CatTraQ™
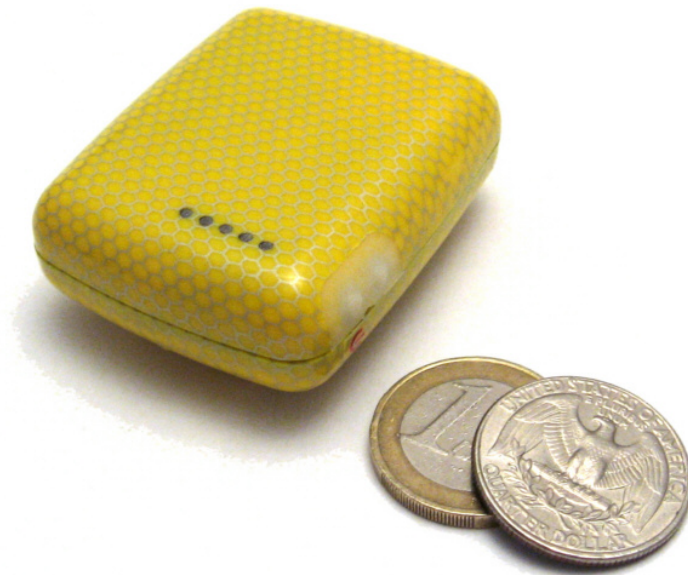
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CatTraQ™ Live 3 – User Manual

Revision History

Revision	Change
V1.0	Initial version for CatTrack Live v3
V1.1	Minor corrections
V1.2	Notes about charge indicator light on docking station
V1.3	Update data of position response

Index

1. Overview

The device has evolved to version 3 which is now a professional tracking solution for scientific and private use satisfying a broad range of requirements. CatTraQ Live III is mainly designed for animal surveillance/observation.
It combines a very small size with a robust watertight enclosure, powerful functions and a very good performance/cost relation.

The purpose of this device is to determine its position using GPS satellite signals and sending the position automatically or on request using existing cellular phone networks.
By supporting quad band phone frequencies the device can be used virtually around the globe.
Using the GPRS function an online tracking via the Internet is possible. In this case the position can be stored on a memory card during times of no available cellular phone network.

To use the device a SIM card (cellular phone service card) is required as well as a mobile phone that can receive and send SMS text messages.

The GPS tracker can find use on the following applications:

- Supervise/locate pets and animals
- Security for elderly people and children
- Track criminals
- Protect property like vehicles, boats and machines

The tracker has the following features:

- Miniaturized size
- Waterproof design
- SMS and GPRS communication
- Track on demand
- Track by time interval
- Geo-fencing control
- SOS button for immediate rescue and alarm
- Speed limit alarm
- Low battery alarm
- Vibration alarm
- Integrated data logger using Micro SD memory card in case of no GSM network coverage.
- Time scheduler to extend runtime
- Position response with coordinates or Internet link to Google Maps

!	**Note:** In some countries it is not legal to use the device for tracking persons who have not given their approval of doing so. It is considered as infringing personal rights and may get punished by law.

1.1 Specification

|	
Charging Voltage	4.2-5.5V/400mA (over Mini USB port)
Integrated battery	Rechargeable 700mAh
Operation time	96 hours
Dimensions	50 x 40 x 20mm
Weight	50g
Operating temperature range	-20°C to 60°C
Acceleration Limit	< 4g
GSM frequencies	Quad-band GSM (850/900/1800/1900MHz)
GPS chipset	SIRF Star III
GPS Sensitivity	-159 dB
GPS tracking Channels	20
Position Accuracy	< 15m 2D RMS
Velocity Accuracy	0.1 m/s
Altitude Limit	Max. 18,000m (60,000 feet)
Velocity Limit	Max. 514 m/s (1000 knots)
Memory card size for data logging	Max. 2 GB

