EFJohnson TECHNOLOGIES
We Respond.

5100 ES Series Portable Radio

700/800 MHz • VHF • UHF

Key Features and Benefits

Reliable and Rugged

- Magnesium casting provides exceptional strength in a light weight package
- Meets applicable Mil Standard 810C, D, E, and F specifications, as well as approved by Factory Mutual as intrinsically safe for use in hazardous environments.

Submersibility Option

- Immersible to a depth of 1 meter for 30 minutes (per MIL Spec 810F and IP67 standards)

Significant Product Flexibility

- Enables programming of up to 864 channel/talkgroups
- Supports both narrowband (12.5 kHz) and wideband (25 kHz) channel spacing, and multiple system protocols

Simplified Programming

- Over the Air Programming (OTAP) option enables you to program radios without connecting them to a computer
- Easy radio programming and feature updating using EFJohnson's PC Configure™ software for portable and mobile radios

Extensive Accessory Suite

Complete line of accessories including speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, and encryption keyloading devices. Visit our website for the *EFJohnson Subscriber Accessories Catalog!*

Reliable…Rugged…Submersible…Solid.

These are just a few words to describe the new 5100 ES Series Portable Radios from EFJohnson. The 5100 ES Series meets the needs of first responders. Specifically designed for public safety, the ES Series offers crisp and powerful digital audio, Project 25 trunked and conventional operation, and a sleek ergonomic design. If you need a multi-protocol portable radio that leads the industry in feature richness and system interoperability, then the 5100 ES Series Portable Radio is the right choice.

- **Project 25 Compliance**
  Supports Project 25 CAI (Common Air Interface), Project 25 Trunked and Conventional system protocols, and Project 25 Over-The-Air Rekeying (OTAR) functionality.

- **Enhanced (AMBE+2) P25 Vocoder**
  Outstanding voice quality and noise reduction. EFJohnson is the only high tier radio vendor with a full implementation of this second generation Enhanced (AMBE+2) P25 preferred vocoder.

- **Industry's Only SMARTNET® II / SmartZone® Licensee**
  Industry's only supplier licensed to support both analog and digital SMARTNET II and SmartZone trunking protocols.

- **Numerous Encryption Protocols**
  Supports industry-standard encryption capabilities such as AES, DES-OFB and DES. Ask about our free Single Key DES-OFB encryption for P25.

EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

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Typical Performance Specifications

GENERAL	700/800	VHF	UHF R1
Frequency Range	762–806 MHz 806-870 MHz	136–174 MHz	380–470 MHz
Channel Spacing	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit
FCC Type Acceptance Certification	ATH2425171	ATH2425111	ATH2425131
Industry Canada Type Certification	IC: 933B-2425171	IC: 933B-2425112	IC: 933B-2425131
FCC Emissions Designators	11K0F3E, 16K0F3E, 14K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D
Input Voltage	7.2 V		
Dimensions (w/o antenna) (HxWxD)	6.7" x 2.52" x 1.8" (6.4 cm x 17.0 cm x 4.6 cm)		
Weight (with standard battery)	11 oz. (312 g)		
Case	Polycarbonate–black, yellow, orange Immersion rated option available for all housings		
Temperature Range	–30°C to +60°C		

TRANSMITTER			
RF Power Output	2.5/1 W (700 MHz), 3/1 W (800 MHz)	5/1 W	4/1 W
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm
Modulation Limiting			
25 kHz channels	*±5 kHz*	*±5 kHz*	*±5 kHz*
12.5 kHz channels	*±2.5 kHz*	*±2.5 kHz*	*±2.5 kHz*
Emissions (Conducted/Radiated)	–75 dBc	–75 dBc	–75 dBc
Audio Response	+1, -3dB	+1, -3dB	+1, -3dB
FM Hum and Noise			
25 kHz channels	*–40 dB*	*–45 dB*	*–45 dB*
12.5 kHz channels	*–35 dB*	*–40 dB*	*-40 dB*
Audio Distortion	2%	2%	2%

RECEIVER			
Audio Output Power	500 mW	500 mW	500 mW
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm
Sensitivity			
Analog Mode: 12 dB SINAD	*0.25 uV (–119 dBm)*	*0.25 uV (-119 dBm)0.25 uV (–119 dBm)*	
Digital Mode: 5% BER	*0.25 uV (–119 dBm)*	*0.25 uV (-119 dBm)0.25 uV (–119 dBm)*	
Selectivity			
25 kHz channels	*–75 dB*	*–75 dB*	*–75 dB*
12.5 kHz channels	*–63 dB*	*–63 dB*	*–63 dB*
Intermodulation	–75 dB	–75 dB	–75 dB
Spurious & Image Rejection	–75 dB	–75 dB	–75 dB
FM Hum and Noise			
25 kHz channels	*–40 dB*	*–40 dB*	*–40 dB*
12.5 kHz channels	*–35 dB*	*–35 dB*	*–35 dB*
Audio Distortion	2%	2%	2%

BATTERIES			
Battery Type	Dimensions (HxWxD)	Weight	Approx. Life (5/5/90)
Extra-High Capacity NiMH	6.0" x 2.3" x 0.85"	12.96 ounces	UHF/VHF: Minimum 10 hours 700/800 MHz: Minimum 12 hours
Extra-High Capacity NiMH, IS	6.0" x 2.3" x 0.85"	12.96 ounces	UHF/VHF: Minimum 10 hours 700/800 MHz: Minimum 12 hours
Alkaline Battery Clamshell	7.2" x 2.6" x 2.0"	15.68 ounces (w/12 AA batt.)	14-16 hours
High Capacity Lithium Ion	6.5" x 2.3" x .78"	8.1 ounces	12 hours

Specifications are measured per TIA 102.CAA-B, TIA 102.CAAB-B and per TIA 603-C.

ENVIRONMENTAL SPECIFICATIONS

Environment	Mil Spec M	810F P
Low Pressure	500.4	II
High Temp.	501.4	I, II
Low Temp.	502.4	I, II
Temp. Shock	503.4	I
Solar Radiation	505.4	I
Rain/Blown Rain	506.4	I, III
Humidity	507.4	NA
Salt Fog	509.4	NA
Dust and Sand	510.4	I
Vibration	514.5	I(24)
Shock	516.5	I, IV
Immersion*	512.4	I

M=Method P=Procedure
Also meets equivalent superseded C, D, and E standards
*Optional

ENCRYPTION OPTIONS

Supported Encryption Algorithms	DES, DES-OFB, AES
Encryption Keys/Radio	64 Common Key Reference (CKR) 64 Physical Identifier (PID) Compatible with Motorola Key Variable Loader
Encryption Frame Re-sync Interval	P25 CAI 360 msec
Encryption Keying	External Key Loader, OTAR
Synchronization	CFB – Cipher Feedback OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Erasure	Keyboard Command
Code Key Initialization	Internal pseudorandom generator
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 197

FACTORY MUTUAL APPROVALS

Intrinsically Safe Class I	Division 1 An area where there is or could be an explosive atmosphere most of the time in normal conditions.	C Ethylene D Propane and Methane E Conductive metal F Carbonaceous material coal, coke dust
Class II		G Grain dust and flour
Class III	Division 1 Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Ignitable fibers or flyings
Non-Incendive Class I	Division 2 An area where an explosive atmosphere exists only as a result of a fault.	A Acetylene B Hydrogen C Ethylene D Propane and Methane

FM APPROVED

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