

AM090 Compact Wireless Meter-Bus Module

Narrow-band Multi-Channel 868 MHz Radio Modem
for Smart Metering, Automation and IoT Applications



The AMIHO AM090 Wireless Meter-Bus module provides a complete and easy to use solution for Wireless Meter-Bus radio communication, in a class leading ultra-compact footprint.

The design's low standby power consumption makes it ideal for prolonged life in battery powered applications and provides up to +13 dBm of RF power.

The module is supplied with AMIHO's Wireless Meter-Bus modem software pre-installed, allowing an external processor to easily send and receive messages using simple commands over a serial interface.

AMIHO's software stack is also available separately allowing customers to write applications that run directly on the modules built-in ARM® Cortex®-M0+ CPU.

Features

Wireless Modem Use in stand-alone modem mode, or embed user application on-board

RF Operation Suitable for narrow-band and wideband operation throughout 868 MHz ISM band

RF Performance Sub-1 GHz Smart Radio gives an excellent link budget of up to 127 dB at 4800 baud.

Hardware

- Freescale Kinetis family of ARM® Cortex®-M0+ MCU with built-in 128KB Program flash, 16KB RAM and 32 kHz RTC
- High-speed precision ADC and DAC for audio and measurement applications, additional UART and I²C

Low Power Operation

Low operating and standby current. Sub 1uA RTC operation

Software

- Full low level platform drivers and EN13757-4:2013 Wireless M-Bus RF stack level drivers provided
- Includes AES128 encryption and decryption;
- Supports Wireless Meter-Bus S, R, T and C modes with OMS extensions for metering applications

Compliance

European Union radio standard EN300 220

Benefits

- Smallest footprint available
- Low power consumption
- Cost effective module
- Complete solution
- Includes optimised software stack
- Reduced time-to-market
- Stack available separately under licence
- Accessible on-board MCU
- Tried and tested technology

Product Range

AM090 family of Wireless M-Bus Modules

- AM090 Wireless Meter-Bus EN13757-4:2013 module
- Features Freescale MKW01Z128 sub-1GHz radio-processor, with 128 KB flash and 16 KB RAM

AE090 Evaluation Kit

- Evaluation kit for Wireless Meter-Bus AM090 Freescale MKW01Z128 series modems
- Includes 2 nodes and everything you need to test the AM090 module for your application

AS090

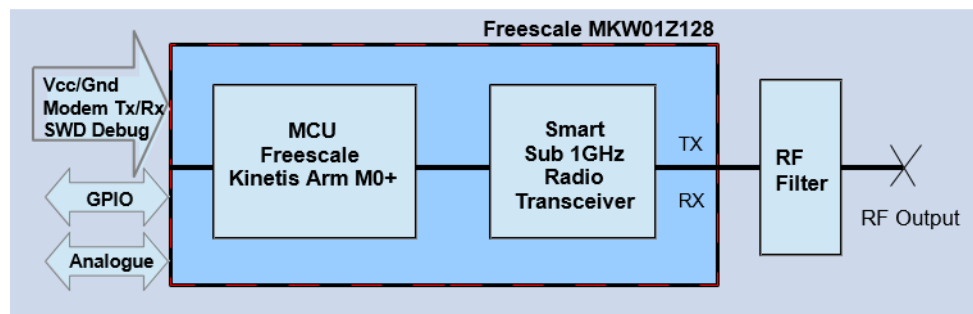
- Included in AM090 module as standard
- Wireless Meter-Bus EN13757-4:2013 software stack for MKW01 radio processor
- Available for licensing separately for user designs

AM092

- USB stick version of the AM090 Wireless Meter-Bus module with integrated antenna

Please see datasheet for ordering information

Block Diagram



Specification

RF modem	Sub-1 GHz Smart Radio
Micro	ARM® 32-bit Cortex®-M0+ MCU
Program memory	128 KB flash
RTC oscillator	
Data memory	16 KB RAM Dataflash emulated in program flash
Supply Voltage	1.8 – 3.6 V
Max output power	+13 dBm
Sensitivity	
4.8 kbits/s	-114 dBm
32.768 kbits/s	-105 dBm
100 kbits/s	-101 dBm
Current Consumption	
RX	16 mA
TX (0dBm)	23 mA
TX (10dBm)	33 mA
Sleep (RTC running)	1.2 µA
Deep sleep	0.1 µA
Temperature range	-40 °C / +85 °C
Physical	
Dimensions	15.2 x 15.2 x 2.5 mm
<ul style="list-style-type: none"> SMD footprint and 1.27mm half-holes for mass production Optional daughter board with 2.54 mm pin headers for solder or socket mounting for prototyping 	

Hardware

- CMOS-level 3.3 V UART interface
- 16 bit high-speed ADC
- 12 bit high-speed DAC
- Additional GPIO and interrupts, with software-configured Count and Wake-up inputs
- SWD debug interface

Software

- EN13757-4:2013 Wireless Meter-Bus stack
- AT command interface for stand-alone modem operation, optional binary mode for reduced compact modem communications
- Built-in profiles for rapid mode switching
- Software-definable frequency bandwidth and power level within entire 868MHz ISM-band for other applications
- M-bus S, R, T & C mode packet interface
- AES128 encryption and decryption
- API to add higher layer Meter-Bus protocol
- API to allow other protocols to be added
- Packet sniffer and network formation modes
- OMS support with resources to implement pulse meter functionality
- Power management
- Example gas meter application