USER GUIDE
GSM modem
iRZ MC52iWDT

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1. Introduction

1.1. Document description

This manual is intended for experienced PC users. It describes the device and the operation of the GSM modem iRZ MC52iWDT.

1.2. Service data

Document version		Issue date	
2.12		08.30.2013	
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1.3. Safety rules

Restrictions on the use of the device near other electronic devices:

- Turn the modem off in hospitals or when located near medical equipment such as pacemakers, hearing aids and so on. Interference for medical equipment may occur
- Turn the terminal off when on an airplane. Take measures to avoid accidental turning on
- Turn the modem off in the vicinity of gas stations, chemical plants, and places where demolition work is conducted. Interference for technical devices may occur
- At a close range, the modem may produce interference for television sets and radio transmitters

Maintenance requirements:

- Protect the modem against external hazards (high temperatures, caustic chemicals, dust, water and so on)
- Keep the modem safe from blows, falls, and strong vibrations
- Do not attempt to take apart or modify the modem on your own. Such actions will void your warranty

Note: Make sure you follow the operation manual for this device. Improper use of the device will disqualify your warranty.

2. General Information

2.1. Purpose

iRZ MC52iWDT modem is an industrial GSM modem for receiving and transmitting data, text messages and faxes. It is perfectly suited both for providing mobile access to the Internet and for industrial applications including telemetry, wireless data collection from sensors, remote monitoring, control, and signaling.

The modem is controlled by standard AT-commands. In order to enable it to track the status of the connection, the terminal is equipped with LED.

The modem possesses a function of unconditional reboot. The reboot interval depends on the modem's model and constitutes either 12 or 24 hours.

2.2. Set

The set of the iRZ MC52iWDT GSM modem includes:

- MC52iWDT modem
- Factory package

2.3. Features

Key features:

- Frequency bands: GSM 900/1800MHz
- Output power:
  - 2W (class 4 for EGSM 900)
  - 1W (class 1 for GSM1800)
- GPRS class 10
- TCP/IP stack accessed via AT-commands
- MS class B
- CSD up to 14.4kbps
- USSD
- SMS
- Voice transmission
- Fax group 3, class 1

Power:

- Power supply from 9 to 30V
- Consumption current not exceeding:
  - with the supply voltage of +12V — 200mA
  - with the supply voltage of +24V — 100mA

Physical characteristics:

- Dimensions not exceeding 69x75x26 mm
- Weight not exceeding 100g
- Operating temperatures from -40°C to +65°C
- Storage temperatures from -50°C to +85°C

Interfaces:

- TJ6-6P6C power connector for powering the modem, launching and shutdown
- TJ-4P4C audio connector for connecting the audio equipment
- DB9 connector (female) for connecting the communication cable with RS232 interface
- FME Jack (male) for connecting the GSM antenna

2.4. Appearance

MC52iWDT modem is a compact device in a plastic case. Its appearance is displayed on Fig.2.4.1 and Fig.2.4.2:
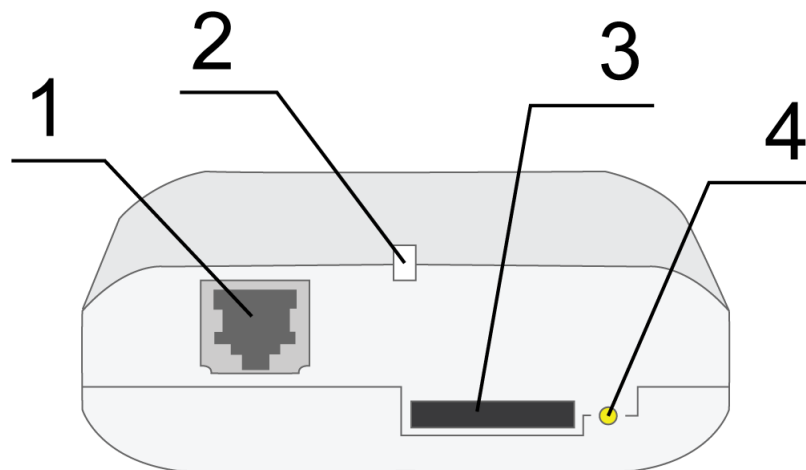
Fig. 2.4.1. Front view
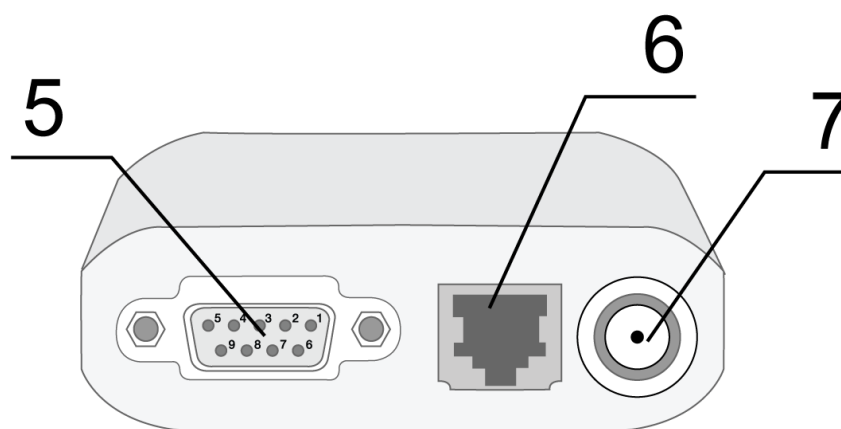
Fig. 2.4.2. Back view

