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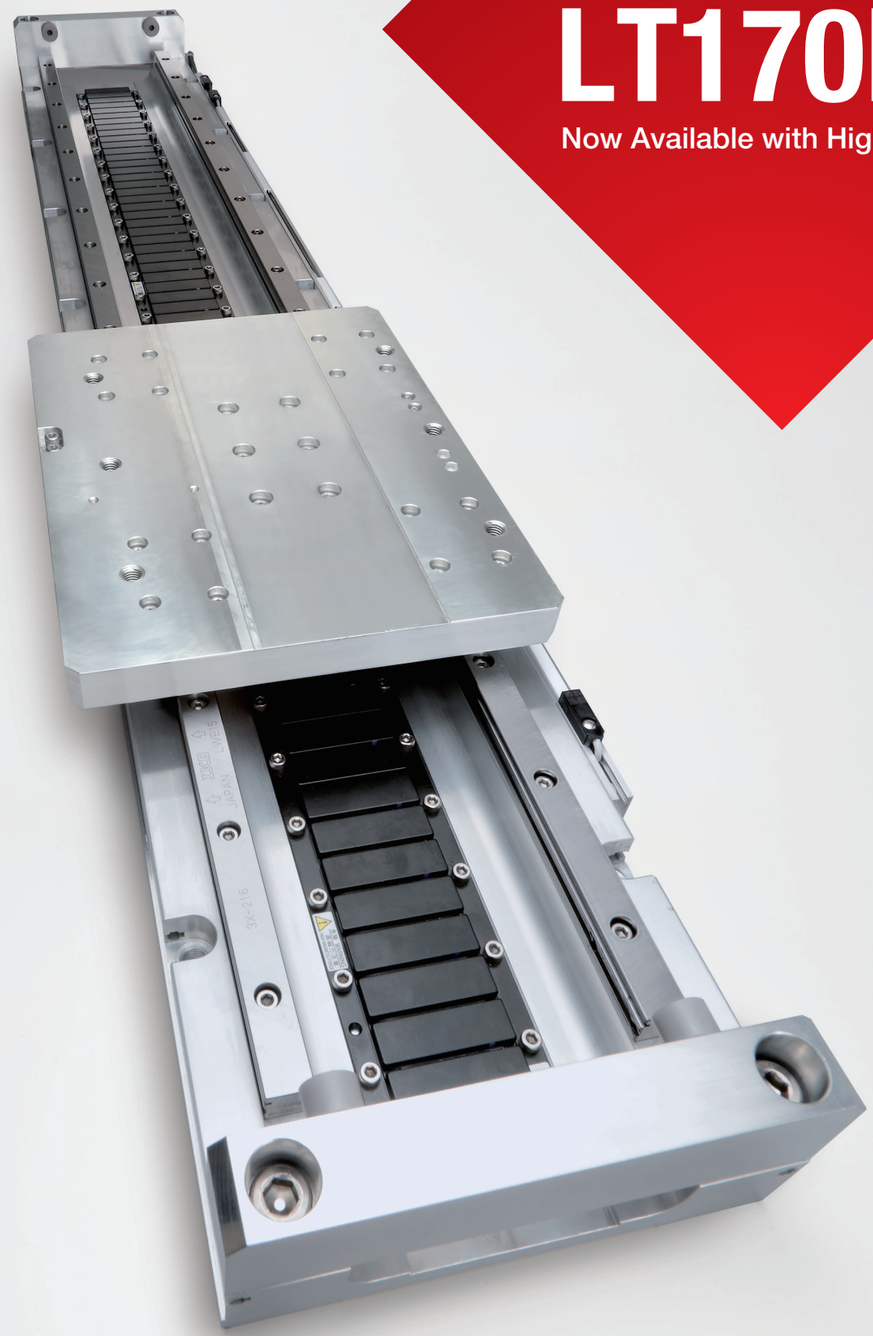
IKO

New

Linear Motor Table LT Series

LT170H2

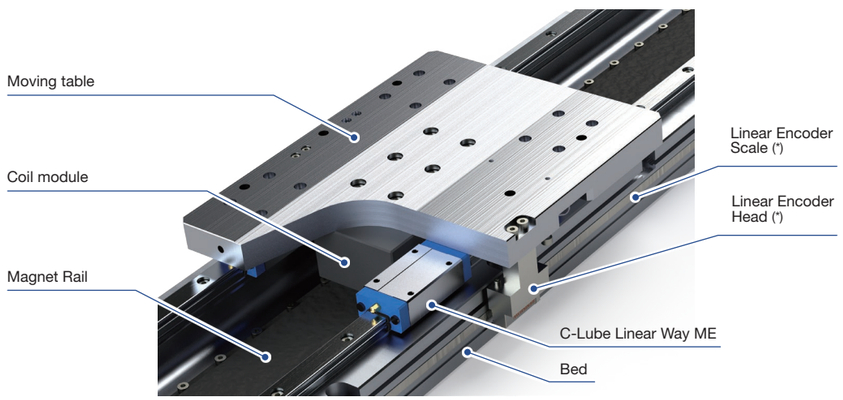
Now Available with Higher Thrust



NIPPON THOMPSON CO., LTD.

The LT170H2 has been added to the high thrust LT series linear motor tables. It features a compact size with higher thrust and a long stroke. It is suitable for a wide range of applications such as semiconductors and FA.

Structure and Characteristics of LT170H2



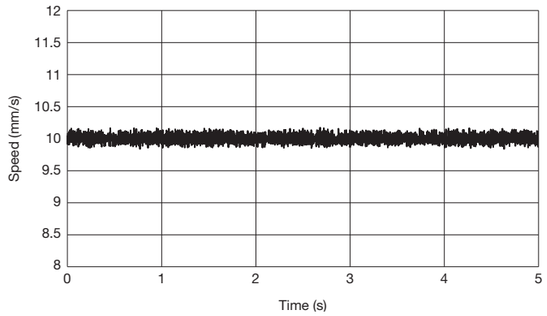
The high thrust type LT···H uses a C-Lube Linear Way in the table guiding parts and can produce the largest thrust force among the Linear Motor Table LT Series while maintaining a compact size. This makes it ideal for the precision positioning of heavy objects.
The newly developed LT170H2 also uses a linear motor with a different structure from the existing LT···H, which greatly improves the rated thrust and expands the range of applicable operating conditions so it can be used in a variety of applications such as semiconductor-related equipment and FA-related equipment.

