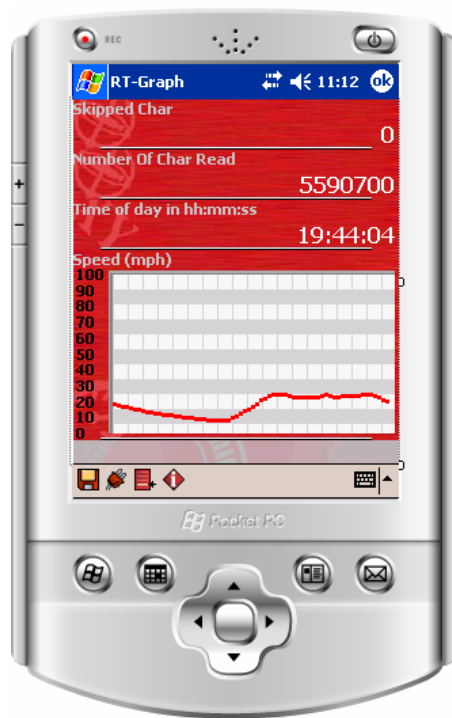


RT-Graph

Display Software
For Pocket PC



User Manual

Confidently. Accurately.

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Introduction

The RT-Graph software for Pocket PC is a useful tool for viewing the measurements of RT3000 Inertial and GPS Navigation Systems. The system is primarily designed as an in-car display; the light-weight, small size of the Pocket PC platform makes it suitable for use in cars since it can have a minimal impact on visibility and is unlikely to cause harm in an accident.

Using the RT-Graph software you will be able to view all of the RT3000 measurements and most of the status messages. You will be able to change the Quick Configuration parameters (Slip Offset, Pitch Offset, Roll Offset, Local Co-ordinates Origin and X-axis angle).

The RT-Graph software for the Pocket PC does not log data and cannot perform calculations.

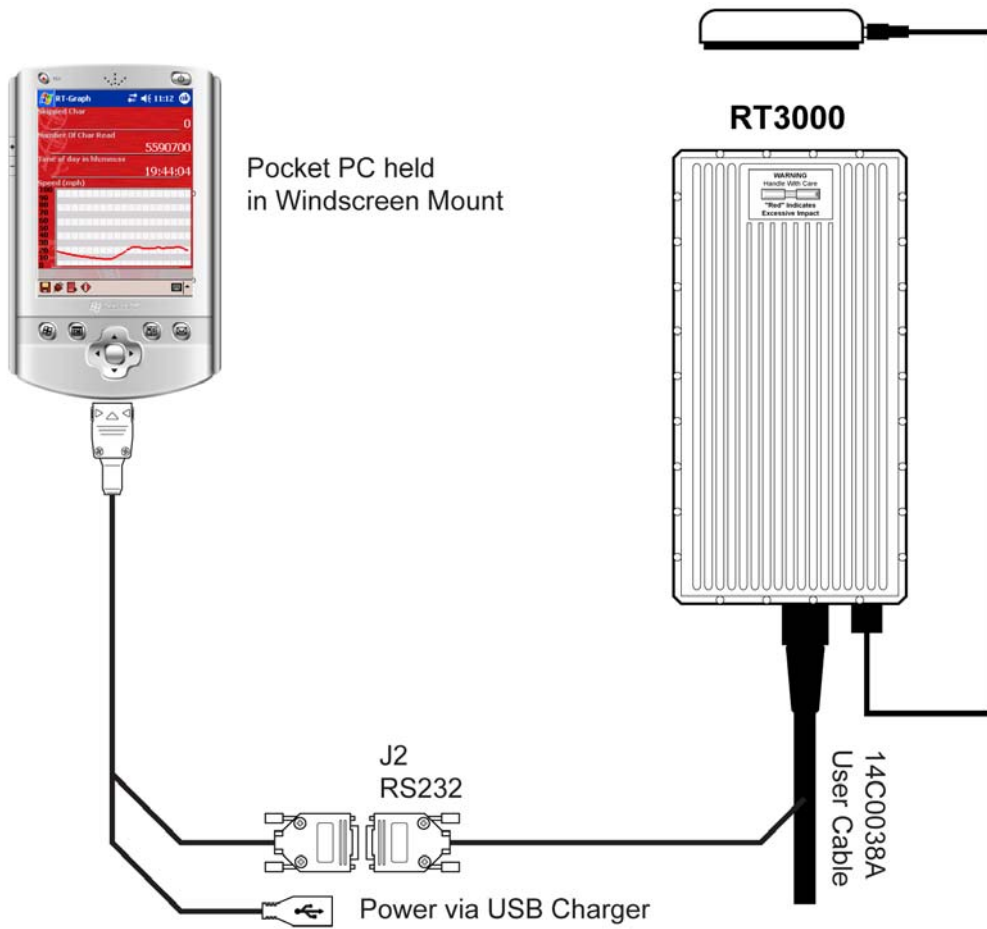
The measurements can be displayed as Text, in Graphs or in Alert Bars.

