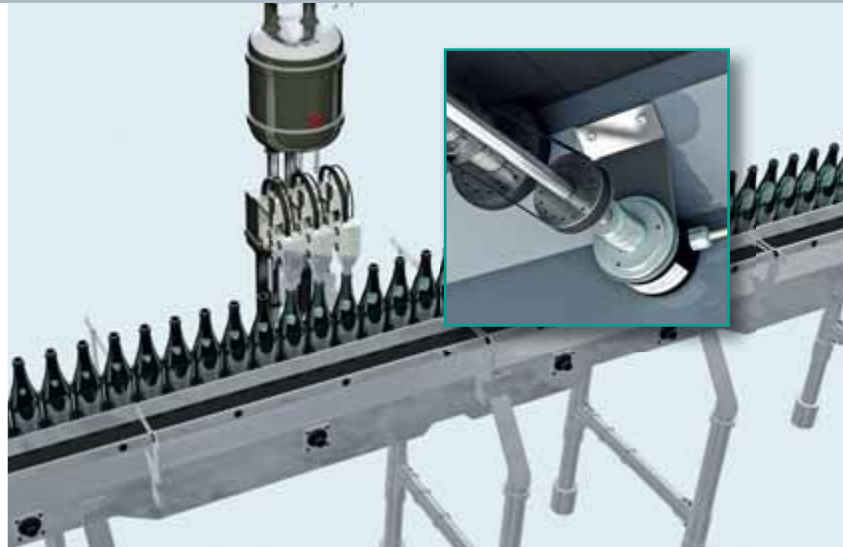


# OVERVIEW

# ROTARY ENCODERS



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### “CUSTOMIZED ENCODER SOLUTIONS”

Can't find a rotary encoder for your application under the standard products? The team at the Customer Solution Center of Pepperl+Fuchs GmbH will be pleased to help you match an encoder to your specification. Please speak to our experts, so that we can help you develop a tailor-made solution for your specific application.

**Your direct line to Pepperl+Fuchs:**  
Tel.: +49 621 776-4411  
E-Mail: [fa-info@pepperl-fuchs.com](mailto:fa-info@pepperl-fuchs.com)





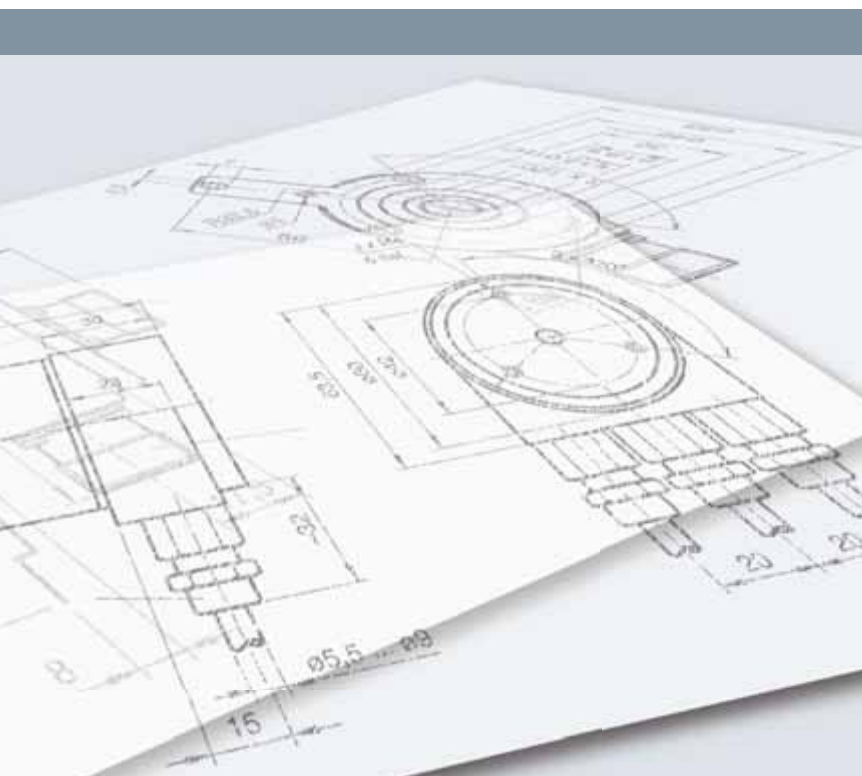
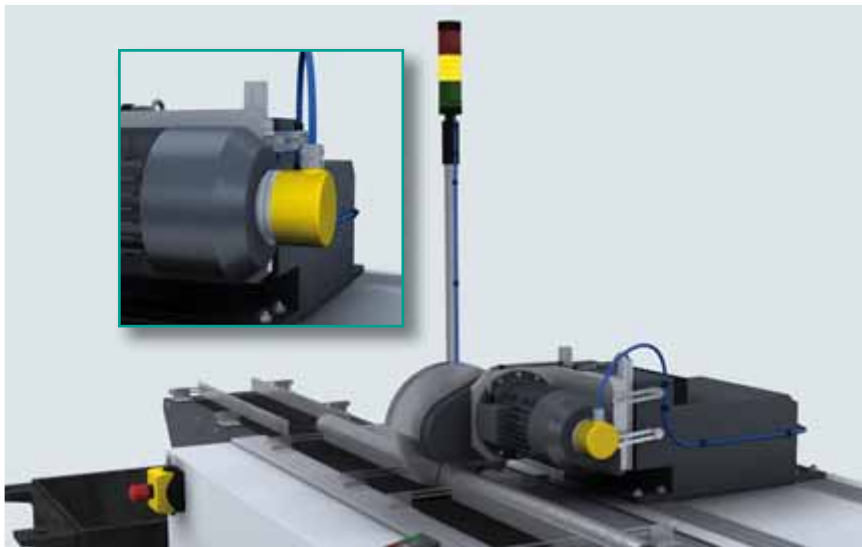
Rotary encoders are used for accurate position measurement and speed feedback. Due to their universal application, rotary encoders can be found in almost all applications in automation, as well as in machinery and plant construction. Let us help you select a rotary encoder for your application demands.

## INCREMENTAL ROTARY ENCODERS

Incremental rotary encoders provide a defined number of pulses per shaft revolution. Measurement of the cycle duration and the number of pulses per unit of time provide the rotational speed. If the number of pulses from a reference point are measured, the numerical value represents a measure of the angle displaced and the distance covered around the path. Two-channel encoders – with a phase shift of  $90^\circ$  – provide the series connected electronics to determine the direction of rotation of the shaft and thereby also enable bi-directional positioning tasks. Three-channel incremental encoders provide a so-called null signal once per revolution.

## ABSOLUTE ROTARY ENCODERS

Absolute value rotary encoders output a uniquely coded numerical value at each shaft position. In particular in positioning tasks, absolute encoders are free of the electronics of the counting tasks, so that complicated and expensive input assemblies can be eliminated. In addition, no referencing movements are required when switching the machine on and following a power failure, since the current position value remains immediately available. New technologies, such as magnetic scanning, extend the application possibilities and complete the range of absolute rotary encoders. On serial absolute rotary encoders the output data is output via standardized interfaces and in accordance with standardized protocols. Although in the past point-to-point connections with serial data transfer were frequently employed, today fieldbus systems are increasing.

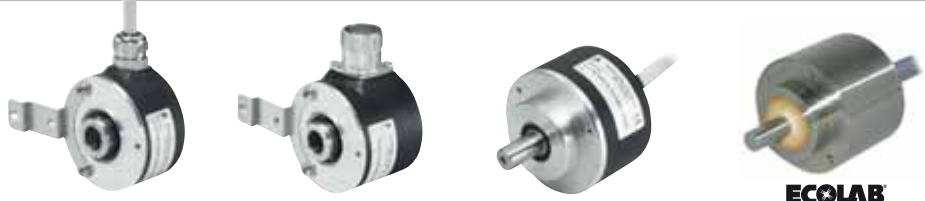


# INCREMENTAL ROTARY ENCODERS

R-LINIE



Up to 50,000 pulses



ECOLAB

	RHI58	RSI58	RVI58	RVI58L
Pulse count	≤ 50,000	≤ 50,000	≤ 50,000	≤ 5,000
Housing diameter [mm]	ø58	ø58	ø58	ø58
Flange type	–	–	Clamping flange, Servo flange	Clamping flange
Flange diameter [mm]	–	–	ø36, ø50	ø36
Solid shaft [mm]	–	–	ø6, ø10	ø10
Hollow shaft [mm]	ø10, ø12	–	–	–
Recessed hollow shaft [mm]	–	ø10, ø12	–	–
Maximum rpm [min <sup>-1</sup> ]	6,000	12,000	12,000	3,600
Max. shaft load, axial [N]	–	–	40	40
Max. shaft load, radial [N]	–	–	60	60
Operating voltage [V DC]	5 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30
Output type	Push-pull, RS 422	Push-pull, RS 422	Push-pull, RS 422	Push-pull, RS 422
Max. output frequency [kHz]	200	200	200	600
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Protection class	IP54	IP54	IP65	IP67/IP69K
Extended temperature range	–	–	•	–

## ORDER CODES

R H I 5 8 N - . . . A K 1 R 6 . N - . . . . .

