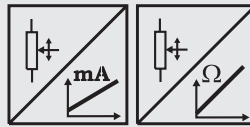


Model WS31C with analog output



OEM sensors for large order volumes

- Protection class IP50
- Low Cost
- Compact outline
- Plastic housing
- Measuring ranges: 0 ... 250 mm and 0 ... 500 mm
- Resolution essentially infinite
- Mounting selectable between mounting brackets or spacer nuts with internal thread



Specifications	Output	Potentiometer: 1 kΩ Current: 4 ... 20 mA (2 wire)
	Resolution	Essentially infinite
	Material	Housing: plastic Cable drum: aluminium Measuring cable: stainless steel
	Sensor element	High-precision potentiometer
	Connection	Cable output, length 1 m (standard)
	Linearity	±0.35% full scale; other values on request
	Protection class	IP50
	Operation temperature range	-15 ... +60°C (max. 85% r. h., non condensing)
	Weight	90 g approx.
	Cable force	250 mm: 1.5 N 500 mm: 1.7 N

Order Code WS31C

WS31C - [] - [] - [] - [] - []

Model Name

Measurement range (in mm)

250 / 500

Output (see pages 57 and 58)

R1K = Potentiometer 1 kΩ

420A = With signal conditioner 4 ... 20 mA (2 wire)

Linearity

L35 = ±0.35%

Other values on request

Sensor Mounting

1 = Mounting brackets

2 = Spacer nuts

Connection

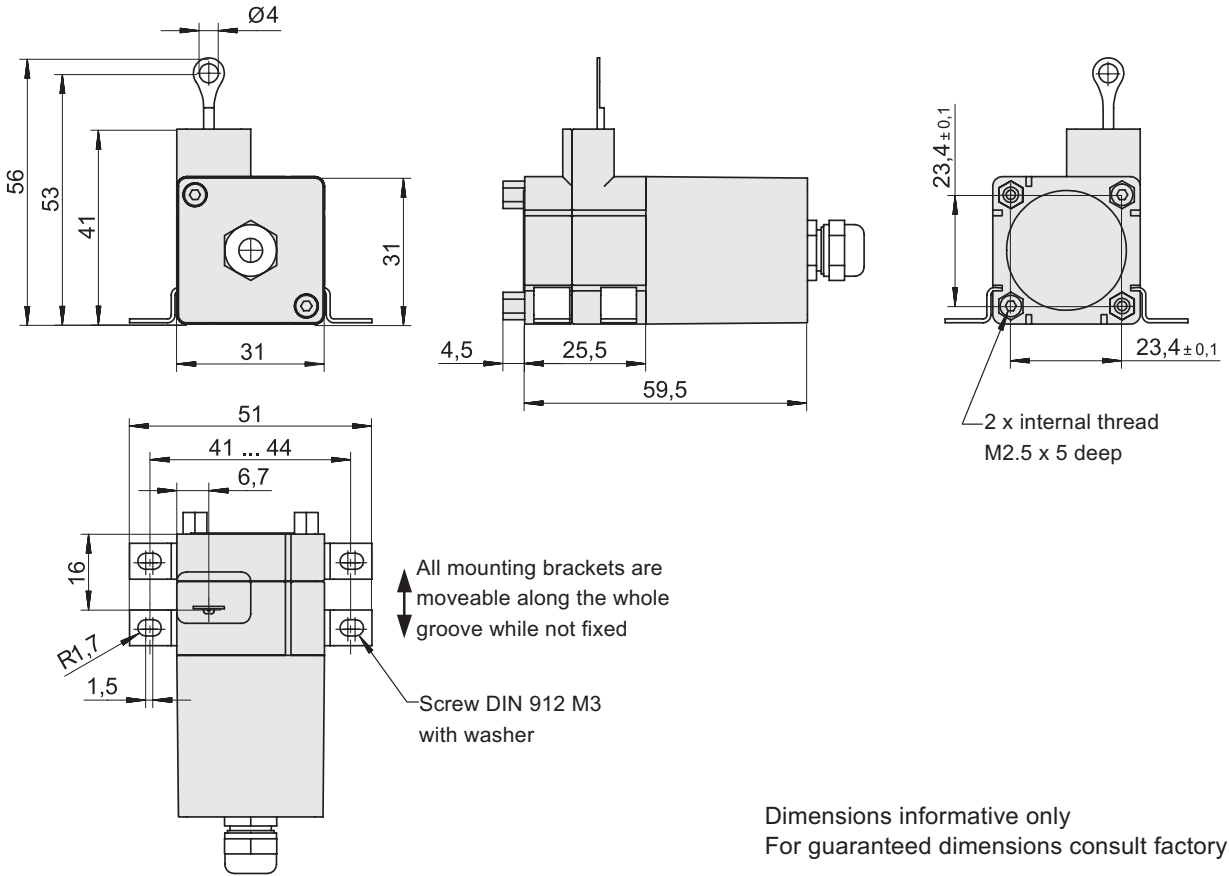
KAB1M = Cable output, length 1 m (standard)

