INSTALL MANUAL

EQSS Model6253 – OverWatch™
Genie GR-12/15/20 Series

**** Failure to follow this installation manual will void warranty ****

AUTHORS:	AUTHORISED BY:	CHECKED BY:
Kieren Grogan, Bhavani Kacharapu	Kieren Grogan	Andrew Donegan

DOCUMENT ABSTRACT:
This Installation Manual details the manufacturer's installation instructions for installing the Model6253 OverWatch on a Genie GR-12/15/20 Series vertical mast with mode selection.

PRODUCT NAME:
Model6253 OverWatch Operator Detection System

REFERENCE DOCUMENTS:
DO0001195 Model6253 OverWatch User Manual

CURRENT DOCUMENT REVISION:
1.3

REVISION INFORMATION:

- 1.0 Initial document creation for installation on a Genie GR-12/15/20 Series control box with mode selection
- 1.1 Update of installation manual and instructions for plug and play installation.
- 1.2 Inclusion for sensor guard V2 mounting instructions
- 1.3 Update to model configuration instructions

Important Information

Information contained in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that the application or our equipment meets with your specifications.

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N23041

This is a class A product certified to AS/NZS CISPR 22:2006. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Table of Contents

Preparation

Required Tools

The OverWatch has been designed to be fitted using basic workshop tools. Shown below is a list of tools required to complete the installation.

Item	Tool / Description
1	Electric Drill
2	Centre punch
3	Hammer
4	Side Cutters
5	Drill 5.0mm
6	Drill 6.0mm
7	Step Drill (5 – 30mm)
8	Metric sockets or spanners
9	Needle nose pliers
10	Screw drivers

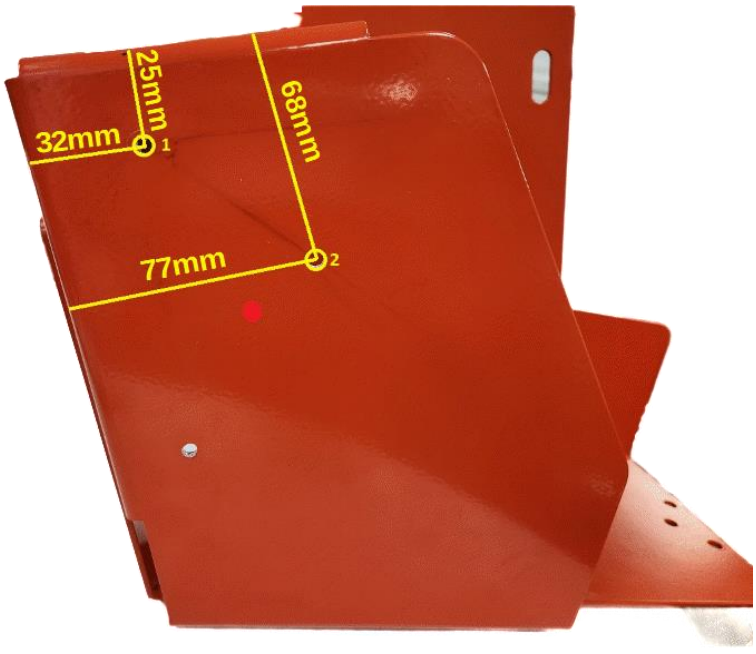
Installation Time

The suggested time required to install the OverWatch on the Genie GR12/15/20 is as detailed below.

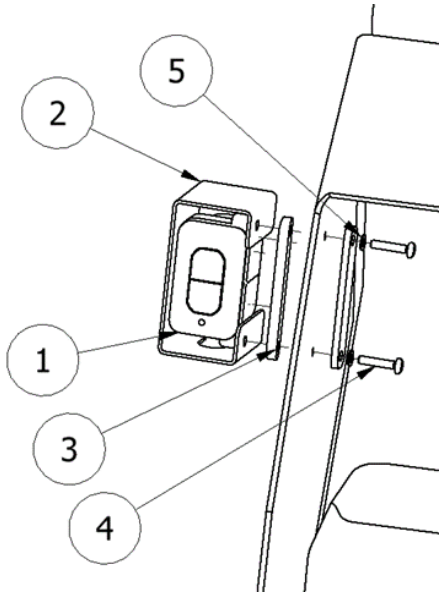
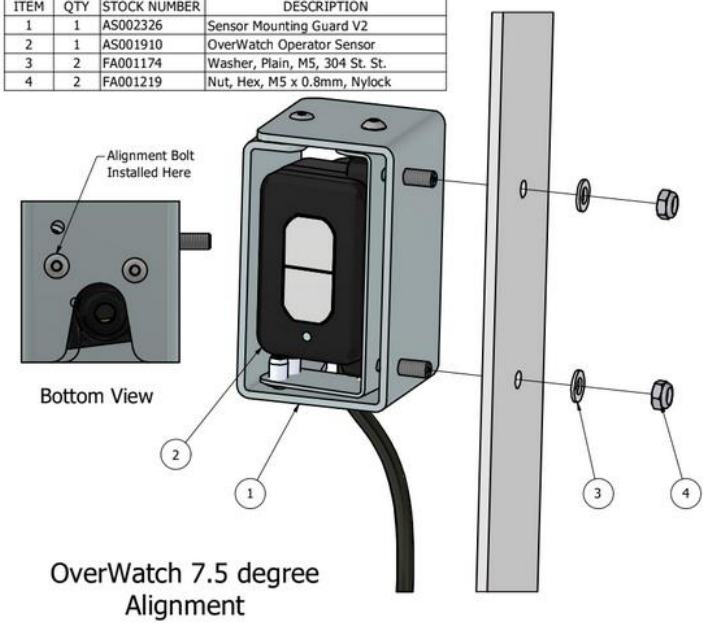
Task	Estimated Time (Minutes)
Drilling of all mounting holes for the various components	10
Mechanical assembly	5
Electrical assembly	20
Post installation system tests	10
Total	**45**