**Shaft dimension**  
**0A** Hollow shaft ø10 mm (up to 5000 ppr)  
**0B** Hollow shaft ø12 mm (up to 5000 ppr)  
**2A** Hollow shaft ø10 mm, clamping on both sides (> 5000 ppr)  
**2B** Hollow shaft ø12 mm, clamping on both sides (> 5000 ppr)

**Output**  
**1** 10 V ... 30 V, push-pull  
**6** 5 V, RS 422  
**X** 10 V ... 30 V, RS 422

**Pulse count**  
 100, 360, 500, 512, 1000, 1024, 1250, 2048, 2500, 3600, 4096, 5000, 6000, 8192, 10000, 20000, 50000

R V I 5 8 N - . . . . . 6 . N - . . . . .

**Shaft dimension**  
**011** Shaft ø10 mm x 20 mm with clamping flange  
**032** Shaft ø6 mm x 10 mm with servo flange  
**044** Shaft ø10 mm x 20 mm Abflachung 1 x 20 mm Clamping flange

**Connection technology**  
**AA** Plug connector Type 9416, 12-pin  
**AB** Equipment connector Type 9416L, 12-pin  
**K1** Cable ø7.8 mm, 6 x 2 x 0.14 mm<sup>2</sup>, 1 m

**Outgoing circuit**  
**A** axial  
**R** radia

**Pulse count**  
 100, 360, 500, 512, 1000, 1024\*, 1250, 2048\*, 2500\*, 3600, 4096\*, 5000, 6000\*, 8192\*, 10000\*, 20000\*, 50000\*

**N** Standard  
**T** Extended temperature range down to -40 °C (available ppr see\*)

**Output**  
**1** 10 V ... 30 V, push-pull  
**6** 5 V, RS 422  
**X** 10 V ... 30 V, RS 422

R S I 5 8 N - . . . A . . . . . N - . . . . .

**Shaft dimension**  
**01** Recessed hollow shaft ø10 mm x 20 mm  
**02** Recessed hollow shaft ø12 mm x 20 mm

**Connection type**  
**AA** Plug connector Type 9416, 12-pin  
**AB** Equipment connector Type 9416L, 12-pin  
**K1** Cable ø7.8 mm, 6 x 2 x 0.14 mm<sup>2</sup>, 1 m

**Output**  
**1** 10 V ... 30 V, push-pull  
**6** 5 V, RS 422  
**X** 10 V ... 30 V, RS 422

**Signal output**  
**3** A + B + 0  
**6** A + B + 0 und A\ + B\ + 0\

**Outgoing circuit**  
**A** axial  
**R** radial

R V I 5 8 L - . . . . . 6 . N - . . . . .

**L** EHEDG hygiene approved, qualified for ECOLAB disinfection

**Shaft dimension**  
**011** Shaft ø10 mm x 20 mm with clamping flange

**Connection type**  
**K2** Cable ø7,8 mm, 6 x 2 x 0,14 mm<sup>2</sup>, 2 m

**Outgoing circuit**  
**A** axial  
**R** radia

**Pulse count**  
 50, 100, 150, 200, 360, 500, 1000, 1024, 1250, 2048, 2500, 4096, 5000

**Output**  
**1** 10 V ... 30 V, push-pull  
**6** 5 V, RS 422  
**X** 10 V ... 30 V, RS 422

# INCREMENTAL ROTARY ENCODERS

R-LINIE



	RV150	RV178	RH190	RV125
Pulse count	≤ 2,500	≤ 5,000	≤ 50,000	≤ 2,000
Housing diameter [mm]	ø50	ø78	ø90	ø2,5"
Flange type	Clamping flange	Clamping flange	–	Rectangular flange
Flange diameter [mm]	ø30	ø42	–	ø1,25"
Solid shaft [mm]	ø8	ø10	–	ø3/8"
Hollow shaft [mm]	–	–	ø16, ø20, ø24, ø25, ø30, ø38, ø45	–
Recessed hollow shaft [mm]	–	–	–	–
Maximum rpm [min <sup>-1</sup> ]	10,000	6,000	3,500	6,000
Max. shaft load, axial [N]	30	50	–	50
Max. shaft load, radial [N]	50	100	–	100
Operating voltage [V DC]	5 or 4,75 ... 30	10 ... 30	5 or 10 ... 30	5
Output type	Push-pull, RS 422	Push-pull	Push-pull, RS 422	Push-pull, RS 422
Max. output frequency [kHz]	160	100	200	200
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, B, 0	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Degree of Protection	IP65	IP65	IP65	IP65
Increased shaft load	–	•	–	•

## ORDER CODES

**RV150N-09B...N-...-...**

### Connection type, outgoing circuit, signals, output

- AAA3T** Equipment connector Type 9416, 12-pin, axial  
A + B + 0, 4.75 V ... 30 V, push-pull
- AAA66** Equipment connector Type 9416, 12-pin, axial  
A + B + 0 and  $\bar{A}$  +  $\bar{B}$  +  $\bar{0}$ , 5 V, RS 422
- KOA3T** Cable ø6 mm, 5 x 0.38 mm<sup>2</sup>, 0.5 m, axial  
A + B + 0, 4.75 V ... 30 V, push-pull

### Pulse count

- 30, 60, 90, 100, 180, 200, 250, 300, 314, 360, 400, 500, 600, 720, 900, 1000, 1024, 1200, 1250, 1440, 1500, 1800, 2000, 2048, 2400, 2500

**RV178N-10C...A31N-...-...**

### Connection type

- AL** Plug connector Type 42306, 6-pin
- K2** Cable ø6 mm, 5 x 0.38 mm<sup>2</sup>, 2 m

### Pulse count

- 30, 60, 90, 100, 180, 200, 250, 300, 314, 360, 400, 500, 600, 720, 900, 1000, 1024, 1200, 1250, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 3000, 3600, 4000, 4096, 5000

**RH190N-...A...R6...N-...-...**

### Shaft dimension

- OE** Hollow shaft ø16 mm
- OF** Hollow shaft ø20 mm
- OG** Hollow shaft ø24 mm
- OH** Hollow shaft ø25 mm
- OI** Hollow shaft ø30 mm
- OL** Hollow shaft ø38 mm
- ON** Hollow shaft ø45 mm

### Output shutdown

- 1** 10 V ... 30 V, push-pull
- 6** 5 V, RS 422
- X** 10 V ... 30 V, RS 422

### Connection type

- AA** Plug connector Type 9416, 12-pin
- AB** Equipment connector Type 9416L, 12-pin
- K1** Cable ø7.8 mm, 6 x 2 x 0.14 mm<sup>2</sup>, 1 m

### Pulse count

- 100, 360, 500, 512, 1000, 1024, 1250, 2048, 2500, 4096, 5000, 8192, 10000, 25000, 50000

**RV125P-06DAA R66F-...-...**

### Connection type

- AA** Plug connector Type 9416, 12-pin

**F** Increased shaft load

### Pulse count

- 2000

# INCREMENTAL ROTARY ENCODERS

T LINE



	TVI40	TSI40	THI40
Pulse count	≤ 1,024	≤ 1,024	≤ 1,024
Housing diameter [mm]	ø40	ø40	ø40
Flange type	Clamping flange	–	–
Flange diameter [mm]	ø20	–	–
Solid shaft [mm]	ø6, ø8, ø1/8", ø1/4"	–	–
Hollow shaft [mm]	–	–	ø6, ø6.35, ø8, ø3/16", ø5/16"
Recessed hollow shaft [mm]	–	ø4, ø6, ø3/16", ø5/16", ø3/8"	–
Maximum rpm [min <sup>-1</sup> ]	6,000	6,000	6,000
Max. shaft load, axial [N]	20	–	–
Max. shaft load, radial [N]	30	–	–
Operating voltage [V DC]	4.75 ... 30	4.75 ... 30	4.75 ... 30
Output type	Push-pull, RS 422	Push-pull, RS 422	Push-pull, RS 422
Max. output frequency [kHz]	100	100	100
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Protection class	IP54	IP54	IP54

## ORDER CODES

**T V I 4 0 N - . . T . . T 6 T N - . . . . .**

### Shaft dimension

- 09** Shaft ø8 mm x 15 mm
- 14** Shaft ø6 mm x 15 mm
- 17** Shaft ø1/4" x 3/4"
- 19** Shaft ø1/8" x 3/4"

