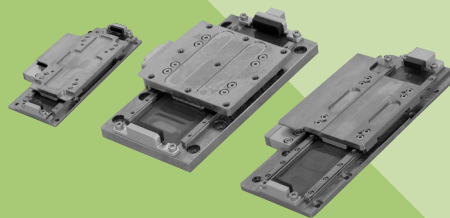


Linear Sliders

Σ -Trac- μ



Model Designations

S **G** **T** **M** **M** **03** - **065** **A** **H** **20** **A**

Σ -Trac Series Linear Slider 1st digit 2nd digit 3rd+4th digits 5th+6th+7th digits 8th digit 9th digit 10th+11th digits 12th digit 13th digit

1st digit

Code	Specifications
M	Moving Magnet Type

2nd digit

Code	Specifications
M	Integrally Molded Armature Type

3rd+4th digits Peak Force

Code	Specifications
03	25 N
01	10 N

5th+6th+7th digits Effective Stroke

Code	Specifications
010	10 mm
025	25 mm
030	30 mm
065	65 mm

8th digit Linear Scale Output Form

Code	Specifications
A	Analog output 1 Vp-p

9th digit Linear Scale Manufacturer

Code	Specifications
H	HEIDENHAIN Corporation
M	MicroE International Inc.

10th+11th digits Linear Scale Resolution

Code	Specifications
20	20 μ m
04	4 μ m

12th digit Design Revision Order

A, B, C

13th digit Options

Code	Specifications
Blank	Without Hall Sensor
P	With hall sensor

Features

- Ultra-flat profile reduces floorspace requirements.
- For applications requiring short strokes (10 mm to 65 mm)
- Vibration-free transmission device enables high-precision positioning with a repetitive positioning accuracy of $\pm 0.5 \mu\text{m}$ max.
- Locations of armature coils on fixed side of the stationary member reduce effects of heat on table or workpiece.

Application Examples

- Semiconductor mounters
- Equipment for biomedical
- Optical testing devices

Model Classification

● Force

SERVOPACK Model SGD V-		Σ -Trac- μ Series Linear Sliders							
Single-phase 100 VAC	Three-phase 200 VAC	Model	Force	10 N	20 N	30 N	Rated force	Peak force	
R70F	R70A	SGTMM01							
R90F	R90A	SGTMM03							

● Stroke Length

Model	Stroke Length	50 mm	100 mm	150 mm	200 mm
SGTMM01	● 10 mm ● 30 mm				
SGTMM03	● 25 mm ● 65 mm				

SGTMM Linear Sliders

● Ratings and Specifications

Time Rating: Continuous
 Insulation Resistance: 500 VDC, 10 M Ω min.
 Ambient Temperature: 0°C to 40°C
 Excitation: Permanent magnet
 Withstand Voltage: 1500 VAC for one minute

Enclosure: Self-cooled
 Ambient Humidity: 20% to 80% (no condensation)
 Allowable Winding Temperature: 130°C (Thermal class B)
 Vibration Resistance: 24.5 m/s²
 Shock Resistance: 294 m/s², 2 times

Linear Slider Model		SGTMM01-010AM20A	SGTMM01-030AM20A	SGTMM03-025AH20AP	SGTMM03-025AH04AP	SGTMM03-065AH20A□	SGTMM03-065AH04AP	
Applicable SERVOPACK Model	SGDV-	R70F, R70A			R90F, R90A			
Applicable Serial Converter Unit Model	JZDP-	□003-242-E			□00□-221-E		□00□-220-E	
Maximum Speed	m/s	1.5			1.0		1.5	
Rated Force	N	3.5	3.5	7	7	7	7	
Peak Force	N	10	10	25	25	25	25	
Force Constant	N/Arms	9	9	13.2	13.2	12.3	12.3	
Motor Constant	N/ \sqrt{W}	1.78	1.26	2.29	2.29	1.58	1.58	
Maximum Payload*1	kg	1	1	3	3	3	3	
Effective Stroke	mm	10	30	25	25	65	65	
Resolution	μ m	0.078 (20 μ m/256)*2			0.016 (4 μ m/256)*2	0.078 (20 μ m/256)*2		0.016 (4 μ m/256)*2
		0.0049 (20 μ m/4096) *3			0.00098 (4 μ m/4096) *3	0.0049 (20 μ m/4096) *3		0.00098 (4 μ m/4096) *3
Movable Member Mass	kg	0.1	0.1	0.215	0.215	0.19	0.19	
Total Mass (excluding cables)	kg	0.35	0.31	0.62	0.62	0.63	0.63	
Repeatability*4	μ m	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5	

*1: Values obtained when the acceleration is 4.9 m/s².
 *2: The value applies when serial converter unit JZDP-D00□-□□□-E is used.
 *3: The value applies when serial converter unit JZDP-G00□-□□□-E is used.
 *4: Values obtained when the ambient temperature is constant.

