Measuring wheel systems

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, position and distance 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

RoHS   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
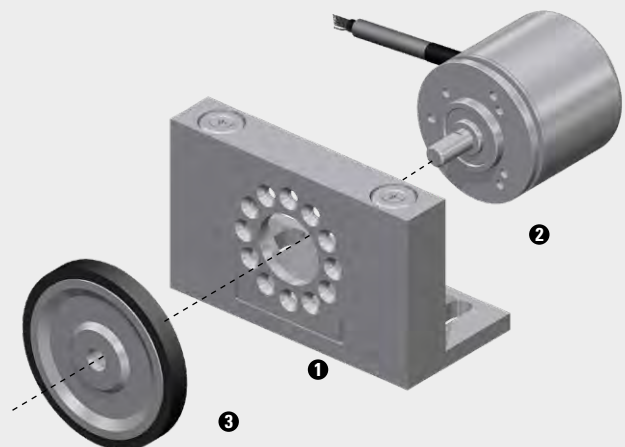
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Order code with incremental encoder

8.MWE31 . 1 2 1 . XX . 40 XX . XXXX
Type ❶ ❷ ❸ c d e

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

    (other encoders on request)

c Output circuit / supply voltage encoder
see data sheet encoder

d Type of connection
see data sheet encoder

e Pulse rate
see data sheet encoder

Order code with absolute encoder

8.MWE31 . 2 2 1 . XX . XXXX . XXXX
Type ❶ ❷ ❸ c d e f g

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
M3 = M3663   SSI
M8 = M3668   CANopen
M8 = M3668   IO-Link

    (other encoders on request)

c Output circuit / supply voltage encoder
see data sheet encoder

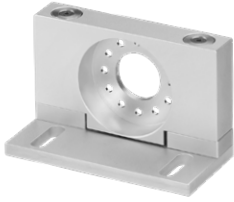**d Type of connection**
see data sheet encoder

e + f + g Interface specifications
see data sheet encoder

Calculation of the linear resolution

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

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

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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

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)

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. | Order no.

O-rings

For measuring wheel circumference 200 mm

8.0000.7000.0067

Further accessories can be found at: kuebler.com/accessories
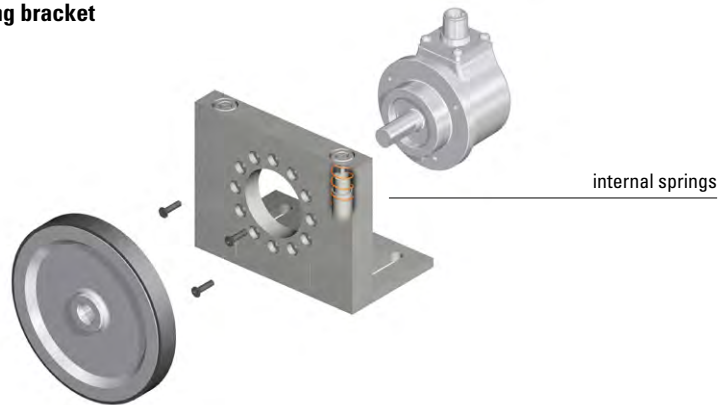Cables and connectors can be found at: kuebler.com/connection-technology

Measuring wheel systems

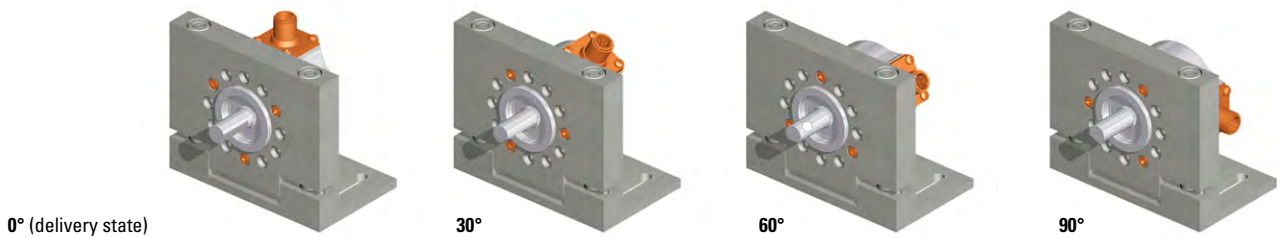## Technology in detail

Mounting options encoder on spring bracket

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

internal springs

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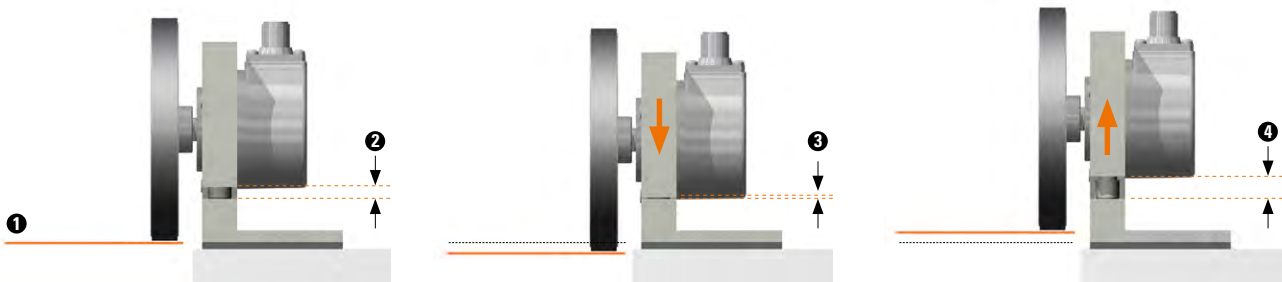
Contact force of the measuring wheel on the material to be measured

