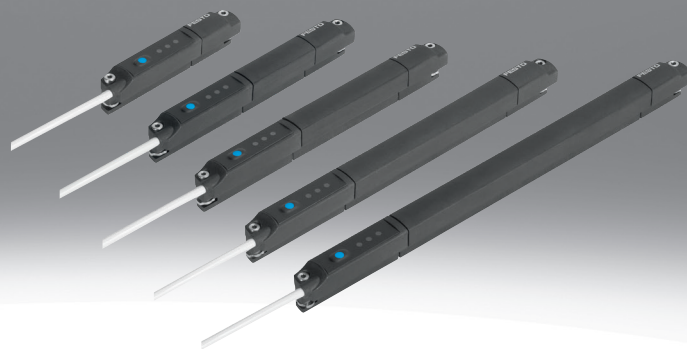


## Position transmitter SDAT-MHS

**FESTO**

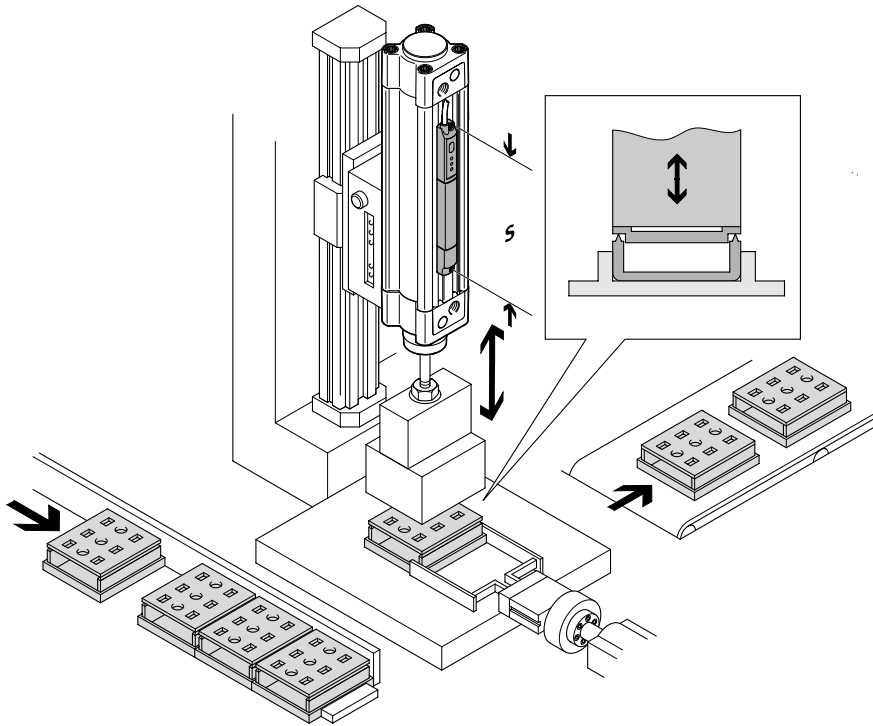


## Characteristics

### At a glance

Position transmitters are used to provide feedback on the piston movement of pneumatic drives. They are positioned between simple proximity switches and more expensive displacement encoders, both in terms of price and complexity. They are the ideal solution for applications in which reliable analogue feedback on the piston stroke is required with high repetition accuracy, such as in press-fitting, screwing, riveting, ultrasonic welding, good/bad selection and other applications.

