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Thor VM3

Vehicle-Mount Computer
with Microsoft® Windows® 7 Professional for Embedded Systems
with Microsoft® Windows® Embedded Standard 7

User Guide

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CUSTOMER SUPPORT

Technical Assistance

To search our knowledge base for a solution or to log in to the Technical Support portal and report a problem, go to www.hsmcontactsupport.com.

For our latest contact information, see www.honeywellaidc.com/locations.

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GETTING STARTED

Overview

The Thor VM3 Vehicle Mount Computer (VMC) is a rugged, vehicle mounted computer running a Microsoft® Windows® 7 Professional for Embedded Systems (64-bit) or a Windows® Embedded Standard 7 (32-bit) operating system and capable of wireless data communications from a fork-lift truck or any properly configured vehicle. Wireless communications are supported over a 802.11 WLAN network and, optionally, over a WWAN network. The Bluetooth® module supports Bluetooth printers and scanners.

⚠ **Caution: Before shipping the Thor VM3, be sure to** Disconnect UPS Battery

The Thor VM3 is designed for use with a vehicle dock. Two models of docks are supported, a Standard Dock and an Enhanced Dock. The dock installs in the vehicle and connects to vehicle power. The dock provides conditioned input power for the Thor VM3. Peripheral connections are on the dock. The Thor VM3 is designed to easily be removed from the dock with a latch on the lower rear of the Thor VM3 housing. Since the dock remains attached to the vehicle, the Thor VM3 computer can easily be moved from one vehicle equipped with a dock to another vehicle equipped with a dock.

The Thor VM3 contains a UPS battery which, when fully charged, can power the Thor VM3 for a minimum of 30 minutes. This can be when the Thor VM3 is not attached to a dock or when the Thor VM3 is attached to a dock but the vehicle power is interrupted, such as when the vehicle battery is being changed.

The Thor VM3 can be used with or without an external keyboard. There are 7 programmable keys (P1-P7) on the front bezel and, when used with the Orange modifier key, provide 7 additional programmable keys (P8-P14).

Contact Technical Assistance for information on the latest upgrades for your Thor VM3.
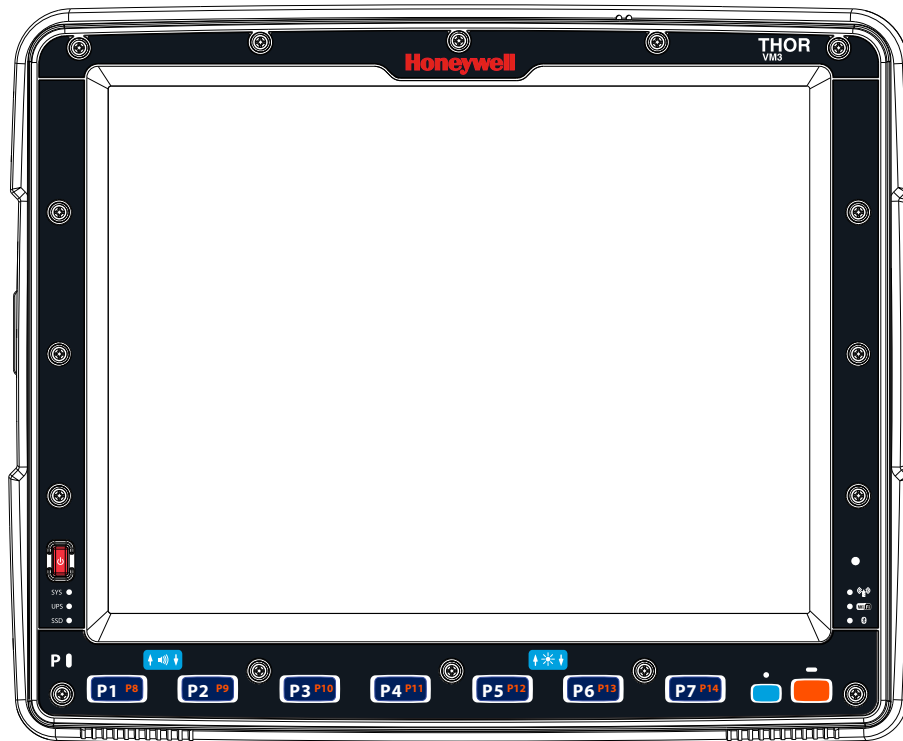
About this Guide

This user's guide has been developed for a Thor VM3 with a Microsoft® Windows® 7 Professional or Windows® Embedded Standard 7 operating system.

Out of the Box

The following items may be packaged separately:

- Thor VM3
- Standard or Enhanced Dock (includes 10-60VDC power cable)
- RAM or U-Bracket vehicle mount kit

If you ordered additional accessories for the Thor VM3, verify they are also included with the order. Keep the original packaging material in the event the Thor VM3 should need to be returned for service. For details, see Technical Assistance.

Initial Setup for Thor VM3

This page lists a quick outline of the steps you might take when setting up a new Thor VM3. More instruction for each step is listed later in this guide.

Contact Technical Assistance if you need additional help.

Hardware Setup

⚠️ **Caution: If the Thor VM3 has connectors for external antennas, do not power up the Thor VM3 without the external antennas connected. Damage to the WLAN radio may result.**

1. Install RAM Mount or Install U Bracket Mount to the vehicle.
2. Place Thor VM3 in the Dock.
3. Secure the optional external keyboard to either an integrated or remote mounting bracket.
4. Connect Cables for any peripherals.
5. Connect Power.
6. Secure all cables in Strain Relief Cable Clamps.
7. Press the Power Switch on the dock to the on position.
8. Press the Power Button on the Thor VM3.

Note: After the initial power on, the Thor VM3 can be configured to automatically power on, either when power is attached or the vehicle ignition is turned on.

9. Perform Touch Screen Calibration (not required for PCAP touch screen).

Software

This section only applies if the Thor VM3 was ordered with an operating system. For a Thor VM3 ordered without an operating system, see Thor VM3 with no Operating System.

Languages

The language selection and installation process varies by operating system:

*   The Thor VM3 with a Windows Embedded Standard 7 operating is delivered with an English operating system. Additional Language Packs are available for installation using the Region and Language control panel. The language installed is identified on the **Software** tab of the About control panel.

*   The Thor VM3 with a Windows 7 Professional operating system may be shipped with an English only operating system. Contact Technical Assistance to order a Thor VM3 Recovery DVD in a different language. The language installed is identified on the **Software** tab of the About control panel.

First Boot

The first boot (also known as the Out of Box Experience) provides initial configuration of the Thor VM3. When a Thor VM3 is ordered with a Windows 7 Professional or Windows Embedded 7 operating system, the product key is printed on a decal on the rear of the Thor VM3. It may be necessary to remove the Thor VM3 from the dock to view the product key decal. Under normal circumstances, it is not necessary to re-enter the product key as it was entered during the manufacturing process. If the Thor VM3 was ordered without an operating system, a product key must be provided by the customer to activate Windows.

When a new Thor VM3 starts up a EULA (End User License Agreement) may be displayed on the touch screen. It remains on the screen until the **Accept** or **Decline** button is tapped with a stylus.

Tap the **Accept** button to accept the EULA terms and the Thor VM3 continues the startup process. The EULA is not presented to the user again.

Tap the **Decline** button to decline the EULA and the Thor VM3 reboots. It will continue to reboot until the **Accept** button is tapped with the stylus.

Software Setup

Hardware setup should be completed before starting software setup.

1. If prompted, perform Touch Screen Calibration.
2. Set Date / Time if not set during first boot.
3. Select a Power Plan and set timers.
4. Adjust Speaker Volume.
5. Configure Bluetooth Printingand Bluetooth Scanning.
6. Set wireless client parameters using the WLAN Wireless Configuration Utility (WCU).
7. Set terminal emulation parameters.

Dock

The Thor VM3 assembly consists of two parts, the Thor VM3 computer and the dock. The Thor VM3 contains an internal UPS battery that, once fully charged, powers the Thor VM3 for a minimum of 30 minutes when the unit is not mounted in the dock.

There are three available vehicle-mount docks for the Thor VM3:

- VM1D Standard Dock
- VM3D Enhanced Dock
- VMXD Enhanced Dock

Additionally an off-vehicle dock is available for the Thor VM3 for use in environment such as an office where AC power is available:

- VMXD Enhanced Dock for Off-Vehicle Use

All docks provide:

- A mount for the Thor VM3 computer. The dock attaches to a vehicle via a RAM or U-bracket mount or to a RAM table stand for use in an office environment.
- Conditioned power for the Thor VM3. The vehicle-mount docks accept 10-60VDC power input directly or 50-150VDC power input with a DC/DC converter. The off-vehicle dock requires an AC/DC power supply.
- Mobility of the Thor VM3, since the dock remains attached to the vehicle the Thor VM3 computer can easily be moved from one vehicle equipped with a dock to another.
- I/O ports as described in the below.
- Strain relief provisions for cables.
- Headset connection via an adapter cable. When a headset is not attached, the microphone and speakers on the Thor VM3 are active.

Features of the docks are described in the following sections.

VM1D Standard Dock

⚠ **Caution: This dock is designed for DC power vehicle-mounted applications only.**

SKUs	VM1001VMCRADLE (with RAM ball) VM1002VMCRADLE VM1003VMCRADLE
Power Connection	Direct or DC/DC power supply
Serial Ports	COM1 and COM2
USB Ports	USB port provides host connection via an adapter cable. This port also supports Honeywell external keyboards.
Ethernet	N/A
CANbus	CANbus connection via an adapter cable
Audio	Headset connection via an adapter cable
Screen Blanking	Supported via COM1 and COM2 connectors.
Ignition Control	Supported

VM3D Enhanced Dock

Caution: **This dock is designed for DC power vehicle-mounted applications only.**

SKU	VM3001VMCRADLE
Power Connection	Direct or DC/DC power supply
Serial Ports	COM1 and COM2
USB Ports	USB1 port provides host connection via an adapter cable. This port also supports Honeywell external keyboards. USB2 port provides two USB host ports via an adapter cable. Direct USB host connection on top of dock.
Ethernet	RJ-45 Ethernet connection on top of dock.
CANbus	CANbus connection via an adapter cable
Audio	Headset connection via an adapter cable
Screen Blanking	Supported via COM1 and COM2 connectors.
Ignition Control	Supported

VMXD Enhanced Dock

> ⚠️ **Caution: This dock is designed for DC power vehicle–mounted applications only.**

This dock is designed for use when the Thor VM3 is replacing a Thor VX8 or Thor VX9. This dock utilizes the existing vehicle wiring from the earlier computer and supports screen blanking through that wiring.

SKUs	VMX004VMCRADLE
Power Connection	Designed to connect to existing Thor VX8 or Thor VX9 power cable only, using existing DC/DC power supply
Serial Ports	COM1 and COM2 (see note below)
USB Ports	USB1 port provides host connection via an adapter cable. This port also supports Honeywell external keyboards. USB2 port provides two USB host ports via an adapter cable. Direct USB host connection on top of dock.
Ethernet	RJ-45 Ethernet connection on top of dock.
CANbus	CANbus connection via an adapter cable
Audio	Headset connection via an adapter cable
Screen Blanking	Supported via power cable connector. (see note below)
Ignition Control	Not supported

Note: *For the VMX Enhanced Dock: COM1 is used for screen blanking (via the power cable connector) and is unavailable when the screen blanking box is attached. When a screen blanking box is attached, any external serial device such as a scanner, must be connected to the COM2 port on the dock. If a screen blanking box is not connected via the power cable, the COM1 port on the dock is available for a serial device.*

VMXD Enhanced Dock for Off-Vehicle Use

⚠ **Caution: This dock is designed for AC power (non vehicle-mounted) applications only.**

SKU	VMX005VMCRADLE
Power Connection	AC/DC Adapter
Serial Ports	COM1 and COM2
USB Ports	USB1 port provides host connection via an adapter cable. This port also supports Honeywell external keyboards. USB2 port provides two USB host ports via an adapter cable. Direct USB host connection on top of dock.
Ethernet	RJ-45 Ethernet connection on top of dock.
CANbus	CANbus connection via an adapter cable
Audio	Headset connection via an adapter cable
Screen Blanking	Supported via COM1 and COM2 connectors.
Ignition Control	Not supported

Additional Connectors

External antenna connectors may be present on the back of the Thor VM3. The connectors may include:

- 802.11 WLAN antenna connectors, used when the Thor VM3 is not equipped with internal antennas.

- External GPS antenna connector, when the Thor VM3 is equipped with GPS.

- External WWAN antenna connectors, when the Thor VM3 is equipped with WWAN. Optional WWAN radio (available in North America, Europe, New Zealand, and Australia only).

> ⚠ **Caution: If the Thor VM3 has connectors for external antennas, do not power up the Thor VM3 without the external antennas connected. Damage to the WLAN radio may result.**

Scanners

The Thor VM3 supports external scanners. These scanners may be:

- A tethered scanner attached to a serial port. See Connect a Tethered Scanner for details on connecting a serial scanner. See Enterprise Settings for information on processing scanned bar code data.

- A tethered scanner attached to a USB port. See USB Scanner for details on connecting a USB scanner. See Enterprise Settings for information on processing scanned bar code data.

- A Bluetooth scanner. See Bluetooth Scanning for details on connecting a Bluetooth scanner. See Enterprise Settings for information on processing scanned bar code data.

Components

Front View – Thor VM3

Microphone

Power
Button

Ambient
Light
Sensor

Speakers

Back View – Thor VM3

External Antenna Connectors

WiFi (MAIN)

WAN (MAIN)   WAN (AUX)

WiFi (AUX)

- WiFi
- RADIO

- WWAN
- RADIO

USE CAUTION REMOVING DOOR.
CABLES ATTACHED

WWAN
Antenna
Cable
Access
Panel

mSATA/mPCIe   SIM 1
SIM 2

mSATA

SIM
Card
and
mSATA
Access
Panel

Provision for
Laptop Security
Cable

Dock
Contact
Pads

Provision for Padlock

Quick Release Handle
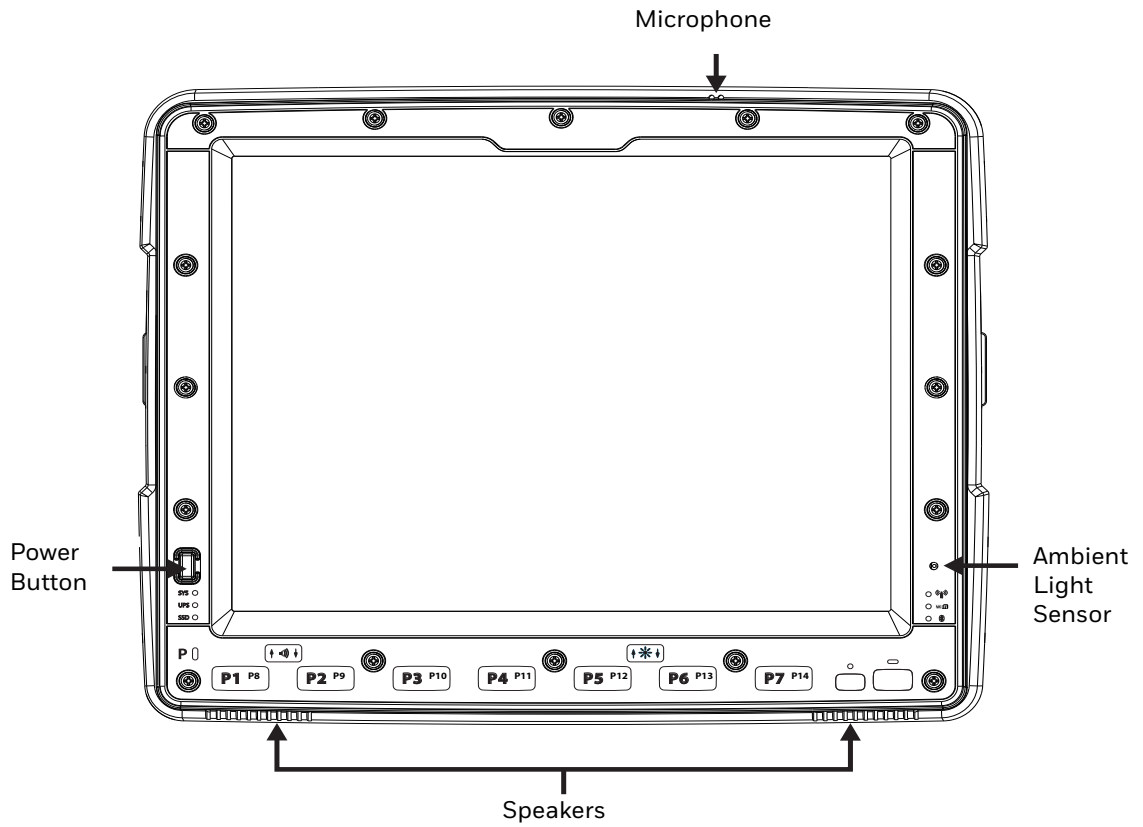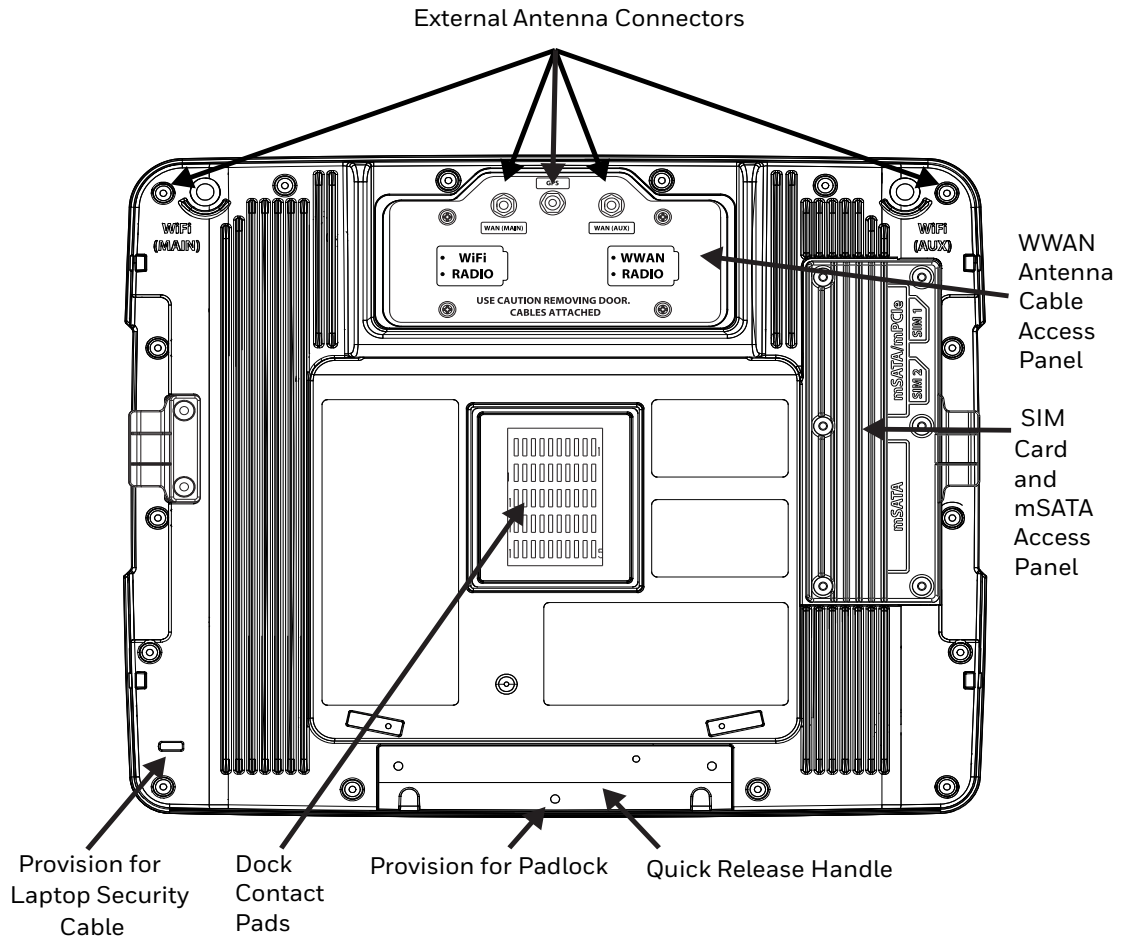
Access Panels – Thor VM3

SIM and mSATA Card Access Panel with door removed

mSATA expansion card slot

UPS Disconnect   SIM card slots
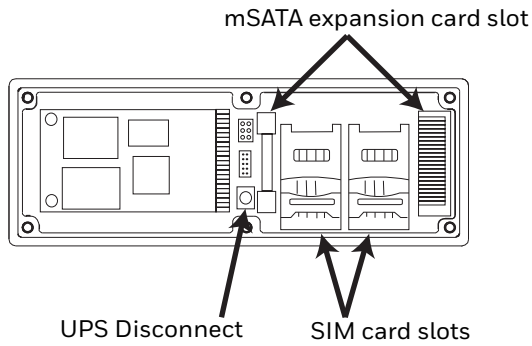
Front View - Dock

Standard Dock
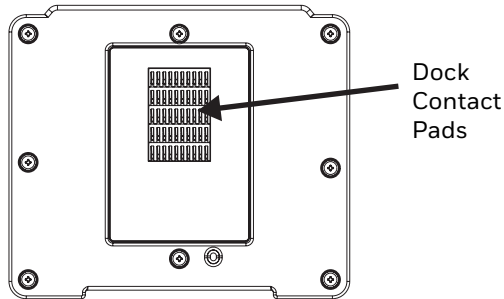
Dock
Contact
Pads

Enhanced Dock

The Enhanced Dock has a foam surround around the dock contact pad.

Dock
Contact
Pads

Foam
Surround
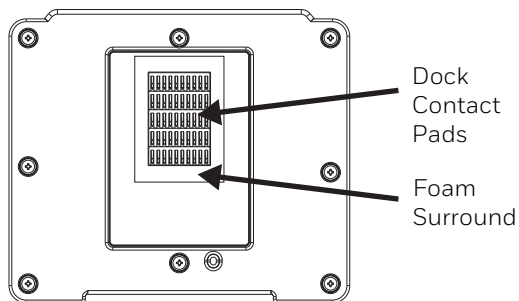
Back View - Dock

The connectors on the back of the dock vary by dock model.

Standard Dock
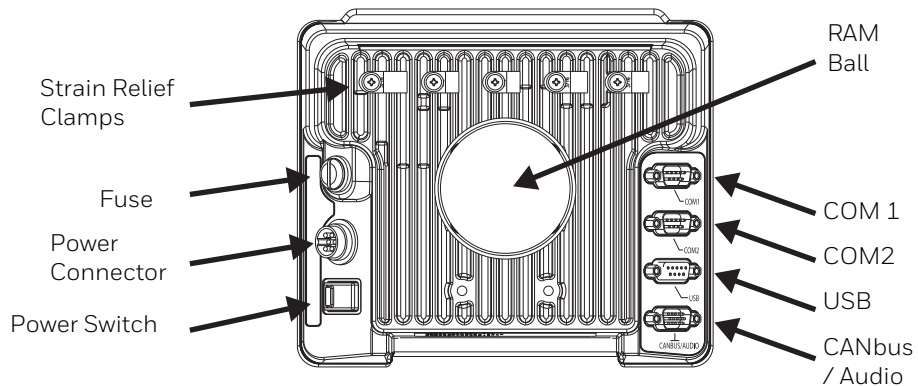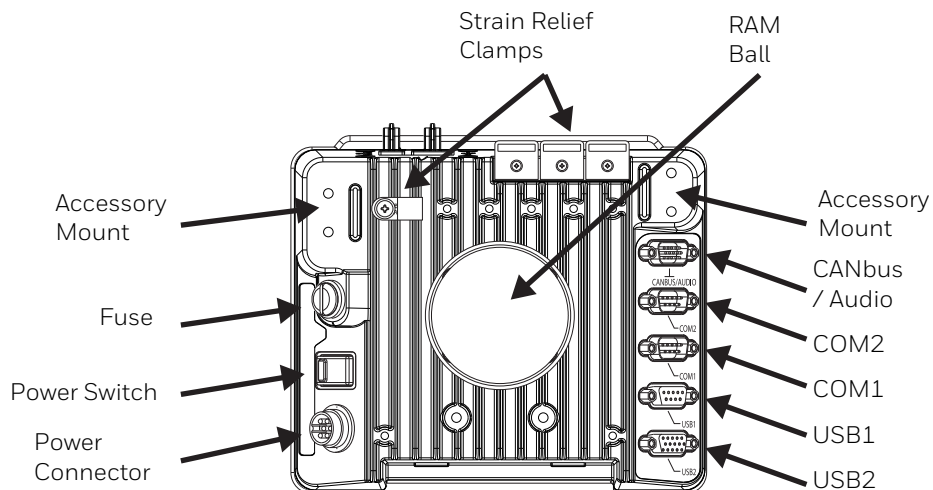
- Strain Relief Clamps
- Fuse
- Power Connector
- Power Switch
- RAM Ball
- COM 1
- COM2
- USB
- CANbus / Audio

Enhanced Dock

- Strain Relief Clamps
- RAM Ball
- Accessory Mount
- Fuse
- Power Switch
- Power Connector
- Accessory Mount
- CANbus / Audio
- COM2
- COM1
- USB1
- USB2

Note: *For the VMX Enhanced Dock: COM1 is used for screen blanking (via the power cable connector) and is unavailable when the screen blanking box is attached. When a screen blanking box is attached, any external serial device such as a scanner, must be connected to the COM2 port on the dock. If a screen blanking box is not connected via the power cable, the COM1 port on the dock is available for a serial device*

Top View - Enhanced Dock

Only the Enhanced Dock has these connectors on the top. The connectors are located behind water tight plugs.

USB Host   Ethernet
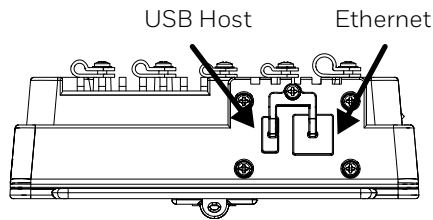
Backlights and Indicators

Display Backlight

There are several configuration options for the Thor VM3 display backlight:

Power Management

The display backlight is controlled by power management. When the user activity timer expires, the display backlight is turned off. Timeouts can be set for the available power management schemes.

See Power Options for configuration options.

Backlight Brightness

The intensity of the display backlight can be manually configured:

1. Press the **Blue** key to enter Blue mode

2. Press the **P5** key to increase backlight brightness or the **P6** key to decrease backlight brightness.

3. Press the **Blue** key to exit Blue mode.

Refer to the Screen Control panel for the current display brightness level.

Screen Blanking

The Thor VM3 can be configured to blank (blackout) the display while the vehicle is in motion.

Refer to ZoomZone for information.

Keypad Backlight

By default, the integrated keypad backlight follows the display backlight. The integrated keypad backlight can be disabled.

To change this behavior, see the Options control panel.

The external USB keyboard backlight is manually controlled.

Speaker Volume

The speaker volume can be adjusted via the Thor VM3 keypad:

1. Press the **Blue** key to enter Blue mode
2. Press the **P1** key to increase speaker volume or the **P2** key to decrease speaker volume.
3. Press the **Blue** key to exit Blue mode.

The current volume level can be viewed on the Sounds control panel or via the system tray speaker icon. These items can also be used to adjust speaker volume.

Power Up

⚠️ If a USB drive, such as a thumb drive is attached to the Thor VM3, the device may attempt to boot from the USB drive. Remove the USB drive and power up the Thor VM3 again.

The dock has a power switch on the back.
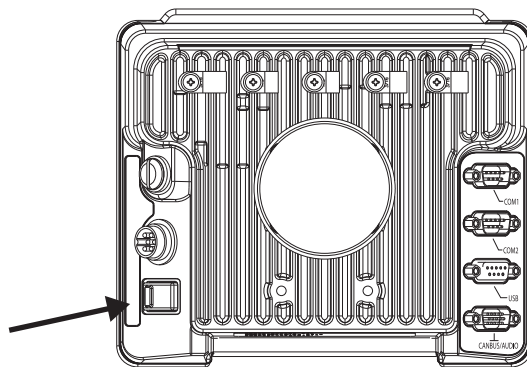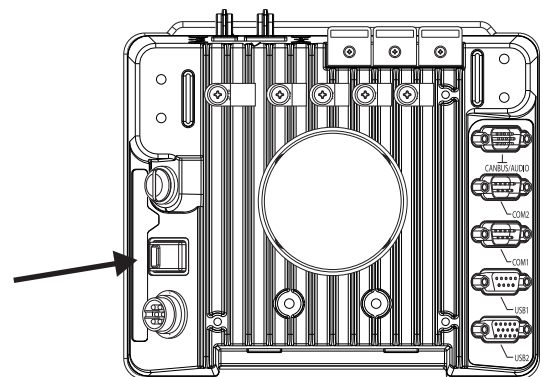
Standard Dock   Enhanced Dock

The "On" side of this rocker switch has a raised bump to allow the state of the switch to be determined when the switch may not be easily viewed, for example, after the dock is mounted in a vehicle.

After external power has been connected and the Thor VM3 has been mounted in the dock, press the side of the power switch with the raised bump to pass power from the dock to the Thor VM3.

Next locate the power button on the front of the Thor VM3.
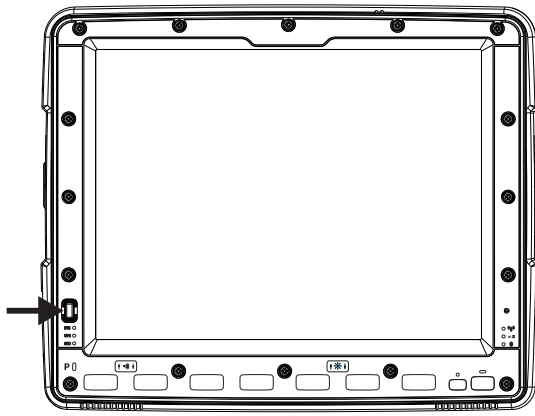
Press the power button to turn the Thor VM3 on. When the Windows desktop is displayed or an application begins, the power up sequence is complete.

After initial power on, the Thor VM3 can be configured to automatically power on. See Power Controls for more information.

Rebooting the Thor VM3

⚠ If a USB drive, such as a thumb drive is attached to the Thor VM3, the device attempts to boot from the USB drive:

- If the USB drive contains a bootable sector, the Thor VM3 boots from the USB drive.
- If the USB drive does not contain a bootable sector, the Thor VM3 does not boot. Remove the USB drive and boot the Thor VM3 again.

Restart

Restart performs a controlled shutdown of the Thor VM3 and then restarts the device.

- If an optional keyboard is attached, use the **Ctrl** + **Alt** + **Del** keypress sequence to start the task manager. Tap the **Shut Down** button and select **Restart** from the pull-down list. Tap the **OK** button to restart the Thor VM3.
- Select **Start** > **Shut Down** > **Restart** and tap **OK** to restart the Thor VM3.
- Use the **P1** + **P7** + **Orange** key press sequence to reboot the Thor VM3. The keys must be pressed in sequence; they do not need to be held down simultaneously.

Tapping the Touch Screen with a Stylus

Note: *Always use the point of the stylus for tapping or making strokes on the touch screen.*

Never use an actual pen, pencil, or sharp/abrasive object to write on the touch screen.

Hold the stylus as if it were a pen or pencil. Touch an element on the screen with the tip of the stylus then remove the stylus from the screen.

Firmly press the stylus into the stylus holder when the stylus is not in use.

Using a stylus is similar to moving the mouse pointer then left-clicking icons on a desktop computer screen.

Using the stylus to tap icons on the touch screen is the basic action that can:

- Open applications
- Choose menu commands
- Select options in dialog boxes or drop-down boxes
- Drag the slider in a scroll bar
- Select text by dragging the stylus across the text
- Place the cursor in a text box prior to typing in data
- Place the cursor in a text box prior to retrieving data using a scanner/imager.

A right-click can be simulated by touching the touch screen with the stylus and holding it for a short time.

A stylus replacement kit is available.

Note: *The stylus is different for a Thor VM3 with a PCAP touch screen and one with a resistive touch screen. Be sure the stylus is the correct type for the touch screen installed in the device.*

When a dialog box is too large for the display, tap and drag the dialog box up or down or from side to side to view the remainder of the dialog box.

Setup Terminal Emulation Parameters

The Thor VM3 offers both RFTerm and Enterprise TE. For details on configuring these terminal emulators, refer to the appropriate user's guide at www.honeywellaidc.com.

Note: *RFTerm is obsolete.*

Cleaning

Cleaning the Thor VM3 and the Dock

Dampen a cloth with the cleaner and then wipe the surface. Do not spray the cleaner directly onto the Thor VM3 or the dock. Avoid harsh chemicals. The following cleaners are recommended:

- Windex® Glass Cleaner
- Formula 409® All-Purpose Cleaner or Glass and Surface Cleaner
- Fantastik® All Purpose Cleaner
- Liquid hand soap

Cleaning the Touch Screen

Note: These instructions are for components made of glass. If there is a removable protective film sheet on the display, remove the film sheet before cleaning the screen.

Keep rough or sharp objects away from the Thor VM3 touch screen and, if installed, the bar code reader scanning aperture.

If the glass becomes soiled or smudged, clean only with a standard household cleaner such as Windex® without vinegar or use isopropyl alcohol. Dampen the cloth with the cleaner and then wipe the surface.

Do not use paper towels or harsh-chemical-based cleaning fluids since they may result in damage to the glass surface. Use a clean, damp, lint-free cloth.

Do not scrub optical surfaces. If possible, clean only those areas which are soiled. Lint and particulates can be removed with clean, filtered canned air.

Startup Help

Contact Technical Assistance if you need more help.

Thor VM3 seems to lockup as soon as it is rebooted.	There may be slight delays while the wireless client connects to the network, authorization for voice-enabled applications complete, and Bluetooth relationships establish or re-establish. When an application begins, the Thor VM3 is ready for use.

3

HARDWARE OVERVIEW

System Hardware

802.11a/b/g/n Wireless Client

The Thor VM3 has an 802.11a/b/g/n network card that supports diversity with two internal or external antennas. Power management for the network card is configured with the WLAN Wireless Configuration Utility (WCU).

Central Processing Unit

The CPU is a 1.5 GHz Dual Core Intel Atom processor.

The operating system is Microsoft Windows Embedded Standard 7 or Windows 7 Professional.

The OS image is stored on an internal mSATA memory card and is loaded into DRAM for execution.

Input/Output Components

The Thor VM3 supports the following I/O components of the core logic:

- Two 9-pin RS-232 serial ports, COM1 and COM2, on dock.
- One slot for mSATA card for operating system storage.
- Second slot for mSATA memory card for storage expansion.
- Integrated keyboard with programmable keys.
- Ports available via adapter cables on dock: USB host port, CANbus, Audio. Direct connections on Enhanced Dock: Ethernet and USB host.

System Memory

Main system memory is 2 or 4 GB SDRAM.

Video Subsystem

The Thor VM3 video subsystem consists of a color TFT display. The video subsystem complies with the VESA VL bus standard. The resolution of this display is 800 x 600 or 1024 x 768 pixels. This resolution complies with the SVGA graphics industry standard.

The display supports screen blanking to eliminate driver distraction when the vehicle is in motion.

Audio Interface

Speakers are located on the bottom front of the Thor VM3. A headset adapter cable provides a connection for headset operation. When a headset is plugged into the adapter cable, the main speakers are disabled.

A microphone is located at the upper right of the Thor VM3 display, near the Thor VM3 emblem. When a headset is plugged into the adapter cable, the internal microphone is disabled.

Card Slots

mSATA Slots

There are two mSATA slots. The lower slot contains an mSATA card loaded with the operating system.

The upper slot is available for a factory installed or a user installable mSATA card for storage expansion.

Bluetooth

The Thor VM3 contains Bluetooth version 2.0 with Enhanced Data Rate (EDR) up to 3.0 Mbit/s over the air. Bluetooth device connection (or pairing) can occur at distances up to 32.8 ft (10 meters) Line of Sight. The wireless client retains wireless connectivity while Bluetooth is active.

The user cannot select PIN authentication or encryption on connections from the Thor VM3. However, the Thor VM3 supports authentication requests from pairing devices. If a pairing device requests authentication or encryption, the Thor VM3 displays a prompt for the PIN or passcode. Maximum encryption is 128 bit. Encryption is based on the length of the user's passcode.

Bluetooth simultaneously supports one printer as a slave Bluetooth device and one scanner, either as a slave or as a master Bluetooth device.

* The LED on the Bluetooth scanner illuminates during a scanning operation.
* Multiple beeps may be heard during a bar code scan using a mobile Bluetooth scanner. The mobile Bluetooth scanner may beep as the bar code data is accepted/rejected and the Thor VM3 may beep during final bar code data manipulation.

WWAN (Wireless Wide Area Networking) is available on the Thor VM3. Two slots are provided for SIM cards.

Power

Vehicle DC Power Supply

⚠️ **Caution: Vehicle DC power supply connections require a DC-compatible Dock.**

Vehicle power input for the Thor VM3 dock is 10V to 60V DC and is accepted without the need to perform any manual operation within the Thor VM3 dock, see 12-48 VDC Vehicles (10-60 VDC Direct Connection). The dock provides a conditioned power output for the Thor VM3. By using a specified DC/DC power supply, input voltage of 50-150V DC can be accepted, see 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid) or 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid).

Power input is fused for protection and the fuse is externally accessible, see Fuse.

External AC Power Supply

If DC power is not available – for example, in an office environment – an optional external Universal Input Power Supply can be used to convert AC wall power to an appropriate DC level. AC to DC power input for the Thor VM3 is delivered to the dock via an optional external power supply and adapter cable. See External AC/DC Power Supply.

Uninterruptible Power Supply

The Thor VM3 contains an internal UPS battery.

The UPS battery is automatically charged when the Thor VM3 is placed in a powered dock, provided the safe charging temperature conditions below are met.

When external power is removed, the UPS automatically powers the Thor VM3 with no user intervention. When running on UPS power, the power management timeouts may be different than when vehicle power is applied.

The UPS allows the Thor VM3 to continue operation when not mounted in a dock or when the vehicle battery is being swapped. When fully charged the UPS battery is designed to power the Thor VM3 for a minimum of 30 minutes at temperatures of -30ºC (-22ºF) or greater.

If operating on UPS power and the UPS battery becomes critically low, the Thor VM3 performs a controlled shutdown.

If there is no external power available, there must be 35% or greater power in the UPS battery or the Thor VM3 does not power on.

The UPS status LED and the Battery Control Panel can be used to monitor the state of

To determine the safe temperature charging range, it is necessary to view the Battery FW Version on the **About** tab.

If the Battery FW Version is **3** or lower:

⚠ Safety requirements restrict the temperature at which the Li-Ion UPS battery can be charged. Charging is disabled if the temperature is outside of the -20ºC to 60ºC safe charging range. In order to maintain UPS charge the Thor VM3 should have power applied while the unit is within the safe charging range for at least an hour each day.

If the Battery FW Version is **4** or higher:

⚠ Safety requirements restrict the temperature at which the Li-Ion UPS battery can be charged. Charging is disabled if the temperature is outside of the 0ºC to 35ºC safe charging range. In order to maintain UPS charge the Thor VM3 should have power applied while the unit is within the safe charging range for at least an hour each day.

Safe Charging Temperature Range

The temperature of the Thor VM3 is the trigger for UPS battery charging.

- If the Battery FW Version is 3 or lower:
  - The UPS battery is not charged when the internal Thor VM3 temperature is below -20ºC (-4ºF). This corresponds to an ambient (room) temperature of approximately -30ºC (-22ºF)
  - The UPS battery is not charged when the internal Thor VM3 temperature is above 60ºC (140ºF). This corresponds to an ambient (room) temperature of approximately 50ºC (122ºF)
- If the Battery FW Version is 4 or higher:
  - The UPS battery is not charged when the internal Thor VM3 temperature is below 0ºC (32ºF). This corresponds to an ambient (room) temperature of approximately -10ºC (-14ºF).
  - The UPS battery is not charged when the internal Thor VM3 temperature is above 45ºC (113ºF). This corresponds to an ambient (room) temperature of approximately 35ºC (95ºF).
- Move the Thor VM3 to a different location to charge the UPS battery.

When the Thor VM3 is operated in an environment where the UPS battery is not able to charge due to temperature extremes, the Thor VM3 should be removed to a location within the safe charging temperature range during off hours. A discharged UPS battery cannot protect against data loss in the event vehicle power is interrupted.

Charging Timeout

- A fully discharged UPS battery normally recharges in less than 4 hours when the Thor VM3 is in a powered dock and within the safe charging temperature range.
- If the UPS battery is not charged before an 8 hour timeout period expires, the UPS Status LED then flashes super-fast red.

- If the charge timeout occurs, remove the Thor VM3 from the dock and Disconnect UPS Battery. Reinstall the Thor VM3 in the dock and power on.

Charging and Power Management

- Charging does not occur when either Ignition Mode power scheme/plan is selected and the ignition is inactive.

- Charging of the UPS battery continues when the Thor VM3 is in power management (user idle, system idle or suspend modes).

- Charging of the UPS battery continues when the Thor VM3 is in power management (display off, sleep or hibernate modes).

Backup Battery

The Thor VM3 has a permanent Lithium battery installed to maintain time, date and CMOS setup information for a minimum of 90 days. The lithium battery is not user serviceable and should last four years with normal use before it requires replacement.

⚠️ **Warning:** **Improper replacement or repair could damage the battery, cause overheating, risk of explosion, and result in injury. The battery should be disposed of properly. The battery should not be disassembled or crushed. The battery should not be heated above 212˚F (100˚C) or incinerated. The battery must be recycled or disposed of separately from household waste.**

Note: *The backup battery should only be changed by authorized service personnel.*

Fuse

Standard Dock   Enhanced Dock
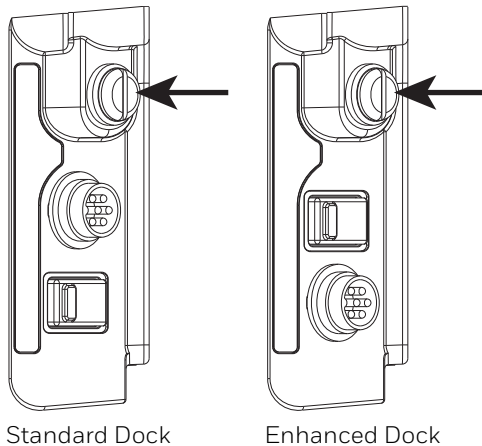
The Thor VM3 uses an 8A time delay (slow blow) fuse that is externally accessible and user replaceable. The fuse is located on the back of the dock. The fuse is accessed by unscrewing the cap as indicated.

Should it need replacement, replace with same size, rating and type of fuse:

*   **Littelfuse 0215008.MXP**
*   **Cooper Bussmann BK1/S506-8-R**
*   **Bel Fuse 5HT 8-R**

or equivalent.

Fuse has voltage on it even when power is off. Always disconnect input power before changing the fuse.

Power Management Modes

The Thor VM3 has four power modes: Full On, Sleep, Hibernate and Off.

Full On Mode

When the Thor VM3 is attached to either vehicle power or an external power supply or is operating from the UPS battery and the power button is pressed, the Thor VM3 is in the On mode. In this mode, the keypad, touch screen and any attached peripherals such as a scanner function normally. The display remains on until the display, standby or hibernate timer (if enabled) expires.

When in Full On mode, the status LED is solid green.

If the Thor VM3 is Full On, a press of the power button can be configured to put the unit in Standby. See the Choose What the Power Button Does.

Sleep Mode

When the sleep timer expires without a primary event occurring, the Thor VM3 transitions to Sleep mode. Pressing the power button exits Sleep mode and transitions the Thor VM3 to Full On.

When in Sleep mode, the status LED:

• blinks green very slowly if external power is attached.

• is off if external power is not attached.

By default, power is turned off to the USB port when the Thor VM3 is in Standby/Sleep mode.

The Thor VM3 can be configured to provide power to the USB port in Standby/Sleep using the Options control panel.

Hibernate Mode

When the Thor VM3 enters hibernate mode, all LEDs are off. Pressing the power button returns the Thor VM3 to Full On.

When in Hibernate Mode, the status LED:

• blinks green very slowly if external power is attached.

• is off if external power is not attached.

Power is turned off to the USB port when the Thor VM3 is in Hibernate.

Off Mode

By default, pressing the power button shuts down the Thor VM3. This behavior can be modified. See Choose What the Power Button Does.

The Thor VM3 is also off when it is not connected to a power source and the UPS battery is depleted. However, an internal Real Time Clock (RTC) powered by an internal battery maintains the date and time while the Thor VM3 is off.

Power Controls

Power Switch
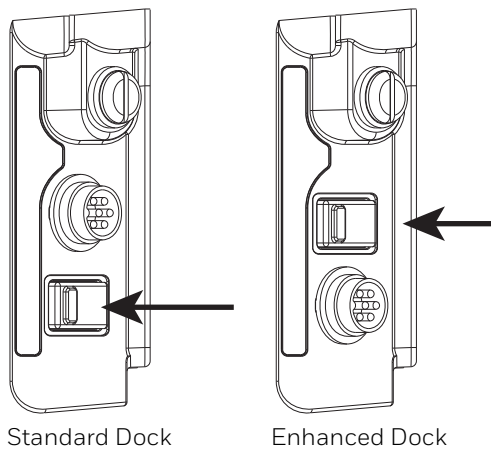
After all cables are connected, the Thor VM3 can be powered on.

There is a power switch located on the back of the dock. The power switch is a rocker switch.

The power switch has a raised bump to identify the switch position even when it is hidden from view. When the side of the switch with the raised bump is pressed, the power switch is On. If the dock is connected to external power, the dock delivers power to the Thor VM3.

Standard Dock   Enhanced Dock

Generally, once the dock is powered On, there is no need to power it off. The dock power can remain On even when the Thor VM3 is not attached.

Power Button
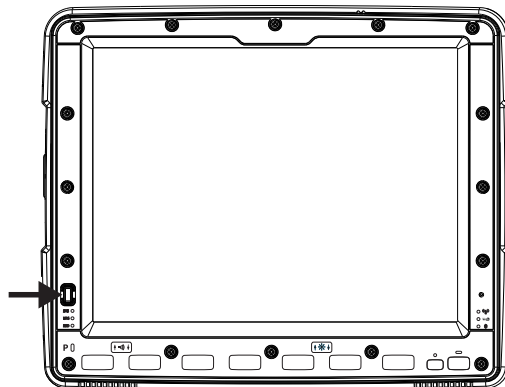
The power button is located at the lower left of the Thor VM3.

If the Thor VM3 is Off, pressing the power button starts the power up sequence.

Note: *This assumes that the Thor VM3 is docked in a powered dock or that the internal UPS battery has a sufficient charge to power the Thor VM3. If no external power is available and the UPS battery does not have a charge, pressing the power button causes no action.*

If the Thor VM3 is On, pressing the power button performs the option selected in the **Advanced** tab of the Power control panel (options may vary by OS type):

- Ignore power button press
- Prompt the user to select action
- Shut down (default, an orderly shutdown is performed)
- Standby/Sleep
- Hibernate

Power Configuration

Use the Power Options control panel to select the desired power scheme/plan.

For information on the Ignition input signal see Vehicle 10-60VDC Direct Power Connection and Auto-On Control Wiring Diagram.

AC/DC

The Thor VM3 is designed to power on whenever external power is attached. When external power is present, the "Plugged In" power management timeouts are used,

Ignition Control

The Thor VM3 is configured to power on when the vehicle ignition is switched on. When either Ignition Control/Ignition On or Ignition Control/Ignition Off is selected and external power is present, the Thor VM3 uses the "Pugged In" power management plan/scheme settings which corresponds to the state of the vehicle ignition.

Auto-On

The Thor VM3 is designed to power on whenever external power is present. When external power is present, the "Plugged In" power management timeouts are used.

UPS

The Thor VM3 uses the UPS mode whenever external power is not available. When external power is not present, the "Running on Batteries" or "On battery" power management timeouts from the selected power scheme/plan are used.

External Connectors

Power the Thor VM3 off before attaching a cable to any port (serial, USB, Audio/CAN, etc.).

The external I/O connectors for the Thor VM3 are located on the right side of the dock (when viewed from the back).

The Power Supply Connector is on the left side of the dock (when viewed from the back).

Antenna connectors are located on the top rear of the Thor VM3.

Serial Connector (COM1 and COM2)

Standard Dock

Enhanced Dock
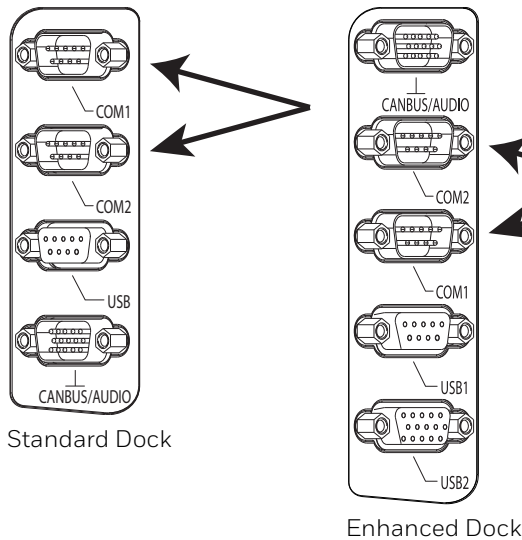
The COM1 and COM2 connectors are D-9 male connectors located on the back of the dock.

Power the Thor VM3 off before attaching a cable to any port (serial, USB, Audio/CAN, etc.).

The serial connectors are industry-standard RS-232, PC/AT standard 9–pin "D" male connector. See COM1 and COM2 Connector for connector pinout detail.

See Connect Serial Device for more information.

If a COM port is not being used for a scanner, it can be used for Screen Blanking when the vehicle is in motion.

Screen Blanking

The screen blanking signal can be provided either by a Honeywell Screen Blanking Box or a user supplied switch or relay. See Screen Blanking for information on connecting screen blanking accessories.

USB Connector(s)
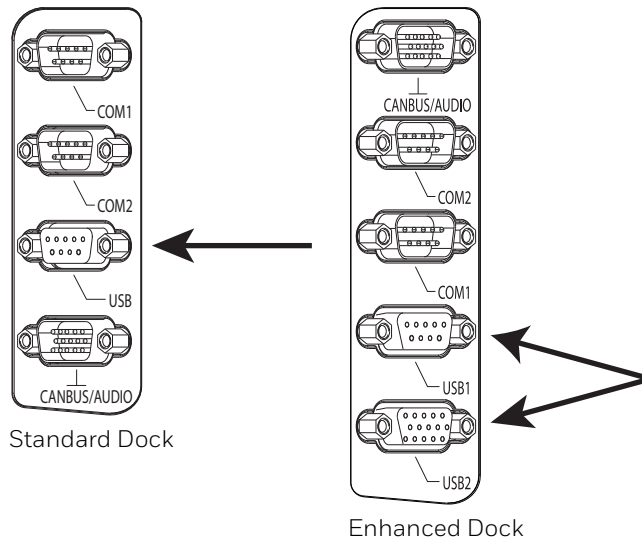
The USB or USB1 connector is a D-9 female connector located on the back of the dock. See USB and USB1 Connector for connector pin-out detail.

The USB-2 connector is a D-15 female connector located on the back of the dock. See USB2 Connector for connector pinout detail.

Power the Thor VM3 off before attaching a cable to any port (serial, USB, Audio/CAN, etc.).

Standard Dock

Enhanced Dock

An additional USB host port is located on the top of the Enhanced Dock. Lift the cover to access the USB port.
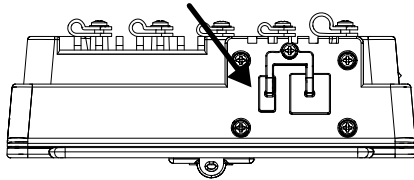
Ethernet Connector

An Ethernet port is located on the top of the Enhanced Dock. Lift the cover to access the Ethernet port.

CANbus / Audio Connector

Standard Dock

Enhanced Dock
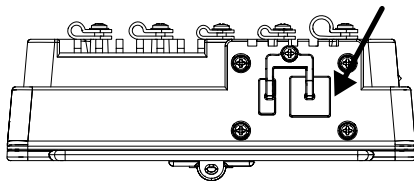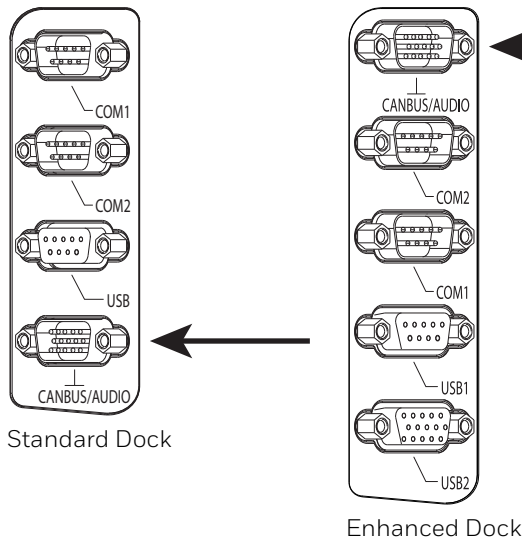
The CANbus/Audio connector is a D-15 male connector located on the back of the dock.

The connector supports a headset adapter cable or a CANbus cable. The Thor VM3 does not support connecting audio and CANbus simultaneously.

See CANbus / Audio Connector for connector pinout detail.

A headset cable attaches to the CANbus / Audio connector and provides a quick connect connection for a headset. See Connect Headset Cable for more information.

The CANbus Y cable has a 9 pin F SAE J1939 (Deutsch) and 9 pin M SAE J1939 (Deutsch) connector. See Connect CANbus Cable for more information.

The CANbus interface is a virtual COM4 port. This port can be accessed using standard Windows API calls.

Power Supply Connector

Standard Dock   Enhanced Dock
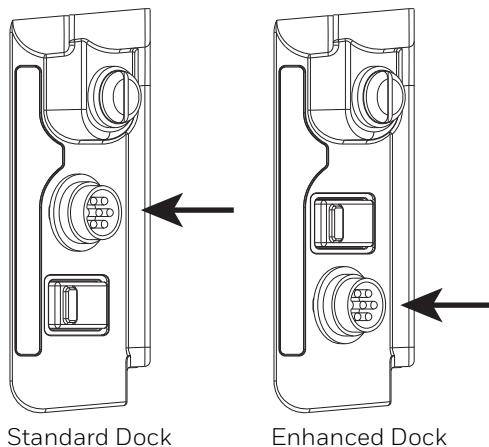
Power is supplied to the Thor VM3 through the power connector. Additionally this assembly provides a connection point for the vehicle's chassis ground to be connected internally to the conductive chassis of the computer.

The Thor VM3 internal power supply can accept DC input voltages in the range of 10 to 60 Volts DC when using the VM1D standard dock or VM3D enhanced docks. Other docks have different power requirements. See Dock for details.

See Power Supply Connector for connector pinout detail. See Connect Power for more information on connecting power to the Thor VM3.

