

## TOAUTO F21-E1/E2

# TOAUTO Industrial Radio Remote Control for Crane

User Manual

## 1. INTRODUCTION

This manual provides essential instructions for the safe and effective use of the TOAUTO Industrial Radio Remote Control system. This wireless control system is designed for operating cranes and similar industrial equipment, offering enhanced flexibility and safety. Please read this manual thoroughly before installation and operation.



Image 1.1: The TOAUTO Industrial Radio Remote Control system, showing both the handheld transmitter and the receiver unit.

## 2. PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- One Transmitter unit with hanging belt
- One Dust Bag
- One Receiver unit

- One 1.65m connection cable for the receiver
- One Operation and Maintenance Manual (this document)



Image 2.1: The TOAUTO remote control system components as packaged, including the transmitter, receiver, and cables.

## 3. SPECIFICATIONS

### 3.1 General Technical Specifications

Feature	Specification
Control Distance	Approx. 100m (200m customizable)
Material	Glass-Fiber PA
Operation Frequency	310.0325-331.165 MHz
Certificates	CE, FCC
Unique ID Codes	Over 4.3 billion
Working Temperature	-40°C to +85°C

### 3.2 Transmitter Specifications (Model F21-TX)

Feature	Specification
Dimensions	156 x 61 x 51 mm
Weight	255g
Enclosure Protection Class	IP65
Transmitter Power	≤10dBm
Power Supply	2 AA batteries

Feature	Specification
Safety Code	32 bits (4.3 billion)

### 3.3 Receiver Specifications (Model F21-RXC)

Feature	Specification
Dimensions	205 x 86 x 80 mm
Weight	620g
Enclosure Protection Class	IP65
Frequency Range	VHF: 310-331MHz; UHF: 425-446MHz
Receiver Sensitivity	-110dBm
Receiver Power Supply	18-65V AC/DC; 65-440V AC/DC (Optional)
Output Contactor Capacity	8A sealed relay output (with AC 250V/10A relays, 10A fuse)
Cable Length	1.65 meters
Safety Code	32 bits (4.3 billion)

## ► Features



### Standard Configuration

- One transmitter (with belt)
- One dust bag
- One receiver
- Receiver is with 1.65 meter cable
- Battery: **not include**
- Operation and maintenance manual

- With 7 function buttons (F21-E2 is Rotary key switch) + E-stop
- Control contact is up to 8
- With battery voltage warning device, the power supply is cut off during low power
- Program the button function by computer software
- Up/down, east/west and south/north can be programmed to interlock or non-interlock, toggle and normal etc
- Start button can be program to be start, normal, toggle function etc

Transmitter Parameters: F21-TX	
Material	Glass-Fiber PA
Enclosure protection class	IP65
Frequency range	VHF: 310~331MHz; UHF: 425~446MHz
Transmitter power	≤10dBm
Transmitter power supply	2 AA batteries
Safety code	32 bits (4.3 billion)
Temperature range	-40°C~+85°C
Control distance	Approx100m(200 meters is customized)

MODEL: F21-E1/E2-TX  
ITEM CODE: 921-006-001/002  
Dimension:156 x 61 x 51 mm  
Weight: 255g(without batteries)

Receiver Parameters: F21-RXC	
Material	Glass-Fiber PA
Enclosure protection class	IP65
Frequency range	VHF: 310~331MHz; UHF: 425~446MHz
Receiver sensitivity	-110dBm
Receiver power supply	18~65V AC/DC, 65~440V AC/DC (optional)
Output contactor capacity	8A sealed relay output (with AC 250V/10A relays, 10A fuse)
Cable lengtht	1.65 meters
Safety code	32 bits (4.3 billion)
Temperature range	-40°C~+85°C

MODEL: F21-E1/E2-RXC  
ITEM CODE: 921-100-112  
Dimension:205x86x80mm  
Weight: 620g

