

## Base Station MTR2000



## Stay In Touch On The Move

The MTR2000 base station radio features enhanced analogue capabilities in a compact/economical package.

The MTR2000 base station/repeater utilises cutting edge technology, providing power levels equivalent to current analogue base stations and repeaters in its class. The smaller, 3 rack units, require less maintenance.

- Integral component of any conventional or Motorola Selectacom MX, Smartnet or Smartzone trunked analogue radio system.
- Unmatched flexibility.
- Available in 25-100 Watt or 2-40 Watt UHF, (1-40 Watt VHF) variable power models.
- VHF and UHF frequencies and features 12.5 or 25/30 kHz programmable channel spacing.
- Software-based design simplifies upgrades.
- Programming and diagnostic testing through personal computer.
- Shorter maintenance time through use of field replaceable units.
- Reliable solid-state performance.
- Continuous-duty cycle operation.
- Battery revert in the event of a site power failure.
- Self testing to reduce regular maintenance schedules.
- Alternative indoor cabinet enclosures.
- Attractive packages available in 40 Watt for VHF and UHF.

# Base Station MTR2000



## GENERAL

Frequency Band	RF Power Output
132-174 MHz	1-40 W
132-154 MHz, 150-174 MHz	25-100 W
403-470 MHz	2-40 W (6-40 W only ETS approved)
403-435 MHz, 435-470 MHz	25-100 W
<b>Modulation:</b>	FM
<b>Temperature Range:</b>	-30°C to +60°C
<b>Antenna Connectors:</b>	Transmit and Receive, Type "N" Female
<b>No. of Frequencies:</b>	6 (Up to 32 optional)
<b>Frequency Generation:</b>	Synthesised
<b>Channel Spacing:</b>	12.5 kHz/20 kHz/25 kHz/30 kHz
<b>Mode of Operation:</b>	Simplex/Semi-duplex/Duplex
<b>Input Voltage AC:</b>	180-264 VAC, 47-63 Hz
<b>Optional DC Only Operation:</b>	14.2 VDC (30/40 Watt Station) 28.6 VDC (100 Watt station)

	Dimensions	Weight
All Stations and Receivers	19 x 16.5 x 5.25 in. † (483 x 419 x 133 mm)	40 lbs † (19 kg)

### Alternative Cabinet Enclosures

Enclosure	Dimensions	Weight
30" Indoor Cabinet	30 x 22 x 20 in. (762 x 559 x 508 mm)	66 lbs* (30 kg)
46" Indoor Cabinet	46 x 22 x 20 in. (1168 x 559 x 508 mm)	75 lbs* (34 kg)
60" Indoor Cabinet	60 x 22 x 20 in. (1524 x 559 x 508 mm)	102 lbs* (46 kg)
70" Outdoor Cabinet	70 x 22 x 20 in. (1778 x 559 x 508 mm)	225 lbs* (103 kg)
30" Modular Rack	30 x 22 x 20 in. (762 x 559 x 508 mm)	52 lbs* (24 kg)
45" Modular Rack	45 x 22 x 20 in. (1143 x 559 x 508 mm)	59 lbs* (27 kg)
52" Modular Rack	52 x 22 x 20 in. (1321 x 559 x 508 mm)	61 lbs* (28 kg)

† Applies to standard station configuration \*Enclosure Only

All specifications use the ETS 300-086 & ETS300-113 method for measurement.  
All values subject to change without notice

## RECEIVER

	VHF	UHF
<b>Frequency - Wideband:</b>	132-174 MHz	403-470 MHz
<b>Frequency - High Performance Preselector:</b> (Option to the station)	132-154 MHz 150-174 MHz	403-433 MHz 433-470 MHz
<b>High Performance Preselector Bandwidth:</b> (Receiver Bandwidth)	4.0 MHz 150-174 MHz	433-470 MHz
<b>Adjacent Channel Rejection:</b> (12.5 and 25/30 kHz) (Selectivity):	75 db/80 db	
<b>Sensitivity 12 db SINAD</b>	0.35 µV	
<b>Signal Displacement Bandwidth:</b> (Off Channel Acceptance): (12.5/25 kHz)	2 kHz	
<b>Frequency Stability:</b> (for temperature and Voltage Variation)	1.5 ppm External Ref optional	
<b>Intermodulation Rejection:</b> (12.5 and 25/30 kHz)	80 db / 85 db typical	
<b>Spurious and Image Response Rejection:</b>	85 dB	
<b>Optional High Performance Preselector:</b>	90 dB	
<b>Audio Response:</b>	+1,-3 dB from 6 dB per octave de-emphasis; 300-3000 Hz referenced to 1000 Hz at line input	
<b>Audio Distortion:</b>	Less than 3% at 1000 Hz; 60% RSD	
<b>Line Output:</b>	-20 dBm to 7 dBm @ 60% RSD, 1 kHz	
<b>FM Hum and Noise:</b> (750 µs de-emphasis)	1000 Hz tone @ 60% RSD 25/30 kHz: 50 dB 12.5 kHz: 45 dB	
<b>RF Input Impedance:</b>	50 Ohms	

