기술 데이터 시트
엔코더 시리즈 정보
품목 번호: 90000290
EI30-O 115 TS



그림과 차이가 날 수 있습니다

내용

- 기술 데이터
- 제품 키워드

인코더_시리즈	EI 115 TS
인코더_기본 원리	증분형
인코더_작동 원리	광학 방식
인코더_플랜지 직경	Ø 115mm
인코더_플랜지 유형	타코 플랜지(10mm)
인코더_실축/중공축	실축
인코더_축 직경	Ø 10mm
	Ø 12mm
	Ø 7mm
	Ø 8mm
인코더_공급전압	10 ~ 30 V DC
	4.75 ... 5.5 V DC
	5 ~ 30V DC
인코더_출력 회로	HTL
	TTL
	TTL, RS422 호환
	반전 1 Vss Sin/Cos
	반전 HTL
인코더_펄스 수	최대 20480I/U

기술 데이터

Encoder EI30 O 115 TS

Resolution

Pulses per revolution PPR	up to 25000 PPR

Mechanical Data

Flange	tacho flange
Flange material	aluminum
Housing material	die cast aluminum, powder coated
Flange diameter	Ø 115 mm [Ø 4.528"]

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1 Ncm [1.416 in-ozf] at ambient temperature
Shaft	Ø 10 mm [Ø 0.394"]
Shaft length	L: 25 mm [0.984"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Advice	Ø 7 mm [0.2761"] / Ø 8 mm [0.315"] / Ø 12 mm [0.472"] on request

Bearings

Bearings type	2 precision ball bearings
Nominale service life	1 x 10'9 revs. at 100 % rated shaft load 1 x 10'10 revs. at 40 % rated shaft load 11 x 10'11 revs. at 20 % rated shaft load
Max. operating speed	8000 rpm

Machinery Directive: basic data safety integrity level

$MTTF_d$	200 a
Mission time (TM)	25 a
Nominale service life (L10h)	1 x 10'11 revs. at 20 % rated shaft load and 8000 rpm
Diagnostic coverage (DC)	0 %

Electrical Data

Power supply/Current consumption	4,75 VDC up to 5,5 VDC: typ. 70 mA (100 mA only C3, D3)
Power supply/Current consumption	5 VDC up to 30 VDC: typ. 70 mA
Power supply/Current consumption	10 VDC up to 30 VDC: typ. 70 mA (100 mA only C2, C4, D4)
Operating principle	optical
Output circuit	TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 Vpp sin/cos
Pulse frequency	TTL ≤ 5000 ppr: max. 200 kHz HTL ≤ 5000 ppr: max. 200 kHz TTL more than 1200 ppr: max. 2 MHz HTL more than 1200 ppr: max. 600 kHz 1 Vpp sin/cos: max. 100 kHz
Channels	B N and inverted signals
Load	max. 40 mA / channel @ 1 Vpp sin/cos: min. 120 Ohm
Circuit protection	circuit type C4, C6, D4, D6 only

Accuracy

Phase offset	90° ± max. 7.5 % of the period duration
pulse-/pause-ratio	≤5000 ppr: 50 % ± max. 7 % Output circuits C2, C3, C4, D3, D4: 50 % ± max. 10 %

Environmental data

ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3
Vibration: (DIN EN 60068-2-6)	50 m/s^2 (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s^2 (6 ms)
Electrial Safety:	according DIN VDE 0160

