

技术数据表

旋转编码器系列信息

配件编号: 90000420

EI30-P 115 TS

内容

- 技术参数
- 产品型号描述



图片可能不同

编码器_系列	EI 115 TS
编码器_基本原理	增量
编码器_工作原理	光学插值
编码器_法兰直径	Ø 115 mm
编码器_法兰型号	转速计法兰 (10 mm)
编码器_实心轴/空心轴H	实心轴
编码器_轴直径	Ø 10 mm
	Ø 12 mm
	Ø 7 mm
	Ø 8 mm
编码器_供电电压	10 ... 30 V DC
	4.75 ... 5.5 V DC
	5 ... 30V DC
编码器_输出电路	1 Vss Sin/Cos
	HTL
	HTL , 逆转
	TTL
	TTL , RS422 紧凑型 , 逆转
编码器_脉冲数	10000 I/U
	10240 I/U
	12000 I/U
	12500 I/U
	1440 I/U
	15000 I/U
	16384 I/U
	20000 I/U
	20480 I/U
	25000 I/U
	2880 I/U
	3000 I/U
	3600 I/U
	4000 I/U
	5760 I/U
	6000 I/U
	7200 I/U
	7500 I/U
	8000 I/U
	9182 I/U

技术参数

Encoder EI30 P 115 TS

Resolution

Pulses per revolution PPR	up to 25000 PPR
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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"]
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Shaft length	L: 25 mm [0.984"]
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Max. Permissible shaft loading radial	200 N [20.394 kp]
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Max. Permissible shaft loading axial	120 N [12.236 kp]
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Advice	Ø 7 mm [0.2761"] / Ø 8 mm [0.315"] / Ø 12 mm [0.472"] on request
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Bearings

Bearings type	2 precision ball bearings
Nominal 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
Nominal 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)
Electrical Safety:	according DIN VDE 0160

Duty information

Customs tariff number:	90318020
Country of origin:	Germany

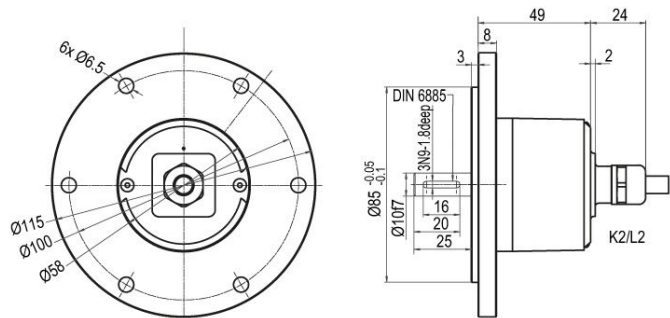
General Data

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)

