

VF-642

RFID Fixed Reader

Product information guidance

- Vanch has the revise authority about product hardware, software and the manual. The manual modified without notice
- The model and power of equipment is subject to the origin country, Please confirm the voltage and read relevant safety attentions, especially in outdoor Installation

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2 Product summary

VF-642 is latest rfid reader which developed by our company. With Indy R2000 chip. it can read the tag or card which according to the protocol of EPC CLASS 1 G2. It can be used in vehicle management, ETC, Personnel access control, electronic anti-counterfeiting, logistic monitor, production auto management system and so on.

2.1 Shape and interface

The shape of VF-642 reader, please see the picture shown on the manual cover. The reader adopts aluminum alloy case; it can be fixed in indoor cabinet, or protective housing in outdoor environment. (Please note: Outdoor protective housing must be with good aeration, dustproof, rainproof conditions.)

VF-642 has 2 panels from its appearance: Antenna Connection Port Panel, and Communications Port Panel.

- (1) VF-642 antenna connector port (refer to diagram 2-1-1): ANT1、ANT2、ANT3 and ANT4 four converse SMA connectors.



Diagram 2-1-1 antenna connector port

- (2) communication connector port(diagram 2-1-2):



Diagram 2-1-2 communication connector port

Diagram 2-1-3 communication connector port has following features:

- A. power connector: +12V DC Outoutput
- B. RJ45 communication connector: 1 Communication port is connected to network directly by cable.
- C. LED indicator:
 - Red light—power indicator light, red light flash mean power is connected.
 - Yellow light—antenna indicator light, yellow light flash mean the selected antenna is connected reliably and receiving and sending RF signal.
 - Green light—communication indicator light, green light flash mean RJ-45/RS232 is sending/receiving data and command.
- D. Buzzer: built in buzzer, when reader read tag, it will alarm.
- E. Power connector: +12V DC outlet
- F. GP I/O connector

I/O connector (12pin+4pin) –The front of the reader interface panel

Item	Signal direction	Explanation
+12DC3A	I	+12VDC
GND	I/O	ground
WD1-0	O	output 1 (TTL Level)
WD1-1	O	output2 (TTL Level)
FIN1	I	trigger 1 (TTL Level)
485+	I/O	RS485+
485-	I/O	RS485-
GND	I/O	ground
TXD	O	RS232 TX (connecting DB9 2ports)

Item	Signal direction	Explanation
RXD	I	RS232 RX (connecting DB9 3ports)
D0	I/O	relay
D0	I/O	relay
WD2-0	O	output 4 (TTL Level)
WD2-1	O	output 3 (TTL Level)
GND	O	Ground
FIN2	I	trigger2 (TTL Level)

Two connectors of relay can be connected or disconnected, user can control relay by host computer.

Output 1~4: User can control high low level by host computer.

Trigger 1: when reader work in trigger mode, trigger antenna1 and antenna3 to work.

Trigger 2: when reader work in trigger mode, trigger antenna 2 and antenna 4 to work.

2.2 performance index

- (1) Operation Frequency:902.5MHz-927.5MHz
- (2) Work model: Auto, command
- (3) Frequency Hopping:51 902.5MHz-927.5MHz
- (4) Communications Speed: serial port speed 9600~115200bps, RJ45 speed 10Mbps
- (5) Reading / writing Range: Reading range>5m; writing range>1m
(Actual reading / writing range is also influenced by tag, antenna, cable, surroundings)
- (6) Power supply: 110~220V AC, +12V DC
- (7) Power dissipation:Average Power <20W
- (8) Weight: 1.5Kg
- (9) Operating Temperature:-10℃~+55℃.
- (10) Buzzer: Built-in buzzer inside, and it sounds when reader read tag.

