

# MTK NMEA Packet User Manual

**Revision: 0.71**

**Linked FW Version: Mcore 1.71**

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**San Jose Navigation, INC.**

## MTK NMEA Packet Format

Preamble	TalkerID	PktType	DataField	*	CHK1	CHK2	CR	LF
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### Packet Length:

The maximum length of each packet is restricted to **255** bytes

### Packet Contents:

**Preamble:** One byte character.

\$

**TalkerID:** Four bytes character string.

"PMTK"

**PktType:** Three bytes character string.

From "000" to "999"

An identifier used to tell the decoder how to decode the packet

**DataField:** The DataField has variable length depending on the packet type.

A comma symbol ',' must be inserted ahead each data field to help the decoder process the DataField.

\*: 1 byte character.

The star symbol is used to mark the end of DataField.

**CHK1, CHK2:** Two bytes character string.

CHK1 and CHK2 are the checksum of the data between Preamble and '\*'.

**CR, LF:** Two bytes binary data.

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

### Sample Packet:

\$PMTK000\*32<CR><LF>

## **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.

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### Packet Type: 000 PMTK\_TEST

**Packet Meaning:**

Test Packet.

**DataField:**

None

**Example:**

```
$PMTK000*32<CR><LF>
```

### Packet Type: 001 PMTK\_ACK

**Packet Meaning:**

Acknowledge of PMTK command

**DataField:**

***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

**DataField:**

Msg: The system message.

'0': UNKNOWN

'1': STARTUP

:

**Example:**

```
$PMTK010,001*2E<CR><LF>
```

### Packet Type: 101 PMTK\_CMD\_HOT\_START

**Packet Meaning:**

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

**DataField:**

None

**Example:**

```
$PMTK101*32<CR><LF>
```

**Packet Type: 102 PMTK\_CMD\_WARM\_START****Packet Meaning:**

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

**DataField:**

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.

**DataField:**

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.

**DataField:**

None

**Example:**

```
$PMTK104*37<CR><LF>
```

**Packet Type: 251 PMTK\_SET\_NMEA\_BAUDRATE****Packet Meaning:**

Set NMEA port baudrate

**DataField:**

**PMTK251,Baudrate**

Baudrate: Baudrate setting

0 – default setting

4800

9600

14400  
19200  
38400  
57600  
115200

**Example:**

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

**Packet Type: 300 PMTK\_API\_SET\_FIX\_CTL****Packet Meaning:**

API\_Set\_Fix\_Ctl

This parameter controls the rate of position fixing activity.

**DataField:**

***PMTK300,FixInterval,0,0,0,0***

FixInterval: Position fix interval [msec]. Must be larger than 200.

**Example:**

```
$PMTK300,1000,0,0,0,0*1C<CR><LF>
```

**Packet Type: 301 PMTK\_API\_SET\_DGPS\_MODE****Packet Meaning:**

API\_Set\_Dgps\_Mode

DGPS correction data source mode.

**DataField:**

***PMTK301,Mode***

Mode: DGPS data source mode.

'0': No DGPS source

'1': RTCM

'2': WAAS

**Example:**

```
$PMTK301,1*2D<CR><LF>
```

**Packet Type: 313 PMTK\_API\_SET\_SBAS\_ENABLED****Packet Meaning:**

API\_Set\_Sbas\_Enabled

Enable to search a SBAS satellite or not.

**DataField:**



Enabled: Enable or disable

'0' = Disable

'1' = Enable

**Example:**

\$PMTK313,1\*2E<CR><LF>

**Packet Type: 314 PMTK\_API\_SET\_NMEA\_OUTPUT**

**Packet Meaning:**

API\_Set\_NMEA\_Out

Set NMEA sentence output frequencies.

**DataField:**

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 NMEA\_SEN\_GRS, // GPGRS interval - GNSS Range Residuals
- 7 NMEA\_SEN\_GST, // GPGST interval - GNSS Pseudorange Erros Statistics
- 13 NMEA\_SEN\_MALM, // PMTKALM interval - GPS almanac information
- 14 NMEA\_SEN\_MEPH, // PMTKEPH interval - GPS ephemeris information
- 15 NMEA\_SEN\_MDGP, // PMTKDGP interval - GPS differential correction information
- 16 NMEA\_SEN\_MDBG, // PMTKDBG interval – MTK debug information
- 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:**

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

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: 320 PMTK\_API\_SET\_PWR\_SAV\_MODE

**(Caution: This command is for internal test only)**

**Packet Meaning:**

API\_Set\_Pwr\_Sav\_Mode

Set power saving operation mode.

