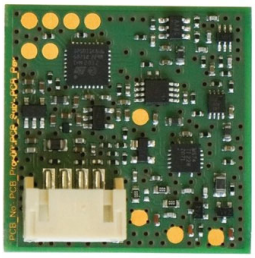
PRELIMINARY PRODUCT INFORMATION



QCRC025D PRODUCT FEATURES

- Fluid quality & fluid property measurement by EBE's patented corTEC® sensor technology
- Allow measurement of capacitive and conductive values
- Suitable for almost any applications
- Non-contact sensing through container walls and tubes
- Excellent sensitivity and repeatability even with media of the lowest dielectric constants (even $\varepsilon_r < 2$)
- Easy communication with I^2C, various option on request

FLUID QUALITY MEASUREMENT

QCRC sensors from EBE allow in real time both capacitive and conductive (through resistive readings) measurement of gases, liquids, solids and even highly viscous media. All measurement is contact-free to the media. This enables detailed analysis of the media and a degree of selectivity of the media usually requiring at least 2 separate measuring instruments. corTEC® capacitive measurement ranges from 1fF to 1000fF for detection of media in a relative permittivity (ε_r) range of vacuum (=1) through oils and solids (typ. <5) all the way to water (typ. 80) and higher. A conductance measurement range is possible from about 0,01mS – 1S (1 to 100.000Ω) which converts to conductivity (values depending on application details). Other ranges and versions on request.

PRODUCT DESCRIPTION

The QCRC025D standard electronics is designed to allow easy integration in OEM and various industry measurement devices. I^2C and other outputs allow for easy communication due to its simplicity and flexibility. The miniature size caters to various OEM integration needs, fitting into compact spaces. EBE's corTEC® measurement technology can detect a vast range of materials like powders, solids, oils, water-based liquids, and high viscosity substances even with the lowest dielectric constants of $\varepsilon_r < 2$. The measurement electrodes are conveniently located at the backside of the sensor, ensuring precise and efficient functionality over long periods of time. The QCRC electronics are REACH/RoHS compliant (EU). For UL compliance please contact EBE.

Preliminary

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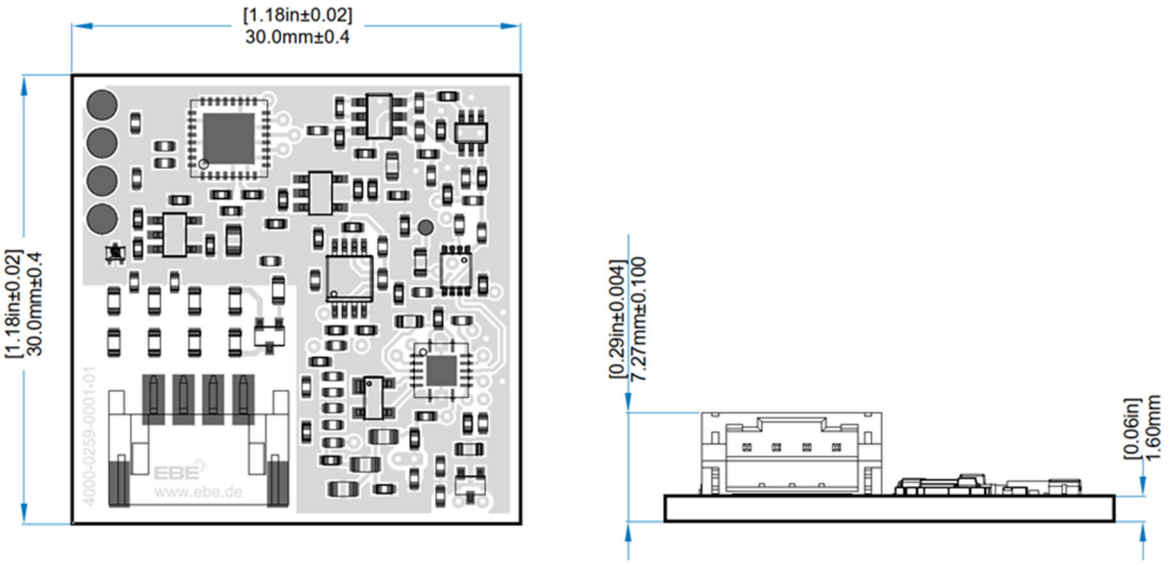
QCRC025D PRODUCT SPECIFICATIONS

DIMENSION	SEE OUTLINE DRAWING
MEASUREMENT TYPE	corTEC®
CAPACITIVE MEASUREMENT RANGE	1 – 1000 fF
CONDUCTANCE MEASUREMENT RANGE[1]	0,01 – 1000 mS (1 – 100kOhm)
RESPONSE TIME	typ. 100ms
ELECTRICAL CONNECTION	4pole header 2MM
POWER SUPPLY	5 VDC, 40 mA max.
OUTPUT	I^2C (switching outputs, IO-Link etc. on request)
OPERATING TEMPERATURE RANGE	-25 °C to +85 °C (extended range on request)
STORAGE TEMPERATURE	-40 °C to +85 °C
HUMIDITY	0- 95% r.H., non-condensing

OUTLINE DRAWING



[2] Conductivity range (mS/cm) as well as resolution and accuracy of both outputs is influenced by customer housing and application. Conductance/conductivity measures are increasingly inaccurate when getting close to range limits. Sensor directly measures capacitance and resistance and provides non-linear outputs in digits.

ADDITIONAL INFORMATION

Customizations

EBE customizes sensors according to the specific requirements and characteristics of the customer's application. The corTEC®'s measurement technology enables precise adaptation to confined spaces and difficult conditions. EBE's engineers support plug and play integration into custom OEM devices.

Sensor Evaluation Kit – Quick Introduction to Applications

EBE offers sensor evaluation kits for immediate readiness for use. The data is transmitted via adapter box to the PC. This allows customers to test the performance of the sensors in their own applications. The download link for the associated EBE Sensor Control Software can be found at https://www.ebe.de/download-center/.

Application Examples

QCRC sensors can be used in a variety of fluid property detection applications, e.g.:

Concentration measurement: saline solutions with different concentrations will provide all a rather similar capacitive value while EBE's fluid quality sensor will still provide selectivity means through different resistive values (due to different conductivity) which allows determining the differences in concentration.

Air detection in (ultrapure) water: the relative permittivity (ε_r) of air is close to 1 while liquid media containing water will always be in a double-digit range of ε_r. The difference of air to (ultrapure) water is easily detected by capacitive measurements (while both air and ultrapure water are known isolators with very small conductivities of less than 0.1µS/cm).

Preliminary

DISCLAIMER

Preliminary Product Information – please refer only to final product specifications

The information contained in this document is for general guidance only. The user is responsible for determining the suitability of the technical information referred to herein for his application. On delivery of the component, EBE is only obliged to implement those properties set out and agreed upon in this technical data sheet. Further properties are not included. No guarantee is given. The component has been designed for installation in our customer's products. Manufacturer of the resulting product and consequent liability according to the Product Liability Act lies with the customer.