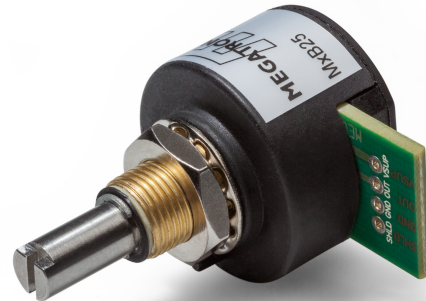


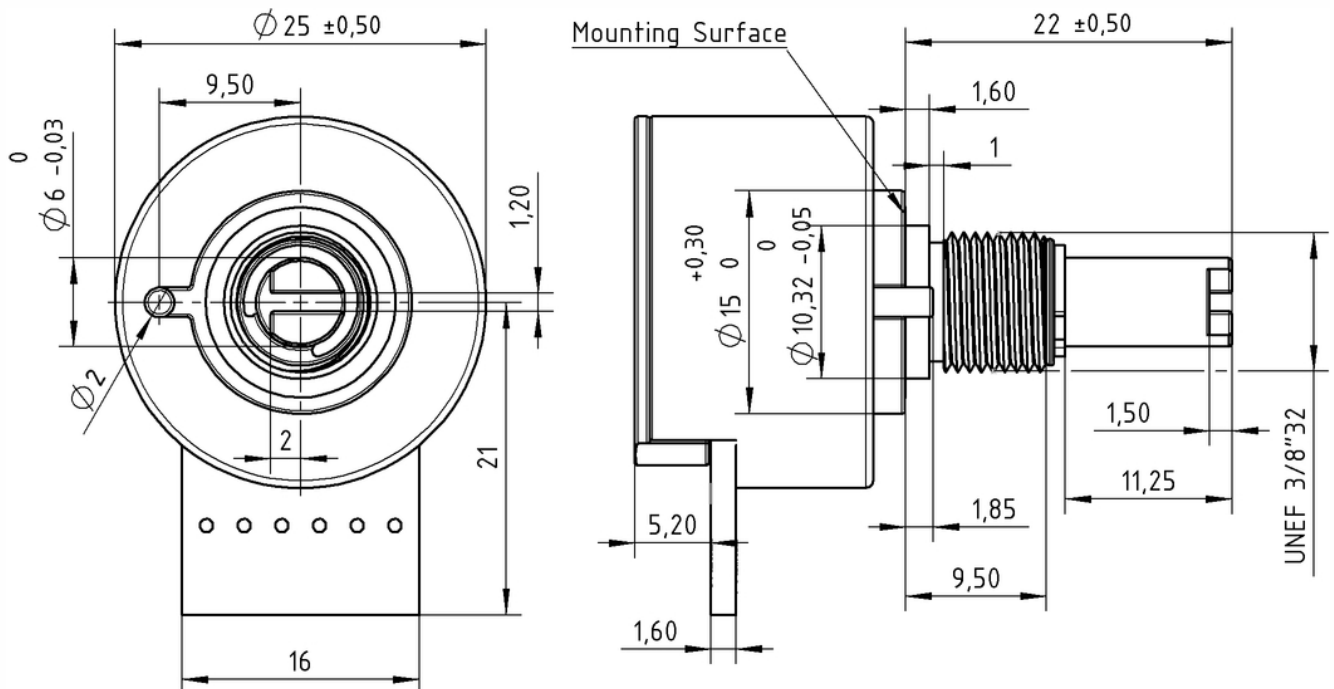
Serie MAB25 / Halleffekt Absolute Encoder with serial Interface

- Serial microcontroller interface (SER)
- Serial peripheral interface (SPI)
- Synchronous serial interface (SSI)
- Angle range 360°
- Resolution 10 Bit or 12 Bit
- Supply Voltage: 3,3V, 5V, 24V
- Redundant electronic (SPI-Interface)
- Ø 25 mm housing
- High lifetime by polymer sleeve bearing

