PMTK Packet User Manual

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Revision History

Revision	Date	Author	Description
A01	2016.04.20	Hector	**1st Release**
A02	2016.05.12	Hector	**2nd Release. It modify PMTK353 command**

MTK NMEA Packet Protocol

In order to inform the sender whether the receiver has received the packet, an acknowledge packet **PMTK_ACK** should return after the receiver receives a packet.

MTK NMEA Packet List

MTK NMEA Packet Format

Preamble	Talker ID	Pkt Type	Date Field	*	CHK1	CHK2	CR	LF

Maximum packet length is restricted to **255** bytes

Field	Length	Type	Description
Preamble	1 byte	Character	"$"
Talker ID	4 byte	Character string	"PMTK"
Pkt Type	3 byte	Character string	From "000" to "999", an identifier used to tell the decoder how to decode the packet
Data Field	variable		A "," must be inserted ahead each data field to help decoder process the Data Field
*	1 byte	Character	The star symbol is used make the end of Data Field
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>

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	Command/ packet type the acknowledge responds Flag: 0 = invalid command/ packet type 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:

1. 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.

Packet Type: 001 PMTK_ACK

Packet Meaning:
Acknowledge of PMTK command

Data Field:
PMTK001,Cmd,Flag
Cmd: The 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

Example:
$PMTK001,604,3*32<CR><LF>

Packet Type: 010 PMTK_SYS_MSG

Packet Meaning:
Output system message

Data Field:
Msg: The system message
'0' = UNKNOWN
'1' = STARTUP
'2' = Notification: Notification for the host aiding EPO
'3' = Notification: Notification for the transition to Normal mode is successfully done

Example:
$PMTK010,001*2E<CR><LF>

Packet Type: 011 PMTK_TXT_MSG

Packet Meaning:
Output system message

Example:
$PMTK011,MTKGPS*08<CR><LF>

Packet Type: 101 PMTK_CMD_HOT_START

Packet Meaning:
Hot Restart: Use all available data in the NV Store.

Data Field:
None

Example:
$PMTK101*32<CR><LF>

Packet Type: 102 PMTK_CMD_WARM_START

Packet Meaning:
Warm Restart: Don't use Ephemeris at re-start.

Data Field:
None

Example:
$PMTK102*31<CR><LF>

Packet Type: 103 PMTK_CMD_COLD_START

Packet Meaning:
Cold Restart: Don't use Time, Position, Almanacs and Ephemeris data at re-start.

Data Field:
None

Example:
$PMTK103*30<CR><LF>

Packet Type: 104 PMTK_CMD_FULL_COLD_START

Packet Meaning:
Full Cold Restart: It's essentially a Cold Restart, but additionally clear system/user configurations at re-start. That is, reset the receiver to the factory status.

Data Field:
None

Example:
$PMTK104*37<CR><LF>

Packet Type: 220 PMTK_SET_NMEA_UPDATERATE

Packet Meaning:
Set NMEA port update rate

Data Field:
Position fix interval (millisecond). The possible interval values range between 100 and 1000 millisecond.

Example:
$PMTK220,1000*1F<CR><LF>
$PMTK220, 200*2C<CR><LF>
$PMTK220,100*2F<CR><LF>

Note:
1. Before user input this command for update rate setting, it needs to see if the baud rate is enough or not. User can use PMTK251 command for baud rate setting
1000(millisecond) = 1(sec) → 1/1 = 1Hz
200(millisecond) = 0.2(sec) → 1/0.2 = 5 Hz
100(millisecond) = 0.1(sec) → 1/0.1 = 10 Hz

Packet Type: 400 PMTK_API_Q_FIX_CTL

Packet Meaning:
Query update rate

Data Field:
None

Return:
PMTK_DT_FIX_CTL

Example:
$PMTK400*36<CR><LF>

Packet Type: 500 PMTK_DT_FIX_CTL

Packet Meaning:
The parameter means which update is set currently

Data Field:
Fixinterval: Position fix interval. (msec). [>=100]
1000 ➔ 1Hz
200 ➔ 5Hz
100 ➔ 10Hz

Example:
$PMTK500,1000,0,0,0.0,0.0*1A<CR><LF>

Packet Type: 251 PMTK_SET_NMEA_BAUDRATE

Packet Meaning:
Set NMEA port baud rate

Data Field:
PMTK251, Baudrate
Baudrate setting : 4800,9600,14400,19200,38400,57600,115200

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

Note:

1. You can also restore the system default setting via issue：$PMTK251,0*28<CR><LF>
2. The setting of baud rate will be back to default value in two conditions:
   a. Full cold start command issued
   b. Enter standby mode

Packet Type: 301 PMTK_API_SET_DGPS_MODE

Packet Meaning:
API_Set_Dgps_Mode
DGPS correction data source mode.

