

# PeopleNet Display.4



## User Manual

Revision A

August, 2013

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## Revision History

Revision	Date	Change
A	August, 2013	Document created

# Safety Precautions

## Usage Precautions

Read the following safety precautions before installation or operation.



### WARNING!

#### Abnormal Conditions

Should the DISPLAY.4 become hot or start to emit smoke or a strange odor, immediately turn off the power and contact your original dealer or an authorized service provider.

Continued usage is dangerous and may result in fire or electric shock.



### WARNING!

#### Foreign Objects

Should any foreign matter get into the DISPLAY.4, immediately turn off the power and contact your original dealer or an authorized service provider.



### WARNING!

#### Damage Caused by Dropping

Should you drop the device and possibly have caused damage, immediately turn off the power and contact your original dealer or an authorized service provider. Continued usage is dangerous and may result in fire or electric shock.



### WARNING!

#### Moisture

Keep the device away from vases, planets, cups, glasses, and other liquid containers. Water or metal getting into the device creates the danger of fire and electric shock. Continued usage after water or metal has gotten into the DISPLAY.4 is dangerous and may result in fire or electric shock.



### CAUTION

#### Foreign Objects

Ensure that metal or combustible objects are not inserted into any openings. Such objects may result in fire or electric shock.



### CAUTION

#### Location

Do not place the DISPLAY.4 on an unstable or uneven surface. Doing so may cause the DISPLAY.4 to fall, which may result in personal injury or major damage to the device. Do not locate the device in extremely humid or dusty areas. Doing so may result in fire or electric shock.



### NOTE

#### FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**CAUTION**



**LCD Screen**

Never apply heavy pressure on the DISPLAY.4 device display or subject it to strong impact. Doing so may crack the screen or LCD panel glass, which may result in personal injury or major damage to the device.

Should the LCD panel glass break, do not touch the liquid inside. Doing so may cause skin inflammation.

Should liquid from the LCD panel accidentally get into a person's mouth, their mouth must be immediately washed out with water and a physician consulted.

Should liquid from the LCD panel accidentally get into a person's eyes or onto their skin, the area must be immediately rinsed for at least 15 minutes with clean tap water and a physician consulted.

**WARNING!**



Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

## Power Supply

**WARNING!**



Do not use the DISPLAY.4 at a voltage other than specified. Doing so may result in fire or electric shock.

Avoid conditions that can cause damage or breaks in the power cable. Do not place heavy objects on the power cable and keep it away from sources of heat. Any of the above may damage the power cable, which may result in fire or electric shock.

Never twist, sharply bend, or pull the power cable. Doing so may result in fire or electric shock.

Should the power cable become severely damaged (to the point that wires are exposed or broken), contact your original dealer or service provider about repair or replacement. Using a damaged electrical cable may result in fire or electric shock.

**CAUTION**



Keep the power cable away from sources of extreme heat. Heat may melt the covering of the power cable, which may result in fire or electric shock

# Overall Description

## Unit image



## Context

The 7" MDT is to provide in-cab computing capabilities for drivers. It connects to the PeopleNet OBC (On Board Computer) via RS-422 communication interface to obtain vehicle and positional information and runs PeopleNet advanced applications: eDriver Logs, Vehicle Management, Onboard Event Recording, In-Cab Navigation, In Cab Scanning, and In-Cab training. These applications will improve fleet management efficiencies and lower the overall cost of the fleet.

## Product Main functions

The 7" MDT communicates with the OBC and runs Windows CE operating system and PeopleNet applications and interface with the driver via the 6 front panel buttons and touchscreen LCD display. It has the following external connections and interfaces.

- Input power – Power connector to be powered by the vehicle battery
- OBC communication interface – RS-422
- Serial port – 1 RS-232 port for custom solutions
- Ignition input – Digital input to indicate the status of ignition
- Unit enable input – Digital input to enable or wake up the MDT
- High speed USB ports - 2 host ports for external peripherals like the flash drive, hard keyboard, and scanner, 1 OTG port for ActiveSync connection as a device
- Fast Ethernet port – 1 fast Ethernet port of up to 100 Mbits/second
- SDIO card slot – 1 standard SDIO card slot for SDHC memory cards
- General Purpose I/O – 1 input and 1 output
- Optional communication interface – Wi-Fi, Bluetooth, CDMA radio, GPS, and J1939

## Electrical Requirements

### power

#### input power

The main input power to the unit is from the vehicle battery with a nominal 12VDC. Following is the unit internal power supply requirement. The physical connection of the input power will be provided by the DSUB connector type on the unit cable.

