

MOTOTRBO™ R7 portable two-way radios



MOTOTRBO R7 digital portable radios offer game-changing audio capabilities in a rugged, dependable and connected device. Its advanced audio processing ensures that your communications are loud and clear, while its rugged construction is ready for the toughest environments.

Key features

- VHF, UHF, 800/900 MHz
- Wi-Fi 2.4/5.0 GHz
- WPA3 Wi-Fi security protocol compliant
- Bluetooth 5.2
- Digital and analog signaling
- 2.4" 320 x 240 px. QVGA display
- Modern, intuitive user experience
- Full suite of accessories
- Sleek and ergonomic form factor
- Automatic Acoustic Feedback Suppression
- Adaptive Dual Microphone Noise Suppression
- Intelligent Audio
- IMPRES™ technology
- Programmable loudness up to 107 phons
- Wideband speaker and microphones
- Simple audio configuration
- Up to 28 hours of battery life¹
- IP68 (waterproof up to 2 meters for 2 hours)
- IP66 (concentrated water jet pressure)
- Intrinsically safe option (UL TIA-4950)
- Disinfectant and decontamination substance resistant housing²
- Robust and corrosion-proof side connector
- Rugged to MIL-STD 810
- 5 years of hardware repair, technical support and software updates with optional add-ons for enhanced cover



Specifications

GENERAL SPECIFICATIONS

R7 FULL KEYPAD MODEL (FKP)				R7 NO KEYPAD MODEL (NKP)		
Band	VHF	UHF	800/900 MHz	VHF	UHF	800/900 MHz
Frequency	136-174 MHz	400-527 MHz	806-825 MHz, 851-870 MHz, 896-902 MHz, 935-941 MHz	136-174 MHz	400-527 MHz	806-825 MHz, 851-870 MHz, 896-902 MHz, 935-941 MHz
High Power Output	5 W	4 W	2.5 W	5 W	4 W	2.5 W
Low Power Output	1 W					
Channel Spacing	12.5 kHz, 20 kHz ⁶ , 25 kHz ⁶					
Channel Capacity	1,000 Channels			64 Channels		
Display	2.4" 320 x 240 px. QVGA display, with up to 10 lines of text			N/A		
FCC Description	AZ489FT7144	AZ489FT7143	AZ489FT7169	AZ489FT7144	AZ489FT7143	AZ489FT7169
IC Description	109U-89FT7144	109U-89FT7143	109U-89FT7169	109U-89FT7144	109U-89FT7143	109U-89FT7169
Power Supply (Nominal)	7.5 V					

MOTOTRBO R7 WITH 2200 MAH SLIM IMPRES LI-ION BATTERY (PMNN4807)

Dimensions (H x W x D)	131.8 x 56 x 34.7 mm (5.2 x 2.2 x 1.4 in.)			131.8 x 56 x 31.3 mm (5.2 x 2.2 x 1.2 in.)		
Weight ³	316 g (11 oz)			289 g (10 oz)		
Digital / Analog Battery Life ¹	20 / 15 hrs	19 / 14.5 hrs	19 / 15.5 hrs	20 / 15 hrs	19 / 14.5 hrs	19 / 15.5 hrs
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)					

MOTOTRBO R7 WITH 2850 MAH IMPRES LI-ION BATTERY (PMNN4809)

Dimensions (H x W x D)	131.8 x 56 x 34.7 mm (5.2 x 2.2 x 1.4 in.)			131.8 x 56 x 31.3 mm (5.2 x 2.2 x 1.2 in.)		
Weight ³	333 g (12 oz)			306 g (11 oz)		
Digital / Analog Battery Life ¹	26 / 19.5 hrs	25 / 19 hrs	25 / 20.5 hrs	26 / 19.5 hrs	25 / 19 hrs	25 / 20.5 hrs
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)					

MOTOTRBO R7 WITH 3200 MAH HAZLOC IMPRES LI-ION BATTERY (PMNN4810)

Dimensions (H x W x D)	131.8 x 56 x 40.7 mm (5.2 x 2.2 x 1.6 in.)			131.8 x 56 x 37.3 mm (5.2 x 2.2 x 1.5 in.)		
Weight ³	366 g (13 oz)			339 g (12 oz)		
Digital / Analog Battery Life ¹	29 / 22 hrs	28 / 21.5 hrs	27.5 / 22 hrs	29 / 22 hrs	28 / 21.5 hrs	27.5 / 22 hrs
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)					



