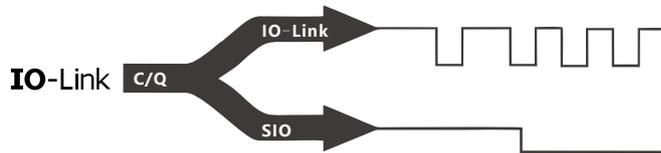
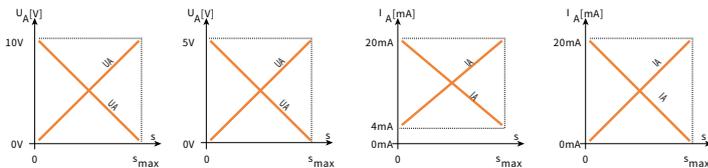




T3H, T3P - Analog(+IO-Link)

T-Series III Data Sheet



- + Updated new generation: stronger performance
- + Direct analog output, position and speed
- + Resolution highest up to 0.1 μ m
- + Output Analog+IO-Link



THE NEW III GENERATION



High precision



Double anti-interference



High performance chip



Reverse polarity protection



Shock/vibration resistant

TECHNICAL PARAMETER

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Input

Measured data	Position/Speed
Position measurement range	T3H 25mm...7650mm T3P 25mm...5600mm
Speed measurement range	0.01...10m/s

Output

Voltage + IO-Link	0...10VDC, 10...0VDC, 0...5VDC, 5...0VDC (Controller min. load impedance >5K Ω)+IO-Link			
Current + IO-Link	4...20mA, 20...4mA, 0...20mA, 20...0mA (min./max. load 0/750 Ω)+IO-Link			
Transmission rate (IO-Link)	Rate(bit/s)	4800	38400	230400
	Port	COM1	COM2	COM3*

Resolution

Resolution(Analog)	16 bit D/A (internal resolution 0.1 μ m)			
Resolution(IO-Link)	1/2/5*/10/20/50/100 μ m			
None-Linearity	< \pm 0.01%F.S. (min. \pm 50 μ m)			
Repeatability	< \pm 0.001%F.S. (min. \pm 1 μ m)			
Update time	Stroke length	\leq 1200mm	\leq 2400mm	\leq 4800mm
	Update time	0.5ms	1ms	2ms
Temperature coefficient	< 30ppm/ $^{\circ}$ C			

Mounting

Mounting direction	Any
T3H	Threaded: metric M18x1.5, metric M20x1.5, metric M24x1, 3/4"-16UNF-3A
T3P	Removable fixing card

Design/Material

T3H	Electronics housing: aluminum alloy/zinc alloy Measuring rod: stainless steel 304/316L Magnet: standard magnet/open magnet
T3P	Electronics housing: aluminum alloy/zinc alloy Profile: aluminum alloy Magnet: slider magnet/suspension magnet/U-magnet/U-magnet
Operating pressure ratings	T3H:35MPa (continuous) ,70MPa (peak)

