Product Handbook of TWR300-TR142 Active RFID

Table of Contents

Part I TWR300 system parameters

1.1 TWR300-TR142 active RFID specifications

1.1.1 Maximum code number: 2^{32}
1.1.2 Operating mode: read,write
1.1.3 Modulation: GFSK
1.1.4 Frequency band: 2.45GHz
1.1.5 Transmitting power: ≤1mw
1.1.6 Operating voltage:1.8V~3.6V DC
1.1.7 Operating current(max): ≤30mA
1.1.8 Operating current(average): ≤30mA
1.1.9 Battey type: CR2032
1.1.10 Battery life: 1.5 years
1.1.10 Readable range: 100m
1.1.11 Dimension: 60mm x24mm x 5mm
1.1.12 Maximum duty time: 700ms

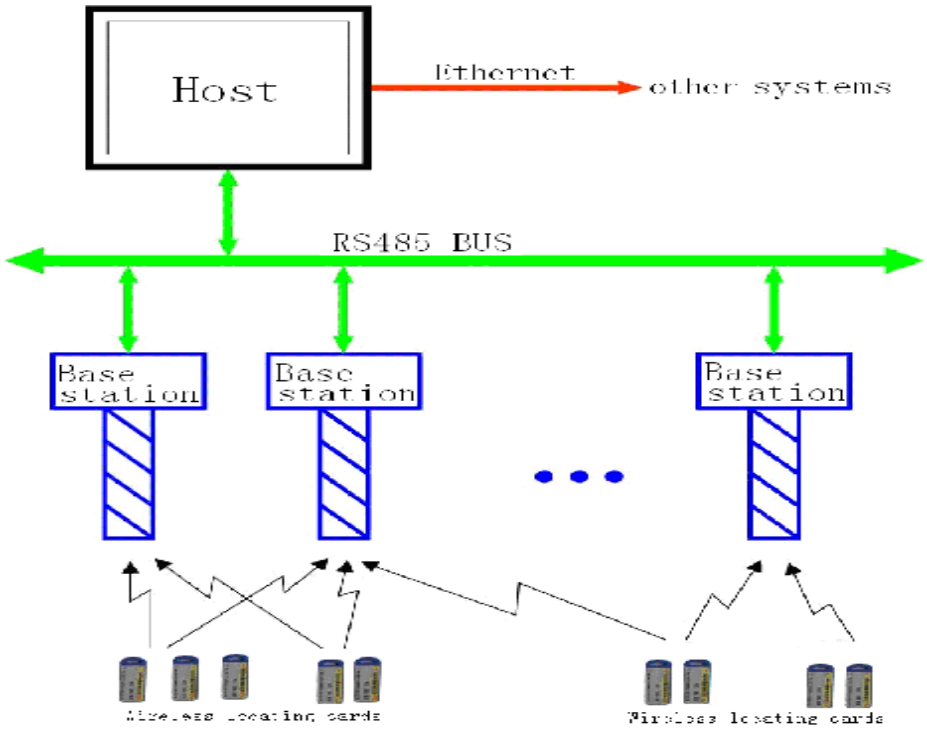
1.2 TWR300-BN140 base station specifications

1.2.1 Modulation: GFSK
1.2.2 Frequency band: 2.45GHz
1.2.3 Antenna: whip antenna,helical antenna(10dB)
1.2.4 Sensitive: -90dB
1.2.5 Operating voltage: 9V~24V DC
1.2.6 Operating current: ≤60mA(12V)
1.2.7 Working temperature: -40°C~+100°C
1.2.8 Cards manageable: 65536 pcs
1.2.9 Communication interface: RS-485,CAN
1.2.10 Communication speed : 4K -- 115.5Kpbs, adjustable
1.2.11 Mean Time Between Failure(MTBF): >50000h
1.2.12 Mounting bracket/bottom material: stainless steel;Main frame:enhanced ABS plastic;Antenna shell: enhanced ASA resin
1.2.13 Dimension: 300mm x125mm x 125mm
1.2.14 Weight: 0.7kg
1.2.15 Packaging: IP68
1.2.16 Installation: brackets

Part II System operation principle

2.1 System configuration

The system diagram of an RFID monitoring system is as follows, it contains an administaration center(host machine), one or more TWR300-BN140 base stations and a plaural of TWR300-TR142 active RFID cards.



2.2 System operation

TWR300-TR142 active RFID card transmit its ID and other stored information to base station via the 2.45GHz ISM band channel and the base station will save and record these data.