*The incremental type linear encoder is the standard specification. An absolute type linear encoder is also available on an individual order basis.

Performance of LT170H2

● Speed Stability

In addition to high speed, high thrust performance and high repetitive positioning performance, the low-cogging design provides high speed stability. It is also ideal for applications where the speed ripple is severe.

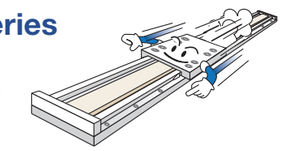


10 mm/s speed stability (measured frequency: 1,000 Hz): ±1.7%

Features of LT170H2

1 Highest-rated Thrust in the Series

The rated thrust of the LT170H2 is 260 N, the highest in the series, expanding the range of supported operating conditions.

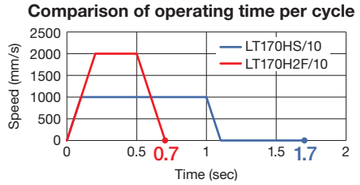


2 High-tact

Rated thrust is increased to reduce the time per cycle when operating under the same conditions as the existing LT···H.
The high-tact increases productivity.

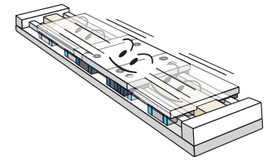
Comparison is made under the condition where the carrying mass is 20 kg and the rated thrust is approximately 80%.

Comparison of operating time per cycle



3 High Speed Operation

The maximum speed is 3,000 mm/s, the highest in the series.
It contributes to improved productivity.



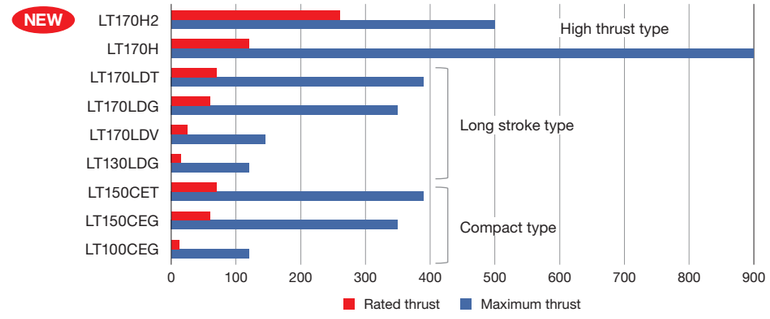
4 Power Saving

The LT170H2 consumes approximately 48% less power than the existing LT···H due to its generous rated thrust. (*)

* Carrying mass: 20 kg, comparison of theoretical values when operating at a moving speed of 1,000 mm/s.
This may differ from values during actual operation.

	Power consumption [W]
LT170H2	55.8
LT170H	108.7
Decrease rate (*)	48.7%

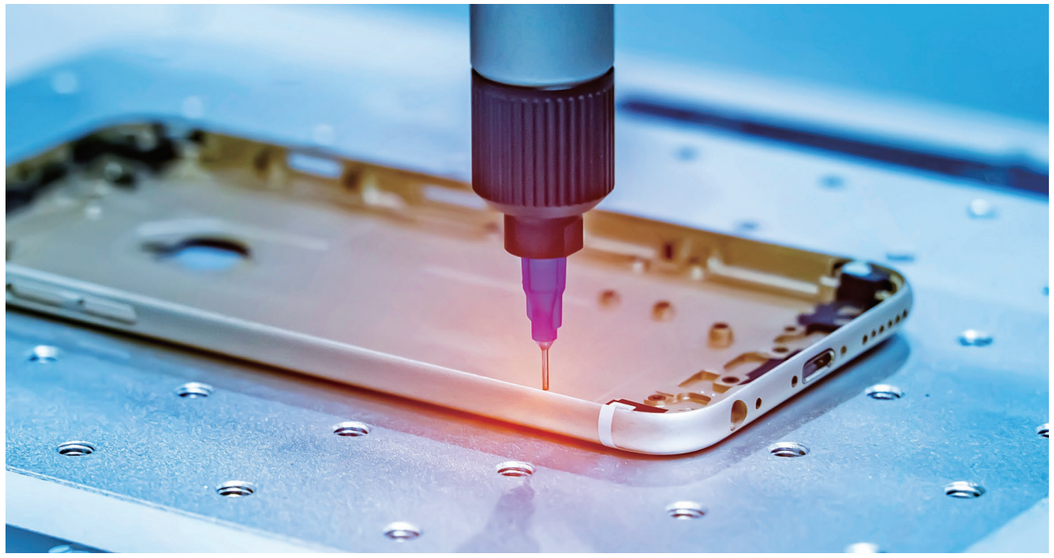
LT Series Thrust Comparison



Application

● Chip Mounter

High-precision positioning, high-speed movement, and static stability are required for high-speed, high-precision assembly of multiple components onto a circuit board. The LT170H2 has a high-rated thrust, which enables stable operation in severe driving patterns and increases the reliability of the system.



● Dispenser Machine

Dispenser machines require high accuracy and reproducibility in the linear motion section in order to discharge materials to the correct position. The machine must also operate at high speeds to ensure high productivity. By configuring the LT170H2 as the XY axis of the dispenser machine, high speed, high accuracy, and high reproducibility is achieved.

Identification Number

Example	LT	170	H2	F	–	980	/	1	D	H	SC	T2	1
	❶	❷	❶	❸		❹		❺	❻	❼	❽	❾	❿

❶ Model code

Model code	
LT…H2	Linear Motor Table LT High Thrust Type H2

❷ Size

Size	
170	Width: 170 [mm]

❸ Shape of moving table

Shape of moving table	
S	Standard
F	Flange type table

❹ Stroke length

Stroke length	
LT170H2S	750, 1250, 1750, 2250, 2750
LT170H2S.../T2	480, 980, 1480, 1980, 2480
LT170H2F	750, 1250
LT170H2F.../T2	480, 980

❺ Resolution

Resolution	
1	0.1 µm
5	0.5 µm
10	1.0 µm

❻ Designation of cover

Designation of cover	
No symbol	Without cover (applicable to standard moving table)
D	With cover (applicable to moving table with flange)

❼ Hall sensor designation

Hall Sensor Designation	
No symbol	Without sensor
H	With Hall Sensor

For models with a hall sensor, only the SANMOTION G driver manufactured by Sanyo Denki Co., Ltd. can be used.