Please note that the RT-Graph software is also compatible with the RT2000 and RT4000 series of inertial and GPS navigation systems.

Typical Installation

A typical installation of the RT-Graph requires several components; the Pocket PC; a USB/Serial Cable; a USB charger and a windscreen mount.

Figure 1. Typical connections for the Pocket PC



Safety

When using this software in a moving vehicle you should take care that you do it in a safe manner. The Pocket PC should be mounted in a place that does not reduce essential visibility. Cables should be routed so that they do not disturb the driver. You should carry out a risk assessment to make sure you are sure about the safety.

Minimum System Requirements

The requirements for the minimum Pocket PC system that we are supporting with this software are:

- 300MHz Processor Speed
- 64MB SDRAM, 128MB Flash
- Windows Mobile 5 or Windows Pocket PC 2003 Second Edition
- Serial Port

Installation

Follow all the installation instructions that come with your Pocket PC. You need to install Active Sync on your PC so that the PC can communicate with the Pocket PC. This communication is required so that the RT-Graph software can be installed.

Obtaining Active Sync

If you do not have an installed copy of Active Sync then you can get it from the Microsoft web site. Go to www.microsoft.com and type Active Sync into the search box; this will link to the latest version.

Installing RT-Graph

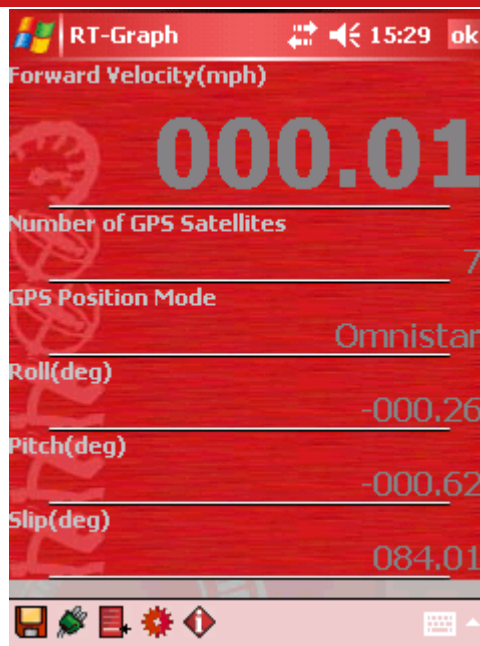
RT-Graph is delivered in a file called `RT-Graph Pocket PC.msi`. Double-click this file to install the software and follow the instructions. (If you have a zipped version of this file, unzip it first). You will probably have to follow some instructions on the Pocket PC to complete the installation.

You will need to have Active Sync and your Pocket PC connected before you install the software.

Software Operation

The main page of the software shows the measurements. The menu is normally at the bottom on the Pocket PC. Each Display Item occupies the full width of the screen. The height of each item can be selected; small, medium large and extra large items are available. Text, Graphs and Alert Bars can be shown on the display.






