RC-03

IQRF Programmable remote controller

User's Guide

Simple way to smarter wireless solutions

Description

RC-03 is a universal user programmable IQRF remote controller with bidirectional communication and accumulator.

It is a generic equipment, i.e. the hardware is fixed and the user can realize specific functionality by software for internal TR module only.

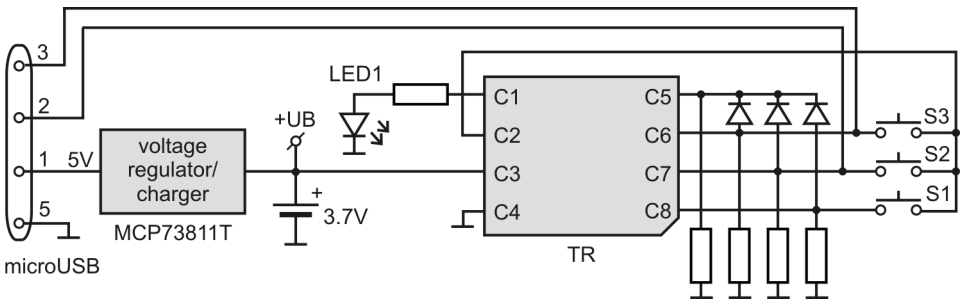
Applications

- Portable controllers
- Automation
- Voting systems
- Wide other usage facilities

Key features

- Internal TR-52B transceiver module
- On-board PCB antenna
- 3 pushbuttons, 1 LED
- 2 inputs/outputs
- Bidirectional communication – high security in comparison to unidirectional systems
- High performance
- Sleep mode with ultra low power consumption
- Accumulator and internal charger
- Charged via microUSB connector
- Low cost

Simplified schematics



Electrical specifications	*(**typical values** unless otherwise stated)*
Accumulator	LIP-552240 (Li-Pol 3.7 V, 400 mAh)
External power supply/charging	5.0 ± 0.35 V DC via microUSB connector
Supply current	*depends on application SW (see TR-52B datasheet for details)*
Sleep mode	2 µA (all peripherals shut down)
Additional watchdog supply current	2 µA typ., 4 µA max. (watchdog enabled)
Run mode	1 mA @ 8 MHz (RF circuitry in standby mode)
Additional supply current	0.6 mA (RF circuitry on) 2 mA (LED on)
Rx mode	
STD mode	13 mA
LP mode	3.5 mA (depends on interferences)
XLP mode	600 µA max. (depends on interferences)
Tx mode	14 mA – 24 mA (according to RF output power)
Accumulator charging	85 mA (depended on the accumulator state)
Temperature range	0 °C to +70 °C
Frequency band	868 MHz or 916 MHz, multiple channels (SW selectable)
RF output power	Up to 3.5 mW, programmable in 7 steps
Transceiver module	TR-52B
Antenna	Internal PCB shortened ¼ wave whip
Dimensions	93 mm x 42 mm x 14 mm
Weight	38 g (including accumulator and TR module)

Absolute maximum ratings

Stresses above those values may cause permanent damage to the device. Exposure to maximum rating conditions for extended periods may affect device reliability.

Supply voltage (VCC):	5.5 V
Storage temperature:	-40 °C to +85 °C

Hardware

RC-03 is a generic equipment, i.e. the hardware is fixed and the user can realize specific functionality by software for internal TR module only.

Power supply

RC-03 is supplied from the accumulator and charged via microUSB connector. Mains adapter is intended for it. Supplying from PC via USB is not allowed.

Sleep mode

It is possible to switch off all functions and peripherals to minimize supply current. For Sleep mode control refer to demo software included. The power can not be switched off at all, the Sleep mode is used instead of this. The controller wakes-up automatically after any pushbutton press (if enabled by SW).

Pushbuttons and LED

Functionality of all three pushbuttons and the LED is fully under user software control.

TR module

Wireless IQRF transceiver module TR-52B in SIM card format. Higher types are also supported. User program should be uploaded by an external programmer outside the GW.

Inputs/outputs

Two TR pins (C6 and C7) are connected to the USB connector for general purpose usage.

Antenna

Built-in PCB antenna on the RC-03 board.

Caution: To enable TR removal, the GW is delivered with TR module not connected to the antenna. It should be soldered by the user before final usage.

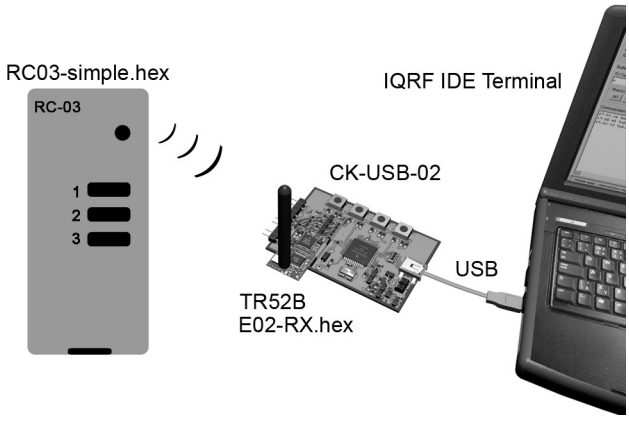
Case

The plastic case is limited to a very few number of open/close cycles only. Development should be accomplished with opened case.

Software

Demo application

This demo illustrates unidirectional non-networking communication between the RC-03 controller and the CK-USB-02 kit equipped with the TR-52B module connected to PC with the IQRF IDE Terminal running. The `RC03_simple.c` program is intended for the controller and the `E02-RX` (one of basic IQRF examples) for the TR module in the CK kit. Both are available on IQRF CD and IQRF website.



In idle state the controller stays in Sleep mode allowing wake-up by any pushbutton. After wake-up the battery voltage is checked and LEDs flashing indicates pressing the button and accumulator condition. Then respective command is sent to CK-USB-02 and the controller gets to sleep again.

Buttons	Function	
• S1	text sent: "S1x"	x=0 if battery O.K. otherwise x=1
• S2	text sent: "S2x"	-"-
• S3	text sent: "S3x"	-"-

LED indication

- button S1 to S3 — 1 x flash (battery O.K.) / 3 x flash (battery exhausted).

Pack list

- RC-03, in Sleep mode
- TR-52B, with demo example programmed, inserted in SIM connector inside
- Accumulator (soldered)
- MI-TY-A6-microUSB power supply adapter

Ordering codes

• RC-03	RC-03, 868 MHz as well as 916 MHz

Document history

• 100811	Schematic and power supply updated.
• 108003	Updated for TR-52B and current development kits.
• 100117	First release

Sales and Service

Corporate office

MICRORISC s.r.o., Delnicka 222, 506 01 Jicin, Czech Republic, EU
Tel: +420 493 538 125, Fax: +420 493 538 126, www.microrisc.com

Partners and distribution

Please visit www.iqrf.org/partners

Quality management

ISO 9001 : 2000 certified

Complies with ETSI directives EN 30279 V.1.2.1:99, ETS 30683:97, ETSI EN 301489-1:00, ETSI EN 300220-1:00, ETSI EN 300390-2V.1.1.1:00

Complies with FCC directives FCC CFR, Title 47, Part 15, Section 15.209, FCC CFR, Title 47, Part 15, Section 15.249

Complies with Directive 2002/95/EC (RoHS)

Trademarks

Legal

On-line support: http://iq-esupport.com

Simple way to smarter wireless solutions