



ULX

Shure ULX Wireless

The Shure wireless system, ULX, user guide.
Version: 3.1 (2020-L)

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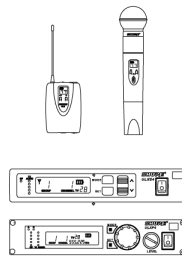
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ULX

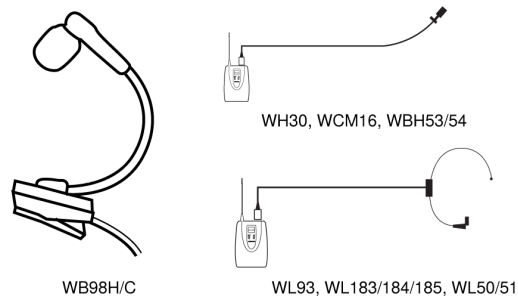
Shure ULX Wireless

ULX System Components

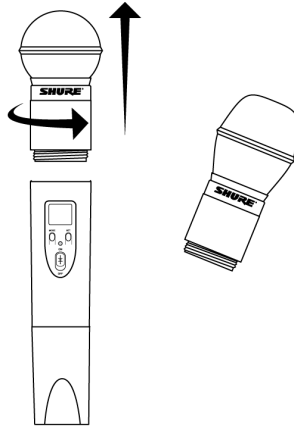
All systems include either a ULXS4 Standard Diversity Receiver or ULXP4 Professional Diversity Receiver.



Bodypack systems include a choice of lavalier, headworn, or instrument microphones.

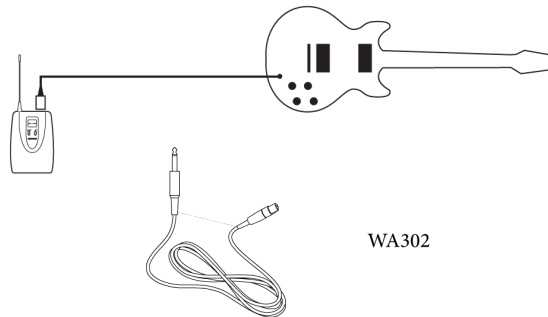


Handheld systems include a choice of interchangeable microphone heads.



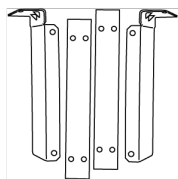
SM58, SM86, SM87A,
Beta 58, Beta 87C

Guitar systems include a 1/4" to mini 4-pin cable.



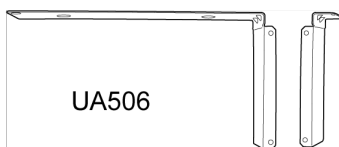
WA302

ULXP4 receivers include rack-mounting hardware.



UA507

FULL RACK MOUNT HARDWARE



UA506

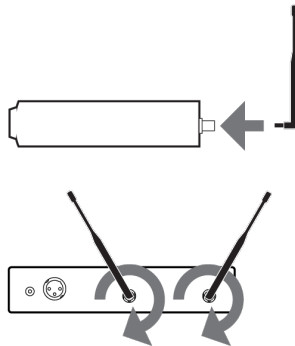
1/2 RACK MOUNT HARDWARE

Antennas

Active Antennas

The antenna connectors on the ULX receiver provide 12 V DC for active circuit antennas.

Caution: Use only Shure antenna accessories to ensure the best operation. Do not use splitters, combiners, or antennas that provide a DC ground, as this can cause the receiver to function improperly.

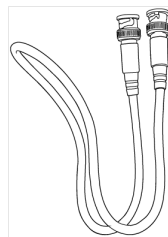


Antenna Combiners and Accessories

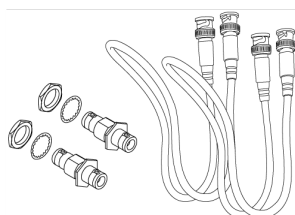
The supplied antennas can be connected directly to the BNC-type ANTENNA connectors. However, optional antenna mounting accessories from Shure can improve reception and reduce rack clutter. Use the following guidelines:

- Antennas and receivers must be from the same band.
- Mount antennas more than 40 cm (16 inches) apart.
- Use Shure UA825 or UA850 low-loss coaxial antenna cable (or any 50 ohm, low-loss cable such as RG-8U).

Visit www.shure.com for more information on wireless antenna accessories.



