

TOA WIRELESS MICROPHONE model **WM-320**GENERAL DESCRIPTION

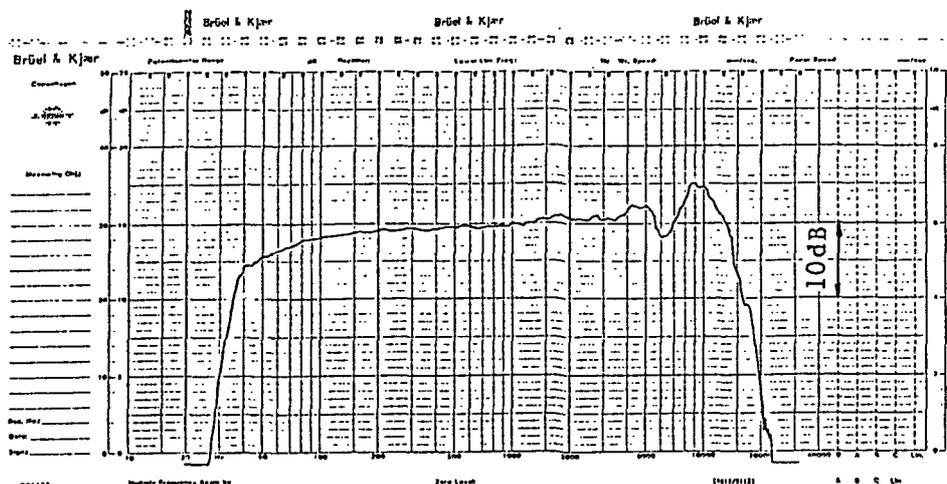
The TOA WM-320 is a crystal controlled lavalier-pocket type wireless microphone designed for operation on a specific frequency from 30MHz to 50MHz.

FEATURES

1. Weighing only 106g, the high-performance transmitter is small enough to fit into a pocket or clip on to a belt, offering complete freedom of movement. The lavalier microphone permits its user to speak without paying much attention to the microphone.
2. The transmitter can accept almost any microphones because of its input sensitivity adjustment control and a detachable connector supplied with 4.5V phantom power.
3. Three (3) "AAA" size alkaline batteries power the WM-320 continuously for 30 hours.
4. Adoption of crystal controlled direct frequency modulation system keeps the oscillation frequency stable against the change of ambient temperature or voltage fluctuation.
5. Dynamic range can be greatly increased, without incorporating compressor and expander, for the pickup of audio signals from a quiet whisper to a full "lung power" without overmodulation and distortion. Its unique circuit design also assures the excellent signal-to-noise ratio.
6. Two (2) LED's are provided for easy-to-see monitoring of the battery consumption.
7. A built-in AGC circuit acts only for excessive input, suppressing a distortion spontaneously. The AGC does not act for normal input, enabling the WM-320 to provide the same performance as that of the "wired" microphone.
8. The transmitter is provided with a STAND-BY switch to silence the receiver while the transmitter power switch is OFF. The STAND-BY switch is independently mounted inside the transmitter lest it is accidentally turned off during use.
9. Switching noise produced when turning switch on and off is extremely low, virtually raising no problem for practical use.

FREQUENCY RESPONSE CURVE

The frequency response has been measured by using a microphone capsule, originally included in the WM-320 package, with the WT-720 receiver, and also by providing a sinewave of 94dB SPL from a point 50 cm distant from the microphone head.

