



## CHARACTERISTICS

ENCODER TYPE	Hollow shaft absolute singleturn encoder
TECHNOLOGY	Magnetic Resistance
SMD - TECHNOLOGY	Strong compact electronics
IP-RATING	Std. IP 64 (option: Ribbon cable + IDC-Connector = IP 50)
LOW CURRENT CONSUMPTION	To be connected directly to PLCs
SUPPLY RANGE	5V ± 10% or 3,3V ± 10%
STRONG CONSTRUCTION	Based on 2 precision ball bearings, for industrial environments

## ELECTRICAL SPECIFICATIONS

At 25°C			
Output	SSI		
Supply-voltage (V+)	5V ± 10% or 3,3V ± 10%		
Current (no load)	max. 25mA		
Max. Load pr. output	4mA @ 5V (short circuit protection)		
Operating temp.	-40°C ... +100°C		
Storage temp.	-55°C ... +100°C		
Humidity non-cond.	5% ... 85%		
Cable data	5 leads (0,14mm <sup>2</sup> ), shielded		
Resolution	<b>10 bit</b>	<b>12 bit</b> (5) (slow mode)	<b>12 bit</b> (5) (fast mode)
electr. permissible speed (see note 2!))	1172 rpm	306 rpm	1121 rpm
@ 512 pulses/rev.	586 rpm	153 rpm	610 rpm
@ 1024 pulses/rev.	—	38 rpm	153 rpm
@ 4096 pulses/rev.	—	—	—
System propagation delay (calculation time)	65 µs	384 µs	96 µs
Transition noise	0,12° rms	0,03° rms	0,06° rms
Precision	0,35°±1LSB	0,09°±1LSB	0,09°±1LSB

## MECHANICAL SPECIFICATIONS

Weight	approx. 75 g
Materials: Housing	Electroplated steel and brass
Hollow shaft	Stainless steel
Fixing Clamp	Brass
Bearings	Lifetime lubricated ball bearings
H-shaft dimensions	ø2mm, ø3mm, ø4mm, ø5mm ø6mm, ø1/4"
H-shaft loads	axial max. 20N radial max. 20N
Mech. max. speed	10.000 rev./min (see notes 2 and 3)
IP-rating	IP 64 (IP 50, with ribbon cable)
Start torque	<0,005 Nm at 25°C
Mass moment of inertia	<1,3 g·cm <sup>2</sup>
Max. shock	10 g / 11ms
Bump	10 g - 16ms (1000 x 3 axis)
Vibration	(10 - 2000 Hz) / 10 g



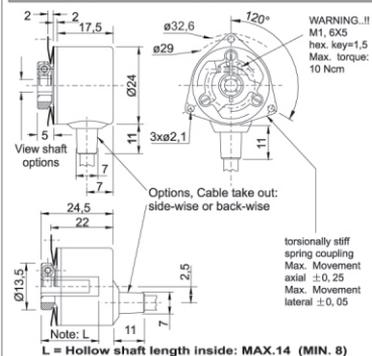
## Notes:

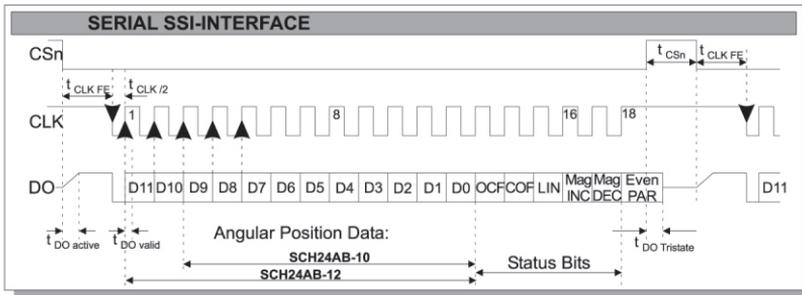


- The absolute angular position is always set to the highest resolution; regardless of rotational speed or the number of positions to be read out.
- The absolute angular position is sampled at a fixed rate. This allows a maximum speed as shown in the electrical specifications without missing positions.
- By increasing the rotational speed, the number of issued absolute angular positions will decrease.
- Data D11:D0 resp. D9:D0 is valid when the status bits have the following configurations:

OCF	COF	LIN	MagINC	MagDEC	Parity
			0	0	even
1	0	0	0	1	checksum of bits 1 to 15
			1	0	
- Make sure you give us information about the 12 bit speed mode in the following order:  
"slow mode" - slow speed applications;  
"fast mode" - for applications with higher speeds.

## MECHANICAL DIMENSIONS





**SSI SYMBOL DECLARATION**

**D11 ... D0:** absolute angular position data (D11: MSB @ 12bit res.; D9: MSB @10 bit res.; D0: LSB).  
**OCF (Offset Compensation Finished):** logic high indicates the startup to be completed and data to be valid.  
**COF (Cordic Overflow):** logic high indicates invalid data on bits D11:D0 resp. D9:D0. The absolute output maintains the last valid angular value.  
**LIN (Linearity Alarm):** logic high indicates critical output linearity on the input field. When bit is set, data bits may still be used but can contain invalid data.  
**MagINC (Magnitude Increase):** becomes high when magnetic field is increasing (pushing the magnet towards IC).  
**MagDEC (Magnitude Decrease):** becomes high when magnetic field is decreasing (pulling the magnet away from IC).  
**Even PAR (Even Parity):** for transmission error detection of bits 1 to 15.

**SSI-INTERFACE TIMETABLE**

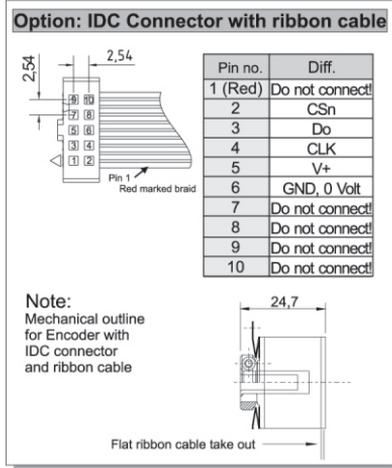
$t_{CLK\ FE}$ = min. 500 ns	First data shifted to output register
$t_{CLK\ /2}$ = min. 500 ns	Start of data output
$t_{DO\ active}$ = max. 100 ns	Data output activated, logic high
$t_{DO\ valid}$ = max. 375 ns	Data output valid
$t_{CSn}$ = min. 500 ns	Pulse width of CSn
$t_{DO\ Tristate}$ = max. 100 ns	Data output tristate

**STANDARD CABLE CONNECTIONS**

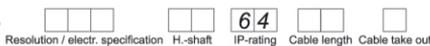
Colour-code	Output
white	GND, 0 Volt
brown	V+
green	CSn
yellow	CLK
gray	DO

**ORDERING CODES**

Resolution / elec. specification:	10 bit - 3,3V 10 bit - 5,0V 12 bit - 3,3V - Fast mode 12 bit - 3,3V - Slow mode 12 bit - 5,0V - Fast mode 12 bit - 5,0V - Slow mode	10A 10B 12E 12F 12G 12H
H-shaft dimensions:	ø2mm ø3mm ø4mm ø5mm ø6mm ø1/4"	02 03 04 05 06 1/4
IP-rating:	IP 64	64
Length of cable:	Standard 1 meter No. of meters	01 XX
Cable take out:	Side Back	S B
<b>OPTION:</b> Cable type:	Ribbon cable + IDC (HP-compatible)	IDC
Ribbon cable length:	0,5meter 1,0meter 2,0meter	0,5 1,0 2,0



To order the standard version: **SCH24AB**



- the version with ribbon cable: **SCH24AB**

