



UHF RFID Development Kit Hardware Description

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Contents

1	Function Description	4
1.1	Intended Use	4
1.2	Hardware Settings	4
1.3	Status Indication	4
1.4	Safety Notes	4
2	Mechanical Drawings	5
3	Mechanical Installation	6
4	Electrical Installation	7
4.1	Internal Connections with RFID Modules	7
4.2	Ribbon Connector Pinout	7
4.3	FPC Connector Pinout.....	7
4.4	External Connections.....	8
4.4.1	USB VCP	8
4.4.2	RS232 Communication	8
4.4.3	TCP/IP Communication.....	8
4.4.4	GPIO Ports and RS485 Host Interface.....	8
4.4.5	Using internal Power Supply for GPIOs	9
4.4.6	Using external Power Supply for GPIOs.....	10
4.5	Wiring Instructions	10
5	Test Operation	11
5.1	Connecting with the Test Software “ModuleReaderManager”	11
5.2	Test the GPIOs	11
6	Troubleshooting.....	12
6.1	Reset IP Address	12
7	Maintenance, Repair and Disposal	13
7.1	Maintenance	13
7.2	Repair	13
7.3	Disposal	13
8	Revision History	14

1 Function Description

1.1 Intended Use

This development kit is an interface board that is convenient for RF module testing and assembly. The board can be directly connected to various RFID modules. It provides USB, RS232, TCP/IP, RS485 communication interface. Based on the board, the performance of the RF module can be easily evaluated, and it can also be made into a fixed reader with the shell, and it is convenient to perform GPIO operation, reset, power-on control and other tests. The power supply of the interface board is 9-24V, please use the matching power adapter to supply power (12V/3A).

1.2 Hardware Settings

There are no hardware settings to be done. All configuration is done using the configuration software.

1.3 Status Indication

The module has a red LED close to the FPC connector. This indicates the power supply.

1.4 Safety Notes

The device may only be used for the intended purpose designed by the manufacturer. The operation manual should be conveniently always kept available for each user.

Unauthorized changes and the use of spare parts and additional devices that have not been sold or recommended by the manufacturer may cause fire, electric shocks, or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.

The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.

Repairs may be executed by the manufacturer only.

Only qualified personnel should carry out installation, operation, and maintenance procedures.

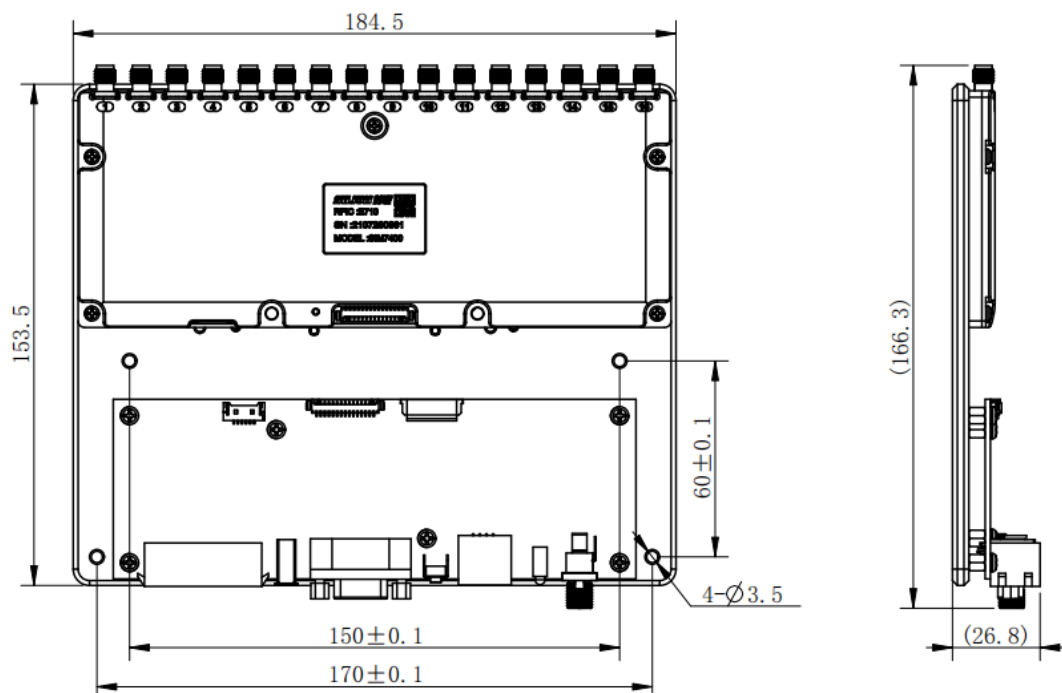
Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.

