Hytera

Respond & Achieve

PD715 Ex/PD795 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

Ex   **FM APPROVED**   **IECEx**   **DMR** DIGITAL MOBILE RADIO ASSOCIATION

PD715 Ex
PD795 Ex

Two-way radios are productivity tools for many professionals. For those who work in environments with explosive gas and combustible dusts, safety is paramount. Use of regular radios could be unsafe.

Hytera understands the challenges faced by professionals working in hazardous environments. Dedicated to designing and delivering innovative intrinsically-safe communications solutions, Hytera launched the PD715Ex and PD795Ex, two portable DMR radios that comply with the world's strictest safety standards.

Technical Highlights

• Improved PCB Circuit Layout & EMC Shielding

To achieve such a high safety standard, Hytera PD715Ex / PD795Ex adopt optimized distributed line design on PCB, reducing the odds of a circuit fault. All the key components on the PCB are covered with shielding and the space between line, between components and between the components and shielding are properly spaced. This ultimately translates to a better EMC performance and less internal interference.
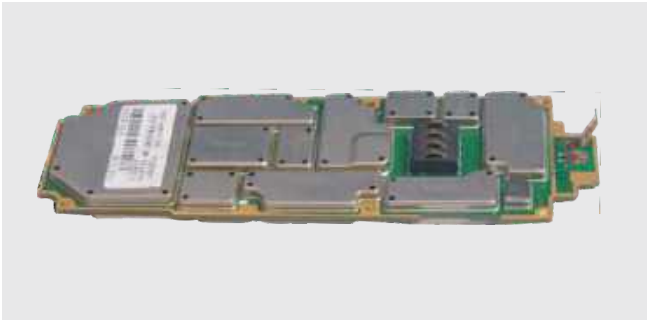
• Innovative Silicone Encapsulating

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 PD715Ex / PD795Ex radio spends eight hours in the manufacture line.
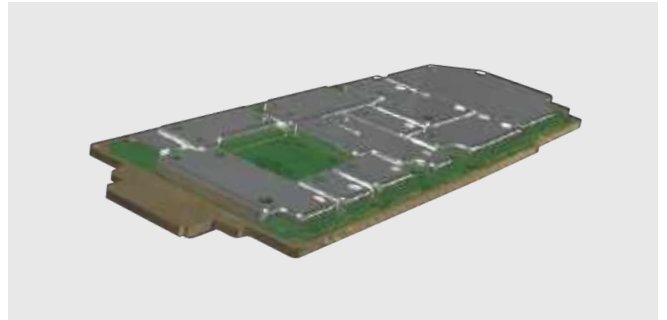
• Innovative Electrostatic Free Design

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

Product Features

• Environmentally Safe and High Reliability

Hytera PD715 Ex / PD795 Ex are designed to meet the strict requirements of European ATEX and North American FM standards. With certifications for ATEX, IECEX, the latest FM and CSA specifications, our radios work 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 stand the harshest environments such as high / low temperatures, high humidity, vibration and shock.

PD715 Ex / PD795 Ex

• Enhanced Safety

Hytera PD715 Ex / PD795 Ex provide a dedicated emergency button. In the case of any accident, a press on the orange emergency button will trigger an alarm and initiate a voice call to a pre-programed work fellow or group. Built-in man-down, GPS and lone-worker functions are also available with the digital portables.

• High-capacity and Safe Li-Ion Battery

Hytera PD715 Ex / PD795 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

Benefiting from the advantages of DMR digital technology, PD715 Ex / PD795 Ex provide superior audio quality and stable communication performance with 40% less battery consumption when compared with analogue radios. DMR radios provide better communication quality, enhanced privacy and reduce overall equipment costs.

• Easy to Use

Hytera PD715 Ex / PD795 Ex are very easy to use. They provide tough and clearly readable LCD screen alongside an intuitive user interface. The anti-skidding and foolproof ergonomic designs are made for easy user operation. The large PTT button and channel knobs are equally useful for users wearing gloves.