❽ Designation of sensor

Designation of sensor	
No symbol	Without sensor
SC	Sensors (limit and pre-origin), with a sensor rail

❾ Moving table specification

Moving table specification	
No symbol	Single table
T2	Twin table

❿ Specification number

Specification number	
1	Specification number 1 (specification number is 1 only)

Specifications and Accuracy

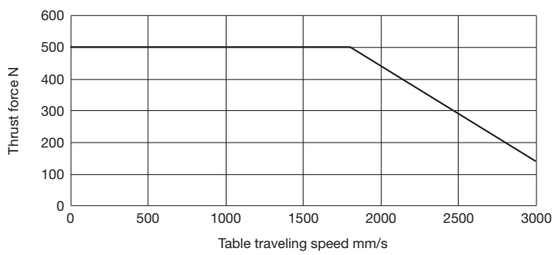
● Specifications and Accuracy

Item \ Model and size	LT170H2		
Maximum thrust N (1)	500		
Rated thrust N (2)	260		
Maximum load mass kg	40		
Resolution μm	0.1	0.5	1.0
Maximum speed mm/s (3)	690	3000	3000
Positioning repeatability μm (4)	±0.5	±0.5	±1.0

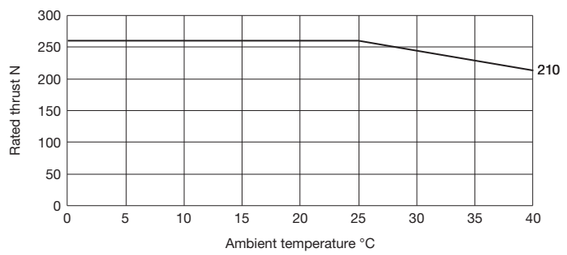
(1) The duration of maximum thrust is up to 1 second.
(2) In the case where the unit is fixed on a steel-made cradle under ambient temperature of 0 to 25°C.
(3) This speed may not be reached depending on the maximum output frequency of the controller used.
(4) The value when the temperature of the product is stabilized.

● Thrust Characteristics

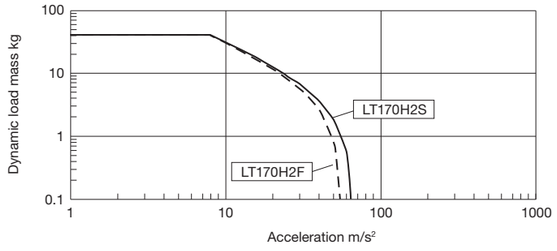
Thrust characteristics



Rated thrust characteristics



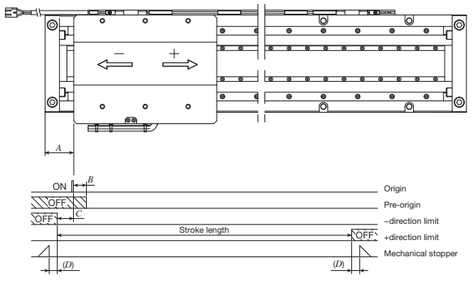
Dynamic load mass



Remark: These are values calculated based on the thrust force with table moving speed set to 1,000 mm/s.

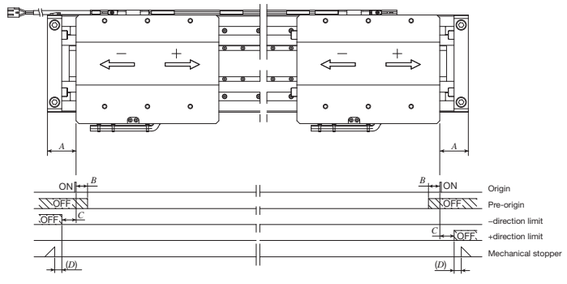
Sensor Specification

Sensor timing chart for the single table specification



Model	*A*	*B*	*C*	*D*
LT170H2	75	5	25	15

Sensor timing chart for the twin table specification



Model	*A*	*B*	*C*	*D*
LT170H2…/T2	75	5	25	15

System Configuration

The LT170H2 is equipped with an ADVA driver manufactured by Hitachi Industrial Equipment Systems Co., Ltd. and a SANMOTION G driver manufactured by Sanyo Denki Co., Ltd. Two types of system configurations are available: pulse train specification and high-speed EtherCAT specification. Table 1 shows the types of drivers that can be used for LT170H2.
Refer to the following pages for system configuration and detailed specifications of each driver when using the ADVA driver and SANMOTION G driver.

Table 1. Applicable driver types

Applicable driver types	Specification
ADVA-08NL ADVA-08NL EC	Single/Three-phase 200V, 750W Pulse Train Single/Three-phase 200V, 750W EtherCAT
SANMOTION G GADSA03AAA2 SANMOTION G GADSA03AHA4	Single/Three-phase 200V, 30A Pulse Train Single/Three-phase 200V, 30A EtherCAT

Note: If a driver not listed in the table is required, please contact IKO.

● Setup Software

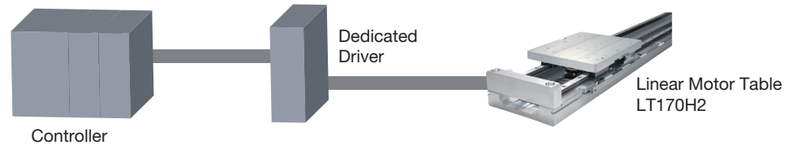
To operate the LT170H2 with the ADVA driver or the SANMOTION G driver, the driver parameters must be initially configured. The driver parameter setting is performed using the setup software. It can also be used for gain adjustments and operational status checks. The setup software and PC connection cable are not provided with the driver. These can be shared with other drivers but at least one set is required. Please obtain these on your own or place an order separately according to your requirements.

● Motion Network

The LT170H2 ADVA and SANMOTION G drivers support EtherCAT motion networks. Motion networks realize higher performance and higher accuracy free from pulse frequency constraint in pulse train command, noise effects in analog command (voltage command), voltage drop due to cable length, and the effects of temperature drifting. Reduction of wiring can also be achieved, so a synchronized system with more than one table can easily be established.

Drivers for SSCNETIII/H, MECHATROLINK, and RTEX are also available. Please contact IKO if required.

