

GSM/GPRS/GPS Tracker **MT100** **User Manual**

TRACMT100UM001

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Contents

1. Introduction.....	7
1.1. Reference.....	7
1.2. Terms and Abbreviations.....	7
2. Product Overview	8
2.1. Appearance.....	8
2.2. Parts List.....	9
2.3. Interface Definition	9
3. Getting Started	10
3.1. Installing a SIM Card	10
3.2. Reset Key	11
3.3. USB connector	11
3.4. Power Connection	11
3.5. Ignition Detection.....	11
3.6. Digital Inputs.....	12
3.7. Analog Inputs	13
3.8. Digital Outputs	13
3.9. Cut Relay Output.....	14
3.10. Device Status LED.....	15

Table Index

TABLE 1: MT100 PROTOCOL REFERENCE	7
TABLE 2: TERMS AND ABBREVIATIONS.....	7
TABLE 3: PART LIST	9
TABLE 4: DESCRIPTION OF MT100 USER CABLE	9
TABLE 5: ELECTRICAL CHARACTERISTICS OF IGNITION DETECTION	11
TABLE 6: ELECTRICAL CHARACTERISTICS OF THE DIGITAL INPUTS	12
TABLE 7: ELECTRICAL CHARACTERISTICS OF DIGITAL OUTPUT.....	13
TABLE 8: DEFINITION OF DEVICE STATUS AND LED.....	16

Figure Index

FIGURE 1.	APPEARANCE OF MT100.....	8
FIGURE 2.	SIM CARD INSTALLATION.....	10
FIGURE 3.	TYPICAL POWER CONNECTION.....	11
FIGURE 4.	TYPICAL IGNITION DETECTION.....	12
FIGURE 5.	TYPICAL DIGITAL INPUT CONNECTION.....	13
FIGURE 6.	TYPICAL ANALOG INPUT CONNECTION.....	13
FIGURE 7.	TYPICAL CONNECTION WITH RELAY.....	14
FIGURE 8.	MT100 LED ON THE CASE.....	15

Revision History

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1. Introduction

The MT100 is a powerful GPS locator designed for vehicle or asset tracking. It has superior receiver sensitivity, fast TTFF (Time to First Fix) and supports Quad-Band GSM frequencies 850/900/1800/1900, its location can be monitored in real time or be periodically tracked by a backend server or other specified terminals. The MT100 has multiple input/output interfaces that can be used for monitoring or controlling external devices. Based on the integrated @Track protocol, the MT100 can communicate with a backend server through the GPRS/GSM network to transfer reports of Emergency, geo-fence boundary crossings, low backup battery or scheduled GPS position as well as many other useful functions. Users can also use MT100 to monitor the status of a vehicle and control the vehicle by its external relay output. System Integrators can easily setup their tracking systems based on the full-featured @Track protocol.

This device complies with part 15B, part 22 and part 24 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference (2) this device must accept any interference, including interference that may cause undesired operation.

1.1. Reference

Table 1: MT100 Protocol Reference

SN	Document name	Remark
[1]	MT100 @Track Air Interface Protocol	The air protocol interface between MT100 and backend server.

1.2. Terms and Abbreviations

Table 2: Terms and Abbreviations

Abbreviation	Description
AIN	Analog Input
DIN	Digital Input
DOUT	Digital Output
GND	Ground

2. Product Overview

2.1. Appearance

Figure 1. Appearance of MT100

2.2. Parts List

Table 3: Part List

Name	Picture
MT100 Locator	mm
DATA_CABLE_M (Optional)	

2.3. Interface Definition

There are 8 wires on MT100 User Cable which contain the connection for power, ignition input, digital input, analog input, siren output, cut output etc. The user cable's definition are shown in following table.

