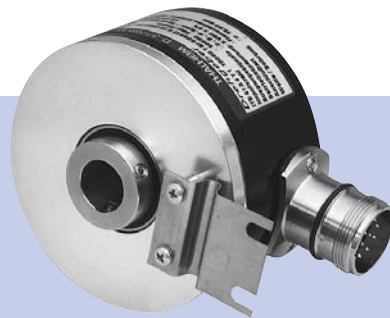


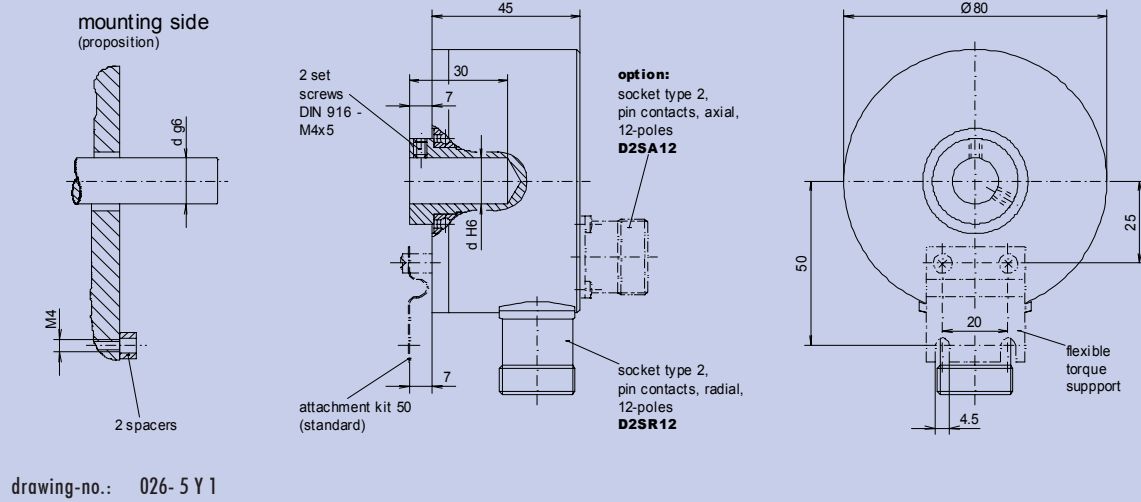
# Incremental encoder *with hollow shaft*

## ITD 40 A 4 Y 1



### Features

- Low-Cost hollow shaft incremental encoder
- **Number of pulses** up to **2048** pulses/rev.
- Mounting at torque support
- TTL- or HTL- Output signals
- Socket radial or axial
- Hollow shaft going through optional



### Mechanical data

Design	A 4		A 4
Attachment kit	50	standard, (ref. datasheet »Attachment kit's ...«)	50
Housing	aluminium, black, powder coated		
Protection	IP 65	according to DIN EN 60 529	IP65
Construction principle	OPSIC with slotdisc		
max. revolution (mechanical)	$n_{max} \leq 8000$ rpm	(observe limit frequency)	
Permissible motor-shaft play	axial $\leq 0.25$ mm radial $\leq 0.1$ mm		
Starting torque	at 20 °C $\leq 1$ Ncm		
Vibration	55... 2000 Hz $\leq 100$ m/s <sup>2</sup>	according to DIN IEC 60 068, part 2-6	
Shock	11 ms $\leq 1000$ m/s <sup>2</sup>	according to DIN IEC 60 068, part 2-27	
Hollow shaft diameter	d 15 mm	(standard), 10 mm to 16 mm possible	
Weight	ca. 580 g		

