MICRONOR®
mechanical products

ESAMX58 SERIES





For CNC-machine, Crane and Laboratory

- **With SSI- or BiSS-Interface**
- **Combined with SinCos incremental signal available**
- **SSI Binär / SSI Gray / BiSS Interface**
- **Immune against magnetic**
- **SET-button and LED for simple implementing**

Product description

The ESAMX58-series Multiturn-Encoder with SSI- respectively BiSS-Interface and optical sensoric dispose a resolution of max. 29 bit. A through hollow shaft up to 14mm and blind hole up to 15mm are also available in variation with additional SinCos or RS422 incremental signal.

Application

The application for this encoder is in industry. Especially in process indurstry as metal-structure. This encoder is insert in CNC lathe, motors and many other machines.

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Technical Data

Supply voltage	5 V DC (+5 %) or 10 ... 30 V DC
Power input (no-load)	5 V DC max. 80 mA 10 ... 30 V DC max. 50mA
Inverse-polarity protection of supply voltage	yes (on 10 ... 30 V DC)
Short-circuit proof output	yes
Max. speed hollow shaft execution	IP65 up to 70°C 12000 min-1, 10000 min-1 (long term operation) IP65 up to Tmax 8000 min-1, 5000 min-1 (long term operation) IP67 up to 70°C 11000 min-1, 9000 min-1 (long term operation) IP67 up to Tmax 8000 min-1, 5000 min-1 (long term operation)
Starting torque	IP65 < 0,01 Nm IP67 < 0,05 Nm
Mass moment of inertia	4,0 x 10-6 kgm2
Shaft capacity	radial 80 N axial 40 N
Weight	ca. 0,45 kg
Protection as EN 60529	Housing IP67 Shaft IP65, optional IP67
Operating temperature range	-40°C ... +90°C
Shock as EN 60068-2-27	2500 m/s2, 6 ms
Vibration as EN 60068-2-6	100 m/s2, 55 ... 2000 Hz

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SSI-Interface

Output driver		RS485 Transceiver-Typ
Permissible load / channel		max. +/- 20 mA
Signal level HIGH type.		3,8 V
LOW as load = 20 mA		typ. 1,3 V
Resolution singleturn		10 ... 14 bit and 17 bit
Numbers of turn (multiturn)		4096 (12 bit)
Code		Binär or Gray
SSI-rate		50 kHz ... 2 MHz
Data rate	ST-resolution ≤ 14 bit	≤ 1 µs
	ST-resolution ≥ 15 bit	4 µs
Mono Flop-time		≤ 15 µs

BiSS- Interface

Resolution singleturn	10 ... 14 bit und 17 bit
Numbers of turn (multiturn)	4096 (12 bit)
Code	Binär
Rate	50 kHz ... 10 MHz
Max. rate	< 10 µs, depend of rate and data length
Data rate	≤ 1 µs

Status output and LED

Output driver		Open Collector, intern Pull up resistance 22 kOhm
Permissible load		max. 20 mA
Signal level	HIGH	+V
	LOW	< 1 V
Active on		LOW

The optional LED (red) and the status-output is used to display various alarm or error messages. In normal operation, the LED is off and the status output is HIGH (open collector with int. pull up 22 kOhm).

A bright LED (status output LOW) shows:
– Error of sensor, singleturn or multiturn (contamination, breakage etc.)
– LED-error, failure or aging
– over- or under temperature

In SSI-mode the failure indication can only restore with switching off the supply voltage.

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SET-input / SET-key

Input	active on HIGH
Input type	comperator
Signal level	HIGH min: 60 % from +V (supply voltage.) max: +V LOW max: 25 % from +V (supply voltage.)
Input current	< 0,5 mA
Min. pulse length (SET)	10 ms
Timeout after SET-signal	14 ms

A HIGH signal at the SET input or by pressing the optional SET key (can only be operated with pen or ballpoint pen) allows the encoder to be set to zero at any position. Other preset values can be programmed at the factory. The SET input has signal delay time of approx. 1ms. After triggering the SET function, the encoder requires an internal processing time of approx. 15 ms until the new position data can be read. During this time, the LED lights up and the status output is LOW.

