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Robocraze RC-A-642

Robocraze Tech Mini IOT-GA6 GPRS GSM Module User Manual

Model: RC-A-642 | Brand: Robocraze

Introduction

The Robocraze Tech Mini IOT-GA6 GPRS GSM Module is a compact and low-power development board based on the GPRS A6 chip. It is designed to enable GSM/GPRS network capabilities for various IoT and M2M applications, including data transmission via GPRS and SMS messages. This module facilitates communication with microcontrollers and Arduino boards through a UART interface, supporting standard AT commands for voice, text, SMS, and data functionalities.
Its compact size and efficient power consumption make it suitable for projects requiring reliable wireless communication, offering a cost-effective alternative to modules like SIM800 and SIM900.

Key Features

- **Baud Rate:** Operates at 115200bps, configurable via AT commands.
- **Versatile Integration:** Ideal for IoT projects, M2M applications, industrial automation, BMS projects, and home automation.
- **Low Power Consumption:** Achieves current consumption as low as 3mA in sleep mode.
- **Compact Design:** Features a compact size with power-saving techniques.
- **UART Communication:** Communicates with microcontrollers via UART port, supporting GSM 07.07, GSM 07.05, and Ai-Thinker enhanced AT Commands.

Module Overview

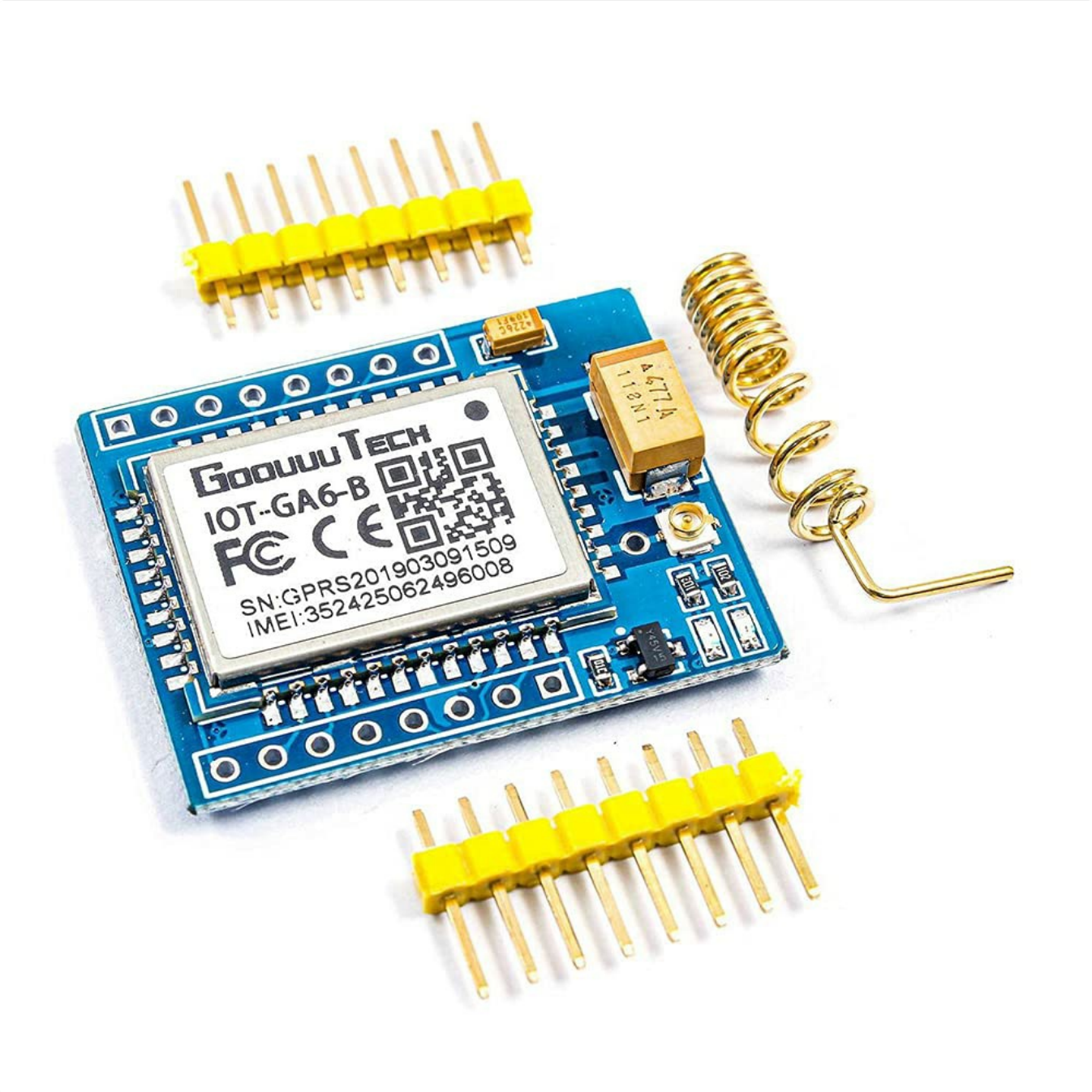


Figure 1: Top view of the IOT-GA6 GPRS GSM Module, showing the main chip, header pins, and included helical antenna.



Figure 2: Detailed view of the IOT-GA6-B chip, displaying the serial number (SN: GPRS201903091509) and IMEI (IMEI: 352425062496008). This unique identifier is crucial for network registration.

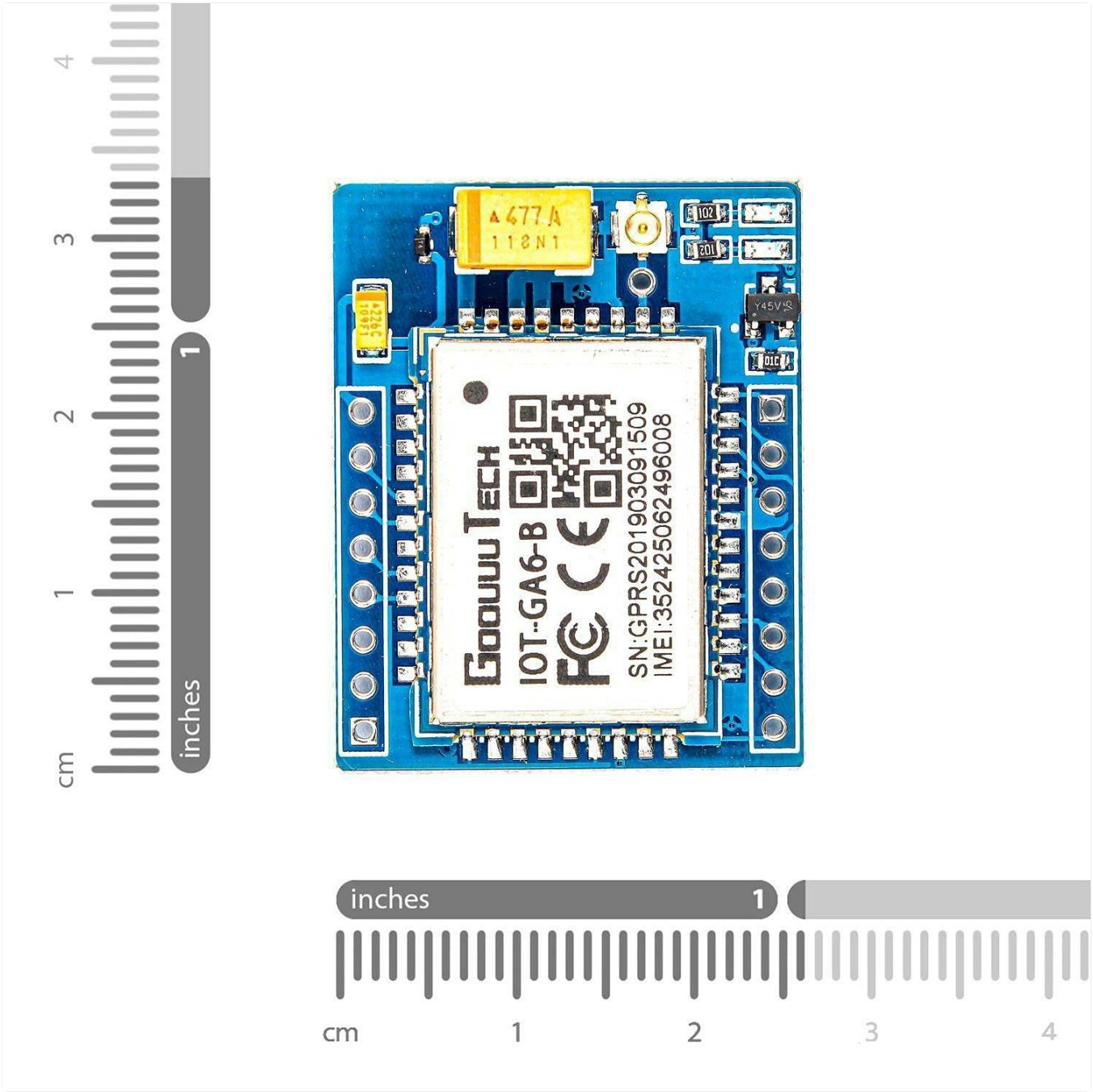


Figure 3: Bottom side of the IOT-GA6 module, highlighting the integrated micro SIM card holder. Ensure the SIM card is correctly inserted for network connectivity.

