

Mictrack Communication Protocol

(for B2316)

V1.0



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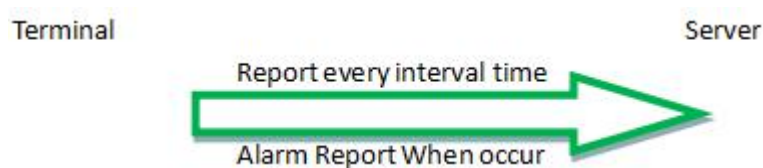
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1. Introduction

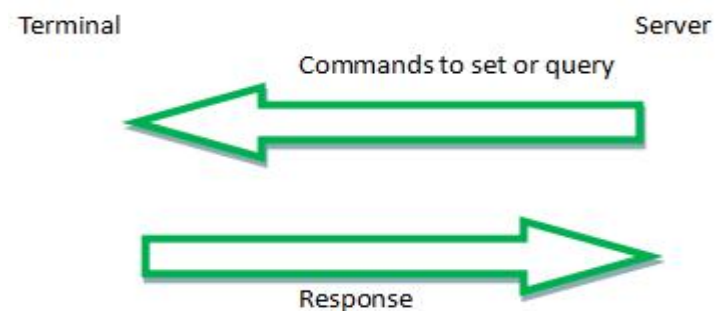
This document defines the communication rules between B2316 and the server. It is based on TCP/UDP communication, including automatic reporting, alarm reporting and command settings.

2. Communication rules

2.1 Report--Auto Report/Alarm Report



2.2 Command-Setting/Query Parameter



3. Terminal to Server Message Format

3.1 Report Message Format

Content	Length(Byte)
Head	2
Separator	1
Mode	1
Separator	1
IMEI	15
Separator	1
Data Type	2
Separator	1
Report Data	90

- <Head> Fixed characters, which is "MT"
- <Separator>Fixed character, which is ","
- <Mode >the device working mode
- <IMEI>Device IMEI number (15 digital)
- <Data Type> check the follow table

Data type	Description
R0	GPS Data
R1	WIFI data
R13	WIFI +LTE cell
R3	LTE cell data
RH	Heart beat data

3.2 Report GPS Data

Item	Max Length(B)
Satellite no.	2
Separator	1
Time Stamp	12
Separator	1
Latitude	9
Separator	1
Longitude	10
Separator	1
Speed	8
Separator	1
Heading	3
Separator	1
Event ID	1
Separator	1
Battery Voltage	4
Separator	1
Heart rate	3
Separator	1
Body Temperature	3
Separator	1
Step	5
Separator	1
Systolic pressure	3
Separator	1
Diastolic pressure	3

MT;6;866425031361423;R0;10+190109091803+22.63827+114.02922+2.14+69+2+3744

+90+363+99999+112+76

3.2.1 Satellite No

The number of available satellites.

3.2.2 Separator

Fixed character, which is “+”

3.2.3 Time Stamp

UTC Time of last GPS location, the format is “YYMMDDhhmmss”

For example, “190109091803” means 09:18:03 on Jan, 09,2019

3.2.4 Latitude Longitude

The device latitude and longitude, the format: (-)dd.ddddd,(-)ddd.ddddd

3.2.5 Speed

Current speed , unit is km/h. For example, “2.14” means 2.14km/h

3.2.6 Heading

Track angle in degrees. From 0 to 359

3.2.7 Event ID

Event ID	Description
0	Device power on
2	GPS report
3	WIFI report
4	Cell report
5	SOS report
6	Wear-off report(unavailable now)
7	Fall detection(unavailable now)
8	Low battery
11	Heart beat
12	Power off
13	Charging
14	Charging full
15	Power on under power saving mode
16	Power off under power saving mode

3.2.8 Voltage

Backup battery voltage. 3744 means 3.740V

3.2.9 Heat rate

90 means the heat rate value is 90 times/minute

3.2.10 Body temperature

Temperature value. 363 means the body temperature is 36.3°C

3.2.11 Step

This is the number of steps on full day (00:00-23:59). 99999 means 99999 steps.

