



UHF LONG RANGE READER (DOLCWIUHFP)

INSTALLATION MANUAL



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This device complies with parts 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 modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

1 Introduction

1.1 Functions

1.1.1 Working principle

Transmitter Solutions DOLCWIUHFP directs the RF module to generate an RF signal, which is broadcast through the internal antenna. Entering the Transmitter Solutions DOLCWIUHFP'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 DOLCWIUHFP. The Transmitter Solutions DOLCWIUHFP 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

has two working mode. one is [Interval Scan Mode](#), 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 DOLCWIUHFP's read range automatically, and transmits the data to a local host computer or process through the specified communication interface (Wiegand 26/34, RS232 or RS485).

The default working mode of Transmitter Solutions DOLCWIUHFP is [Interval Scan 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 DOLCWIUHFP [Table 1.1.3-1](#)

Table 1.1.3-1

No	Parameter	Value
1	Operating Frequency	902 928 MHz FHSS
2	Transmitter Power	0.5 to 2W (programmed by software)
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 Optional	Wigand 34, RS232, RS485
7	Overall Size	370* 360 * 96 mm
8	Package Size	430 * 420 * 190 mm
9	Net Weight:	3.0 KGS
10	Operating Temperature	-20°C to +70°C
11	Storage Temperature	-40°C to +90°C

1.2 System Description

1.2.1 Components

The package of Transmitter Solutions DOLCWIUHFP contains the components list in the [Table 1.2.1-1](#).

Table1.2.1-1

No	Component	Specification	Quantity	Remark
1	Host	370* 360 * 96 mm	1 PC	With Fixed Holder
2	RS232 Cable		1 PC	
3	Test Tag	86 * 54 * 1.0 mm	1 PC	Optional
4	Definition of Connection Pins		1 PC	
5	Packing List		1 PC	

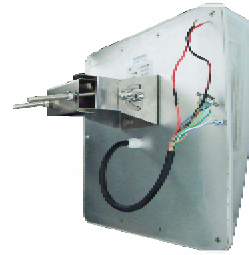
1.2.2 Host



Over view



Side view



Back view

1.2.3 Interface

Transmitter Solutions DOLCWIUHFP 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
1	Power Pins	+12 V	Red
		GND	Black
2	Wiegand Pins	Wiegand 0	Purple
		Wiegand 1	Green
		Ground	Yellow
3	Trigger Pins	Trigger	Orange
		GND	Yellow
4	RS232 Pins	232 (RX)	Blue
		232 (TX)	Grey
		GND	Black
5	RS485 Serial Port pins	485 +	White
		485 -	Light Green
		GND	Yellow
6	Shielding Wire	Earth Ground	Yellow Embedded Green (Thick)

Please make sure all connections are correct before turning on power!

1.2.4 LED Indicator

There are two rows LED indicators on the Transmitter Solutions DOLCWIUHFP, when

Red LED lighting means the DOLCWIUHFP is power on, while Blue LED lighting means the DOLCWIUHFP captures the data of the tag,

1.2.5 Buzzer

When DOLCWIUHFP 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	Interval Scan 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

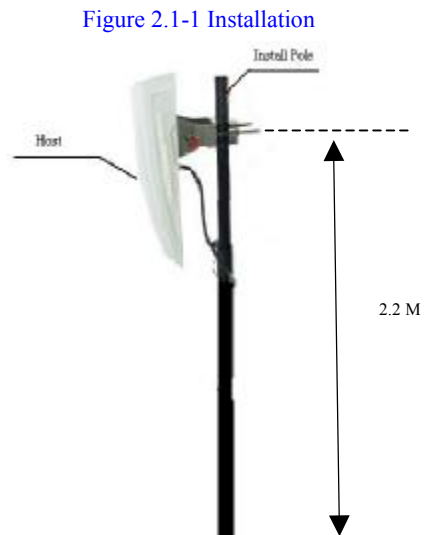
1. Please use the 12V 4A DC Power for connecting the host with the power.
2. If the DC Power is not waterproof, it is suggested to insert into the Ticket Box or be covered.
3. The power cord which connected DC Power and the 120V AC Power needs to be connected the ground wire to prevent lightning strikes.
4. When extending power:
 - Up to 100 feet, use 18 AWG, 600 volt insulated wire
 - Up to 200 feet, use 16 AWG, 600 volt insulated wire

THE PROPER WIRING IS CRITICAL!
5. Wiegand wire runs are 500 feet maxium. Use 6-conductor stranded wire with overall shield. 18, 20, 22 or 24 gauge is preferred.

