

Position transmitters SMAT-8E, for T-slot

FESTO



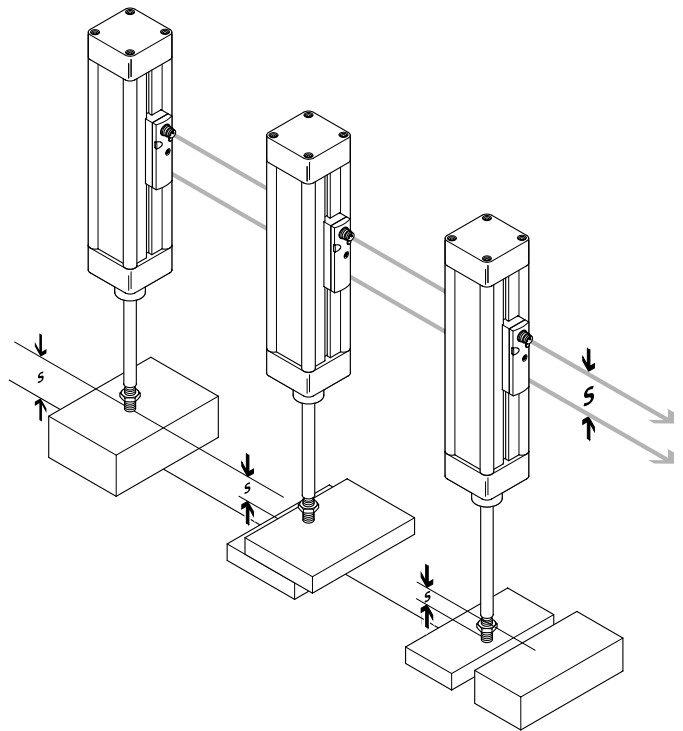
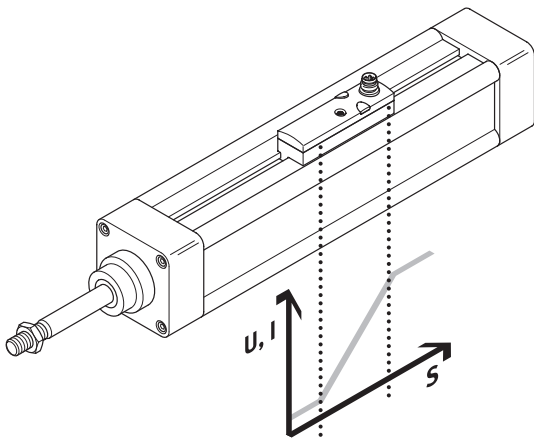
Key features

Design

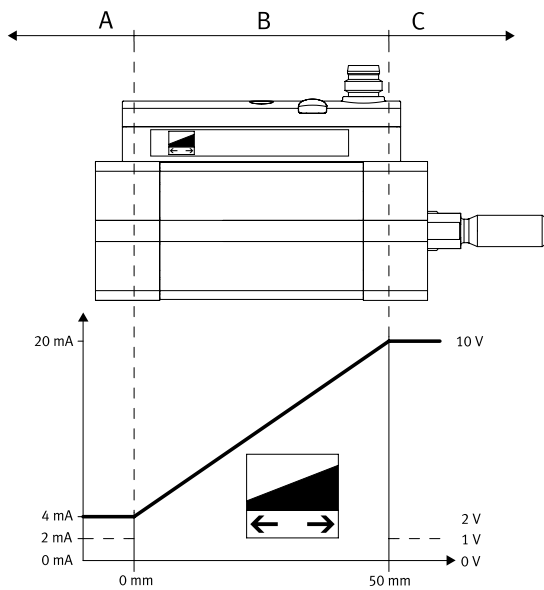
The SMAT-8E is a sturdy magnetic measuring system with a sensing range of 50 mm. It provides a standardised analogue current and voltage signal via an M8x1 plug connection, regardless of the drive used.