Antenna Connections
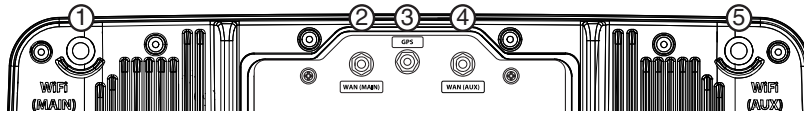
The Thor VM3 is equipped with an 802.11 radio and can be ordered with internal antennas, external antennas or external remote mount antennas. When the Thor VM3 is ordered with internal antennas, the external antenna connectors are not used. GPS and WWAN are optional on the Thor VM3 and require external remote mount antennas.

1. WI-FI (MAIN) 802.11 Main External Antenna Connector

2. WAN (MAIN) (Blue label) Main WWAN Antenna Connector

3. GPS (Green label) GPS Antenna Connector

4. WAN (AUX) (Blue label) Auxiliary WWAN Antenna Connector

5. WI-FI (AUX) 802.11 Auxiliary External Antenna Connector

External Antenna Connector
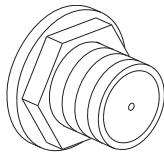
When the Thor VM3 is ordered with the internal antenna option, the 802.11 antenna connectors on the back are not connected to the 802.11 radio. Instead the internal antenna connector is connected to the 802.11 radio.

Remove the rubber cap, if present, from the antenna connector before connecting an external antenna.

Internal 802.11 Antenna

If the internal 802.11 antenna option is ordered, antennas are mounted inside the Thor VM3. The internal antennas are not user accessible.

Vehicle Remote Antenna

The external antennas can be remotely mounted on the vehicle. See Install Remote Antenna for instructions. External antenna kits are available for the 802.11 Wi-Fi radio, GPS and WWAN.

Keyboard Options

The integrated keypad contains seven programmable keys, a blue modifier key and an orange modifier key.

The **P1** though **P7** keys are user programmable.

- When used with no modifier key, **P1** through **P7** can be configured for a user programmable function.

- When used with the **Orange** modifier key, **P1** through **P7** provide secondary programmable keys, **P8** through **P14**, and can be configured for a user programmable function.

- The programmable keys can be remapped to provide a single keypress, a string of keypresses or to execute an application or command. Key remapping is configured via the Programmable Key option in the Control Panel.

- Programmable keys persist across a warmboot or power cycle.

- When used with the **Blue** modifier key, **P1** and **P2** keys are used to adjust speaker volume and **P5** and **P6** keys are used to adjust display brightness.

The **P1** through **P7** keys provide limited functionality before the operating system loads, such as during BIOS configuration. See Integrated Keypad and BIOS for available key-strokes.

The Thor VM3 integrated keypad is backlit.

- By default, the integrated keypad backlight follows the display backlight. When the display backlight is on, the integrated keypad backlight is on.

- If the display backlight brightness is increased (or decreased) the integrated keypad backlight brightness does not change.

- The integrated keypad backlight and the display share the same timer, which is configured in the Power Options control panel.

- The integrated keypad backlight can be disabled via the Options control panel.

Keypad LEDs

See Keyboard LEDs for details.

USB Keyboards

Two Honeywell ruggedized USB keyboards are available, 95-key alphanumeric and 21-key numeric.

95-Key USB Keyboard

The 95-key USB keyboard may have any of the following markings on the decal on the back of the keyboard:

- **164288-0001**
- **95 KEY USB**
- **9000160KEYBRD**

If the keyboard looks similar but has a different part number refer to 95-key PS/2 Keyboard.

If the keyboard is labeled as **164288-0001 Revision B** (or greater) the keyboard has sticky keys for Alt, Ctrl and Shift. These keys will remain active for the next keypress. Earlier versions of this keyboard (Revision A) do not have sticky keys implemented.

The Thor VM3 uses an optional rugged QWERTY 95 key keyboard, designed for ease of use with the Windows operating system. The USB keyboard connects directly to the D9 USB connector (Standard Dock) or USB1 connector (Enhanced Dock).

- The 95 key keyboard supports all 104 keyboard functions (101 standard keyboard plus Windows keys) and includes an integrated pointing device and left and right mouse buttons. However, because the keyboard only has 95 keys, all functions are not visible (or printed on the keyboard). Therefore the keyboard supports what is called hidden keys - keys that are accessible but not visible on the keyboard.

- The 95 key keyboard keys are backlit. The keyboard backlight is manually controlled.

Keyboard Backlight

The keyboard backlight key in the top right hand corner has a light bulb icon.

The keyboard keys are backlit. The keyboard backlight is manually controlled using the backlight key in the upper right hand corner of the keyboard. Pressing the backlight key cycles the keyboard backlight through the levels of backlight intensity: Off, Low intensity, Medium intensity, Maximum intensity, Off, etc. When the Thor VM3 is powered on, the keyboard backlight defaults to Off.

Since the keyboard is a USB device, by default the external keyboard backlight is turned off when the Thor VM3 enters Standby/Sleep. This behavior can be changed by enabling USB power in Standby/Sleep on the Options control panel.

21-key Numeric Keypad

A numeric keypad is available for the Thor VM3 in applications where a full keyboard may not be needed. The USB keyboard connects directly to the D9 USB connector (Standard Dock) or USB1 connector (Enhanced Dock).

Keyboard Backlight

The keyboard backlight key has a light bulb icon.

The keyboard keys are backlit. The keyboard backlight is manually controlled using the backlight key in the upper right hand corner of the keyboard. Pressing the backlight key cycles the keyboard backlight through the levels of backlight intensity: Off, Low intensity, Medium intensity, Maximum intensity, Off, etc. When the Thor VM3 is powered on, the keyboard backlight defaults to Off.

Since the keyboard is a USB device, by default the external keyboard backlight is turned off when the Thor VM3 enters Standby/Sleep. This behavior can be changed by enabling USB power in Standby/Sleep on the Options control panel.

The PF key can be programmed using the External Keypad control panel.

PS/2 Keyboards

Legacy PS/2 keyboards can be used with the Thor VM3 via a USB to PS/2 adapter cable. PS/2 keyboards are available in 60-key and 95-key versions and were used with the VX6, VX7, Thor VX8 or Thor VX9.

Note: *The PS/2 adapter cable does not work with the Thor VM3 and the VM1D Standard Dock. The PS/2 adapter cable works with either the VM3D or VMXD Enhanced Docks.*

95-key PS/2 Keyboard

The 95-key PS/2 keyboard may have any of the following markings on the decal on the back of the keyboard:

- **160491-0001**
- **95 KEY PS-2**
- **9000154KEYBRD** (also available as **VX89154KEYBRD**)

If the keyboard looks similar but has a different part number refer to 95-Key USB Keyboard.

An adapter cable is required to attach this keyboard to the Thor VM3. See Connect PS/2 Keyboard for details.

Note: *If the keyboard was previously used with Thor VX8 or Thor VX9, the adapter cable for the Thor VX8/VX9 is not used. The new PS/2 to USB adapter cable must be used.*

This keyboard is visually similar to the USB external keyboard.

The mouse pointer function on the PS/2 keyboard is not available when connected via an adapter cable to the Thor VM3.

Key Maps

The 95-key keyboard supports all 104 keyboard functions (101 keyboard standard plus Windows keys) and includes an integrated pointing device and left and right mouse buttons. However, because the keyboard only has 95 keys, all functions are not visible (or printed on the keyboard). Therefore the Thor VM3 keyboard supports what is called hidden keys -- keys that are accessible but not visible on the keyboard. Refer to External 95-Key Keyboard for keymaps.

NumLock

For the 95-key PS/2 keyboard, the NumLock key and the numeric keys are backlit green when NumLock is off. When NumLock is on, the backlight for the NumLock key and the numeric keys is amber.

CapsLock and Scroll Lock

For the 95-key PS/2 keyboard, the **CapsLock** key is backlit green when CapsLock is off. When CapsLock is on, the backlight for the CapsLock key is amber.

The **Scroll Lock** key is backlit green when Scroll Lock is off. When Scroll Lock is on, the backlight for the Scroll Lock key is amber.

The default values for CapsLock and Scroll Lock are Off.

Keyboard Backlight

The keyboard keys are backlit. The keyboard backlight is manually controlled using the backlight key in the upper right hand corner of the keyboard. Pressing the backlight key cycles the keyboard backlight through the levels of backlight intensity: Off, Low intensity, Medium intensity, Maximum intensity, Off, etc.

60-key PS/2 Keyboard

The 60-key PS/2 keyboard is part number **160068-0001** (see decal on back of keyboard).

An adapter cable is required to attach this keyboard to the Thor VM3. See Connect PS/2 Keyboard for details.
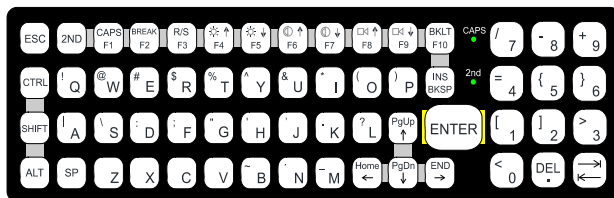
The 60-key keyboard has 101 keyboard functions, including a numeric keyboard pad.

Key Maps

The 60-key keyboard supports all 101 keyboard functions. However, because the keyboard only has 60 keys, all functions are not visible (or printed on the keyboard). Therefore the Thor VM3 keyboard supports what is called hidden keys - keys that are accessible but not visible on the keyboard.

On standard keyboards many keys are found in the Alphanumeric section as well as on the Numeric keypad (i.e. the 1 key is found on the numeric keypad and above the alpha characters on standard keyboards). However these keys send distinctly different scan codes when the keys are pressed. The default codes for the Thor VM3 number keys correspond to the numeric keypad on standard keyboards. In order to duplicate the codes sent when the alphanumeric key is pressed, the hidden keystroke must be used.

Refer to External 60-Key Keyboard for keymaps.

NumLock

The 60-key keyboard does not have a NumLock indicator or key. NumLock can be toggled On or Off using the **2nd SHIFT F10** keypress sequence.

Keyboard Backlight

The keyboard keys are backlit with LEDs. The backlight is manually controlled using the **2nd + CTRL + F10** keypress sequence. The keyboard backlight is off when the Thor VM3 is powered up. The backlight must be manually turned on with the **2nd + CTRL + F10** key sequence.

Control Keys

The VMT keyboard has several control keys. Because of the construction of the Thor VM3 and the Microsoft Windows operating system, many of the Control Keys are not used on the Thor VM3.

- The **2nd** functions of the **F4** and **F5** keys are not used as the display brightness is adjusted via the buttons on the Thor VM3.
- The **2nd** functions of the **F6** and **F7** keys are not used as the Thor VM3 has TFT LCD screen with no provision for contrast adjustments.
- The **2nd** functions of the **F8** and **F9** keys are not used as the sound volume on the Thor VM3 is controlled with the Sound icon in the Microsoft Windows System Tray.
- The **F10** key is used to toggle the backlight as part of the keypress sequence **2nd + CTRL + F10**. This key sequence immediately toggles the status of the keyboard backlight. Pressing **2nd + F10** has no effect on the keyboard backlight.

Keyboard LEDs
CAPS LED

This LED indicates the state of the keyboard CapsLock mode. If CapsLock is enabled this LED is illuminated green. When CapsLock is off, the LED is dark.

Press **2nd** then **F1** to toggle CapsLock On and Off.

The default value of CapsLock is Off.

Secondary Keys LED

The VMT keyboard is equipped with several secondary keys. These keys are identified by the superscripted text found on the keyboard keys. The secondary keys are accessible by using two (2) keystrokes: the **2nd** key followed by the superscripted key.

Once the 2nd state is enabled (by pressing the **2nd** key) the Secondary Mode LED is illuminated and the 2nd state is enabled until another key is pressed. The **2nd** key is toggled on with a **2nd** keypress and then immediately off with another **2nd** keypress.

- Press **2nd** and **F1** to turn CapsLock on and off.
- Press **2nd** and ? (up arrow) to initiate the PgUp command.
- Press **2nd** and **Q** to type the "!" key.
- Press **2nd** and **BkSp** to enter the Insert (Ins) mode.

USB Keyboard / Mouse

A standard USB keyboard or mouse can be attached to the Thor VM3 using the appropriate adapter cable.

The Y cable attaches to the Thor VM3 and provides a USB connector. Please refer to documentation provided with the USB keyboard or mouse for more information on their operation.

LED Functions

System LEDs

Programmable LED

Connection LEDs

Blue LED   Orange LED
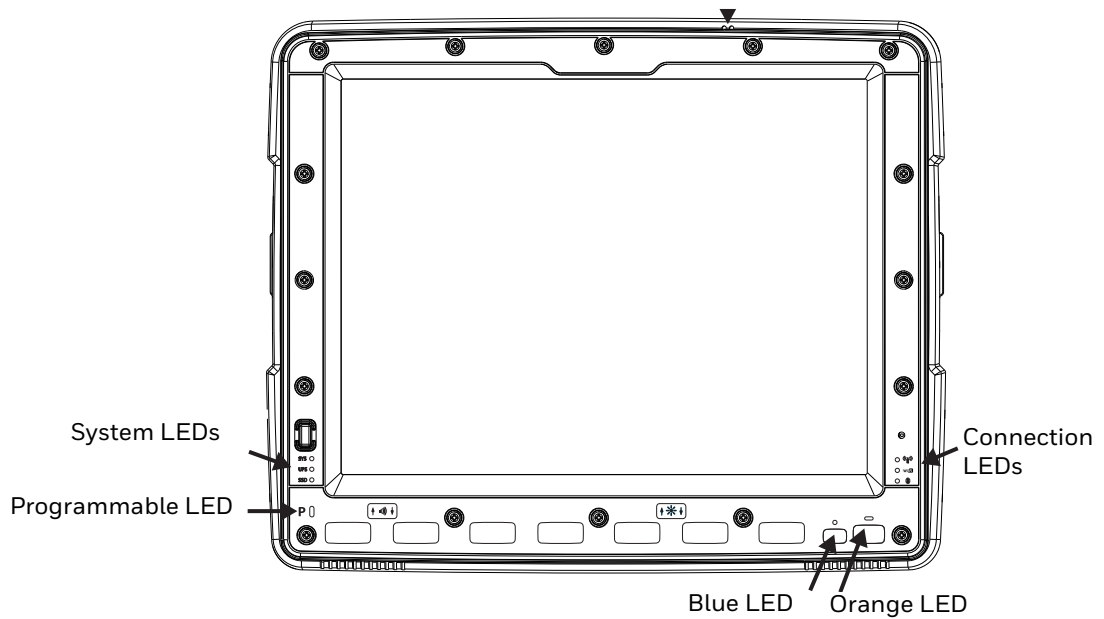
System LEDs

SYS (System Status) LED

UPS (Uninterruptible Power Supply) LED

SSD (Solid State Drive) LED
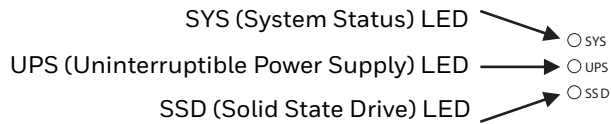
SYS (System Status) LED

LED Behavior	System State
Solid Green	• On • On but Backlight Off • On but Display Off
Off External power present	• Off
Off External power not present	• Hibernate • Standby/Sleep • Off

UPS Status LED

The color of the UPS LED identifies the charge level, while the behavior of the LED identifies the charging state.

Charge Level

LED Color	Status
Green	Fully charged (>90%)
Amber	Less than fully charged, but more than 2 minutes runtime remaining
Red	Low battery, less than 2 minutes runtime until shutdown

Charging State

LED Behavior	Status
Slow Blink (1 sec. on, 3 sec. off)	Charging
Fast Blink (1/2 sec. on, 1/2 sec. off)	UPS supplying power and discharging
On	Neither charging or discharging
Off	Unit is off or is in Hibernate

UPS Unavailable

LED Behavior	Status
Super-Fast Blink (1/8 sec. on, 1/8 sec. off)	• Out of charging temperature range • Charge timeout • UPS is not installed

SSD (Solid State Drive) LED

LED Behavior	Status
Flashing Green	SSD read or write activity
Off	No SSD read or write activity

Connection LEDs

WWAN LED ⟶ ○ ⟨antenna icon⟩
Wi-Fi LED ⟶ ○ ⟨WiFi icon⟩
Bluetooth LED ⟶ ○ ⟨Bluetooth icon⟩
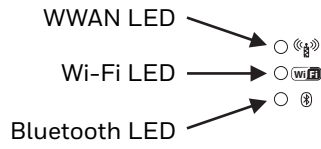
WWAN LED

LED Behavior	Status
Solid Green	Indicates a WWAN connection to a network
Off	Indicates no WWAN connection

Wi-Fi LED

LED Behavior	Status
Solid Green	Indicates a connection with an IP address to an Access Point
Off	Indicates no connection to an Access Point

Bluetooth LED

LED Behavior	Status
On	Bluetooth hardware is on
Off	Bluetooth hardware has been turned off

Keyboard LEDs

The keyboard LEDs are located near the specified key.

Blue LED

LED Behavior	Status
Solid Blue	• Indicates the **Blue** modifier key is active • Pressing the **Blue** key a second time exits this modifier mode and turns off the LED • Pressing the **Orange** key exits the Blue mode and turns off the Blue LED • If no key other key is pressed within five seconds, the **Blue** key times out and turns off the LED • When Blue mode is active, keys **P1** and **P2** provide volume adjustment and keys **P5** and **P6** provide brightness adjustment functions
Off	Blue mode is not invoked

Orange LED

LED Behavior	Status
Solid Orange	• Indicates the **Orange** modifier key is active. Orange mode is invoked for the next keypress only • Pressing the **Orange** key a second time exits this modifier mode and turns off the LED • Pressing the **Blue** key exits the Orange mode and turns off the Orange LED
Off	Orange mode is not invoked.

Programmable LED

The Programmable LED is available for user applications. The LED defaults to Off unless activated by user application.

Display

The display is a thin-film transistor display capable of supporting SXGA graphics modes. Display size is 1024x768 pixels. The display covering is designed to resist stains. The display supports screen blanking to eliminate driver distraction when the vehicle is in motion.

Touch Screen

The Thor VM3 has two touch screen options:

- The standard touch screen is a Resistive Panel with a scratch resistant finish that uses a standard plastic stylus.
- The optional touch screen is a multitouch panel with Projected Capacitance (PCAP) touch for either a finger or conductive stylus with a hardened glass overlay.

The touch screen detects touches by a stylus, and translates them into computer commands. In effect, it simulates a computer mouse. Only the proper styluses should be used. A right mouse click is simulated by touching and holding the screen for the appropriate time interval.

When a dialog box is too large for the display, tap and drag the dialog box up or down or from side to side to view the remainder of the dialog box.

Always use the point of the stylus for tapping or making strokes on the display. Never use an actual pen, pencil, sharp or abrasive object to write on the touch screen.

An extra or replacement stylus may be ordered.

A replaceable touch screen protective film is available when the Thor VM3 is used in an abrasive environment. Contact Technical Assistance for availability.

Note: *If the touch screen is disabled or loses calibration on a Thor VM3, you must use a USB mouse or keyboard attached to the Thor VM3 to access the control panel to re-enable or recalibrate the touch screen unless a programmable key has been assigned to that function.*

Touch Screen Defroster

Extended temperature versions of the Thor VM3 contain a touch screen defroster. The touch screen defroster can be disabled when not needed via the Screen Control panel. The defroster trip point is configurable. The defroster is always disabled when the device is operating from UPS battery power.

Screen Blanking

Screen blanking (blackout) can be enabled when the vehicle is in motion. See Screen Blanking for hardware setup and ZoomZone for software setup to enable screen blanking. Once screen blanking is enabled, the display is blanked out (or a preselected zoom area is displayed) any time when the cable sends the signal that the vehicle is in motion. If the cable is removed, screen blanking is disabled and the display remains on.

Display Backlight Control

The display brightness on a Thor VM3 equipped with an outdoor display can be configured to automatically adjust depending on the ambient light level via Screen Control.

Note: *When automatic brightness control is enabled, the user can still manually adjust brightness. However, automatic brightness control continues to adjust display brightness if the ambient lighting level changes.*

The display brightness can be adjusted manually, via the keypad:

1. Press the **Blue** key to enter Blue mode.
2. Press **P5** to increase brightness or **P6** to decrease brightness.
3. Press the **Blue** key to exit Blue mode.

4

VEHICLE MOUNTING AND ACCESSORY INSTALLATION

Introduction

⚠️ **Warning: The correct dock must be selected for the installation:**

- For a vehicle installation with 10-60 VDC direct connection: Use either a VM1D standard dock or a VM3D enhanced dock.
- For a vehicle installation with 60-144 VDC connection: Use a DC/DC power supply with either a VM1D standard dock or a VM3D enhanced dock.
- To replace a Thor VX8 or Thor VX9: Use the existing power supply and wiring with a VMXD enhanced dock.
- To replace a VX6, VX7 or CV61: Use the appropriate adapter cable and either a VM1D standard dock or a VM3D enhanced dock. Voltage must be 10-60 VDC.
- For an AC powered application: Use an AC/DC power supply and the VMXD off-vehicle enhanced dock.

The Thor VM3 is designed to be mounted to a dock in a vehicle with either a RAM mount or U Bracket system. A power cable is provided with the Thor VM3 dock. An optional 21 key numeric or 95 key laptop-style USB keyboard and keyboard mounts are available. An integrated scanner mount is also offered. Optional communication cables are available.

Vehicle mounting brackets are specifically designed for vehicle mount applications. The vehicle mounted assembly restrains the Thor VM3 and isolates it from shock and vibration. A RAM metal table stand is available to secure the Thor VM3 and dock when in an office environment, for example.

The vehicle mount holds the dock and the Thor VM3 attaches to the dock. The dock remains attached to the vehicle, however, the Thor VM3 has a quick release located on the lower rear side that allows the Thor VM3 to easily be removed from the dock. The Thor VM3 can be operated for a minimum of 30 minutes from an internal UPS battery when not attached to a dock. The Thor VM3 can be transferred from one dock equipped vehicle to another for easy portability. The dock provides accessory attachment and conditioned power for the Thor VM3.

Overhead, dash and roof support pillar mounting is via a RAM Mount or U-bracket accessory which includes all the hardware required for vehicle mounting.

Never put the Thor VM3 into the vehicle mounted assembly until the assembly is securely fastened to the vehicle.

Prepare for Vehicle Mounting

The Thor VM3 should be secured to an area in the vehicle where it:

- Does not obstruct the driver's vision or safe vehicle operation.
- Will be protected from rain or inclement weather.
- Will be protected from extremely high concentrations of dust or wind-blown debris.
- Can be easily accessed by a user seated in the driver's seat while the vehicle is not in operation.

Quick Start

The following list outlines, in a general way, the process to follow when mounting the Thor VM3 in a vehicle. Refer to the following sections in this document for more details.

1. Install RAM Mount or Install U Bracket Mount to the vehicle.
2. Place Thor VM3 in the Dock.
3. Secure accessories such as an optional external keyboard or a scanner holder to either an integrated or remote mounting bracket.
4. Adjust the Thor VM3 to the best viewing angle.
5. Install Remote Antenna or Install External Antenna if necessary.
6. Connect Cables for any peripherals.
7. Connect vehicle power:
   - 12-48 VDC Vehicles (10-60 VDC Direct Connection)
   - 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid)
   - 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Side of Lid).
   - Thor VX8 / Thor VX9 Adapter Cable
   - VX6 / VX7 Adapter Cable
8. Secure all cables in Strain Relief Cable Clamps.

The Thor VM3 is ready for use.

Maintenance – Vehicle Mounted Devices

Check the vehicle mounting hardware frequently and re-tighten if necessary.

If the vehicle mounting hardware and connections become broken, loose or cracked, the assembly must be taken out of service and replaced. Contact Technical Assistance for help.

Cleaning

If it becomes necessary to clean the Thor VM3, dock, peripherals or mounting hardware see:

- Cleaning the Thor VM3 and the Dock
- Cleaning the Touch Screen

Place Thor VM3 in the Dock

Back of Thor VM3

Front of Dock

Upper Lip on Dock

Lower Lip on Dock

Release Lever
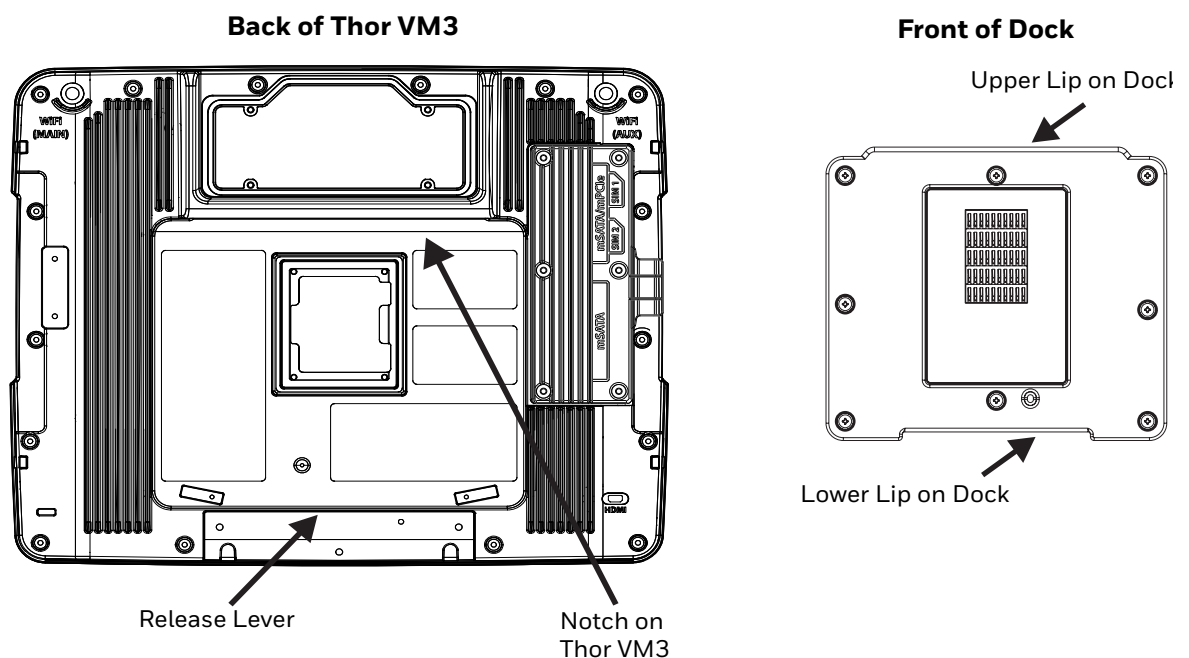
Notch on Thor VM3

1. Locate the notch on the upper rear of the Thor VM3.

2. Slide this notch over the top lip of the dock. Slide the Thor VM3 from side to side on the dock to make sure it fully engages on the lip of the dock. If the Thor VM3 cannot be slid side to side, the lip is engaged.

3. Pull the quick release lever on the Thor VM3 down and push the Thor VM3 against the dock.

4. Release the quick release lever. The quick release lever catches the lower lip on the dock and secures the Thor VM3 to the dock. Be sure the red quick release lever is pushed all the way in to secure the Thor VM3 to the dock.

5. If necessary, adjust the viewing angle of the Thor VM3.

When the Thor VM3 is placed in the dock, the following may happen:

- If the Thor VM3 is off and power is connected to the dock, the Thor VM3 may boot when placed in the dock. The behavior depends on the Power Scheme selected. See Ignition Control/Ignition On and Auto-On.

- If the Thor VM3 is on and power is connected to the dock, the Thor VM3 power management timers may change when the Thor VM3 is placed in the dock. See Power Options.

When the Thor VM3 is removed from the dock, the following may happen:

- If the Thor VM3 is on and power is connected to the dock, the Thor VM3 power management timers may change when the Thor VM3 is placed in the dock. See Select a Power Plan.

Dock I/O Pin Cover.
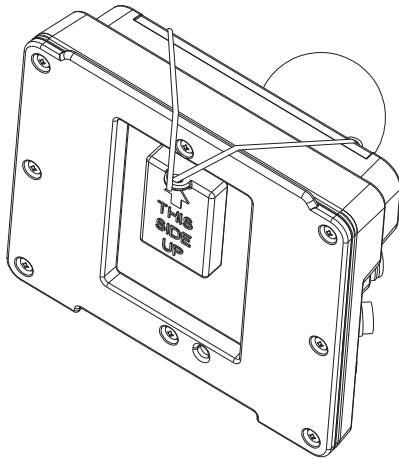
The dock contains a tethered I/O Pin Cover to protect the I/O pins on the dock when a Thor VM3 is not mounted in the dock.

- When the Thor VM3 is not installed in the dock, use the I/O Pin Cover to protect the pins on the dock as shown.

- When a Thor VM3 is installed in the dock, the I/O Pin Cover can be placed out of the way behind the dock.

Padlock
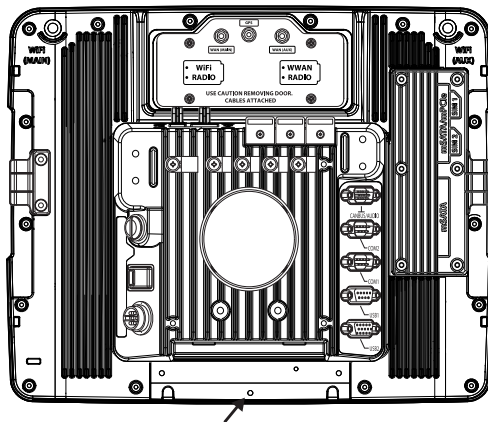
It may be desirable to secure the Thor VM3 in the dock so it cannot be removed from the dock. The quick release handle on the Thor VM3 is notched to allow a user supplied standard padlock to be placed through a hole in the bracket on the back of the Thor VM3 in the location shown below. Once the padlock is installed, the release handle cannot be moved so the Thor VM3 cannot be removed from the dock. The padlock shackle must be smaller than 3/16" (4.76mm).

A cable tie wrap can be used instead of a padlock if desired.

Laptop Security Cable
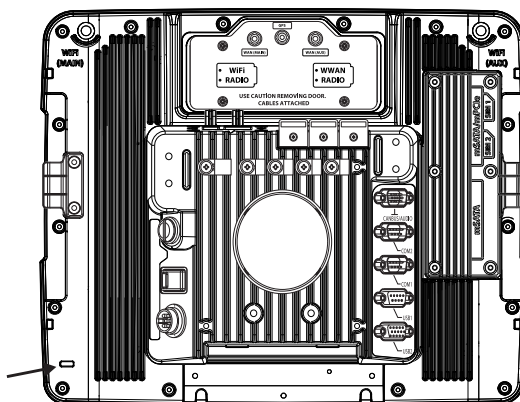
The Thor VM3 can be secured with a standard laptop security cable using the slot on the back of the Thor VM3.

Install RAM Mount

⚠	**Caution:** This device is intended to transmit RF energy. For protection against RF exposure to humans and in accordance with FCC rules and Industry Canada rules, this transmitter should be installed such that a minimum separation distance of at least 20 cm (7.8 in.) is maintained between the antenna and the general population. This device is not to be co-located with other transmitters.

Before installation begins, verify you have the applicable vehicle mounting bracket assembly components necessary, as shown in the following figures.

Components - RAM Mounting Kits

Mounting kits that do not include an external keyboard are shown below.

Mounting kits that include a provision for an external keyboard include the parts on this page plus the parts on the next page.

In addition to the kits below, individual RAM mounting components are also available.

Mounting Kits without Keyboards

Each mounting kit contains:

- RAM Ball (Size D) for back of Thor VM3 dock with hardware (screws and washers) to attach RAM ball to dock

- RAM Arm (Size D), length varies by kit selected

- One of three mounting options:
    - RAM Ball mount (Size D, may include 3 cone washers), or
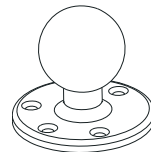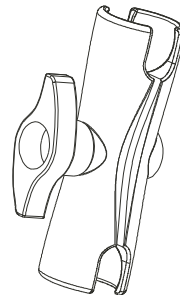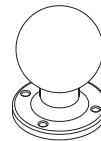
- RAM Clamp mount (Size D), or
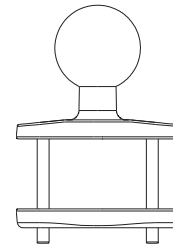
- RAM Plate mount with RAM Ball (Size D) with Hardware (cone washers and nuts) to attach Ball to Plate
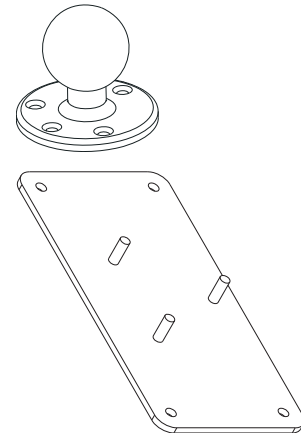
Mounting Kits with Integrated Keyboard Mounting

Additionally, the kits for the Thor VM3 with an integrated 95 key keyboard mount include:

- Thor VM3 Keyboard Mounting Bracket
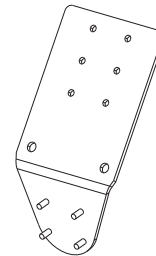
- RAM Ball (Size C) with hardware (nuts) to attach RAM ball to Keyboard Mounting Bracket

- RAM Arm (Size C)

- Keyboard Mounting Plate with RAM Ball (Size C) and hardware (screws and washers) to attack Keyboard to Mounting Plate
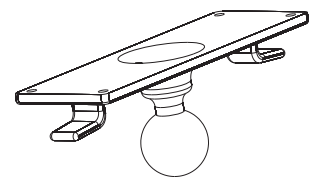
Accessory Mounting Kits

An accessory mounting kit is also available. This kit mounts the 21 key numeric keyboard or the Thor scanner holder to the Enhanced Dock.

Note: *This accessory mount kit is only for use with the Enhanced Dock.*
- Accessory RAM Ball
  This accessory RAM ball mounts to the back of the Enhanced Dock.
- RAM Ball (Size C) to attach RAM ball to 21key numeric keyboard or scanner holder.

- RAM Arm (Size C)
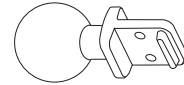
Procedure - RAM Mount Assembly

Equipment Needed: Sockets, screwdriver and a Torque wrench capable of measuring to 50 inch pounds (5.64±.56 N/m).

Note: *Torquing tool is not supplied by Honeywell. Tools needed to attach the RAM Clamp Mount to the vehicle are not supplied by Honeywell.*

Torque Measurement

You will need a torquing tool capable of torquing to 20 inch pounds (1.10 N/m). Torque all screws and bolts according to the following table:

For these nuts...	Torque to
10-32 lock nuts	17 - 20 in/lb (0-95 - 1.10 N/m)

Step 1a – Attach RAM Ball to Vehicle

Note: *If you are using the RAM clamp mount, please go to Step 1b – Mount RAM Clamp to Vehicle. If you are using the RAM plate mount, please go to Step 1c – Attach RAM Plate to Vehicle and Attach RAM Ball.*

1. Determine the position for mounting the RAM ball base. Be sure to position the RAM bracket to allow access to the switches and ports on the bottom of the Thor VM3.

2. Attach the RAM ball base to the vehicle mounting surface using three or four 1/4 bolts (not included) or equivalent fasteners. If the mounting kit includes cone washers, use those as illustrated below.

   IMPORTANT: Mount to the most rigid surface available.
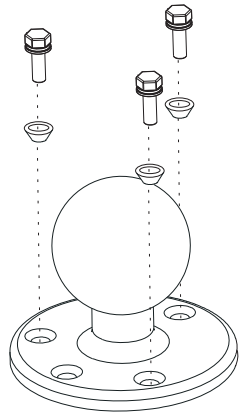
Mounting Dimensions

> *Note:* Drill and tap holes for three 1/4 bolts. Drawing not to scale.

3.69" / 93.73 mm

2.75" / 69.85 mm

60° 60°

120° 120°
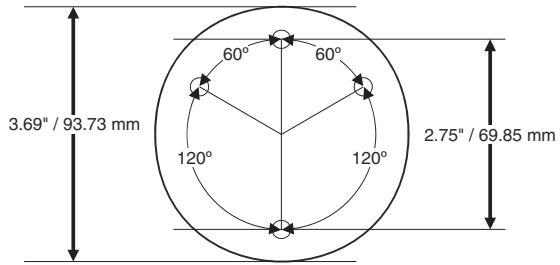
Step 1b – Mount RAM Clamp to Vehicle

Note: *If you are using the RAM ball mount, please go to Step 1a – Attach RAM Ball to Vehicle. If you are using the RAM plate mount, please go to Step 1c – Attach RAM Plate to Vehicle and Attach RAM Ball.*

1. Determine the position for mounting the RAM clamp mount. The clamp mount can be used on a beam (such as on a fork lift truck) up to 2.5" (63.5 mm) wide and approximately 2" (50.8 mm) thick. The clamp may be attached to a thicker beam by substituting longer bolts (not included). Be sure to position the RAM clamp mount to allow access to the switches and ports on the bottom of the Thor VM3.
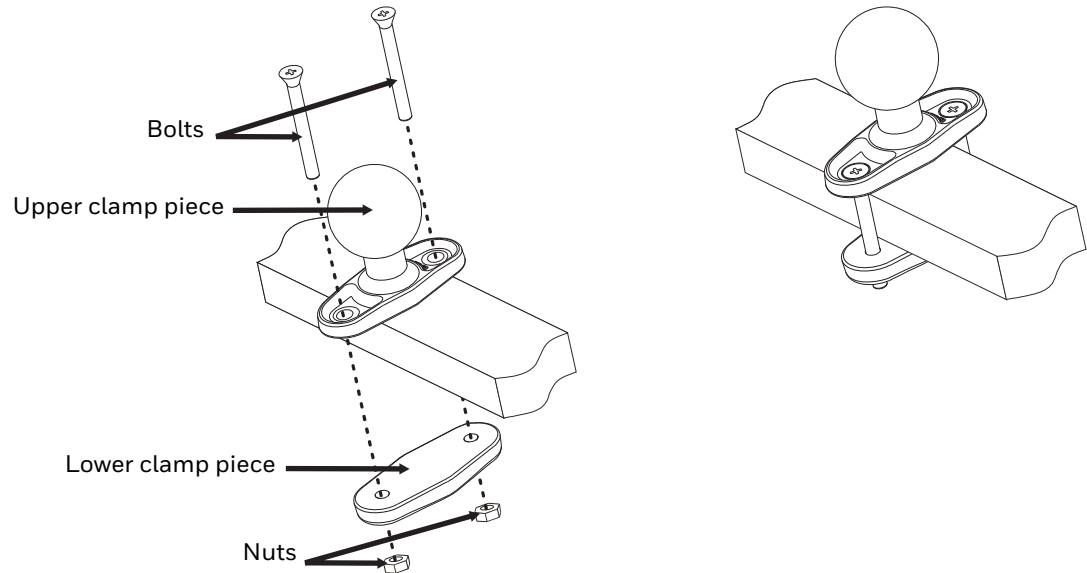
Position the upper clamp piece with ball on the beam. Place the bolts through the holes in the upper clamp piece.

2. Position the lower clamp piece below the beam. Align the bolts with the holes in the lower clamp piece.

3. Place the nylon locking nuts on the bolts and tighten the bolts.

Mounting Dimensions

Note: *Drawing not to scale.*

2.56" / 65.02mm   1.84" (46.74mm)
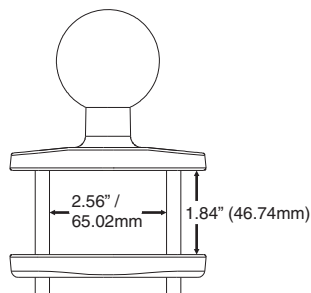
Step 1c – Attach RAM Plate to Vehicle and Attach RAM Ball

Note: *If you are using the RAM ball mount, please go to* Step 1a – Attach RAM Ball to Vehicle *If you are using the RAM clamp mount, please go to* Step 1b – Mount RAM Clamp to Vehicle.

1. Determine the position for mounting the RAM ball plate. Be sure to position the RAM plate to allow access to the switches and ports on the bottom of the Thor VM3.

2. Attach the RAM ball plate to the vehicle mounting surface using four 1/4 bolts (not included) or equivalent fasteners.

3. If not already attached, attach the RAM ball to the RAM ball plate using three M6 nuts and washers.

   IMPORTANT: Mount to the most rigid surface available.
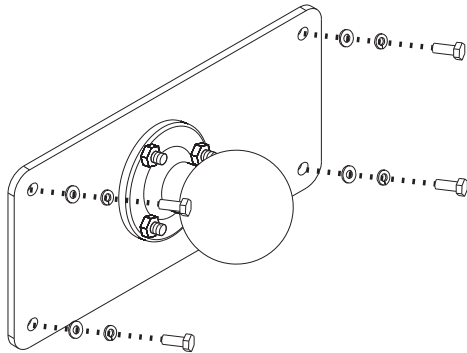
Mounting Dimensions

There are 4 mounting holes in the plate. Use four 1/4 bolts to secure the plate to the vehicle.

Note: *Drawing not to scale.*
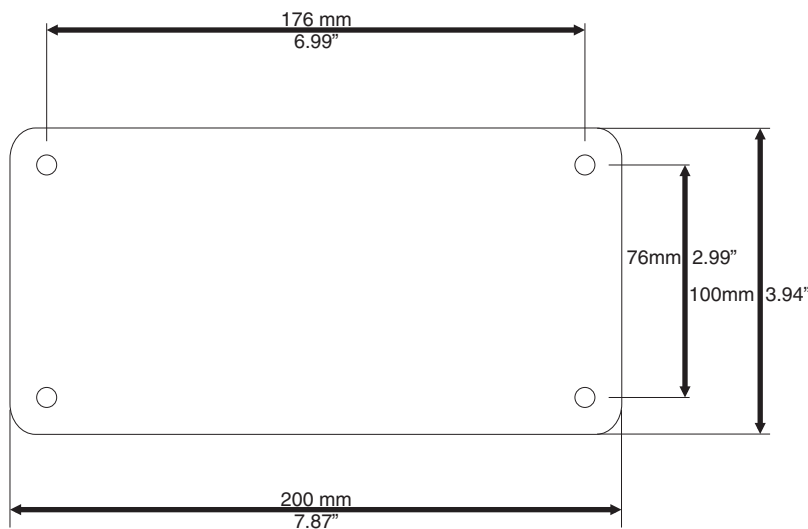
Step 2 – Attach RAM Mount Ball to the Thor VM3 Dock

1. Turn the Thor VM3 off before attaching the RAM mount ball.

2. Place the Thor VM3 face down on a stable surface.

3. If using the external keyboard mount, position the Keyboard Bracket and the Size D RAM ball on the rear of the Thor VM3 dock, aligning the holes on the back of the Thor VM3 dock with the holes on the bracket and the RAM ball base.

4. If not using the external keyboard mount, position the RAM ball on the rear of the Thor VM3 dock, aligning the holes on the back of the Thor VM3 dock with the holes on the RAM ball base. Attach with four M5 screws, flat washers and lock washers.

5. If using the external keyboard mount, attach the Size C RAM ball to the Thor VM3 Keyboard bracket with four M5 nuts, flat washers and lock washers.
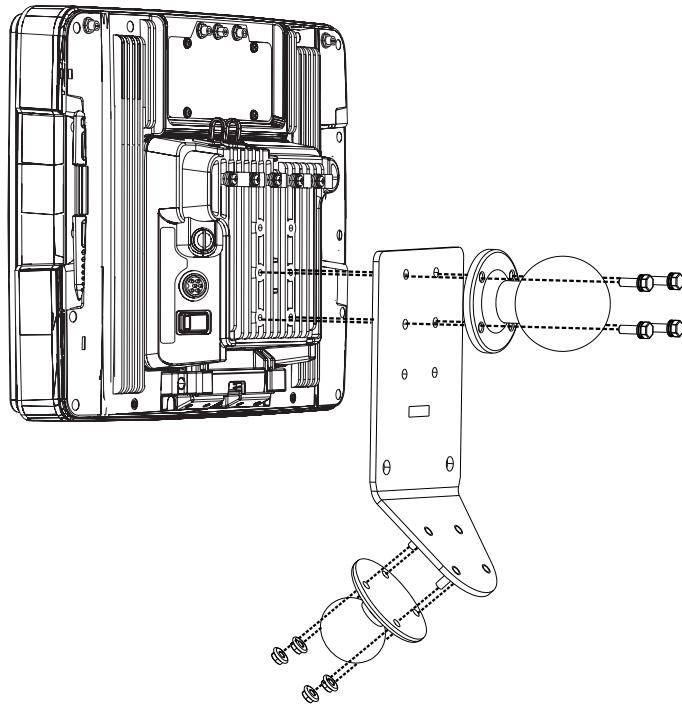
Step 3 – Attach Thor VM3 Assembly to RAM Mount

1. Slip the Size D RAM arm over the ball on the vehicle RAM mount (RAM Ball mount shown).

2. Insert the ball on the dock into the RAM arm and tighten the knob on the RAM arm using the supplied RAM wrench.
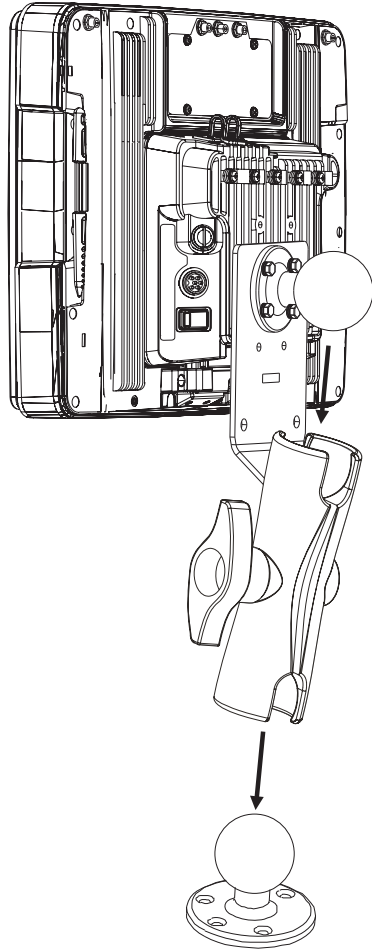
Step 4 – Place the Thor VM3 into the Dock

If the Thor VM3 is not already mounted to the dock, Place Thor VM3 in the Dock

If the optional external keyboard is not used, the mounting process is complete.

Step 5 – Attach Alphanumeric Keyboard to Mounting Plate (Optional)

Note: *This step is only for a Thor VM3 with the optional external keyboard.*

If using the optional integrated keyboard mount, attach the keyboard to keyboard mounting plate, using four #8 screws, flat washers and lock washers.
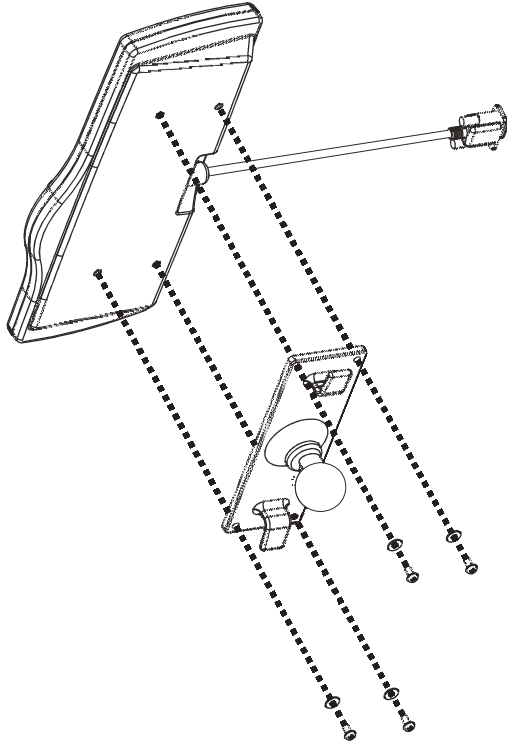
Note: *Excess keyboard cable length can be looped around the hooks on the bottom of the keyboard mounting plate.*

Note: *This step is only for a Thor VM3 with the optional external keyboard.*

1. Slip the Size C RAM arm over the ball on the Thor VM3 Keyboard Bracket.
2. Slip the ball on the Keyboard Mounting Plate into the other end of the Size C RAM arm.
3. Tighten the knob on the RAM arm using the supplied RAM wrench.
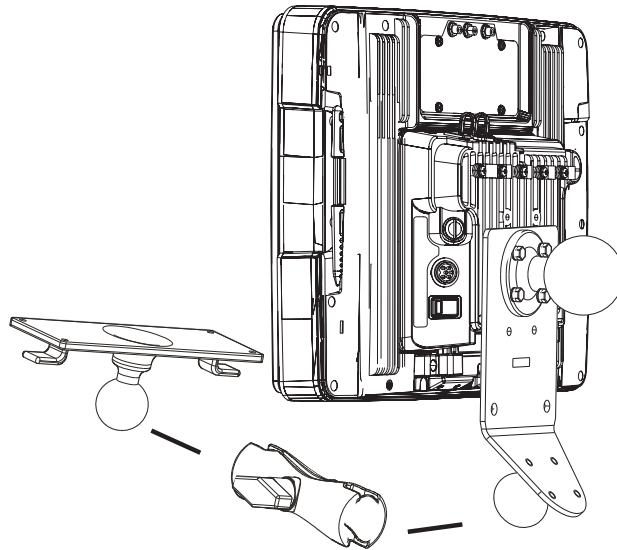
Note: *Some components omitted for detail clarity.*

Step 7 – Attach Numeric Keypad (Optional)

This step is only for use with the Enhanced Dock.

1. Attach the accessory RAM ball to the Enhanced Dock. There are two mounting provisions, one on either side of the Enhanced Dock and either can be used to mount the numeric keypad.
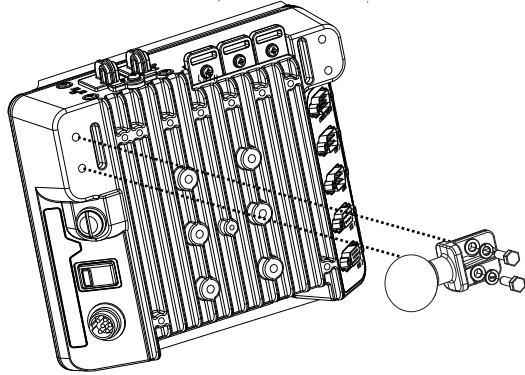
Note: *Some components omitted for detail clarity.*

2. Attach the RAM ball to the back of the keypad.
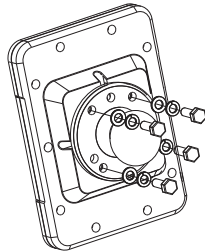
3. Slip the RAM arm over the accessory RAM ball.
4. Slip the RAM ball on the keyboard into the RAM arm.
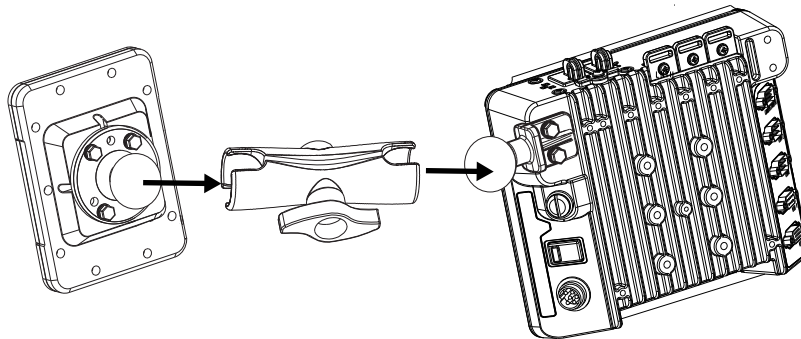
5. Tighten the knob on the RAM arm while adjusting to the desired angle.

Step 8 – Attach Scanner Holder (Optional)

This step is only for use with the Enhanced Dock.

1. Attach the accessory RAM ball to the Enhanced Dock. There are two mounting provisions, one on either side of the Enhanced dock and either can be used to mount the scanner holder.
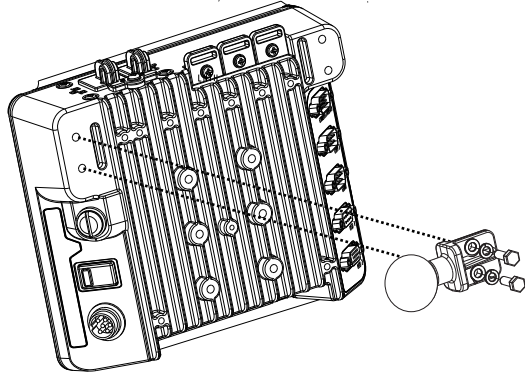
Note: *Some components omitted for detail clarity.*

2. Attach the RAM ball to the back of the scanner holder.
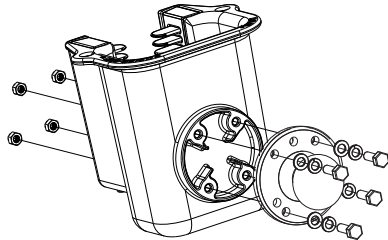
3. Slip the RAM arm over the accessory RAM ball.
4. Slip the RAM ball on the scanner holder into the RAM arm.
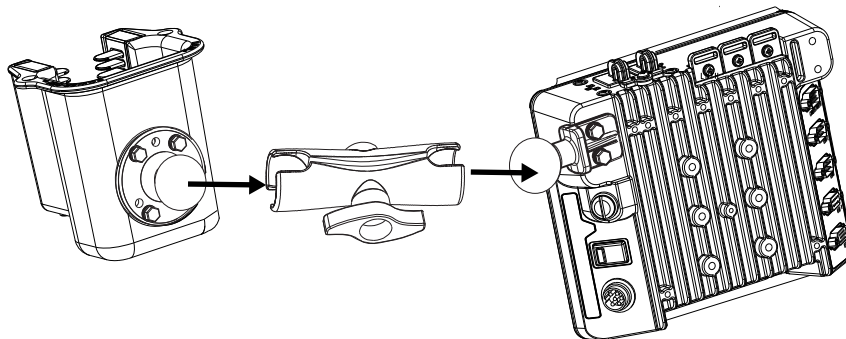
5. Tighten the knob on the RAM arm while adjusting to the desired angle.

Install U Bracket Mount

Note: *This mounting system does not have provisions for an integrated external keyboard mount or scanner holder. These accessories can be mounted remotely if desired. Contact* Technical Assistance *for details.*

Before installation begins, verify you have the applicable vehicle mounting bracket assembly components necessary, as shown in the following figures.