Data Field:
PMTK301,Mode
Mode: DGPS data source mode.
'0' = No DGPS source
'1' = RTCM
'2' = SBAS(Include WAAS/EGNOS/GAGAN/MSAS)

Example:
$PMTK301,1*2D<CR><LF>

Note:

1. If you wish to set DGPS mode to RTCM, please use PMTK250 first to set RTCM baud rate before using this command

Packet Type: 401 PMTK_API_Q_DGPS_MODE

Packet Meaning:
API_Query_Dgps_Mode

Data Field:
None

Return:
PMTK_API_DT_DGPS_MODE

Example:
$PMTK401*37<CR><LF>

Packet Type: 501 PMTK_API_DT_DGPS_MODE

Packet Meaning:
DGPS data source mode

Data Field:
PMTK501,Mode
Mode: DGPS data source mode.
'0' = No DGPS source
'1' = RTCM
'2' = SBAS(Include WAAS/EGNOS/GAGAN/MSAS)

Example:
$PMTK501,2*28<CR><LF>

Packet Type: 313 PMTK_API_SET_SBAS_ENABLED

Packet Meaning:
API_Set_Sbas_Enabled
Enable to search a SBAS satellite or not.

Data Field:
PMTK313,Enabled
'0' = Disable
'1' = Enable

Example:
$PMTK313,1*2E<CR><LF>

Packet Type: 413 PMTK_API_Q_SBAS_ENABLED

Packet Meaning:
API_Query_Sbas_Enabled

Data Field:
None

Return:
PMTK_DT_SBAS_ENABLED

Example:
$PMTK413*34<CR><LF>

Packet Type: 513 PMTK_DT_SBAS_ENABLED

Packet Meaning:
Acknowledge for SBAS function is enable or disable.

Data Field:
PMTK513,Enabled
'0' = Disable
'1' = Enable

Example:
$PMTK513,1*28<CR><LF>

Packet Type: 314 PMTK_API_SET_NMEA_OUTPUT

Packet Meaning:
API_Set_NMEA_Out
Set NMEA sentence output frequencies

Data Field:
There are totally 19 data fields that present output frequencies for the 19 supported NMEA sentences individually.

Supported NMEA Sentences
0 NMEA_SEN_GLL, // GPGLL interval - Geographic Position - Latitude longitude
1 NMEA_SEN_RMC, // GPRMC interval - Recommended Minimum Specific GNSS Sentence
2 NMEA_SEN_VTG, // GPVTG interval - Course over Ground and Ground Speed
3 NMEA_SEN_GGA, // GPGGA interval - GPS Fix Data
4 NMEA_SEN_GSA, // GPGSA interval - GNSS DOPS and Active Satellites
5 NMEA_SEN_GSV, // GPGSV interval - GNSS Satellites in View
6 //Reserved
7 //Reserved
13 //Reserved
14 //Reserved
15 //Reserved
16 //Reserved
17 NMEA_SEN_ZDA, // GPZDA interval – Time & Date
18 NMEA_SEN_MCHN, // PMTKCHN interval – GPS channel status

Supported Frequency Setting
0 - Disabled or not supported sentence
1 - Output once every one position fix
2 - Output once every two position fixes
3 - Output once every three position fixes
4 - Output once every four position fixes
5 - Output once every five position fixes

Example:
$PMTK314,1,1,1,1,1,5,0,0,0,0,0,0,0,0,0,0,0,0,0*2C<CR><LF>

Note:
1. This command set GLL output frequency to be outputting once every 1 position fix, and RMC to be outputting once every 1 position fix, and so on. You can also restore the system default setting via issue：$PMTK314,-1*04<CR><LF>

Packet Type: 414 PMTK_API_Q_NMEA_OUTPUT

Packet Meaning:
API_Query_NMEA_Out
Query current NMEA sentence output frequencies

Data Field:
None

Return:
PMTK_API_DT_NMEA_OUTPUT

Example:
$PMTK414*33<CR><LF>

Packet Type: 514 PMTK_API_DT_NMEA_OUTPUT

Packet Meaning:
NMEA sentence output frequency setting

Data Field:
There are totally 19 data fields that present output frequencies for the 19 supported NMEA sentences individually . Please refer to PMTK_API_SET_NMEA_OUTPUT for the supported NMEA sentence and frequency setting.

Example:
$PMTK514,0,1,1,1,1,5,0,0,0,0,0,0,0,0,0,0,0,0,0*2B<CR><LF>

Packet Type: 605 PMTK_Q_RELEASE

Packet Meaning:
Query the firmware release information.