This enables the transmitter to 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 reproducibility of 0.1 mm.



Analogue output as a function of piston position



Analogue output		Description	Area
[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.

Selection aid

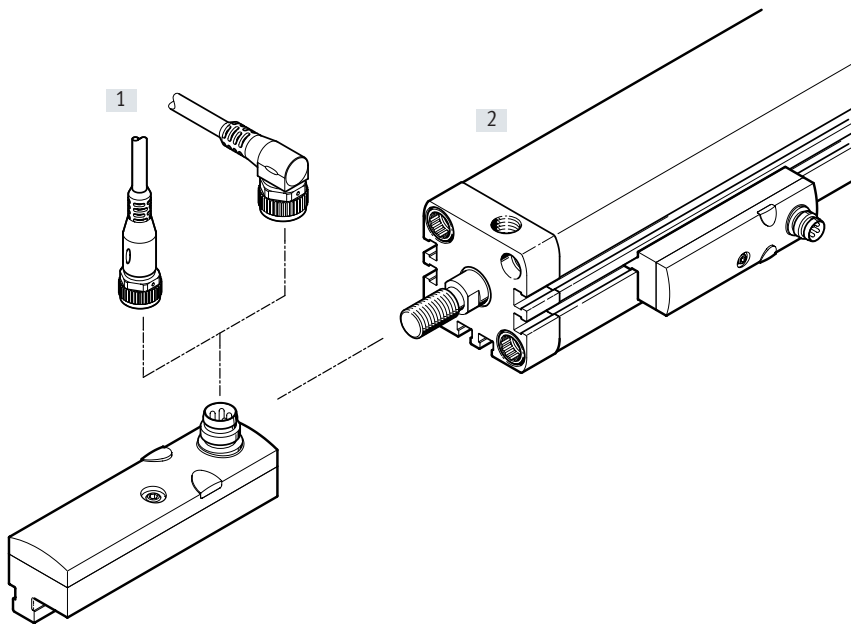
Drive	Piston \varnothing	Suitability
Standards-based cylinders		
Standards-based cylinder DSBC	\varnothing 32, 40, 50, 63, 80	++ ¹⁾
	\varnothing 100, 125	++ ¹⁾
Standards-based cylinder DSBG	\varnothing 125	++
	\varnothing 160, 200	-
Standards-based cylinder DSNU/ ESNU		o
Standards-based cylinder DSN/ESN		-
Standards-based cylinder DNCB		++
Standards-based cylinder DNC		++
Standards-based cylinder CDN-...-R with sensor rail		-
Standards-based cylinder DNU		-
Compact cylinder ADN		++
Piston rod cylinders		
Compact cylinder ADVU/AEVU		++
Short-stroke cylinder ADVC/AEVC	\varnothing 6 ... 25	-
	\varnothing 32 ... 100	++
Flat cylinder EZH-10/40-40-A-B		+
Flat cylinder DZF	\varnothing 12, 25, 32, 40, 63	+
	\varnothing 18, 50	++
Flat cylinder DZH	\varnothing 16 ... 25	+
	\varnothing 32 ... 63	-
Round cylinder DSNU/ESNU		o
Round cylinder DSEU/ESEU		o
Compact cylinder DMM/EMM		+
Standards-based cylinder CRHD		o
Standards-based cylinder CRDSNU		o
Standards-based cylinder CRDNG		-
Standards-based cylinder CRDNGS		-
Rodless cylinders		
Linear drives DGC		-
Linear drives DGP/DGPL		-
Linear drives SLG		-
Linear drives DGO		-
Linear drives SLM	\varnothing 12, 40	++
	\varnothing 16 ... 32	o
Semi-rotary drives		
Semi-rotary drives DSM	\varnothing 6 ... 10	-
Semi-rotary drives DRQ		-
Semi-rotary drives DRQD	\varnothing 6, 8, 12, 40, 50	-
	\varnothing 16 ... 32	++
Function-oriented drives		
Stopper cylinder STA/STAF		-
Linear/swivel clamp CLR		o
Swivel/linear units DSL		-

