Operators Guide
MTP136D-000GN
Mission Transceiver
Panel Mount (P25)

Operators Guide

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Section 1.0 Description

1.1 Introduction

This document provides basic operating instructions for the Mission Transceiver Panel mount, herein subsequently referred to as the MTP.

The MTP is highly configurable with a large set of options for both the Operator and the Administrator. Many of these options are outside the scope of this guide. For advanced configuration and operation please see the MTP136D's product page on AEM's website, www.aem-corp.com, or contact AEM Technical Support at support@aem-corp.com.

This guide supports firmware version 1.10.

1.2 Description

The MTP is a stand-alone VHF FM transceiver that is equipped with a main and guard radio. The MTP is capable of semi-duplex communication and features three operating modes: narrowband analog, wideband analog, and digital APCO P25 Phase I.

The MTP transmit and receive frequency range is the 136 – 174 MHz VHF band with high (10W) or low (1W) transmit output power selectable from the front panel interface.

Continuous Tone Code Squelch System (CTCSS) and Continuous Digital Coded Squelch System (CDCSS) encoding/decoding are selectable in analog mode. Network Access Codes (NAC) and Talk Group IDs (TGID) are available in P25 digital mode.

The MTP is compliant to applicable equipment performance standards TIA-603-E, TIA-102 and DO-160G environmental standards.

Figure 1: MTP136D-000GN

1.3 General Statements

1.3.1 Warnings

WARNING

High volume settings can cause hearing damage.
Set the headset volume control to the minimum volume setting prior to conducting tests, and slowly increase the headset volume to a comfortable listening level.

1.3.2 Controlling Your Exposure to RF Energy

RF is a form of electromagnetic energy (as is sunlight), and there are recommended levels of maximum RF exposure. To control your exposure to RF and comply with the maximum exposure limits for occupational/controlled environments, follow these guidelines:

1. Do not talk (transmit) on the radio more than the rated transmit duty cycle. This is important because the radio radiates more energy when it is transmitting than when it is receiving.
2. While you are transmitting (talking or sending data) on the radio, you must ensure that there is always a distance of 45.3 inches (1.15 m) between people and the antenna. This is the minimum safe distance.
3. Use the radio only with approved antennas and attachments and make only authorized modifications to the antenna otherwise you could damage the radio and violate FCC regulations.

For more information on what RF energy is and how to control your exposure to it, visit the FCC website at www.fcc.gov/oet/rfsafety/rf-faqs.html.

1.3.3 Regulatory and Compliance Statements

Reference the Installation Manual (MTP136D-000GN-815-0) for additional ISED and FCC regulatory and compliance statements.

1.3.4 Warranty

Please refer to the standard product warranty conditions available on our website, www.aem-corp.com.

1.4 Limitations

Front Panel USB is for maintenance activities only and is not intended for use during flight. USB port door is to be closed.

1.5 Part Number Nomenclature

The product part number is defined as follows:

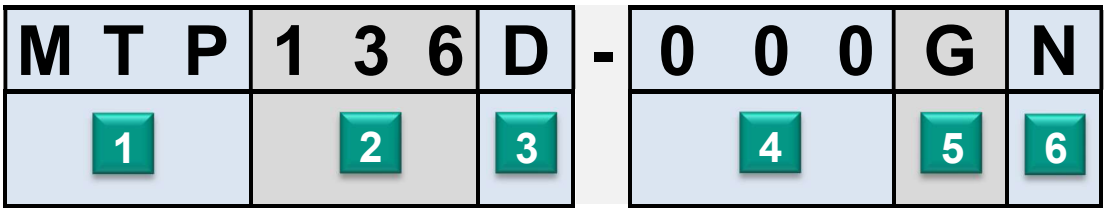

Figure 2: Part Number Nomenclature

Item	Name	Description
1	Product Family	MTP: Mission Transceiver Panel Mount
2	Start Frequency (in MHz)	136: 136 MHz
3	Feature Character	D: Digital capable N/A: Analog only
4	Derivative Identifier [000-999]	000: Base product
5	Feature Character	G: Guard receiver installed N/A: No guard
6	Feature Character	N: NVIS compliant lighting N/A: Non-NVIS lighting

Table 1 :Unit Nomenclature

End of Section 1.0 Description

Section 2.0 Operation

2.1 Introduction

The MTP is controlled using the front panel mounted keypad, knobs, and switches. The display is navigated using the front panel controls to select from menus.

