W-DMX™ G5 USER MANUAL

BLACKBOX
WHITEBOX
MICRO
PROBOX

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www.wirelessdmx.com

WIRELESS SOLUTION
MADE IN SWEDEN

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W-DMX™ G5 User Manual

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1. Radio Compliance Information

FCC IDENTIFIER: NY2-WDMXTRX
Name of Grantee: Wireless Solution Sweden Sales AB
Equipment Class: Part 15 Spread Spectrum Transmitter
FCC Rule Parts: 12C2402.0

General Notes: The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located cooperating in conjunction with any other antenna or transmitter. Users and installers must comply with operating manual.

This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

Modification Warning! Changes or modifications to this equipment, not expressly approved by Wireless Solution Sweden Sales AB could void the user's authority to operate the equipment or void the FCC approval and negate your authority to operate the product.

Safety Notices: Please read this entire manual before using your new equipment. Please keep the manual in a safe place so you can refer to it in the future as required.

W-DMX™ is intended for use only by qualified lighting professionals. Connection, installation, and hanging of this equipment must be performed in accordance with all pertinent local, regional, and national safety codes and regulations.

This equipment shall not be used to operate moving-scenery or moving-truss structures, DMX-triggered motors/hoists or lifting devices including, but not limited to, stage lifts operated by DMX, hydraulic systems or any moving component that may cause harm to human-beings in case of failure.

It should not be used to trigger flames or pyro equipment, explosive powered tools or compressed air equipment. It shall also not be used with water pumps or any water related equipment triggered wirelessly and subject to failure where it may cause harm to human-beings.
Please do not use with any theatrical flying and rigging operations, or any device that may fail due to break of RF signal. W-DMX™ products shall not be used with firearms or weapons triggered by wireless equipment.

Please keep the equipment dry unless it is clearly specified to work outdoors. Do not operate in excessive heat or direct sunlight, and provide adequate ventilation.

Do not place anything on top of the Products that weighs more than 5 pounds (2.25 kg). Excessive weight on top could damage the chassis.

There are no user-serviceable parts inside. All serviceable work shall be done by qualified service personnel, generally appointment by the Manufacturer.

The Product is furthermore not intended for use within a non-entertainment, architectural or motion-picture lighting related business, such as:

- Within hospitals, health centers or any health care institution providing patient treatment with specialized staff and equipment.
- Hazardous Areas of classes I, II and III
- Exclusion Zones
- United States National Radio Quiet Zone
- Within an airplane or a vehicle

No warranty or liability claim is possible in case the Product has been used outside of its reasonably intended usage area, as exemplified above.

The Product must be operated with the factory default settings. No deviation or variance of the Product is allowed. Any peripheral equipment connected to the Product must be previously approved.

The Product must, subsequent to a software upgrade, be thoroughly tested before any use. No warranty or liability claim is possible in case the Product has been thoroughly tested before use.

Wireless Solution Sweden Sales AB cannot take responsibility for any interference that may be caused by a third party device and cause malfunction of the wireless transmission.

2. Warranty

Wireless Solution Sweden AB's warranty obligations are limited to the terms set forth below: Wireless Solution Sweden AB, as defined below, warrants this W-DMX™-branded hardware product against defects in materials and workmanship under normal use for a period of ONE (1) YEAR from the date of purchase by the original end-user purchaser ("Warranty Period"), or up to EIGHTEEN (18) MONTHS from production date. Products to be returned under warranty must be accompanied by a RMA Authorization Number. Wireless Solution Sweden AB does not warrant that the operation of the product will be uninterrupted or error-free. The manufacturer is not responsible for damage arising from failure to follow instructions relating to the product's use.

3. Your Wireless DMX G5 System

Welcome to the Wireless DMX family! We hope you enjoy your brand new devices – Wireless Solution is the industry's leading system for transmitting and receiving DMX signals reliably, and we thrive on avid users like you who use our products. We appreciate all your constructive feedback after you become an expert!

Before you use, you must know: there are two main operating modes:

- **[TX]** Transmitter (to transmit W-DMX™ signals)
- **[RX]** Receiver (to receive W-DMX™ signals)

Most our products are transceivers, meaning they can transmit or receive W-DMX™ signals, depending on how to set them up:

Product	TX	RX	Triple Band	Double Up
BlackBox F-1 G5	✓	✓	✓	✓
BlackBox F-2 G5	✓	✓	✓	✓
BlackBox R-512		✓	✓	
WhiteBox F-1	✓	✓	✓	✓
WhiteBox F-2	✓	✓	✓	✓
Micro F-1	✓	✓		
Micro R-512		✓		
ProBox F-2500	✓	✓	✓	✓
UglyBox G5	✓	✓	✓	

