



Compact Electric Actuator Series **LG1**



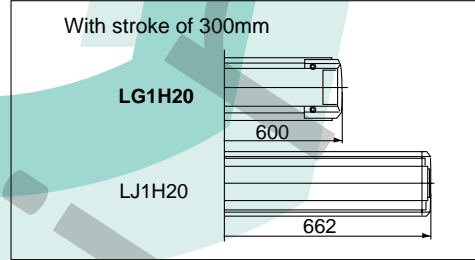
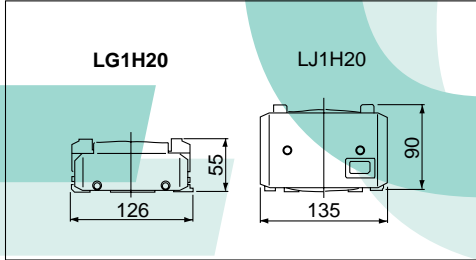
Compact electric actuator uses
a high rigidity, high linear precision guide,
with reduced height and space saving design

Compact electric actuator user precision guide, with reduced weight

Compact size & reduced weight

Height reduced by nearly **39%**
Compared with SMC products (LJ Series)

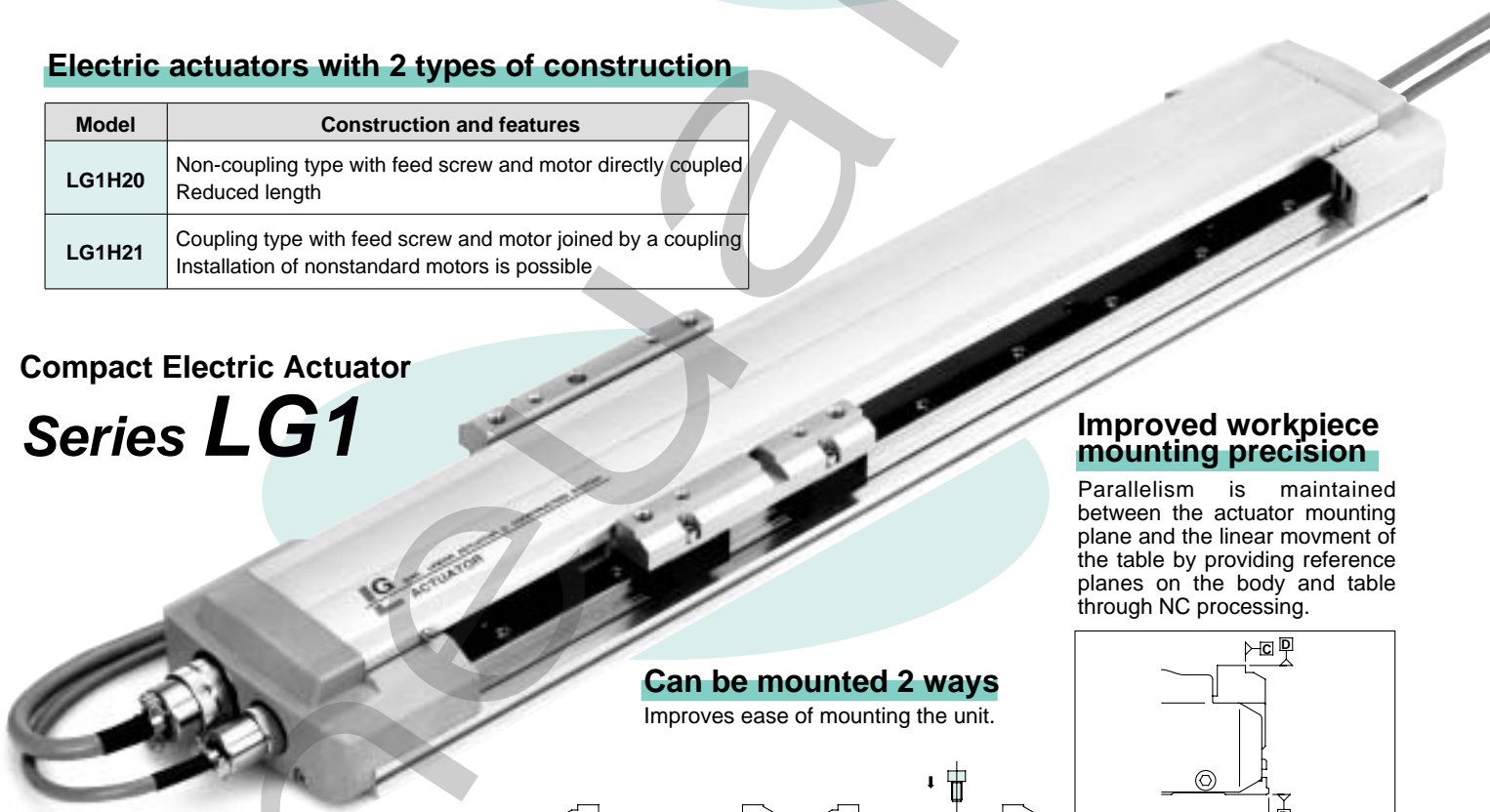
Length reduced by **62mm**
Compared with SMC products (LJ Series)



Electric actuators with 2 types of construction

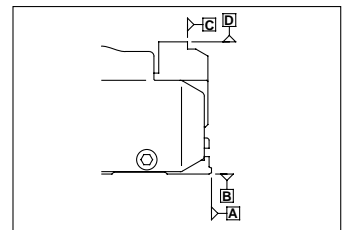
Model	Construction and features
LG1H20	Non-coupling type with feed screw and motor directly coupled Reduced length
LG1H21	Coupling type with feed screw and motor joined by a coupling Installation of nonstandard motors is possible

Compact Electric Actuator Series LG1



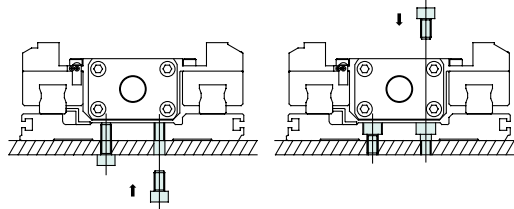
Improved workpiece mounting precision

Parallelism is maintained between the actuator mounting plane and the linear movement of the table by providing reference planes on the body and table through NC processing.



Can be mounted 2 ways

Improves ease of mounting the unit.



Bottom mounting

Top mounting

Table running accuracy (mm)

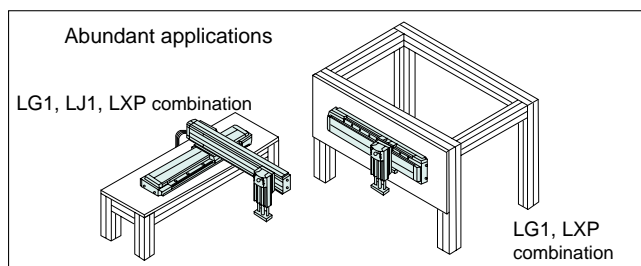
C plane to A plane	D plane to B plane
0.1 or less	0.1 or less

The LG1 series provides a stainless steel frame (LG1TH) for customers who required rigidity with an extendable aluminum frame. Refer to page 41 for further details.

Typical model	Mounting position	Feed screw	Repeatable positioning accuracy (mm)	Maximum work load (N)	Maximum speed (mm/s)	Motor output (W)	Stroke (mm)												Individual models	Applicable controller model
							100	200	300	400	500	600	700	800	900	1000	1200			
LG1H	Horizontal	Ground ball screw lead 10mm	±0.02	300	500	100	●	●	●	●								LG1H□□2□PA-□□□	LC1-1□2HA	
		Rolled ball screw lead 10mm	±0.05				●	●	●									LG1H□□2□NA-□□□		
		Ground ball screw lead 20mm	±0.02						●	●	●	●	●	●						LG1H□□2□PC-□□□
		Rolled ball screw lead 20mm	±0.05						●	●	●	●	●	●						LG1H□□2□NC-□□□
		Slide screw lead 20mm	±0.1	150	500		●	●	●	●	●	●	●	●	●		LG1H□□2□SC-□□□	LC1-1□2MC		

es a high rigidity, high linear height and space saving design

Examples of applications



Slide screw noise data

Low noise operation is possible with slide screw type.

