Position transmitters, proximity sensors SDAS-MHS for T-slot

Characteristics

General

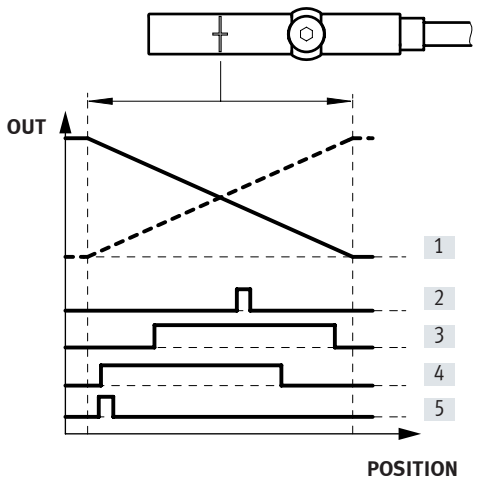
The SDAS-MHS is used for contactless feedback of the piston position of drives with magnetic proximity sensing. It combines two functions into a single device.
1. As a position transmitter, it provides an output signal proportional to the motion within the sensing range, with the signal being made available in the IO-Link communication standard. Furthermore, 4 channels can be programmed via IO-Link as proximity sensor, window comparator or hysteresis comparator.
2. As a programmable proximity sensor, the SDAS-MHS provides binary feedback of the piston position which is made available as a standard 24 V output signal. Additionally, two proximity sensor switching points can be taught in within the sensing range via a capacitive operating button directly on the device.

Thanks to its extremely compact design, the SDAS-MHS is the ideal solution for grippers, compact cylinders and all applications with limited installation space.

Note

It can be used with Festo drives with T-slot (profile slot 8) as well as round cylinders and tie-rod cylinders with mounting kits. A selection aid with suitable drives can be found below.

Position transmitter

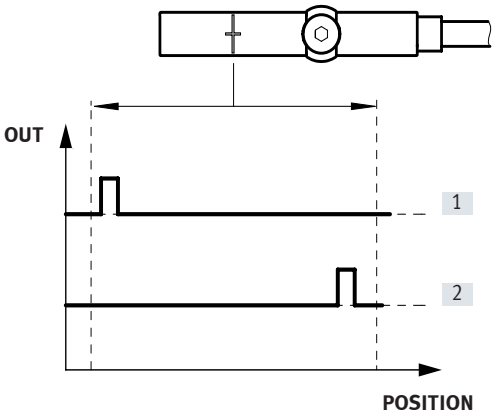


---- Output signal (PDV): direction of increase inverted
— Output signal (PDV): direction of increase as per delivery status

[1] PDV (position data values)
[2] SSC1 (switching signal channel)
[3] SSC2
[4] SSC3
[5] SSC4

Applications:
Good/bad part sorting, press-fitting, riveting, ultrasonic welding etc.

Proximity sensor



[1] Electrical output 1
[2] Electrical output 2

Applications:
Two proximity sensors in one device to save space on compact drives and to save time during assembly and commissioning.

Characteristics

Note

Sensing range [mm]:
Specification for operating mode as **position transmitter**; typical value.

In operating mode as **proximity sensor**, the sensing range in which switching points can be set is reduced at the right- and left-hand edge by approx. 5% in each case on account of the required functional reserve.

For drive	Sensing range [mm]
Standards-based cylinders	
ADN-12	25
ADN-16	25
ADN-20	28
ADN-25	28
ADN-32	29
ADN-40	29
ADN-50	33
ADN-63	34
ADN-80	37
ADN-100	43
ADN-125	41
ADN-TT-12	25
ADN-TT-16	25
ADN-TT-20	27
ADN-TT-25	28
ADN-TT-32	29
ADN-TT-40	29
ADN-TT-50	33
ADN-TT-63	34
ADN-TT-80	37
ADN-TT-100	42
ADN-TT-125	41

