INSTALL MANUAL

EQSS Model6253 – OverWatch™
JLG ES Series Vertical Mast

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

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DOCUMENT ABSTRACT:
This installation manual details the installation instructions for installing the Model6253 OverWatch on a JLG ES Series vertical mast.

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 system installation on a JLG ES Series vertical mast
- 1.1 Inclusion if harness schematics and instructions for plug and play installation
- 1.2 Inclusion of sensor guard V2 and update of machine 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in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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 20mm
6	Drill 5.0mm
7	Drill 12mm
8	Metric sockets or spanners
9	Needle nose pliers
10	Screw drivers

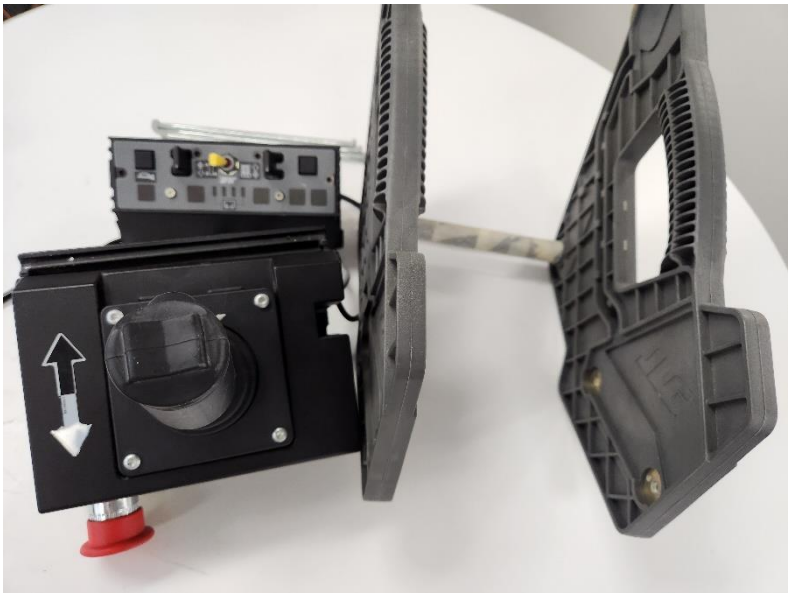
Installation Time

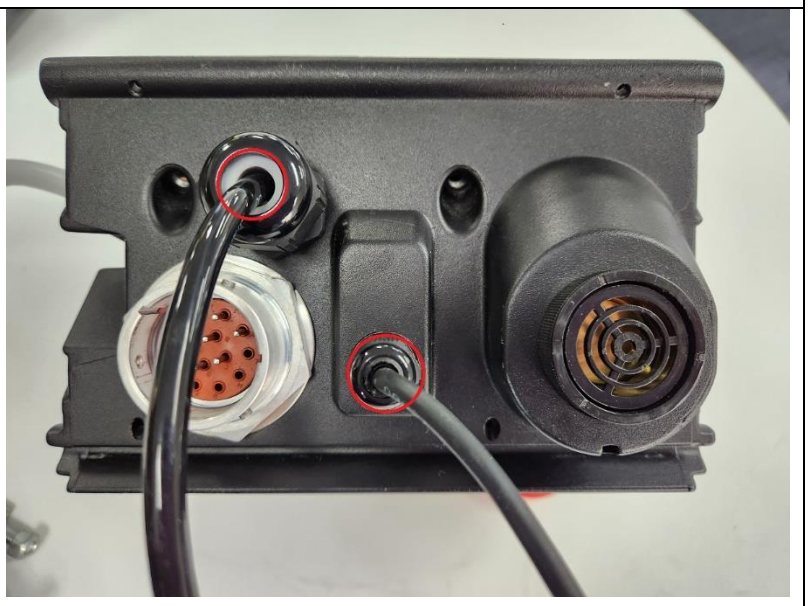
The suggested time required to install the OverWatch is as detailed below.

