

RaceGrade Advanced Sensor Manager

Introduction

Get the most out of the RaceGrade Advanced Sensor product line with the new RaceGrade Advanced Sensor Manager! This standalone application displays live data and enables customization of the internal settings for your TC8, IMU, and AERO8 products giving you the flexibility you need for advanced data acquisition in a range of applications.



Communications

The RaceGrade Advanced Sensor Manager connects directly to your application's CAN Bus via the PEAK Systems P-CAN USB to CAN converter. To purchase a P-CAN go to <http://www.peak-system.com>

Expanded Functionality Overview

- All Devices:
 - CAN Communications
 - Configure Bus Speed
 - Configure Device CAN ID
 - View Live Sensor Readings
- TC8:
 - Configure Output Mode
- IMU:
 - Zero Accelerometer
 - Apply Data Filters
 - Configure Sensitivity
- AERO8:
 - Zero Pressure Ports
 - Transmission Rate

The screenshot shows the RaceGrade Manager Suite v1.0.19 interface. It features several panels: 'PCAN Channels' with a dropdown set to 'PCAN_USB 1 (51h)' and a 'Refresh' button; 'Devices' table listing 'TC8 #194 (v1.44)' with CAN ID '0xF0' and 'AERO8 #105 (v1.51)' with CAN ID '0x430'; 'Device Configuration - TC8' with fields for 'Current' and 'New' CAN IDs (both 'F0') and radio buttons for 'E888 Mode' and 'Standard Mode'; 'Device Output' showing eight temperature plots for Port 1 through Port 8; and 'Device Readings - TC8' displaying sensor temperatures (TC 1: 1014.25 °C, TC 2: 1011.50 °C, TC 3: 1025.75 °C, TC 4: 1025.00 °C, TC 5: 1013.00 °C, TC 6: 1014.50 °C, TC 7: 1021.25 °C, TC 8: 1017.25 °C) and system metrics like 'Battery Volts: 11.9 V' and 'Board Temp: 23.7 °C'.

Connecting to a Device

First wire your P-CAN into your CAN bus then plug the USB connector into your PC. When first opened AS Manager will look for any available P-CAN devices and automatically initialize the connection to the first found P-CAN. If connection fails, click the "Refresh" button to restart the discovery process. If you need to switch to a different P-CAN, click "Release" to disconnect from the first P-CAN. Once successfully connected to the CAN bus AS Manager will automatically detect and begin communications with any found IMU, TC8 or AERO8.

Changing Device CAN Bus Speed

All RaceGrade Advanced Sensor products are configured by default to communicate at 1 Megabit/sec baud rate. It is necessary to change a device's communication speed if connecting to a bus at a different rate. To do this remove all other devices from the CAN Bus, select your desired speed, and click "Set". Disconnect the device and repeat for all devices.

Changing Device CAN ID

All device's CAN IDs may be changed to any desired value however be careful not to duplicate any ID. All IDs are in hexadecimal valid IDs: 0-7FF

TC8 Configuration

CAN Output Mode

The TC8 has a special CAN communications mode in order to mimic the output of a MoTeC E888 input expander. This makes it easy to communicate with other MoTeC devices like the M800 and C125 as they come loaded with pre-written CAN templates. Standard mode allows you to choose your own CAN ID and select whether the device will output temperature or voltage.

IMU Configuration

Zero Accelerometer

The IMU's accelerometer can be zeroed via the RaceGrade AS Manager to give you the most reliable data possible. The zeroing feature assumes that the vertical axis is reading one G and the other two are reading zero G's.

Data Filtering

The IMU has two different types of filters that can be applied to the accelerometer before the data gets send out. Along with filtering method the time period that the IMU filters your data is user configurable.

AERO8 Configuration

Zero Ports

The RaceGrade AS Manager gives you the able to zero each one of the 8 different pressure ports on the AERO8. This feature gives you the ability to get the most accurate readings possible from your RaceGrade AERO8.