### Connection technology

- K0** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 0.5 m
- K2** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 2 m

### Pulse count

- 25, 40, 50, 60, 100, 150, 180, 200, 250, 360, 400, 500, 1000, 1024

**T S I 4 0 N - . . . . . T 6 T N - . . . . .**

### Shaft dimension

- 16A** Hollow shaft ø4 mm x 15 mm
- 14A** Hollow shaft ø6 mm x 15 mm
- 20A** Recessed hollow shaft ø3/8" x 15 mm
- 21A** Recessed hollow shaft ø3/16" x 15 mm
- 22A** Recessed hollow shaft ø5/16" x 15 mm

### Connection technology

- K0** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 0.5 m
- K2** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 2 m

### Pulse count

- 25, 40, 50, 60, 100, 150, 180, 200, 250, 360, 400, 500, 1000, 1024

**T H I 4 0 N - . . A K 2 R 6 T N - . . . . .**

### Shaft dimension

- 0S** Hollow shaft ø6 mm, Clamping ring, flange side
- 0U** Hollow shaft ø6.35 mm, Clamping ring, flange side
- 0X** Hollow shaft ø3/16", Clamping ring, flange side
- 2A** Hollow shaft ø5/16", Clamping ring, flange side
- 0C** Hollow shaft ø8 mm, Clamping ring, flange side
- 1S** Hollow shaft ø6 mm, Clamping ring, cover side
- 1U** Hollow shaft ø6.35 mm, Clamping ring, cover side
- 1C** Hollow shaft ø8 mm, Clamping ring, cover side
- 1X** Hollow shaft ø3/16", clamping ring, cover side
- 3A** Hollow shaft ø5/16", clamping ring, cover side

### Pulse count

- 25, 40, 50, 60, 100, 150, 180, 200, 250, 360, 400, 500, 1000, 1024

# INCREMENTAL ROTARY ENCODERS

T LINE



	TVI50	TVI58	THI58
Pulse count	≤ 1,024	≤ 1,500	≤ 1,500
Housing diameter [mm]	ø50	ø58	ø58
Flange type	Clamping flange, Servo flange, Rectangular flange	Clamping flange, Servo flange	–
Flange diameter [mm]	ø30	ø30, ø50	–
Solid shaft [mm]	ø8, ø1/8", ø1/4", ø3/8"	ø6, ø10	–
Hollow shaft [mm]	–	–	ø10, ø12, ø15
Recessed hollow shaft [mm]	–	–	–
Maximum rpm [min <sup>-1</sup> ]	6,000	6,000	6,000
Max. shaft load, axial [N]	20	20	–
Max. shaft load, radial [N]	40	40	–
Operating voltage [V DC]	4.75 ... 30	4.75 ... 30	4.75 ... 30
Output type	Push-pull, RS 422	Push-pull, RS 422 up to 30 V Operating voltage*	Push-pull, RS 422
Max. output frequency [kHz]	100	100	100
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Protection class	IP54	IP54	IP54

## ORDER CODES

**T V I 5 0 N** - . . . . . **6 T N** - . . . . .

**Shaft dimension**

- 09** Shaft ø8 mm x 15 mm
- 24** Shaft ø1/4" x 19 mm
- 25** Shaft ø1/8" x 19 mm
- 26** Shaft ø3/8" x 19 mm

**Flange version**

- B** Clamping flange
- U** Rectangular flange 2"
- W** Servo flange 2" (4)
- X** Servo flange 2" (3)

**Outgoing circuit**

- A** axial
- R** radial

**Connection technology**

- K0** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 0.5 m
- K2** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 2 m

**Pulse count**

- 40, 50, 60, 100, 200, 360, 400, 500, 1000, 1024

**T V I 5 8 N** - . . . . . **6 N** - . . . . .

**Shaft dimension/ Flange version**

- 01N** Shaft ø10 mm x 20 mm Clamping flange, 3 x M3 and 3 x M4
- 032** Shaft ø6 mm x 10 mm Servo flange

**Output**

- A** axial
- R** radial
- T** 4.75 V ... 30 V, Push-pull
- X** 10 V ... 30 V, RS 422\*

**Connection technology**

- K0** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 0.5 m
- K2** Cable ø6 mm, 8 x 0.128 mm<sup>2</sup>, 2 m

**Pulse count**

- 60, 100, 125, 250, 360, 500, 512, 600, 1000, 1024, 1500

**T H I 5 8 N** - . . **A** . . **R** **6 T N** - . . . . .

**Shaft dimension**

- 0A** Hollow shaft ø10 mm, Clamping ring, flange side
- 0B** Hollow shaft ø12 mm, Clamping ring, flange side
- 0T** Hollow shaft ø15 mm, Clamping ring, flange side
- 1A** Hollow shaft ø10 mm, Clamping ring, cover side
- 1B** Hollow shaft ø12 mm, Clamping ring, cover side
- 1T** Hollow shaft ø15 mm, Clamping ring, cover side

**Connection technology**

- K0** Cable ø6 mm, 8 x 0.14 mm<sup>2</sup>, 0.5 m, UL-Style 2571
- K2** Cable ø6 mm, 8 x 0.14 mm<sup>2</sup>, 2 m, UL-Style 2571

**Pulse count**

- 60, 100, 125, 250, 360, 500, 512, 600, 1000, 1024, 1500

# INCREMENTAL ROTARY ENCODERS

## SINE-COSINE OUTPUT



	RHS58	RHS90	RVS58
Pulse counts	up to 2,048	up to 2,048	up to 2,048
Housing diameter [mm]	ø58	ø90	ø58
Flange type	Hollow shaft	Hollow shaft	Clamping flange, Servo flange
Flange diameter [mm]	–	–	ø36 , ø50
Solid shaft [mm]	–	–	ø6, ø10
Hollow shaft [mm]	ø10 , ø12, ø15	ø19 , ø20, ø25, ø45	–
Recessed hollow shaft [mm]	–	–	–
Maximum rpm [min <sup>-1</sup> ]	6,000	3,500	12,000
Max. shaft load, axial [N]	–	–	40
Max. shaft load, radial [N]	–	–	60
Operating voltage [V DC]	5	5	5
Output type	Sine-Cosine	Sine-Cosine	Sine-Cosine
Max. output frequency [kHz]	200	200	200
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Degree of protection	IP54	IP65	IP65

The combination of solid construction and high precision – the Sine/Cosine encoder RHS.

Typical applications for these rotary encoders are found in safety-evaluated drive technology (motor feedback in mounting areas). Thanks to the 1V peak to peak sine-cosine interface, the rotary encoder is compatible with the electrical drive inverter typically used in the market. The strengths of the RHS series are improved precision, smooth-running drives, and an attractive price.

## ORDER CODES

**RHS58N** - . . . **AK1R6ZN** - . . . . .

### Shaft dimension

- 2A** Hollow shaft ø10 mm, Clamping ring flange and cover side
- 2B** Hollow shaft ø12 mm, Clamping ring flange and cover side
- 2T** Hollow shaft ø15 mm, Clamping ring flange and cover side

### Pulse counts

1024, 2048

**RHS90N** - . . . **K1R6ZN** - . . . . .

### Shaft dimension/Flange version

- 2CA** Hollow shaft ø19 mm
- OFA** Hollow shaft ø20 mm
- OHA** Hollow shaft ø25 mm
- ONA** Hollow shaft ø45 mm

### Pulse counts

1024, 2048

**RVS58N** - . . . . . **6ZN** - . . . . .

### Shaft dimension

- 011** Shaft ø10 mm x 20 mm with clamping flange
- 032** Shaft ø 6mm x 10 mm with servo flange

### Output

- A** axial
- R** radial

### Pulse counts

1024, 2048

### Connection type

- AA** Plug connector Type 9416, 12-pin
- AB** Equipment connector Type 9416L, 12-pin
- K1** Cable ø7.8 mm, 6 x 2 x 0.14 mm<sup>2</sup>, 1 m



# MAGNETIC INCREMENTAL ROTARY ENCODER



		MNI40N
Pulse count		up to 3,600
Housing diameter		cube-shaped with magnetic wheel
Hollow shaft	[mm]	ø6, ø10, ø12, ø15
Maximum rpm	[min <sup>-1</sup> ]	30,000
Operating voltage	[V DC]	5 or 10 ... 30
Output type		Push-pull, RS 422
Max. output frequency	[MHz]	1
Signal outputs		A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Degree of protection		IP67
Shock resistance		200 g
Vibration resistance		40 g
Operating temperature		-25 °C ... 100 °C

The new MNI40 magnetic incremental rotary encoder combines an extraordinarily robust measuring system with intelligent diagnostic and adjustment functions in an extremely compact unit. The sensor from Pepperl+Fuchs GmbH is based on the most up-to-date AMR/GMR technology and is housed in an encapsulated and extremely compact enclosure with an IP67 degree of protection. These features provide the sensor with a high level of resistance to harsh environmental conditions. Simple installation and simple adjustment of the sensor using a two-color LED status indicator considerably reduce installation time.

