



Linear Servomotor General Instructions

Serial Converter Unit (Model: JZDP-□00□-□□□-E)

● Characteristics and Specifications

Items		JZDP-D00□-□□□-E	JZDP-G00□-□□□-E
Electrical Characteristics	Power Supply Voltage	+ 5.0V ± 5%, ripple content 5% max.	
	Current Consumption ^{*1}	120 mA Typ. 350 mA max.	
	Signal Resolution	Input two-phase sine wave: 1/256 pitch	Input two-phase sine wave: 1/4096 pitch
	Max. Response Frequency	250 kHz	100 kHz
	Analog Input Signals ^{*2} (cos, sin, Ref)	Differential input amplitude: 0.4 to 1.2 V Input signal level: 1.5 to 3.5 V	
	Hall Sensor Input Signal	CMOS level	
	Output Signals ^{*3}	Position data, hall sensor information, and alarms	
	Output Method	Serial data transmission	
	Output Circuit	Balanced transceiver (SN75LBC176 or the equivalent) Internal terminal resistance: 120 Ω	
Mechanical Characteristics	Approx. Mass	150 g	
	Vibration Resistance	98 m/s ² max. (10 to 2500 Hz) in three directions	
	Impact Resistance	980 m/s ² , (11 ms) two times in three directions	
Environmental Conditions	Ambient Temperature	0 to 55°C	
	Storage Temperature	-20 to +80°C	
	Humidity	20% to 90% RH (no condensation)	

- *1: The current consumption of the linear scale and hall sensor is not included in this value.
The current consumption of linear scale and hall sensor must be taken into consideration for the current capacity of host controller that supplies the power. The current consumption of hall sensor: Approx. 40 mA.
- *2: Input a value within the specified range. Otherwise, incorrect position information is output, and the device may be damaged.
- *3: The power is turned on, and the transmission is enabled after 100 ms to 300 ms.

Serial Converter Unit (Model: JZDP-□00□-□□□-E)

● Model Designations

JZDP - □00□ - □□□ - E

Serial Converter Unit Model			
Code	Appearance	Applicable Linear Scale	Hall Sensor
D003		Manufactured by HEIDENHAIN Corp.	None
G003			
D005		Manufactured by RENISHAW plc.	None
G005			
D006		Manufactured by HEIDENHAIN Corp.	Provided
G006			
D008		Manufactured by RENISHAW plc.	Provided
G008			

- Non-Stock Items
- Global Stock Items

Applicable Linear Servomotor						
Servomotor Model		Symbol	Servomotor Model		Symbol	
SGLGW- (Coreless)	30A050C	250	SGLTW- (Iron core, T-type)	20A170A	011	
	30A080C	251		20A320A	012	
	40A140C	252		20A460A	013	
	40A253C	253		35A170A	014	
	40A365C	254		35A320A	015	
	When a standard-force magnetic way is used.	60A140C		258	35A460A	016
		60A253C		259	35A170H	105
		60A365C		260	35A320H	106
		90A200C		264	50A170H	108
		90A370C		265	50A320H	109
90A535C		266	40A400B	185		
SGLGW- + SGLGM- □-M (Coreless)		40A140C	255	40A600B	186	
		40A253C	256	80A400B	187	
		40A365C	257	80A600B	188	
		When a high-force magnetic way is used	60A140C	261	35D170H	193
	60A253C		262	35D320H	194	
	60A365C		263	50D170H	195	
	SGLFW- (Iron core, F-type)		20A090A	017	50D320H	196
			20A120A	018	40D400B	197
			35A120A	019	40D600B	198
			35A230A	020	80D400B	199
50A200B			181	80D600B	200	
50A380B			182			
1ZA200B			183			
1ZA380B		184				
35D120A		211				
35D230A		212				
50D200B	189					
50D380B	190					
1ZD200B	191					
1ZD380B	192					

