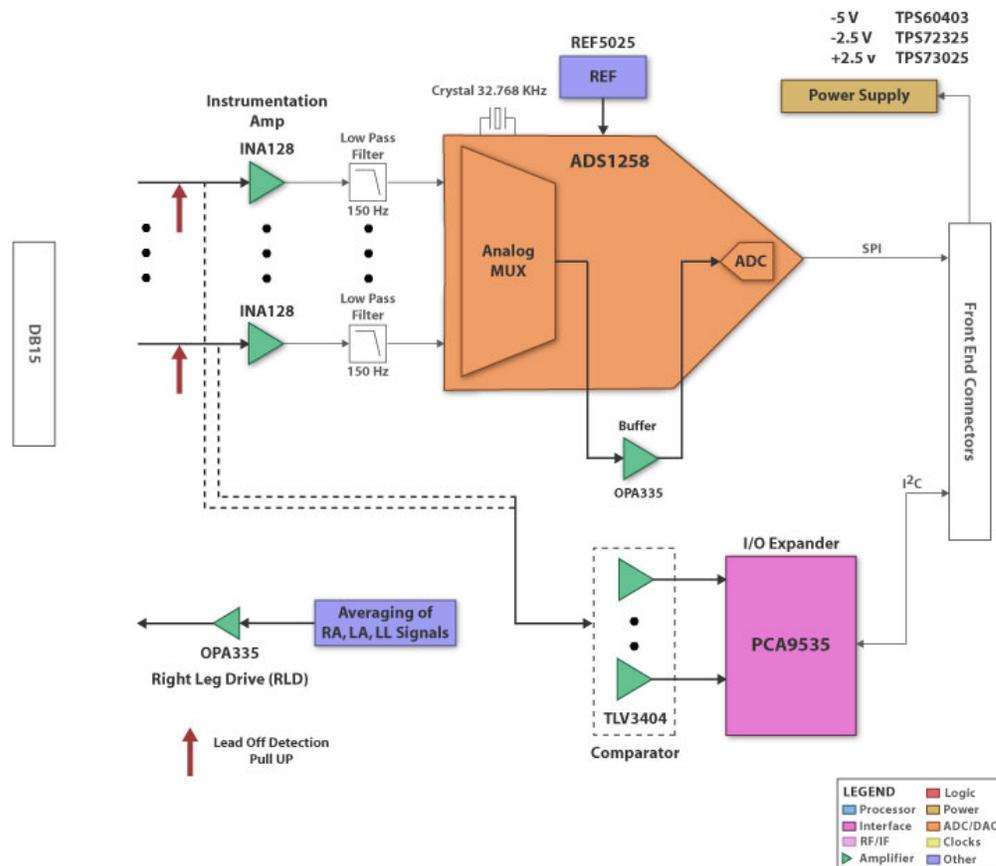


# Electrocardiogram (ECG) analog front end module for the C5505 ECG medical development kit

The TMDXMDKEK1258 electrocardiogram (ECG) analog front end (AFE) module is part of the [ECG medical development kit \(MDK\)](#), which consists of the ECG AFE module, a processor board (C5505 DSP evaluation module), and a set of collateral and application software source code to implement the ECG application. The ECG MDK delivers a complete signal chain solution to enable ECG developers to build a complete ECG system quickly for evaluation and get to production faster.



## ECG MDK features

- 12-lead ECG output using 10 electrode inputs
- 0.05-Hz to 150-Hz bandwidth
- Leads off detection
- Real-time 12-lead ECG waveform display on EVM LCD, one lead at a time
- Real-time 12-lead ECG waveform display on PC, three leads at a time
- Zoom function on X-axis (time) and Y-axis (amplitude)
- Heartbeat rate display
- Recording of ECG data, and offline display option of recorded ECG data
- Freeze option on PC application

## ECG AFE module key components

1. ADS1258 – 16-channel, 24-bit sigma delta analog-to-digital converter (ADC)
2. INA128 – precision, low-power instrumentation amplifier
3. PCA9535 – remote 16-bit I<sup>2</sup>C and SMBus low-power I/O expander
4. TLV3404 – nanopower open drain output comparator

## 5. REF5025 – low-noise, very low drift precision voltage reference

The ADS1258 ADC is one of 27 components on the TMDXMDKEK1258 ECG AFE module. The input signals are processed by the ADS1258, which provides for 24 bits of resolution with no missing codes. Additionally, the ADS1258 provides very low latency, industry-leading speed and noise performance as well as a very low power consumption level – making it very suitable for portable applications.

A high-quality reference voltage is essential for achieving the best performance from the ADS1258. Noise and drift can degrade overall system performance. The REF5025 precision voltage reference provides excellent temperature drift (3ppm/°C), low noise of 3uVpp/V and 0.05% accuracy.

The INA128 provides not only for high input impedance to reduce loading of the signal, but also for high common mode rejection required for noise rejection when used in conjunction with low pass filters.

The ECG AFE module can seamlessly connect to various processor platforms, such as the [C550x EVM](#) or the OMAP35xx Zoom Development Kit, through standard interface.

## EVALUATION BOARD/KIT/MODULE TOOL (“Tool”) WARNINGS, RESTRICTIONS AND DISCLAIMER

### **For Feasibility Evaluation Only in Laboratory/Development Environments. Not for Medical Diagnostic Use.**

This Tool is intended solely for evaluation and development purposes. It is not intended for diagnostic use and may not be used as all or part of an end equipment product.

This Tool should be used solely by qualified engineers and technicians who are familiar with the risks associated with handling electrical and mechanical components, systems and subsystems.

### **Your Obligations and Responsibilities.**

Please consult the User’s Guide prior to using the Tool. Any use of the Tool outside of the specified operating range may cause danger to the users and/or produce unintended results, inaccurate operation, and permanent damage to the Tool and associated electronics. You acknowledge and agree that:

- You are responsible for compliance with all applicable Federal, State and local regulatory requirements (including but not limited to Food and Drug Administration regulations, UL, CSA, VDE, CE, RoHS and WEEE,) that relate to your use (and that of your employees, contractors or designees) of the Tool for evaluation, testing and other purposes.
- You are responsible for the safety of you and your employees and contractors when using or handling the Tool. Further, you are responsible for ensuring that any contacts or interfaces between the Tool and any human body are designed to be safe and to avoid the risk of electrical shock.
- You will defend, indemnify and hold TI, its licensors and their representatives harmless from and against any and all claims, damages, losses, expenses, costs and liabilities (collectively, “Claims”) arising out of or in connection with any use of the Tool that is not in accordance with the terms of this agreement. This obligation shall apply whether Claims arise under the law of tort or contract or any other legal theory, and even if the Tool fails to perform as described or expected.