



ADE9000 Metering and Power Quality Monitoring AFE

Reduces the complexity and high cost of power quality measurement for the metering market.

Feature Rich

Advanced features that enable faster dip/swell detection for power quality measurements. Harmonic analysis made easier with resampled waveform data. Highest accuracy over widest dynamic range for 3-phase metering applications.

Scalability

Part of a common platform that is scalable to enable standard utility meter applications (ADE9078) and meters with differentiated power quality features (ADE9000). Enables 3-phase energy meter platforms that meet a range of accuracies (Class 1.0, Class 0.5, and Class 0.2).

Reduced System Cost

Integrates high performance ADCs with low drift overall gain (± 25 ppm/ $^{\circ}$ C) and a DSP core for Class 0.2 meters. Reduces the complexity and cost to design a system with advanced power quality features.

Applications



- ▶ Power quality monitoring
- ▶ Smart power distribution
- ▶ Condition-based monitoring
- ▶ Polyphase meters
- ▶ Transformer terminal units
- ▶ Panel meters

ADE9000 Overview

The ADE9000 is a fully integrated energy monitoring device that interfaces with both current transformer (CT) and Rogowski coil sensors. It is ideal for multiphase metrology platforms that require high performance and advanced power quality measurements.

The ADE9000 offers an integrated flexible waveform buffer that stores samples at a fixed data rate or a sampling rate that varies based on line frequency to ensure 128 points per line cycle. These two options make it easy to implement harmonic analysis in an external processor.

Advanced utility meters benefit from the additional power quality features like $10/12$ cycle rms measurements and sag/swell based on rms values computed every half cycle.

Features

Advanced metrology and power quality

- ▶ Supports polyphase utility meter measurements
- ▶ Enable implementation of EN 61000-4-30 Class S
- ▶ $V_{rms} \frac{1}{2}$, $I_{rms} \frac{1}{2}$ rms voltage refreshed each half cycle
- ▶ $10/12$ cycle rms
- ▶ Dip, swell detection
- ▶ Waveform buffer holds 128 points/cycle for external harmonic analysis

High performance analog (>95 dB SNR)

- ▶ Watt: 0.1% error at 5000:1; 0.2% error at 10000:1
- ▶ Voltage reference: ± 25 ppm/ $^{\circ}\text{C}$ maximum drift

Flexible sensor interface

- ▶ Multipoint CT phase/gain compensation
- ▶ Rogowski coil support

20 MHz high speed SPI

Low power: 10 mA (ADE9078); 15 mA (ADE9000)

Temperature range: -40°C to $+85^{\circ}\text{C}$

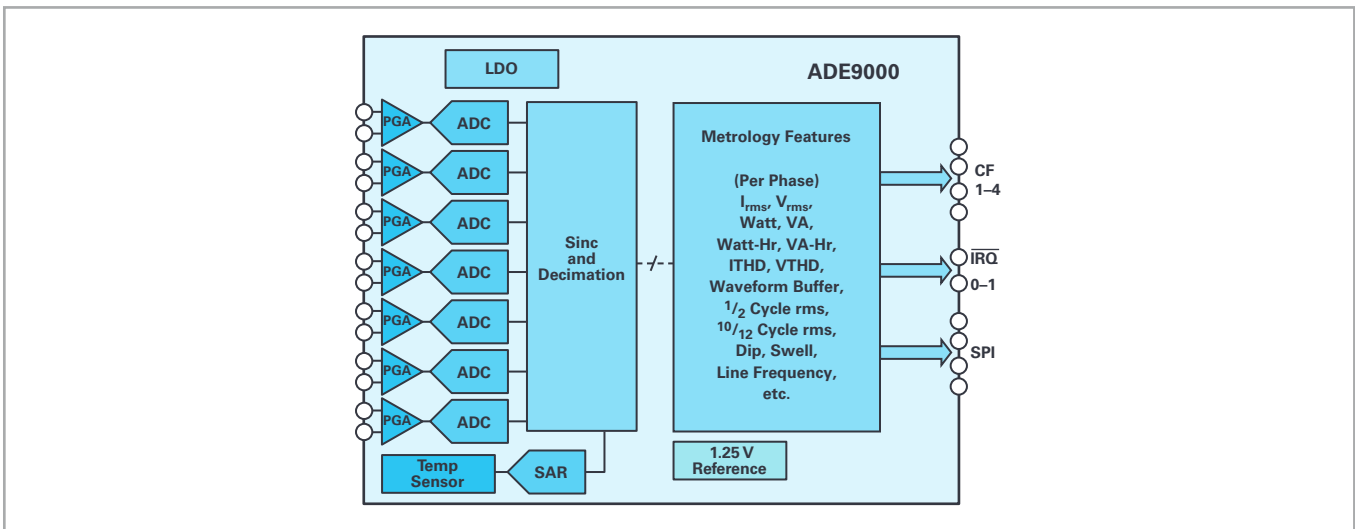


Figure 1. Functional block diagram.

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