

# EQSS Model6253 – OverWatch™ CHUFENG / CFMG-E Series



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



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Model6253 OverWatch™ Installation Manual

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**DOCUMENT ABSTRACT:**

This Installation Manual details the manufacturer's installation instructions for installing the Model6253 OverWatch™ on a ChuFeng CFMG-E Series electric slab scissor lift.

**PRODUCT NAME:**

Model6253 OverWatch™ Operator Detection System

**REFERENCE DOCUMENTS:**

DO0001195 Model6253 OverWatch™ User Manual

**CURRENT DOCUMENT REVISION:**

1.2

**REVISION INFORMATION:**

- 1.0 Initial Document Creation for installation on a LGMG-E Series control box
- 1.1 Update of installation manual and instructions for plug and play installation
- 1.2 Inclusion of harness schematics and update of installation images for PCB's

## Important Information

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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.



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## 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	Step Drill (5 – 30mm)
8	Metric sockets or spanners
9	Needle nose pliers
10	Screw drivers


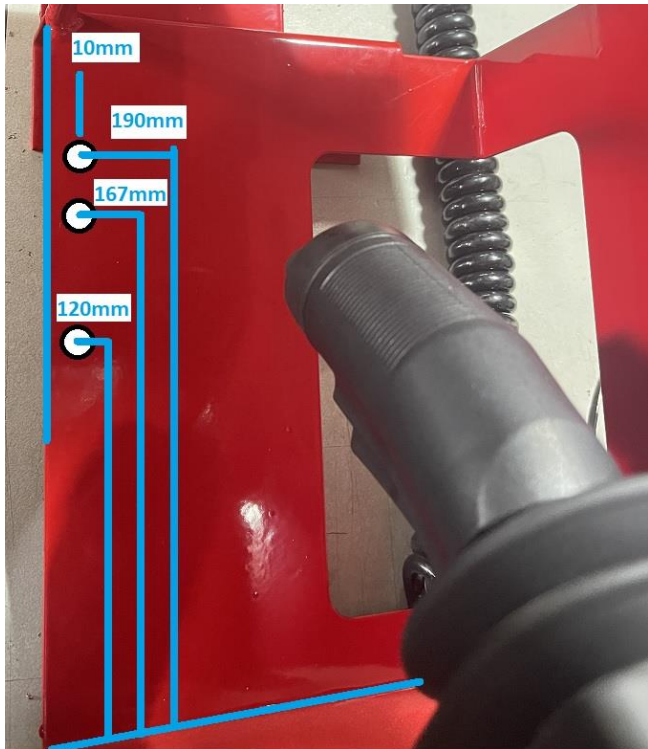
### Installation Time

The suggested time required to install the OverWatch™ is as detailed below

Task	Estimated Time (Minutes)
Drilling of all mounting holes for the various components	10
Mechanical assembly	5
Electrical assembly	10
Post installation system tests	10
<b>Total</b>	<b>35</b>

# Installation Instructions

## Operator Sensor

Step	Description	Diagram
1.	Remove the Joystick controller from the metal housing.	
2.	Drill three x 5.2mm holes into the metal housing in the location as shown. These holes are required to mount the operator sensor bracket and the P-Clip that supports the operator sensor cable.	

3.

Mount the operator sensor bracket to the metal enclosure using the supplied nuts, bolts, and washers.

Use the following hardware from the kit.

2 x M4 x 12mm bolts

2 x M4 Lock Nuts

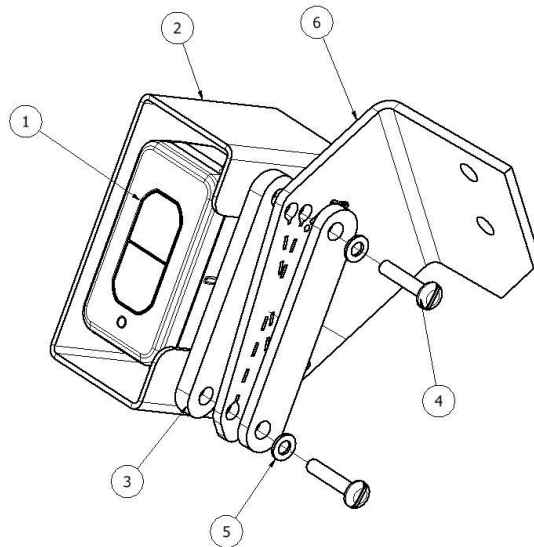
4 x M4 Washers



4.

Mount the operator sensor in the **45 degree position** using the supplied positioning wedges, sensor guard, M4 washers, nuts and bolts.