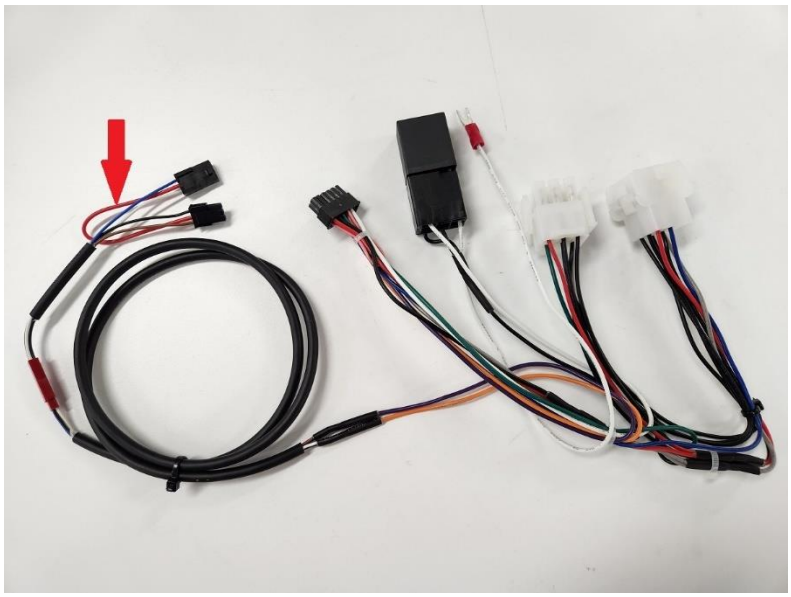
Task	Estimated Time (Minutes)
Open the operator control box	5
Drilling of all mounting holes for the various components	15
Mechanical assembly	10
Electrical assembly	5
Post installation system tests	10
Close the operator control box	5
Total	**50**

