

Encoder Overview

Encoder Type	Single / Multi turn	Signal Type	Safety	Output	Interface	Mfr	Model	Resolution available	Signals	Max. frequency	Supply	Protection degree	Operating speed	Housing and shaft	Standard connector	Note
Incremental	#	TTL / HTL	No	HTL (10...30 Vdc)	-	SICK	VFS-60A	1024, 2048, 4096 ppr (other on req.) **	A, A-, B, B-, Z, Z-	820 kHz	4,5...30 Vdc	IP 65	6000 rpm - Max. 9000 rpm for 60 sec.	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	Programmable - SC option
			No	HTL (10...30 Vdc)	-	HEIDENHAIN	ROD 436	1024, 2048, 4096 ppr	A, A-, B, B-, Z, Z-, Sens+, Sens-	300 kHz	10...30 Vdc	IP 64	12000 rpm	d.58 mm, solid shaft d.6 mm	Size 18 - 10 pin	Adaptor flange + Insulated coupling
			No	TTL (5 Vdc)	-	SICK	VFS-60A	1024, 2048, 4096 ppr (other on req.) **	A, A-, B, B-, Z, Z-	820 kHz	4,5...30 Vdc	IP 65	6000 rpm - Max. 9000 rpm for 60 sec.	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	Programmable - SC option
			No	TTL (5 Vdc)	-	HEIDENHAIN	ERN 420	1024 ppr	A, A-, B, B-, Z, Z-	300 kHz	4,5...5,5 Vdc	IP 64	6000 rpm - Max. 9000 rpm for 60 sec.	d.58 mm, hollow shaft d.15 mm	Size 18 - 10 pin	
			No	TTL (5 Vdc)	-	HEIDENHAIN	ROD 426	1024, 2048, 4096 ppr	A, A-, B, B-, Z, Z-, Sens+, Sens-	300 kHz	4,5...5,5 Vdc	IP 64	12000 rpm	d.58 mm, solid shaft d.6 mm	Size 18 - 10 pin	Adaptor flange + Insulated coupling
			No	TTL (5 Vdc)	-	HEIDENHAIN	ERN 120	1024, 2048, 5000 ppr	A, A-, B, B-, Z, Z-	300 kHz	4,5...5,5 Vdc	IP 64	4000 rpm	d.87 mm, hollow shaft d.38 or 50 mm	Size 18 - 10 pin	
			No	TTL (5 Vdc)	-	HOHNER	BSC2T1K3W.111	1024, 2048 ppr	A, A-, B, B-, Z, Z-	300 kHz	5...28 Vdc	IP 65	6000 rpm	d.58 mm, hollow shaft d.15 mm	Size 18 - 10 pin	
	#	SinCos	SIL2 (PLd)	SinCos 1 Vpp	-	SICK	DFS-60S-PRO	1024 SinCos	Cos+, Cos-, Sin+, Sin-, Z, Z-	153 kHz	4,5...30 Vdc	IP 65	6000 rpm	d.60 mm; hollow shaft d.15 mm	Size 18 - 10 pin	
			No	SinCos 1 Vpp	-	HEIDENHAIN	ERN 480	1024, 2048, 4096 SinCos	Cos+, Cos-, Sin+, Sin-, Z, Z-	180 kHz	4,5...5,5 Vdc	IP 64	6000 rpm - Max. 9000 rpm for 60 sec.	d.58 mm, hollow shaft d.15 mm	Size 18 - 10 pin	
			No	SinCos 1 Vpp	-	HEIDENHAIN	ERN 180	1024, 2048, 5000 SinCos	Cos+, Cos-, Sin+, Sin-, Z, Z-	180 kHz	4,5...5,5 Vdc	IP 64	4000 rpm	d.87 mm, hollow shaft d.38 or 50 mm	Size 18 - 10 pin	
No			SinCos 1 Vpp	-	HEIDENHAIN	ROD 486	1024, 2048, 4096 SinCos	Cos+, Cos-, Sin+, Sin-, Z, Z-, Sens+, Sens-	180 kHz	4,5...5,5 Vdc	IP 64	12000 rpm	d.58 mm, solid shaft d.6 mm	Size 18 - 10 pin	Adaptor flange + Insulated coupling	
Absolute	Single Turn	Digital + SinCos	No	SinCos 1 Vpp	Hiperface®	SICK	SFS-60	1024 SinCos	Cos+, RefCos, Sin+, RefSin, Data+, Data-	200 kHz	7...12 Vdc	IP 65	6000 rpm - Max. 9000 rpm for 60 sec.	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	SC option
			SIL2 (PLd)	SinCos 1 Vpp	Hiperface®	SICK	SFS-60S	1024 SinCos	Cos+, RefCos, Sin+, RefSin, Data+, Data-	200 kHz	7...12 Vdc	IP 65	6000 rpm	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	
			No	SinCos 1 Vpp	EnDat® 2.2 (EnDat 01)	HEIDENHAIN	ECN 413	512, 2048 SinCos	Cos+, Cos-, Sin+, Sin-, Data+, Data-, Clock+, Clock-	512: 130 kHz; 2048: 400 kHz	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 20 - 14 pin	
			No	SinCos 1 Vpp	Hiperface®	SICK	SFM-60	1024 SinCos	Cos+, RefCos, Sin+, RefSin, Data+, Data-	200 kHz	7...12 Vdc	IP 65	6000 rpm - Max. 9000 rpm for 60 sec.	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	SC option
			SIL2 (PLd)	SinCos 1 Vpp	Hiperface®	SICK	SFM-60S	1024 SinCos	Cos+, RefCos, Sin+, RefSin, Data+, Data-	200 kHz	7...12 Vdc	IP 65	6000 rpm	d.60 mm, hollow shaft d.15 mm	Size 18 - 10 pin	
	Single Turn	Digital	No	SinCos 1 Vpp	EnDat® 2.2 (EnDat 01)	HEIDENHAIN	EQN 425	512, 2048 SinCos	Cos+, Cos-, Sin+, Sin-, Data+, Data-, Clock+, Clock-	512: 130 kHz; 2048: 400 kHz	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 20 - 14 pin	
			No	-	EnDat® 2.2 (EnDat 22)	HEIDENHAIN	ECN 425	-	Data+, Data-, Clock+, Clock-	-	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 20 - 14 pin	
			SIL2 (PLd)	-	EnDat® 2.2 (EnDat 22)	HEIDENHAIN	ECN 425 FS	-	Data+, Data-, Clock+, Clock-	-	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 12 - 8 pin Flange socket or coupling	Flying connector not supplied
			SIL2 (PLd)	-	DRIVE-CLiQ®	HEIDENHAIN	ECN 424S FS	-	Tx+, Tx-, Rx+, Rx-	-	10...36 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 12 - 8 pin Flange socket or coupling	Flying connector not supplied
			No	-	EnDat® 2.2 (EnDat 22)	HEIDENHAIN	EQN 437	-	Data+, Data-, Clock+, Clock-	-	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 20 - 14 pin	
Multi Turn	Digital	SIL2 (PLd)	-	EnDat® 2.2 (EnDat 22)	HEIDENHAIN	EQN 437 FS	-	Data+, Data-, Clock+, Clock-	-	3,6...14 Vdc	IP 64	6000 rpm	d.58 mm, hollow shaft d.12 mm	Size 12 - 8 pin Flange socket or coupling	Flying connector not supplied	

