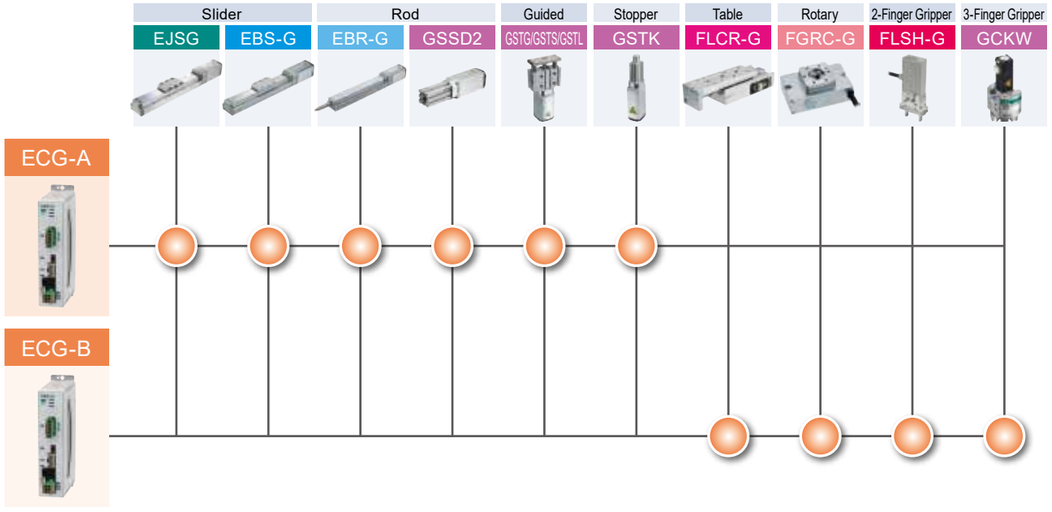
FLCR-G, FLSH-G,
FGRC-G, GCKW

Controller
ECMG
ECG
ECR
ESC4



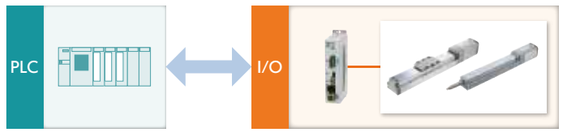
Common controller regardless of actuator model or size

List of Compatible Actuators



Compatible Interface

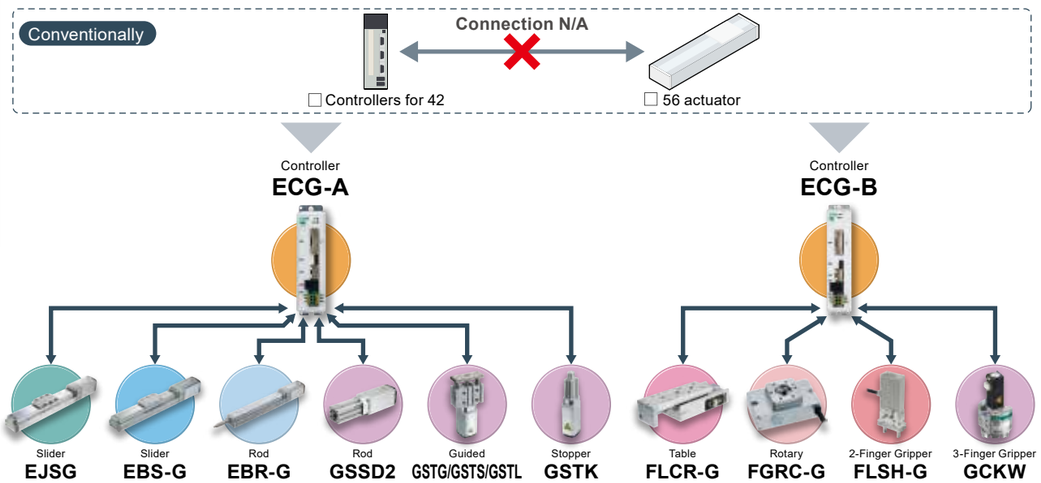
CC-Link EtherNet/IP EtherCAT IO-Link



Commonization of controllers

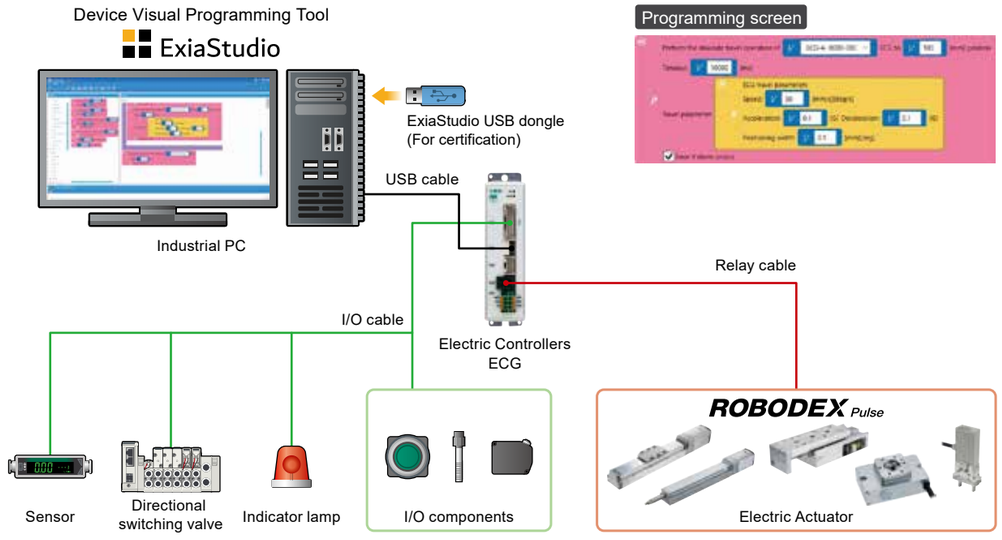
Even actuators with different models, sizes, leads, and strokes can be operated with the same controller. It is possible to significantly reduce the man-hours for selection and ordering, as well as inventory. Since it is equipped with an automatic recognition function that reads actuator information, the initial setting man-hours can also be reduced.

* The automatic recognition function is only for ECG-A



Compatible with Device Visual Programming Tool "ExiaStudio"

Compatible with "ExiaStudio", which allows for easy programming with intuitive operation without requiring specialized knowledge. Electric actuators can be easily controlled with direct values on a PC. The controller ECG can also be used as a digital I/O terminal.



ECG-A

Controller

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Controller

ECMG
ECG
ECR
ESC4

Ending

Controller

ECG-A Series

Controller for EJSG, EBS-G, EBR-G/G Series

For compatible detailed model Nos., please see our website.

Model No. Notation Method

ECG-ANNN30 - NP A 02

❶ ❷ ❸

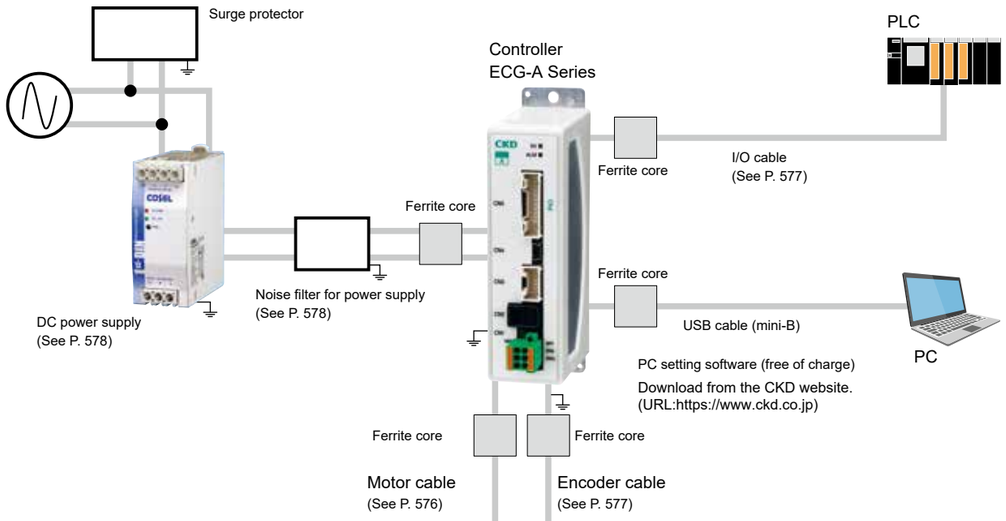
❶Interface Specifications	
NP	Parallel I/O (NPN, PNP common)
LK	IO-Link
CL	CC-Link
EC	EtherCAT
EN	EtherNet/IP

❷Mounting Method	
A	Standard mount
D	DIN rail mounting

❸IO Cable Length *1	
00	None
02	2 m
03	3 m
05	5 m
10	10 m

*1 Except when selecting "Parallel I/O" for the interface specification, please select "None".

System Configuration



Connectable actuators

* For installation of noise filters, surge protectors, ferrite cores, and wiring methods, please refer to the instruction manual.

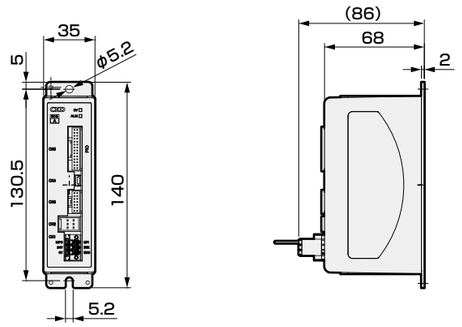
General Specifications

Item		Content		
Applicable Actuators		EJSG, EBS-G, EBR-G, GSSD2, GSTK, GSTG, GSTS, GSTL		
Applicable Motor Size		□35	□42	□56
Configuration Tool		PC configuration software (S-Tools) Connection cable: USB cable (mini-B)		
External Interface	Parallel I/O specifications	24 VDC ±10%, max. 13 I/O points each, max. cable length 10 m		
	Field network specifications	IO-Link, CC-Link, EtherCAT, EtherNet/IP		
Indicator light		SV lamp, alarm lamp Communication status confirmation lamp (depends on each interface specification)		
Power supply voltage	Control power supply	24 VDC ±10%		
	Motive power supply	24 VDC ±10%		
Current Consumption	Control power supply	0.4 A or less		
	Motive power supply	1.7 A or less	1.9 A or less	2.8 A or less
Motor Max. Instantaneous Current		2.4 A or less	2.7 A or less	4.0 A or less
Brake current consumption		0.4 A or less		
Insulation Resistance		10 MΩ or more at 500 VDC		
Dielectric Strength		500 VAC for 1 minute		
Operating Ambient Temperature		0 to 40°C no freezing		
Operating 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		
Operating atmosphere		No corrosive gas, explosive gas, or dust		
Protection Structure		IP20		
Weight	Parallel I/O specifications	Approx. 180 g (standard mounting), approx. 210 g (DIN rail mounting)		
	Field network specifications	Approx. 310 g (standard mounting), approx. 340 g (DIN rail mounting)		

External Dimension Drawing

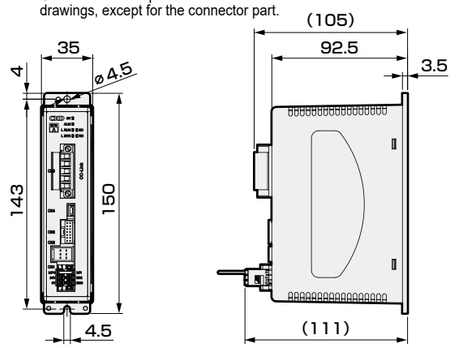
● Standard mount

ECG-ANNN30-NPA□□ (Parallel I/O specification)



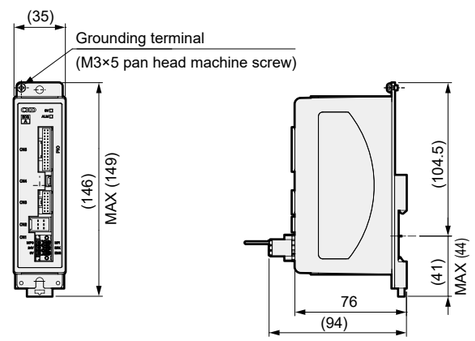
ECG-ANNN30-□□A□□ (Other)

* This figure is the external dimension drawing for the CC-Link specification. Other interface specifications also have the same external dimension drawings, except for the connector part.



