Mictrack Communication Protocol

(for MT700)

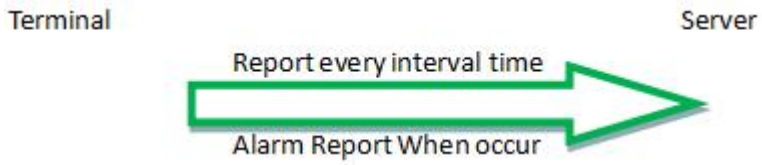
V1.0

Contents

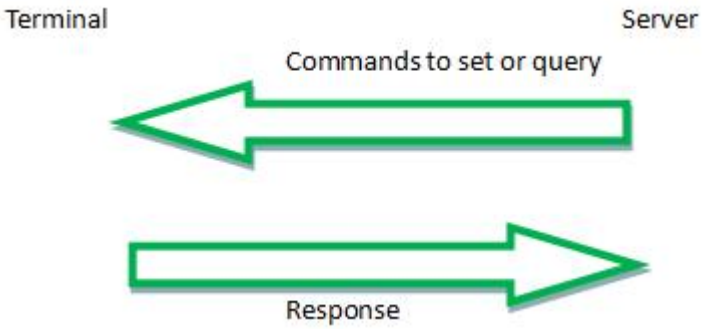
1. Communication rules

MT700 Support TCP/UDP/SMS communication protocol, including auto reports, alarms and command settings,without ACK. When device report to server it should have to keep socket connection alive.

1.1 Report--Auto Report/Alarm Report



1.2 Command-Setting/Query Parameter



2. Terminal to Server Message Package Format

Message Head+Message body

2.1 Message Head

Item	Example	Description
Separator	#	
IMEI	867198059727390	Device ID (15 digits)
Separator	#	
GPRS User Name	MT700	Fix value
Separator	#	
GPRS Password	0000	Fix value
Separator	#	
Report Event Status	AUTO	Report Event Status (more detail please check **2.2.3**).
Separator	#	
Fix Value	1	Fix to 1
<CR><LF>		End of message Head termination

For example:
#867198059727390#MT700#0000#AUTO#1

2.2 Message Body

2.2.1 GPS data

Item	Example	Description
Separator	#	pound
Backup Voltage	3815	3815 means 3.815V
Separator	#	*1. If LBS is ON, the "#" will be shown.* *2. If LBS is OFF, the "#" will be deleted.*
Cell Info	GSM: 460,00,262c,0e4d CAT M1 & NB-IoT: 460,00,1d29,d622f52	MCC,MNC,LAC/TAC,Cell ID *1. If LBS is ON and AGPS is OFF:* *- If GPS is available, the cell info will be deleted.* *- If GPS is unavailable, the cell info will be shown.* *2. If LBS is OFF, the cell info will be deleted.*
Message Type	$GPRMC	RMC Protocol header
Separator	,	comma
UTC time	105721.00	hhmmss.ss
Separator	,	comma
Status	A	A=valid,V=invalid,L=last known position
Separator	,	Comma
Latitude	2238.3071	ddmm.mmmm
Separator	,	comma
N/S Indicator	N	N=north or S=south
Separator	,	Comma
Longitude	11401.7575	Dddmm.mmmm
Separator	,	comma
E/W Indicator	E	E=east or W=west
Separator	,	comma
Speed Over Ground		knots
Separator	,	comma
Course Over Ground	96.70	degrees
Separator	,	comma
Date	250321	DDMMYY
Separator	,	comma
Reserved		
Separator	,	comma

Reserved		
Separator	,	comma
A	A	Fix Value
Checksum	*74	checksum is an XOR of all the bytes between the $ and the * (not including the delimiters themselves) and written in hexadecimal.
<CR><LF>		End of message body termination
Separator	##	End of message package termination

GPS Data (AGPS is OFF): **there are *4 types of data report formats as follows:***

