I N S T A L L   M A N U A L

EQSS Model6253 – OverWatch™ Dingli JCPT RT Series
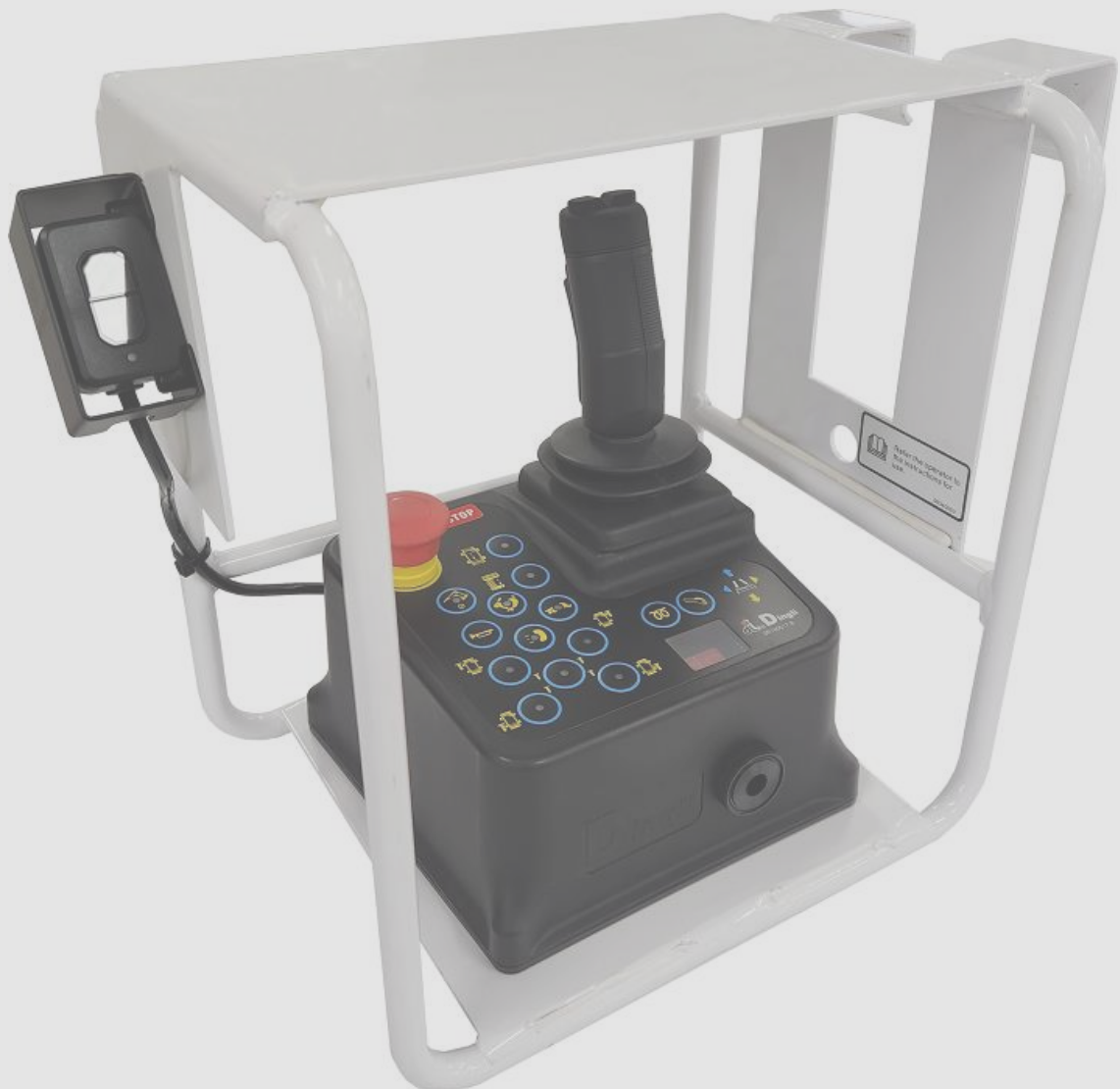
éqss

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DOCUMENT ABSTRACT:
This Installation manual details the instructions for installing the Model6253 OverWatch on a Dingli JCPT RT series 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 Dingli JCPT RT series control box
- 1.1 Update of installation manual 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in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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

REV 1.2	**04/12/2023**	**Model6253 OverWatch™ Installation Manual**	**Document # DO001555**

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Dingli JCPT RT Series
Installation Manual

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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.

