

Hoja técnica

Información sobre la serie de encoders

Código: 90000470

EI30-P 100 HI

Contenido

- Datos técnicos
- Código de producto



La figura puede variar

Encoder_Serie	EI 100 HI
Encoder_Principio básico	incremental
Encoder_Principio de funcionamiento	interpolado ópticamente
Encoder_Diámetro de la brida	Ø 100 mm
Encoder_Tipo de brida	Eje hueco aislado
Encoder_Eje macizo/Eje hueco	Eje hueco
Encoder_Diámetro del eje	Ø 25 mm
	Ø 30 mm
	Ø 32 mm
	Ø 38 mm
	Ø 40 mm
	Ø 42 mm
Encoder_Tensión de alimentación	10 ... 30 V CC
	4,75 ... 5,5 V CC
	5 ... 30 V CC
Encoder_Conmutación de salida	1 Vss Sin/Cos
	HTL
	HTL, inv.
	TTL
	TTL, compatible con RS422, inv.
Encoder_Número de impulsos	10240 imp./rev.
	16384 imp./rev.
	20480 imp./rev.
	4096 imp./rev.
	8192 imp./rev.

Datos técnicos

Encoder EI30 P 100 HI

Resolution

Pulses per revolution PPR	up to 20480 PPR
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Mechanical Data

Flange	hollow shaft (through-bored)
Flange material	aluminum
Housing material	aluminum, powder coated
Torque supports	incl. 1 torque support
- 1. Spring plate compensation	axial: ± 0.8 mm [0.0315"], radial: ± 0.2 mm [0.0079"]
Flange diameter	$\varnothing$ 100 mm [$\varnothing$ 3.543"]

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1.5 Ncm [2.124 in-ozf] at ambient temperature
Fixing	2 x M4, DIN 913; Starting torque: 2,5 Nm

Shaft	$\varnothing$ 25 mm [$\varnothing$ 0.984"]
Shaft length	L: 42 mm [1.654"]
Insertion depth min.	52 mm [2.047"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	$\varnothing$ 28 mm [$\varnothing$ 1.102"]
Shaft length	L: 42 mm [1.654"]
Insertion depth min.	52 mm [2.047"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	$\varnothing$ 30 mm [$\varnothing$ 1.181"]
Shaft length	L: 42 mm [1.654"]
Insertion depth min.	52 mm [2.047"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	$\varnothing$ 32 mm [$\varnothing$ 1.26"]
Shaft length	L: 42 mm [1.654"]
Insertion depth min.	52 mm [2.047"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	$\varnothing$ 38 mm [$\varnothing$ 1.496"]
Shaft length	L: 42 mm [1.654"]
Insertion depth min.	52 mm [2.047"]
Max. Permissible shaft loading radial	200 N [20.394 kp]

Max. Permissible shaft loading axial	100 N [10.197 kp]
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Shaft	$\varnothing$ 40 mm [$\varnothing$ 1.575"]
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Shaft length	L: 42 mm [1.654"]
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Insertion depth min.	52 mm [2.047"]
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Max. Permissible shaft loading radial	200 N [20.394 kp]
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Max. Permissible shaft loading axial	100 N [10.197 kp]
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Shaft	$\varnothing$ 42 mm [$\varnothing$ 1.654"]
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Shaft length	L: 42 mm [1.654"]
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Insertion depth min.	52 mm [2.047"]
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Max. Permissible shaft loading radial	200 N [20.394 kp]
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Max. Permissible shaft loading axial	100 N [10.197 kp]
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Shaft	$\varnothing$ 45 mm [$\varnothing$ 1.772"]
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Shaft length	L: 42 mm [1.654"]
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Insertion depth min.	52 mm [2.047"]
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Max. Permissible shaft loading radial	200 N [20.394 kp]
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Max. Permissible shaft loading axial	100 N [10.197 kp]
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Bearings

Bearings type	2 precision ball bearings
Nominal service life	3 x 10 ¹⁰ revs. at 100 % rated shaft load 1 x 10 ¹¹ revs. at 40 % rated shaft load 1 x 10 ¹² revs. at 20 % rated shaft load
Max. operating speed	3500 rpm

Machinery Directive: basic data safety integrity level

MTTF _d	200 a
Mission time (TM)	25 a
Nominal service life (L10h)	1 x 10 ¹² revs. at 20 % rated shaft load and 3500 rpm
Diagnostic coverage (DC)	0 %

Electrical Data

Power supply/Current consumption	4.75 VDC up to 30 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 $\leq$ 5000 ppr: max. 200 kHz HTL $\leq$ 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

