Bluetooth^{TM} Module

User Guide

Warning!

The connectors used for the GPS antenna on the VBOX and the Bluetooth^{TM} Antenna connection on the Bluetooth^{TM} Module are both SMA type connectors. It is important to make sure that the GPS antenna is NOT connected to the Bluetooth^{TM} Module and that the Bluetooth^{TM} Antenna is NOT connected to the VBOX. Failure to observe this could damage either the Bluetooth^{TM} Module or the VBOX.

Warning!

The Bluetooth^{TM} Module contains sensitive circuitry that can be damaged if it is operated without a load placed on the antenna connector. For this reason, the Bluetooth^{TM} Module should never be connected to a power source (either directly or via a VBOX) without first connecting the supplied Bluetooth^{TM} Antenna. Failure to observe this could damage the Bluetooth^{TM} Module.

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EC Declaration of Conformity

Racelogic Ltd declare that this product   **RLVBBT01 Bluetooth Module**

Has been designed and manufactured in conformance with the following EC directives:

DIRECTIVE 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on Radio Equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity.

Presumption of conformity is demonstrated according to:

ETSI EN 301-489-17   Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagentic Compatibility (EMC) standard for radio equipment; Part 17 – Specific conditions for 2.4GHz wideband transmissions system, 5GHz high performance RLAN equipment and 5.8GHz Broadband Data transmitting Systems

IEC 215 / EN 60215   Safety requirements for radio transmitting equipment

And also

COMMISSION DIRECTIVE 2006/28/EC of 6 March 2006 amending, for the purposes of their adaptation to technical progress, Council Directive 72/245/EEC of 20 June 1972 relating to the radio interference (electromagnetic compatibility) of vehicles and Council Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers

as a non-immunity related device.

Racelogic ltd,
5 Little Balmer
Buckingham Industrial Park,
Buckignham
MK18 1TF
UK

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Introduction

The RLVBBT01 VBOX Bluetooth™ Module from Racelogic is a general purpose Bluetooth™ adapter, designed as an alternative to using a hard-wired serial connection between the VBOX and either a Q1 display (recommended) or laptop PC equipped with a Bluetooth™ interface.

The RLVBBT01 module allows the user to place the VBOX in a safe, dry and convenient location, facilitating the free use of the Q1 display, either by hand or mounted, without any cabling restrictions.

The RLVBBT01 offers high speed serial communications at 115K baud rate, ensuring full data capture and transfer.

The RLVBBT01 has minimal power consumption, resulting in insignificant drain on the VBOX power source – particularly useful when using a VBOX battery pack.

Features

- Bluetooth™ v1.2
- Wireless Data Communications
- Fast Baud Data Throughput
- External Antenna
- Up to 30m Range

- Low Current Consumption
- Compact Construction
- Lightweight
- IP30 Rated
- 3 x LEDS's for Operational Status indication

Standard Inventory

Description:	Quantity	Racelogic Part Number:
VBOX Bluetooth™ Module	1	VBBT01
300mm 5-way LEMO to 5-way LEMO cable	1	RLVBCAB06
Bluetooth™ Antenna	1	RLACS090

Power Supply

The Bluetooth™ module power supply range is 8V to 30V. When used with a VBOX logging system, power is obtained through the RLVBCAB06 connection cable. The maximum operating voltage input must not exceed 30V DC.