Installation Instructions

Operator Sensor

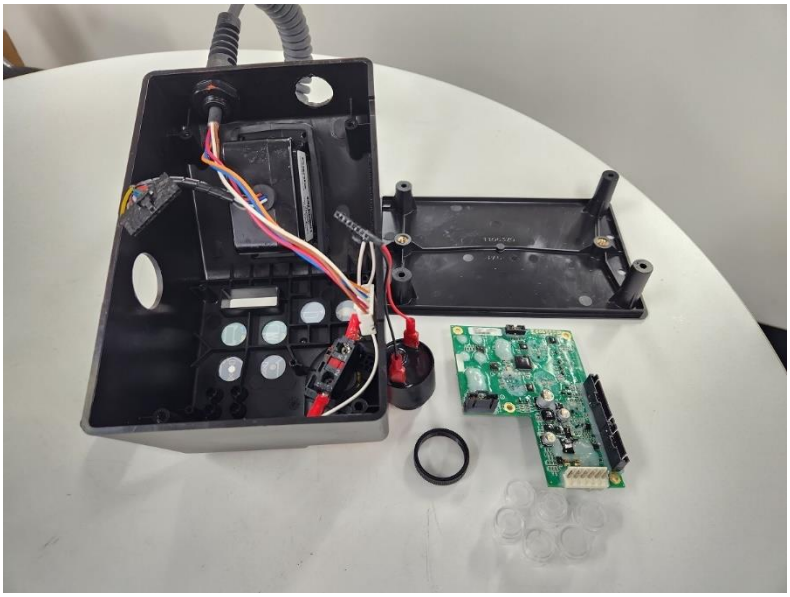
Step	Description	Diagram
1.	Remove the Joystick controller from the metal housing.	
2.	Drill two **6mm** holes to mount the operator sensor in the position as shown in the image. **Hole #1- 25mm** from the horizontal edge and **32mm** from the vertical edge. **Hole #2- 68mm** from the horizontal edge and **77mm** from the vertical edge. **Note: The sensor should be mounted at an angle of 40 degrees from the vertical when the control box is mounted on the machine.**	

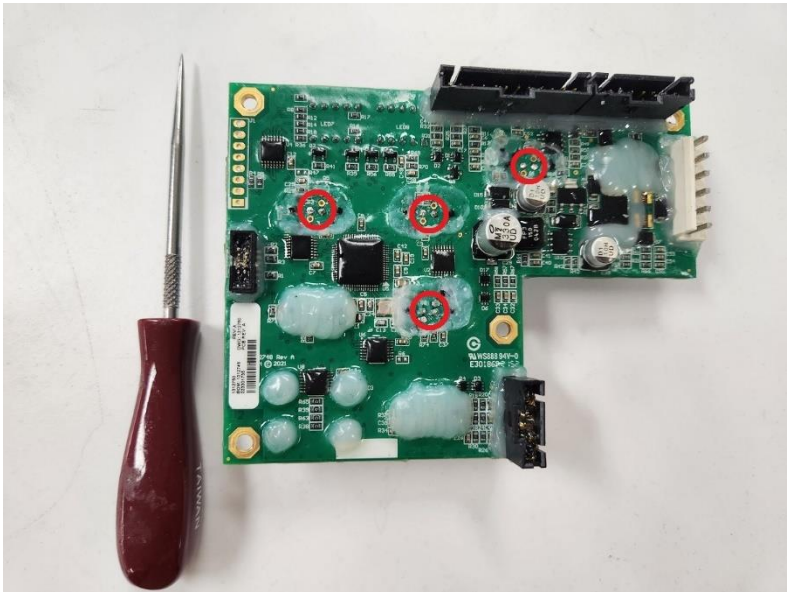
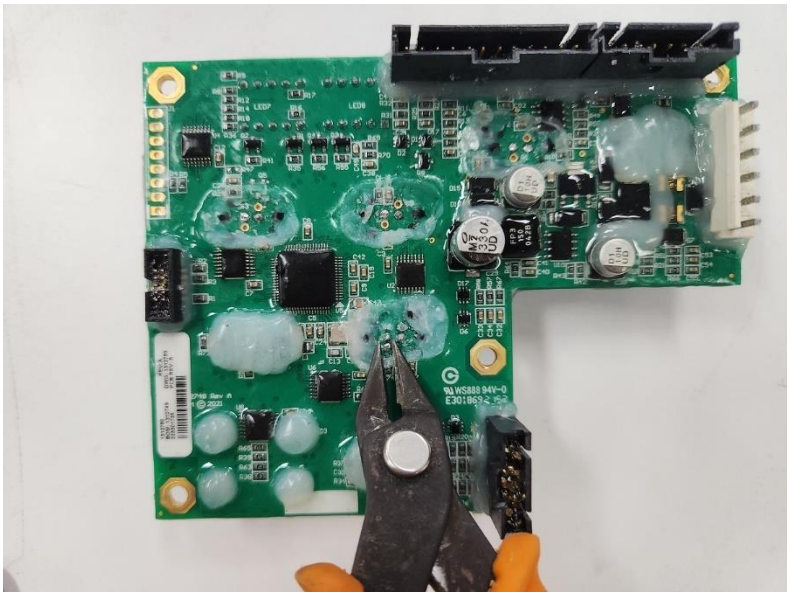
3.	Drill two **5mm** holes for the P-clip installation at the rear and side as shown in the image.	 

