WISG

User Manual

FDS
TIMING SOLUTIONS

FDS-TIMING, SWITZERLAND

WISG (Wireless Start-Gate)

The **Wireless Start-Gate (WISG)** is designed to operate seamlessly with the TBox-Radio in an FDS wireless setup.

In addition to wireless operation, the WISG unit is also compatible with wired equipment via a standard 3.5 mm jack and Banana connectors.

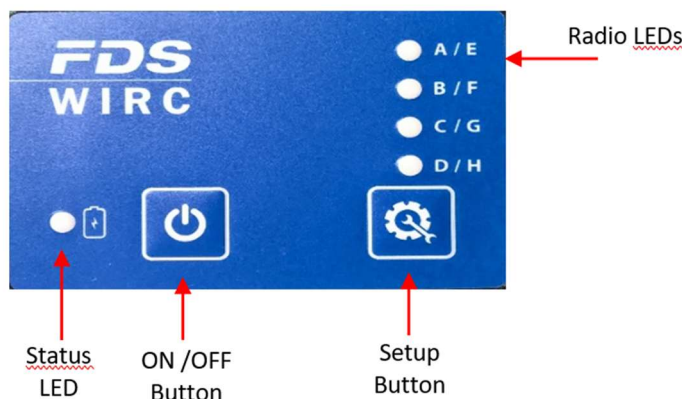The **WISG** exist in two different versions:

WISG-Auto (Automatic return of the wand)

WISG-FIS (2 separates outputs with FIS certification)

1. Keypad

2. Power control and status

2.1. Power On/Off

Using the **Impulse Devices Manager** (PC application), three different power ON/OFF sequences can be selected:

1. The *"Secured"* sequence (All Firmware).
    *   Press the power switch briefly (0.5s–1.5s) until the battery status is indicated on Radio LEDs **A–D**.
    *   Release the power switch and repress it within **1 second**.
    *   Hold the switch down until:
        -   All four Radio input LEDs are ON, and
        -   An audible beep signal is emitted (if the buzzer is enabled).

2. The *"Simplified"* sequence (Firmware >= V2.4.0).
    *   Press and hold the power switch for about **3 seconds**.
    *   Indications:
        -   During the first second, the Radio LEDs A–D display the battery status.
        -   After ~3 seconds, all Radio LEDs and the Power LED light up:
            Green = Power ON
            Red = Power OFF
        -   An audible beep signal is emitted.

3. The *"Automatic"* sequence (Firmware >= V2.4.0).
    *   The WIRC powers **ON automatically** when USB external power is applied.
    *   It powers **OFF automatically** after a defined delay once USB power is removed.

Manual ON/OFF is still possible. If used, the WISG reverts to the **Secured/Simplified** sequence**.**

2.2. Battery status

The power LED give an indication of the battery status. See table below:

Power LED	Device Power	USB	Battery
Yellow ON	OFF	connected	Battery Charging
Green ON	OFF	connected	100% charged
Yellow blinking	ON	connected	Battery Charging
Green blinking	ON	connected	100% Charged
Green blinking	ON	disconnected	> 25%
Red blinking	ON	disconnected	Low battery

Press and hold the ON/OFF button for about 1sec.

The Radio LEDs (A-D) will illuminate to indicate the battery charge status.

4 LEDs ON green: 75-100 %

3 LEDs ON green: 50-75%

2 LEDs ON green: 25-50%

1 LED ON green: 10-25%

1 LED ON red: < 10% (Will work only with external power plugged)

4. Radio configuration

The WISG is configured and linked to a TBox-Radio using two Parameters. Both of them must match on WISG and TBox

- **Group** (radio frequency)
- **Input/ID** (TBox Input / WISG serial number)

4.1. Group

To configure your desired Group, press the Setup button
The selected Group is indicated by the LED array (A, B, C, D).

Release the button and press again to change the selected group.

Group	LED A	LED B	LED C	LED D
A	GREEN			
B	GREEN	GREEN		
C	GREEN	GREEN	GREEN	
D	GREEN	GREEN	GREEN	GREEN
E	YELLOW			
F	YELLOW	YELLOW		
G (*1)	YELLOW	YELLOW	YELLOW	
H (*1)	YELLOW	YELLOW	YELLOW	YELLOW
OFF (*2)	RED	RED	RED	RED

(*1) only available for North America and Japan

(*2) The radio transmission function is disabled. This mode should be selected to save power when you connect the start-gate using a hard-wired solution (jack output).

Country (Groups)	Distance of transmission (*3)	Min locking time
Europe/India/Russia (A, B, C, D)	Up to 2000m	200ms
Europe/India/Russia (E, F)	Up to 5000m	500ms
USA (A, B, C, D)	Up to 4000m	200ms
USA (E, F, G, H)	Up to 6000m	500ms
Japan (A, B, C, D)	Up to 1000m	200ms
Japan (E, F, G, H)	Up to 1500m	500ms

(*3) Clear line of sight, no obstacles, no trees, outside cities, antenna 3m above ground

⚠️ In Groups E-H, if more than 1 impulses per second is expected (all devices), radio transmission can become slow and impulses might be missed.

