



SuperGuard PT3 Universal Tracker

The PT3 Universal Tracker is a mobile GPS and communication device that allows you to track persons, keep in touch with family members, protect your children, or track your vehicles, boats through SMS, GPRS, Internet and mobile phone browsers.



Locating People

- Built-In GPS patch Antenna for optimal GPS location
- ATMEL

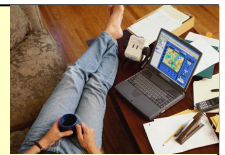
GPS receiver with fast TTFF and low power consumption

- Receive location details through "silent ring" or SMS command



Tracking

- Track persons or vehicles in real-time or intervals through GPRS and/ or SMS
- Access maps and GPS positions online over Internet or mobile phone browser



Communication

- Place and receive Voice Calls through GSM network

- touch-dial to 3 predefined contact numbers

Alerts

- Quick-Set 80 m Geo-Fence
- Define up to four areas as Geo-Fence over Internet
- Setup maximum speed limits



Emergency Function

- Press SOS buttons to send emergency messages to predefined contact numbers (incl. GPS position, address and road name, time, alarm message)
- Exact location with detailed map can be accessed online on mobile devices or PC
- Automatic dialing loop to predefined contacts, until one contact picks up call



Device Features:

- Three touch buttons to quick-dial phone calls to preset contact persons
- Dedicated SOS button to send emergency alarm SMS to all contact persons and automatically dial to main contact
- Automatic Fall-down/ Impact alarm and automatic call functions
- GPS Location: Receive single location requests from up to three contact persons through 2-Ring call or SMS command;
- GPS Tracking: automatic schedule and manual position upgrades over GPRS;
- Power saving options: automatic switch off of GPS and communication if no movement for 4 minutes
- Alerts: One-touch setup of 80 meter Geo-Fence, define additional 4 Geo-fence areas over Internet and setup Speed limits to receive alert messages in case of violations
- Battery: Battery low alarm through tone signal and SMS, GPS timer setup to save power, rechargeable Li-Ion battery pack
- PT3 supports Iridium satellite phone integration, we provide complete package solution including air time, SIM card and activation, to use everywhere in the world, ideal for container ships, boats, yachts, military use

Geo-fence activated/
G-Sensor activated/ Battery
Power Indicator

Functional Indicators:

GPS = GPS availability
GSM = GSM operation/ status
GPRS = GPRS availability/

Select Contact numbers 1, 2 or 3 and press twice to dial out phone calls.
Press either button to accept phone calls.

SOS Button
to trigger SOS alarm



SET:

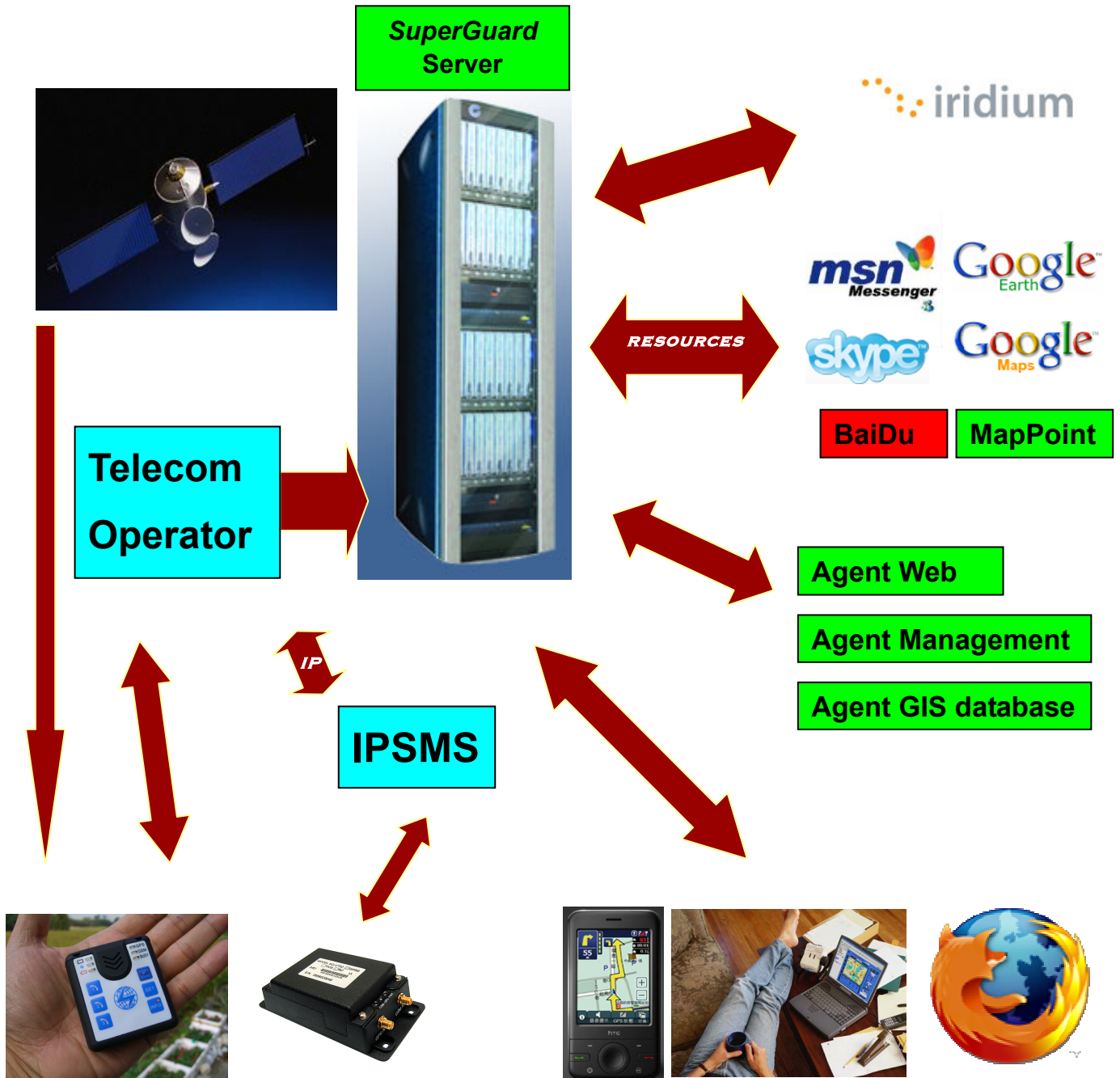
Press to activate 80m Geo-Fence around the device (GPS required). An alarm will be generated and the Geo-Fence turned off automatically when leaving the area)

INFO/Power button:

Press to manually send last available position to server database (data logger).
Press 3 sec to power device off. Press again to power on.



System Diagram





Hardware Specifications

General

The unit utilizes GPS to receive time, date, longitude, latitude, speed, direction data; GPRS for data exchange with Control Base and GSM for communication and short messaging.

GSM

GSM/GPRS module	Sim340 Quadband GPRS module GSM 850 MHZ ; GSM 900 MHZ (2 watt) Class 4 GSM 1800 MHZ (1 watt) Class 1; GSM 1900 MHZ
GSM Antenna	Built-in

GPS

GPS module	ATMEL based L1, C/A code receiver, 16 channels
Protocol	SuperGuard Protocol
GPS Antenna	Built-in Patch antenna
Accuracy	10m-20m
Start time	Cold start: 44sec; Hot start: 3sec (Open Sky)
Speed/Accuracy	0.2 M/sec. (50%)
Acceleration	Max: 4g
Max Height	18,000 M
Sensitivity	-158 dBm
Datum Coordinate	WGS-84

Electrical

Operating Voltage	3.6V
Charge Voltage	5-6V
Standby Current	7~8mA (average)
Operating	80mA
Talk	200~300 mA
Battery	Motorola 998 1000 mAh Operating time: 12h, Talk time: 3h, Standby time: 100h

Others

Operating temperature	-10°C to +50°C
Dimensions	55 x 61 x 24 mm
Speaker (Built-in)	32Ohm/0.5W
Microphone (Built-in)	58db



