THE OPTIMAL SENSING SOLUTION FOR YOUR DESIGN

Avnet Abacus partners with the market’s leading sensor manufacturers to provide you with the solutions and technical expertise you need to select the optimal sensing solution for your application. Our knowledgeable team of technical specialists can guide you through the design process, helping you to reduce your design cycle and decrease your time to market.

To view our full sensor linecard, along with a range of design resources, visit our sensor solutions page at avnet-abacus.eu/sensors.

To arrange a visit or discuss your requirements in your local language, get in touch at avnet-abacus.eu/ask-an-expert.
Advances in sensing technologies are increasing the functionality of devices in many industries including consumer, medical, industrial, automotive and wearables. The functionality can be delivered at various levels of integration in terms of number of diverse sensor types included in either a single package or sensor module. Determining the right types of sensor for your application, selecting the optimal technical characteristics such as precision, range of operation and speed along with ensuring interoperability with the balance of the design is no small task. This brochure details a selection of products available from Avnet Abacus.

For further information please visit [avnet-abacus.eu/sensors](http://avnet-abacus.eu/sensors).

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MEMS motion sensors - accelerometers and gyroscopes

MEMS sensors are used by several industries to measure the rate and rotational angle of motion. Accelerometers measure linear motion which can be used to determine acceleration, tilt, shock and vibration. Gyroscopes measure the rate of angular motion and can accurately assess complex motion in multiple dimensions.

A world leader in MEMS sensors, Murata Electronics Oy develops and manufactures accelerometer and gyroscope components and combined sensors based on the company’s proven 3D MEMS technology and integrated electronics. Providing levels of performance previously found only in more expensive module products, Murata’s accelerometers and gyroscopes are useful for demanding applications in industrial, medical, transportation and automotive industries.

MURATA SCA3100-D04 HIGH PERFORMANCE 3-AXIS MEMS ACCELEROMETER

The SCA3100-D04 is a high performance 3-axis accelerometer component based on Murata’s capacitive 3D MEMS technology. The component integrates high accuracy micromechanical acceleration sensing with a flexible SPI digital interface. Dual Flat Lead (DFL) housing guarantees reliable operation over product lifetime. The SCA3100-D04 is designed, manufactured and tested for high stability, reliability and quality requirements of automotive applications.

The accelerometer has extremely stable output over a wide range of temperature, humidity and vibration. The component is qualified against AEC-Q100 standard and has several advanced self-diagnostics features.

MURATA SCC2230-D08 COMBINED GYROSCOPE AND 3-AXIS ACCELEROMETER

The SCC2230-D08 is a combined high performance angular rate and accelerometer sensor component. It consists of a Z-axis angular rate sensor and a 3-axis accelerometer sensor based on Murata’s proven capacitive 3D MEMS technology. Signal processing is done in one mixed signal ASIC that provides angular rate and acceleration output via flexible SPI digital interface. The sensor elements and ASIC are packaged in a 24-pin pre-molded plastic housing that guarantees reliable operation over the product’s lifetime.

The SCC2230-D08 is designed, manufactured and tested for high stability, reliability and quality requirements. The component has extremely stable output over a wide range of temperature, humidity and vibration. It has several advanced self diagnostics features, is suitable for SMD mounting and is compatible with RoHS and ELV directives.
Pressure sensors - transducer modules

A pressure sensor detects and measures the pressure of a medium (liquid or gas) applied to its sensing element and converts it to an electrical signal representing the applied pressure. Criteria for selecting an optimal component include the magnitude of the pressure, nature of the medium, accuracy, range and linearity. Applications exist across a wide variety of end-markets including industrial, transportation, building automation, automotive, medical, aerospace and defence.

Avnet Abacus offers an extensive range of MEMS pressure sensors from market leaders including ALPS Electric, Amphenol Advanced Sensors, Murata, OMRON Electronic Components, SMI and TE Connectivity, with extensive packaging options from SMD and board level to complete pressure transducer modules.