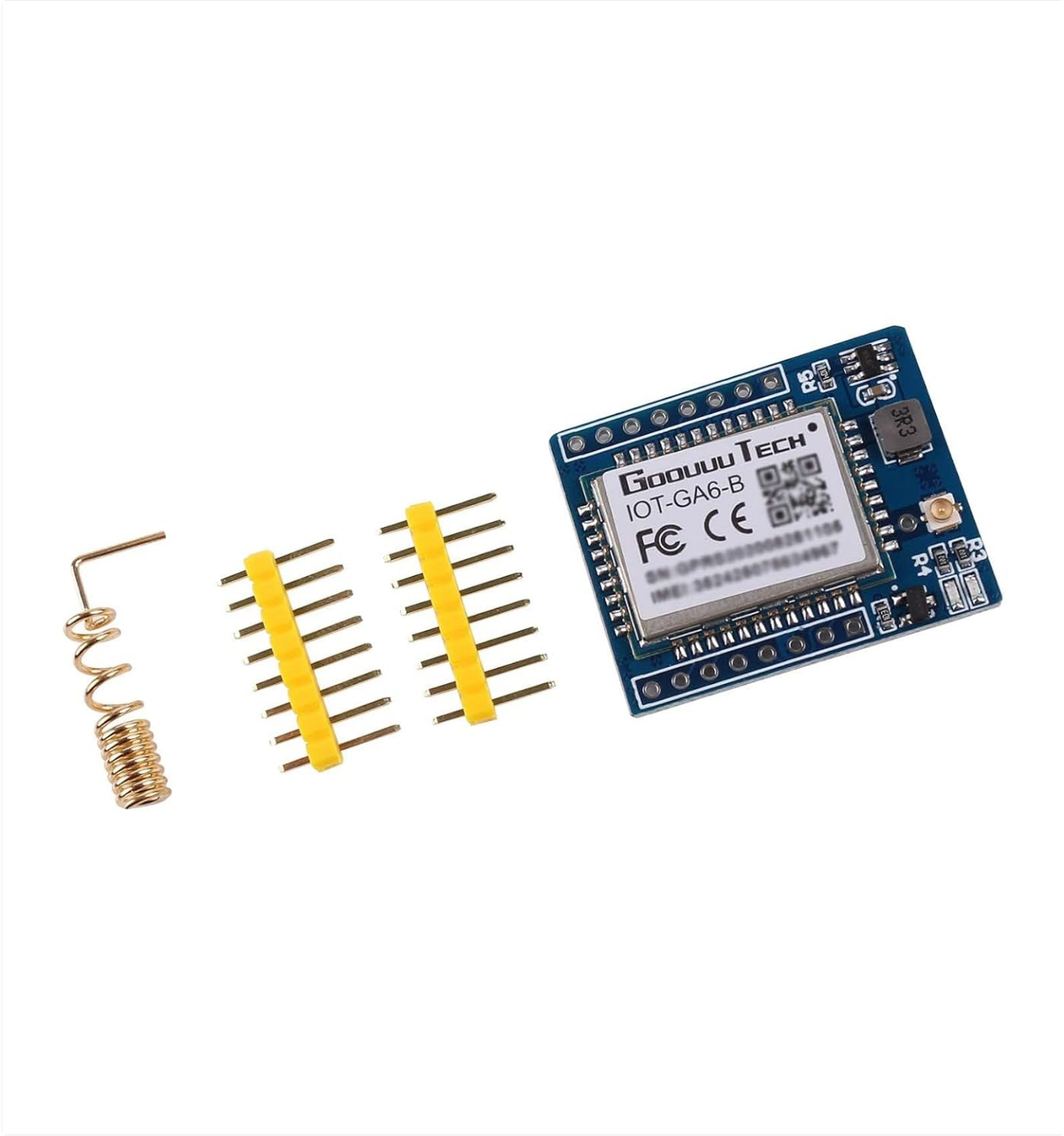


Figure 4: The IOT-GA6 module shown with a ruler, indicating its compact dimensions for integration into various projects.