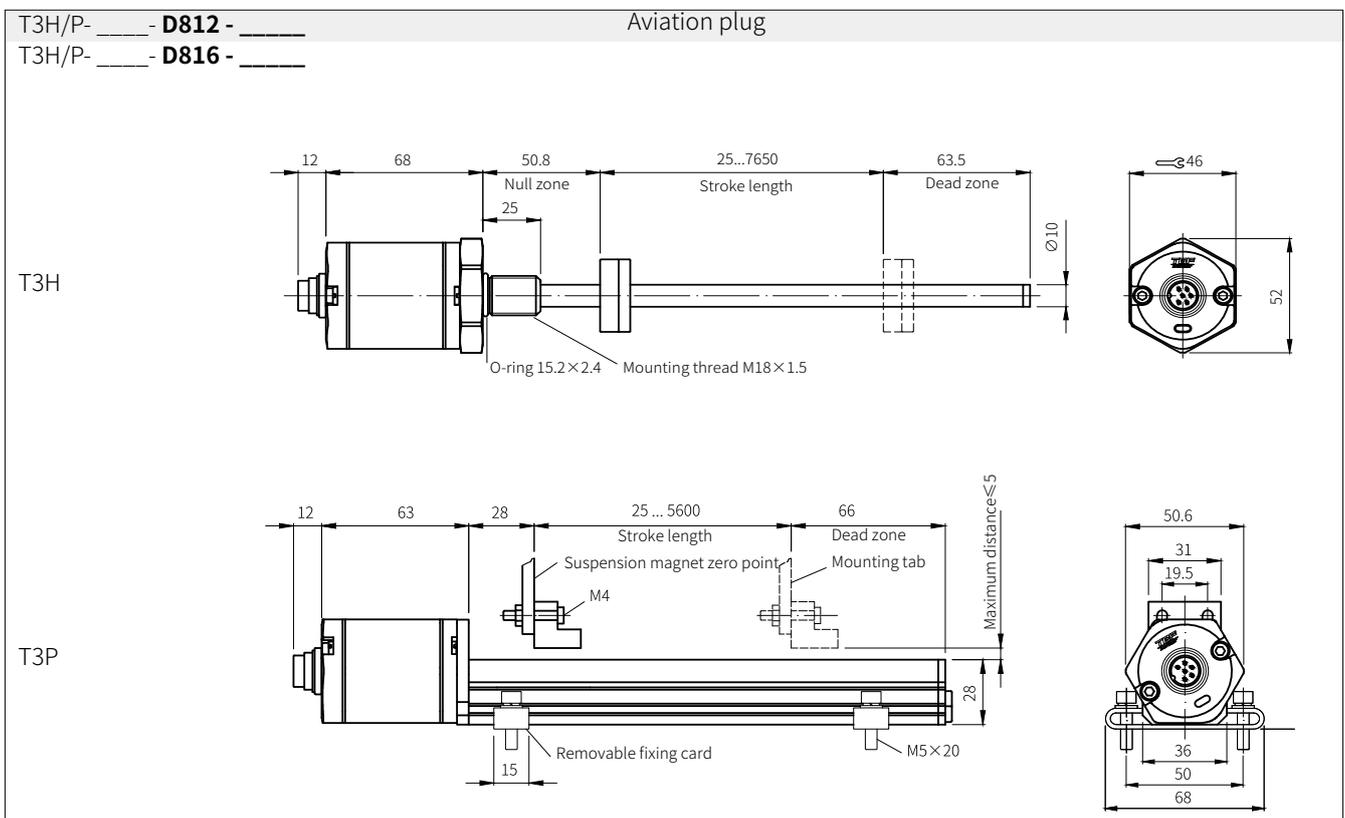
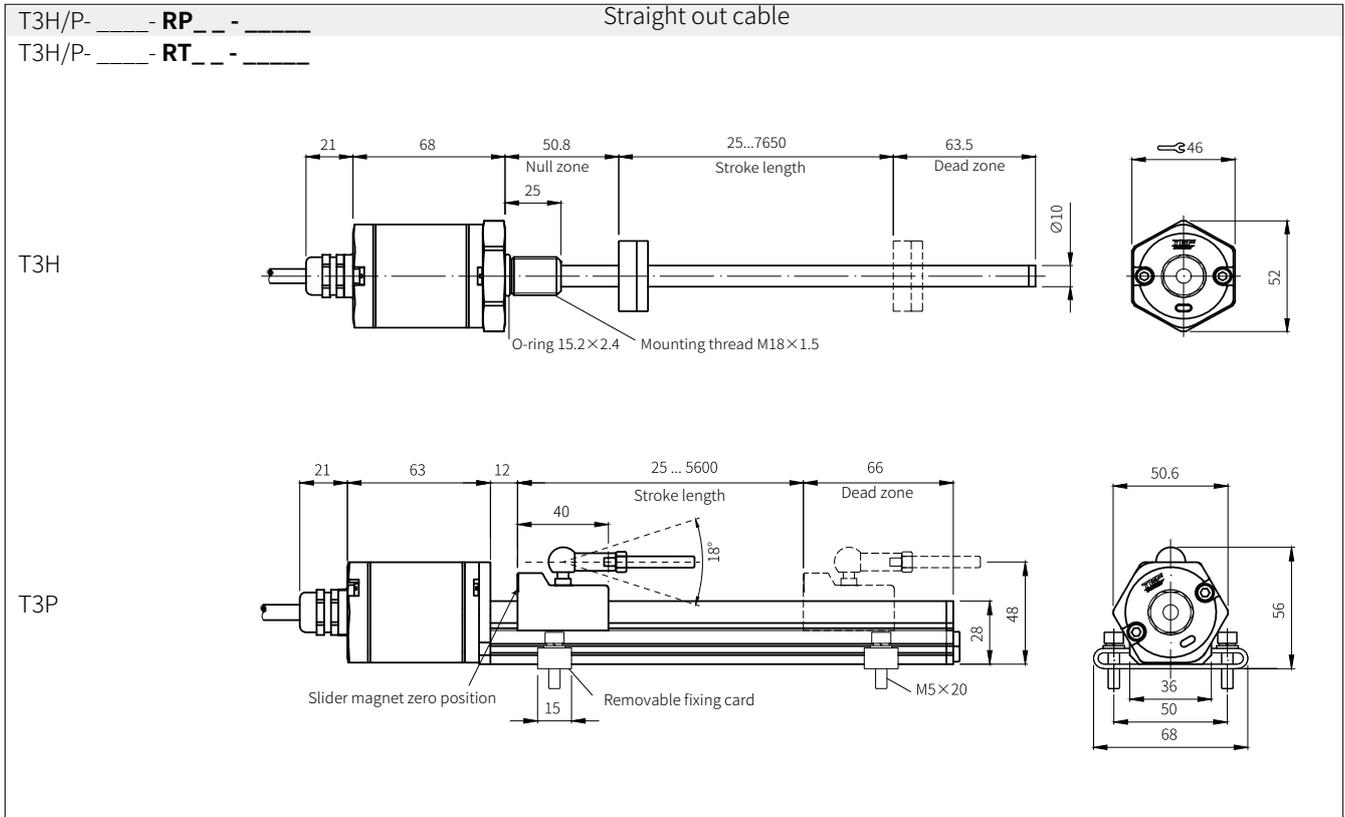
Electrical connection

