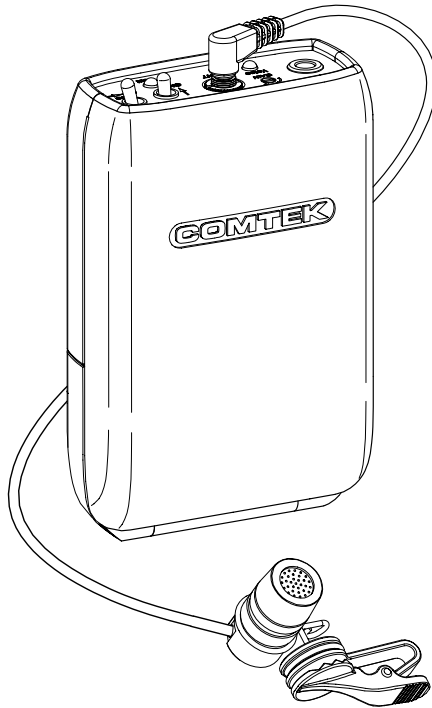


M-175
Personal
Communication
Transmitter



COMTEK[®]

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INTRODUCTION

M-175 ***Personal*** ***Communication*** ***Transmitter***

The M-175 transmitter offers the ultimate performance and versatility for applications where one-way personal communication is required. This compact, personal transmitter is ideal for instructors and presenters who must communicate with persons some distance away or in a noisy environment.

The M-175 incorporates the latest digital and analog technologies to produce low residual noise, wide dynamic range, and extended frequency response rendering the most natural sound possible from a personal communications system.

The audio processing circuit produces full fidelity frequency response from 100 Hz to 10 kHz in the companded or non-companded mode to accommodate a greater variety of receivers. Operating under F.C.C. Regulation Part 90 allows a greater transmission range and reliability than is customary with 72-76 MHz systems.



M-175 SETUP

Setup

a. Check to ensure that the M-175 transmitter's radio frequency channel is the same as the associated COMTEK receiver's channel. (Channels are indicated by the rotary channel selector switches on the back of the transmitter. See page 8.)

b. Open the battery door cover on the transmitter (see page 4) and insert a new nine volt alkaline battery (Eveready E522 or equivalent). This type of battery will offer up to 16 hours of operation. *Replace the battery before every use if the demand for fail-safe operation outweighs battery cost. The use of carbon batteries is not recommended.*

NOTE: If a rechargeable battery is to be used, ensure that it has been allowed to charge at least twelve hours to bring it to full charge (see page 5 for battery charger instructions).

c. Connect the microphone to the transmitter by inserting the microphone plug into the receptacle on the top of the transmitter. The transmitter is operating when the transmitter power switch is turned on and the battery status/on indicator illuminates.

NOTE: The 48-inch microphone cord also functions as part of the transmitter's antenna system. For optimum performance, this cord should be fully extended. Coiling or bunching the microphone cord may reduce the range of the transmitter. The transmitter should be carried by the snap-on belt clip (included) or in a pocket or belt-clip pouch.

d. In a situation where an extremely loud voice or a very soft voice is used, it is necessary to adjust the audio input gain control while observing the audio "voice" level modulation indicator. A full bright LED indicates full audio compression at 100% modulation. For best performance, the audio input gain should be adjusted for some low level LED luminescence during normal audio levels with occasional full bright peaks indicating 100% modulation.

M-175 CONTROLS

❶ COMPAND AUTO / OFF SWITCH: This switch overrides the automatic selection of the companded channels to non-companded operation.

❷ CHANNEL SWITCHES: These rotary switches are used to set the transmitter to the desired operating frequency. (See page 9 and 10 for frequency selection chart.)

❸ BATTERY COMPARTMENT: The battery compartment features a hinged battery cover and an alignment system that ensures proper battery polarity. Battery installation and removal is facilitated by simply manipulating the bottom of the battery.

