Direct drive actuator
GH/H type driver

Common specifications

Descriptions	Model	
	GH type driver AX9000GH	H type driver AX9***H
Power voltage	1. 200 VAC -10% to 230 VAC +10% three phase (standard) (Note 1)	
	2. 100 VAC -10% to 115 VAC + 10% single phase (-J1: Option)	
Power frequency	50/60Hz	
Structure	Driver and controller integrated type (open frame)	
Working ambient temperature range	0 to 50°C	
Working ambient humidity range	20 to 90%RH (with no dew condensation)	
Storage ambient temperature range	-20 to 80°C	
Storage ambient humidity range	20 to 90%RH (with no dew condensation)	
Atmosphere	With no corrosive gas and powder dust	
Noise-resistance	1000V (P-P), pulse amplitude 1μsec., start up 1nsec.	
Vibration resistance	4.9m/s²	
Weight	Approx. 3.2kg	

Note 1: Models with max. torque of 50 N·m or less are used with single-phase 200 to 230 VAC.

Power supply wattage / breaker capacity
GH type driver

Actuator model No.	Driver model No.	Power supply wattage (KVA)		Breaker capacity
		Max. value	Rated value	Rated current (A)
AX4150G		3.0	0.8	
AX4300G	AX9000GH	4.0	1.5	20
AX4500G		4.0	2.0	

H type driver

Actuator model No.	Driver model No.	Power supply wattage (KVA)		Breaker capacity
		Max. value	Rated value	Rated current (A)
AX*006	AX9006H	0.8	0.5	
AX*009, AX*012	AX9009H, AX9012H	1.0	0.5	
AX*021, AX*022	AX9021H, AX9022H			10
AX*045, AX*042	AX9045H, AX9042H	1.5	0.5	
AX*070, AX*075	AX9070H, AX9075H	2.0	0.8	
AX*150	AX9150H	3.0	0.8	
AX*210	AX9210H	4.0	0.8	20
AX*300	AX9300H	4.0	1.5	
AX*500	AX9500H	4.0	2.0	

CN3 input signal

Pin No.	Signal name	Logic	Judgment
1 to 2	External power input + 24V±10%		
3 to 4	External power input GND		
5	Program No. selection input (bit 0)	Positive	Level
6	Program No. selection input (bit 1)	Positive	Level
7	Program No. selection input (bit 2)	Positive	Level
8	Program No. selection input (bit 3)	Positive	Level
9	Program No. selection input (bit 4)	Positive	Level
	/program No. setting input 2nd digit		Edge
10	Program No. setting input 1st digit	Positive	Edge
11	Reset input	Positive	Edge
12	Return to origin command input	Positive	Edge
13	Start input	Positive	Edge
14	Program stop input	Positive	Edge
15	Continuous rotation stop input	Positive	Edge
16	Answer input	Positive	Edge
17	Emergency stop input	Negative	Level
18	Brake release input	Positive	Level

CN3 pulse string input signal

Pin No.	Signal name
19	PULSE/UP/A phase
20	-PULSE/-UP/-A phase
21	DIR/DOWN/B phase
22	-DIR/-DOWN/-B phase

Performance specifications

Descriptions	
Number of control axis	1 axis, 540672 pulses/rotation (name: A axis)
Angle input increment	° (degree), pulse, index number
Min. angle input increment	0.001°. pulse
Speed input increment	Sec., rpm
Speed setting range	0.01 to 100 sec. / 0.01 to 100rpm (Note) The max. rotation speed differs depending on the actuator connected.
Equal index number	1 to 255
Max. command value	7-digit input ±9999999
Timer	0.01 to 99.99 sec.
Programming language	NC language
Programming method	Data can be set with an interactive terminal or personal computer, etc., using the RS-232-C port.
Operation mode	Automatic, MDI, jog, single block, servo OFF, pulse string input mode
Coordinates	Absolute, incremental
Acceleration curve	<5 types> Modified sine (MS), modified constant velocity (MC/MC2), modified trapezoidal (MT), tropecloid (TR)
Status display	Power supply display with LED
Operating indication	Display with 7 segment LED
Communication interface	RS-232C conformed
I/O signal	<Input> Return to origin command, reset, start, stop, continuous rotation stop, emergency stop, answer, program No. selection, brake release, program No. setting, pulse string input <Output> Alarm 1/2, positioning complete, in-position, start input waiting M code 8 point, during indexing 1 (Z phase output)/during indexing 2, timing, M code strobing, index position strobing
Program capacity	6000 characters (256 programs)
Electronic thermal	Over heat protection of actuator

