



MOTOROLA

MTR3000

BASE STATION / REPEATER

MTR3000 is a MOTOTRBO™ integrated voice and data base station/repeater designed to meet the requirements of small public safety, utilities and professional organizations.

The MTR3000 operates in digital mode in MOTOTRBO Conventional, IP Site Connect, Capacity Plus and Connect Plus systems delivering increased capacity, spectral efficiency, integrated data applications and enhanced voice communications.

In addition the MTR3000 can also operate in analog mode for conventional and LTR®/PassPort® Trunking systems providing a flexible high power base station/repeater.

For systems currently using the MTR2000 base station/repeater a simple MTR3000 upgrade kit is available so the station can operate in a MOTOTRBO system and allow the user to leverage their current investment.



MTR3000 STANDARD FEATURES:

- Operates in analog or MOTOTRBO digital mode with a LED indicating mode of operation
- Reliable 100W Continuous Duty Cycle Operation
- 12.5 or 25 kHz programmable channel spacing
- Analog and digital conventional are all standard in one base station without the cost of additional software or hardware
- Power supply functions over a wide range of voltages
- RoHS (Restriction of Hazardous Substances) compliant
- Integrated 100W Power Amplifier and AC/DC Power Supply afford minimized cabling, rack space, expense, and overall complexity
- Offered in the UHF, VHF and 800 / 900 MHz frequency bands
- Wireline capability enables Integrated Tone Remote Control and DC Remote control functionality with balanced audio

- Analog voting capability supports Spectra-TAC and DIGITAC comparators, for improved subscriber talk-in performance (optional wireline board required)

MTR3000 PROGRAMMED IN MOTOTRBO MODE PROVIDES:

- Two simultaneous voice paths in digital 12.5 kHz TDMA
- 6.25e compliance
- Division of an existing channel into two timeslots delivering twice the capacity through a single repeater
- MOTOTRBO Connect Plus multi-site digital trunking for extended coverage and increased capacity
- MOTOTRBO IP Site Connect for wide area coverage
- MOTOTRBO Capacity Plus single-site trunking for increased capacity without a separate hardware controller
- The transmit interrupt suite - voice interrupt, remote voice dekey,

emergency voice interrupt or data over voice interrupt - to help prioritize critical communication exactly when needed

- Dynamic mixed mode capability which allows for automatic switching between analog and digital mode

MTR3000 SERVICEABILITY:

- Repeater diagnostic and control software provides remote or local site monitoring
- Easy to replace components with functionally separate Field Replaceable Units (FRU)
- Software based design simplifies feature upgrades
- Easy access to service ports (no need to remove the front panel) shortening installation and maintenance time
- For ease of installation, minimal station alignment is needed
- Improved Warranty: Backed by Motorola's Standard 2-year Warranty

MTR3000 BASE STATION / REPEATER VHF SPECIFICATIONS

General Specifications

	T3000A - MTR3000	T2003A - Upgrade kit for MTR2000 stations
Number of Frequencies	Up to 16	
Modulation	FM & 4FSK	
Frequency Generation	Synthesized	
Channel Spacing	12.5 kHz, 25 kHz, 30 kHz / 12.5 kHz (6.25e compliant)	
Mode of Operation	Simplex / Semi-Duplex / Duplex	
Temperature Range	-30°C to +60°C	
Antenna Connectors	Transmit and Receive, Type "N" Female	
AC Operation	85-264 VAC, 47-63 Hz	
DC Operation	28.6 VDC (25.7-30.7 VDC full rated output power)	
	Dimensions	Weight
Base Station Repeater	5.25 x 19 x 16.5 in. (133 x 483 x 419 mm)	40 lbs (19 kg)

VHF Input Current (T3000A)

	AC Line 117 Volts / 220 Volts	28 VDC D/C Battery Revert, Neg. Gnd.
100 W Standby	0.4A / 0.4A	0.8A
100 W Transmit	3.5A / 1.9A	12.2A

Transmitter (VHF)

