
IntelliTrac X1-PLUS Series



User Guide

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1.Introduction

Thank you for your purchasing IntelliTrac X1-Plus GPS Vehicle Tracking device. The benefits are:

- Improve Safety
- Ensure Security
- Good efficiency on Fleet management and Dispatch solution
- Asset and resource management
- Economic operation and improving productivity
- Keep the Journey record for future analysis or accident report
- Where is the Car? When it will arrive? What is its speed now?

1.1 Scope

The purpose of this document is to describe how to getting started with the IntelliTrac X Series devices. The document contains basic device configuration. For advanced users, please refer to the IntelliTrac X Series Protocol Document for detailed information.

1.2 About IntelliTrac X1-Plus

The IntelliTrac X1-Plus GPS Unit wirelessly transmits location, peripheral, and vehicle control data to a control center. Location data, including speed, direction, mileage, and altitude, is provided by an onboard GPS receiver. Wireless transmission is achieved using an onboard GSM/GPRS module. microcontroller is used to poll location and command data at regular intervals, derive actions based on location, peripheral, and control data, and execute those actions.

One of the best feature of X series AVL is that they can transit data on ASCII mode.

Peripheral data indicates the status of the various peripherals that are connected to and/or controlled by the unit. Peripherals include, but not limited to, door locks/un-locks , starter interrupt, ignition, battery, engine and panic button.

Firmware on the device applies intelligent filtering to overcome coverage limitations for both GPS and GSM/GPRS networks.

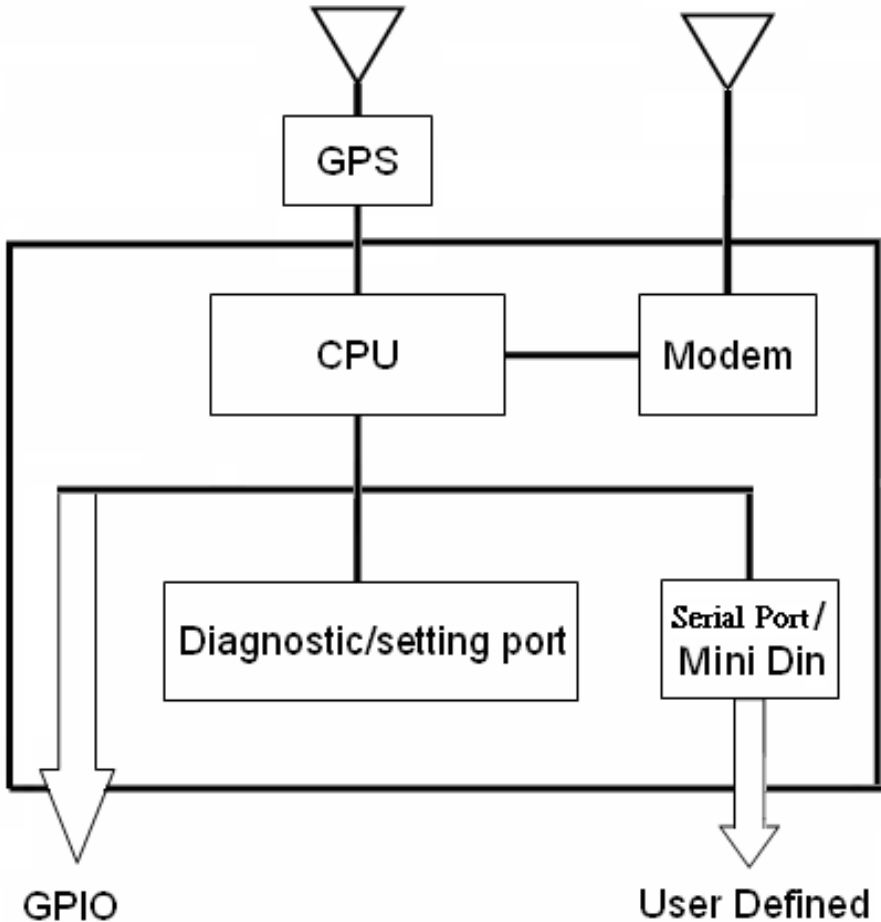
Motion sensor is used to control the status of the unit, either sleep, idle, or full power, there by controlling the amount of current the unit consumes.