Datos técnicos

Encoder EI30 P 100 HI

Electrical Data

Channels	B N and inverted signals
Load	max. 40 mA / channel @ 1 Vpp sin/cos: min. 120 Ohm
Circuit protection	circuit type C6 and 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

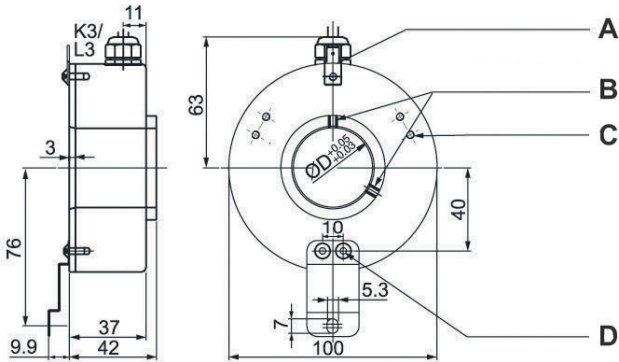
Duty information

Customs tariff number:	90318020
Country of origin:	Germany

General Data

Weight	approx. 720 g [25.397 oz]
Connections	cable or connector, radial
Protection rating (EN 60529)	IP54
Operating temperature	-20 °C up to +80 °C [-4 °F up to +176 °F] 1 Vpp: -10 °C up to +70 °C [+14 °F up to +158 °F]
Storage temperature	-30 °C up to +80 °C [-22 °F up to 176 °F]

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



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

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	C1, C2, D3, D4, D5, D6, D7	D8
GND	WH	WH	WH
(+) Vcc	BN	BN	BN
A	GN	GN	GN

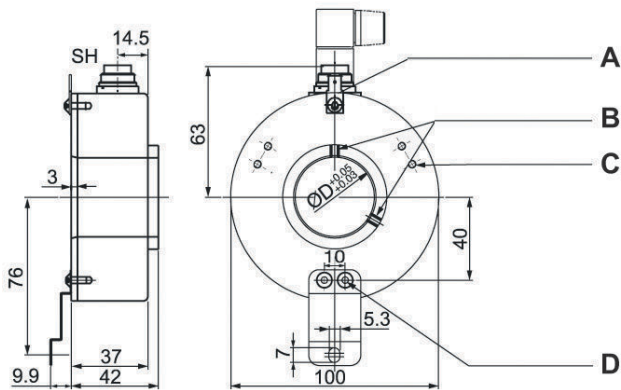
Datos técnicos

Encoder EI30 P 100 HI

Assignments

B	YE	YE	GY
N	GY	GY	BK
	–	–	–
A inv.	–	RD	YE
B inv.	–	BK, (BU at LT)	PK
N inv.	–	VT	–
Shield	flex	flex	flex

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



- A Plug-in connector for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

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	5	C	C
–	–	–	–	–	–	–
A inv.	–	–	6	6	F	F
B inv.	–	–	7	7	A	A

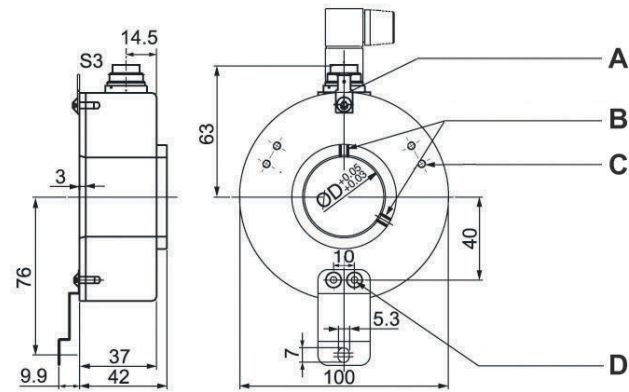
Datos técnicos

Encoder EI30 P 100 HI

Assignments

N inv.	-	-	8	8	D	D
n. c.	-	5	-	-	G, J	G, J
Shield	-	-	-	-	-	-

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



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

Description

N inv. poss.

