Измерительные колесные энкодерные системы MWE11, MWE21, MWE31, MWE41, MWE61, MWE62

Технические характеристики

Measuring wheel system

Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

With incremental encoder Sendix KIS50.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The robust MWE62 measuring wheel system offers maximum spring deflection at maximum contact force to compensate for tolerances perpendicular to the transport movement of the material to be measured. The use of 2 measuring wheels guarantees optimum contact with the material to be measured, even under difficult conditions.

RoHS

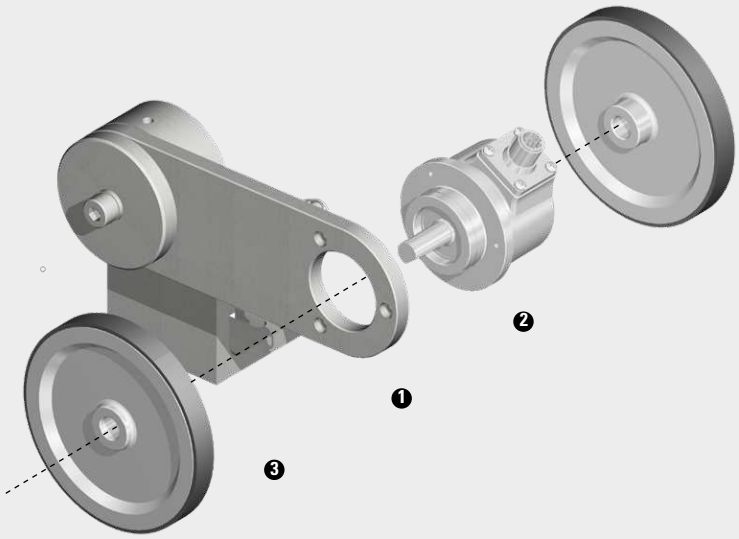
Push-Pull HTL | RS422 TTL | Open Collector NPN

Features

- **Robust design**
  With flexible mounting options: vertical, horizontal or overhead. Encoder can be mounted on the spring arm in 120° steps.
- **High contact reliability to the measured material**
  The use of a second measuring wheel on the encoder ensures a high degree of contact with the measuring surface even under difficult conditions - high vibrations or unevenness.
- **Suitable measuring wheels for all measuring surfaces**
  Circumferences 300 mm or 12“ – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.
- **Contact force up to max. 40 N**
  With stepless adjustable preload. To compensate for tolerances, the integrated spring ensures a working range of the measuring wheel up to a maximum of 80 mm vertical to the measuring surface.

Construction

❶	Spring arm:	MWE60
❷	Encoder:	Clamping flange ø 58 mm
❸	2 x Measuring wheel:	Circumference 300 mm or 12“ (Circumference 200 mm or 500 mm on request)



Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

Order code with incremental encoder

8.MWE62	.	1	2	1	.	XX	.	50	X	X	.	XXXX
Type						❶		❷	❸	❹		❺

❶ *Measuring wheel, circumference / coating*

31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
39 = 300 mm / plastic corrugated (PU)

71 = 12" / diamond knurl (aluminum)
74 = 12" / plastic smooth (PU)
76 = 12" / tufted rubber (PU)
77 = 12" / O-Ring (NBR)
78 = 12" / double O-ring (NBR)
79 = 12" / plastic corrugated (PU)

(Measuring wheels with circumference 200 mm and 500 mm on request)

❷ *Mounted encoder* [1]

50 = KIS50 incremental — to the datasheet >

(other encoders on request)

❸ *Output circuit / supply voltage encoder*

4 = RS422 / 5 V DC
1 = RS422 / 5 ... 30 V DC
2 = push-pull / 5 ... 30 V DC
5 = push-pull / 10 ... 30 V DC
3 = open collector / 5 ... 30 V DC

❹ *Type of connection*

2 = radial cable, 1 m [3.28'] PVC
R = radial M12 connector, 5-pin
4 = radial M12 connector, 8-pin
8 = radial M23 connector, 12-pin

❺ *Pulse rate*

100, 120, 200, 250, 256, 300, 360, 500, 512, 600, 1000, 1024, 1200, 2000, 2048, 2500, 3000, 3600, 4096, 5000
(z.B. 100 Impulse => 0100)

Calculation of the linear resolution

	Measuring step (distance/pulse)			Resolution (pulses/distance)		
Calculation	$\frac{\text{distance}}{\text{ppr}}$	=	$\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{distance}}$	=	$\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$
Example 1 Measuring wheel circumference = 300 mm Pulse number encoder = 3000 ppr	$\frac{300\text{ mm}}{3000\text{ ppr}}$	=	0.1 mm / puls	$\frac{3000\text{ ppr}}{300\text{ mm}}$	=	10 pulses / mm
Example 2 Measuring wheel circumference = 12" Pulse number encoder = 1200 ppr	$\frac{12\text{ inch}}{1200\text{ ppr}}$	=	0.01 inch / puls	$\frac{1200\text{ ppr}}{12\text{ inch}}$	=	100 pulses / inch

1) Clamping flange 58 mm / shaft ø 10 mm on both sides - only relevant when ordering an encoder as a single component.

Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

Single components

Order no.

Spring arm MWE60

combinable with Kübler encoders:

clamping flange ø 58 mm
incremental: Sendix Base KIS50, 5805
absolute: Sendix F58xx, M58xx, 58xx

8.MWE60.121.00.0000.0000

Details s. datasheet >

Measuring wheels

Option ❶	circumference / coating	
31	300 mm / diamond knurl (aluminum)	**8.0000.3317.0010**
34	300 mm / plastic smooth (PU)	**8.0000.3347.0010**
36	300 mm / tufted rubber (PU)	**8.0000.3367.0010**
37	300 mm / O-ring (NBR70)	**8.0000.3377.0010**
38	300 mm / double O-ring (NBR70)	**8.0000.3387.0010**
39	300 mm / plastic corrugated (PU)	**8.0000.3397.0010**
71	12" / diamond knurl (aluminum)	**8.0000.3717.0010**
74	12" / plastic smooth (PU)	**8.0000.3747.0010**
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78	12" / double O-ring (NBR70)	**8.0000.3787.0010**
79	12" / plastic corrugated (PU)	**8.0000.3797.0010**

(Measuring wheels with circumference 200 mm and 500 mm on request)

Details s. datasheet >

Evaluation

Order no.

Preset counter Codix 924

Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
- Time preset counter

6.924.01XX.XXX

Details s. datasheet >

Accessories

Order no.

O-rings

For measuring wheels with O-ring:
Measuring wheel circumference 300 mm, ❶ = 37 — **8.0000.7000.0074**
Measuring wheel circumference 12", ❶ = 77 — **8.0000.7000.0075**

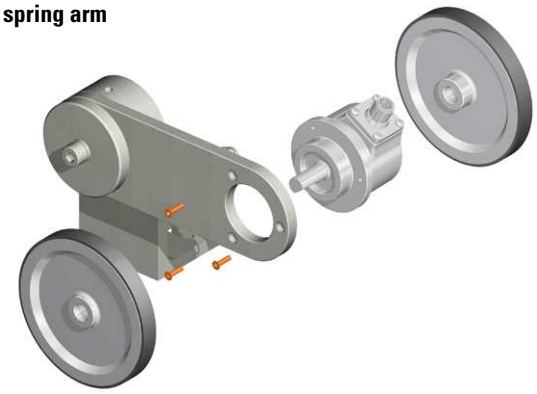
For measuring wheels with double O-ring:
Measuring wheel circumference 300 mm, ❶ = 38 — **8.0000.7000.0077**
Measuring wheel circumference 12", ❶ = 78 — **8.0000.7000.0078**

Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

Technology in detail

Mounting options encoder on spring arm

The encoder is attached to the spring arm with 3 screws.



For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 120° steps.

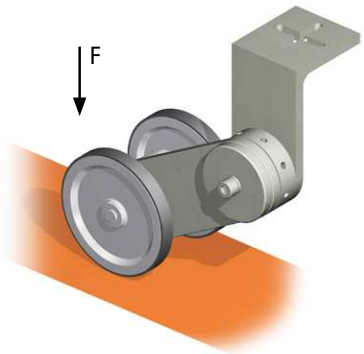
0° (delivery state)

