



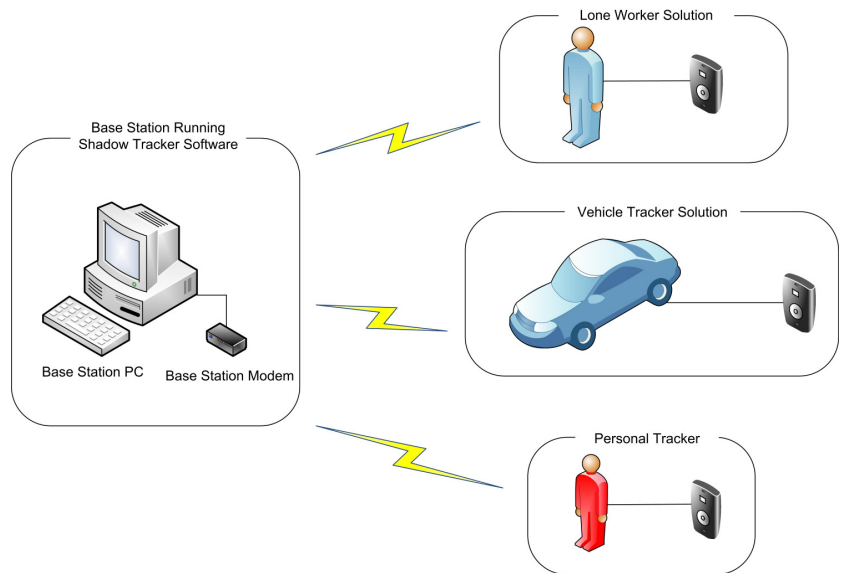
THE SHADOW TRACKER COMPLETE GPS TRACKING SYSTEM

- Complete 'contract free' tracking System
- Simple to use "Click-to-track" software
- Breadcrumb Trail/Time-lapse Tracking
- Tracker is also GSM Phone
- Emergency SOS Call and Position Feature
- Supplied with everything you need:
 - GPS Tracker
 - USB GSM Modem Base Station
 - Google™ Maps based software
 - 2 PAYG SIM Cards
- Vehicle or personal tracking
- Dial up to 4 preset Numbers
- Software tracks multiple Trackers (up to 50)
- Compact, Light weight discrete



Applications

- Lone Work Alarm
- Fleet tracking
- Personal Tracking
- Emergency Alarm
- Valuables Tracker



Description

The **Shadow Tracker System** comes complete with everything you need to start tracking almost anything from a JCB to a child!. All that is required is a PC.

The Shadow Tracker System uses the latest GPS technology to enable you to keep a track of your Vehicle, staff, loved ones or valuables. Simply load the Shadow Tracker Software onto a PC and set it to log the movement of the tracker or use the 'FIND USER' button to get a real time update of one or many Tracker locations.

The Tracker unit may also be used as a normal GSM Mobile phone. In addition to receiving calls, there are four buttons on the tracker which will dial preset telephone numbers.





THE SHADOW TRACKER **COMPLETE GPS TRACKING SYSTEM**

User Manual

1. Definitions	3
2. In the Box.....	3
3. SIM Cards	4
4. USB GSM Modem Base Station	4
5. Shadow Tracker	5
6. Cable Accessories	6
7. Tracking System: Hardware Installation	7
8. Tracking System: Configuration	9
9. Tracking System: Menu Definitions Glossary.....	11
10. Troubleshooting Guide.....	13
11. Technical Specification	13



THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

1. Definitions

The following definitions are used throughout this document and generally in connection with the control unit.

