

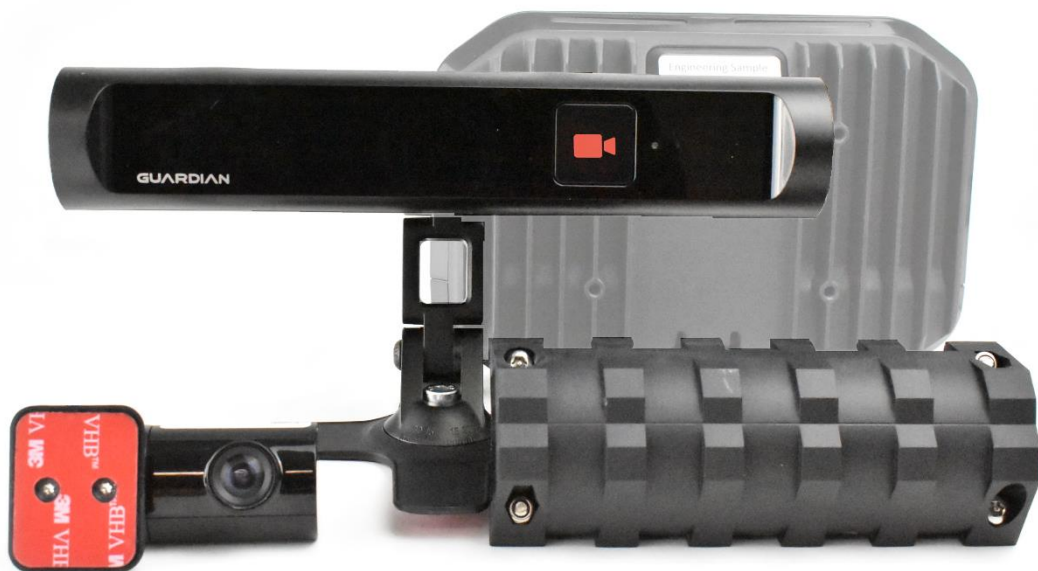


seeingmachines

GUARDIAN

FIELD SUPPORT MANUAL

Guardian - Generation 2 (Gen2)



PURPOSE

The purpose of this manual is to describe the process for the installation, fault finding and maintenance of Guardian - Generation 2 (Gen 2). Please refer to the Guardian Field Installation Manual (June 2016) for installations of the previous generation of Guardian.

All Guardian Gen 2 installations must be completed in accordance with this manual.

This document is the standard for Guardian Gen 2 installations.

Deviation from the process described in this manual may void the warranty of the product and lead to the suspension of an individual's certification.

SECTIONS

SECTION	TITLE
0.	Preface
1.	Introduction to Guardian Gen 2
2.	Installation of Guardian Gen 2
3.	Service & Maintenance of Guardian Gen 2

REFERENCE DOCUMENTS

The below referenced documents can be downloaded from the Technical Communication Portal (TCP) at tcp.seeingmachines.com if you require access to the TCP, please make a request via the 'Apply Here' button on the TCP website.

ITEM	TITLE
1.	Knowledgebase
2.	Installation Checklist
3.	Tutorial videos
4.	Technical Support Bulletins

FCC COMPLIANCY

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. This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate warranty and all applicable regulatory certifications and approvals, including authority to operate this device.

FCC Part 15 Digital Emissions Compliance

We, Seeing Machines, Level 1, 11 Lonsdale St, Braddon, ACT, 2612, Australia, +61 2 6103 4700, declare under our sole responsibility that the product Guardian complies with Part 15 of the FCC Rules.

15.19

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.

15.105

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.

15.21

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.



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GUARDIAN

FIELD SUPPORT MANUAL

Section 1 - Introduction to Guardian Gen 2-2

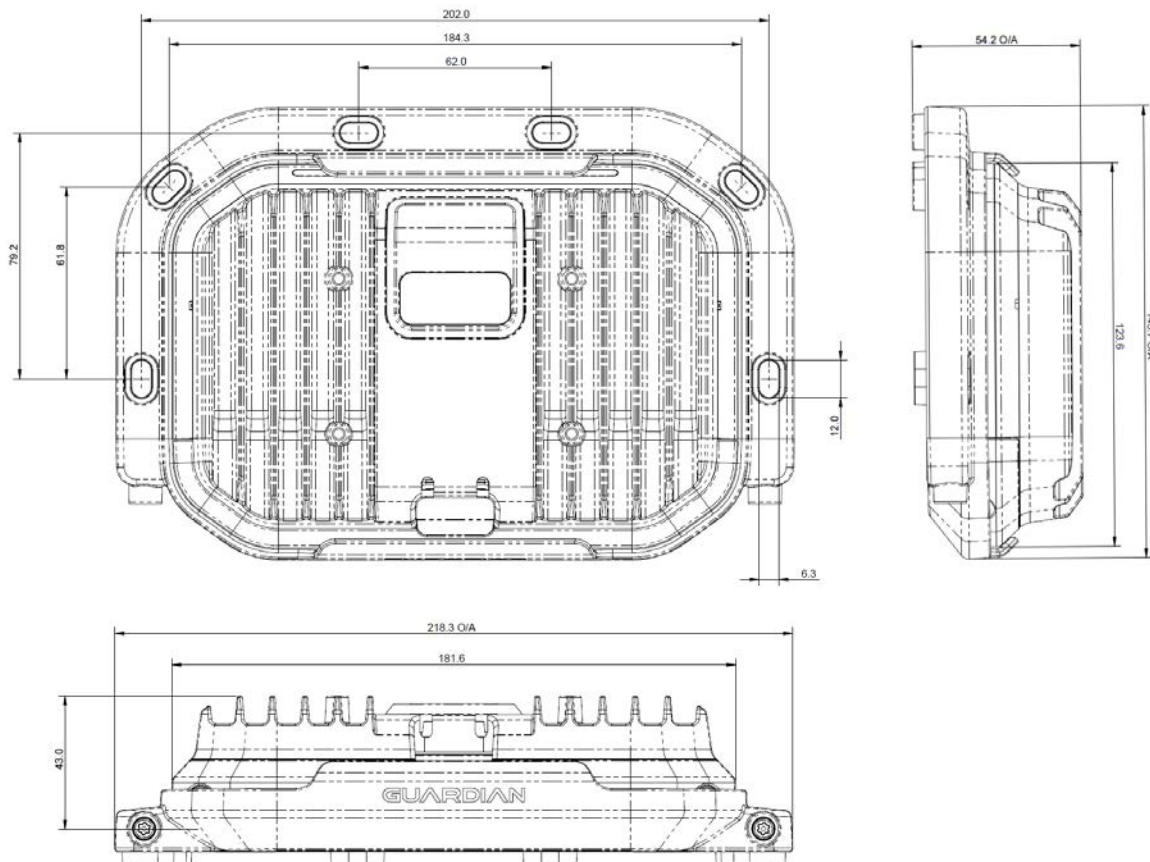


Table of Contents

1. OVERVIEW.....	3
2. ABBREVIATIONS	4
3. TERMS.....	7
4. SAFETY	9
5. PACKAGING	10
6. STANDARD COMPONENTS	11
7. OPTIONAL COMPONENTS.....	19
8. INSTALLATION TOOL KIT (Provided by Trainer)	20
9. REQUIRED TOOLS FOR INSTALLATION.....	21
10. ROLES AND RESPONSIBILITIES.....	24

1. OVERVIEW

The aim of this section is to introduce the acronyms, components and Guardian Gen 2

Section 1 A certified Guardian Technician must read and understand this section before commencing a physical installation of the System.

2. ABBREVIATIONS

ABBREVIATION	MEANING
APN	Access Point Name-Relates to SIM Card
CELL	Cellular -Wireless communications via a communications network
DC	Direct Current
Demo	Demonstration
DSSi	Driver Safety System interface
EMC	Electromagnetic Compatibility
FFC	Forward Facing Camera
FOV	Field Of View
GPS	Global Positioning System
HSE	Health, Safety and the Environment
ICS	In Cab Sensor (also known as the Driver Facing Camera)
IP	Ingress Protection Marking (for use with connectors) Internet Protocol (for use with computers)
IR	Infra-Red
IVS	In-Vehicle System
JHA	Job Hazard Assessment
LAN	Local Area Network
LED	Light Emitting Diode
OJT	On Job Training
PC	Personal Computer
PCB	Printed Circuit Board
PIN	Personal Identification Number

PPE	Personal Protective Equipment (e.g. safety glasses, gloves)
PSU	Power Supply Unit
RMA	Return Materials Authorization
URL	Uniform Resource Locator -Refers to a webpage link
SD	Secure Digital -Refers to the SD memory card
SIM	Subscriber Identity Module -As in SIM Card for a communications device
SM	Seeing Machines
TCP	Technical Communications Portal
USB	Universal Serial Bus
HDMI	High-Definition Multimedia Interface -Refers to video output
Wi-Fi	Refers to a local area wireless network

MEASUREMENTS	MEANING
A	Ampere
C	Celsius
cm	Centimeter
DC	Direct Current
ft.	Feet
g	gram
GB	Gigabyte
F	Fahrenheit
in.	Inch
kg	Kilogram
lb.	Pound
m	Meter
mm	Millimeter
nm	Nanometer
oz	Ounce
RPM	Revolutions per minute
V	Volt

3. TERMS

TERM	DEFINITION
Black Box	Guardian Gen 2-2 has an inbuilt function to record all footage for a set period of time. This is known as the Black Box Recorder which is similar to a Flight Information Recorder - "Black Box".
Certified Technician	A Certified Technician is a person who has completed the Seeing Machines training program and has been assessed in the installation and maintenance of a system in a vehicle. A Certified Technician can complete installations and conduct maintenance tasks on Guardian.
Configuration File	The configuration (config) file contains all the details required for the System to function as per the client's requirements
FOV	A Field of View (FOV) event is an event where the driver has not been tracked by the Guardian System for a configurable duration of time whilst travelling at or above the configured speed limit. You may be asked to rectify FOV's by a client or in response to a support ticket.
Isolation	<p>The removal of all electrical energy to the vehicles, providing a safe environment for workers</p> <p>Isolation could be achieved by, but is not limited to:</p> <ul style="list-style-type: none"> • Switching the main power supply isolation switch to the off position (where provided) • Removing the Positive wire from the battery
Non-Standard Installation	<p>A <i>Non-Standard Install</i> may be conducted by using non-permanent measures – Velcro, cable-ties, double-sided tape or magnets. Drilling and cutting are normally not allowed during a non-standard install.</p> <p>May also be referred to as a 'soft' install.</p>
Operator	The person in control of the vehicle. Can also be called the Driver.
Pitch	<p>The angle in degrees, of the Driver Facing Sensor position up and down.</p> <p>Value range between 10 to 30 degrees. (usually mounted on the dashboard is 10 degrees)</p>
RMA	Return Merchandise Authorization (RMA) is the SM mechanism to investigate a warranty claim.

Soft Install See 'Non-Standard Install'

System Refers to the Guardian Gen 2-2 System but predominately relates to the hardware.

The angle in degrees, the In-Cab Driver Facing Sensor is mounted left or right in relation to the driver's head.

Yaw Value range between -20 to 20 degrees.

(- equals left of the driver, + equals right of the driver)

4. SAFETY

Safety must be considered prior to installing Guardian.

You must comply with the client's site safety policies, processes, arrangements and requirements in place at the site where you will install or maintain the System.

If such policies do not exist it is a requirement to follow the SAFE WORK practices detailed below.

For additional Safety related information, contact the local Occupational Health & Safety authority in your country

SAFE WORK means:

LOOK – for the hazards that may be present during the job

ASSESS – the hazards and associated risk involved with the job





MANAGE – the hazards involved with the job with controls

EVALUATE – the effectiveness of the controls





When conducting your Safe Work Analysis, also called a **Job Hazard Analysis (JHA)**, you must plan for how you will manage the risks and hazards you have identified using the "Hierarchy of Controls", where **Elimination** is the most effective control measure and **Personal Protective Equipment (PPE)** is the least effective control measure:



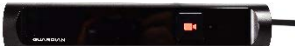

Elimination	Completely eliminate or remove the hazard from the job
Substitution	Change the task or tool to one with lower risks
Engineering	Isolation from the hazard (e.g. machine guards)
Administration	Training, policies and procedures
PPE	Use of protective equipment such as gloves, safety glasses






5. PACKAGING




ITEM	QTY	DESCRIPTION	IMAGE
Box	1	<p>Packaging: Brown Carton</p> <p>Size: 280x270x560mm</p> <p>Weight: 4.7kg</p> <p>Markings:</p> 	
Inner Cartons	2	<p>Contents: 2 layers of shaped cardboard protecting components</p>	
Paperwork	1	<p>Documentation: Installation Checklist</p>	




6. STANDARD COMPONENTS




ITEM	QTY	DESCRIPTION	IMAGE
Controller Unit	1	<p>Controller Unit Hardware: Input voltage: 10 to 30V DC Size: 182x124x43mm Function: This is the Processor of the system which runs the entire system Connection: Size: Adjustment: Function:</p>	
	1	<p>Controller Mounting Pan: Comes in 2 parts Connection: Size: 218x146x54mm (Controller inside) Adjustment: Function:</p>	
	4	<p>Fastener M6x30 5mm cap head with side hole: Connection: Size: Adjustment: Function:</p>	
	4	<p>Fastener M6 SS Nut: Connection: Size:</p>	

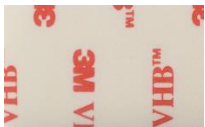



		Adjustment: Function:	
	4	M6 OD 11.8 SS Split Washer: Connection: Size: Adjustment: Function:	
	4	Fastener M6 OD 20 SS Flat Washer: Connection: Size: Adjustment: Function:	
In-Cab Sensor (ICS)	1	ICS Module Hardware: Connection: To the ICS Cable Sensor viewing angle: ??? Function: This is the In-Cab Sensor, Audio and IR Illumination of the system that alerts and detects fatigue and distraction for the driver Size: ??x??x??mm Connection: Size: Adjustment: Function:	
	1	ICS Cable Connection: To the ICS Controller Unit Connection: Size: Adjustment: Function:	






