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AY-U900

UHF Integrated Long-Range Reader
Installation and User Manual



ROSSLARE
SECURITY PRODUCTS

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This manual's sole purpose is to assist installers and/or users in the safe and efficient installation and usage of the system and/or product, and/or software described herein.

BEFORE ATTEMPTING TO INSTALL AND/OR USE THE SYSTEM, THE INSTALLER AND THE USER MUST READ THIS MANUAL AND BECOME FAMILIAR WITH ALL SAFETY REQUIREMENTS AND OPERATING PROCEDURES.

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- This manual describes the maximum configuration of the system with the maximum number of functions, including future options. Therefore, not all functions described in this manual may be available in the specific system and/or product configuration you purchased.
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1. Introduction

The AY-U900 is a UHF reader that is compatible with multiple protocols and can read multiple tag formats.

The reader is waterproof and is suitable for use in a wide range of RFID applications, such as transport management, vehicle management, car parking, production process control, and access control.

Figure 1: AY-U900 Reader



The AY-U900 series includes the following three models:

- AY-U900US: 902–928 MHz (America)
- AY-U900C: 920–925 MHz (China)
- AY-U900EU: 865–868 MHz (Europe)

1.1 Installation Kit

The AY-U900 package includes:

- 1 installation and user manual
- 1 AY-U900 reader
- 1 switching power supply: 9 VDC, 3 A
- 1 RS-232 cable
- 1 DATA communication cable
- 1 installation bracket kit

2. Technical Specifications

Electrical Characteristics

Operating Voltage Range	9 to 12 VDC (2 A)
Input Current	Standby: 0.2 A max
	Read: 1.2 A max
Card Read Distance*	Up to 12 m (39.4 ft) (adjustable)
Transmission Protocol	Wiegand 26-Bit (Custom: Wiegand 34-Bit)
Maximum Cable Distance	150 m (500 ft)
Frequency	AY-U900US: 902–928 MHz (America) AY-U900C: 920–925 MHz (China) AY-U900EU: 865–868 MHz (Europe)
Read Sensitivity	Dual polarization read mode
Cards and Tags	Rosslare's AT-T910 and AT-T911 cards ISO18000-6B Tags EPC GEN2 (ISO18000-6C) Tags

Environmental Characteristics

Operating Temp. Range	-20°C to 80°C (-4°F to 176°F)
Operating Humidity	0 to 95% (non-condensing) Suitable for outdoor use (IP54)

Dimensions

Height x Width x Depth	44 x 44 x 5 mm (1.73 x 1.73 x 0.20)
Weight	2.32 kg (5.11 lb)

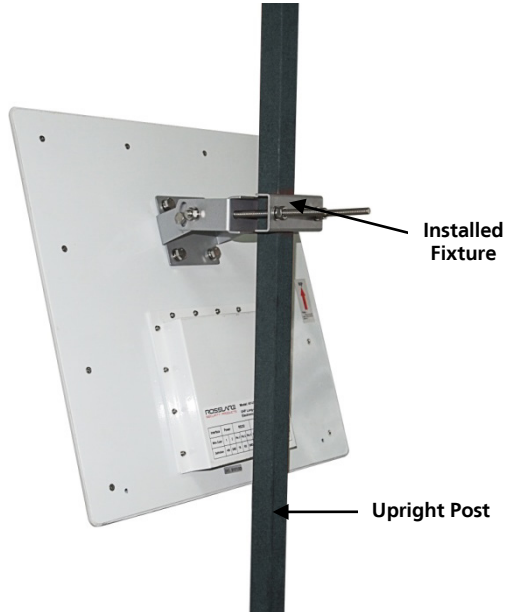
* Read range was tested with Rosslare's AT-T910 card.

3. Installation

3.1 General

Figure 2 shows the structure of the reader.

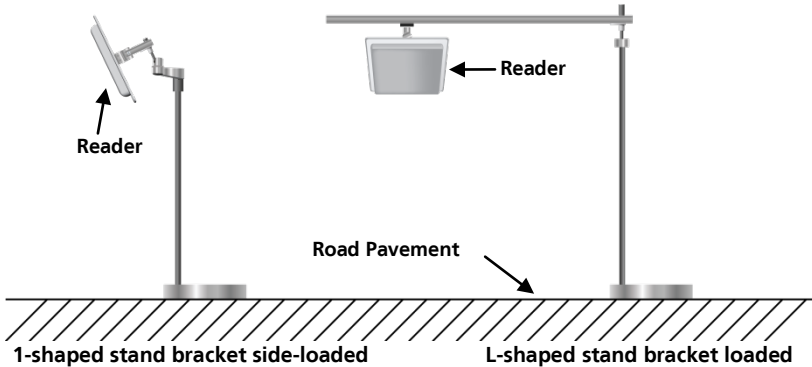
Figure 2: Reader Components



There are two ways to install the stand-bracket of the AY-U900 reader as shown in Figure 3:

- 1-shaped stand bracket side-loaded
- L-shaped stand bracket loaded

Figure 3: Reader Fixing Mode



Each installation method is selected based on application requirements and actual location. The user can use the provided template to install AY-U900 reader in more convenient and easier way, but the read distance is a little short; the situation becomes opposite if using the latter.