120°

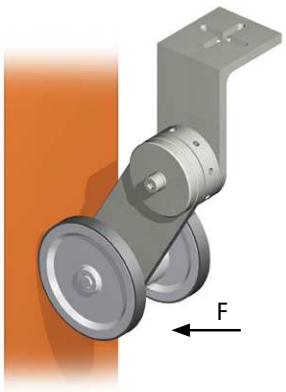
240°

Various mounting options

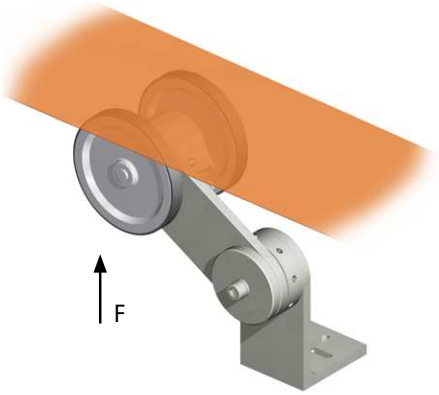
horizontally



vertically



overhead

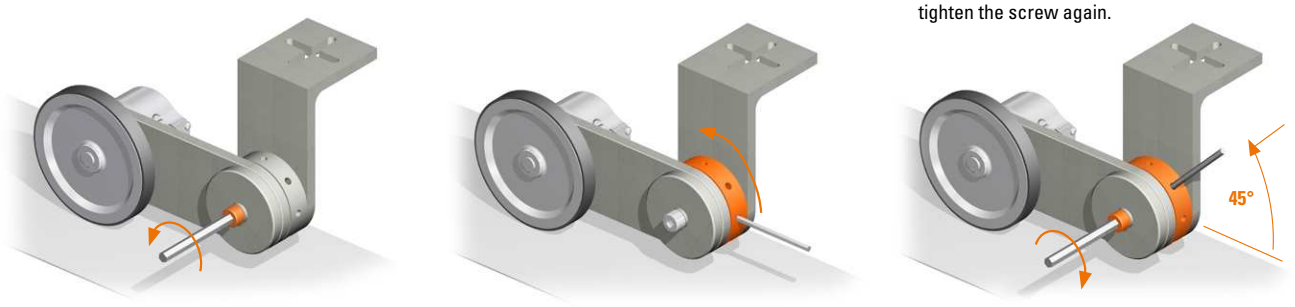


Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

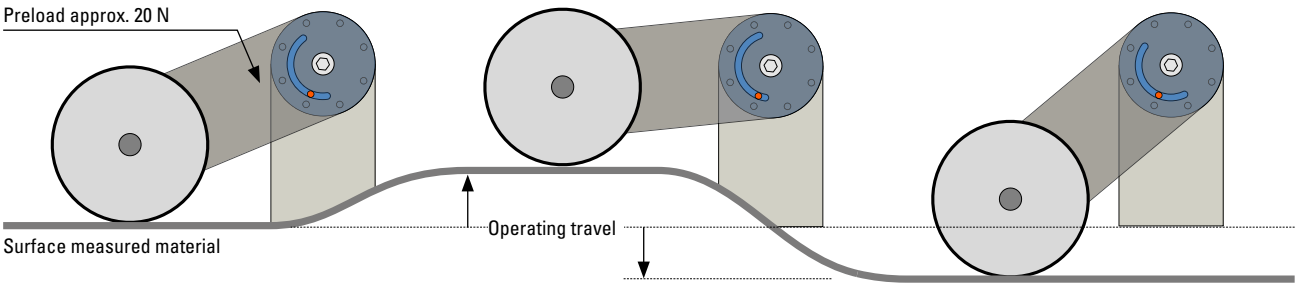
Technology in detail

Setting the preload

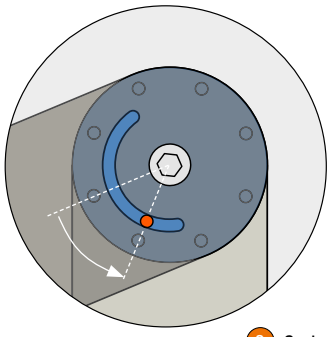
1. Mount the measuring wheel system on the application and release screw.
2. Turn the adjustment ring with a thin allen key or screwdriver until the desired preload is reached.
3. As a guide: Internal detent points in 45° steps correspond to approx. 20 N.
   Hold the position of the adjustment ring and tighten the screw again.



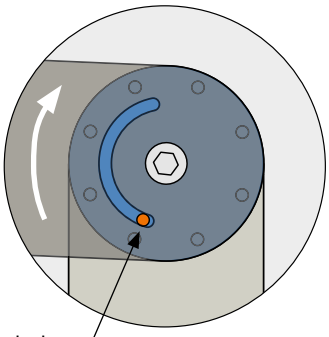
Installation example



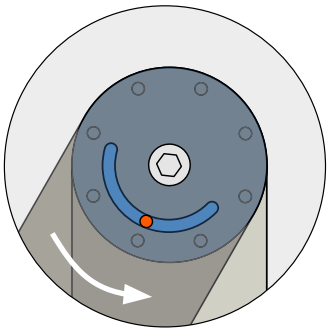
Preload



Contact force max.

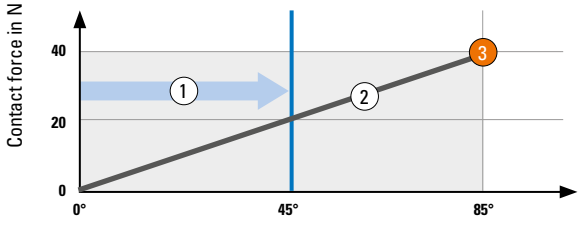


Contact force min.



3 Spring deflection limitation

Contact force of the measuring wheel on the material to be measured



1 Preload (example): 20 N
by turning the setting wheel by approx. 45°
- corresponds to a detent point

2 Contact force

3 Spring deflection limitation to protect against overload

Performance-Line | **Double measuring wheel system MWE62** | **With spring arm, contact force max. 40 N**

Technical data

Mechanical characteristics spring arm MWE60

Materials	spring spring bracket	spring steel aluminum
Weight		670 g
Contact force, max.		40 N
Operating travel, max.		80 mm
Working temperature range		-20 °C ... +70°C [-40 °F ... +176 °F]
Shock resistance acc. EN 60068-2-27		1000 m/s², 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s², 55 ... 2000 Hz

Approvals

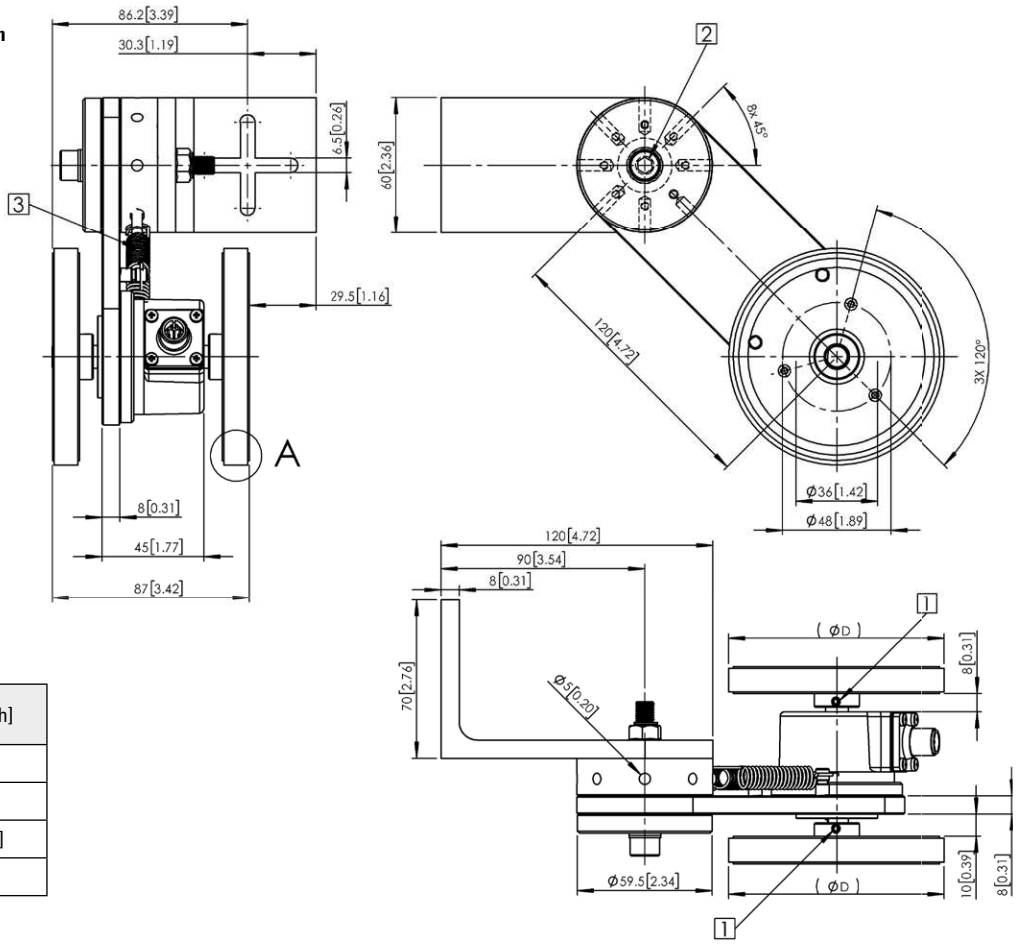
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Dimensions

Dimensions in mm [inch]

Spring arm MWE60 in combination with meeasuring wheel and encoder KIS50

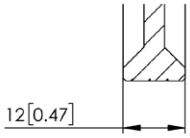
1 Fixing screw M4 x 6 for measuring wheel
2 SW5
3 Spring



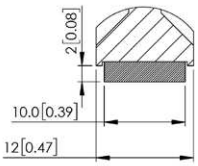
Measuring wheel circumference	ø D mm [inch]
200 mm	63.7 [2.50]
300 mm	95.54 [3.76]
500 mm	159.23 [6.26]
12"	97.07 [3.82]

A for measuring wheel with coating:

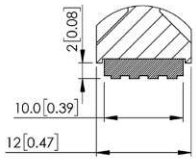
Diamond knurl (aluminum)



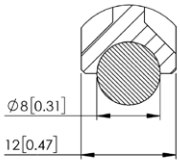
Plastic smooth (PU)



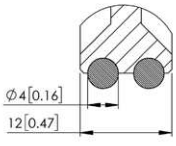
Tufted rubber (PU)



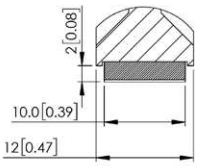
O-ring (NBR)



Double O-ring (NBR)



Plastic corrugated (PU)



Measuring wheel system

Performance-Line | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

With incremental or absolute encoder with clamping flange ø 58 mm.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The robust MWE61 measuring wheel system offers maximum spring deflection at maximum contact force to compensate for tolerances vertical to the transport movement of the material to be measured.

Push-Pull HTL | RS422 TTL | Open Collector NPN | Analog output | SSI

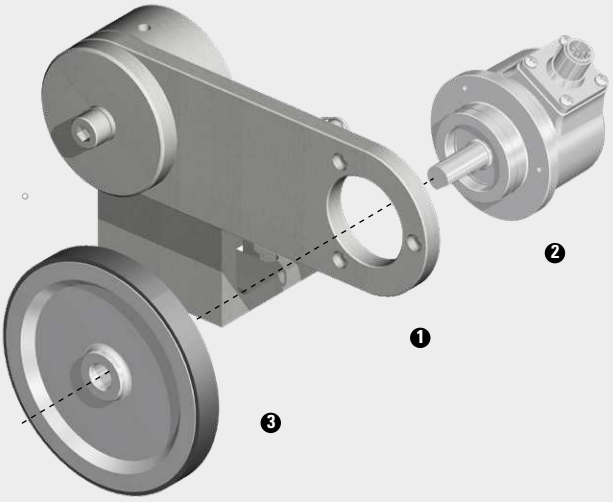
CANopen | IO-Link | EtherNet/IP | PROFINET | PROFIBUS

Features

- **Robust design**
  With flexible mounting options: vertical, horizontal or overhead. Encoder can be mounted on the spring arm in 120° steps.
- **Wide range of encoders**
  Incremental Sendix encoders with a max. resolution of up to 36,000 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link or Profinet for integration in Industry 4.0 concepts.
- **Suitable measuring wheels for all measuring surfaces**
  Circumferences 300 mm or 12“ – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.
- **Contact force up to max. 40 N**
  With stepless adjustable preload. To compensate for tolerances, the integrated spring ensures a working range of the measuring wheel up to a maximum of 80 mm vertical to the measuring surface.

