MINI UHF RFID READER

Instruction Manual Of DOLCWIUHF-910

V1.1

Content

1 Introduction

1.1 Functions

1.1.1 Working principle.

TRANSMITTER SOLUTIONS Reader Model WBU-913 directs the RF module to generate an RF signal, which is broadcast through the internal antenna. Entering the TRANSMITTER SOLUTIONS Reader Model WBU-913's reading range, a TRANSMITTER SOLUTIONS RFID tag installed on a vehicle or other object to be tracked adds its programmed identification information to the signal and reflects the signal back to the TRANSMITTER SOLUTIONS Reader Model WBU-913. The TRANSMITTER SOLUTIONS Reader Model WBU-913 receives this modified or modulated signal and decodes the tag data carried by the reflected signal and transmits this data to a local host computer or process through specified the communication port.

1.1.2 Working Mode

TRANSMITTER SOLUTIONS Reader Model WBU-913 has two working modes. one is Auto Scan (Interval)Mode (Default) ,In this mode ,if reader Power on ,it will scan the tag intermittently; The other mode is Trigger Mode, in this mode, only if the voltage of the Trigger Pin is logic 0,the reader begins to scan the tag automatically.

When reader enters into the scanning status, it will capture the programmed identification information of the tags which within TRANSMITTER SOLUTIONS Reader Model WBU-913's read range automatically and transmits the data to a local host computer or process through the specified communication interface (Wiegand 26, RS232).

The default working mode of TRANSMITTER SOLUTIONS Reader Model WBU-913 is Auto Scan (Interval) Mode and specified Wiegand 26 as the communication interface. if need preconfigured to Trigger Mode or other communication interface, please consult with the TRANSMITTER SOLUTIONS before purchasing.

1.1.3 Parameters

The parameters of TRANSMITTER SOLUTIONS Reader Model WBU-913 as Table 1.1.3-1

Table 1.1.3-1

No	Parameter	Value
1	Operating Frequency	902～928 MHz FHSS (Europe 865.6-867.6 MHz)
2	Transmitter Power	0.5 to 1W
3	Supply Voltage	10~25 VDC +5%/-1%, Ripple: maximum 50 mV
4	Communication Rates	9600 bps
5	Power Consumption	Maximum 10 W
6	Interfaces	Wigand 26 , RS232
7	Overall Size	200* 200 * 40 mm
8	Read distance	WBU-913A is 5 meters / WBU-913B is 10 meters. (Depend on Model No)
9	Weight:	1.5 KGS
10	Operating Temperature	-20°C to +40°C
11	Storage Temperature	-40°C to +70°C

1.2 System Description

1.2.1 Components

The package of TRANSMITTER SOLUTIONS Reader Model WBU-913 contents the components list in the Table 1.2.1-1.

Table1.2.1-1

No	Component	Specification	Quantity	Remark
1	Host	200* 200 * 40 mm	1 PC	With Fixed Holder
2	Power Adapter	12V/3A	1 PC	
3	Power Code	1.8 m in length	1 PC	
4	RS232 Cable		1 PC	
5	Test Tag	ISO card	1 PC	

6	Quick Connector Cable	80 cm in length	1 SET	

1.2.2 Host

Over view

1.2.3 Interface

.TRANSMITTER SOLUTIONS Reader WBU-913 can be able to provide 5 group interface, for details please refer to
Table 1.2.3-1

Table 1.2.3-1 Definition of the Interface

No	Interface Type	Definition	Color	Remark
1	Power	+12 V	Red	
		GND	Black	
2	RS232	232(RX)	Grey 2-Pin	D-Sub 9Pin
		232(TX)	Blue 3-Pin	
		GND	Black	
3	Reserved		White	Option : Reserved
			Light Green	
		GND	Yellow	
4	Wiegand	W0D0	Purple	
		W0D1	Light blue	
		GND	Light brown	
5	Trigger	Trigger	Orange	Reserved for Trigger Mode
		GND	Light brown	

Remark:

1. The default communication interface is Weigand 26, for the other interface need to be preconfigured by TRANSMITTER SOLUTIONS before purchasing.