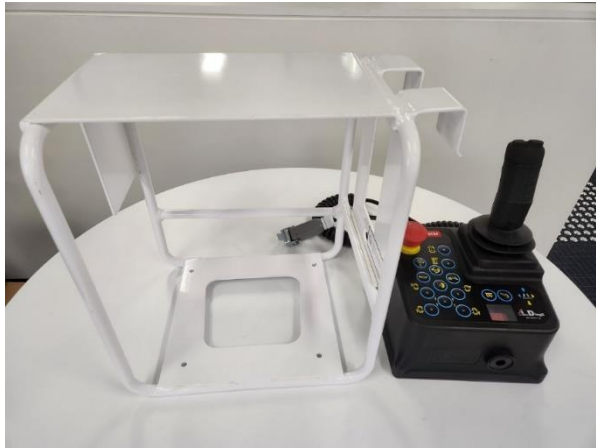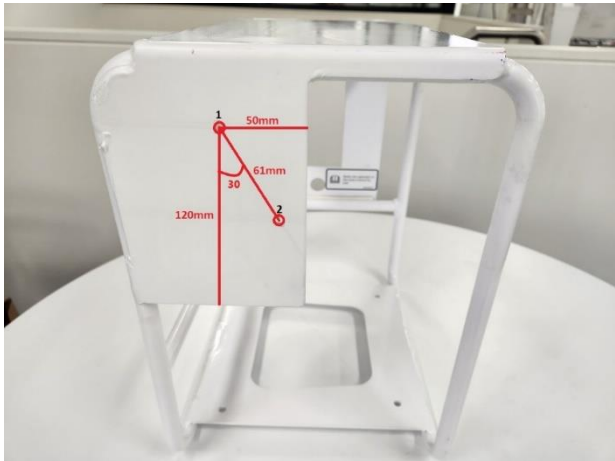| Item	Tool / Description
1	Electric Drill
2	Centre punch
3	Hammer
4	Side Cutters
5	Drill 5.0mm
6	Drill 6.0mm
7	Step Drill (5 – 30mm)
8	Metric sockets or spanners
9	Needle nose pliers
10	Screw drivers
11	Paint – White

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	10
Electrical assembly	10
Post installation system tests	10
Total	**40**

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. The sensor should be mounted at an **angle of 30 degrees** from the vertical. Distance is measured from the vertical and horizontal edge of the metal cover. **Hole #1**- **120mm** from the vertical edge and **50mm** from the horizontal edge. **Hole #2**- **67mm** from the vertical edge and **18mm** from the horizontal edge. The distance between two holes is **61mm**.	

3.	**Sensor Mounting Guard V1 (ME001794)** Mount the operator sensor in the **30-degree position** by using the sensor guard, bolts, and washers. 2 x M4 x 12mm -**FA001417** 2 x M4 Washers-**FA001235** 1 x Sensor Guard-**ME001794**	
5.	**Sensor Mounting Guard V2 (AS002326)** This guard (AS002326) supersedes the original V1 design. Mount the operator sensor in the **30-degree position** on the mounting bracket using the supplied M5 washers and nuts. 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
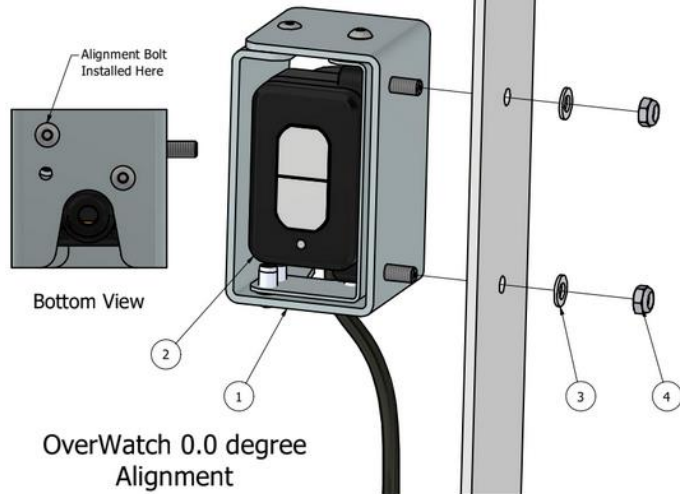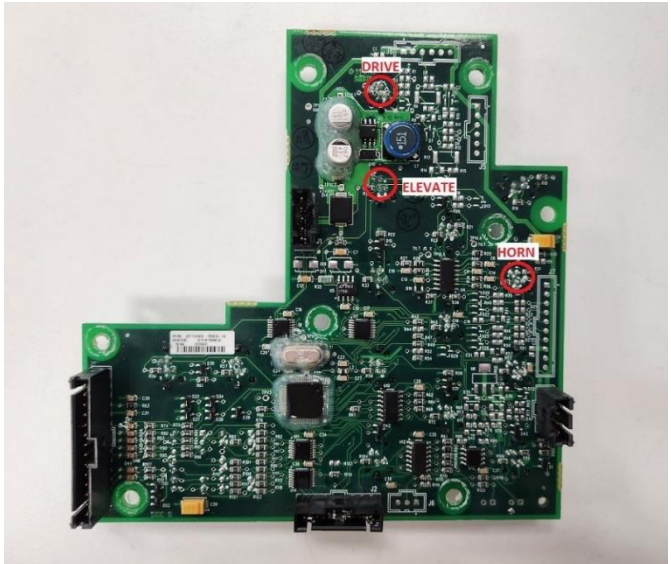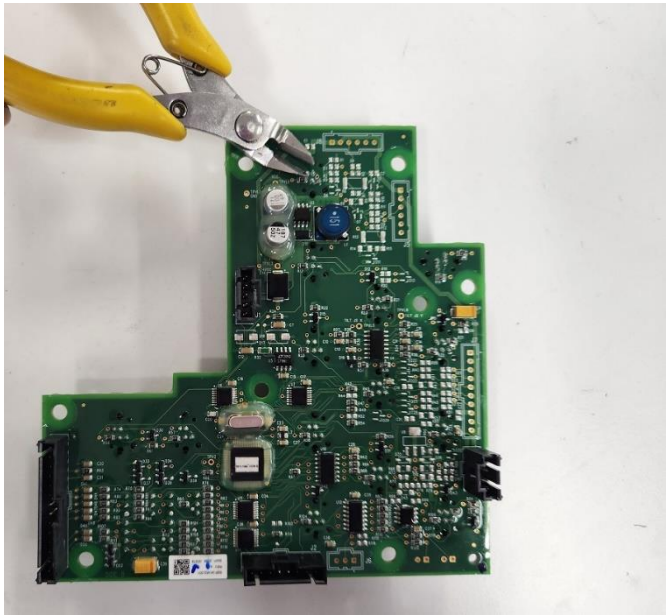
6.	Route the operator sensor cable as shown in the diagram. Use a cable tie to secure the cable to the metal enclosure.	

