STPM32, STPM33, STPM34

High-end metering ICs

Best-in-class turnkey solutions for electricity bill consistency in any industrial metering

STPM32, STPM33, and STPM34 are high accuracy analog front-ends (AFE) with embedded digital signal processor (DSP) for DC or AC energy measurement, offering high accuracy down to extremely low currents.

A full set of on-board features embedded in the DSP provides high system integration and enables on-chip power-quality monitoring, reducing the metering unit cost of ownership and contributing to a fast and easy design to reduce BOM and time to market dramatically.

KEY FEATURES

HIGH ACCURACY

- Class 0.2 fiscal meters compliancy
- <0.1% active power accuracy
- 4 kHz bandwidth
- Very fast single point calibration

FLEXIBILITY

- AC and DC measurement
- Multiple host interfaces: 5- and 3-wire SPI, UART
- I, V bit stream available to host controller for customer post processing

SECURITY AND COMPLIANCE

- Case removal and neutral antitamper detection

INTEGRATION

- Up to 4 independent 24-bit 2nd order sigma-delta ADC
- Integrated DSP for turnkey energy parameter calculations
- Twin independently-temperature-compensated voltage references
- Double LED output programmable for active and reactive energy pulse generation

KEY APPLICATION

- Single-, split-, and poly-phase energy meters
- Smart plugs and home appliances
- Smart lighting
- Servers, EV chargers, solar inverters and multiload industrial monitoring

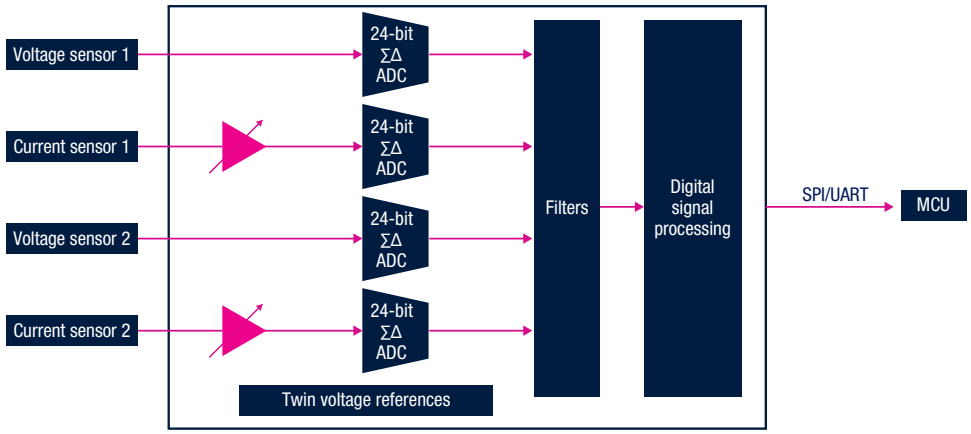
Fully integrated multichannel metering ICs

Enable extremely high-accuracy and very powerful computation.

The STPM32, STPM33, and STPM34 ICs embed up to four 24-bit sigma-delta ADCs to ensure a very high SNR that, along with a 4 kHz bandwidth at -3 dB, offers extremely accurate measurement of all electrical quantities and tight power quality monitoring thanks to the DSP. The wide harmonic content contributes to THD and FFT calculation, while additional features like zero-crossing detection, over-/undervoltage and overcurrent monitoring, negative power indication, and independent antitamper management save many resources on the MCU side. These features dramatically reduce the firmware and flash size, as well as application design and development time.

The STPM3x product family is fully compliant with the applicable International Electrotechnical Commission (IEC) and the American National Standards Institute (ANSI) standards, and exceeds State Power Grid Corporation of China (SGCC) requirements.

STPM34 BLOCK DIAGRAM



PRODUCT TABLE

Order code	Package	Packing	#channels	Documentation
STPM32TR	QFN24 4x4 0.5p	Tape & reel	2	User manual: UM1748, UM2066, UM1719 Design tip: DT0039 Application note: AN4470
STPM33TR	QFN32 5x5 0.5p	Tape & reel	2	
STPM34TR	QFN24 5x5 0.5p	Tape & reel	2	

EVALUATION TOOLS

Order code	Description	Documentation
EVALSTPM32	Single-phase energy metering evaluation board with shunt current sensor based on the STPM32	User manual: UM1748, UM2092, UM1719
EVALSTPM33	Single-phase with tamper monitoring energy metering demonstration board with CT and shunt based on the STPM33	User manual: UM1748, UM1719
EVALSTPM34	Dual-phase energy metering evaluation board with 2 current transformers based on the STPM34	User manual: UM1748, UM1719
STSW-STPM001	STPM32/33/34 evaluation software	Data brief
STSW-STPM002	STM32 firmware for STPM32 access and a basic metrology application	Data brief User manual: UM2092
STSW-STPM003	Three-phase firmware implementation for STM32F4 Discovery kit and EVALSTPM32	Data brief
STSW-STPM006	STM32F407 and STPM3x sampling firmware	Data brief User manual: UM3155