Components - U Bracket Mounting Assembly

The U bracket kit is available in two configurations:

- With a U Bracket included for new vehicle installations
- Without a U Bracket for installing the Thor VM3 in place of a previous Honeywell vehicle mounted computer, such as a VX6 or VX7.
  - U Bracket (only necessary for new installations)
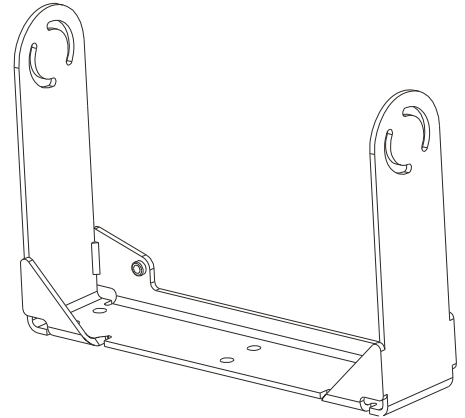
  - Adapter Bracket (includes screws, flat washers and lock washers to attach Adapter Bracket to Thor VM3 and to U Bracket). The U bracket may already be installed on the vehicle where a VX1, VX2, VX4, VX5, VX6 or VX7 was previously installed.
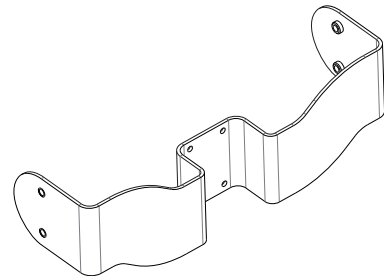
Procedure – U Bracket Assembly

Equipment Needed: Sockets and a Torque wrench capable of measuring to 50 inch pounds (5.64±.56 N/m).

Note: *Torquing tool is not supplied by Honeywell.*

Torque Measurement

You will need a torquing tool capable of torquing to 35-50 inch pounds (1.10 N/m). Torque all screws and bolts according to the following table:

For these bolts...	Torque to
1/4-20x5/8 Bolts	50 in/lb (5.6 N/m)
M5x16mm Bolts	35 in/lb (4.0 N/m)
1/4 Bolts (user supplied)	50.0±5 in/lb (5.64±.56 N/m)

Mounting Positions

The adapter bracket can be mounted in a high or low position, depending on viewing position, as shown below.
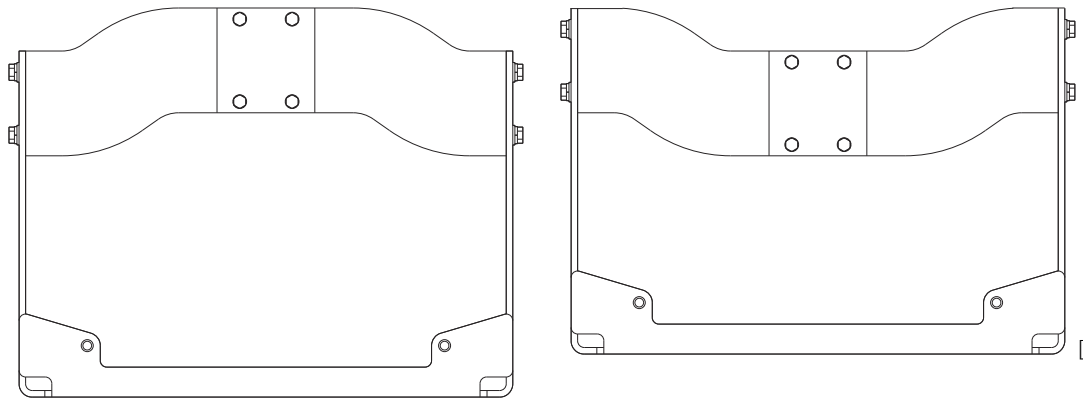
Additionally, the slotted U bracket allows the Thor VM3 to be mounted vertically or tilted forward or backward for best viewing angle.

Step 1 – Install U Bracket to Vehicle

1. Position the bracket to allow access to the switches and ports on the bottom of the Thor VM3.

2. Attach the bottom mounting bracket to the vehicle mounting surface using a minimum of four 1/4 bolts (or equivalent) fasteners.

Note: *1/4 bolts and washers not included. It is recommended to use lock washers and flat washers on the fasteners.*

IMPORTANT: Mount to the most rigid surface available.
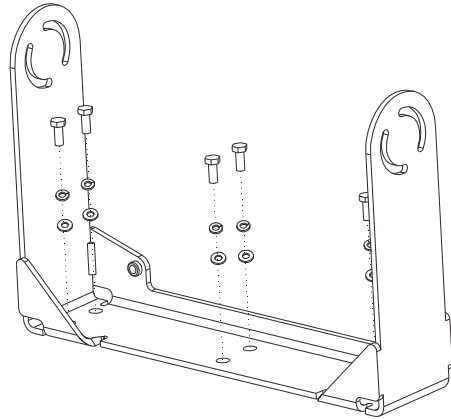
After the bottom bracket has been attached to a rigid surface, you are ready to assemble the Thor VM3 bracket configuration.

Mounting Dimensions

Note: *Drawing not to scale.*
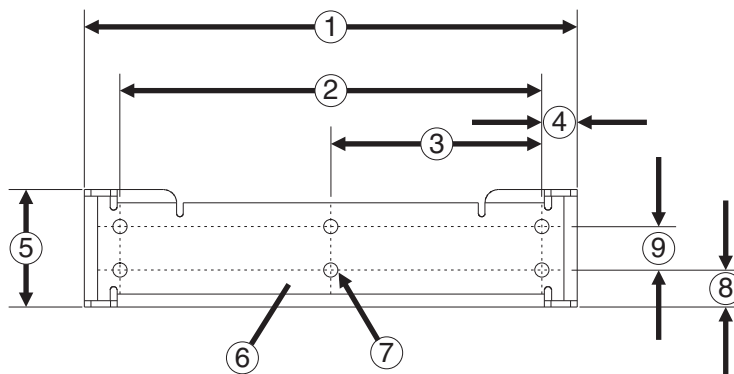
1. 14.40 in / 359.2 mm
2. 12.10 in / 307.3 mm
3. 6.05 in / 153.6 mm
4. 1.02 in / 25.9 mm
5. 3.38 in / 85.85 mm
6. Vehicle Mount Footprint
7. 0.406 in / 10.312 mm
8. 0.88 in / 22.3 mm
9. 1.25 in / 31.75 mm

Step 2 – Remove RAM Ball

If the Thor VM3 dock has a RAM ball attached, the RAM ball must be removed from the dock to use the U Bracket mount.

Remove the RAM ball. The hardware used to attach the RAM ball to the dock is not reused for the U bracket mount.

Step 3 – Attach Adapter Bracket
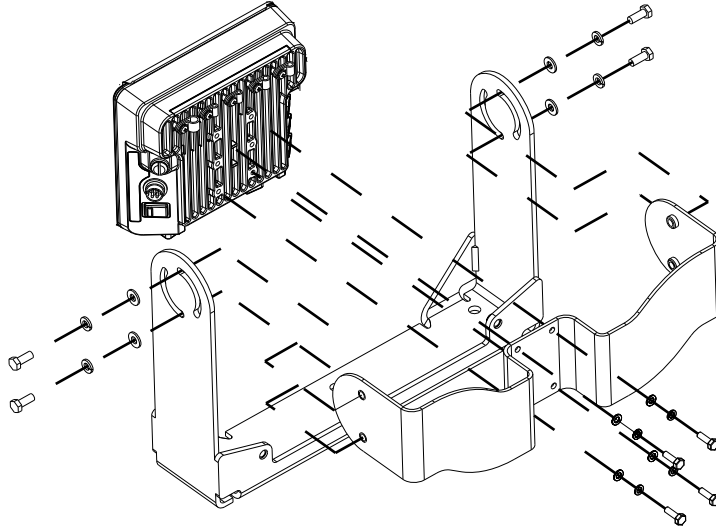
Note: *For the steps below, always place the lock washer on the bolt before the flat washer.*

1. Attach the Adapter Bracket to the Thor VM3 dock using four each M5x16mm bolt, M5 lock washer and M5 flat washer. Torque to 35 in/lbs (4.0 N/m).

2. Attach the Thor VM3/Adapter Bracket assembly to the U Bracket using 4 each 1/4–20x5/8 bolt, 1/4 lock washer and 1/4 flat washer.

3. If the Thor VM3 is not already mounted to the dock, Place Thor VM3 in the Dock.

4. Adjust the Thor VM3 to the desired viewing angle.

5. Torque the 14–20 bolts to 50 in/lbs (5.6 N/m).

Connect Cables

There are many cables available for the Thor VM3 including power cables, and data/communication cables.

Strain Relief Cable Clamps

Equipment Required: Phillips screwdriver (not supplied by Honeywell)

There are five strain relief cable clamps secured to the Standard Dock.

There is one strain relief cable clamp and three strain relief brackets for securing cables to the Enhanced Dock.

Use the strain relief clamps to secure audio, power, and I/O cables attached to the Thor VM3 dock.

Use the left-most strain relief clamp for the power cable.
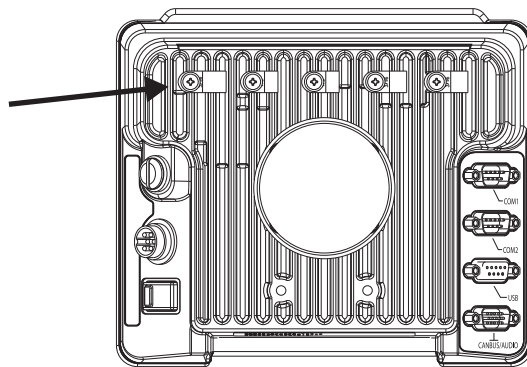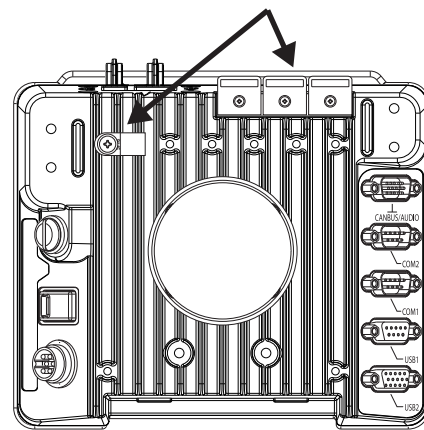
Standard Dock   Enhanced Dock

To use the strain relief clamp(s):

1. Determine the proper strain relief cable clamp. There are three sizes of cable clamps on the Standard Dock which should be matched to the cable to be secured. For example, the largest clamp (on the left when viewing the back of the dock) is designed to secure the power cable. For the Enhanced Dock there is a single cable clamp. Use this clamp for the power cable, Use the brackets for all other cables.

2. Remove the strain relief clamp from the Thor VM3 by turning the screw counterclockwise. Put the screw aside in a safe location.

3. Slide the strain relief clamp over the cable.

4. Using a Phillips screwdriver and the screw that was removed, refasten the clamp holding the cable to the Dock. Do not stretch the cable. Leave enough slack in the cable to allow it to be connected and disconnected easily when needed.

5. Continue in this manner until all cables are secured to the dock.

To use the stradin relief brackets (Enhanced Dock only):

1. Secure the cable to the bracket with plastic tie straps (cable ties).
2. If necessary, the cable ties can be trimmed to length after installation. Cut the excess tie length off flush and not at an angle to prevent sharp edges that may cause cuts.

Connect Power

See Power Supply Connector for connector pinout

For the **VM1D Standard Dock** and **VM3D Enhanced Dock**, power options include:

- 12-48 VDC Vehicles (10-60 VDC Direct Connection) – Direct connection to vehicle power.
- 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Side of Lid) – Requires the use of a DC/DC power supply.
- 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid) – Requires the use of a DC/DC power supply.
- VX6 / VX7 Adapter Cable – For applications where the Thor VM3 replaces a previously installed VX6 or VX7.
- Thor VX8 / Thor VX9 Adapter Cable – For applications where the Thor VM3 (with a VM1D Standard Dock or VM3D Enhanced dock (replaces a previously installed Thor VX8 or Thor VX9.
- CV61 Adapter Cable – For applications where the Thor VM3 replaces a previously installed CV61.
- Screen Blanking – Optional connection to blank the Thor VM3 display while the vehicle is in motion.

For the **VMXD Enhanced Dock**, power options include:

- VMXD Enhanced Dock with Thor VX8/Thor VX9 Power Cable – For applications where a Thor VM3 (with a VMXD Enhanced Dock) replaces a previously installed Thor VX8 or Thor VX9.

When using the Thor VM3 with AC power, use the **VMXD Enhanced Dock for Off-Vehicle Use** and:

- External AC/DC Power Supply – For use when DC power is not available to power the Thor VM3, such as in an office environment.

Power Cable Cautions

> ⚠ **Caution:** **When routing the power cable:**

- Route power cable away from the outside of the fork truck.
- Choose a mounting location so that the power cable does not extend outside the vehicle and that provides sufficient clearance so that the power cable (especially the dock connector end) is not pressed against part of the vehicle.
- Use the proper Strain Relief Cable Clamps to secure cable.
- The power cable is less flexible in low temperature environments. Avoid sharp bends.

> ⚠ **Caution:** **Regularly inspect power cable for damage, especially in low temperature environments. Contact** Technical Assistance **for replacement cable options.**

Power Cable Routing
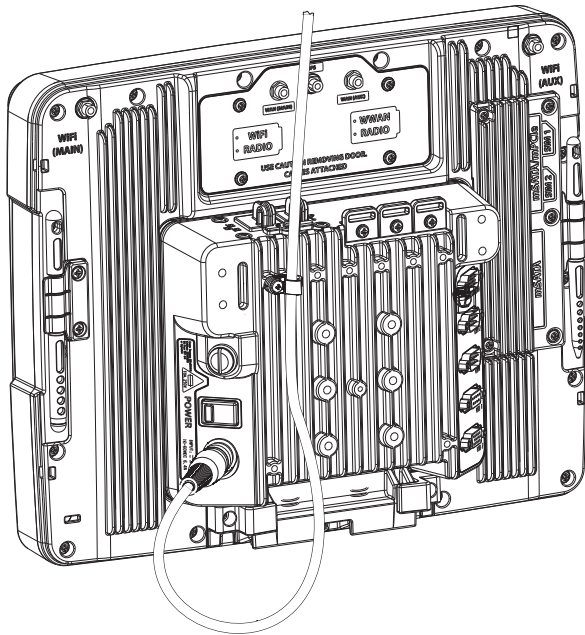
12-48 VDC Vehicles (10-60 VDC Direct Connection)

⚠ **Caution:** **For installation by trained service personnel only.**

⚠ **Caution:** **Use caution when routing the power cable. See** Power Cable Cautions**.**

⚠ **Caution:** These instructions for use with VM1D Standard Dock and VM3D Enhanced Dock only.

Fuse Requirements

⚠ **Warning:** **For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:**

- For **12VDC** input, use the 10A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 12VDC.

- For **24VDC** input, use the 6A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 24VDC.

- For **36VDC** input, use the 4A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 36VDC.

- For **48VDC** input, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 48VDC.

Note: *For North America, a UL Listed fuse is to be used.*

Power Cable Identification

The DC power cable is included with the dock:

Wire Color	Connection
Red	DC + (10-60 VDC)
Red/White	DC + (10-60 VDC)
Black	DC –
Black/White	DC –
Green	Ground
Blue	Ignition Input (optional)

⚠ *Twist the red and red/white wires together and twist the black and black/white wires together before connecting to vehicle power.*

Note: *Correct electrical polarity is required for safe and proper installation. See the figures below for additional wire color-coding specifics.*

The Thor VM3 DC input wires (Red, Red/White DC+ and Black, Black/White DC–) and the Blue ignition input wire are galvanically isolated. The Green ground input is used for electrostatic discharge (ESD) protection.

Vehicle 10-60VDC Direct Power Connection

1. The Thor VM3 must not be mounted in the dock. The power switch on the dock must be turned *Off*. The power cable must be UNPLUGGED from the dock.

2. While observing the Fuse Requirements, connect the power cable as close as possible to the actual battery terminals of the vehicle (if using unswitched power).

3. Use proper electrical and mechanical fastening means for terminating the cable. Properly sized "crimp" type electrical terminals are an accepted method of termination. Please select electrical connectors sized for use with 20AWG (0.81mm2) conductors.

4. Refer to the wiring diagrams following this section for wire colors and connections:

    • Ignition Control Wiring Diagram

    • Auto-On Control Wiring Diagram

    • Manual Control Wiring Diagram

5. Route the power cable the shortest way possible removing any left-over cable. The cable is rated for a maximum temperature of 105°C (221°F). Therefore, when routing this cable it should be protected from physical damage and from surfaces that might exceed this temperature. Cable should be protected from physical damage from moving parts. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

6. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate outer cable jacket.

7. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

8. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

9. Place Thor VM3 in the Dock

10. If using the Screen Blanking feature, install the screen blanking box or switch.

11. Press the Power Switch on the back of the Thor VM3 dock.

12. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

Ignition Control Wiring Diagram

Existing Circuitry On Vehicle

Battery

Main Switch

+Vo   -Vo   Ignition

Fuse - See *Warning* statement below

Cable for optional screen blanking connection

Quick Mount Smart Dock

COM1 or COM2 Connector

Red/White (if present)
Red
Black/White (if present)
Black
Green
Blue

Circular Power Connector

See *Caution* statement below

> **! Caution: For battery powered vehicles:**

- Twist the red and red/white wires together and connect to battery positive.
- Black and black/white wires must be connected to battery negative. Twist these wires together and connect to battery negative.
- Green wire must be connected to the vehicle chassis ground.

> **! Caution: For internal combustion engine powered vehicles:**

- Twist the red and red/white wires together and connect to battery positive.
- Twist the black wire and a black/white together and connect to battery negative.
- Green wire is connected to the vehicle chassis ground, which can also be battery negative.

Fuse Requirements

> **! Warning: For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:**

- For **12VDC** input, use the 10A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 12VDC.
- For **24VDC** input, use the 6A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 24VDC.

- For **36VDC** input, use the 4A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 36VDC.

- For **48VDC** input, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 48VDC.

Note: *For North America, a UL Listed fuse is to be used.*

Existing Circuitry On Vehicle

Battery

Main Switch

+Vo   -Vo

Fuse - See *Warning* statement below

See *Caution* statement below

Cable for optional screen blanking connection

Quick Mount Smart Dock

COM1 or COM2 Connector

Red/White (if present)
Red
Black/White (if present)
Black
Green
Blue (not connected)

Circular Power Connector

! **Caution: For battery powered vehicles:**

- Twist the red and red/white wires together and connect to battery positive.
- Black and black/white wires must be connected to battery negative. Twist these wires together and connect to battery negative.
- Green wire must be connected to the vehicle chassis ground.

! **Caution: For internal combustion engine powered vehicles:**

- Twist the red and red/white wires together and connect to battery positive.
- Twist the black wire and a black/white together and connect to battery negative.
- Green wire is connected to the vehicle chassis ground, which can also be battery negative.

Fuse Requirements

! **Warning: For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:**

- For **12VDC** input, use the 10A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 12VDC.
- For **24VDC** input, use the 6A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 24VDC.

- For **36VDC** input, use the 4A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 36VDC.

- For **48VDC** input, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 48VDC.

Note: *For North America, a UL Listed fuse is to be used.*

Existing Circuitry On Vehicle

Battery

Main Switch

+Vo   -Vo

Fuse - See *Warning* statement below

Cable for optional screen blanking connection

Quick Mount Smart Dock

COM1 or COM2 Connector

Red/White (if present)

Red

Black/White (if present)

Black

Green

Blue (not connected)

Circular Power Connector

See *Caution* statement below

! Caution: For battery powered vehicles:

- Twist the red and red/white wires together and connect to battery positive.
- Black and black/white wires must be connected to battery negative. Twist these wires together and connect to battery negative.
- Green wire must be connected to the vehicle chassis ground.

! Caution: For internal combustion engine powered vehicles:

- Twist the red and red/white wires together and connect to battery positive.
- Twist the black wire and a black/white together and connect to battery negative.
- Green wire is connected to the vehicle chassis ground, which can also be battery negative.
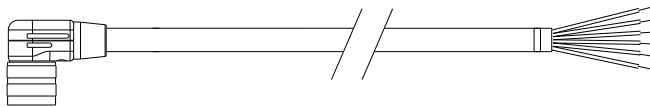
Fuse Requirements

! Warning: For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:

- For **12VDC** input, use the 10A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 12VDC.
- For **24VDC** input, use the 6A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 24VDC.

- For **36VDC** input, use the 4A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 36VDC.

- For **48VDC** input, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than 48VDC.

Note: *For North America, a UL Listed fuse is to be used.*

60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Side of Lid)

⚠️ These instructions are for use with VM1D Standard Dock and VM3D Enhanced Dock only.

This option requires DC/DC external power supply Honeywell Part no. 9000313PWR-SPLY.
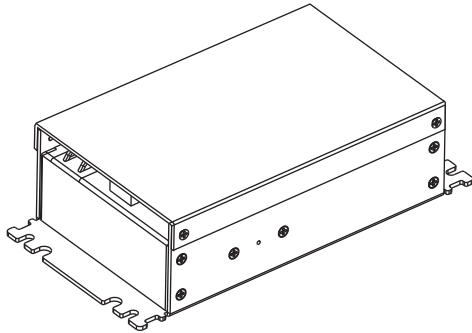
Shown With Lid Attached

- Lid is secured with screws on the side of lid.
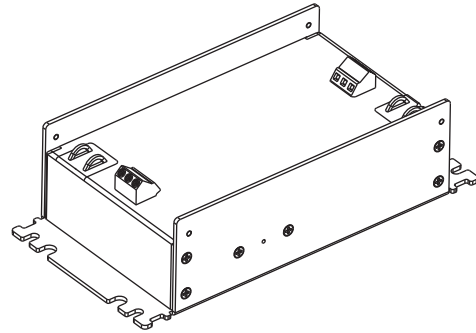
Shown With Lid Removed

- Input and output connector blocks under lid.

- One positive (Vin+), negative (Vin–) and ground (⏚) connection in input block.

- One positive (Vo+) and negative (Vo–) connection in output block.

If the DC/DC power supply does not have screws in the side of the lid, see 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid).

⚠️ **Caution:** **For installation by trained service personnel only.**

⚠️ **Caution:** **Usage in areas where moisture can affect the power supply connections should be avoided. The power supply should be mounted in a dry location within the vehicle or placed in a suitable protective enclosure.**

⚠️ **Caution:** **Use caution when routing the power cable. See** Power Cable Cautions**.**

Warning: For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:

- For **all voltages**, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than the vehicle input voltage.

Note: For North America, a UL Listed fuse is to be used.

Power Cable Identification

The DC power cable is included with the dock:

Wire Color	Connection
Red	DC + (10-60 VDC)
Red/White	DC + (10-60 VDC)
Black	DC –
Black/White	DC –
Green	Ground
Blue	Ignition Input (optional)

Twist the red and red/white wires together and twist the black and black/white wires together before connecting to vehicle power.

Note: Correct electrical polarity is required for safe and proper installation. See Wiring Diagram for additional wire color-coding specifics.

The Thor VM3 DC input wires (Red, Red/White DC+ and Black, Black/White DC–) and the Blue ignition input wire are galvanically isolated. The Green ground input is used for electrostatic discharge (ESD) protection.

1. Please review the Wiring Diagram, before beginning power cable install.

2. The Thor VM3 must not be mounted in the dock. The power switch on the dock must be turned *Off*. The power cable must be UNPLUGGED from the dock.

3. Route the cable from the Thor VM3 to the DC/DC power supply. Route the power cable the shortest way possible. The cable is rated for a maximum temperature of 105°C (221°F). When routing this cable, it should be protected from physical damage and from surfaces that might exceed this temperature. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

4. Cut the cable to length and strip the wire ends.

5. Remove the lid from the DC/DC power supply.

6. Connect the stripped end of the positive wires (red and red/white twisted together) to the output block. See Power Cable Identification.

7. Connect the stripped end of the negative wires (black and black/white twisted together) to the output. See Power Cable Identification.

> *Note:* The input block has $V_{IN}+$, $V_{IN}-$ and GND terminals. The output block has V_O+ and V_O- terminals.
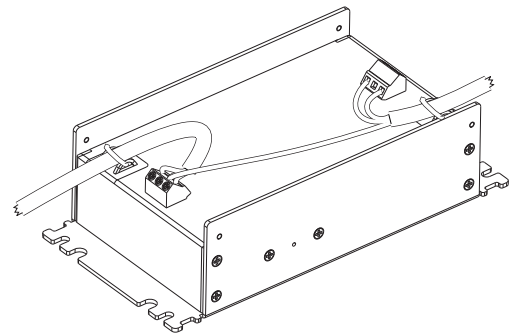
8. Connect the ground (green) wire from the Thor VM3 to the GND terminal on the input side of the DC/DC power supply.

9. Route the wiring from the DC/DC power supply to the vehicle's electrical system. **Do not connect to vehicle power at this time.**

10. Strip the wire ends and connect to the input side of the DC/DC power supply.

11. Use looms and wire ties to secure all wiring as shown.

12. Reattach the cover with the screws.

13. Connect the DC/DC power supply to the vehicle's electrical system as directed below:

> ⚠ **Caution: For battery powered vehicles:**

- $V_{IN}+$ is connected to battery positive.

- $V_{IN}-$ must be connected to battery negative.

- GND must be connected to the vehicle chassis ground.

> ⚠ **Caution: For internal combustion engine powered vehicles:**

- VIN+ is connected to battery positive.

- VIN– is connected to battery negative.

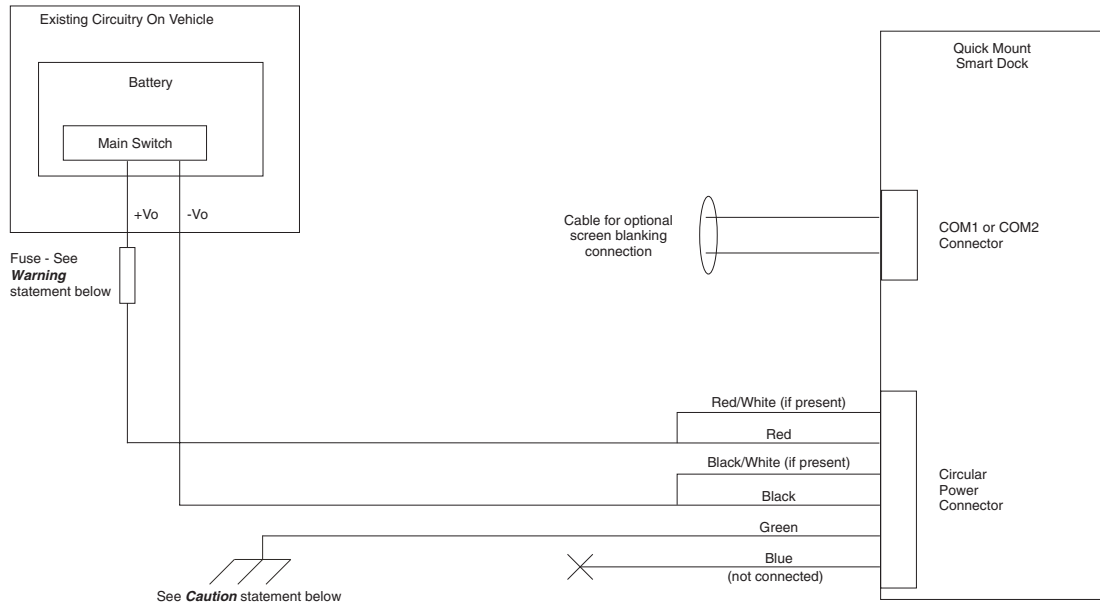- GND is connected to the vehicle chassis ground, which can also be battery negative.

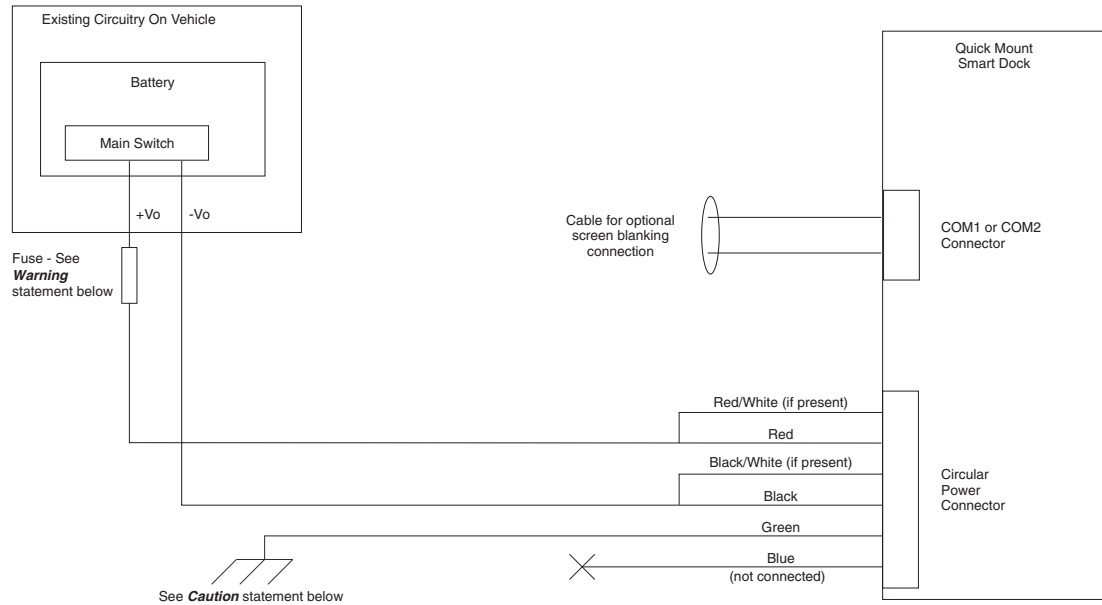14. While observing the Fuse Requirements connect the power cable as close as possible to the actual battery terminals of the vehicle. When available, always connect to unswitched terminals in the vehicle fuse panel, after providing proper fusing.

   ATTENTION: For uninterrupted power, electrical supply connections should not be made at any point after the ignition switch of the vehicle.

15. Use proper electrical and mechanical fastening means for terminating the cable. Properly sized "crimp" type electrical terminals are an accepted method of termination. Select electrical connectors sized for use with 18AWG (1mm^2) conductors.

16. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate the outer cable jacket.

17. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely. Flip the power switch on the back of the dock to On.

18. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

19. Place Thor VM3 in the Dock.

20. If using the Screen Blanking feature, install the screen blanking box or switch.

21. Press the Power Switch on the back of the Thor VM3 dock.

22. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

Note: *Ignition control is not available for trucks over 60VDC.*

> Existing Circuitry on Vehicle
>
> Forklift Battery
>
> Main Switch
>
> +Vo -Vo
>
> Fuse - See *Warning* statement below
>
> See *Caution* statement below
>
> GND VIN+ VIN-
>
> Vo+
>
> Vo-
>
> DC/DC Power Supply
>
> User supplied serial cable for optional screen blanking connection, see below
>
> Quick Mount Smart Dock
>
> COM1 or COM2 Connector on Dock
>
> Red/White (if present)
> Red
> Black/White (if present)
> Black
> Green
> Blue
> (not connected)
>
> Circular Power Connector on Dock

! Caution: For battery powered vehicles:

- GND must be connected to the vehicle chassis ground.

! Caution: For internal combustion engine powered vehicles:

- GND is connected to the vehicle chassis ground, which can also be battery negative.

Fuse Requirements

! Warning: For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:

- For **all voltages**, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than the vehicle input voltage.

Note: *For North America, a UL Listed fuse is to be used.*

60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid)

⚠ These instructions are for use with VM1D Standard Dock and VM3D Enhanced Dock only.

This option requires DC/DC power supply Honeywell Part no. VX89303PWRSPLY shown below.
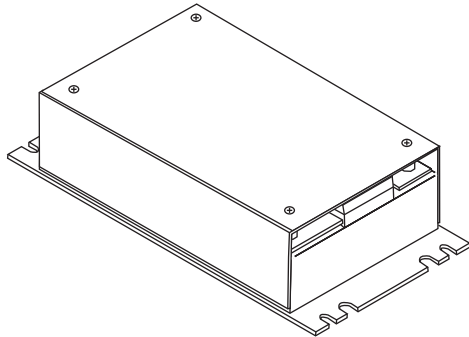
Shown With Lid Attached

- Lid is secured with screws on the top of lid.
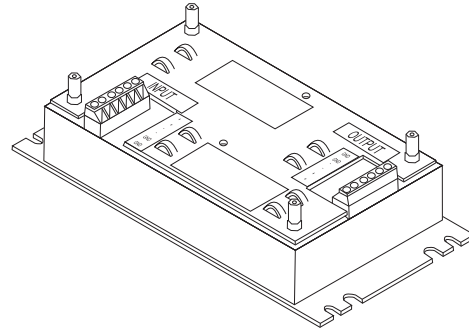
Shown With Lid Removed

- Input and output connector blocks under lid.

- Two positive (+), negative (–) and ground (⏚) connections per terminal block

If the DC/DC power supply does not have screws in the top of the lid, see 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Side of Lid).

⚠ **Caution: For installation by trained service personnel only.**

⚠ **Caution: The VX89303PWRSPLY power supply is sealed per IPXX. Usage in areas where moisture can affect the power supply connections should be avoided. The power supply should be mounted in a dry location within the vehicle or placed in a suitable protective enclosure.**

⚠ **Caution: Use caution when routing the power cable. See** Power Cable Cautions**.**
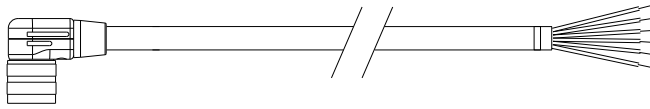
Warning: **For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:**

- For **all voltages**, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than the vehicle input voltage.

Note: *For North America, a UL Listed fuse is to be used.*

Power Cable Identification

The DC power cable is included with the dock:

Wire Color	Connection
Red	DC + (10-60 VDC)
Red/White	DC + (10-60 VDC)
Black	DC –
Black/White	DC –
Green	Ground
Blue	Ignition Input (optional)

Twist the red and red/white wires together and twist the black and black/white wires together before connecting to vehicle power.

Note: *Correct electrical polarity is required for safe and proper installation. See Wiring Diagram for additional wire color-coding specifics.*

The Thor VM3 DC input wires (Red, Red/White DC+ and Black, Black/White DC–) and the Blue ignition input wire are galvanically isolated. The Green ground input is used for electrostatic discharge (ESD) protection.

Vehicle 50–150VDC Power Connection

1. Please review the Wiring Diagram, before beginning power cable install.

2. The Thor VM3 must not be mounted in the dock. The power switch on the dock must be turned *Off*. The power cable must be UNPLUGGED from the dock.

3. Route the cable from the Thor VM3 to the DC/DC power supply. Route the power cable the shortest way possible. The cable is rated for a maximum temperature of 105ºC (221ºF). When routing this cable, it should be protected from physical damage and from surfaces that might exceed this temperature. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

4. Cut the cable to length and strip the wire ends.

5. Remove the lid from the DC/DC power supply.

6. Connect the stripped end of the positive wires (red and red/white twisted together) to the output block. See Power Cable Identification.

7. Connect the stripped end of the negative wires (black and black/white twisted together) to the output. See Power Cable Identification.

Note: *The input and output blocks each have two + (plus), two – (minus) and two ⊕ (ground) connectors. Either connector in the block can be used to connect the matching polarity wire.*
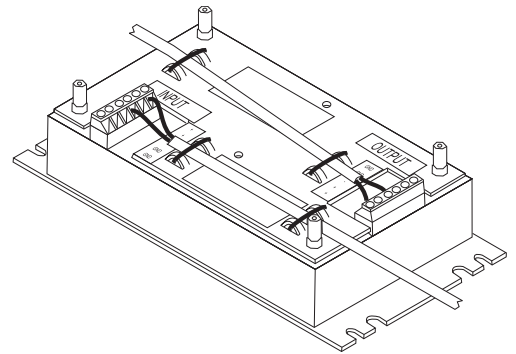
8. Route the wiring from the DC/DC power supply to the vehicle's electrical system. Do not connect to vehicle power at this time.

9. Strip the wire ends and connect to the input side of the DC/DC power supply.

10. Use looms and wire ties to secure all wiring as shown.

11. Reattach the cover with the screws.

12. Connect the DC/DC power supply to the vehicle's electrical system as directed below:

⚠ **Caution: For battery powered vehicles:**

- + is connected to battery positive.
- – must be connected to battery negative.
- ⊕ must be connected to the vehicle chassis ground.

⚠ **Caution: For internal combustion engine powered vehicles:**

- + is connected to battery positive.
- – must be connected to battery negative.
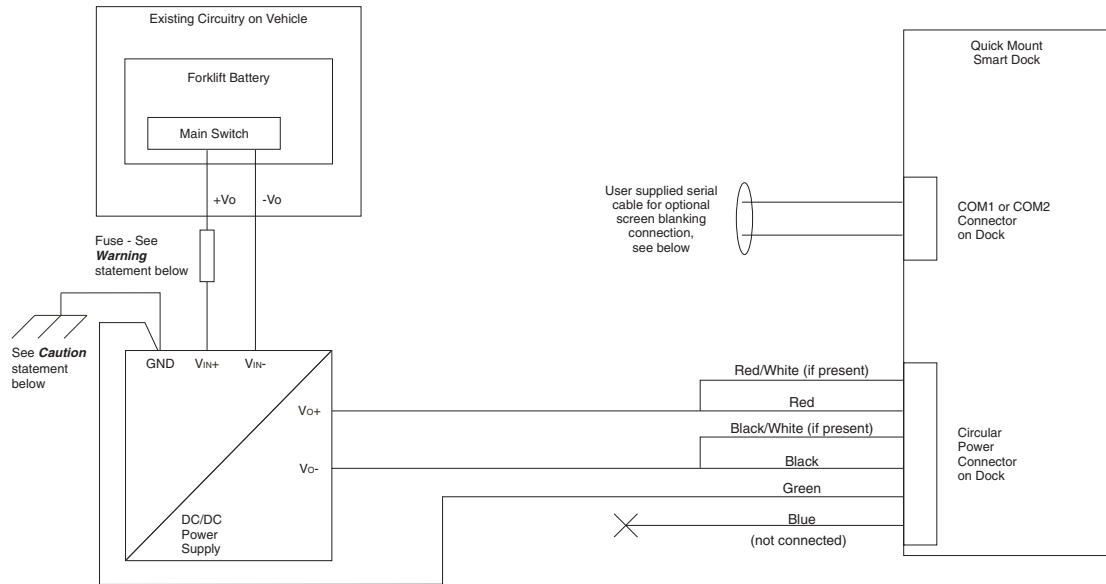- ⊕ must be connected to the vehicle chassis ground.

13. While observing the Fuse Requirements, connect the power cable as close as possible to the actual battery terminals of the vehicle. When available, always connect to unswitched terminals in the vehicle fuse panel, after providing proper fusing.

    ATTENTION: For uninterrupted power, electrical supply connections should not be made at any point after the ignition switch of the vehicle.

14. Use proper electrical and mechanical fastening means for terminating the cable. Properly sized "crimp" type electrical terminals are an accepted method of termination. Select electrical connectors sized for use with 18AWG ($1mm^2$) conductors.

15. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate the outer cable jacket.

16. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely. Flip the power switch on the back of the dock to On.

17. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

18. Place Thor VM3 in the Dock.

19. If using the Screen Blanking feature, install the screen blanking box or switch.

20. Press the Power Switch on the back of the Thor VM3 dock.

21. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

Note: *Ignition control is not available for trucks over 60VDC.*

Wiring Diagram
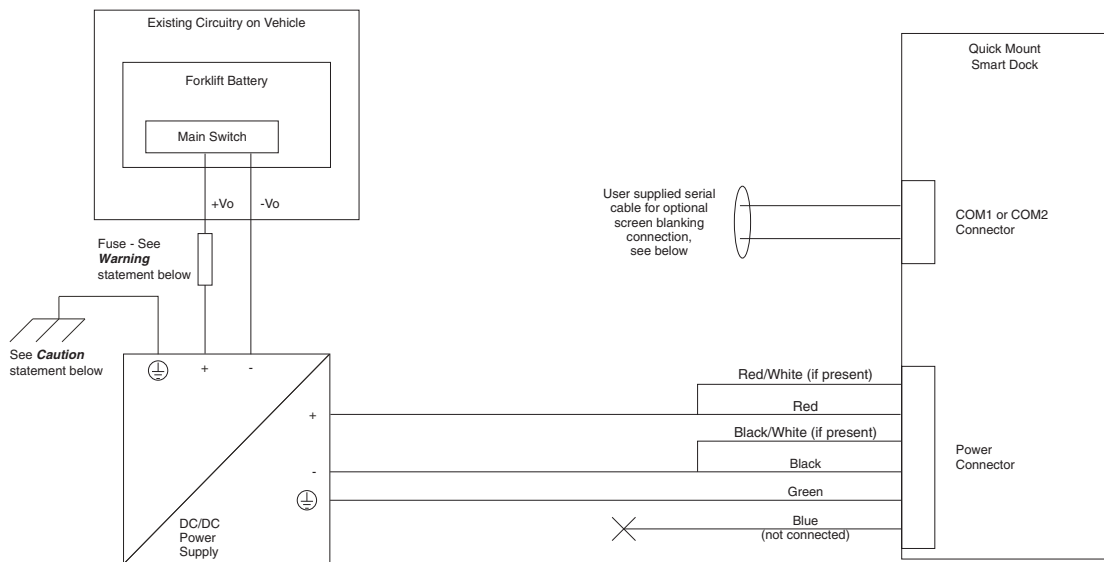
!   **Caution: For battery powered vehicles:**

⏚ must be connected to the vehicle chassis ground.

!   **Caution: For internal combustion engine powered vehicles:**

⏚ is connected to the vehicle chassis ground, which can also be battery negative.

Warning: **For proper and safe installation, the input power cable must be connected to a fused circuit on the vehicle. If the supply connection is made directly to the battery, the fuse should be installed in the positive lead within 5 inches of the battery's positive (+) terminal. Use VM3055FUSE (or equivalent) to install the fuse as shown below:**

- For **all voltages**, use the 3A fuse from the kit or a slow blow fuse that has a DC voltage rating greater than the vehicle input voltage.

Note: *For North America, a UL Listed fuse is to be used.*

VX6 / VX7 Adapter Cable

⚠ These instructions are for use with VM1D Standard Dock and VM3D Enhanced Dock only.

An adapter cable is available to attach the Thor VM3 to a vehicle previously equipped with a VX6/VX7 DC power cable. The adapter cable has a 5-pin connector to match with the VX6/VX7 power supply cable on one end and a 6-pin connector to match to the Thor VM3 on the other end. This section assumes the VX6/VX7 power cable is properly connected to vehicle power. Refer to the VX6 or VX7 Vehicle Mounting Reference Guide for details.

⚠ **Warning: Because the VX6/VX7 supports 10-60 VDC power input, verify input voltages before using this adapter cable with an existing VX6 or VX7 power connection installation.**

To Power Connector on Dock
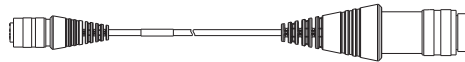
To VX6/VX7 Power Supply Cable

When this adapter cable is used, there is no provision for an ignition switch input. Therefore the vehicle ignition monitoring function is not available when using this cable.

Connect to VX6 / VX7 Power Cable

1. Connect the adapter cable to the Thor VM3 power cable by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

2. The cable is rated for a maximum temperature of 105°C (221°F). Therefore, routing this cable it should be protected from physical damage and from surfaces that might exceed this temperature. Cable should be protected from physical damage from moving parts. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

3. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate outer cable jacket.

4. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

5. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

6. Place Thor VM3 in the Dock

7. If using the Screen Blanking feature, install the screen blanking box or switch.

8. Press the Power Switch on the back of the Thor VM3 dock.

9. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

Thor VX8 / Thor VX9 Adapter Cable

⚠ These instructions for use with VM1D Standard Dock and VM3D Enhanced Dock only. This cable is not used for the VMXD Enhanced Dock

An adapter cable is available to attach the Thor VM3 to a vehicle previously equipped with a VX8/VX9 DC power cable. The adapter cable has a 6-pin connector to match the VX8/XVX9 power supply cable on one end and a 6-pin connector to match the Thor VM3 on the other end. The cable also has bare wires for ground and ignition sense connection plus a D9 cable to connect to a COM port on the Thor VM3 dock to provide a screen blanking signal. This section assumes the VX8/VX9 power cable is properly connected to vehicle power. Refer to the VX8 or VX9 Vehicle Mounting Reference Guide for details.

To COM port on Dock

To VX8/VX9 Power Cable

To Power Connector on Dock

To Ground and Ignition Sense
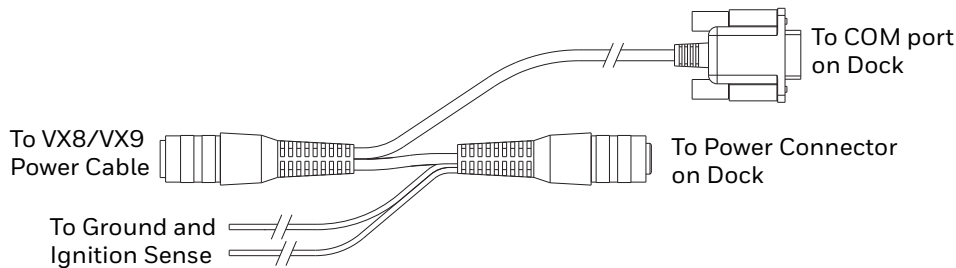
Connect to Thor VX8 / VX9 Power Cable

1. Connect the adapter cable to the Thor VX8/VX9 power cable by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

2. Connect the green wire to vehicle ground

   ⚠ **Caution: For battery powered vehicles:**

   • The green wire must be connected to the vehicle chassis ground.

   ⚠ **Caution: For internal combustion engine powered vehicles:**

   • The green wire is connected to the vehicle chassis ground, which can also be battery negative.

3. If ignition control will be used, connect the blue wire to an ignition switched circuit (less than 1mA over input voltage range). If ignition control is not used, the blue wire can be left disconnected,

4. If the VX8/VX9 cable is connected to a screen blanking box or switch, connect the D9 connector to a COM port on the dock.

5. The cable is rated for a maximum temperature of 105°C (221°F). Therefore, when routing this cable it should be protected from physical damage and from surfaces that might exceed this temperature. Cable should be protected from physical damage from moving parts. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

6. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate outer cable jacket.

7. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

8. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

9. Place Thor VM3 in the Dock.

10. If using the Screen Blanking feature, install the screen blanking box or switch if not previously installed.

11. Press the Power Switch on the back of the Thor VM3 dock.

12. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

CV61 Adapter Cable

> ⚠ These instructions for use with VM1D Standard Dock and VM3D Enhanced Dock only.

An adapter cable is available to attach the Thor VM3 to a vehicle previously equipped with a CV61 DC power cable. The adapter cable has a 5-pin connector to match with the VV61 power supply cable on one end and a 6-pin connector to match to the Thor VM3 on the other end. This section assumes the CV61 power cable is properly connected to vehicle power. Refer to the CV61 documentation for details.

To Power Connector on Dock

To CV41 Power Supply Cable

When this adapter cable is used, there is no provision for an ignition switch input. Therefore the vehicle ignition monitoring function is not available when using this cable.

Connect to CV61 Power Cable

1. Connect the adapter cable to the CV61 power cable by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

2. The cable is rated for a maximum temperature of 105°C (221°F). Therefore, routing this cable it should be protected from physical damage and from surfaces that might exceed this temperature. Cable should be protected from physical damage from moving parts. Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate. Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.

3. Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate outer cable jacket.

4. Connect the watertight connector end of the power cable to the Thor VM3 dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

5. Secure the power cable to the Thor VM3 using the Strain Relief Cable Clamps.

6. Place Thor VM3 in the Dock

7. If using the Screen Blanking feature, install the screen blanking box or switch.

8. Press the Power Switch on the back of the Thor VM3 dock.

9. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

Screen Blanking

Prerequisite: The steps outlined in either 12-48 VDC Vehicles (10-60 VDC Direct Connection), 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Side of Lid) or 60-144 VDC Vehicles (50-150 VDC Power Supply, Screws on Top of Lid) have been completed.

Screen blanking is accomplished by either a Screen Blanking Box or a user supplied switch.

⚠ **Caution: For installation by trained service personnel only.**

Fuse Requirements

⚠ **Warning: For proper and safe installation, the input power lead to the Screen Blanking Box requires a 3 Amp maximum time delay (slow blow) high interrupting rating fuse.**

Note: *For North America, a UL Listed fuse is to be used.*

Screen Blanking Cable

Refer to ZoomZone to configure the Thor VM3 for screen blanking.

When routing any additional cables for screen blanking:

- Route the cable the shortest way possible removing any left-over cable
- Fuses and cabling are user supplied. Therefore, route these cables so they are protected from physical damage and from surfaces that might exceed the cable's rated temperature threshold.
- Cable should be protected from physical damage from moving parts
- Do not expose the cable to chemicals or oil that may cause the wiring insulation to deteriorate
- Always route the cable so that it does not interfere with safe operation and maintenance of the vehicle.
- Provide mechanical support for the cable by securing it to the vehicle structure at approximately one foot intervals, taking care not to over tighten and pinch conductors or penetrate outer cable jacket.

Honeywell Screen Blanking Box Cable

An optional Honeywell Screen Blanking Box Cable is available.
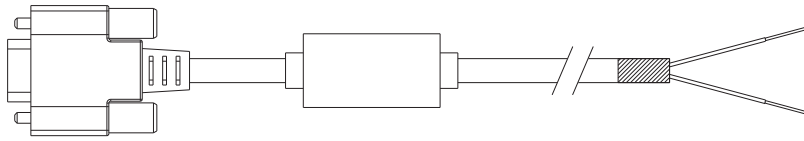
DB9 Female	Function with Screen Blanking Box	Wire color
1 –6, 9	Not Used	
7 (RTS)	Connected to Screen Blanking Box, unswitched side	Black (see note)
8 (CTS)	Connected to Screen Blanking Box, switched side	Gray (see note)

Note: *Wire colors only apply to optional Honeywell Screen Blanking Box Cable, VM1080CABLE. Wire colors may vary in a user-supplied cable.*

The optional Honeywell Screen Blanking Box Cable, VM1080CABLE, is installed as follows:

1. Connect the gray wire of the cable to the switched side of the Screen Blanking Box.

2. Connect the black wire of the cable to the unswitched side of the Screen Blanking Box.

3. Connect the D9 serial connector to either COM1 or COM2 serial port on the Thor VM3 dock.

User-Supplied Cable

A user-supplied cable can be used as well. Pins 7 and 8 must be connected as detailed below. No other pins are to be connected.
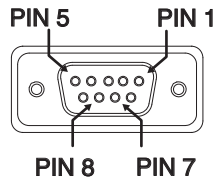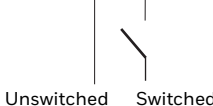
DB9 Female	Function with Screen Blanking Box	Function with Switch
1 –6, 9	Not Used	Not Used
7 (RTS)	Connected to Screen Blanking Box, unswitched side	Connected to Switch
8 (CTS)	Connected to Screen Blanking Box, switched side	Connected to Switch

The user-supplied cable is installed as follows:

1. Connect the wire from Pin 8 of the cable to the switched side of the Screen Blanking Box or to a user-supplied switch.

2. Connect the wire from Pin 7 of the cable to the unswitched side of the Screen Blanking Box or to a user-supplied switch.

3. Connect the D9 serial connector to either COM1 or COM2 serial port on the Thor VM3 dock.

Screen Blanking Box

Screen Blanking Box Terminal	Connection
12-xxV	Input from vehicle motion sensing circuitry. Please refer to label on Screen Blanking Box for allowable voltage input range.
GND	DC −
 Unswitched Switched	These two terminals are for connecting a serial cable: • If using an optional Honeywell screen blanking cable, VM1080CABLE, connect the *gray* wire to the *switched* side of the connection and connect the *black* wire to the *unswitched* side. • If using a user-supplied cable, the cable must be constructed so that Pin 7 (RTS) connects to *switched* side of the connection and Pin 8 (CTS) connects to the *unswitched* side.

It is assumed that the motion sensing circuitry in the illustrations below is powered by internal vehicle circuitry.

Please refer to the appropriate illustration below for Screen Blanking Box wiring diagrams.

Warning: Do not exceed the maximum input voltage, either 60 or 72VDC, specified on the Screen Blanking Box label when using this configuration.
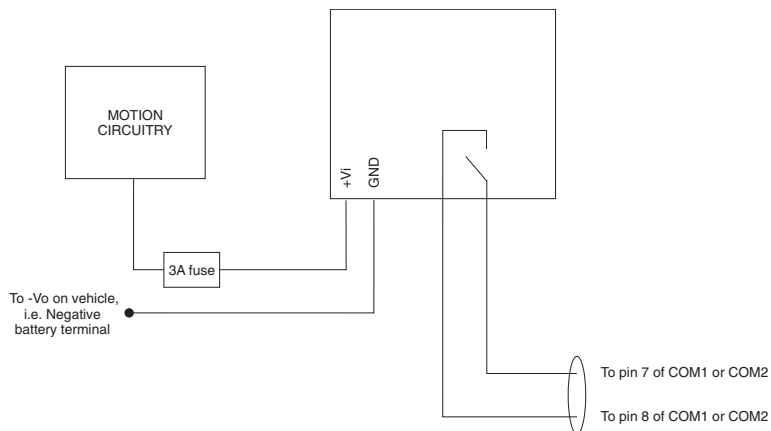
Note: *The black and gray wire colors in the illustration only apply to the optional Honeywell Screen Blanking Box Cable, VM1080CABLE. The wire colors may be different in a user-supplied cable.*

Screen Blanking with Switch

In applications where it is impractical to use the screen blanking box due to vehicle volt-age or lack of a motion sensing signal, screen blanking can be controlled via a user sup-plied switch or relay that provides an electrical conductive connection on vehicle motion.

To pins 7 and 8
of COM1 or COM2
port on dock
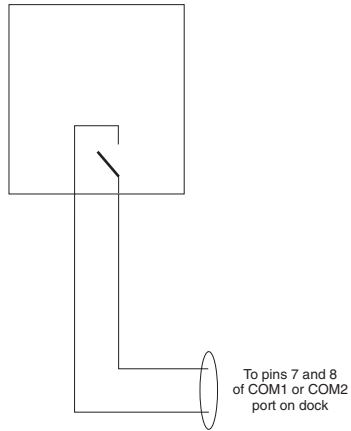
Pins 7 and 8 must be connected as shown in the illustration above. No other pins are to be connected.

VMXD Enhanced Dock with Thor VX8/Thor VX9 Power Cable

⚠️ **Caution:** This dock is recommended for use when replacing an existing Thor VX8 or Thor VX9 where screen blanking is used. This dock eliminates the need for wiring changes by enabling the existing VX8/VX9 power cable and screen blanking box to be used when the VX8/VX9 is replaced by a Thor VM3 computer. These instructions are for this dock model only! The Ignition Control feature is not available when this dock is used.

⚠️ **Warning:** The external DC/DC converter previously used with the Thor VX8 or Thor VX9 must be left in place to provide ground isolation. Connecting the dock power input directly to vehicle power could result in a safety hazard or equipment damage.

⚠️ **Warning:** The cable shielding must be connected to chassis ground. Consult the instructions later in this section for the respective power supply type.

⚠️ **Caution:** COM1 is used for screen blanking (via the power cable connector) and is unavailable when the screen blanking box is attached. When a screen blanking box is attached, any external serial device such as a scanner, must be connected to the COM2 port on the dock. If a screen blanking box is not connected via the power cable, the COM1 port on the dock is available for a serial device connection.