❹ AUXILIARY AUDIO INPUT JACK: Allows transmitter to use line level, earphone level, or fixed AUX as an audio source.

❺ AUDIO “VOICE” MODULATION INDICATOR: This indicator is used in making adjustment with the Audio Input Gain Control.

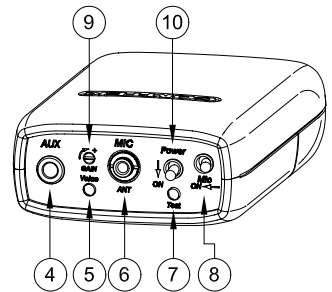
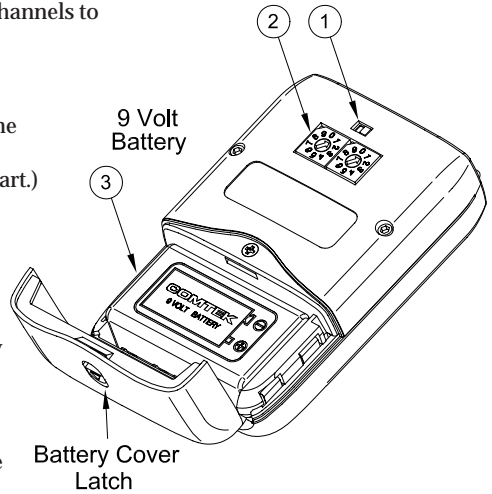
❻ MIC / ANTENNA JACK: This jack accepts an electret type microphone having a 48” long cord with a micro-mini 2.5mm mono plug. The microphone cord functions as part of the transmitter’s antenna system and must be in place for auxiliary audio input operation. If microphone function is not necessary, the optional microphone switch should not be on for this operation.

❼ POWER / BATTERY STATUS INDICATOR: This LED indicator will illuminate continuously when the unit is on, indicating normal operation. When the battery voltage drops below 6 volts, the LED will flash *rapidly*, indicating that a new battery is needed.

❽ OPTIONAL MIC SWITCH: This switch turns off the microphone without turning off the transmitter carrier.

❾ AUDIO INPUT GAIN CONTROL: This is a microphone and AUX level input gain control. This control is used with the “Voice” modulation indicator.

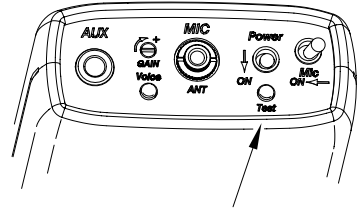
❿ ON / OFF SWITCH: This switch turns the transmitter on and off.



M-175 BATTERY REMOVAL / REPLACEMENT

Low Battery Indicator

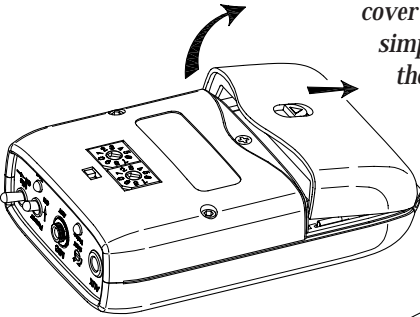
The LED on the top of the transmitter indicates the status of the battery as well as indicating that the unit is turned on. When the transmitter is turned on, the LED illuminates. If the battery is low, the green LED will blink rapidly to warn you that the battery will soon be dead. Replace a low battery immediately.



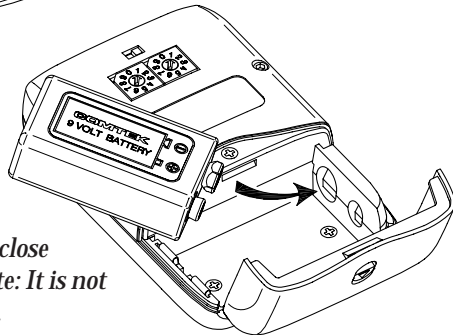
Battery indicator LED

Battery Removal / Replacement

Pull back battery door latch and allow battery cover door to spring open. To remove battery, simply manipulate the bottom of battery out of the compartment and remove.