Figure 2. Main Page of RT-Graph Software



Main Menu

The main menu is used to control and configure the software. Icons are used for each of the menu items to save space. Table 1 describes the items on the menus.

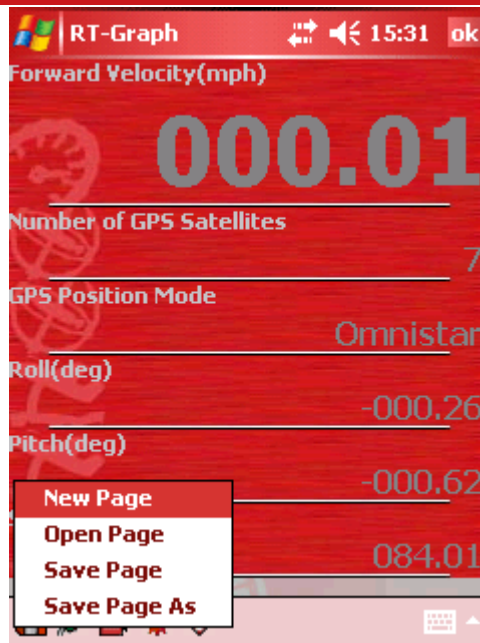
Table 1. Main Menu Icons

Icon	Function	Description
	File	This is the File menu of the RT-Graph software. In this menu the display layout can be saved or opened or a new, blank layout can be selected.
	Connection	The Connection menu is used to tell the software how the RT3000 is connected to the Pocket PC. This menu item also shows if data is being received correctly from the RT3000 or device. When the menu is black, no data is being received. The menu turns red when data is being received correctly.
	Insert Item	The Insert Item menu is used to add an item to the display. The new item will be added to the bottom of the display items.
	Quick Config	The Quick Config menu is used to make quick configuration changes to the RT3000. This item only works correctly with the RT3000 and not with other devices that may be connected.
	About	The About menu gives the software version or <i>Development ID</i> of the software.

File Menu

The File Menu is shown in Figure 3.

Figure 3. File Menu



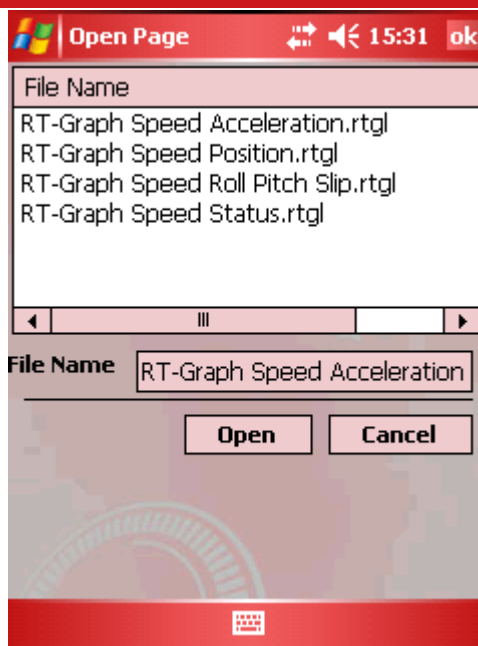
New Page

This option clears away the current page and presents a blank page. You should make sure that you save the current page before selecting New Page.

Open Page

The Open Page option gives a quick method of changing the items on the display. The connection information is also stored in the file. Click on the display page to select a new layout.

Figure 4. Open Page



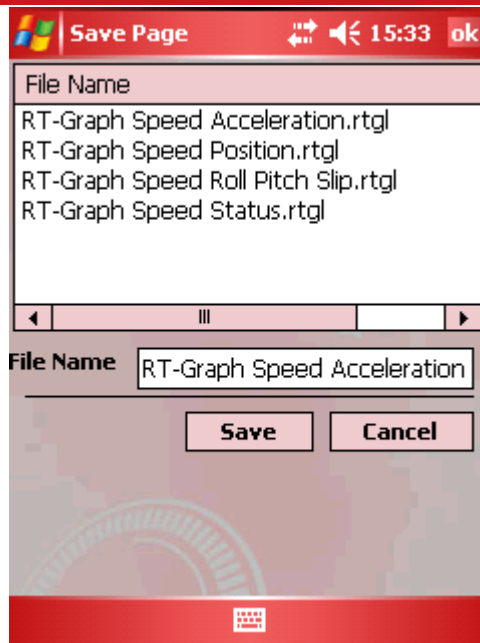
Save Page

This saves the current page. When the software starts it automatically loads the page that was showing when the software last quit. When you save you will overwrite this page.