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™ Sensor Guard
3	2	ME001798	OverWatch™ 7.5° Wedge
4	2	FA001422	M4 x 20mm Post Torx Butt Screw
5	2	FA001235	Washer, Plain, M4, 304 St. St.
6	1	ME001818	Operator Sensor Mounting Bracket

5.

Route the operator sensor cable as shown in the diagram. Using the supplied P-Clip to secure the cable to the metal box.

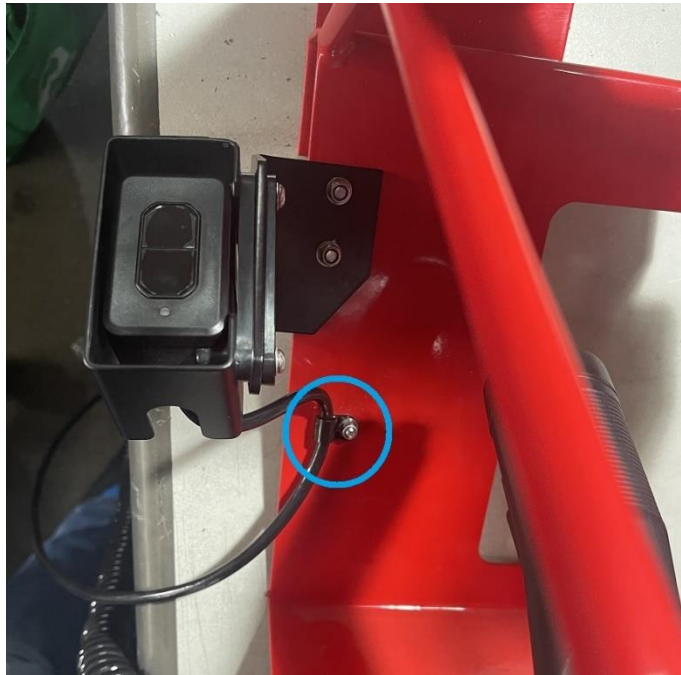
Use the following hardware from the kit.

1 x 6.4mm P-Clip

1 x M4 x 12mm bolt

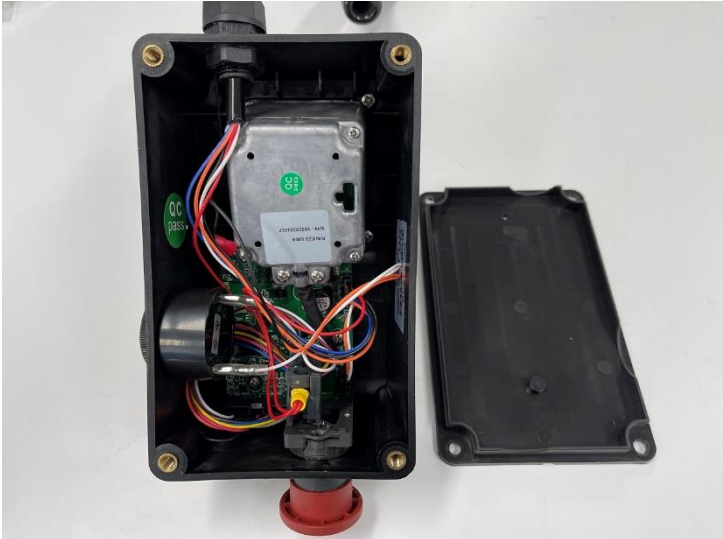
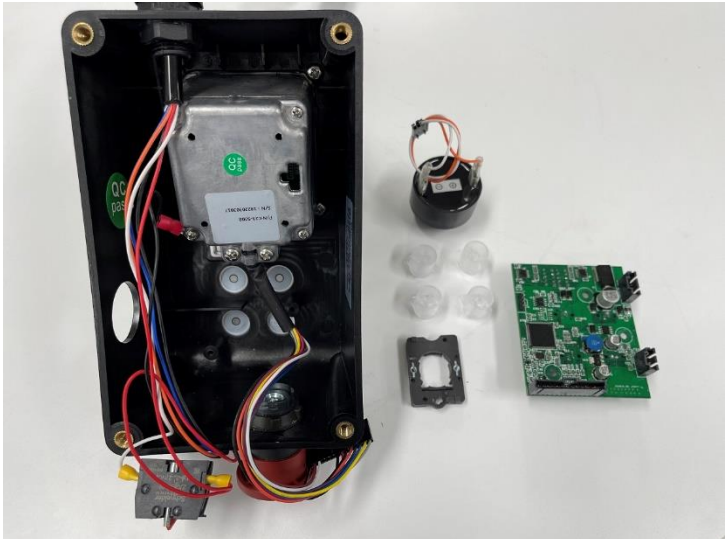
2 x M4 Washer

