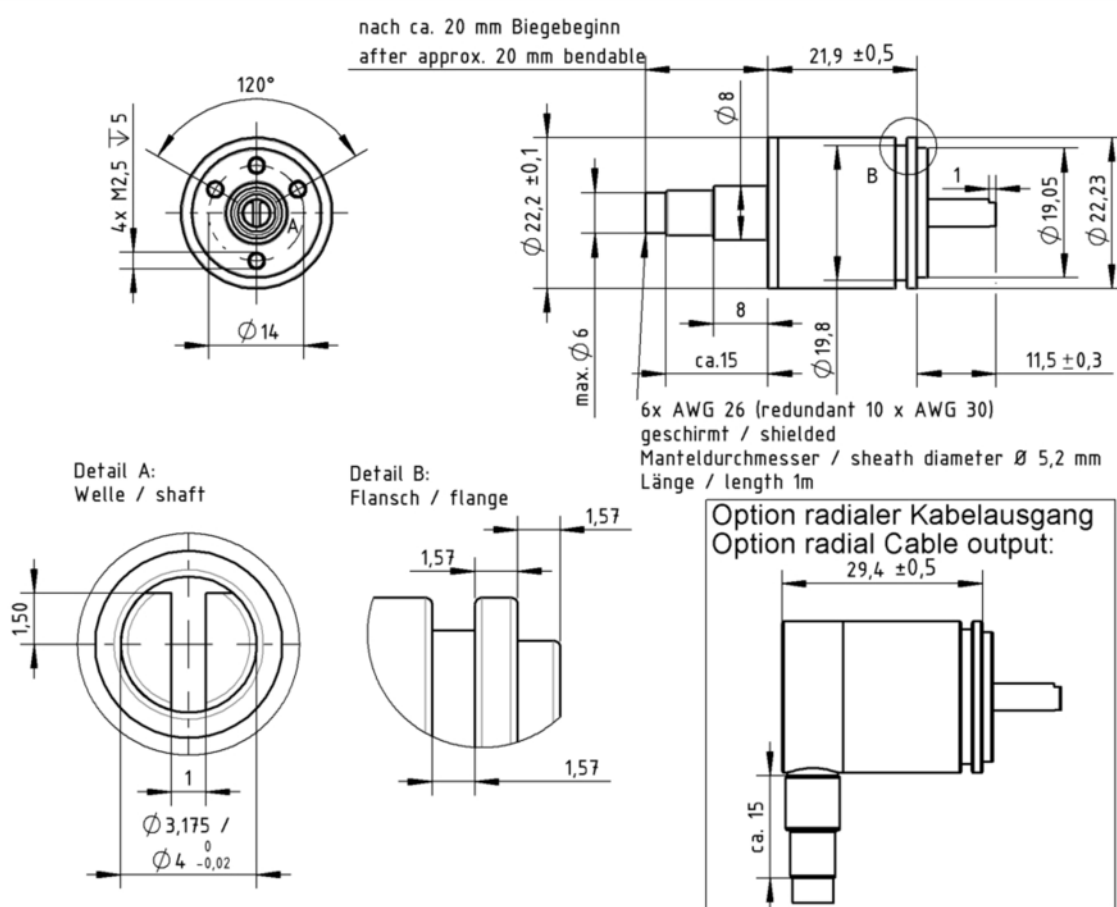


Series MAB22 - Hall Effect Absolute Encoder

- Contactless Hall-Technologie
- Microcontroller interface (SER)
- Synchronous Serial Interface (SSI)
- Serial Peripheral Interface (SPI)
- Angle range 360°
- Resolution 10 Bit (SER), 12 Bit (SER, SSI) or 14 Bit (SPI)
- Supply voltage 3,3 V, 5 V or 15-30 V
- 22 mm body diameter
- 2 precision ball bearings



Drawing



Dimensions in mm

Option N (zero point alignment) = The minimal output signal is measured at the shaft position according to the drawing

