

Energy Metering Chipset for Polyphase Meters with di/dt Current Sensors

FEATURES

- ▶ Complete polyphase direct connect meter or split-phase meter using a PCB-based di/dt current sensor, and ADE9039 and ADE1139 chipset
- ▶ Strong immunity to AC magnetic tampering
- ▶ Immune to DC magnetic fields
- ▶ Ideal for AC applications from 32 A to 1 kA
- ▶ Supports Class 0.2 accuracy
- ▶ System uses a small amount of low cost PCB area
- ▶ Channel crosstalk is typically less than 0.1%
- ▶ Resilience to fast high-current waveforms
- ▶ Less than 3 mA AC offset is achievable due to sensor immunity to electrostatic coupling
- ▶ Computes active energy, reactive energy, and apparent energy on each phase and on the overall system
- ▶ Less than 0.1 % error in active energy over a dynamic range of 2000 to 1 at $T_A = 25^\circ\text{C}$
- ▶ Less than 0.1 % error in voltage RMS over a dynamic range of 1000 to 1 at $T_A = 25^\circ\text{C}$
- ▶ Less than 0.1 % error in current RMS over a dynamic range of 1000 to 1 at $T_A = 25^\circ\text{C}$
- ▶ Single positive 3.3 V supply
- ▶ Power quality measurements
 - ▶ VRMS $\frac{1}{2}$, IRMS $\frac{1}{2}$ refreshed each half cycle
 - ▶ Dip and swell monitors
 - ▶ Line frequency—one per phase
 - ▶ Zero crossing with a timeout availability

- ▶ Phase angle measurements
- ▶ Total harmonic distortion (THD)
- ▶ Flexible waveform buffer
 - ▶ Able to resample continuously waveforms to ensure 64 points per line cycle for ease of external harmonic analysis
 - ▶ Events, such as dip and swell, can trigger waveform storage
- ▶ Advanced metrology feature set
 - ▶ Total and fundamental active and apparent power
 - ▶ Fundamental reactive power
 - ▶ Total and fundamental IRMS, VRMS
 - ▶ Power factor
- ▶ Tested to support active energy standards: IEC 62053-21, IEC 62053-22, EN 50470-3, OIML R46, and ANSI C12.20 based on the ADE9039 and ADE1139 chipset
- ▶ Tested to support reactive energy standards: IEC 62053-23 and IEC 62053-4
- ▶ 10 MHz serial port interface (SPI)

APPLICATIONS

- ▶ Polyphase energy meters
- ▶ Split-phase meters
- ▶ Power quality monitoring
- ▶ Protective devices
- ▶ Smart breakers
- ▶ EV chargers
- ▶ Machine health
- ▶ Smart power distribution units

TYPICAL APPLICATIONS CIRCUIT

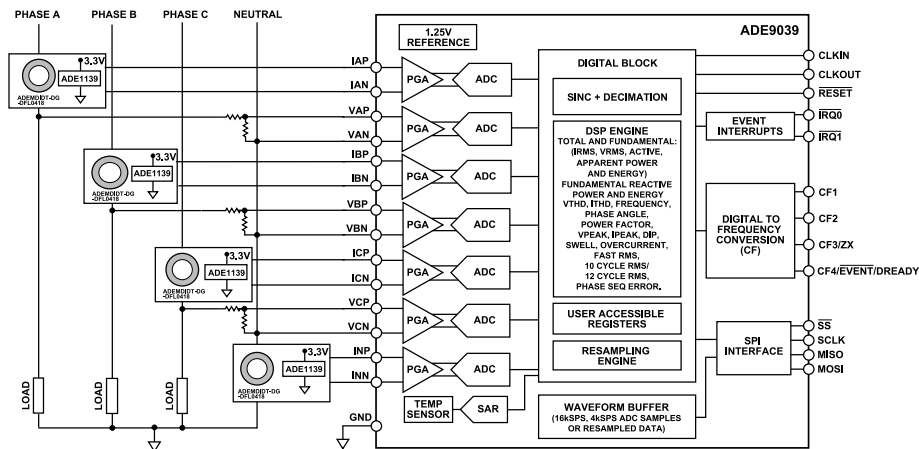


Figure 1. 3-Phase Meter Using Four di/dt Current Sensors Alongside the ADE1139 Amplifiers and Voltage Dividers

For more information about the ADE9039, contact your local Analog Devices, Inc., sales office at www.analog.com/sales.

Rev. SpA

DOCUMENT FEEDBACK

TECHNICAL SUPPORT

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