



## PD71X Ex/PD79X Ex

Intrinsically Safe Digital Portable Two-way Radio

- Most Completely Certified DMR IS Radio
- ATEX/IECEX/FM/CSA/CQST IIC Certificated
- Designed for Hazardous Working Environments



IECEX





## PD71X Ex PD79X Ex

Two-way radios have been a productive tool for many professionals. For those who work in environments with explosive gas and combustible dusts, safety is on top of everything, where using regular radios could be unsafe.

Hytera understands what's underneath the challenges of professionals in hazardous environments. Dedicated to designing and delivering of innovative intrinsically safe communications solutions, Hytera launched PD71X Ex/PD79X Ex, a portable DMR radio that complies with the world's strictest safety standard.

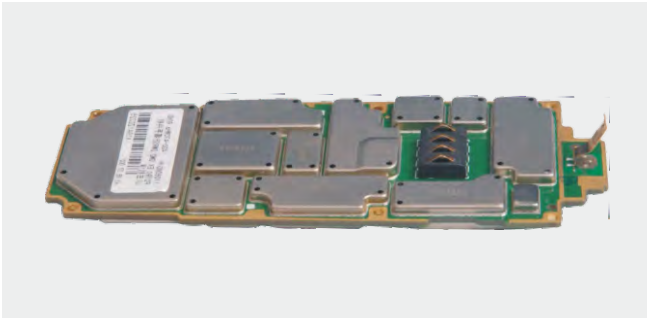




## Technical Highlights

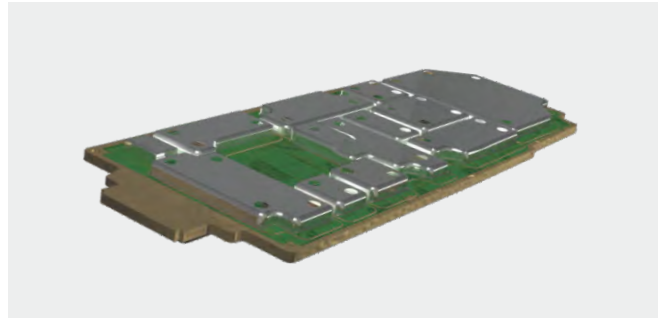
- **Improved PCB Circuit Layout & EMC Shielding**

To achieve such a high safety standard, Hytera PD71X Ex / PD79X Ex adopts optimized distributed line design on PCB, minimizing the odds of circuit fault. All the key components on the PCB are covered with shield, and the space between lines, between components, between component and shield are properly spaced, which translates to better EMC performance and less internal interference.



- **Innovative Silicone Encapsulating**

Silicone encapsulation technology prevents the internal circuits from liquid, dust and harmful gas intrusion. The silicone encapsulating process is delicate and complicated. As a result, every single PD71X Ex / PD79X Ex radio spends eight hours in the manufacture line.



- **Innovative Electrostatic Free Design**

Hytera applies patent on 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.



- **Patented Battery Latch**

To remove the battery from the Hytera's digital portables, the lock and bolt of the latch need to be moved along two different axes. Such a patented design ensures no removal of the battery pack from the main radio in case of dropping that might cause a spark.





## Product Features

### • Environmentally Safe and High Reliability

Hytera PD71X Ex / PD79X 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 confirms it can tolerate the harshest environments like High/Low Temperature, High Humidity, Vibration, and Shock.

### PD71X Ex / PD79X Ex

### • Enhanced Safety

Hytera PD71X Ex / PD79X Ex 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. Built-in Man-down, GPS and Lone Worker functions are also available with the digital portable.

### • High-capacity and Safe Li-Ion Battery

Hytera PD71X Ex / PD79X Ex provides high-capacity Li-Ion battery of 1800mAh with long shift 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

Benefitted from the advantages of DMR digital technology, PD71X Ex / PD79X Ex provides higher audio quality and stable communication performance with 40% less battery consumption than analog radios. It provides better communication quality and enhanced privacy, and moreover reduces overall equipment costs.

### • Easy to Use

Hytera PD71X Ex / PD79X Ex is very easy to use. It provides tough and highly readable LCD screen and intuitive user interface. The anti-skidding and fool-proof ergonomic design are dedicated for user easy operation. Large PPT button and channel knobs are equally useful for users wearing gloves.

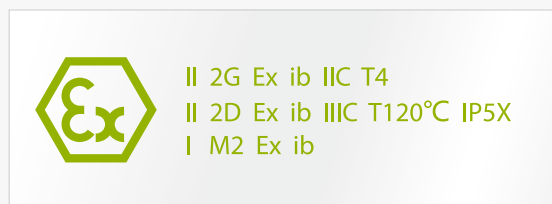
### • Software Upgradable

Upgrade software enables new features without buying a new radio. PD71X Ex/PD79X Ex can also be switched into MPT and DMR trunking modes with corresponding license applied to the same hardware.