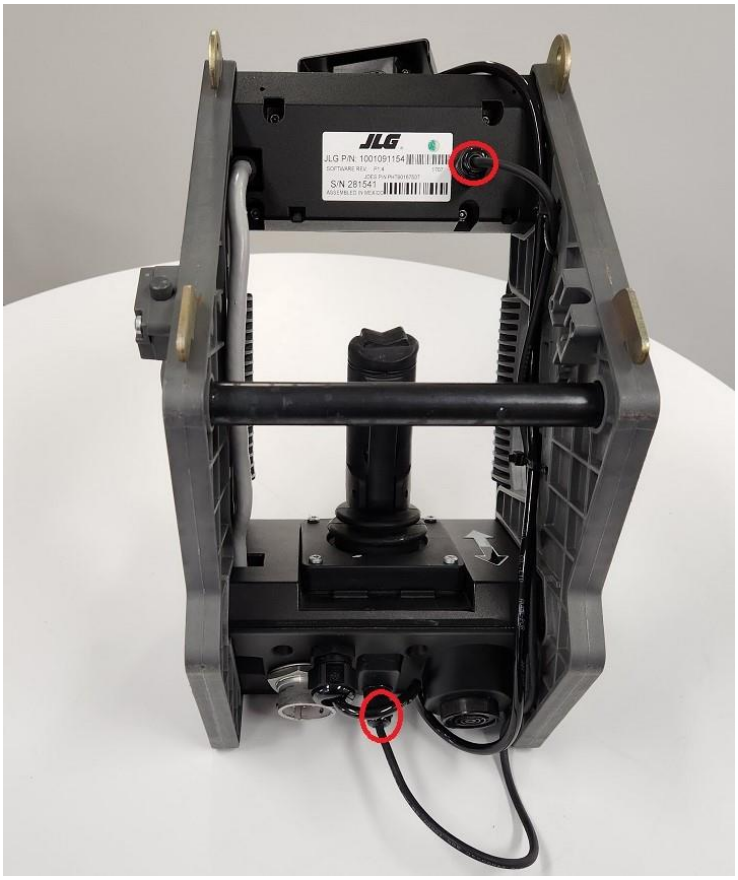
Installation Instructions

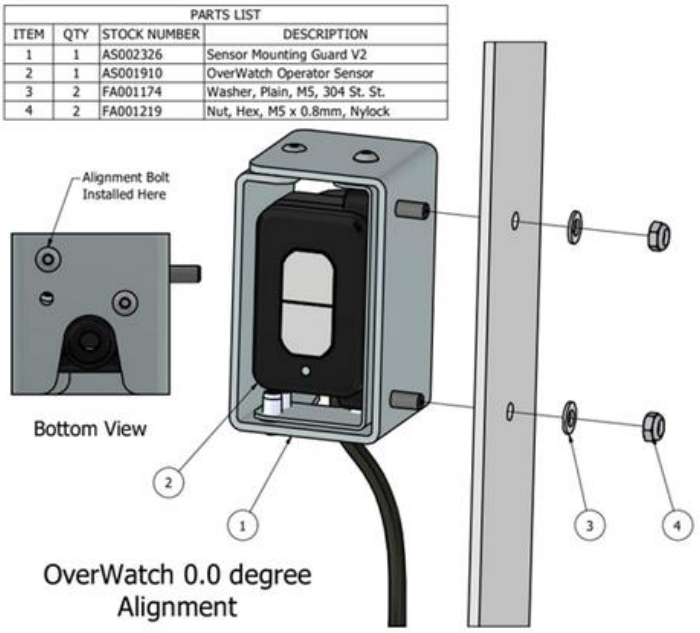
Operator Sensor

Step	Description	Diagram
1.	Remove top and bottom modules from the plastic control box housing.	
2.	Open the top module and drill a 12mm hole on the back panel of the enclosure to install the M12 cable gland. The position of the hole is detailed in the image as **30mm** from the top edge and **40mm** from the right edge.	

Step	Description	Diagram
3.	Open the bottom module and prepare to drill two holes, make sure that all internal cables are clear before drilling holes on the back panel of the control box enclosure as shown in the image.	
4.	**Operator Sensor Gland:** Drill a 20mm hole to install the operator sensor cable gland in the location shown in top left of the image and feed the wire from the operator sensor into the enclosure. **28mm** from the top edge to the centre **55mm** from the left edge to the centre	

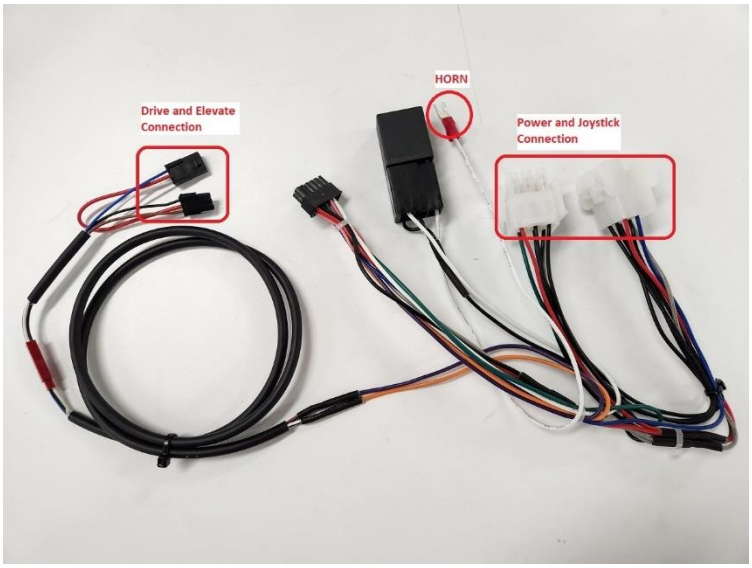
Step	Description	Diagram
5.	**Drive/Elevate Select Cable Gland:** Drill a 12mm hole to install the M12 cable gland in the location shown in the image. Horizontal and vertical distance measured as **11mm** as shown in the image. ***Note:*** *Install cable gland at the exact location shown in image* Feed the two-core cable from the OverWatch loom through the gland out of the enclosure.	 

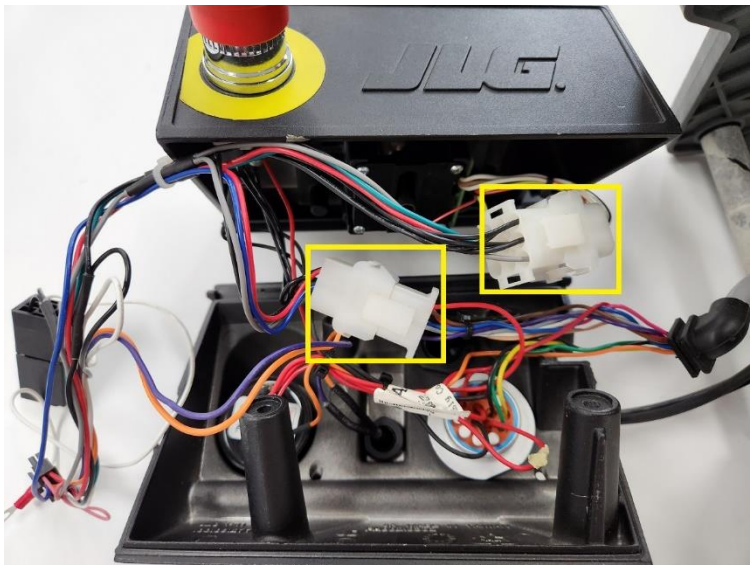
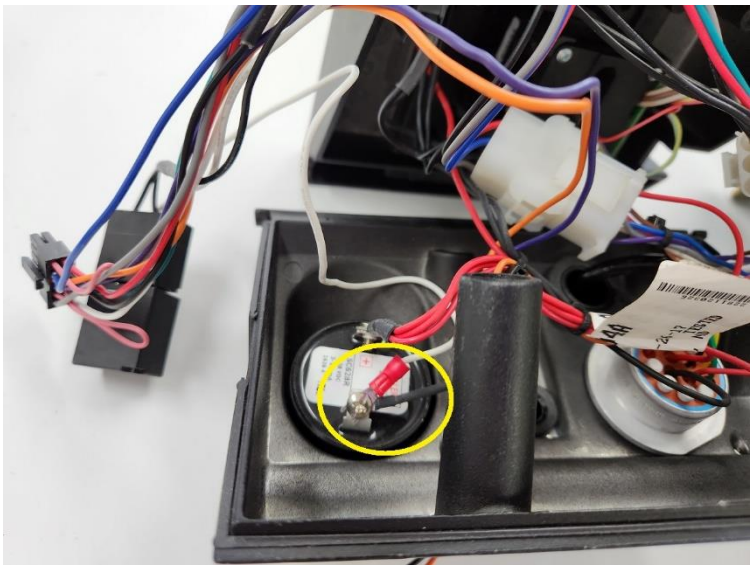
Step	Description	Diagram
6.	Run the two-core cable from the bottom unit to the top unit, through the two M12 cable glands installed. Please refer to the adjacent image for two-core cable.	 