⚠️ These instructions for use with VMXD Enhanced Dock only.

Determine the type of power supply used with the previous Thor VX8 or Thor VX9 installation:

- DC/DC Power Supply with Screws on Top of Lid
- DC/DC Power Supply with Screws on Side of Lid

> ⚠ **Caution:** **Inspect the cable shield to verify it is connected to chassis ground. If there is no connection from the cable shield to chassis ground, one must be added at this time. Use a jumper wire to connect the cable shield to chassis ground as shown below for the appropriate type of power supply installed on the vehicle. A jumper wire, as shown in the illustrations below, may be present to attach the chassis ground to the white wire of the power cable. This wire is not necessary but can be left in place if present. For proper screen blanking, verify the yellow and green wires are attached to the screen blanking box as shown in the illustrations below.**

For this model, follow the diagram below to attach the power cable shield to chassis ground:

> ⚠ **Caution:** **For battery powered vehicles:**

- + is connected to battery positive.
- – must be connected to battery negative.
- ⏚ must be connected to the vehicle chassis ground

⚠ Caution: For internal combustion engine powered vehicles:

- + is connected to battery positive.
- – is connected to battery negative.
- ⏚ is connected to the vehicle chassis ground, which can also be battery negative.

⚠

Caution: Inspect the cable shield to verify it is connected to chassis ground. If there is no connection from the cable shield to chassis ground, one must be added at this time. Use a jumper wire to connect the cable shield to chassis ground as shown below for the appropriate type of power supply installed on the vehicle. A jumper wire, as shown in the illustrations below, may be present to attach the chassis ground to the white wire of the power cable. This wire is not necessary but can be left in place if present. For proper screen blanking, verify the yellow and green wires are attached to the screen blanking box as shown in the illustrations below.

For this model, follow the diagram below to attach the power cable shield to chassis ground:

⚠ **Caution: For battery powered vehicles:**

- VIN+ is connected to battery positive.
- ViN– must be connected to battery negative.
- GND must be connected to the vehicle chassis ground.

⚠ Caution: For internal combustion engine powered vehicles:

- V$_{IN}$+ is connected to battery positive.
- V$_{iN}$- is connected to battery negative.
- GND is connected to the vehicle chassis ground, which can also be battery negative.

External AC/DC Power Supply

⚠️ These instructions for use with VMXD Enhanced Dock for Off-Vehicle Use only.

The optional external AC/DC power supply is for use in environments, such as an office, where DC power is not available.

Note: *The Honeywell-approved AC/DC Power Supply and Adapter Cable are only intended for use in a 40ºC (104ºF) maximum ambient temperature environment.*

In North America, this unit is intended for use with a UL Listed ITE power supply with output rated 15 VDC, 4 Amp (maximum), 60 W (maximum). Outside North America, this unit is intended for use with an IEC certified ITE power supply with output rated 15 VDC, 4 Amp (maximum), 60 W (maximum).

The external power supply may be connected to either a 120V, 60Hz supply or, outside North America, to a 230V, 50Hz supply, using the appropriate detachable cordset. In all cases, connect to a properly grounded source of supply provided with maximum 15 Amp overcurrent protection (10 Amp for 230V circuits).

AC Input Cable (US only)

DC Output Cable

To DC Output Cable

To Dock
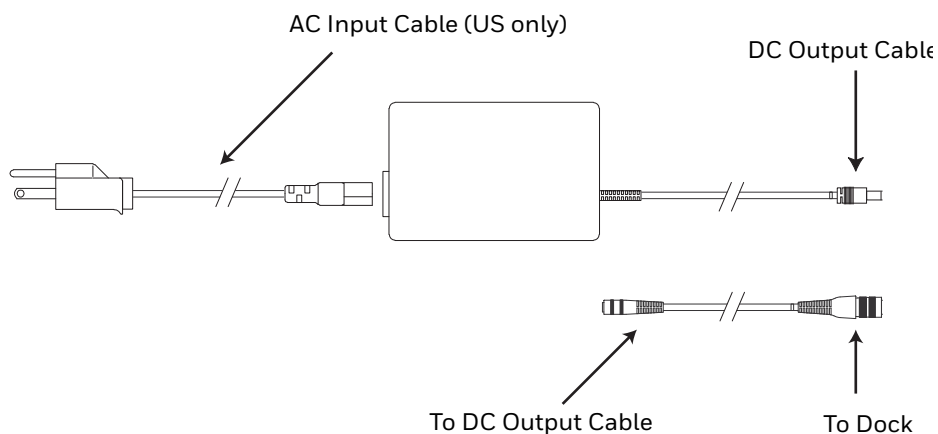
Connect External Power Supply

1. Connect the provided detachable cordset (US only, all others must order cable separately) to the external power supply (IEC 320 connector).

2. Plug cordset into appropriate, grounded, electrical supply receptacle (AC mains).

3. Connect the DC output cable end to the corresponding connector on the adapter cable.

4. Connect the watertight connector end of the Adapter Cable to the VMXD Off-Vehicle Dock power connector by aligning the connector pins to the power connector; push down on the watertight connector and twist it to fasten securely.

5. Press the Power Switch on the back of the Thor VM3 dock.

6. Press the Power Button on the front of the Thor VM3 to turn on the Thor VM3.

When the Thor VM3 is used in an office environment, it can be mounted in a table stand. To use the table stand:

1. Attach the RAM ball to the RAM Metal Table Stand with the supplied screws and nuts.

2. If not present, attach a RAM ball to the VMXD off-vehicle dock. If using an external keyboard mount, attach it now. See Step 2 – Attach RAM Mount Ball to the Thor VM3 Dock for more details.

3. Slide the size D RAM arm over the ball on the table mount.

4. Insert the ball on the dock into the RAM arm and tighten the knob on the RAM arm using the supplied RAM wrench.
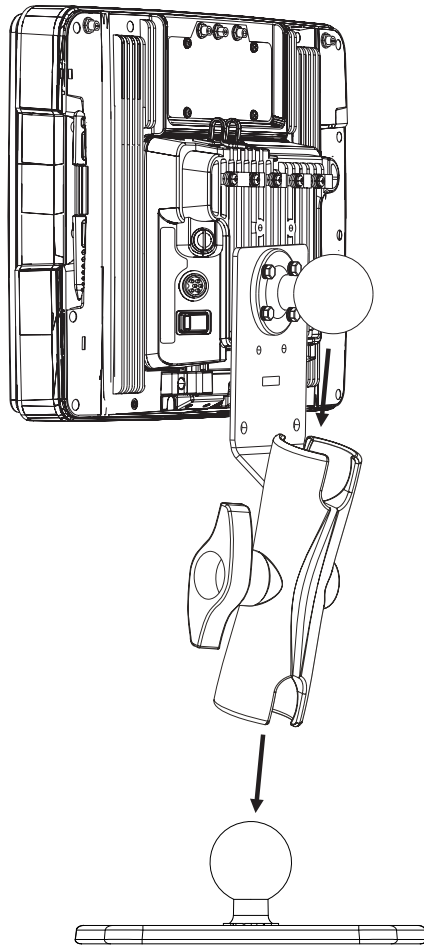
5. If the Thor VM3is not already mounted to the dock, Place Thor VM3 in the Dock.

6. If mounting the keyboard to the Thor VM3, see Step 5 – Attach Alphanumeric Keyboard to Mounting Plate (Optional) and Step 6 – Attach Keyboard Assembly to Thor VM3 Assembly (Optional).

Connect USB Keyboard

There are two external USB keyboard options

- 95-key keyboard (part number **164288-0001**)
- 21-key numeric keyboard.

These USB keyboards have a D9 connector which attaches to the USB port on the Standard Dock or the USB1 connector on the Enhanced Dock.
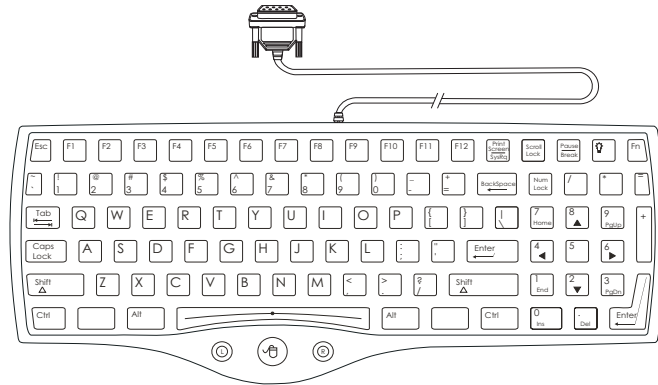
95-Key USB Keyboard
Part number **164288-0001**
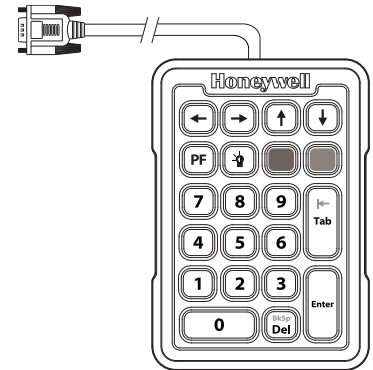
21-Key Numeric USB
Keyboard

1. Seat the keyboard cable connector over the USB or USB1 connector on the dock.
2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.
3. Secure the cable to the Thor VM3 with Strain Relief Cable Clamps.

Connect PS/2 Keyboard
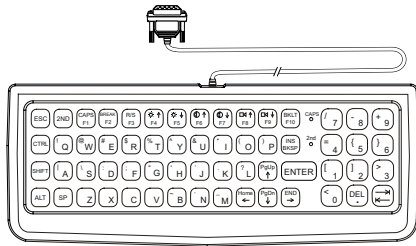
60-Key PS/2 Keyboard

Part number **160068-0001**

Requires PS/2 to USB adapter cable

Not supported on the Thor VM3 with VM1D Standard Dock

Note: *The keyboard backlight must be turned on manually. It does not come on automatically at boot up.*
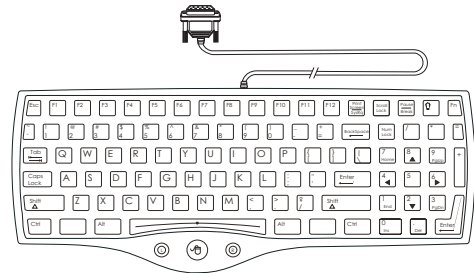
95-Key PS/2 Keyboard

Part number **160491-0001**

Requires PS/2 to USB adapter cable

Not supported on the Thor VM3 with VM1D Standard Dock

Note: *The mouse function is not supported with this keyboard.*

Note: *While the 95-key USB keyboard and the 95-key PS/2 keyboard look similar the installation procedure is different.*

A legacy PS/2 keyboard (used with VX6, VX7, Thor VX8 or Thor VX9), available in either 60-key or 95-key versions can be used with the Thor VM3 via a PS/2 to USB adapter cable. This function is only supported with the VM3D or VMXD Enhanced Docks. It is not supported with the VM1D Standard Dock.
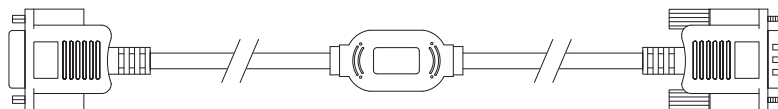
1. Seat the male connector of the cable over the USB connector on the Thor VM3 dock.
2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.
3. Seat the keyboard connector over the female connector of the cable.
4. Tighten the thumbscrews in a clockwise direction. Do not overtighten.

5. Secure the cable to the Thor VM3 with Strain Relief Cable Clamps. The strain relief must capture the keyboard cable.
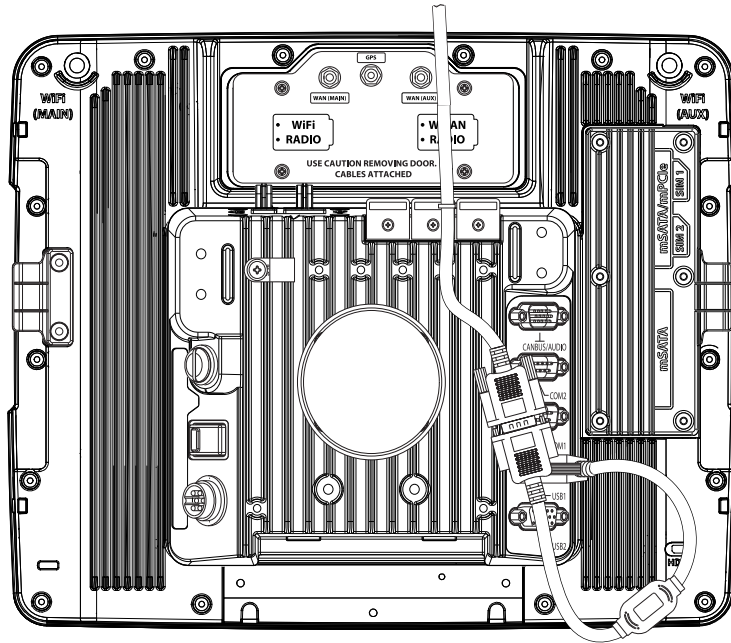
Connect USB Host

Host / Client Y Cable

D9 Connector

USB Host Connector

USB Client Connector
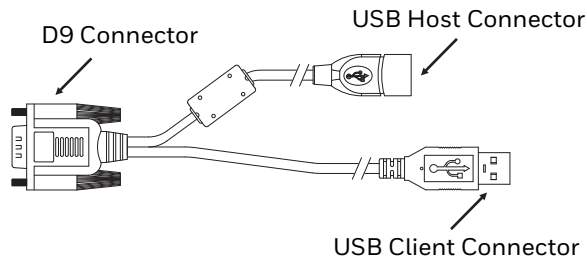
See USB and USB1 Connector for connector pinouts.

Note: *The USB client connection is not available on the Thor VM3.*

1. Seat the D9 connector firmly over the USB (Standard Dock) or USB1 (Enhanced Dock) connector on the dock.

2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.

3. The USB-host connector provides a connector for a USB device such as a USB thumb drive.

4. Secure the cables to the Thor VM3 with Strain Relief Cable Clamps.

Dual Host Y Cable

D15 Connector

USB Host Connectors
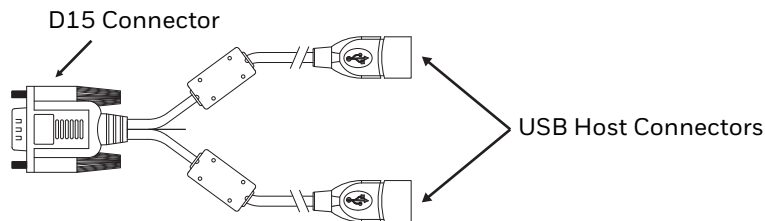
See USB2 Connector for connector pinouts.

1. Seat the D15 connector firmly over the USB2 (Enhanced Dock only) connector on the dock.

2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.

3. The USB-host connectors provide a connector for a USB device such as a USB thumb drive.

4. Secure the cables to the Thor VM3 with Strain Relief Cable Clamps.

USB Scanner

Note: *If using Enterprise Settings to configure the USB scanner, it may be necessary to unplug the scanner and plug it back into the USB port (or remove and reattach the cable) in order for the auto-detect function to display the scanner settings.*

There are several ways to attach a USB scanner:

- A USB scanner can be attached to the USB host port on the Enhanced Dock.
- A USB scanner can be attached to the host port on either USB adapter Y-cable.
- Certain USB scanners can be attached directly to the USB or USB-1 connector using cable CBL-500-300-S00, as shown below.

To use the CBL-500-300-S00 cable:

RJ50 (10-pin) Connector   D9 Connector
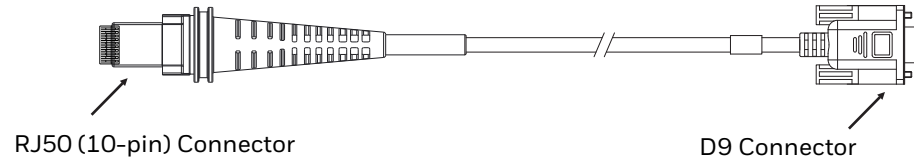
1. Seat the D9 connector of the cable over the USB or USB11 connector on the Thor VM3 dock.
2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.
3. Follow the instructions provided with the scanner to attach the RJ50 end of the cable to the scanner.

See USB Host to Scanner Cable for pinout details.

Connect USB Client

Note: The USB client connection is not used on the Thor VM3.

Connect Serial Device

Note: *Pin 9 of the desired COM port must be configured to provide +5V or RI as needed for the connected device. See the* Options *control panel for details.*

Note: *By default, COM1 and COM2 ports are used by Enterprise Data Collection. To use a COM port for screen blanking, access and set* **Data Collection > Tethered Scanners > Tethered Scanner (COMx) – Enable Scanner Port** *to off (where COMx is either COM1 or COM2).*

See COM1 and COM2 Connector for connector pinouts.

1. Seat the cable end connector firmly over the serial COM port on the dock.
2. Turn the thumbscrews in a clockwise direction. Do not over tighten.
3. Secure the cables to the Thor VM3 with Strain Relief Cable Clamps.
4. Connect the other cable end to the desired serial device.

Connect a Tethered Scanner

1. The scanner cable is attached to either the COM1 or COM2 port on the dock.
2. Connect the serial cable for the scanner as directed above.
3. When the Thor VM3 is powered on, it provides power to the serial scanner.
4. Configure the Data Collection (DC) Wedge to manipulate scanned data as desired.

Connect Headset Cable

The CANbus/Audio connector supports a headset adapter cable or a CANbus cable. The Thor VM3 does not support connecting audio and CANbus simultaneously.
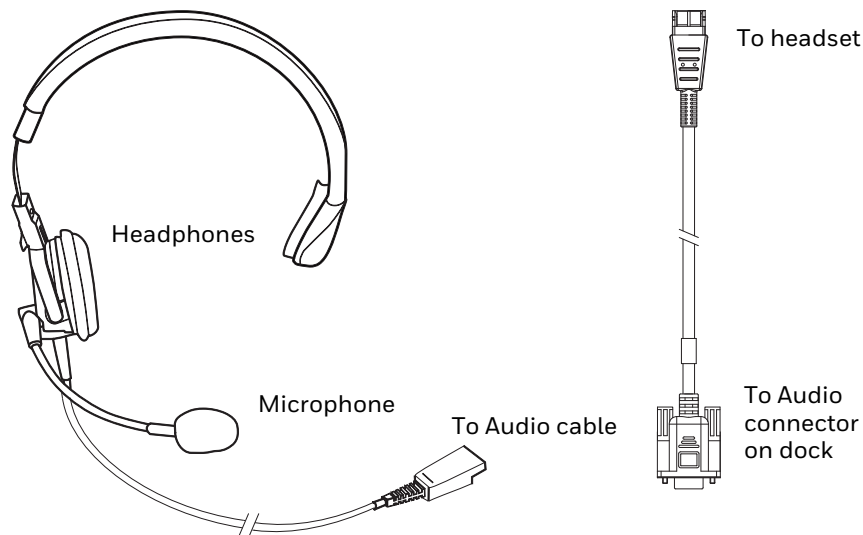
See CANbus / Audio Connector for connector pinouts.

1. Seat the D15 cable end connector firmly over the CANbus/Audio Connector on the dock.

2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.
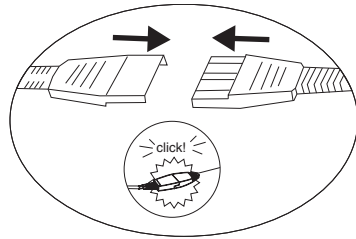
3. Slide the cable ends together until they click shut. Do not twist or bend the connectors. The Thor VM3 internal microphone and speakers are automatically disabled when the headset is connected.

Adjust Headset / Microphone and Secure Cable
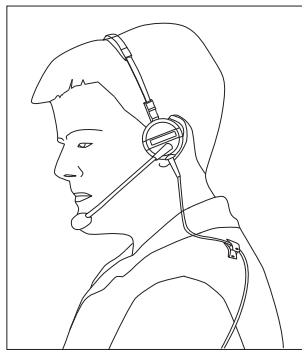
The headset consists of an earpiece, a microphone, a clothing clip and a cable.

1. Do not twist the microphone boom when adjusting the microphone. The micro–phone should be adjusted to be about two finger widths from your mouth.

2. Make sure the microphone is pointed at your mouth. Note the small "Talk" label near the mouthpiece. Make sure the Talk label is in front of your mouth. The microphone cable can be routed over or under clothing.

3. Follow the safety guidelines below when wearing the headset.

Under Clothing

- Leave the cable exposed only at the top of the collar.
- Be sure to leave a small loop of cable to allow movement of your head.

Over Clothing

- Use clothing clips to hold the cable close to your body.
- Tuck the cable under the belt, but leave a small loop where it goes under the belt.
- Do not wear the cable on the front of your body. It may get in your way or get caught on protruding objects.

Connect CANbus Cable

The CANbus/Audio connector supports a headset adapter cable or a CANbus Y cable. The Thor VM3 does not support connecting audio and CANbus simultaneously.
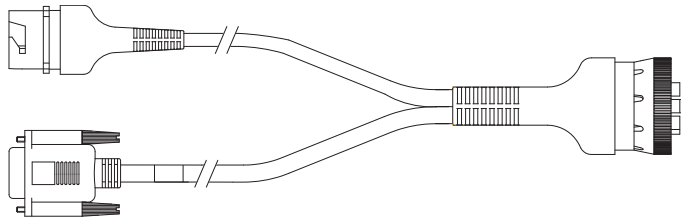
See CANbus / Audio Connector for connector pinouts.

1. Seat the D15 cable end connector firmly over the CANbus/Audio Connector on the dock.

2. Tighten the thumbscrews in a clockwise direction. Do not over tighten.

3. The CANbus Y cable has a 9 pin F SAE J1939 (Deutsch) and 9 pin M SAE J1939 (Deutsch) connector. Connect the appropriate cable connector as needed.

Install External Antenna

The external antenna cannot be used by devices with an internal antenna.

⚠ **Caution: If the Thor VM3 has connectors for external antennas, do not power up the Thor VM3 without the external antennas connected. Damage to the WLAN radio may result.**

1. Remove the rubber cap, if present, from the antenna connector before connecting an external antenna.

2. Place the antenna over the antenna connector. If only one antenna is used, be sure to connect it to the Wi-Fi Main connector.

3. Push down and twist the antenna base clockwise until secure.

4. Repeat for second antenna, if used.

Install Remote Antenna

Remote antennas are available for the 802.11 WLAN radio, the WWAN radio and the GPS.

⚠ Caution: **If the Thor VM3 has connectors for external antennas, do not power up the Thor VM3 without the external antennas connected. Damage to the WLAN radio may result.**

802.11 Remote Mount Antenna
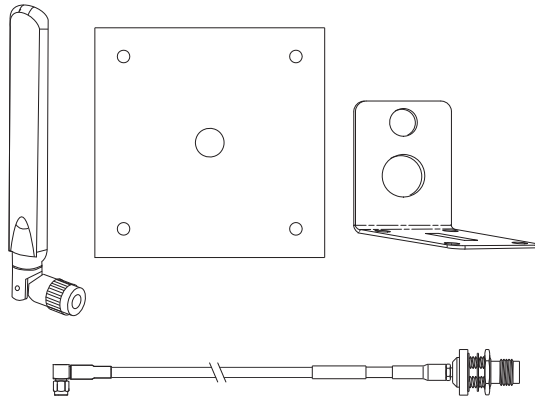
The Remote Antenna Installation Kit consists of two brackets (base plate and right angle), cable, and antenna. Tools are not included.
The desired remote antenna bracket is mounted on the top of a forklift, truck or other vehicle and cabled to the Thor VM3 inside the vehicle.
The Vehicle Remote Mount Antenna cannot be used by devices with an internal antenna.

Components and Mounting Diagram
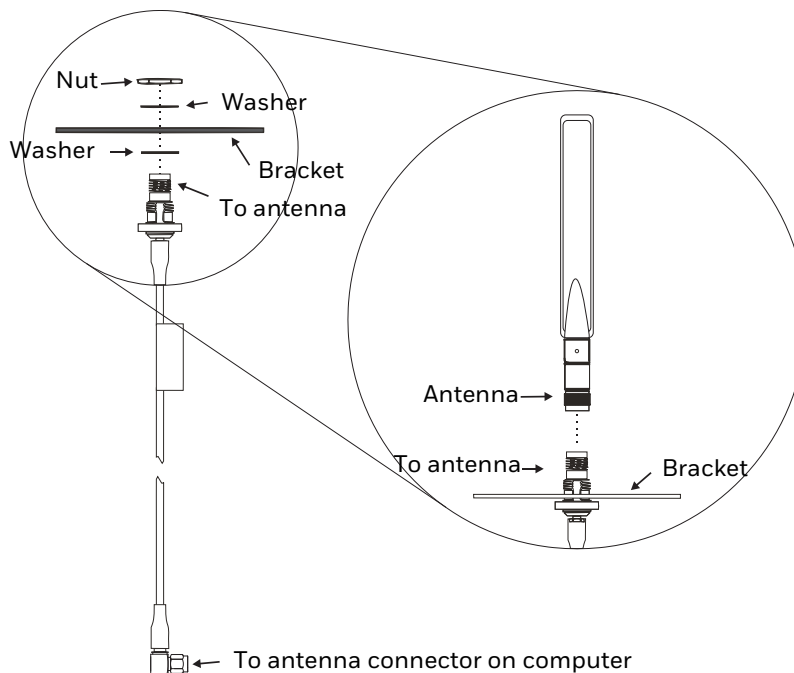
Typical Installation
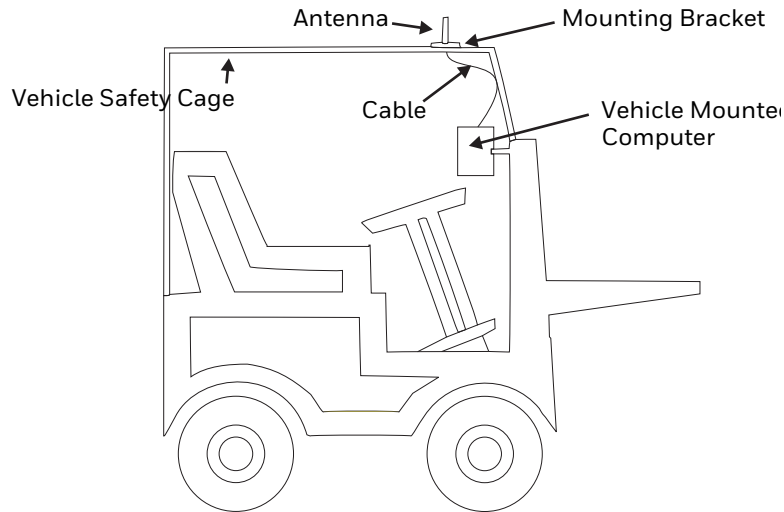
Mounting Instructions

1. Attach and secure the desired mounting bracket to the highest point on the safety cage, following these precautions:

   • The plate must be mounted so the antenna is not damaged while the vehicle or any of its parts are moving.

   • The antenna mounting portion of the bracket must be parallel to the floor.

   • If using two antennas, they must be mounted at least 12 inches (304.8mm) apart.

2. Attach the female connector of the coaxial cable to the antenna connector on the vehicle mounted Thor VM3.

3. Secure the whip antenna to the mounting bracket.

4. Connect the antenna cable to the whip antenna.

5. Use cable ties to secure the coaxial cable to the vehicle as necessary. Make sure the cable is routed so it is not damaged by any moving parts of the vehicle.

6. Connect the cable to the antenna connector (Wi-Fi Main or Wi-Fi Aux) on the Thor VM3. If only one antenna is used, be sure to connect it to the Wi-Fi Main connector.

7. Repeat the steps above for the second 802.11 antenna.

WAN Remote Mount Antenna

The WAN remote mount antenna can be either a magnetic mount or an adhesive mount antenna.

Magnetic Mount WAN Antenna
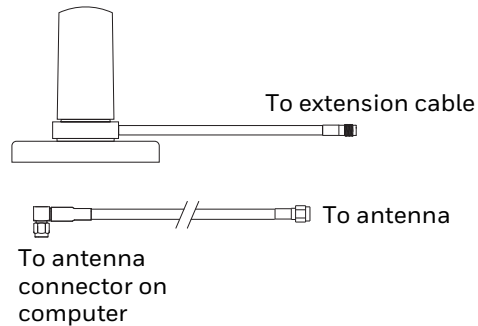
Adhesive Mount WAN Antenna

To extension cable

To extension cable

To antenna

To antenna
connector on
computer

To antenna

To antenna
connector on
computer
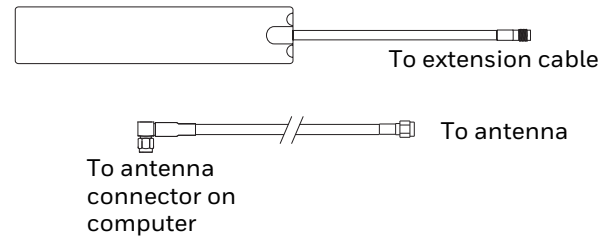
The Remote Antenna Installation Kit consists of the WAN antenna and an extension cable. The remote antenna is mounted on the top of a forklift, truck or other vehicle and cabled to the Thor VM3 inside the vehicle.

1. Locate a mounting position on highest point on the vehicle, following these precautions:

   • The antenna must be mounted so the antenna is not damaged while the vehicle or any of its parts are moving.

2. Clean the area where the antenna is to be mounted.

3. If using an adhesive mount antenna, remove the protective backing paper from the adhesive on the antenna.

4. Position the antenna on the vehicle.

5. Attach the one end of the coaxial cable to the antenna and the other end to the Mobile Net WWAN connector on the vehicle mounted Thor VM3.

6. Use cable ties to secure the coaxial cable to the vehicle as necessary. Make sure the cable is routed so it is not damaged by any moving parts of the vehicle.

GPS Remote Mount Antenna

The external GPS antenna is an adhesive mount antenna.
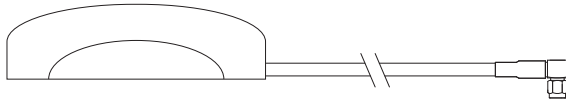
The Remote Antenna Installation Kit consists of the antenna and an integrated cable. The remote antenna is mounted on the top of a forklift, truck or other vehicle and cabled to the Thor VM3 inside the vehicle.

1. Locate a mounting position on highest point on the vehicle, following these precautions:

    *   The antenna must be mounted so the antenna is not damaged while the vehicle or any of its parts are moving.

2. Clean the area where the antenna is to be mounted.

3. Remove the protective backing paper from the adhesive on the antenna and position the antenna on the vehicle.

4. Attach the connector on the coaxial cable to the GPS antenna connector on the vehicle mounted Thor VM3.

5. Use cable ties to secure the coaxial cable to the vehicle as necessary. Make sure the cable is routed so it is not damaged by any moving parts of the vehicle.

Apply Touch Screen Protective Film

The optional Thor VM3 touch screen protective film is shipped in packs of 10. The protective film is flexible and treated with an anti-glare coating on the outer surface.
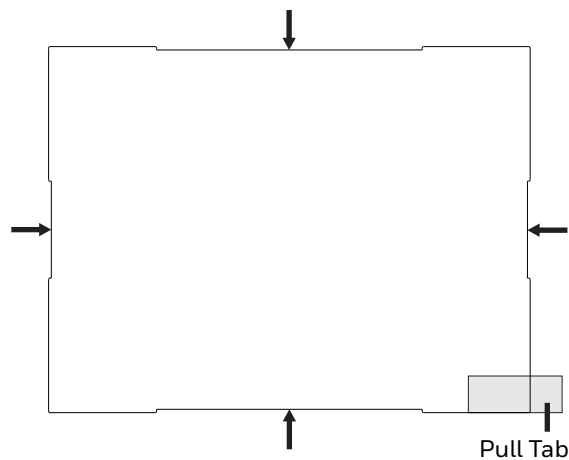
The protective film is slightly larger than the Thor VM3 touch screen, however the notches on the edge of the protective film (indicated by the arrows) correspond to the display size of the Thor VM3. The protective film is not adhesive. The corner edges are designed to fit between the Thor VM3 display and the display housing to hold the protective film in place.

A protective backing is applied to the rear surface of the protective film. A pull tab is attached to the protective backing for easy removal of the protective backing from the film.

Pull Tab

Installation

1. Make sure the touch screen is clean and dry before installation. See Cleaning for instructions on suitable cleaning agents.

2. Pull the release tab to separate the protective backing from the rear of the protective film. Avoid touching the rear side of the protective film while removing the liner.

3. Place the rear side of the protective film against the Thor VM3 display, roughly centering the protective film over the display.

4. Slide the protective film until one corner can be slid back between the touch screen and the display housing as the protective film is re-centered on the display. It may be necessary to press the edges of the protective film against the display to ensure the entire edge slides under the display housing. It is easiest to start with one of the bottom corners.

5. Slide the protective film away from the other bottom corner. The film may bulge slightly away from the Thor VM3 as it is being slid. Only slide the protective film enough so that the protective film can slide under the display housing on that corner when the protective film is returned to center.

6. Repeat with each of the top corners, sliding the protective film away from the corner just enough that the protective film can slide under the display housing when the protective film is returned to center.

7. It may be necessary to flex the protective film during the install, however use care not to flex the protective film so much that the protective film kinks.

8. Once all corners are secure under the display housing, adjust the protective film, if necessary, so it is centered on the touch screen.

Removal

1. To remove the protective film, slide the protective film in one direction until the edge clears.

2. Lift up on the edge of the protective film so it does not slide between the touch screen and display housing when the protective film is slid back to the center.

3. Repeat until all edges are free and remove the protective film.

Disconnect UPS Battery

⚠️ **Caution: The UPS battery must be disconnected before you ship the Thor VM3 or** Replace Front Panel**.**

Equipment Required

The following equipment is user-supplied:

- Torquing tool capable of measuring inch pounds
- #2 Phillips screwdriver bit

Disconnect Procedure

1. For convenience, the Thor VM3 can be removed from the dock, though it is not necessary.
2. If the Thor VM3 remains in the dock, disconnect the power cable from the dock.
3. Shutdown the Thor VM3.
4. Place the Thor VM3 face down on a stable surface.
5. Use a #2 Phillips bit to loosen the captive M3 screws on the access panel with the mSATA and SIM labels.

6. Locate the small push button located just below the SIM card installation slot.
7. Press the push button to disconnect the UPS. The UPS battery maintains its charge but is disconnected from the power circuitry of the Thor VM3.
8. Reattach the access panel, torquing the M3 screws to 7.0 ± 0.5 inch pounds using a #2 Phillips bit.
9. When the Thor VM3 is attached to external power, the UPS battery is automatically reconnected.
10. Restart the Thor VM3
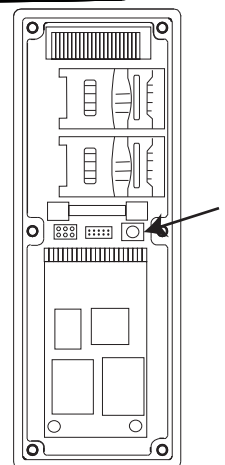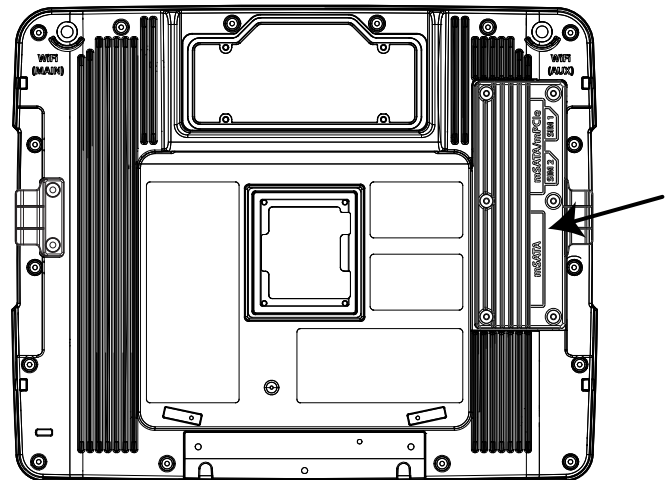
Install mSATA Drive

Note: *Install SIM Card(s) before installing the mSATA drive.*

An mSATA card slot is provided for storage expansion.

⚠ • Only mSATA drives with pin 43 not connected are supported.

• Connecting an mSATA drive with connector pin 43 grounded can result in system instability such as a failure to boot or non-functional accessories such as keyboard or mouse.

Equipment Required

The following equipment is user-supplied:

• Torquing tool capable of measuring inch pounds
• mSATA card

Installation Procedure

Note: *Install any SIM cards before installing the mSATA drive.*

1. Shutdown the Thor VM3.

2. Remove the Thor VM3 from the dock.

3. Disconnect UPS Battery.

4. Place the Thor VM3 face down on a stable surface.

5. Use a #2 Phillips bit to loosen the captive M3 screws on the access panel with the mSATA and SIM labels. This panel is on the right hand side when the Thor VM3 is face down with the top away from the user.
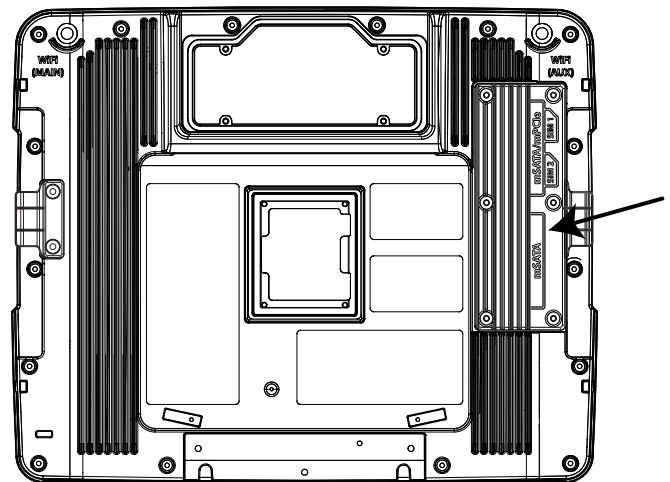
6. Locate the mSATA card installation slot.

7. Tilt the card at a 45° angle and insert the connector end of cards into the slot.

8. Once the connector end is inserted, lower the card until the other end is captured and secured by the anchor pins.

9. Reattach the access panel, torquing the screws to 7.0 ± 0.5 inch pounds.

10. Reinstall the Thor VM3 in the dock.

11. Restart the Thor VM3.

12. When using Windows explorer to view My Computer, the mSATA expansion card is identified as **Hard Disk Drive**, usually Drive D:.
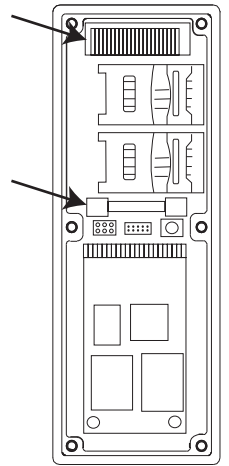
Install SIM Card(s)

The Thor VM3 supports two SIM cards for WWAN switching. The Thor VM3 can switch between carriers, but the WWAN connection is lost during this switch as the first carrier must be disconnected before the second carrier can be connected. See VM3 WWAN Connection Manager for software configuration.

Note: The SIM card is not hot-swappable. After installing or removing a SIM card, the Thor VM3 must be rebooted for the change to take effect.

Equipment Required

The following equipment is user-supplied:

- SIM card(s) for desired carrier(s)
- Torquing tool capable of measuring inch pounds
- #2 Phillips screwdriver bit

Installation Procedure

1. Shutdown the Thor VM3.

2. Remove the Thor VM3 from the dock.

3. Disconnect UPS Battery.

4. Place the Thor VM3 face down on a stable surface.

5. Use a #2 Phillips bit to loosen the captive M3 screws on the access panel with the mSATA and SIM labels. This panel is on the right hand side when the Thor VM3 is face down with the top away from the user.

6. Locate the SIM card holders. The VM3 WWAN Connection Manager identifies the top slot (the slot
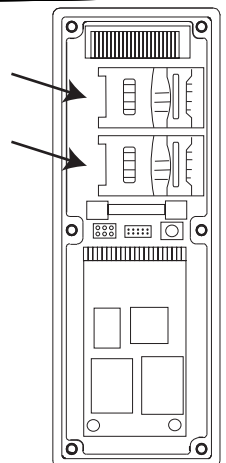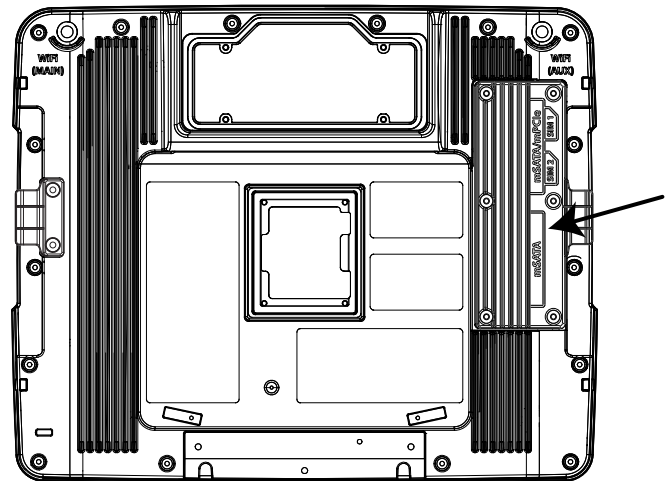
closest to the top of the Thor VM3 as slot 1 (SIM 1) and the lower slot as slot 2 (SIM 2).

Note: *If an mSATA drive has been installed, it is necessary to remove the drive before installing the SIM card(s).*

7. Slide the silver retainer clip toward the center of the Thor VM3.
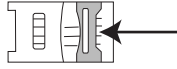
8. After the clip is slid in, lift the outer edge of the SIM holder so it is at a 45º to 90º angle (compared to the circuit board on which it is mounted).
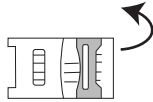
9. Insert the SIM card into the SIM holder.

Note: *The SIM card does not have a "spring lock" type holder. Slide the SIM card into the holder but do not push it expecting it to lock into place. The SIM card will be held in place when the card holder is closed.*
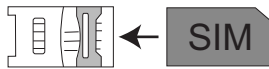
10. Lower the SIM holder to back to its flat position.
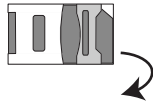
11. Slide the silver retainer clip back toward the outside edge of the Thor VM3. This locks the SIM card in place.

12. Reattach the access panel, torquing the screws to 7.0 ± 0.5 inch pounds.

13. Reinstall the Thor VM3 in the dock.

14. Restart the Thor VM3.

Replace Front Panel

Front Panel Options

The front panel of the Thor VM3 is field replaceable. The front panel assembly contains the keypad, touch screen and optional defroster. Should any of these components fail, the front panel assembly can easily be replaced to reduce downtime. The replacement front panel is available in these configurations:

- Standard temperature with resistive touch screen
- Cold storage with resistive touch screen
- Standard temperature with PCAP touch screen
- Outdoor with resistive touch screen
- Outdoor with PCAP touch screen

Note: *The resistive and PCAP touch screens each use a unique stylus. If switching between touch screen types, be sure to swap the stylus as well.*

Equipment Required

The following equipment is user-supplied:

- Torquing tool capable of measuring inch pounds
- #2 Phillips screwdriver bit

Replacement Procedure

⚠️ **Caution: Before replacing the Thor VM3 front panel,** Disconnect UPS Battery**.**

1. Place the Thor VM3 on a clean, well-lit surface before performing the front panel replacement.
2. Shutdown the Thor VM3.
3. Remove the Thor VM3 from the dock.
4. Disconnect UPS Battery.
5. Loosen the sixteen (16) captive M3 screws holding the front panel. Use a #2 Phillips bit.
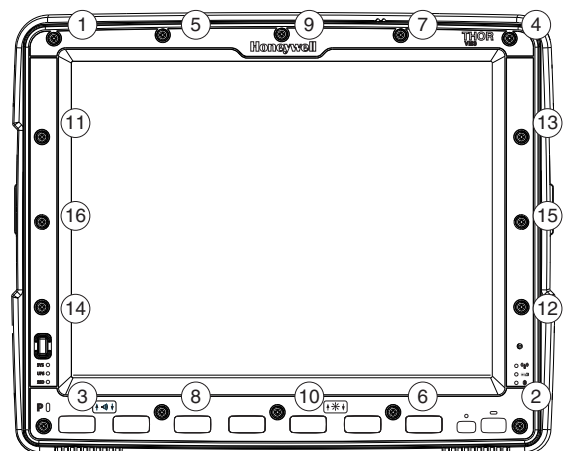
6. Carefully lift the front panel away from the device.

Wiring Connector
on Thor VM3

Wiring Connector
on Front Panel
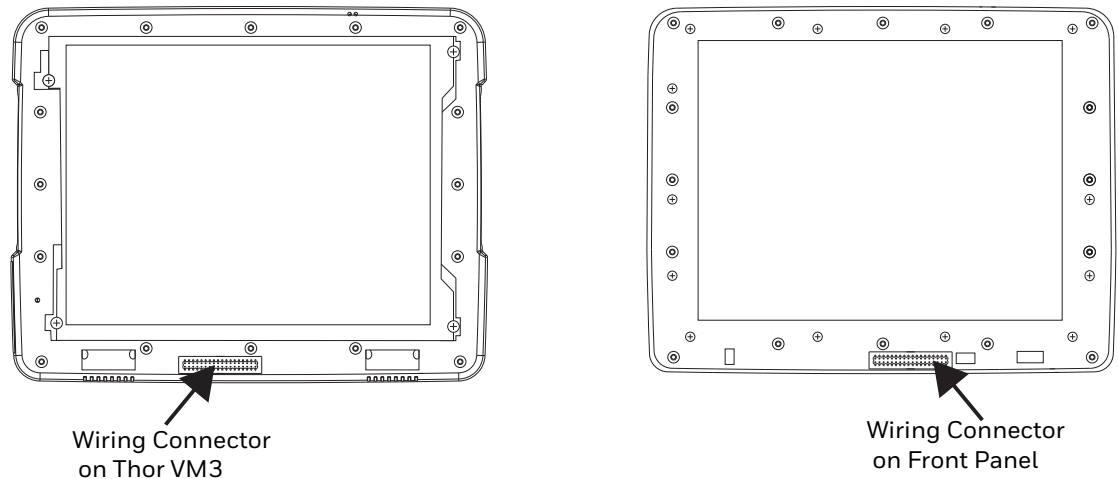
7. Position the replacement front panel so wiring connector on the back of the front panel lines up with the connector on the Thor VM3.

8. Gently press the front panel into place.

9. Tighten the sixteen (16) captive M3 screws. In the order shown in the top figure above, use a #2 Phillips bit and torque the screws to 7 ± 0.5 inch pounds.

10. Reinstall the Thor VM3 in the dock.

11. When the Thor VM3 is placed in the powered dock, the UPS battery automatically reconnects.

12. Restart the Thor VM3.

13. If adding or removing a defroster, update the Thor VM3 configuration by selecting **Screen Control**. It may be necessary to change the control panel to Large Icon or Small Icon view before selecting Screen Control. Tap the **Detect Defroster** button and follow any on-screen prompts.

14. Close any open control panel windows.

15. If the replacement touch screen contains a resistive touch screen, perform a Touch Screen Calibration.

16. The Thor VM3 is ready for use.

SOFTWARE

Microsoft Windows Setup and Configuration

After the system files are processed, Microsoft Windows begins to load. Windows maintains a System Registry and INI files. Standard Windows configuration options apply to the Thor VM3. Configuration options are located in the System Tray or the Control Panel:

- The System Tray contains icons for adjusting the time, date or volume level.
- The Control Panel contains icons for many other configuration options, such as Power Management, Regional and Language Options, etc.
- The Control Panel icons are also used to add, delete or modify software installed on the Thor VM3.

For Microsoft Windows 7 and Windows Embedded 7:

⚠ It is necessary to run to run RFTerm as an administrator when modifying settings because these programs must be able to access and make changes to the Windows registry.

Drive C Folder Structure

Microsoft Windows is installed in the \Windows folder. In addition, Microsoft Windows creates other folders and several subfolders. For more information on the folder structure, please refer to commercially available Microsoft Windows OS reference guides.

Software Loaded on Drive C

The software loaded on the Thor VM3 computer includes:

- BIOS
- Microsoft operating system (Windows Embedded Standard 7 or Windows 7 Professional)
- device drivers
- radio software, see WLAN Wireless Configuration Utility (WCU) and VM3 WWAN Connection Manager

- touch screen software

The software installed on the Thor VM3 is summarized below.

Note: *Due to the complex folder structure and System Registry under Microsoft Windows, software should not be removed manually. Instead use the Windows Control Panel.*

Microsoft Windows

Microsoft Windows is installed in the \Windows subfolder, which is the Windows default. In addition, Windows places files in other folders and subfolders during installation. For more information, please refer to commercially available Microsoft Windows OS user guides.

Device Drivers

Device drivers are installed for all installed hardware options, such as the display, touch screen, radios, etc. For more information on Microsoft Windows device drivers, please refer to commercially available Windows OS reference guides.

Radio Software

The Thor VM3 is delivered with the radio software installed. Because the Thor VM3 uses a Microsoft Windows operating system, the radio installation includes Windows device drivers.

Touch Screen Software

Software is installed for calibrating the standard resistive touch screen. See Touch Screen Calibration for more information.

Touch screen calibration is not necessary with the optional Projective Capacitance (PCAP) touch screen.

RFTerm

⊞ (Start) > All Programs > RFTerm

Note: *RFTerm is obsolete.*

Optional terminal emulation software. The application can also be accessed by double-clicking the RFTerm desktop icon.

- It is necessary to run to run RFTerm as an administrator when modifying settings because RFTerm must be able to access and make changes to the Windows registry.
- *Rather than selecting to run as administrator each time, right-click on the RFTerm icon and select* Properties. *Tap the* **Compatibility** *tab and check* **Run this program as an administrator**. *This modification affects the current user only unless* Change settings for all users is tapped *before changing the privilege level.*

Enterprise Client Pack

There are several components of the Enterprise Client Pack installed on the Thor VM3. For more information on these programs visit the Thor VM3 product page at www.honeywellaidc.com.

Enterprise TE

(Start) > All Programs > Honeywell > Enterprise TE

Optional terminal emulation software. The application can also be accessed by double-clicking the Enterprise TE desktop icon.

Enterprise Browser

(Start) > All Programs > Honeywell > Enterprise Browser

Optional lock-down web client software. The application can also be accessed by double-clicking the Enterprise Browser desktop icon.

Enterprise Browser is designed for users running web-based applications to limit access to other applications, web sites, or other parts of the operating system

Enterprise Browser can be used alone or with Launcher.

Launcher

(Start) > All Programs > Honeywell > Launcher

Optional lock-down menu software. The application can also be accessed by double-clicking the Launcher desktop icon.

End users must log in and can only access authorized programs.

Launcher can be used alone or with Enterprise Browser.

CloneNGo

To launch CloneNGo, right-click on the CloneNGo icon on the desktop and select Run as Administrator.

For information on using CloneNGo on the Thor VM3, refer to the CloneNGo User Guide available at www.honeywellaidc.com.

WLAN Wireless Configuration Utility (WCU)

Manage the wireless 802.11 client installed in the Thor VM3.

VM3 WWAN Connection Manager

Manage the WWAN network device installed in the Thor VM3.

Control Panel

Most control panel applets on the Thor VM3 are standard Microsoft Windows items. The control panels and other functions listed below may differ from a standard Microsoft Windows equipped PC or laptop.

About

🟦 **(Start) > Control Panel > About** (Large or Small Icon View)

Software
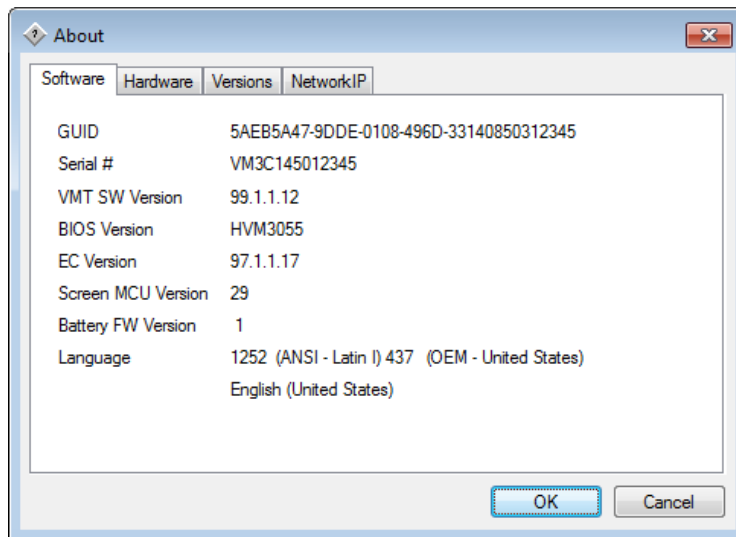
Firmware Versions

The **Software** tab lists the firmware versions installed. The VMT software version and battery, BIOS, Embedded Controller (EC) and Screen MCU firmware versions are shown on this tab.

Battery FW Version

The battery firmware version identifies the type of UPS battery installed in the Thor VM3.

Language

The **Software** tab displays the localized language version of the OS image. The language is identified as English or + an additional language.

The Thor VM3 may be preloaded with an English only OS. Contact Technical Assistance for information on ordering a recovery DVD with an additional language.

Versions

The **Versions** tab displays the versions of many of the software programs installed. Not all installed software is included in this list and the list varies depending on the applications loaded on the Thor VM3. The Image line displays the revision of the system software installed. Refer to the last three digits to determine the revision level.

Versions Tab and the Registry

The **Versions** tab displays program version details from the registry. Customized information can be displayed by modifying the Registry using the Registry Editor. Use caution when editing the Registry and make a backup copy of the registry before changes are made.

The registry settings for the **Versions** tab are under `HKEY_LOCAL_MACHINE \ Software \ HSM \ Version` in the registry. To add a user application to the Version panel, create a new string value under the `HKEY_LOCAL_MACHINE \ Software \ HSM \ Version` key. The string name should be the Application name to appear in the Version window. The data for the value should be the version number to appear in the Version window. Version strings can be equal to or less than 254 characters. Because the strings are displayed in a text box, any number can be accommodated, up to the 64K byte text box limitation.

Network IP
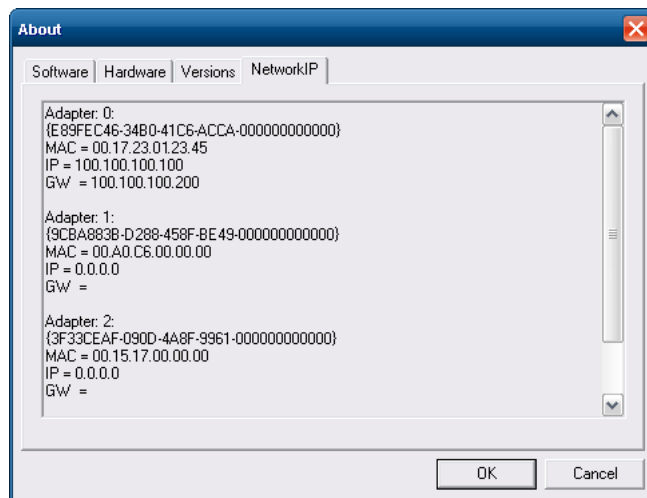
MAC Address

The **Network IP** tab displays the MAC address of the network card(s) such as the WLAN radio and the Bluetooth module.