	1	Mounting Arm Assembly: Connection: Size: Adjustment: Function:	
	1	Screw in dash mount Connection: Size: Adjustment: Function:	
	3	Fastener 10 Gauge x 25mm black self-tapping screw CSK Used with Screw in dash mount Connection: Size: Adjustment: Function:	
	1	Adhesive dash mount Connection: Size: Adjustment: Function:	
	4	Alcohol wipe For adhesive dash mount to clean off dust or grease Connection: Size: Adjustment:	


		Function:	
	1	Primer pen for VHB tape For adhesive dash mount (warning could damage dashboard on removal of this mount) Connection: Size: Adjustment: Function:	
Forward Facing Camera (FFC)	1	FFC Hardware: Connection: To the Controller Unit Cable: 7m long cable Adjustment: 1.5mm Allen key for pitch control (supplied by installer) Size: 72 x 41 x 40 mm Field of View: H105.5°xV63.4° Function: To provide footage of what the drivers sees ahead when an event is triggered Connection: Size: Adjustment: Function:	
Vibration Motor	1	Vibration Motor Hardware: Connection: To the MFC Cable Length: 4m + MFC 1m Size: ??? Function: Alerts the driver with Vibration when the system detects an event Connection: Size: Adjustment: Function:	

1	<p>MFC Hardware:</p> <p>Connection: To the Controller Unit</p> <p>Cable Length: 1m</p> <p>Function: Provides connection for CCDC, Micro USB OTG, Vibration Motor, and other FMS integration</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
2	<p>Hose Clamp Hardware:</p> <p>Connection: To the Vibration Motor / Mounting Plate</p> <p>Size: 150mm Hex Head 8mm</p> <p>Function: To clamp the vibration motor to the driver's seat without the use of screws</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
1	<p>Vibration Plate Hardware:</p> <p>Connection: To the Vibration Motor</p> <p>Size: ???</p> <p>Mounting Hole Size: ???</p> <p>Function: This mounting plate is designed to self-tap into the driver's seat if clamping is unavailable</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	

	2	<p>Fastener - Tek Screw:</p> <p>Connection:</p> <p>Size: 30x8mm Hex Head 8mm</p> <p>Function: to be used with the Vibration Plate Hardware</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
3G Antenna	1	<p>3G Antenna Hardware:</p> <p>Connection: To the Controller Unit</p> <p>Cable Length: 4m</p> <p>Size: ?????</p> <p>Function: To provide the Controller unit ample 3G communication</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
GPS Antenna	1	<p>GPS Antenna Hardware:</p> <p>Connection: To the Controller Unit</p> <p>Cable Length: 4m</p> <p>Size: ?????</p> <p>Function: To provide the Controller unit ample GPS/GLONASS communication</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	

	1	<p>Double sided tape VHB 20x33mm</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
Power Cable	1	<p>Power Cable Hardware:</p> <p>Connection: To the Controller Unit</p> <p>Cable Length: 5m</p> <p>Function: 3 core cable to provide battery, ignition and ground to the Controller Unit</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
	2	<p>In-line Fuse Holder:</p> <p>Connection: To the open-ended side of the Power Cable to be used with Crimps and Joiners on the Battery and Ignition wires as close to the fuse box as possible</p> <p>Size: Mini Blade</p> <p>Connection:</p> <p>Size:</p> <p>Adjustment:</p> <p>Function:</p>	
	2	<p>7.5A Fuse - Mini Blade</p> <p>Connection: To be used with the Fuse Holders</p> <p>Size: Mini Blade 7.5Amp</p> <p>Function: To protect from short circuits and electrical fires</p> <p>Connection:</p> <p>Size:</p>	

		Adjustment: Function:	
	2	Blue Wire Joiner Connection: Size: Adjustment: Function:	
	3	Blue Crimp Terminal Ring 4mm Connection: Size: Adjustment: Function:	
	3	Blue Crimp Terminal Ring 6.3mm Connection: Size: Adjustment: Function:	
	3	Blue Crimp Terminal Ring 10mm Connection: Size: Adjustment: Function:	
Installer Accessories	20	Zip Ties 4.8mm Connection: Size: Adjustment: Function:	

	1	25mm hole size Blanking grommet Connection: Size: Adjustment: Function:	



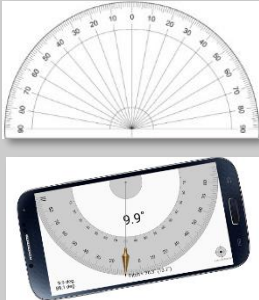

7. OPTIONAL COMPONENTS

Optional Extra's	
Please see the TCP for instructions on additional hardware	

8. **INSTALLATION TOOL KIT** (Provided by Trainer)

TOOL	IMAGE
Security Torx 20 (T20) Key	
24/7 Support Business Card	 <p>Guardian 24/7 Support Center System Registration Configuration Troubleshooting support@seeingmachines.com AUS Tel: +61 2 6108 4313 USA Tel: +1 855 377 4636</p> <p>Technical Communications Portal Support Manuals Updates Knowledge Base Resources tcp.seeingmachines.com</p> <p> GUARDIAN SEEINGMACHINES.COM</p>
USB Recovery Dongle Information Card	 <p>Recovery USB Dongle</p> <p>Your Recovery USB Dongle is NOT programmed. To download the software and program your Recovery USB dongle please go to: tcp.seeingmachines.com/recovery-dongle</p> <p>You will not be able to perform the installation without a programmed Recovery USB Dongle.</p> <p> GUARDIAN SEEINGMACHINES.COM</p>
USB Recovery Dongle (minimum size 4GB)	
USB to Ethernet Adapter	
Ethernet Cable	

9. REQUIRED TOOLS FOR INSTALLATION

TOOL	IMAGE
1.5mm Allen Key To adjust locking screw on the FFC	
Laptop / Smart Phone or Tablet (Windows7, Windows8, Windows10 or Apple are preferred) Installation and Maintenance functions Laptop must have an ethernet port or a	
Protractor / Smart Phone app (In degrees) Determining camera Pitch and Yaw settings	
Box containing the following items: <ul style="list-style-type: none"> • (2058/S26 Ratchet Socket Bit Set 26-Piece) • 1/4in female bit ratchet with 8 mm open end ring 	
Contents: <ul style="list-style-type: none"> Phillips bits: PH-1, PH-2, PH-3 Pozidriv bits: PZ-1, PZ-2, PZ-3 Security Torx bits: T10-security, T15, T20, T25, T30 Hexagon bits: 3, 4, 5, 6 Slotted bits: 4, 5, 6 Sockets: 6, 7, 8, 10, 13 mm 1- bit holder 1- bit ratchet 1- socket driver 1/4in square male to 1/4in hexagon male 	

Ratchet spanner set

8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19mm



Vice grips



Drill bits

2, 4, 6, 7mm



Hole Saws

25mm (1in)



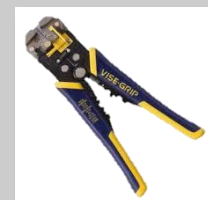
Multi-meter and leads



Wire cutters



Wire strippers



Automotive crimpers



Torch / Head Torch



Scissors



Utility Knife
(Confirm site requirements)



Cordless Drill



Cordless Impact Driver



Brush



Electrical Tape



10. ROLES AND RESPONSIBILITIES

If you are a Field Support Technician and would like to be trained in any other role, please contact TrainingRPL@seeingmachines.com or submit your registration located at tcp.seeingmachines.com

ROLE	RESPONSIBILITIES	AUTHORIZED TO
Field Support Assistant (FSA):		This position allows for a person to install the hardware components only. This can only be done under the supervision of a Guardian System Senior Field Support Technician
	Installation of hardware only	
Field Support Technician (FST):		This position allows for a person to install the hardware and software components of the system. They will also provide on-site support and maintenance. They can work without supervision; however, they are NOT authorised to supervise Guardian System Field Support Assistants.
	Installation of hardware Installation of software	
Senior Field Support Technician (SFST):		This is a Certified Technician who has completed 20 or more successful installations with no breach of quality or safety and has completed the Seeing Machines "Train the Trainer" Course. This position is authorised to conduct On the Job Training (OJT) for Course 1 (see next page) and supervise Guardian System Field Support Assistants
	Supervises FSA Can train FSA Installation of hardware Installation of software	
Field Support Specialist (FSS):		A highly experienced Seeing Machines employee, contractor or partner who is responsible for training and assessing Certified Technicians and Senior Field Support Technicians. This position is individually appointed by Seeing Machines.
	Supervises FSA / FST / SFST Can train FSA / FST / SFST Installation of hardware Installation of software	
Regional Installations Manager (RIM):		A highly experienced Seeing Machines employee to oversee globally targeted technicians and quality assures installation and maintenance practices
	Supervises all within region	
Seeing Machines 24/7 Support:		

	<p>Aids in connecting systems</p> <p>Provides troubleshooting to technicians</p> <p>Provides customer support</p>	<p>A highly experienced Seeing Machines employee to aid installers in connecting systems and troubleshooting in the field</p>
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GUARDIAN

FIELD SUPPORT MANUAL

Section 2 - Installation of the 2 Box Solution

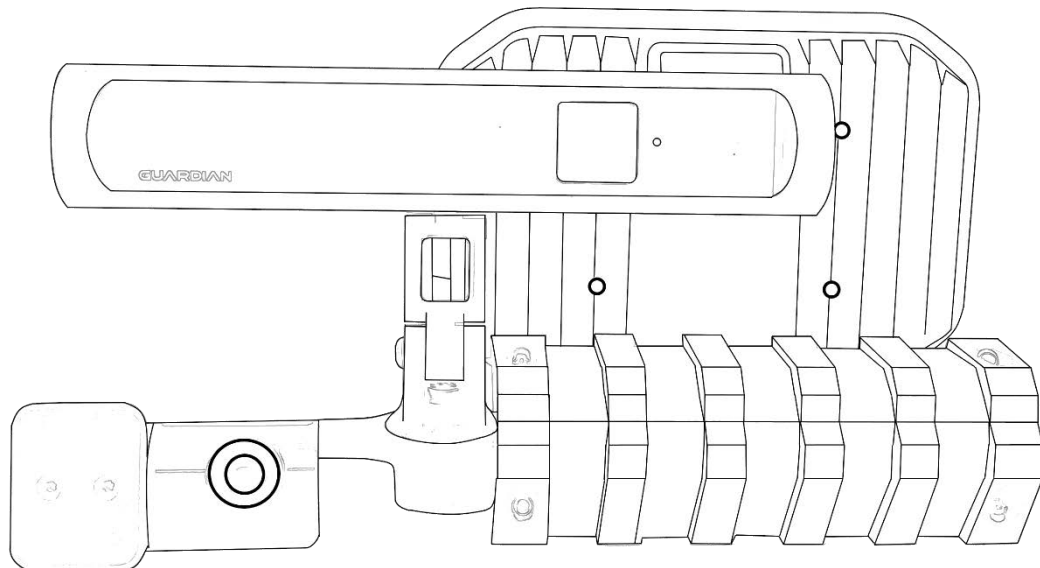


Table of Contents

1	OVERVIEW.....	4
2	LAPTOP & SMART PHONE SETUP	5
2.1	SECTION 2 OVERVIEW	5
2.2	WINDOWS SETUP.....	5
2.3	MAC SETUP	8
2.4	CHROME SETUP	8
2.5	SMART PHONE SETUP	12
2.5.1	PHOTO ARCHIVE.....	12
2.5.2	ANDROID.....	15
2.5.3	IPHONE.....	15
2.6	TECHNICAL COMMUNICATIONS PORTAL (TCP) INFORMATION	16
2.7	RECOVERY DONGLE UPDATES.....	Error! Bookmark not defined.
3	PREPARATION FOR INSTALLATION	20
4	PRODUCT INSTALLATION	21
4.1	SECTION 4 OVERVIEW	21
4.2	COMPONENT INTERCONNECTIONS	22
4.3	INSTALLATION RECORDS.....	23
4.4	COMPONENT INSTALLATION SPECIFICS.....	25
4.4.1	SIM CARD INSTALLATION	25
4.4.2	CONTROLLER INSTALLATION.....	27
4.4.3	FFC INSTALLATION	31
4.4.4	3G ANTENNA INSTALLATION	33
4.4.5	GPS ANTENNA INSTALLATION.....	34
4.4.6	VIBRATION MOTOR INSTALLATION	35
4.4.7	POWER CABLE INSTALLATION.....	39
4.4.8	MFC INSTALLTION	42
4.4.9	CABLING INSTALLATION	43
4.4.10	OPTIONAL EXTRA'S.....	45
4.5	SUMMARY OF INSTALLATION PROCESS.....	46
5	SOFTWARE SETUP, TESTING & ACTIVATION.....	47
5.1	SECTION 5 OVERVIEW	47
5.2	APPLYING LATEST SOFTWARE TO THE CONTROLLER	47
5.3	INSTALLATION WIZARD.....	48
5.4	SYSTEM CHECKS	48
6	CALLING SUPPORT FOR ACTIVATION.....	49

6.1	SECTION 6 OVERVIEW	49
6.2	24/7 SUPPORT DETAILS.....	49
6.3	ACTIVATING A VEHICLE	49
6.4	OTHER DUTIES WITH 24/7 SUPPORT	49
6.4.1	TROUBLESHOOTING.....	49
6.4.2	VEHICLE SWAP	50
6.4.3	BLACKBOX RECOVERY	50
6.4.4	CONFIGURATION CHANGE ON A VEHICLE	50
7	FINAL QA	51

1 OVERVIEW

This section describes the process for installing the Guardian System Generation 2-2.

For quick referral in video form see the TCP/Zendesk for videos

tcp.seeingmachines.com

For a quick reference guide to refresh your knowledge see the knowledgebase in the TCP

It is important to note that variations in vehicle cabin layout and the presence of other equipment in the cabin may mean that the preferred positioning of the Guardian System components as described in this section may not always be possible.