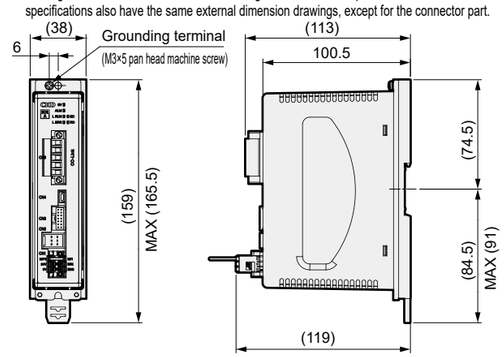
● DIN rail mounting

ECG-ANNN30-NPD□□ (Parallel I/O specification)



ECG-ANNN30-□□D□□ (Other)

* This figure is the external dimension drawing for the CC-Link specification. Other interface specifications also have the same external dimension drawings, except for the connector part.

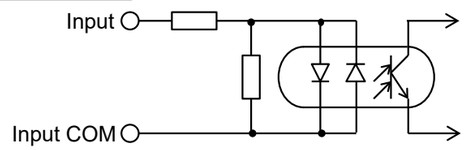


Parallel I/O (PIO) input/output circuit

Input Specifications

Item	ECG-ANNN30-NP□□
Number of input points	13 points
Input voltage	24 VDC ±10%
Input current	4 mA/point
ON-state input voltage	19 V or more
OFF-state input current	0.2 mA or less

Input circuit

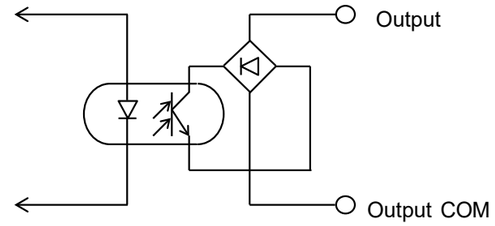


The input is non-polar.
(Input COM can be used for both+and -)

Output Specifications

Item	ECG-ANNN30-NP□□
Number of output points	13 points
Load voltage	24 VDC ±10%
Load current	20 mA or less/point
ON-state internal voltage drop	3 V or less
OFF-state leakage current	0.1 mA or less
Output short-circuit protection circuit	Yes
Connected load	PLC, etc.

Output circuit



The output is non-polar.
(Output COM can be used for both+and -)

Parallel I/O (PIO) operation mode

The controller has 5 types of operation modes.
Please set the appropriate operation mode for your application using the PC configuration software. The initial setting is "64-point mode".

Operation Mode	Number of positioning points	Overview
64-point mode	64 points	· JOG move start input Select output: · Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Simple 7-point mode	7 points	· JOG move start input Select output: · Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Double 2-position type	2 points	· SW output: 2 points Select output: · Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Double 3-position type	2 points	· SW output: 2 points Select output: · Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Single type	2 points	· SW output: 2 points Select output: · Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))

Parallel I/O (PIO) Signal Abbreviation List

Input signal

Abbreviation	Name	Abbreviation	Name
PST	Point move start	JOGM	JOG (-) move start
PSB*	Point number selection bit *	JOGP	JOG (+) move start
OST	Homing Start	P*ST	Point number * move start
SVON	Servo on	V1ST	Solenoid valve move command 1
ALMRST	Alarm Reset	V2ST	Solenoid valve move command 2
STOP	Stop	VST	Solenoid valve move command

Output signal

Abbreviation	Name	Abbreviation	Name
PEND	Point move complete	SONS	Servo ON state
PCB*	Point number confirmation bit *	ALM	Alarm
ACB*	Alarm confirmation bit *	WARN	Warning
PZONE	Point zone	READY	Ready to operate
MOVE	Moving	P*END	Point number *Move complete
ZONE1	Zone 1	SW1	Switch 1
ZONE2	Zone 2	SW2	Switch 2
OEND	Homing complete	SLMT	Soft limit over
SLMTM	Soft limit over (-)	SLMTP	Soft limit over (+)

Parallel I/O (PIO) operation mode and signal assignment

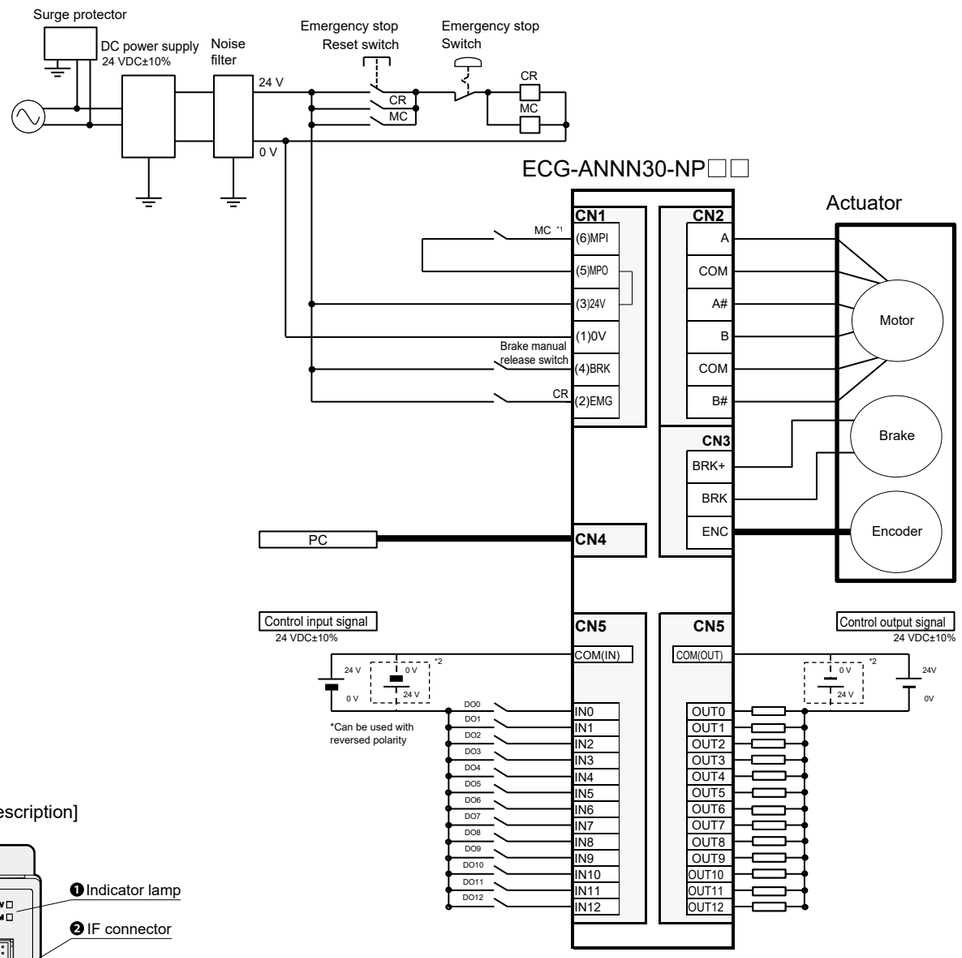
The signal assignment by operation mode is as shown in the figure below.

Operation Mode		64-point mode	Simple 7-point mode	Solenoid valve mode Double 2-position type	Solenoid valve mode Double 3-position type	Solenoid valve mode Single type
Number of positioning points		64	7	2	2	2
Input	IN0	PSB0	P1ST	V1ST	V1ST	-
	IN1	PSB1	P2ST	V2ST	V2ST	VST
	IN2	PSB2	P3ST	-	-	-
	IN3	PSB3	P4ST	-	-	-
	IN4	PSB4	P5ST	-	-	-
	IN5	PSB5	P6ST	-	-	-
	IN6	PST	P7ST	-	-	-
	IN7	JOGM	JOGM	-	-	-
	IN8	JOGP	JOGP	-	-	-
	IN9	OST	OST	OST	OST	OST
	IN10	SVON	SVON	SVON	SVON	SVON
	IN11	ALMRST	ALMRST	ALMRST	ALMRST	ALMRST
	IN12	STOP #	STOP #	-	-	-
Output	OUT0	PCB0/ ACB0	P1END	P1END	P1END	P1END
	OUT1	PCB1/ ACB1	P2END	P2END	P2END	P2END
	OUT2	PCB2/ ACB2	P3END	-	-	-
	OUT3	PCB3/ ACB3	P4END	-	-	-
	OUT4	PCB4	P5END	SW1	SW1	SW1
	OUT5	PCB5	P6END	SW2	SW2	SW2
	OUT6	PEND	P7END	-	-	-
	OUT7	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT8	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT9	OEND	OEND	OEND	OEND	OEND
	OUT10	SONS	SONS	SONS	SONS	SONS
	OUT11	ALM#	ALM#	ALM#	ALM#	ALM#
	OUT12	READY	READY	READY	READY	READY

* # is a negative logic signal.

Parallel I/O connection diagram (ECG-ANNN30-NP)

[PIO]

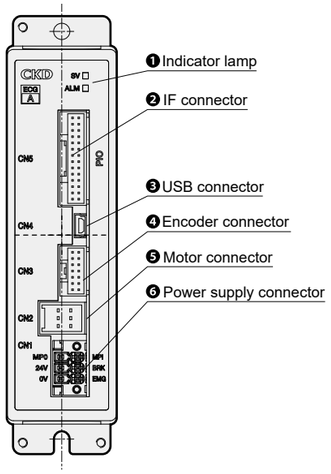


*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)

*1 A surge protector is required for CE marking compliance.

*3 It can also be used with the polarity reversed.

[Panel Description]



● Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT

Description of field network operation modes

Operation Mode	Overview
PIO mode: (PIO)	Point operation can be used, and the I/O signal assignment can be changed in operation mode (PIO), similar to the parallel I/O specification. However, direct value operation, which sets the operating conditions during operation directly from the PLC, cannot be selected. In addition, parameters can be read and written, but the monitor function cannot be used. For detailed items, please refer to the table below.
Half simple direct value mode (HSDP)	This is a mode that can only be selected with a CC-Link specification controller. By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the target position is arbitrarily set from the PLC and operated. In addition, the monitor function can be used with restrictions. However, parameters cannot be read or written. For detailed items, please refer to the table below.
Simple direct value mode: (SDP)	By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the target position is arbitrarily set from the PLC and operated. In addition, parameters can be read and written, and the monitor function can also be used. For detailed items, please refer to the table below.
Half direct value mode (HDP)	This is a mode that can only be selected with a CC-Link specification controller. By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the operating conditions are arbitrarily set from the PLC with restrictions and operated. In addition, the monitor function can be used. However, parameters cannot be read or written. For detailed items, please refer to the table below.
Full Direct Value Mode (FDP)	By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the operating conditions are arbitrarily set from the PLC and operated. In addition, parameters can be read and written, and the monitor function can also be used. For detailed items, please refer to the table below.

Operation Mode		PIO	HSDP	SDP	HDP	FDP
Read/Write parameters		Available	Not available	Available	Not available	Available
Direct Value Travel Selection *1		Not selectable	Available	Available	Available	Available
Number of positioning points		64	Unlimited	Unlimited	Unlimited	Unlimited
Direct Value Travel Item *2	Target Position	-	○	○	○	○
	Positioning Width	-	-	-	○	○
	Speed	-	-	-	○	○
	Acceleration	-	-	-	●	○
	Deceleration	-	-	-	●	○
	Pushing Rate	-	-	-	○	○
	Pushing Distance	-	-	-	○	○
	Pushing Speed	-	-	-	△	○
	Gain magnification	-	-	-	*4	○
	Positioning Method	-	-	-	○	○
	Operation Method	-	-	-	○	○
	Stopping Method	-	-	-	○	○
	Acceleration/ Deceleration Method	-	-	-	○	○
Monitor Item *3	Position	-	○	○	○	○
	Speed	-	○	▲	○	○
	Current	-	○	▲	○	○
	Alarm	-	-	▲	○	○

*1: If direct value travel is not selected, it will operate with the value set in the point data. Therefore, the number of positioning points is up to 64.

