| MODULE	Demo Kit	Frequency [MHz]	# Channels	Max data rate [kbps]	Pout [dBm]	RX Current [mA]	TX Current [mA]	LOS [m]	Compliance/Region
Embedded RC232 Protocol									
RC1140	√	433	17	100	10	22	32.3	1200	CE
RC1180	√	868	16	100	10	22	37.8	800	CE
RC1190	√	915	50	100	-1	22	37.8	300	FCC
RC1170HP	√	865-867	15	76.8	27	24	560	4000	India
RC1180HP	√	868	18	76.8	27	24	560	4000	CE
RC1210	√	418/419	30	4.8	8	20.2	26	2000	China
RC1230	√	426/429	71	2.4	8	20.2	26	2400	Japan
RC1240	√	433	69	4.8	8	20.2	26	2000	CE
RC1244	√	429/433 439/444	85	4.8	8	20.2	29	2000	CE, Sweden
RC1250	√	424/447	80	2.4	8	20.2	26	1200	Korea
RC1280	√	868	80	4.8	3	20.7	28	1000	CE
RC1280HP	√	868	85	4.8	27	20.7	600	6000	CE
RC1290	√	915	51	19.2	-1	20.7	22.9	600	FCC
RC2500	√	2450	83	100	1	25.5	27	1000	World wide
RC2500HP	√	2450	83	100	18[1]	27	160	3500	World wide
802.15.4 HW platforms									
RC2400	√	2450	16	250	3	25	34	500	World wide
RC2400HP	√	2450	16	250	19[1]	29	160	2500	World wide
Embedded ZigBee Protocol									
RC2400-ZNM	√	2450	16	250	3	25	34	500	World wide
RC2400HP-ZNM	√	2450	16	250	19[1]	29	160	2500	World wide
Wireless MBUS									
RC1180-MBUS	√	868[2]	12	100	10	22	37	600	CE

1. Limited to 10mW/MHz in Europe due to regulations
2. Available at 433 MHz and 865-867 MHz

One form factor – pin compatible
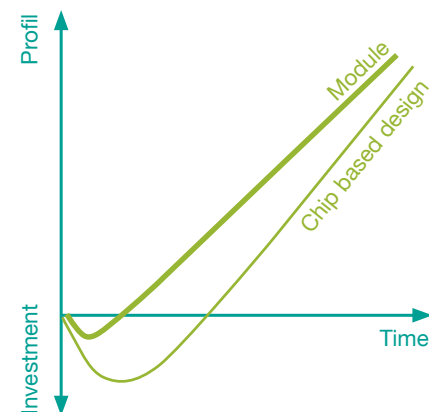### – different radio technologies

Radiocrafts offers full flexibility for customers who are looking for different radio solutions. It is now possible to make one PCB design and combine several radio protocols and frequencies by only changing the radio module and the antenna length. Only minor adjustments in the host controller firmware are necessary to swap between different radio protocols. The footprint compatible Wireless M-Bus solution and high power IEEE 802.15.4 platform for ZigBee, Smart Energy and RF4CE radio module gives a unique flexibility.

ZigBee / 6LoWPAN
Wireless M-Bus
500 mW, 4 km
Narrowband 433 / 868 MHz
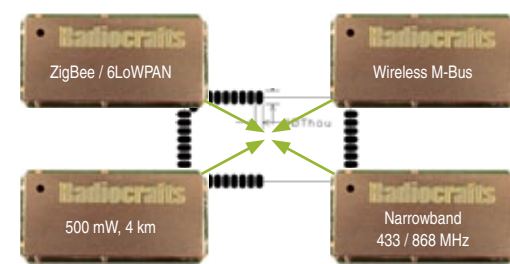
• **ZigBee / 6LoWPAN and RF4CE:** RC2400 and RC2400HP
• **Wireless M-Bus:** RC1180-MBUS
• **Narrowband,** 25 kHz, high sensitivity: RC12x0 and RC1280HP
• **High Power,** RC232: RC2500HP-RC232 and RC1180HP-RC232
• **Cost effective wideband modules,** RC11x0

Module benefits

• Shorter time to market
• Proven RF performance
• Conformance with world-wide RF regulations
• No RF competence required
• Lower Total Cost of Ownership (TCO)

Profil / Investment / Time / Module / Chip based design

	Ease		Range		Size		Reliable
	>>> Plug and play		>>> Up to 6 km		>>> World's smallest modules		>>> Proven in harsh industrial applications

Easy to use
• Data in - RF out
• Cable replacement

Long range
• Up to 6 km
• Increased link margin

Small size
• Surface mounted "radio modem"
• Completely shielded

Reliable
• Narrowband
• High performance

Identify your module/network

In which country shall this equipment operate?
Which ISM frequencies are available in the region?