First, locate the Thor VM3 Bluetooth address by tapping (**Start) > Control Panel > Bluetooth > About** tab.

Bluetooth Printing

[Start icon] **(Start) > Control Panel > Bluetooth Printing** (Large or Small Icon View)

To configure your computer for Bluetooth wireless printing, you need to:

- Create an application that opens the wireless printing COM port on your computer. For help, see the Bluetooth Resource Kit, which is part of the Intermec Developer Library (IDL), available from the Intermec website at www.intermec.com/idl.

- Select the current wireless printer on your computer. For help, see the Printer Options section of Enterprise Settings.

Note: *You can also print wirelessly using Microsoft APIs with Bluetooth extensions for Winsock and Bluetooth. For help, see the Bluetooth Resource Kit documentation.*

The Bluetooth Printing wizard supports the following Honeywell printers:

- PR2
- PR3
- PB31
- PB21
- PB42
- PB50

To connect a printer using the search option:

1. Turn on the printer.
2. Select **Bluetooth Printing** from the control panel.
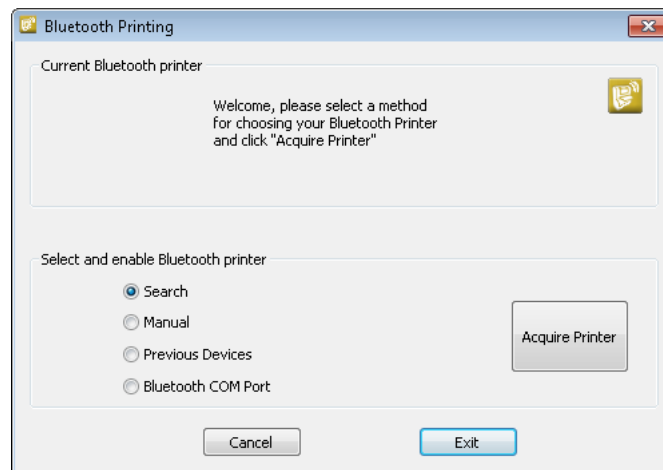
3. Select **Search** and tap A**cquire Printer**.
4. A list of available Bluetooth printers is displayed.
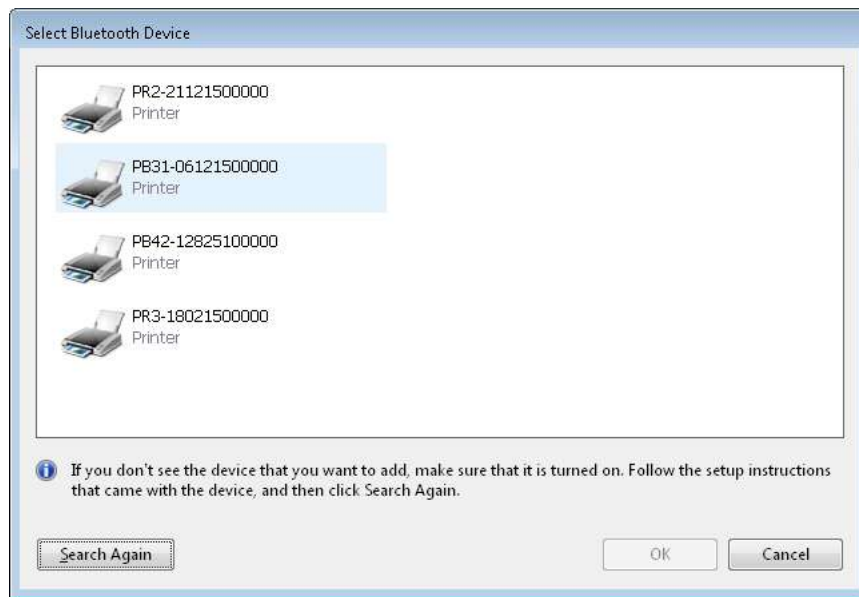
Note: *Due to operating system limitations, other Bluetooth devices may not be filtered out from the printer listing.*

5. If this is the first time a printer is connected, it may take 40-45 seconds for the driver to install.

6. If no error message is displayed, the printer is ready. If an error message such as the one below is displayed, the timeout may have happened before the driver installation has completed.
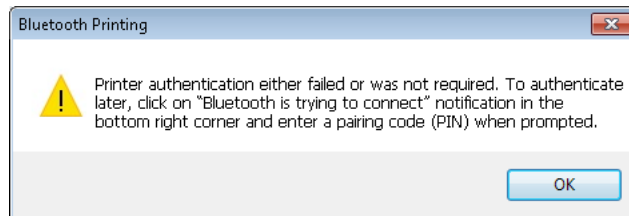
To continue after this error:

• Dismiss the error.

• Return to the Bluetooth Printing control panel and repeat the process starting with step 3.

7. The Bluetooth printer is shown. Print a test page if desired.

Thor VM3 with Microsoft Windows 7 or Windows Embedded Standard 7 User Guide
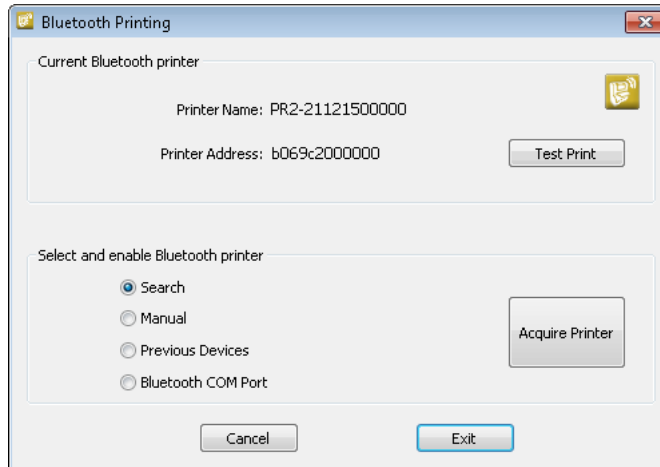
Bluetooth Scanning

 (**Start**) > **Control Panel** > **Bluetooth Scanning** (Large or Small Icon View)

There are several options to add a scanner:

- Quick Connect – Displays a bar code to be scanned by the desired Bluetooth scanner. The bar code displayed on screen only works for certain Bluetooth scanners. See Quick Connect for details and supported scanners.

- Search – Initiates a search (discovery) of Bluetooth scanners within range. See Search for details

- Manual – Prompts for entry of the Bluetooth scanner's MAC address. See Manual for details.

- Previous Devices – Displays a list of devices previously discovered Bluetooth scanners.

Some scanners are not supported via Bluetooth Scanning. To connect one of these scanners, see Adding Other Scanners.

If a scanner does not connect, see Troubleshooting for help.

Quick Connect

There are two different bar codes printed on decals on the side of the Thor VM3.

Note: *The bar codes below are samples. Do not scan these to connect a Bluetooth scanner. Scan the bar code on your device.*

LnkB00078006111AAA

Bluetooth Quick Connect 007806111AAA

LnkB Bar Code Sample

Quick Connect Bar Code Sample

Using Quick Connect with Preprinted Labels

Scan the applicable bar code as indicated below:

Use the LnkB bar code on either side of the Thor VM3 to connect the following scanners:

- Honeywell/LXE 8650 family of Bluetooth ring scanners
- Honeywell Granit 1911i Bluetooth scanner
- Honeywell Granit 1981i Bluetooth scanner
- LXE 88x0 family of Bluetooth scanners

Use the bar code Quick Connect bar code on either side of the Thor VM3 to connect the following scanners:

- Intermec SF51 Bluetooth scanner
- Intermec SF61 Bluetooth scanner
- Intermec SR61 Bluetooth scanner

Using Quick Connect with On Screen Bar Code

1. Select Bluetooth Scanning from the Control Panel (either large or small icon view option must be selected).
2. Tap Add Device.
3. Select Quick Connect (incoming).
4. Tap Next.

5. Select the type of scanner to add:

Select Granit 2D scanner to:	Select SF51, SF61 or SR61 scanner to:
Display this bar code	Display this bar code
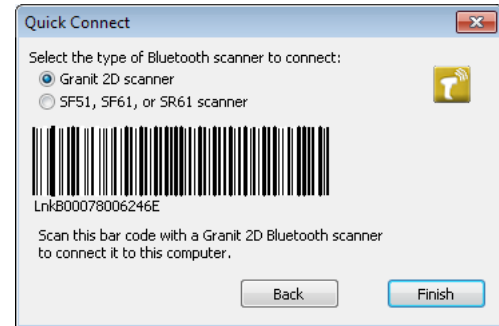
Scan the displayed bar code to connect one of these scanners:

- Honeywell/LXE 8650 family of Bluetooth ring scanners

- Honeywell Granit 1911i Bluetooth scanner

- Honeywell Granit 1981i Bluetooth scanner

- LXE 88x0 family of Bluetooth scanners

Scan the displayed bar code to connect one of these scanners:

- Intermec SF51 Bluetooth scanner

- Intermec SF61 Bluetooth scanner

- Intermec SR61 Bluetooth scanner

Note: *Not all bar code scanners can read the bar code from the screen. If this process fails, use the printed label on the device. See* *.*

Search

To search for a Bluetooth scanner:

1. Select Bluetooth Scanning from the Control Panel (either large or small icon view option must be selected).

2. Tap Add Device.

3. Select Search.

4. Tap Next.

5. Select the scanner from the devices shown.

6. Tap Next.

Manual

1. Select Bluetooth Scanning from the Control Panel (either large or small icon view option must be selected).

2. Tap Add Device.

3. Select Manual.

4. Tap Next.

5. Enter the MAC address of the Bluetooth scanner.

6. Tap Next.

Troubleshooting

- The Honeywell Xenon 1902 Bluetooth scanner does not work with Quick Connect. It must be connected using the Search or Manual options.

- Make sure the scanner is in the correct mode. Bar codes to set the mode can be found in the manual provided with the Bluetooth scanner.
  - The scanner must be a master device to use the Quick Connect option.
  - The scanner must be a slave device to use the Search or Manual option.

- The Motorola/Symbol LS3578 family of scanners may not support the Quick Connect feature (depending on firmware installed). If Quick Connect does not work, use the other options to connect these scanners.

- If the Honeywell Granit 1911i and Granit 1981i scanners cannot be found with the Search option, scan the PDAs/Mobility Systems Devices bar code from the scanner manual and search again.

- If the Honeywell Granit 1911i and Granit 1981i scanners cannot connect using the manual option, scan the PDAs/Mobility Systems Devices bar code from the scanner manual then repeat the manual add process again.

- If the Honeywell Granit 1911i and Granit 1981i scanners are not removed after using the Remove option, the auto-reconnect option is enabled on the Granit scanner (this is the default option). To remove the scanner:
  - Scan the disable auto-reconnect bar code from the Granit scanner manual then tap Remove, or
  - Scan BT_RMV to unlink and disconnect the scanner the tap Remove.

- If a Honeywell/LXE ring scanner is not connecting, scan the **Restore Factory Defaults** bar code in the scanner manual and try connecting again.

Adding Other Scanners

Some scanners may not be supported/discoverable by Bluetooth Scanning. In this case, use the Microsoft Bluetooth panels to add the scanner.

Note: *The Microsoft Bluetooth panels should only be used when the scanner cannot be connected with one of the methods listed above.*

Display

 (Start) > **Control Panel** > **Appearance and Personalization** > **Adjust Screen Resolution** (Category View)

 (Start) > **Control Panel** > **Display** > **Adjust resolution** (Large or Small Icon View)

The Thor VM3 supports a maximum 1024 x 768 pixel display resolution.

Screen Blanking via ZoomZone, Defroster Control and Automatic Brightness Control are configured on separate control panels.

Enterprise Settings

 (Start) > **Control Panel** > **Enterprise Settings** (Large or Small Icon View)
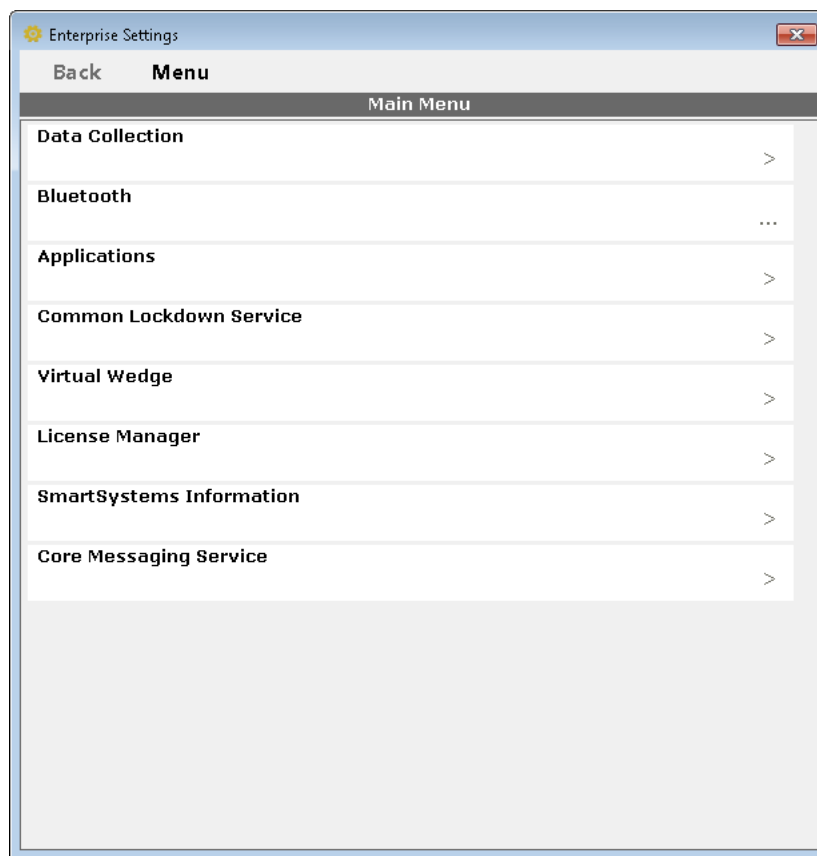
Use Enterprise Settings to configure parameters for Enterprise applications on the computer. You can configure parameters for important functions like data collection and communications.

External bar code scanners are supported by connecting the scanner to a COM port, USB port, or by Bluetooth. The scanners parameters, including bar code symbologies, can be configured using **Enterprise Settings** > **Data Collection**.

About the Structure of Enterprise Settings

Use the tables below to help find the parameters in Enterprise Settings that you want to configure. Each table contains the parameters for one of the Enterprise Settings Main Menu options.

If you see > next to a menu option, there are more screens available in the next level. If you see ... next to a menu option, there is only one more screen available.

Most parameters are saved as soon as you tap **OK**. Some settings require you to reboot the computer for the changes to take effect.

Data Collection	Parameters
Tethered Scanners	
Tethered/USB-Configure on Connect	Auto-configure on connect: • Overwrite with computer settings (default) • Keep scanner settings
Enable USB Scanner Auto Detect	Off (default)
Tethered Scanner (COM1)	• Enable scanner port (On by default, see note below) • Symbologies • Symbology Options • Scanner Settings • Scanner port Settings • Decode Security
Tethered Scanner (COM2)	• Enable scanner port (On by default, see note below) • Symbologies • Symbology Options • Scanner Settings • Scanner port Settings • Decode Security
Note: By default, COM1 and COM2 are enabled as scanner ports. To use the COM port for another use (such as screen blanking), set ***Enable Scanner Port*** to ***Off*** for the desired port.	
Note: Symbology configuration is supported on Intermec scanners. For all other scanners use the bar codes provided in the scanner manuals to program the symbologies.	
Note: Do not select ASCII as the scanner model for an Intermec scanner or the ability to configure the symbology settings with Enterprise Settings is lost.	
Bluetooth Scanners	
BT-Configure on Connect	Auto-configure on connect: • Overwrite with computer settings • Keep scanner settings

Bluetooth	Parameters
Power	• Off • On (default)
Discoverable	• Disable (default) • Enable

Bluetooth	Parameters
Connectable	• Disable • Enable (default)
Class of Device	Hardware information (no user entry)
IBT	Hardware information (no user entry)
Radio	Hardware information (no user entry)
Device Address	Hardware information (no user entry)

Applications	Parameters

Launcher	• Program Version
	• Application Launch Buttons
	    ○ Caption text Color
	    ○ Application Button 1 - 21
	• Background Image
	• Single Application Auto Start
	• Restricted File Browser
	• Default Password
	• Advanced Options

Enterprise Browser	Program Version Browser Engine General Menu Options Security Privacy Appearance Menu and Toolbar Actions
Auto Start	Auto Start Options • None (default) • Launcher • Enterprise Browser • Enterprise Terminal Emulation
Enterprise Terminal Emulation	Enterprise Terminal Emulation Configuration Options

Printers	Parameters
Printer Options	If connected through Bluetooth Printing, configuration options such as Auto detect printer, memory, display, etc. are available.

Common Lockdown Service	Parameters

CLDS Server	• Server
	   ○ Port
	   ○ Maximum Client Connections
	   ○ Enable Server
	• Lockable Keys
	   ○ Lock Windows key
	   ○ Lock Task Manager key
	   ○ Lock Task Switcher key
	   ○ Lock Windows Security Dialog key
	   ○ Lock Closing Applications key
	   ○ Lock Minimize key
	   ○ Lock New Session key
	
	Note:

License Manager	Parameters
License Vault	None (displays applications that are licensed)

SmartSystem Information	Parameters
Identity	Identity information (hardware version, firmware version, OS version, etc.) (read-only)
Administrator	Administrator settings (name, phone, and email)
Location	Location settings (country, state, city, campus, and detail)
Information	Device Notes (read-only

Core Messaging Service	Parameters
Server IP	Server IP (read-only)
Broadcast Name	Broadcast Name
Port	Port (read-only)
Keep Alive Ping Interval	Keep alive ping interval

Virtual Wedge	Parameters
Enable Virtual Wedge	Enable virtual wedge
Virtual Wedge Method	• Adapt to Application (default) • Character mode • Block mode
Barcode Scanner Wedge	• Barcode Scanner Grid • Label Encoding (Code Page)

Bar Code Scanners and Enterprise Settings

The following types of bar code scanners are supported on the Thor VM3:

• A tethered scanner connected to COM1 or COM2

- A tethered scanner connected to a USB host port
- A wireless scanner connected via Bluetooth

The scanner symbologies can be updated through Enterprise data collection software.

Serial Scanners

To configure a particular scanner to work with Enterprise data collection software, select ⊞ **(Start)** > **Control Panel** > **Enterprise Settings** > **Data Collection** > **Tethered Scanner** > **Tethered Scanner** (COM1) or (COM2) > Scanner Settings.

Select the appropriate scanner model (SR Intermec Scanner, ASCII, SR60). By default, both COM1 and COM2 are opened so the appropriate scanners (see below) can work without changing factory defaults:

Tethered Scanner (COM1)

By default the Scanner Model is set to SR Intermec Scanner, which covers models such as SR61T, SR30, and SR31. This COM port's settings are designed to work with legacy Intermec scanners.

Tethered Scanner (COM2)

By default the Scanner Model is set to ASCII to connect with a scanner with baud rate of 9600, 8 data bits, no parity, 1 stopbit, and no flow control. This COM port's settings are designed to work with most legacy Honeywell and LXE scanners.

USB Scanners

By default, when a HID enabled USB scanner is connected to the Thor VM3, the scanned data is transmitted to the active windows as keystroke messages. Any data handling to be applied to the scanned data, for example to strip leading or trailing char-acters, must be programmed into the scan engine. This is done by scanning configura-tion bar codes from the scanner manufacturer or handled by the application accepting the data.

For the Thor VM3 the USB Intermec SR61T and SR31 may be setup to be configurable through Enterprise Settings. This can be done by setting Enable USB Scanner Auto-detect to On under the Data collection menu. If the USB scanner is already attached, you must detach and then re attach it after USB Scanner Auto-detect is enabled in order for it to be recognized by Enterprise Settings. Refresh the Enterprise Settings screen to see the connected USB scanner.

Bluetooth Scanners

See Bluetooth Scanning for information on connecting Bluetooth scanners.

Always use Enterprise Settings to configure Bluetooth parameters. Do not use the Blue-tooth configuration options available from the Bluetooth icon in the system tray.

External Keypad

(Start) > Control Panel > External Keypad (Large or Small Icon View)

This function remaps the programmable keys (PF and Yellow + PF) in the external (21-key numeric) USB keyboard. To remap the P1-P7 keys integrated into the front panel of the Thor VM3, see Programmable Key.

The External Keypad panel can be used to perform the following functions:

- Remap a Key to a Single Key
- Remap a Key to a Unicode Value
- Remap a Key to a Key Sequence
- Remap a Key to a Sequence of Unicode Values
- Remap a Key to Launch an Application
- Remap a Key to Run a Command
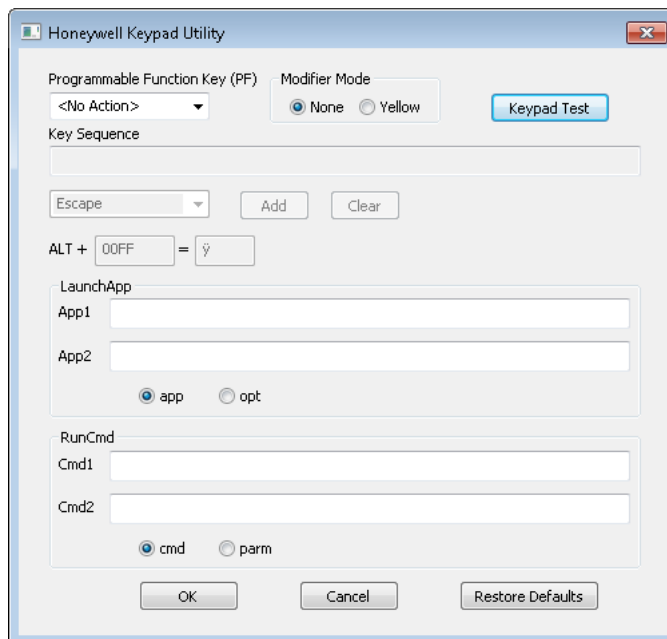
Remap a Key to a Single Key

1. Select the modifier key from the Modifier Mode options.
2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.
3. Select the value for the remapped key from the pull-down list.
4. Click **OK** to save the result and close the control panel.

Remap a Key to a Unicode Value

1. Select the modifier key from the Modifier Mode options.

2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.

3. Select **Unicode** from the pull-down list.

4. There are two Unicode text boxes located on the lower part of this tab. Enter the Unicode value in the text box to the right of ALT + and the Unicode character is displayed in the box to the right of =.

5. Click **OK** to save the result and close the control panel.

Remap a Key to a Key Sequence

Up to 16 keys may be specified for the key sequence. The sequence can consist of keys and Unicode values.

1. Select the modifier key from the Modifier Mode options.

2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.

3. Select **Key Sequence** from the pull-down list.

4. Select the first key for the multiple key sequence from the pull-down list.

5. Press the **Add** button to add the key to the multiple key sequence shown in the Key Sequence box.

6. Repeat this steps 4 and 5 until all desired keys have been added to the key sequence. If necessary, use the **Clear** button to erase all entries in the Key Sequence box.

7. Click **OK** to save the result and close the control panel.

Remap a Key to a Sequence of Unicode Values

Up to 16 Unicode values may be specified for the key sequence. The sequence can consist of keys and Unicode values.

1. Select the modifier key from the Modifier Mode options.

2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.

3. Select **Key Sequence** from the pull-down list.

4. Select **Unicode** from the Key Sequence pull-down list.

5. There are two Unicode text boxes located on the lower part of this tab. Enter the Unicode value in the text box to the right of ALT + and the Unicode character is displayed in the box to the right of =.

6. Press the **Add** button to add the key to the multiple key sequence shown in the Key Sequence box.

7. Repeat this steps 4 through 6 until all desired characters have been added to the key sequence. If necessary, use the **Clear** button to erase all entries in the Key Sequence box.

8. Click **OK** to save the result and close the control panel.

Remap a Key to Launch an Application

1. Select the modifier key from the Modifier Mode options.

2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.

3. Select **Launch App**1-2 from the remapped key from the Remapped Key pull-down list.

4. Make sure the **APP** radio button is selected.

5. In the text box (LaunchApp1-2) corresponding to the number selected for Launch App1-2, enter the application to launch.

6. If any parameters are needed for the application, click on the **OPT** radio button. This clears the text box (though the application name is saved). Enter the desired parameters in the appropriate text box.

7. Click **OK** to save the result and close the control panel.

8. If the **KeyMap** tab is accessed again, the application plus any specified parameters is displayed in the Key Sequence text box when the remapped key is again selected.

Remap a Key to Run a Command

1. Select the modifier key from the Modifier Mode options.

2. The key to be remapped is the programmable function (PF) key on the numeric keyboard.

3. Select **RunCmd**1-2 from the remapped key from the Remapped Key pull-down list.

4. Make sure the **CMD** radio button is selected.

5. In the text box (RunCmd1-2) corresponding to the number selected for RunCmd1-2, enter the desired command.

6. If any parameters are needed for the command, click on the **PARM** radio button. This clears the text box (though the command is saved). Enter the desired parameters in the appropriate text box.

7. Click **OK** to save the result and close the control panel.

8. If the **KeyMap** tab is accessed again, the command plus any specified parameters is displayed in the Key Sequence text box when the remapped key is again selected.

> ⚠ Some executables may require elevated privileges to run. For example, an executable such as regedit.exe may not run for a standard user but does run for an admin user.

Options
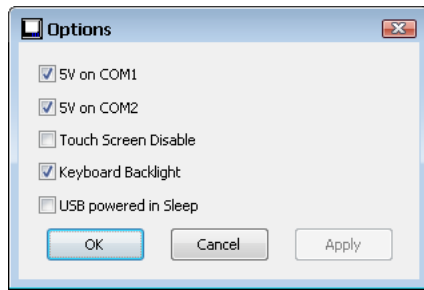
5V on COM1

By default, Pin 9 of COM1 provides +5V, such as for an external scanner tethered to the COM1 port. Uncheck this box to configure Pin 9 of COM1 to provide RI.

5V on COM2

By default, Pin 9 of COM2 provides +5V, such as for an external scanner tethered to the COM2 port. Uncheck this box to configure Pin 9 of COM2 to provide RI.

Touch Screen Disable

By default, this option is unchecked and the touch screen is enabled. If this option is checked, it may be necessary to attach an external keyboard or USB mouse to access this screen to re-enable the touch screen unless a Programmable Key has been assigned to enable the touch screen.

Note: *Tapping **Apply** disables the touch screen but does not dismiss this panel. The panel must be dismissed via an external keyboard or mouse. This panel is dismissed when the **OK** button is tapped after selecting Touch Screen Disable.*

Keyboard Backlight

By default, the integrated keyboard backlight follows the display backlight. Uncheck this box to turn the keyboard backlight off regardless of the display backlight status.

USB Powered in Sleep

By default, power is removed from attached USB devices when the Thor VM3 is in Standby or Sleep mode. Check this box to maintain power to attached USB devices in Standby or Sleep

Power Options

Select a Power Plan

The Thor VM3 has four customized power management plans defined. The active Power Scheme depends on:

- The user selected Power Plan

- And, for Ignition Control, the status of the ignition input signal.

Each power management plan includes two sets of time out values:

- Plugged in for when external power is present (such as vehicle power or from an AC power adapter)

- Running on batteries for when external power is not present and the Thor VM3 is operating on UPS power.

 (Start) > **Control Panel** > **Power Options** > **Power Schemes** tab (Classic View)

 (Start) >**Control Panel** > **Performance and Maintenance**> **Power Options** > **Power Schemes** tab (Category View)

Select a Power Plan

(Start) > **Control Panel** > **Power Options** (Large or Small Icon View)
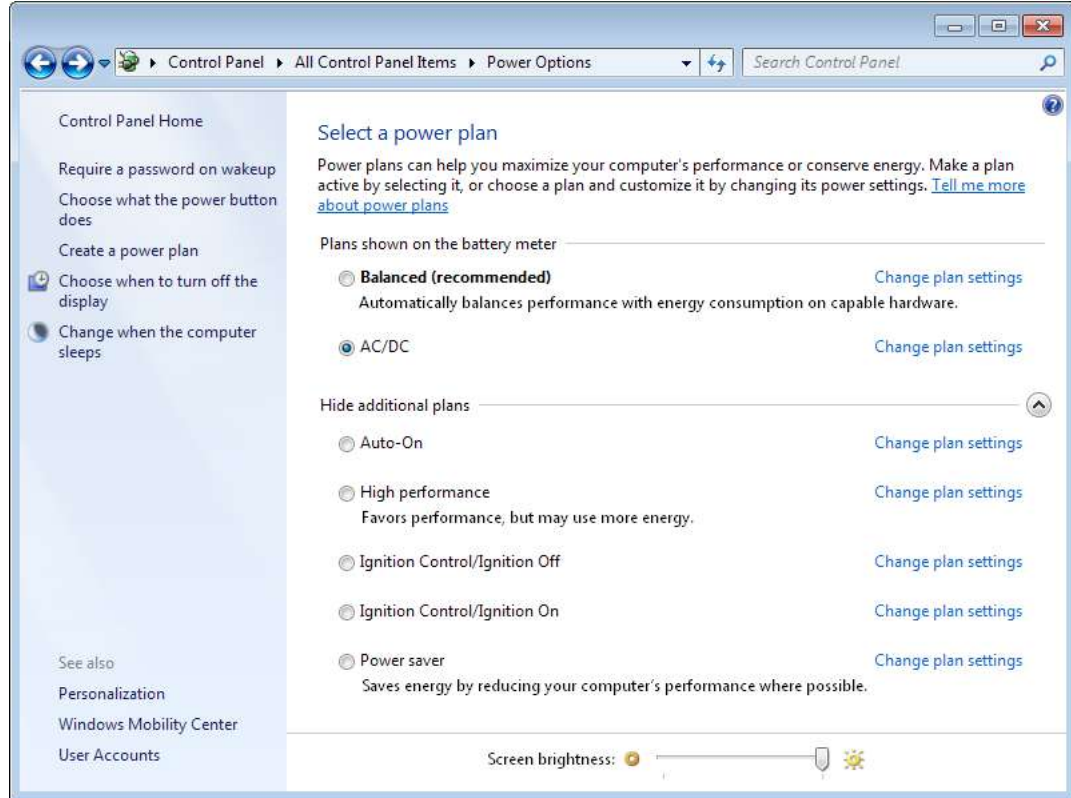
The Thor VM3 has four power management as described in the following sections.

Select the AC/DC power plan when it is desired that the Thor VM3 power on when external power is connected.

In AC/DC mode, the Thor VM3 is turned On by the presence of external power with no user interaction required. Ignition input is ignored when AC/DC mode is enabled.

Note: *When the UPS battery has been depleted or disconnected (the Thor VM3 is first powered out of the box, the front panel has been replaced, etc.) power the Thor VM3 manually by pressing the power button. After the initial power up, the Thor VM3 powers on automatically when power is attached and AC/DC mode is enabled.*

AC/DC Behavior

When the AC/DC plan is selected and external power is present the Thor VM3 behaves as described below. If external power is not present, refer to the UPS section for Thor VM3 behavior.

Thor VM3 is Off

Conditions

The Thor VM3 is Off and gets external power, such as

- Thor VM3 is installed on a powered dock with the dock power switch On

- Thor VM3 is already mounted to a dock and external power is applied to the dock
- Thor VM3 is already mounted to a dock and the dock power switch is turned On

The Thor VM3 boots. Once booted the Thor VM3 follows the AC/DC power plan with timers reset after the boot completes.

Thor VM3 is On

Conditions

The Thor VM3 is On and gets external power, such as

- Thor VM3 is installed on a powered dock with the dock power switch On
- Thor VM3 is already mounted to a dock and external power is applied to the dock
- Thor VM3 is already mounted to a dock and the dock power switch is turned On

Result

The Thor VM3 continues to run and follows AC/DC power plan with timers reset at the time power was connected.

Ignition Control/Ignition On

Select either the Ignition Control/Ignition On or the Ignition Control/Ignition Off power plan when ignition control of the Thor VM3 power on process is desired.

The Thor VM3 aromatically switches between the Ignition Control/Ignition On or the Ignition Control/Ignition Off power schemes/plans depending on the state of the vehicle ignition input.

The following default timeouts are used in the Ignition Control/Ignition On power scheme./plan

Setting	Plugged In (AC or DC Power)	Running on Batteries (UPS Power)
Dim the display	Never	Never
Turn of the display	30 minutes	1 minute
Put the computer to sleep	Never (see note)	Never (see note)
Hibernate after	300 minutes	20 minutes

The ignition input wire must be connected. If the user selects this power plan but the ignition is Off, the Ignition Control/Ignition Off plan is used instead.

Ignition Control/Ignition On Behavior

When either Ignition Control power plan is selected and external power is present the Thor VM3 behaves as described below. If external power is not present, refer to the UPS section for Thor VM3 behavior.

Thor VM3 is Off and Vehicle Ignition is Switched to On

Conditions

The Thor VM3 is Off and vehicle ignition changes from Off to On.

Result

The Thor VM3 boots. Once booted the Thor VM3 follows the Ignition Control/Ignition On power plan with timers reset after the boot completes.

Thor VM3 is On and Vehicle Ignition is Switched to On

Conditions

The Thor VM3 is On and vehicle ignition changes from Off (or not present) to On.

Result

The Thor VM3 continues to run and follows the Ignition Control/Ignition On power plan with timers reset at the time Ignition switched to Active.

An example of this case would be a Thor VM3 that is running on UPS and is then mounted on a dock that has truck power and the ignition switch is already On.

Ignition Control/Ignition Off

Select either the Ignition Control/Ignition On or the Ignition Control/Ignition Off power plan when ignition control of the Thor VM3 power on process is desired.

The Thor VM3 automatically switches between the Ignition Control/Ignition On or the Ignition Control/Ignition Off power schemes/plans depending on the state of the vehicle ignition input. Default timeouts are shorter in this scheme to conserve the vehicle battery charge.

The following default timeouts are used in the Ignition Control/Ignition Off power plan.

Setting	Plugged In (AC or DC Power)	On Battery (UPS Power)
Dim the display	Never	Never
Turn of the display	1 minute	1 minute
Put the computer to sleep	Never (see note)	Never (see note)
Hibernate after	60 minutes	20 minutes

The ignition input wire must be connected. If the user selects this power plan but the ignition is On, the Ignition Control/Ignition On plan is used instead.

Ignition Control/Ignition Off Behavior

When either Ignition Control power plan is selected and external power is present the Thor VM3 behaves as described below. If external power is not present, refer to the UPS section for Thor VM3 behavior.

Thor VM3 is Off and Vehicle Ignition is Off

Conditions

The Thor VM3 is Off and vehicle ignition is Off.

Result

The Thor VM3 remains Off regardless of external power. UPS charging is disabled.

Conditions

The Thor VM3 has external power but vehicle ignition is Off. The power button is pressed.

Result

The Thor VM3 boots. Once booted the Thor VM3 follows the Ignition Control/Ignition Off power plan with timers reset after the boot completes.

Thor VM3 is On and Vehicle Ignition is Switched to Off

Conditions

The Thor VM3 is On and vehicle ignition changes from On to Off.

The Thor VM3 follows the Ignition Control/Ignition Off power plan with timers reset at the time Ignition switched to Inactive. UPS charging is disabled.

An example of this case would be a Thor VM3 that is running on UPS and is then mounted on a dock that has truck power and the ignition switch is already Off.

Auto-On

Select the Auto-On power plan when it is desired that the Thor VM3 power on when external power is connected.

In Auto-On mode, the Thor VM3 is turned On by the presence of external power with no user interaction required. Ignition input is ignored when Auto-On Mode is enabled.

Note: *When the UPS battery has been depleted or disconnected (the Thor VM3 is first powered out of the box, the front panel has been replaced, etc.) power the Thor VM3 manually by pressing the power button. After the initial power up, the Thor VM3 powers on automatically when power is attached and Auto-On mode is enabled.*

The following default timeouts are used in the Auto-On power plan.

Dim the display	Never	Never
Turn of the display	30 minutes	1 minute
Put the computer to sleep	Never (see note)	Never (see note)
Hibernate after	300 minutes	20 minutes

Auto-On Behavior

When the Auto-On power plan is selected and external power is present the Thor VM3 behaves as described below. If external power is not present, refer to the UPS section for Thor VM3 behavior.

Thor VM3 is Off

Conditions

The Thor VM3 is Off and gets external power, such as

- Thor VM3 is installed on a powered dock with the dock power switch On
- Thor VM3 is already mounted to a dock and external power is applied to the dock
- Thor VM3 is already mounted to a dock and the dock power switch is turned On

Result

The Thor VM3 boots. Once booted the Thor VM3 follows the Auto-On power plan with timers reset after the boot completes.

Thor VM3 is On

Conditions

The Thor VM3 is On and gets external power, such as

- Thor VM3 is installed on a powered dock with the dock power switch On
- Thor VM3 is already mounted to a dock and external power is applied to the dock
- Thor VM3 is already mounted to a dock and the dock power switch is turned On

Result

The Thor VM3 continues to run and follows Auto-On power plan with timers reset at the time power was connected.

UPS

When the Thor VM3 is operating on the UPS the timeouts from the battery section for the selected power plan are used. By default, the timeouts for UPS are the same for each power plan.

UPS Behavior

The Thor VM3 behavior when operating from UPS power is described below.

Thor VM3 is Off

Conditions

The Thor VM3 is Off and the power button is pressed the Thor VM3 and the following condition is met:

- UPS power is over 35% capacity

Result

The Thor VM3 boots and follows the selected power scheme's Running on Batteries (or power plan's On battery) timeouts with power management timers reset at boot up.

Conditions

The Thor VM3 is Off and the power button is pressed the Thor VM3 and the following condition is met:

- UPS power is under 35% capacity

Results

The Thor VM3 remains Off.

Thor VM3 is On

Conditions

The Thor VM3 is On and external power is removed, such as:

- Thor VM3 is removed from a powered dock (Dock power switch On)
- Thor VM3 is mounted to a dock and truck power is removed from the dock
- Thor VM3 is mounted to a dock and the dock power switch is turned Off

Result

The Thor VM3 boots and follows the selected power scheme's Running on Batteries (or power plan's On battery) timeouts with power management timers reset at the time of power removal. UPS charging is disabled.

Power Notification Icon

The Power icon in the notification area provides an indication of the level of UPS battery charge. The icon also indicates if external power is connected. Some samples are shown below

	External power is connected and the UPS battery is approximately 50% charged.
	External power not connected and the UPS battery is approximately 100% charged.

Choose What the Power Button Does

🔳 **(Start) > Control Panel > Power Options** (Large or Small Icon View)
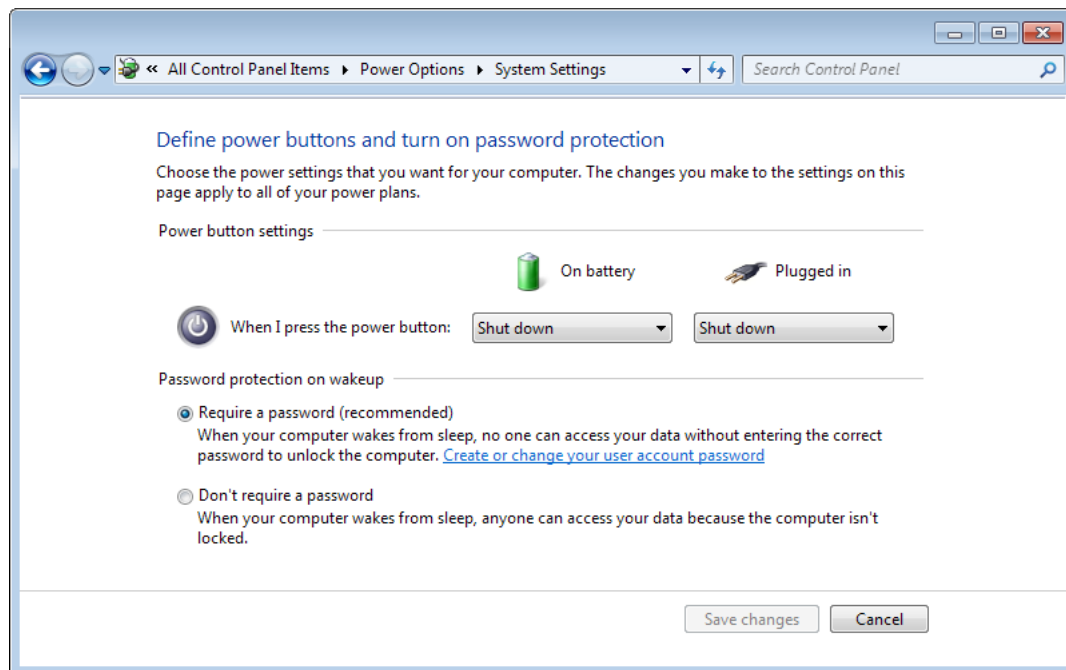
Tap **Choose what the power button does**. For both battery and external power, the power button press may be configured as follows:

• Do nothing

• Sleep

• Hibernate

• Shut down.

Configure Hibernation

🔳 **(Start) > Control Panel > Power Options** (Large or Small Icon View)

By default, hibernate is enabled on the Thor VM3.

To change the hibernate settings:

1. Open the Power Options control panel ((Start) > **Control Panel** > **Power Options***).

2. For the desired power plan, tap Change plan settings. It may be necessary to tap Show additional plans if the desired plan is not the currently active power plan.

3. Tap Change advanced power settings.

4. From the popup window, tap the + in front of Sleep.

5. Tap the + in front of Hibernate after.
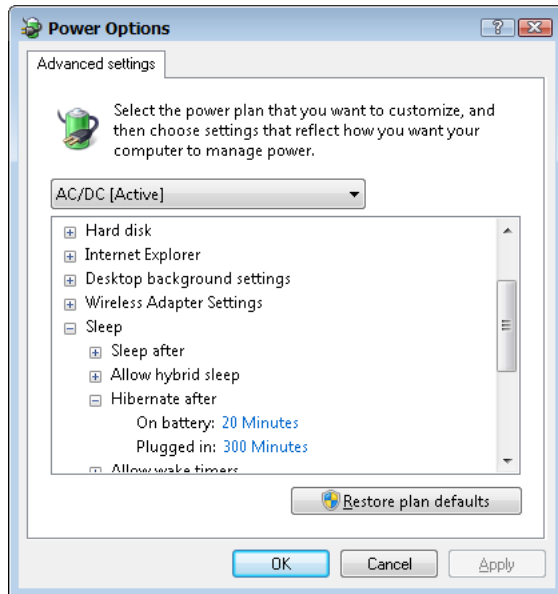
6. Enter the new timeout period in minutes. The hibernate timeout can be specified for on battery and plugged in. Enter 0 to disable hibernation for the specified plan and power source (battery or external).

7. Tap **OK** and close all open power control panels.

Programmable Key

(Start) > Control Panel > Programmable Key (Classic view)

This function remaps P1–P7 keys integrated into the front panel of the Thor VM3. To remap the programmable keys (PF and Yellow + PF) in the optional external (21-key numeric) USB keyboard see External Keypad.

Programmable Key	Default Value
P1	F1
P2	F2
P3	F3
P4	F4
P5	F5
P6	Toggle SIP
P7	Enter
P8 (Orange + P1)	<no key>
P9 (Orange + P2)	<no key>
P10 (Orange + P3)	<no key>
P11 (Orange + P4)	<no key>
P12 (Orange + P5)	<no key>
P13 (Orange + P6)	<no key>
P14 (Orange + P7)	<no key>

The Programmable Key panels can be used to perform the following functions:

- Remap a Key to a Single Key
- Remap a Key to a Unicode Value
- Remap a Key to a Key Sequence
- Remap a Key to a Sequence of Unicode Values
- Remap a Key to a Special Function
- Remap a Key to Launch an Application
- Remap a Key to Run a Command

Keymap
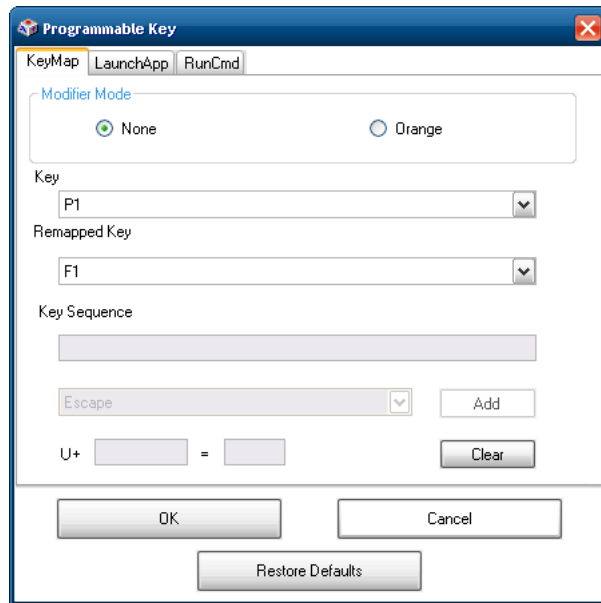
A key or combination of keys can be remapped to provide a single keypress or a string of keypresses.

Assign settings by clicking radio buttons and selecting keys from the drop down boxes.

Tap the **OK** button to save changes and exit the Programmable Keys control panel.

Tap the **Cancel** button to discard any changes and exit the Programmable Keys control panel.

Tap the **Restore Defaults** to return all Programmable Keys to their default values and exit the Programmable Keys control panel.

Remap a Key to a Single Key

1. Select the modifier key from the Modifier Mode options.
2. Select the key to be remapped from the Key pull-down list.
3. Select the value for the remapped key from the Remapped Key pull-down list.
4. Click **OK** to save the result and close the control panel.

Remap a Key to a Unicode Value

1. Select the modifier key from the Modifier Mode options.
2. Select the key to be remapped from the Key pull-down list.
3. Select **Unicode** from the Remapped Key pull-down list.
4. There are two Unicode text boxes located on the lower part of this tab. Enter the Unicode value in the text box to the right of ALT + and the Unicode character is displayed in the box to the right of =.
5. Click **OK** to save the result and close the control panel.

Remap a Key to a Key Sequence

Up to 16 keys may be specified for the key sequence. The sequence can consist of keys and Unicode values.

1. Select the modifier key from the Modifier Mode options.
2. Select the key to be remapped from the Key pull–down list.
3. Select **Key Sequence** from the Remapped Key pull–down list.
4. Select the first key for the multiple key sequence from the pull–down list.
5. Press the **Add** button to add the key to the multiple key sequence shown in the Key Sequence box.
6. Repeat this steps 4 and 5 until all desired keys have been added to the key sequence. If necessary, use the **Clear** button to erase all entries in the Key Sequence box.
7. Click **OK** to save the result and close the control panel.

Remap a Key to a Sequence of Unicode Values

Up to 16 Unicode values may be specified for the key sequence. The sequence can consist of keys and Unicode values.

1. Select the modifier key from the Modifier Mode options.
2. Select the key to be remapped from the Key pull–down list.
3. Select **Key Sequence** from the Remapped Key pull–down list.
4. Select **Unicode** from the Key Sequence pull–down list.
5. There are two Unicode text boxes located on the lower part of this tab. Enter the Unicode value in the text box to the right of ALT + and the Unicode character is displayed in the box to the right of =.
6. Press the **Add** button to add the key to the multiple key sequence shown in the Key Sequence box.
7. Repeat this steps 4 through 6 until all desired characters have been added to the key sequence. If necessary, use the **Clear** button to erase all entries in the Key Sequence box.
8. Click **OK** to save the result and close the control panel.

Remap a Key to a Special Function

1. Select the modifier key from the Modifier Mode options.
2. Select the key to be remapped from the Key pull–down list.
3. Select the special function from the remapped key from the Remapped Key pull–down list. Special functions that can be assigned are:
   - Toggle SIP (soft keyboard) state between displayed and hidden
   - Toggle touch screen state between enabled and disabled
   - Toggle integrated keyboard backlight state between on and off

- Launch the touch screen calibration utility

4. Click **OK** to save the result and close the control panel.

Remap a Key to Launch an Application

1. Select the modifier key from the Modifier Mode options.

2. Select the key to be remapped from the Key pull-down list.

3. Select **Launch App**1-4 from the remapped key from the Remapped Key pull-down list.

4. Click on the LaunchApp tab.

5. Make sure the **APP** radio button is selected.

6. In the text box (LaunchApp1-4) corresponding to the number selected for Launch App1-4, enter the application to launch.

7. If any parameters are needed for the application, click on the **OPT** radio button. This clears the text box (though the application name is saved). Enter the desired parameters in the appropriate text box.

8. Click **OK** to save the result and close the control panel.

9. If the **KeyMap** tab is accessed again, the application plus any specified parameters is displayed in the Key Sequence text box when the remapped key is again selected.

Remap a Key to Run a Command

1. Select the modifier key from the Modifier Mode options.

2. Select the key to be remapped from the Key pull-down list.

3. Select **RunCmd**1-4 from the remapped key from the Remapped Key pull-down list.

4. Click on the RunCmd tab.

5. Make sure the **CMD** radio button is selected.

6. In the text box (RunCmd1-4) corresponding to the number selected for RunCmd1-4, enter the desired command.

7. If any parameters are needed for the command, click on the **PARM** radio button. This clears the text box (though the command is saved). Enter the desired parameters in the appropriate text box.

8. Click **OK** to save the result and close the control panel.

9. If the **KeyMap** tab is accessed again, the command plus any specified parameters is displayed in the Key Sequence text box when the remapped key is again selected.

LaunchApp

The default for all text boxes is Null or " ". The text boxes accept string values only.

The executables and parameters are not checked for accuracy by the keyboard driver. If the launch fails, the Thor VM3 displays a popup error message. If the launch is successful, no notification is displayed.
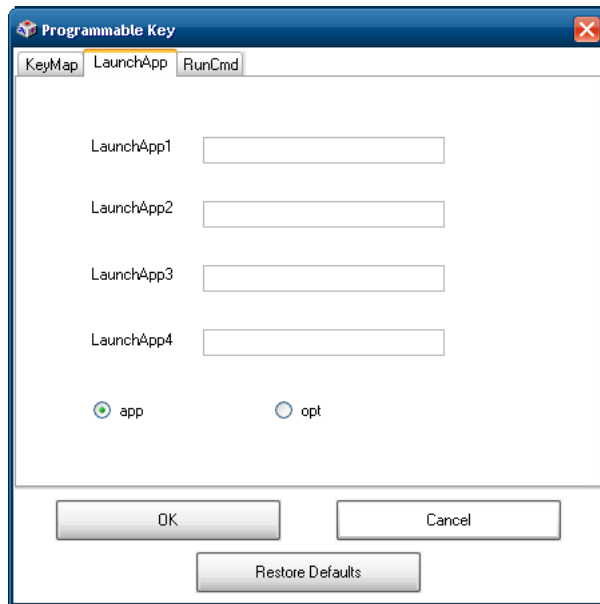
The Launch App command is defined for use by system administrators. These instructions are parsed and executed directly by the keyboard driver.

1. Place the cursor in the text box next to the App you wish to run, e.g., App1, App2.

2. Enable the **app** radio button if the application is an EXE file.

3. Enter the path and name of the executable file including the file extension, e.g.: C:\Windows\System32\notepad.exe.

4. Enable the **opt** radio button to add options or parameters for the executable file in the same text box. Switching from app to opt clears the text box (but the information previously entered is stored), allowing parameter entry.

5. Tap the **OK** button to save changes and exit the Programmable Keys control panel.

Tap the **Cancel** button to discard any changes and exit the Programmable Keys control panel.

Tap the **Restore Defaults** to return all Programmable Keys to their default values and exit the Programmable Keys control panel.

The result of the application (app) and options (opt) entries are displayed on the **KeyMap** tab in the Key Sequence box when the key mapped to the LauchApp is selected.

RunCmd

The default for all text boxes is Empty, Null or " ". The text boxes accept string values only.

The executables and parameters are not checked for accuracy by the keyboard driver. If the launch fails, the Thor VM3 displays a popup error message. If the launch is successful, no notification is displayed.
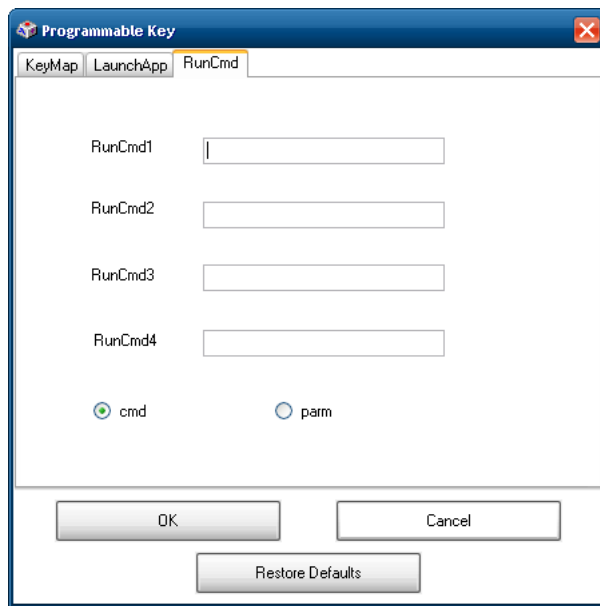
The Run Cmd command is defined for use by system administrators. These instructions call the ShellExecuteEx API, which opens documents directly.

1. Place the cursor in the text box next to the Cmd you wish to run, e.g., Cmd1, Cmd2.

2. Enable the file radio button and enter the name of the file.

3. Enable the **PARM** radio button to add parameters for file/exe execution in the same text box.

4. Tap the **OK** button to save changes and exit the Programmable Keys control panel.

Tap the **Cancel** button to discard any changes and exit the Programmable Keys control panel.

Tap the **Restore Defaults** to return all Programmable Keys to their default values and exit the Programmable Keys control panel.

Some executables may require elevated privileges to run. For example, an executable such as regedit.exe may not run for a standard user but does run for an admin user.

Region and Language

The instructions for installing, changing and uninstalling languages in this section are applicable to Thor VM3 *with Windows Embedded Standard 7 OS only*. While similar control panels are present on other operating systems, the instructions below are not valid for those systems. See Languages for information on installing languages for a Thor VM3 with a Windows 7 Professional OS.

