

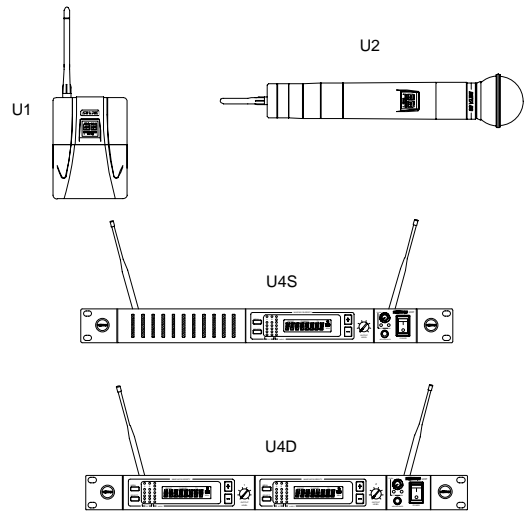
UHF SERIES WIRELESS

Top wireless technology engineered for the most demanding touring environments and installations. UHF wireless systems offer unprecedented flexibility and versatility. Using multiple frequency bands, over 75* compatible systems can be used simultaneously. Individual frequency bands deliver up to 24 compatible systems per band. With multiple system operation and interchangeable components, UHF systems also offer a choice of Single or Dual Channel Diversity Receivers.

SYSTEM FEATURES

Shure UHF Wireless Systems offer many exceptional features, including:

- Menu Driven Display. User-programmable receiver display shows Group, Channel, Frequency, Name, Squelch level, and Locked/Unlocked status.
- Exclusive Shure MARCAD) Circuitry. MARCAD (Maximum Ratio Combining Audio Diversity) circuitry constantly monitors signals from both receiver sections and combines them in a single output signal. MARCAD provides superior reception and exceptional freedom from dropouts.
- Noise Squelch Circuitry. Analyzes signal *quality* instead of signal *strength*. This virtually eliminates the possibility of annoying noise bursts coming through your receiver.
- Dual RF Level Meters. The U4S and U4D receivers have two RF meters, one for each antenna. The dual meters indicate received signal strength at each antenna, and make it easier to identify and troubleshoot "dead spots".
- Audio Metering. Each receiver includes a seven-segment audio meter that lets you monitor audio level and helps optimize transmitter gain setting.
- Transmitter Display. Shows Group, Channel, Battery Power Level, and POWER LOCK ON/OFF* condition. Both displays are user programmable.
- Tone Key Squelch: Eliminates unwanted noise from entering system; eliminates popping noises when turning the transmitter on or off.
- Dual Receiver Option: Provides greater flexibility while conserving rack space.
- Preconfigured Group/Channel: Ensures frequency compatibility and simplifies system installation.
- Network Expansion Capability. U4S and U4D receivers have a 25-pin serial connector for future computer control and monitoring via an accessory interface box.
- DC/DC Converter: Ensures consistent audio and RF performance, even if battery voltages change.



SPECIFICATIONS

RF Carrier Frequency Range

554–862 MHz, depending on region

Working Range

U1: 152.4 m (500 ft.) minimum, under typical conditions; 487.6 m (1600 ft.) line of sight

NOTE: Actual working range depends on RF signal absorption, reflection and interference

Audio Frequency Response

50–15,000 Hz, +2 dB.

NOTE: Overall system frequency response depends on the microphone element

Gain Adjustment Range

U1: 0 to 40 dB

U2: 0 to 26 dB

Modulation

+10kHz to +100kHz deviation, depending on region; compressor-expander system with pre- and de-emphasis

RF Power Output

U1, U2: 10 mW maximum

Dynamic Range

>102 dB or >110dB, depending on region; A-weighted

Image Rejection

90 dB typical

RF Sensitivity

U4S	U4D
–110 dBm 12 dB SINAD	–107 dBm 12 dB SINAD
–105 dBm 30 dB SINAD	–102 dBm 30 dB SINAD

Spurious Rejection

75 dB typical

Ultimate Quieting (ref. 45 kHz deviation)

>100 dB, A-weighted

Audio 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

System Distortion (ref. +45 kHz deviation, 1 kHz modulation)

0.3% Total Harmonic Distortion typical

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Power Requirements

U1, U2: 1.5V AA alkaline battery; Nicad optional
 U4: 90 to 230 Vac, 50/60 Hz

Power Consumption

U4S: 9.6 W min., 13.2 W max.
 U4D: 12 W min., 16 W max.