Order Example: WS31C - 500 - 420A - L35 - 2 - KAB1M

Model WS31C with analog output



Outline drawing



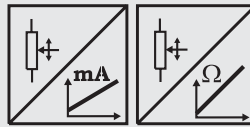
Dimensions informative only
For guaranteed dimensions consult factory.

Model WS42C with analog output



OEM sensors for large order volumes

- Protection class IP50
- Low Cost
- Compact outline
- Plastic housing
- Measurement ranges: 0 ... 750 mm and 0 ... 1000 mm
- Resolution essentially infinite
- Mounting selectable between mounting brackets or spacer nuts with internal thread



Specifications	Output	Potentiometer: 1 kΩ Current: 4 ... 20 mA (2 wire)
	Resolution	Essentially infinite
	Material	Housing: plastic Cable drum: aluminium Measuring cable: stainless steel
	Sensor element	High-precision potentiometer
	Connection	Cable output, length 1 m (standard)
	Linearity	±0.35% full scale; other values on request
	Protection class	IP50
	Operation temperature range	-15 ... +60°C (max. 85% r. h., non condensing)
	Weight	125 g approx.
	Cable force	750 mm: 2.5 N 1000 mm: 1.7 N

Order Code WS42C

WS42C - [] - [] - [] - [] - []

Model Name

Measurement range (in mm)

750 / 1000

Output (see pages 57 and 58)

R1K = Potentiometer 1 kΩ

420A = With signal conditioner 4 ... 20 mA (2 wire)