Construction

❶ Spring arm:	MWE60
❷ Encoder:	Clamping flange ø 58 mm
❸ Measuring wheel:	Circumference 300 mm or 12“ (Circumference 200 mm or 500 mm on request)



Measuring wheel system

Performance-Line | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

Order code with incremental encoder

8.MWE61 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ

Type

❶ *Measuring wheel, circumference / coating*

31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
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71 = 12" / diamond knurl (aluminum)
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76 = 12" / tufted rubber (PU)
77 = 12" / O-Ring (NBR)
78 = 12" / double O-ring (NBR)
79 = 12" / plastic corrugated (PU)

(Measuring wheels with circumference 200 mm and 500 mm on request)

❷ *Mounted encoder* [1]

50	= KIS50	incremental	to the datasheet >
05	= 5805	incremental	to the datasheet >

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ *Pulse rate*
see data sheet encoder

Order code with absolute encoder

8.MWE61 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ ⓕ ⓖ

Type

❶ *Measuring wheel, circumference / coating*

31 = 300 mm / diamond knurl (aluminum)
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79 = 12" / plastic corrugated (PU)

(Measuring wheels with circumference 200 mm and 500 mm on request)

❷ *Mounted encoder* [1]

M1	= M5861	Analog output	to the datasheet >
M3	= M5863	SSI	to the datasheet >
M8	= M5868	CANopen	to the datasheet >
M8	= M5868	IO-Link	to the datasheet >
F8	= F5868	EtherNet/IP	to the datasheet >
F8	= F5868	PROFINET	to the datasheet >
68	= 5868	PROFIBUS	to the datasheet >

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ + ⓕ + ⓖ *Interface specifications*
see data sheet encoder

Calculation of the linear resolution

	Measuring step (distance/pulse)		Resolution (pulses/distance)		
Calculation	$\frac{\text{distance}}{\text{ppr}}$	= $\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{distance}}$	= $\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$	
Example 1 Measuring wheel circumference = 300 mm Pulse number encoder = 3000 ppr	$\frac{300\text{ mm}}{3000\text{ ppr}}$	= 0.1 mm / puls	$\frac{3000\text{ ppr}}{300\text{ mm}}$	= 10 pulses / mm	
Example 2 Measuring wheel circumference = 12" Pulse number encoder = 1200 ppr	$\frac{12\text{ inch}}{1200\text{ ppr}}$	= 0.01 inch / puls	$\frac{1200\text{ ppr}}{12\text{ inch}}$	= 100 pulses / inch	

1) Clamping flange 58 mm / shaft ø 10 mm - only relevant for ordering an encoder as a single component.

Performance-Line | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

Single components

Order no.

Spring arm MWE60

combinable with Kübler encoders:

clamping flange ø 58 mm
incremental: Sendix Base KIS50, 5805
absolute: Sendix F58xx, M58xx, 58xx

8.MWE60.121.00.0000.0000

Details s. datasheet >

Measuring wheels

Option ❶	circumference / coating	
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(Measuring wheels with circumference 200 mm and 500 mm on request)

Details s. datasheet >

Evaluation

Order no.

Preset counter Codix 924

Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
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6.924.01XX.XXX

Details s. datasheet >

Accessories

Order no.

O-rings

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Performance-Line | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

Technology in detail

Mounting options encoder on spring arm

The encoder is attached to the spring arm with 3 screws.

For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 120° steps.

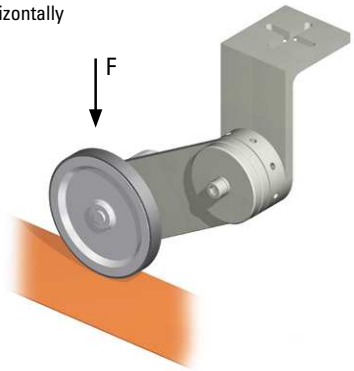
0° (delivery state)

120°

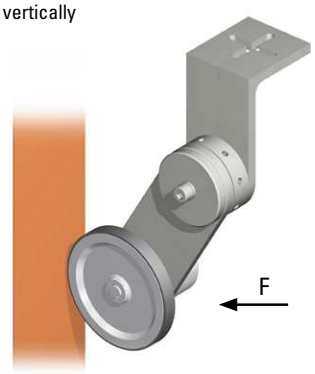
240°

Various mounting options

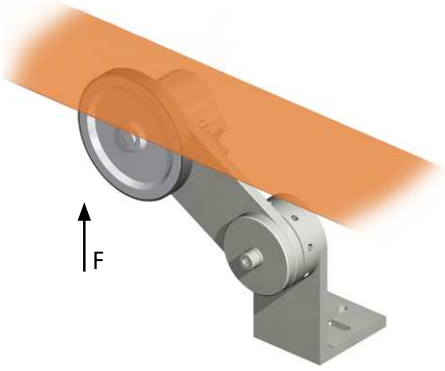
horizontally



vertically



overhead



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Technology in detail

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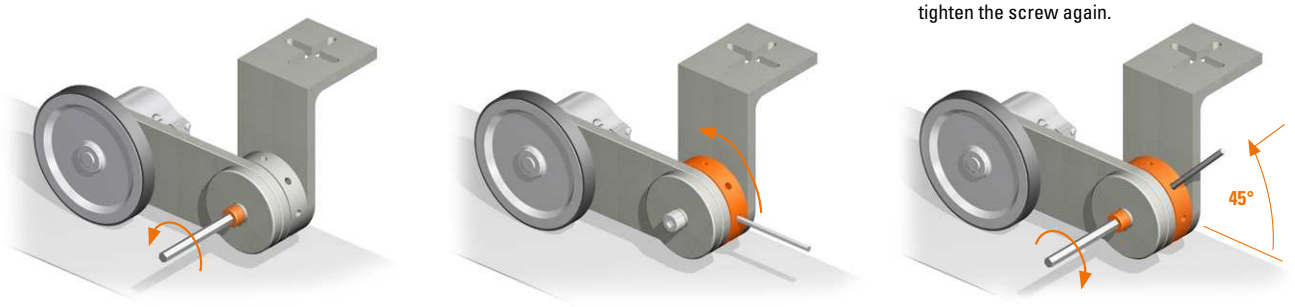
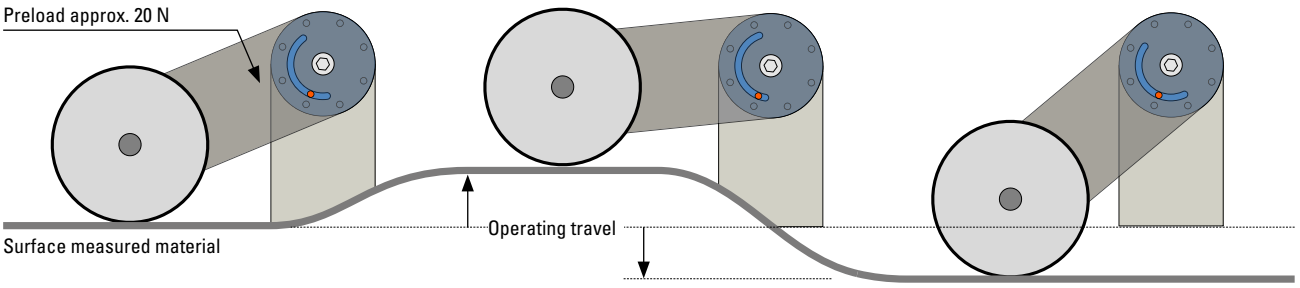
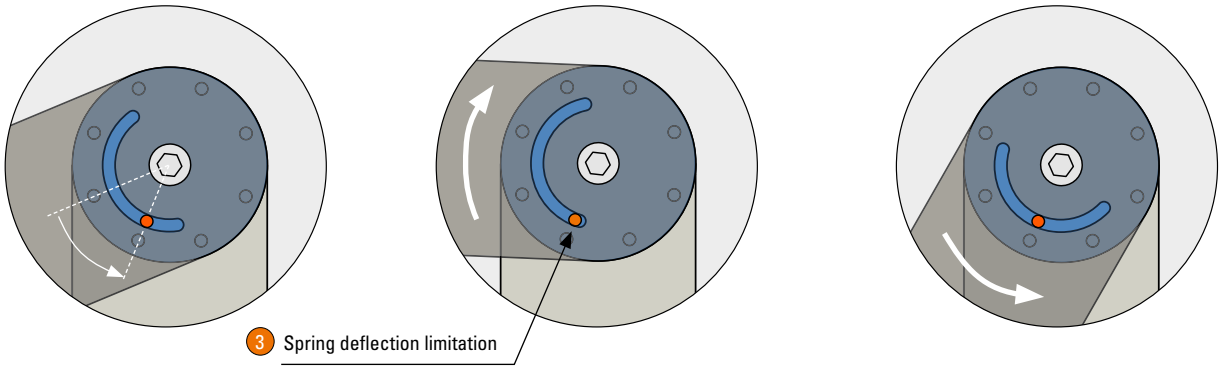


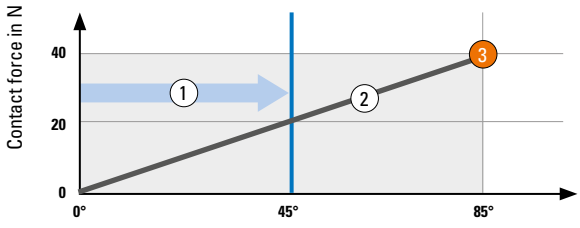
Installation example



Preload | **Contact force max.** | **Contact force min.**



Contact force of the measuring wheel on the material to be measured



1 Preload (example): 20 N
by turning the setting wheel by approx. 45°
- corresponds to a detent point

2 Contact force

3 Spring deflection limitation to protect against overload

Performance-Line | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

Technical data

Mechanical characteristics spring arm MWE60

Materials	spring spring bracket	spring steel aluminum
Weight		670 g
Contact force, max.		40 N
Operating travel, max.		80 mm
Working temperature range		-20 °C ... +70°C [-40 °F ... +176 °F]
Shock resistance acc. EN 60068-2-27		1000 m/s², 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s², 55 ... 2000 Hz