1.2 Device elements
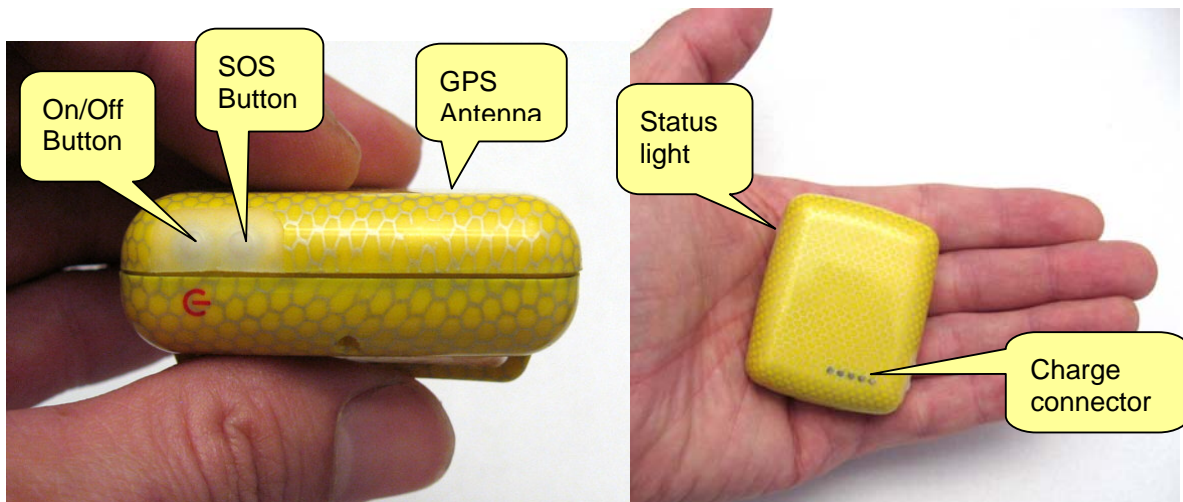
Status Light Signals

Light is 0.5s ON and 0.5s OFF	Initializing or low battery voltage
Light is 1s ON and 1s OFF	Searching GPS satellite
Light is 1s ON and 3s OFF	GPS position acquired (OK state)

Buttons

On/Off Button	Press for 3 seconds to turn device ON or OFF
SOS Button	Press for 3 seconds to send a SMS message to authorized numbers

