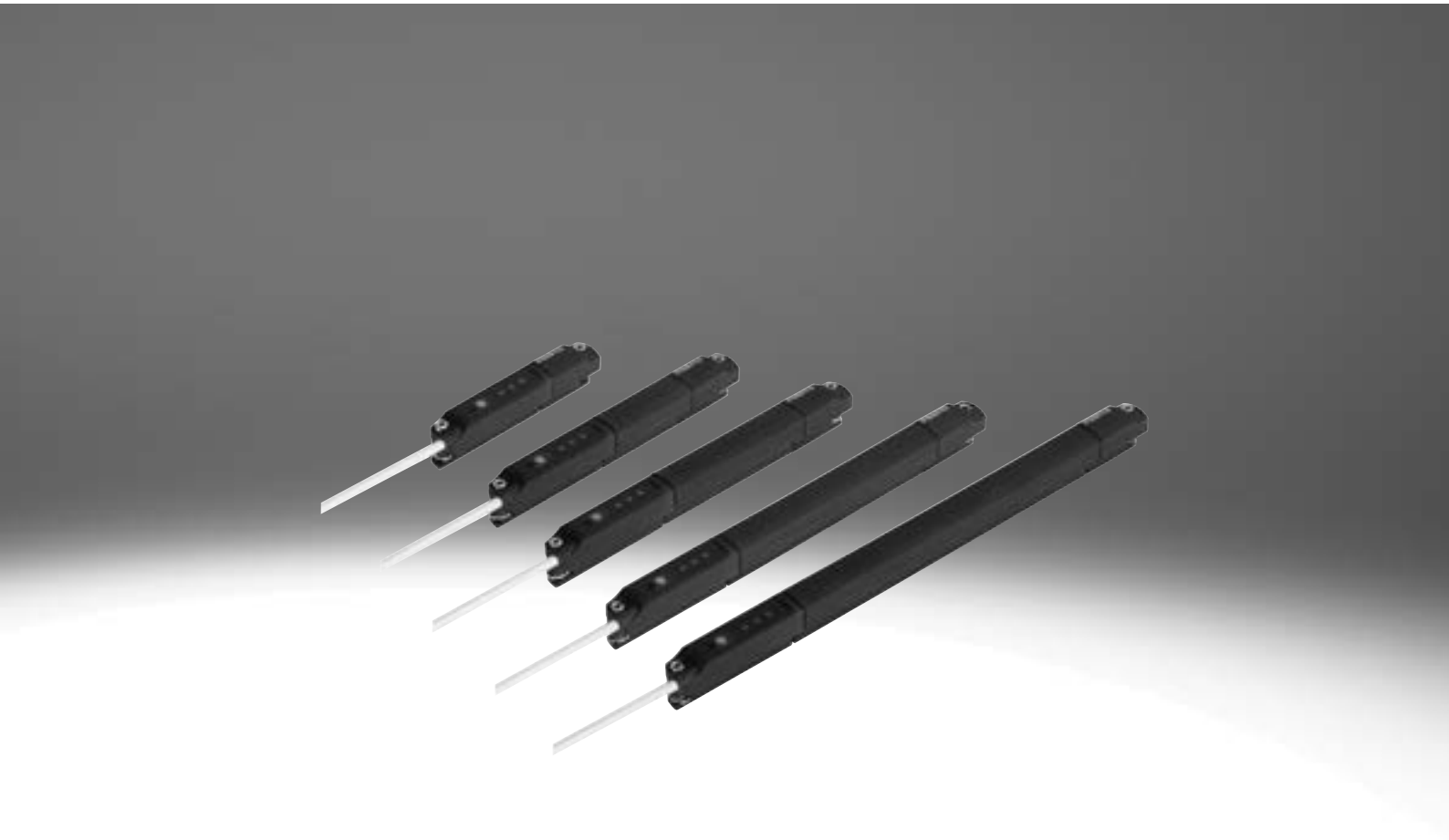
Position transmitters SDAT-MHS, for T-slot