Linearity

L35 = ±0.35%

Other values on request

Sensor Mounting

1 = Mounting brackets

2 = Spacer nuts

Connection

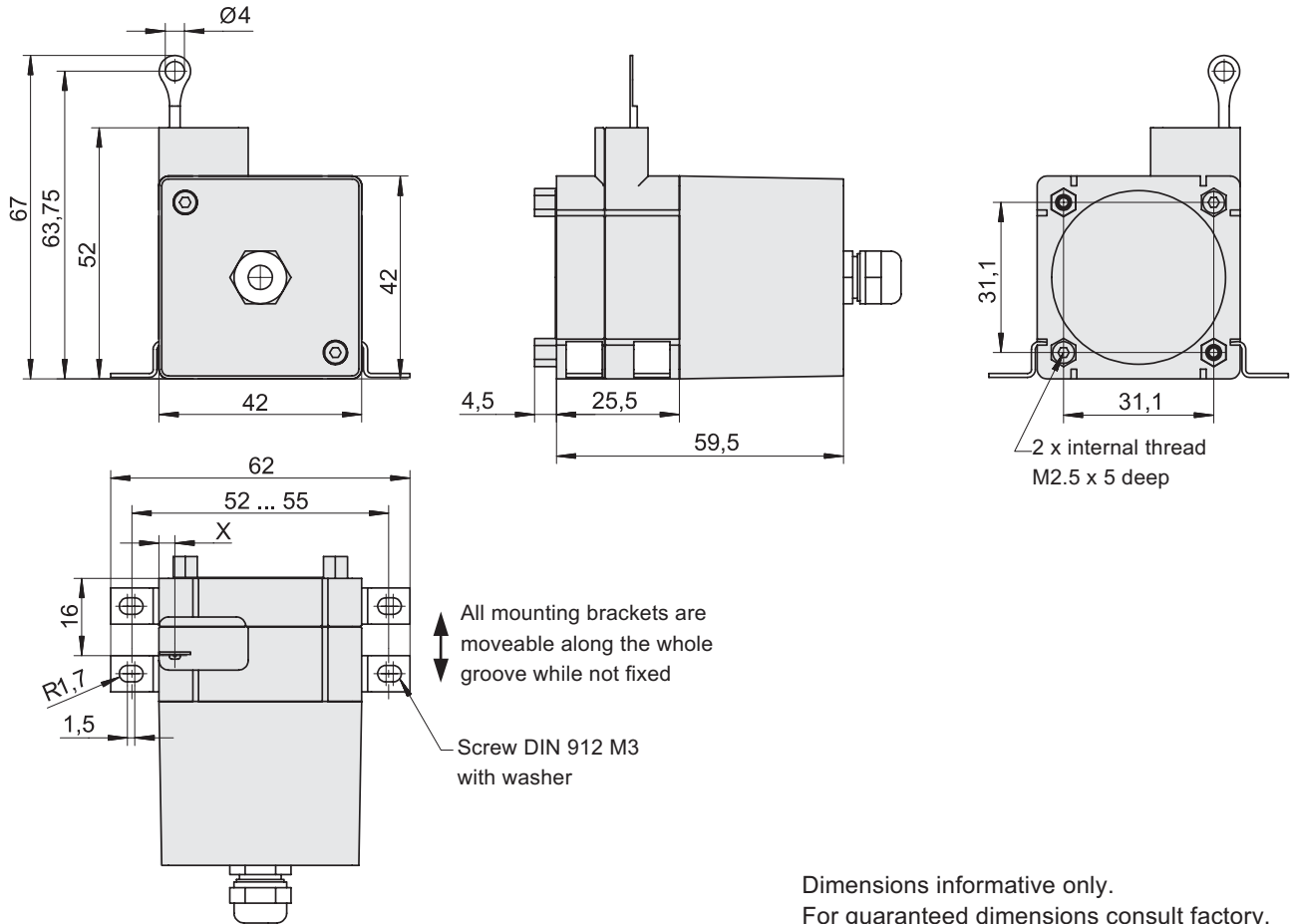
KAB1M = Cable output, length 1 m (standard)

Order Example: WS42C - 1000 - 420A - L35 - 2 - KAB1M

Model WS42C with analog output



Outline drawing



Dimensions informative only.
For guaranteed dimensions consult factory.

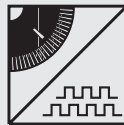
Dimensions	Measurement range	X
	[mm]	
	750	9
	1000	3,3

Model WS31 with incremental encoder output



OEM sensors for large order volumes

- Low Cost
- Compact outline
- Plastic housing
- Measuring range: 0 ... 500 mm
- Resolution: 10 pulses per mm
- Mounting selectable
between mounting brackets or
spacer nuts with internal thread



Specifications	Output	Incremental encoder
	Resolution	10 pulses per mm
	Material	Housing: Plastic; Cable drum: Aluminium Measuring cable: Stainless steel
	Sensor element	Incremental encoder
	Connection	Cable output, approx. 3 m
	Linearity	±0.20 % full scale; other values on request
	Operation temperature range	0 ... +60°C (max. 85% r. h., non condensing)
	Weight	Approx. 95 g
	Cable force	1.5 N

