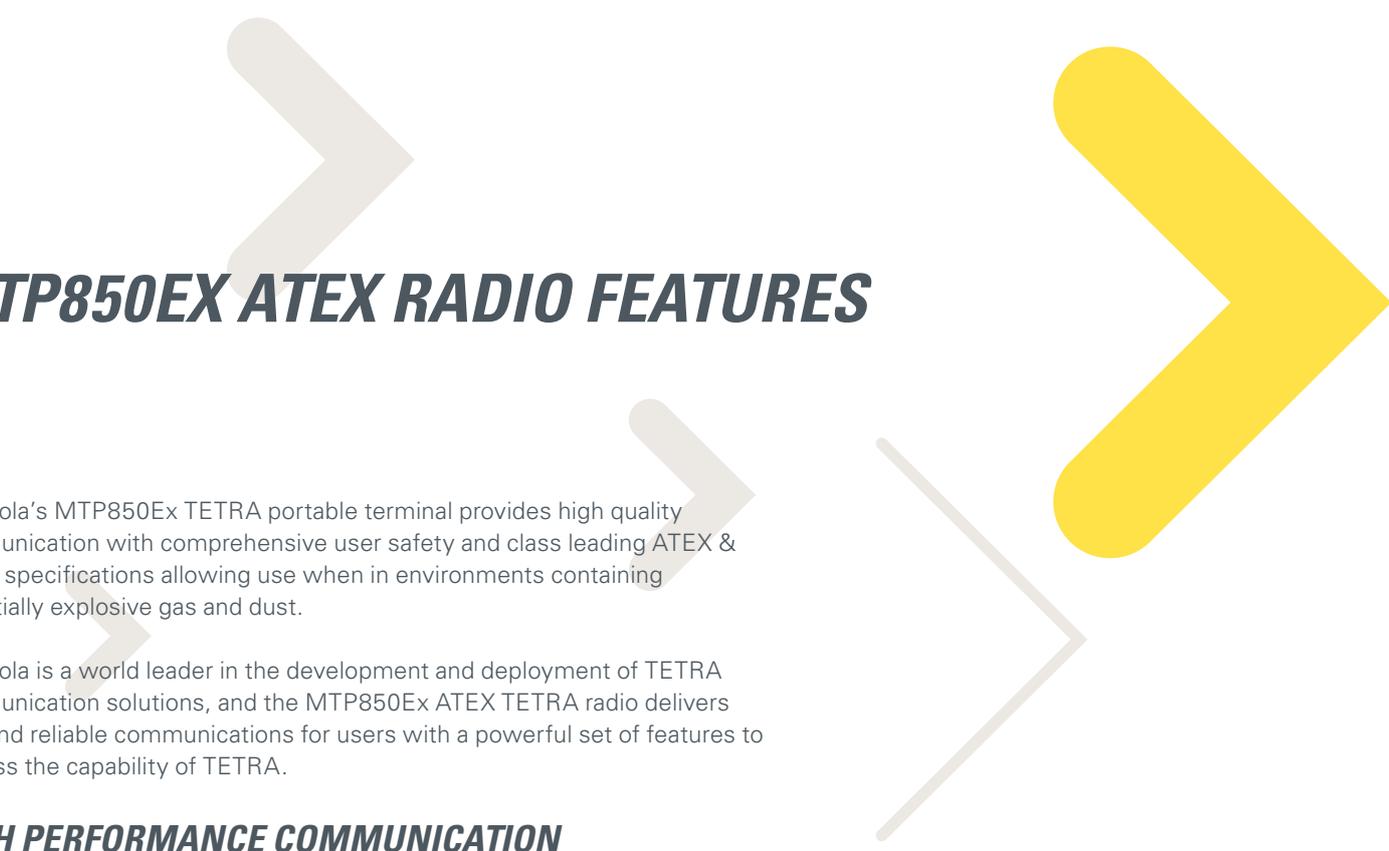# Motorola MTP850Ex ATEX TETRA Radio

MOTOA4 TETRA Mission Critical Portfolio

MOTOA⁴ ™

MTP850EX ATEX RADIO FEATURES

Motorola's MTP850Ex TETRA portable terminal provides high quality communication with comprehensive user safety and class leading ATEX & IECEx specifications allowing use when in environments containing potentially explosive gas and dust.