**TE CONNECTIVITY MSP100 PRESSURE TRANSDUCER**

The MSP100 pressure transducer provides stainless steel media compatibility in a low cost, small profile solution. This sensor has no silicone gel or polymeric media isolation methods to fail in contact with water or other harsh chemicals. Pressure connections are provided via an o-ring seal. The device is available in both analogue and 14-bit digital output with a port material of either 316L SS or 17-4PH.

Additional custom port options are available to meet your application needs. The small size vs. performance and media compatibility are provided through solid-state technology.

**Features and benefits**

- Single piece construction; no welds, no oil
- 100% stainless steel isolation for harsh chemical measurement
- Low cost
- 14-bit digital output or analogue
- Small size
- 316L stainless steel (SS) or 17-4PH
- Available in both analogue and 14-bit digital output with a port material of either 316L SS or 17-4PH

**TE CONNECTIVITY M5600 WIRELESS PRESSURE TRANSDUCER**

The modular M5600 wireless pressure transducer from the Microfused line is enclosed in a stainless steel and polycarbonate housing. This high accuracy wireless transducer eliminates hard wiring and provides remote process control and monitoring.

This series is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids. The wetted material of the pressure port is made of 316L stainless steel and the transducer’s durability is excellent with no o-rings or organics exposed to the pressure media. The M5600 is weatherproof and exceeds the latest heavy industrial CE requirements.

**Features and benefits**

- Digital 24-bit ADC output, I2C protocol
- Wireless Bluetooth® 4.0 connection
- CE compliant with variety of pressure ports
- Compact and battery powered (CR2050)
- Optional stainless steel snubber
- 17-4PH or 316L SS port
- Gauge, sealed, compound
- 10 V/m EMI protection
- ±0.25% pressure accuracy
- Pressure down to ±1.0% total error band
- ±3°C temperature output accuracy
- -10°C to +60°C compensating temperature
- -20°C to +85°C operating temperature
AMPHENOL ADVANCED SENSORS NPA SURFACE-MOUNT PRESSURE SENSOR SERIES

The NPA is a family of OEM miniature pressure sensing products offering best-in-class performance for OEM applications in healthcare, industrial and transportation markets. Packaged in an industry standard surface mount SOIC14 pin package, the NPA series is available in gauge, absolute or differential pressure ranges from 0 to 10” H₂O to 0 to 30 PSI. Uncalibrated millivolt outputs, fully calibrated, amplified analogue and 14-bit digital outputs are available.

Features and benefits
• Differential, gauge, absolute and low pressure
• 10” H₂O to 30 PSI full scale
• Amplified analogue or digital output
• Digital pressure signal: 14-bit ADC/11-bit DAC
• On chip temperature sensor in digital mode
• Operating temperature range of -40°C to 125°C
• 60X overpressure on ranges < 1psi

SMI LOW PRESSURE DIGITAL SENSOR – SM7221, SM7321, SM7421 SERIES GAUGE AND DIFFERENTIAL PRESSURE SENSORS

The SM7221, SM7321 and SM7421 series are digital, low-pressure MEMS sensors offering state-of-the-art pressure transducer and CMOS mixed signal processing technology to produce digital, fully conditioned, multi-order pressure and temperature compensated sensors in a JEDEC standard SOIC-16 package with a dual vertical porting option. They are available in both compound gauge and differential pressure configurations. With the dual porting, a vacuum-gauge measurement is possible to minimise altitude errors due to changes in ambient pressure.

Combining the pressure sensor with a signal-conditioning ASIC in a single package simplifies the use of advanced silicon micro-machined pressure sensors. The pressure sensor can be mounted directly on a standard printed circuit board and a high level, calibrated pressure signal can be acquired from the digital interface. This eliminates the need for additional circuitry, such as a compensation network or microcontroller containing a custom correction algorithm.