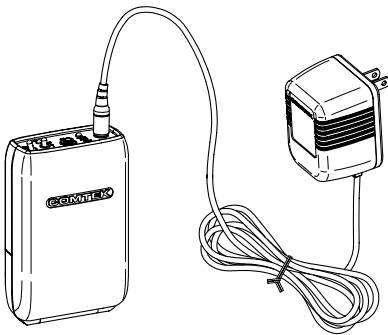
To insert battery, face battery with negative terminal in line with large hole in battery compartment, press battery into compartment and close battery door until it snaps shut. Note: It is not possible to put battery in backwards.



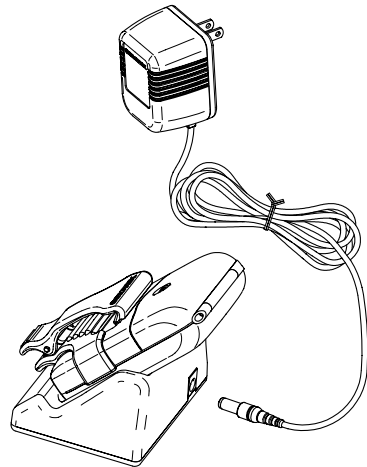
M-175 BATTERY CHARGING

Battery Charging

1. Make sure that a seven cell 9 volt Ni-MH rechargeable battery is used with a minimum of 200 mAh capacity. **(Alkaline batteries must not be charged.)**
2. Make sure the M-175 is turned **OFF**.
3. Note that the red charging indicator on the charger is **ON** when the M-175 is plugged into the charger through the audio output jack.
4. When using the NBC 9-2C charger allow the battery to charge for 14 hours for a full charge. Unit must then be unplugged. When using the NBC 9-3-1 digital fast charger the charger will automatically end the charge cycle and the red LED will change to green. With this charger the unit may be left in the charger until the unit is used.
5. Periodically open the battery compartment on stored COMTEK units to check for battery leakage. If a battery is leaking, it must be discarded, and the battery compartment must be cleaned or returned to COMTEK's service department for repairs.



NBC 9-2C
14-hour charger



NBC 9-3-1
digital fast charger

M-175 AUXILIARY AUDIO INPUT OPERATION

Auxiliary Audio Input Operation

The M-175 transmitter may transmit a variety of audio sources such as tape and C.D. players, TV and VCR's, or any audio device having an auxiliary or line level audio output.

The auxiliary input cable supplied with the M-175 transmitter (CB-36 ST) will operate with any device having a mini 3.5 mm jack, stereo or mono, and with line level or earphone level output.

To accommodate a variety of specialty applications, auxiliary input cables with RCA phono plug, 1/4" audio phone plug, and XLR connectors are available from COMTEK.

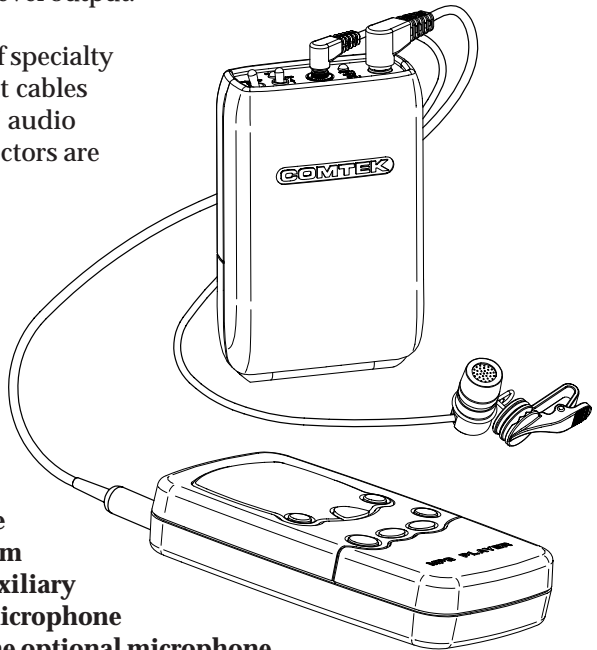
Setup

a. Connect the microphone to the transmitter by inserting the microphone plug into the receptacle on the top of the transmitter.