(Start) > Control Panel > Region and Language > Keyboards and Languages tab (Large or Small Icon View)
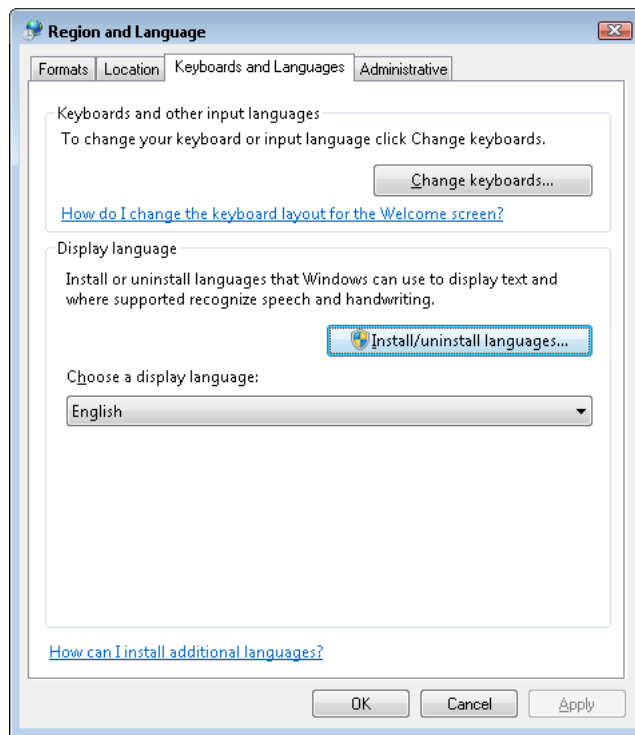
The Thor VM3 may be shipped with an English only Windows Embedded Standard operating system. When only one language (English) is installed, the Choose a display language option is not displayed on the **Keyboard and Languages** tab.

Install a Language

1. Tap I**nstall/uninstall languages...** on the **Keyboards and Languages** tab.

2. If prompted with a User Access Control prompt, tap **Yes** to allow the program to make changes.

3. When prompted, tap **Install display languages**.

4. Tap **Browse** computer or network.

5. Tap the **Browse** button and browse to C:\Honeywell\LanguagePacks and locate the folder for the desired language. The folder name identifies the language:

   • Chinese_Simplified

   • Chinese_Traditional

- French
- German
- Japanese
- Korean
- Portuguese
- Russian
- Spanish
- Thai

6. Select the folder for the desired language and tap **OK**.

7. The language is now ready to install. Check the checkbox in front of the language name and tap **Next**.

8. Review the Microsoft Software License Terms and indicate if you accept. If so, tap **Next**.

9. The installation process continues. This process may require several minutes. Tap **Next** when the installation completes.

10. Select the display language from the list of installed languages. When switching display languages, select if the language should also be applied to the welcome screen and all system accounts.

11. When switching display languages, it may be necessary to log or restart off before the changes can take effect. If so, a popup message is displayed. Close any open work and select **Log off now** or **Restart now** for the changes to take effect.

Change Display Language

When more than one language is installed, the display language can be switched between those installed languages.

1. Select the desired language from the **Choose a display language** pull-down list on the **Keyboard and Languages** tab.

2. Select the desired language from the list and tap **OK**.

3. When switching display languages, it may be necessary to log off before the changes can take effect. If so, a popup message is displayed. Close any open work and select **Log off now** for the changes to take effect.

Uninstall Language

1. Tap **Install/uninstall languages...** on the **Keyboards and Languages** tab.

2. If prompted with a User Access Control prompt, tap **Yes** to allow the program to make changes.

3. When prompted, tap **Uninstall display languages**.

4. Check the checkbox in front of the language name to uninstall and tap **Next**. English is the system language and cannot be removed.

5. The uninstallation process continues. This process may require several minutes. Tap **Next** when the installation completes.

6. If prompted to restart, close any work and select **Restart now** for the changes to take effect.

Screen Control

Set screen properties for the Thor VM3.

Factory Default Settings

Automatic Brightness Control (for outdoor display only)	
Enable automatic brightness control	Disabled
Low to medium light level (%)	25
Medium to high light level (%)	75
Current Level	
LCD Brightness (%)	100 (see note)
Defroster Control	
Enable defroster	Enabled
Trip point (ºC)	40ºC

Note: *If automatic brightness control is enabled for an outdoor display, the value for LCD brightness depends on the Ambient Light %.*

Note: *There is no default value for Ambient Light % as it varies depending on the level of light where the Thor VM3 is located.*
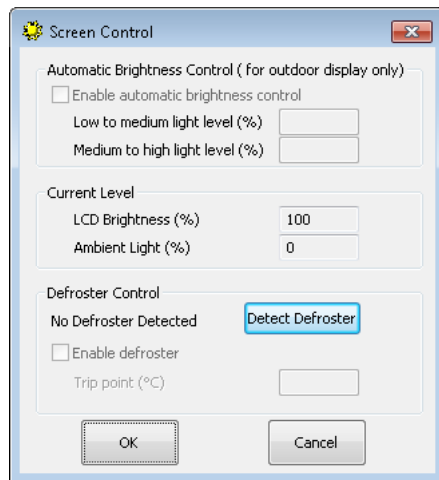
Automatic Brightness Control

When the Thor VM3 is equipped with an outdoor display, automatic brightness control can be enabled. When enabled, display brightness is based on ambient light detected by the ambient light sensor, located near the top right of the display. The default is disabled. To enable, check the **Enable automatic brightness control** checkbox and specify the thresholds for display backlight transition.

When enabled, the thresholds can be entered for display brightness transitions.

• When a low level of ambient light is detected, the display backlight is set to low level.

- When the ambient light exceeds the threshold specified in Low to medium light level (%), the display backlight is automatically increased to a medium level.

- When the ambient light exceeds the threshold specified in Medium to high light level (%), the display backlight is automatically increased to a high level.

- Likewise if the Thor VM3 is returned to a lower ambient light area, the display backlight automatically transitions to the appropriate lower display backlight level.

Current Level

Current levels of LCD brightness and ambient light are displayed as a percentage. Ambient light level is detected by the light sensor, located near the top right of the display.

Defroster Control

Enable the touch screen defroster, if installed, and set the trip point. Settings are ignored if the defroster is not installed.

If a defroster is installed, the defroster can be switched between the Enabled and Disabled states using the check box. The default is Disabled (unchecked).

Specify the Defroster trip point. The default trip point is 40ºC/104ºF.

Sounds

🔷 **(Start) > Control Panel > Sounds and Audio Devices** (Classic View)

🔷 **(Start) >Control Panel > Sounds, Speech and Audio Devices** (Category View)
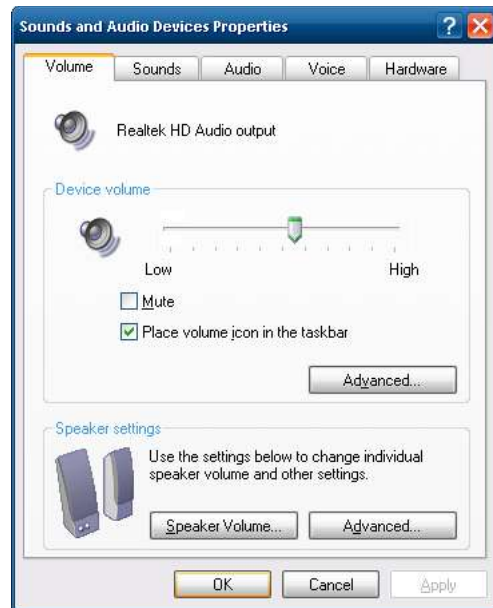
Use the slider bar to adjust the volume level as desired.
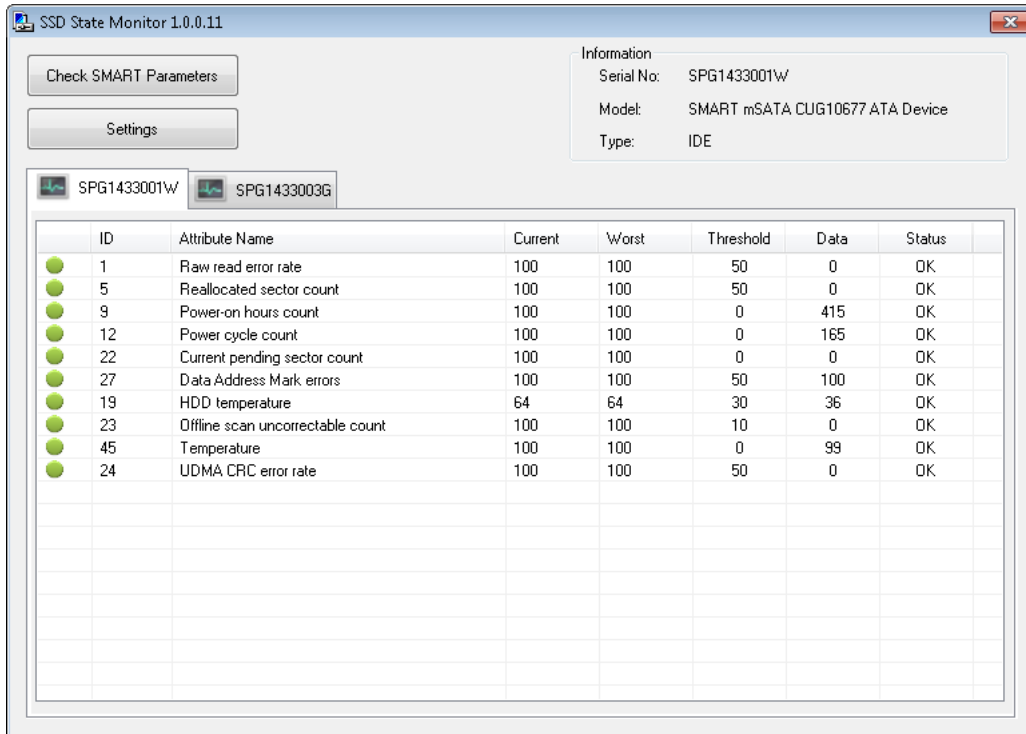
Alternatively:

- Tap the Volume icon, if present, in the taskbar and move the slider until the volume level is as desired.

- Use the integrated keypad – press the **Blue** key then **P1** to adjust volume up or **Blue** then **P2** to adjust volume down.

- By default the side tone is muted. If needed, the user should enable the side tone. If this causes interfering noise, the side tone should be disabled. The VM3 audio is designed to be used with or without the side tone. This is acceptable permissible performance for the Thor VM3.

SSD State Monitor

Note: *The SSD Solid State Monitor control panel is obsolete.*

 (Start) > Control Panel > SSD Monitor (Large or Small Icon View) or tap the SSD State Monitor icon in the system tray.

Use this option to view statistics for the SSD drive(s) installed.

For each attribute, the current, worst, threshold and data values are displayed. The status is also displayed.

If there is more than one SSD installed, there is a tab for each drive.

Tap the **Settings** button to set the frequency the automatically update data for the SSD drive(s). The default is 1 hour.

Tablet PC Settings (Touch Screen Calibration)

(Start) > Control Panel > Tablet PC Settings (Icon View)

The Thor VM3 uses the HIDeGalaxTouch touch screen driver. **The Calibrate...** button on this control panel is not used. Instead use the HIDeGalaxTouch utility, see Touch Screen Calibration for information on calibrating the touch screen. The PCAP touch screen is calibrated at the factory and does not use the calibration utility.

User Accounts

⚠ If creating additional user accounts do not use # character (known as the number sign, pound sign, hash symbol, etc.) in the user account name.

Note: *The following applies to a Thor VM3 that is not part of a domain. When the Thor VM3 is part of a domain, the user is prompted for credentials at Windows startup or log on.*

The Thor VM3 is preconfigured with an administrator account named Administrator. By default, the Thor VM3 automatically logs onto the Administrator account at Windows startup.

If the user assigns a password to the Administrator account:

* The password is stored and used when the Thor VM3 logs onto the Administrator account at Windows startup. The user is not prompted to enter a password.

* If the user logs off, the password must be manually entered to log back onto the Thor VM3.

* At the logon prompt, the user could specify a different user account (and password, if necessary) to log on, assuming the account has been added to the Thor VM3.

* When the Thor VM3 is restarted, the Administrator account automatically becomes the active user account, regardless of the active account before the restart.

If using certificates for authentication, the user must assign a password to the active (Administrator) account.

ZoomZone

🪟 **(Start) > Control Panel > ZoomZone** (Large or Small Icon View), or

Tap the ZoomZone icon in the system tray.

ZoomZone can be used to configure screen blanking behavior.
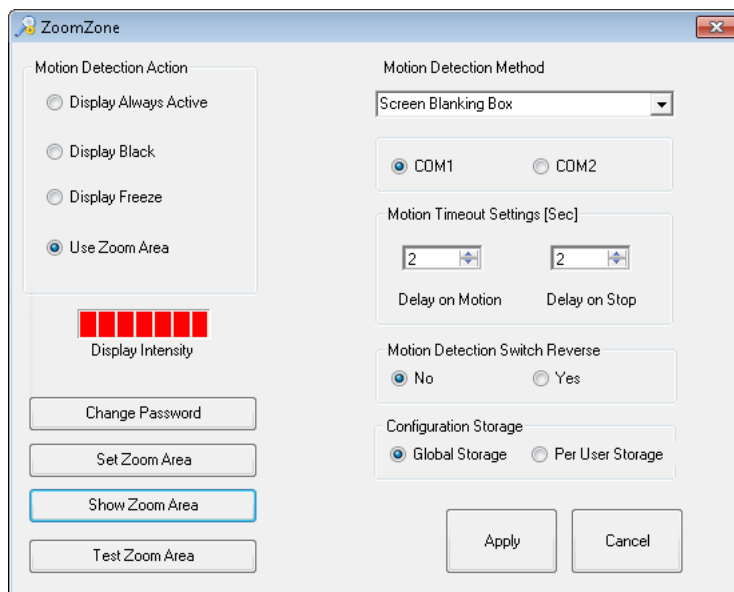
Motion Detection Action

Determine what to do when motion is detected:

- **Display Always Active** – The display does not change when motion is detected.

- **Display Black** – The display is blacked out when motion is detected.

- **Display freeze** – The display is frozen at the time motion is detected.

- **Use Zoom Area** – A preconfigured zoom area is displayed when motion is detected.

Display Intensity

Displays the intensity (brightness) level of the display when the ZoomZone control panel was opened.

Motion Detection Method

Select the motion detection method.

The Thor VM3 supports the screen blanking box to determine motion. Select the port (COM1 or COM2) to which the blanking box is attached.

Note: *By default, COM1 and COM2 ports are used by Enterprise Data Collection. To use a COM port for screen blanking, access* Enterprise Settings *and set* **Data Collection > Tethered Scanners > Tethered Scanner (COMx) – Enable Scanner Port** *to off (where COMx is either COM1 or COM2).*

Motion Timeout Settings

Screen blanking can be configured to provide delays.

- **Delay on Motion** – Configure the delay between motion detection and screen blanking. The default is 2 seconds.

- **Delay on Stop** – Configure the delay between motion stopping and the screen resuming normal behavior. The default is 2 seconds.

Configuration Storage

Select the users to which the ZoomZome settings apply.

- **Global Storage** – The ZoomZone settings apply to all users of the Thor VM3.

- **Per User Storage** – The ZoomZone settings only apply to the current user.

Change password

By default, no password is assigned to ZoomZone. If a password is set, the password must be entered to access the ZoomZone user interface to view or change configuration parameters.

To set a password:

1. Tap the **Change Password** button.

2. Enter the current password. If no password is assigned, leave this entry blank.

3. Enter and confirm the new password. To remove a previously set password, leave the new password blank.

4. Tap **OK** to confirm changes or **Cancel** to discard changes.

Set Zoom Area

The ZoomArea can be selected from the current active desktop display. To set the zoom area:

1. Display the desired content on the Thor VM3 desktop.

2. Open the ZoomZone interface.

3. Tap the **Set Zoom Area** button.

4. Select the desired zoom area by tapping on the upper left corner of the desired area and dragging to the lower right corner of the desired area. The selected area is highlighted by a red outline.

Note: Be sure to select the desired area from the upper left corner to the lower right. Selecting the area from a different corner may result in nothing (a black box) being displayed.

5. If the selected area is not satisfactory, repeat the step above to reselect an area.

6. At the top of the display, tap **File** and select one of the available options:

   • **Save** – Saves the selected zoom area are returns to the ZoomZone user interface.

   • **Test** – Previews the zoom area as it would be displayed during screen blanking.

     ◦ Tap **Accept Zoom** to keep the zoom area and finish, or

     ◦ Tap **Reject Zoom** to discard the zoom are and be returned to select a different zoom area.

   • **Exit** – Discards changes and returns to the ZoomZone user interface.

Show Zoom Area

Tap the **Show Zoom Area** button to show the currently selected zoom area. The selected area is highlighted in red.

When finished, at the top of the display tap **File > Exit** to exit.

To see how the zoom area would be displayed during screen blanking, see Test Zoom Area.

Test Zoom Area

Tap the **Test Zoom Area** button.

The zoom image is displayed.

When finished, at the top of the display tap **File > Exit** to exit.

Bar Code Readers

The Thor VM3 can use the following external bar code readers:

- Tethered hand-held scanners are tethered to a serial port or a USB host port (via a dongle cable) on the Thor VM3 dock and are configured by scanning the engine-specific bar codes in the scanner manufacturer's programming guide. The manufacturer's guides are usually shipped with the bar code reader.

- Wireless hand-held Bluetooth scanners are configured by scanning the engine-specific bar codes in the scanner manufacturer's programming guide. The manufacturer's guides are usually shipped with the bar code reader.

- The body worn Bluetooth Ring Scanner module may be using a Symbol 4400 Ring Imager or a Symbol 955 Ring Scanner. The BTRS module is configured by scanning the bar codes in the Bluetooth Ring Scanner Guide.

Scanner (Virtual) Wedge

Virtual wedge parameters are set via Enterprise Settings.

Touch Screen Calibration

To calibrate the touch screen:

1. Browse to the C:\Honeywell\Touch_5W folder.

2. Tap HIDeGalaxTouch.exe.

3. Select 4 Points Calibration.

4. Follow the on screen instructions to touch the screen, hold the touch and then lift the stylus to complete the calibration process.

File Based Write Filter and Enhanced Write Filter

Note: *For a Thor VM3 with Windows Embedded Standard 7 operating system only.*

These options can be accessed by tapping the lock icons in the system tray.

The Thor VM3 uses a standard Microsoft implementation of these features.

BIOS

The Microsoft Windows operating system is installed before shipping. The default BIOS parameters are configured at that time. In most cases, it is unnecessary to modify the BIOS parameters.

Generally, it is only necessary to enter the BIOS setup to change the boot order of the drives.

This section is not intended to detail all features of the BIOS, instead it is intended to cover the most commonly used setup options.

> **Caution:** **Be very careful when using this utility to modify BIOS Setup parameters. The Thor VM3 may generate unexpected results when incorrect or conflicting parameter values are entered. Selecting incorrect or invalid options may require the Thor VM3 to be returned for repairs.**
> **The parameters should only be modified by Information Services personnel or the system administrator**

The Thor VM3 front panel key can be used to maneuver the BIOS screens in the event an external keyboard is not used. See Integrated Keypad and BIOS for front panel key assignments.

Accessing the BIOS Setup

When the Press F2 for System Utilities prompt is displayed at power up, press the P2 key on the Thor VM3 or the F2 key on an external keyboard to enter BIOS setup.

Use the arrow keys to move around the screen.

Boot Order

To view or edit the boot order, select the **Boot** tab.

The boot drive an can also be selected at bootup. Press P5 from the Thor VM3 keypad or press F5 from an external keyboard. Use the arrows on the external keypad to make a selection. This does not change the default boot order and the next bootup will return to the default drive without user intervention.

Exiting BIOS Setup

To exit the BIOS setup, select the **Exit** tab and select from these options:

- Exit Saving Changes
- Exit Discarding Changes
- Load Setup Defaults for Windows 7 (Use this option for Windows 7 and Windows Embedded Standard 7. Do not use options for other operating systems as this can cause unexpected results)
- Discard Changes

- Save Changes

Using PXE Boot to Load an Operating System

The Thor VM3 supports PXE boot. The following are required for PXE boot:

- A server containing the installation files.
- A wired connection from the server to the Thor VM3.
- An external keyboard connected to the Thor VM3.

The Thor VM3 supports legacy PXE boot and UFE mode PXE boot.

To Use Legacy Mode PXE Boot:

1. Start the Thor VM3.
2. When the **Press F2 for System Utilities** prompt is displayed at power up, press the **P2** key on the Thor VM3 or the **F2** key on an external keyboard to enter BIOS setup.
3. Select the **Main** tab on the BIOS screen.
4. Set **Network Stack** to **Disabled**.
5. Select the **Boot** tab in the BIOS.
6. Set **PCI LAN** first in the boot priority list.

Note: *Rather than change the boot order in the BIOS, press* F5 *as the Thor VM3 boots and use the menu presented to select* PCI LAN *as the boot device. After this boot up, the Thor VM3 returns to the default boot device shown in the BIOS.*

7. Select the **Exit** tab in the BIOS.
8. Choose **Exit Saving Changes** and press **Enter**.
9. The Thor VM3 reboots and the OS load process begins.
10. Follow any on-screen prompts to select and load the desired OS.
11. If the server is not found, the Thor VM3 proceeds to the next device in the boot priority list.

To Use UFE Mode PXE Boot:

1. Start the Thor VM3.
2. When the **Press F2 for System Utilities** prompt is displayed at power up, press the **P2** key on the Thor VM3 or the **F2** key on an external keyboard to enter BIOS setup.
3. Select the **Main** tab on the BIOS screen.
4. Set **Network Stack** to **Enabled**.
5. Select the **Boot** tab in the BIOS.

6. Set **PCI LAN** first in the boot priority list.

Note: *Rather than change the boot order in the BIOS, press **F5** as the Thor VM3 boots and use the menu presented to select **PCI LAN** as the boot device. After this boot up, the Thor VM3 returns to the default boot device shown in the BIOS.*

7. Select the **Exit** tab in the BIOS.

8. Choose **Exit Saving Change**s and press **Enter**.

9. The Thor VM3 reboots and the OS load process begins.

10. Follow any on-screen prompts to select and load the desired OS.

11. The Thor VM3 first tried an IPv4 connection to the server. If that fails, the Thor VM3 tries an IPv6 connection to the server.

12. If the server is not found, the Thor VM3 proceeds to the next device in the boot priority list.

Thor VM3 Recovery DVD

A recovery DVD is available to restore the operating system on your Thor VM3 to the same state it had when it was shipped from the factory. The recovery DVD may not reload all factory installed software, but the Thor VM3 Drivers DVD can be used to install software applications. Recovery DVDs are available for English and Simplified Chinese.

Contact Technical Assistance for information on the recovery DVD and for assistance installing other factory loaded software.

To use the recovery DVD:

1. Attach a USB DVD drive and an external keyboard to the Thor VM3.

2. Insert the recovery DVD into the DVD drive.

3. Reboot the Thor VM3.

4. Repeatedly press the **P5** key on the Thor VM3 front panel or the **F5** key on the external keyboard.

5. When the Boot Menu is displayed, use the arrow keys on the external keyboard to select the USB DVD drive.

6. Follow the on-screen instructions to complete the recovery process.

7. When the process is complete, disconnect the USB DVD drive and start the Thor VM3.

Thor VM3 Drivers DVD

The drivers DVD contains drivers and software for the Thor VM3. The contents of the recovery DVD are divided by operating system type:

*   Use the contents of the Win7x86 folder for drivers for a 32-bit Windows 7 operating system, including Windows Embedded Standard 7.

*   Use the contents of the Win7x64 folder for drivers for a 64-bit Windows 7 operating system.

Inside the appropriate folder is a Microsoft Word document, UserGuide.docx, detailing the installation process. Install the drivers in the order listed in this document, rebooting when specified.

Thor VM3 with no Operating System

The Thor VM3 can be ordered with no operating system. In this case, the user must have:

*   Windows 7 or Windows 10 installation media

*   A valid product licensing key

*   Thor VM3 drivers DVD

To install the operating system:

1. Install the operating system from the desired media, such as using a USB DVD drive attached to the Thor VM3.

2. Install the drivers from the Thor VM3 Drivers DVD.

Configuration Cloning Utility (CCU)

Note: *The Client Configuration Utility is obsolete.*

This utility provides an automated process to read the configuration settings from one Thor VM3 and then apply those settings to one or more other Thor VM3s with the same operating system. The Configuration Cloning Utility (CCU) is installed as part of the factory software load. Configuration settings for the following items may be included:

- RFTerm
- Honeywell Control Panels:
  - USB powered in Sleep
  - Enable/disable touch screen
  - COM port pin 9 +5V or RI
  - Ambient light sensor thresholds
  - Defroster threshold

The CCU allows a configuration file (ccf file) to be created by:

- Reading the current program settings from the source Thor VM3
- Reading the default program settings from a ddf file.

If desired, settings can be modified (advanced user only) before saving the ccf file. If any changes have been made, the CCU can also apply them to the source Thor VM3.

The configuration file can then be copied and deployed to the destination Thor VM3(s). Options include:

- Import changes only – Only those configuration settings which have been modified from their default value are applied to the destination Thor VM3. All other settings on the destination Thor VM3 are left unchanged.
- Import changes and defaults – All configuration settings are applied to the destination Thor VM3. If a setting was modified on the source Thor VM3 the modified value is applied to the destination Thor VM3. Otherwise the default value is applied for that setting on the destination Thor VM3.

The Configuration Cloning Utility can be run as a GUI or command line interface.

⚠ • Before attempting to import settings from RFTerm open the program as an administrator and make any desired changes before importing. These programs do not write to the system registry until they have been opened as an administrator.

Launching Configuration Cloning Utility GUI

1. Locate the CCU icon either on the desktop or by selecting ⊞ **(Start) > All Programs > Honeywell >Configuration Cloning**.

2. Right-click on the icon.

3. Select Run as administrator to launch the CCU.

> It is necessary to run the CCU as an administrator because the CCU must be able to access and make changes to the Windows registry.

> ⚠ *Rather than selecting to run as administrator each time, right-click on the CCU icon and select* Properties. *Tap the* **Compatibility** *tab and check* **Run this program as an administrator**. *This modification affects the current user only unless* Change settings for all users is tapped *before changing the privilege level.*

If a User Account Control message is displayed, you must allow the CCU to make changes to the computer.

Using Configuration Cloning Utility GUI
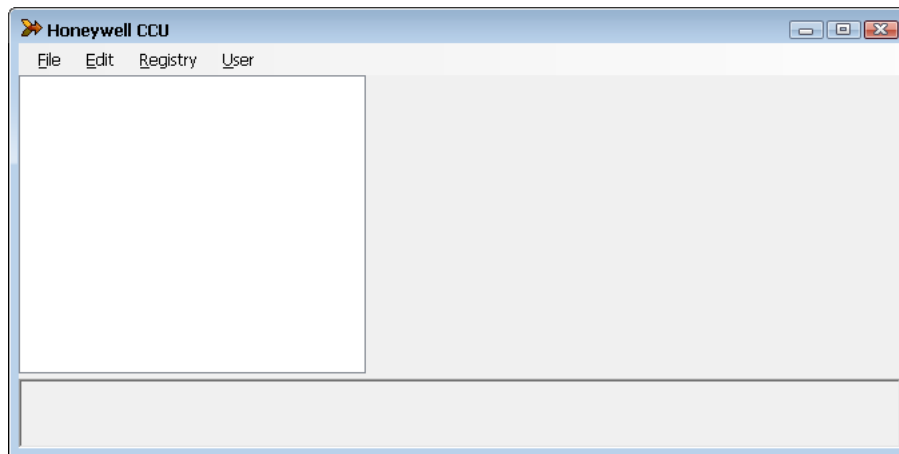
Menu Options

File

The File menu contains information for working with the configuration files.

About

Displays version and copyright information for the Configuration Cloning Utility.

Open

Opens a configuration file. The CCU looks for configuration files in the C:\Windows\DDF folder. CCU can open the following files types:

• ddf files – These files contain the factory default values for the software. These files are placed on the Thor VM3 when the applicable software was installed or upgraded.

Use this option if you wish to start a configuration settings file based on the factory defaults.

- ccf files – These files contain the modified values for the software settings. These files are created with the CCU . ccf files are encrypted for security. Once a ccf file is created on one Thor VM3 it can be copied to other Thor VM3s to duplicate the configuration. An existing ccf file can be opened, modified, applied to the Thor VM3, saved, saved with a different name, etc.

Close

Closes the open data file.

Save

Saves the open data file as a ccf file.

- If a ccf file was opened, it is saved with the same name and in the same location.

- If a ddf file was opened, a prompt is displayed for the name to assign to the new ccf file. By default a new file is saved at C:\Windows\DDF though a different location can be specified.

Save As

Saves the open data file as a ccf. If a ccf file was opened, this option allows a new name or location for the data file to be specified during the save process.

Exit

Exits the CCU. A prompt may be displayed if there are unsaved ccf changes.

Edit

Provides access to the standard Windows Cut, Copy and Paste functions. These functions can be used to manipulate the settings within the configuration file.

Registry

Reads values from and writes values to the system registry.

Import Settings

Imports the current settings from the Windows registry for the selected application(s). When selected, the available programs from which settings can be read are displayed in a tree format.

Apply Settings

Applies the current settings to the Windows registry for the selected applications. During the process, a Default all Non-Configured Parameters prompt is displayed:

- Tap Yes to set all parameters not configured in the ccf file to defaults on the destination device.

- Tap No to apply the values from the ccf file and leave all other parameters as-is on the destination device.

- Tap Cancel to exit with no changes to the destination device.

Upon completion, exit the CCU and reboot the Thor VM3 so changes can take effect.

User

Selects the desired user access level:

• Basic – Basic users can open files and import setting from the system registry. Basic users cannot modify settings from an opened file or setting imported from the registry. Basic users can apply setting to the system registry.

• Advanced – Advanced users can open files and import settings registry. Advanced users can modify the values from either an opened file or imported from the system registry. Advanced users can apply settings to the system registry.

Shortcuts

The table below lists the valid shortcut key combinations within the CCU.

Shortcut key	Action
CTRL + A	Opens About screen
CTRL + O	Opens folder with CCF files (C:\Windows\DDF)
CTRL + C	Closes the open file (only valid when a ccf or ddf file
CTRL + S	Application is saved
CTRL + E	Application is closed
CTRL + X	Cuts the data
CTRL + C	Copies the selected data to the clipboard
CTRL + V	Pastes the data from the clipboard at the current location
CTRL + I	Displays import setting list
CTRL + L	Modified settings are applied
CTRL + B	Basic settings are displayed
CTRL + D	Advanced settings are displayed

Modifying Settings

Advanced user only. Basic user cannot view the expanded tree or modify settings.

When settings have been loaded (either from **Registry > Import Settings** or **File > Open**) the following screen is displayed.
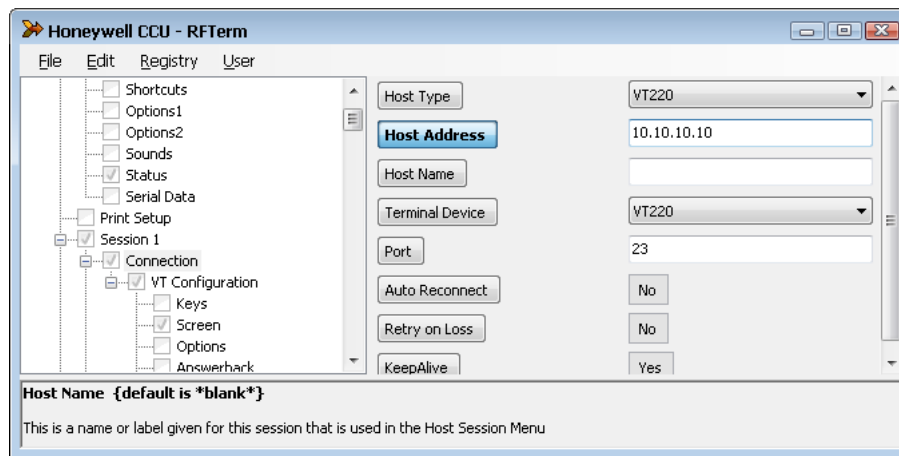
The left side of the upper pane displays the current program settings that have been imported or are part of the open ccf file. Click the + icon to expand the tree or the – icon to condense the tree. When the tree is expanded sufficiently to view the settings, the settings are displayed in the right portion of the upper pane. When a parameter is selected, the name of the parameter is highlighted in blue. The parameter name remains highlighted in blue (regardless of if the value was changed or not) until the parameter name button is tapped a second time. Enter a new value for the parameter as desired. Depending on the parameter selected, the following entry types are available:

- Text box – This is an open entry field and a new value can be typed into the text box. Depending on the parameter, there may be validity checking to ensure the entry in the text box is within the valid range.

- Pull-down list – A down arrow indicates the setting must be selected from a pull-down list of available values. Expand the list and select the desired setting from the list of options.

- Button – Items with two choices (such as Off or On) are displayed as a button. Tapping the button switches the value for the parameter.

When all desired parameter settings have been made, tap **File > Save** to save as a ccf file which can be used to deploy these settings on another Thor VM3.

If the parameter setting changes should also be applied to this Thor VM3, select **Registry > Import Settings**. After importing the settings, a reboot is necessary for the changes to take effect on the Thor VM3.

Do not attempt to modify programmable key settings within the CCU GUI. Instead, make all programmable key changes using the Programmable Key control panel before importing the OS Control Panel into the CCU.

Using the CCU

Refer to the following examples for instructions on using the CCU.

Example 1: Import the current settings and save to a file

To import the current settings from the Thor VM3 running the CCU:

1. If you want to view the settings, tap User and select Advanced.

2. Tap **Registry > Import Settings**.

3. Select the desired program(s) from which to import the settings.

4. Select **File > Save** then specify a file name and tap Save to save the settings to a ccf file.

5. The ccf file can be used to configure another Thor VM3. See Example 4.

Example 2: Modify settings on the current device and save to a file

To modify the settings on the Thor VM3 running the CCU:

1. Tap User and select Advanced.

2. Tap **Registry > Import Settings**.

3. Select the desired program(s) from which to import the settings.

4. Make any desired changes to the settings.

5. Tap **Registry > Apply Settings**

6. Select **File > Save** then specify a file name and tap Save to save the settings to a ccf file.

7. Reboot the Thor VM3 for the new settings to take effect.

8. The ccf file can be used to configure another Thor VM3. See Example 4.

Example 3: Reset a device to system defaults

To import and apply the default values to the Thor VM3 running the CCU:

1. If you want to view the default settings before applying, User and select Advanced.

2. Tap **File > Open** and change the file type to ddf files (*.ddf).

3. Select the desired ddf file(s) for the software program(s) to return to default values.

4. Tap **File > Save** and specify a file name for the ccf file.

5. Tap **Registry > Apply Settings**.

6. Reboot the Thor VM3 for the new settings to take effect.

7. The ccf file can be used to configure another Thor VM3. See Example 4.

Example 4: Clone settings to another device

1. Create a ccf file using any of the above examples.

2. Copy the ccf file to C:\Windows\DDF on the destination Thor VM3.

Note: *Rather than using the CCU GUI, the command line can be used to apply the settings to the destination device.*

3. Open the CCU on the destination device.

4. Tap **File > Open** and select the ccf file that was copied to the device.

5. Tap **Registry > Import**.

6. When prompted to Default all Non-Configured Parameters:

   - Tap Yes to set all parameters not configured in the ccf file to defaults on the destination device.

   - Tap No to apply the values from the ccf file and leave all other parameters as-is on the destination device.

   - Tap Cancel to exit with no changes to the destination device.

7. Reboot the Thor VM3 for the new settings to take effect.

Configuration Cloning Utility Command Line Interface

Note: The CCU GUI must be closed before launching the command line interface.

To launch the Client Configuration Utility from the command line, select ⊞ (**Start) > All Programs > Accessories** and right click on the Command Prompt icon. Select Run as administrator.

⚠ It is necessary to open the command window as an administrator because the CCU must be able to access and make changes to the Windows registry.

The command utility can be run from the installed location (C:\Program Files\Honeywell\Configuration Cloning Utility) or in portable mode (such as from a USB drive). When running in portable mode copy the following files to the USB drive:

- Configuration Cloning Utility.exe (from installation directory)
- PrivateKeyLoaded.dll (from installation directory)
- ccf file(s) (from C:\Windows\DDF or other user-specified folder)

A batch file (.bat) can be created to run the CCU commands.

Refer to the examples below to use the command line.

Example 1: Launch GUI

```
CCU.exe
```

If ran with no parameters, the GUI CCU interface is opened.

Example 2: Import settings

```
CCU.exe -import -[programs] -C:\myfile.ccf
```

Us this command line example to import the current settings from the Thor VM3 running the CCU.

Where:

import directs the CCU to read the settings from the system registry.

[programs] is replaced by one or more of the following programs from which to import settings, separated by an asterisk (*):

- RFTerm - RFTerm terminal emulation settings
- VM3_Win7 - certain Honeywell specific control panels settings
- *.* can be used to import settings from all available programs.

C:\myfile.ccf is the path and filename assigned to the file to settings read from the device. The file must have a .ccf extension. If a file name is specified without a path, the ccf file is saved to C:\Windows\DDF.

```
CCU.exe -import -*.* -C:\myfile.ccf
```

The example above imports settings from all available programs into a file named myfile.ccf.

```
CCU.exe -import -RFTerm -C:\myfile.ccf
```

The example above imports RFTerm settings into a file named myfile.ccf.

```
CCU.exe -import -RFTerm-Win7 -C:\myfile.ccf
```

The example above imports RFTerm and Honeywell control panel settings into a file named myfile.ccf.

Example 3: Apply settings

```
CCU.exe -apply -reset -e:\myfile.ccf
```

Use this command line example to read the settings from the specified ccf file and apply them to the Thor VM3 running the CCC.

Where:

apply directs the CCU to read the settings from the ccf file and apply them to the system registry.

reset is optional. When -reset is specified, all setting are reset to their default values before the customized settings in the ccf file are applied. Any prior changes made to these settings on the Thor VM3 are lost. If -reset is not specified, only the changed values in the ccf file are applied. Any other setting previously made on the Thor VM3 are retained.

E:\myfile.ccf is the path and filename of the ccf file containing the changes to be applied. If the path is not specified, the ccf file must be located at C:\Windows\DDF.

Note: *After using the -apply parameter, the Thor VM3 must be rebooted for the changes to take effect.*

```
CCU.exe -apply -e:\myfile.ccf
```

The example above applies the settings from the ccf file to the device leaving all other settings untouched.

```
CCU.exe -apply -reset -e:\myfile.ccf
```

WIRELESS NETWORK CONNECTIONS

Managing Wireless Connections

The Thor VM3 has an 802.11 a/b/g/n WLAN radio and an optional WWAN radio.

• The WLAN radio is configured using the WLAN Wireless Configuration Utility (WCU).

• The WWAN radio is configured using the VM3 WWAN Connection Manager.

• The VM3 Connection Manager also provides configuration options for hyper-roaming between WLAN and WWAN connections.

WLAN Wireless Configuration Utility (WCU)

The 802.11 wireless client device is a Qualcomm Atheros AR950 802.11 a/b/g/n WLAN adapter. This wireless radio is configured by the Wireless Configuration Utility (WCU).

Dynamic vs. Fixed IP Address

To change between dynamic and fixed IP address select (**(Start) > Control Panel > Network and Sharing Center > Change Adapter Settings**, right click on desired adapter, and select **Properties > Internet Protocol Version 4 (TCP/IPv4) > Properties**). Always reboot the Thor VM3 after changing the IP address type.

Important Notes

It is important that all dates are correct on the Thor VM3 and host computers when using any type of certificate. Certificates are date sensitive and if the date is not correct authentication will fail.

When using the 802.11 radio, the U-NII 1 band is the preferred band for indoor operation. For regulatory domains in which the U-NII 3 band is allowed, the following channels are supported: 149, 153, 157 and 161. The AP must be configured accordingly.

Using the Wireless Configuration Utility

Note: *When finished making changes the device should be restarted afterwards.*

🏁 **(Start) > All Programs > Honeywell > Honeywell** (version ID) **> WCU** *or*

WCU Icon on Desktop
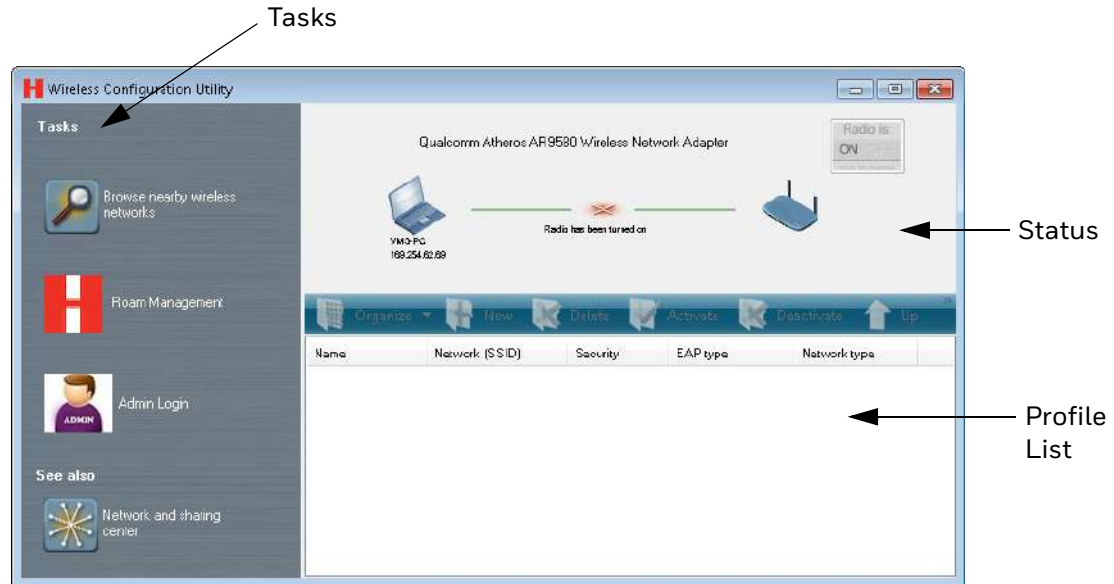
When using any profile that requires the user to enter credentials (user name, password), the user should enter those credentials when the window pops up. If the credentials are not entered then, the credentials window may be hidden by other windows.

This screen contains several items:

- Tasks
- Status
- Profile List

Tasks

Tasks are listed on the left side of the screen:

- Browse Nearby Wireless Networks
- Roam Management
- Admin Login

Status

The status of the radio card is shown in the upper right hand of the screen:

Radio is on.

Tapping the button turns the radio off.

Radio is off.

Tapping the button turns the radio on.

Note: *The radio status can only be changed when the admin is logged on. Tapping the icon has no effect when not logged in.*

The status of the network connection is above the profile list.

The radio has been turned off.

- Tap the radio off icon to turn the radio on.
- When the status of the radio is changing a message may be displayed such as "Radio has been turned on".

The radio is on but is not connected:

- If there are one or more auto profiles, none of them are able to connect.
- If there are one or more manual profiles, none of them have been activated.

The radio is on and is starting a connection:

- The SSID of the network is displayed below the access point icon.

The radio has initiated a connection and is attempting to associate with the access point:

- The SSID of the network is displayed below the access point icon.

Qualcomm Atheros AR9580 Wireless Network Adapter (VM3-PC 10.0.10.1.227 — Authenticating — A3)	The radio has associated with an access point and is attempting to authenticate: • The SSID of the network is displayed below the access point icon. • This step not necessary if the network is open (no security).
Qualcomm Atheros AR9580 Wireless Network Adapter (VM3-PC 10.0.10.1.227 — A3)	The radio has successfully connected to the network: • If security is enabled, the authentication process has been completed. • The SSID of the network is displayed below the access point icon. • The signal strength is also displayed below the access point icon.
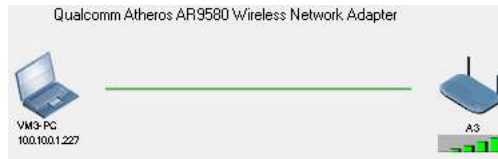
Profile List

All profiles that have been created are listed in this section. Profiles can be configured for auto connect or manual connect and are subdivided by connection type in this list.

From the profile list, an admin can:

• Organize – Open or rename a profile

• New – Create a new profile

• Delete – Delete an existing profile

• Activate – Make an inactive profile the active profile. The inactive profile may be either a manual or an auto profile not currently in use.

• Deactivate – When the current active profile is selected, this option deactivates that profile. If there is an inactive auto profile, that profile may become active.

• Up – If there are multiple profiles, the Up feature moves the selected profile up the list. This feature is available for both the Auto and Manual profiles.

• Down – If there are multiple profiles, the Down feature moves the selected profile down the list. This feature is available for both the Auto and Manual profiles.

Similar features are also available by right–clicking on a profile name:

• New – Create a new profile.

• Open – Open the selected profile to view or edit properties.

• Activate – Make an inactive profile the active profile. The inactive profile may be either a manual or an auto profile not currently in use.

• Deactivate – When the current active profile is selected, this option deactivates that profile. If there is an inactive auto profile, that profile may become active.

• Disconnect – If the selected profile is connected, this option disconnects the profile.

• Rename – Use to assign a new name to the selected profile.

- Up – If there are multiple profiles, the Up feature moves the selected profile up the list. This feature is available for both the Auto and Manual profiles.

- Down – If there are multiple profiles, the Down feature moves the selected profile down the list. This feature is available for both the Auto and Manual profiles.

Admin Login

All users can select from existing profiles and use the browse feature to view nearby networks.

It is necessary to log in to create or edit profiles, turn the radio off or on and to adjust the roaming parameters.

| Admin is not logged in | Admin is logged in |

The appearance of the icon indicates if the admin is logged in or not.

To log in:

1. Tap the Admin Login icon.
2. Enter the password. The default password is Honeywell.

3. Tap the **Login** button to log in or **Cancel** to exit without logging in.

To change the default password:

1. Tap the **Admin Login** icon.
2. Tap the **Reset Password** button.
3. Enter the current password.
4. Enter and confirm the new password.
5. Tap **Reset** to save the new password or **Cancel** to exit without changing the password.

Browse Nearby Wireless Networks

Tap the Browse nearby wireless networks to open the open this window.
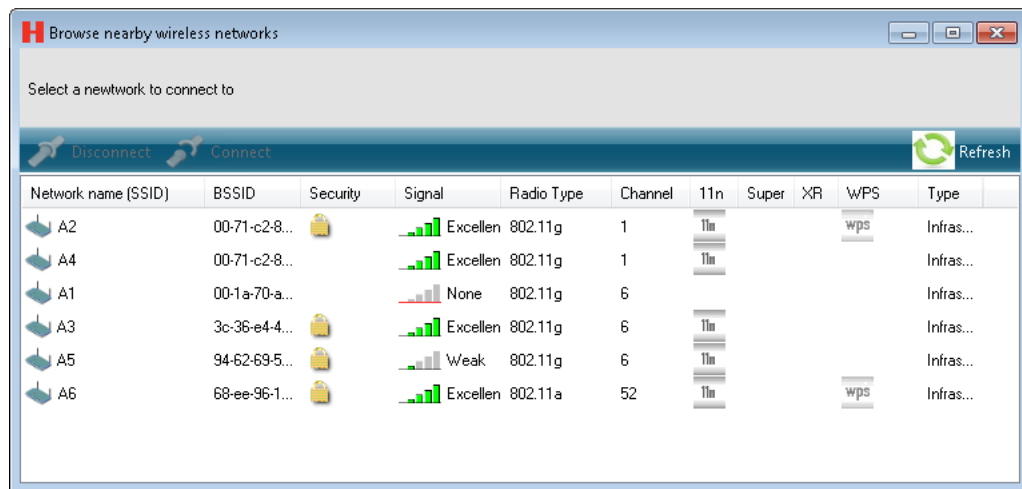
Tap the **Refresh** button to update the network list.

For each network discovered the following attributes are listed:

- Network Name (SSID) – Name of the network (Service Set ID).
- BSSID – Basic Service Set ID, a unique ID to an access point in the network.
- Security – Indefinites if the access point is using security. A lock icon is displayed if the network is using security.
- Signal – A graphic representation of the signal strength plus (0 to 4 bars) plus a text description of signal strength.
- Radio Type – The type of radio in the access point, i.e. 802.11a, 802.11g, etc.
- Channel – The channel the access point is using.
- 11n – If an icon is displayed, the access point supports 802.11n.
- Super – If an icon is displayed, the access point supports Atheros' Super AG features.
- XR – If an icon is displayed, the access point supports Atheros' extended range (ER) technology.
- WPS – If an icon is displayed, the access point supports WPDS (Wi-Fi Protected Setup).
- Type – Identifies the network type, infrastructure or Ad Hoc.

Note: *Tapping on any of the column headings will sort the network list by the contents of that column.*

If logged on as admin, tap on any network in the list to create a profile for that network.

Creating a Profile

To create from the Profile list:

1. Log in as admin.
2. Tap the **New** button.

3. Select the desired profile type – auto connect, manual connect or Ad Hoc.

4. Enter a profile name and network name.

5. Tap Next.

6. Tap Connect To... to connect to the network or tap Change connection settings for additional configuration options including Security.

To create a profile from the nearby networks:

1. Log in as admin.

2. Tap the **Browse nearby wireless networks** button.

3. Tap the desired network then tap the Connect icon or double tap the desired network.

4. Change the profile name if desired.

5. Tap Advanced security settings for additional configuration options including Security.

6. Tap **OK** to exit and save the profile or tap **Cancel** to exit without creating a profile.

Advanced Profile Configuration

Connection
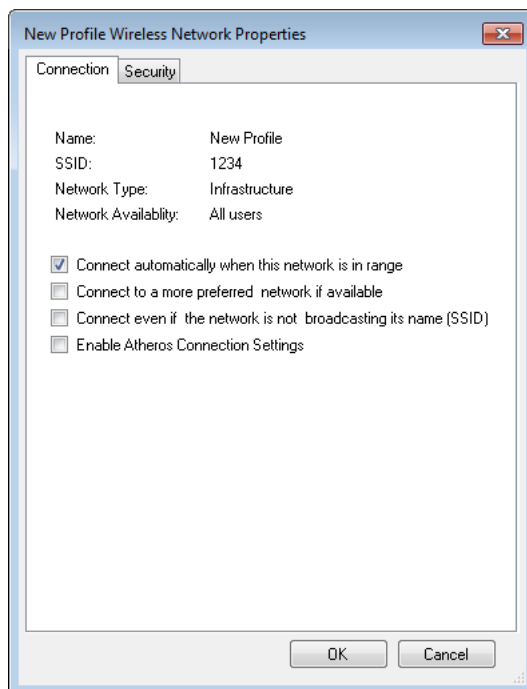
This tab shows the basic information used to create the profile.

Options include:

- Connect automatically when this network is in range – If the profile was created as an auto connect profile, this box is checked. If created as a manual profile, this box is unchecked.

- Connect to a more preferred network if available

- Connect even if the network is not broadcasting its name (SSID) – If a network is not broadcasting its SSID, check this box.

- Enable Atheros connection settings.

Note: *Atheros connection settings must be enabled to use CCX. It is disabled by default.*

Security

The options available on the **Security** tab will depend on the security type and encryption type selected.

Continue to the applicable section to configure the WCU for network security:

- Open (No Security)
- WEP
- WPA2–Personal
- PEAP-TLS
- LEAP
- EAP-FAST PEAP
- EAP-FAST TLS
- EAP-TLS
- EAP-TTLS
- PEAP-MSCHAPv2

Open (No Security)
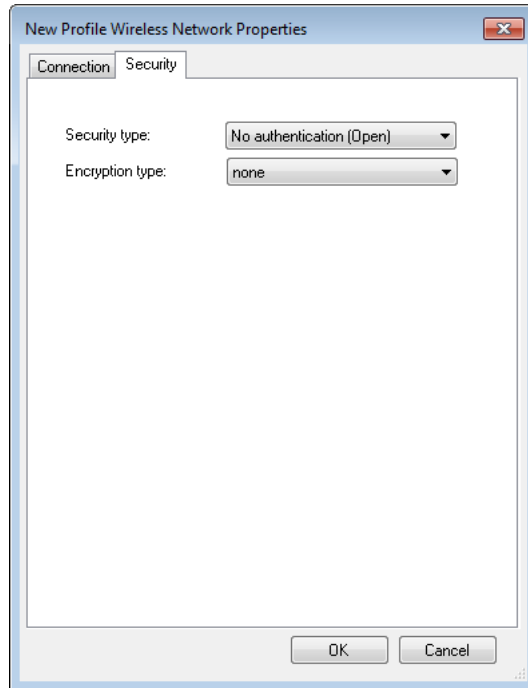
To configure for open (no security):

1. Set Security type to No authentication (Open).

2. Set Encryption type to none.

3. Tap **OK**.

4. From the profile listing, make sure the desired profile is active.

5. Verify the connection using Status.
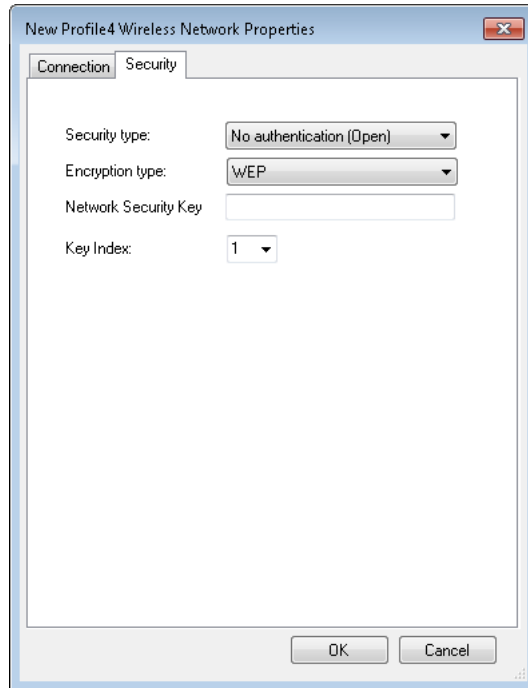
To configure for WEP:

1. Set Security type to No authentication (Open).
2. Set Encryption type to WEP.
3. Enter the Network Security Key.
4. Select the Key Index.
5. Tap **OK**.
6. From the profile listing, make sure the desired profile is active.
7. Verify the connection using Status.