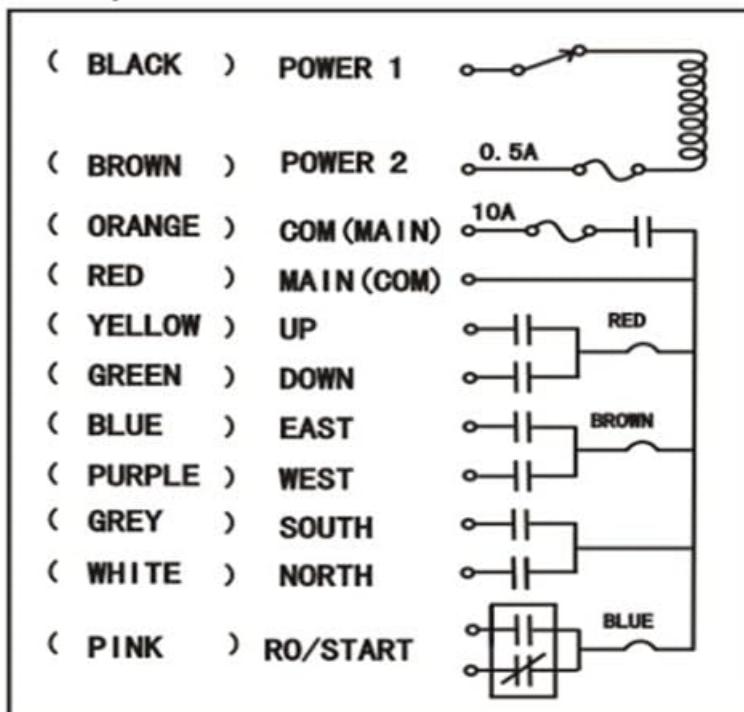
Image 3.1: A visual representation of the transmitter and receiver specifications, including dimensions and technical parameters.

## 4. SETUP

### 4.1 Receiver Wiring

The receiver unit requires proper electrical connection to the crane or industrial equipment. Refer to the wiring diagram below for correct terminal connections. Ensure all connections are secure and comply with local electrical codes.

## F21-E1/E2 Receiver Connections Drawing



### Switching power supply with high conversion efficiency

Old design-transformer power supply



NEW design-switching power supply



**VS**



### Labels are laser security coding

Transmitter and receiver labels use laser engraving technology. Waterproof, wear-resistant, clear writing, avoiding the important information is missing in harsh environments as codes and other issues. To provide more superior

**TELEcontrol**  
MODEL: F21-E1 TX  
S/N: C104003F  
CH: 024  
ITEM CODE: 921-001-001  
DATE: 1216F 0063

Transmitter Label



service for future use.

(It is S/N code and channel code in the red frame. The two codes of the transmitter and receiver must be same in one set. If the user need spared transmitter or receiver, please offer these two codes.)



Image 4.1: Wiring diagram for the F21-E1/E2 receiver, detailing connections for power and control signals (e.g., UP, DOWN, EAST, WEST, NORTH, SOUTH, RO/START).

## 4.2 Power Supply Connection

The receiver supports a wide range of AC/DC power inputs. Ensure the power supply connected matches the receiver's specifications (18-65V AC/DC or 65-440V AC/DC). The system features a switching power supply for high conversion efficiency.



F21-E1 transmitter

F21-E2 transmitter

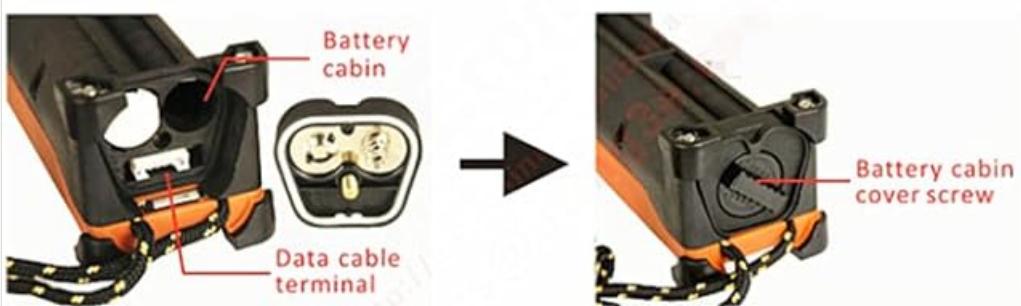
### ➤ Power supply alarm indicator

The LED indicator in transmitter can indicate the operating state of the transmitter. It's mode can be programmed by computer software. It blinks during low power to remind the user to change new battery and goes into protect mode.





### ➤ Easy disassemble battery cabin design



Fast disassemble of battery cabin. Easy to change battery. Change the products function by data cable and software.

### ➤ Screws with damping rubber mounting



The damping rubber in fixed position of receiver can reduce the impact of vibration on the remote control.

Image 4.2: Illustration of the receiver's power supply options (AC/DC 65V-440V and AC/DC 18V-65V) and the damping rubber mounting for vibration reduction.

## 4.3 Transmitter Battery Installation

The transmitter requires two AA batteries (not included). To install or replace batteries, locate the battery cabin on the transmitter. The design allows for easy disassembly. Ensure correct polarity when inserting batteries.





