



***MotionManager***

Patent Pending

## User Guide

Description	Part Number
PMT Motion Manager	AS7.M100.001
1 Foot USB Cable A-Mini B	USB2HABM1FT

[www.precisionmounts.com](http://www.precisionmounts.com)

## Description

Motion Manager is a distracted driving solution that limits the functionality of mobile computers while the vehicle is moving. Motion Manager helps to prevent distracted driving to:

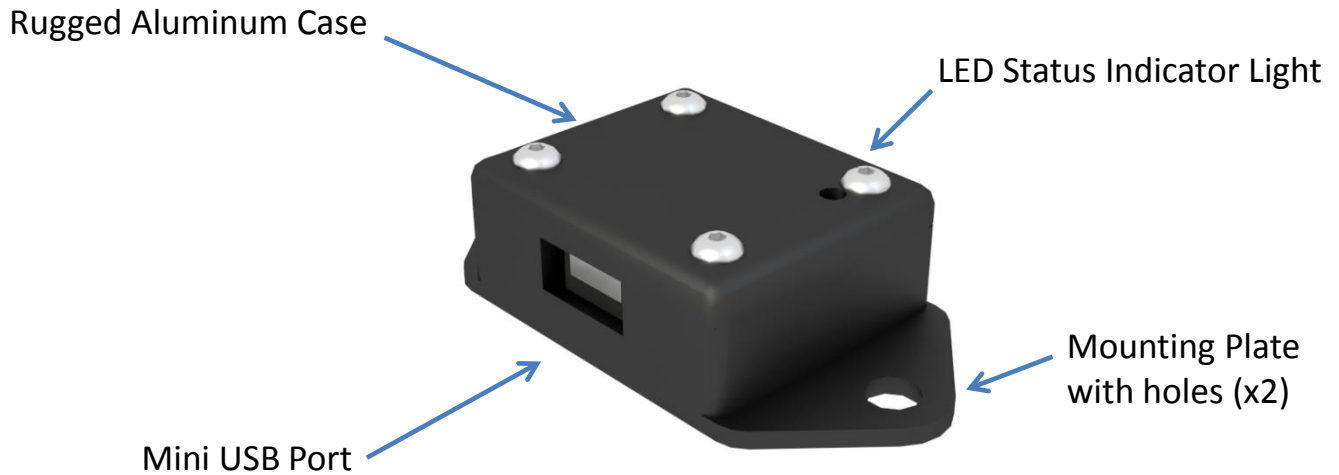
- comply with legislation and corporate safety policies
- reduce risk
- minimize organization liability
- provide a safer workplace

Motion Manager is a microcontroller-based peripheral that incorporates sensor technology to detect vehicle motion. When connected, via a USB port, to a Microsoft Windows computer with Motion Manager software Motion Manager system can be set-up to blank the display when the sensed vehicle motion is above the configured threshold.

The Motion Manager system consists of:

- Sensor hardware
  - Detects vehicle motion
- USB A to Mini B cable
  - Connects the Sensor Hardware to the computer / docking station
- Proprietary Software
  - Resides on the Windows computer
  - Communicates with the Sensor Hardware

## Mounting Manager Hardware Sensor Parts and Layout



### Dimensions

1.20" x 1.00" x 0.50 excluding mounting plate

2.10" x 1.00" x 0.50 including mounting plate



# Motion Manager Features Overview

Basic function	Detects vehicle motion and blanks screen
Product Description	Microcontroller-based peripheral with integrated motion sensor, USB cable
System requirements	<ul style="list-style-type: none"> <li>Operating system: MS Windows XP (SP3), Vista, 7 , 8 or 10</li> <li>USB port</li> </ul>
Data Logging	Administrator configurable: <ul style="list-style-type: none"> <li>Exports to CSV file</li> </ul>
Mounting	Compact, robust aluminum case with mounting holes
Usage / working environment	Unit can be configured based on variety of driving situations; has fast screen refresh
Key Features	<p><b>In Motion Options</b></p> <ul style="list-style-type: none"> <li>Blank display</li> <li>Viewable display with disabled user inputs (note: user must have administrator rights)</li> </ul> <p><b>Screen Activation Options</b></p> <ul style="list-style-type: none"> <li>User interaction: Prevents screen from becoming active when stopped temporarily</li> <li>Screen automatically refreshes on stop after set time threshold</li> </ul> <p><b>Undocked Computer Options</b></p> <ul style="list-style-type: none"> <li>Computer functions as normal</li> <li>Blanks display</li> </ul>