Note: The microphone cord functions as part of the transmitter's antenna system and must be in place for auxiliary audio input operation. If microphone function is not necessary, the optional microphone switch should not be on for this operation.

b. Connect the proper auxiliary input cable to the audio source. Connect the right-angle mini plug end of the auxiliary input cable in the "AUX" input jack of the M-175 transmitter.

Note: Check to ensure that the audio source is a line level, earphone level, or fixed AUX level output.



M-175 AUX OPERATION (Cont.) / SNAP-ON BELT CLIP

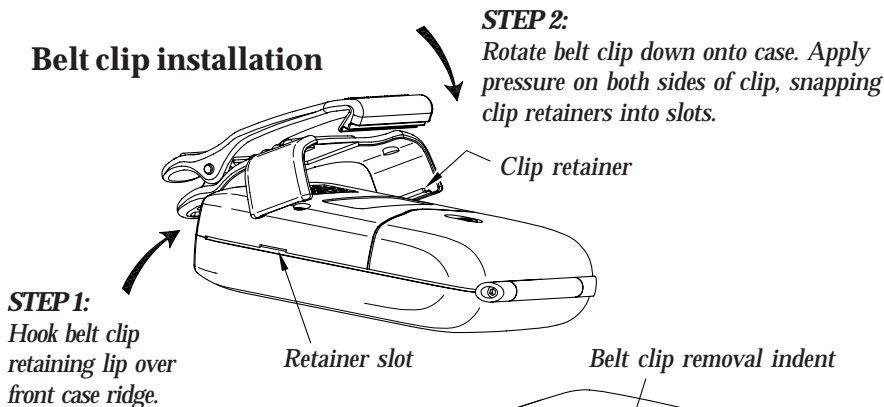
c. Turn on the transmitter with program from the audio source being fed to the transmitter. Observe the audio “voice” level modulation indicator. A full bright LED indicates full audio compression at 100% modulation. For best performance, the audio input gain should be adjusted for some low level LED luminescence during normal audio levels with occasional full bright peaks indicating 100% modulation.

d. When using the auxiliary audio input with the microphone plugged into the transmitter, priority should be given to the microphone gain adjustment. The mixing balance between the auxiliary audio and the microphone should be made with the volume control of the auxiliary audio source.

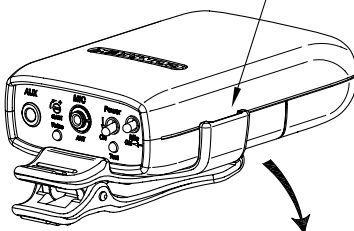
Note: The optional microphone switch only affects the microphone. It does not affect the auxiliary audio input.

M-175 SNAP-ON BELT CLIP (Included)

Belt clip installation



Belt clip removal



Flex out and pull down with your thumb or a large coin (quarter) to unsnap belt clip from case.

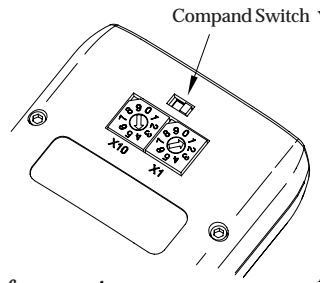
M-175 FREQUENCY SELECTION

Frequency Selection (72-76 MHz)

The M-175 transmitter can operate on one of 88 available channels between 72-76 MHz. COMTEK channel designations indicate a specific frequency which can be used in the companded or non-companded mode of operation. When the “compand auto/off switch” is in the “auto” position, the M-175 transmitter must be used only with receivers having 2:1 audio companding processing. When the “compand Auto/Off switch” is in the “off” position, standard non-companded receivers must be used.