• Software Upgradable

Upgrading the software on the PD715 Ex / PD795 Ex enables new feautures without having to buy a new radio or extra option boards. Both radios can be switched into MPT, XPT and DMR trunking modes as long as the relevant license or firmware are applied.
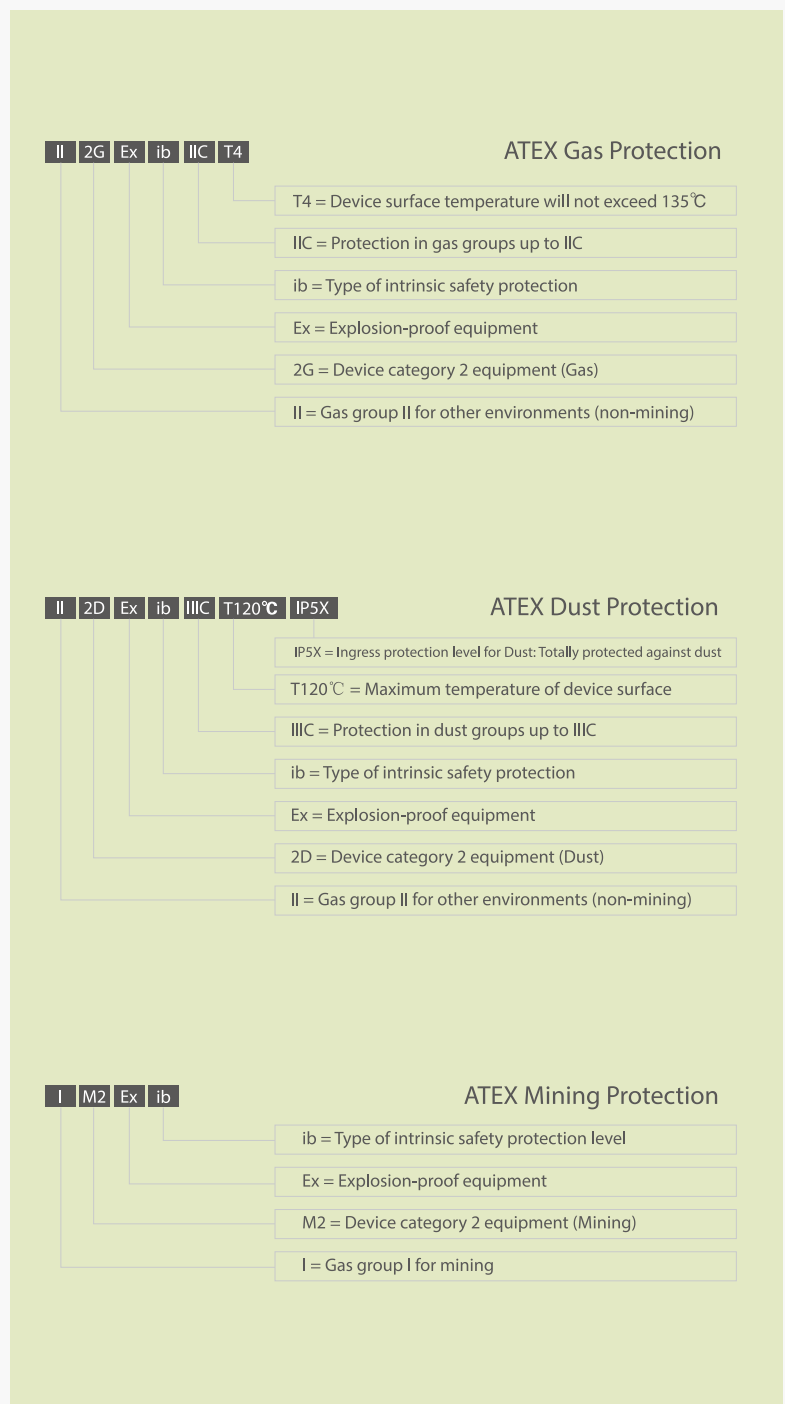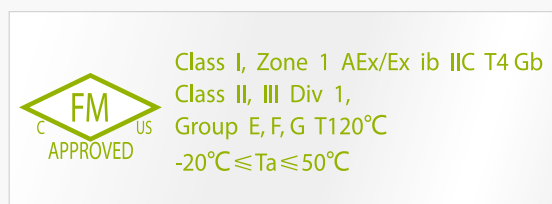
Certification

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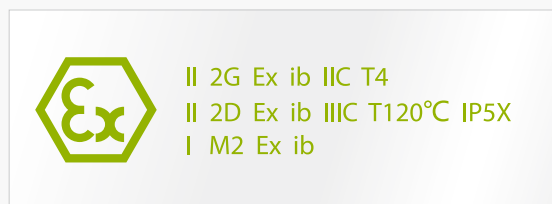
IECEx Scheme is the future route to global compliance certification. Its aim is to harmonize standards to allow free movement of goods by establishing a world-wide accepted standard.

IECEx
Ex ib IIC T4
Ex ib IIIC T120℃ IP5X
Ex ib I
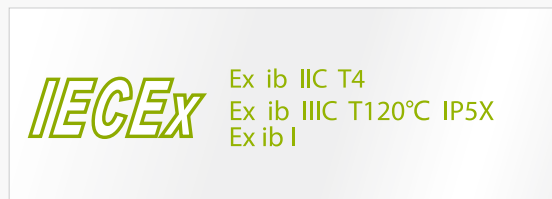
FM (FM Approvals LLC) is a member of Nationally Recognized Testing Laboratories of U.S.A. It strives to offer global services with unsurpassed technical integrity and exceptional customer satisfaction.

FM APPROVED
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 coal exploiting, the gas will gather under ground. If good security management processes are not in place, gas in coal mines can explode with serious and often fatal consequences.

Fire Fighting

For fire fighters, critical situations such as oil spills or natural gas leakage need high spec, reliable, communication equipment.

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; VHF: 136-174MHz
	Channel Capacity	1024
	Zone Capacity	16(PD715 Ex) / 64(PD795 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(PD715 Ex) 141 X 55 X 39mm(PD795 Ex)
	Weight (with antenna & standard battery)	485g(PD715 Ex) 495g(PD795 Ex)
	LCD display (only PD79X Ex)	160 x 128 pixels, 65536 color, 1.8-inch, 4 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 @ 12.5KHz 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	Analogue	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

[#]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

Intrinsically Safe Remote Speaker Microphone(IP67) SM18N4-Ex

Carrying Case with (Leather) (swivel) LCY005

Programming Cable (USB Port) PC38

Intrinsically Safe Bone Conduction Headset(IP67) EBN10-Ex[*1]

Intrinsically Safe Noise-cancelling Headset ECN20-Ex[*1]

Intrinsically Safe Throat-vibrating Earpiece(IP67) ELN09-Ex[*1]

[*1]These accessories are in certification.

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