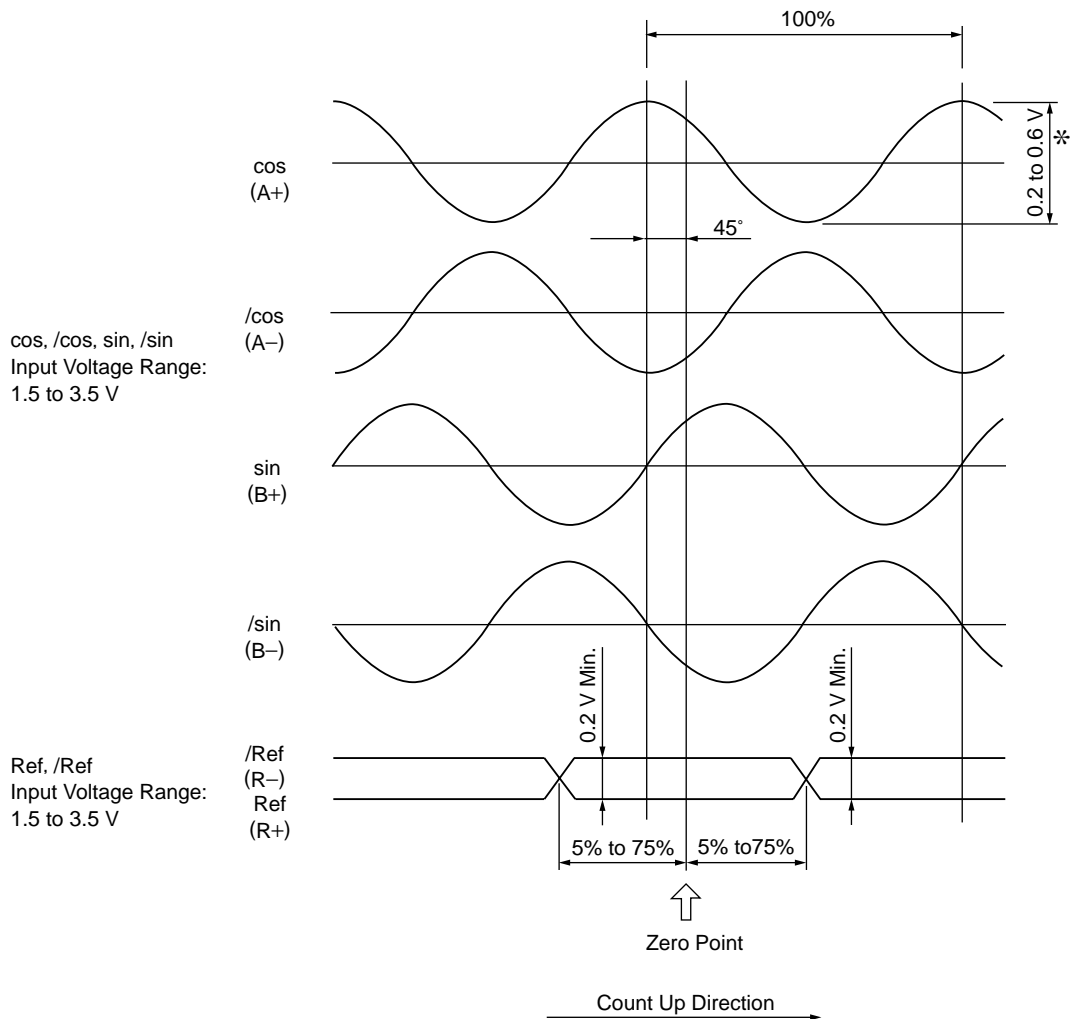
● Analog Signal Input Timing

The following figure shows the input timing of the analog signals.

When the cos and sin signals are shifted 180 degrees, the differential signals are the /cos and /sin signals.

The specifications of the cos, /cos, sin, and /sin signals are identical except for the phase.

Input the signals Ref and /Ref so that they shall cross each other as shown in the figure because they are input into the converter. When they are crossed, the output data will be counted up.



*:If the analog signal amplitude declines to about 0.35 V because of differential amplitude, the serial converter outputs an alarm.

