STPM32, STPM33, STPM34 Smart Metering ICs

Taking care of every milliwatt

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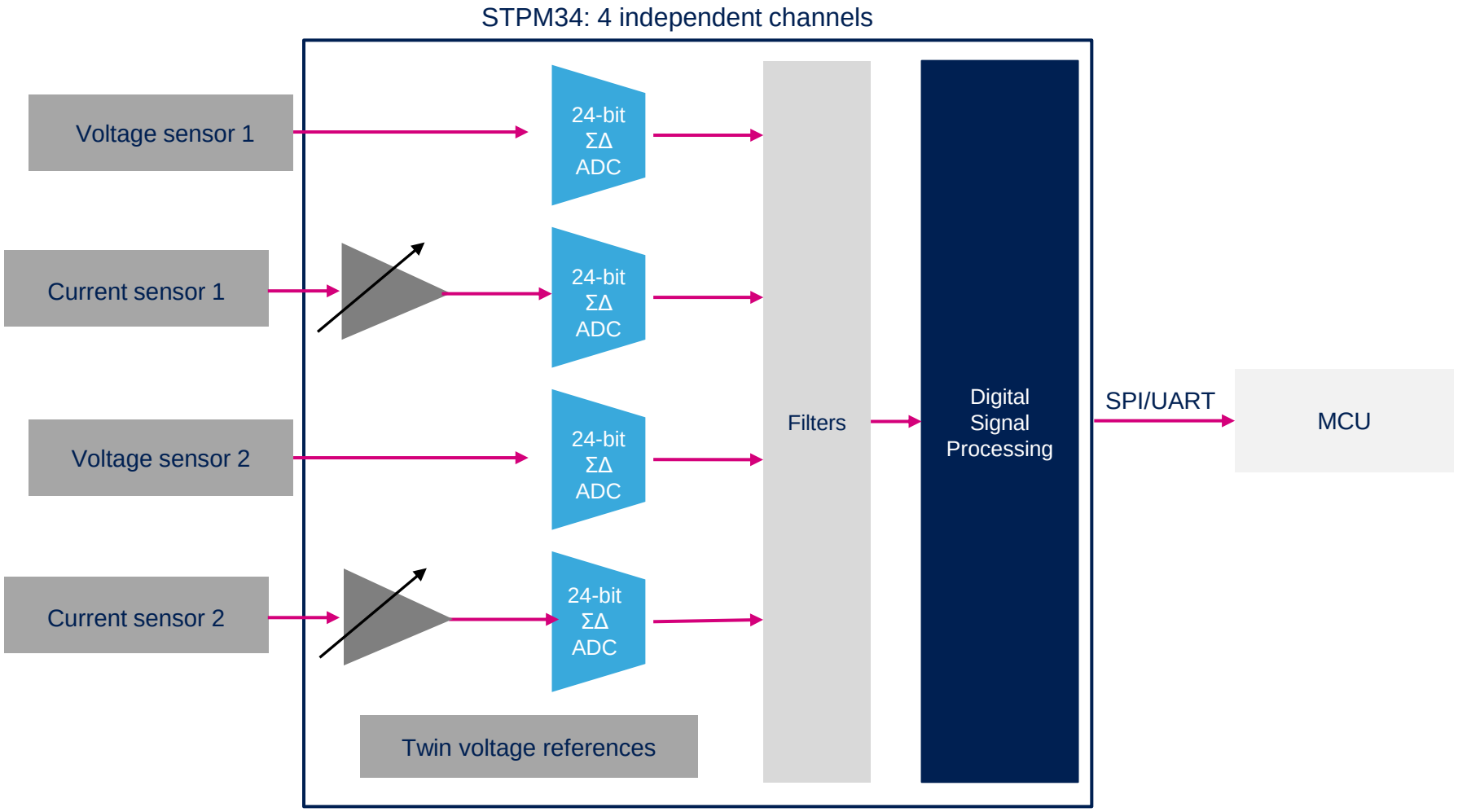
High accuracy down to stand-by mode

