Data Sheet ANZ

MOTOTRBO™ R7Ex

ATEX portable two-way radios

MOTOTRBO R7Ex ATEX and IECEx certified digital portable radios provide high quality communications in potentially explosive environments.

Key features

- UHF frequency band
- Digital and analogue signalling
- 1.7" 132 x 90 px. display[1]
- Wi-Fi 2.4/5.0 GHz[1]
- WPA3 Wi-Fi security protocol compliant[1]
- Bluetooth® Core Version 5.2[1]
- GNSS location tracking
- Modern, intuitive user experience
- Full suite of accessories, tested with the radio to ensure ATEX/IECEx certification for the full solution
- Sleek and ergonomic form factor
- Automatic acoustic feedback suppression
- AI-trained Noise Suppression
- Single microphone noise cancellation (SINC+)
- Intelligent Audio
- IMPRES™ technology
- Programmable loudness up to 108 phons
- Dual click volume knob controls on/off/volume and Volume Boost
- Simple audio configuration
- 6 (FKP)/4 (NKP) programmable buttons[2]
- Up to 23.5 hours of battery life[3]
- IP68 waterproof up to 2 metres for 2 hours per ATEX/IECEx specifications[4]
- IP66 (concentrated water jet pressure) per ATEX/IECEx specifications[4]
- ATEX, IECEx and maritime regulations certified
- Disinfectant and decontamination substance resistant housing[5]
- Rugged to MIL-STD 810

MOTOROLA SOLUTIONS

Specifications

GENERAL SPECIFICATIONS		
	R7Ex FULL KEYPAD (FKP) MODEL	**R7Ex NON-KEYPAD (NKP) MODEL**
Frequency	400 - 470 MHz	
RF power output	2 W[6] / 1 W	
Channel spacing	12.5 kHz, 20 kHz, 25 kHz	
Channel capacity	1000	64
Zone capacity	250	4
Display	1.7" (132 x 90 px) colour display with 5 lines of text	n/a
Power supply (nominal)	7.4 V	
MOTOTRBO R7Ex WITH Li-Ion IP68 2150 mAh BATTERY (PMNN4848)		
Dimensions (h x w x d)	140 x 57 x 40 mm	140 x 57 x 38 mm
Weight with battery Excluding antenna Including whip antenna[7]	438 g 460 g	419 g 441 g
Battery life[3] digital / analogue	23.5 / 20.5 hours (24.5 / 22 hours at 1 W)	
HAZLOC CERTIFICATION		
Gas rating	ATEX: II 2G Ex ib IIC T4 Gb IECEx: Ex ib IIC T4 Gb	
Dust rating	ATEX: II 2D Ex ib IIIC T130°C Db IECEx: Ex ib IIIC T130°C Db	
Mining rating	ATEX: I M2 Ex ib I Mb IECEx: Ex ib I Mb	
Ambient temperature	-30 °C to +60 °C	
ATEX/IECEx Ingress Protection (IP) rating[4]	IP66, IP68 (2 metres for 2 hours)	
MARITIME CERTIFICATION		
Maritime regulation certificates	Marine Equipment Directive 2014/90/EU MED/5.20 Merchant Shipping (Marine Equipment) Regulations 2016 UK/5.20	

TRANSMITTER SPECIFICATIONS	
FM modulation	2.5 kHz: 11K0F3E / 25 kHz: 16K0F3E
4FSK digital modulation	12.5 kHz data: 7K60F1D & 7K60FXD 12.5 kHz voice: 7K60F1E & 7K60FXE Combination of 12.5 kHz voice and data: 7K60F1W
Digital protocol	ETSI TS 102 361-1, -2, -3,- 4 DMR Tier II and DMR Tier III
Conducted / radiated spurious emissions (ETSI)	-36 dBm < 1 GHz, -30 dBm > 1 GHz
Adjacent channel power	60 dB @ 12.5 kHz 70 dB @ 20 kHz / 25 kHz
Frequency stability	±0.5 ppm (-30 °C to +60 °C)
Modulation limiting	±2.5 kHz @ 12.5 kHz, ±4.0 kHz @ 20 kHz, ±5.0 kHz @ 25 kHz

RECEIVER SPECIFICATIONS	
Analogue sensitivity (12dB SINAD)	0.16 µV (typical) / 0.21 µV (maximum)
Digital sensitivity (5% BER)	0.14 µV (typical) / 0.18 µV (maximum)
Conducted / radiated spurious emissions (ETSI)	< -57 dBm
Intermodulation (TIA603E)	> 70 dB
Adjacent channel selectivity, (TIA603A)-1T	> 60 dB @ 12.5 kHz > 70 dB @ 20 / 25 kHz
Adjacent channel selectivity, (TIA603E)-2T	> 45 dB @ 12.5 kHz > 70 dB @ 20 / 25 kHz
Spurious rejection (TIA603E)	> 70 dB
Frequency stability	±0.5 ppm (-30 °C to +60 °C)