2. The communication protocol please consults with TRANSMITTER SOLUTIONS before purchasing.

1.2.4 LED Indicator

There are two colors which the LED indicator show on the TRANSMITTER SOLUTIONS Reader Model WBU-913, when Red LED lighting means the TRANSMITTER SOLUTIONS Reader Model WBU-913 is power on, while Blue LED lighting means the TRANSMITTER SOLUTIONS Reader Model WBU-913 captures the data of the tag,

1.2.5 Buzzer

When TRANSMITTER SOLUTIONS Reader Model WBU-913 captures the data of the tag, the buzzer will beep.

1.2.6 Label

No	Label Type	Definition	Position
1	SN Label	The serial number of the host	Back Board
2	Interface Label	The specified communication interface of the host	Back Board
3	Capital Letter Label	A or B or C or D or E ..	Back Board
4	Mode	Auto Scan Mode or Trigger Mode	Back Board

Remark:

1. The SN label is the identification of each reader, don't tear off during using.
2. Please check the interface configuration with the Interface Label, if not correct, please contact with TRANSMITTER SOLUTIONS.
3. Don't install two hosts with the same Capital Letter Label within 20 meters scope.
4. Trigger Pins reserved for Trigger Mode only.

1.3 Cautions before Using

1. Please use the 12V 3A DC Power Adapter which enclosed the package for connecting the host with the power.

2. 12V 3A DC Power Adapter which enclosed the package is not waterproof, you need to be covered when used.

3. The power code which connected Power Adapter and the 220V AC Power needs to be connected the ground wire to prevent lightning strikes.

4. When you need to use extension power code, please use the copper core with the dia= 1 mm² and length < 5m. If the extension length of the power code is more than 5m, please use the cooper core with the dia = 1.5 mm² or thicker

5. Please make well the insulation protection between different wires to prevent the short circuit damage.

6. Please read this instruction manual carefully before installation.

2 Reader Installation

2.1 Installation Overview

The Reader has been designed with easy installation in mind. The Figure 2.1-1 provides you with any details that you will need to know.

Figure 2.1-1 Installation

2.2 Installation Summary

There are two ways for installing TRANSMITTER SOLUTIONS Reader Model WBU-913 by install position. One installs on the side of the lane which we called Side Installation, while the other installs on the overhead of the lane which we called Overhead Installation. For details, please refer to the Table 2.2-1

Table 2.2-1

Install Way	Advantage	Disadvantage
Side Installation	1. Easy to install with the pole 2. Easy for maintenance	1.The read range is subject to the install height & the angle of the reader 2. The tag should be installed to the side near the reader
Overhead Installation (for WBU-913B only)	1. The reader range is larger & wider 2. The tag position is more flexible	1. It's not easy for maintenance due to the install height of the reader. 2. The extension power wire & communication wire

		requires longer & thicker

When the site meets following conditions, we suggest choosing the Overhead Installation way, otherwise choosing the Side Installation way:

