How to change the baud rate and update rate of MTK GPS module

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This document will explain the process of changing the baud rate and update rate of MTK GPS receiver. Before you proceed, please carefully read below to make sure you understand the concept behind the update rate change.

Concept on Changing the Update Rate:

1. Bigger bandwidth for message output is required for high update rate:
Because high update rate will increase NMEA message throughput, thus GPS module will need to have bigger bandwidth (minimum of 38400bps, though 115200bps is recommended) based on the NMEA sentence output items. If your host device cannot support higher baud rate, you must reduce the NMEA sentence output items or request “One sentence output” service support.

So please change the baud rate setting before you use higher update rate.

2. Change the update rate
After the baud-rate is changed, please re-connect the GPS receiver by using the new baud rate. The purpose of this operation is to reconfirm the baud rate of GPS is now at the correct chosen setting. If successfully connected, the user then can change the update rate .Please refer to the example of changing the update rate by MiniGPS below:

Example 1: Set Update Rate from 1Hz to 5Hz by MiniGPS tool

Notice:
A. MiniGPS tool only support update rate up to 5Hz ,if you want to change to 10Hz, please use PMTK command
B. Only MT3329 Module support 10Hz ,MT3318 only support up to 5Hz

Operation Instruction to change GPS receiver from 1Hz to 5Hz

1. Please connect the GPS receiver by using right baud rate under MiniGPS tool (ex: 9600 bps) and proper COM port (please check in your device) then click “open” button to link with GPS device in “Status” page.

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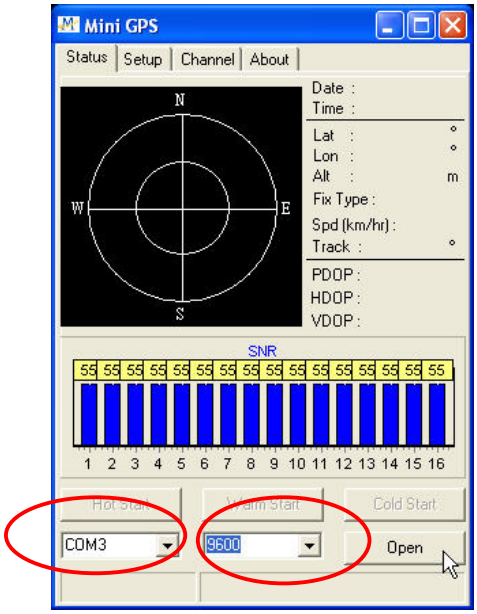
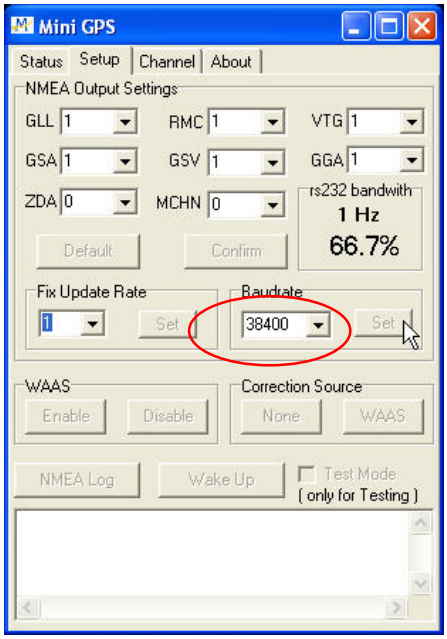
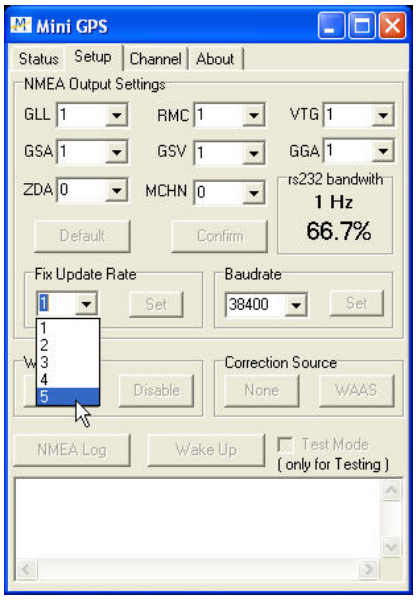


2. After successfully connecting the GPS device, switch to “Setup” page, change baud rate at “38400 bps” and click “set” button. Output baud rate will now become 38400bps.

