



AYNETTEK

High-Frequency Reader User Manual

Instructions

This user manual aims to describe the functions, dimensions, interfaces, DEMO system setup, and installation precautions of the high-frequency series products from Anait Intelligent Technology Co., Ltd. The manual provides complete hardware specifications, general electrical parameters, necessary circuit schematics, and hardware setup for testing the DEMO system. The DEMO system setup only describes the hardware connections and DEMO connections. For specific usage, please refer to our DEMO user manual. The general installation specifications outline some precautions for on-site installation. Please select and install according to the actual conditions on-site in conjunction with these usage specifications to address different industrial application scenarios.

The main contents of the manual include:

- Reader Function Description
- Reader Interface Definition, Dimensions, and General Electrical Parameters
- Adapter Cable Interface Definition
- Hardware Connections of the DEMO System
- Usage Precautions

If there is any ambiguity in the information provided in the manual or if it does not match the actual situation, please contact us.

Contact information:

- Anette Intelligent Technology (Shenzhen) Co., Ltd.
- Phone: +86-755-*****
- Fax: +86-755-*****

Modification History

Version	Modification Content	Author	Date
V1.0	Release	Ren Xiaobo	2023.12.03
V 1.1	Added machine model AIS – PHR – Y305, ISO14443A protocol	Ren Xiaobo	2026.04.29



Table of Contents

1. READER FUNCTION INTRODUCTION	6
READER FUNCTIONALITY INTRODUCTION	6
2. HARDWAREINTERFACEDESCRIPTION	7
READER PORT INTRODUCTION	7
READERINTERFACE PIN DEFINITION	7
READER WORKING INDICATOR DEFINITION	8
3. READER GENERAL SPECIFICATIONSPARAMETERS	9
ELECTRICAL PARAMETERS	9
<i>Application environment parameters</i>	9
<i>Appearance Parameters</i>	9
4. DEMO TEST ENVIRONMENT SETUP	10
DEMO HARDWARE ENVIRONMENT SETUP	10
DEMO SOFTWARE ENVIRONMENT SETUP	11
5. INSTALLATION PRECAUTIONS	12
BRACKET DESIGN	12
READER INSTALLATION SPACING	12
READER DATA POWER LINE PLACEMENT	13
SELECTION OF READING AND WRITING DISTANCE	13
INSTALLATION OF THE TAG	13
ESTIMATION OF MAXIMUM SPEED OF TAG MOVEMENT	13

Tables used in the manual

TABLE1 HIGH-FREQUENCY P SERIES READER INTERFACE MODEL.....7



1. Reader function introduction

Reader Functionality Introduction

The Anet high-frequency series readers are a series of general-purpose high-frequency RFID readers suitable for various industrial applications. This series includes both integrated and separate types of RFID reader products, as well as supporting antennas, tags, cables, and other products. Products of various sizes can be combined and matched to suit various applications in industries such as 3C, home appliances, automotive, new energy, and equipment.

The functions of the reader can be specifically divided into two main categories:

Tag Read/Write Operations

- General I/O Control

Tag Read/Write Operations

The Anet high-frequency series products support ISO-15963 and ISO-14443A protocols, enabling read and write operations on electronic tags compliant with these protocols.

General I/O

Some products in the Anet high-frequency series feature two isolated adaptive GPIO interfaces. These can receive and output I/O signals (such as controlling switches, photoelectric sensors, alarms, etc.) through the general I/O functionality.

The main features of the high-frequency series readers are as follows:

- Operating frequency of 13.56MHz, compliant with ISO-15693 and ISO-14443A standards;
- Supports RS-485 (Modbus RTU) and POE (Modbus TCP) communication methods, facilitating large-scale networking applications for enterprises;
- Industrial standard EMC design effectively resists various interferences in industrial environments;
- Compact structural design for easy installation;
- IP67 protection suitable for various installation environments.

2. HardwareInterfaceDescription

Reader port introduction

Anet high-frequency series readers have four types of external interfaces: antenna connection interface, GPIO interface, POE interface, and 485 & power interface. Each interface connects to the corresponding external device through a customized cable. The following table provides the interface descriptions for the entire series of products.

Table1 High-frequency P series reader interface model

Product image	Product model	Port Type
	AIS-PHR-Y304 AIS-PHR-Y305	①5-core shielded loose wire 485 & power port (length can be customized)

ReaderInterface Pin Definition



Definition of external connection wire M12 terminals. When connecting to loose wire cables, please strictly follow the terminal definition table below. If our company provides If you have standard injection-molded cable products, please prioritize purchasing our finished cables. It is not recommended to assemble cables on your own. If the cable length is insufficient, you can use an extension cord or consult with our company to customize the cable.