## Electrical data

Number of pulses	Z	100, 180, 200, 360, 500, 512, 720, 1000, 1024, 2000, 2048 pulses/revolution	XXXX
Electronic version (output signals)	TTL	Line driver-output stage, supply voltage: $U_B = 5 \text{ VDC} \pm 5\%$ (polarity protected) output amplitude: $U_{\text{LOW}} \leq 0.5 \text{ V}$ , $U_{\text{HIGH}} \geq 2.5 \text{ V}$	T
	HTL	Push pull-output stage (short-circuit proof), supply voltage: $U_B = 8\text{-}30 \text{ VDC}$ (polarity protected) output amplitude: $U_{\text{LOW}} \leq 1.5 \text{ V}$ , $U_{\text{HIGH}} \geq U_B - 3 \text{ V}$	H
Output signals	A, B + Inv.	2 square wave pulse trains, electr. phase shifted $90^\circ \pm 10^\circ$ + signal inverting *	BI
Pulse ratio		pulse : pause = 1 : 1, $\pm 10\%$ at 30 kHz	
Edge steepness		$\geq 15 \text{ V}/\mu\text{s}$	
Limit frequency	$f_G$	120 kHz	
Output load current	$I_{\text{Load}}$	$\leq 70 \text{ mA}$	
Current consumption (no-load)	$I_{\text{max}}$	$\leq 100 \text{ mA}$	
Permissible cable length		$\leq 100 \text{ m}$ (Thalheim-cable)	
Type of connection		socket type 2, pin contacts, radial, 12-poles	D2SR12
Operating temperature range		$-20^\circ \text{C}$ to $+70^\circ \text{C}$	S
Permissible relative humidity		$\leq 90\%$ (condensation not permitted)	

## Options

Electronic version		TTL-Output signals, Line driver-output stage supply voltage: $U_B = 8\text{-}30 \text{ VDC}$ (polarity protected)	R
Output signals	A, B, N + Inv.	2 square wave trains + zero pulse, electr. length $90^\circ \pm 9^\circ$ + signal inverting *	NI
Type of connection	connector	socket type 2, pin contacts, axial, 12-poles	D2SA12
Operating temperature range		$-20^\circ \text{C}$ to $+100^\circ \text{C}$ (IP 54: $n_{\text{max}} \leq 8000 \text{ min}^{-1}$ or IP 65: $n_{\text{max}} \leq 5000 \text{ min}^{-1}$ )	E

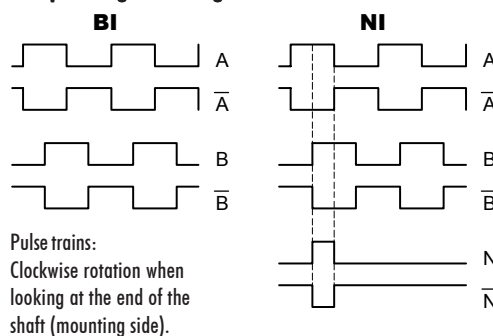
## Accessories

Connector, for version D2S.12		connector type 2, bush contacts, straight, 12-poles	S2BG12
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## Connection table

PIN-no.	signals
PIN 5	A
PIN 6	A inv.
PIN 8	B
PIN 1	B inv.
PIN 3	N
PIN 4	N inv.
PIN 12	+ $U_B$
PIN 10	0 V
PIN 2	+ $U_{\text{Sensor}}$
PIN 11	0 V <sub>Sensor</sub>
PIN 7	NC
PIN 9	NC

## Output signal diagram



## Ordering example:

<b>ITD 40</b> Incremental encoder ITD 40	<b>A 4</b> Design A 4	<b>Y 1</b> Mechanical variant Y 1 = look at the drawing	<b>1024</b> Number of pulses 1024 pulses/revolution	<b>H</b> Electronic version $U_B = 8\text{-}30 \text{ VDC HTL}$	<b>BI</b> Output signals A-, B-track + inv.	<b>D2SR12</b> Type of connection socket type 2, pin contacts, radial, 12-poles	<b>S</b> Operating temperature $-20^\circ \text{C}$ to $+70^\circ \text{C}$	<b>15</b> Hollow shaft diameter 15 mm	<b>IP65</b> Protection IP65	<b>50</b> Attachment kit variant 50
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\* ref. output signal diagram