FALCO MD62 USER MANUAL

Contact us

International legal manufacturer	Amimon Inc. (USA): 8 Mason, Irvine, California, 92618, USA TE: +1 (408) 675-8991
EC|REP	CEpartner4U Esdoornlaan 13, 3951 DB Maarn, The Netherlands +31.6.516.536.26
Website	Medical.teradek.com

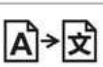
Table of Contents

1 Marking and Labeling

1.1 Glossary of Symbols

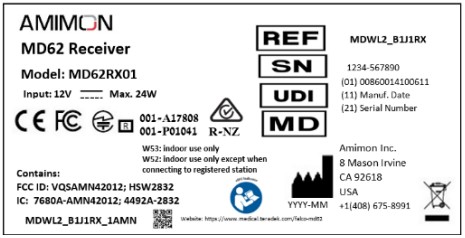
The following are symbols that you will find throughout this operating manual and their meanings

	WARNING: The information stated where you will see this symbol is extremely important and must be noted!
	General Information
	"Conformité Européene" Symbol (CE Marking)
	Waste of Electrical and Electronic Equipment (WEEE) Marking
	Manufacturer
	Authorized Representative in the European Community
	Manufacturer (accompanied by the name and address of the manufacturer)
	Date of Manufacture
	Medical Device
	Country of Manufacturer
	Fragile
	This Way Up
	Keep Dry
	Catalog Number

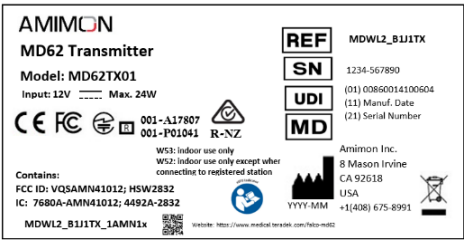
	Serial Number
	Wireless Transmission
	Storage and Transport Humidity Range
	DC Power Control
	Storage and Transport Temperature Range
	Refer to Instruction Manual/Booklet
	Direct Current
	Unique Device Identifier
	RF ID tag
	Batch Code
	Model Number
	Translation
	Non-Sterile
	Compliance with Federal Communication Commission

1.2 S/N Label

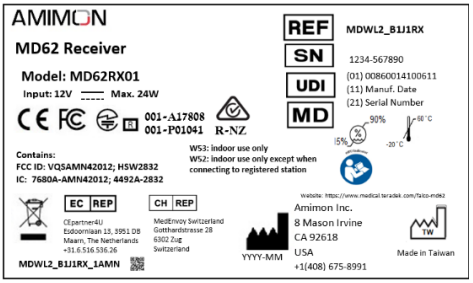
MD62 Receiver Label on the Device



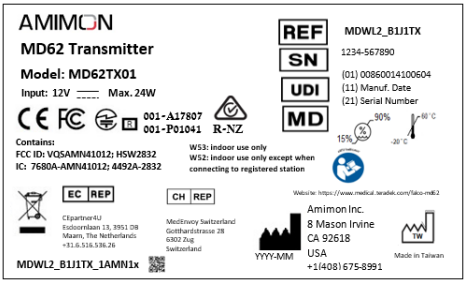
MD62 Transmitter Label on the Device



MD62 Receiver Label on the Individual Device Package



MD62 Transmitter Label on the Individual Device Package



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 System Description

2.1 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.

2.2 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.

2.3 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 Introduction and Safety instructions

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.**
- **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.**
- **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.**

NOTE:

- Any serious incident that has occurred in relation to the Falco MD62 should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

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.

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.

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

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

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.

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.

EU COMPLIANCE STATEMENT
Amimon 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 or GlobTek GTM96300-3614.5-2.5-R3A
The AC adaptor characteristic:

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

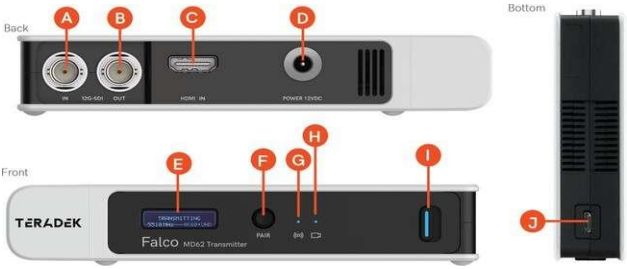
The AC adaptor must be replaced immediately in case the adaptor or power cord is damaged. An approved jack to plug accessory cord can be used to extend the DC power supply cord.

