



## Model Number

TSI40N

## Features

- Compact design
- Up to 2048 ppr
- 4.75 V ... 30 V with short-circuit proof push-pull output
- RS 422 functionality at 5 V operation
- Tangential cable outlet

## Description

The TVI40 continues the new economical target line of Pepperl+Fuchs with a recessed hollow shaft version. With a small outside diameter of 40 mm, the unit is ideal for use in industrial areas where very little space is available.

The technology of the rotary encoder is adapted to the new requirements of the rotary encoder market. Innovative fast technology with Opto-ASIC forms the central basis of the device. The rotary encoder is available with a pulse count of up to 2048 pulses per revolution.

The rotary encoder provides the ideal combination of non-sensitivity to temperature and high resolution.

The appearance of this rotary encoder is the tangential cable outlet. This ensures a buckling-free, carefully laying of the connection cable in tangential, radial or axial manner.

## Technical data

### General specifications

Detection type	photoelectric sampling
Pulse count	max. 2048

### Electrical specifications

Operating voltage $U_B$	4.75 ... 30 V DC 5 V DC for RS-422
No-load supply current $I_0$	max. 55 mA

### Output

Output type	push-pull, incremental or RS-422, incremental
Voltage drop $U_d$	$\leq 2.5$ V ( $< 2.5$ V)
Load current	max. per channel 30 mA, short-circuit protected (max. per channel 20 mA, conditionally short-circuit proof)
Output frequency	max. 100 kHz (max. 100 kHz)
Rise time	980 ns (225 ns)
De-energized delay $t_{off}$	980 ns (225 ns)

### Connection

Cable	$\varnothing 6$ mm, 8 x 0,128 mm <sup>2</sup> , cable length see order code
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### Standard conformity

Degree of protection	DIN EN 60529, IP54
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	EN 61000-6-4:2007/A1:2011
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 100 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 10 g, 10 ... 2000 Hz

### Ambient conditions

Operating temperature	-10 ... 70 °C (14 ... 158 °F) up to 1024 pulses, -10 ... 60 °C (14 ... 140 °F) from > 1024 pulses
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)

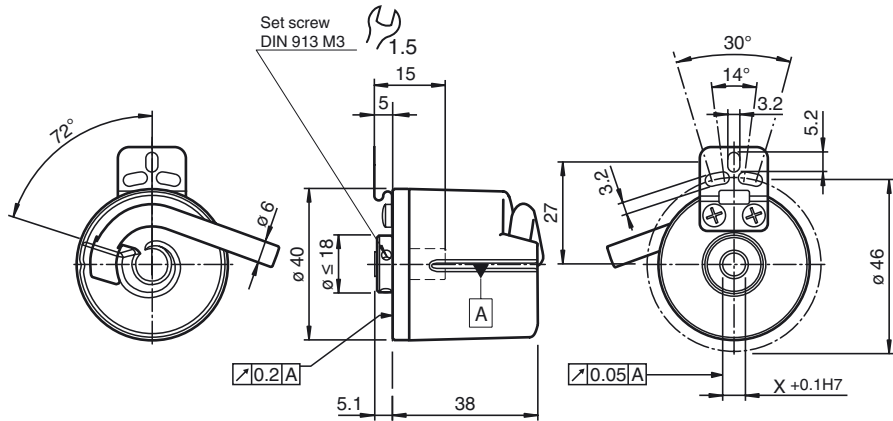
### Mechanical specifications

Material	
Housing	Polycarbonate
Flange	3.1645 aluminum
Shaft	Stainless steel 1.4305 / AISI 303
Mass	approx. 180 g
Rotational speed	max. 6000 min <sup>-1</sup>
Moment of inertia	$\leq 4.3$ gcm <sup>2</sup>
Starting torque	$\leq 0.2$ Ncm
Shaft load	
Angle offset	1 °
Axial offset	max. 1 mm
Life span	$\geq 2 \times 10^9$ revolutions (max. shaft loading)