Motorola is a world leader in the development and deployment of TETRA communication solutions, and the MTP850Ex ATEX TETRA radio delivers safe and reliable communications for users with a powerful set of features to harness the capability of TETRA.

HIGH PERFORMANCE COMMUNICATION

With 1 watt audio power the MTP850Ex delivers best in class audio performance in the typical noisy environments where specialist users from industry or public safety operate. The MTP850Ex has a high level of robustness specially designed for industrial environments.

COMPREHENSIVE USER SAFETY

The MTP850Ex can be used in explosive gas and dust environments due to its high level of protection – including gas Zone 1 and 2, and dust Zone 21 and 22 respectively. Operational safety is further enhanced with a range of features including:

- state of the art integrated GPS receiver providing the ability to locate personnel through the radio, improving user safety and resource management.

- Internal "Man Down" alert - this fully integrated solution triggers an emergency procedure when the carrier of the radio remains motionless for a set period or falls down.

SIMPLE BUT POWERFUL USER INTERFACE

The simplified keypad with large button surface makes the MTP850Ex easy to use with gloves. Combined with the large scalable display fonts and icons, the MTP850Ex facilitates operation in difficult environments with limited visibility.

DATA APPLICATIONS CAPABILITY

The integrated WAP browser and Multi-Slot packet data enables rapid access to critical information in the field. Applications are further enhanced with ability to have simultaneous Short Data Service (SDS) and Multi-Slot packet data services via TNP1 protocol.

MOTOA⁴™

MOTOROLA MTP850EX ATEX TETRA TERMINAL

The TETRA system is now widely used in Mining, and Oil and Gas and other industries. In many cases the environment will be hazardous due to the presence of explosive dust or gasses. A TETRA terminal which can be used with confidence in these environments is required. Other agencies such as fire and rescue, customs, or border enforcement agents will also be required to operate in hazardous areas. Motorola has developed and tested the MTP850Ex to be used in these situations, together with a range of ATEX compatible accessories.

FIT FOR THE ENVIRONMENT
Motorola imposes a harsh testing regime on all new radios, usually far exceeding the standards. The MTP850Ex has been fully tested to the demanding requirements for intrinsically safe radios in **both explosive gas and dust**, *as well as shock and water resistance.*

II 2G Ex ib IIC T4
II 2 D Ex ibD 21 IP6x T90ºC

DESIGN FOR THE MISSION
The MTP850Ex is one of the latest products that embodies the practice of Designing Products that are Second Nature in their Operation
Motorola has integrated human response factors into the design of its public safety communications equipment for more than 25 years. For instance, Motorola was the first to locate the emergency button on its radios at the bottom of the antenna, making it easy for the operator to find it, feel it, without even looking down in an emergency.

Motorola also ensures that the buttons controlling the most critical functions are highly accessible for public safety users. "Volume, push-to-talk and channel controls are the three most important features of a radio. In a Motorola radio, those three controls will never be demoted to a user tree," says Mark Palmer, design integration manager of Human Factors Design Research and User Interface Design at Motorola. "That means that under high stress situations, individuals don't even have to think about how to access them. In essence, we give people information in a way in which they can process it."

Motorola's work in this area has resulted in one other key benefit for its customers: a reduction in user training costs. For instance, when Motorola set out to design Mission Critical radios for the European market, Motorola has worked with customers to identify what the biggest potential obstacle was regarding the migration to the radios. The response has been "Training." With most new communications systems, this customer had to dedicate as many as two days to train the team on new equipment, that meant many days of lost productivity. In contrast, the Mission Critical radios designed by Motorola tested very high on the usability scale, reducing the need for extensive training.