2.2 Front Panel

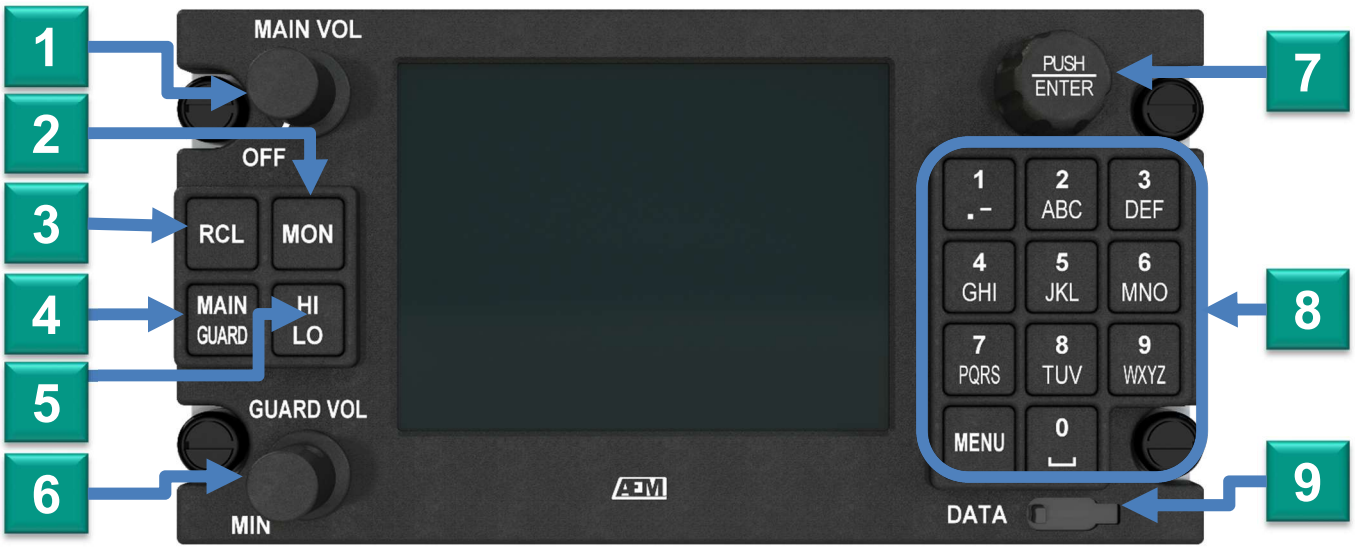

Figure 3: Front Panel

Item	Name	Description
1	**Main Volume Knob** (MAIN VOL)	Adjusts the volume of the main radio. Detent turns the MTP OFF.
2	**Monitor** (MON)	Bypasses Squelch Threshold and Channel Signaling allowing all transmissions to be heard.
3	**Channel Recall** (RCL)	Returns to the previous channel or opens the Function Menu.
4	**Radio Select** (MAIN GUARD)	Changes the Focused Radio.
5	**Transmit Power** (HI LO)	Changes transmit power.
6	**Guard Volume Knob** (GUARD VOL)	Adjusts the volume of the guard radio.
7	**Rotary Selector** (PUSH | ENTER)	Changes channel, navigates, and modifies options.
8	**Keypad and MENU**	Shows/hides the Menu. Changes channel, navigates, dials DTMF tones, and modifies options.
9	**Data Port** (DATA)	USB Type-C port used for Profile Import/Export, Error Log Export, and Firmware Updates.

Table 2: Front Panel Controls

2.3 J1 System Interface Connector

See the Installation Manual for more information.

Input	Functionality
PANEL LIGHTING	Panel and display dimming.
CHAN/SELECT +	Equivalent to rotary selector clockwise. Changes channel, navigates, and modifies options. Commonly installed on the airframe's cyclic stick
CHAN/SELECT -	Equivalent to rotary selector counterclockwise. Changes channel, navigates, and modifies options. Commonly installed on the airframe's cyclic stick.
MIC KEY IN	PTT (Push To Talk).

Table 3: System Interface Connector Inputs

2.4 Power On

To power on, rotate MAIN VOL clockwise past the detent. The display will briefly show a splash screen with the AEM logo followed by an info screen. The info screen includes model number, serial number, firmware version, and modification status and can be paused by pressing ENTER. After the info screen, the display will show the Home Screen.

2.5 Home Screen

The Home Screen shows each radio's indicators, Active Channel, and Active Zone. One radio is Focused (expanded) while all others are Unfocused (collapsed).

All navigation within this guide begins from the Home Screen.

Figure 4: Main Radio Focused

Figure 5: Guard Radio Focused

2.5.1 Focused Radio

Transmit, receive, and channel changes occur on the Focused Radio.

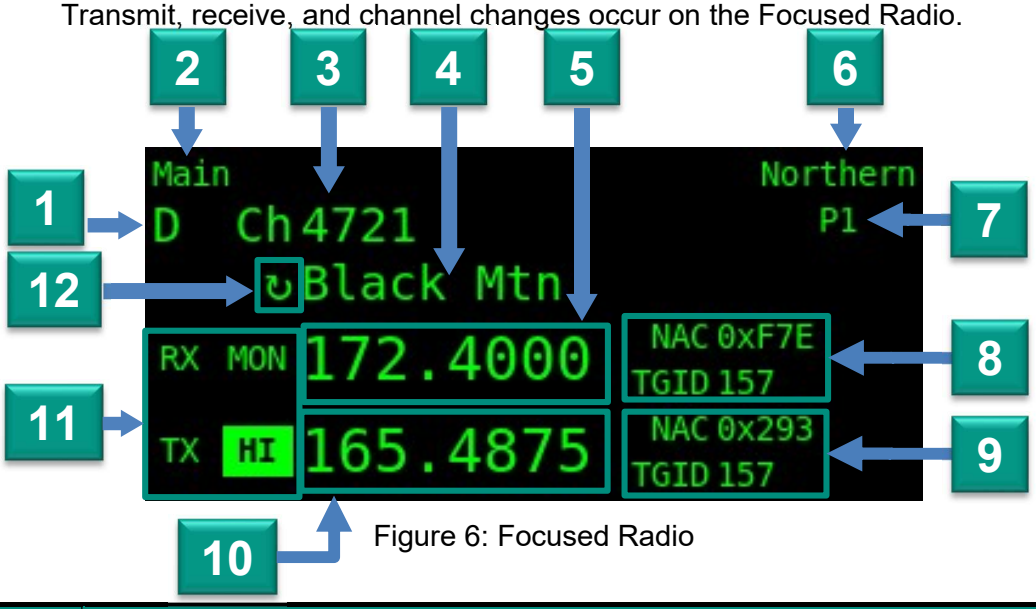

Figure 6: Focused Radio

Item	Description
1	Channel modulation. N: Narrowband Analog, 12.5kHz bandwidth. W: Wideband Analog, 25kHz bandwidth. Requires Wideband Key installed. D: P25 Phase 1 Digital.
2	Radio name.
3	Channel number.
4	Channel name.
5	Receive frequency.
6	Zone name.
7	Scan priority enrolment. Configured per zone. Scanned under P, L+P, and Z+P scan algorithms.
8	Receive Channel Signaling. CTCSS, CDCSS, NAC, or TGID. “0x” prefix refers to hexadecimal display format.
9	Transmit Channel Signaling. CTCSS, CDCSS, NAC, or TGID. “0x” prefix refers to hexadecimal display format.
10	Transmit frequency.
11	Indicators.
12	Scan list enrolment. Scanned under L and L+P scan algorithms.