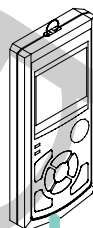
Noise level (dB)
53

Actuator control

- Absolute and incremental movement commands are provided. Speed and acceleration settings also are unrestricted.
- Home position return direction is selectable.

Operation from the teaching box

- **Programming and parameters:** can be operated like a PC. (Operation, monitoring, alarm reset, etc. can be performed.)



Programming from a PC

- **Programming and start-up:** easy programming is possible by means of the PC software's matrix editor.
- **Program test function:** program testing can be done safely by applying limits to the program. (single step, I/O cancel, override)
- **Forced output function (test):** forced output operation can be performed without relying on the program. Valid for confirmation of connections and operation.

Program capacity

- **127 steps x 8 programs:** ensures sufficient program capacity. Linking is possible with jumps and subroutine calls, etc.

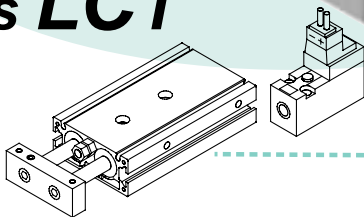
Controller with built-in driver

- **Space saving:** size reduction achieved by improved mounting efficiency. Having all top mounting connectors also saves space.
- **Light weight 2.2kg:** weight reduction achieved by omitting transformer.

Dedicated Controller Series LC1

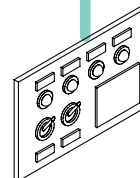
General-purpose input/output control

- **6 each general purpose input/output ports:** control of valves and auto switches, etc. is possible with 6 points + 6 points of general purpose input/output ports.



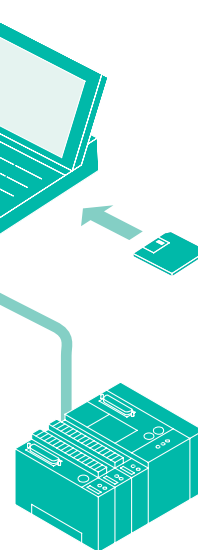
Operation from external input

- **Can be operated from external input by using a 24V power supply:** execution of program batches and step units (movement commands only) can be combined.



Operation from a PLC

- **Control input/output terminals are provided.** Operation can be controlled from a PLC.
- **2 execute configurations:** execution of program batches and step units (movement commands only) can be combined.



Uniaxial Electric Actuator

Series **LG1H**

High Rigidity Direct Acting Guide



Uniaxial Electric
Actuator

High Rigidity
Direct Acting
Guide Type

Series LG1H

Motor Output: 100W

How to Order

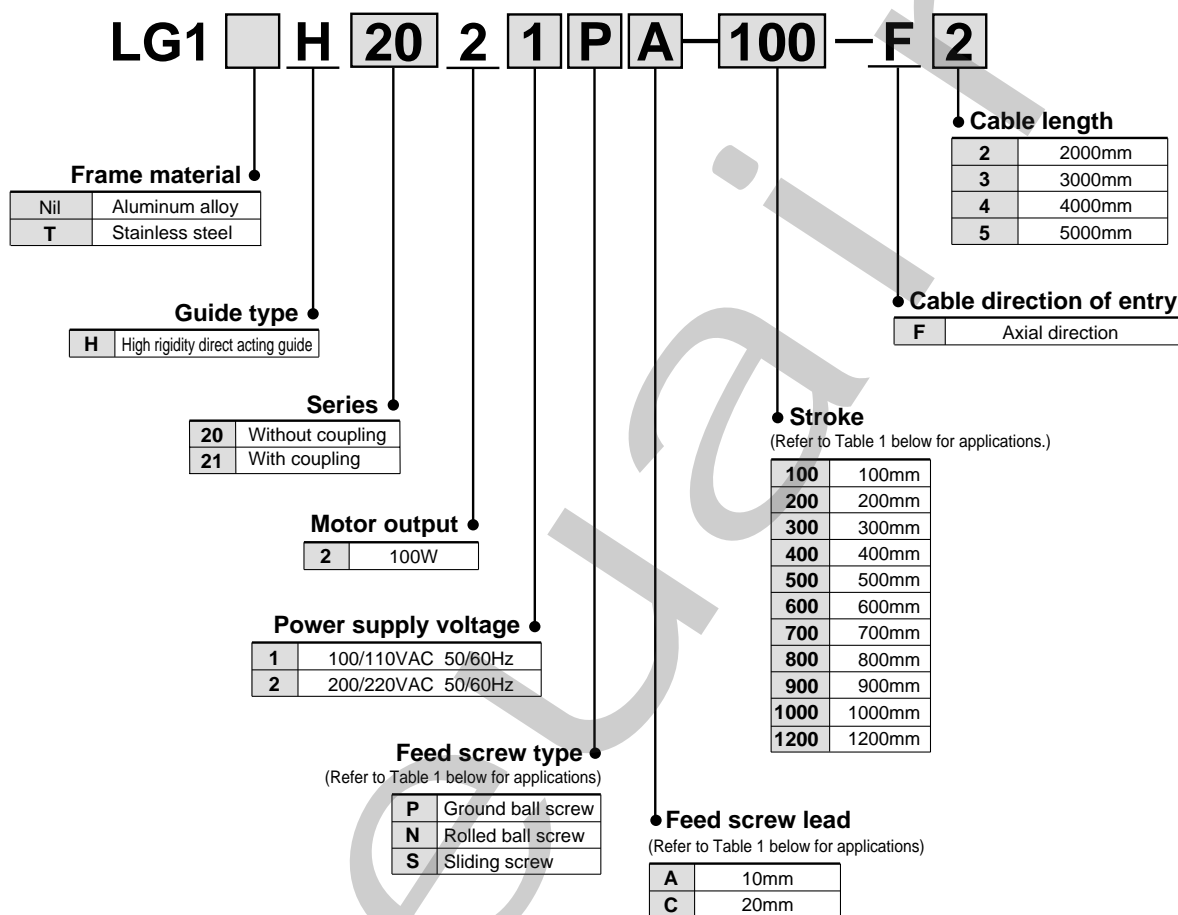


Table 1: Feed Screw and Stroke Combination Correspondence Table

Model		Stroke (mm)										
		100	200	300	400	500	600	700	800	900	1000	1200
Screw combination	LG1H□□□□PA- Stroke	•	•	•	•							
	LG1H□□□□NA- Stroke	•	•	•	•							
	LG1H□□□□PC- Stroke					•	•	•	•	•	•	
	LG1H□□□□NC- Stroke					•	•	•	•	•	•	
	LG1H□□□□SC- Stroke	•	•	•	•	•	•	•	•	•	•	•

* Please note that combinations other than those shown above cannot be produced.

