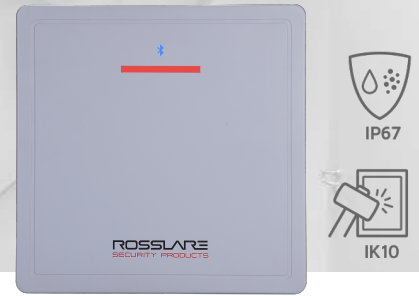


# AY-U9xxBT

## UHF SMART™ Long-Range Reader

### Installation & User Guide



#### 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.

The Rosslare BLE-ID™ app and the Rosslare BLE-Admin™ app for iOS and Android smartphones can be used with the readers for programming operational settings.

The readers are waterproof (IP67) and vandal resistant (IK10). They 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 credentials
- Reading BLE soft credentials
- Transmitting credential ID to the controller
- Acting based on controller's input (allowing access or not)
- 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 installation kit consists of the following items to be used during the installation procedure.

Description	Quantity
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 guide	1

## 2. Mounting



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.



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

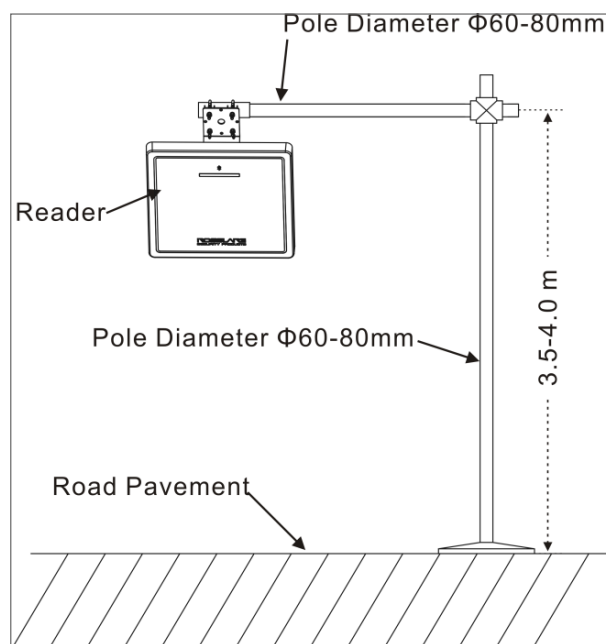
Use the L-shaped stand bracket contained in package box to mount the AY-U9xxBT reader as described below.

#### 2.1.1. 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: L-shaped Stand Bracket Loaded](#)).

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.

#### 2.1.2. 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: Antenna Angle Side View](#)), while the deviation angle of the antenna should be biased towards the lane direction ([Figure 4: Antenna Angle Top View](#)).

Figure 3: Antenna Angle Side View

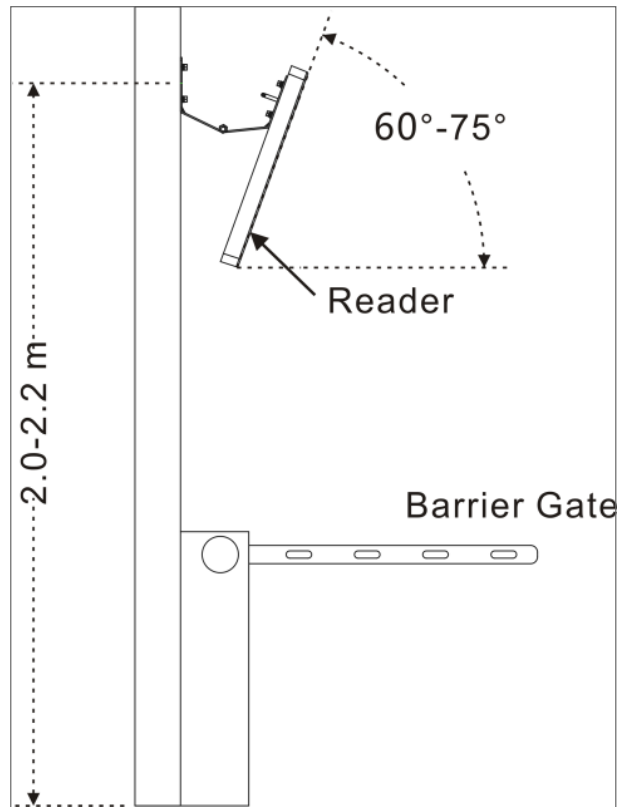
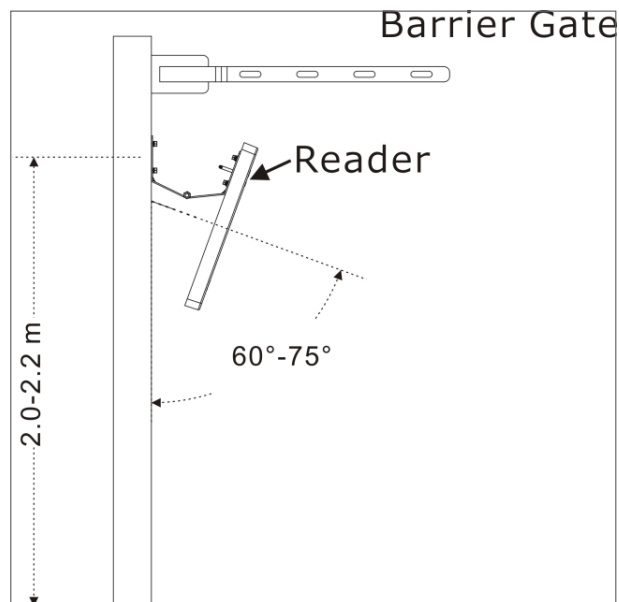


