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TQG19A/B Series Speed Sensor

Product Overview

- Types TQG19A, TQG19A1 and TQG19A3 of speed sensor based on Hall principle are single-channel products, types TQG19B and TQG19B3 are double-channel products
- Non-contact measurement of speed of nonferromugnetic gear is simple and reliable, and is free from maintenance
- TQG19B series double output signal phase difference takes 90° for direction distinguishing
- Safety redundancy design; electrical isolation of TQG19B series channels; independent power supply of each channel
- Static intermediate level output; check the states of sensor and signal chain
- Simple flange installation
- Several electrical interfaces can be selected
- Can be customized according to customer requirements

Environmental parameters

Service conditions	
Altitude	≤2500m
Operating temperature	-40℃~+125℃
Relative humidity	≤95%(the average minimum temperature of this month is 25℃)
Impact and shock	meet the installation requirements of class 3 axle in GB/T 21563-2008
Protection grade	IP68(head)

Performance parameter

Electrical Parameters	
Power voltage	DC12V~DC30V, nominal voltage DC15V
Working frequency	1.83Hz ~10kHz
Working air gap	0.4mm~1.4mm, standard air gap 0.9mm
Number of output channels	Single channel(TQG19A series), Double channel (TQG19B series)
Output waveform	Square wave, rise time and fall time are both no more than 10μs
Load resistance	≥3kΩ
High level	≥0.8Vcc(wherein TQG19A3/TQG19B3: High level ≥9V))
Low level	≤1.0V
Static output level (gear is still)	DC6V~DC8V(wherein TQG19A3/TQG19B3:DC4.5V~DC6V)
Duty ratio	50%±20%

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Performance parameter

Electrical Parameters	
Phase difference	90°±30°(applicable to TQG19B series)
No-load power consumption current	≤35mA(each channel)
Insulation resistance	A 500V megger is used for testing. Insulation resistances between all cable core and shielded wire and between all leading wire (including shielded wire) and shell should be no less than 50MΩ
Insulating strength	AC1500V, 50Hz can be taken among all cable core and shielded wire, between all leading wires (including shielded wire) and shell and between two channels (applicable to TQG19B series) for 60s without breakdown or flashover
EMC	Accord with GB/T 24338.4-2009
Protection function	Power polarity protection and output short circuit protection

Mechanical Parameters	
Modulus of speed measuring gear	modulus≥1.25
Effective gear width	≥10mm(radial movement shall be considered, and it is suggested to be no less than 12mm)
Form of speed measuring gear tooth	Involute teeth (meet the requirements of GB/T 1356 or DIN 867)
Material of speed measuring gear	Low carbon magnetized steel
Material of sensor shell	Stainless steel
External dimension	Referring to figure 1, 2 and 3, line length can be customized according to customer requirements

Electric Connector Parameters	
Auxiliary connector	Harting connector

Cable and corrugated tube Parameters	
Cable	3-core integral shielded cable (TQG19A series) 6-core integral shielded cable (TQG19B series)
Cross section of cable core	0.5mm²
Materials of hose	Nitrile rubber
Outside diameter of hose	25mm