The STPM32, STPM33 and STPM34, smart metering front end provide two, three and four independent channels respectively, to accurately measure voltage, current and energy parameters in single, split and poly-phase lines

Main benefits

- High accuracy in a wide dynamic range down to stand-by currents for accurate billing and power quality monitoring
- Fast single point calibration and multiple flexible configurations for easy product design and low manufacturing cost
- Embedded anti-tampering features and compliance with international metering standards for worldwide safe adoption

Block diagram

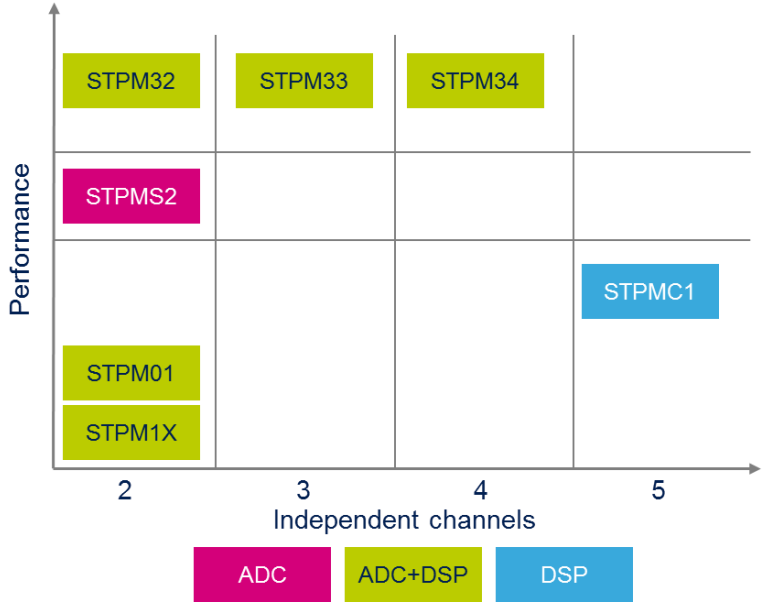


ST’s complete portfolio of metering ICs

- Accurate **ΣΔ** analog-to-digital converter (ADCs)
- High performance digital signal processing units (DSPs)

in connection with sensors provide accurate measurements of:

- active energy (kWh)
- apparent energy (kVA)
- reactive energy (kVAR) and RMS



Main applications

- single, split and poly-phase energy meters up to class 0.2 accuracy
- smart plugs and appliances
- industrial instruments
- servers, lighting
- Power quality monitoring systems

