# Easytrac Getting Started

Version：3.02.28

Date：2007/3/1

# Contents

# 1. Introduction

## I. Package contents:

1. Easytrac x 1 (with 700mAh Ni-MH backup battery)
2. GSM quad-band antenna (850/900/1800/1900) x 1
3. GPS active antenna x 1
4. V-16 cable x 1 (with 16-pin connector and 10A fuse)
5. AC adapter x 1
6. Vehicle power adapter x 1

## II. Front panel:

1. GPS antenna jack (Right side of the panel)
2. GSM antenna jack (Left side of the panel)
3. RS-232 connector (For configuration and debugging)
4. V-16 Connector
5. LED indicators

| PWR | 🔴 | **OFF:** Power OFF<br>**DIM:** Backup battery power low<br>**ON:** Power ON |
|---|---|---|
| GSM | 🟢 | **OFF:** GSM module OFF or Error, No SIM Card, Searching networks)<br>**Flash:** GSM registered (0.5sec ON 0.5sec OFF)<br>**Flash:** GPRS connecting (0.25sec ON 0.25sec OFF)<br>**ON:** Socket session online (connect to tcpserver running on the Gateway Server which is the Primary Server of a tracker) |
| RF | 🟡 | **ON:** System Error<br>**OFF:** System Error<br>**Flash:** System running( 1sec ON 1sec OFF)<br>(Also reserved for Remote controller learning) |
| GPS | 🟠 | **OFF:** GPS module OFF or Error<br>**Flash:** Searching GPS signal<br>**ON:** GPS fixed |

## III. Rear panel:

1. RESET (Left tact switch button): System reboot
2. LEARNING (Right tact switch button): Remote controller learning



## III. Rear panel:

# IV. V-16 Cable pin assignment:

## V-16 Connector Pin Assignment

| 1-PWR | 3-DI1 | 5-DI3 | 7-DI5 | 9-AI1 | 11-DO1 | 13-DO3 | 15-MICP |
|-------|-------|-------|-------|-------|--------|--------|---------|
| 2-GND | 4-DI2 | 6-DI4 | 8-DI6 | 10-AI2 | 12-DO2 | 14-DO4 | 16-MICN |

## V-16 Cable Pin Assignment

| PIN | Color | Name | Description | Range |
|-----|-------|------|-------------|-------|
| 1 | Red | PWR | Power supply input | DC, 12V~24V +- 5% Imax <= 2A |
| 2 | Black | GND | Ground | 0V |
| 3 | Brown | Digital Input 1 | Reserved for Ignition Input (ACC Input) | High : 12V~24V Low : 0V |
| 4 | Blue | Digital Input 2 | General purpose digital input (Positive trigger) | High : 12V~24V Low : 0V |
| 5 | Orange | Digital Input 3 | General purpose digital input (Positive trigger) | High : 12V~24V Low : 0V |
| 6 | Purple | Digital Input 4 | General purpose digital input (Positive trigger) | High : 12V~24V Low : 0V |
| 7 | Yellow | Digital Input 5 | General purpose digital input (Positive trigger) | High : 12V~24V Low : 0V |
| 8 | Green | Digital Input 6 | General purpose digital input (Positive trigger) | High : 12V~24V Low : 0V |
| 9 | Yellow-White | Analog Input 1 | General purpose analog input | Up to 24V DC/8bit resolution |
| 10 | Green-White | Analog Input 2 | General purpose analog input | Up to 24V DC/8bit resolution |
| 11 | Orange-White | Digital Output 1 | General purpose digital output | 500 mA max @ 12V~24V |
| 12 | Purple-White | Digital Output 2 | General purpose digital output | 500 mA max @ 12V~24V |
| 13 | Brown-White | Digital Output 3 | General purpose digital output | 500 mA max @ 12V~24V |
| 14 | Blue-White | Digital Output 4 | General purpose digital output | 500 mA max @ 12V~24V |
| 15 | Red-White | MIC-P | Microphone + | R=50 kΩ differential VImax = 20 mVpp |
| 16 | Black-White | MIC-N | Microphone - | |

## 2. Configuration

### I. Hardware and Software preparations

1. Remove the front panel of Easytrac and insert a SIM card with GPRS service enabled. Lock the SIM card. (Caution: DO NOT remove the backup battery from the Easytrac at anytime. Circuit short may occurred if the backup battery is removed)

2. Re-cover the front panel.

3. Connect GPS antenna to Easytrac.

4. Connect GSM antenna to Easytrac.

5. Use a RS-232 cable (DB-9) to connect Easytrac to a PC COM port.

6. Open Hyper Terminal (or other terminal program) at Windows Start Menu All Programs\Accessories\Communications\Hyper Terminal.

