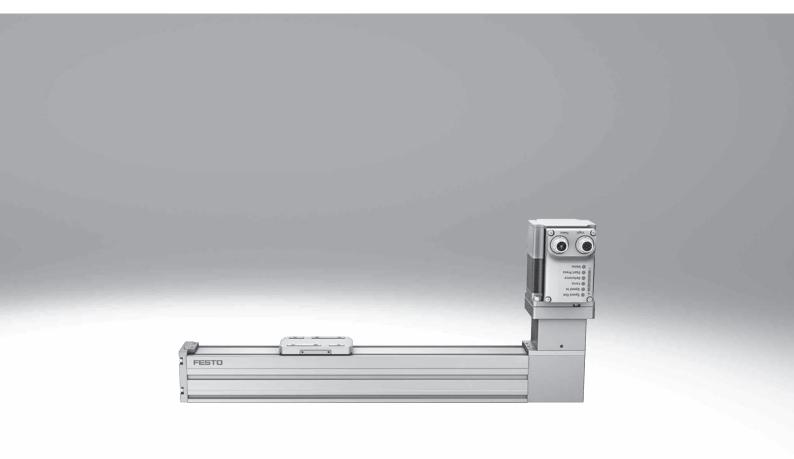
# Toothed belt axis units ELGS-TB-KF







### Key features

### At a glance

### Plug and work with the Simplified Motion Series



The simplicity of pneumatics is now combined for the first time with the advantages of electric automation thanks to the Simplified Motion Series. These integrated drives are the perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks between two mechanical end positions, but don't want the commissioning process for traditional electric drive systems that can often be quite complex.

### Integrated

The integrated electronics in the drive are at the core of the Simplified Motion Series.

### Simple

For commissioning, simply set all relevant parameters directly on the drive:

- · Speed and force
- Reference end position and cushioning
- Manual operation

# **IO**-Link

There is no need for any software since operation is simply based on the "plug and work" principle. Digital I/O (DIO) and IO-Link are always automatically included – a product with two types of control as standard.

### Standardised

Electrical connection via

M12 plug design

- Power (4-pin): power supply for the motor
- Logic (8-pin): control signal, sensor signal and power for the integrated electronics

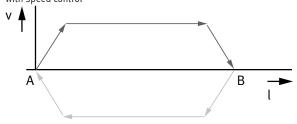
### Connected

Use of extended functions via IO-Link:

- Motion parameters can be set remotely
- Copy and backup function for transferring parameters
- Read function for extended process parameters

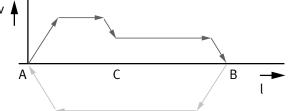
### The functions of the Simplified Motion Series

Basic profile for movement between two end positions: with speed control



- These drives are designed for simple movements between two end positions.
- Proximity switches are required in order to implement any intermediate positions.

Extended motion profile for simplified press-fitting and clamping functions: with speed and force control



### The products in the Simplified Motion Series

Spindle axis unit ELGS-BS-KF



Toothed belt axis unit ELGS-TB-KF



Mini slide unit EGSS-BS-KF



Toothed belt axis unit



Electric cylinder unit



Rotary drive unit



### Key features

### At a glance



- Without external servo drive: all the necessary electronic components are combined in the integrated drive
- Two control options integrated as standard: digital I/O and IO-Link
- Complete solution for simple movements between two mechanical end positions
- · Protected against external influences by internal guide
- Simplified commissioning: all parameters can be manually set directly on the drive
- · No special expertise required for commissioning
- End position feedback similar to that of a conventional proximity switch is integrated as standard
- Clean Look design: easy to clean and less prone to contamination

### Modular and flexible with motor, motor mounting kit and servo drive

This product is also available as a modular mechanical system as toothed belt axis ELGC-TB-KF:

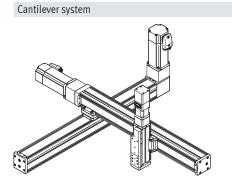


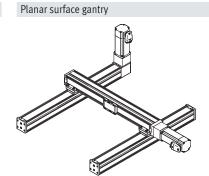
When to compact dimensions and optimised installation space are important, e.g. for assembly systems, test and inspection systems, small parts handling, the electronics industry and desktop applications. Either as an individual axis or as a handling system.

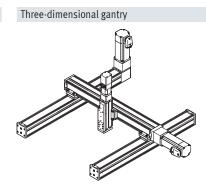
- Compact: optimum ratio of installation space to working space
- Unique: "one-size-down" mounting system
- · Modular: individual combinations with motor, motor mounting kit and servo drive
- Flexible: wide range of mounting options for optimum machine integration

### Typical handling systems

For applications where compact dimensions are essential, the axes ELGC can be combined into very space-saving handling systems that are suitable for assembly systems, test and inspection systems, small parts handling, the electronics industry and desktop applications. The very compact linear axes ELGC, mini slide EGSC and electric cylinder EPCC offer an optimal ratio between installation space and working space. They feature a common system approach and platform architecture and the connections are largely adapterless.





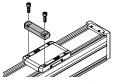


### Key features

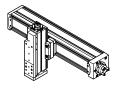
# Matrix showing combinations between axis ELGC/ELGS-TB, ELGC/ELGS-BS, mini slide EGSC/EGSS-BS, electric cylinder EPCC/EPCS-BS and guide axis ELFC Mounting options with profile mounting and via angle kit

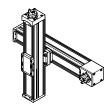
		Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS; EPCC-BS; ELGS-BS/-TB; EGSS-BS, EPCS-BS				
	Size	25	32	45	60	
Base axis	32	•	-	-	-	
ELGC-BS/-TB; ELFC;	45	-	•	-	-	
ELGS-BS/-TB	60	-	-		-	
	80	-	-	-	•	

### With profile mounting EAHF-L2-...-P-D...



• Mounting option: base axis with one-size-down assembly axis



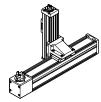


### With angle kit EHAA-D-L2-...-AP



 Mounting option: base axis rotated through 90° with one-size-down assembly axis





# Matrix showing combinations between axis ELGC/ELGS-TB, ELGC/ELGS-BS, mini slide EGSC/EGSS-BS, electric cylinder EPCC/EPCS-BS and guide axis ELFC Assembly options with adapter kit or direct mounting