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

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

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

Peripherals overview



Accessories	→ Page/Internet
[1] Connecting cable NEBU-M8	9
[2] Standards-based cylinder DSBC	dsbc
Standards-based cylinder DNC	dnc
Compact cylinder ADN	adn
Compact cylinder ADVU/AEUV	advu
Short-stroke cylinder ADVC/AEVC	advc
Flat cylinder EZH	ezh
Flat cylinder DZF	dzf

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

Type codes

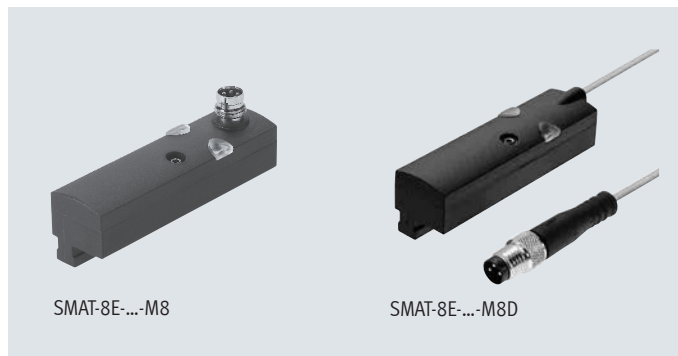
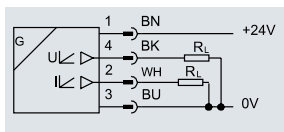
001	Series	
SMAT	Position transmitter, magnetic	
002	Design type	
8	For T-slot	
003	Sensor version	
E	Mounting with accessories	
004	Measuring range	
S50	48 ... 52 mm	
005	Analogue output	
IU	0 ... 10 V, 0 ... 20 mA	

006	Cable characteristic	
	None	
E	Suitable for energy chains/robot applications	
007	Cable length [m]	
	None	
0,3	0.3 m	
008	Electrical connection	
M8	Plug M8, 4-pin, fixed	
M8D	Plug M8, 4-pin, rotatable thread	

Data sheet

Function

Normal operation



General technical data	
Type	SMAT-8E-...-M8 SMAT-8E-...-E-0.3-M8D
Design	For T-slot
Certification	RCM c UL us listed (OL)
KC mark	KC EMC
CE marking (see declaration of conformity)	To EU EMC Directive
Note on materials	Free of copper and PTFE RoHS-compliant Halogen-free

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

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

Output, general	
Path resolution [mm]	0.064

Analogue output	
Analogue output [V]	0 ... 10
[mA]	4 ... 20
Sensitivity [V/mm]	0.152
[mA/mm]	0.305
Typical linearity error [mm]	±0.25
Repetition accuracy of analogue value ¹⁾ [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 which provides protection against rotation is recommended.

Data sheet

Output, additional data		
Short circuit current rating		Yes
Overload protection		Provided
Electronics		
Operating voltage range	[V DC]	15 ... 30
No-load supply current	[mA]	32
Reverse polarity protection		For all electrical connections
Electromechanics		
Electrical connection	SMAT-8E...-M8	SMAT-8E...-E-0.3-M8D
Connection type	Plug	Cable with plug
Connection technology	M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Number of pins/wires	4	4
Type of mounting	Screw-type lock	Screw-type lock
Outlet direction of connection	–	In-line
Cable characteristic	–	Suitable for energy chains and robot applications
Mechanics		
Type	SMAT-8E...-M8	SMAT-8E...-E-0.3-M8D
Mounting position		Any
Product weight	[g]	15
Information on materials: Housing		Reinforced PA, PC
Information on materials: Cable sheath		TPE-U (PUR)
Display/operation		
Ready status indication		Green LED
Status indication		Red LED = outside measuring range
Immission/emission		
Type	SMAT-8E...-M8	SMAT-8E...-E-0.3-M8D
Degree of protection	IP65, IP67	IP65, IP68
Corrosion resistance class CRC ¹⁾	2	

