

TRIONS TECHNOLOGY PRODUCT MANUAL

Attp://www.qdtetc.com



2 0532-80679218 / 80679219

➢ info@qdtetc.com

 2nd Floor, Building 1, Entrepreneurship Center, No. 57 Haier Road, Laoshan District, Qingdao City, Shandong Province, China





OFFICIAL ACCOUNTS

MOBILE WEBSITE



COMPANY INTRODUCTION

Qingdao Trions Electronics Technology Co., Ltd. was established in September 2003 and is a high-technology enterprise specializing in the manufacturing of magnetic sensors and providing automation control solutions. It offers research, development, sales, and services of related technologies and products including on-site signal perception, conversion, isolation, acquisition, transmission, and system integration.

The company possesses core technologies in the development and manufacturing of "thin-film magnetoresistive chips and magnetic sensors," holding multiple patents for magnetic sensor products. The company has passed ISO9001 quality management system certification and obtained EAC product certification. Its TRIONS[®] brand magnetic sensors for speed, angle, position, displacement, tilt, vibration, and other applications are widely used in various fields such as machinery, electronics, textiles, rubber, oil, chemical industries, ships, and vehicles, known for their excellent cost-performance and reliable performance. The company's differential magnetic resistance sensors and gear sensors have been exported to multiple countries and regions. Over the past two decades, the company has supplied more than a million magnetic sensors to hundreds of customers, earning widespread customer satisfaction.

"Perceiving the world, serving with peace of mind," Trions Technology takes innovation as its foundation, customer needs as its guide, and strives to provide the best service. The company is also capable of customizing non-standard sensors according to customer requirements and aims to become a trusted sensor expert for its clients.



OFFICIAL ACCOUNTS



MOBILE WEBSITE

CORPORATION CHARTER

¥63 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
BPQC	ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ Наватель Ofmetrie с оразичения от отстепенияется "БОЯНСПРОМ!" Мото полодания с дара ного отчиствляется "БОЯНСПРОМ!"	©NEX 回家防爆 防爆合格证	
QUALITY MANAGEMENT SYSTEM CERTIFICATION No.56623003657805 This is to certify that the quality watem of Qingdao Trions Electronics Technology CO., LTD	rupu, Kapuda, yane Jipanen, ani Zi, nonyu Z, anaping M, consumi rezyaperanimi prireipagnomia inorgi: 12200011714, nonsp racedona: *96039623170, aapee sanexponted arema tijindul/B(cimil;ru n.met.rupu). n.met Companence appeerings Desputsion Access Bogicomeru measurer, vin Maromondi gerupa, repressi supece / FEDOSS, suspan SMR, TMS, TSS, 75200, TISS, TDMS, PIBMA, ASB, MAN, FR GEI, TCM M, KR SZMH, TCR, TSS, SC, CM, TA-PAtolio, MAS, TMCW, QACW, TQC, TQC, TRZD, TRACT: TRACTS, TRACTS, TRACTS, TRACTS, TRAST, neuronaria-organization Delevision Vehicology CC, LidA, Mongology CC, Lid	 報告期時二年前日前500 第合期時二年前日前500 	商标注册证
Organizationing Coles. 913/2012/1316/0320 Register Advisors. In El Yearis Real, Calculatol Distinct, Gregolio (Maris Ruilling, 2nd Flow, Sile Advisors. No. 37 Have Real, Landon Distock, Gregolio (Naris Ruilling, 2nd Flow, Hulding 1, Verse Control Real, certificateThe quality assessment nyetem of the alone organizations has been reviewed	осущаетсямот дотельность по изготомлятию прохудить: Катай, 2nd Hoor, Badding 1, Emergencember Genet, No. 2 (There Kool, Labol Delice, Queglio, Chana новательствуют рабоваятеля полительствуют рабоваятеля Променялого соют "Электронегиятина сояместность технических практи" (17) °C (602041) Дискодирания в созгателистия правита на асмонала	- 2015年1日 - 2022-3000-7-2-24-00.00 1211.15年20日村2日本2月1日日日本2日村1日日、月田村日で1月5日。 12日7日35日-2021(第1日中日日、第1日前)、日本3日日日本71、4月1日日日) 2日17日35日-2021(第1日日日日、第1日前)、日本3日日日本71、4月1日日日)	検定使川商品/服务法目 (国际分党:9)
closes of quarky management space of participation of considerations	дигательные эконоргованных на выда и макала, агонские пакрытиции (уникальный нолородных об аконский конструкций (ул. 19.2.) (20.2.) (10年 11月19日の 2月1日日本語道: - 3510-4600。 2月19日本語 11月19日 11日日の11日、11日日の11日日の11日日の11日の11日の11日の11日の	 (本) (1805, 1809 (19)(18)(18))、北スルプロ・ド・スクロメのの23)、第四メアル35 (本 長 人 たなを2001.7644.630.2-0
Date of water, h. aux12, 2026 Note: The contribution used legither water lacescal conformation restore of supervision and audity and marked layvest. The validity of the cardification is using the OE date also among the traffic file of the control of the other and the family of the standard of the control of the events contagences.	получаются предукава, из инностатор с дати и почностоя собранная, обранны пред) обранные 0.5025. Лекзаравая в соответствия довучается с дати и регостранов на 13.42.200 водинется само М. В. Поредика с округатор с с дати и регостранов на 13.42.200 водинется само Постатор С с с с с с с с с с с с с с с с с с с	4.5.92574981, F96. ФОЗНЕ JAP 1881188 200 100.25.1922029 1.7.2.18	注册人地址 山东市市局中部山区同行第45号付金中心中特地区上的 注册日期: 200年の月20日 有効有面 200年の月20日
Cingdao B&P Inspection and Certification	Рогистрациянный инсертиональной получествов с полногостание. ГАУС N RU ДСХ.Р.403.В.6040025 Дита регистрания дискарания в соответствии: 14.842025	Contraction of the second seco	* 伊片雨 * 12 41 * 12 * 12
ACC Asses ROLLbuckler (to . 1, markywa) birek Inne Orogina Shadorg provine Company bir. www.bputor.com			
●		4.25 25 22 (B-2019)	425726 735722 18-9 9 821001738 9 0000
	实用新型专利证书 第111日	实用新型专利证书 第1005年	实用新型专利证书
建築構築 からから500 後辺電影 漫画日前 御空登録発展品(個別 第59) 報告記 2014-06-17 至 2014-06-17	文用編幣名称:一種用于真空破損中風友部品度測量装置 や 村 奴人: 内島市街地子村技も相応可 地 地:200000山东省市街市地山区街水街87号(前使中心1号修2)	実用級型系称,一种转進停虜器隊造動物 や利权人:青岛振動化子科技有限公司 地 は、2000mの山东省市局市街山区街市街57号(領金中心1号様2)	実用語言志称,一種指定傳過器測量校准装置 や利权人:青品装飾化了科技有限公司 地 起;200000 山东省市街市街山区街水街57号(値を中く4号株2
2328259/2009 C2024490/41196/374/000001 C/2503490/41196/374/000001 C/2503495/41196/374/001376/d2943/cd/d484ed5472 S20ee1346/d518/270 VetextoreFixEeHeat Total Science 2014/2014/0012014/214/2014/01484ed5472 S20ef346/314/01/001201532/000596/2000000	歴主党) 定 明 人1 20年高歩時後 や 利 号, ZL 2004 200027432.0 股股公告号, CN 221522771 U や利号, ZL 2004 200027432.0 股股公告号, CN 221522771 U や利号: L1 2004701/J05日 股权公告号, 2004年00月13日	臣法(第) 至 明 人: 対理協制規定 专 利 号: 22.2024.20673653.6 授权公告号: CN 221595038 U 专利 号: 23.2042.0073653.6 授权公告号: 2004年08月25日	歴史後) 至 明 人: 対理協制規定
CATE ESH ENHING ZUZZE ZALLE	● 道田珍華泉人。 六島 南京町,子科 秋 有限公司 ● 道田 近期人。 美術 當 赤井 民	中省日时年很人。 宫岛 旗印电子科 线 有限公司 中省日时复刊人。 刘母 宽序环境	中语日时中语人。 宾坞,就得电子科,就看到L公司 中语日时就到人。 刘敏觉,韩时代
HAT ALL ALL ALL ALL ALL ALL ALL ALL ALL A	医学知道不知る年代学生人民大学語《日本会社》考え、まえをとかけれ、キャルのも、 サガルカゼルのからこともとは、サガルを見せたやけれんでを学みが思えたから、 開始 伊と子子 (1)	服装 レス 44 45 4 7 4 5 4 5 4 5 4 7 4 5 4 5 4 5 4	国家加スル福田県 ちんえんが回る日の通行をき、またほうを外は、そうロック・ や村氏白花山のかここの止点、サイ料を変化えやりは人主をすゆけ日につくりついてなから、 局鉄 伊と子の (())
TEL SOUR-TELECTIVITE TELEVISIONE SUBJECTS SUBJEC	中长雨 2014 10(11)	中长雨 (121)-121)-121-121-121-121-121-121-121-12	中长用 第1日(方1-0)
	9	9///8. 6/	9.00
101	101	101 - William - 1121	
ut+#V RIISSINUT 实用新型专利证书	21:49 H215000119 文用新型专利证书	UE-9 0 第2186089年 实用新型专利证书	²²⁻⁸⁹ #22217119 文用新型专利证书
x元回556. → ●加定存後55micle内 や 利 枚 人。 方向表刊も7相支有限公司	实用原则名称: - ●●可自己通知是常的2%品老化台 ◆ 利 枚 人。 青岛南南电子科技有限公司	工用的方面, 一种便于闭起的传统路台地工具 中 析 权 As 并成果的名字科技有限公司	2.7118/276年,——杨编翰编网络研试会 中 科 权 人。有尚真词电子科技有限公司
 地 並 20000 山田道道街島希加山区市市田区市市田区市市田区 2 明 人 11時高井県区 2 明 人 11時高井県区 2 明 人 11時高井県区 2 明 月 2 2360394.9 2 授政会告号, CN 221571444 U 	 地: 2000001本省省市市地区活用が超35%(創业中心19校2	地 近,2 50000 山田道青道島山山区南市857号(雪安中G1号信2 臣法(2) 至 明 人1 対称高参規院 专 利 号 ₁ ZL 2023 237307883	 地: 200000 山水市青島市地山区南水約575 (営业中心19様2 記書記) 2 明 人: 特米氏:対称症 v 利 号, ZL 2023 23253960.4 和 号, ZL 2023 23253960.4
中亚目标电讯,当选择中4.7.213 的代表2141 的代表214	中國日本國家(中國)(AKT 和代表)(AKT 和代表)(AKT 和代表)(AKT AKT)(AKT) 中國田均率法人、高島南政地(子科技名組公司 中國田均須利人、特許民法則指定	 マガマサ目131 - 5405年17月24日 作品日時後礼, 言為(株395-574)(株301-501 第21時年代人, 当時(集)時代 中品目検知人, 対称(集)時代 	○ 利亚市 113 546-04 (1) [J041
服务和这个规模的联节部人民表和指导相接进行智慧、最发展于导对舰、并于过合参。 计相线的组成分离正论出来,于相线管理的及中制队为至于常语学校公司中型企具不定有法。	医学知识不知為意思や学み人名杰加福卡利法会社が意义。決定成十多村は、キアは3-6、 中可以自我以当者とそは生地、中部派官校注意学校私人主党学校学校出社中に記定をある。 ())))))))))))))))))))))))))))))))))))	用整加水产机场的成平等人式及和调制利用通过打量点,决定数子中行机。参于过少步, 中有机的结成分布之间点流,中有机管理性及中行机人定是等体理高心中的管理器化成为由。	图家和这个状态都很早多人民友和国生创造是打学会,决定很平专行战,并不让办法, 中的风格波队会击之日近东城,中的风管使也不可利从了定定等由学习这么中对他们都记载为法。



SMR04 Semiconductor Thin Film Magnetoresistance





Dimension figure



Resistance Strip Position Diagram (0.4 Module Gear)

Limit parameter (25°C)

Project	Symbol	Limit value	Unit
Maximum power	PD	230	mW
Operating temperature	Topr.	-20-80	°C
Storage temperature	Tstg.	-40-100	°C

Electric parameter (25°C)

Project	Symbol	Test condition	Minimum	Maximum	Unit
Zero-field resistance value	R13(0)	B=0	200	1200	Ω
Resistance value under magnetic field	R13(B)	B=0.3T	460	3600	Ω
Resistance change rate	Dr.	R13(B)/R13(0)	2.3	3.0	
Phase A zero magnetic field center voltage	VA(0)	VC=5V,B=0	2.3	2.7	V
Phase B zero magnetic field center voltage	VB(0)	VC=5V,B=0	2.3	2.7	V
Center voltage after phase A back magnetization	VA(B)	VC=5V,B=0.3T	2.3	2.7	V
Center voltage after phase B back magnetization	VB(B)	VC=5V,B=0.3T	2.3	2.7	V

http://www.qdtetc.com

2 0532-80679218 / 80679219

Typical Curve Chart



Output voltage VPP-Gap



 $\triangle R/R_0 - B$



Rт/**R**20℃—**Т**



△ R/R₀—T (B=0.3T)



temperature(°C)

V_A(0)—T





SMR05 Semiconductor Thin Film Magnetoresistance



Equivalent circuit



Dimension figure



Resistance Strip Position Diagram (0.5 Module Gear)

Limit parameter (25°C)

Project	Symbol	Limit value	Unit
Maximum power	PD	230	mW
Operating temperature	Topr.	-20-80	°C
Storage temperature	Tstg.	-40-100	°C

Electric parameter (25°C)

Project	Symbol	Test condition	Minimum	Maximum	Unit
Zero-field resistance value	R13(0)	B=0	200	1200	Ω
Resistance value under magnetic field	R13(B)	B=0.3T	460	3600	Ω
Resistance change rate	Dr.	R13(B)/R13(0)	2.3	3.0	
Phase A zero magnetic field center voltage	VA(0)	VC=5V,B=0	2.3	2.7	V
Phase B zero magnetic field center voltage	VB(0)	VC=5V,B=0	2.3	2.7	V
Center voltage after phase A back magnetization	VA(B)	VC=5V,B=0.3T	2.3	2.7	V
Center voltage after phase B back magnetization	VB(B)	VC=5V,B=0.3T	2.3	2.7	V

Attp://www.qdtetc.com

2 0532-80679218 / 80679219

Typical Curve Chart



Output voltage VPP-Gap



 $\triangle R/R_0 - B$



Rт/**R**20℃—**Т**



△ R/R₀—T (B=0.3T)



temperature(°C)

V_A(0)—T







TMS10 Series **Differential Magneto-resistive Sensor**



The signal amplitude Vpp is independent of speed.





Typical Application

- Replace FP210L100-22、 FP210D250-22
- Angle detection
- Detection of Electric Spindle Speed
- Linear small displacement detection

Dimension Figure



TRIONS Model	TMS10-10L	TMS10-10D
Siemens (Infineon) model	FP210L100-22	FP210D250-22
Maximum working voltage	10V, DC	10V, DC
Rated operational voltage	5V, DC	5V, DC
Rtotal R1-3 @25℃、 I < 1mA、 δ=∞	220-900Ω	900-1600Ω
Resistance asymmetry(R12 & R13)@25℃、δ=∞	≤10%	≤10%
Output offset voltage @25°C、 $\delta=\infty$	≤130 mV	≤130 mV
Output Amplitude @25°C、 δ =0.15mm、 detection object	> 900 mV	> 1000 mV
Operating frequency	0-100kHz	0-100kHz
Operating temperature	0-80°C	0-80°C

The standard test specimen is a pure iron block with dimensions of 1×10×8mm. The 1×10 surface is oriented towards the detection surface, and it passes through the detection surface along the detection direction.

