



# UHF WIRELESS MICROPHONE

16 Channel UHF PLL Synthesized Wireless System



**UDMS16HH**  
WIRELESS MICROPHONE SYSTEM  
Handheld Uni-directional Mic  
w/ UHF Receiver

**UDMS16BP**  
WIRELESS MICROPHONE SYSTEM  
Body-Pack & Lavalier Mic  
w/ UHF Receiver

**INSTRUCTION MANUAL**

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## INTRODUCTION

Thank you for purchasing a Bogen UHF PLL Synthesized Microphone System. This system includes high quality professional operating features and is the best performance and price value available in UHF PLL Synthesized wireless systems.

## USING THIS MANUAL

This manual lists the features of the UDMS16BP/HH Wireless System and takes you step-by-step through operation of the system. After reading the receiver instructions, turn to the section of the booklet that covers the type of transmitter used with your new system. Each section will give you detailed operating instructions. Also included in this manual are system specifications and servicing information.

## SYSTEM FEATURES

### UDR16 RECEIVER

- Frequency rotary DIP switch with 16 user-selectable channels in the wide-open UHF band for interference-free use anywhere
- 120dB Dynamic Range
- 150-250 ft. typical operating range – up to 500+ ft. line-of-sight
- DigiTRU Diversity™ for maximum range and dropout protection
- Full LED indicators (*including A/B - diversity and 5 segment audio level displays*)
- Both 1/4" unbalanced and XLR balanced outputs
- Mute (squelch) adjust control
- Tone Squelch™ for locking out potential interference, and special circuitry for noiseless transmitter ON/OFF switching
- Half-rack receiver design with top folding dual antennas
- Unique snap-out side panel locking tabs for single receiver or dual receivers (side-by-side) optional rack mounting
- Externally powered by receptacle-mounted power adapter

### UHT16 HANDHELD MIC TRANSMITTER

- Sleek metal housing with internal antenna for optimum aesthetics and durable long life
- Uni-directional neodymium dynamic cartridge for optimum true sound, maximum feedback rejection and minimal handling noise
- Frequency rotary DIP switch with 16 user-selectable channels
- Audio mute switch allows convenient audio muting with the transmitter "ON"
- Easily accessible level adjustment for optimum sound
- Status LED indicators for unit "ON" and for low battery "ALERT"
- Convenient, economical operation with two AA alkaline or NiMH batteries

### UBP16 BODYPACK TRANSMITTER

- Frequency rotary DIP switch with 16 user-selectable channels
- Audio mute switch for convenient audio muting with the transmitter "ON"
- Easily accessible input level adjustment for optimum sound
- Bi-color LED status indicator for unit "ON" and for low battery "ALERT"
- Locking 3.5mm mini-jack provides secure connection for removable microphone
- Convenient, economical operation with two AAA Alkaline or NiMH batteries

## UDR16 RECEIVER

### 1. Rack Mounting the Receiver

There are 2 options available (as accessories) for rack mounting the UDR16 receiver: single or side-by-side with another UDR16 receiver.

- a. Single mounting: Remove the receiver **SIDE MOUNT CLIPS (1)** from each side of the receiver (as shown) and slide in the optional wider **RACK EARS (2)**.
- b. Side-by-side double mounting: After removing the **SIDE MOUNT CLIPS (1)** from both UDR16 receivers, join the two receivers with the **JOINING CLIP (3)** and attach the narrow **RACK EARS (4)** as shown. (Note: Do not mount the receiver in a rack directly above an amplifier or other source of high heat – this could degrade the performance of the UDR16. Always ensure adequate airflow and heat dissipation in any rack configuration.)

### 2. Powering the Receiver

Plug the **22V AC/DC ADAPTER (5)** provided into the **DC INPUT JACK (9)** on the back of the receiver. Then plug the power supply into an AC outlet. Press the **POWER SWITCH (13)** once to turn on the receiver. The **POWER "ON" LED (12)** will now light and the receiver is operational.

### 3. Antennas

The UDR16 receiver is equipped with attached dual **FOLDING ANTENNAS (16)**. Optimal positions of the antennas are 45° from the receiver (or 90° from each other). For maximum range, it is always best to maintain a line-of-sight (no obstructions) between the receiver antennas and the transmitter at all times whenever possible.

