

DDC-76D-01

Development kit

User's guide

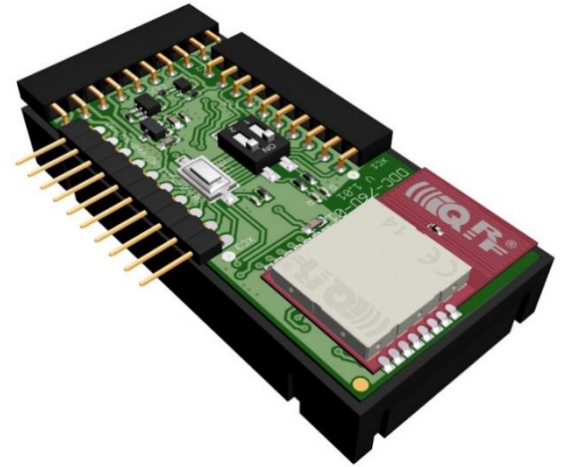


Description

DDC-76D-01 is a kit for solderless development of TR-76D transceiver applications. It contains TR-76DA transceiver and the environment needed for efficient operation, testing and debug. All TR pins are accessible via connectors.

DDC-76D-01 is intended to be used with the CK-USB-04A or DK-EVAL-04A development kits and allows to connect up to two DDC development kits (DDC-IO-01 for comfortable managing TR I/O pins, DDC-SE-01 sensor kit or DDC-RE-01 relay kit).

DDC-76D-01 is equipped with DCTR-76DA transceiver. For simplicity, the abbreviation TR instead of DCTR is often used further on throughout this document.



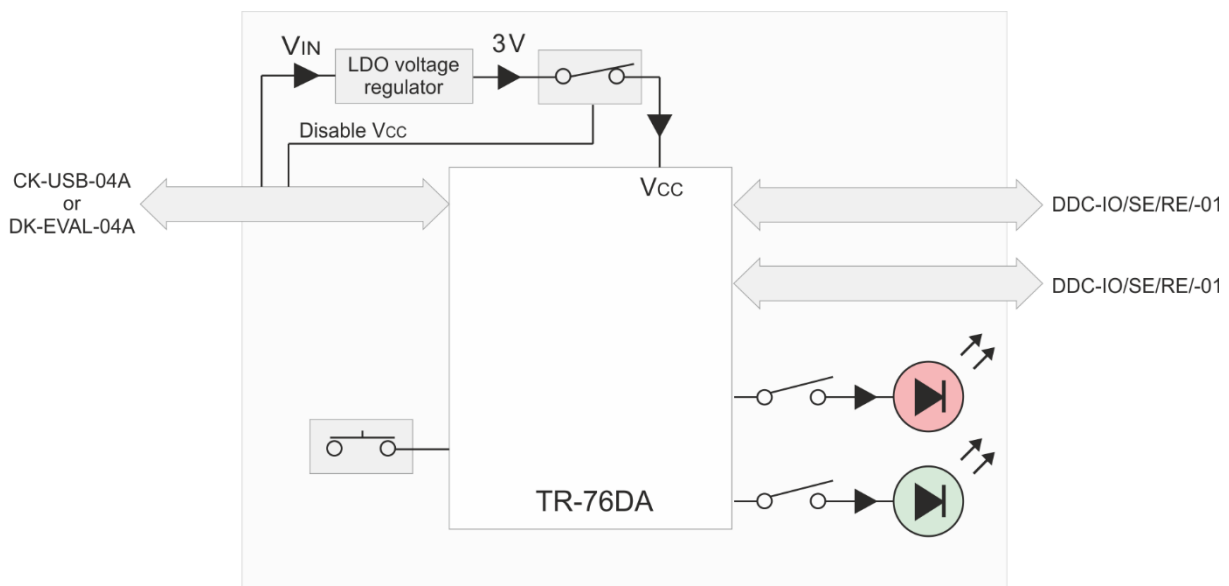
Key features

- Internal DCTR-76DA transceiver
- +3 V LDO voltage regulator
- 1 pushbutton to control the transceiver
- 2 LEDs controlled from the transceiver, disconnectable
- 1 LED indicating the pushbutton pressing
- All I/O pins protected by serial resistors
- All I/Os accessible via connectors
- Connectable to CK-USB-04A for TR upload, debug and operation or to DK-EVAL-04A for portable operation
- Connectable up to two DDC development kits (DDC-IO-01 for comfortable managing TR I/O pins, DDC-SE-01 sensor kit or DDC-RE-01 relay kit)
- Supplied from CK-USB-04A or DK-EVAL-04A