When this occurs, attempt to meet the requirements as closely as is possible noting the minimum separation distances for components.

There is no specific component that must be installed prior to any other component.

All components of the Guardian System must be mounted and secured in a manner which will prevent the components from becoming a hazard should an incident occur.

A Non-Standard Install may be conducted by using non-permanent measures - Velcro, cable-ties, double-sided tape or magnets. Drilling and cutting are normally not allowed during a non-standard install. Product warranty may be void if a non-standard install is conducted.

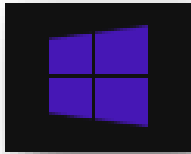
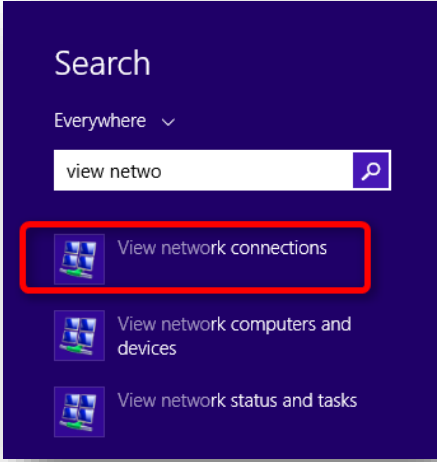
Where Non-Standard Installs are conducted, preventative maintenance should be conducted regularly to ensure components have not shifted from the mounted location. Where components have shifted, the component must be re-installed to the original position.

2 LAPTOP & SMART PHONE SETUP

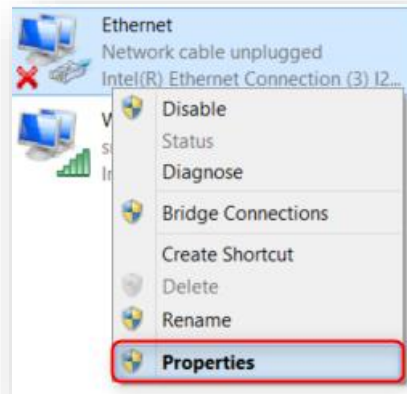
2.1 PART 2 OVERVIEW

This section is on how to configure your equipment for use in the field

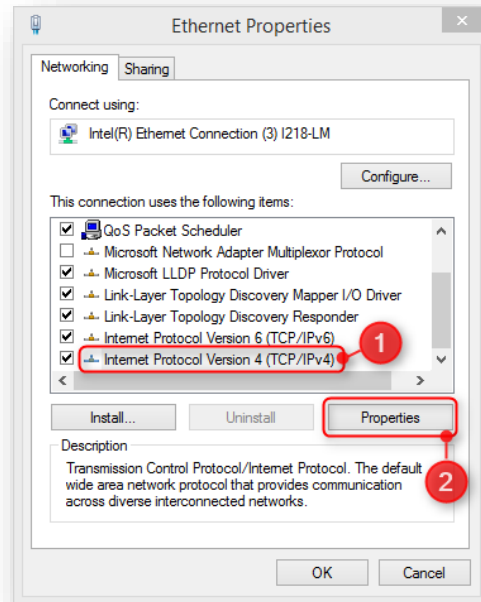
2.2 WINDOWS SETUP

Windows Setup	(Supports Vista,7,8,10)
<p>If your laptop runs Windows, these instructions will setup your laptop to communicate with the Controller Unit through the Ethernet Port (if you do not have an Ethernet port you may be required to obtain a USB to Ethernet Adapter)</p> <p>Notes:</p> <ul style="list-style-type: none"> - If you have an IT Administrator you may not have access to these settings, if so please you may need their support to complete this. - The Controller uses the laptops Ethernet port. By changing these settings, the laptop will now only communicate with the Guardian Controller. If you use the Ethernet port in your office you will need to change this setting back to the original configuration to view your network or Internet 	
<p>Click on the “Windows” Icon in the bottom left corner</p>	
<p>Start typing “View Network Connections” and click on the corresponding words</p>	

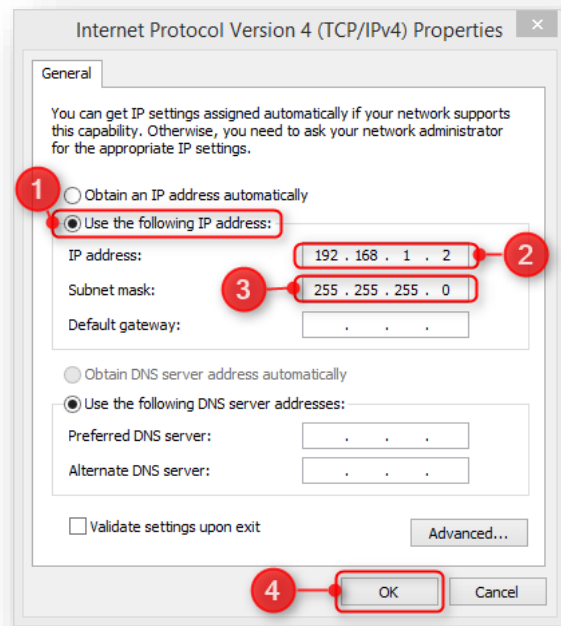
Right click on "Ethernet" this can also be called "Local Area Connection". And click on "Properties"



1. Scroll down to "Internet Protocol Version 4" and click on it to select it
2. Then click on "Properties"




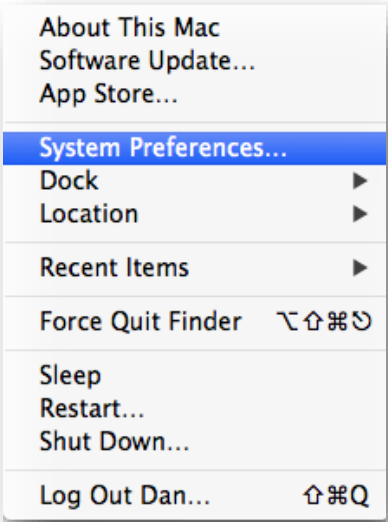
1. Select “Use the following IP address:”
2. In the IP address: field type 192.168.1.2
3. Click into the subnet mask and it will auto populate to 255.255.255.0
4. Then click “OK” to save these settings



Note: When the connection is made between the Laptop and Guardian Controller Unit, the Ethernet section will show “Network [#]” where ‘#’ depends on the numbers of networks that have connected to your laptop before

To connect to the Guardian Controller, we recommend using **Google Chrome setup** on your laptop, see below for further details

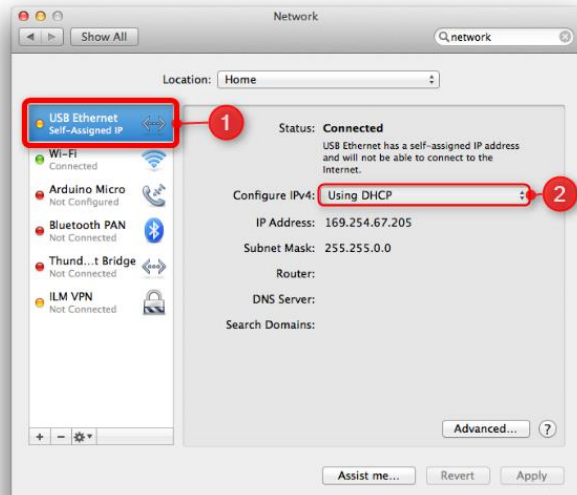
2.3 MAC OS SETUP

MAC OS (X)	(Supports OS X)
<p>These instructions will setup your Apple Mac laptop to communicate with the Controller Unit through the Ethernet Port (if you do not have an Ethernet port you may be required to obtain a USB to Ethernet Adapter)</p> <p>Notes:</p> <ul style="list-style-type: none"> - If you have an IT Administrator you may not have access to these settings, if so you may need IT support to complete this step. - The Controller will connect to your laptop via the Ethernet port. By changing these settings, the laptop will now <u>only</u> communicate with the Guardian Controller. If you use the Ethernet port in your office you will need to change this setting back to the original configuration to view your network or Internet 	
<p>Click on the “Apple” Icon in the top left corner</p>	
<p>Select “System Preferences”</p>	

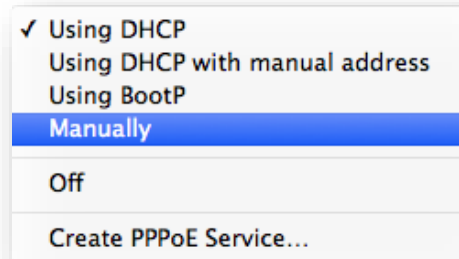
Search or find "Network" and double click on it



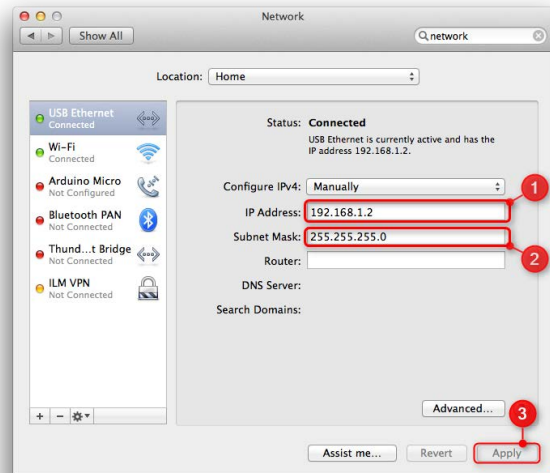
1. Select "Ethernet" in the left-hand pane
2. Click in the dropdown



And select and click "Manually" to configure the ethernet settings



1. Enter under "IP Address:" 192.168.1.2
2. Click into the subnet mask and it will auto populate to 255.255.255.0
3. Click "Apply" to save the settings



Note: When the connection is made between the Laptop and Guardian Processor Unit, the Ethernet section will show *Connected*

To connect to the Guardian Controller, we recommend using **Google Chrome setup** on your laptop, see below for further details

2.4 CHROME SETUP

Google Chrome is recommended as the browser of choice to use for setting up the system from its factory default setting to become a customized system for a company's fleet

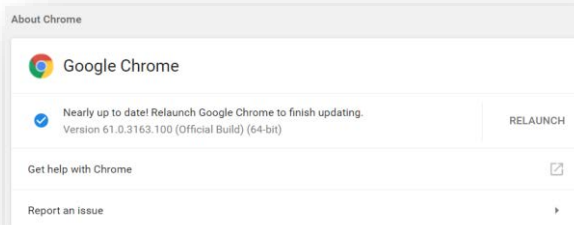
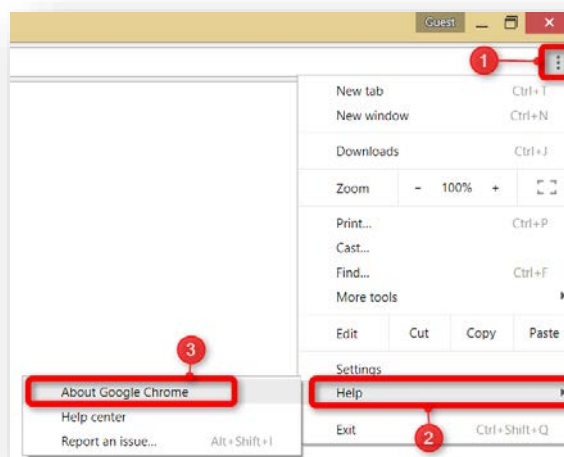
Google Chrome Setup

If you do not have Google Chrome on your laptop you can download the latest version at; www.google.com/chrome and follow the prompts

If you already have Google Chrome, it is recommended to make sure you have the latest version. You can do this by;

- Make sure you have an internet connection
 - Open Google Chrome
1. click on the 3 dots in the top right-hand corner
 2. Hover over "Help"
 3. Click on "About Google Chrome"

Chrome will then start to update to the latest version automatically



2.5 SMART PHONE SETUP



2.5.1 PHOTO ARCHIVE

Taking photos of the install can be very useful for installation if issues arise around vehicle damage. Seeing Machines asks all installers to take photos of the installed items and possible existing damage if damage already exists before your installation begins

Seeing Machines will ask to recall the photos off the installer if an issue develops after the install, this may happen weeks after installation and your collected photos will act as evidence of correct installation

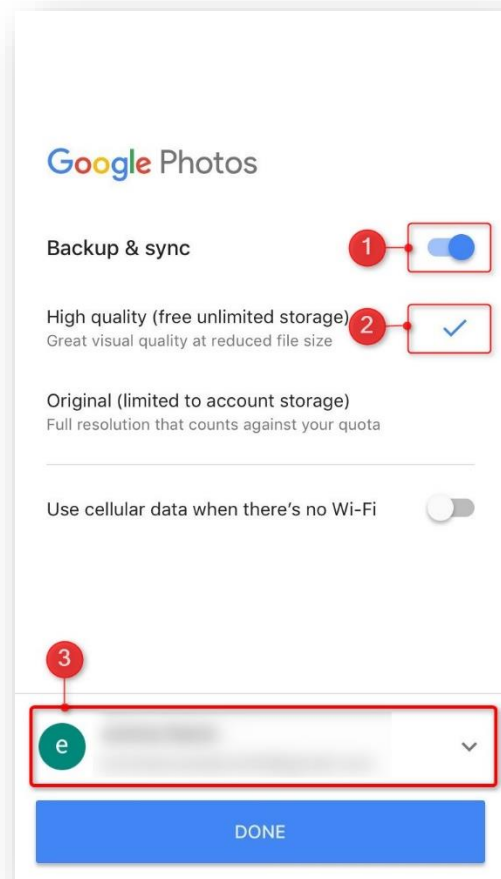
A great free tool to use for this is Google Photos, which uploads your photos into a free cloud storage system, when your phone connects to WiFi.