When working on devices the valid safety regulations must be observed.

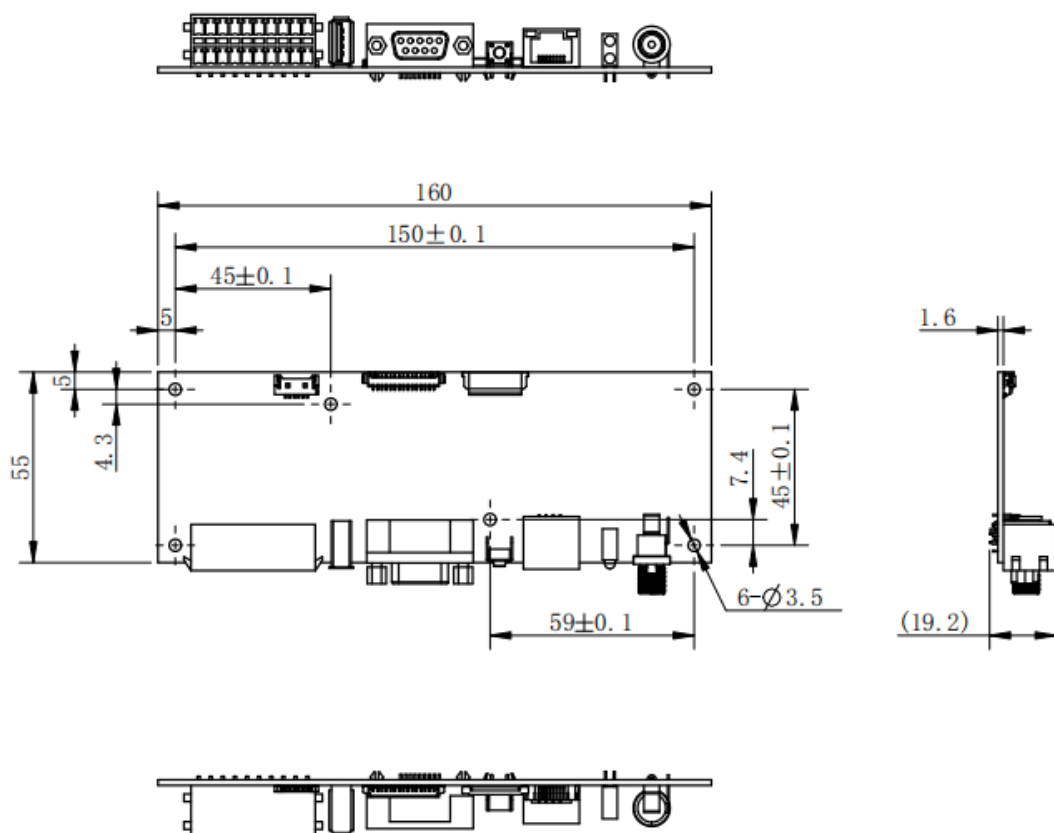
Do not operate the RFID device without antenna or another 50 Ohms load capable of consuming +33 dBm (2 W) RF power.

2 Mechanical Drawings

Overall Dimensions including a 16 Channel RFID Device



Dimensions of the Interface PCB



3 Mechanical Installation

The aluminium plate of the development kit offers lots of threaded holes to fix modules with screws.