Data Field:
None

Return:
PMTK_DT_RELEASE

Example:
$PMTK605*31<CR><LF>

Packet Type: 705 PMTK_DT_RELEASE

Packet Meaning:
Firmware release information.

Data Field:
PMTK705,ReleaseStr,Build_ID,Internal_USE_1,(Internal_USE_2)
ReleaseStr: Firmware release name and version
3318 : Mcore_x.x
3329/3339/3333 : AXN_x.x
Build_ID: for firmware version control
Internal_USE_1: Internal only
Internal_USE_2: Internal only

Example:
$PMTK705,AXN_3.60_3333_15070100,8323,Titan2,1.0*70<CR><LF>

Packet Type: 607 PMTK_Q_EPO_INFO

Packet Meaning:
Query the EPO data status stored in the GPS chip

Data Field:
None

Return:
PMTK_DT_EPO_INFO

Example:
$PMTK607*33<CR><LF>

Packet Type: 707 PMTK_DT_EPO_INFO

Packet Meaning:
EPO data status stored in the GPS chip

Data Field:
PMTK707,Set,FWN,FTOW,LWN,LTOW,FCWN,FCTOW,LCWN,LCTOW
Set: Total number sets of EPO data stored in the GPS chip
FWN & FTOW : GPS week number and TOW of the first set of EPO data stored in chip respectively
LWN & LTOW : GPS week number and TOW of the last set of EPO data stored in chip respectively
FCWN & FCTOW : GPS week number and TOW of the first set of EPO data that are currently used respectively

LCWN & LCTOW : GPS week number and TOW of the last set of EPO data that are currently used respectively

Example:
$PMTK707,28,1680,259200,1681,237600,1680,345600,1680,345600*19

Packet Type: 127 PMTK_CMD_CLEAR_EPO

Packet Meaning:
Clear the EPO data stored in the GPS chip

Data Field:
None

Example:
$PMTK127*36<CR><LF>

Packet Type: 386 PMTK_SET_Nav Speed threshold

Packet Meaning:
Set the speed threshold for static navigation. If the actual speed is below the threshold, output position will keep the same and output speed will be zero. If threshold value is set to 0, this function is disabled.

Data Field:
PMTK386,Nav Speed Threshold
Nav Speed threshold: 0~2.0 (m/s)
The minimum is 0.1 m/s, the maximum value is 2.0 m/s

Example:
$PMTK386,0.2*3F<CR><LF>
$PMTK386,2.0*3F<CR><LF>

Note:
1. The setting of Nav Speed Threshold will be back to default value in two conditions:
   a. Full cold start command issued
   b. Enter standby mode

Packet Type: 447 PMTK_Q_Nav_Threshold

Packet Meaning:
Query current Nav Speed threshold setting.

Data Field:
None

Return:
PMTK_DT_Nav_Threshold

Example:
$PMTK447*35<CR><LF>

Packet Type: 527 PMTK_DT_Nav_Threshold

Packet Meaning:
Current Nav Speed Threshold setting

Data Field:
PMTK527,Current Nav_Threshold
Current Nav_Threshold:

The range is 0~2.0 (m/s)

Example:
$PMTK527,0.20*02<CR><LF>
$PMTK527,2.00*02<CR><LF>
$PMTK527,0.00*00<CR><LF>

Packet Type: 161 PMTK_CMD_STANDBY_MODE

Packet Meaning:
Enter standby mode for power saving.

Data Field:
PMTK161,Type
Type: Standby type
'0' =Sleep mode

Example:
$PMTK161,0*28<CR><LF>

Note:
1. Software on Host side sends any byte to wake up from standby mode.

Packet Type: 223 PMTK_SET_AL_DEE_CFG

Packet Meaning:
It means the module needs to extend the time for ephemeris data receiving under what situation.

Data Field:
PMTK223,SV,SNR,Extension threshold, Extension gap

SV: it means the module need extend the time to receive more ephemeris data while the number of satellite without ephemeris data. [default value: 1, range 1~4]
SNR: it means the module needs to enable the ephemeris data receiving while the SNR of satellite is more than the setting value. [default value: 30, range 25~30]
Extension threshold (millisecond): extension time for ephemeris data receiving [default value: 180000, range 40000~180000]
Extension (millisecond): gap time between EPH data receiving [default value: 60000 msec, range 0~3600000]

Example:
$PMTK225,0*2B<CR><LF>
$PMTK223,1,25,180000,60000*38<CR><LF>
$PMTK225,1,3000,12000,18000,72000*16<CR><LF>

Note:
1. The command is recommended with **PMTK225** command.