Backup battery and tamper sensing GPS Antennas are primarily used to indicate loss of Main Power and loss of GPS antenna connectivity.

Device supports Over-the-air firmware upgrade to deliver added functionality without physically touching the device once installed.

1.3 Hardware Architecture

The IntelliTrac X1-Plus hardware includes Micro-controller, GPS receiver, GSM/GPRS modem, I/Os interface.



- User can use PC HyperTerminal connect to the Diagnostic / setting port to configure the AVL.
- The GPS is used for car accident. Car tow-away warning and power management.
- GPIO can be used to connect to any customer monitoring points (door switch, anti-thief) or Actuators.
- Serial Expansion port .
- RTOS OPTION: We will have X1,X1-Plus professional version with Real Time operation system in JAN.2011.

1.4 Related Documents

[1] IntelliTrac X Series Protocol Document Basic Operations

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■ 2. Basic Operations

2.1 Hardware Installation

(1) SIM Card Installation

- Press yellow button to eject the SIM card holder.
- Put the SIM card on the SIM card holder.
- Insert the SIM card holder to the device correctly.

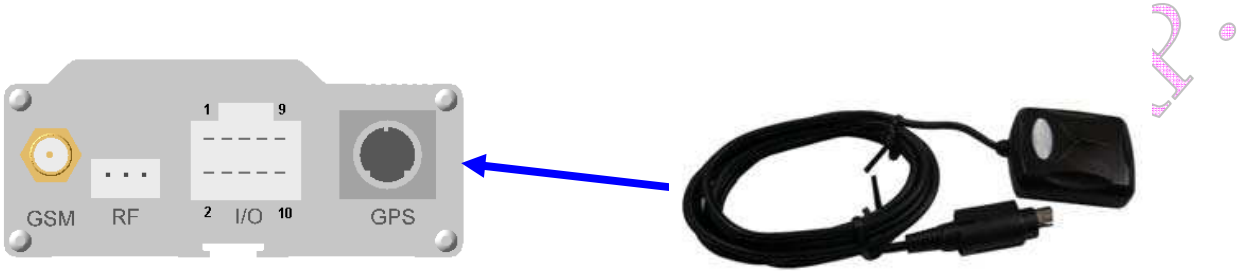


(2) GPS Antenna Installation

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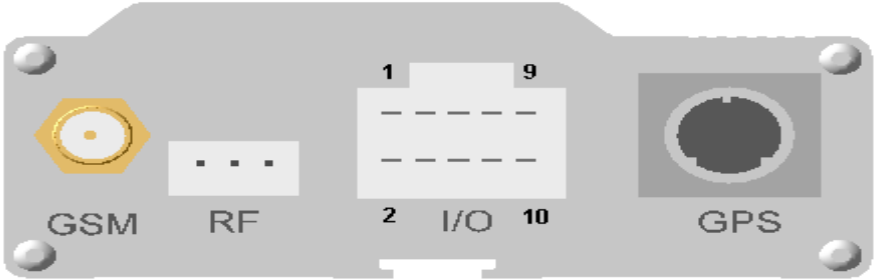
- Connect the GPS Receiver antenna to the right-down Press Mini DIN connector.



(3) Power, I/O Cable Installation

■ 2.2 Connectors Pins Assignment

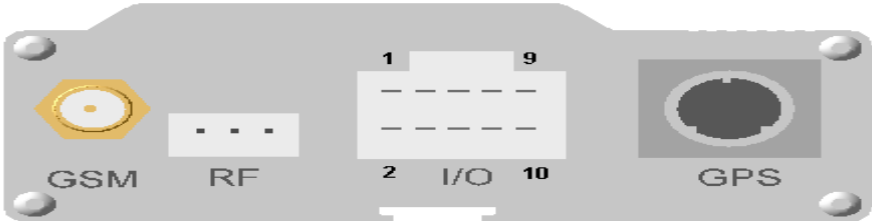
- The I/O cable is a 10-wires cable which include power and positive/negative inputs and outputs.