WPA2-Personal
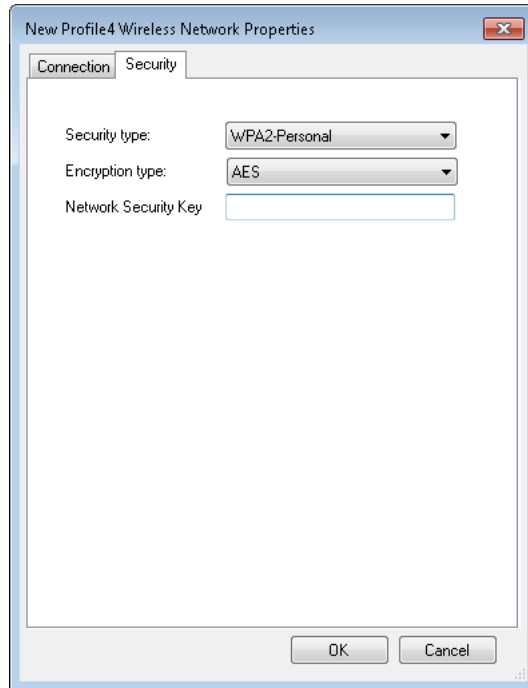
To configure for WPA2-Personal:

1. Set Security type to WPA2-Personal.
2. Set Encryption type to AES.
3. Enter the Network Security Key.
4. Tap **OK**.
5. From the profile listing, make sure the desired profile is active.
6. Verify the connection using Status.
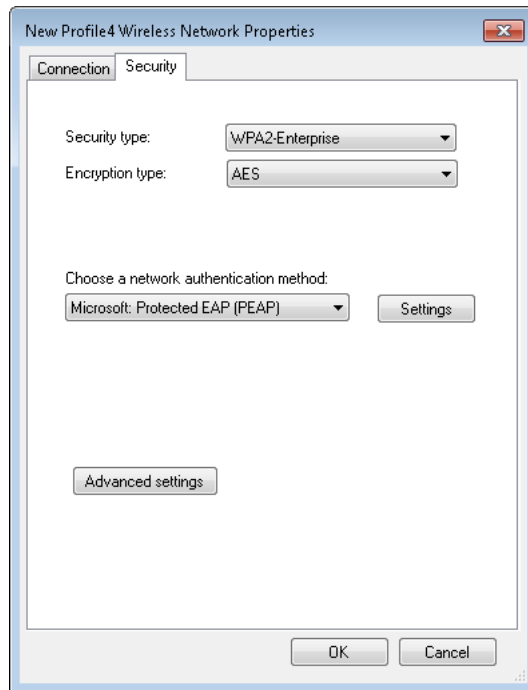
To configure for Microsoft PEAP-TLS:

1. Set Security type to WPA2-Enterprise or CCKM.
2. Set Encryption type to AES.
3. Set network authentication method to Microsoft Protected EAP (PEAP).

4. Tap the **Settings** button.
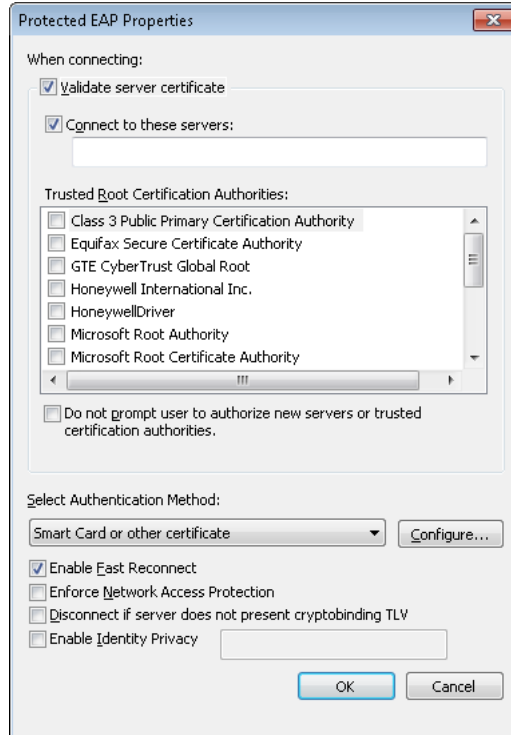
5. Set the authentication method to Smart Card or other certificate.
6. Tap the **Configure** button.
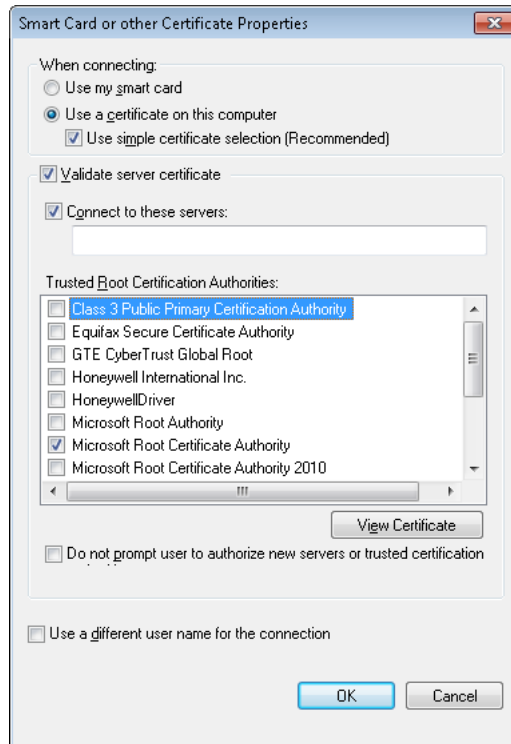
7. Select Use a certificate on this computer.
8. Select the trusted root certificate from the listed certificates.

9. Tap **OK** to close any open windows.

10. From the profile listing, make sure the desired profile is active.

11. Verify the connection using Status.
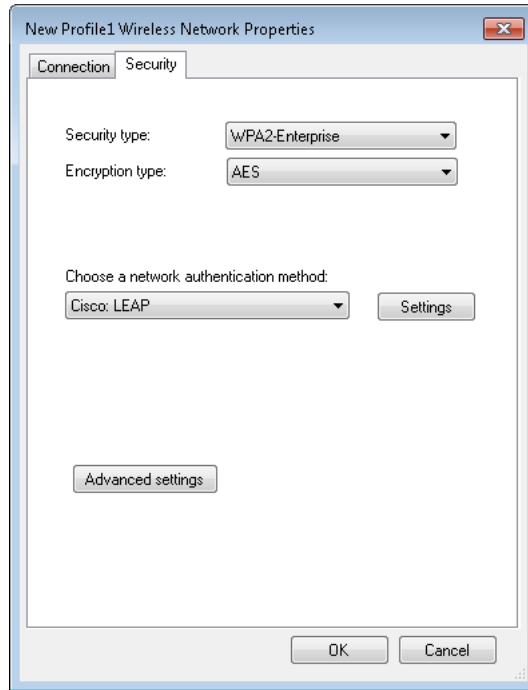
To configure for Cisco LEAP:

1. Set Security type to WPA2–Enterprise or CCKM.

2. Set Encryption type to AES.

3. Tap the **Settings** button.
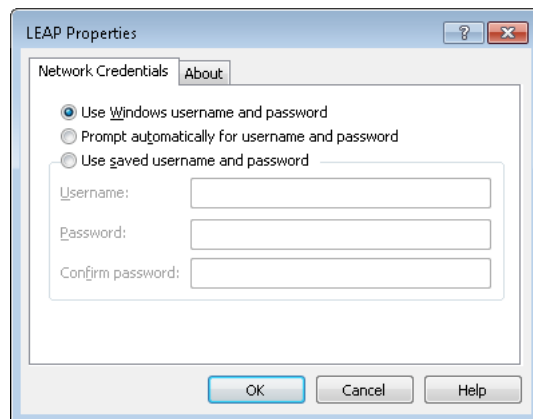
4. Select the desired credentials method of providing credentials. Prompt automatically for username and password is recommended.

5. If saved username and password is selected, enter the credentials now.

6. Tap **OK** to close all open windows.

7. From the profile listing, make sure the desired profile is active.

8. If prompt for username and password option was selected, enter the credentials when prompted.

Note: *If the credentials are not entered when to window first pops up, the credentials window can become hidden behind other windows.*

9. Verify the connection using Status.

EAP-FAST PEAP
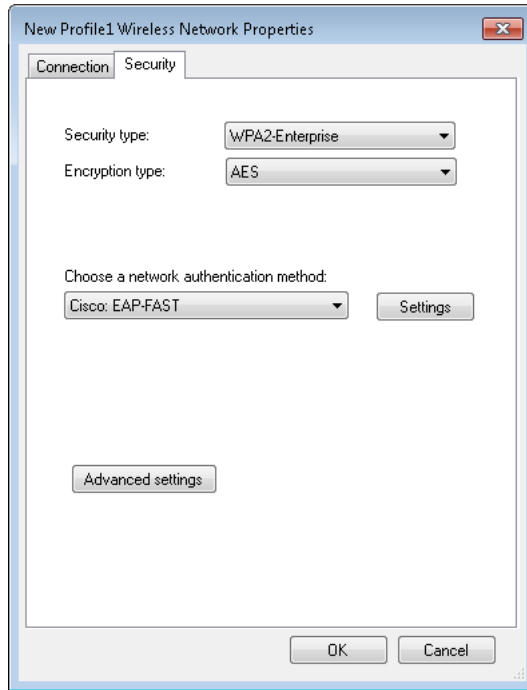
To configure for Cisco EAP–FAST PEAP:

1. Set Security type to WPA2–Enterprise or CCKM.
2. Set Encryption type to AES.
3. Set network authentication method to Cisco:EAP–FAST.
4. Tap the **Settings** button.
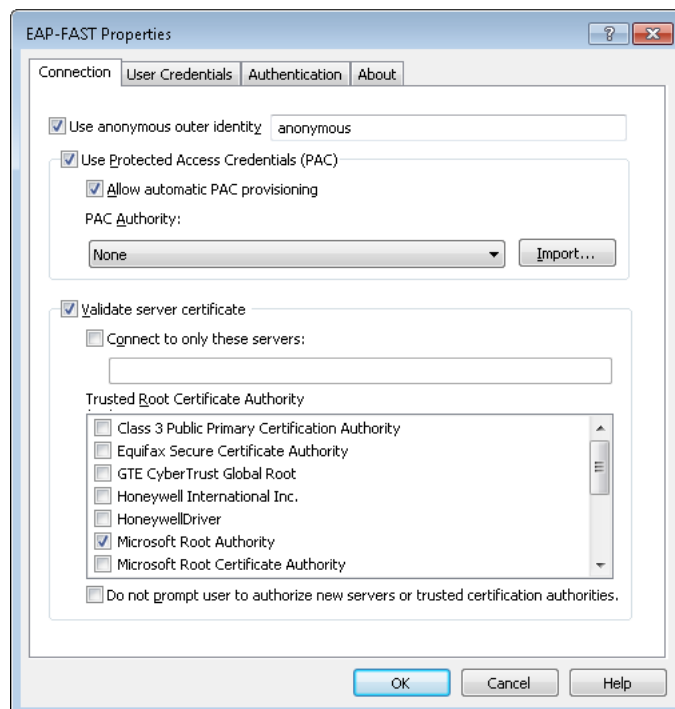
5. Select the **User Credentials** tab.
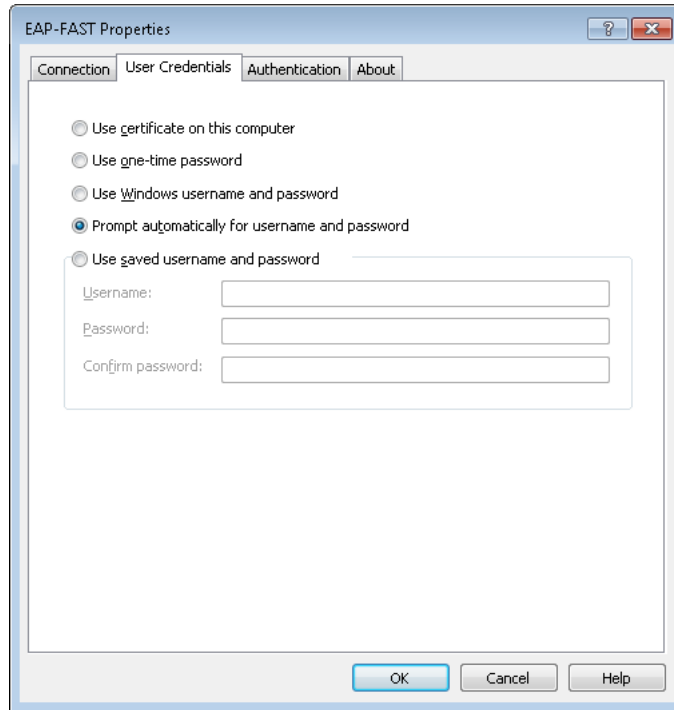
6. Select the desired credentials method of providing username and password. Prompt automatically for username and password is recommended.

7. If saved username and password is selected, enter the credentials now.

8. From the profile listing, make sure the desired profile is active.

9. Tap the **Authentication** tab.
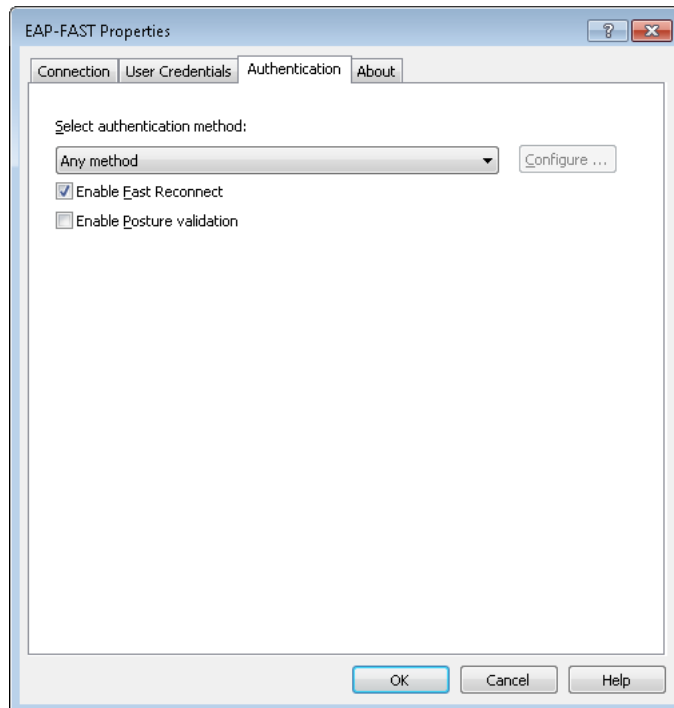
10. Select the desired authentication method. Any of the available options may be used.

11. The **About** tab provides Cisco copyright information.

12. Tap **OK** to close all open windows.

13. From the profile listing, make sure the desired profile is active.

14. If prompt for username and password option was selected, enter the credentials when prompted.

Note: *If the credentials are not entered when to window first pops up, the credentials window can become hidden behind other windows.*

15. Verify the connection using Status.

EAP-FAST TLS
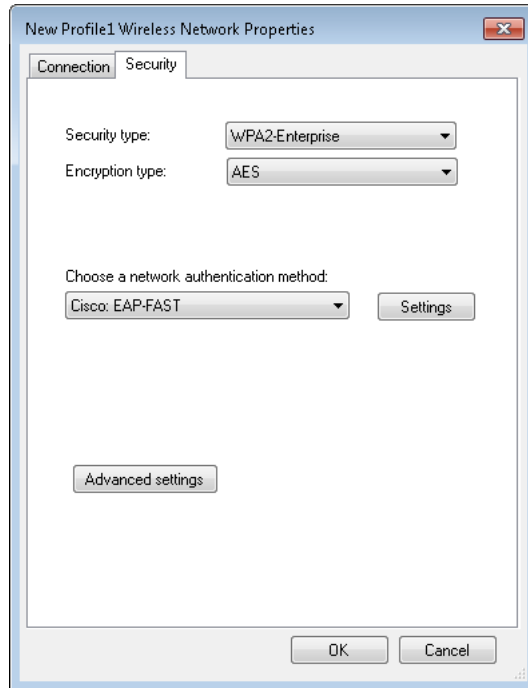
To configure for Cisco EAP–FAST TLS:

1. Set Security type to WPA2–Enterprise or CCKM.
2. Set Encryption type to AES.
3. Set network authentication method to Cisco:EAP–FAST.

4. Tap the **Settings** button.
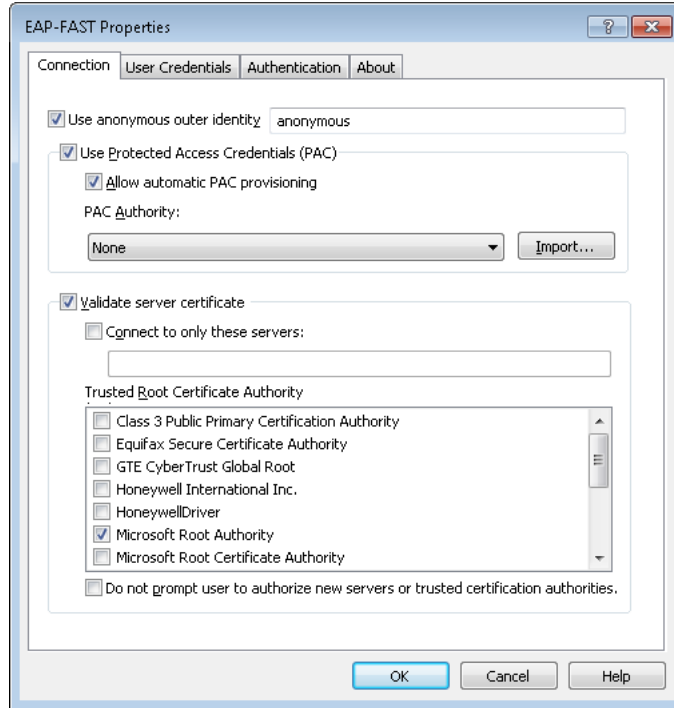
5. Select the **User Credentials** tab.
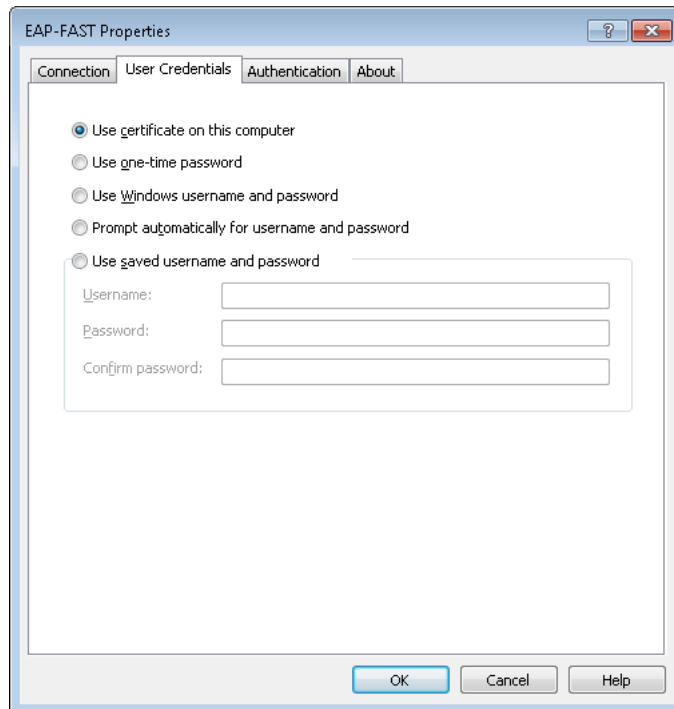
6. Select Use certificate on this computer.

7. No entries are needed on the **Authentication** tab.

8. The **About** tab provides Cisco copyright information.

9. Tap **OK** to close all open windows.

10. From the profile listing, make sure the desired profile is active.

11. Verify the connection using Status.
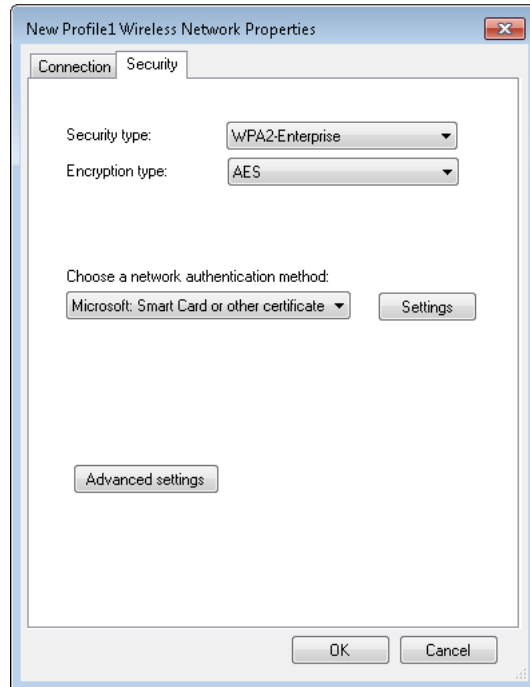
To configure for EAP-TLS:

1. Set Security type to WPA2–Enterprise or CCKM.
2. Set Encryption type to AES.
3. Set network authentication method to Microsoft Smart Card or other certificate.

4. Tap the **Settings** button.
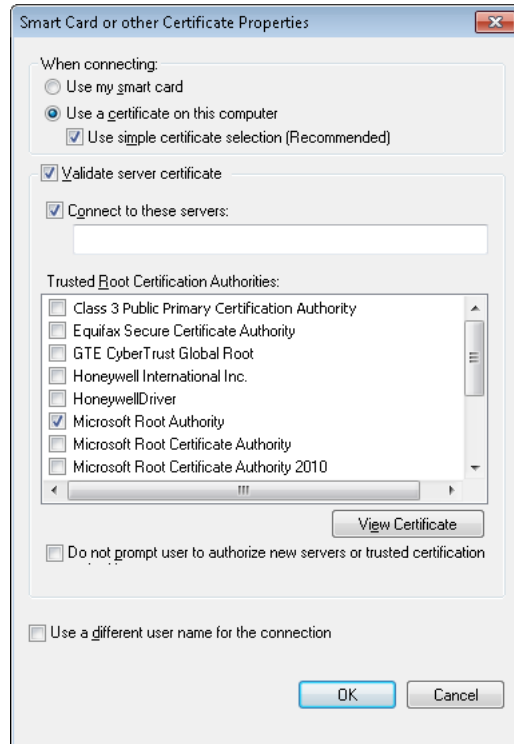
5. Select Use a certificate on this computer.

6. Select the trusted root certificate from the listed certificates.

7. Tap **OK** to close any open windows.

8. From the profile listing, make sure the desired profile is active.

9. Verify the connection using Status.
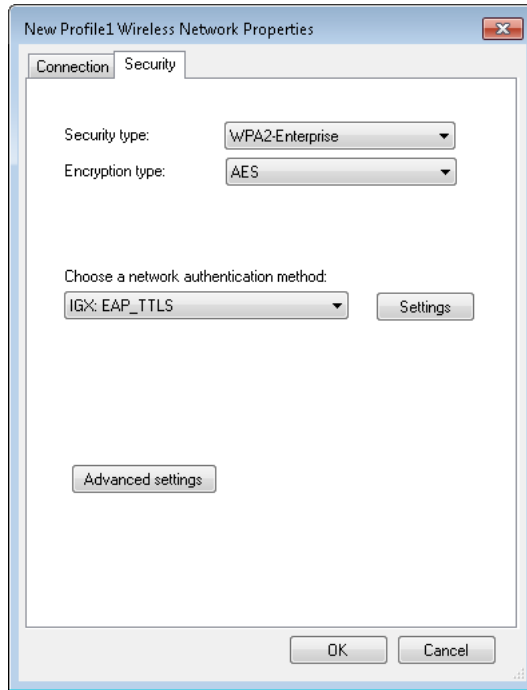
To configure for EAP-TTLS:

1. Set Security type to WPA2-Enterprise or CCKM.
2. Set Encryption type to AES.
3. Set network authentication method to IGX: EAP_TTLS.
4. Tap the **Settings** button.

5. Select the **Connection** tab.

6. Select Validate server certificate.

7. Select the trusted root certificate from the listed certificates.

8. Select the User **Credentials** tab.

9. Select the desired credentials method of providing username and password. Prompt automatically for username and password is recommended.

10. If saved username and password is selected, enter the credentials now.

11. Tap **OK** to close any open windows.

12. From the profile listing, make sure the desired profile is active.

13. If prompt for username and password option was selected, enter the credentials when prompted.

Note: *If the credentials are not entered when to window first pops up, the credentials window can become hidden behind other windows.*

14. Verify the connection using Status.

To configure for PEAP-MSCAHPv2:

1. Set Security type to WPA2-Enterprise or CCKM.

2. Set Encryption type to AES.

3. Set network authentication method to PEAP-MSCHAPv2.

4. Tap the **Settings** button.

5. Select the **Connection** tab.

6. Select Validate server certificate.

7. Select the trusted root certificate from the listed certificates.

8. Select the **User Credentials** tab.

9. Select the desired credentials method of providing username and password. Prompt automatically for username and password is recommended.

10. If saved username and password is selected, enter the credentials now.

11. Tap **OK** to close any open windows.

12. From the profile listing, make sure the desired profile is active.

13. If prompt for username and password option was selected, enter the credentials when prompted.

Note: *If the credentials are not entered when to window first pops up, the credentials window can become hidden behind other windows.*

14. Verify the connection using Status.

Roam Management

General

The **General** tab provides information on the current connection. There are no user entries on this screen.
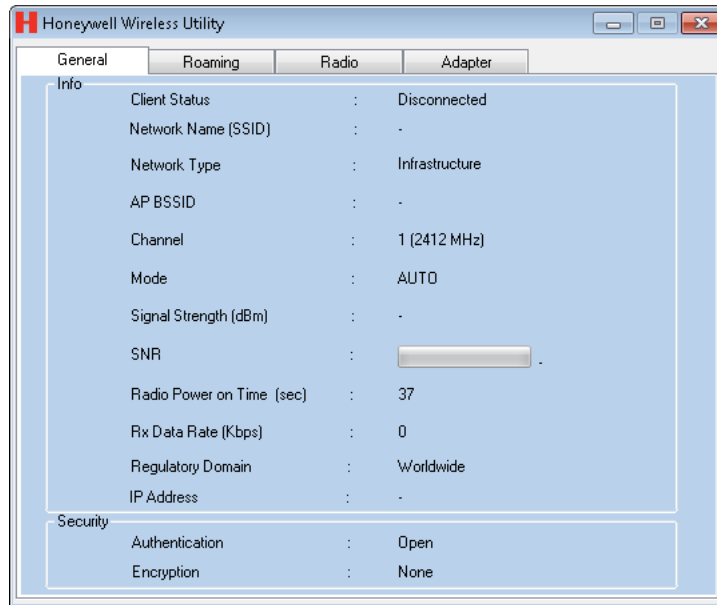
Roaming

The **Roaming** tab is used to configure roaming behavior.

Roam	
Signal Level (dBm)	When the signal strength is below this level, the radio will attempt to roam. Default -65 dBm, range is -80 to -55.
Logging Enable	When checked, logging is enabled. Logging can be set to Critical (fewer messages) or All (more messages). Logging is disabled by default. *Note:* *Logging is set to disabled after any reboot to prevent log files for taking up disk space when not needed.*
Minimum Connection Time (sec)	The minimum connection time the radio stays connected to the current access point before roaming begins. Default 10 seconds, range is 5 to 25.
Roam RISSI Difference (dBm)	The minimum signal strength difference between APs before the radio roams. Default 5 dBm, range is 5 to 25.
Background Scan	
Signal Level (dBm)	The minimum signal strength an access point signal must have to be considered for roaming. Default -65 dBm, range is -80 to -55.
Probe Request Interval (sec)	The interval between roam probes. Default 5 seconds, range is 5 to 60.
CCX Control	
Note: *For CCX to be enabled, two settings must be enabled:* • CCX must be enabled (checked) on this screen. • Enable Atheros Connection Settings must be enabled (checked) on the *Connection* tab. If both settings are not enabled, the WLAN radio does not identify itself as CCX V4 compatible when associating to an access point.	
CCX	Use CCX (Cisco Client Extensions) for faster roaming. Default is enabled.
CCKM	Use CCKM (Cisco Centralized Key Management) for faster roaming. Default is enabled.

To save changes, tap the **Apply** button. Confirmation dialogs may be displayed.

To exit without saving changes, tap the **X** in the upper right of the window.

Tap restore default values, tap the Restore Default Values then tap Apply.

Radio
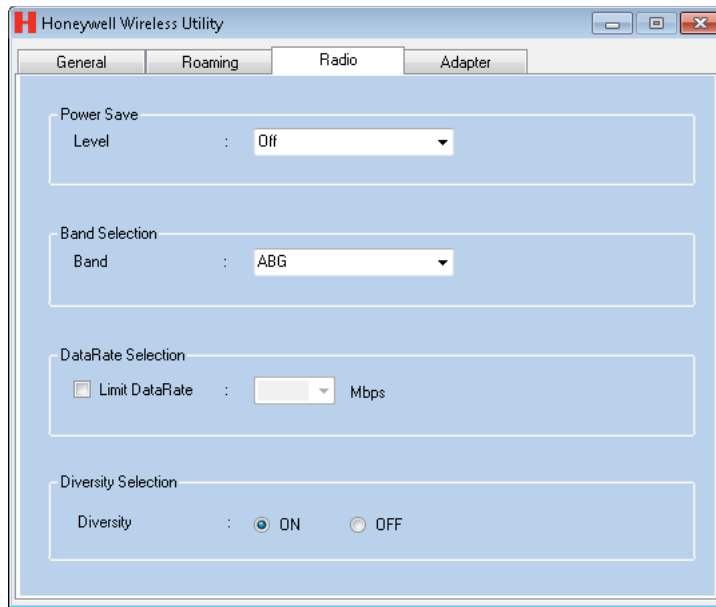
Power Save	Set the power save level. Options are Off (default) and Auto-PSM.
Band Selection	Select the bands to use. Options are: A, BG, G, ABG (default).
DataRate Selection	To limit data rates, check the Limit DataRate checkbox. If checked, select the desired rate (MCS0 to MCS15). MCS0 (Modulation and Coding Scheme) 0 is slowest, MCS15 is fastest but subject to more errors. Default is disabled.
Diversity Selection	By default, diversity is on.

Adapter

The **Adapter** tab provides information on the radio card. There are no user entries on this screen.
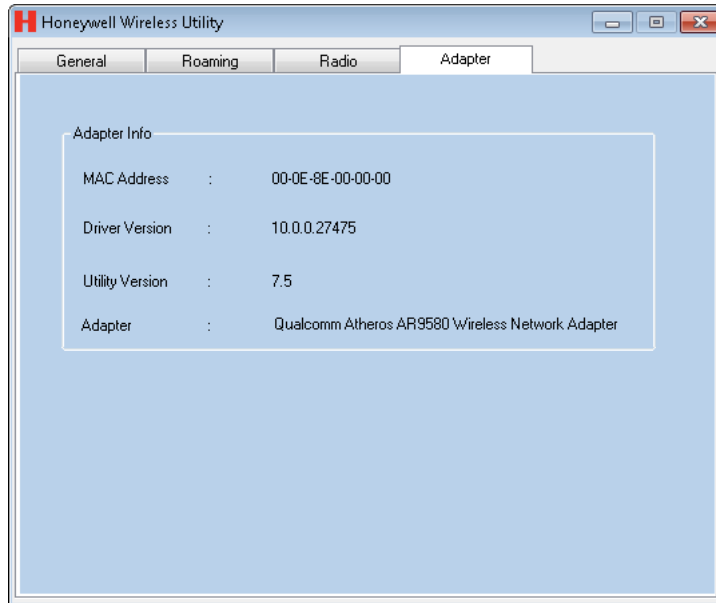
Advanced Settings

802.1X Settings
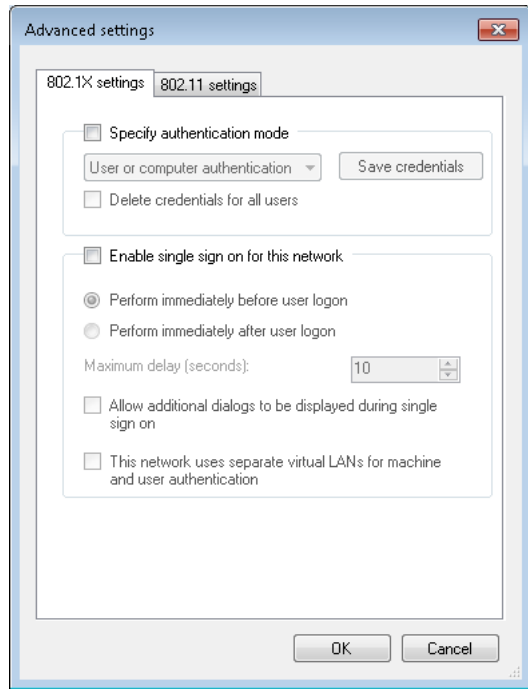
Enable single sign-on from this screen. When enabled, the user credentials are pro-vided to the WCU either immediately before or immediately after the user logs into the computer. The delay can be configured from 1 to 120 seconds (10 seconds is the default).

802.11 Settings
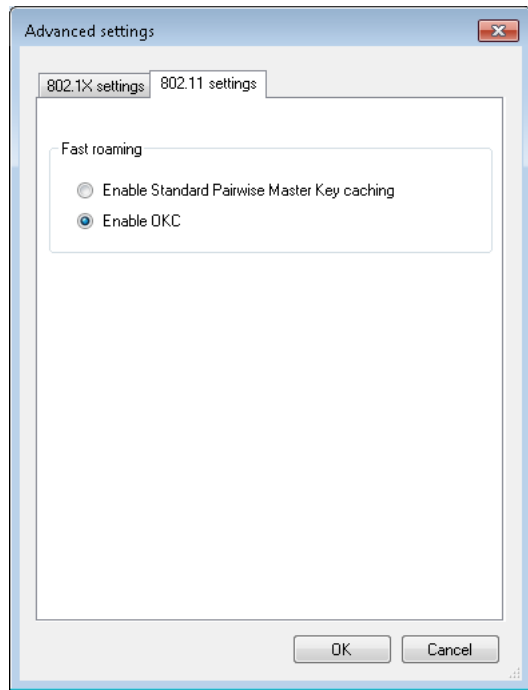
Determines the method used for fast roaming:

- Enable Standard Pairwise Master key caching – When standard Pairwise Master Key (PMK) is enabled, authentication can be skipped if the client has already authenticated to the access point previously. A connection to a new access point uses the 802.11x authentication process while a reconnect to the access point can skip the authentication.

- Enable OKC– Opportunistic Key Caching (OKC) allows a client to skip 802.11x authentication when roaming to an access point under a controller based infrastructure. After the client authenticates with one access point, it can roam to others under the same controller by handshaking rather than authentication.

Certificates

Note: *Please refer to the Security Primer to prepare the Authentication Server and Access Point for communication.*

Note: *It is important that all dates are correct on the Thor VM3 and host computers when using any type of certificate. Certificates are date sensitive and if the date is not correct authentication will fail.*

⚠ If using the Windows Certificate Store, the Windows Account must have a password. The password cannot be left blank. The WCU uses the Windows user account credentials to access the Certificate Store. The Windows user account credentials need not be the same as those entered in the WCU.

Quick Start

Root Certificates are necessary for EAP-TLS, PEAP/GTC and PEAP/MSCHAP.

1. Generate a Root CA Certificate either from the Thor VM3 or using a PC.
2. If a PC was used to request the certificate, copy the certificate to the Thor VM3.
3. Install a Root CA Certificate.

User Certificates are necessary for EAP-TLS.

1. Generate a User Certificate either from the Thor VM3 or using a PC.
2. If a PC was used to request the certificate, copy the certificate to the Thor VM3.
3. Install a User Certificate.

Generate a Root CA Certificate

Note: *It is important that all dates are correct on the Thor VM3 and host computers when using any type of certificate. Certificates are date sensitive and if the date is not correct authentication will fail.*

The easiest way to get the root CA certificate is to use a browser on a PC or the Thor VM3 to navigate to the Certificate Authority. To request the root CA certificate, open a browser to

http://<CA IP address>/certsrv.

Note: *It may be necessary to use a PC to request a certificate for these devices.*

Sign into the CA with any valid username and password.

Click the Download a CA certificate, certificate chain or CRL link.

Make sure the correct root CA certificate is selected in the list box.

Microsoft Certificate Services

Download a CA Certificate, Certificate Chain, or CRL

To trust certificates issued from this certification authority,
install this CA certificate chain.

To download a CA certificate, certificate chain, or CRL, select the
certificate and encoding method.

CA certificate:

> Current

Encoding method:

> ⊙ DER
> ○ Base 64

Download CA certificate
Download CA certificate chain
Download latest base CRL
Download latest delta CRL

Click the **DER** radio button.

To download the CA certificate, click on the **Download CA certificate** link.

File Download - Security Warning

Do you want to open or save this file?

> Name: cnrtnew.cer
> Type: Security Certificate, 1.46 KB
> From: 100.100.100.100

Open   Save   Cancel

While files from the Internet can be useful, this file type can
potentially harm your computer. If you do not trust the source, do not
open or save this software. What's the risk?

Click the **Save** button and save the certificate. Make sure to keep track of the name and location of the certificate.

Next install the certificate on the Thor VM3.

Install a Root CA Certificate

Copy the certificate file to the Thor VM3. The certificate file has a .CER extension. Locate the file and double-tap on it. If presented with a security warning, confirm that you want to open the file.

If the Certificate Wizard does not start automatically when you double-tap the certificate .CER file:

1. Select Start and type certmgr.msc in the search box and press Enter.
2. In the left pane, right-click Trusted Root Certificate Authorities and select **All Tasks > Import**.
3. The Certificate Import Wizard starts.
4. Tap **Next** and use the **Browse..** button to locate the Root certificate copied to the Thor VM3 then tap Open.
5. The certificate filename and path are displayed. Tap Next.
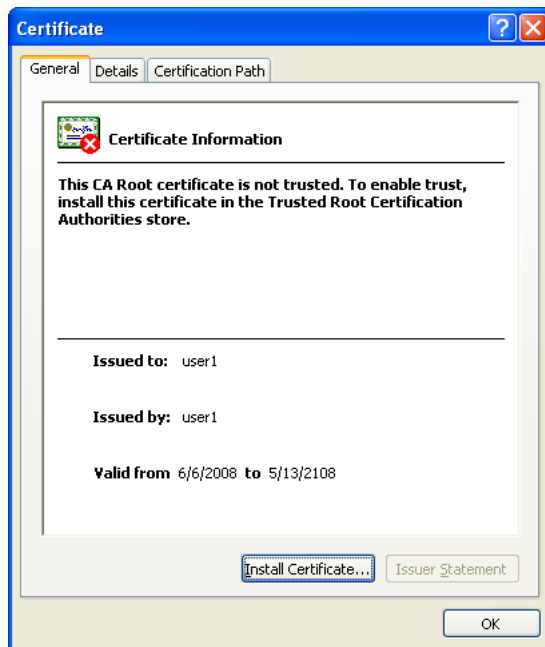
Tap the Install **Certificate** button.

The certificate import wizard starts. Tap Next.

1. Select Place all certificates in the following store.
2. Tap Browse and select Trusted Root Certification Authorities.
3. Tap **OK** then tap Next and Finish.
4. If presented with a security warning, confirm that you want to install this certificate.
5. An import successful message is displayed.

Generate a User Certificate

The easiest way to get the user certificate is to use the browser on the Thor VM3 or a PC to navigate to the Certificate Authority. To request the user certificate, open a browser to

http://<CA IP address>/certsrv.

Note: *It may be necessary to use a PC to request a certificate for these devices.*

Sign into the CA with the username and password of the person who will be logging into the mobile device.

This process saves a user certificate file.

Click the Request a certificate link.

Click on the User Certificate link.

User Certificate - Identifying Information

No further identifying information is required. To complete your certificate, press submit:

More Options >>

Submit >

Click on the **Submit** button. If there is a message box asking if you want to confirm the request, click Yes.

The User Certificate is issued.

Certificate Issued

The certificate you requested was issued to you.

Install this certificate

Install the user certificate on the requesting computer by clicking the Install this certificate link.

If the requesting computer is the Thor VM3, then the process is finished. Otherwise, export the certificate as described below.

Exporting a User Certificate

Select **Tools > Internet Options > Content** and click the **Certificates** button.
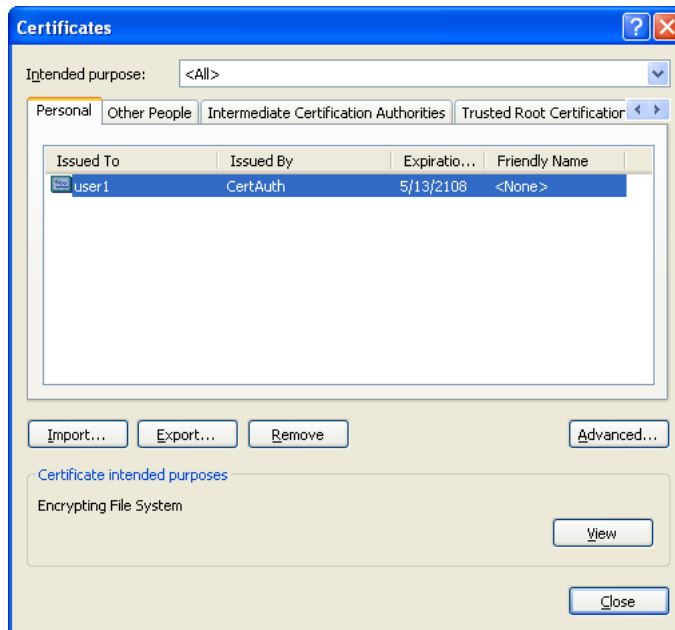
Make sure the **Personal** tab is selected. Highlight the certificate and click the **Export** button.

The Certificate Export Wizard is started

Select **Yes, export the private key** and click **Next**.	Do you want to export the private key with the certificate? ⦿ Yes, export the private key ◯ No, do not export the private key
Uncheck **Enable strong protection** and click **Next**. The certificate type must be PKCS #12 (.PFX).	⦿ Personal Information Exchange - PKCS #12 (.PFX) ☐ Include all certificates in the certification path if possible ☐ Enable strong protection (requires IE 5.0, NT 4.0 SP4 or above) ☐ Delete the private key if the export is successful
When the private key is exported, you must enter the password, confirm the password and click **Next**. Be sure to remember the password as it is needed when installing the certificate.	Type and confirm a password. Password: [ ] Confirm password: [ ]
Supply the file name for the certificate. Use the **Browse** button to select the folder where you wish to store the certificate. The certificate is saved with a .PFX extension.	File name: [ ] Browse...

Click Finish and **OK** to close the Successful Export message.

Locate the User Certificate in the specified location. Copy to the Thor VM3. Install the User certificate.

Install a User Certificate

After generating and exporting the user certificate, install the user certificate.

1. Copy the certificate from the PC to the Thor VM3.
2. Locate the certificate file (it has a .PFX extension) and double-click on it. If clicking on the certificate file does not launch the certificate import wizard, follow the Manually Initiate Certificate Installation before continuing the instructions below.
3. The certificate import wizard starts. Tap Next.
4. Confirm the certificate file name and location.
5. Tap Next.
6. You are prompted for the password that was assigned when the certificate was exported.
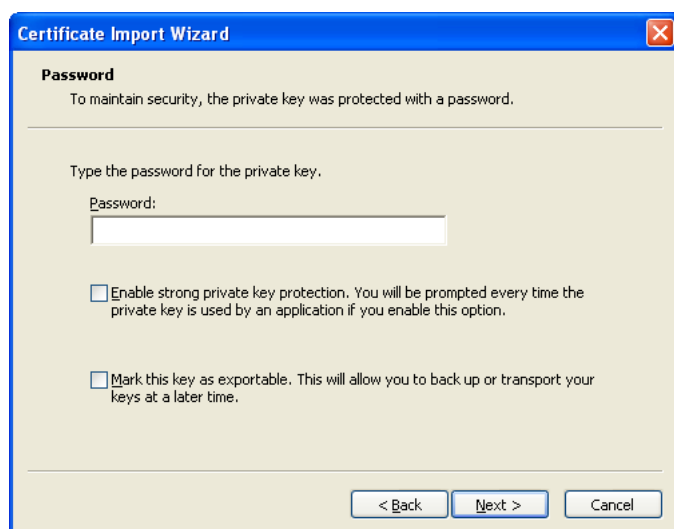
7. It is not necessary to select either of the checkboxes displayed above.

8. Enter the password and tap Next.

9. On the next screen, allow Windows to automatically select the certificate store, then click Next and Finish. An import successful message is displayed.

Manually Initiate Certificate Installation

If the Certificate Wizard does not start automatically when you double-tap the certificate .PFX file:

1. Select Start and type certmgr.msc in the search box and press Enter.

2. In the left pane, right-click Personal and select **All Tasks > Import**.

3. The Certificate Import Wizard starts.

4. Tap Next and use the **Browse..** button to locate the User certificate copied to the Thor VM3. If necessary, change the file type drop down list at the bottom of the explorer window from *.cer to *.pfx. After selecting the .PFX file, tap Open.

5. The certificate filename and path are displayed. Tap Next.

6. Return to the installation instructions above.

VM3 WWAN Connection Manager

Access the VM3 Connection Manager from the Honeywell Connection Manager icon on the desktop or the icon in the system tray. Double tap the Connection Manager icon in the system tray (or right-click and select Configuration Panel). The system tray Connection Manager icon looks like this:

VM3 Connection Manager icon when there is no active WLAN or WWAN connection. The icon may be flashing in the system tray when there is no connection.

WVM3 Connection Manager icon when there is an active WLAN connection.

VM3 connection manager icon when a WWAN connection is active. The icon indicates which SIM card is used (1 or 2) and the strength of the connection (1 to 4 bars).

Use the VM3 Connection Manager to:

- Configure WWAN connections
- Configure hyper-roaming between WWAN carriers or between WWAN and WLAN.

Hyper-Roaming Notes:

- The Connection Manager roams from WLAN to WWAN when the WLAN signal is weak enough to allow the roaming. Due to the fact that WWAN signals are present in most areas, it is unlikely the Connection Manager will roam back to a WLAN connection automatically. User intervention may be required to switch back to WLAN.
- Roaming to or between WWAN carriers is different than roaming between WLAN access points. In order for WWAN to roam, the Connection Manager must first disconnect from the old WWAN carrier then establish a connection to the new WWAN carrier.
- When hyper-roaming (either between WWAN carriers or between WLAN/WWAN) the network connection is temporarily lost during the switching process. When switching to or between WWAN carriers, the connection manager must load carrier firmware and this can take several minutes.

Connection troubleshooting:

- If there is a connection issue, the first step in troubleshooting is to verify the APN on the Connection Type tab.

Home

The **Home** tab lists the available connections and information on these connections. The order of the connections listed are specified on the **Link Settings** tab.
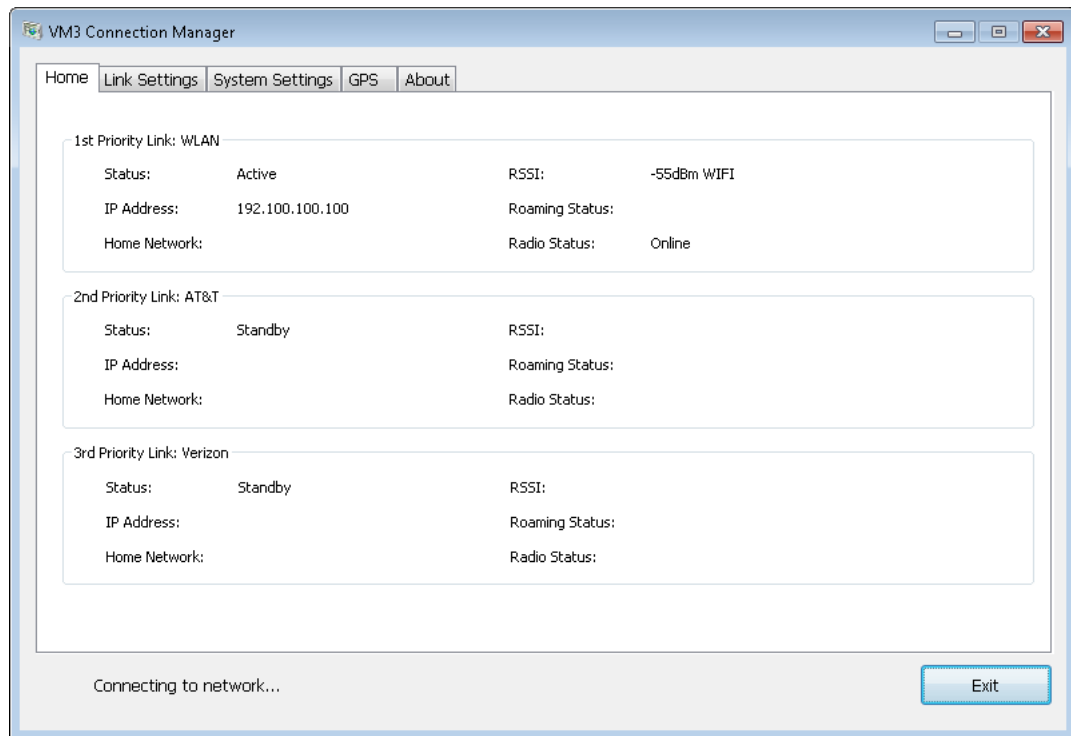
Each configured connection (or link) is identified by name, either WLAN (for a WLAN connection) or the name of the carrier (for a WWAN connection). If a connection is not configured, there is no name after the link and the status field is empty.

The active connection displays the IP address and signal strength (RSSI). Inactive connections show the status as Standby.

If a WWAN connection is active, the roaming status (Home or Roam) is displayed.

Link Settings

The available network connections are shown on this tab:

The WLAN network can be enabled or disabled from this tab, however configuration settings for the 802.11 a/b/g/n radio are set with the WLAN Wireless Configuration Utility (WCU).

The WWAN networks, if any, are shown on this page. A WWAN network is only displayed if a SIM card has been installed for that network. The Thor VM3 supports two SIM cards. See Install SIM Card(s) for SIM card installation instructions. A WWAN network can be enabled or disabled from this screen, however the connection is configured by tapping the applicable **Network Settings** button.
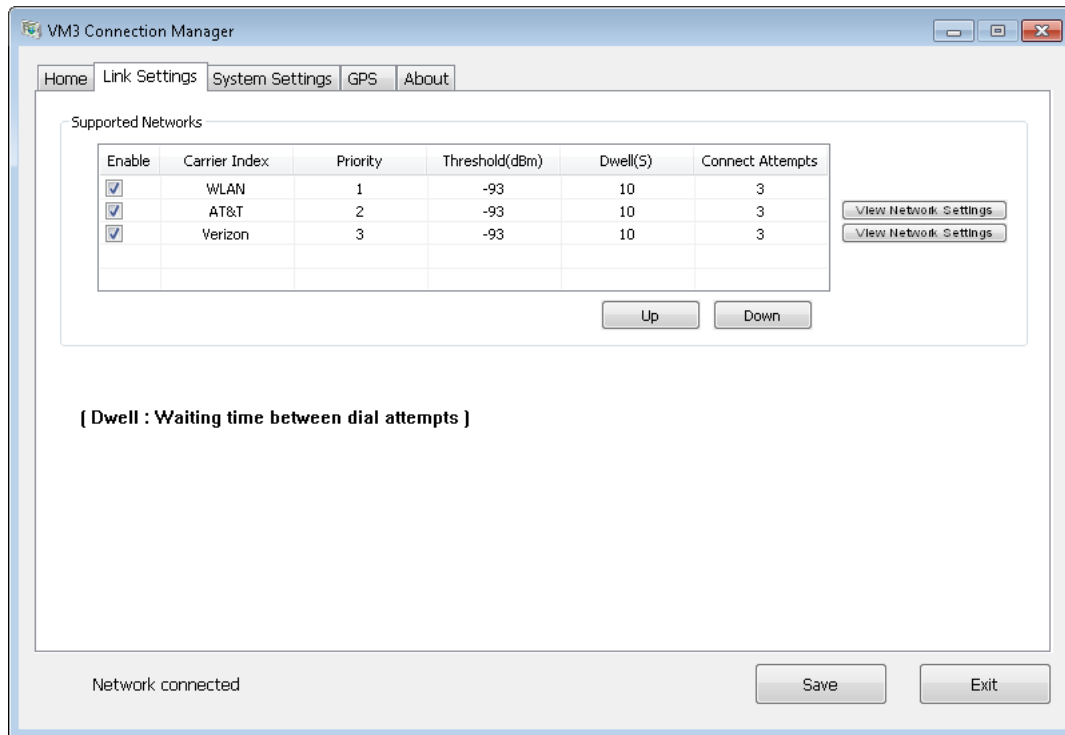
To change the order (Priority) of the networks:

1. Select the desired network. When selected, the network has a green check mark to the left.

2. Tap the **Up** or **Down** button to move the network in the desired direction.

3. Tap the **Save** button after the order is set.

To change the other options (Enable, Threshold, Dwell, Connect Attempts):

1. To enable or disable a carrier, tap the checkbox to the left of the carrier name. When checked, the carrier is enabled.

2. For other parameters, double tap the cell containing the value that is to be changed. The value in the cell can now be edited.

3. Enter the desired value.
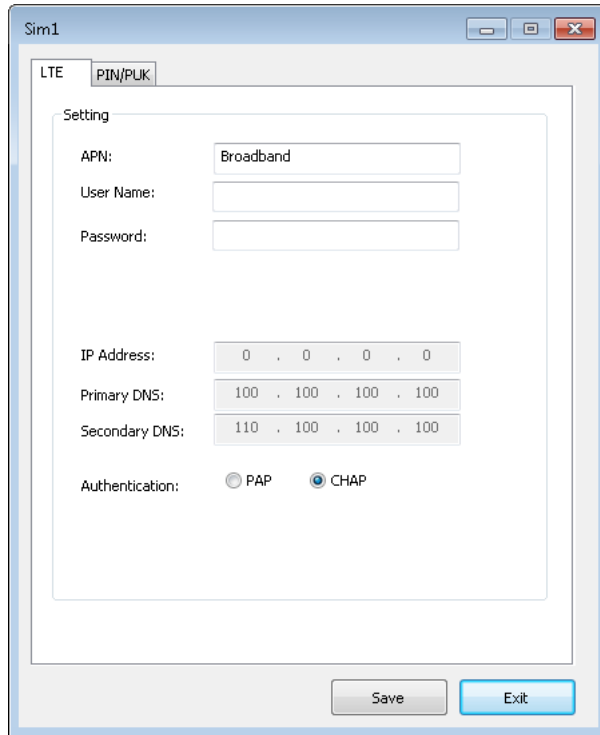
4. Tap anywhere else on the screen to exit the editing mode.

5. The values that can be changed are:

   - Threshold – The signal strength (in dBm) before roaming can occur to this connection. The default is -93 dBm.

   - Dwell – The length of time (in seconds) to wait before attempting the connection. The default is 10 seconds.

   - Connect Attempts – The number of times this connection is tried. If there is no successful connection after this many tries, the next connection is tried.

To configure a WWAN network, tap the **View Network Settings** button. To configure the WLAN connection use the WLAN Wireless Configuration Utility (WCU).

Connection Type

Use this tab to configure the connection parameters. The tab is identified by the type of connection, i.e.: UMTS, LTE, UDMA, etc. The label on this tab corresponds to the Technology field on the About tab.

Note that the SIM card being configured (Sim1 or Sim2) is identified at the top of this tab.

If the WWAN radio fails to connect, please check that the correct APN is entered. This entry can be verified by contacting the WWAN carrier.

! An APN mismatch may generate an error message, however this is not always the case. The first step in diagnosing a connection error should be to verify the APN.

If using a private APN, entries are available for User Name and Password, as well as a choice for Authentication. If these items are not present, contact Customer Support for software upgrade options.

If using a public APN, the software upgrade is usually not necessary.

After all entries are completed, tap the **Save** button.

