

Communication Protocol

Communication Protocol

(V1.9)

Modify Records

Version	Date	Updating Record	Operator
V1.0	20160519	Original Version	Xiao
V1.1	20160903	1.Add command:UD2,IP,UPLOAD,POWEROFF,RESET 2.Remove KEYPAD command 3.Change SET meaning into parameter	Xiao
V1.2	20161219	Update to distinguishes between low battery and SOS status reporting	Xiao
V1.3	20170221	Increase shedding/tamper status bit,modify some documentation errors	Xiao
V1.4	20170410	Increase access to the current position description command	Xiao
V1.5	20170419	Change report interval command Add Find Watch command	Wei
V1.6	20170523	LK increase report steps and heart rate,blood pressure,sleep related command	Xiao
V1.7	20170905	Add reply to Report UD	Wei
V1.8	20171018	Add SOS、 alarm clock command.LK command is specified three formats	Xiao
V1.9	20171115	Optimize command format description, modify some of the examples in the document	Xiao

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Communication Protocol

A. Command Format Description

All command data in this protocol is transmitted in the following format:

EG: [KM*5678901234*0001*0006*LK,100]

Command Start Symbol	Manufacturer Logo	Device ID	Command Serial Number	Content Length	Command Content	Command End Symbol
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Description of each field:

- **Command Start Symbol:** Fixed as [character];
- **Manufacturer Logo:** To identify manufacturer, fixed as two bytes. KM is for reference in this document;
- **Device ID:** As unique label for the device, the length may be 10 or 15 bits, normally included in the device IMEI number. ID length in this referenced document is 10 bits.
- **Command Serial Number:** Fixed as hexadecimal serial number with four bytes, high in the first place and low in the back position, from 0000 +1, when more than FFFF then start from 0 again;
- **Content Length:** To indicate the length of the command content field, fixed to four bytes with hexadecimal, high in the first place and low in the back position, for example, FFFF indicates that the command content length is 65535.
- **Command Content:** The specific content of the command data, refer to the specific format of each command mentioned later in the document;
- **Command End Symbol:** Fixed as] character;
- **Command Field Delimiters:** To separate each field in the command, the delimiter character is * character (the delimiter is not needed after Command Start Symbol and before the Command End Symbol)

B. Send Commands from Terminal

1. Initialization[INIT]

Terminal Sends:

[KM*YYYYYYYYYY*NNNN*LEN*INIT,Phone Number ICCID,SIM Card Operator Type,Firmware Version Number,Serial Number1,Serial Number 2]

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Serial Number 1---Times of all parameter settings

Serial Number 2---Times of contact list settings

EG:

[KM*5678901234*0001*003B*INIT,898602B3131690280048,0,k6_BASE_V1.00_2016_03,0001,0001]

Description:

Phone Number ICCID:20-bit ICCID of reported SIM card;

SIM Card Operator Type:1.AT&T 2.T-Mobile ..etc

Firmware Version Number:Version information of device firmware;

Serial Number 1:Reserved function,can not parse;

Serial Number 2:Reserved function,can not parse;

Platform Response:

[KM*YYYYYYYYYYY*NNNN*LEN*INIT,Received Result,]

EG:[KM*5678901234*0001*0006*INIT,1]

Received Result:

1-Successful

0-Failed.It indicates that the device is not registered on the platform or the device is not enabled by the user.In this case,only send the link hold command.

2. Link Maintenance[LK]

(1) Ordinary Device:

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*LK,Electricity Percentage]

EG:[KM*5678901234*0001*0006*LK,100]

(2) Device Supports Step Function

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*LK,Walks,Roll Times,Electricity Percentage]

EG:[KM*5678901234*0001*000D*LK,50,100,100]

(3) For Customer MSTL Only

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*LK,Electricity Percentage,Device Status]

Status is 00 or 01

EG:[KM*5678901234*0001*0009*LK,100,00]

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Platform Response:

[KM*YYYYYYYYYYY*NNNN*LEN*LK,YYYY-MM-DD,HH:MM:SS]

EG: [KM*5678901234*0016*LK,2015-08-18,14:30:30]

Description:

1. Link Hold data will send two minutes one time,if terminal doesn't get the response data then reconnect in two minutes;
2. Above reported formats will be reported at least one according to the terminal configuration.
3. **Electricity Percentage**:normal range is 0-100,will add 0x80 zone bits when charging that means power range would be 128-228;
4. **Walks**:Total steps recorded by the device during one day;
5. **Roll Times**:Reserved function,can not parse.
6. Platform response time is UTC standard time.

