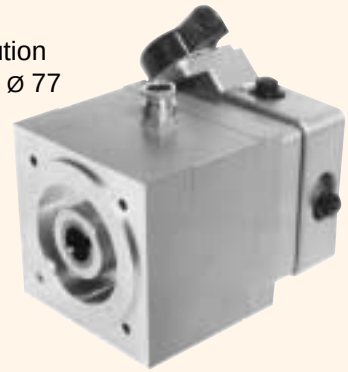
Incremental encoder + DC tachogenerator
ITD 3 + KTD 3-... A 4

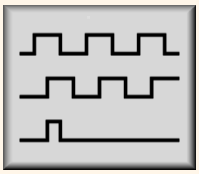
Qualities:

- Number of pulses, up to 1024 pulses per revolution
- Centering seat ø 70, mounting punching circle ø 77
- TTL- or HTL-outputsignals
- Connector outlet optional

+

- High reaction rate
- Small percent ripple





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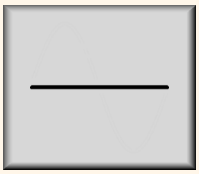
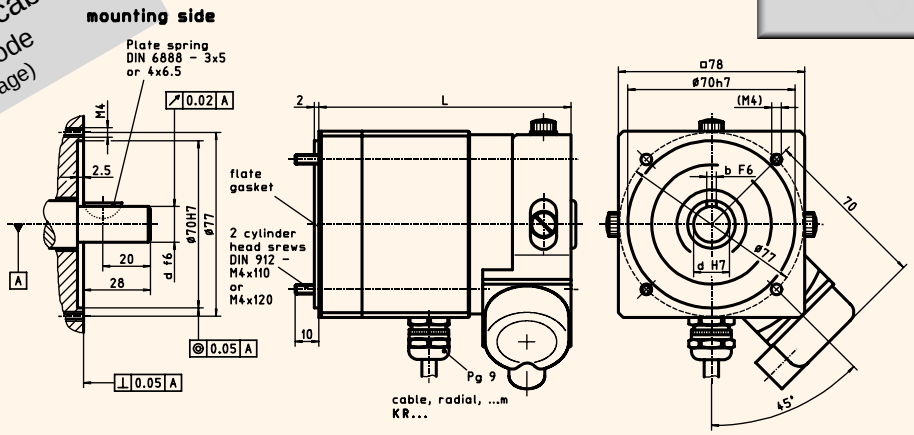


commencing in July '99
New connection cable
⇨ new color code
(see reverse page)



Type	VDC	L
ITD 3 + KTD 3-1 A 4	10	105.5
ITD 3 + KTD 3-2 A 4	20	105.5
ITD 3 + KTD 3-3 A 4	30	105.5
ITD 3 + KTD 3-4 A 4	40	115.5
ITD 3 + KTD 3-6 A 4	60	115.5

ITD 3 + KTD 3-... A 4 drawing-no.: 015 - 2

Mechanical data:

Housing			light-alloy metal, unpainted; steel, zinced
Design style		***A 4***	A 4
Protective class		***IP54***	IP 54
Construction principle (incremental encoder)			GaAs-diode with slotdisc
max. revolution (mechanical)	n_{max}		≤ 6000 rpm (observe frequency limit)
Starting torque	at 20 ° C		≤ 3 Ncm
Vibration	50... 2000 Hz		≤ 100 m/s²
Shock	11 ms		≤ 1000 m/s²
Shaft diameter	d		15 mm (standard) (10 to 16 mm possible)

Electrical data *ITD*:

• Number of pulses	*Z*	***XXXX***	1 up to 1024 pulses per revolution (standard values at requestion)	
• Execution of electronic	*TTL*	***T***	TTL-output signals	*line driver-output stage*
			supply voltage:	U_B = 5 VDC ± 5 % (poling error safe)
			output amplitude:	U_{LOW} ≤ 0.5 V U_{HIGH} ≥ 2.5 V
	HTL	***H***	HTL-output signals	*push pull-output stage* (shortening proof)
			supply voltage:	U_B = 8 - 30 VDC (poling safe error)
			output amplitude:	U_{LOW} ≤ 1.5 V U_{HIGH} ≥ U_B - 3 V
• Output signals	*A,B + Inv.*	***BI***	2 square-wave pulse trains phase shifted by 90° (± 10°) electr. + inverting	*(refere to output signals-diagram)*
Pulse ratio			puls : pause = 1 : 1	± 10 % at 30 kHz
Flank steepness			≥ 15 V/µs	
Frequency limit	f_G		***TTL*** 60 kHz	***HTL*** 60 kHz
Output load current	I_{Load}		***TTL*** ≤ 70 mA	***HTL*** ≤ 70 mA

Incremental encoder + DC tachogenerator
ITD 3 + KTD 3-... A 4

Input current (without load)	I_{max}		≤ 150 mA
Permissible cable length			≤ 100 m (Thalheim-cable)
• Type of connection		***KR1***	cable, radial, 1.0 m (standard length)
• Operating temperature range		***S***	- 20 °C to + 70 °C

Electrical data *KTD*: referenced at 1000 rpm

Polarity	dependent on rotation direction
Number of pole pair	2 = 4-poles
Number of grooves, segments	29
Grooves frequency	$f_N = {}^{29}/_{30} * n$
Reversing error	≤ ± 0.1 %
Residual ripple	≤ 0.4 %
Residual ripple frequency	200 Hz
Linearity error	≤ 0.15 %
Regulation range lower limit n_R	0 rpm
Temperature drift (-10 ° C to + 100 ° C)	± 0.1 % / 10 K (compensated)

Type of connection	terminal box, 2-poles
Isolation class	B
Carbon brushes	4 pieces AG 3 x 4 x 12
Carbon brushes life	approx. 20000 hours of operation
Maintenance	after 10000 hours in service

Type	Rated voltage [VDC]	Rated current [mA]	max. current [mA]	Armature resistance [Ohm]	Upper speed limit [rpm]	Weight [g]
ITD 3 + KTD 3-1	10	10	100	45	6000	1690
ITD 3 + KTD 3-2	20	10	80	170	6000	1690
ITD 3 + KTD 3-3	30	10	80	170	6000	1690
ITD 3 + KTD 3-4	40	10	80	220	4000	1930
ITD 3 + KTD 3-6	60	30	80	220	3000	1930

Options:

• Execution of electronic		***R***	TTL-output signals *line driver-output stage* supply voltage: U_B = 8 - 30 VDC (poling error safe)
• Output signals	*A, B, N + Inv.*	***NI***	2 square-wave pulse trains + zero pulse, 90° electr. length + inv.
• Type of connection *ITD*	connector	***B1BR..***	build-in type 1, bush contacts, radial, ...-poles
• Operating temperature range		***E***	- 20 °C to + 100 °C
• Enhanced protective class			

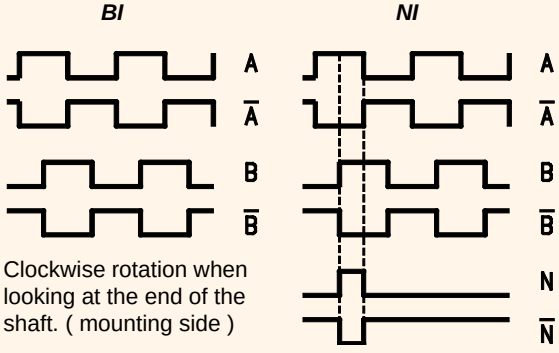
Accessories:

Coupling, for version ***B1B....***	***K1SG...***	coupling type 1, pin contacts, straight, ...-poles

Connection table:

wire color	*wire color*	***signals***
New commencing in July '99		
brown		= A
green		= A inverted
grey		= B
pink		= B inverted
red		= N
black		= N inverted
brown 0.5 mm²		= + U_B
white 0.5 mm²		= 0 V
blue		= + U_{sensor}
white		= 0 V_{sensor}
transparent		= shilding/housing
Old valid until June '99		
	yellow	= housing
	transparent	= shilding

Output signal diagram:



Clockwise rotation when looking at the end of the shaft. (mounting side)