

Sensor technology

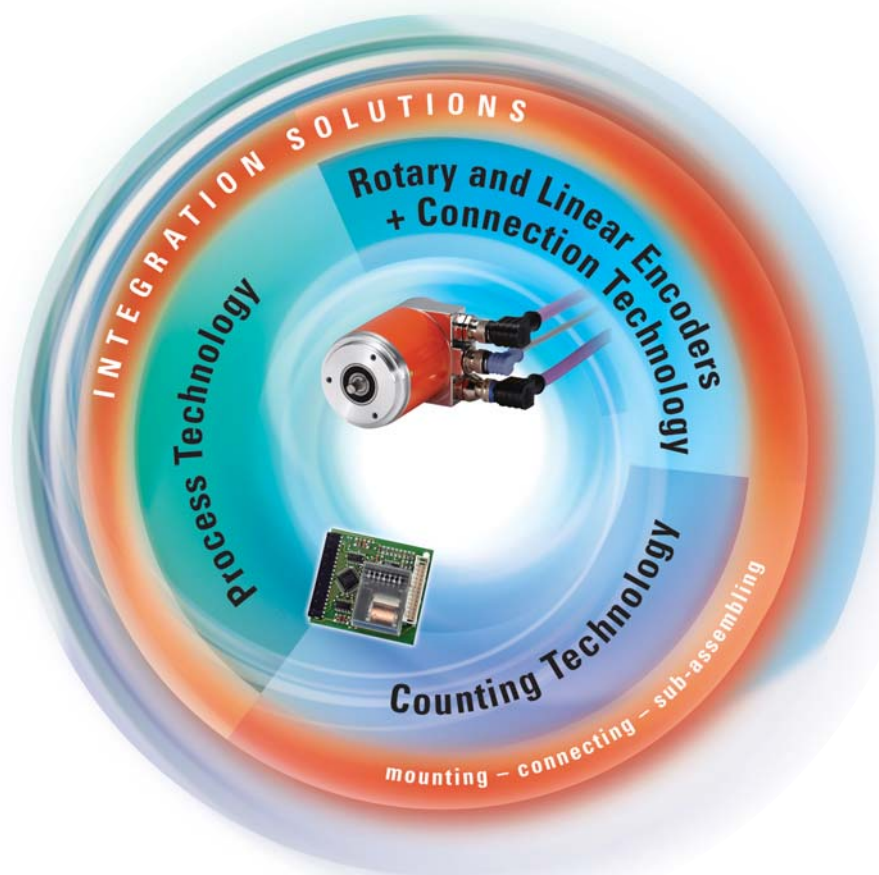
Rotary and linear encoders

- Encoders
- Draw wire encoders
- Magnetic measurement system **LIMES**
- Connection technology
- Accessories



Integrated Components Off-the-Shelf Systems

Kübler's claim is clearly defined: the company delivers not only individual devices and components but also complete systems that the customers can integrate quickly and without any problems into his technical environment. This is why there is a wide choice of customized fixing solutions and suitable connector options for every product - and of course comprehensive and qualified advice.



Encoders, Linear Measuring Systems, + Connection Technology



Solutions based around incremental and absolute encoders, including singleturn, multi-turn and fieldbus technologies, today form part of the wide range of services we offer. Our patented Integrative Technology® and Intelligent-Sensing-Technology® are setting new standards worldwide. The latest innovation in the field of linear measuring technology is the **LIMES** measuring system.

Counting Technology

A variety of high-quality electromagnetic counters are ideally suited as time/pulse counters or as miniature counters for PCB mounting in kWh meters. Modern preset counters with serial interfaces facilitate distributed control with reduced cycle times. The **CODIX** series sets new standards for functional, inexpensive electronic display counters, timers and rate indicators.



Process Technology

Our comprehensive **CODIX** series includes user-friendly competitively priced process displays and controllers for all linear and non-linear signals, either for panel mounting or for DIN-rail mounting.