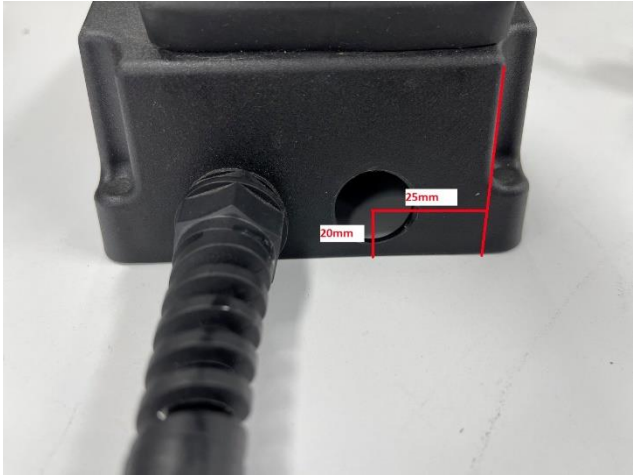
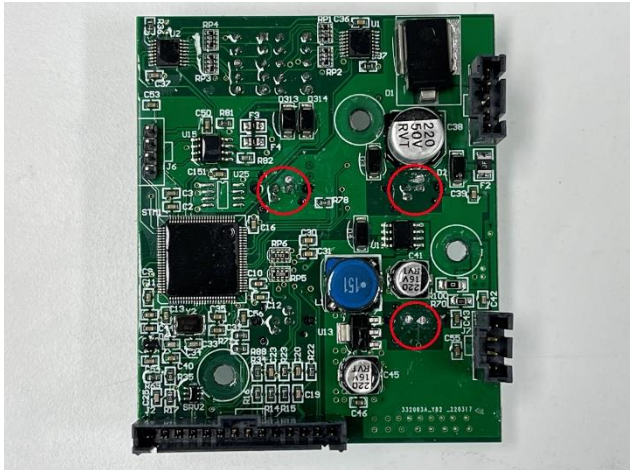
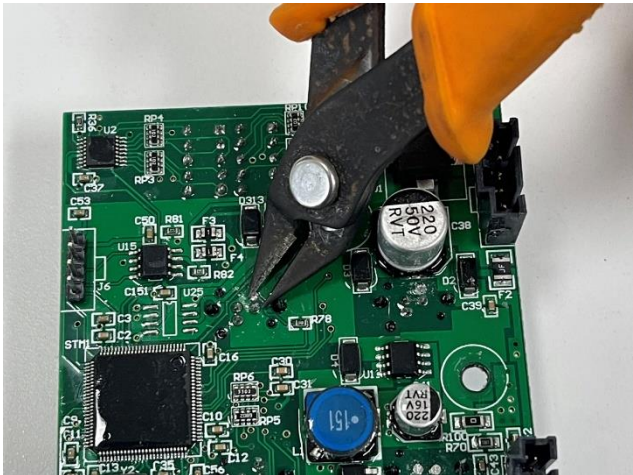
1 x M4 Lock Nut



