ULTRALINK ULM2000

# User's manual

GB

Version 1.0 March 2005

www.behringer.com

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JUST LISTEN.

# IMPORTANT SAFETY INSTRUCTIONS

**CAUTION:** To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside; refer servicing to qualified personnel.

**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus should not be exposed to dripping or splashing and no objects filled with liquids, such as vases, should be placed on the apparatus.

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This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

**DETAILED SAFETY INSTRUCTIONS:**

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

8) Only use attachments/accessories specified by the manufacturer.

9) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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# 1. INTRODUCTION

Thank you very much for expressing your confidence in us by purchasing the ULTRALINK ULM2000. This Transmitter, coupled to the receiver ULR2000 from BEHRINGER, comprises a modern, high-performance wireless transmission system.

Thanks to its amazing set of features, you can use the ULM2000 in all situations in which the highest sound quality and mobility are a must, e.g. live concerts, events and video productions.

Depending on your local wireless transmission regulations, you can use up to 20 systems simultaneously.

The IRC compander system guarantees an extremely wide transmission dynamic range.

The microphone features a high-quality Panasonic® capsule with a cardioid polar pattern. Therefore, it primarily picks up the sound from the front and less so from the sides. The signal entering the microphone from the back is mostly suppressed. This way, the microphone's propensity to creating feedback is very negligible, even in live situations.

The ULTRALINK Series equipment features 3 factory presets, each with 8 permanent, interference-free channels. This allows you to use several systems in parallel without them influencing one another. Additionally, you have the option of storing 8 of your own frequencies in a user preset, thus individually addressing your own needs.

Determining which microphone is assigned to which receiver is done either by observing the transmission channel in the display or by comparing the transmission frequency. In addition, the ULTRALINK equipment from BEHRINGER leaves you the option to color-code your gear for easy identification.

Beyond that, both units feature other useful functions, such as Scan and Auto Mute. This way, no wishes are left open during practice or in live situations.

☞ **The following instructions are intended to familiarize you with the unit's controls, so that you can learn all of its functions. After having thoroughly read these instructions, store them in a safe place for future reference.**

## 1.1 Before you get started

### 1.1.1 Shipment

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The ULM2000 was carefully packed at the factory to assure secure transportation. Should the condition of the cardboard box suggest that damage may have taken place, please inspect the unit immediately and look for physical indications of damage.

☞ **Damaged units should NEVER be sent directly to us. Please inform the dealer from whom you acquired the unit immediately as well as the transportation company from which you took delivery of the unit. Otherwise, all claims for replacement/repair may be rendered invalid.**

☞ **Always use the original packaging to avoid damage due to storage or shipment.**

☞ **Never leave children unsupervised with the unit or its packaging.**

☞ **Please dispose of all packaging materials in an environmentally friendly manner.**

### 1.1.2 Registration

Before powering up the unit for the first time, you **have to register** it with your local postal/telecommunication authority! Additional information is available there.

### 1.1.3 Initial operation of the microphone

The ULM2000 microphone requires one or two 9V batteries. Of course, using only one 9V battery decreases the effective uptime. When using only one battery, it does not matter which of the two battery compartments you use. Either one will work.

☞ **When running the unit on two batteries, please make sure that both batteries are equally fresh. Therefore, whenever changing batteries, always use two brand-new batteries.**

When the battery is nearly depleted, the LED located on the bottom of the microphone will start to blink rapidly. Simultaneously, a special inaudible signal is sent to the ULR2000 receiver, and "LowBat" is shown in its display. To assure dependable operation of the transmitter-receiver system, change the transmitter batteries as soon as possible after seeing the "LowBat" message.

To change the transmitter (mic) batteries:

1. Twist the upper part of the microphone grip while firmly holding its lower portion.
2. Pull the battery compartment out of the microphone until you reach its stop position.
3. Remove the old batteries. Insert one or two fresh 9V batteries.
4. Slide the upper part of the microphone over its lower portion and firmly screw it on.