Battery Life (Typical)

U1, U2: 12 hours

Operating Temperature Range

-20° to 50° C (-4° to 122° F)

NOTE: Battery characteristics may limit this range

Overall Dimensions

U1: 98.4 mm L x 64.7 mm W x 24.6 mm D (3-7/8 x 2-1/2 x 31/32 in.)
 U2/58: 235 mm L x 50.8 mm Dia. (9.4 x 2 in.)
 U2/SM86: 228 mm L x 49 mm Dia. (9.12 x 2 in.)
 U2/BETA 58: 232 mm L x 53 mm Dia. (9.28 x 2.12 in.)
 U2/87: 228 mm x 49 mm Dia. (9 x 1.96 in.)
 U2/BETA 87: 228 mm L x 50.8 mm Dia. (9.12 x 2 in.)
 U4S/U4D: 44.5 mm H x 482.6 mm W x 295.3 mm D (1-3/4 x 19 x 11-5/8 in.)

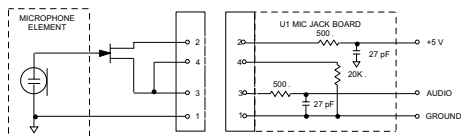
Net Weight

U1: 175.2 g (6.1 oz.) without battery
 U2/58, U2/BETA 58: 330 g (11.6 oz.) without battery
 U2/SM86: 332 g (11.7 oz.) without battery
 U2/87, U2/BETA 87: 339 g (12 oz) without battery
 U4S: 3.30 kg (7.27 lbs)
 U4D: 3.85 kg (8.48 lbs)

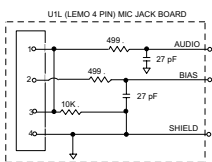
Certification

U1, U2: Type Accepted under FCC Parts 74. Certified by IC in Canada under TRC-78.
 U4S, U4D: UL and cUL Listed to UL 813 and CSA C22.2 No. 1. VDE Certified to EN 60 950. Approved under the Notification provision of FCC Part 15; Certified by IC in Canada under TRC-78.

Wiring



NOTE: LAVALIER MIC TIES PINS 3 AND 4 TOGETHER, GUITAR CABLE DOES NOT.



U1 Transmitter Input (Figure 1)

Connector:	4-Pin female mini connector (TA4F) or LEMO connector (optional)
Input Configuration:	Unbalanced, active
Actual Impedance:	18 kΩ with lavalier microphone 1 MΩ with instrument cable
Maximum Input Level:	6 Vp-p (+7 dBV) for 1% THD at minimum gain setting using 1 kHz signal.
(TA4F) Connector Pin Assignments:	Pin 1: Tied to Ground Pin 2: Tied to +5 V Pin 3: Tied to Audio Pin 4: Tied through 20kΩ Resistor to Ground. (On instrument adapter cable, Pin 4 floats)
LEMO Connector Pin Assignments:	Pin 1: Tied to Pin 3 and 10 kΩ to Ground Pin 2: +5V Pin 3: Tied to Pin 1 Pin 4: Tied to Shield (Ground for Positive Bias)
Voltage for Remote Power:	+5 V supplied to microphone cartridge

U1 Transmitter Output

Connector:	SMC
Actual Impedance:	50 Ω
Nominal Output Level:	+10 dBm
Maximum Output Level:	+11 dBm
Pin Assignments:	Shell = Ground Center = Signal

U2 Transmitter Input

Input Configuration:	Unbalanced, active
Actual Impedance:	20 kΩ
Maximum Input Level:	3 Vp-p (0.5 dBV) for 1% THD at minimum gain setting using 1 kHz signal.

U2 Transmitter Output

Connector:	SMC
Actual Impedance:	50 Ω
Nominal Output Level:	+10 dBm
Maximum Output Level:	+11 dBm
Pin Assignments:	Shell = Ground Center = Signal

U4S and U4D Receiver Input

Connector:	Antenna	Power Input	Network Interface
Connector Type:	BNC	IEC	25-Pin D
Actual Impedance:	50 Ω	-	-
Nominal Input Level:	-95 to -30 dBm	90-230 VAC, 50/60 Hz	CMOS Logic
Maximum Input Level:	+6 dBm (-20 dBm recommended)	230 VAC, 50/60 Hz	-
Pin Assignments:	Shell = Ground Center = Signal	IEC Standard	-
Voltage for Remote Power:	12 Vdc, 150 mA maximum	-	5V, 700 mA max.