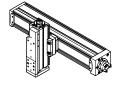
				BS/-TB; ELF S, EPCS-BS		; EPCC-BS;
	Size	25	32	45	60	80
Base axis	32			-	_	_
ELGC-BS/-TB; ELFC;	45	-			-	-
ELGS-BS/-TB	60	-	-			_
	80	-	_	-		

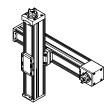
			is EGSC-BS; E	GSS-BS	
	Size	25	32	45	60
Base axis	25	•	-	-	-
EGSC-BS;	32	-	•	-	-
EGSS-BS	45	-	-	•	-
	60	_	-	-	•

### With adapter kit EHAA-D-L2

- Mounting option: base axis with the same size assembly axis
- Mounting option: base axis with height adjustment for one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation

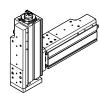






### With direct mounting

Mounting option: base axis with the same size assembly axis

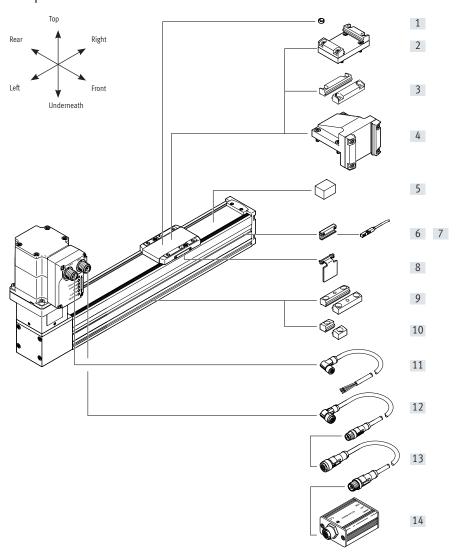


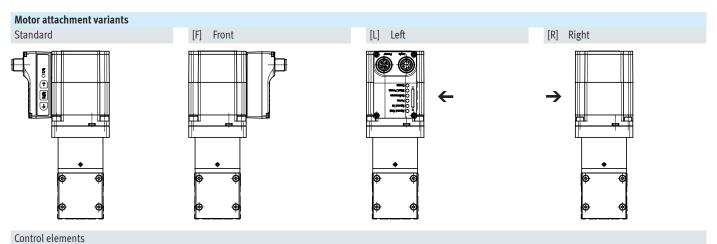
# Type codes

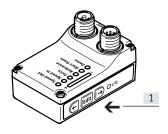
Gantry axis	
Drive system	
Toothed Bett	
Guide	
Recirculating ball bearing guide	
Size	
45	
60	
Ctrake	
800	
1000	
1200	
1500	
1800	
2000	
Motor type	
Stepper motor ST	
Controller	
Integrated	
	Recirculating ball bearing guide  Size  45  60  Stroke  200  300  500  600  800  1000  1200  1500  1800  2000  Motor type  Stepper motor ST  Controller

800	Control panel	
H1	Integrated	
009	Bus protocol/activation	
PLK	PNP and IO-Link®	
NLK	NPN and IO-Link®	
010	End-position sensing	
AA	With integrated end-position sensing	
011	Cable outlet direction	
	Standard	
L	Left	
R	Right	
F	Front	
012	Electrical accessories	
	None	
L1	Adapter for operation as IO-Link® device	
013	Operating instructions	
	With operating instructions	
DN	Without operating instructions	

# Peripherals overview







[1] Pushbutton actuators for parameterisation and control

# Peripherals overview

	Type/order code	Description	→ Page/Internet
[1]	Centring pin/sleeve ZBS, ZBH	For centring loads and attachments on the slide	28
[2]	Adapter kit EHAA-D-L2	<ul> <li>For axis/axis mounting with adapter plate</li> <li>Mounting option: base axis with the same size or one-size-down assembly axis</li> <li>When motors are mounted using parallel kits, this may lead to interfering contours.         In this case, the adapter plate is required for height compensation (download CAD data → www.festo.com)     </li> </ul>	25
[3]	Profile mounting EAHF-L2P-D	For axis/axis mounting without adapter plate Mounting option: base axis with one-size-down assembly axis	24
[4]	Angle kit EHAA-D-L2AP	For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position "slide at top"  base axes with mounting position "slide at top"	26
[5]	Clamping component EADT-S-L5-32	Tool for retensioning the cover strip	28
[6]	Sensor bracket <sup>1)</sup> EAPM-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket	27
[7]	Proximity switch <sup>1)</sup> SIES-8M	Inductive proximity switch, for T-slot	28
	Proximity switch <sup>1)</sup> SMT-8M	Magnetic proximity switch, for T-slot	28
[8]	Switch lug <sup>1)</sup> EAPMSLS	For sensing the slide position in conjunction with inductive proximity switches SIES-8M	27
9]	Profile mounting EAHF-L2P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drill hole in the centre	22
10]	Profile mounting EAHF-L2	For mounting the axis on the side of the profile	23
11]	Supply cable NEBL-T12	For connecting load and logic supply	29
12]	Connecting cable NEBC-M12	For connection to a controller	29
[13]	Adapter NEFC-M12G8	Connection between the motor and the and IO-Link master     Only for use with IO-Link Port Class A Master (recommended)	29
[14]	IO-Link master USB CDSU-1	For straightforward use of the mini slide unit via IO-Link	29

<sup>1)</sup> Proximity switches are optional and only required in order to sense any intermediate positions.