Duty information

Customs tariff number:	90318020
Country of origin:	Germany

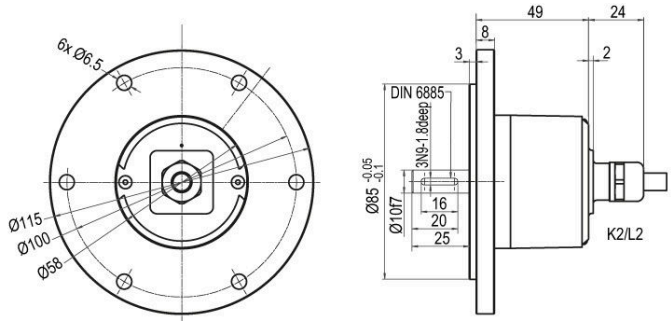
General Data

Weight	approx. 520 g [18.342 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65
Operating temperature	Connector: -40 °C up to +85 °C, Cable: -20 °C up to +80 °C (Option LT: -40 °C up to +85 °C). Connector: -40 °F up to +185 °F, Cable: -4 °F up to +176 °F, Option LT: -40 °F up to +185 F° 1 Vpp: -10 °C up to +70 °C [+14 °F up to +158 °F]
Storage temperature	Connector: -40 °C up to +85 °C, Cable: -30 °C up to +80 °C (Option LT: -40 °C up to +85 °C) Connector: -40 °F up to +185 °F, cable: -22 °F up to +176 °F, (Option LT: -40 °F up to +185 °F)

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Cable connection A-N, A-C, axial, with 2 m cable



All dimensions in mm

Description		N inv. poss.
A-N	axial, shield not connected	•
A-C	axial, shield connected to encoder housing	•

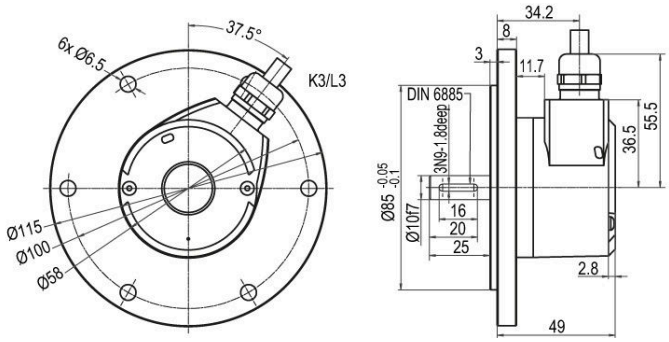
Assignments

	A-N, A-C	A-N, A-C	A-C
Circuit	C3, C4, C5, C6, C7	D3, D4, D5, D6, C1, C2, D7	D8
GND	WH	WH	WH
(+) Vcc	BN	BN	BN
A	GN	GN	GN
B	YE	YE	GY
N	GY	GY	–
–	–	–	–
A inv.	–	RD	YE
B inv.	–	BK, (BU at LT)	PK
N inv.	–	VT	–
Shield	flex	flex	flex

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Encoder EI30 O 115 TS

Cable connection R-N, R-C, radial, with 2 m cable



All dimensions in mm

Description		N inv. poss.
R-N	radial, shield not connected	•
R-C	radial, shield connected to encoder housing	•

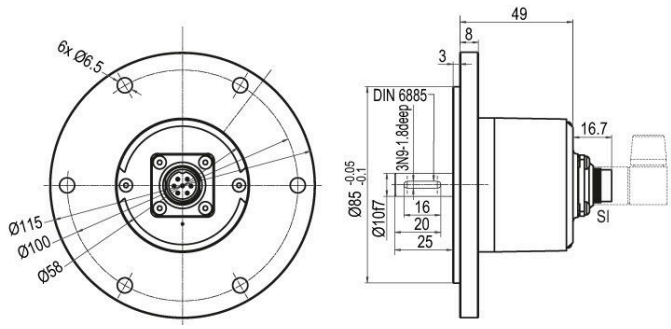
Assignments

	R-N, R-C	R-N, R-C	R-C
Circuit	C3, C4, C5, C6, C7	D3, D4, D5, D6, C1, C2, D7	D8
GND	WH	WH	WH
(+) Vcc	BN	BN	BN
A	GN	GN	GN
B	YE	YE	GY
N	GY	GY	–
–	–	–	–
A inv.	–	RD	YE
B inv.	–	BK, (BU at LT)	PK
N inv.	–	VT	–
Shield	flex	flex	flex

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Encoder EI30 O 115 TS

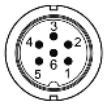
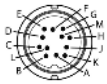
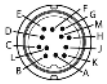
Connector (M16x0.75) A, axial, 5-, 6-, 8-, 12-pin