Attp://www.qdtetc.com **2** 0532-80679218 / 80679219

Operating Principle

The core of this product is that a bias magnetic field or magnetic gathering pure iron is added to the back of the thin-film magnetoresistive element. When a detected ferromagnetic object or magnet passes through its detection area, the magnetic fields at MR1 and MR2 increase successively, thus causing the resistances of MR1 and MR2 to increase successively. If a voltage Vcc is applied across terminals ① and ③, a sine wave will be output from terminal ②, as shown in the following figure:



Considerations

- 1. The detection surface should not be squeezed, collided, or scratched, as this may cause damage.
- 2. The sensor should be firmly fixed during installation, and the inductor should move along the sensing direction of the sensor.
- 3. The operating temperature of the sensor is -30~70° C. Exceeding this range may affect its service life.
- 4. The rated operating voltage of the sensor is 5V, and the maximum operating voltage is 10V. Do not use it with an excessive voltage.

Tachometric Survey

TMS10-10 Differential magnetoresistive sensors are widely used to detect the rotational speed of ferromagnetic rotating bodies such as gears, racks, and gear discs. After being correctly installed as shown in the figure, a stable sinusoidal wave signal can be obtained (one tooth corresponds to one sinusoidal wave).



Small Angle Measurement and Control



Small Displacement Measurement As shown in the figure, when a ferromagnetic standard test object of a specific size (e.g., b = 1.8 mm) passes through the sensor along the sensitive direction, a signal similar to a sine wave can be obtained. The output signal within 1.5 mm near the center position is linear.



6 0532-85653998 ☑ info@qdtetc.com

TRS12I-2-04 Differential Magnetic Resistance Sensor with Dual Paths

Outline Dimensions, Pin Definitions and Sensitive Direction







Typical Curve Chart



TRS12I-2-04

Temperature Characteristic



Technical parameters					
TRIONS Model	TRS12I-2-04				
Corresponding foreign model	FR05CM12AL				
Rated operational voltage (Vin)	≤5V, DC				
Rtotal R1-4(Red-Black),25℃, δ=∞I < 1mA, δ=∞	700±20%Ω				
Output offset voltage, at Vin25°C, $\delta = \infty$	≤100 mV				
Output Amplitude Voutpp(mV), 25°Cδ=0.15mm	> 800mV				
Response frequency (fc)	0-100KHz				
Phase difference	90±5°				
Gear module	0.4				
Operating temperature	-40 ~ 100°C				

http://www.qdtetc.com

2 0532-80679218 / 80679219



Operating Principle

The product is internally equipped with two (or three) sets of magnetoresistive chips corresponding to the gear module, and a magnet is installed on the back of the chips to provide a bias magnetic field. During use, the sensor and gear need to be correctly installed. When the gear rotates, the two (or three) sets of chips respectively sense the magnetic field changes caused by the gear transmission and output two (or three) sinusoidal waves. In automatic control, the motion parameters of components such as tracking motors can be detected and tracked by analyzing these sinusoidal wave signals.



Typical Curve Chart



Technical parameters				
TRIONS Model	TRS25-3-0			
Rated operational voltage (Vin)	≤5V, DC			
Rtotal R1-4(Red-Black) 25℃,δ=∞,I < 1mA, δ=∞	380-500Ω			
Output offset voltage, at Vin 25°C, δ = ∞	≤100 mV			
Voutpp(mV), 25°C ,δ=0.15mm	> 600 mV			
Response frequency (fc)	0-100KHz			
Phase difference	90±5°			
Gear module	0.4			
Operating temperature	-30 ~ 100°C			

Typical Application

- Detection of gear speed and rotation direction
- Angular encoding
- Detection of servo motor speed and rotation speed
- Detection of needle position of knitting machine
- Tracking and monitoring of speed and rotation direction of CNC machine tool motor





TMS Series Computerized Flat Knitting Machine Needle Sensor

This product is a sensor specifically developed for advanced computerized flat knitting machines (woolen sweater knitting machines) to detect and determine the position of the knitting needles. It features high reliability, high sensitivity, strong anti-interference ability, and high cost-performance ratio, and can completely replace the FR05CM21AR sensor from Murata (Japan).

Internal Wiring





Internal needle sensor circuit diagram without built-in operational amplifie

Dimension Figure



TMS12F-20-1 TMS12F-20-2

Demonstration Of The Type



TRIONS Model	TMS12F-20-1	TMS12F-20-2
Corresponding MuRuta model	FR05CM21AR	FR05CM21AR
Maximum working voltage (Vmax)	10V, DC	10V, DC
rated operational voltage (Vin)	5V, DC	5V, DC
Rtotal R1−3, 25℃	700-1500Ω	700-1500Ω
Resistance asymmetry(R12&R13)25℃	≤10%	
Output offset voltage, at Vin	≤130 mV	≤130 mV
Output Amplitude Voutpp(mV),25℃,δ=0.15mm	> 900 mV	> 1000 mV
Operating frequency	0 – 100kHz	0 – 100kHz
Operating temperature	0 - 80°C	0 - 80°C

The standard test specimen is a pure iron block with dimensions of 1×10×8mm. The 1×10 surface is oriented towards the detection surface, and it passes through the detection surface along the detection direction.

http://www.qdtetc.com **2** 0532-80679218 / 80679219

Operating Principle

The core of this product is that a bias magnetic field or magnetic gathering pure iron is added to the back of the thin-film magnetoresistive element. When a detected ferromagnetic object or magnet passes through its detection area, the magnetic fields at MR1 and MR2 increase successively, thus causing the resistances of MR1 and MR2 to increase successively. If a voltage Vcc is applied across terminals ① and ③, a sinusoidal wave will be output from terminal ②, as shown in the following figure: ۷**out**



Typical Application: Needle Position Encoding

The TMS12F-20 needle reading sensor is now widely used in the Shima Seiki series of computerized flat knitting machines. There are two rows of iron racks below the needle bed of the computerized flat knitting machine. An iron block is installed below the starting position of the rack as the starting detection point, as shown in the figure below. Three needle readers are fixed below the head, and the head moves left and right under the drive of the motor. The three sensors are arranged in an inverted "pin" shape. The two upper sensors a and b are directly facing the iron racks, about 0.15 mm away from the tooth tops. The lower sensor c is directly facing the starting detection iron block, about 0.15 mm away from the block. When the head moves, the two upper sensors output two sinusoidal waves, and each sinusoidal wave corresponds to a tooth of the iron rack. The lower sensor only outputs a sinusoidal wave of one cycle at the starting position. Adjusting the distance between the a and b sensors can make the phase difference between the two sinusoidal waves 90 degrees.





TMS Series Electric Spindle Speed Sensor

This product is an important sensor for high-speed measurement of motorized spindles. In the field of speed measurement for motorized spindles of PCB drilling machines, it can replace Infineon's FP212L100-22 and FP212D250-22 products. With its tiny size, ultra-high frequency response, and strong anti-interference performance, this product has become an ideal speed measurement sensor in the motorized spindle industry. This series of products is applicable to the full range of motorized spindles with speeds from 60,000 to 250,000 rotations per minute.



Outline Dimensions and Lead Arrangement



A	В	С	D	E	F
8.0	76	5	5.5	0.8	4.5
8.5	76	5	6.5	0.8	5.5
8.9	76	5	5.5	0.8	4.5
8.9	76	5	6.5	0.8	5.5
	A 8.0 8.5 8.9 8.9	AB8.0768.5768.9768.976	ABC8.07658.57658.97658.9765	ABCD8.07655.58.57656.58.97655.58.97656.5	ABCDE8.07655.50.88.57656.50.88.97655.50.88.97650.50.8

TRIONS Model	TMS8-4EL;TMS8E-6EL;TMS8I-6EL	TMS8-4ED;TMS8E-6ED;TMS8I-6ED
Siemens (Infineon) model	FP212L100-22	FP212D250-22
Maximum working voltage	10V, DC	10V, DC
Rated operational voltage	5V, DC	5V, DC
Rtotal R1-3 @25℃、 I < 1mA、δ=∞	220-900Ω	900-1600Ω
Resistance asymmetry (R12 & R13) @25°C、 δ =∞	≤10%	≤10%
Output offset voltage @25°C、 δ =∞	≤130 mV	≤130 mV
Output Amplitude @25°C, δ =0.15mm, detection object	> 900 mV	> 1000 mV
Operating frequency	0 – 100kHz	0 – 100kHz
Operating temperature	0 - 80°C	0 – 80°C

The standard test specimen is a pure iron block with dimensions of 1×10×8mm. The 1×10 surface is oriented towards the detection surface, and it passes through the detection surface along the detection direction.

http://www.qdtetc.com

2 0532-80679218 / 80679219

Operating Principle

The core of this product is that a bias magnetic field or a magnetic gathering pure iron is added to the back of the thin-film magnetoresistive element. When a detected ferromagnetic object or a magnet passes through its detection area, the magnetic fields at MR1 and MR2 increase successively, thus causing the resistances of MR1 and MR2 to increase successively. If a voltage Vcc is applied across terminals ① and ③, a sinusoidal wave will be output from terminal ②, as shown in the following figure:



Product Picture



Demonstration Of The Type



Typical Curve Chart



The relationship between the output amplitude Vpp and temperature TA: When the temperature is 25 °C, the output amplitude is 100% with a detection distance of 0.2mm



The relationship between the output amplitude Vpp and the detection distance δ : When the detection distance is 0.2 mm, the output amplitude is 100% at a temperature of 25°C.



The relationship be tween the total resistance value R13 and temperature TA, with an infinite detection distance



TTL Series Spindle Speed Sensor

The speed sensor outputs a TTL square wave signal, which is a digital signal. It is designed specifically for the speed measurement of new digital spindle motors.



Red line—+DC5V Black line—ground wire White line—signal output

Model and Shape



Considerations

- 1. Short circuit at the output end is strictly prohibited.
- 2. Overvoltage at the input end is strictly prohibited.

Technical parameters					
Operating voltage	5V,DC	Output low level	≤0.3V		
Output signal	Square wave	Output high level	5V		
Signal format	NPN collector pull-up 470Ω resistor	No-load current draw	6mA		
Operating temperature	-30-100°C	Maximum output current	30mA		
Frequency Response	0-26KHz	Maximum Leakage Current	< 10µA		
Sensing gap	0.2 – 0.5mm				

2 0532-80679218 / 80679219

RA60 Spindle Speed Sensor

This sensor is mainly used for electric spindles with a rotation speed of 60,000 RPM from German PRECISE, such as SC63, SC3163, RA60, and TL60. This speed sensor has a high resistance value. The positive and negative poles can be connected together and form a two-wire speed sensor with the signal wire (white wire).



Dimension Figure



Technical parameters					
	Red - Black	800-1300Ω	Symmetry M	≤10%	
Resistance value	Red - White	400-650Ω	Neutral-point voltage	≤120mV	
	White - Black	400-650Ω	Insulation resistance	>100MΩ, 100VDC	
Output amplitude	≥1900mV				

- 1. Symmetry: M = the ratio of the difference between the two unilateral resistances to the total resistance.
- 2. Midpoint voltage: When a voltage of 5V is applied to the red and black wires, the output voltage of the white wire is -2.5V.
- 3. The output amplitude is the output amplitude (peak-to-peak value) when a standard detection iron block is gently slid along the sensitive direction while touching the sensitive surface, with an operating voltage of DC5V.





HSR205 Spindle Speed Sensor

The speed sensor generates a square wave output signal and is specifically designed for measuring the speed of the HSR205 electric spindle of a drum sander.



Dimension Figure

Internal Wiring&Connection Method



Technical parameters				
Operating voltage	4-12V,DC	Output low level	≤0.3V	
Output signal	square wave	Output high level	> supply voltage -1V	
Signal format	NPN collector open circuit	No-load current draw	6mA	
Operating temperature	-20-120°C	Maximum output current	30mA	
Frequency Response	0-20KHz	Maximum Leakage Current	< 10µA	

Note: When measuring low-level and high-level output, add a $2.2 \text{K}\Omega$ pull-up resistor.

http://www.qdtetc.com
0532-80679218 / 80679219

SC3263 Spindle Speed Sensor

This sensor is a dedicated IC that integrates a magnetoresistive sensitive chip and a signal processing circuit. It is specifically designed for speed measurement of the (Taiwan-made) SC3263 electric spindle.



Red line—DC5V positive power supply Blue line—Signal line Black line—Ground wire

Internal Wiring



Test and Application Circuit



Outline Drawing and Pin Definition

0	PIN	1	Vcc	DC4.5V-16V
[7]]T]	PIN	2	Vout	Open-collector output
	PIN	3	GND	Grounding

Technical parameters	Parameter range	Typical value
Operating voltage (Vcc)	4.5-16V,DC	DC5V
Operating current Icc PIN1	4-14mA	10mA
Saturation voltage VCEsat	Max 1V	
Sensing gap	0.3-2.9mm	
Ambient operating temperature Tamb	-40 ~ 150℃	
Frequency Response (fc)	0-25KHz	
Total power consumption Ptot	200mW	
Signal format	NPN collector open circuit	



Motor Spindle Encoder DDR Motor Sensor Magnetic Head

Mate with Metal shell, Strong anti-Low temperaturedrift, 0.2 module solid and interference capability stable signal reliable gear Protection class IP67, Non-contact measurement working frequency operating temperature -40-120°C 0-200KHz



Typical Application

- Replace the imported A860-2162-V002/013 head
- replace the imported A860-2162-V003/014 head
- replace the imported A860-2155-V001 head
- DDR spindle motor position coding and speed steering measurement
- CNC machine motor speed steering tracking monitoring



TDDR-3-02, TDDR-3-04

outline dimensional drawing



TDDR-2-02 outline dimensional drawing

Product Model	TDDR-3-02	TDDR-2-02	TDDR-3-04
Domestic models to replace imports	A860-2162-V002	A860-2162-V013	A860-2155-V001
Rated operational voltage Vin	5V, DC	5V, DC	5V, DC
Output offset voltage, at Vin25°C, $\delta = \infty$	≤60 mV	≤60 mV	≤60 mV
Output amplitude Voutpp(mV), 25°Cδ	> 500mV	> 500mV	> 700mV
Response frequency fc	0-200KHz	0-200KHz	0-200KHz
Phase difference	90±5°	90±5°	90±5°
Module of gear	0.2	0.2	0.4
Operating temperature	-40 ∼ 120°C	-40 ∼ 120°C	-40 ∼ 120°C

A http://www.qdtetc.com

2 0532-80679218 / 80679219

Typical Curve Chart



TDDR-2-02 Output signal diagram



TDDR-3-02, TDDR-3-04 Output signal diagram

Operating Principle

The sensor head of DDR motor is equipped with two (or three) groups of magnetoresistive chips corresponding to the module of the gear, and the magnetic steel providing a bias magnetic field is installed on the back of the chip. The sensor and gear should be installed correctly when used. When the gear rotates, it will cause the magnetic field on the back of the two (or three) groups of the encoder chip to change, so that the sensor output two (or three) sinusoidal waves. The motion parameters of motor and other components can be detected and tracked by analyzing these sine wave signals in automatic control.



Application diagram of sensor magnetic head

- 1. The detection surface must not be squeezed, collided with, or scratched, as it can be easily damaged;
- 2. The circumferential tooth surface of the gear must be precisely aligned with the centerline of the sensor's sensitive head. For the Z-phase side, one tooth can be removed (or only one tooth retained) to obtain the Z-phase signal;
- 3. The sensor must be securely fixed, and the detection surface of the sensitive head should maintain a proper distance from the tooth tip;
- 4. The operating temperature range of the sensor is -40°C to 120°C. Exceeding this range may affect its service life.



