# MTH 800

TETRA Handportable Terminal

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, we have consistently delivered to our customers' exacting needs. Developing the potential of TETRA was just one of Motorola's many 'firsts' over the years.

## Unleashing the full power of TETRA

Having recognised the demand for a secure, flexible communications technology, we now have more contracts and live TETRA networks than any other manufacturer globally. In the public safety, transportation and industrial markets, Motorola has won nearly half of all contracts awarded to date.

Motorola demonstrated the world's first TETRA radio call at 380-400 MHz and was the first company to secure a commercial contract for TETRA equipment, back in 1997 Motorola's other TETRA firsts include:

- The first operational multi-site TETRA system
- The first demonstration of a TETRA 'group call'
- The first manufacturer to support cross-border TETRA communications
- The first trial system to demonstrate voice and short data
- The first manufacturer to ship a system with Air Interface Encryption
- The first ever 800MHz TETRA contract
- The first wide-area, fully TETRA over IP network to Airwave
- The first ever TETRA system available to order via the web (Compact TETRA)

We remain at the cutting edge of TETRA technology due to our continuing commitment to deliver the innovative communication solutions that you tell us you need.

As part of our market-leading suite of TETRA terminals, the MTH 800, offers the widest range of capabilities including support for state of the art End to End encryption, a high-resolution colour display as well as a revolutionary GPS based Location Service. And now, with a new user interface, the benefits of TETRA have never been easier to manage.

# Adapting to suit our customers' needs

The MTH 800 boasts the very latest 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.

From the End to End encryption to the integrated GPS Location system, the MTH 800 offers an unrivalled set of tools for personal safety and security.

In addition, the MTH 800's ability to send and receive clear, high contrast images provides even greater flexibility to the end-user as well as another addition to Motorola's long list of TETRA 'firsts'.

The Motorola TETRA Handportable MTH 800 terminal is the benchmark against which all others will be judged.

## Additional benefits:
**Performance:**
- The MTH 800's impressive power and memory capacity anticipate future developments in TETRA including the adoption of services such as Multi Slot Packet Data for access to information services

- Using a wide-band RF platform offers flexibility for future radio frequency assignments

**Audio:**
- The larger, 1 Watt speaker provides improved, undistorted sound – 4 times louder than comparable terminals on the market (user customizable sound level).

# POWER THROUGH INNOVATION

**True colour. Truly original**
For ease of use and to optimise its raft of new TETRA applications including image sharing, the MTH 800 includes a ground-breaking highresolution true colour display. With a resolution of 130 x 130 pixels and over 65,000 colours, the display provides accurate reproduction of faces and other images. Coupled with the latest backlighting technologies, the display provides maximum image definition in a wide range of lighting conditions. Making full use of the new colour display, the MTH 800 incorporates the latest in graphical user interfaces with intuitive navigation and a wide range of customizable features including scalable fonts.

**GPS Location Service**
Safety and efficiency are critical factors for many modern organisations. The MTH 800's ground-breaking GPS Location Service gives users the ability to transmit their location to a dispatcher, allowing more efficient use of resources or determining location in life-threatening situations. The MTH 800 incorporates the latest integrated GPS technology to offer low current consumption whilst maintaining a high sensitivity and speedy time-to-fix. The in-built, GPS receiver also benefits from a new, patented, antenna to help ensure optimal coverage – even in vehicles.

The MTH 800 incorporates a powerful application allowing users to:
• Control and reconfigure GPS parameters over-the-air
• Define location and event driven position updates
• Set 'profiles' to enable different location update rules in various scenarios such as emergency situations

For increased security the MTH 800 also includes innovative authentication processes to ensure location information is only sent to authorised users.

**Unparalleled safety and security**
With a proven track record in delivering secure communication solutions, Motorola takes TETRA encryption to a new level with the MTH 800. In addition to support for Class 3 Air Interface Encryption, the MTH 800 is available with a fully integrated End to End encryption module which, when deployed, offers even greater security for the end-user and communications alike. The MTH 800 is part of a complete End to End solution from Motorola for customers requiring enhanced operational security, with support for multiple encryption algorithms and Over-the-Air-Keying using Motorola's Key Management Facility.

**Designed to deliver. Designed for the future**
Although the MTH 800 offers a wide range of leading-edge technologies, the terminal has been designed with the user in mind. Having worked closely with end-users to identify future requirements, the MTH 800 supports over 3,000 Talk Groups and has an integrated phonebook with capacity for 2,000 number entries. The terminal can be customized by a Fleet Manager with up to 12 programmable keys and the end-user can even customize their individual requirements with assignable menu shortcuts.