If the input is not used, the input should be set to 0 V (Ground encoder GND) to avoid interference.

DIR-Input

A HIGH signal switches the direction of rotation from standard CW to CCW. This feature can also be programmed in inverted mode at the factory. If DIR is switched over when switched on, this is interpreted as an error. The LED lights up and the status output switches to LOW. If the input is not used, the input should be set to 0 V (Ground encoder GND) to avoid interference.

(DIR-input)	1 ms

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Terminal assignment

Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)												
0 , 1	0, 1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	N/C	N/C	
		Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	-	-	-	Shirm
0 , 1	2, 3	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	N/C	N/C	Shirm
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)												
4	0, 1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	0Vsens	+Vsens	Shirm
		Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	-	GY-PK	RD-BU	PH
4	2, 3	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	0Vsens	+Vsens	Shirm
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)												
2, 3	0, 1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	A	A-	B	B-	Shirm
		Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY-PK	RD-BU	PH
2, 3	2, 3	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	A	A-	B	B-	Shirm
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)												
5	0, 1	Signal	0V	+V	C+	C-	D+	D-	A	A-	B	B-	0Vsens	+Vsens	Shirm
		Color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY-PK	RD-BU	PH
5	2, 3	Signal	0V	+V	C+	C-	D+	D-	A	A-	B	B-	0Vsnes	+Vsens	Shirm
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

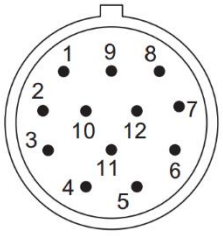
Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)												
0, 1	4, 5	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Shirm				
		Color	1	2	3	4	5	6	7	8	PH				

+V: Supply voltage encoder
+V DC views plug side, pin contact insert
0 V: Mass encoder GND (0V)
0 Vsens / +Vsens: Via the sensor cables of the rotary encoder the voltage applied to the encoder can be measured and be increased accordingly if necessary.

A, : Incremental-output channel A (Cosinus)
B, : Incremental-output channel B (Sinus)
C+, C-: Signal
D+, D-: Data signal
SET: Set-Input
DIR: Direction input Stat: status output
PH: Plug housing (shield)



M12-connector, 8pole



M23-connector, 12pole

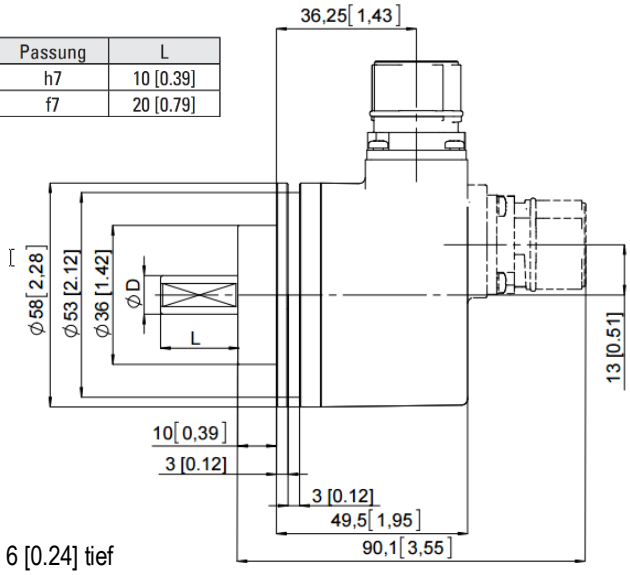
ESAMX58 SERIES

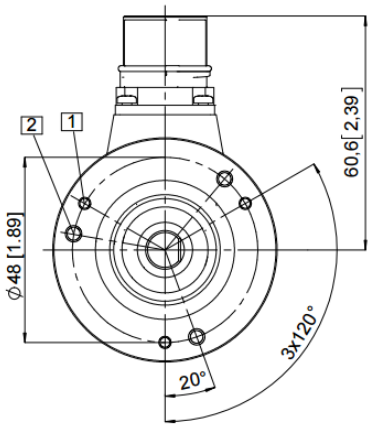


Reference drawing in mm

Clamping flange, ø 58

D	Passung	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]