The numbers on Fig. 2.4.1 and Fig. 2.4.2 stand for:

1. Audio connector for connecting the audio equipment
2. Network LED
3. SIM card holder
4. SIM card holder ejector button
5. DB9 connector (female) for connecting the RS232 communication cable
6. Power connector
7. FME Jack (male) for connecting the GSM antenna

The unconditional reboot interval is set different for two different models of this modem: 12 or 24. The modem's model can be determined using the label located on the bottom side of the modem. You can see the labels of different models of the modem on Fig. 2.4.3 and Fig. 2.4.4. The part of the label that indicates the reboot interval is circled in red.
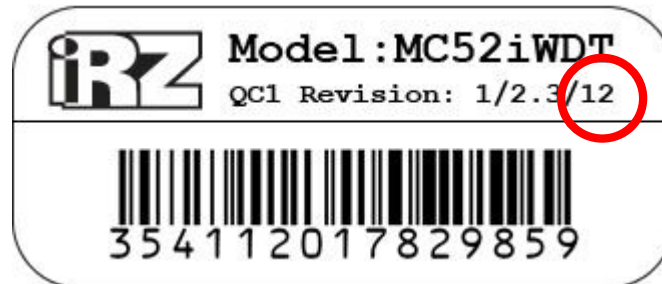
Fig. 2.4.3. Modem label with the reboot interval set to 12
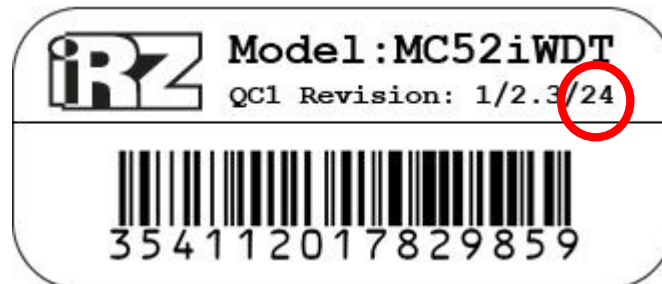
Fig. 2.4.4. Modem label with the the reboot interval set to 24

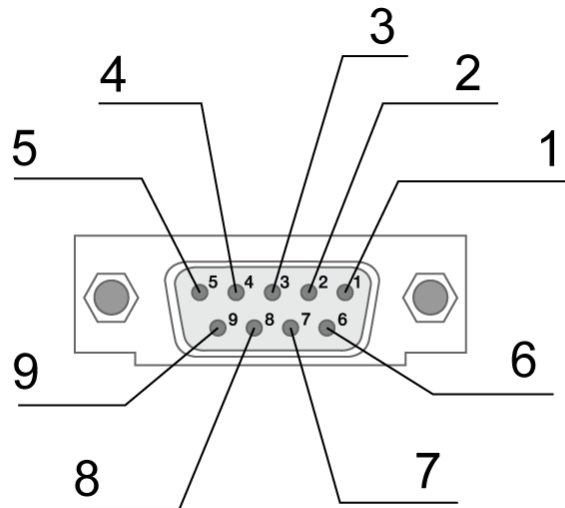## 2.5. Interfaces

2.5.1. DB9 Connector (RS232)

This connector is used for connecting the modem to the control device using the RS232 exchange protocol.
Factory settings of the port: speed is auto defined, 8-N-1.

The AT-commands are used to control the modem operation (see the module description). Please see the external look of the connector on Figure 2.5.1:

Fig. 2.5.1. DB9 connector

Table 2.5.1: Using DB9 connector pins

Pin	Signal	Direction	Purpose
1	DCD	Modem-PC	Data Carrier Detect
2	RXD	Modem-PC	Received Data
3	TXD	PC-Modem	Transmitted Data
4	DTR	PC-Modem	Data Terminal Ready
5	GND	General	Common Ground
6	DSR	Modem-PC	Data Set Ready
7	RTS	PC-Modem	Request to Send
8	CTS	Modem-PC	Clear to Send
9	RI	Modem-PC	Ring Indicator

The purpose of pins is consistent with the serial interface to ITU-T V.24 Interchange Circuits DCE.

The length of the cable is not to exceed 1.8 m. It is recommended to set data transfer speed that does not exceed 115200 bit/s.
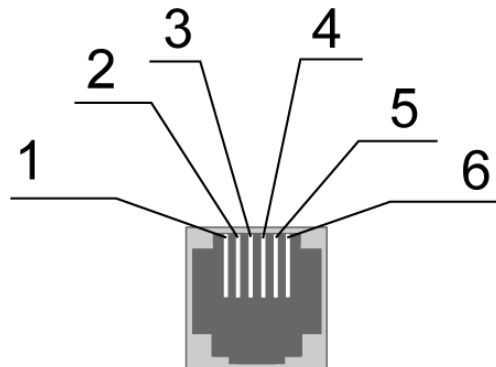
Attention: RS232 standard (COM-port) does not support a "hot" connection.
To avoid damaging the COM-port of the modem connect and disconnect the device at least 5 seconds after the power of the connecting devices has been turned off.