1.3 Accessories

Docking station

USB cable

Screwdriver

Car charger

Wall charger
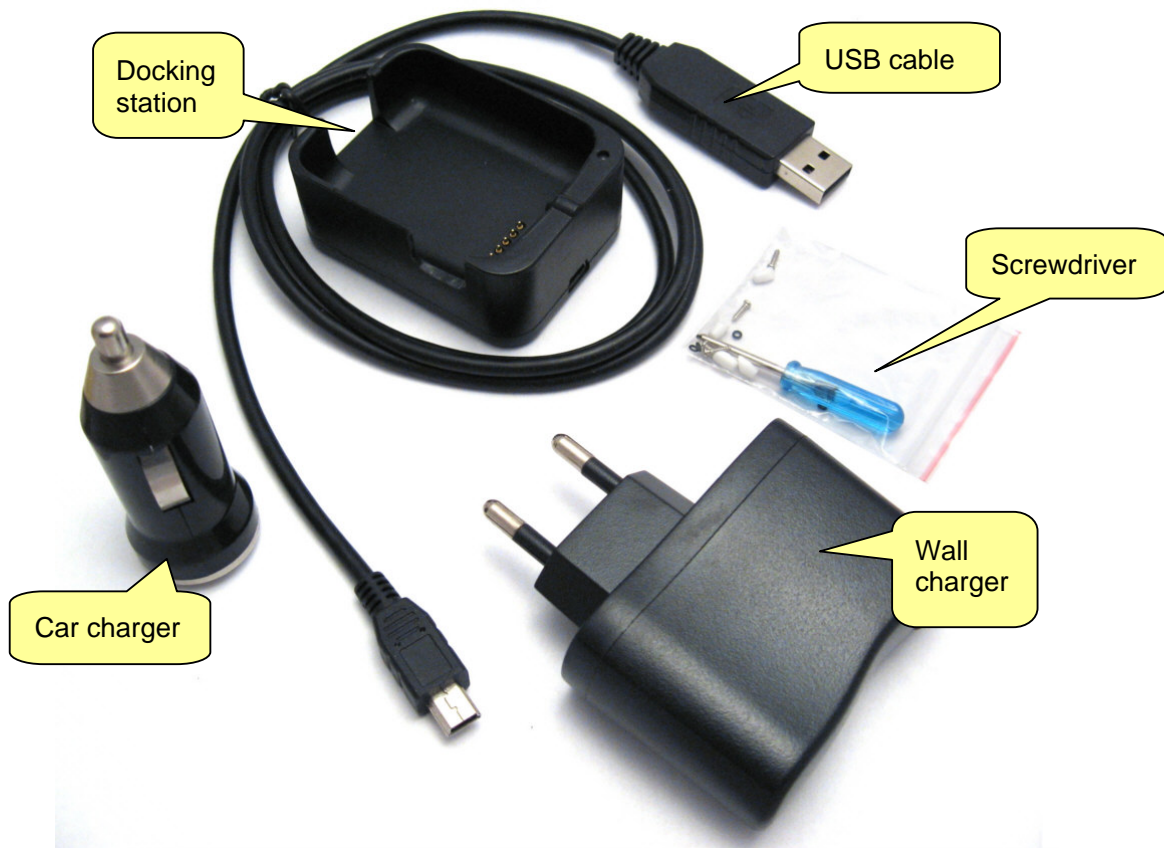
2. Startup

This chapter guides you step-by-step through the setup of the tracking device. Most steps only need to be done one time.

The tracker requires a SIM card to be able to communicate via the cellular phone network. Things to check before you install the SIM card:

SIM card is not locked/passcode protected	✓
SIM card has enough credit left (can receive and send SMS; check with mobile phone)	✓
SIM card supports displaying of caller ID	✓
SIM card is not bonded to a certain mobile phone ("SIM lock"; if that's the case you can go to your dealer and request to change the device bonding. Usually just the device IMEI is required)	✓

Once you made sure that your SIM card fulfills these requirements continue with the device setup steps shown below:
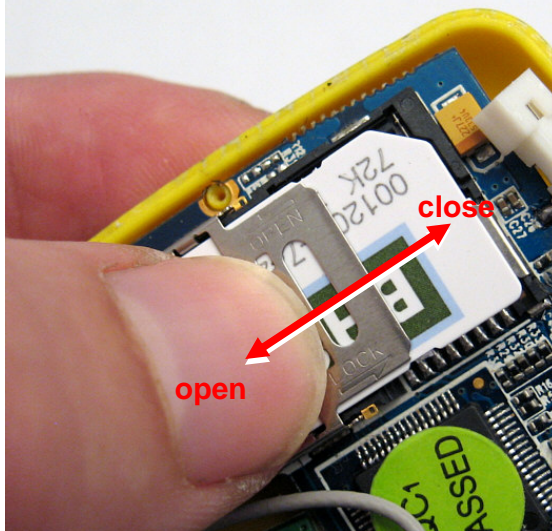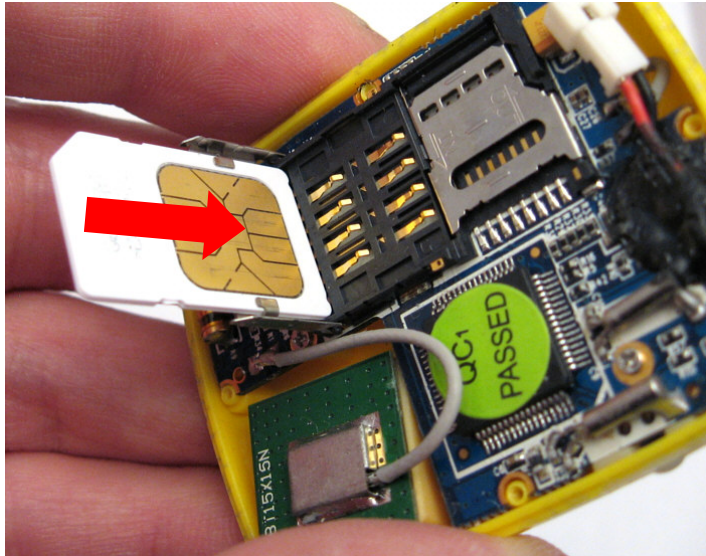
Unscrew the back cover of the device

