Itowa

USER MANUAL

TUNNER SETS

GCFI

ITOWA

MATNRGB

REV 6

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Approved by the head of the Engineering Dept.: I. Martínez

CONTENTS

FULLY CHARGE THE BATTERIES BEFORE USING THE SET FOR THE FIRST TIME

1. INTRODUCTION

This manual is a guide for the correct use of the ITOWA remote control set.

This set has been specially designed for the wireless remote control of all types of electro-mechanical machinery.

The most advanced technology and the latest generation microprocessors have been incorporated in the electronic design. This means total safety when using the radio control.

The type of transmission used, GCFI *(Intelligent Changing Frequency Management)* provides the equipment with an intelligent system enabling it to change to vacant frequencies automatically and at random, thereby avoiding interferences which could cause continuous downtimes during operation.

2. GENERAL RULES FOR THE CORRECT AND SAFE USE OF THE RADIOCONTROL

For maximum safety when handling the radio control, the user must follow the rules indicated in this manual.

Whenever the crane has to be manoeuvred, the radio control operator must be in a place where he can view the whole manoeuvre being performed. If this is not possible, he should position himself where he can see as much of the manoeuvre as possible, and coordinate with another person when he cannot see properly. Never perform a manoeuvre which may be partially uncontrolled.

Do not leave the radio control transmitter on the ground or on metal blocks. If you must do so, activate the emergency stop (STOP BUTTON) of the radio control.

At the end of the working day, or if the radio control operator has to leave the radio control, he should activate the emergency stop (STOP BUTTON) of the radio control and place the battery in the charger for recharging.

Procedure to Lock the Keyboard

The equipment can have the option of keyboard lock on the transmitter by means of a system of sequential lock/unlock of buttons. This system is similar to the one used to lock telephones

To lock the keyboard press the start button 5 times in less than 3 seconds, with the STOP BUTTON pressed. Both leds and will light up for 3 seconds.

To unlock the keyboard, repeat the same operation, that is, press the start button 5 times in less than 3 seconds, with the STOP BUTTON pressed. The operation will also be indicated in the same way, that is, both leds and will light up for 3 seconds.

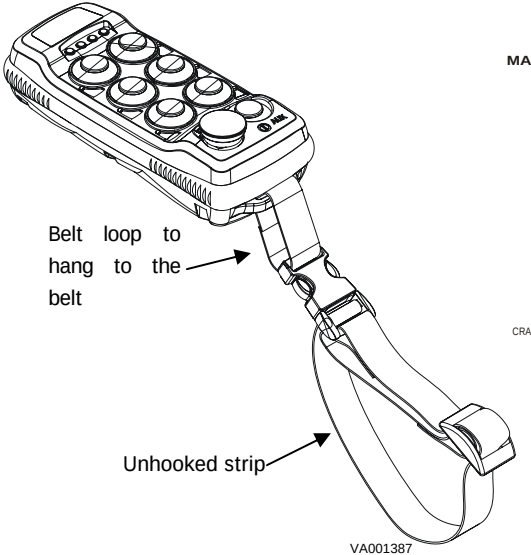
We would point up that if your press the start push button when the transmitter is blocked, the led and the led blink alternately.
In case the start button is pressed while the keyboard is locked, both leds will blink alternatively.

3. DESCRIPTION OF THE SET

TRANSMITTER, RECEIVER, BATTERIES, CHARGER

3.1. TRANSMITTER

This is a sealed pushbutton box in highly resistant plastic material. The manoeuvre pushbuttons and display leds are in the front part. A housing for interchangeable batteries is provided at the back.