Save Page As

This option can be used to save the current layout with a different name. Use the keyboard to enter the new file name.

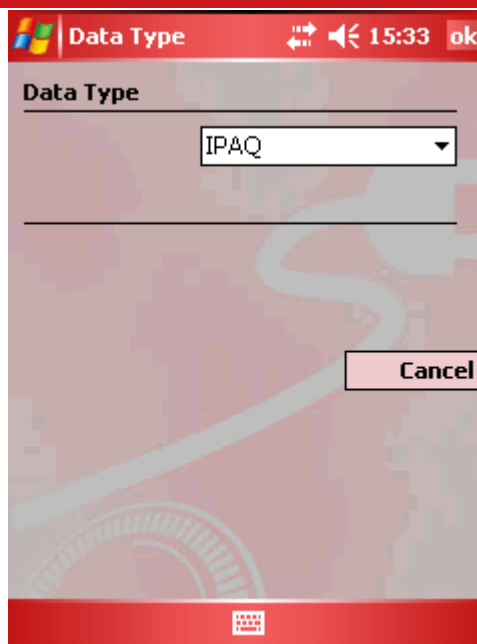
Figure 5. Save Page As



Connection Page

The Connection menu button displays the Connection Page. This is shown in Figure 6.

Figure 6. Connection Page



The data types supported by RT-Graph are shown in Table 2.

Table 2. Data Types Supported by RT-Graph

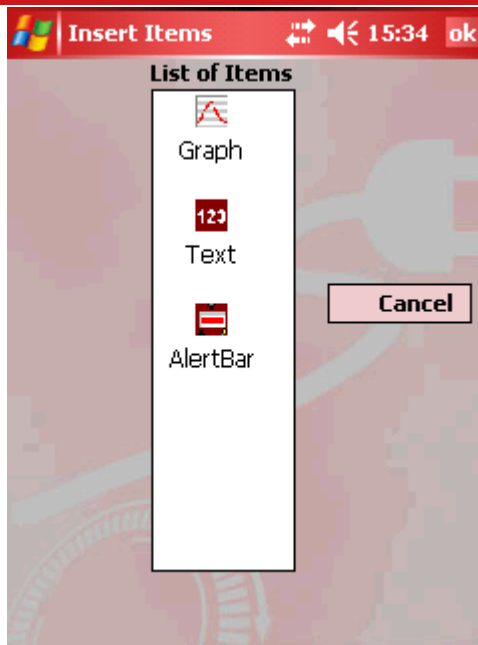
Name	Description
IPAQ	This is the preferred format for use with the RT3000. You need to configure your RT3000 to output the IPAQ format on its Serial 1 Output.
NCOM	This is the default format output by the RT3000. Unfortunately all the Pocket PCs we tested were not fast enough to capture and decode this format.
R1	This is the output format of the MicroSAT GPS Receiver from Datron Technology.

Note: You can also replay NCOM files on the RT-Graph. This is used for demonstration purposes.

Insert Item Menu




The Insert Item Menu is used to add items to the display.

Figure 7. Insert Item Page



Select the type of item that you want to insert. Table 3 describes the different display items available.

Table 3. Display Items

Icon	Display Type	Description
	Graph	The Graph viewer allows the user to view the present and previous measure such as rate of change of speed measure with various scaling values.
	Text	This is the most common display type for viewing the measurements. It also allows you to display advanced information of the system.
	Alert Bar	The alert bar shows the value as a horizontal bar. This display type used to alert the user if the measure value goes beyond the maximum set level.