4. The W-DMX™ Technology

W-DMX™ is solely engineered by Wireless Solution Sweden to provide the same quality, reliability and performance as any wired DMX link. The technology allows you to establish point-to-point links, point-to-multipoint and multipoint-to-multipoint:
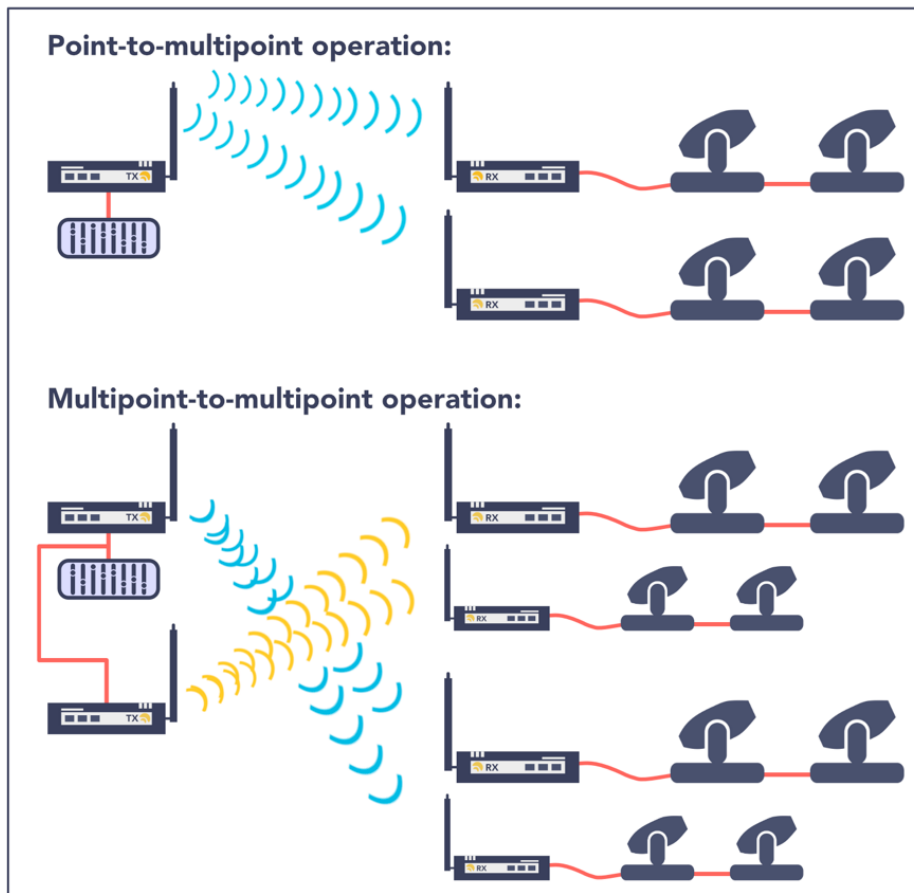
W-DMX™ is unique in its use of advanced radio technologies that are also used in mobile phones and military communication.

Rather than using fixed frequency channels, W-DMX™ uses Adaptive Frequency Hopping technology to continually check the radio channels for interferences and to rapidly move operation to clear radio channels. The checks are carried out in combination with another advanced technology: time division multiple access. This technology makes the most efficient use of every visited frequency channel.

In order to guarantee a more reliable transmission, some W-DMX™ devices can operate on three different frequency bands, allowing the user to move their transmission into an interference-free spectrum. This is limited to some product ranges and countries.

5. Operation

All W-DMX™ devices share the same user interface – these instructions apply to all products:

5.1. Basic setup – Linking devices
A basic setup is defined by the link between two devices. This means that, in order to send data from a transmitter to a receiver, it's necessary to pair the devices:

Press the red function button, on the transmitter, for 1 second, until the *LINK* LED starts flashing.
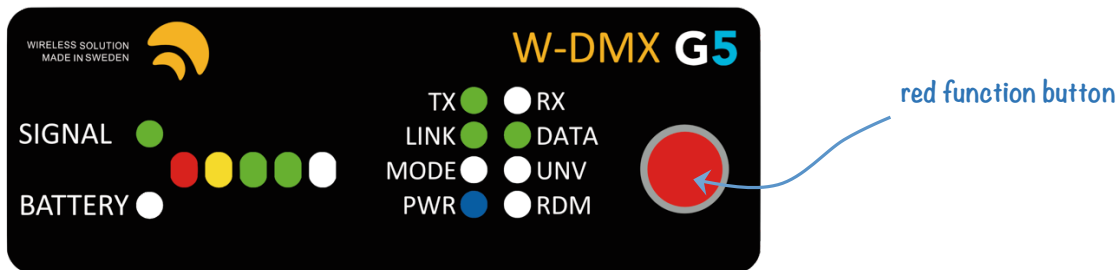
NOTE: All available receivers, as long as they are turned on, will pair with this transmitter. The *LINK* LED of each receiver will flash for 5 seconds, and stay static once linked up.
There is no limited amount of receivers that can link up with a transmitter – there can be an infinite number of receivers all paired with a single transmitter.