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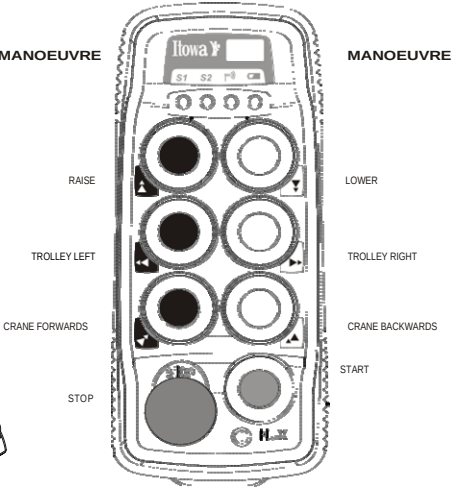

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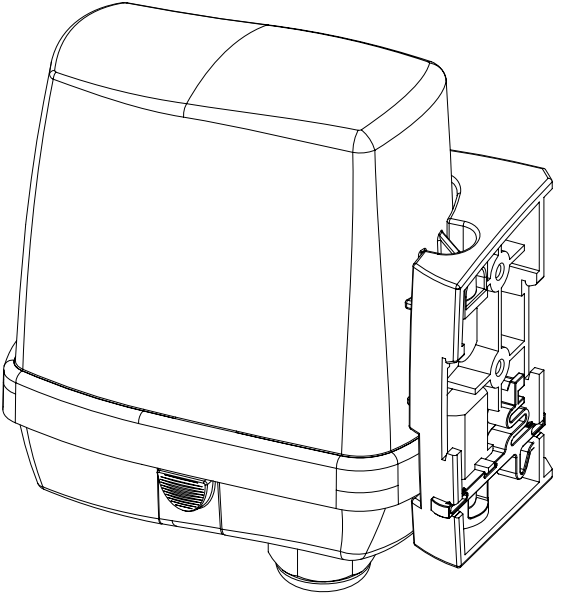
3.2. RECEIVER

The receiving unit consists of a cabinet, which houses the various electronic systems to receive orders and activate/deactivate the corresponding relays for each manoeuvre of the crane.

The signal received by the antenna is injected into the receiver, which supplies a low frequency signal in FFSK code to the microprocessor. The control module checks that the information received is free of errors, and then draws up the corresponding order to activate corresponding relay.

For further safety, both the software and the hardware of all surveillance systems are double.



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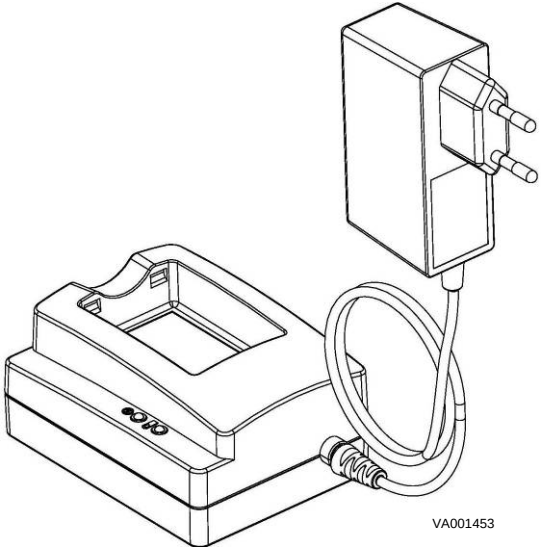
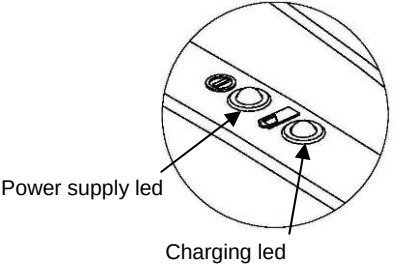
3.3. BATTERY CHARGER

The charger charges the batteries quickly and safely. The batteries supplied are Ni-MH, from which the charger extracts their maximum power. It is able to detect faulty batteries, short circuits or overheating and can recuperate batteries that have been flat for a long period of time.