All dimensions in mm

Description		N inv. poss.
A5	axial, 5-pin, Connector connected to encoder housing	–
A6	axial, 6-pin, Connector connected to encoder housing	–
A8	axial, 8-pin, Connector connected to encoder housing	•
A12	axial, 12-pin, Connector connected to encoder housing	•

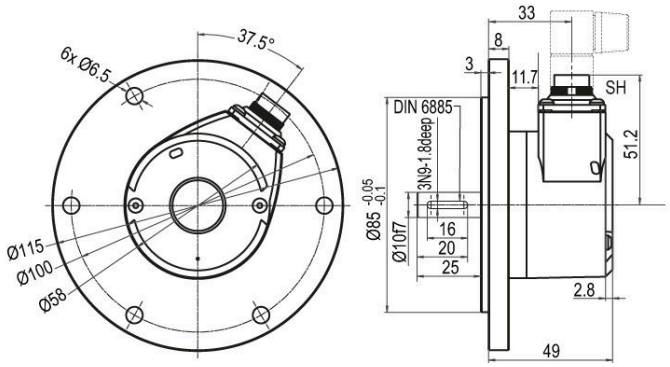
Assignments

	A5	A6	A8	A8	A12	A12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
						
Circuit	C3, C4, C5, C6, C7	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8	C1, C2, D3, D4, D5, D6, D7	D8
GND	1	6	1	1	K, L	K, L
(+) Vcc	2	1	2	2	M, B	M, B
A	3	2	3	3	E	E
B	4	4	4	4	H	H
N	5	3	5	–	C	–
–	–	–	–	–	–	–
A inv.	–	–	6	6	F	F
B inv.	–	–	7	7	A	A
N inv.	–	–	8	–	D	–
n. c.	–	5	–	5, 8	G, J	D, G, J
Shield	–	–	–	–	–	–

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Encoder EI30 O 115 TS

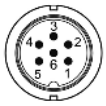
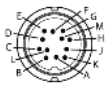
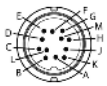
Connector (M16x0.75) R, radial, 5-, 6-, 8-, 12-pin



All dimensions in mm

Description		N inv. poss.
R5	radial, 5-pin, Connector connected to encoder housing	–
R6	radial, 6-pin, Connector connected to encoder housing	–
R8	radial, 8-pin, Connector connected to encoder housing	•
R12	radial, 12-pin, Connector connected to encoder housing	•

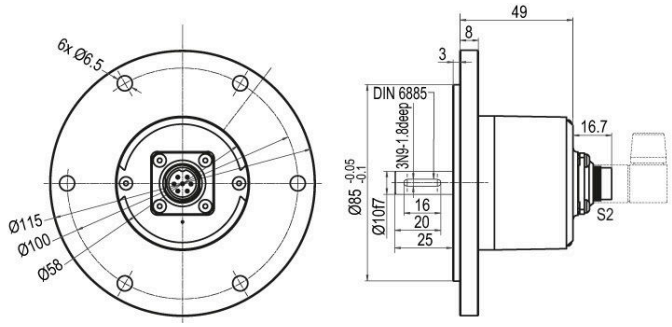
Assignments

	R5	R6	R8	R8	R12	R12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
						
Circuit	C3, C4, C5, C6, C7	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8	C1, C2, D3, D4, D5, D6, D7	D8
GND	1	6	1	1	K, L	K, L
(+) Vcc	2	1	2	2	M, B	M, B
A	3	2	3	3	E	E
B	4	4	4	4	H	H
N	5	3	5	–	C	–
–	–	–	–	–	–	–
A inv.	–	–	6	6	F	F
B inv.	–	–	7	7	A	A
N inv.	–	–	8	–	D	–
n. c.	–	5	–	5, 8	G, J	D, G, J
Shield	–	–	–	–	–	–

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Encoder EI30 O 115 TS

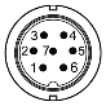
Connector (M16x0.75) A7, axial, 7-pin



All dimensions in mm

Description		N inv. poss.
A7	axial, 7-pin, Connector connected to encoder housing	–

