



**CONTENTS**

SPECIFICATIONS ..... 2

    Furnished Accessories ..... 5

    Optional Accessories ..... 6

    Replacement Parts ..... 6

FREQUENCY LISTS ..... 7

    Groups 1 and 2 ..... 8

    Additional Compatible Frequency Sets for Group 1 ..... 8

    Groups 3 and 4 ..... 9

    Master List (Groups A1–A3) ..... 10

# SPECIFICATIONS

## RF Carrier Frequency Range

854–862 MHz

## Working Range

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 to 15,000 Hz,  $\pm 2$  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

$\pm 40$  kHz deviation compressor-expander system with pre-and de-emphasis

## RF Power Output

U1, U2: 10 mW maximum

## Dynamic Range

>102 dB, A-weighted

## RF Sensitivity

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

## Image Rejection

90 dB typical

## 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  $\frac{1}{4}$ -inch output

## System Distortion (ref. $\pm 45$ kHz deviation, 1 kHz modulation)

0.3% Total Harmonic Distortion typical

## Power Requirements

U1, U2: 1.5V AA alkaline battery (Duracell MN1500 recommended); Nicad optional

U4: 90 to 230 Vac , 50/60 Hz

Power Consumption: 9.6 W min., 13.2 W max. (U4S)

12 W min., 16 W max. (U4D)

15 W min., 16 W max. (UA840)

## Battery Life (Typical)

12 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: 92.2 mm L x 64.7 mm W x 24.2 mm D (3–29/32 x 2–35/64 x 61/64 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: 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)

## Certification

U1, U2: EMC Approved to ETS 300 445. RA Type Approved in the U.K. to MPT1350.

U4S, U4D: VDE Certified to EN 60 950. EMC Approved to ETS 300 445. Meets Low Voltage Directive.

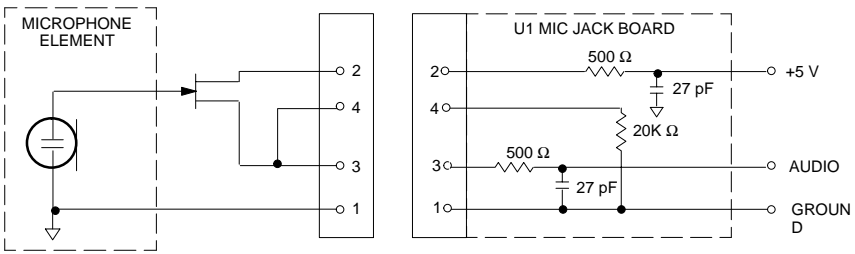
UHF Type Approved and EMC Approved systems are eligible to carry the CE marking.

## U1 Transmitter Input (Figure 1)

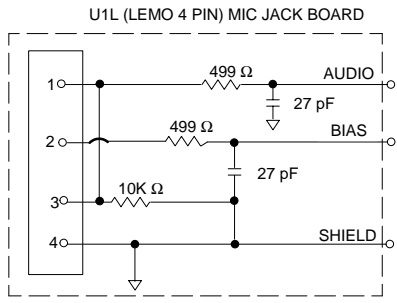
<b>Connector:</b>	Switchcraft TA4F Tini Q.G. or LEMO connector (optional)
<b>Input Configuration:</b>	Unbalanced, active
<b>Actual Impedance:</b>	18 k $\Omega$ with lavalier microphone 1 M $\Omega$ with instrument cable
<b>Maximum Input Level:</b>	6 V <sub>p-p</sub> (+7 dBV) for 1% THD at minimum gain setting using 1 kHz signal.
<b>TA4F Tini Q.G. Connector Pin Assignments:</b>	Pin 1: Tied to Ground Pin 2: Tied to +5 V Pin 3: Tied to Audio Pin 4: Tied thru 20k $\Omega$ Resistor to Ground. (On instrument adapter cable, Pin 4 floats)
<b>LEMO Connector Pin Assignments:</b>	Pin 1: Tied to Pin 3 and 10 k $\Omega$ 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

## U1 Transmitter Output

<b>Connector:</b>	SMC
<b>Actual Impedance:</b>	50 $\Omega$
<b>Nominal Output Level:</b>	+10 dBm
<b>Maximum Output Level:</b>	+11 dBm
<b>Pin Assignments:</b>	Shell = Ground Center = Signal



