Itowa

OPERATOR'S MANUAL

TINY-BLIND

TINY-BLIND

USER'S MANUAL

ITOWA S.A.U.

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1. INTRODUCTION

The present manual is a guide for the proper operation of the multi-frequency remote control family from ITOWA.

This equipment has been especially designed for the wireless remote control of any machines incorporating electromechanical drives.

Radio-transmitted control signals are transmitted using frequency modulation (FM) and FFSK keying. The most advanced technology and latest-generation microprocessors have been used in the electronic design, providing total safety for radio-control yet operation.

To prevent incorrect operations from being executed, the system is equipped with several safety devices that are described in next chapters. When any abnormalities are self-detected, the system locks any controls operation that is commanded.

The system operates in the UHF frequency band, as required by the I-ETS 300 220 telecommunications standard, having obtained the type approvals and national standards in the following countries:

SPAIN	E 08 98 0076
UK	13397
	13988
EIRE	TRA 24/5/124
FRANCE	Nº 98 0169 PPL 0
GERMANY	D800517K
FINLAND	FI98080090
ICELAND	IS-3025-00
	IS-3024-00
BELGIUM	RTT/TI/X84
HOLLAND	CEPT LPD NL
PORTUGAL	ICP-011TC-99
SWEDEN	Ue970144

For other approvals, please check with ITOWA.

2. DESCRIPTION OF THE RADIO-CONTROLLED EQUIPMENT

Remote control units of the TINY-BLIND family consist of the following items:

1. TINY-BLIND TRANSMITTER
2. RECEIVER

This manual only describes transmitter.

2.1. TRANSMITTER

This is a waterproof pushbutton box (with an IP 56 degree of protection) made of high-strength plastic. This box has an input power supply (220Vac or 48 Vac).

Commands from the joysticks are fed into the microprocessor-based system, which takes care of generating the FFSK signal, adding the directional and control codes to it, and injecting the signal to the HF transmitter. The transmitter incorporates this command signal to its carrier frequency, which after being filtered, will be sent by the antenna.

As shown in the block diagram (Fig. 2.1), the transmitter pushbutton box can be divided into three sections: pushbutton section, control circuit section and HF transmitter section.

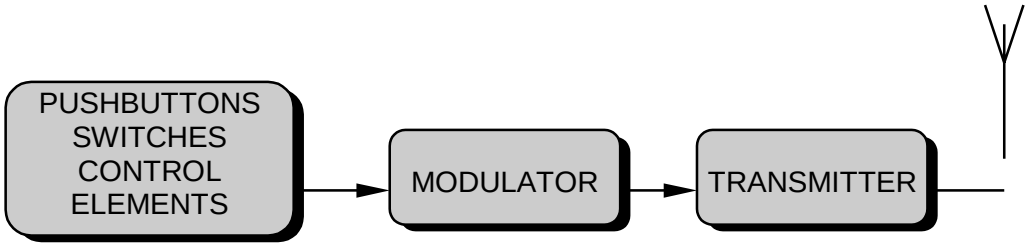

Fig. 2.1 Pushbutton box block diagram

(Fig. 2.2) reproduces a detailed overview of the operating and control elements:

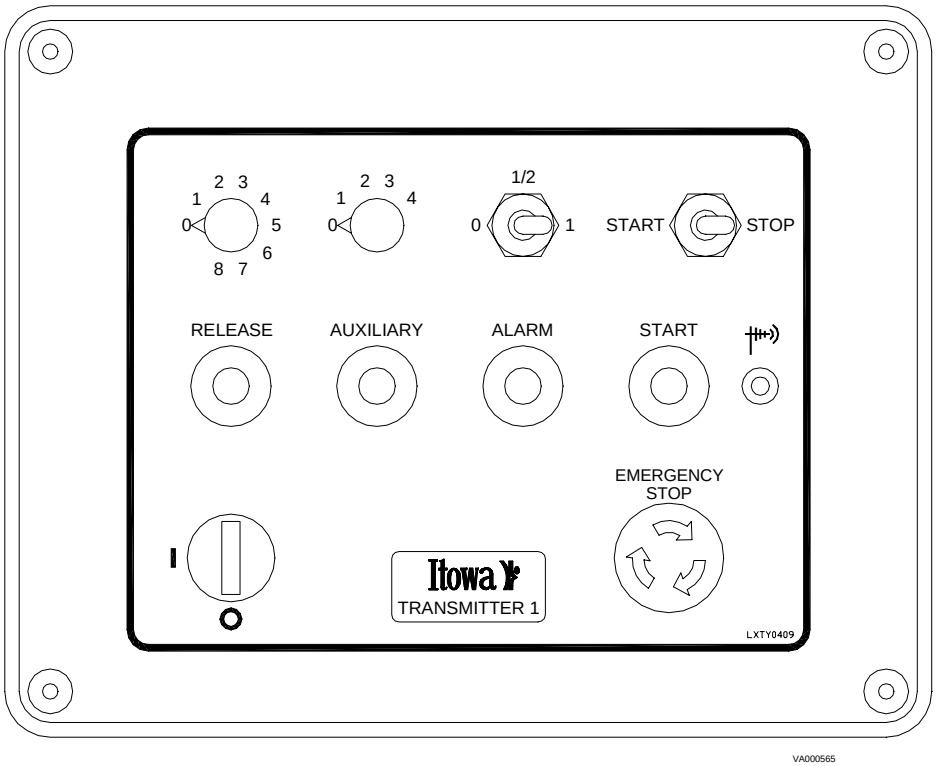

Fig. 2.2 Description of the transmitter

3. TECHNICAL DATA

3.1. OVERALL DATA OF THE SYSTEM

Manufacturer	INVESTIGATION TOTAL WARE S.A.U.
Model	TINY-BLIND
Type	Multi-frequency
Frequency	ISM-BAND*
Number of commands	To 32 orders
Possibility of incorrect operation	$1 \cdot 10^{-18}$
Hamming distance	= 6
Programmable codes	16777216
Command response time	<50 ms
Active emergency time	<50 ms
Passive emergency time	1900 ms
Operating range	< 90 meters

3.2. TRANSMITTER

Frequency band:	UHF 433.050 to 434.750 MHz
Channel spacing:	25 kHz
Modulation:	FM
Transmitting power:	10 mW A.R.P.
Keying:	FFSK
Frequency stability:	± 2.5 ppm (from -30ºC to 70ºC)
Harmonics damping:	> 70 dB
Transmitting power consumption:	110 mA
Standby power consumption:	10 mA.
Power supply:	220 V_{ac} or 48 V_{ac}
Temperature range:	from -10ºC to +55 ^{o}C
Material:	Polyamide
Approximate weight:	
Dimensions:	300 x 220 x 120 mm

* Frequency change must be performed by authorized personnel (see A ADDRESS)

4. START-UP AND OPERATION

Once the receiver has been installed, activating the machine's main switch will cause the receiver LCD to go on. At this moment, the receiver is ready for operation and to receive any commands from the transmitter.*

```
ITOWA S.A  RRC32
CHANNEL:      xx
```

Put power supply into the transmitter, switch off the mushroom-head emergency pushbutton. Activating only the START ON pushbutton will cause the remote control unit to start operation by activating the stop and start relays and the main contactor will be locked. At the same time the TX ON LED will turn on indicating that the remote control unit is operating properly. From this moment on, pressing any pushbutton or joystick will activate the appropriate control operation. The control operation selected will remain active as long as the pushbutton is held in its pressed position.

```
0000000000000000
1100001000000011
```

To keep the radio channel free and prevent the operator from leaving the machine on, the remote control unit is provided with an automatic shutdown system that stops the crane. This system operates after 90 seconds have elapsed without any control operation being executed.

```
ITOWA S.A  RRC32
CHANNEL:      xx
```

To re-enable the transmitter, press again the START ON pushbutton.

To activate an emergency stop, simply press the mushroom-head emergency pushbutton, which will energize the stop relays and switch the radio-controlled unit off; under this condition, all relays that are energized will be deenergized, and the initial message appears again in the LCD.

```
ITOWA S.A  RRC32
CHANNEL:      xx
```

* Indicates any channel (01-69)

CAUTION: REMEMBER THAT PRESSING THE EMERGENCY STOP MUSHROOM-HEAD PUSHBUTTON IS EQUIVALENT TO THE REMOTE CONTROL, THAT IS, ANY ACTIVATED RELAY IN THE RECEIVER WILL BE IMMEDIATELY SWITCHED OFF.