### Application example

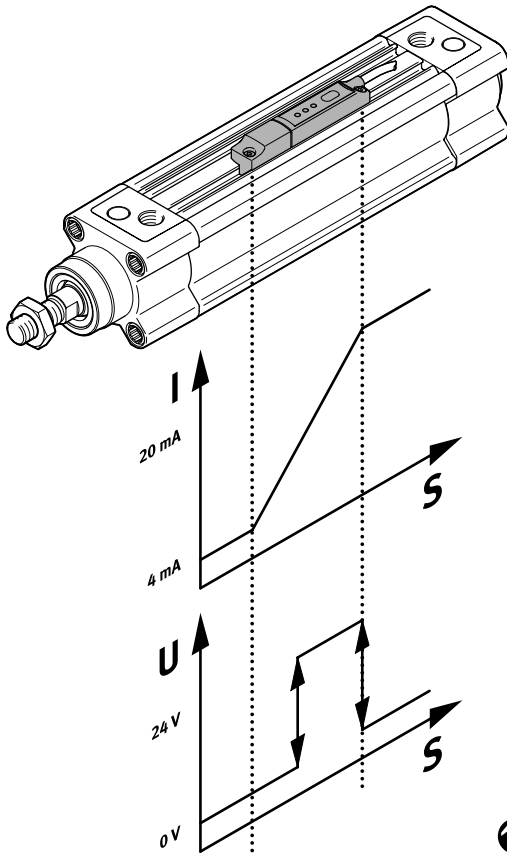


### Ultrasonic welding

- The SDAT-MHS is a position transmitter which continuously records the movement of the piston within the sensing range and makes it available as an output signal proportional to the displacement.
- The sensing ranges are 50, 80, 100, 125, 160 mm and thus a perfect match for the strokes of the best-selling Festo cylinders. The SDAT has a 0 ... 10 V or 4 ... 20 mA analogue output and can therefore be connected to analogue inputs without accessories.
- An IO-Link® switching output is available as a second interface. This gives you the choice between a 24 V switching output or IO-Link® operation. The switching output is programmed directly on the device via a teach button, while the IO-Link® function is programmed via a graphical user interface in the controller. Programming options in both operating modes are: cylinder switch function, window comparator, hysteresis comparator. The IO-Link® switching output is therefore the universal interface for simple programming of standard application functions without having to evaluate the analogue output.

## Characteristics

### Switching input/output



Everything in a single device

- Analogue:  
SDAT-...-SA-... 4 ... 20 mA  
SDAT-...-SV-... 0 ... 10 V
- IO-Link®
- Switching output

Programming options:

- Cylinder switch function
- Window comparator
- Hysteresis comparator
- NO/NC

Repetition accuracy 0.1 mm



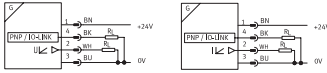
## Type code

<b>001</b>	<b>Series</b>	
<b>SDAT</b>	Position transmitter, magnetic	
<b>002</b>	<b>Sensor version</b>	
<b>M</b>	Can be inserted in the slot	
<b>003</b>	<b>Sensor principle</b>	
<b>HS</b>	Hall sensor	
<b>004</b>	<b>Measuring range</b>	
<b>M50</b>	50 mm	
<b>M80</b>	80 mm	
<b>M100</b>	100 mm	
<b>M125</b>	125 mm	
<b>M160</b>	160 mm	
<b>005</b>	<b>Nominal operating voltage</b>	
<b>1</b>	24 V DC	

<b>006</b>	<b>Display</b>	
<b>L</b>	LED	
<b>007</b>	<b>Switching input/output</b>	
<b>SA</b>	PNP, 1 analogue output 4 ... 20 mA, IO-Link	
<b>SV</b>	PNP, 1 analogue output 0 ... 10 V, IO-Link	
<b>008</b>	<b>Cable characteristic</b>	
<b>E</b>	Suitable for energy chains/robot applications	
<b>009</b>	<b>Cable length [m]</b>	
<b>0.3</b>	0.3 m	
<b>010</b>	<b>Electrical connection</b>	
<b>M8</b>	Plug M8, A-coded	

# Datasheet

## General technical data



Design	For T-slot
Type of mounting	Screw-clamped, Insertable in the slot from above
Mounting position	optional
Approval	RCM trademark, c UL us listed (OL)
Degree of protection	IP65, IP68
CE mark (see declaration of conformity)	To EU EMC Directive
CE marking (see declaration of conformity)	To UK instructions for EMC
Instructions on use	<a href="https://www.festo.com/Drive-Sensor-Overview">https://www.festo.com/Drive-Sensor-Overview</a>
Note on materials	RoHS-compliant, Free of halogen
LABS (PWIS) conformity	VDMA24364-B2-L
Suitability for the production of Li-ion batteries	Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
Cleanroom class	Class 4 according to ISO 14644-1

## Input signal, measuring element

Measuring range	50 mm	80 mm	100 mm	125 mm	160 mm
Measuring principle	Magnetic Hall				
Measured variable	Position				
Sensing range	0 ... 50 mm	0 ... 80 mm	0 ... 100 mm	0 ... 125 mm	0 ... 160 mm
Ambient temperature	-25 ... 70°C				
Ambient temperature with moving cable	-20 ... 70°C				