Approvals

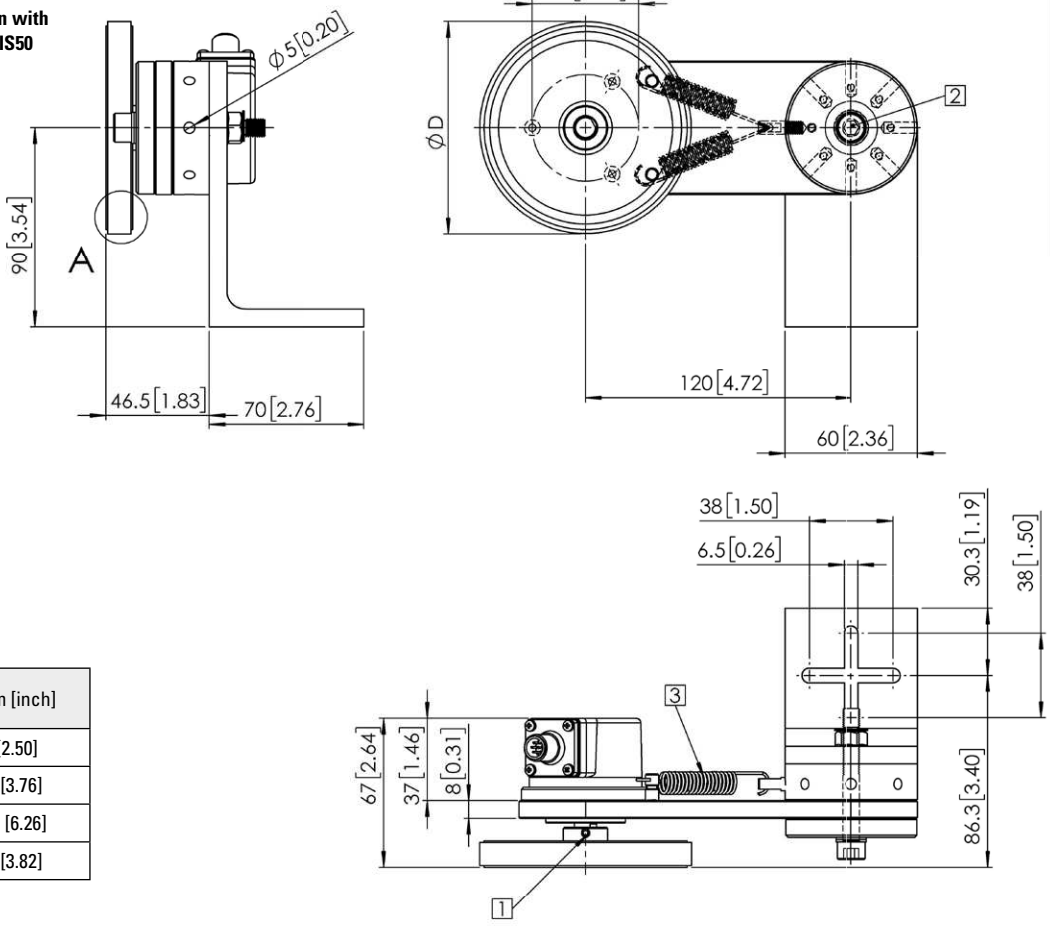
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Dimensions

Dimensions in mm [inch]

Spring arm MWE60 in combination with meeasuring wheel and encoder KIS50

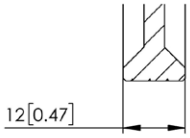
1 Fixing screw M4 x 6 for measuring wheel
2 SW5
3 Spring



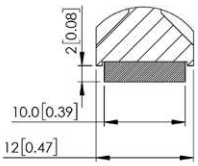
Measuring wheel circumference	ø D mm [inch]
200 mm	63.7 [2.50]
300 mm	95.54 [3.76]
500 mm	159.23 [6.26]
12"	97.07 [3.82]

A for measuring wheel with coating:

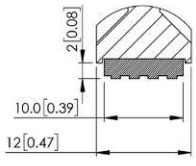
Diamond knurl (aluminum)



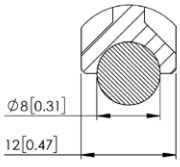
Plastic smooth (PU)



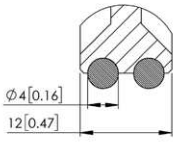
Tufted rubber (PU)



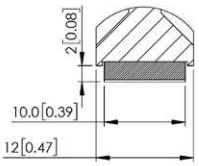
O-ring (NBR)



Double O-ring (NBR)



Plastic corrugated (PU)



Performance-Line | **Measuring wheel system MWE41** | **With spring bracket, contact force max. 25 N**

With incremental or absolute encoder with clamping flange ø 58 mm.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The MWE41 measuring wheel system with internal springs can be quickly and easily integrated into many applications.

Push-Pull HTL | RS422 TTL | Open Collector NPN | Analog output | SSI

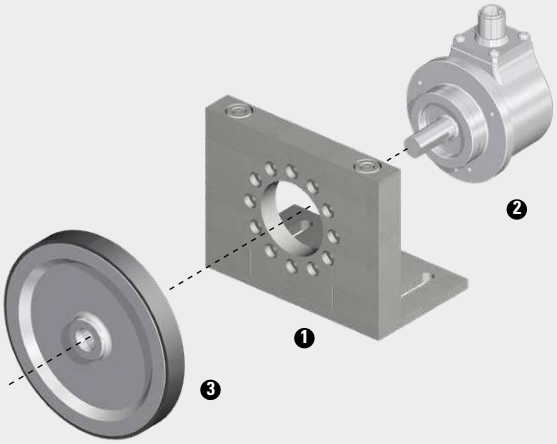
CANopen | IO-Link | EtherNet/IP | PROFINET | PROFIBUS

Features

- **Simple and safe assembly**
  Measuring wheel system with internal springs to protect against unwanted influences for and by the springs. Encoder can be mounted on the spring bracket in 30° steps.
- **Wide range of encoders**
  Incremental Sendix encoders with a max. resolution of up to 36,000 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link or Profinet for integration in Industry 4.0 concepts.
- **Suitable measuring wheels for all measuring surfaces**
  Circumference 300 mm – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.
- **Contact force up to max. 25 N**
  The internal spring ensures a working range of the measuring wheel of up to 10 mm vertical to the measuring surface to compensate for tolerances.

Construction

❶	Spring bracket:	MWE40
❷	Encoder:	Clamping flange ø 58 mm
❸	Measuring wheel:	Circumference 300 mm (Circumference 12“ on request)



Performance-Line | **Measuring wheel system MWE41** | **With spring bracket, contact force max. 25 N**

Order code with incremental encoder

8.MWE41 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ

Type

❶ *Measuring wheel, circumference / coating*
31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
39 = 300 mm / plastic corrugated (PU)

(Measuring wheels with circumference 12" on request)

❷ *Mounted encoder* [1]

50	= KIS50	incremental	to the datasheet >
05	= 5805	incremental	to the datasheet >

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ *Pulse rate*
see data sheet encoder

Order code with absolute encoder

8.MWE41 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ ⓕ ⓖ

Type

❶ *Measuring wheel, circumference / coating*
31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
39 = 300 mm / plastic corrugated (PU)

(Measuring wheels with circumference 12" on request)

❷ *Mounted encoder* [1]

M1	= M5861	Analog output	to the datasheet >
M3	= M5863	SSI	to the datasheet >
M8	= M5868	CANopen	to the datasheet >
M8	= M5868	IO-Link	to the datasheet >
F8	= F5868	EtherNet/IP	to the datasheet >
F8	= F5868	PROFINET	to the datasheet >
68	= 5868	PROFIBUS	to the datasheet >

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ + ⓕ + ⓖ *Interface specifications*
see data sheet encoder

Calculation of the linear resolution

	Measuring step (distance/pulse)		Resolution (pulses/distance)		
Calculation	$\frac{\text{distance}}{\text{ppr}}$	= $\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{distance}}$	= $\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$	
Example Measuring wheel circumference = 300 mm Pulse number encoder = 3000 ppr	$\frac{300\text{ mm}}{3000\text{ ppr}}$	= 0.1 mm / puls	$\frac{3000\text{ ppr}}{300\text{ mm}}$	= 10 pulses / mm	

1) Clamping flange 58 mm / shaft ø 10 mm - only relevant for ordering an encoder as a single component.

Performance-Line	Measuring wheel system MWE41	With spring bracket, contact force max. 25 N

Single components

		Order no.
Spring bracket MWE40 	combinable with Kübler encoders: clamping flange ø 58 mm incremental: Sendix Base KIS50, 5805 absolute: Sendix F58xx, M58xx, 58xx	**8.MWE40.121.00.0000.0000** Details s. datasheet

Measuring wheels

Option ❶	circumference / coating	Order no.
31	300 mm / diamond knurl (aluminum)	**8.0000.3317.0010**
34	300 mm / plastic smooth (PU)	**8.0000.3347.0010**
36	300 mm / tufted rubber (PU)	**8.0000.3367.0010**
37	300 mm / O-ring (NBR70)	**8.0000.3377.0010**
38	300 mm / double O-ring (NBR70)	**8.0000.3387.0010**
39	300 mm / plastic corrugated (PU)	**8.0000.3397.0010**
	(Measuring wheels with circumference 12" on request)	Details s. datasheet

Evaluation

		Order no.
Preset counter Codix 924 	Multifunction device: - Tachometer with limit values - Position indicators with limit values - Time preset counter	**6.924.01XX.XXX** Details s. datasheet

Accessories

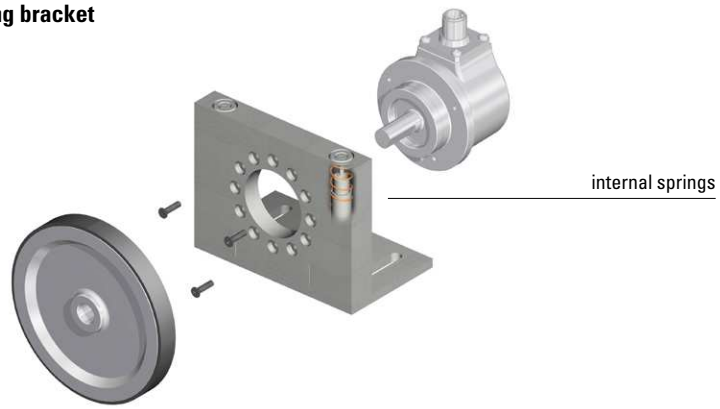
		Order no.
O-rings 	For measuring wheels with O-ring: Measuring wheel circumference 300 mm, ❶ = 37 For measuring wheels with double O-ring: Measuring wheel circumference 300 mm, ❶ = 38	**8.0000.7000.0074** **8.0000.7000.0075**

Performance-Line | **Measuring wheel system MWE41** | **With spring bracket, contact force max. 25 N**

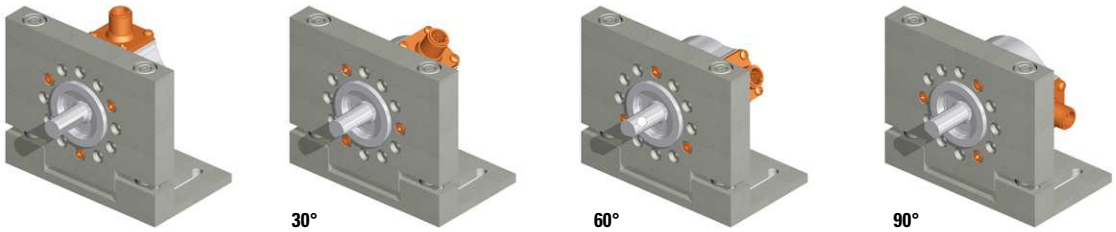
Technology in detail

Mounting options encoder on spring bracket

The encoder is attached to the spring bracket with 3 screws.