7. Add a new connection, input name 'Easytrac'. Click "OK" and select the COM Port for the Easytrac connection.



8. Set the Baud rate as 38,400bps and Flow control as none. Press "OK".
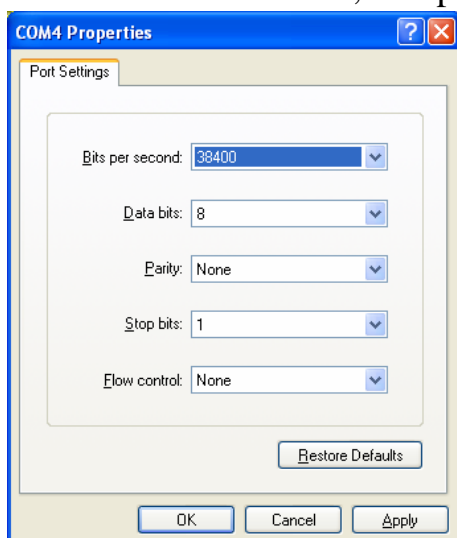


9. Connect the V-16 cable to Easytrac.

10. <mark>Connect the V-16 cable power plug to the AC adapter and press the 'ESC' key of the PC within 3 second after AC adapter POWER ON and until the text messages show on the Hyper Terminal screen. In doing so, Easytrac boots on Configuration Mode</mark>.

11. Normally, the PWR ● LED is ON and the RF ● LED flashing constantly which means the Easytrac is POWER ON and running. It shows as the following on the Hyper Terminal.

EasyTrac Version : 0A04

- Build Date : Feb 27 2007

- Build Time : 07:40:20

- Serial Number : 1000000001

- IMEI : 352021002992709


Type "H" for the Debug Mode Commands Menu.

$>

12. If you don't see the above messages on the Hyper Terminal, please check the settings of Hyper Terminal and reconnect the power adapter or press the RESET button on the Easytrac rear panel. Otherwise, please send an email to support@oriontech.com.tw for technical support.

## II. Configuration step by step

1. Use 'SCFG' command to enter Main Setting Menu. All commands should be upper case. (Wanning: 'H' command is for debug functions used by advanced users. Misusing may cause system crash)

EasyTrac Version : 0A04

- Build Date : Feb 27 2007

- Build Time : 07:40:20

- Serial Number : 1000000001

- IMEI : 352021002992709

Type "H" for the Debug Mode Commands Menu.

<mark>**$>     <Press Enter>**</mark>

Invalid Command

<mark>**$> SCFG    <Press Enter>**</mark>

Main Setting Menu :

1. Basic Setting

2. GSM/GPRS Connection Setting

3. Remote Server Setting

E. Exit

2. Type '1' in Main Setting Menu and press 'Enter' to configure basic settings. Normally, no basic setting is needed to be changed at sample testing.

Basic Setting Menu :

1. EasyTrac Hardware : V5

2. EasyTrac Firmware : 0A04

3. EasyTrac Serial Number : 1000000001

4. EasyTrac UnitID : 1000000001 : [0000000000-4294967296]

5. EasyTrac User Password : 0000     <Password of Easytrac, default=0000>

6. EasyTrac GSM/GPRS Module Info :

   SIEMEMS

   MC55

   03.03

7. EasyTrac GPS Module Info :

   RoyalTek

   REB-3310

   1.3.5.56

8. EasyTrac Enable COM1 for DEBUG : YES : [NO|YES]    <**YES:** Export debugging messages to the Hyper Terminal via COM Port>

9. EasyTrac Enable LOG : YES : [NO|YES] <**YES:** Easytrac logs all system event in the internal Flash memory for debugging. Eg. GPS fixed, GPS fail, GPRS online, GPRS offline>

