



AM070 Wireless Meter-Bus Module

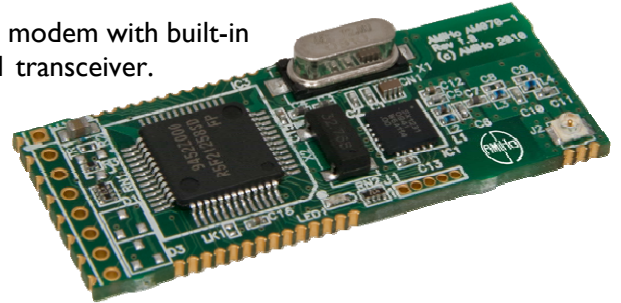
Narrow-band Multi-Channel 868MHz Radio Modem

Preliminary Information – Subject to change © AMiHo 2011

The AM070 Renesas / Semtech / AMiHo Wireless Meter-Bus / 868 MHz modem is the first of a family of narrow-band multi-channel 868MHz modems. It is designed specifically for Wireless Meter-Bus, but is also suitable for other ISM-band applications.

It is a 20mW transmission power output, low-power, embedded modem with built-in Microcontroller using a Renesas R8C MCU and Semtech SX1231 transceiver.

The module uses an AT command interface and supports very low current standby for battery powered applications, and is suitable for direct connection to a Lithium Thionyle Chloride cell, removing the need for external voltage regulators. There are substantial memory and peripheral resources available for users to add their own application code to the module.

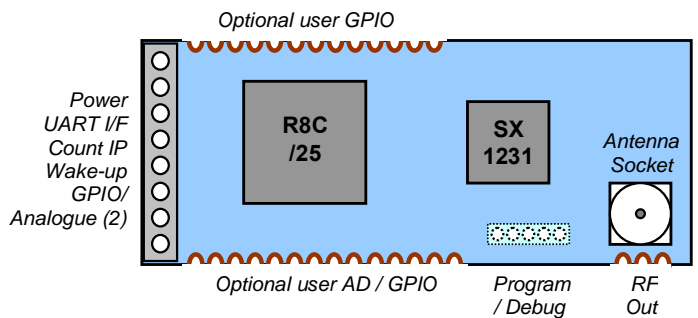


It is supplied with an EN13757-compliant Wireless Meter-Bus software stack, but is also suitable for other 868MHz ISM-band communications standards including KNX and other wireless control applications. The AM070 is also available as a hardware reference design and software stack for integration in a user's own design.

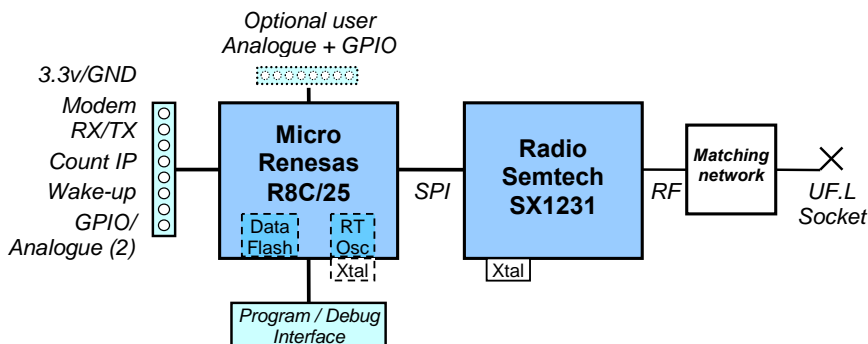
Features

- **Wireless Modem:** Use in stand-alone modem mode, or embed user application on-board.
- **RF Operation:** Suitable for narrow-band and wideband operation throughout 868MHz ISM band.
- **RF Performance:** Semtech SX1231 gives class leading link budget of up to 127 dB at 4800 baud.
- **Hardware:** 16 bit processor with built-in data flash and built-in 32kHz RTC.
- **Low Power Operation:** Low operating and standby current. Suitable for direct connection to a Lithium Thionyle Chloride cell, combined with the ability to run application code giving the lowest system consumption and longest battery life.
- **Software:** Full low level platform drivers and EN13757-4:2005 Wireless M-Bus RF stack level drivers provided, including AES128 encryption and decryption - Supports Wireless Meter-Bus S, R and T modes.
- **Compliance:** The design complies with European Union radio standards (EN301489-1 EN301489-3)

Mechanical Form



Block Diagram



Ordering Information

AM070-Au

AM070 Wireless Meter-Bus module.
U.F.L antenna connector
64kB Flash, 3kB RAM, 2kB NV RAM