- **Ø** - Size 45 ... 60

Stroke length 200 ... 2000 mm



General technical data				
Size		45	60	
Design		Electromechanical axis with toothed belt and integrate	ed drive	
Motor type		Stepper motor		
Guide		Recirculating ball bearing guide		
Mounting position		Horizontal		
Working stroke	[mm]	200, 300, 500, 600, 800, 1000, 1200, 1500	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000	
Stroke reserve	[mm]	0		
Additional functions		Integrated end-position sensing		
		User interface		
Display		LED		
Homing		Positive fixed stop block		
		Negative fixed stop block		
Type of mounting		With female thread		
		With accessories		
		With centring pin, centring sleeve		
Max. line length		•		
Inputs/outputs	[m]	15		
IO-Link operation	[m]	20		

Mechanical data				
Size		45	60	
Max. payload	[kg]	2.5	4	
Max. feed force F <sub>x</sub>	[N]	75	65	
Max. speed	[m/s]	1.2	1.3	
Speed press	[m/s]	0.024	0.026	
Max. acceleration	[m/s <sup>2</sup> ]	6	6	
Repetition accuracy	[mm]	±0.1	±0.1	
Position sensing		For proximity switch		
		Via IO-Link		

Toothed belt			
Size		45	60
Pitch	[mm]	2	3
Elongation <sup>1)</sup>	[%]	0.187	0.124
Effective diameter	[mm]	19.1	24.83
Feed constant	[mm/rev.]	60	78

1) At max. feed force

Electrical data				
Size		45	60	
Motor	•			
Nominal voltage DC	[V]	24 (±15%)		
Nominal current	[A]	5.3		
Max. current consumption (load)	[A]	5.3		
Max. current consumption (logic)	[mA]	300		
Encoder				
Rotor position encoder		Absolute encoder, single turn		
Rotor position sensor measuring principle		Magnetic		
Rotor position encoder resolution	[bit]	16		

Interfaces			
Size		45	60
Parameterisation interface			
IO-Link		Yes	
User interface		Yes	
Digital inputs			
Number		2	
Switching logic		PNP	
		NPN	
Properties		Not galvanically isolated	
		Configurable	
Specification		Based on IEC 61131-2, type 1	
Working area	[V]	24	
Digital outputs			
Number		2	
Switching logic		PNP	
		NPN	
Rotor position encoder		Absolute encoder, single turn	
Properties		Not galvanically isolated	
		Configurable	
Max. current	[mA]	100	

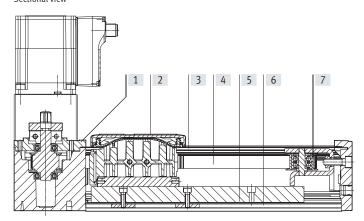
Technical data – IO-Link				
Size		45	60	
SIO-mode support		Yes		
Communication mode		COM3 (230.4 kBaud)		
Connection technology		Plug		
Port class		A		
Number of ports		1		
Process data width OUT	[bytes]	2		
Process data content OUT	[bit]	1 (Move in)		
	[bit]	1 (Move out)		
	[bit]	1 (Quit Error)		
Process data width IN	[bytes]	2		
Process data content IN	[bit]	1 (State Device)		
	[bit]	1 (State Move)		
	[bit]	1 (State in)		
	[bit]	1 (State out)		
Service data contents IN	[bit]	32 (Force)		
	[bit]	32 (Position)		
	[bit]	32 (Speed)		
Minimum cycle time	[ms]	1		
Data memory required	[Kilobyte]	0.5		
Protocol version		Device V 1.1		

Operating and environmental conditions				
Size		45	60	
Insulation class		В		
Ambient temperature	[°C]	0 +50		
Storage temperature	[°C]	-20 +60		
Note on ambient temperature		Above an ambient temperatu	e of 30°C, the power must be reduced by 2% per K	
Temperature monitoring		Switch-off for excessive temporal	rature	
		Integrated precise CMOS tem	Integrated precise CMOS temperature sensor with analogue output	
Relative humidity	[%]	0 90	090	
Protection class		III		
Degree of protection		IP40		
Duty cycle	[%]	100		
CE marking		To EU EMC Directive	To EU EMC Directive	
		To EU RoHS Directive		
KC mark		KC-EMV		
Certification		RCM compliance mark		
Vibration resistance		Transport application check with severity level 1 to FN 942017-4 and EN 61800-2 and EN 61800-5-1		
Shock resistance		Shock test with severity level	Shock test with severity level 1 to FN 942017-5 and EN 61800-2	
Maintenance interval		Life-time lubrication	Life-time lubrication	

Weight				
Size		45	60	
Basic weight with 0 mm stroke	[g]	1790	2955	
Additional weight per 10 mm stroke	[g]	23	43	
Moving mass at 0 mm stroke	[g]	169	482	

### Materials

Sectional view



Axis			
[1]	Drive cover	Painted die-cast aluminium	
[2]	Slide	Die-cast aluminium	
[3]	Cover strip	High-alloy stainless steel	
[4]	Toothed belt	Polychloroprene with glass filament and nylon	
		coating	
[5]	Guide	Steel	
[6]	Profile	Anodised wrought aluminium alloy	
[7]	Guide pulley	Aluminium	
	Note on materials	RoHS-compliant	
		Contains paint-wetting impairment substances	

### Pin allocation

Power supply

Plug

M12x1, 4-pin, T-coded to EN 61076-2-111



Pin	Function
1	Power supply (24 V DC)
2	Reference potential, power supply (GND)
3	Reserved, do not connect
4	Functional earth (FE)
	·

### Logic interface

Plug

M12x1, 8-pin, A-coded to EN 61076-2-101

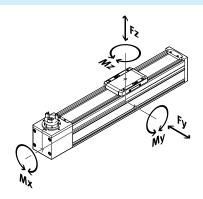


When used with	digital I/O		
Pin	Function		
1	Logic power supply (24 V DC)		
2	Digital output 1 (State "In")		
3	Digital output 2 (State "Out")		
4	Reference potential, logic power supply (GND)		
5	Digital input 1 (Move "In")		
6	Digital input 2 (Move "Out")		
7	Reserved, do not connect		
8	Reference potential, logic power supply (GND)		

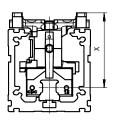
When used w	h I/O-Link		
Pin	Function		
1	L+ IO-Link power supply (24 V DC)		
2	Reserved, do not connect		
3	C/Q communication with the IO-Link master L - Reference potential, IO-Link power supply (0 V)		
4			
5	Reserved, do not connect		
6	Reserved, do not connect Reserved, do not connect L - Reference potential, IO-Link power supply (0 V)		
7			
8			