E. Exit

**Selection [1-9]? E     <Press Enter>**

3. Type '2' in Main Setting Menu to enter GPRS Connection Setting Menu

   Main Setting Menu :

   1. Basic Setting

   2. GSM/GPRS Connection Setting

   3. Remote Server Setting

   E. Exit

   **Selection [1-3]? 2       <Press Enter>**

   Connection Setting Menu :

1. EasyTrac Switch Mode : GPRS : [AUTO|GPRS|SMS]

2. EasyTrac GPRS Reconnec : 16 : [16-65535]

3. EasyTrac SMS Duration : 180 : [180-65535]

4. SIM PIN1&2 Setting

   SIM PIN1 :

   SIM PIN2 :

5. GPRS Connection Setting

6. SMS Connection Setting

E. Exit

**Selection [1-6]? 5    <Press Enter>**

4. Set the GPRS settings item by item according to the information provided by the carrier. The settings with **\*** sign are required. After finishing setting, type 'E' to exit.

   GPRS Connection Setting Menu :

   **\***1. GPRS Dial Number : *99***1#

   2. GPRS User Name :

   3. GPRS Password :

   **\***4. GPRS APN : mobiusone.com.tw   <Access Point Name of GPRS service>

   **\***5. GPRS Enable : ACCON : [STOP|START|ACCON]    <**STOP:** Easytrac only sends SYNC packet to the gateway server instead of GPS data; **START:** Easytrac sends GPS data for continuous tracking as long as the Easytrac is POWER ON; **ACCON:** Easytrac sends GPS data only if the Easytrac is POWER ON and the ACC ON (Ignition ON) signal sent to Easytrac via Brown wire of V-16 cable. When ACC OFF (Ignition OFF), Easytrac only sends SYNC packets to the gateway server>

   **\***6. GPRS Report Interval : 30 : [15-65535]    <Time interval to send GPS data to the gateway server. Default is 30 sec>

   **\***7. GPRS SYNC Interval : 30 : [15-65535]    <Time interval to send SYNC packet to the gateway server. Default is 30 sec>

   8. GPRS Filter : NO : [YES|NO]    <**YES:** Easytrac only sends valid GPS data; **NO:** Easytrac sends valid and invalid GPS data to the gateway server.>

   9. GPRS DNS : 168.95.1.1    <DNS Server IP address of the carrier>

   E. Exit

   **Selection [1-9]? E    <Press Enter>**

5. Return to Connection Setting Menu and type 'E' to return to Main Setting Menu..

Connection Setting Menu :

1. EasyTrac Switch Mode : GPRS : [AUTO|GPRS|SMS]

2. EasyTrac GPRS Reconnec : 16 : [16-65535]

3. EasyTrac SMS Duration : 180 : [180-65535]

4. SIM PIN1&2 Setting

   SIM PIN1 :

   SIM PIN2 :

5. GPRS Connection Setting

6. SMS Connection Setting

E. Exit

**Selection [1-6]? E        <Press Enter>**

6. Type '3' in Main Setting Menu to enter Remote Server Setting Menu.

Main Setting Menu :

1. Basic Setting

2. GSM/GPRS Connection Setting

3. Remote Server Setting

E. Exit

**Selection [1-3]? 3        <Press Enter>**

7. Set the Remote Server (Gateway Server) settings. The settings with * sign are required. Type '1' to change settings. When it is done, type 'E' to exit to the previous menu.

Remote Server Setting Menu :

1. Remote Primary Server

   *Main Server IP : 10.1.99.179     <The Gateway Server IP address which running tcpserver.exe program to communicate with Easytrac and receive GPS data>

   *Main Server Port : 9998 : [0-65535]     <Port Number corresponds to the setting of tcpserver.exe program to receive SYNC packet and GPS data. Default is 9998>

E. Exit

**Selection [1]? E        <Press Enter>**

8. When finishing all settings. Type 'E' to exit Main Setting Menu and save the changes to the Flash memory of the Easytrac.