IMPORTANT

■ Precautions

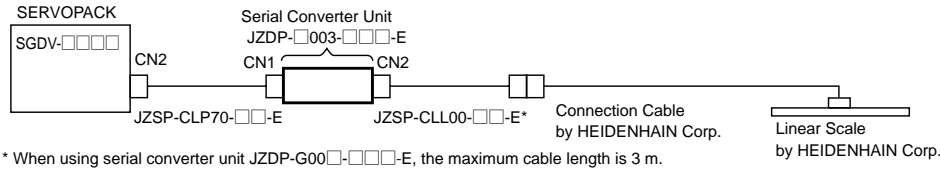
- 1 Never perform insulation resistance and withstand voltage tests.
- 2 When analog signals are input to the serial converter unit, noise influence on the analog signals affects the unit's ability to output correct position information. The analog cable must be as short as possible and shielded.
- 3 Use the serial converter unit without gases such as H₂S.
- 4 Do not connect or disconnect the unit while power is being supplied, or the unit may be damaged.
- 5 When using multiple axes, use a shield cable for each axis. Do not use a shield cable for multiple axes.

Serial Converter Unit (Model: JZDP-□00□-□□□-E) Units: mm

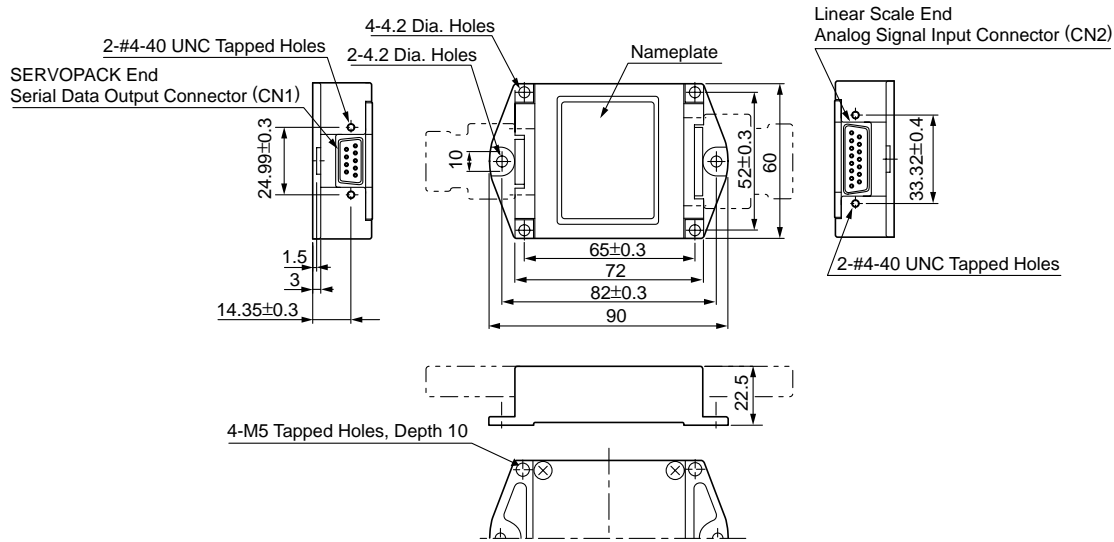
● Without Cable for Hall Sensor (For Linear Scale by HEIDENHAIN Corporation)

Serial Converter Unit Model: JZDP-□003-□□□-E

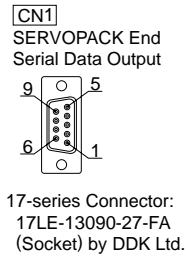
(1) Connection Example



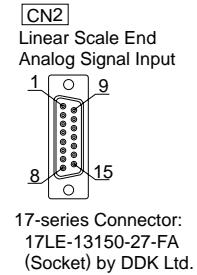
(2) External Dimensions



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



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



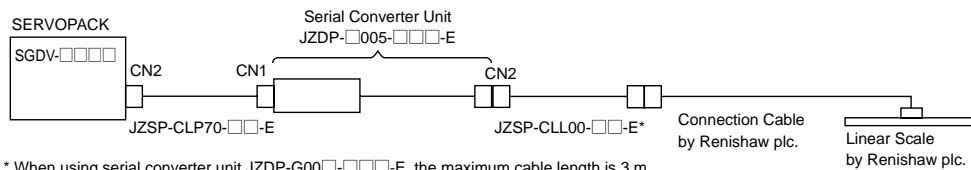
- Notes:
- 1 Do not use the unused pins.
 - 2 Contact HEIDENHAIN Corporation for details of connection cables (analog 1 Vp-p output, D-sub 15-pin, male) by HEIDENHAIN Corporation.
 - 3 Use the same terminal for 5-V sensor and phase-W input.
 - 4 Phase U, V, and W input are internally pulled up at 10 kΩ.

