Technical data sheet
Rotary encoder Series Information
Part no.: 91000210
EM-M 058 BB SSI



For Illustration purposes only

Contents

- Technical data
- Part number code

Series	EM-M 058 BB
Basic principle	absolute
Operating principle	magnetic
Flange diameter	Ø 58 mm
Flange type	Blind hole
Solid shaft/Hollow shaft	Hollow shaft
Shaft diameter	Ø 10 mm
	Ø 12 mm
	Ø 14 mm
	Ø 15 mm
	Ø 6 mm
	Ø 6,35 mm [Ø 1/4"]
	Ø 7 mm
	Ø 8 mm
	Ø 9,525 mm [Ø 3/8"]
Supply voltage	4.75 ... 32 V DC
Output circuit	A-C
	M12A08S
	M12R08S
	R-C
	R-IPC
Pulse count	1 ... 16 Bit / 0 ... 43 Bit

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Encoder EM-M 058 BB SSI

Mechanical Data

Flange	hollow shaft (blind-bored)
Flange material	aluminum
Housing material	Aluminum die cast, powder coated; Integrated magnetic shielding
Torque supports	incl. 1 torque support EA 10001
- 1. Spring plate compensation	axial: ±0.8 mm [0.0315"], radial: ±0.2 mm [0.0079"]
- Max. operating speed	6000 rpm up to max. protection rating +60 °C
- 2. Cylinder pin 4 mm	needs accessories EA 10005
- Compensation	axial: ±0.5 mm [0.0197"], radial: ±1.5 mm [0.0591"], Max. operating speed: 3000 rpm
Flange diameter	Ø 58 mm [Ø 2.283"]

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1.6 Ncm [2.266 in-ozf] at ambient temperature
Fixing	permanently attached clambing ring
Shaft	Ø 6 mm [Ø 0.236"]
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 6.35 mm [Ø 1/4"] Order No: 2Z
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 7 mm [Ø 0.276"]
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 8 mm [Ø 0.315"]
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 9.525 mm [Ø 3/8"] Order No: 4Z
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 10 mm [Ø 0.394"]
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 12 mm [Ø 0.472"]
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 12.7 mm [Ø 1/2"] Order No. 3Z
Advice	with adapter sleeve
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 14 mm [Ø 0.551"]
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]
Shaft	Ø 15 mm [Ø 0.591"]
Shaft length	L: 12 mm [0.472"]
Insertion depth min.	11 mm [0.433"]
Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

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Insertion depth max.	15 mm [0.591"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

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 1 x 10'11 revs. at 20 % rated shaft load
Max. operating speed	6000 rpm

Machinery Directive: basic data safety integrity level

$MTTF_d$	1000 a
Mission time (TM)	20 a
Nominale service life (L10h)	1 x 10'11 revs. at 20 % rated shaft load and 6000 rpm
Diagnostic coverage (DC)	0 %

Electrical Data

Power supply/Current consumption	4,75 VDC up to 32 VDC: typ. 50 mA
Power consumption	max. 0.5 W
Power supply/Current consumption	4,75 VDC up to 5,5 VDC: typ. 80 mA
Power consumption	max. 0.44 W
Operating principle	magnetic

Sensor data

Single-turn technology	innovative hall sensor technology
Single-turn resolution	up to 65,536 steps/360° (16 bit)
Single-turn accuracy	± 0.0878° (≤ 12 bit)
Single-turn repeat accuracy	± 0.0878° (≤ 12 bit)
Internal cycle time	≤ 600 µs
Multi-turn technology	Wiegand wire technology no battery and no gear.
Multi-turn resolution	up to 43 bit.