> Main Setting Menu :
>
> 1. Basic Setting
>
> 2. GSM/GPRS Connection Setting
>
> 3. Remote Server Setting
>
> E. Exit
>
> **Selection [1-3]? E    <Press Enter>**

9. Type 'YES' to apply all setting changes.

> **Write to the External FLASH [YES|NO]? YES    <Press Enter>**
>
> FLASH Sector Erase Start
>
> Sector Number : 0x03 - Sector Address : 0x00030000
>
> .
>
> FLASH Sector Erase Done
>
> Writing 0x000005DC Bytes
>
> FLASH Reset Done
>
> Done.

10. Make sure GPS antenna, GSM antenna, RS-232 cable, V-16 cable are all secured to Easytrac main unit before Press RESET button on the Easytrac rear panel to reboot system.

## III. Running on normal mode

1. Easytrac reboots on normal mode. Normally, PWR ⬤ LED is ON and the RF ⬤ LED flashing constantly which means the Easytrac is POWER ON and running. About 30 sec later, GSM ⬤ LED starts flashing then keeps ON which means GPRS session Online. Also GPS ⬤ LED starts flashing for searching GPS signal then keeps ON which means GPS fixed.

| PWR | ⬤ | **ON** | RF | ⬤ | **Flash** |
|-----|---|--------|-----|---|--------|
| GSM | ⬤ | **ON** | GPS | ⬤ | **ON** |

2. Note: Before running Easytrac on normal mode. A Gateway Server which runs the tcpserver.exe with a public IP address must be ready. The tcpserver.exe is basically a TCP socket listener which building the socket sessions with multiple trackers via TCP/IP over GPRS and internet. Please refer to About TcpServer.txt , About Demo.txt and ORION gateway server API.pdf for more information. To verify your Gateway Server working well, you may use AVL simulator program to send simulated SYNC packets and GPS data to the Gateway Server. Please refer to AVL Simulator Manual.pdf for more information.

3. If the Gateway Server is not ready, the GSM●LED will keep flashing.

4. If the Easytrac and the Gateway Server are working well. It shows as the following on the Hyper Terminal.

> EasyTrac Version : 0A04
>
>  - Build Date : Mar 01 2007
>
>  - Build Time : 13:35:03
>
>  - Serial Number : 2000000988
>
>  - IMEI : 352021002966604
>
> Init. Profiles...
>
> Write - 0009 - AT
>
> Waiting...
>
> Waiting...
>
> Response - SYSSTART
>
> Waiting...
>
> Write - 0008 - AT
>
> Response - OK
>
> Write - 0009 - AT+IPR=38400
>
> Response - OK
>
> Write - 0009 - ATE0
>
> Response - OK
>
> Write - 0009 - AT+CREG=2
>
> Response - OK
>
> Write - 0009 - AT+COPS=0
>
> Response - OK
>
> Write - 0009 - AT&W
>
> Response - OK

Write - 0009 - AT+GSN

Response - 352021002966604

Response - OK

IMEI : 352021002966604

Write - 0009 - AT^SICS=0,conType,GPRS0

Response - OK

Write - 0009 - AT^SICS=0,dns1,"168.95.1.1"

Response - OK

Write - 0009 - AT^SICS=0,passwd,""

Response - OK

Write - 0009 - AT^SICS=0,apn,"mobiusone.com.tw"

Response - OK

Write - 0009 - AT^SISS=0,srvType,socket

Response - OK

Write - 0009 - AT^SISS=0,conId,0

Response - OK

Write - 0009 - AT^SISS=0,address,"socktcp://10.1.99.179:9998"

Response - OK

Write - 0009 - AT+CSMS=0

Response - +CSMS: 1,1,1

Response - OK

Write - 0009 - AT+CMGF=0

Response - OK

**Init. Profiles Done**     **<Initiating GPRS Profiles is done>**

Write - 0011 - AT^SISC=0

Response - OK

GPRS Connection is Closed.

Write - 000F - AT^SISO=0

Waiting...

Waiting...

Waiting...

Waiting...

Waiting...

Response - OK

Waiting...