## Operation

- Once the administrator completes the installation and configurations the operation of Motion Manager requires no user interaction for start up.
- The Motion Manager Sensor Hardware can remain connected to a USB port on the dock at all times or it can be connected when required.
- The Motion Manager Sensor Hardware will start automatically as soon as it becomes receives power.
- When properly installed in the Start-up menu of the computer, the Motion Manager software will automatically start when the computer is started.
- When the software detects the hardware a connection is automatically established and the Motion Manager system will function.
- The Motion Manager Sensor Hardware is equipped with a LED status indicator light:
  - Blinking green: Motion sensed is below the configured threshold
  - Blinking red: Motion sensed is above the configured threshold

# Installation

## 1) Software

- Sign on to the computer under a user with Administrator credentials.
- Locate the exe file “BlackWhiteController1vXXX.exe” provided by PMT or your equipment provider (possibly in a zip file that will need to be extracted before proceeding).
- In the Program Files (x86) folder
  - Create a “PMT” folder and in that folder create a “BWC” folder
  - Place the exe file in the “BWC” folder
- Place a shortcut to the exe file into the Startup folder of the Windows Start menu.
  - Under Win7
    - Click on the Start button
    - Right-click on the All Programs item and select “Open All Users”
    - Double-click on the Programs Folder
    - Double-click on the Start up Folder
    - Place a shortcut to the application in the Start-up folder
    - Give the program the ability to run as an administrator for all users by right clicking on the shortcut and using Properties -> Compatibility -> Change settings for all users
  - Under Windows XP the procedure is similar
  - Under Windows 8 and 10 locate the user Startup folder and place a shortcut to the exe file

# Installation

## 2) Drivers

- In order for Motion Manager to communicate with the computer you will need a driver for the UART communication port to the Motion Manager Sensor Hardware.
- In most cases the computer will automatically download the driver.
- Ensure that the computer has Internet connectivity before connecting the Motion Manager Sensor Hardware
- Connect the Motion Manager Sensor Hardware
  - Plug the Motion Manager Sensor Hardware into a USB port on the computer OR dock the computer in a dock equipped with the Motion Manager Sensor Hardware
- After the driver has finished loading, restart the computer. This will properly start the PMT Motion Manager Controller.
- If your computer doesn't download the driver automatically, the driver is also provided by PMT in 32 bit and 64 bit or it can be manually downloaded at <http://www.ftdichip.com/Drivers/VCP.htm>

# Installation

## 3) Sensor Hardware

Note: If you have purchased a PMT vehicle dock that has been integrated with Motion Manager then skip this step.

- Select a position on the vehicle that will allow the Motion Manager Sensor Hardware to sense motion of the vehicle. Positions where the Motion Manager will sense movement of the operator should be avoided.
- The Motion Manager Sensor Hardware may be screwed down or fixed into position with industrial strength double sided tape or Velcro. For best results ensure that the Motion Manager Sensor Hardware is not mounted to anything that will absorb vibrations . A good solid mount to something connected to the chassis is recommended.
- The orientation of the Motion Manager Sensor Hardware is not important. Orient the Motion Manager Sensor Hardware to make cable placement efficient.
- Connect the sensor to one of the dock's USB Ports.

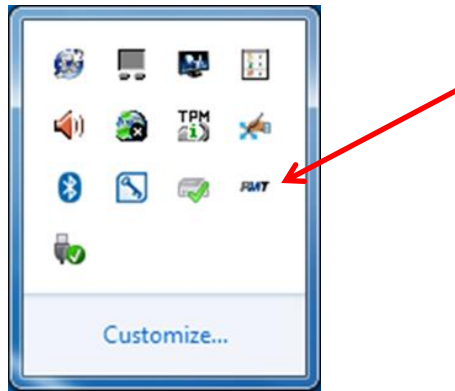
## 4) Configuration

- When first installed, you will need to configure the sensor through the Motion Manager software. Complete configuration instructions are included with this User Guide
- After applying the completed configuration, close the configuration window and minimize the status window. The system will save the settings to a file on that computer. Each time the system starts it will recall the last saved configuration.
- If you change computers you will have to install the software and set the configurations again.