技术参数

Encoder EI30 P 115 TS

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	•

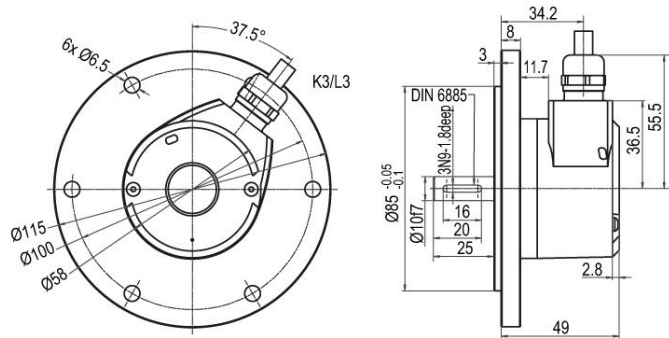
Assignments

	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

技术参数

Encoder EI30 P 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	•

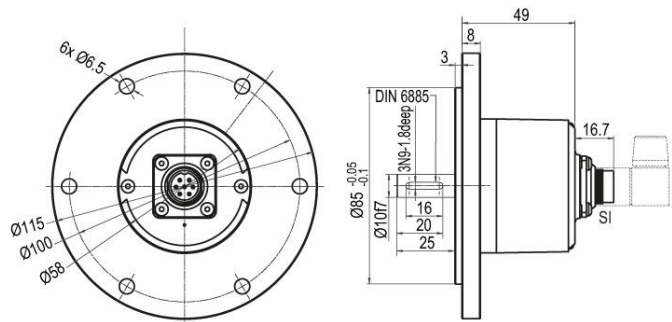
Assignments

	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

技术参数

Encoder EI30 P 115 TS

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



All dimensions in mm

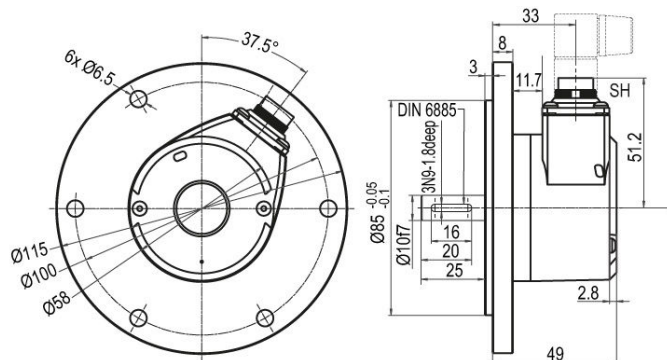
Description		N inv. poss.
A5	axial, 5-pin, Connector connected to encoder housing	—
A6	axial, 6-pin, Connector connected to encoder housing	—
A8	axial, 8-pin, Connector connected to encoder housing	•
A12	axial, 12-pin, Connector connected to encoder housing	•

Assignments					
	A5	A6	A8	A8	A12
	5-pin	6-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	1	6	1	1	K, L
(+) Vcc	2	1	2	2	M, B
A	3	2	3	3	E
B	4	4	4	4	H
N	5	3	5	—	C
—	—	—	—	—	—
A inv.	—	—	6	6	F
B inv.	—	—	7	7	A
N inv.	—	—	8	—	D
n. c.	—	5	—	5, 8	G, J
Shield	—	—	—	—	—

技术参数

Encoder EI30 P 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	•

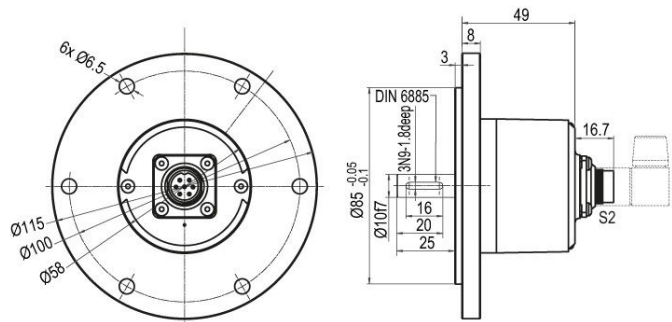
Assignments

	R5 5-pin	R6 6-pin	R8 8-pin	R8 8-pin	R12 12-pin	R12 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	—	—	—	—	—	—

技术参数

Encoder EI30 P 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

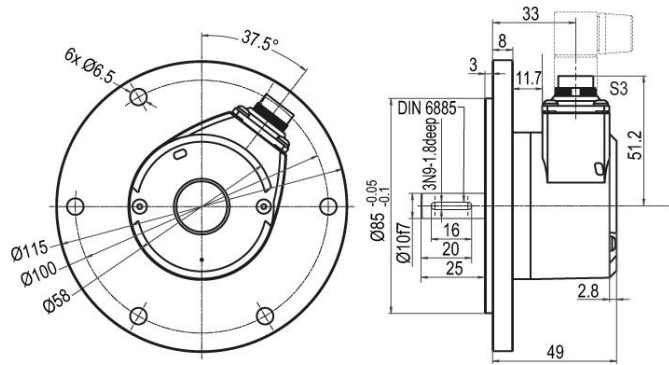
Assignments

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	–

技术参数

Encoder EI30 P 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	—

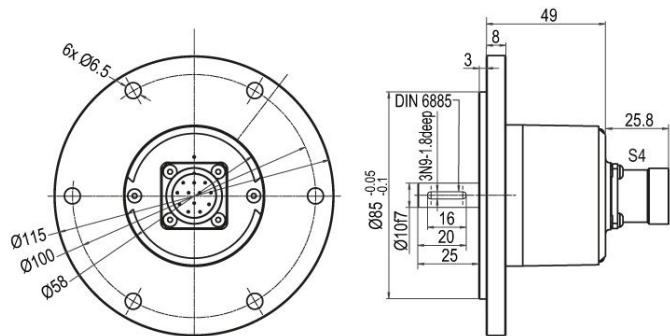
Assignments

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	—

技术参数

Encoder EI30 P 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

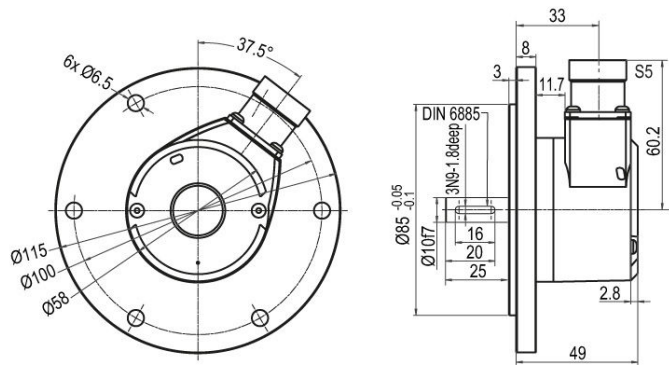
Assignments

	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	–	–	–

技术参数

Encoder EI30 P 115 TS

Connector (M23) R12M, radial, 12-pin



All dimensions in mm

Description

N inv. poss.