Packet Type: 225 PMTK_CMD_PERIODIC_MODE

Packet Meaning:
Enter Standby or Backup mode for power saving.

Data Field:
PMTK225,Type,Run time,Sleep time, Second run time,Second sleep time

Type: operation mode
- '0' = go back to normal mode
- '1' = Periodic backup mode
- '2' = Periodic standby mode
- '4' = Perpetual mode (this mode need be work with relative hardware pin)
- '8' = AlwaysLocate™ standby mode
- '9' = AlwaysLocate™ backup mode

Run time (millisecond): Duration to fix for (or attempt to fix for) before switching from running mode back to a minimum power sleep mode.
- '0': disable
- >='1,000': enable [Range: 1,000~518400000]

Sleep time (millisecond): Interval to come out of a minimum power sleep mode and start running in order to get a new position fix.
- '0': disable
- >='1,000': enable [Range: 1,000~518400000]

Second run time (millisecond): Duration to fix for (or attempt to fix for) before switching from running mode back to a minimum power sleep mode.
- '0': disable
- >='1,000': enable [Range: Second set both 0 or 1,000~518400000]

Second sleep time (millisecond): Interval to come out of a minimum power sleep mode and start running in order to get a new position fix.
- '0': disable
- >='1,000': enable [Range: Second set both 0 or 1,000~518400000]

Example: How to enter periodic modes
Periodic Backup mode
$PMTK225,0*2B<CR><LF>

$PMTK223,1,25,180000,60000*38<CR><LF>
$PMTK225,1,3000,12000,18000,72000*16<CR><LF>

Periodic Standby mode
$PMTK225,0*2B<CR><LF>
$PMTK223,1,25,180000,60000*38<CR><LF>
$PMTK225,2,3000,12000,18000,72000*15<CR><LF>

Example: How to enter AlwaysLocate modes
AlwaysLocate™ Standby
$PMTK225,0*2B<CR><LF>
$PMTK225,8*23<CR><LF>

AlwaysLocate™ Backup
$PMTK225,0*2B<CR><LF>
$PMTK225,9*22<CR><LF>

Note:
1. The second run time should larger than first run time when non-zero value.
2. The purpose of second run time and sleep time can let module to catch more satellite ephemeris data in cold boot condition. The value of them can be null. Then it will use the first run time and sleep time for ephemeris data receiving.
3. AlwaysLocate™ is an intelligent controller of MT3333/MT3339 power saving mode. Depending on the environment and motion conditions, MT3333 can adaptive adjust the on/off time to achieve balance of positioning accuracy and power consumption.

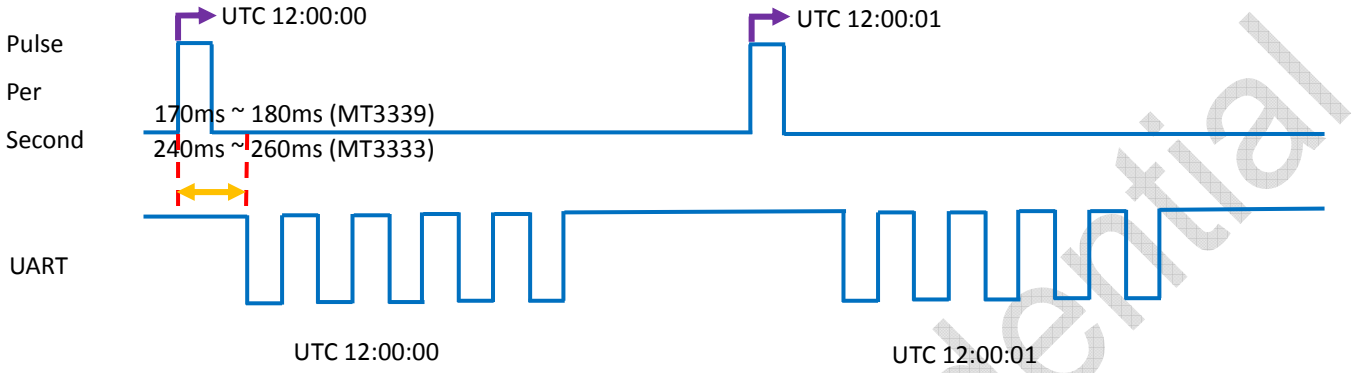
Packet Type: 255 PMTK_SET_SYNC_PPS_NMEA (only support in AXN3.6(8) and AXN2.3 after 2014.04.21)

Packet Meaning:
Enable or disable fix NMEA output time behind PPS function. (Default off)

Data Field:
PMTK255,Mode
Mode:
'0' = disable
'1' = enable
Example:
$PMTK255,1*2D<CR><LF>

Note:
1. This function is useful in 1Hz update rate and baud rate at 14400~115200 bps
2. At baud rate of 9600 and 4800, it is recommended to set RMC sentence only. Because at low baud rate, if there are many NMEA sentence output, per second transmission may exceed one second.