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 DIN EN 61326-1
Vibration: (DIN EN 60068-2-6)	300 m/s^2 (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	5000 m/s^2 (6 ms)
Electrial Safety:	according DIN VDE 0160
Turn on time:	<1,5 s

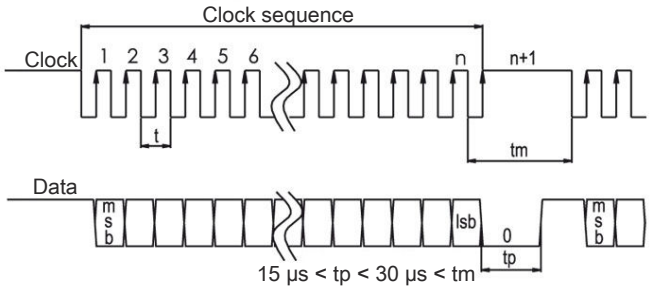
Duty information

Customs tariff number:	90318020
Country of origin:	Germany

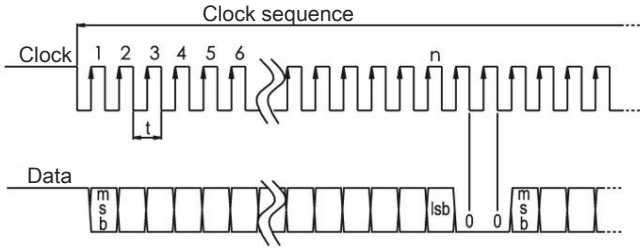
Interface

Interface:	SSI
Clock input:	via opto-coupler; I > 1.6 mA; U > 2.2 V
Clock frequency:	100 kHz up to 500 kHz, up to 2 MHz on request
Data output:	RS485/RS422 compatible
Output code:	gray or binary
SSI output:	Angular-/position value
Parity bit:	optional (even/odd)
Error bit:	optional
Turn on time:	<1,5 s
Configuration inputs Positive direction of counting: (View on shaft)	DIR = GND -> cw DIR = +UB -> ccw
Set to zero:	Set: Preset = +UB for 2 s Deaktivate: Preset = GND

Transmission protocoll SSI Single transmission:



Transmission protocol SSI Multipath transmission:



LED-behaviour:	
At Start / while booting:	- red gleam (< 2,3 s)
Malfunction:	- constant red gleam (> 2,3 s)
Normal function:	- constant green gleam
No supply:	- no gleam

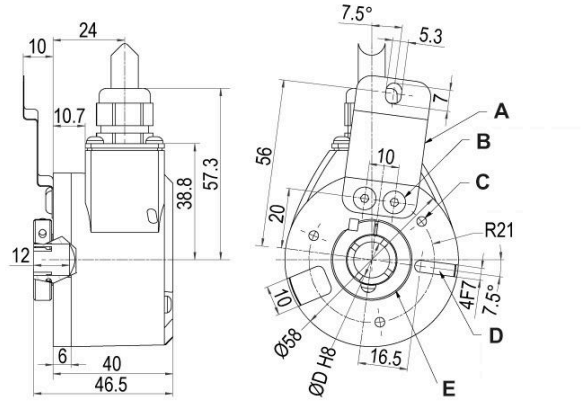
General Data

Weight	approx. 220 g [7.76 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet R-IPN: IP40, A-IPN: IP20
Operating temperature	-40 °C up to +85 °C [-40 °F up to +185 °F]
Storage temperature	-40 °C up to +100 °C [-40 °F up to +212 °F]

Technical data

Encoder EM-M 058 BB SSI

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



All dimensions in mm

L3 → R-C

A Spring plate as torque support
B 2x M4x0.76H, 6 deep
C 3x M4x0.7 6H, 6 deep
D Groove for cylinder pin as torque support DIN 7-D4mm
E Clamping ring

Description

R-C	radial, shield connected to encoder housing

Assignments

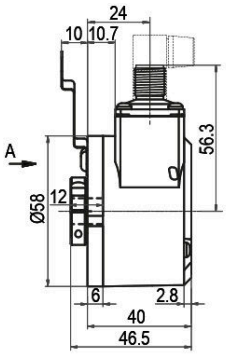
	R-C
GND	WH
(+) Vcc	BN
SSI CLK+	GN
SSI CLK-	YE
SSI DATA+	GY
SSI DATA-	PK
PRESET	BU
DIR	RD
Shield	housing