### 4. Mute (Squelch) Adjustment

In normal operation, the **SQUELCH CONTROL (6)** should be set fully clockwise to the factory preset RF level (Max. Sens.). However, in areas of high RF activity, the squelch (or mute) may need to be adjusted to compensate for the adverse conditions in a particular location. If, with the transmitter off, the receiver's A or B **DIVERSITY LED INDICATORS (14)** flicker or stay on, the squelch control should be turned counterclockwise until the A or B LEDs go out. When the squelch is properly adjusted, the A or B LEDs will only light when the system transmitter is turned ON. Turning the squelch control too far counterclockwise will reduce the range, but yield a quieter squelch (mute) function. During operation, especially at ranges greater than 75 feet, one or the other of the A or B LEDs may go out briefly. This is normal. The unit's DigiTRU Diversity™ reception ensures that the received audio will not be interrupted. When both LEDs are not lit, the transmitter is out of range for that given location, and the user should move closer to the receiver to re-establish the radio link. (Note: It would be preferable to select a different channel with less RF activity before resorting to the MUTE (squelch) adjustment.)

## 5. Channel Selection

Turn the frequency rotary **DIP SWITCH (11)** to one of the sixteen channels. The slot on the switch shaft should match a number or letter on the dial, which indicates the selected channel.

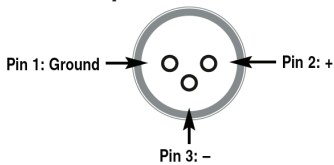
## 6. Audio Level and Peak LED Indicator

The UDR16 receiver is equipped with a five segment **LED AUDIO LEVEL DISPLAY (15)**. Occasional flickering of the top Peak LED indicator on loud inputs to the transmitter is normal. If this LED lights continuously, turn down the **INPUT LEVEL CONTROL** on the transmitter, or noticeable distortion may result.

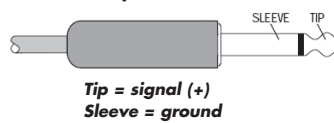
## 7. Connecting the Audio Output

The UDR16 receiver provides both a fixed mic level **BALANCED MIC AUDIO OUTPUT XLR (7)** and an adjustable line level **AUDIO OUTPUT 1/4" jack (10)**.

### Audio Output XLR

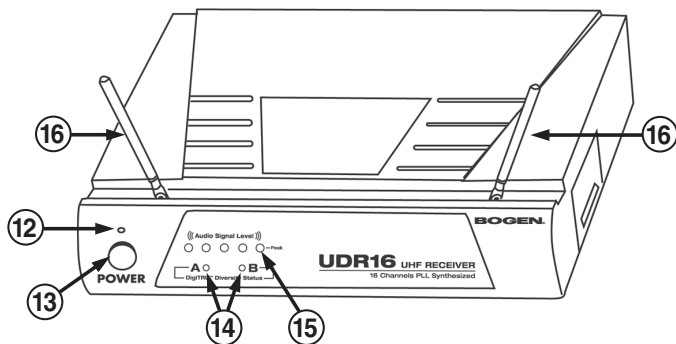
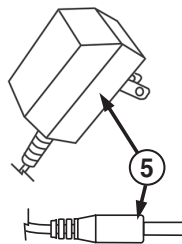
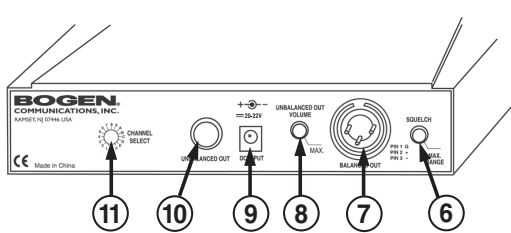
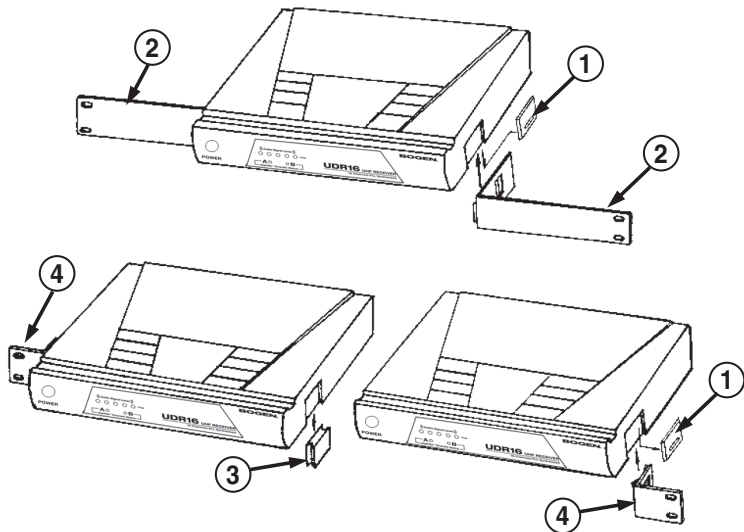