Table2 485 & Power Interface Terminal Definition Table with Built-in Tail Wire

Serial Number	Definition	Reader	Tail line scattered line
1	24V+	1	Red
2	24-	2	Green
3	RS485_A	3	White
4	RS485_B	4	Black
5	NC	5	Huang

Reader Working Indicator Definition



Table3 Blue-Green Dual Indicator Model Definition

Number	Description
Green	Always on, power supply is normal
	Off, there is a tag in the reading area, at this time the blue light is always on
	Flashing, data interaction with the reader
Blue	Changliang, there are tags in the reading area



3. Reader General SpecificationsParameters

Electrical Parameters

Table4 Reader Electrical Parameters

Name	Parameters
Wireless Protocol	ISO-15693 (ISO-14443A optional)
Operating Frequency	13.56MHz
Supported Areas	SRRC China, FCC North America, ETSI Europe
Output Power	Related to Model
Wireless Rate	26.5kbit/S
Reading Distance	Related to Model
Communication Interface	RS-485 or TCP
Serial Communication Rate	115.2kbit/s (configurable)
Ethernet communication rate	10/100M adaptive
Power supply voltage	DC 24V+/-10% (RS-485), DC 48V+/-10% (POE)
Average current	Related to Model

Application environment parameters

Table5 Reader position and interface function definition

Operating temperature	-40°C to +70°C
Storage Temperature	-40°C ~ +85°C
Operating Humidity	5% ~ 95%RH (non-condensing)
Water and Dust Resistance Rating	IP67
Drop Test	GB/T2423.8-1995

Appearance Parameters

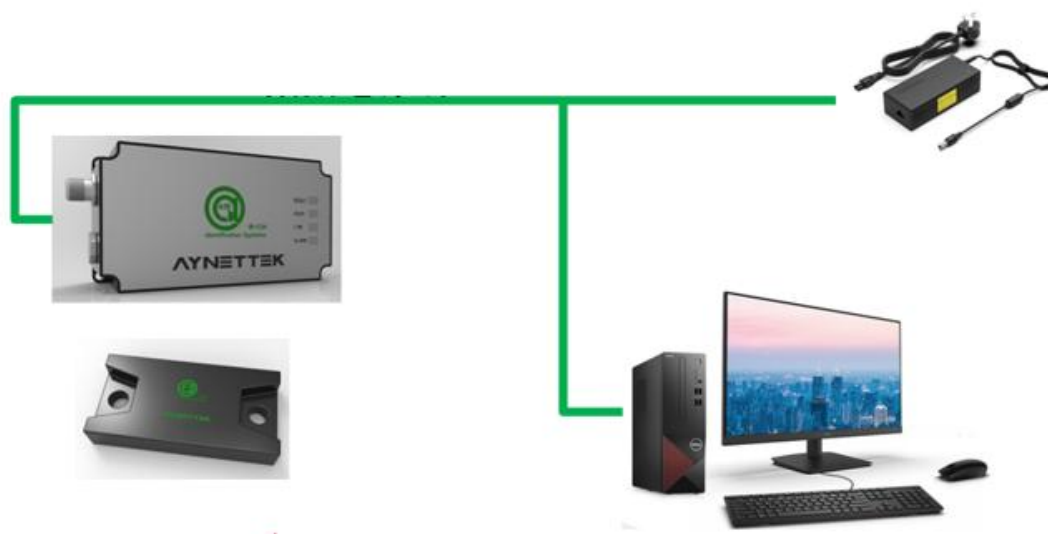
Please refer to the technical specifications of the corresponding model.

4. DEMO test environment setup

DEMO Hardware Environment Setup

Table6 Hardware Required for DEMO Environment Setup

Reader	RS485 Model
Power Supply	24V Adapter or DC Power Supply (with terminals)
Equipment	
Data Cable	RS485 to USB Data Cable (with terminals)
Data Power Cable	RS485 Data Power Cable (provided by our company)
Reader Antenna	Split-Type Model Optional
(Optional)	
Label	Selection Label
Network Cable	Standard Network Cable
Computer	Windows System Computer