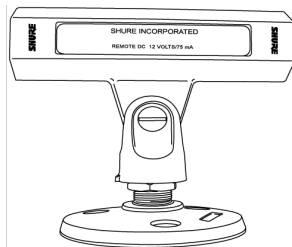
Coaxial Cables



Front Mount Antenna Kit



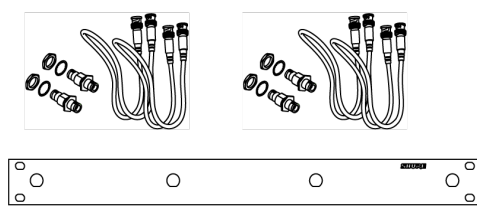
1/2-Wave Antenna included with ULXP4 systems



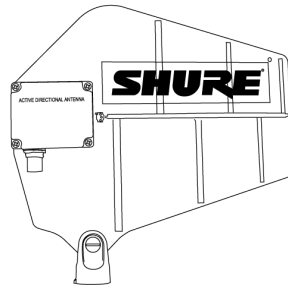
for long antenna cable runs

Inline Antenna Amplifier

for long antenna cable runs



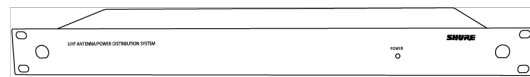
Antenna Rack Mount Kit



for more focused reception

Active Directional Antenna

for more focused reception

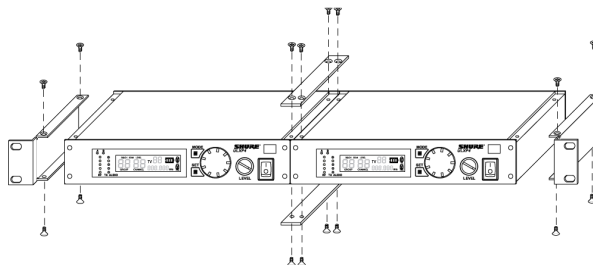
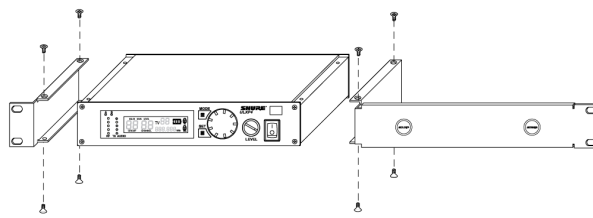


combines antennas and power supplies for multiple receivers

Distribution Amplifier

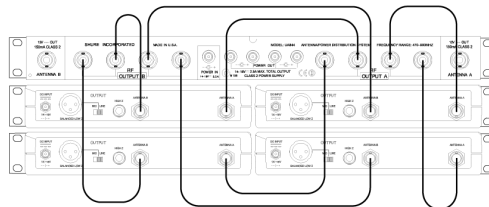
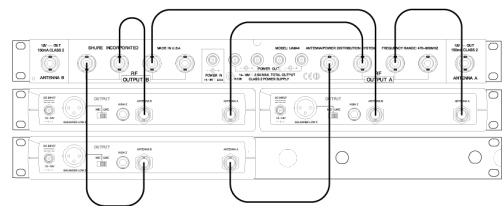
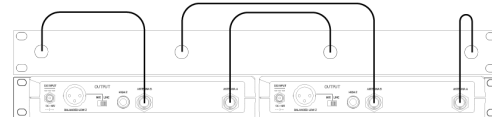
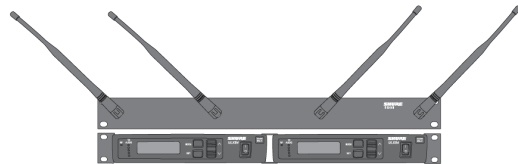
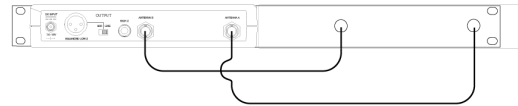
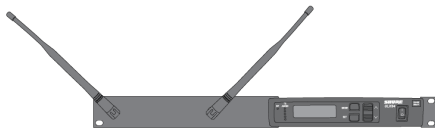
combines antennas and power supplies for multiple receivers

Rack Installation

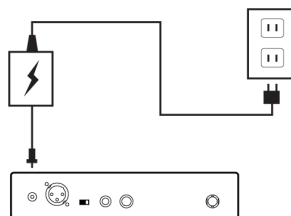


Rackmount Options

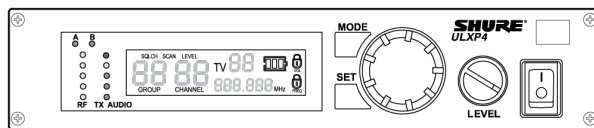
The following shows rackmounting options for one to four receivers and lists the required accessories.



Power



Power switch



Power Connector

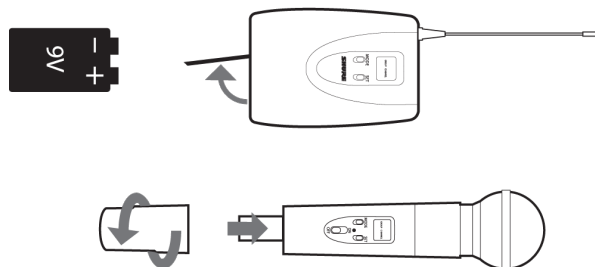
DC INPUT



14 –18V

Connect using the supplied AC adapter or certified 14–18 Vdc (550 mA) replacement supply.

