Transmitter SOLUTIONS®

Dolphin UHF-R1 Reader

Thank you for choosing the Transmitter Solutions Dolphin UHF-R1 Reader.

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Catalogue

1. Technical Specification

1.1 Feature

UHF-R1 is a high performance RFID reader which integrating reader & antenna. It complies with ISO18000-6C/6B protocols, The work frequency includes FCC 902MHZ ~ 928MHz.

Output power from 0 ~ 33dBm optional, with long identification distance, fast reading speed, high accurate rate, strong anti-interference ability, good protection performance and easy installation.

1.2 Technical

1.2.1 Main function

- Protocol: support ISO18000-6C/6B standard
- Built-in LINUX operating system
- Multiple communication port: Ethernet, RS232, RS485, Wiegand
- Support tag data filtering
- Support RSSI: the intensity of the perceived signal
- Adjustable RF output power
- Optional working mode: constant frequency / frequency hopping
- Supports antenna detection function
- Supports online and remote upgrade
- I/O interface: 2 port optcoupler input, 2 port relay output and Wiegand output

1.2.2 Technical parameter

- Working frequency:

  FCC 902MHz ~ 928MHz, ETSI 865MHz ~ 868MHz

- Output power (port): 33dBm ± 1dB (MAX)

- Power adjustment: 1 dB step-by-step
- Reading distance: 1-30 Feet (depending on tags, antennas and environment)
- Channel bandwidth: <200 KHz
- Integrated circular antenna VSWR: ≤1.4:1
- Integrated circular antenna gain: ≥8dBi
- RS232 serial communication rate: 115200bps (default), 19200 bps, 9600bps
- RS485 interface communication rate: 115200bps (default), 19200 bps, 9600bps
- Support: Wiegand 26 interfaces
- Power adapter: AC input 100V ~ 240V, 50Hz ~ 60Hz

  DC output: 24V/2.5A → 12 - 30v | 1 - 3 amps |30 Watt Consumption
- High protection grade: IP65