3. After enable this function, the relationship between PPS and Tx of UART is shown in below:
The latency range of beginning of UART Tx is between 170 ms and 180 ms at MT3339 platform (240 ms and 260 ms at MT3333 platform) and behind the rising edge of PPS



Packet Type: 286 PMTK_CMD_AIC_MODE

Packet Meaning:
Active Interference Cancellation (AIC) feature provides effective narrow-band interference and jamming elimination.

Data Field:
PMTK286,Mode
Mode:
'0' = disable AIC function
'1' = enable AIC function

Example:
$PMTK286,1*23<CR><LF>

Note:
1. The AIC function is enabled for default factory setting.

Packet Type: 869 PMTK_CMD_EASY_ENABLE

Packet Meaning:
Enable or disable EASY function. Query if EASY is enabled or disabled

Data Field:
PMTK869,CmdType,Enable,Extension Day
CmdType:
'0' = Query
'1' = Set

'2' = Result for Query operation

Enable:
'0' = disable
'1' = enable
Extension Day: Finished extension day
Example:
To enable EASY, use
$PMTK869,1,1*35<CR><LF>

To disable EASY, use
$PMTK869,1,0*34<CR><LF>

To query if EASY is enabled or disabled, use
$PMTK869,0*29<CR><LF>

If EASY is disabled, the receiver returns
$PMTK869,2,0,0*2B<CR><LF>

If EASY is enabled and is not finished yet, the receiver may returns
$PMTK869,2,1,0*2A<CR><LF>

If EASY is enabled and is finished 1-day extension, the receiver may returns
$PMTK869,2,1,1*2B<CR><LF>
If EASY is enabled and is finished 2-day extension, the receiver may returns
$PMTK869,2,1,2*28<CR><LF>

If EASY is enabled and is finished 3-day extension, the receiver may returns
$PMTK869,2,1,3*29<CR><LF>
Note:
1. The EASY function is enabled for default setting.
2. The "VBACKUP" pin needs to connect to a coin-battery for this feature. Please contact us for more details.
3. The EASY function only support update rate 1Hz.

Packet Type: 886 PMTK_FR_MODE

Packet Meaning:
Set navigation mode

Data Field:
PMTK886,CmdType
CmdType:
'0': Vehicle mode: For general purpose
'1': Pedestrian: For running and walking purpose that the low-speed (< 5m/s) movement will have more effect on the position calculation.

'2': Avionic mode: For high-dynamic purpose that the large-acceleration movement will have more effect on the position calculation.
'3': Balloon mode: For high-altitude balloon purpose that the vertical movement will have more effect on the position calculation.

Example:
$PMTK886,0*28<CR><LF> :Enter vehicle mode.
$PMTK886,1*29<CR><LF> :Enter pedestrian mode.
$PMTK886,2*2A<CR><LF> :Enter avionic mode.
$PMTK886,3*2B<CR><LF> :Enter balloon mode.
Return:
$PMTK001,886,3*36<CR><LF>

Mode	Altitude Limitation
Vehicle mode	10,000 m
Pedestrian mode	10,000 m
Avionic mode	10,000 m
Balloon mode	80,000 m

Note:
1. In mode 0~2, the altitude limitation is 10,000 meter. For mode 3 the altitude limitation is 80,000 meters; however when the altitude exceeds 18,000 meter, the velocity must be lower than 515 m/s.

Packet Type: 330 PMTK_API_SET_DATUM

Packet Meaning:
Configure Datum

Data Field:
PMTK330,Datum
Datum:
'0' = WGS84
'1' = TOKYO-M
'2' = TOKYO-A

Example:
$PMTK330,0*2E<CR><LF>

Note:
1. It supports 222 different datum. Please refer to GTOP Datum List.