3.2.12 Systolic pressure

112 means current systolic pressure is 112mmHg, the range is [0,299]mmHg.

3.2.13 Diastolic pressure

76 means current diastolic pressure is 76mmHg, the range is [0,299]mmHg.

3.3 Report Cell Data

Item	Max Length(B)
UTC Time	12
Separator	1
MNC	2
Separator	1
Cell ID	9
Separator	1
LAC	5
Separator	1
MCC	3
Separator	1
PCID	3
Separator	1
Event ID	1
Separator	1
Battery Voltage	4
Separator	1
Heart rate	3
Separator	1
Temperature	3
Separator	1
Step	5
Separator	1
Systolic pressure	3
Separator	1
Diastolic pressure	3

MT;1;866425031379169;R3;190528030445+0,167910723,14924,460,176+4+3587+90+363+99999+112+76

3.3.1 UTC Time

Refer to 3.2.3

3.3.2 MNC

Mobile network code

3.3.3 CELL ID

The parameter is the 16-bit (GSM) or 28-bit (LTE) cell ID. Range: 0-0xFFFFFFFF

3.3.4 LAC

Location area code.

3.3.5 MCC

Mobile country code

3.3.6 PCID

Physical Cell ID.

3.4 WIFI Data

Item	Max Length(B)
UTC Time	12
Separator	1
MAC	17
Separator	1
RSSI	3
Separator	1
MAC	17
Separator	1
RSSI	3
Separator	1
Event ID	1
Separator	1
Battery Voltage	4
Separator	1
Heart rate	3
Separator	1
Temperature	3
Separator	1
Step	5
Separator	1
Systolic pressure	3
Separator	1
Diastolic pressure	3

MT;6;866425031377981;R1;190108024848+6a:db:54:5a:79:6d,-91,00:9a:cd:a2:e6:21,-94+3+3831+90+363+99999+112+76

3.4.1 MAC

MAC address of AP.

3.4.2 RSSI

Received Signal Strength Indication.

3.5 WIFI+CELL Data

Item	Max Length(B)
UTC Time	12
Separator	1
MAC	17
Separator	1
RSSI	3
Separator	1
MAC	17
Separator	1
RSSI	3
Separator	1
MNC	2
Separator	1
Cell ID	9
Separator	1
LAC	5
Separator	1
MCC	3
Separator	1
PCID	3
Separator	1
Event ID	1
Separator	1
Battery Voltage	4
Separator	1
Heart rate	3
Separator	1
Temperature	3
Separator	1
Step	5
Separator	1
Systolic pressure	3

Separator	1
Diastolic pressure	3

MT;6;866425031377981;R13;190108024848+6a:db:54:5a:79:6d,-91,00:9a:cd:a
2:e6:21,-94+0,167910723,14924,460,176+3+3831+90+363+99999+112+76

3.6 Heart beat data

Item	Max Length(B)
Satellite no.	2
Separator	1
UTC Time	12
Separator	1
Fix value	1
Separator	1
Fix value	1
Separator	1
Fix value	1
Separator	1
Fix value	1
Separator	1
Event ID	1
Separator	1
Battery Voltage	4
Separator	1
Heart rate	3
Separator	1
Temperature	3
Separator	1
Step	5
Separator	1
Systolic pressure	3
Separator	1
Diastolic pressure	3

MT;5;866425031379169;RH;5+190116112648+0+0+0+0+11+3954+90+363+99999+112
+76

3.7 BLE RSSI Data

Item	Max Length(B)
UTC Time	12
Separator	1

IMEI1	15
Separator	1
RSSI1	3
Separator	1
IMEI2	15
Separator	1
RSSI2	3
Separator	1
IMEI3	15
Separator	1
RSSI3	3
Separator	1
IMEI4	15
Separator	1
RSSI4	3
Separator	1
IMEI5	15
Separator	1
RSSI5	3
Separator	1
IMEI6	15
Separator	1
RSSI6	3
Separator	1
IMEI7	15
Separator	1
RSSI7	3