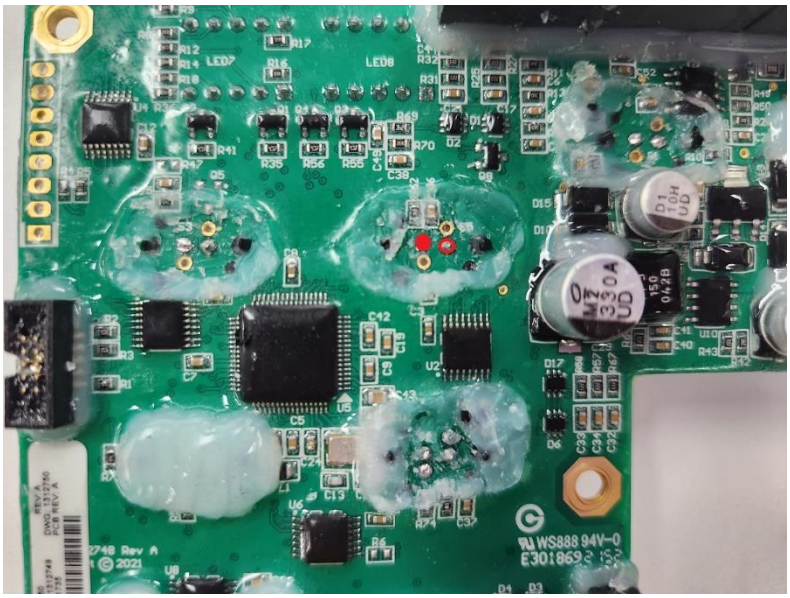
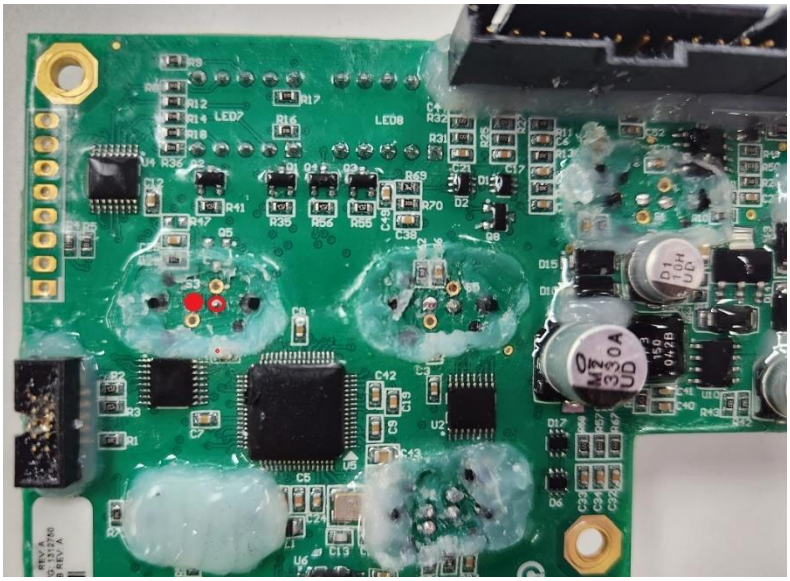
4.	**Sensor Mounting Guard V1 (ME001794)** Mount the operator sensor in the **40-degree position** by using the wedges, sensor guard, bolts, and washers. The orientation of the wedge blocks is critical for the correct positioning of the operator sensor. Make sure that the sensor is angled, such that it is **twisted outwards** from the joystick controller.	PARTS LIST ITEM | QTY | PART NUMBER | DESCRIPTION 1 | 1 | AS001910 | OverWatch Operator Sensor 2 | 1 | ME001794 | OverWatch Operator Sensor Guard 3 | 2 | ME001798 | Operator Sensor Alignment Wedge 4 | 2 | FA001422 | M4 x 20mm Security Screw 5 | 2 | FA001235 | M4 Plain Washer 
5.	**Sensor Mounting Guard V2 (AS002326)** This bracket (AS002326) supersedes the original V1 design. Attach the bracket in position using the M5 nuts and washers. Make sure that the sensor is on the 7.5-degree angle, such that it is twisted outwards from the joystick controller. **The 7.5-degree twist is achieved by rotating the sensor inside the assembly and using the bolt hole as show in the image.**	PARTS LIST ITEM | QTY | STOCK NUMBER | DESCRIPTION 1 | 1 | AS002326 | Sensor Mounting Guard V2 2 | 1 | AS001910 | OverWatch Operator Sensor 3 | 2 | FA001174 | Washer, Plain, M5, 304 St. St. 4 | 2 | FA001219 | Nut, Hex, M5 x 0.8mm, Nylock  OverWatch 7.5 degree Alignment