## TRANSMITTER

	VHF	UHF
<b>Frequency - 30/40 Watt:</b>	132-174 MHz	403-470 MHz
<b>Frequency - 100 Watt:</b>	132-154 MHz 150-174 MHz	403-435 MHz 435-470 MHz
<b>Electronic Bandwidth:</b> (Transmit Bandwidth)	Full Sub-band (reduced with the addition of a duplexer/external circulator option)	
<b>Output Impedance:</b>	50 Ohms	
<b>Frequency Stability:</b> (for temperature and Voltage Variation)	1.5 ppm External Ref	
<b>Intermodulation attenuation:</b> (For ref isolation):	40 dB for 40 W, 100 W 70 dB for 30 W	
<b>Maximum Deviation:</b>	30 (VHF)/25 kHz: 12.5 kHz: +/-5 kHz +/-2.5 kHz	
<b>Audio Sensitivity:</b>	-20 dBm to 0 dBm variable	
<b>Spurious and Harmonic Emissions Attenuation:</b> (Spurious and harmonic Emissions)	-36 dBm for frequencies smaller than 1 GHz and -30 dBm for frequencies smaller than 4 GHz	
<b>FM Hum and Noise:</b> (750 µs de-emphasis)	300 to 3000 Hz bandwidth, 60% RSD 30 (VHF)/25 kHz: 50 dB 12.5 kHz: 45 dB	
<b>Audio Response:</b>	+1,-3 dB from 6 dB per octave pre-emphasis; 300-3000 Hz referenced to 1000 Hz at line input	
<b>Audio Distortion:</b>	Less than 3% at 1000 Hz; 60% RSD	

Contact your local Authorised Motorola Dealer to find out more about how communicating with the MTR 2000 will benefit your organisation

Your Authorised Motorola Dealer is:



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# MTR2000 Station/Repeater

# SPECIFICATIONS

## GENERAL SPECIFICATIONS

Model Number: T5544, T5731		VHF			UHF		
Application	System Software Option	Power/Band Option	RF Power Output	Receiver Band Option	Power/Band Option	RF Power Output	Receiver Band Option
Conventional Analog SMARTNET 6809 Analog Trunking SmartZone 6809 Analog Trunking	X597	X345 (132-174 MHz)	30-1	X319 (132-174 MHz)	X341 (403-470 MHz)	30-2	X320 (403-470 MHz)
	X997	X330 (132-174 MHz)	40-1		X340 (403-470 MHz)	40-2	
	X51	X530 (132-154 MHz, 150-174 MHz)	100-25		X540 (403-435 MHz, 435-470 MHz)	100-25	
No. of Frequencies:	Up to 32	Modulation:	FM				
Frequency Generation:	Synthesized	Temperature Range:	-30°C to +60°C*				
Channel Spacing:	12.5 kHz/25 kHz/30 kHz (VHF) 12.5 kHz/25 kHz (UHF)	Antenna Connectors:	Transmit and Receive, Type "N" Female				
Mode of Operation:	Simplex / Semi-duplex / Duplex						
Input Voltage AC:	85-264VAC, 47-63 Hz						
Optional DC Only Operation:	14.2 VDC (40/30 Watt Station) 28.6 VDC (100 Watt station)						