Table 4: Focused Radio Elements

2.5.2 Unfocused Radio

Unfocused radios can receive but cannot transmit.

Figure 7: Unfocused Radio

Item	Description
1	Indicators.
2	Channel name.

Table 5: Unfocused Radio Elements

2.5.3 Indicators

Indicators show the receive and transmit status of each radio.

Indicator	Description
RX RX	Highlights when a carrier is detected on the receive frequency.
Mon Mon	Highlights when Squelch Threshold and Channel Signaling has been met allowing audio to be delivered to the headset.
TX TX	Highlights when transmitting.
Lo Hi	Highlights when transmit power is set to High. Highlighting can be disabled by setting the “Highlight HI Power” user option to Off.

Table 6: Home Screen Indicators

2.6 Menu

The menu provides access to navigation and common actions. It can be opened at any time by pressing the MENU button. When open, it is overlayed on the right side of the display. The content depends on the currently available options and screens.

An action is triggered by pressing the associated number on the keypad.

Figure 8: Example Menus

2.7 Active Channel

Radios use one channel at a time called the Active Channel. The Active Channel dictates receive and transmit behavior of the radio.

To change the Active Channel:

1. Turn the rotary selector.

   OR

1. Use the keypad to enter the channel number.

   OR

1. Menu > Channel.
2. Choose from the list.

2.8 Active Zone

Radios use one zone at a time known as the Active Zone. The Active Zone dictates available channels to the radio and modifies behavior according to the contained options such as priority scan channels, active signal lists, and permissions. Changing the Active Zone may be locked by an Administrator on a per-radio basis.

To change the Active Zone:

1. MENU > Zone.
2. Choose a zone.

2.9 Transmit

Transmit will begin on the Active Channel of the Focused Radio when PTT is active. Receive is not possible when transmitting. Transmit can occur with two power levels, Low (1W) and High (10W), and can be changed using the HI/LO button.

Transmit may timeout after a period defined by an Administrator. This is indicated by an exclamation mark on the transmit indicator (TX!) and can be cleared by re-transmitting.

2.10 Transmit DTMF Tones

DTMF tones can be transmitted either manually while transmitting (live dialing), or in a predetermined sequence prior to transmitting (sequence dialing).

2.10.1 Live Dialing

DTMF tones can be sent from the Home screen while transmitting on an Analog channel. 0-9 is sent from the keypad and A-D, #, * from the Menu (Figure 9).

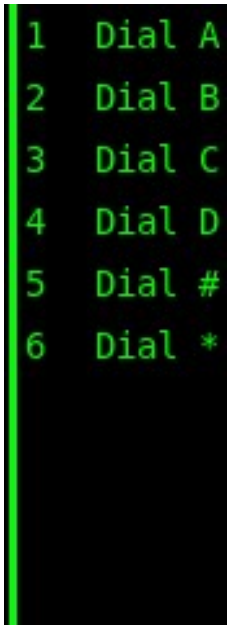

Figure 9: DTMF Tone Menu

2.10.2 Sequence Dialing

DTMF sequences can be dialed by entering them into the DTMF Dial screen followed by transmitting. Sequences can also be preconfigured using Function Menu Dial actions. Space, *, and # can be inputted with the 0 key.

To dial a DTMF Sequence:

1. MENU > Radio.
2. MENU > Dial.

   OR

1. MENU > Functions (when configured).

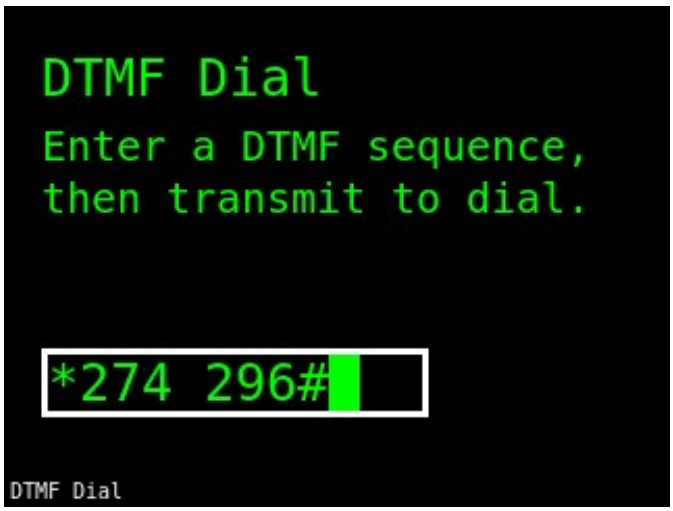

Figure 10: DTMF Dial screen

2.11 Talkaround

Talkaround bypasses repeaters by temporarily modifying the channel's TX frequency and signaling to match RX. Talkaround is indicated by a bar linking RX and TX on the Home screen. Talkaround is reset to OFF on channel change or power cycle.

To enable or disable talkaround:

1. MENU > Radio.
2. Scroll to desired radio section (Main or Guard).
3. Choose Talkaround: On/Off.

   OR

1. MENU > Functions (when configured).

Figure 11: Talkaround enabled

2.12 Functions

Up to 9 custom functions are available for configuration. Functions are accessed on the Function Menu and configured on the User Options screen.

Figure 12: Function Menu

2.12.1 Use a Function

Functions are activated on the Function Menu using the corresponding keypad digit.