1.2.3 Operational environment

- Working environment: -9°F to 158 F
- Relative Humidity: 5%RH ~ 90%RH

2. Sketch map

2.1 Physical construction

- Physical size: 11.4 in * 11.4 in * 4.5 in

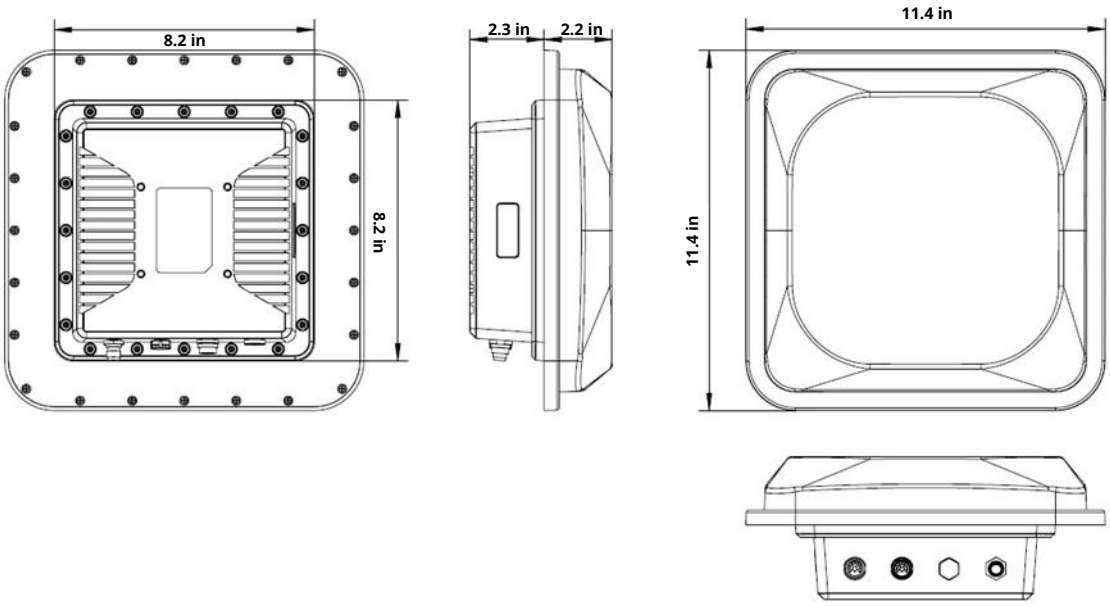


Image 2-1 Structure diagram

2.2Weight

- Main body: 5.5 Pounds

2.3 Interface chart

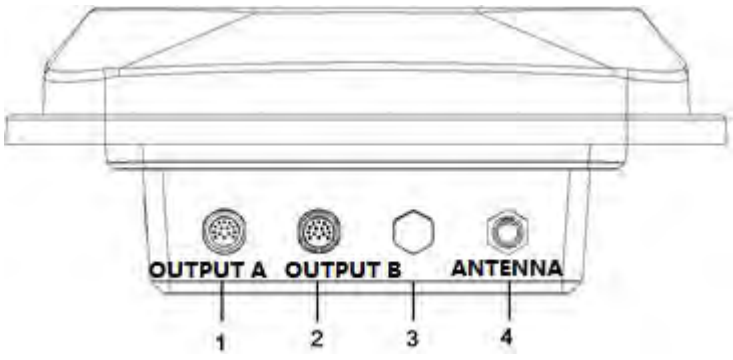


Image2-2I/O & communication interface

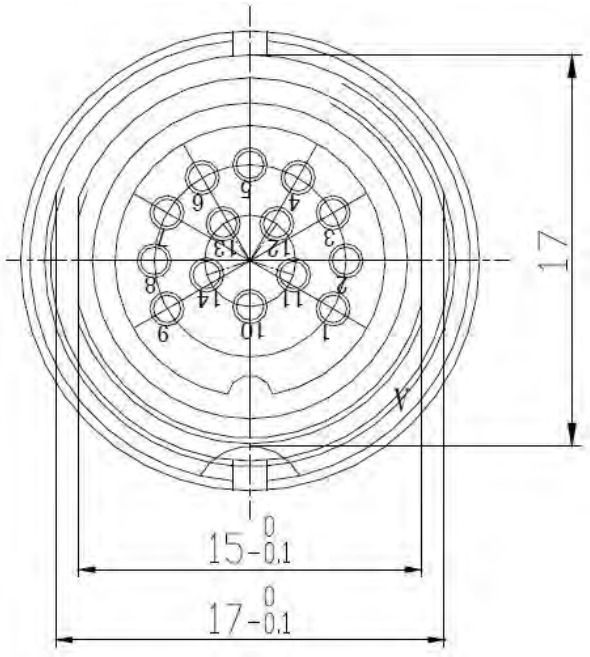
1 — power & communication port

2 — I/O control interface

3 — Ventilation valve

4 — external antenna port

2.3.1 Power supply & communication Interface description



Picture 2-3 Power supply & communication interface aviation connector pin number chart

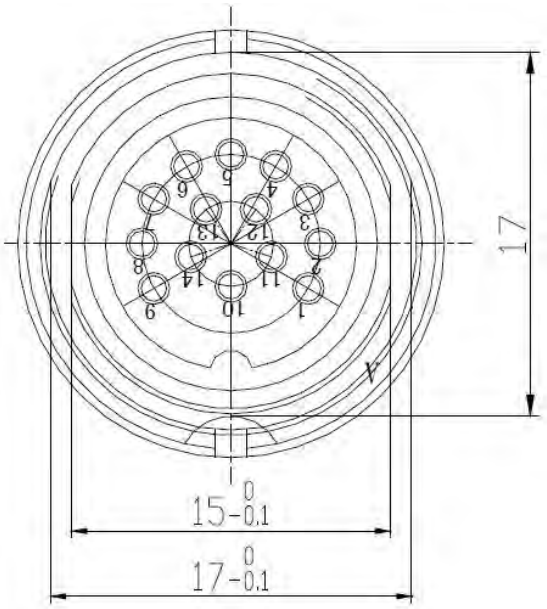
Aviation plug signal definitions

Chart 2-1 Power & communication interface signal definition

PIN	Description	PIN definition
9	Power supply GND	PGND
8	Power supply GND	PGND
7	24V power positive	+24V
6	24V power positive	+24V
5	NC	NC
4	NC	NC
3	NC	NC
2	Network wire	TD-
1	Network wire	TD+