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.



2.2 Installation Summary

There are two ways for installing Transmitter Solutions DOLCWIUHFP 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	<ol style="list-style-type: none"> 1. Easy to install with the pole 2. Easy for maintenance 	<ol style="list-style-type: none"> 1. The read range is subject to the install height & the angle of the reader 2. The tag should installed to the side near the reader
Overhead Installation	<ol style="list-style-type: none"> 1. The reader range is larger & wider 2. The tag position is more flexible 	<ol style="list-style-type: none"> 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:

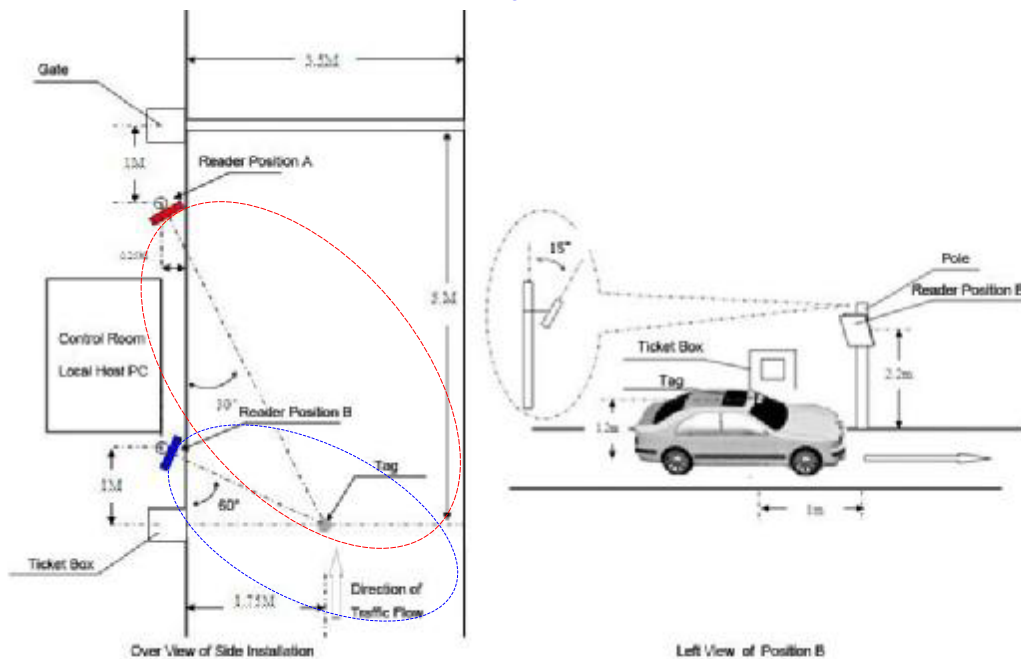
1. There are many types of car, especially with both large vehicle and small car;
2. The position of the tag is different from different type of vehicles;
3. The drive position is available for both left and right side

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 with 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

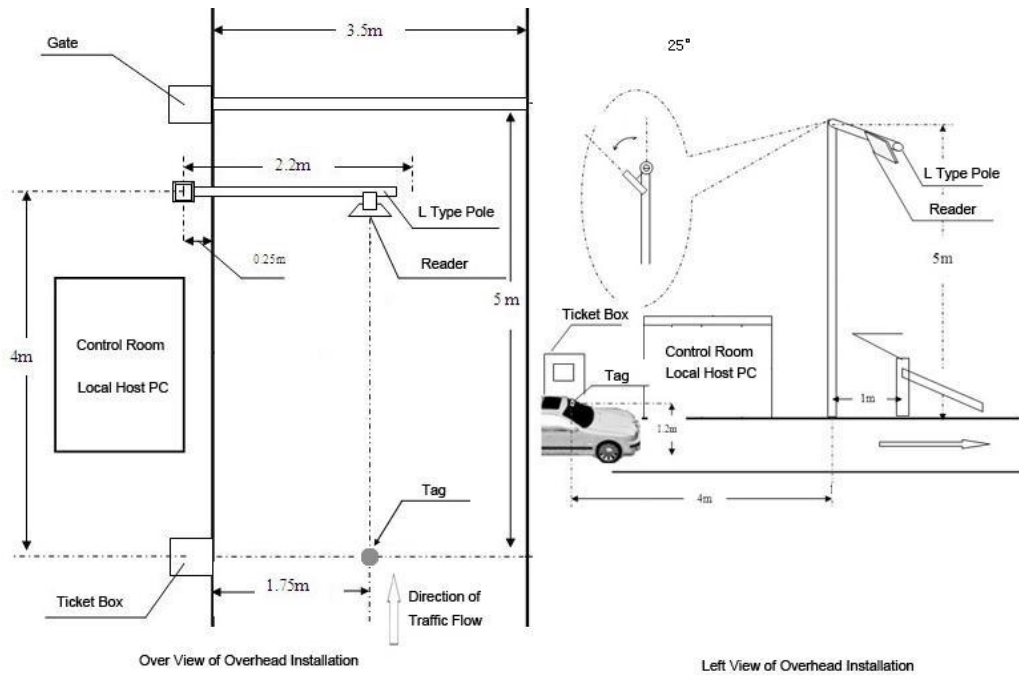
1. If the DC Power is not waterproof, it is suggested to insert into the Ticket Box or be covered.
2. The dia of the extension power core should be 1.5 mm" if the length is over 5.0 m.
3. The data wire should be with shielding layer and should be connected with the GND to avoid any interference.
4. Adjust 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