Applications

- Development with SMT transceivers TR-76Dx
- Solderless development and prototyping

Block diagram



Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

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Electrical specifications

Typical values unless otherwise stated

Supply voltage (V_{IN})	3.1 V to 5.5 V
Internal regulated supply voltage (V_{CC})	$+3.0\text{ V} \pm 3\%$ ($V_{IN} > 3.1\text{ V}$)
Input voltage on TR I/O pins	0 V to V_{CC}
Supply current	
TR in Sleep mode, all LEDs off	2.9 μA (typical)
Additional supply current	
TR active	See TR-76D datasheet.
LEDs active	About 2 mA per LED. Rough value for brief guidance only.
Operating temperature ¹	-40 °C to +85 °C
Size (L x W x H)	48 mm x 27 mm x 12 mm

Note 1: RF range may change with lower temperature. Frost, condensation or humidity over 85% may disable transceiver functionality. The suitability should be tested in final application.

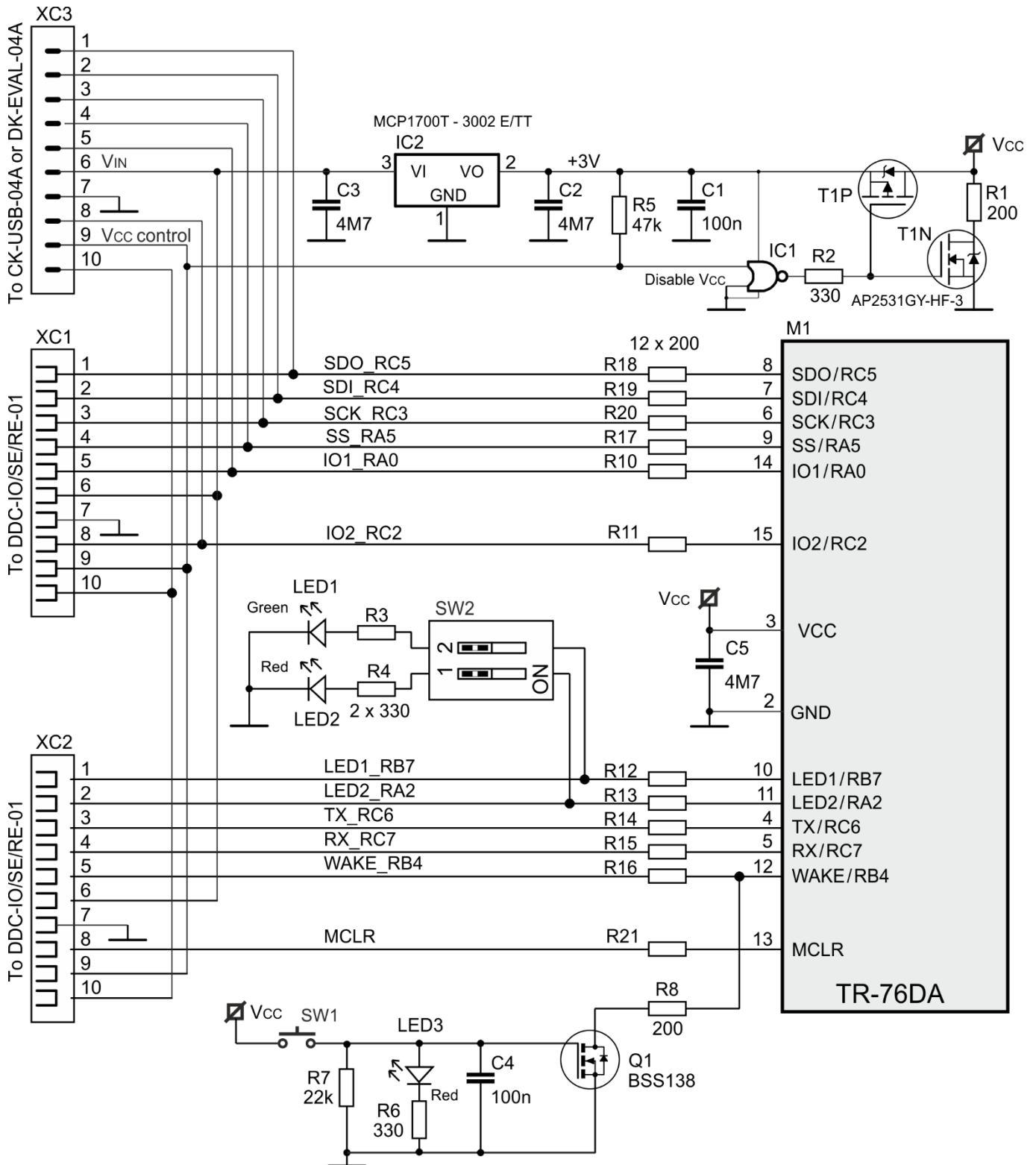
Caution: Electrostatic sensitive device. Observe appropriate precautions for handling.