### Approvals and certificates

UL approval	cULus Listed, General Purpose, Class 2 Power Source
Maximum permissible ambient temperature	$\leq 60$ °C ( $\leq 140$ °F)

Dimensions

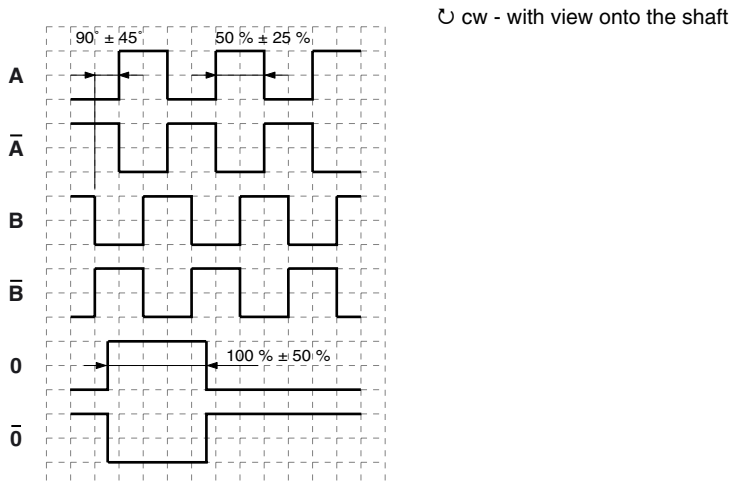


Recessed hollow shaft	X [mm]
ø 1/4"	ø 6.35
ø 3/8"	ø 9.525
ø 3/16"	ø 4.763
ø 5/16"	ø 7.938
ø 4	ø 4
ø 6	ø 6
ø 8	ø 8

Electrical connection

Signal	For cabel Ø6 mm, 8-core, color	For cable connector M12, 8-pin, pin
GND	Blue	1
+U <sub>b</sub>	Brown	2
A	Black	3
$\bar{A}$	Violet	4
B	White	5
$\bar{B}$	Grey	6
0	Orange	7
$\bar{0}$	Yellow	8
Shield	-	-

Signal outputs



Order code

T	S	I	4	0	N	-				K		T	6	T	N	-						
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**Pulse count** 25, 50, 60, 100, 150, 180, 200, 250, 360, 400, 500, 600, 1000, 1024, 2048

**Temperature range**  
 N normal

**Output switching**  
 T 4,75 V ... 30 V, push-pull

**Signal output**  
 6 A + B + 0 and  $\bar{A}$  +  $\bar{B}$  +  $\bar{0}$

**Exit position**  
 T tangential

**Connection type**  
 K0 Cable Ø6 mm, 8 x 0.128 mm<sup>2</sup>, 0.5 m  
 K2 Cable Ø6 mm, 8 x 0.128 mm<sup>2</sup>, 2 m  
 BI Cable Ø6 mm, cable connector M12, 8-pin, 0.2 m

**Shaft dimensions/flange type**  
 16A Recessed hollow shaft Ø4 mm x 15 mm <sup>1)</sup>  
 14A Recessed hollow shaft Ø6 mm x 15 mm  
 17A Recessed hollow shaft Ø1/4" x 15 mm <sup>1)</sup>  
 27A Recessed hollow shaft Ø8 mm x 15 mm  
 20A Recessed hollow shaft Ø3/8" x 15 mm <sup>1)</sup>  
 21A Recessed hollow shaft Ø3/16" x 15 mm <sup>1)</sup>  
 22A Recessed hollow shaft Ø5/16" x 15 mm <sup>1)</sup>

**Housing material**  
 N Plastic

**Shaft version**  
 S Recessed hollow shaft

1) not with pulse count 2048

Release date: 2018-05-28 11:44 Date of issue: 2018-05-28 t30768\_eng.xml