14	Signal Ground	PGND
13	Network wire	RD-
12	Network wire	RD+
11	RS232 receiving RXD	RX
10	RS232 receiving RXD	TX

2.3.2 I/O aviation port chart



Picture2-4 I/O interface aviation connector pin number chart

I/O aviation port definition as per in chart 2-2:

Chart 2-2 I/O port signal function definition

PIN No.	Description	PIN definition
9	Relay 1 output port	R1
8	Relay 1 output port	L1
7	Relay 2 output port	R2
6	Relay 2 output port	L2

5	Optocoupler 1 external signal input anode	IN1
4	Optocoupler 2 external signal input anode	IN2
3	Optocoupler external signal input ground	IGND
2	Wiegand output 0	WG0
1	Wiegand output 1	WG1
14	GND	AGND
13	RS485 signal	485+
12	RS485 signal	485-
11	GND	AGND
10	GND	AGND

2.3.3 LED panel description

Picture 2-5 LED panel chart

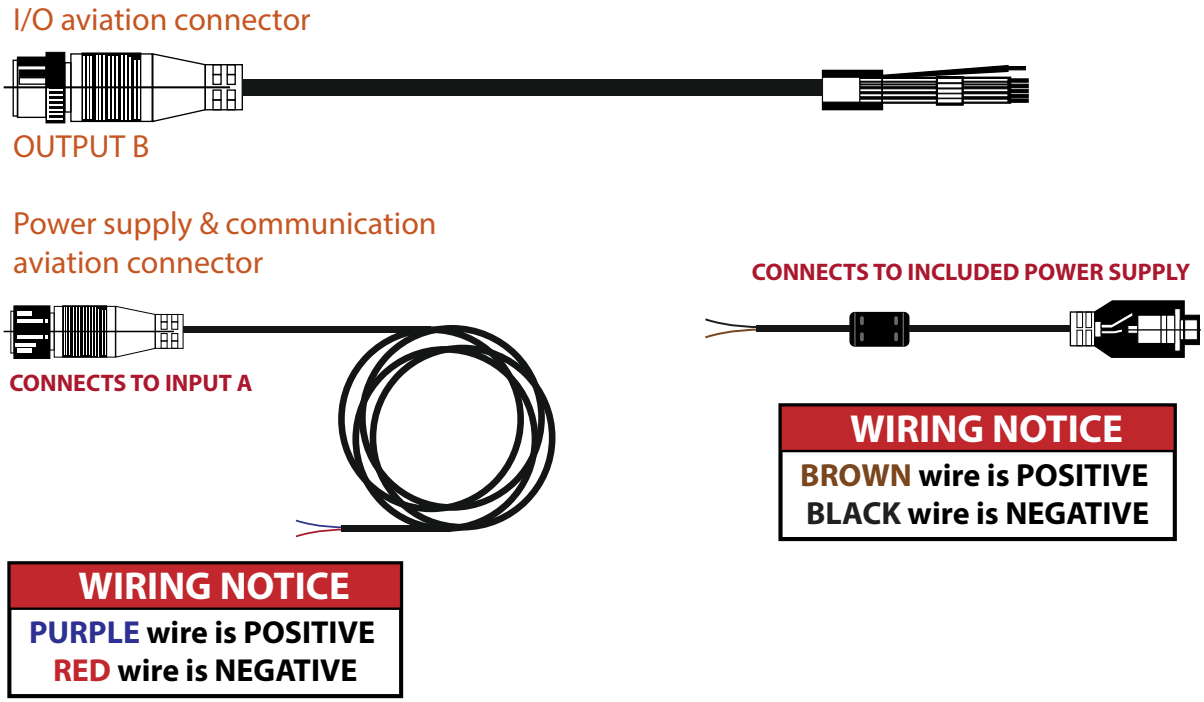
LED panel description as per in chart 2-3:

Chart 2-3 LED definition description

LED Mark No.	Description	Status description
(ANT1)	Antenna 1 indicator	Indicates built-in antenna is working
(ANT2)	Antenna 2 indicator	Indicates external antenna is working
(PWR)	Read/write card status	bright indicates power supply working normally Flickering means the reader is reading tags

2.4 External cable connection description

abridged general view



2.4.2 I/O control interface cable description

Cable Specifications: Black insulating skin with metal screening net, 14 inner core wire, outer diameter 7.8mm, aviation connector is connected with reader I / O control interface"OUTPUT B", The 14-core main line provides two-way optocoupler input , two pair relay output, Wiegand output, 485 signal line. Mainly used for input trigger reading, peripherals switch control,upload card data, and communication functions, see Table 2-4 I / O control aviation seat definition table.

