SHURE®

USER GUIDE SUPPLEMENT
M4 (662–692 MHz)

UHF WIRELESS SYSTEM

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SPECIFICATIONS

RF Carrier Frequency Range

662–692 MHz

Working Range

U1, U2: 152.4 m, minimum, under typical conditions; 487.6 m line of sight

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

Audio Frequency Response

50 to 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

±45 kHz deviation compressor-expander system with pre-and de-emphasis

RF Power Output

U1, U2: 30 mW maximum

Dynamic Range

>110 dB, A-weighted

RF Sensitivity (Typical)

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

Image Rejection

100 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 $^{1}/_{4}$-inch output

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

<0.3% Total Harmonic Distortion typical

Power Requirements

U1, U2: Two (2) 1.5V AA alkaline battery recommended; Nicad battery 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.

UA845US: 15 W min. per unit typical, 62 W max. when used with 4 UC4's and 4 UA830WB line amplifiers.

Battery Life (Typical)

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

Operating Temperature Range

-7° to 49° C **NOTE:** Battery characteristics may limit this range

Overall Dimensions

U1: 92.2 mm L x 64.7 mm W x 24.2 mm D
U2/58:254 mm L x 50.8 mm Dia.
U2/BETA 58: 254 mm L x 53.2 mm Dia.
U2/87:228.6 mm x 49.2 mm Dia.
U2/BETA 87A, U2/BETA 87C: 216 mm L x 50.8 mm Dia
U4S/U4D: 44.5 mm H x 482.6 mm W x 295.3 mm D

Net Weight

U1: 175.2 g without battery
U2/58, U2/BETA 58: 375.6 g without battery
U2/87, U2/BETA 87A, U2/BETA 87C: 303.1 g without battery
U4S: 3.30 kg
U4D: 3.85 kg

Certification

U1, U2: Type Accepted under FCC Part 74. FCC ID DD4U1M4 and DD4U2M4. Certified by IC in Canada under RSS-123 and RSS-102

U4S, U4D: UL and cUL Listed to UL 813 and CSA C22.2 No. 1. Approved under the Declaration of Conformity provision of FCC Part 15; Certified by IC in Canada under RSS-123 & ICES-003 VDE Certified to EN 60 950.

UHF Type Approved and EMC Approved systems. Meet the requirements of 300.422–1,-2 and 301.489-1,-9 and are eligible to carry the CE marking.
CE 0682 ⓘ

FCC Statement

The U4 Receiver complies with Part 15 of the FCC rules. 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.

Licensing Statement

A user license may be required for operation. Contact the communications authority in your country for more information.

Modifications to Approved Equipment

Changes or modifications not expressly approved by Shure Incorporated could affect compliance with telecommunications standards, thereby voiding the user's authority to operate this product.

U1 Transmitter Input (Figure 1A, 1B, 1C)

Connector:	4-Pin Male Miniature Connector (TA4M) 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) using 1 kHz signal for 1% THD at minimum gain setting with –6 dB pad.
4-Pin Male Miniature Connector TA4M Pin Assignments:	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). See Figure 1B
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). See Figure 1C
Voltage for Remote Power:	+5 V supplied to microphone cartridge

Fig. 1A

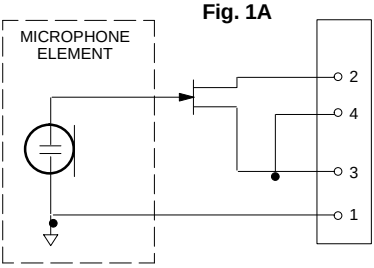
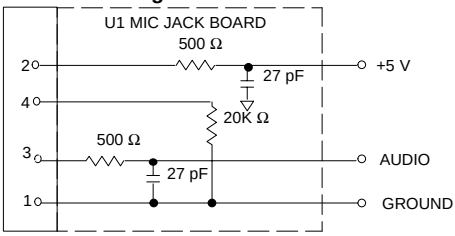


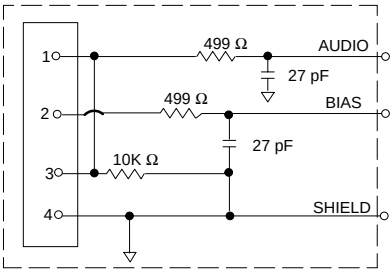
Fig. 1B



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

Fig. 1C

(LEMO 4 PIN) MIC JACK BOARD



U1Transmitter Output

Antenna Impedance:	50 Ω
Nominal Output Level:	+10 dBm
Maximum Output Level:	+13.5 dBm

U2 Transmitter Input

Input Configuration:	Wireless Microphone Element
Actual Impedance:	20 kΩ
Maximum Input Level:	3 Vp–p (0.5 dBV) using 1 kHz signal for 1% THD at minimum gain setting without pad.