After you have determined the channel on which you are going to operate, position the two rotary switches to indicate the channel. The left rotary switch is for *tens* and the right rotary switch is for *ones*. To select channel 41 (72.92 MHz), position the left rotary switch to point to 4 (X10), and position the right rotary switch to point to 1 (X1).

Refer to frequency charts on pages 9 and 10 for selectable frequencies.



Multiple Channel Operation

When multiple transmitters are broadcasting in the same immediate area (within 100 feet), the RF signals will “mix” together generating additional signals. If these product frequencies are too close to a frequency which you are using, you will experience intermodulation interference. This condition is common to all radio receivers to some extent.

Simultaneous operation of more than three channels requires frequency coordination to avoid intermodulation interference which could result in poor or unusable performance.

To avoid this type of interference, you should select frequencies from one of the standard groups (see group frequency charts on pages 9 and 10), or use COMTEK’s frequency selection software available at www.comtek.com to determine appropriate frequencies or contact COMTEK to obtain a free copy.

M-175 FREQUENCY INFORMATION

72-76 MHz STANDARD COMPADED CHANNELS

CHAN	FREQ
01	72.02 MHz
02	72.04 MHz
03	72.06 MHz
04	72.08 MHz
05	72.10 MHz
06	72.12 MHz
07	72.14 MHz
08	72.16 MHz
09	72.18 MHz
10	72.20 MHz
11	72.22 MHz
12	72.24 MHz
13	72.26 MHz
14	72.28 MHz
15	72.30 MHz
16	72.32 MHz
17	72.34 MHz
18	72.36 MHz
19	72.38 MHz
20	72.40 MHz
21	72.42 MHz
22	72.46 MHz
23	72.50 MHz
24	72.54 MHz
25	72.58 MHz
26	72.62 MHz
27	72.64 MHz
28	72.66 MHz
29	72.68 MHz
30	72.70 MHz
31	72.72 MHz
32	72.74 MHz
33	72.76 MHz
34	72.78 MHz

CHAN	FREQ
35	72.80 MHz
36	72.82 MHz
37	72.84 MHz
38	72.86 MHz
39	72.88 MHz
40	72.90 MHz
41	72.92 MHz
42	72.94 MHz
43	72.96 MHz
44	72.98 MHz
45	74.61 MHz
46	74.63 MHz
47	74.65 MHz
48	74.67 MHz
49	74.69 MHz
50	74.71 MHz
51	74.73 MHz
52	74.75 MHz
53	74.77 MHz
54	74.79 MHz
55	75.21 MHz
56	75.23 MHz
57	75.25 MHz
58	75.27 MHz
59	75.29 MHz
60	75.31 MHz
61	75.33 MHz
62	75.35 MHz
63	75.37 MHz
64	75.39 MHz
65	75.42 MHz
66	75.46 MHz
67	75.50 MHz
68	75.54 MHz

CHAN	FREQ
69	75.58 MHz
70	75.62 MHz
71	75.64 MHz
72	75.66 MHz
73	75.68 MHz
74	75.70 MHz
75	75.72 MHz
76	75.74 MHz
77	75.76 MHz
78	75.78 MHz
79	75.80 MHz
80	75.82 MHz
81	75.84 MHz
82	75.86 MHz
83	75.88 MHz
84	75.90 MHz
85	75.92 MHz
86	75.94 MHz
87	75.96 MHz
88	75.98 MHz

Recommended Channels For Non-Companded Receivers

CHAN	FREQUENCY	CHAN
05	72.1 MHz	A
15	72.3 MHz	B
23	72.5 MHz	C
30	72.7 MHz	D
40	72.9 MHz	E
67	75.5 MHz	F
74	75.7 MHz	G
84	75.9 MHz	H
50	74.7 MHz	I
60	75.3 MHz	J