● Performance Curves

● Force - Speed

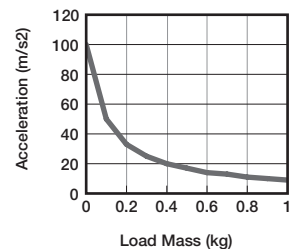
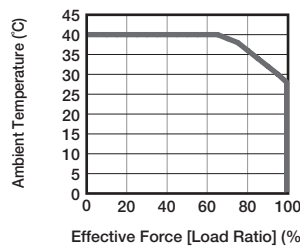
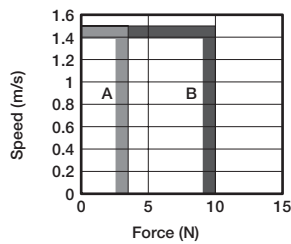
A: Continuous Duty Zone
B: Intermittent Duty Zone (Note)

● Effective Force - Ambient Temperature

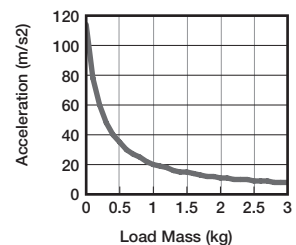
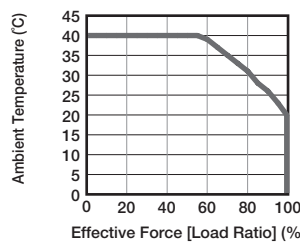
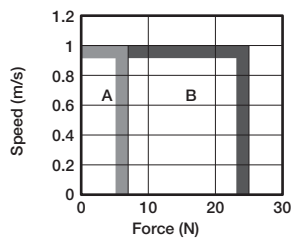
● Load Mass - Acceleration

When the linear scale temperature is 50 °C or less.
 — Ambient temperature

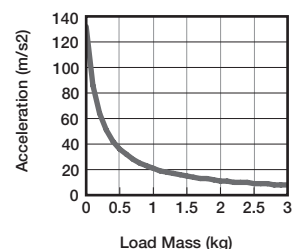
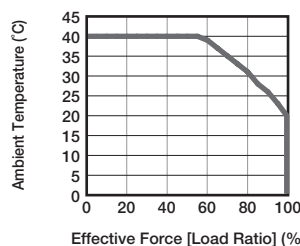
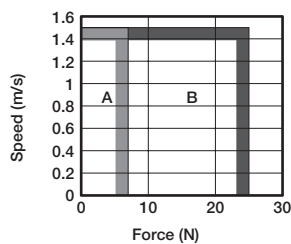
(1) SGTMM01