	Dimensions	Weight
All Stations and Receivers	5.25 x 19 x 16.5 in. † (133 x 483 x 419 mm)	40 lbs † (19 kg)
Alternative Cabinet Enclosures		
30" Indoor Cabinet	30 x 22 x 20 in. (762 x 559 x 508 mm)	66 lbs** (30 kg)
46" Indoor Cabinet	46 x 22 x 20 in. (1168 x 559 x 508 mm)	75 lbs** (34 kg)
60" Indoor Cabinet	60 x 22 x 20 in. (1524 x 559 x 508 mm)	102 lbs** (46 kg)
30" Modular Rack	30 x 22 x 20 in. (762 x 559 x 508 mm)	52 lbs** (24 kg)
45" Modular Rack	45 x 22 x 20 in. (1143 x 559 x 508 mm)	59 lbs** (27 kg)
52" Modular Rack	52 x 22 x 20 in. (1321 x 559 x 508 mm)	61 lbs** (28 kg)

† Applies to standard station configuration

\* Temperature specification applies to one station per cabinet only. See product planner for details.

\*\* Enclosure Only

### VHF INPUT POWER (VARIES WITH OPTIONS)

	AC Line 117 Volts / 220 Volts	DC Only Operation (Negative Ground) 28 VDC (X121 Option)
100W - Standby	0.6A / 0.4A	1.0A
100W - Transmit	4.5A / 2.5A	11.5A
		14 VDC (X121 Option)
40/30 W - Standby	0.5A / 0.3A	1.7A
40/30 W - Transmit	2.3A / 1.3A	11.5A

### UHF INPUT POWER (VARIES WITH OPTIONS)

	AC Line 117 Volts / 220 Volts	DC Only Operation (Negative Ground) 28 VDC (X121 Option)
100W - Standby	0.6A / 0.4A	1.0A
100W - Transmit	5.4A / 2.9A	13A
		14 VDC (X121 Option)
40/30 W - Standby	0.5A / 0.3A	1.7A
40/30 W - Transmit	2.4A / 1.3A	8.5A

### TRANSMITTER

	VHF	UHF
Frequency - 30 Watt:	132-174 MHz	403-470 MHz
Frequency - 40 Watt:	132-174 MHz	403-470 MHz
Frequency - 100 Watt:	132-154 MHz, 150-174 MHz	403-435 MHz, 435-470 MHz
Electronic (Transmit) Bandwidth:	Full Sub-band (reduced with the addition of a duplexer/external circulator option)	Full Sub-band (reduced with the addition of a duplexer, circulator covers entire band)
Output Impedance:	50 Ohms	50 Ohms
Frequency Stability (for temperature and Voltage Variation):	1.5 PPM/External Ref	1.5 PPM/External Ref
Intermodulation Attenuation:	40 dB for 40W, 100W 70 dB for 30W	40 dB for 40W, 100W 70 dB for 30W
Maximum Deviation (RSD)		
30 (VHF)/25 kHz:	±5 kHz	±5 kHz
12.5 kHz:	±2.5 kHz	±2.5 kHz
Audio Sensitivity:	-20 dBm to 0 dBm variable	-20dBm to 0 dBm variable
Spurious and Harmonic Emissions Attenuation:	-85 dBc	-85 dBc
FM Hum and Noise: (750µs de-emphasis)	300 to 3000 Hz bandwidth, 60% RSD 50 dB nominal 45 dB nominal	300 to 3000 Hz bandwidth, 60% RSD 50 dB nominal 45 dB nominal
30 (VHF)/25 kHz 12.5 kHz:		
Audio Response:	+1,-3 dB from 6 dB per octave pre-emphasis: 300-3000 Hz referenced to 1000 Hz at line input	+1,-3 dB from 6 dB per octave pre-emphasis: 300-3000 Hz referenced to 1000 Hz at line input
Audio Distortion:	Less than 3% at 1000 Hz: 60% RSD	Less than 3% at 1000 Hz: 60% RSD
Emission Designators:		
25 kHz	16K0F3E, 13K6F1D, 11K0F3E, 8K60F1D	16K0F3E, 13K6F1D, 11K0F3E, 8K60F1D
12.5 kHz		