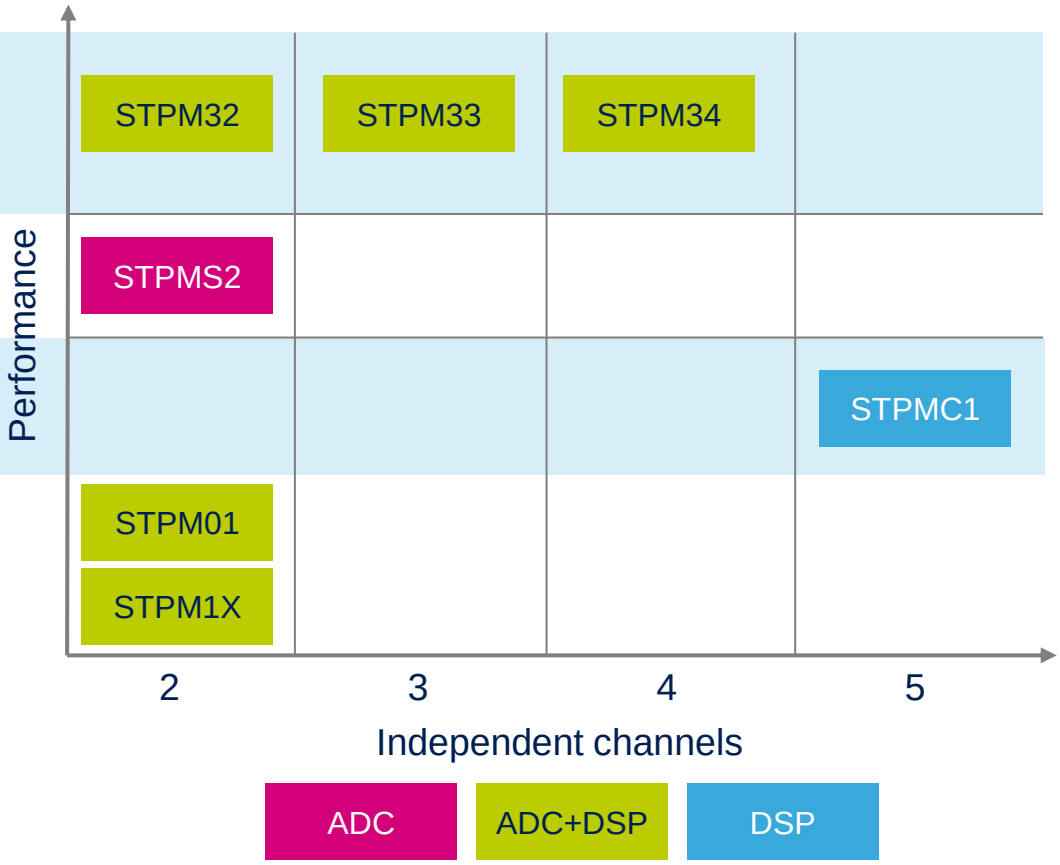
Family Portrait

- < 0.1% error over 5000:1 range, SPI, UART
- Exceeds 50-60 Hz EN 50470-x, IEC 62053-2x, ANSI12.2x
- Power quality monitoring

- < 0.5% error over 10000:1 range

- < 0.1% error over 1000:1 range, SPI
- Supports IEC 62052-11 / 62053-21 / 62053-23
- Can process data from up to 4x STPMS2

- < 0.1% error over 1000:1 range, SPI
- Support 50 ÷ 60 Hz - IEC62052-11, IEC62053-2X



STPM32, STPM33, STPM34

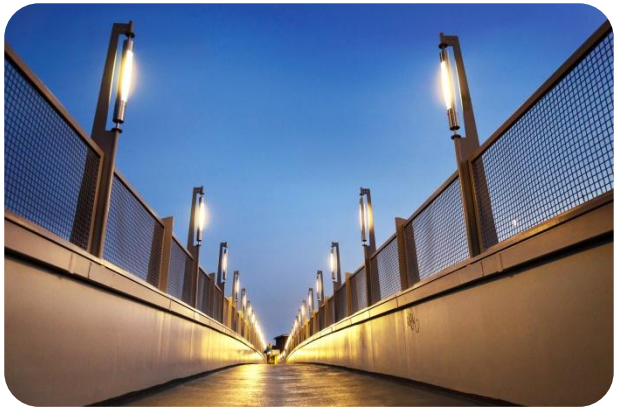
- Ensure accurate measurement down to few milliamps current levels for confident and consistent billing
- Multi sensors support (CT/Shunt/Rogo coil), flexible interfacing (UART/SPI) and multi-phase scalability for fast, easy and low cost products design
- On-chip power-quality parameters calculation and fast single point calibration reduce smart meters cost of ownership
- Anti-tampering features (neutral line, case removal) and compliance with international metering standards for worldwide safe adoption

High accuracy

- Enabling up to Class 0.2 meter accuracy and beyond
- < 0.1% active power accuracy over wide 5000:1 wide dynamic range
- Can measure frequencies down to DC, with 4kHz wide bandwidth for accurate measurement of harmonic content and power-quality assessment
- Up to 4 independent 24-bits 2nd order **ΣΔ** Analog to Digital Converters
- Precision and temperature compensated built-in twin voltage references for different sensors independent compensation
- Auto-zero offset cancellation
- 16 MHz Input clock Frequency xtal or external source

