

Position transmitters SMAT-8E, for T-slot



# Position transmitters SMAT-8E, for T-slot

Key features



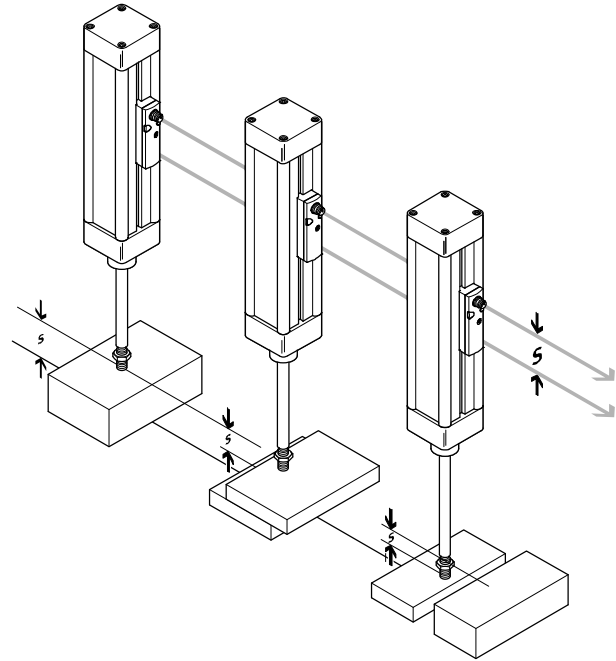
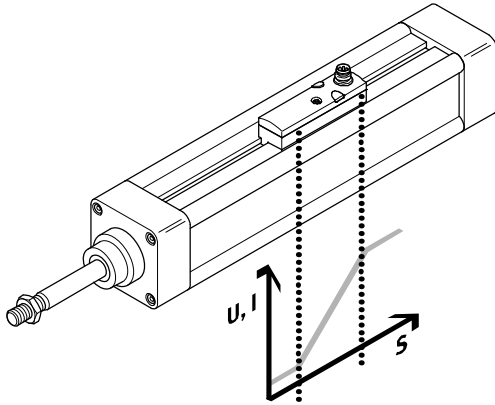
## Design

The SMAT-8E is a sturdy magnetic measuring system with a 50 mm range. It provides a standardised analogue current and voltage signal

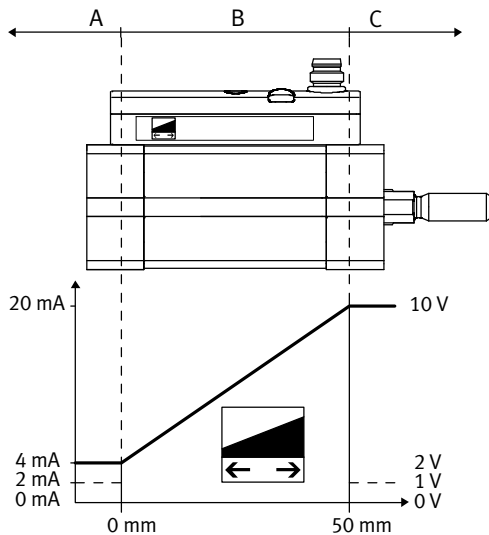
via an M8x1 plug connection, regardless of the drive used. The transmitter can thus be connected directly to the analogue input of a programmable

logic controller. The piston position of the pneumatic cylinder is detected by contactless sensing and the travel

distance can be measured between any set switching points with typical repeatability of 0.1 mm.



## Analogue output as a function of piston position



Analogue output		Description	Range
[V]	[mA]		
0	0	No valid signal, e.g. no operating voltage	–
1	2	Piston outside of the measuring range after the operating voltage is switched on	A, C
2	4	Piston has left the measuring range in the negative direction	A
10	20	Piston has left the measuring range in the positive direction	C
2 ... 10	4 ... 20	Piston within the measuring range at the relevant position	B

### Note

Sensors that detect magnetic fields, such as the position transmitter SMAT, must not be secured onto

the drive using mountings made from ferritic materials, as this can lead to malfunction.