Features and benefits
• Pressure ranges from 10 to 20 cmH₂O (7.36 to 14.7 mmHg); gauge, differential and asymmetric outputs
• Accuracy: ±1% full scale
• 14-bit digital, pressure calibrated and temperature compensated output
• I²C digital interface
• Compensated temperature range: –20°C to 85°C
•Insensitive to mounting orientation
•Robust JEDEC SOIC-16 package for automated assembly
•Manufactured according to ISO9001 and ISO/TS 16949 standards

OMRON 2SMPP-03 GAUGE PRESSURE SENSOR

Featuring a package size of 6.1 x 4.7 x 8.2mm (L x W x H), offset voltage of -2.5±4.0 mV and a rated power consumption of 0.2mW, the 2SMPP-03 boasts superior electrical characteristics in a tiny form factor for pressure measurement from -50 to +50kPa.

Features and benefits
• Superior electrical characteristics at -50 kPa to 50 kPa pressure range
  Offset voltage of -2.5±4.0 mV
  Span voltage of 42.0±5.5 mV
(At rated pressure 50 kPa, 100 µADC current supply)
• Small package 6.1 x 4.7 x 8.2mm (L x W x H)
• Good temperature dependency at 0 to 85°C, at rated pressure 0 to 50 kPa
  Temp. influence of span of ±3.0%FS
  Temp. influence of offset of ±5.0%FS
(100 µADC current supply)
• Rated power consumption of 0.2 mW
Pressure sensors - surface mount

ALPS ELECTRIC HSPPAD042A DIGITAL PRESSURE SENSOR

The HSPPAD042A achieves an extremely low current consumption level (1.8µA in low power mode) and high sensing precision (absolute pressure accuracy: ±0.7hPa, relative pressure accuracy: ±0.05hPa) in a device measuring 2.0 × 2.5 × 0.9mm (W × D × H). The sensor also incorporates temperature compensation circuitry.

Features and benefits
- 1.8µA low current consumption (in low power mode)
- High sensing precision with ±0.7hPa absolute and ±0.05hPa relative pressure accuracy
- Industry-smallest dimensions of 2.0 × 2.5 × 0.9mm
- Built-in temperature compensation circuit means compensation by the host product is not required
- Built-in 16-step FIFO

AMPHENOL ADVANCED SENSORS NPA 201 DIGITAL BAROMETRIC PRESSURE SENSOR

The NovaSensor NPA 201 is an absolute pressure sensor with digital output for low cost applications. Its low power consumption (sleep state current <250nA, 25°C) and compact size (2.0 × 2.5 x 1.0mm) make it ideal for battery powered and mobile applications or any application where size is a constraint.

Features and benefits
- 260 to 1260 mBar absolute pressure range
- Temperature measurement included
- Sleep state current <250nA (25°C)
- Temperature resolution: <0.003K/LSB
- 16-bit pressure and temperature resolution
- Operation temperature: −40°C to +85°C
- Operating range 1.7 ~ 3.6V
- 8-HCLGA package
- Fully calibrated and compensated
- Digital compensation via 18-bit internal digital signal processor (DSP) running a correction algorithm

TE CONNECTIVITY MS5607-02BA03 BAROMETRIC PRESSURE SENSOR, WITH STAINLESS STEEL CAP

The MS5607–02BA is a new generation of high resolution altimeter sensor with an SPI and I2C bus interface. This barometric pressure sensor is optimised for altimeters and variometers with an altitude resolution of 20cm. The sensor module includes a high linearity pressure sensor and an ultra low power 24-bit ΔΣ ADC with internal factory calibrated coefficients.

It provides a precise digital 24-bit pressure and temperature value and different operation modes that allow the user to optimise for conversion speed and current consumption. A high resolution temperature output allows the implementation of an altimeter/thermometer function without any additional sensors.

