

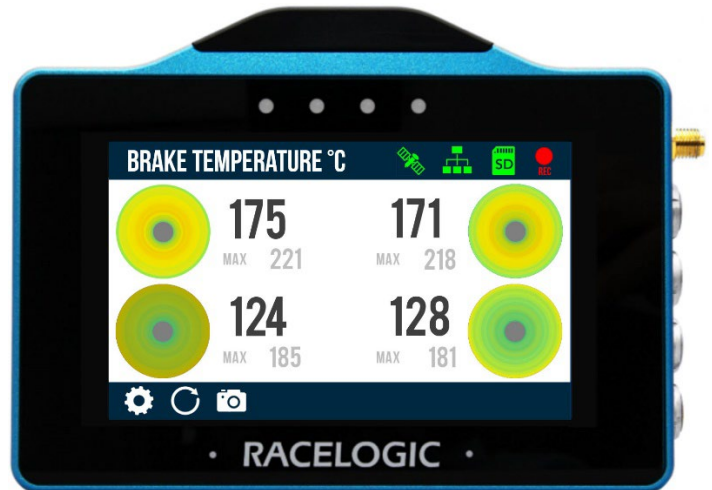
# Brake Temperature Monitoring System (RLVBBTMS)

**VBOX**  
MOTORSPORT

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.



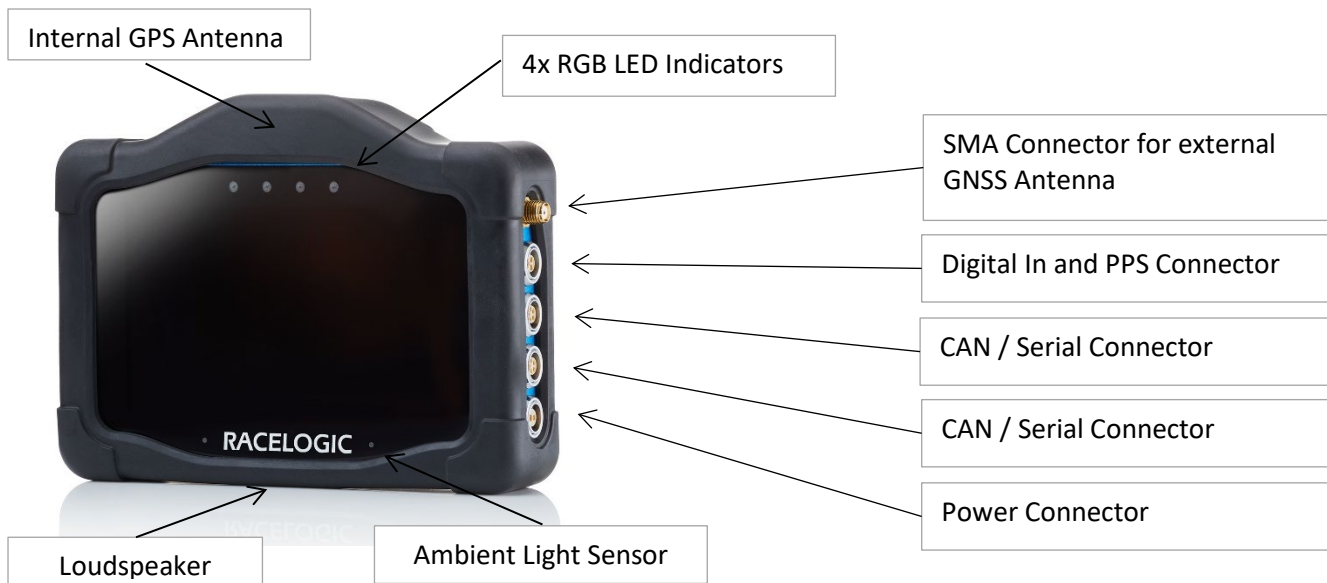
## Features

- 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
- 25 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	25 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	
Position Standalone*	2 m	Accuracy	1 %
Accuracy with SBAS*	1.3 m	Maximum	4 g
Resolution	0.00185 m	Resolution	0.01 g

\* Specifications will vary depending on the number of satellites used, obstructions, satellite geometry (PDOP), multipath effects, and atmospheric conditions. For maximum system accuracy, always follow best practices for GNSS data collection.

