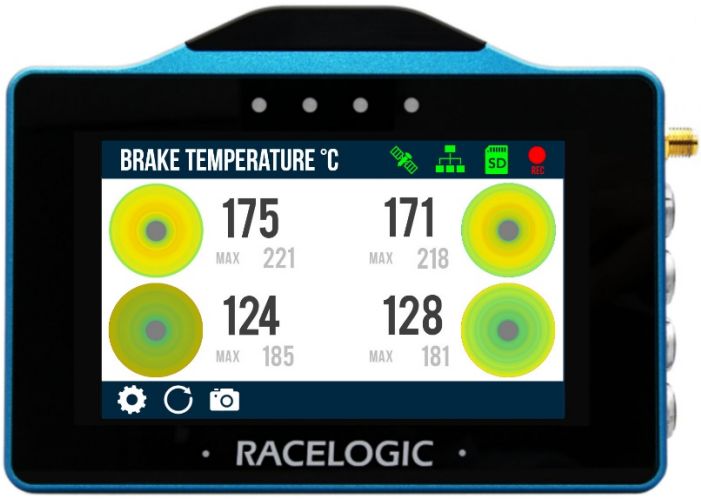
# Brake Temperature Monitoring System (RLVBBTMS)

Racelogic Brake Temperature Monitoring System has been specifically designed to measure, log and display surface temperature of a brake disc, providing invaluable information.

The display offers a visual representation of the whole surface temperature for all four brake discs via 64 individual heat maps, as well as live temperature and maximum temperature values.

Each sensor can measure up to 16 temperature points on an object with surface temperatures ranging from -20°C to 950°C.




## Features

- 4.3" TFT daylight readable capacitive touch screen
- 4 x high brightness LED indicators
- Up to 16 temperature points per sensor
- CAN Bus data output
- Removable protective rubber cover included
- 10 Hz GPS receiver with internal patch antenna
- SMA connector for external GPS antenna (overrides internal antenna when connected)
- Wi-Fi and Bluetooth connectivity

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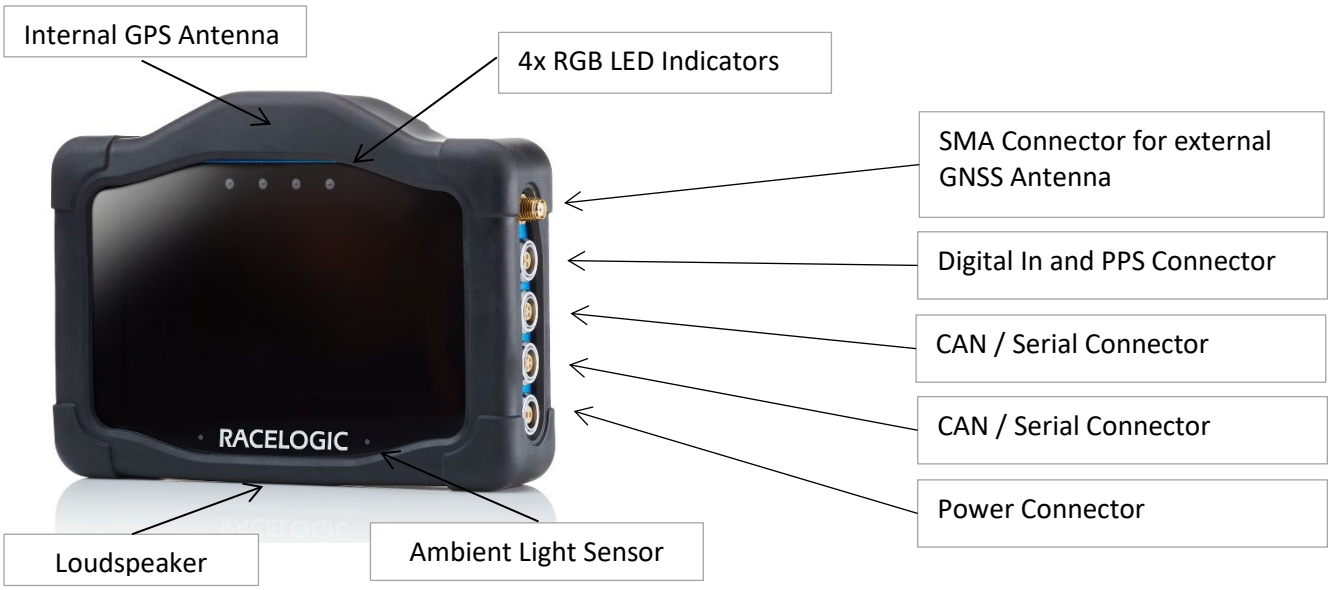
## The Display




