Technical data sheet
Rotary encoder Series Information
Part no.: 91000280
EM-M 058 SY IO



For Illustration purposes only

Contents

- Technical data
- Part number code

Series	EM-M 058 SY
Basic principle	absolute
Operating principle	magnetic
Flange diameter	Ø 58 mm
Flange type	Synchro flange
Solid shaft/Hollow shaft	Solid shaft
Shaft diameter	Ø 10 mm
	Ø 6 mm
	Ø 8 mm
	Ø 9,525 mm [Ø 3/8"]
Supply voltage	18 – 30 V DC
Output circuit	M12A05
	M12R05
Pulse count	1 ... 16 Bit / 0 ... 43 Bit

Technical data

Leuze

Encoder EM-M 058 SY IO

Mechanical Data

Flange	synchro flange
Flange material	aluminum
Housing material	stainless steel
Flange diameter	Ø 58 mm [Ø 2.283"]
Cam mounting	pitch 65 mm [2.4016 inches]

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1 Ncm [1.416 in-ozf] at ambient temperature
Shaft	Ø 6 mm [Ø 0.236"]
Advice	Attention: No option IP = full IP67 version
Shaft length	L: 12 mm [0.472"]
Max. Permissible shaft loading radial	125 N [12.746 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Shaft	Ø 8 mm [Ø 0.315"]
Advice	Attention: No option IP = full IP67 version
Shaft length	L: 19 mm [0.748"]
Max. Permissible shaft loading radial	125 N [12.746 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Shaft	Ø 9.525 mm [Ø 3/8"] Order No: 4Z
Advice	Attention: No option IP = full IP67 version
Shaft length	L: 20 mm [0.787"]
Max. Permissible shaft loading radial	220 N [22.433 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Shaft	Ø 10 mm [Ø 0.394"]
Shaft length	L: 20 mm [0.787"]
Max. Permissible shaft loading radial	220 N [22.433 kp]
Max. Permissible shaft loading axial	120 N [12.236 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	8000 rpm

Machinery Directive: basic data safety integrity level

$MTTF_d$	1300 a
Mission time (TM)	20 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	18 VDC up to 30 VDC: typ. 30 mA
Power consumption	max. 0.6 W
Operating principle	magnetic

Sensor data

Single-turn technology	innovative hall sensor technology
Single-turn resolution	65,536 steps/360° (16 bit)
Single-turn accuracy	± 0.0878° (≤ 12 bit)
Single-turn repeat accuracy	± 0.0878° (≤ 12 bit)
Internal cycle time	250 µs
Multi-turn technology	Wiegand wire technology no battery and no gear.
Multi-turn resolution	up to 32 bit with high precision value up to 43 bit.

Environmental data

ESD (DIN EN 61000-4-2):	4 kV
Burst (DIN EN 61000-4-4):	2 kV
Includes EMC:	DIN EN 61000-6-2 DIN EN 61326-2-3 DIN EN 61131-9
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:	DIN EN 61010-1 (VDE 0411-1) / IEC 61010-1 / UL 61010-1 / CSA C22.0 No. 61010-1-12
Turn on time:	<1 s

Duty information

Customs tariff number:	90318020
Country of origin:	Germany

Interface

Interface:	IO-Link Version: V1.1.4
Protocol:	• 2.8 Adjustable Switching Sensor, multi channel • 4.2.1 Measuring and Switching Sensor, high resolution, 1 channel • 4.2.2 Measuring and Switching Sensor, high resolution, 2 channel
Baud rate:	COM 3 230.4 kBit/s
Advice:	The standard settings and customer-specific adjustments in the parameterisation can be set using ISDUs, e.g. scaling, direction of rotation, etc.