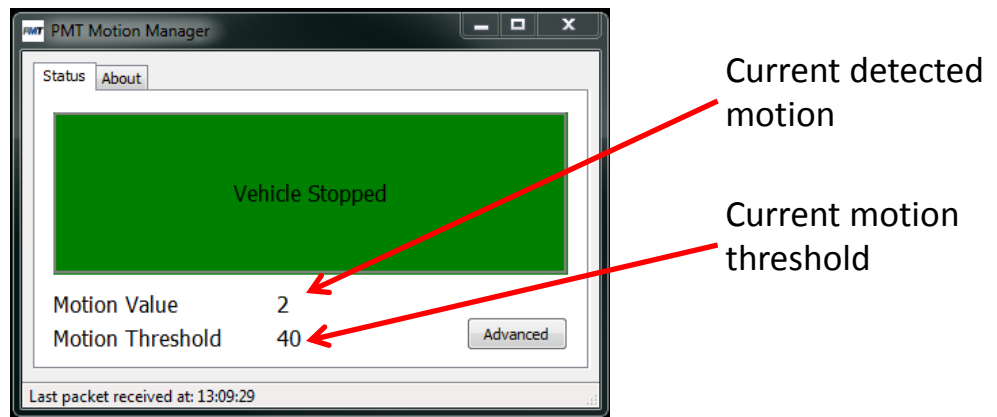


# Configuration

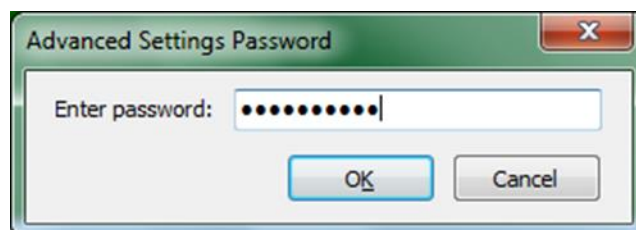
- Open the System Tray and double click on the PMT icon.



- Double clicking the PMT icon will open the status window.



- The status window will show one of the following
  - Vehicle Stopped
  - Vehicle Moving
  - Waiting to search
  - Hunting
  - Configuring
- Click the advanced button and enter the password “MMAdmin14”
- Click OK



## Configuration Continued

- This will open the PMT Motion Manager Settings window

The screenshot shows the PMT Motion Manager Settings window with the following configuration values:

Section	Parameter	Value
Communications	Port	11
	Speed	38400
	Status Rate	100
Detection Parameters	Motion Threshold	40
	Exp Period	7
	Trigger Duration	50
	Clear Duration	30
Scale Factors	X Scale	256
	Y Scale	256
	Z Scale	256
Actions	On Motion	Blank Display
	No Sensor	No Action
Restore screen when stopped		<input type="checkbox"/>
Test 'On Motion' Option		Test 'On Motion' Option
PMT Banner	Position	Bottom-Left

- As a starting point, set values to match those shown above
  - Note: Communications Port value can be different based on the system that Motion Manager is connected to.

# Configuration Tab Definitions & Settings

- Communications: Port
  - The Motion Manager software is programmed to automatically detect the USB port in use with the Motion Manager Sensor Hardware. User setting is usually not required.
  - USB serial port can be located using the device manager. It will be the last entry in the Ports (Com & LPT) list.
  - Each time the computer starts up it will search for the device and download the last configuration when found. (Note: On the first start-up after the controller software is installed it will download the default configuration)
- Communications: Status Rate
  - The time between communications from the sensor to the computer. The sensor collects data at 400Hz and processes it to determine the motion status, but only updates the motion status to the computer as often as set by the status rate setting.
  - The units for the number in this field is X\*10 milliseconds
    - 1 equals 10 milliseconds equals 1/10 second
    - 50 equals 500 milliseconds equals ½ second
    - 100 equals 1000 milliseconds equals 1 second
  - Setting the update rate to a long period will increase the time required for the screen to turn on after a stop as it waits for the sensor to send the current status. With a long setting it is possible to miss a very short stop which is very desirable. (Note: The duration settings are also designed to limit false starts and stops)
- Communications: Speed
  - User setting not required.
  - Leave at 38400

## Configuration Tab Definitions & Settings

- Detection Parameters: Motion Threshold
  - The amount of sensor movement that is considered to be vehicle motion.
  - Higher values require more vehicle motion to trigger the screen shut down.
- Detection Parameters: Exp Period
  - The amount of smoothing of the sensor signal. Higher values create a smoother signal.
  - For most applications we recommend 7 for this value. (smoothing over  $\sim 1/3$  sec)
- Detection Parameters: Trigger Duration & Clear Duration
  - Trigger and clear duration settings are used to limit false signals by requiring a number of samples to be above or below the threshold value.
  - The Trigger Duration value sets the number of data samples required to be above the threshold before blanking the display.
  - The Clear Duration value sets the number of data samples required to be below threshold before turning on the display.
- Detection Parameters: Scale Factors
  - User setting not required.
  - Leave at 256