LG1H20: Without Coupling
LG1H21: With Coupling

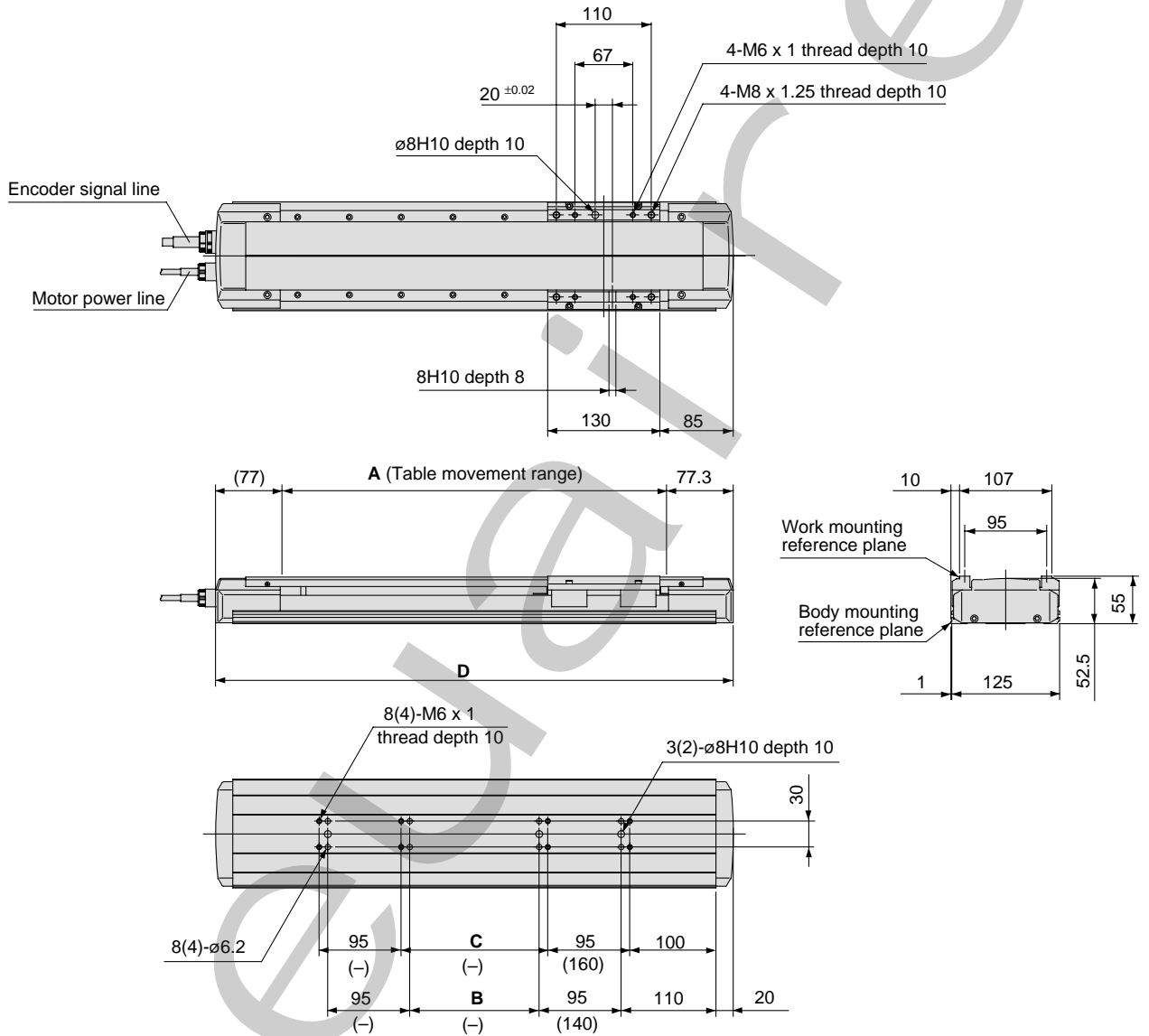


Specifications

Stroke				mm																							
				100	200	300	400	500	600	700	800	900	1000	1200													
Weight	Horizontal specification	Ball screw	Aluminum alloy frame	kg																							
			Stainless steel frame																								
		Slide screw	Aluminum alloy frame																								
			Stainless steel frame																								
Operating temperature range				°C 5 to 40 (with no condensation)																							
Maximum work load	Horizontal specification	Ball screw	10 mm Lead	100W				N				300				-											
			20 mm Lead	-				300				-															
		Slide screw	20 mm Lead	150																							
Maximum speed	Horizontal specification	Ball screw	10 mm Lead	100W				mm/s				500				-											
			20 mm Lead	-				1000				930 740 600 500 -															
		Slide screw	20 mm Lead	500																							
Rated thrust	Ball screw	10 mm Lead	100W				Nm				180				-												
			20 mm Lead	-				90				-															
		Slide screw	20 mm Lead	50																							
Repeatable positioning accuracy	Ball screw	Rolled		mm												±0.05											
		Ground		±0.02																							
		Rolled		±0.1																							
Motor output	Horizontal specification			AC servomotor (100W)																							
Encoder				Incremental system																							
Feed screw	Horizontal specification	Ball screw	Rolled, Ground		ø15mm, 10mm Lead				-																		
			Rolled		-				ø15mm, 20mm Lead				-														
Guide	Slide screw	Rolled		ø20mm, 20mm Lead																							
					High rigidity direct acting guide																						

Series LG1H

LG1H20: Without Coupling / Dimensions

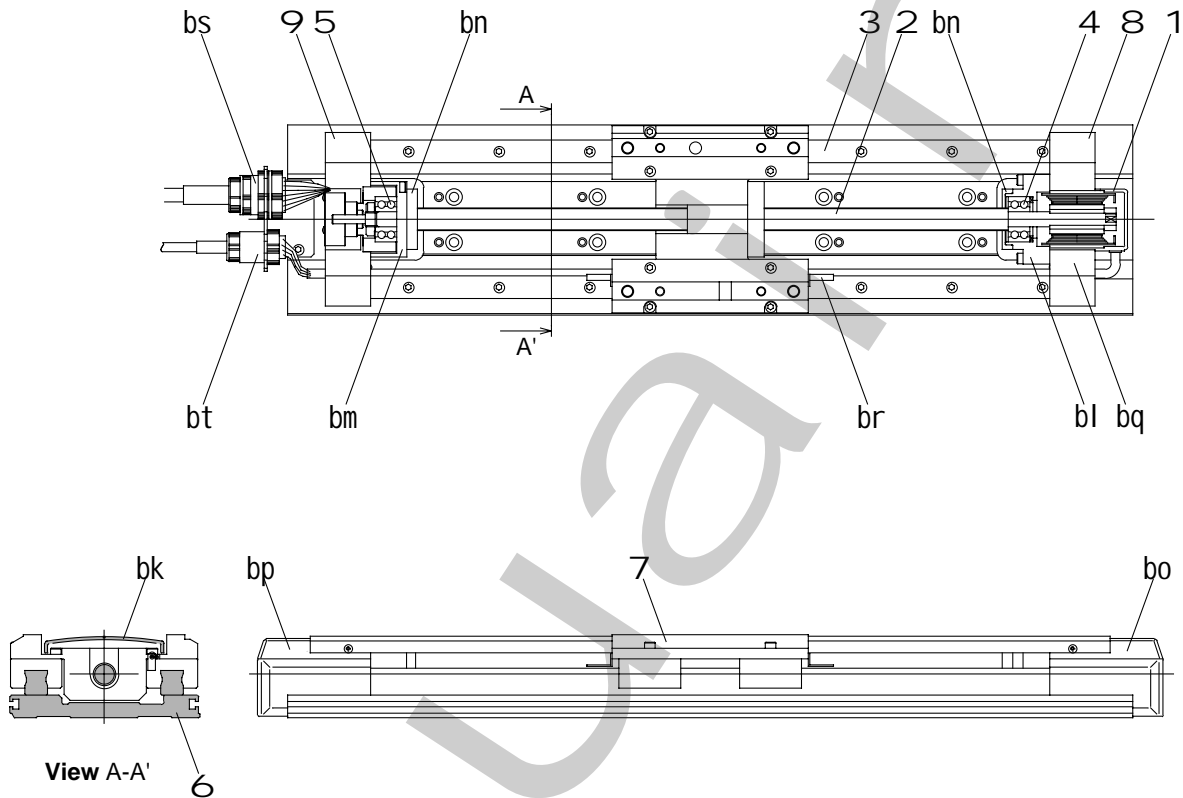


Dimensions

Model	Stroke	A	B	C	D
LG1H20□□□- 100-F□ (Note)	100	245.7	-	-	400
LG1H20□□□- 200-F□	200	345.7	50	70	500
LG1H20□□□- 300-F□	300	445.7	150	170	600
LG1H20□□□- 400-F□	400	545.7	250	270	700
LG1H20□□□- 500-F□	500	645.7	350	370	800
LG1H20□□□- 600-F□	600	745.7	450	470	900
LG1H20□□□- 700-F□	700	845.7	550	570	1000
LG1H20□□□- 800-F□	800	945.7	650	670	1100
LG1H20□□□- 900-F□	900	1045.7	750	770	1200
LG1H20□□□-1000-F□	1000	1145.7	850	870	1300
LG1H20□□□-1200-F□	1200	1345.7	1050	1070	1500