Encoder Overview

Model	VFS-60A / VFS-60A-SC*	SFS-60 / SFS-60-SC*	SFM-60 / SFM-60-SC*	BSC2T1K3W.111/1024 or 2048
Type	INCREMENTAL	ABSOLUTE - SINGLE TURN	ABSOLUTE - MULTI TURN	INCREMENTAL - Ceramic ball bearings insulated
Safety	No	No	No	No
Resolution available	1024, 2048, 4096 ppr (other on req.) **	1024 SinCos	1024 SinCos	1024, 2048 ppr
Output	TTL (5 Vdc); HTL (10...30 Vdc) **	SinCos 1 Vpp	SinCos 1 Vpp	TTL (5 Vdc)
Signals	A, A-, B, B-, Z, Z-	Cos+, RefCos, Sin+, RefSin, Data+, Data-	Cos+, RefCos, Sin+, RefSin, Data+, Data-	A, A-, B, B-, Z, Z-
Supply	4,5...30 Vdc	7...12 Vdc	7...12 Vdc	5...28 Vdc
Interface	-	Hiperface®	Hiperface®	-
Total nr. of turns	-	-	4096	-
Nr. of steps per revolution	-	32768	32768	-
Max. frequency	820 kHz	200 kHz	200 kHz	300 kHz
Operating speed	6000 rpm - Max. 9000 rpm for 60 sec.	6000 rpm - Max. 9000 rpm for 60 sec.	6000 rpm - Max. 9000 rpm for 60 sec.	6000 rpm
Working temperature	-20...+100 °C	-20...+115 °C	-20...+115 °C	-20...+100 °C
Housing and shaft	d.60 mm, hollow shaft d.15 mm	d.60 mm, hollow shaft d.15 mm	d.60 mm, hollow shaft d.15 mm	d.58 mm, hollow shaft d.15 mm
Protection degree	IP 65	IP 65	IP 65	IP 65
Standard connector	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin
Note	*SC = Ceramic Ball Bearings; ** Resolution and output (TTL / HTL) reprogrammable with PGT-10-PRO programming tool (Optional)			

