

FMCW Radar Sensors

Applications

FMCW radars in the GHz spectrum provide excellent distance measurement performance in applications where high accuracy, repeatability and reliability are needed. Because of the short wavelength (12 mm for a 24 GHz signal), resolutions on the order of 2 cm can be achieved over distances of 20-30 meters. This allows FMCW sensors to excel in applications such as tank level gauging where high resolution non-contact measurements are needed.

FMCW sensors have been used in oil and LNG tankers and storage tanks to measure product volumes, in commercial, military, and unmanned aircraft as altimeters, and in industrial applications for the verification of product dimensions in automated systems.

Due to the non-contact nature of the measurement system, and due to the nature of the microwave, FMCW radar operating in the GHz range also exhibit excellent resistance to dust, steam, heat, etc. This allows for use in conditions as demanding as those found in the blast furnace of a steel mill.

Due to their ability to determine range over very short or fixed distances, FMCW based systems have also been in transportation applications, including automotive collision avoidance radars and marine radars. Other applications have included wall-penetrating radar for imaging and detection, security sensors against intrusion, and human vital-sign detection and measurement. In summary, radar sensors using FMCW principles perform extremely well in situations requiring non-contact measurement of distance in harsh conditions.

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