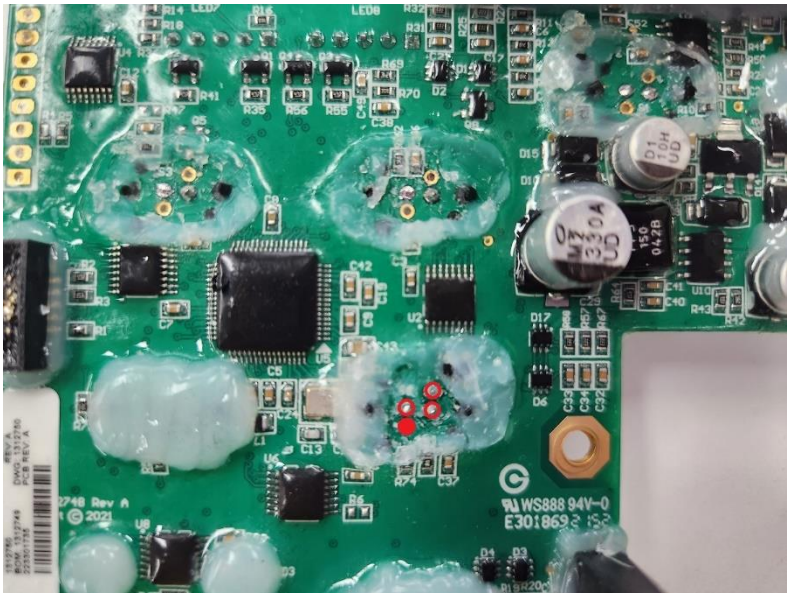
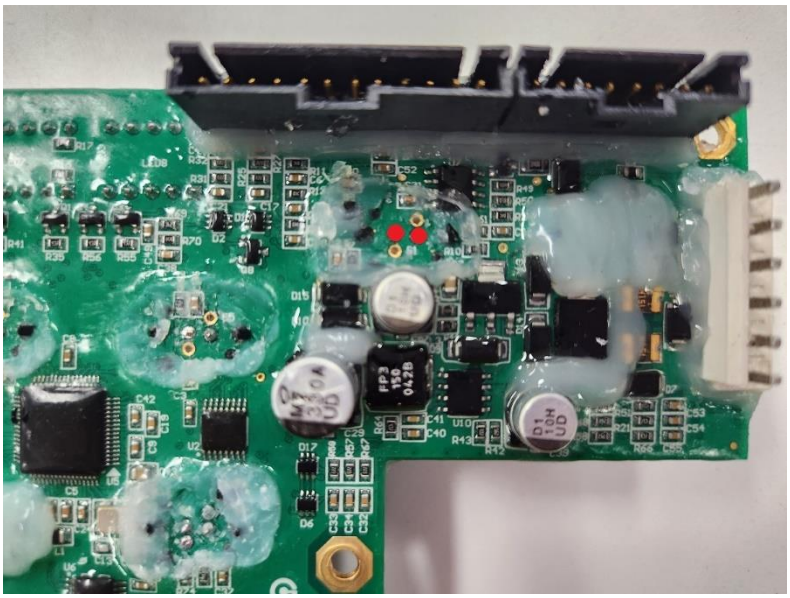
6.	Route and secure the operator sensor cable using the P-clips as shown in the image.	

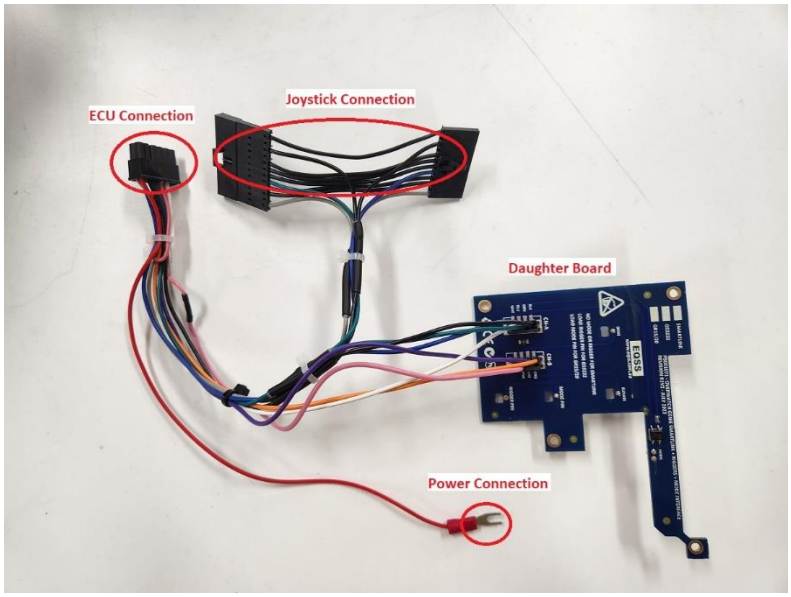
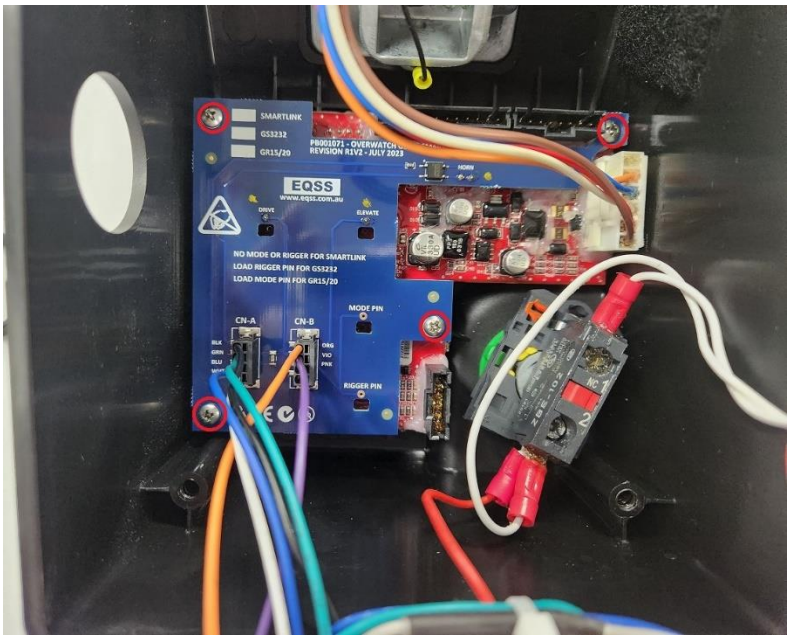
Control Module