3.1.1 1-Shaped Stand Bracket Side-Loaded

In this method, the stand pole installed to the AY-U900 reader should have a diameter of between 50 and 60 mm and the length of 2.2 m. The pole should be made of stainless steel with a thickness of more than 1.20 mm.

Use the fastener contained in package box to mount AY-U900 reader to the top of the stand pole according to actual vehicle type (mainly large car and small car) and then adjust the height from the center of AY-U900 reader to lane level to be around 2.0 m (between 1.8 and 2.2 m).

3.1.2 L-Shaped Stand Bracket Top-Loaded

In this method, the L-shaped stand pole (or dragon shape) installed to AY-U900 reader should have a diameter of between 60 to 80 mm. The pole should be made of stainless steel with the thickness of more than 1.20 mm.

Use the fastener contained in package box to mount AY-U900 reader to the rail near the center of the lane.

Adjust the height between the rail and the ground to between 3.5 to 4.0 m, depending on the height of vehicle.

3.2 Adjusting the Azimuth Angle of Antenna

The angle of inclination with the ground plane of the antenna should be approximately 60° to 75°, while the deviation angle of the antenna should be biased towards the lane direction (Figure 4).

Figure 4: Antenna Angle Top View

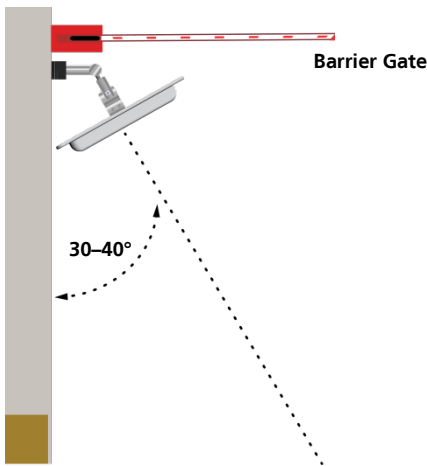
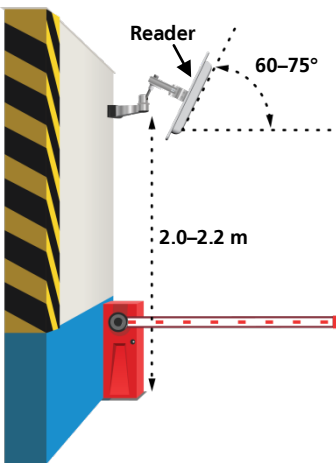


Figure 5: Antenna Angle Side View



4. Operation Instructions

After wiring the unit to a power supply and a controller (Wiegand output, D0, D1, GND), you should test the AY-U900 long-range UHF reader.

To test the reader:

1. Power up the reader. One beep is emitted and then it begins an auto-calibration procedure. After 2 seconds, the reader enters working mode.
2. Present the appropriate type of proximity card to the reader. A short beep is emitted, indicating that the card is read properly.

5. Software Installation and Configuration

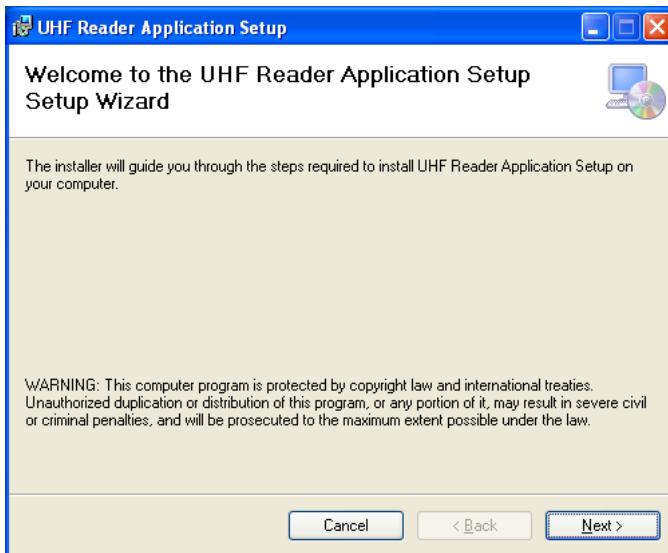
5.1 Installing the Software

The UHF Reader Setup Application v1.1 is used to configure the reader.

