

### 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.

### 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

U1H: 300 m (1000 ft.) minimum, under typical conditions; 975.2 m (3200 ft) line of sight

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

#### Audio Frequency Response

50 to 15,000 Hz,  $\pm 2$  dB. **NOTE:** Overall system frequency response depends on the microphone element

#### Gain Adjustment Range

U1, U1H: 0 to 40 dB

U2: 0 to 26 dB

#### Modulation

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

#### RF Power Output

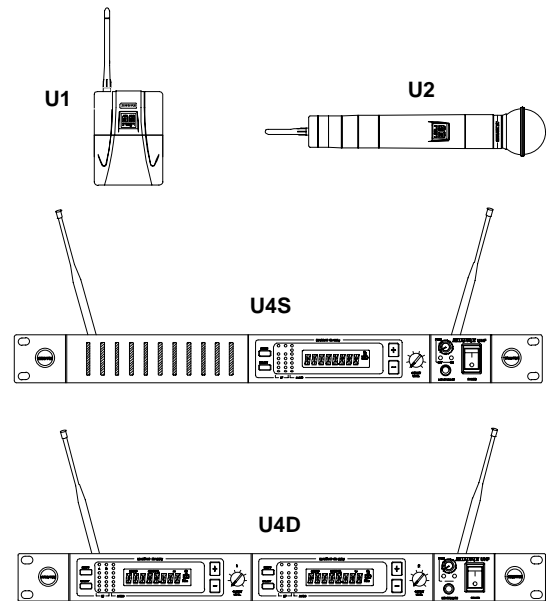
U1, U2: 10 mW maximum

U1H: 100 mW maximum

#### Dynamic Range

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

- **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.



#### 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. $\pm 45$ kHz deviation, 1 kHz modulation)

0.3% Total Harmonic Distortion typical

#### Power Requirements

U1, U1A, U2: 1.5V AA alkaline battery (Duracell MN1500 recommended); 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.  
 UA840: 15 W min., 16 W max.

**Battery Life (Typical)**

U1, U2: 12 hours (with Duracell MN1500 1.5V AA alkaline battery)  
 U1H: 6 hours (with Duracell MN1500 1.5V AA alkaline battery)

**Operating Temperature Range**

-20° to 50° C (-4° to 122° F) **NOTE:** Battery characteristics may limit this range

**Overall Dimensions**

U1, U1A: 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: 254 mm L x 50.8 mm Dia. (10 x 2 in.)  
 U2/BETA 58: 254 mm L x 53.2 mm Dia. (10 x 2-3/32 in.)  
 U2/87: 228.6 mm x 49.2 mm Dia. (9 x 1-15/16 in.)  
 U2/BETA 87: 216 mm L x 50.8 mm Dia. (8-1/2 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**

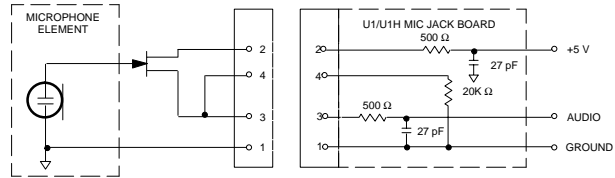
U1, U1A: 175.2 g (6.1 oz.) without battery  
 U2/58, U2/BETA 58: 375.6 g (13.2 oz.) without battery  
 U2/87, U2/BETA 87: 303.1 g (10.7 oz) without battery  
 U4S: 3.30 kg (7.27 lbs)  
 U4D: 3.85 kg (8.48 lbs)

**U1, U1H Transmitter Input (Figure 1)**

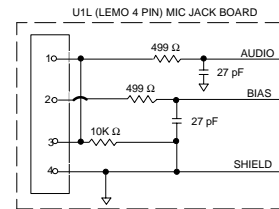
<b>Connector:</b>	4-Pin female mini connector (TA4F) or LEMO connector (optional)
<b>Input Configuration:</b>	Unbalanced, active
<b>Actual Impedance:</b>	18 kΩ with lavalier microphone 1 MΩ with instrument cable
<b>Maximum Input Level:</b>	6 Vp-p (+7 dBV) for 1% THD at minimum gain setting using 1 kHz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

**Certification**

U1, U1A, 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.



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



**FIGURE 1**

**U1, U1H Transmitter Output**

<b>Connector:</b>	SMC
<b>Actual Impedance:</b>	50 Ω
<b>Nominal Output Level:</b>	+10 dBm (+17 dBm for U1H)
<b>Maximum Output Level:</b>	+11 dBm (+18 dBm for U1H)
<b>Pin Assignments:</b>	Shell = Ground Center = Signal

**U2 Transmitter Input**

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

**U2 Transmitter Output**

<b>Connector:</b>	SMC
<b>Actual Impedance:</b>	50 Ω
<b>Nominal Output Level:</b>	+10 dBm
<b>Maximum Output Level:</b>	+11 dBm
<b>Pin Assignments:</b>	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.

## 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	Coaxial Antenna Cable (2 ft)	UA802
Zipper Bag (U1)	26A13	1/2 Wave Antenna	UA820A
Zipper Bag (U2)	26A14	Transmitter Carrying Case	65A8257
Screwdriver	80A498	Carrying Case Insert	29B1577

## OPTIONAL ACCESSORIES

Instrument Adapter Cable (U1)	WA302	15.2 (50 ft) Meter Antenna Extension Cable	UA850
Female 4-Pin Mini Connector (TA4F) (U1)	WA330	In-Line Active Remote Antenna Kit (782 - 810 MHz)	UA830A
In-Line Audio Switch (U1)	WA360	Antenna/Power Distribution System, 120 Vac	UA840A
1.8 Meter (6 ft) Receiver-Mixer Cable (1/4" phone to XLR)	WA410	Directional Antenna	UA870A
7.6 Meter (25 ft) Antenna Extension Cable	UA825		

## REPLACEMENT PARTS

Hardware Kit (screwdriver, mounting feet, cable clamps)	90VL1371	Matte Silver Grille (U2/BETA 58)	RK265G
Bulkhead Adapters for Front-Mounting Antennas	95A8647	Matte Silver Grille (U2/BETA 87A)	RK313G
120 VAC Power Cord (U.S. mains connector)	95A8389	Black Grille (U2/87C)	RK214G
305 mm (12 in.) Daisy-Chain Power Cord (120 V)	95A8570	Black Grille (U2/BETA 58)	RK323G
SM58® Cartridge with Grille (U2/58)	R158	Black Grille (U2/BETA 87A)	RK324G
BETA 58A® Cartridge with Grille (U2/BETA 58)	R179	Belt Clip (U1)	53A8247A
SM87 Cartridge with Grille (U2/87)	R165	Antenna (U1)	95A8646
BETA 87A Cartridge with Grille (U2/BETA 87A)	R166	Antenna (U2)	95A2029
BETA 87C Cartridge with Grille (U2/BETA 87C)	RPW100		
Matte Silver Grille (U2/58)	RK143G		