After the item is selected the Properties page for this item will be displayed. See later in the manual for details on the Properties pages.

Quick Config Page

The Quick Config Page is shown in Figure 11. This is only applicable when an RT3000 is connected, the microSAT does not support these configurations. The Slip Offset,

Pitch angle, Roll angle and Local Co-ordinates can be changed using the Quick Config Page. Other settings of the RT3000 require RT3000 Config.

See section on the Quick Config later on in the manual.

About Page

The About page shows the installed RT-Graph version as shown in Figure 8.

Figure 8. About page



Properties Menu

In order to change the property of an inserted display item the user must hold down the mouse and a menu will pop up on the item as shown in Figure 9. The Table 4 shows the menu options for the Display Measure Items.

Figure 9. Properties Menu

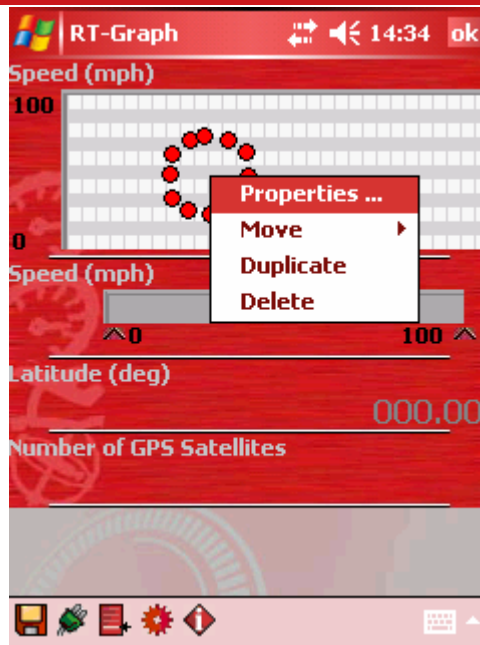


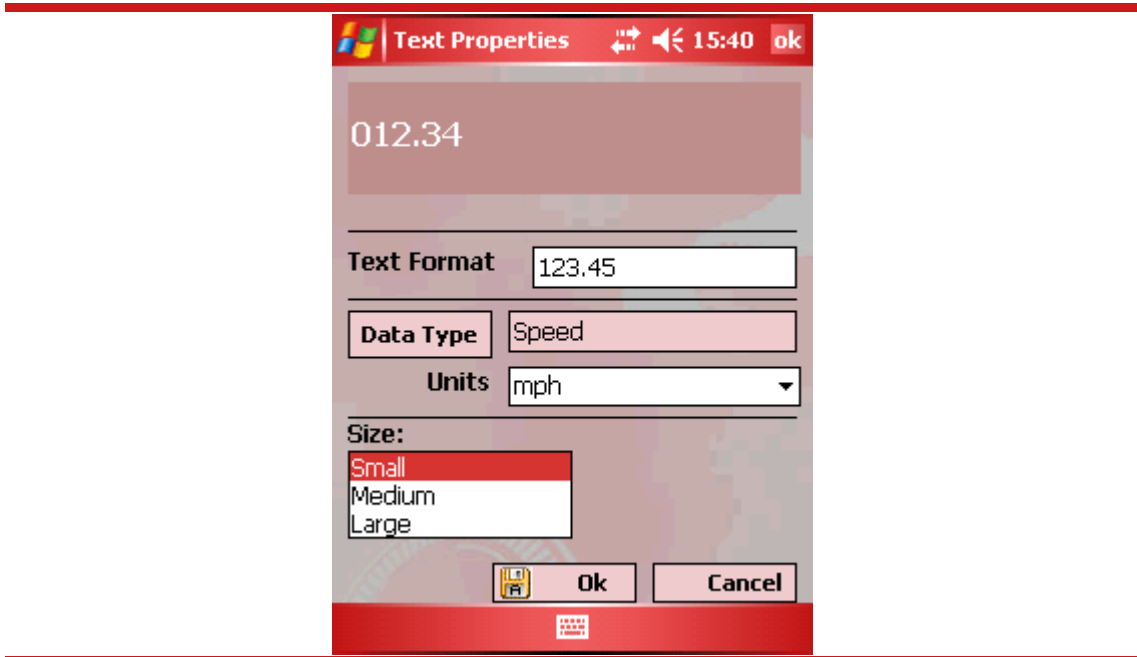
Table 4. Properties Menu Items

Options	Description
Properties	Shows the property window to edit the properties of the display item.
Move	This option allows you to move the display item to Top, Up, Down and Bottom.
Duplicate	Duplicate menu allows you to duplicate the selected display item.
Delete	This option allows you to delete the selected display