5.2. Unlinking devices
There are two ways to unlink devices – individual unlink, or group unlink:

Individual unlink:
Press and hold the red function button, on each receiver, for 5 seconds. The *LINK* LED should turn off.

Group unlink:
Press and hold the red function button, on the transmitter, for 5 seconds. All paired receivers will unlink.

5.3. Linking multiple transmitters with multiple receivers
When multiple receivers need to be linked up with different transmitters, repeat the process in 3.1., but turn off all receivers you do not wish to pair up. For example:
-   If you have 2 transmitters and 10 receivers, pair the first transmitter to 5 receivers, while the last five are turned off.
-   After that, turn the last five receivers, and pair them to the second transmitter.
 **NOTE:** This will not affect any receiver that has already been paired up.

5.4. Switching FLEX mode

All units identified as a transceiver can be changed between transmitter or receiver – the units capable to operate in both modes are listed in chapter 2.
FLEX mode determines if the unit is used in transmit mode (TX) or receive mode (RX):

1. Disconnect the power cable
2. Press and hold the red function button on the front panel.
3. While holding the button, reconnect the power cable.
4. Release the red function button.
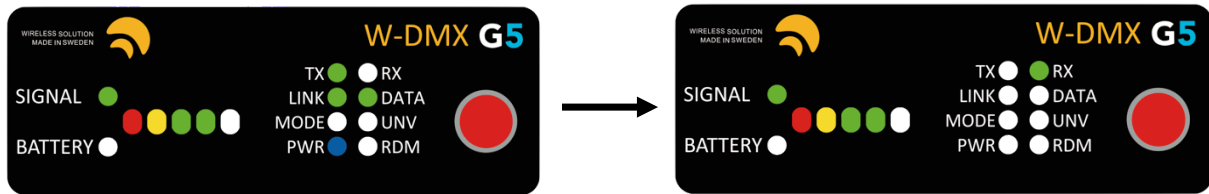
You will notice the *TX* LED will turn off, and the *RX* LED will turn on.
Repeat the same procedure to change from RX to TX.

5.5. Changing CTRL mode

There are several operating modes within all W-DMX™ products – these are like operating systems, and allow you to be backward compatible with legacy products. They are:

G3 Mode [2.4 GHz]
G4S Mode [2.4 GHz & 5.8 GHz]
G5 Mode [2.4 GHz, 5.2 GHz & 5.8 GHz]
G5 Mode with double-up [2.4 GHz, 5.2 GHz & 5.8 GHz]

You can change between modes are any given moment – changes must be made to the transmitter:
1. Press and hold the red function button for 10 seconds
2. The top 4 LEDs will chase. Tap the red function button to scroll through all the modes.
3. There are 9 options available – you can understand the mode as follows:

	MODE LED	UNV LED
G3 2.4 GHz		
G4S 2.4 GHz	green solid	
G4S 5.8 GHz	green blinking	
G5 2.4 GHz	blue solid	
G5 5.8 GHz	blue blinking	
G5 5.2 GHz	blue blinking	
G5 2.4 GHz Double-Up	blue solid	green solid
G5 5.8 GHz Double-Up	blue blinking	green blinking
G5 5.2 GHz Double-Up	blue blinking	green blinking

4. Press and hold the red function button to save and exit.

NOTE! All changes shall be made to the transmitter. It's necessary to re-link all receivers after changing control modes. Triple-band and double-up are not available in the Micro series.