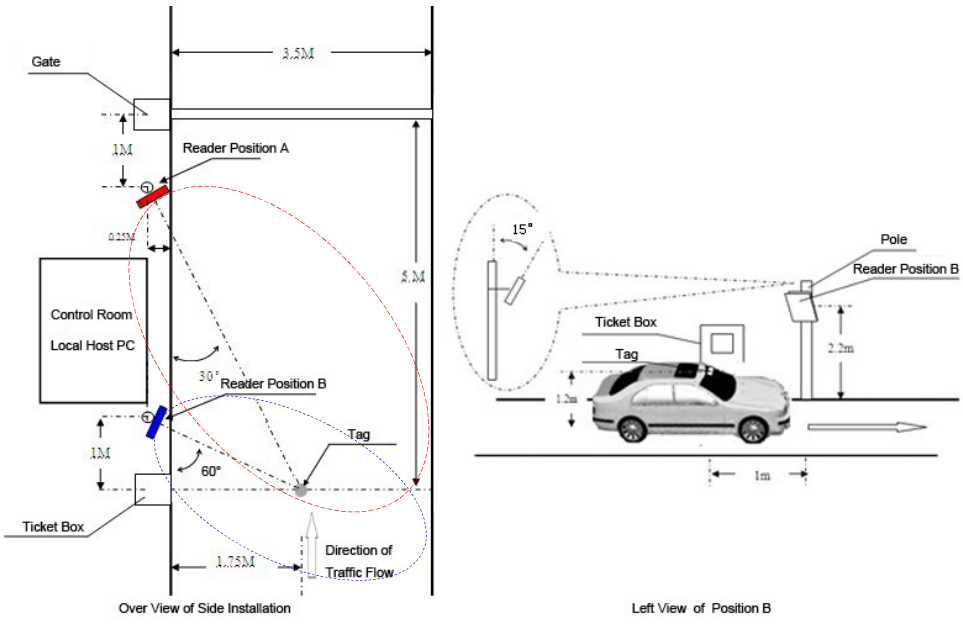
1. There are many types of cars, especially with both large vehicle and small car;
2. The position of the tag is different from different type of vehicles;
3. The drive position is available for both left and right side.

2.3 Side Installation

2.3.1 Overview

Take a simple parking lot for example: the width of the lane is 3.5 M, while the distance between Gate and Ticket Box is 5 M. The reader is expected to be placed to allow time for the gate to open so the car can roll through without stopping while not allowing room for an untagged car to be between the car being read and the gate. There 2 opinions position for installing Reader, for the details please refer to the Figure 2.3.1-1

Figure 2.3.1-1



2.3.2 Instruction

The instruction mentioned in the Table 2.3.2-1 is based on the example showed on the Figure 2.3.1-1, if not suitable for your site, you can contact TRANSMITTER SOLUTIONS for assistance.

Table 2.3.2-1

Description	Position A	Position B
Install Height	Over 2.2 m (see the Left View of Position B in Figure 2.3.1-1)	
Pole Position (H)	Over 0.25 m horizontal far from the edge of the lane (See Over View of Side Installation in Figure 2.3.1-1	
Pole Position (V)	1.0 m far in vertical from the Gate	1.0 M far in vertical from the Ticket Box
Offset Angle with Lane	About 30°	About 60°
Offset Angle with Pole	About 0°	About 15°

2.3.3 Notice

1. The Power Adapter is not waterproof; it is suggested to insert into the Ticket Box or be covered.

2. The diameter of the extension power core should be 1.5 mm² if the length is over 5.0 m.

3. The data wire should be with shielding layer and should be connected with the GND to avoid any interference.

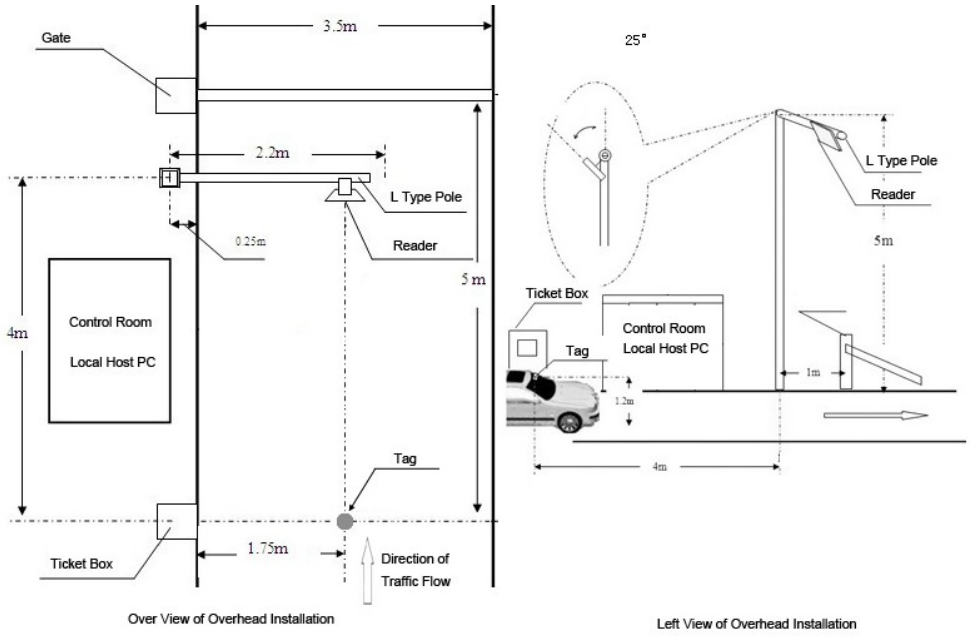
4. Adjust the reader range to make sure the tag can be detected when the vehicle with the tag is approaching ticket box and within one lane area only, so that there is only one vehicle and one tag in the operation area to avoid any wrong operation.