Your photos will be backed up even if you change phones

<h2 style="text-align: center;">Google Photos Setup</h2>	
<p>Google Photos is a multi-platform app, it supports iPhone and Android devices To use Google Photos easily you are required to have a Gmail address.</p> <p>If you like your existing email however you can turn your normal email address into a “Google Account”, this gives you the ability to use your normal email address with any Google application Sign up with your normal email here accounts.google.com/SignUpWithoutGmail</p>	
<p>Using your camera phone’s web browser go to photos.google.com and select your platform to download the app</p>	
<p>After installing the app, open the Google Photos</p>	

An opening setup screen will appear

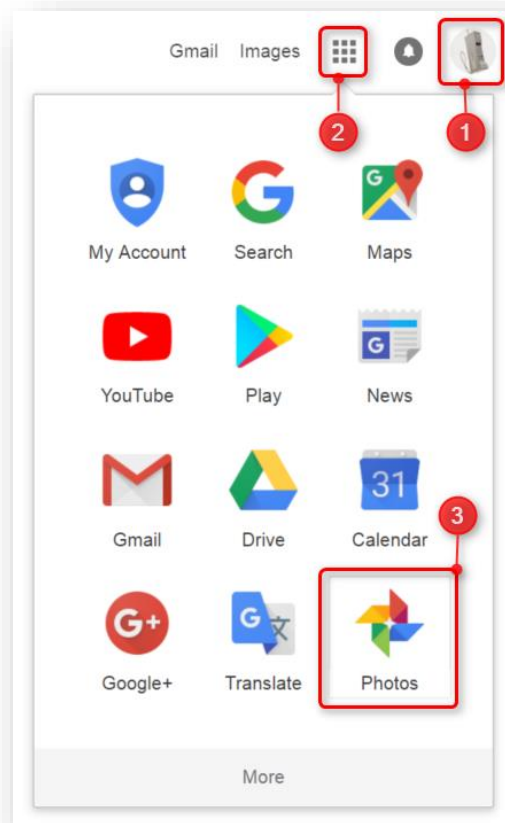
1. Make sure "Backup & Sync" is on
2. Make sure "(free unlimited storage)" is selected
3. Make sure your Gmail/Google Account is entered, then click "Done"



To access Google Photos you can use the app as normal.

Or alternatively you can go to www.google.com

1. Sign into your Gmail/Google Account
 2. Click on the 9 dots to reveal your app drawer
 3. Click on the "Photos" icon to display all your pictures
- If you cannot see the "Photos" icon, you may need to click on "More"



2.5.2 ANDROID TO REPLACE LAPTOP

This is a future Seeing Machines development --- Coming Soon

2.5.3 IPHONE TO REPLACE LAPTOP

This is a future Seeing Machines development --- Coming Soon

2.6 TECHNICAL COMMUNICATIONS PORTAL (TCP) INFORMATION

The TCP is not only an area for your online training, it also supplies you with a wide range of resources such as:

- Datasheets
- User Manuals
- Installation Updates
- Knowledgebase
- **Error codes**
- Zendesk Ticket Support

The TCP also holds your information for your training certifications, if you change your personal details please update your records so we can still contact you

Login at the TCP here for further information:

tcp.seeingmachines.com

2.7 GUARDIAN SYSTEM RESTORATION

The Guardian System is designed to have all required software to run straight out of the box. Upon setup of the system the software will automatically look for the latest version of software when internet is available.


If for some reason there is an error with the software and the system is not running correctly for example;

- There is no access though the IVS interface using the standard login process **see section ??**
- The system is not able to boot as normal
- Software is not behaving correctly

There are a few ways to mitigate this issue

2.7.1 FACTORY RESET BUTTON

The factory reset button will revert the system back to the original state when the system was first installed into the vehicle. The IVS Installation Wizard will need to be completed for this system to work once again

<h2>Factory Resetting the System</h2>	
<p>Locate the Factory Reset Button in the controller</p>	

To perform a factory reset use a pen or something similar to push and hold the button for 10 seconds, the green LED to the right will flash when the unit has been reset



2.7.2 USB RECOVERY DONGLE RESTORATION

The TCP has the latest software download for the guardian system, your Recovery USB Dongle will **NOT** be programmed when you receive it in your installer kit given to you in your training.

***does the recovery dongle have the latest version, or does it have the basic software eg 4.X?**

As a certified technician you will receive notification of new software updates when they are available.

This section will describe how to program, and use your USB Recovery Dongle for the Guardian System

2.7.2.1 DOWNLOADING THE RECOVERY DONGLE SOFTWARE

Go to tcp.seeingmachines.com/recovery-dongle and select the **Guardian System – Gen2** and download the software by clicking on **"Download"**

The downloaded file will be a *.zip file type. Open the file and copy the content on to your desktop

2.7.2.2 PROGRAMMING THE RECOVERY DONGLE

The latest software version of the recovery dongle can be downloaded from

tcp.seeingmachines.com/recovery-dongle

2.7.2.3 USING THE RECOVERY DONGLE

Using the Recovery Dongle

Make sure the vehicle is turned off for 10 minutes prior to commencing the restoration process



Unscrew the Mounting Pan's 2 screws to release the Controller Unit using your T20 Driver



Take out the Controller Unit and unscrew the 2 Cover Plate screws, using your T20 Driver



Slide the Cover Plate down to access the Maintenance Panel



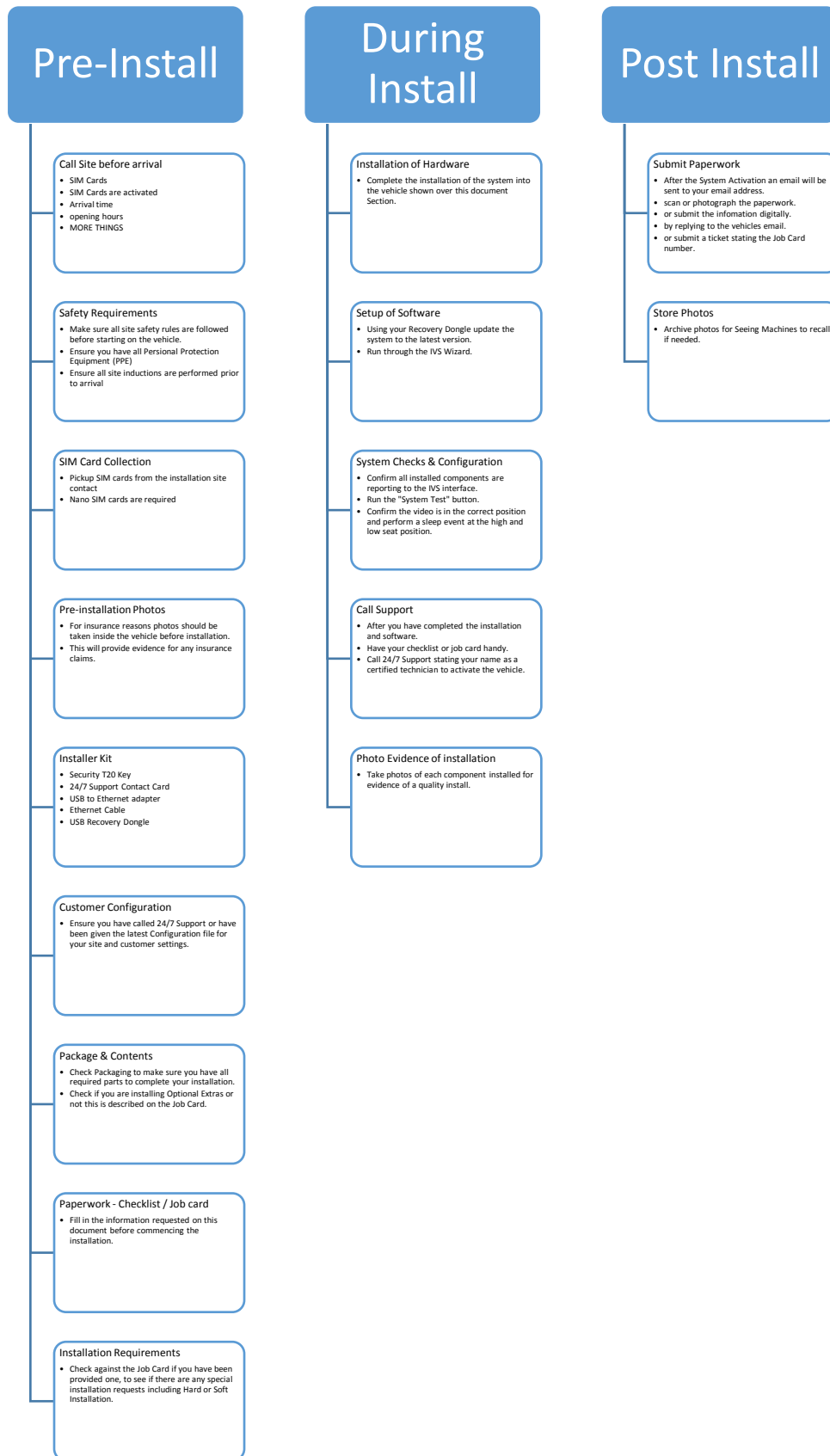
Insert the USB Recovery Dongle into the USB port on the Maintenance Panel



<p>Turn on the vehicle</p>	
<p>Observe the LED light on the Controller Unit. When the recovery has finished the light will ??????</p>	
<p>The recovery process is now complete, remove the USB Recovery Dongle. The system will reboot automatically.</p> <p>Refer to the IVS Installation Wizard to setup and configure the system</p>	

3 PREPARATION FOR INSTALLATION

This chart shows an overview of the steps required to successfully complete an installation



4 PRODUCT INSTALLATION

4.1 PART 4 OVERVIEW

These installation instructions allow you to successfully install the Guardian Generation 2 – 2 Box Solution. Below describes the function and mounting specifics of each piece.

4.2 COMPONENT INTERCONNECTIONS



REFERENCE	DESCRIPTION
1	Forward Facing Camera (FFC)
2	USB 3.0
3	Nano SIM card slot
4	Multi-Function Cable (MFC) - Connects to; <ul style="list-style-type: none"> Vibration Motor Cruise Control Disable Cable (CCDC) Micro USB OTG - FMS integration FMS integration
5	Vibration Motor
6	Cruise Control Disable Cable (Optional Extra)
7	Micro USB Cable - FMS integration

8	Serial FMS integration
9	Power Cable; <ul style="list-style-type: none"> • Yellow = Ignition • Red = Battery • Black = Ground/Chassis
10	Processor Unit - includes; <ul style="list-style-type: none"> • Driver facing Sensor (DFS) • Illuminators • Audio Alerts

4.3 INSTALLATION RECORDS

The installation checklist is used to record which system has been installed into which vehicle. This is very important because when a fatigued driver has an event the site representative will be notified of the location and vehicle number. If this is incorrect this could mean life or death for the driver

This paperwork is a mandatory requirement for the installation of the system, and is to be submitted to Seeing Machines 24/7 Support after completion of installation

Installation Checklist
<p>Location:</p> <p>The Installation checklist can be found inside the packaging of the Guardian Gen2-2 system</p> <p>If this checklist has been lost, it can be downloaded from; tcp.seeingmachines.com/forms</p>
<p>Information:</p> <p>Each field must be filled in</p> <p>You can find a more detailed explanation of how to fill in the checklist at: tcp.seeingmachines.com/forms</p> <p>The checklist contains all 24/7 support details for the System Registration</p> <p>It also contains the weblink for the Technical Communications Portal (TCP) where you'll find this manual and any other information including the Seeing Machines knowledgebase</p>

Locating the serial numbers:

The serial number is located under the Controller Panel on the Gen2-2 Controller
 You must have your T20 driver to access this panel
 Unscrew the two bolts of the Controller Panel



Slide the connector panel downwards to reveal the Product number and Serial number



Record the "P:-XXXXXXXX" and the "S:-XXXXXXXX" Numbers on the Installation Checklist





Important Points to Note:

These numbers are required by support when activating the vehicle

4.4 COMPONENT INSTALLATION SPECIFICS

4.4.1 SIM CARD INSTALLATION


SIM Card Installation	
Important Points to Note: Activated SIM cards are to be provided by the customer. The SIM card size requirement is a Nano SIM. Confirm with the customer that the SIM has been activated with the telecommunications provider	
Mounting Location: The SIM card is inserted in the Guardian Controller SIM card tray which can be pulled out with your fingernail	
Record the SIM's serial number on the installation checklist Punch out the Nano size SIM	

The Nano SIM is inserted so that the metal chip is visible. Match the cut corner on the SIM to the matching corner on the tray, and push the tray closed

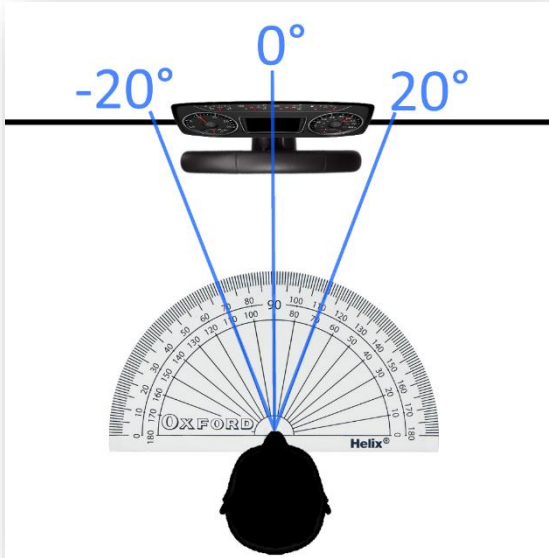



4.4.2 CONTROLLER UNIT INSTALLATION

Controller Unit	Image
<p>When installing the Controller Unit you will need;</p> <p>The Controller Unit</p>	
<p>The Mounting Pan</p> <ul style="list-style-type: none"> - Should have at least 4 screws - Should be orientated to easily access the 2 bottom T20 bolts 	
<p>And Fasteners</p> <ul style="list-style-type: none"> - Each piece should be used to securely mount the unit so that it is vibration proof 	
<p>Mounting Location:</p> <p>Determine where a suitable place is for mounting.</p> <p>A good place is;</p> <ul style="list-style-type: none"> - Inside the cabin - Well ventalated - Away from potential water damage - Accessabilty for maintenance 	

<p>A good place is also where you have considered the length of the provided cables</p>	
<p>Types of Mounting:</p> <p>The mounting pan is a light weight mounting template, choose 3 to 4 of the 6 mounting holes to suit your mounting location</p> <p>The orientation of the Mounting Pan should be aligned so that you have easy access to the T20 locking screws</p> <p>Note: Mounting the Pan to the ceiling of enclosed space is not recommended, as heat generated from the controller will not escape effectively</p>	
<p>The Fasteners can be used both ways around</p>	<p>Picture screw fitting in both ways</p>
<p>Adjusting the Mounts:</p> <p>Unscrew the T20 screws anticlockwise on the Mounting Pan to allow the 2 parts to separate, this will allow the Controller to fit inside.</p> <p>Screw the T20 screws clockwise to lock the Controller inside,</p> <p>Note: This can be done at the end of the install</p>	<p>Picture insterting controller in pan</p>
<p>Important Points to Note:</p>	

4.4.3 IN-CAB SENSOR MODULE INSTALLATION

In-Cab Sensor Module (ICS)	Image
<p>Mounting Location:</p> <p>The In-Cab Sensor is to be mounted on the dashboard within -20 to 20 degrees of the driver's straight ahead position, as shown in the image</p>	
<p>The ICS must be mounted so that there are no obstructions between the driver's eyes at the ICS hardware</p> <p>Make sure ICS is in complete view of the driver when the steering wheel is at its highest point</p>	
<p>Types of Mounting:</p> <p>There are two main types of mounting, Hard mount and Soft mount.</p>	

Hard Mount:

Hard Mount requires the mount to be **screwed or bolted** into the dashboard using the supplied fasteners

It is required to use split washers or nylock nuts if bolting the plate in, otherwise self tapping screw can also be used

**Soft Mount:**

Soft Mount uses strong automotive grade double sided tape for adhesion

(The Hard Mount is recommended by Seeing Machines. The Soft Mount method should only be used if the customer requests it)

Make sure the vehicles surface has been cleaned; alcohol wipes can be used to aid in grease removal which are included.

