

FALCO MD62 USER MANUAL



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Amimon is part of the Creative Solutions Division, which is part of Videndum PLC. Amimon's products are sold under the TERADEK professional video product line.

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1.1 Glossary of Symbols

The following are symbols that you will find throughout this operating manual and their meanings

	WARNING: The information stated where you will see this symbol is extremely important and must be noted!		Serial Number
	General Information		Wireless Transmission
	“Conformité Européene” Symbol (CE Marking)		Storage and Transport Humidity Range
	Waste of Electrical and Electronic Equipment (WEEE) Marking		DC Power Control
	Manufacturer		Storage and Transport Temperature Range
	Authorized Representative in the European Community		Refer to Instruction Manual/Booklet
	Manufacturer (accompanied by the name and address of the manufacturer)		Direct Current
	Date of Manufacture		Unique Device Identifier
	Medical Device		RF ID tag
	Country of Manufacturer		Batch Code
	Fragile		Model Number
	This Way Up		Translation
	Keep Dry		Non-Sterile
	Catalog Number		Compliance with Federal Communication Commission

1.2 S/N Label

MD62 Receiver Label on the Device

AMIMON

Falco MD62 Receiver

Model: MD62RX01

Input: 12V Max. 24W



001-A17808
001-P01041

W53: indoor use only

W52: indoor use only except when connecting to registered station

Contains:

FCC ID: VQSAMN42012; HSW2832

IC: 7680A-AMN42012; 4492A-2832

REF

SN

UDI

MD

MDWL2_B1J1RX



Amimon Ltd.
26 Zarhin St.
Raanana
Israel



AMIN_LBL_1043 Rev. 3.0

MD62 Transmitter Label on the Device

AMIMON

Falco MD62 Transmitter

Model: MD62TX01

Input: 12V Max. 24W



001-A17807
001-P01041

W53: indoor use only

W52: indoor use only except when connecting to registered station

Contains:

FCC ID: VQSAMN41012; HSW2832

IC: 7680A-AMN41012; 4492A-2832

REF

SN

UDI

MD

MDWL2_B1J1TX



Amimon Ltd.
26 Zarhin St.
Raanana
Israel



AMIN_LBL_1044 Rev. 3.0

MD62 Receiver Label on the Individual Device Package

AMIMON

Falco MD62 Receiver

Model: MD62RX01

Input: 12V Max. 24W

Contains:
FCC ID: VQSAMN42012; HSW2832
IC: 7680A-AMN42012; 4492A-2832

EC REP

CEpartner4U
Esdoornlaan 13, 3951 DB
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CH REP

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Switzerland

Amimon Ltd.
26 Zarhin St.
Raanana
Israel
888.941.2111 (USA)
+972-9-9629200 (Outside USA)

Made in Taiwan

REF

SN

UDI

MD

MDWL2_B1J1RX

15%
 90%
 -20 °C
 60 °C

AMN_LBL_1045 Rev. 4.0

MD62 Transmitter Label on the Individual Device Package

AMIMON

Falco MD62 Transmitter

Model: MD62TX01

Input: 12V Max. 24W

Contains:
FCC ID: VQSAMN42012; HSW2832
IC: 7680A-AMN42012; 4492A-2832

EC REP

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Raanana
Israel
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+972-9-9629200 (Outside USA)

Made in Taiwan

REF

SN

UDI

MD

MDWL2_B1J1RX

15%
 90%
 -20 °C
 60 °C

AMN_LBL_1046 Rev. 4.0

1.3 Warning



The MD62 is designed for professional use only. Any unauthorized change or modification to the MD62 devices is prohibited and can result in hazard or injury. The manufacturer cannot be held responsible for damage or injury caused by improper use or uses other than those for which this device is intended.

Read the User Manual instructions carefully to become familiar with all safety requirements and operating procedures before using the Falco MD62 devices, thereby preventing accidents and injury and reducing the risk of damaging the machine.

2.1 System Description

Models

Transmitter: **MD62TX01**

Receiver: **MD62RX01**

Description

Falco MD62 transmitters and receivers are wireless devices that can deliver video in ultra-low latency for use in medical applications such as endoscopy systems, surgical lights, clinical microscopes, and other setups requiring detailed capture of intricate procedures and sharp-clear images. The technology enables it to wirelessly transmit live video without interruption onto secondary monitors, control panels, recording equipment, and other related apparatuses, allowing the required robustness and flexibility in operating rooms and clinical setups. In parallel, the video source must always remain connected to the primary monitor.

Intended Use and Environment

Falco MD62 is designed for use by healthcare professionals only within a professional healthcare facility environment, specifically outside of the sterile field.

Falco MD62 wireless devices are intended for use in professional healthcare facility environments, such as physician offices, dental offices, clinics, limited care facilities, freestanding surgical centers, freestanding birthing centers, multiple treatment facilities, hospitals, emergency rooms, patient rooms, intensive care, surgery rooms (except near HF SURGICAL EQUIPMENT), outside the RF shielded space of a system for magnetic resonance imaging.

The purpose of the Falco MD62 is to provide wireless video output for a secondary monitor, facilitating training, education, and recording endeavors.

Limitations of Use

The MD62 is a non-sterile, reusable device not intended for use within a sterile field. The MD62 shall not be used to replace the video connectivity of the primary monitor.

3.1 Introduction



This chapter describes safety issues regarding the use and maintenance of the MD62 wireless system, with particular emphasis on electrical safety. Please, carefully read this chapter and be familiar with its safety requirements and operating procedures before operating the system.

The system is designed for a safe and reliable usage when used by proper operating and maintenance procedures as outlined in this operating manual. Only healthcare professionals can use the system. The operator and all other personnel operating or maintaining the system should be familiar with all the safety information provided in this manual.

The primary objective should always be maximizing the safety of both, patient and operator.



WARNING: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify they are operating normally.



WARNING: Use of accessories, transducers, and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.



WARNING: The video transmitter system, model MD62 needs special precautions regarding EMC and needs to be installed and put into service according to the specific instructions for maintaining basic safety and essential performance with regard to electromagnetic disturbances for the expected service life provided in the regulatory warning section in this chapter.

