INSTALL MANUAL

EQSS Model6253 – OverWatch™ Snorkel PHX-II

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

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DOCUMENT ABSTRACT:
This Installation Manual details the manufacturer's installation instructions for installing the Model6253 OverWatch on a Snorkel PHX-II Series Machine

PRODUCT NAME:
Model6253 OverWatch Operator Detection System

REFERENCE DOCUMENTS:
DO001195 Model6253 OverWatch - User Manual

CURRENT DOCUMENT REVISION:
1.5

REVISION INFORMATION:

- 1.1 Initial Document Creation for system installation on a Snorkel PHX-II Series Machine
- 1.2 Inclusion of relay to activate horn on SW5
- 1.3 Update on installation images and instructions. Inclusion of rapid harness
- 1.4 Update on ECU mounting position
- 1.5 Inclusion of mounting guard V2 and update of configuration procedures

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in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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 3.2mm
6	Drill 5.0mm
7	Sockets & Spanners
8	Needle Nose Pliers
9	Screwdrivers

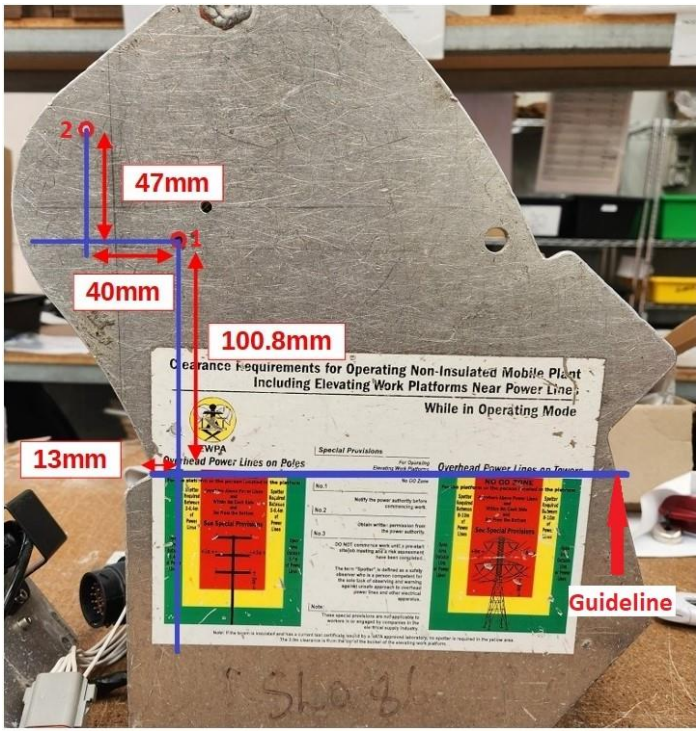
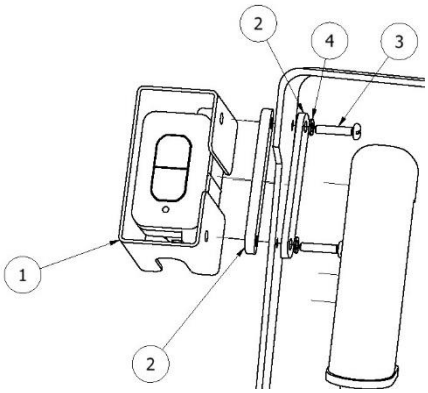
Installation Time