3. Location Data Report[UD]

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*UD,Location Data(Specific format,check Appendix I)]

EG:

[KM*5678901234*0001*008F*UD,220414,134652,A,22.571707,N,113.8613968,E,0.1,0.0,100,7,60,90,1000,50,0000,4,1,460,0,9360,4082,131,9360,4092,148,9360,4091,143,9360,4153,141]

Platform Response:

[KM*YYYYYYYYYYY*NNNN*LEN*UD].

EG: [KM*5678901234*0001*0002*UD]

4. Blind Spot Data Filling In[UD2]

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*UD2,Location Data(check Appendix I)]

EG:

[KM*5678901234*0001*0090*UD2,220414,134652,A,22.571707,N,113.8613968,E,0.1,0.0,100,7,60,90,1000,50,0000,4,1,460,0,9360,4082,131,9360,4092,148,9360,4091,143,9360,4153,141]

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Platform Response:

No

Description: To supplement report data when not landing platform.

5. Alarm Data Report[AL]

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*AL,Location Data(check Appendix I)]

EG:

[KM*5678901234*0001*008F*AL,220414,134652,A,22.571707,N,113.8613968,E,0.1,0.0,100,7,60,90,1000,50,0001,4,1,460,0,9360,4082,131,9360,4092,148,9360,4091,143,9360,4153,141]

Platform Response:

[KM*YYYYYYYYYYY*NNNN*LEN*AL]

EG:[KM*5678901234*0001*0002*AL]

Description:

Terminal press SOS,it will send an AL message to the communication background,them background will send the corresponding location information to the relevant guardian,while the terminal will also make recycled calls to the first three family numbers ring phone.

6. Get Current Location Description[GETLOC]

Terminal Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*GETLOC,Location Data(check Appendix I)]

EG:

[KM*5678901234*0001*0093*GETLOC,220414,134652,A,22.571707,N,113.8613968,E,0.1,0.0,100,7,60,90,1000,50,0001,4,1,460,0,9360,4082,131,9360,4092,148,9360,4091,143,9360,4153,141]

Platform Response:

[KM*YYYYYYYYYYY*NNNN*LEN*GETLOC,UTC Time,Longitude and Latitude,Location String]

EG:

[KM*5678901234*0001*0069*GETLOC,2015-08-18,14:30:30,22.571707,N,113.8613968,E,Tair

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an 7th Road, Futian District, Shenzhen, Guangdong Province, Near West Block, 2nd District, Tairan Industry & Trade Park]

Description:

1. After the terminal sends this command, the platform just delivers the current standard time, longitude and latitude coordinates, location string.
2. The current time delivered by the platform must be UTC time.
3. If the terminal reports GPS coordinates, the platform returns as it is; If the reported is base station or WIFI data, the platform will convert to the corresponding longitude and latitude coordinates then returns;
4. Location string is UTF8 encoding format.

7. Terminal Heart Rate Upload[HEART]

Terminal Upload:

[KM*YYYYYYYYYY*NNNN*LEN*HEART,x]

X is heart rate data for every minutes.

EG: [KM*5678901234*0001*0009*HEART,100]

Representative terminal heart rate is 100 times/minutes

Terminal Response:

[KM*5678901234*0001*0005*HEART]

8. Terminal Blood Pressure Upload[BLOOD]

Terminal Upload:

[KM*YYYYYYYYYY*NNNN*LEN*BLOOD,Systolic Blood Pressure,Diastolic Blood Pressure]

EG: [KM*5678901234*0001*000C*BLOOD,126,75]

Representative terminal blood pressure: systolic blood pressure is 126mmHG, diastolic blood pressure is 75mmHG.

Terminal Response:

[KM*5678901234*0001*0005*BLOOD]

9. Terminal Sleep Upload[SLEEP]

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Terminal Upload:

[KM*YYYYYYYYYYY*NNNN*LEN*SLEEP,Sleep Start Time-Sleep End Time,Deep Sleep Time(Minutes),Light Sleep Time(Minutes)]

EG: [KM*5678901234*0001*001A*SLEEP, 23:30-07:30,130,350]

Terminal Response:

[KM*5678901234*0001*0005*SLEEP]

C.Send Commands from Platform

1.IP Port Settings[IP]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*IP,IP OR Domain Name,Port]

EG:[KM*5678901234*0001*0014*IP,113.81.229.9,5900]

Terminal Response:

If the no terminal response,disconnect to new server.

Description:

Setting connects platform IP and port.