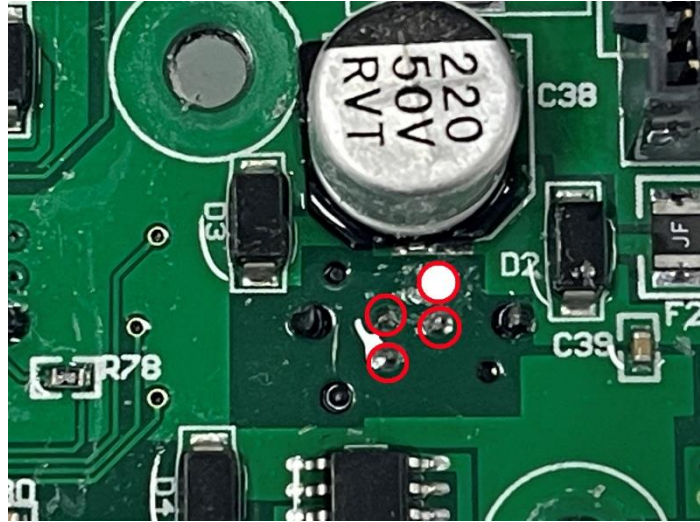


## Control Module

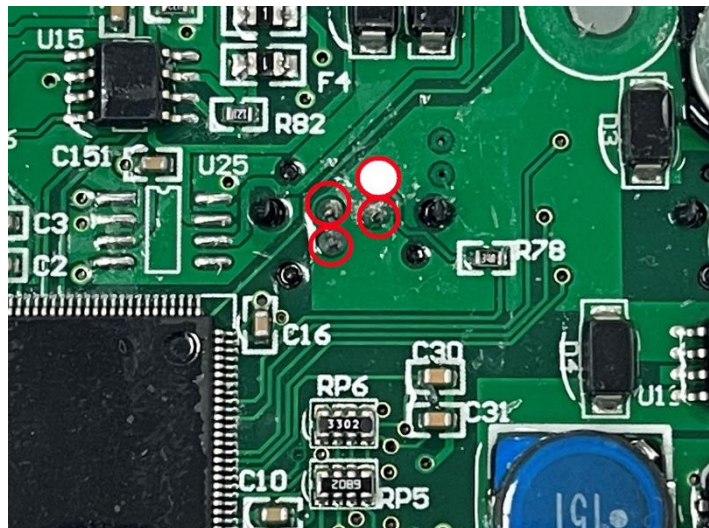
Step	Description	Diagram
1.	Remove the bottom plastic cover from the Joystick to expose the inside wiring and electronics.	
2.	Remove the Buzzer, E-Stop, and the controller circuit board from the plastic enclosure.	

3.	Drill a 20mm hole to run the operator sensor M20 Gland into the plastic joystick enclosure. The position of the hole is detailed as in the image. It is recommended to use a step drill for this hole, as it is running through plastic material.	
4.	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 and horn connections on the circuit joystick board.	
5.	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 pin from the plug and play board can make suitable contact with the terminal	

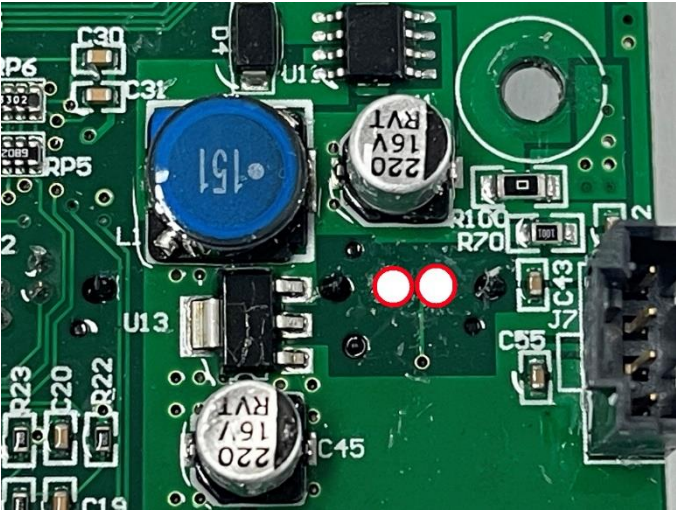
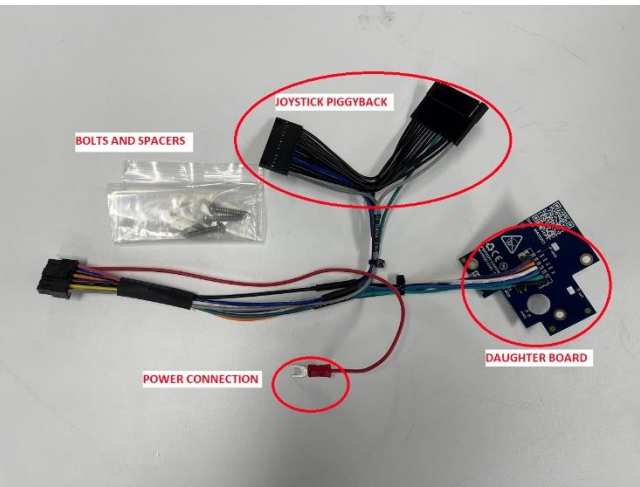

6. Trim down the **Elevate** signal pin. This pin is located as displayed in the image. Using a fine pair of side cutters make sure that the pin is trimmed flat.