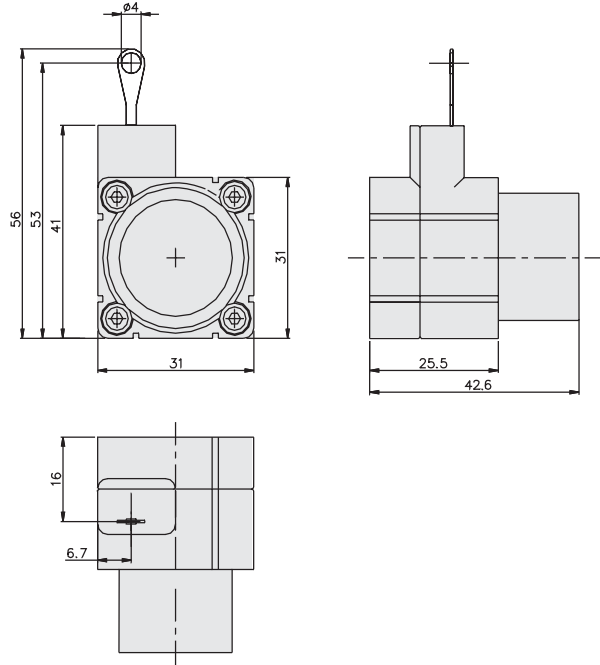
Order Code WS31 incremental	Model Name	WS31
	Measurement Range (in mm)	500
	Outputs (see page 60)	IE24LI = Incremental output TTL compatible inverted IE24HI = Incremental output HTL compatible inverted
	Pulses per mm	10
	Sensor Mounting	1 = Mounting brackets 2 = Spacer nuts