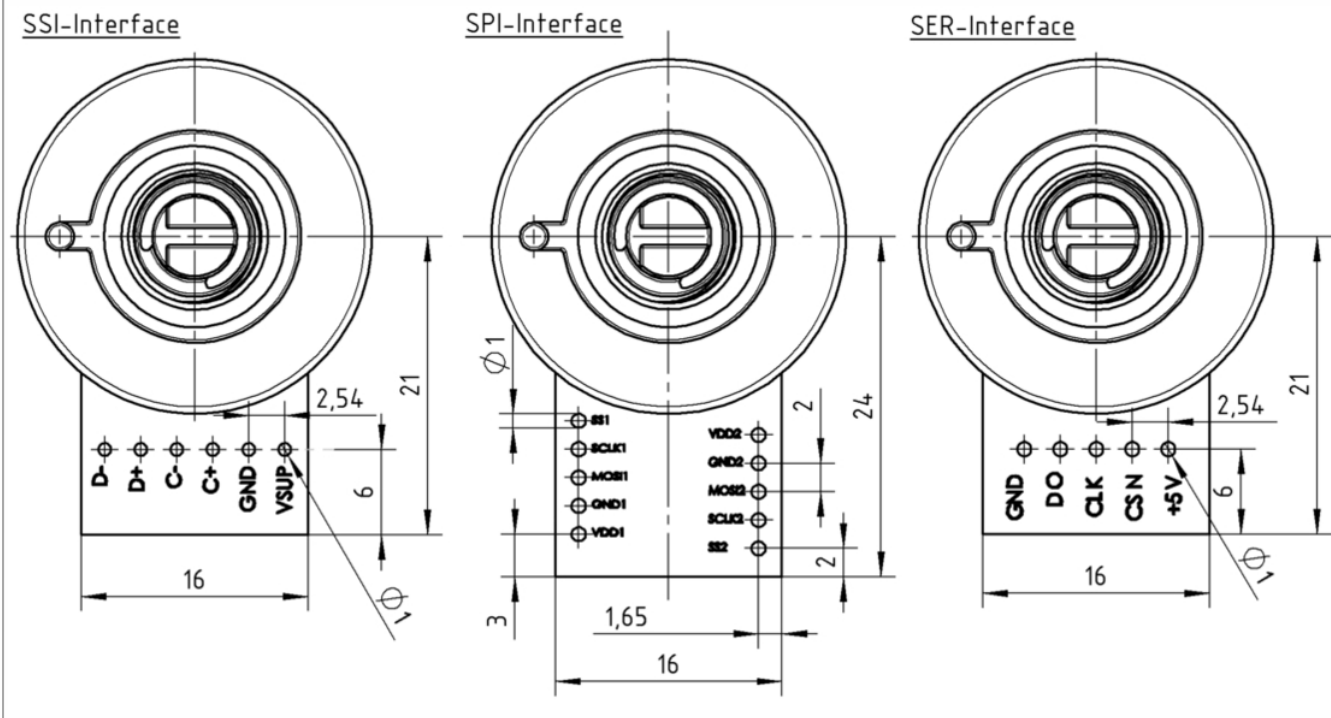
The absolute control encoder MAB25 SER is used as a high resolution device or a rotary encoder for universal applications.