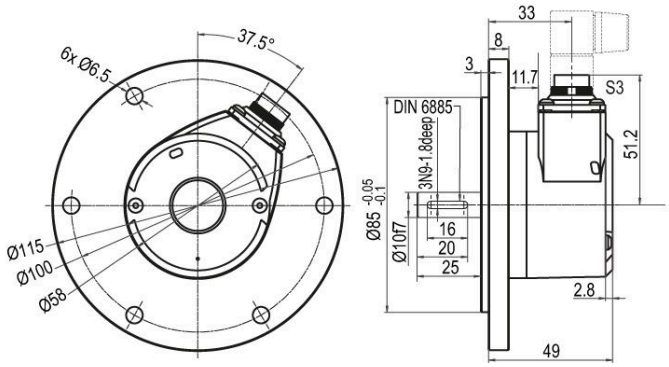
Assignments

	A7
	7-pin
	
Circuit	C3, C4, C5, C6, C7
GND	1
(+) Vcc	2
A	3
B	4
N	5
–	–
A inv.	–
B inv.	–
N inv.	–
n. c.	6, 7
Shield	–

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Encoder EI30 O 115 TS

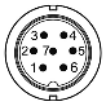
Connector (M16x0.75) R7, radial, 7-pin



All dimensions in mm

Description		N inv. poss.
R7	radial, 7-pin, Connector connected to encoder housing	–

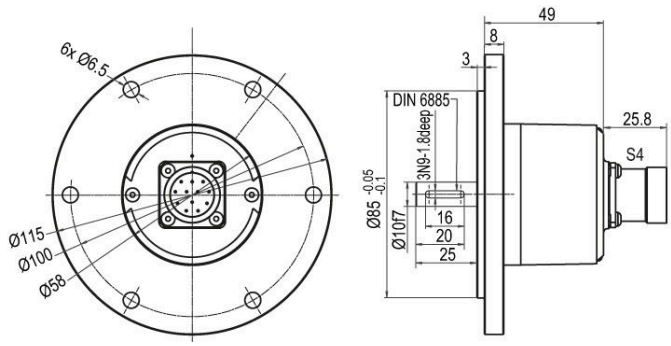
Assignments

	R7
	7-pin
	
Circuit	C3, C4, C5, C6, C7
GND	1
(+) Vcc	2
A	3
B	4
N	5
–	–
A inv.	–
B inv.	–
N inv.	–
n. c.	6, 7
Shield	–

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Encoder EI30 O 115 TS

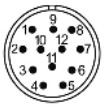
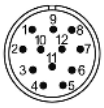
Connector (M23) A12M, axial, 12-pin



All dimensions in mm

Description		N inv. poss.
A12M	axial, 12-pin, Connector connected to encoder housing	–

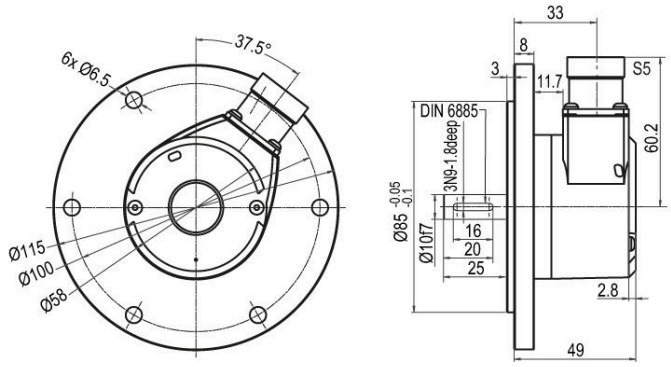
Assignments

	A12M	A12M	A12M
	12-pin	12-pin	12-pin
			
Circuit	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	–
–	–	–	–
A inv.	–	6	6
B inv.	–	1	1
N inv.	–	4	–
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	–	–	–

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Connector (M23) R12M, radial, 12-pin



All dimensions in mm

Description		N inv. poss.
R12M	radial, 12-pin, Connector connected to encoder housing	•