CN3 output signal

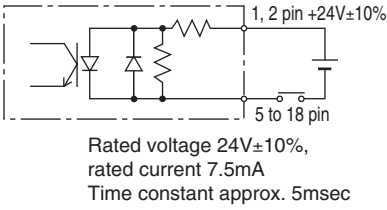| Pin No.	Signal name	Logic
33	M code output (bit 0)	Positive
34	M code output (bit 1)	Positive
35	M code output (bit 2)	Positive
36	M code output (bit 3)	Positive
37	M code output (bit 4)	Positive
38	M code output (bit 5)	Positive
39	M code output (bit 6)	Positive
40	M code output (bit 7)	Positive
41	In-position output	Positive
42	Positioning complete output	Positive
43	Start input waiting output	Positive
44	Alarm output 1	Negative
45	Alarm output 2	Negative
46	Output during indexing 1/Z phase output	Positive
47	Output during indexing 2	Positive
48	Output of time (Note 2)	Positive
49	Index position strobing output	Positive
50	M code strobing output	Positive

Note 2: Timing output cannot be used if the continuous rotation direction is CCW.
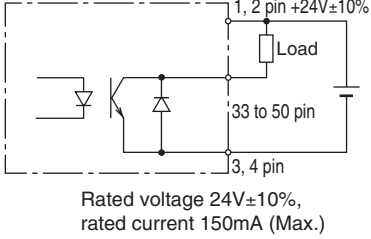
GH/H type driver