*2: ○ indicates items that operate with values set from the PLC. - operates with the value set in the point data. ● indicates items that operate with values set from the PLC, but the two ● items can only be set to the same value. △ operates with the value set in the common parameters.

*3: ○ indicates items that can be monitored. - indicates items that cannot be monitored. ▲ indicates items that can be monitored by selecting them as monitor values (CC-Link and IO-Link can monitor one value at a time, while others can monitor three values simultaneously).

*4: Gain magnification is invalid.

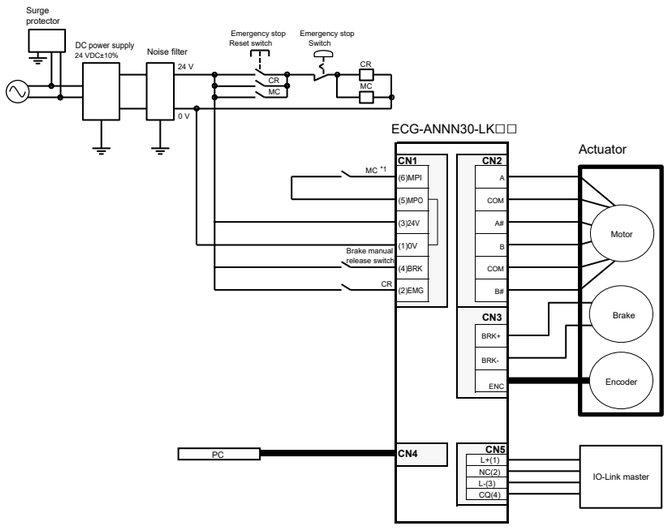
IO-Link specifications and connection diagram (ECG-ANNN30-LK□□)

[Communication Specifications]

Item	Specifications
Communication protocol version	V1.1
Transmission speed	COM3 (230.4 kbps)
Port	Class A
Process data length (input) PD(in) data length	PIO mode: 2 bytes
	Simple direct value mode: 9 bytes
	Full Direct Value Mode: 12 bytes
Process data length (output) PD(out) data length	PIO mode: 2 bytes
	Simple direct value mode: 7 bytes
	Full Direct Value Mode: 22 bytes
Minimum cycle time	PIO mode: 1 ms
	Simple direct value mode: 1.5 ms
	Full Direct Value Mode: 2.5 ms
Monitor function	Position, speed, current, alarm

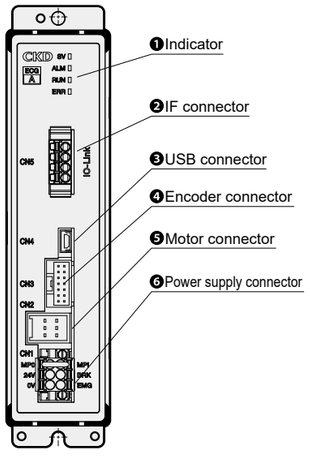
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 571.

[IO-Link]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

PD (OUT)	bit	Full Direct Value Mode Signal name
0	7	Pause #
	6	Stop #
	5	Alarm Reset
	4	Servo ON
	3	Homing Start
	2	Point move start
	1	JOG/INCH (+) move start
	0	JOG/INCH (-) move start
1	7	INCH Selection
	6	-
	5 to 0	Point number selection bits 5 to 0
2	7 to 4	-
	3 to 1	Direction of rotation (direct value travel)
	0	Direct Value Travel Selection
3 to 6	7 to 0	Position (direct value travel)
7 to 8	7 to 0	Positioning width (direct value travel)
9 to 10	7 to 0	Speed (direct value travel)
11	7 to 0	Acceleration (direct value travel)
12	7 to 0	Deceleration (direct value travel)
13	7 to 0	Pushing rate (direct value travel)
14	7 to 0	Pushing speed (direct value travel)
15 to 18	7 to 0	Pushing distance (direct value travel)
19 to 20	7 to 0	Gain magnification (direct value travel)
21	7	Positioning method (direct value travel)
	6 to 5	Operation method (direct value travel)
	4 to 3	Acceleration/deceleration method (direct value travel)
	2 to 0	Stopping method (direct value travel)

Cyclic data from controller

PD (IN)	bit	Full Direct Value Mode Signal name
0	7	Ready to operate
	6	Warning #
	5	Alarm #
	4	Servo ON state
	3	Homing complete
	2	Point move complete
	1 to 0	-
1	7 to 6	-
	5 to 0	Point number confirmation bits 5 to 0
2	7	Soft limit over (+)
	6	Soft limit over (-)
	5	Soft limit over
	4	Zone 2
	3	Zone 1
	2	Moving
	1	Point zone
	0	Direct move state
3 to 6	7 to 0	Position (monitor value)
7 to 8	7 to 0	Speed (monitor value)
9	7 to 0	Current (monitor value)
10 to 11	7 to 0	Alarm (monitor value)

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT
IO-Link Connector	FMC1,5/4-ST-3,5-RF	PHOENIX CONTACT

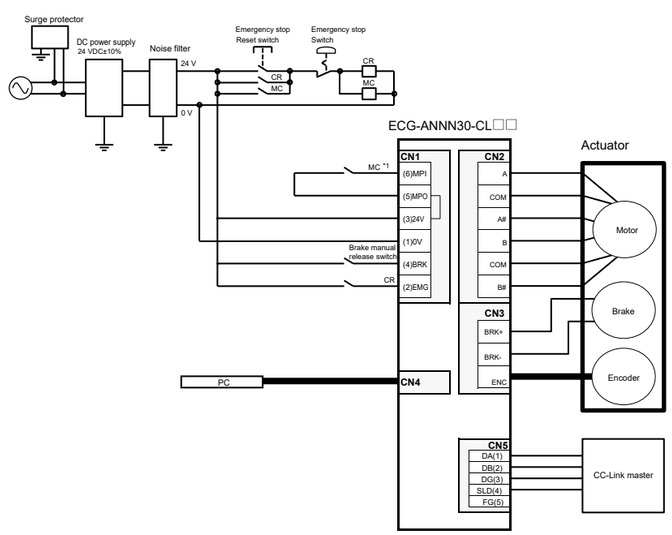
CC-Link specifications and connection diagram (ECG-ANNN30-CL□□)

[Communication Specifications]

Item	Specifications
CC-Link Version	ver. 1.10
Station type	Remote device station
Remote station number	1 to 64 (set by parameter setting)
Operation mode and number of occupied stations	PIO mode (1 station occupied)
	Half simple direct value mode (1 station occupied)
	Simple direct value mode (2 stations occupied)
	Half direct value mode (2 stations occupied)
	Full direct value mode (4 stations occupied)
Number of remote I/O points	32 points×number of occupied stations
Remote register I/O	4 words×number of occupied stations
Communication speed	10M/5M/2.5M/625k/156kbps (Select by parameter setting)
Connection cable	CC-Link Ver. 1.10 compatible cable (Shielded 3-core twisted pair cable)
Number of connected units	Up to 42 units when only remote device stations are connected
Monitor function	Position, speed, current, alarm

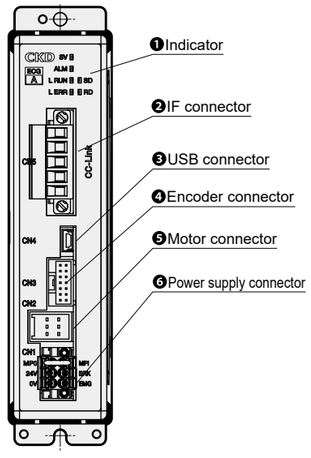
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 571.

[CC-Link]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

Device No.	Half simple direct value mode Signal name
RYn0	Point number selection bit 0
RYn1	Point number selection bit 1
RYn2	Point number selection bit 2
RYn3	Point number selection bit 3
RYn4	Point number selection bit 4
RYn5	Point number selection bit 5
RYn6	Direct Value Travel Selection
RYn7	JOG/INCH (-) move start
RYn8	JOG/INCH (+) move start
RYn9	INCH Selection
RYnA	Point move start
RYnB	Homing Start
RYnC	Servo ON
RYnD	Alarm Reset
RYnE	Stop #
RYnF	Pause #
RY (n+1) 0 to RY (n+1) F	Unused

Device No.	Half simple direct value mode Signal name
RWw0	Position (direct value travel)
RWw1	
RWw2	-
RWw3	-

Cyclic data from controller

Device No.	Half simple direct value mode Signal name
RXn0	Point number confirmation bit 0
RXn1	Point number confirmation bit 1
RXn2	Point number confirmation bit 2
RXn3	Point number confirmation bit 3
RXn4	Point number confirmation bit 4
RXn5	Point number confirmation bit 5
RXn6	Direct value travel state
RXn7	Select output 1
RXn8	Select output 2
RXn9	-
RXnA	Point move complete
RXnB	Homing complete
RXnC	Servo ON state
RXnD	Alarm #
RXnE	Warning #
RXnF	Ready to operate
RX (n+1) 0 to RX (n+1) F	Unused

Device No.	Half simple direct value mode Signal name
RWr0	Position (monitor value)
RWr1	
RWr2	Speed (monitor value)
RWr3	Current (monitor value)

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT
CC-Link Connector	MSTB2,5/5-STF-5,08ABGYAU	PHOENIX CONTACT

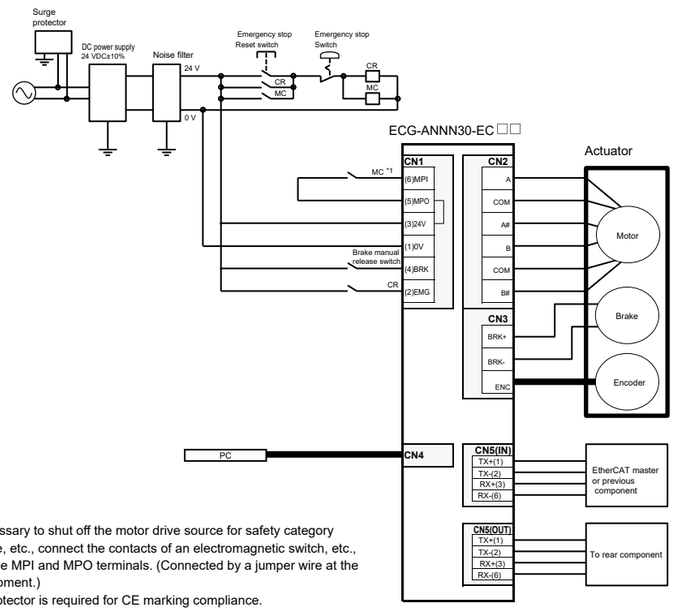
EtherCAT specifications and connection diagram (ECG-ANNN30-EC□□)

[Communication Specifications]

Item	Specifications
Communication speed	100 Mbps (Fast Ethernet, full-duplex)
Process data	Variable PDO mapping
Max. PDO Data length	RxPDO: 64 bytes TxPDO: 64 bytes
Station alias	0 to 65535 (set by parameter)
Connection cable	EtherCAT compatible cable (CAT5e or higher twisted pair cable (double shielded with aluminum tape and braid) is recommended)
Node address	Master automatically assigns
Monitor function	Position, speed, current, alarm

*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 571.

