

## 冗余轮速传感器 Redundant Wheel Speed Sensor

### 产品介绍 Product Description

该产品是基于霍尔原理而设计的，安装于汽车底盘上，用于读取车轮转速的传感器。

The product is designed based on Hall principle, and is installed on the chassis of the car. It is a sensor used to read the wheel speed.

### 产品特征及优势 Feature and benefits

- ◆ 密封、磁操作的非接触式传感，使用寿命长，可靠性高。  
Hermetically sealed, magnetically operated non-contact sensing gives excellent life and reliability.
- ◆ 坚固的结构使该传感器非常适合恶劣环境。  
Robust construction makes this sensor well suited to harsh environments.
- ◆ 高精度。  
High Accuracy.
- ◆ 根据客户要求，多种量程可定制。  
According to customer requirements, a variety of ranges can be customized.
- ◆ 工作温度范围广，为-40-150°C。  
The working temperature range is - 40-150 °C.
- ◆ 内部搭载两块霍尔芯片，可以实现冗余功能。  
Two Hall chips are installed inside, which can realize redundancy function.



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### 产品作用 Application

汽车用轮速传感器是ABS/ESP的一个子系统，用于检测车轮转速随动信号，通过霍尔效应，将其转化为电信号传输给ECU，ECU根据电信号的变化特点来判断车速，从而调控ABS/ESP的及时工作。

The automobile wheel speed sensor is a subsystem of ABS/ESP, which is used to detect the follow-up signal of wheel speed, convert it into an electrical signal through the Hall effect, and transmit it to the ECU. The ECU judges the speed according to the change characteristics of the electrical signal, so as to regulate the timely work of ABS/ESP.

### 操作 Operation

#### ◆ 基本原理Basic principle:

霍尔式轮速传感器利用霍尔效应原理，即在半导体薄片的两端通以控制电流，在薄片的垂直方向上施加磁场强度为B的磁场，则在薄片的另两端便会产生一个大小与控制电流、磁感应强度B的乘积成正比的电势，这就是霍尔电势。

用霍尔元件作为汽车的车轮转速传感器时，多采用磁感应强度B作输入信号，通过磁感应强度B随轮速变化，产生霍尔电势脉冲，经霍尔集成电路内部的放大、整形、功放后，向外输出脉冲序列，其空占比随转盘的角速度变化。齿盘的转动交替改变磁阻，引起磁感应强度变化，即可测取传感器输出的霍尔电势脉冲。

Hall type wheel speed sensor uses the principle of Hall effect, that is, control current is applied at both ends of the semiconductor sheet, and a magnetic field with a magnetic field strength of B is applied in the vertical direction of the sheet, then an electric potential whose size is proportional to the product of control current and magnetic induction strength B will

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be generated at the other ends of the sheet, which is called Hall potential.

When Hall element is used as the wheel speed sensor of an automobile, magnetic induction intensity B is usually used as the input signal. When magnetic induction intensity B changes with wheel speed, Hall potential pulse is generated. After amplification, shaping and power amplifier inside Hall integrated circuit, pulse sequence is output outward, and its duty cycle changes with the angular speed of the turntable. The rotation of the gear disc alters the magnetoresistance, causing the change of magnetic induction intensity, which can measure the Hall potential pulse output by the sensor.

### ◆ 连接选项 Connection options:

根据客户选择定制连接系统。  
Customized to customer choice of connection system.

### ◆ 包装选项 Packaging Options:

可提供定制包装以满足任何需要，请联系KESENS技术部了解详情。  
Custom packaging can be provided to meet any need, please contact KESENS Engineering for details.

## 技术参数 Functional Characteristics

参数 PARAMETER	最小值 MIN.	额定值 NOM.	最大值 MAX.	单位 UNITS	备注 COMMENT
工作温度 TEMPERATURE RANGE	-40		150	°C	
供电电压 SUPPLY VOLTAGE	4.5	12	20	V	
占空比 DUTY CYCLE	40	50	60	%	
低电平信号 LOW LEVEL SIGNAL	5.9	7	8.4	mA	
高电平信号 HIGH LEVEL SIGNAL	11.8	14	16.8	V	
输出上升时间 OUTPUT RISE TIME			1.5	us	
输出下降时间 OUTPUT FALLING TIME			1.5	us	
输出频率 OUTPUT FREQUENCY	1		5000	Hz	

可根据需要定制不同量程及电气和环境规范的产品，详情请联系KESENS研发部。

Products with different ranges and electrical and environmental specifications can be customized according to needs. Please contact KESENS design department for details.