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Compatibility

The Bluetooth^{TM} module is designed for use with all VBOX modules which have an RS232 output, as an alternative to a hardwired connection to any Bluetooth^{TM} enabled Q1 display or laptop PC. The Bluetooth^{TM} module is a direct replacement for a serial cable and as such data transfer at 100Hz is limited to Velocity, Time, Number of Satellites and Trigger Event Time.
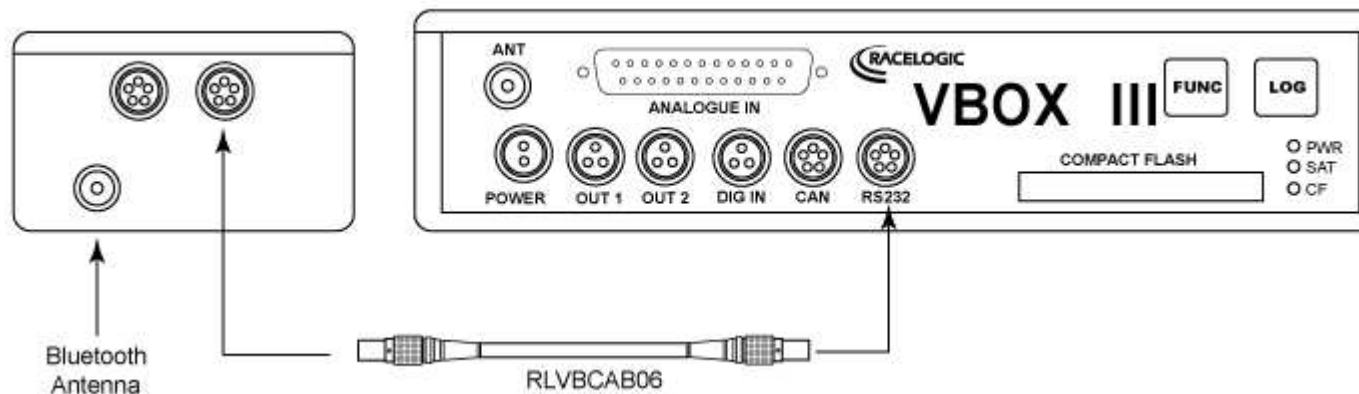
There are no known compatibility issues with the Bluetooth^{TM} module.

Getting Started

Prior to connecting the Bluetooth^{TM} module to the power source (VBOX), ensure that the antenna port is loaded with the Bluetooth^{TM} antenna. Failure to observe this could damage the module.

The connection between the VBOX and the Bluetooth^{TM} module should be made as follows:

Once connected, the Bluetooth^{TM} module has 3 LEDS to indicate status:

RED LED: Power – Illuminates when connected correctly.
GREEN LED: Rx – illuminates when module is receiving data.
BLUE LED: Tx – illuminates when module is transmitting data.

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Setting up the Bluetooth^{TM} Module with a Racelogic Q1 Display

The Q1 display is supplied with an internal Bluetooth^{TM} antenna. To configure the Q1 to communicate with the VBOX via the Bluetooth^{TM} module, follow the steps below:

Power up the Q1 – At the desktop screen you will need to click on the Bluetooth^{TM} icon in the system tray at the bottom of the screen. This will show the following screen:
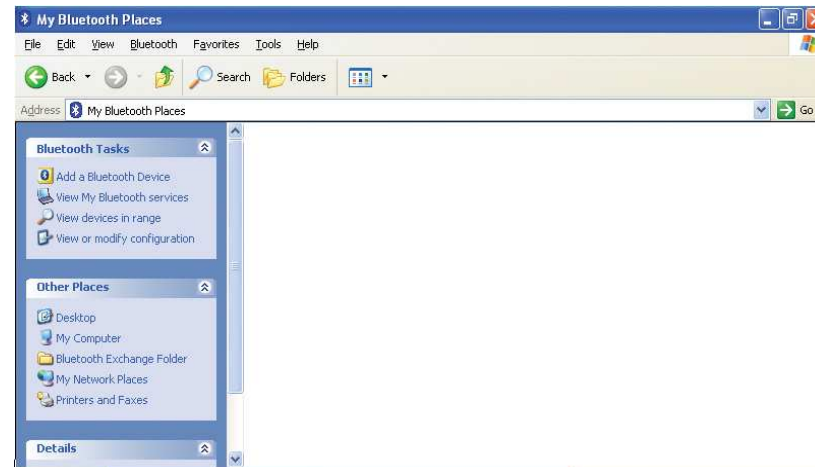
Next, click on "View devices in range". This will identify all Bluetooth^{TM} enabled devices within the range of the Q1's Bluetooth^{TM} receiver. The VBOX Bluetooth^{TM} module is identified with VBBT001, followed by the modules serial number – in this case VBBT01 - 005150

If you have already identified devices in range, you may need to click on "Search for devices in range" from this screen to identify the module.