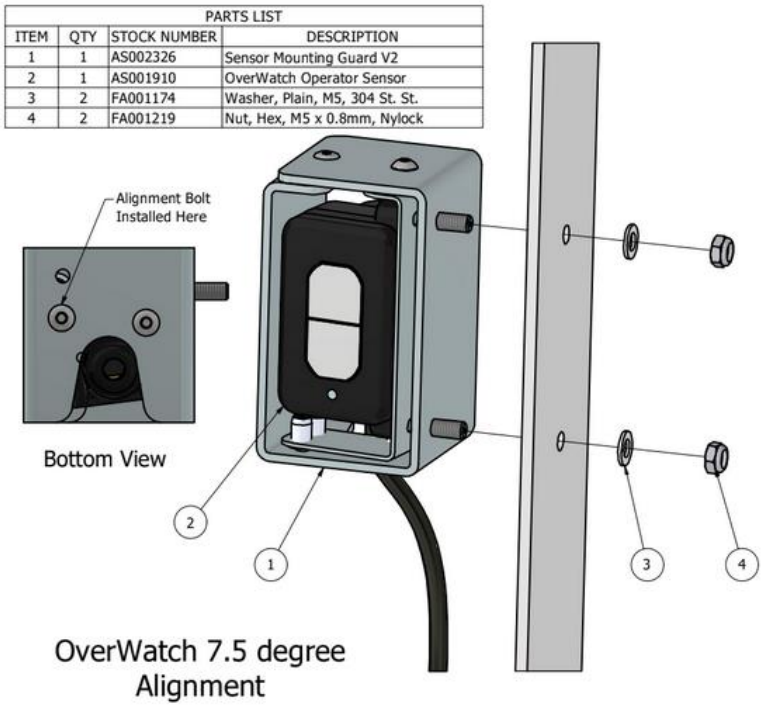
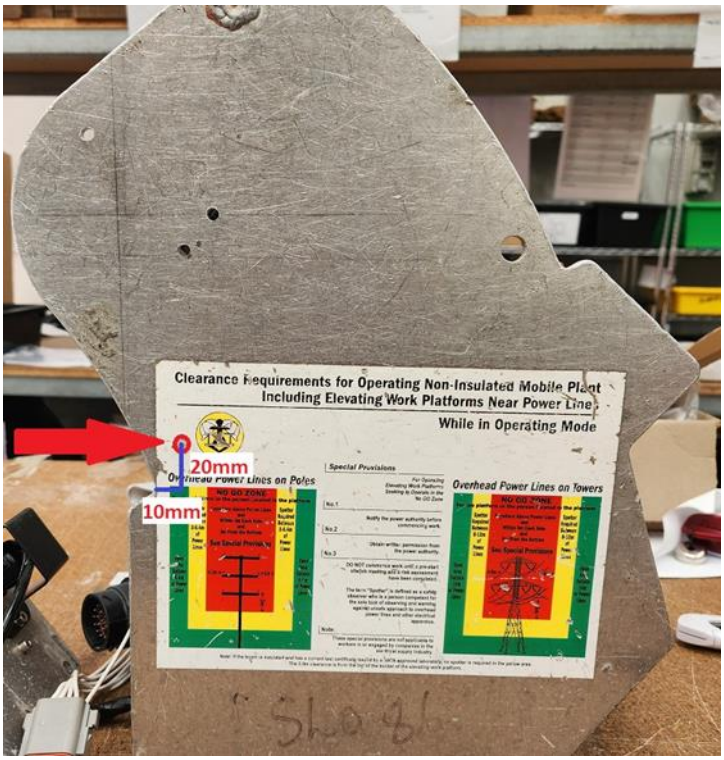
The suggested time required to install the OverWatch is detailed below.

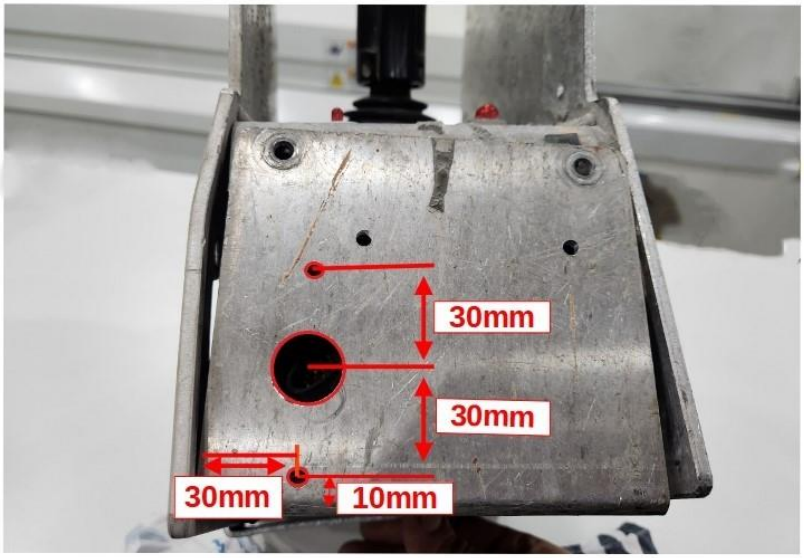
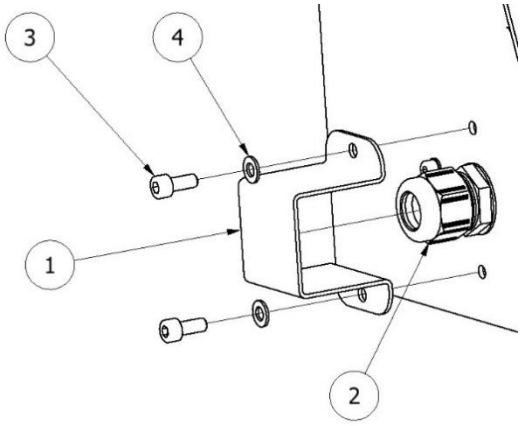
Task	Estimated Time (Minutes)
Open the operator control box	1
Drilling of all mounting holes for the various components	13
Mechanical assembly	10
Electrical assembly	10
Post installation system tests	10
Close the operator control box	1
Total	**45**