Report data format: timestamp;imei1,rssi1;imei2,rssi2;imei3,rssi3;imei4,rssi4;imei5,rssi5;imei6,rssi6;imei7,rssi7

Example: 190116112648+866425031379169,-91,866425031379170,-90,866425031379171,-100,866425031379169,-91,866425031379170,-90,866425031379171,-100,866425031379169,-91

3.8 Command Response format

Content	Max Length (Byte)
---------	-------------------

Command Code	13
Separator	1
Password	4
Result	7
End Sign	1

3.8.1 Command Code

Refer to 4.1 for detail.

3.8.2 Separator

Fixed character, which is “=”

3.8.3 Password

4 digital numbers, letters, or combination of numbers and letters

3.8.4 Result

Setting result, “Success” or “Fail”

3.8.5 End Sign

Fixed character, which is “!”

4. Server to Terminal Message Format

Content	Length (Byte)
Command Code	13
Separator	1
Password	4
Separator	1
Parameter1	64
Separator	1
Parameter2	20
Separator	1
Parameter3	80
Separator	1
Parameter4	10
End Sign	1

4.1 Command Code

4.1.1 Change password

Content	Description
---------	-------------

Command Code	password
Separator	,
Parameter1	0000
Separator	,
Parameter1	1234
End Sign	#

This command is used to change the password.

Format is: password,old password, new password#

For example: password,0000,1234#

Response:

- password=Success!
- password=Fail!

4.1.2 IP/Port

Content	Description
Command Code	data
Separator	,
Password	0000
Parameter1	IP:Port
End Sign	#

This command is used to set the server IP and port.

For example: data,0000,113.98.254.179:7700#

After setup the device will directly connect to 113.98.254.179:7700 , and then report to this server.

Response:

- data=Success!
- data=Fail!

4.1.3 APN

Content	Description
Command Code	APN
Separator	,
Password	0000
Parameter1	APN
Separator	,
Parameter 2	Username

Separator	,
Parameter 3	password
End Sign	#

- If the APN include APN username and password please send the command:
apn,internet,internet,internet#
- If the sim card only have APN and APN username and password are blank,
please send the command: apn,0000,iot.nb,,#

Response:

- apn=Success!
- apn=Fail!

4.1.4 Working Mode

Content	Description
Command Code	mode
Separator	,
Password	0000
Parameter1	Report mode (1/5/6/7)
Separator	,
Parameter2	Time/interval
End Sign	#

Report mode description

Parameter1	Parameter2	note
1	interval:(1-1440); unit:min	Deep sleep interval
5	Interval 1-1440); unit:min	GPS sleep report mode
6	Interval (10-86400); unit:sec	GPS always on mode
7	Interval (10-86400); unit:sec	Power Saving mode

- **Deep sleep interval mode**
Device will wake up and send data to server by interval time,then go to sleep.
Example:
mode,0000,1,60#
The device will report to server every 60mins.
- **GPS sleep mode**
Device will report to server by interval time, after that the GPS will disable. When interval time is arrived,the GPS will enable and report data to server again.
Example:

Mode,0000,5,10#

The device will report data every 10mins.

- **GPS always on mode**

GPS power on all the time, and report by interval.

Example:

Mode,0000,6,10#

The device will report data every 10sec.

Response:

- mode=Success!
- mode=Fail!

- **Power saving mode**

When device detect to vibrate it will wake up or it will power off.

Example:

Mode,0000,7,10#

The device will report data every 10sec when vibrate.

Response:

- mode=Success!
- mode=Fail!