R12M radial, 12-pin, Connector connected to encoder housing

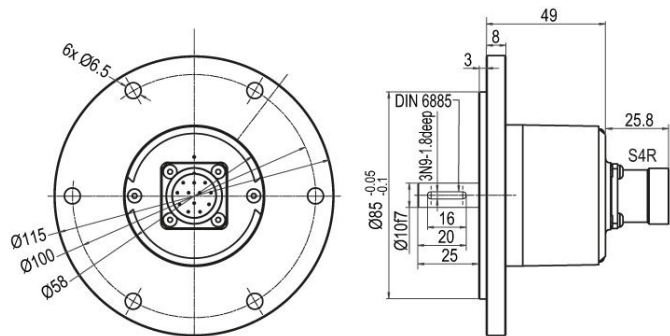
Assignments

	R12M	R12M	R12M
	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	–	–	–

技术参数

Encoder EI30 P 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

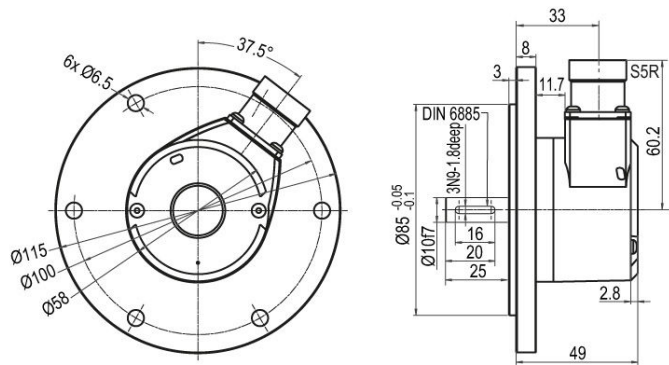
Assignments

	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	–	–	–

技术参数

Encoder EI30 P 115 TS

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



All dimensions in mm

Description

N inv. poss.

RC12 radial, 12-pin, Connector connected to encoder housing

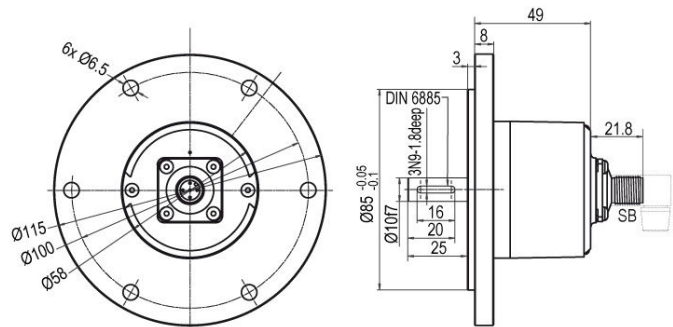
Assignments

	RC12	RC12	RC12
	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	—	—	—

技术参数

Encoder EI30 P 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	•

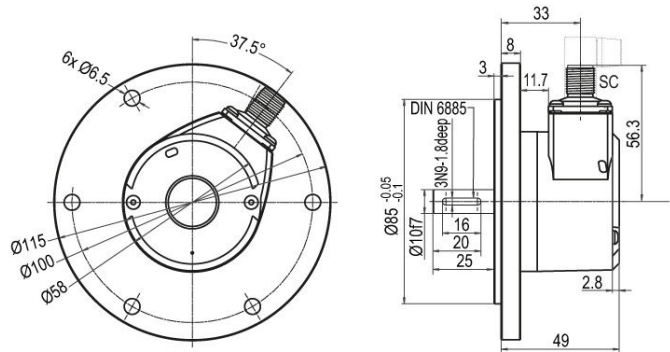
Assignments

	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	—	—	—	—	—

技术参数

Encoder EI30 P 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 4-pin	RS5 5-pin	RS8 8-pin	RS8 8-pin	RS12 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	—	—	—	—	—

技术参数

Encoder EI30 P 115 TS

Options

Low-friction bearings

Order key

The encoder EI30 P 115 TS is also available as a particularly smooth- running low-friction encoder. The starting torque is thereby changed to $\leq 0.5 \text{ Ncm}$ [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 P 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 P 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 $-40 \text{ }^{\circ}\text{C}$ up to $+85 \text{ }^{\circ}\text{C}$ [$-40 \text{ }^{\circ}\text{F}$ up to $+185 \text{ }^{\circ}\text{F}$] (measured at the flange).