## APPLICATIONS

- Machine/Plant construction
- Automation technology
- Wind power plants
- Vehicle manufacture
- Construction machinery
- Lifting and conveyor technology
- Outdoor applications/Offshore

## HIGHLIGHTS

- Clear function verification via two-color LEDs (red/green)
- Simple installation and adjustment using assistance functions reduce costs
- Self-diagnostics including the magnetic wheel provide quality assurance
- Internal intelligence provides easy setup and reliable operation
- The elastomer coating of the magnetic wheel provides resistance to dirt as well as thermal and mechanical shock
- Long service life at high speeds and temperatures



## ORDER CODES

<b>MNI40N</b>	-	.	.	.	.	<b>K26</b>	.	.	.	.	.
<b>Hollow shaft magnetic wheel Internal diameter</b>						<b>Output</b>					
<b>OS</b> 6 mm						<b>1</b> 10 ... 30 V, VDC push-pull					
<b>OA</b> 10 mm						<b>6</b> 5 V, VDC RS 422					
<b>OB</b> 12 mm											
<b>OT</b> 15 mm											
						<b>Magnetic wheel specifications</b>					
						<b>01</b> 50 poles, ø31,7 mm					
						Pulse count 100, 500, 1000, 1250, 1600, 2400, 2500					
						<b>A1</b> 64 poles, ø40,6 mm					
						Pulse count 128, 512, 1024, 2048, 3072, 3200					
						<b>E1</b> 72 poles, ø46 mm					
						Pulse count 360, 1800, 3600					

# ABSOLUTE ROTARY ENCODERS

Absolute value rotary encoders output a uniquely coded numerical value at each shaft position. Absolute encoders eliminate the need for expensive input components in a positioning application because they have built-in reference data. In addition, reference runs after a power failure or when the machine is switched off are not required because the encoder provides the current position value immediately. New technologies, such as magnetic sampling, extend the applications and complete the range of absolute rotary encoders. With serial absolute rotary encoders, the output data is output via standardized interfaces and according to standardized protocols. While in the past, pure point-to-point connections with serial data transfer were implemented, fieldbus systems are now becoming increasingly popular.

## SINGLE-TURN FUNCTION

In the case of single-turn absolute rotary encoders, one rotation of the encoder ( $360^\circ$ ) is divided into a maximum of 65,536 measuring steps (16 bits). After each full rotation, the coding starts at its initial value again. The encoder electronics do not recognize how many rotations have been completed.

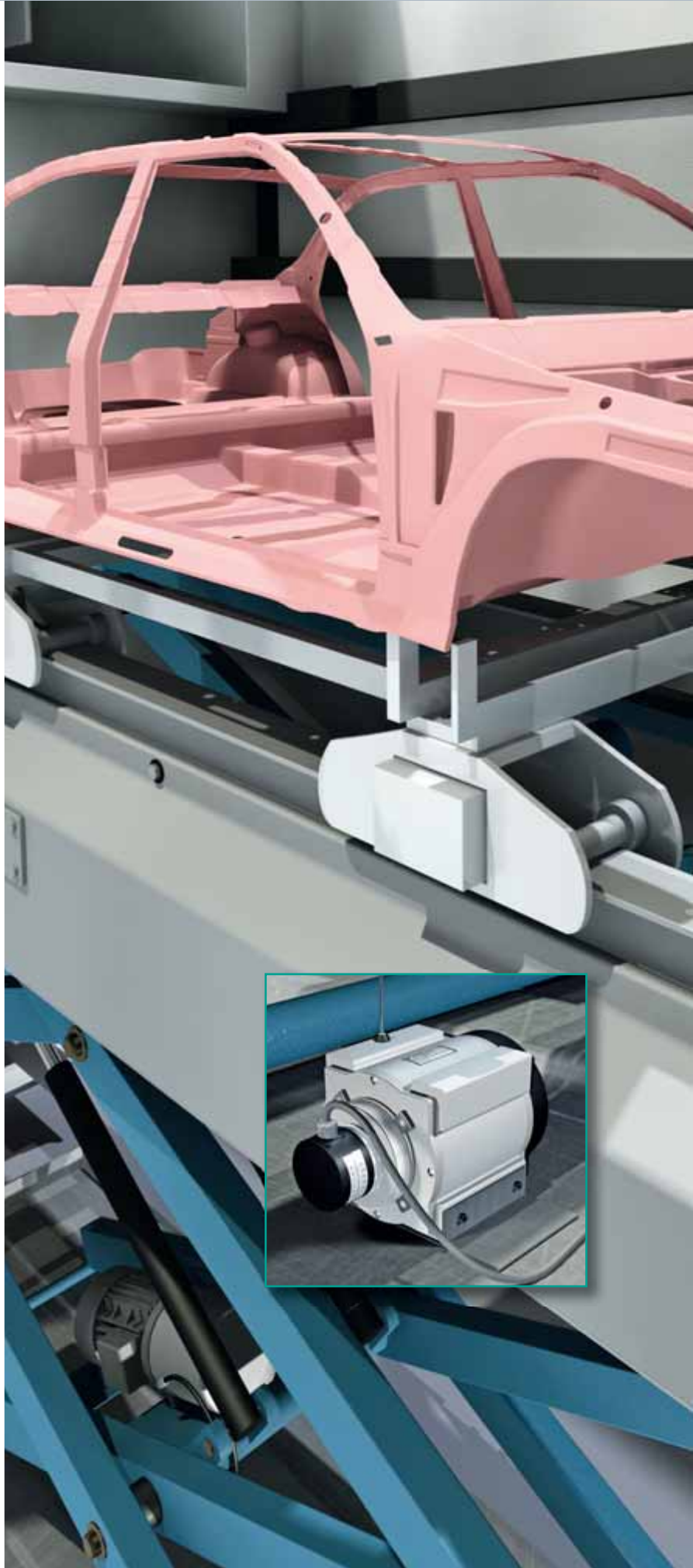
## MULTI-TURN FUNCTION

The number of rotations can also be recorded in the multi-turn version. Thus, in addition to the single-turn position, the multi-turn position is also available, multiplying the resolution. Depending on the technology and version, a total resolution of up to 30 bits can be achieved.

With optical absolute rotary encoders, the most common multi-turn technology is implemented using a mechanical drive. In the case of magnetic absolute rotary encoders, a magnetic process is used that works without battery backup. Whichever of the two technologies is used, the current position is always shown after the operating voltage is applied.

## INTERFACES

- Parallel interface
- SSI interface
- AS interface
- CANopen
- DeviceNet
- PROFIBUS
- Industrial Ethernet



# ABSOLUTE ROTARY ENCODERS

INDUSTRIAL  
ETHERNET

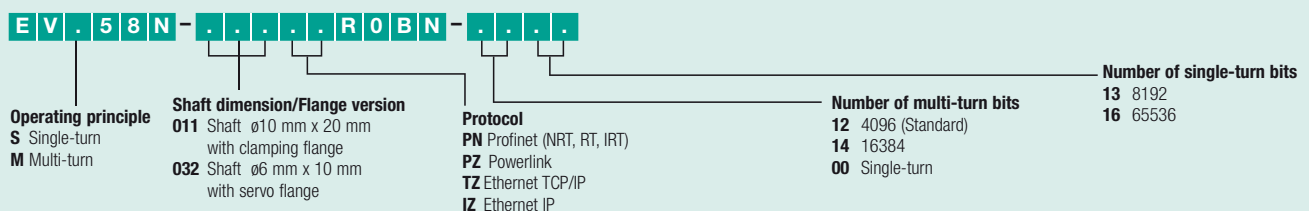
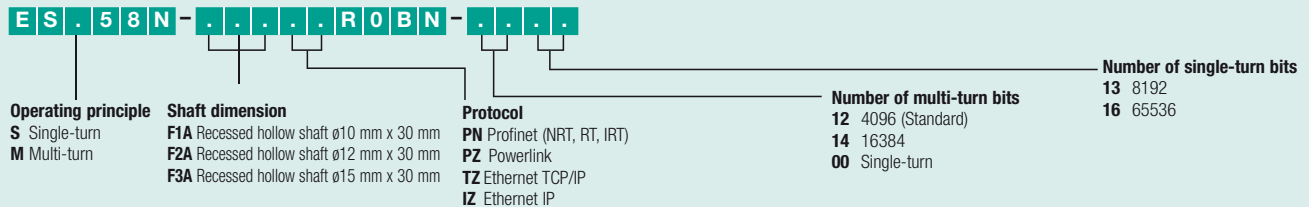


