WaveSculptor Mechanical Engineering Reference

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Brisbane, Australia
http://www.tritium.com.au

1 INTRODUCTION

This document describes the mechanical requirements for positioning and fastening the WaveSculptor motor controller into a vehicle.

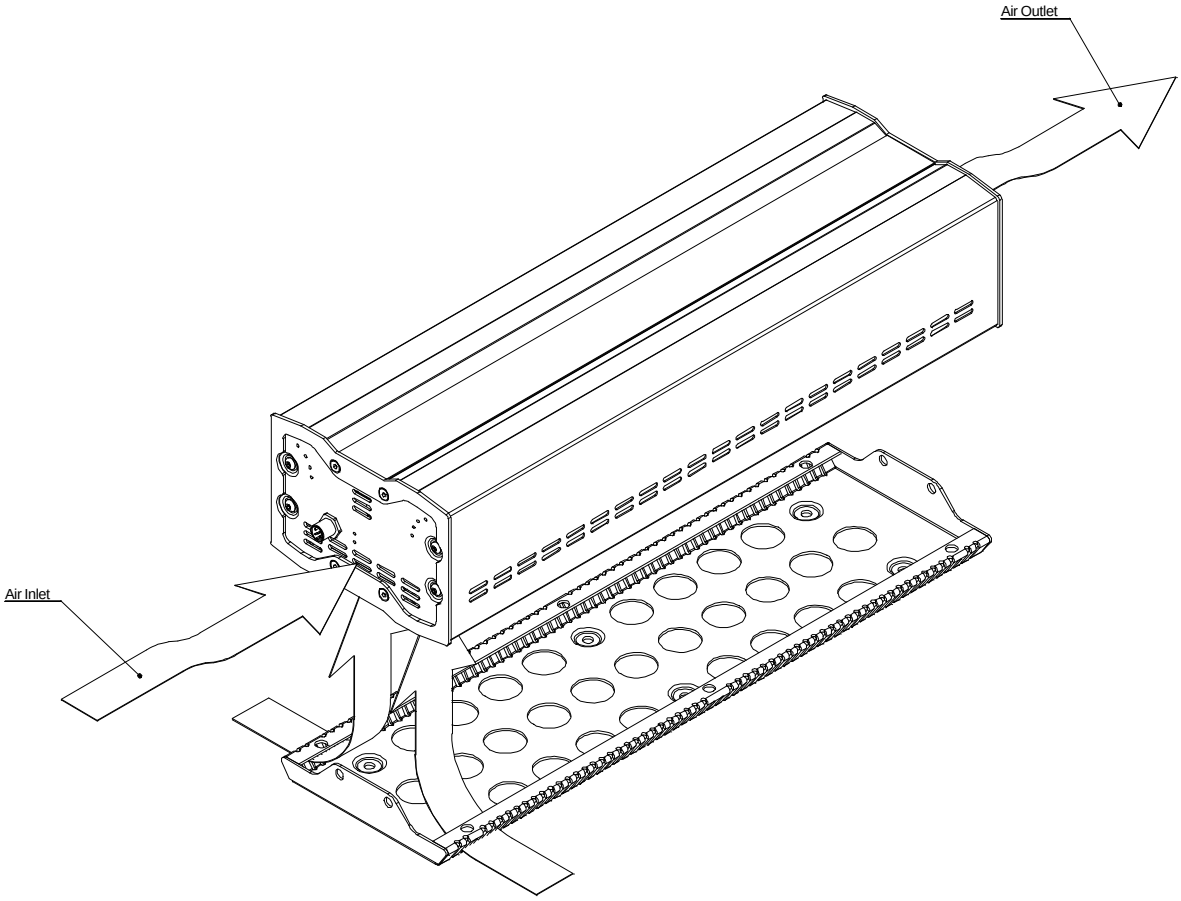
2 CHOOSING A POSITION FOR THE WAVESCULPTOR

2.1 AIRFLOW

Careful attention should be paid to positioning the WaveSculptor correctly, to ensure optimum performance.

The main criteria for choosing a good mounting location is ambient temperature and airflow. The WaveSculptor's average power capability is limited by cooling, and it relies on a flow of air to be available near the inlet vent locations.

Air is pulled into the controller through slots in the CAN connection & status LED end plate, as well as from underneath the controller through the mounting tray. Air is exhausted from the controller through slots in the motor and DC bus wiring end plate. The following diagram shows approximate locations.