5.6. Enabling 5 GHz

Due to regulations worldwide, all W-DMX™ devices come with 5 GHz disabled from front-interface control. This must be enabled with the W-DMX™ Dongle and Configurator software, available from the website.
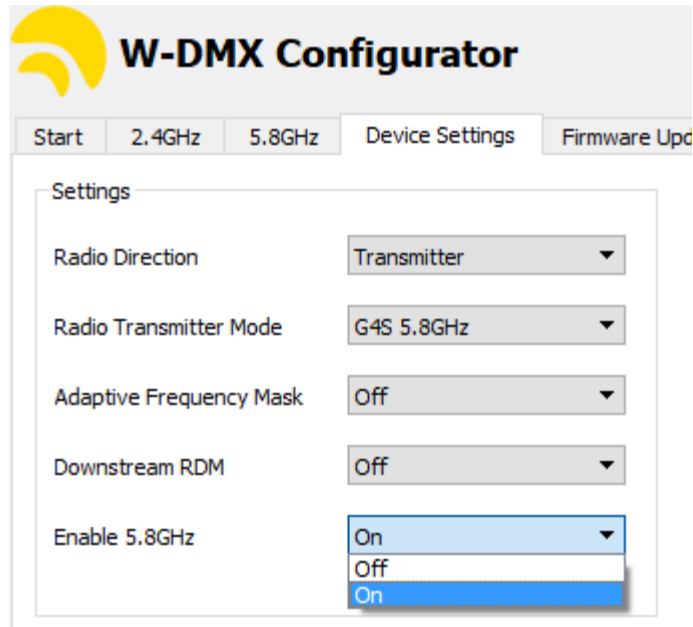
5.7. Double-Up Mode

In G5 series, all products except the Micro series come with Double-Up mode – this allows you to send an extra universe wirelessly, just by changing the operating CTRL mode. By doing this, you decrease the transmission range by 20%, but receive an extra 512 channels.

This is only available on the F-1 and F-2 models, not on R-512 models.

5.8. Repeater Mode

All F-2 models are capable to operate as repeaters, as long as configured to do so:
1. Set universes A and B into transmitter mode [see 4.4.]
2. With the W-DMX™ Dongle, set the master transmitter to "G4S repeater mode"
3. Set Universe B of the F-2 unit into "G4S repeater mode"
4. Set Universe A of the F-2 unit into "G4S receiver mode"
5. Link Universe A to the mater transmitter
6. Link the receivers to Universe B of the F-2 unit

6. User Interface

Though the interface display appears simple, there is a lot of information you can read back, which will help you troubleshooting and understanding how your device is operating.
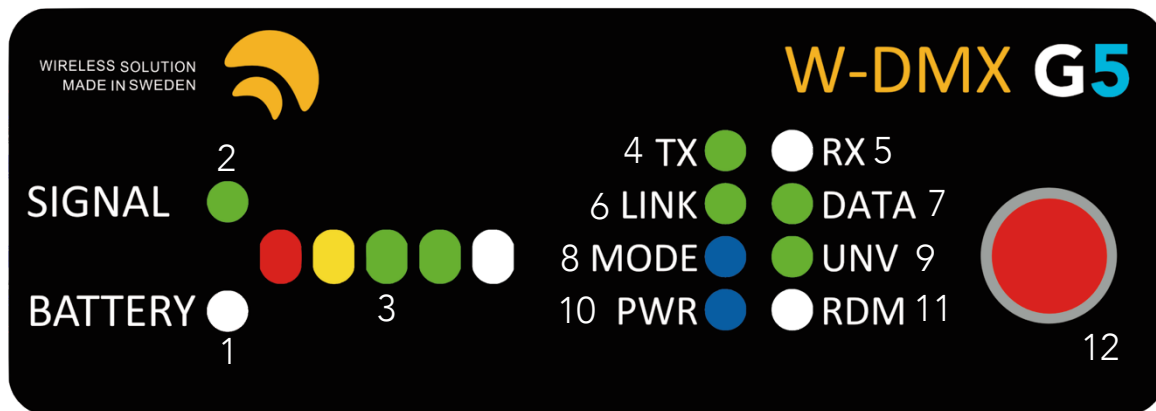
1. **BATTERY** Only works on the Micro series. Indicates battery-life of the device.
2. **SIGNAL** Will stay always on, except on the Micro, where it warns about battery-life
3. **SIGNAL STATUS** On a transmitter, indicates the power output in mW. Full bar indicates 500mW, two green LEDs indicates 375mW (EU max.), one green LED indicates 100mW (DE max.), yellow LED indicates 25mW.
   On a receiver, indicates signal strength.
4. **TX** Device operating as a transmitter.
5. **RX** Device operating as a receiver.
6. **LINK** On a transmitter, it states it's ready to establish a link. On a receiver, if off, indicates it's got no active link, if on, it indicates it's already paired to a transmitter. If blinking intermittently, it indicates that it has lost its link [either the transmitter is out-of-range or turned off].
7. **DATA** It indicates whether data is being sent to the transmitter/receiver. If the LED is off, check if the DMX cable is plugged correctly to the transmitter.
8. **MODE** Indicates the CTRL mode [See chapter 3.4].
9. **UNV** Indicates double-up mode.
10. **PWR** States power condition of the device.
11. **RDM** Indicates whether RDM is active or disabled.
12. **Red function button.**