3. After finishing this step, you need to go back to “Status” page to close GPS connection then reopen GPS connection, this time you should set baud rate at 38400 bps.-Make sure the baud rate have been changed to 38400bps .



4. After reconnecting with GPS device, go to “setup” page again, then select fix update rate at “5”. The output rate should be at 5Hz.



5. Please note if you take battery out from device, all setting will back to default value which is 1Hz output and 9600bps, then you have do the setup again. If you want to set the change to the default ,please contact with your supplier for further help

Example 2: Set Update Rate from 1Hz to 10Hz(5Hz) by PMTK command

Notice:

1. Before using the PMTK command, you have to know how to send the PMTK command to GPS receiver by using software terminal tools (ex. Hyper terminal). If you don't know how to use these kinds of tools, you can refer to the document "Using WinXP Hyperterminal to change MTK GPS setting .pdf".

2. Please make sure you have the MTK checksum tool "MTK-Checksum.exe " on hand for checksum calculation

Using the concept on changing the update rate, you can use these commands to change the baud rate and update rate.

MTK baud rate command packet

Packet Type：251 PMTK_SET_NMEA_BAUDRATE

Packet Meaning：

Set NMEA port baudrate

DataField：

PMTK251, Baudrate

Baudrate：115200, 57600, 38400, 19200, 14400, 9600,4800

Example：

$PMTK251,38400*27<CR><LF>

Note：

- 27 is checksum
- CR, LF：Two bytes binary data

MTK update rate command packet

Packet Type: 220 PMTK_SET_NMEA_UPDATERATE

Packet Meaning:

Set NMEA port update rate

DataField:

Position fix interval (msec). The possible interval values range between 100 and 10000 msec.

Example:

$PMTK220,1000*1F<CR><LF>

Note：

1000(msec) = 1(sec) → 1pps = 1Hz

200(msec) = 0.2(sec) → 1/0.2 pps = 5 Hz

100(msce) = 0.1(sec) → 1/0.1 pps = 10 Hz

- 1F is checksum
- CR, LF：Two bytes binary data
- The two bytes are used to identify the end of a packet

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Example:

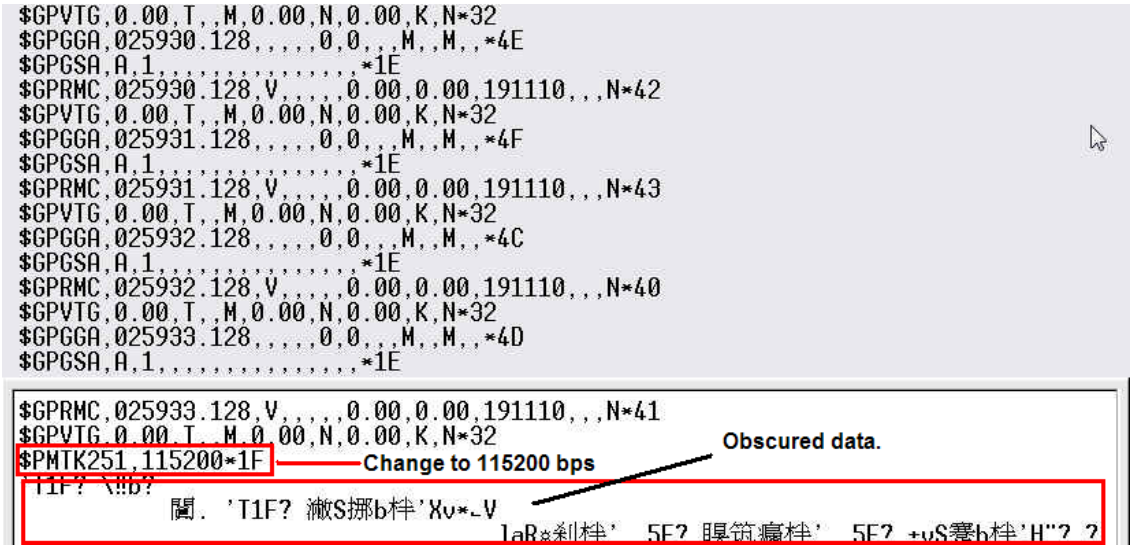
How to change the update rate from 1Hz to 10Hz