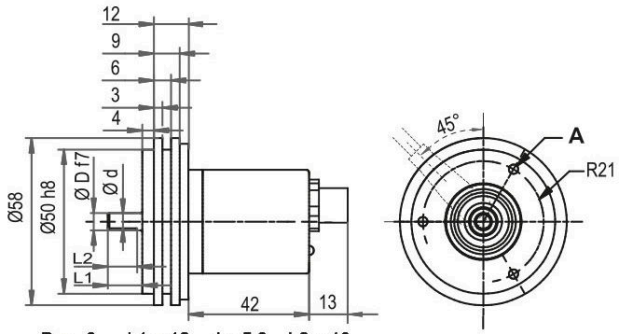
Technical data

Encoder EM-M 058 SY IO

General Data

Weight	approx. 224 g [7.901 oz]
Connections	connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65
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]

Connector, M12x1 M12A05, axial, 5-pin



D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

Option AX:
D = 6, L1 = 10, d = 5.3, L2 = 8

A M4x0.7 - 6H

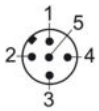
All dimensions in mm

IB5 → M12A05

Description

M12A05	axial, 5-pin, shield connected to encoder housing

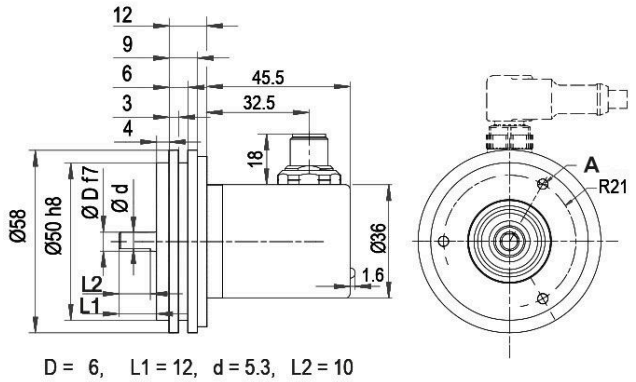
Assignments

	M12A05
	
(+) Vcc	1
GND	3
CANHigh	4
CANLow	2
CANGND shield	5

Technical data

Encoder EM-M 058 SY IO

Connector, M12x1 M12R05, radial, 5-pin



D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

Option AX:
D = 6, L1 = 10, d = 5.3, L2 = 8

A M4x0.7 - 6H

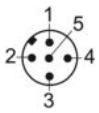
All dimensions in mm

IC5 → M12R05

Description

M12R05	radial, 5-pin, shield connected to encoder housing

Assignments

	M12R05
	
(+) Vcc	1
GND	3
CANHigh	4
CANLow	2
CANGND shield	5

Technical data

Leuze

Encoder EM-M 058 SY IO

Options

Low-friction bearings	Order key
The encoder EM-M 058 SY IO 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

Shafts sealed to IP67, only with Ø 10 mm shaft		Order key
The encoder EM-M 058 SY IO can be supplied in a IP67 version.		IP
Max. rpm:	3500 min^{-1}	
Permitted Shaft-Loading:	axial 100 N; radial 110 N	
Starting-torque:	approx. 4 Ncm at ambient temperature	

Shaft length 10 mm (Ø 6 mm)	Order key
The encoder EM-M 058 SY IO shaft: Ø 6 mm is also available with a shortened shaft L = 10 mm.	AX

Technical data

Leuze

Encoder EM-M 058 SY IO

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

	Shaft	Order key
06	Ø 6 mm [Ø 0.236"] Attention: No option IP = full IP67 version	06
	Ø 8 mm [Ø 0.315"] Attention: No option IP = full IP67 version	08
	Ø 9.525 mm [Ø 3/8"] Order No: 4Z Attention: No option IP = full IP67 version	4Z
	Ø 10 mm [Ø 0.394"]	10

	Single-turn Resolution	Order key
16	Single-turn resolution 1 bit up to 16 bit: (e. G. 6 bit)	16

	Multi-turn Resolution	Order key
43	Multi-turn resolution: (examples) 6 bit = 6 43 bit = 43	16

	Data protocol	Order key
42	IO-Link	42

	Power supply	Order key
2	18 V up to 30 V (standard)	2

	Galvanic isolation	Order key
0	no	0

	Electrical connections	Order key
	Connector:	
M12A05	sensor-connector, M12x1, 5-pin, axial, shield connected to encoder housing	M12A05
	sensor-connector, M12x1, 5-pin, radial, shield connected to encoder housing	M12R05

	Options	Order key
	Without option	Empty
	Low-friction bearings	LB
	Shafts sealed to IP67, only with Ø 10 mm shaft	IP
	Shaft length 10 mm (Ø 6 mm)	AX

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.

Leuze