

# MT 2000

SYNTHESIZED FM PORTABLE RADIO

## Creating New Horizons

- VHF ▶ 5 to 1 Watts
  - ▶ 136-174 MHz
- UHF ▶ 4 to 1 Watts
  - ▶ 403-470 MHz
  - ▶ 450-520 MHz
- 800 ▶ 3 Watts
  - ▶ 806-870 MHz

48 Channel Top Display  
A4 Model

160 Channel Front  
Display and Keypad A7  
Model

### 12.5/20/25/30 kHz

Channel Spacing  
RSS Programmable Per  
Mode UHF/VHF

The MT 2000 series offers you small, rugged, economically packaged radios loaded with features and full alphanumeric displays never before offered in a Motorola MT portable product. In addition, the MT 2000 radio includes programmable function controls and radio-to-radio cloning for increased user flexibility. Of course, the MT 2000 radio family incorporates the quality and reliability you have come to expect from Motorola—the leader in FM two-way radio communications.



**NOVA**  
COMMUNICATIONS

 **MOTOROLA**

# GENERAL FEATURES

All MT 2000 radios include the following hardware configurations:

- ▶ Belt Clip
- ▶ Antenna
- ▶ Side Mounted Monitor Button
- ▶ Two Programmable Side Mounted Buttons
- ▶ "Quick Disconnect" Accessory Port
- ▶ Rotary Channel Selector Knob
- ▶ Noise Canceling Microphone
- ▶ On/Off/Volume Knob
- ▶ One Programmable Top Button
- ▶ Back-lit Alphanumeric Display
- ▶ Dual Charge High Capacity Battery
- ▶ Top Mounted Bi-Color LED Indicator
- ▶ Weather-Sealed Universal Connector
- ▶ 3-Position Programmable Toggle Switch
- ▶ 15 Button Keypad (A7 model only)
- ▶ 2-Position Programmable Switch



*Easy access controls, A7 Model*



*Programmable buttons and switches*



## Channel/Zone Operation

The MT 2000 portable features extensive channel and zoning capabilities in both of its models. The A4 model accommodates 48 channels through three zones of 16 channels each. Without zoning operation, the A4 model is capable of 16 channels selectable from the rotary selector knob. The A7 model has 160 channels available through 10 zones that each have 16 channels. The A7 model can also accommodate all of its 160 channels without zoning operation via channel selection from the standard 15 button keypad. If rotary only channel selection is desired on the A7, only 16 channels can be accessed without zone operation.

## AlphaNumeric Display

Both MT 2000 models feature easy to read back-lit alphanumeric LCD displays which provide the user with instant channel and radio status information at a glance. The A4 model has a top mounted six character star-burst display, and the A7 model has a front mounted 14 character dot matrix display. The A4 top mount display is "operator flippable" so it can be read from the front, or while hanging from one's belt. All MT 2000 radios also feature easy to read radio function annunciators as part of the display windows to provide the user with vital radio indicators.

## Mode and Zone Naming

Both MT 2000 models are field programmable for both mode and zone naming. Naming of modes and zones reduces the risk of a user being on an incorrect frequency setting because of cryptic or ambiguous nomenclature. A combination of mode and zone names can be six characters in length on the A4 top display model, and 14 characters in length on the A7 front display model.

## Keypad Operation (A7 model only)

A set of 15 back-lit buttons constitutes the keypad on the front display A7 MT 2000 model. This keypad provides the user with additional access to the radio's features through the use of navigation buttons. With it, the radio's features can be viewed in a scrolling list three at a time, with all functions just one keystroke away. In fact, through the programming software, the user can determine the order in which those features most important to him appear in the scrolling order. That way, those most needed radio attributes can be accessed quickly and easily. A dedicated "home" button is available so a user can easily exit any function and return quickly to the last mode use. Additionally, in those situations where noise must be kept to a mini-

mum, all keystroke tones can be easily muted by the operator.

## Radio Lock (A7 model only)

This feature provides a means for the user to prevent unauthorized use of the radio upon power up. All user accessible functions will be disabled until the correct password is entered by the user after the radio is turned on. The radio lock password can even be modified by the user in the field.

## Full Band Operation

The MT 2000 radio features Motorola's broadest band range. With "Full Band VHF", a single model can operate from 136 to 174 MHz—and with only two models, you'll cover the entire UHF band, as well.