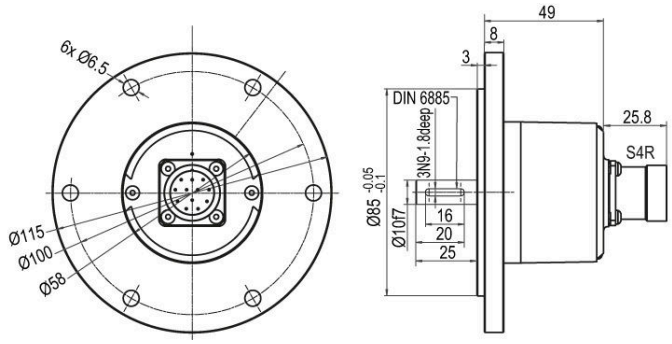
Assignments

	R12M 12-pin	R12M 12-pin	R12M 12-pin
			
Circuit	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	–
–	–	–	–
A inv.	–	6	6
B inv.	–	1	1
N inv.	–	4	–
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	–	–	–

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Encoder EI30 O 115 TS

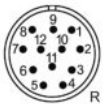
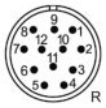
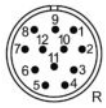
Connector (M23) AC, axial, 12-pin (clockwise)



All dimensions in mm

Description		N inv. poss.
AC12	axial, 12-pin, Connector connected to encoder housing	•

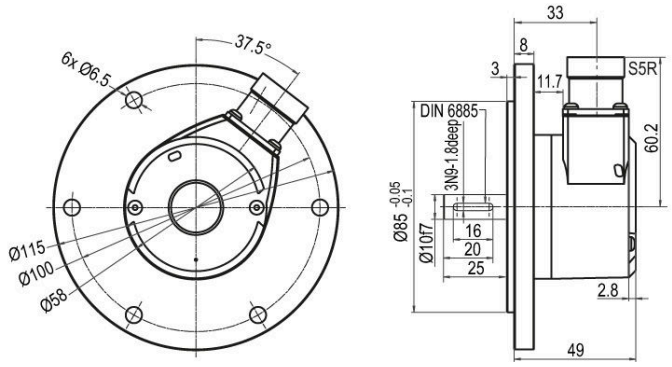
Assignments

	AC12	AC12	AC12
	12-pin	12-pin	12-pin
			
Circuit	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	–
–	–	–	–
A inv.	–	6	6
B inv.	–	1	1
N inv.	–	4	–
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	–	–	–

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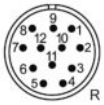
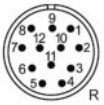
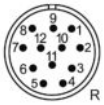
Connector (M23) RC, radial, 12-pin (clockwise)



All dimensions in mm

Description		N inv. poss.
RC12	radial, 12-pin, Connector connected to encoder housing	•

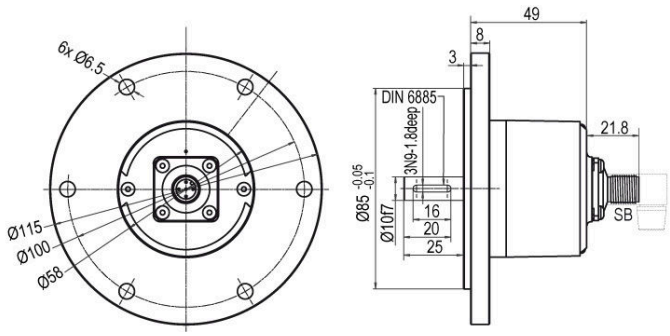
Assignments

	RC12 12-pin	RC12 12-pin	RC12 12-pin
			
Circuit	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	–
–	–	–	–
A inv.	–	6	6
B inv.	–	1	1
N inv.	–	4	–
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	–	–	–

기술 데이터

Encoder EI30 O 115 TS

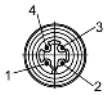
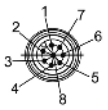
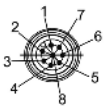
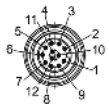
Sensor-connector (M12x1) AS, axial, 4-, 5-, 8-, 12-pin