(2) SGTMM03-025



(3) SGTMM03-065

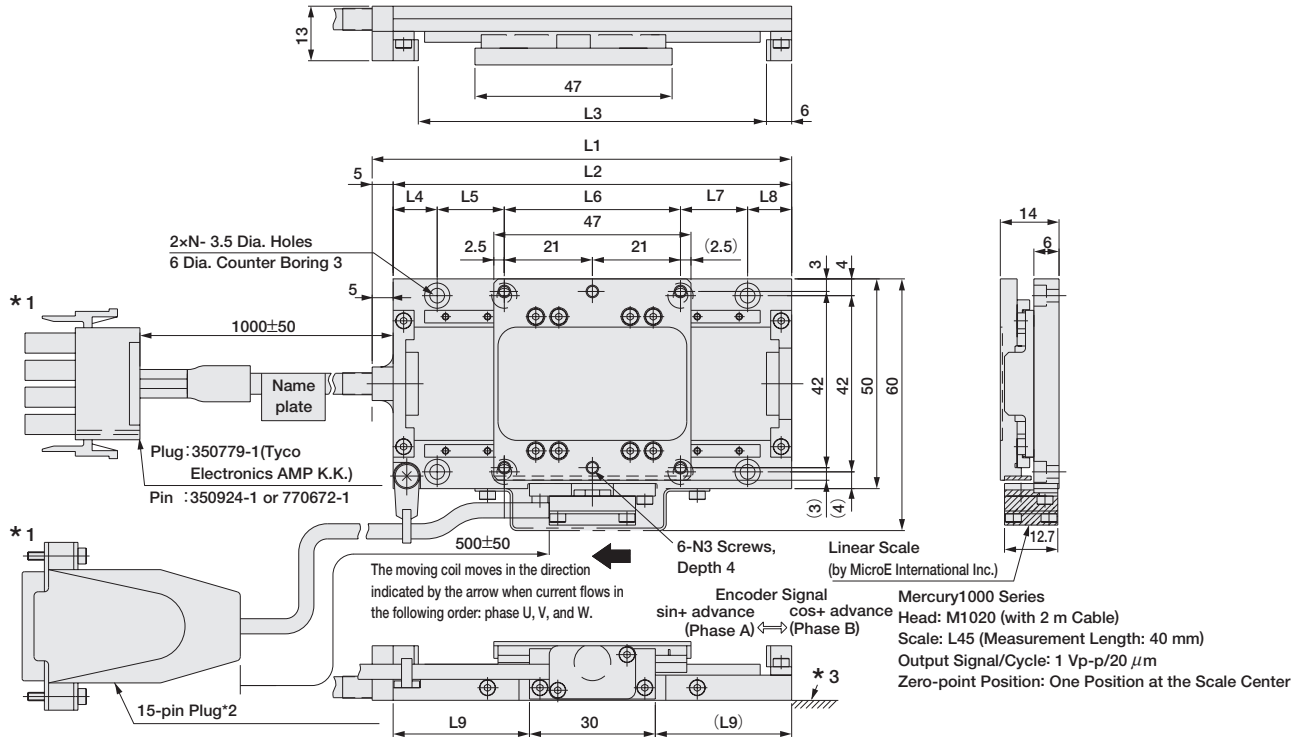


Note: When the effective force is within the rated force, the servomotor can be used within the intermittent duty zone.

SGTMM Linear Sliders

● External Dimensions

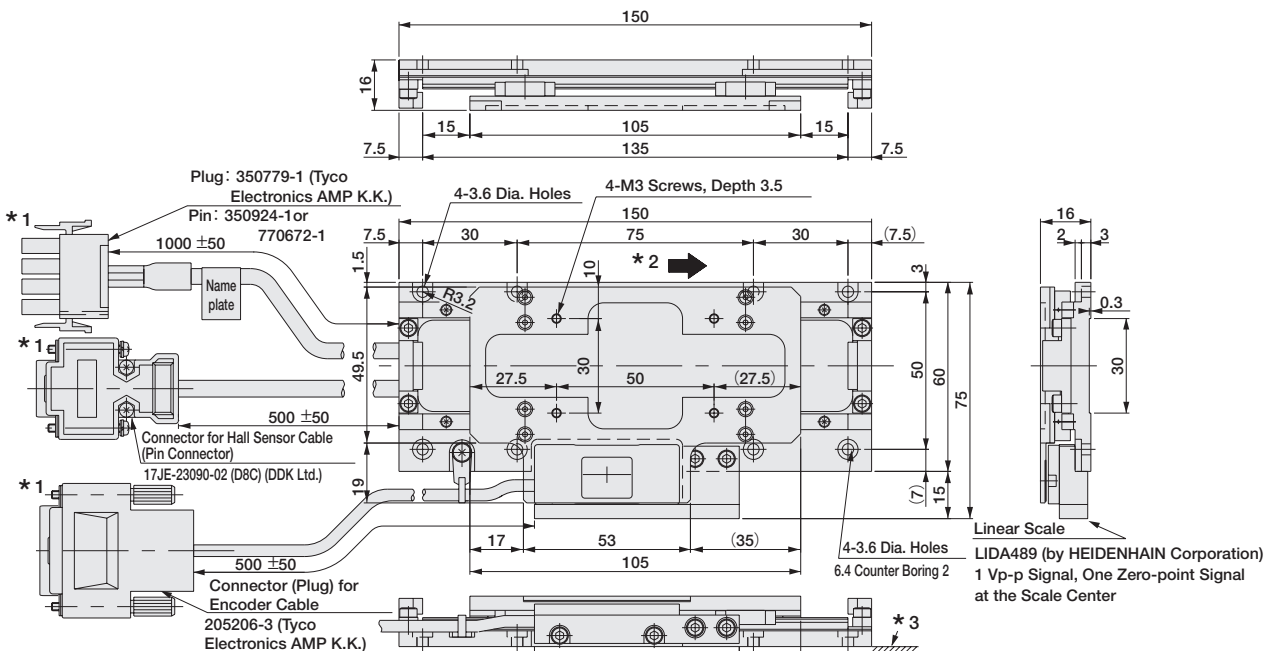
(1) SGTMM01-010AM20A, -030AM20A



- *1: See the next page for the connector specifications.
- *2: A signal converter cable (JZSP-CLL40) is required between this connector and a cable for connecting the linear scale.
- *3: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.01 mm (reference value) or an equivalent.

Linear Slider Model	L1	L2	L3	L4	L5	L6	L7	L8	L9	N
SGTMM01-	mm	mm	mm	mm	mm	mm	mm	mm	mm	
010AM20A	80	75	63	14	42	8	-	11	22.5	3
030AM20A	100	95	83	10.5	16	42	16	10.5	32.5	4