The charger has 2 display leds, one for power supply indicating that the set is connected to the mains, and the other indicating that the battery is being charged. When the battery is inserted, the charger tests its level and then charges accordingly for approximately 20 minutes (led is on), or it keeps it charged (led flashes), until it is fully charged (led is off). Complete charging takes less than 8 hours. For safety purposes, the maximum charging time is limited to 12 hours.

Charging should be performed at a temperature of between -10 and 50ºC.





4. TECHNICAL SPECIFICATIONS

4.1. GENERAL SPECIFICATIONS

RESPONSE TIME TO ORDER	<50 ms
ACTIVE EMERGENCY TIME	<50 ms
PASSIVE EMERGENCY TIME	1900 ms
RADIUS OF ACTION	90 metres
Frequency bands	433.050 to 434.775 MHz
(I-ETS 300 220)	868.000 to 870.000 MHz
TEMPERATURE RANGE:	From -20ºC to +70ºC

4.2. TRANSMITTER

Transmission power:	10 mW P.R.A
Power supply:	Removable battery Ni-MH 3.6V
Endurance:	18 hours + 10 minutes reserve
Dimensions:	External: 170x70x55 mm
Weight:	With battery and belt: 325 g.
Protection:	IP 65

4.3. RECEIVER

Maximum number of relay switchings:	Resistive load: Inductive load (cosØ=0.4):	5 A at 250 Vac or 30 vdc 2 A at 250 Vac or 30 vdc
Power supply:	48 Vac / 115 / 230 Vac (-20% + 15%) according to EN 60047-5-1 24 Vdc (-20% + 15%) according to EN 60047-5-1	
Max. consumption:	0.1 A (48 Vac) / 0.05 A (115 Vac) / 0.03 A (230 Vac) 0.135 A (24 Vdc)	
Connection:	By means of an Itowa 26-pin connector	
Fuses:	Emergency Stop Manoeuvre 3 A	
Dimensions:	External: 190 x 83 x 165 mm	
Weight:	With fastening: 890 g.	
Fastening:	With bolts, DIN rail or magnetic (optional)	
Protection:	IP65	

4.4. BATTERY CHARGER

Power supply:	115 / 230 Vac – 15 Vdc (Max. 3 VA)
Charging time:	8 hours
Protection:	IP30
Charger Dimensions:	75 x 95 x 50 mm

5. INSTALLATION AND START-UP

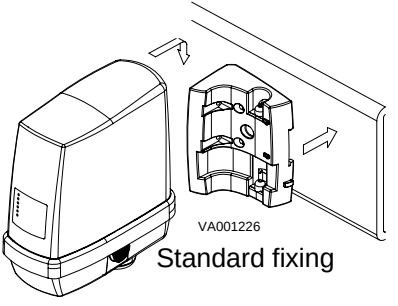
5.1. INSTALLATION OF THE RECEIVER

The receiver should be installed in an accessible location to be able to work on it easily.

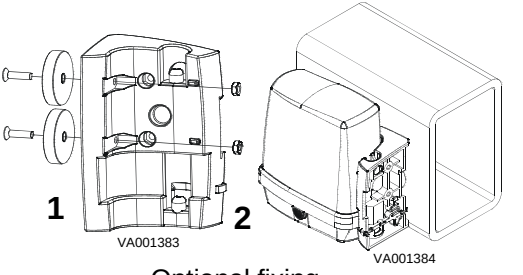
¡ATTENTION!: IT IS VERY IMPORTANT TO CLOSE THE COVER OF THE RECEIVER PROPERLY IN ORDER TO ENSURE SEALING. THE GUARANTEE DOES NOT COVER ANY BREAKDOWNS CAUSE BY INCORRECTLY CLOSING THE COVER.

In applications with an exterior antenna, it should be free of metal shields in order to achieve a better radio link and avoid failures in communication.

5.1.1. FASTENING OPTIONS



Standard fixing



Optional fixing

For the magnetic fastening option, it should be placed on a metal surface with a MINIMUM THICKNESS OF 4 MM, where the two magnets contact the flat surface.