Before sticking the adhesive mount down make sure the rotation of the mount is positioned so that the maximum amount of adhesion is used

If the adhesive mount is not sticking to the vehicle you may be required to obtain a primer

Primer may be the only tested way Jess TBA



3M Primer 94 is recommended for dashboard material adhesion

Note: It is recommended to talk with your site representative as using Primer 94 may damage the dash on removal of the Adhesive Mount



Adjusting the Mounts:

The Sensors mounting has 4 points of movement to allow the installer to change angles for optimum sensor placement, and ease of maintenance

In your installer kit your T20 security Torx key can adjust these movements

The ICS must be placed as level as possible in the horizontal position

Make sure after adjustment the 4 locking bolts have been tightened to ensure a sturdy mounting

**Important Points to Note:**

Make sure the base is securely mounted to the vehicle

Make sure the adjustment screws are tightened

4.4.4 FFC INSTALLATION

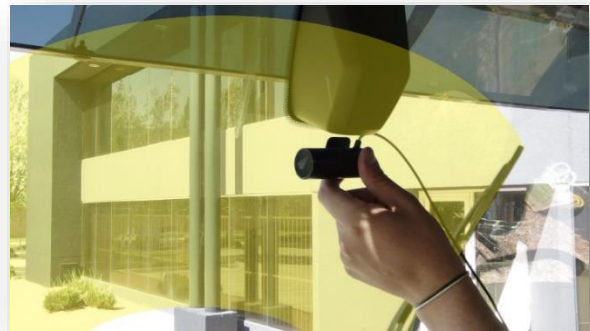
Forward Facing Camera (FFC)**Image**

Mounting Location:**

The FFC is to be mounted so that the wipers clean the vision for the camera to see

It is to be mounted in the center of the windscreen so that it does not interfere with the drivers vision

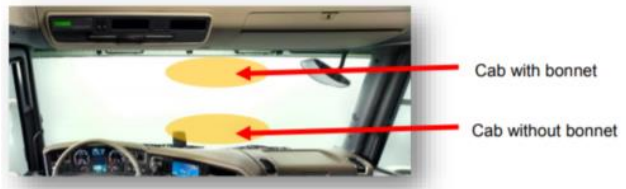
The FFC "Guardian" logo must be read the correct way, as it can not be upside down



Types of Mounting:

For a vehicle **with** a bonnet it is recommended to mount the FFC in the center **top** section of the windscreen

For a vehicle **without** a bonnet it is recommended to mount the FFC in the center **bottom** section of the windscreen

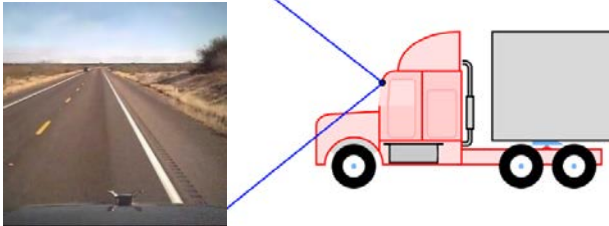
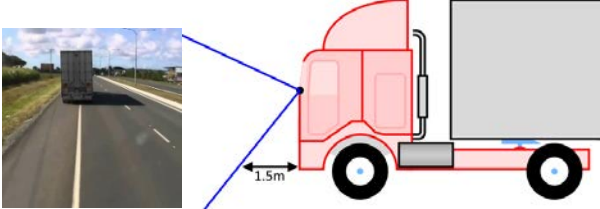


Adjusting the FFC:

A 1.5mm Allen key is required to lock the cameras position when the correct camera view has been adjusted

A provided cap is to be clipped over the recess to prevent misalignment tampering

FFC lock screw picture

<p>Bonnet - Adjust the camera so that;</p> <ul style="list-style-type: none"> • The top of the image sees the horizon • The bottom of the image sees the top of the bonnet 	
<p>No Bonnet - Adjust the camera so that;</p> <ul style="list-style-type: none"> • The top of the image sees the horizon • The bottom of the image sees 1.5m in front of the vehicle 	
<p>Important Points to Note:</p> <p>**Check your countries regulations on mounting systems to windcreens, restrictions may vary</p> <p>Make sure the FFC has been adjusted and locked into position using the 1.5mm Allen key</p>	

4.4.5 3G ANTENNA INSTALLATION

3G Antenna	
<p>Mounting Location:</p> <p>The 3G antenna is to be mounted so that there is a clear line of sight to the sky</p> <p>The 3G antenna can see through; plastic, wood and fiberglass.</p> <p>It cannot see through metal</p> <p>Mount the antenna close to a window</p>	
<p>Mount the antenna at least 30cm from the GPS Antenna</p> <p>Mount the antenna at least 60cm from any other antennas</p> <p>Mount the antenna at least 1m from the Controller?</p>	

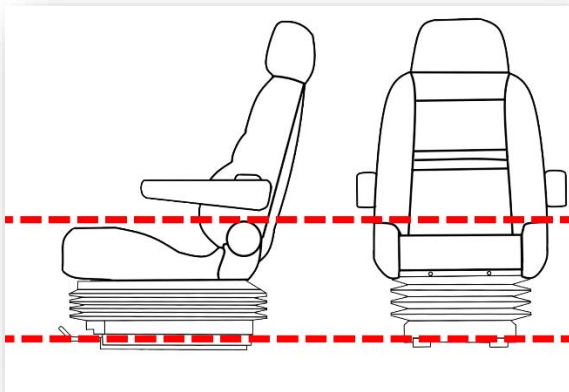
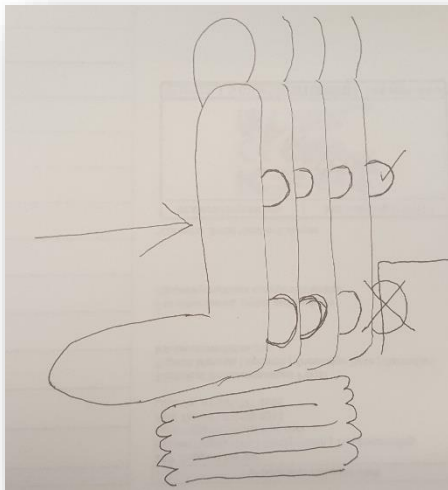

Types of Mounting: Tape	
Adjusting the Mounts: Distance between 3G and GPS TBD Distance to 3 rd party antennas TBD Distance to the controller TBD	
Important Points to Note:	

4.4.6 GPS ANTENNA INSTALLATION

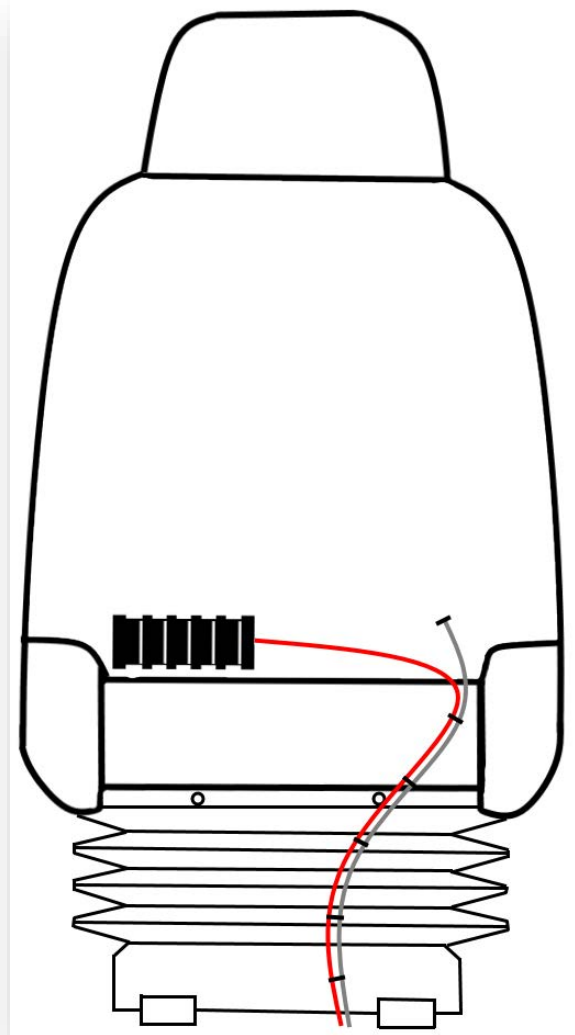
GPS Antenna	
Mounting Location: The GPS antenna is to be mounted so that there is a clear line of sight to the sky The GPS antenna can see through; plastic, wood, fiberglass. It cannot see through metal Mount the antenna close to a window	
Mount the antenna at least 30cm from the 3G Antenna Mount the antenna at least 60cm from any other antennas Mount the antenna at least 1m from the Controller?	
Types of Mounting: The GPS is a directional antenna, it must be mounted so that the receiver faces the sky always. The picture shows how it faces the sky	
Adjusting the Mounts:	
Important Points to Note: Make sure the GPS has a clear line of sight to the sky	

--	--

4.4.7 VIBRATION MOTOR INSTALLATION

Vibration Motor	
<p>Mounting Location:</p> <p>The Vibration Motor is to be mounted on the driver's seat. It should be located above the adjustment rails and within the red dotted lines</p> <p>The preferred method of mounting is clamping not drilling</p> <p>Note: It is not recommended to mount under the rails because the vibration cannot be easily felt by the driver</p>	
<p>The placement of the vibration motor must not interfere with the seat belt, or the ability to adjust the seat. And should not be in a spot where it interferes with the driver's comfort and safety</p> <p>Note: If mounting of the vibration motor must be mounted outside of the red dotted line as detailed above, you must seek approval from the site representative</p>	
<p>Locate a flat, round or square bar</p>	

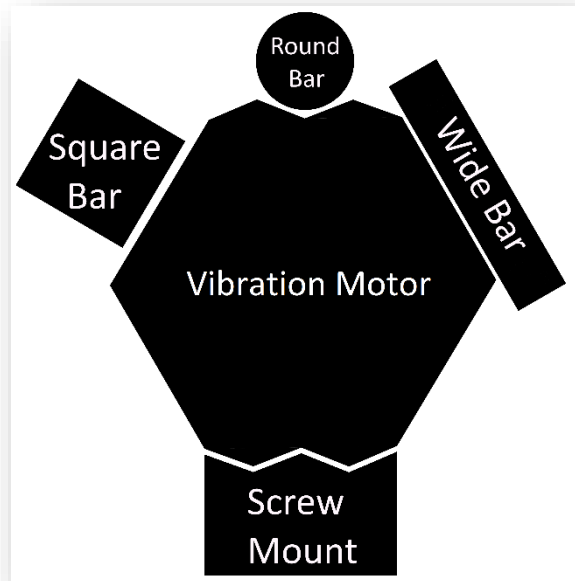
To avoid the cable breaking during normal vehicle operation, the seat must be able to move freely in all directions. The cabling must be installed with sufficient slack to allow this movement to occur. If the seat already has cabling, it is recommended that you follow that routing.



Types of Mounting:

Bar Mount:

Looking at the end of the vibration motor there is a 'V' shape edge and a flat edge, these can mount to different shapes



The hose clamps are used to mount to any type of strong bar on the seat.

2 hose clamps are to be used, in any 2 of the 5 slots on the vibration motor. If there are obstructions the hose clamp can be relocated

**Screw mount:**

When there is no bar to mount to, the Screw mount can be used by drilling in 2 Tek Screws into the mounting point



When the screw mount has been screwed into position the vibration motor will mount to the screw mount

Rotate the vibration motor so that the bar mount position sits on the screw mount



Then use the hose clamps on the two outer slots to secure the vibration motor



Adjusting the Mounts:

Using an 8mm socket and your impact driver is the easiest and fastest way to tighten the hose clamps.