## Enhanced Audio

The MT 2000 radio is one of the loudest portables ever developed by Motorola. Improved voice intelligibility at high volumes means less distortion and fewer miscommunications. The radio's standard noise canceling microphone minimizes background noise.

## Universal Connector

A weather-sealed connector allows all reprogramming, tuning and testing to be performed without opening the radio. The connector is multi-functional and allows quick connect and release of accessories.

## Radio-to-Radio Cloning

Using a simple cloning cable you can duplicate one radio's operating parameters into another MT 2000 portable of the same model configuration and sub-band.

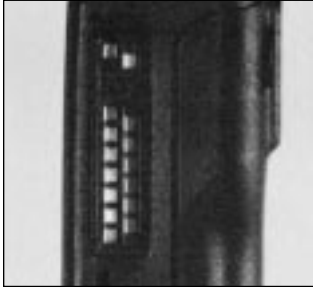
## Channel Scan Monitoring

Allows the radio to scan up to 16 lists of channels. Channel Scan is capable of scanning for PL, DPL, Carrier Squelch, and Stat-Alert Selective Call, and can be configured for Non-Priority or Single Priority operation. The MT 2000 radio also includes Talk-back scan and nuisance channel delete capability where the user can temporarily delete an unwanted active channel from the scan list by simply pressing a button.

## Adjustable Power Levels (UHF and VHF only)

The MT 2000 portable can be programmed to adjust RF power levels automatically on a mode slaved basis,

# GENERAL FEATURES



**Side mounted, weather sealed universal connected**



**Back-lit 15 button keypad**

or manually through operation of a switch. Variable RF power level provides the capability of having up to two power levels in one radio, and of operating in high or low power on a per channel basis. The default power levels in VHF are 5 Watts (high) and 1 Watt (low) and in UHF are 4 Watts (high) and 1 Watt (low). The two power levels can be changed in the field by a service technician if other than the default settings are required.

## Smart PTT-Busy Channel Lockout

Prevent users from "talking over" each other by restricting the user from transmitting if activity is detected on the channel. The radio will generate a continuous tone upon PTT depress if a transmission is not being allowed. Inhibit Transmit can be activated for any busy channel or only on a busy channel with a different squelch code. A quick-key override option can work in conjunction with Smart PTT to allow the user to override the transmit inhibit state for times when transmission is critical.

## Repeater and Talkaround Operation

Allows the user to choose operation through a repeater (where the transmit frequency is not equal to the receive frequency), or operation that bypasses a repeater and talks directly to another unit (Talkaround or Direct Operation). When the feature is mode slaved, the channel is programmed to operate either in the direct or repeat mode. Alternatively, the repeater/talkaround function can be programmed to the toggle switches where the user can select from the two operating choices in the field.

## Coded Squelch Operation

Allows the user to operate a radio in Carrier Squelch, PL or DPL mode. When in the Carrier Squelch mode, the user will hear all traffic on the selected channel, but when operating PL or DPL modes, the user will hear only those messages that are intended for his group. Tone PL and Digital PL can be mixed on a per channel basis.

## Low Battery Alert

An annunciator will appear in the display if the battery falls below a specified voltage level while in the transmit mode. The radio can also be programmed to sound an alert tone if the low battery condition is detected during transmission or periodically while in the stand-by mode.

## Time-Out Timer

Limits the amount of time the user can continuously transmit on a channel. If the PTT is held down longer than the preprogrammed limit, the radio automatically emits a warning tone, then stops transmitting, and will generate a talk prohibit tone until the PTT is released.

# SIGNALLING FEATURES

## MDC-1200 STAT-ALERT Signalling

Unit ID and Emergency—Each MT 2000 radio can be programmed to send a unique digital identification code at the beginning of each transmission, at the end, or both. This ID may be combined with an emergency alarm that is activated by an emergency button on that top of the radio. The dispatcher can quickly identify the radio user, and also receive nearly instant clear indication of critical situations.

## Call Alert and Selective Call Decode

Provides an efficient way for the dispatcher to initiate a page or a voice page message to an individual or a group. It is a convenient way to eliminate the need for users to listen to traffic that does not concern them. When the user receives a Call Alert, the radio will continuously generate a series of four tones and flash the green LED until the user takes action. When the user receives a Selective Call, the radio will generate alert tones, flash the green LED, and will unmute so an incoming message can be heard.

## Radio Check

Allows the dispatcher to determine if the radio unit is on the air and within communications range without disturbing the radio operator.