3.2 Operator



WARNING:

- All operators **MUST** be familiar with the system controls and know how to shut down the system in case of trouble.
- Always be aware of the possible dangers of using the System and take proper precautions as described in this manual.
- Do not touch the inner parts of the System. The System repairs must be performed by qualified personnel only. Failure to do so will void all service agreements.
- Do not touch the surface of the System for a period longer than 10 seconds to avoid excessive exposure to temperature.

3.3 Regulatory Warnings and Information

Modifications

Any changes or modifications could void the user's authority to operate the equipment and invalidate the regulatory approval.

Antenna Requirements

The product is provided with approved antennas. Use only antennas supplied by Amimon. Any changes or modifications to the antenna may void the regulatory approvals obtained for the product.

FCC STATEMENT

The following antennae were approved with the modules listed in the **Antenna Information** table.

INDUSTRY CANADA (IC) STATEMENT

The radio transmitters 7680A-AMN41012, 7680A-AMN42012, and 4492A-2832 have been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain shown for that type, are strictly prohibited for use with this device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not more than necessary for successful communication.

Les présent émetteur radios 7680A-AMN41012, 7680A-AMN42012, et 4492A-2832 ont été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Antenna Information					
Medical Device	Module Model	FCC ID	IC	Model	Gain
MD62 TX01	AMN41012	VQSAMN41012	7680A-AMN41012	4x AMN_ANT_1012-2	2dBi Typical
MD62 TX01	Bluetooth Module: MBN52832	HSW2832	4492A-2832	AMN_ANT_1022	3dBi Typical
MD62 RX01	AMN42012	VQSAMN42012	7680A-AMN42012	3x AMN_ANT_1012-2 2x AMN_ANT_1012-1	2dBi Typical 2dBi Typical
MD62 RX01	Bluetooth Module: MBN52832	HSW2832	4492A-2832	AMN_ANT_1022	3dBi Typical

RF Exposure

EU and INTERNATIONAL STATMENT

The product complies with internationally recognized standards covering human exposure to electromagnetic fields from radio devices. To satisfy local RF exposure regulation

requirements, the transmitting product must operate with a minimum separation distance of 20cm or more from a person's body.

FCC RF EXPOSURE STATEMENT

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the device and your body. The device must not be co-located or operated in conjunction with any other antenna or transmitter.

IC RADIATION EXPOSURE STATEMENT

Important Note: Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

Note Importante: Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Unintentional Radio Interference

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the system
- Increase the separation between the equipment and the system

Radio Transmitters

General

- Operation of these devices in the 5.925-6.425 GHz band is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet.

- Operation of these devices in the 5.925-6.425 GHz band is prohibited for control of or communications with unmanned aircraft systems.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- In the 5.925-6.425 GHz band, devices containing AMN42012 (a client device) must operate under the control of a device containing the AMN41012, an indoor access point. Access points may connect to other access points. Client devices are prohibited from connecting directly to another client device. In all cases, an exception exists for transmitting brief messages to an access point when attempting to join its network after detecting a signal that confirms that an access point is operating on a particular channel.

FCC STATEMENT: Radio Transmitters (Part 15) – Class B Digital Devices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC regulations restrict the operation of these devices in the 5.925-6.425 GHz band to indoor use only.

IC STATEMENT

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage.

2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution:

1. The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
2. Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.
3. The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit.
4. The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.
5. Operation is limited to indoor use only in the band 5925-6425 MHz;
6. Operation on oil platforms, cars, trains, boats, and aircraft shall be prohibited except for on large aircraft flying above 10,000 ft.

Avertissement:

1. Les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
2. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.
3. Le gain d'antenne maximum autorisé pour les appareils fonctionnant sous les bandes de fréquences 5250-5350 MHz et 5470-5725 MHz doit être tel que l'équipement est toujours conforme à la limite PIRE;
4. Le gain d'antenne maximum autorisé pour les appareils fonctionnant sous les bandes de fréquences 5725-5850 MHz doit être tel que l'équipement est toujours conforme à la limite PIRE spécifiée pour un fonctionnement point à point et non point à point, le cas échéant.

5. Utilisation limitée à l'intérieur seulement dans la bande 5 925 – 6 425 MHz;
6. Utilisation interdite à bord de plateformes de forage pétrolier, de voitures, de trains, de bateaux et d'aéronefs, sauf à bord d'un gros aéronef volant à plus de 10,000 pieds d'altitude

EU COMPLIANCE STATEMENT

Amimon Ltd. hereby declares that this Radio Transmitter complies with the essential requirements and other relevant provisions of Directives 2014/53/EU, 2011/65/EU and (EU) 2015/863. The full text of the EU DoC is located at:

<https://www.medical.teradek.com/falco-md62>.

3.4 Electrical and Mechanical Safety, and Fire Hazards

Damage due to inappropriate handling is not covered under warranty.

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Video transmitter system, model MD62, including cables specified by the manufacturer. Otherwise, it could result in degradation of the performance of this equipment.

Fire Hazards



Do not use the system in the presence of explosive or flammable materials.
Do not use the system in an oxygen-rich environment.

Equipment List

When you receive the system, ensure that it includes the following pieces of equipment:

- MD62TX – Transmitter & AC adapter
- MD62RX – Receiver & AC adapter

Electrical Requirements



The system shall only be powered with the AC adaptor supplied with GlobTek WR9QE3000CCPNNAR6B.

The AC adaptor characteristic:

- **Input parameters - 100-240 Volts; AC, 50-60Hz, 1.0A**
- **Output parameters - 12 Volts DC; 3.0A**

The AC adaptor must be replaced immediately in case the adaptor or power cord is damaged.