Table 4: Description of MT100 User Cable

Index	Colour	Description	Comment
1	Red	Power	External DC power input, 8-32V
2	Black	Ground	System ground, connect to the vehicle's frame directly
3	White	Ignition	Ignition input, positive trigger
4	Blue	Digital input	Digital input, negative trigger
5	Green	Analog input	Analog input, 0-32V
6	Brown	Siren output	Siren output, high end
7	Yellow	Relay ouput1	Internal relay output1.
8	Yellow	Relay ouput2	Internal relay output2

3. Getting Started

3.1. Installing a SIM Card

Step 1: Remove the cover by screwdriver.

Step 2: Make sure the contact area is facing down, insert the SIM into the slot.

Step 3: Install the SIM card cover.

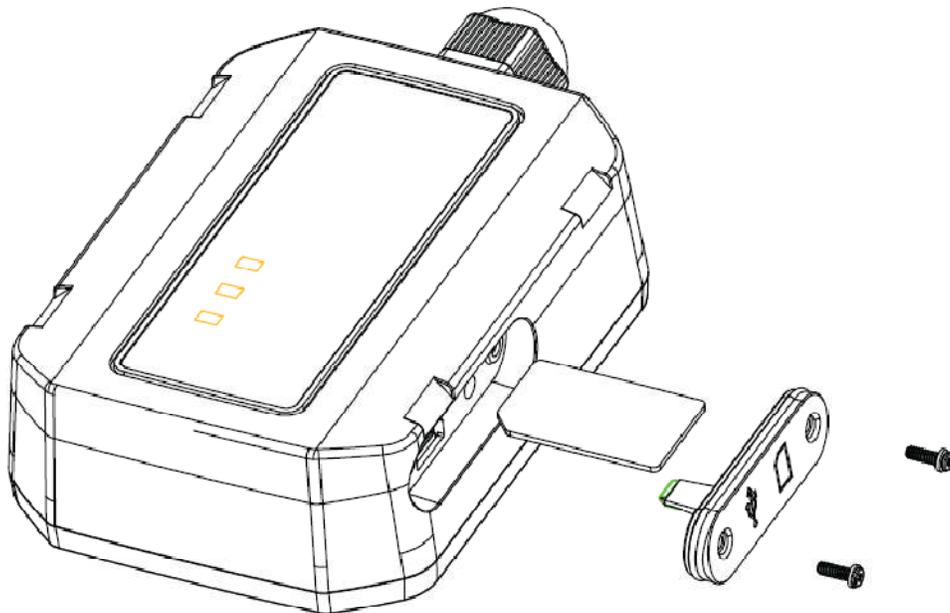


Figure 2. SIM Card Installation

3.2. Switch the set on/off

There are two methods to Power on MT100:

- MT100 external power turned on.
- Connect MT100 to PC with user cable.

When the external power or USB cable power be removed, MT100 will switch to internal backup battery and keep on running. When internal backup battery is exhausted, MT100 will give a report and then turn off.

Note:

- 1-External power and User USB power can be present at same time.
- 2-For USB port current limitation, when configuring MT100 by user cable, please let backup battery on using.

There is one method to turn off MT100.

- Remove the external power and USB power.
- Press the reset key.

Note:

MT100 PWR LED will off.

3.3. Reset Key

There is a reset key behind the SIM card cover. If the power wire is connected to vehicle power, the system will reboot when the key is pressed; if the system is powered by the backup battery and the power wire is not be connected to vehicle power, the system will shutdown when the key is pressed.

3.4. USB connector

There is a USB connector on MT100 which is beside the SIM card. With the USB connector and the DATA_CABLE_M, user can configure the system or download firmware. As long as the DATA_CABLE_M is plugged in, the system will boot.

3.5. Power Connection

The red wire is power wire and the black wire is ground wire. The input voltage range for this device is from 8V to 32V. The device is designed to be installed in vehicles that operate on 12V or 24V systems without the need for external transformers.