[EtherCAT]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

Cyclic data from master

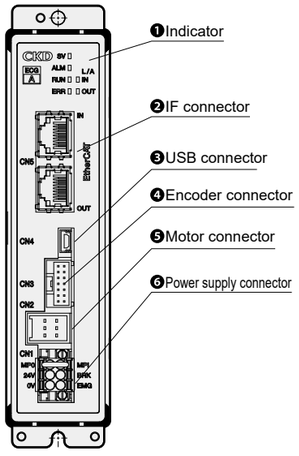
INDEX	Sub Index	bit	Full Direct Value Mode Signal name
0x2001	0x01	0 to 5	Point number selection bits 0 to 5
		6	-
		7	JOG/INCH (-) move start
		8	JOG/INCH (+) move start
		9	INCH Selection
		10	Point move start
		11	Homing Start
		12	Servo ON
		13	Alarm Reset
		14	Stop #
		15	Pause #
		16 to 31	-
	0x02	0 to 3	-
		4	Data request
		5	Data R/W selection
		6 to 11	-
		12	Monitor request
		13 to 14	-
		15	Direct Value Travel Selection
		16 to 31	-
0x2003	0x01	0 to 31	Position (direct value travel)
	0x02	0 to 31	Positioning width (direct value travel)
	0x03	0 to 31	Speed (direct value travel)
	0x04	0 to 31	Acceleration (direct value travel)
	0x05	0 to 31	Deceleration (direct value travel)
	0x06	0 to 31	Pushing rate (direct value travel)
	0x07	0 to 31	Pushing speed (direct value travel)
	0x08	0 to 31	Pushing distance (direct value travel)
	0x09	0 to 31	Mode (direct value travel)
	0x0A	0 to 31	Gain magnification (direct value travel)
	0x0B	0 to 31	Write data
	0x0C	0 to 31	Data number
	0x0D	0 to 31	Monitor number 1
	0x0E	0 to 31	Monitor number 2

Cyclic data from controller

INDEX	Sub Index	bit	Full Direct Value Mode Signal name
0x2005	0x01	0 to 5	Point number confirmation bits 0 to 5
		6 to 9	-
		10	Point move complete
		11	Homing complete
		12	Servo ON state
		13	Alarm #
		14	Warning #
		15	Ready to operate
		16 to 31	-
	0x02	0 to 3	Data response
		4	Data complete
		5	Data write status
		6 to 7	-
		8 to 11	Monitor response
		12	Monitor complete
		13 to 14	-
		15	Direct value travel state
		16	Point zone
		17	Moving
		18	Zone 1
		19	Zone 2
		20	Soft limit over
		21	Soft limit over (-)
		22	Soft limit over (+)
		23 to 31	-
0x2007	0x01	0 to 31	Position (monitor value)
	0x02	0 to 31	Speed (monitor value)
	0x03	0 to 31	Current (monitor value)
	0x04	0 to 31	-
	0x05	0 to 31	Alarm (monitor value)
	0x06 to 0x0A	0 to 31	-
	0x0B	0 to 31	Read data
	0x0C	0 to 31	Data (alarm)
	0x0D	0 to 31	Monitor value 1
	0x0E	0 to 31	Monitor value 2

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

[Panel Description]



Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT

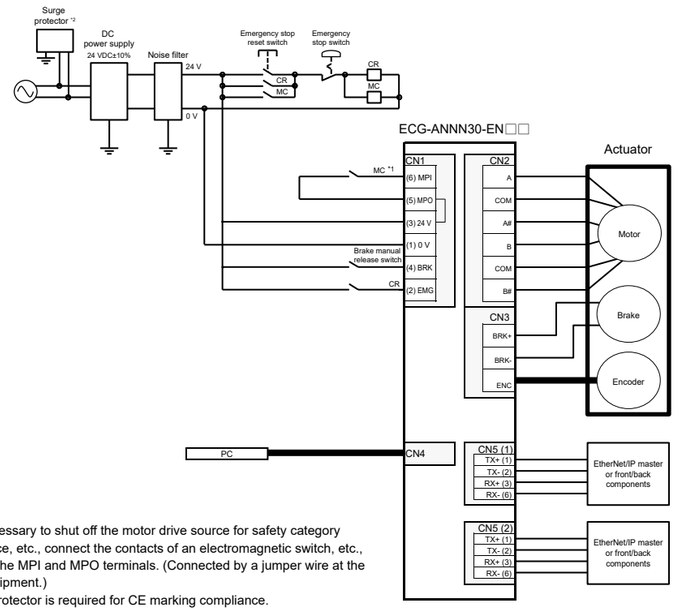
EtherNet/IP specifications and connection diagram (ECG-ANNN30-EN□□)

[Communication Specifications]

Item	Specifications
Communication protocol	EtherNet/IP
Communication speed	Automatic setting (100 Mbps/10 Mbps, full-duplex/half-duplex)
Number of occupied bytes	Input: 64 bytes/output: 64 bytes
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
Connection cable	EtherNet/IP compatible cable (CAT5e or higher twisted pair cable (double shielded with aluminum tape and braid) is recommended)
Monitor function	Position, speed, current, alarm

*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 571.

[EtherNet/IP]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

Cyclic data from master

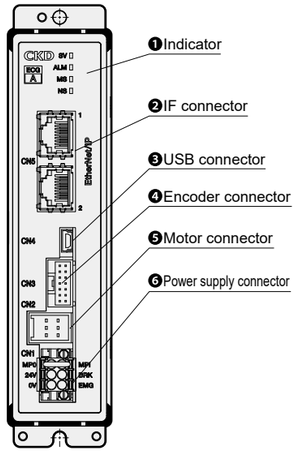
Byte	bit	Full Direct Value Mode Signal name
0	0 to 5	Point number selection bits 0 to 5
	6	-
	7	JOG/INCH (-) move start
1	0	JOG/INCH (+) move start
	1	INCH Selection
	2	Point move start
	3	Homing Start
	4	Servo ON
	5	Alarm Reset
	6	Stop #
	7	Pause #
2 to 3	0 to 7	-
4	0 to 3	-
	4	Data request
	5	Data R/W selection
	6 to 7	-
5	0 to 3	-
	4	Monitor request
	5 to 6	-
	7	Direct Value Travel Selection
6 to 7	0 to 7	-
8 to 11	0 to 7	Position (direct value travel)
12 to 15	0 to 7	Positioning width (direct value travel)
16 to 19	0 to 7	Speed (direct value travel)
20 to 23	0 to 7	Acceleration (direct value travel)
24 to 27	0 to 7	Deceleration (direct value travel)
28 to 31	0 to 7	Pushing rate (direct value travel)
32 to 35	0 to 7	Pushing speed (direct value travel)
36 to 39	0 to 7	Pushing distance (direct value travel)
40 to 43	0 to 7	Mode (direct value travel)
44 to 47	0 to 7	Gain magnification (direct value travel)
48 to 51	0 to 7	Write data
52 to 55	0 to 7	Data number
56 to 59	0 to 7	Monitor number 1
60 to 63	0 to 7	Monitor number 2

Cyclic data from controller

Byte	bit	Full Direct Value Mode Signal name
0	0 to 5	Point number confirmation bits 0 to 5
	6 to 7	-
1	0 to 1	-
	2	Point move complete
	3	Homing complete
	4	Servo ON state
	5	Alarm #
	6	Warning #
	7	Ready to operate
2 to 3	0 to 7	-
4	0 to 3	Data response
	4	Data complete
	5	Data write status
	6 to 7	-
5	0 to 3	Monitor response
	4	Monitor complete
	5 to 6	-
	7	Direct value travel state
6	0	Point zone
	1	Moving
	2	Zone 1
	3	Zone 2
	4	Soft limit over
	5	Soft limit over (-)
	6	Soft limit over (+)
	7	-
7	0 to 7	-
8 to 11	0 to 7	Position (monitor value)
12 to 15	0 to 7	Speed (monitor value)
16 to 19	0 to 7	Current (monitor value)
20 to 23	0 to 7	-
24 to 27	0 to 7	Alarm (monitor value)
28 to 47	0 to 7	-
48 to 51	0 to 7	Read data
52 to 55	0 to 7	Data (alarm)
56 to 59	0 to 7	Monitor value 1
60 to 63	0 to 7	Monitor value 2

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

[Panel Description]



Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT

Relay Cable

Motor cable model number system (ECG-A Series)

EA-CBLM 4 - S 01

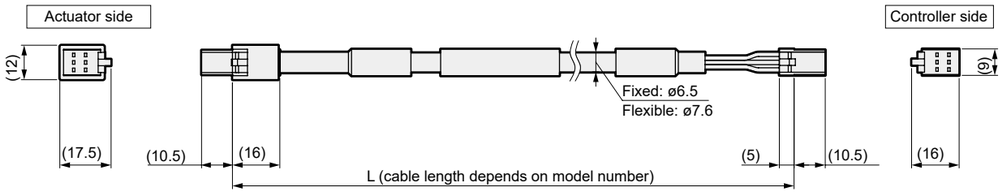
❶Cable Specifications	
4	EJSG/EJSG-C EBS-G/EBR-G GSSD2/GSTK GSTG/GSTS GSTL
5	EJSG-G

❷Cable Type	
S	Fixed cable
R	Flexible cable

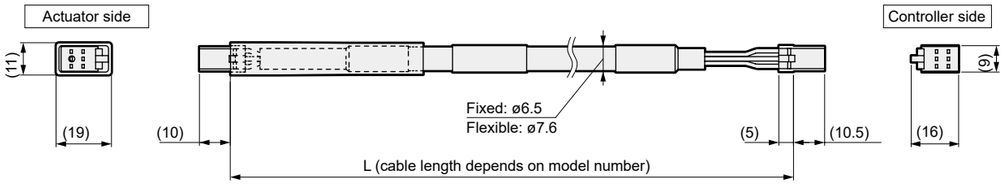
❸Cable length	
01	1 m
03	3 m
05	5 m
10	10 m

Motor cable external dimensions (ECG-A series)

● EA-CBLM4 (for EJSG, EJSG-C, EBS-G, EBR-G, GSSD2, GSTK, GSTG, GSTS, GSTL)



● EA-CBLM5 (for EJSG-G)



* Please use all cables with a bending radius of 51 mm or more.

Relay Cable

Encoder cable model number system (ECG-A Series)

EA-CBLE 4 - S 01

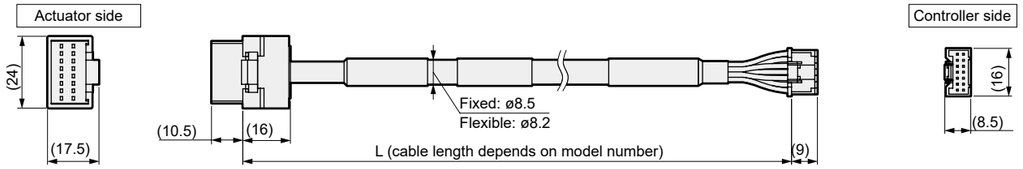
❶Cable Specifications	
4	EJSG/EJSG-C EBS-G/EBR-G GSSD2/GSTK GSTG/GSTS GSTL
5	EJSG-G

❷Cable Type	
S	Fixed cable
R	Flexible cable

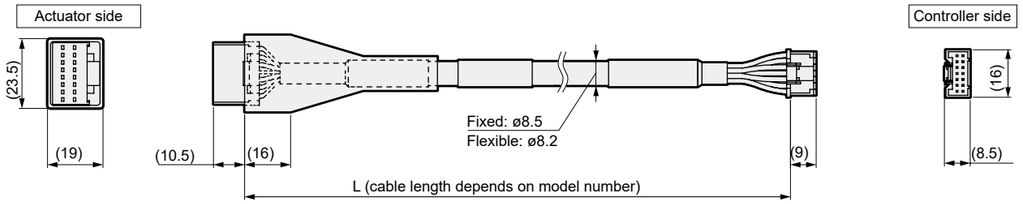
❸Cable length	
01	1 m
03	3 m
05	5 m
10	10 m

Encoder cable external dimensions (ECG-A series)

● EA-CBLE4 (for EJSG, EJSG-C, EBS-G, EBR-G, GSSD2, GSTK, GSTG, GSTS, GSTL)



● EA-CBLE5 (for EJSG-G)



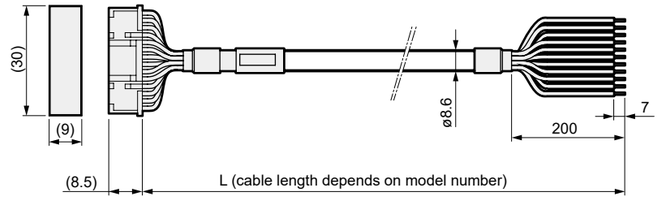
* Please use all cables with a bending radius of 51 mm or more.

I/O cable

● I/O cable

* Also selectable by parallel I/O specification controller model

EA-CBLNP2 - 02



❶Cable length	
02	2 m
03	3 m
05	5 m
10	10 m

Special Order Product*

● Change of relay cable length

The length of the relay cable can be changed.
The cable length can be changed within the range of 1 m to 10 m.

* For details on special order products, please contact our sales office.