- Input voltage range: 6-32VDC
- Input current draw: 1A maximum at 12VDC
- Efficiency: > 80%
- ISO7637 compliant

#### Power control

After main input power is applied to the unit, the unit would power up or power down with the following power states.

Power off – Unit Enable input inactive low. All power supplies are turned off except the power required to monitor the Unit Enable input.



Power up – Unit Enable input becomes active high. Turn on all power supplies and start normal boot sequence.

Power on – Unit Enable input active high. Turn on all power supplies.

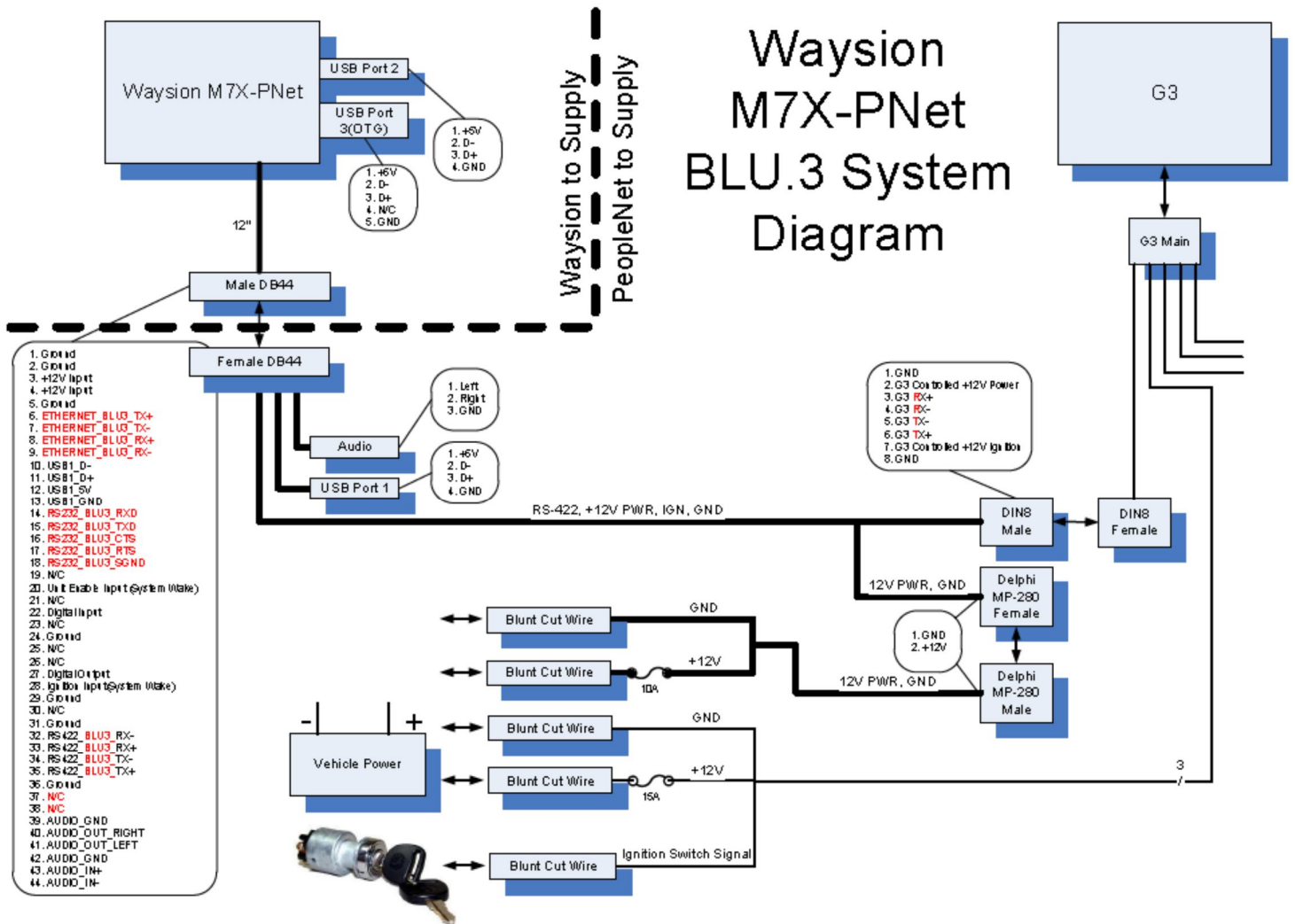
Power down – Unit Enable input becomes inactive low. Start 30 seconds timer and after the timer expired go to Power off state. If the Unit Enable input becomes active high during the 30 seconds, reset the 30 seconds timer and return to Power on state.