Optional: Insert SD memory card if you want to use data logging during loss of GSM network signals
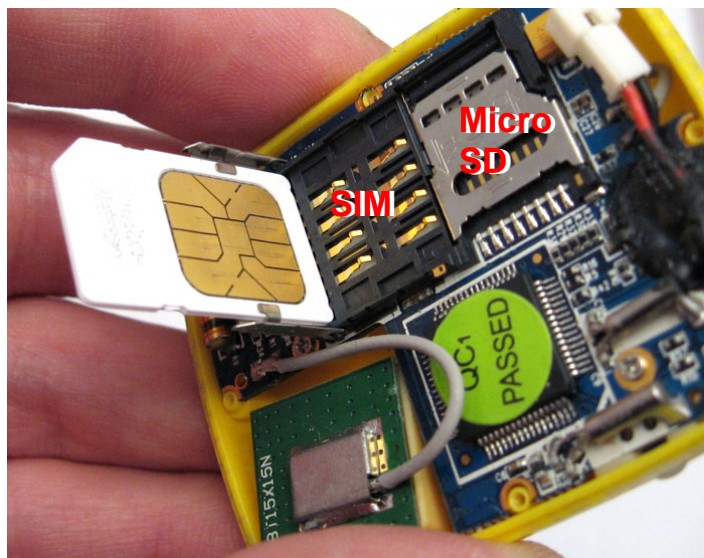
Insert mobile phone SIM
card

Connect battery
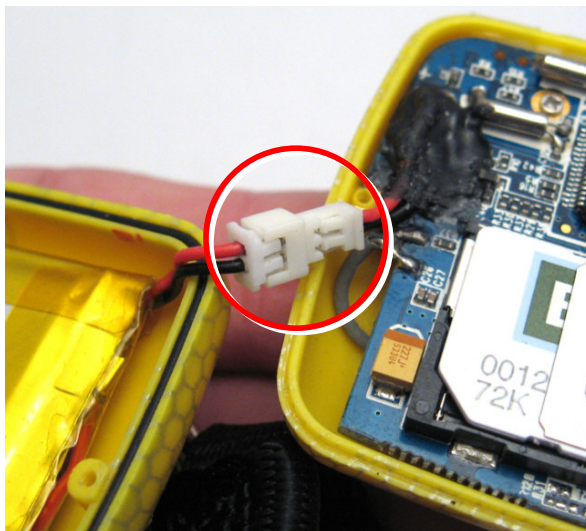
Close cover (make sure that gasket is clean)

Fasten screws

Done. You only need to repeat the setup to exchange SIM card. For charging the device stays closed.

Turn on the unit outdoors by pressing the "on/off" button until the indicator light is on.
For first use, please initialize the unit and restore it to default setting (please refer to next section for instructions).
After about 50 seconds the unit will begin to work and acquire the GSM signals as well as the GPS signals.

2.2 Charging

The device is charged using the docking station. An USB interface supplies the docking station with power. It can get connected to a computer or to an USB charger (car or wall mount charger). Make sure that the connectors on front of the device are clean. Make also sure that the tracker sits firmly on the docking station so that good electrical contact can be achieved.
The light on the docking station will shine red while the battery is charging and is green when battery full or device not connected properly.

Charge indicator

2.3 Harness

A harness is the optimal choice to attach the tracker to a pet. It ensures that the GPS antenna points upward to the sky and also prevents that the animal losses the device.

Two key rings are used to make the connection between the tracking device and the harness.

On each side of the enclosure loop feed in a key ring.

The result looks like this.

Now the device should be mounted to the top string of the harness.

Place the top string over the enclosures loop. Rotate the key ring over the string. Make sure that the end of the ring will go back under the enclosures loop.

Do the same with the second key ring.

The picture shows how the two rings mount the tracking device to the harness.