**DataField:**

***PMTK320,Mode***

Mode: 0: PWR\_SAV\_OFF: power saving mode off

1: PWR\_SAV\_ON: power saving mode on

**Example:**

```
$PMTK320,0*26<CR><LF>
```

### Packet Type: 330 PMTK\_API\_SET\_DATUM

**Packet Meaning:**

API\_Set\_Datum

Set default datum.

**DataField:**

***PMTK330,Datum***

Datum: 0: WGS84

1: TOKYO-M

2: TOKYO-A

Support 219 different datums. The total datums list in the Appendix A.

**Example:**

```
$PMTK330,0*2E<CR><LF>
```

## Packet Type: 331 PMTK\_API\_SET\_DATUM\_ADVANCE

### Packet Meaning:

API\_Set\_Datum\_Advance

Set user defined datum.

### DataField:

**PMTK331,majA,ecc,dX,dY,dZ**

majA: User defined datum semi-major axis [m]

ecc: User defined datumeccentric [m]

dX: User defined datum to WGS84 X axis offset [m]

dY: User defined datum to WGS84 X axis offset [m]

dZ: User defined datum to WGS84 X axis offset [m]

### Example:

\$PMTK331, 6377397.155, 299.1528128, -148.0, 507.0,685.0\*16<CR><LF>

## Packet Type: 390 PMTK\_API\_SET\_USER\_OPTION

### Packet Meaning:

API\_Set\_Flash\_User\_Option

Write the user setting to the flash to override the default setting. Maximum 8 times without erase the chip. This feature may not be available.

### DataField:

**PMTK390, Lock, Update\_Rate, Baud\_Rate, GLL\_Period, RMC\_Period, VTG\_Period, GSA\_Period, GSV\_Period, GGA\_Period, ZDA\_Period, MCHN\_Period**

Lock: nonzero: freeze the setting; 0: allow further setting

Update\_Rate: 1~5 (Hz)

Baud\_Rate: 115200, 57600, 38400, 19200, 14400, 9600, 4800

XXX\_Period: NMEA sentence output period

### Example:

\$PMTK390,1,1,38400,1,1,1,1,1,1,1,0\*2B<CR><LF>

## Packet Type: 400 PMTK\_API\_Q\_FIX\_CTL

### Packet Meaning:

API\_Query\_Fix\_Ctl

### DataField:

None

### Return:

PMTK\_DT\_FIX\_CTL

### Example:

\$PMTK400\*36<CR><LF>

### Packet Type: 401 PMTK\_API\_Q\_DGPS\_MODE

**Packet Meaning:**

API\_Query\_Dgps\_Mode

**DataField:**

None

**Return:**

PMTK\_DT\_DGPS\_MODE

**Example:**

\$PMTK401\*37<CR><LF>

### Packet Type: 413 PMTK\_API\_Q\_SBAS\_ENABLED

**Packet Meaning:**

API\_Query\_Sbas\_Enabled

**DataField:**

None

**Return:**

PMTK\_DT\_SBAS\_ENABLED

**Example:**

\$PMTK413\*34<CR><LF>

### Packet Type: 414 PMTK\_API\_Q\_NMEA\_OUTPUT

**Packet Meaning:**

API\_Query\_NMEA\_Out

Query current NMEA sentence output frequencies.

**DataField:**

None

**Return:**

PMTK\_DT\_NMEA\_OUTPUT

**Example:**

\$PMTK414\*33<CR><LF>

### Packet Type: 420 PMTK\_API\_Q\_PWR\_SAV\_MODE

**(Caution: This command is for internal test only)**

**Packet Meaning:**

API\_Query\_Pwr\_Sav\_Mode

Query power saving operation mode.