Incremental encoders

Meet the more stringent railway standards



Version	Series	Special features	Miniature Shaft/ Blind hollow shaft 2400/2420	Economy ¹⁾ shaft 3700	Economy ¹⁾ hollow shaft 3720	Compact ¹⁾ shaft 3600
Mechanical characteristics			Hollow shaft version - very small yet fully suited to industrial use	Low-cost compact encoder for resolutions up to 1024 ppr, Tubetech® cable outlet permits high constant load on the cable outlet. Version with through hollow shaft (8 mm)		High protection rating for tough industrial use where space is limited
Shaft/Hollow shaft ø	[mm]		4/6	4 ... 8	4 ... 8	4/6
Max. housing dim.	[mm]		ø24x20 or 30x20	ø 37 x 32 mm	ø 37 x 32 mm	ø36,5x49
Max. speed	[min ⁻¹]		12000	6000	6000	12000
Max. shaft load rad./ax.	[N]		20/10 at 2400	20/10	20/10	15/10
Max. operating temp.	[°C]		-20 ... +85	-20 ... +70	-20 ... +70	0 ... +80
Max. protection to			IP 64 housing side	IP 67 housing side	IP 67 housing side	IP 66
Type of connection			Cable	Cable	Cable	Cable
Max. resolution	[PPR]		1024	1024	1024	3600
Electrical characteristics						
Output			Push-pull	RS 422 or Push-pull	RS 422 or Push-pull	RS 422 or Push-pull
Supply voltage	[V DC]		5 ... 24 or 8 ... 30	5 or 5 ... 30	5 or 5 ... 30	5 or 10 ... 30
Max. pulse frequency	[kHz]		160	250 *extended strain relief	250 *extended strain relief	125





* More stringent requirements compared with the EMC standard 89/336/EWG, described in EN 50121-3-2 and EN 61326-1



Version	Series	Special features	Compact Shaft 3610	Compact Hollow shaft 3620	Universal, compact ¹⁾ Shaft Sencix Incremental 5000	Universal, compact ¹⁾ Hollow shaft Sencix Incremental 5020
Mechanical characteristics			Compact, low-cost, high performance data		Flange compatible with all 58 mm series. Tough, e.g. Safetylock design ensures solid bearing construction, compact design. Flexible, e.g. hollow shaft up to 15.7 mm; for temperatures down to -40 °C.	
Shaft/Hollow shaft ø	[mm]		4/5/6/ 1/4"	6/6.35/8	6 ... 12	6 ... 15
Max. housing dim.	[mm]		ø36,5x35 or 36,5x31,5	ø36,5x31	ø 50 (58) mm x 53 mm	ø 50 (58) mm x 44 mm
Max. speed	[min ⁻¹]		12000	12000	12000	12000
Max. shaft load rad./ax.	[N]		40/20	—	80/40	—
Max. operating temp.	[°C]		-20 ... +85	-20 ... +85	-40 ... +85	-40 ... +85
Max. protection to			IP 65 housing side	IP 65 housing side	IP 67	IP 67
Type of connection			Cable	Cable	Cable/plug	Cable/plug
Max. resolution	[PPR]		3600	3600	3600	3600
Electrical characteristics						
Output			Push-pull	Push-pull	RS 422, push pull 7272 or push pull	RS 422, push pull 7272 or push pull
Supply voltage	[V DC]		5 ... 24 or 8 ... 30	5 ... 24 or 8 ... 30	5 or 5 ... 30	5 or 5 ... 30
Max. pulse frequency	[kHz]		200	200	300	300





1) available as explosion proof zone 2 and 22

Incremental encoders/ industrial standard ø 58 mm

					
		cUL US	cUL US	cUL US	cUL US
Version		Universal ¹⁾ 5800 Shaft Preferred ¹⁾ 5802 Shaft 5800/5802	High temperature ¹⁾ shaft 5803	Sine wave ¹⁾ shaft high resolution, 5804/5805	Economy ¹⁾ shaft 5810
Series					
Special features		5800: many options, PUR cable 5802: preferred types, low-cost	Operating temperature range up to 110 °C; TPE cable; options include MIL plugs and inch measurements.	5804: high quality sine wave signal 5805: high resolution up to 36,000 ppr.	Low-cost entry-level model for applications with limited resolution, very small installation depth
Mechanical characteristics					
Shaft/Hollow shaft ø	[mm]	6 ... 10, 3/8"	6 ... 10, 3/8"	6 ... 10	6/10
Max. housing dim.	[mm]	ø58x66	ø58x66	ø58x66	ø58x41,5
Max. speed	[min ⁻¹]	12000	12000	12000	6000
Max. shaft load rad./ax.	[N]	80/40	80/40	80/40	80/40
Max. operating temp.	[°C]	-20 ... +90	-20 ... +110	-20 ... +90	-20 ... +75
Max. protection to		IP 65	IP 65	IP 65	IP 64
Type of connection		Cable/Plug	Cable/Plug	Cable/Plug	Cable/Plug
Max. resolution	[PPR]	5000	5000	5000 ¹⁾ 36000 ²⁾	1024 New
Electrical characteristics					
Output		RS 422 or Push-pull	RS 422 or Push-pull	Sine wave 1 Vpp RS 422 or Push-pull	Push-pull
Supply voltage	[V DC]	5, 5 ... 30 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30	10 ... 30
Max. pulse frequency	[kHz]	300	300	180	100