Related parts model No. table

● Recommended Power Supply

Manufacturer	Model No. *1	Manufacturer model No.	Input voltage	Rated current *2	Output peak current *2 *3	Parallel connection	DIN rail compatible
Cosel Co., Ltd.	EA-PWR-KHNA240F-24-N2	KHNA240F-24-N2	85-264 VAC	10 A	15 A	×	×
	EA-PWR-KHNA240F-24	KHNA240F-24	85-264 VAC	10 A	15 A	×	Yes
OMRON Corporation	–	S8VK-S24024 *5	85-264 VAC	10 A	15 A	Yes *4	Yes
	–	S8VK-S48024 *5	85-264 VAC	20 A	30 A	Yes *4	Yes

*1 Can be purchased from CKD. - (hyphenated) products cannot be purchased from CKD, so please contact each manufacturer.
*2 Derating of output power may be necessary depending on the power supply mounting method, ambient temperature, input voltage, etc. For details on the operating conditions of the power supply, please refer to the manufacturer's website.
*3 Be aware of usage restrictions due to peak current, such as DUTY restrictions. For details, please refer to the manufacturer's website.
*4 Up to 2 units can be connected in parallel.
*5 To use as a UL/cUL compliant product, please use this power supply.

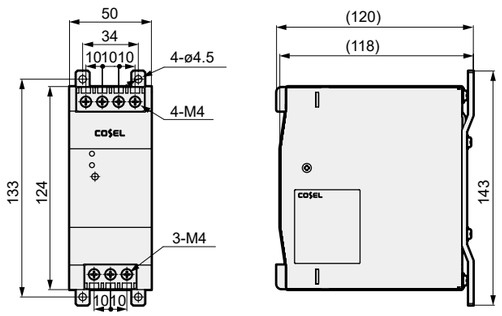
[Power Supply Specifications]

Item \ Model No.			EA-PWR-KHNA240F-24-N2 (screw mounting) EA-PWR-KHNA240F-24 (DIN rail mounting)
Manufacturer			Cosel Co., Ltd.
Manufacturer model number	Screw mounting		KHNA240F-24-N2
	DIN rail mounting		KHNA240F-24
Input voltage			85 to 264 VAC ø1 or 88 to 370 VDC
Output	Power		240 W
	Voltage/Current		24 V 10 A
	Variable voltage range		22.5 to 28.5 V
Attached functions	Overcurrent protection		Operates at 101% min of peak current
	Overvoltage protection		30.0 to 36.0 V
	Remote control		Possible
	Remote sensing		-
	Other		DC_OK display, ALARM display
Operating temperature/humidity			-25 to +70°C, 20 to 90%RH (no condensation), -40°C Bootable *
Applicable Standards	Safety standards	AC input	UL60950-1, C-UL(CSA60950-1), EN62368-1
			UL508, ANSI/ISA 12.12.01, ATEX certified, PSE compliant*
		DC input	UL60950-1, C-UL(CSA60950-1), EN62368-1
	Noise terminal voltage		Compliant with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B
	Harmonic current		IEC61000-3-2 (Class A) compliant*
Structure	External dimensions (W×H×D)		50×124×117 mm
	Weight		900 g max
	Cooling method		Natural air cooling

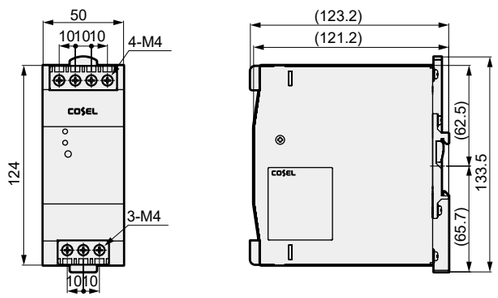
* For details, please refer to the manufacturer's website.
* CE marking and RoHS are obtained by manufacturer model number.

[External Dimension Drawing]

■ EA-PWR-KHNA240F-24-N2 (for 24 V screw mounting)



■ EA-PWR-KHNA240F-24 (for 24 V DIN rail mounting)



● Other parts

Product Name	Model No.
Noise filter for power supply (single-phase, 15 A)	AX-NSF-NF2015A-OD

* For the ferrite core to be used, please refer to the instruction manual.

MEMO

ECG-B

Controller

CONTENTS

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· EtherNet/IP	591
· Cable	592
· Related parts	593
⚠ Precautions for Use	626

Controller
ECMG
ECG
ECR
ESC4

Controller

ECG-B Series

Controller for FLCR-G, FLSH-G, FGRC-G, GCKW

For compatible detailed model Nos., please see our website.

Model No. Notation Method

ECG-BNNN30 - NP A 02

❶ ❷ ❸

❶Interface Specifications

NP	Parallel I/O (NPN, PNP common)
LK	IO-Link
CL	CC-Link
EC	EtherCAT
EN	EtherNet/IP

❷Mounting Method

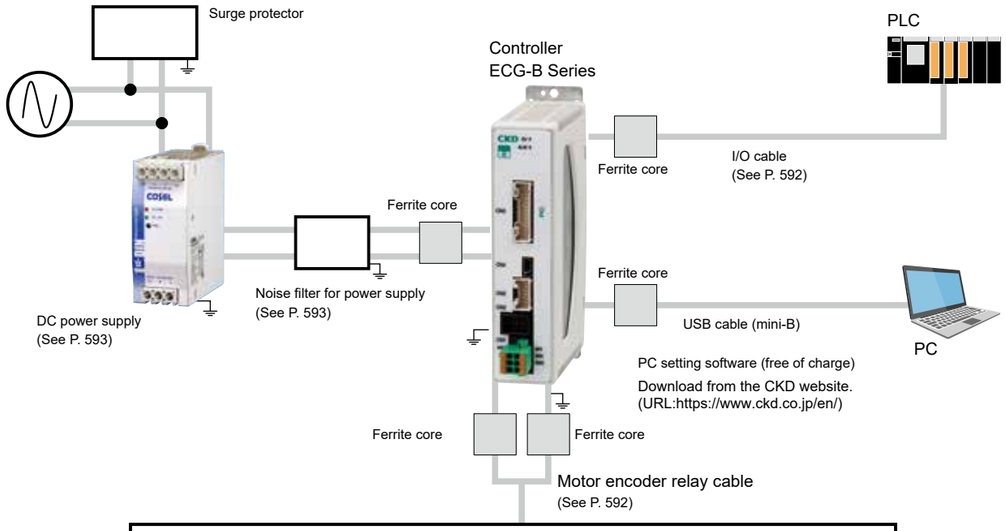
A	Standard mount
D	DIN rail mounting

❸IO Cable Length *1

00	None
02	2 m
03	3 m
05	5 m
10	10 m

*1 Except when selecting "Parallel I/O" for the interface specification, please select "None".

System Configuration



Connectable actuators

FLCR-G Series	FGRC-G Series	FLSH-G Series	GCKW Series
(P. 225)	(P. 247)	(P. 271)	(P. 395)

* For installation of noise filters, surge protectors, ferrite cores, and wiring methods, please refer to the instruction manual.

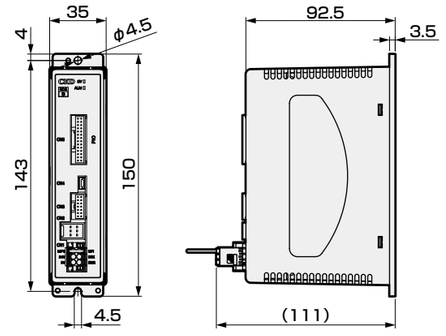
General Specifications

Item		Content			
Applicable Actuators		FLCR-G, FGRC-G, FLSH-G, GCKW			
Applicable Motor Size		□20	□25	□25L	□35
Configuration Tool		PC configuration software (S-Tools) Connection cable: USB cable (mini-B)			
External Interface	Parallel I/O specifications	24 VDC ±10%, max. 13 I/O points each, max. cable length 10 m			
	Field network specifications	IO-Link, CC-Link, EtherCAT, EtherNet/IP			
Indicator light		SV lamp, alarm lamp Communication status confirmation lamp (depends on each interface specification)			
Power supply voltage	Control power supply	24 VDC ±10%			
	Motive power supply	24 VDC ±10%			
Current Consumption	Control power supply	0.4 A or less			
	Motive power supply	1.1 A or less	2.1 A or less	3.2 A or less	3.0 A or less
Motor Max. Instantaneous Current		1.5 A or less	3.0 A or less	4.5 A or less	4.2 A or less
Insulation Resistance		10 MΩ or more at 500 VDC			
Dielectric Strength		500 VAC for 1 minute			
Operating Ambient Temperature		0 to 40°C no freezing			
Operating 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			
Operating atmosphere		No corrosive gas, explosive gas, or dust			
Protection Structure		IP20			
Weight		Approx. 310 g (standard mounting) Approx. 340 g (DIN rail mounting)			

External Dimension Drawing

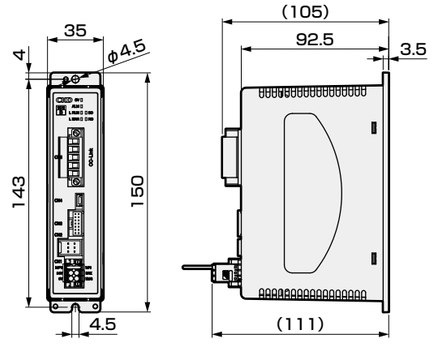
● Standard mount

ECG-BNNN30-NPA□□ (Parallel I/O specification)



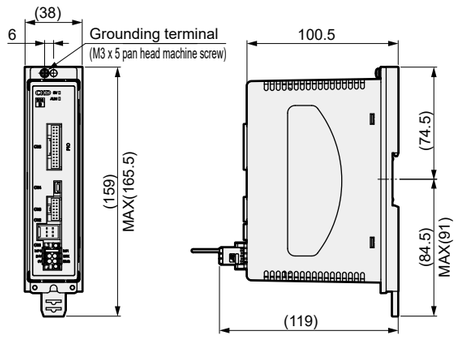
ECG-BNNN30-□□A□□ (Other)

* This figure is the external dimension drawing for the CC-Link specification. Other interface specifications also have the same external dimension drawings, except for the connector part.



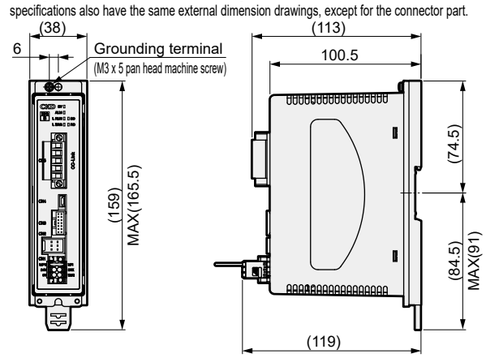
● DIN rail mounting

ECG-BNNN30-NPD□□ (Parallel I/O specification)



ECG-BNNN30-□□D□□ (Other)

* This figure is the external dimension drawing for the CC-Link specification. Other interface specifications also have the same external dimension drawings, except for the connector part.

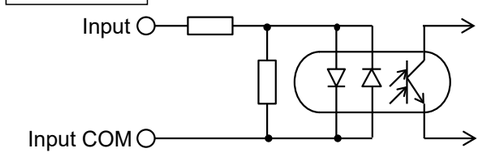


Parallel I/O (PIO) input/output circuit

Input Specifications

Item	ECG-ANNN30-NP□□
Number of input points	13 points
Input voltage	24 VDC ±10%
Input current	4 mA/point
ON-state input voltage	19 V or more
OFF-state input current	0.2 mA or less

Input circuit

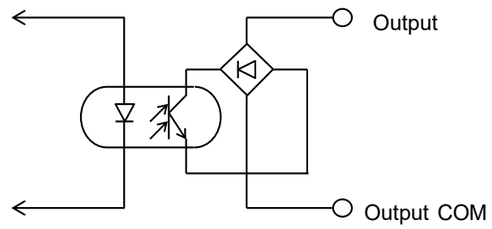


The input is non-polar.
(Input COM can be used for both+and -)

Output Specifications

Item	ECG-ANNN30-NP□□
Number of output points	13 points
Load voltage	24 VDC ±10%
Load current	20 mA or less/point
ON-state internal voltage drop	3 V or less
OFF-state leakage current	0.1 mA or less
Output short-circuit protection circuit	Yes
Connected load	PLC, etc.