Specifications

TRANSMITTER SPECIFICATIONS

Channel Spacing	12.5 kHz, 20 kHz ⁶ , 25 kHz ⁶
4FSK Digital Modulation	<ul style="list-style-type: none"> 12.5 kHz Data Only: 7K60F1D & 7K60FXD 12.5 kHz Data & Voice: 7K60F1E & 7K60FXE Combination of 12.5 kHz Voice and Data: 7K60F1W
Digital Protocol	<ul style="list-style-type: none"> ETSI TS 102 361-1, -2, -3, -4 DMR Tier II and DMR Tier III
Conducted/Radiated Emissions (TIA603D)	<ul style="list-style-type: none"> -36 dBm < 1 GHz -30 dBm > 1 GHz
Adjacent Channel Power	<ul style="list-style-type: none"> 60 dB @ 12.5 kHz 70 dB @ 20 kHz⁶ / 25 kHz⁶
Frequency Stability	+/-0.5 ppm

RECEIVER SPECIFICATIONS

Analog Sensitivity (12dB SINAD)	0.16 µV (0.21µV for 800/900 MHz model)
Digital Sensitivity (5% BER)	0.14 µV (0.18µV for 800/900 MHz model)
Intermodulation (TIA603D)	70 dB
Adjacent Channel Selectivity, (TIA603A)-1T	<ul style="list-style-type: none"> 60 dB @ 12.5 kHz 70 dB @ 20 kHz⁶ / 25 kHz⁶
Adjacent Channel Selectivity, (TIA603D)-2T	<ul style="list-style-type: none"> 45 dB @ 12.5 kHz 70 dB @ 20 kHz⁶ / 25 kHz⁶
Spurious Rejection (TIA603D)	70 dB

GNSS SPECIFICATIONS

Constellation Support	GPS, GLONASS, BEIDOU, GALILEO
Time To First Fix, Cold Start	≤ 60 seconds
Time To First Fix, Hot Start	≤10 seconds
Horizontal Accuracy	< 5 meters

WI-FI SPECIFICATIONS

Frequency Range	2.4 GHz, 5 GHz
Standards Supported	Wi-Fi 5 / IEEE 802.11a/b/g/n/ac
Security Protocol Supported	WPA-3, WPA-2
Maximum Number of SSIDs	128 (64 for NKP Models)

HAZLOC CERTIFICATION

ANSI/TIA 4950 and CAN/CSA C22.2 No. 157-92 as intrinsically safe for use in Class I, II, III, Division 1, Groups C, D, E, F, G, Division 2, Groups A, B, C, D

SERVICE COVERAGE

Included: Hardware repair, technical support, software updates and premium features (5 years)

Optional: Accidental damage (5 years)

BLUETOOTH SPECIFICATIONS

Version	5.2
Range	Class 2, 10 m (33 ft)
Supported Profiles	Bluetooth Headset Profile (HSP), Serial Port Profile (SPP), Personal Area Network (PAN), Generic Attributes (GATT), In-door location (Bluetooth LE Passive Scanning)
Simultaneous Connections	1 audio accessory and up to 4 data devices

AUDIO SPECIFICATIONS

Digital Vocoder Type	AMBE+2
Audio Response (TIA603D)	+1, -3 dB
Audio Output Power (Rated/Max)	1 W / 3 W
Audio Distortion at Rated Audio	≤1.5%
Maximum Speech Loudness by Default (ISO5326)	102 phon @ 30 cm
Maximum Programmable Speech Loudness (Extra Loud Mode, Level 3)	107 phon @ 30 cm
Hum and Noise	<ul style="list-style-type: none"> -40 dB @ 12.5 kHz -45 dB @ 20 kHz⁶ / 25 kHz⁶
Conducted Spurious Emissions (TIA603D)	-57 dBm

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature ⁴	-30 °C to 60 °C (-22 °F to 140 °F)
Storage Temperature	-40 °C to 85 °C (-40 °F to 185 °F)
Thermal Shock	Per MIL-STD
Humidity	Per MIL-STD
Electrostatic Discharge	IEC 61000-4-2 Level 4
Dust and Water Intrusion	IP68 (Submersion up to 2m, 2hrs) IP66 for high pressure-water resistance per IEC 60529
Salt Fog	5% NaCl for 8 hrs at 35 °C, 16 hrs standing
Packaging Test	MIL-STD 810D and E

MILITARY STANDARDS (MIL-STD 810)