Installation Instructions

Operator Sensor

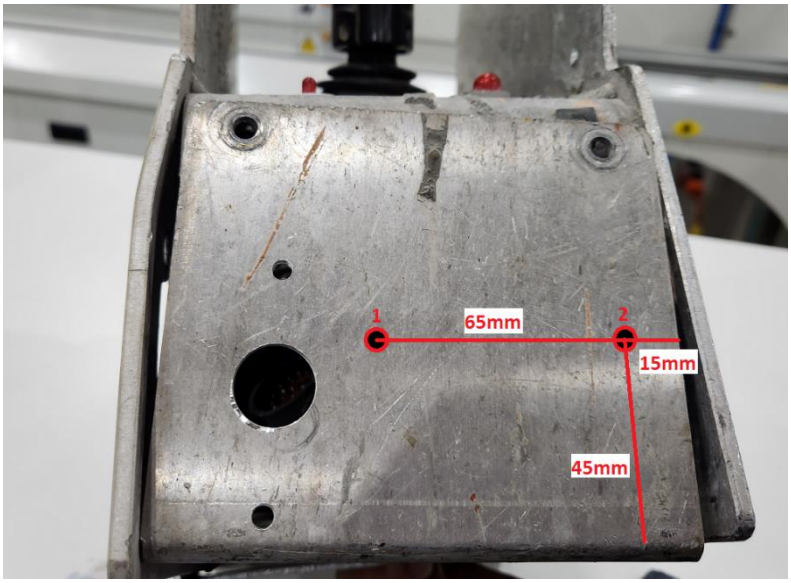
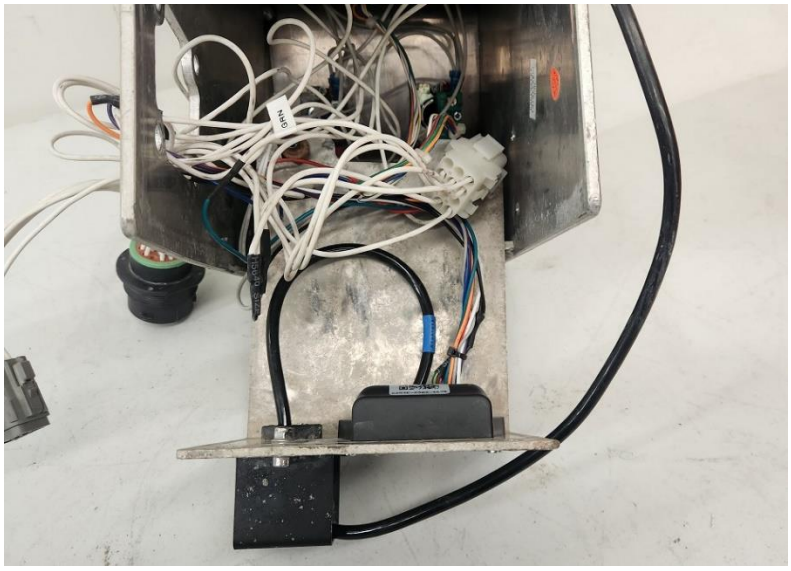
Step	Description	Diagram
1.	Separate the joystick controller from the metal enclosure. Drill two 5.2mm holes to mount the operator sensor in the position shown in the diagram. The distance is measured by using a horizontal guideline. The sensor should be mounted at an angle of 45degrees.	
2.	**Sensor Mounting Guard V1 (ME001794)** Mount the operator sensor to the mounting bracket in the **45-degree** position by using M4 washers, nuts, and bolts.	PARTS LIST ITEM / QTY / PART NUMBER / DESCRIPTION 1 / 1 / ME001794 / OverWatch Sensor Guard 2 / 2 / ME001798 / OverWatch sensor Wedges 3 / 2 / FA001422 / M4 x 20mm Butt Screw 4 / 2 / FA001235 / M4 Plain Washer 

Step	Description	Diagram
3.	**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.**	
4.	Drill a **5mm** hole to install a P-clip as shown in the image.	