The I/O cable pins assignment shown below :

Pin Number	Description
1	DC power source (8V ~ 30V)
2	Ground
3	Input1 (ACC Positive trigger input)
4	Output1
5	Input2 (Positive trigger)
6	Output2
7	Input3
8	Output3
9	Input4
10	Output4 (Internal 2A Relay)

- (4) Install GSM Antenna
 - Connect the GSM antenna to the SMA connector with label "GSM".
- (5) Install RF Receiver (Optional)
 - Connect the RF receiver to the 3 pins connector with label "RF".



2.3 Software Upgrade

Device Configurations

The screenshot shows the 'IntelliTrac X1 Setting Tool' application window. The left sidebar contains a tree view with categories: Basic Setting (Parameters, Communication, Log, Backup Battery), Advanced Setting (Diagnostic, Default Report, User Report, Power management, Vehicle towed, Set mileage, Baud Rate Setting), and Other (Reset, About). The 'Communication' category is selected, and the main area displays the 'Communication' configuration page.

Communication

This page is used for setting unit communication parameters.

CommType
Primary communication type: (3 options)

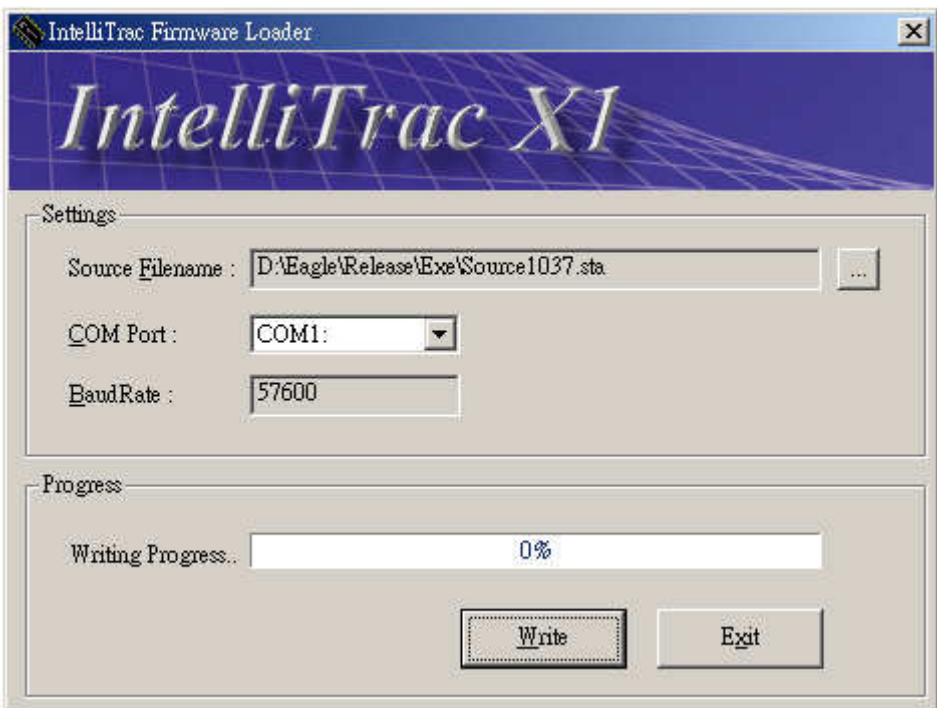
GSM Setting
SMS base phone number: (Max. 16 characters)

CSD Setting
CSD base phone number: (Max. 16 characters)

GPRS Setting

GPRS Access Point Name	<input type="text" value="Internet"/>	(Max. 35 characters)
GPRS Login Username	<input type="text"/>	(Max. 15 characters)
GPRS Login Password	<input type="text"/>	(Max. 15 characters)
GPRS Package Format	<input type="text" value="TCP"/>	(TCP/UDP)
GPRS HostAddress	<input type="text" value="60.248.29.20"/>	(Max. 30 characters)
GPRS HostPort	<input type="text" value="6000"/>	(Max. 65535)
GPRS SyncInterval	<input type="text" value="30"/>	(Max. 65535 seconds)
GPRS DNS	<input type="text" value="168 . 95 . 1 . 1"/>	

