



Instruction Manual
wireSENSOR, WPS

WPS - x - MK30
WPS - x - MK46
WPS - x - MK77
WPS - x - MK88
WPS - x - MK120

Declaration of incorporation

Declaration of incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B

Manufacturer and authorized representative for the compilation of the relevant technical documents

MICRO-EPSILON MESSTECHNIK
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hereby declares that the machine designated below, as a result of its manner of design, construction as well as version that has been placed on the market - to the extent possible in the scope of delivery - corresponds to the relevant, fundamental health and safety requirements of the EC Machinery Directive, including the valid changes at the time of this declaration.

Model: wiresensor
Type designation: WDS-xxx, WPS-xxx

The following fundamental health and safety requirements in accordance with Annex I of the above-named directive are applied and maintained:

- No. 1.1.2. Principles of safety integration
- No. 1.7.3. Marking of machinery
- No. 1.7.4. Instructions

Furthermore, the compliance with the following EC Directives and standards is explained, including the valid changes at the time of this declaration:

- EN ISO 13857:2008 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
- EN 60204-1:2006 Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- DIN EN 61326-1: 2006-10
- DIN EN 61326-2-3: 2007-05

Moreover, we declare that the relevant technical documentation for this partly completed machinery has been created in accordance with part B of Annex VII, and that we shall be obligated to deliver these upon the request of the market surveillance authorities.

The described partly completed machinery is intended for installation in a production line.

The commissioning of this partly completed machinery shall be prohibited until the partly completed machinery has been installed in a machine that complies with the provision of the EC Machinery Directive and for which an EC Declaration of Conformity in accordance with Annex II A is available.



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Ortenburg, May 5th 2015

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Certified acc. to
DIN EN ISO 9001:2008

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1. Safety

The handling of the sensor assumes knowledge of the instruction manual.

1.1 Symbols Used

The following symbols are used in this instruction manual:



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



Indicates a situation which, if not avoided, may lead to property damage.



Indicates an user action.



Indicates an user tip.

1.2 Warnings



Do not open the sensor housing.

- > Danger of injury from pre-tensioned spring motor

Do not let the measuring wire rewind without control (snap back).

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor

Do not pull or loop the measuring wire around unprotected parts of the body.

- > Danger of injury

Connect the power supply in accordance with the safety regulations for electrical equipment.

- > Danger of injury
- > Damage to or destruction of the sensor safety

NOTICE

Do not pull the measuring wire over measuring range.
> Destruction of the measuring wire and/or the sensor

Do not let the power supply exceed the specified limits.
> Damage to or destruction of the sensor

Avoid banging and knocking the sensor
> Damage to or destruction of the sensor

1.3 Notes on CE Identification

The following applies to series WPS draw wire sensors: Directive 2006/42/EC

The following applies to series WPS draw wire sensors with voltage, current or encoder output:

- EU directive 2004/108/EC
- EU directive 2011/65/EC, "RoHS" category 9

Products which carry the CE mark satisfy the requirements of the quoted EU directives and the European standards (EN) listed therein. The EC declaration of conformity is kept available according to EU regulation, article 10 by the authorities responsible at

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Draw wire sensors with potentiometer output are not automatically operable devices (components). An EC declaration of conformity or CE identification is therefore not issued by EMC law.

Draw wire sensors with encoder output carry the CE mark.

Sources: EMC law, Guidelines on the application of council directive 2004/108/EC, directive 2006/42/EC.

1.4 Proper Use

- Draw wire sensors are used for
 - distance or displacement measuring
 - position determination of components or moving machine parts.
- The sensors may only be operated within the limits specified in the technical data, see Chap. 2..
- Draw wire sensors should only be used in such a way that in case of malfunction or failure personnel or machinery are not endangered.
- Additional precautions for safety and damage prevention must be taken for safety-related applications.

1.5 Proper Environment

- Protection class for sensor IP 20¹
IP 65 (MK 88, MK 120)
- Operating temperature: -20 °C bis +80 °C (-4 to +176 °F)
- Storage temperature: -40 °C bis +80 °C (-40 to +176 °F)
- Humidity: 5 - 95 % (non-condensing)
- Ambient pressure: atmospheric pressure

i Note the slight power dissipation of the potentiometer above +40°C (+104 °F)! (-0.15W/10K)!

1.6 Foreseeable Misuse

Do not further extract the measuring wire but only to the specified measuring range. This may lead to damage of the measuring wire and also to uncontrollable snapping of the measuring wire. Danger of injury.

Make sure the sensor is not held by another person when the measuring wire is extracted. Danger of snapping and injury.

¹⁾For models with potentiometer. For models with encoder depends on encoder type.

2. Functional Principle, Technical Data

2.1 Functional Principle

With the wire principle, a linear motion is transformed into a change in resistance by a rotation.

A measuring wire made of highly flexible stainless steel wires is wound onto a drum with the aid of a long life spring motor.

The winding drum is coupled axially with a

- multi-turn potentiometer (Type WPS-...-MKxx-...-Pxx) respectively with an
- encoder (Type WPS-...-MKxx-E).

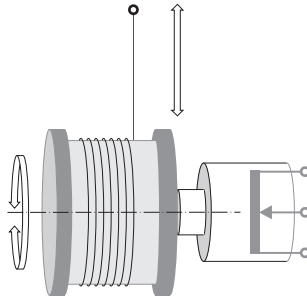


Fig. 1 Draw-wire sensor with potentiometer

2.2 Structure

The draw wire principle is used in the housing design MK30, MK46, MK77, MK88 and MK120 with different measuring lengths from 50 to 7500 mm (1.69 to 295.2 in).

