

Metering Features

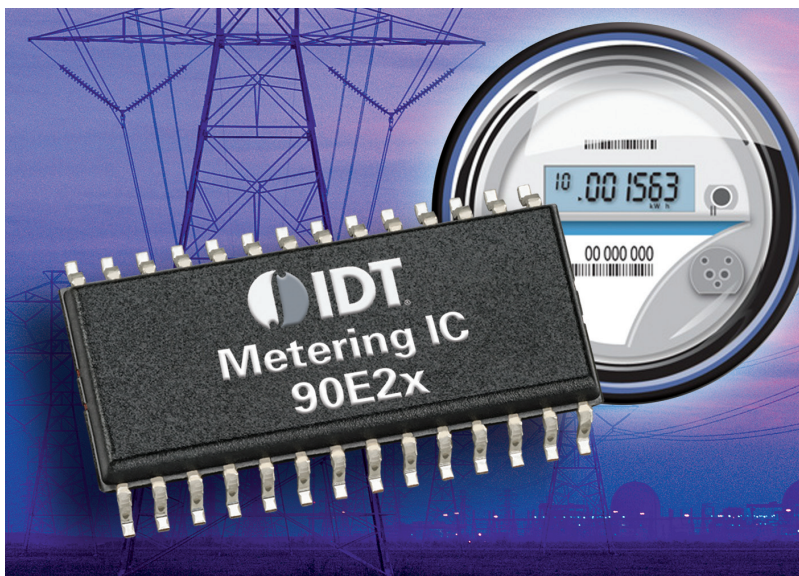
- Metering features fully in compliance with the requirements of IEC standard IEC62052-11, IEC62053-21 and IEC62053-23; applicable in class 1 or class 2 single-phase watt-hour meter or class 2 single-phase var-hour meter.
- Accuracy of 0.1% for active energy and 0.2% for reactive energy over a dynamic range of 5000:1.
- Temperature coefficient is 15ppm/°C (typical) for on-chip reference voltage.
- Single-point calibration over a dynamic range of 5000:1 for active energy; no calibration needed for reactive energy.
- Electrical parameters measurement: less than ±0.5% fiducial error for Vrms, Irms, mean active/ reactive/ apparent power, frequency, power factor and phase angle.
- Forward/ reverse active/ reactive energy with independent energy registers.
- Programmable startup and no-load power threshold.
- Dedicated ADC and different gains for L line and N line current sampling circuits. Current sampled over shunt resistor or current transformer (CT); voltage sampled over resistor divider network or potential transformer (PT).
- Programmable L line and N line metering mode: anti-tampering mode (larger power), L line mode (fixed L line), L+N mode (applicable for single-phase three-wire system) and flexible mode (configure through register).
- Programmable L line and N line difference threshold in anti-tampering mode.

Other Features

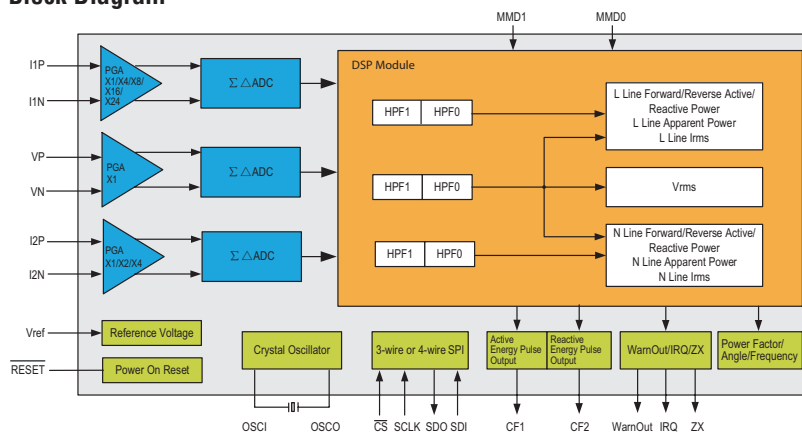
- 3.3V single power supply. Operating voltage range: 2.8V~3.6V. Metering accuracy guaranteed within 3.0V~3.6V. 5V compatible for digital input.
- Four-wire SPI interface or simplified three-wire SPI interface with fixed 24 cycles for all registers operation.
- Channel input range
 - Voltage channel (when gain is '1'): 120µVrms~600mVrms.
 - L line current channel (when gain is '24'): 5µVrms~25mVrms.
 - N line current channel (when gain is '1'): 120µVrms~600mVrms.
- Programmable L line current gain: 1, 4, 8, 16, 24; Programmable N line gain: 1, 2, 4.
- Crystal oscillator frequency: 8.192 MHz. On-chip 10pF capacitors and no need of external capacitors.
- Green SSOP28 package.
- Operating temperature range: -40°C ~ +85°C

Application

- The 90E24 is used for active energy metering for single phase two-wire, single-phase three-wire or anti-tampering energy meters. With the measurement function, the 90E24 can also be used in power instruments which need to measure voltage, current, etc.



Block Diagram



IDT Metering IC Family

Part Number	Active Energy Metering	Reactive Energy Metering	N Line Metering	Instantaneous Measurement
90E21	√			√
90E22	√	√		√
90E23	√		√	√
90E24	√	√	√	√

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