¡ATTENTION!: ONCE INSTALLED, CHECK THAT THE SET IS FIRMLY ACNHORED AND DOES NOT SLIDE.

Due to the magnetic force of the magnets, to dismantle the set, lever with a flat screwdriver between the metal structure of the machine and the magnetic fastening.

5.2. CONNECTING THE SET

It is recommended to connect the set with a standard multi-cable hose. This hose will be connected to the set at one end, by means of the supplied Itowa connector, and the other end will be connected to a multi-pole connector identical to the one used by the machine to interconnect with its pushbutton box.

5.3. POWER SUPPLY OF THE RECEIVER

¡ATTENTION!: CONNECTION SHOULD BE MADE SO THAT WHEN GENERAL SWITCHING IS TURNED OFF, THE REMOTE CONTROL RECEIVER IS ALSO TURNED OFF.

¡ATTENTION!: AS A SAFETY MEASURE ENSURE THAT IT IS EARTHED WITH THE CORRESPONDING PIN OF THE CONNECTOR.

Itowa will not be held responsible for incorrect installation.

5.4. START-UP

Once the receiver is installed, when the general switch of the machine is turned on, the leds located on the front of the receiver set will light up, for testing.

Insert a charged battery in the transmitter, switch off the STOP BUTTON and press the START button, the remote control will start to operate by turning on the stop and start relays, and the general contactor will be locked. The led  and the S1 led (Start-up led) of transmitter will light up indicating that the remote control is in operating mode. From this moment, if any button is pressed, the corresponding manoeuvre will be activated. The selected manoeuvre will remain active while the button is pressed.

To keep the radio channel free and to avoid the operator from accidentally leaving the machine on when not in use, the remote control is equipped with an automatic shutoff system. This system is activated after 180 seconds (this can be programmed) after not operating, sending a shutoff sequence to the receiver, causing the machine to stop.

5.4.1. SETTING THE TRANSMISSION TIME

The automatic stop time can be set from the pushbuttons and can be changed between three values:

1) Lock the STOP BUTTON and remove the battery.

2) Press either of the first two manoeuvre buttons and keep them passed while you insert the battery.

3) Wait approximately one second and unlock the STOP BUTTON.

4) Release the manoeuvre button and then press it again.

5) The leds and will start to flash simultaneously from one to three times, indicating the set time, which can be:

- Mode 1: 180 seconds (one flash).
- Mode 2: 330 seconds (two flashes).
- Mode 3: continuous transmission (three flashes).

Repeat this sequence to change from one mode to another in a cycle.

To activate the transmitter again, the battery should be removed and then inserted.

5.4.2. BATTERY STATUS

When the transmitter detects that the battery is at a certain level of discharging, the led will start to flash and the horn will turn on intermittently (reserve). After about 10 minutes, the transmitter will switch off and the led will be permanently on (flat battery).

6. MAINTENANCE OF THE RADIOCONTROL SET

The equipment you have purchased is manufactured using top quality materials to ensure perfect working order and operation of the remote control. Similarly to all machinery and equipment, the remote control requires minimum basic maintenance tasks that should be performed. In order to increase the life span of the apparatus and avoid unnecessary repair costs, we advise you to carefully follow these preservation and maintenance recommendations.

- Use the fastening accessories and shoulder strap suitably and adjust them so that the set can be used comfortably and safely.
- The pushbuttons of the set are of elastic material to give elasticity, touch and water tightness, this means that special care should be taken not to use sharp objects which could damage the structure of the pushbutton. Replace the pushbuttons immediately if they are worn or damaged.

¡ATTENTION!: ORIGINAL SPARE PARTS SHOULD BE USED FOR ALL REPAIRS, SAFETY SPECIFICATIONS OF THIS EQUIPMENT AND OF THE TRANSMITTER AND UHF RECEIVER SHOULD NOT BE MOVED.