GROUP 1

CHAN	FREQ
01	72.02 MHz
11	72.22 MHz
31	72.72 MHz
45	74.61 MHz
70	75.62 MHz
75	75.72 MHz

GROUP 2

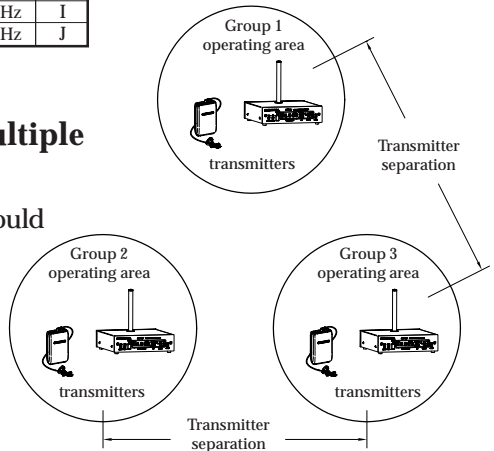
CHAN	FREQ
04	72.08 MHz
09	72.18 MHz
31	72.72 MHz
53	74.77 MHz
69	75.58 MHz
85	75.92 MHz

GROUP 3

CHAN	FREQ
13	72.26 MHz
25	72.58 MHz
54	74.79 MHz
57	75.25 MHz
81	75.84 MHz
87	75.96 MHz

Transmitter Proximities For Multiple Channel Operation

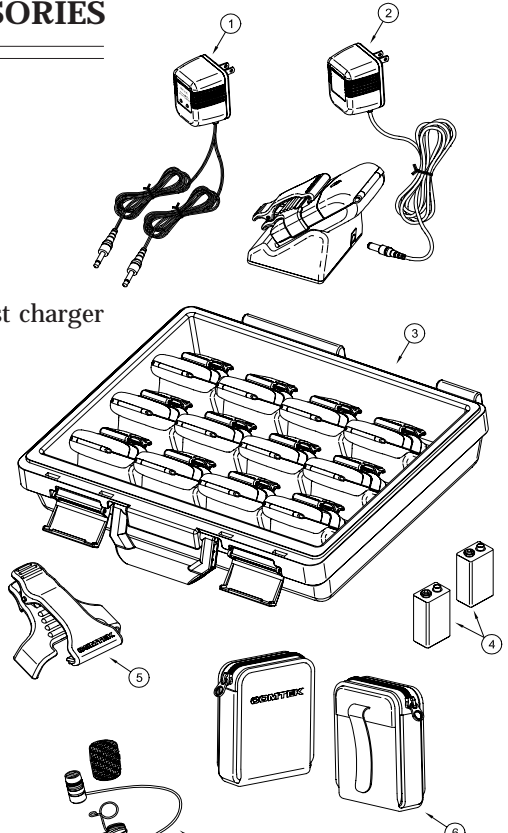
Frequency groups being transmitted should be separated by 2X the operating area; and for best performance, the group operating areas should have a 100 ft. minimum separation.



M-175 OPTIONAL ACCESSORIES

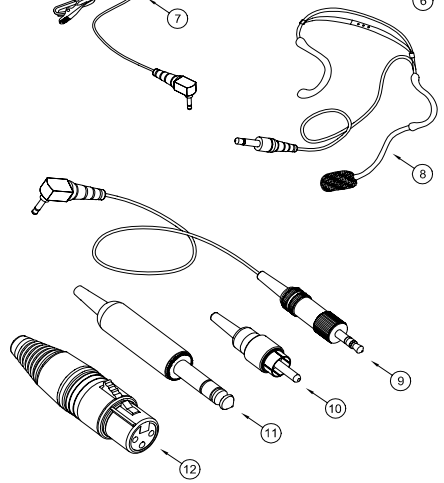
Optional Accessories

1. NBC 9-2C Battery charger
2. NBC 9-3-1 Digital fast charger
3. NBC 9-3-12 Digital 12-station fast charger
4. NH9-200 Rechargeable batteries
5. BC-216 Snap-on belt clip (supplied with M-175)
6. P1 Universal pouch
7. SM-185 Unidirectional electret condenser microphone
8. PSC-HM Headworn unidirectional electret microphone