Two versions of the electrical connection are possible:

- Potentiometer output (resistance divider)
- Incremental encoder (with integral electronics, HTL or TTL output)

2.3 Technical Data MK30

Model		WPS-50 MK30	WPS-150 MK30	WPS-250 MK30	WPS-500 MK30	WPS-750 MK30
Output type		C	W	H	H/E ¹⁾	H/E ¹⁾
Measuring range	mm	50	150	250	500	750
Linearity (FSO)	C ±0.5 %	0.25 mm	-	-	-	-
	W ±0.25 %	-	0.375 mm	0.625 mm	1.25 mm	1.87 mm
	H ±0.1 %	-	-	0.25 mm	0.5 mm	0.75 mm
	E ±0.05 %	-	-	-	0.25 mm	0.375 mm
Resolution	W	-	0.1 mm	0.1 mm	0.15 mm	0.2 mm
	C/H	quasi infinite				
Sensor element		conductive plastic- / wire- / hybrid potentiometer or incremental encoder				
Operating temperature	°C/ °F	-20 ... +80 (-4 ... +176 °F)				
Material	Housing	Plastics				
	Wire	stainless steel with polyamid sheath (wire)				
Wire diameter	mm	0.36				
Wire mounting		wire clip				
Sensor mounting		mounting holes and mounting grooves on the sensor housing				
Wire retraction force (min)	N	approx. 1				
Wire extension force (max)	N	approx. 2.5				
Protection class DIN EN60529	P	IP 20				
	E	depends on sensor design				
Electrical connection	P	soldering tags				
	E	depends on sensor design				
Weight	P	g			45	
	E	g			80	

C = conductive plastic potentiometer

E = incremental encoder

W = wire potentiometer

H = hybrid potentiometer

FSO = Full Scale Output

¹⁾ Specifications for output E/E830, see Chap. 2.8.

CAUTION

Uncontrolled retraction of the measuring wire is incorrect!

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor.

Models with potentiometric output WPS - - MK30 - Pxx

Supply voltage:	max. 32 VDC at 1 kOhm / max. 1 W
Resistance:	1 kOhm \pm 10 % (potentiometer)
Viper current:	\leq 10 μ A
Temperature coefficient:	\pm 0.0025 % FSO/K (valid for encoder)
Sensitivity:	depends on measuring range

Models with incremental-/absolute encoder WPS - - MK30 - E/E830

Resolution:	10 pulses per mm with MR 500 6.7 pulses per mm with MR 750
Sensor element:	Incremental encoder
Material:	Plastics (housing), stainless steel with polyamid sheath (wire)

2.4 Technical Data MK46

Model		WPS-1000 MK46	WPS-1250 MK46	WPS-1250 MK46
Output type		W/H	W/H	E/E830 ¹⁾
Measuring range	mm	1000	1250	1250
Linearity (FSO)	E ±0.05 %	-	-	±0.625 mm
	W ±0.25 %	±2.5 mm	±3.12 mm	-
	H ±0.1 %	±1 mm	±1.2 mm	-
Resolution	W	0.3 mm	0,4 mm	-
	H	quasi infinite		
Sensor element		wire or hybrid potentiometer or incremental encoder		
Operating temperature	°C/ °F	-20 ... +80 (-4 ... +176 °F)		
Material	Housing	Plastics		
	Wire	stainless steel with polyamid sheath (wire)		
Wire diameter	mm	0.36		
Wire mounting		wire clip		
Sensor mounting		mounting holes and mounting grooves on the sensor housing		
Wire retraction force (min)	N	1	0.9	1
Wire extension force (max)	N	1.6	1.5	1.4
Protection class		IP 20	IP 20	depends on type
Electrical connection		solder tags		cable radial
Wire acceleration	m/s ²	75	70	75
Weight (with cable)	g	80	80	120

E = incremental encoder

W = wire potentiometer

H = hybrid potentiometer

FSO = Full Scale Output

¹⁾ Specifications for output E/E830, see Chap. 2.8.

CAUTION

Uncontrolled retraction of the measuring wire is incorrect!

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor.

Models with potentiometric output WPS - - MK46 - Pxx

Supply voltage:	max. 32 VDC at 1 kOhm / max. 1 W
Resistance:	1 kOhm \pm 10 % (potentiometer)
Viper current:	\leq 10 μ A
Temperature coefficient:	\pm 0.0025 % FSO/K (valid for encoder)
Sensitivity:	depends on measuring range

Models with incremental encoder WPS - - MK46 - E/E830

Resolution:	4 pulses per mm
Sensor element:	Incremental encoder
Material:	Plastics (housing), stainless steel with polyamid sheath (wire)

2.5 Technical Data MK77

Model		WPS-2100 MK77- P25	WPS-2100 MK77- CR-P25	WPS-2100 MK77- E/E830
Output type		W	W	E/E830 ¹⁾
Measuring range	mm	2100		
Linearity (FSO)		±0.25 %		±0.05 %
Resolution		0.55 mm		0.43 mm
Sensor element		hybrid potentiometer or incremental encoder		
Operating temperature	°C/ °F	-20 ... +80 (-4 ... +176 °F)		
Material	Housing	Plastics		
	Wire	stainless steel with polyamid sheath (wire)		
Wire diameter	mm	0.45		
Wire mounting		wire clip		
Sensor mounting		mounting holes and mounting grooves on the sensor housing		
Wire retraction force (min)	N	3.5		
Wire extension force (max)	N	5		
Protection class		IP 20		IP 54
Electrical connection		solder tags	cable radial, 1.5 m	cable radial, 2 m
Wire acceleration	m/s ²	5	5	5
Weight (with cable)	g	200	225	270

W = wire potentiometer

E = incremental encoder

FSO = Full Scale Output

¹⁾ Specifications for output E/E830, see Chap. 2.8.