Text Item Properties

The Text item properties page controls the behaviour of the Text item display. You can set the size, measurement (Data Type) and formatting of the text. Figure 10 shows the Text Properties page.

Figure 10. Text Properties page

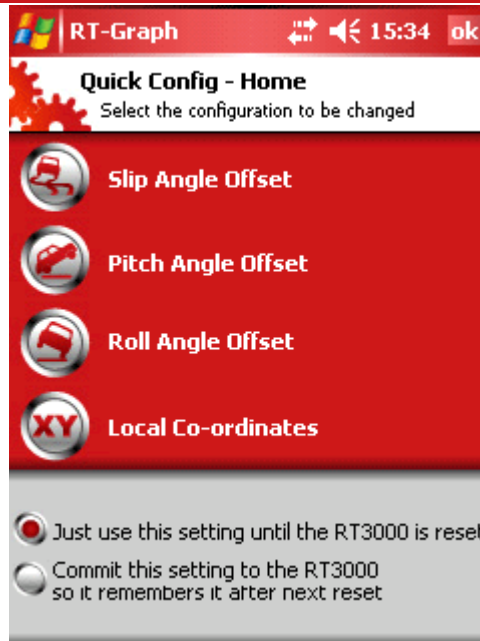


The properties of the Alert Bar and Graph are very similar.

Quick Config Operation

The Slip angle offset, Pitch angle offset, Roll angle offset and Local Co-ordinates can be changed using the Quick Config Page. Other settings of the RT3000 require RT3000 Config. Figure 11 shows the Quick Config Page.

Figure 11. Quick Config Main Page



Click on one of the buttons to change the settings. Changes to the settings of the RT3000 can be temporary or committed so they remain after the RT3000 is reset.

Just use the setting until RT3000 is reset

Using this setting will make the setting temporary and they will be forgotten next time you reset the RT3000.

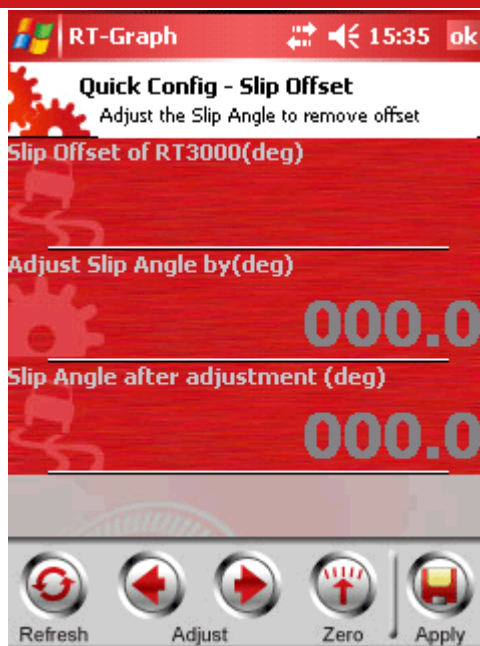
Commit the setting to the RT3000 so it remembers it after next reset

Using this setting will commit the changes to the permanent storage of the RT3000 and they will be remembered even when you reset the RT3000.

Slip, Roll and Pitch Angles Offset Adjustment Pages

Figure 12 shows the Slip Offset Configuration Page. The pages for Roll and Pitch are almost identical in appearance and functionality. The buttons at the bottom of the page are used to change the Slip Offset Angle and to send the new setting to the RT3000.

