Shure Brothers Incorporated
222 Hartrey Avenue
Evanston IL 60202-3696 U.S.A.

Model 888TT User Guide

DTMF AIRCRAFT MICROPHONE

The Shure Model 888TT is handheld, amplified, noise–cancelling DTMF communications microphone that is FAA Certified for aircraft application (TSO-C58a). In addition to its extremely clear transmission, even in noisy environments, the 888TT has very low sensitivity to hum pickup and low susceptibility to radio frequency interference.

In instances where transmitter input gain requires microphone sensitivity modification, the 888TT has limited access external screwdriver controls for independent adjustment of both mic audio and DTMF levels. This eliminates the problem of fixed audio levels that require disassembling the microphone for adjustments. Restricted control access, however, prevents accidental changes common to other types of external controls.

The microphone has an illuminated keypad made of tough silicone rubber, with durable printed characters that will last the life of the microphone. The keypad is backlit by red LEDs, easily visible during night operation, minimizing eye readjustment for night vision.

The 888TT is designed for use with most currently available aircraft radios. For installation convenience, all microphone and signaling functions, including keypad illumination, are powered directly from the microphone input circuit of most transmitters, reducing the need for equipment modification. A three-conductor MODULINK® cable (sold separately) has a telephone-type modular plug, with an effective strain relief, to connect to the microphone and a PJ-068 plug on the equipment end for connection to most aircraft radios. This cable can be instantly changed or replaced without soldering.

The 888TT is ergonomically designed; it fits naturally and comfortably in the hand and is not affected by heat or humidity. The voice-entry port is at the top of the microphone body for simple, natural transmitting. The rugged ARMO-DUR® case is immune to oil, grease, most fumes and solvents, salt spray, sun, rust and corrosion. The 888TT is outstanding in its ability to withstand mechanical shocks and vibration. Its Million-Cycle Plus™ leaf-type switch is a double-pole, single-throw type, designed to resist the effects of severe operating conditions and constant use. It has nickel-silver blades with palladium-alloy contacts for reliable oxidation-free operation.

The microphone is supplied with output levels factory preset to meet TSO-C58a requirements. Adjustments should be made only by an FAA Approved Service Facility or the Shure Service Department.

The 888TT is supplied with a small screwdriver for releasing the modular-plug microphone cable from the case and for adjusting the microphone amplifier gain and DTMF level. A mounting loop is supplied affixed to the microphone, and mounting brackets for attaching to radio equipment or other surfaces are available in quantities of three as Shure RK6MB.

Features:

- FAA Certified for aircraft use
- Detachable MODULINK modular-plug coil cord with PJ-068 aircraft-radio plug
- Noise-canceling with frequency response tailored for optimum intelligibility
- Top-Talk Sound Channel™ for clear voice input, easy handling
- Built-in transistor amplifier powered by carbon-microphone-type circuit
- Illuminated keypad with positive tactile confirmation and audible verification tones
- Convenient screwdriver-accessible microphone gain adjustment accommodates most input circuits
- Simple easy-to-use continuous-tone dialing
- Screwdriver accessible DTMF level adjustment, independent of microphone gain setting
- Low sensitivity to hum and rf interference
- Rugged Million-Cycle Plus™ leaf-type switch stands up under severe environments and constant use
- High impact ARMO-DUR® case, strong, lightweight, comfortable to the touch in hot or cold environments
- Rugged and dependable under all operating conditions

27A3041 (RL)

Printed in U.S.A.

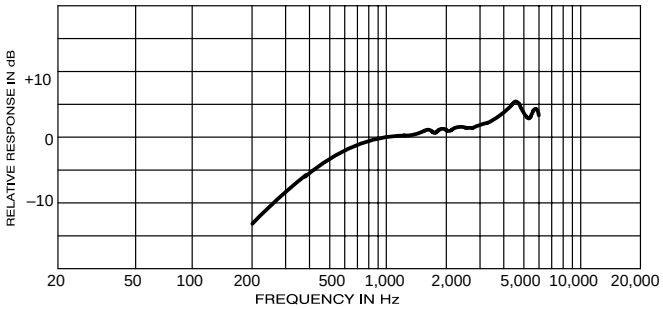
SPECIFICATIONS

Type

Electret condenser, noise canceling, with transistor preamplifier, DTMF signaling circuitry, illuminated keypad

Frequency Response

200 to 4,000 Hz (see Figure 1)



TYPICAL FREQUENCY RESPONSE

FIGURE 1

Polar Pattern

Bidirectional, noise canceling

Electrical Characteristics

	Operating Voltage			
	8 V	**12 V**	**28 V**	**Notes**
Audio Output Level* (100 µbar acoustic test signal at 1 kHz, 10 mm)	–11.5 dBV (266 mV)	–11.0 dBV (281 mV)	–10.0 dBV (316 mV)	Audio trim-pot in factory preset position
DTMF Output Level	–12.8 dBV (230 mV)	–12.0 dBV (250 mV)	–11.2 dBV (275 mV)	DTMF trim-pot in factory preset position
Dc Supply Current†	6 mA	12 mA	36 mA	