### 1.1.4 Warranty

Please do remember to register your new BEHRINGER equipment right after your purchase by visiting www.behringer.com (alternatively www.behringer.de) and kindly read the terms and conditions of our warranty carefully.

BEHRINGER warrants all items purchased against defects in material or workmanship for one year* from date of purchase. Full terms of the warranty may be found on our website at www.behringer.com (alternatively www.behringer.de).

Should your BEHRINGER product malfunction, our goal is to have it repaired as quickly as possible. To arrange for warranty service, please contact the retailer from whom the equipment was purchased. Should your BEHRINGER dealer not be located in your vicinity, you may directly contact one of our subsidiaries. Corresponding contact information is included in the original equipment packaging (Global Contact Information/ European Contact Information). Should your country not be listed, please contact the distributor nearest you. A list of distributors can be found in the support area of our website (www.behringer.com).

Registering your purchase and equipment with us helps us process your repair claims quickly and efficiently.

Thank you for your cooperation!

*Different terms and conditions may apply to EU customers. Please contact the German BEHRINGER Support Center for further details.

# 2. CONTROL ELEMENTS

In this chapter, different control elements of your ULM2000 will be described, explained in detail, and you will get useful information on how to use them.

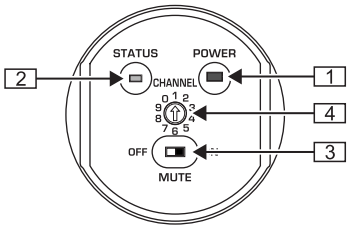


*Fig. 2.1: ULM2000's underside*

1 *POWER*
To power the hand-held transmitter on or off, keep the POWER button pressed for at least 2 seconds. Briefly pressing the POWER button confirms your choices when entering values (refers to later chapters). Additionally, you can check the current transmitter settings (selected channel and battery condition).

2 *STATUS* LED
Through repeated blinking, the status LED gives the account of the current settings for all parameters. We differentiate between 3 different blinking tempos:

- ▲ The LED blinks **slowly** when you, for example, successfully leave the programming mode.
- ▲ To give the account of the channel number or individual frequency values, the LED blinks with **medium** tempo.
- ▲ **Rapid** blinking indicates an error, for example an empty battery or a faulty entry.

3 *MUTE* switch
Engaging the MUTE switch mutes the microphone. Additionally, the ULM2000 can be switched to programming mode by selecting the digits 9 or 0; or, you can get a readout of a specific unit setting.

4 SELECTION SWITCH
Using a screwdriver, you can select different values on the SELECTION SWITCH. For example, you can select a channel number and the frequency.

The *SERIAL NUMBER* is located on the transmitter battery compartment. To get to the serial number, please open the battery compartment (see ch. 1.1.3).

# 3. HAND-HELD TRANSMITTER OPERATION

A brief overview with the graphic representation on operating the transmitter is found on the last page of this user manual (QUICK REFERENCE GUIDE).

## 3.1 Turning the microphone on

1. Press the POWER button located at the bottom of the microphone and keep it pressed for 2 seconds.
2. A blink code follows, indicating the battery condition:
   1 = Battery is nearly empty . . . 5 = Battery is fully charged
3. Afterward, a second blink code indicates to which channel the transmitter is currently set.
   1 = channel 1 is selected . . . 8 = channel 8 is selected

## 3.2 Channel setting

You can comfortably select a channel within a preset by using the selection switch [4]. In doing so, it is irrelevant whether the microphone is on or off.

**Changing the channel when the transmitter is already powered on**

☞ **During this procedure, the transmitter may not be set to mute!**

1. Turn the selection switch to one of the positions 1 - 8, corresponding to the desired channel number. If a valid value is selected (i.e. neither 9 nor 0), the LED blinks quickly once as a confirmation.
2. Briefly press the POWER button. The LED blinks with medium tempo. The number of individual flashes within one cycle corresponds to the value/channel number selected on the selection switch.