Contact force in N

Spring deflection in mm [inch]

| 2 [0.08] | 4 [0.16] | 5 [0.20] | 6 [0.24] | 8 [0.31] | 10 [0.39] |
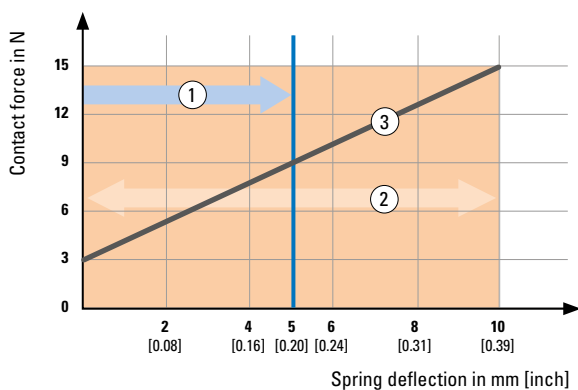
① Preload, recommended : 9 N (approx. 5 mm defection)

② Operating travel, max. : 10 mm

③ Contact force in relation to spring deflection
(Functional principle based on 2 integrated springs)

Measuring wheel systems

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Technical data

Mechanical characteristics spring bracket

| Materials	spring	spring steel
	spring bracket	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 acc. to	File no. E224618
CE compliant acc. to	EMV guideline 2014/30/EU
	RoHS guideline 2011/65/EU
UKCA compliant acc. to	EMC Regulations S.I. 2016/1091
	RoHS Regulations S.I. 2012/3032

Dimensions
Dimensions in mm [inch]

Spring bracket MWE30 in combination with meeasuring wheel and encoder KIS40

1 Measuring wheel
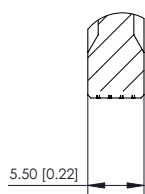2 Encoder
3 Fixing screw M4 x 6
   for measuring wheel
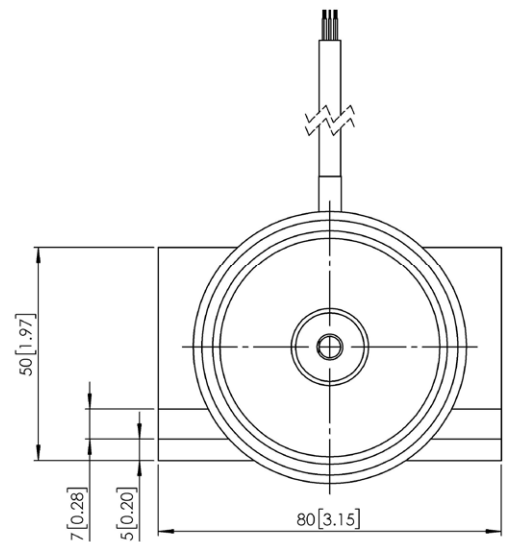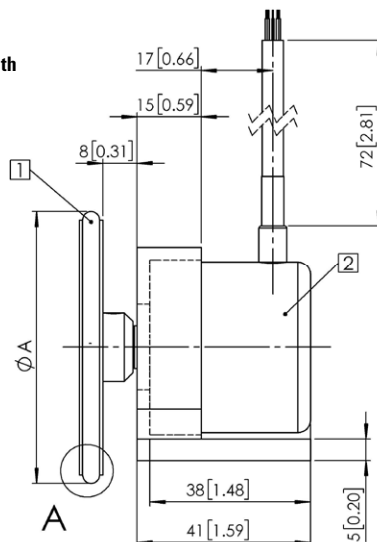
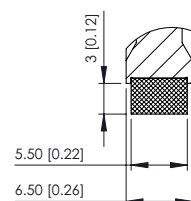| Measuring wheel circumference	ø A mm [inch]
200 mm	63.7 [2.52]
6"	48.5 [1.91]
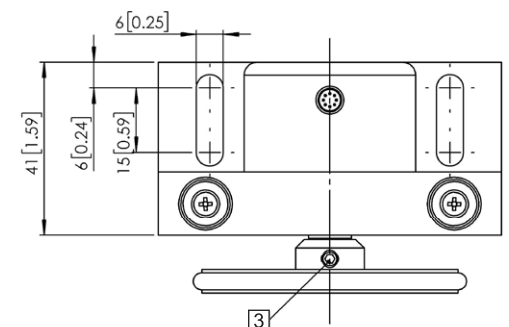
D for measuring wheel with coating:

Diamond knurl (aluminum)

Plastic smooth (PU)

O-ring (NBR)