*Standard electrical test circuit per RTCA DO-170

†Microphone is powered only while PTT switch is depressed (standby current = 0 if PTT switch is released)

Environmental Conditions

Operating Temperature: –40 to 60° C (–40 to 140° F)

Storage Temperature: –54 to 85° C (–65 to 185° F)

Relative Humidity: 0 to 95% (non-condensing)

Microphone Connector

6-conductor modular telephone type

PTT Switch assembly

Mechanical: Double-pole, single-throw, leaf-type, normally open

Cable

ALM-88, detachable MODULINK, 0.65 m (2.1 ft) coiled (1.8 m [6 ft] extended) cord with modular plug on microphone end and PJ-068 aircraft connector on equipment end

Construction

Case: Black textured high-impact ARMO-DUR

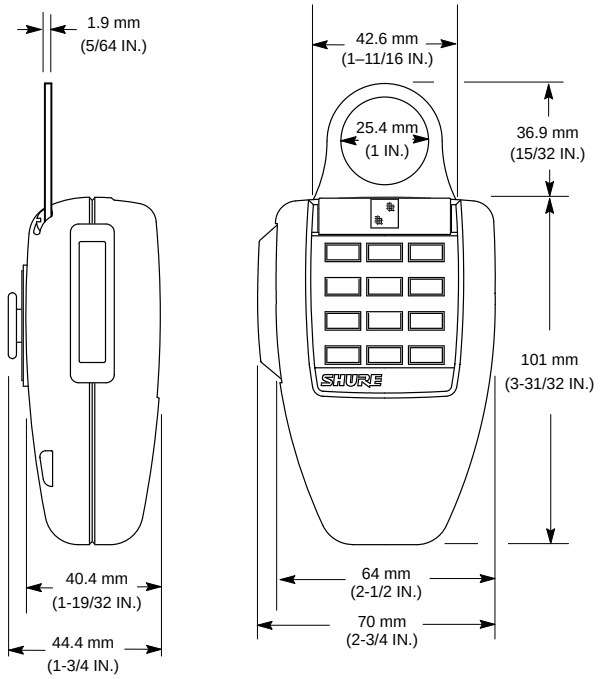
Switch Button: Black ARMO-DUR

Keypad: Molded silicone rubber

Hangup Loop: Matte finish stainless steel

Dimensions

See Figure 2



OVERALL DIMENSIONS

FIGURE 2

Net Weight (including cable and connector)

283 g (10 oz)

Certification

FAA Certified for aircraft under TSO-C58a requirements

FAA CERTIFICATION

The Model 888TT is FAA Certified for aircraft use under FAA TSO-C58a requirements. To maintain this FAA Certification, any service required for the Model 888TT must be performed by Shure Brothers Incorporated, or by an FAA Approved Service Facility.

MOUNTING

The 888TT is equipped with a rear-case hang-up loop and a hang-up button for use with a mounting bracket on associated equipment.

Heavy-duty chrome-plated mounting brackets are available in quantities of three as Shure Part No. RK6MB.

CABLE

To attach the cable to the 888TT, insert the modular telephone-type plug in the microphone jack until it locks. To remove the cable from the microphone, insert the small screwdriver supplied with the 888TT in case hole “A” just above the cable jack (see Figure 4) to unlock the plug and withdraw the plug from the jack.

Microphone connector wiring is shown in the table below.

Microphone Connector Wiring

Pin	Color	Function	Pin	Color	Function
1	———	N.C.	5	Black	PTT Switch Ground
2	White	Dc Bias (+), Audio Out	6	Red	Audio Out (Ac coupled)
3	Yellow	PTT Switch	7	Drain	Ground
4	Blue	NC	8	———	N.C.

The ALM-88 cable is wired at the microphone connector as shown in Figure 3 at the bottom of the page.

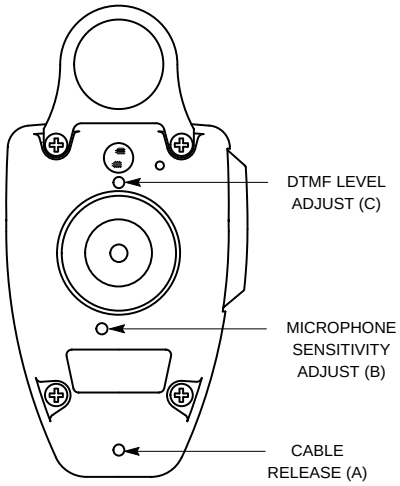
ADJUSTMENTS

Operation of microphone and DTMF functions requires that the 888TT be connected to the communications equipment and that the equipment power is turned on.

After connection to the communications set, turn the equipment power On. Power application can be verified by pressing the push-to-talk switch and observing the keypad LED backlighting.

