Incremental encoders

Meet the more stringent railway standards*

	Version	Miniature	Miniature	Economy[1]	Economy[1]
	Series	Shaft 2400	Blind hollow shaft 2420	Shaft 3700	Hollow shaft 3720
	Special features	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)	
	Mechanical characteristics				
Shaft/Hollow shaft ø	[mm]	4/6	4/6	4 ... 8	4 ... 8
Housing dim.	[mm]	ø24x20 or 30 x20	ø24x20 or 30 x20	ø 37 x 32 mm	ø 37 x 32 mm
Max. speed	[min^{-1}]	12000	12000	6000	6000
Max. shaft load rad./ax.	[N]	20/10 at 2400	20/10 at 2400	20/10	20/10
Max. operating temp.	[°C]	–20 ... +85	–20 ... +85	–20 ... +70	–20 ... +70
Max. protection to		IP 64 housing side	IP 64 housing side	IP 67 housing side	IP 67 housing side
Type of connection		Cable	Cable	Cable	Cable
Max. resolution	[PPR]	1024	1024	1024	1024
Electrical characteristics					
Output		Push-pull	Push-pull	RS 422 or push-pull	RS 422 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]	160	160	250	250

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

	Version	Compact	Compact	Universal, compact[1]	Universal, compact[1]
	Series	Shaft 3610	Hollow shaft 3620	Shaft Sendix Incremental 5000	Hollow shaft Sendix Incremental 5020
	Special features	Compact, low-cost, high performance data		Flange compatible with all 58 mm series. Tough, e.g. Safety-Lock™ design ensures solid bearing construction, compact design. Flexible, e.g. hollow shaft up to 15.7 mm; for temperatures down to –40 °C.	
	Mechanical characteristics				
Shaft/Hollow shaft ø	[mm]	4/5/6/ 1/4"	6/6.35/8	6 ... 12	6 ... 15,7
Housing dim.	[mm]	ø36.5x35 or 36.5x31.5	ø36,5x31	ø 50 (58) x 53 mm	ø 50 (58) 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]	2500	2500	5000	5000
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] Ex available as explosion proof zone 2 and 22

Incremental encoders/ industrial standard ø 58 mm

	Version	Universal Shaft	High temperarure[1] Shaft	Sine wave[1] Shaft high resolution[2]	Economy[1] Shaft
	Series	5800	5803	5804/5805	5810
	Special features	many options, PUR cable	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
	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 interpol. [2]	1024
	Electrical characteristics				
	Output	RS 422 or push-pull	RS 422 or push-pull	Sine wave 1 Vpp[1] RS 422 o. push-pull[2]	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

[1] 5804
[2] 5805

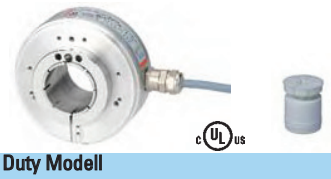
	Version	Universal 5820[1]	Hollow shaft,[1] universal	Hollow shaft,[1] sine wave , high res	Hollow shaft,[1] Stainless steel (Niro)
	Series	5820	5823	5824/5825	5826
	Special features	wide variety of fixing options	High temperature version with TPE cable	High quality sine wave signal; High resolution up to 36,000 ppr.	Stainless steel housing; sea water version on request
	Mechanical characteristics				
	Shaft/Hollow shaft ø [mm]	6/8/14/15	6/8/10/12/14/15	6/8/10/12/14/15	10/12
	Housing dim. [mm]	ø58x41.5	ø58x41.5	ø58x41.5	ø58x41.5
	Max. speed [min^{-1}]	12000	12000	12000	12000
	Max. shaft load rad./ax. [N]	—	—	—	—
	Max. operating temp. [°C]	–20 ... +90[2]	–20 ... +110	–20 ... +90	–20 ... +90
	Max. protection to	IP 66	IP 66	IP 66	IP 66
	Type of connection	Cable/Plug[3]	Cable/Plug	Cable/Plug	Cable
	Max. resolution [PPR]	5000	5000	5000 [2] 36000 interpolated [3]	5000
	Electrical characteristics				
	Output	RS 422 or push-pull	RS 422 or push-pull	Sine wave 1 Vpp[2] RS 422 or push-pull[3]	RS 422 or push-pull
	Supply voltage [V DC]	5. 5 ... 30 or 10 ... 30	5. 5 ... 30 or 10 ... 30	5 or 10 ... 30	5. 5 ... 30 or 10 ... 30
	Max. pulse frequency [kHz]	300	300	180 [2], 800 [3]	300

[1] Ex available as explosion proof zone 2 and 22

[2] 5824
[3] 5825

Incremental encoders

Version		**Magnetic measuring system**	**Heavy duty model**[1] **large hollow shaft**	**Stainless steel with shaft (Niro)**[1]	**Ex-proof shaft, hollow shaft**
Series		***LIMES*** **RI20/LI20**	**9000**	**9000 NIRO**	**7030** *Atex-approved*
Special features		Magnetic sensor with magnetic ring	Extended axial and radial load	Suitable for food processing and chemical industries	Very compact Ex II 2G EEx d II C T6 and Ex II 2D IP6x T85°C
Mechanical characteristics					
Shaft/Hollow shaft ø	[mm]	up to 30 mm	12	12	12
Housing dim.	[mm]	16 mm x 10 mm	ø 90x90	ø 90x102	ø70x94
Max. speed	[min^{-1}]	6000	6000	6000	6000
Max. shaft load rad./ax.	[N]	—	140/70	140/70	20/10 (Shaft)
Max. operating temp.	[°C]	–20 ... 80 °C	–20 ... +90	–20 ... +85	–20 ... +60
Max. protection to		IP67	IP 66	IP 66	IP 64
Type of connection		Cable: PUR	Cable/Plug	Cable	Cable
Max. resolution	[PPR]	3600	5000	5000	5000
Electrical characteristics					
Output		RS 422 or push-pull	RS 422 or push-pull	RS 422 or push-pull	RS 422 or push-pull
Supply voltage	[V DC]	4.8 ... 30 V DC	5 or 10 ... 30	5 or 10 ... 30	5 or 10 ... 30
Max. pulse frequency	[kHz]	163	300	300	300



Version		**Large hollow shaft up to 42 mm**[1]	**Heavy Duty Modell Large hollow shaft up to 42 mm**[1]	
Series		**A020**	**A02H**	
Special features		For medium loads, hollow shaft up to 42 mm dia., installation depth only 43 mm, wide variety of fixing options	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.	
Mechanical characteristics				
Shaft/Hollow shaft ø	[mm]	up to 42	up to 42	
Housing dim.	[mm]	ø100x43	ø100x50	
Max. speed	[min^{-1}]	1500	6000	
Max. shaft load rad./ax.	[N]	—	—	
Max. operating temp.	[°C]	–20 ... +75	–20 ... +60	
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