### Characteristic load values

The indicated forces and torques refer to the centre of the guide. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Distance from the slide surface to the centre of the guide



Max. permissible forces	Max. permissible forces and torques on the slide (strength limits)			
Size		45	60	
Fy <sub>max</sub> .	[N]	300	600	
Fz <sub>max</sub> .	[N]	600	1800	
Mx <sub>max</sub> .	[Nm]	5.5	29.1	
My <sub>max</sub> .	[Nm]	4.7	31.8	
Mz <sub>max</sub> .	[Nm]	4.7	31.8	

Distance from the slid	Distance from the slide surface to the centre of the guide			
Size		45	60	
Dimension x	[mm]	42.8	54.6	

Max. permissible forces	Max. permissible forces and torques for the bearing calculation, for a service life of 5000 km or 5 x 10 <sup>6</sup> cycles			
Size		45	60	
Fy <sub>max</sub> .	[N]	880	3641	
Fz <sub>max.</sub>	[N]	880	3641	
Mx <sub>max.</sub>	[Nm]	5.5	29.1	
My <sub>max</sub> .	[Nm]	4.7	31.8	
Mz <sub>max.</sub>	[Nm]	4.7	31.8	



### - Note

For a guide system to have a service life of 5000 km, the load comparison factor must have a value of  $fv \le 1$ , based on the maximum permissible forces and torques for a service life of 5000 km.

This formula can be used to calculate a guide value.

The engineering software "PositioningDrives" is available

for more precise calculations  $\rightarrow$  www.festo.com

If the axis is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

$$f_v = \frac{\left|F_{y1}\right|}{F_{y2}} + \frac{\left|F_{z1}\right|}{F_{z2}} + \frac{\left|M_{x1}\right|}{M_{x2}} + \frac{\left|M_{y1}\right|}{M_{y2}} + \frac{\left|M_{z1}\right|}{M_{z2}} \leq 1$$

 $F_1/M_1 = dynamic value$ 

 $F_2/M_2 = maximum value$ 

### Calculating the service life

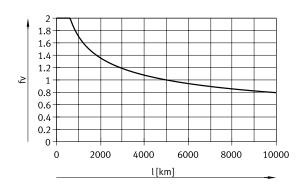
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor fv against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor fv greater than 1.

### Load comparison factor fv as a function of service life l

### Example:

A user wants to move an x kg load. Using the formula ( $\rightarrow$  page 12) gives a value of 1.5 for the load comparison factor fv. According to the graph, the guide has a service life of approx. 1500 km. Reducing the acceleration reduces the My and Mz values. A load comparison factor fv of 1 now gives a service life of 5000 km.



### Comparison of the characteristic load values for 5000 km with dynamic forces and torques of recirculating ball bearing guides

The characteristic load values of bearing guides are standardised to ISO and JIS using dynamic and static forces and torques. These forces and torques are based on an expected service life of the guide system of 100 km according to ISO or 50 km according to JIS.

As the characteristic load values are dependent on the service life, the maximum permissible forces and torques for a 5000 km service life cannot be compared with the dynamic forces and torques of bearing guides to ISO/JIS.

To make it easier to compare the guide capacity of linear axes ELGS with bearing guides, the table below lists the theoretically permissible forces and torques for a calculated service life of 100 km. This corresponds to the dynamic forces and torques to ISO.

These 100 km values have been calculated mathematically and are only to be used for comparing with dynamic forces and torques to ISO. The drives must not be loaded with these characteristic values as this could damage the axes.

Max. permissible forces and to	ax. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)			
Size	_	45	60	
Fy <sub>max.</sub>	[N]	3240	13400	
Fz <sub>max</sub> .	[N]	3240	13400	
Mx <sub>max</sub> .	[Nm]	20	107	
My <sub>max.</sub>	[Nm]	17	117	
Mz <sub>max</sub> .	[Nm]	17	117	

### Service life of the motor

The service life of the motor at nominal power is 20000 h.

### Sizing example

Application data:

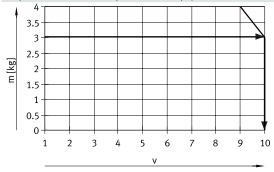
- Payload: 3 kg
- Mounting position: horizontal
- Stroke: 600 mm
- Max. permitted positioning time: 1 s (one direction)

Step 1: Selection of the possible size from the table → page 8

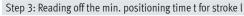
Mechanical data				
Size		45	60	
Max. payload	[kg]	2.5	4	

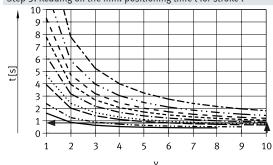
→ Smallest possible size: ELGS-TB-KF-60

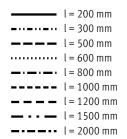
Step 2: Selection of max. speed level v for payload m











→ Min. positioning time for 600 mm at level 10: 0.8 s

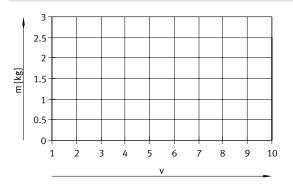
### ightharpoonup Max. speed level for payload: level 10

### Result

The application can be implemented using ELGS-TB-KF-60-600. A minimum positioning time (one direction) of 0.8 s is achieved. Longer positioning times can be selected at any time using a lower speed level.

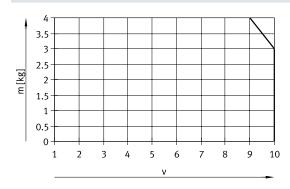
### Mass m as a function of speed level v

Size 45



Horizontal

### Size 60

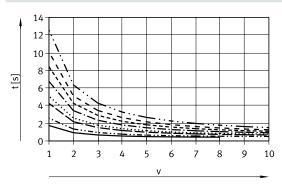


Note:

The lines represent the maximum values. The lower speed levels can be set at any time.