## Tilt Switch

When equipped with the optional Tilt Switch accessory, the MT 2000 radio will send an emergency transmission after a preprogrammed delay time if the radio is tilted greater than 60°.

## Touch-Code Signalling

Touch-Code signalling allows encoding of Dual Tone Multi-Frequency tones via a keypad. This lets a user access the land-line phone network or gives them the capability to operate remote control devices. There are several operational configurations that may be programmed by the user, including manual or automatic phone line access, and live or buffered dialing.

# OPTIONAL FEATURES

## Intrinsically Safe

The MT 2000 portable, when ordered with the Intrinsically Safe option and used with Motorola's FM batteries, is approved for operation in hazardous atmospheric environments by the U.S. Factory Mutual agency.

# MOTOROLA BUILT AND BACKED

## ALT

The MT 2000 portable will keep working under harsh conditions. Like all Motorola products, the radio is subjected during the design stages to our unique Accelerated Lift Test (ALT) which simulates five years of intensive field stress.

## Warranty

All MT 2000 radios are backed by Motorola's One Year Parts and Labor Warranty for protection against defects in material and workmanship under normal use and service.



# MT 2000

## Synthesized FM Portable Radio

# SPECIFICATIONS

### TYPICAL PERFORMANCE SPECIFICATIONS\*

General	Model Number	Channels	Bandsplit	RF Power Output	Display/Keypad
VHF Models	H01KDD9AA4_N	48	136-174 MHz	1 to 5 Watts	Top 6 Character/None
	H01KDH9AA7_N	160	136-174 MHz	1 to 5 Watts	Front 14 Character/15 Button
UHF Models	H01RDD9AA4_N	48	403-470 MHz	1 to 4 Watts	Top 6 Character/None
	H01RDH9AA7_N	160	403-170 MHz	1 to 4 Watts	Front 14 Character/15 Button
	H01SDD9AA4_N	48	450-520 MHz	1 to 4 Watts	Top 6 Character/None
	H01SDH9AA7_N	160	450-520 MHz	1 to 4 Watts	Front 14 Character/15 Button
800 Models	H01UCD6AA4_N	48	806-870 MHz	3 Watts	Top 6 Character/None
	H01UCD6AA7_N	160	806-870 MHz	3 Watts	Front 14 Character/15 Button
<b>Power Supply:</b>	Provided through one rechargeable nickel cadmium battery.				
<b>Sealing:</b>	Withstands rain testing per Mil. Std. 810 C/D/E				
<b>Shock and Vibration:</b>	Protection provided via impact resistant housing exceeding EIA RS-316B and Mil. Std. 810 C/D/E				
<b>Dust and Humidity:</b>	Protection provided via weather resistant housing exceeding EIA RS-316B and Mil. Std. 810 C/D/E				

Radio Dimensions		Radio Weight	
<b>Radio Only:</b>	6.30" (H) x 2.34" (W) x 1.49" (D)	<b>Radio Only:</b>	10.3 oz.
<b>With Medium Capacity Battery:</b>	6.30" (H) x 2.34" (W) x 1.49" (D)	<b>With Medium Capacity Battery:</b>	17.0 oz.
<b>With High Capacity Battery:</b>	6.30" (H) x 2.34" (W) x 1.49" (D)	<b>With High Capacity Battery:</b>	18.4 oz.
<b>With Ultra High Capacity Battery:</b>	6.30" (H) x 2.34" (W) x 1.54" (D)	<b>With Ultra High Capacity Battery:</b>	19.5 oz.

Dimensions Note: All depth and width dimensions reflect measurements taken at the widest points on the radio unit. They do not reflect every width and depth point on the radio.

Battery Life @ 5/5/90	VHF @ 5W	VHF @ 1W	UHF @ 4W	UHF @ 1W	800 @ 3W
<b>Medium Capacity Battery:</b>	4.0 Hours	5.0 Hours	4.0 Hours	5.0 Hours	3.6 Hours
<b>High Capacity Battery:</b>	8.0 Hours	11.0 Hours	8.0 Hours	11.0 Hours	8.0 Hours
<b>Ultra High Capacity Battery:</b>	9.0 Hours	12.0 Hours	9.0 Hours	12.0 Hours	9.0 Hours

\*Specifications are per EIA 316B unless otherwise noted.