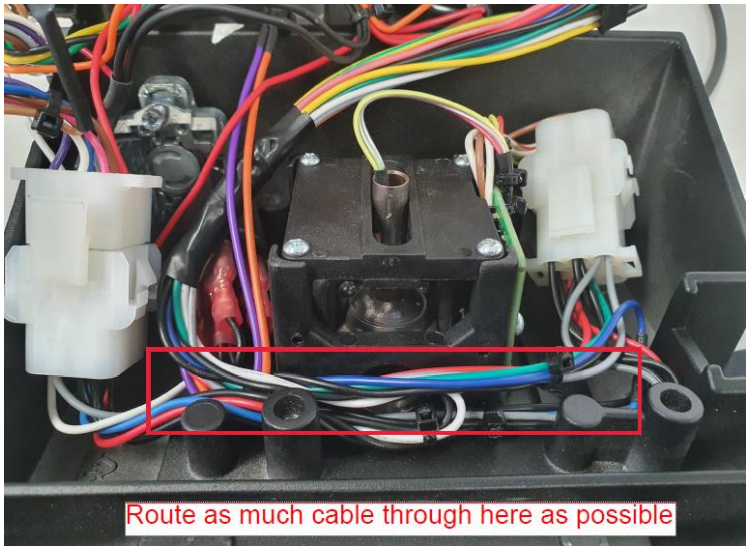
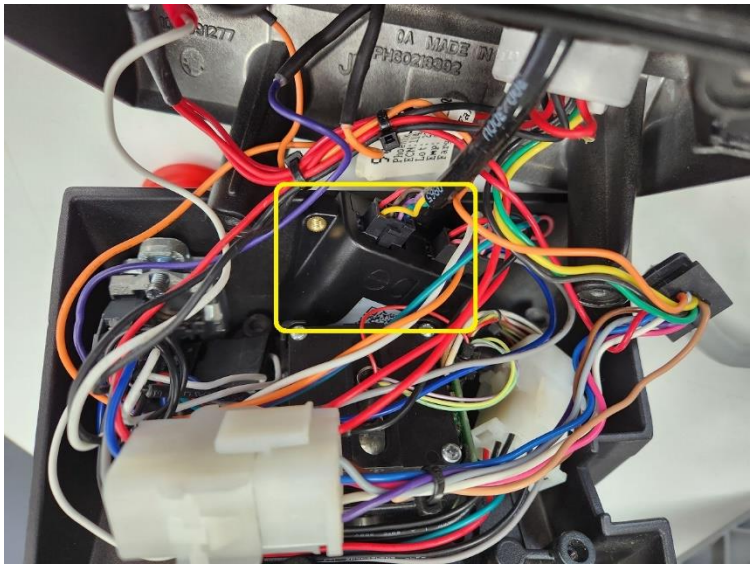
Step	Description	Diagram
7.	**Sensor Mounting Guard V1 (ME001794)** Mount the operator sensor to the mounting bracket ME001835 by using **M4x12mm** washers and security bolts.	
8.	**Sensor Mounting Guard V2 (AS002326)** This guard (AS002326) supersedes the original V1 design. Mount the operator sensor to the mounting bracket (ME001835) using the M5 nuts and washers. Make sure that the sensor is on the **0.0-degree angle**, such that it is **not** twisted away from the joystick. **The 0.0-degree angle is achieved by 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 