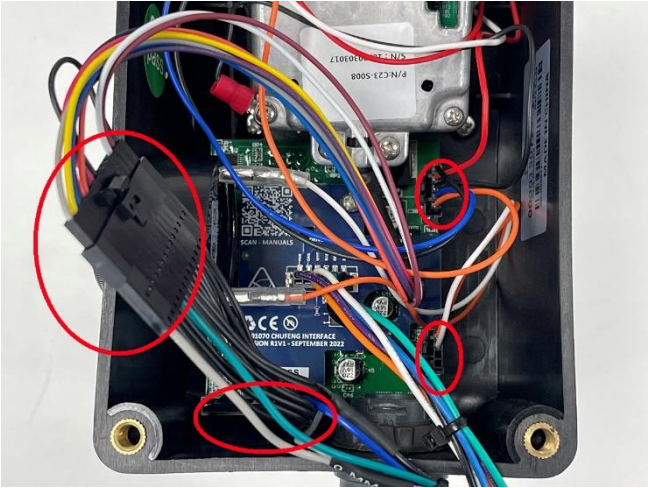
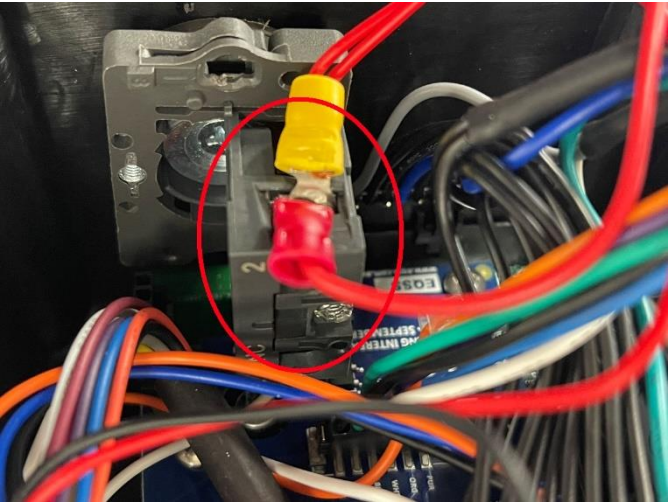



7. Trim down the **Drive** signal pin. This pin is located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pin is trimmed flat.





8.	Trim down the two <b>Horn</b> 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 made by the AS002224 Plug and Play harness	
10.	Mount the Overwatch circuit board on top of joystick circuit board. Using the provided screws and 6.4mm spacers. 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 solid with the joystick board.	

<p>11.</p>	<p>Install the Overwatch joystick connectors in between the joystick and the control box circuit board.</p> <p>Visually check that all pins from the original joystick connector have a corresponding cable on the Overwatch harness.</p> <p>Reconnect the other connectors, which were disconnected in step 1 to the control box circuit board.</p>	
<p>12.</p>	<p>At the back of the Estop, install the OverWatch Red Power cable to terminal 2 of the E-Stop. Same terminal as where the yellow wires are connected.</p> <p><i>Note: this cable might need to be changed to terminal 1 if the Overwatch is powered with the E-stop pushed in.</i></p>	
<p>13.</p>	<p>Mount the OverWatch ECU inside the joystick control box, the ECU is mounted to the bottom of the metal joystick using the adhesive Velcro tape.</p> <p>Run the operator sensor cable through the predrilled 20mm hole and secure the cable gland.</p> <p>Connect the 8-pin connector from the operator sensor and the 12-pin connector from the overwatch loom to the ECU.</p>	

14.

Re-assemble the joystick control box and mount to the metal shroud.

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 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 (2021 onwards). Firefox or Chrome 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.

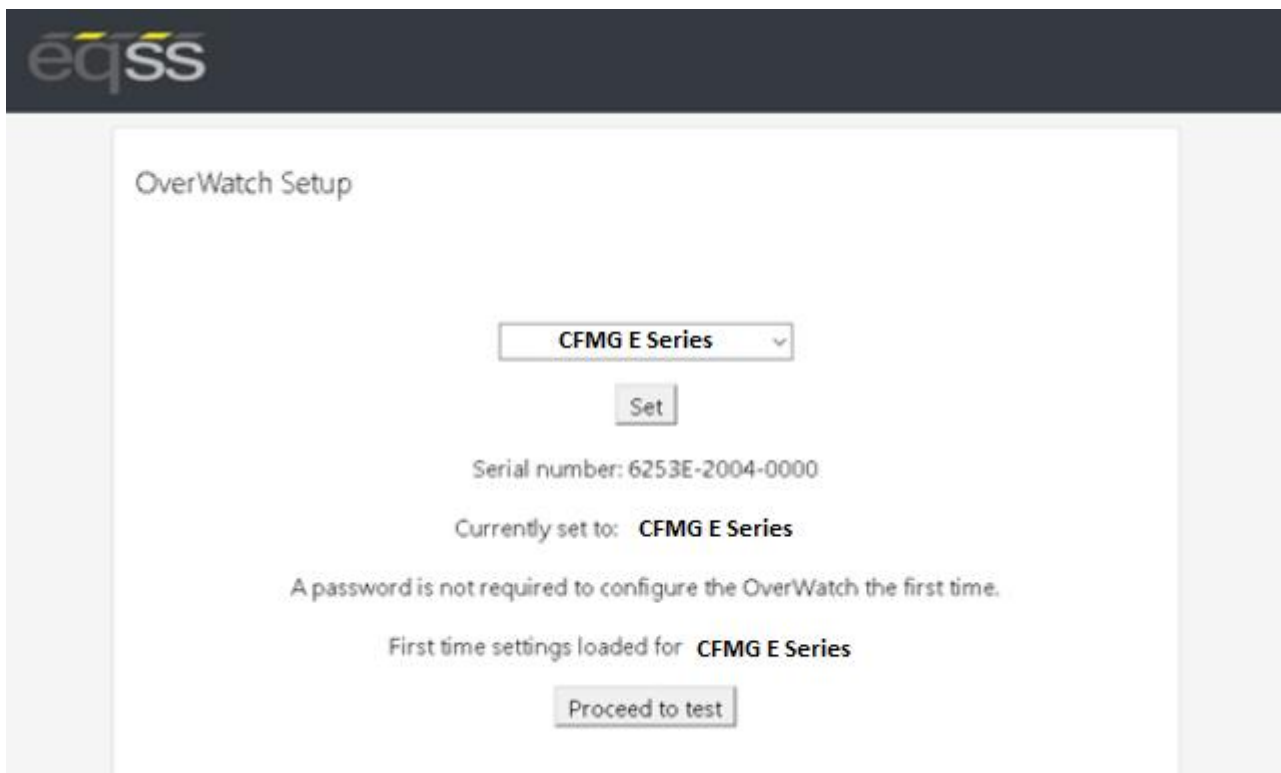
1. Power down the platform control box with the ESTOP
2. Wait 10 seconds
3. Power up the platform control box with the ESTOP
4. While standing in the operator position, switch on the OverWatch™
5. As the welcome chime starts to play, cover the sensor. The LED will flash white then black to acknowledge.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