6.1. MAINTENANCE OF THE TRANSMITTER

¡ATTENTION!: BEFORE HANDLING THE TRANSMITTER, TURN OFF THE GENERAL SWITCH OF THE MACHINE.

The good condition of the transmitter should be checked, paying particular attention to joints and rubber protections of the various parts. Replace immediately is they have been cut or damaged as the result of improper use of the apparatus.

Check the contacts of the battery holder ensuring that they are clean and free of rust, and that the spring return force is correct.

6.2. MAINTENANCE OF THE RECEIVER

Maintenance of the receiver is identical to the transmitter. The following parts should be checked:

- The connection between the receiver and the electrical equipment of the machine.
- The correct working order of the active and passive safety circuits.
- The correct working order of all the leds display messages.
- The receiver cover and packing gland should be properly sealed.
- The firm fastening of the whole unit.
- If the antenna is exterior, check that the connection is clean and free of rust.

To check the working order of the active safety circuit, simply press the STOP BUTTON while the remote control is on. The general contactor should drop immediately.

To check the working order of the passive safety circuit, remove the battery from the transmitter. The general contactor should drop after within a maximum of 1.9 seconds.

6.3. MAINTENANCE OF THE CHARGER

The following parts should be checked:

- Contacts (which should be clean and free of rust).
- The correct display and indication of the leds.

¡ATTENTION!: IF YOU DETECT ANY ANOMALY IN THE WORKING ORDER OF THE SET, IT SHOULD BE IMMEDIATELY SWITCHED OFF.

If you have any doubt or enquiry, contact our Technical Assistance Service or any of our authorised technicians.

6.4. BATTERY CHARGING

The batteries supplied with ITOWA equipment do not have a memory effect, meaning that they can be charged without having to be totally flat. Therefore, in order to lengthen their life span, it is recommended to use one battery every half day of work.

7. DISPLAYING THE CODE

7.1. DISPLAYING THE CODE OF THE SET

If you want to know the code of the set, the receiver can display it by turning on jumper J1 of the base plate.

To start displaying, place the jumper in the position indicated in the following figure: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The presentation sequence of the code will start through the LEDS. The hexadecimal value of each group will be represented by a LED of the front panel of the receiver through a number of flashes equal to this value, starting with LED S1 with the first digit of the code (reading from left to right).

The following table shows the correspondence between the hexadecimal value of each digit and the number of flashes corresponding to the LED it represents.

Code carácter (Hexadecimal value)	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Number of pulses (Decimal value)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Bear in mind that once the receiver detects the position of jumper J1, the test of all the LEDs is carried out without interruption. Between the presentation of one LED and another, all the LEDs flash as a separation mark. If the position of Jumper J1 is changed during the test, the sequence is not interrupted. For better understanding of this process, an example of the code and the resulting display is given. The code of the example is: 01A38E

Led	S1	S2	S3	S4		
Code	0	1	A	3	8	E
Number of pulses	0	1	10	3	8	14

8. TROUBLESHOOTING

INCIDENT	SITUATION	ACTION
The set does not start up	None of the transmitter indicator and light up	Check that the battery is properly inserted.
		Check that the battery is charged or directly replace with a charged battery.
	Both leds and of the transmitter flash	Transmitter with keyboard is locked, follow steps given in *"Locking the Keyboard"* to unlock it.
	Only led S1 lights up	EEPROM error. Check in the transmitter that it is inserted in its housing. If it is and still does not work, contact the Technical Assistance Service.
	Led S2 of the transmitter lights up and flashes	A pushbutton is pressed, check that all actuators of the transmitter are in the stand-by position.
	Led S4 of the RX flashes	Eeprom fault. Check in the RX that it is inserted in its housing. If it is and still does not work, contact the Technical Assistance Service.
	The set is not connected to the machine	Connect the cable from the remote control to the electric panel of the machine using the corresponding connectors.
	The set is connected to the machine but it does not work	The power supply of the set is under 45% of the nominal value.
The set starts up but the machine does not work.	The set is connected to the machine, but it still does not work	The fuses of the stop relays are blown. They should be replaced with new fuses of the same value.
		Place the pushbuttons of the cable/cabin instead of the remote control. If it still does not work, the problem is with the machine.