When obejects with TWR300-TR142 active RFID cards enter into the range covered by a base station, the base station reads the ID and other information, such as battery capacity etc. of RFID cards and send them to the host machine along with the timestamps. The host can match the received information to default information and make a decision to react on certain events based on, for example, objects' movement and location. These information are written into database to be used by other consumers or for future reference. The system can be used for security applications to monitor people or objects remotely in real-time.

Part III Applications

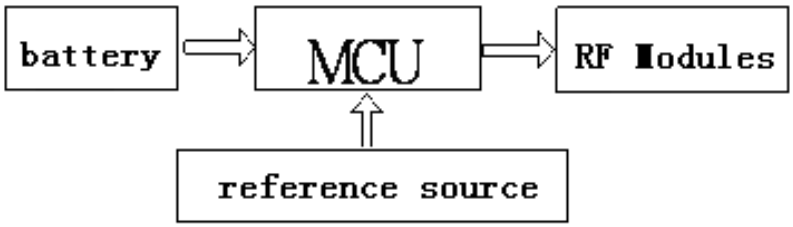
3.1 Attendance management

3.2 Speed detection for high-speed trains

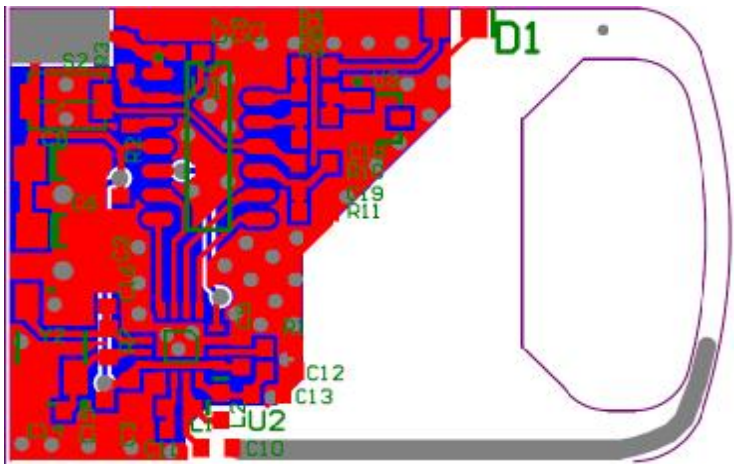
3.3 Inventory management

Part IV PCB drawing

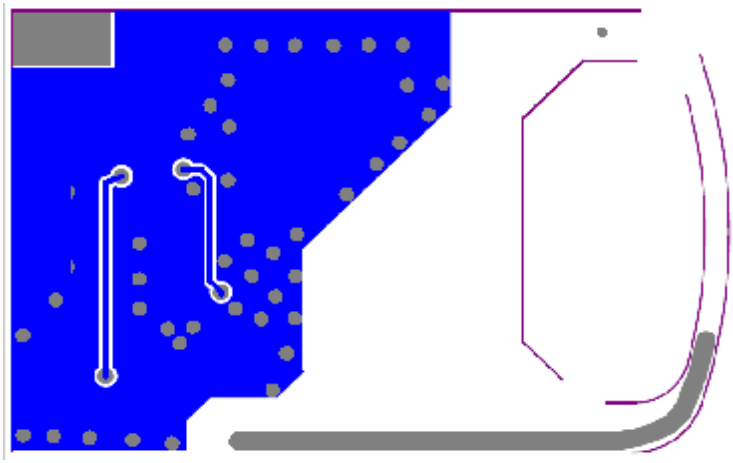
4.1.1 The schematic diagram of TWR300-TR142