2.3 functions

- (1) Can read / write tag. (Tag protocol: EPC CLASS1 Gen 2)

- (2) Can read many different length EPC number(16、 32、 48、 64、 80 or 96bits) at the same time
- (3) Can read selected EPC number of the tag
- (4) Can read data of selected tag in user memory
- (5) Can read data of selected tag in TID memory
- (6) Can read access password and kill password of tag (access password, kill password , both of them are 32bits)
- (7) Can write different length EPC number(16、 32、 48、 64、 80 or 96bits)
- (8) Can write data in user memory
- (9) Can modify access password and kill password of tag (access password, kill password , both of them are 32bits)
- (10) EPC、 TID、 User memory can be set for write - protection.
- (11) Can set read-protection and write-protection for password memory

3 Equipment Installations

For the Antenna installation, it needs to consider some factors like position, height, angle, etc., so as to satisfy below application requirements:

- (1) To ensure the beam range of antenna can cover the reliability range for reading tag. Place the antenna(s) at a height approximately midway between the highest and lowest expected tag position.
- (2) To ensure cable length which used for connecting antenna and reader, not exceed 10m(better with 3m)
- (3) According to different application situations, antenna installation can adopt different methods (horizontal type or vertical type). Whatever antenna installation method to be adopted, please ensure that antenna polarization direction is in accordance with tag polarization direction.

3.1 Connect Antenna to Reader

VF-642 Reader offers 4 converse SMA RF ports, which requests low-attenuation coaxial-cables to connect antenna and reader. As the longer length cable, the larger attenuation of high frequency signals is. So it is better to adopt the short length cable. Increasing the length of coaxial-cable or adopting common cable will affect the reading distance.

Suggest to use –7 soft cable when the connection cable (between antenna and reader) is within 3m; and if the connection cable exceeds 3m, use “1/2 inch” cable. The cable can not exceed 10m.

While connecting cable with antenna / reader, screw down the cable connector.

After that seal the cable connector with pyrocondensation pipe, or tie the cable connector firmly with rubber band, in order to protect the cable connector.

Remarks: Suggest don't use common cable for antenna connection, and don't install cable connector randomly.

3.2 Connect Reader to PC

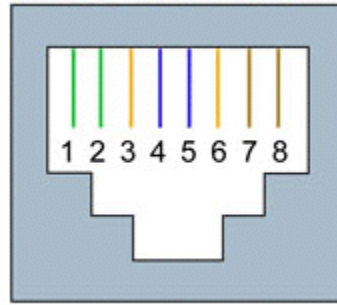
VF-642 reader is connected with PC by RS232 or RJ45 to receive commands and send data.

(1) Connected by RJ45



Reader connects direct with PC, please see above figure. And the assignment of cable, please see the following figure:

Foot 1 of reader's RJ45 to be connected with foot 3 of PC's RJ45, foot 3 of reader's RJ45 to be connected with foot 1 of PC's RJ45, foot 2 of reader's RJ45 to be connected with foot 6 of PC's RJ45, foot 6 of reader's RJ45 to be connected with foot 2 of PC's RJ45. Other feet connected correspondingly.



If reader is connected with PC by HUB, should use straight connection cable

(2) Connected by RS232

RS232 can be connected with PC directly by cable and the cable length should be less than 10m in the project.

3.3 Connect Power Supply

VF-642reader adopts +12V DC/3A. We supply the supporting AC/DC adapter for the reader. The connection method as follows:

- (1) Check and confirm the voltage and the frequency of the A.C. source, if they meet the requirement of AC 100-240V/50Hz.
- (2) Connect the DC output connector plug with +12V DC input port in reader.
- (3) Connect 120V AC input plug of the adaptor to AC circuit.
- (4) The indicator light up, it shows power supply input normally.

3.4 Equipment adjustment

Key factor for adjustment: adjust the height, direction angle, angle of inclination of the antenna until the reader can read the tag in expected area.

Steps as follows:

- (1) Open the reader power supply, set as auto work model, close the program and disconnection of the reader with PC. (Parameter setting please refers to Section 4.3).
- (2) Disconnect the power supply and then connect, the reader will work under continuing work model.
- (3) For different material of identified object, it needs to use different tags. So when adjusting, you need to put the tag near the identified object and then move the tag. If the reader can get the information of the tag, the built-in buzzer will alarm and the green LED will light.
- (4) Adjust the height and angle of the antenna carefully and find an optimal read coverage.