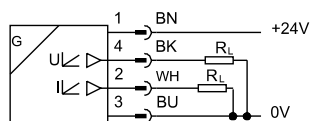
1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Terminal allocation

Normal operation

Plug



- 1 Operating voltage
- 2 Analogue output 0 ... 20 mA
- 3 0 V
- 4 Analogue output 0 ... 10 V

Wire colours

BN = Brown
BK = Black

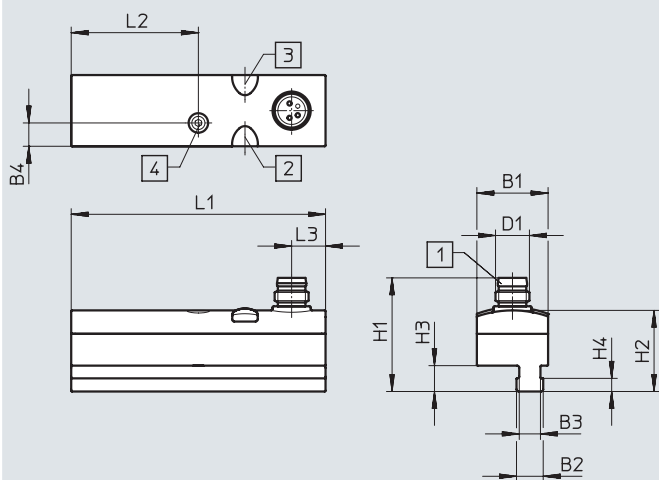
BU = Blue
WH = White

Data sheet

Dimensions

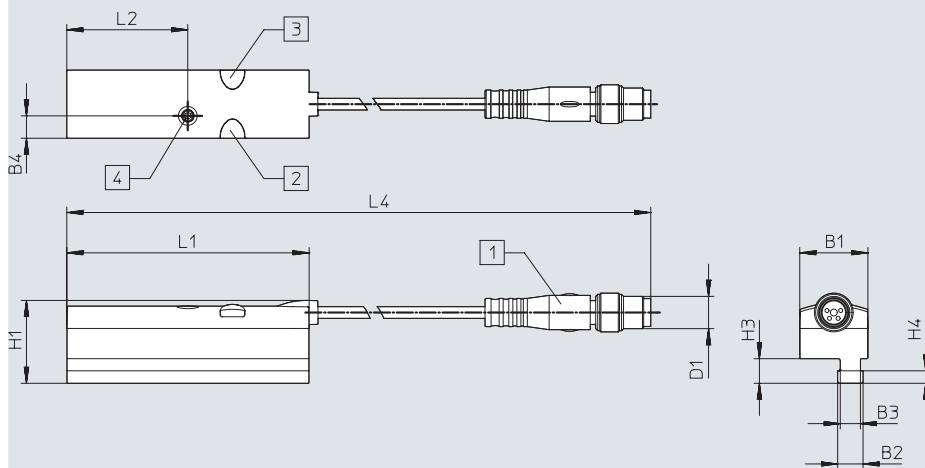
Download CAD data → www.festo.com

SMAT-8E...-M8



- [1] Plug to fit connecting cable NEBU-M8
- [2] Green light emitting diode
- [3] Red light emitting diode
- [4] Threaded pin

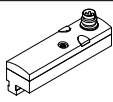
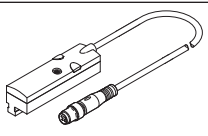
SMAT-8E...-M8D



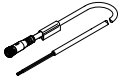
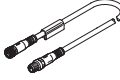
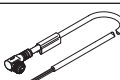
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- [4] Threaded pin

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	62.3

Ordering data

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

Accessories

Ordering data – Connecting cables NEBU-M8				Data sheets → 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

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