

CATS-01

IQRF Service tool

Firmware v0.43

User's guide



Smarter wireless. Simply.

Description

CATS-01 is a service and debug tool to analyze RF signal. It allows to extend functionality by future firmware upgrades.

CATS-01 is a fixed non-generic device. No parts can be programmed by the user.



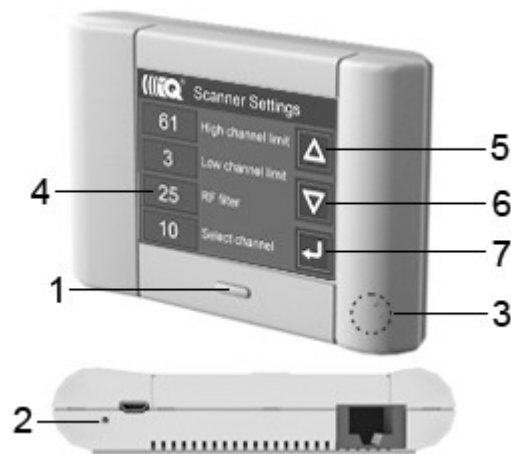
Applications

- IQRF application debug and development
- RF scanner
- Network installation hints for channel choice

Key features

- Based of the GW-QVGE-01 gateway
- 868 MHz ISM band scanner displaying activity in individual channels
- SD Flash memory card inside
- Firmware upgrade supported

Parts and controls



Hardware

Main unit is based on the touchscreen oriented **GW-QVGE-01** gateway with TR module TR-52BA inside.

Control and indication

Pushbutton below the screen (1)

- | | |
|--------------------------------|---|
| • Short press (less than 2 s) | Return to main menu (in any condition) |
| • Long press (longer than 2 s) | Switch to power saving Sleep mode (requires confirmation) |
| • Press in Sleep mode | Waking-up from Sleep and invoking the application program |

Reset pushbutton (2)

Press (by a pin) during operation or Sleep invokes restart of the device. The bootloader is activated first. If there is a different application program on SD card inside it is uploaded and executed otherwise the original program is run. See *Firmware upgrade* below.

Power supply indication

Power supply and internal accumulator condition is indicated by dual color LED inside the case (3) and a buzzer. Following states are recognized:

- | | |
|---------------------------------|---|
| • Green LED flash in 3 s period | Supplied from external power source, internal accumulator is charged. |
| • Red LED flash in 3 s period | Supplied from internal accumulator, voltage is higher than 3.5 V. |
| • Red LED flash in 0.5 s period | Supplied from internal accumulator, voltage is lower than 3.5 V. |
| • Warning sound in 10 s period | |
| • Warning screen for 3 s | Voltage dropped under 3.45 V. Device is just switched to sleep then. |

When powered from accumulator, battery icon on the top of main screen displays battery status (inner blue bar length corresponds to exhausting level).

Touchscreen edit boxes

Besides of physical control parts there are also control object displayed on the touchscreen. Numeric values are setup via edit boxes (4).

Then two methods are available:

- Click the edit box to highlight the parameter and make it accessible for change via arrow keys Up (5) and Down (6).
- Doubleclick the edit box to make the parameter accessible for change via numeric keypad.

The *Back* key (7) is used to return to previous screen.

SD card

- CATS-01 must be operated with inserted SD card containing license keys to access individual firmware parts for given device. If it is missing or data is corrupted only *System* is available in main menu.
- Additionally, SD card can be used to upgrade firmware (see below).
- SD card inside the device is accessible by a PC via USB as an external disk unit.

For more information about HW and parameters refer to the GW-QVGE-01 User's guide.

Software

Main screen menu items: *System* and *Scanner*.

System

This screen is intended for control and information functions regarding the device. Submenu items: About, TR module, GW Status and Date Time.

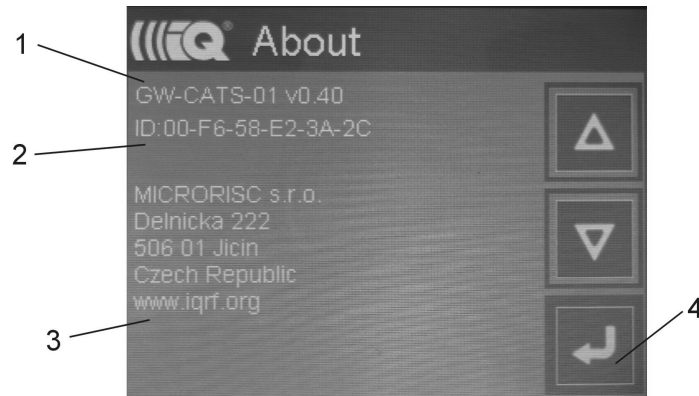
About

Fig. 1 – About

Detailed data concerning the device and the manufacturer:

- Item (1) Device type and firmware version
- Item (2) MAC address (unique for each device)
- Item (3) Manufacturer

Button (4) should be used to return to menu *System*.