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Control Module

Step	Description	Diagram
1.	Remove the bottom cover from the joystick control box to expose the inside wiring and electronics.	
2.	Disconnect all the connectors from the circuit board and remove the circuit board.	
3.	Drill a 20mm hole to run the operator sensor M20 gland into the metal joystick enclosure. The position of the hole is detailed as in the image. It is recommended to use a step drill for this hole.	

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 and elevate connections on the circuit 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 OverWatch 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.	
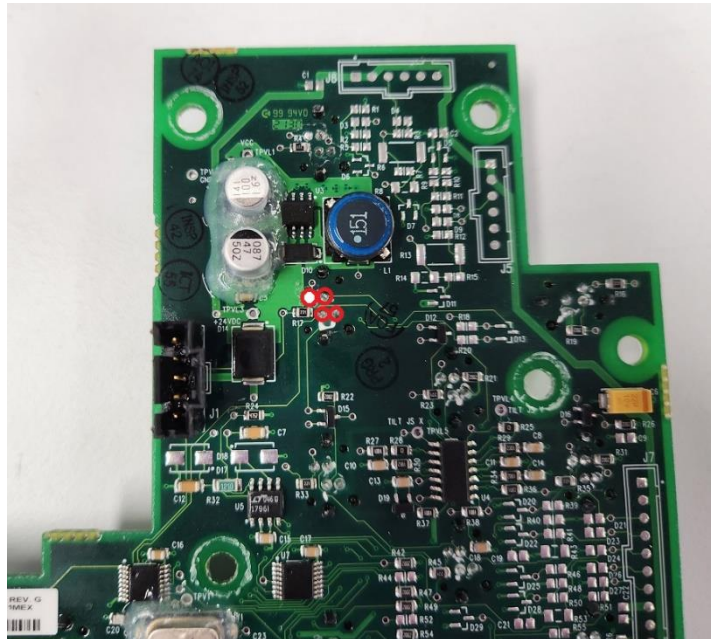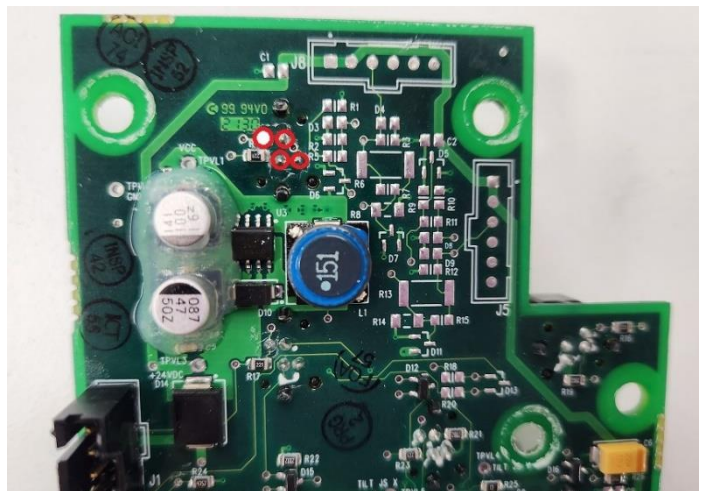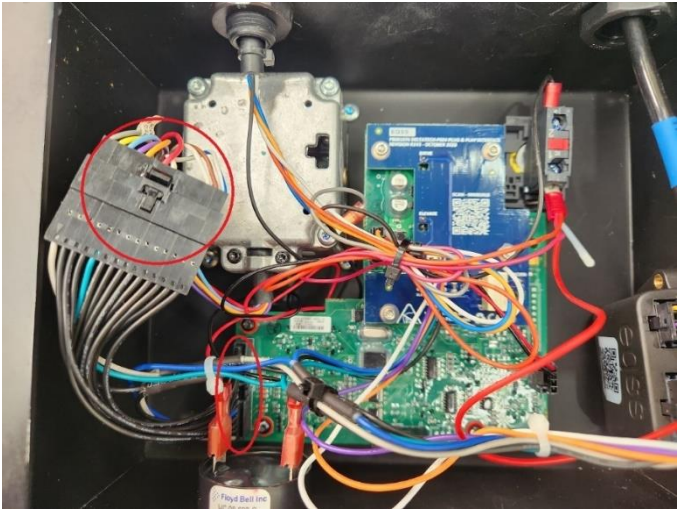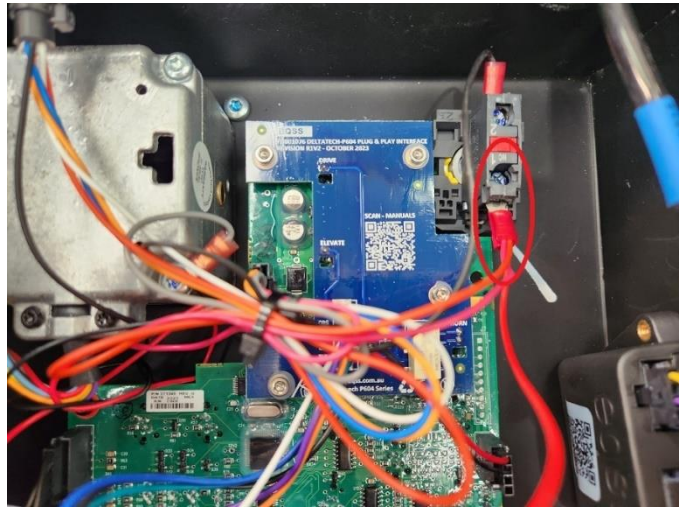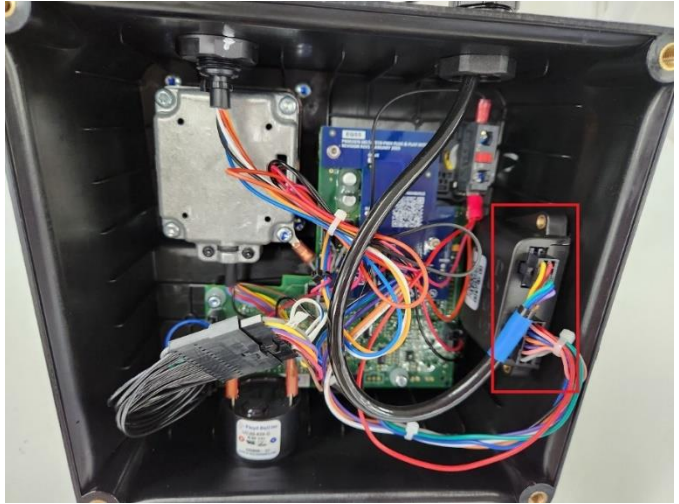