For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 30° steps.

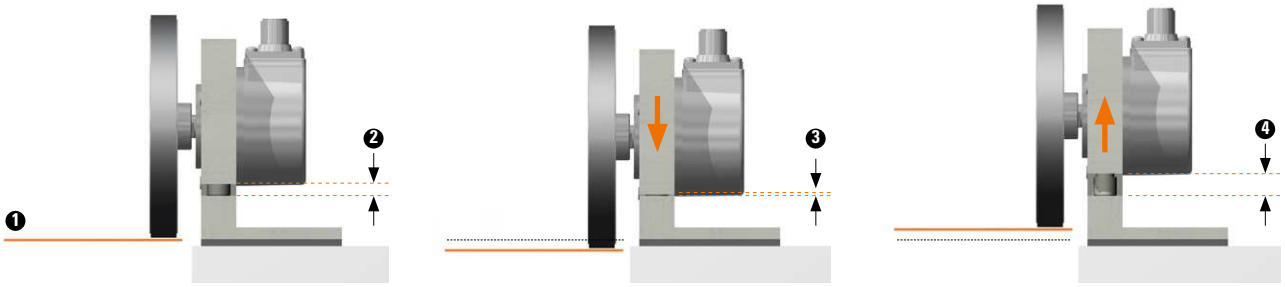


0° (delivery state) **30°** **60°** **90°**

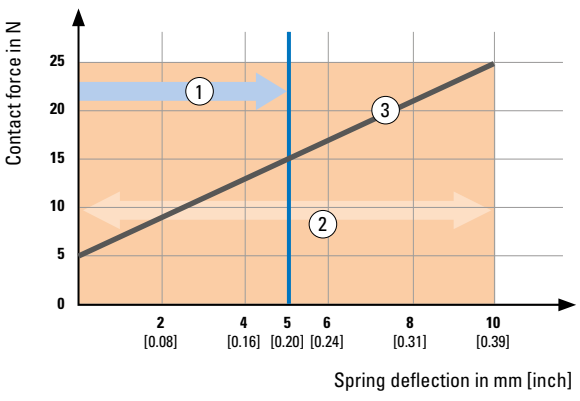
Mounting on the application

Install the MWE41 on the material to be measured ❶ in such a way that the requested preload is obtained. (ideally approx. 5 mm of the spring deflection ❷)

The working range is from 0 mm ❸ (equivalent to 5 N) to 10 mm ❹ (equivalent to 25 N)



Contact force of the measuring wheel on the material to be measured



① Preload, recommended : 15 N (approx. 5 mm defection)

② Operating travel, max. : 10 mm

③ Contact force in relation to spring deflection

(Functional principle based on 2 integrated springs)

Performance-Line | **Measuring wheel system MWE41** | **With spring bracket, contact force max. 25 N**

Technical data

Mechanical characteristics spring bracket MWE40

Materials	spring spring bracket	spring steel aluminum
Weight		350 g
Contact force, max.		25 N
Preload, recommended		15 N (at 5 mm spring deflection)
Operating travel, max.		10 mm
Working temperature range		-20 °C ... +70°C [-40 °F ... +176 °F]
Shock resistance acc. EN 60068-2-27		1000 m/s², 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s², 55 ... 2000 Hz

Approvals

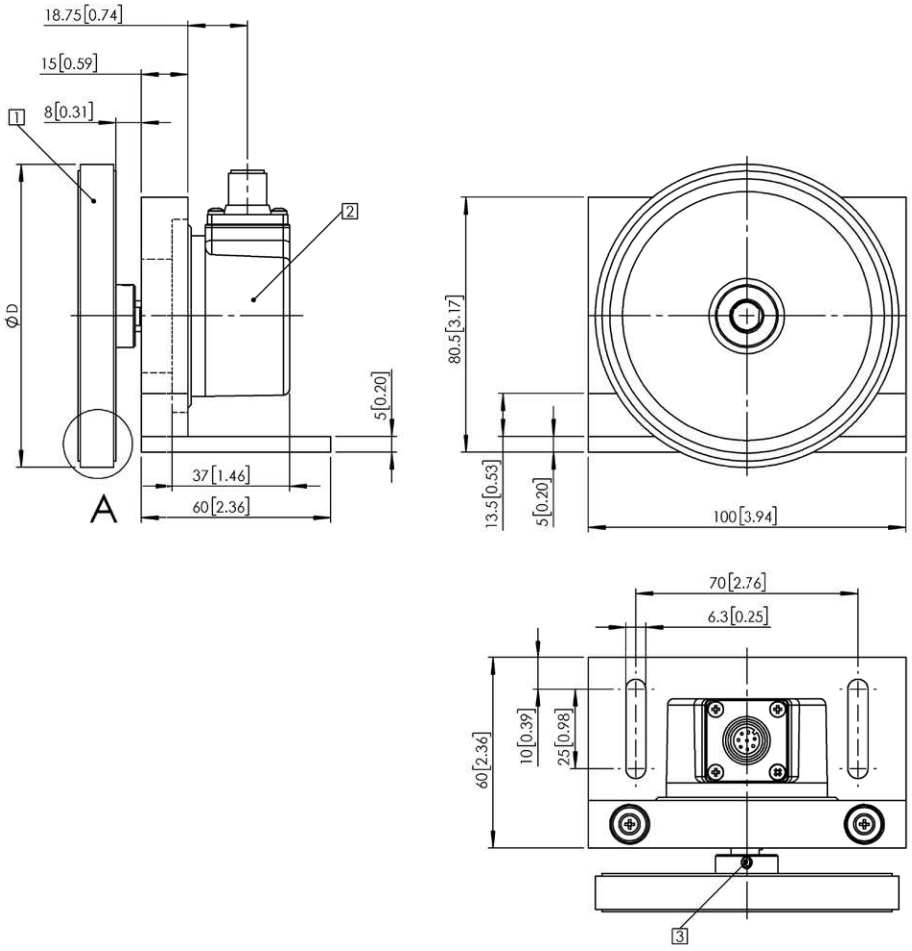
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Dimensions

Dimensions in mm [inch]

Spring bracket MWE40 in combination with meeasuring wheel and encoder KIS50

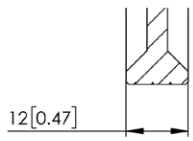
1 Measuring wheel
2 Encoder
3 Fixing screw M4 x 6 for measuring wheel



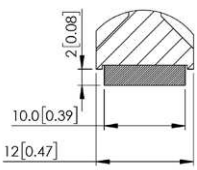
Measuring wheel circumference	ø D mm [inch]
200 mm	63.7 [2.50]
300 mm	95.54 [3.76]
500 mm	159.23 [6.26]
12“	97.07 [3.82]

A for measuring wheel with coating:

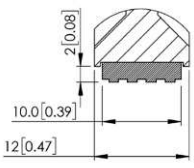
Diamond knurl (aluminum)



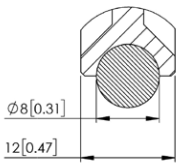
Plastic smooth (PU)



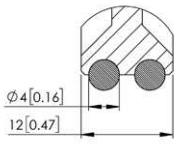
Tufted rubber (PU)



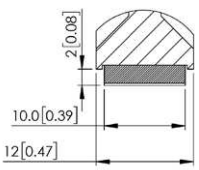
O-ring (NBR)



Double O-ring (NBR)



Plastic corrugated (PU)



Compact-Line | **Measuring wheel system MWE31** | **With spring bracket, contact force max. 15 N**

With incremental or absolute encoder with clamping flange ø 36 mm or ø 40 mm.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The compact MWE31 measuring wheel system with internal springs can be quickly and easily integrated into even the tightest installation spaces.

Push-Pull HTL | RS422 TTL | Open Collector NPN | Analog output | SSI | CANopen | IO-Link

Features

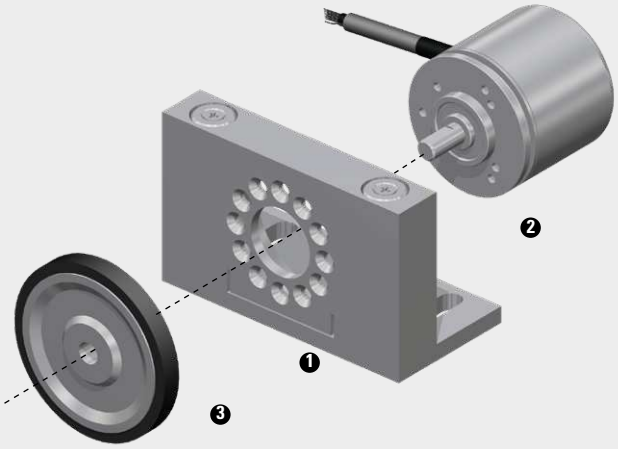
- **Simple and safe assembly**
  Measuring wheel system with internal springs to protect against unwanted influences for and by the springs. Encoder can be mounted on the spring bracket in 30° steps.
- **Wide range of encoders**
  Incremental Sendix encoder with a max. resolution of up to 2500 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link for integration in Industry 4.0 concepts.
- **Suitable measuring wheels for all measuring surfaces**
  Circumference 200 mm - measuring wheel coating available with O-ring, smooth plastic or diamond knurl surface.
- **Contact force up to max. 15 N**
  The integrated spring ensures a working range of the measuring wheel of up to 10 mm vertical to the measuring surface to compensate for tolerances.

