

# IS Series Portfolio

Intrinsically Safe DMR Radios



- UL / ATEX / IECEx / FM / CSA / UL / CQST IIC Certified
- Designed for Hazardous Working Environments
- GPS, Man Down and Integration with Data Applications



RATED  
IP67





# IS Series

Two-way radios have been a productivity tool for many professionals. For those who work in environments with explosive gas and combustible dusts using standard radios could be unsafe. Understanding the challenges faced by professionals working in hazardous environments. Hytera launched our intrinsically safe series of DMR Portable Radios PD792 Ex, PD782 UL913 and PD702 UL913. These IS portable DMR radios comply with some of the world's strictest safety standards.

## Applications

Oil & Gas

Utilities

Mining

Manufacturing

Firefighters

Refineries

Pharmaceutical



# Innovative Design & Convenient Operation

## Product Advantages

### 1 Patented antenna

The radio and GPS antenna are integrated to ensure convenience and better performance.



### 2 Separated knobs

Separated by the antenna, the two knobs of portable radio stand apart from each other, which reduces mis-operation when with gloves on or under dim light.



### 3 Patented Battery Latch

The PD792 Ex is designed with a battery latch that keeps the battery in place even when the radio is dropped.



### 4 Large-size color display & multilingual UI

The large-size TFT LCD display with multilingual UI delivers you favorable accessibility.



### 5 Ergonomic key

The smart body incorporates big keys for ease of use and precise operation.



### 6 Rugged & Reliable

All IS Radios comply with the IP67 requirements, withstanding immersion testing (1meter up to 30 minutes). Compliance with MIL-STD-810 C/D/E/F/G requirements, ensure outstanding performance even under harsh environments.



# Certifications



**UL:**  
These requirements apply to apparatus or parts of apparatus for installation and use in Class I, II, or III, Division 1 hazardous (classified) locations in accordance with the requirements of the National Electrical Code, NFPA 70.

**Class I II III  
DIV I Group C-G  
-22°F to 131°F T4**



**IECEX :**  
Scheme is the future route to global compliance certification. Its aim is to harmonize standards to allow free movement of goods by establishing a world-wide accepted standard.

**Ex ib IIC T4  
Ex ib IIIC T240°F IP5X  
Ex ib I**



**FM:**  
FM Approvals LLC is a member of Nationally Recognized Testing Laboratories of U.S.A. It strives to offer global services with unsurpassed technical integrity and exceptional customer satisfaction.

**Class I, Zone 1, Aex, ib, IIC, T4, Gb  
Class II III, Div 1, Group E F G  
T248°F -4°F ≤ TA ≤ 122°F**

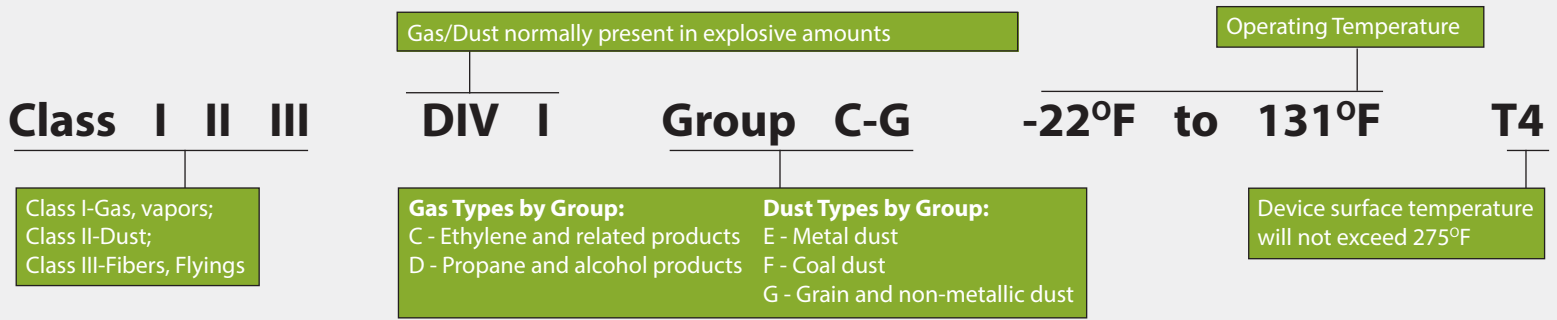


**ATEX:**  
is the European Union directive to which all two-way radios must conform if used in potentially explosive environments. It replaces the Cenelec classification in all European Union member states and EFTA countries.