EtherCAT®
SSCNET III/H SERVO SYSTEM CONTROLLER NETWORK
MECHATROLINK
RTEX Realtime Express

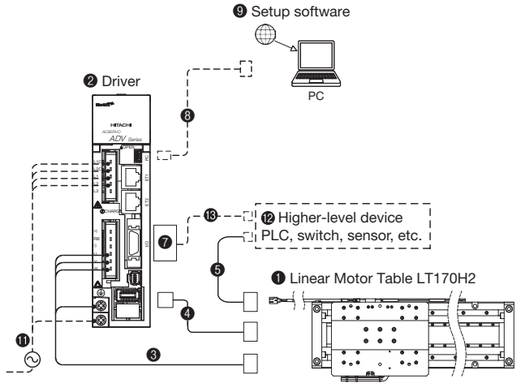


Model	Features
EtherCAT	This is an Ethernet-based open network communication system developed by Beckhoff of Germany, allowing real-time control. High-speed communication and high-accuracy inter-node synchronization provide higher performance and higher accuracy of devices. In addition, Ethernet cables available on the market can be used and various wiring types can be supported.
SSCNET III/H	This is a motion network communication system for servo system control developed by Mitsubishi Electric Corporation. It applies the optical fiber cables, so noise immunity is improved relative to conventional SSCNET.
MECHATROLINK	The open field network communication that connects the controller and various components. Developed by Yaskawa Electric Corporation and managed by the MECHATROLINK Members Association.
RTEX	RTEX (Realtime Express) is an advanced network developed independently by Panasonic Corporation, in order to deliver the high real-time performance required for servos. It offers extremely high-speed communication (100 Mbps), and supports commercially available LAN cables to help reduce system costs.

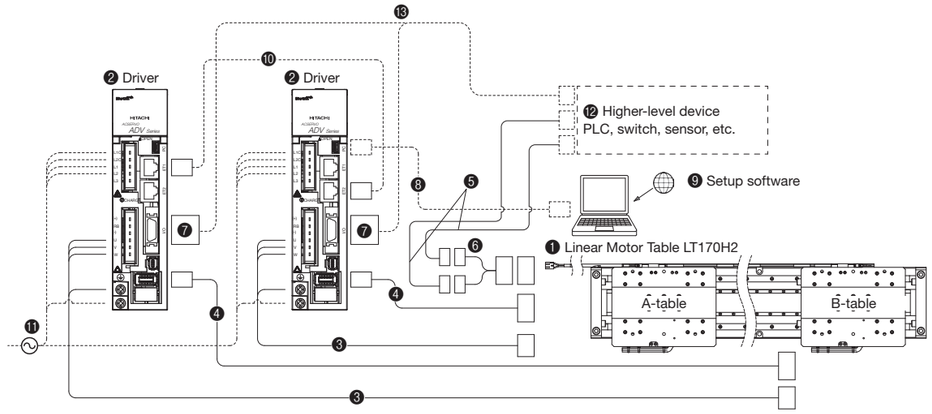
System Configuration

● System configuration when using the ADVA (pulse train command) driver

Example of system configuration for single table



Example of system configuration for twin table

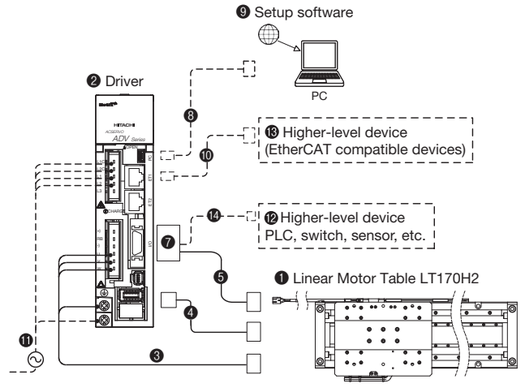


No.	Name	Identification number
❶	Linear Motor Table	See pages 11 to 12.
❷	Driver	ADVA-08NL
❸	Motor extension cord	TAE20V7-AM□□
❹	Encoder extension cord	TAE20V4-EC□□
❺	Sensor extension cord	TAE10V8-LC□□
❻	Limit branch cord (0.1 m)	TAE20V2-BC
❼	I/O connector	TAE20R5-CN (†)
❽	PC connection cable	USB mini B cable This must be prepared by customer
❾	Setup Software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
❿	Ethernet cable	This must be prepared by the customer.
⓫	Power cord	
⓬	Higher-level device	
⓭	I/O connector connection cable	

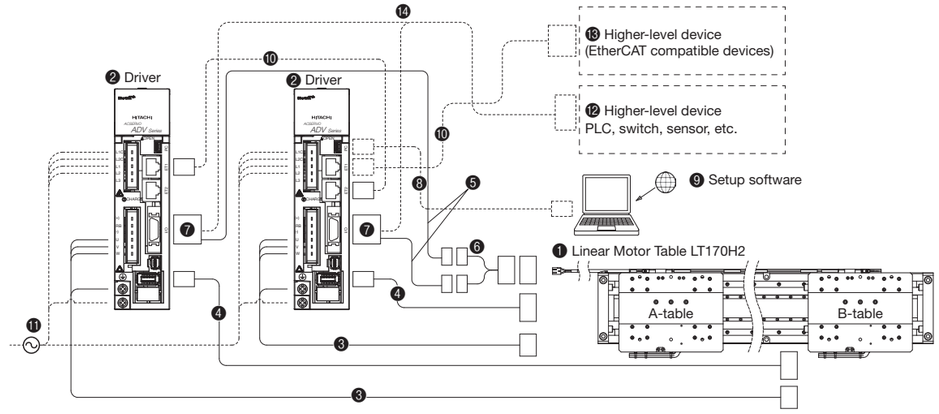
Note (†) The I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from 3M Japan Limited.
Remark The lengths of motor extension cord, encoder extension cord, and sensor extension cord are specified in the □□ located at the end of the identification number for length of 3 to 10 m in units of 1m.
The cord length is specified in two digits even when the length is less than 10 m. (For 3 m: TAE20V7-AM03)