2.Report Interval Settings[UPLOAD]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*UPLOAD,Report Interval(Minutes)]

EG:[KM*5678901234*0001*0009*UPLOAD,10]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*UPLOAD,Received Result]

EG:[KM*5678901234*0001*0008*UPLOAD,1]

3. Real-Time Positioning Queries[CR]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*CR]

EG:[KM*5678901234*0001*0002*CR]

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Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*CR]

EG:[KM*5678901234*0001*0002*CR]

Description:Immediately wake-up terminal GPS module for real-time positioning.

4. SOS Number Setting Command[SOS]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*SOS,SOS Number 1,SOS Number 2,SOS Number 3]

EG:[KM*5678901234*0001*0023*SOS,13812345678,18611223344,18198765432]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*SOS]

EG:[KM*5678901234*0001*0003*SOS]

5. Family Number Setting Command[PHB]

Platform Sends(1-5 numbers):

[KM*YYYYYYYYYYY*NNNN*LEN*PHB,Setting Times Serial Number,Family Numbers(EG:3),Flags 1-Role Or Other Name 1-Phone Number 1|Flags 2-Role OR Other Name 2-Phone Number 2|Flags 3-Role OR Other Name 3-Phone Number 3]

EG:[KM*5678901234*0001*001B*PHB,1234,3,1-Grand-pa-13562632332|2-Tom-13513013150|3-Jerry-16632631320]

Description:

Phone Number-There is no value behind indicates that the cornet is empty.

Flags:O is a person,if not 0 then a making-friends device number.

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*PHB,Setting Times Serial Number,Received Result]

EG:[KM*5678901234*0001*0003*PHB,1234,1]

Description:Only when set family number then can monitor,up to 5.

6. Family Number Monitoring[MONITOR]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*MONITOR,Call-Back Number]
EG:[KM*5678901234*0001*0012*MONITOR,13812345678]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*MONITOR]
EG:[KM*5678901234*0001*0007*MONITOR]

Description:Terminal will call back the number automatically.

7. GPS Switch Function[GPS]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN* GPS, ONOFF]
EG:[KM*5678901234*0001*0018* GPS,1]
ONOFF-----1 indicates that GPS function is enabled.
ONOFF-----0 indicates that GPS function is disabled.

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN* GPS,1]
EG:[KM*5678901234*0001*0006* GPS,1]

8. Set Parameter Function[SET]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*SET, Device Phone Number, Setting Times Serial Number,Setting Item,Class Disabled Period,Timing Start-up Time,Timing Shut-down Time,Time When Screen is Bright,Language,Time Zone,Reserve Expansion]
EG:
[KM*5678901234*0001*000A*SET,13800000000,1234,FFF,08:00-11:30|14:00-16:30|12345,06:05,23:00,10,2,480]

Description:

Phone Number-----Device Phone Number,can use fixed value 13800000000

Setting Times Serial Number-----Indicates setting times,can be corresponding to init all parameters setting times serial number,to synchronize if the setting is successful,also can use fixed

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value 0001 at first.

Setting Item -----FFF fixed value

Class Disabled Period:08:00-11:30 and 14:00-16:30,from Monday to Friday.

Timing Start-up Time:06:00,timing start-up time 23:00,use fixed value at first.

Time when Screen is Bright-----If has no screen then can set as fixed value 10

Language:is Chines,if no screen then can set as fixed value

Time Zone-----If no screen can set as fixed value 0

Reserve Expansion-----fixed value 0

Terminal Response: [YW*YYYYYYYYYYY*NNNN*LEN*SET,Setting Times Serial Number,Received Result]

Received Result:

1—Successful

0—Failed

9. Power Off[POWEROFF]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*POWEROFF]

EG:[KM*5678901234*0001*0008*POWEROFF]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*POWEROFF]

EG:[KM*5678901234*0001*0008*POWEROFF]

Description:Power off function.

10. Reset[RESET]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*RESET]

EG:[KM*5678901234*0001*0005*RESET]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*RESET]

EG:[KM*5678901234*0001*0005*RESET]

Description:Device restart..

11. Find Device[FIND]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*FIND]
EG:[KM*5678901234*0001*0004*FIND]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*FIND]
EG:[KM*5678901234*0001*0004*FIND]

Description: To find the device.

12. Alarm Clock Setting Command[REMIND]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*REMIND,Alarm Clock1,Alarm Clock2,Alarm Clock3]
EG:
[KM*5678901234*0001*0018*REMIND,08:10-1-1,08:10-1-2, 08:10-1-3-0111110]

Terminal Response:

[KM*YYYYYYYYYYY*NNNN*LEN*REMIND]
EG:[KM*5678901234*0001*0006*REMIND]

Description:

Format of Each Alarm: Alarm Time-Switch-Type-Custom Date. Some dashes to separate them;

Alarm Clock Time: alarm clock time, 24 hours;

Switch: 1 is open, 0 is closed;

Type: 1 for the one-time alarm, 2 for per day, 3 for the custom.