CAUTION

Uncontrolled retraction of the measuring wire is incorrect!

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor.

Models with potentiometric output WPS - - MK77-P25 / CR-P25

Supply voltage:	max. 32 VDC at 1 kOhm / max. 1 W
Resistance:	1 kOhm \pm 10 % (potentiometer)
Viper current:	\leq 10 μ A
Temperature coefficient:	\pm 0.0025 % FSO/K (valid for encoder)
Sensitivity:	depends on measuring range

Models with incremental encoder WPS - - MK77-E/E830

Resolution:	0.43 mm
Sensor element:	Incremental encoder
Material:	Plastics (housing), stainless steel with polyamid sheath (wire)

2.6 Technical Data MK88

Model		WPS-2300 MK88 (01)	WPS-3500 MK88 (01)	WPS-5000 MK88 (01)
Output type		P/U/I		
Measuring range	mm	2300	3500	5000
Linearity (FSO)		±0.15 %	±0.3 %	±0.4 %
Resolution/sensitivity		quasi infinite		
Sensor element		Potentiometer		
Temperature range	°C	-20 ... +80		
Material	Housing	plastic, PA 6 GF 30		
	Wire	Coated polyamid stainless steel		
	Protection cap	Aluminum		
Wire diameter	mm	ø 0.45 (0.45 dia.)		
Wire mounting		Wire clip		
Sensor mounting		Mounting holes / mounting grooves on sensor housing		
Wire retraction force (min)	N	4		
Wire extension force (max)	N	9		
Protection class		IP 65		
Electrical connection		Kabel radial, 1 m		
Wire acceleration (max)		approximately 7 g		
Weight (with cable)	g	400 - 430		

P = potentiometer U = voltage I = current

FSO = Full Scale Output

Models with potentiometer output WPS - - MK88 - CR - P(01)

Supply voltage:	Max. 32 VDC at 1 kOhm / max. 1 W
Resistance:	1 kOhm \pm 10 % (potentiometer)
Temperature coefficient:	\pm 0.0025 % FSO/K (\pm 0.0014 % FSO/ $^{\circ}$ F)
Sensitivity:	Depends on measuring range Individually shown on test report

Models with voltage output WPS- ... - MK88 - CR - U(01)

Electrical data

Supply voltage:	14 to 27 VDC non stabilized
Current consumption:	30 mA max.
Output voltage:	0 to 10 VDC (options: 0 - 5 / \pm 5 V)
Output current:	2 mA max.
Load impedance:	> 5 kOhm
Output noise:	0.5 mV _{eff}
Temperature coefficient:	\pm 0.005 % FSO/K (\pm 0.0028 % FSO/ $^{\circ}$ F)

Models with current output (2-wire), WPS - - MK88 - CR - I(01)

Electrical data

Operating voltage:	14 to 27 VDC non stabilized, measured on the input terminal of the sensor
Current consumption:	35 mA max.
Output voltage:	4 to 20 mA
Load:	< 600 Ohm
Temperature coefficient:	\pm 0.01 % FSO/K (\pm 0.005 % FSO/ $^{\circ}$ F)
Output noise:	< 1.6 μ A _{eff}

⚠ CAUTION

Uncontrolled retraction of the measuring wire is incorrect!

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor.

2.7 Technical Data MK120

Model		WPS-3000 MK120	WPS-5000 MK120	WPS-7500 MK120
Output type		P, U, I		
Measuring range	mm	3000	5000	7500
Linearity	FSO	0.15	0.15	0.15
Resolution		quasi infinitely		
Sensor element		hybrid potentiometer		
Operating temperature	°C/ °F	-20 ... +80 (-4 ... +176 °F)		
Material	Housing	Plastics PA6		
	Wire	0,45 mm encapsulated		
Wire diameter	mm	0.45		
Wire mounting		wire clip		
Sensor mounting		mounting holes on the sensor housing		
Wire retraction force (min)	N	5.5	5	7
Wire extension force (max)	N	8	8	13
Protection class		IP 65		
Electrical connection		built-in cable, radial, 1 m long		
Wire acceleration	m/s ²	25	25	15
Weight (with cable)	kg	0.75	0.75	0.9

P = potentiometer U = voltage I = current
 FSO = Full scale Output

Models with potentiometric output WPS - - MK120 - CR - P

Supply voltage:	max. 32 VDC at 1 kOhm / max. 1 W
Resistance:	1 kOhm ± 10 % (potentiometer)
Viper current:	$\leq 10 \mu\text{A}$
Temperature coefficient:	± 0.0025 % FSO/K (valid for encoder)
Sensitivity:	Depends on measuring range

Models with voltage output WPS- - MK120 - CR - U

Electrical data

Supply voltage:	14 to 27 VDC non stabilized
Current consumption:	30 mA max.
Output voltage:	0 to 10 VDC (options: 0 - 5 / ± 5 V)
Output current:	2 mA max.
Load impedance:	> 5 kOhm
Output noise:	$0.5 \text{ mV}_{\text{eff}}$
Temperature coefficient:	± 0.005 % FSO/K (± 0.0028 % FSO/ $^{\circ}\text{F}$)