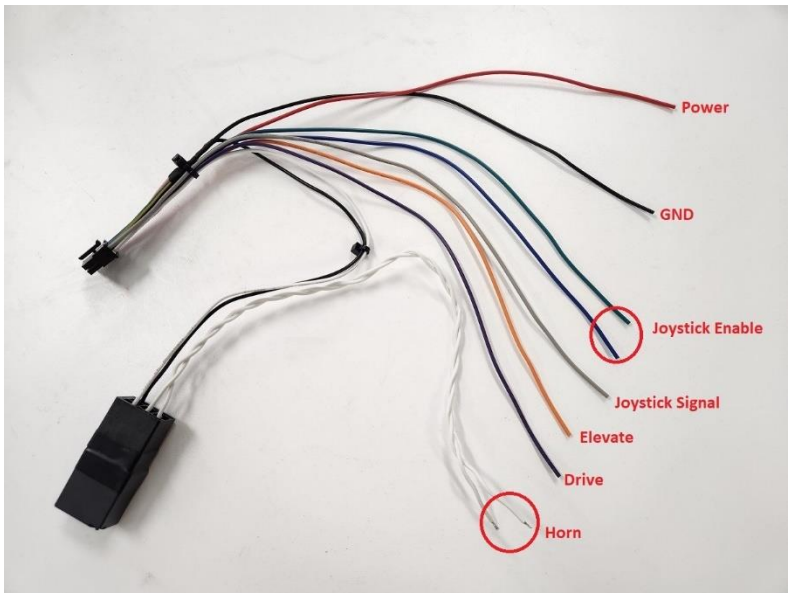
Step	Description	Diagram
5.	Drill a **20mm** hole to run the operator sensor M20 cable gland and drill two 5.2mm holes for the cable gland guard.	
6.	Install the cable gland and gland cover in the location shown in the image and feed the cable from the operator sensor into the enclosure.	

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ME001793	OverWatch Cable Gland Cover
2	1	M20 Cable Gland	
3	2	FA001211	M4 x 12mm Socket Head Screw
4	4	FA001235	M4 Plain Wsaher
5	2	FA001223	M4 Hex Nut

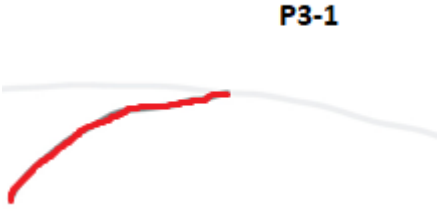
Control Module

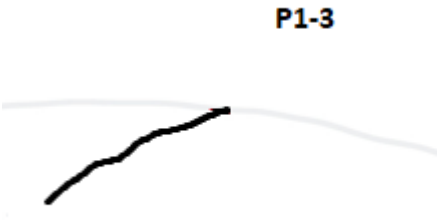
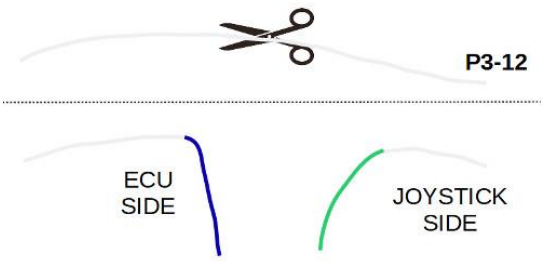
Step	Description	Diagram
1.	Drill two **5mm** holes to mount the ECU as shown in the image.	
2.	Mount the ECU module by using bolts, nuts, and washers. **Note: Make sure to mount the ECU module facing downwards to avoid any damages**.	

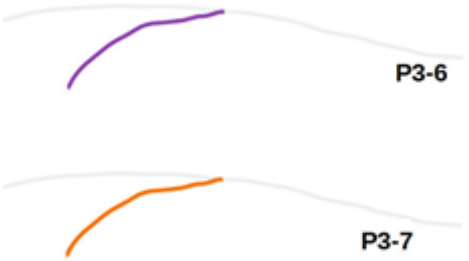
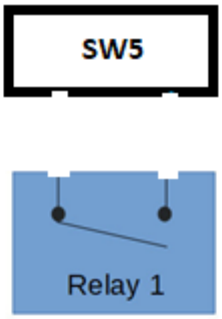
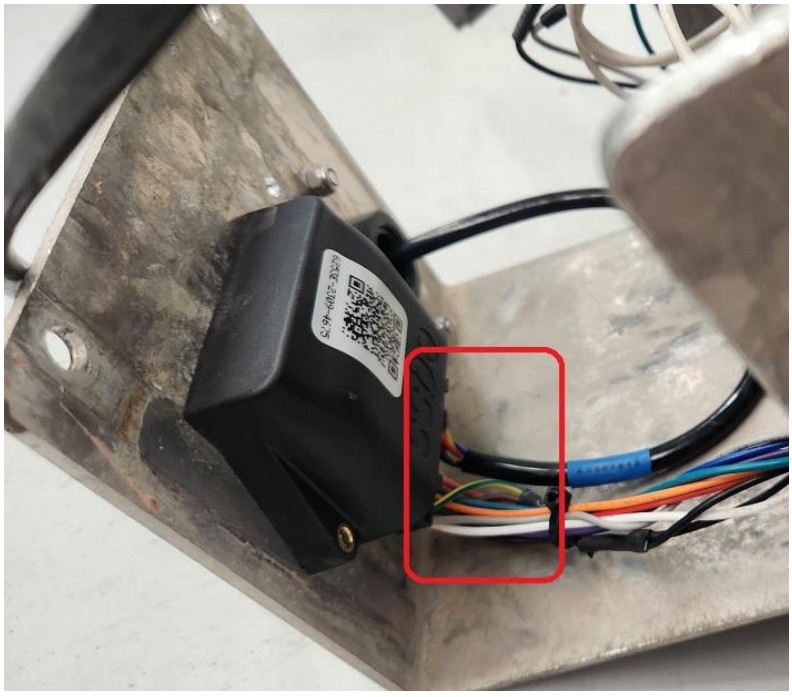
PARTS LIST			
ITEM	**QTY**	**PART NUMBER**	**DESCRIPTION**
1	2	FA001235	M4 Plain Washer
2	1	AS001916	OverWatch ECU Module
3	2	FA001211	M4 x 12mm Socket Head Cap Screw