OverWatch Setup

CFMG E Series ▼

Set

Serial number: 6253E-2004-0000

Currently set to: CFMG E Series

A password is not required to configure the OverWatch the first time.

First time settings loaded for CFMG E Series

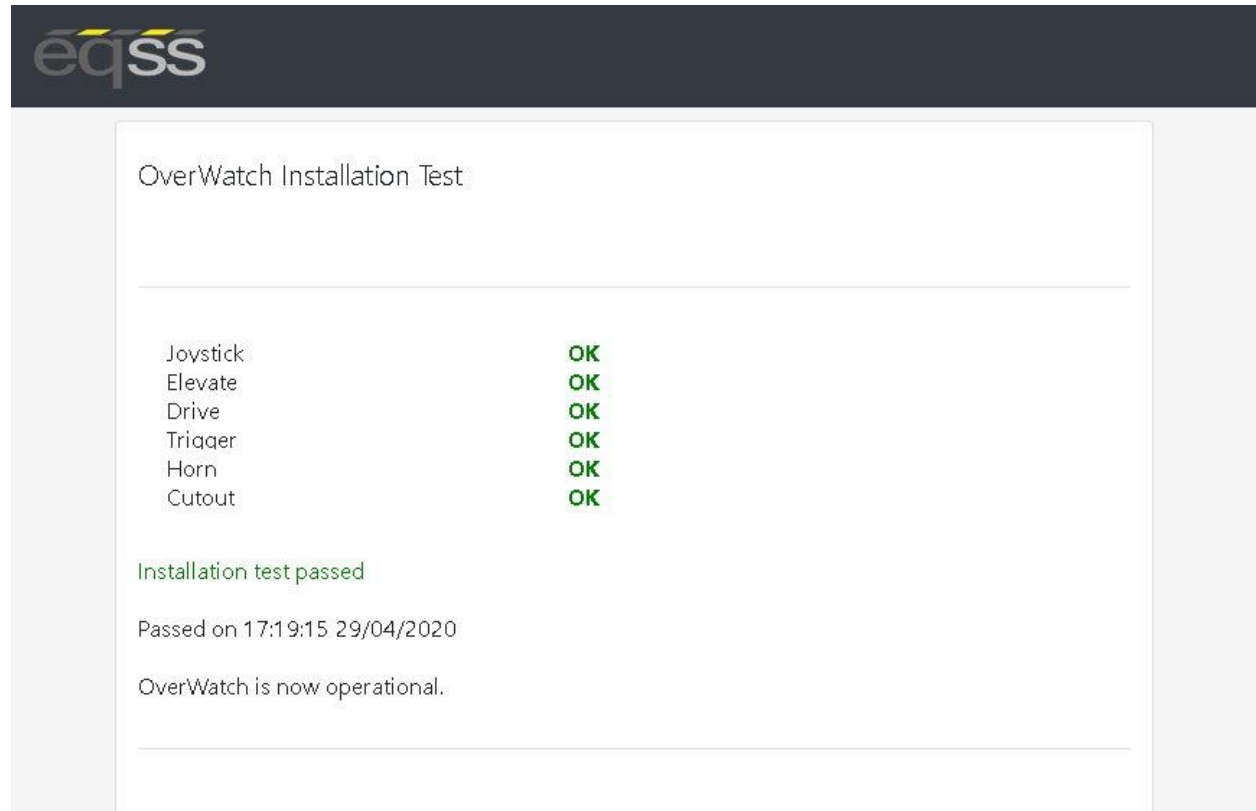
Proceed to test



## 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.



OverWatch Installation Test

Joystick	OK
Elevate	OK
Drive	OK
Tripper	OK
Horn	OK
Cutout	OK

Installation test passed

Passed on 17:19:15 29/04/2020

OverWatch is now operational.

## Change Model Configuration

To reconfigure the OverWatch™ for a different model requires an authorisation password to be supplied by a service manager. The authorisation password is generated from the EQSS website. The EQSS website requires a login username and password. If you are a service manager and don't have a username and password, contact EQSS to register. Follow the instructions below to obtain an authorisation password.

1. Open your preferred web and enter the following into the address bar <http://www.eqss.com.au/overwatch> to open the Login page
2. Select Customer
3. Enter your username and password
4. Ask the service technician for the serial number shown on the Setup page or on the ECU module along with the owner details of the EWP and complete the details form then click Generate Hash
5. Provide the 5-digit hash password to the service technician



### Details

Name	John Smith
Email	john.smith@company.com
Phone	+61 9 9999 9999
EQSS Overwatch Serial Number	6253E-2004-0000
Scissor Lift Model	CFMG E Series
Hash	50244

## Set Date and Time

Date and time should be set accordingly. The date and time can be set on the log page. This page allows adjustment of the system's real time clock and calendar if required. Please note, any time or date change is logged and recorded.

### OverWatch Log Viewer

#### Set Date and Time

Date

Time

Set date and time

Read OverWatch date and time

Download CSV

Timestamp	Description	State	Drive mode	Joystick	Calibration	Displacement	Maximum displacement	Velocity	Maximum velocity