Motor Spindle Encoder FANUC Motor Sensor Magnetic Head





Product Mix



Technical Parameters

Product model	A20B-2003-0311/01	A20B-2003-0311/02
Rated operational voltage (Vin)	5V, DC	5V, DC
Output offset voltage, at Vin25°C, $\delta = \infty$	≤60 mV	≤60 mV
Output Amplitude Voutpp (mV)	> 750mV,(25℃δ=0.15mm)	> 1000mV,(25℃δ=0.20mm,)
Response frequency (fc)	0-200KHz	0-200KHz
Optimal installation distance	0.10-0.15mm	0.20-0.25mm
Phase difference	90±5°	90±5°
Gear module	0.4	0.4
Operating temperature	-40 ∼ 120°C	-40 ~ 120°C

2 0532-80679218 / 80679219

Typical Curve Chart



Typical Application

- Measurement of Speed and Rotation Direction of High-Speed Spindle Motor for CNC Machine Tools
- Replace imported A20B-2003-0311 encoder
- Detection of Servo Motor Speed and Rotation Direction
- Detection and Tracking of Gear Speed and Rotation Direction
- Monitoring of CNC Machine Tool Motor Speed and Rotation Direction Tracking

01:Detection distance

0.10-0.15

02:Detection distance 0.20-0.25

Demonstration Of The Type

A20B-2003-

0311:ABZ

Three-way signal

0310:AB

Two-way signal

Operating Principle

Inside the sensor magnetic head are installed two (or three) sets of magnetoresistive chips corresponding to the gear modulus. On the back of the chips is a magnet that provides a bias magnetic field. When in use, the sensor and gear need to be correctly installed. When the gear rotates, it will cause the magnetic field on the back of the two (or three) sets of chips of the encoder to change, so that the sensor outputs two (or three) sinusoidal waves. In automatic control, the motion parameters of components such as tracking motors can be detected and tracked by analyzing these sinusoidal wave signals.



Considerations

Product

Series Name

- 1. The detection surface shall not be subjected to extrusion, collision, or scratching, as it is prone to damage.
- 2. The circular tooth surface of the gear must be exactly aligned with the centerline of the sensor's sensitive head. For the gear on the Z-phase side, one tooth can be removed (or only one tooth can be left) to obtain the Z-phase signal.
- 3. The sensor should be firmly fixed, and the distance between the detection surface of the sensitive head and the tooth top should be appropriate.
- 4. The operating temperature range of the sensor is -40°C to 120°C. Exceeding this range will affect its service life.

Motor Spindle Encoder Mitsubishi System Motor Spindle Encoder





Product Mix



Connection method: The pin definitions of the 10-pin or 8-pin standard plug are compatible with the Mitsubishi signal processing board.

Typical Curve Chart



Operating Principle

The CM16AC motor spindle encoder is internally equipped with two magneto-resistive chips. One chip generates complementary A and B phase signals, while the other chip outputs two channels of Z-phase zero reference signals. After accurately positioning and installing this sensor with the matching gear, when the motor drives the gear to rotate, the sensor will output six-channel sinusoidal wave signals. These signals are processed by a Mitsubishi dedicated signal processing board and converted into digital signals, which are then transmitted to the central processor.



Demonstration Of The Type



- 1. The detection surface shall not be subjected to extrusion, impact, or scratching, as it is prone to damage.
- 2. The circular tooth surface of the gear must be exactly aligned with the centerline of the sensitive head of the sensor. Rotate the sensor so that the A and B phase chips are facing the side with multiple teeth, and the Z phase chip is facing the side with a single tooth.
- 3. The sensor must be firmly fixed, and the distance between the detection surface of the sensitive head and the tooth top should be appropriate.
- 4. The operating temperature of the sensor ranges from -40°C to 120°C. Exceeding this range will affect its service life.
- 5. The rated operating voltage of the sensor is 5V DC. Do not use it under overvoltage conditions.

Motor Spindle Encoder TR-GEL2444 Series Spindle Encoder

Achieve ultra-high precision measurement through circuit subdivision

Contactless measurementwith sin/cos or TTL interface

Match with gears (module 0.3,0.4or0.5) without bearings Protection level IP68, operating temperature -40-120°C Low temperature fluctuation, stable signal, frequency response range (0-200KHz)

Metal housing, fully shielded, with strong anti-electromagnetic interference ability



Selection Guide

234501 TR-GEL2444

- 1 Product Master Model Number
- 2 AB phase output type: K/T. K = Sine wave output, T = Square wave frequency doubling output
- 3 Module of matching gears: 3 / 4 / 5. 3 = 0.3 module,4 = 0.4 module,5 = 0.5 module
- Gear zero point type: M/Z. M = groove, Z = tooth protrusion
- **5** Z-phase (zero position) signal type: 1/2. 1 = Sine wave, 2 = Square wave
- Cable Interface Types: N/C/D. N = No interface, self-wiring. C = Piercing terminal interface.
 D = Dupont terminal interface.
- Lead-out Methods: L/T/G/R. L = Left-side lead-out. T = Right-side lead-out G = Axial lead-out. R = Radial lead-out

8 Cable length:015/030/100/150. (Unit: cm)

Example: The encoder TR-GEL2444K3Z2DT015 features AB sine wave output, 0.3 module, suitable for spur gears, Z phase (zero signal) is square wave output, Dupont terminal interface, right side cable outlet, and cable length of 15cm.

Technical parameters

Supply voltage	5V DC ±5%
Load current	≤30mA
Signal type	Sine wave/Square wave
Frequency response	0 – 200KHz
Signal amplitude	≈1Vpp @0.15mm
Gear module	0.3/0.4/0.5module (customizable)
Operating temperature	-20 - 120°C

Wiring Method



L = Left-side lead-out



G = Axial lead-out



T = Right-side lead-out



R = Radial lead-out

Type Of Gear



Boundary Dimension



Left-side lead-out (Unit: mm)



Right-side lead-out (Unit: mm)



Axial lead-out (Unit: mm)





Radial lead-out (Unit: mm)

Wiring definition				
L+B wire core color	TRIONS wire core color	Signal	Function	
Red	Red	+5V	+5V supply voltage	
Blue	Blue	0V	GND	
White	White	U1+ (A+)	Signal of trajectory 1	
Brown	Brown	U1- (A-)	Trajectory 1 Reverse Signal	
Rose pink	Rose pink	U2+ (B+)	Signal of trajectory 2	
Black	Black	U2- (B-)	Trajectory 2 Reverse Signal	
Grey	Grey	UN+ (Z+)	Reference Trajectory N Signal	
Yellow	Yellow	UN- (Z-)	Reference trajectory N reverse signal	
Green	Green	U Sense	5 V Sense	

Refer to the wiring definition of L + B as above

(this wiring definition applies to customer self-wiring and the use of Dupont terminal interface)

Application Field

- Replace the GEL2444 series sensor of L+B (Lenord+Bauer)
- Position and speed detection and tracking of high-speed spindle for machine tools
- Electronic synchronization of positioning screws in vacuum pumps
- Position detection of workpiece and motor speed measurement in lathe, grinding machine and milling machine
- Replace photoelectric encoders in high-speed and harsh environments.



Speed Sensor TCDM Series Magneto-Electric Speed Sensor

Product Features

- Passive output: No external power supply is required. It directly senses ferromagnetic substances to output signals.
- Two-wire output: There are only two wires without polarity, making wiring convenient.
- Sine-like wave output: Every time the detected object passes by the sensor, the sensor outputs a signal similar to a sine wave.
- The amplitude of the sine-like wave is positively correlated with frequency (0 - 10 kHz) and negatively correlated with the detection distance.
- The interior of the sensor features an induction magnetic core and coil structure, ensuring high reliability and suitability for harsh environments.



Installation Diagram



Demonstration Of The Type



B: Direct output cable with BNC connector at the end Default: Direct output of two-core cable.

Boundary Dimension



TCDM6-25



TCDM8-20



Signal	Resistance(Ω)±10%	Inductance(mH)±20%	Output Amplitude Vpp(V)@60Hz	Output Amplitude Vpp(V)@1500Hz
TCDM6-25	160	20	> 0.2	> 2
TCDM8-20	240	45	> 0.4	> 3
TCDM10-30CB	1000	140	> 1	> 4
TCDM12-40	750	160	> 1	> 6
TCDM12-60C	750	160	> 1	> 8
TCDM12-190C	850	300	> 1	> 8
TCDM16-60C	850	350	> 2	> 20
TCDM18-42	550	300	> 2	> 20
TCDM22-50B	550	300	> 2	> 20

6 0532-85653998 ☑ info@qdtetc.com

Speed Sensor NR Series Turbocharger Speed Sensor

Product Introduction

The product uses high-permeability materials to collect magnetic field lines, enabling it to measure the rotational speed of rotating magnets. It features a two-wire passive output of a sinusoidal wave with high output amplitude, high reliability, and excellent anti-interference performance. It can fully replace imported brand turbocharger speed sensors.



Dimension Figure



Sensor Model	L(MM)	Remark
NR20/R,NR20/S,NR24/R,NR24/S,NR26/R,NR29/S	55	
NR15/R,NR17/S,NR20	129	
NR12R/S,NR12/S,NR14/S	129	without cable connector

Technical Parameters

Parameter name	Unit	Numerical value	Remark
Resistance	Ω	800±10%	Room temperature25°C
Inductance	mH	1100±10%	Room temperature25°C
Output Amplitude(200 RPM)	mV	> 600	Cylindrical magnetic steel rotor;
Output Amplitude (1000RPM)	mV	> 3000	Surface magnetic field
Output Amplitude (3000RPM)	mV	> 9000	Filter capacitor 4.7nF

http://www.qdtetc.com

2 0532-80679218 / 80679219

SZMB Series Turbocharger Magnetoelectric Speed Sensor

Product Introduction

The magneto-electric speed sensor is a two-wire passive sensor, widely used for speed measurement, especially suitable for gear speed measurement. The output signal is similar to a sine wave, the output amplitude increases with the increase of the rotational speed and decreases with the increase of the installation distance.

Dimension Figure



Signal	L1	L2	L3
SZMB-120	30	120	169
SZMB-150	40	150	199
SZMB-190	50	190	239

Technical Parameters

Output Impedance (Ω)	1000±10%	Output Amplitude (Low Speed)	> 1.0V
Inductance value (mH)	350±10%	Output Amplitude (High Speed)	> 10V
Output waveform	Quasi-sinusoidal wave	Operating temperature (°C)	-40-150
Mounting distance (mm)	0.2-2	Gear material	Ferromagnetism
Frequency response (Hz)	0-100KHz	Level of protection	IP66

Speed measurement test conditions: The gear has 18 teeth in one circle, and the tooth pitch is 12 mm;

theinstallation distance between the sensor and the gear is 1 mm, with a low speed of 300 rpm and a high speed of 10000 rpm.



TCR Series Turbocharger Magnetoelectric Speed Sensor

Product Introduction

The TCR series speed sensor is a two-wire passive sensor widely used for speed measurement, especially suitable for speed measurement of turbocharger gears. The output signal is a quasi-sinusoidal wave. The output amplitude increases with the increase of the rotational speed and decreases with the increase of the installation distance.



Dimension Figure





Signal	L1	L2	L3
TCR12/14	49.5	61	2000
TCR16/18	73.5	85	2000
TCR20/22	91.5	103	2000

Technical Parameters

Output Impedance (Ω)	850±25%	Output Amplitude (Low Speed)	> 1.0V
Inductance value (mH)	135±25%	Output Amplitude (High Speed)	> 10V
Output waveform	Quasi-sinusoidal wave	Operating temperature (°C)	-40-150
Mounting distance (mm)	0.2-2	Gear material	Ferromagnetism
Frequency response (Hz)	0-100KHz	Level of protection	IP68

Speed measurement test conditions: The gear has 18 teeth in one circle, and the tooth pitch is 12 mm; The installation distance between the sensor and the gear is 1 mm.

The low speed is 120 rpm, and the high speed is 5000 rpm. The filter capacitor is 22 nF.

http://www.qdtetc.com

2 0532-80679218 / 80679219

TPS Series Turbocharger Magnetoelectric Speed Sensor

Product Introduction

The magneto-electric speed sensor is a two-wire passive sensor, widely used for speed measurement, especially suitable for gear speed measurement. The output signal is similar to a sine wave, the output amplitude increases with the increase of the rotational speed and decreases with the increase of the installation distance.



Dimension Figure



Signal	L1	L2
TPS48	54	78
TPS52	54	78
TPS57	69	108
TPS61	69	108

Technical Parameters

Output Impedance (Ω)	1000±10%	Output Amplitude (Low Speed)	> 1.0V
Inductance value (mH)	140±10%	Output Amplitude (High Speed)	> 10V
Output waveform	Quasi-sinusoidal wave	Operating temperature (°C)	-20-120
Mounting distance (mm)	0.2-2	Gear material	Ferromagnetism
Frequency response (Hz)	0-100KHz	Level of protection	IP67

Speed measurement test conditions: The gear has 18 teeth in one circle, and the tooth pitch is 12 mm; theinstallation distance between the sensor and the gear is 1 mm, with a low speed of 300 rpm and a high speed of 10000 rpm.





ZA Series Turbocharger Magnetoelectric Speed Sensor

Product Introduction

The magneto-electric speed sensor is a two-wire passive sensor, widely used for speed measurement, especially suitable for speed measurement of turbocharger gears. The output signal is similar to a sine wave, the output amplitude increases with the increase of the rotational speed and decreases with the increase of the installation distance.



Dimension Figure



Technical Parameters

Signal	ZA0506	ZA0507(TCR12S)	ZA0508
Output Impedance (Ω)	370±20%	680±20%	600±20%
Inductance value (mH)	140±20%	90±20%	300±20%
Output Amplitude (Low Speed)	> 500mV	> 300mV	> 500mV
Output Amplitude (High Speed)	> 10V	> 6V	> 10V
Output waveform	Quasi-sinusoidal wave	Quasi-sinusoidal wave	Quasi-sinusoidal wave
Mounting distance (mm)	0.2-2	0.2-2	0.2-2
Frequency response	0-100KHz	0-100KHz	0-100KHz
Level of protection	IP66	IP66	IP66
Gear material	Ferromagnetism	Ferromagnetism	Ferromagnetism
Operating temperature	-40-150°C	-40-150°C	-40-150°C

Speed measurement test conditions: The gear has 18 teeth in one circle, and the tooth pitch is 12 mm; The installation distance between the sensor and the gear is 1 mm. The low speed is 120 rpm, and the high speed is 10000 rpm. The filter capacitor is 22 nF.

M8 Series Speed Sensor

Selection Guide

- Product master model number
- External thread diameter
- S Total length of the sensor
- P: Single channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector
- Maximum working voltage
- Military products

Magnetic steel

disc trigger

Example Of Usage Method



Screw trigger on the rotating wheel

Technical parameters		
Operating voltage	DC8~24V	
Output mode	1-NPN;2-PNP;3-NPN Pull-up resistor	
Output high level	≥Supply voltage—1V	
Output low level	≤0.7∨	
Maximum output current	50mA	
Detection distance	0.2~2mm	
Frequency response	0~20KHz	
Protection level	IP66	



Wiring Method

Brown wire - positive power supply; Blue wire - 0V; Black wire - signal output

Output Waveform



One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

- 1. Short circuit at the output end is prohibited.
- 2. If the gear module is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the sensing surface of the sensor should be facing the center of the gear.



M12 Series Speed Sensor

Selection Guide

- 1 Product master model number
- **2** External thread diameter
- **3** Total length of the sensor
- P: Single channel D:twin channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector
 4.Push-pull output
- Maximum working voltage
- Military products

Example Of Usage Method









Screw trigger on the rotating wheel

Technical parameters

Operating voltage	DC12~24V
Output mode	1-NPN;2-PNP;3-NPN Pull-up resistor 4.Push-pull output
Output high level	≥Supply voltage—1V
Output low level	≤0.7∨
Maximum output current	50mA
Detection distance	0.2~3mm(Related to triggers)
Frequency response	0~20KHz
Protection level	IP66



2 0532-80679218 / 80679219





Wiring Method

Brown wire - positive power supply; Blue wire - 0V; Black wire - signal output

Output Waveform



One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

Considerations

- 1. Short circuit at the output end is prohibited.
- 2. If the gear module is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the sensing surface of the sensor should be facing the center of the gear.