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](#)

Figure 2.4.1-1



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 with 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. If the DC Power is not waterproof, it is suggested to insert into the Ticket Box or be covered.
2. The dia of the extension power wire should be 2.0 mm" 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

WINGSAFE provides 3 types of tag according to different demands:



Type	Photo	Suitable Way
Card		<ol style="list-style-type: none"> 1. Fixed with card holder 2. Handheld by user
Sticker		<ol style="list-style-type: none"> 1. Stick on the surface of the glass
Metal Tag		<ol style="list-style-type: none"> 1. Fixed on the surface of the metal

3.2 Instruction

3.2.1 Card

3.2.1.1 Fixed with card holder

Transmitter Solutions provides 2 types of card holder according to different demands:

Type	Photo	Suitable Way
Fixed Holder		Fixed on the windows, see the remark
Rotatable Holder		Fixed on the driver platform

3.2.1.2 Installation for Tags

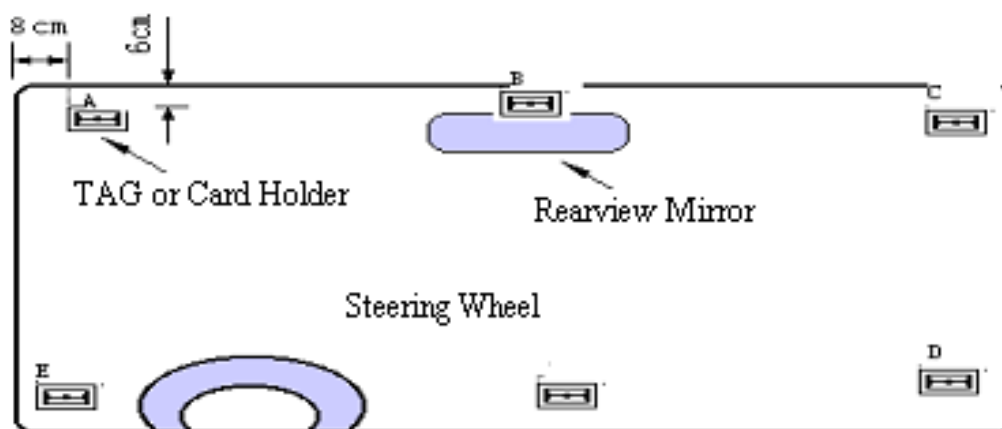
For the vehicles without metalized windshield, you can choose one of six places showed on the figure 3.2.1-1 to install

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 tag 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 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



3.2.1.3 Installation for card

The card is designed to install on the front of the driver platform, the base of the card can be adjusted to make sure the front surface of the tag is face to the front surface of the reader.

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

The install way is same as card holder, for details refer to 3.2.1.2. Please note that the tag 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

It designed for License plate use only. Use the screws to fix the tag 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 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 tag parallel to the front surface of the reader. Move the tag from the near to the distant by the horizontal line (see as the [figure Appendix-1](#)) until the tag can not be detected by the reader. The line distance between the reader and the tag is the MAX Distance.
- 6: When the MAX Distance is over 9 meters, and the reading signal of the reader is stable & continuous, the read performance of the reader is OK.

Figure-Appendix-1