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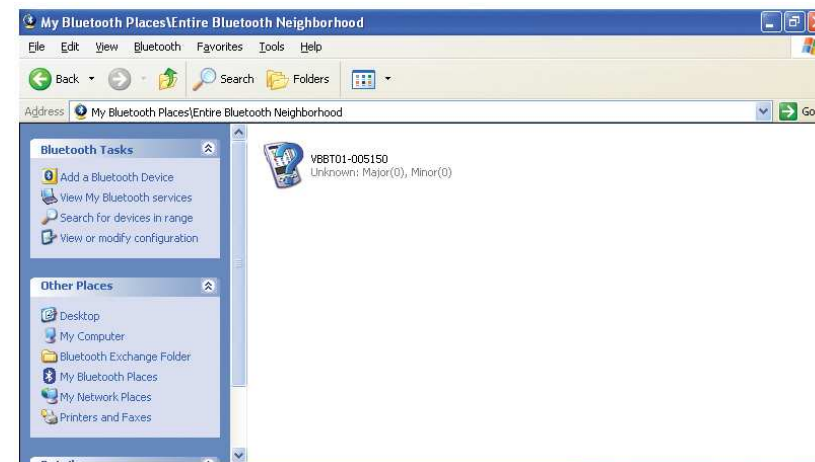
Now that the device has been identified, the next step is to initialise communication between the devices – this is known as "pairing" .To do this, right click (tap and hold) on the Bluetooth^{TM} Module icon and select "Pair Device":
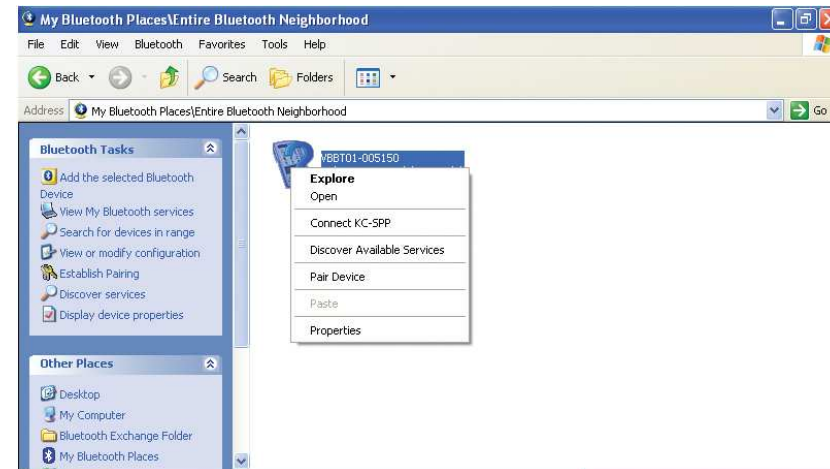

Once you click on "Pair Device", you will then be prompted to enter a Bluetooth^{TM} Security code. For the Bluetooth^{TM} Module, this is **1234** and should be entered in the dialogue box. Once entered, click OK:

Once the security code has been entered, and you have clicked OK, the dialogue box will close and you will return to the previous screen. This time the BluetoothTM Module icon will have a ticked box next to it to show that the module has been recognised.
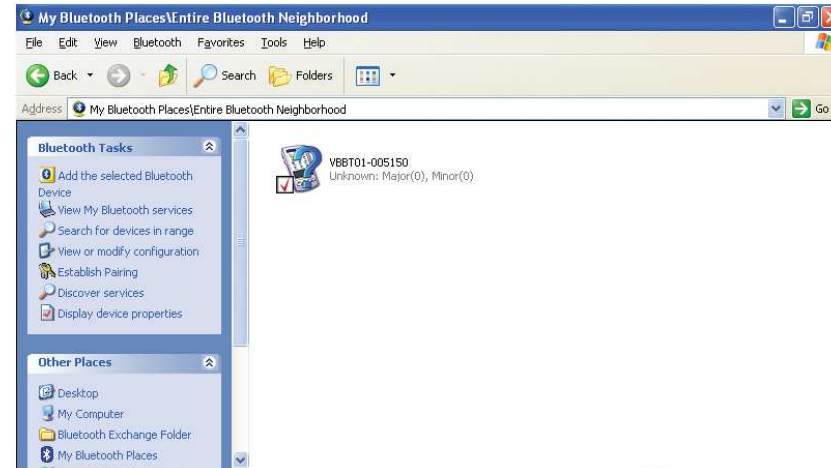

Now that the device has been recognised, the next step is to connect it to the Q1 via the BluetoothTM link. Double click (tap and hold) on the BluetoothTM Module icon to bring up the following screen.
Note you will see that the device is "not connected".