# FEATURES OVERVIEW

### GPS Location Service

Enhance user safety and efficiency with the MTH 800. Incorporating the latest semiconductor technology, it includes a highly sensitive, low power consumption GPS receiver. The MTH 800 uses a new patented antenna combining TETRA and GPS signal to help ensure optimal positioning of the antenna for GPS coverage. The solution includes a full terminal resident software application providing control of all GPS parameters over the air – no need to touch programmed terminals when changes are required.

### Performance

The MTH 800 comes packed with power, a new processor and Digital Signalling Processor (DSP) to ensure applications such as WAP, Multi Slot Packet Data, imaging etc will run smoothly and take advantage of the 16M byte flash memory.

### Audio

While MTH 800 includes many exciting new features it is important to not forget the basics – audio quality! To that effect MTH 800 has two major improvements; a new larger and more effective 1 Watt speaker as well as a new 1 Watt class D audio amplifier, all together providing exceptional clarity of audio with minimal distortion, even at high audio levels (user customizable sound level).

### Colour display

Display technologies are moving fast. Motorola now has a 65,000 colour display included in the MTH 800 for ease of use to differentiate display information to the user. The 130 x 130 pixel display provides the ability to view high resolution pictures e.g. missing persons, suspects etc.

### User interface

To harness the power of MTH 800 a new easy-to-use graphical user interface is included with assignable shortcuts to menu items, more that 3,000 Talk Groups as well as a unified contact book with 2,000 entries – enough to satisfy even the demanding user.

### End-to-End encryption

While compact and lightweight, the MTH 800 includes full End-to-End encryption. Part of a complete End-to-End solution from Motorola for customers requiring enhanced operational security, the MTH 800 offers support for multiple encryption algorithms and Over The Air Rekeying using Motorola's Key Management Facility. Subject to security requirements, the MTH 800 may be factory fitted with End-to-End encryption, can be provisioned in-country or alternatively retrofitted at a later date.

# FEATURES

## VOICE SERVICES SUPPORTED – 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 (DMO/TMO)
- 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 SUPPORTED – TELEPHONE CALL (PABX/PSTN):
- 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)

## SECURITY SERVICES SUPPORTED:
- 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 for customer use
- User crypto key deletion from keypad
- Radio Stun
- PIN/PUK code access
- Packet data user authentication

## END TO END SECURITY SERVICES SUPPORTED:
- 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 Air Rekeying of encryption keys and talkgroup associations

## 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
- New 1 Watt audio amplifier and speaker
- Site Wide Call
- DMO to TMO Emergency Switching

## DATA/MESSAGING SERVICES SUPPORTED:
- 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

## 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 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
- Pre-programmed languages (English, French, German, Spanish, Dutch, Greek, Arabic, Cyrillic and Swedish)
- 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)

## 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
  - TXI enable/disable
  - DMO/TMO switching
  - Low battery
  - Full over the air programmability of all GPS Location Service parameters

## 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

# ENHANCE YOUR MTH 800 TETRA HANDPORTABLE TERMINAL WITH A WIDE RANGE OF ACCESSORIES

Professional users of portable radios have specific needs, requirements and working conditions within a highly demanding environment. Motorola provides complete two-way radio communication solutions with a wide selection of robust and reliable accessories. This extensive portfolio of accessories allows professional users to further customize their MTH 800 TETRA Terminal and satisfy their individual communications needs above and beyond those already incorporated in the standard package.

## CHARGERS

| | |
|---|---|
| FTN6306B | Dual Pocket Desktop Charger (requires the use of Travel Charger WALN4092A) |
| WALN4092A | Travel Charger (including UK and Euro plugs) |
| WPLN4175B | Multi Unit Charger 6 pockets – Euro Plug 220V |
| WPLN4176B | Multi Unit Charger 6 pockets – UK Plug 240V |
| WPLN4177B | Multi Unit Charger 6 pockets – US Plug 110V |
| RLN5643A | Wall Mounting Tray for Multi-Unit charger |

## BATTERIES

| | |
|---|---|
| SNN5705C | 800 mAh – Lithium Ion (requires the use of standard battery door 0188809V58) |
| NNTN4655B | 1500 mAh – Lithium Ion (requires the use of extended battery door 0188809V59) |
| 0188809V58 | Standard battery door (for use with standard battery SNN5705C) |
| 0188809V59 | Extended battery door (for use with extended battery NNTN4655B) |

## IN-VEHICLE SOLUTIONS

| | |
|---|---|
| FTN6307B | Digital Car Kit (Kit includes cradle, junction box, remote visor microphone, remote Velcro PTT, external 5W speaker, installation cables) |
| FLN9469A | Vehicle Power Adaptor |

