



- Analogue and digital
- For measuring and positioning
- For use with pneumatic components

Displacement encoders

Key features

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Analogue displacement encoders

MLO-POT-...-TLF

- Conductive plastic potentiometer
- Absolute measurements with high resolution
- High speeds of travel and long service life
- Plug-in connections
- Stroke: 225 ... 2000 mm



MLO-POT-...-LWG

- Connecting rod potentiometer
- Absolute measurements with high resolution
- Long service life
- High degree of protection
- Plug-in connections
- Stroke: 100 ... 750 mm



Digital displacement encoders

MME-MTS-...-AIF










- Magnetostrictive measuring principle
- Contactless with absolute measurements
- High speeds of travel
- Long service life
- High degree of protection
- Several mounting options on pneumatic linear drives DGPL
- Plug-in connections
- Stroke: 225 ... 2000 mm




Displacement encoders

Selection aid

Recommended combinations of displacement encoder, drive and controller

Function	Version	Linear drive	Standard cylinder	End position controller		Axis controller		→ Page/ Internet
		DGC-K	DSBC	CPX-CMPX	SPC11	CPX-CMAX	CPX-CMIX	
								
Analogue	MLO-POT-TLF 	■	-	■	■	■	■	4
	MLO-POT-LWG 	-	■	■	■	■	■	6
Digital	MME-MTS-AIF 	■	-	■	■	■	■	8

 Note
The displacement encoders can be combined with any linear drive provided that the installation conditions are adhered to and the customer uses the appropriate mounting.

Type code

MLO	-	POT	-	225	-	TLF
Type						
MLO	Analogue displacement encoder					
MME	Digital displacement encoder					
Measuring principle						
POT	Potentiometric					
MTS	Magnetostrictive					
Stroke [mm]						
Version						
TLF	Profile					
LWG	Connecting rod					
AIF	Integrated AIF interface					

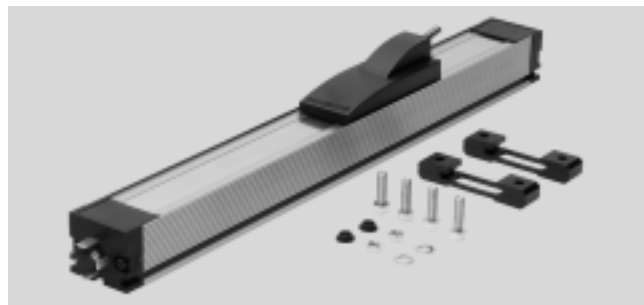
Displacement encoders MLO-POT, analogue

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Technical data

MLO-POT...-TLF

- Stroke length
225 ... 2000 mm



General technical data													
Stroke		225	300	360	450	500	600	750	1000	1250	1500	1750	2000
Constructional design	Open profile with cover strip and sliding cartridge												
Measuring principle	Analogue displacement encoder, with contact and absolute measurement												
Resolution	[mm]	0.01											
Max. speed of travel	[m/s]	10											
Max. acceleration	[m/s ²]	200											
Mounting position	Any												
Driver, ball coupling	Angle offset	[°]	±1										
	Parallel offset	[mm]	±1.5										
Service life	Strokes	[10 ⁶]	Typical 100										
Connection	4-pin plug, type A DIN 43 650												
Product weight	[g]	900	1000	1100	1200	1300	1500	1800	2200	2500	3000	3500	3900

General electrical data													
Stroke		225	300	360	450	500	600	750	1000	1250	1500	1750	2000
Power supply	[V DC]	10 ¹⁾											
Max. current consumption	[mA]	4											
Wiper current	recommended	[µA]	< 1										
	maximum	[mA]	10 ²⁾										
Connection resistance	[kΩ]	5	5	5	5	5	5	10	10	10	20	20	20
Connection resistance tolerance	[%]	±20											
Independent linearity	[%]	0.07	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.02
Temperature coefficient	[ppm/°K]	5											
Interface	Analogue												

- 1) Stabilised power supply is recommended, max. 42 V DC permissible.
- 2) Only permissible in the short-term in the event of a fault.