M16 Series Speed Sensor

Selection Guide

- Product master model number
- 2 External thread diameter
- O Total length of the sensor
- P: Single channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector
 4.Push-pull output
- Maximum working voltage
- Military products

disc trigger

Example Of Usage Method



Screw trigger on the rotating wheel

Technical parameters

Operating voltage	DC12~24V
Output mode	1-NPN;2-PNP;3-NPN Pull-up resistor 4.Push-pull output
Output high level	≥Supply voltage—1V
Output low level	≤0.7V
Maximum output current	50mA
Detection distance	0.2~3mm(Related to triggers)
Frequency response	0~20KHz
Protection level	IP66





Wiring Method

Brown - positive power supply terminal; Blue - negative power supply terminal; Black - signal output

Output Waveform



One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

- 1. Short circuit at the output end is prohibited.
- 2. If the gear module is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the sensing surface of the sensor should be facing the center of the gear.



Speed Sensor Junction Box Sensor

Selection Guide

0 2 6 6 6 6 7 CM 16 - 85 P-1-24 B

- Product master model number
- 2 External thread diameter
- ③ Total length of the sensor
- P: Single channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector
 4.Push-pull output; 5.Two-wire current output
- Maximum working voltage





Technical parameters		
Operating voltage	DC12-24V	
Operating temperature	-20-80°C	
Output mode	3 output methods	
Thread length&interface	L=60, M16×1	
Output high level	≥ supply voltage—1V	
Output low level	voltage < 0.7V	
Current consumption	40mA	
Measurement accuracy	±1 pulse	
Output current	50mA	
Insulation resistance	> 50MΩ	
Detection distance	0.2~2mm	
Guard mode	Polarity & short circuit protection	
Frequency response	0~15KHz	
Trigger mode	Iron gear or permanent magnet	
Protection level	IP67	
Shell material	Copper-nickel plated + aluminum	
Wire diameter	5-12mm	
Vibration	200Hz,8g	







Output Waveform



One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

Installation Method



Considerations

- 1. Long-term short circuit at the output end is prohibited.
- 2. If the gear modulus is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear..

Speed Sensor Navigation Plug-out Speed Sensor

Selection Guide

- Product master model number
- External thread diameter
- **6** Total length of the sensor
- P: Single channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector
 4.Push-pull output
- Ø Working voltage
- Cable outlet with aviation plug





One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

Technical parameters

Operating voltage	DC12-24V
Operating temperature	-20-80°C
Output mode	4 output methods
Thread length&interface	L=60, M16×1
Output high level	≥ supply voltage—2V
Output low level	≤0.7V
Current consumption	40mA
Measurement accuracy	±1 pulse
Output current	50mA
Insulation resistance	> 50MΩ
Detection distance	0.2~2mm
Guard mode	Polarity & short circuit protection
Frequency response	0~15KHz
Trigger mode	Iron gear or permanent magnet
Protection level	IP66
Shell material	Nickel plated brass





Red wire - positive power supply terminal; Black wire - negative power supply terminal; Yellow wire - signal wire

Installation Method



- 1. Long-term short circuit at the output end is prohibited.
- 2. If the gear modulus is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear..



High-speed Gear Speed Sensor For Drawing And Spinning Frames

Selection Guide

1 TR - PA1010 - 2

- Company Identification
- Series Name
- Wire length

Practical Application

Detect gear speed:





Detect the rotational speed of the gear disc:





Typical applications: High-speed detection of gears in various imported and domestic warping machines, sizing machines, textile and chemical fiber machinery.

Technical parameters		
Operating voltage	DC12~24V	
Output mode	NPN pull-up resistor voltage output	
Output high level	> supply voltage—1V	
Output low level	< 0.7V	
Output current	50mA	
Detection distance	0.2 ~ 1mm	
Frequency response	0 ~ 20KHz	
Protection level	IP65	
Operating temperature	-20°C ∼ +85°C	







Red - positive power supply terminal; Black - negative power supply terminal; White - signal wire

Output Waveform



One square wave period corresponds to one trigger point (one tooth, one hole, one magnet, etc.)

Considerations

- 1. Long-term short circuit at the output end is prohibited.
- 2. If the gear modulus is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear..

Special Gear Speed Sensor For Oilfield Equipment

Selection Guide

- Series Name
- 2 External thread diameter
- O Thread end length
- P: Single channel D:twin channel
- Output modes: 1.NPN Output; 2.PNP Output;
- Operating voltage: 24V
- Aviation plug model: MS3106A10SL3S

Installation Method



Technical parameters		
Operating voltage	DC10~30V	
Output mode	PNP voltage output	
Output high level	≥ supply voltage—1V	
Output low level	≤0.3V	
Output current	50mA	
Detection distance	0.2~2mm	
Frequency response	0~20KHz	
Protection level	IP67	





Output Waveform



A square wave cycle corresponds to one trigger point, that is, one tooth.

Wiring Method

Military aviation plug cable outlet, aviation plug model MS3106A-10SL-3S Terminal definition: A - positive power supply; B - 0V; C - signal line.

- 1. Long-term short circuit at the output end is prohibited.
- 2. If the gear modulus is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear..



M12 Series Dual-channel Gear Speed Sensor

Selection Guide

2
3
6
5
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6
6<

- 2 External thread diameter
- Total length of the sensor
- O:twin channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector;
 4.Push-pull output; 5.Complementary output;
 6.NPN+PNP Output
- Operating voltage

Installation and Output



Technical parameters		
Operating voltage	DC12-24V	
Frequency response	e OHz ~ 18KHz	
Output signal	Output a single-channel square wave signal high level: close to supply voltage; low level: 0.3V	
Operating temperature	▲ - 20 ~ 80°C (ordinary)	
Output current	≤30mA	
Types of protection	Polarity&short circuit protection	
Trigger form	Steel gears or racks	
Output mode	6 output methods	
Resolution modulus	≥1	
Applicable humidity	≤95%RH	
Operating range	≥0.2 ~ 1mm	
Insulation resistance	≥50MΩ	
Measurement accuracy	±1 pulse	
Trigger mode	Iron gear wheel/permanent magnet	
Shell material	Copper shell with nickel plating/stainless steel	





Red wire – positive power supply terminal; Black wire – negative power supply terminal; Green wire – B signal wire; Yellow wire – A signal wire

Considerations

- 1. The output end is prohibited from being short-circuited to the positive power supply or ground.
- 2. Pay attention to the sensitive direction during installation.
- 3. The detected gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear.
- 5. If the gear module is small (i.e., when the teeth are narrow), the installation distance should be less than 0.5 mm.
- 6. The detected gear must be ferromagnetic.
- 7. During installation, the detection surface of the sensor should be facing the center of the gear. Pay attention to whether the sensitive direction of the sensor is correct.

2 0532-80679218 / 80679219

M16 Series Dual-channel Gear Speed Sensor

Selection Guide

2 3 4 5 6 5 0 16 6 5 0 1 2 4 5 6 5 6 6 6 6 7 6 7 8 6 6 6 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 7 8 6 6 6 7 7 8 6 6 6 7 7 8 6 6 6 7 7 8 8 8 8 8 8 8 9 8 9

- ② External thread diameter
- **③** Total length of the sensor
- D:twin channel
- Output modes: 1.NPN Output; 2.PNP Output;
 3.NPN Output with pull-up resistor on collector;
 4.Push-pull output; 5.Complementary output;
 6.NPN+PNP Output
- **6** Operating voltage

Installation and Output



Technical parameters		
Operating voltage	DC12-24V	
Frequency response	0Hz ~ 18KHz	
Output signal	Output a single-channel square wave signal high level: close to supply voltage; low level: 0.3V	
Operating temperature	▲ - 20 ~ 80°C (ordinary)	
Output current	≤30mA	
Types of protection	Polarity&short circuit protection	
Trigger form	Steel gears or racks	
Output mode	6 output methods	
Resolution modulus	≥0.5	
Applicable humidity	≤95%RH	
Operating range	≥0.2 ~ 1mm	
Insulation resistance	≥50MΩ	
Measurement accuracy	±1 pulse	
Shell material	Copper shell with nickel plating/stainless steel	





Red wire – positive power supply terminal; Black wire – negative power supply terminal; Green wire – B signal wire; Yellow wire – A signal wire

- 1. The output end is prohibited from being short-circuited to the positive power supply or ground.
- 2. Pay attention to the sensitive direction during installation.
- 3. The detected gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear.
- 5. If the gear module is small (i.e., when the teeth are narrow), the installation distance should be less than 0.5 mm.
- 6. The detected gear must be ferromagnetic.
- 7. During installation, the detection surface of the sensor should be facing the center of the gear. Pay attention to whether the sensitive direction of the sensor is correct.



CM16-66BJ-PG9H Type Wire Breakage Alarm Speed Sensor

Pin Definition



		0.		
	Ø 25 25	41	10	
3.6 09 09 09 09 09 09 09 09 09 00 09 00 00	Working Indicator (green)			22 22
		Broken line alarm light (red)	Gland box t PG11	

Technical parameters		
Operating voltage	DC 24V (±20%)	
Frequency response	0 ~ 15KHz	
RPM signal	NPN collector open circuit	
Operating temperature	-20 ~ 100°C	
Broken line alarm	Open circuit to ground when disconnected (solid state relay output)	
Guard mode	Polarity&short circuit protection	
Alarm type	Internal coil wire breakage; Signal wire breakage	
Trigger material	Ferromagnetic object	
Indicator light	Operate with green light, alert with red light	
Relay capacity	30V,0.5A	
Range	0.2 – 2.0mm	
Insulation resistance	≥100MΩ(100V,DC)	
Measurement accuracy	±1 pulse	
Shell material	Stainless steel	
Gland box	PG11	
Wire diameter	Φ7.6-9	
Protection level	IP68	
Vibration	200 Hz, less than 8a	

Installation Diagram



Considerations

- 1. The output end is prohibited from being short-circuited to the positive power supply or ground.
- 2. The detected gear must be ferromagnetic.
- 3. During installation, the detection surface of the sensor should be facing the center of the gear.
- 4. If the gear module is small (i.e., when the teeth are narrow), the installation distance should be less than 0.5 millimeters.

http://www.qdtetc.com

2 0532-80679218 / 80679219

CM14-60FS-4H Steering Speed Sensor

Installation Method and Signal Output







Technical parameters		
Operating voltage	DC 8 - 32 V	
Frequency response	0 ~ 15KHz	
Output signal	The square wave represents the rotational speed, and the high and low levels represent the direction.	
Operating temperature	-40 ∼ 125°C	
Output current	≤35mA	
Guard mode	Polarity&short circuit protection	
Trigger form	Steel gears or racks	
Output mode	Push-pull output	
Resolution modulus	≥0.5	
Humidity	≤95%RH	
Detection distance	0.2 – 2.3mm	
Insulation resistance	≥100MΩ/500VDC	
Measurement accuracy	±1 pulse	
Shell material	Nickel plated brass	
Protection level	IP68	
Gland box	PG9	

Pin Definition



- 1. The output end is prohibited from being short-circuited to the positive power supply or ground.
- 2. The detected gear must be ferromagnetic.
- 3. During installation, the detection surface of the sensor should be facing the center of the gear.
- 4. If the gear module is small (i.e., when the teeth are narrow), the installation distance should be less than 0.5 millimeters.



CM16-85P-5-24 **Two-wire Speed Sensor**



Wiring Method



Operating voltage

Operating temperature

Output mode

Thread length&interface

Output high current

Output low current

Current consumption

Measurement accuracy

Output current

Insulation resistance

Detection distance

Guard mode

Frequency response

Trigger mode

Protection level

Shell material

Wire diameter

Vibration



50mA

>100MΩ, 100VDC

0.2~2mm

Polarity&short circuit protection

0~15KHz

Iron gear wheel/permanent magnet

IP67

Copper-nickel plated + aluminum

5-12mm

200Hz,8g





Technical parameters		Output Waveform
ltage	DC12-24V	
perature	-20-80°C	
ode	current output	
interface	L=60, M16×1	to one trigger point
urrent	46-48mA(250Ωload)	(one tooth, one hole, one magnet, etc.)
urrent	8-9mA(250Ωload)	
mption	40mA	Considerations
iccuracy	±1 pulse	Considerations

1. Long-term short circuit at the output end is prohibited.

- 2. If the gear modulus is small (<0.5), the installation distance should be less than 0.5 millimeters.
- 3. The detection gear must be ferromagnetic.
- 4. During installation, the detection surface of the sensor should be facing the center of the gear.

e	http://www.gdtetc.com	

2 0532-80679218 / 80679219

S16-29 Series Ceramic Rod Toothed **Roller Sensor**

Selection Guide

0 2 3 4 5 6 S 16 - 29 DW - 1 - V1

- Product Serial Number
- 2 Sensitive end diameter
- The distance from the sensitive surface to the flange surface
- **4** DW:twin channel signal A, B.FW:four-channel signal A, \overline{A} , B, \overline{B}
- I. NPN open collector output 2. PNP pull-down resistor output 3. NPN pull-up resistor output 4. Push-pull output
- V1:Operating voltage5V,DC V2:Operating voltage12V,DC V3:Operating voltage24V,DC V4:Operating voltage8-30V,DC





Installation Diagram



Relationship

A: _____ B: _____ <u>B</u>: <u>____</u> Output waveform during A-direction movement



Output waveform during **B-direction movement**

Technical parameters		
Operating voltage	Four selectable voltages	
Frequency response	0Hz ~ 15KHz	
Output signal	high level: > supply voltage-1V; low level:< 0.7V	
Operating temperature	-40 ~ 125°C	
Current consumption	< 50mA	
Output mode	4 output methods	
Trigger form	Magnetic steel gear	
Direction	Output signal diagram	
Modulus of resolution	Tooth spacing of 1mm or more	
Humidity	≤95%RH	
Detection distance	0.3 ~ 1mm	
Guard mode	Polarity&short circuit protection	
Protection level	IP67	
Shell material	Stainless steel	

- 1. The sensitive surface of the sensor must not be subject to impact or scratching.
- 2. The shielding wire of the sensor should be left hanging and must not be connected to the 0V wire.
- 3. Do not connect wires while powered on. It is prohibited to have the output wire short-circuited with the positive power supply wire or the 0V wire for an extended period.
- 4. The operating voltage is appropriate and overvoltage use is prohibited.



S22-293 Series Linear Actuator Sensor

Selection Guide



- Product Serial Number
- 2 Sensitive end diameter
- The distance from the sensitive surface to the flange surface
- **\bigcirc** DW:twin channel signal A, B.FW:four-channel signal A, \overline{A} , B, \overline{B}
- **5** 1. NPN open collector output
- 2. PNP pull-down resistor output
- 3. NPN pull-up resistor output 4. Push-pull output
- V1:Operating voltage5V,DC
 V2:Operating voltage12V,DC
 V3:Operating voltage24V,DC
 V4:Operating voltage8-30V,DC

Installation Diagram



Technical parameters		
Operating voltage	Four selectable voltages	
Frequency response	0Hz ~ 15KHz	
Output signal	high level: > supply voltage-1V; low level:< 0.7V	
Operating temperature	-40 ~ 125℃	
Current consumption	< 50mA	
Output mode	4 output methods	
Trigger form	Magnetic steel gear	
Direction	Output signal diagram	
Modulus of resolution	Tooth spacing of 1mm or more	
Humidity	≤95%RH	
Detection distance	0.3 ~ 1mm	
Guard mode	Polarity&short circuit protection	
Protection level	IP67	
Shell material	Stainless steel	





Relationship

A:	A: Ā:
B:	$\frac{B}{B}$:
Output waveform during A-direction movement	(



Output waveform during B-direction movement

Considerations

- 1. The sensitive surface of the sensor must not be subject to impact or scratching.
- 2. The shielding wire of the sensor should be left hanging and must not be connected to the 0V wire.
- 3. Do not connect wires while powered on. It is prohibited to have the output wire short-circuited with the positive power supply wire or the 0V wire for an extended period.
- 4. The operating voltage is appropriate and overvoltage use is prohibited.