Technical data

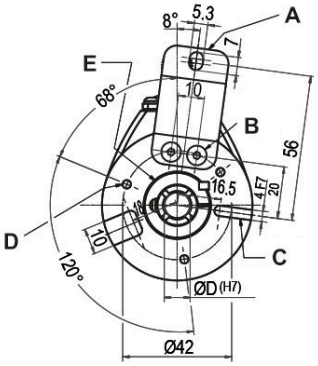
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Encoder EM-M 058 BB SSI

Connector, M12x1, M12R08S, radial, 8-pin



All dimensions in mm



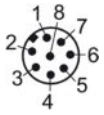
CC8 → M12R08S

A Spring plate as torque support
B 2x M4x0.7-6H, 6 deep
D Groove for cylinder pin as torque support DIN 7-D4mm
C 3x M4x0.7-6H, 6 deep
E Clamping ring

Description

M12R08S radial, 8-pin, shield connected to encoder housing

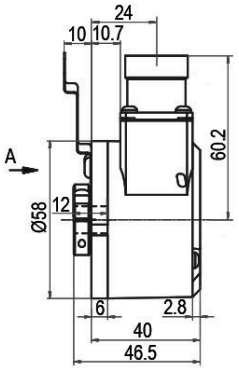
Assignments

	M12R08S
	
GND	1
(+) Vcc	2
SSI CLK+	3
SSI CLK-	4
SSI DATA+	5
SSI DATA-	6
PRESET	7
DIR	8
Shield	housing

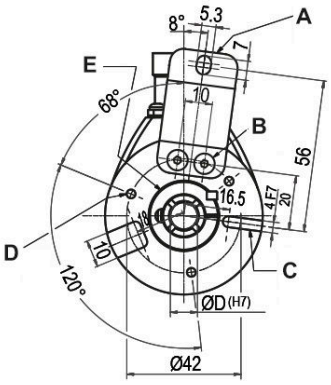
Technical data

Encoder EM-M 058 BB SSI

Connector, M23, M23R12, radial, 12-pin



All dimensions in mm



C5 → M23R12

A Spring plate as torque support
B 2x M4x0.7-6H, 6 deep
D Groove for cylinder pin as torque support DIN 7-D4mm
C 3x M4x0.7-6H, 6 deep
E Clamping ring

Description

M23R12	radial, 12-pin, shield connected to encoder housing

Assignments

	M23R12
	
GND	12
(+) Vcc	11
SSI CLK+	2
SSI CLK-	1
SSI DATA+	3
SSI DATA-	4
PRESET	9
DIR	8
Shield	housing

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Encoder EM-M 058 BB SSI

Options

Low-friction bearings	Order key
The encoder EM-M 058 BB SSI is also available as a particularly smooth- running low-friction encoder. The starting torque is thereby changed to approx. ≤ 0.6 Ncm [0.85 in-ozf] at ambient temperature and the protection class at the shaft input to IP50.	LB

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Encoder EM-M 058 BB SSI

Example Order No.	Type	Your encoder
EM50 058 BB	EM-M 058 BB	EM50 058 BB

	Shaft	Order key
06	Ø 6 mm [Ø 0.236"] with adapter sleeve	06
	Ø 6.35 mm [Ø 1/4"] Order No: 2Z with adapter sleeve	2Z
	Ø 7 mm [Ø 0.276"] with adapter sleeve	07
	Ø 8 mm [Ø 0.315"] with adapter sleeve	08
	Ø 9.525 mm [Ø 3/8"] Order No: 4Z with adapter sleeve	4Z
	Ø 10 mm [Ø 0.394"] with adapter sleeve	10
	Ø 12 mm [Ø 0.472"]	12
	Ø 12.7 mm [Ø 1/2"] Order No: 3Z with adapter sleeve	3Z
	Ø 14 mm [Ø 0.551"]	14
	Ø 15 mm [Ø 0.591"]	15