**II 2G Ex ib IIC T4  
II 2D Ex ib IIIC T248°F IP5X  
I M2 Ex ib**

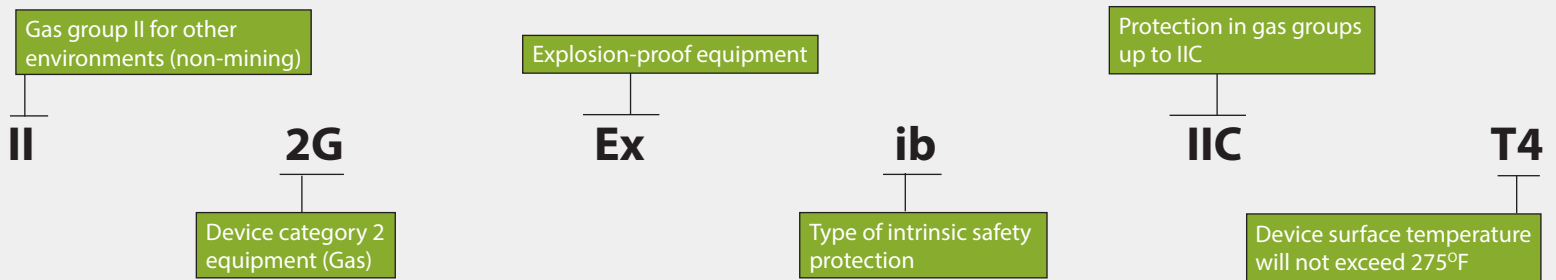


# UL913 Protection

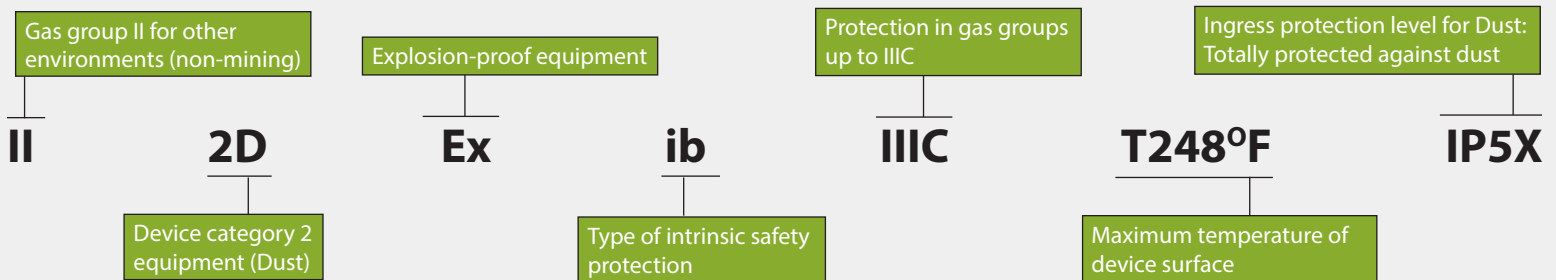


# ATEX Protection

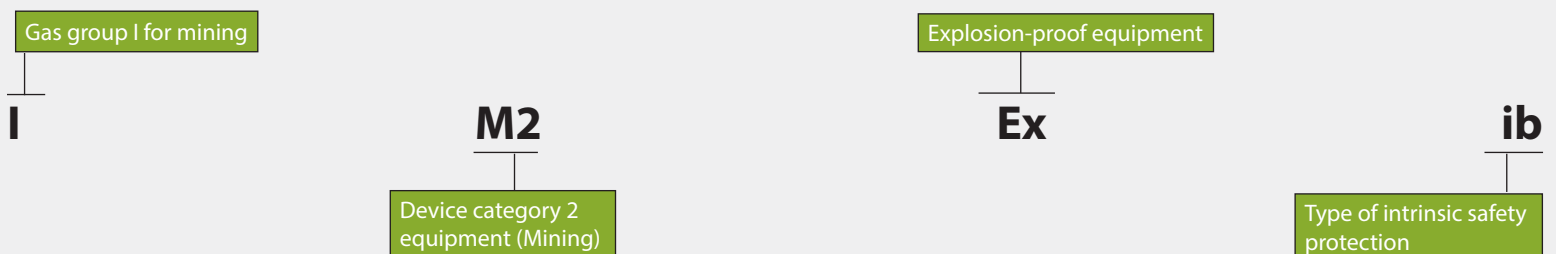
## GAS:



## DUST:



## MINING:



## PD792 Ex

## Innovative Design

- **Ease of Use**  
The PD792 Ex is very easy to use. It has a tough and highly readable LCD screen and an intuitive user interface. The large PPT button and channel knobs are useful for users wearing gloves. The ergonomic design and channel annunciation enhance the user experience.
- **Patent Battery Latch**  
To disengage the battery from Hytera digital portables, the lock and bolt of the latch need to be moved along two different axes. This patented design ensures no movement of the battery pack in case of dropping to prevent sparks.
- **Innovative Silicone Encapsulating**  
Silicone encapsulant technology prevents the internal circuits from interface with air and liquid which effectively stops the intrusion of liquid, dust and harmful gas. The silicone encapsulating process is delicate and complicated. As a result, every single PD792 Ex radio spends eight hours in the manufacture line.
- **Innovative Electrostatic Free Design**  
Hytera has a patent on the electrostatic free design and dual-material molding technology in this intrinsically safe portable. The static dispersive material (blue) minimizes static accumulation on the surface, thus reducing the probability of static discharge on the radio. Meanwhile the robust material (black) maximizes the ruggedness of the enclosure.
- **Enhanced Safety**  
The PD792 Ex provides a dedicated emergency button. In case of any accident, a press on the button will trigger an alarm and initiate a pre-programmed voice call. Built-in Man-down, GPS and Lone Worker functions are also available with the digital portable.

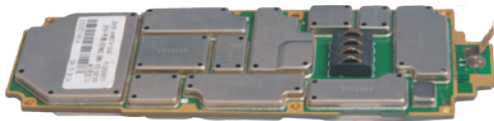
## Features

- **Environmentally Safe and High Reliability**  
The PD792 Ex is designed upon the strict requirements of European ATEX and North American FM standards. With certifications for ATEX, IECEx, the latest FM and CSA specifications, the radio works safely in most hazardous environments, even with the presence of hydrogen and dust particles. The overall design complies with the latest American Military Standard-MIL-STD-810G, which means it can bear the harshest environments like High/Low Temperature, High Humidity, Vibration, and Shock.
- **High-capacity and Secure Li-Ion Battery**  
The PD792 Ex has a high-capacity Li-Ion battery of 1800mAh with long shelf life of 17 hours under 5-5-90 duty cycle. The battery charging and discharging circuits are stringently designed to prevent overcharging or discharging causing high heat, which leads to unstable battery environments. In addition the battery cells are also encapsulated to redistribute single point heat buildup and also prevent air discharge.
- **High Audio Quality and Assured Communication Based on DMR Technology**  
Using DMR digital technology, the PD792 Ex provides higher audio quality and stable communication clarity with 40% less battery consumption than analog radios. It provides better communication quality and enhanced privacy, and moreover reduces overall equipment costs.
- **GPS Positioning**  
The built-in GPS module in the PD792 Ex supports GIS applications.



# Specifications

- IP67 Protection**  
 The Ingress Protection reaches IP67 (6: Totally protected against dust; 7: Protected against the effects of immersion up to 1m for 30 minutes). It's the highest IP level for land-based wireless radio application.
- Improved PCB Circuit Layout & EMC Shielding**  
 To achieve such a high safety standard, Hytera PD792 Ex has an optimized distributed line design on PCB, minimizing the odds of circuit fault. All the key components on the PCB are covered with a shield, and the space between lines, between components, between component and shield are properly separated which translates to better EMC performance and less internal interference.



General	Frequency Range	VHF: 136 - 174MHz UHF1: 400 - 470MHz		
	Channel Capacity	1024		
	Zone Capacity	64 (each with max of 16 channels)		
	Channel Spacing	12.5 / 20 / 25KHz		
	Operating Voltage	7.4V (rated)		
	Battery	1800mAh (Li-Ion)		
	Battery Life (5-5-90 Duty Cycle)	Analog	Approx. 14.5hrs	
		Digital	Approx. 17hrs	
	Frequency Stability	1.5ppm		
	Antenna Impedance	50 Ω		
	LCD Display	160 x 128 Pixels, 65,536 Color, 1.8 inches, 4 rows		
	Dimensions (HxWxD)	5.55 x 2.16 x 1.53 inches		
	Weight	1.1 lbs		