Construction

❶ Spring bracket: MWE30

❷ Encoder: Clamping flange ø 36 mm or ø 40 mm

❸ Measuring wheel: Circumference 200 mm



Compact-Line | **Measuring wheel system MWE31** | **With spring bracket, contact force max. 15 N**

Order code with incremental encoder

8.MWE31 . 1 2 1 . XX . 40 X X . XXXX
Type — ❶ — ❷ — ❸ ❸ ❸ — ❹

❶ *Encoder version*
1 = incremental

❷ *Measuring wheel, circumference / coating*
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)
(other measuring wheels on request)

❸ *Mounted encoder* [1]

40	= KIS40 incremental	to the datasheet >

(other encoders on request)

❸ *Output circuit / supply voltage encoder*
see data sheet encoder

❸ *Type of connection*
see data sheet encoder

❹ *Pulse rate*
see data sheet encoder

Order code with absolute encoder

8.MWE31 . 2 2 1 . XX . XX X X . XXXX
Type — ❶ — ❷ — ❸ ❸ ❸ — ❹

❶ *Encoder version*
2 = absolute

❷ *Measuring wheel, circumference / coating*
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)
(other measuring wheels on request)

❸ *Mounted encoder* [1]

M1	= M3661 Analog output	to the datasheet >
M3	= M3663 SSI	to the datasheet >
M8	= M3668 CANopen	to the datasheet >
M8	= M3668 IO-Link	to the datasheet >

(other encoders on request)

❸ *Output circuit / supply voltage encoder*
see data sheet encoder

❸ *Type of connection*
see data sheet encoder

❹ + ⓕ + ⓖ *Interface specifications*
see data sheet encoder

Calculation of the linear resolution

	Measuring step (distance/pulse)		Resolution (pulses/distance)		
Calculation	$\frac{\text{distance}}{\text{ppr}}$	= $\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{distance}}$	= $\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$
Example Measuring wheel circumference = 200 mm Pulse number encoder = 1000 ppr	$\frac{200\text{ mm}}{1000\text{ ppr}}$	= 0.2 mm / puls	$\frac{1000\text{ ppr}}{200\text{ mm}}$	= 5 pulses / mm

1) Clamping flange 36 or 40 mm / shaft ø 6 mm - only relevant for ordering an encoder as a single component.

Compact-Line | **Measuring wheel system MWE31** | **With spring bracket, contact force max. 15 N**

Single components

Order no.

Spring bracket MWE30

combinable with Kübler encoders:

incremental:	Sendix Base KIS40, 3610	**8.MWE30.121.00.0000.0000**
absolute:	Sendix F36xx, M36xx	**8.MWE30.221.00.0000.0000**

Details s. datasheet >

Measuring wheels

Option ❷	circumference / coating	
21	200 mm / diamond knurl (aluminum)	**8.0000.3215.0006**
24	200 mm / plastic smooth (PU)	**8.0000.3245.0006**
27	200 mm / O-ring (NBR70)	**8.0000.3275.0006**

(other measuring wheels on request)

Details s. datasheet >

Evaluation

Order no.

Preset counter Codix 924

Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
- Time preset counter

6.924.01XX.XXX

Details s. datasheet >

Accessories

Order no.

O-rings

For measuring wheel circumference 200 mm

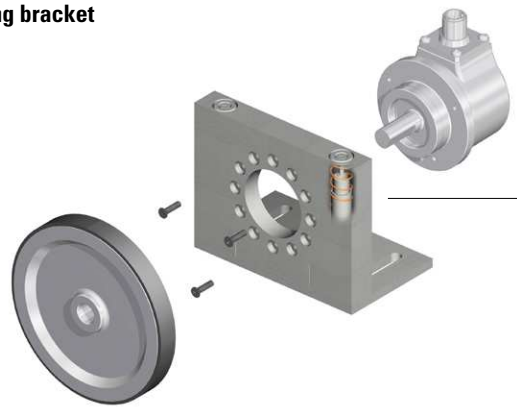
8.0000.7000.0067

Compact-Line | **Measuring wheel system MWE31** | **With spring bracket, contact force max. 15 N**

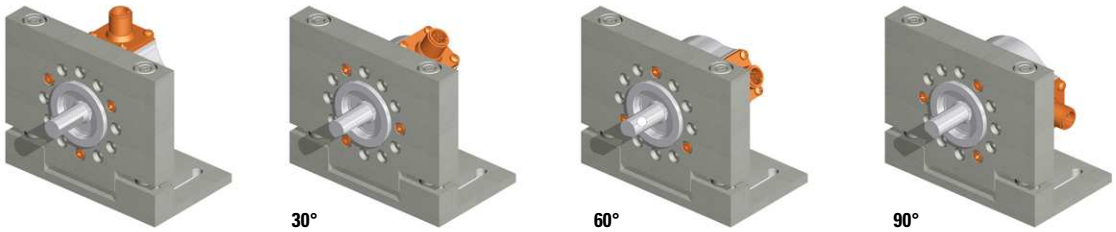
Technology in detail

Mounting options encoder on spring bracket

The encoder is attached to the spring bracket with 3 screws.



For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 30° steps.

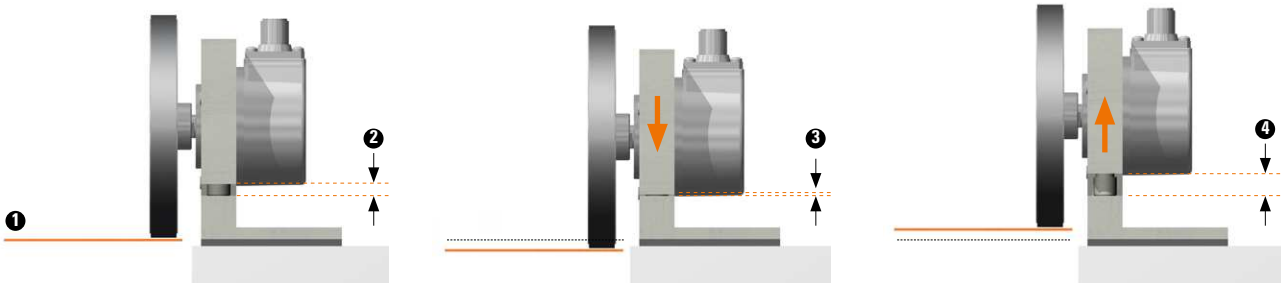


0° (delivery state) **30°** **60°** **90°**

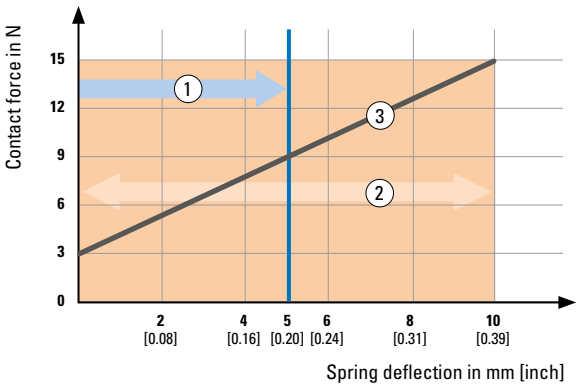
Mounting on the application

Install the MWE31 on the material to be measured ❶ in such a way that the requested preload is obtained. (ideally approx. 5 mm of the spring deflection ❷)

The working range is from 0 mm ❸ (equivalent to 3 N) to 10 mm ❹ (equivalent to 15 N)



Contact force of the measuring wheel on the material to be measured



① Preload, recommended : 9 N (approx. 5 mm defection)

② Operating travel, max. : 10 mm

③ Contact force in relation to spring deflection

(Functional principle based on 2 integrated springs)

Compact-Line | **Measuring wheel system MWE31** | **With spring bracket, contact force max. 15 N**

Technical data

Mechanical characteristics spring bracket MWE30

Materials	spring spring bracket	spring steel aluminum
Weight		160 g
Contact force, max.		15 N
Operating travel, max.		10 mm
Preload, recommended		9 N (at 5 mm spring deflection)
Working temperature range		-20 °C ... +70°C [-40 °F ... +176 °F]
Shock resistance acc. EN 60068-2-27		1000 m/s², 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s², 55 ... 2000 Hz

Approvals

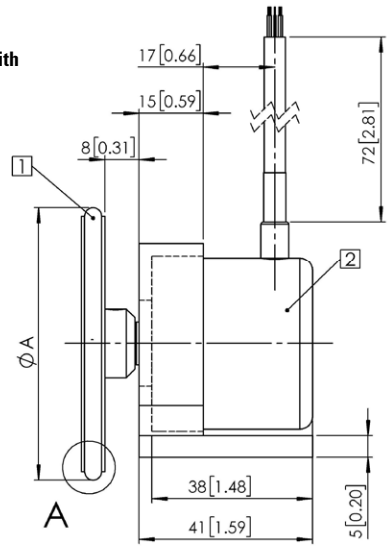
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

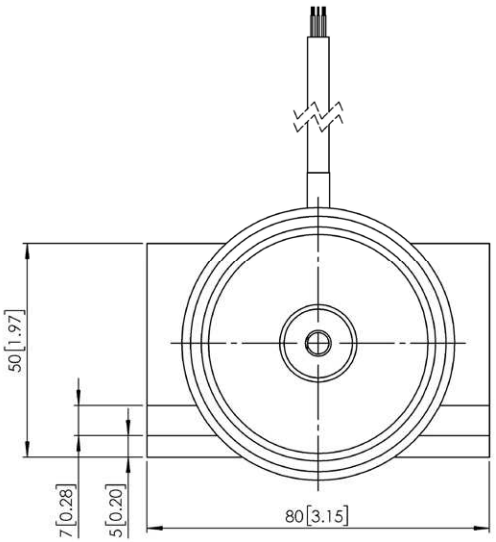
Dimensions

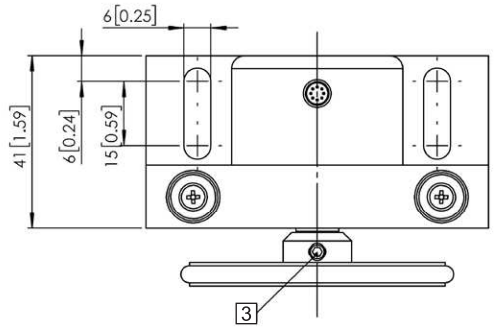
Dimensions in mm [inch]

Spring bracket MWE30 in combination with meeasuring wheel and encoder KIS40

1 Measuring wheel
2 Encoder
3 Fixing screw M4 x 6 for measuring wheel



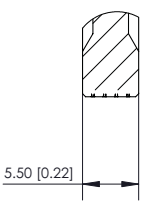




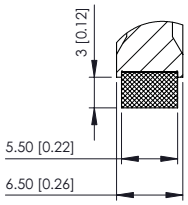
Measuring wheel circumference	ø A mm [inch]
200 mm	63.7 [2.52]
6“	48.5 [1.91]

D for measuring wheel with coating:

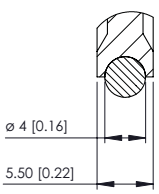
Diamond knurl (aluminum)



Plastic smooth (PU)



O-ring (NBR)



Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

With incremental or absolute encoder with clamping flange ø 36 mm or ø 40 mm.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The compact measuring wheel system MWE21 with adjustable preload can be integrated very flexibly even in the tightest installation spaces.