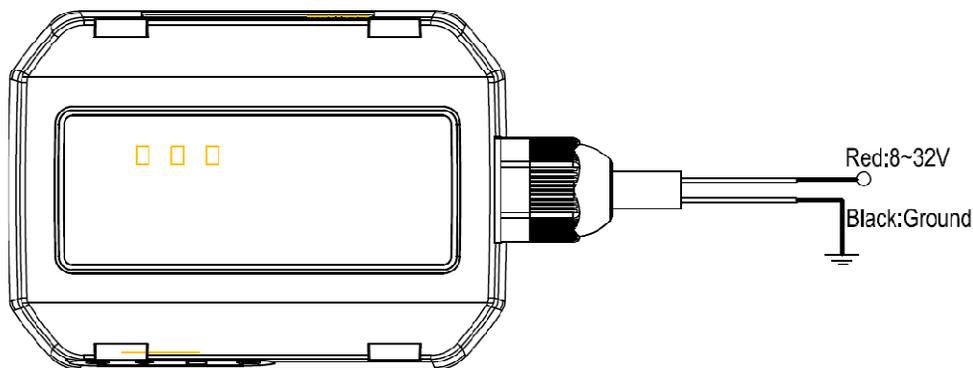


Figure 3. Typical Power Connection

3.6. Ignition Detection

Table 5: Electrical Characteristics of Ignition Detection

Logical State	Electrical State
Active	5.0V to 32V

Inactive	0V to 3V or Open
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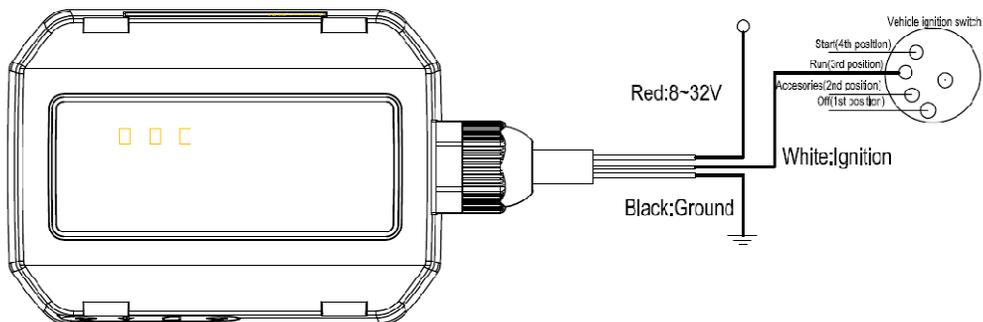


Figure 4. Typical Ignition Detection

The white wire is used for ignition detection. It is strongly recommended to connect this wire to ignition key “RUN” position as shown up.

An alternative to connecting to the ignition switch is to find a non permanent power source that is only available when the vehicle is running. For example the power source for the FM radio.

Ignition signal can be configured to start transmitting information to backend server when ignition is on; and enter power saving mode when ignition is off.

3.7. Digital Inputs

There is a general purpose digital input which is the blue wire on MT100 User Cable, and it is a negative trigger. The digital input is recommended to support panic button function.

Table 6: Electrical Characteristics of the digital inputs

Logical State	Electrical Characteristics
Active	0V to 0.8V
Inactive	Open

The following diagram shows the recommended connection of the digital input.