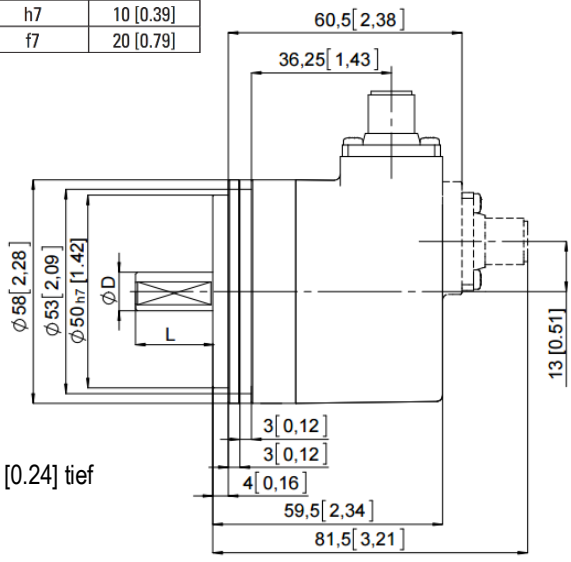


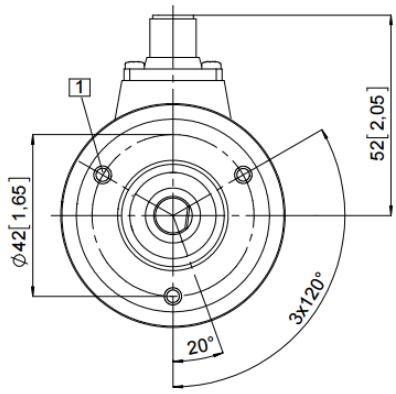


1 - 3 x M3, 6 [0.24] tief
2 - 3 x M4, 8 [0.32] tief

Synchro flange, ø 58

D	Passung	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]





1 - 3 x M4, 6 [0.24] tief

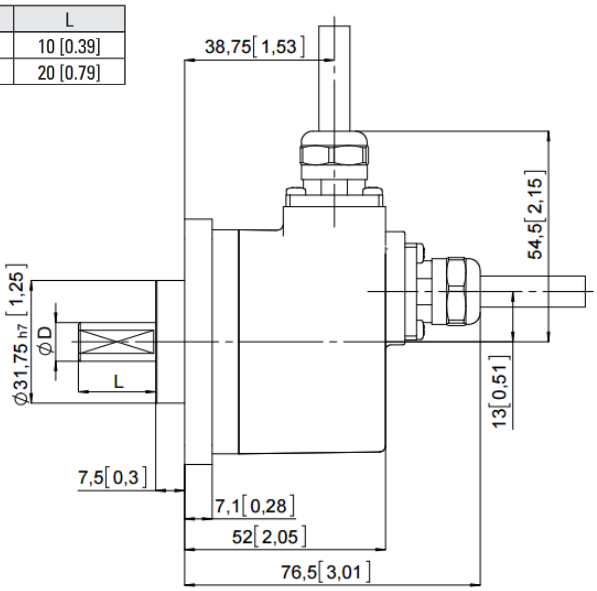
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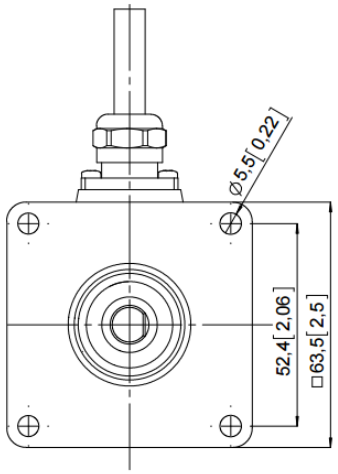
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Square flange, 63.5 x 63.5