Batteries Installation



Battery Life

Use only 9V alkaline or lithium batteries. Typical life for common types of 9V batteries are listed below. For detailed information on battery performance, contact Shure Applications Engineering.

Recommended:

- Lithium (16 hours)
- Alkaline (8 hours)

Not recommended:

- Carbon-Zinc (½ hour)

- Rechargeable Ni-Cd (2 hours)
- Rechargeable Ni-MH (2½ hours)

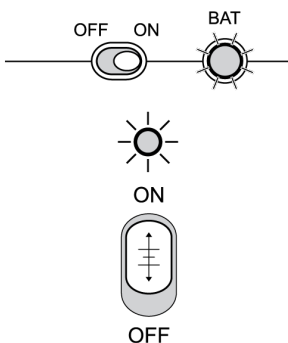
Note:

- Battery life varies with type and manufacturer.
- Batteries stored for more than a year or stored in excessively hot environments may experience a higher failure rate.
- Do not use rechargeable batteries with a fully-charged rating of greater than 9 V (for example, 9.6 V).
- Transmitters require a minimum of 6 V to operate.

Power/Mute Switch

- Turn transmitter off to mute the microphone or conserve battery power.
- Use the lock feature to avoid accidental muting of the microphone during a performance.

Power Indicator (BAT)

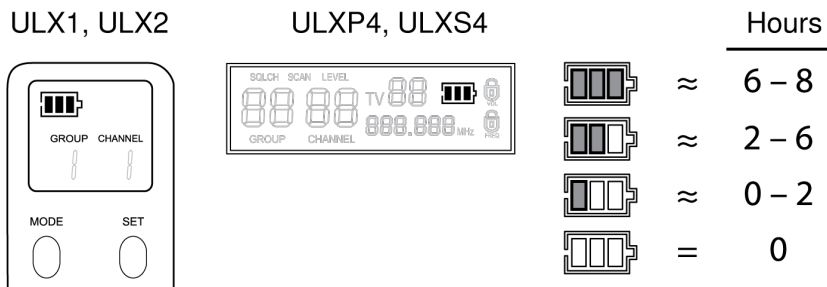


Green: ready

Red: battery power low

Note: Remaining battery life varies with battery type.

Battery Indicator



Both the transmitter and receiver LCD shows approximate operation time remaining for the transmitter.

Single System

If you encounter wireless interference, perform a channel scan on the receiver and use the selected channel. You usually do not need to change the group.

Multiple Systems

To maximize performance, set all wireless systems to different channels from the same group. These channels are selected to work well together.

Follow these steps when using group and channel scan with multiple systems.

1. Power off all system transmitters. Turn on all other wireless or digital devices as they would be during the performance or presentation.
2. **On the first receiver:** Perform a group scan. Note the selected group, then use channel scan to find the first open channel in that group.
3. Power on the first transmitter and set it to the selected group and channel.
4. **IMPORTANT:** Leave the first transmitter powered on while setting up the next system.
5. **For each additional system:** Set to the same group as the first. Perform a channel scan and set the receiver and transmitter to the selected channel.
6. Leave each transmitter on while setting up additional systems.

Note:

- Keep each transmitter at least two meters (6 feet) apart.
- If using systems from different bands, set up all systems from the same band together.

Tip: To reduce setup time, you can manually set up the group and channels before arriving at the venue. Visit www.shure.com for a list of groups and channels that are anticipated to be free of interference in a particular city or region.

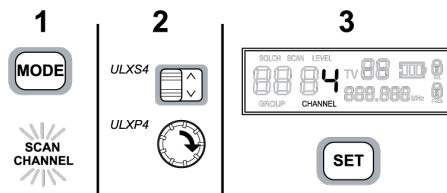
Automatic Frequency Scan

Channel Scan

This feature scans for an open channel in the selected group.

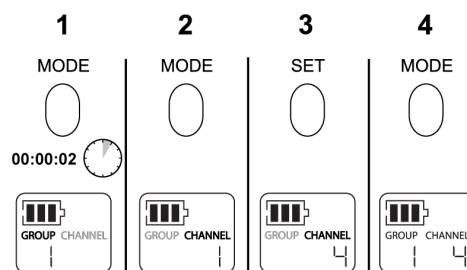
①

To Scan for Next Clear Channel



②

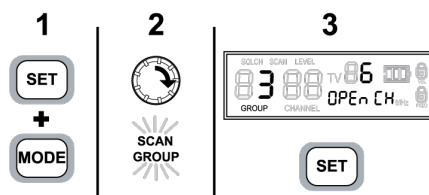
To Change Channel



Group Scan (ULXP4 only)

The "group scan" feature on the ULXP helps maximize the number of systems you can install at a single venue. It scans for wireless interference and finds the group with the most open channels.