TRANSMITTER				
Frequency Range:	136-174 MHz	403-470 MHz	450-520 MHz	806-825 MHz 851-870 MHz
<b>Channel Spacing:</b>	12.5/25/30 kHz	12.5/25 kHz	12.5/25 kHz	25 kHz
<b>FM Hum &amp; Noise:</b> @ 12.5 kHz: @ 25 or 30 kHz (Companion Receiver Method)	-40 dB -45 dB	-40 dB -45 dB	-40 dB -45 dB	-45 dB
<b>Audio Distortion:</b>	3%	3%	3%	3%
<b>Spurious &amp; Harmonics:</b>	-66 dBW	-66 dBW	-66 dBW	-46 dBW
<b>Frequency Stability:</b> (-30 to +60° C; 25° C ref.) (821-824 MHz Capable):	± .0002%	± .0002%	± .0002%	± .0002%
<b>FCC ID:</b>	AZ489FT3768	AZ489FT4781	AZ489FT4780	AZ489FT5747
<b>Emission Designators:</b>	25 kHz: 16K0F3E 20K0F2D 20K0F1E  12.5 kHz: 11K0F3E 11K0F2D	16K0F3E 16K0F1D 15K0F2D 20K0F1E	16K0F3E 20K0F2D 20K0F1E	16K0F3E 16K0F1E 20K0F1E 15K0F2D 16K0F1D 14K0F3E 14K0F1D
<b>Audio Response:</b> (from a 6 dB/octave pre-emphasis 300 to 3000 Hz)	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB

RECEIVER				
Frequency Range:	136-174 MHz	403-470 MHz	450-520 MHz	806-825 MHz 851-870 MHz
<b>Channel Spacing:</b>	12.5/25/30 kHz	12.5/25 kHz	12.5/25 kHz	25 kHz
<b>Modulation Acceptance</b> @ 12.5 kHz: @ 25 or 30 kHz	± 3.75 kHz ± 7.5 kHz	± 3.75 kHz ± 7.5 kHz	± 3.75 kHz ± 7.5 kHz	± 7.5 kHz
<b>Audio Distortion:</b>	3%	3%	3%	3%
<b>Intermodulation</b> @ 12.5 kHz: @ 25 or 30 kHz	-65 dB -75 dB	-63 dB -73 dB	-63 dB -73 dB	-70 dB
<b>Sensitivity:</b> 20 dB Quietening: 12 dB Sinad:	.40 µV .28 µV	.40 µV .28 µV	.40 µV .28 µV	.50 µV .35 µV
<b>Adjacent Channel Selectivity</b> (12 dB Sinad): @ 12.5 kHz: @ 25 or 30 kHz	-65 dB -75 dB	-63 dB -73 dB	-63 dB -73 dB	-70 dB
<b>Spurious Response Rejection:</b> ½ I.F.:	-75dB -75dB	-73 dB -68 dB	-73 dB -68 dB	-70 dB -70 dB
<b>Image Rejection:</b>	-74dB	-73 dB	-73 dB	-74 dB
<b>Rated Audio Output:</b>	500 mW	500 mW	500 mW	500 mW
<b>Frequency Stability:</b> @ 12.5 kHz: @ 25 or 30 kHz: (-30 to +60° C; 25° C ref.)	± .0005% ± .0005%	± .0003% ± .0005%	± .0003% ± .0005%	± .00025%

Standard	U.S. Military Spec 810C		U.S. Military Spec 810D		U.S. Military Spec 810E	
	Method	Procedure	Method	Procedure	Method	Procedure
Low Pressure	500.1	I	500.2	II	500.3	II
High Temperature	501.1	I	501.2	I (Cat. A1), II	501.3	I (Cat. A1), II
Low Temperature	502.1	I	502.2	I (Cat. C1), II	502.3	I (Cat. C1), II
Temperature Shock	503.1	I	503.2	I (Cat. A1, C1)	503.3	I (Cat. A1, C1)
Solar Radiation	505.1	I	505.2	I	505.3	I
Rain	506.1	I,II	506.2	II,II	506.3	I,II
Humidity	507.1	II	507.2	II, III	507.3	II, III
Salt Fog	509.1	I	509.2	I	509.3	I
Dust	510.1	I	510.2	I	510.3	I
Vibration	514.2	VII, VIII, X	514.3	I (Cat. 8)	514.4	I (Cat. 8)
Shock	516.2	I, II, V	516.3	I, IV	516.4	I, IV

Specifications subject to change without notice.



**MOTOROLA**

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