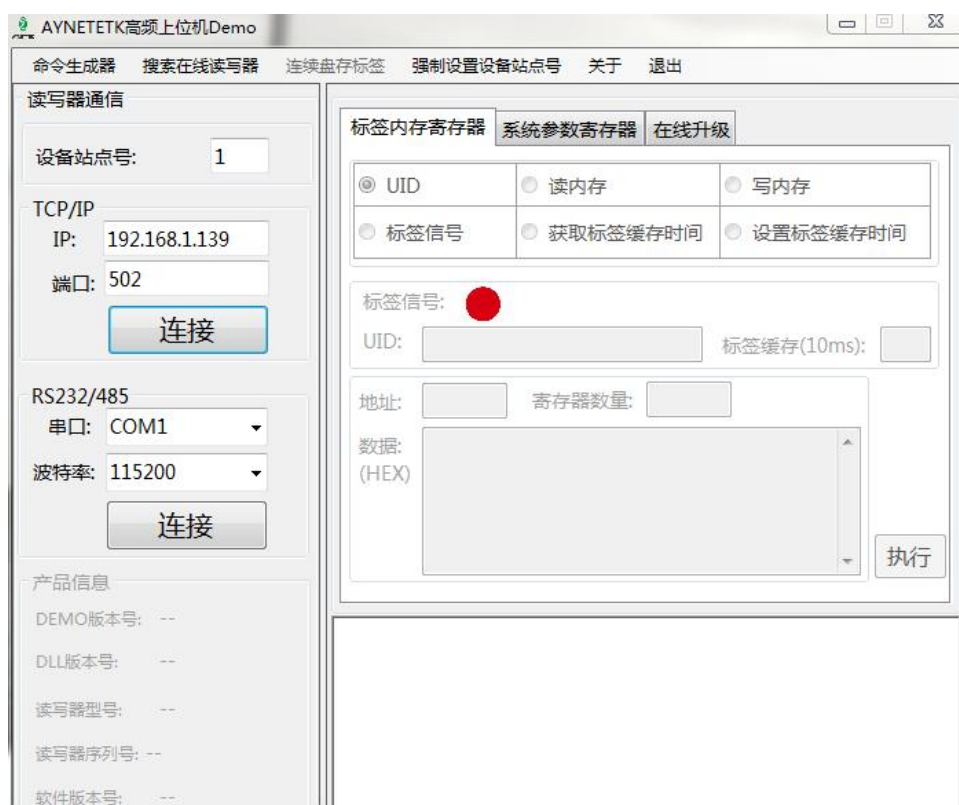


DEMO Software Environment Setup

Select the DEMO executable provided in our development package and double-click to run.



For the POE model, select TCP/IP connection, and the default IP port is shown in the figure below. For the RS485 model, select serial connection, with a default baud rate of 115200.



For detailed usage of the DEMO software, please refer to the "High-Frequency Reader DEMO User Reference Manual" in the software development package.

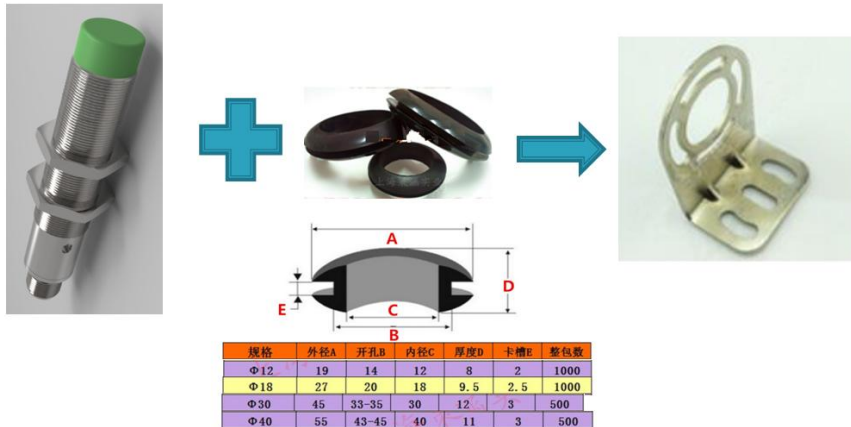
5. Installation Precautions

Bracket Design



!!!! The reader's antenna cover is made of non-metallic material; impact is prohibited!!!!

The high-frequency reader is sensitive to low-frequency interference signals, requiring the device casing to be well grounded to shield external interference. However, production line equipment has various motors and is difficult to ground properly. If the reader's metal casing is directly connected to the equipment, it may conduct interference signals from the equipment. Therefore, when designing the bracket, insulating materials should be used to isolate the reader (including the antenna) metal casing from the mechanical equipment. Insulating materials such as PC and bakelite can be used. We also provide corresponding installation components to facilitate the bracket's insulation design.