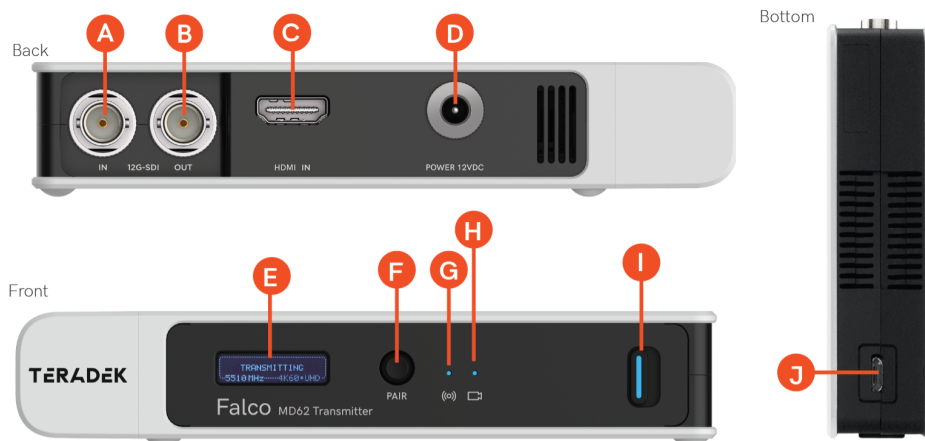
An approved jack to plug accessory cord can be used to extend the DC power supply cord.

Environmental Requirements

- Corrosive materials can damage electronic parts. Ensure that the environment is free from corrosive material.
- For optimal operation, the System should be placed in a room with temperatures between 0°- 40°C (32°-104°F) and relative humidity between 25-75%.
- For optimal storage, the system should be stored at a temperature between -20°- 60°C (-4°-140°F) with a relative humidity between 15-90%.
- For Optimal transportation system should be transported under the temperature range between -20°- 60°C (-4°-140°F) with a relative humidity of less than 80%.

4.1 View of the System

MD62 Transmitter



A. 12G-SDI input

E. OLED display

I. Power switch

B. 12G-SDI output

F. Navigation button

J. Micro USB

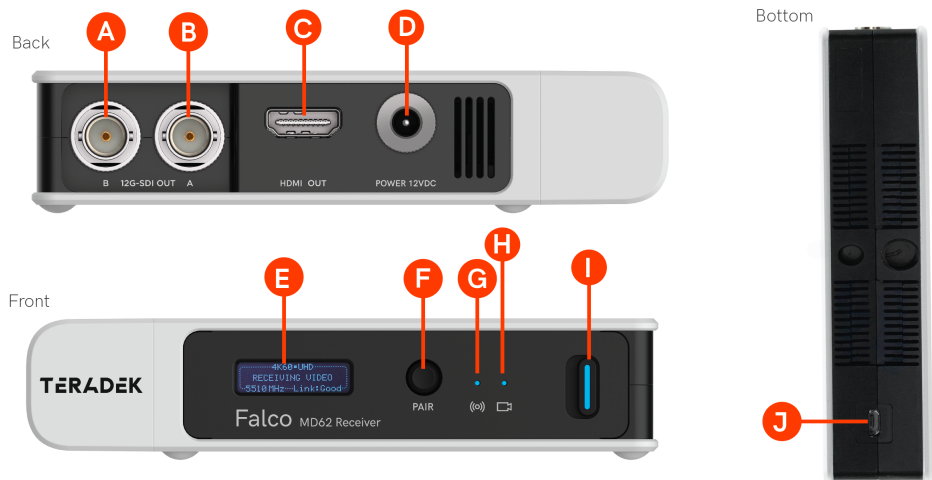
C. HDMI 2.0 input

G. Network status

D. 12V DC power input

H. Video status

MD62 Receiver



- | | | |
|------------------------------|-----------------------------|------------------------|
| A. 12G-SDI output B | E. OLED display | I. Power switch |
| B. 12G-SDI output A | F. Navigation button | J. Micro USB |
| C. HDMI 2.0 output | G. Network status | |
| D. 12V DC power input | H. Video status | |

4.2 System Installation

Installation

MD62 transmitter and receiver can be installed horizontally, using the plastic bumpers on the bottom of the devices, or vertically, on the side panel, where the micro USB connector is located.

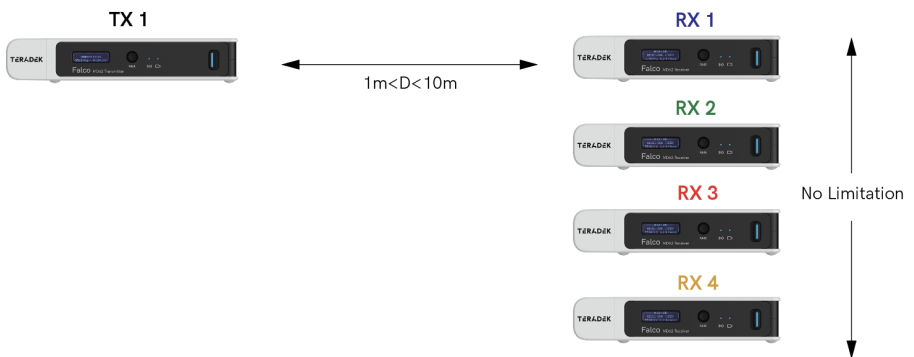
Note:

- Position the transmitter and receiver on a flat surface to avoid accidental falls and damage.
- **When using VESA plates mounting accessories (AMN_VESA_KIT01, AMN_VESA_KIT02), the MD62 transmitter and receiver can be mounted on the back of a monitor.**

Distance Between Falco Devices

This section describes the required distance and limitations between installed Falco devices (such as Falco MD62).

- The distance between a paired transmitter and receiver shall be between 1m and 10m.
- There is no distance limitation between receivers paired with the same transmitter.

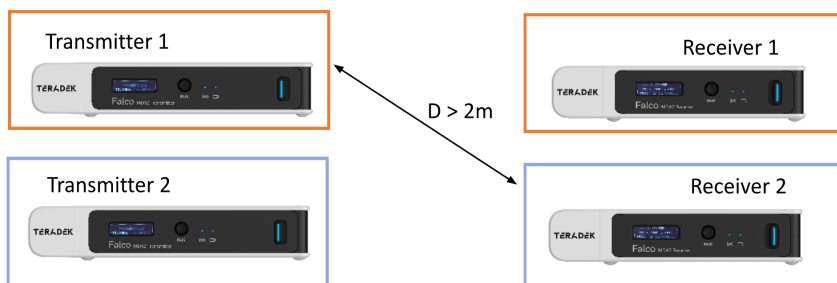


D = Distance

- The distance between neighboring transmitters shall be no less than 1m



- The distance between any transmitter and any receiver (not part of the link) shall be no less than 2m.



