



INDUCTIVE SENSORS: ANALOG OUTPUT SERIES 509



- ✓ Sensing range up to **40 mm**
- ✓ Resolution in **µm** range
- ✓ Excellent **temperature stability**
- ✓ Very good **repeat accuracy**
- ✓ **Current & voltage outputs**
- ✓ **Several switch points** with a single device

TECHNICAL DATA

(according to IEC 60947-5-2)	
Housing material	Chrome-plated brass
Degree of protection	IP 67
Max. ripple content	≤ 20 % U _B
No-load supply current	≤ 10 mA
Output voltage, damped	0 VDC
Output voltage, non-damped	5 VDC / 10 VDC (-320/-39#)
Temperature drift % s _v	≤ 5 % (0...+70 °C); ≤ 10 % (-25...+0 °C)
Short-circuit protection	Built-in
Polarity reversal protection	Built-in
Power-on reset	Built-in

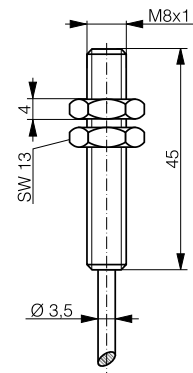
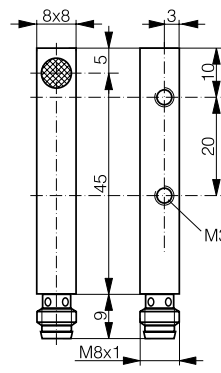
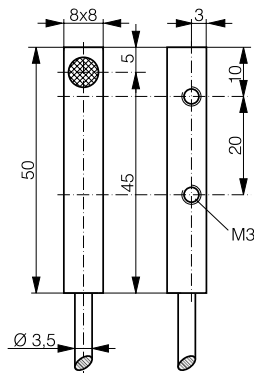
Inductive sensors with analog output for continuous measuring from 0 to 40 mm with very high detection accuracy (µm range). High resolution and temperature stability as well as excellent repeat accuracy. Voltage (all models) and current outputs (M12, M18 and M30) in the same device. Particularly suited for

- ✓ regulated approach of **elevators** to end positions
- ✓ **vibration monitoring**
- ✓ **rotation monitoring**
- ✓ **angle detection**
- ✓ detection of **pedal positions** in vehicles
- ✓ **position monitoring** of parts on conveyor belts
- ✓ **sheet-metal forming**
- ✓ **metal-sorting systems**

HOUSING SIZE	8 X 8		M8
SENSING RANGE MM	0 ... 4	0 ... 4	0 ... 4



ANALOG OUTPUT / LARGE SENSING RANGE



- 1) Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
- 2) see page 133
- 3) see page 268

TECHNICAL DATA			
Connection ¹⁾	PUR cable type 3	Connector S8	PUR cable type 3
Bandwidth (-3 dB)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 10 V	0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	---	---	---
Wiring ²⁾	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	15 ... 30 VDC	15 ... 30 VDC	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (BOLD: PREFERRED TYPES)			
Non-linearized:			DW-AD-509-M8***
Outputs 0 ... 5 V / 1 ... 5 mA			
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AD-509-C8-390***	DW-AS-509-C8-390***	DW-AD-509-M8-390***
Compatible connectors ³⁾		A, B	

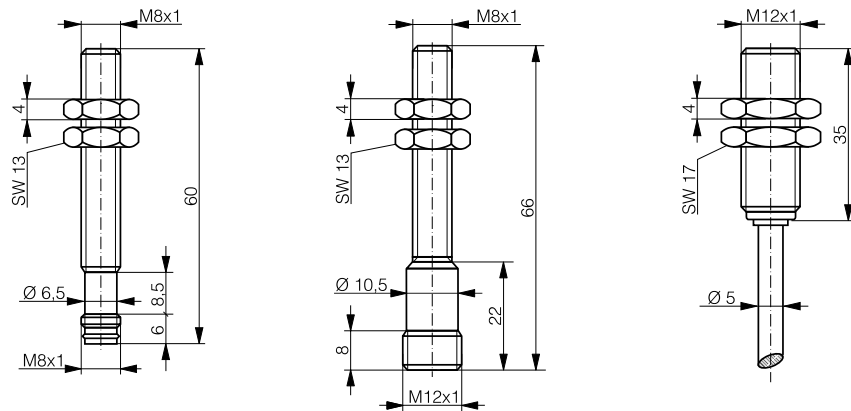
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

Inductive
Photoelectric
Optical fibers
Ultrasonic
Capacitive
Cables & connectors
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Glossary
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HOUSING SIZE	M8		M12
SENSING RANGE MM	0 ... 4	0 ... 4	0 ... 6