Transmitter	RF Power Output	1W (adjustable)	
	FM Modulation	11K φF3E @ 12.5KHz; 14KφF3E @ 20KHz; 16KφF3E @ 25KHz	
	4FSK Digital Modulation	12.5KHz Data Only; 7K6φFXD 12.5KHz Data & Voice; 7K6φFXW	
	Conducted/Radiated Emission	-36dBm<1GHz -30dBm>1GHz	
	Modulation Limiting	2.5KHz @ 12.5KHz; 4.0KHz @ 20KHz; 5.0KHz @ 25KHz	
	FM Hum & Noise	40dB @ 12.5KHz; 43dB @ 20KHz ; 45dB @ 25KHz	
	Adjacent Channel Power	60dB @ 12.5KHz 70dB @ 20/25KHz	
	Audio Response	+1 ~ -3dB	
	Audio Distortion	3%	
	Digital Vocoder Type	AMBE++ or SELP	
Digital Protocol	ETSI-TS102 361-1, 2&3		

Environmental	Operating Temperature	-4°F ~ +122°F	
	Storage Temperature	-40°F ~ +185°F	
	Dust & Water Intrusion	IP67 (non-explosive-proof)	
	Humidity	MIL-STD-810 C/D/E/F/G	
	Shock & Vibration	MIL-STD-810 C/D/E/F/G	
	ESD	IEC 61000 - 4 - 2 (level 4) ± 8kV(contact) ± 15kV (air)	
	Certifications	ATEX	II 2G Ex ib IIC T4; II 2D Ex ib IIC T248°F IP5X; I M2 Ex ib
IECEX		Ex ib IIC T4; Ex ib IIC T248°F IP5X; Ex ib I	
FM		Class I, Zone 1 Aex ib IIC T4 Gb Class II, III Div 1; Group E, F, G T248°F; -4°F Ta 122°F	

Receiver	Sensitivity	Analog	0.3 μ V (12dB SINAD); 0.22 μ V (typical) (12dB SINAD); 0.4 μ V (20dB SINAD)
		Digital	0.3 μ V/BER5%
	Selectivity TIA-603 ETSI	60dB @ 12.5KHz / 70dB @ 20/25KHz; 60dB @ 12.5KHz / 70dB @ 20/25KHz	
	Intermodulation TIA-603 ETSI	70dB @ 12.5/20/25KHz 65dB @ 12.5/20/25KHz	
	Spurious Response Rejection TIA-603 ETSI	80dB @ 12.5/20/25KHz 84dB @ 12.5/20/25KHz	
	Hum & Noise	40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz	
	Rated Audio Power Output	0.5W	
	Rated Audio Distortion	3%	
	Audio Response	+1 ~ -3dB	
	Conducted Spurious Emission	< -57dBm	

GPS	TTF Cold Start (Time To First Fix)	<1 minute
	TTF Hot Start (Time To First Fix)	<10 seconds
	Horizontal Accuracy	<10 meters

## Accessories

- Included**
- Li-Ion Battery (IS Certified)
  - MCU Rapid-rate Charger
  - Power Adapter
  - Antenna
  - Belt Clip
  - Leather Strap

See website for full list of optional accessories



## PD782 UL913



## Innovative Design

- **User Friendly Design**  
The large-size color display allows good visibility even under extremely strong light. The globally patented industrial design and antenna design ensure convenient operation and remarkable GPS performance. The large PTT, volume, channel knobs and programmable buttons are easy to operate even when wearing gloves.
- **Rugged & Reliable**  
Complies with MIL-STD-810 C/D/E/F/G standards. The Ingress Protection reaches IP67 (6: Totally protected against dust; 7: Protected against the effects of immersion up to 1m for 30 minutes). It's the highest IP level for land-based wireless radio application.
- **Superior Voice**  
With the adoption of the AGC technology in combination with the application of narrowband codec and digital error correction technologies, The PD782 UL913 radio is capable of ensuring your voice is clear and crisp even in noisy environments or at the edge of the coverage area.
- **Higher Spectrum Efficiency, Higher Channel Capacity**  
The TDMA technology allows twice the channels based on the same spectrum resource. This relieves the stress of increasing shortage in spectrum resource.
- **Larger Li-Ion Battery**  
Equipped with 2400mAh and UL913 / CSA certified Li-Ion battery, lasting approximately 21 hours under 5-5-90 duty cycle. The battery life-span is also longer as the charge/discharge cycles reduced. To ensure intrinsically safe certification the IS Battery must be used.