Model	DFS-60S-PRO	SFS-60S	SFM-60S
Type	INCREMENTAL	ABSOLUTE - SINGLE TURN	ABSOLUTE - MULTI TURN
Safety	SIL2 (PLd)	SIL2 (PLd)	SIL2 (PLd)
Resolution available	1024 SinCos	1024 SinCos	1024 SinCos
Output	SinCos 1 Vpp	SinCos 1 Vpp	SinCos 1 Vpp
Signals	Cos+, Cos-, Sin+, Sin-, Z, Z-	Cos+, RefCos, Sin+, RefSin, Data+, Data-	Cos+, RefCos, Sin+, RefSin, Data+, Data-
Supply	4,5...30 Vdc	7...12 Vdc	7...12 Vdc
Interface	-	Hiperface®	Hiperface®
Total nr. of turns	-	-	4096
Nr. of steps per revolution	-	32768	32768
Max. frequency	153 kHz	200 kHz	200 kHz
Operating speed	6000 rpm	6000 rpm	6000 rpm
Working temperature	-20...+85 °C	-20...+85 °C	-20...+85 °C
Housing and shaft	d.60 mm; hollow shaft d.15 mm	d.60 mm, hollow shaft d.15 mm	d.60 mm, hollow shaft d.15 mm
Protection degree	IP 65	IP 65	IP 65
Standard connector	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin

Note

Encoder Overview

Model	ERN 420	ERN 480	ERN 120	ERN 180
Type	INCREMENTAL	INCREMENTAL	INCREMENTAL	INCREMENTAL
Safety	No	No	No	No
Resolution available	1024 ppr	1024, 2048, 4096 SinCos	1024, 2048, 5000 ppr	1024, 2048, 5000 SinCos
Output	TTL (5 Vdc)	SinCos 1 Vpp	TTL (5 Vdc)	SinCos 1 Vpp
Signals	A, A-, B, B-, Z, Z-	Cos+, Cos-, Sin+, Sin-, Z, Z-	A, A-, B, B-, Z, Z-	Cos+, Cos-, Sin+, Sin-, Z, Z-
Supply	4,5...5,5 Vdc	4,5...5,5 Vdc	4,5...5,5 Vdc	4,5...5,5 Vdc
Interface	-	-	-	-
Total nr. of turns	-	-	-	-
Nr. of steps per revolution	-	-	-	-
Max. frequency	300 kHz	180 kHz	300 kHz	180 kHz
Operating speed	6000 rpm - Max. 9000 rpm for 60 sec.	6000 rpm - Max. 9000 rpm for 60 sec.	4000 rpm	4000 rpm
Working temperature	-20...+100 °C	-20...+100 °C	-20...+100 °C	-20...+100 °C
Housing and shaft	d.58 mm, hollow shaft d.15 mm	d.58 mm, hollow shaft d.15 mm	d.87 mm, hollow shaft d.38 or 50 mm	d.87 mm, hollow shaft d.38 or 50 mm
Protection degree	IP 64	IP 64	IP 64	IP 64
Standard connector	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin
Note				