S22-343 Series CeramicRod Tooth Roller Sensor

Selection Guide

1 2 3 4 5 6 S 22 -343 DW - 1 - V1

- Product Serial Number
- 2 Sensitive end diameter
- The distance from the sensitive surface to the flange surface
- **4** DW:twin channel signal A, B.FW:four-channel signal A, \overline{A} , B, \overline{B}
- 1. NPN open collector output
 2. PNP pull-down resistor output
 3. NPN pull-up resistor output
 4. Push-pull output
- V1:Operating voltage5V,DC V3:Operating voltage24V,DC
 V4:Operating voltage8-30V,DC

Installation Diagram



Technical parameters		
Operating voltage	Four selectable voltages	
Frequency response	0Hz ~ 15KHz	
Output signal	high level: > supply voltage-1V; low level:< 0.7V	
Operating temperature	-40 ∼ 125°C	
Current consumption	< 50mA	
Output mode	4 output methods	
Trigger form	Magnetic steel gear	
Direction	Output signal diagram	
Modulus of resolution	Tooth spacing of 1mm or more	
Humidity	≤95%RH	
Detection distance	0.3 ~ 1mm	
Guard mode	Polarity&short circuit protection	
Protection level	IP67	
Shell material	Stainless steel	





Relationship

A: Ā:		
B: B:		
Output waveform during A-direction movement		

Output waveform during B-direction movement

- 1. The sensitive surface of the sensor must not be subject to impact or scratching.
- 2. The shielding wire of the sensor should be left hanging and must not be connected to the 0V wire.
- 3. Do not connect wires while powered on. It is prohibited to have the output wire short-circuited with the positive power supply wire or the 0V wire for an extended period.
- 4. The operating voltage is appropriate and overvoltage use is prohibited.



MAS-A-66 Two-wire Reluctance Angle Sensor

Product Introduction

Masa-66 two-wire magnetoresistive Angle sensor is A product specially customized for the tire machinery industry. The core component uses MR Magnetoresistive sensor, which converts the mechanical Angle into electrical signal with magnetic field as the medium. The product is equipped with a standard transmitter, corresponding to the measured Angle range, output standard 4-20mA current signal, two-wire wiring can be easily used with PLC, secondary instruments and other interfaces.

Technical parameters			
Product model	MAS-A-66		
Operating voltage	12-24V		
Linear range	66°		
Output signal	4-20mA		
Mechanical Angle	360°		
Resolution	Continuous		
Independent linearity	≤2%		
Temperature drift coefficient	≤0.01°/°C		
Operating temperature	−10 ~ 70°C		
Driving torque	< 0.5g.cm		
Humidity range	≤95RH		
Protection level	IP65		





Wiring Method

Brown wire - Positive source 12-24V Blue wire - Current signal output

Considerations

- 1. The installation should keep the rotating wheel and transmission wheel of the sensor mounted on the same axis, and can be connected with a coupling.
- 2. The rotating shaft of the sensor can not bear too much axial pressure and side tension, otherwise the sensor is easy to damage.

2 0532-80679218 / 80679219

MAS Series Angle Sensor Without Contact

Product Introduction

MAS series of contactless Angle sensor uses the company's self-produced magnetoresistor as the sensitive element, using the magnetic field as the medium to convert the mechanical Angle and angular displacement into electrical signals. The product is equipped with a standard transmitter, corresponding to the measured Angle range, and the output signal is a standard voltage signal (0-5V, 1-5V, etc.) or a standard current signal (4-20mA), which can be easily used with secondary instruments, PLC and other interfaces.





Selection Guide



Model	MAS-A-30/60/90	MAS-V-30/60/90
Operating voltage	12-24V	12-30V
Linear range	$\pm 15^{\circ}$, $\pm 30^{\circ}$, $\pm 45^{\circ}$ (0-90°can be customized)	±15°、±30°、±45° (0-90°can be customized)
Output signal	4-20mA	0-5V, 0-10V, 1-5V
Mechanical Angle	360°	360°
Resolution	Continuous	Continuous
Independent linearity	≤2%	≤2%
Temperature drift coefficient	≤0.01°/°C	≤0.01°/°C
Temperature	-10 ∼ 70°C	−10 ~ 70°C
Driving torque	< 0.5g.cm	< 0.5g.cm
Humidity range	≤95RH	≤95RH
Protection level	IP65	IP65

Typical Output Curve

Connection Mode

MAS-A-90

Current output type wiring (two-wire
system):
Brown-Positive power supply 12-24V
DC;
Black-Current signal output.
Voltage output type wiring:
Brown-Positive power supply 12-24V
DC;
Black-Voltage signal output;
Blue-Ground.

MAS-V-90





Product Introduction

TMCW0 series axial Angle sensor adopts the world's advanced integrated magnetic resistor chip, the use of magnetic signal non-contact induction, signal processing through the microprocessor, the mechanical Angle into the standard signal output (4-20mA, 0-5V, 0-10V, 1-5V, etc.), measuring range, output mode can be customized according to customer requirements. The sensor is composed of two parts, a signal picker and a sensor, which are separated. When used, the sensor body is fixed, the picker and the rotating shaft are fixed, so the sensor is shaftless.

Technical parameters				
Output mode	Voltage output (TMCW0V-)	Current output (TMCW0A-)		
Operating voltage	12±2V, DC or 24±2V,DC	12±2V, DC or 24±2V,DC		
Mechanical angle	360°	360°		
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable		
Resolution	12-bit(4096)	12-bot(4096)		
Accuracy	0.087°	0.087°		
Temperature drift(-20-80°C)	< 0.5°	< 0.5°		
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other		
Current consumption	≤16mA	≤16mA		
Load capacity	≥5KΩ	≥500Ω		
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C		
Protection level	IP67	IP67		
Replacement cycle	1ms	1ms		

Note: 1.In 1.0-360° multi-turn measurement, there is a 0.1-1° blind area at the intersection of 360° and 0°. 2.0-5V, 0-10V output, there is a base number of about 50mV at 0V.

Attp://www.qdtetc.com

2 0532-80679218 / 80679219

Connection Method

supply 10-30V, DC;

Black wire - Signal wire;

Blue wire - Ground wire

Selection Guide

6

- Product series name
- O represents no axis
- V:Voltage output A:Current output
- Voltage output range:example010:0-10V;15:1-5V
- S or default: Increase clockwise;N:Increase counterclockwise
- **6** Output angle range
- Operating voltag
- **13** W: External type; I: Internal type



TMCW0V-90F(0-10V output)

TMCW0A-90F (4-20mA output)

Install Wither Mode

- 1. Securely fix the sensor sensitive element.
- 2. Fix the signal pickup to the rotating shaft. Requirements: The axis of the pickup should coincide with the axis of the sensor sensitive element as much as possible. The side of the pickup with the magnet should face the sensor sensitive element. The pickup should be inserted into the cylindrical groove of the sensor sensitive element, and try to make the outer circular surface of the pickup flush with the flange surface of the sensitive element.
- 3. Measure the output voltage or output current of the signal wire to ground. Rotate the signal pickup so that the midpoint mark on the pickup aligns with the wire outlet hole on the sensor sensitive element. At this time, the output voltage or current should be near the midpoint value (for 4-20mA output, it is 12mA; for 0-5V output, it is 2.5V; for 1-5V output, it is 3V; for 0-10V output, it is 5V). If you need to accurately locate the midpoint value position, you can rotate the pickup until the output value reaches the midpoint value.

Examples Of Output Characteristics



TMCW5 Series **Contactless Angle Sensor**

No contact no contact measurement Small temperature drift high resolution good linearity

Small torque

It can adapt to harsh environments, has high reliability and long life

Flexible and diverse measurement range and output methods

Application Field

- Angle measurement and tracking in automatic control
- Valve opening angle measurement and control
- Servo motor rotation angle measurement
- Tension measurement and control in fields such as textile and papermaking
- Liquid level measurement and tracking



Three soft wire outputs on the side: Red wire - positive power supply 10-30V, DC; Black wire - ground; Yellow wire - signal wire

Selection Guide



- Product series name
 Shaft diameter
- **③** V:Voltage output A:Current output
- Voltage output range:example010:0-10V;15:1-5V
- S or default: Increase clockwise N:Increase counterclockwise
- **6** Output angle range
- L:Screw mounting;F:Flanged mounting
- Operating voltage

Note: For standard products, the output increases when rotated clockwise If there is no "S" or "N" marked in the model number, the sensor output increases when rotated clockwise

Technical parameters				
Output mode	Voltage output (TMCW5V-)	Current output (TMCW5A-)		
Operating voltage	12±2V, DC or 24±2V,DC	12±2V, DC or 24±2V,DC		
Mechanical angle	360°	360°		
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable		
Resolution	12-bit(4096)	12-bit(4096)		
Accuracy	0.087° (range smaller, accuracy higher)	0.087° (range smaller, accuracy higher)		
Temperature drift(-20-80°C)	< 0.5°	< 0.5°		
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other		
Current consumption	≤16mA	≤16mA		
load capacity	≥2KΩ	≥500Ω		
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C		
Protection level	IP63	IP63		
Replacement cycle	1ms	1ms		

Note: 1.In 1.0-360° multi-turn measurement, there is a 0.1-1° blind area at the intersection of 360° and 0°. 2.0-5V, 0-10V output, there is a base number of about 50mV at 0V.

http://www.qdtetc.com

2 0532-80679218 / 80679219

Dimension Figure



Typical Output Curve



TMCW5V-90L(F) (0-10V output)

Install Wither Mode

- 1. The sensor is reliably fixed.
- 2. The wiring is correct and power is supplied.
- 3. Measure the output voltage or output current of the signal wire to ground. Rotate the rotating shaft to make the output voltage or current reach the zero point value (for 4-20mA output, it is 12mA; for 0–5V output, it is 2.5V; for 1-5V output, it is 3V; for 0-10V output, it is 5V). This position is the zero point position. At this time, the D-shaped notch of the sensor is facing the zero mark point.



- 1. During installation, it is necessary to keep the rotating shaft of the sensor coaxially connected with the drive shaft, and an appropriate coupling can be used.
- 2. The rotating shaft of the sensor cannot withstand excessive axial pressure and radial torque, otherwise the sensor is prone to damage.
- 3. This product can be used in conjunction with the TRSX series intelligent digital display instruments produced by our company to form a complete set of measurement, display and control systems.

TMCW6 Series Contactless Angle Sensor

Product Introduction

TMCW6 series contact-free Angle sensor adopts the current international advanced integrated magnetic resistor chip, the use of magnetic signal non-contact induction, signal processing through the microprocessor, the mechanical Angle into the standard signal output (4-20mA, 0-5V, 0-10V, 1-5V, etc.). Measuring range, output mode can be customized according to customer requirements.





Brown wire - Positive power supply 10-30V, DC; Black line - signal line; Blue line - ground

Selection Guide



Operating voltage

Note: For standard products, the output increases when rotated clockwise. If there is no "S" or "N" marked in the model number, the sensor output increases when rotated clockwise.

	Technical parameters	
Output mode	Voltage output (TMCW6V-)	Current output (TMCW6A-)
Operating voltage	12±2V, DC or 24±2V,DC	12±2V, DC or 24±2V,DC
Mechanical angle	360°	360°
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable
Resolution	12-bit(4096)	12-bit(4096)
Accuracy	0.087° (range smaller, accuracy higher)	0.087° (range smaller, accuracy higher)
Temperature drift(-20-80°C)	< 0.5°	< 0.5°
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other
Current consumption	≤16mA	≤16mA
load capacity	≥2KΩ	≥500Ω
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C
Protection level	IP63	IP63
Replacement cycle	1ms	1ms

Note: 1.In 1.0-360° multi-turn measurement, there is a 0.1-1° blind area at the intersection of 360° and 0°. 2.0-5V, 0-10V output, there is a base number of about 50mV at 0V.

A http://www.qdtetc.com

2 0532-80679218 / 80679219

Dimension Figure



Typical Output Curve



Application Field

- Measurement and tracking of angles in automatic control;
- Measurement and control of valve opening angles;
- Measurement of servo motor rotation angles;
- Tension measurement and control in fields such as textiles and papermaking;
- Liquid level measurement and tracking







- 1. During installation, it is necessary to keep the rotating shaft of the sensor coaxially connected with the drive shaft, and an appropriate coupling can be used.
- 2. The rotating shaft of the sensor cannot withstand excessive axial pressure and radial torque, otherwise the sensor is prone to damage.
- 3. This product can be used in conjunction with the TRSX series intelligent digital display instruments produced by our company to form a complete set of measurement, display and control systems.

TMCW8 Series Contactless Angle Sensor

The TMCW8 series non-contact angle sensor adopts the currently internationally advanced integrated magneto-sensitive resistor chip, uses non-contact magnetic signal induction, and processes the signal through a microprocessor to convert the mechanical angle into a standard signal output (4-20mA, 0-5V, 0-10V, 1-5V, etc.). The measurement range and output mode can be customized according to customer requirements.





Brown wire - Positive power supply DC; Black line - signal line; Blue line - 0V line

Selection Guide



- Product series name
 Shaft diameter
- O V:Voltage output A:Current output
- Voltage output range:example010:0-10V;15:1-5V
- S or default: Increase clockwise N:Increase counterclockwise
- Output angle range
- L:Screw mounting;F:Flanged mounting
- Operating voltage

Note: For standard products, the output increases when rotated clockwise. If there is no "S" or "N" marked in the model number, the sensor output increases when rotated clockwise.

	Technical parameters	
Output mode	Voltage output (TMCW8V-)	Current output (TMCW8A-)
Operating voltage	12±2V, DC or 24±2V,DC	12±2V, DC or 24±2V,DC
Mechanical angle	360°	360°
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable
Resolution	12-bit(4096)	12-bit(4096)
Accuracy	0.087° (range smaller, accuracy higher)	0.087° (range smaller, accuracy higher)
Temperature drift(-20-80°C)	< 0.5°	< 0.5°
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other
Current consumption	≤16mA	≤16mA
load capacity	≥2KΩ	≥500Ω
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C
Protection level	IP63	IP63
Replacement cycle	1ms	1ms

Note: 1.In 1.0–360° multi-turn measurement, there is a 0.1–1° blind area at the intersection of 360° and 0°. 2.0–5V, 0–10V output, there is a base number of about 50mV at 0V.

http://www.qdtetc.com

2 0532-80679218 / 80679219

Dimension Figure



Typical Output Curve



Install Wither Mode

- 1. The sensor is reliably fixed.
- 2. The wiring is correct and power is supplied.
- 3. Measure the output voltage or output current of the signal wire to ground. Rotate the rotating shaft to make the output voltage or current reach the zero point value (for 4-20mA output, it is 12mA; for 0-5V output, it is 2.5V; for 1-5V output, it is 3V; for 0-10V output, it is 5V). This position is the zero point position. At this time, the D-shaped notch of the sensor is facing the zero mark point.

Application Field

- Measurement and tracking of angles in automatic control;
- Measurement and control of valve opening angles;
- Measurement of servo motor rotation angles;
- Tension measurement and control in fields such as textiles and papermaking;
- Liquid level measurement and tracking



TMCW8A-90L(F) (4-20mA output)

- 1. During installation, it is necessary to keep the rotating shaft of the sensor coaxially connected with the drive shaft, and an appropriate coupling can be used.
- 2. The rotating shaft of the sensor cannot withstand excessive axial pressure and radial torque, otherwise the sensor is prone to damage.
- 3. This product can be used in conjunction with the TRSX series intelligent digital display instruments produced by our company to form a complete set of measurement, display and control systems.



