SEMIC TRADE

Semic Trade, s.r.o., Volutová 2521/18, 158 00 Praha 5
Telephone: +420 251 625 331, 251 625 332, 251 625 377
GSM: +420 605 999 994 Fax:+420 251 626 252, 251 626 393

www.semic.cz
semic@semic.cz

TQG19E Series Speed Sensor

Product Overview

- Double-channel speed sensor based on Hall principle
- Non-contact measurement of speed of nonferromugnetic gear is simple and reliable, and is free from maintenance
- Width measuring range: 0Hz~20kHz; considering of ultra slow motion detection and high speed rotation measurement
- Phase difference of output signals takes 90°for direction distinguishing
- IP protection grade meets IP68 and IPx9K requirements
- Stainless steel shell is adopted, and they are applicable to hash application environments
- Lateral outgoing line
- Simple flange installation
- 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, IPx9K

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Performance parameter

Electrical Parameters	
Power voltage	DC10V~DC30V, nominal voltage DC15V
Working frequency	0Hz ~20kHz
Working air gap	0.1mm~1.5mm, standard air gap 0.8mm
Number of output channels	Double channel
Output waveform	Square wave, rise time and fall time are both no more than 10μs
Load resistance	≥750Ω
High level	≥0.8Vcc (Vcc is power voltage)
Low level	≤1.0V
Duty ratio	50%±20%
Phase difference	90°±30°(the definition of direction refers to figure 1)
No-load power consumption current	≤60mA
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 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	2(other modulus can be customized according to customer requirements)
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 2, 3, 4 , line length can be customized according to customer requirements

Electric Connector Parameters	
Auxiliary connector	FRCIR06AG20-7S-F80T39-12-VO;VG3108E20-7PN-B01-NPG11;VG3106E20-7SN-B14-PG11

Cable and corrugated tube Parameters	
Cable	4-core integral shielded cable
Outside diameter of cable (D)	5.4mm（TQG19E(2m) Outside diameter of speed sensor cable : 13 mm）
Cross section of cable core	0.5mm²
Minimum bending radius of cable	≤6D（TQG19E(2m) speed sensor cable: 7.5D）
Outside diameter of corrugated tube	13mm (TQG19E(2m) Speed sensors do not use corrugated tube)
Static/dynamic bending radius of corrugated tube	20mm/50mm

Fire-proof Performance	
Fire-proof performance of non-metallic	Meet the requirements of standard DIN 5510-2 : 2009