### RECEIVER

	VHF	UHF
Frequency - Wideband:	132-174 MHz	403-470 MHz
Frequency - High Performance Preselector:	132-154 MHz, 150-174 MHz	403-433 MHz, 433-470 MHz
High Performance Preselector Bandwidth (Receiver Bandwidth):	4.0 MHz	4.0 MHz
Selectivity: 25/30 kHz	80 dB	80 dB
12.5kHz	75 dB	75 dB
Sensitivity 12 dB SINAD:	0.35µV	0.35µV
Signal Displacement Bandwidth: (Off Channel Acceptance) (12.5/25kHz)	2kHz	2kHz
Frequency Stability: (for temperature and Voltage Variation):	1.5 PPM/External Ref	1.5 PPM/External Ref
Intermodulation Rejection: (Intermodulation) (12.5 and 25/30 kHz)	85 dB / 85 dB	85 dB / 85 dB
Spurious and Image Response Rejection:	85 dB	85 dB
Optional High Performance Preselector:	90 dB	90 dB
Audio Response:	+1,-3 dB from 6 dB per octave de-emphasis: 300-3000 Hz referenced to 1000 Hz at line output	+1,-3 dB from 6 dB per octave de-emphasis: 300-3000 Hz referenced to 1000 Hz at line output
Audio Distortion:	Less than 3% at 1000 Hz: 60% RSD	Less than 3% at 1000 Hz: 60% RSD
Line Output:	-20 dBm to 7 dBm @ 100% RSD @ 1 kHz	-20 dBm to 7 dBm @ 100% RSD @ 1 kHz
FM Hum and Noise: (750µs de-emphasis)	1000 Hz tone @ 60% RSD 25/30 kHz 45 dB nominal	1000 Hz tone @ 60% RSD 50 dB nominal 45 dB nominal
12.5kHz		
RF Input Impedance:	50 Ohms	50 Ohms

### FCC TYPE ACCEPTANCE (VHF)

Frequency Range in MHz	Type	Power Output in Watts	Type Acceptance Number
132-174	Transmitter	30-1	ABZ89FC3785
132-174	Transmitter	40-1	ABZ89FC3785
132-154	Transmitter	100-25	ABZ89FC3786
150-174	Transmitter	100-25	ABZ89FC3786
132-174	Receiver	N/A	ABZ89FR3787

### FCC TYPE ACCEPTANCE (UHF)

Frequency Range in MHz	Type	Power Output in Watts	Type Acceptance Number
403-470	Transmitter	30-2	ABZ89FC4811
403-470	Transmitter	40-2	ABZ89FC4811
403-435	Transmitter	100-25	ABZ89FC4812
435-470	Transmitter	100-25	ABZ89FC4812
403-470	Receiver	N/A	ABZ89FR4813

Industry Canada Approval: Type T554X 109195112

Note: Specification per TIA/EIA603. Product meets ETS300-086 and ETS300-133 specifications from 6-100 watts.

Specifications subject to change without notice.



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# MTR2000

## VHF/UHF Station/Repeater/Receiver

MTR2000  
Station/Repeater  
available in:

- ▶ **Conventional:**  
Local Operation  
Tone Remote Control  
Spectra-TAC Voting
- ▶ **Trunking:**  
SMARTNET and  
SmartZone
- ▶ **Continuous Duty**



*MTR2000 100 Watt Station/Repeater  
Enhanced Features in an Economical Package*

## FEATURES/BENEFITS

### **Provides Unmatched Flexibility in a Compact Design**

- ▶ Analog operation in conventional systems
- ▶ Software based design allows for future system applications
- ▶ 100-25 Watt, 40-1 Watt, and 30-1 Watt variable power models (VHF)
- ▶ 100-25 Watt, 40-2 Watt, and 30-2 Watt variable power models (UHF)
- ▶ Compact dimensions, 3 Rack Units (5.25" or 13.3 cm), utilize expensive site space efficiently
- ▶ 12.5 or 25/30 kHz programmable channel spacing
- ▶ Standard EIA 19" rack mount configuration
- ▶ Lightweight (40 lbs./19 kg.)

### **Shortens Installation and Maintenance Time**

- ▶ Programming and diagnostic testing performed through a personal computer
- ▶ Functionally separate modules: Field Replaceable Units (FRU)
- ▶ Software-based design simplifies upgrades
- ▶ Easy access to station ports

### **Contributes to Maximizing System Up Time**

- ▶ Microprocessor based design with integrated DSP capability
- ▶ Switching power supply functions over a wide range of voltages and frequencies
- ▶ RSS diagnostics and metering
- ▶ Functionally separate modules: Field Replaceable Units (FRU)