To Scan Groups

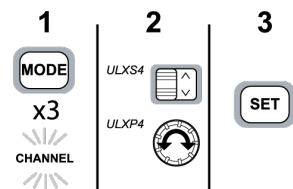


Changing Group and Channel

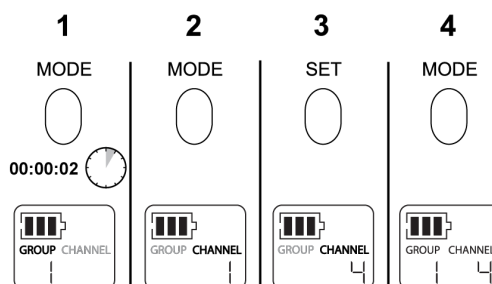
If you encounter wireless interference, set the receiver and transmitter to a different channel or group.

Change Channel

To Change Channel

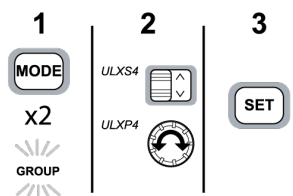


To Change Channel

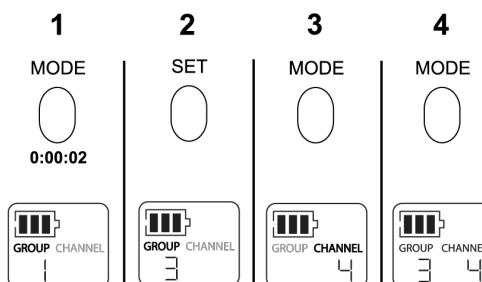


Change Group

To Change Group



To Change Channel



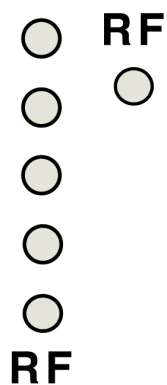
* **Note:** You can reverse the scroll direction by holding SET and pressing MODE.

Wireless Indicators

RF Indicator

Indicates wireless activity over the selected channel.

Note: When the antenna and battery indicators are illuminated, the RF indicator shows signal strength from the transmitter. Otherwise, it is showing interference from another source. Select a different channel.

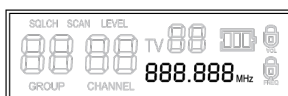


Antenna Indicator

This indicator shows which antenna is receiving the strongest signal from the transmitter.



Frequency Display



TV

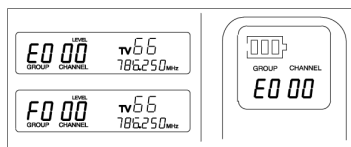
For models sold in the United States only. Displays the TV channel occupied by the selected frequency.



Frequency Master List Mode

Master List mode offers more precise frequency selection for larger, multiple-system installations.

Enter Master List mode on the receiver or transmitter by holding down the SET button for 10 seconds. Set GROUP and CHANNEL as you would in normal mode.



Note: The unit must remain in Master List mode to operate at the selected frequency.

Exit Master List mode by holding the SET button for 10 seconds.

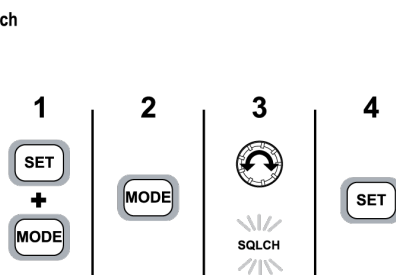


Squelch (ULXP4 Only)

The factory setting offers the optimum performance for most installations.

Increasing squelch filters out all but the highest quality signal, but this decreases operating range. Decreasing squelch extends the operating range, but can increase signal noise.

To Adjust Squelch



Audio Output

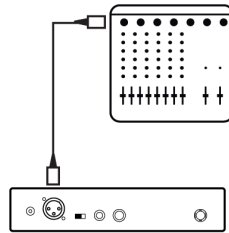
Audio Output Connectors

Balanced XLR: Connect to a mixer or other professional audio input. Use the MIC/LINE switch to adjust for microphone or line-level inputs.

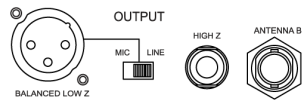
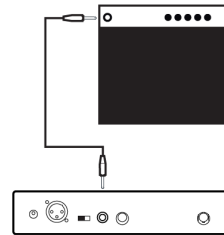
Unbalanced 6.35 mm (1/4"): Connect to high impedance inputs, such as a guitar amplifier.

Note: The LINE/MIC switch does not affect the 6.35 mm (1/4") jack.

 LOW Z



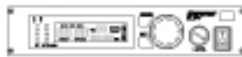
 HIGH Z



Receiver Output Level

Adjusts the level of the receiver's audio outputs.