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



**FIGURE 1**

**U2 Transmitter Input**

<b>Input Configuration:</b>	Unbalanced, active
<b>Actual Impedance:</b>	20 kΩ
<b>Maximum Input Level:</b>	3 V <sub>p-p</sub> (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 $\Omega$	—	—
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	—	Un-balanced	Balanced	See Appendix
Actual Impedance:	300 $\Omega$	—	1 k $\Omega$	30 $\Omega$	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
Switchcraft TA4F Female 4–Pin Connector (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 (854 – 862 MHz) .....	UA830B
Antenna/Power Distribution System, 120 Vac .....	UA840B
Directional Antenna .....	UA870KA

## REPLACEMENT PARTS

Hardware Kit (screwdriver, mounting feet, cable clamps) .....	90VL1371
Bulkhead Adapters for Front–Mounting Antennas .....	95A8647
230 VAC Power Cord (U.K. mains connector) .....	95A8713
304 mm (12 in.) Daisy–Chain Power Cord (230 V) .....	95A8678
SM58 Cartridge with Grille (U2/58) .....	R158
BETA 58A Cartridge with Grille (U2/BETA 58) .....	R179
SM87 Cartridge with Grille (U2/87) .....	R165
BETA 87 Cartridge with Grille (U2/BETA 87) .....	R166
Matte Silver Grille (U2/58) .....	RK143G
Matte Silver Grille (U2/BETA 58) .....	RK265G
Matte Silver Grille (U2/BETA 87) .....	RK313G
Black Grille (U2/87) .....	RK214G
Black Grille (U2/BETA 58) .....	RK323G
Black Grille (U2/BETA 87) .....	RK324G
Belt Clip (U1) .....	53A8247A
Antenna (U1) .....	95A8646
Antenna (U2) .....	95A2029

## FREQUENCY LISTS

The following tables list groups of frequencies in megahertz. Please note that only frequencies in Group 1 are compatible.

- Group 1 contains 10 compatible frequencies which are derived from a combination of fixed site ("Multi UHF High and Low") frequencies as well as "Indoor Use at Fixed Site" frequencies.

**NOTE:** See also the additional compatible frequency sets for Group 1.

- Group 2 contains 14 fixed site frequencies taken entirely from the Multi UHF High and Low band.
- Groups 3 and 4 contains all frequencies within the Indoor Use at Fixed Site band, in 25 kHz increment steps.
- The master list (Groups A1–A3) covers all frequencies in 25 kHz increments within the 854–862 MHz band.

Shure recommends that you maintain a 500 kHz separation between each receiver in the U4D dual receiver. Please contact the Shure Customer Service Department if you need additional information or assistance in frequency selection and setup.

**NOTE:** *While the Shure U4 receiver may display each "FREQUENCY" mode for all frequencies in 25 kHz steps within the 854–862 Mhz band, your transmitter only tunes to legally allowed frequencies within that band.*

## Group 1

CHAN	GROUP 1
1	854.900
2	855.900
3	856.575
4	857.125
5	858.025
6	858.650
7	859.625
8	860.400
9	860.900
10	861.750

### Additional Compatible Frequency Sets for Group 1

In addition to the 10 compatible channels in Group 1, the following additional compatible frequency sets can be used if interference is encountered when using Group 1:

SET 1	SET 2	SET 3
854.900	855.275	854.900
855.900	856.175	856.175
856.575	856.675	856.675
857.475	857.625	857.300
858.000	858.200	858.200
858.650	858.900	858.725
859.625	859.475	859.375
860.400	860.400	860.400
860.900	860.900	860.900
861.550	861.750	861.750