**DataField:**

None

**Return:**

PMTK\_DT\_PWR\_SAV\_MODE

**Example:**

\$PMTK420\*3F<CR><LF>

**Packet Type: 430 PMTK\_API\_Q\_DATUM****Packet Meaning:**

API\_Query\_Datum  
Query default datum

**DataField:**

None

**Return:**

PMTK\_DT\_DATUM

**Example:**

\$PMTK430\*35<CR><LF>

**Packet Type: 431 PMTK\_API\_Q\_DATUM\_ADVANCE****Packet Meaning:**

API\_Query\_Datum\_Advance  
Query user defined datum

**DataField:**

None

**Return:**

PMTK\_DT\_DATUM

**Example:**

\$PMTK431\*34<CR><LF>

**Packet Type: 490 PMTK\_API\_GET\_USER\_OPTION****Packet Meaning:**

API\_Get\_Flash\_User\_Option

Returns the current user setting from the flash memory. Please refer to Packet Type 590 for the detailed information.

**DataField:**

None

**Return:**

PMTK\_DT\_FLASH\_USER\_OPTION

**Example:**

\$PMTK490\*33<CR><LF>

**Packet Type: 500 PMTK\_DT\_FIX\_CTL****Packet Meaning:**

These parameters control the rate of position fixing activity.

**DataField:**

FixInterval: Position fix interval. (msec). [ >= 200]

**Example:**

\$PMTK500,1000,0,0,0,0\*1A<CR><LF>

**Packet Type: 501 PMTK\_DT\_DGPS\_MODE****Packet Meaning:**

DGPS Data Source Mode

**DataField:**

Mode: DGPS data source mode

'0': No DGPS source

'1': RTCM

'2': WAAS

**Example:**

\$PMTK501,1\*2B<CR><LF>

**Packet Type: 513 PMTK\_DT\_SBAS\_ENABLED****Packet Meaning:**

Enable to search a SBAS satellite or not.

**DataField:**

Enabled: Enable or disable

'0' = Disable

'1' = Enable

**Example:**

\$PMTK513,1\*28<CR><LF>

**Packet Type: 514 PMTK\_DT\_NMEA\_OUTPUT****Packet Meaning:**

NMEA sentence output frequency setting

**DataField:**

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 Sentences and Frequency Setting.

**Example:**

```
$PMTK514,1,1,1,1,1,5,1,1,1,1,1,0,1,1,1,1,1*2A<CR><LF>
```

**Packet Type: 520 PMTK\_DT\_PWR\_SAV\_MODE**

**(Caution: This command is for internal test only)**

**Packet Meaning:**

Power saving operation mode.

**DataField:**
***PMTK520,Mode***

Mode: 0: PWR\_SAV\_OFF: power saving mode off

1: PWR\_SAV\_ON: power saving mode on

**Example:**

```
$PMTK520,0*24<CR><LF>
```

**Packet Type: 530 PMTK\_DT\_DATUM**
**Packet Meaning:**

Current datum used.

**DataField:**
***PMTK530,Datum***

Datum: 0: WGS84

1: TOKYO-M

2: TOKYO-A

**Example:**

```
$PMTK530,0*28<CR><LF>
```

**Packet Type: 590 PMTK\_DT\_FLASH\_USER\_OPTION**
**Packet Meaning:**

The user setting in the flash memory.

**DataField:**

There are totally 11 data fields that present the followings:

1. Available number of times for recording the user setting.
2. Update\_Rate: 1~5
3. Baud\_Rate: in bps

4~11: NMEA sentence output period (GLL, RMC, VTG, GSA, GSV, GGA, ZDA, MCHN)

**Example:**

```
$PMTK590,0,1,9600,1,1,0,1,5,1,0,0*2A<CR><LF>
```

**Packet Type: 604 PMTK\_Q\_VERSION****Packet Meaning:**

Query the version information of FW

**DataField:**

NONE

**Return:**

PMTK\_DT\_VERSION

**Example:**

```
$PMTK604*6D<CR><LF>
```

**Packet Type: 605 PMTK\_Q\_RELEASE****Packet Meaning:**

Query the firmware release information.

**DataField:**

NONE

**Return:**

PMTK\_DT\_RELEASE

**Example:**

```
$PMTK605*31<CR><LF>
```

**Packet Type: 704 PMTK\_DT\_VERSION****Packet Meaning:**

Version information of FW.