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☞ **If an invalid channel number is selected (0 or 9), the channel selected last remains selected.**

**Changing the channel when the transmitter is powered off**

1. Turn the selection switch to one of the values (1 - 8), corresponding to the desired channel number.
2. If you turn on the transmitter, the channel you selected is automatically loaded.

☞ **If an invalid channel number was selected (0 or 9), the channel selected last remains selected.**

## 3.3 Setting your own frequency

A carrier frequency in the range between 798.1 and 805.9 MHz can be freely selected. This frequency is stored in a self-assignable user preset (Preset 1).

☞ **The carrier frequency can only be set in 25-kHz steps. The frequency you select has to be a multiple of 25 kHz. If you select a frequency that is not a multiple of 25 kHz or does not lie in the frequency range between 798.1 and 805.9 MHz, the ULM2000 gives off an error message (the LED blinks quickly 5 times).**

1. Engage MUTE. The transmitter can now be switched to the programming mode.
2. Turn the selection switch to 9 and confirm your selection by keeping the POWER button pressed for about 2 seconds. The LED indicates confirmation by blinking once with medium tempo and blinking once slowly. The transmitter is now in the programming mode and awaits the entry of a 6-digit frequency.
3. Enter all 6 digits one after another in the following fashion:
   - ▲ Select the desired value on the selection switch, for example 4. If a valid value is selected, the LED blinks quickly once as a confirmation. This way, you can be sure that a correct value is entered (in regard to the frequency range and divisibility by 25 kHz) even before confirming your selection.
   - ▲ Confirm your selection by briefly pressing the POWER button.
   - ▲ If the end frequency value you entered is valid, the LED blinks quickly once more. If the frequency value is invalid, the LED blinks quickly 5 times, and the unit is no longer in the programming mode. In this case, start anew with step 2.
     After a brief interruption, a second blink code is given: the LED blinks corresponding to the value selected (in this case, 4 times) with medium tempo.

☞ **The value 0 is indicated by a very short blink of the LED, and you will easily tell a 0 from a 1.**

☞ **If no entry is made for more than 5 seconds (either on the selection switch or by pressing the POWER button), the LED blinks quickly 5 times, and the programming mode is aborted.**

After entering the 6 digits for the frequency value, enter another value to indicate the channel number under which the frequency will be stored.

4. Select a desired channel number on the selection switch, for example channel 2 (possible values: 1 - 8). If a valid value is selected, the LED blinks quickly once to confirm. This way, you can be sure that a correct channel number is being entered even before confirming your selection.

5. Confirm your selection by briefly pressing the POWER button.
6. When a valid value is selected, the LED blinks briefly again. When an invalid value is selected, the LED blinks quickly 5 times and the unit is no longer in the programming mode. In this case, start a new with step 2.
   After a brief interruption, a second blink code is given: the LED blinks corresponding to the value selected (in this case, 2 times) with medium tempo.
7. After a second blink pause, an additional blink code is given as a confirmation:
   - ▲ A successfully stored frequency is signaled with 2 slow blinks. The transmitter leaves the programming mode.
   - ▲ If the LED blinks quickly 5 times, the frequency was not stored. In this case, start anew with step 2.

☞ **If no entry is made for more than 5 seconds (either on the selection switch or by pressing the POWER button), the LED blinks quickly 5 times, and the programming mode is aborted.**

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8. Disengage the MUTE switch.

☞ **A user-assigned frequency is automatically stored in the user preset (Preset 1)!**

## 3.4 Preset

The ULM2000 lets you work with 4 presets, each with 8 channels.

**Factory presets (Presets 2, 3 and 4)**
In the ULM2000, there are 3 factory presets (each with 8 interference-free channels). That means that all 8 channels of one preset can run simultaneously with 8 different transmitters and receivers without causing interference to one another.

The channels in the 3 factory presets are all assigned to different frequencies. This way, you can always select a frequency range that assures the best signal transmission.

