



HF Industrial Reader User Manual

Suitable for AR1302P/AR2302P

- ◆ Before you use this product, please read this manual carefully and properly keep it for future reference.
- ◆ As our products continue improving, they may be changed without advanced notice.
- ◆ The copyright of this manual belongs to our company. Unauthorized plagiarism or dissemination will be held legally responsible.

Version: V1.1

Contents

1.	Product Overview	1
1.1.	Introduction	1
1.2.	Product Features	1
1.3.	Product Pictures	2
1.4.	Main Parameter	2
2.	Hardware Interface Description	3
3.	Communication Connection	4
3.1.	Connection Description	4
3.2.	Connector Description	4
3.2.1.	Splitter	4
3.2.2.	Cables	5
4.	Indicator Light Description	7
5.	Installation Instructions	8
5.1.	Product Dimensions	8
5.2.	Product Installation Method	8
6.	Technical Support	9

1. Product Overview

1.1. Introduction

AR1302P and AR2302P are high-stability industrial-grade RFID reading/writing devices. AR1302P is developed based on a low-power HF radio frequency chip, while AR2302P is developed based on a medium-power HF radio frequency module. Operating at 13.56MHz, they support reading tags compliant with the ISO15693 international standard protocol, such as NXP I-CODE 2 and I-CODE SLI. The devices have built-in filtering and isolation modules, providing strong anti-interference capability for EMC. They also feature easy use, good sealing, excellent heat dissipation, high receiving sensitivity, stable performance, and high reliability. Supporting the standard industrial communication protocol “Profinet”, they facilitate integration into PLC and other control systems. The reader integrates radio frequency communication protocols internally, eliminating the need for users to understand complex radio frequency communication protocols. Users can achieve UID inventory, read memory, and write memory operations through common “Profinet” commands.

This product is suitable for industrial fields such as production automation lines, automated sorting systems, and component assembly lines.

1.2. Product Features

- Support ISO 15693 standard
- Built-in filter and isolation module, with strong anti-interference ability to EMC
- Communication interface: RS485, Ethernet port
- Integrated design, compact structure, convenient for distributed installation and deployment
- Protection class IP67, suitable for various harsh environments in the industrial field

1.3. Product Pictures



Figure 1 Product appearance

1.4. Main Parameter

The detailed technical parameters of this product are as follows:

Table 1 Description of main technical parameters of the product

Parameter	Description
Operating Frequency	13.56 MHz
Support Standard	ISO 15693 protocol ISO 14443 Type A/B protocol (limited to AR1302P)
Read And Write Distance	AR1302P:0~100mm(M50 non-metal-resistant tag) AR2302P:0~200mm(M50 non-metal-resistant tag)
Communication Interface	RS485(Modbus RTU) Ethernet port (ProfiNET)
Communication Rate	RS485:9600~115200 bit/s Ethernet port: 10M/100M
Supply Voltage	24V DC(10~30V)
Maximum current	AR1302P:<0.08A@24V DC AR2302P:<0.12A@24V DC
Indicator Lights	2 LED indicator lights
Dimensions	100*100*35mm
Weight	590g±50g
Fixing Method	4*M4 Nut fixed
Housing Material	ABS + metal base plate
Shell Color	Black
Operating Temperature	-40°C~+70°C

Operating Humidity	5%~95%RH
IP Rating	IP67

2. Hardware Interface Description

This product adopts dual communication ports:

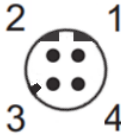
P1 port is an industrial plug 4pin male (M12D): used as the Ethernet communication port.

P2 port is an industrial plug 8pin male (M12A): power + RS485 communication + 1 isolated input + 1 isolated output + common terminal + GND.

The device is powered by DC 24V (10~30V).

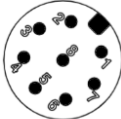
Pin definition for P1:

Table 2 Ethernet Port Pin Definition

P1	Pin (4pin male)	Connection (Ethernet port)
 M12 D	1	TD+
	2	RD+
	3	TD-
	4	RD-

Pin definition for P2:

Table 3 Reader Power Supply, Communication and IO Port Pin Definition

P2	Pin (8pin male)	Power Supply, Debugging, DIO
 M12A male	1	24VDC
	2	0V
	3	RS485A
	4	RS485B
	5	DI
	6	DO
	7	COM+
	8	GND

3. Communication Connection

3.1. Connection Description

AR1302P and AR2302P can communicate with PLC through an industrial router.