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Selection aid

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Drive	Piston Ø	Suitability
<b>Standards-based cylinders</b>		
Standard cylinders DSBC	Ø 32, 40, 50, 63, 80	++ <sup>1)</sup>
	Ø 100, 125	++ <sup>1)</sup>
Standard cylinders DSBG	Ø 125	++
Standard cylinders DSNU/ESNU		o
Standard cylinders DSN/ESN		-
Standard cylinders DNCB		++
Standard cylinders DNC		++
Standard cylinders CDN-...-R with sensor strip		-
Standard cylinders DNU		-
Compact cylinders ADN		++
<b>Cylinders with piston rod</b>		
Compact cylinders ADVU/AEVU		++
Short-stroke cylinders ADVC/AEVC	Ø 6 ... 25	-
	Ø 32 ... 100	++
Flat cylinders EZH-10/40-40-A-B		+
Flat cylinders DZF	Ø 12, 25, 32, 40, 63	+
	Ø 18, 50	++
Flat cylinders DZH	Ø 16 ... 25	+
	Ø 32 ... 63	-
Round cylinders DSNU/ESNU		o
Round cylinders DSEU/ESEU		o
Compact cylinders DMM/EMM		+
Standard cylinders CRHD		o
Standard cylinders CRDSNU		o
Standard cylinders CRDNG		-
Standard cylinders CRDNGS		-
<b>Rodless cylinders</b>		
Linear drives DGC		-
Linear drives DGP/DGPL		-
Linear drives SLG		-
Linear drives DGO		-
Linear drives SLM	Ø 12, 40	++
	Ø 16 ... 32	o
<b>Semi-rotary drives</b>		
Semi-rotary drives DSM	Ø 6 ... 10	-
Semi-rotary drives DRQ		-
Semi-rotary drives DRQD	Ø 6, 8, 12, 40, 50	-
	Ø 16 ... 32	++
<b>Function-oriented drives</b>		
Stopper cylinders STA/STAF		-
Linear/swivel clamps CLR		o
Swivel/linear units DSL		-

1) Only with key feature D3, with slot that can be accessed from the side

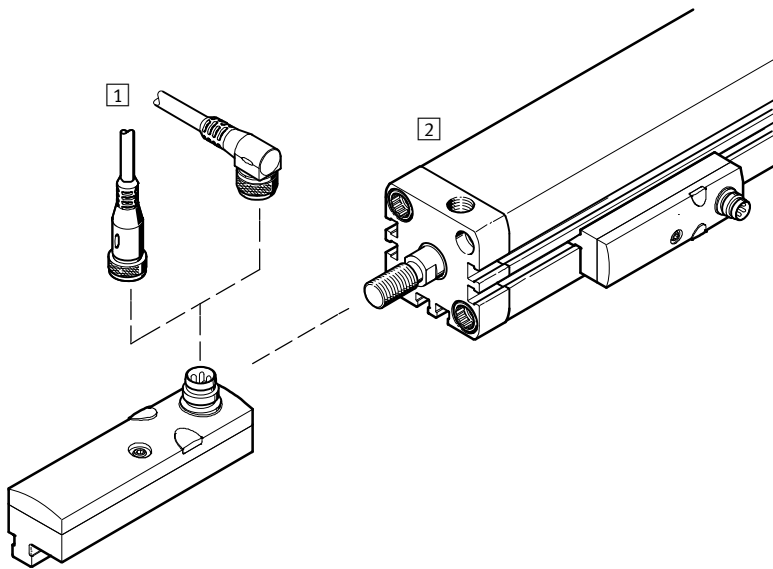
Drive	Piston Ø	Suitability
<b>Drives with linear guide</b>		
Mini slides SLS/SLF/SLT		-
Slide units SPZ	Ø 10, 25	o
	Ø 16	++
	Ø 32	-
Guided drives DFP	Ø 10 ... 16	-
	Ø 25 ... 80	o
Mini guided cylinders DFC		-
Guided drives DFM	Ø 12, 25, 50	++
	Ø 16, 20, 32, 40, 63, 80	+
	Ø 100	-
Guided drives DFM-B	Ø 12, 16, 25, 32	-
	Ø 20	+
	Ø 40, 50	++
	Ø 63	-
Linear units SLE		-
Twin-piston cylinders DPZ		++
<b>Handling units</b>		
Linear modules HMP		-
Handling modules HSP		-
Feed separators HPV		-
Three-point grippers DHDS		-
Three-point grippers HGDD		-
Parallel grippers DHPS		-
Parallel grippers HGPD		-
Parallel grippers HGPT		-
Angle gripper DHWS		-
Radial grippers DHRS		-
Radial grippers HGRT		-
<b>Cushioning components</b>		
Stop elements YSRWJ		-
<b>Electrical positioning systems</b>		
Toothed belt axes DGE-ZR		-
Spindle axes DGE-SP		-
<b>System components</b>		
Heavy-duty guides HD		-
<b>Valve actuators</b>		
Copac linear actuators DLP-A		-

- ++ Unrestricted use
- + Sensor function guaranteed without restriction; installation direction and clamping are drive-specific
- o On request
- Not suitable