Packet Type: 331 PMTK_API_SET_DATUM_ADVANCE

Packet Meaning:
Set user defined datum

Data Field:
PMTK331,majA,eec,dX,dY,dZ
majA: User defined datum semi-major axis [meter]
eec: User defined datumeccentric [meter]
dX: User defined datum to WGS84 X axis offset [meter]
dY: User defined datum to WGS84 Y axis offset [meter]
dZ: User defined datum to WGS84 Z axis offset [meter]
Example:
$PMTK331,6377397.155,299.1528128,-148.0,507.0,685.0*16<CR><LF>

Packet Type: 431 PMTK_API_Q_DATUM_ADVANCE

Packet Meaning:
Query user defined datum

Data Field:
None
Return:

PMTK_DT_DATUM

Example:
$PMTK431*34<CR><LF>
After issue PMTK431, then module send acknowledge like below:
$PMTK530,6377397.155,299.1528128,-148.0,507.0,685.0*11<CR><LF>

Packet Type: 353 PMTK_API_SET_GNSS_SEARCH_MODE

(Not supported in AXN3.0 and MT3339)

Packet Meaning:

This command is used to configure the receive to start searching of which satellite system
The setting will be kept available when NVRAM data is valid

Data Field:

,GPS_Enabled,GLONASS_Enabled,GALILEO_Enabled,GALILEO_FULL_Enabled,BEIDOU_Enabled

GPS_Enabled: '0'=disable (DO NOT search GPS satellite)
'1' or non-ZERO value=search GPS satellite

GLONASS_Enabled: '0'=disable (DO NOT search GLONASS satellite)
'1' or non-ZERO value=search GLONASS satellite

GALILEO_Enabled: '0'=disable (DO NOT search GALILEO satellite)
'1' or non-ZERO value=search GALILEO satellite

GALILEO_FULL_Enabled: '0'=disable
'1' =enable

BEIDOU_Enabled: '0'=disable (DO NOT search BEIDOU satellite)
'1' or non-ZERO value=search BEIDOU satellite

Example:

$PMTK353,0,1,0,0,0*2A : Search GLONASS satellites only
$PMTK353,1,0,0,0,0*2A : Search GPS satellites only
$PMTK353,1,1,0,0,0*2B : Search GPS and GLONASS satellites
$PMTK353,1,1,1,0,0*2A : Search GPS GLONASS, GALILEO satellites
$PMTK353,0,0,0,0,1*2A : Search BEIDOU satellites only
$PMTK353,1,0,0,0,1*2B : Search GPS and BEIDOU satellites

Note:

1. Parameter "GALILEO_FULL_Enabled" is phase out. Please keep it in ZERO value.

Packet Type: 430 PMTK_API_Q_DATUM

Packet Meaning:
Query default Datum

Data Field:
None

Return:
PMTK_API_DT_DATUM

Example:
$PMTK430*35<CR><LF>

Packet Type: 530 PMTK_API_DT_DATUM

Packet Meaning:
Current datum used

Data Field:
PMTK530,Datum
Datum:
'0' = WGS84
'1' = TOKYO-M
'2' = TOKYO-A

Example:
$PMTK530,0*28<CR><LF>

Packet Type: 183 PMTK_LOCUS_QUERY_STATUS

Packet Meaning:
Query Logging status

Data Field:
None

Return:

$PMTKLOG,Serial#, Type, Mode, Content, Interval, Distance, Speed, Status, Number, Percent*Checksum
Serial#: Logging serial number : 0~65535
Type: Logging type – 0: Overlap, 1: FullStop
Mode: Logging mode – 0x08 interval logger
Content: Logging contents of configuration
Interval: Logging interval setting (valid when Interval mode selected)
Distance: Logging distance setting (valid when Distance mode selected)
Speed: Logging speed setting (valid when Speed mode selected)
Status: Logging status – 0: Logging, 1: Stop logging
Number: Logging number of data record
Percent: Logging life used percentage (0%~100%)

Example:

Input: $PMTK183*38<CR><LF>

Return: $PMTKLOG,456,0,b,31,2,0,0,0,3769,46*2A<CR><LF>

Packet Type: 184 PMTK_LOCUS_ERASE_FLASH

Packet Meaning:

Erase Logging flash

Data Field:

PMTK184,Type

Type: Erase type – 1: erase all logger internal flash data

Example:

Input: $PMTK184,1*22<CR><LF>

Return: $PMTK001,184,3*3D<CR><LF>

Packet Type: 185 PMTK_LOCUS_STOP_LOGGER

Packet Meaning:

Stop/Start Logging flash

Data Field:

PMTK185,Type

Type: Logging type – 1: Stop logging
0: Start logging

Example:

Input: $PMTK185,1*23<CR><LF>

Return: $PMTK001,185,3*3C<CR><LF>

Packet Type: 186 PMTK_LOG_NOW

Packet Meaning:

Snapshot write log

Data Field:

PMTK186,Type

Type: 1 means snapshot log data

Example:

Input: $PMTK186,1*20<CR><LF>

Return: $PMTK001,186,3*3F<CR><LF>

Packet Type: 187 PMTK_LOCUS_CONFIG

Packet Meaning:

Configure LOCUS setting by command

Data Field:

PMTK187,mode,setting

Type: 1 means interval mode

Setting: New setting instead of the original configuration (e.g. change to 5 seconds interval as the example below)

Example:

Input: $PMTK,187,1,5*14<CR><LF>

Return: $PMTK001,187,3*3E<CR><LF>

Note:

1. It only allow user to set interval temporary, and the setting will get back to default when power on (without coin-battery)

Packet Type: 622 PMTK_Q_LOCUS_DATA

Packet Meaning:

Dump LOCUS flash data

Data Field:

Case 1: PMTK622,Type

Type: 0 means dump full flash data

1 means dump partial in used flash data

Case 2: PMTK622,type,offset,size

Type: 2 means dump specified sector's LOCUS flash data

offset: The start address for dump (0<=offset<=32, the unit is sector [4KB])

size: The dump length (0<=offset<=32, the unit is sector [4KB])

Example:

Input: $PMTK622,0*28 //Dump full LOCUS flash data

Input: $PMTK622,1*29 //Dump partial LOCUS flash data

Input: $PMTK622,2,3,2*2B //Skip sector 1,2,3. Dump sector 4 and sector 5 LOCUS flash data

Note:

1. If the input values of offset and size are out of range, it will dump all LOCUS flash like using $PMTK622,0*28
2. For Case 2 function, it is available in latest version of C39 chip. Please contact us for more details.

Packet Type: 602 PMTK_Q_DATA_PORT

Packet Meaning:

Read data port input/output

Data Field:

None

Example:

Input: $PMTK602*36<CR><LF>

Return: PMTK_DT_DATA_PORT packet

Packet Type: 702 PMTK_DT_DATA_PORT

Packet Meaning:

Display data port input/output data type and baud rate

Data Field:

InType: Data port input data type

‘0’ = DPORT_IN_NONE

‘1’ = DPORT_IN_RTCM

‘2’ = DPORT_IN_NA

OutType: Data port output data type

‘0’ = DPORT_OUT_NONE

‘1’ = DPORT_OUT_RTCM

‘3’ = DPORT_OUT_NMEA

Example:

Input: $PMTK602*36<CR><LF>

Return: $PMTK702,1,3,9600*16<CR><LF>

Packet Type: 285 PMTK_SET_PPS_CONFIG_CMD

Packet Meaning:

Configure PPS setting

Data Field:

PMTK285,PPSType,PPSPulseWidth

PPSType: Availablity

‘0’ = Disable

‘1’ = After the first fix

‘2’ = 3D fix only

‘3’ = 2D/3D fix only

‘4’ = Always

PPSPulseWidth: PPS pulse width (unit: ms)

Example:

$PMTK285,2,100*3E<CR><LF>

Packet Type: 299 PMTK_SET_OUTPUT_DEBUG

Packet Meaning:

Enable or disable Debug log output

Data Field:

PMTK299,Enabled

Enabled:

‘0’ = Disable

‘1’ = Enable

Example:

$PMTK299,1*2D<CR><LF>

Note:

1. It is recommended to set higher baud rate while using this command.
2. This command only supported in AXN3.6, AXN3.8.

Packet Type: 355 PMTK_API_QUERY_GNSS_SEARCH_MODE

(Not supported in MT3339)

Packet Meaning:

This command is to get GLONASS, BEIDOU and GALILEO search setting

Data Field:

None

Example:

$PMTK355*31<CR><LF>

Return $PMTK001,355,3,1,0,0*2E ➔"$PMTK001,355,3,GLON_Enable,BEIDOU_Enable,GALILEO_Enable"

The GLONASS search mode is enabled.

Packet Type: 356 PMTK_API_SET_HDOP_THRESHOLD

Packet Meaning:

This command is to set the HDOP threshold. If the HDOP value is larger than this threshold value, the position will not be fixed.

Data Field:

PMTK356,HDOPThreshold

HDOPThreshold: 0 means disable this function or other value enable this function.

Example:

$PMTK356,5.0*35<CR><LF>

Return $PMTK356,5.0 Set OK!*52, it means setting is ok.

Packet Type: 357 PMTK_API_GET_HDOP_THRESHOLD

Packet Meaning:

This command is to get the HDOP threshold.