- The distance between receivers (linked to different transmitters) shall be no less than 80 cm.

Receiver 1



$D > 0.8\text{m}$

Receiver 2



- The maximum number of Falco devices to be operated in a single room is six transmitters and six receivers.
- The room may also contain other RF-emitting devices, such as 2.4GHz or 5GHz Wi-Fi and 2.4GHz Bluetooth.



WARNING

- Do not connect the device to power using a multiple socket outlet or an extension cord.
- Do not block the ventilation opening.
- Not intended for use near patients or medical staff (minimum distance of 20cm between the radiator and your body).
- Do not install near sources of intense heat, such as boilers or radiators.
- Install this system in an environment that complies with all applicable IEC, CEC, and NEC requirements for the safety of electrical devices. Any installation or connection with other devices shall be evaluated for electrical safety according to the IEC 60601-1.

5.1 Power and Connectivity

1. Connect power to the transmitter and receiver using the included AC adapter.
2. Connect the output from your video source to either the SDI or HDMI input (**A or C**) on the MD62 transmitter. **NOTE: When the SDI and HDMI inputs are both connected, the SDI input will have priority over the HDMI input.**
3. Connect either the SDI or HDMI output (**A, B, or C**) from the MD62 receiver to the video input on your monitor.
4. Move the power switches on both the transmitter and receiver (**I**) to the ON position. Follow the Pairing process described hereunder and the receiver will connect to the transmitter and start delivering video.
5. To turn off the device, slide the power switch (**I**), and make sure the blue light turns off.
6. Micro USB (**J**) available for future software updates.



When there is no video input to the transmitter:

1. The receiver will turn off the HDMI 5V output, to enable the video sink device to enter sleep mode.
2. After 10 minutes, the transmitter will turn off the RF transmission until the video signal is detected.

5.2 Pairing

To associate the MD62 transmitter with the MD62 receiver, the MD62 devices need to be paired using the device's front panel navigation button (F).

1. To initiate the pairing process on the **MD62 transmitter**, press the Navigation Button for 4 seconds, or until the "Release to pair" message appears. **Note: Holding the Navigation Button pressed for over 10 seconds will open the device's menu.**
2. To initiate the pairing process on the **MD62 receiver**, press the Navigation Button for 4 seconds, or until the "Release to pair" message appears. **Note: Holding the Navigation Button pressed for over 10 seconds will open the device's menu.**
3. When pairing two to four receivers with one transmitter, repeat steps 1 and 2 for each receiver to be paired. Once a receiver is paired, it is recommended to turn it off before pairing the next receiver device.
4. When a fifth receiver is paired with a transmitter, the first paired receiver is deleted automatically from the transmitter's list of paired receivers. This receiver will stop showing video.
5. MD62 devices can also pair with Falco MD11 devices. To pair the MD62 device with a Falco MD11 device, follow the pairing instructions of the MD62 device and the MD11 device.



NOTE:

1. Turning off unused devices in the area while performing the pairing procedure is recommended.
2. Once the transmitter and receiver are paired, they will automatically connect upon powering up.
3. When the transmitter or receiver performs the un-pairing procedure, the transmitter and receiver will not reconnect.
4. When connecting a MD62 transmitter with a MD11 receiver, the MD11 receiver will not be able to support resolutions over 4K30 fps and 3D resolutions.

5.3 Receiver Menu

Main Status Screen - This screen displays the connection status of the receiver and the transmitter, along with the current video resolution and link quality (if connected).

Menu Operation - Press the Navigation Button (**F**) at any direction for 11 seconds or until the "RELEASE TO UNLOCK" message appear to unlock the menu, then press right on the Navigation Button to navigate the menu.

- **Pair** - Pair your receiver with a transmitter. Once Pairing is activated on the receiver, activate Pairing on the transmitter.
- **Unpair**
 - **Unpair specific transmitter** - Unpair one transmitter.
 - **Unpair all** – Unpair all paired transmitters.
- **Info**
 - **Firmware Versions** – Displays controller, video, and radio firmware.
 - **Model** – Displays the device's serial number and name.
 - **Device Info** – Display the receiver's input voltage level, temperature, and frequency.
 - **Transmitter Info** – Displays the transmitter's serial number, input voltage level, and temperature (when in link).
- **Video OSD Settings** - Enables to choose when to display the On-Screen Display (OSD) on the monitor.
 - **Never show** - Disables the OSD.
 - **Show when operating** - Disables the OSD until activated by the Navigation button.
 - **Show when no video** - Displays the OSD when there is no video feed. OSD will be disabled when video appears (default configuration).
 - **Always show** - OSD will be displayed unless deactivated by the Navigation
- **Display Settings** - Use the Display Settings to control the Navigation screen (OLED) display operation.
 - **Invert every 30min** – Inverts the OLED display every 30 minutes.
 - **Dim after 10 min** – Dims the OLED after 10 minutes (default configuration).
 - **Dim after 10 sec** - Dims the OLED after 10 seconds.

