

	Absolute Singleturn			Multiturn		
	ECN 425	ECN 413	ECN 413	EQN 437	EQN 425	EQN 425
Absolute position values*	EnDat 2.2	EnDat 2.2	SSI	EnDat 2.2	EnDat 2.2	SSI
Ordering designation	EnDat 22	EnDat 01	39r1	EnDat 22	EnDat 01	41r1
Positions per revolution	33554432 (25 bits)	8192 (13 bits)		33554432 (25 bits)	8192 (13 bits)	
Revolutions	-			4096		
Code	Pure binary		Gray	Pure binary		Gray
Elec. permissible speed Deviations <sup>1)</sup>	≤ 12000 min <sup>-1</sup> for continuous position value	512 lines: ≤ 5000/12000 min <sup>-1</sup> ± 1 LSB/± 100 LSB 2048 lines: ≤ 1500/12000 min <sup>-1</sup> ± 1 LSB/± 50 LSB	≤ 12000 min <sup>-1</sup> ± 12 LSB	≤ 12000 min <sup>-1</sup> for continuous position value	512 lines: ≤ 5000/10000 min <sup>-1</sup> ± 1 LSB/± 100 LSB 2048 lines: ≤ 1500/10000 min <sup>-1</sup> ± 1 LSB/± 50 LSB	≤ 12000 min <sup>-1</sup> ± 12 LSB
Calculation time t <sub>cal</sub>	≤ 5 μs		≤ 0.5 μs <sup>5)</sup>	≤ 5 μs		≤ 0.5 μs <sup>5)</sup>
Incremental signals	None	~ 1 V <sub>PP</sub> <sup>2)</sup>		None	~ 1 V <sub>PP</sub> <sup>2)</sup>	
Line counts*	-	512 2048	512	-	512 2048	512
Cutoff frequency -3 dB	-	512 lines: ≥ 130 kHz; 2048 lines: ≥ 400 kHz		-	512 lines: ≥ 130 kHz; 2048 lines: ≥ 400 kHz	
Scanning frequency	-	-		-	-	
Edge separation a	-	-		-	-	
System accuracy	± 20"	512 lines: ± 60"; 2048 lines: ± 20"		± 20"	512 lines: ± 60"; 2048 lines: ± 20"	
Power supply*	3.6 to 14 V	3.6 to 14 V	5 V ± 5% or 10 to 30 V	3.6 to 14 V	3.6 to 14 V	5 V ± 5% or 10 to 30 V
Current consumption without load	≤ 110 mA <sup>6)</sup>	≤ 110 mA <sup>6)</sup>	≤ 100 mA or ≤ 45 mA	≤ 140 mA <sup>6)</sup>	≤ 140 mA <sup>6)</sup>	≤ 130 mA or ≤ 55 mA
Electrical connection*	<ul style="list-style-type: none"> <li>Flange socket M12, radial</li> <li>Cable 1 m, with M12 coupling</li> </ul>	<ul style="list-style-type: none"> <li>Flange socket M23, radial</li> <li>Cable 1 m, with M23 coupling or without connecting element</li> </ul>		<ul style="list-style-type: none"> <li>Flange socket M12, radial</li> <li>Cable 1 m, with M12 coupling</li> </ul>	<ul style="list-style-type: none"> <li>Flange socket M23, radial</li> <li>Cable 1 m, with M23 coupling or without connecting element</li> </ul>	
Shaft*	Blind hollow shaft or hollow through shaft; D = 8 mm or D = 12 mm					
Mech. permissible speed n <sup>3)</sup>	≤ 6000 min <sup>-1</sup> /≤ 12000 min <sup>-1</sup> <sup>4)</sup>					
Starting torque at 20 °C below -20 °C	Blind hollow shaft: ≤ 0.01 Nm Hollow through shaft: ≤ 0.025 Nm ≤ 1 Nm					
Moment of inertia of rotor	≤ 4.3 · 10 <sup>-6</sup> kgm <sup>2</sup>					
Permissible axial motion of measured shaft	± 1 mm					
Vibration 55 to 2000 Hz Shock 6 ms/2 ms	≤ 300 m/s <sup>2</sup> ; flange socket version: 150 m/s <sup>2</sup> (EN 60068-2-6) ≤ 1000 m/s <sup>2</sup> /≤ 2000 m/s <sup>2</sup> (EN 60068-2-27)					
Max. operating temp. <sup>3)</sup>	100 °C					
Min. operating temp.	Flange socket or fixed cable: -40 °C For frequent flexing: -10 °C					
Protection EN 60529	IP 67 at housing, IP 64 at shaft end (IP 66 available on request)					
Weight	Approx. 0.3 kg					

**Bold:** These preferred versions are available on short notice

\* Please select when ordering

<sup>1)</sup> Velocity-dependent deviations between the absolute value and incremental signal

<sup>2)</sup> Restricted tolerances: Signal amplitude 0.8 to 1.2 V<sub>PP</sub>

<sup>3)</sup> For the correlation between the operating temperature and the shaft speed or supply voltage, see *General Mechanical Information*

<sup>4)</sup> With two shaft clamps (only for hollow through shaft)

<sup>5)</sup> The position value is updated internally every 5 μs

<sup>6)</sup> Depends on the power supply; see *General Electrical Information*