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# 三合一温度湿度压力传感
## 3 in1 Temperature and Humidity Pressure Sensor



## 产品介绍 Product Description

三合一温度湿度压力传感器由压力传感器与温湿度传感器集成，同时输出介质压力、温度、湿度三路信号给控制器。

The PHT sensor integrates a pressure sensor and a temperature & humidity sensor, and outputs three signals of medium pressure, temperature and humidity to the controller.

## 产品特征及优势 Feature and Benefits

- PHT可以提供三个信号。
  The PHT sensor provides three outputs: medium pressure, temperature and humidity.
- 来源于压力感应元件并经芯片处理后的介质压力信号。
  Medium pressure output derived from a MEMS based sensing element.
- 介质温度与湿度信号由集成式温湿度芯片输出。
  Medium temperature and humidity output from an integrated temperature & humidity chip.
- 激光打标以得到更好的追溯性。
  laser marking for better traceability.
- 根据客户要求，压力量程可定制。
  Different pressure ranges are available on customer request.
- 接插件及机械接口可定制。
  Connector and mechanical interface are customizable.

## 产品应用 Application

PHT 传感器采集管路压缩空气，输出压力、温度、湿度三路信号，服务于空气悬架的闭环控制与状态诊断。同时也可用于其他流体管路及气源系统的监测与控制。

With compressed air pressure, temperature and humidity signals from the PHT sensor, together with other system signals, the suspension ECU modulates pneumatic actuators to achieve closed-loop control and condition diagnosis for air suspension, with additional applicability to monitoring and control of other fluid pipelines and air source systems.

## 操作 Operation

### 基本原理 Basic Principle

三合一温度湿度压力传感器压力部分,是通过压力敏感单元感应管路内介质的压力变化，将其转化为压力敏感元件的阻值变化，然后通过调理电路进行处理放大，转换成电压信号。温度湿度部分通过一个集成式温湿度芯片采集介质的温湿度信号，分别输出两路信号，温度升高，电压升高，湿度加大，电压升高。

With resistive sensing technology, the pressure of the medium in the pipeline is converted into resistance variation of the pressure-sensitive element, and then processed into a voltage signal by the conditioning module. The temperature and humidity part uses an integrated temperature-humidity chip; its output voltage rises as temperature increases, and the output voltage rises as humidity increases.

图1 压力[BarA] 输出电压
供电电压 5.0V

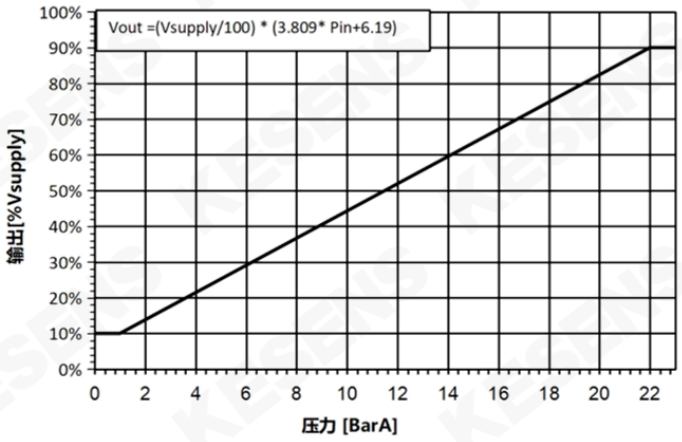



图2 温度[℃] 输出电压
供电电压 5.0V

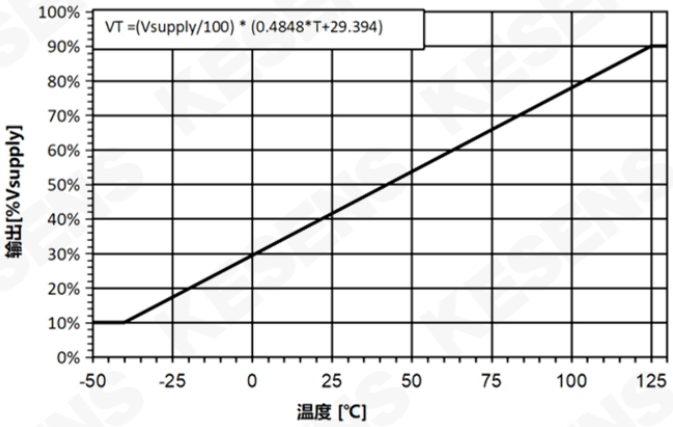
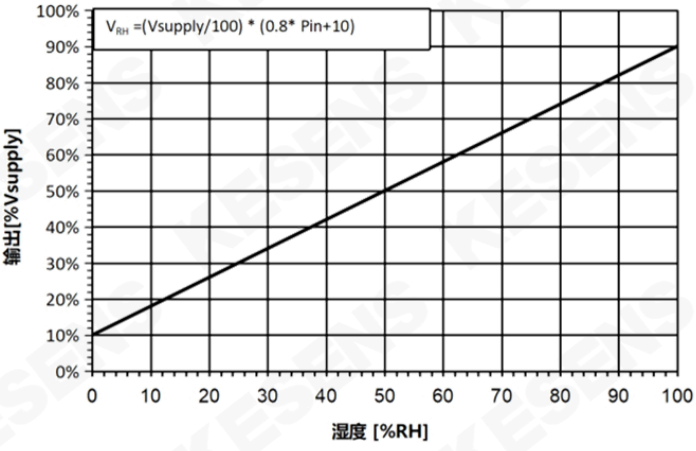



图3 湿度[%RH] 输出电压
供电电压 5.0V



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## 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 | 符号SYMBOL | 最小值MIN. | 额定值NOM. | 最大值MAX. | 单位UNITS |
|---|---|---|---|---|---|
| 温度工作范围<br>TEMPERATURE RANGE | T | -40 | | 120 | ℃ |
| 压力测量范围 （可定制）<br>PRESSURE RANGE （Customizable） | P | 1 | | 22 | bar |
| 湿度工作范围<br>Humidity RANGE | H | 0 | | 100 | %RH |
| 电源电压<br>SUPPLY VOLTAGE | Vcc | 4.75 | 5 | 5.25 | V |
| 供电电流<br>SUPPLY CURRENT | Icc | | | 30 | mA |
| 输出电流<br>OUTPUT LOAD CURRENT | $I_L$ | | | 10 | mA |
| 压力输出电压<br>NOMINAL OUTPUT （Customizable） | Vout | 10 | | 90 | %Vcc |
| 压力精度误差<br>OVERALL ACCURACY ERROR | P-err | | | 2.5 | %FS |
| 温度精度误差<br>TEMPERATURE ACCURACY ERROR | T-err | | | 2.5 | ℃ |
| 湿度精度误差<br>TEMPERATURE RESPONSE TIME | H-err | | | ±5(20~100%RH)<br>±7(0~20%RH) | %RH |

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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