- **Off after 10 min** – Turns off the OLED after 10 minutes.
 - **Off after 10 sec** – turns off the OLED after 10 seconds.
 - **Always on** – OLED stays On.
- **Switch TX** - Select a different transmitter (paired transmitters only). MD62 receivers can pair with up to four transmitters at a time. **Switch TX** allows you to quickly switch from one paired transmitter to another paired transmitter without the need to pair the units again.
 - **Advanced Settings**
 - **Lock Keypad** - Locks the Navigation menu to prevent it from being used.
 - **Bluetooth**- Controls the Bluetooth device used for wireless link control. The Bluetooth configuration does not affect the video link itself, which is done over a proprietary protocol, not over the Bluetooth connection. **Note: Bluetooth wireless link control requires a dedicated mobile application or control device.**
 - **Enable Bluetooth** – Enables/disables Bluetooth connectivity. The default configuration is **On**.
 - **Use Bluetooth PIN** – Enables/ Disables Bluetooth PIN code for a secured Bluetooth connection. The default configuration is **Off**.
 - **Change PIN** – Change the Bluetooth PIN code.
 - **Background Color** - Allows the selection of a screen color to be displayed when there is no video received from the transmitter.
 - **Black**
 - **Blue**
 - **Yellow**
 - **Video Off** - Turns off the video output when there is no video input connected to the transmitter (default configuration). **Note:** When configured to Video off, no OSD (On Screen Display) message is shown while the system is not delivering video from the source. To allow OSD in such cases, other Background Color options should be used.
 - **Reset All Settings** - Reset all configurable options to their factory defaults. **Note:** Pairing is not deleted when the settings are reset.

- **Tools**

- **Signal Quality Graph** – This is a real-time graph representing the link’s quality. The values range from 0% to 100% where 100% is the best possible quality and 0% is the worst quality.
- **Test Pattern** - Test the video using a test pattern in different resolutions. This mode can be used on the receiver without the need for a wireless link. Press left on the Navigation Button to disable.

Receiver LEDs

Each unit has three LEDs that indicate the **Power**, **Network**, and **Video** status. These LEDs operate independently from each other. The **Power** LED is part of the on-off switch, while the **Network** and **Video** LEDs are on the front panel.

LEDs can be in one of the following states:

- **Off**
- **On** (solid light)
- **Short blink** - 30ms On, 2 sec Off
- **Long blink** - 2 sec On, 30ms Off
- **Slow blink** - 2 sec On, 2 sec Off
- **Fast blink** - 200ms On, 200ms Off

RECEIVER STATUS LEDs				
#	Status	Network LED	Video LED	Power LED
1	No power			Off
2	Power on			On
3	No link	Off		
4	No video input		Off	

5	Video input detected		On	
6	Network connecting	Short blink		
7	Network connected	On		
8	Pairing in progress	Fast blink		

Receiver Navigation Screen (OLED) Messages

#	STATE	MESSAGE
1	No paired devices	NOT PAIRED
2	Network is connecting	CONNECTING
3	No transmitter is found	TX NOT FOUND
4	Network connected and video is delivered	CONNECTED TO TX NAME
5	Network connected but no video is delivered	NO VIDEO
6	Pairing before a transmitter was found	PAIRING SEARCHING FOR TX
7	Pairing in progress	PAIRING...
8*	Pairing completed successfully	PAIRING COMPLETED SUCCESSFULLY
9*	Pairing failed	PAIRING FAILED
10**	Unpairing	UNPAIRING... PLEASE WAIT...

#	STATE	MESSAGE
11***	Unit is overheating (85° - 88°)	OVERHEATING + (Temp) °C
12****	Unit is too hot (>88°)	OVERHEATING + TURN OFF THE UNIT
13	Firmware update	UPGRADING FIRMWARE PLEASE WAIT...
14	Restoring default settings	RESTORING DEFAULT SETTINGS
15	Navigation button is pressed, to be released in <X> seconds to initiate pairing	PAIR IN <X> SECONDS
16	Navigation button is pressed for over 4 seconds, to initiate pairing	RELEASE TO PAIR
17	Navigation button is pressed for over 10 seconds, to unlock the configuration menu	RELEASE TO UNLOCK

* For statuses 7-8, the message will display an option to cancel and abort the operation.

** During operation the OLED may display the message “**PLEASE WAIT...**” for up to 5 seconds.

***For status 11, the message will show until the user will press the **OK** button.

****For status 12, the message will be given priority over any other system message.

5.4 Transmitter Menu

Main Status Screen - This screen displays the status of the wireless transmitter, along with the current video resolution and frequency.

Menu Operation - Press the Navigation button (**F**) at any direction for 11 seconds or until the "RELEASE TO UNLOCK" message appear to enable and then navigate the menu.

- **Pair** - Pair the transmitter with a receiver. Once **Pairing** is activated on the transmitter, activate Pairing on the receiver.
- **Unpair:**
 - **Unpair specific device**
 - **Unpair all** – unpair all paired devices.
- **Info**
 - **Firmware Versions** – Displays the controller, video, and radio firmware versions.
 - **Model** – Displays the device model type and serial number.
 - **Device Info** – Displays the device's input voltage level and temperature.
- **Display Settings** - Use the Display Settings to control the Navigation screen (OLED) display operation.
 - **Invert every 30min** – Inverts the OLED display every 30 minutes.
 - **Dim after 10 min** – Dims the OLED after 10 minutes (default configuration) .
 - **Dim after 10 sec** - Dims the OLED after 10 seconds.
 - **Off after 10 min** – Turns off the OLED after 10 minutes.
 - **Off after 10 sec** – Turns off the OLED after 10 seconds.
 - **Always on** – OLED stays On.
- **3D Mode** -
 - **Auto** – The system will automatically display 3D resolutions when connected to a 3D video source (default configuration).
 - **Side-By-Side** – This enables you to force the system into Side-By-Side 3D mode. Applicable when the video resolution is a 3D Side-By-Side resolution.
 - **Line by Line** - Enables you to force the system into Line Alternative 3D mode. Applicable for specific video sources, outputting 3D resolutions in specific formats.

- **Advanced Settings**

- **Lock Keypad** - Locks the Navigation button to prevent it from being used.
- **Bandwidth** - Controls the bandwidth of the wireless video link.
 - **20MHz** - Allows video support up to 1080p60
 - **40MHz** - Enables the highest video quality and resolution up to 4K60fps. (default configuration)
 - **Note:** When changing the bandwidth from 40mhz to 20mhz, the receiver must be power cycled
- **Bluetooth** - Controls the Bluetooth device used for wireless link control. The Bluetooth configuration does not affect the video link itself, which is done over a proprietary protocol, not over the Bluetooth connection.
 - **Enable Bluetooth** – Enables/disables Bluetooth connectivity. The default configuration is **On**.
 - **Use Bluetooth PIN** – Enables/ Disables Bluetooth PIN code for a secured Bluetooth connection. The default configuration is **Off**.
 - **Change PIN** – Change the Bluetooth PIN code.
- **Reset All Settings** - Reset all configurable options to their factory defaults. **Note:** Pairing is not deleted when the settings are reset.