Setup Guide

1. SIM Card Installation

Locate the micro SIM card holder on the bottom side of the module (refer to Figure 3). Gently slide your activated micro SIM card into the slot until it clicks into place. Ensure the SIM card is correctly oriented as indicated on the module. A properly inserted SIM card is essential for network registration.

2. Power Supply Connection

The module requires a stable power supply. Connect the appropriate voltage (typically 3.3V to 4.2V, refer to module pinout for exact specifications) to the VCC pin and connect GND to the ground of your power source. Ensure your power supply can provide sufficient current, especially during network registration and data transmission peaks.

3. UART Connection

Connect the module to your microcontroller (e.g., Arduino) or PC (via a USB-to-UART converter) using the UART pins:

- **TXD:** Connect to the RX pin of your microcontroller/converter.
- **RXD:** Connect to the TX pin of your microcontroller/converter.
- **GND:** Connect to the ground of your microcontroller/converter.

The default baud rate for communication is 115200bps. Ensure your microcontroller's UART is configured to match this baud rate.

4. Antenna Connection

Attach the provided helical antenna to the antenna connector on the module. A properly connected antenna is crucial for stable GSM/GPRS signal reception and transmission.

Operating Instructions

The IOT-GA6 module is controlled using AT (Attention) commands sent via the UART interface. These commands allow you to manage network connections, send/receive SMS, make/receive calls, and handle GPRS data.

Basic AT Commands (Examples)

- **AT:** Checks if the module is responding. Expected response:OK.
- **AT+CSQ:** Checks signal quality. Response indicates signal strength and bit error rate.
- **AT+CREG?:** Checks network registration status.
- **AT+CMGF=1:** Sets SMS message format to text mode.
- **AT+CMGS="<phone_number>":** Sends an SMS message. After sending this command, type your message and then send Ctrl+Z (ASCII 26) to send the SMS.
- **AT+CGACT=1,1:** Activates GPRS context.
- **AT+HTTPINIT:** Initializes HTTP service for web communication.

For a comprehensive list of AT commands and their usage, refer to the official GA6 AT Command Set documentation, which adheres to GSM 07.07 and GSM 07.05 standards, along with Ai-Thinker enhanced AT Commands.

Power Management

The module supports low-power sleep modes. To enter sleep mode and reduce current consumption (as low as 3mA), specific AT commands can be used. Consult the detailed AT command manual for power-saving mode activation and deactivation procedures.

Maintenance

- **Environmental Conditions:** Keep the module in a dry, dust-free environment. Avoid exposure to extreme temperatures, humidity, or corrosive substances.
- **Handling:** Handle the module by its edges to prevent damage to components or static discharge.
- **Cleaning:** If necessary, gently clean the module with a soft, dry, anti-static cloth. Do not use liquid cleaners or solvents.
- **Firmware Updates:** Periodically check the Robocraze official website or support channels for any available firmware updates. Follow the provided instructions carefully for any update procedures.

Troubleshooting

- **Module Not Responding (No "OK" to AT command):**
  - Verify power supply connections and voltage levels.
  - Check UART connections (TX/RX swapped?).
  - Ensure the baud rate of your microcontroller/converter matches the module's default (115200bps).
  - Confirm the module is powered on and not in a deep sleep state.
- **No Network Registration:**
  - Check SIM card insertion and ensure it is activated and has sufficient balance/plan.
  - Verify antenna connection.
  - Check signal strength using AT+CSQ. Move to an area with better network coverage if signal is weak.
  - Ensure the correct APN settings are configured for GPRS (if applicable).
- **SMS/GPRS Not Working:**
  - Confirm network registration (AT+CREG?).
  - Check SMS text mode setting (AT+CMGF=1).
  - Ensure GPRS context is activated (AT+CGACT=1,1).
  - Verify correct AT command syntax and termination (e.g.,Ctrl+Z for SMS).

Specifications

Attribute	Value
Brand	Robocraze
Model Number	RC-A-642
Connectivity Technology	UART, GSM/GPRS
Compatible Devices	Microcontrollers, Arduino boards, Personal Computers (via UART interface)
Processor Brand	ARM
Item Weight	40 g
Product Dimensions (LxWxH)	4.9 x 10 x 12.8 cm
Country of Origin	China
First Available Date	17 January 2018

Warranty and Support

For any technical assistance, warranty claims, or further inquiries regarding your Robocraze Tech Mini IOT-GA6 GPRS GSM Module, please contact Robocraze customer support.
You can find more information and support resources by visiting the official Robocraze Store on AmazonRobocraze Store.

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