

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 industry 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 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	comparator
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-	0Vsens	+Vsens	Shirm
		Pin	1	2	3	4	5	6	7	8	9	10	11	12	PH

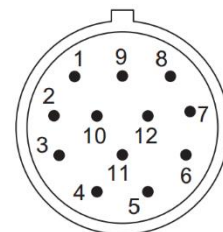
Interface	Type of connection	Cable (unused wire must be individually isolated before commissioning)													
0, 1	4, 5	Signal	0V	+V	C+	C-	D+	D-	SET	DIR	Shirm				
		Color	1	2	3	4	5	6	7	8	PH				

+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

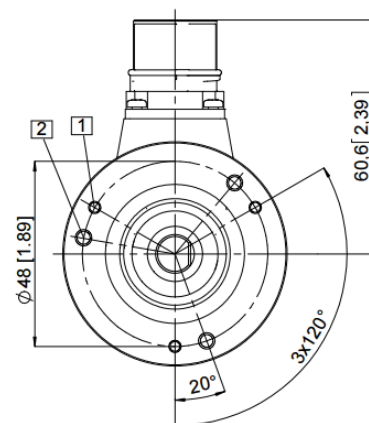
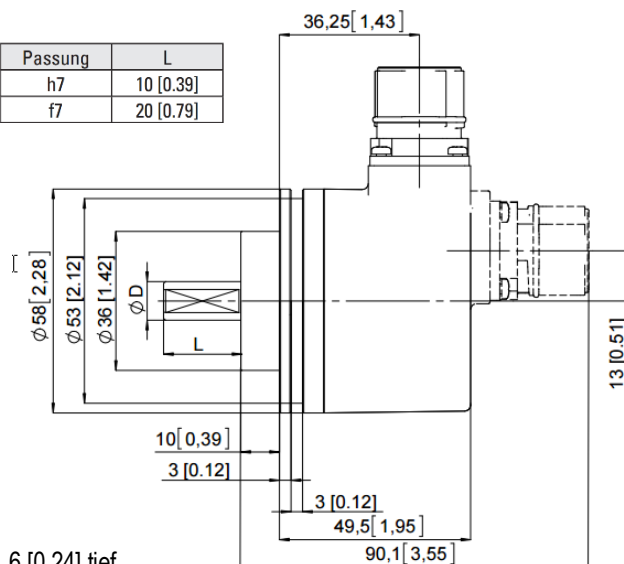
ESAMX58 SERIES



Reference drawing in mm

Clamping flange, $\varnothing 58$

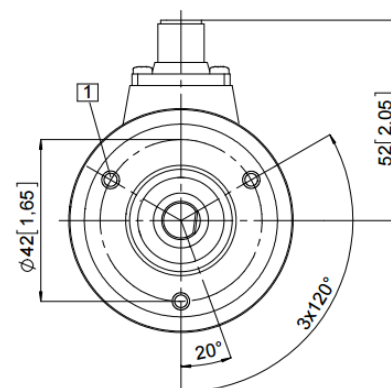
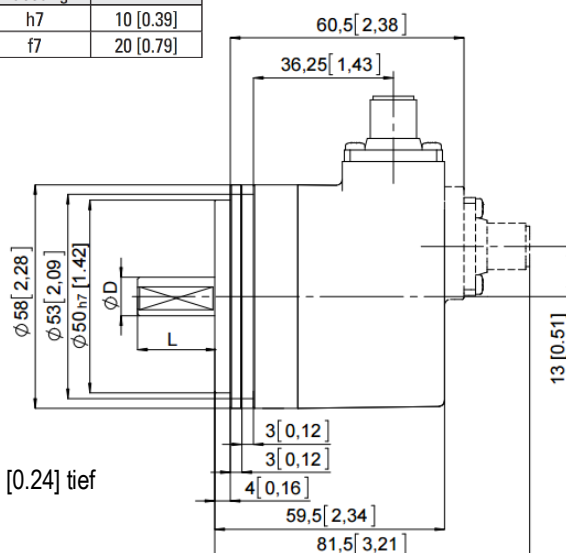
D	Passung	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]