**DataField:**

***PMTK704,FWVrsn1, FWVrsn2, FWVrsn3***

Vrsn: MainVersion\_ReleaseNumber

**Example:**

```
$PMTK704,1.881_06,0606_m0138,0000*52<CR><LF>
```

**Packet Type: 705 PMTK\_DT\_RELEASE****Packet Meaning:**

Firmware release information.

**DataField:**



***PMTK705,ReleaseStr,ModelID***

ReleaseStr: Firmware release name and version

ModelID: Model ID

**Example:**

```
$PMTK705,Mcore_1.3,0000*15<CR><LF>
```

**Appendix A: Datum List**

No	Datum	Region
0	WGS1984	International
1	Tokyo	Japan
2	Tokyo	Mean For Japan, South Korea, Okinawa
3	User Setting	User Setting
4	Adindan	Burkina Faso
5	Adindan	Cameroon
6	Adindan	Ethiopia
7	Adindan	Mali
8	Adindan	Mean For Ethiopia, Sudan
9	Adindan	Senegal
10	Adindan	Sudan
11	Afgooye	Somalia
12	Ain El Abd1970	Bahrain
13	Ain El Abd1970	Saudi Arabia
14	American Samoa1962	American Samoa Islands
15	Anna 1 Astro1965	Cocos Island
16	Antigua Island Astro1943	Antigua(Leeward Islands)
17	Arc1950	Botswana
18	Arc1950	Burundi
19	Arc1950	Lesotho
20	Arc1950	Malawi
21	Arc1950	Mean For Botswana, Lesotho, Malawi, Swaziland, Zaire, Zambia, Zimbabwe
22	Arc1950	Swaziland
23	Arc1950	Zaire
24	Arc1950	Zambia
25	Arc1950	Zimbabwe
26	Arc1960	Mean For Kenya Tanzania
27	Arc1960	Kenya
28	Arc1960	Tanzania
29	Ascension Island1958	Ascension Island
30	Astro Beacon E 1945	Iwo Jima
31	Astro Dos 71/4	St Helena Island
32	Astro Tern Island (FRIG) 1961	Tern Island
33	Astronomical Station 1952	Marcus Island
34	Australian Geodetic 1966	Australia, Tasmania

35	Australian Geodetic 1984	Australia, Tasmania
36	Ayabelle Lighthouse	Djibouti
37	Bellevue (IGN)	Efate and Erromango Islands
38	Bermuda 1957	Bermuda
39	Bissau	Guinea-Bissau
40	Bogota Observatory	Colombia
41	Bukit Rimpah	Indonesia(Bangka and Belitung Ids)
42	Camp Area Astro	Antarctica(McMurdi Camp Area)
43	Campo Inchauspe	Argentina
44	Canton Astro1966	Phoenix Island
45	Cape	South Africa
46	Cape Canaveral	Bahamas, Florida
47	Carthage	Tunisia
48	Chatham Island Astro1971	New Zealand(Chatham Island)
49	Chua Astro	Paraguay
50	Corrego Alegre	Brazil
51	Dabola	Guinea
52	Deception Island	Deception Island, Antarctica
53	Djakarta (Batavia)	Indonesia(Sumatra)
54	Dos 1968	New Georgia Islands (Gizo Island)
55	Easter Island 1967	Easter Island
56	Estonia Coordinate System1937	Estonia
57	European 1950	Cyprus
58	European 1950	Egypt
59	European 1950	England, Channel Islands, Scotland, Shetland Islands
60	European 1950	England, Ireland, Scotland, Shetland Islands
61	European 1950	Finland, Norway
62	European 1950	Greece
63	European 1950	Iran
64	European 1950	Italy (Sardinia)
65	European 1950	Italy (Sicily)
66	European 1950	Malta
67	European 1950	Mean For Austria, Belgium,Denmark, Finland, France, W Germany, Gibraltar, Greece, Italy, Luxembourg, Netherlands, Norway, Portuga,l Spain, Sweden, Switzerland
68	European 1950	Mean For Austria, Debnmark,France, W Germany, Netherland , Switzerland
69	European 1950	Mean For Irag, Israel, Jordan, Lebanon, Kuwait, Saudi

