



TEST MODULE

NTSensorBoosterPack: IDC-BoosterPack for precise capacitive measurement used in industrial automation

The highlight of the NTSensorBoosterPack is the single-chip frontend, based on the TLV320AIC3254. It implements a patented measurement method from Texas Instruments for measuring complex impedances.

Customer benefits

The applied measurement method covers a wide measuring range and offers a reliable detection of small signal levels even in the presence of strong interfering signals, like they are usual in production environment. It is suitable for capacitive or inductive sensors, used for example in manufacturing or building automation, process monitoring or portable measurement instrumentation. The integrated miniDSP provides the user a maximum of flexibility. By reconfiguring and reprogramming, the measurement can be adapted easily on your individual applications, measuring ranges and other additional requirements.

NewTec is your development partner having the required know-how for adapting the measurement system to your application. Thereby we are supporting your design, beginning from the concept up to the realization of your products.

Typical applications

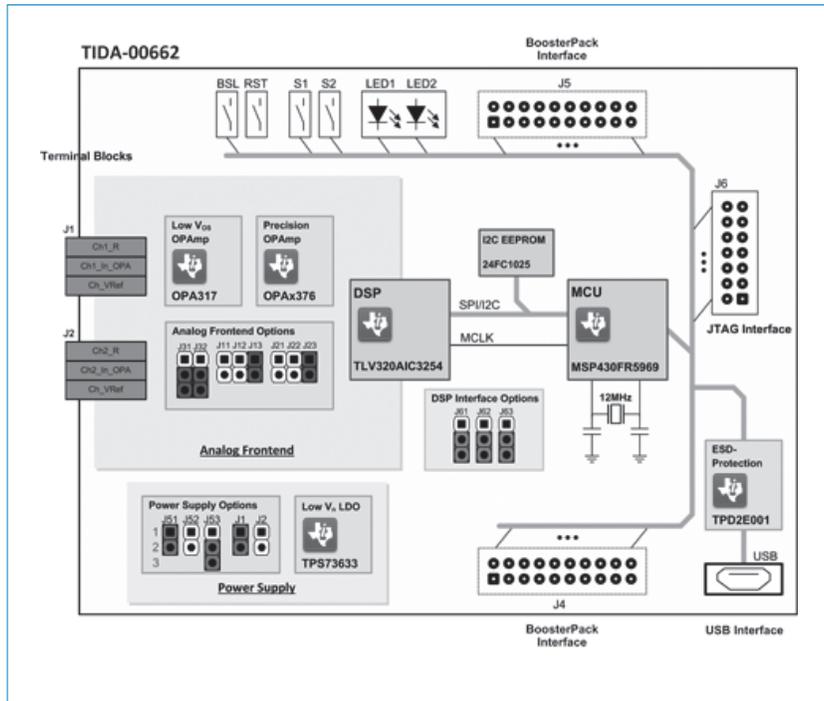
Industrial automation & process control
Sensors & field transmitters
Bio-impedance measurement

Support

You can use the NTSensorBoosterPack as development platform for your sensor applications, based on capacitive or inductive sensing.

By combining the NTSensorBoosterPack with other TI BoosterPacks, its functions can be easily extended.

System overview

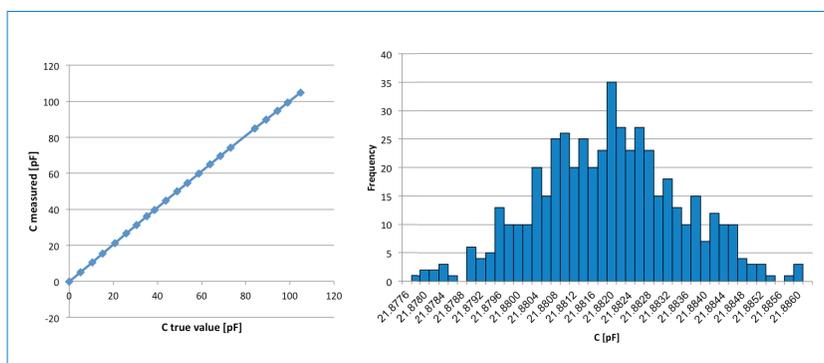


Key features

- Capacitive / Inductive Measurement
- Customizable Measuring Range
- 2 Measurement Channels
- Signal Processing based on TLV320AIC3254
- Application MCU: MSP430
- 3.3V/5V Input Voltage
- 12MHz Oscillator Frequency
- SPI/I2C/UART Interface
- USB Interface
- JTAG Interface for Debugging
- TI BoosterPack Pinout Standard
- Programmable LEDs and Buttons

The NTSensorBoosterPack offers two separated measurement channels, which can be used for two different measurements at the same time. The audio codec AIC3254 converts the analog data into digital and implements the further data processing. As the AIC3245 has only volatile memory, it is necessary to rewrite its firmware after every reset. That is one of the main tasks of the implemented microcontroller MSP430. The communication between the AIC3254 and the MSP430 can be applied via I2C or SPI. Further the microcontroller manages the communication with the external interfaces.

Test data



The figures show the test results of a capacitance measurement in the range of 0 to 100 pF, comprising the measurement characteristic and a histogram of a selected measurement value as example. The maximum absolute deviation in the analyzed measurement range is < 1 pF.