For drive	Sensing range [mm]
Standards-based cylinders	
DSBC-32	28
DSBC-40	30
DSBC-50	30
DSBC-63	34
DSBC-80	38
DSBC-100	42
DSBC-125	42
DSBC-TT-32	27
DSBC-TT-40	30
DSBC-TT-50	30
DSBC-TT-63	34
DSBC-TT-80	38
DSBC-TT-100	42
DSBC-TT-125	42
DSBG-32	31
DSBG-40	29
DSBG-50	30
DSBG-63	32
DSBG-80	35
DSBG-100	40
DSBG-125	45
DSBG-32 V2	31
DSBG-63 V2	32
DSBG-100 V2	36
DSNU-8	24
DSNU-10	26
DSNU-12	27
DSNU-16	28
DSNU-20	27
DSNU-25	29
DSNU-32	27
DSNU-40	28
DSNU-50	31
DSNU-63	32

Characteristics

For drive	Sensing range [mm]
Piston rod cylinders	
ADVC-32	Stroke < sensing range of SDAS
ADVC-40	Stroke < sensing range of SDAS
ADVC-50	Stroke < sensing range of SDAS
ADVC-63	Stroke < sensing range of SDAS
ADVC-80	Stroke < sensing range of SDAS
ADVC-100	Stroke < sensing range of SDAS
ADVU-12	27
ADVU-16	24
ADVU-20	29
ADVU-25	30
ADVU-32	33
ADVU-40	35
ADVU-50	32
ADVU-63	40
ADVU-80	44
ADVU-100	45
ADVU-125	40
DMM-10	23
DMM-16	27
DMM-20	32
DMM-25	31
DMM-32	33
DPDM-25	29
DPDM-32	28
DZF-12	28
DZF-18	29
DZF-25	35
DZF-32	34
DZF-40	44
DZF-50	47
DZF-63	52
DGST-16	28
DGST-20	32
DGST-25	32
DZH-16	31
DZH-20	32
DZH-25	33
DSL-16	32
DSL-20	25
DSL-25	36
DSL-32	37
DSL-40	40

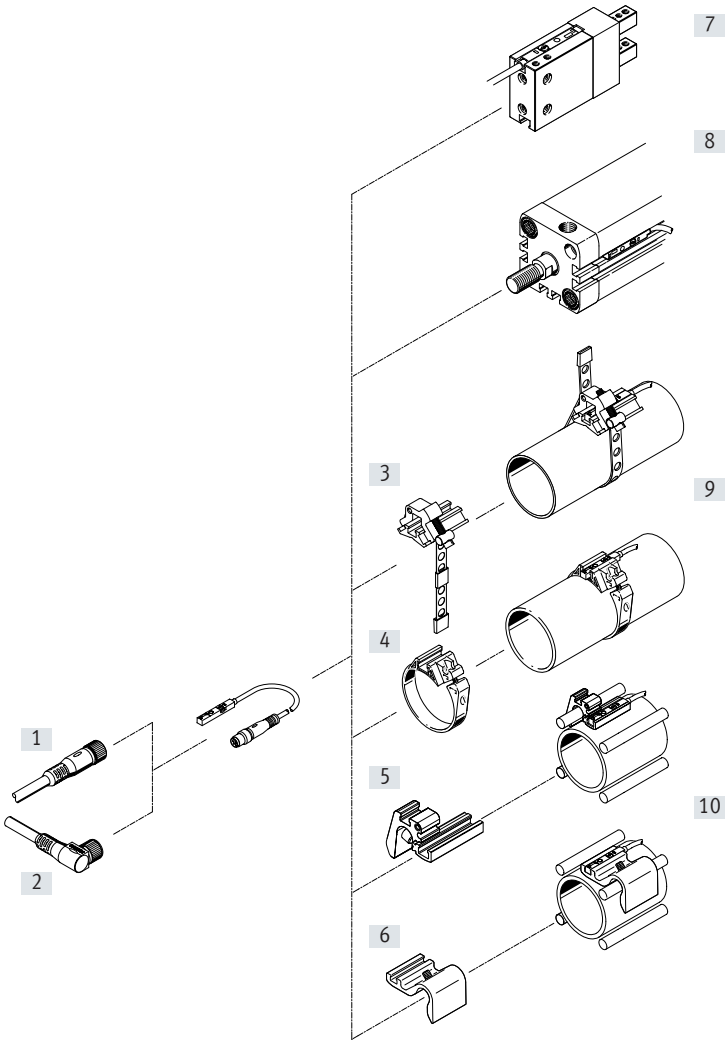
For drive	Sensing range [mm]
Rodless cylinders	
DGC-18	33
DGC-25	41
DGC-32	43
DGC-40	58
DGC-K-18	34
DGC-K-25	44
DGC-K-32	52
Semi-rotary drives with rack and pinion	
DRRD-16	Stroke < sensing range of SDAS
DRRD-20	23
DRRD-25	28
DRRD-32	30
DRRD-35	31
DRRD-40	30
DRRD-50	29
DRRD-63	29
DRQD-16	Stroke < sensing range of SDAS
DRQD-20	29
DRQD-25	29
DRQD-32	31
DRQD-50	39
DRQD-63	29
Drives with linear guide	
DFM-12	27
DFM-16	25
DFM-20	31
DFM-25	30
DFM-32	33
DFM-40	32
DFM-50	34
DFM-63	36
DFM-80	41
DFM-100	46
DFM-12-B	25
DFM-16-B	27
DFM-20-B	28
DFM-25-B	29
DFM-32-B	30
DFM-40-B	30
DFM-50-B	32
DFM-63-B	36
DGC-18	33
DGC-25	41
DGC-32	43
DGC-40	58
DGC-K-18	34
DGC-K-25	44
DGC-K-32	52
DPZ-10	27
DPZ-16	30
DPZ-20	34
DPZ-25	32
DPZ-32	34