Note) Dimensions inside () are for a 100mm stroke.

LG1H20: Without Coupling / Construction



Parts list

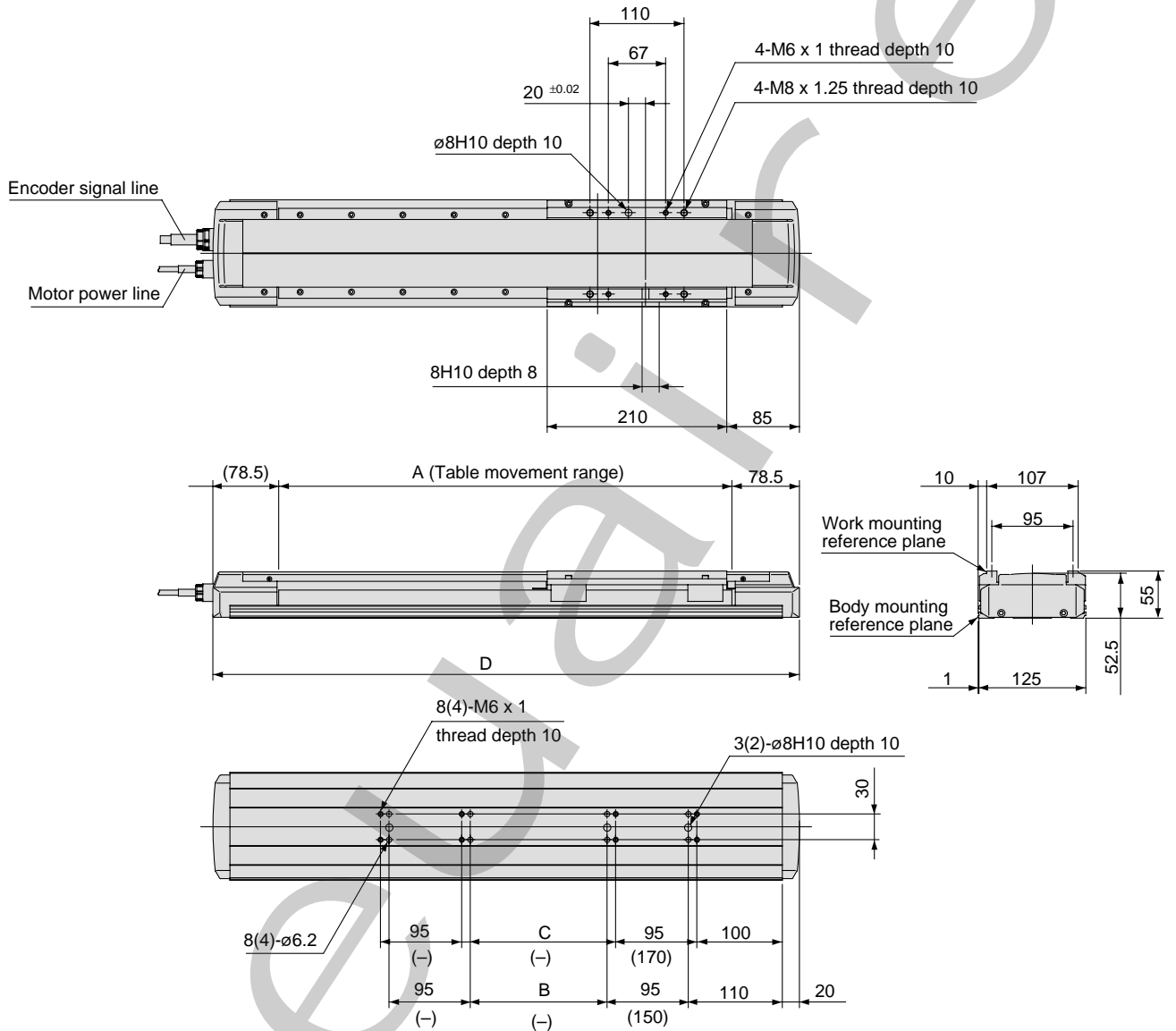
No.	Description	Material	Note
1	AC servomotor	—	100W
2	Feed screw	—	Ball screw/Slide screw
3	High rigidity direct acting guide	—	
4	Bearing R	—	
5	Bearing F	—	
6	Frame	Aluminum alloy/Stainless steel	
7	Table	Aluminum alloy	
8	Housing A	Aluminum alloy	
9	Housing B	Aluminum alloy	
bk	Body cover	Aluminum alloy	

Parts list

No.	Description	Material	Note
bl	Head cover	Aluminum alloy	
bm	Encoder cover	Aluminum alloy	
bn	Damper	IIR	
bo	End cover A	PC	
bp	End cover B	PC	
bq	Photomicrosensor	—	
br	Sensor plate	—	
bs	Connector A	—	
bt	Connector B	—	