## Group 2

CHAN	FREQ
1	854.900
2	855.275
3	855.900
4	856.175
5	856.575
6	857.625
7	857.950

CHAN	FREQ
8	858.200
9	858.650
10	860.400
11	860.900
12	861.200
13	861.550
14	861.750

## Groups 3 and 4

CHAN	GRP 3	GRP 4
1	856.100	858.575
2	856.125	858.600
3	856.150	858.625
4	856.175	858.650
5	856.200	858.675
6	856.225	858.700
7	856.250	858.725
8	856.275	858.750
9	856.300	858.775
10	856.325	858.800
11	856.350	858.825
12	856.375	858.850
13	856.400	858.875
14	856.425	858.900
15	856.450	858.925
16	856.475	858.950
17	856.500	858.975
18	856.525	859.000
19	856.550	859.025
20	856.575	859.050
21	856.600	859.075
22	856.625	859.100
23	856.650	859.125
24	856.675	859.150
25	856.700	859.175
26	856.725	859.200
27	856.750	859.225
28	856.775	859.250
29	856.800	859.275
30	856.825	859.300
31	856.850	859.325
32	856.875	859.350
33	856.900	859.375
34	856.925	859.400
35	856.950	859.425
36	856.975	859.450
37	857.000	859.475
38	857.025	859.500
39	857.050	859.525

CHAN	GRP 3	GRP 4
40	857.075	859.550
41	857.100	859.575
42	857.125	859.600
43	857.150	859.625
44	857.175	859.650
45	857.200	—
46	857.225	—
47	857.250	—
48	857.275	—
49	857.300	—
50	857.325	—
51	857.350	—
52	857.375	—
53	857.400	—
54	857.425	—
55	857.450	—
56	857.475	—
57	857.500	—
58	857.525	—
59	857.550	—
60	857.575	—
61	857.600	—
62	857.625	—
63	857.650	—
64	857.675	—
65	857.700	—
66	857.725	—
67	857.750	—
68	857.775	—
69	857.800	—
70	857.825	—
71	857.850	—
72	857.875	—
73	857.900	—
74	857.925	—
75	857.950	—
76	857.975	—
77	858.000	—
78	858.025	—

CHAN	GRP 3	GRP 4
79	858.050	—
80	858.075	—
81	858.100	—
82	858.125	—
83	858.150	—
84	858.175	—
85	858.200	—
86	858.225	—
87	858.250	—
88	858.275	—
89	858.300	—
90	858.325	—
91	858.350	—
92	858.375	—
93	858.400	—
94	858.425	—
95	858.450	—
96	858.475	—
97	858.500	—
98	858.525	—
99	858.550	—

# Master List (Groups A1–A3)

FREQ	GRP	CHAN
854.900	A1	1
854.925	A1	2
854.950	A1	3
854.975	A1	4
855.000	A1	5
855.025	A1	6
855.050	A1	7
855.075	A1	8
855.100	A1	9
855.125	A1	10
855.150	A1	11
855.175	A1	12
855.200	A1	13
855.225	A1	14
855.250	A1	15
855.275	A1	16
855.300	A1	17
855.325	A1	18
855.350	A1	19
855.375	A1	20
855.400	A1	21
855.425	A1	22
855.450	A1	23
855.475	A1	24
855.500	A1	25
855.525	A1	26
855.550	A1	27
855.575	A1	28
855.600	A1	29
855.625	A1	30
855.650	A1	31
855.675	A1	32
855.700	A1	33
855.725	A1	34
855.750	A1	35
855.775	A1	36
855.800	A1	37
855.825	A1	38
855.850	A1	39
855.875	A1	40
855.900	A1	41
855.925	A1	42
855.950	A1	43
855.975	A1	44
856.000	A1	45
856.025	A1	46
856.050	A1	47
856.075	A1	48
856.100	A1	49
856.125	A1	50
856.150	A1	51
856.175	A1	52
856.200	A1	53
856.225	A1	54

FREQ	GRP	CHAN
856.250	A1	55
856.275	A1	56
856.300	A1	57
856.325	A1	58
856.350	A1	59
856.375	A1	60
856.400	A1	61
856.425	A1	62
856.450	A1	63
856.475	A1	64
856.500	A1	65
856.525	A1	66
856.550	A1	67
856.575	A1	68
856.600	A1	69
856.625	A1	70
856.650	A1	71
856.675	A1	72
856.700	A1	73
856.725	A1	74
856.750	A1	75
856.775	A1	76
856.800	A1	77
856.825	A1	78
856.850	A1	79
856.875	A1	80
856.900	A1	81
856.925	A1	82
856.950	A1	83
856.975	A1	84
857.000	A1	85
857.025	A1	86
857.050	A1	87
857.075	A1	88
857.100	A1	89
857.125	A1	90
857.150	A1	91
857.175	A1	92
857.200	A1	93
857.225	A1	94
857.250	A1	95
857.275	A1	96
857.300	A1	97
857.325	A1	98
857.350	A1	99
857.375	A2	1
857.400	A2	2
857.425	A2	3
857.450	A2	4
857.475	A2	5
857.500	A2	6
857.525	A2	7
857.550	A2	8
857.575	A2	9