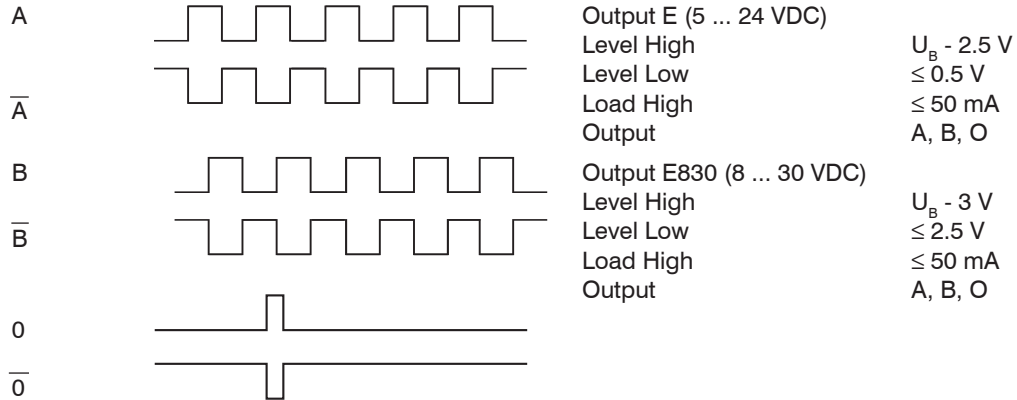
Models with current output (2-wire), WPS - - MK120 - CR - I

Electrical data

Operating voltage:	14 to 27 VDC non stabilized, measured on the input terminal of the sensor
Current consumption:	35 mA max.
Output voltage:	4 to 20 mA
Load:	< 600 Ohm
Temperature coefficient:	± 0.01 % FSO/K (± 0.005 % FSO/ $^{\circ}\text{F}$)
Output noise:	$< 1.6 \mu\text{A}_{\text{eff}}$

2.8 Output Specifications Incremental-Encoder

Signal outputs



Pin assignment E, E830

Pin	Cable color	Assignment
-	white	0 V
-	brown	+ U_B
-	green	A
-	-	/A
-	yellow	B
-	-	/B
-	grey	0

3. Delivery

3.1 Unpacking

- Do not unpack the sensor by pulling the wire.
- Ship so, that no damage can appear.
- Check for completeness and shipping damages immediately after unpacking.
- In case of damage or missing parts, please contact the manufacturer or supplier.
- **i** Remove shipping protection of measuring wire by qualified personnel only and immediately before mounting.

3.2 Storage

Store only with the transport protection in place. This prevents the measuring wire being pulled out and accidental is snapping back.

- Storage temperature: -40 °C bis +80 °C (-40 to +176 °F)
- Humidity: 5 - 95 % (non-condensing)
- Atmospheric pressure

⚠ CAUTION

Uncontrolled retraction of the measuring wire is incorrect!

- > Danger of injury from whiplash effect of the wire with assembly bolts/clips
- > Destruction of wire and/or of sensor.

Save the wire during installation work.

4. Installation and Assembly

4.1 Precautionary Measures

Do not pull the measuring wire over range.

- > Damage to or destruction of the sensor is possible

Do not damage the measuring wire.

Do not oil or grease the measuring wire.

Do not bend the measuring wire.

Do not pull the measuring wire at an angle.

Do not allow to loop the measuring wire around objects.

Fix the sensor with drawn in measuring wire to the target.

Do not loop the measuring wire around parts of the body.

4.2 Sensor Mounting

Model	Screws	Mounting clamp
MK 30	3 x M2.5	yes
MK 46	3 x M2.5	yes
MK 77	3 x M3	yes
MK 88	3 x M4	yes
MK 120	3 x M6	no

The sensor does not have to be oriented in a special way.

➡ Choose the installation position so that damage and soiling of the measuring wire is avoided.

➡ Prefer an installation position with measuring wire outlet facing downwards if possible.

This prevents liquids penetrating the measuring wire outlet.

- Do not let snap the measuring wire!
- ! No warranty by damage through snapping.

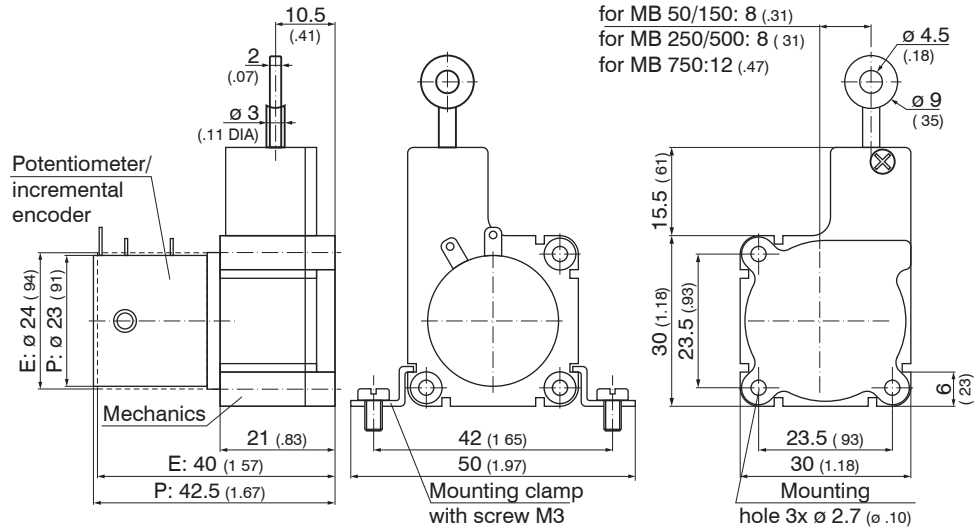


Fig. 2 Dimensional drawing WPS- ... -MK30 with potentiometer or encoder, dimensions in mm (inches), not to scale