7. Hardware

7.1. BlackBox Series
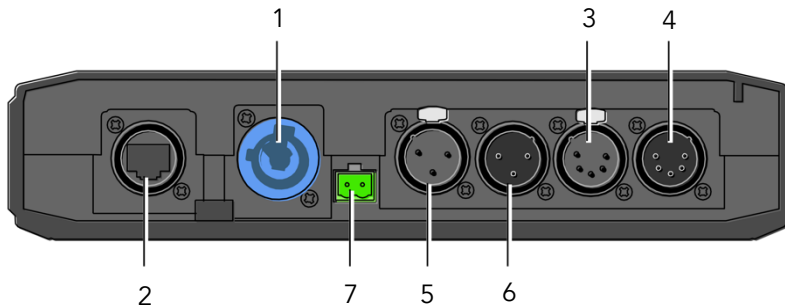
1. **AC Power Input**
   U_{ac} = 90-250V / 50-440 Hz
   PowerCon® 20A connector
2. **EtherCon RJ45 port**
   NOTE Ethernet based-protocols are only available if the Ethernet extension is mounted. This is an optional feature available for purchase.
3. **XRL female 5 pin [Universe 1]**
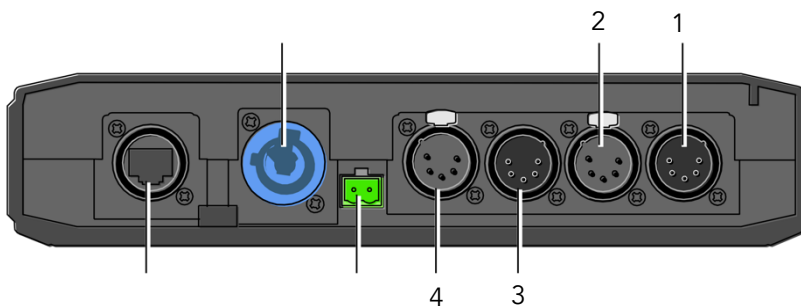4. **XRL male 5 pin [Universe 1]**
5. **XRL female 3 pin [Universe 2 in Double-Up mode]**
6. **XRL female 3 pin [Universe 2 in Double-Up mode]**
7. **12V DC power supply [- / +]**

NOTE The R-512 model does not receive in double-up mode, only the first universe will be received.

7.1.1 BlackBox F-2 Double-Up explained

G3/G4S/G5 Mode:
1. Universe A In
2. Universe A Out
3. Universe B In
4. Universe B Out

Double-Up Mode:
1. Universe 1 In/Out
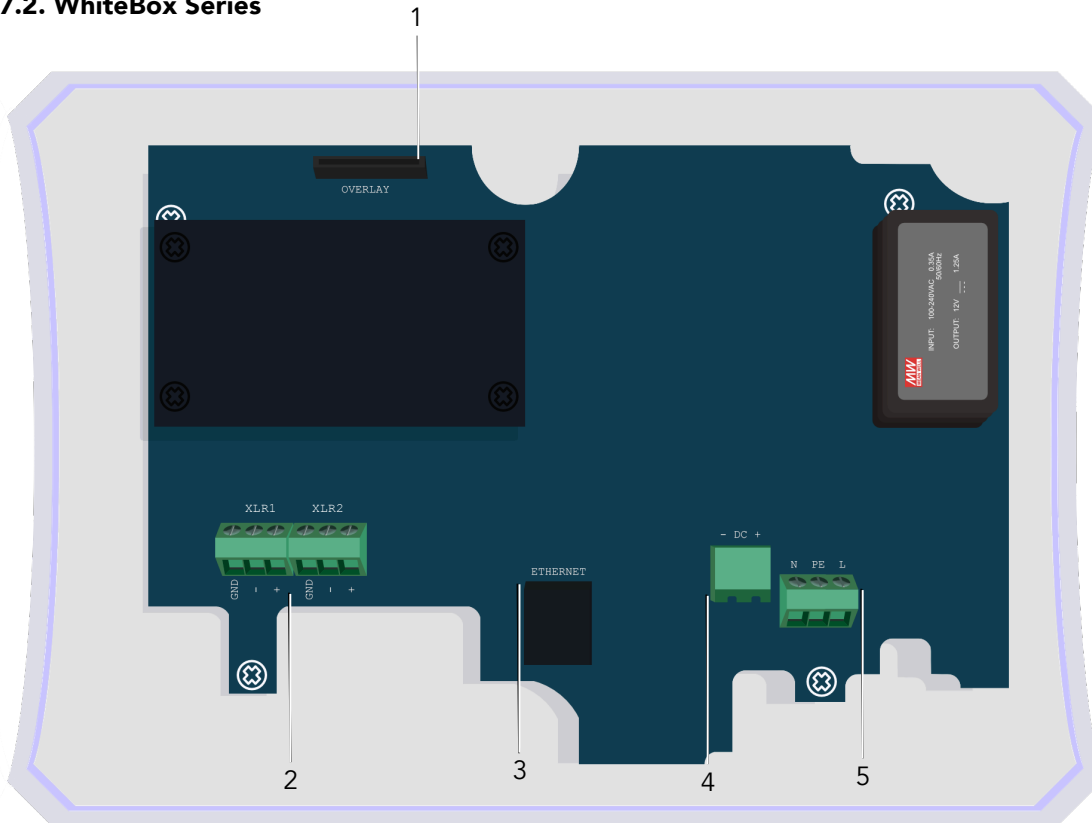2. Universe 2 In/Out
3. Universe 3 In/Out
4. Universe 4 In/Out

