TRITIUM

WaveSculptor Front Panel Display Specification

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Brisbane, Australia

http://www.tritium.com.au

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1   INTRODUCTION

This document describes the behaviour of the front panel indicators on the Tritium WaveSculptor Motor Controller.

For a more detailed description of the error conditions, please refer to the Software User's Manual document (TRI50.026) available on the Tritium website.

2   FRONT PANEL LAYOUT
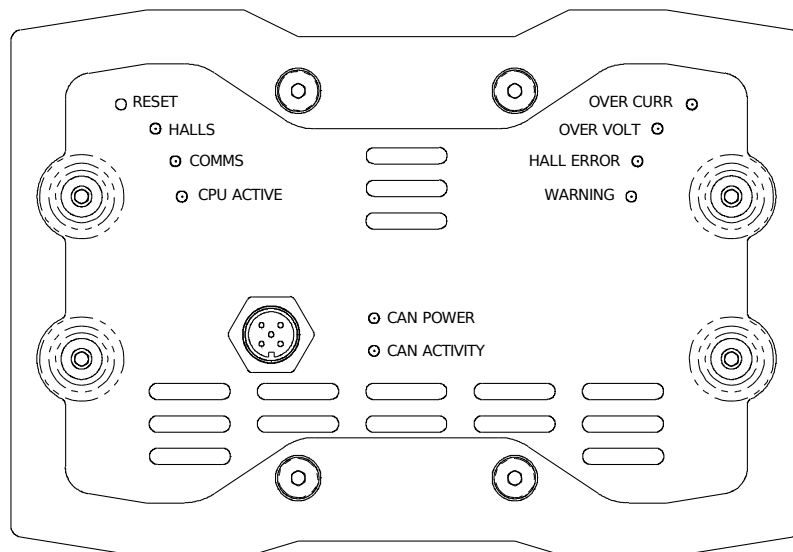
3   INDICATOR FUNCTIONS

3.1   CPU ACTIVE LED

This LED illuminates Green. This LED flashes at approximately 1 Hz if the processor in the WaveSculptor is powered and functioning.

3.2   COMMS LED

This LED illuminates Green. This LED toggles every time the WaveSculptor receives a Motor Drive command on the CAN bus. This indicates that the CAN bus hardware is functional and that the processor is correctly receiving and identifying frames on the bus.

3.3   HALLS LED

This LED illuminates Green. This LED toggles every time there is an edge (rising or falling) on any of the three incoming motor position hall signals. This can be used as a quick check to diagnose faulty hall signals.

3.4   OVER CURRENT LED

This LED illuminates Red.

3.4.1   Continuous

The instantaneous motor phase current was found by the motor controller software to be more than 15% above the configured **Current Limit** * sqrt(2). The **Current Limit** setting can be found in the general tab of the configuration dialog box in the Windows PC setup / configuration software. The controller needs only a single sample above the trip point to trigger this error.

3.4.2   Flashing

The hardware comparators in the motor controller detected an instantaneous motor phase current above the **Hard Current Limit** setting. This setting is factory set in hardware to approximately 180A, and can be viewed in the general tab of the configuration dialog box in the Windows PC setup / configuration software. It is difficult to trigger this fault, and doing so is usually indicative of a serious fault in either the motor, wiring or controller. This warning overrides the software (continuous illumination) fault.

3.5   OVER VOLTAGE LED

This LED illuminates Red. The DC bus voltage was found by the motor controller software to be above the **Bus Over Voltage** setting. This setting can be found in the calibration tab of the configuration dialog box in the Windows PC setup / configuration software, with a factory default of 180V. The controller needs only a single sample above the trip point to trigger this error.

Do not confuse this setting with the **Max Bus Voltage** configuration value, which is used as an target value input to the control loop for the WaveSculptor software.

3.6   HALL ERROR LED

This LED illuminates Red. The incoming sequence of edges from the motor position hall sensors did not match the expected value for the direction of motor travel. This indicates a fault in the motor sensors, wiring or connectors. The expected sequence is learned by the WaveSculptor when the phasorsense algorithm is run during initial setup and configuration.

3.7   WARNING LED

The LED illuminates Yellow.

3.7.1   Continuous

There has been an error reading part of the configuration or calibration data from the file stored in the motor controller. The controller will operate, but only using the factory default settings, which may not be optimal for your motor and vehicle.

3.7.2   Flashing

The last reset of the controller was due to a watchdog timeout. This warning overrides the config file readout warning.

3.8   CAN POWER LED

This LED illuminates Green. This LED is lit whenever there is approximately 12V DC power supplied along the CAN bus cable to operate the electronics and control systems of the controller. It does not indicate the presence or absence of power on the high-voltage DC bus.

3.9   CAN ACTIVITY LED

The LED illuminates Green. This LED pulses briefly every time activity is detected on the CAN bus. Any activity on the bus will trigger the pulse, they are not specific to frames from or to the WaveSculptor. This LED indicates that the CAN hardware and isolation barrier is functional, but not that the processor in the controller is necessarily receiving meaningful data.

4   REVISION RECORD

REV	DATE	CHANGE
1	18 May 2007	Document creation (JMK)