Operating and environmental conditions													
Stroke		225	300	360	450	500	600	750	1000	1250	1500	1750	2000
Ambient temperature	[°C]	-30 ... +100 ¹⁾											
Protection class	top	IP40 to IEC 60529											
	bottom	IP42 to IEC 60529 ²⁾											
Vibration resistance	To DIN/IEC 68 Parts 2 – 6, severity level 2												
Continuous shock resistance	To DIN/IEC 68 Parts 2 – 27, severity level 2												
CE marking symbol (see conformity declaration)	As per EU EMC directive												

- 1) Please note temperature ranges of individual components used in a complete system solution.
- 2) The encoder slide points downwards in the inverted mounting position.

Materials		
Housing		Anodised aluminium
Cover		Plastic
Moving slide	Housing	Aluminium, plastic
	Connection	Steel ball, carbide plate
Cover		Steel band
Mounting clip		Polyetherimide

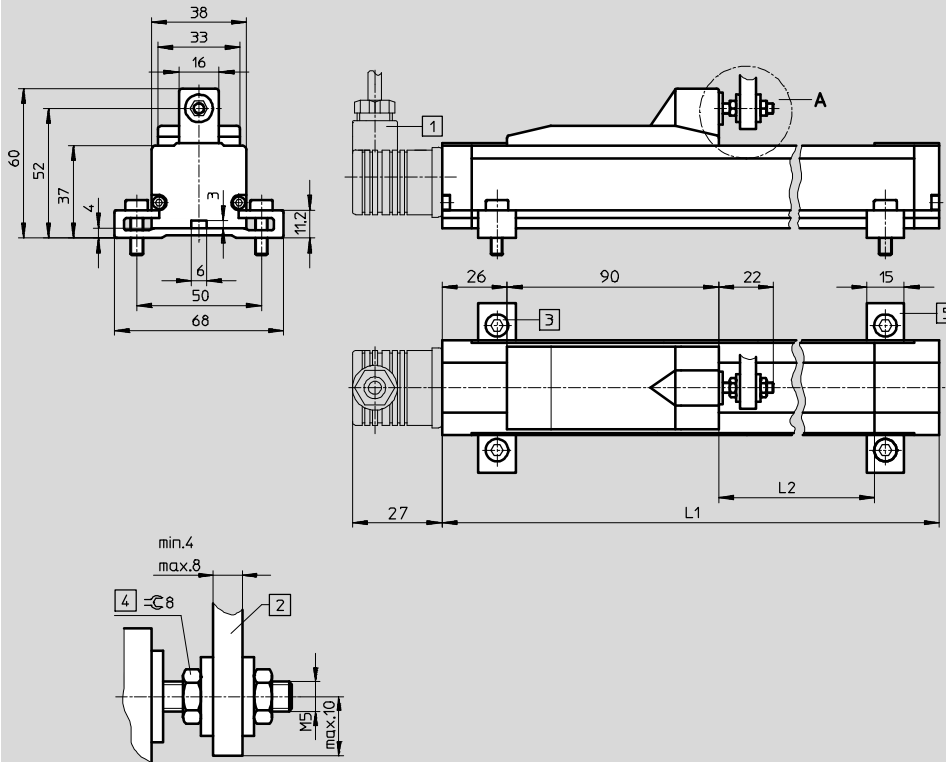
Displacement encoders MLO-POT, analogue

Technical data and accessories

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Dimensions

Download CAD data → www.festo.com

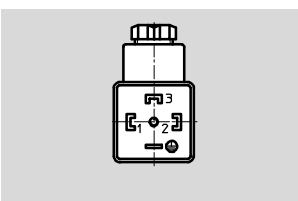


- 1 Plug socket, 4-pin to DIN 43 650
Insert 90° rotatable (not included in scope of delivery)
- 2 Driver (not included in scope of delivery)
- 3 Mounting screw M5x18
- 4 Hex nut M5
- 5 Adjustable mounting clips are included