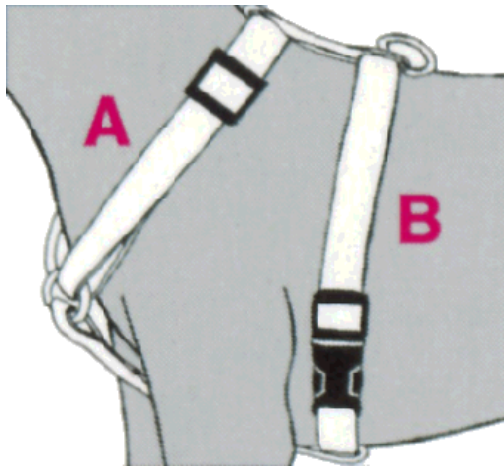The device is now attached to the harness.

To put the equipment on your pet, follow the instructions of the harness or collar.
On a harness the neck strap "A" is usually put on first, then the chest strap "B".
Make sure that the device is activated and that the upper side points toward the sky.
Make also sure that the harness / collar is not adjusted too tight or too loose.

3. Functions & Control Commands

The device is controlled by SMS/text message commands from a mobile phone.

Control and configuration commands are sent as SMS/text message to the tracking device. A command is consisting out of keyword, password, command and parameters. The keyword is always the same and signals the device an instruction. Each part of the command is separated by commas. Do not use spaces after commas.

Keyword	Password	Command	Parameters	;

> **!** **Note**: The default password is 123456

3.1 Change Password

facid	Old password	**password**	New password	;

Old password = current password (default password is 123456)
New password = new password, should be 6 digits

Example: `facid,123456,password,000000;`

3.2 Reset Device

facid	Password	**default**	;

Restores all default settings

Example: `facid,123456,default;`

3.3 Authorization

In order to access the tracker position you need to authorize phone numbers.

facid	Password	**authorize**	Index=Phone number	;

You can set 5 different phone numbers which are allowed to request the position. The 5 numbers are set using the index parameter.

Examples:
```
facid,123456,authorize,1=149178456456;
facid,123456,authorize,1=149178456456,4=149177998899;
facid,123456,authorize,1=149178456456,2=149177998899,3=186776532123;
```

3.4 Single Position Request

Acquire the latest position of the tracker.

facid	Password	sms	fast	;

The tracker will reply with a SMS text message with the latest location.

<u>Example</u>: `facid,123456,sms,fast;`

<u>Note:</u>
Alternatively if you call the device with an authorized number and hang up, the tracker will report also the position.

You will receive a SMS looking like this:

```
Lat:20.54821N Long:101.57936E,SP:0.00,10/10/11 16:27
BAT=13%,SGL:CUR,LowBattery,GPS:06,117.0,460,01,2795,6440
```

Explanation of data contained in the response:

`Lat:20.54821N`	Latitude of position
`Long:101.57936E`	Longitude of position
`SP:0.00`	Speed is 0.00km/h
`10/10/11 16:27`	Current GPS date and time
`BAT=13%`	Battery power
`SGL:CUR`	Signal:cur = GPS position is fixed when sending data
	Signal:last = GPS position is not fixed and the previous known position is send
`LowBattery`	Alarm information
`GPS:06`	Number of GPS satellites visible
`117.0`	Altitude
`460`	MCC (Mobile Country Code)
`00`	MNC (Mobile Network Code)
`2795`	LAC (Location Area Code)
`6440`	Cell ID

If you do not want to deal with coordinates and details, use the SMS format command to switch to an internet link which opens the current position on a map.

3.5 Position Information Using Time Intervals

The tracker will automatically send out its position in a defined time interval.

facid	Password	loc	i= interval,t=times,L=distance	;

Description:
Interval: 0…65535 seconds, 0 is no interval
Times: 0…999, 0 means no data to send, 999 means unlimited times to send position
Distance: 0…65535 meters, sets the minimum distance the position needs to change until the tracker sends out new data. Prevents that unnecessary data is sent when the position stays the same.

Example: `facid,123456,loc,i=30,t=50,L=0;` The tracker will send location back to authorized phone number every 30 seconds, total 50 locations.