TMCW-M Series Sealed Waterproof Contactless Angle Sensor

No contact no contact measurement Small temperature drift high resolution good linearity Seal waterproofing

It can adapt to harsh environments,has high reliability and long life Flexible and diverse measurement range and output methods

Application Field

- Measurement and tracking of angles in automatic control;
- Measurement and control of valve opening angles;
- Measurement of servo motor rotation angles;
- Tension measurement and control in fields such as textiles and papermaking;
- Rubber machinery angle measurement and tracking





Brown wire - Positive power supply DC; Black line - signal line; Blue line - 0V line

Selection Guide

1	2	3	4	5		6	7	8	
TMC¥	8		□ -		-		- [] – 🗆	

- Product series nameShaft diameter
- ❸ V:Voltage output A:Current output
- Voltage output range:example010:0-10V;15:1-5V
- S: Increase clockwise;N:Increase counterclockwise
- Angle range
- L:Screw mounting;F:Flanged mounting;
 M:With appliage ring;
- M:With sealing ring Operating voltage

Note: For standard products, the output increases when rotated clockwise. If there is no "S" or "N" marked in the model number, the sensor output increases when rotated clockwise.

	Technical parameters	
Output mode	Voltage output	Current output
Operating voltage	12±2V, DC or 24±2V,DC	12±2V, DC or 24±2V,DC
Mechanical angle	360°	360°
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable
Resolution	12-bit(4096)	12-bit(4096)
Accuracy	0.087°	0.087°
Temperature drift(-20-80°C)	< 0.5°	< 0.5°
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other
Current consumption	≤16mA	≤16mA
load capacity	≥2KΩ	≤500Ω
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C
Protection level	With sealing ring IP67	Without sealing ring IP65;With sealing ring IP67
Replacement cycle	1ms	1ms

Note: 1.In 1.0–360° multi-turn measurement, there is a 0.1–1° blind area at the intersection of 360° and 0°. 2.0–5V, 0–10V output, there is a base number of about 50mV at 0V.

http://www.qdtetc.com

2 0532-80679218 / 80679219

Product Introduction

The TMCW-M series sealed and waterproof non-contact angle sensor adopts the currently internationally advanced integrated magneto-sensitive resistor chip. It utilizes non-contact magnetic signal induction and processes the signal through a microprocessor to convert the mechanical angle into a standard signal output (such as 4-20mA, 0-5V, 0-10V, 1-5V, etc.). This series of sensors features an all-stainless steel housing and shaft seal ring design, making it robust, reliable, and with a high protection rating. It is suitable for use in harsh working environments. The measurement range and output mode can be customized according to customer requirements.



Typical Output Curve



TMCW8A-90LM-24 output curve

Install Wither Mode

- 1. The sensor is reliably fixed.
- 2. The wiring is correct and power is supplied.
- 3. Measure the output voltage or output current of the signal wire to ground. Rotate the rotating shaft to make the output voltage or current reach the zero point value (for 4-20mA output, it is 12mA; for 0-5V output, it is 2.5V; for 1-5V output, it is 3V; for 0-10V output, it is 5V). This position is the zero point position. At this time, the D-shaped notch of the sensor is facing the zero mark point.

- 1. During installation, it is necessary to keep the rotating shaft of the sensor coaxially connected with the drive shaft, and an appropriate coupling can be used.
- 2. The rotating shaft of the sensor cannot withstand excessive axial pressure and radial torque, otherwise the sensor is prone to damage.
- 3. This product can be used in conjunction with the TRSX series intelligent digital display instruments produced by our company to form a complete set of measurement, display and control systems.



TMCWQ Series Contactless Angle Sensors For Automotive Applications

No contact no contact measurement Small temperature drift high resolution good linearity

Small torque

It can adapt to harsh environments, has high reliability and long life

Flexible and diverse measurement range and output methods

Application Field

- Angle measurement and tracking in automatic control
- Valve opening angle measurement and control
- Servo motor rotation angle measurement
- Tension measurement and control in fields such as textile and papermaking
- Wheel rotation angle measurement of automotive chassis



1. Plug connection: PIN 1 – ground; PIN 2 – positive power supply; PIN 3 - signal line 2. Shielded cable connection: brown - positive power supply; blue - ground; black - signal line 3. Customers need to have a 282105 sealed plug produced by AMP

Selection Guide



- Product series name
 Shaft diameter
- Over the second seco
- Voltage output range:example010:0-10V;15:1-5V
- **6** S or default: Increase clockwise N:Increase counterclockwise
- Output angle range
- Operating voltage
- 8 C:Pin interface;L:Three-core shielded wire output

Note: For standard products, the output increases when rotated clockwise If there is no "S" or "N" marked in the model number, the sensor output increases when rotated clockwise

Technical parameters				
Output mode Voltage output (TMCW6V-)		Current output (TMCW6A-)		
Operating voltage	10-30V, DC	10-30V, DC		
Mechanical angle	360°	360°		
Angle measuring range	±5 ~ ±180°, 0 ~ 360°customizable	±5 ~ ±180°, 0 ~ 360°customizable		
Resolution	12-bit(4096)	12-bit(4096)		
Accuracy	±0.03-0.087°(range smaller, accuracy higher)	±0.03-0.087°(range smaller, accuracy higher)		
Temperature drift(-20-80°C)	< 0.5°	< 0.5°		
Output signal	0-5V、0-10V、1-5V or other	4–20mA or other		
Current consumption	≤16mA	≤16mA		
load capacity	≥2KΩ	≤500Ω		
Operating temperature	Industrial grade-20-80°C;military grade-40-125°C	Industrial grade-20-80°C;military grade-40-125°C		
Protection level	IP67	IP67		
Replacement cycle	1ms	1ms		

Note: 1.In 1.0-360° multi-turn measurement, there is a 0.1-1° blind area at the intersection of 360° and 0°. 2.0-5V, 0-10V output, there is a base number of about 50mV at 0V.

http://www.qdtetc.com **2** 0532-80679218 / 80679219

Product Introduction

TMCWQ series contact-free Angle sensor adopts the international advanced integrated magnetic resistor chip, using magnetic signal non-contact induction, signal processing through the microprocessor, the mechanical Angle is converted into standard signal output (4-20mA, 0-5V, 0-10V, 1-5V, etc.). Measuring range, output mode can be customized according to customer requirements. This sensor has been developed specifically for automotive electrical systems and can replace the RPN rotary position sensor produced by Honeywell.

Typical Output Curve



Dimension Figure



Install Wither Mode

- 1. The sensor is reliably fixed.
- 2. The wiring is correct and power is supplied.
- 3. Measure the output voltage or output current of the signal wire to ground. Rotate the rotating shaft to make the output voltage or current reach the zero point value (for 4-20mA output, it is 12mA; for 0-5V output, it is 2.5V; for 1-5V output, it is 3V; for 0-10V output, it is 5V). This position is the zero point position. At this time, the D-shaped notch of the sensor is facing the zero mark point.

- 1. During installation, it is necessary to keep the rotating shaft of the sensor coaxially connected with the drive shaft, and an appropriate coupling can be used.
- 2. The rotating shaft of the sensor cannot withstand excessive axial pressure and radial torque, otherwise the sensor is prone to damage.
- 3. This product can be used in conjunction with the TRSX series intelligent digital display instruments produced by our company to form a complete set of measurement, display and control systems.

Winder Tension Control **Contactless Angle Sensor**

Product Introduction

TMCW16K6V05-60L(integrated) and TMCW0K6V05-60L (split) contactless Angle sensor is a kind of Angle sensor for winding tension control developed by our company for winding machine. After many years of application, this sensor has become the standard sensor for winding machine tension control system.





Brown wire - Positive power supply 10-30V, DC; Black line - signal line; Blue line - ground

Install Wither Mode

- 1. The sensor is reliably fixed;
- 2. Connect cables correctly and power on;
- 3. Measure the output voltage of the signal line to the ground. Rotate the rotating shaft so that the output voltage is 2.5V. The position of the rotating shaft is the midpoint of the output of the sensor.

Technical parameters		
Output mode	Voltage output	
Operating voltage	12±2V, DC	
Mechanical angle	360°	
Angle measuring range	60°	
Resolution	12-bit(4096)	
Accuracy	±0.087°	
Temperature drift(-20-80°C)	< 0.5°	
Output signal	0-5V	
Current consumption	≤16mA	
load capacity	≥2KΩ	
Operating temperature	Industrial grade-20-80°C	
Protection level	IP65	
Replacement cycle	1ms	

http://www.qdtetc.com

2 0532-80679218 / 80679219

TAD Type Angle Transfer Display Instrument

Product Introduction

This product integrates a non-contact angle sensor and an intelligent instrument, enabling the following functions:

- 1. Accurately measure angles and transmit output standard voltage.
- 2. Display angle values.
- 3. Set the starting point and midpoint for angle measurement.
- 4.Set the clockwise mode or counterclockwise mode.





Technical parameters		
Electrical corner	0 ~ X°(X≤359.9)	
Mechanical angle of rotation	360°	
Accuracy	±0.2%	
Resolution	4096 (12 -bit) , 0.087°	
Update speed	2ms	
Output signal	1 ~ 5V	
Operating voltage	DC12 ~ 24V	
Operating current	< 80mA	
Operating temperature	−25°C ~ +85°C	

Installation Settings

- 1. The transmitter is reliably fixed.
- 2. Proper wiring. Connect the brown wire to the positive pole of the power supply wire, the blue wire to the negative pole of the power supply wire, and the black wire is the signal output wire.
- 3. Set the start and end points.









TMCW-D Series Digital Output Contactless Angle Sensor

No contact no contact measurement Small temperature drift high resolution good linearity

Small torque

It can adapt to harsh environments,has high reliability and long life Flexible and diverse measurement range and output methods

Application Field

- Angle measurement and tracking in automatic control
- Valve opening angle measurement and control
- Servo motor rotation angle measurement
- Tension measurement and control in fields such as textile and papermaking
- Liquid level measurement and tracking

A DECEMBER OF A

RS232 Interface:

Red - connects to positive power supply; Black - ground wire; Blue - TXD; White - RXD RS485 Interface:

Red – connects to positive power supply; Black – ground wire; Blue – 458–A; White – 458–B

Selection Guide

1 2 3 4 MCW □ D □ -	5	6 -] -	9
Product series r	name	2 Sh	aft di	amet	er

- O D:Digital output
- Distinguish between units
- S:Increase clockwise; N:Increase counterclockwise
- Angle range
- B L:Screw mounting; F:Flanged mounting
- Operating voltage

For example, TMCW8D485-12N-360F-24 indicates: ϕ 8 shaft, 485 output, counterclockwise increasing, flange mounting, measuring range of 360°, working voltage of 24V, digital output angle sensor with a resolution of 12 bits.

ole

Communication Format

Baud rate 9600,1 start bit, 8 data bit, none check bit, and 1 stop bit						
Frame header	Address	Data high 8 bits	Data low 8 bits	Data & Verification	Frame tail	
0x02	0×00	0x00-0x3F	0x000xFF	0x000xFF	0x03	

Note: The communication format can also be customized according to customer requirements. The data output is active and continuous. Each frame of data consists of 6 bytes. Add the high 8 bits and low 8 bits of the data, and take the low 8 bits of the sum as the data and check.

http://www.qdtetc.com
0532-80679218 / 80679219

QMCW360 Full Range Contactless Angle Sensor



- 1. Angle measurement and tracking
- 2.Motor rotation angle measurement and tracking
- 3. Angle measurement and tracking in military applications
- 4. Marine machinery angle measurement



Contactless, long lifespan, high reliability

Technical parameters				
Product model	QMCW-360V			
Operating voltage	24±2V, DC			
Output characteristics	0-10V			
Current consumption	40 mA			
Resolution	0.7°			
Accuracy	±0.7°			
Maximum rotational speed	20000 revolutions per minute			
Operating temperature	-25-70°C			
Storage temperature	-25-125°C			
Range	0-360°non-blind area			
Driving torque	< 0.8g.cm			





Brown wire - Positive power supply, 24±2V, DC; Blue wire - 0V; Black wire - Signal output

Typical Output Curve



Voltage output type characteristic curve: QMCW-360V

Method Of Decay

The 0 ° point and 360 ° point of this sensor coincide. After securely fixing the sensor and correctly wiring and powering it on, measure the voltage (or current) between the output terminal and ground. Rotate the rotating shaft so that when the measured value reaches 10V (or 20mA), the corresponding position is the 360 ° point, which is also the 0 ° point.





TDI810 Dynamic Tilt Sensor





Low cost and high performance

Dynamic repeatability accuracy of ±0.5°

Refresh rate: 1000Hz

Work independently without external assistance

Drift-free true dynamic inclination measurement product

Built-in tri-axis accelerometer and tri-axis gyroscope

Any installation position does not require the installation of the load center of mass point.

Application Field

- Ship Engineering machinery
- Car Robot

- Rail traffic
- Weapon platform
- Opto-electronic platform
- Dynamic GPS Assistance
- Level measurement compensation

 \bigcirc

• Power line inspection

Technical parameters				
Pitch / Roll Angle	±90°/±90°, double-shaft			
Resolution	0.05°			
Frequency response	0~400Hz			
Linearity	≤±0.4%FS, dynamic			
Accuracy	≤±0.5°, dynamic ≤±0.05°, static			
Delay	≤5ms			
Refresh rate	50Hz ~ 1000Hz (adjustable)			
Angular velocity measurement range	±300°/s, MEMS, Three-axis			
Acceleration measurement range	±4g, MEMS, Three-axis			
Supply voltage	9~36VDC			
Power consumption	<1W			
Output interface	RS232, RS422, CAN			
Output parameter Dynamic Roll and Pitch Angles				
Operating temperature	-40~85℃			
Storage temperature	-40~85°C			
Mean Time Between Failures (MTBF)	≥100000 hours per time			
Anti-impact	1000g@1ms, Triaxial (Semi-Sine)			
Protection level	IP67			
Connector	M12			
Boundary dimension	81x54x28.5mm			
Weight240g (Does not include connectors and cables)				

2 0532-80679218 / 80679219

TQB Series Gravity Tilting Angle Sensor

Product Introduction

The internal damping precision gravity pendulum structure is used to realize the mechanical conversion of the sensor to the tilt Angle, and the most advanced integrated reluctance element is used to measure the change of Angle, so as to realize the dynamic tracking of the tilt Angle. The product is easy to install and use, and can output analog signals such as voltage and current according to user requirements.







Red line – positive power supply Black wire – 0V Yellow line – Signal output

Selection Guide

1 2 3 4 5 TQB-V-010-45-12

- Product series name
- **2** V:Voltage output A:Current output
- Output interval:010:0-10V;05:0-5V;15:1-5V
 Default:current output 4-20mA
- Ange:45:±45°; 180:±180°
- Rated operational voltage:12:12V,DC;24:24V,DC

Technical parameters					
Model	TQB-V	TQB-A			
Operating voltage	12 or 24V,DC	12 or 24V,DC			
Angle measuring range	±3° ~ ±180°	±3° ~ ±180°			
Output interval	As per customer requirements	As per customer requirements			
Operating temperature	-40 ~ 80°C	-40 ~ 80°C			
Resolution	4096 – bit	4096 – bit			
Linearity	0.5%FS	0.5%FS			
Accuracy	0.1°	0.1°			
Response time	0.1S	0.1S			
Protection level	IP66	IP66			
Current consumption	30mA	30mA			
Load impedance	> 5KΩ	< 250Ω			



TQG-D Series Precision 2D Tilt Angle Sensor

Product Introduction

The TQG-D series high-precision two-dimensional tilt angle sensor is a high-reliability tilt angle measurement product developed and manufactured for the construction machinery industry. This series of products takes various measures in terms of reliability and stability, including full potting and sealing, strengthened design of PCBA, optimized design of power management, enhanced anti-shock and vibration capabilities, application of professional automatic testing technology, and precision-machined aluminum alloy housing, etc. It uses a high-performance MEMS low g-value acceleration sensor with 2000g anti-shock capability. Through nonlinear compensation, cross-axis error compensation, filtering technology, etc., it directly outputs an analog or digital signal that is proportional to the actual tilt angle.





