

CK-USB-04

IQRF Programmer and Debugger

Firmware v1.00

User's Guide



Description

CK-USB-04 is a development kit intended for programming and debugging of user applications with IQRF transceiver modules.

It can serve also as an IQRF USB gateway (USB ↔ SPI converter) or just a simple host for TR module application.



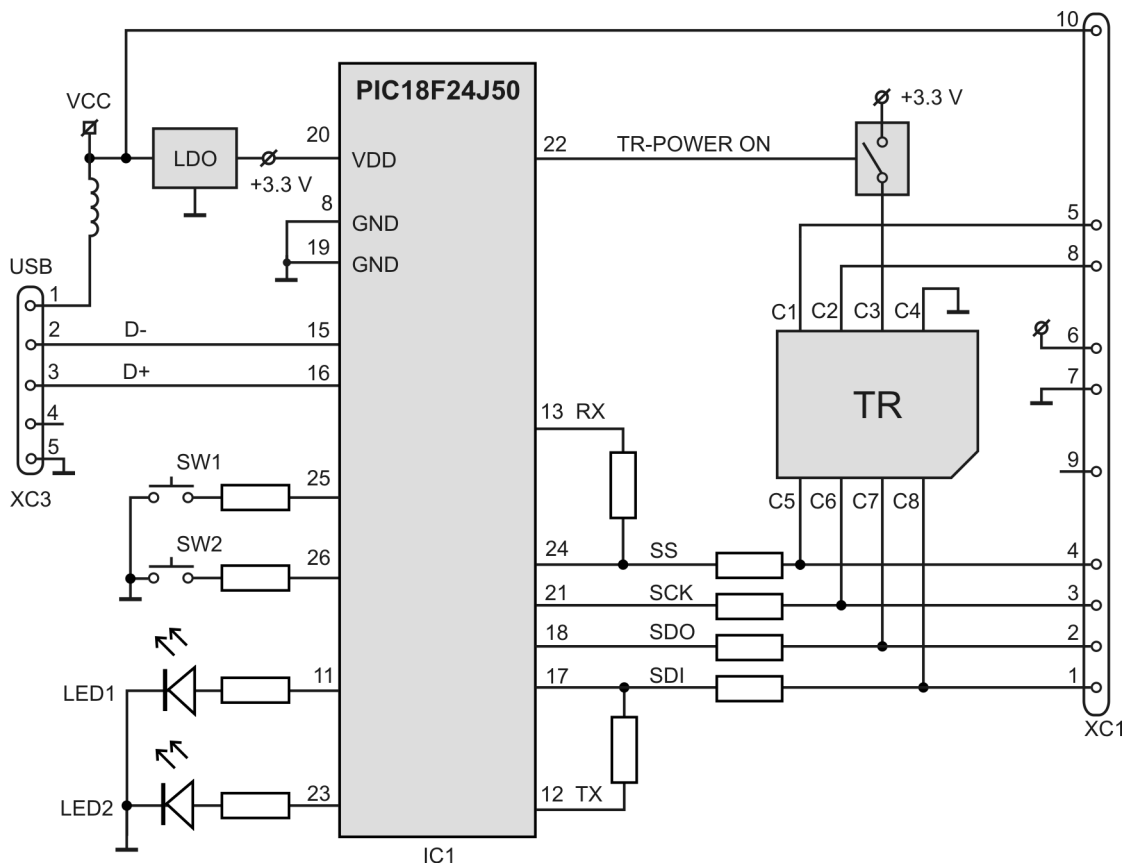
Applications

- Programmer for IQRF transceiver modules
- IQRF debugging kit
- End IQRF application host
- USB gateway
- USB to SPI converter
- PC connectivity

Key features

- Supported by the IQRF IDE development environment
- Wired or wireless (RFPGM) upload possible
- SIM connector with metallic holder for transceiver module
- USB interface (custom device, MICRORISC VID & PID)
- I/O and power supply interface via single row connector
- 2 pushbuttons, 2 LEDs
- Powered via USB connector
- Multiple devices controlled by IQRF IDE on single PC
- Firmware upgradeable from IQRF IDE

Simplified circuit diagram



Electrical specifications

Power supply:	
Supplied from USB:	5.0 V
Supplied via external power connector:	3.6 V – 5 V. 3.6 V battery recommended. USB must be disconnected in this case.
I/O and SPI voltage levels:	3.3 V
Operating temperature:	0 °C to +70 °C -40 °C to +85 °C (Industrial) available on request
Size:	48 mm x 27 mm x 11 mm
Weight:	10 g

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:	5.5 V
Storage temperature:	-40 °C to +85 °C

Control and indication

Pushbuttons

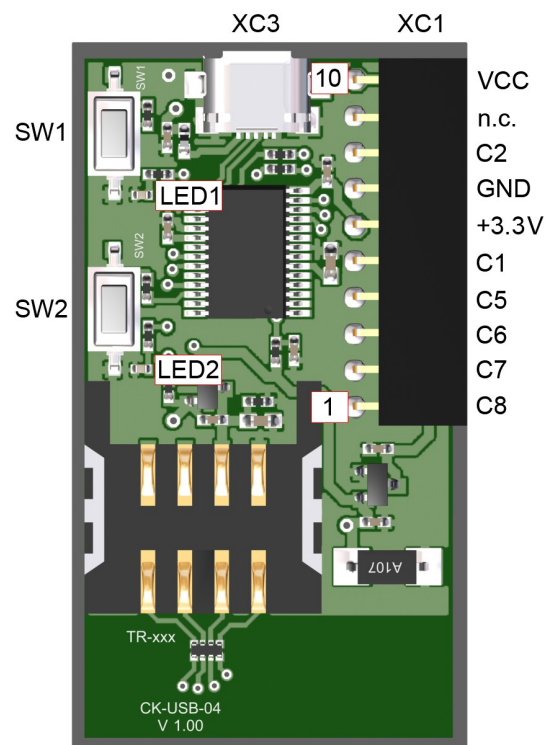
- SW1 – C5 pin control: pushed => C5 = log. 0. During SPI communication this pushbutton is ignored.
- SW2 – TR module power off (useful for TR reset and restart the application)