Wiring connection	Straight out cable,M12 connector (8 pin) , M16 connector (8 pin)
Operating voltage	+24VDC(-15/+20%)
Polarity protection	Up to -36VDC
Overvoltage protection	Up to +36VDC
Power consumption	< 70mA (varies with range size)
Dielectric strength	500 VDC (DC ground to machine ground)

Operating conditions

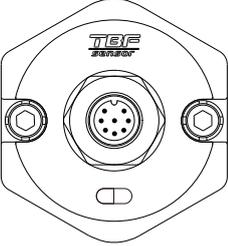
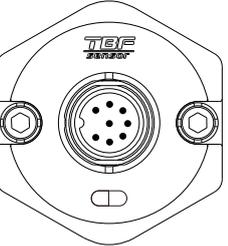
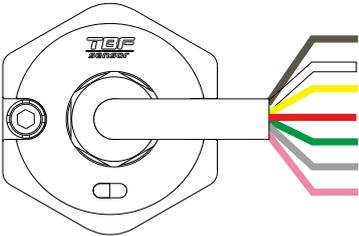
Magnet speed	Slider magnet \leq 10m/s; magnetic ring, any; suspension magnet, any.
Operating temperature	-40...85 $^{\circ}$ C
Humidity	90 % relative humidity, no condensation
Ingress protection	IP68 T3H (Pressure resistant outer tube type) IP67 T3P (Aluminum outer tube)
Shock	150 g/11 ms, IEC standard 60068-2-27
Vibration	30 g/10...2000 Hz, IEC standard 60068-2-6 (resonant frequencies excluded)
EMC	Electromagnetic emission according to EN 61000-6-3 Electromagnetic immunity according to EN 61000-6-2