	NOTE: If no SIM card is applied, the GSM LED will remain on. You will not be able to operate the unit without SIM card and battery inserted.
To operate the following device features, the device has to be initialized with server database and up to 3 contact phone numbers (see point 1.).	
Place Phone Call	<p>The Device can place phone calls to 3 predefined contact numbers. Select the contact phone number 1, 2 or 3 and press to place a phone call.</p> <p>To end a phone call, press either of the number buttons again.</p> <p>If auto-dial feature is enabled, the device will auto-dial a phone call to the main contact number each time it is moved after 5 min of inactivity.</p>
Accept Phone Calls	<p>The device can accept phone calls from any phone number. To accept a call, press any of the number buttons.</p> <p>To end a phone call, press either of the number buttons.</p> <p>If auto-answering mode is enabled, the device will automatically accept voice calls from authorized contact numbers after 3 ring tones (ca. 12 sec).</p> <p>NOTE: During phone calls, no commands for location requests or real time tracking can be processed at the same time.</p>
SOS Emergency button	<p>When the SOS button is pressed for 2 seconds, the Device will send the last available GPS data and status through SMS to the Control Base.</p> <p>The Control Base will itself send text message with location details, time and alert text to all Contact numbers, with the text (example): After sending SOS status, the Device will dial the number of Contact #1. If a 'busy' signal is received, the unit will automatically dial Contact #2, #3 and so on.</p>
Manual (instant) Geo-Fence activation	<p>Users can setup one instant Geo-fence of 80m radius by pressing the SET button once. When the device leaves the area, it will send GPS data and status to the Control Base through GPRS or SMS (fallback).</p> <p>The Control Base sends a text message containing address details and alert text to all Contact numbers.</p>
Fall-down alarm	Pressing the SET button twice will activate the G-Sensor alarm:



activation	<p>An alarm will be triggered when the device is dropped or the person who carries the device falls down, or when a sudden drop in velocity similar to a car crash happens.</p> <p>The Device will send the location information with alarm message to control base through GPRS or SMS (fallback). The Control Base sends a text message containing address details and alert text to all Contact numbers.</p> <p>Both Instant Geo-fence and Fall-down alarms can be activated simultaneously by pressing the SET button thrice.</p> <p>To disable all alarms, press the SET button four times. Each activation status can be checked through the device LEDs.</p>
Send current position to server database	<p>In order to manually send the current GPS position to the server database, device users can press the INFO button. This feature can work as remote "data logger", especially if no other tracking schedules are configured.</p>
Other Indicators	<p>The battery LED will start flashing when the battery power gets low, and stay on if charging current is present</p> <p>The GPS LED (blue) will flash briefly when a GPS fix is available.</p> <p>The GSM LED will flash briefly when the device is registered to GSM network and is ready for communication.</p> <p>The Busy LED will flash when data packets or alarms are sent, or during phone call operation.</p> <p>Both GSM and Busy LED will flash simultaneously when the device is online via GPRS.</p>

3. REMOTE CONFIGURATIONS

The following list describes configurations that can be setup remotely through SMS commands from the Control Base.



Function/ Feature	Description
Maximum Speed Limit	<p>The device can be configured with a maximum speed limit.</p> <p>If a speed violation occurs, the device will send GPS data and status to the Control Base through GPRS or SMS (fallback). The Control Base will send text message containing address details and alert text to all Contact numbers.</p>
Additional Geo-Fence Setup	<p>Apart from the instant 80m Geo-fence, additional 4 Geo-fences can be loaded through SMS command containing longitude/latitude parameters.</p> <p>If a Geo-Fence violation occurs, the device will send GPS data and status to the Control Base through GPRS or SMS (fallback). The Control Base will send text message containing address details and alert text to all Contact numbers.</p>
Normal Reporting Mode:	<p>In default (normal) mode, the device will send updated GPS and status information via GPRS to the Control Base in intervals 60 seconds, as long as GPS is available.</p> <p>If the device is not moving for a continuous period of 4min, it will automatically turn to standby mode by disabling GPS and stop reporting position updates, in order to reduce power consumption.</p> <p>GPS and reporting will resume when the device is being moved or picked up.</p>
Special Reporting Mode 1: Police Use	<p>In police use mode, the device will automatically place a phone call to the main contact number each time the device is moved after 5min of inactivity.</p> <p>When the call is answered, the microphone sensitivity will be set to high, to allow overhearing conversations.</p> <p>After the call or call time-out, the device will go GPRS online and start sending positions to the Control Base in 10sec intervals.</p>
Special Reporting Mode 2:	<p>In car security mode, the PT3 can act as a simple vehicle tracking and security device.</p>



