



More Precision.

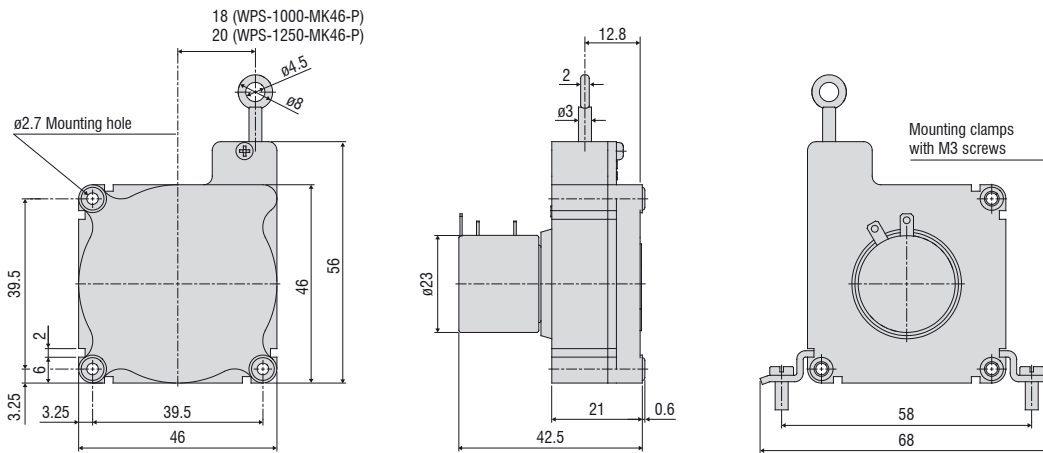
wireSENSOR // Draw-wire displacement sensors



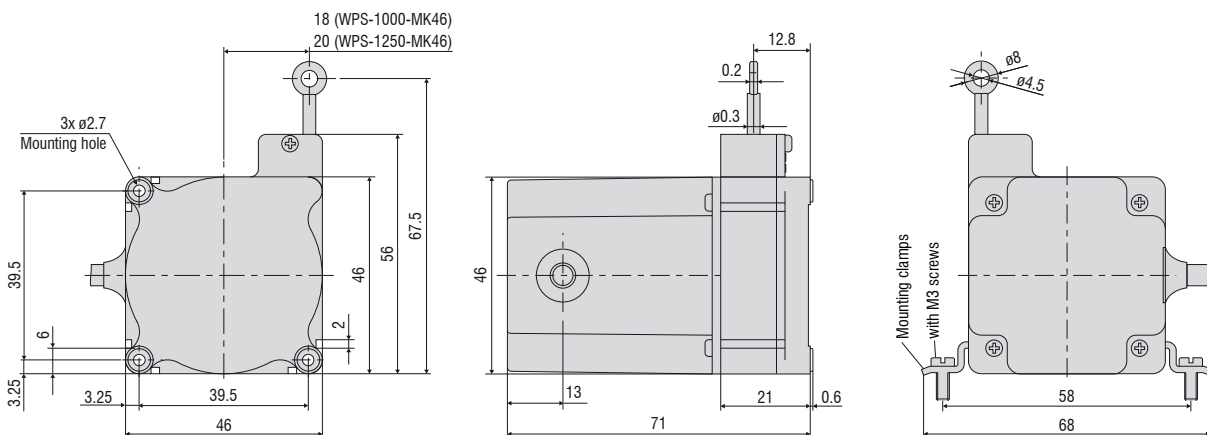


- Robust plastic housing
- Customer-specific designs
- Wire or hybrid potentiometer

MK46 model Output P10/P25



MK46 model Output CR-P25/CR-U10/CR-I10



Dimensions in mm, not to scale.

