Version History

Date	Version	Author	Comments
01/06/2009	1.0	Lunglin Shr	Initial version

1 NMEA Input/Output Message

The unit may also output data in NMEA-0183 format as defined by the *National Marine Electronics Association* (NMEA), Standard For Interfacing Marine Electronics Devices, Version, January 1,1997.

1.1 Prototype of NMEA Message

This NMEA input/output message is designed to include:

Start Sequence: Start with character '$' and behind it is the string representing message type.

Payload: Datum collected to input/output and being separated with comma.

Checksum: The value of checksum-algorithm.

Start Sequence	Payload	Checksum	End Sequence

1.2 Checksum

The checksum is two-byte in the payload data. The following pseudo code defines the algorithm used.

```
Let message to be the array of bytes to be sent by the transport.
Index  =  1
checkSum  =  0
while message[ Index != '*' ]
 checkSum  ^=  message[ index++ ]
```

Checksum will skip the '$' character and then be calculated one character by one character using XOR(EXCLUSIVE-OR) operator to do so until getting '*'

1.3 NMEA Output Message

The unit outputs the following messages as shown below (Table 1-1).

Table 1-1 NMEA-0183 Output Messages

Option	Description
GGA	Time, position, and fix related data for a GPS receiver.
GLL	Latitude and longitude of present position, time of position fix and status.
GSA	GPS receiver operating mode, satellites used in the position solution, and DOP values.
GSV	The number of GPS satellites in view satellite ID numbers, elevation, azimuth, and SNR values.
RMC	Time, date, position, course and speed data provided by the GPS receiver.
VTG	The actual course and speed relative to the ground.

1.3.1 GGA–Global Positioning System Fixed Data

```
                                                    11
      1          2         3 4          5 6 7  8     9    10 |   12  13  14   15
      |          |         | |          | | |  |     |     | |   |   |   |    |
$GPGGA,hhmmss.sss,llll.llll,a,yyyyy.yyyy,a,x,xx,xx.xx,xx.x,M,xx.x,M,xxxx,xxxx*hh
```

1. Time (UTC)
2. Latitude
3. N or S (North or South)
4. Longitude
5. E or W (East or West)
6. GPS Quality Indicator,
   0 - fix not available,
   1 - GPS fix,
   2 - Differential GPS fix
7. Number of satellites in view, 00 – 12
8. Horizontal Dilution of precision
9. Antenna Altitude above/below mean-sea-level (geoid)
10. Units of antenna altitude, meters
11. Geoidal separation, the difference between the WGS-84 earth ellipsoid and mean-sea-level(geoid), "-" means mean-sea-level below ellipsoid
12. Units of geoidal separation, meters
13. Age of differential GPS data, time in seconds since last SC104 type 1 or 9 update, null field when DGPS is not used
14. Differential reference station ID, 0000-1023
15. Checksum

1.3.2 GLL—Geographic Position - Latitude/Longitude

```
      1         2 3          4 5          6 7 8
      |         | |          | |          | | |
$GPGLL,llll.llll,a,yyyyy.yyyy,a,hhmmss.sss,A,A*hh
```

1. Latitude
2. N or S (North or South)
3. Longitude
4. E or W (East or West)
5. Time (UTC)
6. Status A - Data Valid, V - Data Invalid
7. Mode Indicator
   - A – Autonomous
   - D – Differential
   - E – Estimated
   - N – Data not valid
8. Checksum

1.3.3 GSA—GNSS DOP and Active Satellites

```
      1 2 3                                 14 15    16    17    18
      | | |                                  |  |     |     |     |
$GPGSA,a,a,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx.xx,xx.xx,xx.xx*hh
```

1. Selection mode
2. Mode
3. ID of 1st satellite used for fix
4. ID of 2nd satellite used for fix

...

14. ID of 12th satellite used for fix
15. PDOP in meters
16. HDOP in meters
17. VDOP in meters
18. Checksum

1.3.4 *GSV–GNSS Satellites in View*

```
      1 2 3   4  5  6    7      8
      | | |   |  |  |    |      |
$GPGSV,x,x,xx,xx,xx,xxx,xx,...*hh
```

1. Total number of messages
2. Message number
3. Satellites in view
4. Satellite number
5. Elevation in degrees
6. Azimuth in degrees to true
7. SNR in dB

...

more satellite infos like 4. to 7.