# Position transmitters SMAT-8E, for T-slot

Peripherals overview

FESTO



Accessories	→ Page/Internet
1 Connecting cable NEBU-M8	9
2 Standard cylinders DNCB	dncb
Standard cylinders DNC	dnc
Compact cylinders ADN	adn
Compact cylinders ADVU/AEVU	advu
Short-stroke cylinders ADVC/AEVC	advc
Flat cylinders EZH	ezh
Flat cylinders DZF	dzf

Accessories	→ Page/Internet
2 Flat cylinders DZH	dzh
Compact cylinders DMM/EMM	dmm
Linear drives SLM	slm
Semi-rotary drives DRQD	drqd
Slide units SPZ	spz
Guided drives DFM/DFM-B	dfm
Twin-piston cylinders DPZ	dpz

# Position transmitters SMAT-8E, for T-slot

Type codes

SMAT - 8E - S50 - IU - E - 0,3 - M8D

**Type**

SMAT	Position transmitter, magnetic
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**Design**

8E	For T-slot, insertable in slot lengthwise
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**Position measuring range**

S50	48 ... 52 mm
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**Analogue output**

IU	0 ... 10 V, 0 ... 20 mA
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**Cable attribute**

E	Energy chain + robot applications
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**Cable length**

0,3	0.3 m
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**Electrical connection**

M8	Plug M8, 4-pin, fixed
M8D	Plug M8, 4-pin, rotatable thread

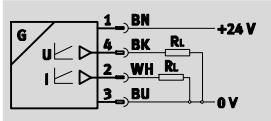
# Position transmitters SMAT-8E, for T-slot

Technical data

FESTO

Function

Normal operation



General technical data	
Type	SMAT-8E-...-M8
Design	For T-slot
Certification	cULus listed (OL) C-Tick
Special features	Oil-resistant
CE mark (see declaration of conformity)	To EU EMC Directive
Note on materials	Free of copper and PTFE RoHS-compliant Halogen-free

Input signal/measuring element	
Type	SMAT-8E-...-M8
Measured variable	Position
Measuring principle	Magnetic
Position measuring range [mm]	48 ... 52
Ambient temperature [°C]	-20 ... +50
Ambient temperature with flexible cable installation [°C]	-20 ... +50

Signal processing	
Typ. sampling interval [ms]	2.85
Max. travel speed [m/s]	3

Output, general	
Displacement resolution [mm]	0.064

Analogue output	
Analogue output [V]	0 ... 10
[mA]	4 ... 20
Sensitivity [V/mm]	0.152
[mA/mm]	0.305
Typ. linearity error [mm]	±0.25
Repetition accuracy of analogue value <sup>1)</sup> [mm]	0.128
Min. load resistance of voltage output [kΩ]	2
Max. load resistance of current output [Ω]	500

1) Use of a non-rotating piston rod or a mechanical structure to protect against rotation is recommended.

# Position transmitters SMAT-8E, for T-slot

Technical data

Output, additional data	
Protection against short circuit	Yes
Protection against overloading	Yes

Electronic components		
Operating voltage range	[V DC]	15 ... 30
Idle current	[mA]	32
Reverse polarity protection	For all electrical connections	

Electromechanical components		
Type	SMAT-8E-...-M8	SMAT-8E-...-E-0,3-M8D
Electrical connection	Plug M8x1, 4-pin	
Connection direction	Lateral	In-line
Cable attribute	-	Energy chain + robot applications

Mechanical components		
Type	SMAT-8E-...-M8	SMAT-8E-...-E-0,3-M8D
Mounting position	Any	
Product weight	[g]	15                      21.4
Housing materials	PA-reinforced, PC	
Cable sheath materials	TPE-U(PUR)	

Display/operation	
Ready status display	Green LED
Status display	Red LED = outside measuring range

Immissions/emissions		
Type	SMAT-8E-...-M8	SMAT-8E-...-E-0,3-M8D
Protection class	IP65, IP67	IP65, IP68
Corrosion resistance class CRC <sup>1)</sup>	2	

1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

## Pin allocation

<p>Normal operation</p>	<p>Plug</p>	<p>1 Operating voltage                  2 Analogue output 0 ... 20 mA                  3 0 V                  4 Analogue output 0 ... 10 V</p>
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Wire colours	
BN = brown	BU = blue
BK = black	WH = white

