POSITAL
FRABA

ABSOLUTE ROTARY ENCODER
SSI

Main Features

- Compact and heavy-duty industrial model
- Interface: Synchronous-serial (RS422/485)
- Housing: 58 mm ∅
- Shaft: 6 or 10 mm ∅
- Hollow Shaft: 12 mm ∅
- Resolution: Max. 25 Bit = 33,554,432 steps
                      over 4,096 revolutions
- Code: Gray
- EMC: EN 50 081-2, EN 61000-6-2, CE

Mechanical Structure

- Flange and housing of Aluminum
- Shaft of stainless steel
- Precision ball bearings with sealing or cover rings
- Code disc made of unbreakable and durable plastic

Applications

- Sensing of
- Angles
- Distances
- Tracks
- Inclinations
- Differences between two or more axes

Electrical Features

- Temperature insensitive IR-opto-receiver-array
- Only one IR-transmitter-diode per opto-Array
- Highly integrated circuit in SMD -technology
- Polarity inversion protection
- Over-voltage-peak protection

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Technical Data

Electrical Data

Clock input	Via opto-coupler
Data input	Line-driver according to RS 485 / RS 422
Clock frequency	100 kHz - 1 MHz
Step frequency LSB	Max. 100 kHz (valid code)
Accuracy of division	$\pm$ ½ LSB
EMC	Certified according to EN 50 081-2, EN 61000-6-2
Supply voltage	10-30 V DC (absolute limits)
Current consumption	~180 mA
Electrical lifetime	$> 10^5$ h
Connection	Connector or cable, 1 meter long

Mechanical Data

Housing	Aluminum, optional stainless steel		
Lifetime	Fa $\leq$ 250 N, Fr $\leq$ 250 N: $1 * 10^8$ revolutions		
	Fa $\leq$ 40 N, Fr $\leq$ 110 N: $3 * 10^9$ revolutions		
Inertia of rotor	≈ 50 gcm^2		
RPM	Max. 6,000 (continuously)		
Shock (EN 60068-2-27)	$\leq$ 30 g (halfsine, 11 ms)		
Permanent shock (EN 60028-2-29)	$\leq$ 10 g (halfsine, 16 ms)		
Vibration (EN 60068-2-6)	$\leq$ 10 g (10 Hz ... 1,000 Hz)		
Weight, Singleturn / Multiturn	$\approx$ 500 g / $\approx$ 700 g		
Friction torque	$\leq$ 5 Ncm		
Flange	**Synchro (Y)**	**Clamp (F), Synchro (Z)**	**Hollow shaft (H)**
Shaft diameter	6 mm	10 mm	12 mm
Shaft length	10 mm	20 mm	
Hollow Shaft depth min. / max.			15 / 30 mm

Environmental Conditions

Operating temperature	- 30 ... + 70 °C
Storage temperature	- 40 ... + 85 °C
Humidity	98 % (without liquid state)
Protection Class (EN 60529)	
Casing side	IP 65
Shaft side	IP 65 up to 0.5 bar

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Interface

Synchron-Serielles Interface (SSI)

Driver	Driver meets EIA standard RS 485 / RS 422; transmission rates up to 10 MBit/s
Transfer	Transfer distance up to 1,200 m
Transmission	Balanced transmission provides high noise immunity
Pair lines	Shielded and twisted pair lines are essential to attain extremely high noise immunity
Interface	For a detailed description of the synchronous-serial interface (SSI) refer to introduction section.
Optional	Built-in RS 485 / RS 422 interface for bus mode (strobe-function) Up to 32 encoders (AWC) can be used on the same data line !

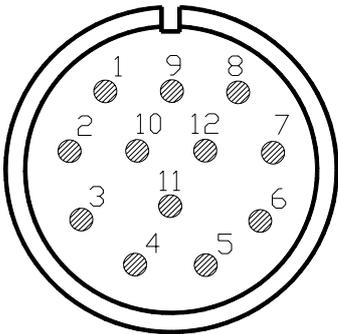**Single Shift**

$t_p < 20\mu s$ $t_m > 20\mu s$ $t < t_m$

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Electrical Interface

	12 pin circular plug Pin	open cable
Clock -	1	green
Clock +	2	yellow
Data +	3	brown
Data -	4	white
Complement	8	pink
+ U_b= 10-30 V	11	white *
GND	12	brown *
Shield	-	Shielding

* 0.5 mm^2

Pinning AWC (Male)

