



**PRODUCT BRIEF**

WaveSculptor Motor Drive  
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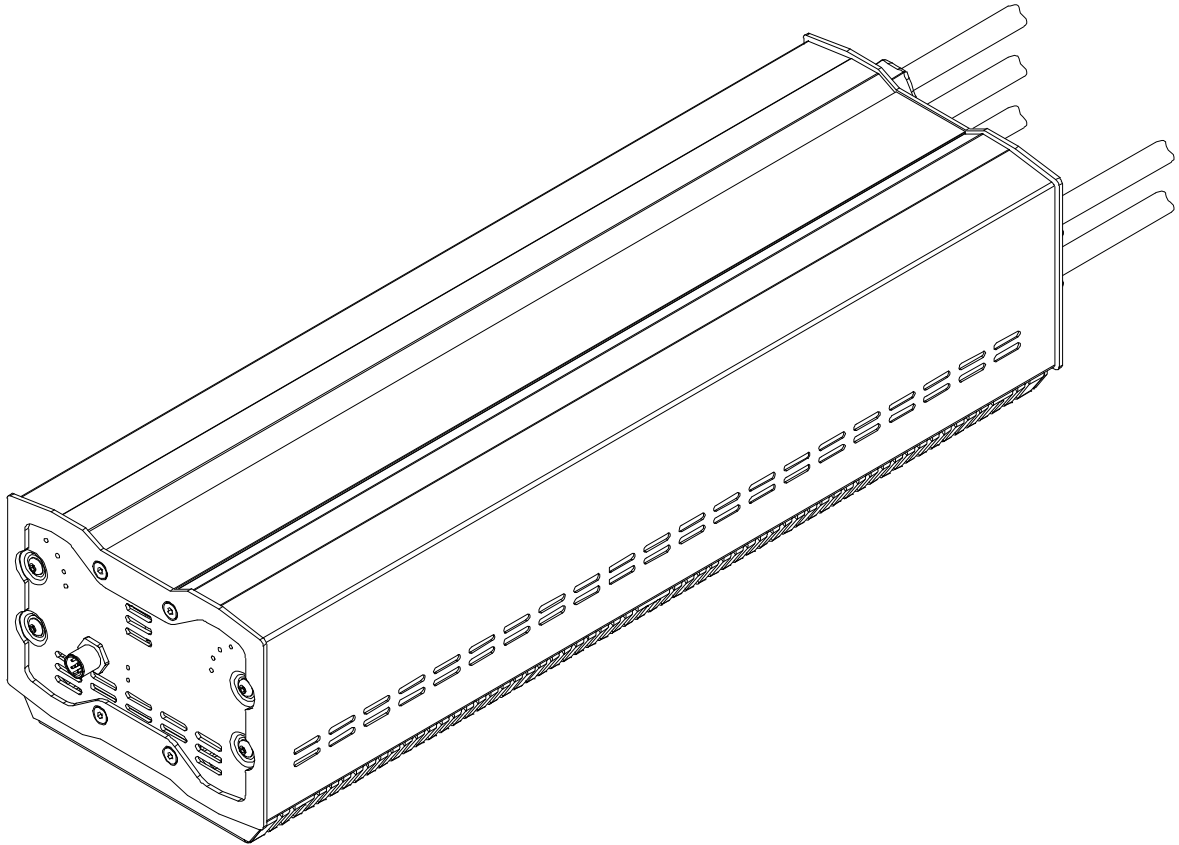
# **WaveSculptor Motor Drive Product Brief**

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## 1 INTRODUCTION

This document briefly describes the features and specifications of the Tritium WaveSculptor 3-phase motor drive.



## 2 FEATURES

### 2.1 OVERVIEW

The WaveSculptor provides an off-the-shelf solution for light electric vehicle drive systems, combining advanced three-phase inverter technology with intelligent software.

A large amount of development time has been devoted to the control software and user interface, making the WaveSculptor compatible with a wide range of electric motors, and easy to use for non-technical customers.

The WaveSculptor provides a three-phase space-vector modulated sinewave output from a high-voltage DC bus, to maximise motor efficiency and minimise noise. It is designed specifically for use with solar vehicle and other light EV applications.

Tritium acknowledges the contribution of the Queensland Government, through the Queensland Sustainable Energy Innovation Fund (QSEIF), which has enabled this project to proceed.

## 2.2 MOTOR INTERFACE

The WaveSculptor drives permanent magnet motors with position sensors, including:

- CSIRO surface
- CSIRO halbach
- NGM SC-M150
- Lillington T-Flux
- Permanent magnet synchronous machines (PMSM)
- Brushless DC machines (BLDC)

## 2.3 VOLTAGE RATINGS

- Maximum battery voltage: 160V
- Output voltage: 110V rms line-to-line

## 2.4 CONTINUOUS RATINGS

- Output power: 10kVA
- Motor current: 50A rms
- Typical vehicle cruising efficiency: ~97%

## 2.5 PEAK RATINGS

- Output power: 20kVA
- Motor current: 100A rms
- Max efficiency: ~98%

## 2.6 PHYSICAL

- 457(l) x 146(w) x 110(h) mm
- 4kg
- Detachable lightweight tray mounting system
- High-current power connectors — no exposed bolt terminals
- Case isolated to 400V

## 2.7 CONTROL & DIAGNOSTIC INTERFACE

- CAN bus
- Isolated to 400V
- Bit rates to 1 Mbit/s
- Windows setup and control software
- Control and interface powered from 12V DC on CAN bus
- Allows redundant power supply systems and battery backup

## 2.8 AVAILABLE PERIPHERAL SUPPORT

Tritium provides other peripheral devices using CAN bus, including

- Driver interface / control
- LCD displays
- High voltage DC bus precharge circuit

All specifications are subject to modification due to product improvement.