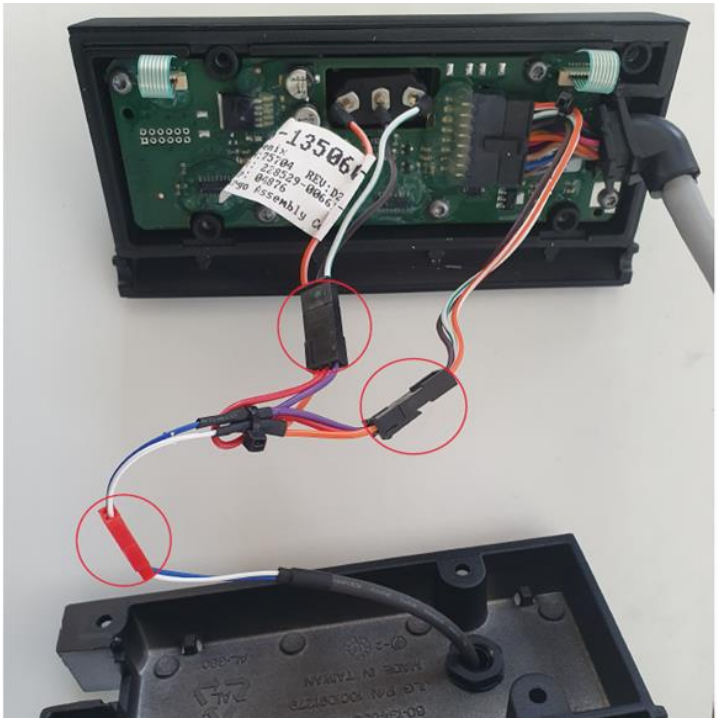
Step	Description	Diagram
9.	Remove screws from the top module as shown in the image.	
10.	Mount the module in the located position using the imperial **#6 x 5/8** washers and bolts.	

Control Module

Step	Description	Diagram
1.	Wiring connections are made with the **AS001937** harness.	
2.	The following connections will need to be done in the bottom module.	

Step	Description	Diagram
3.	**Joystick and power:** Disconnect the 9-pin connector from the JLG joystick and install the OverWatch harness in series.	
4.	**Buzzer:** At the back of the buzzer on the **Negative** side, install the **white** wire from the OverWatch harness.	

Step	Description	Diagram
5.	Place the OverWatch ECU module in an angle in the location shown in the image and neatly manage the cables. Making sure the joystick connectors are positioned as shown. Make sure the cables are secure and in position as not to be pinched or damaged during the closure.	 

Step	Description	Diagram
6.	The following connections will need to be done in the top module.	
7.	**Drive and Elevate Select**: At the back the Drive/Elevate switch disconnect the existing black 3 pin connector and install the Drive/Elevate Select piggyback cable in between. Refer to the photo shown on the right.	

Step	Description	Diagram
8.	Re-assemble the bottom module and top module and mount to the plastic housing. Make sure the operator sensor cable runs clear to the joystick enclosure and tighten the M20 gland to seal the cable entry point. Care must be taken when closing the boxes, make sure all internal wires are clear of the box edges and bolt inserts, do not pinch or crush any internal wires when closing the boxes.	