102:102:02 81/101/2000	BOOT: OverWatch started	calibrating	not set	idle	100	0	0	0.00	0.00
102:103:44 81/101/2000	BOOT: OverWatch started	calibrating	not set	idle	100	0	0	0.00	0.00
102:107:32 81/101/2000	CAL: OK	calibrating	drive	idle	54	-34	-44	4.95	-56.12
102:107:32 81/101/2000	CAL: Begin scanning	calibrating	drive	idle	54	-34	-44	4.95	-56.12
102:107:32 81/101/2000	CUTOUT: Position	calibrating	drive	idle	54	-34	-44	4.95	-56.12
102:107:32 81/101/2000	CUTOUT: Resume calibration	calibrating	drive	idle	54	-34	-44	4.95	-56.12
11:33:01 30/04/2020	Date and time set to undefined NaN 2020	NaN:NaN	calibrating	drive	idle	54	602	607	187.82 197.97
11:33:01 30/04/2020	Date and time set to undefined NaN 2020	NaN:NaN	calibrating	drive	idle	54	603	607	187.82 197.97
11:40:01 30/04/2020	Date and time set to Apr 30 2020	11:40	calibrating	drive	idle	54	603	607	187.82 197.97
11:57:46 30/04/2020	CAL: OK	calibrating	drive	backward	68	-7	-19	-10.00	60.61
11:57:46 30/04/2020	CAL: Begin scanning	calibrating	drive	backward	68	-7	-19	-10.00	60.61
11:57:46 30/04/2020	SCAN: Resume calibration	calibrating	drive	backward	68	-7	-19	-10.00	60.61
11:57:58 30/04/2020	CAL: OK	calibrating	drive	backward	63	6	13	-15.08	276.32
11:57:58 30/04/2020	CAL: Begin scanning	calibrating	drive	backward	63	6	13	-15.08	276.32
11:57:58 30/04/2020	CUTOUT: Movement	calibrating	drive	backward	63	6	13	-15.08	276.32
11:57:58 30/04/2020	CUTOUT: Resume calibration	calibrating	drive	backward	63	6	13	-15.08	276.32
11:59:05 30/04/2020	CAL: OK	calibrating	drive	idle	63	-3	-3	1000.00	1000.00
11:59:05 30/04/2020	CAL: Begin scanning	calibrating	drive	idle	63	-3	-3	1000.00	1000.00
11:59:05 30/04/2020	SCAN: Resume calibration	calibrating	drive	idle	63	-3	-3	1000.00	1000.00
11:59:21 30/04/2020	CAL: OK	calibrating	drive	backward	49	2	8	40.00	46.15
11:59:22 30/04/2020	CAL: Begin scanning	calibrating	drive	backward	49	2	8	40.00	46.15

## System Settings

See the sections below for details on each of the CFMG-E Series OverWatch™ system default settings.