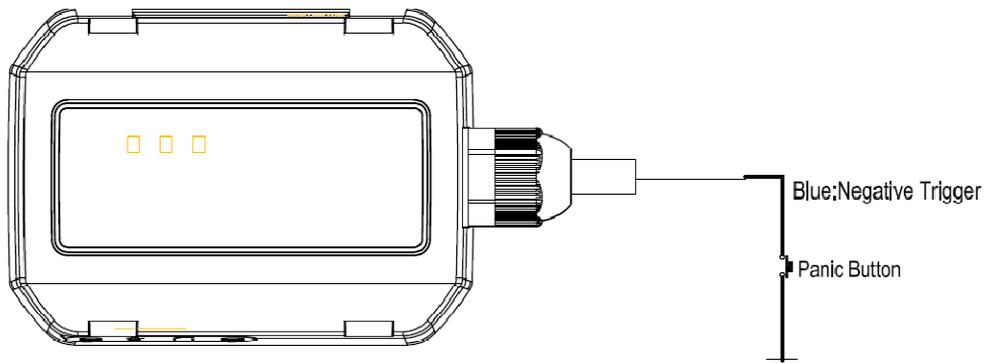


Figure 5. Typical Digital Input Connection

3.8. Analog Inputs

There is an analog input which is the green wire on MT100 User Cable, and the analog input voltage range is from 0 to 32V. The following diagram shows the recommended connection.

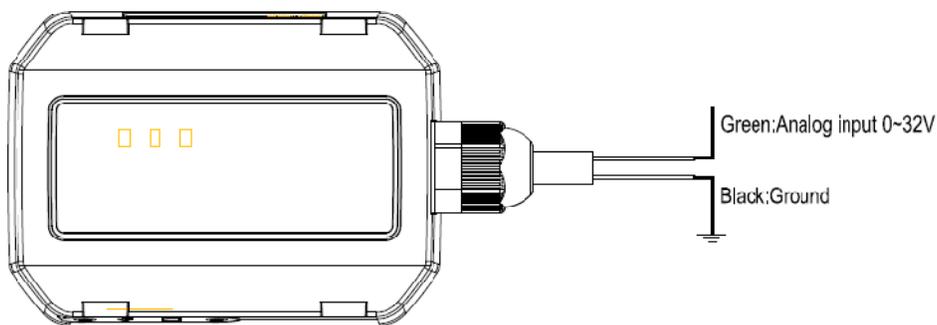


Figure 6. Typical Analog Input Connection

3.9. Digital Outputs

There is an output which is the brown wire on MT100 User Cable. This output is used to drive a siren and the maximum drive current is 750mA. When the siren output is enabled, the voltage on the siren output is determined by the system power level, if the system power is 12V, then the siren output voltage is 12V.

Table 7: Electrical Characteristics of Digital Output

Logical State	Electrical Characteristics
---------------	----------------------------

Active	<1V
Inactive	Open drain

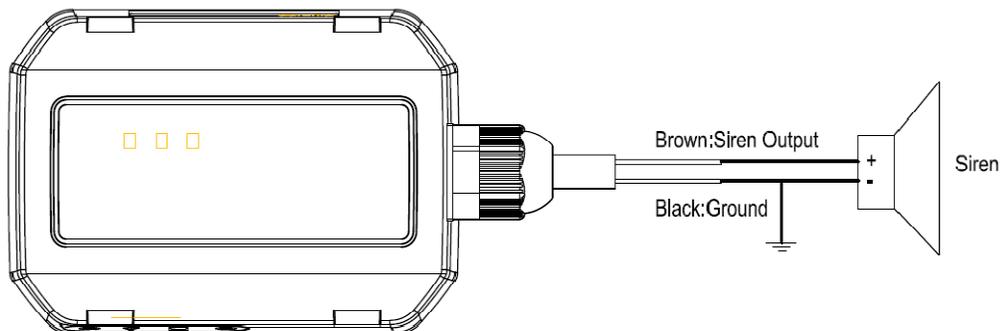
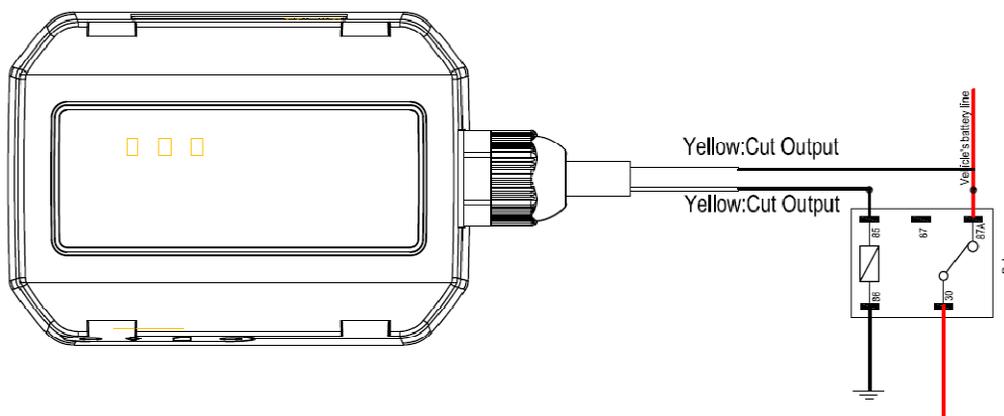