Serial Converter Unit (Model: JZDP-□00□-□□□-E) Units: mm

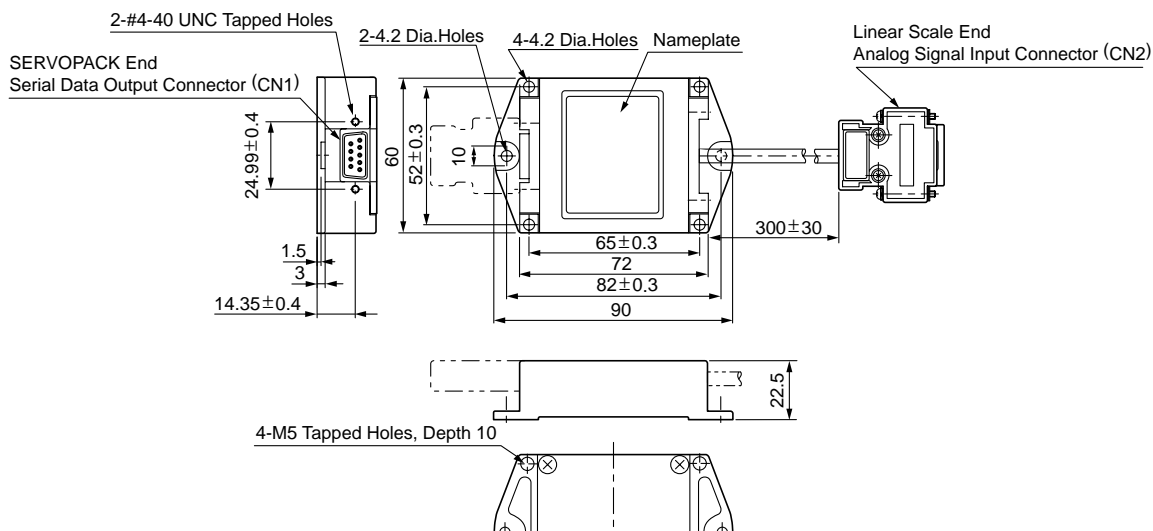
● Without Cable for Hall Sensor (For Linear Scale by Renishaw plc.)

Serial Converter Unit Model: JZDP-□005-□□□-E

(1) Connection Example

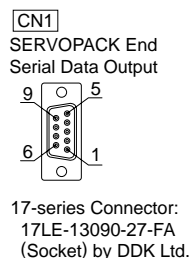


(2) External Dimensions

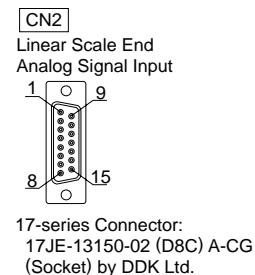


Pin No.	Signal
1	+5V
2	Phase S output
3	Not used
4	Not used
5	0V
6	Phase /S output
7	Not used
8	Not used
9	Not used
Case	Shield

SERVOPACK does not have the function to process Vq signals.