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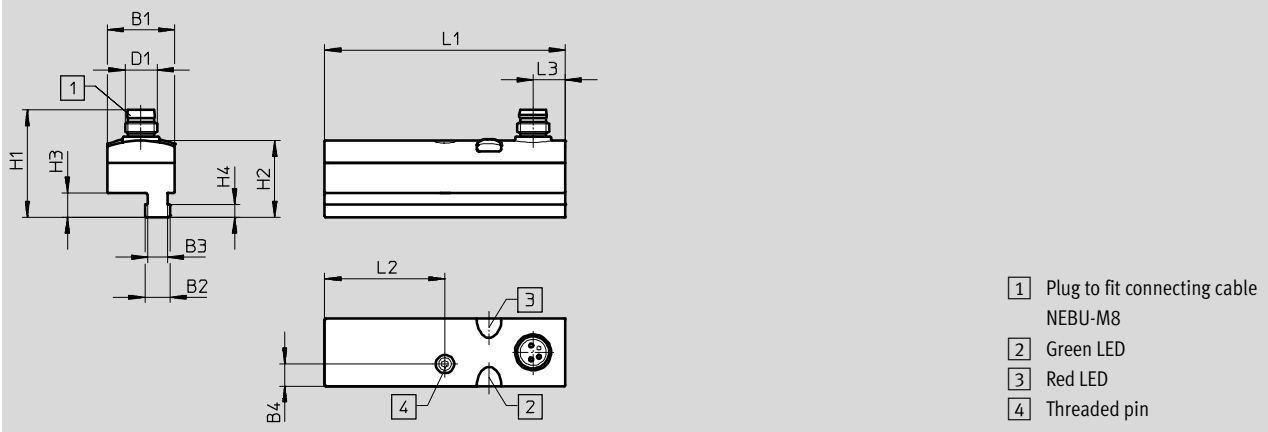
Technical data



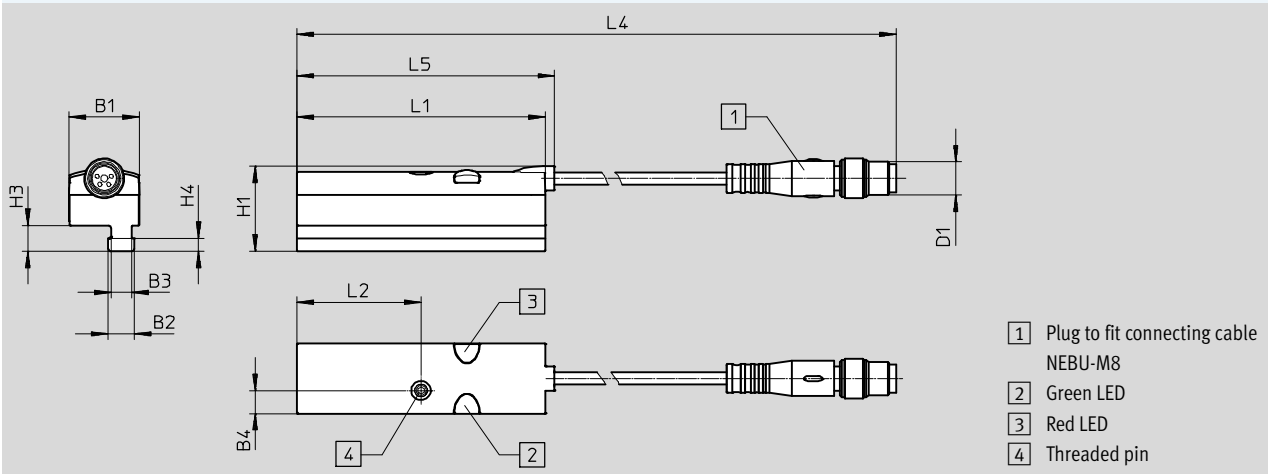
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

SMAT-8E-...-M8



SMAT-8E-...-M8D



Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	L1	L2	L3	L4	L5
SMAT-8E-...-M8	16.8	6.3	5	5.5	M8x1	26.8	19.1	6.1	3.1	60	30	8	-	-
SMAT-8E-...-M8D	16.9			5.6		20.5	60.1			420				

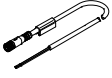
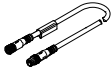

## Ordering data

	Electrical connection	Cable length [m]	Part No.	Type
	Plug M8x1, 4-pin, fixed	-	540191	SMAT-8E-S50-IU-M8
	Plug M8x1, 4-pin, rotatable thread	0.3	570134	SMAT-8E-S50-IU-E-0,3-M8D



# Position transmitters SMAT-8E, for T-slot

Accessories

Ordering data – Connecting cables NEBU-M8				Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
	Straight socket, M8x1, 4-pin	Straight socket, M8x1, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	541345	NEBU-M8W4-K-5-LE4