Order Example: WS31 - 500 - IE24HI - 10 - 1

Model WS31 with incremental encoder output

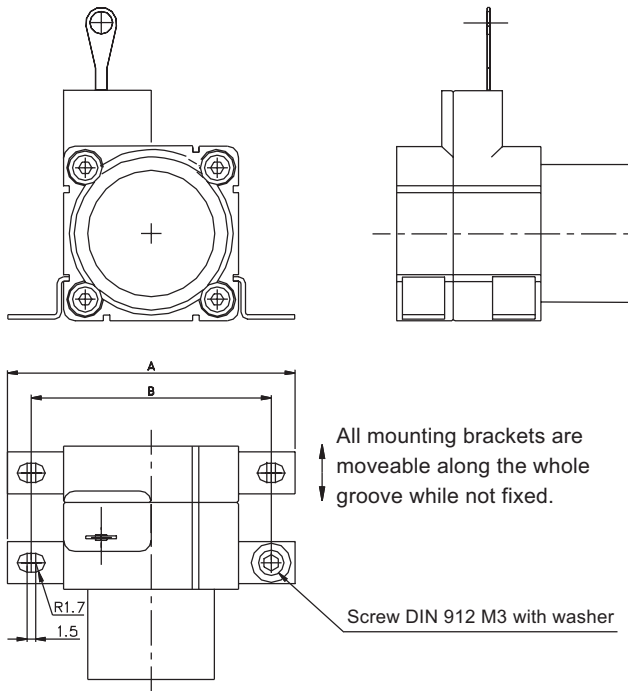


Outline Drawing WS31



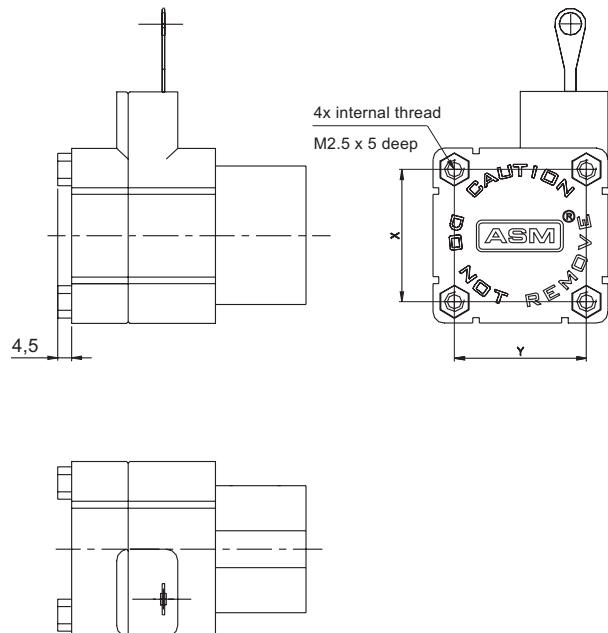
Mounting with mounting brackets

Dimensions WS31
A 51
B 41...44



Mounting with spacer nuts

Dimensions
X = Y 23,4



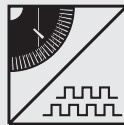
Dimensions informative only.
For guaranteed dimensions consult factory.

Model WS42 with incremental encoder output



OEM sensors for large order volumes

- Low Cost
- Compact outline
- Plastic housing
- Measuring range: 1000 mm
- Resolution: 6 pulses per mm
- Mounting selectable
between mounting brackets or
spacer nuts with internal thread



Specifications	Output	Incremental encoder
	Resolution	6 pulses per mm
	Material	Housing: plastic; Cable drum: aluminium Measuring cable: stainless steel
	Sensor element	Incremental encoder
	Connection	Cable output, approx. 3 m
	Linearity	±0.20 % f.s.; other values on request
	Operation temperature range	0 ... +60°C (max. 85% r. h., non condensing)
	Weight	Approx. 130 g
	Cable force	1.7 N

Order Code WS42 incremental

WS42 - [] - [] - [] - []

Model Name
WS31 / WS42

Measurement Range (in mm)
1000

Outputs (see page 60)
IE24LI = Incremental output TTL compatible inverted
IE24HI = Incremental output HTL compatible inverted

Pulses per mm
6

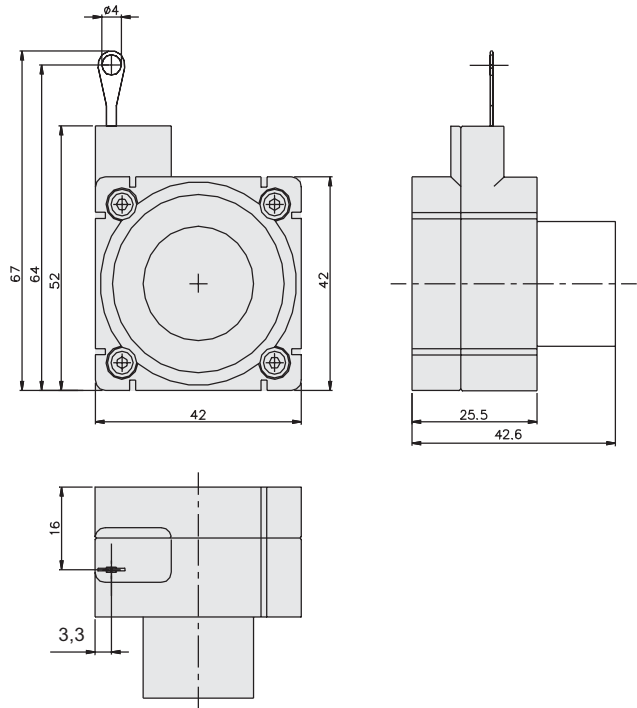
Sensor Mounting
1 = Mounting brackets
2 = Spacer nuts