Absolute maximum ratings

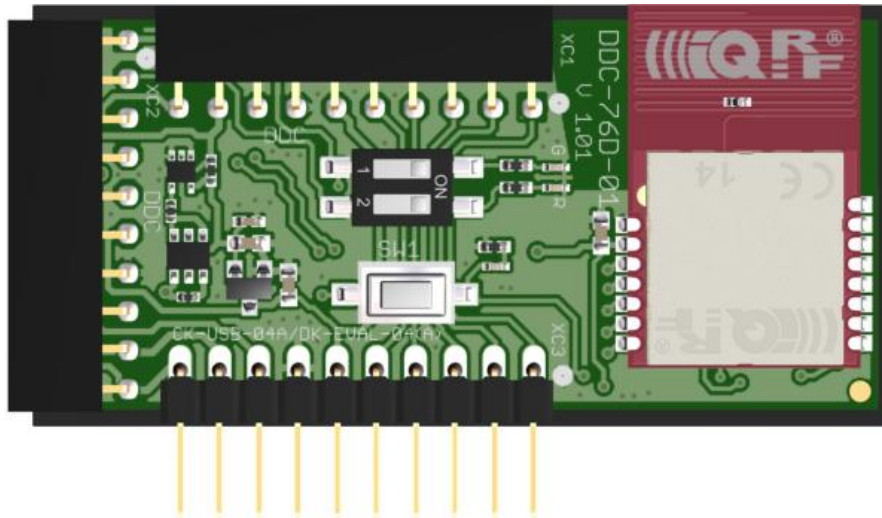
Stresses above listed maximum values may cause permanent damage to the device and affect device reliability. Functional operation at these or any other conditions beyond those specified is not supported.

Supply voltage (V_{IN})	6 V
Voltage on TR I/O pins (configured as inputs) vs. GND	-0.3 V to ($V_{CC} + 0.3\text{ V}$)
Storage temperature	-40 °C to +85 °C
Ambient temperature under bias	-40 °C to +85 °C

Schematic



Hardware



Top view

Power supply

DDC-76D-01 should be supplied from CK-USB-04A or DK-EVAL-04A development kit connected via connector XC3. It is not intended to be supplied from other power sources. LDO voltage regulator MCP1700T-3002E/TT by Microchip converts the internal supply voltage to 3 V.

If CK-USB-04A is used, IQRF IDE development environment controls connection to internal supply voltage (to perform TR upload). If DK-EVAL-04A is used (and switched on), the DDC-76D-01 is supplied continually.

RF transceiver

TR-76DA with on-board antenna. Refer to the TR-76D datasheet.

