KESENS

汽车氧传感器（开关泵电流型 KS-BP）

Automotive Oxygen Sensor (Binary with pump current KS-BP)



产品介绍 Product Description

汽车用氧传感器主要作用在于监测发动机排气中的氧含量，并根据所测得的数据输出信号（电压信号或者电流信号），反馈给ECU，从而控制喷油量的大小，使汽车发动机随时处于最佳的燃烧状态，并且与三元触媒相结合使用，有效的减少汽车尾气中有害成分的80%以上，节油5% ~20% 。

The oxygen sensor for automobile was used to monitor the oxygen concentration in the engine exhaust gas。the engine can Precisely control the amount of fuel injection through output signals (voltage signals or current signals) fed back by ECU and keeping the engine in the optimal combustion state at all times. When combined with the three-way catalytic converter, it can effectively reduce more than 80% of the harmful components in vehicle exhaust, saving 5% to 20% of fuel.

产品特征及优势 Feature and Benefits

- 安装螺栓尺寸：M18X1.5-6e;六角对边尺寸：22mm；
  Mounting bolt size: M18X1.5-6e; Hexagonal opposite side size: 22mm;
- 传感探头长度：30.2 mm;
  Sensor length: 30.2mm;
- 安装扭矩：40~60 NM ;
  Installation torque: 40~60 NM;
- 常规工作温度范围：350℃~850℃;
  Normal operating temperature range：350℃~850℃;
- 可靠性好； 起燃时间短， 输出信号稳定;
  Good reliability，Short ignition time, stable output signal;
- 抗中毒能力强;
  Strong anti-poisoning ability ;
- 密封性能好，响应速度快;
  Good sealing performance, fast response speed;
- 外观和客户接口可以与主流OEM产品兼容;
  Appearance and customer interface can be compatible with mainstream OEM products;

产品应用 Application

氧传感器在现代发动机管理系统的配置机构中被用于探测发动机所排出的燃烧废气中氧的含量，借以判定发动机实时燃油供给之空气燃料混合比的实际状态，并通过自身产生的电器反应信号反馈给发动机电子控制模块（ECM），以作为系统燃油管理系统的闭环燃油修正补偿控制的重要依据，使燃油管理子系统能够更加精确地控制调整发动机各种工作状态下的空气燃料混合比；并在绝大多数工况下使系统保持在理想空燃比工作状态，以便获得更加优良的排放控制特性和燃油经济性。

Oxygen sensors are used in the configuration of modern engine management systems to detect the oxygen content of the exhaust gases emitted by the engine, thereby determining the actual state of the air-fuel mixture in the engine at any given time. They generate electrical reaction signals and feed them back to the engine electronic control module (ECM) to serve as an important basis for the closed-loop fuel correction control of the fuel management subsystem. This enables the fuel management subsystem to more accurately control and adjust the air-fuel mixture ratio in the engine under various operating conditions. In most cases, the system is kept in the ideal air-fuel ratio operating state to achieve better emission control characteristics and fuel economy.

操作 Operation

基本原理 Basic Principle

氧传感器采用平板结构多层氧化锆陶瓷元件作为传感器的基础元件。氧化锆元件是一种通体充满无数微孔的陶瓷基础元件外面镀有氧化锆涂层，该涂层外侧暴露于发动机燃烧废气之中；涂层的内侧透过含微孔的陶瓷元件与大气相通。集中在氧化锆内外两侧电极之间氧含量的差别形成的微分电压信号。

当氧化锆元件被电流加热或被流经传感器的发动机燃烧废气加热所激活，空气经过通体充满无数微孔的陶瓷基础元件进入氧化锆元件的内电极，而燃烧废气流经氧化锆的外电极。氧离子将从氧化锆内电极向外电极移动，传感器的内外电极之间构成了一个简单的原电池，发动机燃烧废气中氧含量的变化不同在两个电极之间产生不同的输出电压信号。氧传感器将根据发动机燃烧废气中氧离子浓度的高低变化来改变这一输出电压信号的高低。

