



PD78XG/ PD70XG^(UL913)

Intrinsically Safe Full Power Digital Radio

- UL/CSA/CQST Certified explosion-proof DMR Portable Two-way Radio
- Designed for Hazardous Working Environments
- Smooth Migration from Analog to Digital
- Larger Battery Capacity, Longer Cycle Life





**PD78XG/PD78X
PD70XG/PD70X
(UL913)**

As a product built to the DMR standard, PD78X/PD78XG/PD70X/PD70XG (UL913) are specially designed for those who work in environments with explosive gas and combustible dusts, where using regular radios could be unsafe. Hytera understands the challenges of professionals in hazardous environments. And is dedicated to designing and delivering of intrinsically safe and reliable communications solutions. Hytera launched PD78X/PD78XG/PD70X/PD70XG (UL913), portable explosion-proof DMR radio with ergonomic and rugged design, long battery life and UL913-rated for safety. The PD78XG/PD70XG enables your workers to communicate safely and efficiently wherever it must be.

Applications

Oil & Gas, Refinery, Chemical Industry, Fire Fighting

PD78X, PD78XG, PD70X, PD70XG in this document are intrinsically safe, they are different from the conventional types.



Highlights

UI913 and CSA Certificated Explosion-proof Safety

Hytera PD78XG/PD70XG intrinsic safety radio is designed upon the requirements of USA UL913 and Canada CSA standard. The radio works safely in most hazardous environments with explosive gas and dust particles.

Reliable Quality

PD78XG/PD70XG is strictly compliant with MIL-STD-810 C/D/E/F/G and IP67 standards, ensuring outstanding performance even in harsh environments.

Support MPT and DMR Trunking Modes

New features can be enabled via software upgrade. Moreover, the radio can switch between MPT and DMR trunking modes through license.

High Audio Quality and Assured Communication

Based on DMR Technology

Benefited from the latest digital DMR technology, PD78XG/PD70XG delivers clear and loud voice in noisy environments.

Ease To Use

With large PTT, volume, channel knobs and programmable buttons, PD78XG/PD70XG are easy to operate even when wearing gloves. The PD78XG/PD70XG with large colourful display (PD78XG only) and bright LED shows status information at a glance.

Larger Li-Ion Battery capacity, longer cycle life

Equipped with 2400mAH and UL913/CSA certificated Li-Ion battery, PD78XG/PD70XG provides with shift life of 18 hours under 5-5-90 duty cycle. And the battery life-span is longer as the charge/discharge cycles reduced.



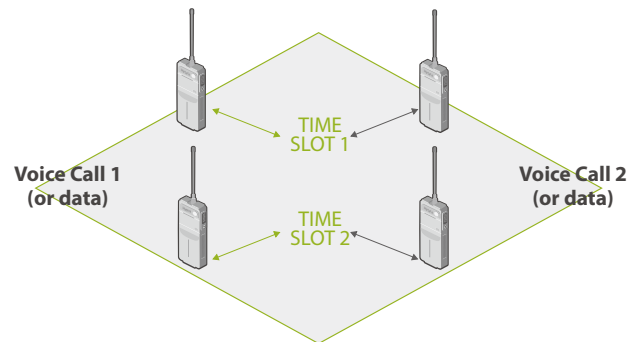
Features

• Dual Modes (Analog + Digital)

PD78XG/PD70XG can operate in either analog or digital mode. It is compatible with the prevalent analog system, ensuring a smooth analog-to-digital transition.

• Dual-slot Pseudo Trunk

The free slot can be allocated to enhance frequency efficiency and timely response under emergency.



Slot 1, Slot 2 are automatically assigned to voice call 1 or voice call 2.

• Secure Communication

Besides the basic encryption of the digital technology, PD78XG/PD70XG provides advanced encryption (such as 256-bit encryption algorithm) and scrambler features to secure communication.

• Data Services

PD78XG/PD70XG can send private and group text message. The third party application can control the radio via API (GPS, Radio Registration Services, Call Control, Telemetry, Data Transfer).

• Various Analog Signaling Types

PD78XG/PD70XG supports various analog signals (HDC1200, DTMF, 2-Tone and 5-Tone), various squelch signals (CTCSS/CDCSS), thus providing higher expansion capacity to the analog system.