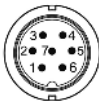
R7 radial, 7-pin, Connector connected to encoder housing

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Assignments

R7

7-pin

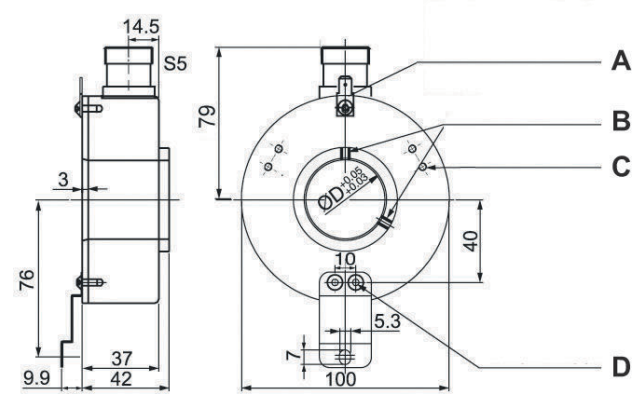


Circuit	C3, C4, C5, C6, C7
GND	1
(+) Vcc	2
A	3
B	4
N	5
-	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

Datos técnicos

Encoder EI30 P 100 HI

Connector (M23) R12M, radial, 12-pin



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

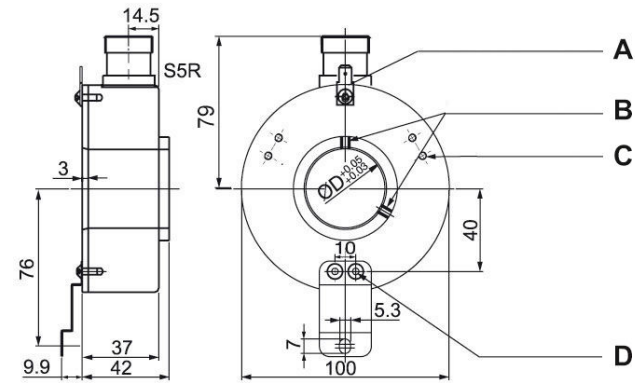
Description		N inv. poss.
R12M	radial, 12-pin, Connector connected to encoder housing	•

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	3
—	—	—	—
A inv.	—	6	6
B inv.	—	1	1
N inv.	—	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11
Shield	—	—	—

Datos técnicos

Encoder EI30 P 100 HI

Connector (M23) RC12, radial, 12-pin (clockwise)



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

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

Assignments

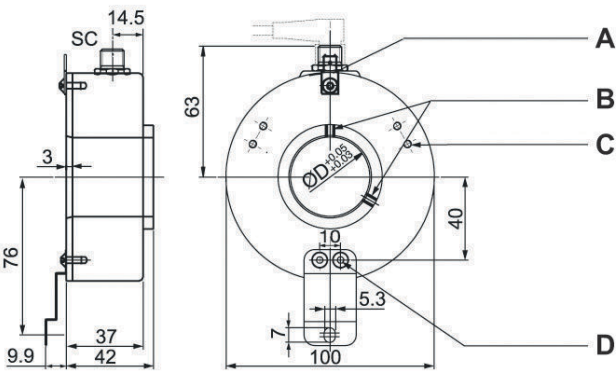
	RC12 12-pin	RC12 12-pin	RC12 12-pin
Circuit	C3, C4, C5, C6, C7	C1, C2, D3, D4, D5, D6, D7	D8
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	3
—	—	—	—
A inv.	—	6	6
B inv.	—	1	1
N inv.	—	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11
Shield	—	—	—

Hier waren die falschen Bilder drin: es fehlte unten rechts das R

Datos técnicos

Encoder EI30 P 100 HI

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



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

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	–	–	–	–	–

Datos técnicos

Encoder EI30 P 100 HI

Options

Low temperature	Order key										
The encoder EI30 P 100 HI with the output circuit types C4, C6, D4, D6, C3, C5, D3, D5, C1, C2 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 P 100 HI 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. <table><tr><td>Max. RPM:</td><td>1500 rpm</td></tr><tr><td>Permitted Shaft-Loading, axial:</td><td>100 N [10.197 kp]</td></tr><tr><td>Permitted Shaft-Loading, radial:</td><td>120 N [12.236 kp]</td></tr><tr><td>Max. PPR:</td><td>20480 ppr</td></tr><tr><td>Starting-torque:</td><td>approx. 5 Ncm [7.081 in-ozf] at ambient temperature</td></tr></table>	Max. RPM:	1500 rpm	Permitted Shaft-Loading, axial:	100 N [10.197 kp]	Permitted Shaft-Loading, radial:	120 N [12.236 kp]	Max. PPR:	20480 ppr	Starting-torque:	approx. 5 Ncm [7.081 in-ozf] at ambient temperature	PE
Max. RPM:	1500 rpm										
Permitted Shaft-Loading, axial:	100 N [10.197 kp]										
Permitted Shaft-Loading, radial:	120 N [12.236 kp]										
Max. PPR:	20480 ppr										
Starting-torque:	approx. 5 Ncm [7.081 in-ozf] at ambient temperature										
Cable length	Order key										
The encoder EI30 P 100 HI 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										