In the case of the MTP850Ex this focus on the mission has resulted in a user interface that is easy to see, audio that is easy to hear in loud industrial environments, and simple controls which can be used when wearing thick gloves.
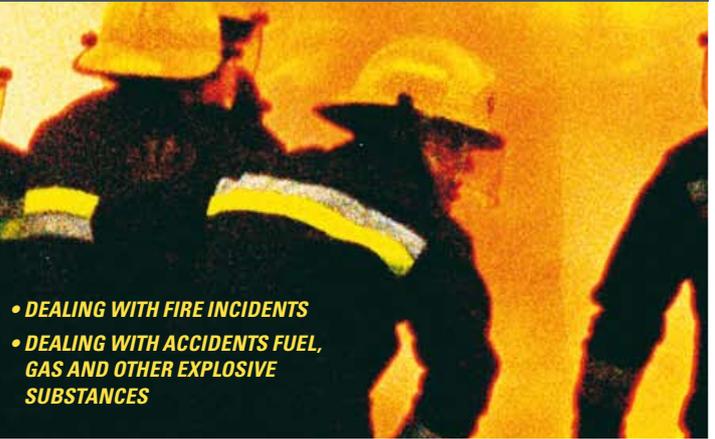
FIRE AND RESCUE

At the incident scene, coordinating resources is critical for a safe, successful outcome. The MTP850Ex delivers comprehensive communications with best in class audio and class leading ATEX certification for safe use in gas and dust environments.

The integrated GPS receiver and WAP browser harness the integrated data capabilities to enhance access to information.

Key features
• Best in class audio
• Simplified keypad with large buttons
• Comprehensive user safety features

• *DEALING WITH FIRE INCIDENTS*
• *DEALING WITH ACCIDENTS FUEL, GAS AND OTHER EXPLOSIVE SUBSTANCES*

OIL AND GAS EXTRACTION

At the incident scene, coordinating resources is critical for a safe, successful outcome. The MTP850Ex delivers comprehensive communications with best in class audio.

Key features
• Best in class audio
• Designed for use with gloves
• Large icons and easy to read display

• *ONSHORE AND OFFSHORE PRODUCTION*
• *OIL AND GAS FIELDS*

OIL AND GAS DISTRIBUTION

The distribution of oil and gas requires optimum efficiency and safety. The MTP850Ex enhances performance through comprehensive voice and data services and the ability to be used in gas and dust environments.

For operators monitoring remote facilities, user safety is enhanced with integrated "man down" alarms, automatically calling for assistance when needed, with the capability to report location through the built in GPS receiver.

Key features
• Integrated GPS receiver for safety and efficiency
• WAP browser for access to databases
• Comprehensive user safety features

• *OIL AND GAS PIPELINES*
• *OIL TANKERS SHIPS / HARBOURS*
• *ROAD TANKER LOADING DEPOT*

INDUSTRIAL AND MANUFACTURING

The comprehensive safety features of the MTP850Ex make it ideal for use in environments with presence of explosive gas or dust.

The MTP850Ex delivers best in class audio performance in the typical noisy environments encountered in industrial environments and is enhanced with a range of ATEX certified accessories.

Key features
• ATEX gas and dust certification
• Man down alarm for user safety
• Large controls for use with gloves

• *PETROCHEMICAL REFINING AND PROCCESSING*
• *CHEMICAL, PHARMACEUTICAL MANUFACTURE*
• *FOOD PROCESSING*

**Over-the-head Heavy Duty Headset
PMLN5389**

**Hard Leather Case
PMLN5287**

**Behind-the-head Lightweight Headset
PMLN5392**

**Remote Speaker
Mic with Vol Control
PMMN4058**

**Throat Microphone
with 80mm PTT
PMMN4063**

**IMPRES Multi-Unit Charger
WPLN4198**

**IMPRES Charger
WPLN4199**

ROBUST ACCESSORY PORTFOLIO

The MTP850Ex offers the essential ATEX approved accessories to support busy professionals and public safety officers operating in hazardous environments. Heavy-duty headsets offer noise protection and is designed for use with hard hats and other protective head gear. Lightweight headsets offer flexible, comfortable wearing options and are designed for indoor use in manufacturing facilities.

