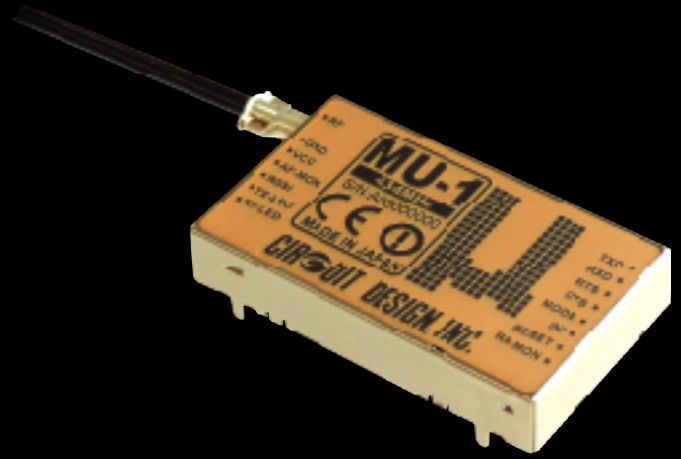


Embedded low power radio modem

MU-1

434MHz



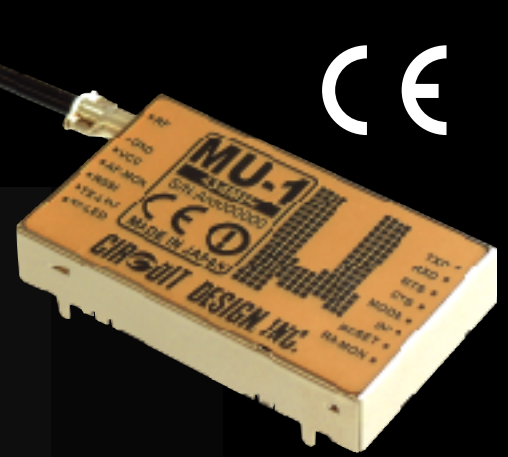
MU-1

434MHz

Embedded low power radio modem



The MU-1 embedded low power modem is designed for use in industrial applications in the 434 MHz license free European SRD bands. Circuit Design fs industry-proven narrowband, high frequency circuitry is transplanted to the MU-1, and it provides long range and reliable data transfer at 10 mW RF power. Simple commands dedicated to the MU-1 control communication and the RF part. The MU-1 can typically be used for serial data communication systems that use UART serial interfaces to connect with the host system. High frequency devices, a control CPU and surrounding parts are integrated into a robust metal shield case. While the MU-1 is no bigger than conventional modules that contain only a radio component, the MU-1 has all the functions of an embedded RF modem and offers reliable long distance communication with good noise resistance. The MU-1 is highly versatile, making it suitable for a wide range of applications.



Features

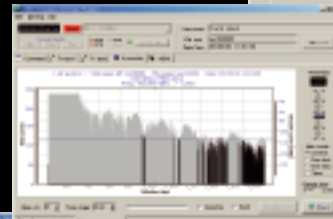
- 10 mW RF output, 3.0 to 5.0 V operation
- Long range communication
- 25 kHz-step, 64-channel narrow band FM
- UART interface
- Simple dedicated command control
- Robust metal housing for industrial use
- Various interface board options
- EN300 220, EN301 489 compliant
- Wide operating temperature range -20°C + 60°C

MU-1 Evaluation Software Program

Air Monitor window



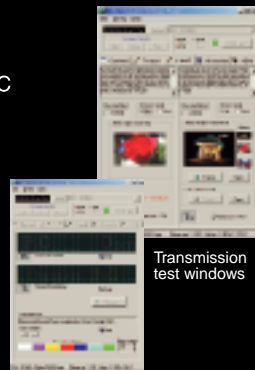
ADK window



Time domain



Frequency domain



Transmission test windows

Applications

- Serial data transmission
- Industrial telecontrol
- Industrial telemetry / monitoring
- Environmental telemetry / monitoring
- Medical telemetry / monitoring

General specifications

Item	Specification	Unit	Remarks
Standard	R&TTE Directive EN1999/5/EC		CE mark acquired
Antenna power	Within 8 +20% -50%	mW	Contact (50 Ω)
Communication method	Half-duplex		
Modulation system	Binary FSK	-	
Radio data speed	9,600	bps	
Frequency range	433.2000 to 434.7750	MHz	
Number of channels	64	-	Channel span 25 kHz
Receiver sensitivity	-108	dBm	Packet error rate 0.1% (255 bytes/1 packet)
Operating temperature	-20 to +60	°C	The range varies with the temperature conditions.
Operating voltage	3.0 to 5.0	V	Absolute maximum rated voltage 5.5 v
Consumption current	Transmitting: 46 / Receiving: 32	mA	When the supply voltage is 3 v
External dimensions	50 × 30 × 9 (W × D × H)	mm	Not including the antenna.
Unit weight	23.5	g	