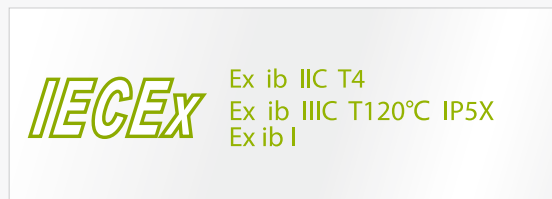


## Certification

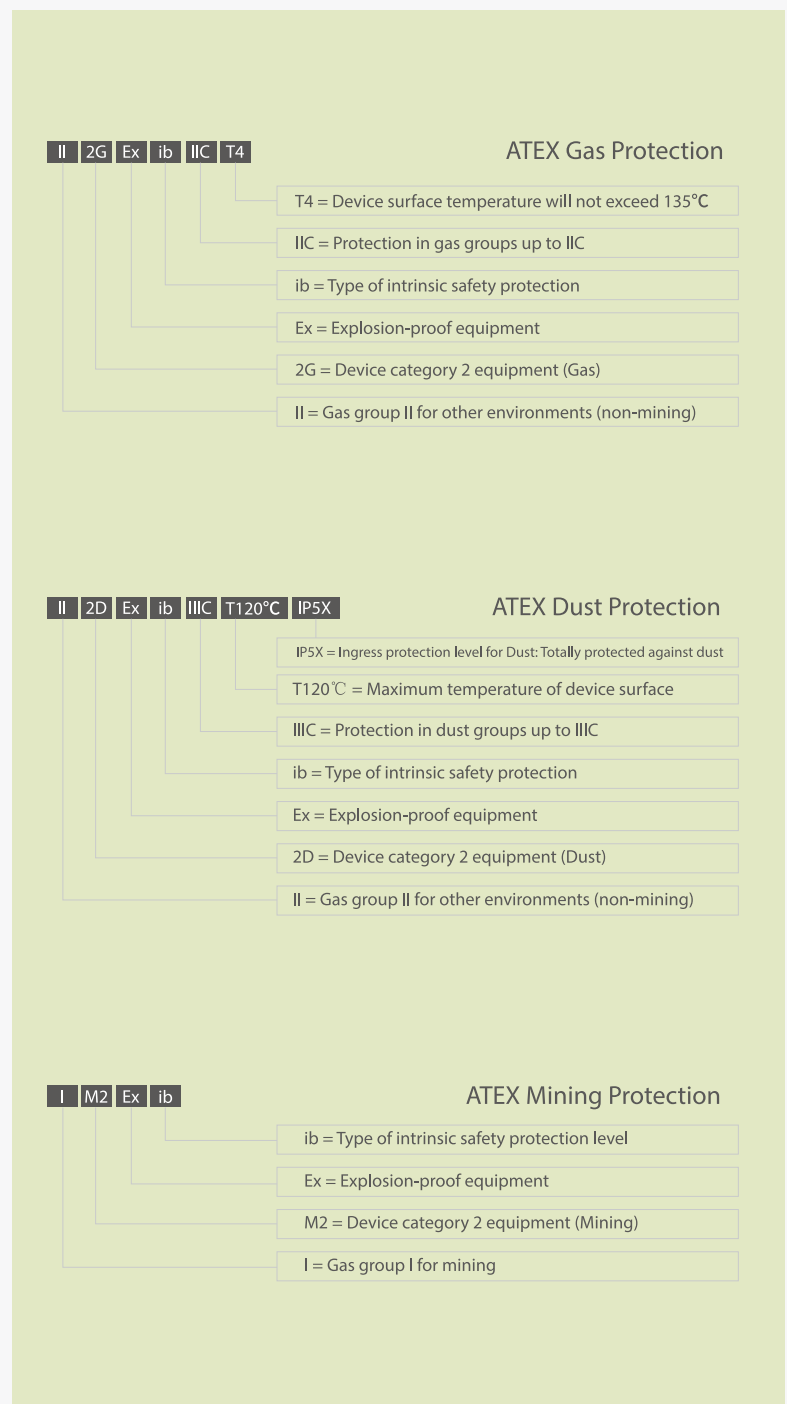
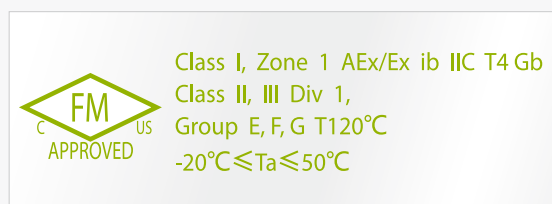
**ATEX** is the European Union directive to which all two-way radios must conform if used in potentially explosive environments. It replaces the Cenelec classification in all European Union member states and EFTA countries.



**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.



**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.





# Applications



## Chemical Industry

Flammable gases, liquids and solids are converted and processed in many different processes in the chemical industry. These processes may give rise to explosive mixtures.



## Power Generating Companies

Lump coal, which is not explosive in mixture with air, may be converted in the conveying, grinding and drying processes into coal dusts capable of forming explosive dust/air mixtures.