ANALOG OUTPUT / LARGE SENSING RANGE



- 1) Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
- 2) see page 133
- 3) see page 268

TECHNICAL DATA

Connection ¹⁾	Connector S8	Connector S12	PUR cable type 7
Bandwidth (-3 dB)	1,600 Hz (at s = 2 mm)	1,600 Hz (at s = 2 mm)	1,000 Hz (at s = 3 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	---	---	1 ... 5 mA
Wiring ²⁾	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (BOLD: PREFERRED TYPES)

Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	DW-AS-509-M8-001***	DW-AS-509-M8***	DW-AD-509-M12-120
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AS-509-M8-390***	DW-AS-509-M8-393***	DW-AD-509-M12-320***
Compatible connectors ³⁾	A, B	G, H, M, N	

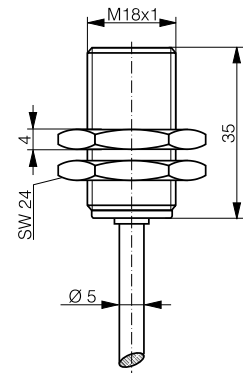
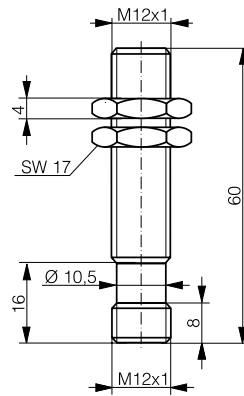
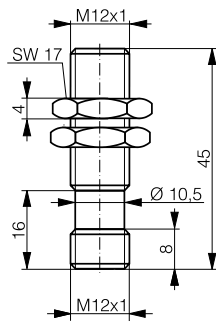
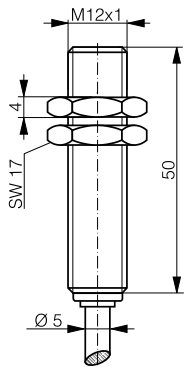
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

M12			M18
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0 ... 6	0 ... 6	0 ... 6	0 ... 10
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ANALOG OUTPUT / LARGE SENSING RANGE



PUR cable type 7	Connector S12	Connector S12	PUR cable type 7
1,000 Hz (at s = 3 mm)	1,000 Hz (at s = 3 mm)	1,000 Hz (at s = 3 mm)	500 Hz (at s = 5 mm)
Quasi-embeddable	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C	-25 ... +70 °C**	-25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AD-509-M12	DW-AS-509-M12-120	DW-AS-509-M12	DW-AD-509-M18-120
DW-AD-509-M12-390	DW-AS-509-M12-320***	DW-AS-509-M12-390	DW-AD-509-M18-320
	M, N	M, N	

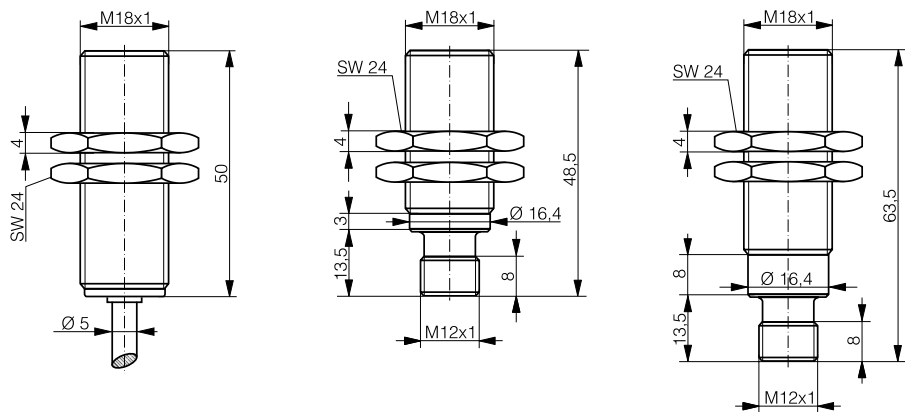
* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets) *** without current output

- Inductive
- Photoelectric
- Optical fibers
- Ultrasonic
- Capacitive
- Cables & connectors
- Accessories
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HOUSING SIZE	M18		
SENSING RANGE MM	0 ... 10	0 ... 10	0 ... 10



ANALOG OUTPUT / LARGE SENSING RANGE



- 1) Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
- 2) see page 133
- 3) see page 268

TECHNICAL DATA

Connection ¹⁾	PUR cable type 7	Connector S12	Connector S12
Bandwidth (-3 dB)	500 Hz (at s = 5 mm)	500 Hz (at s = 5 mm)	500 Hz (at s = 5 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Wiring ²⁾	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (BOLD: PREFERRED TYPES)

Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	DW-AD-509-M18	DW-AS-509-M18-120	DW-AS-509-M18-002
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AD-509-M18-390	DW-AS-509-M18-320	DW-AS-509-M18-390
Compatible connectors ³⁾		M, N	M, N

* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

M18

0 ... 20

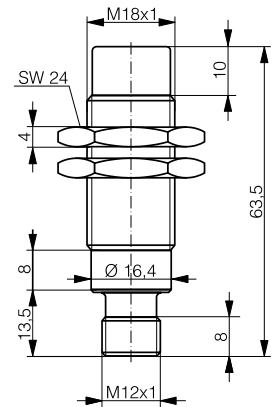
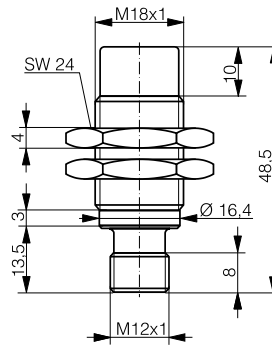
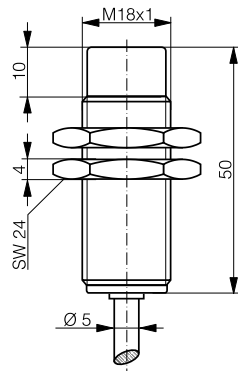
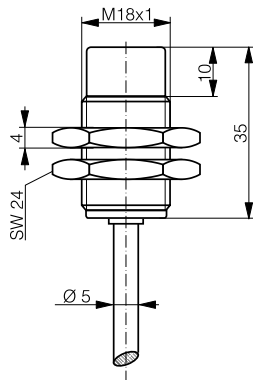
0 ... 20

0 ... 20

0 ... 20



ANALOG OUTPUT / LARGE SENSING RANGE



PUR cable type 7	PUR cable type 7	Connector S12	Connector S12
250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)	250 Hz (at s = 10 mm)
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**	25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AD-519-M18-120	DW-AD-519-M18	DW-AS-519-M18-120	DW-AS-519-M18-002
DW-AD-519-M18-320	DW-AD-519-M18-390	DW-AS-519-M18-320	DW-AS-519-M18-390
		M, N	M, N

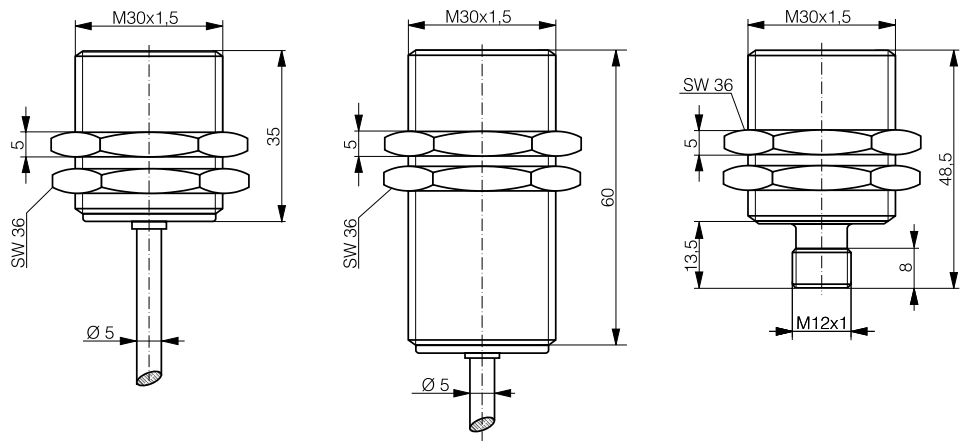
* DW-A#-519-M##-320/39#

** Depending on operating conditions, limited temperature range for DW-A#-519-M##-320/390 (see data sheets)

HOUSING SIZE	M30		
SENSING RANGE MM	0 ... 20	0 ... 20	0 ... 20



ANALOG OUTPUT / LARGE SENSING RANGE



- 1) Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
- 2) see page 133
- 3) see page 268

TECHNICAL DATA

Connection ¹⁾	PUR cable type 7	PUR cable type 7	Connector S12
Bandwidth (-3 dB)	200 Hz (at s = 10 mm)	200 Hz (at s = 10 mm)	200 Hz (at s = 10 mm)
Mounting	Quasi-embeddable	Quasi-embeddable	Quasi-embeddable
Voltage output	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
Current output	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Wiring ²⁾	Diagram 5	Diagram 5	Diagram 5
Supply voltage range	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
Ambient temperature range	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
Approvals	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

PART REFERENCES: (BOLD: PREFERRED TYPES)

Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	DW-AD-509-M30-120	DW-AD-509-M30	DW-AS-509-M30-120
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AD-509-M30-320	DW-AD-509-M30-390	DW-AS-509-M30-320
Compatible connectors ³⁾			M, N