FREQ	GRP	CHAN
857.600	A2	10
857.625	A2	11
857.650	A2	12
857.675	A2	13
857.700	A2	14
857.725	A2	15
857.750	A2	16
857.775	A2	17
857.800	A2	18
857.825	A2	19
857.850	A2	20
857.875	A2	21
857.900	A2	22
857.925	A2	23
857.950	A2	24
857.975	A2	25
858.000	A2	26
858.025	A2	27
858.050	A2	28
858.075	A2	29
858.100	A2	30
858.125	A2	31
858.150	A2	32
858.175	A2	33
858.200	A2	34
858.225	A2	35
858.250	A2	36
858.275	A2	37
858.300	A2	38
858.325	A2	39
858.350	A2	40
858.375	A2	41
858.400	A2	42
858.425	A2	43
858.450	A2	44
858.475	A2	45
858.500	A2	46
858.525	A2	47
858.550	A2	48
858.575	A2	49
858.600	A2	50
858.625	A2	51
858.650	A2	52
858.675	A2	53
858.700	A2	54
858.725	A2	55
858.750	A2	56
858.775	A2	57
858.800	A2	58
858.825	A2	59
858.850	A2	60
858.875	A2	61
858.900	A2	62
858.925	A2	63

FREQ	GRP	CHAN
858.950	A2	64
858.975	A2	65
859.000	A2	66
859.025	A2	67
859.050	A2	68
859.075	A2	69
859.100	A2	70
859.125	A2	71
859.150	A2	72
859.175	A2	73
859.200	A2	74
859.225	A2	75
859.250	A2	76
859.275	A2	77
859.300	A2	78
859.325	A2	79
859.350	A2	80
859.375	A2	81
859.400	A2	82
859.425	A2	83
859.450	A2	84
859.475	A2	85
859.500	A2	86
859.525	A2	87
859.550	A2	88
859.575	A2	89
859.600	A2	90
859.625	A2	91
859.650	A2	92
859.675	A2	93
859.700	A2	94
859.725	A2	95
859.750	A2	96
859.775	A2	97
859.800	A2	98
859.825	A2	99
859.850	A3	1
859.875	A3	2
859.900	A3	3
859.925	A3	4
859.950	A3	5
859.975	A3	6
860.000	A3	7
860.025	A3	8
860.050	A3	9
860.075	A3	10
860.100	A3	11
860.125	A3	12
860.150	A3	13
860.175	A3	14
860.200	A3	15
860.225	A3	16
860.250	A3	17
860.275	A3	18
860.300	A3	19

FREQ	GRP	CHAN
860.325	A3	20
860.350	A3	21
860.375	A3	22
860.400	A3	23
860.425	A3	24
860.450	A3	25
860.475	A3	26
860.500	A3	27
860.525	A3	28
860.550	A3	29
860.575	A3	30
860.600	A3	31
860.625	A3	32
860.650	A3	33
860.675	A3	34
860.700	A3	35
860.725	A3	36
860.750	A3	37
860.775	A3	38
860.800	A3	39
860.825	A3	40
860.850	A3	41
860.875	A3	42
860.900	A3	43
860.925	A3	44
860.950	A3	45
860.975	A3	46
861.000	A3	47
861.025	A3	48
861.050	A3	49
861.075	A3	50
861.100	A3	51
861.125	A3	52
861.150	A3	53
861.175	A3	54
861.200	A3	55
861.225	A3	56
861.250	A3	57
861.275	A3	58
861.300	A3	59
861.325	A3	60
861.350	A3	61
861.375	A3	62
861.400	A3	63
861.425	A3	64
861.450	A3	65
861.475	A3	66
861.500	A3	67
861.525	A3	68
861.550	A3	69
861.575	A3	70
861.600	A3	71
861.625	A3	72
861.650	A3	73
861.675	A3	74

FREQ	GRP	CHAN
861.700	A3	75
861.725	A3	76
861.750	A3	77

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