D	Passung	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]





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ESAMX58 SERIES



Order Code

ESAMX 58 965 x. x x. x x x

965	ESAMX58
	Flange
0	Clamping flange, IP65, Ø58mm
1	Clamping flange, IP67, Ø58mm
2	Synchro flange, IP65, Ø58mm
3	Synchro flange, IP67, Ø58mm
4	Square flange, IP65, 63.5mm
5	Square flange, IP67, 63.5mm
	Hollow shaft
0	6x10mm
1	10x20mm
	Interface
0	SSI or BiSS 5V DC
1	SSI or BiSS 10…30V DC
2	SSI or BiSS, 2048ppr SinCosSpur 5V DC
3	SSI or BiSS, 2048ppr SinCos 10…30V DC
4	SSI or BiSS 5V DC, with sensor output
5	SSI or BiSS, 2048ppr SinCos 5V DC with sensor output
	Connection
0	Cable axial, 1m
1	Cable radial, 1m
2	M23-connector axial, 12pole
3	M23-connector radial, 12pole
4	M12-connector axial, 8pole
5	M12-connector radial, 8pole
	Code
0	SSI Binary
1	BiSS Binary
2	SSI Gray
	Resolution
0	10 bit ST
1	11 bit ST
2	12 bit ST
3	13 bit ST
4	14 bit ST
5	17 bit ST

For North American Sales & Support, contact Micronor Sensors +1-805-389-6600 or sales@micronor.com

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Rotary Measuring Technology
Absolute shaft encoder, Multiturn, SSI/BiSS

micronor sensors

Sendix Absolute, Multiturn ESAMX 58, SSI/BiSS

Order code:

ESAMX 58 . X X X X . X X X X

Type

Flange

- **1 = Clamping flange ø 58 IP 65**
- **2 = Synchro flange ø 58 mm, IP65**
- 3 = Clamping flange ø 58 mm, IP 67
- 4 = Synchro flange ø 58 mm, IP67
- 5 = Square flange 2,5" / 63,5 mm, IP 65
- 7 = Square flange 2,5" / 63,5 mm, IP 67

Shaft

- **1 = Shaft 6 mm x 10 mm (ø x L)[1)]**
- **2 = Shaft 10 mm x 20 mm (ø x L)[2)]**
- 3 = Shaft 1/4" x 7/8" (ø x L)
- 4 = Shaft 3/8" x 7/8" (ø x L)

Output circuit / Power supply

- 1 = SSI or BiSS interface, 5 V DC,
- **2 = SSI or BiSS, 10 … 30 V DC**
- 3 SSI or BiSS, and 2048 ppr SinCos 5 V DC
- 4 = SSI or BiSS, and 2048 ppr SinCos 10 ... 30 V DC M23
- 5 = SSI or BiSS, 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder
- 6= SSI or BiSS, and 2048 ppr SinCos 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder
- 7 SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 5 V DC,
- 8 SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 10 ... 30 V DC,
- 9 = SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder

Preferred types are indicated in ***bold***

Options (service)

- 1 = no option
- 2 = status LED
- **3 = SET button and status LED**

Input/output[3)]

- **2 = SET, DIR inputs additional status output**

Resolution[3)]

- A = 10 bits ST + 12 bits MT
- 1 = 11 bits ST + 12 bits MT
- 2 = 12 bits ST + 12 bits MT
- **3 = 13 bits ST + 12 bits MT**
- 4 = 14 bits ST + 12 bits MT
- 7 = 17 bits ST + 12 bits MT

Code

- B = SSI, binary
- C = BiSS, binary
- **G = SSI, gray**

Type of connection

- 1 = axial cable (1 m PVC)
- 2 = radial cable (1 m PVC)
- 3 = 12 pin plug M23, axial
- **4 = 12 pin plug M23, radial**
- 5 = 8 pin plug M12, axial
- 6 = 8 pin plug M12, radial

