AY-U9xxBT

Long-Range UHF-RFID Reader with Bluetooth BLE-ID

Installation and User Manual

UHF SMART

Models:

AY-U915BT

AY-U920BT

ROSSLARE
SECURITY PRODUCTS

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Notice and Disclaimer

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.

- The system must not be used for purposes other than those for which it was designed.
- The use of the software associated with the system and/or product, if applicable, is subject to the terms of the license provided as part of the purchase documents.
- ROSSLARE exclusive warranty and liability is limited to the warranty and liability statement provided in an appendix at the end of this document.
- 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.
- Incorrect operation or installation, or failure of the user to effectively maintain the system, relieves the manufacturer (and seller) from all or any responsibility for consequent noncompliance, damage, or injury.
- The text, images and graphics contained in the manual are for the purpose of illustration and reference only.
- All data contained herein subject to change without prior notice.
- In no event shall manufacturer be liable for any special, direct, indirect, incidental, consequential, exemplary or punitive damages (including, without limitation, any and all damages from business interruption, loss of profits or revenue, cost of capital or loss of use of any property or capital or injury).
- All wiring diagrams are intended for reference only, the photograph or graphic of the PCB(s) are intended for clearer illustration and understanding of the product and may differ from the actual PCB(s).

1. Introduction

The AY-U9xxBT series of UHF and Bluetooth readers are available with versions in both UHF frequencies (865-868 and 902-928 MHz) and support Bluetooth BLE frequencies and protocols.

Two associated apps for iOS and Android smartphones made by Rosslare – APP-x411 BLE-ID App and APP-x421 BLE-Admin App – can be used with the readers for programming operational settings (refer to *APP-x411 BLE-ID App Installation and User Manual* and *APP-x421 BLE-Admin App Installation and User Manual*, respectively).

The readers are waterproof (IP65) and are suitable for use in a wide range of RFID applications, such as transport management, vehicle management, car parking, production process control, and access control.

The readers support the following functions:

- Reading UHF hard credential
- Reading BLE soft credential
- Transmitting credential ID to the controller
- Acting based on controller's input (allowing access or not)
- Self-update
- Reconfiguration provided by credential (soft or hard) or by PC SW

The AY-U9xxBT series includes the following models:

- AY-U9xxBT-US: 902–928 MHz (America)
- AY-U9xxBT-EU: 865–868 MHz (Europe)

1.1 Installation Kit

The package includes:

- 1 AY-U9xxBT reader with a 5 m (16.4 ft) 10-wire cable
- 1 100–240 VAC switching power supply: 15 VDC @ 4 A
- 1 installation bracket kit
- 1 installation and user manual

2. Mounting

Important: All RFID readers can be affected by Radio Frequency Interference (RFI). For optimal read range, RFID readers should be installed away from areas with RFI.

Note: Installing an RFID reader adjacent to metallic surfaces might alter the reader's specifications. To diminish this interference, use a plastic spacer when mounting the reader.

2.1 General

There are two methods that can be used when installing the reader.

- 1-Shaped Stand Bracket Side-Loaded
- L-Shaped Stand Bracket Top-Loaded

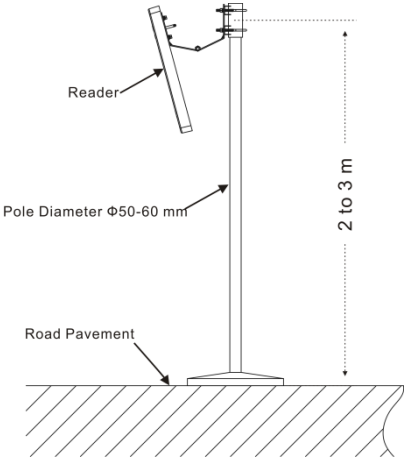
Each installation method is selected based on application requirements and actual location.

2.1.1 1-Shaped Stand Bracket Side-Loaded

In this method, the stand pole should have a diameter of between 50 and 60 mm (2 to 2.4 in.) and a height of 2 to 3 m (6.5 to 10 ft). The pole should be made of stainless steel with a thickness of at least 1.2 mm (0.05 in.).

Use the bracket contained in the package box to mount the AY-U9xxBT reader to the top of the stand pole depending on actual vehicle type (mainly large car and small car) (Figure 1).

Figure 1: 1-shaped Stand Bracket Side-Loaded



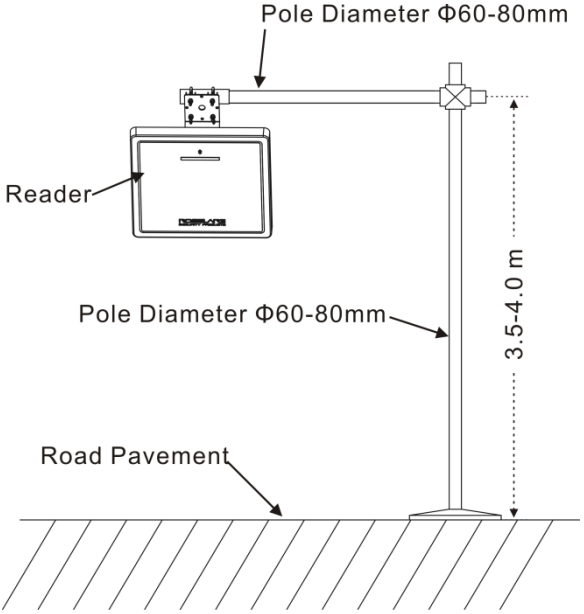
Adjust the height from the center of AY-U9xxBT reader to lane level to be around 2.0 m (6.5 ft).