## Configuration Tab Definitions & Settings

- Actions: On Motion
  - Sets what happens once motion threshold is exceeded
  - Options are:
    - No action
      - Nothing happens and computer functions are normal
    - Blank Display
      - Screen goes blank (black)
    - Block Input
      - Display remains viewable and user input is disabled
- Actions: No Sensor
  - Sets what happens when the sensor hardware is not detected (sensor unplugged or computer undocked)
  - Options are:
    - No action
      - Nothing happens and computer functions are normal
    - Blank Display
      - Screen goes blank (black)
- Actions: Restore screen when stopped
  - When this box is checked the screen will automatically reactivate from blank (black) once the vehicle is stopped (recommended for forklift applications)
  - When this box is unchecked the user has to manually reactivate the screen by pressing a key on the keyboard, touching a touch screen or touching a touch pad (recommended for automobile applications)
- Actions: Test “On Motion” Option
  - By pressing this button the system will simulate exceeding the motion threshold and display the configured actions

## Configuration Tab Definitions & Settings

- PMT Banner
  - Use this option to display and position a banner that reads
    - “PMT Motion Manager Active”
  - The banner will help to inform the user that the Motion Manager is active and is particularly useful when the action is set to Block Input
- Change Password
  - Change password from default
- Apply
  - When making changes to the settings always press Apply before Close

## Status Tab Definitions & Settings

1

Item	Current Value
Pkts Rxd	596
CRC Errs	0
CMD Txd	0
CMD Failed	0
Firmware Version	12
Status Period (10s of msec)	100
Status Flags (hex)	00
Motion Value	9
Motion Threshold	40
Exponential Period	7
Duration Value	50
Clear Duration	30
Reserved	0
X Scale Factor (256 is unity)	256
Y Scale Factor (256 is unity)	256
Z Scale Factor (256 is unity)	256
X Data	13
Y Data	0
Z Data	239
Exp Variance	9

2

3

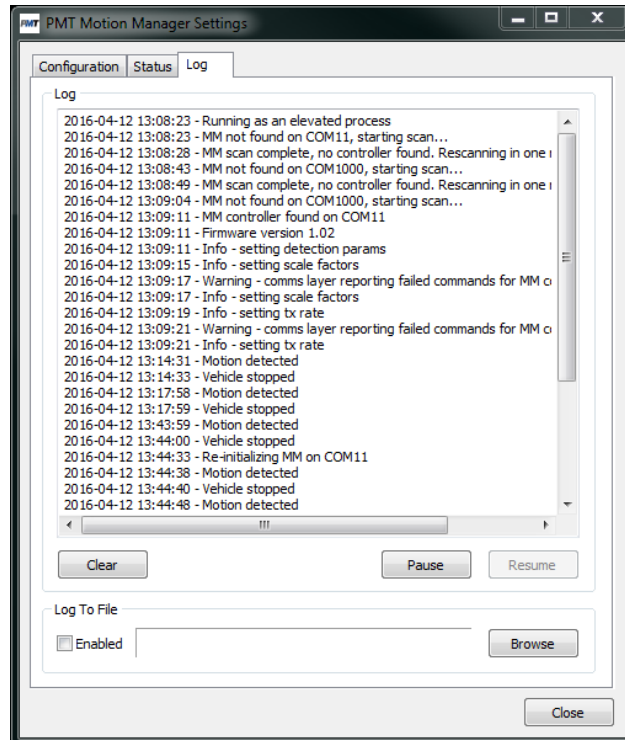
4

Enable logging of status packets

Close

- Section 1 shows transmitted data status and the firmware version.
- Section 2 shows the active configuration settings
- Section 3 shows the actual data being measured by the sensor
- Section 4 check box sends measurement data to the log page

## Log Tab Definitions & Settings



- By default this tab shows a running log of actions and status
- To add data to the log
  - Check the “Enable logging of status packets” box on the Status tab
- The log automatically starts when the computer starts and is erased when the computer is powered down.
- The Log to File function allows the log to be automatically saved to a file making the data available for future review
- This function can be used to determine if and when the Motion Manager has been disconnected from the computer
  - Browse to set the file location and check the “Enabled” box
  - The data file can be saved to a local file or mapped network file