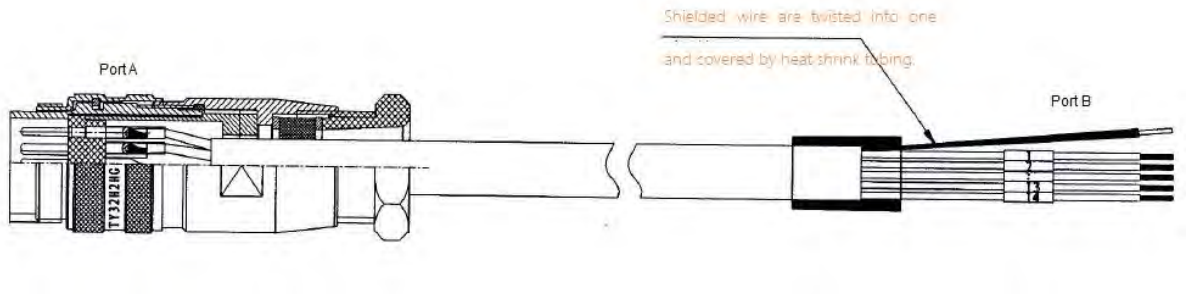


Chart 2-8 I / O control interface cable chart

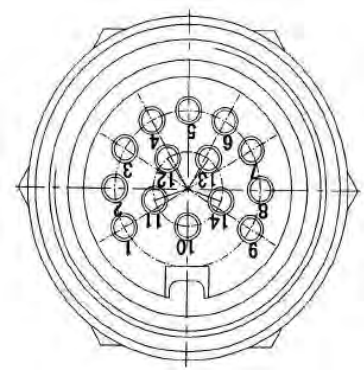


Chart 2-9 I/O control aviation seat illustration

The other end of the cable are bare and tinned lines, can distinguish the functions defined by the color of the lines.

Chart 2-4 I/O control aviation seat definition table

Pin number of aviation connector	PIN description	color for reference only	Marking number
14	Ground	Black	14
13	RS485A signal	Black & White	13
12	RS485B signal	Green	12
11	Ground	Gray/White	11
10	Ground	Gray	10
2	Wiegand output 0	Red	2
1	Wiegand output 1	Red/White	1

2.4.3 External RF cable description (optional)

Picture 2-10 RF cable schematic chart

The connector between RF cable& reader is TNC male, the connector between RF cable & antenna is SMA male connector (depending on antenna connector as well). Try to keep the cable length within 15 Feet, impedance50Ω, the insertion loss less than 2dB. Of course, you can choose a high-performance cable, appropriately increase the length, but keep the insertion loss less than 2dB.

Note: Too long of a RF cable or poor connection will cause high signal attenuation & poor reader performance.

2.4.4 External antenna description (optional)

This reader has a integrated secondary antenna. User can also connect one more external antenna.

Picture 2-11 **Secondary Antenna**

Antenna performance parameters:

Work frequency: 902~928

VSWR: ≤ 1.3:1

Gain: 9dBi

Polarization: Circular Right or left

Input impedance: 50 Ohm

Antenna Connection: N / SMA

Mechanical size: 11.4 in * 11.4 in

Color: White

Working temperature: -9 ℉ ~ 158 ℉

2.4.4 Network connection chart

Network interface used for long-distance high-speed connection (less than 80 m), can be connected with the switcher or router through the network cable, or directly connected with the PC network interface, refer to below picture.