2.5.2. Power connector

The connector is used to power the device.

Fig. 2.5.2. Power connector

Table 2.5.2: Using connector power pins

Pin	Signal	Purpose
1	+ 12V	The positive pole of DC supply voltage. Fused circuit and overvoltage protection (when input voltage of over 30V is applied) and reverse polarity
2	Not used	
3	Not used	
4	Not used	
5	Not used	
6	GND	Ground

2.5.3. Audio connector

The connector is used to connect the audio equipment.
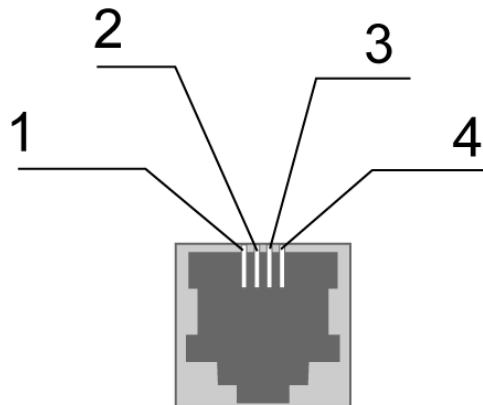
Fig. 2.5.3. Audio connector

Table 2.5.3: Using audio connector pins

Pin	Signal	Purpose
1	MICP	Non-inverted microphone input and microphone powering
2	SPKP	Non-inverted headphone output
3	SPKN	Inverted headphone output
4	MICN	Inverted microphone input

2.6. Modem status LED

LED is used to indicate the connection status. This function can be controlling by a corresponding AT-command (AT^SSYNC=1 — LED mode on; AT^SSYNC=0 — LED mode off). By default, AT^SSYNC=1.

Table 2.6.1: Connection status display

LED mode	Conditional indication display	Operation mode
Turned off	○	Modem is turned off or indication is shut down, sleep mode, power-saving mode
600ms on / 600ms off	●●●●●●○○○○○○	Modem is not logged to the network
75ms on / 3s off	●○○○○○○○○○…○	Modem is logged to the network
75ms on / 75ms off / 75ms on / 3s off	●○●○○○○○○○…○	GPRS connection is activated
500ms on / 50ms off	●●●●●○	Data transfer in progress
Permanently turned on	●	Voice call, CSD

3. Connecting and configuring

3.1. Connecting

Only individuals with specialized technical training and those who have studied the product specifications are permitted to assemble (install) the modem.

Before connecting the device install the SIM card into the modem (the SIM card must be unlocked). The SIM card must be connected and removed when the power is turned off. In order to install the SIM card do the following:

- Eject the SIM holder by pressing the SIM card tray ejector button (Fig. 2.4.1)
- Place the SIM card into the SIM card tray
- Insert the SIM card holder with the SIM card into the modem

Be careful when installing the SIM card.

Connect the GSM antenna and the RS232 commuting cable. Power the modem through the power connector or the umbilical connector (Fig. 2.4.2). The frequent blinking of the green LED indicates that the modem is turned on (Table 2.6.1). Remove the PIN code of the SIM card to complete automatic online registration. After the registration is complete the modem goes into the working mode and green LED blinks less frequently.

> **Note:** GSM antenna, the commuting cables and the power supply are not included in the set.

3.2. Control, rebooting, and connecting

The modem is controlled by standard AT-commands. You can download the description of the AT-commands at www.irz.net.

The modem can be rebooted using one of the following ways:

- Program method using the AT-commands
- Eight transitions of the DTR COM port line into a passive state (DTR < 3V), the duration of the impulses and pauses between the impulses should remain within the range of 100-500ms
- Temporary power shutdown

The modem can be shut down using one of the following ways:

- Program method using the AT-commands
- Power shutdown.

When shutting down using the AT-commands, the modem goes into the sleep mode (minimal power consumption). The modem wakes up:

- When DTR line of COM port goes from "passive" to "active" mode

Switch-over of modem into power saving mode by using AT-command "AT+CFUN". For more detail see AT-commands description for the GSM module.

The modem has a function of absolute restart (power) GSM-module at intervals of 12 or 24 (depending on version). You can determine the interval for the label – see Section 2.4 of this manual.

4. Support

New document versions and software are available using:

St. Petersburg	
The company's website:	www.radiofid.ru
Phone number in St. Petersburg:	+7 (812) 318 18 19
E-mail:	support@radiofid.ru
Moscow	
The company's website:	www.digitalangel.ru
Phone number in Moscow:	+7 (495) 974 74 22
E-mail:	info@digitalangel.ru

Our support team is ready to assist you with any questions you might have when installing, configuring or solving issues with our equipment.