- GPS** Global Positioning System – Used to locate the position of the tracker
- GPRS** General Packet Radio Service – GSM Data connections.
- GSM** Global System for Mobile communications
- Alphanumeric** Characters in the range A to Z (upper and lower case), numbers in the range 0 – 9.
- Mobile** GSM telephone with text message ability
- PC** Personal computer which operates to the minimum requirements

2. In the Box

Provided as part of The Shadow Tracker System:



PART No	Description	Present
SHADOW-TRACKER	Compact GPS Tracker unit / GSM Mobile Phone	
	USB Connecting Cable	
	Tracker Mains Charger	
	Modem Extension Cable	
	Hands free Kit	
GSM-USBG10	USB GSM Modem Base Station (connects to user PC)	
CD-SHADOW	CD Rom containing The Shadow Tracker Software & requisites	
2 x SIM-CARD	Two Vodafone Pay-as-you-go SIM Cards.	
Batch No.:-	Packed by	

THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

3. SIM Cards



Two **Vodafone Pay-as-you-go** SIM Cards are bundled with this system. The Shadow Tracker system can use either these or other SIM Cards / service providers with the following provisos;

These SIM Cards must be registered with Vodafone prior to use. To do this call the number on the pack provided. At this point you should be informed of your SIM cards' Telephone Number.

Notes

1. Only 3 Volt SIM cards will be correctly read and older 5 Volt types will be ignored.
2. Some types of pay-as-you-go SIM cards may require regular call activity (once every six months) to remain registered.
3. SIM cards that have been protected by means of a PIN (in a mobile phone) will not operate in the unit.
4. **Because The Shadow Tracker system works by sending text messages, it is important that you consider the costs involved with using the system, these will be dependant on the network provider you choose.**
5. **For heavy use it might be advisable to obtain use a contact for free to text deal from a Service Provider.**
6. The message memory of the SIM card should be clear before it is fitted to the GSM Modem.

4. USB GSM Modem Base Station

The USB GSM Modem Base Station connects to the Base Station computer and communicates with the Shadow Trackers via Text messaging.



Do not plug the modem into the PC prior to installing software!

The GM Modem Base Station is a Plug and play device which is powered directly by the USB port and therefore requires little set-up.

Simply install the drivers for the product, insert a SIM card and plug into a free USB port.

More details can be found at http://www.rfsolutions.co.uk/acatalog/GSM_Modems.html

Tip: This modem is not tied to The Shadow Tracker System and may also be used as a standard GSM/GPRS modem if required.

THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

5. The Shadow Tracker

The Shadow Tracker is a small and powerful GPS/GSM/GPRS tracking device designed and developed for remote positioning and lone worker applications.

Do not plug the Shadow tracker into the PC before installing software.



Fig 5.1

1. Install a SIM card

- a. Unlock the rear of the case and remove
- b. Remove the battery by lifting at the base
- c. Insert the SIM card ensuring the orientation is as per the diagram marked on the unit.

2. Charge the Shadow Tracker

- a. With the battery installed and the Shadow Tracker fully assembled
- b. Open the protective cover on the top of the unit (see Fig 5.1)
- c. Plug in the mini USB Mains Charger cable provided.
NB: The Tracker can be charged with the PC cable but it is best not to use this option prior to installing the PC software.
- d. The LED on the front face will flash red while the Shadow tracker charges
- e. The LED will turn green when the battery is full.

3. Power On/Off the tracker

- a. Power on: Press and hold the power button for 3secs (shown on Fig 5.1) the Shadow Tracker will flash its LED multiple colours and the power on tune will be heard.
- b. Power Off: Press and hold the power button (shown on Fig 5.1) the Shadow Tracker will flash its LED and the power off tune will be heard.
- c. When the Tracker is powered on the buttons will illuminate when pressed. When not on charge and powered off this will not happen.

THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

4. Sleep Mode

- a. The Shadow Tracker goes into SLEEP mode and locks the keys after 10seconds idle, this prevents accidental activation. To exit sleep press the Power button briefly.
- b. When sleep mode is off, ensure the tone for each button press is audible.

5. Phone Dialling / Answering / Hanging up

- a. Four Pre-set numbers can be dialled using the Shadow Tracker.
- b. To dial a number:
 - i. Bring the tracker out of sleep mode by pressing the power button briefly
 - ii. Press the OK button once briefly (Shadow Tracker will beep)
 - iii. Press the button number you wish to dial
 - iv. Press OK to start the call.