### Positioning time t as a function of speed level v and stroke l

Size 45



l = 200 mm

l = 300 mm

l = 500 mm

l = 600 mm

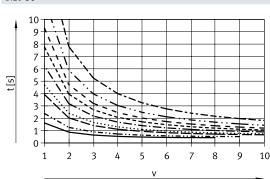
l = 800 mm

l = 1000 mm

l = 1200 mm

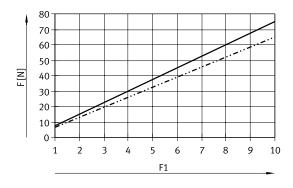
l = 1200 mm

### Size 60



l = 200 mm
l = 300 mm
l = 500 mm
l = 600 mm
l = 600 mm
l = 1000 mm
l = 1200 mm
l = 1200 mm
l = 1500 mm
l = 1500 mm

### Feed force F as a function of force level F1



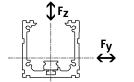
ELGS-TB-45
ELGS-TB-60

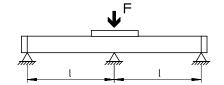
### Maximum permissible support spacing L (without profile mounting) as a function of force F

In order to limit deflection in the case of large strokes, the axis may need to be supported.

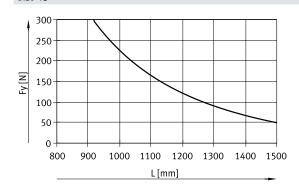
The following graphs can be used to determine the maximum permissible support spacing l as a function of force F acting on the axis.

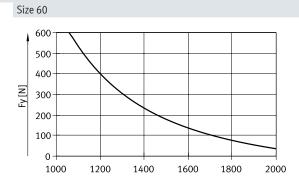
The deflection is f = 0.5 mm.





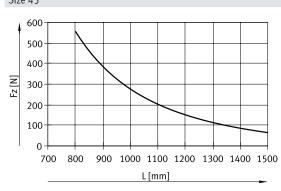
Force F<sub>y</sub> Size 45



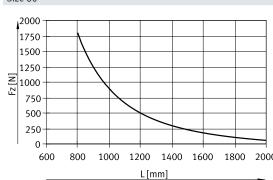


L[mm]

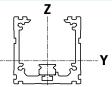
Force F<sub>z</sub> Size 45







### 2nd moment of area

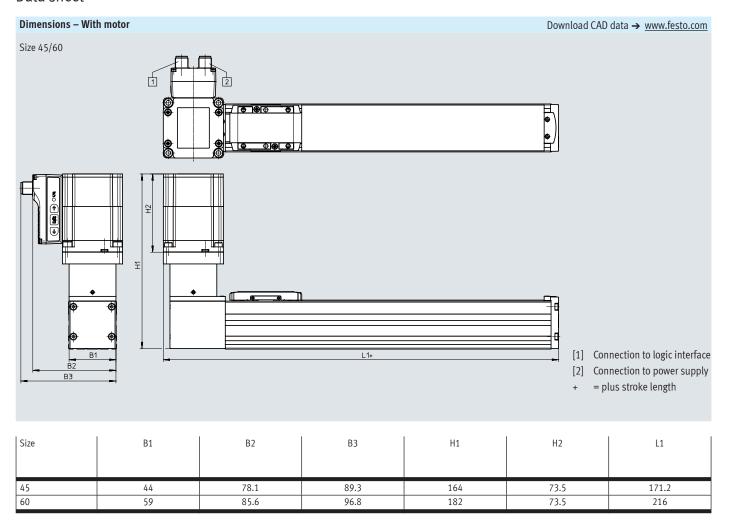


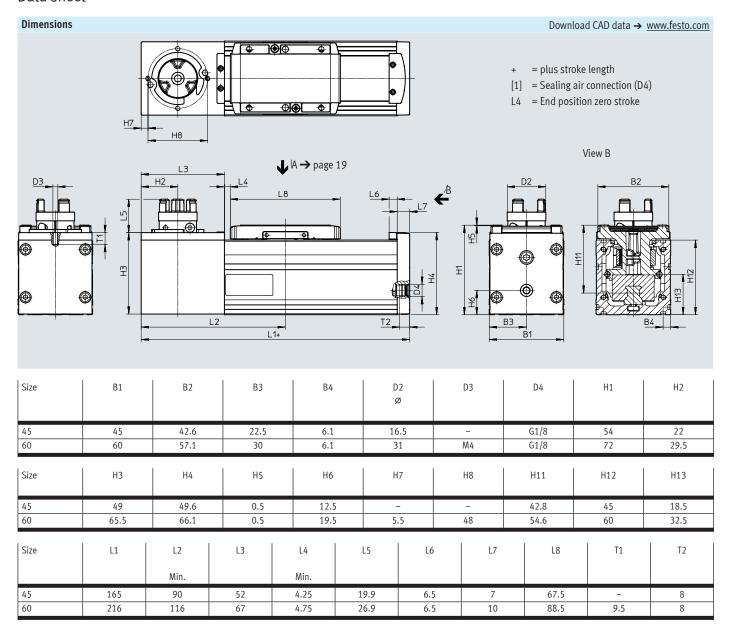
Size			45	60
ſ	ly [n	mm <sup>4</sup> ]	140x10 <sup>3</sup>	441x10 <sup>3</sup>
Γ	lz [n	mm <sup>4</sup> ]	170x10 <sup>3</sup>	542x10 <sup>3</sup>

### **Recommended deflection limits**

Adherence to the following deflection limits is recommended so as not to impair the functional performance of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

	Dynamic deflection (moving load)	Static deflection (stationary load)
45 60	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length





