MTP 850

TETRA Handportable Terminal

MOTOROLA

For over seventy five years, Motorola has led the way in the wireless communications marketplace. From the first walkietalkie to the first ever moon landing, Motorola has consistently delivered innovative solutions to customers' exacting needs. Developing the potential of TETRA was another of Motorola's many 'firsts'

- 1995 First demonstration of a TETRA radio call

- 1996 First demonstration of TETRA 'group call'

- 1996 First operational multi site TETRA system

- 1997 First commercial contract

- 1999 First integrated voice and data TETRA solution

- 1999 First secure TETRA system

- 2001 First fully TETRA over IP public safety network

- 2002 First 800MHz TETRA contract

- 2002 First to support cross-border TETRA communications

- 2003 First packet switched TETRA system deployed over a satellite link

- 2003 First integrated GPS and colour screen radio

- 2004 First to launch increased data throughput with multi slot IP packet data

- 2004 First TETRA system used during an Olympics with the Motorola secure digital communications network

SEAMLESS MOBILITY

At the core of Motorola's Seamless Mobility solution is a simple idea: the organisation benefits when it provides tools to its workers and executives that empower them to be more productive. Enterprise Seamless Mobility can help contain costs as well as lead to organizational efficiencies, teams become free to focus on work while the solution makes intelligent decisions.

Motorola's TETRA solution and MTP 850 starts this process by seamlessly linking voice and data, allowing users to find the people and information they need at any time and virtually everywhere.

Improved resource management through;

- Satellite location of individuals or vehicles, with the potential to deliver maps and directions straight to the individual

Faster information exchange from images to slow scan video, reports to finger print capture. For example;

- Security staff efficiencies delivered through the Motorola finger identification system and MTP 850, offers remote and timely access to valuable information such as fingerprints, facial images and records

- On line or embedded medical applications that allow front line staff to respond to a range of medical emergencies. From cuts, bleeding, Cardiopulmonary Resuscitation (CPR) or simple advice on the recovery position Improved remote access to intelligence databases such as;

- Field staff can search data bases, send/request reports or to quickly receive images of missing or wanted persons

- Paramedics can link instantly to patient medical records and delivery of life saving advice

- Flight arrival information fed direct to ground staff

Improved productivity with;

- Instant access to report writing tools and to downloading of daily briefing reports

- Delivery of job reports and access to technical on line information

THE DRIVING
FORCE BEHIND TETRA

INNOVATION THROUGH DESIGN

Customers' continually evolving businesses ensure that Motorola is constantly developing new TETRA applications and features to meet their operational needs. As the latest addition to the Motorola market-leading suite of TETRA terminals, the MTP 850 boasts a wide range of technological advances - developed in response to a myriad of real-world requirements. From public sector users such as the emergency services and military, to commercial enterprises in industries as diverse as utilities, retailing, construction, logistics and transport - the need for greater security has never been more important

True colour. Truly original

Its sophisticated cellular user interface with high resolution colour display ensures that TETRA communications have never been as easy to manage. From data queries to image sharing, the MTP 850 with its 65,000 vivid colours offers accurate delivery of photos, maps, or illustrations.

Safety through location

Safety and efficiency are critical factors for any business. The revolutionary GPS (satellite) location service, allows users to be located instantly, either to respond to help or location of an emergency call. Allowing for more efficient use of resources or determining location in life-threatening situations.

Safety through design

There are growing pressures to respond to crimes faster, improved staff visibility and increased use of lone workers. The consequences of which are ever-greater exposure to potential violence. The MPT850 has been designed to protect users, from its high quality voice call to its size. At only 12.5 cm it is easy to carry, but it's big where it matters, with large emergency and push to talk buttons.

Safety through secure communications

Maintaining private and secure communications is increasingly important as potentially sensitive information flows back and forth. By adding an MTP 850 secure solution, voice and data transfer are no longer compromised through the provision of Motorola's 30 years of proven secure solutions.

FEATURES & BENEFITS OVERVIEW

Customers' evolving needs require increasingly secure communication to protect staff safety and respond effectively to emergencies. In response to these needs Motorola has developed the MTP 850 which offers the widest range of new and proven capabilities

Personnel Safety

Personal protection for staff is simply too important to be left to the individual. The MTP 850 has been designed to protect users, with its high quality voice calls, large emergency button and its revolutionary location solution. The integrated satellite (GPS) location service provides the ability to automatically transmit user location direct to a dispatcher. Ensuring life threatening situations are identified, located and resources allocated quickly.

Secure Communications

Maintaining private and secure communications is increasingly important, with potentially sensitive information flowing back and forth. With this in mind the MTP 850 has been designed to support the highest level of secure protection, from its integrated End-to-End encryption module to Motorola's industry leading key management facility.