<table>
<tr><th>Step</th><th>Description</th><th>Diagram</th></tr>
<tr><td>3.</td><td>Wiring connections are made with the AS001931 harness.</td><td> 
</td></tr>
<tr><td>4.</td><td>From the wiring connections loom, cut and crimp the following wires.

The connection instructions will be explained in more detail in the next few steps.</td><td>
<table>
<tr><th>ECU PIN</th><th>Colour</th><th>Wire ID</th><th>Location</th></tr>
<tr><td>1</td><td>Red</td><td>P3-1</td><td>+24V</td></tr>
<tr><td>2</td><td>Black</td><td>P1-3</td><td>GND</td></tr>
<tr><td>3</td><td>Green</td><td>P3-12 Joystick Side</td><td>Enable/Deadman – Switch Side</td></tr>
<tr><td>5</td><td>White</td><td>RLY1</td><td>Horn Relay</td></tr>
<tr><td>8</td><td>Blue</td><td>P3-12 ECU Side</td><td>Enable/Deadman – ECU Side</td></tr>
<tr><td>9</td><td>Orange</td><td>P3-7</td><td>Elevate Switch Splice</td></tr>
<tr><td>10</td><td>Purple</td><td>P3-6</td><td>Drive Switch Splice</td></tr>
<tr><td>12</td><td>Grey</td><td>P1-4</td><td>Joystick 0-5V Splice</td></tr>
<tr><td>RLY1</td><td>RLY White</td><td>SW5-1</td><td>Horn Switch Side 1</td></tr>
<tr><td>RLY1</td><td>RLY White</td><td>SW5-2</td><td>Horn Switch Side 2</td></tr>
</table>
</td></tr>
<tr><td>5.</td><td>To install the system power +24V:

Crimp the red wire from the machine connection loom to the wire on pin P3-1</td><td> 
</td></tr>
</table>

Step	Description	Diagram
6.	To install the system ground 0V: Crimp the black wire from the machine connection loom to the wire on pin **P1-3**	
7.	The Enable/Deadman connection is on the wire from the pin position **P3-12**. Cut this wire in half and follow these steps. Crimp the green wire (Pin 3) from the machine connection loom to the joystick side of the **P3-12** wire. Crimp the blue wire (Pin 8) from the machine connection loom to the ECU side of the **P3-12** wire.	
8.	To install the joystick input: Crimp the grey wire from the machine connection loom to the wire on pin **P1-4**	

Step	Description	Diagram
9.	To install the Drive & Elevate inputs: Connect the purple (Drive) wire from the machine connections loom to the wire from pin **P3-6**. Connect the orange (Elevate) wire from the machine connections loom to the wire from pin **P3-7**.	
10.	To install the horn output: Connect one white wire from RLY1 to SW5-1 and another white wire from RLY1 to SW5-2. SW5 is the push button horn switch. ***Note:** RLY1 is attached to the machine connection harness	
11.	Connect the 8-pin connector from the operator sensor and the 12-pin connector from the machine connection harness, into the Control Module.	

Step	Description	Diagram
12.	Re-assemble the joystick controller back into the enclosure.	

Post Installation Configuration

Overview

After the OverWatch 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.