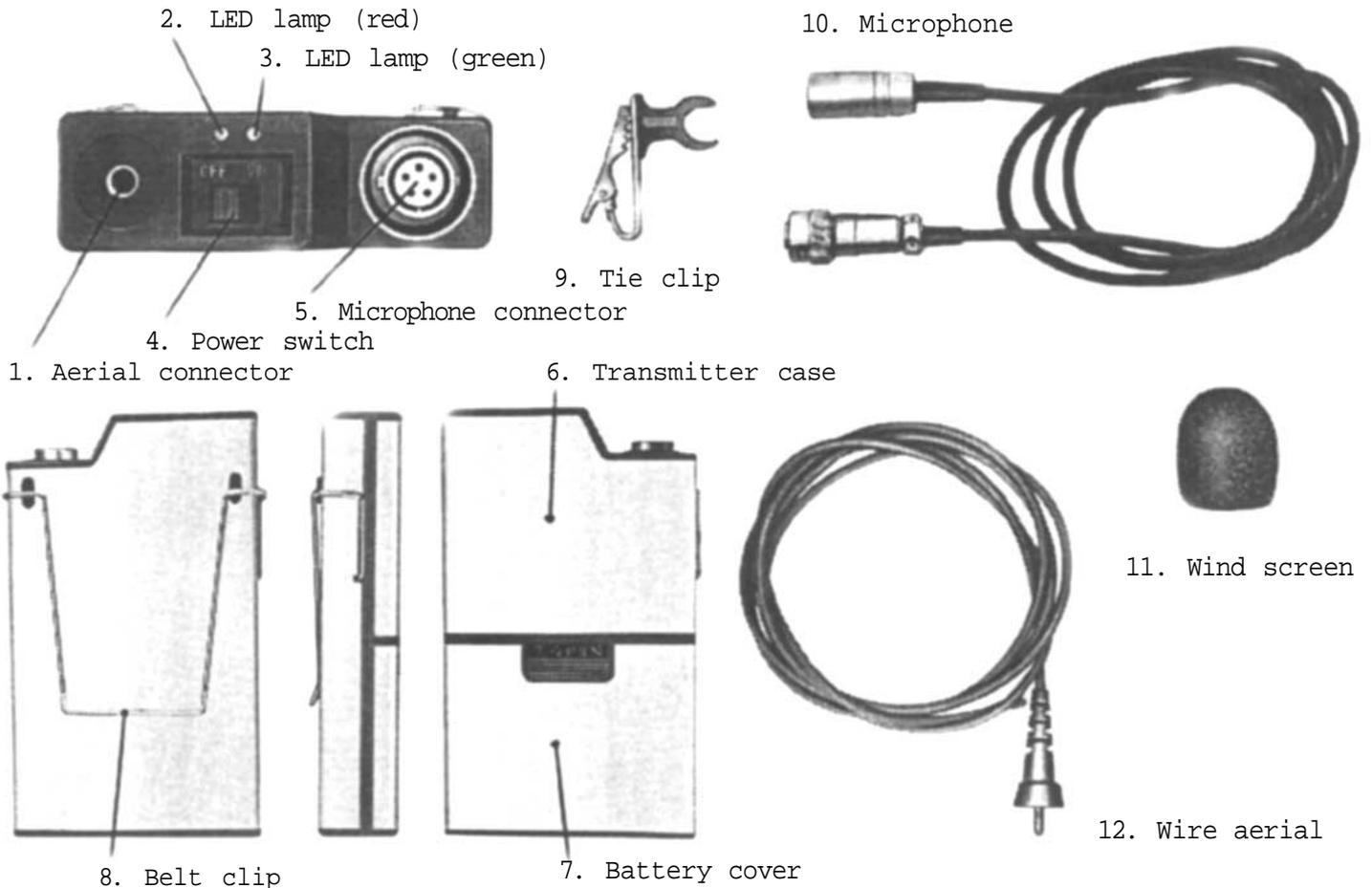


SPECIFICATIONS

| | |
|--|---|
| Nominal carrier frequency: | One of 36.7MHz, 37.1MHz and 37.9MHz |
| Frequency stability: | Less than \pm 10kHz |
| Modulation system: | Crystal controlled direct frequency modulation |
| RF output power: | 40mW |
| Radiated output power: | Less than 1mW |
| Harmonic and spurious output power: | Less than 4nW |
| Radiated harmonic and spurious power: | Less than 4nW |
| Pre-emphasis: | 75usec. |
| Deviation: | Maximum \pm 80 kHz |
| Modulation sensitivity: | 1.7kHz at 82dB SPL (0dB=1V/uBar.)(at fm=1kHz) |
| Max. input S.P.L.: | 115dB SPL (0dB=1V/uBar.)(at fm=1kHz) |
| Frequency characteristics: | 70Hz to 12,000Hz \pm 3dB |
| Distortion: | Less than 0.8% |
| S/N ratio: | Better than 86.5dB |
| Microphone element: | Electret condenser microphone |
| Ambient temperature range: | 10°C to 40°C |
| Antenna: | Whip, 78cm long |
| Operating voltage range: | 3.5V to 4.5V |
| Battery: | 3 pcs. of LR03 (size AAA) or equivalent |
| Battery life: | Approx. 30 Hours When alkaline batteries are used. |
| Dimensions: | 56 (W) x 95.5 (H) x 18 (D) mm (2.2 x 3.8 x 0.7") |
| Weight: | 106g (0.23 lbs) (Batteries are included.) |
| Type approval No.: | M-88/83 for FTZ* |