## Signal processing

Typical sampling interval	1 ms
Max. travel speed	3 m/s

## Output, general

Displacement resolution	0.05 mm
-------------------------	---------

## Analogue output ...SA...

Measuring range	50 mm	80 mm	100 mm	125 mm	160 mm
Analogue output	4 - 20 mA				
Sensitivity	0.32 mA/mm	0.2 mA/mm	0.16 mA/mm	0.128 mA/mm	0.1 mA/mm
Max. load resistance current output	500 Ohm				
Typical linearity error	±0.25 mm				
Repetition accuracy	0.1 mm				

## Analogue output ...SV...

Measuring range	50 mm	80 mm	100 mm	125 mm	160 mm
Analogue output	0 - 10 V				
Sensitivity	0.18 V/mm	0.113 V/mm	0.09 V/mm	0.072 V/mm	0.056 V/mm
Min. load resistance voltage output	20 kOhm				
Typical linearity error	±0.25 mm				
Repetition accuracy	0.1 mm				

## Datasheet

**Output, additional data**

Short circuit current rating	yes
Overload protection	Available

**Electronics**

Operational voltage range DC	15 ... 30 V
Reverse polarity protection	For all electrical connections
Switching output	PNP
Switching element function	N/C or N/O contact, switchable
Residual ripple	10%
Switch-on time	2 ms
Switch-off time	2 ms
Max. switching frequency	1 kHz
Max. switching capacity DC	2.7 W
Max. output current	100 mA
Voltage drop	2.5 V

**Electromechanics**

Electrical connection 1, connection type	Cable with plug
Electrical connection 1, connector system	M8x1, A-coded, to EN 61076-2-104
Electrical connection 1, number of connections/cores	4
Type of mounting	Screw-clamped, Insertable in the slot from above
Connection outlet orientation	In-line
Cable characteristic	Suitable for energy chains/robot applications
Test conditions cable	Bending strength: to Festo standard, Torsional resistance: > 300,000 cycles, $\pm 270^\circ/0.1$ m, Energy chain: > 5 million cycles, bending radius 28 mm

**Display, operation**

Setting options	IO-Link®, Pushbutton
Ready status indication	Green LED
Switching status indication	Yellow LED
Status indication	Red LED

**Materials**

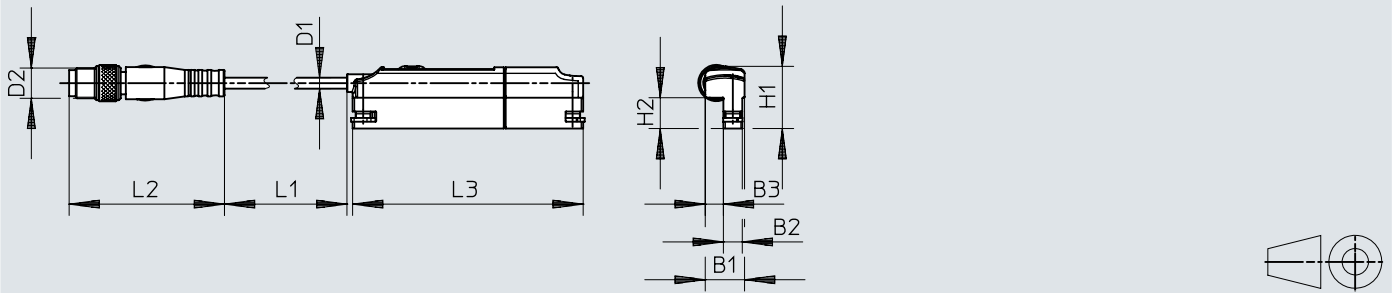
Material housing	Brass, nickel-plated, PA-reinforced, Polyester, High-alloy stainless steel
Material electrical contact	Copper alloy, Bronze
Material foil	Polyester
Material union nut	Nickel-plated brass
Material cable sheath	TPE-U(PUR)
Cable sheath colour	grey