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

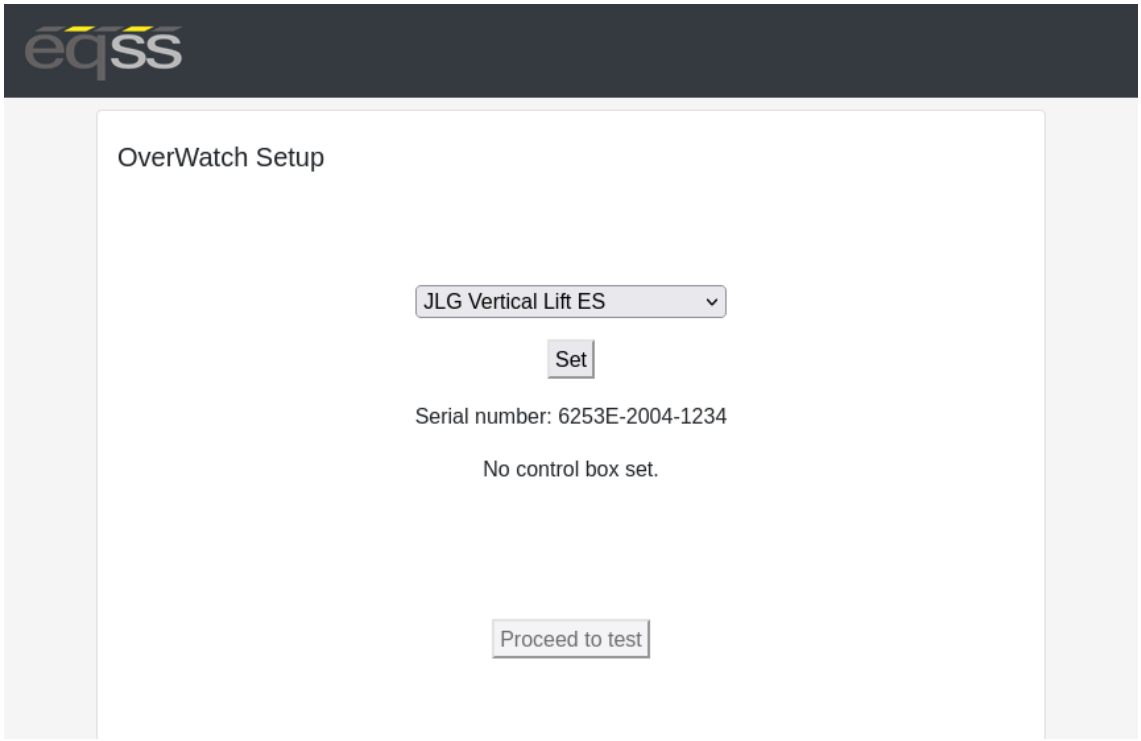
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

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

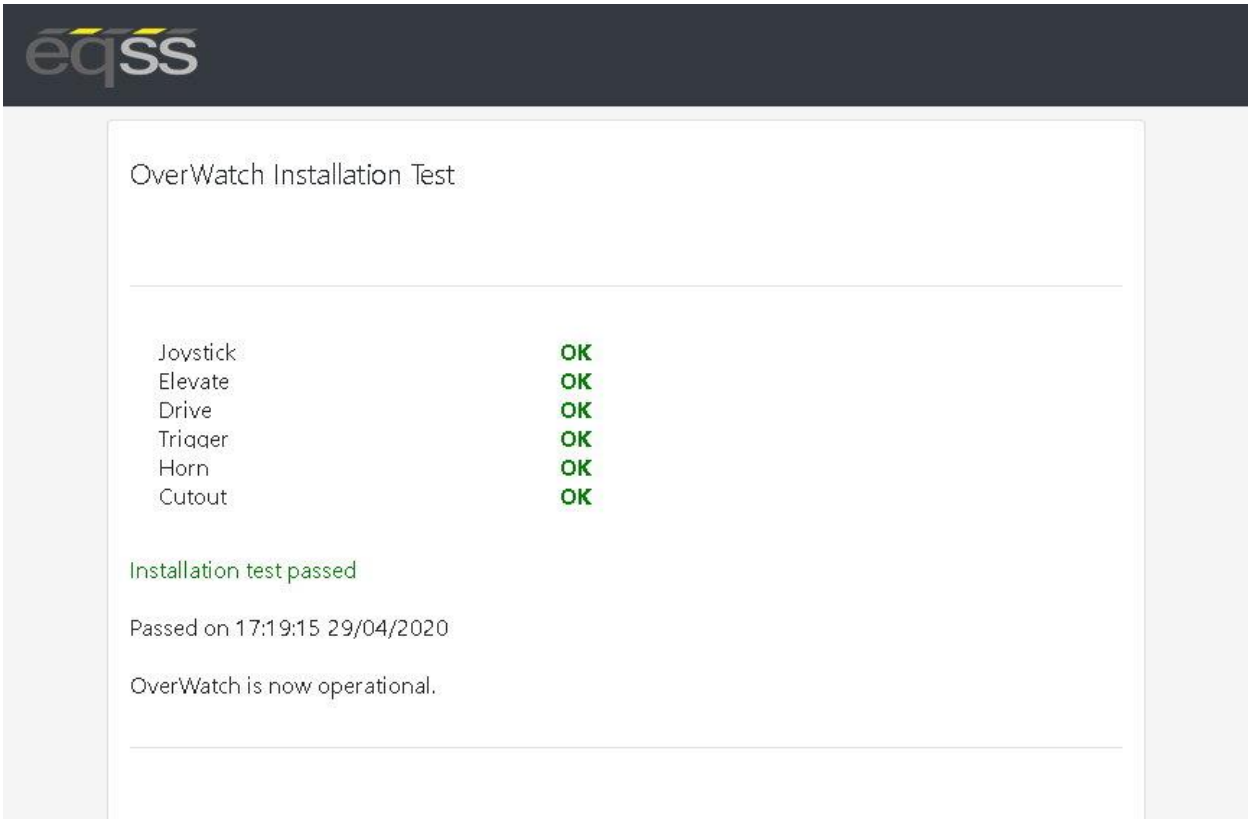
Follow the instructions below to configure the OverWatch.