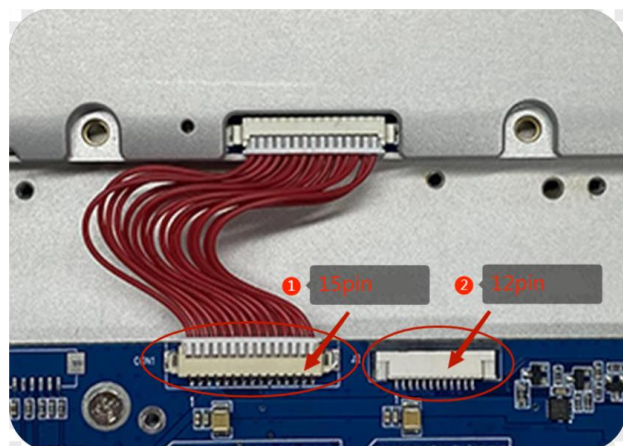


The threaded holes are for screws with a diameter of M2.5. The depth is 4 mm.

Carrier PCB with soldered M600-TTL:	M2.5 × 4 mm
Carrier PCB with soldered M610-TTL:	M2.5 × 4 mm
RFID Reader OEM-M620-TTL:	M2.5 × 6 mm
RFID Reader OEM-M650-TTL:	M2.5 × 8 mm

4 Electrical Installation

4.1 Internal Connections with RFID Modules



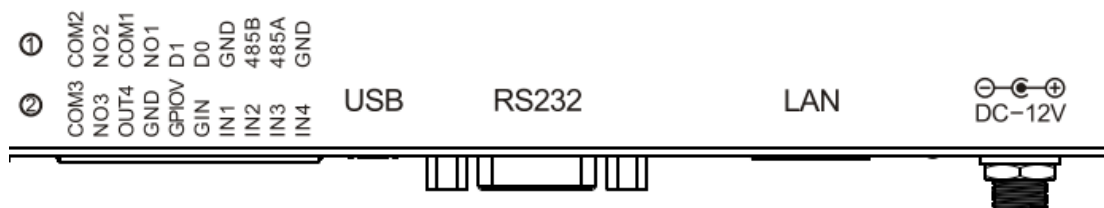
4.2 Ribbon Connector Pinout

Pin	Signal Name	Description
1	GND	Negative Power Supply
2	GND	Negative Power Supply
3	VCC	Positive Power Supply 5 Vdc $\pm 5\%$
4	VCC	Positive Power Supply 5 Vdc $\pm 5\%$
5	GPIO Out 1	Digital Output 1, TTL Level
6	GPIO Out 2	Digital Output 2, TTL Level
7	GPIO In 1	Digital Input 1, TTL Level
8	GPIO In 2	Digital Input 2, TTL Level
9	RxD	Data Input, TTL Level
10	TxD	Data Output, TTTL Level
11	—	NC
12	—	NC
13	—	NC
14	SHUTDOWN	Low level enable, high level power off, high level should be greater than VCC-0.3V
15	/RST	Reset, low-active

4.3 FPC Connector Pinout

Pin	Signal Name	Description
1	VCC	Positive Power Supply 3.6...5 Vdc
2	VCC	Positive Power Supply 3.6...5 Vdc
3	GND	Negative Power Supply
4	GND	Negative Power Supply
5	/Inhibit	High or open: RFID device is active; pulled to GND: power down mode
6	GPIO Out2	Digital Output 2, TTL Level
7	GPIO In 1	Digital Input 1, TTL Level
8	GPIO In 2	Digital Input 2, TTL Level
9	RxD	Data Input, TTL Level
10	TxD	Data Output, TTTL Level
11	/RST	Reset, low-active
12	GPIO Out 1	Digital Output 1, TTL Level

4.4 External Connections



4.4.1 USB VCP

The USB communication of the board uses the FT232RL chip of FTDI (Future Technology Devices International Ltd.). After the driver is installed, it will be virtualized into a standard serial port.

Normally the USB drivers are automatically installed with Windows operating systems.