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# Brake Temperature Monitoring System (RLVBBTMS)

## Connector Pin Allocation

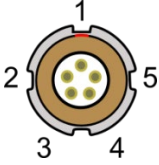
### SMA Connector 1

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



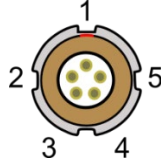
### 5-way LEMO Connector 1

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



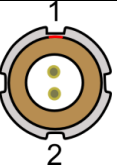
### 3-way LEMO Connector

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)

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## Environmental and Physical

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

Touch Screen	
<b>Size</b>	4.3" TFT Capacitive Touch
<b>Resolution</b>	480*800 pixels
<b>TFT LCD Display Colours</b>	262K colours (18 Bit)

Mounting	
Richter mounting system or ¼" 20TPI UNC	



# Brake Temperature Monitoring System (RLVBBTMS)

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## 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

# Brake Temperature Monitoring System (RLVBBTMS)



## Mechanical

Weight	20 g
Protection Rating	IP 66

## CAN

Standard	CAN2.0A (11 bit identifier) ISO-11898	<b>Base CAN ID's</b>	
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

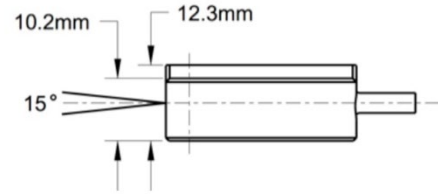
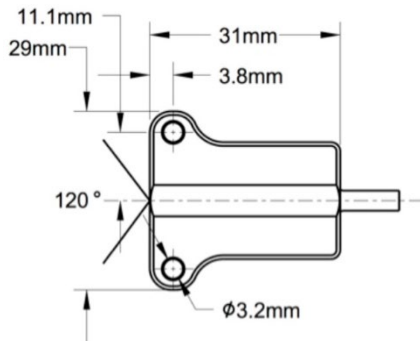
Channel 13		Channel 14		Channel 15		Channel 16	
Byte 0 (MSB)	Byte 1 (LSB)	Byte 2 (MSB)	Byte 3 (LSB)	Byte 4 (MSB)	Byte 5 (LSB)	Byte 6 (MSB)	Byte 7 (LSB)



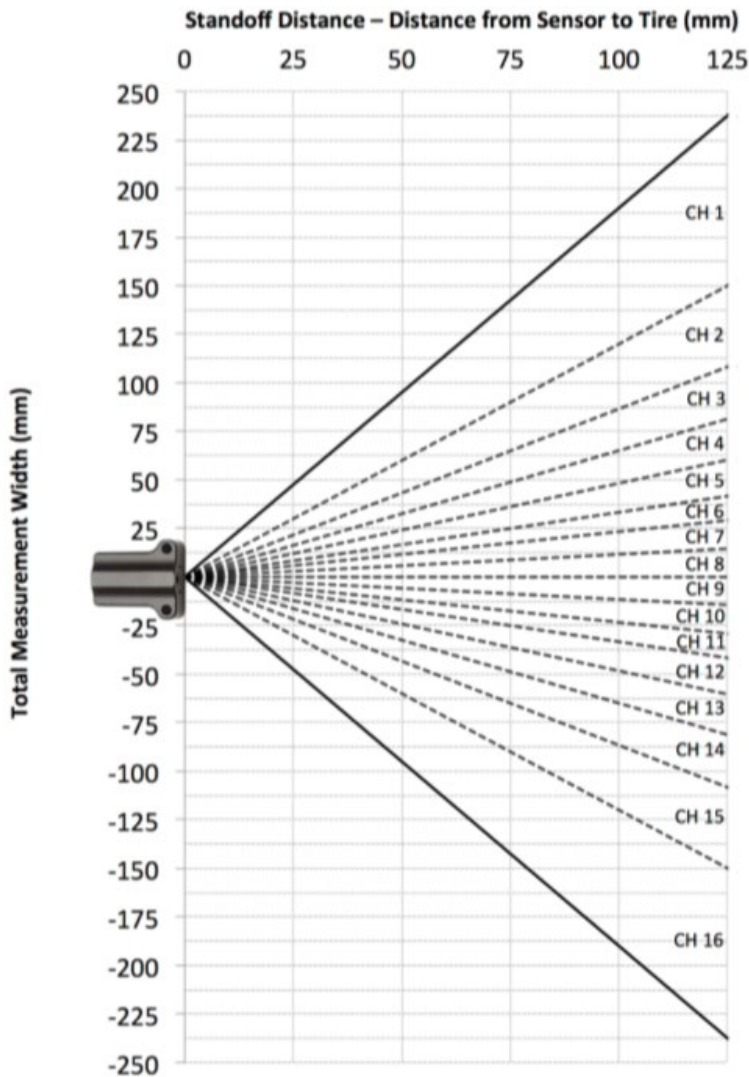
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## Sensor Dimensions



## Field of View



# Brake Temperature Monitoring System (RLVBBTMS)

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## Package Contents

Description	Product Code
1x VBOX Touch Unit	VBTOUCH-V2
1x Rubber Overmould	MECH0298SD
1x Unterminated Power Supply (2 m cable)	RLCAB014LE
4x 60° Field of View Brake Temperature Sensors & Wiring Loom	RLACS314
1x 8 GB SD Card	RLACS313
1x GNSS Antenna	RLACS262
1x Suction Mount	RLACS331
1x Plastic Carry Case for VBOX Touch	RLACS281
1 x Calibration Certificate	RLCALUKAS