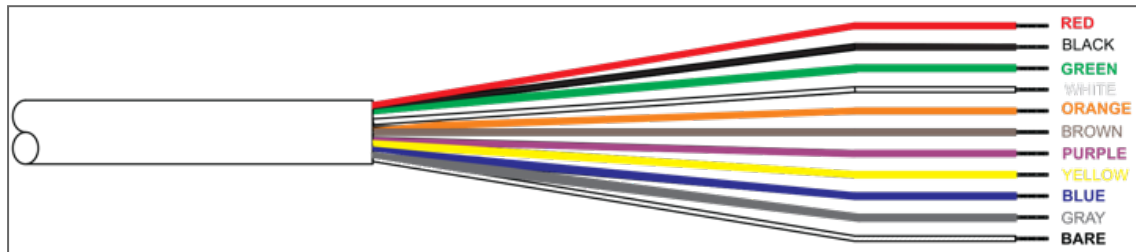
Figure 4: Antenna Angle Top View



### 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: Wiring Colors](#)).

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: Wiring the Unit as a Reader to a Control Panel](#).
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
White	Data 1
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

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



- The individual wires from the reader are color coded according to 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.
- Yellow LED Control and Green LED control wires do not operate when the reader is in OSDP mode.

#### 4. Operation Instructions

After wiring the unit to a controller (POWER, GND, D0, D1), you should test the reader.

To test the reader:

- Power up the reader. One beep is emitted and then it begins an auto-calibration procedure. After 2 seconds, the reader enters working mode.
- 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

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



- Open the application, select the required reader from the list displayed.

3. Enter the password.



- 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. In **Settings** on the main screen, you can see the following reader parameters:


Option	Remarks
Address	Shows the address for the reader.
Type	Shows the reader model.
Serial Number	Shows the reader serial number.

5. In **Settings** on the main screen, configure the following reader parameters:

Option	Remarks
Reader Name	Assign name to selected door reader
Password	Change password
Firmware	Shows the reader firmware version

6. Tap Set Configuration and configure the following:

Parameter	Options	Remarks
Light Bar	Activation	Enable or disable light bar activation.
	Idle state color	Red (default), Green, Blue, White
	Credential read color	On: Flashes Red (default), Flashes Green, Flashes Blue, Flashes White Off: Light bar does not come on when a credential is read
Buzzer	On/Off	Enable or disable buzzer activation.
UHF Functionality	On/Off	Enable or disable UHF communication. When the UHF communication is disabled, only a BLE-ID credential is valid.
Power	Min = 1 (20 dBm) Max = 10 (29 dBm) Default = 10	Slide to select the signal power to change the effective reading range for the UHF credentials.

Parameter	Options	Remarks
Protocol	Wiegand	Wiegand: 26-bit (default), 32, 34, 40, 56, 64, 96, 128-bit, Reverse: On/Off (default)
	OSDP	Host-controlled: On (default)/Off  <div style="border: 1px solid #ccc; padding: 5px; background-color: #f9f9f9;">  <ul style="list-style-type: none"> <li>On - the LED and buzzer operate as specified in the OSDP commands received from the controller</li> <li>Off - the LED and buzzer operate as specified by the built-in specifications</li> </ul> </div> Format: 26-bit (default), 32, 34, 40, 56, 64, 96, 128-bit OSDP address: 0-31, 13 (default) OSDP Secure Channel: Option to switch to installation mode
Tag Mode	Single	Single = reads the strongest Tag in the reader's antenna field (default).
	Multiple	Multiple = reads all the cards in the reader's antenna field into a dynamic buffer that can store up to 50 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. For 96 or 128-bit, the minimum output interval is 400 ms.
Timing Interval	Min = 200 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. For 96 or 128-bit, the minimum timing interval is 400 ms.
Starting Address	Min = 0 Max = 9 Default = 4	Slide to select the initial ID Byte
Read Mode	Timing	Timing – the reader will read at the “Timing Interval” setting (default).
	Trigger	Trigger – when a trigger is received, the reader will start to read cards for the time interval set by the “Read Trigger” time.  <ul style="list-style-type: none"> <li>To operate in the trigger mode it is necessary that the yellow wire is connected to ground.</li> </ul>
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.



The 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:



## 5.1. Configuration Options

Tap the menu icon located at the top-right of the screen to do the following functions.

Option	Remarks
Reset	Reset the reader to the default settings.
email	Email the reader configuration.
Export	Export the reader configuration.
Import	Import a reader configuration.

## 6. Restore to Factory Defaults

The following procedure restores the reader to the default settings.

1. Turn off power to the reader.
2. Connect the orange wire (Green LED Control) and brown wire (Yellow LED Control) to GND.
3. Turn on power to the reader
4. Keep the brown wire and orange wire connected to GND for a minimum of four seconds but not more than 30 seconds.
5. Keep the power connected and disconnect the brown and orange wires.



When the restore to factory defaults procedure is complete, the LED will blink in the sequence green, yellow, green, yellow for two seconds while the buzzer will operate.



## 7. 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)
Maximum Cable Distance	Wiegand: 150 m (492 ft) with 18" AWG cable OSDP: 1,200 m (4,000 ft) with 18" AWG twisted shielded 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	<ul style="list-style-type: none"> <li>• EPC GEN2 (ISO18000-6C) tags</li> <li>• BLE-ID soft credentials</li> </ul>

\* Measured using a Rosslare proximity card or equivalent.

\*\* For future use

Environmental Characteristics	
Vandal Resistance	IK10
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 (IP67)

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)

## 8. 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.

## 9. 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.

## 10. 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.

## 11. Limited Warranty

The full ROSSLARE Limited Warranty Statement is available in the Quick Links section on the ROSSLARE website at [www.rosslaresecurity.com](http://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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