1. GPS available, LBS OFF

#862255061947757#MT700#0000#AUTO#1

*#3815$GPRMC,123318.00,A,2238.8946,N,11402.0635,E,,,100124,,,A*5C*

##

2. GPS available, LBS ON

#862255061947757#MT700#0000#AUTO#1

*#3815#$GPRMC,123548.00,A,2238.8936,N,11402.0640,E,,,100124,,,A*5A*

##

3. GPS unavailable, LBS OFF

 # #862255061984701#MT700#0000#AUTO#1

*#3815$GPRMC,023216.00,V,,,,,,290424,,,A*7F*

##

4. GPS unavailable, LBS ON

#862255061947757#MT700#0000#AUTO#1

*#3815#460,00,1D29,156153D$GPRMC,121831.00,V,,,,,,100124,,,A*7C*

##

2.2.2 WiFi data

Item	Example	Description
Separator	#	
Backup Voltage	3815	3815 means 3.815V
Separator	#	*1. If LBS is ON, the "#" will be shown.* *2. If LBS is OFF, the "#" will be deleted.*
Cell Info	GSM: 460,00,262c,0e4d CAT M1 & NB-IoT: 460,00,1D29,156153D	MCC,MNC,LAC/TAC,Cell ID *1. If LBS is ON and GPS is unavailable:* *- If AGPS is ON, the cell info will be deleted.* *- If AGPS is OFF, the cell info will be shown.* *2. If LBS is OFF, the cell info will be deleted.*
Message Type	$WIFI	WIFI Protocol header

Separator	,	comma
UTC time	104356.00	hhmmss.ss
Separator	,	comma
Status	A	A=valid,V=invalid,L=L=last known position
Separator	,	comma
RSSI	-36	Received Signal Strength Indication.
Separator	,	comma
MAC	6877248FA31A	MAC address of AP
Separator	,	comma
RSSI	-46	Received Signal Strength Indication.
Separator	,	comma
MCA	7CB59B3B8777	MAC address of AP
Separator	,	comma
RSSI	-75	Received Signal Strength Indication.
Separator	,	comma
MAC	0C839AA8B6B8	MAC address of AP
Separator	,	comma
RSSI	-76	Received Signal Strength Indication.
Separator	,	comma
MCA	DC333DF82C74	MAC address of AP
Separator	,	comma
RSSI	-76	Received Signal Strength Indication.
Separator	,	comma
MAC	90769F421140	MAC address of AP
Separator	,	comma
Date	160223	DDMMYY
Checksum	*77	checksum is an XOR of all the bytes between the $ and the * (not including the delimiters themselves) and written in hexadecimal.
<CR><LF>		End of message body termination
Separator	##	End of message package termination

WiFi Data (GPS is unavailable):**there are 4 types of data report formats as follows:**

1.LBS OFF, AGPS ON

#862255061947757#MT700#0000#AUTO#1

*#3815$WIFI,124517.00,A,-39,6877248FA31A,-39,7E77248FA31A,-73,DC333DF82C74,-75,0260736CF982,-77,90769F421140,100124*0E*

##

2.LBS ON, AGPS ON

#862255061947757#MT700#0000#AUTO#1

*#3815#$WIFI,125200.00,A,-31,6877248FA31A,-32,7E77248FA31A,-73,0260736CF982,-74,DC333DF82C74,-74,90769F421140,100124*0F*

##

3.LBS ON, AGPS ON

#862255061947757#MT700W#0000#AUTO#1

*#3815#460,00,262C,11F1$WIFI,095147.00,V,,,,,,,,,,241223*06*

##

4.LBS ON, AGPS ON

#862255061947757#MT700#0000#AUTO#1

*#3815#460,00,262C,11F1$WIFI,022300.00,A,-31,6877248FA31A,-32,7E77248FA31A,-73,0260736CF982,-74,DC333DF82C74,-74,90769F421140,100124*74*

##

2.2.3 Report Event Status

Status	Description
HT & TOWED	MODE 0
AUTO	MODE 1
AUTOLOW	MODE 2
HT	MODE 3 & MODE 10
TOWED	MODE 4 & MODE 7
WIFI	MODE 5
SMS	MODE 6
SHAKE	When device detect to vibrate and wake up (from mode 0, MODE 4 or MODE 7), the first report data Status is SHAKE and then (from the seconds data) all the report data are TOWED.
LOCK	LOCK MODE
DEF	Device remove alert (Light Sensor Alarm)
BLP	Backup battery low voltage
CALL	Heartbeat report (Only available for MODE 2 and MODE 5)
STILL	MODE 7

3. Server to Terminal Message Format

3.1 Set APN

If sim card have APN,APN username and password, send command:

Command format: 803,apn, apn,username,apn password

For examples: 803,internet,internet,Internet

If sim card only have APN, APN username and password are blank, send command:

Command format: 803,apn,,

For examples: 803,nbiot,,

Response:

- #IMEI#REPLY#803,OK##
- #IMEI#REPLY#803,FS##

3.2 Set IP and Port

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

Command format: 804,IP,Port

For example: 804,e.trackits.com,7700

After setup the device will connect to server and then report data to this server.