Dimensions and ordering data

Stroke [mm]	L1	L2 (effective mechanical/electrical displacement)	Part No.	Type
225	376	234/228	152 625	MLO-POT-225-TLF
300	452	310/304	152 626	MLO-POT-300-TLF
360	514	372/366	152 627	MLO-POT-360-TLF
450	605	463/457	152 628	MLO-POT-450-TLF
500	656	514/508	152 629	MLO-POT-500-TLF
600	758	616/610	152 630	MLO-POT-600-TLF
750	910	768/762	152 631	MLO-POT-750-TLF
1000	1164	1022/1016	152 632	MLO-POT-1000-TLF
1250	1418	1276/1270	152 633	MLO-POT-1250-TLF
1500	1668	1526/1520	152 634	MLO-POT-1500-TLF
1750	1918	1776/1770	152 635	MLO-POT-1750-TLF
2000	2168	2026/2020	152 636	MLO-POT-2000-TLF

Ordering data – Accessories



PIN	Pin allocation	Designation	Part No.	Type
1	Power supply	Connector plug	171 157	MSSD-C-4P
2	Signal			
3	0 V			
PE	PE (yellow), screen			

Displacement encoders MLO-POT, analogue

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Technical data

MLO-POT...-LWG

- Stroke length
100 ... 750 mm



General technical data			100	150	225	300	360	450	500	600	750
Stroke											
Constructional design	Round profile with connecting rod										
Measuring principle	Analogue displacement encoder, with contact and absolute measurement										
Resolution	[mm]	0.01									
Max. speed of travel	[m/s]	5									
Max. acceleration	[m/s ²]	200									
Mounting position	Any										
Driver, ball coupling	Angle offset	[°]	±12.5								
	Parallel offset	[mm]	-								
Service life	Strokes	[10 ⁶]	Typical 50								
Connection	4-pin square plug										
Product weight	[g]										

General electrical data			100	150	225	300	360	450	500	600	750
Stroke											
Power supply	[V DC]	10 ¹⁾									
Max. current consumption	[mA]	4									
Wiper current	recommended	[µA]	< 1								
	maximum	[mA]	10 ²⁾								
Connection resistance	[kΩ]	3	5	5	5	5	5	5	5	5	10
Connection resistance tolerance	[%]	±20									
Independent linearity	[%]	0.1	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.04
Temperature coefficient	[ppm/°K]	5									
Interface	Analogue										

- 1) Stabilised power supply is recommended, max. 42 V DC permissible.
- 2) Only permissible in the short-term in the event of a fault.

Operating and environmental conditions			100	150	225	300	360	450	500	600	750
Stroke											
Ambient temperature	[°C]	-30 ... +100 ¹⁾									
Protection class	IP65										
Vibration resistance	To DIN/IEC 68 Parts 2 – 6, severity level 2										
Continuous shock resistance	To DIN/IEC 68 Parts 2 – 27, severity level 2										
CE marking symbol (see conformity declaration)	As per EU EMC directive										

- 1) Please note temperature ranges of individual components used in a complete system solution.

Materials		
Housing	Anodised aluminium	
Bearing cap	Reinforced polyester	
Bearing seal	Nitrile rubber	
Connecting rod	Corrosion resistant steel	
Wiper	Contact	Stainless steel
	Silencer	Elastomer

Displacement encoders MLO-POT, analogue

Technical data and accessories

Note

The mechanical vibrations of the piston rod must not be transmitted to the displacement encoder. The displacement encoder is earthed to a screw on the end cap using a