Features and benefits
- High resolution module, 20cm
- Fast conversion down to 1 ms
- Low power, 1 µA (standby < 0.15 µA)
- QFN package 5.0 x 3.0 x 1.0mm³
- Supply voltage 1.8 to 3.6 V
- Integrated digital pressure sensor (24 bit ΔΣ ADC)
- Operating range: 10 to 1200 mbar, −40°C to +85°C
- I2C and SPI interface up to 20 MHz
- No external components (internal oscillator)
- Excellent long term stability
Temperature sensors - NTC and digital

Temperature sensors are fundamental for all forms of temperature measurement, control and compensation. Commonly used sensors are negative temperature coefficient (NTC) thermistors, positive temperature coefficient (PTC) thermistors, resistance temperature detectors (RTD), thermocouples and infrared sensing thermopiles.

Factors in consideration when selecting the correct temperature sensor include the required accuracy, responsiveness, temperature range, output type and any environmental demands such as corrosiveness, shock and vibration.

Avnet Abacus offers an extensive range of temperature sensors and thermal sensing solutions for applications across all industries from vendors including ALPS Electric, Amphenol Advanced Sensors, AVX, Bourns, KEMET, Murata, Panasonic, TDK and TE Connectivity.

**AMPHENOL ADVANCED SENSORS THERMOMETRICS NTC TYPE CR-1 HARSH ENVIRONMENT CHIP THERMISTOR**

NTC type CR-1 harsh environment chip thermistors are Sn-coated alloy 52 leads with high performance acid and moisture resistant coating. These NTC chip thermistors are ideal for harsh environment applications and operate up to 190°C with excellent stability. Suitable for a wide range of applications from automotive (AEC Q200 Rev D qualified) to industrial and white goods.

**Features and benefits**
- Suitable for automotive, EGR, SCR, TMAP, OAT, HVAC and white goods applications
- Operation up to 190°C with excellent stability
- Automotive/aerospace fluids resistance
- Water immersion
- Flexible – coated leads can be formed
- Insulation resistance to 1kV d.c.
- Designed for accurate temperature measurement, control and compensation
- Tight tolerances on resistance and B value

**TDK G1540 GLASS ENCAPSULATED NTC SENSORS**

The G1540 NTC temperature sensors feature high temperature resistance, operating up to +250°C. Used in temperature measurement applications where small size and fast response times are needed, the G1540 has a head dimension of just 0.9mm and has options on lead materials and electrical specifications.

**Features and benefits**
- Glass-encapsulated, heat-resistive and highly stable
- Temperature measurement up to 250°C
- Leads: dumet wires (copper-clad FeNi)

**TE CONNECTIVITY TSYS02D DIGITAL TEMPERATURE SENSOR**

The TSYS02D is a single chip temperature sensor. It provides factory calibrated data corresponding to the measured temperature. The data is provided via I2C interface. The TSYS02D can be interfaced to any microcontroller by an I2C interface. The TDFN8 package provides a small size and fast time response.

**Features and benefits**
- High accuracy ±0.2°C @ temp range -5°C - +50°C
- Adjustment of high accuracy temperature range on request
- Low supply current < 420µA (standby < 0.14µA)
- I2C interface up to 400kHz
- Small IC-package TDFN8 2.5mm x 2.5mm
- Operating temperature range: -40°C - +125°C
- Resolution: 0.01°C
Temperature sensors - RTD, polymer PTC resettable fuse and thermopile array

BOURNS MULTIFUSE® RESETTABLE FUSE DEVICES

Based on an innovative polymer PTC technology, Bourns Multifuse® devices provide protection against over-temperature and over-current conditions. These resettable fuses exhibit a positive temperature coefficient (PTC) effect when heated. As the PTC increases due to current or ambient temperature, the material expands.

This expansion increases the impedance from low to high, effectively creating an open circuit with some leakage current. Key applications include lithium-ion battery pack protection where overheating can cause serious safety threats.