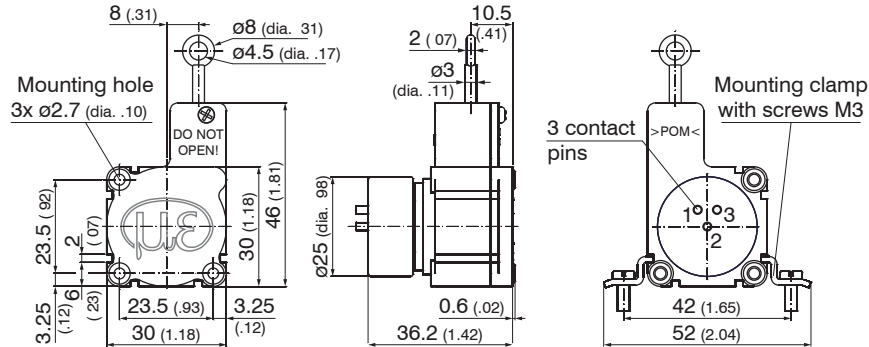


Fig. 3 Dimensional drawing WPS- ... -50MK30 with potentiometer or encoder, dimensions in mm (inches), not to scale

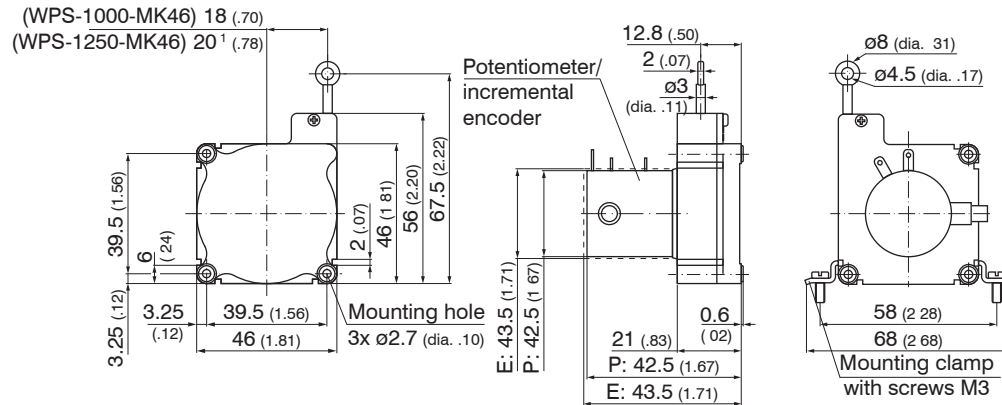


Fig. 4 Dimensional drawing WPS- ... -MK46, with potentiometer or encoder, dimensions in mm (inches), not to scale

¹⁾ 18 (.71) for WPS-1000-MK46-Pxx

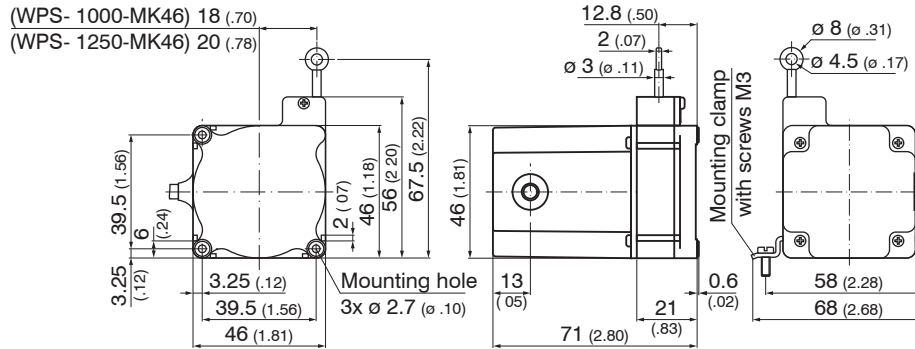


Fig. 5 Dimensional drawing WPS- ... -MK46-CR, with potentiometer and radial cable, dimensions in mm (inches), not to scale

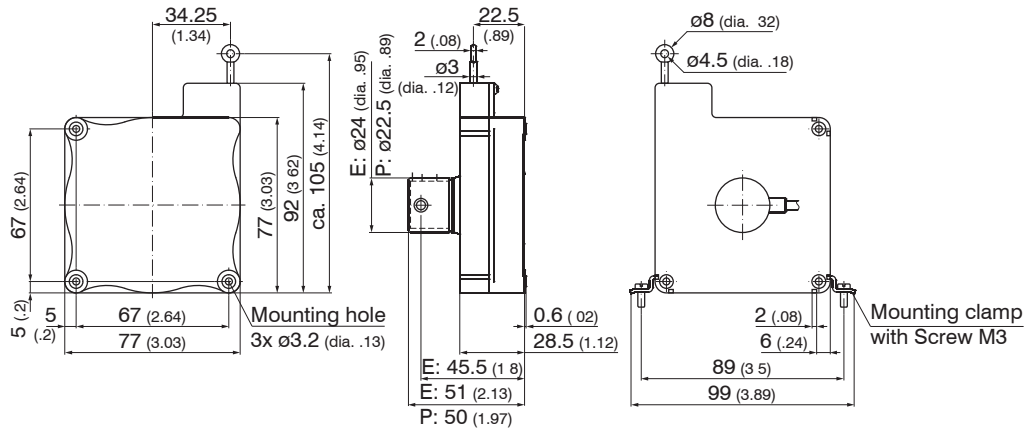


Fig. 6 Dimensional drawing WPS-...-MK77, with potentiometer or encoder, dimensions in mm (inches), not to scale