The hose clamps can be rotated to your installing position when tightening them for ease of install



When the vibration motor is tightened, Zip tie down any excess hose clamp

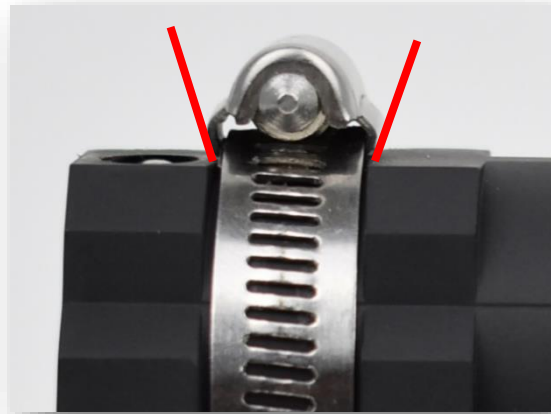


Important Points to Note:

Make sure the hose clamps fall into the slots when tightening so the motor cant slide out

Make sure the hose clamps are tight so the motor cant move around or slide

The Vibration motor cables plug connects to the MFC cable, not straight to the Controller



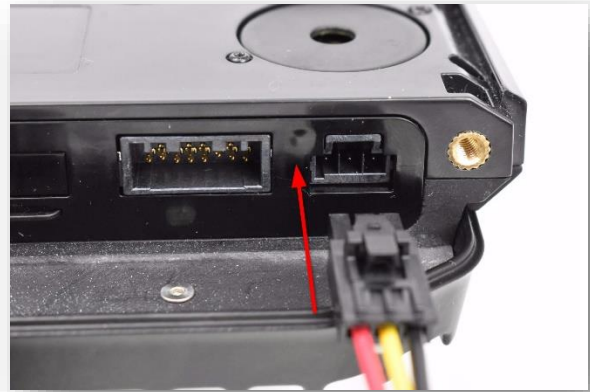
Picture of MFC connect to VIBA

4.4.8 POWER CABLE INSTALLATION

Power Cable

Mounting Location:

Starting at the Controller, route the power cable back to the fuse box for power pickup, via a point that can be used as a tether for the Controller if it somehow becomes loose



The tethering point must be close to the Controller.

It must be strong point of the vehicle.

And the power cable must be securely connected to the tether point

This is used incase the controller comes off its mounting during an accident.

ARE WE TETHERING FOR SCREW AND STICK MOUNTS?



After routing the cable through the vehicle, the power cable can be shortened at the open end if there is excess cable length.



At the fuse box

Fuse holders are to be attached in line with the power connection on the battery and ignition wires

Various ring terminals can be used depending on the connection type.

For further information on crimping techniques refer to the "Installer Resources" on the TCP



Types of Connection:

The packaging comes with all crimps to enable the installer to crimp together the connections;

If you prefer soldering, that is also a preferred method, be sure to protect your soldering joints from shorting out with electrical tape, heat shrink etc.

Ensure the fuse holders are installed at the beginning of the power cable to avoid potential shorts later in the line

Terminals Picture

- Battery fuse is 7.5A mini blade fuse
- Ignition fuse is 7.5A mini blade fuse

Before power connection

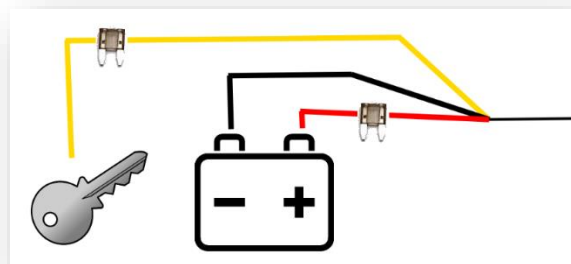
isolate the vehicle

The wiring is as follows;

RED WIRE - Battery Terminal

YELLOW WIRE - Ignition Terminal

BLACK WIRE - Ground/Chassis Terminal



Important Points to Note:

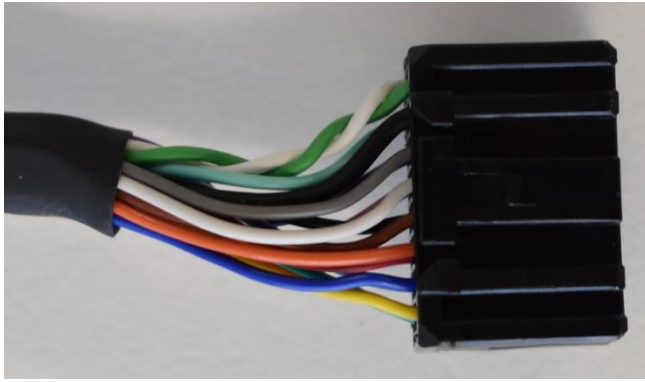
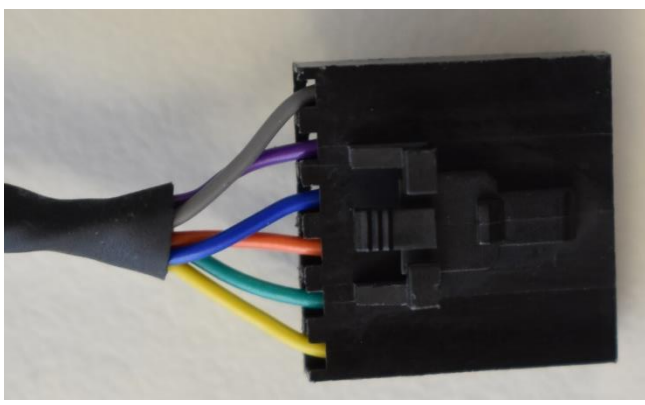
Make sure the vehicle is isolated before performing the power connection

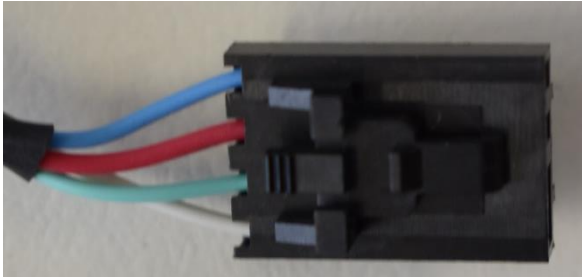

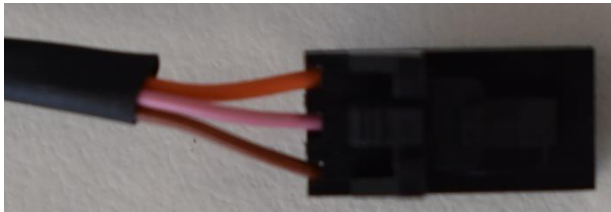
Test battery and ignition connection to make sure they are the correct way around (the system still functions, but not correctly)

Ensure the ground connection is a good connection, free of grease, paint, plastic, corrosion etc

Secure the power cable to act as a tether, on a main unit, zip tie to structural part of the dash or under a screw

4.4.9 MFC INSTALLTION

Multi-Function Cable (MFC)	
<p>Mounting Location: Located close to the controller This will connect the Vibration Motor to the system</p>	
<p>Types of Connection: The MFC cable splits from one connector to four connectors</p>	
<p>The Main connector plugs into the Controller</p>	
<p>The six pin connector plugs into the vibration motor cable</p>	

<p>The four pin connector plugs into Third Party Fleet Management Systems (FMS) Products (Optional extra)</p>	
<p>The female micro USB connector plugs into Third Party FMS Products (Optional extra)</p>	
<p>The three pin connector plugs into the Cruise Control Disable Cable (CCDC) (Optional extra)</p>	
<p>Adjusting the Mounts: Zip tie the MFC cable to existing cable looms to reduce cable pulling and cable safety</p>	
<p>Important Points to Note:</p>	

4.4.10 CABLING INSTALLATION

<p>Installation of Cabling</p>	
<p>Mounting Location: When installing the cabling, make sure you have sufficient length to get the cables back to the Controller on the dashboard with their included cable slack</p>	

Placement of cables:

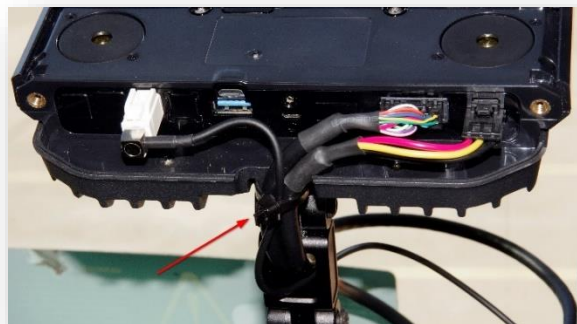
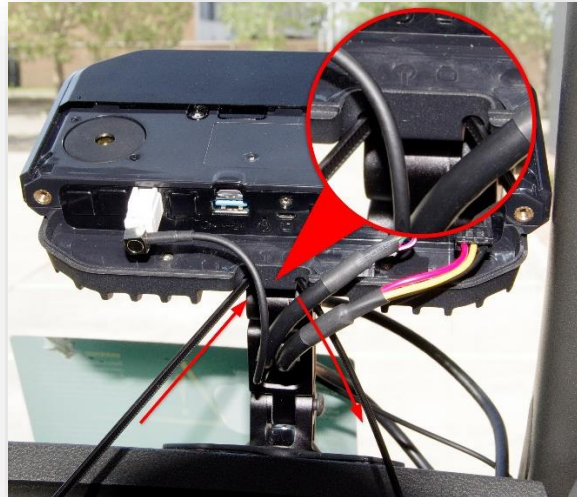
After all system components have been installed and their respective cable routed. The cables coming into the controller are to pass through the mounting arms cable slot.

This keeps the cables neat and easy to zip tie together for cable management



Cable relief:

After all cables have been plugged into the Controller at the end of the installation, the cable relief management system must be used. This will minimise pull on the cables and allow easy connection and removal of the Controller's cover



4.4.11 OPTIONAL EXTRA'S

Optional Extra's	
Please see the TCP for instructions on additional hardware	


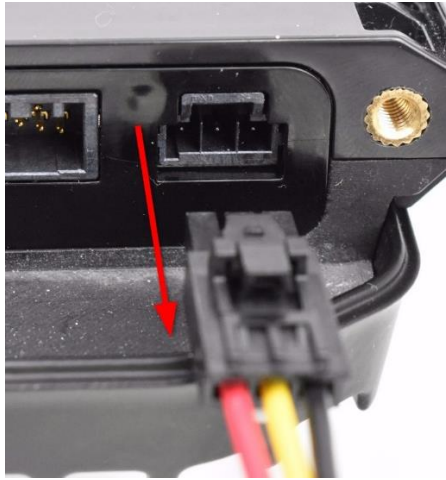

4.5 SUMMARY OF INSTALLATION PROCESS

STEP	DESCRIPTION	SECTION
1.	<p>Preparation</p> <ul style="list-style-type: none"> • Sign in at the worksite if required • Complete all customer and site safety requirements • Conduct JHA and safety plan for the installations • Complete Section 2 - Safety of OPS-MAN-TEC Guardian Installation Checklist • Ensure all components are ready for installation • Ensure all tools are prepared for installation • Ensure vehicle is clean and free of personal items • Where a Specific Vehicle Installation Manual is available, ensure the manual is accessed and understood <ul style="list-style-type: none"> ○ Contact the 24/7 Support Centre if required 	Various
2.	<p>Install the Guardian System components</p> <ul style="list-style-type: none"> • In no set order 	8
3.	<p>Complete software configuration</p> <ul style="list-style-type: none"> • Use IVS Install Wizard 	10

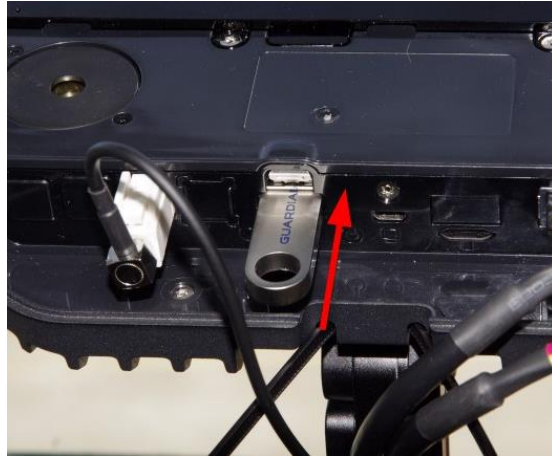
5 SOFTWARE SETUP, TESTING & ACTIVATION

5.1 PART 5 OVERVIEW

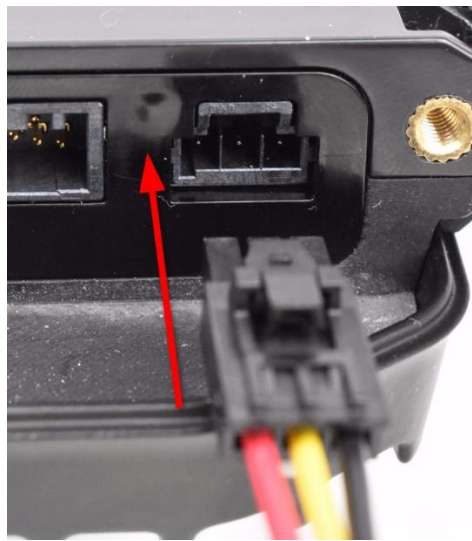
5.2 APPLYING LATEST SOFTWARE TO THE CONTROLLER

Applying the Software	
<p>The controller by default does not have software applied.</p> <p>Your Recovery USB Dongle is used to update the guardian system to the latest software version</p> <p>See Section 2.7 of this document to make sure you are up to date</p>	
<p>After the systems hardware has been installed the latest software will need to be applied You will need to do this with the Recovery USB Dongle you received in your installer kit</p>	
<p>Make sure the power connector is unplugged from the controller</p>	
<p>turn the key on</p>	

Plug in the Recovery USB Dongle



Plug in the power connector and wait until
NOT SURE WHAT HAPPENS YET



5.3 INSTALLATION WIZARD

Installation Wizard	
<p>The Installation Wizard will always start after you have used your Recovery USB Dongle or performed a Factory Reset</p> <p>Make sure you have your Laptop setup to communicate to the Controller unit See Section 2 of this document for more information</p>	

5.4 SYSTEM CHECKS

System Checks	
----------------------	--

After the software has been setup for the installation, system checks need to be done to ensure the system is running optimally	

6 CALLING SUPPORT FOR ACTIVATION

6.1 PART 6 OVERVIEW

6.2 24/7 SUPPORT DETAILS

24/7 Support Center

System Registration | Configuration | Troubleshooting

support@seeingmachines.com

AUS Tel: +61 2 6108 4313

USA Tel: +1 855 377 4636

Technical Communications Portal

Support Manuals | Updates | Knowledge Base | Resources

tcp.seeingmachines.com

6.3 ACTIVATING A VEHICLE

Calling support with your filled in checklist will activate a vehicle for active fatigue management

Simply call the support number above, press “1” for technical support and be ready to tell our support team;

- Your name
- Your email address
- The information on the checklist
 - a. P:-
 - b. S:-
 - c. SIM card serial number
 - d. Make of the vehicle (eg. Kenworth)
 - e. Model of the vehicle (eg. T909)
 - f. Vehicle ID (eg. TRUCK123)

The support team will give you a status of what they see over the network to make sure its running correctly.