Transmitter LEDs

Each unit has three LEDs that indicate the **Power**, **Network**, and **Video** status. These LEDs operate independently from each other. The **Power** LED is part of the on-off switch, while the **Network** and **Video** LEDs are on the front panel. LEDs can be in one of the following states:

- **On** (solid light)
- **Short blink** - 30ms On, 2 sec Off
- **Long blink** - 2 sec On, 30ms Off
- **Slow blink** - 2 sec On, 2 sec Off
- **Fast blink** - 200ms On, 200ms Off

TRANSMITTER STATUS LEDs

#	Status	Network LED	Video LED	Power LED
1	No power			Off
2	Power on			On
3	Standby mode			Slow Blink
4	No video input		Off	
5	Video input detected		On	
6	No paired devices	Off		
7	Network connecting	Short Blink		
8	Network connected	On		
9	Pairing in progress	Fast Blink		

Transmitter Navigation Screen (OLED) Messages

#	STATE	MESSAGE
1	No paired devices	NOT PAIRED
2	Searching for free frequency NOTE: During this state, it typically takes up to 60 seconds to set up a link.	SEARCHING FREQ
3	Searching for a free frequency for over 90 seconds Note: the transmitter is	NO CLEAR FREQ

	still searching for free frequency to use	
4	No receiver is found	RX NOT FOUND
5	Network connecting	CONNECTING
6	Network is connected and video is delivered	SENDING VIDEO
7	Network is connected but no video is delivered	NO VIDEO
8	Network connected & unsupported resolution is connected to the transmitter	NO VIDEO
9*	Pairing before a receiver was found	PAIRING SEARCHING FOR RX
10*	Pairing in progress	PAIRING...
11	Pairing completed successfully	PAIRING COMPLETED SUCCESSFULLY
12	Pairing failed	PAIRING FAILED
13	Unpairing	UNPAIRING... PLEASE WAIT...
14**	Unit is overheating (85° - 88°)	OVERHEATING [Temp °C]
15	Unit is too hot (>88°)	OVERHEATING [Temp °C]
16	Firmware update	UPGRADING FIRMWARE PLEASE WAIT...
17	Restore default settings	RESTORING DEFAULT SETTINGS

18	Navigation button is pressed, to be released in <X> seconds to initiate pairing	PAIR IN <X> SECONDS
19	Navigation button is pressed for over 4 seconds, to initiate pairing	RELEASE TO PAIR
20	Navigation button is pressed for over 10 seconds, to unlock the configuration menu	RELEASE TO UNLOCK

- During operation the OLED may display the message **“PLEASE WAIT...”** for up to 5 seconds.
- * For statuses 9-10, the message will display an option to cancel and abort the operation.
- **For status 14, the message will be given priority over any other system message.

6.1 Maintenance

No maintenance is required.

 Cleaning and Maintenance Warning:

- Prior to cleaning, power the device off and unplug all external power sources (i.e., power cables) and video/data cables (i.e., HDMI, SDI, USB).
- Cover HDMI, SDI, and USB connections when cleaning the device so the chemical does not penetrate inside the device.
- If you’re not using sanitizing wipes, use a lint-free cloth, such as a screen wipe or a cloth made from microfiber.
- Avoid excessive wiping and submerging of products in disinfectant solutions. This could lead to damage. Wring wet wipes before use if they are excessively wet.

- Avoid bleach or abrasive cleaners. Using bleach on plastic parts or OLEDs might cause white stains and malfunction.
- Do not spray liquid disinfectants directly on devices. Instead, spray a lint-free cleaning cloth with it first and gently wipe. Using liquids directly on devices could cause an electric short if it comes into contact with internal electronics.
- Use isopropyl alcohol-based disinfectant solutions containing at least 70% alcohol since they will evaporate faster.
- When using a cleaner for the first time, test it in a small hidden area before cleaning the whole device.

6.2 Waste Electrical and Electronic Equipment (WEEE)

Waste electrical and electronic equipment should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

7.1 Troubleshooting

The MD62 unit does not power on.

1. Verify the power adaptor is connected and that the power switch is in the **ON** position.
2. Power cycle the unit by switching the power button to OFF and then back to ON.

The MD62 unit shows a "NOT PAIRED" message on the OLED.

Make sure the transmitter and receiver units are paired with each other. If not, refer to the **Pairing** section (page 24) for steps on how to pair your devices.

The MD62 receiver shows a "TX not found" message on the OLED.

1. Verify that the "paired" MD62 transmitter is turned **ON**.
2. If the paired transmitter is in "Network Connecting" mode for over a minute, power cycle (turn **OFF** then **ON**) both the MD62 transmitter and receiver.
3. If the paired transmitter is in "Searching for Frequency" mode, wait at least two minutes.
4. Keep at least a 1-meter distance between the MD62 transmitter and receiver.
5. Re-pair the units.

Video is not displayed on the monitor.

1. Verify that the transmitter's OLED shows a "SENDING VIDEO" message. If not, ensure that:
 - a. The video source resolution is supported by the MD62 up to 1080p60 at 20MHz bandwidth, and up to 4k60Hz at 40MHz bandwidth.
 - b. The HDMI/SDI cable which is connected to the transmitter supports 12G/4K video resolution.
 - c. The length of the HDMI/ SDI cable connected to the transmitter is 50cm to 2m.
2. Verify that the receiver's OLED shows a "**Connected to xxx**" message.
3. Verify that the HDMI/SDI cable connected to the receiver supports 12G/4K video resolution.
4. Verify that the receiver is connected to the correct transmitter.
5. Disconnect and reconnect the video input cable.

Navigation button is unresponsive.

Unlock the navigation button by pressing the joystick to its left position for 11 seconds.

3D video signal is not displayed correctly through the system.