All dimensions in mm

Description		N inv. poss.
AS4	axial, 4-pin, Connector connected to encoder housing	–
AS5	axial, 5-pin, Connector connected to encoder housing	–
AS8	axial, 8-pin, Connector connected to encoder housing	•
AS12	axial, 12-pin, Connector connected to encoder housing	•

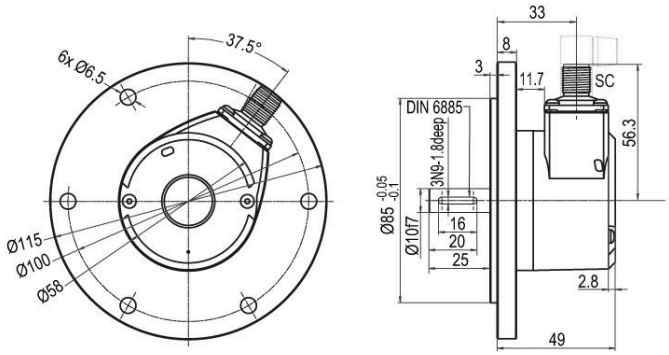
Assignments

	AS4	AS5	AS8	AS8	AS12
	4-pin	5-pin	8-pin	8-pin	12-pin
					
Circuit	C3, C4, C5, C6, C7	C3, C4, C5, C6, C7	D3, D4, D5, D6, D7, C1, C2	D8	D3, D4, D5, D6, D7, C1, C2
GND	3	3	1	1	3
(+) Vcc	1	1	2	2	1
A	2	4	3	3	4
B	4	2	4	5	6
N	–	5	5	–	8
–	–	–	–	–	–
A inv.	–	–	6	4	9
B inv.	–	–	7	6	7
N inv.	–	–	8	–	10
n. c.	–	–	–	7, 8	2, 5, 11, 12
Shield	–	–	–	–	–

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Encoder EI30 O 115 TS

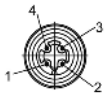
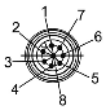
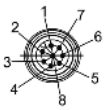
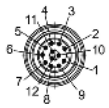
Sensor-connector (M12x1) RS, radial, 4-, 5-, 8-, 12-pin



All dimensions in mm

Description		N inv. poss.
RS4	radial, 4-pin, Connector connected to encoder housing	–
RS5	radial, 5-pin, Connector connected to encoder housing	–
RS8	radial, 8-pin, Connector connected to encoder housing	•
RS12	radial, 12-pin, Connector connected to encoder housing	•

Assignments

	RS4	RS5	RS8	RS8	RS12
	4-pin	5-pin	8-pin	8-pin	12-pin
					
Circuit	C3, C4, C5, C6, C7	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8	C1, C2, D3, D4, D5, D6, D7
GND	3	3	1	1	3
(+) Vcc	1	1	2	2	1
A	2	4	3	3	4
B	4	2	4	5	6
N	–	5	5	–	8
–	–	–	–	–	–
A inv.	–	–	6	4	9
B inv.	–	–	7	6	7
N inv.	–	–	8	–	10
n. c.	–	–	–	7, 8	2, 5, 11, 12
Shield	–	–	–	–	–

기술 데이터

Encoder EI30 O 115 TS

Options

Low-friction bearings	Order key
The encoder EI30 O 115 TS is also available as a particularly smooth- running low-friction encoder. The starting torque is thereby changed to ≤ 0.5 Ncm [0.708 in-ozf] and the protection class at the shaft input to IP50.	LB

IP67 Shafts sealed to IP67 (not for 1 Vpp Sin/Cos)		
The encoder EI30 O 115 TS can be supplied in a full IP67 version.		IP
Max. RPM:	3500 rpm	
Permitted Shaft-Loading, axial:	80 N [8.157 kp]	
Permitted Shaft-Loading, radial:	110 N [11.216 kp]	
Max. PPR:	25000 ppr	
Starting-torque:	approx. 4 Ncm [5.664 in-ozf] at ambient temperature	

