INDUSTRIE

Installation and using Manual

REMOTE CONTROL WIRELESS
SHOTMAX
for MAX 70 HF/DC
with MASTER CONTROL MC4

HIGH FREQUENCY DENTAL X-RAY DIAGNOSTIC SYSTEM

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REMOTE CONTROL WIRELESS
"SHOTMAX"
for MAX 70 HF/DC

Definitions

REMOTE CONTROL: system constituted by a TRANSMITTER and a RECEIVER, fit to effect an emission; the two devices transmit among themselves without cables;

TRANSMITTER: part of remote control with which is possible to supply the emission consent to the X-Ray system;

RECEIVER: part of remote control which receives the consent for the emission from the transmitter and activate as a consequence the X-Ray system.

Introduction

CSN Industrie would like to thank you for having chosen an X-Ray system MAX 70 HF/DC: it is a high technology product that generates high quality x-rays whether using common films or radiography sensor RX2, RX2 Mega PX (also produced by CSN Industrie) or phosphorous plates.

The following instructions refer to the connection and the installation of the above mentioned parts.

It is not possible to control, connect, modify or change MAX 70 HF/DC system with timers or parts made by other manufacturers not properly engineered for this unit, penalty is the decay of warranty and CE certification.

IMPORTANT: the procedure described in the following paragraphs should be respected and have to be performed by authorized technicians, using the specified materials; any variation would cause malfunctions and/or possible dangerous situations for the operator.

CSN Industrie declines all responsibility for damages to people or things in case of wrong installation.

For any additional explanation, please contact the technical service:

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PART I

SIMBOLOGY

SN	**UNIT REGISTER NUMBER** To be used when contacting the manufacturer and/or the Technical Service.
	**NOT ATTUNED BAND** The symbol indicates the device is working on a frequency band not attuned
CE	**COMPLIANCE TO THE EUROPEAN COMMUNITY REGULATIONS** The symbol is followed by a number identifying the notified body which certifies and controls this compliance.
	**WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) – EUROPEAN DIRECTIVE 2002/96/EC** The symbol on the product, or on the documents accompanying the product, indicates that this appliance may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. Disposal must be carried out in accordance with local environmental regulations for waste disposal. For more detailed information about treatment, recovery and recycling of this product, please contact your local city office, your household waste disposal service or the distributor where you purchased the product.
CE 0122 	**REQUIREMENT OF IDENTIFY LABEL** The European Union provides that the devices equipped with the used radio module show these symbols sequence outside

TECHNICAL DATA

SUPPLY VOLTAGE	Receiver: 5VDC, 50mA drawn from RC401 board in the X-Ray MAX70; transmitter: 2 batteries of 1,5V
WEIGHT OF TRANSMITTER	50÷100
FREQUENCY BAND	ISM 2.400÷2.4835 GHz
MODULATION	GFSK
DATAS CODING	DSSS 64bit/bit
PROTECTION LEVEL AGAINST WATER ENTRY	The apparatus is not waterproof

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TECHNICAL DATAS AND DECLARATION OF CONFORMITY OF RADIO MODULE

ATTENTION:
This product contains a radio transmitter with USB Wireless Technology, tested and judged certified to the applicable rules to the radio transmitter in the frequency band included between 2.400 GHz and 2.4835 GHz.

The radio module has been explicitly approved of in the following Countries:

USA	Canada	Belgium	Denmark
France	Finland	Germany	Italy
Nederland	Spain	Sweden	Great Britain

The manufacturer of radio module guarantees features and conformity of the same module. Here following it is reported the furnished documentation.

Technical Data:

ITEM	DESCRIPTION	SPECIFICATION
1	PCB Material	FR-4
2	PCB Layers	2
3	Connector type	Straight thru-hole or header, mirrored through hole or header, bare.
4	PCB Number	1
5	Flammability Rating	UL94 V-0
6	UGWR2US Dimensions	1.29" x 1.30" x 0.54" (32.76 mm x 33.02mm x 13.72mm)

Certifications:

Agency	Test Performed	Type	Limit	Result	Margin
EU	Radiated Spurious Emissions	30-12,750MHz Transmit Mode	EN 300 328	PASS	-4.6dB @ 4804MHz
		30-12,750MHz Transmit Mode	EN 300 328	PASS	-4.9 @ 177.01MHz
FCC 15.247	Radiated Emissions	30 25,000 Spurious Emission	FCC Part 15.209/15.247 (c)	PASS	Result on file
		6dB Bandwidth	15.247 (a)	PASS	960kHz
		99% Bandwidth	IC RSS-210	PASS	1.175MHz
		Output Power	15.247 (b)	PASS	7.2dBm
		Power Spectral Density (PSD)	15.247 (d)	PASS	3.06dBm
		Bandedge	FCC Part 15.209/15.247 (c)	PASS	Results on file
		Out of band	15.247 (c)	PASS	Results on file
EU	Radio Performance Test	Output Power, Power spectral density at normal conditions	EN 300 328-1	PASS	Results on file
		Frequency Range at normal conditions	EN 300 328-1	PASS	Results on file
		Output Range over extreme conditions	EN 300 328-1	TBT	
		Frequency range over extreme conditions	EN 300 328-1	TBT	
		Conduced spurious emissions, 30MHz - 12.750MHz, transmit mode	EN 300 328-1	PASS	Results on file

		Conduced spurious emissions, 30MHz - 12.750MHz, receive/stand-by mode	EN 300 328-1	PASS	Results on file
	Radiated Spurious Emissions	30-12,750MHz Spurious Emissions Transmit Mode	EN 300 328 V1.2.1	PASS	Results on file
		30-12,750MHz Spurious Emissions Receive Mode	EN 300 328 V1.2.1	PASS	Results on file

Declaration of conformity:

EUROPEAN UNION "DECLARATION OF CONFORMITY"

DECLARATION OF CONFORMITY

Unigen Corporation
45388 Warm Springs Blvd.
Fremont, CA 94538
USA

declare under our sole responsibility that the product(s)

WirelessUSB™ - UGWR2US

to which this declaration relate(s) is in conformance with the following standards:

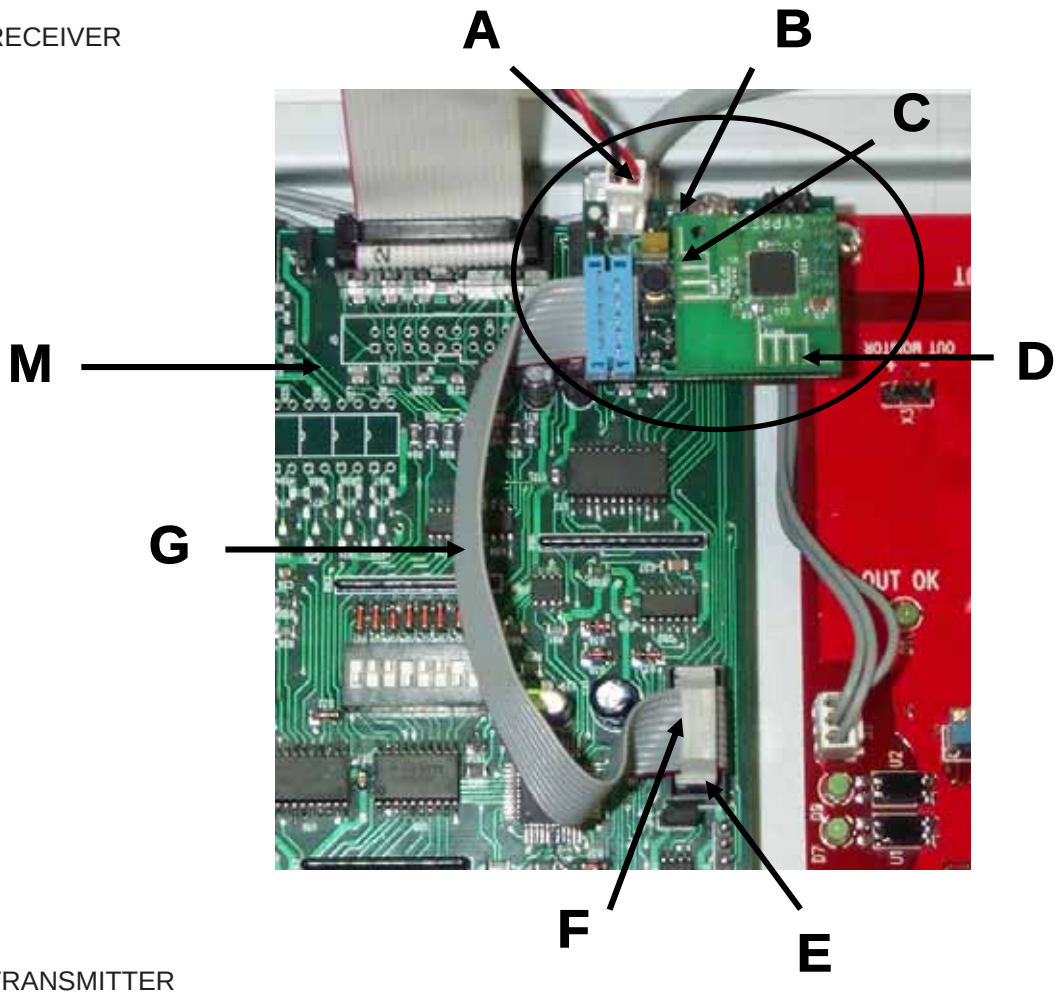
EN 300-328 v1.3.1
EN 301 489-17
EN 55022 limits B