Cylindrical readers or antennas should be used with rubber rings.

Reader Installation Spacing



The high-frequency reader reads and writes tags through the magnetic field around the antenna. If two devices are installed too close to each other, their antenna radiation magnetic fields will interfere with each other's ability to read tags. Therefore, the installation distance of all readers or antennas should follow the distances in the table below. If it cannot be avoided on-site, the readers need to operate in a time-sharing polling mode.

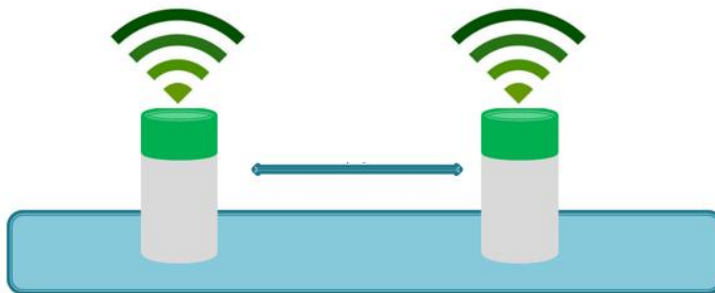


Table7 Reader Installation Spacing Table

Reader Model	Installation Safety Distance (cm)
AIS-PHR-Y304	40cm
AIS-PHR-Y305	

Note: The spacing for split-type readers depends on the size of their connected antennas, referring to the spacing of readers with antennas of the same size. The antennas connected to the same split-type device do not interfere with each other.



Reader Data Power Line Placement

High-frequency readers read and write tags through the magnetic field around the antenna. The production equipment's motor generates electromagnetic components, which, if significant, may affect the normal operation of the reader. This is especially true when the reader's power data line is laid flat alongside the equipment's power line, particularly if it is long. Therefore, it is recommended:

- The reader's power data line should be routed in a separate cable tray;
- The feed line of the split-type antenna should not be coiled or placed in a spiral manner.



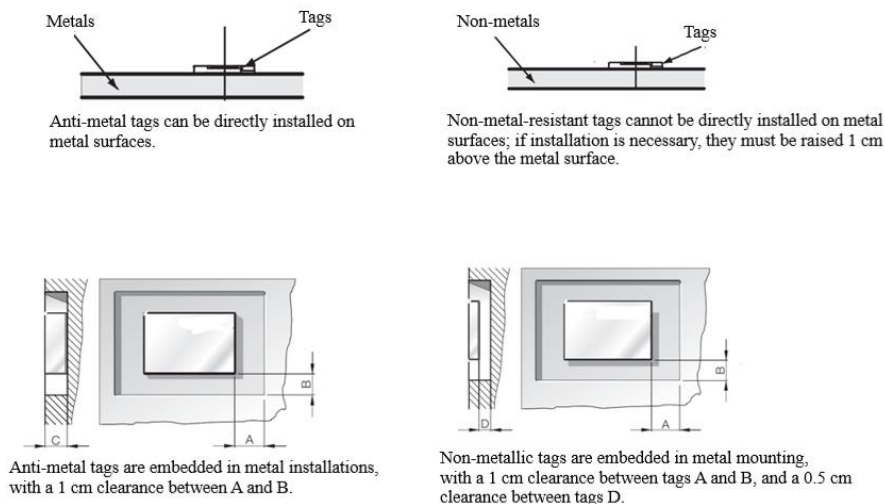
Selection of Reading and Writing Distance

The high-frequency reader writes and reads tags through the magnetic field around the antenna. The electromagnetic components around the reader can interfere with its normal operation. Therefore, it is recommended to use 60% of the maximum reading distance of the reader as the installation distance. Additionally, the reader's antenna should be aligned with the tag's antenna.



Installation of the tag

High-frequency tags also communicate with the reader through a magnetic field. When the magnetic field encounters metal, it generates a reverse eddy current magnetic field due to Lenz's law, which cancels out the magnetic field produced by the reader, causing a sharp decline in the magnetic field energy received by the tag, making it unreadable. To mitigate the impact of metal, magnetic materials need to be added to the bottom of the tag, or a clearance area should be reserved during installation.



Estimation of maximum speed of tag movement

The maximum speed allowed for mobile reading. If reading while in motion, the readable range at the current reading distance needs to be measured, and based on the number of bytes read, the time required for two readings should be estimated. Speed = readable range / time required.

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.

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.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.