(2) SGTMM03-025AH20AP

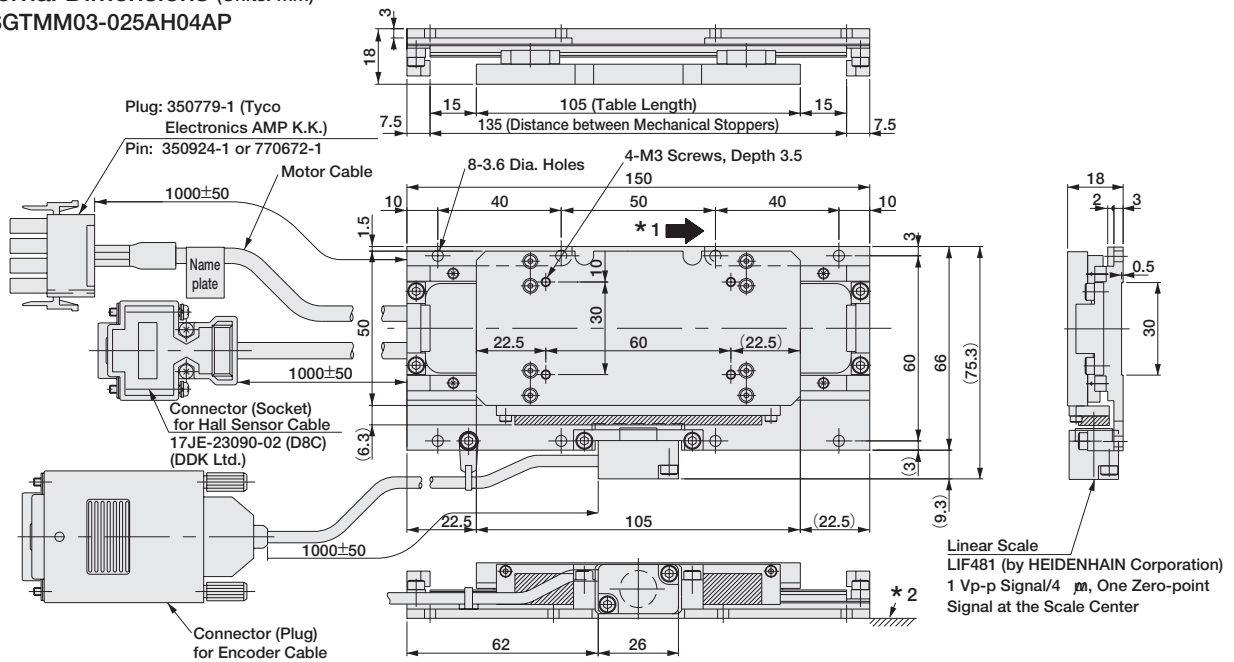


- *1: See the next page for the connector specifications.
- *2: The moving coil moves in the direction indicated by the arrow when current flows in the following order: phase U, V, and W.
- *3: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.02 mm (reference value) or an equivalent.

SGTMM Linear Sliders

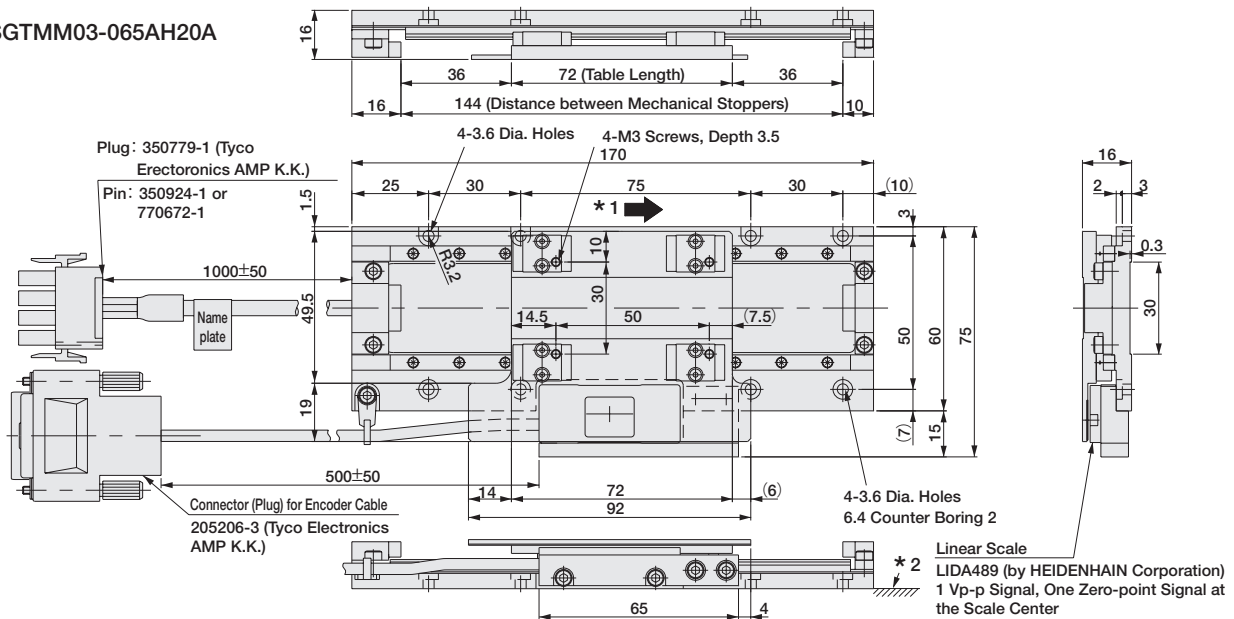
● External Dimensions (Units: mm)

(3) SGTMM03-025AH04AP



*1: The moving coil moves in the direction indicated by the arrow when current flows in the following order: phase U, V, and W.
 *2: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.02 mm (reference value) or an equivalent.

