Tyre Temperature Monitoring System (RLVBTTMS)

The Racelogic Tyre Temperature Monitoring System has been specifically designed to measure, log and display surface temperature of a tyre, providing invaluable information to the driver whilst on track.

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

This tool enables drivers and teams alike to fine tune the car and manage their tyres in real time, which is extremely useful in endurance racing.
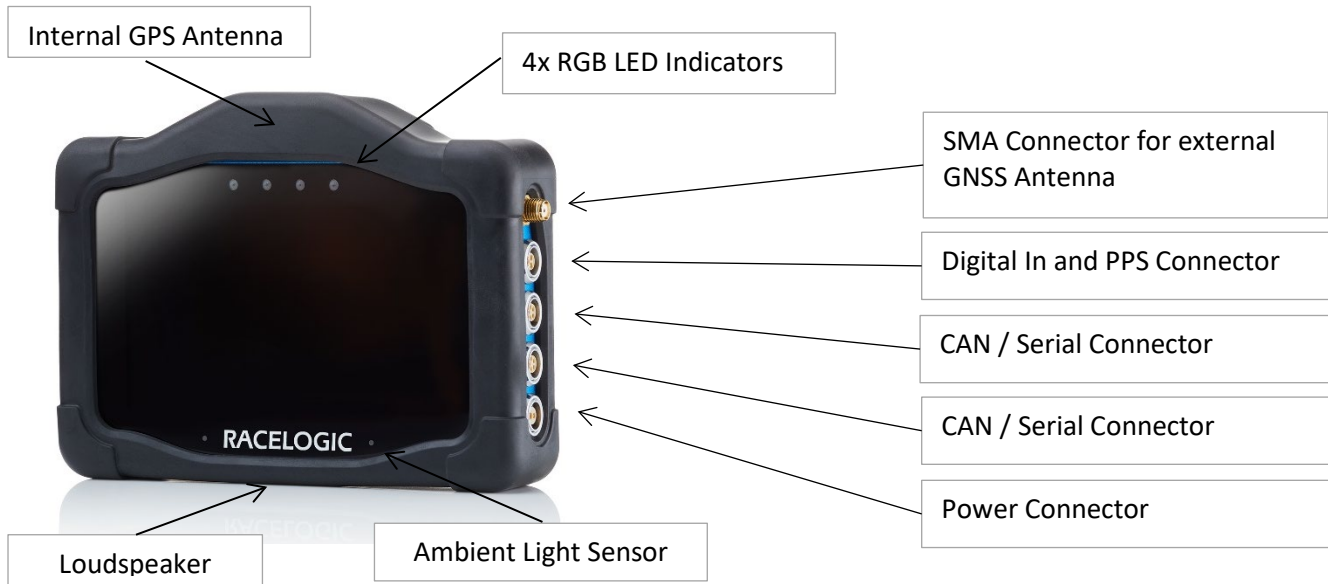

Features

- 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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Tyre Temperature Monitoring System (RLVBTTMS)

The Display

Internal GPS Antenna

4x RGB LED Indicators

SMA Connector for external GNSS Antenna

Digital In and PPS Connector

CAN / Serial Connector

CAN / Serial Connector

Power Connector

Loudspeaker

Ambient Light Sensor

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

Definitions

*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.
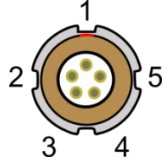
Connector Pin Allocation
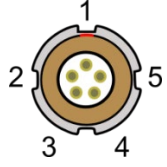
SMA Connector 1

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
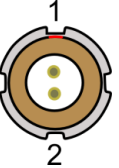
5-way LEMO Connector 2

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

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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) Unit Rubber Cover	138 x 96 x 29 mm 142 x 103 x 36 mm
Weight Unit Rubber Cover	375 g 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

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The Tyre Temperature Sensors

Specification

Temperature Measurement Range	-20 to 300° C
Accuracy (Central 10 Channels, Nominal)	**±1.0° C** for 0° C < Tp < 50° C **±2.0° C** for Tp < 0° C and Tp > 50° C
Accuracy (First & Last 3 Channels, Nominal)	**±2.0° C** for 0° C < Tp < 50° C **±3.0° C** for Tp < 0° C and Tp > 50° C
Field of View, FOV	120° x 15° (ultra-wide)
Number of Channels	16
Thermal Time Constant	2 ms
Effective Emissivity	0.85
Spectral Range	8 to 14 μm

Electrical

Recommended Supply Voltage	5 to 12 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

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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	0x4B0
Byte Order	Big-Endian / Motorola	Front Right Sensor	0x4B4
Scale	0.1°C / bit	Rear Left Sensor	0x4B8
Offset	-100°C	Rear Right Sensor	0x4BC

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

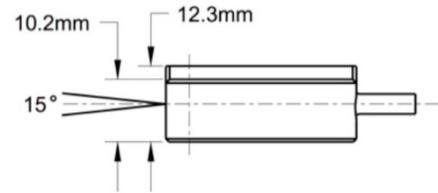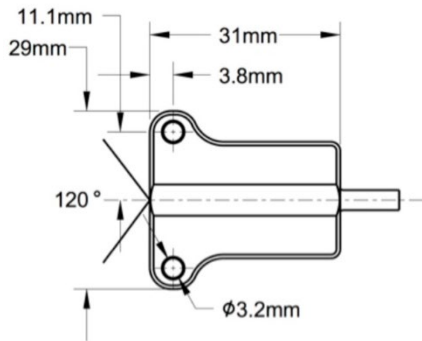| Channel 9		Channel 10		Channel 11		Channel 12	
Byte 0 (MSB)	Byte 1 (LSB)	Byte 2 (MSB)	Byte 3 (LSB)	Byte 4 (MSB)	Byte 5 (LSB)	Byte 6 (MSB)	Byte 7 (LSB)

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

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Tyre Temperature Monitoring System (RLVBTTMS)

Package Contents

Description	Product Code
1x VBOX Touch Unit	VBTOUCH-V2
1x Rubber Overmould	MECH0298SD
1x Unterminated Power Supply (2 m cable)	RLCAB010LE
4x 120° Field of View Tyre Temperature Sensors &Wiring Loom	RLACS272-120
1x 8 GB SD Ultima Pro Memory Card	RLACS313
1x GNSS Antenna (3 m cable)	RLACS262
1x Suction Mount	RLACS331
1x Plastic Carry Case for VBOX Touch	RLACS281
1 x Calibration Certificate	RLCALUKAS

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