● System configuration when using the ADVA (EtherCAT communication) driver

Example of system configuration for single table



Example of system configuration for twin table



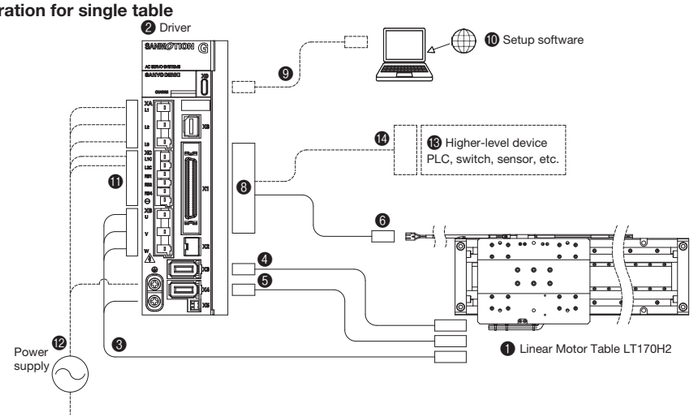
No.	Name	Identification number
❶	Linear Motor Table	See pages 11 to 12.
❷	Driver	ADVA-08NLEC
❸	Motor extension cord	TAE20V7-AM□□
❹	Encoder extension cord	TAE20V4-EC□□
❺	Sensor extension cord	TAE10V8-LC□□
❻	Limit branch cord (0.1 m)	TAE20V2-BC
❼	I/O connector	TAE20V5-CN (†)
❽	PC connection cable	USB mini B cable This must be prepared by customer
❾	Setup Software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
❿	Ethernet cable	This must be prepared by the customer.
⓫	Power cord	
⓬	Higher-level device	
⓭	Higher-level device (EtherCAT-supported device)	
⓮	I/O connector connection cable	

Note (†) The I/O connector TAE20V5-CN is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from 3M Japan Limited.
Remark The lengths of motor extension cord, encoder extension cord, and sensor extension cord are specified in the □□ located at the end of the identification number for length of 3 to 10 m in units of 1m.
The cord length is specified in two digits even when the length is less than 10 m. (For 3 m: TAE20V7-AM03)

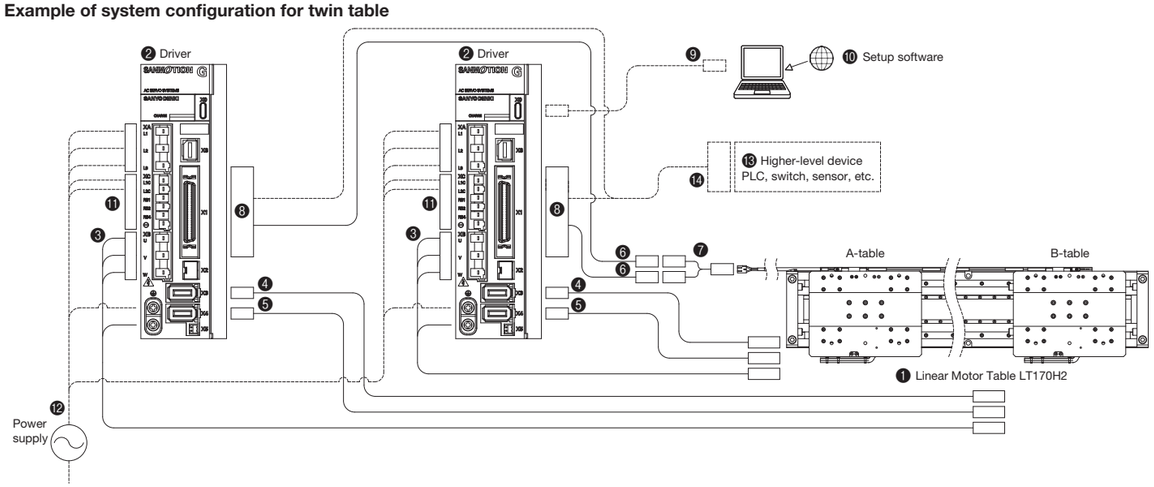
System Configuration

● System configuration when using the SANMOTION G (pulse train command) driver

Example of system configuration for single table



Example of system configuration for twin table

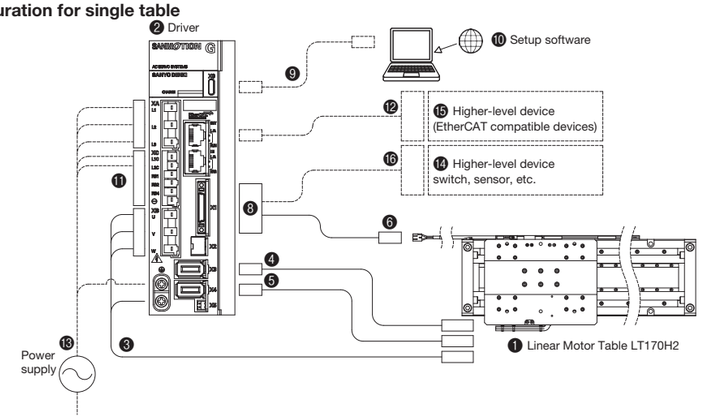


No.	Name	Identification number
❶	Linear Motor Table	See pages 11 to 12.
❷	Driver	GADSA03AAA2
❸	Motor extension cord	TAE20V7-AM□□
❹	Encoder extension cord	TAE20V4-EC□□
❺	Hall sensor extension cord	TAE20V8-EC□□
❻	Sensor extension cord	TAE10V8-LC□□
❼	Limit branch cord (0.1 m)	TAE20V2-BC
❽	I/O connector	TAE20R5-CN (3M Japan Co., Ltd., 10150-3000PE (Connector) / 10350-52F0-008 (Cover))
❾	PC connection cable	USB Type-C cable This must be prepared by customer
❿	Setup Software	Please download SANMOTION MOTOR SETUP SOFTWARE from the website of Sanyo Denki Co., Ltd.
⓫	Power Connector Set A	AL-01135740-01 (Sanyo Denki Co., Ltd.)
⓬	Power cord	This must be prepared by the customer.
⓭	Higher-level device	
⓮	I/O connector connection cable	