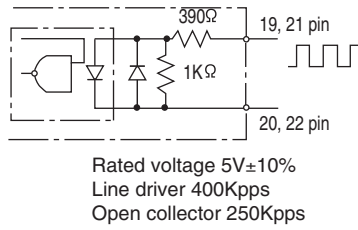Dimensions, etc.,

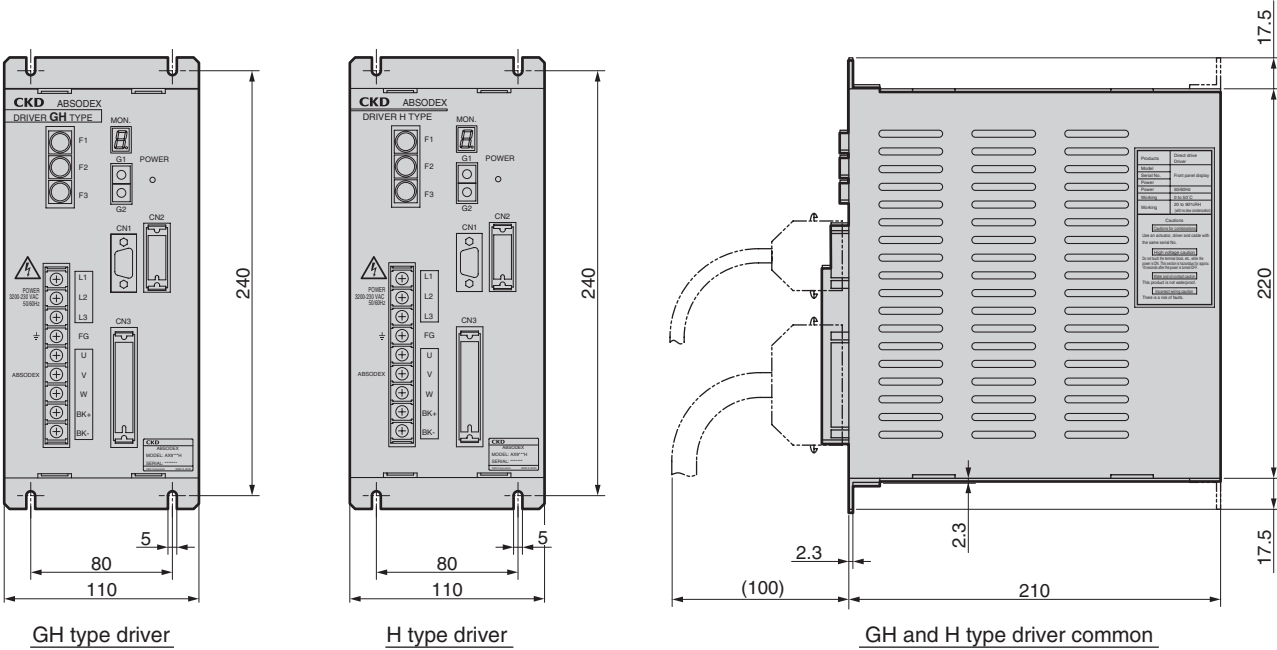## CN3 I/O circuit specifications

● Input circuit

1, 2 pin +24V±10%

5 to 18 pin

Rated voltage 24V±10%,
rated current 7.5mA
Time constant approx. 5msec

● Output circuit

1, 2 pin +24V±10%

Load

33 to 50 pin

3, 4 pin

Rated voltage 24V±10%,
rated current 150mA (Max.)

● Pulse string input circuit

390Ω

19, 21 pin

1KΩ

20, 22 pin

Rated voltage 5V±10%
Line driver 400Kpps
Open collector 250Kpps

Dimensions

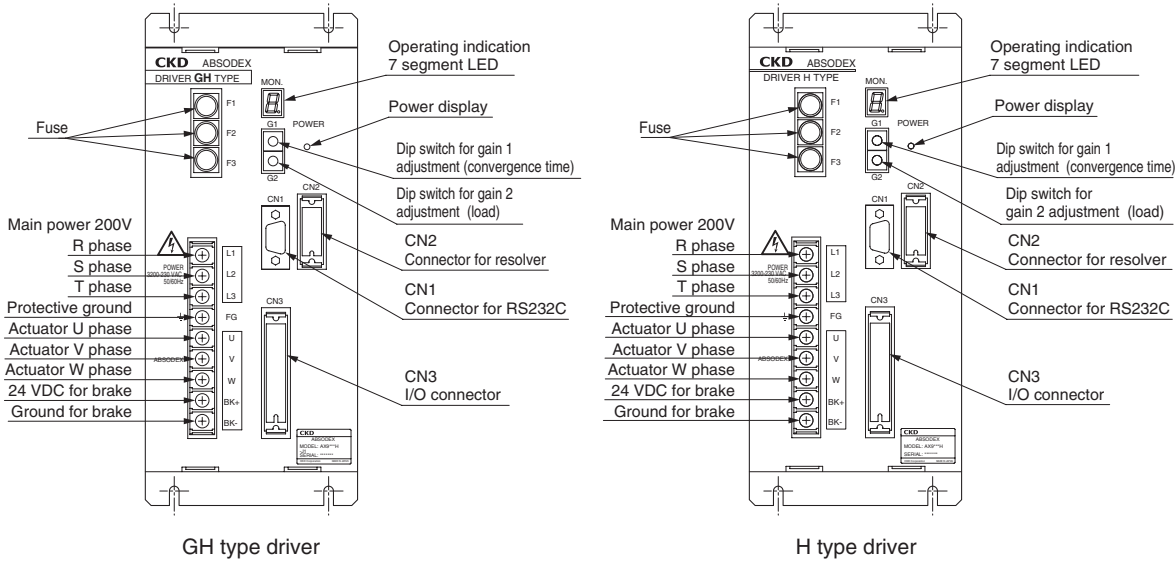● GH/H type driver (with controller)

GH type driver

H type driver

GH and H type driver common

Panel explanation   Note) A front panel design of GH and H type drivers are different.