2.1.2 L-Shaped Stand Bracket Top-Loaded

In this method, the L-shaped stand pole should have a diameter of between 60 to 80 mm (2.4 to 3.1 in.) and a height of 4.2 m (13.8 ft). The pole should be made of stainless steel with the thickness of at least 1.2 mm (0.05 in.).

Use the bracket contained in package box to mount the AY-U9xxBT reader to the rail near the center of the lane (Figure 2).

Figure 2: L-shaped Stand Bracket Loaded



Adjust the height between the rail and the ground to between 3.5 to 4.0 m (11.5 to 13 ft), depending on the height of vehicle.

2.1.3 Adjusting the Azimuth Angle of Antenna

The angle of inclination with the ground plane of the antenna should be approximately 60° to 75° (Figure 3), while the deviation angle of the antenna should be biased towards the lane direction (Figure 4).

Figure 3: Antenna Angle Side View

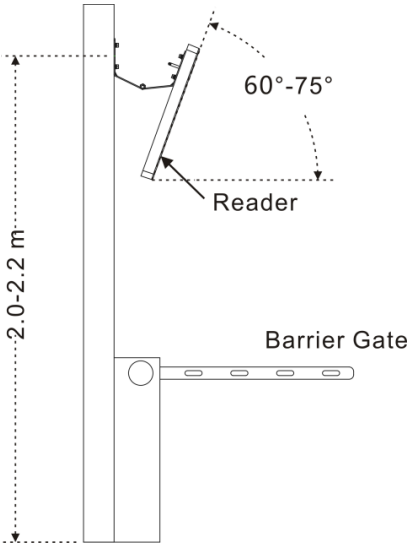
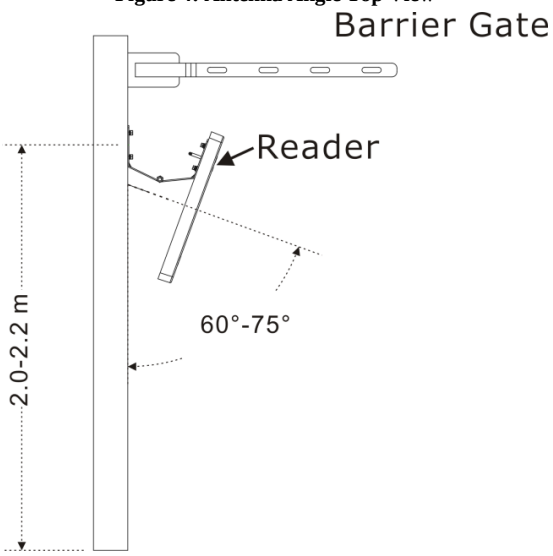


Figure 4: Antenna Angle Top View



3. Wiring

The units are supplied with a 5 m (16.4 ft) 10-conductor pigtail with exposed wires coated with solder (see Figure 5).

Figure 5: Wiring Colors

To connect the unit as a reader to an access control unit:

1. Select the appropriate connections according to Table 1.
2. Prepare the controller cable by cutting its jacket back about 3 cm (1¼") and strip the insulation from the wires about 1.3 cm (½").
3. Splice the reader's pigtail wires to the corresponding controller wires and cover each joint with insulating tape.

Table 1: Wiring the Unit as a Reader to a Control Panel

Wire Color	Output
Red	Power
Black	Ground
Green	Data 0 / Data / C2
White	Data 1 / Clock / C1
Orange	Green LED Control
Brown	Yellow LED Control
Purple	OC Output*
Yellow	Hold/Trigger Control
Blue	RS-485 - A / OSDP*
Gray	RS-485 - B / OSDP*

* For future use

4. Trim and insulate the ends of all unused conductors individually. Do not short any unused wires together.

Note

- The individual wires from the reader are color coded according the Wiegand standard.
- When using a separate power supply for the reader, this supply and that of the controller must have a common ground.
- The reader's cable shield wire should be preferably attached to an earth ground, or a signal ground connection at the panel, or the power supply end of the cable. This configuration is best for shielding the reader cable from external interference.

4. Operation Instructions

After wiring the unit to a controller (POWER, GND, D0, D1), you should test the 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 credential to the reader. A short beep is emitted, indicating that the credential is read properly.

When installing the UHF credential inside a vehicle, make sure that the vehicle is not RF proof.