Notice: Please make sure your GPS receiver is based on MT3329 GPS chipset

Stage 1: Change the baud rate to 115200 bps

$PMTK251,115200*1F<CR><LF>

The output message in the terminal will show unknown garbage data if the change is successful as the figure below:



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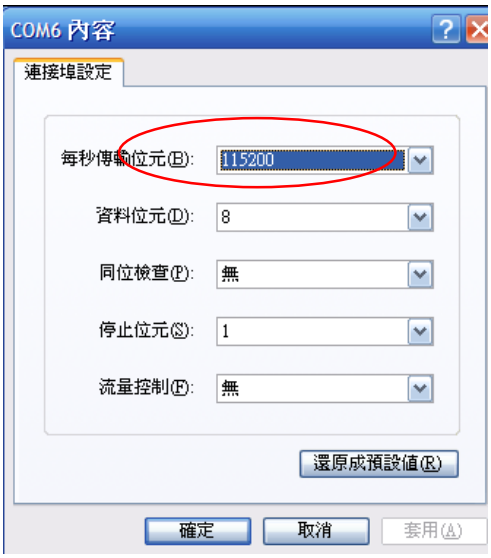
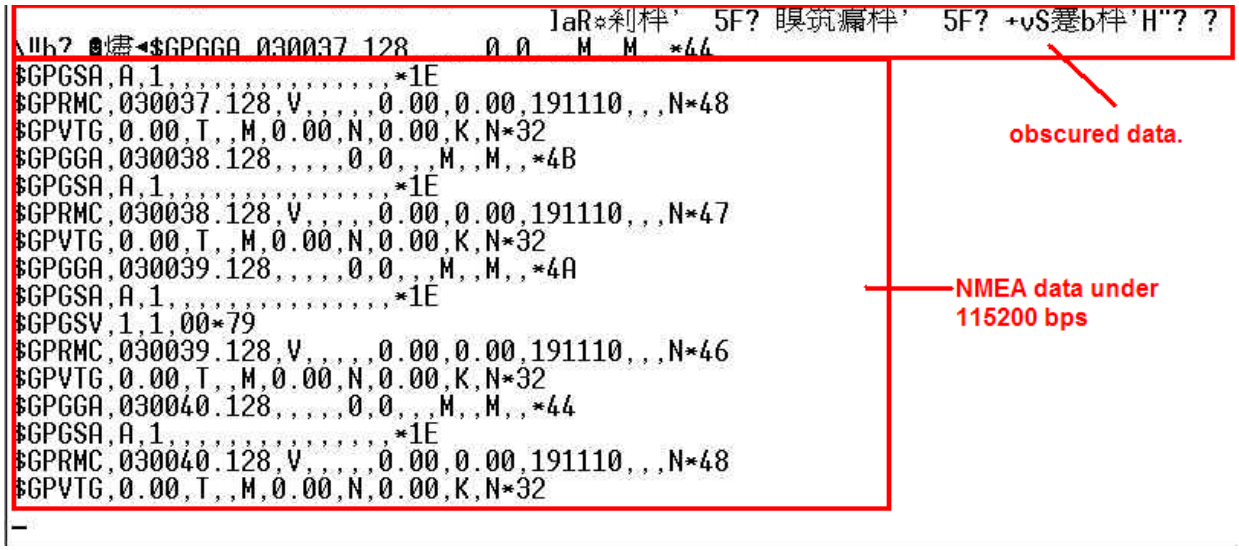
Stage 2: Re-connect GPS receiver by 115200 bps

You need to change baud rate from terminal program to 115200 and connect the GPS receiver again (Please don't power off or disconnect the power to the GPS to make sure the GPS retain the change.)

a. change the baud rate of terminal tool.