Pin No.	Signal
1	cos input (V1-)
2	sin input (V2-)
3	Ref input (V0+)
4	+5V
5	5Vs
6	Not used
7	Not used
8	Not used
9	cos input (V1+)
10	sin input (V2+)
11	/Ref input (V0-)
12	0V
13	0Vs
14	Not used
15	inner (0V)
Case	Shield



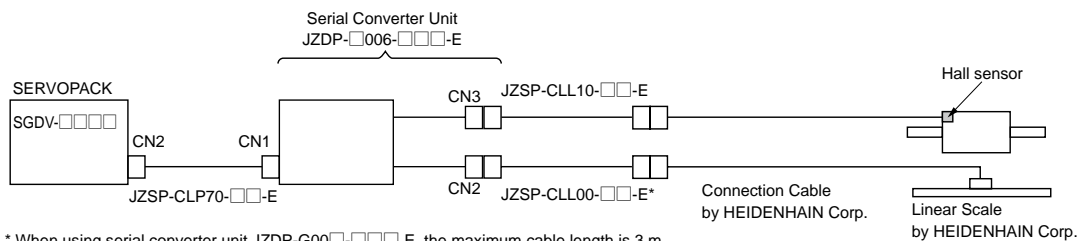
- Notes:
- 1 Do not use the unused pins.
 - 2 Contact Renishaw plc. for details of connection cables (analog 1 Vp-p output, D-sub 15-pin, male) by Renishaw plc. However, the BID and DIR signals are not connected.
 - 3 Use the linear scale-end connector to change the zero point specifications of the linear scale.

Serial Converter Unit (Model: JZDP-□00□-□□□-E) Units: mm

● With Cable for Hall Sensor (For Linear Scale by HEIDENHAIN Corporation)

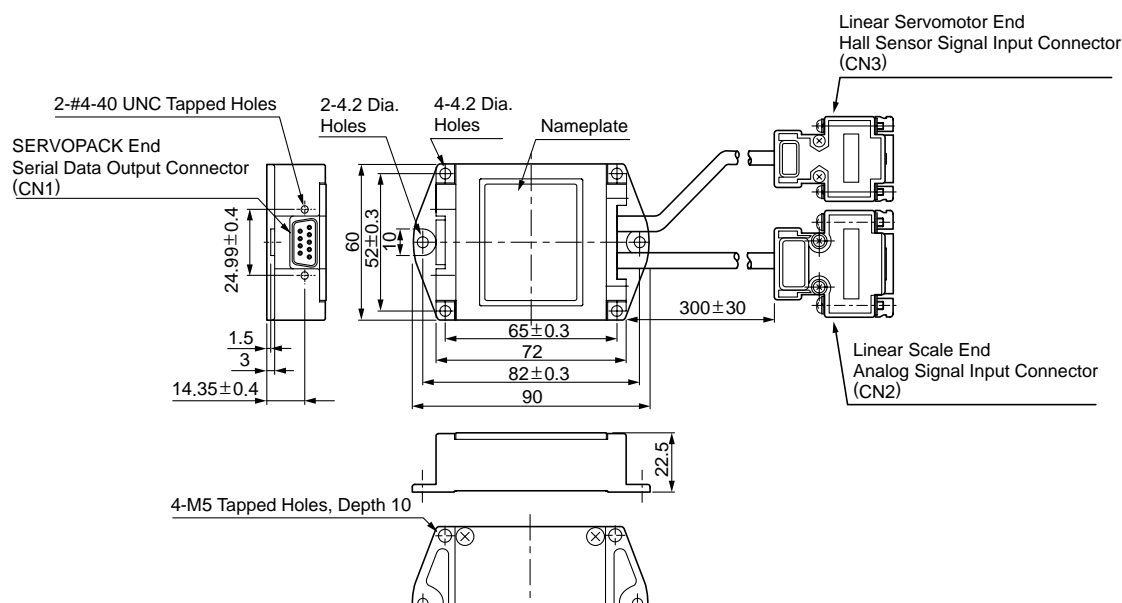
Serial Converter Unit Model: JZDP-□006-□□□-E

(1) Connection Example

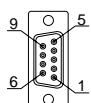


* When using serial converter unit JZDP-G00□-□□□-E, the maximum cable length is 3 m.

(2) External Dimensions

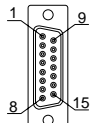


CN1
SERVOPACK End
Serial Data Output



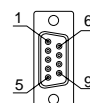
17-series Connector:
17LE-13090-27-FA
(Socket) by DDK Ltd.