## Features

- **Secure Communication**  
Besides the encryption inherent to digital technology, The PD82 UL913 radio provides enhanced encryption capabilities (such as 256-bit encryption algorithm). It has analog scrambling, and digital encryption using Advanced Encryption Standard (AES) and ARCFOUR (ARC4) encryption methodology to both voice and data.
- **Roaming**  
Automatic roaming of all sites in an IP Multi-site Connect system.
- **Vibration**  
Vibration alerts the user of voice calls and text messages.
- **Scan**  
Capable of scanning of pure analog voice and signaling, pure Digital voice and data, and also mix mode scan that comprise of Analog and Digital activities.
- **Versatile Voice Calls**  
The intelligent signaling of the PD782 UL913 supports various voice call types, including Private Call, Group Call, All Call and Emergency Call.
- **Multifaceted Features**  
In addition to conventional communication services, it is capable of Text Message, Scan, Emergency, Man Down (optional), vibration Auto Registration, High-speed Data Transmission, Lone Worker, Radio Check, Remote Monitor, Call Alert, Radio Enable, and Radio Disable.
- **One Touch Call/Text**  
Supports One Touch features that comprise of Preprogrammed Text Messages, Voice Calls and Supplementary Features.



# Specifications

- GPS Positioning**  
 Supports viewing of GPS positioning information and sending of GPS text message.
- Software Upgradeable**  
 Upgradeable software enables new features without buying a new radio; The PD82 UL913 radios can also be switched into DMR trunking modes with corresponding trunking license applied in the same hardware.
- Pseudo Trunk**  
 This virtual trunking feature allocates a free timeslot for urgent communications. This effectively enhances frequency efficiency and allows you to communicate in a timely manner in emergency situations.
- Data Features**  
 The PD782 UL913 supports data capabilities of sending Private and Group text messages. It also supports a Third Party to control the radio via Third party API (GPS, Radio Registration Services, Radio Call Control, Telemetry, Data Transfer), via Telemetry control to radio.
- Expansion Ports**  
 This allows third parties to develop accessory and applications via front and rear port of the mobile. (Features such as voice recording, encryption).

General	Frequency Range	VHF: 136 - 174MHz ; UHF1: 400 - 470MHz ; UHF2: 450-520MHz ; UHF5: 806-941MHz (only DMR Trunking)		
	Channel Capacity	1024		
	Zone Capacity (max of 16 channels)	64		
	Channel Spacing	25 / 20 / 12.5KHz		
	Operating Voltage	7.4V (rated)		
	Battery	2400mAh (Li-Ion)		
	Battery Life (5-5-90 Duty Cycle, High TX Power)	Analog	Approx. 8 - 12hrs	
		Digital	Approx. 11 - 15hrs	
	Frequency Stability	± 0.5ppm		
	Antenna Impedance	50 Ω		
	Dimensions (HxWxD)	4.9 x 2.17 x 1.46 inches		
	Weight	12.52 oz		
LCD Display (PD782 / PD762)	160 128 pixels, 65535 colors 1.8 inch, 4 rows			

Environmental	Operating Temperature	-22°F ~ +140°F	
	Storage Temperature	-40°F ~ +185°F	
	ESD	IEC 61000 - 4 - 2 (level 4) ± 8kV(contact) ; ± 15kV (air)	
	American Military Standard	MIL-STD-810 C/D/E/F/G	
	Dust & Water Intrusion	IP67 Standard	
	Humidity	MIL-STD-810 C/D/E/F/G	
	Shock & Vibration	MIL-STD-810 C/D/E/F/G	
	Certifications	UL913	Class I II III DIV I Group C-G -22°F to 131°F T4

GPS	TTF (Time To First Fix) Cold Start	<1 minute
	TTF (Time To First Fix) Hot Start	<10 seconds
	Horizontal Accuracy	<10 meters

