KESENS

胎压传感器
Tire Pressure Sensor



产品介绍 Product Description

胎压传感器内置电池，将压力/温度元件、加速度传感器、微控制器与射频电路高度集成于一体。安装于轮胎内后，可实时监测并无线发送胎压、胎温及电量信息。产品具备智能休眠唤醒与低功耗设计，支持爆胎检测与自动定位，更可实现车辆熄火状态下的无线接收器唤醒。整体性能符合胎压检测国标一类标准。

The tire pressure sensor features a built-in battery and highly integrates pressure/temperature elements, an accelerometer, a microcontroller, and RF circuitry into a single unit. Once installed inside the tire, it can monitor and wirelessly transmit real-time information on tire pressure, temperature, and battery level. The product features an intelligent sleep/wake-up design and low power consumption. It supports tire blowout detection and automatic positioning, and is even capable of waking up the wireless receiver while the vehicle is turned off. Its overall performance complies with the Class 1 national standards for tire pressure detection.

产品特征及优势 Feature and Benefits

- 高集成度模块化设计，采用SMT贴装工艺。
  Highly integrated modular design using SMT fabrication process.
- 基于核心传感单元的轮胎绝对压力输出（100~900kPa），精度±10kPa。
  Tire absolute pressure output derived from a core sensing unit (100~900kPa), with ±10kPa accuracy.
- 存储温度范围（-40~125℃），具备优异的环境耐受力。
  Storage temperature range (-40~125℃), providing excellent environmental tolerance.
- 集成射频发射模块，FSK调制，抗干扰能力强。
  Integrated RF transmitter with FSK modulation for high anti-interference capability.
- 采用灌胶密封工艺，具备IP6K9K高防护等级，确保零泄漏。
  Utilizes potting sealing process to achieve IP6K9K high protection rating and ensure zero leakage.
- 接口与主流供应商产品完全兼容，支持激光打标，追溯性优异。
  Interfaces are fully compatible with major tier 1 suppliers; laser marking ensures excellent traceability.
- 工作温度范围宽（-40~105℃），适应恶劣工况。
  Wide operating temperature range (-40~105℃) for harsh environments.

产品应用 Application

胎压传感器安装于各车轮内，采集轮胎压力、温度及电池电量，并无线发送至接收模块。结合加速度传感器，传感器可智能识别行车与驻车状态以优化功耗。当监测到欠压、漏气、过温及爆胎等异常时，系统可通过仪表盘警示驾驶员。

The tire pressure sensors are installed inside each wheel to collect tire pressure, temperature, and battery level data, which are then wirelessly transmitted to the receiving module. Integrated with an accelerometer, the sensors can intelligently distinguish between driving and parking states to optimize power consumption. When abnormalities such as under-inflation, air leakage, overheating, or tire blowouts are detected, the system alerts the driver via the dashboard.

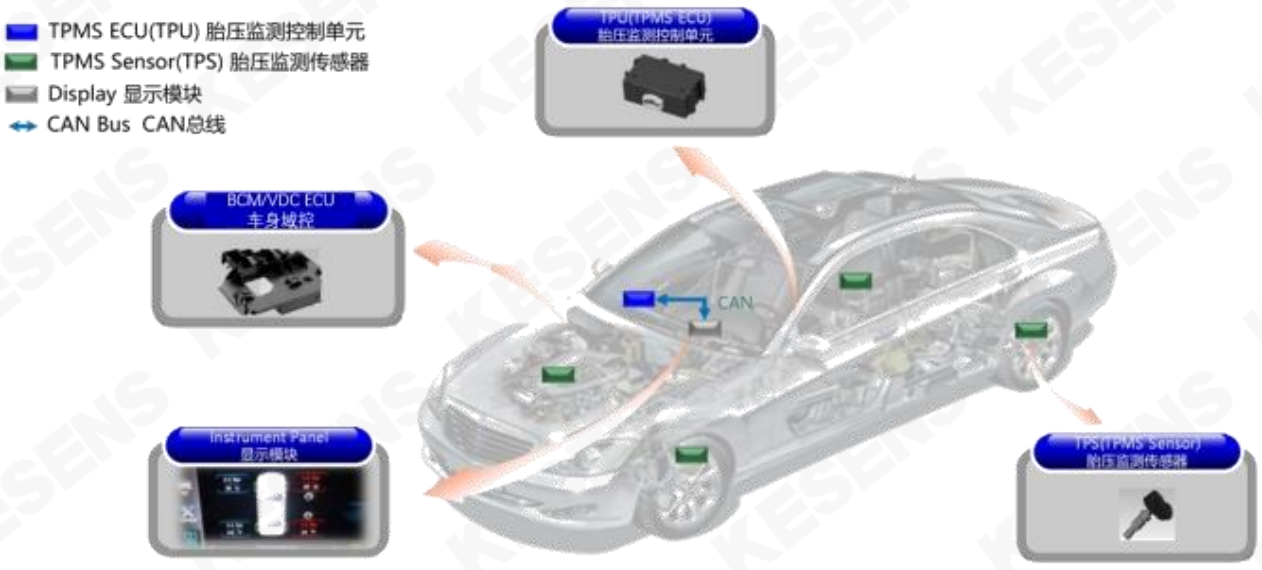
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操作 Operation

基本原理 Basic Principle

胎压传感器内置压力与温度敏感元件及加速度传感器，实时采集轮胎气压、温度及自身电池电量，并由微控制器进行数字编码。加速度传感器用于判断车辆行驶或静止状态以控制休眠唤醒；数据最终通过射频（RF）模块无线发送至车身接收模块，供系统判定欠压、过压、漏气、过温及爆胎等异常。

The tire pressure sensor integrates built-in pressure and temperature sensing elements along with an accelerometer to collect real-time data on tire pressure, temperature, and its own battery level, which is then digitally encoded by a microcontroller. The accelerometer is used to determine whether the vehicle is in motion or stationary, thereby controlling the sleep and wake-up states. Finally, the data is wirelessly transmitted via an RF module to the vehicle's receiving module, allowing the system to identify abnormalities such as under-inflation, over-inflation, air leakage, overheating, and tire blowouts.



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.

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技术参数 Functional Characteristics

参数PARAMETER	符号SYMBOL	最小值MIN.	额定值NOM.	最大值MAX.	单位UNITS
工作温度 TEMPERATURE RANGE	T	-40		105	℃
压力测量范围 （可定制） PRESSURE RANGE （Customizable）	P	100		900	kPa
存储温度 STORAGE TEMPERATURE	T	-40		125	℃
射频波载频率 RF CARRIER FREQUENCY	fc	433.877	433.92	433.963	MHz
射频频率偏移 RF FREQUENCY OFFSET	fc	-45		45	kHz
压力侦测精度 PRESSURE DETECTION ACCURACY	Err			10（0~85℃）； 20（-40~0、85~125℃）	kPa
温度侦测精度： TEMPERATURE DETECTION ACCURACY	Err			3℃(-20～85℃); 5℃(-40～-20℃; 85～125℃)	℃
静态电流 QUIESCENT CURRENT	I_{DD}			0.4	uA
发射功率 TRANSMIT POWER	f_{RF}	87		107	dBuV

可根据客户需求定制产品，如有需求请联系我们。
Customized products available upon request. Contact us for details.

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