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

Synchro flange, $\varnothing 58$

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



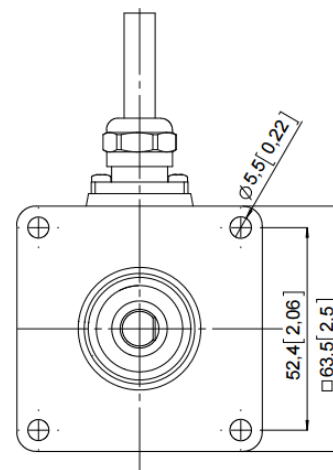
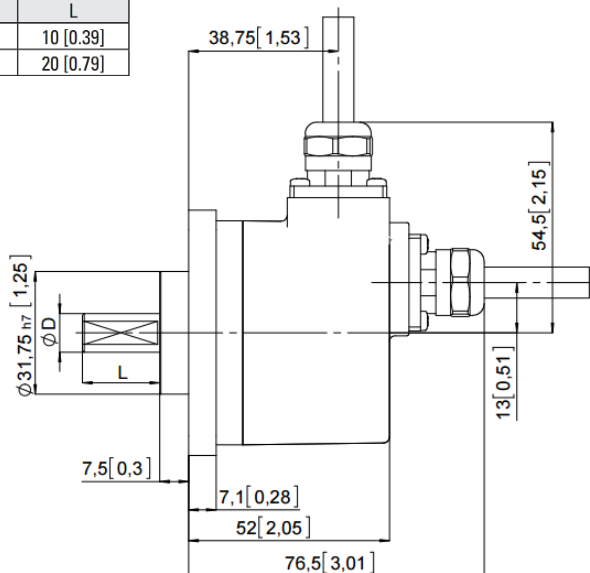
- 1 - 3 x M4, 6 [0.24] tief

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Square flange, 63.5 x 63.5

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



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

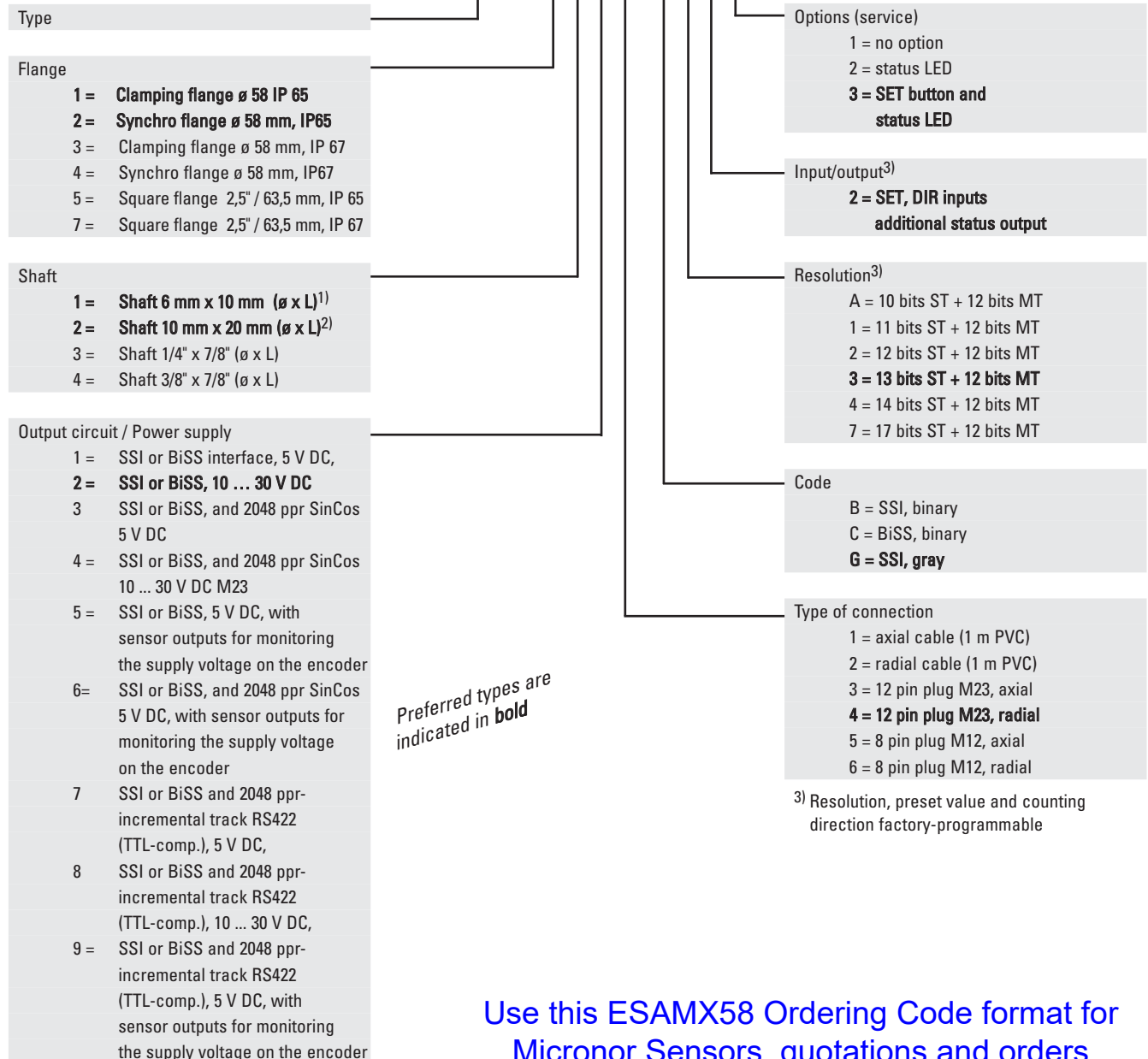
Absolute shaft encoder, Multiturn, SSI/BiSS

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Sendix Absolute, Multiturn ESAMX 58, SSI/BiSS

Order code:

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



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