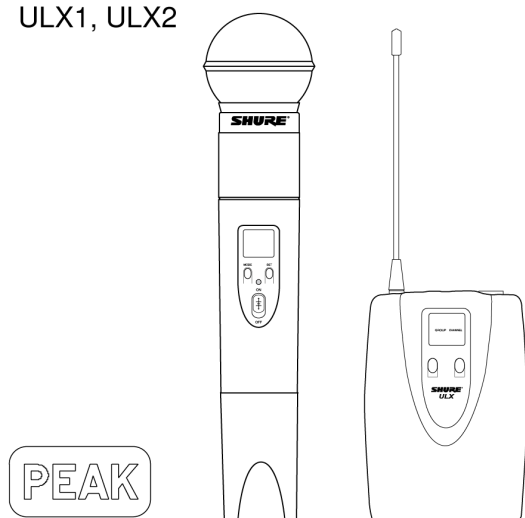
ULXP4



PEAK Icon

This icon appears when the input signal overloads the transmitter. The icon is displayed for 2 seconds after input overload is detected.

ULX1, ULX2



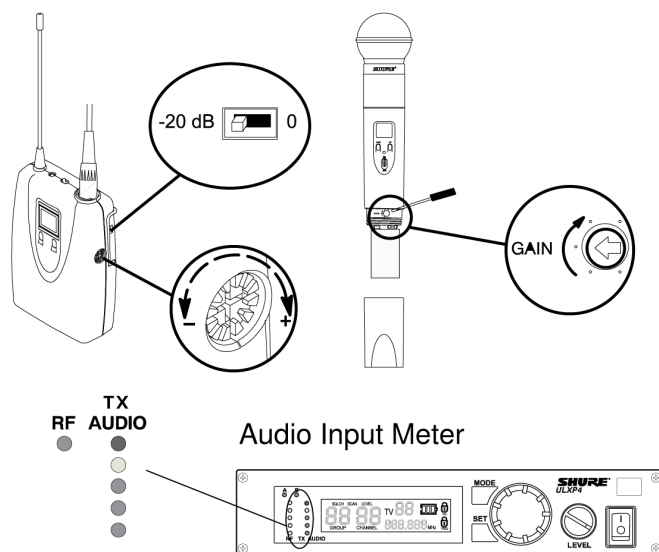
Transmitter Gain

For best audio quality, adjust transmitter gain so only the green and yellow TX AUDIO LEDs flicker. (Occasional illumination of the red LED is okay.)

Green = nominal

Yellow = peak

Red = overload



ULX1

1. Set the attenuator (pad) switch to 0 dB for microphones and -20 dB for guitars. (Some low output instruments may not need attenuation.)
2. Adjust gain control as necessary.

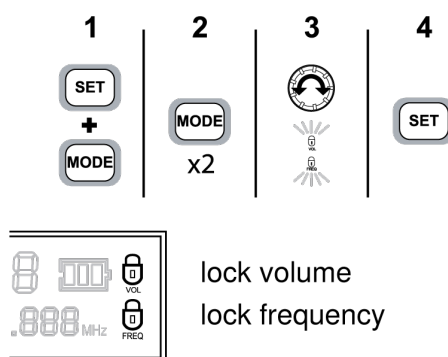
ULX2

- Fully clockwise for quiet to normal vocal performance.
- Halfway counterclockwise for loud vocal performance.
- Fully counterclockwise for horn or percussive instruments.

Locking the Receiver (ULXP4 Only)

This feature prevents accidental setting changes.

To Lock Front Panel Controls



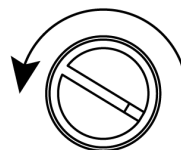
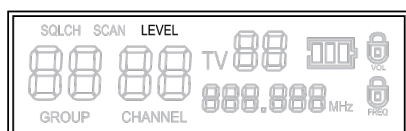
Unlocking

Hold the SET button while turning the control wheel left, right, left.

To Unlock Front Panel Controls



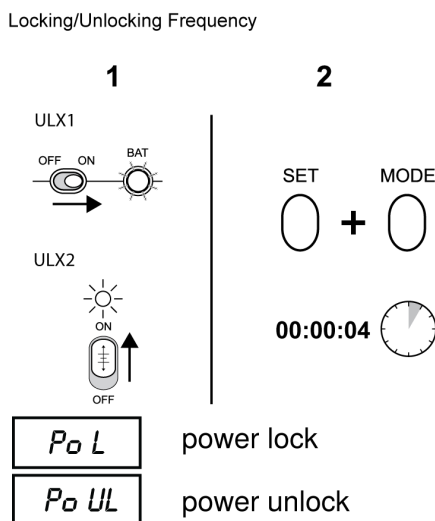
Note: If LEVEL flashes on the LCD, decrease the LEVEL control to continue. This feature safeguards against sudden level increases when the lock is removed.



