GW-USB-04

FW v1.20

IQRF USB Gateway

User's Guide

Description

GW-USB-04 is an IQRF gateway with USB connectivity. It is intended as an interface between IQRF network and PC.

The user can realize specific functionality by software for internal TR module.
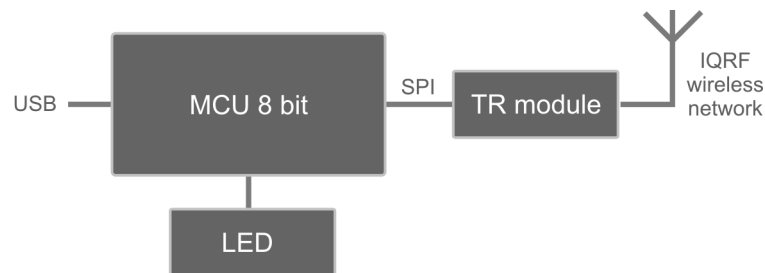
Applications

• IQRF – PC interface

• Home automation

• Diagnostic tool

• IQRF gateway

• RF programmer

Key features

• PC connectivity via USB interface

• 2 USB classes (Custom device and CDC)

• TR module and internal antenna

• TR module programming via USB and IQRF IDE

• Bidirectional RF communication

• High performance

• Bootloader for firmware upgrade

• 3 LEDs

• Compact USB-stick style

Block schematics

Electrical specifications   *(typical values* unless otherwise stated)*

Power supply	5.0 V Supplied from USB
USB	V2.0 Compliant SIE
Supply current (TR in Sleep mode)	13 mA
Aditional supply current due to TR module	1 mA (TR in Run mode) up to 24 mA (TX mode, max. output power)
Temperature range	0 °C to +70 °C
TR module	TR-52B compatible, without temperature sensor
Antenna	PCB on GW board
Frequency band	868 MHz / 916 MHz, SW selectable
RF output power	up to 3.5 mW, programmable
Dimensions	60 mm x 18.5 mm x 9 mm (including the cover)
Weight	7 g (including the cover)

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

The user can realize specific functionality by software for the TR module. Application for TR module inside can also be developed using the CK-USB-04 development kit. For detailed information refer to CK-USB-04 User's guide.

Power supply

GW-USB-04 is intended to be supplied via USB connector from PC.

Reset

Reset can be invoked by connecting a disconnected GW to USB or by the *Reset USB Device* command in CDC mode. Actual reset is executed ~5 s after the command is issued. This delay allows to disconnect USB communication on PC side in time.

USB

The device supports two USB modes:

• Custom Device mode
Full communication with the IQRF IDE is enabled in this mode. The GW uses identical USB driver like e.g. CK-USB-04. It is possible to upload the application into internal TR module, display data received from SPI interface of the TR in IQRF IDE Terminal etc. The user can easily create his own PC program using the `mpusbapi.dll` library. See USB Custom Device Example on IQRF website.

• CDC mode
After connecting to PC a virtual serial port is created in this mode. The user can create his own PC program and communicate via this port using the protocol described in document *CDC implementation in IQRF platform*.

Switching between the modes:

• From Custom Device to CDC:
Using IQRF IDE v2.08 or higher:
Help → Show IQRF USB Device Info → Switch to CDC mode.

• From CDC to Custom Device:
Using the *Switch to USB Custom Class* command in CDC protocol.
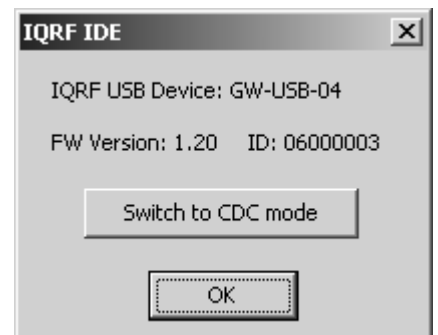
Current mode indication see chapter LED. The last selected mode is restored after start-up or reset.

Tip

For testing a communication in CDC mode various SW terminals operating with PC serial ports are available. Select a terminal enabling to issue direct byte commands and data. Refer to the communication protocol described in CDC Implementation in IQRF USB devices User's guide.

Recommended terminal: Docklight, **www.docklight.de**. There is a project containing all supported commands for this terminal available at **www.iqrf.org/218**. It is necessary just to select the COM port used.

Unsuitable terminal: Windows Hyperterminal, Tera Term.

LEDs

Debug/service LEDs inside the case.

- LED3 dedicated to the GW – red
  - LED3 flashes for 500ms after reset.
  - LED3 flashing in 1 s period means CDC mode (Custom Device mode is without flashing).
  - LED3 flashes 3x after clicking the IQRF logo in respective IQRF IDE (to identify the kit among other IQRF USB devices in case of multiple IQRF IDE instances).
  - LED3 flashing in 300 ms period means missing firmware (see Software below).
- LEDs dedicated to TR module – LED1 (red) and LED2 (green).
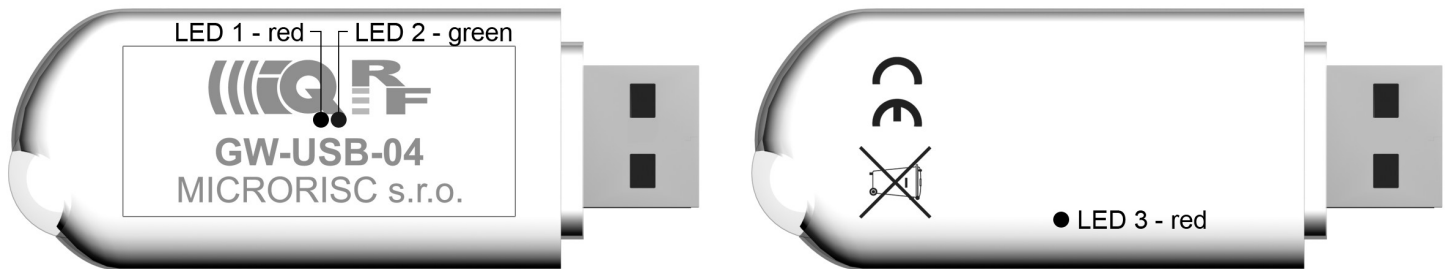
TR module

Wireless IQRF transceiver module compatible with TR-52B, 868 MHz as well as 916 MHz, without temperature sensor.

Antenna

PCB antenna on GW board.

Software

Firmware for the MCU inside the GW is fixed but can be upgraded by the user using the code provided by IQRF manufacturer. Refer to IQRF Application note *AN008 – Firmware upgrade* for details.

TR module functionality is fully user programmable. Factory default is E03-TR (one of basic IQRF examples). Programming and uploading the code is similar to CK-USB-04.

Product information

Pack list
- GW-USB-04

Ordering code
- GW-USB-04   Gateway GW-USB-04, 868 MHz as well as 916 MHz

Document history
- 110929   Tip for PC CDC terminal added
- 110530   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 : 2009 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)

CE

Trademarks

The IQRF name and logo are registered trademarks of MICRORISC s.r.o.
PIC, SPI, Microchip, RFM and all other trademarks mentioned herein are property of their respective owners.

Legal

All information contained in this publication is intended through suggestion only and may be superseded by updates without prior notice. No representation or warranty is given and no liability is assumed by MICRORISC s.r.o. with respect to the accuracy or use of such information.

Without written permission it is not allowed to copy or reproduce this information, even partially.

No licenses are conveyed, implicitly or otherwise, under any intellectual property rights.

The IQRF products utilize several patents (CZ, EU, US)

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

Smarter wireless. Simply.