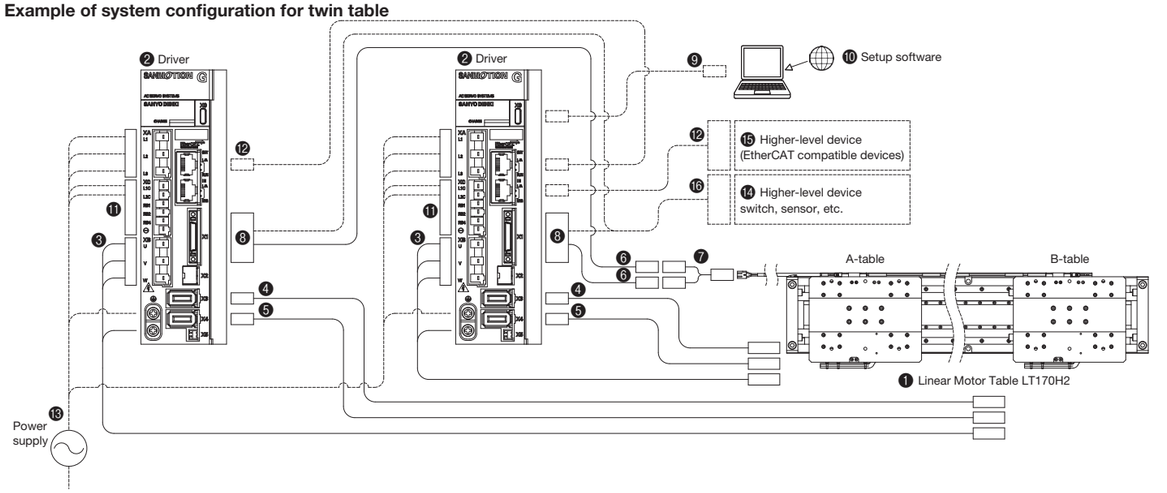
Remark The lengths of motor extension cord, encoder extension cord, and sensor extension cord are specified in the □□ located at the end of the identification number for length of 3 to 10 m in units of 1 m.
The cord length is specified in two digits even when the length is less than 10 m. (For 3 m: TAE20V7-AM03)

● System configuration when using the SANMOTION G (EtherCAT communication) driver

Example of system configuration for single table



Example of system configuration for twin table

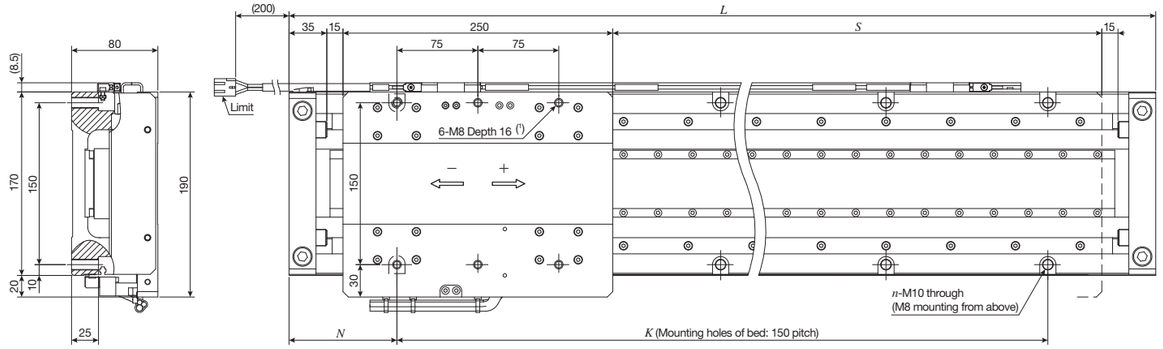


No.	Name	Identification number
❶	Linear Motor Table	See pages 11 to 12.
❷	Driver	GADSA03AHA4
❸	Motor extension cord	TAE20V7-AM□□
❹	Encoder extension cord	TAE20V4-EC□□
❺	Hall sensor extension cord	TAE20V8-EC□□
❻	Sensor extension cord	TAE10V8-LC□□
❼	Limit branch cord (0.1 m)	TAE20V2-BC
❽	I/O connector	AL-01131482-01 (Sanyo Denki Co., Ltd.)
❾	PC connection cable	USB Type-C cable This must be prepared by customer
❿	Setup Software	Please download SANMOTION MOTOR SETUP SOFTWARE from the website of Sanyo Denki Co., Ltd.
⓫	Power Connector Set A	AL-01135740-01 (Sanyo Denki Co., Ltd.)
⓬	Ethernet cable	This must be prepared by the customer.
⓭	Power cord	
⓮	Higher-level device	
⓯	Higher-level device (EtherCAT-supported device)	
⓰	I/O connector connection cable	

Remark The lengths of motor extension cord, encoder extension cord, and sensor extension cord are specified in the □□ located at the end of the identification number for length of 3 to 10 m in units of 1 m.
The cord length is specified in two digits even when the length is less than 10 m. (For 3 m: TAE20V7-AM03)

Product Dimensions

● LT170H2S Single table

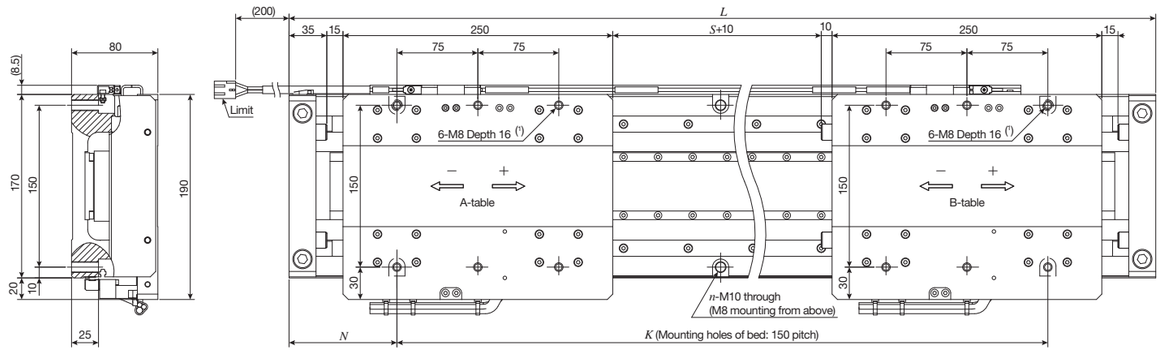


Unit: mm

Identification number	Stroke length S (2)	Overall length L	Mounting holes of bed			Total mass of table kg	Mass of moving table kg
			N	K	n		
LT170H2S- 750	750	1100	100	900	14	25.5	5.5
LT170H2S-1250	1250	1600	50	1500	22	34.5	
LT170H2S-1750	1750	2100	75	1950	28	43.5	
LT170H2S-2250	2250	2600	100	2400	34	52.5	
LT170H2S-2750	2750	3100	50	3000	42	61.5	

Note (1) Inserting mounting screws too deeply may affect the running performance of the moving table. Never insert a screw longer than the depth of the through hole.
(2) For other stroke lengths, please contact IKO.