Red line - Power supply Black wire - ground Yellow line - X axis output signal line Blue line - Y-axis output signal

Output Value & Position Relationship Diagram



Technical parameters				
Model	Current output TQG-AD-15,30,45; Voltage output TQG-VD-15,30,45; Digital output TQG-SD-15,30,45			
Measuring range	Commonly used: $\pm 15^{\circ}$, $\pm 30^{\circ}$, $\pm 45^{\circ}$ (Customizable from ± 5 to $\pm 180^{\circ}$)			
Measurement accuracy	± 0.1° (@25°C)			
Temperature drift coefficient	±0.005°/°C (@-20~65°C)			
Resolution	0.02			
Repeatability	± 0.02°			
Frequency response	0~20Hz			
Analog voltage output	0 ~ 5V,0.5~4.5V,0~10V,(Customizable from 0 to 10V)			
Output current	0~20mA, 4~20mA			
Digital output	RS232 output interface, data format: baud rate 9600/115200bps, 8 data bits, 1 start bit, 1 stop bit, no parity check, ASCII code			
Supply voltage	DC12~24V			
Operating temperature	−30~80 °C			
Protection level	IP67			
Current consumption	<30mA			

2 0532-80679218 / 80679219

TQG-S Series Precision One-Dimensional Tilt Angle Sensor

Product Introduction

The TQG-S series high-precision one-dimensional tilt angle sensor is a high-reliability tilt angle measurement product developed and manufactured for the construction machinery industry. This series of products takes various measures in terms of reliability and stability, including complete potting and sealing, strengthened design of PCBA, optimized design of power management, enhanced anti-shock and vibration capabilities, application of professional automatic testing technology, and precision-machined aluminum alloy housing, etc. It adopts a high-performance MEMS low g-value acceleration sensor with 2000g anti-shock capability. Through nonlinear compensation, cross-axis error compensation, filtering technology, etc., it directly outputs an analog or digital signal proportional to the actual tilt angle.





Red line - Power supply Black wire - ground Yellow line - X axis output signal line Blue line - Y-axis output signal

Output Value & Position Relationship Diagram



Technical parameters				
Current output TQG-AD-15,30,45; Voltage output TQG-VD-15,30,45; Digital output TQG-SD-1				
Measuring range	Commonly used: $\pm 15^{\circ}$, $\pm 30^{\circ}$, $\pm 45^{\circ}$ (Customizable from ± 5 to $\pm 180^{\circ}$)			
Measurement accuracy	± 0.1° (@25°C)			
Temperature drift coefficient	±0.005°/°C (@-20~65°C)			
Resolution 0.02				
Repeatability	± 0.02°			
Frequency response	0~20Hz			
Analog voltage output0 ~ 5V, 0.5~4.5V, 0~10V, (Customizable from 0 to 10V)				
Output current 0~20mA, 4~20mA				
Digital output	RS232 output interface, data format: baud rate 9600/115200bps, 8 data bits, 1 start bit, 1 stop bit, no parity check, ASCII code			
Supply voltage	DC12~24V			
Operating temperature	−30~80 °C			
Protection level	IP67			
Current consumption	<30mA			



TQXJ-S Series One-Dimensional Tilt Angle Sensor

Installation and User Guide

- 1. Aviation plug wiring method: Terminal 1 - Red wire connects to positive power supply; Terminal 2 - Black wire connects to ground; Terminal 3 - Yellow wire is the X-axis output signal wire.
- 2. Horizontal installation: Fix the sensor on the measured plane with screws. The rotation axis of the measured inclination angle should be perpendicular to the bottom surface of the sensor. Adjust the measured plane so that the output signal of the sensor is at the midpoint of the output range (i.e., 12mA for current output type and 3V for voltage output type). This position is the horizontal position.

Selection Guide

- Company name TRIONS
- **2** Slant angle sensor
- Over the second seco A:Voltage output
- **④** S:single axis D:double axis
- Angle range:±30°

Output Value & Position Relationship Diagram



http://www.qdtetc.com

2 0532-80679218 / 80679219



Red wire – power supply Black wire - ground Yellow wire - X-axis output signal wire

Parameter	Value range	Note
Operating voltage	DC12 ~ 24V	
Operating temperature	-30 ~ 80 ℃	Industrial grade
Angle range	$\pm 3^{\circ} \sim \pm 45^{\circ}$	
Output signal	4~20mA/1~5V	Current output / Voltage output
Accuracy	0.01° ~ 1°	Smaller angle, higher accuracy
Angular resolution	0.003°	
Protection level	IP67	
Frequency response	0-18Hz	-3dB
Current consumption	30mA	
Load impedance	Current out Voltage out	put : 0~250Ω put : ≧10K Ω

TQXJ-D Series Two-Dimensional Tilt Angle Sensor

Installation and User Guide

- 1. Aviation plug wiring method: Terminal 1 - The red wire is connected to the positive power supply; Terminal 2 - The black wire is grounded; Terminal 3 - The yellow wire is the X-axis output signal wire; Terminal 4 - The blue wire is the Y-axis output signal wire.
- 2. Horizontal installation: Fix the sensor on the measured plane with screws. The rotation axis of the measured inclination angle should be perpendicular to the bottom surface of the sensor. Adjust the measured plane so that the output signal of the sensor is at the midpoint of the output range (i.e., 12mA for the current output type and 3V for the voltage output type). This position is the horizontal position.
- 3. The measurement ranges of the X-axis and Y-axis for inclination angles can be different and are selected by the customer.



	Parameter	Value range	Note
	Operating voltage	DC12 ~ 24V	
	Operating temperature	-30 ~ 80 ℃	Industrial grade
	Angle range	$\pm 3^{\circ} \sim \pm 45^{\circ}$	
	Output signal	4~20mA/1~5V	Current output / Voltage output
	Accuracy	0.01° ~ 1°	Smaller angle, higher accuracy
	Angular resolution	0.003°	
	Protection level	IP67	
	Frequency response	0-18Hz	-3dB
	Current consumption	30mA	
	Load impedance	Current out Voltage out	put : 0~250Ω put : ≧10K Ω

Output Value & Position Relationship Diagram















Large Range Digital Signal Tilt Sensor



Product Introduction

Red wire – positive power supply terminal; Black wire – negative power supply terminal; Yellow wire – 485–A; Blue wire – 485–B

The maximum inclination angle range of this sensor can reach ±100 degrees. By optimizing the circuit design, anti-seismic structure design, and enhancing sealing process measures, the reliability of product application has been improved. It adopts a high-performance MEMS low-g value acceleration sensor with 2000g impact resistance. Through nonlinear compensation, cross-axis error compensation, filtering technology, etc., it directly outputs a digital signal proportional to the actual inclination angle. It is mainly used in the sun-tracking of solar panels and special engineering fields that require large inclination angles.

Feature	Condition	Minimum	Typical	Maximum	Unit
Supply voltage	DC power supply	12	24	30	\vee
Operating current	supply voltage=24V	16	18	20	mA
Settling time	Measure the temperature 25°C		3		sec
Measuring range	Static or uniform motion		±90	±100	0
	Measure the temperature 25°C、measuring range±30°		±0.03	±0.05	0
	Measure the temperature 25°C、measuring range±60°		±0.04	±0.06	0
	Measure the temperature 25°C、measuring range±90°		±0.05	±0.07	0
Resolution	Measure the temperature 25°C		±0.02		0
Linearity	Measure the temperature 25°C、measuring range±90°		±0.10	±0.20	%
Repeatability	Mtt 25°C、Factory filter frequency setting		±0.03		0
Stability	Mtt 25°C、Factory filter frequency setting、 Time interval of 24 hours		±0.04		0
Thermal zero drift	temperature range: -40°C—80°C		±0.002	±0.004	°/°C
Cross-axis sensitivity error	Measure the temperature 25°C		±1	±2	%
Data update rate	The output mode is continuous output	1	10	30	Hz
Baud rate	RS485	4800	9600	38400	Baud
Comms params	RS485		b	aud, n, 8,	1
Storage temperature	Ambient temperature	-50		90	°C
Operating temperature	Ambient temperature	-40		80	°C
Protection level	Encapsulation (ABDL)		IP67		

Output Format

The data output is in HEX format data frame. A data frame consists of 12 bytes in total. The meaning of each byte is shown in the following table:

Byte position	Meaning	Data type	explanation
1	Frame header (FH)	Unsigned number	0xAA
2	Frame header (FH)	Unsigned number	0xAA
3	Frame header (FH)	Unsigned number	Data frame length, excluding frame header
4	Address	Unsigned number	Inclination angle address number
5	Command word (CW)	Unsigned number	The received command word is returned
6	High position of X-axis angle	Signed number	
7	Low position of X-axis angle	- Signed humber	Angle value = parsed data (100)
8	High position of Y-axis angle	Signed number	Angle value – parsed data / 100
9	Low position of Y-axis angle	Signed number	
10	Temperature	Signed number	
11	Verify the high bit	Unsigned number	The high bit of the cumulative sum of the first 10 bytes
12	Verify the low bit	Unsigned number	The low-order bits of the cumulative sum of the first 10 bytes

Example of HEX format data parsing:

For example: Received data frame AA AA 0A 02 00 1D FF 0D 03 8C;

AA stands for data frame header;

0A is the length of the data frame, excluding the frame header, which is 10;

02 is the address number for the inclination angle;

04 is the command word for speed 4;

00 1D is the X-axis angle value. After converting the high-order 00 to binary, the first digit is 0, indicating that the X-axis angle value is positive; If 00 is converted to decimal and 1D is converted to decimal and 29, then X angle=(0 * 256+29)/100=0.29.

FF is the Y-axis angle value (note: the one-dimensional tilt angle sensor does not have a Y-axis, so this value is 0). After converting the high-order FF to binary, the first digit is 1, indicating that the X-axis angle value is negative; If FF is converted to decimal and becomes 255, then Y angle= (255 * 256+255-65536)/100=-0.01.

0D is temperature, converted to decimal as 13;

03 8C is the cumulative sum of all bytes before this byte.

Factory Settings

Product Model

• A-Tilt angle range0-±100°

• TQXL-485-A-V

• L-Wide-range

- TQX-Product name
- 485-Output format RS485
- V-Operating voltage

info@qdtetc.com

Baud rate: 9600
Output speed:
3 times per second



Piezoelectric Vibration Acceleration Sensor

Freq range 5-1000Hz to DCS, PLC system

nection True virtual value

Internally, it adopts a shearing-typepiezoelectric element and a precise integration circuit.

Small size, small vibration displacement can be measured, cost-effective

Selection Guide

 $\begin{array}{c} \textcircled{0}{}\\ TRZD - \overrightarrow{GA} - \end{array} \begin{array}{c} \textcircled{0}{}\\ \blacksquare \end{array}$

- Piezoelectric vibration sensor
- Vibration acceleration, current output
- 8 Range value (unit: g)

TRZD-GA-5 represents a piezoelectric vibration acceleration sensor with two-wire $4\sim20$ mA current output and a measurement range of ±5 g.

Electrical performance			
Measuring range	±5、10、20、50、100g (customizable)		
Frequency response	5Hz ~ 1000Hz		
Output signal	Two-wire 4-20mA current signal		
Nonlinearity	< 2%		
Operating voltage	15~30V DC		
Load impedance	≤250Ω		
Vibration	Parallel to the sensor axis		
Installing method	vertical or horizontal		
Operating temperature	-40°C ∼ +85°C		
Weight	80±5g		
Insulation resistance	>100MΩ, 100VDC		
Protection level	IP65		
Install	1/4-28 Threaded Stud with M6 (M8, M10 Optional) Double Heads, or Magnetic Base		



Wire connector plug (5/8-24 two-core socket)

Brown wire - positive power supply terminal Black wire - current signal output wire

Application Field

- 1. Measurement and tracking of mechanical and electrical equipment vibration acceleration;
- 2. Vibration detection of motor bearing seat;
- 3. Measurement and evaluation of vibration parameters of production lines;
- Vibration detection of offshore platforms, wind power and other equipment;
- 5. Vibration detection of bridge, rail and other facilities

Considerations

- It should be reliably fixed to the vibrating equipment being measured with double-headed bolts; alternatively, the magnetic seat adsorption installation method can be selected for fixation.
- 2. Pay attention to the working direction of the sensor and do not install it incorrectly.
- 3. Ensure correct wiring.

Piezoelectric Vibration Velocity Sensor

Freq range 5-1000Hz Direct connection to DCS, PLC system 4-20mA output

Internally, it adopts a shearing-typepiezoelectric element and a precise integration circuit.

Small size, small vibration displacement can be measured, cost-effective

TRIONS 泰崩 振动速度传感器 TRZD-VA-50

Wire connector plug (5/8-24 two-core socket)

Brown wire - positive power supply terminal Black wire - current signal output wire

Selection Guide

- Piezoelectric vibration sensor
- Vibration velocity current output
- 3 Range value (unit: g)

TRZD-VA-20 represents a piezoelectric vibration velocity sensor with two-wire current output and a measurement range of 20mm/s.

Electrical performance			
Measuring range	Conventional 20mm/s (customizable)		
Frequency response	5Hz ~ 1000Hz		
Output signal	Two-wire 4-20mA current signal		
Nonlinearity	< 2%		
Operating voltage	15~30V DC		
Load impedance	≤250Ω		
Vibration	Parallel to the sensor axis		
Installing method	vertical or horizontal		
Operating temperature	-40°C ∼ +85°C		
Weight	80±5g		
Insulation resistance	>100MΩ, 100VDC		
Protection level	IP65		
Install	1/4-28 Threaded Stud with M6 (M8, M10 Optional) Double Heads, or Magnetic Base		

Application Field

- 1. Vibration acceleration measurement and tracking of electromechanical equipment
- 2. Vibration detection of low-frequency motors
- 3. Measurement and evaluation of vibration parameters of products on the production line
- 4. Vibration detection of wind power equipment
- 5. Vibration detection of experimental equipment

- It should be reliably fixed to the vibrating equipment being measured with double-headed bolts; alternatively, the magnetic seat adsorption installation method can be selected for fixation.
- 2. Pay attention to the working direction of the sensor and do not install it incorrectly.
- 3. Ensure correct wiring.



Piezoelectric Vibration Displacement Sensor

Freq range 5-1000Hz to DCS, PLC system

system 4-20mA output

Internal shear piezoelectric components, metal shell, high reliability

Small size, small vibration displacement can be measured, cost-effective

Selection Guide



- Piezoelectric vibration sensor
- Vibration displacement, current output
- ³ Range value (unit: μm)

TRZD-GA-5 represents a piezoelectric vibration acceleration sensor with two-wire 4~20mA current output and a measurement range of ± 5 g.

Electrical performance			
Measuring range	valid value100,200,300,400,500µm (customizable)		
Frequency response	10Hz ~ 160Hz (±3dB)		
Output signal	Two-wire 4-20mA current signal		
Nonlinearity	< 2%		
Operating voltage	15~30V DC		
Load impedance	≤250Ω		
Vibration	Parallel to the sensor axis		
Installing method	vertical or horizontal		
Operating temperature	-30°C ~ +85°C		
Weight ≤90g			
Protection level	IP66		
Install 1/4-28 turns to M6			



Wire connector plug (5/8-24 two-core socket)

Brown wire - positive power supply terminal Black wire - current signal output wire

Application Field

- 1. Vibration displacement measurement and tracking in low frequency occasions;
- 2. Vibration detection of low-frequency motor;
- 3. Measurement and evaluation of vibration parameters of production lines;
- 4. Monitor the running state of the machine by detecting the vibration displacement of the machine

Considerations

- It should be reliably fixed to the vibrating equipment being measured with double-headed bolts; alternatively, the magnetic seat adsorption installation method can be selected for fixation.
- 2. Pay attention to the working direction of the sensor and do not install it incorrectly.
- 3. Ensure correct wiring.

MEMS Vibration Acceleration Sensor

Freq range 5-1000Hz	Direct connection to DCS, PLC system	Two-wire current signal (4-20mA)		
Internal MEMS components, metal housing, high reliability				
Small	size, small vibration d	lisplacement		

can be measured, cost-effective

Selection Guide MVA - A - B - B

- MEMS vibration acceleration
- 2 Current output
- 8 Range value (unit: g)
- F:Flanged mounting; L:Screw mounting

MVA-A-10-F represents a MENS vibration acceleration sensor with two-wire current output and a measurement range of 10g, mounted via flange.