● GH/H type driver (with controller)

Fuse

Operating indication
7 segment LED

Power display

Dip switch for gain 1
adjustment (convergence time)

Dip switch for gain 2
adjustment (load)

CN2
Connector for resolver

CN1
Connector for RS232C

CN3
I/O connector

Main power 200V
R phase
S phase
T phase
Protective ground
Actuator U phase
Actuator V phase
Actuator W phase
24 VDC for brake
Ground for brake

GH type driver

Fuse

Operating indication
7 segment LED

Power display

Dip switch for gain 1
adjustment (convergence time)

Dip switch for
gain 2 adjustment (load)

CN2
Connector for resolver

CN1
Connector for RS232C

CN3
I/O connector

Main power 200V
R phase
S phase
T phase
Protective ground
Actuator U phase
Actuator V phase
Actuator W phase
24 VDC for brake
Ground for brake

H type driver

Driver type

H type driver

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GS/S/GH/H type driver

CE marking products dimensions

● GS/S type driver (-K)
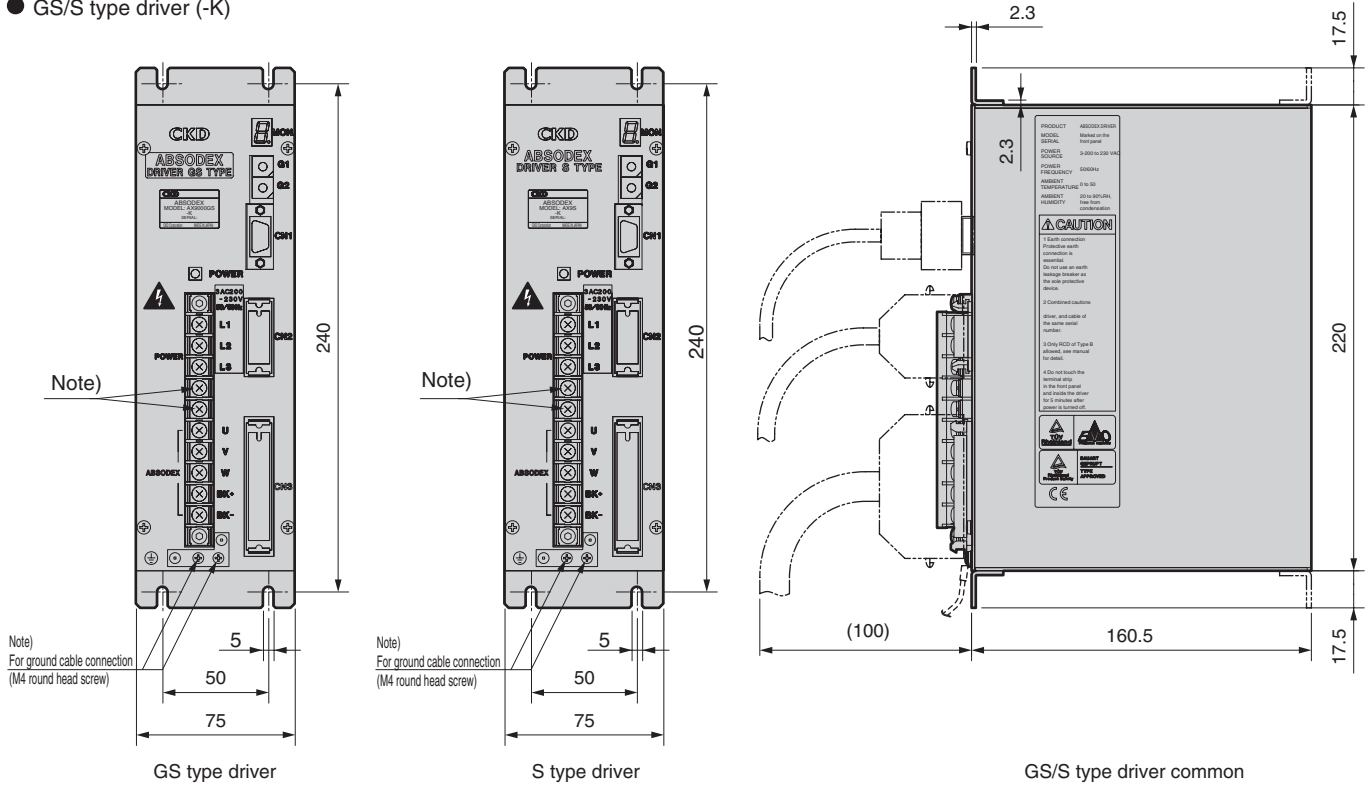
GS type driver

5
50
75

S type driver

5
50
75

GS/S type driver common

2.3
17.5
2.3
220
(100)   160.5   17.5

Note) Fix a ground cable to ground cable fixing (M4) screw.