8.	Trim down the **Horn** signal pin. This pin is located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pin is trimmed flat.	
9.	Wiring connections are made with the AS002277 harness	
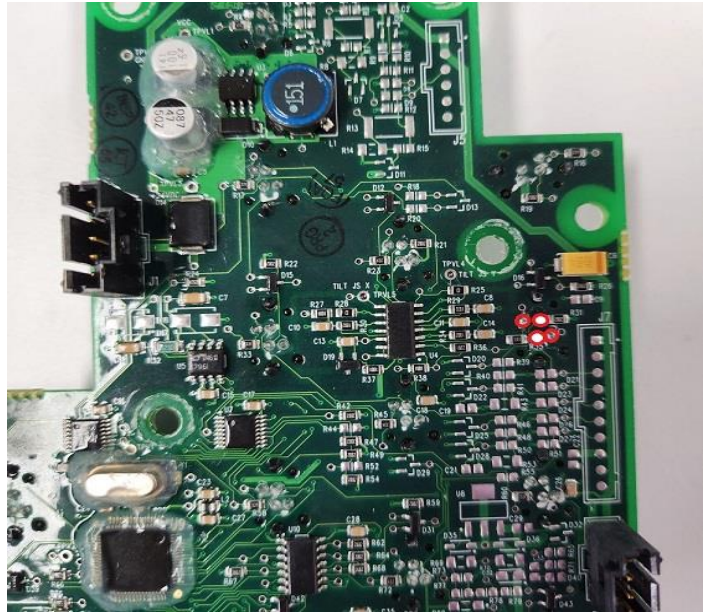
10.	Mount the OverWatch circuit board on top of joystick circuit board using the provided screws and spacers in the kit. Make sure that the board is sitting in the correct position and the spring pins are contacting the joystick circuit board signal pins. Use the cut-outs next to each spring pin to inspect that the contact is solid with the joystick board. **Make sure that the plastic 6.4mm spacers are in place.**	
11.	Install the OverWatch joystick connectors in between the joystick and the control box 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 2.	
12.	At the back of the Estop, install the OverWatch Red Power cable to terminal 1 of the E-Stop. **Note: this cable might need to be changed to terminal 2 if the OverWatch is powered with the E-stop pushed in.**	