5802: -20 ... +75 °C

¹⁾ 5804 ²⁾ 5805

					
		cUL US	cUL US	cUL US	cUL US
Version		Hollow shaft Universal 5820 ²⁾ 5822 ³⁾	Hollow shaft, ¹⁾ universal 5823	Hollow shaft, ¹⁾ sine wave, high res 5824/5825	M-Line for geared motors 5820M
Series					
Special features		5820: many options 5822: preferred types, low-cost, wide variety of fixing options	High temperature version with TPE cable	High quality sine wave signal ²⁾ High resolution up to 36.000 ppr ³⁾	Tangential outlet for use where space is tight, stable clamping, special fixing and connector technology
Mechanical characteristics					
Shaft/Hollow shaft ø	[mm]	6/8/14/15	6/8/10/12/14/15	6/8/10/12/14/15	up to 15
Max. housing dim..	[mm]	ø58x41,5	ø58x41,5	ø58x41,5	ø58x43,3
Max. speed	[min ⁻¹]	12000	12000	12000	6000
Max. shaft load rad./ax.	[N]	—	—	—	—
Max. operating temp.	[°C]	-20 ... +90 ²⁾	-20 ... +110	-20 ... +90	-20 ... +80
Max. protection to		IP 66	IP 66	IP 66	IP 66
Type of connection		Cable/Plug ³⁾	Cable/Plug	Cable/Plug	Cable/Plug
Max. resolution	[PPR]	5000	5000	5000 ²⁾ 36000 interpolated ³⁾	3600
Electrical characteristics					
Output		RS 422 or Push-pull	RS 422 or Push-pull	Sine wave 1 Vpp RS 422 or Push-pull	RS 422 or push pull
Supply voltage	[V DC]	5, 5 ... 30 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30	5 or 5 ... 30
Max. pulse frequency	[kHz]	300	180	180 ²⁾ , 800 ²⁾	300

¹⁾ available as explosion proof zone 2 and 22

²⁾ 5822: -20 ... +70

³⁾ 5823: -20 ... +110 °C

²⁾ 5824 ³⁾ 5825

Incremental encoders



	Version	Series	Special features	Mechanical characteristics
		Hollow shaft¹⁾ stainless steel (Niro) 5826	Stainless steel housing; sea water version on request	
		Heavy duty¹⁾ 9000	Extended axial and radial load	
		Stainless steel with shaft (Niro) 9000 NIRO	Suitable for food processing and chemical industries	
		Ex-proof¹⁾ shaft, hollow shaft 7030 <i>Atex approved</i>	Very compact ExII2GExdIICT6 and ExII2DIP6xT85°C	
Shaft/Hollow shaft ø	[mm]	10/12	12	12
Max. housing dim.	[mm]	ø 58x41,5	ø 90x90	ø 90x102
Max. speed	[min ⁻¹]	12000	6000	6000
Max. shaft load rad./ax.	[N]	—	140/70	140/70
Min./Max. operating temp.	[°C]	–20 ... +90	–20 ... +90	–20 ... +85
Max. protection to		IP 66	IP 66	IP 66
Type of connection		Cable/Plug	Cable/Plug	Cable
Max. resolution	[PPR]	5000	5000	5000
Electrical characteristics				
Output		RS 422 or Push-pull	RS 422 or Push-pull	RS 422 or Push-pull
Supply voltage	[V DC]	5, 5 ... 30 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30
Max. pulse frequency	[kHz]	300	300	300



	Version	Series	Special features	Mechanical characteristics
		Large hollow shaft up to 42 mm¹⁾ A020	For medium loads, hollow shaft up to 42 mm dia., installation depth only 43 mm, wide variety of fixing options	
		Heavy Duty Model Large hollow shaft up to 42 mm¹⁾ A02H	Rugged: balanced stainless-steel clamping rings, special bearing-shaft connection increases stability and vibration resistance, economic alternative to traditional heavy duty encoders that are often over-engineered and expensive. Versatile due to compact size. Optional isolating inserts.	
Shaft/Hollow shaft ø	[mm]	up to 42	up to 42	
Max. housing dim.	[mm]	ø100x43	ø100x50	
Max. speed	[min ⁻¹]	1500	6000	
Max. shaft load rad./ax.	[N]	—	—	
Max. operating temp.	[°C]	–20 ... +75	–20 ... +75	
Max. protection to		IP 65	IP 65	
Type of connection		Cable/Plug	Cable/Plug	
Max. resolution	[PPR]	5000	5000	
Electrical characteristics				
Output		RS 422, Push-pull, sine wave	RS 422 or Push-pull, sine wave	
Supply voltage	[V DC]	5 or 10 ... 30	5 or 11 ... 24	
Max. pulse frequency	[kHz]	300	50	

Isolating inserts
The isolating insert provides galvanic isolation between the encoder and the motor shaft and prevents current flowing via the motor and encoder bearings. We also supply isolated tether arms specially adapted to these applications.