Data Field:

None

Example:

$PMTK357*33<CR><LF>

Return $PMTK357,5.0*34

Packet Type: 435 PMTK_API_Q_RTC_TIME

Packet Meaning:

This command is to get current RTC UTC Time

Data Field:

None

Example:

Input $PMTK435*30<CR><LF>

Return PMTK_API_DT_RTC_TIME packet

Packet Type: 535 PMTK_API_DT_RTC_TIME

Packet Meaning:

This packet includes current RTC UTC Time

Data Field:

PMTK535,Year,Month,Day,Hour,Min,Sec

Year: Year
Month: 1~12
Day: 1~31
Hour: 0~23
Min: 0~59
Sec: 0~59

Example:

$PMTK535,2016,4,21,6,29,37*3A

Packet Type: 250 PMTK_SET_DATA_PORT

Packet Meaning:

Set data port (UART1) input/output data type and baud rate

Data Field:

PMTK250,InType,OutType,Baudrate

InType: Data port input data type
- '0' = DPORT_IN_NONE (No data input)
- '1' = DPORT_IN_RTCM (RTCM input)
- '3' = DPORT_IN_NMEA (MTK NMEA)

OutType: Data port output data type
- '0' = DPORT_OUT_NONE (No data output0
- '1' = DPORT_OUT_NMEA (MTK NMEA)
- '3' = 2D/3D fix only

Baud rate: Data port input data type
- 4800
- 9600
- 14400
- 19200
- 38400
- 57600
- 115200

Example:

$PMTK250,1,3,9600*14<CR><LF>

Packet Type: 602 PMTK_Q_DATA_PORT

Packet Meaning:

Read data port input/output data type and baud rate

Data Field:

None

Example:

Input $PMTK602*36<CR><LF>

Return 702 PMTK_DT_DATA_PORT packet

Packet Type: 702 PMTK_Q_DATA_PORT

Packet Meaning:

Display data port input/output data type and baud rate

Data Field:

InType: Data port input data type

‘0’ = DPORT_IN_NONE (No data input)

‘1’ = DPORT_IN_RTCM (RTCM input)

‘3’ = DPORT_IN_NMEA (MTK NMEA)

OutType: Data port output data type

‘0’ = DPORT_OUT_NONE (No data output0

‘1’ = DPORT_OUT_NMEA (MTK NMEA)

‘3’ = 2D/3D fix only

Baud rate: Data port input data type

4800

9600

14400

19200

38400

57600

115200

Example:

$PMTK702,1,3,9600*16<CR><LF>

Notice:

How to calculate the checksum value

Example: $PMTK605*31<CR><LF>

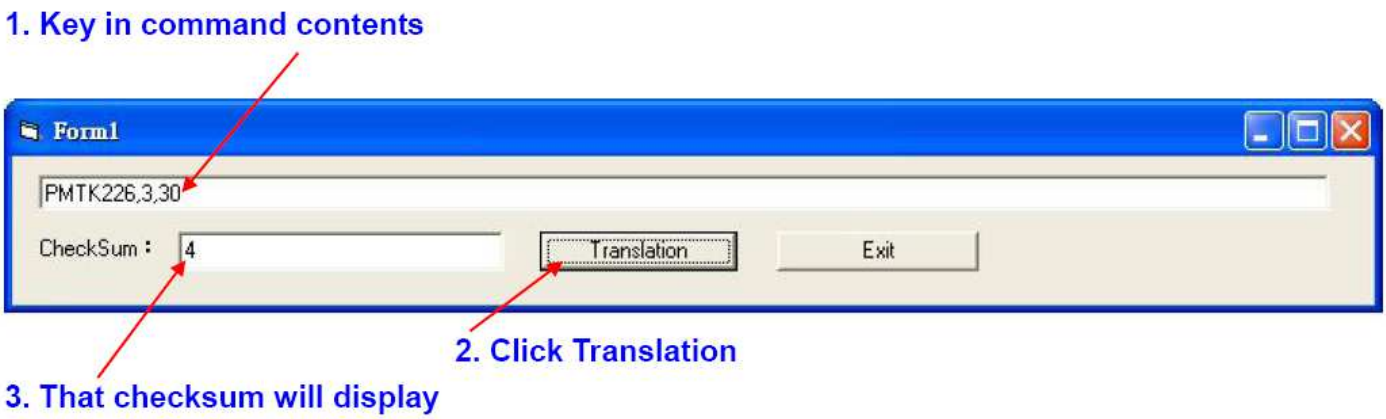
31 is the checksum, and it is calculated by **Xor** all characters between **$** and ***.

CR, LF：Two bytes binary data

The two bytes are used to identify the end of a packet

How to acquire that checksum value by checksum tool.

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



Command setting reset

Those command packet for module baud rate and update rate changed only temporary, when module power reset those update rate and baud rate must be back to original setting. If user want to change baud rate and update rate of module to other value that need GTop re-edit new firmware and burning it to module.