	Multi-turn Resolution	Order key
12	Multi-turn up to 43 bit (e. G. 12 bit) No Multi-turn = 00	12

	Data protocol	Order key
06	SSI binary SSI gray 07	06

	Power supply	Order key
0	4.75 V up to 32 V (standard)	0
	4.75 V up to 5.5 V	1

	Galvanic isolation	Order key
1	yes	1

	Electrical connections	Order key
	Cable:	
	radial, shield connected to encoder housing, with 2 m cable	R-C
M12R08S	**Connector:**	
	sensor-connector, M12x1, 8-pin, radial, shield connected to encoder housing	M12R08S
	connector, M23, 12-pin, radial, shield connected to encoder housing	M23R12

	Options	Order key
	Without option	Empty
	Low-friction bearings	LB

Part number code

Part designation: **EABB CCCDDEE FFFFFF GHHJKK LLMNNOPPP RR**

A	**Rotary encoder type** I: Incremental S: Absolute, singleturn M: Absolute, multiturn
BB	**Series** 10: Entry 30: Basic 50: Extended 70: Advanced
CCC	**Flange diameter** 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	**Flange type** BB: Hollow shaft with blind hole CA: Clamp flange (additional 1.25") CC: Clamping flange (compact design) CF: Clamping flange (food and beverages) CH: Clamping flange (heavy-duty version) CL: Clamping flange HI: Hollow shaft (insulated) HO: Hollow shaft HT: Hollow shaft (special torque support) RC: Round flange (36/40 clamping flange, 58 with 6 mm shaft) RE: Round flange (expanded boreholes) RN: Round flange SC: Stator coupling SF: Screw flange (53 clamping flange, 58 food and beverages) SI: Servo flange (increased shaft load and IP protection) SQ: Square flange SR: Screw flange (36/40 clamping flange, 58 corrosion-resistant) SY: Synchro (incremental), Servo (36), Synchro (58) (absolute) TM: Speedometer (115 with 1 mm shaft, 58 motor feedback) TS: Speedometer (10 mm shaft)
EE	**Shaft / bore hole diameter** 06: 6 mm 07: 7 mm 08: 8 mm 08: 8 mm 10": 1/10 cone, 9.25 mm (3/8”) 10: 10 mm 11: 11 mm 12: 12 mm 14: 14 mm 15: 15 mm 06-72: Hollow bore / blind holes (6 – 72 mm) 2Z: 6.35 mm (1/4") 4Z: 9.525 mm (3/8")
FFFFFF	**Signal / resolution** Axxxxx: A Bxxxxx: AB Nxxxxx: ABN P16384: Programmable xx: Singleturn, 1 – 16 bit xx: Multiturn, 0 – 43 bit (00 for singleturn)
G	**Galvanic isolation (absolute only)** 0: without 1: with
HH	**Voltage supply (absolute only)** 0": 4.75 ... 32 V DC 0: 10 – 32 V DC/with galvanic isolation 1: 4.75 ... 5.5 V DC 2: 18 ... 30 V DC
J	**Operating principle** M: magnetic O: optical P: optically interpolated

Part number code

KK	**Interface** 01: RS485 06: SSI binary 07: SSI Gray 08: Ethernet universal 35: CANopen 38: EtherCAT 42: IO-Link 48: PROFINET 58: EtherNet/IP 68: CANopen lift 78: CAN SAE J1939
LL	**Electrical connection** M08: M8 connector M12: M12 connector M16: M16 connector M23: M23 connector M12BC: Bus cover connector
M	**Cable outlet** A: Axial R: Radial T: Tangential
NN	**No. of pins** xx: Number of pins
O	**Shield connection (2 cable) (optional)** C: connected N: not connected
PPP	**Cable length** xxx: Cable length (in dm)

Note

↳ A list with all available device types can be found on the Leuze website at www.leuze.com.

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