PIN/PUK

Next select the **PIN/PUK** tab. Note that the SIM card being configured (Sim1 or Sim2) is identified at the top of this tab.
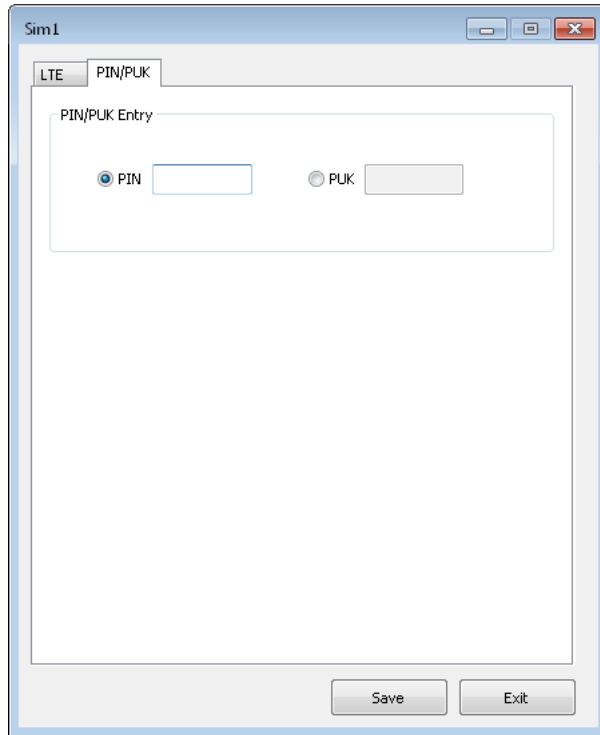
Enter the PIN or PUK and tap Save then tap Exit to return to the Connection Manager.

System Settings

Use this screen to configure WWAN settings.
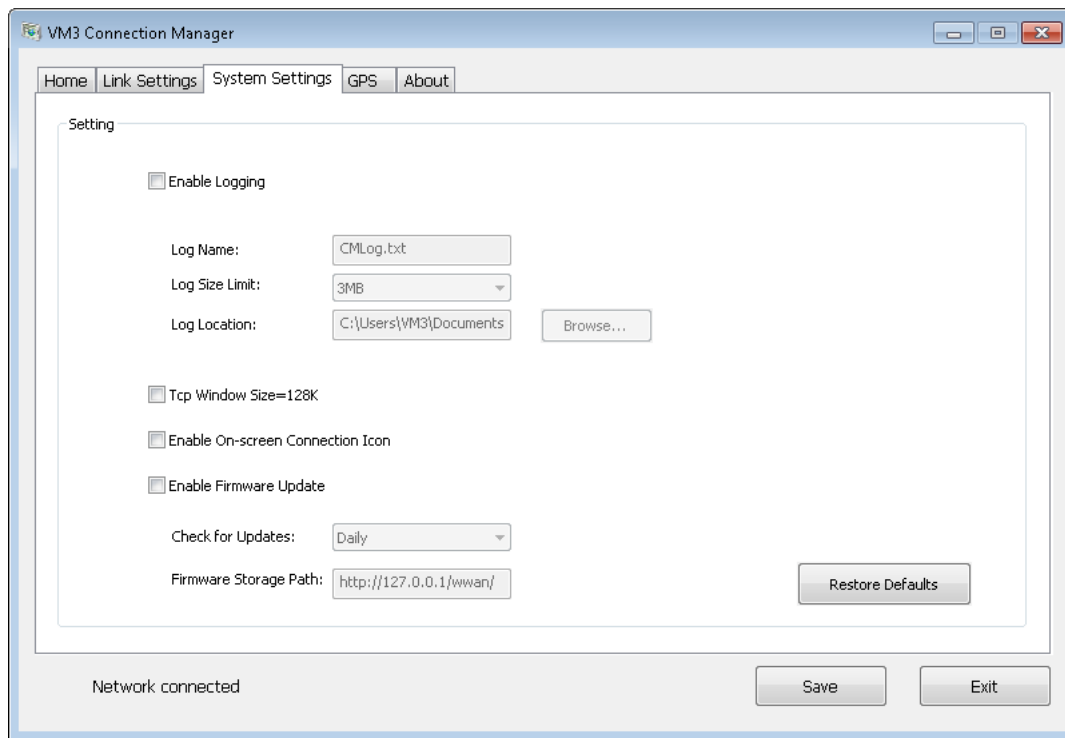
Enable Logging

Check to enable logging. Specify the maximum file size and the location for the log file.

By default logging is disabled.

TcpWindow Size=128k

Check to set the TCP window size to 128k.

By default this options is disabled.

Enable On-screen Connection Icon

Check to enable an on-screen connection icon. The icon is displayed in the lower right corner of the screen, above the date/time.

Connected   Not connected

This icon is in addition to the connection icon in the system tray.

By default the on-screen icon is disabled.

Enable Firmware Update

The WWAN card supports firmware update over the air (Firmware Over The Air, or FOTA). By default, FOTA is disabled. See Using FOTA

Restore Defaults

Use this option to return all Connection Manager settings to the default value.

Using FOTA

Honeywell recommends distributing firmware via a WLAN connection rather than the WWAN connection. This requires an HTTP server which can be hosted on the Internet or the same Intranet (i.e.: the same network domain) as the Thor VM3. Honeywell tested FOTA using:

- Uniform Server: https://sourceforge.net/projects/miniserver/

- IIS: Microsoft Internet Information Services, Windows 2012 server

To use FOTA, the following steps must be completed before initial use:

- Configure HTTP Server
- Load Firmware Updates
- Configure the Thor VM3

For subsequent updates, it is only necessary to Load Firmware Updates.

Configure HTTP Server

The instructions below are for Uniform Server (UniServer). Setup information for IIS server is widely available on line. Follow the same folder setup as in step 4 below for IIS.

1. After installing, browse to the installation folder and run the server by double-clicking UniController.exe.

2. Click the **Start Apache** button. The indicator changes from red to green when the server is running. The button label also changes to Stop Apache.
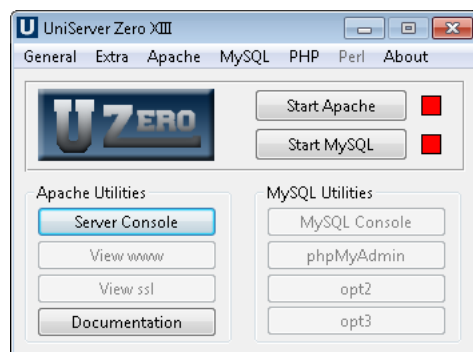
3. Display the test page by clicking the **View www button** or typing http://localhost into a web browser.

4. Create the folder structure on the web server:
    <Server URL>/<wwan>/<Carrier Number>/<Version>.
    Assuming initroot is root folder for the HTTP server, create a wwan folder underneath initroot. Then create folders under wwan numbered 0–15 to represent each carrier number. The structure is shown below. As firmware updates are received, create version folders under the appropriate carrier number. Notice the version folders under the <3> folder in this example.

    ```
    <initroot>
        <wwan>
            <0>
            <1>
            <2>
            <3>
                    1.0.0
                    1.0.1
                    1.0.2
            <4>
            <5>
            …
            <14>
            <15>
    ```

5. Click on the **Apache** tab and select **Access and Passwords** > **Folder www access and passwords**.
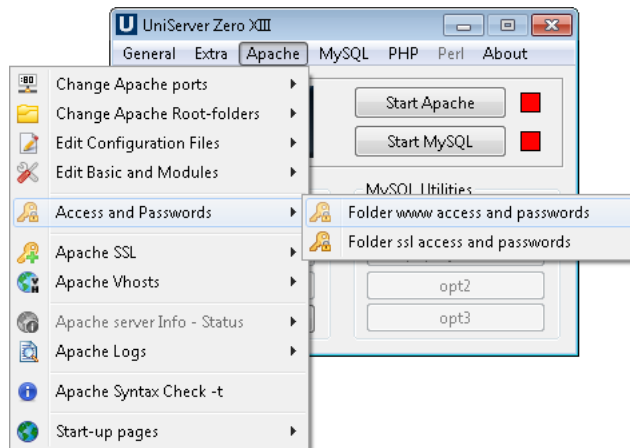
6. Select **Password Disabled** and **Local, Intranet and Internet Access**.
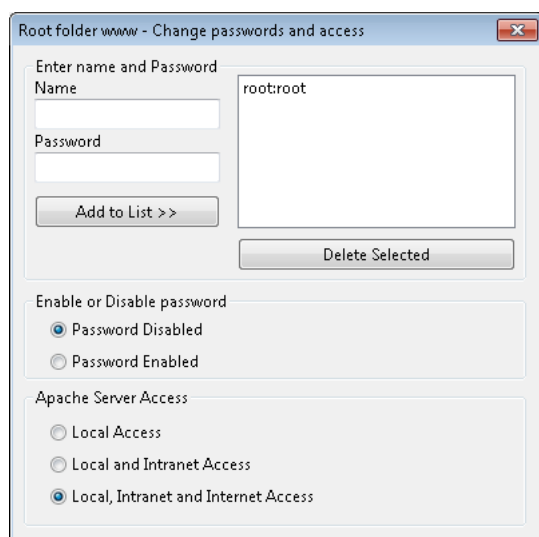
7. Verify server setup:
   - Ping the sever from the Thor VM3 to verify connectivity between the devices.
   - Open the web browser on the Thor VM3 and verify the URL of the server can be accessed.

Load Firmware Updates

The firmware update is provided by Honeywell customer support. The update consists of a version string and a zip file. The version string is three numbers separated by periods, i.e.: 1.0.0 or 3.1.12.

Top load the firmware files:

1. Create a subfolder under the applicable carrier number that matches the version string. For example, if update 1.0.3 is received for carrier number 6, the folder would be:
   <Server URL>/<wwan>/<6>/<1.0.3>

2. Unzip the firmware file. The firmware update consists of three files:
   - carrier_pri.nvu
   - imageInfo.xml
   - spkg_sblz.cwe

3. Copy the three files into the update folder created above.

Configure the Thor VM3

Repeat these steps for each Thor VM3 that will be using FOTA. Once configured, the Thor VM3 continues to check for firmware updates at the specified interval.

On the **System Settings** tab of the Connection Manager:

1. Check the Enable Firmware Update checkbox.
2. Select the desired frequency (daily or weekly) to Check for Updates.

3. Specify the Firmware Storage Path. This path includes the address of the web server but does not include the carrier number or version folders created. The carrier folder and update folder are automatically detected by the update utility. For example, if the web server is hosted at http://127.0.0.1, the path is entered as http://127.0.0.1/wwan/
    Important – the trailing / must be included after wwan.

GPS

This screen displays GPS data. A WWAN connection is not required for the GPS data, however an antenna must be attached to the GPS port.
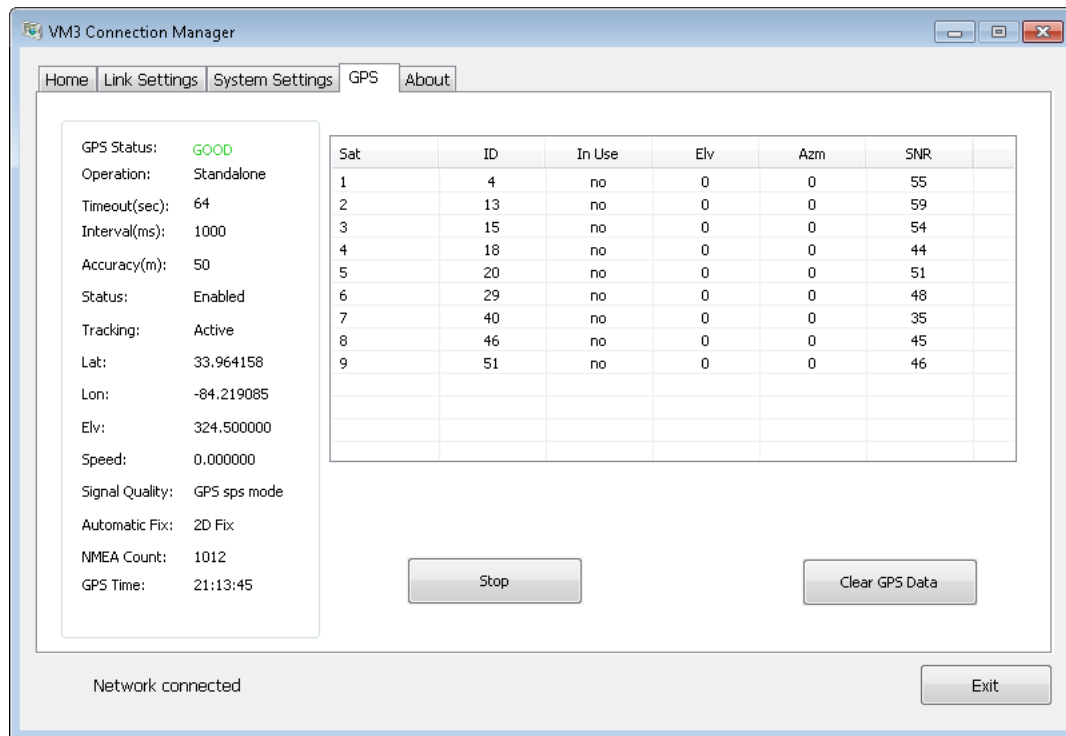
Tap the **Start** button to begin receiving GPS data. Once started, the button label changes to **Stop** and GPS data on screen is populated.

Tap the **Clear GPS Data** button to erase the GPS data.

About

The about screen has no user-configurable parameters. It identifies the firmware and hardware versions, the carrier selected, MEID, etc. for the WWAN radio.

A KEY MAPS
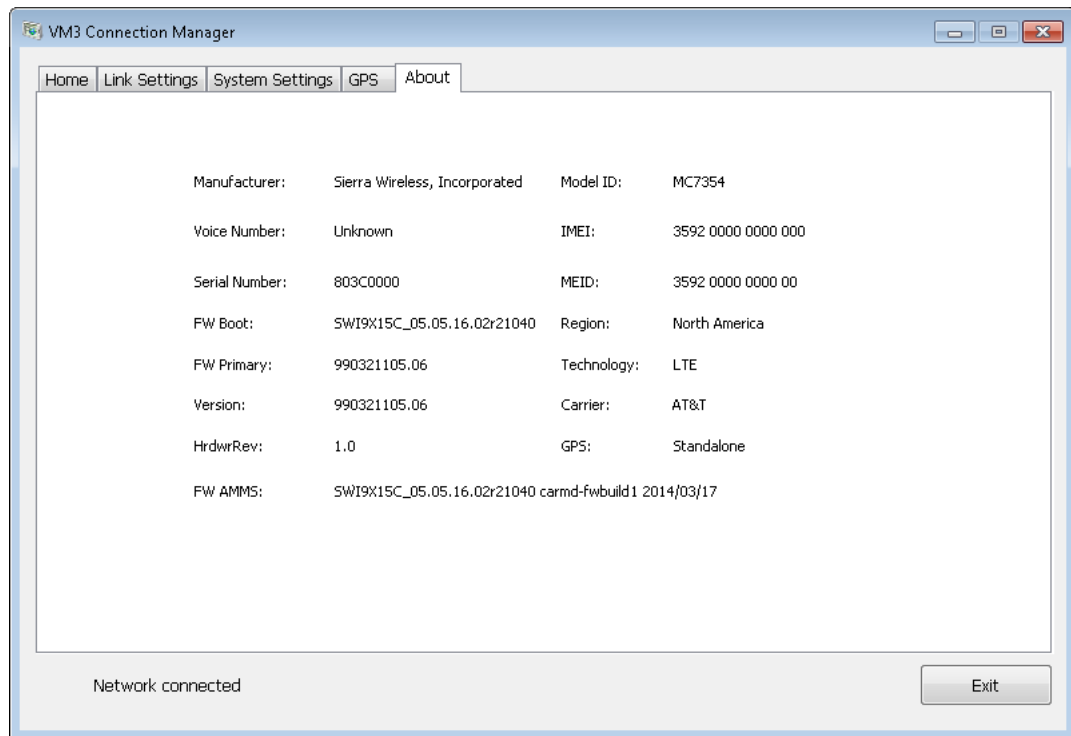
Integrated Keypad

There are seven integrated programmable keys located on the Thor VM3 below the display. Each programmable key can be modified by the Orange key for a total of 14 programmable keys.

See Programmable Key to remap these keys.

The default values for these keys are:

To get this Programmable Key	Press These Keys in this Order		Default Key Value
P1 (Programmable key 1)	P1		F1
P2 (Programmable key 2)	P2		F2
P3 (Programmable key 3)	P3		F3
P4 (Programmable key 4)	P4		F4
P5 (Programmable key 5)	P5		F5
P6 (Programmable key 6)	P6		Open/Close Soft Keyboard
P7 (Programmable key 7)	P7		Enter
P8 (Programmable key 8)	Orange	P1	<none>
P9 (Programmable key 9)	Orange	P2	<none>
P10 (Programmable key 10)	Orange	P3	<none>
P10 (Programmable key 11)	Orange	P4	<none>
P10 (Programmable key 12)	Orange	P5	<none>
P10 (Programmable key 13)	Orange	P6	<none>
P10 (Programmable key 14)	Orange	P7	<none>
Increase speaker volume	Blue	P1	Increase speaker volume
Decrease speaker volume	Blue	P2	Decrease speaker volume
Increase display brightness	Blue	P5	Increase display brightness

To get this Programmable Key	Press These Keys in this Order		Default Key Value
Decrease display brightness	Blue	P6	Decrease display brightness

The following key press sequences are not programmable:

To get this function	Press These Keys in this Order	
Increase speaker volume	Blue	P1
Decrease speaker volume	Blue	P2
Increase display brightness	Blue	P5
Decrease display brightness	Blue	P6

The Blue plus P3, P4 or P7 key press sequences cause no action.

Integrated Keypad and BIOS

The front panel keys have limited functionality before booting completes. However, the following key functions are available during BIOS setup and before Windows has completed loading (i.e.: to maneuver a Windows boot menu).

- P1 – Up Arrow
- P2 – F2
- P3 – Down Arrow
- P4 – Left Arrow
- P5 – F5
- P6 – Right Arrow
- P7 – Esc (Escape)
- Blue – Tab
- Orange – Enter

External 21-Key Keyboard

The table below shows the results of the keypress combinations. Each key has an unshifted mode, a Yellow shifted mode and a Green shifted mode.

- To enter Yellow shifted mode, press the Yellow key. The keypad remains in Yellow shifted mode until any other key is pressed or the Yellow key is pressed again.

- To enter Green shifted mode, press the Green key. The keypad remains in Green shifted mode until any other key is pressed or the Green key is pressed again.

- Pressing the Yellow key then the Green key cancels Yellow mode and the keypad is in Green shifted mode.

- Pressing the Green key then the Yellow key cancels Green mode and the keypad is in Yellow shifted mode.

- Arrow keys are unaffected by Yellow or Green shifted mode.

- Keypress combinations marked as N/A do nothing (the keystroke is consumed by the keyboard and not sent to the Thor VM3).

- Keys marked as programmable can be assigned a value using the Programmable Key control panel.

- Pressing the backlight key (alone or after the Green or Yellow keys) cycles the keypad backlight through Low, Medium, High, Off then repeats.

Key	Non-Shifted	Yellow-Shifted	Green-Shifted
1	1	F1	F11
2	2	F2	F12
3	3	F3	F13
4	4	F4	F14
5	5	F5	F15
6	6	F6	F16
7	7	F7	F17
8	8	F8	F18
9	9	F9	F19

Key	Non–Shifted	Yellow–Shifted	Green–Shifted
0	0	F10	F20
PF	Programmable	Programmable	N/A
Del	Delete	Backspace	N/A
Tab	Tab	Backtab	N/A
Left	Left	Left	Left
Right	Right	Right	Right
Up	Up	Up	Up
Down	Down	Down	Down

External 95-Key Keyboard

These key functions apply to both the 95-Key USB Keyboard and the 95-key PS/2 Keyboard.

The key map table that follows lists the commands used for the Thor VM3. Note that since the Thor VM3 uses a Microsoft Windows operating system, no DOS Terminal Emulation keypress sequences are provided.

There are 10 hidden keys on the 95 key keyboard. Each of the hidden keys is accessed by pressing the <Fn> key (located in the top right hand corner) plus a key on the numeric keypad on the right. Additional function keys are supported as well.

To get this Key / Function	Press These Keys in this Order	
Insert	FN	0 (numeric keypad)
Home	FN	7 (numeric keypad)
Page Up	FN	9 (numeric keypad)
Delete	FN	. (numeric keypad)
End	FN	1 (numeric keypad)
Page Down	FN	3 (numeric keypad)
Up Arrow	FN	8 (numeric keypad)
Left Arrow	FN	4 (numeric keypad)
Down Arrow	FN	2 (numeric keypad)
Right Arrow	FN	6 (numeric keypad)

External 60-Key Keyboard
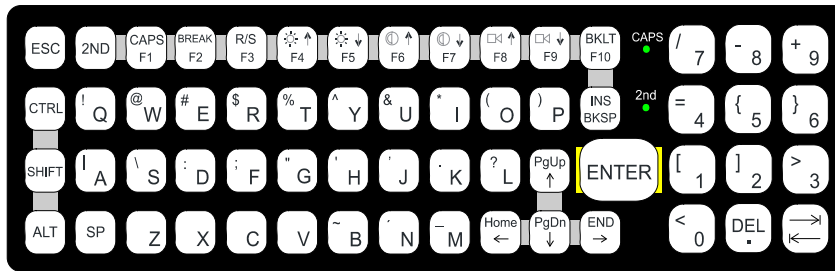
The key map table that follows lists the commands used when using the Thor VM3 with the 60-key PS/2 Keyboard.

The 60-key keyboard does not have a NumLock indicator or key. NumLock can be toggled On or Off using the **2nd SHIFT F10** keypress sequence. The default for NumLock is On. Changes made to the NumLock status persist across a Windows restart.

When running RFTerm, please refer to the RFTerm Reference Guide for equivalent keys and keypress sequences.

60 Key KeyMap 101-Key Equivalencies

- The following keymap is used on a Thor VM3 that is NOT running RFTerm.
- When using a sequence of keys that includes the 2nd key, press the 2nd key first then the rest of the key sequence.
- When the Thor VM3 boots, the default condition of Caps (or CapsLock) is Off. The Caps (or CapsLock) condition can be toggled with a **2nd + F1** key sequence. The CAPS LED is illuminated when CapsLock is On. The keymaps below assume Caps is Off.
- The Thor VM3 keyboard has several control keys. The following control keys are not used:
  - The 2nd function of the **F3** key is not used as Windows Power Management controls all power management modes on the Thor VM3.
  - The 2nd functions of the **F4** and **F5** keys are not used as the display brightness is adjusted via the buttons on the front of the Thor VM3.
  - The 2nd functions of the **F6** and **F7** keys are not used as the Thor VM3 has TFT LCD screen with no provision for contrast adjustments.
  - The 2nd functions of the **F8** and **F9** keys are not used as the sound volume on the Thor VM3 is controlled with a Microsoft Windows Control Panel.
  - The 2nd function of the **F10** key is not used as the display backlight timer also controls the keyboard backlight.

To get this Key / Function	Press These Keys in this Order		
Power On/Off	Power		
2nd	2nd		

To get this Key / Function	Press These Keys in this Order		
Shift	Shift		
Alt	Alt		
Ctrl	Ctrl		
Esc	Esc		
Space	Sp		
Enter	Enter		
Enter (numeric)	2nd	Enter	
CapsLock (Toggle)	2nd	F1	
Back Space	BkSp		
Tab	Tab		
Back Tab	2nd	Tab	
Ctrl-Break	Ctrl	2nd	F2
Pause	2nd	F2	
Up Arrow	Up Arrow		
Down Arrow	Down Arrow		
Right Arrow	Right Arrow		
Left Arrow	Left Arrow		
Insert	2nd	Bksp	
Delete (numeric)	2nd	DOT	
Home	2nd	Left Arrow	
End	2nd	Right Arrow	
Page Up	2nd	Up Arrow	
Page Down	2nd	Down Arrow	
ScrollLock	2nd	Shift	F10
F1	F1		
F2	F2		
F3	F3		
F4	F4		
F5	F5		
F6	F6		
F7	F7		
F8	F8		
F9	F9		
F10	F10		
F11	2nd	Shift	F1
F12	2nd	Shift	F2
a	A		
b	B		
c	C		
d	D		

To get this Key / Function	Press These Keys in this Order		
e	E		
f	F		
g	G		
h	H		
i	I		
j	J		
k	K		
l	L		
m	M		
n	N		
o	O		
p	P		
q	Q		
r	R		
s	S		
t	T		
u	U		
v	V		
w	W		
x	X		
y	Y		
z	Z		
A	Shift	A	
B	Shift	B	
C	Shift	C	
D	Shift	D	
E	Shift	E	
F	Shift	F	
G	Shift	G	
H	Shift	H	
I	Shift	I	
J	Shift	J	
K	Shift	K	
L	Shift	L	
M	Shift	M	
N	Shift	N	
O	Shift	O	
P	Shift	P	
Q	Shift	Q	
R	Shift	R	

To get this Key / Function	Press These Keys in this Order		
S	Shift	S	
T	Shift	T	
U	Shift	U	
V	Shift	V	
W	Shift	W	
X	Shift	X	
Y	Shift	Y	
Z	Shift	Z	
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		
7	7		
8	8		
9	9		
0	0		
DOT	DOT		
<	2nd	0	
[	2nd	1	
]	2nd	2	
>	2nd	3	
=	2nd	4	
{	2nd	5	
}	2nd	6	
/ (numeric)	2nd	Ctrl	7
/ (alpha)	2nd	7	
– (numeric)	2nd	Ctrl	8
– (alpha)	2nd	8	
+ (numeric)	2nd	Ctrl	9
+ (alpha)	2nd	9	
* (numeric)	2nd	I (letter i)	
* (alpha)	2nd	Ctrl	I (letter i)
: (colon)	2nd	D	
; (semicolon)	2nd	F	
?	2nd	L	
`	2nd	N	
_ (underscore)	2nd	M	
, (comma)	2nd	J	

To get this Key / Function	Press These Keys in this Order		
' (apostrophe)	2nd	H	
~ (tilde)	2nd	B	
\	2nd	S	
|	2nd	A	
"	2nd	G	
!	2nd	Q	
@	2nd	W	
#	2nd	E	
$	2nd	R	
%	2nd	T	
^	2nd	Y	
&	2nd	U	
(	2nd	O	
)	2nd	P	

B SPECIFICATIONS AND REFERENCE MATERIAL

Technical Specifications

Thor VM3

Processor	Intel Atom Dual Core CPU operating at 1.46GHz
Memory	2 or 4 GB DDR3 RAM
Mass Storage	32, 64 or 128 GB mSATA
Storage Expansion	4 GB mSATA (factory option or user installable)
Operating System	Microsoft Windows Embedded Standard 7 (32-bit) Microsoft Windows 7 Professional 64-bit for Embedded Systems No operating system
Radio Modules	802.11 a/b/g/n radio / Bluetooth
Scanner Options	No integrated scanner, Optional serial, USB or Bluetooth scanners
Display Technology	Intel HD graphics processor Active matrix TFT Resolution: 1024 x 468 pixels (maximum) 400 NIT (indoor) or 900 NIT (outdoor) brightness, 12.1" (measured horizontally) display Transmissive with LED backlight Automatic brightness control on outdoor display Vehicle motion screen blanking available
Keyboard	Integrated 7-key keypad Optional 95-key USB keyboard Optional numeric-only keyboard Optional adapter cable for Honeywell PS/2 keyboards
Touch Screen	Impact resistive, standard hardened or premium Optional defroster Field replaceable front panel including touch screen and optional defroster
External Connectors	Optional external 802.11 / GPS / WWAN antenna connectors Additional connectors on dock, see below
Beeper	Minimum loudness greater than 95dBm at 10 cm in front of unit
Power Supply	10 to 60 VDC isolated
Uninterruptible Power Supply	Internal UPS battery, 30-minute life at –30ºC (–22ºF)
Backup Battery (RCT)	Internal lithium battery maintains Real Time Clock

VM1D Standard Dock

⚠️ **Caution:** **This dock is designed for DC power vehicle–mounted applications only.**

SKUs	VM1001VMCRADLE (with RAM ball) VM1002VMCRADLE VM1003VMCRADLE
Power Connector	6-pin connector: Direct10-60V DC input power Optional external converter for extended range DC (60-150 VDC)
COM1Connector	9-pin male, RS-232 serial port, COM1 with switchable power on pin 9
COM2 Connector	9-pin male, RS-232 serial port, COM2 with switchable power on pin 9
CANBUS/AUDIO Connector	15-pin male, CANbus/Audio connector supports either audio/microphone via adapter cable or J1939 Female and J1939 Male connectors via CANbus cable
USB Connector	9-pin female, USB connector supports USB host port via adapter cable
Power Switch	Sealed power switch
Input Power	DC Input Voltage: 10- 60 VDC, Input Current: 4.6 Amps (typical), Input Fuse: 8A Time Delay. Replace with same size, rating and type of fuse: • Littelfuse 0215008.MXP • Cooper Bussmann BK1/S506-8-R • Bel Fuse 5HT 8-R or equivalent.
External Power Supply	50-150 VDC DC power supply available for vehicles over 60 VDC *Note:* *Use dock VMX005VMCRADLE (VMXD Enhanced Dock of Off-Vehicle Use) in AC power applications.*

VM3D Enhanced Dock

⚠ **Caution: This dock is designed for DC power vehicle–mounted
applications only.**

SKU	VM3001VMCRADLE
Power Connector	6-pin connector: Direct10-60V DC input power Optional external converter for extended range DC (60-150 VDC)
COM1Connector	9-pin male, RS-232 serial port, COM1 with switchable power on pin 9
COM2 Connector	9-pin male, RS-232 serial port, COM2 with switchable power on pin 9
CANBUS/AUDIO Connector	15-pin male, CANbus/Audio connector supports either audio/microphone via adapter cable or J1939 Female and J1939 Male connectors via CANbus cable
USB1 Connector	9-pin female, USB connector supports USB host port via adapter cable ***Note:*** *USB Client port may not be supported by the Thor VM3 operating system.*
USB 2 Connector	15-pin female, USB connector supports 2 USB host ports via adapter cable
USB2 Connector	15-pin female, USB connector supports two USB host ports via adapter cable
USB Host Connector	One USB Host connector behind waterproof cap
Ethernet	One RJ45 Ethernet connector behind waterproof cap
Power Switch	Sealed power switch
Input Power	DC Input Voltage: 10– 60 VDC, Input Current: 4.6 Amps (typical), Input Fuse: 8A Time Delay. Replace with same size, rating and type of fuse: • Littelfuse 0215008.MXP • Cooper Bussmann BK1/S506-8-R • Bel Fuse 5HT 8-R or equivalent.
External Power Supply	50-150 VDC DC power supply available for vehicles over 60 VDC ***Note:*** *Use dock VMX005VMCRADLE (VMXD Enhanced Dock of Off-Vehicle Use) in AC power applications.*

VMXD Enhanced Dock

⚠️ **Caution: This dock is designed for DC power vehicle–mounted applications only.**

SKUs	VMX004VMCRADLE
Power Connector	6-pin connector: 13.2VDC input power; requires DC power supply Connector is also used for screen blanking via COM1 CTS and RTS signals
COM1Connector	9-pin male, RS-232 serial port, COM1 with switchable power on pin 9 Do not use COM1 when screen blanking box is attached to avoid port conflicts.
COM2 Connector	9-pin male, RS-232 serial port, COM2 with switchable power on pin 9
CANBUS/AUDIO Connector	15-pin male, CANbus/Audio connector supports either audio/microphone via adapter cable or J1939 Female and J1939 Male connectors via CANbus cable
USB1 Connector	9-pin female, USB connector supports USB host port via adapter cable *Note:* *USB Client port may not be supported by the Thor VM3 operating system.*
USB 2 Connector	15-pin female, USB connector supports 2 USB host ports via adapter cable
USB2 Connector	15-pin female, USB connector supports two USB host ports via adapter cable
USB 2 Connector	15-pin female, USB connector supports 2 USB host ports via adapter cable
USB Host Connector	One USB Host connector behind waterproof cap
Ethernet	One RJ45 Ethernet connector behind waterproof cap
Power Switch	Sealed power switch
External Power Supply	AC Adapter, 120-240VAC to 12VDC
Input Power	DC Input Voltage: 13.2VDC, Input Current: 4.6 Amps (typical), Input Fuse: 8A Time Delay. Replace with same size, rating and type of fuse: • Littelfuse 0215008.MXP • Cooper Bussmann BK1/S506-8-R • Bel Fuse 5HT 8-R or equivalent.
External Power Supply	50-150 VDC DC power supply required for all installations *Note:* *Use dock VMX005VMCRADLE (VMXD Enhanced Dock of Off-Vehicle Use) in AC power applications.*

VMXD Enhanced Dock for Off-Vehicle Use (QM3AC)

⚠ **Caution:** **This dock is designed for AC power (non vehicle-mounted) applications only.**

SKU	VMX005VMCRADLE
Power Connector	6-pin connector: 15VDC input power via required AC/DC Adapter
COM1Connector	9-pin male, RS-232 serial port, COM1 with power on pin 9
COM2 Connector	9-pin male, RS-232 serial port, COM2 with power on pin 9
CANBUS/AUDIO Connector	15-pin male, CANbus/Audio connector supports either audio/microphone via adapter cable or J1939 Female and J1939 Male connectors via CANbus cable
USB1 Connector	9-pin female, USB connector supports USB host port via adapter cable ***Note:*** *USB Client port may not be supported by the Thor VM3 operating system.*
USB 2 Connector	15-pin female, USB connector supports 2 USB host ports via adapter cable
USB2 Connector	15-pin female, USB connector supports two USB host ports via adapter cable
USB 2 Connector	15-pin female, USB connector supports 2 USB host ports via adapter cable
USB Host Connector	One USB Host connector behind waterproof cap
Ethernet	One RJ45 Ethernet connector behind waterproof cap
Power Switch	Sealed power switch
External Power Supply	AC Adapter, 120-240VAC to 15VDC
Input Power	DC Input Voltage: 15VDC, Input Current: 4 Amps (maximum), Input Fuse: 8A Time Delay. Replace with same size, rating and type of fuse: • Littelfuse 0215008.MXP • Cooper Bussmann BK1/S506-8-R • Bel Fuse 5HT 8-R or equivalent.
External Power Supply	AC Adapter, 120-240VAC to 15VDC required ***Note:*** *This dock for use in AC power applications. See other docks for DC power applications.*

Dimensions

Thor VM3

Width	12.6" (31.9 cm)
Height	10.3" (26.1 cm)
Depth	2.4" (6.2 cm)
Weight	6.75 lb. (3.1 kg)

VM1D Standard Dock

Note: *The RAM ball is not included in the following measurements.*

Length	7.1" (18.0 cm)
Width	6.1" (15.5 cm)
Height	2.5" (6.4 cm), measurement includes strain relief cable clamps
Weight	3.2 lb. (1.5 kg)

VM3D and VMXD Enhanced Dock

Note: *The RAM ball is not included in the following measurements.*

Length	7.1" (18.0 cm)
Width	6.1" (15.5 cm)
Height	2.1" (5.4 cm), measurement includes strain relief cable clamps
Weight	2.4 lb. (1.1 kg)

Environmental Specifications

Thor VM3 and Dock

Operating Temperature	-22º to 122º F (-30ºC to 50ºC) [non-condensing]
Storage Temperature	-22ºF to 140ºF (-30ºC to 60ºC) [non-condensing]
Operating Humidity	Up to 95%
Water and Dust	IEC 60529 compliant to IP66
ESD	15 kV air, 8kV direct contact
Vibration	MIL-STD-810F, composite wheeled vehicles.
Crash	SAE-J 1455

Network Card Specifications

WLAN - Qualcomm Atheros 802.11a/b/g/n

Bus Interface	SDIO (Secure Digital I/O)
Wireless Frequencies (varies by regulatory domain)	2.4 to 2.4895 GHz IEEE 802.11b / 802.11g DSSS OFDM 5.15 to 5.82 GHz IEEE 802.11a DSSS OFDM
RF Data Rates	802.11a (OFDM) 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b (DSSS) 1, 2, 5.5, 11 Mbps 802.11g (OFDM) 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (OFDM 20 MHz chs) 13, 26, 39, 52, 78, 104, 117, 130 Mbps 802.11n (OFDM 40 MHz chs) 27, 54, 81, 108, 162, 216, 243, 270 Mbps
RF Power Level	50 mW max.
Channels	FCC: 1-11, 36, 40 ,44, 48, 149, 153, 157, 161 ETSI: 1-13, 36, 40, 44 ,48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
Connectivity	TCP/IP, Ethernet, ODI
Diversity	Yes

WPAN - Bluetooth

Bus Interface	USB
Enhanced Data Rate	Up to 3.0 Mbit/s over the air
Connection	No less than 32.80 feet (10 meters) line of sight
Bluetooth Version	2.0 + EDR
Operating Frequency	2.402 - 2.480 GHz
QDID	B013455

WWAN

Device	Software definable (data only), includes GPS
Technology	4G radio: LTE/UMTS/HSPA+/GSM/GPRS/EDGE/ EV-DO Supports 2 SIM cards for hyper-roaming between WWAN carriers

Port and Connector Pinouts

Power Supply Connector

VM1D Standard Dock and VM3D Enhanced Dock
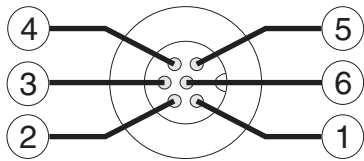
Pin	Signal	Description
1	V In+	10-60V DC input +
2	V In+	10-60V DC input +
3	V In-	input -
4	V In-	input -
5	GND	Chassis ground
6	Ignition	+0V to 60V to start terminal

VMXD Enhanced Dock
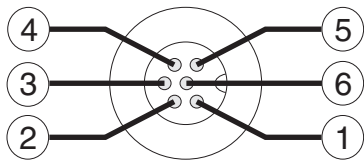
Pin	Signal	Description
1	V In+	13.2V DC Input + provided by DC/DC power supply
2	V In+	13.2V DC Input + provided by DC/DC power supply
3	V In-	Input -
4	V In-	Input -
5	COM1 RTS	Screen Blanking Box + The green wire in the power cable must be connected to the switched side of the screen blanking box. See the applicable wiring diagram below.
6	COM1 CTS	Screen Blanking Box - The white wire in the power cable must be connected to the unswitched side of the screen blanking box. See applicable wiring diagram below.
Cable shell provides chassis ground connection.		

VMXD Enhanced Dock for Off-Vehicle Use (QM3AC)

Pin	Signal	Description
1	V In+	15V DC Input + provided by AC/DC adapter
2	V In+	15V DC Input + provided by AC/DC adapter
3	V In-	Input -
4	V In-	Input -
5	GND	No connection.
6	Ignition	No connection
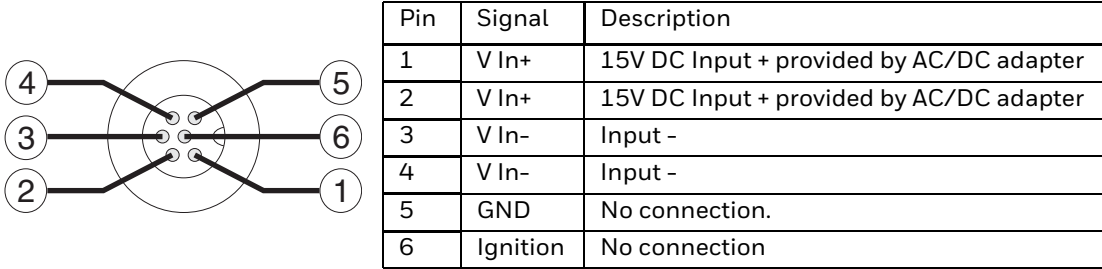
VMXD enhanced dock for off-vehicle use requires adapter cable VM1076CABLE to connect the dock to the AC/DC adapter. This cable is included in the AC kit for off-vehicle use.

COM1 and COM2 Connector

PIN 1   PIN 5

PIN 6   PIN 9
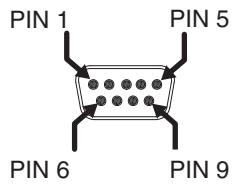
Pin	Signal	Description
1	DCD	Data Carrier Detect – Input
2	RXD	Receive Data – Input
3	TXD	Transmit Data – Output
4	DTR	Data Terminal Ready – Output
5	GND	Signal/Power Ground
6	DSR	Data Set Ready – Input
7	RTS	Request to Send – Output
8	CTS	Clear to Send – Input
9	+5VDC	Bar Code Scanner Power - 500mA max
Shell	CGND	Chassis Ground

VMXD Enhanced Dock only: Because the power supply connector port for the VMXD Enhanced Dock con-tains COM1 RTS and CTS signals, the COM1 port on the dock should not be used when the power cable is used for screen blanking to avoid port conflicts.

USB and USB1 Connector

The Standard Dock has a USB connector. The Enhanced Dock has a USB1 connector.
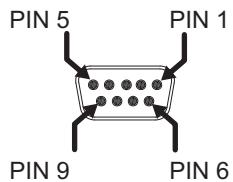
PIN 5   PIN 1

PIN 9   PIN 6

Pin	Signal	Description
1	GND	Common ground
2	USBC_D+	USB client data signal (not used)
3	USBC_D-	USB client data signal (not used)
4	USB_H1_PWR	USB host 1; 5V output power
5	GND	Common ground
6	GND	Common ground
7	USB_H1_D+	USB host 1 data signal
8	USB_H1_D-	USB host 1 data signal
9	USBC_VBUS	USB client 5V detect from attached host

USB Host/Client Y Cable

D9 Male Connector

PIN 1   PIN 5

PIN 6   PIN 9

Pin	Signal	Description
1	GND	Common ground
2	USBC_D+	USB client data signal (not used)
3	USBC_D-	USB client data signal (not used)
4	USB_H1_PWR	USB host 5V output power
5	GND	Common ground
6	GND	Common ground
7	USB_H1_D+	USB host 1 data signal
8	USB_H1_D-	USB host 1 data signal
9	USBC_VBUS	USB client 5V detect from attached host

USB Host Connector

PIN 4

PIN 1

Pin	Signal	Description
1	5V_USB	USB Power, Current Limited
2	USB_H1_D-	USB D-
3	USB_H1_D+	USB D+
4	GND	USB Power Return
Shell	CGND	Chassis Ground

USB Client Connector

The USB client connection is not supported on the Thor VM3.

USB Host to Scanner Cable

D9 Male Connector
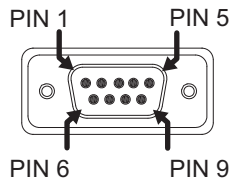
PIN 1   PIN 5

PIN 6   PIN 9

Pin	Signal	Description
1	Not used	
2	Not used	
3	Not used	
4	USB_H1_PWR	USB host 5V output power
5	GND	Common ground
6	Not used	
7	USB_H1_D+	USB host 1 data signal (twisted pair)
8	USB_H1_D–	USB host 1 data signal (twisted pair)
9	USBC_VBUS	USB client 5V detect from attached host

RJ50 Connector

PIN 10

PIN 1
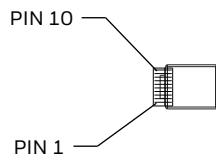
Pin	Signal	Description
1	Drain	To D9 connector shell
2	Not used	
3	GND	Common ground
4	Not used	
5	Not used	
6	Not used	
7	USB_H1_PWR	USB host 5V output power
8	Not used	
9	USB_H1_D+	USB host 1 data signal (twisted pair)
10	USB_H1_D–	USB host 1 data signal (twisted pair)

USB2 Connector

The USB2 connector is only present on the Enhanced Dock.
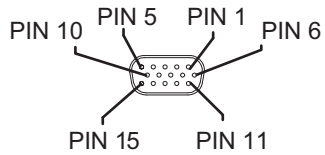
PIN 10   PIN 5   PIN 1   PIN 6

PIN 15   PIN 11

Pin	Signal	Description
1	Not Used	
2	Not Used	
3	Not Used	
4	Not Used	
5	Not Used	
6	USB_H2_PWR	USB host 2 5V output power
7	USB_H2_D+	USB host 2 data signal
8	USB_H2_D-	USB host 2 data signal
9	GND	Common ground
10	GND	Common ground
11	USB_H3_PWR	USB host 3 5V output power
12	USB_H3_D+	USB host 3 data signal
13	USB_H3_D-	USB host 3 data signal
14	GND	Common ground
15	GND	Common ground

USB Dual Host Y Cable

D15 Male Connector
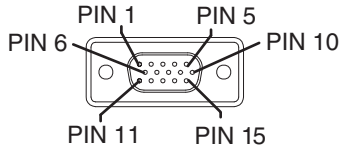
Pin	Signal	Description
1	Not Used	
2	Not Used	
3	Not Used	
4	Not Used	
5	Not Used	
6	USB_H2_PWR	USB host 2 5V output power
7	USB_H2_D+	USB host 2 data signal
8	USB_H2_D-	USB host 2 data signal
9	GND	Common ground
	GND	Common ground
	USB_H3_PWR	USB host 3 5V output power
	USB_H3_D+	USB host 3 data signal
	USB_H3_D-	USB host 3 data signal
	GND	Common ground
	GND	Common ground

USB Host Connectors

Pin	Signal	Description
1	5V_USB	USB Power, Current Limited
2	USB_H2_D-	USB D-
3	USB_H2_D+	USB D+
4	GND	USB Power Return
Shell	CGND	Chassis Ground

PS/2 to USB Keyboard Adapter Cable

Note: *This cable is not supported when the Thor VM3 is used with the VM1D Standard Dock.*

D9 Male Connector – USB

PIN 1   PIN 5

PIN 6   PIN 9
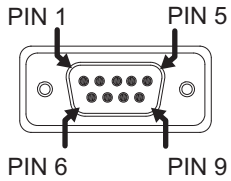
Pin	Signal	Description
1	Not Used	
2	Not Used	
3	Not Used	
4	USB_H1_PWR	USB host 5V output power
5	Not Used	
6	GND	Ground
7	USB_H1_D+	USB host 1 data signal
8	USB_H1_D–	USB host 1 data signal
9	USBC_VBUS	

D9 Female Connector – PS/2

PIN 5   PIN 1

PIN 9   PIN 6
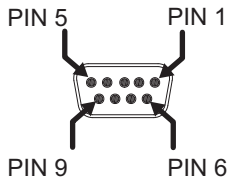
Pin	Signal	Description
1	KBDAT	Keyboard data
2	Not Used	
3	Not Used	
4	Not Used	
5	GND	Ground
6	Not Used	
7	KBCLK	Keyboard clock
8	GND	Ground
9	VCC	Keyboard power

CANbus / Audio Connector

PIN 6　PIN 1　PIN 5　PIN 10

PIN 11　PIN 15
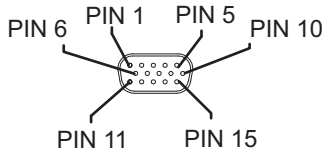
Pin	Signal	Description
1	–	CAN reserved
2	CAN_L	CAN_L bus line dominant low
3	CAN_GND	CAN Ground
4	–	CAN reserved
5	GND	Optional ground
6	Audio return	Headset return
7	Audio output	Headset output
8	Mic input	Microphone input
9	Mic return	Microphone return
10	Audio Return	
11	GND	Optional ground
12	CAN_SHLD	
13	CAN_H	CAN_H bus line dominant high
14	–	CAN reserved
15	CAN_V+	Option CAN external Power Supply

Headset Adapter Cable

D15 Female Connector
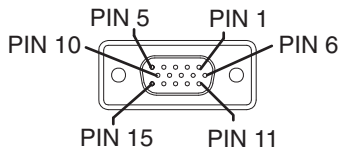
Pin	Signal	Description
1	Not used	
2	Not used	
3	Not used	
4	Not used	
5	Not used	
6	Audio return	Headset return
7	Audio output	Headset output
8	Mic input	Microphone input
9	Mic return	Microphone return
10	Not used	
11	Not used	
12	Not used	
13	Not used	
14	Not used	
15	Not used	

Quick Connect Headset Connector
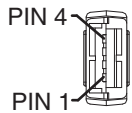
Pin	Signal	Description
1	Mic input	Microphone input
2	Mic return	Microphone return
3	Audio output	Headset output
4	Audio return	Headset return

CANbus Y Cable

D15 Female Connector

PIN 5   PIN 1
PIN 10   PIN 6
PIN 15   PIN 11
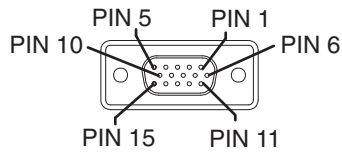
Pin	Signal	Description
1	Not Used	
2	CAN_L	CAN_L bus line dominant low
3	CAN_GND	CAN ground
4	Not Used	CAN reserved
5	GND	Ground
6	Not used	
7	Not used	
8	Not used	
9	Not used	
10	Not used	
11	GND	Optional ground
12	CAN_SHLD	
13	CAN_H	CAN_H bus line dominant high
14	Not Used	CAN reserved
15	CAN_V+	CAN external power supply

9-Pin J1939 (Deutsch) Connectors

Receptacle–
J1939 Female
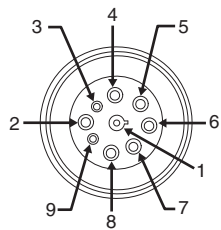
Socket
J1939 Male
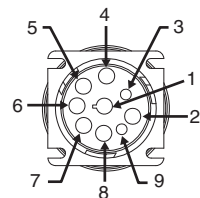
Pin	Signal	Description
1	CAN_GND	CAN Ground
2	CAN_V+	Option CAN external Power Supply
3	CAN_H	CAN_H bus line dominant high
4	CAN_L	CAN_L bus line dominant low
5	CAN_SHLD	
6	Not used	
7	Not used	
8	Not used	
9	Not used	

Hat Encoding

Desired ASCII	Hex Value	Hat Encoded
NUL	0X00	^@
SOH	0X01	^A
STX	0X02	^B
ETX	0X03	^C
EOT	0X04	^D
ENQ	0X05	^E
ACK	0X06	^F
BEL	0X07	^G
BS	0X08	^H
HT	0X09	^I
LF	0X0A	^J
VT	0A0B	^K
FF	0X0C	^L
CR	0X0D	^M
SO	0X0D	^N
SI	0X0E	^O
DLE	0X0F	^P
DC1 (XON)	0X10	^Q
DC2	0X11	^R
DC3 (XOFF)	0X12	^S
DC4	0X13	^T
NAK	0X14	^U
SYN	0X15	^V
ETB	0X16	^W
CAN	0X17	^X
EM	0X18	^Y
SUB	0X19	^Z
ESC	0X1A	^[
FS	0X1B	^\\
GS	0X1C	^]
RS	0X1D	^^
US	0X1E	^_ (underscore)
	0X1F	^?
	80	~^@
	81	~^A
	82	~^B
	83	~^C
IND	84	~^D
NEL	85	~^E
SSA	86	~^F
ESA	87	~^G
HTS	88	~^H

Desired ASCII	Hex Value	Hat Encoded
HTJ	89	~^I
VTS	8A	~^J
PLD	8B	~^K
PLU	8C	~^L
RI	8D	~^M
SS2	8E	~^N
SS3	8F	~^O
DCS	90	~^P
PU1	91	~^Q
PU2	92	~^R
STS	93	~^S
CCH	94	~^T
MW	95	~^U
SPA	96	~^V
EPA	97	~^W
	98	~^X
	99	~^Y
	9A	~^Z
CSI	9B	~^[
ST	9C	~^\\
OSC	9D	~^]
PM	9E	~^^
APC	9F	~^_ (underscore)
(no-break space)	A0	~ (tilde and space)
¡	A1	~!
¢	A2	~"
£	A3	~#
¤	A4	~$
¥	A5	~%
¦	A6	~&
§	A7	~'
¨	A8	~(
©	A9	~)
ª	AA	~*
«	AB	~+
¬	AC	~,
(soft hyphen)	AD	~- (dash)
®	AE	~. (period)
¯	AF	~/
°	B0	~0 (zero)
±	B1	~1
²	B2	~2

Desired ASCII	Hex Value	Hat Encoded	Desired ASCII	Hex Value	Hat Encoded
³	B3	~3	Ú	DA	~Z
´	B4	~4	Û	DB	~[
µ	B5	~5	Ü	DC	~\\
¶	B6	~6	Ý	DD	~]
·	B7	~7	Þ	DE	~\^
¸	B8	~8	ß	DF	~_ (underscore)
¹	B9	~9	à	E0	~´
º	BA	~:	á	E1	~a
»	BB	~;	â	E2	~b
¼	BC	~<	ã	E3	~c
½	BD	~=	ä	E4	~d
¾	BE	~>	å	E5	~e
¿	BF	~?	æ	E6	~f
À	C0	~@	ç	E7	~g
Á	C1	~A	è	E8	~h
Â	C2	~B	é	E9	~i
Ã	C3	~C	ê	EA	~j
Ä	C4	~D	ë	EB	~k
Å	C5	~E	ì	EC	~l
Æ	C6	~F	í	ED	~m
Ç	C7	~G	î	EE	~n
È	C8	~H	ï	EF	~o
É	C9	~I	ð	F0	~p
Ê	CA	~J	ñ	F1	~q
Ë	CB	~K	ò	F2	~r
Ì	CC	~L	ó	F3	~s
Í	CD	~M	ô	F4	~t
Î	CE	~N	õ	F5	~u
Ï	CF	~O	ö	F6	~v
Ð	D0	~)	÷	F7	~w
Ñ	D1	~Q	ø	F8	~x
Ò	D2	~R	ù	F9	~y
Ó	D3	~S	ú	FA	~z
Ô	D4	~T	û	FB	~{
Õ	D5	~U	ü	FC	~|
Ö	D6	~V	ý	FD	~}
×	D7	~W	þ	FE	~~
Ø	D8	~X	ÿ	FF	~^?
Ù	D9	~Y			

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// by Bruce Schneier
// Revised code--3/20/94
// Converted to C++ class 5/96, Jim Conger

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This documentation is relevant for the following Thor models: VM3.

The EU declaration of conformity, if applicable, and other publicly downloadable certificates are available at www.honeywellaidc.com/compliance.

Label Locations

Compliance labels are located in the dock well area on the back of the Thor VM3, as indicated by the shaded areas below. The Thor VM3 must be removed from the dock to view the labels.
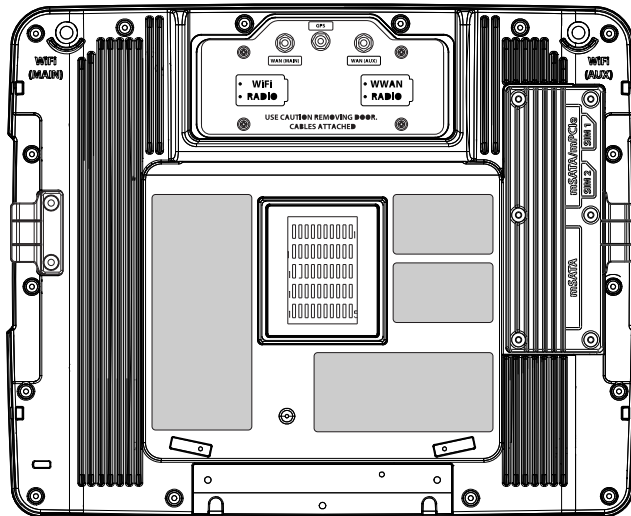
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Honeywell
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Fort Mill, SC 29707