[3)] Resolution, preset value and counting direction factory-programmable

Use this ESAMX58 Ordering Code format for Micronor Sensors quotations and orders

Ex-proof zone 2, 22 on request

[1)] Preferred type with flange type 2

[2)] Preferred type with flange type 1

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ENAMX58 SERIE



For CNC-machine, Crane and Laboratory



- **With SSI- or BiSS-Interface**
- **Combined with SinCos incremental signal available**
- **SSI Binär / SSI Gray / BiSS Interface**
- **Immune against magnetic**
- **SET-button and LED for simple implementing**

Product description

The ENAMX58-series Multiturn-Encoder with SSI- respectively BiSS-Interface and optical sensoric dispose a resolution of max. 29 bit. A through hollow shaft up to 14mm and blind hole up to 15mm are also available in variation with additional SinCos or RS422 incremental signal.

Application

The application for this encoder is in industry. Especially in process indurstry as metal-structure. This encoder is insert in CNC lathe, motors and many other machines.

Technical Data

Supply voltage	5 V DC (+5 %) or 10 ... 30 V DC
Power input (no-load)	5 V DC max. 80 mA 10 ... 30 V DC max. 50mA
Inverse-polarity protection of supply voltage	yes (on 10 ... 30 V DC)
Short-circuit proof output	yes
Max. speed hollow shaft execution	IP65 up to 70°C 9000 min-1, 6000 min-1 (long term operation) IP65 up to Tmax 6000 min-1, 3000 min-1 (long term operation) IP67 up to 70°C 8000 min-1, 4000 min-1 (long term operation) IP67 up to Tmax 4000 min-1, 2000 min-1 (long term operation)
Starting torque	IP65 < 0,01 Nm IP67 < 0,05 Nm
Mass moment of inertia	7,0 x 10-6 kgm2
Shaft capacity	radial 80 N axial 40 N
Weight	ca. 0,45 kg
Protection as EN 60529	Housing IP67 Shaft IP65, optional IP67
Operating temperature range	-40°C ... +90°C
Shock as EN 60068-2-27	2500 m/s2, 6 ms
Vibration as EN 60068-2-6	100 m/s2, 55 ... 2000 Hz

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ENAMX58 SERIE



SSI-Interface

Output driver		RS485 Transceiver-Typ
Permissible load / channel		max. +/- 20 mA
Signal level HIGH type.		3,8 V
LOW as load = 20 mA		typ. 1,3 V
Resolution singleturn		10 ... 14 bit and 17 bit
Numbers of turn (multiturn)		4096 (12 bit)
Code		Binär or Gray
SSI-rate		50 kHz ... 2 MHz
Data rate	ST-resolution ≤ 14 bit	≤ 1 µs
	ST-resolution ≥ 15 bit	4 µs
Mono Flop-time		≤ 15 µs

BiSS- Interface

Resolution singleturn	10 ... 14 bit und 17 bit
Numbers of turn (multiturn)	4096 (12 bit)
Code	Binär
Rate	50 kHz ... 10 MHz
Max. rate	< 10 µs, depend of rate and data length
Data rate	≤ 1 µs

Status output and LED

Output driver		Open Collector, intern Pull up resistance 22 kOhm
Permissible load		max. 20 mA
Signal level	HIGH	+V
	LOW	< 1 V
Active on		LOW

The optional LED (red) and the status-output is used to display various alarm or error messages. In normal operation, the LED is off and the status output is HIGH (open collector with int. pull up 22 kOhm).

A bright LED (status output LOW) shows:
– Error of sensor, singleturn or multiturn (contamination, breakage etc.)
– LED-error, failure or aging
– over- or under temperature

In SSI-mode the failure indication can only restore with switching off the supply voltage.