To stop the automatic position reporting:

facid	Password	loc	;

Example: `facid,123456,loc;`

3.6 SMS Format (Link / Text)

The SMS text message format of the position information can be switched between coordinates (described in section "Single Position Request") and Internet link to Google Maps which simplifies the graphical display of the current position. In the later case the link just needs to get activated and you see the reported position on a map (requires internet connection of your cell phone /smart phone).

facid	Password	sms	Format	;

Format:
text = default setting, response with latitude and longitude coordinates
link = response with Internet link to Google map.

Example:
```
facid,123456,sms,link;
facid,123456,sms,text;
```

3.7 GPRS Tracking Setup

The position is send to an internet server instead of a cell phone. You need to set an interval time as described in section "Position Information Using Time Intervals" for a continuous position update. The GRPS function and the SMS text message function are using the same time interval. If you enable GPRS the SMS function will be disabled automatically.
To enable GPRS Tracking use the following command:

Facid	Password	gprs	addr=IP address, port=port number, name=user name, pass=password, APN=APN, ID=identifier, mode=mode	;

Description:
IP address: 0…31 chars, IP address of webserver
port number: 0...65535, port number of webserver
user name and password: each 0…31 chars, user name and password are optional (clarify with network provider). If no username and no password are required, just input APN only.
APN: 0…31 chars, Access Point Name, please contact with your network provider for more information
identifier: 0…19 chars, identifier of your tracker for the GPRS webserver
mode: 0 or 1, communication mode, 0 means TCP, 1 means UDP

Example:
```
facid,123456,gprs,addr=113.90.7.193,port=7000,name=,pass=,APN=CMNET,ID=88888,mode=0;
facid,123456,loc,i=30,t=999,l=0;
```
Tracker will send GPRS data to server every 30 seconds, "t=999" means unlimited times, the server's IP is 113.90.7.193, the server's port is 7000.

3.8 Disable GPRS

Closes GPRS connection and turns on SMS mode.

Facid	Password	gprs	;

Example: `facid,123456,gprs;`

3.9 Speeding Alarm

When the tracker is moved faster than a certain limit it will send an SMS to authorized phone numbers or an alarm to the webserver (if GPRS is connected).

facid	Password	ov	L=speed	;

Description:
Speed: 0…65535 in km/h. If speed=0 speeding alarm is turned off.

Example: `facid,123456,ov,L=80;` When the tracker speed is higher than 80km/h and speeding alarm is sent out.

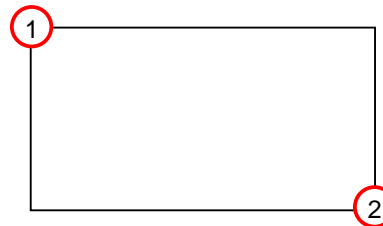To turn off speeding alarm, send the following command: `facid,123456,ov;`

3.10 Geofence Alarm

If the tracker is moved outside a defined area it will send out an alarm by SMS or GPRS.

facid	Password	geofence	1=x1/y1,2=x2/y2	;

Description:

X1=longitude of point 1
Y1=latitude of point 1
X2=longitude of point 2
Y2=latitude of point 2

Example:
`facid,123456,geofence,1=114.000000e/22.400000n,2=113.800000e/22.600000n;`

To turn off geofence: `facid,123456,geofence;`

3.11 Spot Alarm

While the Geofence function requires coordinates to be set the Spot Alarm uses the current position and applies a circular zone around it. When the tracker leaves that spot area it will send out an alarm by SMS or GPRS.

facid	Password	move	L=radius	;

Location during activation
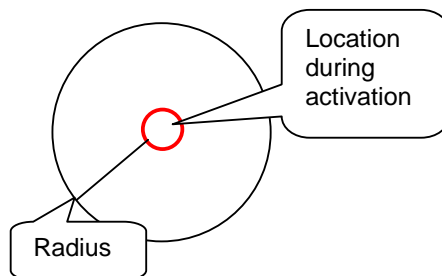
Radius

Description:
Radius = 0…65535 in meter

Example: `facid,123456,move,L=300;` Creates a spot area with 300m radius around the current tracker location.