3. Installing

3.1 Precautions

To ensure the normal and stable operation of the device and your personal property and safety, please carefully read the following notes before installing Dolcuhf-R1 reader and writer:

1. Firstly, check whether the power socket is connected to the ground, and to see whether the local power supply voltage is in accordance with the applicable voltage range of the reader;

2. Check the device and the external connection if is closely connected;

3. Pay attention to the type selection and the length limit of the network cable and the serial cable:

   Network cable connects directly, no longer than 80 meters

   Serial cable connects directly, no longer than 10 meters

4. When installing several readers, the antenna position and the antenna spacing should be appropriate to avoid interference with each other.

3.2 Installation conditions

Before installing the reader, please check carefully whether the product is in good condition and the accessories are complete. If there is any parts missing or damage, please contact the supplier in time.

3.3 Device connection

3.3.1 Connected to power adapter

- ☆ Insert the power cord into the AC power supply socket and plug another end into the power connector of the device and tighten.
- ☆ Turn on and wait about 20 seconds, the system initialization process is completed and is standby state.

3.3.2 Connect an external antenna and RF cable

☆The reader housing has a TNC-type coaxial connector for connecting an external antenna, select low consumption RF cable, connectors should be tightened.

☆ The reader antenna angle or tilt needs to be adjusted to the best position through the actual test according to the specific application.

3.3.2 Connected with PC

☆ RS232 interface is for short distance communication (less than 10m), through the DB9 connector and the PC serial port connection to realize the communication of PC and the device,

☆RJ45 network port used for long distance communication (less than 80m), connect PC with extend network cable.

3.4 How to install the reader

The reading and writing range of the reader depends on the onsite application, the tilt angle of the antenna is adjusted to achieve the best reading and writing performance.

3.5 Installation steps

Mounting Bracket

4. Common failures

4.1 Daily maintenance

The routine maintenance of Dolcuhfr1

☆To check whether the tightening of RF connector

☆To check if the screw fixed reader and antenna is loose

☆To check whether the RF cable joints appear outsourcing breaking the shielding layer

☆To check if the reader power line connection is reliable

4.2 Common failure analysis and solution

Power supply system failures:

Check whether the power adapter is normal, and the AC supply voltage is between 100V ~ 240V.

The panel indicator light failed when power on:

Check whether the communication is normal; please contact customer serviceif it'snot normal.

The serial port unable to connect:

Check if the serial cable is not connected or connected unstable.

Check if the serial port connect baud rate of the reader is correct

Check if the selected COM port is right.

The network port cannot connect:

Factory set the default IP address: 192.168.1.116 when Dolcuhfr1 reader device ex-factory, ensure the IP address of the PC and reader in the same network segment, such as "192.168.1.XXX" then you can connect to the reader, if you forget the IP address of the device, you can reset the reader's IP address through the serial port.

The reader can't read the tag

Check if the setting of antenna number is correct

Check if the label is damaged

Check if the label is placed in the reader's valid reading and writing range.

Check if the electromagnetic interference between the reader and the other device.

For the problem users cannot be solved, please contact customer service.

Table 6-1 Packing Accessories list

NO.	Name	Material Code	Qty	Unit	Remark
1	Dolcuhfr1 integrated RFID Reader	————————	1	set	Included
2	Customized aviation cable (one divides into three)		1	Set	Included
3	Customized aviation external IO cable.		1	Pcs	Included
4	Power adapter 24V/2.5A		1	Pcs	Included
5	AC power cable		1	Pcs	Included
6	Network cable		1	Pcs	Included
7	RS232 cable		1	Pcs	Included
8	Inner hexagon cylinder head combination screw		4	Pcs	Included
9	L-shaped mounting bracket	20411000013135	1	Pcs	Optional
10	u-bolt and toothed mounting bracket	20411000013136	2	Pcs	Included
11	9dBi circularly polarized antenna	20351000000035	1	Pcs	Optional
12	Coaxial RF Feeder Cable BRL-07 SMA-K--TNC-J	20351000000038	1	Pcs	Optional

6. WARRANTY

The warranty period of this product is 24 months, beginning from the manufacturing date. During this period, if the product does not operate correctly, due to a defective component, the product will be repaired or replaced at the sole discretion of Transmitter Solutions. This warranty does not extend to the product casing which can be damaged by conditions outside of the control of Transmitter Solutions.

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