**IO-Link®**

Protocol	I-Port, IO-Link®
IO-Link, Protocol version	Device V 1.1
IO-Link, Profile	Smart sensor profile
IO-Link, Function classes	Binary data channel (BDC), Process data variable (PDV), Identification, Diagnostics, Teach channel
IO-Link, communication mode	COM3 (230.4 kBaud)
IO-Link, SIO-Mode support	Yes
IO-Link, Port class	A
IO-Link, Process data content IN	12 bit PDV (measured position value), 4 bit BDC (position monitoring)
IO-Link, Process data length IN	2 bytes
IO-Link, Min. cycle time	1 ms


## Dimensions

Dimensions – SDAT-MHSM... 1LSAE0.3M8

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

	B1	B2	B3	D1 ∅	D2	H1	H2	L1	L2	L3
SDAT-MHS-M50-1L-SA-E-0,3-M8	10,4	5	4,8	2,9	M8	16,5	8,2	300	41,1	61
SDAT-MHS-M80-1L-SA-E-0,3-M8										91
SDAT-MHS-M100-1L-SA-E-0,3-M8										111
SDAT-MHS-M125-1L-SA-E-0,3-M8										136
SDAT-MHS-M160-1L-SA-E-0,3-M8										171

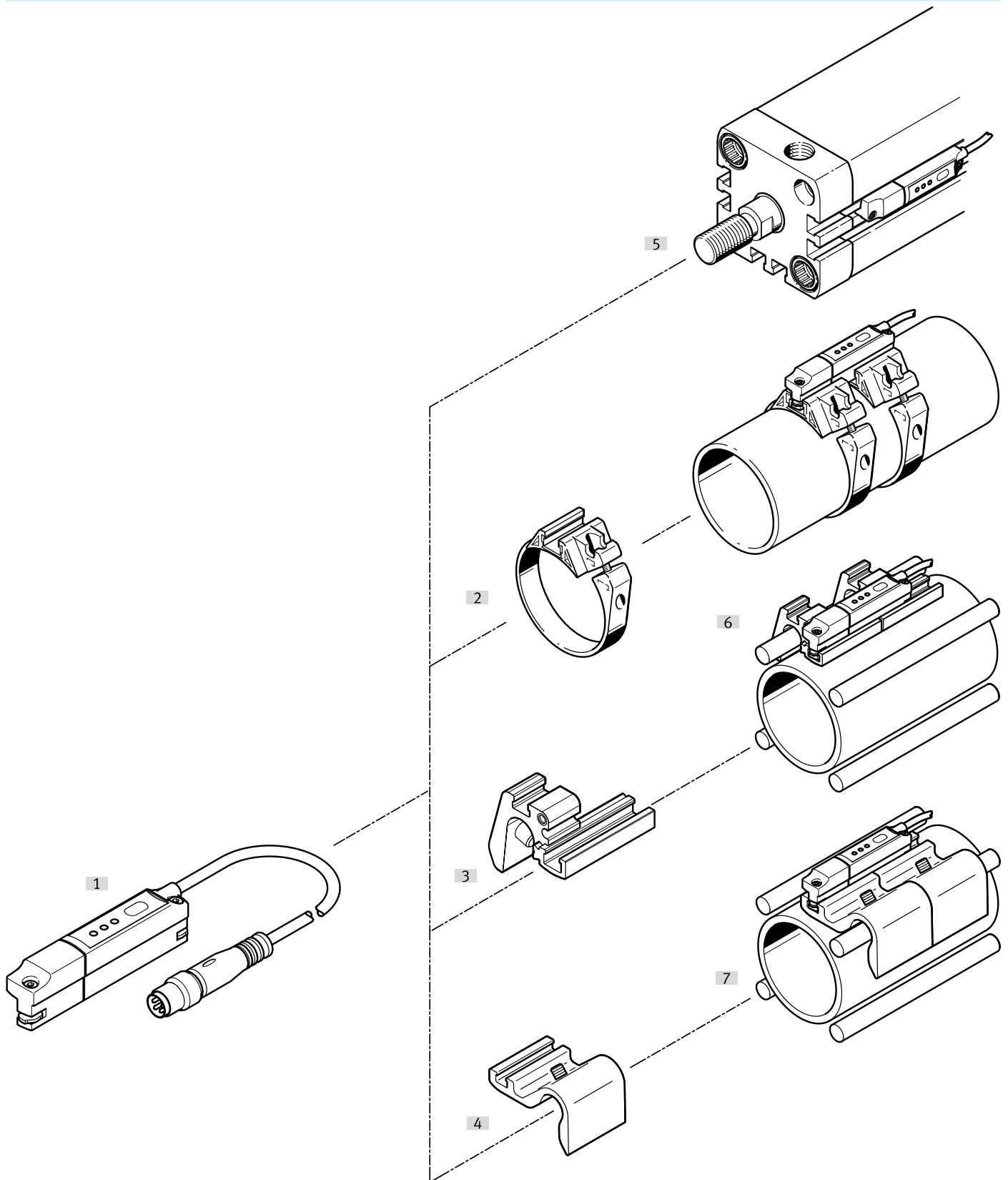
## Ordering data

Ordering data						
	Electrical connection 1, connection type	Electrical connection 1, connector system	Cable length	Product weight	Part no.	Type
	Cable with plug	M8x1, A-coded, to EN 61076-2-104	0.3 m	19 g	8115394	SDAT-MHS-M50-1L-SV-E-0.3-M8
					1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
				23 g	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
					8115395	SDAT-MHS-M80-1L-SV-E-0.3-M8
				26 g	8115396	SDAT-MHS-M100-1L-SV-E-0.3-M8
					1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
				30 g	8115397	SDAT-MHS-M125-1L-SV-E-0.3-M8
					1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
				35 g	8115398	SDAT-MHS-M160-1L-SV-E-0.3-M8
					1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8



## Peripherals

### Peripherals overview




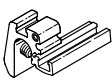
Accessories			→ Page/Internet
Type/order code	Description		
[1] Position transmitter SDAT-MHS	–		sdat-mhs
[2] Mounting kit SMBR	For round cylinders		11