13.	Mount the OverWatch ECU inside the joystick control box, the ECU is mounted to the plastic box using the adhesive velcro tape. Cut the extra plastic material on the side to keep the ECU mounting location area flat. **Make sure that the ECU is mounted so the connectors are pointing downwards.** 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 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 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
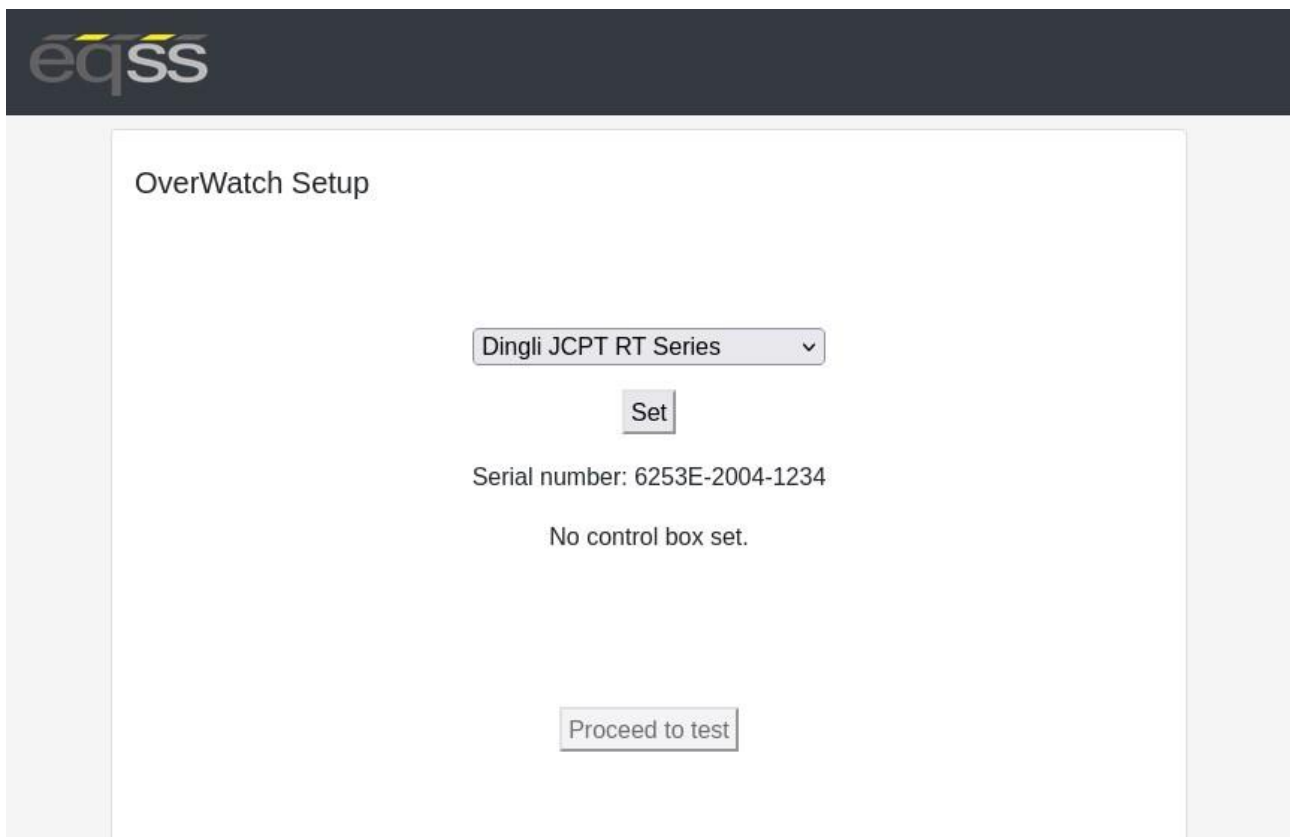
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