¹⁾ available as explosion proof zone 2 and 22

Absolute encoders/Singleturn



Version	Series	Special features	Singleturn ¹⁾ universal model, shaft	Singleturn ¹⁾ parallel model	Singleturn ¹⁾ Ex proof Shaft, Hollow shaft 7031	
			5850	5852	Atex approved	
			patented Integrative Technology® construction offers 3 to 5 times higher shock resistance (250g) than is standard in the market The encoders are equipped with various control inputs.			Very compact ExII2GEEExdIICT6 and ExII2DIP6xT85°C
Mechanical characteristics						
Shaft/Hollow shaft ø	[mm]		6/10	6/10	12/12	
Max. housing dim..	[mm]		ø 58x66	ø 58x66	ø 70x94	
Max. speed	[min ⁻¹]		12000	12000	6000	
Max. shaft load rad./ax.	[N]		80/40	80/40	20/10 (shaft)	
Max. operating temp. [°C]			-20 ... +90	-20 ... +90	-20 ... +70	
Max. protection to			IP 65	IP 65	IP 64	
Type of connection			Plug/Cable	Plug/Cable	Plug/Cable	
Electrical characteristics						
Max. resolution			16384 (14 Bit)	16384 (14 Bit)	16384 (14 Bit)	
Version			Singleturn	Singleturn	Singleturn	
Interface			SSI, Parallel, 4 ... 20 mA	Parallel	SSI, Parallel, 4 ... 20 mA	
Type of code			Gray, Binary, BCD	Gray or Gray-Excess	Gray, Binary, BCD	
Supply voltage	[V DC]		5 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30	



Version	Series	Singleturn ¹⁾ universal model, hollow shaft 5870	Singleturn, ¹⁾ hollow shaft parallel model 5872	Singleturn ¹⁾ stainless steel Hollow shaft 5876	Connection technology	
		patented Integrative Technology ® construction offers 3 to 5 times higher shock resistance (250g) than is standard in the market The encoders are equipped with various control inputs.				Encoders and connection technology from a single source
Mechanical characteristics						
Shaft/Hollow shaft ø	[mm]	6/8/10/12	10/12	10/12	Please enquire about our wide range of connection technology: <ul style="list-style-type: none">• connectors• cable assemblies• M12 technology• Profibus, CANopen and DeviceNet conection technology• M23x1, MIL and Right-angle-plugs	
Max. housing dim..	[mm]	ø 58x41,5	ø 58x41,5	ø 58x41,3		
Max. speed	[min ⁻¹]	6000	6000	6000		
Max. shaft load rad./ax.	[N]	—	—	—		
Max. operating temp. [°C]		–20 ... +90	–20 ... +90	–20 ... +80		
Max. protection to		IP 66	IP 66	IP 66		
Type of connection		Plug/Cable	Plug/Cable	M12 plug/Cable		
Electrical characteristics						
Max. resolution		16384 [14 Bit]	16384 (14 Bit)	16384 [14 Bit]		
Version		Singleturn	Singleturn	Singleturn		
Interface		SSI or Parallel	Parallel	SSI or Parallel		
Type of code		Gray, Binary, BCD	Gray or Gray-Excess	Gray, Binary, BCD		
Supply voltage	[V DC]	5 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30		