Outline Drawing

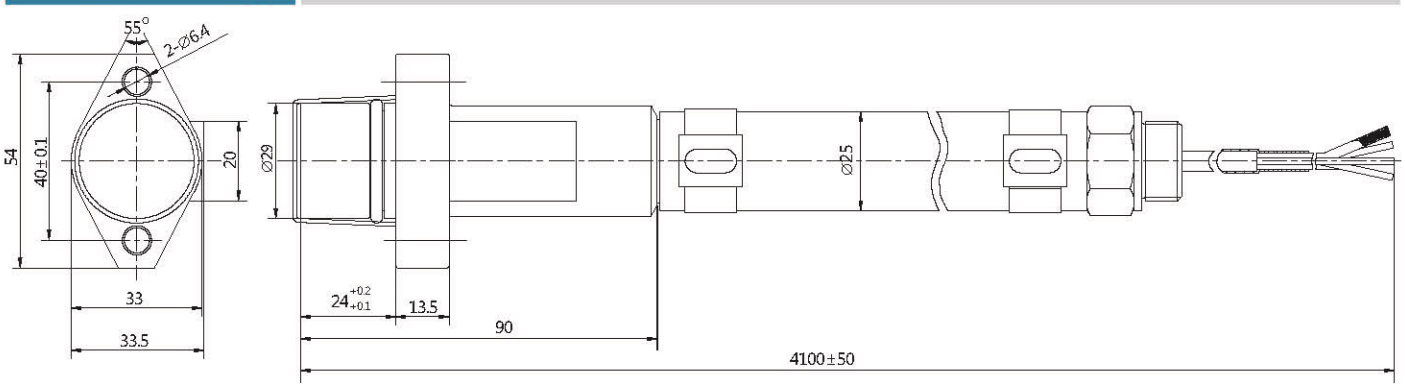

Fig.1 Bolt type TQG19A, TQG19B speed sensor Outline Drawing

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Outline Drawing

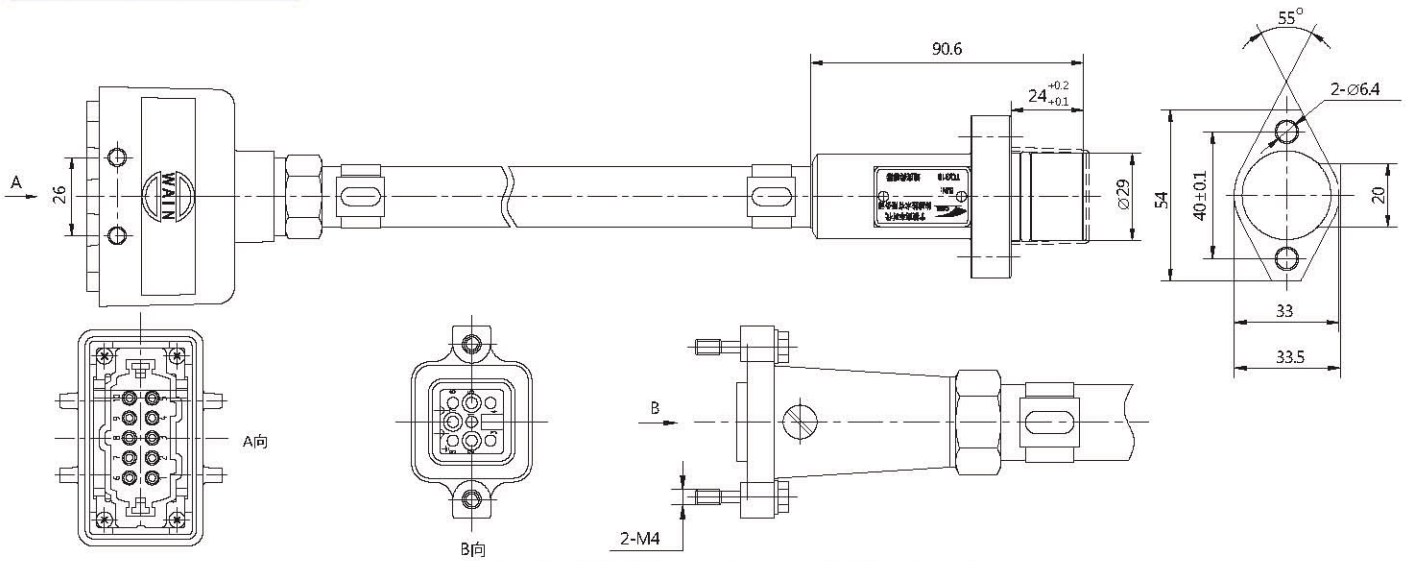

Fig.2 TQG19A speed sensor Outline Drawing

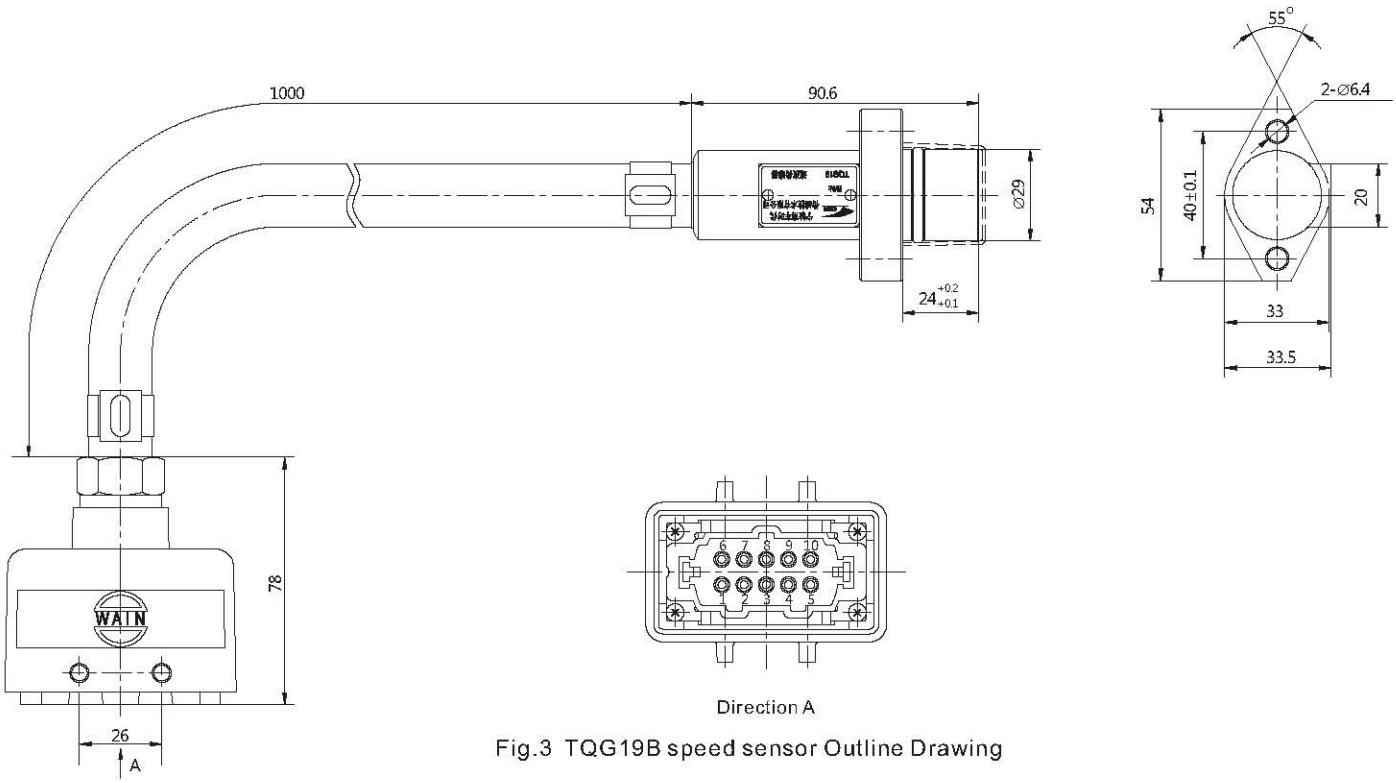

Fig.3 TQG19B speed sensor Outline Drawing

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TQG19A/B Series Speed Sensor

Electrical Interface

Table1 TQG19A series Definition of Electrical Interface

Number	Output Functions	TQG19A	TQG19A1	TQG19A3	
		Electrical connector	Cable	WAIN10-core Connector	8-core Heavy Load Connector
1	Power supply +	Contact pin 1	Red core wire	Contact pin 1	Contact pin 1
2	Power ground (0V)	Contact pin 3	Blue core wire	Contact pin 3	Contact pin 3
3	Signal channel	Contact pin 2	White core wire	Contact pin 2	Contact pin 2
4	Shield	Ground terminal	Shield	Ground end	Contact pin 4

Table 2 TQG19B series Definition of Electrical Interface

Number	Output Functions	TQG19B
		Electrical connector
1	Power supply 1+	Contact pin 1
2	Power ground 1(0V)	Contact pin 3
3	Signal channel 1	Contact pin 2
4	Power supply 2+	Contact pin 9
5	Power ground 2(0V)	Contact pin8
6	Signal channel 2	Contact pin 10
7	Shield	Ground terminal

Mounting Requirements

- Recommended to tighten by M6 bolts;
- Cable laying requirements: sensor conductors and subsequent connecting lines should keep away from large-scale electrical equipment and power lines, and are forbidden to be winded with power lines or transmit in the same pipeline;