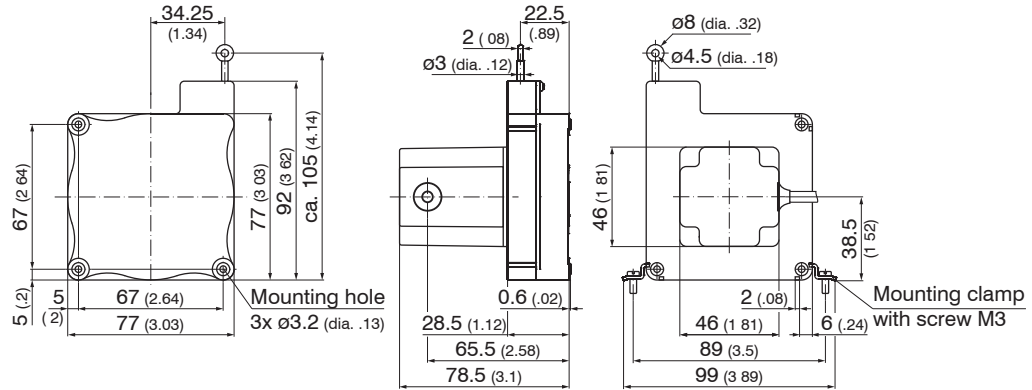


Fig. 7 Dimensional drawing WPS-...-MK77-CR, with potentiometer and radial cable, dimensions in mm (inches), not to scale

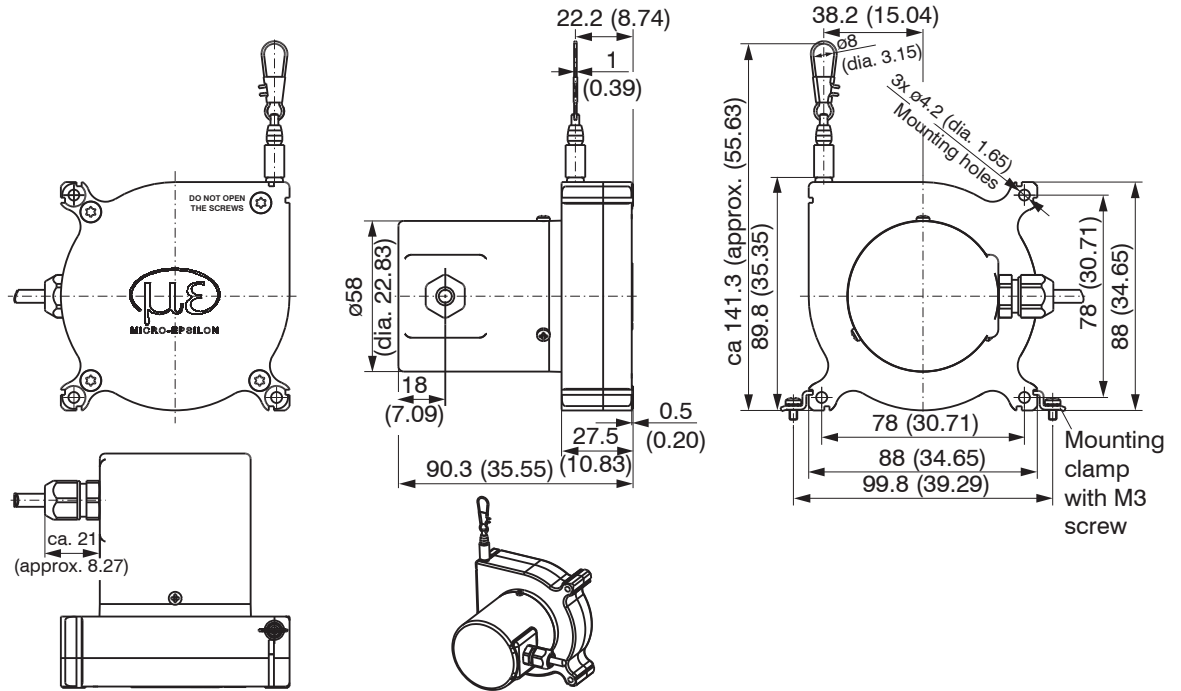


Fig. 8 Dimensional drawing WPS- ... -MK88-CR, with potentiometer, dimensions in mm, not to scale

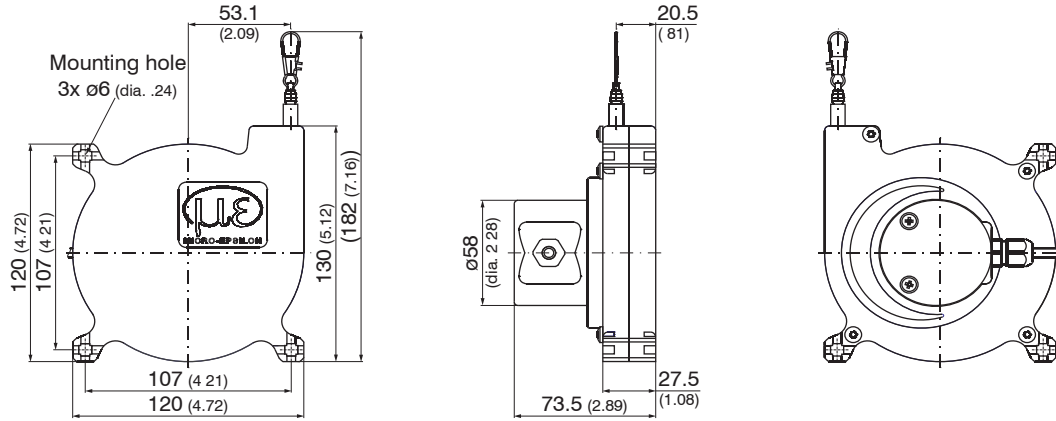


Fig. 9 Dimensional drawing WPS-...-MK120-CR, measuring ranges 3000 and 5000 mm, dimensions in mm (inches), not to scale

