

Draw-wire Sensors – Measuring Wheels



Encoders with a prefixed draw-wire sensor (0.25 to 40 m long) are the best choice for direct length measurements. Thanks to the excellent repeatability rating of 0.05 mm, they solve position control tasks with the utmost precision in applications which, up to now, could only be handled by complex equipment.

Whether used for positioning of pumps in tanks, for alignment of elevating platforms or orientation of cranes: Just select a draw-wire sensor of the right size and with the appropriate output configuration for your system.

Technical data	Measuring range	Type code
Analog current output, 4...20 mA, 2-wire, U _B = 12...30 VDC, M12-male	250 mm	DW250-70-7E-H1141
	500 mm	DW500-70-7E-H1141
	1000 mm	DW1000-110-7E-H1141
	2000 mm	DW2000-110-7E-H1141
	3000 mm	DW3000-110-7E-H1141
	6000 mm	DW6000-155-7E-H1141
	10000 mm	DW10000-135-7E-H1141
	15000 mm	DW15000-135-7E-H1141
	20000 mm	DW20000-135-7E-H1141
	30000 mm	DW30000-135-7E-H1141
40000 mm	DW40000-135-7E-H1141	
Potentiometer output, 1 kΩ, U _B = max. 30 VDC, M12 male	250 mm	DW250-70-PA-H1141
	500 mm	DW500-70-PA-H1141
	1000 mm	DW1000-110-PA-H1141
	2000 mm	DW2000-110-PA-H1141
	3000 mm	DW3000-110-PA-H1141
	6000 mm	DW6000-155-PA-H1141
	10000 mm	DW10000-135-PA-H1141
	15000 mm	DW15000-135-PA-H1141
	20000 mm	DW20000-135-PA-H1141
	30000 mm	DW30000-135-PA-H1141
40000 mm	DW40000-135-PA-H1141	

Material surface	Perimeter/width	Material	Coating	Operating temperature	Bore for encoder shaft	Type code
Cardboard Wood Fabric	0,5 m/ 25 mm	Aluminium	Cross-knurl	-30...+80 °C	10 mm	RMW-5
Cardboard Wood Fabric Paper						Aluminium
Cardboard Wood Fabric Paper Wire		Aluminium	Vulkollan (smooth)	-30...+80 °C		RMW-7
Fabric Metal Coated surface						Aluminium
Fabric		Aluminium	Hytrel (grooved)	-30...+80 °C		RMW-9

If simple length measurements are required, such as cutting paper or fabrics to length, encoders with a prefixed measuring wheel are the inexpensive but very precisely operating alternative.

Recommended accessory

Spring arm for encoders, adjustable contact pressure, multiple mounting possibilities.

Type: RMW-1

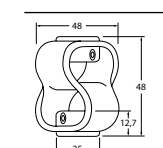
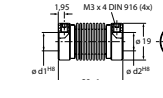
Recommended encoder

Incremental, 1 mm resolution,
Type: RI-10S10C-2B500-H1181

Accessories

Accessories	Max. revolution [Ncm]	Max. axial offset [mm]	Max. angular error [°]	Type code
Accessories for solid shaft encoders	Bellows coupling Ø 19 mm	150	± 0,7	± 1,5

Bore Ø/mm (for shaft Ø 10/1010/10)



Accessories	Conditions	For encoders	Reference diameter	Type code	
Accessories for hollow shaft encoders	Mounting plate, short	Axial/radial play low dynamics	Ri-12 RS-31 RS-33 RM-35 RM-36	64,5 mm	
					RME-9
	Mounting plate, long	Axial/radial play low dynamics	Ri-12 RS-31 RS-33 RM-35 RM-36	80...170 mm	
					RME-4
	Stator coupling	Axial/radial play high dynamics	Ri-12 RS-31 RS-33 RM-35 RM-36	65 mm	RME-7
	Spring element, long	High axial play	Ri-42	110 mm	RME-10
Insulating inlay for shaft Shaft insert	Reduction/insulation of shaft diameter for electrical isolation	Ri-12H15T	d1 = 6 mm	RSA-1, RSA-5	
		Ri-12H15T	d1 = 12 mm		
Accessories for draw-wire sensors	Shaft insert	for electrical isolation		RDR-1	

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Overview Encoders



Incremental Encoders

Ri encoder – push-pull with inversion



Incremental encoders use electrical pulses to measure rotation speed or position.

The dual-channel incremental encoders of the Ri series, detect positions bidirectionally as well as the rotation sense of the shaft.