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SET-input / SET-key

Input	active on HIGH
Input type	comperator
Signal level	HIGH min: 60 % from +V (supply voltage.) max: +V LOW max: 25 % from +V (supply voltage.)
Input current	< 0,5 mA
Min. pulse length (SET)	10 ms
Timeout after SET-signal	14 ms

A HIGH signal at the SET input or by pressing the optional SET key (can only be operated with pen or ballpoint pen) allows the encoder to be set to zero at any position. Other preset values can be programmed at the factory. The SET input has signal delay time of approx. 1ms. After triggering the SET function, the encoder requires an internal processing time of approx. 15 ms until the new position data can be read. During this time, the LED lights up and the status output is LOW.

If the input is not used, the input should be set to 0 V (Ground encoder GND) to avoid interference.

DIR-Input

A HIGH signal switches the direction of rotation from standard CW to CCW. This feature can also be programmed in inverted mode at the factory. If DIR is switched over when switched on, this is interpreted as an error. The LED lights up and the status output switches to LOW. If the input is not used, the input should be set to 0 V (Ground encoder GND) to avoid interference.

(DIR-input)	1 ms

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Terminal assignment

Interface	Terminal connection	Cable (unused wire must be individually isolated before commissioning)												
0 , 1	0	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	N/C	N/C	
		color	WH	BN	GN	YE	GY	PK	BU	RD	BK	-	-	-	Shield
0 , 1	1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	N/C	N/C	Shield
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Terminal connection	Cable (unused wire must be individually isolated before commissioning)												
4	0	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	0Vsens	+Vsens	Shield
		color	WH	BN	GN	YE	GY	PK	BU	RD	BK	-	GY-PK	RD-BU	PH
4	1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Stat	N/C	0Vsens	+Vsens	Shield
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Terminal connection	Cable (unused wire must be individually isolated before commissioning)												
2, 3	0	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	A	A-	B	B-	Shield
		color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY-PK	RD-BU	PH
2, 3	1	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	A	A-	B	B-	Shield
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

Interface	Terminal connection	Cable (unused wire must be individually isolated before commissioning)												
5	0	Signal	0V	+V	C+	C-	D+	D-	A	A-	B	B-	0Vsens	+Vsens	Shield
		color	WH	BN	GN	YE	GY	PK	BU	RD	BK	VT	GY-PK	RD-BU	PH
5	1	Signal	0V	+V	C+	C-	D+	D-	A	A-	B	B-	0Vsnes	+Vsens	Shield
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

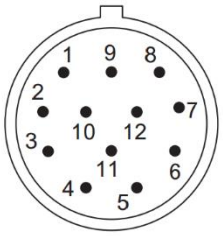
Interface	Terminal connection	Cable (unused wire must be individually isolated before commissioning)												
0, 1	2	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Shirm				
		color	1	2	3	4	5	6	7	8	PH				

+V: Supply voltage encoder
+V DC views plug side, pin contact insert
0 V: Mass encoder GND (0V)
0 Vsens / +Vsens: Via the sensor cables of the rotary encoder the voltage applied to the encoder can be measured and be increased accordingly if necessary.

A, : Incremental-output channel A (Cosinus)
B, : Incremental-output channel B (Sinus)
C+, C-: Signal
D+, D-: Data signal
SET: Set-Input
DIR: Direction input Stat: status output
PH: Plug housing (shield)



M12-Stecker, 8-polig



M23-Stecker, 12-polig

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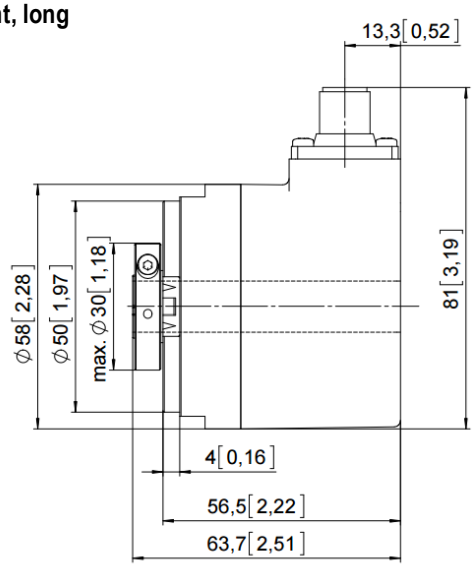
ENAMX58 SERIE