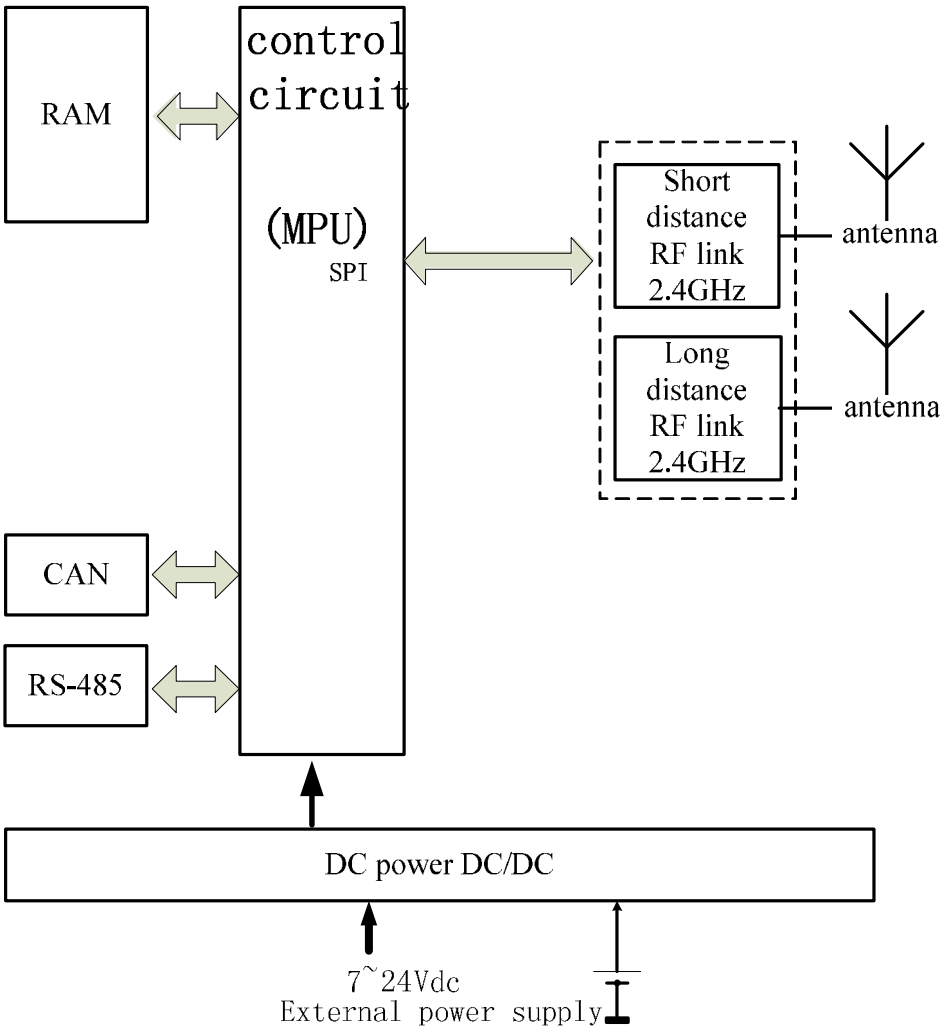
4.1.2 The top layer of the PCB drawing of TWR300-TR142



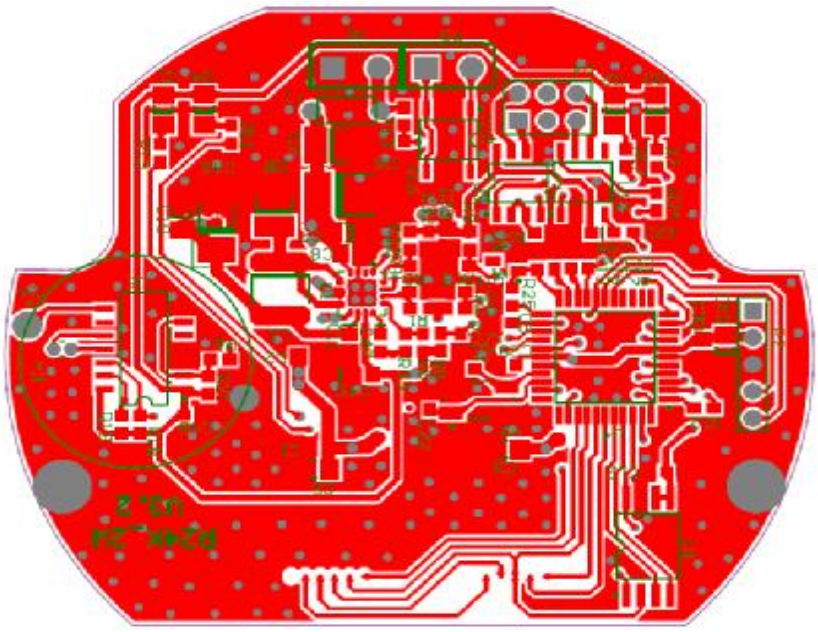
4.1.3 The bottom layer of the PCB drawing of TWR300-TR142