ETHERNET  
POWERLINK  
STANDARDIZATION GROUP



	ESS58	ESM58	EVS58	EVM58
Single-turn resolution	65,536	65,536	65,536	65,536
Multi-turn resolution	1	16,384	1	16,384
Housing diameter [mm]	ø58		ø58	
Flange type	–		Clamping flange, Servo flange	
Flange diameter [mm]	–		ø36, ø50	
Solid shaft [mm]	–		ø6, ø10	
Hollow shaft [mm]	–		–	
Recessed hollow shaft [mm]	ø10, ø12, ø15		–	
Maximum rpm [min <sup>-1</sup> ]	6,000		6,000	
Max. shaft load, axial [N]	–		40	
Max. shaft load, radial [N]	–		110	
Operating voltage [V DC]	10 ... 30		10 ... 30	
Interfaces	Industrial Ethernet		Industrial Ethernet	
Resolution scaling	Yes		Yes	
Selection of counting direction	Yes		Yes	
PRESET	Yes		Yes	
Degree of protection	IP65		IP65	

## ORDER CODES



## INDUCTIVE ANGLE MEASUREMENT SYSTEM

The F130 is an absolute 360° angle sensor with 4 mA ... 20 mA current output and two definable switching points. The zero point and switching points can be learned using the convenient TEACH-IN BUTTON with LED support. Typical areas of application in process technology include the determining of angle positions or angle settings (open/closed valve setting). In the area of factory automation, the F130 is used as an electronic cam switching unit or for similar positioning tasks.



PMI360-F130-IE8-V15	
Measurement range	0° ... 360°
Resolution	0.4°
Repeatability	0.5°
Temperature drift	1.5° (-25 °C ... 70 °C)
Linearity error	≤1.2°
Internal diameter	41.5 mm
Output type	Analog output 4 mA ... 20 mA Zero point + 2 switching points adjustable

# ABSOLUTE ROTARY ENCODERS

CANopen DeviceNet™



	CSS58	CSM58	DSS58	DSM58	PSS58	PSM58
Single-turn resolution	65,536	65,536	65,536	65,536	65,536	65,536
Multi-turn resolution	1	16,384	1	16,384	1	16,384
Housing diameter [mm]	ø58		ø58		ø58	
Flange type	-		-		-	
Flange diameter [mm]	-		-		-	
Solid shaft [mm]	-		-		-	
Hollow shaft [mm]	-		-		-	
Recessed hollow shaft [mm]	ø10, ø12, ø15		ø10, ø12, ø15		ø10, ø12, ø15	
Maximum rpm [min <sup>-1</sup> ]	12,000		12,000		12,000	
Max. shaft load, axial [N]	-		-		-	
Max. shaft load, radial [N]	-		-		-	
Operating voltage [V DC]	10 ... 30		10 ... 30		10 ... 30	
Interfaces	CANopen		DeviceNet		PROFIBUS	
Output type	DSP406, Class 1 and 2		-		RS 485	
Selection of counting direction	Yes		Yes		Yes	
LATCH	-		-		-	
TRISTATE	-		-		-	
PRESET 1	Yes		Yes		Yes	
PRESET 2	-		-		-	
Degree of protection	IP65		IP65		IP65	

## ORDER CODES

. S S 5 8 . - . . . . R O B N - 0 0 . .

### Interface

C CAN-Bus)  
D DeviceNet  
P PROFIBUS

### Housing material

N Aluminum, powder-coated  
I Stainless steel

### Connection technology

AG detachable housing cover  
with terminal compartment  
AN detachable housing cover  
with M12 plug connection x 1

### Number of single-turn bits

12 4096  
13 8192  
16 65536

### Shaft dimension/Flange version

F1A Recessed hollow shaft ø10 mm x 30 mm  
F2A Recessed hollow shaft ø12 mm x 30 mm  
F3A Recessed hollow shaft ø15 mm x 30 mm

. S M 5 8 . - . . . . R O B N - . . . .

### Interface

C CAN-Bus)  
D DeviceNet  
P PROFIBUS

### Housing material

N Aluminum, powder-coated  
I Stainless steel

### Connection technology

AG detachable housing cover  
with terminal compartment  
AN detachable housing cover  
with M12 plug connector x 1

### Number of single-turn bits

12 4096  
13 8192  
16 65536

### Number of multi-turn bits

12 4096 (Standard)  
14 16384

### Shaft dimension/Flange version

F1A Recessed hollow shaft ø10 mm x 30 mm  
F2A Recessed hollow shaft ø12 mm x 30 mm  
F3A Recessed hollow shaft ø15 mm x 30 mm

# ABSOLUTE ROTARY ENCODERS

CANopen DeviceNet™



	CVS58	CVM58	DVS58	DVM58	PVS58	PVM58
Single-turn resolution	65,536	65,536	65,536	65,536	65,536	65,536
Multi-turn resolution	1	16,384	1	16,384	1	16,384
Housing diameter [mm]	ø58		ø58		ø58	
Flange type	Clamping flange, Servo flange		Clamping flange, Servo flange		Clamping flange, Servo flange	
Flange diameter [mm]	ø36, ø50		ø36, ø50		ø36, ø50	
Solid shaft [mm]	ø6, ø10		ø6, ø10		ø6, ø10	
Hollow shaft [mm]	–		–		–	
Recessed hollow shaft [mm]	–		–		–	
Maximum rpm [min <sup>-1</sup> ]	12,000		12,000		12,000	
Max. shaft load, axial [N]	40		40		40	
Max. shaft load, radial [N]	110		110		110	
Operating voltage [V DC]	10 ... 30		10 ... 30		10 ... 30	
Interfaces	CANopen		DeviceNet		PROFIBUS	
Output type	DSP406, Class 1 and 2		–		RS 485	
Selection of counting direction	Yes		Yes		Yes	
LATCH	–		–		–	
TRISTATE	–		–		–	
PRESET 1	Yes		Yes		Yes	
PRESET 2	–		–		–	
Degree of protection	IP65		IP65		IP65	

## ORDER CODES

**. V S 5 8 . - . . . . R O B N - 0 0 . . . .**

**Interface**  
**C** CAN-Bus)  
**D** DeviceNet  
**P** PROFIBUS

**Connection technology**  
**AG** detachable housing cover with terminal compartment  
**AN** detachable housing cover with M12 plug connector x 1

**Number of single-turn bits**  
**12** 4096  
**13** 8192  
**16** 65536

**Housing material**  
**N** Aluminum, powder-coated  
**I** Stainless steel

**Shaft dimension/Flange version**  
**011** Shaft ø10 mm x 20 mm with clamping flange  
**032** Shaft ø6 mm x 10 mm with servo flange

**. V M 5 8 . - . . . . R O B N - . . . .**

**Interface**  
**C** CAN-Bus)  
**D** DeviceNet  
**P** PROFIBUS

**Number of multi-turn bits**  
**12** 4096  
**13** 8192  
**16** 65536

**Connection technology**  
**AG** detachable housing cover with terminal compartment  
**AN** detachable housing cover with M12 plug connector x 1