To open the Function Menu:

1. Menu > Functions.

   OR

1. RCL (when the “RCL Button” User option is set to “Functions”).

2.12.2 Configure a Function

Each function has an action, a name, and action specific parameters. The default name of each function can be overridden to customize the menu's appearance. Supported actions are listed in Table 7.

To configure Functions:

1. Menu > More > Options.
2. Functions.
3. Choose which function to configure.

Action	Default Name	Description	Parameters
None	None (--)	Does nothing.	N/A.
Preset Channel	Preset Ch.	Jumps to a preset zone and channel.	Zone: Preset zone. Channel: Preset channel.
Talkaround	Talkaround	Toggles talkaround on the active channel.	N/A.
New Channel	New Ch.	Creates a new channel at the end of the active zone and begins editing.	N/A.
TX Tone	TX Tone	Begins editing the TX tone or Code on the active channel.	N/A.
Recall	Recall	Returns to the previous channel.	N/A.
Dial	Dial	Opens the DTMF Dial screen and preloads a sequence.	Sequence: DTMF sequence.

Table 7: Supported Function Actions

2.13 Channel Signaling Display Format

Numerical display format for Tones (CTCSS), NACs, and TGIDs. The menu will only show options for the currently applicable Channel Signaling. See Table 8 for a list of all display format options.

To change Channel Signaling Display Format:

1. MENU > Format.

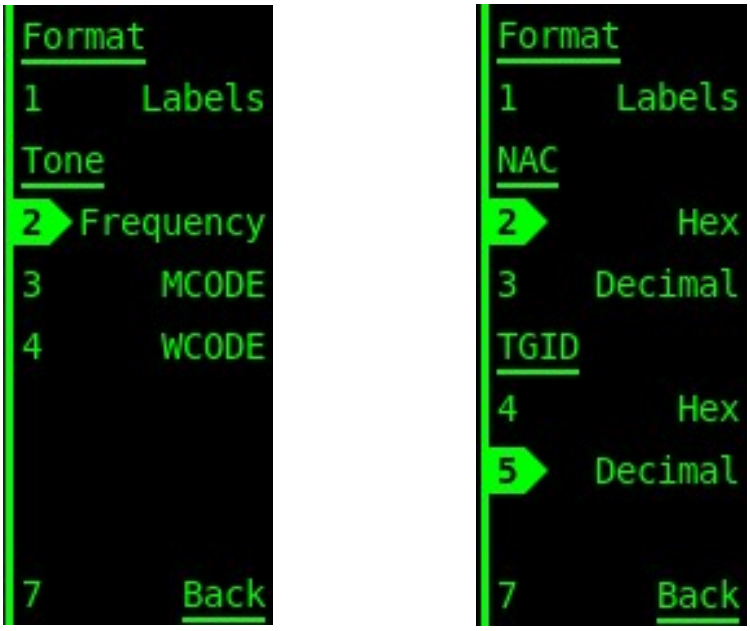

Figure 13: Example Format Menus

Display Format	Description	Applicable Signaling	Example
Hexadecimal	Base 16 with a prefix of “0x”.	NAC and TGID	0x293
Decimal	Base 10 whole number.	NAC and TGID	157
Frequency	Base 10 with 1 decimal place.	Tone	82.5
MCODE	Motorola coded.	Tone	YZ
WCODE	Wolfsberg coded.	Tone	06

Table 8: Display Format Options

2.14 LCD Brightness

LCD backlight brightness.

To change the LCD Brightness:

1. MENU > Bright.

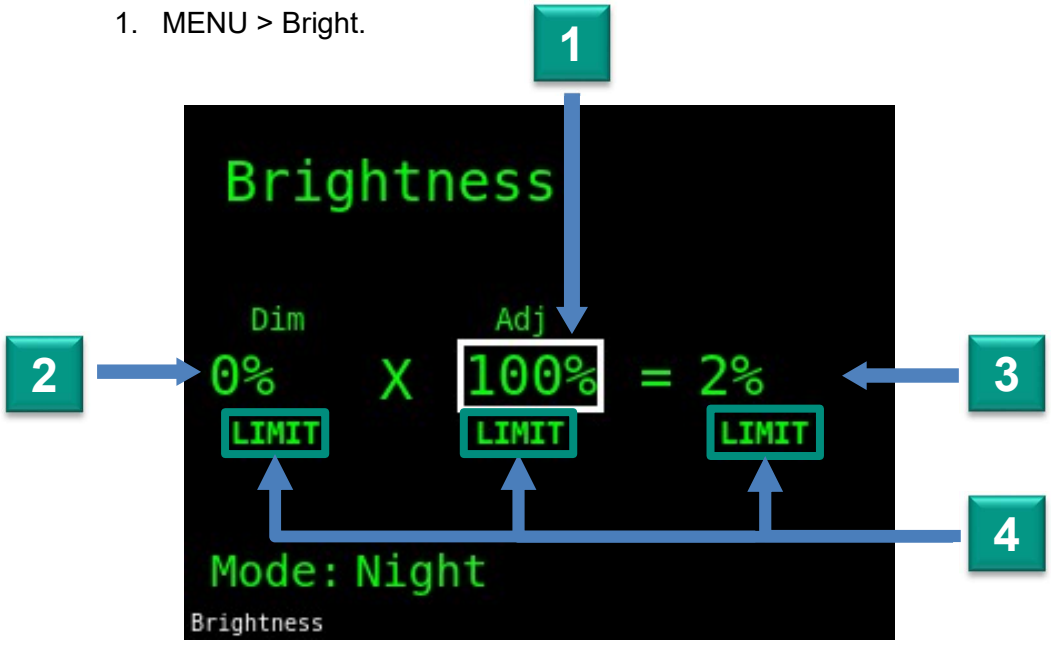

Figure 14: Brightness Screen

Item	Description
1	Brightness adjustment.
2	Dimming due to panel lighting input.
3	Combined LCD brightness.
4	Displayed when a value has reached its minimum or maximum value.