2.4 Overhead Installation (For WBU-913B only)

2.4.1 Overview

Take a simple parking lot for example; the width of the lane is 3.5 M, while the distance between Gate and Ticket Box is 5 M. The reader is expected to be placed to allow time for the gate to open so the car can roll through without stopping while not allowing room for an untagged car to be between the car being read and the gate. For the details, please refer to the Figure 2.4.1-1

Figure2.4.1-1



2.4.2 Instruction

The instruction mentioned in the Table 2.4.2-1 is based on the example showed on the Figure 2.4.1-1, if not suitable for your site, you can contact TRANSMITTER SOLUTIONS for assistance.

Tabel 2.4.2-1

Description	Overhead Installation
Install Height	Over 5.0 m (See the Left View of Overhead Installation in the Figure 2.4.1-1)
Pole Type	L type as the Left View of Overhead Installation in the Figure 2.4.1-1)
Pole Position(H)	Over 0.25 m horizontal far from the edge of the lane (See Over View of Side Installation in Figure 2.4.1-1
Pole Position(V)	1.0 m far in vertical from the Gate
Offset Angle with Pole	About 25°(see figure 2.4.1-1)

Reader position (H)	The center of the Reader is 1.75 m far from the edge of the Lane in horizontal

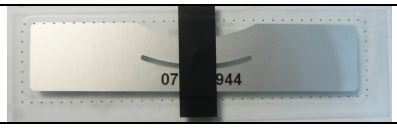
2.4.3 Notice

1. The Power Adapter is not waterproof; it is suggested to be covered.
2. The diameter of the extension power wire should be 2.0 mm² if the length is over 10.0 m.
3. The data wire should be with shielding layer and should be connected with the GND to avoid any interference.
4. Adjust the reader range to make sure the tag can be detected when the vehicle with the tag is approaching ticket box and within one lane area only, so that there is only one vehicle and one tag in the operation area to avoid any wrong operation.

1 Tag Installation

3.1 Overview

TRANSMITTER SOLUTIONS provides 4 types of tag according to different demands:

Type	Model	Photo	Suitable Way
Card	WBUC-S		1.Fixed with card holder 2.Handheld by user
Sticker	WBUC-R2		1.Stick on the surface of the glass
Metal Tag	WBUC-M1		1.Fixed on the License Plate 250x14x18 mm
Hang Tag	WBUC-SH		1.162x85x1 mm 2. Temporary Use

3.2 Instruction

3.2.1 Card WBUC-S

3.2.1.1 Fixed with card holder.

TRANSMITTER SOLUTIONS provides the card holder according to different demands:

Type	Model	Photo	Suitable Way
Fixed Holder	WBUC-H		Fixed on the windows, see the remark