Car Security	<p>When the device is moved, a phone call will be placed to the main contact.</p> <p>After the call or time-out, the device will go GPRS online and start sending positions to the Control Base in 2 min intervals. After 4 min of GPS inactivity, GPS and communication will shut down to preserve power, and resume after the device is moving again.</p>
Special Reporting Mode 3: Hiking Mode	<p>In hiking mode, the device will remain in sleeping mode with GPS and GSM communication shut down unless it is moving or a button has been pressed.</p> <p>A GSM wakeup heartbeat of every 60min ensures that new commands can be received.</p> <p>The device will report positions to the Control Base in 2 min intervals as long as it's moving and GPS is available.</p>
Special Reporting Mode 4: Maritime Use	<p>In Maritime mode, the device will remain in sleeping mode with GPS and GSM communication shut down unless a button has been pressed.</p> <p>A GSM wakeup heartbeat of every 60min ensures that new commands can be received.</p>

4. LOCATION AND TRACKING FEATURES

The following options are available to setup tracking schedules and send location requests from control base and authorized contact numbers.

Function/ Feature	Description
Normal Reporting Mode	<p>By default, the device will send updated GPS and status information via GPRS to the Control Base in intervals of every 60 seconds.</p> <p>If GPS or GPRS is not available at the time, the device will stop sending data until GPS or GPRS are available again.</p> <p>If the device is not moving for a continuous period of 4 minutes, it will switch to power saving mode by disabling GPS. GPS acquisition will resume after the device is being moved.</p>
Single Location	3-RING Call (From Contact Numbers only) :



requests:	<ul style="list-style-type: none"> - Hanging up after 2 rings (3 - 10sec) during a call placed from one of the Contact Numbers will let the Device send last available GPS + status data + Contact# as GPRS package or SMS (fallback) to Control Base - The Control Base will send text message with address details and status to the inquiring Contact. - <p>SMS Command: You can also request the last available GPS position through SMS command from the Control Base/ Websites or authorized contact numbers. The device will send last available GPS position + status as GPRS package or SMS (fallback) to Control Base, and the Control Base will send location data per SMS to the inquiring Contact.</p>
Tracking Schedule Setup	<p>A Tracking interval between 10sec and 999 sec can be configured through SMS from Control Base or contact numbers.</p> <p>Device will send GPS data and status via GPRS to the Control Base in the specified interval, as long as GPS available and power saving mode is inactive.</p> <p>If the tracking interval is less than 60sec, the device will keep sending positions in the same GPRS session.</p> <p>If GPRS keeps idle for more than 60sec (no data sent and no commands are received), the device will go GPRS offline and back online at the next scheduled report.</p>
Real-Time Tracking (RTT)	<p>RTT can be initiated at the Control Base or by users through connected Websites.</p> <p>GPRS connectivity through device is required.</p> <p>Max. Period: 0-65534 (minutes).</p> <p>The device will go GPRS online and send GPS data and status to the Control Base over a period of (<i>value</i>) minutes in an interval of ca. 10 seconds until the time period (max. 65534 minutes) has ended.</p>
Manual data logger	<p>The device owner can initiate a current location report to Control Base through pressing the INFO button on the device.</p>
<p>NOTE: During RTT or other features that require the Device to go GPRS online, no phone calls or other SMS commands can be received at the same time.</p>	



5. ALARM FEATURES

Automatic and manually triggered alarm reports to Control Base and Contact numbers