Electrical performance			
Measuring range	Effective values: 1g, 2g, 3g15g (Customizable within 1~15g)		
Frequency response	1Hz ~ 500Hz		
Output signal	4~20mA current signal		
Nonlinearity	Better than 3%		
Operating voltage	10~30V DC		
Load impedance	≤250Ω		
Vibration	Parallel to the sensor axis		
Installing method	vertical or horizontal		
Operating temperature	-30°C ~ +80°C, RH ≤90%		
Weight	≤20g		
Output mode	Two-wire current output		
Protection level	IP67		



Brown wire - positive power supply terminal Black wire - current signal output wire

Application Field

- 1. Measurement and tracking of mechanical equipment vibration acceleration
- 2. Vibration monitoring of equipment such as fans and pumps
- 3. Measurement and evaluation of vibration parameters of products on the production line
- 4. Monitor the operating status of machines by detecting their vibration displacement

- Reliably fix it to the measured vibrating equipment with M3 (or M5) screws; alternatively, the magnetic base adsorption installation method can also be selected for fixation.
- 2. Pay attention to the working direction of the sensor and do not install it incorrectly.
- 3. Ensure correct wiring.



TR-KTF Series Sliding Block Displacement Sensor



- 1. Effective Stroke Specification(mm): 75、100、110、125、150、175、200、225、250、275、 300、325、350、375、400、425、450、475、500、550、600、650、700、750、800、850、900、950、 1000、1150、1250、1450、1500、1600、1800、2000、2250、2500、2750、3000;
- 2. Mechanical stroke(mm): effective travel +7mm(Buffer at each end 3.5mm)
- 3. Resistance (K Ω ±10%): 5 (75 ~ 550mm effective travel); 10 (600 ~ 1000mm effective travel); 20(1150 ~ 3000mm effective travel);
- 4. Independent Linear Accuracy (%): 0.08 (75 ~ 250mm effective travel); 0.05 (275 ~ 650mm effective travel); 0.04 (650 ~ 1250mm effective travel); 0.03 (1250 ~ 3000mm effective travel)
- 5. Resolution: Infinite resolution;
- 6. Maximum operating speed: 10m/s;
- 7. Operating temperature range: $-40 \sim 125C^{\circ}$
- 8. Dimension: A = Effective stroke + 143mm
- 9. Installation dimensions: See the figure



Transmitter Module: It is available in two types, external and plug-in, which can be conveniently connected to the displacement sensor and directly convert the voltage signal into a 4-20mA or 0-10V standard signal.

Dimensions of the external type: 66×50×23.8mm, with an aluminum housing. Dimensions of the plug-in type: 70×34×38.8mm, with a plastic housing.

http://www.qdtetc.com
0532-80679218 / 80679219

TR-KTR Series Self-restoring Displacement Sensor



- 1.Effective Stroke Specification (mm): 10,15,25,50,75,100;
- 2.Mechanical stroke(mm): effective travel+3mm(Buffer at each end 1.5mm)
- 3.Resistance (KΩ±10%): 1 (10 ~ 25mm effective travel); 2 (50mm effective travel); 5.0 (75 ~ 100mm effective travel);
- 4.Independent Linear Accuracy (%): 0.2 (10 ~ 25mm effective travel); 0.15 (50 ~ 75mm effective travel); 0.10(100mm effective travel);
- 5.Resolution: Infinite resolution;
- 6.Maximum operating speed: 5m/s;
- 7.Operating temperature range: -40 ~ 125°C
- 8.Dimension: A = Effective stroke + 43mm
- 9.Output voltage signal: 0 ~ 100%Input working voltage (varies with displacement)
- 10.Maximum Allowable Voltage: $1K\Omega/DC12V$; 2 ~ $4K\Omega/DC24V$; 5 ~ $20K\Omega/DC36V$
- 11.Installation dimensions: See the figure



Transmitter Module: It comes in two types, external and plug-in, which can be easily connected to the displacement sensor and directly convert the voltage signal into a 4-20mA or 0-10V standard signal.

External dimensions: 66mm × 50mm × 23.8mm Aluminum housing

info@qdtetc.com



TR-KTM Series Micro Pull Rod Displacement Sensor



- 1.Effective Stroke Specification(mm): 10、15、25、50、75、100、125、150、175、200、225、 250、275、300;
- 2. Precision: 0.01 mm, Repeatability accuracy 0.001 mm
- 3.Mechanical stroke(mm): effective travel+3mm(Buffer at each end 1.5mm)
- 4.Resistance (KΩ±10%): 1 (10 ~ 25mm effective travel); 2 (50 ~ mm effective travel);
 5.0(75 ~ 300mm effective travel);
- 5.Independent Linear Accuracy (%): 0.2 (10 ~ 25mm effective travel); 0.15 (50 ~ 75mm effective travel); 0.10 (100 ~ 200mm effective travel); 0.08 (225 ~ 300mm effective travel);
- 6.Resolution: Infinite resolution;
- 7.Maximum operating speed: 5m/s;
- 8.Operating temperature range: -40 ~ 125°C
- 9.Dimension: A = Effective stroke + 43mm
- 10.Installation dimensions: See the figure



Transmitter Module: It is available in two types, external and plug-in, which can be conveniently connected to the displacement sensor and directly convert the voltage signal into a 4-20mA or 0-10V standard signal.

Dimensions of the external type: $66 \times 50 \times 23.8$ mm, with an aluminum housing. Dimensions of the plug-in type: $70 \times 34 \times 38.8$ mm, with a plastic housing.

http://www.qdtetc.com
0532-80679218 / 80679219

TR-KTC Series Pull Rod Displacement Sensor



- 1.Effective Stroke Specification(mm): 75、100、110、125、150、175、200、225、250、275、 300、325、350、375、400、425、450、475、500、550、600、650、700、750、800、850、900、950、 1000、1150、1250;
- 2.Mechanical stroke(mm): effective travel+7mm(Buffer at each end 3.5mm)
- 3.Resistance (KΩ±10%): 5 (75 ~ 550mm effective travel); 10 (600 ~ 1000mm effective travel); 20(1150 ~ 1250 effective travel);
- 4.Independent Linear Accuracy (%): 0.08 (75 ~ 250mm effective travel); 0.05 (275 ~ 650mm effective travel); 0.04(650 ~ 1250mm effective travel);
- 5.Resolution: Infinite resolution;
- 6.Maximum operating speed: 10m/s;
- 7.Operating temperature range: -40 ~ 125°C
- 8.Dimension: A = Effective stroke + 80mm
- 9.Output voltage signal: 0 ~ 100%Input working voltage (varies with displacement)
- 10.Maximum Allowable Voltage: 1KΩ/DC12V;2 ~ 4KΩ/DC24V;5 ~ 20KΩ/DC36V
- 11.Installation dimensions: See the figure



Transmitter Module: It is available in two types, external and plug-in, which can be conveniently connected to the displacement sensor and directly convert the voltage signal into a 4-20mA or 0-10V standard signal.

Dimensions of the external type: 66×50×23.8mm, with an aluminum housing.

Dimensions of the plug-in type: 70×34×38.8mm, with a plastic housing.



TR-KSC Series Linear Small Displacement Sensor





Product Parameters

- Service life: >100×106 cycles
- Linear accuracy: 0.3%
- Resistance tolerance: ±10%
- Repeatability accuracy: 0.01mm
- Resolution: Infinite resolution
- Maximum operating speed: 3m/s
- Temperature drift coefficient: 1.5ppm/°C
- Maximum allowable voltage: 10VDC/2-5K Ω DC5V/1K Ω
- Operating temperature: -20°C ~ +120°C
- Humidity: ≤90%

KSC Series:

- Effective stroke: 5, 10, 15, 20, 25mm
- Resistance value: 2, 2, 3, 4, 5 K Ω
- Buffer stroke: 1mm at each end
- Dimension B in the above figure = Effective stroke + 34mm
- Dimension A = 2Bmm

Contactless Linear Small Displacement Sensor

Contactless, frictionless

The resolution is theoretically infinite

Fast response speed, capable of high-speed measurement

The displacement is proportional to the pressure applied to the output shaft.

Application Field

- Automatic control of small displacement measurement and tracking
- Automotive braking system
- Tension measurement in textile, papermaking and other fields
- Used as a wire break sensor

Selection Guide

- Product Series Name
- Linear range
- U: Voltage output ; I: Current output
- N: Stretchable ; S: Spring type

Model	TRLP-20U	TRLP-20I
Mechanical stroke	25mm	25mm
Effective travel	20mm	20mm
Output signal	0.5-4.5V	4-20mA
Independent linearity	±2%	±2%
Operating voltage	5V, DC	12-24V, DC
Isolation voltage	≥100MΩ	≥100MΩ
Operating temperature	-20-80°C	-20-80°C
Storage temperature	-20-80°C	-20-80°C
Spring strength	< 100gf	< 100gf





Connection Method

Voltage output	Current output	
Brown: 5V, DC	Brown: 12-24V,DC	
Black: voltage signal output	Black: current signal output	
Blue: ground	Blue: ground	

Typical Output Curve







Contactless Linear Small Displacement Sensor

Contactless, frictionless The resolution is theoretically infinite

Fast response speed, capable of high-speed measurement

The displacement is proportional to the pressure applied to the output shaft.

Application Field

- Automatic control of small displacement measurement and tracking
- Automotive braking system
- Tension measurement in textile, papermaking and other fields
- Used as a wire break sensor

Selection Guide

 $\begin{array}{cccc} \textcircled{0} & \textcircled{0} & \textcircled{0} & \textcircled{0} \\ TRLP & -16 & -\Box - & \Box \end{array}$

- Product Series Name
- 2 Linear range
- U: Voltage output ; I: Current output
- N: Stretchable ; S: Spring type

Model	TRLP-16U	TRLP-16I
Mechanical stroke	18mm	18mm
Effective travel	16mm	16mm
Output signal	0.5-4.5V	4-20mA
Independent linearity	±2%	±2%
Operating voltage	5V, DC	12-24V, DC
Isolation voltage	≥100MΩ	≥100MΩ
Operating temperature	-20-80°C	-20-80°C
Storage temperature	-20-80°C	-20-80°C
Spring strength	< 100gf	< 100gf

2 0532-80679218 / 80679219







Connection Method

Voltage output	Current output	
Brown: 5V, DC	Brown: 12-24V,DC	
Black: voltage signal output	Black: current signal output	
Blue: ground	Blue: ground	

Typical Output Curve



TRLP-10 Series Linear Small Displacement Sensor

Contactless, frictionless The resolution is theoretically infinite

Fast response speed, capable of high-speed measurement

The displacement is proportional to the pressure applied to the output shaft.

Application Field

- Automatic control of small displacement measurement and tracking
- Automotive braking system
- Tension measurement in textile, papermaking and other fields
- Used as a wire break sensor

Selection Guide

- Product Series Name
- 2 Linear range
- U: Voltage output ; I: Current output
- N: Stretchable ; S: Spring type

Model	TRLP-10U	TRLP-10I
Mechanical stroke	12mm	12mm
Effective travel	10mm	10mm
Output signal	0.5-4.5V	4-20mA
Independent linearity	±2%	±2%
Operating voltage	5V, DC	12-24V, DC
Isolation voltage	≥100MΩ	≥100MΩ
Operating temperature	-20-80°C	-20-80°C
Storage temperature	-20-80°C	-20-80°C
Spring strength	< 100gf	< 100gf





Connection Method

Voltage output	Current output			
Brown: 5V, DC	Brown: 12-24V,DC			
Black: voltage signal output	Black: current signal outpu			
Blue: ground	Blue: ground			

Typical Output Curve





TMSR2000、TMSR5000 Series Magnetic Grid Scale Reading Head

Product Introduction

The TMSR2000 and TMSR5000 series products are a set of magnetic grid measurement products, which consist of a magnetic grid scale and a read head. When the read head moves linearly along the magnetic grid scale, it will output standard pulse signals in real time according to the relevant displacement of the movement. Moreover, it has strong anti-seismic, oil-proof, dust-proof, water-proof, and high-temperature resistance performance. The read head is compact in design and easy to install, making it suitable for various applications such as milling machines, grinding machines, stone cutters, wood cutters, linear motors, and precision automation.

Technical parameters				
Operating voltage	5-30VDC ±5%			
Current consumption	≤30mA			
Output load current	Maximum 50mA (per signal channel)			
Signal type	5-core: A, B, Z three-way pulse signal; 8-core: A+/A-, B+/B-, Z+/Z- six-way pulse signal			
Signal output format	Push-pull output			
Signal high level	≈supply voltage			
Signal low level	≈0∨			
AB phase difference	90±3°			
System accuracy	±20μm			
Repeatability	±1 pulse			
Mounting clearance	0.1-2mm			
Movement speed	Maximum 15 m/s			
Operating temperature	-20-85°C			
Protection level	IP67			

2 0532-80679218 / 80679219





Selection Guide

- Series Number
- Magnetic grid ruler specifications: 2000/5000
- Magnetic strip length: 01/02/03/04/05...(Unit:m)
- Resolution: 01/02/05/10...(Unit:µm)
- Cable length: 01/03/05(Unit:m) customizable
- Number of cores: 05/08

For example: TMSR2000-02-01-03-08 indicates that this read head is suitable for a magnetic grid ruler with a magnetic pole pitch of 2mm, a ruler length of 2 meters, a resolution of 1μ m, a wire length of 3 meters, and an 8-core cable.

For example: TMSR5000-03-05-10-05 indicates that this read head is suitable for a magnetic grid ruler with a magnetic pole pitch of 5mm, a ruler length of 3 meters, a resolution of 5μ m, a wire length of 10 meters, and a 5-core cable.

5-core cable								
color	red	black	blue	-	green	-	yellow	-
function	positive pole	negative pole	A+	-	B+	-	Z+	-
8-core cable								
color	red	black	blue	grey	green	purple	yellow	white
function	positive pole	negative pole	A+	A-	B+	B-	Z+	Z-

Overview of Magnetic Grid Scale

As shown in Figure 1, the magnetic grid scale consists of three parts: the magnetic tape, steel strip 1 and steel strip 2.

The magnetic tape is composed of N poles and S poles arranged at equal intervals (as shown in Figure 2). The width of one N pole or S pole is called the magnetic pole pitch. For the magnetic grid scales matched with the TMSR2000 series products, the magnetic pole pitch is 2 mm. Usually, such magnetic grid scales are also referred to as 2+2 specifications. For the magnetic grid scales matched with the TMSR5000 series products, the magnetic pole pitch is 5 mm. Usually, such magnetic grid scales are also referred to as 5+5 specifications.

Steel strip 1 is a flexible and magnetic-conducting steel strip. This steel strip protects the magnetic tape from mechanical damage. At the same time, as the magnetic back iron, it can improve the working stability when there is external magnetic field interference. Usually, steel strip 1 and the magnetic tape have been pasted together at the factory.

Steel strip 2 is a magnetic-permeable steel strip with adhesive on the back. Its function is to protect the magnetic tape. Usually, users paste it by themselves according to the actual situation.



N	s	N	s	N	s	N	s	N

Figure 2 Schematic diagram of the magnetic strip structure

Output Signal



The relationship between resolution R (unit: μ m), the number of pulses output per magnetic pole P, and the magnetic pole pitch D (unit: mm) is: R = (P x 4) / D. For example, for the read head of the TMSR2000 series, if the resolution is 1 μ m, then the A and B signal lines (including A- and B-, if available) of this read head will output 500 counting pulses respectively every time they pass through a magnetic pole (width = D) of the magnetic grating ruler, and the Z signal line (including Z-, if available) will output one position pulse.



PRODUCT IS CONTINUOUSLY UPDATED TO BE CONTINUED



0532-85653998

2nd Floor, Building 1, Entrepreneurship Center, No. 57 Haier Road, Laoshan District, Qingdao City, Shandong Province, China



OFFICIAL ACCOUNTS

Trions Technology

http://www.qdtetc.com

0532-80679218 / 80679219

🔀 info@qdtetc.com