7.1.2 Contents included
When you purchase a new BlackBox, the following items are included:

- BlackBox device (R-512, F-1 or F-2)
- User Manual
- Antenna Adapter [90 Deg]

- 3dBi Antenna
- Mounting brackets
- Phoenix DC connector

NOTE Power cable is not included.

7.2. WhiteBox Series

1. Overlay connector
2. DMX input and/or output
3. Ethernet RJ45 port
4. 12V DC power supply [- / +]
5. AC power input
   U_{ac} = 90-250V / 50-440 Hz
   N / EARTH / L

7.2.1 WhiteBox Double-Up explained

G3/G4S/G5 Mode: **Double-Up Mode:**

XLR 1. Universe A In   XLR 1. Universe 1 In/Out

XLR 2. Universe A Out   XLR 2. Universe 2 In/Out

XLR 3. Universe B In   XLR 3. Universe 3 In/Out

XLR 4. Universe B Out   XLR 4. Universe 4 In/Out
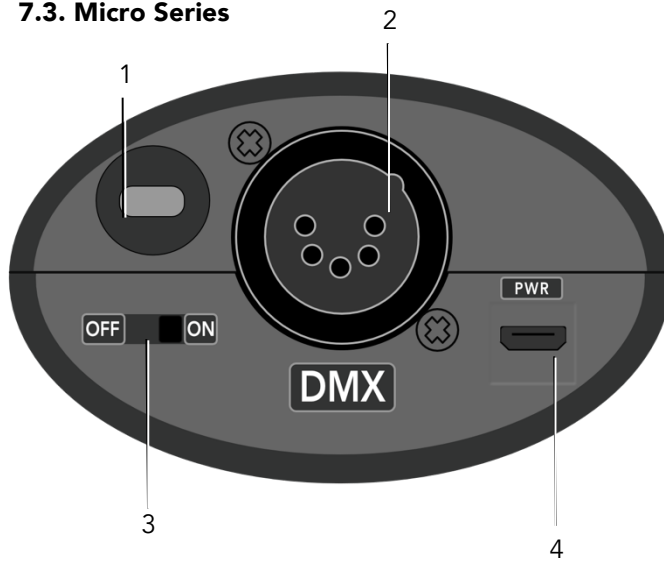
7.2.2 Contents included

When you purchase a new ProBox, the following items are included:

- WhiteBox device (F-1 or F-2)   • 3dBi Antennae
- User Manual

NOTE Power or DMX cables are not terminated or included with this device.

7.3. Micro Series

1. Kensington security slot
2. XLR female 5 pin (Female on R-512 models, male for F-1 models)
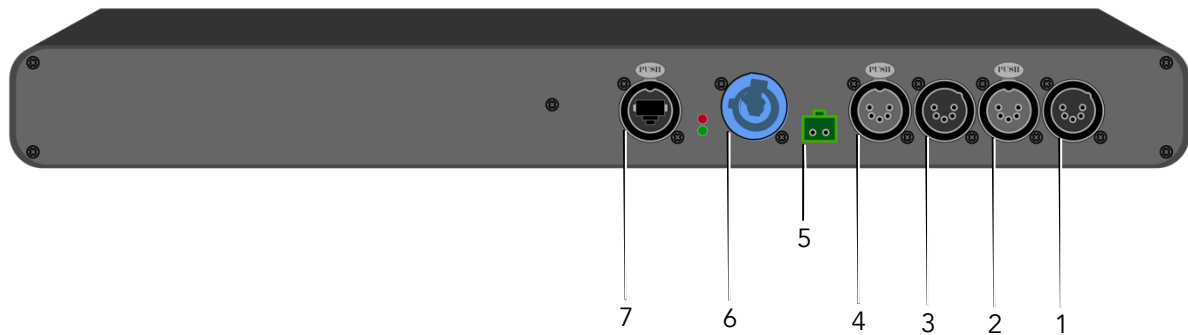3. Power switch
4. Micro USB 5V power connector

NOTE Micro series do not operate in double-up mode or in triple-band.