## GPS Specifications

| Velocity | | Distance | |
|---|---|---|---|
| **Accuracy** | 0.1 km/h (averaged over 4 samples) | **Accuracy** | 0.05 % (< 50 cm per km) |
| **Update rate** | 10 Hz | **Resolution** | 1 cm |
| **Maximum velocity** | 1600 km/h | **Heading** | |
| **Minimum velocity** | 0.5 km/h | **Resolution** | 0.01° |
| **Resolution** | 0.01 km/h | **Accuracy** | 0.3° |

| Position | | Acceleration | |
|---|---|---|---|
| **2D Position** | ±2 m[1] 95 % CEP[2] | **Accuracy** | 1 % |
| **Height** | ±10 m 95 % CEP[2] | **Maximum** | 4 g |
| | | **Resolution** | 0.01 g |

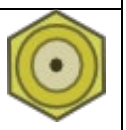
**Definitions**

[1] 2 m accuracy with SBAS DGPS or 2.5 m accuracy without SBAS DGPS.

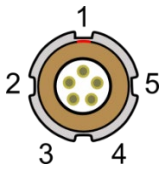
[2]95 % CEP (Circle of Error Probable) means 95 % of the time the position readings will fall within a circle of the stated radius.

## Connector Pin Allocation

### SMA Connector 1

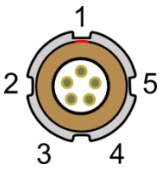
| GNSS Antenna Connector: | | | |
|---|---|---|---|
| Pin | I/O | Function |  |
| Centre | I | RF Signal / Power for active | |
| Shell | I | Ground | |

### 5-way LEMO Connector 1

| CAN/ Serial Connector: | | | |
|---|---|---|---|
| Pin | I/O | Function |  |
| 1 | O | Tx-RS232 | |
| 2 | I | Rx-RS232 | |
| 3 | I/O | CAN High | |
| 4 | I/O | CAN Low | |
| 5 | I | Power | |
| Shell | I | Ground | |

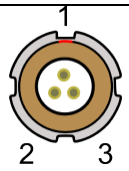


### 5-way LEMO Connector 2

| CAN/ Serial Connector: | | | |
|---|---|---|---|
| Pin | I/O | Function |  |
| 1 | O | Tx-RS232 | |
| 2 | I | Rx-RS232 | |
| 3 | I/O | CAN High | |
| 4 | I/O | CAN Low | |
| 5 | I | Power | |
| Shell | I | Ground | |

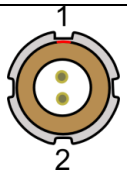


### 3-way LEMO Connector

| Digital In and PPS Connector: | | | |
|---|---|---|---|
| PIN | I/O | Function |  |
| 1 | I | Ground | |
| 2 | O | PPS | |
| 3 | I | Event/Brake Trigger | |



### 2-way LEMO Connector

| Power Connector: | | | |
|---|---|---|---|
| Pin | I/O | Function |  |
| 1 | I | Power | |
| 2 | I | Ground | |
| Shell | I | Ground | |

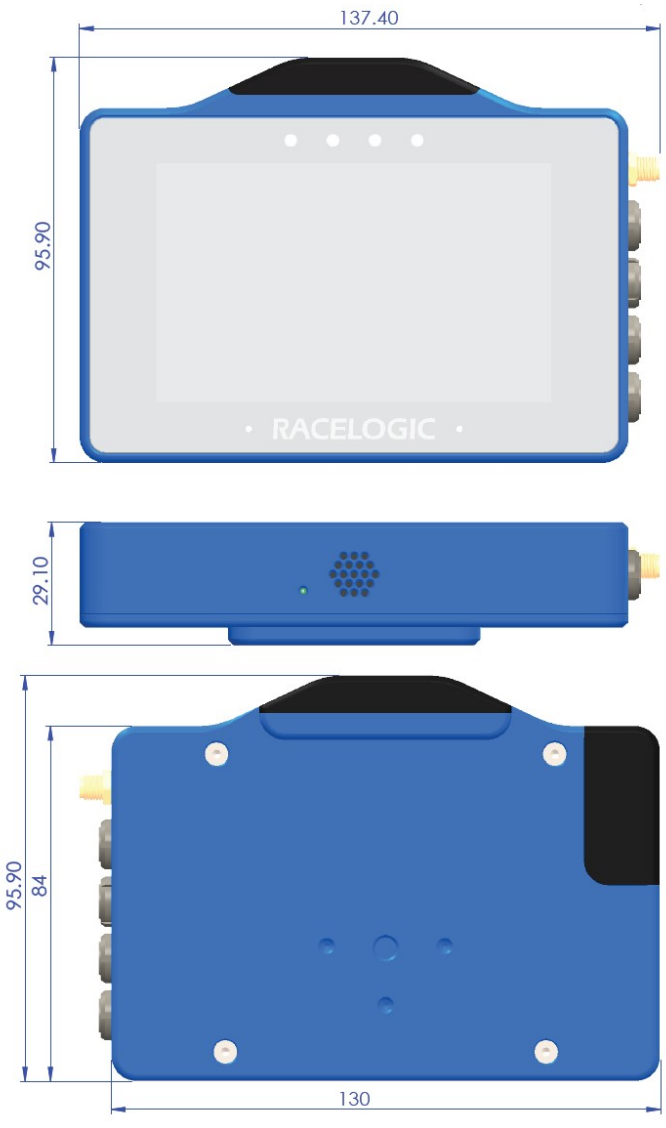
# Brake Temperature Monitoring System (RLVBBTMS)