Push-Pull HTL | RS422 TTL | Open Collector NPN

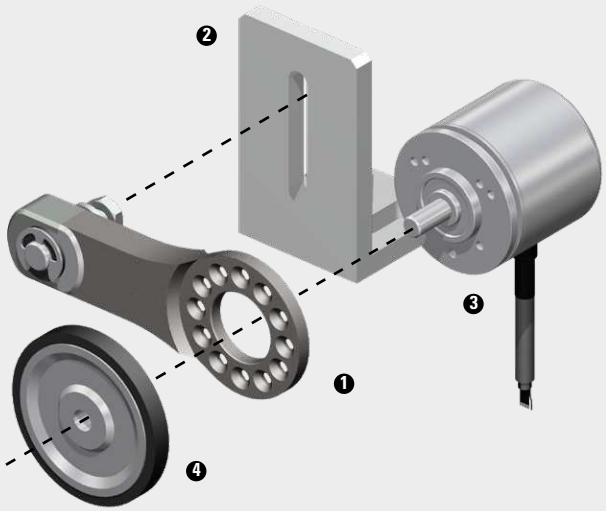
RoHS | Analog output | SSI | CANopen | IO-Link

Features

- **Compact measuring wheel system**
  For the tightest installation spaces with flexible mounting options: vertical, horizontal or overhead. Encoders can be mounted on both sides of the spring arm in 30° steps.
- **Wide range of encoders**
  Incremental Sendix encoder with a max. resolution of up to 2500 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link for integration in Industry 4.0 concepts.
- **Suitable measuring wheels for all measuring surfaces**
  Circumference 200 mm or 6“ - measuring wheel coating available with O-ring, smooth plastic or diamond knurl surface.
- **Contact force up to max. 20 N**
  With adjustable preload and mechanical spring deflection limitation for a long service life. The integrated spring ensures a working range of the measuring wheel of up to 16 mm vertical to the measuring surface to compensate for tolerances.

Construction

❶	Spring arm:	MWE20
❷	Mounting bracket:	optional
❸	Encoder:	Clamping flange ø 36 mm or ø 40 mm
❹	Measuring wheel:	Circumference 200 mm or 6“



Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

Order code with incremental encoder

8.MWE21 . 1 X 1 . XX . 40 X X . XXXX
Type — ❶❷ ❸ ❹ ⓒ ⓓ ⓔ

❶ *Encoder version*
1 = incremental

❷ *Mounting bracket*
1 = without mounting bracket
2 = with mounting bracket

❸ *Measuring wheel, circumference / coating*
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)

61 = 6" / diamond knurl (aluminum)
64 = 6" / plastic smooth (PU)
67 = 6" / O-ring (NBR)

(other measuring wheels on request)

❹ *Mounted encoder* [1]
40 = KIS40 incremental

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ *Pulse rate*
see data sheet encoder

Order code with absolute encoder

8.MWE21 . 2 X 1 . XX . XX X X . XXXX
Type — ❶❷ ❸ ❹ ⓒ ⓓ ⓔⓕⓖ

❶ *Encoder version*
2 = absolute

❷ *Mounting bracket*
1 = without mounting bracket
2 = with mounting bracket

❸ *Measuring wheel, circumference / coating*
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)

61 = 6" / diamond knurl (aluminum)
64 = 6" / plastic smooth (PU)
67 = 6" / O-ring (NBR)

(other measuring wheels on request)

❹ *Mounted encoder* [1]
M1 = M3661 Analog output
M3 = M3663 SSI
M8 = M3668 CANopen
M8 = M3668 IO-Link

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ + ⓕ + ⓖ *Interface specifications*
see data sheet encoder

Calculation of the linear resolution

	Measuring step (distance/pulse)			Resolution (pulses/distance)		
Calculation	$\frac{\text{distance}}{\text{ppr}}$	=	$\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{distance}}$	=	$\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$
Example 1 Measuring wheel circumference = 200 mm Pulse number encoder = 1000 ppr	$\frac{200\text{ mm}}{1000\text{ ppr}}$	=	0.2 mm / puls	$\frac{1000\text{ ppr}}{200\text{ mm}}$	=	5 pulses / mm
Example 2 Measuring wheel circumference = 6 inch Pulse number encoder = 600 ppr	$\frac{6\text{ inch}}{600\text{ ppr}}$	=	0.01 inch / puls	$\frac{600\text{ ppr}}{6\text{ inch}}$	=	100 pulses / inch

1) Clamping flange 36 or 40 mm / shaft ø 6 mm - only relevant for ordering an encoder as a single component.

Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

Single components

Order no.

Spring arm MWE20

combinable with Kübler encoders:

incremental:	Sendix Base KIS40, 3610	**8.MWE20.111.00.0000.0000**
absolute:	Sendix F36xx, M36xx	**8.MWE20.211.00.0000.0000**

Measuring wheels

Option ❸	circumference / coating	
21	200 mm / diamond knurl (aluminum)	**8.0000.3215.0006**
24	200 mm / plastic smooth (PU)	**8.0000.3245.0006**
27	200 mm / O-ring (NBR70)	**8.0000.3275.0006**
61	6“ / diamond knurl (aluminum)	**8.0000.3615.0006**
64	6“ / plastic smooth (PU)	**8.0000.3645.0006**
67	6“ / O-ring (NBR70)	**8.0000.3675.0006**

(other measuring wheels on request)

Details s. datasheet >

Evaluation

Order no.

Preset counter Codix 924

Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
- Time preset counter

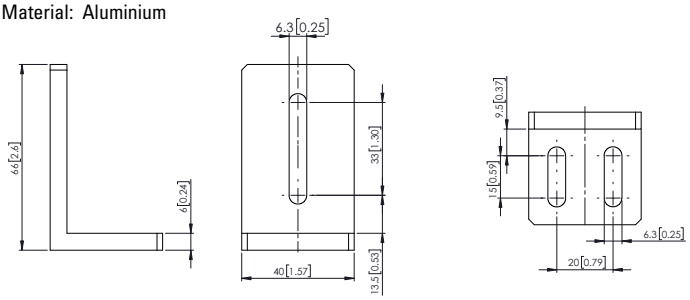
6.924.01XX.XXX

Accessories

Order no.

Mounting bracket

Material: Aluminium



8.0000.7000.0065

O-rings

For measuring wheel circumference 200 mm	**8.0000.7000.0067**
For measuring wheel circumference 6“	**8.0000.7000.0066**

Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

Technology in detail

Mounting options encoder on spring arm

The encoder is attached to the spring arm with 3 screws.

The fastening points are designed in such a way that mounting on both sides of the spring arm is possible.

Mounting left (delivery state)

Mounting right

For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 30° steps.

0° (delivery state)

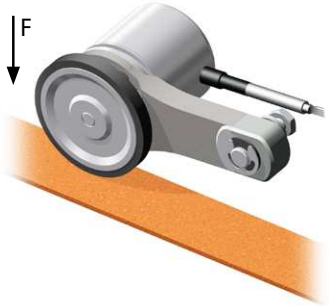
30°

60°

90°

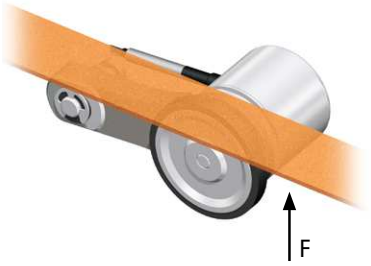
Various mounting options

horizontally

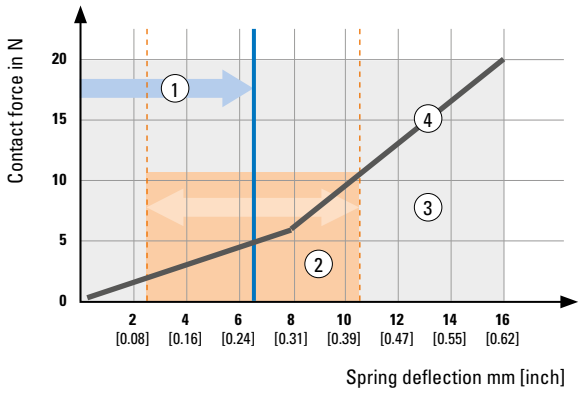


vertically

overhead



Contact force of the measuring wheel on the material to be measured



1	Preload, example:	5 N (approx. 6,5 mm defection)
2	Operating travel, recommended:	± 4 mm (from the preload set)
3	Spring deflection, max.:	16 mm
4	Contact force in relation to spring deflection (Functional principle based on 2 integrated springs)	

Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

Technical data

Mechanical characteristics spring arm MWE21

Materials	spring spring arm	spring steel aluminum
Weight		37 g
Contact force, max.		20 N
Spring deflection, max.		16 mm
Preload, recommended		5 N (approx. 6,5 mm spring deflection)
Operating travel, recommended (continuous)		±4 mm [1] (from the recommended preload)
Spring operating life		2.0 Mio. cycles [2]

Approvals

UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

1) Operating deflection is measured after preload applied and with/for continuous operations.
2) Life of spring is measured with operating deflection at 1 Hz.