Transmitter	RF Power Output	VHF: High 5W - Low 1W UHF: High 4W - Low: 1W
	FM Modulation	11K φF3E @ 12.5KHz ; 14KφF3E @ 20KHz ; 16KφF3E @ 25KHz
	4FSK Digital Modulation	12.5KHz Data Only: 7K6 FXD 12.5KHz Data & Voice: 7K6 FXW
	Conducted/Radiated Emission	-36dBm<1GHz -30dBm>1GHz
	Modulation Limiting	± 2.5KHz @ 12.5KHz ; ± 4.0KHz @ 20KHz ; ± 5.0KHz @ 25KHz
	FM Hum & Noise	40dB @ 12.5KHz ; 43dB @ 20KHz ; 45dB @ 25KHz
	Adjacent Channel Power	60dB @ 12.5KHz 70dB @ 20/25KHz
	Audio Response	+1 ~ -3dB
	Audio Distortion	≤ 3%
	Digital Vocoder Type	AMBE++ or SELP
Digital Protocol	ETSI-TS102 361-1, 2&3	

Receiver	Sensitivity	Analog	0.22 μ V (12dB SINAD) ; 0.22 μ V (Typical) (12dB SINAD); 0.4 μ V (20dB SINAD)
		Digital	0.22 μ V/BER5%
	Selectivity TIA-603 ETSI	60dB @ 12.5KHz / 75dB @ 20/25KHz ; 60dB @ 12.5KHz / 70dB @ 20/25KHz	
	Intermodulation TIA-603 ETSI	70dB @ 12.5/20/25KHz 65dB @ 12.5/20/25KHz	
	Spurious Response Rejection TIA-603 ETSI	70dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz	
	Blocking TIA-603 ETSI	80dB 84dB	
	S/N	40dB @ 12.5KHz ; 43dB @ 20KHz ; 45dB @ 25KHz	
	Rated Audio Power Output	0.5W	
	Rated Audio Distortion	≤ 3%	
	Audio Response	+1 ~ -3dB	
Conducted Spurious Emission	< -57dBm		

## Accessories

### Included

- Li-Ion Battery (IS Certified)
- MCU Rapid-rate Charger
- Power Adapter
- Antenna
- Belt Clip
- Leather Strap

See website for full list of optional accessories





## PD702 UL913

## Innovative Design

- **User Friendly Design**  
The globally patented industrial design and antenna design ensure convenient operation and remarkable GPS performance. The large PTT, volume, channel knobs and programmable buttons are easy to operate even when wearing gloves.
- **Rugged & Reliable**  
Complies with MIL-STD-810 C/D/E/F/G standards. The Ingress Protection reaches IP67 (6: Totally protected against dust; 7: Protected against the effects of immersion up to 1m for 30 minutes). It's the highest IP level for land-based wireless radio application.
- **Superior Voice**  
With the adoption of the AGC technology in combination with the application of narrowband codec and digital error correction technologies, The PD702 UL913 radio is capable of ensuring your voice is clear and crisp even in noisy environments or at the edge of the coverage area.
- **Higher Spectrum Efficiency, Higher Channel Capacity**  
The TDMA technology allows twice the channels based on the same spectrum resource. This relieves the stress of increasing shortage in spectrum resource.
- **Larger Li-Ion Battery**  
Equipped with 2400mAh and UL913 / CSA certificated Li-Ion battery, lasting approximately 21 hours under 5-5-90 duty cycle. The battery life-span is also longer as the charge/discharge cycles reduced. To ensure intrinsically safe certification the IS Battery must be used.

## Features

- **Secure Communication**  
Besides the encryption inherent to digital technology, and provides enhanced encryption capabilities (such as 256-bit encryption algorithm). It has analog scrambling, and digital encryption using Advanced Encryption Standard (AES) and ARCFOUR (ARC4) encryption methodology to both voice and data.
- **Roaming**  
Automatic roaming of all sites in an IP Multi-site Connect system.
- **Vibration**  
Vibration alerts the user of voice calls and text messages.
- **Versatile Voice Calls**  
The intelligent signaling of the PD702 UL913 radio supports various voice call types, including Private Call, Group Call, All Call and Emergency Call.
- **Multifaceted Features**  
In addition to conventional communication services, and is capable of Scan, Emergency, Man Down (optional), vibration Auto Registration, Lone Worker, Radio Check, Remote Monitor, Call Alert, Radio Enable, and Radio Disable.
- **Scan**  
Capable of scanning of pure analog voice and signaling, pure Digital voice and data, and also mix mode scan that comprise of Analog and Digital activities.
- **One Touch Call/Text**  
Supports One Touch features that comprise of Preprogrammed Text Messages, Voice Calls and Supplementary Features.