Series LG1H

LG1H21: With Coupling/Dimensions

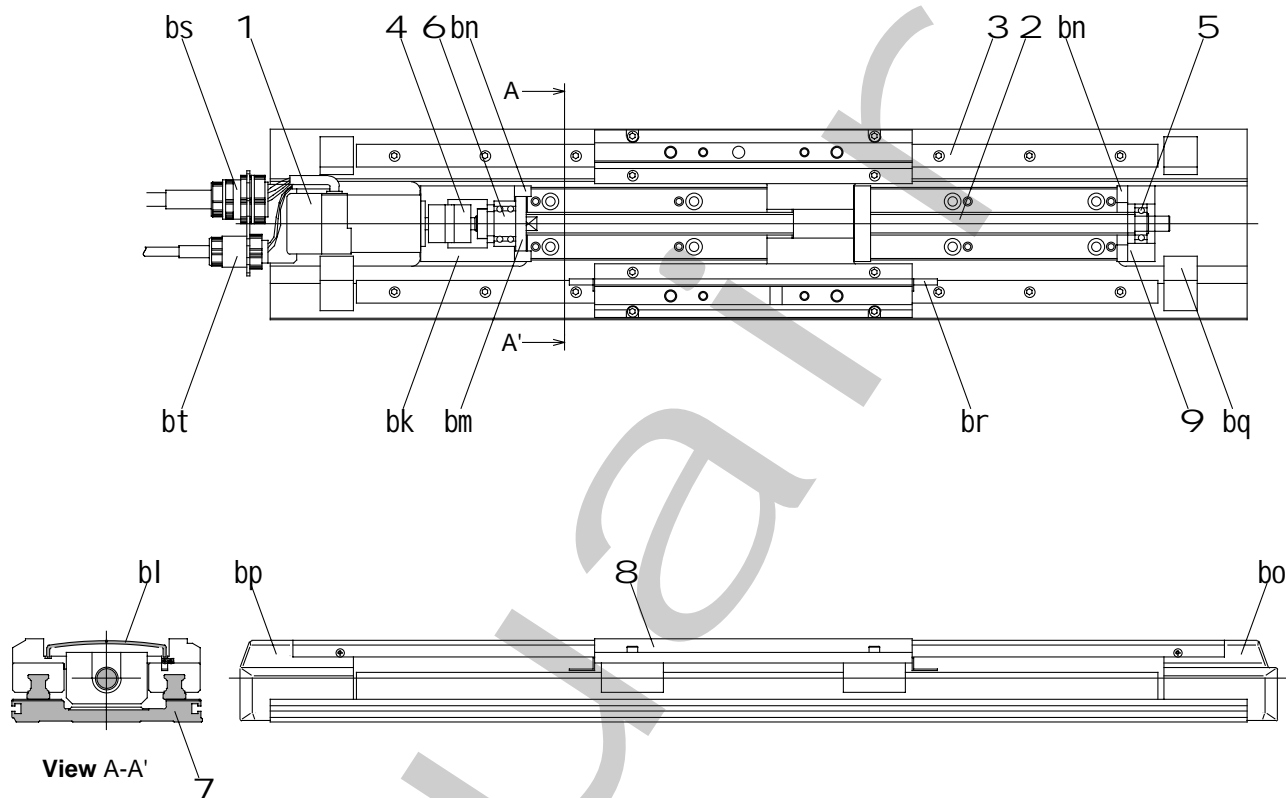


Dimensions

Model	Stroke	A	B	C	D
LG1H21□□□- 100-F□ <small>Note)</small>	100	329	-	-	486
LG1H21□□□- 200-F□	200	429	60	80	586
LG1H21□□□- 300-F□	300	529	160	180	686
LG1H21□□□- 400-F□	400	629	260	280	786
LG1H21□□□- 500-F□	500	729	360	380	886
LG1H21□□□- 600-F□	600	829	460	480	986
LG1H21□□□- 700-F□	700	929	560	580	1086
LG1H21□□□- 800-F□	800	1029	660	680	1186
LG1H21□□□- 900-F□	900	1129	760	780	1286
LG1H21□□□-1000-F□	1000	1229	860	880	1386
LG1H21□□□-1200-F□	1200	1429	1060	1080	1586

Note) Dimensions inside () are for a 100mm stroke.

LG1H21: With Coupling/Construction



Parts list

No.	Description	Material	Note
1	AC servomotor	-	100W
2	Feed screw	-	Ball screw/Slide screw
3	High rigidity direct acting guide	-	
4	Coupling	-	
5	Bearing R	-	
6	Bearing F	-	
7	Frame	Aluminum alloy/Stainless steel	
8	Table	Aluminum alloy	
9	Housing A	Aluminum alloy	
b0	Housing B	Aluminum alloy	

Parts list

No.	Description	Material	Note
bl	Body cover	Aluminum alloy	
bm	Bearing cap	Aluminum alloy	
bn	Damper	IIR	
b0	End cover A	PC	
bp	End cover B	PC	
bq	Photomicrosensor	-	
br	Sensor plate	-	
bs	Connector A	-	
bt	Connector B	-	

Uniaxial Electric
Actuator

High Rigidity
Direct Acting
Guide Type

Series LG1H

Nonstandard Motor Specifications (Motor Output: 100W)

How to Order

LG1 H 21 G 2 1 P A - 100 - F - X10

Frame material

Nil	Aluminum alloy
T	Stainless steel

Guide type

H	High rigidity direct acting guide
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Series

21	With coupling
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Motor specifications

G	Matsushita Electric Industrial Co., LTD
R	Mitsubishi Electric Corporation
Y	Yaskawa Electric Corporation

Motor output

2	100W
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Power supply voltage

1	100/115VAC 50/60Hz
2	200/230VAC 50/60Hz
0	Without motor

Feed screw type
(Refer to Table 1 below for applications.)

P	Ground ball screw
N	Rolled ball screw
S	Sliding screw

Stroke
(Refer to Table 1 below for applications.)

100	100mm
200	200mm
300	300mm
400	400mm
500	500mm
600	600mm
700	700mm
800	800mm
900	900mm
1000	1000mm
1200	1200mm

Feed screw lead
(Refer to Table 1 below for applications.)

A	10mm
C	20mm

Limit switch

Nil	None
W	B contact specification 2pcs.

Cable direction of entry

F	Axial direction
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X10 Nonstandard motor ^(Note)

Note) A driver is included when shipped with a nonstandard motor installed. However, the cable to connect the motor and driver is optional and may be supplied by the customer, or the cable corresponding to the selected motor may be ordered separately by referring to the section on how to order cables on page 10.

Table 1: Feed Screw and Stroke Combination Correspondence Table

Model		Stroke (mm)										
		100	200	300	400	500	600	700	800	900	1000	1200
Screw combination	LG1H21 2 PA- Stroke	•	•	•	•							
	LG1H21 2 NA- Stroke	•	•	•	•							
	LG1H21 2 PC- Stroke					•	•	•	•	•	•	
	LG1H21 2 NC- Stroke					•	•	•	•	•	•	
	LG1H21 2 SC- Stroke	•	•	•	•	•	•	•	•	•	•	•

* Please note that combinations other than those shown above cannot be produced. Refer to dimensions on page 6.

LG1H21: With Coupling

Specifications

Stroke				mm	100	200	300	400	500	600	700	800	900	1000	1200
Weight	Horizontal specification	Ball screw	Aluminum alloy frame	kg	5.7	6.5	7.3	8.1	8.9	9.7	10.5	11.3	12.1	12.9	–
			Stainless steel frame		8.9	10.2	11.4	12.7	13.9	15.2	16.4	17.7	18.9	20.2	–
		Slide screw	Aluminum alloy frame		6.3	7.2	8.0	8.9	9.8	10.7	11.6	12.4	13.3	14.2	16.4
			Stainless steel frame		9.8	11.2	12.5	14.0	15.3	16.7	18.0	19.5	20.8	22.2	25.7
Operating temperature range				°C	5 to 40 (with no condensation)										
Maximum work load	Horizontal specification	Ball screw	10 mm Lead	100W	N	300			–						
			20 mm Lead			–			300				–		
		Slide screw	20 mm Lead			150									
Maximum speed	Horizontal specification	Ball screw	10 mm Lead	100W	mm/s	500			–						
			20 mm Lead			–			1000	930	740	600	500	–	
		Slide screw	20 mm Lead			500									
Feed screw	Horizontal specification	Ball screw	Rolled, Ground		ø15mm, 10mm Lead			–							
		Slide screw	Rolled		–			ø15mm, 20mm Lead				–			
Guide					High rigidity direct acting guide										

Nonstandard Compatible Motors: The following motors can be mounted when specified.

	Motor output (W)	Power supply voltage (AC)	Motor model	Corresponding driver model
Matsushita Electric Industrial Co., LTD	100	100/115	MSM011P1A	MSD011P1E
		200/230	MSM012P1A	MSD013P1E
Mitsubishi Electric Corporation	100	100/115	HC-PQ13	MR-C10A1
		200/230		MR-C10A
Yaskawa Electric Corporation	100	100/115	SGME-01BF12	SGDE-01BP
		200/230	SGME-01AF12	SGDE-01AP

* Refer to the motor correspondence table on page 11 when specified without motor. Refer to the dimensions on page 11 for the motor mounting area, and use for reference during assembly and design.
 * For detailed driver specifications, etc., inquiries should be directed to the respective motor manufacturers.

Series LG1H Option Specifications

Actuator Cables

Cables for connecting actuators and controllers.