(4) SGTMM03-065AH20A



*1: The moving coil moves in the direction indicated by the arrow when current flows in the following order: phase U, V, and W.
 *2: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.02 mm (reference value) or an equivalent.

● Connector Specifications for the Σ -Trac- μ Series of Linear Sliders (All Models)

For SGTMM01 Linear Sliders

For SGTMM03 Linear Sliders

For Motor Cable

Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG	Green

For Encoder Cable

Pin No.	Signal	Pin No.	Signal
1	IW-	9	N/C
2	IW+	10	N/C
3	Test	11	N/C
4	Transmit	12	+5 V
5	Receive	13	GND
6	Reset	14	Cos-
7	Cos+	15	Sin-
8	Sin+		

For Motor Cable

Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG	Green

For Encoder Cable

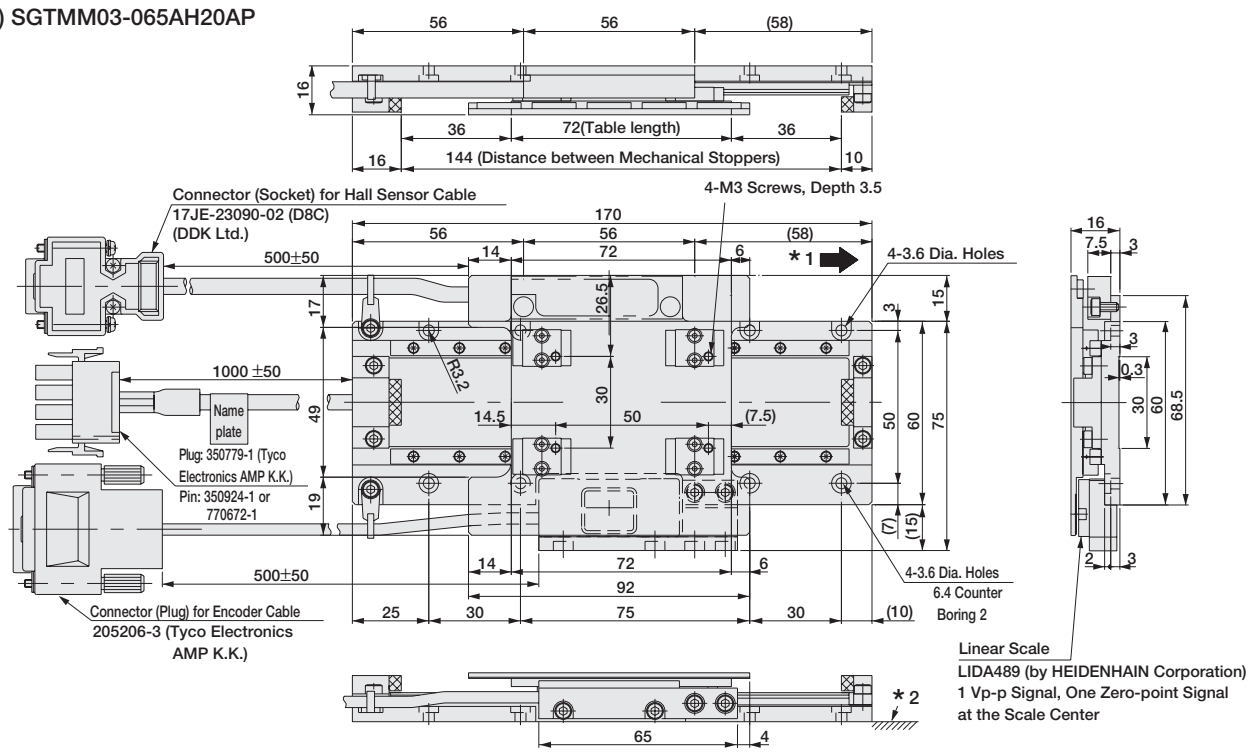
Pin No.	Signal	Pin No.	Signal
1	Cos output (A+)	9	/Cos output (A-)
2	0 V	10	0 V sensor
3	Sin output (B+)	11	/Sin output (B-)
4	+5 V	12	5 V sensor
5	Not used	13	Not used
6	Not used	14	/Ref (R+)
7	/Ref (R-)	15	Not used
8	Not used	Case	Shield

For Hall Sensor Cable

Pin No.	Signal
1	+5V (power supply)
2	Phase-U output
3	Phase-V output
4	Phase-W output
5	0V (power supply)
6	Not used
7	Not used
8	Not used
9	Not used