AUDIO ACCESSORIES

Motorola TETRA radios give users access to a diverse range of voice service-group, telephony and individual calling. Motorola's range of audio accessories enable users to utilise these services efficiently, with tailored solutions for public safety and covert users, industrial and commercial users

BODY WEAR ACCESSORIES

Motorola TETRA radios offer users many new features over traditional voice two-way radio-including text messaging, sophisticated users interfaces and access to data through features such as WAP browsers. These new capabilities require carrying solutions that allow easy access to these services, such as our innovative chest-worn carry system.

POWER ACCESSORIES

Critical communications solutions require reliable and efficient power sources and Motorola delivers this with a range of batteries and charging solutions, coupled with the latest in-rechargeable cell technology.

APPROVED ATEX ACCESSORIES

The benefits and assurance of the ATEX certification will be invalidated by using non-approve accessories. The Motorola ATEX accessories for the MTP850Ex have been fully tested to meet the ATEX standards. These can be used with confidence in gas and dust explosive risk areas.

KEY FEATURES

- An intrinsically safe TETRA portable radio designed to be operated in potentially explosive environments (gas and/or dust) providing safe and reliable communication
- Data Applications Capability
- Support of WAP plus simultaneous Short Data Service (SDS) and Multi-Slot packet data (MSPD)* services via TNP1 protocol
- Best in Class Audio (1 watt audio output power) that maintains audio performance in the typical noisy environments where specialist users from industry or public safety operate
- Simplified Keypad with Large Buttons that are easy to use with gloves, facilitating operation in difficult environments with limited visibility
- Simplified User Interface - Large Icons/Fonts ensure easy access to critical features
- Wide range of Languages/Keypads - Languages including : Arabic, Chinese Simplified, Chinese Traditional, Dutch, English, French, German, Greek, Hungarian, Italian, Korean, Lithuanian, Norwegian, Portuguese Russian, Spanish and Swedish
- GPS Location Services
  - A state of the art integrated GPS receiver provides ability to locate personnel thereby improving user safety and resource management
- Man-Down
  - A fully integrated internal Man-Down solution triggers an emergency procedure when the carrier of the radio device does not move any more and/or has fallen down

MTP850Ex
ATEX TETRA Terminal
High performing communication and user safety

Part of Motorola's market leading range of ATEX TETRA terminals, the MTP850 Ex provides high quality communication with comprehensive user safety and class leading ATEX specifications allowing use when in environments containing potentially explosive gas and dust.

Motorola is a world leader in the development and deployment of TETRA communication solutions, and the MTP850Ex ATEX TETRA radios deliver safe and reliable communications for users with a powerful set of features to harness the capability of TETRA.

High Performance Communication
The MTP850Ex delivers best in class audio performance in the typical noisy environments where specialist users from industry or public safety operate.

Comprehensive User Safety
The MTP850Ex can be used in explosive gas and dust environments due to its high level of protection. Operational safety is further enhanced with a range of features including:

- State of the art integrated GPS receiver providing the ability to locate personnel through the radio, improving user safety and resource management.
- Internal "Man Down" alert - this fully integrated solution triggers an emergency procedure when the carrier of the radio remains motionless for a set period or falls down.

Simple but Powerful User Interface
The simplified keypad with large button surface makes the MTP850Ex easy to use with gloves. Combined with the large scalable display fonts and icons, the MTP850Ex facilitates operation in difficult environments with limited visibility.

Data Applications Capability
The integrated WAP browser and Multi-Slot packet data enables rapid access to critical information in the field. Applications are further enhanced with the ability to have simultaneous Short Data Service (SDS) and Multi-Slot packet data services via the TNP1 protocol.