- **Supplementary Services**

PD78XG/PD70XG supports supplementary services of Radio Check, Remote Monitor, Call Alert, Radio Enable and Radio Disable.

- **Enhanced Safety**

Hytera PD78XG/PD70XG provides a dedicated emergency button. In case of any accident, a press on the button will trigger an alarm and initiate a voice call to a pre-programmed work fellow or group. Man-down, Positioning Services and Lone Worker features further ensures the safety.

- **Versatile Services**

In addition to voice services, PD78XG/PD70XG offers data services and selectable features, such as Text Message, Scan, Emergency, Man Down (optional), Vibration, Auto Registration, High-speed Data Transmission, Lone Worker etc.

Accessories

Standard Accessories

Li-Ion Battery

Power Adapter

MCU Rapid-rate Charger

Belt clip

Leather Strap

Antenna

UI913 certified audio accessories



EAN17
3-wire Earpiece
with Transparent
Acoustic Tube (Beige)

EAN18
3-wire Earpiece
with Transparent
Acoustic Tube (Black)

SM18N2
Water-proof
Remote Speaker

UL913 Certificate

Class III III-Division 1, Group C-G, -30°C to 55°C, T4
 Class I- Division 2, Group A-D

Temperature Class
 (Maximum device surface temperature)

- T1-450°C T3C-160°C
- T2-300°C T4-135°C
- T3-200°C T5-100°C
- T3A-180°C T6-85°C
- T3B-165°C

Atmosphere:
Class I-Gas, vapors;
Class II-Dust;
Class III-Fibers, Flyings

Operating Temperature

Class III III Division 1 Group C-G -30°C to 55°C T4

Area Classification: (Flammable material present time) NEC 500
Division 1: Gas/Dust normally present in explosive amounts
Division 2: Gas/Dust not normally present in explosive amounts

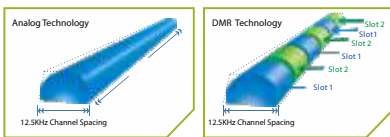
Gas Types by Group:
A-Acetylene
B-Hydrogen
C-Ethylene and related products
D-Propane and alcohol products

Dust Types by Group:
E-Metal dust
F-Coal dust
G-Grain and non-metallic dust

Digital Technology

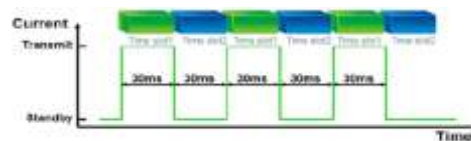
1 Higher Spectrum Efficiency

FCC mandates that non frequency efficient ($\geq 12.5\text{kHz}$) equipment will not approved after 2011 due to congestion, and all public safety equipments have to be migrated by 2013. The more efficient digital technology is the trend to replace analog technology.



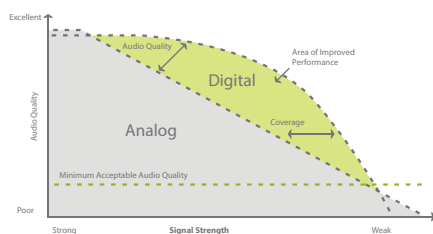
2 Longer Battery Life

Two-slot, however, offers a good way forward. Since an individual call uses only one of the two timeslots, it requires only half of the transmitter's capacity. 40% Battery Life Improvement with this technology.



3 Better Digital Audio Quality

With narrowband codec and digital error-correction technologies, PD78XG/PD70XG delivers superior voice under noisy environments. The AGC technology maintains a suitable voice volume.



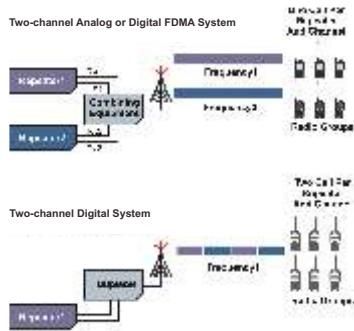
4 Compatible to Analog System

DMR can operate in either analog or digital mode. Accordingly, you can forget about its compatibility with the analog system that you are using, and just enjoy the benefits it brings. DMR allows migration to take place one radio at a time, one channel at a time or the entire system at a time.