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 View of System

4.1 MD62 Transmitter



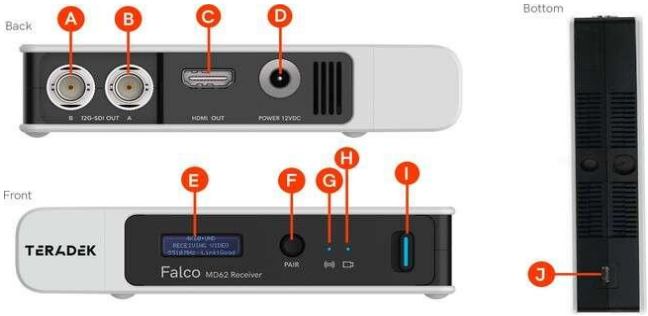
A. 12G-SDI input **E.** OLED display **I.** Power switch

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

4.2 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 input **G.** Network status

D. 12V DC power input **H.** Video status

5 System Installation and Use

5.1 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.
- 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.
- 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.
- The video receptor (monitor, recorder, etc.) connected to the Falco MD62 shall be grounded.

5.2 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:

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

5.3 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 MD11device.

NOTE:

- Turning off unused devices in the area while performing the pairing procedure is recommended.
- Once the transmitter and receiver are paired, they will automatically connect upon powering up.
- When the transmitter or receiver performs the un-pairing procedure, the transmitter and receiver will not reconnect.
- 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.

5.4 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 is 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...
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 8-9, the message will display an option to cancel and abort the operation.
** For status 10, 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.

5.5 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 appears 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 sill searching for free frequency to use**	NO CLEAR FREQ
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 Maintenance and cleaning

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 Troubleshooting

7.1 Q&A

- **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 13) 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.

- **The 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 5.1 in this manual.
2. Turn off unused Falco devices and other unused wireless devices in the nearby area.

8 Regulatory Guidance

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.

8.1 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.

<table>
<tr><th colspan="3">Guidance and Manufacturer’s Declaration: Electromagnetic Emissions</th></tr>
<tr><td colspan="3">The MD62 Wireless Receiver and MD62 Wireless Transmitter are intended for use in the electromagnetic environment specified below.

The customer or the user of MD62 Wireless Receiver and MD62 Wireless Transmitter should ensure they are used in such an environment</td></tr>
<tr><td>Emissions test</td><td>Compliance</td><td>Electromagnetic Environment - guidance</td></tr>
<tr><td>RF emissions CISPR 11</td><td>Group 1</td><td>The MD62 Wireless Receiver and MD62 Wireless Transmitter uses RF energy only for its internal function; therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td></tr>
<tr><td>RF emissions CISPR 11</td><td>Class B</td><td rowspan="3">The MD62 Wireless Receiver and MD62 Wireless Transmitter is 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 health care professionals only. This system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as reorienting or relocating the system or shielding the location</td></tr>
<tr><td>Harmonic emissions IEC 61000-3-2</td><td>Class A</td></tr>
<tr><td>Voltage Fluctuations / flicker emissions IEC 61000-3-3</td><td>Complies</td></tr>
</table>

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 material is synthetic, 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 ±1 kV for SIP/SOP lines - not applicable for MD62 system	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 ±2kV common mode	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 from 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	6 Vrms in ISM bands between	6 Vrms in ISM bands between	Portable and mobile RF communications equipment should be used no closer to any part of the MD62 Wireless Receiver

IEC 61000-4-6	150 kHz to 80 MHz 3Vrms 150 kHz to 80 MHz	150 kHz to 80 MHz 3Vrms 150 kHz to 80 MHz	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√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:
Radiated RF IEC 61000-4-3	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 broadcast, and TV broadcast, cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the MD62 Wireless Receiver and MD62 Wireless Transmitter is 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 b)	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) ±5kHz 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.

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