F21-E1 transmitter



F21-E2 transmitter

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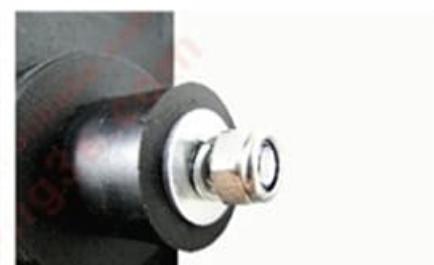


#### ➤ Easy disassemble battery cabin design



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The damping rubber in fixed position of receiver can reduce the impact of vibration on the remote control.

Image 4.3: Diagram showing the easy disassembly of the transmitter's battery cabin for battery replacement and access to the data cable terminal for programming.

## 5. OPERATION

### 5.1 Power On/Off and Safety

To power on the transmitter, use the safety key switch. This prevents unauthorized use. The transmitter

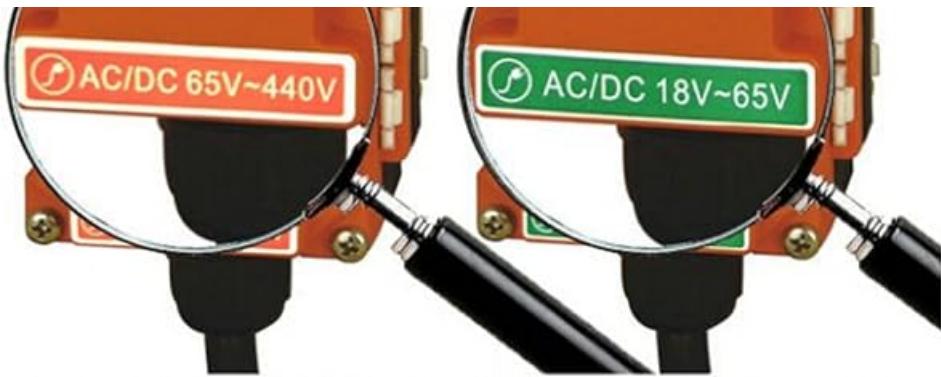
features a red mushroom head emergency stop button for immediate power cut-off in critical situations. Some models include a rotary key for enhanced safety.



Special button materials and high-quality switches, offering the user ultra comfortable feel.

### ➤ Safe and reliable mushroom head and rotary emergency stop





**Power supply, High Voltage and Low Voltage for option.**

Image 5.1: Close-up of the transmitter's safety features, including the mushroom head emergency stop button and the rotary key switch (F21-E1 and F21-E2 models shown).

## 5.2 Button Functions

The transmitter is equipped with 7 operation buttons: 6 single-speed directional buttons (Up, Down, East, West, North, South) and one 'STOP' button. A 'START' button is also present. These buttons control the corresponding functions of the connected equipment.

- **Directional Buttons:** Control movement (Up/Down, East/West, North/South). These can be configured for mutual inhibition (preventing simultaneous opposite movements) or independent operation via computer interface.
- **START Button:** Initiates operation.
- **STOP Button:** Halts all operations immediately.
- **Spare Key:** Can be programmed for various functions such as acceleration, toggle switch, or other specific operations.

## 5.3 Battery Voltage Warning

The transmitter includes an LED indicator that signals the operating state. During low power conditions, the LED will blink to alert the user to replace batteries. The system will enter a protective mode if power becomes critically low.



F21-E1 transmitter

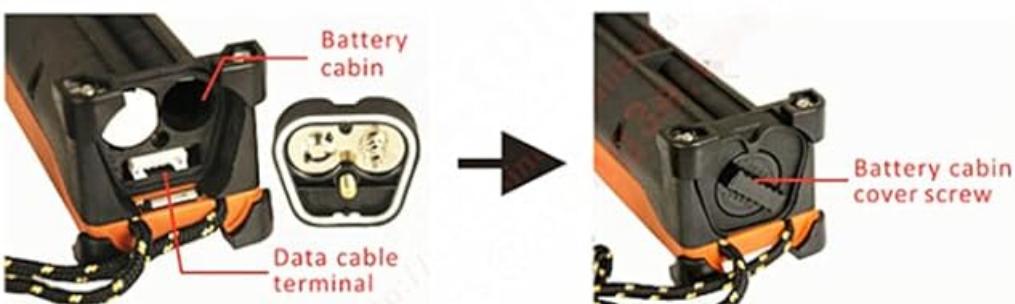
F21-E2 transmitter

➤ **Power supply alarm indicator**

The LED indicator in transmitter can indicate the operating state of the transmitter. It's mode can be programed by computer software. It blinks during low power to remind the user to change new battery and goes into protect mode.