		Arabia, Syria
70	European 1950	Portugal, Spain
71	European 1950	Tunisia,
72	European 1979	Mean For Austria, Finland ,Netherlands ,Norway, Spain, Sweden, Switzerland
73	Fort Thomas 1955	Nevis St Kitts (Leeward Islands)
74	Gan 1970	Republic Of Maldives
75	Geodetic Dataum 1970	New Zealand
76	Graciosa Base SW1948	Azores (Faial, Graciosa, Pico, Sao, Jorge, Terceria)
77	Guam1963	Guam
78	Gunung Segara	Indonesia (Kalimantan)
79	Gux I Astro	Guadalcanal Island
80	Herat North	Afghanistan
81	Hermannskogel Datum	Croatia-Serbia, Bosnia-Herzegovina
82	Hjorsey 1955	Iceland
83	Hongkong 1963	Hongkong
84	Hu Tzu Shan	Taiwan
85	Indian	Bangladesh
86	Indian	India,Nepal
87	Indian	Pakistan
88	Indian 1954	Thailand
89	Indian 1960	Vietnam (Con Son Island)
90	Indian 1960	Vietnam (Near 16 deg N)
91	Indian 1975	Thailand
92	Indonesian 1974	Indonesian
93	Ireland 1965	Ireland
94	ISTS 061 Astro 1968	South Georgia Islands
95	ISTS 073 Astro 1969	Diego Garcia
96	Johnston Island 1961	Johnston Island
97	Kandawala	Sri Lanka
98	Kerguelen Island 1949	Kerguelen Island
99	Kertau 1948	West Malaysia and Singapore
100	Kusaie Astro 1951	Caroline Islands
101	Korean Geodetic System	South Korea
102	LC5 Astro 1961	Cayman Brac Island
103	Leigon	Ghana
104	Liberia 1964	Liberia
105	Luzon	Philippines (Excluding Mindanao)

106	Luzon	Philippines (Mindanao)
107	M'Poraloko	Gabon
108	Mahe 1971	Mahe Island
109	Massawa	Ethiopia (Eritrea)
110	Merchich	Morocco
111	Midway Astro 1961	Midway Islands
112	Minna	Cameroon
113	Minna	Nigeria
114	Montserrat Island Astro 1958	Montserrat (Leeward Island)
115	Nahrwan	Oman (Masirah Island)
116	Nahrwan	Saudi Arabia
117	Nahrwan	United Arab Emirates
118	Naparima BWI	Trinidad and Tobago
119	North American 1927	Alaska (Excluding Aleutian Ids)
120	North American 1927	Alaska (Aleutian Ids East of 180 degW)
121	North American 1927	Alaska (Aleutian Ids West of 180 degW)
122	North American 1927	Bahamas (Except San Salvador Islands)
123	North American 1927	Bahamas (San Salvador Islands)
124	North American 1927	Canada (Alberta, British Columbia)
125	North American 1927	Canada (Manitoba, Ontario)
126	North American 1927	Canada (New Brunswick, Newfoundland, Nova Scotia, Qubec)
127	North American 1927	Canada (Northwest Territories, Saskatchewan)
128	North American 1927	Canada (Yukon)
129	North American 1927	Canal Zone
130	North American 1927	Cuba
131	North American 1927	Greenland (Hayes Peninsula)
132	North American 1927	Mean For Antigua, Barbados, Barbuda, Caicos Islands, Cuba, Dominican, Grand Cayman, Jamaica, Turks Islands
133	North American 1927	Mean For Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua
134	North American 1927	Mean For Canada
135	North American 1927	Mean For Conus
136	North American 1927	Mean For Conus (East of Mississippi, River Including Louisiana, Missouri, Minnesota)
137	North American 1927	Mean For Conus (West of Mississippi, Rive Excluding Louisiana, Minnesota, Missouri)
138	North American 1927	Mexico