Order Example: WS42 - 100 - IE24HI - 6 - 1

Model WS42 with incremental encoder output

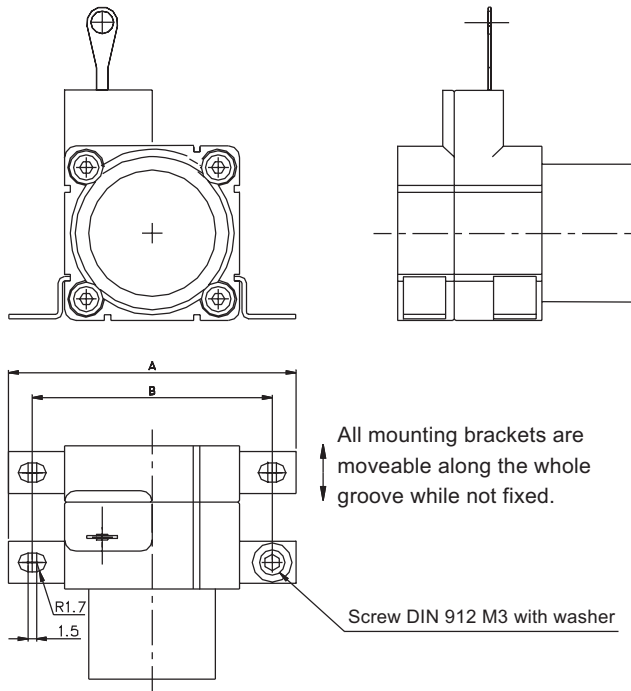


Outline Drawing WS42



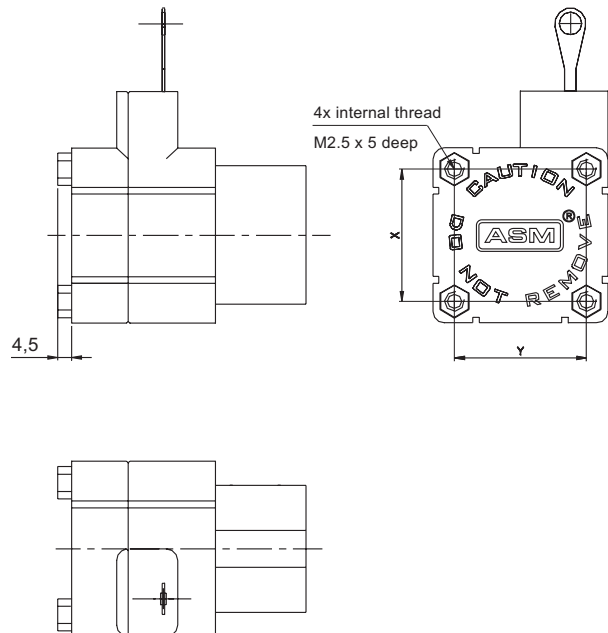
Mounting with mounting brackets

Dimensions WS42
A 62
B 52...55



Mounting with spacer nuts

Dimensions
X = Y 31,1

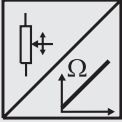


Dimensions informative only.
For guaranteed dimensions consult factory.

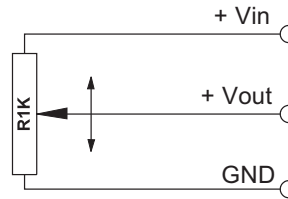
Output Specifications

R1K and 10V for WS position sensors

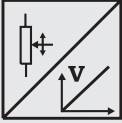


Voltage divider R1K Potentiometer 	Excitation Voltage	32 VDC max. at 1 k Ω (input power 1 W max.)
	Potentiometer Impedance	1 k Ω \pm 10%
	Thermal coefficient	\pm 25 x 10 ⁻⁶ / °C full scale
	Sensitivity	Depends on measurement range, individual sensitivity of sensor specified on label
	Voltage Divider Utilization Range	Approx. 3% ... 97% of full range
	Operating Temperature	-20 ... +85 °C

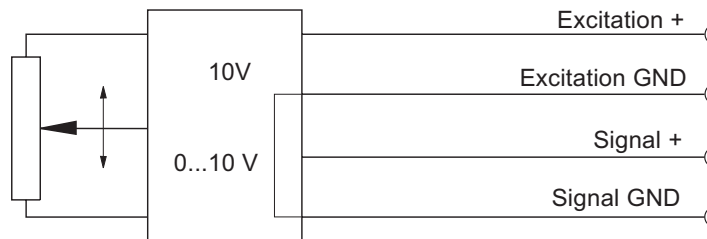
Signal diagram



Note: The potentiometer must be connected as a voltage divider. The input impedance of the following processing circuit should be 10 M Ω min.