How to Order

LG1 – 1 – B **02**

• Cable length

02	2m
03	3m
04	4m
05	5m

Nonstandard Motor Cables

Cables for connecting nonstandard motors and drivers.
Cable lengths other than those shown below should be arranged by the customer.

How to Order

LG1 – 1 – **G** **05**

• Cable length

05	5m
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Compatible models

G	Matsushita Electric Industrial Co., LTD
R	Mitsubishi Electric Corporation
Y	Yaskawa Electric Corporation

Cable compatibility table

Model	Manufacturer's No.
Note 1) LG1-1-G05	MFMCA0050AEB (for motor) MFECA0050EAB (for encoder)
LG1-1-R05	Note 2) (for motor) MR-CCBL5M (for encoder)
Note 3) LG1-1-Y05	DP9320081-2 (for motor) DP9320089-2 (for encoder)

Note 1) When the Matsushita Electric Industrial Co., LTD motor driver is selected, in addition to the cable a power supply connector (MOLEX 5569-1OR) and an interface connector (Sumitomo-3M 10126-3000VE) are also required.

Note 2) A cable is not provided for the Mitsubishi Electric Corporation motor, and therefore the customer should arrange a 4 wire 0.75mm² electric cable.

Note 3) When the Yaskawa Electric Corporation motor driver is selected, a digital operator and personal computer are required for selecting the various parameters.

Please refer to the technical literature of each manufacturer for further details.

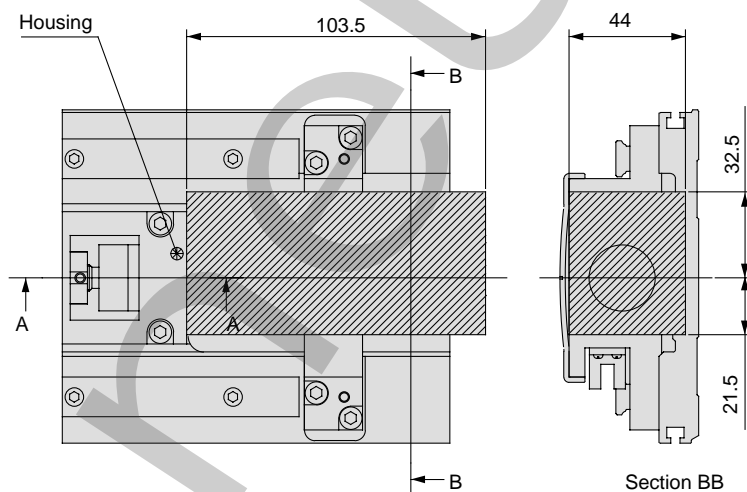
Series LG1H Reference Data

Motor Options 1

The following motors can be mounted when specified without motor.

	Motor output (W)	Power supply voltage (AC)	Motor model	Compatible driver model	Compatible model
Matsushita Electric Industrial Co., LTD	100	100/115	MSM011P1A	MSD011P1E	LG1H21
			MSM011A1A	MSD011A1X	
		200/230	MSM012P1A	MSD013P1E	
			MSM012A1A	MSD013A1X	
Mitsubishi Electric Corporation	100	100/115	HC-PQ13	MR-C10A1	
			HA-ME13	MR-J10MA1	
			HC-MF13	MR-J2-10A1	
		200/230	HC-PQ13	MR-C10A	
			HA-ME13	MR-J10MA	
			HC-MF13	MR-J2-10A	
Yaskawa Electric Corporation	100	100/115	SGME-01BF12	SGDE-01BP	
			SGM-01B312	SGD-01BP	
		200/230	SGME-01AF12	SGDE-01AP	
			SGM-01A312	SGD-01AP	

Nonstandard Motor Mounting Dimensions / LG1H21(with Coupling)

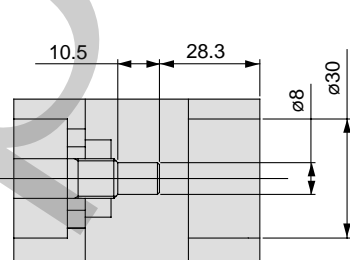


Motor mounting area dimensions

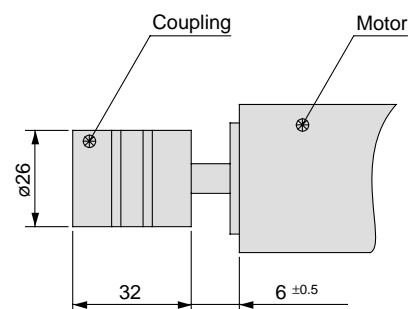
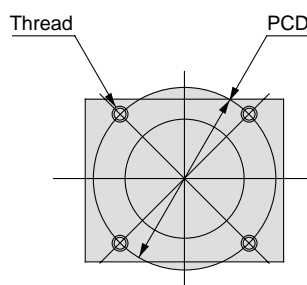
Manufacturer	Mitsubishi Yaskawa	Matsushita
Thread size	M4 x 0.7	M3 x 0.5
Effective thread length (mm)	8	6
Quantity	2	4
PCD	46	45

Motor mounting area

Note) When mounting the coupling to the motor, mount within the limits of the dimensions shown to the left.



Section AA (Housing interior)