Locking the Transmitter

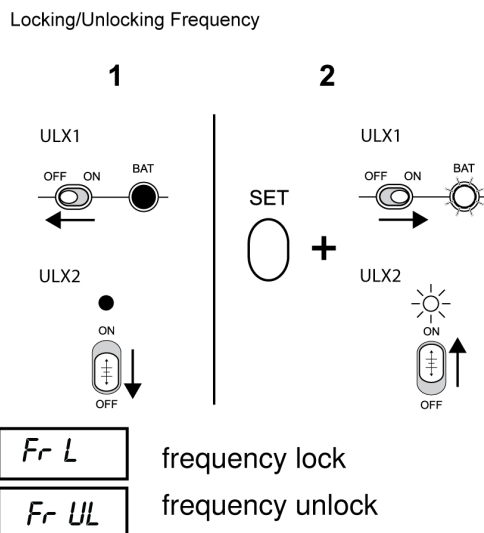
Lock/Unlock Power (On)

Hold SET and MODE for four seconds or until the lock icon appears.



Lock/Unlock Frequency

Hold the SET button while powering on the transmitter.



Troubleshooting

No power: Check battery and power supply connections and voltage. Check the power switch on the transmitter.

The LCD displays "E0 00" or similar code: Exit master list mode by holding the SET button for ten seconds.

Can't turn off or change settings on the transmitter or receiver: The interface is locked. See the section on locking the interface.

No audio: If the antenna and battery indicators do not appear on the receiver, then it is not receiving a signal from the transmitter. Make sure the transmitter and receiver are tuned to the same group and channel.

Faint or distorted audio: Adjust transmitter gain, bodypack attenuator switch, and receiver output level.

Noise: Noise usually results from wireless interference or a weak signal from the transmitter. See Tips for Improving System Performance.

Tips for Improving System Performance

If you encounter wireless interference or dropouts, try the following:

- Replace the transmitter battery with a fresh alkaline battery (avoid rechargeable batteries).
- Choose a different frequency channel.
- Reposition the antennas so there is nothing obstructing a line of sight to the transmitter (including the audience).
- Avoid placing transmitter and receiver where metal or other dense materials may be present.
- Move the receiver to the top of the equipment rack (or remote mount antennas outside the rack).
- Remove nearby sources of wireless interference, such as cell phones, two-way radios, computers, media players, and digital signal processors.
- Keep transmitters more than two meters (6 feet) apart.
- Keep the transmitter and receiver more than 5 meters (15 ft) apart.
- Point the receiver antenna tips away from each other at a 45° angle, and keep them away from large metal objects.
- During sound check, mark "trouble spots" and ask presenters or performers to avoid those areas.

Parts and Accessories

Included Accessories

Microphone Stand Adapter (ULX2)	WA371
Grip/Switch Cover (ULX2)	WA555
Zipper Bag (ULX1)	95A2313
Zipper Bag (ULX2)	95B2313
Screwdriver (ULX2)	80A498

Optional Accessories

Passive Antenna Splitter/Combiner Kit	UA221
UHF Line Amplifier	UA830WB
UHF Powered Directional Antenna	UA874US
	UA874E
	UA874WB

	UA874X
UHF Antenna Power Distribution Amplifier (U.S.A.)	UA844SWB
UHF Antenna Power Distribution Amplifier (Europe)	UA844SWB-E
UHF Antenna Power Distribution Amplifier (UK)	UA844SWB-UK
33 m (100 ft.) BNC–BNC cable	UA8100
1.8 m (6 ft.) BNC–BNC cable	UA806
Antenna Rack Panel	UA440
Front Mount Antenna Kit (Includes 2 cables and 2 bulkhead adapters)	UA600
Remote Antenna Bracket with BNC Bulkhead Adapter	UA505
Rack Mount Kit for single Receiver	UA506
Rack Mount Kit for Two Receivers	UA507
Carrying Case	WA610
Microphone Adapter Cable (XLR)	WA310

Replacement Parts

AC Adapter (120 VAC, 60 Hz)	PS41
AC Adapter (220 VAC, 50 Hz)	PS41AR
AC Adapter (230 VAC, 50/60 Hz)	PS41AZ
AC Adapter (230 VAC, 50/60 Hz, Europlug)	PS41E
AC Adapter (230 VAC, 50/60 Hz)	PS41UK
AC Adapter (100 VAC, 50/60 Hz)	PS41J
SM58[®] Cartridge with Grille (ULX2/58)	RPW112
BETA 58A[®] Cartridge with Grille (ULX2/ BETA 58)	RPW118
SM86 Cartridge with Grille (ULX2/SM86)	RPW114
SM87A Cartridge with Grille (ULX2/87)	RPW116
BETA 87A Cartridge with Grille (ULX2/BETA 87A)	RPW120
BETA 87C Cartridge with Grille (ULX2/BETA 87C)	RPW122
Matte Silver Grille for SM58	RK143G
Matte Silver Grille for SM86	RPM226
Matte Silver Grille for BETA 58A	RK265G
Matte Silver Grille for BETA 87A	RK312