Response:

- #IMEI#REPLY#804,OK##
- #IMEI#REPLY#804,FS##

3.3 Working Mode

3.3.1 MODE 1 (Real Time Mode)

Command format: MODE,1,T

Example: MODE,1,10

Note: Device will report data every 10s .T is interval time and range is [10-600] seconds.

On this mode GPS and TCP will always ON.

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.2 MODE 2 (GPS Auto Mode)

Command format: MODE,2,T, X, Y

For examples: MODE,2,10,1,1

Note: 1. T is report interval time and the range is [10,60] minutes.

2. X=0 means GPS will wake-up only when report interval time is arrive; X=1 means GPS will always on,.

3. Y=0 means TCP will wake-up only when report interval time is arrive; Y=1 means TCP will always connected.

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.3 MODE 3 (Deep Sleep Mode)

Command format: MODE,3,T

For examples: MODE,3,1

Note: Device will wake up and report one data to server every 1 hour, after that it will go to sleep again until next 1 hour. T is [1-24] hours.

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

Note: This mode is highly recommended if you need to extend the battery life for 7 years.

3.3.4 MODE 4 (Vibrate Mode)

Command format: MODE,4,T

For examples: MODE,4,60

Note: When the device detects to vibrate, it will wakes up and starts to connect to the network, After connected it will Immediately report a data to the platform;

If the device is still in a vibrating state, MT700 will report to server every 60 seconds

If there is no vibration for more than 10 minutes, the device will automatically go to sleep .

T is [10-600] seconds

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.5 MODE 5 (WiFi only Mode)

Command format: MODE,5,T, X, Y

For examples: MODE,5,5,0,1

Note: 1. T is report interval time and the range is [1,60] minutes.

2. X fix to 0.

3. Y=0 means TCP will wake-up only when report interval time is arrive; Y=1 means TCP will always connected.

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.6 MODE 6 (SMS only Mode)

Command format: MODE,6

For examples: MODE,6

In this mode if user send text command "**WHERE0000**" to unit,it will reply SMS as follow:

ID:866770057542798

Date:10:30:45 06/10/2022

Fix:A State:SMS

http://maps.google.com/maps?q=+22.64766%2c+114.03423

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.7 MODE 7 (Smart Mode)

Command format: MODE,7, T1, T2

For examples: MODE,7,10,1

Note: This mode low power than mode 0. T1 is [10-1440] minutes, T2 is [1-24] hours;

When the device detects vibration, it will report at the T1 interval. When the device is still, it will report at the T2 interval.

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.8 MODE 0 (AUTO Mode)

Command format: MODE,0,T1,T2

For examples: MODE,0,10,1

Note: This is mix mode of Mode 3 and mode 4. T1 is [10-600] seconds, T2 is [1-24] hours; when the device detects vibration, it will report at the T1 interval. When the device is still, it will report at the T2 interval.

Response:

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.9 MODE 10 (Clock Mode)

Command format: MODE,10,T1,T2

For examples: MODE:10,1,01:00

Note: T1 is [0,24] hours, T2 is [00:00,23:59] HH:MM, T2 is UTC time.

After setting the alarm clock parameter, the device will automatically generate multiple sub-alarms and limit them to 24 hours according to the value set in T1. If the T1 is 0, it means that only one report will be generated per day.

- #IMEI#REPLY#MODE,OK##
- #IMEI#REPLY#MODE,FS##

3.3.10 LOCK MODE

Command Format: LOCK,password,T1,T2

For Example: LOCK,10,1

Note: T1 is report interval time and the range is [10,60] seconds.

T2 is interval time back to the last mode and range is [1,60] minutes.

Response:

- #IMEI#REPLY#LOCK,OK##
- #IMEI#REPLY#LOCK,FS##

Note: When the device received this command, it will change to real time tracking mode and run as the interval and then it will exit the real time mode and back to the previous working mode.

3.4 Network Mode

3.4.1 Set Cat M1 only

Command format : NWM,3,0,2

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

Response:

- #IMEI#REPLY#NWM,OK##
- #IMEI#REPLY#NWM,FS##

3.4.2 Set NB-IoT only

Command format :NWM,3,1,3

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

Response:

- #IMEI#REPLY#NWM,OK##
- #IMEI#REPLY#NWM,FS##

3.4.3 Setup GSM only

Command format : NWM,1,2,1

Note: Device will only work under GSM network.

Response:

- #IMEI#REPLY#NWM,OK##
- #IMEI#REPLY#NWM,FS##

3.5 Lock the Band

Command format : BAND,X,Y,f

For examples: BAND,12,8,f

Note: X is CAT M1 band. Y is NB-IoT band and f is GSM band (fix to f)

After sending this command, the device will lock to CAT M1 B12,NB-IoT B8 and GSM Quad band.