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.
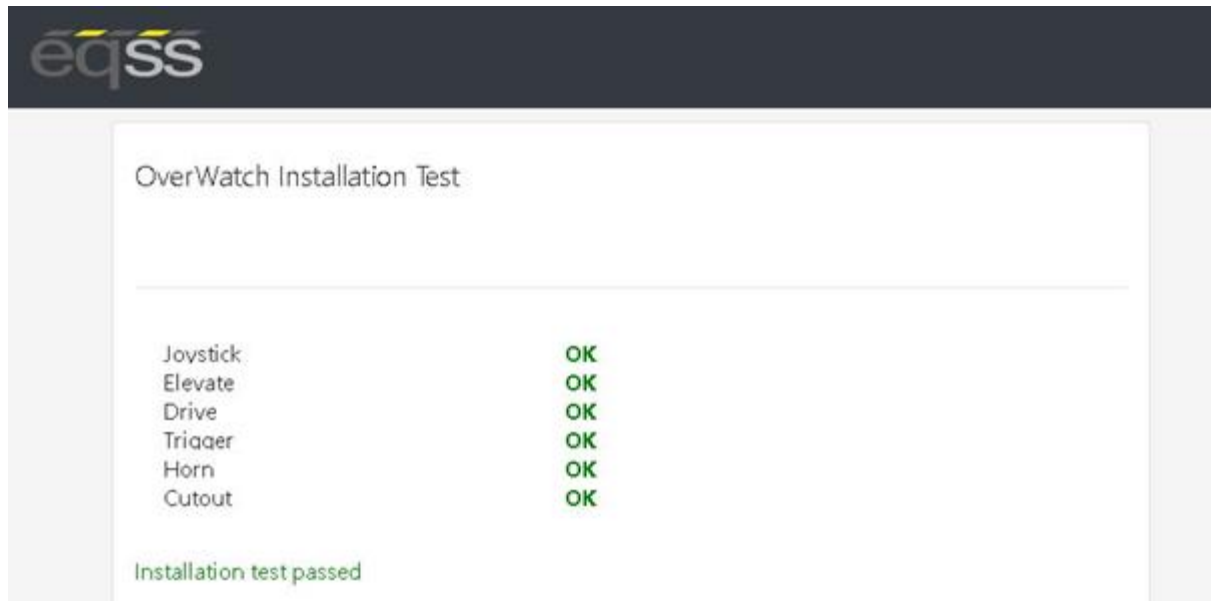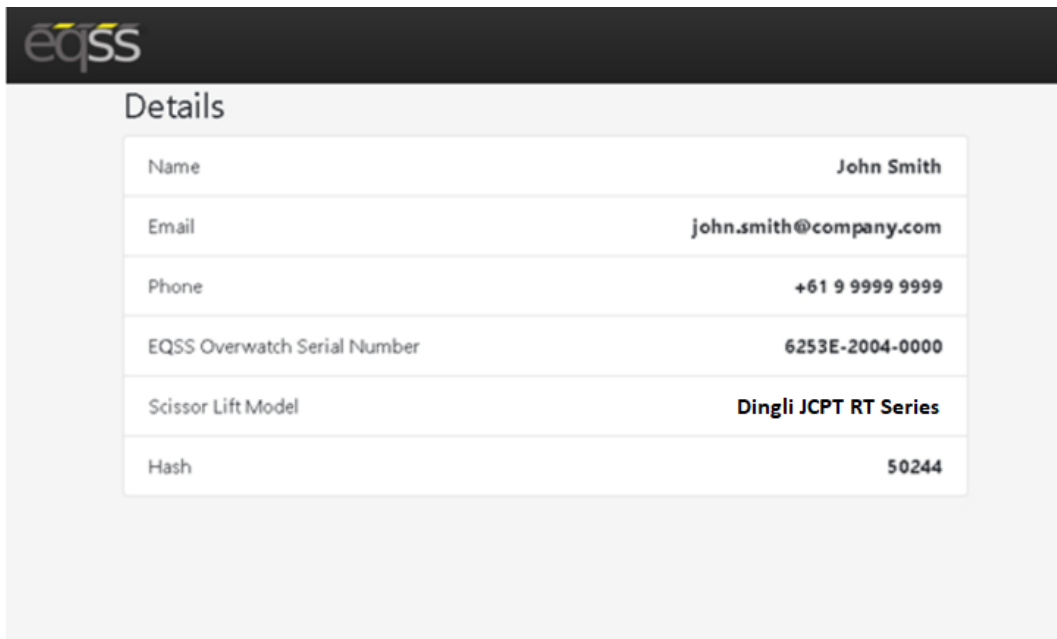
Change Model Configuration