Output circuit



The output is non-polar.
(Output COM can be used for both+and -)

Parallel I/O (PIO) operation mode

The controller has 5 types of operation modes.
Please set the appropriate operation mode for your application using the PC configuration software. The initial setting is "64-point mode".

Operation Mode	Number of positioning points	Overview
64-point mode	64 points	· JOG move start input · Select output: Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Simple 7-point mode	7 points	· JOG move start input · Select output: Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Double 2-position type	2 points	· SW output: 2 points · Select output: Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Double 3-position type	2 points	· SW output: 2 points · Select output: Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))
Solenoid valve mode Single type	2 points	· SW output: 2 points · Select output: Select output: 2 points (Point zone, Zone 1, Zone 2, Moving, Warning, Soft limit over, Soft limit over (-), Soft limit over (+))

Parallel I/O (PIO) Signal Abbreviation List

Input signal

Abbreviation	Name	Abbreviation	Name
PST	Point move start	JOGM	JOG (-) move start
PSB*	Point number selection bit *	JOGP	JOG (+) move start
OST	Homing Start	P*ST	Point number *Move start
SVON	Servo on	V1ST	Solenoid valve move command 1
ALMRST	Alarm Reset	V2ST	Solenoid valve move command 2
STOP	Stop	VST	Solenoid valve move command

Output signal

Abbreviation	Name	Abbreviation	Name
PEND	Point move complete	SONS	Servo ON state
PCB*	Point number confirmation bit *	ALM	Alarm
ACB*	Alarm confirmation bit *	WARN	Warning
PZONE	Point zone	READY	Ready to operate
MOVE	Moving	P*END	Point number *Move complete
ZONE1	Zone 1	SW1	Switch 1
ZONE2	Zone 2	SW2	Switch 2
OEND	Homing complete	SLMT	Soft limit over
SLMTM	Soft limit over (-)	SLMTP	Soft limit over (+)

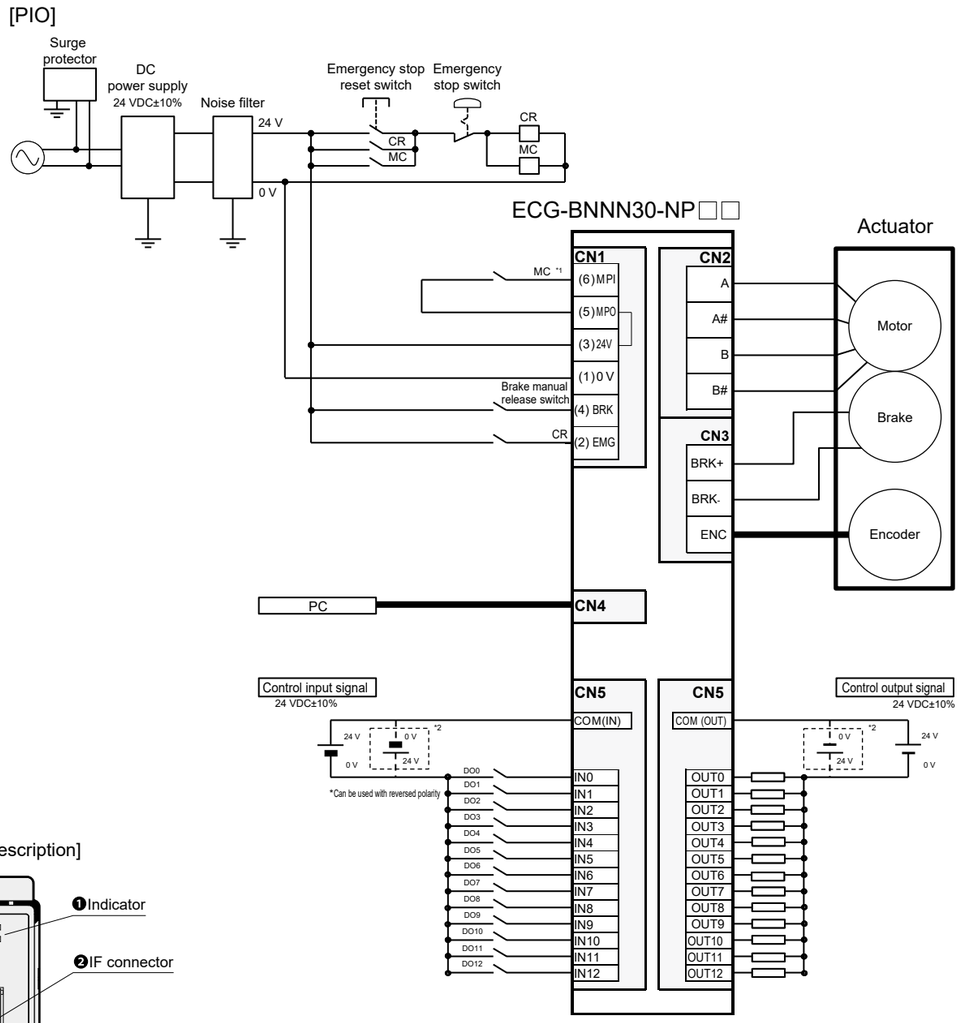
Parallel I/O (PIO) operation mode and signal assignment

The signal assignment by operation mode is as shown in the figure below.

Operation Mode		64-point mode	Simple 7-point mode	Solenoid valve mode Double 2-position type	Solenoid valve mode Double 3-position type	Solenoid valve mode Single type
Number of positioning points		64	7	2	2	2
Input	IN0	PSB0	P1ST	V1ST	V1ST	-
	IN1	PSB1	P2ST	V2ST	V2ST	VST
	IN2	PSB2	P3ST	-	-	-
	IN3	PSB3	P4ST	-	-	-
	IN4	PSB4	P5ST	-	-	-
	IN5	PSB5	P6ST	-	-	-
	IN6	PST	P7ST	-	-	-
	IN7	JOGM	JOGM	-	-	-
	IN8	JOGP	JOGP	-	-	-
	IN9	OST	OST	OST	OST	OST
	IN10	SVON	SVON	SVON	SVON	SVON
	IN11	ALMRST	ALMRST	ALMRST	ALMRST	ALMRST
	IN12	STOP #	STOP #	-	-	-
Output	OUT0	PCB0/ ACB0	P1END	P1END	P1END	P1END
	OUT1	PCB1/ ACB1	P2END	P2END	P2END	P2END
	OUT2	PCB2/ ACB2	P3END	-	-	-
	OUT3	PCB3/ ACB3	P4END	-	-	-
	OUT4	PCB4	P5END	SW1	SW1	SW1
	OUT5	PCB5	P6END	SW2	SW2	SW2
	OUT6	PEND	P7END	-	-	-
	OUT7	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT8	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT9	OEND	OEND	OEND	OEND	OEND
	OUT10	SONS	SONS	SONS	SONS	SONS
	OUT11	ALM#	ALM#	ALM#	ALM#	ALM#
	OUT12	READY	READY	READY	READY	READY

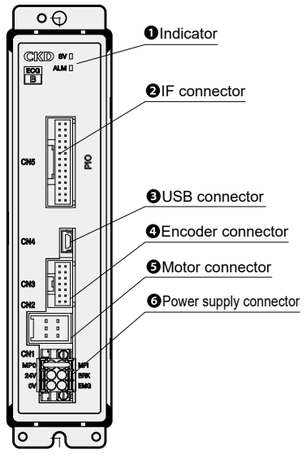
* # is a negative logic signal.

Parallel I/O connection diagram (ECG-BNNN30-NP□□)



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.
*3 It can also be used with the polarity reversed.

[Panel Description]



● Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT

Description of field network operation modes

Operation Mode	Overview
PIO mode: (PIO)	Point operation can be used, and the I/O signal assignment can be changed in operation mode (PIO), similar to the parallel I/O specification. However, direct value operation, which sets the operating conditions during operation directly from the PLC, cannot be selected. In addition, parameters can be read and written, but the monitor function cannot be used. For detailed items, please refer to the table below.
Half simple direct value mode: (HSDP)	This is a mode that can only be selected with a CC-Link specification controller. By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the target position is arbitrarily set from the PLC and operated. In addition, the monitor function can be used with restrictions. However, parameters cannot be read or written. For detailed items, please refer to the table below.
Simple direct value mode: (SDP)	By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the target position is arbitrarily set from the PLC and operated. In addition, parameters can be read and written, and the monitor function can also be used. For detailed items, please refer to the table below.
Half direct value mode: (HDP)	This is a mode that can only be selected with a CC-Link specification controller. By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the operating conditions are arbitrarily set from the PLC with restrictions and operated. In addition, the monitor function can be used. However, parameters cannot be read or written. For detailed items, please refer to the table below.
Full direct value mode: (FDP)	By switching the direct value travel selection, you can select and use either the 64-point operation or the direct value operation, in which the operating conditions are arbitrarily set from the PLC and operated. In addition, parameters can be read and written, and the monitor function can also be used. For detailed items, please refer to the table below.

Operation Mode		PIO	HSDP	SDP	HDP	FDP
Read/Write parameters		Available	Not available	Available	Not available	Available
Direct Value Travel Selection *1		Not selectable	Available	Available	Available	Available
Number of positioning points		64	Unlimited	Unlimited	Unlimited	Unlimited
Direct Value Travel Item *2	Target Position	-	○	○	○	○
	Positioning Width	-	-	-	○	○
	Speed	-	-	-	○	○
	Acceleration	-	-	-	●	○
	Deceleration	-	-	-	●	○
	Pushing Rate	-	-	-	○	○
	Pushing Distance	-	-	-	○	○
	Pushing Speed	-	-	-	△	○
	Gain magnification	-	-	-	*4	○
	Positioning Method	-	-	-	○	○
	Operation Method	-	-	-	○	○
	Stopping Method	-	-	-	○	○
	Acceleration/Deceleration Method	-	-	-	○	○
Monitor Item *3	Position	-	○	○	○	○
	Speed	-	○	▲	○	○
	Current	-	○	▲	○	○
	Alarm	-	-	▲	○	○

*1: If direct value travel is not selected, it will operate with the value set in the point data. Therefore, the number of positioning points is up to 64.
*2: ○ indicates items that operate with values set from the PLC. - operates with the value set in the point data.
● indicates items that operate with values set from the PLC, but the two ● items can only be set to the same value. △ operates with the value set in the common parameters.
*3: ○ indicates items that can be monitored. - indicates items that cannot be monitored.
▲ indicates items that can be monitored by selecting them as monitor values (CC-Link and IO-Link can monitor one value at a time, while others can monitor three values simultaneously).
*4: Gain magnification is invalid.

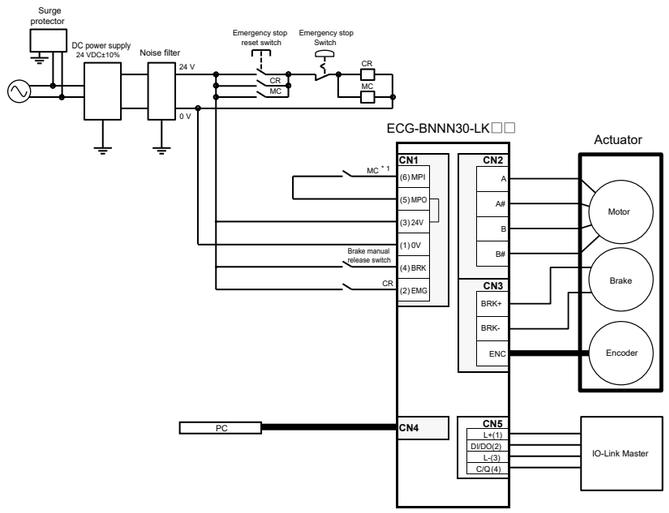
IO-Link specifications and connection diagram (ECG-BNNN30-LK□□)

[Communication Specifications]

Item	Specifications
Communication protocol version	V1.1
Transmission speed	COM3 (230.4kbps)
Port	Class A
Process data length (Input) PD (in) data length	PIO mode: 2 bytes
	Simple direct value mode: 9 bytes
	Full Direct Value Mode: 12 bytes
Process data length (Output) PD (out) data length	PIO mode: 2 bytes
	Simple direct value mode: 7 bytes
	Full Direct Value Mode: 22 bytes
Minimum cycle time	PIO mode: 1 ms
	Simple direct value mode: 1.5 ms
	Full Direct Value Mode: 2.5 ms
Monitor function	Position, speed, current, alarm

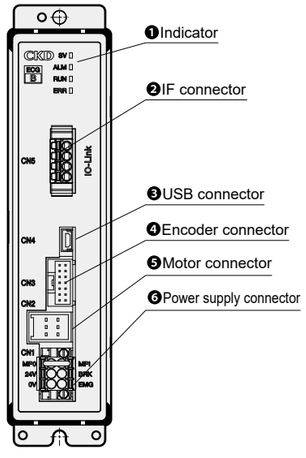
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 587.