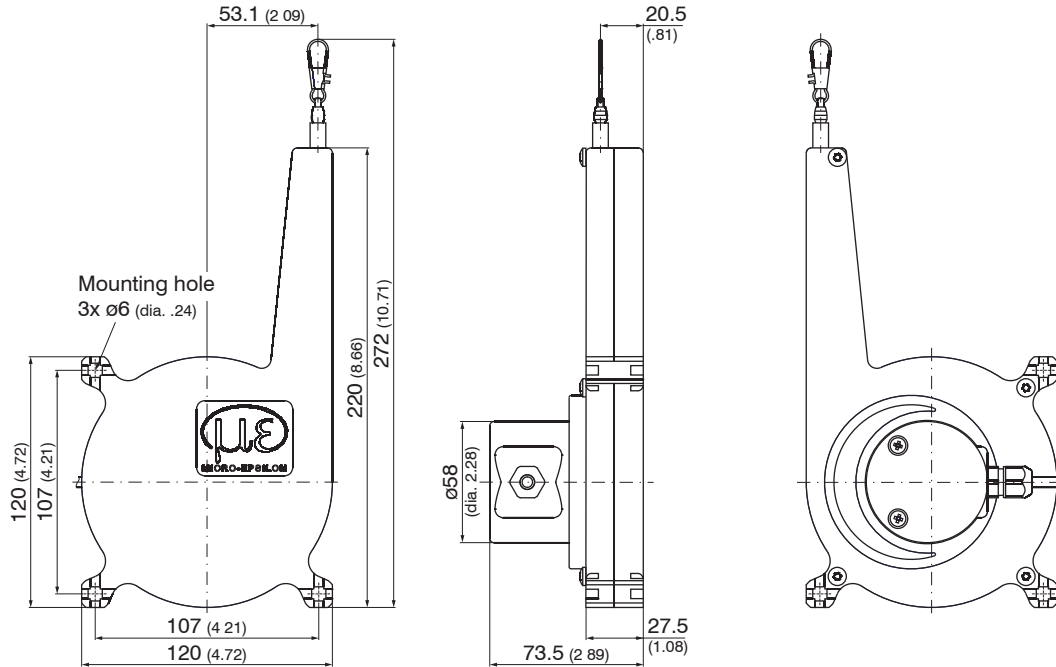


Fig. 10 Dimensional drawing WPS-...-MK120-CR, measuring ranges 7500 mm, dimensions in mm (inches), not to scale

CAUTION

A measuring wire under tension where operators are standing can lead to injuries.

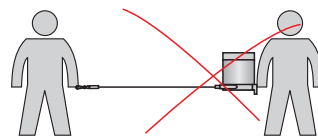
NOTICE

Do not twist the measuring wire!

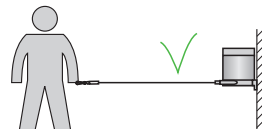
4.3 Wire Guide and Fastening

If the measuring wire has to be extracted from the sensor resp. to fix it to the target

- the sensor may not be held by another person
- the measuring wire may not be further extracted but only to the specified measuring range
- the surroundings of the sensor have to be protected against snapping of the measuring wire



Wrong



Correct

- ➡ Fix the measuring wire to the target using a wire clip
- ➡ Fed the measuring wire perpendicularly from the sensor housing.

Misalignment only permissible up to 3 degrees.

If you drag of the measuring wire on the inlet hole or other objects, this leads for damaging and/or snapping of the measuring wire.

- ➡ Keep measuring wire in an area where it cannot be snagged or otherwise be violated.

4.4 Power Supply and Display/Output Device

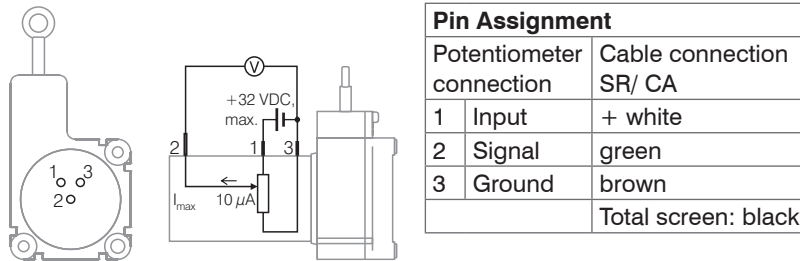


Fig. 11 Model with potentiometer output

Draw wire sensors with potentiometer output are connected according, see Fig. 11.

All potentiometers must only be used in a voltage divider circuit. Using them as a variable resistor, destroys the element. Ensure that the maximum current through the viper is limited.

i Use potentiometer only as voltage divider, not as variable series resistor!

Note the pin assignment for draw-wire displacement sensors with encoder output (E). The sensor contains an additional supplement for detailed information.


Electrical connection		Output		
-CR- integral cable	-SR- Connector	-U- Voltage	-P- Potentiometer	-I- Current
white	 Female connector, solder-pin side	1	Power supply	Power supply
brown		2	GND	GND
green		3	Signal	---
yellow		4	GND	---

Fig. 12 Pin assignment WPS- ... - MK88, - MK120

5. Operation

For draw wire sensors with potentiometer output (P) or encoder output (E) there are no adjustment and setting elements.

6. Operation and Maintenance

The measuring wire, the wire drum, the spring motor and the potentiometer may not be greased or oiled.

The notes on wire guiding, see Chap. 4.3, must be observed during operation.

Imperfect wire guiding can lead to increased wear and premature defects.

The warranty and all liability claims are null and void if the device is manipulated by unauthorised persons.

Repairs are to be made exclusively by Micro-Epsilon.

7. Decommissioning, Disposal

- ➡ Disconnect the power supply and output cable on the sensor.
- ➡ Release the measuring wire from the measuring object. Do not let the measuring wire rewind without control (snap back).
- ➡ Do the disposal according to the legal regulations (see directive 2002/96/EC).