Drawing



Drawing electrical options



Pin assignment

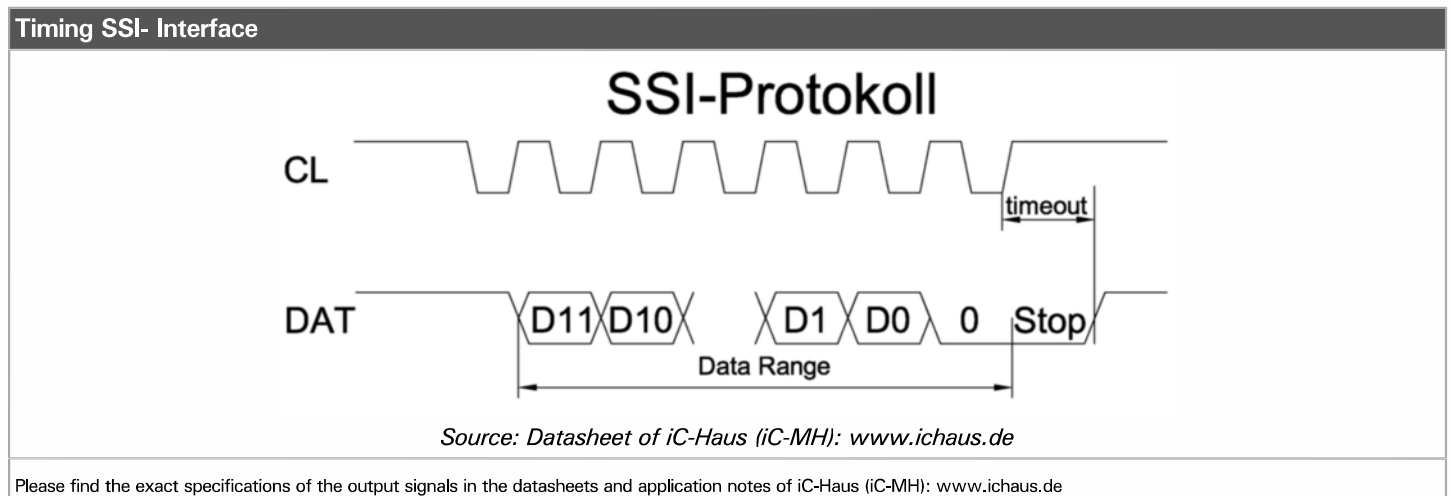
SSI-Interface		SPI-Interface (galvanically isolated, redundant sections)		SER-Interface	
D-	Data -	Section 1		GND	Ground
D+	Data +	SS1	Slave select 1	DO	Data
C-	Clock -	SCLK1	Clock 1	CLK	Clock
C+	Clock +	MOSI1	Data bidirectional 1	CSN	Slave select
GND	Ground	GND1	Ground 1	+ 5V (+ 3,3V)	Supply Voltage
VSUP	Supply Voltage	VDD1	Supply Voltage 1		
		Section 2			
		VDD2	Supply Voltage 2		
		GND2	Ground 2		
		MOSI2	Data bidirectional 2		
		SCLK2	Clock 2		
		SS2	Slave select 2		

Serie MAB25 / Halleffekt Absolute Encoder with serial Interface

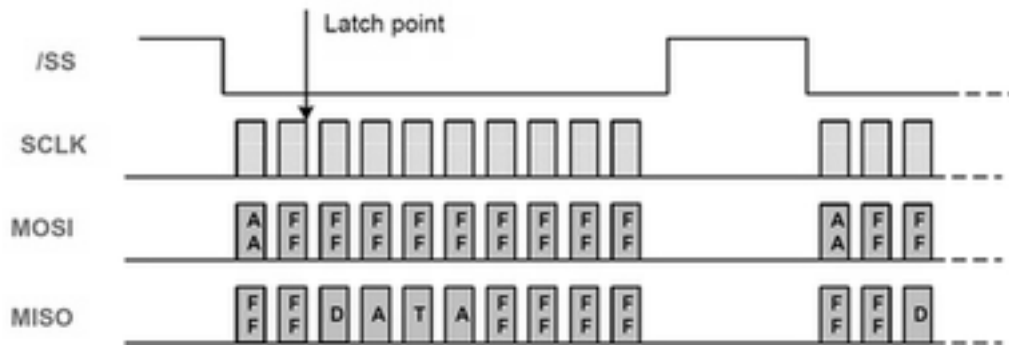
Electrical Data	SSI Interface	SPI Interface	SER Interface
Electrical Angle	20...360°		
Independent linearity tolerance	±0,4%	±0,3%	±0,4% (12 bit version) ±0,5% (10 bit version)
Resolution	4096 Steps (12Bit)	16384 Steps (14 Bit)	4096 Steps (12 bit) 1024 Steps (10 bit)
Update rate	0,1 ms	2,5 ms / 0,6 ms (High Speed)	0,38 ms / 0,1 ms (High Speed)
Supply Voltage	5 VDC ±10% / 15-30 VDC	5 VDC ±10%	3,3 VDC ±10% / 5VDC ±10%
Supply Current (no load)	< 20 mA	< 10 mA / < 20 mA (High Speed)	< 20 mA