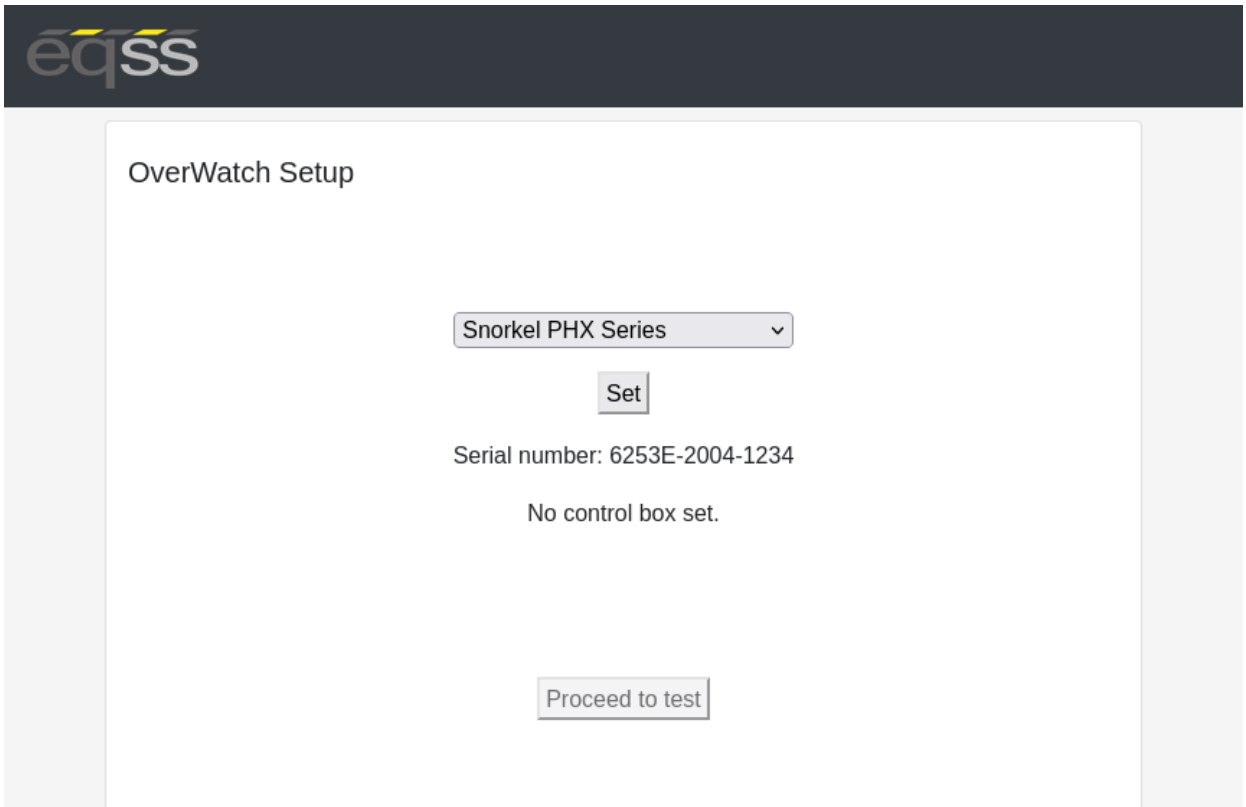
1. Power down the platform control box with the ESTOP
2. Wait 10 seconds
3. Power up the platform control box with the ESTOP
4. While standing in front of the **operator sensor**, switch on the OverWatch
5. As the welcome chime starts to play, cover the sensor. The LED will flash white then black to 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)

Enter the following into the address bar http://192.168.4.1 to open the OverWatch main page

Machine Model Selection

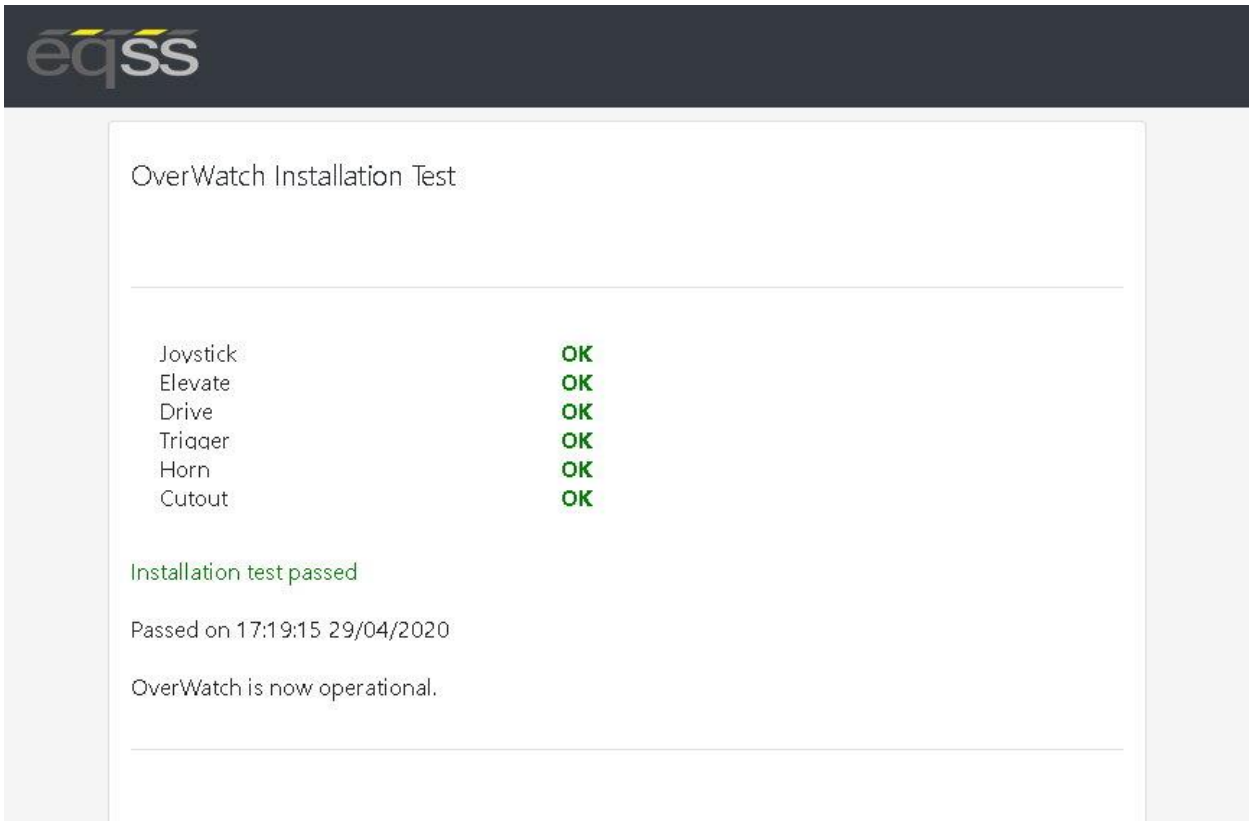
Follow the instructions below to configure the OverWatch.