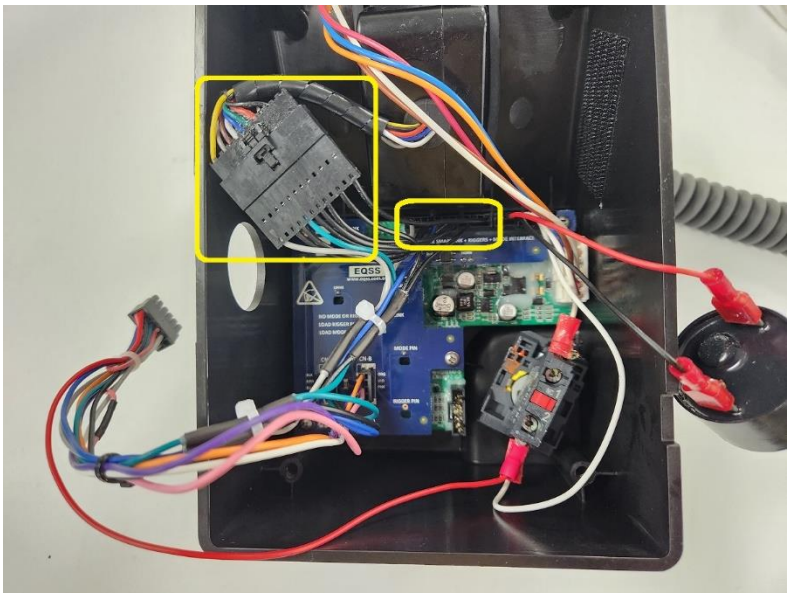
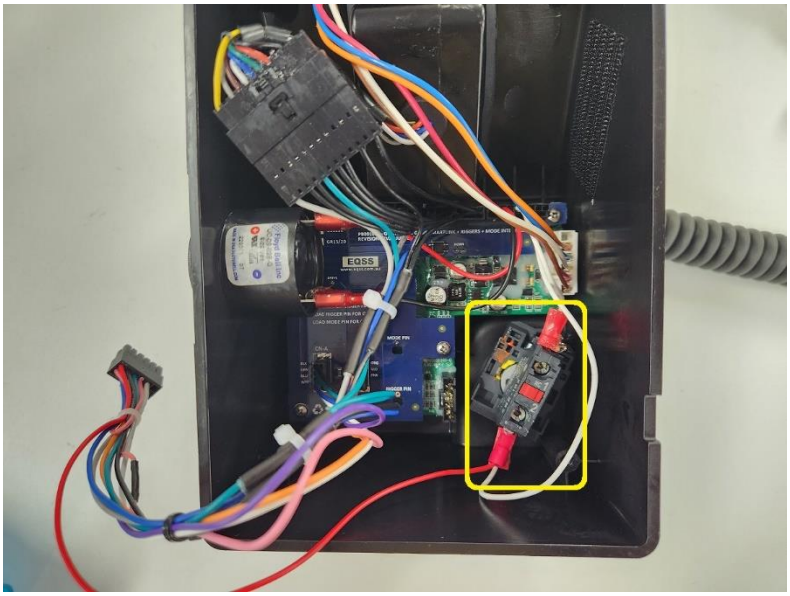
Step	Description	Diagram
1.	Remove the bottom plastic cover from the joystick to expose the internals. Remove the buzzer, E-stop, and the circuit board from the joystick enclosure.	
2.	Drill a **20mm** hole to run the operator sensor M20 gland into the joystick enclosure. The position of the hole is detailed as in the image. It is recommended to use a step drill for this hole.	

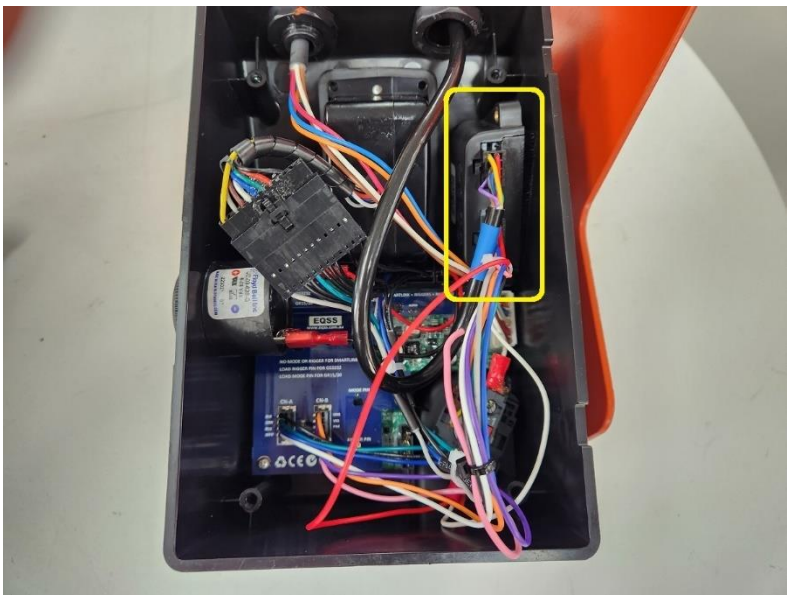
3.	Use a fine metal pick to clean the area shown in the red circles, on the adjacent image, to allow access to the pins. This process removes the conformal coating on the PCB and allows electrical access to the **drive**, **elevate**, **horn** and **mode** selection connections on the circuit board.	
4.	Use a fine pair of side cutters to trim down the signal pins. These connections must be trimmed to be as flat as possible so that the spring pins from the Overwatch daughter board can make contact with the signals.	

5.	Trim down the **Elevate** signal pin. This pin is located as displayed in the image. Using a fine pair of side cutters make sure that the pin is trimmed flat.	
6. 7.	Trim down the **Drive** signal pin. This pin is located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pin is trimmed flat.	

7.	Trim down the **Mode** signal pin. This pin is located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pin is trimmed flat.	
8.	Trim down the two **Horn** signal pins. These pins are located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pins are trimmed flat.	

9.	Wiring connections are with the **AS002240** harness. Use the following hardware: 4 x 6.4mm spacers 4 x G4x19mm screws **These hardware components are critical and must be used to space the daughter board above the joystick circuit board.**	
10.	Mount the OverWatch daughter board on top of joystick circuit board by using the provided **screws** and **spacers** in the kit. **It is critical that the white plastic spacers are used in each location. These spacers position the board at the correct vertical height so that the spring pins make correct electrical contact.** Make sure that the board is sitting in the correct position and the spring pins are contacting the joystick circuit board signal pins. Use the cut-outs next to each spring pin to inspect that the contact is aligned.	