Figure 12. Slip Offset Configuration Page



There are three values shown on the display.

Slip Offset of RT3000 (deg)

This is the current Slip angle offset of the RT3000 in the vehicle. The RT3000 needs to be configured with the Advanced Slip enabled in order for the Slip angle offset to work.

Adjust Slip Angle by (deg)

The second value displayed on this page is the value you want to adjust the Slip angle by. To change this value use the Adjust buttons or the Zero button.

Slip Angle after adjustment (deg)

This will be the offset of the Slip angle after the adjustment is applied. It is useful so you can see exactly what the effect of the adjustment will be.

The Slip Angle offset is controlled using the buttons at the bottom of the page. These buttons are described below.

Refresh Button

The Refresh button updates the current angle value from the RT3000. The displayed angle is not adjusted automatically and you need to press refresh if you move the vehicle and change the angle.

Adjust Buttons

The Adjust buttons are used to the change adjustment that you want to make to the angle. The left button decrements the adjustment by 0.1 degrees and the right button increments the adjustment by 0.1 degrees.

Zero Button

In order to zero the current angle offset press this button. This is the normal adjustment that you want to make and is a quick way of getting the Slip angle to be zero.

Apply Button

The adjustment will not be made to the RT3000 outputs until the Apply button is pressed. Press this button after you have set the adjustment to the required value. The software will send the adjustment to the RT3000 and the outputs will change.

Local Co-ordinates adjustment page

Figure 13 shows the Local Co-ordinate page. This page shows co-ordinates measurements such as Latitude, Longitude and Heading which are described below; also the buttons on this page are used to set the Origin and Axis for the Local Co-ordinates.

Latitude (deg)

This is the current Latitude in degrees.

Longitude (deg)

This is the current Longitude in degrees.

Heading (deg)

This is the current Heading in degrees of the vehicle. This measure can be used to give some indication of the angle of the axes.

Distance from Origin (m)

Once the Origin has been set by pressing the Origin button it will display the distance in meters of the vehicle from the Origin.

The Origin and Axis of the Local Co-ordinates are controlled by the buttons at the bottom of the page. These buttons are described below:

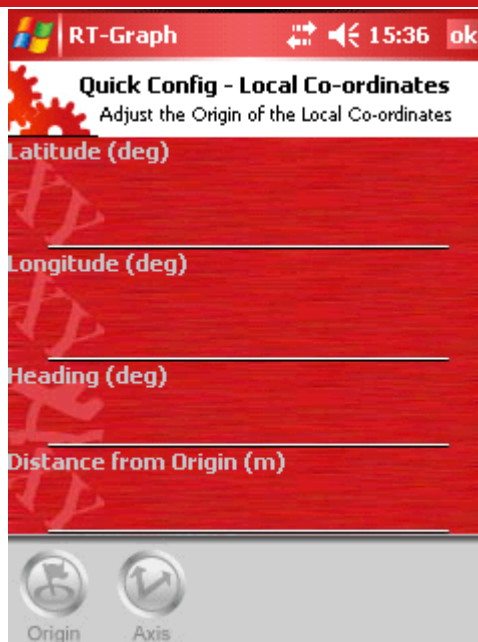
Origin Button

This button is active when the RT3000 is connected to the Pocket PC and computing Latitude, Longitude and Heading of the vehicle. Press this button to set the Origin of the Local Co-ordinates for the RT3000 at this location. Now the distance from the Origin will be displayed on the Distance from Origin text display.

Axis Button

Before you can set the axis of the Local Co-ordinates you have to be at least 100m away from the Origin. Using a longer distance increases the accuracy of the axis angle. Drive the vehicle away from the Origin along your desired X-axis (probably your test track). Set the X-axis angle at the end of your test track.

Figure 13. Local Co-ordinates Configuration Page



Revision History

Table 5. Revision History

Revision	Comments
051018	Initial Version
051114	Typing Corrections
051118	More Corrections and change of CAN IDs to 7A0h/7B0h range
060310	Added Quick Config pages operation
071113	Updates