Series MAB22 - Hall Effect Absolute Encoder

Cable assignment

	black	red	green	orange	yellow	brown	blue	purple	gray	white
SER Interface	GND	VSUP	CS	not connected	CLK	DO	-	-	-	-
SSI Interface	GND	VSUP	DATA -	CLK -	DATA +	CLK +	-	-	-	-
SPI Interface	GND	VSUP	not connected	CLK	SS	DATA	-	-	-	-
Redundant SPI Interface	GND 1	VSUP 1	DATA 1	CLK 1	SS 1	DATA 2	CLK 2	SS 2	GND 2	VSUP 2

Electrical Data	SER- Interface	SPI- Interface	SSI- Interface
Electrical Angle	360 °		
Independent linearity tolerance	±0,2 %		
Resolution	12Bit - 4096 Steps 10Bit - 1024 Steps	14 Bit - 16384 Steps	12 Bit - 4096 Steps
Update rate	0,38 ms / 0,1 ms (HS)	2,5 ms / 0,6 ms (HS)	0,1 ms
Initial response	< 50 ms	< 16 ms	
Voltage supply	3,3 VDC ±10% 5 VDC ±10%	5 VDC ±10%	5 VDC ±10% 15-30 VDC
Supply current (no load)	< 20 mA	< 10 mA / < 20 mA (HS)	< 20 mA

Mechanical Data

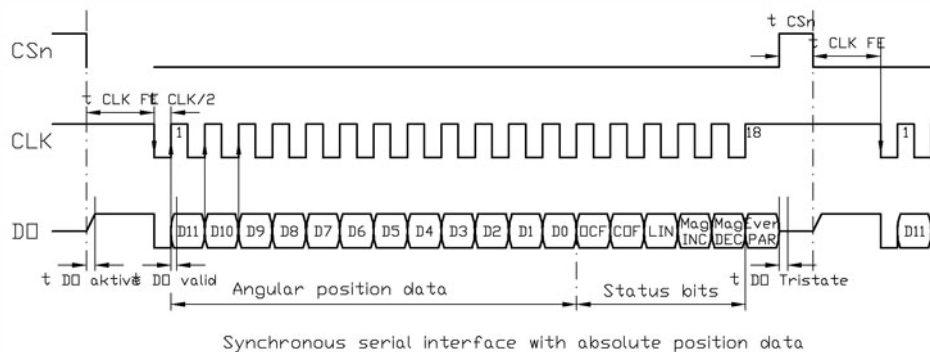
Maximum rotational speed	6.000 rpm
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Other Data

Protection class	IP65
Operating temperature	-30 ... +80 °C
Storage temperature	-40 ... +80 °C
Bearing	2 precision ball bearings
Housing material	chromed aluminium
Shaft material	stainless steel
Weight	≈30 g

Series MAB22 - Hall Effect Absolute Encoder

Timing SER-Bus



Falling edge of CS triggers a measurement value

Signal timing: $t_{CSn} > 500ns$

$t_{CLKFE} > 500ns$

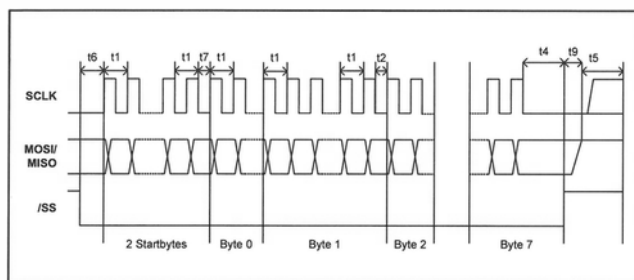
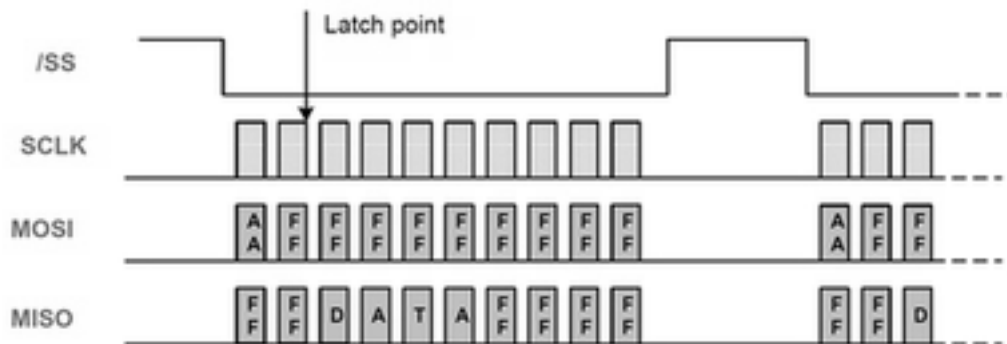
$CLK < 1MHz$

Remark: Above signal timing apply to 10 Bit and 12 Bit version.