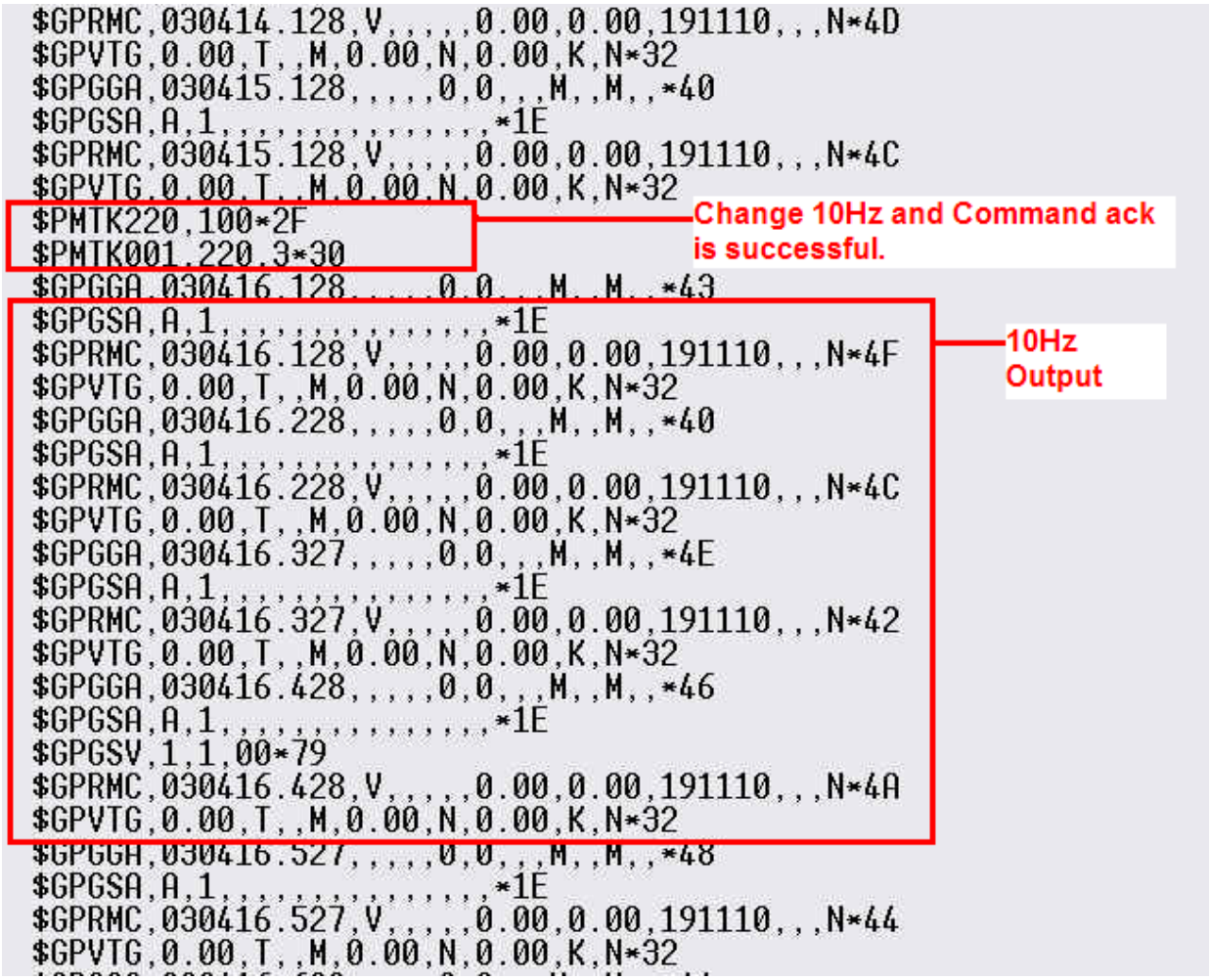


b. re-connect again, after normal standard NMEA message output again , you are ready to give next command.