139	North American 1983	Alaska (Excluding Aleutian Ids)
140	North American 1983	Aleutian Ids
141	North American 1983	Canada
142	North American 1983	Conus
143	North American 1983	Hahawii
144	North American 1983	Mexico, Central America
145	North Sahara 1959	Algeria
146	Observatorio Meteorologico 1939	Azores (Corvo and Flores Islands)
147	Old Egyptian 1907	Egypt
148	Old Hawaiian	Hawaii
149	Old Hawaiian	Kauai
150	Old Hawaiian	Maui
151	Old Hawaiian	Mean For Hawaii, Kauai, Maui, Oahu
152	Old Hawaiian	Oahu
153	Oman	Oman
154	Ordnance Survey Great Britian 1936	England
155	Ordnance Survey Great Britian 1936	England, Isle of Man, Wales
156	Ordnance Survey Great Britian 1936	Mean For England ,Isle of Man, Scotland, Shetland Island, Wales
157	Ordnance Survey Great Britian 1936	Scotland, Shetland Islands
158	Ordnance Survey Great Britian 1936	Wales
159	Pico de las Nieves	Canary Islands
160	Pitcairn Astro 1967	Pitcairn Island
161	Point 58	Mean For Burkina Faso and Niger
162	Pointe Noire 1948	Congo
163	Porto Santo 1936	Porto Santo, Maderia Islands
164	Provisional South American 1956	Bolovia
165	Provisional South American 1956	Chile (Northern Near 19 deg S)
166	Provisional South American 1956	Chile (Southern Near 43 deg S)
167	Provisional South American 1956	Colombia
168	Provisional South American 1956	Ecuador
169	Provisional South American 1956	Guyana

170	Provisional South American 1956	Mean For Bolivia Chile,Colombia, Ecuador, Guyana, Peru, Venezuela
171	Provisional South American 1956	Peru
172	Provisional South American 1956	Venezuela
173	Provisional South Chilean 1963	Chile (Near 53 deg S) (Hito XVIII)
174	Puerto Rico	Puerto Rico, Virgin Islands
175	Pulkovo 1942	Russia
176	Qatar National	Qatar
177	Qornoq	Greenland (South)
178	Reunion	Mascarene Island
179	Rome 1940	Italy (Sardinia)
180	S-42 (Pulkovo 1942)	Hungary
181	S-42 (Pulkovo 1942)	Poland
182	S-42 (Pulkovo 1942)	Czechoslovakia
183	S-42 (Pulkovo 1942)	Lativa
184	S-42 (Pulkovo 1942)	Kazakhstan
185	S-42 (Pulkovo 1942)	Albania
186	S-42 (Pulkovo 1942)	Romania
187	S-JTSK	Czechoslovakia (Prior 1 Jan1993)
188	Santo (Dos) 1965	Espirito Santo Island
189	Sao Braz	Azores (Sao Miguel, Santa Maria Ids)
190	Sapper Hill 1943	East Falkland Island
191	Schwarzeck	Namibia
192	Selvagem Grande 1938	Salvage Islands
193	Sierra Leone 1960	Sierra Leone
194	South American 1969	Argentina
195	South American 1969	Bolivia
196	South American 1969	Brazil
197	South American 1969	Chile
198	South American 1969	Colombia
199	South American 1969	Ecuador
200	South American 1969	Ecuador (Baltra, Galapagos)
201	South American 1969	Guyana
202	South American 1969	Mean For Argentina, Bolivia, Brazil,Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Trinidad and Tobago, Venezuela
203	South American 1969	Paraguay

204	South American 1969	Peru
205	South American 1969	Trinidad and Tobago
206	South American 1969	Venezuela
207	South Asia	Singapore
208	Tananarive Observatory 1925	Madagascar
209	Timbalai 1948	Brunei, E Malaysia (Sabah Sarawak)
210	Tokyo	Japan
211	Tokyo	Mean For Japan, South Korea, Okinawa
212	Tokyo	Okinawa
213	Tokyo	South Korea
214	Tristan Astro 1968	Tristam Da Cunha
215	Viti Levu 1916	Fiji (Viti Levu Island)
216	Voirol 1960	Algeria
217	Wake Island Astro 1952	Wake Atoll
218	Wake-Eniwetok 1960	Marshall Islands
219	WGS 1972	Global Definition
220	WGS 1984	Global Definition
221	Yacare	Uruguay
222	Zanderij	Suriname