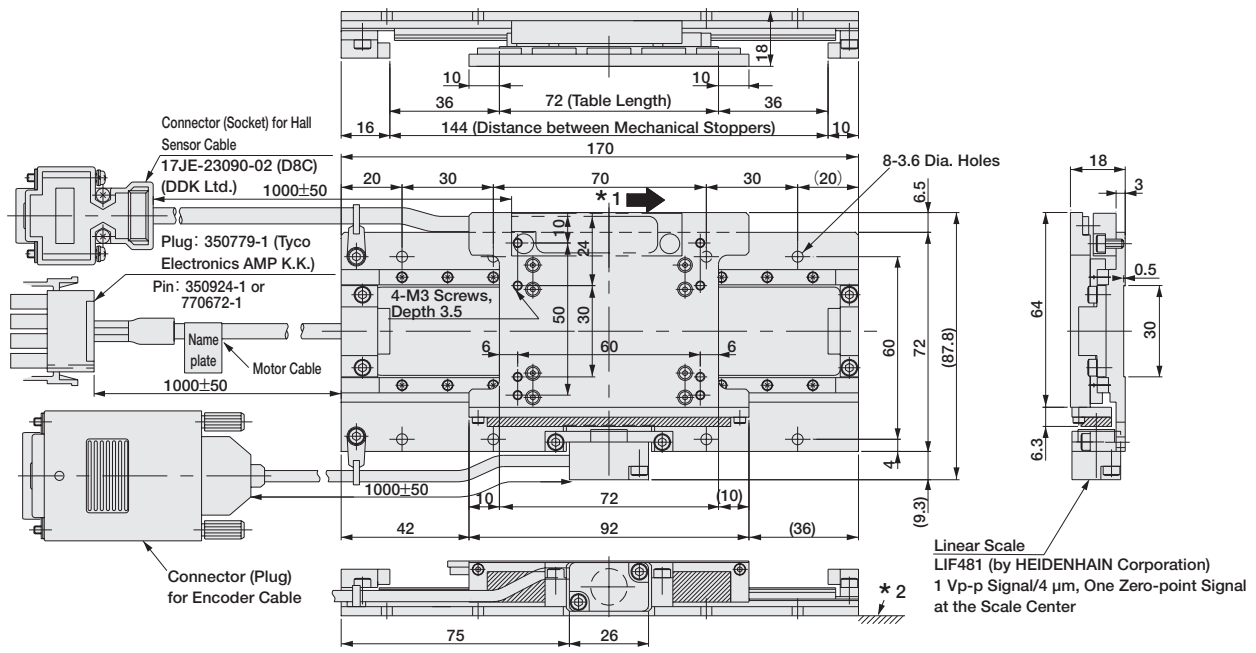
SGTMM Linear Sliders

● External Dimensions (Units: mm)
(5) SGTMM03-065AH20AP



*1: The moving coil moves in the direction indicated by the arrow when current flows in the following order: phase U, V, and W.
*2: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.02 mm (reference value) or an equivalent.

(6) SGTMM03-065AH04AP

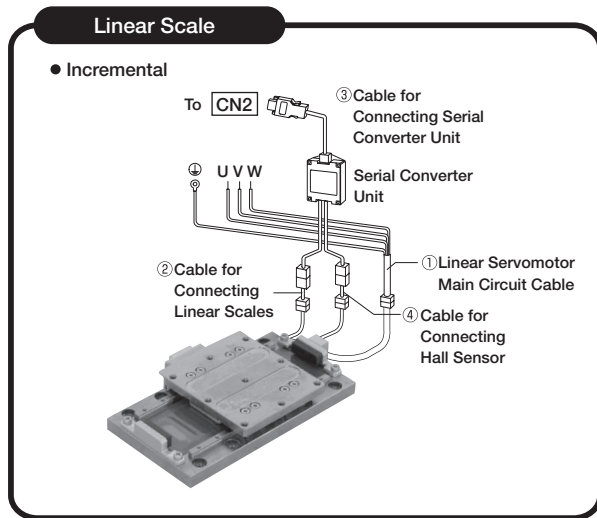
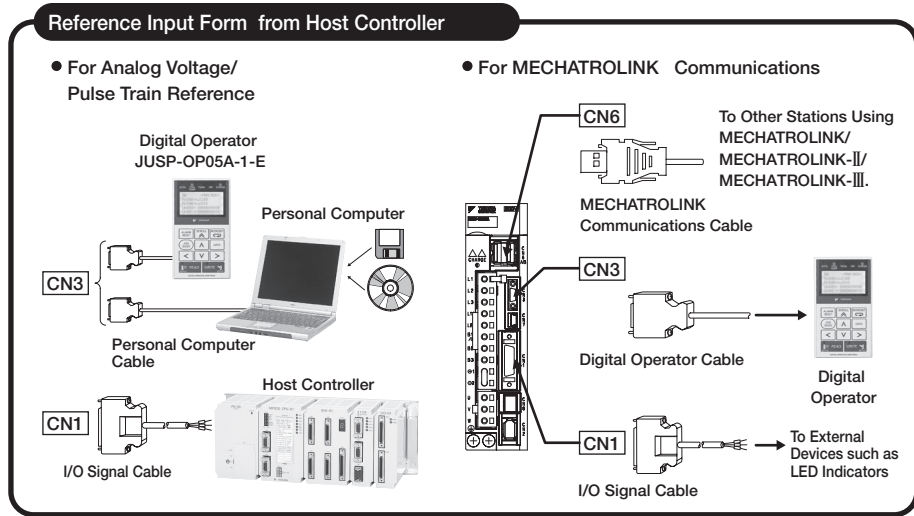
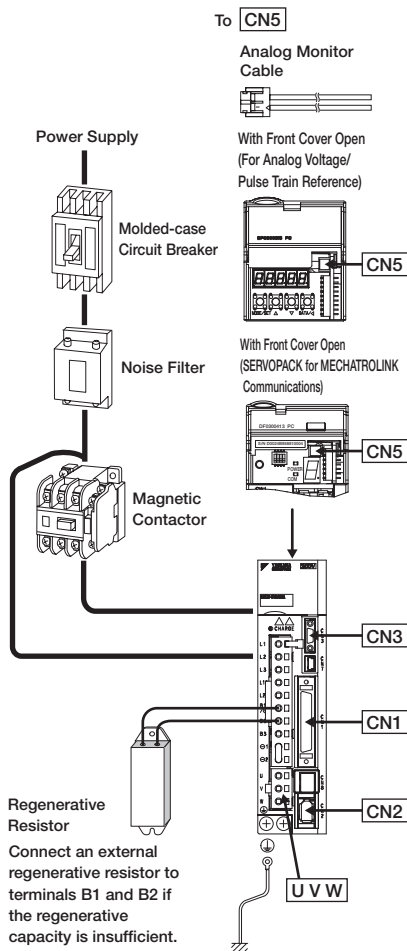