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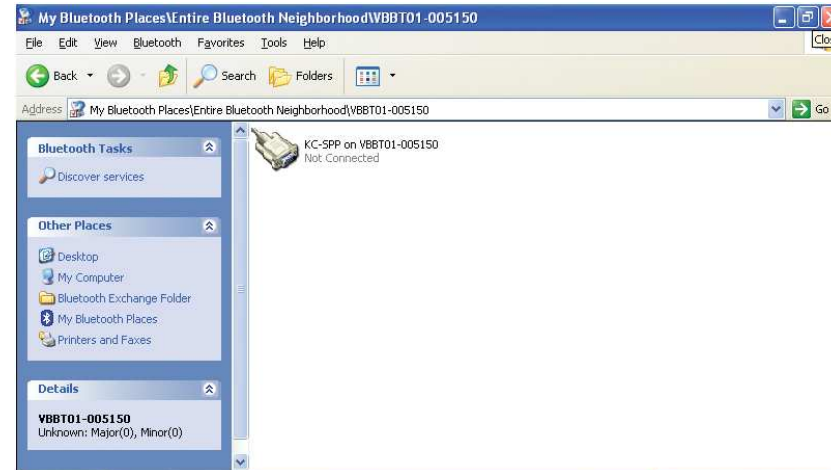
Now right click (tap and hold) on the icon and select "Connect to Bluetooth Serial Port":
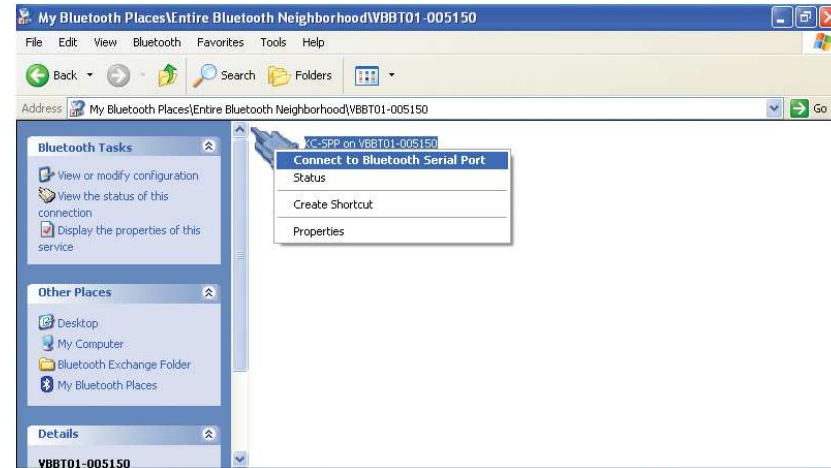
Once this is selected, a small "connecting…" dialogue box will appear for a couple of seconds, after which the following screen will appear advising of the COM port over which the connection has been made. Note this COM port number for configuration of the VBOX Tools software and then click OK