Then an email will be sent to you confirming the installation,

You will need to reply to this email with a scanned copy of the checklist, this is required for proof of warranty

6.4 OTHER DUTIES WITH 24/7 SUPPORT

6.4.1 TROUBLESHOOTING

Support can help you with troubleshooting an issue if you get stuck, however to save time you may be able to rectify your issue by;

- Reading through “Section 3 – Service & Fault Finding”
- Logging on to the TCP and looking through the online knowledgebase (tcp.seeingmachines.com)

6.4.2 VEHICLE SWAP

If you plan to move a system from one vehicle to another, you will need to contact support and notify them of the new vehicle information.

6.4.3 BLACKBOX RECOVERY

Support will assist you in BlackBox recovery if the vehicle is caught in an accident

See “Section 3 – Service & Fault Finding” for more information

6.4.4 CONFIGURATION CHANGE ON A VEHICLE

The company authority can only make changes to the configuration change on the vehicle, this can be agreed through the companies Seeing Machines account manager

24/7 Support can aid in communication and apply changes through such authorities

7 FINAL QA

Final QA	
At the end of the installation a final quality assurance check is required	
<p>Cables are cable tied and do not interfere with the function of the vehicle</p> <p>Cables are hidden from view as much as possible</p> <p>No rubbish is left in the vehicle from the installation</p> <p>All your tools have been removed</p> <p>All vehicle pieces and bolts are placed back on the vehicle</p> <p>All components of the guardian gen2-2 has been installed</p> <p>All photos have been taken (detailed in the installation checklist)</p> <p>The system powers down when the key is off (detailed in the installation checklist)</p> <p>You have completed the installation checklist</p> <p>You have called 24/7 support to activate the vehicle(detailed in the installation checklist)</p> <p>You have notified the site manager the truck is ready for release and they have signed off the checklist (detailed in the installation checklist)</p> <p>Paperwork has been uploaded to supports email of vehicle connection(detailed in the installation checklist)</p> <p>INSTALLATION IS NOW COMPLETE!!!</p>	

INSTALLATION IS NOW COMPLETE



seeingmachines

GUARDIAN

FIELD SUPPORT MANUAL

Section 3 - Service of Guardian Generation 2

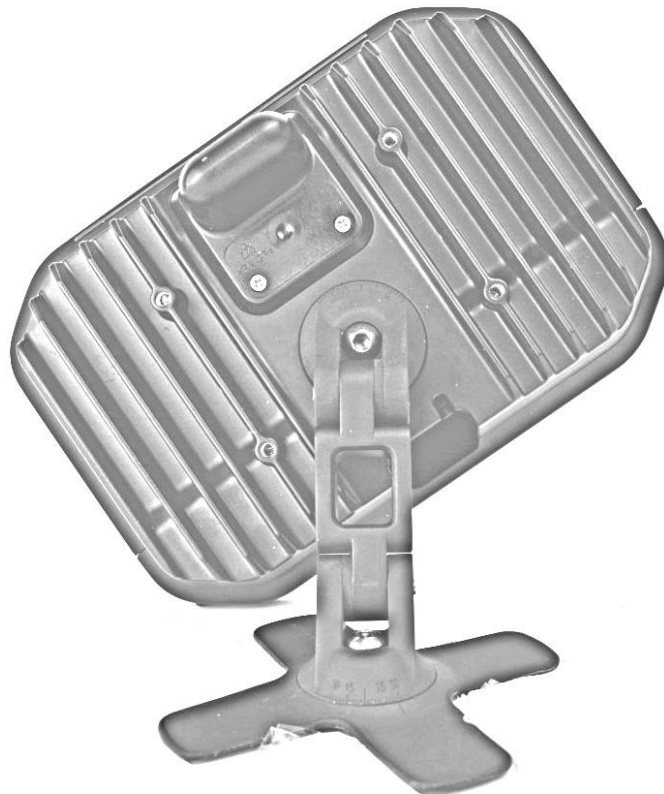


Table of Contents

1. OVERVIEW.....	3
2. MAINTENANCE.....	4
3. SYSTEM CHECKS	6
4. SYSTEM RECOVERY.....	9
5. FAULT FINDING & FAULT CODES.....	10
6. TROUBLESHOOTING WITH SUPPORT	11
7. BLACKBOX RETREIVAL	12

1. OVERVIEW

This section is a guide to troubleshooting known Guardian System faults.

If the fault experienced is not listed in this section or further assistance is required **please see our knowledgebase in Zendesk (link here)** or contact the Seeing Machines 24/7 Support Centre.

2. PREVENTATIVE MAINTENANCE

2.1. PREVENTATIVE MAINTENANCE

Preventative Maintenance should be conducted on a regular basis to ensure that the Guardian System components are able to perform correctly. The main aim of conducting preventative maintenance is to:

1. Ensure that the system is clear from dirt.
2. Check the system for any visible signs of damage.

Guardian Unit	
Is the system mounted correctly and able to view the driver?	
Is the system mount secure?	
Is there any visible damage to the unit?	
Clean the lens with a soft, dry cloth	
Is the power cable intact?	
Does the antenna have a clear view of the sky?	
Vibration Motor	
Is the seat vibration motor mounted correctly and secure?	
Is there any visible damage to the vibration motor?	
Forward Facing Camera (FFC)	
Is the FFC mounted securely?	
Is the FFC aligned correctly and is mounted in swept area of windscreen?	
Is there any visible damage to the FFC?	
Is the cable intact?	
Clean the FFC lens with a soft, dry cloth	
System Check	
Does the system power on via the vehicles ignition?	

Conduct a 'system test' using the <i>system test button</i>	
Are any fault lights indicated?	

3. SYSTEM CHECKS

3.1. Self Checks during boot-up

The system will conduct self-checks *more information to introduce the section*

There are two (2) LED's on the unit.

Insert image?

They can flash different colors (Status green/amber PSU green/red) and for different time periods. The meaning behind each LED light and action is in the following table.

LED			Meaning
Position	Color	Action	
PSU	Green	Steady	System is Powered and functioning correctly
PSU	Green	0.1 Second on / 5 seconds off	DC power supply is in idle or standby state <ul style="list-style-type: none"> System ignition is off, battery power is connected
PSU	Green	1 Flash every 10 seconds	Battery voltage is below normal operating range <ul style="list-style-type: none"> Check vehicle power voltages May require the vehicle ignition to be started
PSU	Green	2 Flashes	The Processor Unit power up sequence failed <ul style="list-style-type: none"> Re-powering the system may fix the issue If problem persists - replace Processor Unit (RMA)
PSU	Green	3 Flashes	The Processor Unit power supply output voltages are out of normal range <ul style="list-style-type: none"> Replace Processor Unit (RMA)
PSU	Green	4 Flashes	The Processor Unit power down, stand-by or hibernate sequence failed <ul style="list-style-type: none"> Re-powering the system may fix the issue If problem persists - replace Processor Unit (RMA)
PSU	Red	Steady	Indicates the system is booting up
Status	Green	Flashing	Indicates that the Processor Unit software is booting up or shutting down

Status	Amber	Flashing	Indicates the Processor Unit is undergoing the recovery process via Recovery Dongle (USB Drive)
Camera	Green	Flashing	Guardian System hardware is initially powered or rebooted
Camera	Green	Steady	Normal operation mode <ul style="list-style-type: none"> Green LED will go off after 2 minutes
Camera	Red	Steady	Indicates a hardware or communications fault: <ul style="list-style-type: none"> Camera Not Detected Logging disk and system disk not available GPS Not Detected Unable to communicate with the Server

3.2. System Test Mode

LED			Meaning
Position	Color	Action	
Camera	Green	Flashing	System is running the system diagnostics check <ul style="list-style-type: none"> Once the system has completed its self-test and no faults have been found, the Green LED will switch off
Camera	Green	Steady	System is functioning normally
Camera	Amber	Steady	An intermittent fault has been detected. The button should be pressed again after a few minutes. This could indicate; <ul style="list-style-type: none"> 1 of 2 IR pods have failed GPS is detected but does not have a valid signal FFC is configured but is not connected Network is not connected System has low disk space Vibration Motor is configured but not detected
Camera	Red	Steady	A critical fault has been detected and the driver will not receive in-cab alerts. This could indicate; <ul style="list-style-type: none"> 2 of 2 IR pods have failed GPS is not detected

			<ul style="list-style-type: none">• Audio alert has failed• System has Critically low disk space
--	--	--	---

All green lights

Network connected and successful

Test button

Field of view check

Fatigue event tests low and high

4. SYSTEM RECOVERY

Requires the recovery dongle in the installer kit

Recovery dongle should have the latest version of the software

Creation of recovery dongle

Features of recovery dongle

5. FAULT FINDING & FAULT CODES

Sounds explained

Led light explained

Flashes explained

Boot sequence and times

Possible causes and solutions

6. TROUBLESHOOTING WITH SUPPORT

Data log extraction to help support

Phone numbers and forms of contact

Information required to assist support

Contacting support ways

7. BLACKBOX RETREIVAL

7.1. Blackbox Overview

The Guardian has an inbuilt recorder that uses circular buffer recording to enable the system to record all information from the system until the allocated memory has been filled (overwriting older data with new data). This feature is called the Blackbox.

The Blackbox default setting is *enabled* and provides for at least 24 hours of data. This feature will only be disabled (or changed) if requested by the client.

The Blackbox stores the following information:

- In Cab Sensor (ICS) video.
- Forward Facing Camera (FFC) video.
- GPS data (including vehicle location, speed and bearing).
- Accelerometer data.

Clients can request the Blackbox data at any time. When data is requested, a Certified Technician will be responsible for downloading the data and uploading it to the 24/7 Support Center. The data can only be downloaded via the IVS Web Interface.

Note: The amount of Blackbox data available on the memory is variable depending on the quality of the ICS and FFC video. You will be advised of any change to the default data when you receive your support request.

The SM 24/7 Support Center is responsible for decrypting the data and providing a thorough analysis for the client.

When an incident occurs and the Black Box Recorder data is requested, it is important that the copying of the data is done up to 24 hours* of vehicle run time, from time of the incident.

7.2. Copying Blackbox Data from the unit

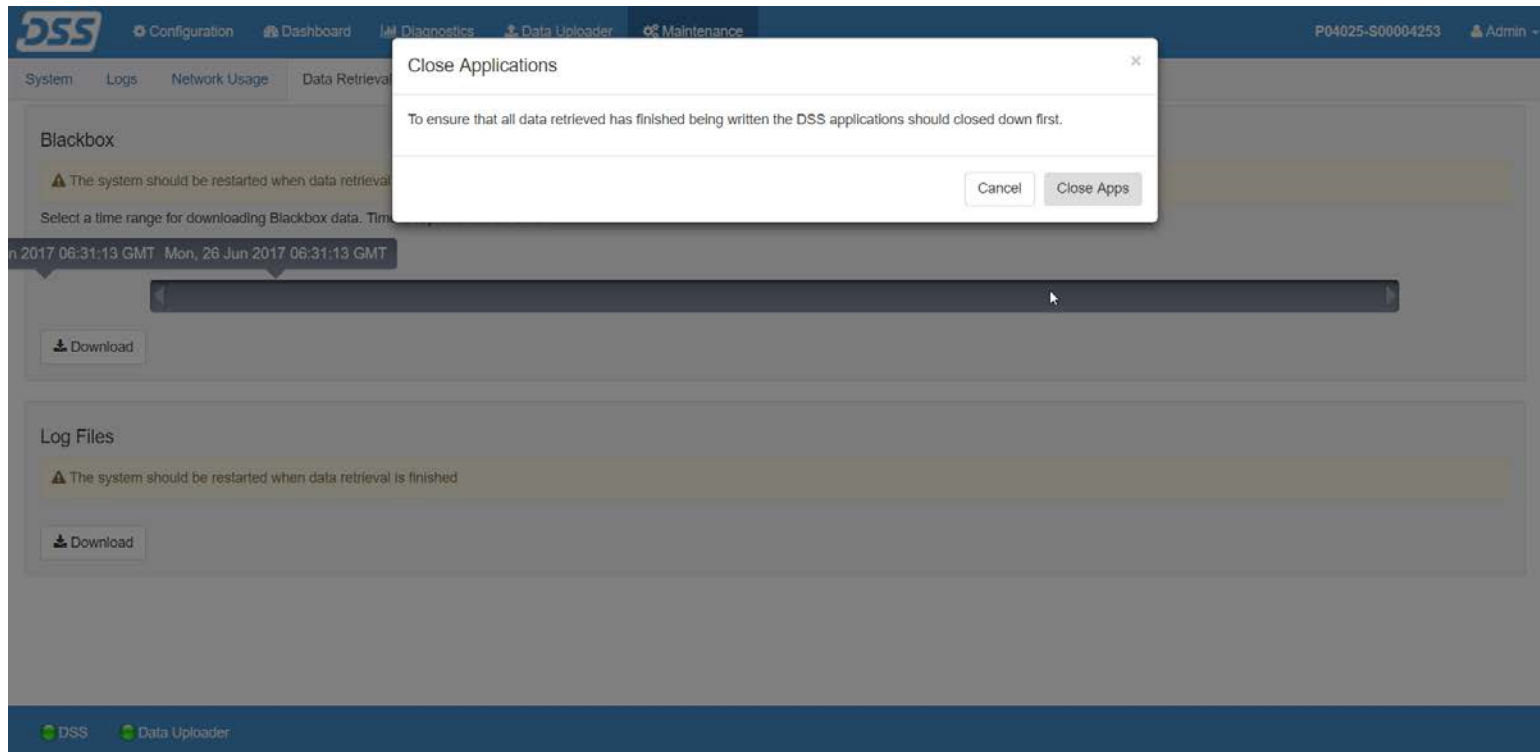
Step	Description
	You will need to enable "Pop-ups" from this site if this is the first time you are downloading Blackbox data on your Laptop.
1.	In the IVS Interface, go to the 'Maintenance' tab, and click on "Data Retrieval".