NOTE: Numbers are set using the Shadow Tracker Software

- c. To answer an incoming call, press the OK button once.
- d. To end a call, press the power button briefly once.

6. Emergency Call / Transmit Location

- a. **Briefly** press the power button, then press both Red SOS buttons (on each side of the Shadow Tracker) the blue OK key backlight will flash and cause the following to occur:
 - i. Shadow Tracker will call the first preset telephone number.
 - ii. Shadow Tracker will consecutively SMS transmit its location to all four of the preset telephone numbers. The shadow tracker software allows the co-ordinates to be entered manually and plotted on Google Map.
 - iii. With SOS number 4 set to the base station number the shadow tracker software will plot the trackers position on Google Map even if a voice call is in progress

6. Cable Accessories

Bundled with the system is

Mains Charger for the Shadow Tracker



USB Lead to connect Shadow Tracker to PC



Other (Optional Use) Cables:

Modem Extension cable, and Tracker Hands Free Calling Kit.



THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

7. Tracking System: Hardware Installation

(Note: See system requirements section for PC specification)

Before you can use the Shadow Tracker system you must install all three parts of the system onto the Base Station PC. These consist of;

1. Install the Software onto the Base Station PC.
2. Install the GSM Modem Base Station.
3. Install the Shadow Tracker.

1. Install the Shadow Tracker software and Driver bundle from the CD provided

- a. Place the Shadow Tracker CD-ROM in the CD drive and wait for the auto run process to start.
- b. The software bundle will install along the drivers for all components of the Shadow Tracker system
- c. Follow the on screen instructions to install the software onto the PC
- d. Once Installation is complete (Fig 4.1) you may install the Modem and the Shadow Tracker

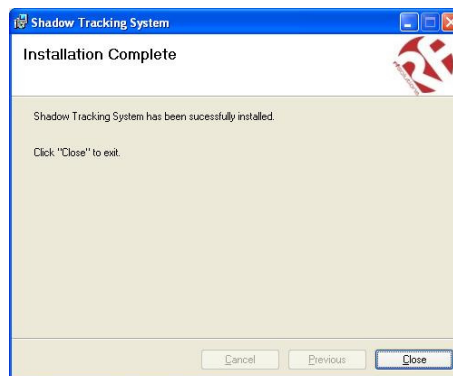


Fig 4.1

2. Install the GSM Modem Base Station

- a. Plug the GSM Modem Base Station into a free USB port on the PC
- b. Wait until the PC detects the modem
- c. When prompted, select the “*Install the software automatically*” option (Fig 4.2)



Fig 4.2

- d. Follow the on-screen instructions and complete the driver installation
- e. Three drivers are required, do not unplug the GSM Modem Base Station until all three have installed Windows indicates that installation for “*Teltonika Modem USB G10*” is completed
- f. **Remove the GSM Modem Base Station from the PC.**

THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

Install the Shadow Tracker

- g. Plug the Shadow Tracker into the USB port using the Cable provided.
- h. Turn on the Shadow Tracker
- i. Select the *“Install the software automatically”* option
- j. Wait for the Shadow Tracker to be detected and follow the on screen instructions to Install the *“6218 USB Modem Driver”*
- k. After installation is complete (see Fig below) Unplug the Shadow Tracker from the PC.



8. Tracking System Software: Configuration

To get started with your tracking system you need to;

- Set the Preset Telephone numbers within each Shadow Tracker
- In order to take advantage of the SOS system, the modem (base station) number should be set to button 4.
- Setup each Shadow Tracker(s) name and telephone numbers on the GSM Base Station so that it can be tracked.