## Connectivity / Cable

There would be one DB44-pin male connector on the unit pigtail cable coming out at the bottom of the unit. All the external wired communication interfaces, peripherals interfaces, and power supply would be provided by the DB44 pin male connector.

## system wiring

Below is a system wiring block diagram and the pin-out of the DB44 male connector.

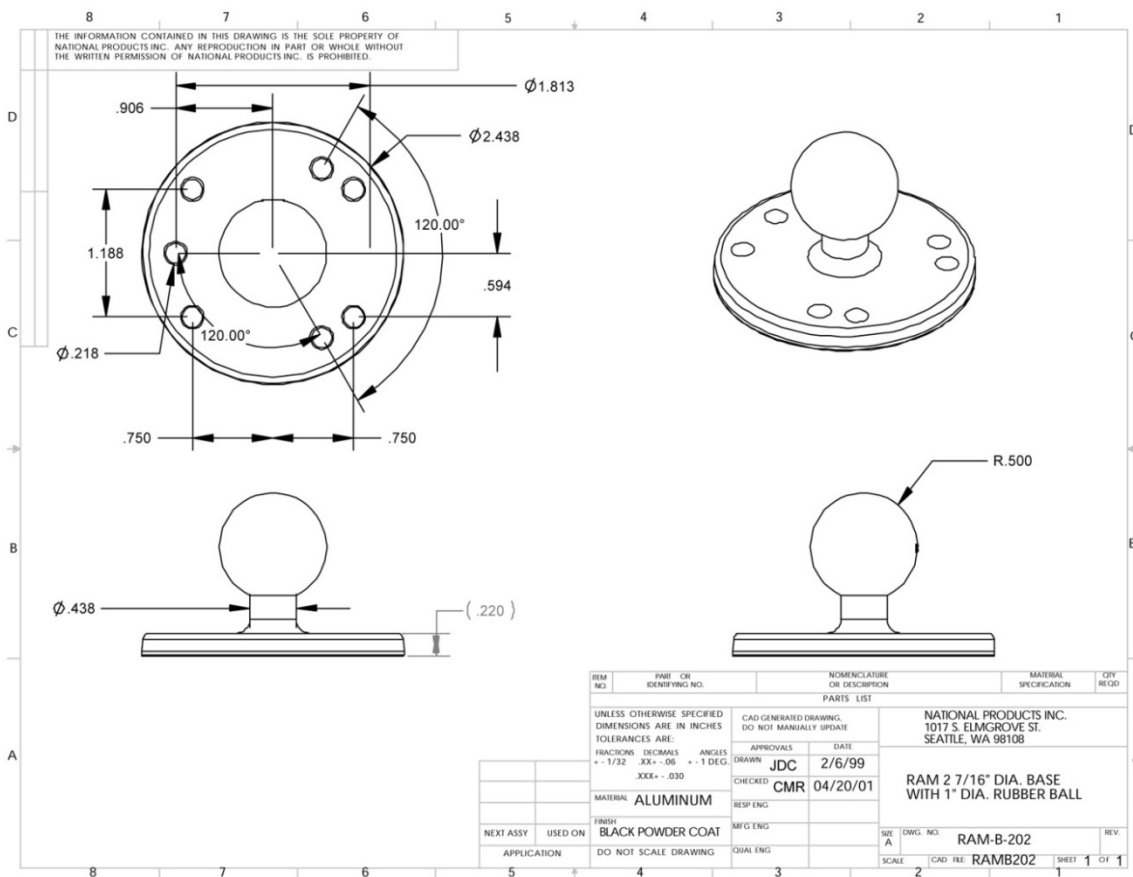


# Mechanical and Mounting Requirements

## Unit mounting

The unit will be fixed mounted with standard RAM® mounting arm. The unit will have 4 universal AMPS holes pattern with 4 metal PEM nuts at the back of the unit. The thread size of the PEM nuts should be 8-32 and must not be pass-through.

Following is the drawing of the RAM® round base with the AMPS hole pattern.



## Device Installation steps

1. Determine the optimal positioning of the Display.4 device in the vehicle that provides easy access and clear view.
2. Attach the base of the mounting-arm assembly to the dashboard or cabin.
3. Attach the mounting arm to the rear panel of the device, using the mounting screws inserts.
4. Perform electrical installation. See [Electrical Installation](#).
5. Install the Display.4 device on the mounting arm.
6. Adjust for the optimal device position and fix it by closing the mounting-arm wing nut.
7. Arrange the cables using a plastic strip.

## Vehicle Battery Connection

The DISPLAY.4 device input power should come directly from the vehicle's battery. The supported nominal battery voltage supply is 12V or 24V DC. The operating range is between 6V to 32V DC. The DISPLAY.4 should be connected via a 10A fuse, to the vehicle's power line. An inline 5A "Slow Blow" fuse with fuse holder for HHC/HHD blade-type fuses, should be added to the power cable.

The +Vin signals of the Device must be directly connected to the Vehicle's battery. For proper power management, connect the vehicle's ignition switch signal to the ignition input of the device. For more information about the power management architecture of the platform, please refer to the DISPLAY.4 Hardware Guide chapter on Power Management.

### NOTE:

Connecting the power to the DISPLAY.4 is not enough to enable the device. The Display.4 can be enabled from the power-down state only by providing a signal rise on the device's ignition input or unit enable input.