Black Grille for SM87A	RK214G
Black Grille for BETA 58A	RPM323G
Black Grille for BETA 87A and BETA 87C	RPM324G
Belt Clip	44A8013A
1/4-Wave Antenna (470 - 752 MHz)	UA400B
1/4-Wave Antenna (774 - 952 MHz)	UA400
1/2-Wave Antenna (774 - 862 MHz)	UA820A
1/2-Wave Antenna (638 - 698 MHz)	UA820L3
1/2-Wave Antenna (554 - 590 MHz)	UA820D
1/2-Wave Antenna (740 - 814 MHz)	UA820Q
1/2-Wave Antenna (470 - 530 MHz)	UA820G
1/2-Wave Antenna (746 - 784 MHz)	UA820E
1/2-Wave Antenna (572 - 596 MHz)	UA820F
1/2-Wave Antenna (578 - 638 MHz)	UA820J

Certifications

Industry Canada ICES-003 Compliance Label: CAN ICES-3 (B)/NMB-3(B)

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:

Shure Europe GmbH

Headquarters Europe, Middle East & Africa

Department: EMEA Approval

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Certified under FCC Part 74.

Certified by ISED in Canada under RSS-123 and RSS-102.

FCC ID: DD4ULX1, DD4ULX2, DD4ULX1G3, DD4ULX2G3. **IC:** 616A-ULX1, 616A-ULX2.

Approved under the Declaration of Conformity (DoC) provision of FCC Part 15.

Certified by ISED in Canada under RSS-123.

Important Product Information

LICENSING INFORMATION

Licensing: A ministerial license to operate this equipment may be required in certain areas. Consult your national authority for possible requirements. Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate the equipment. Licensing of Shure wireless microphone equipment is the user's responsibility, and licensability depends on the user's classification and application, and on the selected frequency. Shure strongly urges the user to contact the appropriate telecommunications authority concerning proper licensing, and before choosing and ordering frequencies.

Information to the user

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: EMC conformance testing is based on the use of supplied and recommended cable types. The use of other cable types may degrade EMC performance.

Australia Warning for Wireless

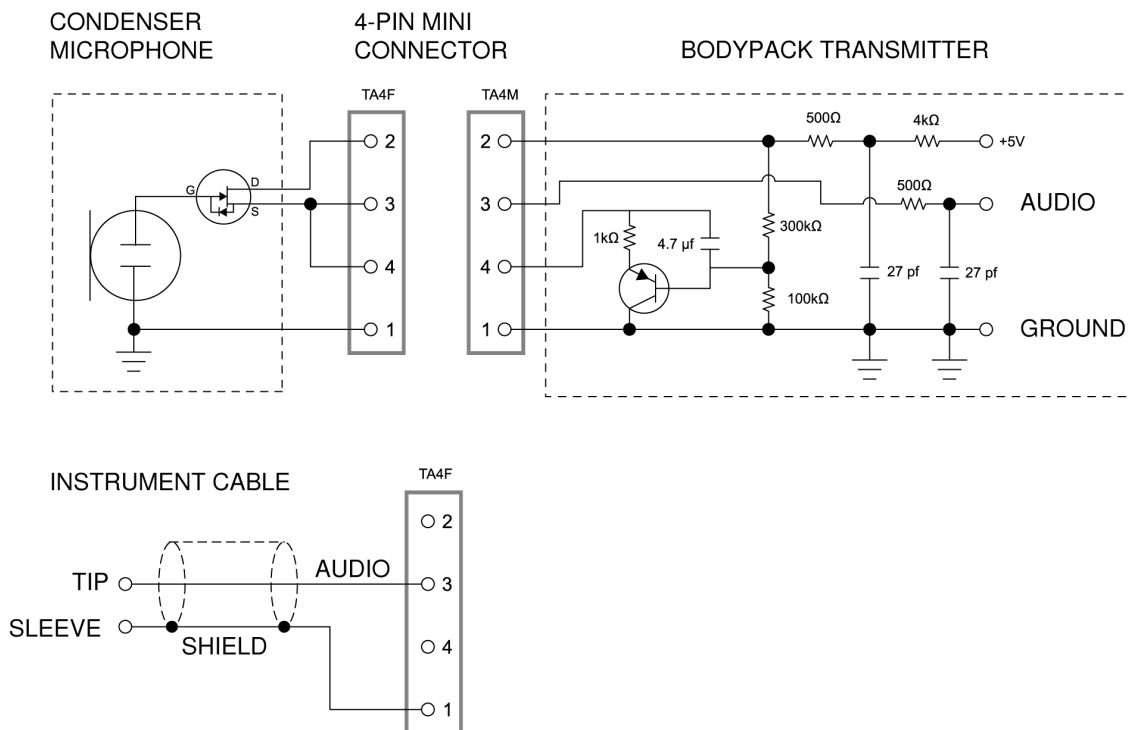
This device operates under an ACMA class licence and must comply with all the conditions of that licence including operating frequencies. Before 31 December 2014, this device will comply if it is operated in the 520-820 MHz frequency band.