## Peripherals

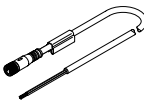
Accessories		→ Page/Internet
Type/order code	Description	
[3] Mounting SMBZ-8	–	11
[4] Sensor bracket DASP-M4-...	–	11
[5] Standards-based cylinder DNC	–	dnc
[5] Compact cylinder ADN	–	adn
[5] Short-stroke cylinders ADVC, AEVC	–	advc
[5] Compact cylinder ADVU, AEVU	–	advu
[5] Flat cylinder DZF	–	dzf
[5] Linear drive DGC	–	dgc
[5] Guided drive DFM	–	dfm
[6] Standards-based cylinder, round cylinder DSNU	–	dsnu
[6] Linear drive unit SLE	–	sle
[7] Standards-based cylinder DSBG	–	dsbg

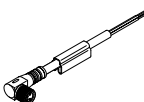
## Accessories

Mounting kit SMBR					
	Size	Material profile	Material retaining bracket	Part no.	Type
	8	Wrought aluminium alloy	POM	175091	SMBR-8-8
	10			175092	SMBR-8-10
	12			★ 175093	SMBR-8-12
	16			★ 175094	SMBR-8-16
	20			★ 175095	SMBR-8-20
	25			★ 175096	SMBR-8-25
	32			175097	SMBR-8-32
	40			175098	SMBR-8-40
	50			175099	SMBR-8-50
	63			175100	SMBR-8-63

Mounting SMBZ					
	For piston diameter	Material housing	Product weight	Part no.	Type
	Ø32 - Ø100	Anodised wrought aluminium alloy	14 g	537806	SMBZ-8-32/100
	Ø125 - Ø320			537808	SMBZ-8-125/320

Sensor bracket DASP-M4-...					
	For piston diameter	Material housing	Product weight	Part no.	Type
	Ø125	Wrought aluminium alloy, Anodised	26.5 g	1451483	DASP-M4-125-A
	Ø160 - Ø200		41.5 g	1553813	DASP-M4-160-A
	Diameter 250		60 g	1456781	DASP-M4-250-A
	Ø320		3015256	DASP-M4-320-A	

Connecting cables NEBU-M8, straight socket					
	Electrical connection 1, connector system	Electrical connection 2, connector system	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104	2.5 m	554035	NEBU-M8G4-K-2.5-M8G4
		Open end		541342	NEBU-M8G4-K-2.5-LE4
			5 m	541343	NEBU-M8G4-K-5-LE4

Connecting cables, NEBU-N8, angled socket					
	Electrical connection 1, connector system	Electrical connection 2, connector system	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	2.5 m	541344	NEBU-M8W4-K-2.5-LE4
			5 m	541345	NEBU-M8W4-K-5-LE4