5. Configuration with the BLE-Admin™ Application

1. Download the BLE-Admin application from Google Play or App Store using the following QR code.

2. Open the application, select the required reader from the list displayed.
3. Enter the password.

NOTES:

- Use the default password (12345678) when you log in to the BLE-Admin application for the first time.
- It is highly recommended that you change the password (see step 4).

4. On the main screen, configure the following:

Option	Remarks
Door Name	Assign name to selected door reader
Password	Change password

5. Tap **Set Configuration** and configure the following:

Parameter	Options	Remarks
LED Activation	On/Off	Enable or disable LED activation
UHF Functionality	On/Off	Enable or disable UHF communication
Tag Type	EPC-GEN2	This is the only supported mode.
Power	Min = 1 Max = 10 Default = 10	Slide to select the signal power to change the effective reading range for the UHF credentials

Parameter	Options	Remarks
Transmission Protocol	Wiegand – default OSDP	Select the credential output protocol
Transmission Protocol Type	26, 32, 32R, 34, 40, 56, 64 bits Default = 26 bits	To be used if Weigand protocol is applied
OSDP Address	Min = 0 Max = 31 Default = 13	To be used if OSDP protocol is applied
Tag Mode	Single = default Multiple	Single = reads the strongest Tag in the reader's antenna field. Multiple = reads all the cards in the reader's antenna field into a dynamic buffer that can store up to 100 tags.
Output interval	Min = 100 mSec Max = 25.5 sec Default = 1 sec	Slide to select the interval of sending a credential from the reader
Timing Interval	Min = 10 mSec Max = 2.5 sec Default = 0.5 sec	Slide to select the time interval between when one tag is read to when the next tag is read.
Starting Address	Min = 0 Max = 9 Default = 4	Slide to select the initial ID Byte
Read Mode	Timing = default Trigger	Timing – the reader will read at the "Timing Interval" setting. Trigger – the reader will read a card at the time interval set by the "Read Trigger" time. • To operate in the "trigger" mode it is necessary to connect the "yellow" wire to the controller.
Read Trigger	Min = 1 sec Max = 255 sec Default = 60 sec	Slide to select the amount of time to operate the trigger.
Multimode Timing Interval	Min = 20 sec Max = 255 sec Default = 35 sec	In multimode, the reader can detect more than one tag at the same time. Tags that stay in the reader antenna field are not sent to the controller again until the Multimode Timing Interval ends.

NOTE: The My BLE-ID™ application allows a mobile device to be used as a credential. Download the application from Google Play or App Store using the following:

6. Technical Specifications

Electrical Characteristics	
Operating Voltage Range	Typical: 9 to 15 VDC (2 A) Max: 24 VDC
Input Current	Standby: 0.2 A max
	Read: 1.2 A max
Credential Read Distance*	AY-U915BT: 0.5 to 6 m (1.6 to 19.7 ft) (adjustable)
	AY-U920BT: 0.5 to 12 m (1.6 to 39.4 ft) (adjustable)
Transmission Protocol	Wiegand 26-Bit (default) Wiegand 32-Bit Wiegand 34-Bit Wiegand 40-Bit Wiegand 56-Bit Wiegand 64-Bit OSDP** Custom
Maximum Cable Distance	150 m (492 ft) with 18” AWG cable
Frequency	AY-U9xxBT-US: 902–928 MHz (America) AY-U9xxBT-EU: 865–868 MHz (Europe)
Modulation Type	ASK
Read Sensitivity	Dual polarization read mode
Cards and Tags	• EPC GEN2 (ISO18000-6C) tags • BLE-ID soft credentials **Note: That the reader is only compatible with Rosslare’s credentials.**

* Measured using a Rosslare proximity card or equivalent.

** For future use

Environmental Characteristics	
Operating Temp. Range	-35°C to 60°C (-31°F to 140°F)
Operating Humidity Range	0 to 95% (non-condensing) Suitable for outdoor use (IP65)
Physical Characteristics	
Dimensions (H x W x D)	AY-U915BT: 29.5 x 29.5 x 3.2 cm (11.6 x 11.6 x 1.3 in.)
	AY-U920BT: 36.5 x 36.5 x 3.2 cm (14.4 x 14.4 x 1.3 in.)
Weight	AY-U915BT: 2.5 kg (5.5 lb)
	AY-U920BT: 2.8 kg (6.2 lb)

A. Declaration of Conformity

FCC ID = GCD-AYU9XXBT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- 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.

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.

B. Radio Equipment Directive (RED)

Under our sole responsibility that the following labeled AY-U9xxBT is tested to conform to the EU Radio Equipment Directive – RED 2014/53/EU – in electrical and electronic equipment.

C. RoHS Directive

Under our sole responsibility that the following labeled AY-U9xxBT is tested to conform to the Restriction of Hazardous Substances (RoHS) directive – 2011/65/EU – in electrical and electronic equipment.

D. Limited Warranty

The full ROSSLARE Limited Warranty Statement is available in the Quick Links section on the ROSSLARE website at www.rosslaresecurity.com.

Rosslare considers any use of this product as agreement to the Warranty Terms even if you do not review them.

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