# Profile Size 45 Size 60 [1] = Slot for sensor bracket [2] = Mounting slot Size B1 B5 H9 H10

6.1

6.1

45

60

45

60

32.9

47.9

24.5

38.5

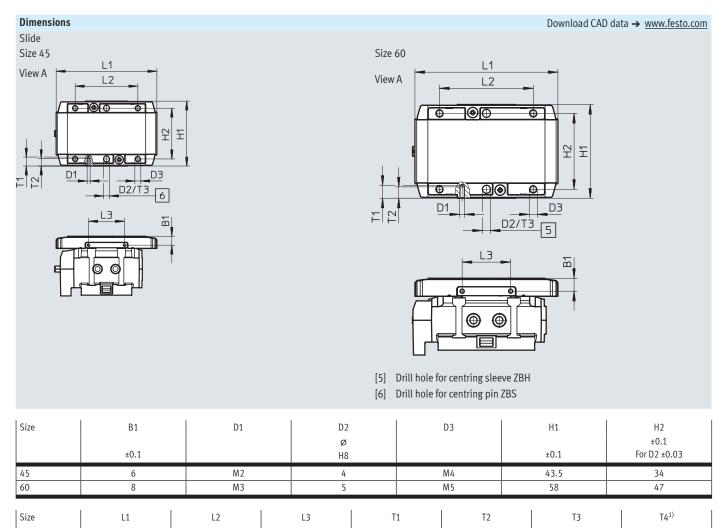
+0.1

3.1

1.3

6 ... 7.5 8.5 ... 10

### Data sheet



67.5

88.5

45

60

±0.1

42

58

±0.1

24

30

6

9

5

<sup>1)</sup> Recommended screw-in depth

# Ordering data

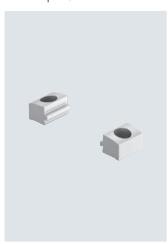
Ordering data				
	Size	Stroke	Part no.	Туре
	45	200	8083665	ELGS-TB-KF-45-200-ST-M-H1-PLK-AA
		300	8083666	ELGS-TB-KF-45-300-ST-M-H1-PLK-AA
		500	8083667	ELGS-TB-KF-45-500-ST-M-H1-PLK-AA
		600	8083668	ELGS-TB-KF-45-600-ST-M-H1-PLK-AA
		800	8083669	ELGS-TB-KF-45-800-ST-M-H1-PLK-AA
		1000	8083670	ELGS-TB-KF-45-1000-ST-M-H1-PLK-AA
		1200	8083671	ELGS-TB-KF-45-1200-ST-M-H1-PLK-AA
		1500	8083672	ELGS-TB-KF-45-1500-ST-M-H1-PLK-AA
	60	200	8083570	ELGS-TB-KF-60-200-ST-M-H1-PLK-AA
		300	8083571	ELGS-TB-KF-60-300-ST-M-H1-PLK-AA
		500	8083572	ELGS-TB-KF-60-500-ST-M-H1-PLK-AA
		600	8083573	ELGS-TB-KF-60-600-ST-M-H1-PLK-AA
		800	8083574	ELGS-TB-KF-60-800-ST-M-H1-PLK-AA
		1000	8083575	ELGS-TB-KF-60-1000-ST-M-H1-PLK-AA
		1200	8083576	ELGS-TB-KF-60-1200-ST-M-H1-PLK-AA
		1500	8083577	ELGS-TB-KF-60-1500-ST-M-H1-PLK-AA
		1800	8083578	ELGS-TB-KF-60-1800-ST-M-H1-PLK-AA
		2000	8083579	ELGS-TB-KF-60-2000-ST-M-H1-PLK-AA

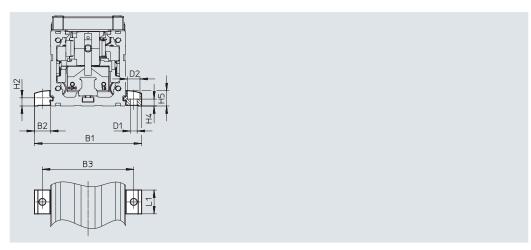
# Ordering data – Modular product system

Ordering table Size	45	60			Enter code
Module no.	8083664	8083557			
Series	ELGS			ELGS	ELGS
Drive system	Toothed belt			-TB	-TB
Guide	Recirculating ball bearing guide			-KF	-KF
Size	45	60			
Stroke [mm	200, 300, 500, 600, 800, 1000, 1200, 1500	200, 300, 500, 600, 800, 1000, 1200, 1500, 1800, 2000			
Motor type	Stepper motor ST			-ST	-ST
Controller	Integrated			-M	-M
Control panel	Integrated			-H1	-H1
Bus protocol/control	NPN and IO-Link			-NLK	
	PNP and IO-Link			-PLK	
End-position sensing	With integrated end-position sensing			-AA	-AA
Cable outlet direction	Rear				
	Front			-F	
	Left			-L	
	Right			-R	
Electrical accessories	None				
	Adapter for operation as IO-Link device			+L1	
Operating instructions	With operating instructions				
	Without operating instructions			DN	

### Profile mounting EAHF-L2-...-P-S

Material: Anodised wrought aluminium alloy RoHS-compliant • For mounting the axis on the side of the profile





Dimensions and ord	ering data					
For size	B1	B2	В3	D1	D2	H2
				Ø	Ø	
				H13	H13	
45	70.6	12.8	58	5.5	10	6.1
60	85.6	12.8	73	5.5	10	6.1

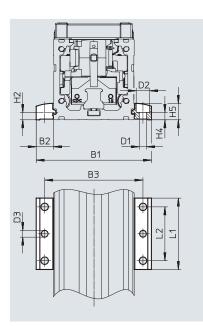
For size	H4 ±0.1	Н5	L1	Weight [g]	Part no.	Туре
45	5.5	12.2	19	6	5184133	EAHF-L2-45-P-S
60	5.5	12.2	19	6	5184133	EAHF-L2-45-P-S

### Profile mounting EAHF-L2-...-P

Material: Anodised wrought aluminium alloy RoHS-compliant • For mounting the axis on the side of the profile.

The profile mounting can be attached to the mounting surface using the drill hole in the centre.