● LT170H2S/T2 Twin table

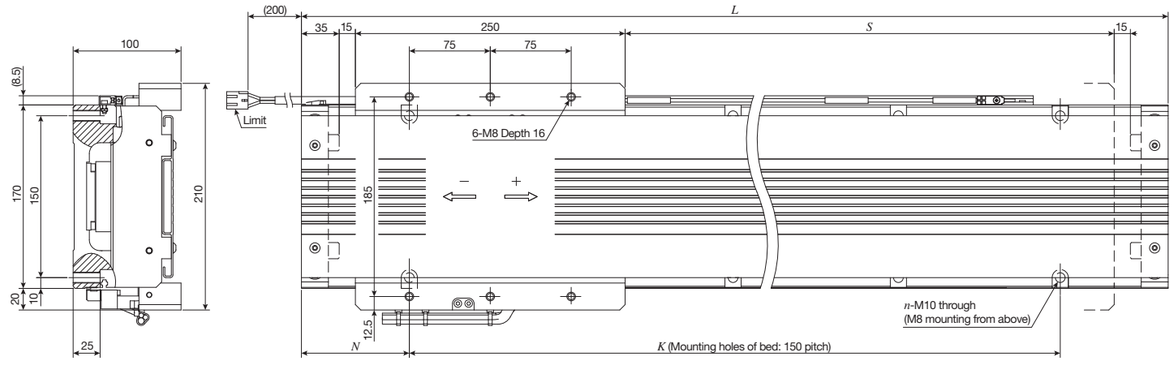


Unit: mm

Identification number	Stroke length S (2)	Overall length L	Mounting holes of bed			Total mass of table kg	Mass of moving table kg
			N	K	n		
LT170H2S- 480/T2	480	1100	100	900	14	31	5.5
LT170H2S- 980/T2	980	1600	50	1500	22	40	
LT170H2S-1480/T2	1480	2100	75	1950	28	49	
LT170H2S-1980/T2	1980	2600	100	2400	34	58	
LT170H2S-2480/T2	2480	3100	50	3000	42	67	

Note (1) Inserting mounting screws too deeply may affect the running performance of the moving table. Never insert a screw longer than the depth of the through hole.
(2) For other stroke lengths, please contact IKO.

● LT170H2F/D Single table with cover

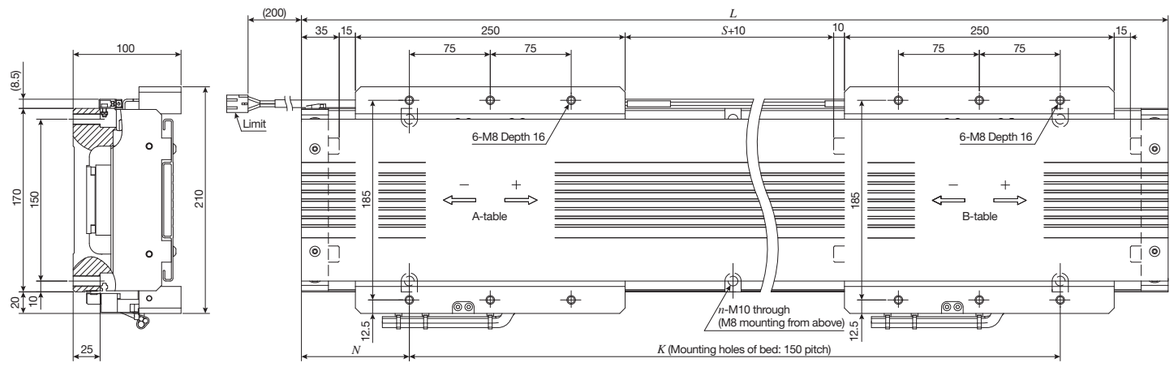


Unit: mm

Identification number	Stroke length S (2)	Overall length L	Mounting holes of bed			Total mass of table kg	Mass of moving table kg
			N	K	n		
LT170H2F- 750/D	750	1100	100	900	14	28	6.5
LT170H2F-1250/D	1250	1600	50	1500	22	37	

Note (2) For other stroke lengths, please contact IKO.

● LT170H2F/DT2 Twin table with cover



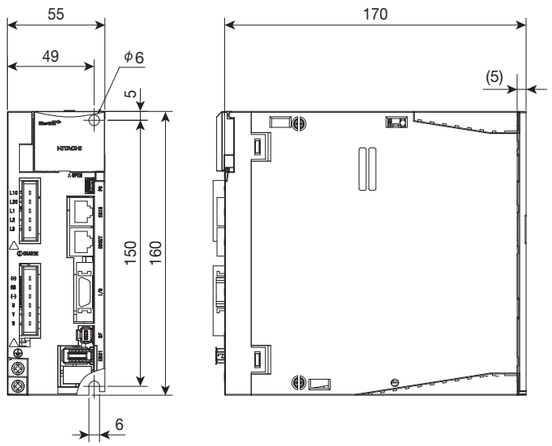
Unit: mm

Identification number	Stroke length S (2)	Overall length L	Mounting holes of bed			Total mass of table kg	Mass of moving table kg
			N	K	n		
LT170H2F-480/DT2	480	1100	100	900	14	34.5	6.5
LT170H2F-980/DT2	980	1600	50	1500	22	43.5	

Note (2) For other stroke lengths, please contact IKO.

ADVA Specifications

- In addition to the conventional pulse train command input, high-speed motion network EtherCAT is also supported.
- 10 input terminals, 6 output terminals, and analog input (0~±10 V) can be controlled by intelligent terminals.
- The high controllability shortens the settling time, realizing further improvement in productivity.
- Machine diagnosis, startup and adjustment of linear motor can be easily performed thanks to parameter settings, monitor display, operation trace and automatic tuning function of the setup software.