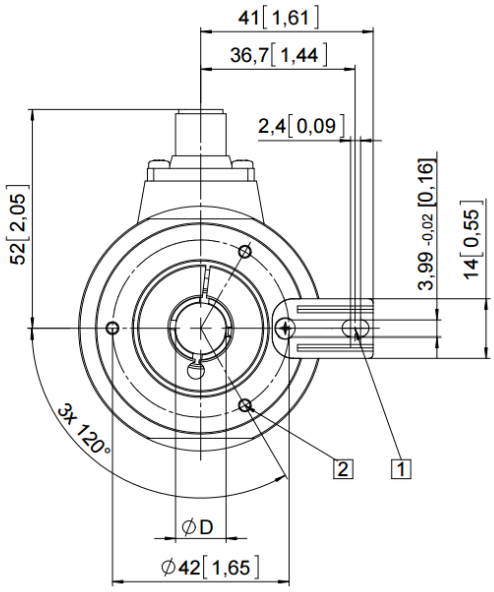


Dimension in mm

Flange with spring element, long
Type of flange 0 / 1

Hollow shaft tolerance H7

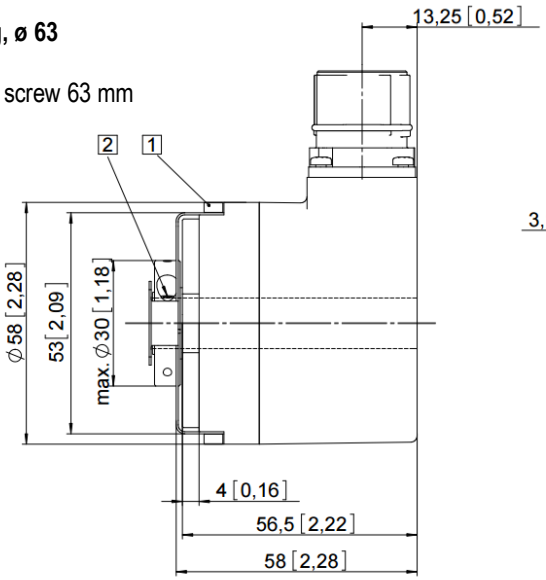


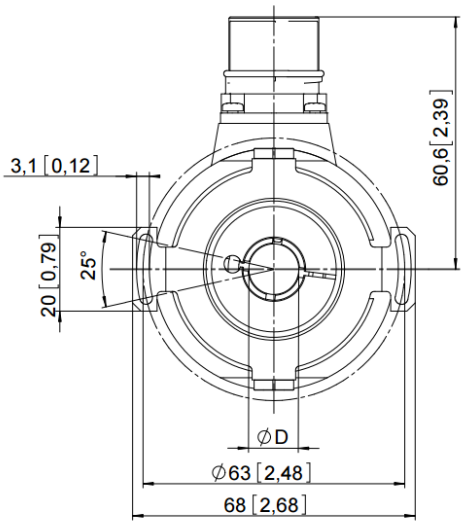


1 - Nut spring element, suggestion: cylinder pin as DIN 7, ø 4
2 - 3 x M3, 6 [0.24] deep
3 - Suggested torque for clamp ring 0,6 Nm

Flange with stator coupling, ø 63

Reference diameter for fixing screw 63 mm





1 - Fixing screw DIN 912 M2,5 x 6 (felt washer in delivery included)
2 - Suggested torque for clamp ring 0,6 Nm