If this does not work, you can download the latest drivers here: <https://ftdichip.com/drivers/vcp-drivers/>

4.4.2 RS232 Communication

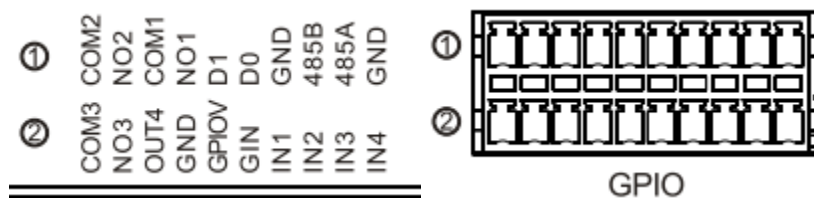
If serial communication is used, the host computer and the interface board can be connected through a male-female serial port straight-through extension cable.

Pin	Signal Name	Description
1	DCD, CD, RLSD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTR	Ready to Receive
8	CTS	Clear to Send
9	RI	Ring Indicator

4.4.3 TCP/IP Communication

In the network port connection, the default address of the reader is 192.168.1.100, the default gateway is 192.168.1.254, and the subnet mask is 255.255.255.0. The IP address of the computer connected to the reader must be in the same network segment.

4.4.4 GPIO Ports and RS485 Host Interface



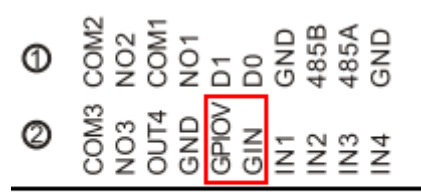
Upper Row (1)

Pin	Signal Name	Description
1	COM2	Relay 2 common port
2	NO2	Relay 2 normal open port
3	COM1	Relay 1 common port

4	NO1	Relay 1 normal open port
5	D1	Wiegand 26/34 D1 or CAN-H
6	D0	Wiegand 26/34 D0 or CAN-L
7	GND	Ground
8	485/A	RS485 interface A port
9	485/B	RS485 interface B port
10	GND	Ground

Lower Row (2)

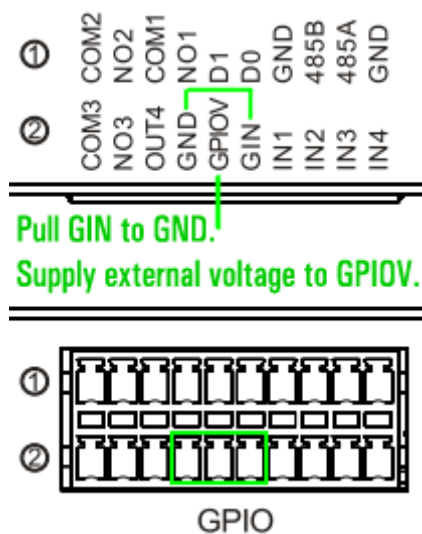
Pin	Signal Name	Description
1	COM3	Relay 3 common port
2	NO3	Relay 3 normal open port
3	OUT4	GPIO output, output voltage range: 0 to (VGPIOV-0.3V) Current-drawing capability: <ul style="list-style-type: none"> when internally powered, a total amount of 1 A can be drawn from all channels (e.g. 250 mA per channel) when externally powered, each channel can bear a load of 1 A Device logic 0 output high level (VGPIOV-0.3V) Device logic 1 output low level (0-0.3V, internal 3K resistor pull down)
4	GND	Ground
5	GPIOV	GPIOV, GPIO power supply positive
6	GIN	GND_GPIO, GPIO power supply ground, connect to GND when internal power supply is required
7	IN1	GPIO inputs, the input voltage range is (0-24V)
8	IN2	Input high voltage (5-24V) judged as logic 0
9	IN3	Input low voltage (0-0.7V) judged as logic 1
10	IN4	

4.4.5 Using internal Power Supply for GPIOs

Do NOT connect these two pins GPIOV and GIN.