Design	Shaft diameter flange/ mounting	Electrical connection/ operating voltage	Resolution imp.	Type code		
Solid shaft						
Compact Ø 37 mm	6 mm without flange	Cable connection $U_B = 5...30$ VDC	360	Ri-08S6S-2F360-C 1M		
			500	Ri-08S6S-2F500-C 1M		
			512	Ri-08S6S-2F512-C 1M		
			1000	Ri-08S6S-2F1000-C 1M		
Hollow shaft	8 mm stator coupling	Cable connection $U_B = 5...30$ VDC	1024	Ri-08S6S-2F1024-C 1M		
			Solid shaft			
			6 mm clamping flange	Cable connection $U_B = 10...30$ VDC	360	Ri-10S6C-2B360-H1181
					2048	Ri-10S6C-2B2048-H1181
2500	Ri-10S6C-2B2500-H1181					
4096	Ri-10S6C-2B4096-H1181					
10 mm clamping flange	Cable connection $U_B = 10...30$ VDC	5000	Ri-10S6C-2B5000-H1181			
		360	Ri-10S10C-2B360-H1181			
		2048	Ri-10S10C-2B2048-H1181			
		2500	Ri-10S10C-2B2500-H1181			
Standard Ø 58 mm	6 mm synchro flange	Cable connection $U_B = 10...30$ VDC	4096	Ri-10S10C-2B4096-H1181		
			5000	Ri-10S10C-2B5000-H1181		
			360	Ri-10S10S-2B360-H1181		
			2048	Ri-10S10S-2B2048-H1181		
10 mm synchro flange	Cable connection $U_B = 10...30$ VDC	2500	Ri-10S10S-2B2500-H1181			
		4096	Ri-10S10S-2B4096-H1181			
		5000	Ri-10S10S-2B5000-H1181			
		Hollow shaft				
Large hollow shaft Ø 100 mm	10 mm torque stop	M12 male $U_B = 10...30$ VDC	360	Ri-12H10T-2B360-H1181		
			2048	Ri-12H10T-2B2048-H1181		
			2500	Ri-12H10T-2B2500-H1181		
			4096	Ri-12H10T-2B4096-H1181		
15 mm torque stop	M12 male $U_B = 10...30$ VDC	5000	Ri-12H10T-2B5000-H1181			
		360	Ri-12H15T-2B360-H1181			
		2048	Ri-12H15T-2B2048-H1181			
		2500	Ri-12H15T-2B2500-H1181			
30 mm spring element long	M12 male $U_B = 10...30$ VDC	4096	Ri-12H15T-2B4096-H1181			
		5000	Ri-12H15T-2B5000-H1181			
		1024	Ri-42H25S4-2B1024-12M23			
		2048	Ri-42H25S4-2B5000-12M23			
30 mm spring element long	M23 male $U_B = 10...30$ VDC	5000	Ri-42H25S4-2B5000-12M23			
		1024	Ri-42H30S4-2B1024-12M23			
		2048	Ri-42H30S4-2B2048-12M23			
		5000	Ri-42H30S4-2B5000-12M23			

Absolute Singleturn Encoders

RS encoder

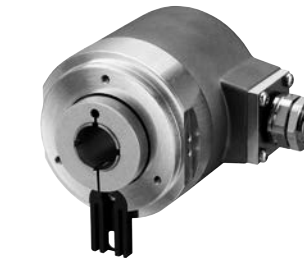


Absolute singleturn encoders detect any angle within a full revolution of 360°. With absolute encoders, each incremental angle is assigned a code pattern. This allows the position to be detected at any time, even after a power failure, without having to initialize a reference run. Absolute encoders detect angles, positions and inclinations precisely – tasks, that are typically found in robotics, positioning and process technology.