Radio Setup Lock Function

To prevent accidental radio group changes, the Radio Setup button can be locked or unlocked by pressing and holding both the Radio button and the Power button simultaneously.

- When locked: **LEDs A and D flash red**
- When unlocked: **LEDs A and D flash green**

4.2. WISG and TBox-Radio Pairing

Each WISG has a **unique ID** (serial number) that can be paired with a **TBox-Radio input (A–F)**. Pairing can be done via an application or manually.

Option 1: Using the application "Device Manager"

- No need to be in presence of WISG (Just the SN is required)
- Enter the Device Serial Number in the TBox inputs settings
- Do not use the same serial number for more than one TBox input.

Option 2: Manual Pairing (No Application)

- **Requirements**
  - Both TBox-Radio and WISG must be powered on.
- **Steps**
  1. Enter pairing mode on TBox-Radio
     - Press the Setup button 🔧 for **3 seconds** until a long beep sounds.
     - LED corresponding to input A flashes yellow.
  2. Select the desired input (A–F)
     - Perform a **short press** on the Setup button until the correct input is selected.
  3. Enter pairing mode on the WISG
     - Press the Setup button 🔧 for **3 seconds** until a long beep sounds.
  4. Completion (When pairing is successful):
     - LEDs A–F on the TBox flash yellow.
     - Both TBox and WISG return to normal operation.
- **Exiting Manual Pairing Mode**
  - Press the Setup button on either the TBox or WISG for 3 seconds until a long beep sounds.

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5. Radio communication

Any messages that do not receive an ACK from the TBox-Radio will be retransmitted several times. The WISG indicates each time an impulse is transmitted or retransmitted by flashing its A/E LED:

- **Green flash:** Pulse transmission successfully completed.
- **Yellow flash:** The last message did not receive an ACK.
- **Red flash:** No ACK has been received from the TBox-Radio after all attempts (the impulse may be lost).

Those indications provide the user with a basic method to test the positioning and communication between the TBox-Radio and WISG.
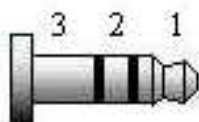
Frequent yellow or red flashes may indicate unstable communication. Adjusting the position of the WIRC or the TBox-Radio—or even just the antennas—may improve the connection.

⚠️ Radio transmissions cannot be 100% guaranteed. An unfavorable environment, lack of line of sight, interference or an improper installation might lead to the loss of data.
FDS cannot be held responsible for any of the above.

6. Wired connection (Jack: Impulse and Data)

The jack connector at the back of the WISG photocell receiver allows a hard-wired connection to most modern timing devices.

It features an optocoupler on the output, which can safely handle up to 16 V.

1: Impulse optocoupled output
2: RS232 RXD
3: GND

The same Jack connector can be also used to connect our RCID (RFID) receiver.
When received, the competitor number is immediately sent by radio to the TBox.

7. Wired connection (Banana: Impulse)

The FIS version has 2 outputs (Banana) totally independent from each other.
1 is optocoupled and support up to 16V.
1 has an open drain and support also up to 16V.

8. USB

The USB-C connector has various functions including:

- External power supply and battery charging
- Configure the WIRC photocell options and parameters
- Update the Firmware
- Hardware reset in the unlikely event of a frozen WISG

9. Firmware Update Procedure

Updating the WISG firmware is straightforward. The FdsFirmwareUpdate software is required.

1. **Install Software**
   - Install the application **FdsFirmwareUpdate** on your computer.
   - Launch the application.
2. **Connect Device**
   - Connect the USB cable between your PC and the WISG start-gate
3. **Select COM Port**
   - Choose the COM port corresponding to the connected WISG device.
4. **Select Firmware File**
   - Select the **".bin" firmware file** for the update.
5. **Start Update**
   - Press **Start** in the program.
   - The WISG firmware will update automatically.
6. **Finalize Update**
   - Once the update completes, **disconnect the USB cable**.
   - **Switch ON** the WISG to activate the new firmware.

10.   Technical specifications

Frequencies & Power:
    Europe
    India
    Russia
    North America
    Japan (TBox-41 only)
	869.4 - 869.65 MHz 100mW
	865 - 867 MHz 100mW
	868.7 – 869.2 MHZ 100mW
	920 - 924 MHz 100mW
	922 - 927 MHz 20mW

Operating temperature:	-20°C to 60°C Battery charge possible only between 0°C and 45°C
Min locking time (between two detections)	200ms for Groups A-D 500ms for Groups E-H
External power input	USB compatible (5V +/- 5%) up to 1.5A
Battery	LiPo 1700mAh
Autonomy @20°C	150 hours radio ON
Dimension	100x80x80mm
Weight	460g
Homologation	FIS : FDS.S274.25

12.   Copyright and Declaration

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