Response:

- #IMEI#REPLY#BAND,OK##
- #IMEI#REPLY#BAND,FS##

NOTE: For detail of Lock Network and bands please check this post:

https://help.mictrack.com/articles/how-to-config-network-or-bands-for-mictrack-devices/

3.6 Set eDRX

Setup the eDRX can make sure the device go to ultra low power working mode during in sleep, but this base on your sim card support. This Command is to enable or disable eDRX.

eDRX For CAT M1

Enable eDRX: EDRX,1,4,0010

Disable eDRX: EDRX,0,4,0010

Response:

- #IMEI#REPLY#EDRX,OK##
- #IMEI#REPLY#EDRX,FS##

eDRX For NB-IoT:

Enable eDRX: EDRX,1,5,0010

Disable eDRX: EDRX,0,5,0010

Response:

- #IMEI#REPLY#EDRX,OK##
- #IMEI#REPLY#EDRX,FS##

NOTE: The eDRX functions are dependent on your mobile operator and SIM card support. If you are unsure whether your network and SIM card support eDRX, we do not recommend setting it up.

3.7 Set Positioning Priority

Command format: PRIOR,X

For example: PRIOR,0

Note: X=0 means GPS priority; X=1 means WiFi priority.

Response:

- #IMEI#REPLY#PRIOR,OK##
- #IMEI#REPLY#PRIOR,FS##

NOTE: This setting is applicable for MODE 3 only.

3.8 Set last known position

Command format: LEP,X

For example: LEP,0

Note:1. If X=0, it means the last known position is disabled. If GPS is unavailable, it will report invalid GPS data.

2. If X=1, it means the last known position report is enabled. When GPS is unavailable, it will report the last known position to the server.

Response:

- #IMEI#REPLY#LEP,OK##
- #IMEI#REPLY#LEP,FS##

3.9 Set LBS

Command format: LBS,X

For example: LBS,0

Note: X=0 disables LBS, meaning the report data will not include LBS data.

X=1 enables LBS. When both GPS and WiFi are unavailable, the report data will include LBS data.

X=2, enable LBS. When the WiFi MAC address<4, the report data will include LBS data.

X=3, enable LBS, when GPS is unavailable, the report data must be include LBS data.

Response:

- #IMEI#REPLY#LBS,OK##
- #IMEI#REPLYY#LBS,FS##

3.10 Set Heartbeat report

Command format: HBC,T

For example: HBC,5

T is report interval time and the range is [5,60] minutes.

Response:

- #IMEI#REPLY#HBC,OK##
- #IMEI#REPLY#HBC,FS##

3.11 SET GPS duration

Command format: DUR,T

For example: DUR,3

T is the time to continue to searching for GPS after the GPS wakes up, the range is [1,10] minutes.

Response:

- #IMEI#REPLY#DUR,OK##
- #IMEI#REPLY#DUR,FS##

3.12 Set TCP keep alive time

Command format :RWT,X

Examples: RWT,60

Response: #IMEI#REPLY#RWT,OK##

Note: This command can setup the Interval time of TCP keep alive. X is the keep connection interval time, with a range of [60,600] seconds.

3.13 Set Assisted WiFi Location

Command format :AGPS,X

Examples: AGPS,1

Note: 1. If X=0, it means WiFi positioning is disabled. If X=1, it means WiFi positioning is enabled.

2. If GPS is unavailable, it will report the WiFi location.

3.14 Set Light Sensor

Command format :LTP,X

For examples: LTP,1

Note: If X=1, the light sensor will be enable.

If X=0, the light sensor will be disable.

Response:

- #IMEI#REPLY#LTP,OK##
- #IMEI#REPLY#LTP,FS##

3.15 Set Protocol

Command format: 800,X

For examples: 800,TCP

Note: X=TCP mean setup to TCP protocol, X=UDP means set to UDP Protocol.

Response:

- #IMEI#REPLY#800,OK##
- #IMEI#REPLY#800,FS##

3.16 Read Config

This is a command to query current device config info.

Command format: RCONF,X

For examples: RCONF,1

Note: X range is [1,4].

Response:

- #IMEI#REPLY#RCONF,1#info1##
- #IMEI#REPLY#RCONF,2#info2##
- #IMEI#REPLY#RCONF,3#info3##
- #IMEI#REPLY#RCONF,4#info4##

3.17 Reboot

This command can reboot your device.

Command format : REBOOT

Response:

- #IMEI#REPLY#REBOOT,OK##
- #IMEI#REPLY#REBOOT,FS##

(End of this document)

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