7.3.1 Contents included
When you purchase a new Micro unit, the following items are included:

- Micro device (R-512 or F-1)
- User Manual
- USB adaptor with universal plugs
- Velcro strap

7.4. ProBox Series

1. XRL male 5 pin [Universe A]
2. XRL female 5 pin [Universe A]
3. XRL male 5 pin [Universe B]
4. XRL female 5 pin [Universe B]
5. 12V DC power supply [- / +]
6. AC Power Input
   U_{ac} = 90-250V / 50-440 Hz
   PowerCon® 20A connector
7. EtherCon RJ45 port

7.4.1 BlackBox F-2 Double-Up explained

G3/G4S/G5 Mode:
1. Universe A In
2. Universe A Out
3. Universe B In
4. Universe B Out

Double-Up Mode:
1. Universe 1 In/Out
2. Universe 2 In/Out
3. Universe 3 In/Out
4. Universe 4 In/Out

7.4.2 Contents included
When you purchase a new ProBox, the following items are included:

- ProBox F-2500 device
- User Manual
- 2x Antenna Adapter [90 Deg]

- 2x 3dBi Antenna
- Phoenix DC connector

NOTE Power cable is not included.

8. Upgrades and Updates

8.1. Ethernet Upgrade
Coming soon.

8.2. Wi-Fi Upgrade
Coming soon.

8.3. Firmware Update
Wireless Solution is committed to developing and improving its wireless technology – though firmware updates are not constant, occasionally there is a need to release a new version, whether related to the transmission itself, glitches with the interface or RDM implementation.
All products are updatable, including OEM devices. For that, it's necessary to obtain a W-DMX™ Dongle – this is a USB to DMX interface that connects straight to any device. We encourage to get one per W-DMX™ kit.

The software interface can be found on Wireless Solution's website:
www.wirelessdmx.com/download

New firmware versions can be found on Wireless Solution's RMA portal: www.wirelessdmx.com/rma

Instructions:

1. Connect the dongle to your computer, and the DMX cable to the W-DMX™ device.
2. Before powering-up the device, load the new firmware version.
3. Press start and turn on the device.
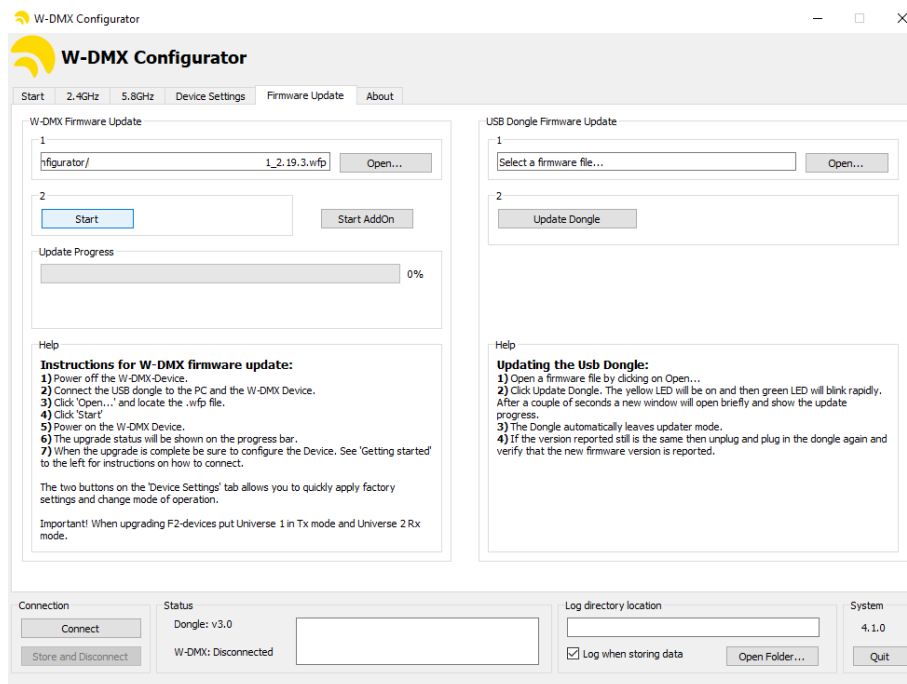
NOTE Follow carefully all the instructions in the 'Help' section, within the software.