following the provisions of the 73/23/EEC and 89/336/EEC Directives.

Unigen Corporation, Fremont CA - Mark Morrissey, Director of Business Development

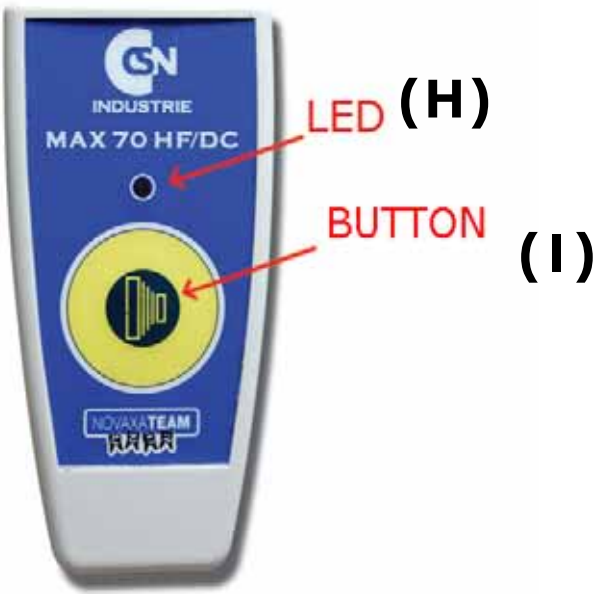
GRAPHIC LEGEND TRANSMITTER/RECEIVER for MAX 70 HF/DC