Features and benefits
- Resettable overcurrent protection
- Heat element
- Agency approvals – UL, CSA, TÜV
- Standard footprints and packaging options
- Low resistance
- RoHS compliance standard
- Custom designs available

PANASONIC GRID-EYE THERMOPILE ARRAY SENSOR

The Panasonic Grid-EYE is an 8 x 8 (64) pixel infrared array sensor. This sensor offers digital output (I^2C) for thermal presence, direction, and temperature values. The built-in lens includes a 60 degree viewing angle. Grid-EYE features a compact SMD design using MEMS thermopile technology.

Applications for this sensor can include: digital signage, security, lighting control, kiosk/ATM, medical imaging, automatic doors, thermal mapping, people counting and robotics.

Features and benefits
- Temperature detection of a two-dimensional area. 8 x 8 (64 pixels)
- Digital output (capability of temperature value output)
- Compact SMD package (adaptively to reflow mounting)
- RoHS compliant

TE CONNECTIVITY PTF FAMILY PLATINUM RTD SENSORS

The PTF-sensors are designed to provide precise, stable measurement in extreme temperature applications. These sensors offer high value through proven design, ease-of-use, reliable performance and quick availability.

Precise temperature measurements can be made in extreme environments. Whether you’re working on a new engineering design or optimising an existing one, TE’s platinum temperature sensors are easy to use in many industries and applications. The linear output requires low engineering intervention and TE makes these sensors available quickly in most form factors. Sensor components are available as glass encapsulated wire wound types for metrology applications as well as thin film on ceramic types for industrial and general purpose usage. The assemblies include push and screw-in probes for multi-purpose usage including harsh environments. Platinum RTD temperature sensor components and assemblies comply with the DIN EN 60751 to provide international comparability and interchangeability.

Features and benefits
- Precise measurement in extreme environments
- Ease of application and use
- Engineered to withstand extreme temperatures -200°C to +600°C
- International industrial standards (IEC 60751:2008)
- Greater engineering efficiency due to linear output
- Complete range for numerous applications
Magnetic sensors - AMR, GMR and geomagnetic

Magnetic sensors are used to measure the presence, strength and direction of magnetic fields. Types of magnetic sensors include AMR (anisotropic magnetoresistive), GMR (giant magnetoresistive), geomagnetic, hall effect and reed switch. Different types of magnetic sensors are used for cylinder/axis position detection, tamper detection and the open/close detection for equipment such as industrial control panels and refrigerators. Avnet Abacus offers an extensive range of magnetic sensors for applications across all industries from vendors including ALPS Electric, Murata and TE Connectivity.

ALPS ELECTRIC GEOMAGNETIC TYPE HSCD SERIES

The HSCDTD008A sensor is smaller than earlier models, has the industry’s widest measurement range and features extremely low current consumption. By achieving a compact size of 1.6 × 1.6mm (60% smaller than earlier models) with a high-reliability LGA*5 package and a measurement range of ±2.4mT (two times larger than earlier models) for each of the X, Y and Z axes, the sensor will contribute to greater freedom in circuit board design.

Features and benefits
- Size: 1.6 × 1.6 × 0.65mm
- 8pin LGA package
- Low noise
- Low current consumption, 60µA typ. (active), 3µA typ. (standby)
- Simple calibration
- High azimuth accuracy
- Measurement range: ±2.4mT
- Operating temperature: -40°C to 85°C

MURATA MRMS201A-001 SERIES FOR GENERAL POSITION AND OPEN–CLOSE DETECTION

Exploiting the magnetoresistive effect, AMR sensors detect changes in the magnetic resistance of a magnetoresistive element affected by an external magnetic field. This series includes versatile sensors that can detect a broad range of magnet movements for position sensing and rotation detection applications.