Characteristics

For grippers	Sensing range [mm]
DHDS-32	Stroke < sensing range of SDAS
DHDS-50	Stroke < sensing range of SDAS
DHDS-32-NC	Stroke < sensing range of SDAS
DHDS-50-NC	Stroke < sensing range of SDAS
DHEF-20-A	33
DHPS-10	Stroke < sensing range of SDAS
DHPS-16	Stroke < sensing range of SDAS
DHPS-20	Stroke < sensing range of SDAS
DHPS-25	Stroke < sensing range of SDAS
DHPS-35	Stroke < sensing range of SDAS
DHPS-10-NC	Stroke < sensing range of SDAS
DHPS-16-NC	Stroke < sensing range of SDAS
DHPS-35-NC	Stroke < sensing range of SDAS
DHPS-10-NO	Stroke < sensing range of SDAS
DHPS-16-NO	Stroke < sensing range of SDAS
DHPS-20-NO	Stroke < sensing range of SDAS
DHPS-35-NO	Stroke < sensing range of SDAS
DHRS-16	Stroke < sensing range of SDAS
DHRS-25	Stroke < sensing range of SDAS
DHRS-32	Stroke < sensing range of SDAS
DHRS-40	Stroke < sensing range of SDAS
DHRS-16-NC	Stroke < sensing range of SDAS
DHRS-25-NC	Stroke < sensing range of SDAS
DHRS-32-NC	Stroke < sensing range of SDAS
DHRS-40-NC	Stroke < sensing range of SDAS
HGW-16	Stroke < sensing range of SDAS
HGW-25	Stroke < sensing range of SDAS
HGW-32	Stroke < sensing range of SDAS
HGW-40	Stroke < sensing range of SDAS
DHWS-16	Stroke < sensing range of SDAS
DHWS-25	Stroke < sensing range of SDAS
DHWS-32	Stroke < sensing range of SDAS
DHWS-40	Stroke < sensing range of SDAS
DHWS-16-NC	Stroke < sensing range of SDAS
DHWS-25-NC	Stroke < sensing range of SDAS
DHWS-32-NC	Stroke < sensing range of SDAS
DHWS-40-NC	Stroke < sensing range of SDAS
HGDD-50	Stroke < sensing range of SDAS
HGDD-63	Stroke < sensing range of SDAS
HGDD-80	Stroke < sensing range of SDAS
HGDD-35-G1	Stroke < sensing range of SDAS
HGDD-40-G1	Stroke < sensing range of SDAS
HGDD-50-G1	Stroke < sensing range of SDAS
HGDD-63-G1	Stroke < sensing range of SDAS
HGDD-80-G1	Stroke < sensing range of SDAS
HGDD-35-G2	Stroke < sensing range of SDAS
HGDD-40-G2	Stroke < sensing range of SDAS
HGDD-50-G2	Stroke < sensing range of SDAS
HGDD-63-G2	Stroke < sensing range of SDAS
HGDD-80-G2	Stroke < sensing range of SDAS