AM070-Ae

AM070 Wireless Meter-Bus module.
External antenna PCB edge connection
64kB Flash, 3kB RAM, 2kB NV RAM

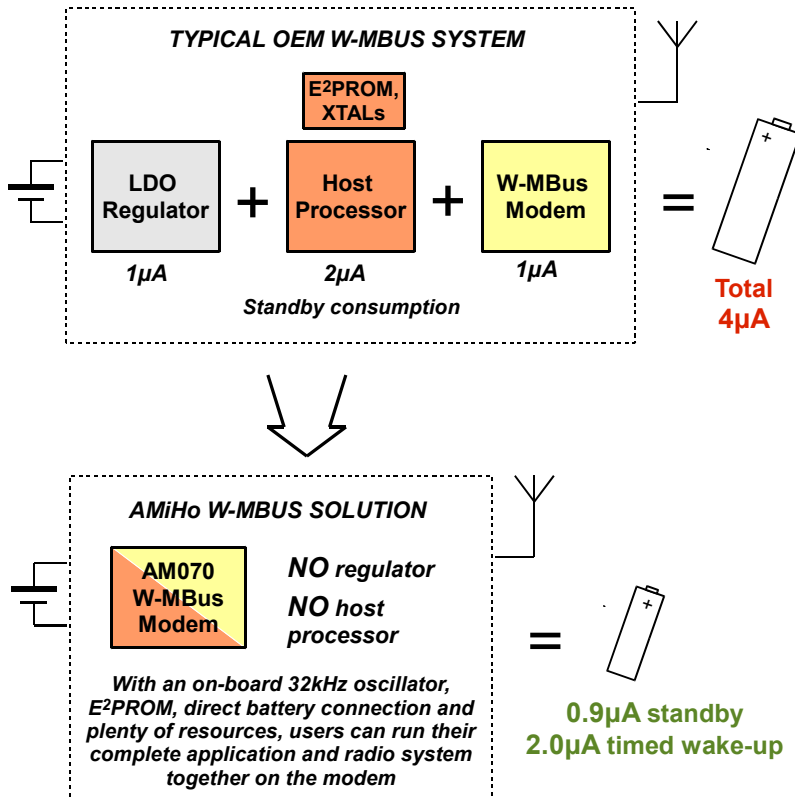
AM070 Evaluation Kit

Evaluation kit for Wireless Meter-Bus.
Applications include concentrator (master) module with PC application and meter (slave) module

Other variations are available to order



Application Information



Support

- **Hardware Design:** Uses low cost components. A full reference design including Schematics, Bill of Materials and PCB Gerber Files is provided, free for incorporation into customers' design.
- **Software Support:** Sample application code and application notes. Further support available from AMiHo and through the extensive support network of Renesas. Customisation of software is also offered.
- **Software Upgrades:** OMS and DSMR support and ENI 3757:5 scheduled for 2012.
- **Tools:** Utilities supplied to help debug user application; supported by Renesas R8C IDE.
- **Evaluation Kit:** Available to assist development and testing of Wireless Meter-Bus applications, including installation utilities.
- **Training and Field Support:** Training and support offered to assist customers at all stages of design, testing, installation and commissioning.
- **Continual Testing:** AMiHo test for interoperability to ensure compatibility in the field.

For further information and sales enquiries contact: sales@amiho.co.uk

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Specification

RF modem:	Semtech SX1231
Micro:	Renesas R8C/25, up to 20MHz
Program memory:	up to 64 KB flash
RTC oscillator	
Data memory:	2KB NV memory / up to 3KB RAM
Supply Voltage:	2.2 – 3.75 V
Maximum 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	18 mA
TX (0dBm)	23 mA
TX (10dBm)	36 mA
Sleep (awaiting timed TX)	2.0 uA
Deep sleep	0.9 uA
Temperature range:	-40 °C / +85 °C

Physical

20 x 50 x 10 mm size
 2.54 mm pin headers for solder or socket mounting
 Connections for additional GPIO
 Hirose U.FL antenna socket or external edge RF connection

Hardware

CMOS-level 3.3V UART interface
 Dedicated *Count* and *Wake-up* inputs
 2 Analogue / spare GPIO inputs
 1 x LED
 22 additional Analogue / GPIO
 E8 / E8a Program / debug interface

Software

ENI3757-4:2005 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 and T 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 mode
 Network formation mode
 Pulse counter
 Power management
 Example gas meter application

RENESAS



SEMTECH