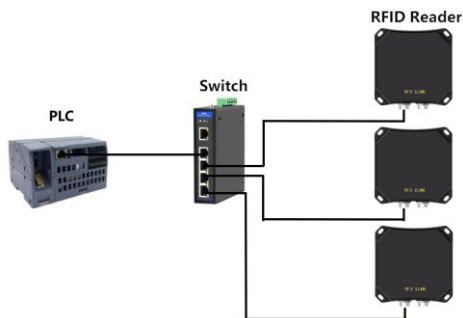


Figure 2 AR1302P, AR2302P Single Machine Connection to PLC

3.2. Connector Description

3.2.1. Splitter

3.2.1.1. 8-core Interface Splitter

Connected through an 8-core interface splitter, which divides the 8-core interface into: Port 2 is an industrial plug 4pin male (M12A), used as power supply and RS485 communication port; Port 3 is an industrial plug 4pin female (M12A), used as GPIO port:

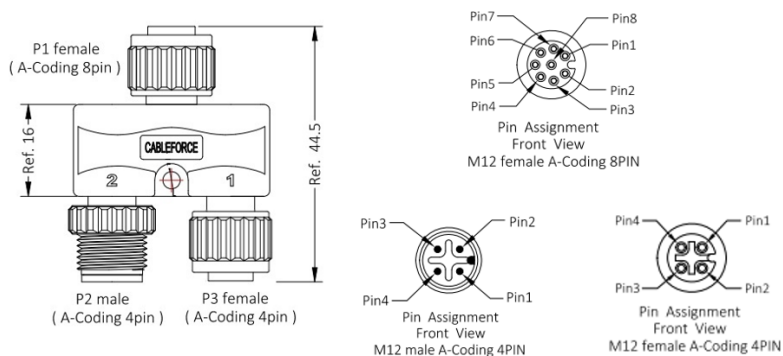


Figure 3 8-core Interface Splitter (Optional)

3.2.1.2. 2-way Splitter

Connected through a 2-way splitter, which can expand power supply and RS485 communication bus:

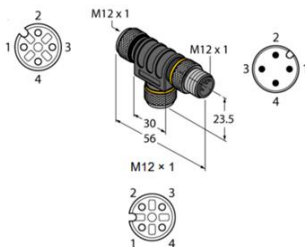


Figure 4 2-way Splitter (Optional)

3.2.2. Cables

3.2.2.1. Power/Debugging/DIO Connection Cable

Among the 8-core cable, 2 cores are power lines (1, 2), 2 cores are RS485 lines (3, 4), 1 core is DI line (5), 1 core is DO line (6), 1 core is common terminal (7), and 1 core is ground terminal (8).

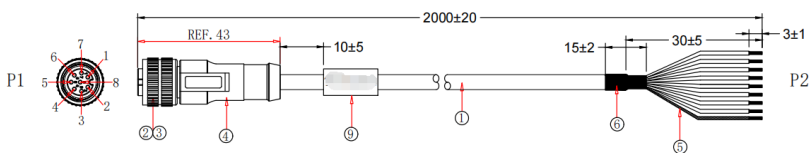


Figure 5 DC Power Supply Cable

Table 4 Port Wiring

P1 (Reader)	Wire Color	Definition
1	Red	V+
2	Blue	V-
3	White	RS485A
4	Brown	RS485B
5	Grey	DI
6	Pink	DO
7	Yellow	COM+
8	Green	GND

Metal Shielding Mesh	Metal Shielding Mesh	PE
----------------------	----------------------	----

3.2.2.2. One-to-Two Debugging Cable

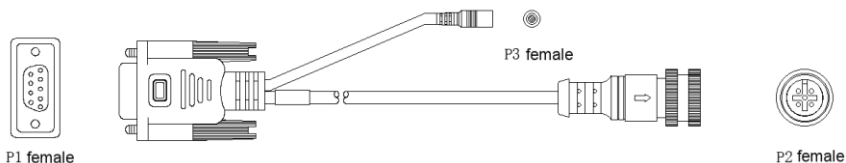


Figure 6 One-to-Two Debugging Cable (Optional)

This cable can be directly connected to a 2-way splitter or 8-core interface splitter. The female socket P2 can be connected to the industrial plug 4pin male (M12A) of the 2-way splitter or 8-core interface splitter. The female socket P3 can be connected to an adapter power supply (10-30V) with DC2.1 male interface. The female socket P1 is an RS485 interface, which can be connected to a computer for communication.

3.2.2.3. Power/Communication Connection Cable

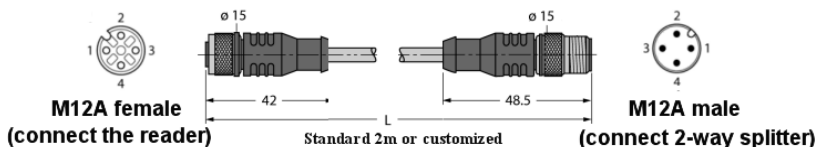


Figure 7 Power Supply and RS485 Connection Cable (Optional)

This connection cable encapsulates 24V DC power supply and RS485 communication lines in a 4-core industrial connection cable.

To improve communication reliability and system EMI performance, users can choose shielded twisted pair as communication cable or special serial communication cable. The communication distance is related to the quality of the communication cable and the communication baud rate.