For grippers	Sensing range [mm]
HGPD-40	Stroke < sensing range of SDAS
HGPD-50	Stroke < sensing range of SDAS
HGPD-63	Stroke < sensing range of SDAS
HGPD-80	Stroke < sensing range of SDAS
HGPD-40-G1	Stroke < sensing range of SDAS
HGPD-50-G1	Stroke < sensing range of SDAS
HGPD-63-G1	Stroke < sensing range of SDAS
HGPD-80-G1	Stroke < sensing range of SDAS
HGPD-40-G2	Stroke < sensing range of SDAS
HGPD-50-G2	Stroke < sensing range of SDAS
HGPD-63-G2	Stroke < sensing range of SDAS
HGPD-80-G2	Stroke < sensing range of SDAS
HGPL-14	25
HGPL-25	28
HGPL-40	32
HGPL-63	33
HGPL-B-14	26
HGPL-B-25	28
HGPL-B-40	32
HGPL-B-63	33
HGPT-40	Stroke < sensing range of SDAS
HGPT-50	Stroke < sensing range of SDAS
HGPT-63	Stroke < sensing range of SDAS
HGPT-80	Stroke < sensing range of SDAS
HGPT-40-G1	Stroke < sensing range of SDAS
HGPT-50-G1	Stroke < sensing range of SDAS
HGPT-63-G1	Stroke < sensing range of SDAS
HGPT-80-G1	Stroke < sensing range of SDAS
HGPT-40-G2	Stroke < sensing range of SDAS
HGPT-50-G2	Stroke < sensing range of SDAS
HGPT-63-G2	Stroke < sensing range of SDAS
HGPT-80-G2	Stroke < sensing range of SDAS
HGRT-40	Stroke < sensing range of SDAS
HGRT-50	36
HGRT-40-G2	Stroke < sensing range of SDAS
HGRT-50-G2	40
EHPS-16	Stroke < sensing range of SDAS
EHPS-20	Stroke < sensing range of SDAS
EHPS-25	Stroke < sensing range of SDAS

Peripherals overview



Accessories		→ Page/Internet
[1]	Connecting cable NEBU-M8G4	12
[2]	Connecting cable NEBU-M8W4	12
[3]	Mounting kit SMBR-8-8/100-S6, heat-resistant	12
[4]	Mounting kit SMBR	12
[5]	Mounting SMBZ-8	12
[6]	Sensor bracket DASP-M4-...	12
[7]	Three-point gripper HGDD	hgdd
	Parallel gripper DHPS	dhps
	Parallel gripper HGPD	hgpd
	Parallel gripper HGPT	hgpt
	Angle gripper DHWS	dhws
	Radial gripper DHRS	dhrs
	Radial gripper HGRT	hgrt

Accessories		→ Page/Internet
[8]	Standards-based cylinder DSBC	dsbc
	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
	Linear/swivel clamp CLR	clr
	Guided drive DFM	dfm
[9]	Standards-based cylinder/round cylinder DSNU	dsnu
	Linear drive unit SLE	sle
[10]	Standards-based cylinder DSBG	dsbg

Type codes

001	Series	
SDAS	Position transmitter/cylinder switch	

002	Sensor version	
M	Can be inserted in the slot	

003	Sensor principle	
HS	Hall sensor	

004	Measuring range	
M40	Typically up to 40 mm	

005	Nominal operating voltage	
1	24 V DC	

006	Display	
L	LED	

007	Electrical output 1	
PNLK	PNP or NPN or IO-Link®	

008	Electrical output 2	
PN	PNP or NPN	

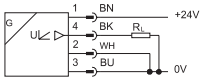
009	Cable characteristic	
E	Suitable for energy chains/robot applications	