WARNING: After 31 December 2014, in order to comply, this device must not be operated in the 694-820 MHz band.

Please follow your regional recycling scheme for batteries, packaging, and electronic waste.



Wiring Diagram



Specifications

RF Carrier Range

470,000–865,000 MHz

Working Range

100 m (300 ft) typical

Audio Frequency Response

25 Hz

– 15 kHz, ± 2 dB

Modulation

± 38 kHz deviation compressor-expander system with pre- and de-emphasis

Dynamic Range

>100 dB, A-weighted

Image Rejection

80 dB, typical

RF Sensitivity

1.26 μ V for 12 dB SINAD, typical

Spurious Rejection

75 dB, typical

Ultimate Quieting

Ref. ± 38 kHz deviation with 1 kHz tone

>105 dB, A-Weighted

Total Harmonic Distortion

Ref. ± 38 kHz deviation with 1 kHz tone

0.3%, typical

Operating Temperature Range

-20°C (-4°F) to 49°C (120°F)

Polarity

Positive pressure on microphone diaphragm (or positive voltage applied to tip of WA302 phone plug) produces positive voltage on pin 2 (with respect to pin 3 of low-impedance output) and the tip of the high impedance 1/4-inch output.

Battery Life

8 to 9 hours (9 V alkaline)

ULX1

Gain Adjustment Range

25 dB

Attenuation Switch

0, -20 dB

Dimensions

96.5 x 67 x 26.7 mm (3.86 x 2.68 x 1.10 in.), H x W x D

Weight

79 g (2.8 oz.) without batteries

Power Requirements

9 V alkaline

Input Impedance

1 M Ω

RF Output Power

30 mW maximum

ULX2

Gain Adjustment Range

20 dB

Dimensions

SM58	229 x 51 mm (9 x 2 in.), L x Dia.
BETA 58	221 x 51 mm (8.7 x 2 in.), L x Dia.
SM86	213 x 49 mm mm (8.4 x 1.9 in.), L x Dia.
SM87/BETA 87	223 x 51 mm (8.8 x 2 in.), L x Dia.

Weight

SM58/BETA 58	289 g (10.2 oz.) without batteries
SM86	251 g (8.8 oz.) without batteries
SM87/BETA 87	258 g (9.1 oz.) without batteries

Power Requirements

9 V alkaline

RF Output Power

30 mW maximum

ULXS4, ULXP4

Dimensions

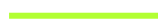
ULXS4	43 x 214 x 163 mm (1.72 x 8.56 x 6.52 in.), H x W x D
ULXP4	43 x 214 x 172 mm (1.72 x 8.56 x 6.88 in.), H x W x D

Weight

ULXS4	1049 g (2 lbs, 5 oz.)
ULXP4	1105 g (2 lbs, 7 oz.)

Power Requirements

14–18 V DC (negative ground), 550 mA



Frequencies for European Countries

G3E 470-506 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, BG, CH, CY, CZ, D, EST	470 - 506 MHz*
F, GB, GR, H, I, IS, L, LT	470 - 506 MHz*
NL, P, PL, S, SK, SLO	470 - 506 MHz*
DK, FIN, M, N	*
HR, E, IRL, LV, RO, TR	*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

J2 554-590 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, CH, D, E, F, GB	554 - 590 MHz*
GR, I, IRL, L, NL, P	554 - 590 MHz*
DK, FIN, N, S	*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

K2E 606-642 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, BG, CH, CY, CZ, D, EST	606 - 642 MHz*
F, GB, GR, H, I, IS, L, LT	606 - 642 MHz*
P, PL, S, SK, SLO	606 - 642 MHz*
B, DK, FIN, M, N, NL	*
HR, E, IRL, LV, RO, TR	*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

M2 662-698 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, CH, D, E, F, GB	662 - 698 MHz*
GR, I, IRL, L, NL, P	662 - 698 MHz*
DK, FIN, N, S	*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

R4 784-820 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, CH, D, E, F, GB	784 - 820 MHz*
GR, I, IRL, L, NL, P	784 - 820 MHz*
DK, N	800 - 820 MHz*
FIN	800.1 - 819.9 MHz*
I, GB, all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

S3 829-865 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, CH, D, E	829 - 865 MHz*
GR, IRL, L, NL, P	838 - 862 MHz*
GB	830 - 865 MHz*
DK, F, FIN, I, N, S	863 - 865 MHz*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).

Q2 748-784 MHz

Country Code	Frequency Range
Code de Pays	Gamme de frequences
Codice di paese	Gamme di frequenza
Código de país	Gama de frecuencias
Länder-Kürzel	Frequenzbereich
A, B, CH, D, E, F, GB	748 - 784 MHz*
GR, I, IRL, L, NL, P	748 - 784 MHz*
DK, FIN, N, S	*
all other countries	*

* This equipment may be capable of operating on some frequencies not authorized in your region. See [Licensing Information](#).