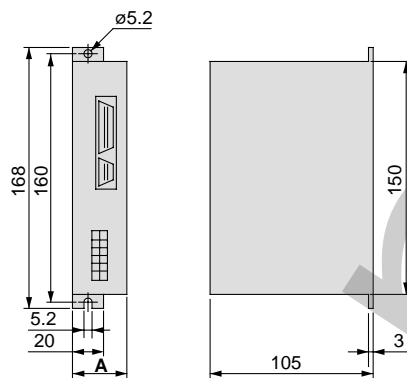


Coupling mounting dimensions

Series LG1H

Nonstandard Motors/Matsushita Electric Industrial Co., LTD Drivers

Dimensions



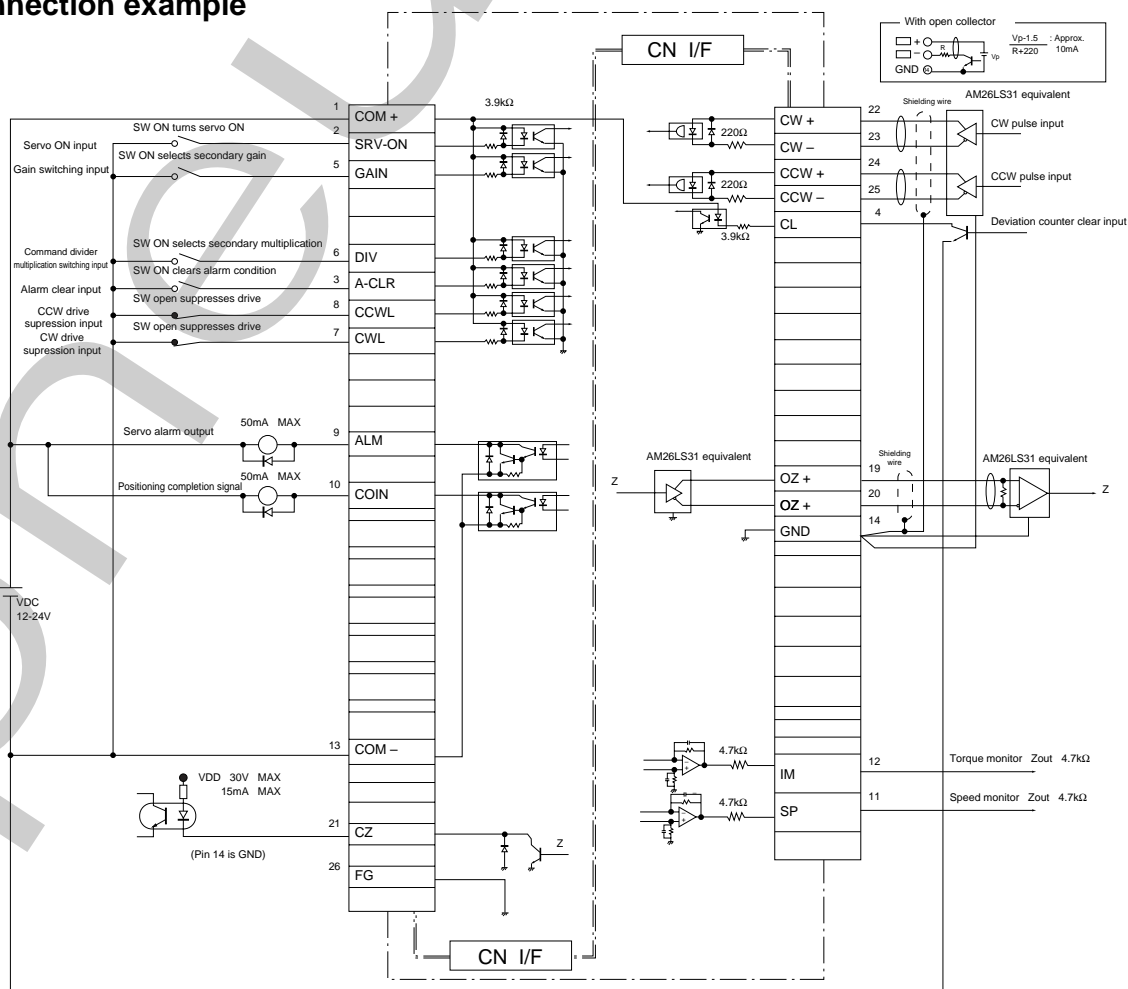
Dimension table

Driver model	A
MSD013P1E	35
MSD011P1E	45

Summary of input/output signals (connector CN-1/F)

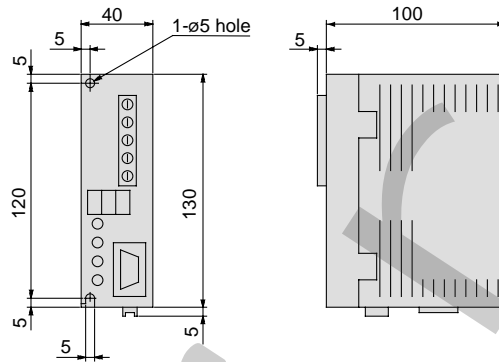
Pin No.	Symbol	Signal name	Pin No.	Symbol	Signal name
1	COM+	Control signal power supply	12	IM	Torque monitor signal
2	SRV-ON	Servo ON input	13	COM-	Control signal power supply
3	A-CLR	Alarm clear input	14	GND	
4	CL	Counter clear input	19	OZ+	Z phase output
5	GAIN	Gain switching input	20	OZ-	Z phase output
6	DIV	Command divider switching input	21	CZ	Z phase output
7	CWL	CW drive suppression input	22	CW+	CW pulse input
8	CCWL	CCW drive suppression input	23	CW-	CW pulse input
9	ALM	Servo alarm output	24	CCW+	CCW pulse input
10	COIN	Positioning completion signal output	25	CCW-	CCW pulse input
11	SP	Speed monitor signal	26	FG	Frame ground

Equipment connection example



Nonstandard Motors/Mitsubishi Electric Corporation Drivers

Dimensions (Without RS-232C option unit)

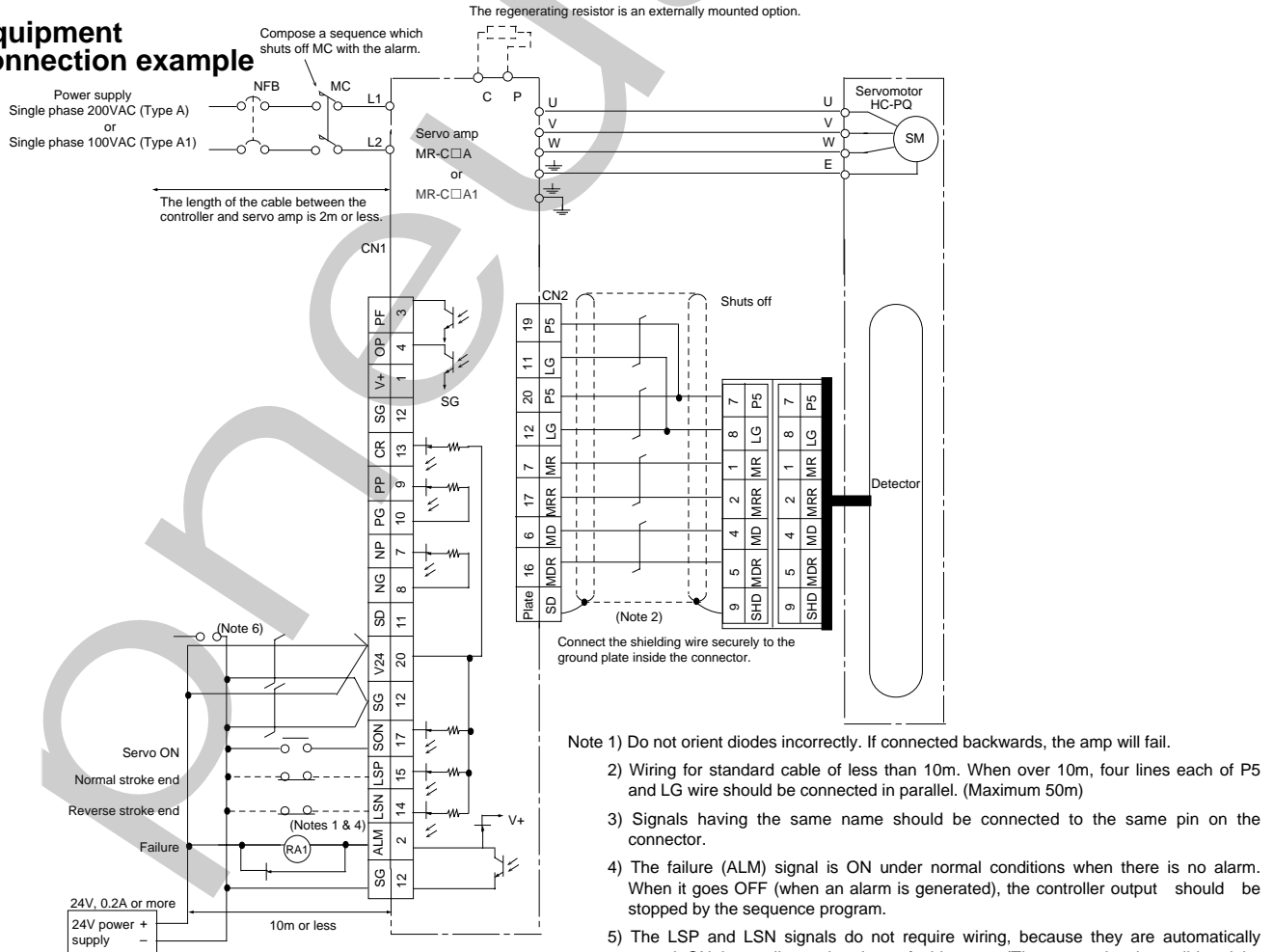


Driver model
MR-C10A
MR-C10A1

Summary of input/output signals (connector CN-1/F)