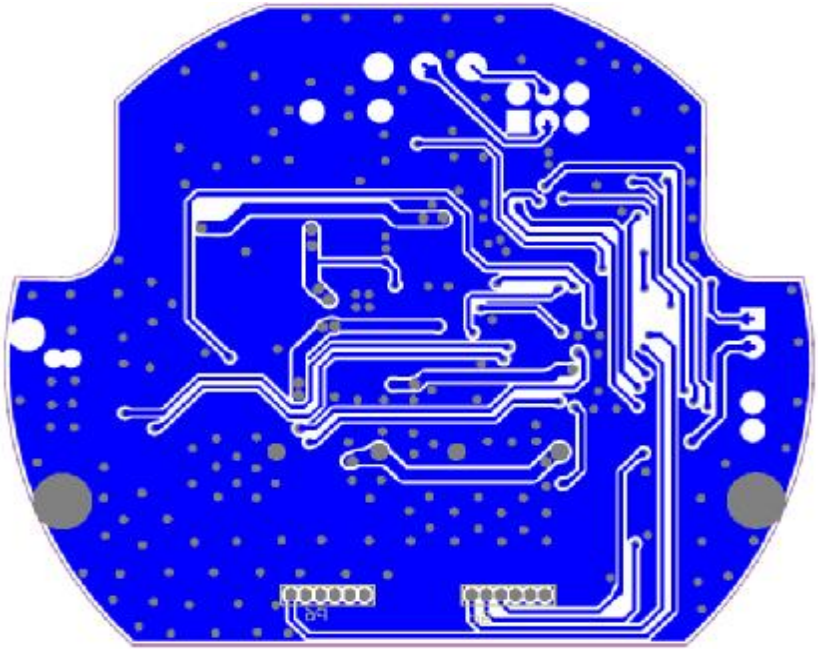
4.1.4 The schematic diagram of TWR300-BN140