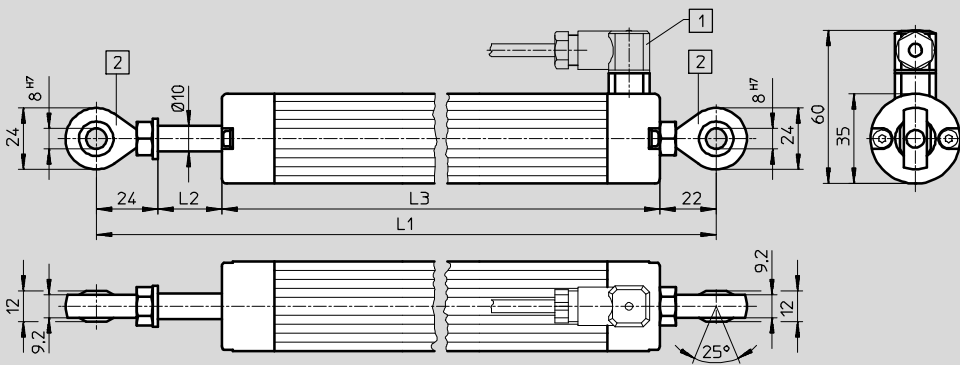
cable lug or earthing strap that must be connected to the earthing screw of the SPC11-...-LWG housing. The earthing cable should not be longer than the encoder cable of the

SPC11-...-LWG. The connection must be designed to be low-resistance. The conductor cross-section must be at least 1.5 mm².

An earthing strap (braided) should be used instead of a round cable as earthing straps are considerably more effective at dissipating interference.

Dimensions

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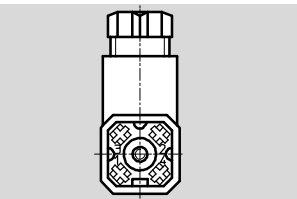


- 1 Plug socket, 4-pin
Type: SD-4-WD-7
Insert 90° rotatable
(not included in scope of delivery)
- 2 Rod eye, backlash-free

Dimensions and ordering data

Stroke [mm]	L1	L2 (effective mechanical/electrical displacement)	L3	Part No.	Type
100	273	105/102	227	192 213	MLO-POT-100-LWG
150	323	155/152	277	192 214	MLO-POT-150-LWG
225	400	231/228	354	152 645	MLO-POT-225-LWG
300	476	307/304	430	152 646	MLO-POT-300-LWG
360	551	368/366	505	152 647	MLO-POT-360-LWG
450	665	460/457	619	152 648	MLO-POT-450-LWG
500	730	510/508	684	152 649	MLO-POT-500-LWG
600	856	612/610	810	152 650	MLO-POT-600-LWG
750	1040	764/762	994	152 651	MLO-POT-750-LWG

Ordering data – Accessories



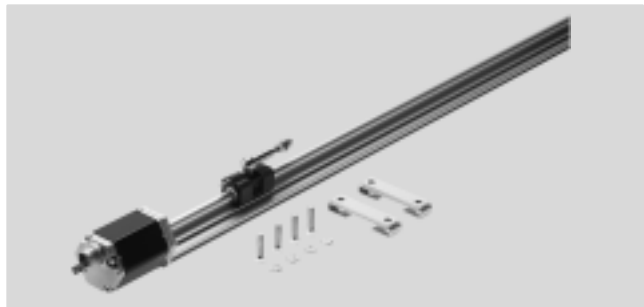
PIN	Pin allocation	Designation	Part No.	Type
1	Power supply	Plug socket	194 332	SD-4-WD-7
2	Signal			
3	0 V			
4	PE (yellow), screen			

Displacement encoders MME-MTS, digital

Technical data

MME-MTS-...-AIF

- Stroke length
225 ... 2000 mm



General technical data													
Stroke		225	300	360	450	500	600	750	1000	1250	1500	1750	2000
Constructional design	Closed profile with outer slide												
Measuring principle	Digital, magnetostrictive, non-contacting and absolute measurement												
Resolution	[mm]	< 0.01											
Max. speed of travel	[m/s]	10											
Max. acceleration	[m/s ²]	200											
Mounting position	Any												
Driver, ball coupling	Angle offset	[°]	±1										
	Parallel offset	[mm]	±1.5										
Service life	MTBF	[10 ⁶ /h]	> 4 ¹⁾										
Connection	6-pin round plug to DIN 45 322												
Product weight	[g]	620	710	780	890	950	1070	1250	1550	1850	2150	2450	2750