U2 Transmitter Output

Connector:	SMC (Internal)
Pin Assignments:	Shell = Ground Center = Signal
Antenna Impedance:	50 Ω
Nominal Output Level:	+10 dBm
Maximum Output Level:	+13.5 dBm

U4S and U4D Receiver Input

Connector:	Antenna	Power Input	Network Interface
Connector Type:	BNC	IEC 320	25–Pin D
Antenna 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)		—
Pin Assignments:	Shell = Ground Center = Signal	IEC Standard Brown = Live Blue = Neutral Green/Yellow = Ground	—
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 in User Guide
Actual Impedance:	300 Ω	—	1 kΩ	30 Ω	See Appendix in User Guide
Nominal Input Level:	—	90 to 230 VAC, 5A	—	—	CMOS Logic
Pin Assignments:	Tip = Hot Ring = Hot Sleeve = Gnd	IEC Standard Brown = Live Blue = Neutral Green/Yellow = Ground	Tip = Hot Ring/ Sleeve = Gnd	1 = Ground 2 = Hot 3 = Hot	See Appendix in User Guide
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 (U1), (U2) 80A498
Two Coaxial Antennas Cable 2 ft, (U4) UA802
Two 1/2 Wave Antennas (U4) UA820C
Transmitter Carrying Case (U1), (U2) 65A8257
Carrying Case Insert (U1), (U2) 29B1577

OPTIONAL ACCESSORIES

Instrument Adapter Cable (U1) WA302
4-Pin Female Miniature 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 Meter (50 ft) Antenna Extension Cable UA850
30.4 Meter (100 ft) Antenna Extension Cable UA8100
Remote In–Line RF Amplifier UA830WB
Antenna/Power Distribution System, 120 Vac UA845US
Directional Antenna UA870WB

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
304 mm (12 in.) Daisy–Chain Power Cord (120 V) 95A8576
SM58® Cartridge with Grille (U2/58) R158
BETA 58A® Cartridge with Grille (U2/BETA 58) R179
SM87 Cartridge with Grille (U2/87) R165
BETA 87A Cartridge with Grille (U2/BETA 87A) R166
BETA 87C Cartridge with Grille (U2/BETA 87C) RPW100
Matte Silver Grille (U2/58) RK143G
Matte Silver Grille (U2/BETA 58) RK265G
Matte Silver Grille (U2/BETA 87A) RK313G
Black Grille (U2/BETA 87C) RK214G
Black Grille (U2/BETA 58) RK323G
Black Grille (U2/BETA 87A) RK324G
Belt Clip (U1) 44A8023A
Antenna (U1) 70A8019
Antenna (U2–M4) 95E2029

FREQUENCY SELECTION GUIDE

The Shure UHF Wireless System is designed for maximum flexibility and versatility in a variety of applications. Up to 24 Shure UHF Wireless Systems can be operated simultaneously in a single installation using the frequency compatibility groups. Please contact Shure Incorporated if you need additional information or assistance in frequency selection and setup.

Compatibility Groups

The Shure UHF Wireless System includes 10 groups of compatible channels. If you are using more than one receiver in the same area, we recommend that you set the receivers to different frequencies within the same group.