## AUDIO ACCESSORIES

### For shoulder worn terminal:

| | |
|---|---|
| FTN6596A | Earpiece, receive only, short coiled cable (2.5 mm plug) |
| GMMN1105B | Audio Bundle Kit - includes receive only FTN6596A, voicetubes NTN8371A (low noise) and NTN8370A (high noise), earshells WADN4223A (large) and WADN4224A (small), contained in black Motorola branded nylon bag |

### For belt worn terminal:

| | |
|---|---|
| RMN5042A | Remote Speaker Microphone with 3.5 mm jack socket |
| RLN4939A | Earpiece, receive only, short coiled cable for use with Remote Speaker Microphone (3.5 mm plug) |
| FTN6582A | Breeze Headset with Boom Microphone and in-line Push-To-Talk (recommended for indoor/normal ambient noise environment only). |
| FTN6583A | Personal Hands-free Kit (earbud with in-line microphone and Push-To-Talk) |
| FTN6595A | 3-wire Surveillance Kit - Earpiece with separate Microphone and Push-To-Talk |
| FTN6707A | 2-wire Surveillance Kit - Earpiece with combined Microphone and Push-To-Talk |

### The following accessories can be used to further personalise your communication:

**For use with RLN4939A, 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 |

**For use with FTN6707A:**

| | |
|---|---|
| PMLN4605A | Transparent Acoustic Tube with rubber eartip |

## CARRY ACCESSORIES

### Shoulder Worn:

| | |
|---|---|
| FTN6355A | Shoulder Wearing Device (bracket with stud - Peter Jones Klick Fast connector to use in conjunction with sew-on dock GMDN0386A) |
| GMDN0386A | Peter Jones sew-on dock |

### Belt Worn:

| | |
|---|---|
| RLN4892A | Hard Leather Case with swivel 3'' belt loop |
| RLN4891A | Soft Leather Case with swivel 3'' belt loop |
| FTN6302A | Bracket with U-slot (to use in conjunction with belt clip HLN9714A or HLN9844A) |
| HLN9714A | Spring Belt Clip - 2.5'' long (requires bracket with U-slot FTN6302A) |
| HLN9844A | Spring Belt Clip- 1.5'' short (requires bracket with U-slot FTN6302A) |

### Other:

| | |
|---|---|
| HLN9767B | Wrist Strap |

## ANTENNAS

| | |
|---|---|
| 8586381J10 | Helical Wideband Antenna 380-430 MHz combined GPS and TETRA |
| 8586381J11 | Whip Wideband Antenna 380-430 MHz combined GPS and TETRA |
| GMAE4290A | Car Kit External Roof Antenna, wideband 380 - 430 MHz combined GPS and TETRA (kit includes antenna, cables, duplexer and DC adapter) |
| GMAE4293A | Car Kit External Roof Antenna, 450 - 470 MHz combined GPS and TETRA (kit includes antenna, cables, duplexer and DC adapter) |

## CABLES

| | |
|---|---|
| FKN4897A | RS232 Data Cable |
| FLN9636A | Programming Cable |
| NNTN4007B | USB Cable |

# SPECIFICATIONS

### General

| | |
|---|---|
| Dimensions HxWxD mm | 141 x 55 x 33 (with standard 800mAh battery) |
| | 141 x 55 x 38 (with 1500mAh battery) |
| Weight g | 192 Radio only |
| | 222 with standard 800mAh battery |
| | 247 with 1500mAh battery |
| Battery Capacity mAh | 800 Standard Li Ion |
| | 1500 Extended Li Ion |

| Battery Performance | Duty Cycle | Battery Capacity (mAh) | Operating Life |
|---|---|---|---|
| | 5/5/90 | 800 | > 12 hours |
| | | 1500 | > 20 hours |
| | 5/35/60 | 800 | > 8 hours |
| | | 1500 | > 16 hours |

| | |
|---|---|
| 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 | -30 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 |
| Climatic Conditions °C | ETS 300-019 1-7 class 7.3E |
| | Between 5-95% relative humidity, no condensation |
| Shock, drop and vibration | ETS 300 019-1-7 class 5M3 |

### RF Specifications

| | |
|---|---|
| Frequency Bands MHz | 380-430 |
| | 450-470*** |
| RF Channel Bandwidth kHz | 25 |
| Switching Bandwidth TMO MHz | 50 (380-430) |
| | 20 (450-470) |
| Switching Bandwidth DMO MHz | 50 (380-430) |
| | 20 (450-470) |
| Transmitter/Receiver Separation MHz | 10 |
| Transmitter RF Power Watt | 1 |
| RF Power Control | 3 steps of 5dB |
| RF Power Level Accuracy +/- dB | 2 |
| Receiver Class | A and B |
| Receiver Static Sensitivity dBm | -112 minimum (-116 typical) |
| Receiver Dynamic Sensitivity dBm | -103 minimum (-105 typical) |

### 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) * |

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