Signal conditioner 10V Voltage output 	Excitation Voltage	+18 ... +27 V DC non stabilized
	Excitation Current	20 mA max.
	Output Voltage	0 ... +10 V DC
	Output Current	2 mA max.
	Output Load	> 5 k Ω
	Stability (Temperature)	\pm 50 x 10 ⁻⁶ / °C full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0,5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
EMC	According to EN 61326:2004	

Signal diagram

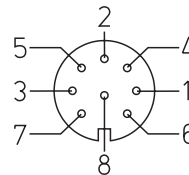


Signal Wiring	Output signals		Cable color	Connector pin no.
	R1K	10V		
	+ Vin	Excitation +	White	1
	GND	Excitation GND	Brown	2
	+ Vout	Signal +	Green	3
		Signal GND	Yellow	4

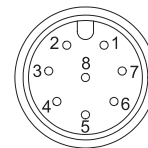
Connection

Mating Connector

View to solder terminals



CONN-DIN-8F-W

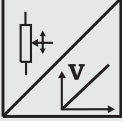


CONN-M12-8F-G

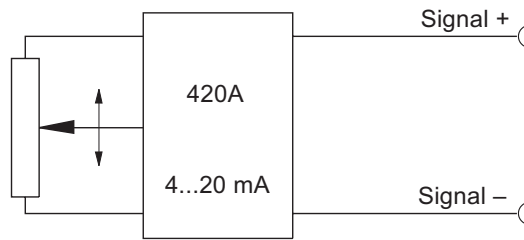
Output Specifications

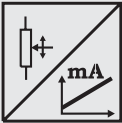
420A and 420T for WS position sensors



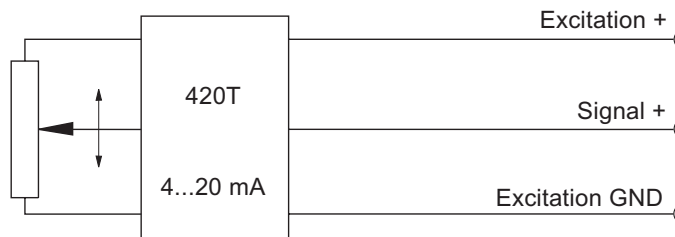
Signal conditioner 420A Current output (2 wire) 	Excitation Voltage	+12 ... 27 VDC non stabilized, measured at the sensor terminals
	Excitation Current	35 mA max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 100 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

Signal Diagram



Signal Conditioner 420T Current output (3 wire) 	Excitation Voltage	+18...+27 V DC non stabilized
	Excitation Current	40 mA max.
	Load Resistor	350 Ω max.
	Output Current	4 ... 20 mA equivalent to 0 ... 100% range
	Stability (Temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ full scale
	Protection	Reverse polarity, short circuit
	Output Noise	0.5 mV _{RMS}
	Operating Temperature	-20 ... +85 °C
	EMC	According to EN 61326:2004

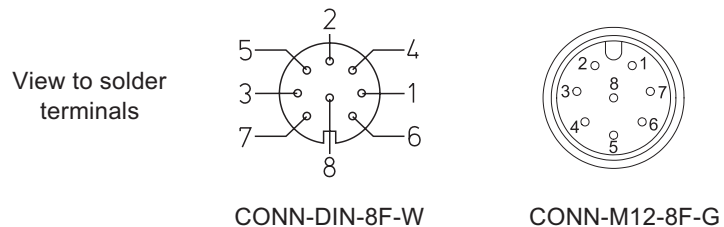
Signal diagram



Signal Wiring	Output signals		Cable color	Connector pin no.
	420A	420T		
	Signal +	Excitation +	White	1
	Signal -	Excitation GND	Brown	2
		Signal +	Green	3