Key Features

High Performing Communication
- Strong rugged design for optimum reliability in harsh conditions
- Powerful, high quality audio for the most demanding environments
- Full range of supporting ATEX certified accessories for a customized solution

Comprehensive User Safety
- ATEX & IEC-Ex gas and dust approvals
- Integrated GPS for user location
- Internal "Man Down" alarm

Atex Specifications

	ATEX Rating		IEC Ex Rating	
	Gas	Dust	Gas	Dust
MTP850Ex-2D	II 2G Ex ib IIC T4	II 2D Ex ibD 21 IP6x T90°C	Ex ib IIC T4	Ex ibD 21 IP6x T90°C
			(Approved for Zone 1 & 2, Equipment Group II, Gas Group C, Temperature Class T4, -20°C to +50°C)	(Approved for Zone 21 & 22, Equipment Group II)

Specifications

PHYSICAL

Dimensions (mm)	135 x 55 x 38
Weight (typ) g	400
Battery	725 mAh, 7,2V
	12 hrs, typ, 5/5/90 duty cycle

RF Specifications

Frequency Bands (MHz)	380 – 430
	806 – 870
Switching Bandwidth TMO (MHz)	50 (380-430)
	19 (TX: 806-825, RX:851-870)
Switching Bandwidth DMO (MHz)	50 (380-430)
	19 (851-870)
RF Channel Bandwidth (kHz)	25
Transmitter RF Power	1W
RF Power Control	3 Steps of 5 dB
RF Power Level Accuracy	+/- 2 dB
Receiver Class	A & B
Receiver Static Sensitivity (dBm)	-112 minimum, -115 typical
Receiver Dynamic Sensitivity (dBm)	-103 minimum, -107 typical

VOICE SERVICES

Talkgroups	2048 (TMO) & 1024 (DMO)	
Phone Book	1000 persons	
Scan Lists	40 lists, 20 talkgroups / list	
TMO Services	Group Call	Late entry
	Private Call	Half / Full Duplex
	Telephony	Full Duplex
	DGNA	up to 2047 groups
DMO Services	Group Call	Late entry
	Private Call	
	Compatibility	Gateway & Repeater
Emergency	Smart Emergency	DMO / TMO / DMO to TMO
	Hot Mic	Configurable timers
	Location	Send on emergency
	Target Address	Individual or Group
	Alarm	Emergency Status
Other Services	Ambience Listening	Transmit Inhibit

INTERFACES

RS232 PEI	For connection of data devices
Rugged Accessory	For programming and audio accessory connectivity

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature (°C)	-20°C to +50°C (Hazardous Environments)
	-20°C to +60°C (Non-Hazardous Environments)
Storage Temperature (°C)	-40°C to +85°C (MIL STD 810 C, D)
Humidity	ETS 300 019-1-7 Class 7.3E
Dust and Water	IP65 per IEC 60529
Shock, drop and vibration	ETS 300 019-1-7 Class 5M3

GPS SPECIFICATIONS

Simultaneous Satellites	12
Mode of Operation	Autonomous or assisted (A-GPS)
GPS Antenna	Integrated in TETRA antenna
Sensitivity	-152 dBm / -182 dBW
Accuracy	5 meter (50% probable)
Location Protocols	ETSI LIP
	Motorola LRRP

DATA SERVICES

Status Messaging	Alias Messages	100
Short Data Service (SDS)	Inbox	20 messages
	Target Address	Individual or Group Address
	Voice Interaction	Send / receive during calls
Packet Data	Single or Multi Slot	7.2kbps - 28.8 kbps gross
WAP	Integrated Openwave browser	
	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack	
PEI	AT Commands	
	TNP1; enables simultaneous SDS & PD	

SECURITY FEATURES

Air Interface Encryption	Algorithms	TEA1, TEA2, TEA3
	Security Classes	Class1 (clear), Class2 (SCK), Class3 (DCK, CCK & GCK*)
Key Provisioning	Secure provisioning tool (key variable loader KVL)	
	Over the Air Re-keying (OTAR) for SCK and Class 3 (CCK & GCK*)	
Network Access	Temporary Enable / Disable (Stun)	
	Permanent Enable / Disable (Kill)	
Authentication	Infrastructure initiated and made mutual by terminal	

PERIPHERALS AND ACCESSORIES

Audio	A wide range of audio accessories is available including ATEX certified speaker mics and headsets.
Power & Charging	Solutions for desk top charging and multi-way chargers
Carrying	A range of carrying solutions is available including carry cases, carry strap and belt clips
Programming	Comprehensive solutions available for radio configuration and encryption key loading via Motorola KVL

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