Model	ROD 426	ROD 436	ROD 486
Type	INCREMENTAL	INCREMENTAL	INCREMENTAL
Safety	No	No	No
Resolution available	1024, 2048, 4096 ppr	1024, 2048, 4096 ppr	1024, 2048, 4096 SinCos
Output	TTL (5 Vdc)	HTL (10...30 Vdc)	SinCos 1 Vpp
Signals	A, A-, B, B-, Z, Z-, Sens+, Sens-	A, A-, B, B-, Z, Z-, Sens+, Sens-	Cos+, Cos-, Sin+, Sin-, Z, Z-, Sens+, Sens-
Supply	4,5...5,5 Vdc	10...30 Vdc	4,5...5,5 Vdc
Interface	-	-	-
Total nr. of turns	-	-	-
Nr. of steps per revolution	-	-	-
Max. frequency	300 kHz	300 kHz	180 kHz
Operating speed	12000 rpm	12000 rpm	12000 rpm
Working temperature	-20...+100 °C	-20...+100 °C	-20...+100 °C
Housing and shaft	d.58 mm, solid shaft d.6 mm	d.58 mm, solid shaft d.6 mm	d.58 mm, solid shaft d.6 mm
Protection degree	IP 64	IP 64	IP 64
Standard connector	Size 18 - 10 pin	Size 18 - 10 pin	Size 18 - 10 pin

Note ROD models : Adapter flange ID257044-01 + Insulated coupling K17-02 required

Encoder Overview

Model	ECN 413	EQN 425	ECN 425	EQN 437
Type	ABSOLUTE - SINGLE TURN	ABSOLUTE - MULTI TURN	ABSOLUTE - SINGLE TURN	ABSOLUTE - MULTI TURN
Safety	No	No	No	No
Resolution available	512, 2048 SinCos	512, 2048 SinCos	-	-
Output	SinCos 1 Vpp	SinCos 1 Vpp	-	-
Signals	Cos+, Cos-, Sin+, Sin-, Data+, Data-, Clock+, Clock-	Cos+, Cos-, Sin+, Sin-, Data+, Data-, Clock+, Clock-	Data+, Data-, Clock+, Clock-	Data+, Data-, Clock+, Clock-
Supply	3,6...14 Vdc	3,6...14 Vdc	3,6...14 Vdc	3,6...14 Vdc
Interface	EnDat® 2.2 (EnDat 01)	EnDat® 2.2 (EnDat 01)	EnDat® 2.2 (EnDat 22)	EnDat® 2.2 (EnDat 22)
Total nr. of turns	-	4096	-	4096
Nr. of steps per revolution	8.192 (13 bit)	8.192 (13 bit)	33.554.432 (25 bit)	33.554.432 (25 bit)
Max. frequency	512: 130 kHz; 2048: 400 kHz	512: 130 kHz; 2048: 400 kHz	-	-
Operating speed	6000 rpm	6000 rpm	6000 rpm	6000 rpm
Working temperature	-20...+100 °C	-20...+100 °C	-20...+100 °C	-20...+100 °C
Housing and shaft	d.58 mm, hollow shaft d.12 mm	d.58 mm, hollow shaft d.12 mm	d.58 mm, hollow shaft d.12 mm	d.58 mm, hollow shaft d.12 mm
Protection degree	IP 64	IP 64	IP 64	IP 64
Standard connector	Size 20 - 14 pin	Size 20 - 14 pin	Size 20 - 14 pin	Size 20 - 14 pin

Note

Model	ECN 425 FS	EQN 437 FS	ECN 424S FS
Type	ABSOLUTE - SINGLE TURN	ABSOLUTE - MULTI TURN	ABSOLUTE - SINGLE TURN
Safety	SIL2 (PLd)	SIL2 (PLd)	SIL2 (PLd)
Resolution available	-	-	-
Output	-	-	-
Signals	Data+, Data-, Clock+, Clock-	Data+, Data-, Clock+, Clock-	Tx+, Tx-, Rx+, Rx-
Supply	3,6...14 Vdc	3,6...14 Vdc	10...36 Vdc
Interface	EnDat® 2.2 (EnDat 22)	EnDat® 2.2 (EnDat 22)	DRIVE-CLiQ®
Total nr. of turns	-	4096	-
Nr. of steps per revolution	33.554.432 (25 bit)	33.554.432 (25 bit)	16.777.216 (24 bit)
Total nr. of steps	-	-	-
Operating speed	6000 rpm	6000 rpm	6000 rpm
Working temperature	-20...+100 °C	-20...+100 °C	-20...+100 °C
Housing and shaft	d.58 mm, hollow shaft d.12 mm	d.58 mm, hollow shaft d.12 mm	d.58 mm, hollow shaft d.12 mm
Protection degree	IP 64	IP 64	IP 64
Standard connector	Size 12 - 8 pin Flange socket or coupling	Size 12 - 8 pin Flange socket or coupling	Size 12 - 8 pin Flange socket or coupling
Note	<i>Flying connector not supplied</i>	<i>Flying connector not supplied</i>	<i>Flying connector not supplied</i>