Connection

Mating Connector



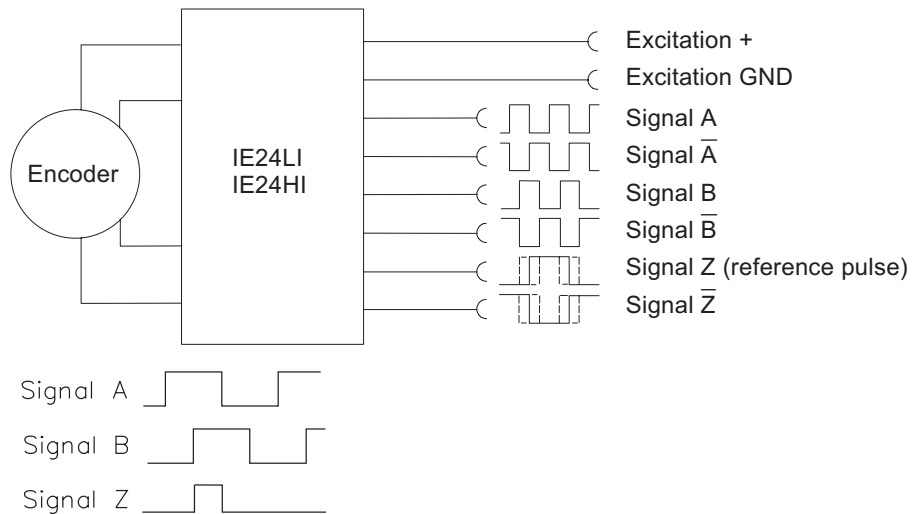
Output Specifications

IE24LI and IE24HI for WS position sensors

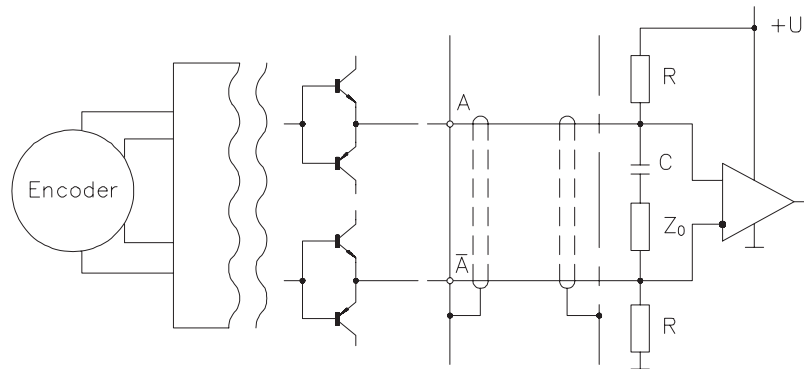


IE24LI and IE24HI incremental		IE24LI	IE24HI
	Excitation voltage	5 V DC $\pm 10\%$	10 ... 30 V DC
	Excitation current	100 mA max.	
	Output frequency	200 kHz	
	Output	Push-pull and inverted signals	
	Output current	10 mA max.	
	Output voltage	Depending on the excitation voltage	
	Stability (temperature)	$\pm 20 \times 10^{-6} / ^\circ\text{C}$ f.s. (sensor mechanism)	
	Operation temperature	-20 ... +85 $^\circ\text{C}$	
	Protection	Short circuit	
	EMC	According to EN 61326:2004	

Output signals



Output circuit and recommended processing input circuit



Signal wiring	Output signals	Cable color	Connector pin no.
	Excitation +	Brown	1
	Excitation GND	White	2
	Signal B (A + 90°)	Grey	3
	Signal A	Green	4
	Signal B-bar	Pink	5
	Signal A-bar	Yellow	6
	Signal Z (reference pulse)	Blue	7
	Signal Z-bar	Red	8

Connection

Mating connector