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Outline Drawing

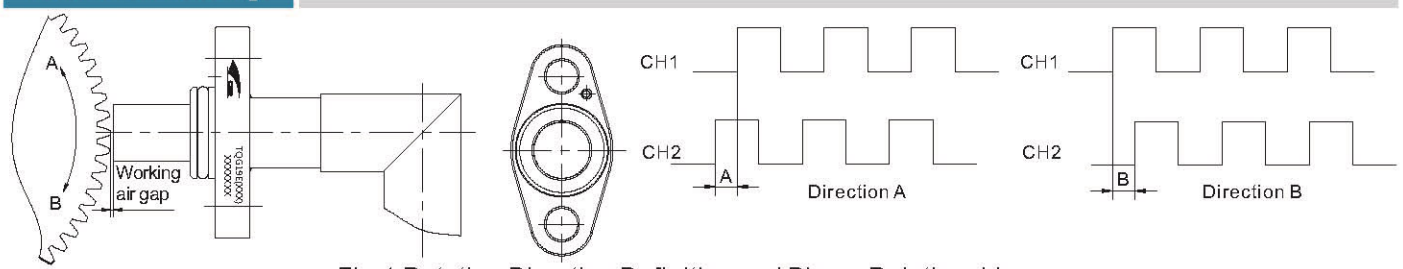

Fig.1 Rotation Direction Definition and Phase Relationship

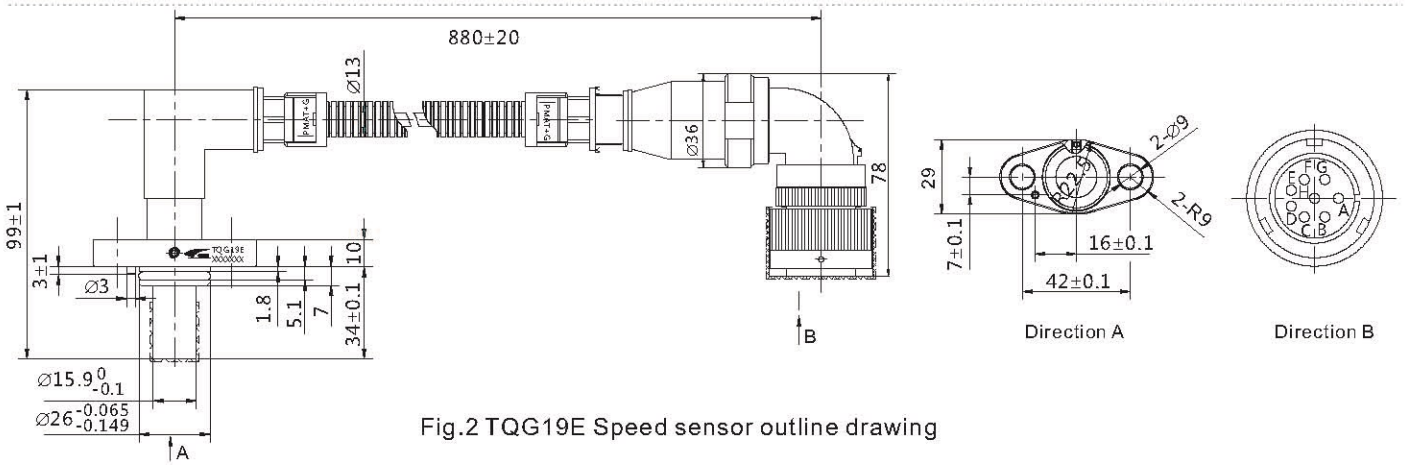

Fig.2 TQG19E Speed sensor outline drawing

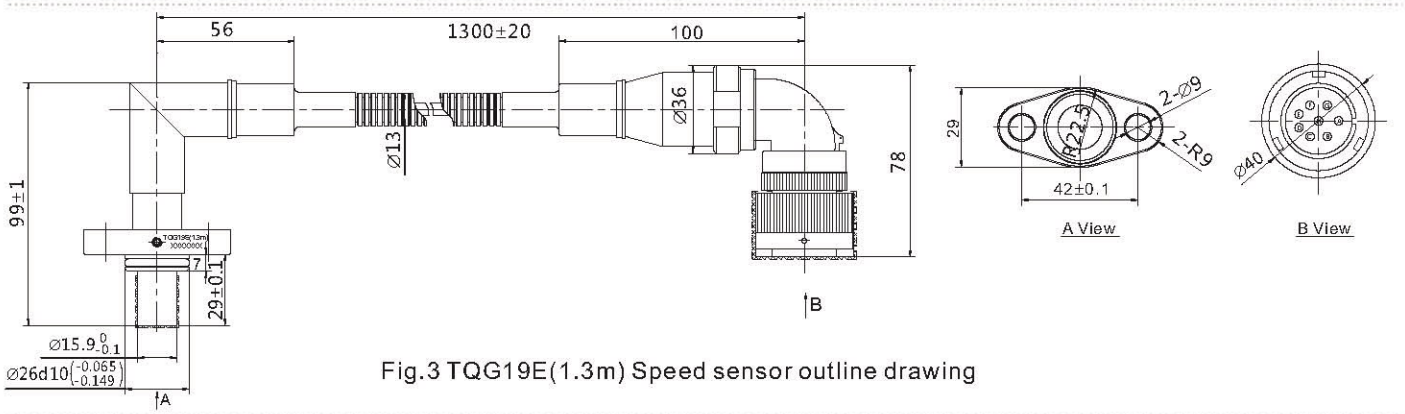

Fig.3 TQG19E(1.3m) Speed sensor outline drawing

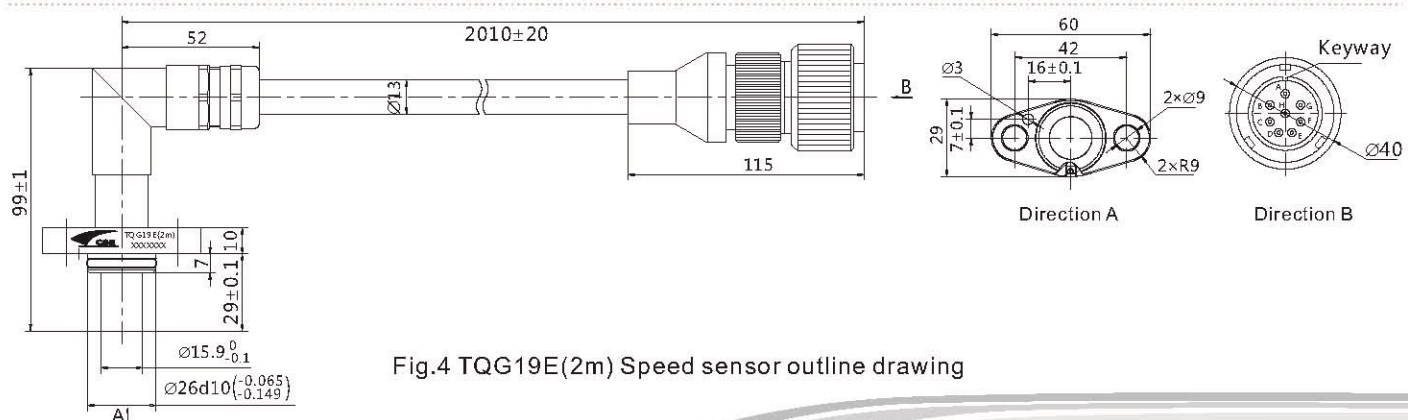

Fig.4 TQG19E(2m) Speed sensor outline drawing

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Electrical Interface

Table 1 Definition of Electrical Interface

Number	Output Functions	Connector Definition
1	Power supply +	Contact pin A
2	Power ground (0V)	Contact pin H
3	Signal channel 1 (CH1)	Contact pin B
4	Signal channel 2 (CH2)	Contact pin G
5	Shield	Contact pin E

Mounting Requirements

* Recommended to tighten by M8 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 (IEC 62236 -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
* DIN 5510-2:2009 Preventive fire protect in railway vehicle parts 2: Fire behavior and fireside effects of material
* DIN 40050-9:1993 Road vehicles; degrees of protection (IP-code)

Main Application Fields and Achievements

Rail transit traction system
Main application achievements: Guangzhou Metro, Beijing Line 14, Shenzhen Lines 2# and 5#, Dongguan Line, Guangfo Line, Hefei Metro, Tianjin Metro Line 5

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