## Environmental and Physical

| Environmental and Physical | |
|---|---|
| **Input Voltage** | 6 – 30 V DC |
| **Power** | <7 W |
| **Operating Temperature** | -20°C to +60°C |
| **Storage Temperature** | -20°C to +80°C |
| **Size (rounded)**<br>Unit<br>Rubber Cover | <br>138 x 96 x 29 mm<br>142 x 103 x 36 mm |
| **Weight**<br>Unit<br>Rubber Cover | <br>375 g<br>75 g |

| Touch Screen | |
|---|---|
| **Size** | 4.3” TFT Capacitive Touch |
| **Resolution** | 480*800 pixels |
| **TFT LCD Display Colours** | 262K colours (18 Bit) |

| Mounting |
|---|
| Richter mounting system or ¼ ” 20TPI UNC |



# Brake Temperature Monitoring System (RLVBBTMS)

## The Brake Temperature Sensors

## Specification

| | |
|---|---|
| Temperature Measurement Range | -20 to 950° C |
| Accuracy | **<±2.0%** FS |
| Uniformity | **±1.0%** FS for -20° C < Tp < 85° C |
| Noise Equivalent Temperature Difference (NETD) | 0.8° C at 32 Hz, ε = 0.85 |
| Field of View, FOV | 60° x 8° |
| Number of Channels | 16 |
| Thermal Time Constant | 2 ms |
| Effective Emissivity | 0.01 – 1.00 (default = 0.55) |
| Spectral Range | 8 to 14 µm |

## Electrical

| | |
|---|---|
| Recommended Supply Voltage | 5 to 8 V |
| Supply Current | 30 mA |

Features Reverse polarity protection and over-temperature protection (125° C)

## Wiring

| | |
|---|---|
| Supply Voltage | Red |
| Ground | Black |
| CAN + | Blue |
| CAN - | White |

## Mechanical

| | |
|---|---|
| Weight | 20 g |
| Protection Rating | IP 66 |

## CAN

| | | | |
|---|---|---|---|
| Standard | CAN2.0A (11 bit identifier) ISO-11898 | **Base CAN ID's** | |
| Bit Rate | 1 Mbit/s | Front Left Sensor | 0x4C4 |
| Byte Order | Big-Endian / Motorola | Front Right Sensor | 0x4C9 |
| Scale | 0.1°C / bit | Rear Left Sensor | 0x4CE |
| Offset | -100°C | Rear Right Sensor | 0x4D3 |

CAN ID: Base ID

| Channel 1 | | Channel 2 | | Channel 3 | | Channel 4 | |
|---|---|---|---|---|---|---|---|
| Byte 0 (MSB) | Byte 1 (LSB) | Byte 2 (MSB) | Byte 3 (LSB) | Byte 4 (MSB) | Byte 5 (LSB) | Byte 6 (MSB) | Byte 7 (LSB) |

CAN ID: Base ID+1

| Channel 5 | | Channel 6 | | Channel 7 | | Channel 8 | |
|---|---|---|---|---|---|---|---|
| Byte 0 (MSB) | Byte 1 (LSB) | Byte 2 (MSB) | Byte 3 (LSB) | Byte 4 (MSB) | Byte 5 (LSB) | Byte 6 (MSB) | Byte 7 (LSB) |