Set the correct 3D mode in the MD62 transmitter's OLED menu (i.e. Line Alternative).

The video is displayed with artifacts.

1. Verify the transmitter and receiver are positioned in the same room, with a distance of less than 10m.
2. Verify that there are no major obstacles (walls, metal plate, etc.) between the two units.
3. Verify the transmitter and receiver are at least 1m apart.
4. Use the Receiver's video quality tool, to check if the issue is related to the wireless link.

It takes over five minutes to get a video link on all the devices in the room

In case of multiple links in the same room (over two transmitters), it's recommended to power up the transmitters one-by-one, for a faster room setup.

The transmitter's OLED states "NO CLEAR FREQ" A. All frequencies are occupied.

1. Verify the distance requirements from neighboring systems are met. Refer to section 4.1 in this manual.
2. Turn off unused Falco devices and other unused wireless devices in the nearby area.

8.1 Technical Specifications

	FALCO MD62 TRANSMITTER	FALCO MD62 RECEIVER
VIDEO		
Video Inputs	1x 12G-SDI SMPTE 2082-1 standard/75 Ω (BNC x 1) 1x HDMI 2.0 Type-A	N/A
Video Outputs	1x Loopout 12G-SDI SMPTE 2082-1 standard/75 Ω (BNC x 1)	2x 12G-SDI SMPTE 2082-1 standard/75 Ω (BNC x 1) 1x HDMI 2.0 Type-A
Color Sampling	SDI: YCbCr 4:2:2, 10-bit HDMI: RGB/YCbCr; 4:4:4/4:2:2	SDI: YCbCr 4:2:2, 10-bit HDMI: RGB/YCbCr; 4:4:4/4:2:2
Delay (TX to RX)	<0.002sec	<0.002sec
Supported Resolutions	2D: 4Kp23.98/24/25/29.97/30/50/59.94/60 1080p23.98/24/25/29.97/30/50/59.94/60 1080i50/59.94/60 720p50/59.94/60 3D (Side by Side/Top bottom/Line by Line): 4Kp23.98/24/25/29.97/30/50/59.94/60 1080p23.98/24/25/29.97/30/50/59.94/60 * No BT2020 support	
AUDIO		
Audio Compression	48kHz 24-bit PCM	48kHz 24-bit PCM

Audio Input	Embedded SDI/HDMI Audio Input (2 Channel)	N/A
Audio Output	N/A	Embedded SDI/HDMI Audio Output (2 Channel)
PHYSICAL ATTRIBUTES		
Dimensions	5.9"L x 3.6"W x 1.1"H (149 x 91.2 x 27.1mm)	5.1"L x 5.5"W x 1.1"H (129 x 138.8 x 27.1mm)
Weight	12.7oz (360g)	15.3oz (434g)
Construction	Milled aluminum (chassis), regulation-compliant PCB	
Mountability	Compatible with the VESA mounting kits AMN_VESA_KIT01 and AMN_VESA_KIT02	Compatible with the VESA mounting kits AMN_VESA_KIT01 and AMN_VESA_KIT02
INTERFACES		
Configuration Interface	OLED screen with Menu Joystick Navigation	OLED screen with Menu Joystick Navigation
Switches	On/Off Switch	On/Off Switch
USB Interface Functionality	Upgrade via Micro-USB	Upgrade via Micro-USB
WIRELESS VIDEO NETWORK		
Wireless Video Bands	DFS Frequencies: 5.250 - 5.350 GHz, 5.470 - 5.725 GHz	DFS Frequencies: 5.250 - 5.350 GHz, 5.470 - 5.725 GHz

	Non-DFS Frequencies: 5.150 - 5.250 GHz, 5.725 - 5.850 GHz	Non-DFS Frequencies: 5.150 - 5.250 GHz, 5.725 - 5.850 GHz
	NOTE: Frequencies and channels are dependent on regional approvals.	
Bandwidth	20MHz/40MHz	20MHz/40MHz
Modulations	OFDM	OFDM
RF Power	18dBm EIRP	14dBm EIRP
Antennas	4x Internal 2dBi antennas	5x Internal 2dBi antennas
Encryption	AES-256, RSA-1024 key exchange	AES-256, RSA-1024 key exchange
Range	Up to 100 ft (30m)	Up to 100 ft (30m)
Multicast	Transmitter can stream simultaneously to up to 4 receivers	Receiver can switch between 4 transmitters
Noise Rejection	Can coexist with WiFi and other devices working on the 5GHz band. Up to 6 sets at the same location.	Can coexist with WiFi and other devices working on the 5GHz band. Up to 6 sets at the same location.
BLUETOOTH		
Frequency band	2402-2480MHz	2402-2480MHz
Bandwidth	1MHz	1MHz
RF Power	7dBm EIRP	7dBm EIRP
NFC		

Frequency	13.56MHz	13.56MHz
Antenna inductance	2.1uH	2.1uH
POWER		
Power Input	2.1 mm barrel connector 12 VDC	2.1 mm barrel connector 12 VDC
Nominal Power Consumption	20 Watts	18 Watts
Operating Temperature	0 - 40°C	0 - 40°C
GENERAL		
RF Compliance	FCC, EU, ISED, KC, MIC	FCC, EU, ISED, KC, MIC
CERTIFICATION AND APPROVALS		
General	ISO 13485:2016 MDR 2017/745 Class I FDA Manufacturer Registration 3014730563 FDA Listing Class I, 510K exempt. CFR 21 Parts 801, 807, 820, 880 UK MDR 2002 Swiss Medical Device Ordinance SR 812.213 ("MedDO")	
Medical Electrical Equipment	IEC 60601-1:2005 + A1:2012 + A2:2020, EN 60601-1:2006 + A1:2013 + A2:2021, ANSI/AAMI ES60601-1:2005+ A1:2012 + A2:2021, CAN/CSA-C22.2 No. 60601-1:14 + A2:2022	

IEC 60601-1-6:2010+A2:2021, EN 60601-1:2010 + A1:2015 + A2:2021
IEC 60601-1-2:2014 + A1:2020, EN 60601-1-2:2015 + A1(21) Edition 4.1,
CISPR 11:2015 + A1(16) + A2(19) group 1 class B limits