Setting Name	Description	Value
deltaseek	This specifies which of the previous lidar reading to compare against the current one to calculate the speed.	20
max_safe_velocity	This is the velocity threshold for the cutout in cm/s. for drive mode.	95
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. in elevate mode.	75
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
max_safe_velocity_neutral	This is the velocity threshold for the cutout in cm/s. in neutral mode.	60
max_safe_displacement_neutral	This is the maximum permitted distance in cm the operator may be away from the calibration position in neutral mode.	40
fwddispadj	The coefficient to apply to the displacement when the displacement is toward the sensor.	-0.8
fwdveloadj	The coefficient to apply to the velocity when the displacement is toward the sensor.	-1
zone_obstruction	The lidar is considered obstructed if the lidar sensor reading is below this.	5
zone_minimum	Any lidar reading below this will trigger a cutout with the message: "Operator Zone"	15
zone_maximum	Any lidar reading above this will trigger a cutout with the message: "Operator Zone"	120
horn_count_max	The number of times the horn will sound when alerting the operator if the trigger remains pressed during the cutout.	2
horn_time_ms	The amount of time in milliseconds each individual horn should play.	200
adc_elevate_threshold	For the elevate ADC input, a reading below this indicates the EWP is in elevate mode.	250
adc_drive_threshold	For the drive ADC input, a reading below this indicates the EWP is in drive mode.	250
adc_trigger_threshold	For the trigger ADC input, a reading below this indicates the trigger is pressed.	200

Setting Name	Description	Value
adc_joystick_fwd_threshold	For the joystick ADC input, a reading below this indicates the joystick has been pushed forward.	1200
adc_joystick_bwd_threshold	For the joystick ADC input, a reading above this indicates the joystick has been pulled backward.	1000
override_cooldown	The amount of time in milliseconds the system will wait before accepting another override request.	20000
override_time	The amount of time in milliseconds the override will last before it expires, and normal operation is resumed.	15000
override_listening_time	The amount of time in milliseconds the system will wait while the deadman is held down before considering it not to be part of the triple click override request.	300
override_reset_time	The amount of time in milliseconds the override system will wait before resuming listening after the deadman has been released at the end of an override period.	500
override_triple_click_time	The amount of time in milliseconds 3 clicks of the deadman need to occur to trigger the override.	2000
lidar_fault_timeout	The amount of time in milliseconds of silence from the sensor module before a fault condition is triggered.	1000
cutout_fault_timeout	The amount of time in milliseconds a discrepancy between the cutout and the cutout sensor is permitted before a fault condition is triggered.	3000
throttle_time	Period after the trigger is pressed, the system does not track velocity.	2000
time_before_welcome	Time after power on before welcome audio is played	250
stuck_displacement	While the operator is within this distance in cm of the position they were in when the cutout occurred, the operator is considered trapped.	20
stuck_time	The period in milliseconds the operator needs to remain still after a cutout to be considered trapped.	5000
stuck_time_long	After the stuck time this is the interval between horn alerts.	10000
wifi_on_click_count	The number of times the trigger needs to be pressed after start-up to enter Wi-Fi mode.	10
wifi_on_click_time	The timeout after start-up before OverWatch stops listening to the trigger click method of turning on the Wi-Fi	10000
wifi_on_gesture_count	The number of times to cover and uncover the sensor to enter Wi-Fi mode.	3
wifi_on_gesture_time	The timeout before OverWatch stops waiting for the next part of the gesture in milliseconds	3000

Setting Name	Description	Value
wifi_on_gesture_initial_time	The timeout after start-up before OverWatch stops waiting for start of the gesture in milliseconds	10000
driving_state_timeout	Mode selection switch timeout	7000

## Polarity and Input Style

The table below describes each setting

Setting Name	Description	Value
joystick_drive_forward	Direction of joystick to move EWP forward	forward
joystick_elevate_upward	Direction of joystick to move EWP upward	forward
joystick_neutral_move	Direction of joystick that requires monitoring when in neutral	forward
elevate_polarity	Direction of signal logic	low
drive_polarity	Direction of signal logic	low
trigger_polarity	Direction of signal logic	low
joystick_polarity	Direction of signal logic	high
neutral_safe	Monitor when no drive mode set	yes
driving_state_input	Direct, timer based or separate joysticks	direct

# AS002224 Plug and Play Harness Drawing