## Mining

The by-product of coal mining is gas. Following the coal exploiting, the gas will gather under the ground. If there is poor safety management, gas in coal mines could lead to serious gas explosions.



## Fire Fighting

As for fire fighting, some task critical situations such as oil spill or natural gas leakage need high security electrical equipments.



## Pharmaceutical Industry

Alcohols are often used as solvents in the production of pharmaceuticals. Agents and auxiliary materials that give rise to dust explosions, such as lactose, may also be used.



## Refineries

The hydrocarbons handled in refineries are all flammable and, depending on their flash point, may give rise to explosive atmospheres even at ambient temperature. The area around oil processing plant is generally regarded as a place where explosive atmospheres may occur.



## More Examples of Explosive Hazards

### Landfill Tips and Civil Engineering

Flammable landfill gases may arise in landfill tips. Elaborate technical arrangements are needed to avoid uncontrolled gas emission and possible ignition. Flammable gases from various sources may collect in poorly ventilated tunnels, cellars, etc.

### Recycling Operations

Processing of waste for recycling can give rise to explosion hazards, e.g. from cans or other containers of flammable gases and/or liquids that have not been completely emptied or from paper or plastic dusts.

### Food and Feedstuffs Industry

Explosive dusts may arise during transport and storage of grain, sugar, etc. If they are exhausted and collected by filtering, explosive atmospheres may arise in the filter.

### Paint-spraying Operations

The overspray generated in paint spray bays and the solvent vapors released may give rise to explosive atmospheres when mixed with air.

### Agriculture

Biogas production plants are operated on some farms. Explosive biogas/air mixtures may arise if the gas is released, e.g. by leakage.

### Gas Suppliers

Explosive gas/air mixtures may be formed when natural gas is released, e.g. by leakage.



# Specifications

General	Frequency Range	UHF1: 400-470MHz UHF3*: 350-400MHz (only for PD79X Ex) VHF1: 136-174MHz
	Channel Capacity	1024
	Zone Capacity	16(PD71X Ex) / 64(PD79X Ex)
	Channel Spacing	12.5kHz / 20kHz / 25kHz
	Operating Voltage	7.4V (rated)
	Battery	1800mAh (Li-Ion)
	Battery Life(5-5-90 Duty Cycle, High TX Power) High-capacity 1800mAh Li-Ion Battery	Analog: about 14.5 H / 13 H (GPS) Digital: about 17 H / 15 H (GPS)
	Frequency Stability	± 1.5ppm
	Antenna Impedance	50 Ω
	Dimensions (H×W×D) (with standard battery, without antenna)	141 x 55 x 37mm(PD71X Ex) 141 x 55 x 39mm(PD79X Ex)
	Weight (with antenna & standard battery)	485g(PD71X Ex) 495g(PD79X Ex)
	LCD display (only PD79X Ex)	160 x 128 pixels, 65536 color, 1.8-inch, 6 rows
Anti-explosion levels	ATEX	II 2G Ex ib IIC T4 II 2D Ex ib IIIC T120°C IP5X I M2 Ex ib
	IECEX	Ex ib IIC T4 Ex ib IIIC T120°C IP5X Ex ib I
	FM/CSA	Class I, Zone 1 AEx/Ex ib IIC T4 Gb Class II, III Div 1, Group E, F, G T120°C -20°C ≤ Ta ≤ 50°C
Environmental Specifications	Operating Temperature	-20°C ~ +50°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 Intrusion	IP67 (non-explosion-proof)
	Humidity	Per MIL-STD-810 C/D/E/F/G Standard
	Shock & Vibration	Per MIL-STD-810 C/D/E/F/G Standard
GPS*	TTFF (Time To First Fix) Cold Start	<1 minute
	TTFF (Time To First Fix) Hot Start	<10 seconds
	Horizontal Accuracy	<10 meters

Transmitter	RF Power Output	1W	
	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 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	0.3µV (12dB SINAD) 0.22µV (typical) (12dB SINAD) 0.4µV (20dB SINAD)
		Digital	0.3µV /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	70dB @ 12.5/20/25kHz 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		

\* This frequency band will be available soon.

\* Accurate long-term track (95% value>trackable for 5 satellites in rated-130dBm signal strength).

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

## Accessories

### Standard

- Li-Ion Battery
- MCU Rapid-rate Charger
- Power Adapter
- Antenna
- Belt Clip
- Leather Strap

### Optional



Intrinsic Safe  
Remote Speaker  
Microphone(IP57)  
SM18N4-Ex



Carrying Case  
with (Leather)  
(swivel)  
LCY005



Programming  
Cable (USB Port)  
PC38



Intrinsic Safe  
Bone Conduction  
Headset(IP57)  
EBN10-Ex



Intrinsic Safe  
Noise-cancelling  
Headset  
ECN20-Ex



Intrinsic Safe  
Throat-vibrating  
Earpiece(IP57)  
ELN09-Ex



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