The following table shows which frequencies are stored in the factory presets.

| CHANNEL | PRESET 2 | PRESET 3 | PRESET 4 |
|---|---|---|---|
| 1 | 798,1 MHz | 799,4 MHz | 800,7 MHz |
| 2 | 798,5 MHz | 799,8 MHz | 801,1 MHz |
| 3 | 799,3 MHz | 800,6 MHz | 801,9 MHz |
| 4 | 799,7 MHz | 801,0 MHz | 802,3 MHz |
| 5 | 801,7 MHz | 803,0 MHz | 804,3 MHz |
| 6 | 802,1 MHz | 803,4 MHz | 804,7 MHz |
| 7 | 802,9 MHz | 804,2 MHz | 805,5 MHz |
| 8 | 803,3 MHz | 804,6 MHz | 805,9 MHz |

*Table 3.1: Factory preset frequencies (presets 2,3 and 4)*

**User preset (Preset 1)**
Preset 1 is meant for the user. Frequencies of your own choice can be stored in the 8 storage slots of this preset.

If you have not stored any of your own frequencies, the frequencies stored in the user preset (Preset 1) are identical to the frequencies stored in Preset 3.

**Loading a preset**
1. Engage MUTE. The transmitter can now be switched into the programming mode.
2. Turn the selection switch to 0 and confirm your selection by keeping the POWER button pressed for 2 seconds. As a confirmation, the LED blinks slowly once and then once again with medium tempo. The transmitter is now in the programming mode and waits for you to enter a one-digit number.
3. Select the desired preset number on the selection switch, e.g. 3 (possible choices: 1 - 4). If a valid selection is made, the LED blinks once quickly to confirm your selection. This way, you can be sure that a correct value is entered (in regard to the selection of presets, Mic Gain and Auto Mute) even before confirming your selection.

☞ **Selecting 5 or 6 changes the Mic Gain setting (ch. 3.5). Selecting 7 or 8 changes the Auto Mute settings (ch. 3.6). Values 9 and 0 are invalid.**

4. Confirm your selection by briefly pressing the POWER button.
5. If the selection you made is valid, the LED blinks quickly once again. An invalid selection is indicated with 5 quick blinks, and the unit is immediately no longer in the programming mode. In this case, start anew with step 2.
   After a brief break, a second blink code is given: The LED blinks according to the value selected (for example, in this case 3 times) with medium tempo.

☞ **If no entry is made for more than 5 seconds (either on the selection switch or by pressing the POWER button), the LED blinks quickly 5 times, and the programming mode is aborted.**

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6. After a second brief blink break, an additional blink code is given as a confirmation:
   - ▲ Successful loading of a preset is signaled with two slow blinks. The unit leaves the programming mode.
   - ▲ If the preset could not be loaded, the LED blinks quickly 5 times. In this case, start anew with step 2.
7. After setting the desired preset, disengage the MUTE switch.

## 3.5 Mic Gain

You have the option to adjust the ULM2000 to the level of the signal being transmitted. If you talk very softly into the microphone, we recommend the “High Gain” setting; if the sound is loud, select “Low Gain.” This way, optimal transmitter drive is achieved.

1. Engage MUTE. The transmitter can now be switched into the programming mode.
2. Turn the selection switch to 0 and confirm your selection by keeping the POWER button pressed for 2 seconds. As a confirmation, the LED blinks slowly once and then once again with medium tempo. The transmitter is now in the programming mode and waits for you to enter a one-digit number.
3. Select one of the following two digits on the selection switch:
   - ▲ Low Gain: select 5
   - ▲ High Gain: select 6

   If a valid selection is made, the LED blinks quickly once to confirm your selection. This way, you can be sure that a correct value is entered (in regard to preset, MicGain and Auto Mute selection) even before confirming your selection.