	MTR3000	T2003A - Upgrade kit for MTR2000 stations
Frequency	136-174 MHz	136-154, 150-174 MHz
Power Output (Continuous Duty)	8-100 watts	1-30/40 watts, 25-100 watts
Electronic Bandwidth	Full Band	
Output Impedance	50 Ohms	
Intermodulation Attenuation	55 dB	40 dB for 40W and 100W stations; 70 dB for 30W station
Maximum Deviation (RSD)	25 kHz / 12.5 kHz	±5 kHz / ±2.5 kHz
Audio Sensitivity	60% RSD @80 mV RMS	
Spurious and Harmonic Emissions Attenuation	90 dB	85 dB
FM Hum and Noise (750 µs de-emphasis)	25 kHz / 12.5 kHz	50 dB (55 dB typical) / 45 dB (52 dB typical)
Frequency Stability (for temperature and aging variation)	1.5 PPM/External Ref (optional)	
Audio Response	+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% (1% typical) at 1000 Hz; 60% RSD	
Emission Designators	FM Modulation: 12.5 kHz: 11K0F3E; 25 kHz, 30 kHz: 16K0F3E 4FSK Modulation: 12.5 kHz - Data Only: 7K60FXD; 12.5 kHz - Data and Voice: 7K60FXE	

Receiver (VHF)

	MTR3000	T2003A - Upgrade kit for MTR2000 stations
Frequency	136-174 MHz	
Selectivity (TIA603)	25 kHz / 12.5 kHz	80 dB (90 dB typical) / 75 dB (82 dB typical)
Selectivity (TIA603D)	25 kHz / 12.5 kHz	80 dB (90 dB typical) / 50 dB (60 dB typical)
Analog Sensitivity 12 dB SINAD	0.30 µV (0.22 µV typical)	
Digital Sensitivity 5% BER	0.30 µV (0.20 µV typical)	
Signal Displacement Bandwidth	25 kHz / 12.5 kHz	2 kHz / 1 kHz
Intermodulation Rejection	25 kHz and 12.5 kHz	85 dB
Spurious and Image Response Rejection	85 dB (95 dB typical)	
Audio Response	+1/-3 dB from 6 dB per octave pre-emphasis; 300-3000 Hz referenced to 1000 Hz at line output	
Audio Distortion	Less than 3% (1% typical) at 1000 Hz; 60% RSD	
Line Output	330 mV (RMS) @ 60% RSD	
FM Hum and Noise (750µs de-emphasis)	25 kHz / 12.5 kHz	50 dB (56 dB typical) / 45 dB (52 dB typical)
RF Input Impedance	50 Ohms	

FCC Type Acceptance

Frequency Range in MHz	Model	Type	Power Output in Watts	US Type Acceptance Number
136-174	T3000A	Transmitter	8 - 100	ABZ89FC3793
136-174	T3000A	Receiver	N/A	ABZ89FR3794
136-174	T2003A	Transmitter	25 - 100	ABZ89FC3795
136-174	T2003A	Receiver	N/A	ABZ89FR3796
136-174	T2003A	Transmitter	1-30 / 40	ABZ89FC3797

Industry Canada Approval: IC ID 109AB-3793; IC model T3000-VHF
 Specifications per TIA/EIA 603D unless otherwise noted
 Product meets ETSI 300-086 & ETSI 300-113
 CE Pending; RoHS compliant; UL Listed
 Digital Protocol ETSI 102 361-1, -2, -3; AMBE +2™ Vocoder
 Specifications subject to change without notice.

MTR3000 BASE STATION / REPEATER UHF SPECIFICATIONS

General Specifications

	T3000A - MTR3000	T2003A - Upgrade kit for MTR2000 stations
Number of Frequencies	Up to 16	
Modulation	FM & 4FSK	
Frequency Generation	Synthesized	
Channel Spacing	12.5 kHz, 25 kHz / 12.5 kHz (6.25e compliant)	
Mode of Operation	Simplex / Semi-Duplex / Duplex	
Temperature Range	-30°C to +60°C	
Antenna Connectors	Transmit and Receive, Type "N" Female	
AC Operation	85-264 VAC, 47-63 Hz	
DC Operation	28.6 VDC (25.7-30.7 VDC full rated output power)	
	Dimensions	Weight
Base Station Repeater	5.25 x 19 x 16.5 in. (133 x 483 x 419 mm)	40 lbs (19 kg)

UHF Input Current (T3000A)

	AC Line 117 Volts / 220 Volts	28 VDC D/C Battery Revert, Neg. Gnd.
100 W Standby	0.4A / 0.4A	0.8A
100 W Transmit	3.3A/1.8A	11.5A