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.	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 for 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
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.	2200
adc_drive_threshold	Threshold value for the drive ADC input.	2200
adc_trigger_threshold	Threshold value for the trigger ADC input.	2000
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

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

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Harness Drawing AS002277

Bill of Materials

Id	Description	Part Number	Quantity
1	Molex, Microfit 3.0, 12 Way, Female	CN001316	1
2	Molex, SL Plug, 14 Pos, 07010700013	CN001364	1
3	Molex, SL Receptacle, 14 Pos, 0509579414	CN001366	1
4	Micro-Fit 3.0, Female Terminals, 0430300001	CN001331	11
5	Molex, SL Male Pin, 0016020107	CN001365	11
6	Molex, SL Female Socket, 0016020086	CN001367	11
7	Lug Fork Terminal Crimp Connector, 4mm	CN001114	1
8	HC0047, 22AWG, Black	CB001087	1220 mm
9	HC0047, 22AWG, Grey	CB001088	310 mm
10	HC0047, 22AWG, Blue	CB001091	360 mm
11	HC0047, 22AWG, Green	CB001090	360 mm
12	HC0047, 22AWG, Orange	CB001095	250 mm
13	HC0047, 22AWG, Violet	CB001098	250 mm
14	HC0047, 22AWG, White	CB001099	250 mm
15	HC0047, 22AWG, Red	CB001089	250 mm
16	HC0026, 24AWG, Pink	CB001116	160 mm

Connection Table (C2.TM)

From	To	Conductor	Color	Gauge	Notes
C2.TM.1	S5.JOY	W14.Gray		22 AWG	JOY_M
C2.TM.2	C3.TF.2	W6.Black		22 AWG	CONN_LINK.2
C2.TM.3	C3.TF.3	W7.Black		22 AWG	CONN_LINK.3
C2.TM.4	C3.TF.4	W8.Black		22 AWG	CONN_LINK.4
C2.TM.5	S2.DM.IN	W21.Green		22 AWG	CONN_DM_IN
C2.TM.6	C3.TF.6	W9.Black		22 AWG	CONN_LINK.6
C2.TM.7	C3.TF.7	W10.Black		22 AWG	CONN_LINK.7
C2.TM.8	C3.TF.8	W11.Black		22 AWG	CONN_LINK.8
C2.TM.12	C3.TF.12	W12.Black		22 AWG	CONN_LINK.12
C2.TM.13	S4.GND2	W5.Black		22 AWG	GND_M
C2.TM.14	C3.TF.14	W28.Black		22 AWG	CONN_LINK.14

Connection Table (C3.TF)

From	To	Conductor	Color	Gauge	Notes
C3.TF.1	S5.JOY	W15.Gray		22 AWG	JOY_F
C3.TF.2	C2.TM.2	W6.Black		22 AWG	CONN_LINK.2
C3.TF.3	C2.TM.3	W7.Black		22 AWG	CONN_LINK.3
C3.TF.4	C2.TM.4	W8.Black		22 AWG	CONN_LINK.4
C3.TF.5	S3.DM.OUT	W18.Blue		22 AWG	CONN_DM_OUT
C3.TF.6	C2.TM.6	W9.Black		22 AWG	CONN_LINK.6
C3.TF.7	C2.TM.7	W10.Black		22 AWG	CONN_LINK.7
C3.TF.8	C2.TM.8	W11.Black		22 AWG	CONN_LINK.8
C3.TF.12	C2.TM.12	W12.Black		22 AWG	CONN_LINK.12
C3.TF.13	S4.GND2	W5.Black		22 AWG	GND_F
C3.TF.14	C2.TM.14	W28.Black		22 AWG	CONN_LINK.14