LT

Pressure equalising membrane

Order key

The EI30 P 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.

PE

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.

Cable length

Order key

The encoder EI30 P 115 TS can be supplied with more than 2 m cable.

XXX = Decimeter

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

技术参数

Encoder EI30 P 115 TS

Example Order No.	Type				
EI30 P 115 TS	EI30 P 115 TS	EI30 P 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					
C6	Resolution PPR	Power supply VDC	Output circuit	–	Order key
	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
	(higher frequency) 1200 up to 25000	10 - 30	TTL, RS422 comp., inverted	–	C1
		4.75 - 5.5	TTL	–	C3
		4.75 - 5.5	TTL, RS422 comp., inverted	–	D3
		10 - 30	HTL	–	C4
	1024, 2048	10 - 30	HTL inverted	–	D4
		10 - 30	TTL, RS422 comp., inverted	–	C2
		4.75 - 5.5	1 Vpp sin/cos	–	D8

技术参数

Encoder EI30 P 115 TS

Electrical connections

Description		N inv. poss.	Order key
Cable: length (2 m standard)			
A-N	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
	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 P 115 TS	10	5000	N	C6	A-N	EI30 P 115 TS	Your encoder
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产品型号描述

产品名称：EABB CCCDDEE FFFFFFF GHHJKK LLMNOPPP RR

A	旋转编码器型号 I：增量 S：绝对，单圈 M：绝对，多圈
BB	系列 10：条目 30：基本型 50：扩展型 70：高级版
CCC	法兰直径 024: 24 mm 036: 36 mm 058: 58 mm 063: 63 mm 067: 67 mm 070: 70 mm 080: 80 mm 100：100 mm 115: 115 mm
DD	法兰型号 BB：带有盲孔钻孔的空心轴 CC：夹紧法兰（紧凑结构形式） CF：夹紧法兰（食品和饮料） CH：夹紧法兰（重负载规格） CL：夹紧法兰 HI：空心轴（绝缘） HO：空心轴 HT：空心轴（特殊扭矩支承） RC：圆形法兰（36/40 夹紧法兰，58 带 6-mm-轴） RE：圆形法兰（扩展钻孔） RN：圆形法兰 SC：定子联轴器 SF：螺栓法兰（53 夹紧法兰，58 食品和饮料） SI：伺服法兰（高级轴负载和 IP 地址） SQ：方形法兰 SR：螺栓法兰（36/40 夹紧法兰，58 耐腐蚀） SY：同步（增量），伺服(36)，同步(58)（绝对） TM：转速计（115 带 1-mm-轴，58 电机反馈） TS：转速计（10-mm-轴）
EE	轴-/钻孔直径 06: 6 mm 07: 7 mm 08: 8 mm 08: 8 mm 10: 10 mm 11: 11 mm 12: 12 mm 14: 14 mm 15: 15 mm 06-72：空心/盲孔钻孔 (6 ... 72 mm)
FFFFFF	信号/分辨率 Axxxxx: A Bxxxxx: AB Nxxxxx: ABN P16384：可编程 xx：单圈，1 ... 16 位 xx：多圈，0 ... 43 位（单圈时为 00）
G	电隔离（仅绝对） 0：无 1：带有
HH	供电电源（仅绝对） 0：10 ... 32 V DC/带电隔离 1: 4.75 ... 5.5 V DC 2: 18 ... 30 V DC
J	工作原理 M：磁性 O：光学 P：光学插值

产品型号描述

KK	接口 01: RS485 07 : SSI 二进制 08: SSI Gray 35: CANopen 38: EtherCAT 48: PROFINET 58: EtherNet/IP
LL	电气连接 M08 : 圆形插头 M8 M12 : 圆形插头 M12 M16 : 圆形插头 M16 M23 : 圆形插头 M23 M12BC : 总线罩插头
M	电缆出口 A : 轴向 R : 径向 T : 正切
NN	引脚数 xx : 引脚数
O	屏蔽接口 (2-m-电缆) (可选) C : 已连接 N : 未连接
PPP	电缆长度 xxx : 电缆长度 (单位为 dm)

注意

	所有可用设备类型列表请查阅劳易测的网站 www.leuze.com 。
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