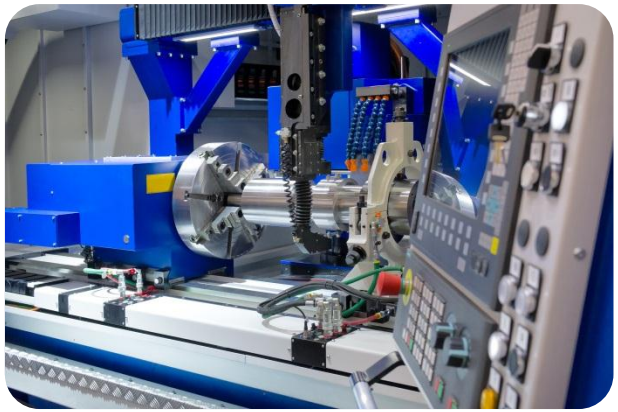
Flexibility

- 3 p/n with scalable features to easily extend the design from single to poly phase meters
- DC component measurement
- Multi-phase, multi-branch clockout pin
- All Sensors supported (Shunt, current transformer, Rogowsky coil)
- Multiple interface 5 wires and 3 wires SPI, 2 wire UART with CRC polynomial verification



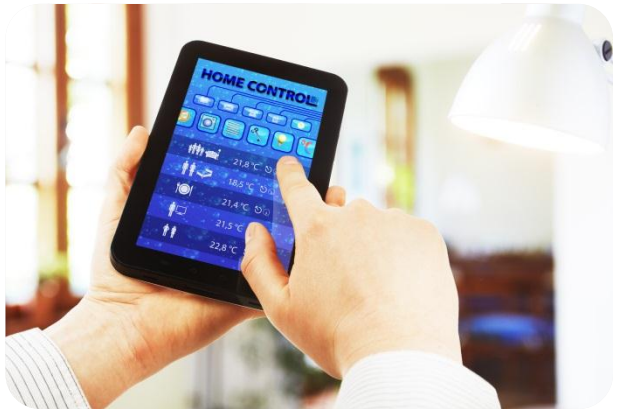
Integration

- Fully integrated 4 independent channels AFE with PGA
- Integrated DSP for “turn-key” energy parameters calculation
- Twin voltage reference
- Double LED output programmable for active and reactive pulses generation
- Digital Fast Single Point calibration with separated registers for voltage and current channels and high speed LED output
- Only few passive components to realize a complete product application
- Down to two wires interface to MCU for flexible host interfacing and optional low cost data isolation



Security and Compliance

- Case removal and neutral tamper detection
- Comprehensive set of features fits a very wide applications range
- Fully compliant to the applicable International Electrotechnical Commission (IEC), American National Standards Institute (ANSI) and exceed State Power Grid Corporation of China (SGCC) requirements.



Making your designs easier

To support STPM32, STPM33, STPM34, a comprehensive set of design tools is available, including:

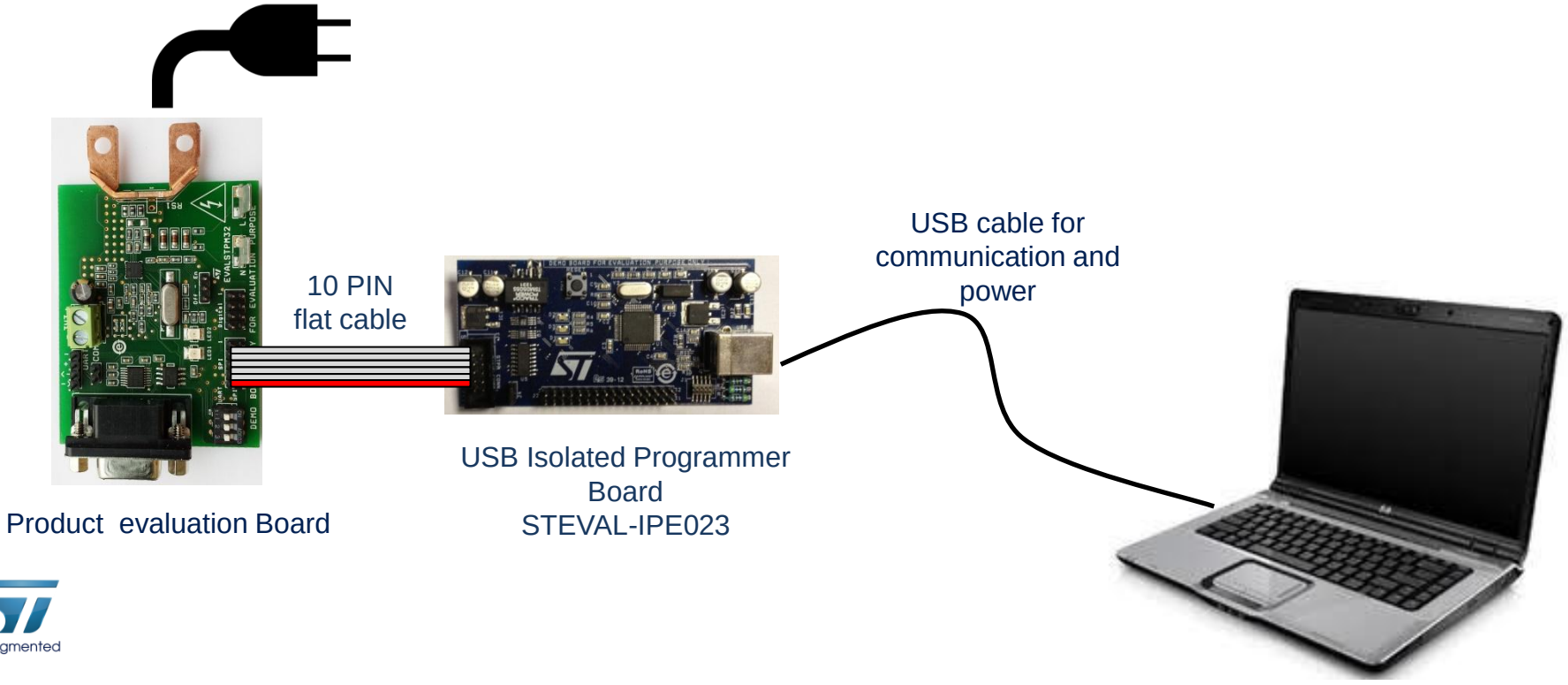
- evaluation boards

Order code	Description
EVALSTPM32	Single-phase energy metering evaluation board with shunt current sensor based on the STPM32
EVALSTPM33	Single-phase energy metering evaluation board with tamper monitoring , CT and shunt sensors based on the STPM33
EVALSTPM34	Dual-phase energy metering evaluation board with 2 current transformers based on the STPM34
STEVAL-IPE023V1	USB Programmer board for the STPM3x family

- a SW GUI for calibrating and configuring the device

GUI and USB Programmer

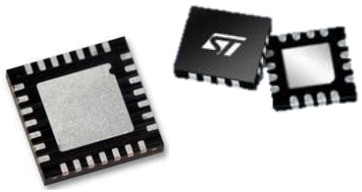
- to read, write and configure the device
- to perform automatic calibration
- to fasten the application design