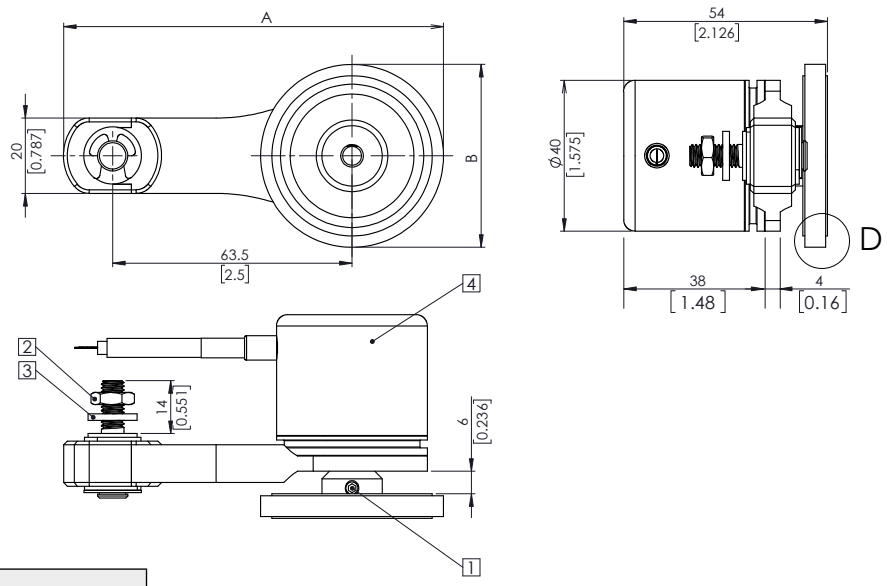
Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 20 N**

Dimensions

Dimensions in mm [inch]

Spring arm MWE20 in combination with meeasuring wheel and encoder KIS40

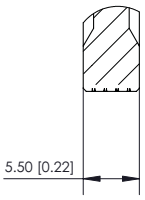
1 Fixing screw M4 x 6 for measuring wheel
2 Hexagon nut M6
3 Toothed washer
4 Encoder



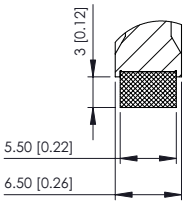
Measuring wheel circumference	A mm [inch]	ø B mm [inch]
200 mm	108.4 [4.27]	63.7 [2.52]
6"	100.8 [3.97]	48.5 [1.91]

D for measuring wheel with coating:

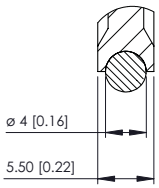
Diamond knurl (aluminum)



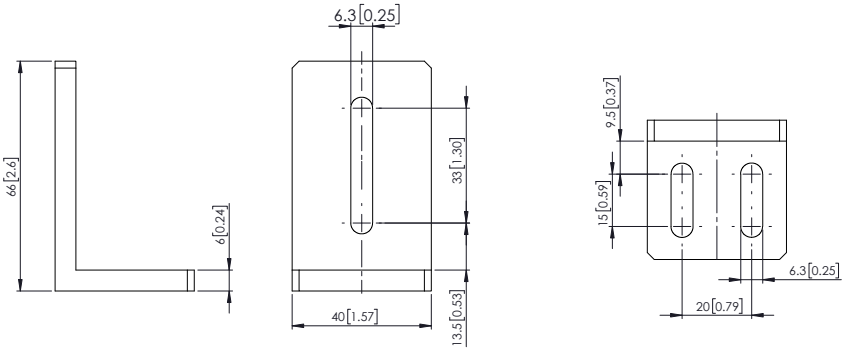
Plastic smooth (PU)



O-ring (NBR)



Mountig bracket



Compact-Line | **Measuring wheel system MWE11** | **With spring bracket, contact force max. 10 N**

With incremental encoder Sendix 2400.

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data.

The compact measuring wheel system MWE11 with the smallest size can be integrated very flexibly, even in the tightest installation spaces.

RoHS

Push-Pull
HTL

Features

- **Easy handling**
  Measuring wheel, sensor and spring bracket are pre-assembled and therefore easy to install: screw on - connect - done.
- **Compact design**
  Dimensions of the complete unit only 74 x 50 x 52 mm.
- **Measuring wheels in 2 variants**
  Circumference 100 mm - measuring wheel coating available with diamond knurl or rubber surface.

Order code with incremental encoder

05.2400	.	0040	.	1000	.	50	XX ❶
Type							

❶ *Measuring wheel, circumference / coating*
45 = 100 mm / diamond knurl (aluminum)
49 = 100 mm / Rubber, Shore hardness 60

(other measuring wheels on request)

Mounted encoder

2400	incremental	to the datasheet >

Output circuit / supply voltage encoder
push-pull (with inverted signal) / 8 ... 30 V DC

Type of connection
radial cable, 2 m PVC

Pulse rate
1000 ppr

(other options on request)

Calculation of the linear resolution

	Measuring step (Dinstance/pulse)			Resolution (pulses/Dinstance)		
Calculation	$\frac{\text{Distance}}{\text{ppr}}$	=	$\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$	$\frac{\text{ppr}}{\text{Distance}}$	=	$\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$
Example Measuring wheel circumference = 100 mm Pulse number encoder = 1000 ppr	$\frac{100\text{ mm}}{1000\text{ ppr}}$	=	0.1 mm / puls	$\frac{1000\text{ ppr}}{100\text{ mm}}$	=	10 pulses / mm

Compact-Line	Measuring wheel system MWE11	With spring bracket, contact force max. 10 N

Single components

Measuring wheels

Option ❶	circumference / coating	Order no.
45	100 mm / diamond knurl (aluminum)	**8.0000.3113.0006**
49	100 mm / Rubber, Shore hardness 60	**8.0000.3123.0006**

(other measuring wheels on request)

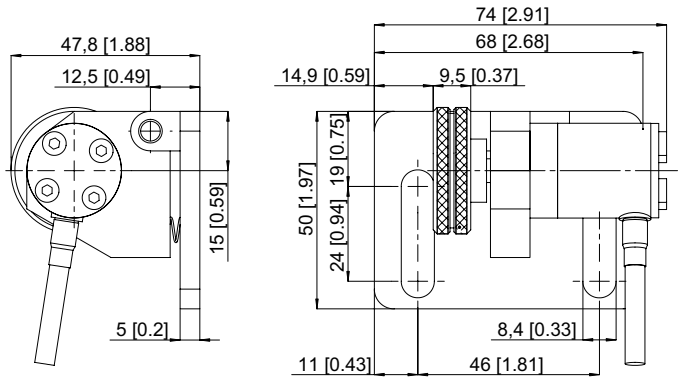
Evaluation

Preset counter Codix 924 — **6.924.01XX.XXX**

Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
- Time preset counter

Dimensions

Dimensions in mm [inch]

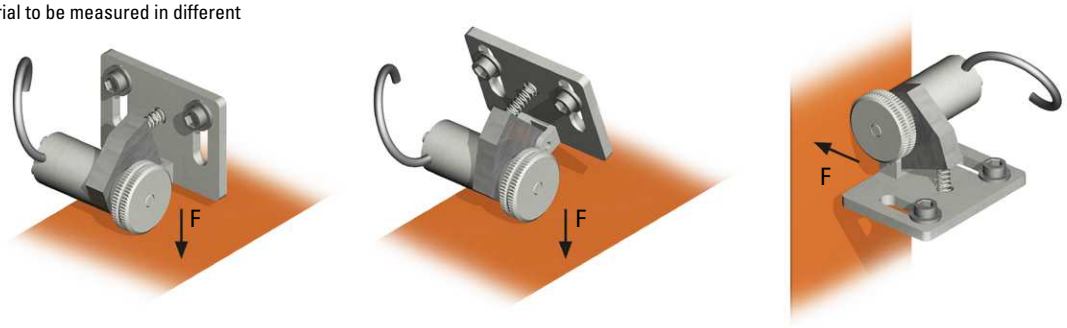


Compact-Line | **Measuring wheel system MWE11** | **With spring bracket, contact force max. 10 N**

Technology in detail

Various mounting options

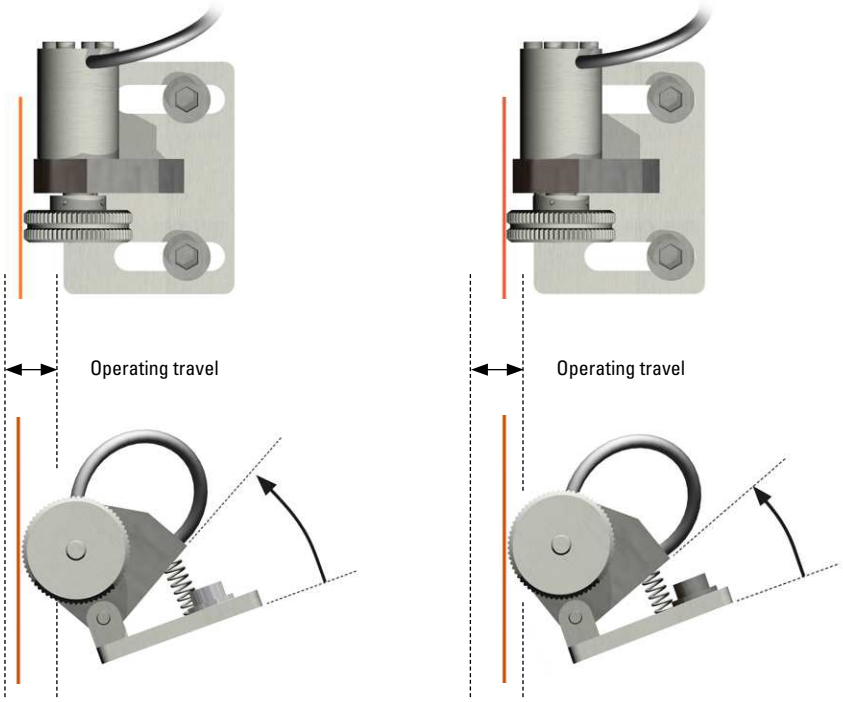
The measuring wheel system can be placed on the material to be measured in different ways.



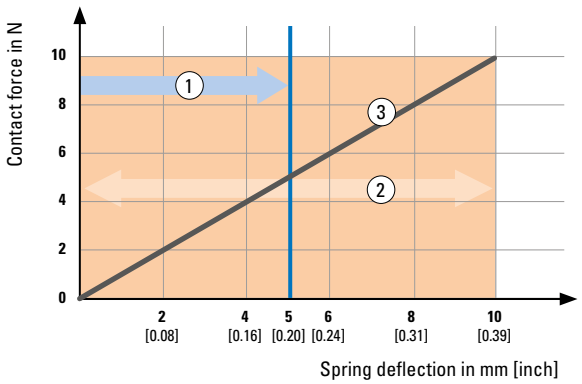
Setting the preload

The distance between the MWE11 measuring wheel system and the material to be measured can be adjusted via 2 slotted holes.

This simultaneously sets the desired preload of the spring.



Contact force of the measuring wheel on the material to be measured



1 Preload, recommended : 5 N

2 Operating travel, max. : 10 mm

3 Contact force in relation to spring deflection

По вопросам продаж и поддержки обращайтесь:

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Ставрополь (8652)20-65-13
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Тюмень (3452)66-21-18
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