Model		WPS-1000-MK46	WPS-1250-MK46
Measuring range		1000 mm	1250 mm
Analog output		Potentiometer	Potentiometer, current, voltage
Resolution	Wire potentiometer P25	0.3 mm	0.4 mm
	Hybrid potentiometer P10/U10/I10	towards infinity	
Linearity	Wire potentiometer P25	$\leq \pm 2.5$ mm	$\leq \pm 3.12$ mm
	Hybrid potentiometer P10/U10/I10	$\leq \pm 1$ mm	$\leq \pm 1.2$ mm
Sensor element		Wire/hybrid potentiometer	
Wire extension force (max.)		approx. 1.6 N	approx. 1.5 N
Wire retraction force (min.)		approx. 1 N	
Wire acceleration (max.)		approx. 5 g	
Material	Housing	Plastics	
	Measuring wire	Polyamide-coated stainless steel (\varnothing 0.36 mm)	
Wire mounting		Eyelet (\varnothing 4.5 mm)	
Mounting		Mounting holes or mounting grooves on the sensor housing	
Temperature range	Storage	-20 ... +80 °C	
	Operation	-20 ... +80 °C	
Connection	P10/P25	Soldering tags	
	CR-P25/CR-U10/CR-I10	integrated cable, radial, length 1 m	
Shock (DIN EN 60068-2-27)		50 g / 5 ms in 3 axes, 2 directions and 1000 shocks each	
Vibration (DIN EN 60068-2-6)		20 g / 20 ... 2000 Hz in 3 axes and 10 cycles each	
Protection class (DIN EN 60529)		IP20	
Weight		approx. 80 g	

FSO = Full Scale Output

Specifications for analog outputs from page 54 onwards.

Article designation

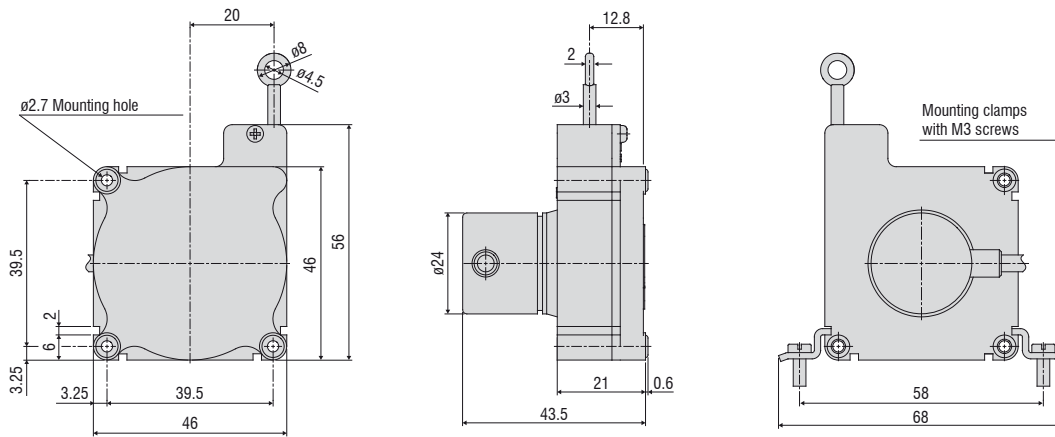
WPS -	1000 -	MK46 -	P25
			Output type: P25: Potentiometer P10: Potentiometer CR-P25: Potentiometer, integrated cable, radial, 1 m
		MK46 series	
	Measuring range in mm		

WPS -	1250 -	MK46 -	P25
			Output type: P25: Potentiometer P10: Potentiometer CR-P25: Potentiometer, integrated cable, radial, 1 m CR-U10: Voltage, integrated cable, radial, 1 m CR-I10: Current, integrated cable, radial, 1 m
		MK46 series	
	Measuring range in mm		



- Robust plastic housing
- Customer-specific designs
- Incremental encoder

MK46 model



Dimensions in mm, not to scale.

Model		WPS-1250-MK46
Measuring range		1250 mm
Digital output		Encoder: E (5 ... 24 VDC) / Encoder E830 (8 ... 30 VDC)
Resolution		4 pulses/mm 0.25 mm
Linearity $\leq \pm 0.05\%$ FSO		$\leq \pm 0.625$ mm
Sensor element		Incremental encoder
Wire extension force (max.)		approx. 1.5 N
Wire retraction force (min.)		approx. 1 N
Wire acceleration (max.)		approx. 5 g
Material		Housing: Plastics Measuring wire: Polyamide-coated stainless steel (\varnothing 0.36 mm)
Wire mounting		Eyelet (\varnothing 4.5 mm)
Mounting		Mounting holes or mounting grooves on the sensor housing
Temperature range		Storage: $-20 \dots +80$ °C Operation: $-20 \dots +80$ °C
Connection		integrated cable, radial, length 1 m
Shock (DIN EN 60068-2-27)		50 g / 5 ms in 3 axes, 2 directions and 1000 shocks each
Vibration (DIN EN 60068-2-6)		20 g / 20 ... 2000 Hz in 3 axes and 10 cycles each
Protection class (DIN EN 60529)		IP54
Weight		approx. 120 g (incl. cable)

FSO = Full Scale Output

Specifications for digital outputs from page 55 onwards.