Features and benefits
- Operating temperature range: -45°C to 85°C
- Supply voltage range: 1.6V to 3.5V
- Low level output voltage: 0.3V
- High level output voltage: 2.7V
- Current consumption (typ.): 5.0µA
- Operating magnetic field (hon) max 2.5mT
- Operating magnetic field (hoff) min 0.5mT
- Storage temperature range: -40°C to 125°C

TE CONNECTIVITY KMY/KMZ LINEAR MAGNETIC FIELD SENSOR

Due to their featured properties – high sensitivity and almost no hysteresis – the KMY/KMZ sensors are used in a wide range of applications, for example magnetic field measurement, revolution counters, proximity detecting, and position measurement.

Features and benefits
- Output proportional to magnetic field strength with very high sensitivity
- Very small hysteresis and low noise
- Highly reliable
- Large operating temperature range, from -40°C to +150°C
- With/without internal magnet
Position sensors - encoders and precision potentiometers

Encoders and potentiometers are used in a wide range of applications to provide position feedback measurement of objects. Encoders are sensors and transducers that are used to accurately measure linear or angular position. They use optical, magnetic or conductive technologies and are widely used in applications such as industrial machine controls, indicators and monitors, motion control, robotics, valve position monitors, audio consoles and medical devices. Potentiometers are variable resistors that are commonly used for all applications where manually activated, adjustable settings are designed for long lifetimes. They are found in transportation, industrial and medical equipment.

BOURNS AMS22U NON-CONTACTING ANALOGUE ROTARY POSITION SENSOR

The Bourns model AMS22U non-contacting analogue rotary position sensor is designed to meet the specifications of heavy-duty applications requiring long cycle life and high reliability. This single-turn rotary sensor features a 1/8 inch shaft supported by dual ball bearings and a factory programmable electrical angle from 10 to 360 degrees. Available in a servo mount configuration with a rotational life of up to 100 million cycles, the Bourns model AMS22U sensor is a highly versatile position sensing device ideal for use in a range of industrial, medical and security applications.

Features and benefits
- Non-contacting magnetic technology
- Highly resistant to vibration/shock
- Highly resistant to fluid/dust ingress
- Operating temperature -40°C to 125°C
- Programmable at factory for zero position
- Robust design for industrial applications
- Highly repeatable
- Dual ball bearing
- RoHS compliant

TE CONNECTIVITY CH25 ROTARY INCREMENTAL ENCODER

The CH25 rotary incremental encoder comes with a 2.5 inch square flange, 3/8 inch shaft and a push-pull output driver. The CH25 also accepts a wide input voltage from 5 to 30 VDC and is available in resolutions from 100 to 5000 pulses per revolution. This encoder is perfect for many applications including electric motors, packaging machines, conveyor systems and elevators.

Features and benefits
- 100 to 5000 pulses per revolution
- Input voltage: 5 to 30 VDC
- Push-pull driver
- Operating temperature -20°C to 80°C
- M12 connector
- IP67 enclosure design

VISHAY ROT/SF SERIES PRECISION ROTATIVE TRANSDUCERS, CONDUCTIVE PLASTIC, SERVO MOUNTING

Vishay’s precision rotative transducers offer high precision, extremely long life, nearly infinite resolution and excellent repeatability. The ROT/SF series is part of a complete range of servo mounting rotational transducers for applications requiring long life accuracy and speed, such as industrial robotics, aircraft and construction equipment.

Features and benefits
- Size 08 to 30
- Linearity ± 1% down to ± 0.015%
- Output type: output by turrets
- Excellent repeatability
- Long life
- Essentially infinite resolution
- Up to 6 electrical functions with the same shaft
- On request custom design to meet your specifications
- Following MIL-R-39023 and NFC 93-255 requirements
Object and proximity sensors - detector switches, ultrasonic transducers and photomicrosensors

Sensing the presence or movement of objects is important in various applications, particularly in the medical, industrial and automotive sectors. This is achieved with sensing techniques including optical sensors, detector switches and ultrasonic sensors. Depending on the nature of the object and the application’s environment, solutions include choosing a detector switch to mechanically sense the presence or movement of an object, using an ultrasonic sensor to measure the presence or distance to an object or selecting a photomicrosensor which is triggered when an object interrupts its optical beam.