9. Recommendations

There are several tips and tricks that could make your wireless transmission work better. Here's a few that should be followed:

Fig.1: It's important that all antennas point to the same axis – wireless waves have a radial pattern that should be valued. There are a number of accessories that can help maintaining directionality.
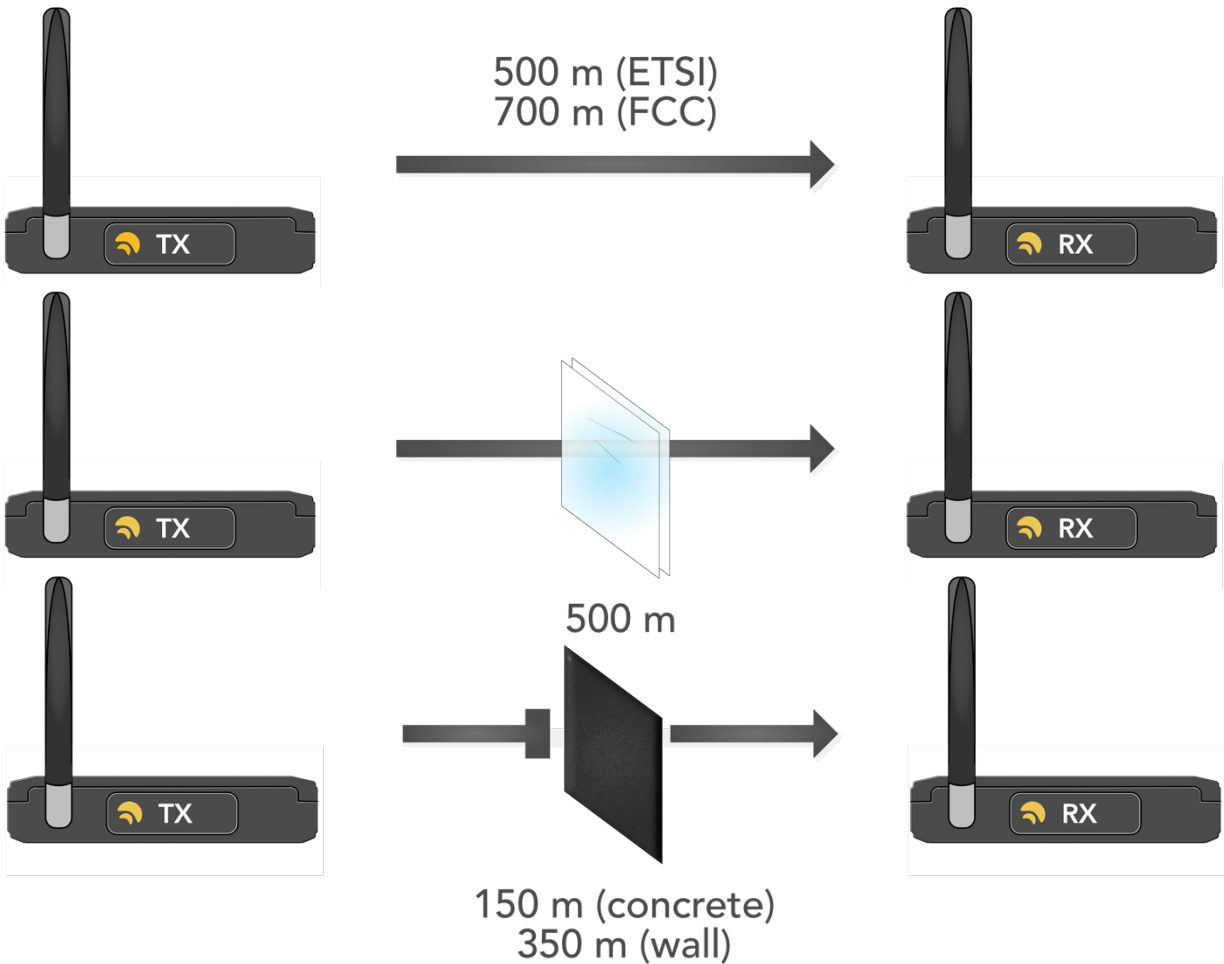

Fig.2: There are limitations to how wireless waves propagate through air. Physical barriers like glass, concrete and walls will limit the transmission range. Always try to have clear line-of-sight between transmitters and receivers.

Fig.3: It's possible to increase performance of dual-universe devices just by rotating one of the antennas to a different axis. This will avoid the radio-waves of both transmissions to interference with each other.

Fig.4: Micros like to be seen – just because it's small, don't throw it inside a box! They have a very sensitive antenna that doesn't like barriers. And most of all, always point their display to each other – that's where their optimum performance is!

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