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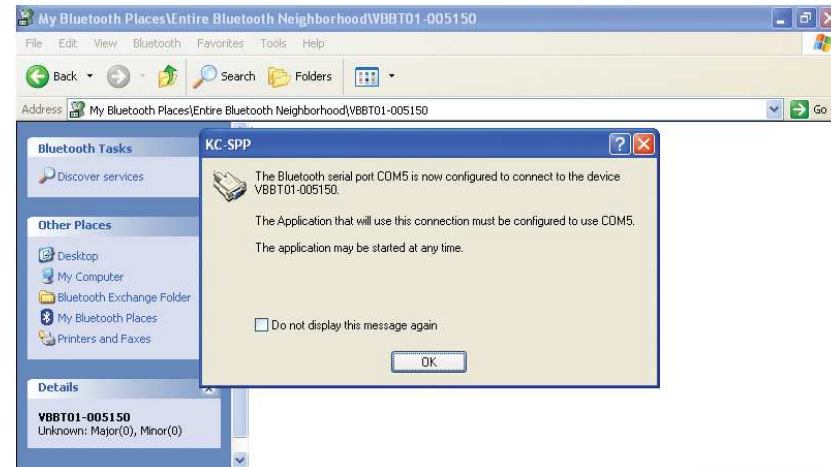
Once you have clicked OK, the dialogue box will close and you will be returned to the previous screen – this time the icon will advise that the Q1 and the Bluetooth^{TM} Module are now connected:
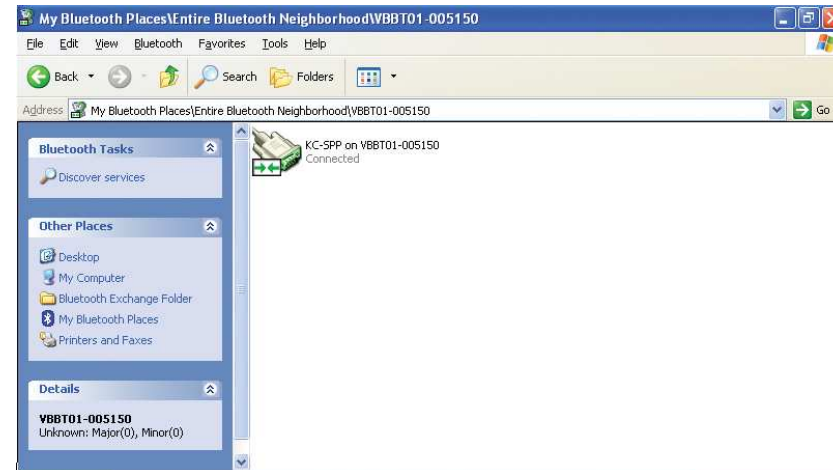

Now that the Q1 and the Bluetooth^{TM} Module are connected, you can open VBOX Tools to view your data. However, before you can view this you must open the correct COM port, as advised on the previous page.

There are two ways to open the correct COM port, depending upon whether VBOX Tools is in "Button Text OFF" or "Button Text ON" mode.

From "Button Text ON" mode, select the Tools icon, followed by Options; COM Port and then select the correct COM port to open.
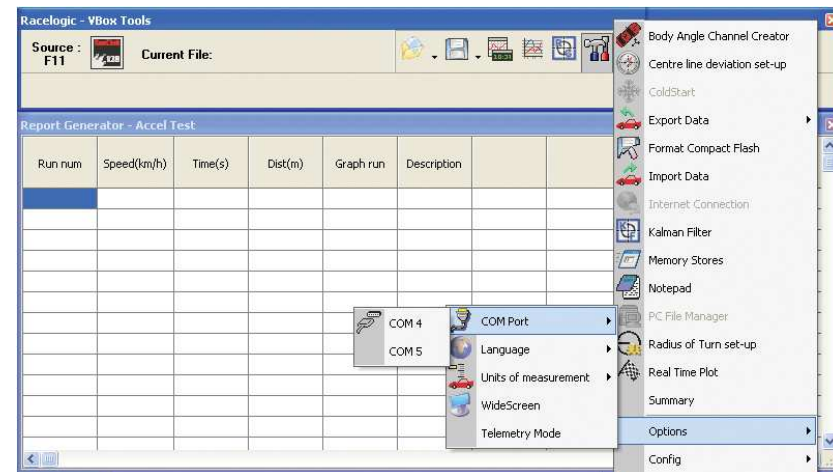
From "Button Text OFF" mode, the method is very similar. This time select the Options menu, followed by COM port and then select the COM port required.
You do not need to select the tools icon in this mode.
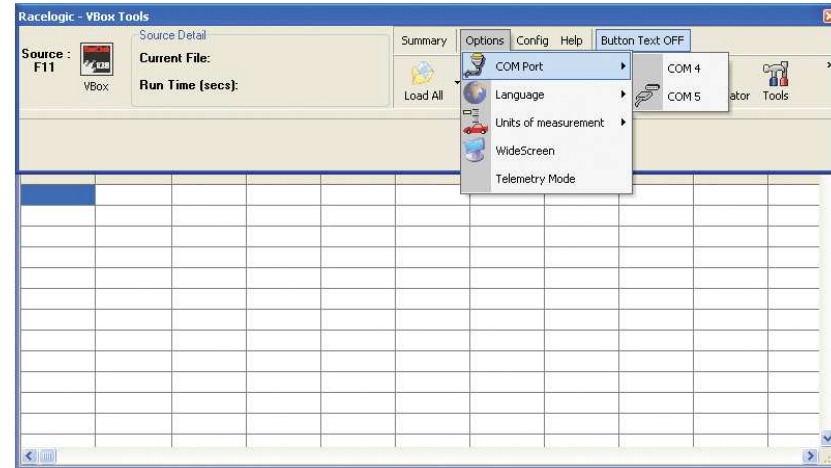
With the connection complete and the COM port activated, VBOX Tools is now able to read live data.
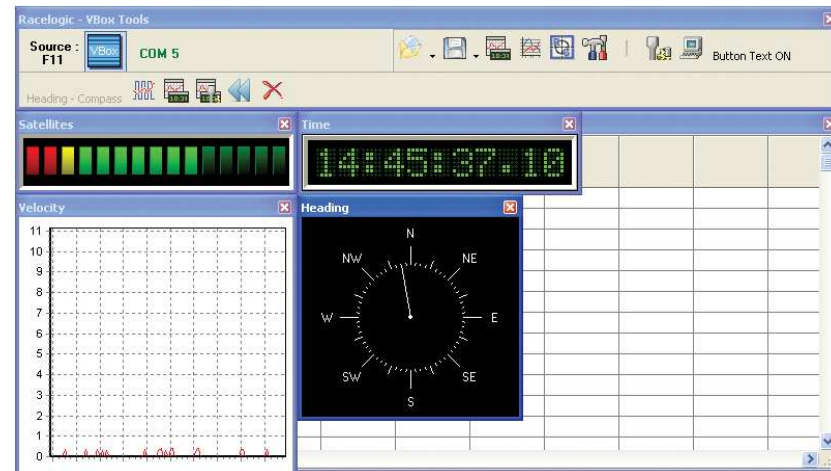
Setting up the Bluetooth^{TM} Module with the user's Laptop