Stage 3: Change the update rate to 10Hz

$PMTK220,100*2F<CR><LF>



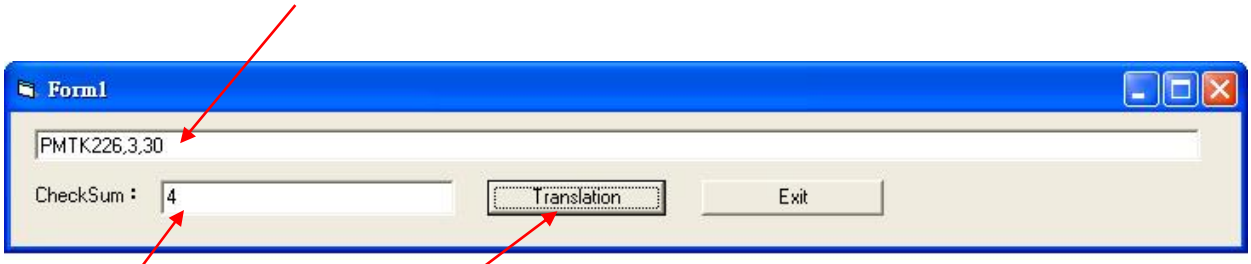
Appendix :

How to use the check sum tool

How to acquire that CheckSum value by checksum tool.

Example: **$PMTK226,3,30*4<CR><LF>**

1. Key in command contents



2. Click Translation

3. That checksum will display

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MTK NMEA Packet Format

Preamble	TalkerID	PktType	DataField	*	CHK1	CHK2	CR	LF

Maximum packet length is restricted to 255 bytes.

Field	Length	Type	Description
Preamble	1 byte	Character	"$"
TalkerID	4 byte	Character string	"PMTK"
PktType	3 byte	Character string	From "000" to "999", an identifier used to tell the decoder how to decode the packet
DataField	Variable		A "," must be inserted before each data filed to help decoder process the DataField
*	1 byte	Character	The star symbol is used to mark the end of DataField
CHK1, CHK2	2 byte	Character string	Checksum of the data between preamble "," and "*"
CR, LF	2 byte	Binary data	Used to identify the end of a packet

Sample Packet: $PMTK000*32<CR><LF>

To inform the sender whether or not the module has received the packet, an acknowledge packet PMTK_ACK should be returned after the command is successfully given.

Pkt Type	Abbreviation / Syntax	Data Field	Meaning / Example / Return
000	PMTK_TEST	None	Test Packet *$PMTK000*32<CR><LF>*
001	PMTK_ACK ***PMTK001,Cmd,Flag***	Cmd: Command / packet type the acknowledge responds Flag: 0 = Invalid command / packet 1 = Unsupported command / packet type 2 = Valid command / packet, but action failed 3 = Valid command / packet, and action succeeded	Acknowledge of PMTK command ***$PMTK001,604,3*32<CR><LF>***
010	PMTK_SYS_MSG ***PMTK010,Msg***	Msg: System message. 0 : Unknown 1: Startup	Output system message ***$PMTK010,001*2E<CR><LF>***

In addition, when the GPS module is powered-on or restarted via command, both "$PMTK010,001*2E<CR><LF>" and $PMTK011,MTKGPS*08<CR><LF>" will be returned at the same time after GPS engine has successfully completed boot-up stage.

Note:

When the power of device (module) is removed, any modified setting will be lost and reset to factory default setting. If the device (module) has backup power supply through VBACKUP or coin battery, it will be able to keep the modified setting until the backup power is exhausted.