Note: "*" as default



FUNCTION

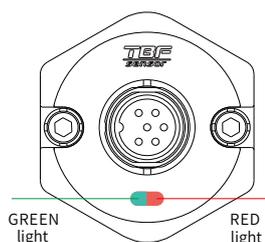
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8 pin M12 connector	D812	PIN	Function	
	 View on sensor	1	SGND 2*	
		2	SGND 1	
		3	Signal output 2*	
		4	C/Q(communication line)	
		5	Signal output 1	
		6	GND	
		7	+24VDC(-15/+20%)	
		8	NC	
8 pin M16 connector	D816	PIN	Current	Voltage
	 View on sensor	1	Output 1 (Current signal)	NC
		2	SGND	SGND
		3	Output 2 (Current signal)*	Output 2 (Voltage signal)*
		4	C/Q (communication line)	C/Q(communication line)
		5	NC	Output 1 (Voltage signal)
		6	GND	GND
		7	+24VDC (-15/+20%)	+24VDC (-15/+20%)
		8	NC	NC
Straight out cable		Color	Function	
		Brown	+24VDC (-15/+20%)	
		White	GND	
		Yellow	SGND1	
		Red	C/Q(communication line)	
		Green	Signal output 1	
		Gray	SGND 2 *	
		Pink	Signal output 2 *	

"*"adaptable for dual output signal connection

Enhanced monitoring and diagnostic functions

TECHNOLOGY PERCEIVES THE FUTURE



Green light	Red light	Function
ON	OFF	Normal work
ON	ON	Magnet is out of effective range, or magnet cannot be measured, nor magnet number is correct.
FLASH	ON	Enter programming status

ORDER CODE

T3H - - - - **M** - - - -

Thread	Stroke length	Connection type	Output
M Metric M18x1.5	0025...7650mm (5mm increments)	RP__ Straight out __m high performance cable	(Output Code)
V Metric M20x1.5		RT__ Straight out __m high temperature cable (Fill in zero if less than 2 places)	
S 3/4"-16UNF-3A		D812 8 pin M12 connector	
W Metric M24x1		D816 8 pin M16 connector	
R Metric M18x1.5, with M4x6 thread at tail end			

T3P - - - - **M** - - - -

Magnet	Stroke length	Connection type	Output
S Magnet slider joint at top	0025...5600mm (5mm increments)	Same as above	(Output Code)
V Magnet slider joint at front			
F Suspension magnet			
U U-magnet			

Analog Output Code [1][2][3]-[4] [5][6]

[1] System	[2] Resolution	[3] Output	[4][5] Current/Voltage	[6] Magnet
L +IO-Link (COM3)	1 5µm*	1 Position	A0 4...20mA (forward)	1 one magnet *
	2 2µm	2 Position and speed*	A1 20...4mA (reverse)	2 two magnets
	3 10µm	3 2 positions	A2 0...20mA (forward)	
	4 50µm	4 2 positions and 2 speeds	A3 20...0mA (reverse)	
	5 100µm	5 Configurable outputs	A4 4...20mA (dual output forward)	
	7 20µm	(Speed : µm/s)	V0 0...10V (forward)	
	8 1µm		V1 10...0V (reverse)	
			V2 0...5V (forward)	
		V3 5...0V (reverse)		
		V5 0.5...4.5V (forward)		
		V8 4.5...0.5V (reverse)		

Note: forward, data grows larger when the magnet is distant from the electronics housing;
reverse, data grows larger when the magnet approaches the electronics housing.

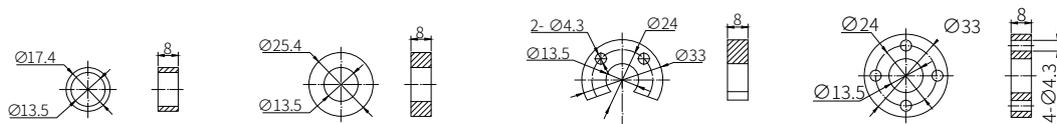
Model selection | Model: T3H-M-0600M-D812-L11-A01

Explanation: T series III generation, T3H pressure resistance outer tube type, mounting thread metric M18x1.5, stroke length 600mm, 8pin M12 aviation plug, Interface Analog+IO-Link, IO-Link resolution 5µm, position measurement, analog output of 4...20mA (forward), single magnet.