RECEIVER



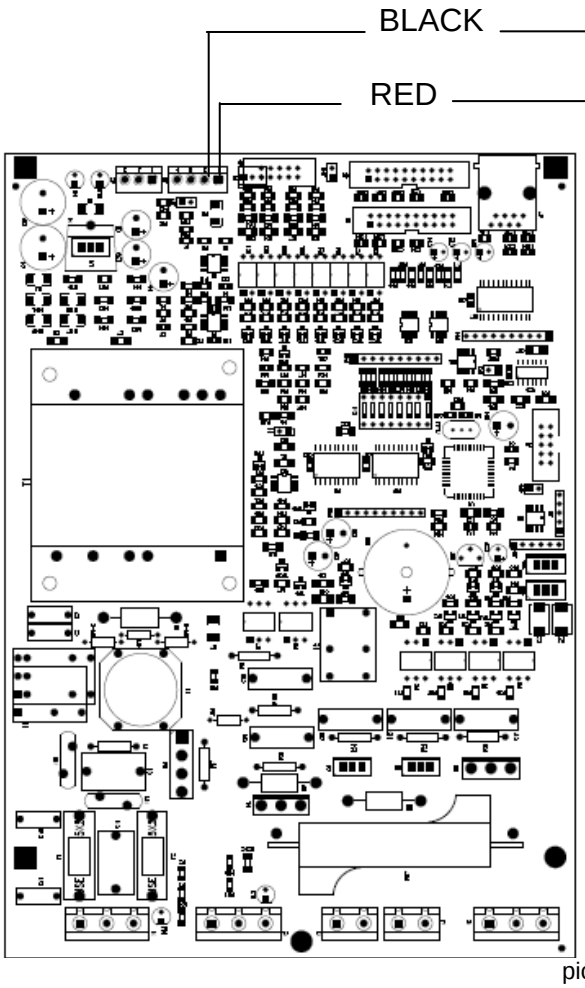
pic. 1

TRANSMITTER

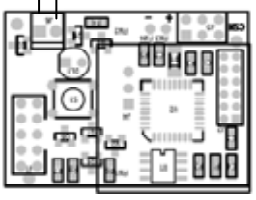


pic. 2

pic. 3



pic. 4



A	Double poles cable
B	Receiver module LED
C	Programming button
D	Receiver module
E	**J9** connector
F	10 poles connector
G	Flat cable
H	Transmitter LED
I	Emission button
L	**J3** terminal board
M	RC401 green board

pic. 5

PART II

INSTALLATION INSTRUCTIONS OF RECEIVER MODULE

In some X-Ray MAX70 series the receiver module (pic. 1), is installed before the selling.
In this case you can find it in the position indicated in pic.1 **(D)**.
If you have received the receiver module separately it is necessary to install it before using.

1. Turn off MAX70
2. Take out the carter
3. Identify 10 poles connector **J9 (E)** on RC401 green board (pic. 1)
4. Insert 10 poles connector **(F)** assembled on flat cable **(G)** in **J9** connector **(E)** on RC401 green board **(M)**; the connector can be insert only in one way (pic. 1)
5. Connect two poles cable between the connector on the receiver and the terminal board **J3 (L)** respecting polarity like indicated in picture **(L)** and in the circuit diagram (pics. 3-4)
6. Take off fixing screw near the board corner (pic. 1)
7. Fix the plastic spacer contents in the packaging
8. Fix the receiver module on the spacer using the plastic screw contents in the packaging
9. Close again the equipment

REGISTRATION PROCEDURE INSTRUCTIONS

Purpose of this procedure is to let the transmitter module (pic. 1) and the receiver module (pic. 2) communicate between themselves.
To guarantee the safety of patients and operators the receiver module will know only one transmitter on 65.536 possible combinations, in order to prevent that MAX70 can be activated from other transmitters or that you can activate other X-Ray systems with your remote control.
First it's necessary that the modules acknowledge between each other.

If you have received the transmitter and the receiver modules in a single packaging, the modules are just registered and it isn't necessary to make the following procedure.

If you have received the transmitter and the receiver modules separately, it's necessary to make the following operation; on the contrary, transmitter and receiver will not able to acknowledge and the system can't run.

ATTENTION!
The procedure is made with MAX70 turn on and without carter; in these conditions it isn't guaranteed the electrical safety. The operations should be performed only from qualified personnel! CSN Industrie declines all responsibility for damage or death in case of execution of following instructions from not qualified personnel or without the due protections and cautions.

If the receiver module it isn't installed, to provide at the installation following the instructions described in the "Installation instructions of receiver module" chapter.

1. With receiver module installed, turn on MAX70 X-Ray system;
2. Verify that the transmitter is turned off (green led (H) turned off);in contrary case wait for his switching off, that must occur at most in 30'' (pic. 2);
3. Press and keep pressed the remote control button **(I)**; after about 10" the green led **(H)** on the transmitter will turn on, at this time release the button and the led will start flashing (pic. 2);
4. Press briefly the receiver button **(C)**; led **(B)** on the same module will turn on; now the receiver is ready to make the registration (pic. 1);
5. Press briefly the remote control button **(I)**; registration will start (pic. 2);
6. After few instants led **(B)** on receiver module will turn off. The receiver has made the registration (pic. 1);
7. Led **(H)** of transmitter makes some flash again and then it will be switched on for 30"; the transmitter has finished the registration (pic. 2);
8. Switch off and restart MAX70; the two modules recharge the parameters and give first acknowledge;
9. Close again MAX70;
10. At this time it's possible to start working.