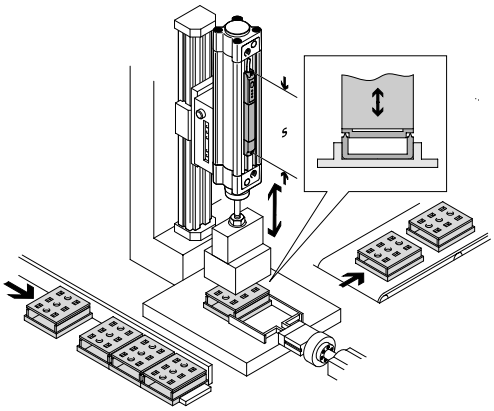


Key features

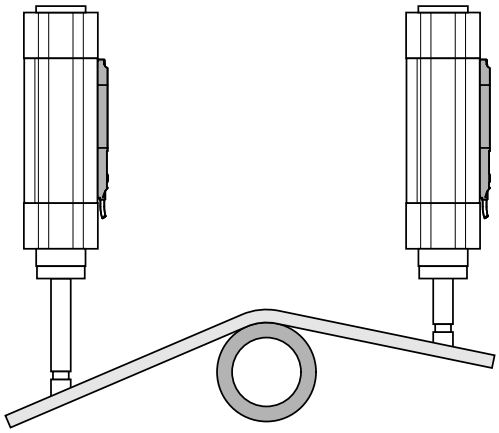
General

Position transmitters are used to provide feedback on piston movement in pneumatic drives. They are situated 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.

Ultrasonic welding

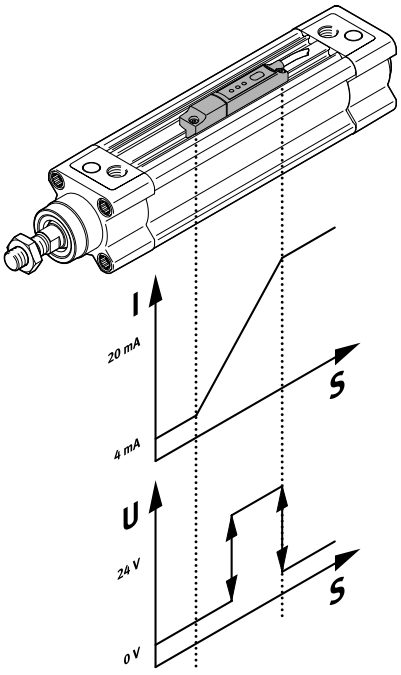


Bending



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 and 160 mm, making them perfectly harmonised to the stroke of the best-selling Festo cylinders.
The SDAT has a 0 ... 10 V or 4 ... 20 mA analogue output, so it can be connected to analogue inputs without accessories.
An IO-Link switching output is available as a second interface. There is thus a choice between: switching output 24 V or IO-Link operation. The switching output is directly programmed into the device using a teach button; the IO-Link function is programmed via a graphic user interface in the controller. The programming options in the two operating modes are: proximity switch function, window comparator, hysteresis comparator.
The IO-Link switching output is therefore the universal interface for simple programming of routine application functions without needing to evaluate the analogue output.

Switching output



Everything in a single device

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

Programming options:

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

Repetition accuracy: 0.1 mm

Note

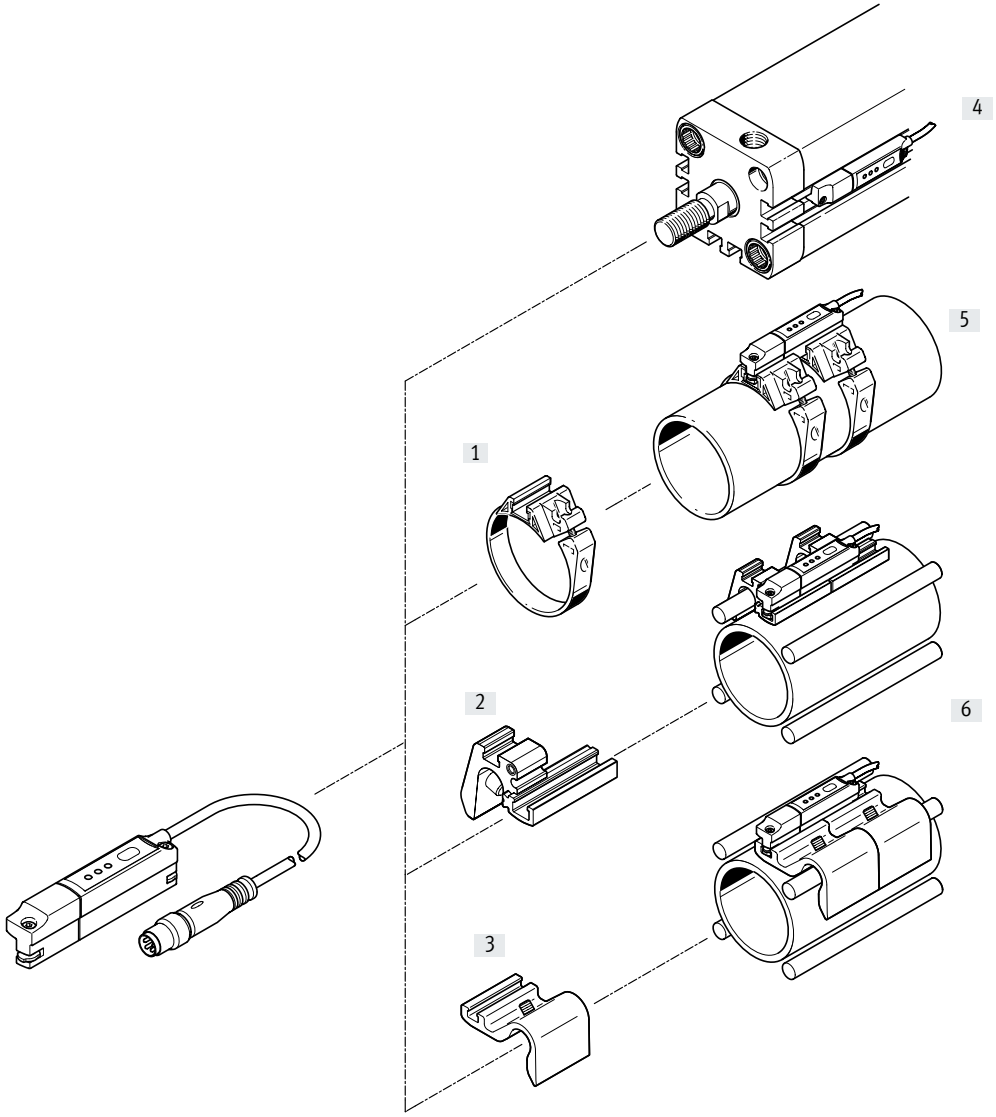
Sensors that detect magnetic fields, such as the position transmitter SDAT, must not be secured onto the drive using mountings made from ferritic materials, as this can lead to malfunction.

Key features

For drive	Piston ⌀
Standards-based cylinders	
ADN	⌀ 12, 16, 20, 25, 32, 40, 50, 63, 80
	⌀ 100, 125
DSNU	⌀ 8, 10, 12, 16, 20, 25, 32, 40, 50
	⌀ 63
DNC	⌀ 32, 40, 50, 63, 80, 100, 125
DNCB	⌀ 32, 40, 50, 63, 80, 100
DNG	⌀ 32, 40, 50, 63, 80, 100, 125
DSBC	⌀ 32, 40, 50, 63, 80, 100, 125
DSBG	⌀ 32, 40, 50, 63, 80, 100, 125, 160
	⌀ 200, 250, 320
Piston rod cylinders	
ADVC	⌀ 40, 50, 63, 80, 100
ADVU	⌀ 12, 16, 20, 25, 32, 40, 50
	⌀ 63, 80, 100, 125
DMM	⌀ 10, 16, 20, 25, 32
DZF	⌀ 12, 18, 25, 32, 40, 50, 63
DZH	⌀ 16, 20, 25
Function-oriented drives	
DFST	⌀ 50, 63, 80
STAF	⌀ 50, 80

For drive	Piston ⌀
Rodless cylinders	
DGC-K	⌀ 18, 25, 32, 40, 50, 63, 80
DGC-KF	⌀ 18, 25, 32, 40, 50, 63
DGC-G	⌀ 18, 25, 32, 40, 50, 63
DGC-GF	⌀ 18, 25, 32, 40, 50, 63
Drives with linear guide	
DFM	⌀ 12, 16, 20, 25, 32, 40, 50, 63, 80
	⌀ 100
DFM-B	⌀ 12, 16, 20, 25, 32, 40, 50, 63
DGST	⌀ 16, 20, 25
DPZ	⌀ 10, 16, 20, 25, 32
SLE	⌀ 32, 40, 50
Swivel/linear drive units	
DSL	⌀ 16, 20, 25, 32, 40
Semi-rotary drives with gear rack and pinion	
DRQD	⌀ 16, 20, 25, 32, 40, 50
DRRD	⌀ 16, 20, 25, 32, 40, 50, 63
Mechanical grippers	
DHPS	⌀ 35
DHRS	⌀ 32, 40
DHWS	⌀ 32, 40
HGP	⌀ 35
HGR	⌀ 32, 40
HGW	⌀ 32, 40
HGPL	⌀ 63
HGPL -...- B	⌀ 14, 25, 40, 63
HGPT -...- G	⌀ 63, 80
HGRT	⌀ 40, 50