How many nodes, and do all nodes communicate with all other nodes?
Is mesh network necessary, or will point-to-point (multipoint) do the job?

What is the distance between nodes that need to communicate?
Low frequency and narrow bandwidth gives longer range.

What data rate is necessary for the application?
Higher data rates require wider channels.

Shall the nodes operate on battery?
What is max acceptable power consumption?

About Radiocrafts

Radiocrafts offers standard RF modules for operation in the license-free ISM bands at 300-2450 MHz . We provide compact modules that are easy to integrate and easy to use, for shortest possible time-to-market. Radiocrafts also makes customer specific solutions, from specification to turn-key delivery. Based on our experience in a wide variety of products and applications we find the best solution to take your idea to the market at a minimum of time and cost. Radiocrafts is a member of TI's Third Party Program, the ZigBee Alliance and the OMS group for developing Wireless M-Bus for metering in Europe.

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Radiocrafts
Embedded Wireless Solutions

Product Selection Guide

Applications

Automatic Meter Reading (AMR)
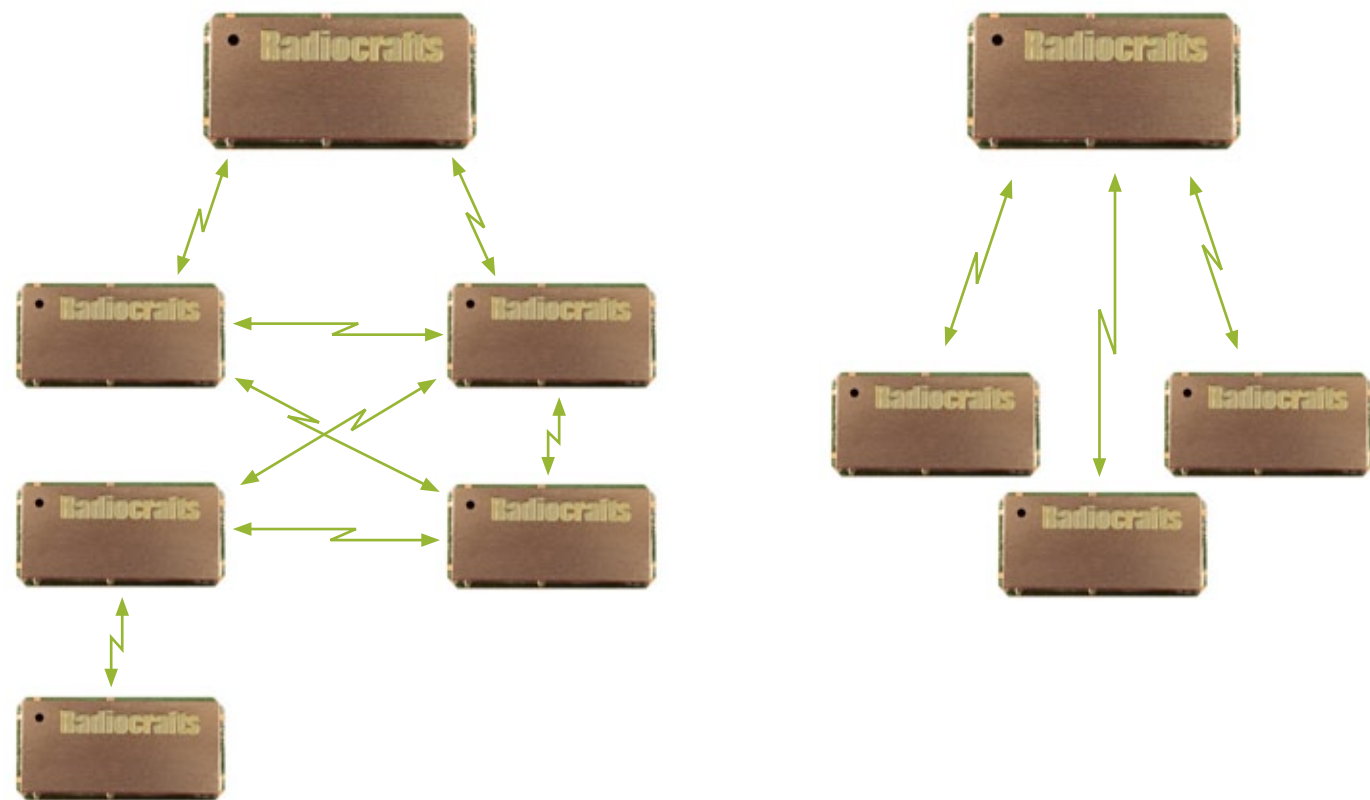
Wireless Sensor Networks (WSN)