Frequency (MHz)	Group	Chan-nel	Master List	
662.150	1	1	A1	7
662.825	1	2	A1	34
663.700	1	3	A1	69
665.600	1	4	A2	46
666.325	1	5	A2	75
668.025	1	6	A3	44
669.375	1	7	A3	98
671.000	1	8	A4	64
671.875	1	9	A4	99
674.575	1	10	A6	9
675.325	1	11	A6	39
677.775	1	12	A7	38
679.400	1	13	A8	4
680.500	1	14	A8	48
681.800	1	15	A9	1
682.425	1	16	A9	26
683.875	1	17	A9	84
684.825	1	18	B1	23
686.650	1	19	B1	96
688.075	1	20	B2	54
688.725	1	21	B2	80
689.725	1	22	B3	21
690.500	1	23	B3	52
691.075	1	24	B3	75

Frequency (MHz)	Group	Chan-nel	Master List	
662.025	2	1	A1	2
663.025	2	2	A1	42
663.650	2	3	A1	67
666.000	2	4	A2	62
667.200	2	5	A3	11
669.475	2	6	A4	3
670.500	2	7	A4	44
671.125	2	8	A4	69
671.950	2	9	A5	3
673.175	2	10	A5	52
674.150	2	11	A5	91
674.650	2	12	A6	12
675.625	2	13	A6	51
678.400	2	14	A7	63
679.575	2	15	A8	11
681.425	2	16	A8	85
682.925	2	17	A9	46
683.825	2	18	A9	82
686.550	2	19	B1	92
687.000	2	20	B2	11
687.800	2	21	B2	43
689.900	2	22	B3	28
690.550	2	23	B3	54
691.475	2	24	B3	91

Frequency (MHz)	Group	Chan-nel	Master List	
662.225	3	1	A1	10
662.800	3	2	A1	33
663.800	3	3	A1	73
664.575	3	4	A2	5
665.150	3	5	A2	28
666.000	3	6	A2	62
667.125	3	7	A3	8
667.825	3	8	A3	36
668.800	3	9	A3	75
669.400	3	10	A3	99
670.225	3	11	A4	33
678.025	3	12	A7	48
678.450	3	13	A7	65
679.350	3	14	A8	2
681.050	3	15	A8	70
681.900	3	16	A9	5
682.325	3	17	A9	22
683.025	3	18	A9	50
684.725	3	19	B1	19
685.575	3	20	B1	53
686.925	3	21	B2	8
687.800	3	22	B2	43
689.550	3	23	B3	14
690.475	3	24	B3	51

Frequency (MHz)	Group	Chan-nel	Master List	
662.150	4	1	A1	7
662.700	4	2	A1	29
664.825	4	3	A2	15
665.375	4	4	A2	37
667.725	4	5	A3	32
668.275	4	6	A3	54
669.125	4	7	A3	88
669.775	4	8	A4	15
670.850	4	9	A4	58
672.350	4	10	A5	19
673.625	4	11	A5	70
675.250	4	12	A6	36
675.850	4	13	A6	60
676.650	4	14	A6	92
678.750	4	15	A7	77
680.125	4	16	A8	33
683.225	4	17	A9	58
684.775	4	18	B1	21
685.350	4	19	B1	44
687.250	4	20	B2	21
688.125	4	21	B2	56
688.800	4	22	B2	83
690.100	4	23	B3	36
691.725	4	24	B4	2

Frequency (MHz)	Group	Chan-nel	Master List	
662.350	5	1	A1	15
662.775	5	2	A1	32
664.825	5	3	A2	15
666.050	5	4	A2	64
667.075	5	5	A3	6
667.525	5	6	A3	24
668.700	5	7	A3	71
669.550	5	8	A4	6
670.650	5	9	A4	50
671.150	5	10	A4	70
673.400	5	11	A5	61
673.975	5	12	A5	84
675.850	5	13	A6	60
680.175	5	14	A8	35
681.600	5	15	A8	92
682.750	5	16	A9	39
683.325	5	17	A9	62
684.825	5	18	B1	23
685.850	5	19	B1	64
686.675	5	20	B1	97
687.150	5	21	B2	17
687.850	5	22	B2	45
690.375	5	23	B3	47
691.325	5	24	B3	85

Frequency (MHz)	Group	Chan-nel	Master List	
662.675	6	1	A1	28
664.150	6	2	A1	87
664.925	6	3	A2	19
666.825	6	4	A2	95
667.750	6	5	A3	33
668.950	6	6	A3	81
671.825	6	7	A4	97
672.250	6	8	A5	15
673.250	6	9	A5	55
674.900	6	10	A6	22
676.325	6	11	A6	79
679.200	6	12	A7	95
680.150	6	13	A8	34
680.600	6	14	A8	52
681.325	6	15	A8	81
682.750	6	16	A9	39
683.175	6	17	A9	56
684.575	6	18	B1	13
686.775	6	19	B2	2
687.375	6	20	B2	26
688.750	6	21	B2	81
689.750	6	22	B3	22
691.150	6	23	B3	78
691.775	6	24	B4	4