Table 9: Brightness Screen Elements

2.15 LCD Brightness Mode

Controls maximum LCD brightness.

To change LCD Brightness Mode:

1. MENU > Bright.
2. MENU > Choose LCD Mode.
   - Day: Maximum brightness is not limited allowing the LCD to reach its highest possible brightness.
   - Night: Maximum brightness is limited for use in Night or NVIS applications. Dimming from panel lighting input is customizable by an Administrator.
   - Auto: Day or Night automatically chosen based on panel lighting input voltage. Customizable by an Administrator.

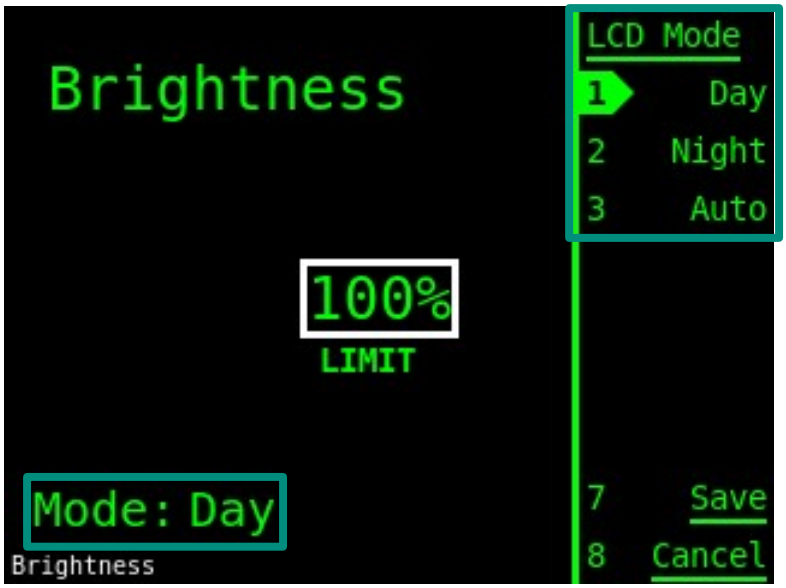

Figure 15: Changing LCD Mode on the Brightness Screen

2.16 Receive Volume Range

Sets the minimum and maximum receive volume for each radio. The volume knobs automatically rescale to the configured range.

To change Receive Volume Range:

1. MENU > More > Options.
2. Scroll to desired radio section (Main or Guard).
3. Choose Min Volume or Max Volume.

2.17 Microphone Sidetone Volume

Audio feedback volume for the microphone.

To change Microphone Sidetone Volume:

1. MENU > Radio.
2. Scroll to Audio section.
3. Choose Sidetone Vol.

2.18 DTMF Sidetone Volume

Audio feedback volume for dialed DTMF tones.

To change DTMF Sidetone Volume:

1. MENU > Radio.
2. Scroll to Audio section.
3. Choose DTMF Sidetone Vol.

2.19 Squelch Threshold

Required signal strength above noise to break squelch.

To change Squelch Threshold:

1. MENU > Radio.
2. Scroll to desired radio section (Main or Guard).
3. Choose Sq. Threshold.
    - Low: Low strength signals will break squelch. Recommended when operating across large distances, or where RF activity is minimal.
    - Medium: Medium strength signals will break squelch. Recommended setting for urban and semi-urban environments where moderate RF activity is expected.
    - High: High strength signals are required to break squelch. Recommended in environments where high RF activity is expected.

2.20 Monitor Latch

MON button behavior.

To change Monitor Latch:

1. MENU > More > Options.
2. Choose Monitor Latch.
    - Hold: Hold to latch monitor, otherwise momentary.
    - On: Press toggles monitor.
    - Off: Hold to momentary monitor.

2.21 Analog Monitor

Monitor behavior on all analog channels.

To change Analog Monitor:

1. MENU > More > Options.
2. Choose Analog Monitor.
   - Squelch: Breaks noise squelch.
   - Tone: Bypasses tone squelch by temporarily clearing the current tone.

2.22 Digital Monitor

Monitor behavior on all digital channels.

To change Digital Monitor:

1. MENU > More > Options.
2. Choose Digital Monitor.
   - All: Monitors all NACs and TGIDs.
   - TGID: Monitors all NACs within the current TGID. Indicated on Home Screen by overlaying current NAC with 0xF7E (All) while monitoring.

2.23 Auto TX Power

Restores saved TX Power when changing channels.

To change Auto TX Power:

1. MENU > More > Options.
2. Choose Auto TX Power.
   - On: Radio TX power is set to the per-channel stored TX Power option on channel changes and startup. Pressing HI/LO will temporarily override the TX power until the next channel change or power cycle.
   - Off: Radio TX power persists across channel changes and power cycle. Pressing HI/LO will toggle and immediately save the TX power. Per-channel TX Power is ignored.

2.24 Scanning

The order of scanned channels is determined by the selected scan algorithm (Table 10) which can be changed by turning the rotary selector while scanning.