*1: The moving coil moves in the direction indicated by the arrow when current flows in the following order: phase U, V, and W.
*2: When installing the linear slider, the surface should be flat with a maximum discrepancy of 0.02 mm (reference value) or an equivalent.

Linear Sliders

Selecting Cables and Connectors

● Connection diagrams



● Applicable Cables and Connectors

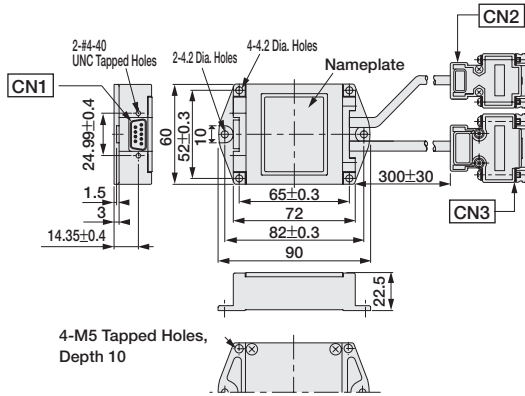
Motor Type	Linear Scale Type	Servo Drive		Motor Cable		Linear Scale Connection Cables		
		Σ-Trac-μ Series Model	SERVOPACK Model SGD-V Single-phase 100 V	SERVOPACK Model SGD-V Three-phase 200 V	SERVOPACK+Motor ① Linear Servomotor Main Circuit Cable (Flexible Type)	Serial Converter Unit Model JZDP- ③ Cable for Connecting Serial Converter Unit (Flexible Type)	② Cable for Connecting Linear Scales (Flexible Type)	④ Cable for Connecting Hall Sensor
Moving Magnet (MM)	Incremental	SGTMM01-010AM20A	R70F	R70A	JZSP-CLN11-□□-E-G#	□003-242-E	JZSP-CLP70-□□-E-G# The numbers in the boxes (□□) indicate the cable length. 01 = 1 m 03 = 3 m 05 = 5 m 10 = 10 m 15 = 15 m 20 = 20 m	JZSP-CLL00-□□-E-G# ¹⁾ The numbers in the boxes (□□) indicate the cable length. 01 = 1 m 03 = 3 m 05 = 5 m 10 = 10 m 15 = 15 m Note: For SGTMM01 linear sliders, a JZSP-CLL40-E cable (length: 0.2 m) is also required.
		SGTMM01-030AM20A	R70F	R70A	JZSP-CLN11-□□-E-G#	□003-242-E		
		SGTMM03-025AH20AP	R90F	R90A	JZSP-CLN11-□□-E-G#	□006-221-E		
		SGTMM03-025AH04AP	R90F	R90A	JZSP-CLN11-□□-E-G#	□006-221-E		
		SGTMM03-065AH20A	R90F	R90A	JZSP-CLN11-□□-E-G#	□003-220-E		
		SGTMM03-065AH20AP	R90F	R90A	JZSP-CLN11-□□-E-G#	□006-220-E		
		SGTMM03-065AH04AP	R90F	R90A	JZSP-CLN11-□□-E-G#	□006-220-E		

Note: The digit "#" of the order number represents the design revision.