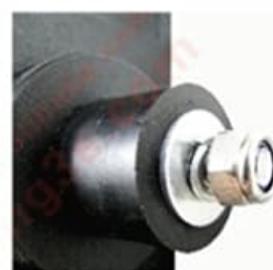


➤ **Easy disassemble battery cabin design**



Fast disassemble of battery cabin. Easy to change battery. Change the products function by data cable and software.

➤ **Screws with damping rubber mounting**



The damping rubber in fixed position of receiver can reduce the impact of vibration on the remote control.

Image 5.2: The LED indicator on the transmitter, which provides visual feedback on the operating status and warns of low battery power.

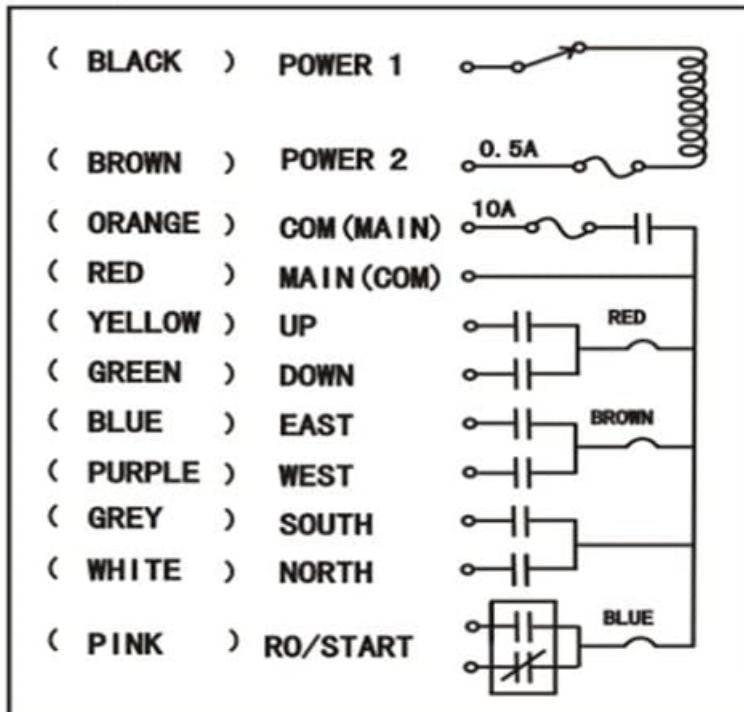
## 6. KEY FEATURES

- **Durable Construction:** Made from Glass-Fiber PA material, not standard plastic, for enhanced durability.
- **High-Quality Buttons:** Utilizes German-imported buttons for reliable and comfortable operation.
- **Extended Service Life:** Equipped with high-quality relays to prolong the operational life of the remote

control system.

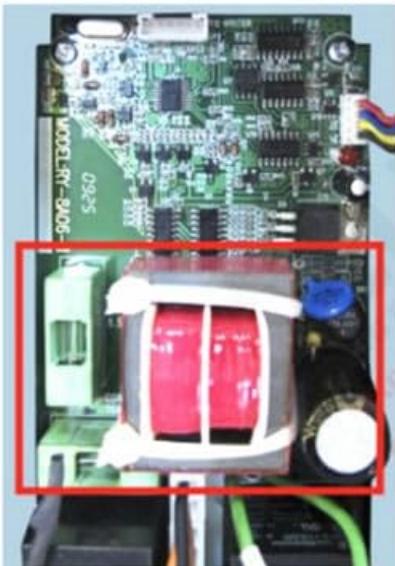
- **Secure Cabling:** The receiver's connection cable is designed for safety and strength.
- **Laser-Marked Labels:** Important information such as Serial Number (S/N) and Channel (CH) is laser-marked to prevent loss and ensure traceability, even in harsh environments.
- **Configurable Functions:** Internal functions can be set via a computer interface, allowing customization of button behavior and interlock settings.
- **Vibration Damping:** The receiver features damping rubber mounting screws to reduce the impact of vibration during operation.

### F21-E1/E2 Receiver Connections Drawing



### Switching power supply with high conversion efficiency

Old design-transformer power supply



NEW design-switching power supply

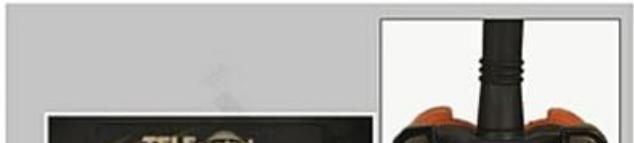


VS



### Labels are laser security coding

Transmitter and receiver labels  
use laser engraving technology.  
Waterproof, wear-resistant, clear



writing, avoiding the important information is missing in harsh environments as codes and other issues. To provide more superior service for future use.