Remote control and telemetry

Home, Building and Industrial automation

Wireless alarms and security

Telemetry systems

Fleet and Asset Management

Services

- Custom hardware and software designs
- Application specific designs
- Standard module modifications
- Turn-key solutions and volume deliveries
- Gateway solutions for GPRS/Ethernet, RS232/RS485 and USB
- Pilot- and demo systems for control and monitoring
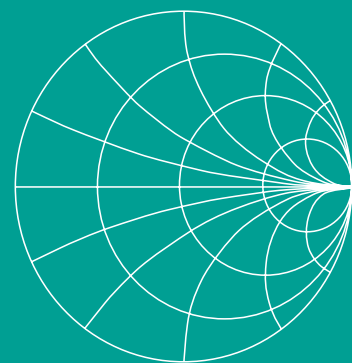
RC232™ RF

RC232™ RF Module family

- Narrowband modules for long range and high immunity
- Wideband modules for low cost
- High Power module for extended range
- Small size (12.7 x 25.4 x 3.5 mm)
- Conforms with world-wide regulations (EU R&TTE; FCC CFR 47, part 15; ARIB STD - T66/T67; G.S.R. 564(E)/168(E))
- Pin compatible variants for EU, US, Japan, Korea, India and China
- 300-2450 MHz
- Up to 6 km range (Line of Sight)
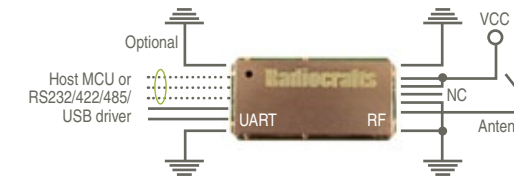
Embedded RC232™ Protocol

- Supports host communication, data buffering, error check, addressing, broadcasting and RSSI
- UART interface with optional handshake, RS232/422/485 and USB via level converters
- Point-to-point, point-to-multipoint and peer-to-peer network topologies
- Options: Temperature measuring, I/O mapping and Listen Before Talk (LBT)

The RC232™ RF modules are the world's smallest RF transceivers with embedded protocol. The product family covers different frequency bands and channel bandwidths giving a complete solution for world-wide frequency regulation compliance. No additional components are needed except for a standard antenna.

IEEE 802.15.4

IEEE 802.15.4 HW platforms

- Compact shielded module ,12.7 x 25.4 x 3.5 mm size
- Conforms with world-wide RF regulations
- Supported network topologies: Star, Mesh
- High power option in same footprint
- Pin compatible with RC232™ and Wireless M-Bus modules

The IEEE 802.15.4 radio modules are hardware platforms with excellent sensitivity and with option for integrated high power amplifier and LNA, in the same footprint.
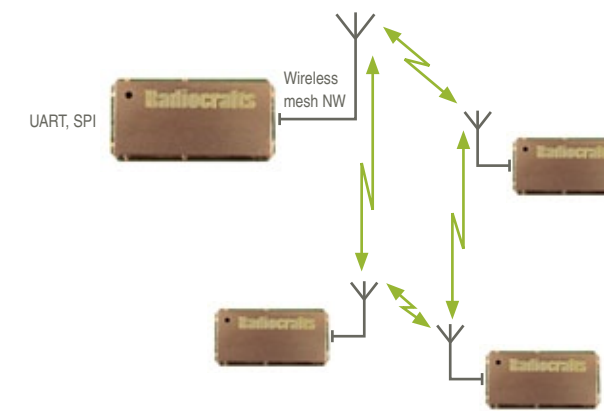
IEEE 802.15.4 Software options

All IEEE 802.15.4 compliant HW platforms are capable of running mesh network protocols. This includes proprietary solutions and existing standards such as:
- **ZigBee® Pro**
  Mesh network for wireless sensors, Smart Energy (AMR) and home/building automation etc.
- **6LoWPAN**
  IPv6 packets over Low power Wireless Personal Area Network
- **RF4CE**
  The new RF standards for remote control (RF for Consumer Electronics)
- **Wireless HART/ISA100.11a.**
  Wireless standards for harsh industrial environments

Radiocrafts offers modules with preloaded ZigBee® software and serial interface (API) for configuration and data packets. This ZigBee Network Module (ZNM) simplifies ZigBee® development significantly and reduces time to market.