PART III

USING INSTRUCTIONS

The remote control repeats the remote emission button function.
To guarantee the safety of patients and operators, it's possible to make an exposure with the remote control, only in the case of the X-Ray was previously in state of pre-shot pressing the confirmation/exposure button on the palm control (look at "User Manual" for MAX70 HF/DC at "how to make an exposure" paragraph). In case of remote control used, without pre-shot setting, the X-Ray system emits a sound signal, indicating the abnormal operation.
To turn on the transmitter press the confirmation/exposure button **(I)** on the remote control for about 1 second; the green led **(H)** will light up (pic. 2), indicating the transmitter is ready to transmit.

***to make an exposure**:*

1. Turn on the transmitter; To turn on the transmitter press the confirmation/exposure button **(I)** on the remote control for about 1 second; the green led **(H)** will light up (pic. 2), indicating the transmitter is ready to transmit;
2. Pre-shot the X-Ray system following the "User Manual" of MAX 70 instructions;
3. Pressing the confirmation/exposure button on the transmitter you will make the emission.

warning:

- To guarantee the system safety, the exposure will start with a short retard with respect to the button pressing;
- The button should be kept pressed until the exposure end; in contrary case the exposure will be immediately interrupted and the master control will report an error condition: "dead man" type;
- To guarantee the safety and to increase the battery duration, the remote control automatically switches off after 30'' or at exposure end; to make another exposure it's necessary to make a short pressure again of the remote control to turn on again;
- Green led **(H)** on remote control (pic. 2) still lighting with remote control switched on and during the pressure.

BATTERY REPLACEMENT

With a normal use of remote control and using good quality batteries, the normal duration of the same is estimable in about one year.
A frequently used or bad ambient condition (particularly high temperature) can reduce the batteries duration.
Integrated safety system of MAX70 prevents that the X-Ray system becomes dangerous because of to partially low batteries.

Anyway **we recommend** using good quality batteries.
When the transmitter doesn't switch on or go out after a few instants **the batteries are exhausted and you have to replace them.**
Anyway it's possible make exposures using palm control of MAX70.
The **appropriated batteries** kind MUST be identified at least with the following marks:

- AAA 1,5V
- 24A (NEDA/ANSI)
- LR03 (IEC)

To replace the batteries:

1) Using a cross screwdriver, remove the screw in the lower side of transmitter;
2) Open the transmitter lifting up the narrow part (compass movement); pay attention not to damage the cable that connects inferior part with the higher one;
3) Take off the batteries from the transmitter;
4) Insert new batteries, respecting the polarity; "+" symbol stamped on the bottom of the transmitter identifies the way to insert the batteries; two batteries **ARE NOT** turned to the same direction;
5) Close again the transmitter; pay attention not to damage the cable that connects the lower part with the higher one;
6) Position again and tighten the screws on the lower side of transmitter.

Now it is possible to use the remote control again.

ATTENTION!
If the remote control is not used for long time, or the batteries are low, the same must be removed anyway from their seat. The possible loss of acids can damage definitively the emitter and can constitute a danger for the operator! In case of contacts or ingestion of substances exited from the transmitter, a doctor or an Antivenom Center must be contacted immediately.

ATTENTION!
Consult the enforced norms in your country on purpose of the discarding of the exhausted batteries.

ATTENTION!
CSN Industrie is engaged to equip the transmitter with batteries of good quality, but their duration is strongly depending from the employment conditions. The batteries are excluded from the guarantee.

TROUBLE SHOOTING

FAULT	**CAUSE**	**SOLUTION**
Transmitter doesn't switched on	Absent or discharged or bad positioned batteries	Check and/or replace the batteries
Transmitter in turn on but the exposure doesn't start	X-Ray system is not set in pre-shot state	Set X-Ray in pre-shot state
	Receive module is not installed correctly	Check the installation
	Double poles cable is disconnected	Check the cable is connected to the terminal board **J3** (look at "Installation instructions of receiver module" section)
Pressing **I** button led **H** starts flashing	The two modules are not registered	Execute the registration procedure
	Max70 can be turned off	Turn Max70 on

In case of lacked operation try to make an exposure acting on palm control of the MAX70; in this way you will exclude the presence of bad working caused from outside reasons of the remote control.
If the technical assistance of CSN Industrie becomes necessary, please annotated the serial numbers of the X-Ray parts; you will save time because our technicians will know immediately the configuration of your MAX70.