010	Cable length [m]	
0.3	0.3	
2.5	2.5	

011	Electrical connection	
LE	Open end	
M8	Plug M8	

Data sheet

Function



Operating mode:
Position transmitter

Operating mode:
Proximity sensor

General technical data	
Design	For T-slot
Mounting position	Any
Type of mounting	Screwed tightly
Application information	Support / Overview of actuator sensors “The right sensor for the actuator”
Certification	RCM compliance mark
KC mark	KC EMC
CE marking (see declaration of conformity)	To EU EMC Directive
	To EU RoHS Directive
UKCA marking (see declaration of conformity)	To UK instructions for EMC
	To UK RoHS instructions
Degree of protection	IP65, IP68
Note on materials	RoHS-compliant
	Halogen-free
PWIS conformity	VDMA24364-B2-L

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Sensors		
Measured variable		Position
Measuring principle		Magnetic Hall
Sensing range	[mm]	≤ 52
Ambient temperature	[°C]	-40 ... +80
Typical sampling interval	[ms]	2
Max. travel speed	[m/s]	3
Path resolution	[mm]	≤ 0.02
Repetition accuracy	[mm]	0.2
Typical linearity error	[mm]	±1

Electronics – General		
Operating voltage range	[V DC]	10 ... 30
Residual ripple	[%]	10
Reverse polarity protection		For all electrical connections

Data sheet

Electronics – Switching output (operating mode: proximity sensor)		
Switching output		2x PNP or 2x NPN adjustable
Switching element function[1]		N/C or N/O contact, switchable
Switch-on time	[ms]	< 4
Switch-off time	[ms]	< 4
Max. switching frequency	[Hz]	125
Max. output current[2]	[mA]	50
Idle current	[mA]	< 12
Short circuit current rating		Yes
Overload protection		Present
Max. switching output voltage DC	[V]	30
Max. switching capacity DC	[W]	1.5
Voltage drop	[V]	< 0.5

1) Switching element function can only be set via IO-Link
2) Per switching output

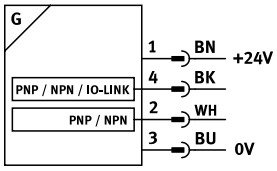
IO-Link (operating mode: position transmitter)		
Protocol		IO-Link
		I-Port
Protocol version		Device V 1.1
Profile		Smart sensor profile
Function classes		Process data variable (PDV)
		Identification
		Diagnostics
		Teach channel
		Switching signal channel (SSC)
Communication mode		COM2 (38.4 kBaud)
SIO-mode support		Yes
Port class		A
Process data width IN		2 bytes
Process data content IN		12-bit PDV (position measurement)
		4-bit SSC (switching signal)
Minimum cycle time	[ms]	2.5

Display/operation	
Switching status indication	LED yellow
Status indication	LED red
Setting options	IO-Link
	Capacitive pushbutton

Data sheet

Electromechanical components		SDAS-MHS- ... -0,3-M8	SDAS-MHS- ... -2,5-LE
Electrical connection 1			
Connection type		Cable with plug	Cable
Connection technology		M8x1, A-coded to EN 61076-2-104	Open end
Number of pins/wires		4	
Type of mounting		Screw-type lock	–
Connection outlet direction		In-line	
Ambient temperature with flexible cable installation	[°C]	–20 ... +70	
Cable length	[m]	0.3	2.5
Cable characteristic		Suitable for use with energy chains/robot applications	
Cable test conditions		Bending strength: to Festo standard	
		Energy chain: 5 million cycles, bending radius 28 mm	
		Torsional resistance: › 300,000 cycles, ± 270°/0.1 m	
Cable sheath colour		Grey	
Cable sheath material		TPE-U(PUR)	
Information on materials: Pin contacts		Gold-plated copper alloy	–