Dimensions and ord	ering data						
For size	B1	B2	B3	D1	D2	D3	H2
				Ø	Ø	Ø	
				H13	H13		
45	70.6	12.8	58	5.5	10	5	6.1
60	85.6	12.8	73	5.5	10	5	6.1

For size	H4 ±0.1	H5	L1	L2	Weight [g]	Part no.	Туре
45	5.5	12.2	53	40	35	4835728	EAHF-L2-45-P
60	5.5	12.2	53	40	35	4835728	EAHF-L2-45-P

### Profile mounting EAHF-L2-...-P-D...

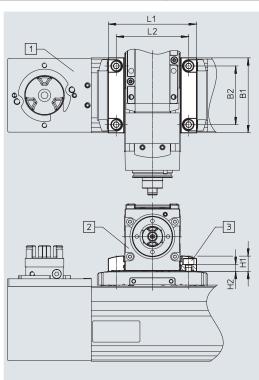
Material:

Anodised wrought aluminium alloy RoHS-compliant

- For axis/axis mounting without adapter plate
- Mounting option: base axis with one-size-down assembly axis (→ page 4)

	Combination matrix				
			[2] Assembly axis ELGC-BS/-TB; ELFC; EG	SC-BS	
		Size	32	45	60
Ī	[1] Base axis	45	4759748	-	-
	ELGC-BS/-TB, ELFC	60	_	4759739	_





- [1] Base axis
- [2] Assembly axis

Dimensions and ordering	g data			
For combination (size)	B1	B2	D1	H1
60/45	60	47	M5	12.2

For combination (size)	H2 ±0.1	L1	L2	Weight [g]	Part no.	Туре
60/45	5.5	70.6	58	56	4759739	EAHF-L2-45-P-D3

→ Internet: www.festo.com/catalogue/...

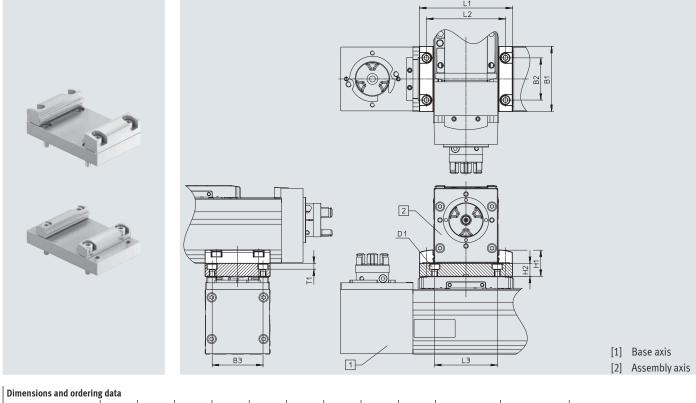
### Adapter kit EHAA-D-L2

Material:

Anodised wrought aluminium alloy RoHS-compliant

- For axis/axis mounting with adapter plate
- Mounting option: base axis with same size or one-size-down assembly axis
   (→ page 4)

Combination matrix					
		[2] Assembly axis	ELGC-BS/-TB; ELFC; EGSC-BS		
	Size	32	45	60	80
[1] Base axis	45	8066714		-	-
ELGC-BS/-TB; ELFC	60	-	8066715		-



Dimensions and ordering	ng data												
For combination	B1	B3	D1	H1	н	2	L1	L2	L3	T1	Weight	Part no.	Туре
(size)		±0.05									[g]		
60/45	60	47	M5	24.2	2 1	2 :	70.6	58	58	5.4	205	8066715	EHAA-D-L2-60-L2-60
1	1 - 1	1		- 1			1	1	1	1 -	I	1-	1-
For combination	B1	B2	В3	D1	H1	H2	L1	L2	L3	T1	Weight	Part no.	Туре
For combination (size)	B1	B2	B3 ±0.05	D1	H1	H2	L1	L2	L3	T1	Weight	Part no.	Туре

### Angle kit EHAA-D-L2-...-AP

Material:

Anodised wrought aluminium alloy

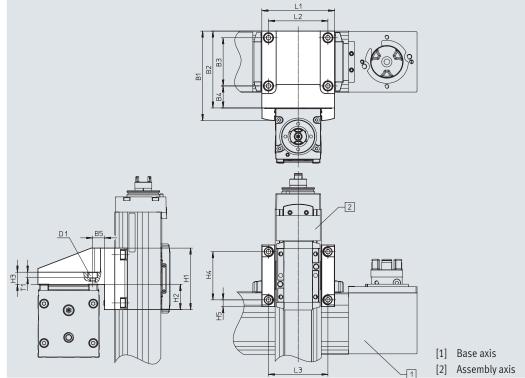
RoHS-compliant

• For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position "slide at top"

(→ page 4)

Combination matrix									
		[2] Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS							
	Size	32	45	60					
[1] Base axis	45	8066718	-	-					
ELGC-BS/-TB; ELFC	60	-	8066719	-					





Dimensions and ordering data										
For combination	B1	B2	В3	B4	B5	D1	H1	H2	Н3	H4
(size)										
60/45	87.2	75	47	21.5	21.5	M5	60	24.5	12	47

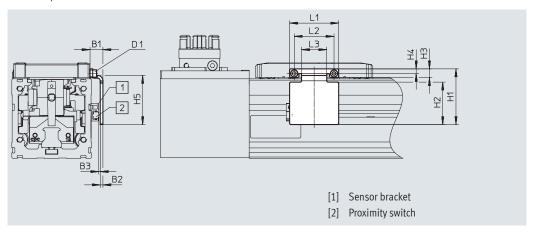
For combination (size)	H5	L1	L2	L3	T1	Weight [g]	Part no.	Туре
60/45	6.5	71	58	58	5.4	433	8066719	EHAA-D-L2-60-L2-45-AP

### Switch lug EAPM-L2-SLS

For sensing using inductive proximity switches SIES-8M

Material: Galvanised steel RoHS-compliant





Dimensions and ord	Dimensions and ordering data								
For size	B1	B2	В3	D1	H1	H2	Н3	H4	
					±0.2				
45	9.4	2	1.2±0.31	M2	37	28	5.5	3.3	
60	9.7	2	1.3±0.31	M3	42	32	6.6	3.5	

For size	H5	L1	L2	L3	Weight	Part no.	Туре
	±0.2	±0.2	±0.15		[g]		
45	33	30	24	14	18	8067260	EAPM-L2-45-SLS
1 '-		, ,,		'	1 -0	000,200	

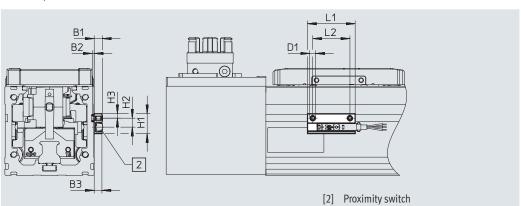
### Sensor bracket EAPM-L2-SH

Material:

Anodised wrought aluminium alloy

RoHS-compliant





Dimensions and ordering data								
For size	B1	B2	D1	H1	H2			
45,60	5.5	1.3	M4	13.4	6			

45, 60	2	22	25	[g]	4759852	EAPM-L2-SH
For size	H3	L1	L2	Weight	Part no.	Туре

Ordering data										
	For size	Description	Part no.	Туре	PE <sup>1)</sup>					
Centring pin ZBS	Centring pin ZBS/centring sleeve ZBH									
	45	For slide	562959	ZBS-4	10					
	60		189652	ZBH-5						
Clamping compo	onent EADT									
	45	Tool for retensioning the cover strip	8065818	EADT-S-L5-32	1					
	60		8058451	EADT-S-L5-70						
$\overline{}$										

1) Packaging unit

ŭ	- Proximity switches for T-slot, inductive	10	Lecture 1	1011111	ls .	Data sheets → Internet: si
	Type of mounting	Switching	Electrical connection	Cable length	Part no.	Туре
		output		[m]		
I/O contact						
	Insertable in the slot from above, flush	PNP	Cable, 3-wire	7.5	551386	SIES-8M-PS-24V-K-7,5-0E
<b>1</b>	with the cylinder profile		Plug M8x1, 3-pin	0.3	551387	SIES-8M-PS-24V-K-0,3-M8D
		NPN	Cable, 3-wire	7.5	551396	SIES-8M-NS-24V-K-7,5-OE
			Plug M8x1, 3-pin	0.3	551397	SIES-8M-NS-24V-K-0,3-M8D
I/C contact						
	Insertable in the slot from above, flush	PNP	Cable, 3-wire	7.5	551391	SIES-8M-PO-24V-K-7,5-OE
<b>S</b>	with the cylinder profile		Plug M8x1, 3-pin	0.3	551392	SIES-8M-PO-24V-K-0,3-M8D
<i>?/</i> /		NPN	Cable, 3-wire	7.5	551401	SIES-8M-NO-24V-K-7,5-OE
			Plug M8x1, 3-pin	0.3	551402	SIES-8M-NO-24V-K-0,3-M8D

Ordering data –	Proximity switches for T-slot, magneto-re	sistive				Data sheets → Internet: smt		
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Туре		
N/O contact								
	Inserted in the slot from above,	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2,5-OE		
N. S. C.	flush with the cylinder profile,		Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0,3-M8D		
The state of the s	short design							
N/C contact								
3	Inserted in the slot from above,	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7,5-0E		
W. C. C.	flush with the cylinder profile, short design							

Ordering data -	Connecting cables		Data sheets → Internet: nebu		
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Туре
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
<b>4</b>			5	541341	NEBU-M8W3-K-5-LE3



### Note

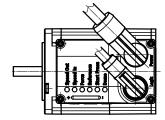
Proximity switches are optional and only required in order to sense any intermediate positions.

Ordering data -	- Supply cables				Data sheets → Internet: nebl
	Electrical connection, left Electrical connection, right		Cable length	Part no.	Туре
			[m]		
	Angled socket, M12x1, 4-pin	Cable, open end, 4-wire	2	8080778	NEBL-T12W4-E-2-N-LE4
			5	8080779	NEBL-T12W4-E-5-N-LE4
			10	8080780	NEBL-T12W4-E-10-N-LE4
			15	8080781	NEBL-T12W4-E-15-N-LE4
	Straight socket, M12x1, 4-pin	Cable, open end, 4-wire	2	8080790	NEBL-T12G4-E-2-N-LE4
30			5	8080791	NEBL-T12G4-E-5-N-LE4
			10	8080792	NEBL-T12G4-E-10-N-LE4
			15	8080793	NEBL-T12G4-E-15-N-LE4

Ordering data − Connecting cables  Data sheets → Internet: nebc							
	Electrical connection, left	Electrical connection, right	Cable length	Part no.	Туре		
			[m]				
	Angled socket, M12x1, 8-pin	Cable, open end, 8-wire	2	8094476	NEBC-M12W8-E-2-N-B-LE8		
			5	8094478	NEBC-M12W8-E-5-N-B-LE8		
			10	8094481	NEBC-M12W8-E-10-N-B-LE8		
			15	8094479	NEBC-M12W8-E-15-N-B-LE8		
<b>E</b>		Straight plug, M12x1, 8-pin	2	8080786	NEBC-M12W8-E-2-N-M12G8		
			5	8080787	NEBC-M12W8-E-5-N-M12G8		
			10	8080788	NEBC-M12W8-E-10-N-M12G8		
			15	8080789	NEBC-M12W8-E-15-N-M12G8		
STATE OF THE PARTY	Straight socket, M12x1, 8-pin	Cable, open end, 8-wire	2	8094480	NEBC-M12G8-E-2-N-B-LE8		
			5	8094477	NEBC-M12G8-E-5-N-B-LE8		
			10	8094482	NEBC-M12G8-E-10-N-B-LE8		
			15	8094475	NEBC-M12G8-E-15-N-B-LE8		
		Straight plug, M12x1, 8-pin	2	8080782	NEBC-M12G8-E-2-N-M12G8		
			5	8080783	NEBC-M12G8-E-5-N-M12G8		
			10	8080784	NEBC-M12G8-E-10-N-M12G8		
			15	8080785	NEBC-M12G8-E-15-N-M12G8		



The cables are positioned at a 45° angle to the axis.



Ordering data − IO-Link master USB  Data sheets → Internet: cdsu						
	Description	Cable length [m]	Part no.	Туре		
	For using the unit with IO-Link     An external power supply plug is additionally required     (not in scope of delivery)	0.3	8091509	CDSU-1		

Ordering data – Adapter  Data sheets → Internet: nefc								
	Electrical connection, left	Electrical connection, right	Cable length	Part no.	Type			
			[m]					
OLD STEEL	Straight socket, M12x1, 8-pin	Straight plug, M12x1, 5-pin     Only for use with IO-Link Port Class A     Master (recommended)	0.3	8080777	NEFC-M12G8-0.3-M12G5-LK			

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