### Audio Output 1/4" Jack



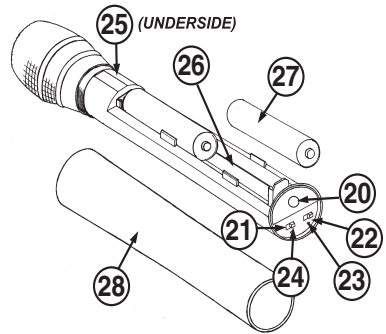
*(Note: As when making any connection, make sure the amplifier or mixing board volume is at the minimum level before plugging in the receiver to avoid possible sound system damage.)*

# UDR16 UHF Receiver



## UHT16 HANDHELD MICROPHONE TRANSMITTER

1. Install batteries by unscrewing the **BATTERY COMPARTMENT COVER (28)** counterclockwise and remove, exposing the **BATTERY HOLDER (26)**. Insert two fresh **AA ALKALINE BATTERIES (27)**, observing the correct polarity, and screw the cover back on to the microphone. Make sure the cover is screwed clockwise completely. Fresh alkaline batteries can last up to 10 hours in use, but in order to ensure optimum performance, it is recommended that you replace the batteries after every 7-8 hours of use.
2. Select Channel by turning the frequency rotary **DIP SWITCH (20)** to one of the sixteen channels. The slot on the switch shaft should match a number or letter of the dial, which indicates the selected channel. This channel needs to be set to the same channel as the UDR16 Receiver. (*IMPORTANT NOTE: The transmitter must be OFF when selecting a new channel. When selected, the transmitter will then be at the new selected channel when turned ON. If you attempt to change the channel when the transmitter is ON, it will not change until the unit is turned OFF and ON again. This step must be repeated each time you select a new channel.*)
3. Turn on the UHT16 by sliding the **AUDIO MUTE SWITCH (21)** to the OFF position first. Then slide the **POWER SWITCH (22)** to the ON position. The **TX LED INDICATOR (green) (23)** will stay on to indicate that the transmitter is on. The **BATTERY INDICATOR LED (red) (24)** will stay OFF, indicating usable battery strength. In the case of a dead or low battery, the **BATTERY INDICATOR LED (24)** will either not go on at all or will stay on continuously, indicating that the batteries should be replaced with fresh ones. To preserve battery life, turn the transmitter off when not in use.
4. The microphone is now ready to use. The A or B **DIVERSITY LED INDICATOR (14)** on the UDR16 receiver should now be lit, indicating a received signal from the transmitter. When ready to speak, slide the **AUDIO SWITCH (21)** to the ON position. (*Note: Observe care in selecting P.A. volume, transmitter location and speaker placement so that acoustic feedback (howling or screeching) will be avoided.*) (*Note: The windscreen of the UHT16 functions as a built-in antenna. For proper operation, never remove the windscreen during use, or exchange with another type. For optimum range, maintain line-of-sight between the transmitter and the receiver whenever possible. Holding the microphone tightly, bridging across the windscreen and mic tube, will also lessen range. Hold mic by mic tube housing only for optimum operation.*)
5. For optimum performance, an **INPUT LEVEL CONTROL (25)** is provided. Adjust the gain by turning the control with a small screwdriver. It is recommended that the level be set at about 1/2 maximum. Experiment and set for maximum possible gain without audible distortion on the high level peaks. (*Note: Turning down the gain too much can compromise the signal-to-noise ratio, and is not recommended.*)