If you are not using a Racelogic Q1 Display, the set-up of the Bluetooth^{TM} Module may differ slightly according to the software supplied with the laptop's Bluetooth^{TM} interface.

The actual process requirements will essentially be the same – the laptop will need to establish a connection to the Bluetooth^{TM} Module and a COM port will need to be assigned to VBOX Tools –but for specific commands please refer to your Bluetooth^{TM} interface user guide.

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Specification

|	
Input voltage	8-30VDC
Current Consumption	35mA typical; 90mA peak
VBOX Connection	2 x 5-way LEMO
Range	30m Line of sight
Baud rate	115k
RF Frequency	2400 – 2483.5MHz
External antenna	2400MHz, 50Ω (supplied) via SMA connector

Environmental and Physical

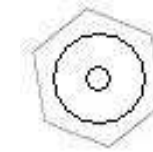|	
Temperature (Operating)	-20°C to +60°C
Temperature (Storage)	-40°C to +85°C
Enclosure	Milled Aluminium
Height	33mm
Width	60mm
Depth	112mm (including SMA antenna connector)
Weight	240g
Ingress Protection Rating	IP30

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Connection Data
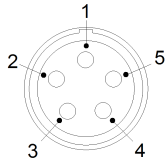
Connector 1 - 5 pin LEMO socket
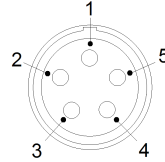
Connector 2 - 5 pin LEMO socket

Connector 3 - SMA connector

Connector 1 – Serial / Power connector			
PIN	In/Out	Description	Range
1	O	RS232 Rx	±12V
2	I	RS232 Tx	±12V
3	I/O	CAN High pass-through	
4	I/O	CAN Low pass-through	
5	I	+V Power	8 to 30V DC
Chassis	I	Ground	0V

Connector 2 – as Connector 1			
PIN	In/Out	Description	Range
1	O	RS232 Rx	±12V
2	I	RS232 Tx	±12V
3	I/O	CAN High pass-through	-
4	I/O	CAN Low pass-through	-
5	I	+V Power	8 to 30V DC
Chassis	I	Ground	0V

Connector 3 – ANT (RF Antenna)			
PIN	In/Out	Description	Range
Centre	I	Antenna	-
Chassis	I	Ground	0V

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Contact Information

Racelogic Ltd
5 Little Balmer
Buckingham Ind Pk
Buckingham
MK18 1TF
England

Tel: +44 (0) 1280 823803

Fax: +44 (0) 1280 823595

Email: support@racelogic.co.uk

Web: www.racelogic.co.uk

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1	28/09/2007	First Release	NT