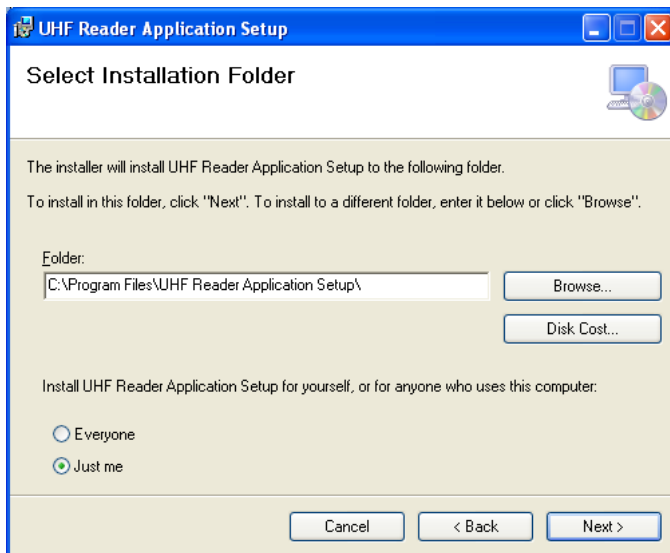
To install the UHF Reader Setup Application:

1. Insert the CD into the computer's CD drive.
2. If the Autoloader does not initiate the installation, open My Computer, double-click on the CD drive icon and then double-click the setup file.

The installation package extracts the installation files. After the files are extracted, the *Welcome to the UHF Reader Application Setup Wizard* screen opens.

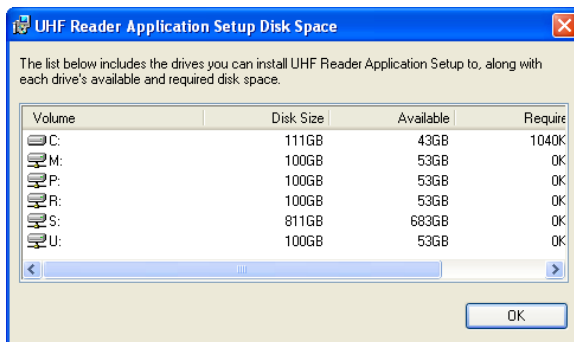


3. Click **Next**.
The *Select Installation Folder* screen opens.

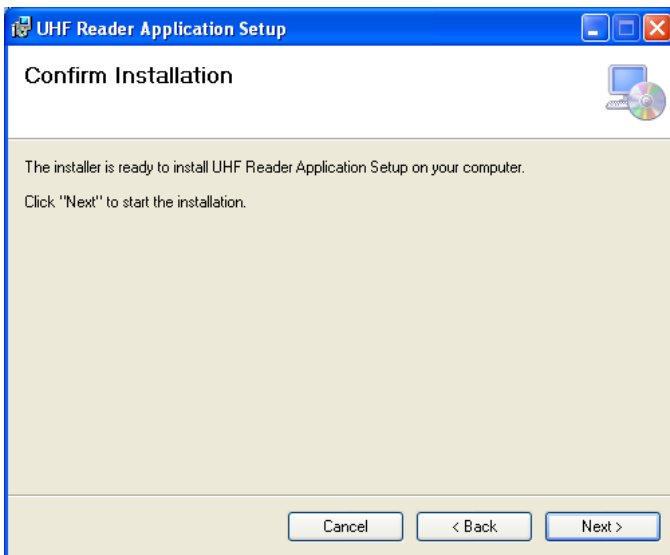


4. [Optional]Click **Disk Cost....** to ensure the computer has sufficient space.
The *UHF Reader Application Setup Disk Space* window opens.

Figure 6: ASB01 Setup – Disk Space Availability

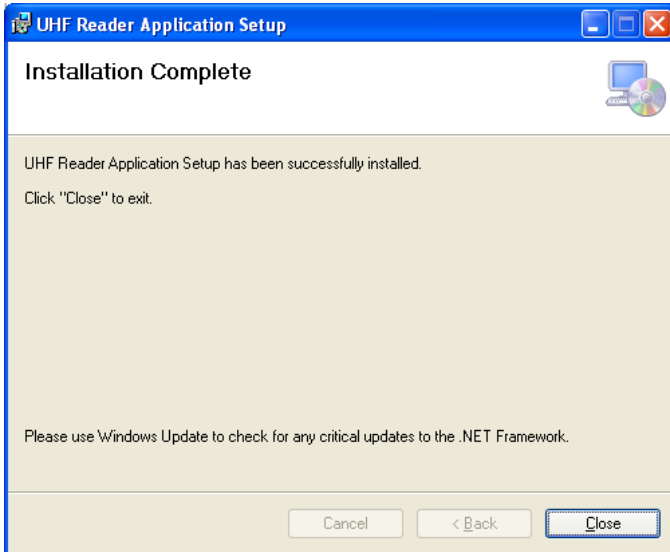


5. Select the users allowed to use the program, **Everyone** or **Just me**.
For security purposes it is suggested that **Just me** is selected.
6. [Optional] You can change the destination folder of the installation:
 - a. Click **Browse**.
The standard Windows Explorer window opens.
 - b. Navigate to and select the required folder.
7. Click **Next** to continue the installation process.
The *Confirm Installation* screen opens.