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G		MIL-STD 810H	
	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE	METHOD	PROCEDURE
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.6	II	500.6	II
High Temp	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/Hot	501.6	I/A1, II/A1	501.7	I/A1, II/A1
Low Temp	502.1	I	502.2	I, II	502.3	I, II	502.4	I, II	502.6	I, II	502.7	I, II
Temp Shock	503.1	I	503.2	A1/C3	503.3	A1/C3	503.4	I	503.6	I-C	503.7	I-C
Solar Radiation	505.1	II	505.2	I/A1	505.3	I/A1	505.4	I/A1	505.6	I/A1	505.7	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.6	I, III	506.6	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-	507.6	II/Aggravated	507.6	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	-	509.6	-	509.7	-
Blowing Dust & Sand	510.1	I / -	510.2	I, II	510.3	I, II	510.4	I, II	510.6	I, II	510.7	I, II
Vibration	514.2	VIII/CatF, XI	514.3	I/Cat10, II/Cat3	514.4	I/Cat10, III/Cat3	514.5	I/Cat24, II/Cat5	514.7	I/Cat24, II/Cat5	514.8	I/Cat24, II/Cat5
Shock	516.2	I, II	516.3	I, IV	516.4	I, IV	516.5	I, IV	516.7	I, IV	516.8	I, IV
Contamination by Fluids ²									504.2	II	504.3	2.2.6 b



Feature Comparison

R7 is available with full keypad and no keypad versions.

	R7 FULL KEYPAD	R7 NO KEYPAD
GENERAL		
VHF 5 W, UHF 4 W, 800/900 MHz 2.5 W	●	●
Full Keypad	●	-
Color Screen	●	-
Analog and Digital	●	●
Voice and Data	●	●
Integrated Wi-Fi	○	○
Canned Text Messaging	●	●
Freeform Text Messaging	●	-
Text to Speech	○	○
Work Order Ticketing	●	-
Indoor Location Tracking	○	○
Event-Driven Location Update ⁷	●	●
Outdoor Location Tracking	○	○
Bluetooth Audio	○	○
Bluetooth Data	○	○
Voice Announcement	●	●
Home Channel Reminder	●	●
Late Entry	●	●
Priority Scan	●	●
Real-Time Clock	●	●
Audio Recording/Playback	○	○
Secure Linux Operating System	●	●
M-Radio Control App	○	○
AUDIO		
Intelligent Audio in Analog and Digital	●	●
IMPRES Audio	●	●
Automatic Acoustic Feedback Suppressor	●	●
Microphone Distortion Control	●	●
User-Selectable Audio Profile	●	●
Trill Enhancement	●	●
Advanced Dual Microphone Noise Suppression ⁵	●	●
Single Microphone Noise Cancellation	-	-
SYSTEMS		
Dual Capacity Direct Mode	●	●
Conventional	●	●
IP Site Connect	●	●
Capacity Plus Single/Multi Site	○	○
Capacity Max	○	○

	R7 FULL KEYPAD	R7 NO KEYPAD
MANAGEMENT		
CPS 2.0 and Radio Management	●	●
Over-the-Air Programming (via DMR)	●	●
Over-the-Air Software Update (via Wi-Fi)	●	●
IMPRES Energy	○	○
IMPRES Battery Management	○	○
Over-the-Air Battery Management	○	○
SAFETY		
Emergency Button	●	●
Man Down / Fall Alert	○	○
Lone Worker	●	●
IP68 (waterproof up to 2 meters for 2 hours)	●	●
IP66 (concentrated water jet pressure)	●	●
Rugged to MIL-STD 810	●	●
Disinfectant / Decontamination Resistant ²	●	●
Sensor Integration	○	○
Integrated Accelerometer	●	●
Basic Privacy	●	●
Enhanced Privacy	○	○
AES256 encryption	○	○
Transmit Interrupt	○	○
Digital Emergency	●	●
Emergency Search Tone	●	●
Remote Monitor	●	●
Radio Disable / Enable	●	●
Secure Processor	●	●
Digital Certificates	●	●
CUSTOMIZATION		
GCAI-Mini Accessory Port	●	●
6 Programmable Buttons	●	-
4 Programmable Buttons	-	●
Day/Night Screen Mode	●	-
Action List	●	-
Label Recess	●	●
Option Board (requires aftermarket installation)	○	○

● Included ○ Optional - Not Included

¹ Typical battery life, 5/5/90 profile at maximum transmitter power with GNSS, Bluetooth, Wi-Fi and Option Board applications disabled. Actual observed runtimes may vary.

² Please refer to the MOTOTRBO R7 user manual for a list of approved disinfectants and decontamination substances.

³ Radio weight information is exclusive of General Option Board and antenna.

⁴ Radio only. Battery minimum operating temperature -20 °C.

⁵ Noise suppression method differs between accessories.

⁶ 20/25 kHz channels not available in USA.

⁷ Requires GNSS (Global Navigation Satellite System) support to be enabled.

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