Peripherals overview



Accessories		→ Page/Internet
[1]	Mounting kit SMBR	9
[2]	Mounting SMBZ-8	9
[3]	Sensor bracket DASP-M4-...	9
[4]	Standards-based cylinder DNC	dnc
	Compact cylinder ADN	adn
	Short-stroke cylinder ADVC/AEVC	advc
	Compact cylinder ADVU/AEVU	advu
	Flat cylinder DZF	dzf
	Linear drive DGC	dgc
	Guided drive DFM	dfm

Accessories		→ Page/Internet
[5]	Standards-based/round cylinder DSNU	dsnu
	Linear drive unit SLE	sle
[6]	Standards-based cylinder DSBG	dsbg

Type codes

001	Series	
SDAT	Position transmitter, magnetic	

002	Sensor version	
M	Can be inserted in the slot	

003	Sensor principle	
HS	Hall sensor	

004	Measuring range	
M50	50 mm	
M80	80 mm	
M100	100 mm	
M125	125 mm	
M160	160 mm	

005	Nominal operating voltage	
1	24 V DC	

006	Display	
L	LED	

007	Switching input/output	
SA	PNP, 1 analogue output 4 ... 20 mA, IO-Link®	
SV	PNP, 1 analogue output 0 ... 10 V, IO-Link®	

008	Cable characteristic	
E	Suitable for energy chains/robot applications	

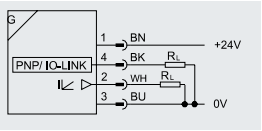
009	Cable length [m]	
0.3	0.3 m	

010	Electrical connection	
M8	Plug M8, A-coded	

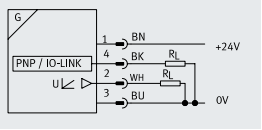
Data sheet

Function
Normal operation

SDAT-...-SA-...



SDAT-...-SV-...



General technical data						
Type		M50	M80	M100	M125	M160
Design		For T-slot				
Type of mounting		Inserted in the slot from above, screw-clamped				
Mounting position		Any				
Certification		RCM				
		c UL us listed (OL)				
Degree of protection		IP65, IP68				
CE marking (see declaration of conformity)		To EU EMC Directive				
KC mark		KC EMC				
Note on materials		Halogen-free, RoHS-compliant				
PWIS conformity		VDMA24364-B2-L				
Weight	[g]	19	23	26	30	35

Input signal/measuring element						
Type		M50	M80	M100	M125	M160
Measuring principle		Magnetic Hall				
Measured variable		Position				
Sensing range	[mm]	0 ... 50	0 ... 80	0 ... 100	0 ... 125	0 ... 160
Ambient temperature	[°C]	–25 ... 70				
Ambient temperature with flexible cable installation	[°C]	–20 ... 70				

Signal processing		
Typical sampling interval	[ms]	1
Max. speed of travel	[m/s]	3

Output, general		
Path resolution	[mm]	0.05

Data sheet

Analogue output		M50	M80	M100	M125	M160
Analogue output						
SDAT-...-SA-...	[mA]	4 ... 20				
SDAT-...-SV-...	[V]	0 ... 10				
Sensitivity						
SDAT-...-SA-...	[mA/mm]	0.32	0.2	0.16	0.128	0.1
SDAT-...-SV-...	[V/mm]	0.18	0.113	0.09	0.072	0.056
Max. load resistance SDAT-...-SA-...						
Current output	[Ω]	500				
Min. load resistance SDAT-...-SV-...						
Voltage output	[kΩ]	20				
Typical linearity error	[mm]	±0.25				
Repetition accuracy of analogue value	[mm]	0.1				

Output, additional data	
Short circuit current rating	Yes
Overload protection	Provided

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

Electromechanics	
Electrical connection	4-pin
	M8x1, A-coded to EN 61076-2-104
	Screw-type lock
Outlet direction of connection	In-line
Cable characteristic	Suitable for energy chains/robot applications
Cable test conditions	Bending strength: to Festo standard
	Cable chain: 5 million cycles, bending radius 28 mm
	Torsional resistance: › 300,000 cycles, ±270°/0.1 m

Display/operation	
Setting options	IO-Link
	Pushbutton
Ready status indication	Green LED
Switching status indication	Yellow LED
Status indication	Red LED