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.

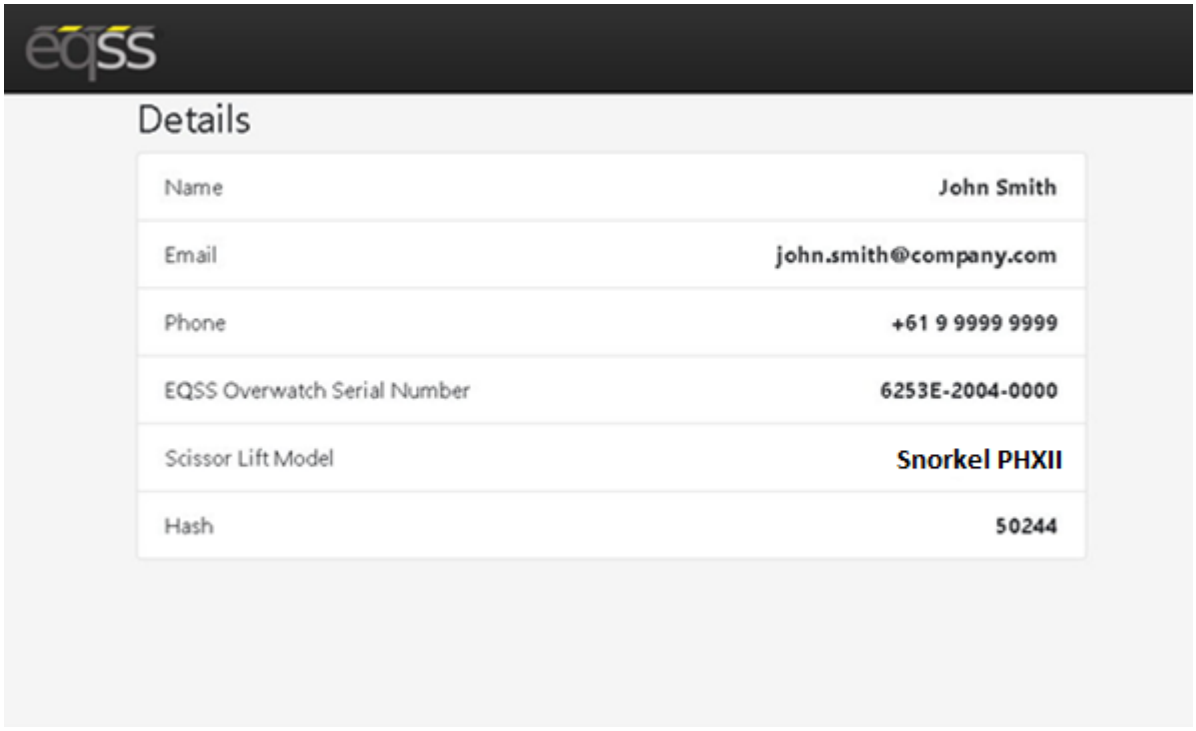


Change Model Configuration

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.