Figure 7. Typical Connection with Relay

3.10. Cut Relay Output

There is a built-in cut relay on MT100, and it is a NO type relay which maximum switching voltage is 16VDC and maximum continuous current is 30A. On MT100 user cable one 18AWG yellow wire is connected to the cut relay NO contact and the other 18AWG yellow wire is connected to the cut relay COM contact. In certain instances the two wires will be connected together.



3.11. Device Status LED

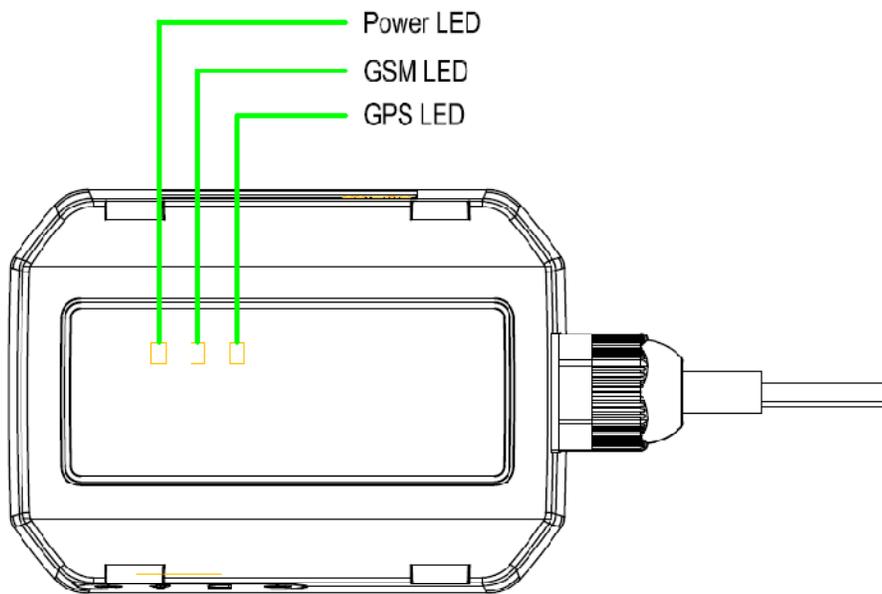


Figure 8. MT100 LED on the Case

Table 89: Definition of Device status and LED

LED	Device status	LED status
GSM (note1)	Device is searching GSM network	Fast flashing (Note3)
	Device has registered to GSM network.	Slow flashing (Note4)
	SIM card needs pin code to unlock.	ON
GPS (note 2)	GPS chip is powered off	OFF
	GPS sends no data or data format error.	Slow flashing
	GPS chip is searching GPS info.	Fast flashing
	GPS chip has gotten GPS info.	ON
PWR (note 2)	No external power and internal battery voltage is lower than 3.35V.	OFF
	No external power and internal battery voltage is below 3.5V.	Slow flashing
	External power in and internal battery is charging	Fast flashing
	External power in and internal battery is fully charged	ON

Note:

- 1 - GSM LED cannot be configured.
- 2 - GPS LED and PWR LED can be configured to turn off after a period of time using the configuration tool
- 3 - Fast flashing is about 60ms ON/ 780ms OFF
- 4 - Slow flashing is about 60ms ON/ 1940ms OFF