The screenshot displays the 'Maintenance' section of the DSS web interface. The navigation bar at the top includes 'DSS', 'Configuration', 'Dashboard', 'Diagnostics', 'Data Uploader', and 'Maintenance'. Below the navigation bar, there are tabs for 'System', 'Logs', 'Network Usage', and 'Data Retrieval'. The main content area contains five sections:

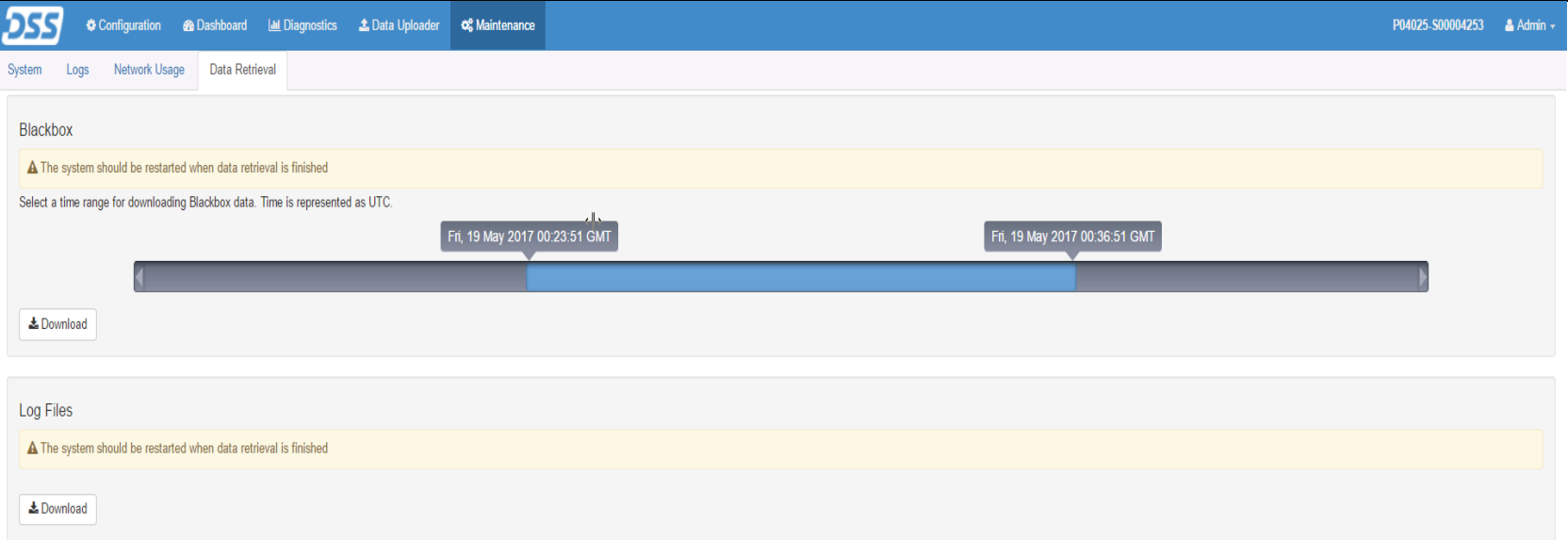
- Stop Applications:** A section with the heading 'Stop Applications' and the text 'This will shutdown all DSS applications. The system will need to be rebooted to start them again.' It features a 'Stop' button with a square icon.
- Restart:** A section with the heading 'Restart' and the text 'A restart may be required for any system changes to take effect.' It includes a yellow warning box stating 'Please be aware a restart can take up to 5 minutes to complete. During this stage the webservice will be offline.' and a 'Restart' button with a circular arrow icon.
- Reset Configuration:** A section with the heading 'Reset Configuration' and the text 'The IVS configuration can be reset to default settings using the button below.' It includes a yellow warning box stating 'This operation will reset EVERY parameter to the default value.' and a 'Reset' button with a circular arrow icon.
- Load Configuration:** A section with the heading 'Load Configuration' and the text 'The IVS configuration can be loaded from a pre-configured file.' It includes a blue information box stating 'Browse to the configuration file and then click Load', a 'Choose File' button (with 'No file chosen' text), and a 'Load' button with a circular arrow icon.
- IVS Install Wizard:** A section with the heading 'IVS Install Wizard'.

At the bottom of the interface, there is a status bar with 'DSS' and 'Data Uploader' indicators, each accompanied by a green dot.

2. In the pop up window, select "Close Apps" to stop the Guardian application to download data.

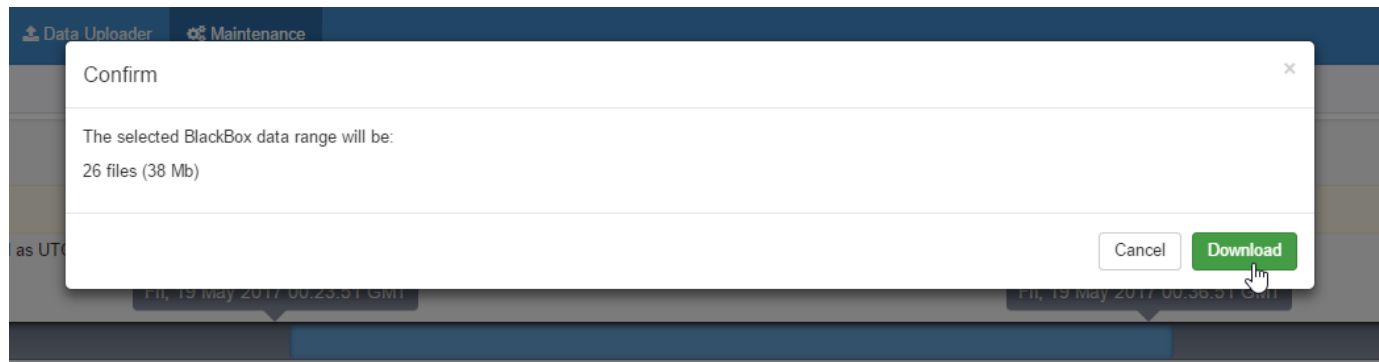


3. Select the block of data you wish to download (it is recommended to download 1 to 2 hour blocks at a time) the download size will depend on your Laptops RAM size.
- Note:** The time is displayed in UTC time (Universal Time Coordinated); this is time irrespective of location around the world. Eg, if you are located in Sydney, Australia. In winter time its UTC+10 and UTC = +0, therefore an event that occurred at 11am in Sydney would have occurred at 1am UTC time. For easy conversion please see here: <https://savvytime.com/converter/utc>.
4. Select "Download" to download your specified block. If you are having problems downloading simply choose a smaller block amount

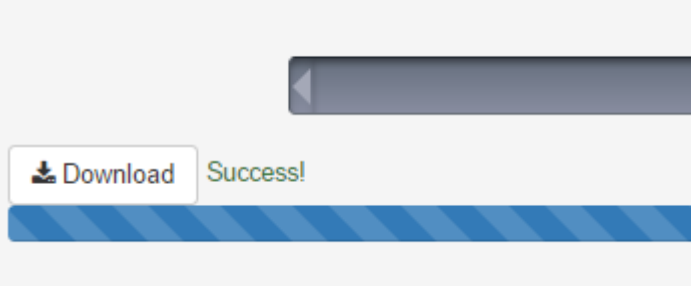


The screenshot shows the DSS Maintenance interface. The top navigation bar includes 'Configuration', 'Dashboard', 'Diagnostics', 'Data Uploader', and 'Maintenance'. The 'Data Retrieval' tab is active. The 'Blackbox' section contains a warning message: 'The system should be restarted when data retrieval is finished'. Below this, a time range selector is shown with a blue bar indicating the selected range from 'Fri, 19 May 2017 00:23:51 GMT' to 'Fri, 19 May 2017 00:36:51 GMT'. A 'Download' button is visible below the selector. The 'Log Files' section also has a warning message and a 'Download' button.

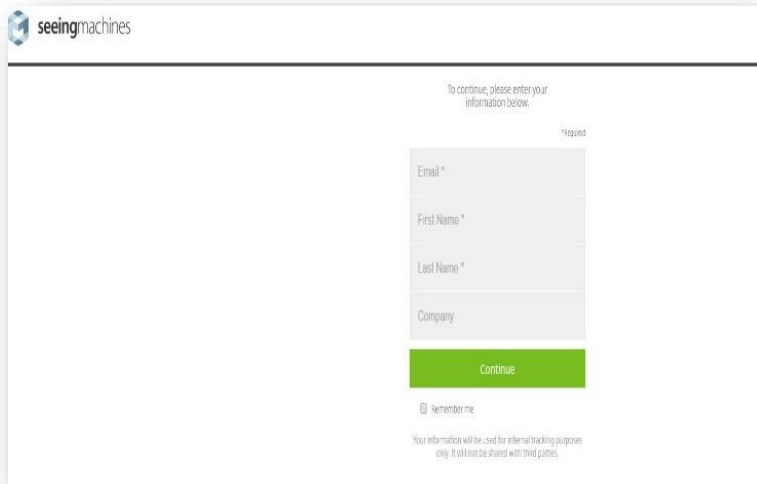
5. In the pop-up window, confirm the 'size' and click 'download'.

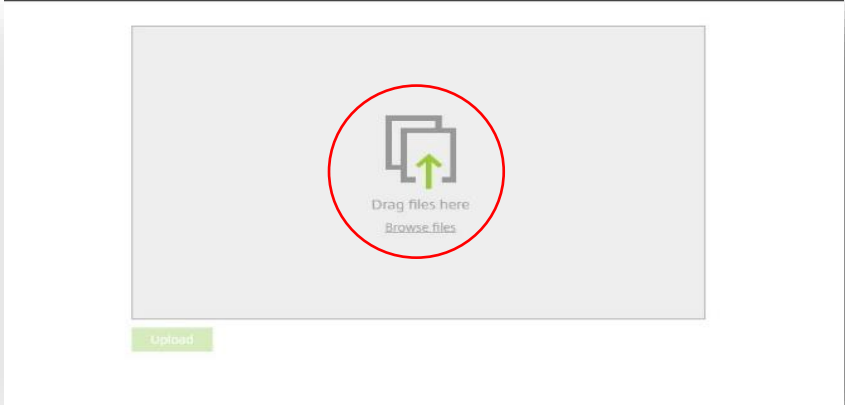
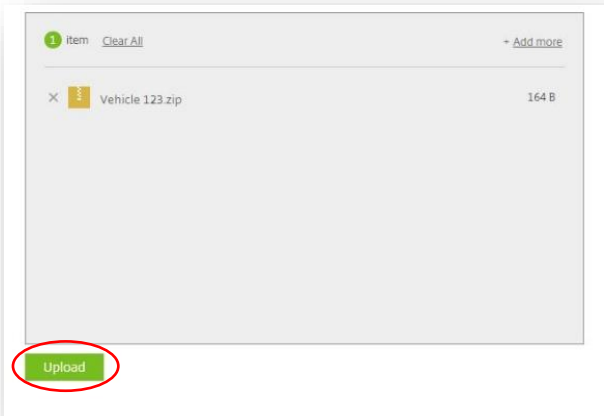


Note: A bar will appear showing the progress of the data downloading. When "Success" is shown, a file will automatically download in the bottom left of the window.

	 A screenshot of a software interface. At the top, there is a dark grey horizontal bar with a white left-pointing arrow. Below this bar, there is a white rectangular area containing a 'Download' button with a download icon and the text 'Download'. To the right of the button, the word 'Success!' is displayed in green. Below the 'Success!' message, there is a blue horizontal bar with a diagonal striped pattern.
6.	'Save' the downloaded data in a folder named "CompanyName VehicleID Date".
7.	Continue with 24/7 Support upload instructions
8.	Restart the system when the data retrieval is finished, this will allow the system to function as normal once again

7.3. Delivering Blackbox Data to 24/7 Support

Step	Description
1.	Ensure the computer has internet access
2.	<p>Contact the 24/7 Support Centre and advise them that Blackbox data has been downloaded and that a link to upload the data is required.</p> <p>The following information must be provided:</p> <ul style="list-style-type: none">• Company Account and Site Name• Guardian System Processor Serial Number• Vehicle ID• Date and time of incident• Details of the incident (if known)
3.	<p>Locate the file containing the Blackbox data from your computer. Use the link provided to you by the 24/7 Support Centre (via Sharefile) to upload the data.</p> <ul style="list-style-type: none">• Enter your email, name and company detail on the initial screen. Select 'continue'.  <p>The screenshot shows a web form for 'seeingmachines'. At the top left is the logo. The main heading says 'To continue, please enter your information below.' with a '*Required' label. The form contains five input fields: 'Email *', 'First Name *', 'Last Name *', and 'Company'. Below these is a green 'Continue' button. At the bottom, there is a checkbox for 'Remember me' and a small disclaimer: 'Your information will be used for internal tracking purposes only. It will not be shared with third parties.'</p>
4.	Drag the file containing the Blackbox data onto the prompt or select "Browse files" and select the file from your computer

	
5.	<p>Once the data has been attached, select "Upload"</p> 
6.	<p>Contact the SM 24/7 Support Centre and advise them that the Blackbox data has been uploaded to Sharefile</p>

Costs involved for retrieval