**Housing material**  
**N** Aluminum, powder-coated  
**I** Stainless steel

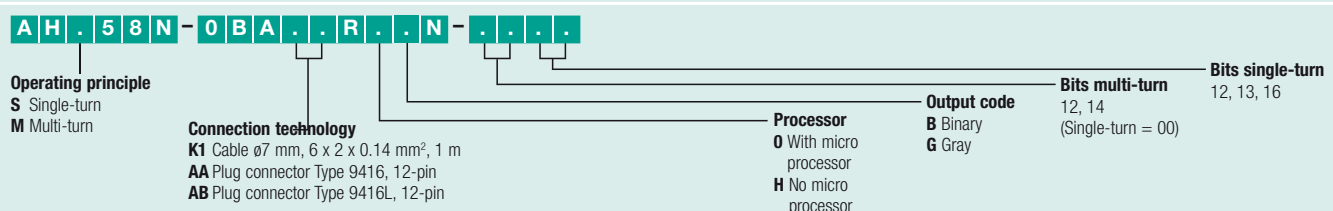
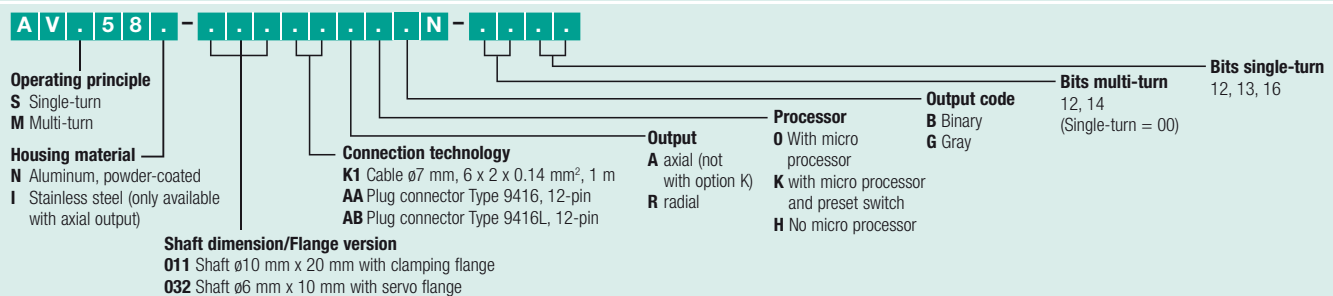
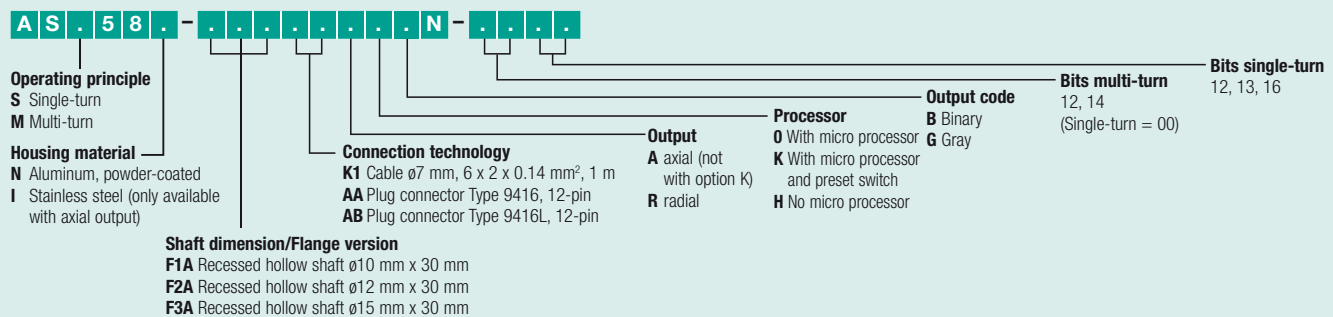
**Shaft dimension/Flange version**  
**011** Shaft ø10 mm x 20 mm with clamping flange  
**032** Shaft ø6 mm x 10 mm with servo flange

# ABSOLUTE ROTARY ENCODERS



	ASS58	ASM58	AVS58	AVM58	AHS58	AHM58
Single-turn resolution	65,536	65,536	65,536	65,536	65,536	65,536
Multi-turn resolution	1	16,384	1	16,384	1	16,384
Housing diameter [mm]	ø58		ø58		ø58	
Flange type	-		Clamping flange, Servo flange		-	
Flange diameter [mm]	-		ø36, ø50		-	
Solid shaft [mm]	-		ø6, ø10		-	
Hollow shaft [mm]	-		-		ø12	
Recessed hollow shaft [mm]	ø10, ø12, ø15		-		-	
Maximum rpm [min <sup>-1</sup> ]	12,000		12,000		3,000	
Max. shaft load, axial [N]	-		40		-	
Max. shaft load, radial [N]	-		110		-	
Operating voltage [V DC]	10 ... 30		10 ... 30		10 ... 30	
Interfaces	SSI		SSI		SSI	
Output type	RS 422		RS 422		RS 422	
Selection of counting direction	Yes		Yes		Yes	
LATCH	-		-		-	
TRISTATE	-		-		-	
PRESET 1	Yes		Yes		-	
PRESET 2	-		-		-	
Degree of protection	IP65		IP65		IP64	

## ORDER CODES



# ABSOLUTE ROTARY ENCODERS



	BSS58	BSM58	BVS58	BVM58
Single-turn resolution	8,192	8,192	8,192	8,192
Multi-turn resolution	1	4,096	1	4,096
Housing diameter [mm]	ø58		ø58	
Flange type	–		Clamping flange, Servo flange	
Flange diameter [mm]	–		ø36, ø50	
Solid shaft [mm]	–		ø6, ø10	
Hollow shaft [mm]	–		–	
Recessed hollow shaft [mm]	ø10, ø12		–	
Maximum rpm [min <sup>-1</sup> ]	10,000	6,000	12,000	6,000
Max. shaft load, axial [N]	–		40	
Max. shaft load, radial [N]	–		60	
Operating voltage [V DC]	29.5 ... 31.6		29.5 ... 31.6	
Interfaces	AS-Interface		AS-Interface	
Output type	–		–	
Selection of counting direction	Yes		Yes	
LATCH	Yes		Yes	
TRISTATE	–		–	
PRESET 1	Yes		Yes	
PRESET 2	–		–	
Degree of protection	IP65		IP65	

## ORDER CODES

**B S S 5 8 . - . . . A V R O N N - 0 0 1 3**

### Housing material

**N** Aluminum, powder-coated  
**I** Stainless steel

### Shaft dimension/Flange version

**01A** Recessed hollow shaft ø10 mm x 21 mm  
**02A** Recessed hollow shaft ø12 mm x 21 mm

**B S M 5 8 . - . . . A V R O N N - . . . .**

### Housing material

**N** Aluminum, powder-coated  
**I** Stainless steel

### Shaft dimension/Flange version

**01A** Recessed hollow shaft ø10 mm x 21 mm  
**02A** Recessed hollow shaft ø12 mm x 21 mm

**Resolution**  
**Multi-turn/Single-turn**  
(see data sheet)

**B V S 5 8 . - . . . A V R O N N - 0 0 1 3**

### Housing material

**N** Aluminum, powder-coated  
**I** Stainless steel

### Shaft dimension/Flange version

**011** Shaft ø10 mm x 20 mm with clamping flange  
**032** Shaft ø6 mm x 10 mm with servo flange

**B V M 5 8 . - . . . A V R O N N - . . . .**

### Housing material

**N** Aluminum, powder-coated  
**I** Stainless steel

### Shaft dimension/Flange version

**011** Shaft ø10 mm x 20 mm with clamping flange  
**032** Shaft ø6 mm x 10 mm with servo flange

**Resolution**  
**Multi-turn/Single-turn**  
(see data sheet)

# MAGNETIC ABSOLUTE ROTARY ENCODERS



	AVS36M	AVM36M	ASS36M	ASM36M
Single-turn resolution	8,192	8,192	8,192	8,192
Multi-turn resolution	1	4,096	1	4,096
Housing diameter [mm]	ø36		ø36	
Flange type	Servo flange		Recessed hollow shaft	
Flange diameter [mm]	ø33		–	
Solid shaft [mm]	ø6		–	
Hollow shaft [mm]	–		ø6	
Maximum rpm [min <sup>-1</sup> ]	12,000		12,000	
Max. shaft load, axial [N]	40		–	
Max. shaft load, radial [N]	60		–	
Operating voltage [V DC]	10 ... 30		10 ... 30	
Interfaces	SSI		SSI	
Output type	RS 422		RS 422	
Selection of counting direction	Yes		Yes	
LATCH	–		–	
TRISTATE	–		–	
PRESET 1	Yes		Yes	
PRESET 2	–		–	
Degree of protection	IP67		IP67	
Vibration resistance	30 g		30 g	

## ORDER CODES

**A V S 3 6 M - O 3 S . . A 0 . N - 0 0 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BE** Device connector, M12 x 1, 8-pin

### Output code

**B** Binary  
**G** Gray

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**A V M 3 6 M - O 3 S . . A 0 . N - 1 2 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BE** Device connector, M12 x 1, 8-pin

### Output code

**B** Binary  
**G** Gray

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**A S S 3 6 M - F 4 A . . A 0 . N - 0 0 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BE** Device connector, M12 x 1, 8-pin

### Output code

**B** Binary  
**G** Gray

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**A S M 3 6 M - F 4 A . . A 0 . N - 1 2 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BE** Device connector, M12 x 1, 8-pin

### Output code

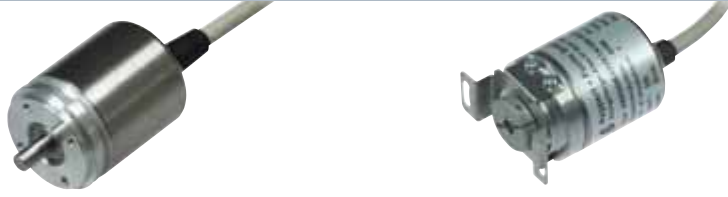
**B** Binary  
**G** Gray

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)



