Hytera

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

FM C US APPROVED

IECEx

DMR DIGITAL MOBILE RADIO ASSOCIATION

www.hytera.com

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 PD79X Ex, a portable DMR radio that complies with the world's strictest safety standard.

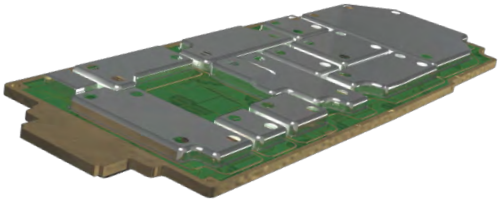
Technical Highlights

• Improved PCB Circuit Layout & EMC Shielding

To achieve such a high safety standard, Hytera 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. The silicone encapsulating process is delicate and complicated. As a result, every single 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 digital portable, 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 spark.

Product Features

• Environmentally Safe and High Reliability

Hytera 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 toleratethe harshest environments like High/Low Temperature, High Humidity, Vibration, and Shock.

PD79X Ex

• Enhanced Safety

Hytera 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 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, 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 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 easy user operation.

• Software Upgradable

Upgrade software enables new features without buying a new radio. 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.

II 2G Ex ib IIC T4
II 2D Ex ib IIIC T120℃ IP5X
I M2 Ex ib

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 T120℃ IP5X
Ex ib I

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Class I, Zone 1 AEx/Ex ib IIC T4 Gb
Class II, III Div 1,
Group E, F, G T120℃
-20℃≤Ta≤50℃

ATEX Gas Protection

II | 2G | Ex | ib | IIC | T4

- T4 = Device surface temperature will not exceed 135℃
- IIC = Protection in gas groups up to IIC
- ib = Type of intrinsic safety protection
- Ex = Explosion-proof equipment
- 2G = Device category 2 equipment (Gas)
- II = Gas group II for other environments (non-mining)

ATEX Dust Protection

II | 2D | Ex | ib | IIIC | T120℃ | IP5X

- IP5X = Ingress protection level for Dust: Totally protected against dust
- T120℃ = Maximum temperature of device surface
- IIIC = Protection in dust groups up to IIIC
- ib = Type of intrinsic safety protection
- Ex = Explosion-proof equipment
- 2D = Device category 2 equipment (Dust)
- II = Gas group II for other environments (non-mining)

ATEX Mining Protection

I | M2 | Ex | ib

- ib = Type of intrinsic safety protection level
- Ex = Explosion-proof equipment
- M2 = Device category 2 equipment (Mining)
- I = Gas group I for mining

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 mine can lead to serious gas explosion.

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 VHF: 136-174MHz
	Channel Capacity		1024
	Zone Capacity		64 (each with a maximum of 256 channels)
	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 39 mm
	Weight (with antenna & standard battery)		495g
	LCD display		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℃ IP5X I M2 Ex ib
		IECEx	Ex ib IIC T4 Ex ib IIIC T120℃ 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℃ -20℃≤Ta≤50℃

Environmental Specifications	Operating Temperature	-20℃ ~ +50℃
	Storage Temperature	-40℃ ~ +85℃
	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 @ 12.5 kHz 14K0F3E @ 20 kHz 16K0F3E @ 25 kHz
	4FSK Digital Modulation		12.5kHz Data Only: 7K60FXD 12.5kHz Data & Voice: 7K60FXW
	Conducted/Radiated Emission		-36dBm<1GHz -30dBm>1GHz
	Modulation Limiting		±2.5 kHz @ 12.5 kHz ±4.0 kHz @ 20 kHz ±5.0 kHz @ 25 kHz
	FM Noise		40dB @ 12.5 kHz 43dB @ 20 kHz 45dB @ 25KHz
	Adjacent Channel Power		60dB @ 12.5 kHz; 70dB @ 20/25 kHz
	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% 0.22μV(typical) /BER5%
	Selectivity TIA-603 ETSI		60dB @ 12.5 kHz/70dB @ 20 & 25 kHz 60dB @ 12.5 kHz/70dB @ 20 & 25 kHz
	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.

Accessories

Standard

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

Optional

Intrinsically Safe Remote Speaker Microphone(IP57) SM18N4-Ex

Carrying Case with (Leather) (swivel) LCY005

Programming Cable (USB Port) PC38

Intrinsically Safe Bone Conduction Headset(IP57) EBN10-Ex

Intrinsically Safe Noise-cancelling Headset ECN20-Ex

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

Hytera
Respond & Achieve

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