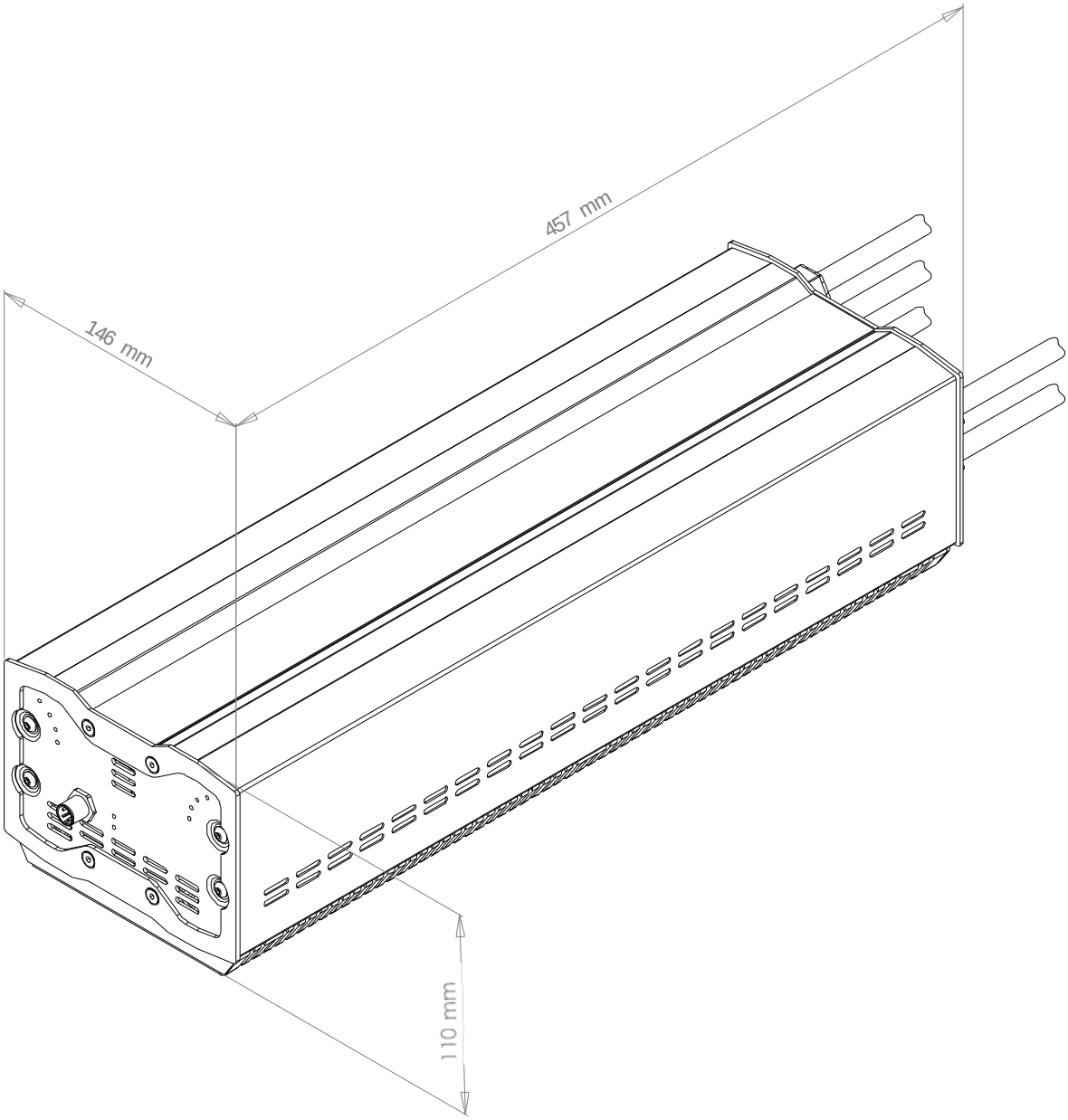


The average power quoted in the controller datasheet is for an ambient temperature of 40°C. Providing air at a lower temperature than this will allow the controller to operate using lower fan speeds (less power consumption), or alternatively, allow operation at higher average power levels.

At least 100mm clearance should be provided between the ends of the WaveSculptor and any nearby obstructions, to allow a free flow of air to and from the controller.

2.2 CLEARANCE

Please refer to the following diagram for total external dimensions of the WaveSculptor controller, when mounted on the supplied tray.



Sufficient room must be allowed at each end of the controller for unobstructed airflow, and to allow clearance for CAN bus, Motor and DC power cabling and connectors.