# CANopen



	CVS36M	CVM36M	CSS36M	CSM36M
Single-turn resolution	8,192	8,192	8,192	8,192
Multi-turn resolution	1	4,096	1	4,096
Housing diameter [mm]	ø36		ø36	
Flange type	Servo flange		Recessed hollow shaft	
Flange diameter [mm]	ø33		–	
Solid shaft [mm]	ø6		–	
Hollow shaft [mm]	–		ø6	
Maximum rpm [min <sup>-1</sup> ]	12,000		12,000	
Max. shaft load, axial [N]	40		–	
Max. shaft load, radial [N]	60		–	
Operating voltage [V DC]	10 ... 30		10 ... 30	
Interfaces	CANopen		CANopen	
Output type	DSP406, Class 1 and 2		DSP406, Class 1 and 2	
Selection of counting direction	Yes		Yes	
LATCH	–		–	
TRISTATE	–		–	
PRESET 1	Yes		Yes	
PRESET 2	–		–	
Degree of protection	IP67		IP67	
Vibration resistance	30 g		30 g	

## ORDER CODES

**C V S 3 6 M - 0 3 S . . A 0 . N - 0 0 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BD** Device connector, M12 x 1, 5-pin

### Output code

**B** Binary

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**C V M 3 6 M - 0 3 S . . A 0 . N - 1 2 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BD** Device connector, M12 x 1, 5-pin

### Output code

**B** Binary

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**C S S 3 6 M - F 4 A . . A 0 . N - 0 0 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BD** Device connector, M12 x 1, 5-pin

### Output code

**B** Binary

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**C S M 3 6 M - F 4 A . . A 0 . N - 1 2 . .**

### Connection technology

**K1** Cable ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 1 m  
**BD** Device connector, M12 x 1, 5-pin

### Output code

**B** Binary

### Number of single-turn bits

**12** 4096  
**13** 8192 (max.)

**SIL**  
IEC61508



Plant manufacturers, system integrators and component manufacturers are faced with higher standards for functional safety due to an increase in the level of automation in machine and plant engineering. Some of the more common requirements include improvements in the functionality of conventional control systems and the capacity to meet high standards of functional safety offered by modern drive controllers. Reliable rotary encoders with a high level of functional safety have adopted a whole new meaning.

In response to these needs, Pepperl+Fuchs has developed a range of certified rotary encoders that incorporate innovative concepts to enable economical system integration. New ideas make the system easier to use with existing communication channels and allow it to be used in high safety category systems up to SIL3 (according to IEC 61508).



**RVS58S**

Pulse counts		up to 2048
Housing diameter	[mm]	ø58
Flange type		Servo flange
Flange diameter	[mm]	ø50
Solid shaft	[mm]	ø6
Maximum rpm	[min <sup>-1</sup> ]	12,000
Max. shaft load, axial	[N]	40
Max. shaft load, radial	[N]	60
Operating voltage	[V DC]	5
Output type		Sine/Cosine
Max. output frequency	[kHz]	200
Signal outputs		A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Degree of protection		IP65

## ORDER CODES

**R V S 5 8 S - 0 3 2 K 1 R 6 Z N - . . . . .**

Pulse counts  
1024, 2048



**Custom-made encoders up to 115 °C available on demand**



# SAFETY ROTARY ENCODERS



**CANopen**  
Safety

**SIL**  
IEC61508



## APPLICATIONS

- Drive technology
- Stage equipment
- Suspended rails
- Conveyor systems
- Lifting / Elevator technology
- Machine / Plant construction
- Automation technology
- Vehicle manufacture
- Wind power plants
- General applications:  
Systems that fall within the application scope of Machine Directives 2006/42/EC.

## HIGHLIGHTS

- Certified functional safety
- The use of existing communication channels enables simple integration
- Incremental/absolute rotary encoder technology
- Reliability and simple installation provide an economical solution
- For systems up to SIL 3 according to IEC 61508
- Performance level e according to ISO 13849
- Safety category 4 according to EN 954-1
- For electrical drives as per IEC 61800-5-2

	CVS58S	CVM58S
Single-turn resolution	65,536	65,536
Multi-turn resolution	1	16,384
Housing diameter [mm]	ø58	
Flange type	Clamping flange, Servo flange	
Flange diameter [mm]	ø36, ø50	
Solid shaft [mm]	ø6, ø10	
Hollow shaft [mm]	–	
Recessed hollow shaft [mm]	–	
Maximum rpm [min <sup>-1</sup> ]	12,000	
Max. shaft load, axial [N]	40	
Max. shaft load, radial [N]	110	
Operating voltage [V DC]	10 ... 30	
Interfaces	CANopen	
Output type	DSP406/301/304, Class 1 and 2	
Selection of counting direction	Yes	
LATCH	–	
TRISTATE	–	
PRESET 1	Yes	
PRESET 2	–	
Degree of protection	IP65	

## ORDER CODES

**CV.58S-011AGROBN-... ..**

Operating principle

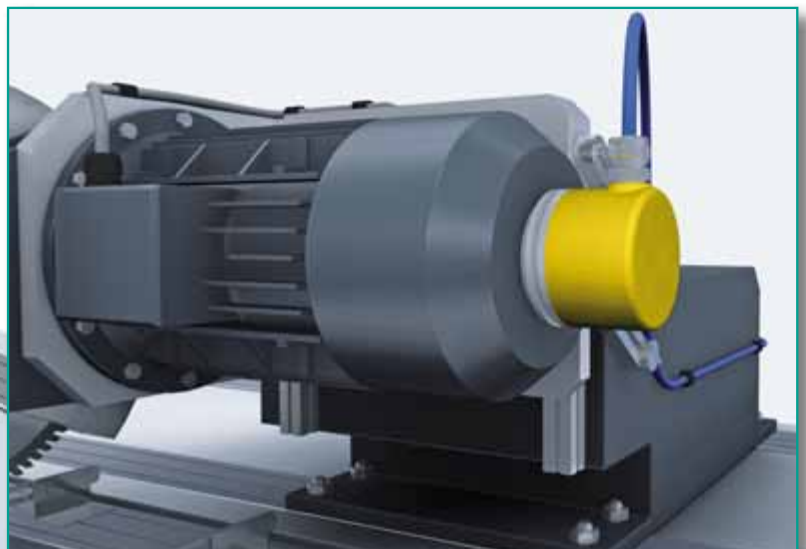
**S** Single-turn  
**M** Multi-turn

Number of multi-turn bits

**12** 4096  
**14** 16384  
(Single-turn = 00)

Number of single-turn bits

**12** 4096  
**13** 8192  
**16** 65536



# ROTARY ENCODERS FOR HAZARDOUS AREAS

The Pepperl+Fuchs range includes rotary encoders with two different ignition protection classes. A distinction is made between “Flameproof enclosure” ignition protection class (Ex d) and “Intrinsic safety” class (Ex i) and use in zone 2/zone 22.

## IGNITION PROTECTION EX D

Devices with ignition protection class Ex d are designed so that their housings will not be damaged in the event of the internal explosion of an explosive mixture, thereby preventing the explosion from being transferred to the surrounding explosive atmosphere. The following devices are available:

- **Incremental rotary encoder:**  
Series 14 with counter timer and RS 422 interface
- **Absolute rotary encoder:**  
Series CVM14 with CANopen interface  
Series DVM14 with DeviceNet interface  
PVS/PVM14 series with PROFIBUS interface



## IGNITION PROTECTION CLASS EX I

With ignition protection category Ex i the current and voltage values are kept at such a low level that sparking is impossible and there can be no ignition in an explosive atmosphere. The following devices are designed in this way:

- **Incremental rotary encoder:**  
Series RV184 with NAMUR interface as per  
DIN EN 60947-5-6.

## ZONE 2/ZONE 22

For ignition protection classes Ex d and I, Pepperl+Fuchs now also supplies rotary encoders for use in zone 2/zone 22, based on ignition protection type nA and tD.