Table 5 Baud Rate and Communication Distance Description

Baud Rate (bits/s)	Maximum Communication Distance (m)
9600	800
19200	600
38400	500

3.2.2.4. Ethernet Connection Cable

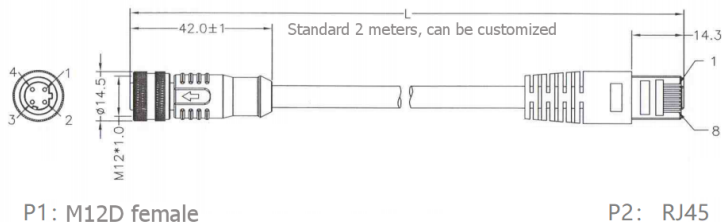


Figure 8 Industrial Ethernet Connection Cable (Optional)

To improve communication reliability and system EMI performance, it is recommended that users use CAT5E standard industrial Ethernet cable as communication cable. The theoretical communication distance can reach 100 meters, but it is recommended to use within 80 meters in actual applications.

Table 6 Port Wiring

P1 (Reader)	P2 (Router)	Definition	Wire Color
1	1	TD+	Orange-White
3	2	TD-	Orange
2	3	RD+	Green-White
4	6	RD-	Green
Metal Shielding Mesh	Metal Shielding Mesh	Signal Shielding Mesh	

4. Indicator Light Description

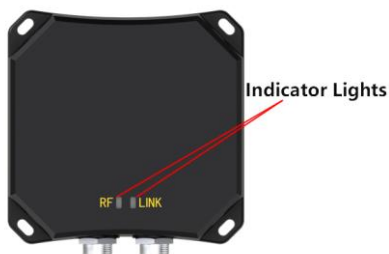


Figure 9 Reader Indicator Lights

Table 7 Reader Indicator Lights Description

LED	Status	Indication
Green LED	Slow blinking	Command card reading mode
	Fast blinking	Cyclic card reading mode
	Steady on	RFID tag detected
Blue LED	Steady on	Received communication data from host computer (blinking)

5. Installation Instructions

5.1. Product Dimensions

The outline dimensions of this product are as follows (unit: mm):

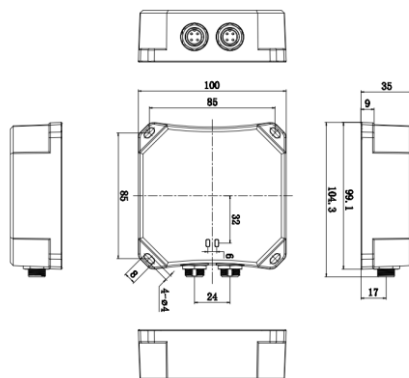


Figure 10 Device Dimensions (unit: mm)

5.2. Product Installation Method

This device can be fixed in position using 4 M4 screws. Custom mounting brackets can be provided according to the customer's on-site installation environment. If there is a metal plate on any side of the reader, the reader must be at least 15mm away from the metal plate; otherwise, the radio frequency signal of the reader will be affected, resulting in the reading distance not reaching the expected distance or even complete failure to read.

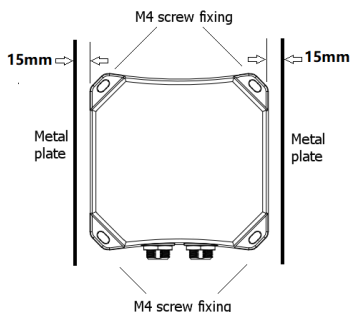


Figure 11 Product Installation Diagram

Since radio frequencies between readers will interfere with each other, a certain distance must be maintained between any two readers to avoid mutual interference. Therefore, when readers are installed sideways, the distance between them should be greater than 800mm; when installed facing each other, the distance should be greater than 650mm.

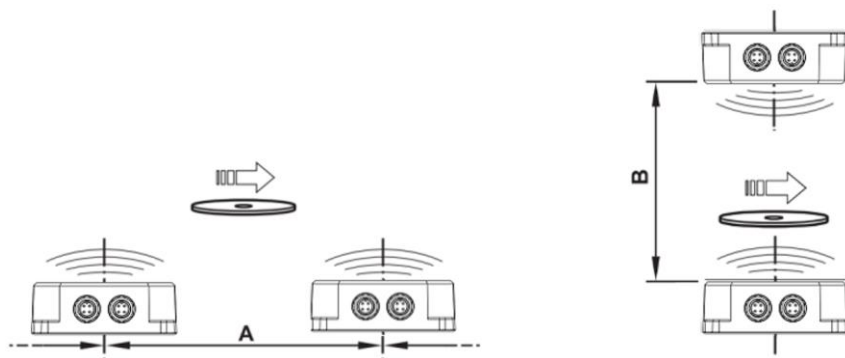


Figure 12 Product Installation Spacing Diagram

6. Technical Support

- **Download link for development data and testing**
<http://www.gzandea.com/download.php>
- **Call for equipment debugging and technical support**
Mobile phone: 138 0251 4535

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



Guangzhou Andea Electronics Technology Co., Ltd.

Address: Room 1101, 1102, Building C2, No. 29, Bishan Street,
Huangpu District, Guangzhou.

Zip code: 510705

Website: <http://www.gzandea.com>