Durable and Robust

Every Motorola TETRA terminal model passes an accelerated life testing process which simulates a 5 year life span; these vigorous tests ensure that the MTP 850 meets some of the highest levels of military robustness.

Compact

Communications need to be quick and easy to be effective, so the MTP 850 has been designed to improve operations, with its large emergency and push to talk buttons. Additionally, its 12.5 cm height makes the radio easy to carry whether on the belt or the shoulder.

True Colour Display

The MTP 850 incorporates the latest in cellular user interfaces, ensuring intuitive operation and optimizing applications from data enquiries to image sharing. With over 65,000 vivid colours, its high resolution colour display provides accurate reproduction of photos, maps and images.

Designed to deliver. Designed for the future.

Building on Motorola's data capabilities, the MTP 850 is capable of supporting new and exciting applications through the use of Multi Slot Packet Data and WAP communications. Access to databases, directories or folders will be as simple as using a computer for timely and dependable communication.

FEATURES

VOICE SERVICES - GROUP:
- Group call – TMO/DMO
  - Late Entry
  - Group call via DMO Gateway
  - TMO / DMO Talkgroup mapping
  - Hidden Talkgroups
- Direct Mode (DMO)
  - DMO Gateway compatibility
  - DMO Repeater compatibility
- Announcement Talk Group call
- Smart Emergency call – TMO / DMO (including "Hot Mic" option in TMO)
  - to selected group, pre-defined group (incl. Emergency Status message),
  - to individual, or to telephone/PABX subscriber
- Dynamic Group Number Assignment (DGNA) – (up to 2047 Groups)
  - Accept DGNA assignment with attachment
- Local site trunking
- Scanning
  - Background Scanning (Always Scan)
  - Scan group attachment signaling
  - Scan on/off status
  - Support SwMI initiated attachment/detachment
- Talking Party Identification
- Priority Monitor
- Site Wide Call

VOICE SERVICES SUPPORTED – PRIVATE CALL:
- Half duplex/full duplex operation (TMO/DMO)
- Flexible dialing (list scroll, short number dial, direct entry, alphabetic search, last number called)
- Loud/discreet audio mode
- Calling line Identification Presentation
- Busy User Pre-emption (Pre-emption Priority Call – PPC)
- Speakerphone

VOICE SERVICES - TELEPHONY:
- Full duplex operation
- Speakerphone
- Flexible dialling (list scroll, direct dial, alphabetic search, speed dial, one-touch dial, last number redial)
- DTMF overdial
- Calling line Identification Presentation
- Busy User Pre-emption (Pre-emption Priority Call – PPC)

DATA/MESSAGING SERVICES:
- Short Data Service (SDS)
- to individual / group target
- Alphanumeric Text Service (ATS)
- Predictive Text Entry (iTAP)
- Built-in database enquiry templates
- One-touch status messaging
- Keypad entry of status values
- Peripheral Equipment Interface (PEI) for external RS232 short and packet data devices
- New text message notification during calls
- Automatic status message sent on entering/exiting Transmit Inhibit mode
- WAP support
- Multi Slot Packet Data

SECURITY SERVICES:
- Air Interface Encryption:
- Algorithms
  - TEA1, TEA2, TEA3
- Security Class
  - Class 1: Clear
  - Class 2: Static Cipher Key (SCK)
  - Class 3: Derived Cipher Key (DCK) and Common Cipher Key (CCK)
- Authentication
  - Infrastructure Initiated
  - Made mutual by Terminal
- Secure Key Provisioning Tool
- User crypto key deletion from keypad
- Radio Stun (temporary disable)
- PIN/PUK code access
- Packet data user authentication

END TO END SECURITY SERVICES:
- End to End encryption module with full tamper protection
- Factory or field install (including in-country) of End to End module
- Multiple Algorithm support
- Over The Rekeying of encryption keys

USER SAFETY:
- Dedicated Emergency button
- Color indication of Emergency Mode (Red Display)
- Editable Screensaver with logo option

- Talk Group lock
- Keypad lock
- Transmit Inhibit (TXI) – enhanced version
- 'Hot' Microphone emergency (TMO)
- Automatic Microphone Gain adjustment during 'Hot' microphone emergency
- Ambience Listening
- Separate front mounted main loudspeaker and earpiece to prevent Acoustic Shock
- 1 Watt audio amplifier and speaker
- Site Wide Call
- DMO to TMO Emergency Switching

USER INTERFACE FEATURES:

- Top Mounted multi-function Talk Group Selector and Volume Control:
  - Combined operation of Talk Group Selection, list navigation and volume control
  - Talk Group Selection only
  - Volume Control only
- Rugged Side & bottom accessory connector
- 2 microphones
  - Top microphone for dispatcher calls
  - Bottom microphone for "one-to-one" calls
- Alphanumeric Talk Group search
- Loud/discreet audio mode toggle
- Quick access to Menu items via editable Menu Shortcuts
- Keypad tones on/off
- Alert tones on/off
- Configurable Notification tones
- Backlight options (disabled, Semi-automatic and automatic)
- Wallpaper
- Scan list edit via keypad
- Address book edit via keypad
- Language options include English, French, German, Spanish, Dutch, Chinese, Korean, Cyrillic, Swedish, Greek and Arabic
- User definable display languages (ISO 8859-1 characters)
- 2 dedicated context sensitive menu softkeys
- 2 dedicated programmable function buttons
- One-touch functions on numeric keypad (10 entries)
- One-touch Phone / Private / PABX / Status /Talk Group / TXI / Database template / Text message template / Display flip
- Full access to menu system during calls
- Call history missed/received/dialed lists
- Display flip (inverts text 180 degrees)
- Fast access to functions using rotary knob
- 2 font sizes (normal, zoom)
- Display Contrasts (7 levels)

OTHER:

- Side connector for audio accessories and lock function, IP54
- Dedicated connector for digital car kit, programming, upgrading, packet and short data as well as Remote Speaker Microphone (RSM)
- VibraCall®
- Multiple software upgrade capability
- Programming software automatic logging of logistical information
- Customer Programming Software Codeplug Password enable
- Programming interface via USB and RS232
- Enhanced Mobility operation (including subscriber classes)
- Modeless Operation
- Favourite Talk Group (DMO/TMO Talk Groups)
- Unified Address Book (contacts)
- Continuous rotary or end-stop Talk Group selection

GPS LOCATION SERVICE:

- Fully integrated single chip GPS receiver
  - Low current and high sensitivity GPS
  - Autonomous and assisted GPS support
  - Multiple GPS Protocol support;
    - Location Request/Response Protocol (LRRP) for positioning data transportation
    - ETSI Location Information Protocol (LIP) for TETRA
  - Patented Helical GPS antenna integrated into TETRA antenna
  - GPS disable option for special operations
  - Authentication of GPS Location Service dispatchers

- Full programmable position update triggers including:
  - On request
  - Delta distance
  - Emergency Alerting
  - Delta time
  - On power-up/power down
  - Transmit Inhibit (TXI) enable/disable
  - DMO/TMO switching
  - Low battery
  - Full over the air programmability of all GPS Location Service parameters

ENHANCE YOUR MTP 850 TETRA HANDPORTABLE TERMINAL WITH A WIDE RANGE OF ACCESSORIES

The MTP 850 offers seamless and efficient co-ordination, control and response for staff operations. Motorola takes this a step further to maximize productivity through its accessory range to turn a great radio into a customized communications solution. Every Motorola accessory is designed to deliver peak performance, so adding the proper headsets, microphones, chargers and carry cases will ensure enhanced productivity.
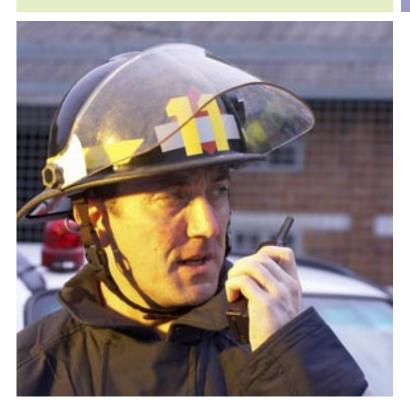
CHARGERS AND VEHICLE SOLUTIONS

Designed to work as a total system with the MTP 850 and battery, Motorola chargers maximize battery life.

FTN6575A	Dual pocket desktop charger base (requires travel charger/power supply NNTN4250B)
NNTN4250B	Travel charger (power supply unit) US plug, just add country specific adapter (SYN7456A - Euro, SYN7455A - UK , SYN7460A - Korea, SYN8127B - Australia/New Zealand, SYN8039A - Argentina, SYN8040A - Hong Kong)
WALN4092A	Travel charger kit (includes UK and Euro adapters)
NPN6443A	Travel charger kit (includes Korean adapter)
NNTN5842A	Travel charger kit (includes Argentina adapter)
FLN9469A	Vehicle power adaptor

BATTERIES

Motorola batteries have been designed to work hand in hand with the MTP 850 optimizing performance and staff operations.

FTN6573A	Standard capacity battery 950 mAh - Lithium Ion
FTN6574A	Ultra high capacity battery 1850 mAh - Lithium Ion

AUDIO ACCESSORIES

Earpieces leave the hands free and face unobstructed. Motorola offers solutions, from in-door to high speech clarity requirements, for those in noisy environments, to those carrying out surveillance work.