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ENAMX58 SERIE



Order Code

ENAMX 58 961 x. x x. x x x

961	ENAMX58
	Flange
0	With spring element long, IP65
1	With spring element long, IP67
2	With stator coupling, IP65, Ø65mm
3	With stator coupling, IP67, Ø65mm
4	With stator coupling, IP65, Ø63mm
5	With stator coupling, IP67, Ø63mm
	Hollow shaft
0	Ø 10 mm
1	Ø 12 mm
2	Ø 14 mm
3	Ø 15 mm
4	Ø 9,52 mm
5	Ø 12,7 mm
	Interface
0	SSI or BiSS 5V DC
1	SSI or BiSS 10…30V DC
2	SSI or BiSS, 2048ppr SinCos Spur 5V DC
3	SSI or BiSS, 2048ppr SinCos 10…30V DC
4	SSI or BiSS 5V DC, with sensor output
5	SSI or BiSS, 2048ppr SinCos 5V DC with sensor output
	Connection
0	Cable radial, 1m
1	M23-connector radial, 12pole
2	M12-connector radial, 8pole
	CODE
0	SSI Binary
1	BiSS Binary
2	SSI Gray
	Resolution
0	10 bit ST
1	11 bit ST
2	12 bit ST
3	13 bit ST
4	14 bit ST
5	17 bit ST

For North American Sales & Support, contact Micronor Sensors +1-805-389-6600 or sales@micronor.com

micronor sensors

Rotary Measuring Technology
Absolute hollow shaft encoder, Multiturn, SSI/BiSS

micronor sensors

Absolute, Multiturn ENAMX 58, SSI/BiSS

Order code:

ENAMX 58. X X X X . X X X X

Type

Flange

- 1 = Flange with torque stop IP 65
- 2 = Flange with torque stop IP 67
- 3 = Flange with stator coupling pitch circle ø 65, IP 65
- 4 = Flange with stator coupling pitch circle ø 65, IP 67
- **5 = Flange with stator coupling pitch circle ø 63, IP 65**
- 6 = Flange with stator coupling pitch circle ø 63, IP 67

Hollow shaft

- 3 = ø 10 mm
- **4 = ø 12 mm**
- 5 = ø 14 mm
- 6 = ø 15 mm (blind hollow shaft)
- 8= ø 9,52 mm [3/8"]
- 9 = ø 12,7 mm [1/2"]

Output circuit / Power supply

- 1 = SSI or BiSS interface, 5 V DC,
- **2 = SSI or BiSS, 10 … 30 V DC**
- 3 SSI or BiSS, and 2048 ppr SinCos 5 V DC
- 4 = SSI or BiSS, and 2048 ppr SinCos 10 ... 30 V DC M23
- 5 = SSI or BiSS, 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder
- 6 = SSI or BiSS, and 2048 ppr SinCos 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder
- 7 = SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 5 V DC,
- 8 = SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 10 ... 30 V DC,
- 9 = SSI or BiSS and 2048 ppr-incremental track RS422 (TTL-comp.), 5 V DC, with sensor outputs for monitoring the supply voltage on the encoder

Options (service)

- 1 = no option
- 2 = status LED
- **3 = SET button and status LED**

Input/output[3)]

- **2 = SET, DIR inputs additional status output**

Resolution[3)]

- A = 10 bits ST + 12 bits MT
- 1 = 11 bits ST + 12 bits MT
- 2 = 12 bits ST + 12 bits MT
- **3 = 13 bits ST + 12 bits MT**
- 4 = 14 bits ST + 12 bits MT
- 7 = 17 bits ST + 12 bits MT

Code

- B = SSI, binary
- C = BiSS, binary
- **G = SSI, gray**

Type of connection

- 2 = radial cable (1 m PVC)
- **4 = 12 pin plug M23, radial**
- 6 = 8 pin plug M12, radial

[3)] Resolution, preset value and counting direction factory-programmable

Preferred types are indicated in ***bold***

Use this ESAMX58 Ordering Code format for Micronor Sensors quotations and orders

Ex-proof zone 2, 22 on request