Response - ^SISW: 0, 1

**GPRS Connection is Opened.**     **<Easytrac attaches to GPRS service>**

SYNC Command:

Write - 0009 - AT^SISW= 0, 8

Response - ^SISW: 0, 8

**Write - 0009 - C8 CA 00 00 7A 94 35 77 0D 0A**        **\<Send SYNC to Gateway Server\>**

Response - OK

Response - ^SISW: 0, 1

Write - 0009 - AT^SISR=0, 128

Response - ^SISR: 0, 8

Response - OK

**Received Command : C8 CA 00 53 49 53 52 3D**        **\<Get SYNC Ack from Gateway Server\>**

Write - 0009 - AT^SISR=0, 128

Response - ^SISR: 0, 34

Response - $SetTimeStamp,1724,0000,226171453&

Response - OK

**Received Command : $SetTimeStamp,1724,0000,226171453&**        **\<Get TimeStamp from Gateway Server\>**

Server Request Command

00 : SetTimeStamp

01 : 1724

02 : 0000

03 : 226171453

FLASH Sector Erase Start

Sector Number : 0x01 - Sector Address : 0x00010000

FLASH Sector Erase Done

Writing 0x000005DC Bytes

FLASH Reset Done

Done.

**Time Stamp = 0D7B1A3E**        **\<Set TimeStamp to Easytrac\>**

Response Command

$SetTimeStamp,1724,OK&

Write - 0009 - AT^SISW= 0, 24

Response - ^SISW: 0, 24

Write - 0009 - $SetTimeStamp,1724,OK&    **\<Send SetTimeStamp OK to Gateway Server\>**

Response - OK

Response - ^SISW: 0, 1

Counter : 0001

Time Stamp : 0D7B1A3E

Type : U

Resend : N

Data : SetTimeStamp,1724,OK

GPRS Track:

Write - 0009 - AT^SISW= 0, 90

Response - ^SISW: 0, 90

Write - 0009 -

**$evtGPRSTrack,2000000122,110905000017.044,V,00000.0000,E,0000.000 0,N,00,13,0.00,0,0,0,2&**    **\<Send GPS data to Gateway Server\>**

Response - OK

Response - ^SISW: 0, 1

5. If the Demo.exe and Gateway Server are working well, it shows the SYNC packet and GPS data on the Demo window, too. You can compare them to those showing on the Hyper Terminal window.

6. To parse the GPS data string, please refer to the command 2.1 ActGPRSTrack of ORION Protocol.pdf.

7. If the Easytac can not connect to the Gateway Server and send GPS data, please recheck the settings. Otherwise please send an email to support@oriontech.com.tw for technical support.

# IV. Test protocol commands via RS-232 connection

1. You may test commands of <mark>ORION Protocol.pdf</mark> by RS-232 connection instead of GPRS connection. Type 'H' to enter Debug Mode Command Menu. Type the protocol commands after the prompt and check the tracker responses. Please refer to <mark>ORION Protocol.pdf</mark> for more command details.

   EasyTrac Version : 0A04

   - Build Date : Feb 27 2007

   - Build Time : 07:40:20

   - Serial Number : 1000000001

   - IMEI : 352021002992709

   Type "H" for the Debug Mode Commands Menu.

   **$>      <Press Enter>**

   Invalid Command

   **$>H      <Press Enter>**

   EasyTrac Debug Mode Command Menu:
   | | |
   |---|---|
   | A2D | - Get the Current Analog Inputs. |
   | DCFG | - Firmware Default Configuration. |
   | DI | - Show the Current Digital Input's Status. |
   | DO[1\|2\|3\|4] | - Toggle the Specified DOx. |
   | EXIT | - Return to the Normal Mode. |
   | LED[1\|2\|3\|4] | - Toggle the Specified LEDx. |
   | LOG | - Display the Logged Records. |
   | LOG_RESET | - Reset the Logged Records. |
   | IGPRS | - Init. GPRS Profiles. |
   | ISMS | - Init. SMS Profiles. |
   | MA2D | - Monitor the Current A2D Status. |
   | MDI | - Monitor the Current DI Status. |
   | MGPRS | - Monitor the Current GPRS's Status. |
   | MINT | - Monitor the Current INTs' Status. |
   | MRTC | - Monitor the Current RTC Status. |
   | FCFG | - FLASH Saved Configuration. |
   | FLASH_RESET | - Reset Whole FLASH Chip to 0x00. |
   | RD Address | - Read Data from the Address Address. |
   | RTC | - Get the Current RTC Status. |
   | RUN | - Return to the Running Mode. |
   | SCFG | - Set Configuration. |
   | SETMODE DOWNLOAD | - Set to the Download Mode. |
   | SETVL [GPRS\|GPS] | - Set Virtual Link to GPRS or GPS Mode. |
   | SRAM_FLASH | - Test the External SRAM and FLASH. |