Data sheet

Materials	
Housing	High-alloy stainless steel
	Nickel-plated brass
	PA-reinforced
	Polyester
Union nut	Nickel-plated brass
Cable sheath, grey	TPE-U(PUR)
Film	Polyester
Pin contacts	Gold-plated copper alloy

Terminal allocation

Plug M8x1, 4-pin

1 Operating voltage
+24 V DC
2 Analogue output
SDAT-...-SA-... 4 ... 20 mA
SDAT-...-SV-... 0 ... 10 V
3 0 V
4 IO-Link/switching output

Wire colours

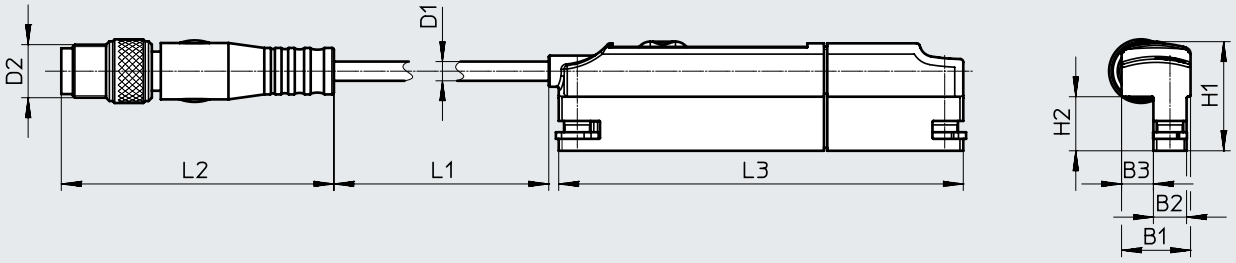
1 BN = brown
2 WH = white
3 BU = blue
4 BK = black

IO-Link		
Protocol		IO-Link
		I-Port
Protocol version		Device V 1.1
Profile		Smart sensor profile
Function classes		Binary data channel (BDC)
		Diagnostics
		Identification
		Process data variable (PDV)
		Teach channel
Communication mode		COM3 (230.4 kBd)
SIO mode support		Yes
Port class		A
Process data width IN		2 bytes
Process data content IN		12 bit PDV (measured position value)
		4 bit BDC (position monitoring)
Minimum cycle time	[ms]	1

Dimensions

Download CAD data ➔ www.festo.com

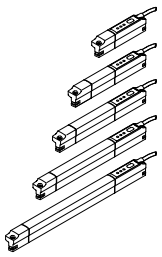
SDAT-MHS-M... -1L-SA-E-0.3-M8



Type	B1	B2	B3	D1 ø	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

Accessories

Ordering data

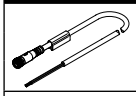
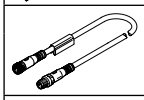
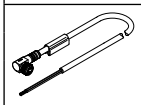
	Electrical connection	Cable length [m]	Part no.	Type
	4-pin, cable with plug, rotatable thread M8	0.3	**1531265**	**SDAT-MHS-M50-1L-SA-E-0,3-M8**
			1531266	**SDAT-MHS-M80-1L-SA-E-0,3-M8**
			1531267	**SDAT-MHS-M100-1L-SA-E-0,3-M8**
			1531268	**SDAT-MHS-M125-1L-SA-E-0,3-M8**
			1531269	**SDAT-MHS-M160-1L-SA-E-0,3-M8**
			8115394	**SDAT-MHS-M50-1L-SV-E-0.3-M8**
			8115395	**SDAT-MHS-M80-1L-SV-E-0.3-M8**
			8115396	**SDAT-MHS-M100-1L-SV-E-0.3-M8**
			8115397	**SDAT-MHS-M125-1L-SV-E-0.3-M8**
			8115398	**SDAT-MHS-M160-1L-SV-E-0.3-M8**

Ordering data – Mounting components

	For piston ø	Part no.	Type
Mounting kit SMBR			
	8	**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			
	32 ... 100	**537806**	**SMBZ-8-32/100**
	125 ... 320	**537808**	**SMBZ-8-125/320**
Sensor bracket DASP-M4-...			
	For DSBG-125	**1451483**	**DASP-M4-125-A**
	For DSBG-160 ... 200	**1553813**	**DASP-M4-160-A**
	For DSBG-250	**1456781**	**DASP-M4-250-A**
	For DSBG-320	**3015256**	**DASP-M4-320-A**

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**