Pin No.	Symbol	Signal name	Pin No.	Symbol	Signal name
1	V+	Digital output power supply	11	SD	Shield
2	ALM	Failure	12	SG	Interface power supply common
3	PF	Positioning completion	13	CR	Clear
4	OP	Z phase pulse	14	LSN	Reverse stroke end
5	SG	Interface power supply common	15	LSP	Normal stroke end
7	NP	Reverse pulse train	16	V5	Interface power supply
8	NG	Reverse pulse train	17	SON	Servo ON
9	PP	Normal pulse train	19	OPC	Open collector power supply
10	PG	Normal pulse train	20	V24	Interface power supply

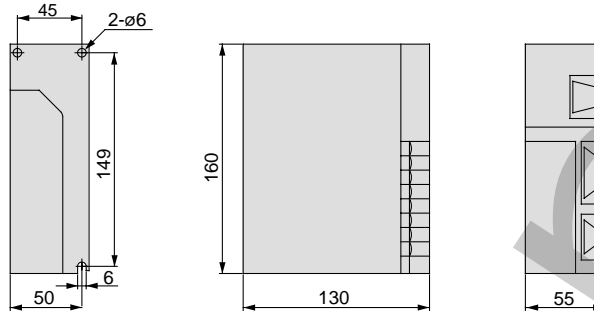
Equipment connection example



Series LG1H

Nonstandard Motors/Yaskawa Electric Corporation Drivers

Dimensions

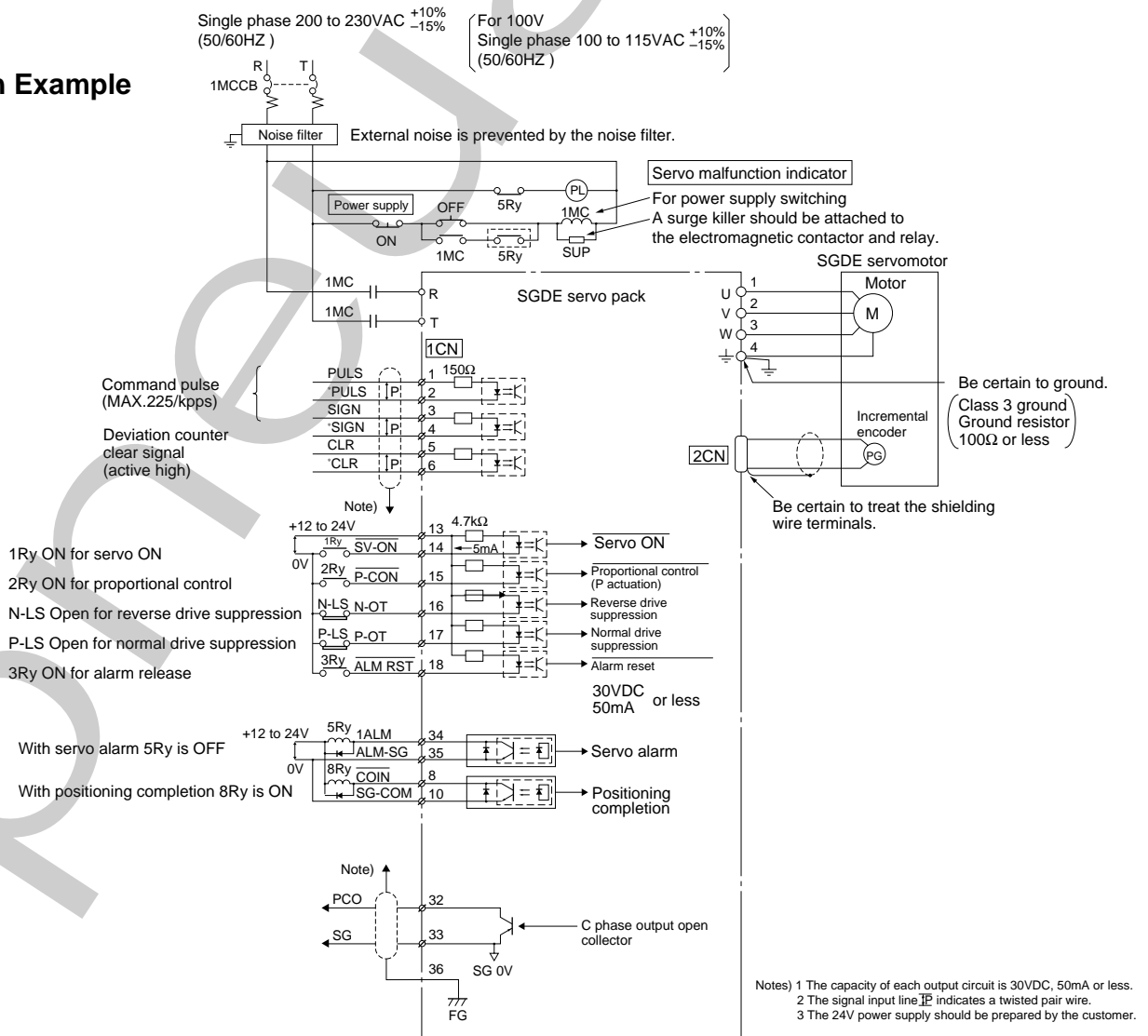


Driver model
SGDE-01AP
SGDE-01BP

Summary of input/output signals (connector CN-1/F)

Pin No.	Symbol	Signal name	Pin No.	Symbol	Signal name
1	PULS	Command pulse input	14	S-ON	Servo ON input
2	PULS	Command pulse input	15	P-CON	P actuation input
3	SIGN	Command code input	16	P-OT	Normal rotation suppression input
4	SIGN	Command code input	17	N-OT	Reverse rotation suppression input
5	CLR	Deviation counter clear input	18	ALMRST	Alarm reset input
6	CLR	Deviation counter clear input	32	PCO	PG ouput C phase
7	BK	Brake interlock signal output	33	SG	0V
8	COIN	Positioning completion signal output	34	ALM	Servo alarm output
10	SGCOM	0V	35	SG	0V
13	P-IN	External power supply input	36	FG	Frame ground

Equipment Connection Example

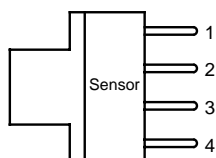


Series LG1H Photomicrosensor

Photomicrosensor for Home Position

Ratings

Power supply voltage	5 to 24VAC $\pm 10\%$, ripple (p-p) 10% or less
Current consumption	35mA or less
Control output	5 to 24VAC, Load current (1c) 100mA, Residual voltage 0.8V or less Load current (1c) 40mA, Residual voltage 0.4V or less
Ambient operating temperature	Operation: -25 to 55°C (Storage: -30 to 80°C)
Ambient operating humidity	Operation: 5 to 85%RH (Storage: 5 to 95%RH)



Terminal layout

1	Brown	Vcc (+)
2	White	L (Note)
3	Black	OUTPUT
4	Blue	GND(0V) (-)

Note) This sensor is a normally ON when shaded type, however, it can be used as an ON when lighted type by shorting the L and (+) terminals.

Output section circuit

Operating state of output transistor	ON when lighted	ON when shaded
Output circuit	<p>Note 2) When used with voltage output, be certain to install a resistor at RL and use Load 2. To determine a standard for the resistor, refer to the correct usage on page 36.</p>	
Timing chart	(With L and (+) shorted)	(With L and (+) disconnected)
	<p>Lighted</p> <p>Shaded</p> <p>Indicator light (red)</p> <p>Light on</p> <p>Light off</p> <p>Output transistor</p> <p>ON</p> <p>OFF</p> <p>Load 1 (relay)</p> <p>Operating</p> <p>Return</p> <p>Load 2</p> <p>H</p> <p>L</p>	<p>Lighted</p> <p>Shaded</p> <p>Indicator light (red)</p> <p>Light on</p> <p>Light off</p> <p>Output transistor</p> <p>ON</p> <p>OFF</p> <p>Load 1 (relay)</p> <p>Operating</p> <p>Return</p> <p>Load 2</p> <p>H</p> <p>L</p>