Custom Date: When the type is user-defined, user-defined date is configured, 7 digits are used for 7 days starting from Sunday, 1 or 0 is for ringing, for example, 0111110 is for ringing from Monday to Friday.

13. Heart Rate Upload Setting[HRTSTART]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*HRTSTART,x]

x is the upload interval time, in seconds, continuous upload minimum time is no less than 300 seconds, the maximum does not exceed 65,535.

Example: [KM * 5678901234 * 0001 * 000C * HRTSTART, 300]

The terminal detects the heart rate every 300 seconds

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x is 1 represents the terminal immediately open heart rate a single time upload, automatically shut down after the upload.

x is 0 represents the terminal heart rate upload is shut down.

Terminal Response

[KM*5678901234*0001*0008*HRTSTART]

14. Sleep Detection Time Period Setting[SLEEPTIME]

Platform Sends:

[KM*YYYYYYYYYYY*NNNN*LEN*SLEEPTIME,Time Period]

EG:[SG*5678901234*0001*0014*SLEEPTIME,21:10-07:30]

Terminal Response:

[CS*YYYYYYYYYYY*NNNN*LEN*SLEEPTIME]

EG:[SG*5678901234*0001*0009*SLEEPTIME]

Description: Set the time range of sleep detection.

D.Appendix

Appendix I: Location Data Description

Name	Example(ASII Code)	Description
Date	120414	(Day/Month/Year)2014, April, 12nd
Time	101930	(Hour/Minute/Second)10:19:30
Locate or not	A	A:locate V:not locate
Latitude	22.564025	According to DD.DDDDDD format definition, this latitude value is: 22.564025
Latitude Symbol	N	N means North latitude,S means South latitude
Longitude	113.242329	According to DDD.DDDDDD format definition, this longitude value is: 113.242329
Longitude Symbol	E	E means East longitude, W means West longitude
Speed	5.21	5.21km/hour
Direction	152	The direction is at 152 degrees
Altitude	100	The unit is meters
Satellite Numbers	9	Indicates the number of GPS satellites
GSM Signal Strength	100	Indicates the current GSM signal strength (0-100)
Electricity	90	Indicates the current power level percentage

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Walks	1000	The number of steps is 1000
Roll Times	50	Roll 50 times
Terminal Status	00000000(Hexadecimal)	<p>High 16 bits are alarm bits</p> <ol style="list-style-type: none"> 1. 0x0001 0000 abnormal heart rate alarm (Specific Item) 2. 0x0002 0000 abnormal blood pressure alarm (Specific Item) 3. 0x0004 0000 alarm of reporting location when calling (Specific Item) 4. 0x0008 0000 take-off / demolition alarm (Specific Item) 5. 0x0010 0000 SOS alarm 6. 0x0020 0000 fall-down alarm (Specific Item) 7. 0x0040 0000 low power alarm <p>Low 16 bits are status bits</p> <ol style="list-style-type: none"> 1. 0x0000 0008 shedding / dismantling status (Specific Item) 2. 0x0000 0040 low power status <p>Others are reserved</p>
Base Station Numbers	4	Reported base station number,0 indicates no base station information is reported
Connect to Base Station ta	1	GSM is delayed
MCC Country Code	460	460 represents China
MNC Internet Code	02	02 represents China Mobile
Location Area Code Connected Base Station	10133	area code
Connected Base Station Number	5173	base station number
Connected Base Station Signal Strength	100	signal strength
Nearby Base Station One Location Area Code	10133	area code
Nearby Base Station One Number	5173	base station number
Nearby Base Station One Signal Strength	100	signal strength
Nearby Base Station	10133	area code

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Two Location Area Code		
Nearby Base Station Two Number	5173	base station number
Nearby Base Station Two Signal Strength	100	signal strength
Nearby Base Station Three Location Area Code	10133	area code
Nearby Base Station Three Number	5173	base station number
Nearby Base Station Three Signal Strength	100	signal strength
...
WIFI Information Quantity	5	WIFI numbers (up to 5), sorted by signal strength
WIFI One Name	rrr	first WIFI information name
WIFI One MAC Address	1c:fa:68:13:a5:b4	first WIFI MAC address
WIFI Two Signal Strength	-61	first WIFI signal strength
WIFI Two Name	abc	second WIFI name
WIFI Two MAC Address	1c:fa:68:13:a5:b5	second WIFI MAC address
WIFI Two Signal Strength	-87	second WIFI signal strength
...