Auxiliary Audio Input Cords

9. CB-36 STM Stereo mini 3.5mm (supplied with M-175)
10. CB-36 RCA Phono plug (optional)
11. CB-36 ST1/4 Stereo 1/4" (optional)
12. CB-36 XLR XLR-F 3 pin connector (optional)



M-175 SPECIFICATIONS

Audio Input:

- Microphone input impedance for electret type microphone - 3000 ohm
- Aux/Line input impedance - 10 k ohm (0 dBV nominal)

Connectors:

Microphone - Micro-mini mono 2.5mm

Auxiliary - TRS 3.5mm jack

Audio: Tip and sleeve

Battery Charging: Tip and sleeve

Controls and Indicators:

- Synthesized channel selection switches
- Power On/Off switch
- Optional microphone switch
- Audio input gain control
- Power/Battery status indicator
- Audio (voice level) modulation indicator
- Manual compand switch

Frequency Response:

100 Hz to 10 kHz

Audio Distortion:

Less than 1% at 50% modulation

Modulation Limiter:

Soft compressor with 30 dB linear overload protection; attack time - less than 1 ms, recovery time - 10 ms

Frequency Modulation:

7.5 kHz deviation (companded)

5.0 kHz deviation (non-companded)

Operating Radio Frequency:

88 synthesized channels in the 72-76 MHz band.

Out-of-Band Emissions:

Better than 50 dB below carrier

R.F. Stability:

20 ppm XTL controlled

Digitally synthesized

RF Power Output:

40 mW to antenna system

FCC Compliance:

Type Accepted under FCC Part 90

Antenna System:

Body induction microphone cord antenna.

Current Drain:

29 mA constant current

Battery:

- 9 volt alkaline Eveready 522 or equivalent for up to 16 hours of use
- Rechargeable 9 volt Ni-MH 200 mAh battery for up to 5 hours of operation
- Rechargeable 9 volt Lithium Polymer 500 mAh battery for up to 16 hours of use

Dimensions:

1 1/16" x 2 1/4" x 3 1/2"

(27 mm x 57 mm x 89 mm)

Weight:

5 ounces (140 grams)

NOTE: Specifications subject to change without notice or obligation

M-175 WARRANTY AND SERVICE

Warranty

COMTEK warrants this product to be free from defects in workmanship and material under normal use and conditions for a period of one year from date of original purchase. Items such as batteries, neckloops, and cords are not covered by the warranty. Damage due to misuse, ill treatment and unauthorized modification and repairs are not covered by this warranty. COMTEK is not liable for consequential damages arising out of any failure of the equipment to perform as intended. COMTEK shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it. COMTEK SPECIFICALLY DISCLAIMS AND NEGATES ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF SUCH EQUIPMENT INCLUDING, WITHOUT LIMITATION, ANY WARRANTY THAT THE USE OF SUCH EQUIPMENT FOR ANY PURPOSE WILL COMPLY WITH APPLICABLE LAWS AND REGULATIONS.

Service Policies

Warranty repairs must be done by COMTEK. Only factory technicians are authorized to perform warranty service on the M-175 transmitter. Before returning the M-175 for service, a Return Authorization Number should be obtained from the service department by calling 1-800-496-3463 or 1-801-466-3463. Return the unit to the factory with the original or comparable packing. COMTEK will pay for insurance and ground return shipping costs in the United States for all warranty service.