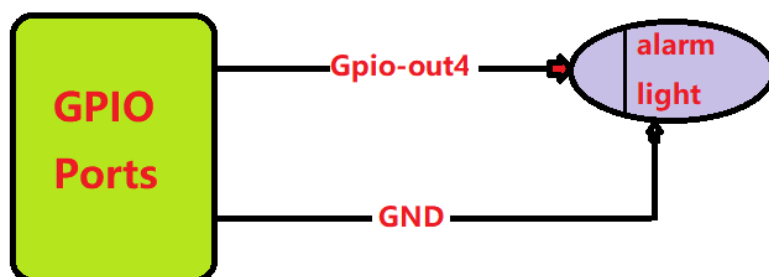
4.4.6 Using external Power Supply for GPIOs



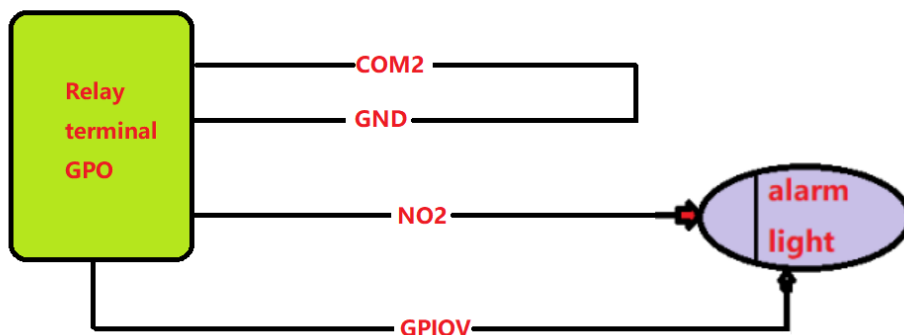
4.5 Wiring Instructions

First select internal power supply or external power supply according to the actual situation.

Use the GPIOs as shown in the figures below:



GPIO Output 4 drives an Alarm Light



Using the Relays for an Alarm Light, the connection to GND is switched by the relay.

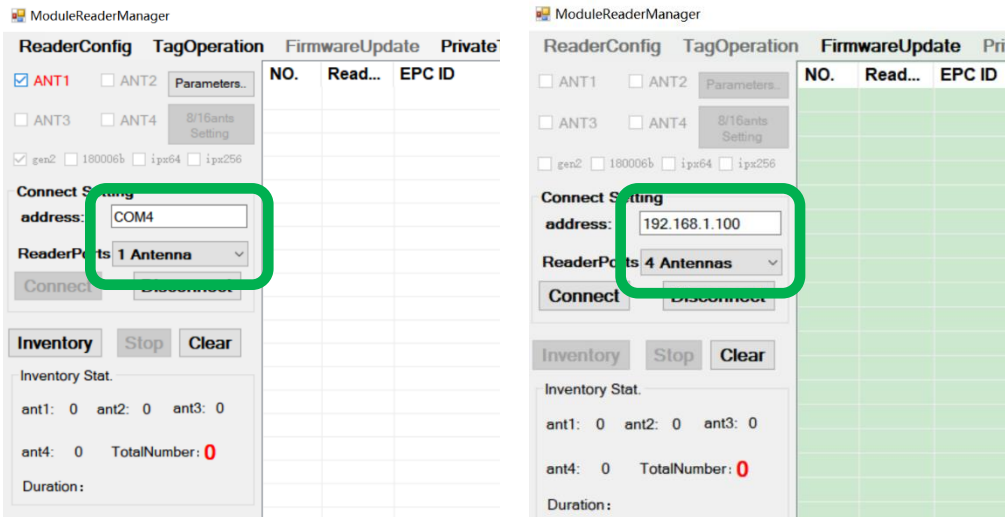
5 Test Operation

5.1 Connecting with the Test Software “ModuleReaderManager”

Open the test DEMO program ModuleReaderManager.exe. Fill in the corresponding serial port number or IP address, select the corresponding number of antenna ports and click Connect.