Note) For ground cable connection (M4 round head screw)

● GH/H type driver (-K)

GH type driver

30   5
80
110

H type driver

30   5
80
110

GH and H type driver common

2.3
2.3
220
Ground cable
For front panel installation
For rear panel installation
(100)   (4)   210

Note) 2-M4 for ground cable connection
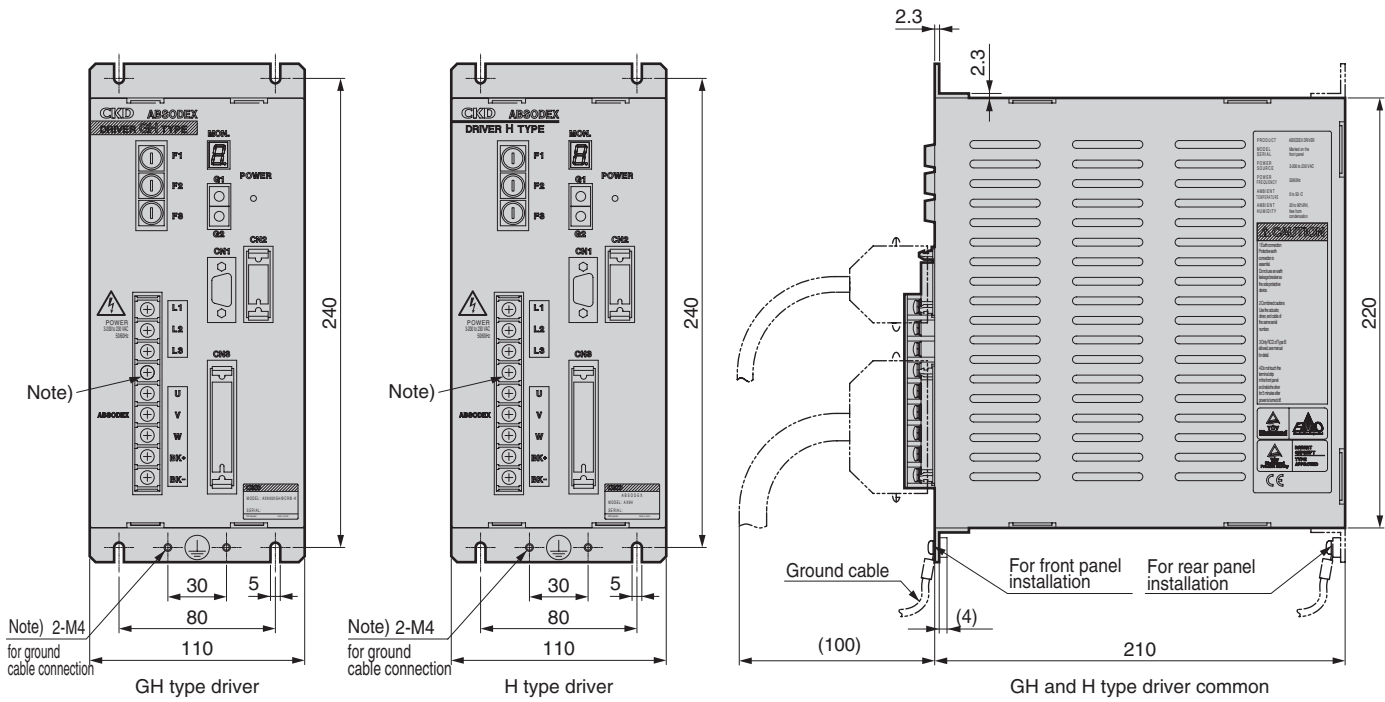
Note) Fix a ground cable to ground cable fixing (M4) screw.

⚠ Safety precautions

● Check that foreign matter such as wire scraps does not get in during wiring.
● Consult with CKD when using this product where dust or oil fumes could get in the driver.

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