Datos técnicos

Encoder EI30 P 100 HI

Example Order No.	Type				
EI30 P 100 HI	EI30 P 100 HI	EI30 P 100 HI			
Shaft					
25	25; 28; 30; 32; 38; 40; 42; 45				
Pulses per revolution PPR:					
1024	512, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request				
Channels:					
N	B, N				
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
		10 - 30	HTL inverted	—	D4
		10 - 30	TTL, RS422 comp., inverted	—	C2
	1024, 2048	4.75 - 5.5	1 Vpp sin/cos	—	D8

Datos técnicos

Encoder EI30 P 100 HI

Electrical connections

Description		N inv. poss.	Order key
Cable: length (2 m standard)			
R-N	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, radial	–	R5
	connector, M16x0.75, 6-pin, radial	–	R6
	connector, M16x0.75, 8-pin, radial	•	R8
	connector, M16x0.75, 12-pin, radial	•	R12
	connector, M16x0.75, 7-pin, radial	–	R7
	connector, M23, 12-pin, radial	•	R12M
	connector, clockwise pin count, M23, 12-pin, radial	•	RC12
	sensor-connector, M12x1, 4-pin, radial	–	RS4
	sensor-connector, M12x1, 5-pin, radial	–	RS5
	sensor-connector, M12x1, 8-pin, radial	•	RS8
	sensor-connector, M12x1, 12-pin, radial	•	RS12

Options

Description		Order key
Low temperature		LT
IP55		PE
Without option		Empty
Cable length		XXX = Decimeter

Example Order No.:	EI30 P 100 HI	25	1024	N	C6	R-N	EI30 P 100 HI	Your enco- der
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Código de producto

Denominación del artículo: EABB CCCDDEE FFFFFFF GHJJKK LLMNNOPPP RR

A	Tipo de codificador rotatorio I: Incremental S: Absoluto, Singleturn M: Absoluto, Multiturn
BB	Serie 10: Entry 30: Basic 50: Extended 70: Advanced
CCC	Diámetro de la brida 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	Tipo de brida BB: Eje hueco con orificio ciego CC: Brida de sujeción (diseño compacto) CF: Brida de sujeción (alimentos y bebidas) CH: Brida de sujeción (ejecución para carga pesada) CL: Brida de sujeción HI: Eje hueco (aislado) HO: Eje hueco HT: Eje hueco (brazo de torsión especial) RC: Brida redonda (36/40 brida de sujeción, 58 con eje de 6 mm) RE: Brida redonda (orificios ampliados) RN: Brida redonda SC: Acoplamiento de estátor SF: Brida roscada (53 brida de sujeción, 58 alimentos y bebidas) SI: Brida servo (carga del eje y protección IP ampliadas) SQ: Brida cuadrada SR: Brida roscada (36/40 brida de sujeción, 58 resistente a la corrosión) SY: Synchro (incremental), Servo (36), Synchro (58) (absoluto) TM: Tacómetro (115 con eje de 1 mm, 58 retroalimentación del motor) TS: Tacómetro (eje de 10 mm)
EE	Diámetro del eje/orificio 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: Orificio hueco/ciego (6 ... 72 mm)
FFFFFF	Señal/Resolución Axxxx: A Bxxxx: AB Nxxxx: ABN P16384: Programable xx: Singleturn, 1 ... 16 bits xx: Multiturn, 0 ... 43 bits (00 con Singleturn)
G	Separación galvánica (solo absoluto) 0: sin 1: con
HH	Alimentación de tensión (solo absoluto) 0: 10 ... 32 V CC/con separación galvánica 1: 4,75 ... 5,5 V CC 2: 18 ... 30 V CC
J	Principio de funcionamiento M: magnético O: óptico P: interpolado ópticamente

Código de producto

KK	Interfaz 01: RS485 07: SSI binario 08: SSI Gray 35: CANopen 38: EtherCAT 48: PROFINET 58: EtherNet/IP
LL	Conexión eléctrica M08: Conector redondo M8 M12: Conector redondo M12 M16: Conector redondo M16 M23: Conector redondo M23 M12BC: Conector de cubierta de bus
M	Salida de cable A: Axial R: Radial T: Tangencial
NN	Número de polos xx: Número de polos
O	Conexión de blindaje (cable de 2 m) (opcional) C: conectado N: no conectado
PPP	Longitud de cable xxx: Longitud de cable (en dm)

Nota

	Encontrará una lista con todos los tipos de equipo disponibles en el sitio web de Leuze: www.leuze.com .
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