Low temperature	Order key
The encoder EI30 O 115 TS with the output circuit types C1, C2, C3, C4, C5, C6, D3, D4, D5, D6 is also available with the extended temperature range -40 °C up to +85 °C [-40 °F up to +185 °F] (measured at the flange).	LT

Pressure equalising membrane	Order key
The EI30 O 115 TS shaft encoder is also optionally available with a pressure equalising membrane. This prevents water from penetrating into the encoder housing in the case of high air humidity. The IP67 protection level, temperature range and salt spray resistance are maintained. Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.	PE

Cable length	Order key
The encoder EI30 O 115 TS can be supplied with more than 2 m cable. The maximum cable length depends on the supply voltage and the frequency. Please extend the standard order code with a three figure number, specifying the cable length in decimetres. Example: 5 m cable = 050	XXX = Decimeter

기술 데이터

Encoder EI30 O 115 TS

Example Order No.	Type	
EI30 O 115 TS	EI30 O 115 TS	EI30 O 115 TS

	Shaft
10	10

	Pulses per revolution PPR:
5000	2, 5, 10, 15, 20, 25, 30, 36, 40, 48, 50, 60, 64, 72, 90, 100, 120, 125, 128, 150, 160, 180, 200, 216, 240, 250, 254, 256, 300, 314, 320, 360, 400, 500, 512, 571, 600, 720, 750, 768, 800, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 2880, 3000, 3600, 4000, 4096, 4685, 5000, 5760, 6000, 7200, 7500, 8000, 8192, 10000, 10240, 12000, 12500, 15000, 16384, 20000, 20480, 25000 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request

	Channels:
N	B, N (SIN: B)

	Output circuit				
	Resolution PPR	Power supply VDC	Output circuit	–	Order key
C6	up to 2500	5 - 30	HTL (TTL at 5 VDC)	–	C7
		5 - 30	HTL, inv. (TTL/RS422 comp. at 5 VDC)	–	D7
	up to 5000	4.75 - 5.5	TTL	–	C5
		4.75 - 5.5	TTL, RS422 comp., inverted	–	D5
		10 - 30	HTL	–	C6
		10 - 30	HTL inverted	–	D6
		10 - 30	TTL, RS422 comp., inverted	–	C1
	(higher frequency) 1200 up to 25000	4.75 - 5.5	TTL	–	C3
		4.75 - 5.5	TTL, RS422 comp., inverted	–	D3
		10 - 30	HTL	–	C4
		10 - 30	HTL inverted	–	D4
		10 - 30	TTL, RS422 comp., inverted	–	C2
	1024, 2048	4.75 - 5.5	1 Vpp sin/cos	–	D8

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Encoder EI30 O 115 TS

Electrical connections

	Description	N inv. poss.	Order key
	Cable: length (2 m standard)		
	axial, shield not connected	•	A-N
	axial, shield connected to encoder housing	•	A-C
	radial, shield not connected	•	R-N
	radial, shield connected to encoder housing	•	R-C
	Connector: (shield connected to encoder housing)		
	connector, M16x0.75, 5-pin, axial	–	A5
	connector, M16x0.75, 5-pin, radial	–	R5
	connector, M16x0.75, 6-pin, axial	–	A6
	connector, M16x0.75, 6-pin, radial	–	R6
	connector, M16x0.75, 8-pin, axial	•	A8
	connector, M16x0.75, 8-pin, radial	•	R8
	connector, M16x0.75, 12-pin, axial	•	A12
A-N	connector, M16x0.75, 12-pin, radial	•	R12
	connector, M16x0.75, 7-pin, axial	–	A7
	connector, M16x0.75, 7-pin, radial	–	R7
	connector, M23, 12-pin, axial	•	A12M
	connector, clockwise pin count, M23, 12-pin, axial	•	AC12
	connector, M23, 12-pin, radial	•	R12M
	connector, clockwise pin count, M23, 12-pin, radial	•	RC12
	sensor-connector, M12x1, 4-pin, axial	–	AS4
	sensor-connector, M12x1, 4-pin, radial	–	RS4
	sensor-connector, M12x1, 5-pin, axial	–	AS5
	sensor-connector, M12x1, 5-pin, radial	–	RS5
	sensor-connector, M12x1, 8-pin, axial	•	AS8
	sensor-connector, M12x1, 8-pin, radial	•	RS8
	sensor-connector, M12x1, 12-pin, axial	•	AS12
	sensor-connector, M12x1, 12-pin, radial	•	RS12