Reference data

* Effective radio communication speed: About 6,800 bps / Conditions: One-way communication, no error correction, 25°C

* Range: About 600 m / Conditions: One-way communication, no error correction, 25°C, line of sight distance, ground level of 1.5 m, vertical antenna

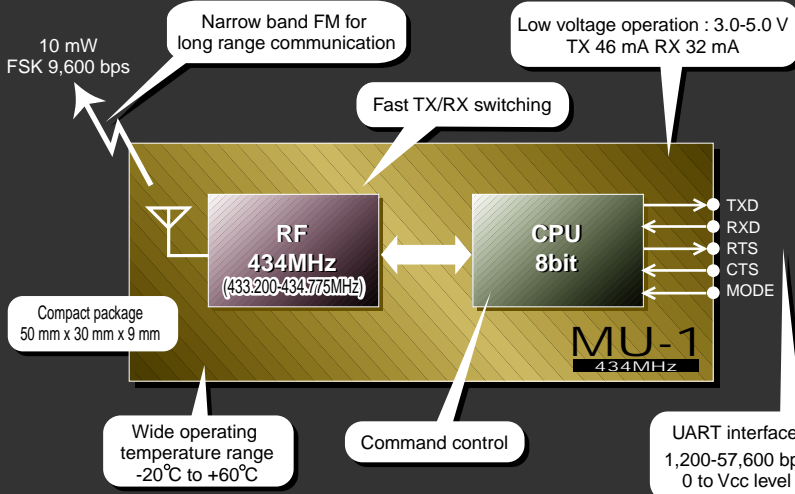
UART interface specifications

Communication method	Serial communication (RS232C format)
Synchronization	Asynchronous
Data speed	1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 38,400 / 57,600 bps
Flow control	RTS/CTS hardware flow control
Other parameters	Data length 8 bits, no parity, 1 or 2 stop bits

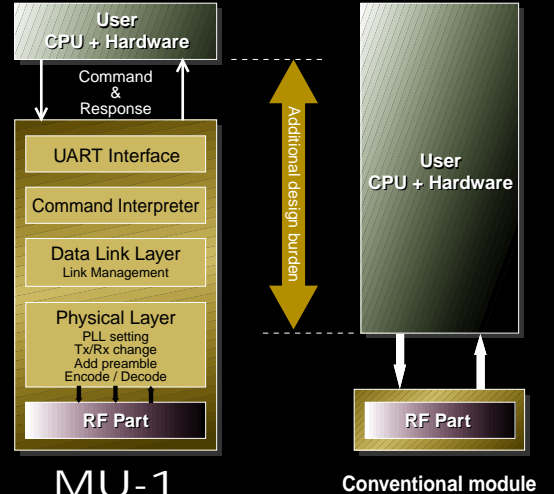
Specifications are subject to change without prior notice.