■ 2.4 Firmware Download Software



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3. Technical Specification

Dimension	90mm x 70mm x 30mm
Weight	250g
Input Ports	4 Inputs (2 positive, 2 negative)
Output Ports	4 Outputs (4 negative trigger)
GPS Datum	WGS-84
GPS Frequency	L1, 1575.42MHz
GPS Channel	16
GPS Tracking sensitivity	-152dBm typ.
GPS Cold Start	40secs
GPS Warm Start	25secs
GPS Hot Start	3secs
GPS Update Rate	1Hz
GPS Accuracy	3m CEP (50%), 7m (90%)
GPS Baud Rate	19200bps
GSM/GPRS Frequency	Tri-Band 900/1800/1900MHz
GPRS	Multi-slot class 10
SMS	PDU mode
Data mode	CS Data
Voice mode	HR/FR/EFR

4. Electrical reliability and radio characteristics

Absolute maximum rating for power supply and voltage on digital input pins of the IntelliTrac X1-Plus are list in following table:

Parameter	Min	Max	Unit
Supply Voltage	8	30	V
Positive trigger Input Voltage	5	30	V
Positive trigger Input current	35		uA
Negative trigger Input Voltage	0	0.7	V
Output current		400	mA
Relay output current		2	A
Power current consumption (Standby mode)	40	45	mA @ 12VDC
Power current consumption (GPS Off mode)	24	26	mA @ 12VDC
Power current consumption (Deep sleep mode)	15	15	mA @ 12VDC

■ 4.1 Operating temperatures

The operating temperature is listed in following table:

Parameter	Min	Typ	Max	Unit
Ambient temperature	-20	25	55	°C
Restricted temperature*	-20 ~ -40		55 ~ 85	°C
Storage Temperature	-40		85	°C

* The Intelli Trac X1-Plus device can work , but the deviation from the specification may occur.

■ 4.2 GSM/GPRS Output Power

Frequency	Max	Min
GSM850	33dBm ±2db	5dBm±5db
EGSM900	33dBm ±2db	5dBm±5db
DCS1800	30dBm ±2db	0dBm±5db
PCS1900	30dBm ±2db	0dBm±5db

■ 4.3 GSM/GPRS Receive sensitivity

Frequency	Receive sensitivity (Typical)	Receive sensitivity(Max)
GSM850	-109dBm	-107dBm
EGSM900	-109dBm	-107dBm
DCS1800	-109dBm	-107dBm
PCS1900	-109dBm	-107dBm

■ 4.4 GSM/GPRS Receive/transmit frequency

Frequency	Receive	Transmit
GSM850	869 ~ 894MHz	824 ~ 849 MHz
EGSM900	925 ~ 960MHz	880 ~ 915MHz
DCS1800	1805 ~ 1880MHz	1710 ~ 1785MHz
PCS1900	1930 ~ 1990MHz	1850 ~ 1910MHz

5. LED Indicators

PWR LED Status	Function
Off	Power off
20 ms On / 2 secs Off	The device is running in power saving mode.
500ms On / 500ms Off	Reset procedure is in progress
20ms ON / 20ms Off	Upgrade firmware is in progress
On	Power on

GPS LED Status	Function
Off	The GPS is off or running in power saving mode.
1 sec On / 1 sec Off	No GPS satellites signal received
On	GPS Ready

GSM LED Status	Function
Off	The device is off or running in deep sleep mode.
600 ms On / 600ms Off	No SIM card inserted or no PIN entered, or network search in progress, or network login in progress.
90 ms On / 3 secs Off	Logged to network.
90 ms blinking 2 times /3secs Off	GPRS Network connected

FCC Regulations:

● This mobile 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.

● This mobile device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

▶ RF Exposure Information

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

● This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.



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About Systems & Technology Corporation

IntelliTrac X-Series AVL device is produced by Systems & Technology Corporation. The company is a key developer and supplier of advanced systems in the Automatic Vehicle Location (AVL), Digital Map and Car Navigation Systems.

If you need information on other maps solutions or products, please contact us at the phone and fax numbers listed below, or visit our web sites.

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