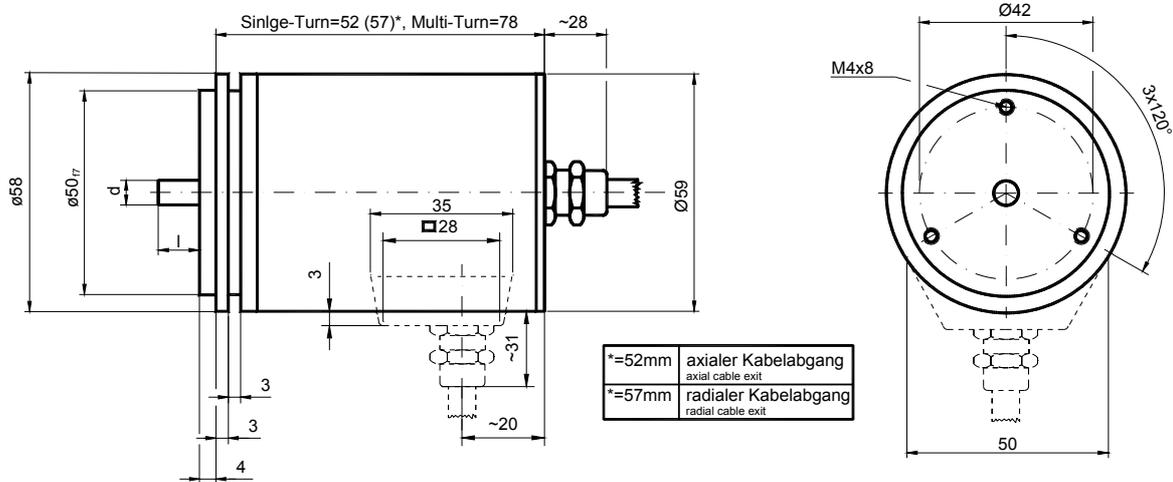| COMPLEMENT-Input		Encoder counting direction at
Function	Level	clockwise rotation (as seen on shaft)
Direction of rotation	0 (Input to GND)	Up
	1 (Input to + U_b or $\geq$ 8 V)	Down

ABSOLUTE ROTARY ENCODER
SSI

Mechanical Drawings

Synchro Flange (Y,Z)

The only difference between the Y- and Z-Flange is the shaft size (refer to the table besides).

	d [mm]	l [mm]
Y-Flange	6_{f6}	10
Z-Flange	10_{h8}	20

Cable Exit (cable diameter = 8mm or 0.315'')

*=52mm	axialer Kabelabgang
	axial cable exit
*=57mm	radialer Kabelabgang
	radial cable exit

12 pin circular connector (cable outlet: 6-9mm = 0.236-0.354'')

*=52mm	axialer Stecker
	axial connector
*=57mm	radialer Stecker
	radial connector

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Mechanical Drawings

Clamp Flange (F)

Cable Exit (cable diameter = 8mm or 0.315'')

| *=52mm | axialer Kabelabgang
axial cable exit |
| *=57mm | radialer Kabelabgang
radial cable exit |

12 pin circular connector (cable outlet: 6-9mm = 0.236-0.354'')

| *=52mm | axialer Stecker
axial connector |
| *=57mm | radialer Stecker
radial connector |

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Hollow Shaft (H)

* bei Option Wellendichtung verlängert sich das Maß um 3mm (on shaft sealing increases length by 3mm)

Singleturn=76 *, Multiturn=98 *
~60
72
Ø63

3,3
1,3
Ø12 F7
Ø59
20
Ø3,2
20°

Anlagekante an Momentenstütze
lay-on edge torque support

~60

Max. W ** = 30
Min. W ** = 15
** Welleneinstecktiefe / hollow shaft depth

~19,5
30

Mounting instructions

The clamp ring may only be tightened if the shaft of the driving element is in the hollow shaft.

The diameter of the hollow shaft can be reduced to 10 mm or 8 mm by using an adapter (this reducing adapter can be pushed into the hollow shaft).

Allowed shaft movements of the drive element are listed in the table.

	axial	radial
static	± 0.3 mm	± 0.5 mm
dynamic	± 0.1 mm	± 0.2 mm

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Models / Ordering Description

Description	Type Key											
Absolute rotary encoder Diameter in mm	**AWC 58.**		..... -	.... -	.	G	0	.	SL	.	...	
Steps per revolution	360*	36/1										
	3600*	36/10										
	1024	10										
	4096	**12**										
	8192	13										
No. of revolutions	1	**1**										
	16	16										
	256	256										
	4096	**4096**										
Flange	Clamp (shaft = 10 mm)	**F**										
	Synchro (shaft = 6 mm)	**Y**										
	Synchro (shaft = 10 mm)	Z										
	Hollow shaft = 12 mm	H										
Code	Gray		**G**									
Latch-function	Without (integrated in SSI)		**0**									
Strobe-function	Without			**0**								
	With			S								
Interface	Synchronous-serial acc. to RS422/RS485				**SL**							
Options	Without					**0**						
	Shaft sealing (not possible for Z-Flange)					W						
	Stainless steel configuration (flange, housing, cap)					Q						
Connection	Connector, axial						1KG					
	Connector, radial						**1KW**					
	Cable, axial (1m)						00A					
	Cable, radial (1m) [+]						00R					

Further models on request

* only for Single-Turn configuration, [+] not available in stainless steel configuration

Accessories

Description		Type
Connector, counterpart	Circular connector, 12 pins	1KG
Shaft coupling **	Drilling: 10 mm	GS 10
	Drilling: 6 mm	GS 06
Clamp disc **	4 pcs. / AWC	SP 15
Clamp ring **	2 pcs. / AWC	SP H

** not used for hollow shaft

We do not assume responsibility for technical inaccuracies or omissions. Specifications are subject to change without notice.