Article designation

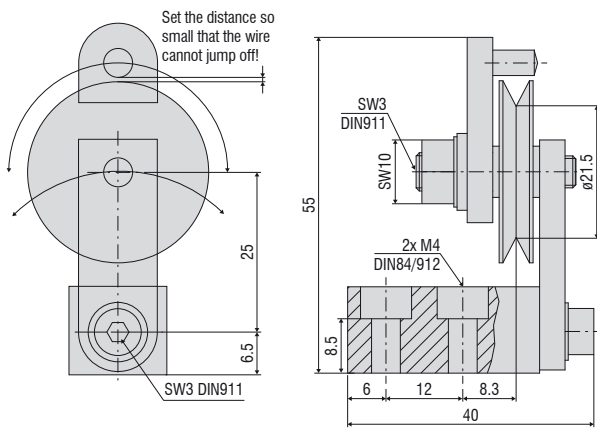
WPS -	1250 -	MK46 -	E
			Output type: Encoder E (5 ... 24 VDC) Encoder E830 (8 ... 30 VDC)
			MK46 series
			Measuring range in mm

Wire deflection pulleys for external installation

TR1-WDS	Wire deflection pulley, adjustable, for sensors with a wire diameter ≤ 0.45 mm
TR3-WDS	Wire deflection pulley, fixed, for sensors with a wire diameter ≤ 0.45 mm
TR4-WDS	Wire deflection pulley, fixed, for sensors with a wire diameter of 0.8 mm to 1 mm

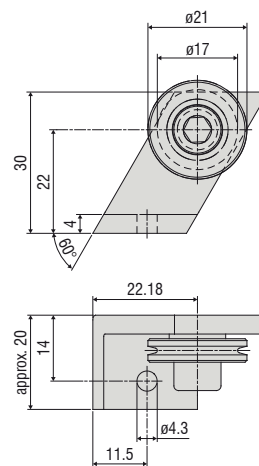
TR1-WDS

Wire deflection pulley, adjustable, for sensors with a wire diameter ≤ 0.45 mm



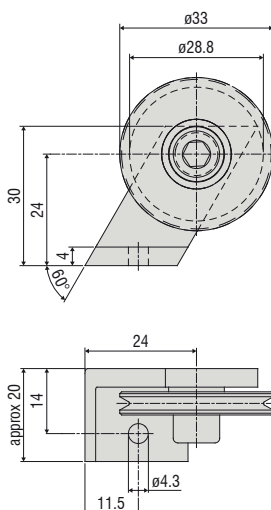
TR3-WDS

Wire deflection pulley, fixed, for sensors with a wire diameter ≤ 0.45 mm



TR4-WDS

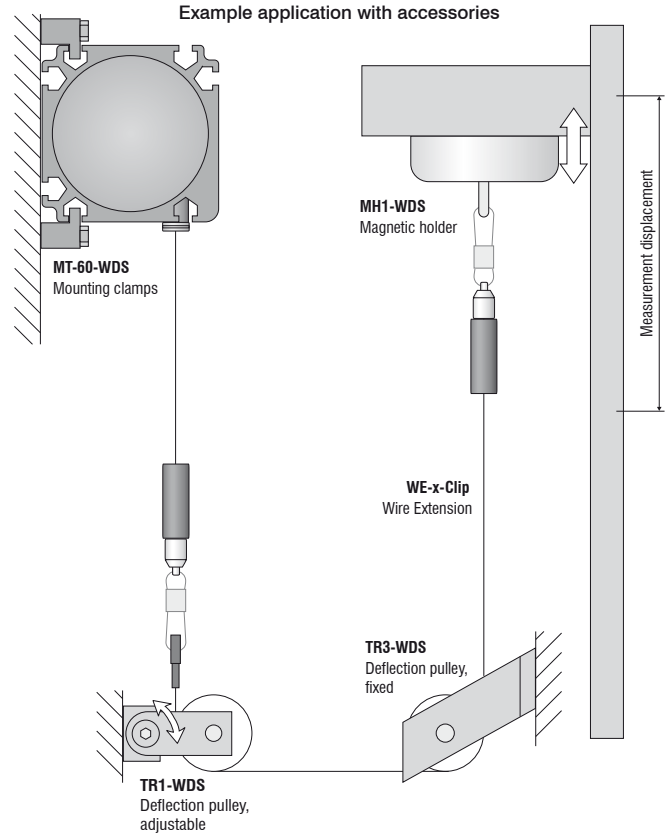
Wire deflection pulley, fixed, for sensors with a wire diameter of 0.8 mm to 1 mm