To turn off geofence: `facid,123456,move;`

3.12 Vibration Alarm

The tracker contains a shock/vibration sensor. If the vibration alarm is enabled and the device moved and alarm is send out by SMS or GPRS.

facid	Password	vib	L=sensitivity	;

Note:
sensitivity=0…10; 0= turn off vibration alarm; 1=lowest sensitivity; 10=highest sensitivity

Example: `facid,123456,vib,L=5;`

To turn off vibration alarm: `facid,123456,vib;`

3.13 Low Battery Alarm

When the remaining battery energy gets below 25% the tracker will send a message by SMS or GPRS.

3.14 SOS Alarm

When the SOS button next to the power button is pressed for 3 seconds the tracker will send out a message by SMS or GPRS.

3.15 Time Zone

Since the GPS time is independent from the global position, the time zone command matches the GPS time to the local time.

facid	Password	time zone	v=value	;

Note: value= -15 … 15; time offset relative to GMT

Example: `facid,123456,time zone,v=-6;`

3.16 Time Scheduler

With the time scheduler the tracker is enabled for a defined time per day. This improves the operation time since the power consumption in standby mode is very low.

facid	Password	config	poweren=switch, poweron=start time, poweroff=end time	;

Note:
Switch = 0 or 1; 0 means to turn of the time scheduler; 1 enables the time scheduler
Start time = daily time when the tracker is turned on.
End time = daily time when the tracker is turned off.

Example: `facid,123456,config,poweren=1,poweron=10:50,poweroff=16:00;` the tracker will work from 10:50 o'clock to 16 o'clock (4pm) daily.

To turn off scheduler: `facid,123456,config,poweren=0;`

> ! **Attention**: When the tracker is turned off by the scheduler it can not get accessed any more until it is enabled again.

3.17 SD Memory Card (GPRS)

When there is no GPRS signal the device can not send data to server. In this case the positions can be stored on a memory card. When there is GPRS connection present again the data is transmitted to the server. The maximum memory card size supported is 2 GB.

Test the SD memory card compatibility:

facid	Password	sdcard	test	;

Note: if the SD card works well response is "sdcard ok".
Example: `facid,123456,sdcard,test;`

Enable/disable logging to the memory card in case of no phone network available:

Facid	Password	sdcard	log=switch1	;

Note:
switch1= 0 or 1; 1 means enable logging to memory card; 0 means disable logging
Example: `facid,123456,sdcard,log=1;` turns on logging to memory card.

Enable/disable transmission of logged position to web server.

Facid	Password	sdcard	read=switch2	;

Note:

Switch2= 0 or 1; 1 means to transfer logged positions to webserver once a network is present again. 0 means disable data transfer.

Example: `facid,123456,sdcard,read=1;` turns on transmission of stored positions to web server.
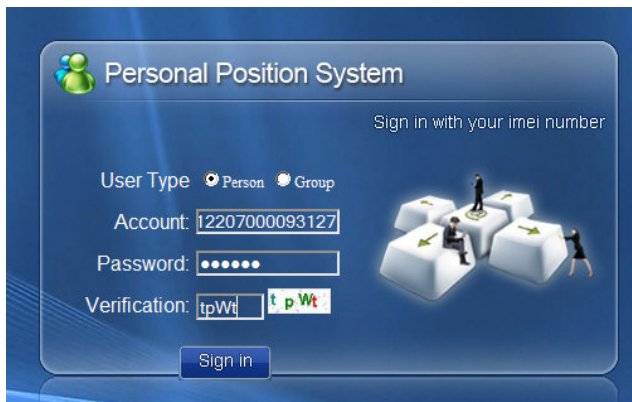
4. GPRS Tracking

GPRS allows an online tracking of the device over the Internet.
You can log in to the web server and see the position of the device on a map. It is also possible to see positions from the past. This means that there is a continuous recording.

Please note that the service fees for GPRS may be higher than regular SMS charges. Get in contact with your communication network provider to find out the costs before you enable GPRS and running in excessive costs.