11.	Install the harness connectors in between the joystick and the circuit board. Visually check that all pins from the original joystick connector have a corresponding cable on the Overwatch harness. Reconnect the other connectors, which were disconnected in step 1 to the control box circuit board.	
12.	At the back of the E-stop, install the Overwatch red power cable to terminal 2 of the E-stop. **Note: This cable might need to be changed to terminal 1 if the Overwatch is powered with the E-stop pushed in.**	

13.	Mount the OverWatch ECU inside the control box, the ECU is mounted on the right hand inside wall using the Velcro tape. Run the operator sensor cable through the predrilled 20mm hole and secure the cable gland. Connect the 8-pin connector from the operator sensor and the 12-pin connector from the overwatch loom to the ECU.	
14.	Re-assemble the control box and make sure the operator sensor cable runs clear to the joystick enclosure and tighten the M20 gland to seal the cable entry point.	

Post Installation Configuration

Overview

After the system has been installed it must be configured with the parameters to suit the machine. Follow the instructions below to configure the OverWatch.

Minimum system requirements

Any smart phone, tablet or laptop that meets the following requirements:

- The device can connect to a Wi-Fi access point
- The device has an up to date web browser installed. Firefox, Chrome or Safari are recommended.

Wi-Fi Connection & Web Page Access

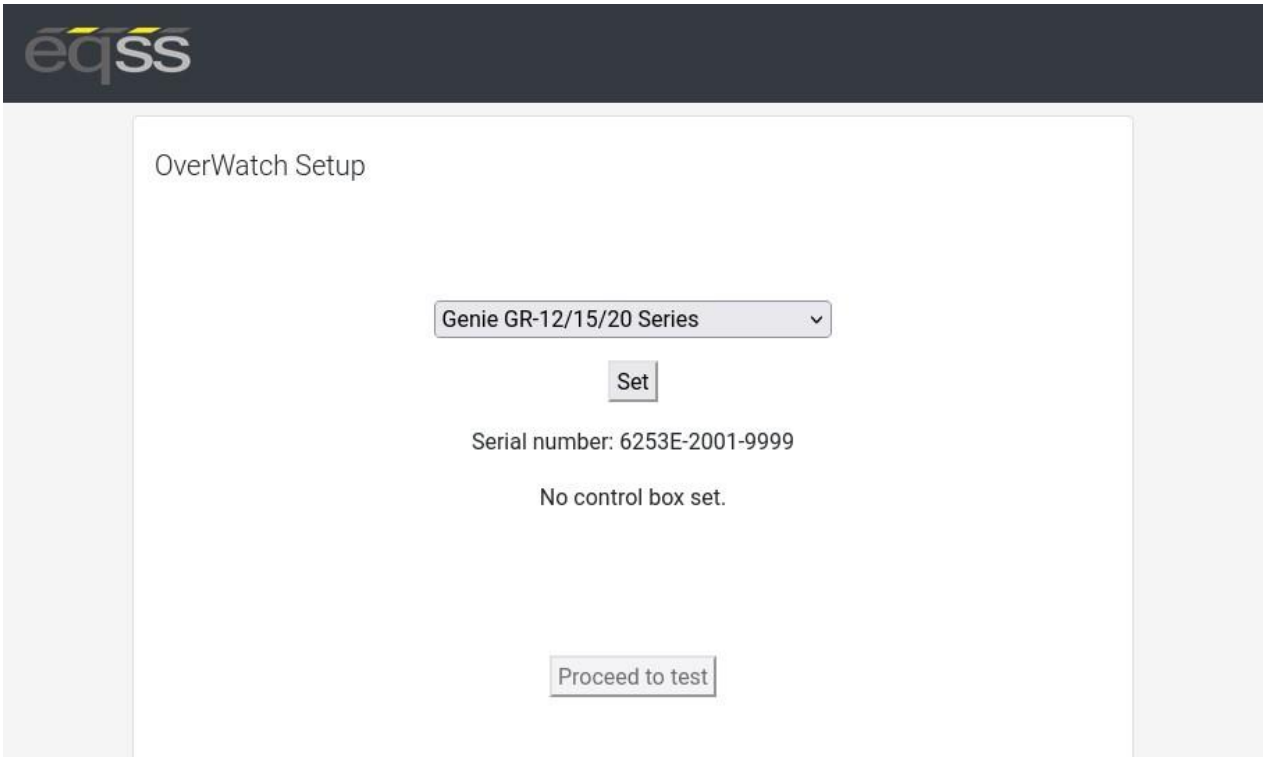
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

1. Power down the platform control box with the ESTOP
2. Wait 5 seconds
3. Power up the platform control box with the ESTOP
4. While standing **in front of the operator sensor**, switch on the OverWatch
5. As the welcome chime starts to play, cover the sensor. The LED will flash white then black to acknowledge.
6. Remove your hand from the sensor. The LED will flash white then black to acknowledge.
7. After covering then uncovering the sensor this way 2 more times, "Wi-Fi On" will be announced
8. On your Wi-Fi enabled device (laptop, tablet, smartphone, etc), show the available wireless networks
9. Select the wireless network (starts with “overwatch”) to connect to the OverWatch
10. When prompted, enter the **password 12345678**
11. Open your preferred web browser (Chrome, Firefox, Safari)
12. Enter the following into the address bar http://192.168.4.1 to open the OverWatch main page