Factory preset microphone audio and DTMF levels are correct for aircraft radios with standard input circuits (as defined in RTCA DO-170), and level adjustment should not ordinarily be necessary. When such adjustment is necessary, it should be performed only by Shure Brothers Inc. or by an FAA Approved Service Facility. Use the supplied screwdriver to adjust the microphone sensitivity and DTMF output levels as follows:

1. ***Microphone sensitivity:*** Press the push-to-talk button and speak normally into the microphone while checking transmitter modulation. Adjust the microphone sensitivity control (case back, hole "B" in Figure 4) and repeat the talk test as required.



MICROPHONE CASE BACK

FIGURE 4

2. ***DTMF output:*** Press and hold the push-to-talk button. Depress and hold down a keypad button for a continuous tone. Adjust the DTMF output control (case back, hole "C" in Figure 4) as required.

OPERATION

Voice Transmission

1. Hold the microphone comfortably in the hand positioned so that the Top-Talk Sound Channels™ at the top of the case are near the mouth. The clearest sound is often obtained with the microphone at the corner of the mouth, with the cable away from the face.
2. Depress the push-to-talk button and make sure the equipment is in the transmit mode before speaking.

Dialing

1. Press and hold the push-to-talk button.
2. Press the desired keypad buttons in sequence. A high-pitched tone will confirm that the code has been transmitted. (The microphone audio is muted during DTMF tone transmission.)

REPLACEMENT PARTS

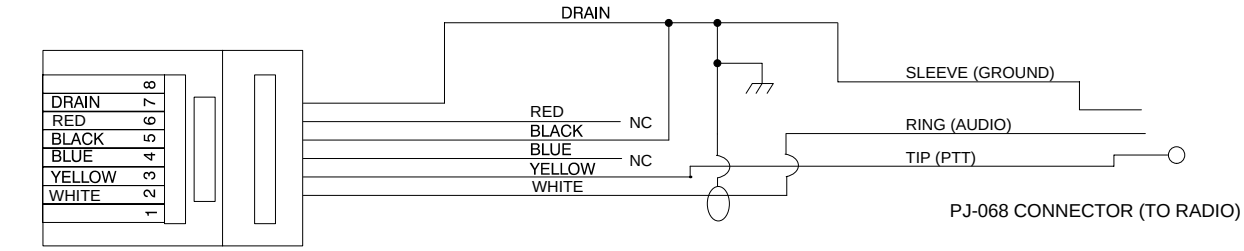
Modular plug-cable with PJ-068 plug assembly . . ALM-88

FURNISHED ACCESSORY

Screwdriver 65A1587

OPTIONAL ACCESSORY

Mounting Bracket (3 in kit) RK6MB



MODULINK CABLE WIRING

FIGURE 3

ENVIRONMENTAL QUALIFICATION FORM, TSO-C58a

DO-170 PARA. #	CONDITIONS	DO-160C PARA. #	DESCRIPTION OF TESTS
3.1.1	Ground Survival Low Temperature and Operating Low Temperature	4.5.1	Microphone tested to Category D1
3.1.2	Ground Survival High Temperature and Short-Time Operating High Temperature	4.5.2	Microphone tested to Category D1
	Operating High Temperature	4.5.3	Microphone tested to Category D1
3.1.3	Altitude	4.6.1	Microphone tested at altitude equivalent to 15,200 m (50,000 ft) = 11.6 kPa (116 mbar, 87 mm [3.42 in.] Hg)
3.1.4	Decompression	4.6.2	Microphone tested at altitude equivalent to 15,200 m (50,000 ft)
3.1.5	Overpressure	4.6.3	Microphone tested at pressure = 170 kPa; equivalent altitude = –15,000 ft
2.11 & 3.2	Temperature Variation – Preamplifier	5.3	Microphone tested to Category B for two cycles.
3.3	Humidity	6.3.1	Microphone tested to Category A for 2 cycles.
3.5	Vibration	8.5	Microphone tested to Categories N, B, & M (Table 8-1, Not on Vibration Isolators)**
3.6	Magnetic Effect	15.3	Microphone tested to Equipment Class Z; no magnetic properties
3.7	Voltage Spike Conducted	17.3	Microphone tested to Category A
3.8.1	Induced Signal Susceptibility*	19.3	Microphone tested to Category Z
3.9	Radiated rf Susceptibility*†	20.5†	Microphone tested to Category A
3.10	Emission of rf Energy*	21.4	Microphone tested to Category Z
3.11	Final Distortion		After all required environmental tests microphone meets requirements of DO-170, 2.2
3.12	Push-To-Talk Switch Life		After all required environmental tests microphone meets requirements of DO-170, Appendix B, T-7 and 2.9
	Fire Retardance		In accordance with FAR 25; 25.869(a)(4) and Appendix F, Part I (a)(3)(b)***

*Tests performed at Radiometrics Midwest Corporation, Lombard, IL

† Tested to DO-160B

**Tests performed at Elite Electronic Engineering, Downers Grove, IL

***Tests performed at Gaynes Test Laboratories, Chicago, IL

All other tests performed at Shure Brothers Inc., Evanston, IL

INFORMATION TO USERS

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. 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 microphone and receiver.

Connect the microphone transmitter into 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.