1) For the waveguide

General electrical data		
Power supply	[V DC]	24 (-15/+20%)
Max. current consumption	[mA]	90
Independent linearity	[%]	0.02 ¹⁾
Temperature coefficient	[ppm/°K]	15
Interface	Digital, CAN with protocol: SPC-AIF	

1) Min. ±50 µm

Operating and environmental conditions		
Ambient temperature	[°C]	-40 ... +75 ¹⁾
Protection class	IP65	
Vibration resistance	To DIN/IEC 68 Parts 2 – 6, severity level 1	
Continuous shock resistance	To DIN/IEC 68 Parts 2 – 27, severity level 1	
CE marking symbol (see conformity declaration)	As per EU EMC directive	

1) Please note temperature ranges of individual components used in a complete system solution

Materials		
Housing	Wrought aluminium alloy, anodised	
Cover	Die-cast aluminium, painted	
Moving slide	Housing	Reinforced polyester, permanent magnet
	Connection	Steel ball, hard metal plate
Mounting clip	Polyetherimide	

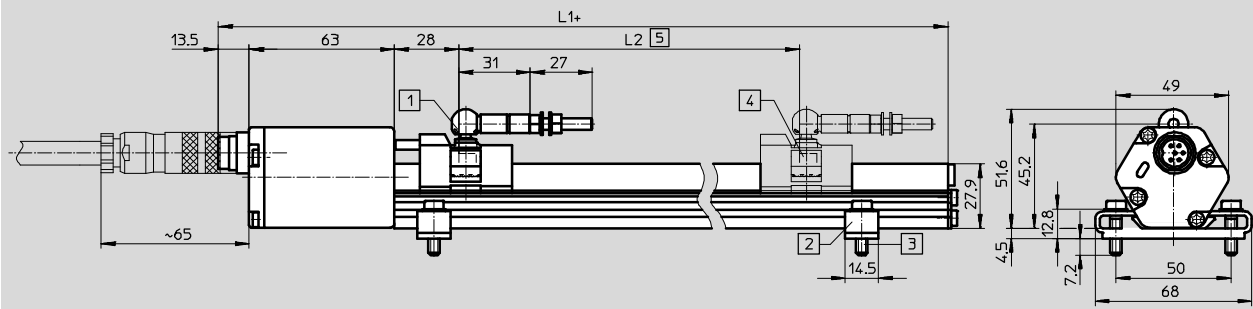
Displacement encoders MME-MTS, digital

Technical data

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Dimensions

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- 1 Slide positions
- 2 Adjustable mounting clips are included
- 3 Socket head screw M5x20
- 4 Magnet
- 5 Effective displacement
- 6 Plug is a component of the axis interface SPC-AIF-MTS and Soft Stop SPC11-MTS-AIF

Dimensions and ordering data

Stroke [mm]	L1	L2 (effective path)	Part No.	Type
225	395	225	178 310	MME-MTS-225-TLF-AIF
300	470	300	178 309	MME-MTS-300-TLF-AIF
360	530	360	178 308	MME-MTS-360-TLF-AIF
450	620	450	178 307	MME-MTS-450-TLF-AIF
500	670	500	178 306	MME-MTS-500-TLF-AIF
600	770	600	178 305	MME-MTS-600-TLF-AIF
750	920	750	178 304	MME-MTS-750-TLF-AIF
1000	1170	1000	178 303	MME-MTS-1000-TLF-AIF
1250	1420	1250	178 302	MME-MTS-1250-TLF-AIF
1500	1670	1500	178 301	MME-MTS-1500-TLF-AIF
1750	1920	1750	178 300	MME-MTS-1750-TLF-AIF
2000	2170	2000	178 299	MME-MTS-2000-TLF-AIF

Pin allocation

PIN	
1	CAN LOW
2	CAN HIGH
3	Unused
4	Unused
5	+24 V
6	0 V
PE	Screen