Machine Model Selection

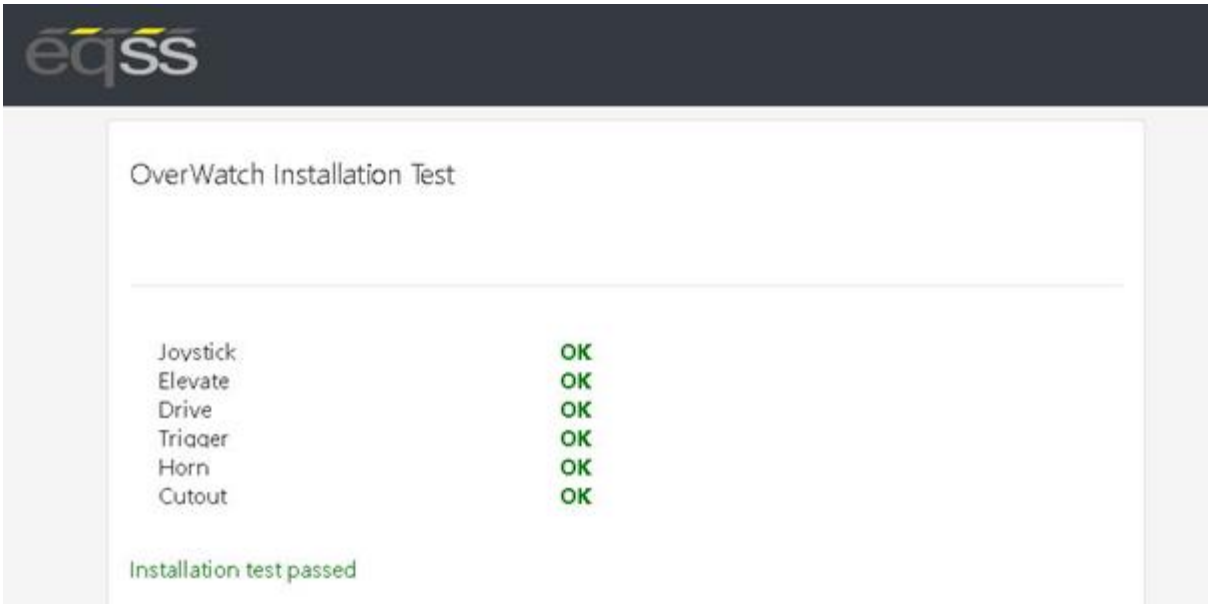
Follow the instructions below to configure the OverWatch.

1. Select the Setup option
2. If there is a password field at the bottom of the page, follow the instructions in Change Model Configuration to obtain the password and enter the password field
3. Select the EWP Model from the drop-down list and click Set
4. Click on Proceed to test to begin the installation test



Installation Test

After the model configuration has been set or updated an Installation Test must be performed. This will ensure the installation has been correctly performed and the OverWatch is functioning correctly. Follow the instructions on the web page to complete the Installation Test.

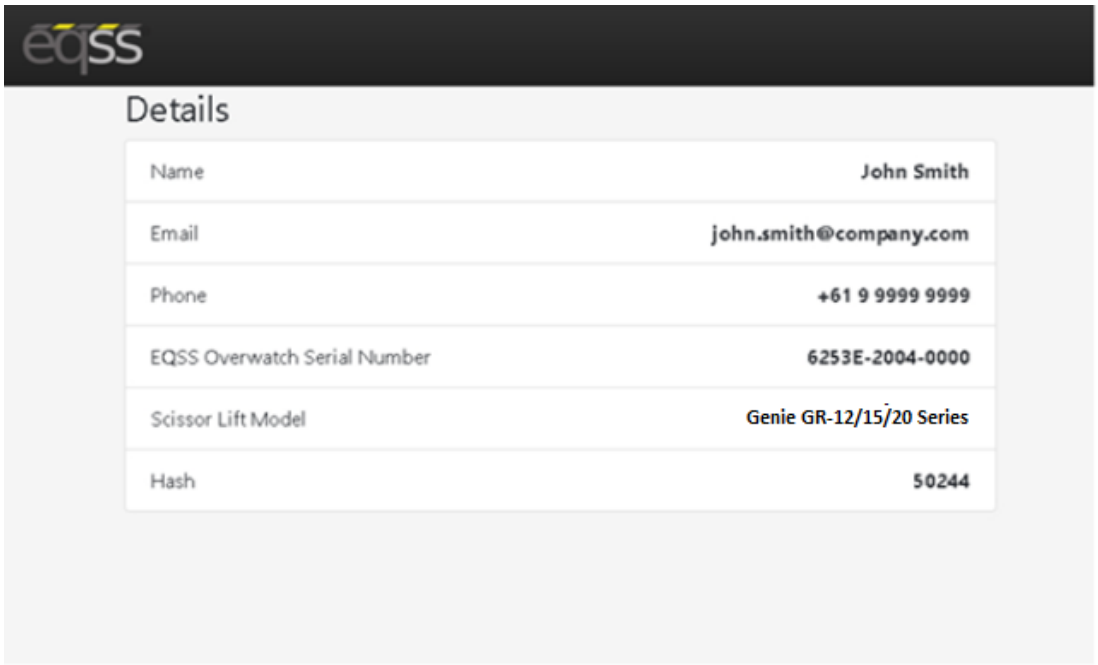


Change Model Configuration

To reconfigure the OverWatch for a different model requires an authorisation password. The authorisation password is generated from the EQSS website. The EQSS website requires a login username and password, contact EQSS for these details.

Follow the instructions below to obtain an authorisation password. It is important to note that each ECU has a unique serial number and a unique password.

1. Open your web and enter the following into the address bar http://www.eqss.com.au/overwatch to open the Login page
2. Enter your username and password
3. Enter the EUC serial number which is shown on the setup page or on the ECU serial number sticker, also enter the owner and model details of the EWP and then click Generate Hash
4. The generated Hash code or password can be used to change the model configuration.



System Settings

Default Parameters

The OverWatch is configurated with the following default parameters.