Specifications

GNSS SPECIFICATIONS Long-term tracking (95th percentile values >5 satellites visible at nominal -130dBm signal strength)	
Constellation support	GPS, GLONASS, BeiDou, Galileo
Time to first fix, cold start	≤ 35 seconds (dual constellation) ≤ 60 seconds (single constellation)
Time to first fix, hot start	≤ 2 seconds (dual constellation) ≤ 10 seconds (single constellation)
Horizontal accuracy	< 1 metres (dual constellation) < 5 metres (single constellation)
WI-FI SPECIFICATIONS[1]	
Frequency range	2.4 GHz, 5 GHz
Standards supported	Wi-Fi 5 / IEEE 802.11a/b/g/n/ac
Security protocol supported	WPA3, WPA2
Maximum number of SSIDs	128
BLUETOOTH SPECIFICATIONS[1]	
Bluetooth technology	Bluetooth, Bluetooth Classic, Bluetooth LE, Bluetooth Dual Mode
Core version	Qualified against Bluetooth Core 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 (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)	0.5 W / 2.5 W
Audio distortion at rated audio	≤1.5 %
Maximum speech loudness by default (ISO5326)	101 phons @ 30 cm
Maximum programmable speech loudness	108 phons @ 30 cm
Hum and noise	-40 dB @ 12.5 kHz -45 dB @ 20 kHz / 25 kHz
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature with battery	-30 °C to 60 °C
Storage temperature	-40 °C to 85 °C
Thermal shock	Per MIL-STD-810C/D/E/F/G/H
Humidity	Per MIL-STD-810C/D/E/F/G/H
Electrostatic discharge	IEC 61000-4-2 level 4
Dust and water intrusion IEC60079 & IEC60529[4]	IP66 and IP68 (2 metres for 2 hours)
Salt fog	5 % NaCl for 8 hours at 35 °C, 16 hours standing
Packaging test	Per MIL-STD-810D and E

SERVICE COVERAGE

Included: 5 years manufacturing defects/wear and tear hardware repair, technical support and software updates

Optional: 5 years accidental damage repair

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	1-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, II/ 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[5]									504.2	II	504.3	2.2.6b

Features

R7Ex is available with full keypad (FKP) and non-keypad (NKP) versions.

● Included ○ Optional — Not Included

	R7Ex	
	FKP	NKP
GENERAL		
Full keypad	●	—
Colour display	●	—
Analogue and digital	●	●
Voice and data	●	●
Canned text messaging	●	●
Freeform text messaging	●	—
Text to speech	●	●
Work order ticketing	●	—
Integrated Wi-Fi	●	—
Indoor location tracking	●	—
Outdoor location tracking (GNSS)	●	●
Event-driven location updates	●	●
Bluetooth audio	●	—
Bluetooth data	●	—
Third-party Bluetooth PTT support	○	—
Voice announcement	●	●
Home channel reminder	●	●
Late entry	●	●
Priority scan	●	●
Date and time	●	●
Audio recording/playback	○	○
IP66 & IP68[4]	●	●
Rugged to MIL-STD 810	●	●
AUDIO		
Intelligent Audio in analogue and digital	●	●
IMPRES audio	●	●
Acoustic feedback suppressor	●	●
User-selectable audio profile	●	●
Dual click volume knob	●	●
Trill enhancement	●	●
Microphone distortion control	●	●
Received audio levelling	●	●
Voice operated transmit (VOX)	●	●
AI-trained noise suppression	●	●
Single microphone noise cancellation (SINC+)	●	●

	R7Ex	
	FKP	NKP
SYSTEMS		
Dual Capacity Direct Mode	●	●
Conventional	●	●
IP Site Connect	●	●
Capacity Plus single site	●	●
Capacity Plus multi-site	●	●
Capacity Max	○	○
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	○	○
Preventive maintenance	○	○
Rental timer	●	●
SAFETY		
Emergency button	●	●
Fall Alert	●	●
Lone worker	●	●
Transmit Interrupt	●	●
Basic privacy	●	●
Enhanced privacy	●	●
AES256 encryption	○	○
Remote monitor	●	●
Digital emergency	●	●
Emergency search tone	●	●
Radio disable / enable	●	●
Secure processor	●	●
Digital certificates	●	●
Secure Linux operating system	●	●
Wrong battery alert	●	●
Disinfectant / decontamination resistant[5]	●	●
CUSTOMISATION		
Programmable buttons[2]	6	4
Day/night screen mode	●	—
Label recess	●	●
Sensor integration[8]	○	—

[1] Full keypad models only.
[2] Including emergency button which can alternatively be programmed for other functions.
[3] Typical battery life, 5/5/90 profile at maximum transmitter power with GNSS, Bluetooth and Wi-Fi disabled. Actual observed runtimes may vary.
[4] R7Ex also meets IP64, IP65 and IP67.
[5] Please refer to the MOTOTRBO R7Ex user manual for a list of approved disinfectants and decontamination substances.
[6] Max 2 W allowed per ATEX/IECEx Standards.
[7] Weight including whip antenna PMAD4139 or PMAE4079.
[8] Interface allowing third-party developers to create sensor solutions using R7Ex.

To learn more, visit: **www.motorolasolutions.com/R7Ex**

These models available in Motorola Solutions ANZ region only. Availability varies and is subject to individual country law and regulations.
All specifications shown are typical unless otherwise stated and are subject to change without notice.

MOTOROLA SOLUTIONS