Tritium suggests a minimum of 100mm clearance at each end of the controller, although allowing 200mm or more will result in less cluttered cable routing.

A clearance of around 10mm should be allowed between the sides and top surfaces of the WaveSculptor, and any other nearby objects.

3 FIXING THE MOUNTING TRAY

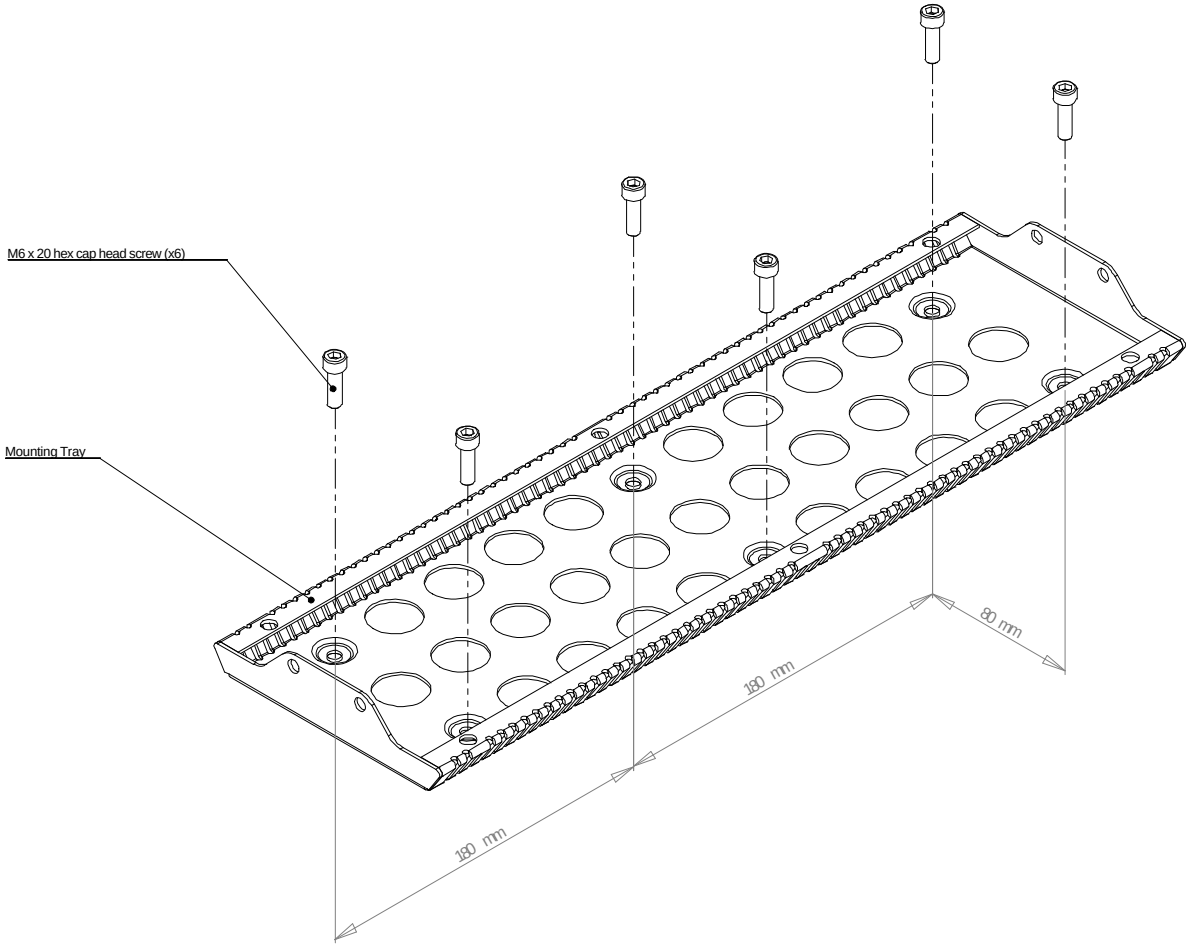
The WaveSculptor is provided with a lightweight folded aluminium mounting tray for fixing the controller into your vehicle.

This tray should be permanently fastened to your chosen attachment point for the WaveSculptor. It does not need to be removed to attach and release the WaveSculptor.

The usual method of securing the mounting tray to a vehicle is through the use of six M6 (or closest imperial equivalent) socket head screws or bolts. The base tray is symetrical around both centrelines, with fixings on 180 x 80mm centres.