3.2.1.2 Installation for WBUC-H

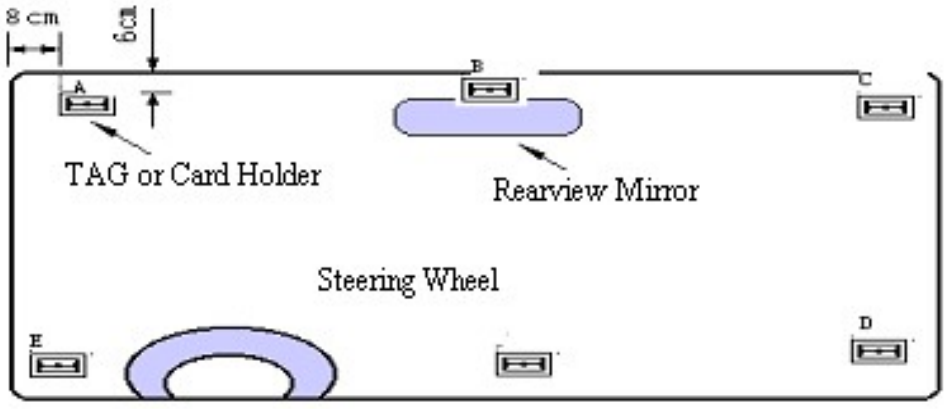
For the vehicles without metalized windshield, you can choose one of six places showed on the figure 3.2.1-1 to install WBUC-H

For the vehicles with the pre-configured metalized windshield, it should have a reserved area with 120(L) * 70(W) mm that not metalized for RFID tags according to the European Standard, usually in the place B, so you can install the WBUC-H on this reserved area.

For the vehicles with the after-sale metalized windshield, you can choose one of six places showed on figure 3.2.1-1 to cut off the metallic coat with a 120(L) * 70(W) mm area for WBUC-H.

For optimum performance, choose the placement A or E if the antenna of the reader in the left position of the windshield; choose the placement C or D if the antenna in the right position of the windshield; while choose placement B or F if the antenna in the overhead of the traffic lane.

Figure 3.2.1-1

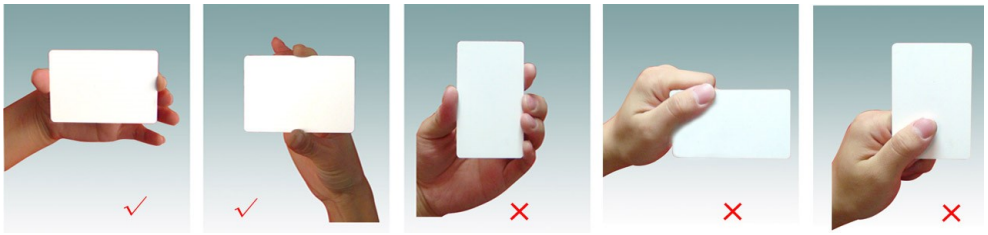


Remark: When there is a metalized windshield, the read range of the reader will be affected. Please test the performance before installation

3.2.1.4 Holding the card by hand

Choose the correct way with ticket " √ " for holding card. For details, please see figure 3.2.1.4-1

Figure 3.2.1.4-1



3.2.2 Sticker WBUC-R6

The install way is same as card holder WBUC-H, for details refer to 3.2.1.2. Please note that the WBUC-R6 need to be used by stick on the surface of the window or headlights and cannot able to reuse if rip off. Please test the performance before installation.

3.2.3 Metal Tag WBUC-M1

It designed for License plate use only. Use the screws to fix the WBUC-M1 on the bottom of the License plate

Appendix 1 How to check the performance simply?

Purpose: When a malfunction occurs during the using, the follow steps will help you to check the performance of the reader simply.

1. Test Sites: Open area without any barrier or block.
2. Reader Install Height: Over 2 Meter and power the reader with Power Adapter & Power Code enclosed the package.
3. Test Tag: use the tag WBUC-S enclosed the package
4. Tag Install: by hand, use the correct way as figure 3.2-3
5. Test Method: Keep the front surface of the WBUC-S is parallel to the front surface of the reader. Move the WBUC-S from the near to the distant by the horizontal line (see as the figure Appendix-1) until the WBUC-S can not be detected by the reader. The line distance between the reader and the WBUC-S is the MAX Distance.
6: When the MAX Distance is over X meters*, and the reading signal of the reader is stable & continuous, the read performance of the reader is OK.
(X meters* : WBU-913A is 5 meters and WBU-913B is 10 meters)

Figure-Appendix-1