Materials	Regulation (EC) No 1907/2006, Directive 2011/65/EU & 2015/863/EU
Radio	FCC CFR 47 Part 15, Radio FCC CFR 47 Part 2 RE-Directive 2014/53/EU: EN 301 893 V2.1.1, EN 300 328 V2.2.2, EN 50665:2017 Electromagnetic Compatibility - EN 301 489-1 V2.2.3, EN 301 489-17 V3.2.4, Class B

Electromagnetic Compatibility

- This equipment is for use in a professional healthcare environment. It is not for use in the RF-shielded room of a medical electrical system for magnetic resonance imaging, where the intensity of EM disturbances is high.
- This equipment is not likely susceptible to interference from HF surgical instruments in the Special Environment of being near an active HF surgical instrument. In the case that HF surgical interference is observed, adjust the separation distance of the equipment.

Guidance and Manufacturer's Declaration - ELECTROMAGNETIC IMMUNITY

The MD62 Wireless Transmitter and Receiver are intended for use in the electromagnetic environment specified below. The customer or the user of the MD62 Wireless Transmitter and Receiver should ensure that they are used in such an environment.

Guidance and Manufacturer's Declaration: ELECTROMAGNETIC EMISSIONS		
The MD62 Wireless Receiver and MD62 Wireless Transmitter are intended for use in the electromagnetic environment specified below.		
The customer or the user of the MD62 Wireless Receiver and MD62 Wireless Transmitter should ensure they are used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group 1	The MD62 Wireless Receiver and MD62 Wireless Transmitter use RF energy only for their internal function; therefore, their RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The MD62 Wireless Receiver and MD62 Wireless Transmitter are suitable for use in all establishments other than domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded: WARNING: This system is intended for use by healthcare professionals only. This system may cause radio interference or disrupt nearby equipment's operation. It may be necessary to take mitigation measures, such as reorienting or relocating the system or shielding the location
Harmonic emissions IEC 61000-3-2	Class A	
Voltage Fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer's Declaration - ELECTROMAGNETIC IMMUNITY

Immunity Test	IEC 60601 Test level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±8kV contact, ±15kV air	±8kV contact, ±15kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, there should at least be 30% relative humidity.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines, ±1 kV for SIP/SOP lines (if applicable)	±2kV line to ground,	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode Class II equipment	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	0% UT for 0.5 cycle 0% UT for 1 cycle 70% UT for 25/30 cycles 0% UT for 250/300 cycles	0% UT for 0.5 cycle 0% UT for 1 cycle 70% UT for 25/30 cycles 0% UT for 250/300 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of the transmitter requires continued operation during power mains interruptions, it is recommended that the Wireless Transmitter be powered by an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power-frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: UT is the AC mains voltage prior to application of the test level			

Guidance and Manufacturer's Declaration – ELECTROMAGNETIC IMMUNITY FOR PROFESSIONAL HEALTHCARE FACILITY ENVIRONMENT, IEC 60601-1-2 Ed.4.1

Immunity Test	IEC 60601 Test level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	6 Vrms in ISM bands between 150 kHz to 80 MHz 3 Vrms 150 kHz to 80 MHz	6 Vrms in ISM bands between 150 kHz to 80 MHz 3 Vrms 150 kHz to 80 MHz	Portable and mobile RF communications equipment should be used no closer to any part of the MD62 Wireless Receiver and MD62 Wireless Transmitter system, including its cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended Separation Distance $d = 2\sqrt{P}$ 80 MHz to 2.7 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey (a), should be less than the compliance level in each frequency range (b). Interference may occur in the vicinity of equipment marked with the following symbol:
Electrical fast transient/burst IEC 61000-4-4	3V/m 80MHz to 2.7GHz	3V/m 80MHz to 2.7GHz	



(a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcasts, and TV broadcasts, cannot be predicted theoretically with accuracy. An electromagnetic site survey should be considered to assess the electromagnetic environment due to fixed RF transmitters. If the measured field strength in the location in which the MD62 Wireless Receiver and MD62 Wireless Transmitter are used exceeds the applicable RF compliance level above, the display and transmitter should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the MD62 Wireless Receiver and MD62 Wireless Transmitter

(b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m

Tested Specifications for Immunity to RF Wireless Communications Equipment

	Test Frequency (MHz)	Band A (MHz)	Service	Modulation	Immunity Test Level
Proximity fields from RF wireless communications equipment	385	380-390	TETRA 400	Pulse modulation b) 18Hz	27 V/m
	450	430-470	GMRS 460, FRS 460	FM c) ± 5 kHz deviation 1 kHz	28 V/m
	710	704-787	LTE Band 13, 17	Pulse modulation b) 217 Hz	9 V/m
	745				
	780				
	810	800-960	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE Band 5	Pulse modulation b) 18 Hz	28 V/m
	870				
	930				
	1720	1700-1990	GSM 1800 CDMA1900 GSM 1900 DECT LTE Band 1,3, 4,25; UMTS	Pulse modulation b) 217 Hz	28 V/m
	1845				
	1970				
	2450	2400-2570	Bluetooth, WLAM, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation b) 217 Hz	28 V/m
	5240	5100-5800	WLAN 802.11 a/n	Pulse modulation b) 217 Hz	9 V/m
	5500				
	5785				
IEC 61000-4-39 Immunity to magnetic fields in close proximity	65 A/m 134.2 kHz 7.5 A/m 13.56 MHz	NFC	NFC		65 A/m 134.2 kHz 7.5 A/m 13.56 MHz

Note: Portable RF Communication equipment should be used no closer than 30cm to the MD62 Wireless Receiver and MD62 Wireless Transmitter System. Otherwise, degradation of the performance of this equipment could result.

(a) For some services, only the uplink frequencies are included.

(b) The carrier shall be modulated using a 50 % duty cycle square wave signal.

(c) As an alternative to FM modulation, the carrier may be pulse modulated using a 50 % duty cycle square wave signal at 18 Hz. While it does not represent actual modulation, it would be worst case.