FTN6596A	Earpiece receive only with short coiled cord, suitable for shoulder worn radios
FTN6582A	Breeze headset with boom microphone and in-line Push-To-Talk, for belt worn radio
FTN6583A	Personal hands free kit (ear bud with in-line microphone and Push-To-Talk), for belt worn radio
FTN6595A	Surveillance kit - 3 wire earpiece with separate Microphone and Push-To-Talk, for belt worn radio
FTN6707A	Surveillance kit -2 wire earpiece with combined microphone & Push-To-Talk, for belt worn radio
PMLN4605A	Acoustic tube for use with 2 wire kit FTN6707A
PMMN4015A	Remote speaker microphone with emergency button, Push-To-Talk and 3.5mm audio jack

For use with FTN6595A and FTN6596A:

NTN8371A	Acoustic tube for low noise environments (clear voice tube with rubber ear tip)
NTN8370A	Acoustic tube for extreme noise environments (clear voice tube with foam earplug)
WADN4223A	Ear shell, large with grommet insert
WADN4224A	Ear shell, small with grommet insert

CARRY OPTIONS

Carrying accessories are available in various options and materials to meet different operational needs. Coupled with the MTP 850 audio accessories, the Motorola solution offers convenience and hands free mobility.

NTN5243A	Shoulder strap
RLN5717A	Belt worn hard leather case with swivel belt loop
RLN5718A	Belt worn nylon holster with fixed 3″ belt loop
RLN5719A	Belt worn soft leather carry case with swivel 3″ belt loop
RLN5720A	Belt worn soft leather carry case with integrated belt clip
HLN9767B	Wrist strap
HLN9844A	Belt clip (for 1.5″ belt width)
HLN9714A	Belt clip (for 2.0″ belt width)

PERFORMANCE MATCHED ACCESSORIES

Motorola accessories are designed as an integral part of the radio system and tested to ensure they are "performance matched". All of which are created and built to rigorous standards, then Accelerated Life Tested to simulate years of service. Peace of Mind supported by a Motorola warranty.

ANTENNAS

Injection molded for use in rugged environments. Each antenna is tested and tuned to give maximum power and performance. The MTP 850 patented antenna combines TETRA and GPS signal to help ensure optimal positioning for GPS coverage.

8587526V08	Helical Antenna 800-870 MHz with integrated GPS antenna
8587526V09	Whip Antenna 800-870 MHz with integrated GPS antenna

CABLES

FKN4897A	RS232 data cable
FLN9636A	Programming cable
NNTN4007B	USB programming cable

SPECIFICATIONS

General

Dimensions HxWxD mm	125 x 50 x 33.5 (slim 950 mAh battery)
	125 x 50 x 37.5 (standard 1850 mAh battery)
Weight g	175 Radio only
	215 (with slim battery)
	233 (with standard battery)

Battery Performance	Slim Li Ion	Standard Li Ion
	(950 mAh)	(1850 mAh)
Duty Cycle (5/5/90)	> 10 hours	> 20 hours
Duty Cycle (5/35/60)	> 8 hours	> 16 hours
Talk Time	1.8 hours	3.5 hours

Colour Display	130x130 pixel screen size with 65,536 vivid colours
	Flip screen and large text options
Talk Groups – TMO	2048
Talk Groups – DMO	1024
Address Book:	1000 Persons
	Up to 6 numbers per entry
	Max 2000 entries
Text message list	20
Status list	100
Country code/Network code list	100
Scan list	20 lists of 20 groups

Environmental

Operating Temperature °C	-25 to +60
Storage Temperature °C	-40 to +85
Humidity	ETS 300 019-1-7 class 7.3E, up to 95% for 8 hours
Dust and Water Ingress	IP54 (cat.2) - EC 529 class
Shock, drop and vibration	ETS 300-019 1-7 class 7.3E (-25 to +60)
	Between 5-95% relative humidity, no condensation

RF Specifications

Frequency Bands MHz	806-870
	380-430***
RF Channel Bandwidth kHz	25
Transmitter/Receiver Separation MHz	45 (806-870)
	10 (380-430)
Switching Bandwidth TMO MHz	50 (380-430)
	19 (806-825)
Switching Bandwidth DMO MHz	50 (380-430)
	19 (851-870)
RF Power Control	3 steps of 5dB
Transmitter RF Power Watt	1
RF Power Level Accuracy +/- dB	2
Receiver Class	A and B
Receiver Static Sensitivity dBm	-112 minimum (-115 typical)
Receiver Dynamic Sensitivity dBm	-103 minimum (-107 typical)

Integrated GPS Specifications

Simultaneous Satellites	12
Mode of operation	Autonomous or assisted (A-GPS**)
GPS antenna	Helical integrated into TETRA antenna
Sensitivity	-152 dbm / -182 dbW
Accuracy	5 meter (50% probable)*
	10 meter (95% probable) *

www.motorola.com/tetra