Transmitter (UHF)

	T3000A	T2003A - Upgrade kit for MTR2000 stations
Frequency	403-470, 470-524 MHz	403-435, 435-470 MHz
Power Output (Continuous Duty)	8-100 watts	2-30/40 watts; 25-100 watts
Electronic Bandwidth	Full Band	
Output Impedance	50 Ohms	
Intermodulation Attenuation	55 dB	40 dB for 40W and 100W stations; 70 dB for 30W station
Maximum Deviation (RSD)	25 kHz / 12.5 kHz	±5 kHz / ±2.5 kHz
Audio Sensitivity	60% RSD @ 80 mV RMS	
Spurious and Harmonic Emissions Attenuation	90 dB	85 dB
FM Hum and Noise (750 µs de-emphasis)	25 kHz / 12.5 kHz	50 dB nominal / 45 dB nominal
Frequency Stability (for temperature and aging variation)	1.5 PPM/External Ref (optional)	
Audio Response	+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% (1% typical) at 1000 Hz; 60% RSD	
Emission Designators	FM Modulation: 12.5 kHz: 11K0F3E; 25 kHz: 16K0F3E 4FSK Modulation: 12.5 kHz - Data Only: 7K60FXD; 12.5 kHz - Data & Voice: 7K60FXE	

Receiver (UHF)

	T3000A	T2003A - Upgrade kit for MTR2000 stations
Frequency	403-470, 450-524 MHz	403-470 MHz
Selectivity (TIA603)	25 kHz / 12.5 kHz	80 dB (86 dB typical) / 75 dB (78 dB typical)
Selectivity (TIA603D)	25 kHz / 12.5 kHz	75 dB (85 dB typical) / 45 dB (60 dB typical)
Analog Sensitivity 12 dB SINAD	0.30 uV (0.22 uV typical)	
Digital Sensitivity 5% BER	0.30 µV (0.20 uV typical)	
Signal Displacement Bandwidth	25 kHz / 12.5 kHz	2 kHz / 1 kHz
Intermodulation Rejection	25 kHz and 12.5 kHz	85 dB
Spurious and Image Response Rejection	85 dB (typical 95 dB)	
Audio Response	+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% (1.5% typical) at 1000 Hz, 60% RSD	
Line Output	330 mV (RMS) @ 60% RSD	
FM Hum and Noise (750µs de-emphasis)	25 kHz / 12.5 kHz	50 dB nominal / 45 dB nominal
RF Input Impedance	50 Ohms	

FCC Type Acceptance

Frequency Range in MHz	Model	Type	Power Output in Watts	US Type Acceptance Number
406.1 - 470	T3000A	Transmitter	8-100	ABZ89FC4823
403 - 470	T3000A	Receiver	N/A	ABZ89FR4824
470 - 512	T3000A	Transmitter	8-100	ABZ89FC4825
450 - 512	T3000A	Receiver	N/A	ABZ89FR4826
406.1 - 470	T2003A	Transmitter	25 - 100	ABZ89FC4827
406.1 - 470	T2003A	Transmitter	2 - 30/40	ABZ89FC4829
403 - 470	T2003A	Receiver	N/A	ABZ89FR4828

Industry Canada Approval: IC ID 109AB-T3000; IC model T3000-UHFR1
 Specifications per TIA/EIA 603D unless otherwise noted
 Product meets ETSI 300-086 & ETSI 300-113
 CE Marked; RoHS compliant; UL Listed
 Digital Protocol ETSI 102 361-1, -2, -3; AMBE +2™ Vocoder
 Specifications subject to change without notice.

MTR3000 BASE STATION / REPEATER 800 / 900 MHz SPECIFICATIONS

General Specifications

	T3000A - MTR3000	T2003A - Upgrade kit for MTR2000 stations
Number of Frequencies	Up to 16	
Modulation	FM & 4FSK	
Frequency Generation	Synthesized	
Channel Spacing	12.5 kHz, 25 kHz / 12.5 kHz (6.25e compliant)	
Mode of Operation	Semi-duplex / Duplex	
Temperature Range	-30°C to +60°C	
Antenna Connectors	Transmit and Receive, Type "N" Female	
AC Operation	85-264 VAC, 47-63 Hz	
DC Operation	28.6 VDC (24.7 - 30.7 VDC full rated output power)	
	Dimensions	Weight
Base Station Repeater	5.25 x 19 x 16.5 in. (133 x 483 x 419 mm)	40 lbs (19 kg)