5. TRANSMITTER MAINTENANCE

Before attempting any maintenance operation, switch off the machine's main switch.

This remote control unit requires minimum maintenance. Every 3 months, please check for good condition of the transmitter, the pushbuttons, paying special attention to the gaskets and the pushbutton and joystick grommets, etc. Clean the transmitter removing any foreign matter that may have stuck to it.

If any pushbutton grommets were damaged, please replace them immediately. Otherwise, water may cause the transmitter to break down.

6. TROUBLESHOOTING

This section describes the most common trouble situations of these remote control units as well as the troubleshooting procedure. If these troubles occur, carry out the following checks.

1) Checking the trouble place:

Check whether the trouble is caused by the remote control unit or by the machine's electrical circuit. To check this, simply connect the original pushbutton box to the machine or to the cabin, and make sure the crane operates properly. If the machine works properly, this means the remote control unit is broken down. Otherwise, call the machine's technical support provider, since the trouble is caused by the crane itself.

3) Checking the transmitter:

Switch on the remote control unit by releasing the mushroom-head emergency pushbutton and press the start pushbutton. The LED marked " TX OK " should turn on. If this LED goes on, it means the trouble is in the receiver. Otherwise, check the power supply.

If the power supply operates properly, make sure the key and pushbutton operate satisfactorily. If these operate properly, then the trouble is in the IT3020 control and transmission module; if this is the case, have the transmitter repaired by an ITOWA authorized Technical Support Provider. (See Annex A, Page A-1)

4) Checking the receiver:

Let us assume the transmitter is operating properly. Make sure the receiver is operating properly by performing the following checks:

Check operation of the power supply. The LCD should be on. Otherwise, check operation of the power supply circuit and the transformer.

If the power supply operates properly, press the START button on the transmitter and check whether the stop and start relays are energized. If so, check the control operation fuse. If the stop and start relays are energized, check the control circuit for those relays. If the circuit is operating properly, this means the problem lies in the IT 3021 control and HF module. If this is the case, have it repaired by an ITOWA authorized Technical Support Provider. (See Annex A, Page A-1)

Check that the antenna is in good condition and make sure it is properly connected to the receiver.

CAUTION: ALWAYS USE ORIGINAL SPARE PARTS FOR ANY REPAIR AND NEVER ALTER THE SAFETY FEATURES NOR THOSE OF THE HF TRANSMITTER / RECEIVER.

ANNEX

A. ADDRESS

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EC – DECLARATION OF CONFORMITY

The manufacturer:

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Barcelona, España
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Fax: +34 93 789 13 51

According with the requirements of the **R&TTE 1999/05/EC Annex III** declares under its responsibility that the radio remote control equipment designated as:

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Are in conformity with the following European Directives:

- **98/37/EC** *(June, 22nd 1998)* : **Safety of machinery.**
  - With the standard **EN 954-1** (1996) type CLASS III concerning the main requirements of health and safety to the design and the construction of machines.
  - With the standard **EN 60204-32** (1998) concerning the safety of machinery; electrical equipment of machines; Part 32 : Requirements for hoisting machines.
  - With the standard **EN 13557** (2003) concerning cranes; controls and control stations.
- **99/05/EC** *(March, 9th 1999)* : **Radio and Telecommunications Terminal Equipment (R&TTE).**
  - With the standard **EN 60215** (1989) concerning the safety requirements for radio transmitting equipment.
  - With the standard **EN 60215/A2** (1994) concerning the safety requirements for radio transmitting equipment.
  - With the standard **EN 301 489-3 v1.4.1** concerning the electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; PART 3 Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz.
  - With the standard **EN 300 220-3 v1.1.1** concerning the electromagnetic compatibility and radio spectrum matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1.000 MHz frequency range with power levels ranging up to 500 mW; Part 3 : Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

Signatory :

Name : Ramón Faure
Function : Technical Manager
Place and date : Terrassa, July 15th 2011

Signature