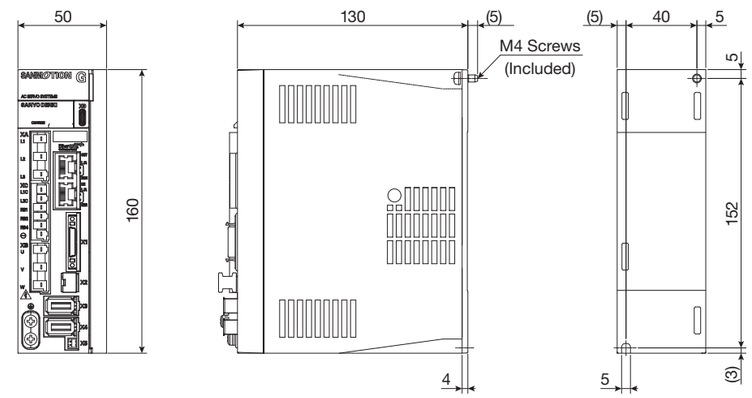


Item	Identification number	ADVA-08NL (Pulse train/analog) ADVA-08NLEC (EtherCAT)
Basic specification	Input power	Single-phase / Three-phase 200~230VAC 50/60Hz
	Rated current / momentary current	5.1Arms/15.3Arms
	Power plant capacity	1.3kVA
	Protective structure (1)	Semi-enclosed IP20
	Control mode	Position control / Speed control / Thrust force control
Input/Output relation function	Speed command	Analog input: 0 to ±10 V / Maximum speed (gain configurable) or EtherCAT
	Thrust force command	Analog input: 0 to ±10 V / Maximum thrust (gain configurable) or EtherCAT
	Position command	Line driver signal: 20 Mpps (non-isolated input / after 4-time multiplication) Open collector signal: 2 Mpps (isolated input / after 4-time multiplication) or EtherCAT
	Contact input / output	[Input] Intelligent terminal, functions of 10 input terminals (6 input terminals for EtherCAT specifications) can be selected by parameter 12/24 VDC contact signal / open collector signal input (internal 24 VDC power supply) [Output] Intelligent terminal, functions of 6 output terminals (4 output terminals for EtherCAT specifications) can be selected by parameter (open collector signal output: sink output)
Internal function	Built-in operator	Pulse train command specification: Five-digit numeric display, five key push button / DIP switch (Modbus communication setting)
		EtherCAT specification: 2-digit numeric display, DIP switch (node address setting for EtherCAT)
	External operator	Can be connected to Windows (32bit, 64bit) computers (USB2.0 FULL SPEED)
	Regenerative braking circuit	Built-in
	Dynamic brake (2)	Built-in (motion condition configurable)
	Protective function	Overcurrent, overload, braking resistor overload, main circuit overvoltage, memory error, main circuit under voltage, CT error, CPU error 1, external trip (motor temperature error), servo ON ground detection, control circuit under voltage, servo amplifier temperature error, drive prohibition error, power module failure, safety circuit failure, emergency shutdown, encoder failure, mismatch error, power reactivation request, magnetic pole position estimation error, magnetic pole position estimation not executed, position deviation error, speed deviation error, overspeed error, momentary power failure, main circuit power supply failure, drive range error (network communication error, DC synchronization error, and undervoltage display)
Operating environment	Ambient operating temperature / storage temperature (3)	0 to 55°C / -10 to 70°C
	Operating humidity	20 to 90% RH (keep dewdrop free)
	Vibration resistance (4)	5.9m/s^2(0.6G) 10 to 55Hz
	Service space	Altitude of 1000 m or below, indoor (no corrosion gas and dust)
Mass		1.2kg

Note (1) Protection method is compliant with JEM1030.
(2) Use the dynamic brake for emergency stops.
(3) The storage temperature is the temperature during transportation.
(4) Compliant with JIS C60068-2-6:2010.

SANMOTION G Specifications

- Newly developed current control achieves high response control (3.5 kHz speed frequency response).
- By detecting and compensating Coulomb friction, viscous friction and gravity with high accuracy, positioning settling time is shortened.
- Since the frequency characteristics of the machine are measured with high precision and the optimum servo parameters are automatically adjusted, start-up is easy.
- The driver setup support software enables parameter setting, status display, tuning through various diagnostics, trial runs, operation tracing, etc.



Item	Identification number	GADSA03AAA2 (Pulse train/analog) GADSA03AHA4 (EtherCAT)
Basic specification	Input power supply (1)	Single-phase/three-phase: 200 to 240VAC (+10, -15%) 50/60Hz (±3Hz) DC: 300VDC (±20%)
	Rated current / momentary current	5.2 Arms / 16.3 Arms
	Power plant capacity	2.4 kVA
	Control mode	Position control / Speed control / Thrust force control (parameter switching)
Input/Output relation function	Speed command	Analog input: 0 to ±10 V / Maximum speed (gain configurable) or EtherCAT
	Thrust force command	Analog input: 0 to ±10 V / Highest thrust force (gain configurable) or EtherCAT
	Position command	Line driver signal: 4 Mpps (non-isolated input / after 4-time multiplication) Open collector signal: 4 Mpps (isolated input / after 4-time multiplication) or EtherCAT
	Contact input / output	[Input] Functions of 8 Input terminal can be selected using parameters 5 VDC ±5%, 12 to 24 VDC ±10% contact signal / open collector signal input (sink type, source type) EtherCAT specification has 2 photo coupler inputs (independent power supply can be used) [Output] Functions of 8 output terminals (2 output terminals for EtherCAT specifications) can be selected by parameter Open collector signal output: sink output)
	Analog monitor	2ch output (X11) 2.0 V ±10%: Speed, current, and other parameters can be selected
Internal function	Digital operator	Pulse train / analog: Status display, parameter setting, adjustment mode, trial operation mode, alarm history display, monitor display, motor code setting EtherCAT: Status display, adjustment mode, alarm history display, monitor display
	External operator	Can be connected to Windows (32bit, 64bit) computers (USB Type C)
	Regenerative processing circuit	Built-in
	Dynamic brake circuit	Built-in
	Protective function	Output power device abnormality (overcurrent), current detection abnormality, safety torque interruption abnormality, cooling fan stopped, overload, regenerative overload, magnetic pole position estimation abnormality, excessive continuous rotation speed, overheat abnormality, external abnormality, servo amplifier temperature abnormality, overvoltage, main circuit insufficient voltage, main circuit power supply incomplete phase, main circuit voltage detection abnormality, rush prevention time abnormality, control power supply abnormality, control circuit insufficient voltage, encoder abnormality, overspeed, speed control abnormality, speed feedback abnormality, model following damping control abnormality, excessive position deviation, position command abnormality, inter-axis synchronization error, excessive dual position error, dual position feedback abnormality, amplifier communication abnormality, excessive position deviation difference, memory abnormality, CPU abnormality, parameter abnormality, control circuit abnormality, task processing abnormality
Operating environment	Ambient temperature in operation / Storage temperature (2)	0 to 60°C / -20 to 65°C
	Operating humidity	95%RH or lower (keep dewdrop free)
	Vibration resistance	6m/s^2 (Impact: 20m/s^2)
	Altitude	2000 m or less
	Overvoltage Category	III
Mass		0.9 kg

Note (1) Configure the parameters when using single-phase or DC.
(2) For use at +55°C to +60°C or 1000 to 2000 m, the rating must be reduced.