

1) not included in scope of delivery, 2) Distance to tape, 3) Tape, 4) Cable length, 5) Active measurement surface



### Basic features

Additional features 01	Reference signal, individually or fixed-periodic
Additional features 03	Real-time capable
Application	linear/rotary motion
Approval/Conformity	CE cURus EAC WEEE
Measuring principle	incremental measuring system
Series	S1F

### Electrical connection

Bending radius min., fixed cable	7.5 x D
Bending radius min., flexible cable	15 x D
Cable diameter D	4.9...5.2 mm
Cable length L	0.3 m, drag chain compatible
Conductor cross-section	0.08 mm <sup>2</sup>
Connection	Cable with connector, M12x1- Male, 12-pin, 0.3 m, PUR
Connection type	Cable with connector, 0.3 m, PUR
Connection version	axial
Number of conductors	12
Polarity reversal protected	yes
Protection against device mix-ups	yes

### Electrical data

Current consumption max. at 5 V DC	50 mA
Hysteresis H max.	2 µm
Operating voltage U <sub>b</sub>	4.75...5.25 VDC
Overvoltage protection	no
Periods	1 mm
Voltage-proof up to (GND to housing)	500 V DC

### Environmental conditions

Altitude max.	2000 m
Ambient temperature	-20...80 °C
Cable temperature, drag chain	-25...85 °C
Cable temperature, fixed routing	-40...85 °C
Cable temperature, flexible routing	-25...85 °C
EN 55016-2-3, Radiation	Industrial areas
EN 60068-2-27, Continuous shock	100 g, 2 ms
EN 60068-2-27, Shock	100 g, 6 ms
EN 60068-2-6, Vibration	12 g, 10...2000 Hz
EN 61000-4-2, ESD	Severity Level 3
EN 61000-4-3, RFI	Severity Level 3
EN 61000-4-4, Burst	Severity Level 1
EN 61000-4-5, Surge	Severity Level 2
EN 61000-4-6, High-frequency fields	Severity Level 3
EN 61000-4-8 Magnetic fields	Severity Level 4
Ext. magnetic fields max., in operation	1 mT (no effect)
IP rating IEC 60529 (connector)	IP67
Overall system temperature coefficient	10.5 ppm/K
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-30...85 °C

### Functional safety

MTTF (40 °C) 565 a

### Interface

Differential signals yes  
 Error signal no  
 Interface Analog Sin/Cos (1 Vpp)  
 Reference signal Individually or fixed-periodic  
 Signal sequence A before B = rising

### Material

Cable flame-resistant UL94 V0 and IEC 60332/2  
 Housing material Aluminium  
 Material jacket PUR

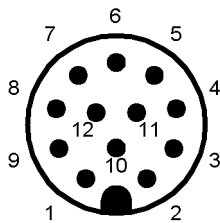
### Mechanical data

Dimension 12 x 13.1 x 35 mm  
 Lateral offset (Y) ±0.5 mm  
 Mounting part M4 thread  
 Pitch max. ±1.0 °  
 Pole width 1 mm  
 Procedure direction Lengthwise to tape  
 Roll max. ±1.0 °  
 Weight 21 g (excluding cable)  
 Yaw max. ± 1.0 °

### Range/Distance

Non-linearity of sensor head, max. ±2 µm  
 Read distance 0.01...0.35 mm  
 Repeat accuracy ≤ 1 µm depending on controller  
 Resolution (controller-dependent)  
 Traverse speed max. 10 m/s

## Connector Drawings



## Wiring Diagrams (Schematic)

Pin	Signal
1	+B (+Cos)
2	-B (-Cos)
3	-A (-Sin)
4	+A (+Sin)
5	+Z
6	-Z
7	GND

Pin	Signal
8	+5 V DC
9	GND Sense
10	U <sub>B</sub> Sense
11	NC
12	NC
Shield	Housing