Please contact us for more customized products.
www.tbfsensor.com

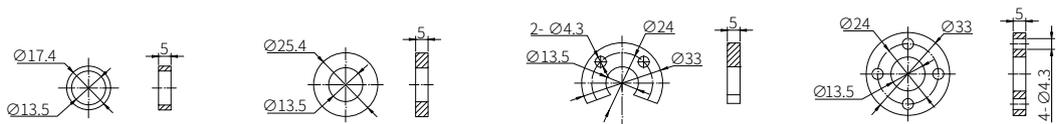
PARTS SELECTION

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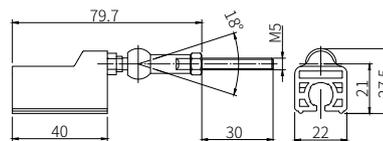
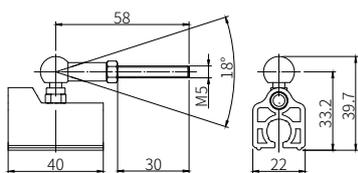


Name	Ring magnet	Ring magnet	U-magnet	Ring magnet
Operating temperature	-40...125°C			
Order code	12-1032	12-1019	12-1017	12-1001

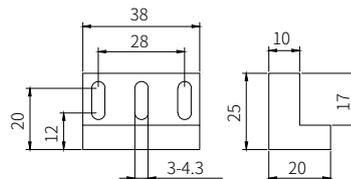
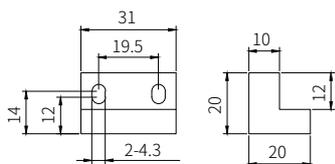
Fitting non-magnetic gasket



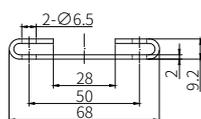
Name	Non-magnetic gasket	Non-magnetic gasket	Non-magnetic gasket	Non-magnetic gasket
Operating temperature	-40...125°C			
Order code	12-1037	12-1021	12-1018	12-1008



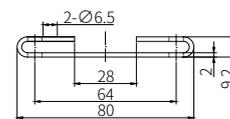
Name	Magnet slider S, joint at top	Magnet slider V, joint at front
Operating temperature	-40...105°C	
Order code	12-1114	12-1115



Name	Suspension magnet 31x20	Suspension magnet 38x25
Operating temperature	-40...105°C	
Order code	12-1010	12-1009

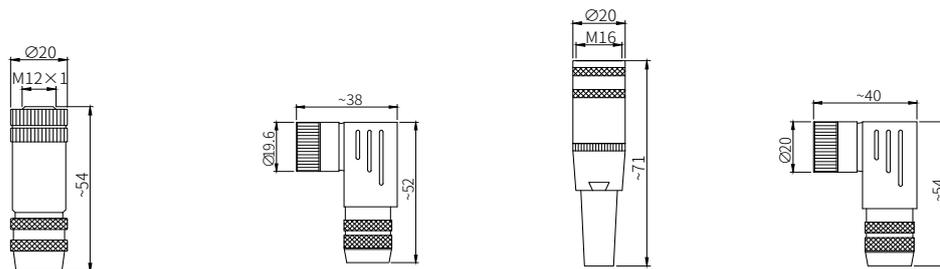


Width: 15mm



Width: 15mm

Name	Removable fixing card	Removable fixing card
Order code	11-1003	11-1004



Name	8 pin M12 female connector	8 pin M12 female connector (90 degree angle)	8 pin M16 female connector	8 pin M16 female connector (90 degree angle)
End view drawing				
Material				
Fitting diameter	8...10mm	6...8mm	6...8mm	6...8mm
Connection	Threaded		Welding	
Order code	18-5004	18-5005	18-5002	18-5003

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