- **Absolute rotary encoder:**  
Series PVS/PVM58X and PSS/PSM58X with  
PROFIBUS interface
- **Incremental rotary encoder:**  
Series RV158X and RS158X

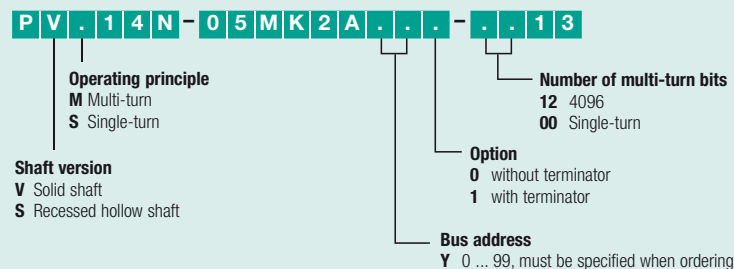
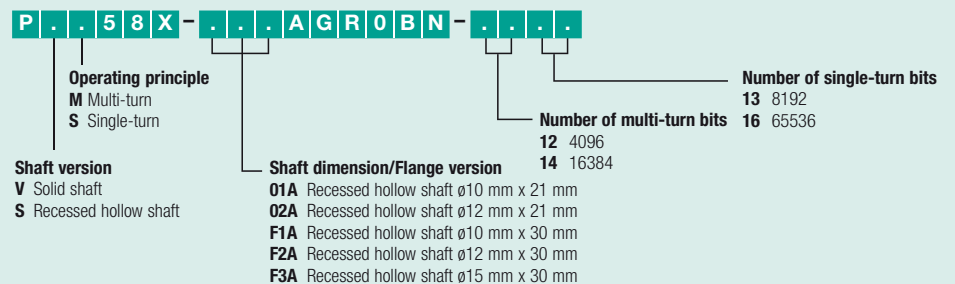


## ABSOLUTE ROTARY ENCODERS



	PSS58X · PSM58X · PVS58X · PVM58X	PVS14	PVM14
Explosion-proof labelling	II 3G Ex nA IIB T4 II 3D Ex tD A22 IP64 T120 °C	II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T80 °C	II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T80 °C
EC-type-examination certificate	ZELM 06 ATEX 3290 X	ZELM 02 ATEX 0078	ZELM 02 ATEX 0078
Single-turn resolution	65,536	8,192	8,192
Multi-turn resolution	16,384	1	4,096
Housing diameter [mm]	ø58	ø116	
Flange type	Clamping flange, Servo flange		
Flange diameter [mm]	ø36	ø40	
Solid shaft [mm]	ø10, ø6	ø12 x 25	
Hollow shaft [mm]	ø10, ø12, ø15	-	
Recessed hollow shaft [mm]	-	-	
Maximum rpm [min <sup>-1</sup> ]	6,000	6,000	
Max. shaft load, axial [N]	40	60	
Max. shaft load, radial [N]	110	80	
Operating voltage [V DC]	10 ... 30	10 ... 30	
Interfaces	PROFIBUS		
Output type	-		
Selection of counting direction	-		
LATCH	-		
TRISTATE	-		
PRESET 1	-		
PRESET 2	-		
Degree of protection	IP64	IP66	

### ORDER CODES



# ROTARY ENCODERS FOR HAZARDOUS AREAS

## ABSOLUTE ROTARY ENCODERS



	AVS14	AVM14	CVM14	DVM14
Explosion-proof labelling	II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T80 °C		II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T80 °C	
EC-type-examination certificate	ZELM 02 ATEX 0078 X		ZELM 02 ATEX 0078	ZELM 02 ATEX 0078
Single-turn resolution	4,096	4,096	8,192	8,192
Multi-turn resolution	1	4,096	4,096	4,096
Housing diameter [mm]	ø116		ø116	ø116
Flange type	Clamping flange		Clamping flange	Clamping flange
Flange diameter [mm]	ø40		ø40	ø40
Solid shaft [mm]	ø12		ø12	ø12
Hollow shaft [mm]	–		–	ø12
Recessed hollow shaft [mm]	–		–	–
Maximum rpm [min <sup>-1</sup> ]	6,000		6,000	3,000
Max. shaft load, axial [N]	60		60	60
Max. shaft load, radial [N]	80		80	80
Operating voltage [V DC]	10 ... 30		10 ... 30	10 ... 30
Interfaces	SSI		CANopen	DeviceNet
Output type	RS 422		DSP406, Class 1 and 2	–
Selection of counting direction	Yes		–	–
LATCH	–		–	–
TRISTATE	–		–	–
PRESET 1	–		–	–
PRESET 2	–		–	–
Degree of protection	IP66		IP66	IP66

### ORDER CODES

**A V S 1 4 N - 0 5 M K 2 A 0 . N - 0 0 1 2**

**Output code**  
**B** Binary  
**14** Gray

**A V M 1 4 N - 0 5 M K 2 A 0 . N - 0 0 1 2**

**Output code**  
**B** Binary  
**14** Gray

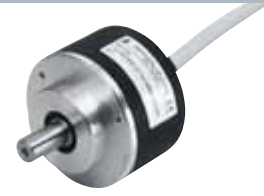
**C V M 1 4 N - 0 5 M K 2 A P R . - 0 0 1 2**

**Option**  
**0** without terminator

**D V M 1 4 N - 0 5 M K 2 A P R . - 0 0 1 2**

**Option**  
**0** without terminator

## INCREMENTAL ROTARY ENCODERS



	SERIES 14	RVI84	RVI58X	RSI58X
Explosion-proof labelling	II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T80 °C	II 2G Ex ia IIC T6	II 3G Ex nA IIB T4 II 3D Ex tD A22 IP64 T105 °C	II 3G Ex nA IIB T4 II 3D Ex tD A22 IP54 T105 °C
EC-type-examination certificate	ZELM 02 ATEX 0078 X	94/9/EG	ZELM 96 ATEX 3297 X	
Certificates				
Pulse count	≤ 5,000	≤ 25	≤ 5,000	
Housing diameter [mm]	ø116	ø78	ø58	
Flange type	Clamping flange	Servo flange	Clamping flange or servo flange	Hollow shaft flange
Flange diameter [mm]	ø40	ø56	ø66	–
Solid shaft [mm]	ø10	ø10	ø10 or ø6	–
Hollow shaft [mm]	–	–	–	–
Recessed hollow shaft [mm]	–	–	–	ø12 or ø10
Maximum rpm	6,000	3,000	6,000	6,000
Max. shaft load, axial [N]	60	50	40	–
Max. shaft load, radial [N]	80	100	60	–
Operating voltage [V DC]	5 or 10 ... 30	8	5 or 10 ... 30	5 or 10 ... 30
Output type	Push-pull, RS 422	NAMUR	Push-pull, RS 422	Push-pull, RS 422
Max. output frequency [kHz]	100	5	200	200
Signal outputs	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, B	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$
Degree of protection	IP66	IP65	IP64	IP54

## ORDER CODES

1 4 - 1 4 3 6 . . . .

### Output

1 10 V ... 30 V, counter pulse (Push-Pull)  
6 5 V, RS 422  
X 10 V ... 30 V, RS 422

### Pulse count

60, 100, 120, 180, 200, 250, 256, 300, 314, 360, 400, 500, 512, 600, 720, 900, 1000, 1024, 1200, 1250, 1500, 1800, 2000, 2048, 2400, 2500, 3000, 3600, 4000, 4096, 5000

R V I 8 4 N - 1 0 C K 2 A 2 N N - . . . .

### Pulse count

1, 2, 5, 10, 20, 25

R V I 5 8 X - . . . K 1 . 6 . N - . . . .

### Shaft dimension/Flange version

011 Shaft ø10 mm x 20 mm  
with clamping flange  
032 Shaft ø6 mm x 10 mm  
with servo flange

Output  
A axial  
R radial

### Output

1 10 V ... 30 V, counter pulse (Push-Pull)  
6 5 V, RS 422  
X 10 V ... 30 V, RS 422

### Pulse count

100, 360, 500, 512, 1000, 1024, 1250, 2048, 2500, 3600, 4096, 5000

R S I 5 8 X - . . . A K 1 . 6 . N - . . . .

### Shaft dimension

01 Recessed hollow shaft  
ø10 mm x 20 mm  
02 Recessed hollow shaft  
ø12 mm x 20 mm

Output  
A axial  
R radial

### Output

1 10 V ... 30 V, counter pulse (Push-Pull)  
6 5 V, RS 422  
X 10 V ... 30 V, RS 422

### Pulse count

100, 360, 500, 512, 1000, 1024, 1250, 2048, 2500, 3600, 4096, 5000

## INSTALLATION AIDS

- Synchro clamping element
- Mounting bracket
- Mounting bracket for servo flange



## CONNECTORS

- Amphenol
- Coninvers
- SUB-D
- Souriau
- Connector



## COUPLINGS

- Spring steel coupling
- Spring disk coupling
- Bellows coupling
- Precision coupling
- Helix coupling



## CABLE PULLS

- Measuring range 1,000 mm
- Measuring range 2,000 mm
- Measuring range 3,000 mm
- Measuring range 5,000 mm
- Measuring range 15,000 mm



## MEASURING WHEELS

- Circumference 200 mm
- Circumference 500 mm
- Plastic
- Dimpled rubber
- Aluminum knurled screw
- Plastic knurled screw



## EVALUATION

- Counter



### Contact

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