氧传感器通常的工作表现为在当发动机的工作时空燃比变稀时，排气中氧含量的浓度将会升高，此时，氧传感器的输出电压信号接近0V；当空燃比变浓时，排气中氧含量的浓度降低，传感器的输出电压将接近1V。

The oxygen sensor is based on a multi-layer zirconia ceramic element with a flat structure. The zirconia element is a ceramic base element filled with numerous micropores and coated with a zirconia coating, which is exposed to the engine combustion exhaust gas. The inner side of the coating communicates with the atmosphere through ceramic elements containing micropores. The differential voltage signal is formed by the difference of oxygen content between the inner and outer electrodes of zirconia.

When the zirconia element is heated by an electric current or by engine combustion exhaust gas flowing through the sensor, the air passes through the ceramic base element filled with numerous micropores into the inner electrode of the zirconia element, and the combustion exhaust gas flows through the outer electrode of the zirconia. Oxygen ions will move from the inner zirconia electrode to the outer electrode, and a simple galvanic cell is formed between the inner and outer electrodes of the sensor. The different oxygen content in the engine combustion exhaust gas produces different output voltage signals between the two electrodes. The oxygen sensor will change the level of this output voltage signal according to the change of oxygen ion concentration in the engine combustion exhaust gas.

The usual performance of the oxygen sensor is that when the fuel ratio of the working time and space of the engine becomes thinner, the concentration of oxygen content in the exhaust gas will increase. At this time, the output voltage signal of the oxygen sensor is close to 0V; When the air-fuel ratio becomes thicker, the concentration of oxygen content in the exhaust gas decreases, and the output voltage of the sensor will be close to 1V.

泵电流要求 Pumping Current

本款氧传感器引入了由 ECM 持续为探测元件提供氧气作为参照气体的特殊设计结构。因此，这种氧传感器需要电子控制系统电路能够向氧传感器的信号输出端 7-10 微安的泵电流，以便将感应元件废气一侧的氧传输到参考气体一侧。泵电流可以由集成到发动机电子控制模块（ECM）的控制输出电路提供。这样就可以取消传感器之废气一侧与参照气体一侧之间的密封处理元件。

The oxygen sensor introduces a special design structure in which the ECM continuously provides oxygen as a reference gas for the detection element. Therefore, this oxygen sensor requires an electronic control system circuit that can provide a pump current of 7~10 microamperes to the signal output terminal of the oxygen sensor, in order to transfer oxygen from the exhaust gas side of the sensing element to the reference gas side. The pump current can be provided by the control output circuit integrated into the engine electronic control module (ECM). This can eliminate the sealing element between the exhaust gas side and the reference gas side of the sensor.

KESENS

连接选项 Connection Options

可根据客户选择定制连接系统。目前接插件使用DELPHI-P WEATHERPACK,外壳型号：12015024。
Customized to customer choice of connection system. Current connector use DELPHI-P WEATHERPACK, housing number: 12015024.

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Parameters		工况Condition	要求Requirements
基本性能 Basic performance 450℃，13.5V	VR	λ=0.95	≥720mv
	VL	λ=1.05	≤120mv
	TR-L	600mv-300mv	≤200ms
	TL-R	300mv-600mv	≤120ms
转换电压 Switching voltage	450mv		
泵电流 Pumping current	7-10μA		
起燃时间 Light-off time	≤13s（With pumping current）		
加热器电阻 Heater voltage	9.6±1.5Ω		
加热器电压 Heater voltage	13.5V		
传感器内阻 Internal resistance	≤5000Ω （Apply 13.5V for 60s）		
静态Lambda Static Lambda	1.005±0.003		

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.

地址：浙江省嘉兴市经济技术开发区天枢路199号
Add：No. 199, Tianshu Road, Economic and Technological Development Zone, Jiaxing City, Zhejiang Province，China.
电话（Tel）：0573-82858999
邮箱（E-mail）：info@kesens.com
网址（Web）：www.kesens.com