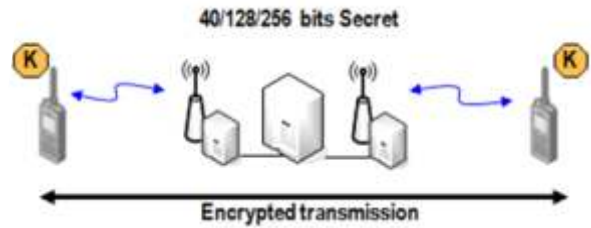
5 Save Equipment Cost

Compared with FDMA solution, 2 slot solution allows 2 simultaneous calls through 1 repeater, which helps reduce minimum entry cost.



6 End-to-End Encryption

Voice or data information is encrypted during the transmission from end to end. The encrypted information can only be decoded by the radios that have the same encryption keys.



Specifications

General	Frequency Range	UHF1: 400-470MHz; UHF2: 450-520MHz; UHF3:350-400MHz; UHF5: 806-941MHz; VHF: 136-174MHz		
	Channel Capacity	1024		
	Zone Capacity	16(PD70X UL913, each with a maximum of 16 channels) 64(PD78X UL913, each with a maximum of 256 channels)		
	Channel Spacing	12.5kHz / 20kHz / 25kHz		
	Operating Voltage	7.4V (rated)		
	Battery	2400mAh (Li-Ion)		
	Battery Life (5-5-90 Duty Cycle, High TX Power) High-capacity 2400mAh Li-Ion Battery	Analog: 20h 18h (G)	Digital: 23h 21h (G)	
	Frequency Stability	± 1.5ppm		
	Antenna Impedance	50Ω		
	Dimensions (H×W×D) (with standard battery, without antenna)	125 x 55 x 43mm (PD78XG) 125 x 55 x 41mm (PD70XG)		
	Weight (with antenna & standard battery)	369g (PD78XG) 355g (PD70XG)		
	LCD Display (PD78XG)	160 x 128 pixels, 65535 colors 1.8 inch, 6 rows		
	Receiver	Sensitivity	Analog	0.22 μV (Typical) (12dB SINAD)
Digital			0.3 μV / BER5%	
Selectivity		TIA-603	60dB @ 12.5kHz / 70dB @ 20/25kHz	
		ETSI	60dB @ 12.5kHz / 70dB @ 20/25kHz	
Intermodulation		TIA-603	70dB @ 12.5/20/25kHz	
		ETSI	65dB @ 12.5/20/25kHz	
Spurious Response Rejection		TIA-603	70dB @ 12.5/20/25kHz	
		ETSI	70dB @ 12.5/20/25kHz	
Hum and 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			

Transmitter	RF Power Output	UHF1/UHF2/UHF3: 1W/4W UHF5: 1W/ 3W (806-870MHz), UHF5: 1W/ 2.5W (896-941MHz) VHF1: 1W/ 5W		
	FM Modulation	11K0F3E @ 12.5kHz; 14k0F3E @ 20kHz 16K0F3E @ 25kHz		
	4FSK Digital Modulation	12.5kHz Data Only: 7K60FXD 12.5kHz Data & Voice: 7K60FXW		
	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+2™ or SELP		
Environmental Specifications	Digital Protocol	ETSI-TS102 361-1,-2,-3		
	Operating Temperature	-30°C ~ +55°C		
	Storage Temperature	-40°C ~ +85°C		
	ESD	IEC 61000-4-2 (level 4) ± 8kV (contact) ± 15kV (air)		
	American Military Standard	MIL-STD-810 C/D/E/F/G		
	Dust & Water Protection	IP67		
	Humidity	Per MIL-STD-810 C/D/E/F/G		
	Shock & Vibration	Per MIL-STD-810 C/D/E/F/G		
	Accuracy specs are for long-term tracking (5 satellites visible at nominal -130dBm)			
	GPS (for PD78X only)	TTFF (Time To First Fix) Cold Start	< 1 minute	
TTFF (Time To First Fix) Hot Start		< 10 seconds		
Horizontal Accuracy		5m (50% probable)		
	10m (95% probable)			

All specifications are tested according to applicable standards, and subject to change without notice due to continuous development.



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