☞ **Selecting the values 1 thru 4 changes the preset settings (ch. 3.4). Selecting 7 or 8 changes the Auto Mute settings (ch. 3.6). Values 9 and 0 are invalid.**

4. Confirm your selection by briefly pressing the POWER button.
5. If the selection you made is valid, the LED blinks quickly once again. An invalid selection is indicated with 5 quick blinks, and the unit is immediately no longer in the programming mode. In this case, start anew with step 2.
   After a brief break, a second blink code is given: The LED blinks according to the value selected (for example, in this case 3 times) with medium tempo.
   - ▲ Low Gain: the LED blinks once with medium tempo.
   - ▲ High Gain: the LED blinks twice with medium tempo.

☞ **If no entry is made for more than 5 seconds (either on the selection switch or by pressing the POWER button), the LED blinks quickly 5 times, and the programming mode is aborted.**

6. After a second brief blink break, an additional blink code is given as a confirmation:
   - ▲ Successful loading of a preset is signaled with two slow blinks. The transmitter leaves the programming mode.
   - ▲ If the setting for Mic Gain could not be stored, the LED blinks quickly 5 times. In this case, start anew with step 2.
7. Disengage MUTE.

## 3.6 Auto Mute

If the transmitter is turned on, off or switched to another channel without first muting the receiver, or if the transmission fails due to weak batteries, audible noise will result. Even if the squelch circuit is turned on at the receiver end, it still requires some time to react, and such noise can not be suppressed safely.

To bridge this latency time, the ULM2000 offers a practical Auto Mute function:

- ▲ When the ULM2000 is being turned off, when you are switching channels or during low-battery indication, an inaudible send signal is being transmitted.
- ▲ The receiver ULR2000 recognizes this signal and automatically mutes the output before the transmitter is actually turned off, switched to another channel or before it powers down on its own due to battery charge being too low.

☞ **For the Auto Mute function to work, it has to be activated on both the transmitter and the receiver!**

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**Activating/deactivating the Auto Mute function**

1. Engage MUTE. The transmitter can now be switched into the programming mode.
2. Turn the selection switch to 0 and confirm your selection by keeping the POWER switch pressed for 2 seconds. As a confirmation, the LED blinks slowly once and then once again with medium tempo. The transmitter is now in the programming mode and waits for you to enter a one-digit number.
3. Select one of the following two digits on the selection switch:
   - ▲ Activate Auto Mute: select 7
   - ▲ Deactivate Auto Mute: select 8

   If a valid selection is made, the LED blinks quickly once to confirm your selection. This way, you can be sure that a correct value is entered (in regard to preset, MicGain and Auto Mute selection) even before confirming your selection.

☞ **Selecting the values 1 through 4 changes the preset settings (ch. 3.4). Selecting 5 or 6 changes the Mic Gain settings (ch. 3.5). Values 9 and 0 are invalid.**

4. Confirm your selection by briefly pressing the POWER button.
5. If the selection you made is valid, the LED blinks quickly once again. An invalid selection is indicated with 5 quick blinks, and the unit is immediately no longer in the programming mode. In this case, start anew with step 2.
   After a brief break, a second blink code is given:
   - ▲ Auto Mute activated: the LED blinks once at middle tempo.
   - ▲ Auto Mute engaged: the LED blinks twice at middle tempo.

☞ **If no entry is made for more than 5 seconds (either on the selection switch or by pressing the POWER button), the LED blinks quickly 5 times, and the programming mode is aborted.**

6. After a second brief blink break, an additional blink code is given as a confirmation:
   - ▲ Two slow blinks signal that the Auto Mute setting was changed. The transmitter leaves the programming mode.
   - ▲ If the setting for Auto Mute could not be stored, the LED blinks quickly 5 times. In this case, start anew with step 2.
7. Disengage MUTE.

## 3.7 Turning the microphone off

To turn of the transmitter, keep the POWER button pressed for 2 seconds. A long blink confirms that microphone is being turned off.

☞ **The transmitter stores the frequency and the channel settings. These parameters are restored to these same values the next time you turn the unit on.**

# 4. STATUS QUERY

While you are using your microphone, you may want to check the “transmission channel,” “battery condition,” “transmission frequency,” “preset,” “Mic Gain” and “Auto Mute” parameters. The status of these parameters can be checked without having to turn the microphone off and back on.