- Wire according to the definition of the electrical interface strictly, make sure of right wiring without short circuit and break circuit;
- Grounding way of shielded wire: recommended to be grounded on the control system through one end;
- Fixed position of connector: recommended to be mounted on vehicle.

Standards

- GB/T 2423.1-2008 Environmental testing for electric and electronic products----Part 2:Testing methods Test A:Low temperature（IEC 60068-2-1: 2007, IDT）
- GB/T 2423.2-2008 Environmental testing for electric and electronic products----Part 2: Testing methods Test B: High temperature （IEC 60068-2-2 : 2007, IDT ）
- GB/T 2423.4-2008 Environmental testing for electric and electronic products----Part 2: Testing methods Test Db: Alternating temperature and humidity (IEC 60068-2-30: 2005, IDT)
- GB 4208-2008 Enclosure protection class (IP code) (IEC 60529:2001, IDT)
- GB/T 24338.4-2009 Rail transit---electromagnetic compatibility Part 3-2: Equipment for rolling stock (IEC62236-3-2: 2003, MOD)
- GB/T 25119-2010 Rail transit--- electronic devices for rolling stock
- TB/T 2760.2-2010 Locomotive speed sensor Part 2: Hall effect speed sensor

Main Application Fields and Achievements

Rail transit braking system
Main application achievements: Shanghai Metro, Guangzhou Metro

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