Please find the exact specifications of the output signals in the datasheets and application notes of Austria Microsystems (AS5040 - 10Bit / AS5045 - 12Bit):

www.austriamicrosystems.com

Timing SPI-Bus



$t1 > 6,9 \mu s / 2,3 \mu s$ (HS) = Minimum clock period for any bits within a byte

$t2 > 37,5 \mu s / 12,5 \mu s$ (HS) = Minimum time between any other byte

$t4 > 6,9 \mu s / 2,3 \mu s$ (HS) = Time between last clock and /SS = high = chip de-selection

$t5 > 1500 \mu s / 300 \mu s$ (HS) = Minimum /SS = high time where it's guaranteed that a frame resynchronisation will be started.

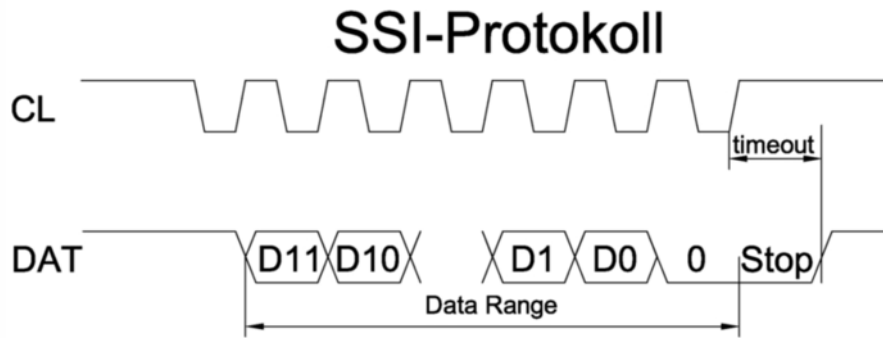
$t6 > 6,9 \mu s / 2,3 \mu s$ (HS) = Minimum time between /SS = low and the first clock edge

$t7 > 45 \mu s / 15 \mu s$ (HS) Minimum time between the StartByte and the Byte 0

$t9 < 1 \mu s$ = Maximum time between /SS = high and MISO Bus High-Impedance

Please find the exact specifications of the output signals in the datasheets and application notes of Melexis (MLX90316): www.melexis.com

Timing SSI- Interface



Please find the exact specifications of the output signals in the datasheets and application notes of iC-Haus (iC-MH): www.ichaus.de

Series MAB22 - Hall Effect Absolute Encoder

Order description and Options

Series MAB22	MAB22							
<u>Shaft diameter</u>								
Ø 4 mm	4							
Ø 3,175 mm (1/8") (*)	3,175 (*)							
<u>Resolution / Supply voltage / Output signal</u>								
12 bit High Speed / 3,3 V / SER					12HS 3,3 SER (*)			
12 bit High Speed / 5 V / SER					12HS 5 SER (*)			
14 bit High Speed / 5 V / SPI					14HS 5 SPI (*)			
redundant 14 bit / 5 V / SPI			X (*)		14HS 5 SPI (*)			
12 bit / 5 V / SSI					12 5 SSI (*)			
12 bit / 24 V / SSI					12 24 SSI			
<u>Counterclockwise rising signal</u>								
						CCW360 (*)		
<u>Other electrical effective angle</u>								
						C(C)Wxxx (*)		
<u>Zero point alignment (only for SPI)</u>								
							N (*)	
<u>Other shaft length [mm]</u>								
								Axx (*)
<u>Cable output</u>								
Axial - 1 m								-
Axial [m]								CVxx(*)
Radial [m]								CVRxx(*)

"bold print = standard option"

short-term stock types can be found on: <http://www.megatron.de/en/stocklists/angle-sensors/lagerliste.html>

(*) = on request available for projects

23.02.2015