Connection Table (S1–S5)

From	To	Conductor	Color	Gauge	Notes
S1.GND1	C1.OW.2	W1.Black		22 AWG	OW_GND
S1.GND1	LW1.GND	W3.Black		22 AWG	PCB_GND
S1.GND1	S4.GND2	W2.Black		22 AWG	GND_LINK
S2.DM.IN	C1.OW.3	W19.Green		22 AWG	OW_DM_SS
S2.DM.IN	C2.TM.5	W21.Green		22 AWG	CONN_DM_IN
S2.DM.IN	LW2.DM.IN	W20.Green		22 AWG	PCB_DM_IN
S3.DM.OUT	C1.OW.8	W16.Blue		22 AWG	OW_AUX_OUT
S3.DM.OUT	C3.TF.5	W18.Blue		22 AWG	CONN_DM_OUT
S3.DM.OUT	LW3.DM.OUT	W17.Blue		22 AWG	PCB_DM_OUT
S4.GND2	C2.TM.13	W4.Black		22 AWG	GND_M
S4.GND2	C3.TF.13	W5.Black		22 AWG	GND_F
S5.JOY	C1.OW.12	W13.Gray		22 AWG	OW_JOY
S5.JOY	C2.TM.1	W14.Gray		22 AWG	JOY_M
S5.JOY	C3.TF.1	W15.Gray		22 AWG	JOY_F

Connection Table (C1.OW)

From	To	Conductor	Color	Gauge	Notes
C1.OW.1	ST1.PWR	W25.Red		22 AWG	OW_PWR
C1.OW.2	S1.GND1	W1.Black		22 AWG	OW_GND
C1.OW.3	S2.DM.IN	W19.Green		24 AWG	OW_DM_SS
C1.OW.4	S7.LOOP.1	W29.Pink		24 AWG	OW_DM_ECU1
C1.OW.5	S8.LOOP.2	W30.Pink		24 AWG	OW_DM_ECU2
C1.OW.6	LW4.HORN	W24.White		22 AWG	OW_HORN
C1.OW.7	S7.LOOP.1	W26.Pink		24 AWG	OW_AUX_IN
C1.OW.8	S3.DM.OUT	W16.Blue		22 AWG	OW_AUX_OUT
C1.OW.9	LW5.ELE	W22.Orange		22 AWG	OW_ELE
C1.OW.10	LW6.DRV	W23.Violet		22 AWG	OW_DRV
C1.OW.11	S8.LOOP.2	W27.Pink		24 AWG	OW_TEST
C1.OW.12	S5.JOY	W13.Gray		22 AWG	OW_JOY

Connection Table (LW)

From	To	Conductor	Color	Gauge	Notes
LW1.GND	S1.GND1	W3.Black		22 AWG	PCB_GND
LW2.DM.IN	S2.DM.IN	W20.Green		22 AWG	PCB_DM_IN
LW3.DM.OUT	S3.DM.OUT	W17.Blue		22 AWG	PCB_DM_OUT
LW4.HORN	C1.OW.6	W24.White		22 AWG	OW_HORN
LW5.ELE	C1.OW.9	W22.Orange		22 AWG	OW_ELE
LW6.DRV	C1.OW.10	W23.Violet		22 AWG	OW_DRV

Connection Table (ST1)

From	To	Conductor	Color	Gauge	Notes
ST1.PWR	C1.OW.1	W25.Red		22 AWG	OW_PWR

Final Assembly Photo: https://drive.google.com/file/d/1JWwXqjdzsm5TnPdchoIVdp4ot1-c9UD6S/view

Notes

1. Small Cable Tie Here
2. Strip 5mm and Tin(Solder) All 6 Loose Wires
3. Use Two Lengths of Pink 24 AWG Wire Here. Do Not Splice. See Final Assembly Photo For Details
4. Seal All Splice Joins Using Glue Heatshrink

Revisions

Rev.	Date	Author	Description
1.0	13/9/22	Andrew Donegan	Initial Design

Title Block

	Name	Date
Drawn By	A. Donegan	14/9/22
Eng Approved	K. Grogan	14/9/22
Mfg Approved	A. Donegan	14/9/22
QA	K. Grogan	14/9/22

Title: Wire Harness
Description: Overwatch DeltaTech P500 Plug & Play Harness
Part Number: AS002196
Revision: 1.0

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
AS002281	OverWatch - Complete for Dingli JCPT RT Series
AS001910	OverWatch - Operator Sensor with M20 gland
AS001916	OverWatch - Electronic Control Unit (ECU)
AS002277	OverWatch - Dingli JCPT RT Series Harness
AS002326	OverWatch - Sensor Guard V2