WR Address Data   - Write Data to the Address.
WTD            - Watchdog Reset.
$...&         - Protocol Commands Test.   <Start by $ sign, End by & sign>


$>$GetUnitID,1234,0000&     <Press Enter>
Server Request Command
00 : GetUnitID
01 : 1234
02 : 0000

**Response Command**
**$GetUnitID,1234,1000000001&**

$>

# V.  Get the system logs via RS-232 connection for advanced debugging

1.  The GPS tracker behaviors may be various in different areas because of the GSM coverage and GPRS service settings. If the GPRS connection of a tracker is not stable, you may retrieve the system logs from the tracker to verify them and figure out the reason causing the problems. Type 'H' to enter Debug Mode Command Menu. Type 'LOG' after the prompt to retrieve the system logs and check the system logs with ORION's engineers. This feature helps us to fine tune the firmware to improve the tracker's performance in different countries.    For more information, please contact support@oriontech.com.tw for more information.

EasyTrac Version : 0A04
   - Build Date : Feb 27 2007
   - Build Time : 07:40:20
   - Serial Number : 1000000001
   - IMEI : 352021002992709

Type "H" for the Debug Mode Commands Menu.
$>     <Press Enter>
Invalid Command

$>H     <Press Enter>

EasyTrac Debug Mode Command Menu:
A2D            - Get the Current Analog Inputs.

DCFG          - Firmware Default Configuration.
DI            - Show the Current Digital Input's Status.
DO[1|2|3|4]   - Toggle the Specified DOx.
EXIT          - Return to the Normal Mode.
LED[1|2|3|4]  - Toggle the Specified LEDx.
**LOG          - Display the Logged Records.** **\<Get system logs from the tracker\>**
LOG_RESET     - Reset the Logged Records.
IGPRS         - Init. GPRS Profiles.
ISMS          - Init. SMS Profiles.
MA2D          - Monitor the Current A2D Status.
MDI           - Monitor the Current DI Status.
MGPRS         - Monitor the Current GPRS's Status.
MINT          - Monitor the Current INTs' Status.
MRTC          - Monitor the Current RTC Status.
FCFG          - FLASH Saved Configuration.
FLASH_RESET   - Reset Whole FLASH Chip to 0x00.
RD Address    - Read Data from the Address Address.
RTC           - Get the Current RTC Status.
RUN           - Return to the Running Mode.
SCFG          - Set Configuration.
SETMODE DOWNLOAD - Set to the Download Mode.
SETVL [GPRS|GPS] - Set Virtual Link to GPRS or GPS Mode.
SRAM_FLASH    - Test the External SRAM and FLASH.
WR Address Data - Write Data to the Address.
WTD           - Watchdog Reset.
$...&         - Protocol Commands Test.

**$>LOG    \<Press Enter\>**

FLASH Reset Done

Display - First User Sector Found : 08

Display - User Sector : 08
*******************

Time Stamp : 0D771C7E

Type : U

Resend : N

Data : SetTimeStamp,1644,OK


Time Stamp : 0D771C80

Type : U

Resend : N

Data : SetTimeStamp,1644,OK


Time Stamp : 0D771C9C

Type : U

Resend : N

Data :

evtGPRSTrack,2000000963,270207084246.000,A,12131.2661,E,2502.8625,N,08,30,178.93,0.00,0,0,126

Time Stamp : 0D771CBA

Type : U

Resend : N

Data :

evtGPRSTrack,2000000963,270207084316.000,A,12131.2572,E,2502.8579,N,08,31,178.93,0.00,0,0,126

Time Stamp : 0D771CD8

Type : U

Resend : N

Data :

evtGPRSTrack,2000000963,270207084346.000,A,12131.2609,E,2502.8542,N,09,30,178.93,0.00,0,0,126

**FCC warning statement**

**This model complies with part 15/22H/24E of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.**

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