Function/ Feature	Description
SOS Emergency (indicator: SOS)	<p>When SOS button is pressed, the Device will send the last available GPS data and status through SMS to the Control Base.</p> <p>The Control Base will itself send text message with address details, time and alert text to all Contact numbers, with the text (example):</p> <p>After sending SOS status, the Device will dial the number of Contact #1. If a 'busy' signal is received, the unit will automatically dial Contact #2, #3 and so on.</p>
Fall-Down Alarm	<p>If the G-Sensor alarm is activated, the device will trigger a Fall-down alarm when it is dropped or the person who carries the device falls down.</p> <p>After sending G-Sensor alarm, the Device will send the location information with alarm message to control base, and the control base will send location and status to all contact numbers.</p>
Movement Alarm	<p>When auto-dial function is configured, the PT3 will place a phone call to the main contact number each time the device is moved after 5 min of inactivity.</p> <p>When answered, microphone sensitivity will be set to high.</p>
Geo-Fence Alarm	<p>If the device has been configured through instant Geo-fence and/or a set of restricted geographic areas, the following activities will be triggered when a Geo-Fence violation occurs:</p> <p>The device will send alarm package and GPS coordinates to the Control Base through GPRS (or SMS fallback). The Control Base software will find the street name and closest intersection from a map server and send an SMS text message to all authorized Contact numbers, including the text (example):</p> <p>"Peter is in Arlington., near intersection Fairfax Ramp; GEO Fence Violation !"</p>



Maximum Speed Alarm	<p>If the device has been configured with a maximum speed limit, the following activities will be triggered when the speed recorded through GPS exceeds this limit:</p> <p>The device will send alarm package and GPS coordinates to the Control Base through GPRS (or SMS for fallback). The Control Base software will find the street name and closest intersection from a map server and sends an SMS text message to all authorized Contact numbers, including the text (example):</p> <p>“Peter is in Highway 166, near intersection Gleebe; Speeding”</p>
Battery Low Warning	<p>When the included battery pack in the device runs low on power, all 3 LED lights will flash in sequence, and an alarm with GPS coordinates will be sent to the Control Base.</p>

6. Power Saving Modes

The following Power Saving Modes are available to reduce power consumption

Function/ Feature	Description
Normal Mode	<p>Device will go into power saving mode and let the GPS engine go into sleep mode every time the device is not in motion for continuous 4 minutes. GPS will be turned on again, if shock is detected.</p>
Sleep Mode	<p>After receiving the command, the device will go into Sleep Mode. The device GSM module will only be turned on every 60 min for a period of 2 minutes (heartbeat) to receive pending SMS commands.</p> <p>GSM communication and sending of GPS position data (if GPS available) will resume in the following scenarios:</p> <ol style="list-style-type: none"> 1. The device is being moved 2. Any button of the device is being pressed 3. An SMS with new command is received at or during the heartbeat interval



Deep Sleep Mode	<p>After receiving the command, the device will go into constant power saving mode (deep sleep mode). The device GSM module will only be turned on every 60 min for a period of 2 minutes (heartbeat) to receive pending SMS commands.</p> <p>GSM communication and sending of GPS position data (if GPS available) will resume in the following scenarios:</p> <ol style="list-style-type: none"> 1. Any button of the device is being pressed 2. An SMS with new command is received at or during the heartbeat interval 3.
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7. Additional Commands and Device Diagnostic Features

Function/ Feature	Description
Automatic Answering (optional)	The PT3 can be configured to switch to automatic answering mode for incoming phone calls. When a call gets connected, the microphone sensitivity will switch to highest, while the speaker will be muted for monitoring features.
Speaker/ microphone levels	Volume levels and microphone gain can be adjusted through command.
Diagnostic commands	A set of diagnostic commands is available to interrogate firmware version, original initialization parameters, communication related and device configuration details and remaining battery voltage. In addition, online diagnostic over GPRS connection can be conducted to view GPS and GSM signal strength, NMEA output data and button controls.
OTA Device upgrading	Firmware can be upgraded via GPRS connection. Specific host IP and port can be addressed through upgraded command.