## UBP16 BODYPACK MICROPHONE TRANSMITTER

1. Open the **BATTERY DOOR (30)** by pulling on side tabs and swinging the lid open. Insert two fresh AAA ALKALINE BATTERIES into the **BATTERY COMPARTMENT (31)**, observing the correct polarity. Fresh alkaline batteries can last up to 5 hours in use, but in order to ensure optimum performance, it is recommended that the batteries be replaced after 3-4 hours of use.
2. The UBP16 is provided with a 3.5 mm **LOCKING JACK (33)** for connecting the audio input. Connect the **LAVALIERE MIC CORD (40)** here. To secure the connection, turn the slip ring on the plug clockwise to thread it on the jack. To unplug, reverse the process. Slip the transmitter into a pocket or use the **CLIP (32)** on the rear of the unit to attach to your clothes.
3. Select Channel by turning the frequency rotary **DIP SWITCH (39)** to one of the sixteen channels. The slot on the switch shaft should match a number or letter of the dial, which indicates the selected channel. This channel needs to be set to the same channel as the UDR16 Receiver. (*IMPORTANT NOTE: The transmitter must be OFF when selecting a new channel. When selected, the transmitter will then be at the new selected channel when turned ON. If you attempt to change the channel when the transmitter is ON, it will not change until the unit is turned OFF and ON again. This step must be repeated each time you select a new channel.*)
4. Turn on the UBP16 by sliding the **AUDIO MUTE SWITCH (34)** to the OFF position first, then slide the **POWER SWITCH (36)** to the ON position. The bi-color **LED INDICATOR (35)** will stay ON (green) indicating usable battery strength and the transmitter is ON. In the case of dead or low batteries, the LED will either not go on at all or will stay ON (red) continuously, indicating that the batteries should be replaced with fresh ones. To preserve battery life, turn the transmitter OFF when not in use. The A or B **DIVERSITY LED INDICATORS (14)** on the UDR16 receiver should now be lit, indicating that signal is being received from the transmitter.

*(Note: The UBP16 is supplied with a removable antenna (37). It should always be operated with the supplied antenna. For optimum operating range, always maintain line-of-sight between the transmitter and the receiver whenever possible.)*

### 5. Microphone Use

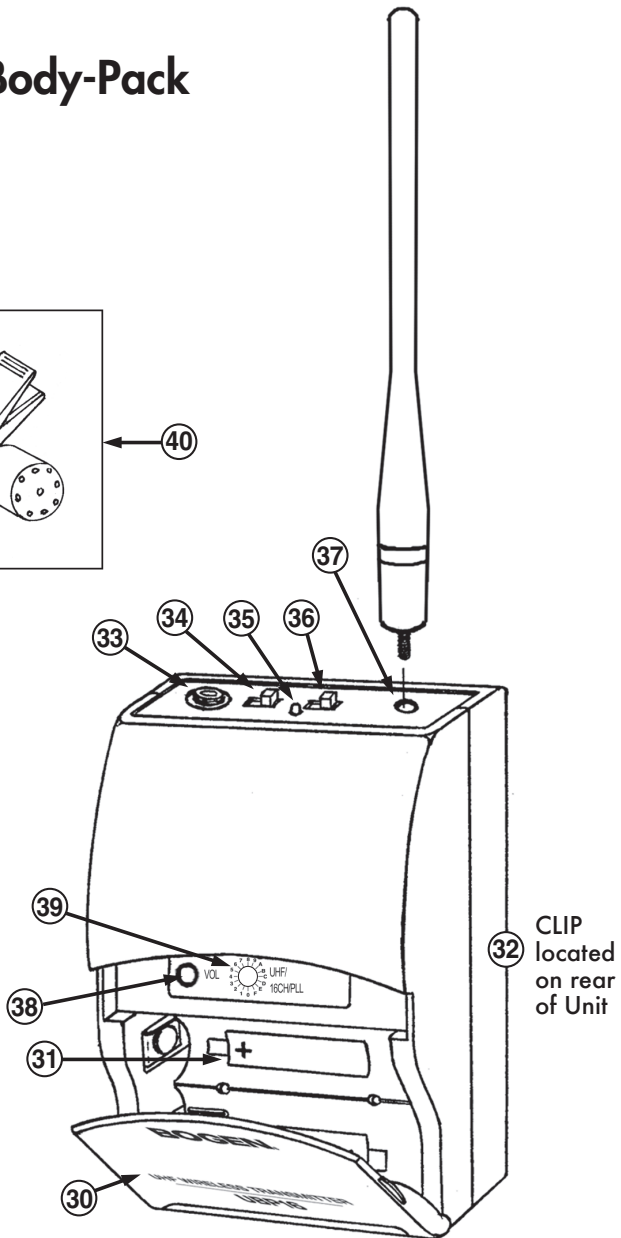
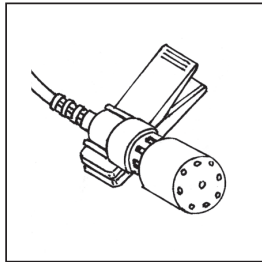
Secure the connection from the **LAVALIERE MIC CORD (40)**. To use the lavalier mic, attach it at chest level. Do not place it too close to the mouth. A distance of about six inches usually works best. When ready to speak, slide the **AUDIO MUTE SWITCH (34)** to the ON position.