Terminal allocation



Operating mode: proximity sensor

1	Operating voltage
2	Switching output 2
3	0V
4	Switching output 1

Operating mode: position transmitter

1	Operating voltage
2	Not used
3	0V
4	IO-Link

Wire colours

BN =	Brown	WH =	White
BK =	Black	BU =	Blue

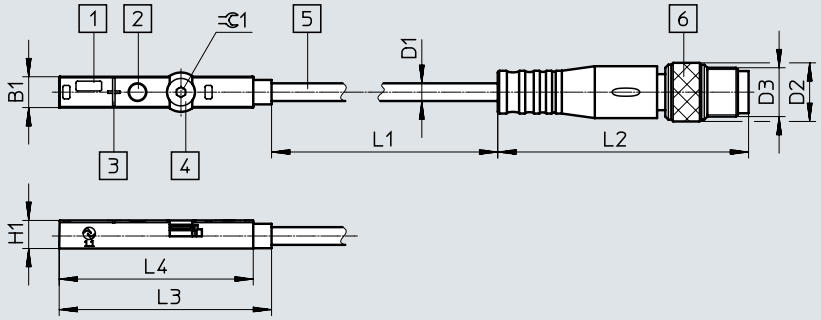
Plug

Mechanical system		SDAS-MHS- ... -0,3-M8	SDAS-MHS- ... -2,5-LE
Type of mounting		Insertable in the slot from above	
Product weight	[g]	9.5	27
Housing material		High-alloy stainless steel	
		Reinforced PA	
Information on materials: Union nut		Nickel-plated brass	–

Data sheet

Dimensions of cable with plug

Download CAD data ➔ www.festo.com

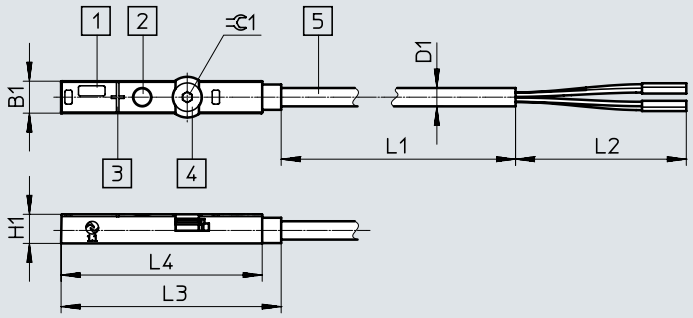


[1] Light emitting diode
[2] Operating button
[3] Centre of the sensor
[4] Slot for screwdriver
[5] Connecting cable
[6] Plug M8, 4-pin

Type	B1	D1 ø	D2 ø	D3	H1	L1	L2	L3	L4	=C 1
SDAS-MHS-...-M8	5	2.9	9.6	M8	4.6	300	41.1	34.8	31.8	1.5

Cable dimensions

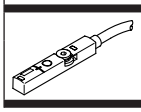
Download CAD data ➔ www.festo.com



[1] Light emitting diode
[2] Operating button
[3] Centre of the sensor
[4] Slot for screwdriver
[5] Connecting cable

Type	B1	D1 ø	H1	L1	L2	L3	L4	=C 1
SDAS-MHS-...-LE	5	2.9	4.6	2500	50	34.8	31.8	1.5

Ordering data

	Electrical connection	Cable length [m]	Part no.	Type
	Cable with plug, M8x1, A-coded to EN 61076-2-104	0.3	**8063974**	**SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8**
	Cable, open end	2.5	**8063975**	**SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE**

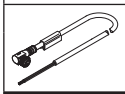
Accessories

Ordering data – Mounting components

	For piston diameter	Part no.	Type
Mounting kit SMBR-8-8/100-S6, heat-resistant			
	8 ... 100	**538937**	**SMBR-8-8/100-S6**
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			
	For DSBG 32 ... 100	**537806**	**SMBZ-8-3 2/100**
Sensor bracket DASP-M4-...			
	For DSBG-125	**1451483**	**DASP-M4-125-A**

Ordering data – Connecting cable 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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