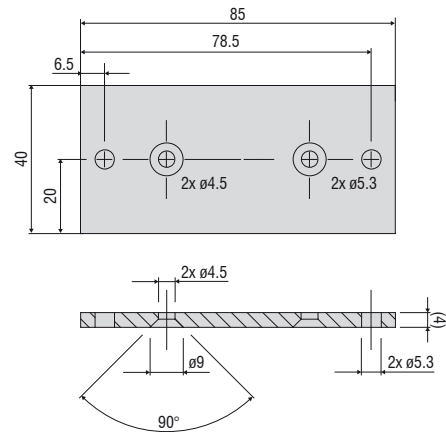
Dimensions in mm, not to scale.

Accessories

WE-xxx-M4	Wire extension with M4 wire connection, x=wire length
WE-xxx-Clip	Wire extension with eyelet, x = wire length
WE-xxx-Clip-WSS	Wire extension with clip and uncoated wire d=0.45 mm
WE-xxx-Ring-PW	Wire extension with plastic ring and para-aramid wire, 1 mm
GK1-WDS	Fork head for M4
MH1-WDS	Magnetic holder for wire attachment
MH2-WDS	Magnetic holder for sensor mounting
MT-60-WDS	Mounting clamps for WDS-P60
FC8	Mating plug for WDS straight, 8-pin
FC8/90	Mating plug, 90° angled for WDS
PC3/8-WDS	Sensor cable, 3 m long
PS2020	Power supply unit 24 V / 2.5 A; input 100-240 VAC, output 24 VDC / 2.5 A; mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022)
WDS-MP60	Mounting plate for P60 models
PC2/10-WDS-A	Cable for SSI encoder, 2 m long
PC2/10-WDS-E	Cable for incremental encoder, 2 m long
PC10/10-WDS-A	Cable for SSI encoder, 10 m long
PC10/10-WDS-E	Cable for incremental encoder, 10 m long



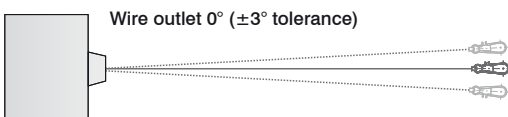
WDS-MP60
Mounting plate for P60 models



Installation instructions:

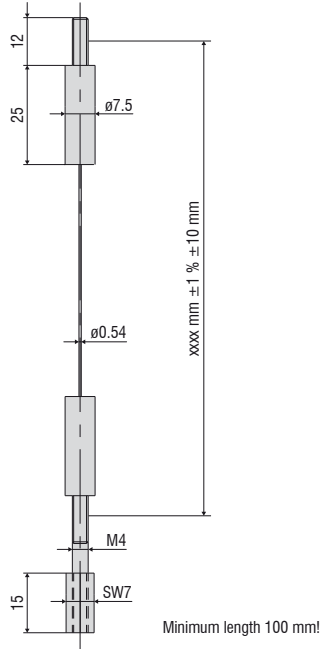
Wire attachment: during installation, do not allow at any time the measuring wire to freely return.

Angle of wire outlet: Make sure during installation that the wire outlet is straight (tolerance of $\pm 3^\circ$). Exceeding this tolerance leads to increased wear of the wire material and on the wire outlet.