## 4.1 Battery condition and transmission channel

1. Turn the selection switch to 0. The position of the MUTE switch does not matter.
2. Briefly press the POWER button.
3. Just like when powering the microphone on, the microphone status is indicated with medium-tempo blink codes:

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| | | | |
|---|---|---|---|
| ▲ | battery condition: | 1 = battery is nearly empty . . . | 5 = battery is fully loaded |
| ▲ | selcted channel: | 1 = channel 1 is selected. . . | 8 = channel 8 is selected |

☞ **If the receiver is not powered on, no status is indicated. Briefly pressing the POWER button will neither turn the transmitter on nor off!**

## 4.2 Transmission frequency

1. Turn the selection switch to 9. The position of the MUTE switch is irrelevant.
2. Briefly press the POWER button.
3. Just like during programming, 6 blink medium-tempo codes indicate the individual digits that make up the transmission frequency. Individual codes are separated from one another by brief pauses.

☞ **The value 0 is signaled by a very short blink of the LED, and you will easily tell a 0 from a 1.**

☞ **If the receiver is not powered on, no status is indicated. Briefly pressing the POWER button will neither turn the transmitter on nor off!**

## 4.3 Preset

1. Make sure that the microphone is not set to mute (MUTE switch is set to OFF).
2. Turn the selection switch to 1, 2, 3 or 4 and confirm your selection by briefly pressing the POWER button.
3. The LED indicates the preset number with the corresponding number of medium-tempo blinks.

## 4.4 Mic Gain

1. Make sure that the microphone is not set to mute (MUTE switch is set to OFF).
2. Turn the selection switch to 5 or 6 and confirm your selection by briefly pressing the POWER button.
3. The LED indicates the Mic Gain status with the corresponding number of medium-tempo blinks:
   - ▲ Low Gain: The LED blinks once with medium tempo.
   - ▲ High Gain: The LED blinks twice with medium tempo.

## 4.5 Auto Mute

1. Make sure that the microphone is not set to mute (MUTE switch is set to OFF).
2. Turn the selection switch to 7 or 8 and confirm your selection by briefly pressing the POWER button.
3. The LED indicates the Auto Mute status with the corresponding number of medium-tempo blinks::
   - ▲ Auto Mute turned off: The LED blinks once with middle tempo.
   - ▲ Auto Mute turned on: The LED blinks twice with middle tempo.

# 5. ULM2000 LEVEL SETTING

☞ **To optimally set the level on your ULM2000, the High Gain or Low Gain setting has to be set to the level of the signal being transmitted (ch. 3.5).**

Adjust the gain control in the microphone channel of your mixing console so that the peak LED lights up only occasionally or never at all. The EQ controls in the microphone channel should be set to mid-travel position to start with. To get the sound you want, try changing the mic position relative to the sound source or even move the microphone around in the recording room of your studio. Adjusting the angle at which walls face the sound source can also be helpful. Only when the desired basic sound has been achieved should you start to use equalizers and signal processors, if any at all (remember: less is often more!)

# 6. APPLICATION EXAMPLE

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Fig. 6.1 shows how easy it is to use the ULM2000. Simply connect the receiver ULR2000 to your mixing console.