ALPS ELECTRIC COMPACT TWO-WAY, TWO-STEP DETECTION TYPE SSCQ SERIES

The SSCQ series are the industry’s smallest two-step detector switches, saving up to 30% space against competing solutions.

OMRON EE-SX3350/EE-SX4350 PHOTOMICROSENSOR

The photomicrosensor is a compact optical sensor that senses objects or object positions with an optical beam. The transmissive photomicrosensor incorporates an emitter and a transmissive that face each other.

PUI AUDIO ULTRASONIC TRANSDUCER UTR-1440K-TT-R

This product is used to detect glass breakage and water flow with appropriate circuits. Waterproof aluminium housing allows use in dusty, humid environments, and it is successful as an alternative to photoelectric sensors where light detection is limited.

Features and benefits
- Poles: 1
- Two-direction, 2-positions each side
- For PC board (reflow) terminal type
- 0.35N (max.) operating force
- 3.73mm total travel position
- With location lug
- -10°C to +60°C operating temperature range
- Rating (max.)/(min.) (resistive load): 1mA 5V DC/50µA 3V DC

Features and benefits
- Unique 5mm slot width
- PCB surface mounting type
- High resolution with a 0.5 mm wide aperture
- Choice of 2 types of Photo-IC output (EE-SX3350: dark ON, EE-SX4350: light ON)

Features and benefits
- Wide 70° (±15°) directivity for off-axis reception
- Designed to work as a stand-alone ultrasonic transmitter/receiver unit
- Uses high frequency for determining distance in the proper circuit
Air quality and humidity sensors

Monitoring and controlling air quality is a key factor in building automation, agriculture and horticultural systems where the ability to measure moisture, VOC and carbon dioxide in the air is crucial. Further applications for humidity sensing include humidifiers, dehumidifiers and meteorology.

ALPS Electric, Amphenol Advanced Sensors and TE Connectivity are world leaders in the development of a range of component and modular solutions for air quality monitoring and control applications.

ALPS ELECTRIC DIGITAL TEMPERATURE AND HUMIDITY SENSOR MODULE

The HSHCAL temperature and humidity sensor PC board mountable module is easily installed within end products, in the optimal location for performing measurement. Capacitive sensing enables operation in 0 to 100% relative humidity and output is provided by an I²C interface.

Features and benefits
• Dimensions: 24 × 16 × 6.5mm (W × D × H)
• 2.5 – 5.5V supply voltage
• -20°C to +85°C operating temperature range
• 0 to 100% RH operating humidity range
• 64LSB/% RH humidity sensitivity
• 50LSB/°C temperature sensitivity
• ±5%RH (@25°C/40, 60% RH) accuracy

AMPHENOL TELAIRE MICS-VZ-89TE INTEGRATED SENSOR BOARD

The MICS-VZ-89TE combines state-of-the-art MOS sensor technology with intelligent detection algorithms to monitor VOCs (volatile organic compounds) and CO₂ equivalent variations in confined spaces, e.g. meeting rooms or vehicle cabins. The dual signal output can be used to control ventilation on-demand, saving energy and reducing cost of ownership.

Features and benefits
• Calibration free
• Low power
• Wide VOCs detection range
• High sensitivity
• High resistance to shocks and vibrations

AMPHENOL ADVANCED SENSORS TELAIRE T6713 CO₂ MODULE

The new T6700 series is a miniature NDIR CO₂ sensor that has the accuracy and reliability of many larger sensors. The new small size allows OEMs to integrate in to smaller enclosures and equipment and uses significantly less power than many other devices on the market. The Telaire T6713 CO₂ module is ideal for applications where accurate CO₂ levels need to be measured and controlled for indoor air quality and energy saving applications such as demand control ventilation.