Examples

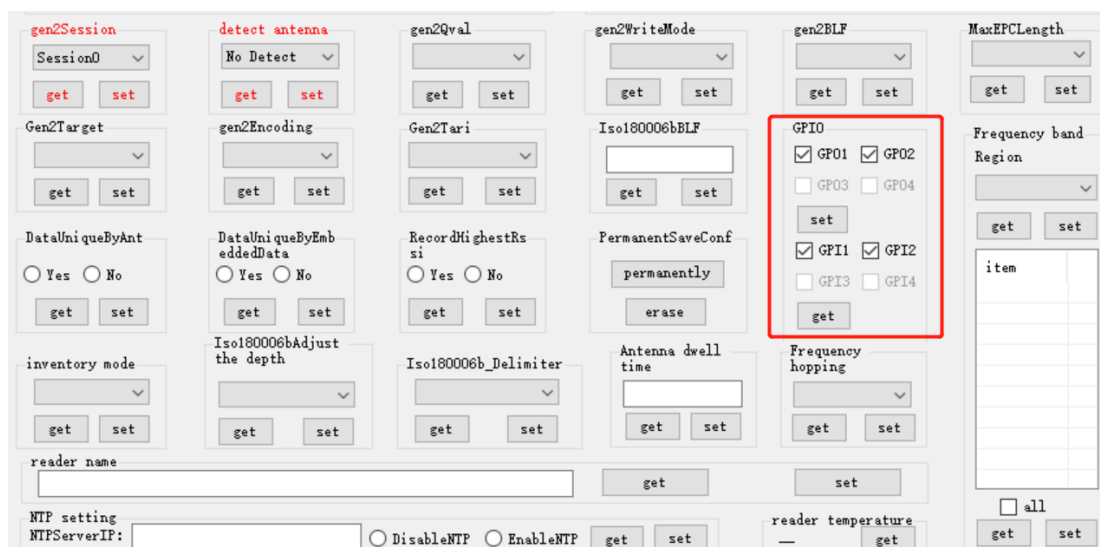
- OEM-UHF-M620-TTL has one antenna port => select single antenna
- OEM-UHF-M650-TTL has four antenna ports => select four antennas



After connecting, you can test related modules. Refer to the DEMO program operation instructions for details.

5.2 Test the GPIOs

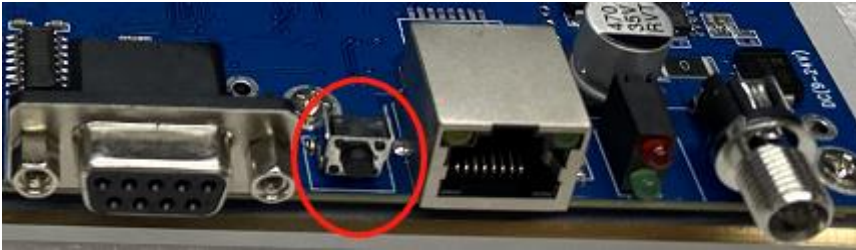
The GPIO test can be implemented by the DEMO program ModuleReaderManager.exe. After establishing communication with the module according to the above steps, click the parameter setting, and then the following interface will appear, as shown in the red box, you can set the status of GPO and obtain the status of GPIN. You can check whether the status has changed by setting the GPO or triggering the GPI external device. If the GPIO port is not needed, the GPIO pin can be left floating.



6 Troubleshooting

6.1 Reset IP Address

There is a reset IP button on the left side of the network port of the interface board. When you forget the set IP, you can press and hold the reset button for 3 s in the power-on state to reset the IP. The reset IP is 192.168.1.100



7 Maintenance, Repair and Disposal

7.1 Maintenance

The electronics are maintenance-free. Protect it against dirt and liquids.

7.2 Repair

There are no user-serviceable parts. Do not attempt repairs. Do not allow any unauthorized service centre or personnel to repair or modify the product.

In the event your electronics fails, contact iDTRONIC GmbH via the service e-mail address: support@idtronic.de

7.3 Disposal

After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

Do not dispose of this device in normal household waste. Contact your local council for information on disposal options for electronic devices in your area.

8 Revision History

Version	Date	Notes
0.1	2023-03-30	Initial Version