Design	Shaft diameter flange/ mounting	Electrical connection/ operating voltage	Output type/ resolution	Type code
Solid shaft				
Compact Ø 36 mm	6 mm synchro flange	Cable connection $U_B = 15...30$ VDC	Analog, U, 0...10 V, 12 bit	RS-06S6S-8B12B-C 1M
			Cable connection $U_B = 10...30$ VDC	Analog, I, 4...20 mA, 12 bit
		Cable connection $U_B = 5...30$ VDC	SSI, binary 9 bit	RS-54S6S-5B9B-C 1M
			Hollow shaft	
Standard Ø 58 mm	6 mm stator coupling	Cable connection $U_B = 15...30$ VDC	Analog, U, 0...10 V, 12 bit	RS-07H6E-8B12B-C 1M
			Cable connection $U_B = 10...30$ VDC	Analog, I, 4...20 mA, 12 bit
	6 mm clamping flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13 bit	RS-24S6C-3C13B-H1181
			PROFIBUS 16 bit	RS-25S6C-9A16B-R3M12
10 mm clamping flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13 bit	RS-24S10C-3C13B-H1181	
		PROFIBUS 16 bit	RS-25S10C-9A16B-R3M12	
Standard Ø 58 mm	6 mm synchro flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13 bit	RS-24S6S-3C13B-H1181
			PROFIBUS 16 bit	RS-25S6S-9A16B-R3M12
	10 mm synchro flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13 bit	RS-24S10S-3C13B-H1181
			PROFIBUS 16 bit	RS-25S10S-9A16B-R3M12
Hollow shaft				
12 mm stator coupling	M12 male $U_B = 10...30$ VDC	M12 male $U_B = 10...30$ VDC	SSI, Gray 13 bit	RS-31H12E-3C13B-H1181
			PROFIBUS 16 bit	RS-33B12E-9A16B-R3M12

Absolute Multiturn Encoders

RM encoder



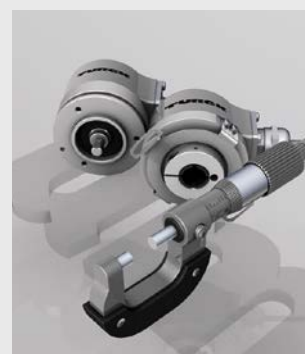
Absolute multiturn encoders detect any angle within a full revolution of 360° and also the number of revolutions. With absolute encoders, each incremental angle is assigned a code pattern. This allows the position to be detected at any time, even after a power failure, without having to initialize a reference run. Absolute encoders detect angles, positions and inclinations precisely – tasks, that are typically found in robotics, positioning and process technology.

Design	Shaft diameter flange/ mounting	Electrical connection/ operating voltage	Output type/ resolution	Type code
Solid shaft				
Compact Ø 36 mm	8 mm synchro flange	Cable connection $U_B = 10...30$ VDC	SSI, Gray 12/12 bit	RM-46S8S-3C24B-CT 1M
			Hollow shaft	
Standard Ø 58 mm	10 mm stator coupling	Cable connection $U_B = 10...30$ VDC	SSI, Gray 12/12 bit	RM-50H10E-3C24B-CT 1M
			Solid shaft	
	6 mm clamping flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13/12 bit	RM-28S6C-3C25B-H1181
			PROFIBUS 16/12 bit	RM-29S6C-9A28B-R3M12
10 mm clamping flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13/12 bit	RM-28S10C-3C25B-H1181	
		PROFIBUS 16/12 bit	RM-29S10C-9A28B-R3M12	
6 mm synchro flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13/12 bit	RM-28S6S-3C25B-H1181	
		PROFIBUS 16/12 bit	RM-29S6S-9A28B-R3M12	
10 mm synchro flange	M12 male $U_B = 10...30$ VDC	SSI, Gray 13/12 bit	RM-28S10S-3C25B-H1181	
		PROFIBUS 16/12 bit	RM-29S10S-9A28B-R3M12	
Hollow shaft				
12 mm stator coupling	M12 male $U_B = 10...30$ VDC	M12 male $U_B = 10...30$ VDC	SSI, Gray 13/12 bit	RM-35H12E-3C25B-H1181
			PROFIBUS 16/12 bit	RM-36B12E-9A28B-R3M12



High protection class

A protection rating of as high as IP69K can be achieved, even under the most adverse application conditions, thanks to the excellently protected shaft seal. The devices always work safely and reliably, even in the roughest environments.



High accuracy

High-quality components and an innovative quality management provide highly precise measured signals for excellent linearity and repeatability. Even the most demanding applications are economically and technically viable with TURCK encoders.



Rugged designs

Balanced stainless steel clamp rings and highly rugged bearing-shaft constructions improve the stability and reliability of the devices, making them resistant to extremely heavy mechanical impacts. Thanks to the new design, the encoders are made for heavy duty applications and highest revolution speeds.



High interference immunity

Frequency converters, large motors, ferritic metals or permanent magnets are no problem at all: The optically operating encoders are insensitive to magnetic fields of all kinds and feature excellent EMC properties.



Shock and vibration proof

The extremely rugged bearing assembly guarantees high stability of the shaft in case of vibration and other mechanical loads. Blocked bearings, enough spacing between the bearings and extra strong outer bearings prevent interferences and machine downtimes emerging from intense load. These are strains which mechanically complex applications are often exposed to.



Extensive Accessories

A wide range of accessories is available to ensure easy installation and safe operation.