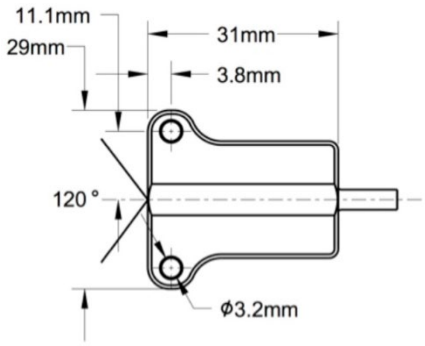
CAN ID: Base ID+2

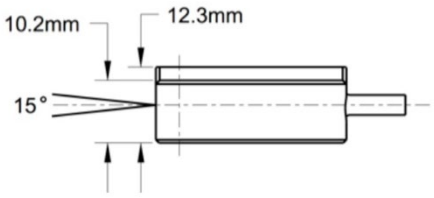
| Channel 9 | | Channel 10 | | Channel 11 | | Channel 12 | |
|---|---|---|---|---|---|---|---|
| Byte 0 (MSB) | Byte 1 (LSB) | Byte 2 (MSB) | Byte 3 (LSB) | Byte 4 (MSB) | Byte 5 (LSB) | Byte 6 (MSB) | Byte 7 (LSB) |

CAN ID: Base ID+3

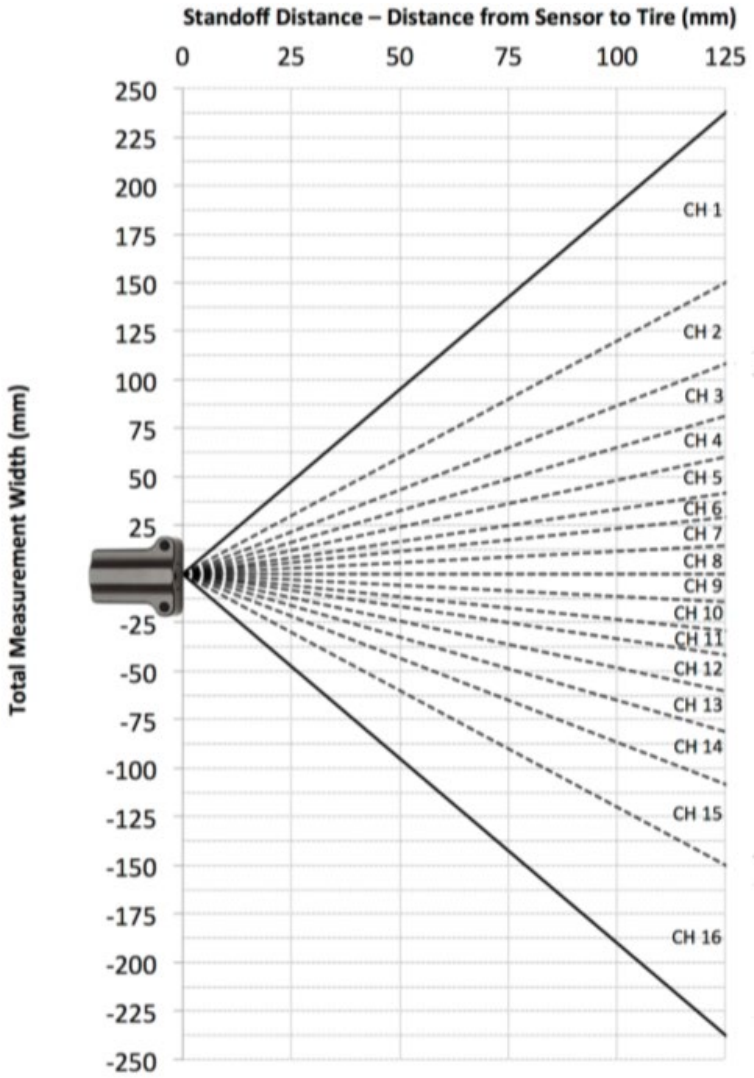
| Channel 13 | | Channel 14 | | Channel 15 | | Channel 16 | |
|---|---|---|---|---|---|---|---|
| Byte 0 (MSB) | Byte 1 (LSB) | Byte 2 (MSB) | Byte 3 (LSB) | Byte 4 (MSB) | Byte 5 (LSB) | Byte 6 (MSB) | Byte 7 (LSB) |

## Sensor Dimensions




## Field of View



# Brake Temperature Monitoring System (RLVBBTMS)

## Package Contents

| Description | Product Code |
|---|---|
| 1x VBOX Touch 10 Hz Unit | VBTOUCH-V1 |
| 1x Rubber Overmould | MECH0298SD |
| 1x Unterminated Power Supply (2 m cable) | RLCAB014LE |
| 4x 60° Field of View Brake Temperature Sensors | ACS314-60 |
| 1x Wiring Loom | ACS272LOOM |
| 1x 8 GB SDHC Card (Class 10) | RLACS259 |
| 1x GNSS Antenna | RLACS262 |
| 1x Swivel Neck Richter Suction Mount | RLACS277 |