Options

Description	Order key
Low-friction bearings	LB
IP67	IP
Low temperature	LT
Pressure equalising membrane	PE
Without option	Empty
Cable length	XXX = Decimeter

Example Order No.:	EI30 O 115 TS	10	5000	N	C6	A-N	EI30 O 115 TS	**Your encoder**

제품 키워드

제품 명칭: **EABB CCCDDEE FFFFFF GHHJKK LLMNNOPPP RR**

A	**회전 센서 유형** I: 증분형 S: 절대형, 싱글턴 M: 절대형, 멀티턴
BB	**시리즈** 10: Entry 30: 기본 50: 확장형 70: Advanced
CCC	**플랜지 직경** 024: 24mm 036: 36mm 058: 58mm 063: 63mm 067: 67mm 070: 70mm 080: 80mm 100: 100 mm 115: 115 mm
DD	**플랜지 유형** BB: 막힌 구멍 보어가 있는 중공축 CC: 클램핑 플랜지(컴팩트형) CF: 클램핑 플랜지(식품 및 음료용) CH: 클램핑 플랜지(중하중형) CL: 클램핑 플랜지 HI: 중공축(절연) HO: 중공축 HT: 중공축(특수 토크 지지대) RC: 원형 플랜지(36/40 클램핑 플랜지, 58은 6 mm 축 적용) RE: 원형 플랜지(확장 홀) RN: 원형 플랜지 SC: 스테이터 커플링 SF: 나사식 플랜지(53 클램핑 플랜지, 58 식품 및 음료용) SI: 서보 플랜지(증가된 축 하중 및 IP 보호) SQ: 스퀘어 플랜지 SR: 나사식 플랜지(36/40 클램핑 플랜지, 58 내식형) SY: 싱크로(증분형), 서보(36), 싱크로(58)(절대형) TM: 타코(115, 1mm 축, 58 모터 피드백) TS: 타코(10mm 축)
EE	**축/보어 직경** 06: 6mm 07: 7mm 08: 8mm 08: 8mm 10: 10mm 11: 11mm 12: 12mm 14: 14mm 15: 15 mm 06-72: 중공축/막힌 구멍 보어(6 ~ 72mm)
FFFFFF	**신호/분해능** Axxxxx: A Bxxxxx: AB Nxxxxx: ABN P16384: 프로그래밍 가능 xx: 싱글턴, 1 ~ 16비트 xx: 멀티턴, 0 ~ 43비트(싱글턴의 경우 00)
G	**갈바닉 절연(절대형에 한함)** 0: 제외 1: 있음
HH	**전원 공급(절대형에 한함)** 0: 10 ~ 32V DC/갈바닉 절연 1: 4.75 ~ 5.5V DC 2: 18 ~ 30V DC
J	**작동 원리** M: 자기식 O: 광학 방식 P: 광학 보간

제품 키워드

KK	**인터페이스** 01: RS485 07: SSI 2진 08: SSI Gray 35: CANopen 38: EtherCAT 48: PROFINET 58: EtherNet/IP
LL	**전기 연결** M08: 원형 커넥터 M8 M12: 원형 커넥터 M12 M16: 원형 커넥터 M16 M23: 원형 커넥터 M23 M12BC: 버스 커넥터
M	**케이블 출구** A: 액시얼 R: 레이디얼 T: 접선형
NN	**핀 개수** xx: 핀 개수
O	**차폐 연결(2m 케이블)(옵션)** C: 연결됨 N: 연결되지 않음
PPP	**케이블 길이** xxx: 케이블 길이(단위: dm)

참고

↳ 제공되는 모든 장치 유형 목록은 로이체의 웹 사이트 www.leuze.com을 참조하십시오.

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