

Complete Wireless M-Bus Solution

Multiple MSP430+CC11xx hardware platforms with wM-Bus Stack



TI's Complete wM-Bus Solution

- Multiple MSP430+CC11xx/CC120x hardware platforms with wM-Bus stack
- First complete wM-Bus solution available to the market
- Multiple TI EVM kits supporting wM-Bus are available today:
 - TRXEB + CC11xx/CC120xEM
 - EM430F6137RF900 for CC430 single-chip device
- CC1101/CC1120+CC1190 reference designs for high transmit power in 868-/915-MHz bands
- CC1120+ external PA reference designs for high transmit power in 169-MHz bands
- TPS62730/40 EVMs for efficient power supply from primary batteries supporting all the MCU+RF kits above
- TPS6xxx universal high efficiency power management solution for battery-operated meters

Following on TI's first-to-market introduction of the ZigBee® stack, TI provides an industry-first complete wM-Bus ecosystem, including an optimized hardware platform for microcontrollers, sub-1GHz radio devices and high-efficiency battery management solutions.

Featuring TI's new CC112x/120x RF Performance Line, the ultra-low-power MSP430™ microcontroller and the high-efficiency TPS62730 and TPS62740 DC/DC devices offer multiple evaluation platforms for testing and enabling wM-Bus (EN13757-x) communication for smart utility meters (gas, water, heat and e-meters), sub-metering (heat cost allocators) and data concentrators.

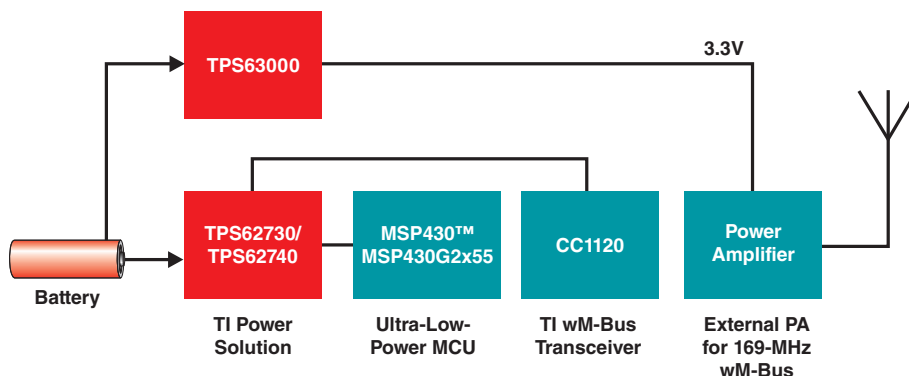
The popular S, T and C modes in the 868-MHz band as well as all narrow-band N-modes in the ETSI 169-MHz band are also fully supported with the new CC112x/120x RF Performance Line, which delivers the best sensitivity, selectivity and blocking. The 169MHz frequency combined with up to 500mW of transmit power,

enables long-range and robust communication even in difficult environments and dense urban area deployments in Europe.

TI's wM-Bus full system solution is a combination of easy-to-use development kits, featuring TI's MSP430 ultra-low-power microcontroller and CC11xx/120x low-power wireless connectivity devices, a robust and field-proven wM-Bus stack and high-efficiency RF-friendly ultra-low-power DC/DC devices.

Hardware and software support for both 169-MHz and 868-MHz wM-Bus systems:

- Best blocking and selectivity performance for a robust and future-proof solution
- WaveMatch enables reliable packet reception and eliminates false packet detection
- "RX Sniff" mode maintains best RF performance in RX while reducing power consumption
- High efficiency battery management optimized for TI RF and MCU devices
- Complete development kit available for stack and RF performance evaluation



▲ Block diagram of TI's complete wM-Bus N-mode system, including a high-efficiency battery management solution.

Learn more at
www.ti.com/tool/wmbus

TI's wM-Bus solution offers reliable hardware + software for Smart Grid applications worldwide

Optimized for low-cost and robust RF communication between smart meters or sub-meters and data collectors, the TI wM-Bus platforms can be combined with dedicated TI high-efficiency power management devices, which have been designed to work with TI's radios without performance penalties.

wM-Bus Hardware and Software Kits

Frequency Band	Microcontroller	Radio		Software
		Option 1: General	Option 2: High Transmit Power	
868 MHz	SimpleLink™ (CC1120): CC1120DK, SimpleLink (CC1200): CC1200DK, SimpleLink (CC11XL): CC11XLDK Includes TrxEB (MCU, USB/I/F, LCD, accelerometer, light sensor)	(CC1101): CC1101EMK868-915 or (CC110L): CC110LEM-868-915-RD or (CC1120): CC1120EMK-868-915 or (CC1200): CC1200EMK-868-930	SimpleLink (CC1120 + CC1190): CC1120-CC1190EM868	wM-Bus Stack
	(CC430F6147): EM430F6137RF900	– –		
169 MHz	SimpleLink (CC1120): CC1120DK	CC1120EMK-169	SimpleLink (CC1120 + PA): CC112XSKY65367EM-RD +30 dBm	+30 dBm
	SimpleLink (CC1120 + PA):	CC112XxxxxEM-RD	XX	

Power Management EVMs for wM-Bus

Issue to Address	Solution	Evaluation Tool
Efficient power supply from primary batteries (Supports all MCU + RF kits listed above)	TPS62730	TPS62730EVM
High-power supply (RFPA)	TPS62065/67	TPS62065-67EVM
Capacitor-based battery assistance	TPS61251	TPS61251EVM
Ultra-low Iq step-down converter for wireless connectivity	TPS62740	TPS62740EVM
Li-Ion battery support	TPS63050	TPS63050EVM

Solution highlights:

- Designed with the metering and sub-metering markets in mind, these TI platforms deliver leading RF performance combined with lowest power consumption, a high transmit power option and proven wM-Bus software stack.
- Together these boards create the complete wM-Bus solution (hardware + software + power management) fully compliant with EN 13757-4 modes N, C, S and T.
- Wireless M-Bus support for RF transceivers (CC110x, CC112x and CC120x) as well as the CC430 SoC and families.
- CC430 and CC1200 come with AES-128 hardware encryption/decryption engine to meet low latency requirements in EN13757-4 and to reduce stack code size.
- Certified wM-Bus RF modules with integrated wM-Bus software stack available from multiple TI third parties.
- Using RF modules ensures interoperability and compliance, and significantly reduces time-to-market and development/certification costs.

www.ti.com/tool/wmbus

Get online TI support and documentation at www.ti.com/tool/wmbus

TI Designs

- ETSI Cat. 1 Receiver-Capable wM-Bus 169MHz
- RF Subsystem for Smart Gas and Water Meters: <http://www.ti.com/tool/TIDC-WMBUS-169MHZ>
- wM-Bus Smart Meter Subsystem at 868 MHz: <http://www.ti.com/tool/TIDC-WMBUS-868MHZ>

wM-Bus related documentation:

- TI AN121: "Wireless M-Bus Implementation with CC112x/CC120x High Performance Transceivers"
- TI report: "CC112x/CC120x RX Sniff Mode"
- TI DN039: "IPCIPC for 868/915 MHz operation with the CC112x, CC117x and CC12xx"
- TI DN040: "Reduced Battery Current Using CC112x, CC1175 and CC1200 with TPS62730"

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