Over 10mm of vertical clearance is provided inside the mounting tray (up to the base of the WaveSculptor), allowing the use of a wide variety of fasteners.

Please refer to the following diagram for an overview of the mounting tray system.

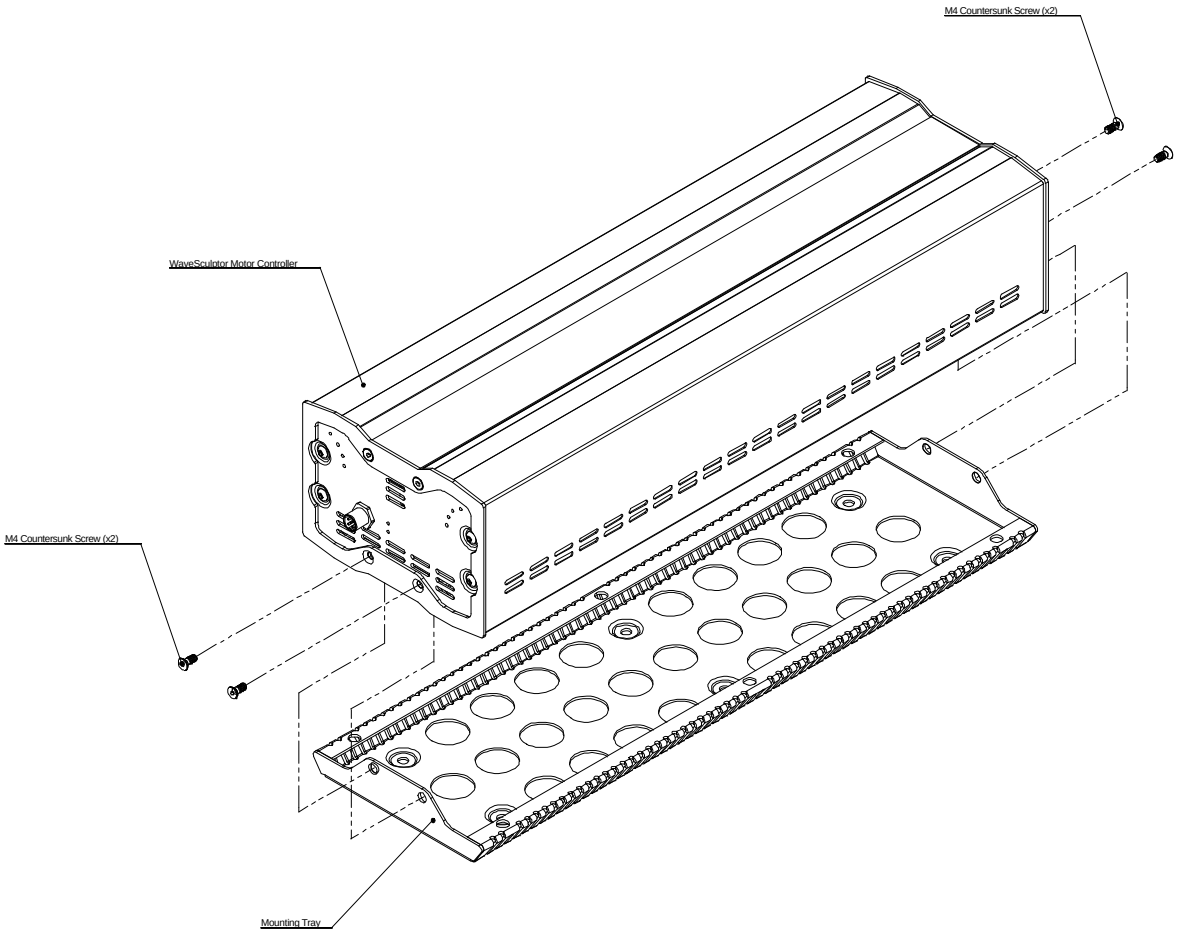


4 FITTING THE WAVESCULPTOR

The WaveSculptor is held into the mounting tray using four M4 x 10 countersunk screws, two at each end. These screws use a 2.5mm allen (hex) key.

To fit the controller into your vehicle, lower the WaveSculptor over the end tabs on the mounting tray so that the tabs slide up inside the end plates of the controller.

Once it is resting on the tray, insert the four M4 screws and tighten with the hex key, please refer to the following diagram for placements:



Please note that there are other screws accessible on the end faces of the WaveSculptor. These should not need to be accessed except to disassemble the controller.

5 REVISION HISTORY

Version	Date	Description
1	30 November, 2006	Document creation (JMK)