Settings

Default Parameters

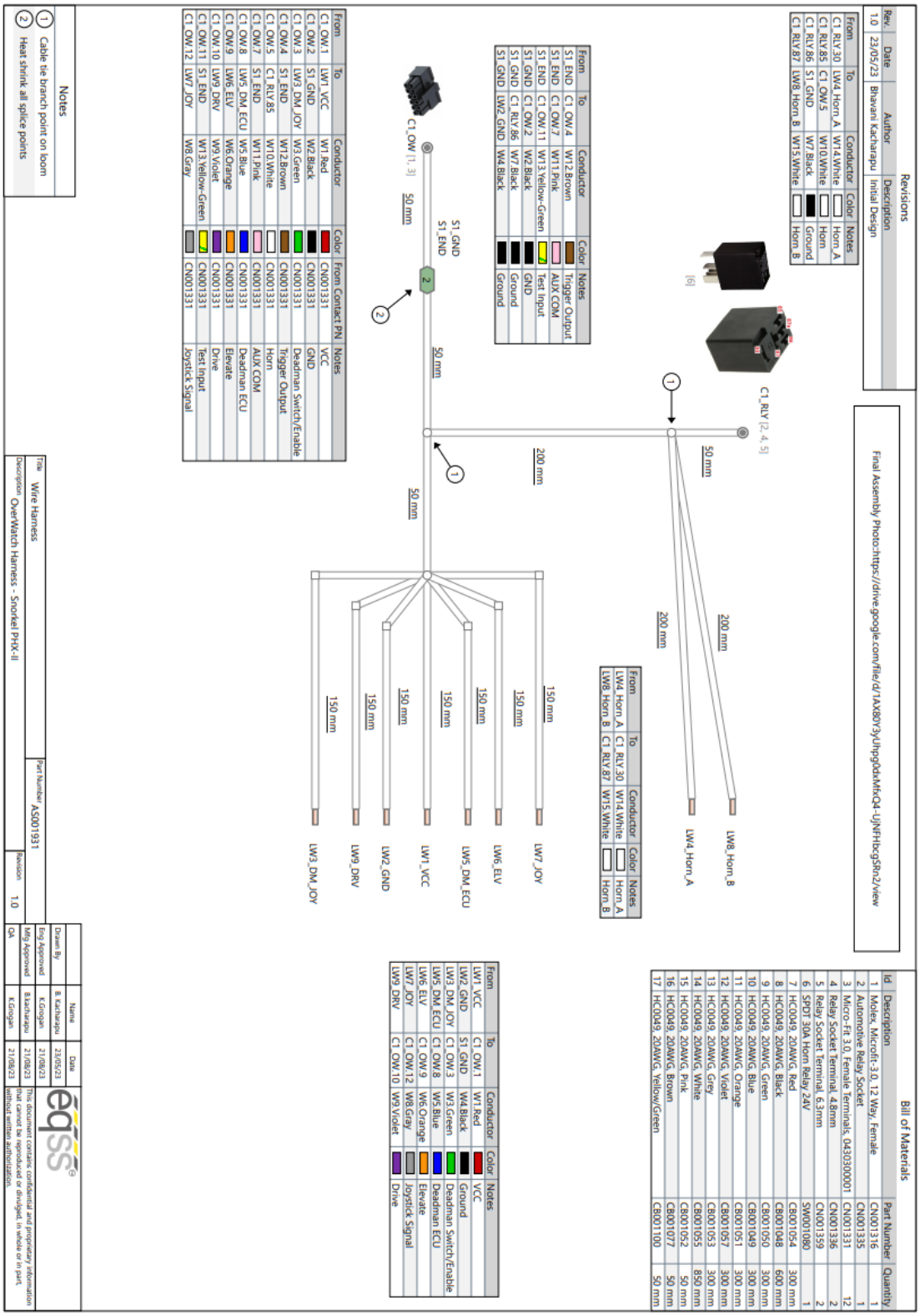
The OverWatch is configurated with the following default parameters.

Setting Name	Description	Default
max_safe_velocity	This is the velocity threshold for the cutout in cm/s for drive mode.	100
max_safe_displacement	This is the maximum permitted distance in cm the operator may be away from the calibration position in drive mode.	50
max_safe_velocity_elevate	This is the velocity threshold for the cutout in cm/s for elevate mode.	85
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.	120
adc_elevate_threshold	Threshold value for the elevate ADC input.	1000
adc_drive_threshold	Threshold value for the drive ADC input.	1000
adc_trigger_threshold	Threshold value for the trigger ADC input.	1000
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1500
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1400
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

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	backward
elevate_polarity	Direction of signal logic	high
drive_polarity	Direction of signal logic	high
trigger_polarity	Direction of signal logic	high
joystick_polarity	Direction of signal logic	high
driving_state_input	Direct or timer based	direct

Harness Drawing AS001931



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
AS001945	OverWatch - Complete kit for Snorkel PHX Series Control Box
AS001910	OverWatch - Operator Sensor with M20 gland
AS001916	OverWatch - Electronic Control Unit (ECU)
AS001931	OverWatch - Snorkel PHX Series Harness
AS002326	OverWatch - Sensor Guard V2