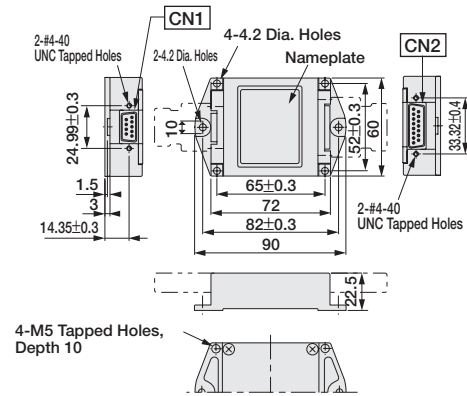
Selecting Cables and Connectors

● Detail Drawings: Serial Converter Units for Linear Scales by HEIDENHAIN Corporation


● JZDP-□006-□□□-E
(With Hall Sensor Cable)



● JZDP-□003-□□□-E
(Without Hall Sensor Cable)




● Details on Connectors

CN1 
SERVOPACK End
Serial Data Output


by DDK Ltd.
17-series Connector:
17LE-13090-27-FA
(Socket)

Pin No.	Signal	Pin No.	Signal
1	+5V	6	Phase-S output
2	Phase-S output	7	Not used
3	Not used	8	Not used
4	Not used	9	Not used
5	0V	Case	Shield

CN2 
Linear Scale End
Analog Signal Input

by DDK Ltd.
17-series Connector:
17JE-13150-02 (D8C)A-CG
(Socket)

Pin No.	Signal	Pin No.	Signal
1	cos input (A+)	9	/cos input (A-)
2	0V	10	0 V sensor
3	sin input (B+)	11	/sin input (B-)
4	+5V	12	5 V sensor
5	Not used	13	Not used
6	Not used	14	Ref input (R+)
7	/Ref input (R-)	15	Not used
8	Not used	Case	Shield

CN3 
Linear Servomotor End
Hall Sensor Signal Input

by DDK Ltd.
17-series Connector:
17JE-13090-02(D8C) A-CG
(Socket)

Pin No.	Signal	Pin No.	Signal
1	+5V	6	Not used
2	Phase-U input	7	Not used
3	Phase-V input	8	Not used
4	Phase-W input	9	Not used
5	0V	Case	Shield

Serial Converter Unit+Hall Sensor	Analog Voltage/Pulse Train Reference Type SERVOPACK		MECHATROLINK Communications Reference Type SERVOPACK				Cables for Setting Devices/Monitors
	I/O Signal Connector [CN1]		I/O Signal Connector [CN1]		MECHATROLINK-II Communications Connector [CN6A] or [CN6B]	MECHATROLINK-III Communications Cable [CN6A] or [CN6B]	[CN5] Analog Monitor Cable
④ Cable for Connecting Hall Sensor (Flexible Type)	Connector Terminal Block Converter Unit	Cable with Loose Wires at One End	Connector Terminal Block Converter Unit	Cable with Loose Wires at One End			
JZSP-CLL10-□□-E-G# The numbers in the boxes(□□) indicate the cable length. 01 = 1 m 03 = 3 m 05 = 5 m 10 = 10 m 15 = 15 m Note: For SGTMM01 and SGTMM03-065AH20A servomotors, a cable for connecting the hall sensor is not required.	JZSP-TA50PG-□-E ² The number in the box(□) indicates the cable length. None = 0.5 m 1 = 1 m 2 = 2 m	JZSP-CSI01-□-E ² The number in the box(□) indicates the cable length. 1 = 1 m 2 = 2 m 3 = 3 m	JZSP-TA26P-□-E ² The number in the box(□) indicates the cable length. None = 0.5 m 1 = 1 m 2 = 2 m	JZSP-CSI02-□-E ² The number in the box(□) indicates the cable length. 1 = 1 m 2 = 2 m 3 = 3 m	MECHATROLINK communications cable: JEPMC-W6002-□□-E The numbers in the boxes(□□) indicate the cable length. A5 = 0.5 m 20 = 20 m 01 = 1 m 30 = 30 m 03 = 3 m 40 = 40 m 05 = 5 m 50 = 50 m 10 = 10 m MECHATROLINK terminator: JEPMC-W6022-E	The numbers in the boxes(□□) indicate the cable length. JEPMC-W6012-□□-E A2 = 0.2 m 05 = 5 m A5 = 0.5 m 10 = 10 m 01 = 1 m 20 = 20 m 02 = 2 m 30 = 30 m 03 = 3 m 50 = 50 m 04 = 4 m JEPMC-6013-□□-E ³ 10 = 10 m 50 = 50 m 20 = 20 m 75 = 75 m 30 = 30 m JEPMC-6014-□□-E A5 = 0.5 m 10 = 10 m 01 = 1 m 30 = 30 m 03 = 3 m 50 = 50 m 05 = 5 m	JZSP-CA01-E (1 m)

*1: When using serial converter unit JZDP-G00□-□□□-E, the maximum cable length is 3 m.
*2: A connector kit and cable materials are required to assemble cables. For details, refer to SERVOPACKS in this catalog.
*3: Currently in pre-release. Will be available soon.