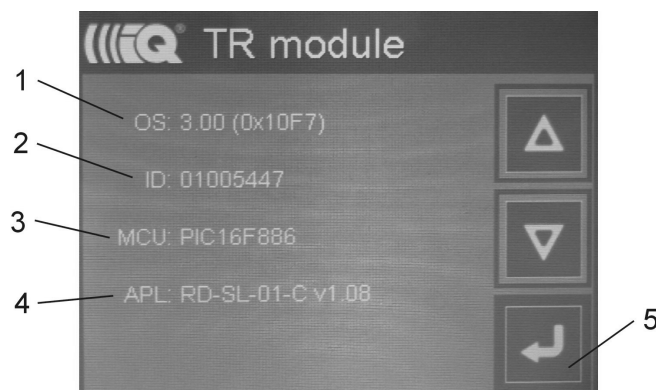
TR module

Fig. 2 – TR module

Detailed data concerning TR module inside:

- Item (1) Version of operating system built-in the TR module
- Item (2) TR module identification (unique for each TR)
- Item (3) MCU type inside the TR
- Item (4) Type and version of firmware currently uploaded in TR module (It depends on the last selected function of CATS-01)

Button (5) should be used to return to menu *System*.

GW Status

- Temp Temperature sensor connected or not
- Power External power source connected or not
- Accu Accumulator voltage
- Acc Inertial sensor outputs (x, y and z values)
- SD card Inserted or not

Date Time

Internal real-time clock/calendar data is displayed and can be changed in a standard way. This menu item can be invoked also by click to the area where time and date is displayed on main screen.

Sound

Acoustic indication can be enabled/disabled by checkbox *Beep*.

Display

Backlight times can be setup separately if powered externally or from the accumulator.

Scanner

Scanner is intended to monitor RF communication in 868 MHz band. This band is separated to 62 channels (0 to 61). It is displayed whether a communication is running in individual channels and signal strength (current as well as the maximal detected one).

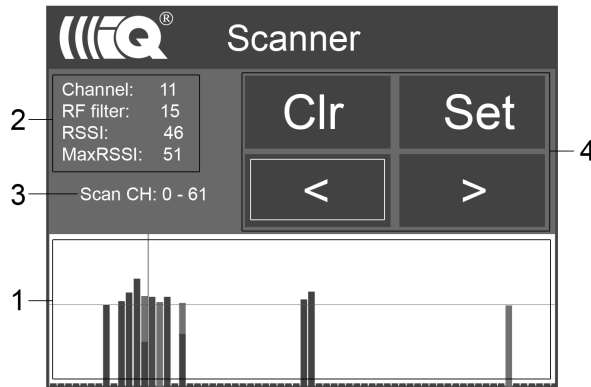


Fig. 3 – Scanner main screen

The screen is separated to following parts:

- RF activity in individual channels (1). In different colors the following data is displayed:
 - Light blue Max. RSSI detected in the channel
 - Dark blue Current RSSI in the channel
 - Light red Max. RSSI detected in currently selected channel
 - Dark red Current RSSI in currently selected channel
 - Black horizontal line RF filter level defining minimal incoming signal strength to be detected by the scanner.
 - Red vertical line Currently selected channel
- Details about currently selected channel (2)
 - Channel Number of selected channel
 - RF Filter RF level to filter incoming signal.
 - RSSI Current RSSI value in selected channel
 - Max. RSSI Maximal RSSI value detected in selected channel
- Scan CH Range of scanned channels (3)
- Area with four control buttons (4):
 - "<" and ">" Channel selection (to display details)
 - Clr To clear stored and displayed maximal RSSI values. The same is achieved by double click to the field (1).
 - Set Switch to the screen for setting of measurement parameters. Range of scanned data, RF filter and current channel can be specified here.

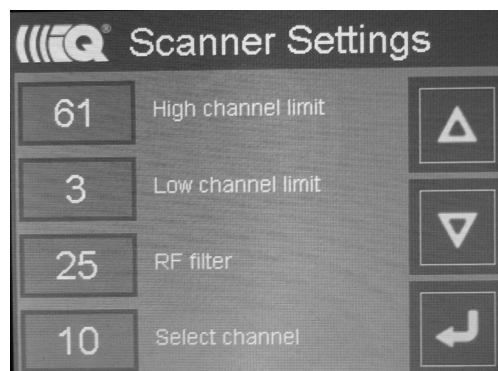


Fig. 4 – Scanner main screen

Firmware upgrade

CATS-01 firmware can be upgraded by the user with a new version released by the manufacturer. To accomplish this, follow the steps below:

- Download the new firmware version (the `gwap1_fw.hex` file) from the product web page.
- Connect CATS-01 to PC via micro USB cable. Internal SD card should be detected as a disk unit.
- Copy the firmware to the SD card to the `GWSYSTEM` directory. The file name must remain unchanged.
- Disconnect the device from the PC and reset the device. New FW should be detected and upgraded automatically.

Functionality extension

CATS-01 is designed to support various functionality depending on the license. Thus, if there are any optional parts in given firmware it is possible to make it accessible by changing the license keys.

To accomplish this, follow the steps below:

- Ask the manufacturer for license keys to chosen option for your device (specified by the MAC address).
- Connect CATS-01 to PC via micro USB cable. Internal SD card should be detected as a disk unit.
- Copy the license keys to the SD card to the `GWSYSTEM` directory.
- Disconnect the device from the PC and reset the device. New functionality should be made accessible automatically.

Product information

Pack list

- GW-QVGE-01 with the CATS-01 firmware programmed
 - SD connector and SD Flash memory card included
 - TR-52BA transceiver module inside
 - Accumulator (soldered)
- Power source TY-A6-microUSB (5V DC, 500 mA, stabilized, with micro USB connector)

Recommended options

- CAB-USBABMICRO-100 Micro USB cable

Ordering code

- CATS-01 IQRF debug and service tool

Document history

- 110506 First release

Sales and Service

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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)



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