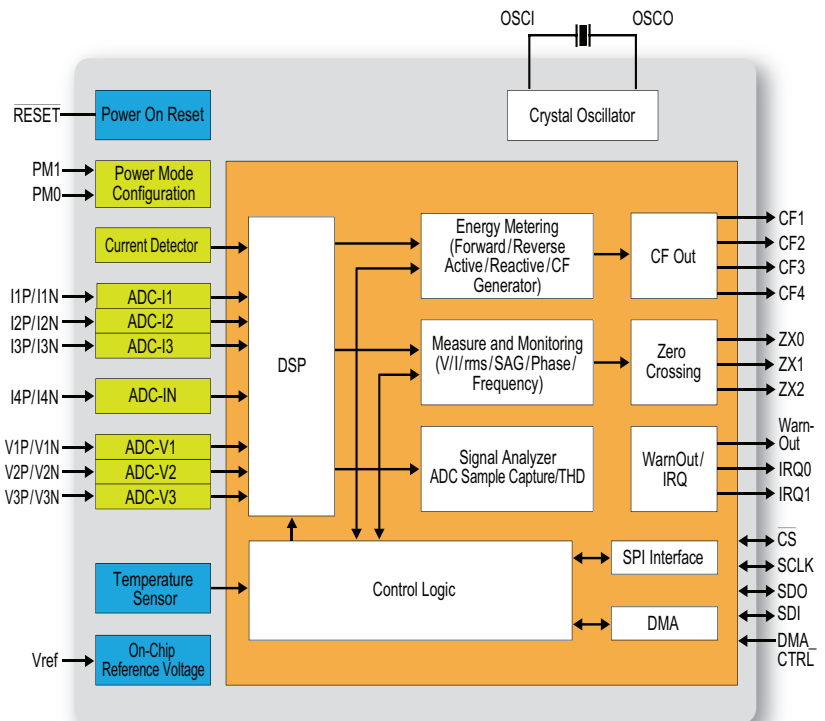


## OTHER FEATURES

- 3.3V single power supply. Operating voltage range: 2.8V ~ 3.6V. Metering accuracy guaranteed within 3.0V ~ 3.6V. 5V compatible for digital input.
- Four-wire SPI interface, has Direct Memory Access (DMA) function to read current and voltage ADC raw data.
- ADC range:
  - When gain is '1': 120 $\mu$ Vrms~720mVrms.
  - When gain is '2': 70 $\mu$ Vrms~360mVrms.
  - When gain is '4': 40 $\mu$ Vrms~180mVrms.
- CF1/CF2/CF3/CF4 output active/ reactive (apparent)/ fundamental/harmonic energy pulses respectively.
- Crystal oscillator frequency: 16.384 MHz. On-chip 20 pF capacitors and no need of external capacitors.
- TQFP48 package.
- Operating temperature: -40°C~ +85°C.

## APPLICATION

- The 90E36 is applicable in poly-phase energy meters of class 0.5S and class 1 which are used in three-phase four-wire (3P4W) or three-phase three-wire (3P3W) systems. 90E36 is also applicable in Data Acquisition Terminal. With the measuring and Fourier analysis functions, it can also be used in power monitoring instruments which need to measure voltage, current, active/reactive/apparent power, harmonic component analysis, etc.



## METERING FEATURES

- Metering features fully in compliance with the requirements of IEC62052-11, IEC62053-21, IEC62053-22 and IEC62053-23; applicable in class 0.5S or class 1 poly-phase watt-hour meter or class 2 poly-phase var-hour meter.
- Accuracy of 0.1% for active energy and 0.2% for reactive/apparent energy over a dynamic range of 6000:1.
- Temperature coefficient of 8 ppm/°C (typical) for on-chip reference voltage; whole chip temperature coefficient less than 16 ppm/°C (typical) over temperature range of -40°C ~ 85°C.
- Single-point calibration on each phase over the whole dynamic range for active energy; no need for reactive and apparent energy calibration.
- $\pm 1^\circ\text{C}$  temperature sensor.
- Electrical parameters measurement: less than  $\pm 0.5\%$  accuracy for Vrms, Irms, mean active/ reactive/ apparent power, frequency, power factor and phase angle.
- Active (forward/reverse), reactive (forward/reverse), apparent energy with independent energy registers.

- Programmable startup and no-load power threshold, special design of startup/no-load circuits to eliminate crosstalk between phases at low-power conditions.
- Programmable startup and no-load power threshold.
- 7 ADC sampling at the same time with different PGA gains: 4 ADC for phase A/B/C and Neutral Line current sampling (Current Transformer or Rogowski Coil compatible), 3 ADC for phase A/B/C voltage sampling (resistor divider or Potential Transformer compatible); calculated neutral line current  $I_{Nc}$  ( $i_N=i_A+i_B+i_C$ ) provided.
- Programmable power modes: Normal mode, Idle mode, Detection mode and Partial Measure mode.
- Fundamental and harmonic active energy, dedicated registers of Fundamental/ Harmonic energy and power.
- Total Harmonic Distortion (THD), and Fourier analysis from 1<sup>st</sup> to 31<sup>st</sup> order harmonic component, adopting the same interval for each phase of V and I.
- Event detection: sag, phase loss, reverse voltage/ current phase sequence, reverse flow, calculated neutral line current  $I_{Nc}$  overcurrent, sampled neutral line current  $I_{Ns}$  overcurrent, THD+N over-threshold and phase sequence error.

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