¹⁾ available as explosion proof zone 2 and 22

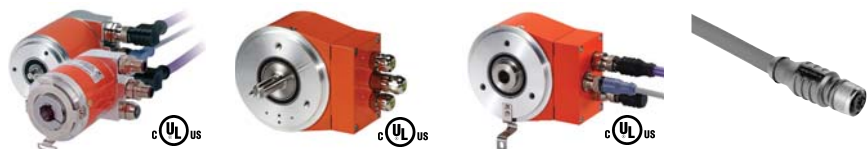
Absolute encoders/Multiturn



Version	Multiturn, New standard line	Multiturn, shaft ¹⁾ programmable	Multiturn, hollow ¹⁾ shaft, programmable	Multiturn, hollow ¹⁾ shaft or shaft progr.
Series	Non-contact multiturn stage with patented Intelligent Sensing technology ®: high immunity to EMC interference, for highly dynamic applications; patented Integrative Technology ® offers 3 to 5 times high shock resistance than normal in the market (up to 250g).			
Special features	Entry-level model with attractive price/performance ratio	Additional incremental track 2048 ppr Programmable with Ezturn ® software tool.		
Mechanical characteristics			only 40.5 mm depth	shaft max ø 28 mm
Shaft/Hollow shaft ø [mm]	6/10	10/12	6/10	10/12
Max. housing dim.. [mm]	Ø58x66	40,5	ø 58x66	ø 58x40,5
Max. speed [min ⁻¹]	6000	6000	6000	6000
Max. shaft load rad./ax. [N]	80/40	—	80/40	—
Max. operating temp. [°C]	–20 ... +80	–20 ... +80	–20 ... +90	–20 ... +80
Max. protection to	IP 65	IP 65	IP 65	IP 65
Type of connection	Cable/Plug	Cable/Plug	Cable/Plug	Plug
Electrical characteristics				
Max. resolution	13 x 12 Bit	13 x 12 Bit progr.	13 x 12 Bit progr.	13 x 12 Bit progr.
Version	Multiturn	Multiturn	Multiturn	Multiturn
Interface	SSI	SSI, RS 485, AWG-pr.	SSI, RS 485, AWG-pr.	SSI, RS 485, AWG-pr.
Type of code	Gray	Gray or Binary	Gray or Binary	Gray or Binary
Supply voltage [V DC]	5 ... 30	5 ... 30	5 ... 30	5 ... 30

Absolute fieldbus encoders


PROFI BUS **CANopen** **DeviceNet**



Version	Multiturn, Fieldbus shaft ¹⁾ 5860	Multiturn, Fieldbus shaft ¹⁾ 9080	Multiturn, Fieldbus hollow shaft ¹⁾ 9080	Connection technology
Series	With patented Intelligent Sensing technology ®. Extremely reliable, shock resistance up to 250g. Integrated fieldbus nodes and T-coupler for problem-free integration in complex fieldbus networks. Optional hollow shaft			Encoders and connection technology from a single source
Special features				
Mechanical characteristics	compact, ø 58 mm	flat shaft version	Hollow shaft up to	
Shaft/Hollow shaft ø [mm]	6/10	12	ø 28 mm	
Max. housing dim.. [mm]	ø 60x88	ø 90x60	12 ... 28	
Max. speed [min ⁻¹]	6000	6000	ø 90x60	
Max. shaft load rad./ax.. [N]	80/40	80/40	6000	
Max. operating temp. [°C]	–10 ... +80	–10 ... +80	80/40	
Max. protection to	IP 65 (IP 66 on requ.)	IP 65 (IP 66 on requ.)	–10 ... +80	
Type of connection	Terminal box or M12 connector	Terminal box or M12 connector	IP 65 (IP 66 on requ.) Terminal box or M12 connector	Please enquire about our wide range of connection technology: • connectors • cable assemblies • M12 technology • Profibus, CANopen and DeviceNet connection technology • M23x1, MIL and Right-angle-plugs
Electrical characteristics				
Max. resolution	13 x 12 Bit	13 x 12 Bit	13 x 12 Bit	
Version	Multiturn	Multiturn	Multiturn	
Interface	Profibus DP	Profibus DP/CANopen	Profibus DP/CANopen	
Type of code	Binary	Binary	Binary	
Supply voltage [V DC]	10 ... 30	10 ... 30	10 ... 30	

¹⁾ available as explosion proof zone 2 and 22

Linear measurement systems

	Version				
	Series				
	The idea				
	Mechanical characteristics				
Measuring range	[mm]	up to 90 000	1000/2000	up to 40000	no limit
Resolution	[mm]	up to 0,005	0,1	0,1	up to 0,1 mm
Wiederholgenauigkeit		± 1 digit	±0,15	~0,05	0,1 at 1 m
Temperature range	[°C]	-10 ... 70 °C	-10 ... +80	-20 ... +80	-20 ... + 70 °C
Materials				Al	Measuring wheels:
Housing		Sensor: plastic	Plastic reinforced	Steel, red para wire,	Plastic or AL,
Wire		Cable: PUR	Steel wire *	coloured cable ident.	Rack: steel
Suitable encoders/interfaces		Push-Pull or Line-Driver Inverted	2400 series with either incremental or analog-(current, voltage) output	Various incremental and absolute encoders	depends from the encoder

* over 1000 mm: plastic coated wire.

Accessories

				
Couplings		Mounting brackets for hollow-shaft encoders		Eccentric fixings
				
Flange adapters		Connectors, Cable assemblies		Programming software Ezturn®
				
SSI display 571/position display 570		Accessories for draw wire encoder		Measuring wheels