*(Note: Observe care in selecting P.A. volume, transmitter location, and speaker placement so that acoustic feedback (howling and screeching) will be avoided. Please also note the pickup pattern characteristics of the microphone selected. Omni-directional mics pickup sound equally from all directions, and are prone to feedback if not used carefully. Uni-directional mics are more resistant to feedback, but best pick up sound sources that are directly in front of the mic. Also, mics that are farther from the sound source, such as lavalieres, require more acoustic gain and thus are more prone to feedback than close-source mics such as handheld models that are used close to the mouth.)*

For optimum performance, an **INPUT LEVEL CONTROL (38)** is provided. Adjust the gain by turning the control with a small screwdriver. For lavaliere mic use, it is recommended that the level be set at about 2/3 maximum. Experiment and set for maximum possible gain without audible distortion on the high level peaks. *(Note: Turning down the gain too much can compromise the signal-to-noise ratio and is not recommended.)*

# UBP16 Body-Pack



CLIP  
located  
on rear  
of Unit

## SPECIFICATIONS

### OVERALL SYSTEM PERFORMANCE

RF Carrier Frequency.....	UHF, 16-frequency group in separate bands within 470-510 MHz
Frequency Stability.....	+/- 0.005%, PLL synthesized
Modulation.....	FM (F3E), +/- 50 kHz normal
Frequency Response.....	30 Hz - 21 kHz, -3dB
Dynamic Range.....	120 dB
Total Harmonic Distortion.....	< 0.5%
Operating Range.....	Up to 250 ft. typical (depending on site conditions); Up to 500+ feet optimum line-of-sight

### UDR16 RECEIVER

Reception Mode.....	DigiTRU Diversity™ (Dual Antenna)
Unwanted Signal Rejection.....	>90 dB image and spurious
Squelch.....	External Control, Tone Key (45 kHz)
Controls.....	Power ON/OFF, Volume Control, Squelch Adjust, 16-Channel select
Connectors.....	DC in, 1/4" (6.3 mm) unbalanced phone jack output (360 mV/no load), XLR balanced output (24 mV/600 Ohm)
LED Indicators.....	Power ON, Diversity A/B, Audio Signal LED bars + peak (5 segments)
Power Requirements.....	DC 22V @ 400mA, AC/DC adapter included
Dimensions (Max.).....	1.75" x 5.5" x 8.1" (4.4 x 14 x 20.7 cm)
Weight.....	1.05 lb. (.48 kg)
Antennas.....	3.5" (9 cm), dual-folding antennas

### TRANSMITTERS

RF Power Out.....	+14dBm (25mW) nominal
Harmonic & Spurious Emissions...	< -45 dBc
Audio Inputs.....	<b>UBP16:</b> 3.5mm locking mini-jack input for Lavalier Mic <b>UHT16:</b> Integral neodymium dynamic cartridge
Controls.....	<b>UBP16:</b> Power and Audio Mute ON/OFF, 16Ch select, Lavalier Mic select, Input Level Adjust <b>UHT16:</b> Power and Audio Mute ON/OFF, 16-Ch select, Level Adjust
Adjust LED Indicators.....	<b>UBP16:</b> Bi-color, Unit "ON" (green), Low Battery Alert (red) <b>UHT16:</b> Two LEDs, Unit "ON" (green), Low Battery Alert (red)
Battery.....	<b>UBP16:</b> Two AAA Alkaline/NiMH <b>UHT16:</b> Two AA Alkaline/NiMH
Battery Life.....	<b>UBP16:</b> 5 Hours <b>UHT16:</b> 10 Hours
Dimensions.....	<b>UBP16:</b> 3.62" x 2.44" x 1.22" (9.2 cm x 6.2 cm x 3.1 cm) <b>UHT16:</b> 2" x 9.5" (5.1 cm x 24 cm)
Weight.....	<b>UBP16:</b> 3.1 oz. (88 g) without battery <b>UHT16:</b> 10.2 oz. (290 g) without battery

*Specifications subject to change without notice.*

## WARRANTY

Bogen products are warranted to be free from defects in material or workmanship for one (1) year from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by Bogen, at our option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. The product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

THE FOREGOING LIMITED WARRANTY IS BOGEN'S SOLE AND EXCLUSIVE WARRANTY AND THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW. Bogen's liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. In no event shall Bogen be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if Bogen has been advised of the possibility of such damages or losses. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

Products that are out of warranty will also be repaired by the Bogen Factory Service Department – same address as above or call 201-934-8500. The parts and labor involved in these repairs are warranted for 90 days when repaired by the Bogen Factory Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization number.

08/10/2004

The Wireless Systems are type accepted under FCC rules parts 90, 74 and 15. The device complies with RSS-210 of Industry & Science Canada. 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.

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54-2180-01A 1008