Available in a click

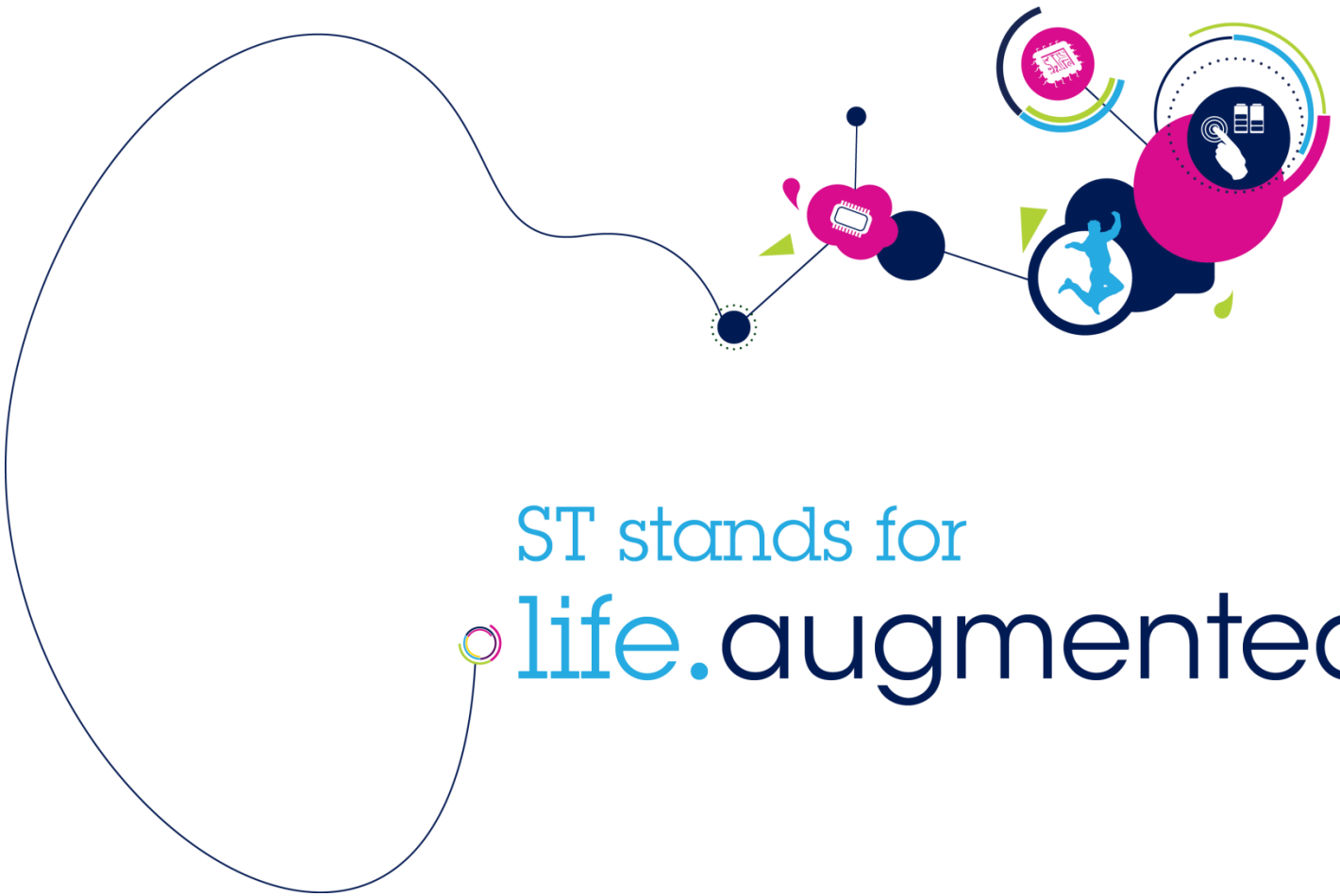
Available in tape and reel packing, with order codes:

Order Code	Package	# Channels	Evaluation Board
STPM32TR	QFN24 4x4 0.5p	2	EVALSTPM32
STPM33TR	QFN32 5x5 0.5p	3	EVALSTPM33
STPM34TR	QFN32 5x5 0.5p	4	EVALSTPM34



For technical documentation, samples, on-line ordering visit us at:
www.st.com/stpm3metering

Thank you!



ST stands for

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