800/900 MHz Input Current (T3000A)

	AC Line 117 Volts / 220 Volts	28 VDC D/C Battery Revert, Neg. Gnd.
100 W Standby	0.4A / 0.4A	0.9A
100 W Transmit	3.4A / 1.9A	12.0A

Transmitter (800/900 MHz)

	T3000A	T2003A - Upgrade kit for MTR2000 stations
Frequency	851 - 870 & 935 - 941 MHz	851 - 870, 935 - 941 MHz
Power Output (Continuous Duty)	8-100 watts	20-75 watts
Electronic Bandwidth	Full Band	
Output Impedance	50 Ohms	
Intermodulation Attenuation	55 dB	50 dB
Maximum Deviation (RSD)	±5 kHz, ±2.5 kHz / ±2.5 kHz	
Audio Sensitivity	60% RSD @80 mV RMS	
Spurious and Harmonic Emissions Attenuation	800 MHz / 900 MHz 90 dB / 86 dB	80 dB / 80 dB
FM Hum and Noise (750 µs de-emphasis)	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 50 dB nominal, 45 dB nominal / 45 dB nominal	
Frequency Stability (for temperature and aging variation)	0.1PPM/ External Ref (optional)	
Audio Response	+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%(1% typical) at 1000 Hz, 60% RSD	
Emission Designators	FM Modulation: 800 MHz: 12.5 kHz: 11K0F3E; 25 kHz: 16K0F3E 900 MHz: 12.5 kHz: 11K0F3E 4FSK Modulation: 12.5 kHz - Data Only: 7K60FXD; 12.5 kHz - Data & Voice: 7K60FXE	

Receiver (800/900 MHz)

	T3000A	T2003A - Upgrade kit for MTR2000 stations
Frequency	806 - 825 & 896 - 902 MHz	806 - 825, 896 - 902 MHz
Selectivity (TIA603)	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 85 dB , 75 dB / 75 dB	
Selectivity (TIA603D)	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 80 dB (87 dB typical), 55 dB (62 dB typical) / 55 dB (62 dB typical)	
Analog Sensitivity 12 dB SINAD	0.28 µV (0.21 µV typical)	
Digital Sensitivity 5% BER	0.28 µV	
Signal Displacement Bandwidth	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 2 kHz, 1 kHz / 1 kHz	
Intermodulation Rejection	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 85 dB (90 dB typical) / 85 dB (90 dB typical)	
Spurious and Image Response Rejection	90 dB	
Audio Response	+1, -3 dB from 6 dB per octave pre-emphasis, 300 - 3000 Hz referenced to 1000 Hz at line output	
Audio Distortion	Less than 3%(1.5% typical) at 1000 Hz, 60% RSD	
Line Output	330 mV (RMS) @60% RSD	
FM Hum and Noise (750µs de-emphasis)	800 MHz: 25 kHz, 12.5 kHz / 900 MHz: 12.5 kHz 50 dB nominal, 45 dB nominal / 45 dB nominal	
RF Input Impedance	50 Ohms	

FCC Type Acceptance

Frequency Range in MHz	Model	Type	Power Output in Watts	US Type Acceptance Number
851 - 870 & 935- 941	T3000A	Transmitter	8 - 100	ABZ89FC5817
806 - 825 & 896 - 902	T3000A	Receiver	N/A	ABZ89FR5818
851 - 870	T2003A	Transmitter	20 - 75	ABZ89FC5819
806 - 825	T2003A	Receiver	N/A	ABZ89FR5820
935 - 941	T2003A	Transmitter	20 - 75	ABZ89FC5821
896 - 902	T2003A	Receiver	N/A	ABZ89FR5822



Industry Canada Approval: IC ID 109AB-5817; IC Model T3000-8/900
 Specifications per TIA/EIA 603D unless otherwise noted
 Product meets ETSI 300-086 & ETSI 300-113
 RoHS compliant; UL Listed
 Digital Protocol ETSI 102 361-1, -2, -3; AMBE +2™ Vocoder
 Specifications subject to change without notice.

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