If your solution requires device enabling via the power connection, connect (via a short) the unit enable pin with the power-in signal.

### WARNING!

Please do not float the unit enable signal. Doing this will cause uncontrolled power cut-offs, and may have a detrimental effect on the operating system.



## Electrical Installation Procedure

1. Make preparations to connect the power and all the required peripherals in the vehicle, to the main cable.
2. Connect the main cable to the DISPLAY.4's main device connector.
3. Connect the power signals from the main cable to the vehicle's power line protected by a 10A fuse. An inline 5A "Slow Blow" fuse with fuse holder for HHC/HHD blade-type fuses, should be added to the power cable.
4. Press the Push button to power on the DISPLAY.4 device and verify that all connected peripherals operate properly.
5. Fix the main cable with cable mounting screws after verifying that all the functions are performing properly.

## Environmental requirements

### Operating temperature

The operating temperature range: -20°C to +70°C. The unit will start and boot from initial power on state for the entire operating temperature range.

### Storage temperature

The storage temperature range: -30°C to +80°C. The unit will be tested per MIL-STD-810.

### Humidity

The operating humidity is 0-95% non-condensing

### Vibration

The unit will meet the following requirements with the unit connecting and communicating to the OBC.

- Operational swept sine vibration: SAEJ1455, MIL-STD-202G, Method 201A
- Operational Random Vibration: SAEJ1455, MIL-STD-810G, Method 514.6

### Ingress protection (IP rating)

The unit will meet IP64 requirement with the unit being powered during the splashing water test.

## **Chemical resistance**

The unit shall be resistant and meet SAEJ1455 for normal engine environment chemicals. Minor discoloration or dulling of the material is acceptable.

## **Flame retardant**

The plastic enclosure of the unit will meet UL94 V0 or higher flame retardant standard.

## **UV resistance**

The plastic enclosure of the unit will contain UV stabilizer that meets UL746C F2 rated standard.