To start or stop scanning:

1. MENU > Scan.

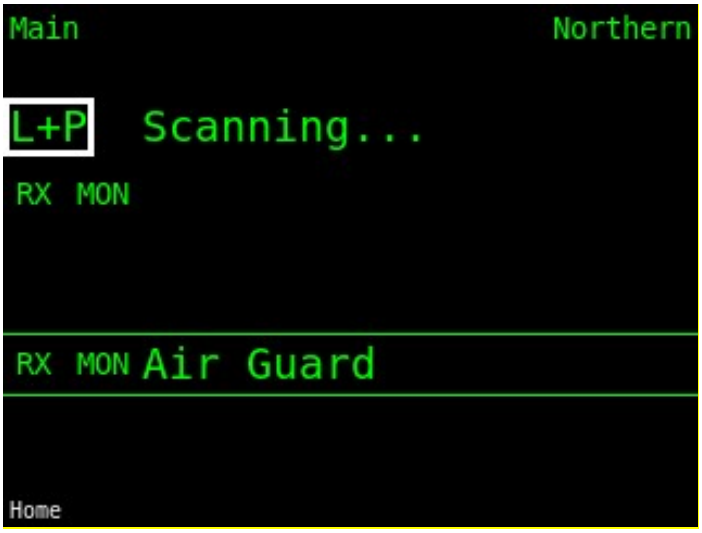

Figure 16: Scanning on the Home Screen

Algorithm	Description	Example
List L	Scans all channels in a zone in numerical order that have Channel Scan (↻) enabled.	Home, 1, 2, 3, Home, 1, 2, …
Priority P	Scans zone P1, zone P2, and Home in order of priority. When locked, the scanner will periodically check higher priority channels for transmissions.	P1, P2, Home, P1, P2, Home, P1, …
List + Priority L+P	A combination of List and Priority algorithms where a single, incrementing, list channel is scanned after all Priority algorithm channels are scanned.	P1, P2, Home, **1**, P1, P2, Home, **2**, P1, P2, …
Zone Z	Scans all channels in the Active Zone.	1, 2, 3, 4, 1, 2, …
Zone + Priority Z+P	A combination of Zone and Priority algorithms where a single, incrementing zone channel is scanned after all Priority Algorithm channels are scanned.	P1, P2, Home, **1**, P1, P2, Home, **2**, P1, P2, …

Table 10: Scan Algorithms

2.24.1 Scan Locked

If a signal is detected while scanning, the radio will lock to that channel to allow the transmission to be heard and responded to. When locked, the Home Screen Action Menu is modified with the following options:

1. Radio: Navigates to the Radio Options screen.
2. Scan: Stop scanning and return to the home channel.
3. Next: Skip this channel and continue scanning.
4. Stay: Stop scanning but return to the locked channel instead of home.
5. Delete: Temporarily remove the locked channel from the scan list. Channel won't be scanned again until scan is re-enabled.

Pressing PTT will transmit on the locked channel. Scan will continue after a short period of RX or TX inactivity.

Figure 17: Scan Locked on the Home Screen

2.25 Profiles

Options and lists are stored in a JSON file (.json) called a Profile. Only one Profile is stored and used at a time.

2.25.1 Create a Profile

Profiles can be created using the MTP13xx Profile Editor found on AEM's website www.aem-corp.com on the MTP product page under software.

2.25.2 Import a Profile

Profiles can be imported from a USB storage device connected to the DATA port.

To import a profile:

1. Copy profile into the root directory of the USB device.
2. MENU > More > Import.
3. Connect the USB device to the DATA port.
4. Select the desired profile from the list.
5. Press MENU and choose what to import from the selected profile:
   1. All: Imports entire profile including all Options and Lists.
   2. Options: Imports only options.
   3. Lists: Imports zones, channels, tones, codes, TGIDs, and NACs.
6. Wait until one of the results in Table 11 is displayed. This may take a few minutes.

Result	Description
Success.	Import successful, profile saved.
Insufficient permissions.	Profile contains options that exceed current permission level. Login and try again.
Incompatible version.	Profile is not compatible with this firmware version. Convert using AEM Radio Profile Editor on AEM's website: www.aem-corp.com on the MTP product page under software.
Device error.	USB communication issue or a device compatibility problem. Try again or try a different device.
Invalid syntax or options.	File likely corrupted. Replace and try again.

Table 11: Import results

2.25.3 Export a Profile

Profiles can be exported to the root directory of a USB storage device connected to the DATA port.

To export a profile:

1. MENU > More > Export.
2. Connect a USB device to the DATA port.
3. Enter desired file name.
4. MENU > Export.
5. Wait until one of the results in Table 12 is displayed. This may take a few minutes.

Result	Description
Success.	Export successful, profile saved to USB device.
Device error.	USB communication issue or a device compatibility problem. Try again or try a different device.

Table 12: Export results

2.25.4 USB Drive Requirements

The MTP only supports USB drives that meet the following requirements:

1. Formatted to FAT, FAT32, or exFAT.
2. Power consumption less than 4.5W.
3. USB-C or connected through a USB-C adapter.
4. Mechanical requirements as shown in Figure 18 below.