4.1.5 The top layer of the PCB drawing of TWR300-BN140

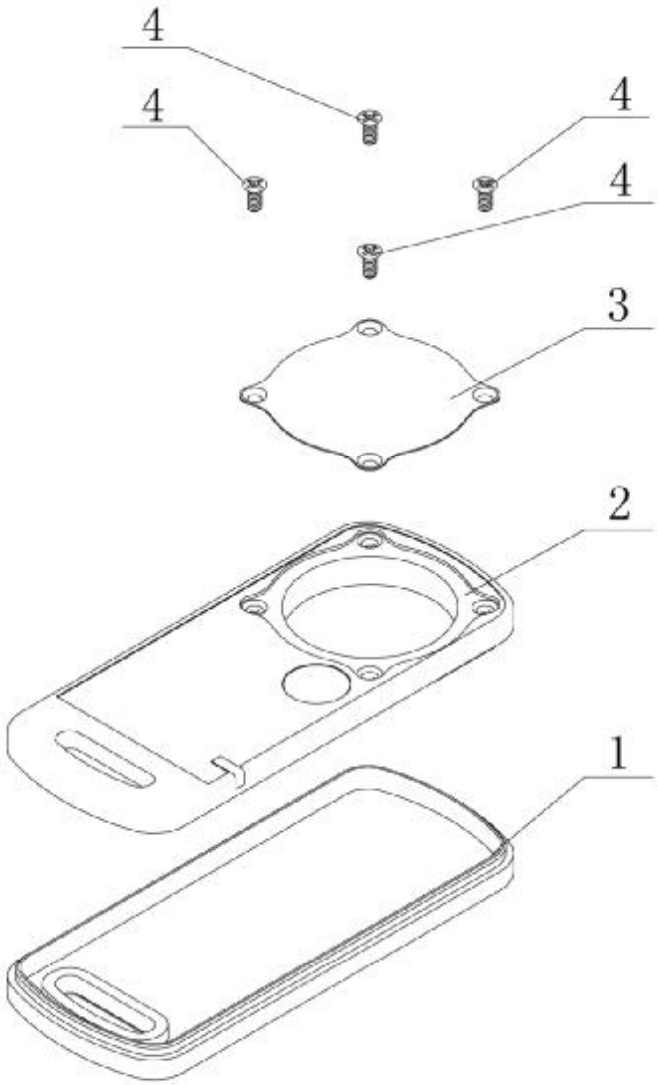


4.1.6 The bottom layer of the PCB drawing of TWR300-BN140



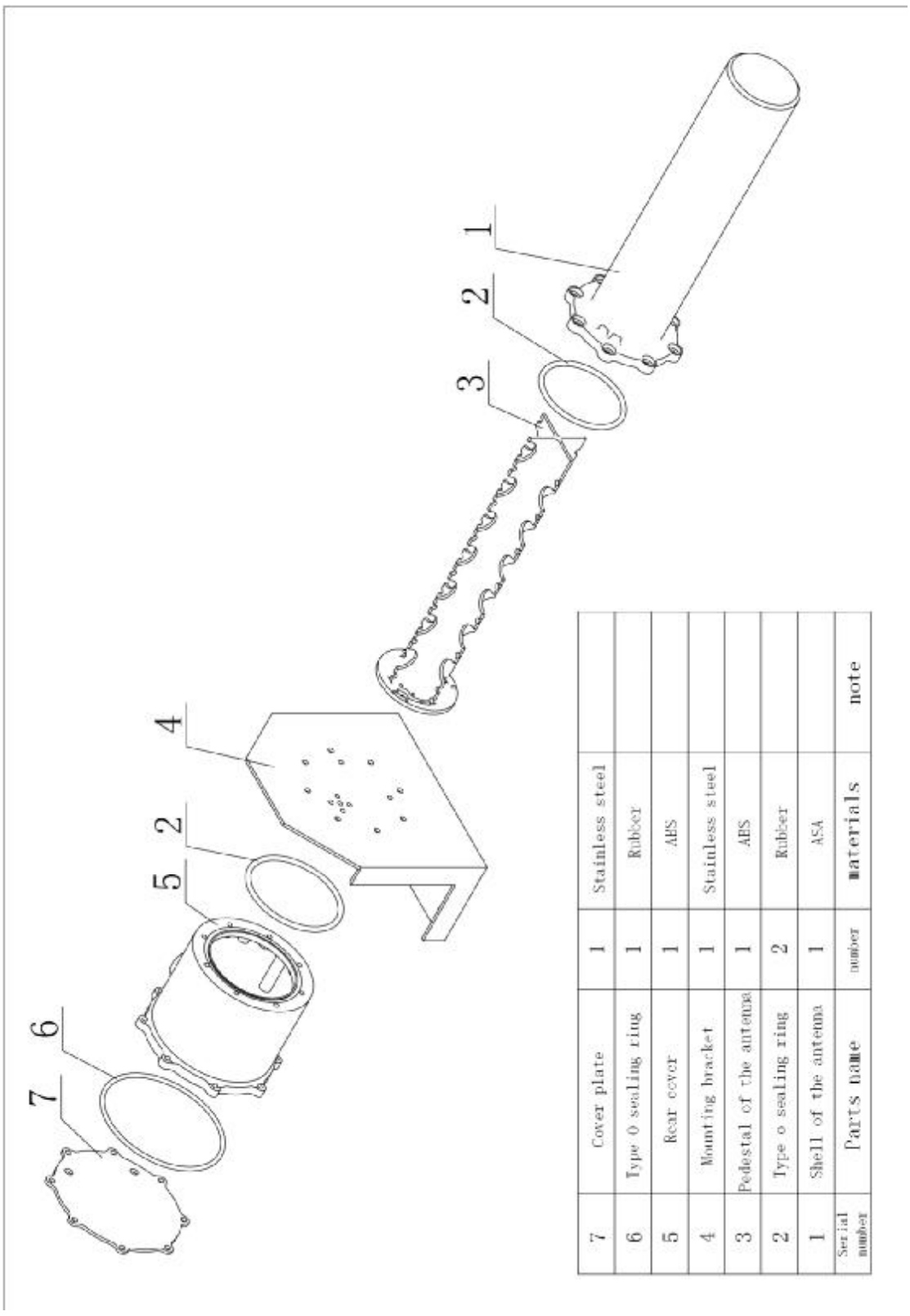
Part V Assembly drawing of system

5.1 Assembly drawing of TWR300-TR142



Serial number	Parts name	number	materials	note
4	screw	4	Stainless steel	
3	Battery cover	1	Stainless steel	
2	Upper shell	1	ABS	
1	Bottom shell	1	ABS	

5.2 Assembly drawing of TWR300-BN140



Serial number	Parts name	number	materials	note
7	Cover plate	1	Stainless steel	
6	Type O sealing ring	1	Rubber	
5	Rear cover	1	ABS	
4	Mounting bracket	1	Stainless steel	
3	Pedestal of the antenna	1	ABS	
2	Type o sealing ring	2	Rubber	
1	Shell of the antenna	1	ASA	

FCC ID: ZJO-TR142

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

changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.