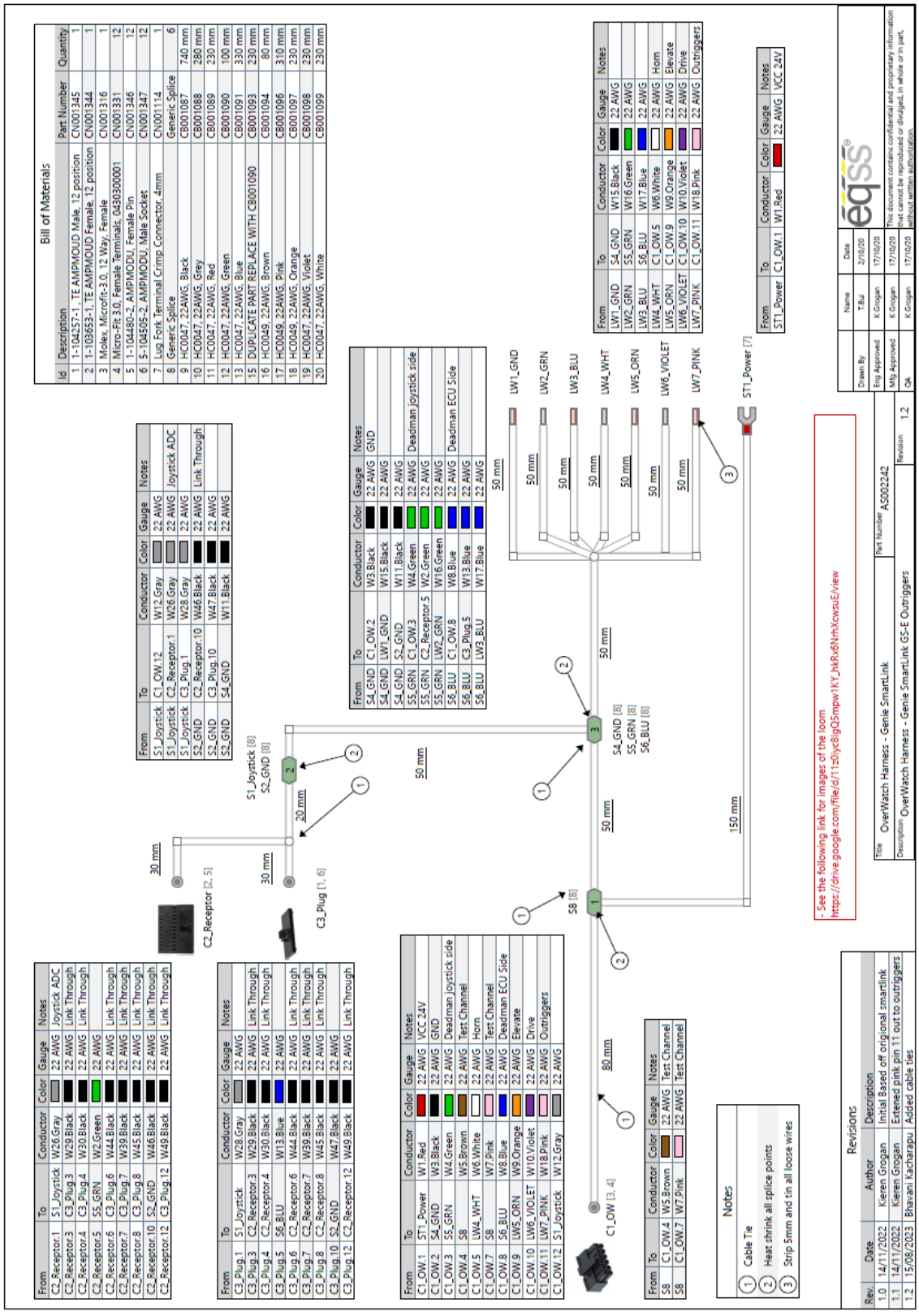
Setting Name	Description	Default
max_safe_velocity	This is the velocity threshold for the cutout in cm/s for drive mode.	105
max_safe_displacement	This is the maximum permitted distance in cm the operator may be away from the calibration position in drive mode.	60
max_safe_velocity_elevate	This is the velocity threshold for the cutout in cm/s for elevate mode.	95
max_safe_displacement_elevate	This is the maximum permitted distance in cm the operator may be away from the calibration position in elevate mode.	50
fwddispadj	The proportion of the calibration distance toward the sensor permitted to the operator.	0.7
fwdveloadj	The coefficient to apply to the maximum allowable velocity when the movement of the operator is toward the sensor.	1.0
zone_obstruction	If the lidar sensor reading is below this, the lidar is considered to be obstructed (with paint or thick coat of dust) and the system is cutout until the obstruction is cleared.	5
zone_minimum	The minimum calibration distance. If the operator is closer to the sensor than this “operator zone” will be announced.	17
zone_maximum	The maximum calibration distance. If the operator is further from the sensor than this “operator zone” will be announced.	80
adc_elevate_threshold	Threshold value for the elevate ADC input.	100
adc_drive_threshold	Threshold value for the drive ADC input.	100
adc_trigger_threshold	Threshold value for the trigger ADC input.	100
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1525
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1375
throttle_time	Period after the trigger is pressed (ms) during which initial velocity reading is computed.	500
driving_state_timeout	Mode selection switch timeout (ms)	7000

Polarity and Input Style

The table below describes each setting

Setting Name	Description	Default
joystick_drive_forward	Direction of joystick to move machine forward	forward
joystick_elevate_upward	Direction of joystick to move machine upwards	forward
elevate_polarity	Direction of signal logic	high
drive_polarity	Direction of signal logic	low
trigger_polarity	Direction of signal logic	low
joystick_polarity	Direction of signal logic	high
driving_state_input	Direct or timer based	timer

Harness Drawing AS002240



Replacement Parts

Replacement parts for this OverWatch kit are available from EQSS, for all inquiries please email sales@eqss.com.au
Shown below are the part numbers for the major components included in this model specific kit.

Part Number	Description
AS002314	OverWatch - Complete kit for Genie GR Series Control Box
AS001910	OverWatch - Operator Sensor with M20 gland
AS001916	OverWatch – Electronic Control Unit (ECU)
AS002240	OverWatch - Genie GR12/15/20 Harness
AS002326	OverWatch - Sensor Guard V2