8. Warranty

All components of the device have been checked and tested for perfect function in the factory.

In the unlikely event that errors should occur despite our thorough quality control, this should be reported immediately to MICRO-EPSILON.

The warranty period lasts 12 months following the day of shipment. Defective parts, except wear parts, will be repaired or replaced within this period if you return the device to MICRO-EPSILON free of charge.

This warranty does not apply towards damages resulting from abuse of the equipment and devices, from forceful handling or installation of the devices or from repair or modifications performed by third parties.

No other claims, except as warranted, are accepted.

The terms of the purchasing contract apply in full.

MICRO-EPSILON will specifically not be responsible for eventual consequential damages.

MICRO-EPSILON always strives to supply customers with the finest and most advanced equipment. Development and refinement is therefore performed continuously and the right for design changes without prior notice is accordingly reserved.

For translation in other languages the data and statements of the German language operation manual are to be taken as authoritative.

Appendix

Accessories and Spare Parts

- TR1-WPS Guide pulley adjustable with mounting socket, see [Fig. 13](#)
- TR3-WPS Guide pulley fix with mounting socket, see [Fig. 14](#)
- WE-xxxx-CLIP Wire extension with wire clip, see [Fig. 15](#), wire length in millimeters for xxxx, max. 10.000 mm (33 ft)

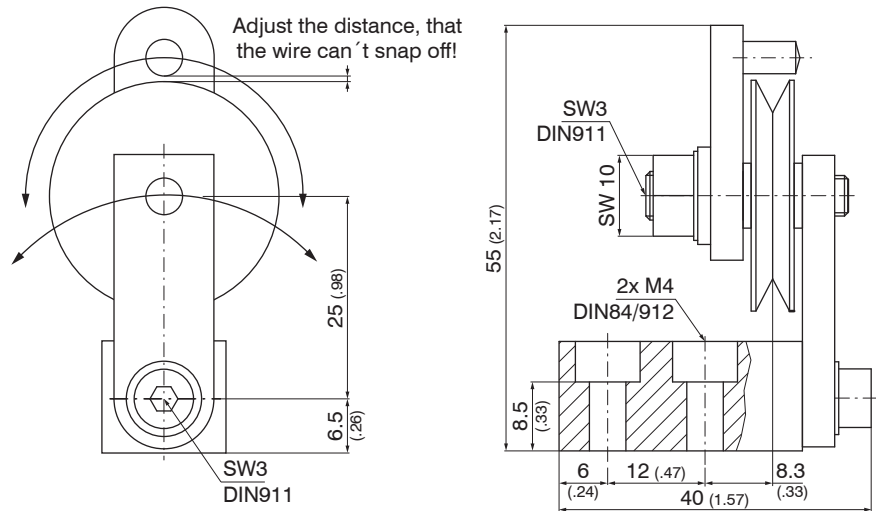


Fig. 13 Guide pulley TR1-WPS with mounting socket, dimensions in mm (inches), not to scale

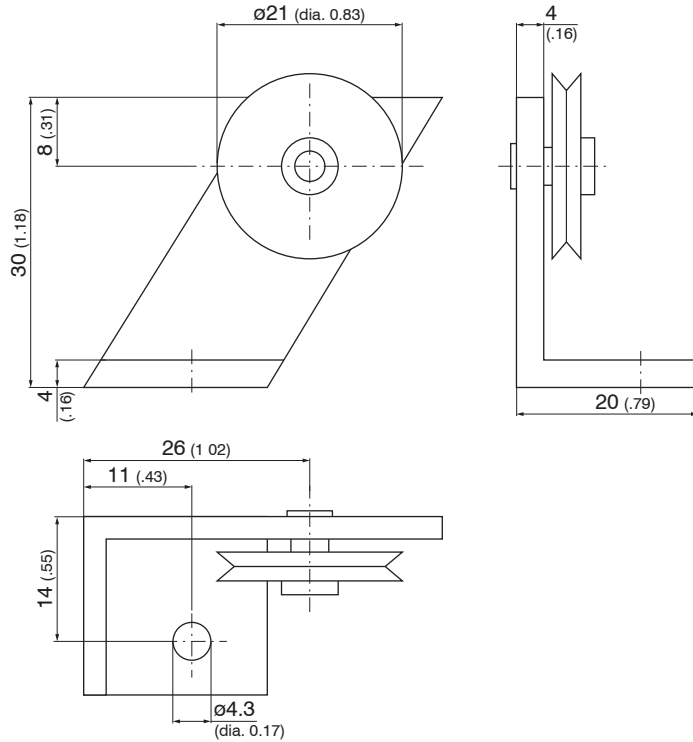


Fig. 14 Guide pulley TR3-WPS fix with mounting socket, dimensions in mm (inches), not to scale

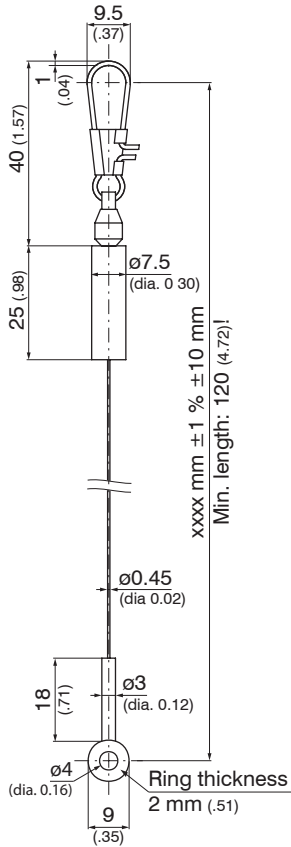


Fig. 15 Wire extension WE-xxxx-CLIP, dimensions in mm (inches), not to scale



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