CN2
Linear Scale End
Analog Signal Input



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

CN3
Linear Servomotor End
Hall Sensor Signal Input



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

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

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

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

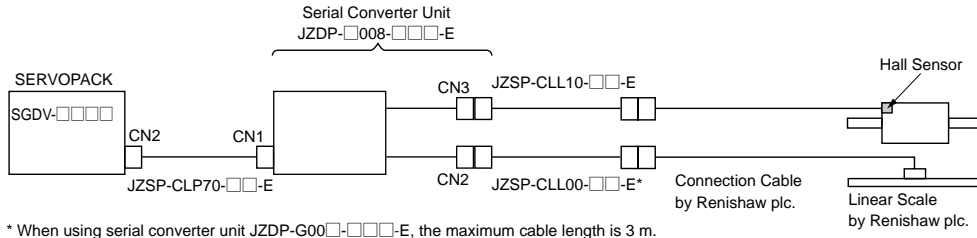
- Notes: 1 Do not use the unused pins.
2 Contact HEIDENHAIN Corporation for details of connection cables (analog 1 Vp-p output, D-sub 15-pin, male) by HEIDENHAIN Corporation.
3 Phase U, V, and W input are internally pulled up at 10 kΩ.

Serial Converter Unit (Model: JZDP-□00□-□□□-E) Units: mm

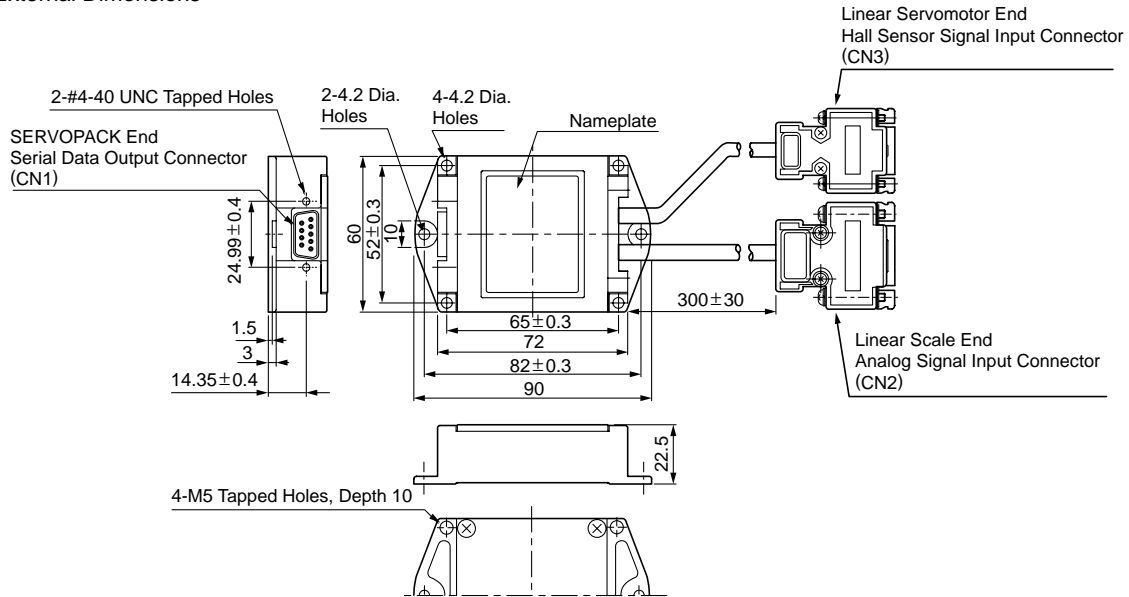
● With Cable for Hall Sensor (For Linear Scale by Renishaw plc.)

Serial Converter Unit Model: JZDP-□008-□□□-E

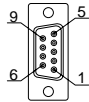
(1) Connection Example



(2) External Dimensions

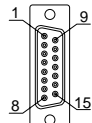


CN1
SERVOPACK End
Serial Data Output



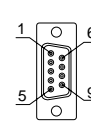
17-series Connector:
17LE-13090-27-FA
(Socket) by DDK Ltd.