4.1 Login for GPRS Tracking

To use the web based GPRS tracking you will need to order the annual service pack. You will receive login instructions.
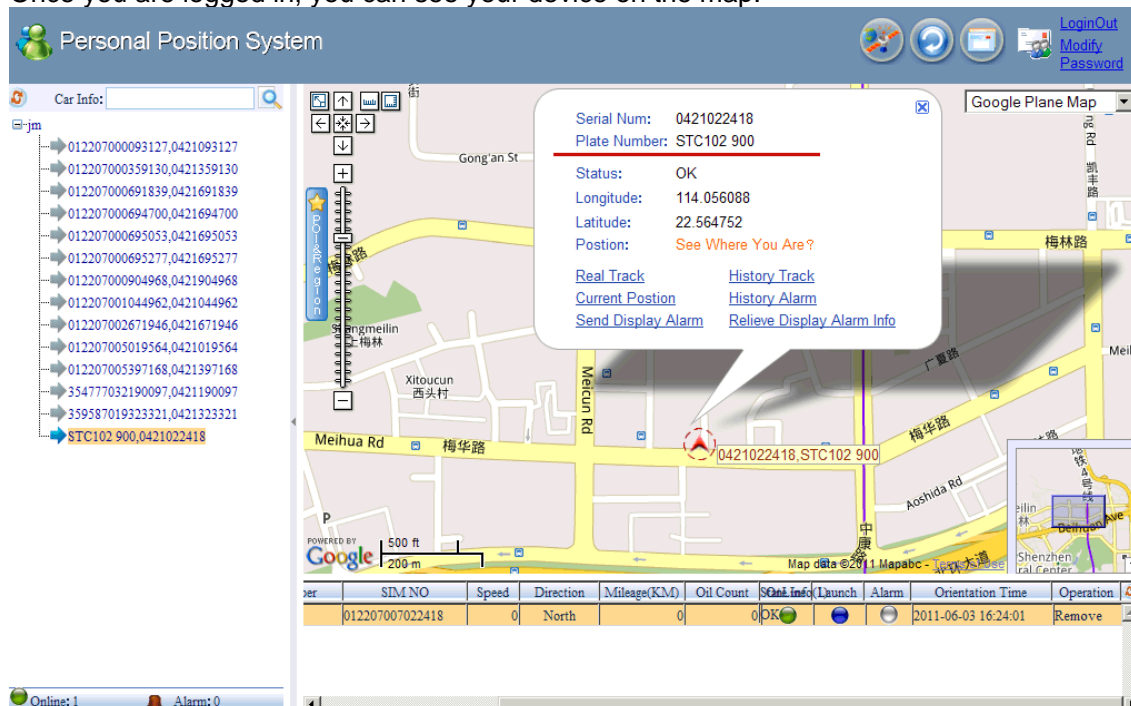
Once you are logged in, you can see your device on the map:

5. Troubleshooting

Commands not recognized: check if the command string you send has a semicolon at the end.

Device does not turn ON: power button needs to get pressed for at least 3 seconds. Battery must have enough energy.

Device does not reply with SMS message:
If the light flashes in 0.5 seconds interval the tracker tries to connect to the GSM network.
GSM network may be overloaded or not available.
Wrong password or wrong SMS format may be used.
Check if SIM card passcode/pin is removed.

No position available/light flashes in one second intervals: The tracker does not get valid satellite signals. Provide clear view to sky. Check battery charge state.

Device fails to connect to GPRS Server:
Check if SIM card supports GPRS function.
Check if GPRS function of the unit is turned on
Check if IP address and Port is set correct
Check if GSM signals are strong enough

6. Support and Help

You can get in contact with the technical support by sending a mail to support@mr-lee-catcam.de

Perthold Engineering LLC
P.O. Box 383
Anderson, SC 29622
USA

7. Important Safety Notes

> **!** **Warning:** This device is not suitable for children. It is not a toy. Small parts may break loose and get swallowed. Danger of suffocation !

> **!** **Warning:** This device is not suitable for larger animals like dogs which tend to chew and swallow non-food things. The animal may get hurt.

> **!** **Warning:** Do not expose device to temperatures above 60°C / 140°F. The rechargeable battery may explode and catch fire.