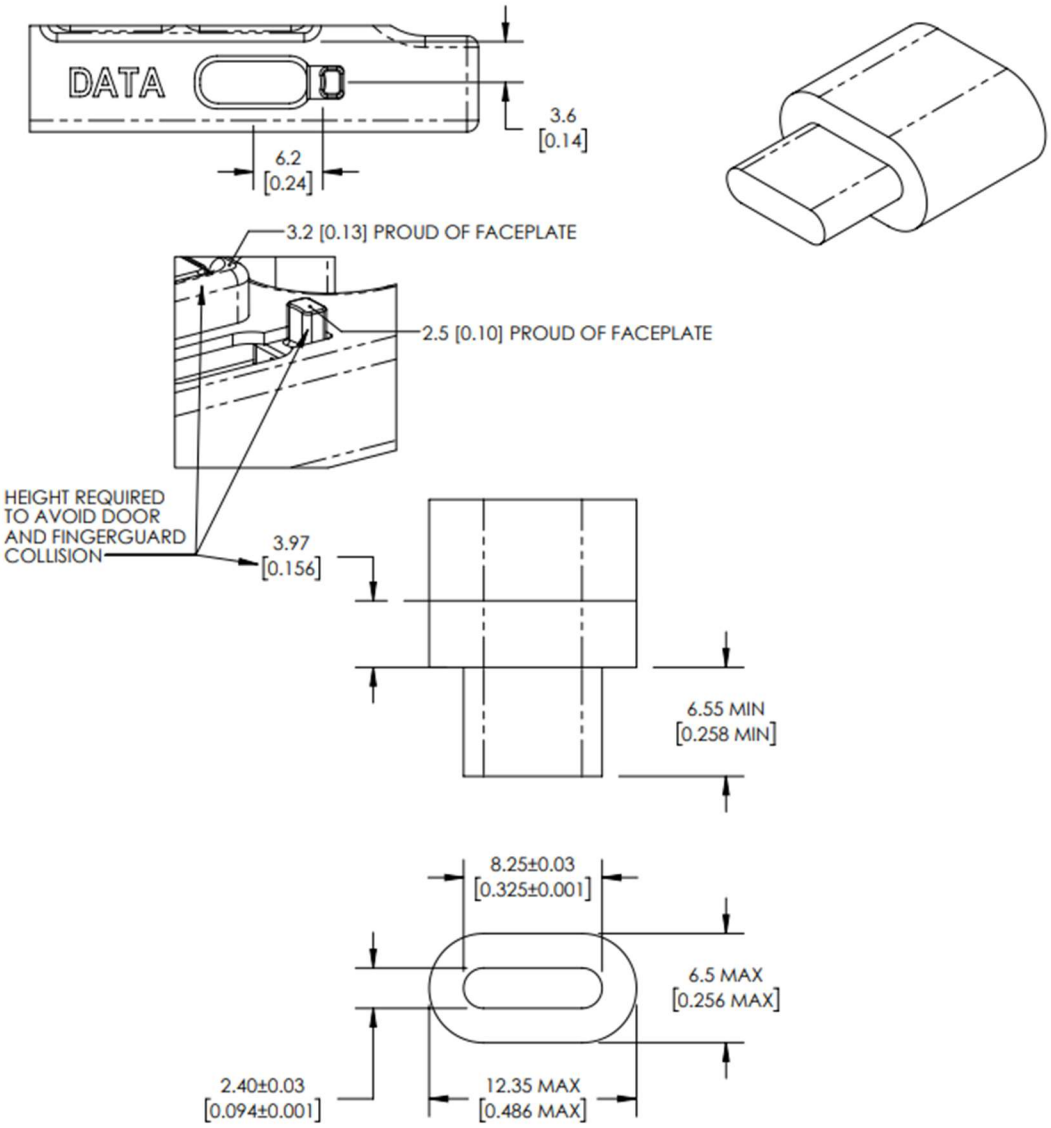

Figure 18: USB Drive Mechanical Requirements

2.26 Wideband Operation (Key Required)

To comply with FCC CFR Part 90.203, transmission of wideband channels (25 kHz) is disabled by default.

To enable this feature contact AEM Technical Support at support@aem-corp.com with the serial number of the unit to acquire a Wideband Key. Key installation steps can be found in the Installation Manual. It is the responsibility of the installer or operator to determine if they meet the regulatory exceptions to operate with this feature enabled.

2.27 Agile Operation (Key Required)

To comply with FCC CFR Part 90.203 and ISED RSS 119, modification of zones, channels, and signal lists from the front panel is disabled by default.

To enable this feature contact AEM Technical Support at support@aem-corp.com with the serial number of the unit to acquire an Agile Edit Key. Key installation steps can be found in the Installation Manual. It is the responsibility of the installer or operator to determine if they meet the regulatory exceptions to operate with this feature enabled.

2.27.1 Edit the Active Channel

1. MENU > Edit.
   - All: Choose which channel option to edit or create a new channel.
   - Name: Edit channel name.
   - RX/TX Freq: Edit channel frequency.
   - RX/TX NAC: Edit channel NAC.
   - RX/TX Tone: Edit channel tone.
   - RX/TX Code: Edit channel code.

Figure 19: Edit Menu

2.27.2 Add a Channel to the Active Zone

A new channel can be added to the Active Zone on the Agile Edit All Screen. The new channel will be added to the end of the list, set as the Active Channel, and immediately made available for editing.

To add a channel:

1. MENU > Edit > All.
2. MENU > New.

   OR

1. MENU > Functions (when configured).

2.27.3 Edit a Zone

1. MENU > More > Lists > Zones.
2. Choose a zone.
3. Choose an option.

2.27.4 Add a Channel to a Zone

1. MENU > More > Lists > Zones.
2. Choose a zone.
3. MENU > Channels.
4. MENU > New.
5. Choose the destination.

2.27.5 Edit a Channel in a Zone

1. MENU > More > Lists > Zones.
2. Choose a zone.
3. MENU > Channels.
4. Choose a channel.
5. Choose an option.

2.27.6 Copy Channels Between Zones

1. MENU > More > Lists > Channels.
2. MENU > Copy.
3. Choose:

   To: Copy the selected channel to another zone.

   From: Copy a channel from another zone into this list.

4. Complete the prompts to select the desired source or destination.

2.27.7 Edit a Signal List

1. MENU > More > Lists
2. Choose list type: Tone Lists, Code Lists, NAC Lists, or TGID Lists.
3. Choose a signal list.
4. Choose an option.

2.27.8 Edit a Signal in a Signal List

1. MENU > More > Lists
2. Choose list type: Tone Lists, Code Lists, NAC Lists, or TGID Lists.
3. Choose a signal list.
4. MENU > Tones, Codes, NACs or TGIDs.
5. Choose a signal.
6. Choose an option.