CN2
Linear Scale End
Analog Signal Input



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

CN3
Linear Servomotor End
Hall Sensor Signal Input



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

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

Pin No.	Signal
1	/cos input (V1-)
2	/sin input (V2-)
3	Ref input (V0+)
4	+5V
5	5Vs
6	Not used
7	Not used
8	Not used
9	cos input (V1+)
10	sin input (V2+)
11	/Ref input (V0-)
12	0 V
13	0 Vs
14	Not used
15	Inner
Case	Shield

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

- Notes:
- Do not use the unused pins.
 - Contact Renishaw plc. for details of connection cables (analog 1 Vp-p output, D-sub 15-pin, male) by Renishaw plc. However, the BID and DIR signals are not connected.
 - Use the linear scale-end connector to change the zero point specifications of the linear scale.
 - Phase U, V, and W input are internally pulled up at 10 kΩ.

Flexible Cables

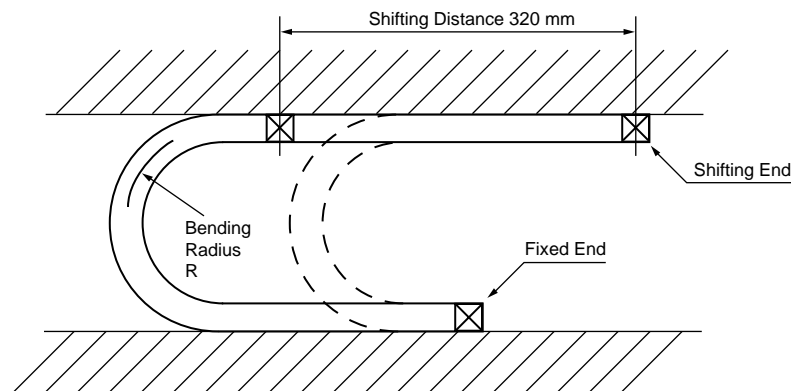
● Life of Flexible Cable

The flexible cable supports 10,000,000 or more operations of bending life with the recommended bending radius R. The following table shows the recommended bending radius R of each cable.

Cable Type	Model	Recommended Bending Radius mm
Linear Servomotor Main Circuit Cables	JZSP-CLN11-□□-E	35
	JZSP-CLN21-□□-E	38
	JZSP-CLN39-□□-E	50
	JZSP-CLN14-□□-E	35
Cables for Connecting Linear Scales	JZSP-CLL00-□□-E	57
Cables for Connecting Hall Sensors	JZSP-CLL10-□□-E	46
Cables for Connecting Serial Converter Units	JZSP-CLP70-□□-E	46

● Conditions

- Repeat moving one end of the cable forward and backward for 320 mm with using the test equipment shown in the following figure.
- Connect the lead wires in parallel, and count the number of cable return motion times until a lead wire is disconnected. Note that one reciprocating is counted as one test.



- Notes:
- The life of flexible cable differs largely depending on the amount of mechanical shocks, mounting to the cable, and fixing methods. The life of flexible cable is limited under the specified conditions.
 - The life of flexible cable indicates the number of bending times in which lead wires are electrically conducted and by which no cracks and damages that affects the performance of cable sheathing are caused. Disconnecting the shield wire is not taken into account.

● Wiring Precautions

Even if the recommended bending radius R is respected in the mechanical design, incorrect wiring may cause early disconnection. Observe the following precautions when wiring.

- Cable twisting**
Straighten the flexible cables before wiring.
Twisted cables cause early disconnection. Check the indication on the cable surface to make sure that the cable is not twisted.
- Fixing method**
Do not fix the moving points of the flexible cable. Stress on the fixed points may cause early disconnection. Fix the cable at the minimum number of points.
- Cable length**
If the cable length is too long, it may cause the cable's sagging. Besides the cable length is too short, it may cause the excessive tension on the fixed points that will cause early disconnection. Use a flexible cable with the optimum length.
- Interference between cables**
Avoid interference between cables.
Interference limits the motion of flexible cable, which causes early disconnection. Keep enough distance between cables, or provide a partition when wiring.