[IO-Link]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

PD (out)	bit	Full Direct Value Mode Signal name
0	7	Pause #
	6	Stop #
	5	Alarm Reset
	4	Servo ON
	3	Homing Start
	2	Point move start
	1	JOG/INCH (+) move start
	0	JOG/INCH (-) move start
1	7	INCH Selection
	6	-
	5 to 0	Point number selection bit 5 to 0
2	7 to 4	-
	3 to 1	Direction of rotation (direct value travel)
	0	Direct Value Travel Selection
3 to 6	7 to 0	Position (direct value travel)
7 to 8	7 to 0	Positioning width (direct value travel)
9 to 10	7 to 0	Speed (direct value travel)
11	7 to 0	Acceleration (direct value travel)
12	7 to 0	Deceleration (direct value travel)
13	7 to 0	Pushing rate (direct value travel)
14	7 to 0	Pushing speed (direct value travel)
15 to 18	7 to 0	Pushing distance (direct value travel)
19 to 20	7 to 0	Gain magnification (direct value travel)
21	7	Positioning method (direct value travel)
	6 to 5	Operation method (direct value travel)
	4 to 3	Acceleration/deceleration method (direct value travel)
	2 to 0	Stopping method (direct value travel)

Cyclic data from controller

PD (in)	bit	Full Direct Value Mode Signal name
0	7	Ready to operate
	6	Warning #
	5	Alarm #
	4	Servo ON state
	3	Homing complete
	2	Point move complete
	1 to 0	-
1	7 to 6	-
	5 to 0	Point number confirmation bit 5 to 0
2	7	Soft limit over (+)
	6	Soft limit over (-)
	5	Soft limit over
	4	Zone 2
	3	Zone 1
	2	Moving
	1	Point zone
	0	Direct move state
3 to 6	7 to 0	Position (monitor value)
7 to 8	7 to 0	Speed (monitor value)
9	7 to 0	Current (monitor value)
10 to 11	7 to 0	Alarm (monitor value)

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT
IO-Link Connector	FMC1,5/4-ST-3,5-RF	PHOENIX CONTACT

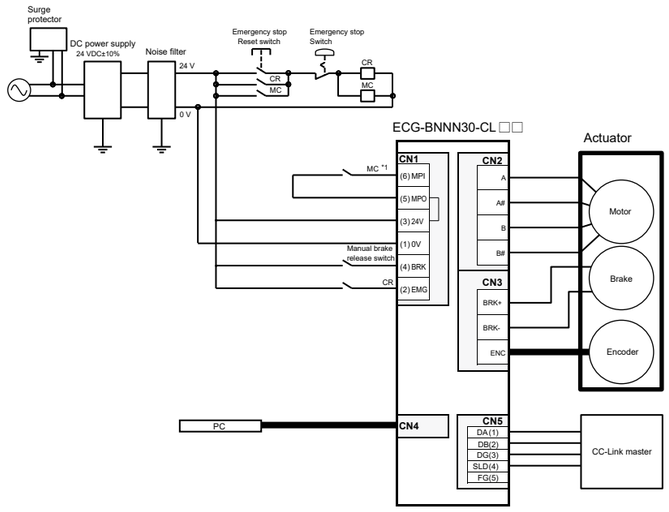
CC-Link specifications and connection diagram (ECG-BNNN30-CL□□)

[Communication Specifications]

Item	Specifications
CC-Link Version	ver. 1.10
Station type	Remote device station
Remote station number	1 to 64 (set by parameter setting)
Operation mode and number of occupied stations	PIO mode (1 station occupied)
	Half simple direct value mode (1 station occupied)
	Simple direct value mode (2 stations occupied)
	Half direct value mode (2 stations occupied)
	Full direct value mode (4 stations occupied)
Number of remote I/O points	32 points×number of occupied stations
Remote register I/O	4 words×number of occupied stations
Communication speed	10M/5M/2.5M/625k/156kbps (Select by parameter setting)
Connection cable	CC-Link Ver. 1.10 compatible cable (Shielded 3-core twisted pair cable)
Number of connected units	Up to 42 units when only remote device stations are connected
Monitor function	Position, speed, current, alarm

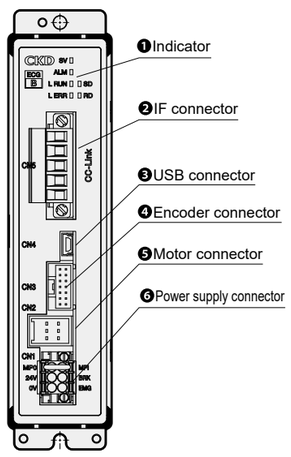
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 587.

[CC-Link]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

Device No.	Half simple direct value mode Signal name
RYn0	Point number selection bit 0
RYn1	Point number selection bit 1
RYn2	Point number selection bit 2
RYn3	Point number selection bit 3
RYn4	Point number selection bit 4
RYn5	Point number selection bit 5
RYn6	Direct Value Travel Selection
RYn7	JOG/INCH (-) move start
RYn8	JOG/INCH (+) move start
RYn9	INCH Selection
RYnA	Point move start
RYnB	Homing Start
RYnC	Servo ON
RYnD	Alarm Reset
RYnE	Stop #
RYnF	Pause #
RY (n+1) 0 to RY (n+1) F	Unused

Device No.	Half simple direct value mode Signal name
RWw0	Position (direct value travel)
RWw1	
RWw2	-
RWw3	-

Cyclic data from controller

Device No.	Half simple direct value mode Signal name
RXn0	Point number confirmation bit 0
RXn1	Point number confirmation bit 1
RXn2	Point number confirmation bit 2
RXn3	Point number confirmation bit 3
RXn4	Point number confirmation bit 4
RXn5	Point number confirmation bit 5
RXn6	Direct value travel state
RXn7	Select output 1
RXn8	Select output 2
RXn9	-
RXnA	Point move complete
RXnB	Homing complete
RXnC	Servo ON state
RXnD	Alarm #
RXnE	Warning #
RXnF	Ready to operate
RX (n+1) 0 to RX (n+1) F	Unused

Device No.	Half simple direct value mode Signal name
RWr0	Position (monitor value)
RWr1	
RWr2	Speed (monitor value)
RWr3	Current (monitor value)

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT
CC-Link Connector	MSTB2,5/5-STF-5,08ABGYAU	PHOENIX CONTACT

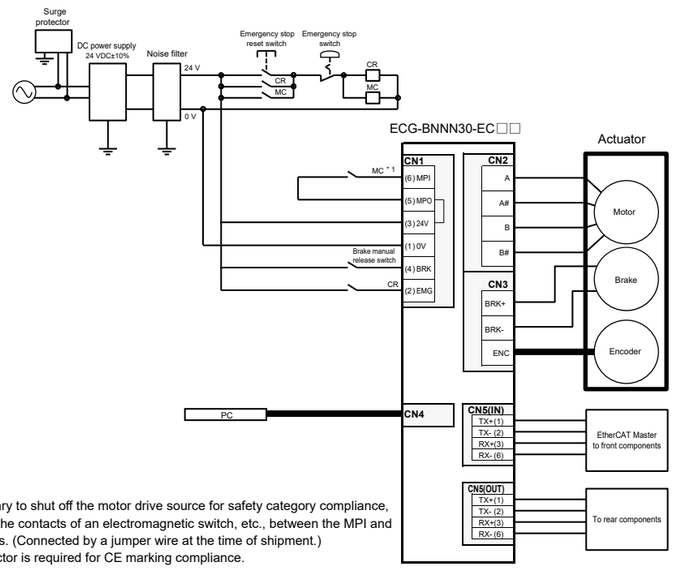
EtherCAT specifications and connection diagram (ECG-BNNN30-EC□□)

[Communication Specifications]

Item	Specifications
Communication speed	100 Mbps (Fast Ethernet, full-duplex)
Process data	Variable PDO mapping
Max. PDO data length	RxPDO: 64 bytes / TxPDO: 64 bytes
Station alias	0 to 65535 (set by parameter)
Connection cable	EtherCAT compatible cable (CAT5e or higher twisted pair cable (double shielded with aluminum tape and braid) is recommended)
Node address	Master automatically assigns
Monitor function	Position, speed, current, alarm

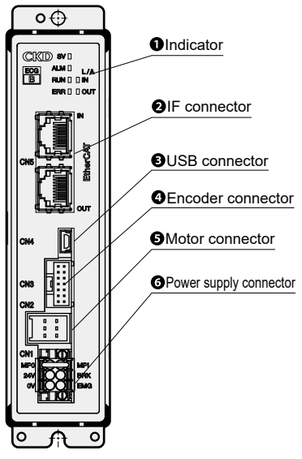
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 587.

[EtherCAT]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals. (Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

INDEX	Sub Index	bit	Full Direct Value Mode Signal name
0x2001	0x01	0 to 5	Point number selection bits 0 to 5
		6	-
		7	JOG/INCH (-) move start
		8	JOG/INCH (+) move start
		9	INCH Selection
		10	Point move start
		11	Homing Start
		12	Servo ON
		13	Alarm Reset
		14	Stop #
		15	Pause #
		16 to 31	-
	0x02	0 to 3	-
		4	Data request
		5	Data R/W selection
		6 to 11	-
		12	Monitor request
		13 to 14	-
		15	Direct Value Travel Selection
		16 to 31	-
0x2003	0x01	0 to 31	Position (direct value travel)
	0x02	0 to 31	Positioning width (direct value travel)
	0x03	0 to 31	Speed (direct value travel)
	0x04	0 to 31	Acceleration (direct value travel)
	0x05	0 to 31	Deceleration (direct value travel)
	0x06	0 to 31	Pushing rate (direct value travel)
	0x07	0 to 31	Pushing speed (direct value travel)
	0x08	0 to 31	Pushing distance (direct value travel)
	0x09	0 to 31	Mode (direct value travel)
	0x0A	0 to 31	Gain magnification (direct value travel)
	0x0B	0 to 31	Write data
	0x0C	0 to 31	Data number
	0x0D	0 to 31	Monitor number 1
	0x0E	0 to 31	Monitor number 2

Cyclic data from controller

INDEX	Sub Index	bit	Full Direct Value Mode Signal name
0x2005	0x01	0 to 5	Point number confirmation bits 0 to 5
		6 to 9	-
		10	Point move complete
		11	Homing complete
		12	Servo ON state
		13	Alarm #
		14	Warning #
		15	Ready to operate
		16 to 31	-
	0x02	0 to 3	Data response
		4	Data complete
		5	Data write status
		6 to 7	-
		8 to 11	Monitor response
		12	Monitor complete
		13 to 14	-
		15	Direct value travel state
		16	Point zone
		17	Moving
		18	Zone 1
		19	Zone 2
		20	Soft limit over
		21	Soft limit over (-)
		22	Soft limit over (+)
		23 to 31	-
0x2007	0x01	0 to 31	Position (monitor value)
	0x02	0 to 31	Speed (monitor value)
	0x03	0 to 31	Current (monitor value)
	0x04	0 to 31	-
	0x05	0 to 31	Alarm (monitor value)
	0x06 to 0x0A	0 to 31	-
	0x0B	0 to 31	Read data
	0x0C	0 to 31	Data (alarm)
	0x0D	0 to 31	Monitor value 1
	0x0E	0 to 31	Monitor value 2