1. Open the Shadow Tracker System Software on the PC

2. Connect the Shadow Tracker

- a. Install a SIM card into the Shadow Tracker
- b. Connect the tracker to the PC using any free USB slot

3. Configure the Shadow Tracker's numbers to dial

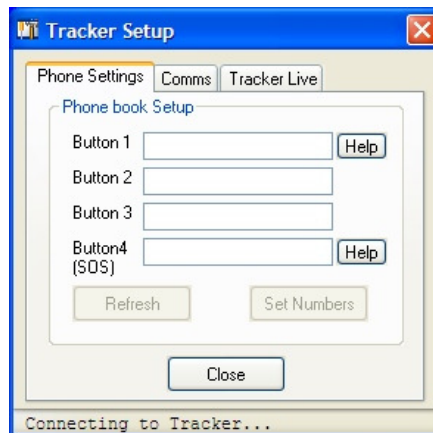


Fig 7.3

New Numbers

- a. From the *Set-Up* menu choose the *Tracker Set-Up* option (Fig 7.3)
- b. Plug the Shadow Tracker into the PC using the USB cable.
- c. Wait for the Software to detect the tracker, the connection status is shown at the bottom of the window. (Fig 7.3)
- d. Once connected enter up to 4 numbers in the windows provided.
- e. **IMPORTANT: SOS SYSTEM** In order for SOS alert to show the Tracker Software, the number of the base station GSM modem must be entered into button 4 (see 5.6). A text message and voice call will be made to the number saved as button 1, text messages only will be sent to numbers 2 & 3.
- f. Click the Set Numbers button to save the data
- g. Remove the Shadow tracker from the PC
- h. The Tracker will need to be restarted for the numbers to take effect.

Replacement Numbers

- i. Turn Shadow tracker off.
- j. Plug the tracker into the PC using the USB cable.
- k. From the *Set-Up* menu choose the *Tracker Set-Up* option (Fig 7.3)
- l. Turn tracker on.
- m. Wait for the Software to detect the tracker, the connection status is shown at the bottom of the window. (Fig 7.3) The existing numbers will be displayed.
- n. Change numbers by selecting & typing over, then click the save numbers button to save the new numbers.
- o. Remove the Shadow tracker from the PC
- p. The Tracker will need to be restarted for the number changes to take effect

THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

4. Connect the GSM Modem

- a. Install a SIM card in the GSM Modem
- b. Plug the GSM Modem Base Station into any free USB slot on the PCB
- c. Wait for the Auto Detect process to complete and ensure that you have a good GSM signal using the Signal strength meter in the bottom right of the screen. (Fig 7.4)

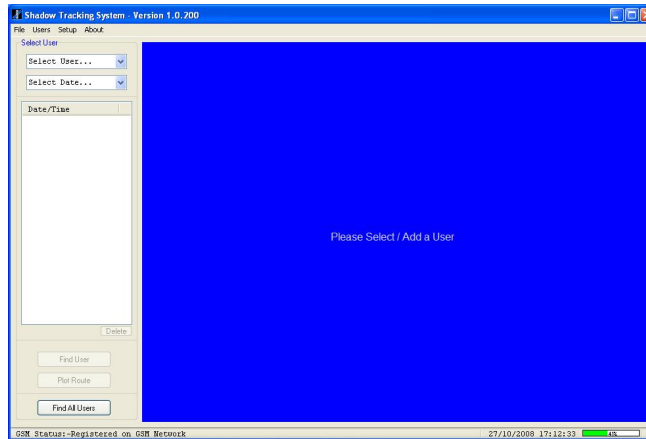


Fig 7.4

5. Set up a New User / New Shadow to be tracked

- a. From the *Users* menu select *Create/Edit Users*
- b. Click the *Add* Button and enter the details for the user
- c. Enter a name for the user and enter the phone number for the SIM card installed in the Shadow Tracker. Enter all numbers in International format (Fig 7.5)

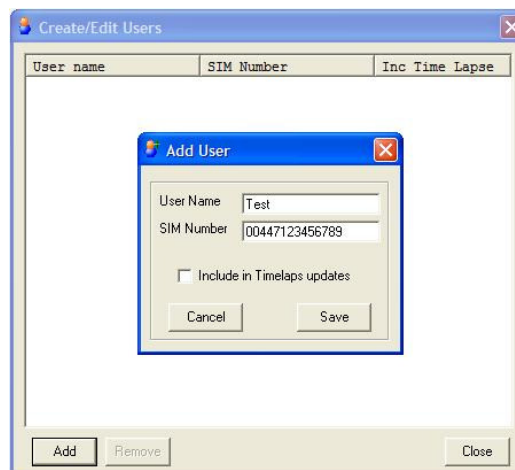


Fig 7.5

- d. Choose whether or not to include the user in any Time-lapse updates (See Software details below)
- e. Close the *Create/Edit Users* window