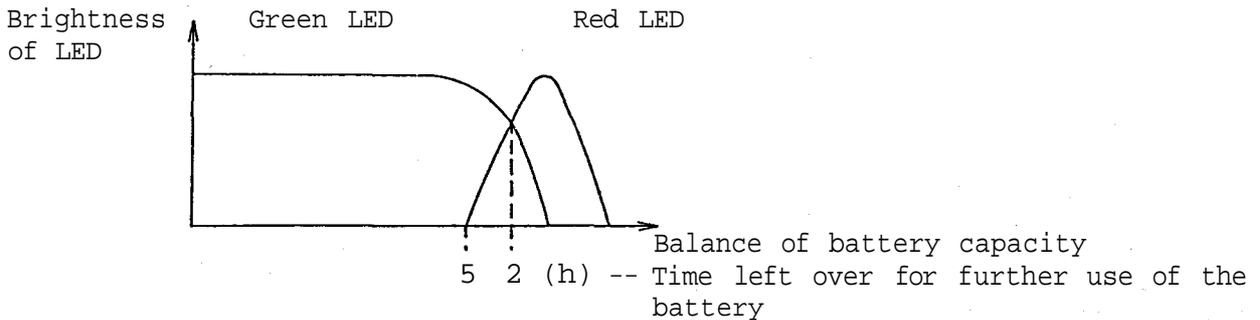
* FTZ: Fernmeldetechnisches Zentralamt (German Telecommunications Central Office).

PART DESCRIPTION



LED TO CHECK BATTERIES, AND TIME FOR REPLACING BATTERIES

The WM-320 employs the cross-over battery check system which permits easy-to-see monitoring of the battery status with 2 LEDs (green and red). The brightness of both LEDs changes as shown below.



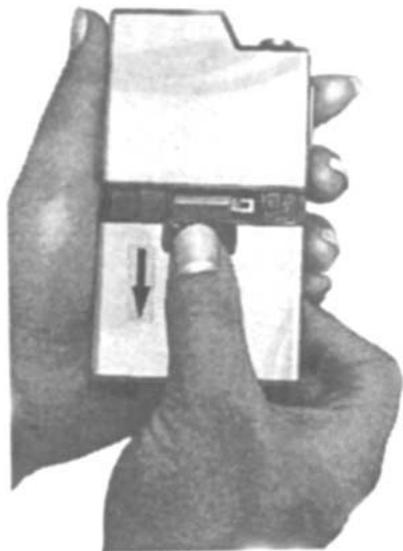
It is possible to use unit continuously for another 5 hours after the red LED comes on. When it lights more brightly than the green LED does, it signals the time that the battery needs replacement (only 2 hours is available for use until the battery capacity is exhausted).

The battery voltage is not stabilized for first several minutes after the power switch is turned on. So, perform the checking of the LED lighting several minutes after power is switched on. Also, if the red LED is illuminated more brightly than the green LED when the power switch is turned off, you should replace the battery with the new one.

The transmitter is made to give up to 30 hours of continuous operation from an alkaline battery.

LOADING BATTERIES

1. To open a battery cover, slide it in the direction pointed by the arrow in an illustration.
2. Mount correctly 3 "AAA" size batteries according to the polarity indication marked inside unit.