## Specifications

- Software Upgradeable**  
 Upgradeable software enables new features without buying a new radio; Can also be switched into DMR trunking modes with corresponding trunking license applied in the same hardware.
- Expansion Ports**  
 This allows third parties to develop accessory and applications via front and rear port of the mobile. (Features such as voice recording, encryption).
- Pseudo Trunk**  
 This virtual trunking feature allocates a free timeslot for urgent communications. This effectively enhances frequency efficiency and allows you to communicate in a timely manner in emergency situations.
- GPS Positioning**  
 Supports viewing of GPS positioning information and sending of GPS text message.

General	Frequency Range	VHF: 136 - 174MHz ; UHF1: 400 - 470MHz ; UHF2: 450-520MHz ; UHF5: 806-941MHz (only DMR Trunking)		
	Channel Capacity	1024		
	Zone Capacity (max of 16 channels)	64		
	Channel Spacing	25 / 20 / 12.5KHz		
	Operating Voltage	7.4V (rated)		
	Battery	2400mAh (Li-Ion)		
	Battery Life (5-5-90 Duty Cycle, High TX Power)	Analog	Approx. 8 - 12hrs	
		Digital	Approx. 11 - 15hrs	
	Frequency Stability	± 0.5ppm		
	Antenna Impedance	50 Ω		
	Dimensions (HxWxD)	4.9 x 2.17 x 1.38 inches		
Weight	11.82 oz			

Environmental	Operating Temperature	-22°F ~ +140°F	
	Storage Temperature	-40°F ~ +185°F	
	ESD	IEC 61000 - 4 - 2 (level 4) ± 8kV(contact) ; ± 15kV (air)	
	American Military Standard	MIL-STD-810 C/D/E/F/G	
	Dust & Water Intrusion	IP67 Standard	
	Humidity	MIL-STD-810 C/D/E/F/G	
	Shock & Vibration	MIL-STD-810 C/D/E/F/G	
Certifications	UL913	Class I III DIV I Group C-G -22°F to 131°F T4	

GPS	TTF (Time To First Fix) Cold Start	< 1 minute
	TTF (Time To First Fix) Hot Start	< 10 seconds
	Horizontal Accuracy	< 10 meters

Transmitter	RF Power Output	VHF: High 5W - Low 1W UHF: High 4W - Low: 1W
	FM Modulation	11K φF3E @ 12.5KHz; 14KφF3E @ 20KHz; 16KφF3E @ 25KHz
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	Conducted/Radiated Emission	-36dBm<1GHz -30dBm>1GHz
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	Adjacent Channel Power	60dB @ 12.5KHz 70dB @ 20/25KHz
	Audio Response	+1 ~ -3dB
	Audio Distortion	≤ 3%
	Digital Vocoder Type	AMBE++ or SELP
Digital Protocol	ETSI-TS102 361-1, 2&3	

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	Blocking TIA-603 ETSI	80dB 84dB	
	S/N	40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz	
	Rated Audio Power Output	0.5W	
	Rated Audio Distortion	≤ 3%	
	Audio Response	+1 ~ -3dB	
Conducted Spurious Emission	< -57dBm		

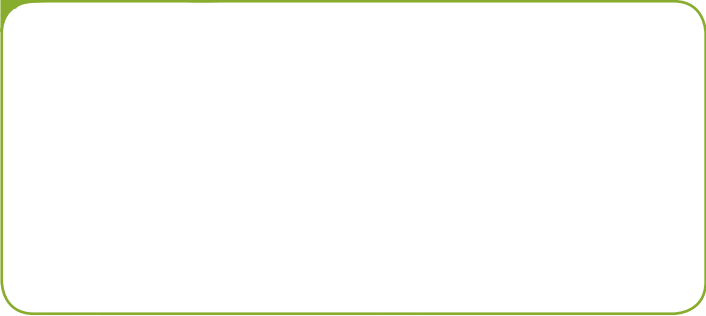
## Accessories

### Included

- Li-Ion Battery (IS Certified)
- MCU Rapid-rate Charger
- Power Adapter
- Antenna
- Belt Clip
- Leather Strap

See website for full list of optional accessories





20KHz / 25KHz will not be available on new equipment in the U.S. after January 1<sup>st</sup>, 2011

Hytera reserves the right to change product designs or specifications at any time. If you have any questions regarding the accuracy of this information please contact your local sales representative or Hytera directly.

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**Hytera America**

**Address:** 3315 Commerce Parkway  
Miramar, Florida 33025, USA  
**Tel:** 800-845-1230 **Fax:** 954-846-1672  
**http:** //www.hytera.us