Features and benefits
• An affordable gas sensing solution for OEMs
• Eliminates the need for calibration in most applications with Telaire’s patented ABC Logic™ software
• Lifetime calibration warranty
• A reliable sensor design based on 20 years of engineering and manufacturing expertise
• Flexible CO₂ sensor platform designed to interact with other microprocessor devices
• Compact design and versatile interface options for simple product integration
Air quality and humidity sensors

TE CONNECTIVITY HTF3000LF PCB MODULE HUMIDITY AND TEMPERATURE SENSOR

HTF3000LF PVH-3.3 PCB modules provide humidity and temperature measurements in a small, complete package. It features a very small size for easy, cost-effective mechanical mounting. Direct interface with a micro-controller is made possible with the module’s linear frequency output.

Features and benefits
- One of the smallest humidity/temperature modules on the market
- Stable, proportional frequency output from 0 to 100% RH
- Calibrated within ± 3% RH @ 55% RH at 3.3V DC
- High quality thermistor
- Stable characteristics with temperature
- High reliability and long term stability

TE CONNECTIVITY HTU21D(F) DIGITAL HUMIDITY TEMPERATURE SENSOR

The HTU21D(F) is a digital humidity sensor with temperature output. Setting new standards in terms of size and intelligence, it is embedded in a reflow solderable Dual Flat No leads (DFN) package with a small 3 x 3 x 0.9mm footprint. This sensor provides calibrated, linearised signals in digital, I²C format. Every sensor is individually calibrated and tested. Lot identification is printed on the sensor and an electronic identification code is stored on the chip – which can be read out by command. Low battery can be detected and a checksum improves communication reliability. The resolution of these digital humidity sensors can be changed by command (8/12-bit up to 12/14-bit for RH/T).

Features and benefits
- Relative humidity and temperature digital output, I²C interface
- Fully calibrated
- Lead free sensor, reflow solderable
- Low power consumption
- Full interchangeability with no calibration required in standard conditions
- Instantaneous desaturation after long periods in saturation phase
- Compatible with automatised assembly processes, including Pb free and reflow processes
- Individual marking for compliance to stringent traceability requirements
The technical specialists

A TRULY EUROPEAN FOOTPRINT
- 98 pan-European franchises
- Selected multi-regional and local agreements
- 44 offices in 20 countries
- Over 40 technical specialists based across Europe
- 100 account managers backed up by 150 sales assistants

Avnet Abacus is a pan-European distributor of electronic components, specialising in interconnect, passive, electromechanical, power supply, energy storage, wireless and sensor products from the world’s leading manufacturers.

Our industry-leading linecard and widespread local presence means that our customers benefit from the product choice, financial strength, logistics and fulfilment benefits of a global distributor, with the personal service of a local provider.

Avnet Abacus’ expertise spans a wide range of industrial applications and a significant engagement with contract manufacturers. We service many end user markets including building and home automation, communications, defence and aerospace, healthcare and medical, industrial and automation, internet of things, lighting, power, renewable energy, smart metering and transportation.

Our in-depth knowledge of the IP&E market enables us to offer the highest levels of product, service and technical expertise in the industry; and we can deliver this, in local language, through our Europe-wide team of product specialists. So our customers can rest assured they’re achieving the most efficient and cost-effective solutions for their design.

To get in touch with our technical specialists in your local language, visit avnet-abacus.eu/ask-an-expert.

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TECHNICAL SUPPORT
Choosing the right sensors can be a complex process, regardless of the application, and understanding how they are designed and constructed is a key first step to making the right decision.

Avnet Abacus stocks a wide range of sensors from the world’s leading suppliers, and our pan-European team of technical specialists can help you find the optimal solution for your application. Contact them avnet-abacus.eu/ask-an-expert to discuss your design requirements.
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