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT

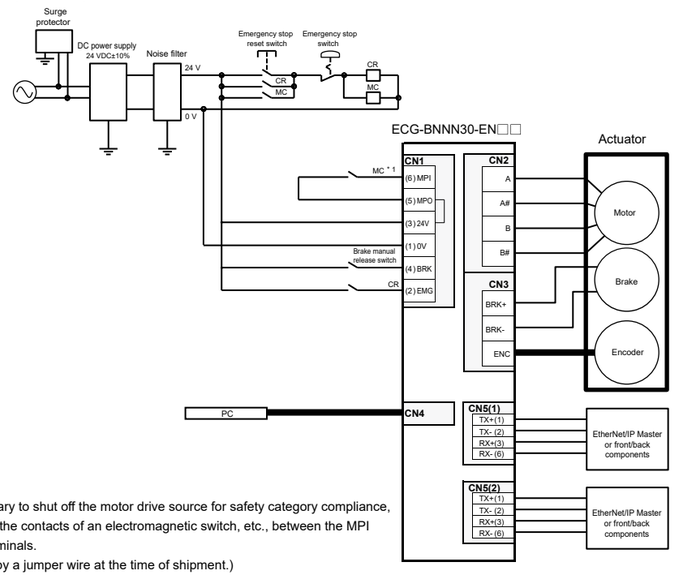
EtherNet/IP specifications and connection diagram (ECG-BNNN30-EN□□)

[Communication Specifications]

Item	Specifications
Communication protocol	EtherNet/IP
Communication speed	Automatic setting (100 Mbps/10 Mbps, full-duplex/half-duplex)
Number of occupied bytes	Input: 64 bytes/output: 64 bytes
IP address	Setting by parameter (0.0.0.0 to 255.255.255.255) Via DHCP server (any address)
RPI (Packet interval)	4 ms to 10000 ms
Connection cable	EtherNet/IP compatible cable (CAT5e or higher twisted pair cable (double shielded with aluminum tape and braid) is recommended)
Monitor function	Position, speed, current, alarm

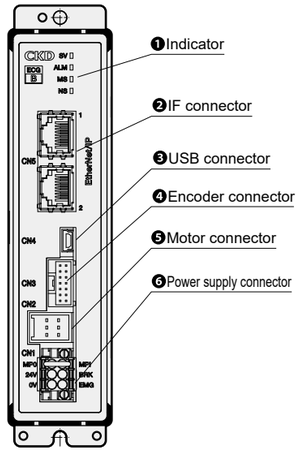
*The items that can be monitored vary depending on the operation mode. For details, please refer to P. 587.

[EtherNet/IP]



*1 If it is necessary to shut off the motor drive source for safety category compliance, etc., connect the contacts of an electromagnetic switch, etc., between the MPI and MPO terminals.
(Connected by a jumper wire at the time of shipment.)
*2 A surge protector is required for CE marking compliance.

[Panel Description]



Cyclic data from master

Byte	bit	Full Direct Value Mode Signal name
0	0 to 5	Point number selection bits 0 to 5
	6	-
	7	JOG/INCH (-) move start
1	0	JOG/INCH (+) move start
	1	INCH Selection
	2	Point move start
	3	Homing Start
	4	Servo ON
	5	Alarm Reset
	6	Stop #
	7	Pause #
2 to 3	0 to 7	-
4	0 to 3	-
	4	Data request
	5	Data R/W selection
	6 to 7	-
5	0 to 3	
	4	Monitor request
	5 to 6	-
	7	Direct Value Travel Selection
6 to 7	0 to 7	-
8 to 11	0 to 7	Position (direct value travel)
12 to 15	0 to 7	Positioning width (direct value travel)
16 to 19	0 to 7	Speed (direct value travel)
20 to 23	0 to 7	Acceleration (direct value travel)
24 to 27	0 to 7	Deceleration (direct value travel)
28 to 31	0 to 7	Pushing rate (direct value travel)
32 to 35	0 to 7	Pushing speed (direct value travel)
36 to 39	0 to 7	Pushing distance (direct value travel)
40 to 43	0 to 7	Mode (direct value travel)
44 to 47	0 to 7	Gain magnification (direct value travel)
48 to 51	0 to 7	Write data
52 to 55	0 to 7	Data number
56 to 59	0 to 7	Monitor number 1
60 to 63	0 to 7	Monitor number 2

Cyclic data from controller

Byte	bit	Full Direct Value Mode Signal name
0	0 to 5	Point number confirmation bits 0 to 5
	6 to 7	-
1	0 to 1	-
	2	Point move complete
	3	Homing complete
	4	Servo ON state
	5	Alarm #
	6	Warning #
	7	Ready to operate
2 to 3	0 to 7	-
4	0 to 3	Data response
	4	Data complete
	5	Data write status
	6 to 7	-
5	0 to 3	Monitor response
	4	Monitor complete
	5 to 6	-
	7	Direct value travel state
6	0	Point zone
	1	Moving
	2	Zone 1
	3	Zone 2
	4	Soft limit over
	5	Soft limit over (-)
	6	Soft limit over (+)
	7	-
7	0 to 7	-
8 to 11	0 to 7	Position (monitor value)
12 to 15	0 to 7	Speed (monitor value)
16 to 19	0 to 7	Current (monitor value)
20 to 23	0 to 7	-
24 to 27	0 to 7	Alarm (monitor value)
28 to 47	0 to 7	-
48 to 51	0 to 7	Read data
52 to 55	0 to 7	Data (alarm)
56 to 59	0 to 7	Monitor value 1
60 to 63	0 to 7	Monitor value 2

* For other operation modes, please refer to the instruction manual.
* # represents a negative logic signal.

Attached items

Product Name	Manufacturer model number	Manufacturer name
Power connector	DFMC1.5/3-STF-3.5	PHOENIX CONTACT

Relay Cable

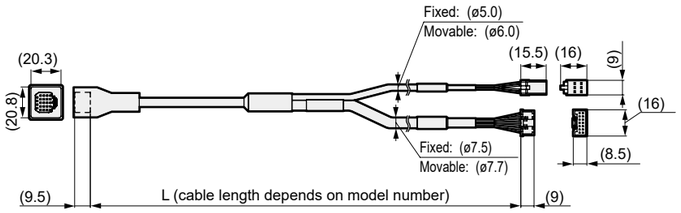
● Motor/encoder relay cable (fixed/flexible)

* Also selectable by actuator model

EA-CBLME4 - S 01
(1) (2)

❶Cable Type	
S	Fixed cable
R	Flexible cable

❷Cable length	
01	1 m
03	3 m
05	5 m
10	10 m



* Please use all cables with a bending radius of 51 mm or more.

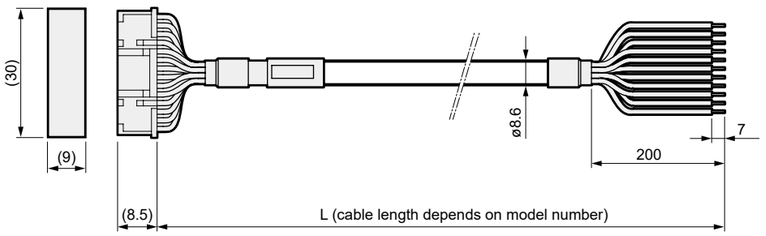
I/O cable

● I/O cable

* Also selectable by parallel I/O specification controller model

EA-CBLNP2 - 02
(1)

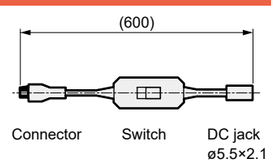
❶Cable length	
02	2 m
03	3 m
05	5 m
10	10 m



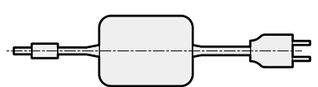
Brake release unit

● FLCR brake release unit

EA-BRK-UNIT



Customer-supplied: AC-DC Adapter



DC plug
ø5.5×2.1
Polarity: Center positive

AC-DC Adapter Specifications
Rated output voltage: 18-24 VDC
Rated current: 0.35 A or more

Special Order Product*

● Change of relay cable length

The length of the relay cable can be changed. The cable length can be changed within the range of 1 m to 10 m.

* For details on special order products, please contact our sales office.

Related parts model number table

● Recommended Power Supply

Manufacturer	Model No. *1	Manufacturer model number	Input voltage	Rated current *2	Output peak current *2 *3	Parallel connection	DIN rail compatible
Cosel Co., Ltd.	EA-PWR-KHNA240F-24-N2	KHNA240F-24-N2	85-264 VAC	10 A	15 A	×	×
	EA-PWR-KHNA240F-24	KHNA240F-24	85-264 VAC	10 A	15 A	×	Yes
OMRON Corporation	–	S8VK-S24024 *5	85-264 VAC	10 A	15 A	Yes *4	Yes
	–	S8VK-S48024 *5	85-264 VAC	20 A	30 A	Yes *4	Yes

*1 Can be purchased from CKD. - (hyphenated) products cannot be purchased from CKD, so please contact each manufacturer.
*2 Derating of output power may be necessary depending on the power supply mounting method, ambient temperature, input voltage, etc. For details on the operating conditions of the power supply, please refer to the manufacturer's website.
*3 Be aware of usage restrictions due to peak current, such as DUTY restrictions. For details, please refer to the manufacturer's website.
*4 Up to 2 units can be connected in parallel.
*5 To use as a UL/cUL compliant product, please use this power supply.

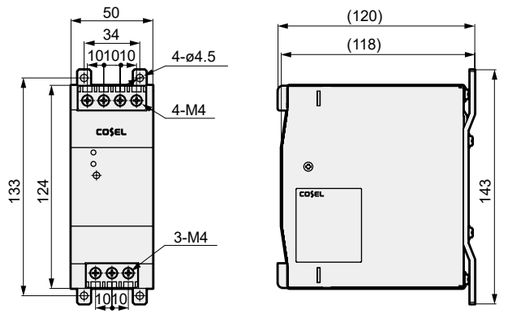
[Power Supply Specifications]

Item \ Model No.		EA-PWR-KHNA240F-24-N2 (screw mounting) EA-PWR-KHNA240F-24 (DIN rail mounting)
Manufacturer		Cosel Co., Ltd.
Manufacturer model number	Screw mounting	KHNA240F-24-N2
	DIN rail mounting	KHNA240F-24
Input voltage		85 to 264 VAC ø1 or 88 to 370 VDC
Output	Power	240 W
	Voltage/Current	24 V 10 A
	Variable voltage range	22.5 to 28.5 V
Attached functions	Overcurrent protection	Operates at 101% min of peak current
	Overvoltage protection	30.0 to 36.0 V
	Remote control	Possible
	Remote sensing	-
	Other	DC_OK display, ALARM display
Operating temperature/humidity		-25 to +70°C, 20 to 90%RH (no condensation), -40°C Bootable *
Applicable Standards	Safety standards: AC input	UL60950-1, C-UL (CSA60950-1), EN62368-1
	Safety standards: AC input	UL508, ANSI/ISA 12.12.01, ATEX certified, PSE compliant*
	Safety standards: DC input	UL60950-1, C-UL (CSA60950-1), EN62368-1
	Noise terminal voltage	Compliant with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B
	Harmonic current	IEC61000-3-2 (Class A) compliant*
Structure	External dimensions (W×H×D)	50×124×117 mm
	Weight	900 g max
	Cooling method	Natural air cooling

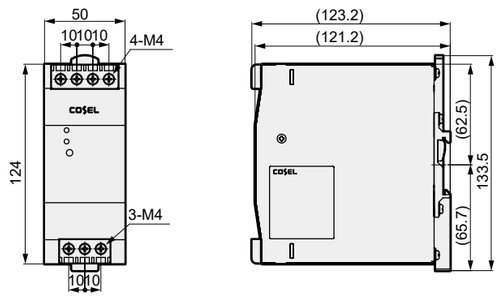
* For details, please refer to the manufacturer's website.
* CE marking and RoHS are obtained by manufacturer model number.

[External Dimension Drawing]

■ EA-PWR-KHNA240F-24-N2 (for 24V screw mounting)



■ EA-PWR-KHNA240F-24 (for 24V DIN rail mounting)



● Other parts

Product Name	Model No.
Noise filter for power supply (single-phase, 15 A)	AX-NSF-NF2015A-OD

* For the ferrite core to be used, please refer to the instruction manual.