# Poly-phase chipset for energy measurement


## Innovative modular approach for high-performance/accuracy electricity metering systems

**STMicroelectronics' poly-phase chipset represents the first modular solution for metering systems. It supports 1-, 2- or 3-phase wye and delta services, from 2 to 4 wires.**

**It provides ripple-free cumulative active (wideband and fundamental) and reactive energy calculation, frequency, RMS and instantaneous voltage and current values for each phase, and cumulative values.**

**The high-speed pulsed output energy enables a fast digital calibration in only one load point.**

**Wide sensor support, SPI interface, tamper proofing by neutral current, temperature and magnetic field monitoring make this the ideal solution for multi-purpose high-performance metering systems.**

### STPMC1

- Computes active and reactive wideband and fundamental harmonic energies
- Exclusive ripple-free energy calculation algorithm
- 112 configuration and calibration bits
- Neutral current, temperature and magnetic field monitoring
- SPI interface

### STPMS2

- Two 2nd order ΣΔ modulators
- Max error on active energy 0.1% over 1:2500 dynamic range
- Standards supported: EN 50470-1, EN 50470-3, IEC 62053-21, IEC 62053-22, IEC 62053-23, ANSI C12.1-2001, ANSI C12.10-1997, ANSI C12.20-2002

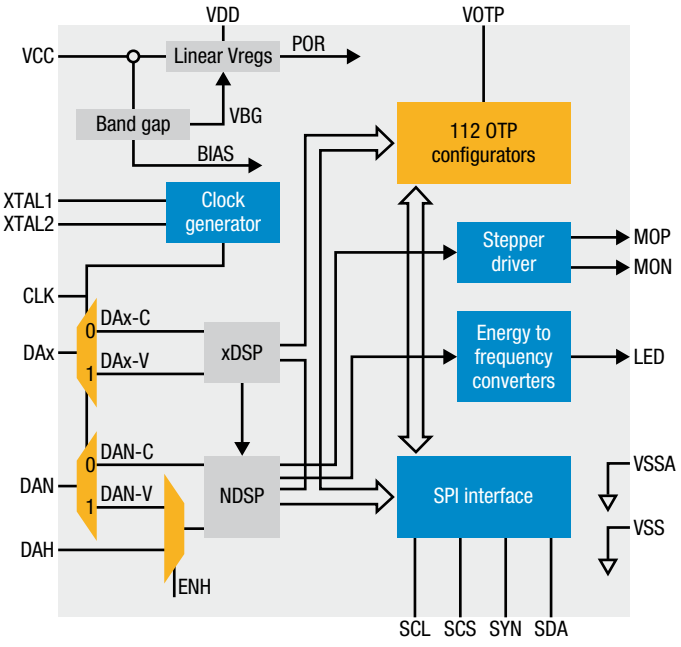
### Key benefits

- Fast digital calibration
- Higher accuracy
- Flexible approach
- Allows the use of multiple shunts

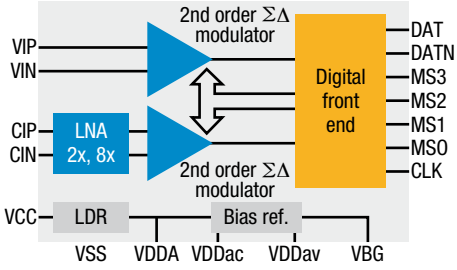
### Targeted applications

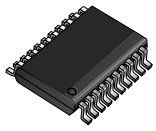
- Power metering

## STPMC1




## STPMS2



TSSO20

QFN16 (4x4)

## Product description

The STPMC1 works as an energy calculator. It is an ASSP designed for effective energy measurement in power line systems. Used in combination with one or more STPMS2 ICs, it implements all the functions needed in a 1-, 2- or 3-phase energy meter. The STPMS2, also called smart-sensor, is a dual ΣΔ modulator with embedded PGA.

This chipset approach allows you to position the A/D conversion (STPMS2) very close to the current transducers, so minimizing noise capture from the analog tracks. Once converted, the ΣΔ streaming of voltage and current are multiplexed and transferred through a single-wire data line to a dedicated DSP inside the STPMC1.

The STPMC1 can manage from 2 to 9 streams coming from the STPMS2 (from 1 to 5 devices) serving 3 voltage channels and 4 current channels plus 2 optional streams for multiple purposes.

## Product table

| Part number | Meter type | Measurement parameters | Marketing status | Supply voltage (Vcc) (V) | Operating temperature (°C) | Analog channels (V + I) | Quartz/RC/ external oscillator | Order of SD modulator | Package |
|---|---|---|---|---|---|---|---|---|---|
| **STPM01** | Single phase | Watt, VAR, VA, Irms, Vrms, V, I | Active | 3.165 to 5.5 | -40 to +85 | 1 + 2 | Q/RC/E | 1st | TSSOP20 |
| **STPM10** | Single phase | Watt, VAR, VA, Irms, Vrms, V, I | Active | 3.165 to 5.5 | -40 to +85 | 1 + 2 | Q/RC/E | 1st | TSSOP20 |
| **STPM11** | Single phase | Watt | Active | 3.165 to 5.5 | -40 to +85 | 1 + 1 | RC | 1st | TSSOP20 |
| **STPM12** | Single phase | Watt | Active | 3.165 to 5.5 | -40 to +85 | 1 + 1 | Q/E | 1st | TSSOP20 |
| **STPM13** | Single phase | Watt | Active | 3.165 to 5.5 | -40 to +85 | 1 + 2 | RC | 1st | TSSOP20 |
| **STPM14** | Single phase | Watt | Active | 3.165 to 5.5 | -40 to +85 | 1 + 2 | Q/E | 1st | TSSOP20 |
| **STPMC1** | Poly phase | Watt, VAR, Irms, Vrms, V, I | Active | 3.165 to 5.5 | -40 to +85 | N/A | Q/E | N/A | TSSOP20 |
| **STPMS2** | Poly phase | N/A | Active | 3.165 to 5.5 | -40 to +85 | 1 + 1 | N/A | 2st | QFN16 (4x4) |