* DW-A#-509-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

M30

0 ... 20

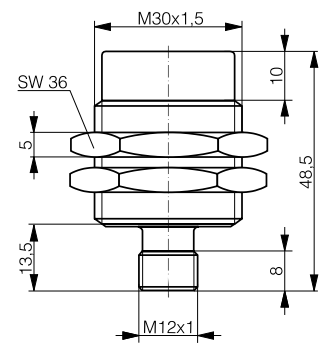
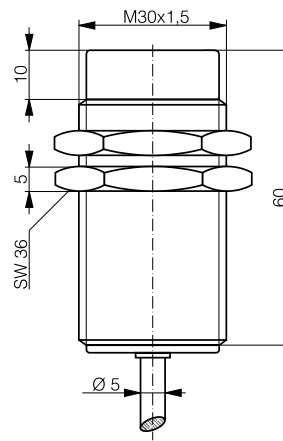
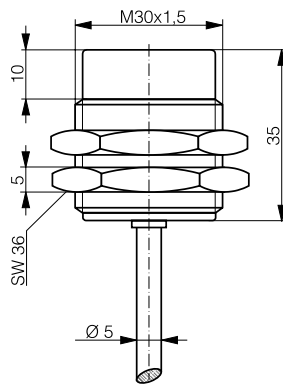
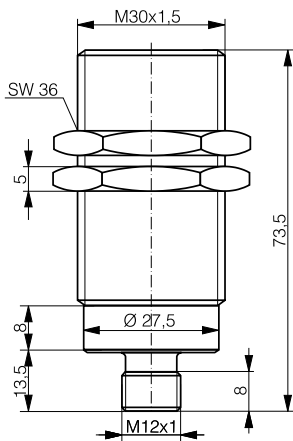
0 ... 40

0 ... 40

0 ... 40



ANALOG OUTPUT / LARGE SENSING RANGE



Connector S12	PUR cable type 7	PUR cable type 7	Connector S12
200 Hz (at s = 10 mm)	100 Hz (at s = 20 mm)	100 Hz (at s = 20 mm)	100 Hz (at s = 20 mm)
Quasi-embeddable	Non-embeddable	Non-embeddable	Non-embeddable
0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V	0 ... 5 V / 0 ... 10 V
1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA	1 ... 5 mA / 4 ... 20 mA
Diagram 5	Diagram 5	Diagram 5	Diagram 5
10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*	10 ... 30 / 15 ... 30 VDC*
-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**	-25 ... +70 °C**
CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS	CE, UL, RoHS

DW-AS-509-M30-002	DW-AD-519-M30-120	DW-AD-519-M30	DW-AS-519-M30-120
DW-AS-509-M30-390	DW-AD-519-M30-320	DW-AD-519-M30-390	DW-AS-519-M30-320
M, N			M, N

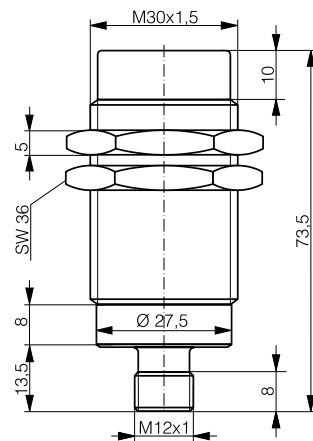
* DW-A#-509-M##-320/39#

** Depending on operating conditions, limited temperature range for DW-A#-509-M##-320/390 (see data sheets)

HOUSING SIZE	M30		
SENSING RANGE MM	0 ... 40		



ANALOG OUTPUT / LARGE SENSING RANGE



- 1) Standard cable length 2 m. Non-standard cable lengths and types on request. Cable type see page 271.
- 2) see page 133
- 3) see page 268

TECHNICAL DATA

Connection ¹⁾	Connector S12		
Bandwidth (-3 dB)	100 Hz (at s = 20 mm)		
Mounting	Non-embeddable		
Voltage output	0 ... 5 V / 0 ... 10 V		
Current output	1 ... 5 mA / 4 ... 20 mA		
Wiring ²⁾	Diagram 5		
Supply voltage range	10 ... 30 / 15 ... 30 VDC*		
Ambient temperature range	-25 ... +70 °C**		
Approvals	CE, UL, RoHS		

PART REFERENCES: (BOLD: PREFERRED TYPES)

Non-linearized:			
Outputs 0 ... 5 V / 1 ... 5 mA	DW-AS-519-M30-002		
Outputs 0 ... 10 V / 4 ... 20 mA	DW-AS-519-M30-390		
Compatible connectors ³⁾	M, N		

* DW-A#-519-M##-320/39# ** Depending on operating conditions, limited temperature range for DW-A#-519-M##-320/390 (see data sheets)