Precautions for use of battery

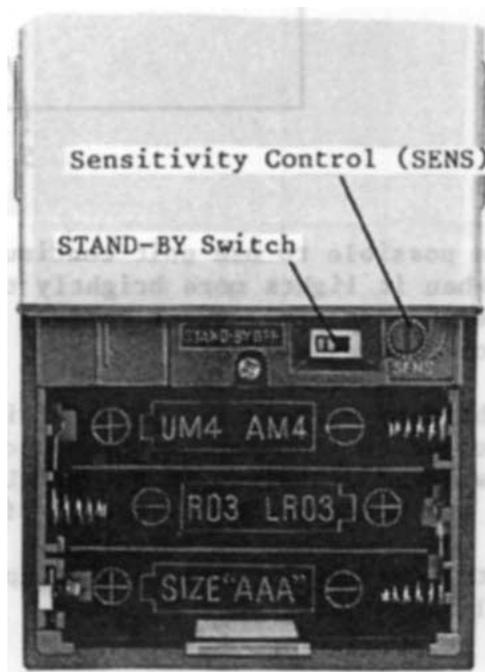
- * Be sure to use "AAA" size batteries. Avoid to use the new and the nearly exhausted batteries altogether as this may shorten an operating time remarkably.
- * Remove the batteries if unit is to be stored for over 10 days. This will prevent any damage a defective "leaking" battery may cause.

OPERATION

1. Confirm that microphone frequency matches receiver frequency.
2. Place a screw-in aerial supplied as free accessory on to an aerial connector.
3. Set the microphone switch to ON, and confirm that a green LED lamp comes on.
4. With the microphone in a designated area, adjust a sound volume control of the receiver lest a howling should occur.
5. Turn the microphone switch off after use and confirm the LED lamp goes out. In the event that the LED lamp still remains lit, refer to the next section, "Using the STAND-BY switch".

USING THE STAND-BY SWITCH

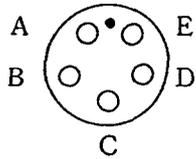
While the microphone switch is OFF, the corresponding receiver can be operated by noise or other radio waves and as a result, it produces unwanted sounds. The STAND-BY switch is used to prevent this phenomenon. For normal use of the microphone, place the STAND-BY switch in the OFF position. Setting it to the ON position supplies power to the transmitter, putting the transmitter in the transmission mode regardless of whether or not the microphone switch is ON. The voice signals may or may not be allowed to go through by placing the microphone switch in the ON or OFF position. Turn off both the STAND-BY and the microphone switch after use, and confirm that the LED lamp goes out.



CONNECTION OF THE MICROPHONE CONNECTOR

The WM-320 contains a transmitter and a mic in one package and is designed for the transmitter to accept any microphones by changing the wiring inside the connector. A table given below shows the change in wiring for each type of microphone you wish to use.

Adjust an input sensitivity adjustment control according to sensitivity of the microphone you use. The input sensitivity adjustment control is already adjusted to the microphone included in a package.



- A: +B (4.5V) DC Power
- B: Electret Mic Power Supply
- C: Signal Input for Condenser Mic
- D: Signal Input for Dynamic Mic
- E: -B (Earth) DC Power

| | 3-wire Condenser Mic | | 2-wire Condenser Mic | | Dynamic Mic |
|--------|----------------------|---------|-----------------------|---------|-------------|
| | Flat | Low-cut | Flat | Low-cut | |
| +B | A | A | | | |
| Signal | C&D | C | C&D | C | D |
| Earth | E | E | E | E | E |
| | | | Short circuit A and B | | |

TIE-CLIP

Fit a clip holder to the mic head along a slot on the mic head. It is possible to direct the clip toward left hand side or right hand side, whichever you like.

WIND SCREEN

Placing a wind screen over the mic head eliminates the "pops" from explosive breath sounds or from wind sounds, resulting in articulate sounds of voices.

BELT CLIP

Attach it to a belt.



USER CARE

1. Signal dropouts (momentary losses of reception) and noise may be suddenly encountered in a certain area as the user holding the microphone moves. These problems are caused by reflection and/or absorption of the transmitted radio waves by the walls or other objects. In such a case, change the locations of the microphone and receiver (receiving aerial).
2. Do not drop the microphone on a hard concrete floor, nor strike the microphone head front with a fist or fingers, nor blow a breath strongly into the microphone head front. Also, avoid to use the WM-320 in areas of high humidity and high temperature as this could lead to the damage of the microphone.



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