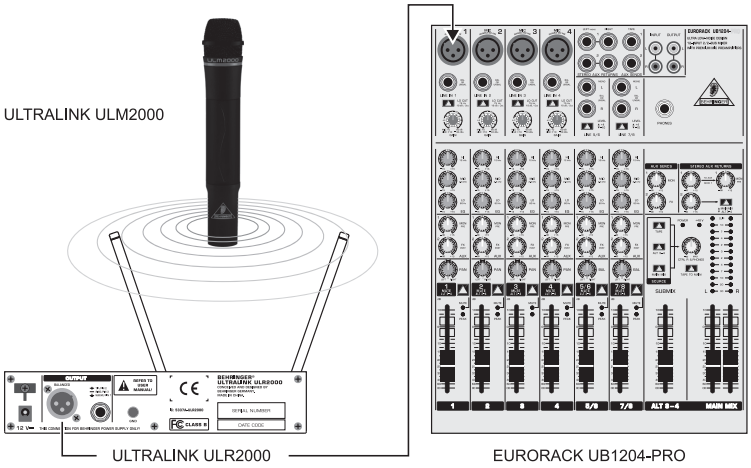


*Fig.6.1: Wiring the ULR2000 receiver and the ULM2000 microphone*

# 7. INSTALLATION

## 7.1 Installation information

▲ Always make sure that the devices are not operated in direct proximity of large metallic surfaces (radiators, metal racks, reinforced concrete walls and similar).

▲ The devices should always be at a height of at least 1 m (3 ft.) off the ground.

▲ To assure interference-free reception, ideally there should be no large objects placed between the transmitter and the receiver. Not only the size but also the type of material play a role in determining how strong signal interference will be!

## 8.3 Audio connections

Unlike other microphones, the ULM2000 hand-held transmitter can not be connected using a cable. It connects to the receiver wirelessly. Cables are only used to pass the signal from the receiver farther down the signal path.

☞ **Please ensure that only qualified personnel install and operate the ULM2000. During installation and operation, the user must be sufficiently grounded. Electrostatic charges might affect the operation of the unit.**

# 8. SPECIFICATIONS

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| | |
|---|---|
| **RF characteristics** | |
| Modulation | wideband FM |
| Frequency range | 794 - 810 MHz |
| Transmission frequencies (for EU/US/CA) | 320 frequencies, between 798.1 - 805.9 MHz, adjustable in 25-kHz increments |
| Channels | 8, freely programmable and switchable |
| Channel bandwidth | < 200 kHz |
| Channel spacing (min.) | 400 kHz |
| Nominal/peak deviation | ± 32 kHz / ± 48 kHz |
| Frequency stability | < ± 15 ppm |
| Antenna | integrated |
| Range | 100 m (nominal), coupled with the ULR2000 receiver under optimal environmental conditions |
| **AF characteristics (coupled to ULR2000)** | |
| Noise reduction | high-performance IRC compander system, Pre-/Deemphase |
| RF system AF frequency response | 30 - 19000 Hz (-3dB) |
| THD (at nom. deviation and $1kHz_{NF}$) | < 0.4 % |
| SNR (at peak deviation) | > 105 dB (A) |
| **Microphone** | |
| Type | Panasonic® back electret condenser with FET impendance converter |
| Pickup pattern | Unidirectional (cardioid) |
| Sensitivity | -47 dB (0 dB = 1 V/Pa, 1 kHz) |
| Frequency resonse curve | 100 - 18000 Hz |
| Max. input sound pressure | > 120 dB SPL |
| SNR | > 60 dB |
| Temperature range | -10°C to +50°C (14°F - 122°F) |
| **In compliance with** | **ETS 300 445, ETS 300 422, FCC** |
| **Power supply** | 2 x 9 V alkaline cell (IEC 6LR61-PP3) |
| Power consumption | typ. 75 mA |
| Standby current | typ. 31 mA |
| Operating time | > 12 hours |
| **Dimensions/Weight** | |
| Dimensions (W x H x D) | approx. 1 7/8" x 10" x 1 7/8" (48 mm x 254 mm x 48 mm) |
| Weight | approx. 0.5 lbs (250 g) |

BEHRINGER makes every effort to ensure the highest standards of quality. Necessary modifications are carried out without notice. Thus, the specifications and design of the device may differ from the information given in this manual.

# FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

**BEHRINGER HANDHELD TRANSMITTER MODEL ULM2000**
CONCEIVED AND DESIGNED BY BEHRINGER GERMANY.
MADE IN CHINA
CE 0682 IC: 5337A-ULM2000
FCC ID: SIG-ULM2000

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Operation of this device is subject to the following two conditions:

(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

**Notice:**

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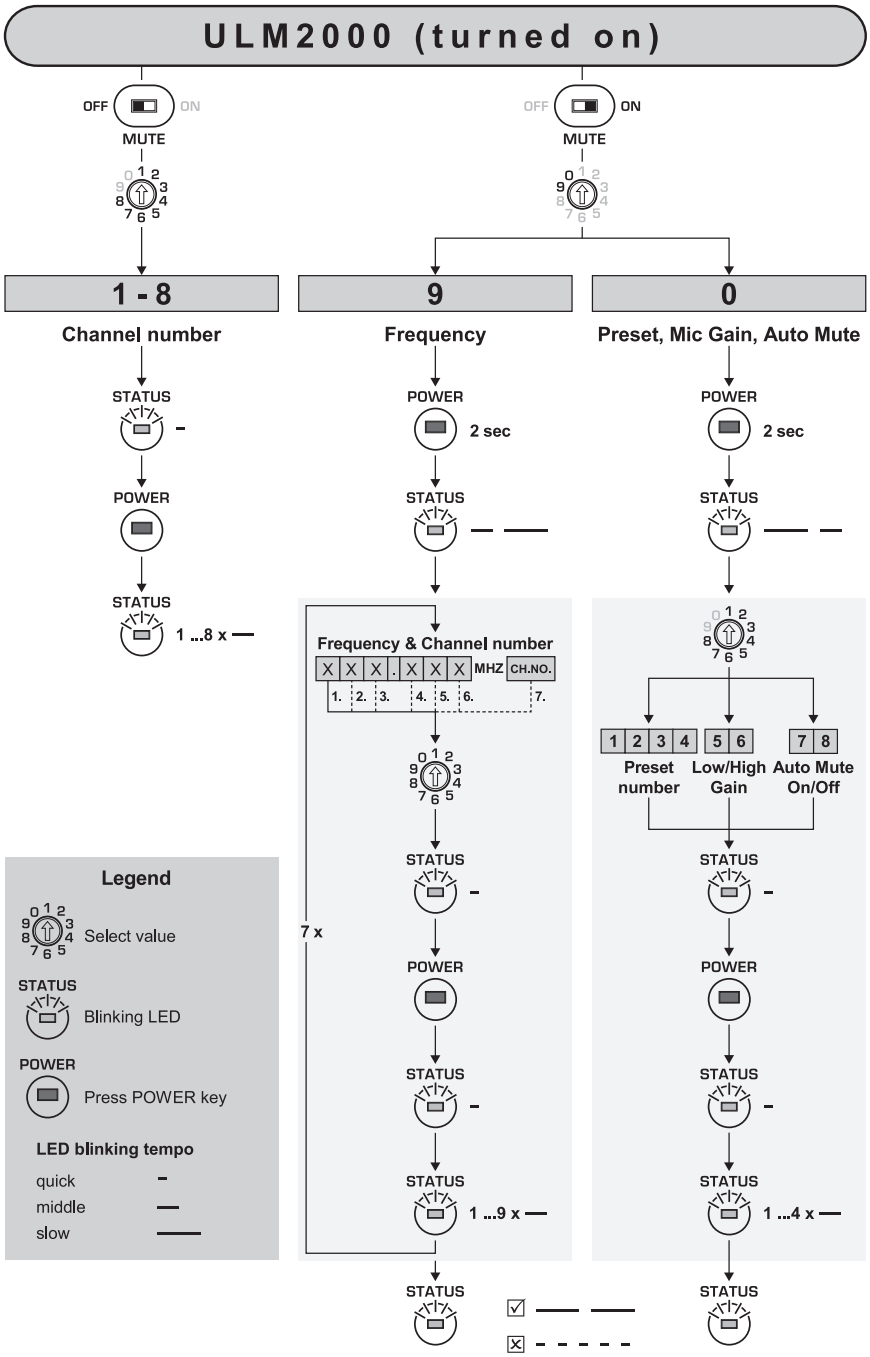
# MICROPHONE QUICK START GUIDE

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