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.

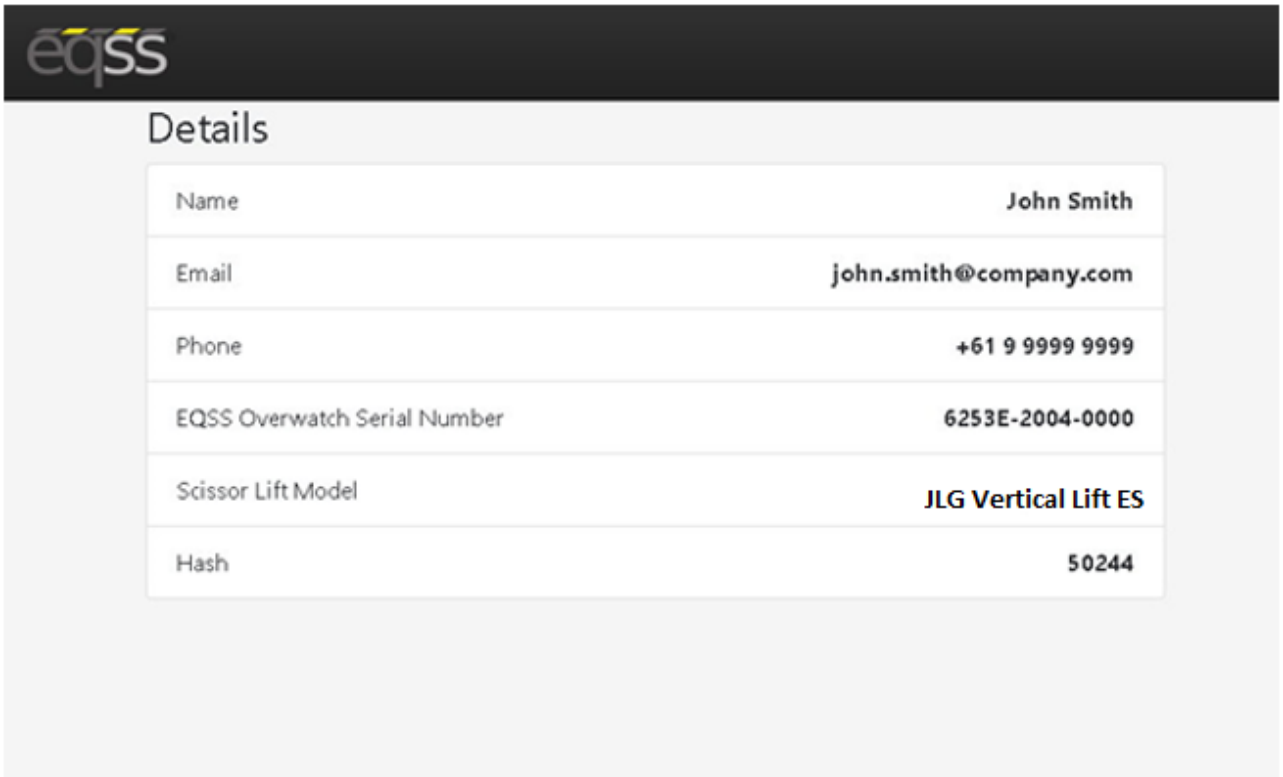


Change Model Configuration

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 browser 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 configured with the following default parameters.