(It is S/N code and channel code in the red frame. The two codes of the transmitter and receiver must be same in one set. If the user need spared transmitter or receiver, please offer these two codes.)



Image 6.1: Example of laser-engraved labels on both the transmitter and receiver, ensuring important identification information remains clear and legible.

## 7. MAINTENANCE

Regular maintenance ensures the longevity and reliable operation of your TOAUTO Industrial Radio Remote Control system.

- **Cleaning:** Keep both the transmitter and receiver units clean and free from dust and debris. Use a soft, dry cloth. Avoid harsh chemicals.
- **Battery Replacement:** Replace transmitter batteries promptly when the low power warning indicator blinks. Always use new AA batteries.
- **Cable Inspection:** Periodically inspect the receiver's connection cable for any signs of wear, damage, or fraying. Replace if necessary.
- **Label Integrity:** Ensure the laser-marked labels on both units remain legible. These contain critical information for service and identification.
- **Damping Rubber:** Check the damping rubber mounting on the receiver for any signs of degradation. This helps absorb vibrations and protects the internal components.

## 8. TROUBLESHOOTING

This section addresses common issues you might encounter with your remote control system.

- **No Response from Equipment:**
  - Check if the transmitter is powered on and batteries are not low.
  - Ensure the receiver has power and is correctly wired.
  - Verify that the safety key switch on the transmitter is in the 'ON' position.
  - Confirm that the transmitter and receiver are within the operational control distance (approx. 100m).
  - Check for potential radio interference in the operating environment.
- **Transmitter LED Blinking:**
  - This indicates low battery power. Replace the AA batteries in the transmitter immediately.

#### • Intermittent Control:

- Could be due to weak batteries, environmental interference, or being at the edge of the control range.
- Inspect receiver wiring for loose connections.

#### • Emergency Stop Not Functioning:

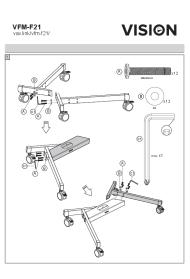
- Immediately cease operation. Inspect the emergency stop button for physical damage. Do not use the system until this critical safety feature is fully functional.

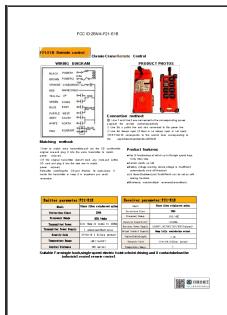
If issues persist after following these steps, contact customer support.

## 9. WARRANTY AND SUPPORT

For warranty information, please refer to the documentation provided at the time of purchase. For technical support, service, or spare parts, please contact TOAUTO customer service through your retailer or the official TOAUTO channels.

### Related Documents - F21-E1/E2

	<p><a href="#">XINDALI XDL19 Industrial Remote Control System - Product Instructions &amp; Specifications</a></p> <p>Detailed product instructions and technical specifications for the XINDALI XDL19 series industrial remote control systems. Includes model variations, dimensions, and performance data.</p>
	<p><a href="#">F21 Series Industrial Wireless Remote Control User Manual</a></p> <p>Comprehensive user manual for F21 Series E1, E1B, 4D, 4S, 4SB, 2D, 2S industrial wireless remote control systems, covering installation, operation, warranty, and troubleshooting.</p>
	<p><a href="#">VISION VFM-F21 Adjustable Display Stand Assembly Instructions</a></p> <p>Comprehensive assembly guide for the VISION VFM-F21 adjustable display stand, detailing each step with textual descriptions of diagrams, parts, and required tools for safe and proper installation.</p>
	<p><a href="#">ROTECH F21 Series Full Height Turnstile Installation and Service Guide</a></p> <p>This guide provides comprehensive installation, specifications, operation, and service instructions for ROTECH F21, F21XL, and Double F21 full height turnstiles, designed for pedestrian access control.</p>



## [F21-E1B Wireless Remote Control System for Industrial Cranes - Technical Specifications](#)

Comprehensive technical details for the F21-E1B wireless remote control system, including wiring diagrams, connection and matching procedures, product features, emitter/receiver parameters, and FCC compliance information for industrial crane and hoist applications.

V1.0

### **F21 Pro USER MANUAL**



## [Windgoo F21 Pro Electric Bike User Manual](#)

Comprehensive user manual for the Windgoo F21 Pro electric bike, covering specifications, assembly, operation, maintenance, troubleshooting, and safety guidelines.