

CDC

Implementation in IQRF USB devices

User's guide



Smarter wireless. Simply.

CDC class

Devices equipped with the firmware supporting the USB CDC class creates virtual serial port enabling to communicate with PC via the USB interface like through a standard COM port. Common PC terminals can be used on PC side. After first connection USB driver is requested. It is available to download from www.iqrf.org/downloads.

This document describes CDC implementation in IQRF platform.

Communication

Communication is based on commands sent from PC and USB device responds with answers. Additionally, USB device can send asynchronous messages as well.

Format

Every command begins with the ">" character. Every answer and asynchronous message begins with the "<" character. It allows easy orientation in directions if PC terminal is used. Every packet is terminated with the CR character (CR LF is also accepted).

Command:

> [body] [CR]

Answer:

< [body] [CR]

Message:

< [body] [CR]

[body] – body of the command

[CR] – Carriage Return (value 0x0D)

General error

In case of syntax error or not supported command general error message is issued.

Answer:

<ERR [CR]

Communication test

Command:

> [CR]

Answer:

<OK [CR]

Commands

Reset USB Device

5 s after receiving of this command USB device is reset. This delay allows to disconnect USB communication on PC side in time.

Command:

```
>R[CR]
```

Answer:

```
<R[CR]
```

Reset TR Module

TR module inside the USB device is reset.

Command:

```
>RT[CR]
```

Answer:

```
<RT:OK[CR]
```

Get USB Device Info

Returns USB device identification.

Command:

```
>I[CR]
```

Answer:

```
<I:[type]#[version]#[id][CR]
```

```
    [type]    - device type (in text format)
    [version] - firmware version (in text format)
    [id]      - serial number (in text format)
```

Example:

```
>I[CR]
```

```
<I:GW-USB-03#02.01#03010000[CR]
```

```
    [type]    - GW-USB-03
    [version] - 2.01
    [id]      - 0x03010000
```

Get TR Module Info

Returns identification of TR module inside the USB device.

Command:

```
>IT[CR]
```

Answer:

```
<IT:[module_info][CR]
```

```
    [module_info] - description see IQRF OS User's guide (chapter Identification → Module Data)
```

Connectivity Indication

USB device issues an acoustical or optical indication.

Command:

```
>B[CR]
```

Answer:

```
<B:OK[CR]
```

Get Status

Returns information about current status.

Command:

```
>S[CR]
```

Answer:

```
<S:[spi_status][CR]
```

[spi_status] - value according to the table in IQRF SPI User's guide (chapter SPI status)

Send Data

Sends data to TR module inside the USB device.

Command:

```
>DS[dlen]:[data][CR]
```

[dlen] – data length (number of bytes in the [data] field), in hexadecimal
– range 1 to 41

[data] – actual data for TR module
– number of bytes must correspond to [dlen]

Answers:

```
<DS:OK[CR]
```

– data successfully sent to TR module

```
<DS:ERR[CR]
```

– communication failure (checksum error)

– [dlen] out of range

– data length mismatch (number of bytes in [data] does not correspond to [dlen])

```
<DS:BUSY[CR]
```

– SPI bus is busy, communication is just running

– TR module is not in communication mode

Example:

```
>DS[0x05]:Hello[CR]
```

```
<DS:OK[CR]
```

Received Data

Asynchronous message sent by the USB device after data receipt from TR module.

Messages:

```
<DR[dlen]:[data][CR]
    [dlen] - data length (number of bytes in the [data] field), in hexadecimal
            - range 1 to 41
    [data] - actual data from TR module
<DR:ERR[CR]
    - communication failure (checksum error)
```

Example:

```
<DR[0x05]:Hello[CR]
```

Switch to USB Custom Class

USB class is switched to Custom and the device is reset 5 s after this command is issued. This delay allows to cancel USB communication on PC side. Refer to user's manual of given USB device how to return to CDC.

Command:

```
>U[CR]
```

Answer:

```
<U[CR]
```

Supported devices

- GW-USB-03 with FW v2.01 or higher. The *Switch to USB Custom Class* command is supported from FW v2.03.
- GW-USB-04 with FW v1.20 or higher
- GW-USB-03A with FW v1.00 or higher

Document history

110526	<i>Switch to USB Custom Class</i> command added.
110318	First release.

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