Frequency (MHz)	Group	Chan-nel	Master List	
663.025	7	1	A1	42
663.600	7	2	A1	65
665.100	7	3	A2	26
666.150	7	4	A2	68
666.850	7	5	A2	96
667.750	7	6	A3	33
669.025	7	7	A3	84
669.875	7	8	A4	19
671.700	7	9	A4	92
672.250	7	10	A5	15
673.325	7	11	A5	58
673.850	7	12	A5	79
675.225	7	13	A6	35
679.150	7	14	A7	93
680.150	7	15	A8	34
682.225	7	16	A9	18
683.300	7	17	A9	61
683.850	7	18	A9	83
685.725	7	19	B1	59
687.175	7	20	B2	18
688.850	7	21	B2	85
689.550	7	22	B3	14
689.975	7	23	B3	31
690.825	7	24	B3	65

Frequency (MHz)	Group	Chan-nel	Master List	
662.200	8	1	A1	9
663.275	8	2	A1	52
663.900	8	3	A1	77
664.825	8	4	A2	15
667.000	8	5	A3	3
668.725	8	6	A3	72
669.425	8	7	A4	1
671.150	8	8	A4	70
672.225	8	9	A5	14
673.775	8	10	A5	76
677.775	8	11	A7	38
678.600	8	12	A7	71
680.325	8	13	A8	41
681.575	8	14	A8	91
682.475	8	15	A9	28
683.125	8	16	A9	54
683.975	8	17	A9	88
686.600	8	18	B1	94
687.425	8	19	B2	28
688.000	8	20	B2	51
688.800	8	21	B2	83
689.850	8	22	B3	26
690.450	8	23	B3	50
691.425	8	24	B3	89

Frequency (MHz)	Group	Chan-nel	Master List	
662.075	9	1	A1	4
662.500	9	2	A1	21
663.650	9	3	A1	67
664.425	9	4	A1	98
665.575	9	5	A2	45
667.175	9	6	A3	10
670.400	9	7	A4	40
671.475	9	8	A4	83
672.075	9	9	A5	8
672.975	9	10	A5	44
676.150	9	11	A6	72
676.675	9	12	A6	93
679.025	9	13	A7	88
679.975	9	14	A8	27
682.550	9	15	A9	31
684.200	9	16	A9	97
685.500	9	17	B1	50
686.375	9	18	B1	85
687.450	9	19	B2	29
688.075	9	20	B2	54
689.150	9	21	B2	97
690.000	9	22	B3	32
690.450	9	23	B3	50
691.475	9	24	B3	91

Frequency (MHz)	Group	Chan-nel	Master List	
662.000	10	1	A1	1
663.025	10	2	A1	42
663.700	10	3	A1	69
665.125	10	4	A2	27
666.150	10	5	A2	68
666.975	10	6	A3	2
669.475	10	7	A4	3
670.650	10	8	A4	50
671.200	10	9	A4	72
672.300	10	10	A5	17
673.200	10	11	A5	53
674.775	10	12	A6	17
679.100	10	13	A7	91
679.875	10	14	A8	23
682.100	10	15	A9	13
682.925	10	16	A9	46
684.750	10	17	B1	20
685.575	10	18	B1	53
686.200	10	19	B1	78
687.200	10	20	B2	19
687.975	10	21	B2	50
689.950	10	22	B3	30
690.600	10	23	B3	56
691.675	10	24	B3	99

SHURE Incorporated Web Address: http://www.shure.com
222 Hartrey Avenue, Evanston IL 60202-3696, U.S.A.
Phone: 847-866-2200 Fax: 847-866-2279
In Europe, Phone: 49-7131-72140 Fax: 49-7131-721414
In Asia, Phone: 852-2839-4290 Fax: 852-2839-4055
Elsewhere, Phone: 847-866-2200 Fax: 847-866-2585