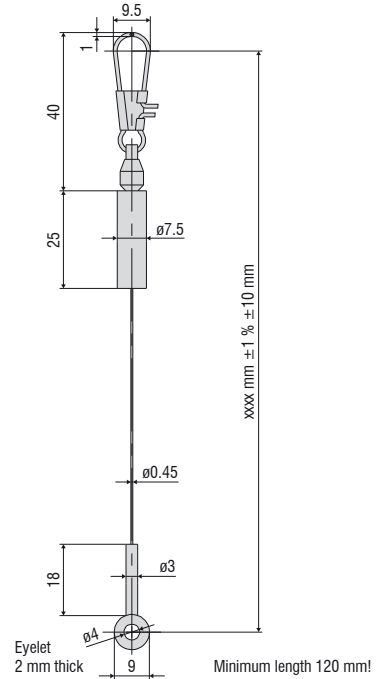
WE-xxxx-M4

Wire extension with M4 wire connection, x=wire length



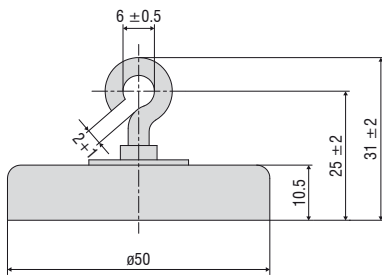
WE-xxxx-Clip

Wire extension with eyelet, x = wire length



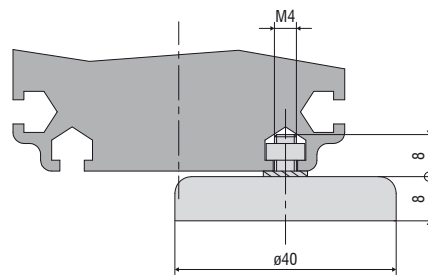
MH1-WDS

Magnetic holder for wire attachment



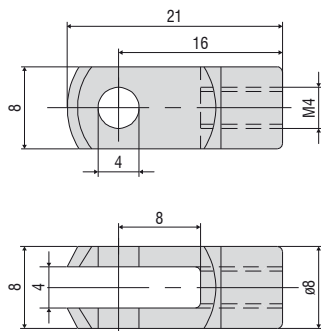
MH2-WDS

Magnetic holder for sensor mounting



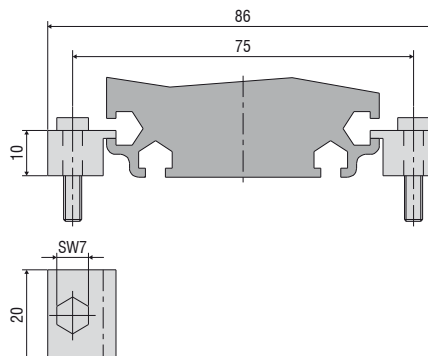
GK1-WDS

Fork head for M4



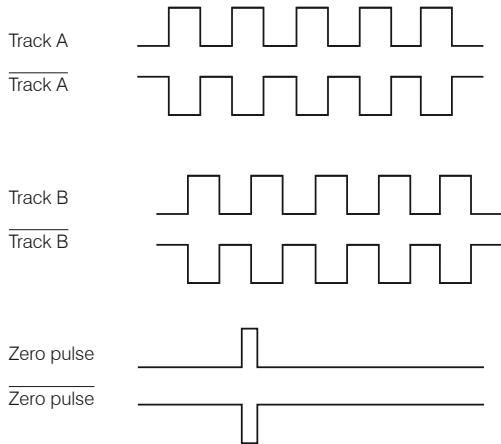
MT-60-WDS

Mounting clamps for WDS-P60



Output		Connector M16 -SA / -SR	Integrated cable -CA / -CR	Open contacts
Potentiometer output (P)		 <p>Sensor side</p> <p>1 = Input + 2 = Ground 3 = Signal</p>	<p>White = Input + Brown = Ground Green = Signal</p>	  <p>1 = Input + 2 = Signal 3 = Ground</p>
Input voltage	max. 32 VDC with 1 kOhm / max. 1 W			
Resistance	1 kOhm $\pm 10\%$ (resistance divider)			
Temperature coefficient	$\pm 0.0025\%$ FSO/ $^{\circ}$ C			
Voltage output (U)		 <p>Sensor side</p> <p>1 = Power supply 2 = Ground 3 = Signal 4 = Ground</p>	<p>White = Supply Brown = Ground Green = Signal Yellow = Ground</p>	
Supply voltage	14 ... 27 VDC (non-stabilized)			
Current consumption	max. 30 mA			
Output voltage	0 ... 10 VDC Option 0 ... 5 / ± 5 V			
Load resistance	> 5 kOhm			
Output noise	0.5 mV _{eff}			
Temperature coefficient	$\pm 0.005\%$ FSO/ $^{\circ}$ C			
Electromagnetic compatibility (EMC)	EN 61000-6-4 EN 61000-6-2			
Adjustment range (if supported by the model)				
Zero	$\pm 20\%$ FSO			
Sensitivity	$\pm 20\%$			
Current output (I)		 <p>Sensor side</p> <p>1 = Power supply 2 = Ground</p>	<p>White = Supply Brown = Ground</p>	
Supply voltage	14 ... 27 VDC (non-stabilized)			
Current consumption	max. 35 mA			
Output current	4 ... 20 mA			
Load	< 600 Ohm			
Output noise	$< 1.6 \mu\text{A}_{\text{eff}}$			
Temperature coefficient	$\pm 0.01\%$ FSO/ $^{\circ}$ C			
Electromagnetic compatibility (EMC)	EN 61000-6-4 EN 61000-6-2			
Adjustment range (if supported by the model)				
Zero	$\pm 18\%$ FSO			