6. Set-up is now complete and your Shadow Tracker system is ready to be used.

- a. Select your user from the *Select User* Box in the main window
- b. (the *Select Date* box will now show all data (if any) stored for this user, filtered by date.
- c. Use the *Find User* button to locate the Shadow tracker and show its position in the Map window.
- d. Full Software features explanation is given in section 9.

9. Tracking System: Menu Definition Glossary

Main Screen

Select User

The *Select User* drop down box shows a list of all known users, click on a user to show data stored for their movements

Select Date

The *Select Date* drop down box shows a list of all data stored on previous dates for the selected user.

Delete

The *Delete* button will delete all data shown in the window above.

Find

The *Find User* Button transmits an SMS to a selected User (Shadow tracker) and receives back its current location.

When the *Find User* button is pressed the screen will refresh and show that users location with their name highlighted on the map.

Clicking over the user location will show the nearest postal address

Plot Route

The *Plot Route* button is used to plot the route taken by the selected User (Shadow tracker) over the time period selected this is then displayed in the browser window

Find All

The *Find All* button is used to find the current location of all users (Shadow Trackers) in the Users Menu.

All users will be displayed in the map window and highlighted by name.

Import

With a suitable micro memory card installed (Not Supplied) the Tracker unit will log its location over time and by using the import option the data can be imported into the Shadow Tracker software under the currently selected user.

File Menu

Find, Find All, Plot Route – all as above

Plot SOS Message

This feature can be used to enter the data from an SOS message received by a mobile phone.

Plot Address

Displays a list of addresses visited for the selected User / Date.

Last Known Location

Displays the last known address's for all users.

Print

Print current map displayed.

Start Time Lapse

The *Start Time-Lapse* option will start the time lapse monitoring service: See **Time Lapse Set Up**



THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

Users

Create/Edit Users

The Create/Edit Users menu allows you to add new users and remove those existing in the system. Choose also to include a user in Time Lapse Updates when in use (See Time Lapse Setup)

Set-Up

Modem Setup

Allows the selection of a Com port and baud rate for modem communication. This should be set to auto detect using the tick box.

Tracker Setup

Tracker must be plugged into the PC for the below options to be useable. The Tracker Setup is split into 4 tabs:

Phone Settings

This allows the setting of the four telephone numbers to dial, these can be landline or mobile.

Comms

Communications Protocol and baud rate settings for communication with the Shadow Tracker, these should be set to auto detect using the tick box.

Tracker Live

Shows current live data from the tracker

Time Lapse Setup

The *Time lapse Setup* Menu allows selection of a time period within which all users included in the Time Lapse Updates are constantly monitored (see at the Create/Edit Users section). Select the start and stop time for tracking i.e. within business hours or after school and choose the interval of each update.

Display Setup

Basic Setup Options for Plot Line colour and Map detail level are selectable.

Google Earth

If Google Earth™ is installed on the host PC, the Shadow Tracker can display the movements of a user/users instead of displaying using the inbuilt Google Maps™ Browser.

About

Minimise to Tray

The Shadow Tracker can run in the background on the PC and minimise to the System tray if the option is ticked.

Help

Display datasheet

About

Shows the Modem Status, SIM card number (if supported by the SIM card), link to RF Solutions Ltd Home page and also give access to the Log for troubleshooting.





THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

10. Troubleshooting Guide

Shadow Tracker LED indication

Indication	Conditions	LED display
Service	Limited Service	Red Light Flashing
	No Service	Red Light On permanently
Mode	GSM + GPS not fixed	Blue Light Flashing
	GSM + GPS fixed	Turquoise Light Flashing
	GPRS + GPS	Orange Light Brief Flash
	GPRS + GPS fix mode	Green Light Brief Flash
	Tracking + GPS not fixed	Orange Light Brief Flash
	Tracking + GPS fix	Green Light Brief Flash
Battery	Battery Low	Green/Red Lights Flashing
	Battery Charging	Red Light Flashing
	Battery Full	Green Light On permanently

11. Technical Specification

(specification for GSM base Station can be found using the link in Section 4)

Shadow Tracker

GPS

Item	Description	Specification
Chipset	GSW3	SiRF Star III technology
General	Frequency	L1,1575.42Mhz
	C/A Code	1.023 MHz chip rate
	Channels	20
Accuracy	Position	10 meters, 2-D RMS
		5 meters 2-D RMS, WAAS
	Velocity	0.1 meters/second
TTFF	Time	Within 1us of GPS time
	Reacquisition	0.1 sec av.
Open Sky and Stationary requirements	Hot Start	1 sec Typical
	Warm Start	35 sec Typical
	Cold Start	42 sec Typical
Dynamic Conditions	Altitude	1800m
	Velocity	515m/s
	Acceleration	4g max

GSM

Item	Description	Specification
Air Interface	GSM Tri Band	900/1800/1900MHz
	Class 4	2W @ 900Mhz
	Class 1	1W @ 1800/1900MHz
Data interface		
GRPS	GPRS Mutlislot	Class 12
	Coding Scheme	CS1 ~ CS4





THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

Physical/Operation Specifications

Item	Description	Specification
Dimensions	Length	88.5mm
	Width	40mm
	Height	19.95mm
Weight	With Battery	72g
	Without Battery	57g
Temperature	Operating	-10 to 50 C
	Storage	-20 to 60 C
Humidity	Up to 95% non-condensing	

Electrical Specifications

Item	Description	Specification
Supply Voltage	GSM	4.2V
	Other	
Power Consumption	Operating Mode	270mA
	Standby (trace on)	130mA
	Power Saving (trace off)	76mA
Battery (li-ion)	Capacity	750mAh
	Dimension	43 x 31.7 x 6.9 mm
	Charging time	3hr
	Output Voltage	4.2V

PC System Requirements

Item	Minimum	Recommended
Operating Systems	Microsoft Windows XP or Vista	
Hardware	CD-ROM Drive	
	USB Port	2 Free ports
	Internet Access	Broadband 1MB+
Software	Microsoft Internet Explorer 7	Later versions should compatible
	(optional)	Google Earth™




THE SHADOW TRACKER

COMPLETE GPS TRACKING SYSTEM

PRODUCT STATUTORY ENVIRONMENTAL INFORMATION

Please retain this data sheet for future reference.

<p>RF Solutions Ltd RECYCLING NOTICE rfsolutions.co.uk Meets the following EC Directives</p> 
<p>DO NOT Discard with normal waste, please recycle.</p>
<p>ROHS Directive 2002/95/EC Specifies certain limits for hazardous substances.</p>
<p>WEEE Directive 2002/96/EC Waste Electrical & Electronic Equipment. This product must be disposed of through a licensed WEEE collection point. RF Solutions Ltd fulfils its WEEE obligations by membership of an approved compliance scheme. <u>Environment Agency producer registration number WEEJB0104WV</u></p>
<p>Waste Batteries and Accumulators Directive 2006/66/EC Where batteries are fitted, before recycling the product, the batteries must be removed and disposed of at a licensed collection point.</p>



BATTERY REMOVAL

For more information or general enquiries, please call;

RF Solutions Ltd.,

Unit 21, Cliffe Industrial Estate,

Lewes, E. Sussex. BN8 6JL.

England.

E-mail : sales@rfsolutions.co.uk

www.rfsolutions.co.uk

Tel: +44 (0)1273 898 000 Fax: +44 (0)1273 480 661

RF Solutions is a member of the Low Power Radio Association.

Information contained in this document is believed to be accurate, however no representation or warranty is given and no liability is assumed by R.F. Solutions Ltd. with respect to the accuracy of such information. Use of R.F.Solutions as critical components in life support systems is not authorised except with express written approval from R.F.Solutions Ltd.