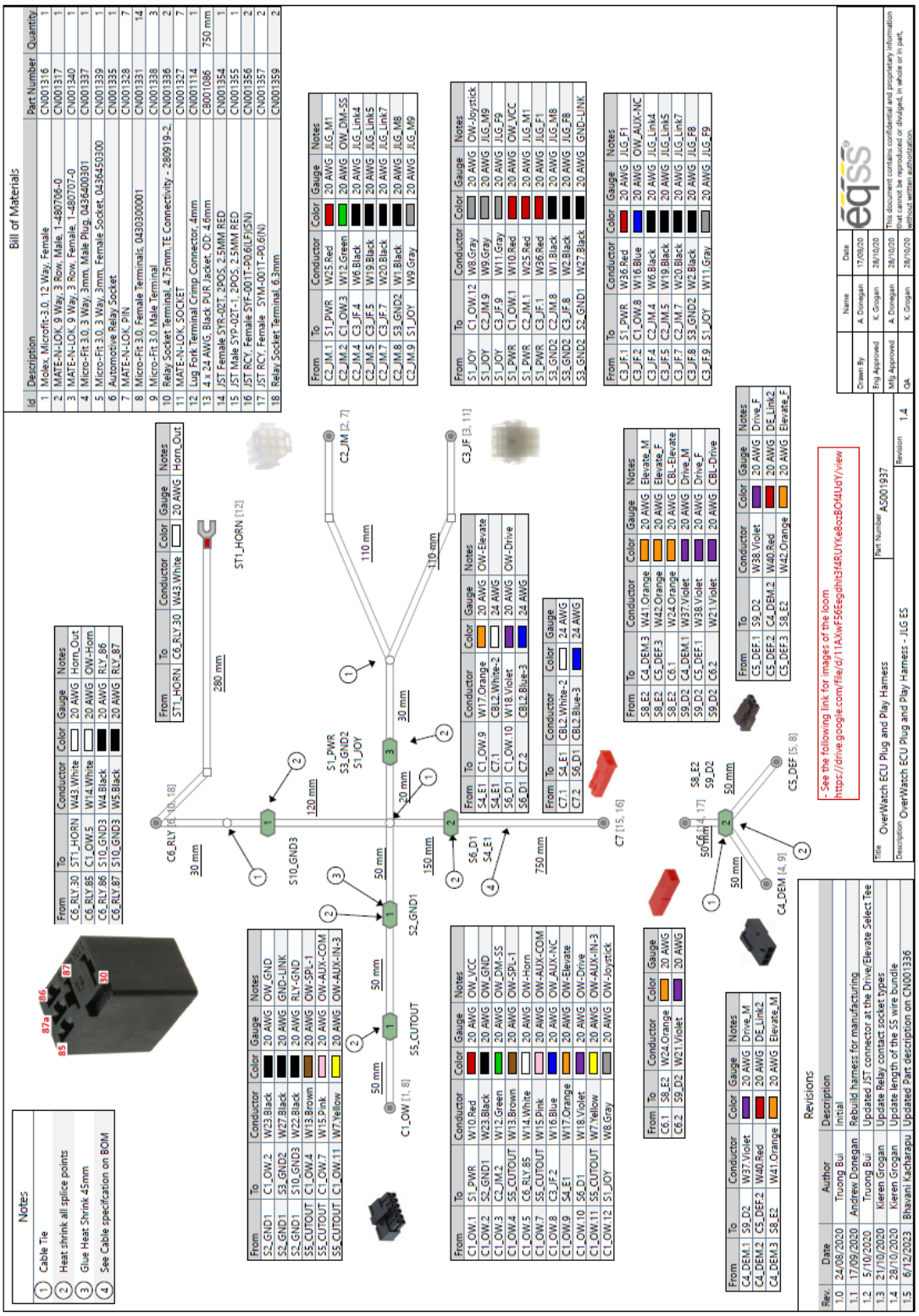
Setting Name	Description	Default
max_safe_velocity	This is the velocity threshold for the cutout in cm/s for drive mode.	100
max_safe_displacement	This is the maximum permitted distance in cm the operator may be away from the calibration position in drive mode.	50
max_safe_velocity_elevate	This is the velocity threshold for the cutout in cm/s for elevate mode.	80
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.	-0.4
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.	300
adc_drive_threshold	Threshold value for the drive ADC input.	300
adc_trigger_threshold	Threshold value for the trigger ADC input.	2000
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1250
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1450
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	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	low
driving_state_input	Direct or timer based	direct

Harness Drawing AS001937



Replacement Parts

Replacement parts for this OverWatch kit are available from EQSS, 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
AS001982	OverWatch - Complete kit for JLG Vertical Lift ES Series
AS001910	OverWatch - Operator sensor with M20 gland
AS001916	OverWatch - Electronic Control Unit (ECU)
AS001937	OverWatch – JLG Vertical Lift ES series harness
AS002326	OverWatch - Sensor guard V2
ME001835	OverWatch – JLG Vertical Lift ES mounting bracket