GPRS Communication Protocol

minifinder™ Pico

Protocol format

Beginning character	Separator character	Ending character
!	,	;

Command format of GPRS packets

From Tracker to Server

Form 1-1

Command format	Explanation
!1,gsn;	Gsn:IMEI, the server will establish a connection according to the IMEI
!3,ok/error;	Set the parameters success/failure
!4,f1,f2,f3,f4,f5,f6,f7,f8,f9;	Check status. Please refer to the form 1-3 state
!5,csq,sta;	Heartbeat,CSQ:0-31;sta:GPS signal,A means it has GPS signal,V means no GPS signal
!D,date,time,lat,lot,speed,degrees,flag, altitude,bat,sta1,sta2,0;	**Real time data:** !D,3/7/13,6:35:30, 56.869524,14.820557,0.0,225.8,1f0001, 12.11,98,0,0,0; date: 3/7/13 // dd/mm/nn time: 6:35:30 // hh:mm:ss lat: 56.869524 // LAT 56.869524° lot: 14.820557 // LOT 14.820557° speed： 0.0 // speed 0km/h degrees： 225.8 // Direction 225.8° flag： 1f0001 // FLAG:0x1f0001 hexadecimal format, see form 1-2 located by: GPS GPS module: Normal SOS: NO overspeed: NO GSM CSQ: 31 altitude: 121.3 // Altitude 121.3m bat: 98 // Battery 98% sta1: 4 // satellites in use sta2: 7 // satellites in view 0: 0 // Reserved

Status: Form 1-2

Flag (4 byte)	
Bit	**Explanation**
1:0	00 = No Signal 01 = GPS 10 = GSM
3:2	00 = Normal 01 = Module Fault
6	1 = SOS Alarm
7	1 = Over speed alarm
8	1 = Fall down alarm
12	1 = Battery low 0 = Normal
14	1 = Motion alarm
15	1 = Movement alarm
20:16	0-31 = GSM CSQZ

From Server to Tracker

Form 1 - 3

Operations	Parameters	Function switch	State
Data transmission interval	123456M,num	num = 001-999 (*10s)	f1
	123456S0	close GPRS connection	
Authorize number 1	123456A1,num	example: 123456A1,+46704556677	f2
	123456A0	remove number 1	
Authorize number 2	123456B1,num	num = +46(phone number)	f3
	123456B0	remove number 2	
Authorize number 3	123456C1,num	num = +46(phone number)	f4
	123456C0	remove number 3	
Time Zone setup	123456Lnum	num = -11 to +11	f5
Over speed alarm	123456J1,num	num = 001-250Km/h	f6
	123456J0	reset	
Movement alarm	123456R1,num	num = 01-99 (*0.1Km)	f7
	123456R0	reset	
Vibration alarm	123456W1, xxS/M/H	xx = 01-99S/M/H	f8
	123456W0	reset	
A-GPS	123456AGPS1	apply AGPS	f9.0
	123456AGPS0	reset	
Listen in	123456P1	apply	f9.1
	123456P0	cancel	
Cell location	123456GSM1	apply	f9.2
	123456GSM0	cancel	
LED lights	123456LED1	turn off LED lights	f9.3
	123456LED0	turn on LED lights	

Fall detection	123456F1	activate	f9.4
	123456F0	inactivate	
Sleeping mode	123456SP1	activate	f9.5
	123456SP0	inactivate	
Reboot	123456T	apply	f9.6
Request status	123456G	replies with device parameter info. Please refer to the “State”	

Firmware over the air upgrade

Read firmware version		
Send: 123456V		
Reply: !7,V2.06.1220,csq; //V2.06.1220:firmware version , CSQ: GSM signal strength		

Send firmware (each frame 1032 byte)
Server send: Start: 0x01 Sum: 0x##0x## All: 0xxx Num: 0xxx data(1024): data0 ... data1023 check: 0x## 0x## end: 0x04
Server receive: !8,All,Num,ok; !9,All,Num,error;

Note:

The software will check if the size of the chosen file is 1032*n. If not, it will remind wrong file.

Each frame is 1032byte, every correct frame will get reply of OK; every incorrect frame will get reply of ERROR. All of them have corresponding total frames and frame order.

With reply of OK, it will send the next frame by the frame order. It will send all frames one by one. After the latest frame upgraded, it will remind that Upgrade success.

With reply of ERROR, it will send the same frame again. Also, if server gets no response in 20 seconds, it will send the same frame again. It will remind that Upgrade failed when the frame has been sent 3 times and failed.

Resume from break point: when file failed upgrade, you need to resend the file, from the first frame, the tracker returns the last num, and the next frame send num + 1 will be ok.