4.1.5 Network mode

Content	Description
Command Code	netlock
Separator	,
Password	0000
Parameter1	2,3,0/3,3,1/0,0,2
End Sign	#

- **Setup to Cat M1 network only**

SMS Command format : netlock,0000,2,3,0#

Reply: netlock=Success!

Note: In this mode device will only work under Cat M1 network.

- **Setup to NB-IoT network only**

SMS Command format : netlock,0000,3,3,1#

Reply: netlock=Success!

Note: Device will only work under NB-IoT network.

4.1.6 Network band

Content	Description
Command Code	bandlock

Separator	,
Password	0000
Separator	,
Parameter1	CAT M1 Band value
Separator	,
Parameter1	NB-IoT Band value
End Sign	#

- **Setup to Cat M1 band**

SMS Command format : bandlock,0000,28,0#

Reply: bandlock=Success!

Note: device will lock the band to CAT M1 B28

- **Setup to NB-IoT network only**

SMS Command format :bandlock,0000,0,20#

Reply: bandlock=Success!

Note: device will lock the band to NB-IoT B20

4.1.7 Positioning mode

Content	Description
Command Code	locatelock
Separator	,
Password	0000
Separator	,
Parameter1	GPS/Wifi/auto
End Sign	#

- **GPS Only**

SMS Command format : locatelock,0000,gps#

Reply: locatelock=Success!

Note: In this mode device will only enable GPS (WIFI/LBS will disable)

- **WiFi Only**

SMS Command format : locatelock,wifi#

Reply: locatelock=Success!

Note: In this mode device will only enable WIFI(GPS will disable)

- **AUTO**

SMS Command format : locatelock,auto#

Reply: locatelock=Success!

Note: In this mode device will auto switch Outdoor GPS and indoor WiFi

4.1.8 Protocol

Content	Description
Command Code	protocol
Separator	,
Parameter1	0/1
Separator	,
Parameter2	0/1
End Sign	#

This Command is to set TCP or UDP.

- Parameter 1: 0 means UDP, 1 means TCP.
- Parameter 2: 0 not need ACK. 1 mean need to response ACK.
If use TCP please ignore this parameter and configure it to 0/1.
- For example: protocol,1,0/1#
It means TCP protocol. The parameter2 is 0 or 1.
- For example: protocol,0,0# / protocol,0,1#
It means UDP protocol. If the parameter2 is 0 it don't need to response ACK.
If the parameter2 is 1 it need to response ACK

Response:

- Protocol =success!
- ----Protocol =Fail!

4.1.9 Rconf

Content	Description
Command Code	rconf
Separator	,
Password	0000
Separator	,
Type	0
End Sign	#

This is a command to query current device config info.

For example,

rconf,0000,0#

Response:

866425032478242,nbiot,,,113.98.254.179,7700,6,60,Cat M1, GPS,TCP,B2316B.0PT.DT12

Note: According the above message and we can get the info as follow:

ID: 866425032478242

APN: nbiot
 IP/Port: 113.98.254.179:7700
 Working Mode: Mode,6,60#
 Network Mode: CAT M1
 Position mode : GPS Only
 Protocol: TCP
 Version: B2316B.0PT.DT12

4.1.10 Reboot

Content	Description
Command Code	reboot
Separator	,
Password	0000
Separator	,
Type	0
End Sign	#

This is a command to let the unit software restart.

For example,
 reboot,0000,0#

The device will restart after send this command.

Response:

- reboot=Success!
- reboot=Fail!

4.1.11 Reset

Content	Description
Command Code	reset
Separator	,
Password	0000
Separator	,
Type	0
End Sign	#

This is a command to let the unit reset settings

For example,
 reset,0000,0#

The device will restart after send this command.

Response:

- reset=Success!

- reset=Fail!

4.1.12 OTA

Use the Bluetooth App to upgrade the firmware or config the devices

(End of the document)

mictrack

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