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U4S and U4D Receiver Output

Connector:	Monitor	Power Output	High Z Audio	Low Z Audio*	Network Interface
Output Configuration:	Unbalanced mono, 1/4 inch	-	Unbalanced	Balanced	See Appendix
Actual Impedance:	300 Ω	-	1 kΩ	30 Ω	See Appendix
Nominal Input Level:	-	90 to 230 VAC, 5A	-	-	CMOS Logic
Pin Assignments:	Tip = Hot Ring = Hot Sleeve = Gnd	IEC Standard	Tip = Hot Ring/ Sleeve = Gnd	1 = Ground 2 = Hot 3 = Hot	See Appendix
Voltage/Current/Phantom Power Protection?	Yes	-	Yes	Yes	5V, 700 mA resettable polyfuse

*Output Level: Microphone Level = Line Level - 30 dB

FURNISHED ACCESSORIES

Microphone Stand Adapter (U2)WA370A
 Zipper Bag (U1) 26A13
 Zipper Bag (U2) 26A14
 Screwdriver 80A498

Coaxial Antenna Cable (2 ft.) UA802
 1/2 Wave Antenna UA820A
 Transmitter Carrying Case 65A8257
 Carrying Case Insert 29B1577

OPTIONAL ACCESSORIES

Instrument Adapter Cable (U1) WA302
 Female 4-Pin Mini Connector (TA4F) (U1) WA330
 In-Line Audio Switch (U1) WA360
 1.8 Meter (6 ft.) Receiver-Mixer Cable
 (1/4" phone to XLR) WA410

7.6 Meter (25 ft.) Antenna Extension Cable UA825
 15.2 (50 ft.) Meter Antenna Extension Cable UA850
 In-Line Active Remote Antenna Kit (782 - 810 MHz) UA830A
 Antenna/Power Distribution System, 120 Vac UA845A
 Directional Antenna UA870A

REPLACEMENT PARTS

Hardware Kit (screwdriver, mounting feet,
 cable clamps) 90VL1371
 Bulkhead Adapters for Front-Mounting Antennas 95A8647
 120 VAC Power Cord (U.S. mains connector) 95A8389
 305 mm (12 in.) Daisy-Chain Power Cord (120 V) 95A8570
 SM58³ Cartridge with Grille (U2/58) RPW112
 SM86 Cartridge with Grille (U2/86) RPW114
 BETA 58A³ Cartridge with Grille (U2/BETA 58) RPW118
 SM87 Cartridge with Grille (U2/87) RPW116
 BETA 87A Cartridge with Grille (U2/BETA 87A) RPW120

BETA 87C Cartridge with Grille (U2/BETA 87C) RPW122
 Matte Silver Grille (U2/58) RK143G
 Matte Silver Grille (U2/BETA 58) RK265G
 Matte Silver Grille (U2/BETA 87A) RK313G
 Black Grille (U2/87C) RK214G
 Black Grille (U2/BETA 58) RK323G
 Black Grille (U2/BETA 87A) RK324G
 Belt Clip (U1) 53A8247A
 Antenna (U1) 95A8646
 Antenna (U2) 95A2029

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The wireless system shall operate in the UHF band between 554 MHz and 862 MHz, with the specific range being dependent on the user's locale. The system shall include the option of changing the operating frequency in order to avoid RF interference, enabling up to 16 systems to operate simultaneously in the same location. Preconfigured group, channel and frequency setups shall be available to ensure that multiple systems in use do not interfere with one another.

All transmitters shall be powered by a single 9V battery and shall have a power on/off switch, an optional mute switch, an LED indicating that power is on, and an LED indicating low battery power. Available transmitters shall include: a body pack for use with electric guitars, basses, and other electric instruments, as well as lavalier or headworn microphones; and a handheld microphone for vocals. The system shall have a DC/DC converter to ensure consistent performance, even if battery voltages change.

The receiver shall have a user programmable menu-driven display showing group, channel, frequency, name, squelch level, and locked/unlocked status. The system shall use technology such as MARCAD signal combining circuitry to improve reception, minimize signal dropouts, and achieve the best possible signal-to-noise ratio. An equalizer, tone key squelch, and noise squelch circuitry shall be built in to the system to provide optimal sound quality and minimize unwanted noise. The receiver shall include dual RF meters (one for each antenna), an audio level meter, and a 25-pin serial connector for future computer control and monitoring. The receiver shall have a volume control and an adjustable noise squelch control.

The system shall be the Shure UHF Wireless.



SHURE Incorporated Web Address: <http://www.shure.com>
 5800 W. Touhy Avenue, Niles, IL 60714-4608, U.S.A.
 Phone: 1-847-600-2000 Fax: 1-847-600-1212
 In Europe, Phone: 49-7131-72140 Fax: 49-7131-721414
 In Asia, Phone: 852-2893-4290 Fax: 852-2893-4055
 Elsewhere, International Fax: 847-600-6446