Mechanical Data	
Maximum rotational speed	3000 rpm
Life time	> 25 x 10 ⁶ revolutions (depend on the application) <small>tested with room temperature and 1 N radial load</small>

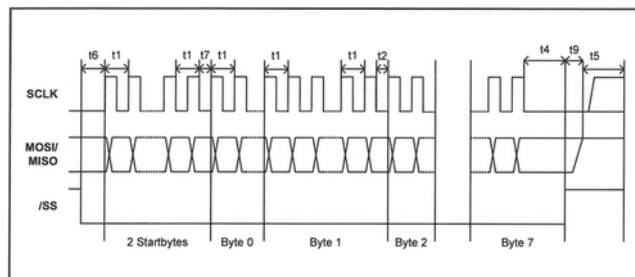
Other Data	
Protection class	IP40
Operating temperature	-40 ... +85 °C
Storage temperature	-40 ... +90 °C
Bearing	Polymer bearing
Housing material	glass-fiber reinforced polyamid
Shaft material	stainless steal
Weigth	approx. 20 g



Timing SPI-Bus



Source: Datasheet of Melexis (MLX90316): www.melexis.com



Source: Datasheet of Melexis (MLX90316): www.melexis.com

$t_1 > 6,9 \mu s / 2,3 \mu s$ (HS) = Minimum clock period for any bits within a byte

$t_2 > 37,5 \mu s / 12,5 \mu s$ (HS) = Minimum time between any other byte

$t_4 > 6,9 \mu s / 2,3 \mu s$ (HS) = Time between last clock and /SS = high = chip de-selection

$t_5 > 1500 \mu s / 300 \mu s$ (HS) = Minimum /SS = high time where it 's guaranteed that a frame resynchronisation will be started.

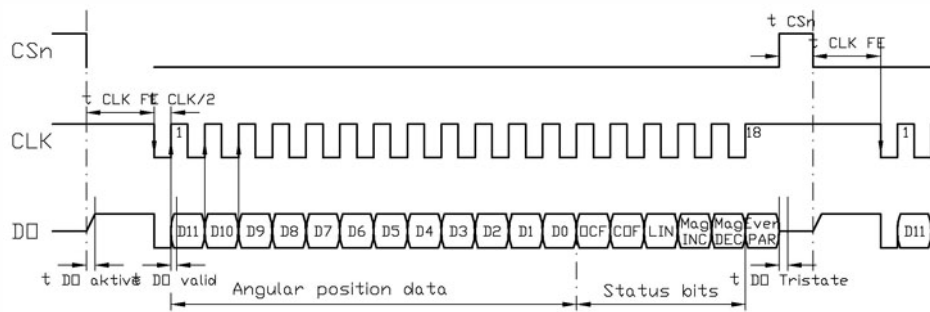
$t_6 > 6,9 \mu s / 2,3 \mu s$ (HS) = Minimum time between /SS = low and the first clock edge

$t_7 > 45 \mu s / 15 \mu s$ (HS) Minimum time between the StartByte and the Byte 0

$t_9 < 1 \mu s$ = 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 SER-Bus



Synchronous serial interface with absolute position data

Source: Datasheet of Austria Microsystems: (AS5045): www.austriamicrosystems.com

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

Serie MAB25 / Halleffekt Absolute Encoder with serial Interface

Order Description and Options

Series MAB25	MAB25				
<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 (*)	
				CW360	
Counterclockwise rising signal				CCW360 (*)	
Other electrical effective angle				C(C)Wxxx (*)	
<u>Other shaft length [mm]</u>					Axx (*)

"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