LEDs

- Both LEDs flash once after power on.
- While a pushbutton is pressed the appropriate LED is on.
- LED1 flashes 3x after the *Indicate USB device* command (key *F11*) in respective IQRF IDE (to identify the kit in case of multiple IQRF USB devices or IDE instances).
- LED2 flashes once after TR reset induced by IQRF IDE or pushbutton SW2.
- Complementary LED1 and LED2 flashing in ~1 s period means missing firmware (see *Upgrade* below).

Connectors

- USB: micro USB
- SIM: Supported TR types see table *Compatibility* below.
- XC1: I/O / SPI / power interface. Female connector for square 0.635 mm, 2.54 mm pitch pins



Caution: The TR module can be plugged / unplugged into / from the SIM connector while powered off only.

Tip: Use the SW2 pushbutton for this. The TR module is not powered while the SW2 pushbutton is held.

Application

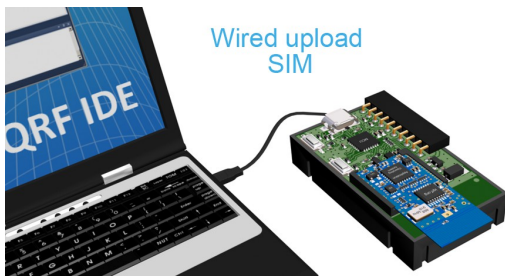
Installing

See the IQRF Quick Start guide, IQRF IDE Help and IQRF application examples (www.iqrf.org/examples).

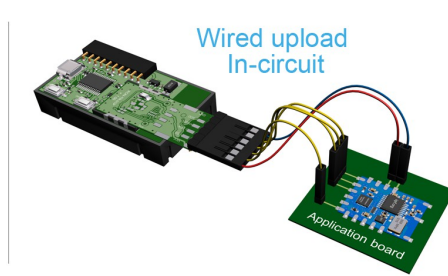
Upload

CK-USB-04 enables to upload an application code into IQRF TR modules in following ways:

- Wired upload
 - TR module plugged in the SIM connector – see the IQRF Quick Start guide.
 - TR module assembled in user equipment (in-circuit upload via the KON-TR-01P kit), see the KON-TR-01P User's guide.
- Wireless upload (RFPGM – RF Programming™) – see IQRF OS User's guide (Appendix RFPGM) and IQRF IDE (*Programming* → *RF programmer*).



TR plugged in a programmer



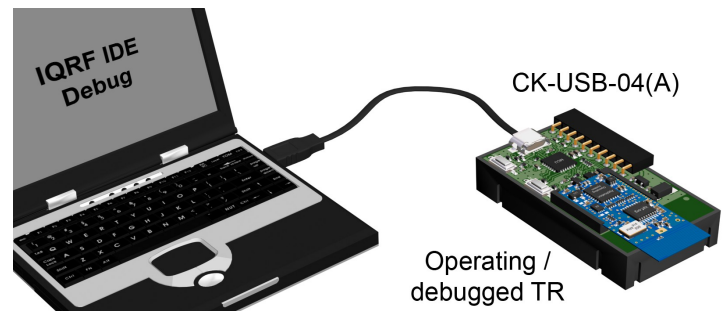
TR soldered in user equipment



TRs placed even in final locations

Debug

See the IQRF Quick Start guide, IQRF IDE Help and IQRF application example E06-RAM (www.iqrf.org/examples).



Compatibility

Supported TR module types when plugged in SIM connector:

Type	Supported
TR-52D	Yes
TR-54D	–
TR-55D	Yes
TR-56D	–
TR-58D-RJ	–
TR-52B	Yes
TR-53B	Yes

Firmware upgrade

CK-USB-04 firmware can be upgraded by the user with new versions possibly released by the IQRF manufacturer using the IQRF IDE 4.14 or higher, menu *USB Device* → *USB Device Manager* → *Update FW*. See IQRF IDE Help.

Product information

Pack list

- CK-USB-04 IQRF programmer & debugger (without a TR-module)

Recommended options

- CAB-USBABMICRO-100 Standard microUSB communication cable (USB A ↔ micro USB)
- KON-TR-01P In-circuit upload adapter
- KON-RJ-01 Interconnecting kit to upload TR modules with RJ-45 connector, e.g. TR-58DA-RJ

Ordering code

- CK-USB-04 IQRF development kit

Document history

- 140120 Revised, updated for new TR modules, KON-TR-01P and IQRF IDE. Document file renamed from MNCKUSB04_110621 to User_Guide_CK-USB-04_140120.
- 110621 Minor bug in circuit diagram corrected.
- 110419 Absolute maximum ratings added.
- 110210 First release.

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Quality management

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