2.28 Supported Channel Signaling (CTCSS, CDCSS, NAC, TGID)

FREQ	MCODE	WCODE	FREQ	MCODE	WCODE	FREQ	MCODE	WCODE
67.0	XZ	1	118.8	2B	21	183.5	N/A[2]	56
69.3	WZ	51	123.0	3Z	22	186.2	7Z	36
71.9	XA	2	127.3	3A	23	189.9	N/A[2]	57
74.4	WA	3	131.8	3B	24	192.8	7A	37
77.0	XB	4	136.5	4Z	25	196.6	N/A[2]	58
79.7	WB[1]	5	141.3	4A	26	199.5	N/A[2]	61
82.5	YZ	6	146.2	4B	27	203.5	M1	38
85.4	YA	7	151.4	5Z	28	206.5	8Z	62
88.5	YB	8	156.7	5A	31	210.7	M2	41
91.5	ZZ	11	159.8	N/A[2]	52	218.1	M3	42
94.8	ZA	12	162.2	5B	32	225.7	M4	43
97.4	ZB	13	165.5	N/A[2]	53	229.1	9Z	47
100.0	1Z	14	167.9	6Z	33	233.6	M5	44
103.5	1A	15	171.3	N/A[2]	54	241.8	M6	45
107.2	1B	16	173.8	6A	34	250.3	M7	46
110.9	2Z	17	177.3	N/A[2]	55	254.1	0Z	63
114.8	2A	18	179.9	6B	35			

Table 13: Supported CTCSS Tones

[1] Alternative MCODE SP not supported.
[2] No MCODE assigned to this CTCSS tone. Will remain displayed in frequency format when format is set to MCODE.

CDCSS Codes							
0nn	**1nn**	**2nn**	**3nn**	**4nn**	**5nn**	**6nn**	**7nn**
017	114	205	306	411	503	606	703
023	115	212	311	412	506	612	712
025	116	223	315	413	516	624	723
026	122	225	325	423	523	627	731
031	125	226	331	431	526	631	732
032	131	243	332	432	532	632	734
036	132	244	343	445	546	654	743
043	134	245	346	446	565	662	754
047	143	246	351	452		664	
050	145	251	356	454			
051	152	252	364	455			
053	155	255	365	462			
054	156	261	371	464			
065	162	263		465			
071	165	265		466			
072	172	266					
073	174	271					
074		274					

Table 14: Supported CDCSS Codes

NAC	Description
0x000 to 0xFFF	General purpose.
0x293	Default NAC commonly used on interoperability channels and ham radio equipment.
0xF7E	Receive all. RX only, not supported on TX.
0xF7F	Not supported. Reserved by P25 standard.

Table 15: Supported NACs

TGID	Description
0x0001 to 0xFFFE	General purpose. Enables P25 Selective mode.
--	Receive all. RX only, not supported on TX. Enables P25 Normal mode.
0xFFFF	Transmit all. Will bypass any TGID setting on any other receiver on the same frequency and NAC.

Table 16: Supported TGIDs

2.29 Troubleshooting

If a problem persists or a serious problem occurs, discontinue use, and contact AEM Technical Support at support@aem-corp.com.

Problem	Solution
Unable to edit channels, zones, signal lists, or signals.	Administrator has restricted the ability to make changes using permissions or the Agile Edit Key. Contact Administrator or AEM.
Cannot hear sidetone.	Ensure Sidetone is enabled, and Sidetone Volume is sufficiently high (Radio Options Screen).
Poor audio quality.	Refer to the Installation Manual to verify installation. If issue persists, contact AEM.
Unable to transmit.	• Transmit timeout may have been reached (indicated by TX!). Re-key PTT. • Ensure Active Channel is not disabled.
Transmit power overridden to low (LO!).	Radio is overheating. Refer to the Installation Manual to verify installation. Ensure it is not installed close to high heat emitting equipment. If issue persists, contact AEM.
Hearing static or adjacent channel communication.	• Increase Squelch Threshold. • Confirm channel modulation is correctly configured.
Unable to hear a received signal.	• Increase volume. • Use Monitor to test whether squelch sensitivity or incorrect Channel Signaling is the cause of the problem. • Reduce Squelch Threshold.
Unable to use wideband modulation.	Wideband Key not installed. Contact Administrator or AEM.
Radio Fault.	Contact AEM.
CRC failure.	Contact AEM.
Unexpected restart.	Contact AEM.

Table 17: Troubleshooting

End of Section 2.0 Operation

Section 3.0 Revisions

Prepared By:	Checked By:	Approved By:
Lukas Vozenilek Software II 12-Mar-2026	Kris Erickson Designer 12-Mar-2026	Nathan Meade TS Manager 13-MAR-2026	Nikolis Andrews PRGMGR 16-Mar-2026

AEM MANUAL REVISIONS

Rev. #	ECO	Date	§	Revision Description
1.03	ECO1261	12-Mar-2026	All	Minor improvements.
			2.2, 2.4, 2.5.4, 2.10, 2.11, 2.12, 2.13, 2.21	Updated to support new and changed behavior in software rev 1.10.
1.02	ECO1239	18-Jul-2025	2.20, 2.22, 2.22.1, 2.23.3, 2.5.1	General improvements.
			2.23.4	Added USB drive requirements.
			2.5.3, 2.23.2, 2.25.1, 2.25.2.	Updated to support new and changed behavior in software rev 1.03.
1.01	ECO1220	07-Feb-2025	All	Changed all references of *MTP136D* to *MTP*.
			2.12	Changed section name *Display Brightness* to *LCD Brightness*.
			1.1, 2.12, 2.13, 2.14, 2.19.2, 2.19.3.	Updated to support new and changed behavior in software rev 1.02.
			1.5	Updated part number nomenclature.
			2.11	Added table to explain all Display Format options.
			2.18, 2.20, 2.21.	Added descriptions for Monitor Latch, Auto TX power, and Go Home features.
N/A	1.00	16-Apr-2024	All	Initial release