Note: The reader only send the microwave power when read and write tags. It can meet the American FCC RF items requirement when there is 30cm distance between adjustment engineer and the antenna.

3.5 Place Tag

In the application of RFID system, sticking the tag is the common work. The notice we need to do as follows:

- (1) Use the glue we recommend.
- (2) For the tag used in metal surface, use special glue.
- (3) It needs to do the test to find a suitable place and ensure the ideal read/write effect.

4 Common malfunction

Table 4-1 common malfunction and solutions

Malfunction phenomenon	Possible reason	Solutions
Can not detect the tag	Antenna not connect well	Check the antenna connection
	Exceed the read coverage	Move the tag to the antenna
	Antenna damaged	Change antenna
	RF Power is too low	Restore the factory parameter
	Tag damaged	Change tags
	Reader damaged	Contact with the technician
Can not connect the reader	No power supply	Check the connector and the adaptor of the power supply
	Com port occupied or damaged	Check if the com port is occupied through the software and test if the port can communicate
	Baud rate is not unanimous	Set the unanimous Baud rate through the software
	Reader damaged	Contact with the technician
Short read distance	Antenna not connect well	Check the antenna connection
	RF Power is too low	Restore the factory parameter
	The polarization of the tag is not unanimous with the antenna	Rotation 90° of the tag
	Reader damaged	Contact with the technician
	Tag damaged	Change tags

5 After service

5.1 Support and service

Website: Please enter into <http://www.vanch.cn> and get the product specification、 optional accessories and relevant information

Customer support if you have questions about the specifications or the website information can't answer all your questions, you can contact with our service staff. If your equipment need to repair , please contact with us to get the service information 、 delivery instructions and the cost for repair before deliver the equipment to us.

Service please contact with our service staff if your equipment need diagnostic service or other services. Please do not deliver your equipment before contact with us . If your equipment meet the warranty conditions in the warranty, please prepare your proof of purchase date.

Please do as follows before contacting with us:

- A. Read the specification
- B. Prepare the follow information of your product
 - model
 - Serial number
- C. your proof of purchase date
- D. Prepare your equipment, the service staff may have you operating it
- E. Prepare your questions, detailed description can help the customer

service solve the problem quickly.

Warranty information this article is Warranty statement of hardware product, please read carefully.

One year limited hardware warranty

Shenzhen vanch intelligent technology company provides the one year defect-free guarantee of the materials and manufacture which is according to the receipt date of the original purchaser

If Shenzhen vanch intelligent technology company receives the defect notice of the above definition, we can decide to repair or replace the defective product which has been proven.

If Shenzhen vanch intelligent technology company can not repair the product or replace it in reasonable time, the customer can choose a refund when returning the product.

As the describing of above warranty, it should not include the defects which caused by factors below: misuse; unauthorized modification; open this hardware; operate and store this products in the excess environmental specifications; damage during transportation; improper maintenance; or cause to use the software, spare parts, media, accessories, consumables which is not Shenzhen Vanch Intelligent Technology or use the item which is not design for this product.

There is only one warranty statement of Shenzhen VANCH Intelligent Technology Co., Ltd, and there is no other written or oral warranty statement.

The metaphor of sales of any goods or apply to special-purpose subject to

this written warranty with one year period

Shenzhen VANCH Intelligent Technology Co., Ltd will not be responsible for direct, indirect, special, accidental, or ensuing damage (including profits loss) in any cases. Whether based on warranty statement, contract, negligence, or any other theoretical legal basis.

5.2 Service Line

Thank you for choosing our RFID products and, sincerely we will offer you technical supports about the integration application of these products. Any of your problems or doubts about our products' quality and application, is quite sure to get prompt attention and soon solutions. Our contact details as follows:

Company Name: Shenzhen VANCH Intelligent technology co., Ltd

Address: 6F, 533, BaGua 6 st., FuTian district, Shenzhen, Guangdong

Postcode::518029

Tel: 0755-8242 6775

Fax: 0755-8240 3457

Website: www.vanch.cn

Email: info@vanch.net

6 FCC Warning

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.

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.

Caution

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment

The antennas used for this transmitter must be installed to provide a separation distance of at least 30 cm from all persons.