Features

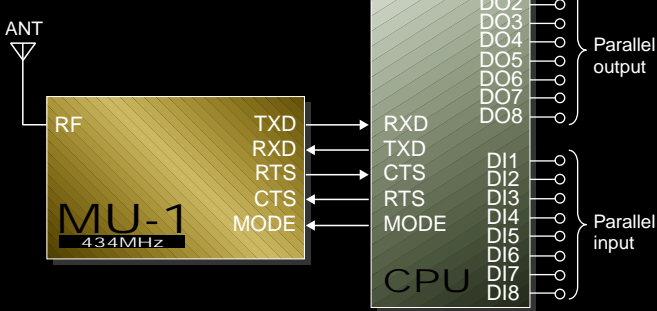
MU-1 internal block



MU-1 communication layer

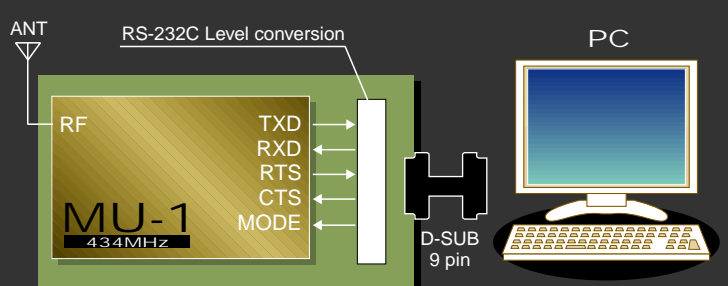


Direct interface with a one chip CPU with UART port



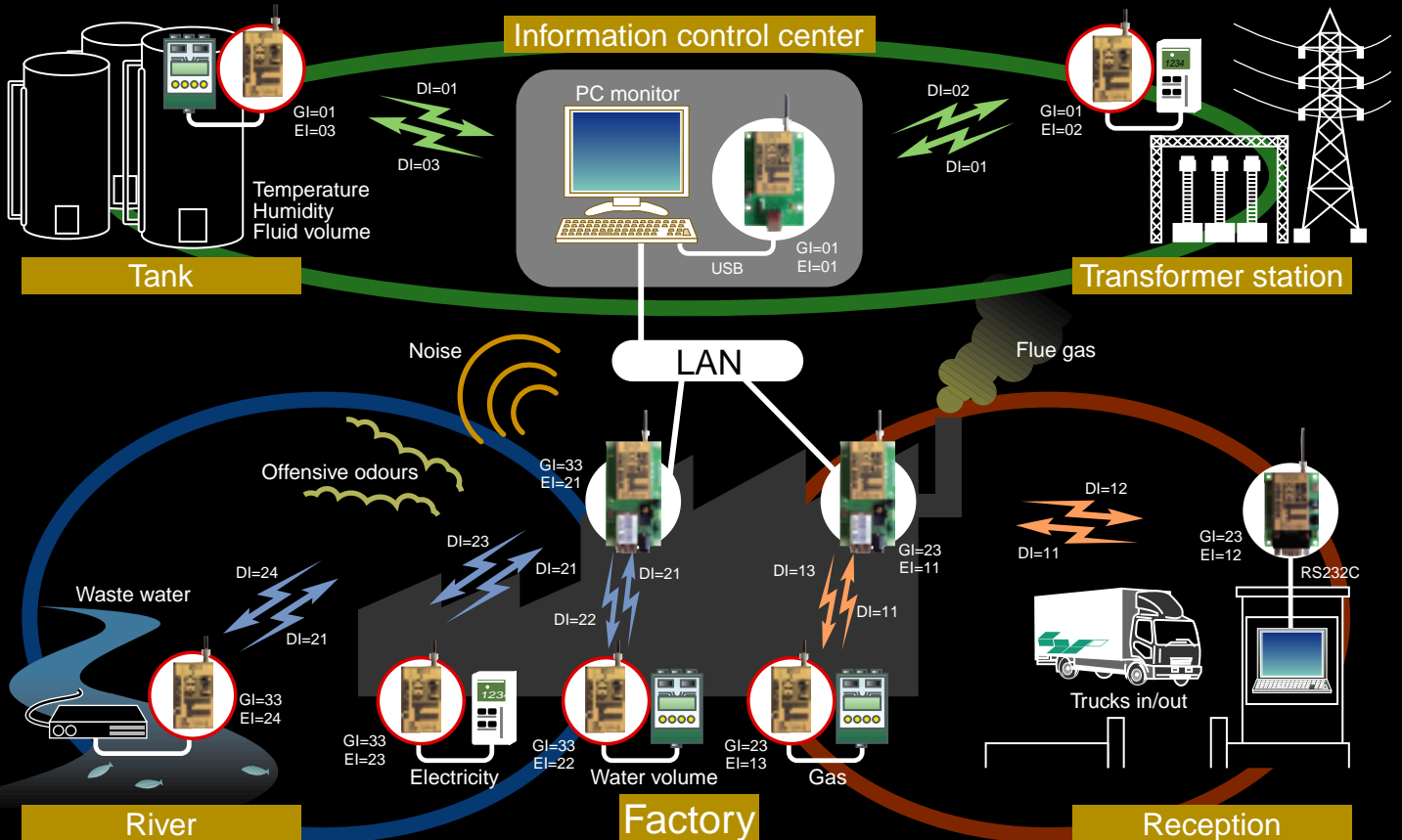
RS232C interface with PC

For interface with the RS232C or COM port of a PC, insert an RS232C conversion IC.



Application of the MU-1 in the manufacturing plant

The MU-1 is a reliable RF node for wireless monitoring network systems in the manufacturing plant.



UI(User ID), GI(Group ID), EI(Equipment ID) and DI(Destination ID) in the chart show assignment of Link IDs provided by the MU-1 communication software. UI (User ID) is common to all equipment.

Development kits

Application design kits and interface kits for quick introduction tests of the MU-1



The MU1-ADK is a programmable hardware kit for users who intend to develop applications using the MU-1. The Training Board is equipped with a PIC microcontroller and basic peripheral components, making it possible for users to perform various tests ahead of development of their applications.



The MU-1 RS232C is a development kit for planning radio system applications with an RS232C interface connection. It can be connected directly with the COM port of a PC and other equipment with an RS232C port.



The MU1-UIK is a development kit for planning radio system applications with a USB interface connection. It uses the FTDI FT8U232MB that has a protocol conversion function to convert between the USB and UART interfaces.



The MU1-LIK is a development kit for planning radio system applications with a LAN interface connection. It incorporates the Lantronix XPort, and using the XPort Serial - Ethernet conversion function and general purpose I/O function, it interfaces directly with the MU-1 UART.

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