Pushbutton

User pushbutton is completely controlled from the application inside the transceiver. It is intended for task such as RFPGM (wireless upload) termination, bonding initialization, wake-up from TR sleep, MCU interrupt or any other user-specific functionality.

Pressing the pushbutton is indicated by red LED (LED3).

System LEDs

LED1 (green) and LED2 (red) can be connected to the transceiver by the dipswitch. They are managed by IQRF OS (LEDG and LEDR) and DPA framework (if applied), and can also be handled by the user application.

Connectors XC1 and XC2

Connectors XC1 and XC2 are intended for connection to DDC kits, a user development board or some user equipment.

DDC kits

DDC-IO-01, DDC-SE-01 or DDC-RE-01 can be connected via connectors XC1 or XC2. All I/O pins (protected by serial resistors) are accessible at these two connectors. Note that the Q13 pin of the transceiver is input only.

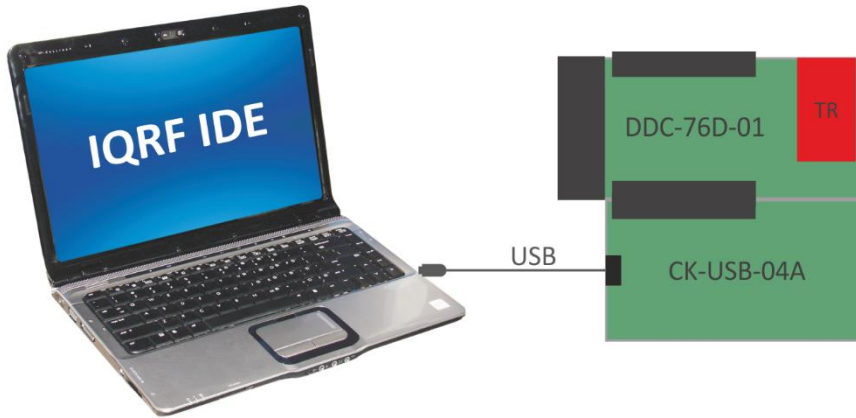
Some limitations resulting from factual circuitry of DDC kits should be taken into account. E.g., relay 2 can not be controlled if DDC-RE-01 is connected via connector XC2.

Application

Upload

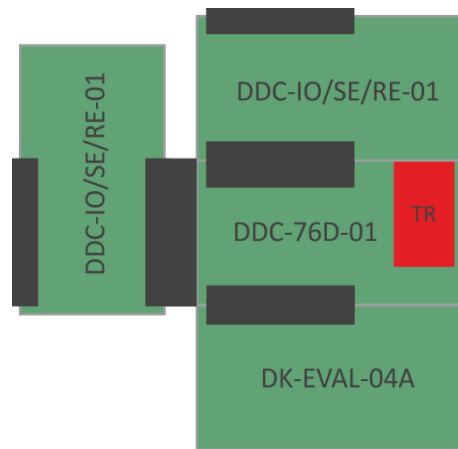
TR programming (upload):

- Wired upload: See the picture below and the CK-USB-04A User's guide.
- Wireless upload: See the IQRF OS User's guide, Appendix *RFPGM – RF programming™*.



Operation

Example of using with DK-EVAL-04A and two DDC kits:



Application software

See IQRF Quick start guide and other documentation relating to applications of IQRF transceivers.

Product information

Pack list

DDC-76D-01 Development kit for TR-76Dx transceivers, with DCTR-76DA soldered.

Recommended options

CK-USB-04A IQRF programmer, debugger, development and test kit
DK-EVAL-04 IQRF development kit for end wireless devices
DDC-IO-01 IQRF development kits for managing I/Os, 2 pcs
DDC-SE-01 IQRF sensor development kit
DDC-RE-01 IQRF relay development kit

Ordering code

DDC-76D-01

Document history

- 160201 First release.

Sales and Service

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Partners and distribution

Please visit www.iqrf.org/partners.

Quality management

ISO 9001 : 2009 certified

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EN 300220-1 V2.4.1:2012, EN 300220-2 V2.4.1:2012 and VO-R/10/05.2014-3.

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