8. Click **Next**.

The installation process is initiated. When the process finishes, the *Installation Complete* screen opens.



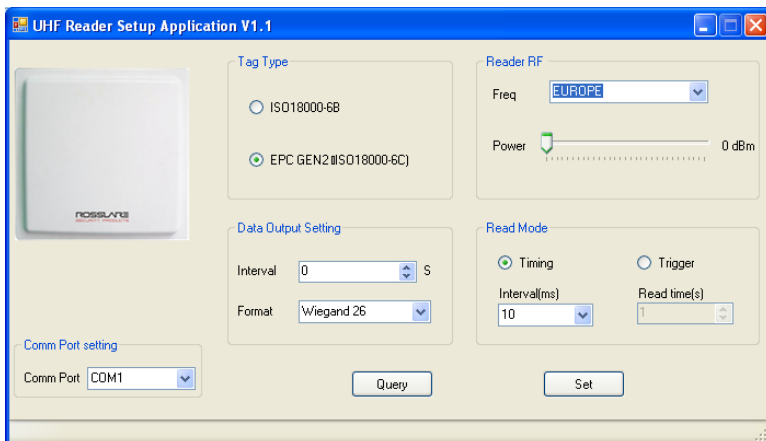
9. Click **Close** to complete the installation process.

5.2 Connecting the Reader

Once you've installed the UHF Reader Setup Application, you must verify that there is a connection between the reader and the software.

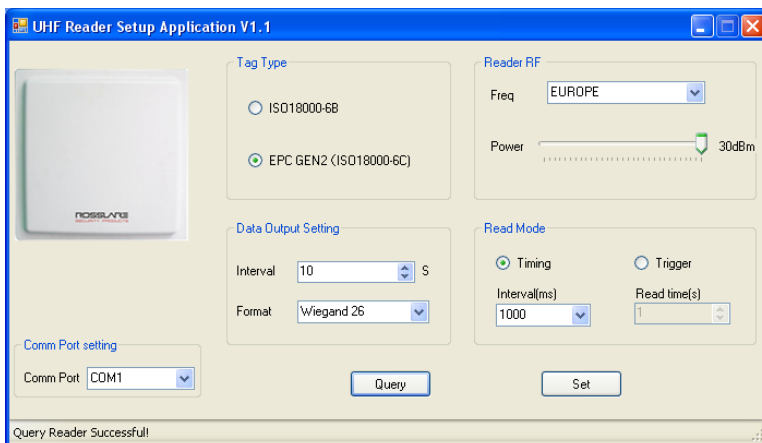
To connect the AY-U900:

1. Connect the UHF reader to the PC.
2. Click the *UHF Reader Setup* icon on the desktop or select the program from the Rosslare folder in the **Start** menu. The application opens.



3. From the **Comm Port** dropdown, select the correct COM port.
4. Click **Query**.

If the connection is successful, the software displays information on the bottom left of the screen to indicate the connection is successful.



The current parameters in the reader are displayed.

5.3 Configuring the Reader

There are four main sections in the software interface to be configured: Tag Type, Reader RF, Data Output Setting, and Read Mode.

To configure the reader:

1. Configure the four sections as needed according to the field descriptions in the subsections below.
2. Click **Set** to save the settings.

5.3.1 Tag Type

Select one of the two types of cards:

- ISO 18000-6B
- EPC GEN2 (ISO 18000-6C)

5.3.2 Reader RF

There are two parameters in this section.

- **Frequency:** Select one of the three kinds of frequencies for the different regions: America, China, or Europe.
- **Power:** Use the Power slider to choose a power between 0 and 30 dBm.

5.3.3 Data Output Setting

There are two parameters in this part.

Interval: Select the rate that the reader uploads card information to controller (between 0 to 255 seconds). For example, if you set the interval time to 5 seconds, the reader uploads the card information to the controller every 5 seconds, even if the reader reads the card many times during those 5 seconds.

Format: Select either Wiegand 26 or Wiegand 34.

5.3.4 Read Mode

The software can configure the reader to work in one of two modes:

Timing mode: The reader reads a card continually at a reading rate according to the interval time.

Trigger mode: The reader starts to read a card by connecting a red wire (trigger) and a black wire (ground) at a reading rate according to the interval time. The reader stops after the indicated time as set in the **Read time(s)** spin control.

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