A ZigBee stack can be downloaded for free. 6LoWPAN, RF4CE and Wireless HART/ISA100,11 software stacks are available from third parties.

Wireless M-Bus

Wireless M-Bus Module

- Supports EN 13757-4:2005 and implementations of NTA8130/DSMR and Open Metering System (OMS) specification
- 12.7 x 25.4 x 3.3 mm compact module for SMD mounting
- UART interface for communication and configuration
- Ultra low power modes for battery lifetime up to 15 years
- Configurable Manufacturer ID and serial number
- Designed for EX compliance
- AES-128 hardware encryption
- High power option in same footprint
- Pin compatible with RC232™ and 802.15.4 HW platform modules
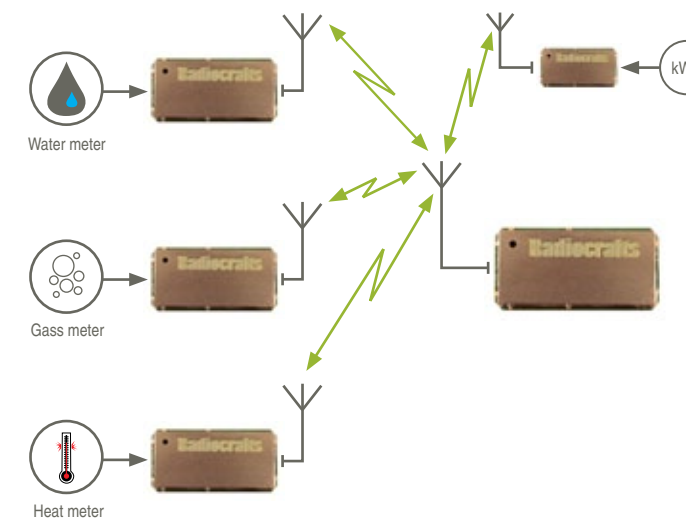
Wireless M-Bus feature sets

RC1180-MBUS1	Basic Wireless M-Bus EN 13757-4:2005
	Two-way communication
	No acknowledge or encryption by module
RC1180-MBUS2	NTA 8130/DSMR feature set
	Two-way communication
	Automatic message acknowledge
	AES-128 encryption and decryption
RC1180-MBUS3	OMS feature set
	Two-way communication
	Repeater functionality
	Automatic message acknowledge
	AES-128 encryption and decryption

Demo Kits

Demo Kits are available for all Radiocrafts' modules. The Demo Kit contains two Demo Boards that will make a wireless link "out of the box", and provide easy access to the module's I/O-pins. Connect the Demo Boards to a computer with terminal program, or to a microcontroller with an UART interface, and send and receive wireless data. The Demo Kits are ideal for rapid prototyping, proof of concept and range evaluation.
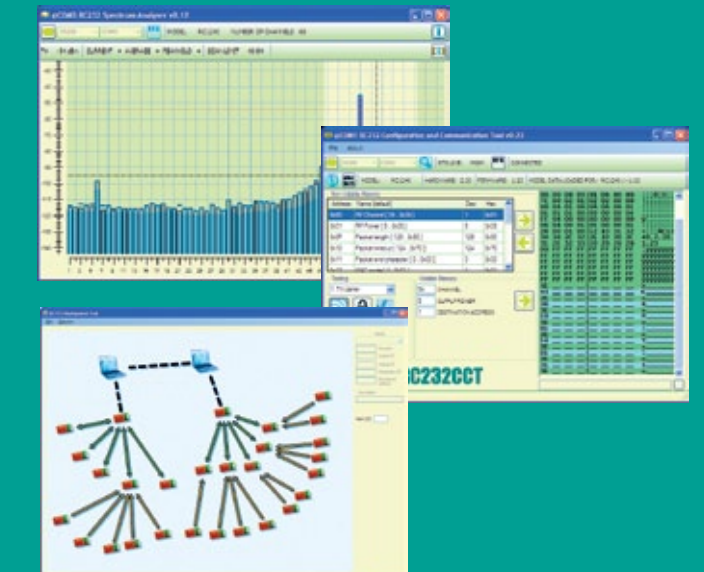

RC-Tools – making RF easy

RC-Tools is a powerful and easy to use PC suite that helps you during test, development and deployment of the Radiocrafts modules. The tools package contains a Configuration and Communication Tool (CCT), a Spectrum Analyzer (SA) and a system Deployment Tool (DT). For Wireless M-Bus a MBUS_DEMO meter emulator and packet sniffer is available. The RC-Tools is available for free and immediate download from our web site.

Technical Support
- FREE review of schematics and PCB layout
- FREE support for optimum antenna design
- QUICK support response time