Sensitivity	$\pm 15\%$			

Output signals



TTL Output	Line driver (5 VDC)	
High level	$\geq 2.5 \text{ V}$	(with $I = -20 \text{ mA}$)
Low level	$\leq 0.5 \text{ V}$	(with $I = 20 \text{ mA}$)
Load High	$\leq 20 \text{ mA}$	
Tracks	A, \bar{A} , B, \bar{B} , 0	

Output TTL01/ TTL02	NPN (5 VDC $\pm 5 \%$)	
High level	$> 4.5 \text{ V}$	
Low level	$< 1.0 \text{ V}$	
Load High	$\leq 3 \text{ mA}$	
Tracks (TTL01)	A, B, 0	
Tracks (TTL02)	A, \bar{A} , B, \bar{B} , 0	

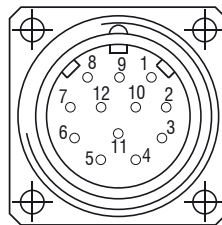
Output HTL	Push-pull (10 ... 30 VDC)	
High level	$\geq V+ - 3 \text{ V}$	(with $I = -20 \text{ mA}$)
Low level	$\leq 1.5 \text{ V}$	(with $I = 20 \text{ mA}$)
Load High	$\leq 40 \text{ mA}$	
Tracks	A, \bar{A} , B, \bar{B} , 0	

Output E	Push-pull (5 VDC)	
High level	$\geq V+ - 2.5 \text{ V}$	
Low level	$\leq 0.5 \text{ V}$	
Load High	$\leq 50 \text{ mA}$	
Tracks	A, B, 0	

Output E830	Push-pull (8 ... 30 VDC)	
High level	$\geq V+ - 3 \text{ V}$	
Low level	$\leq 2.5 \text{ V}$	
Load High	$\leq 50 \text{ mA}$	
Tracks	A, B, 0	

Pin assignment TTL, HTL

Connector	Cable color	Assignment
Pin 1	Pink	Track B inv.
Pin 2	Blue	V+ Sense
Pin 3	Red	Track N (zero pulse)
Pin 4	Black	Track N inv. (zero pulse inv.)
Pin 5	Brown	Track A
Pin 6	Green	Track inv.
Pin 7	-	-
Pin 8	Gray	Track B
Pin 9	-	-
Pin 10	White-green	GND
Pin 11	White	GND Sense
Pin 12	Brown-green	V+



V+ Sense and GND Sense are directly connected to V+ or GND. Recommendation: Use twisted-pair cables (e.g. A/A inv.) from a cable length of 10 m.

Pin assignment E, E830

Cable color	Assignment
White	0V
Brown	V+
Green	A
-	\bar{A}
Yellow	B
-	\bar{B}
Gray	0

Pin assignment TTL01

Cable color	Assignment
Brown	0V
Gray	V+
White	A
Green	B
Yellow	0

Pin assignment TTL02

Cable color	Assignment
Red	V+
Black	0V
Brown	A
Black	\bar{A}
Orange	B
Black	\bar{B}
Yellow	0
Black	n. c.

Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



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3D measurement technology for dimensional testing and surface inspection