9. QUICK DISPLAY GUIDE

9.1. SUMMARY OF RECEIVER LED FUNCTIONS

MODE	S1
	Set on
	Signal is weak
	Shutdown of set for time or STOP BUTTON

MODE	S2
	Stand-by mode or manoeuvre without changes
	Fault in Stop relays
	Flash for each mode change in one of the relays

MODE	S3

MODE	S4
	E2p Ok
	Error in eeprom

MODE	
	Set in stand-by
	Recognised signal with set code received (set does not have to be on)
	Comunication Ok
	Error in radio frequency receiver

MODE	⏻
●	Correct power supply
○	No power supply

9.2. SUMMARY OF TRANSMITTER LED FUNCTIONS

MODE	
●	Transmitter on
◑	Communication between Tx/Rx (Together with led 🔋, keypad)
○	Transmitter off

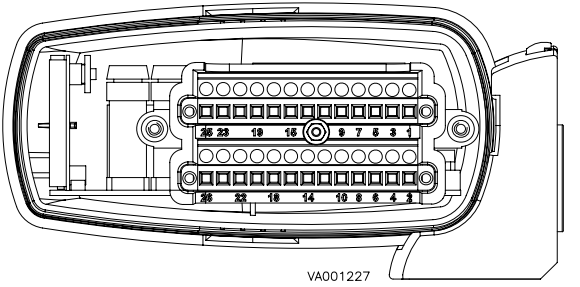
MODE	S1
●	E2prom error

MODE	S2
◑	Manoeuvre button is on when start button is pressed

MODE	🔋
○	Standby mode or battery OK
◑	Battery in reserve
●	Battery flat

Mode	Indication
○	Led off
◑	Slow Flushing
☼	Led off with Flushing
●	Led on continuously

9.3. CONNECTING THE RECEIVER



RELAY	PIN CONNECTOR
1	Ø 6 / Ø 5
2	Ø 8 / Ø 7
3	Ø 10 / Ø 9
4	Ø 9 / Ø 11
5	Ø 14 / Ø 12
6	Ø 12 / Ø 13
7	Ø 16 / Ø 15
8	Ø 18 / Ø 17

RELAY	PIN CONNECTOR
9	Ø 20 / Ø 19
10 (Start) *	Ø 22 / Ø 21 (Jumper)
11 (Stop)	Ø 16 / Ø 15
12 (Stop)	Ø 18 / Ø 17
**	Ø 2 (⏚)
	0V (N) Ø 3
	48V (L) Ø 1
	230V (L) Ø 4

Attention: If the Stop manoeuvre does not require independent contacts, a jumper should be made between terminals 23 and 25, and the manoeuvre in terminals 24 and 26 should be connected.

* This relay can be configured as N.C. through the jumper located at the back of the plate.

** Other power supplies to be consulted.

10. RECYCLABILITY

INFORMATION FOR THE PROPER MANAGEMENT OF ELECTRIC AND ELECTRONIC APPARATUS WASTE (RAEE)

At the end of the life span of the set, it should not be mixed with general waste.
You can hand it in, free of charge, at any collection plants of local councils or distributors who provide this service.

Eliminating electronic waste separately means avoiding possible negative consequences on the environment and also the materials can be treated and recycled leading to significant saving in energy and resources.

To underline the obligation of collaborating in selective waste Collection, the product is marked with a warning not to use normal containers for its disposal.

Contact the corresponding authorities for further information.

10.1. PACKAGING

→ The material used in packaging can be recycled.

→ Please bear in mind the local regulations for the treatment of this type of waste.