8. Checksum

1.3.5 RMC–Recommended Minimum Specific GNSS Data

```
                                                          11  13
      1          2 3         4 5          6 7   8      9    10|12 |
      |          | |         | |          | |   |      |     || |  |
$GPRMC,hhmmss.sss,A,llll.llll,a,yyyyy.yyyy,a,x.xx,xx.xx,DDMMYY,,,a*hh
```

1. Time (UTC)
2. Status, V = Navigation receiver warning
3. Latitude
4. N or S
5. Longitude
6. E or W
7. Speed over ground, knots
8. Track made good, degrees true
9. Date, DDMMYY
10. Magnetic Variation, degrees
11. E or W
12. Mode Indicator
    - A – Autonomous
    - D – Differential
    - E – Estimated
    - N – Data not valid
13. Checksum

1.3.6 VTG–Course Over Ground and Ground Speed

```
             4
      1     2 3| 5   6 7   8 9 10
      |     | || |   | |   | | |
$GPVTG,xx.xx,T,,M,x.x,N,x.x,K,a*hh
```

1. Track Degrees
2. T = True
3. Track Degrees
4. M = Magnetic
5. Speed Knots
6. N = Knots
7. Speed Kilometers Per Hour
8. K = Kilometres Per Hour
9. Mode Indicator
   - A – Autonomous
   - D – Differential
   - E – Estimated
   - N – Data not valid
10. Checksum

1.4 NMEA Input Messages

NMEA input messages are provided to allow you to control the Evaluation Receiver while in NMEA protocol mode.

Transport Message

Preamble	TalkerID	PktType	DataField	*	**Checksum**	**End Sequence**
$	PMTK	<MID>		*	CKSUM	<CR> <LF>
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**"

DataField: The DataField has variable length

1.4.1 *Packet Type: 000 PMTK_TEST*

Packet Meaning:

Test Packet.

DataField:

None

Example:

$PMTK000*32<CR><LF>

1.4.2 *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>

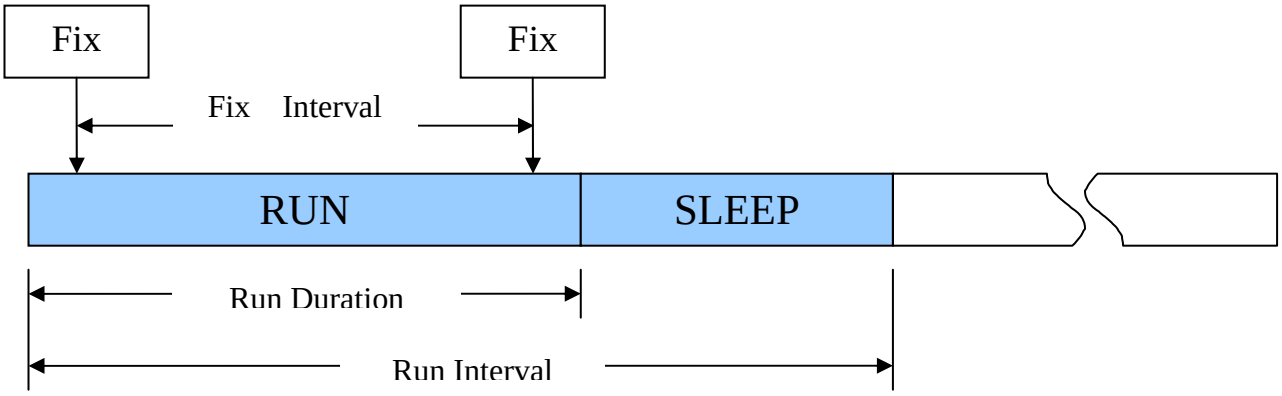
1.4.3 *Packet Type: 221 PMTK_SET_INTMT*

Packet Meaning:

Intermittent Mode Setting:

In RUN stage, the GPS receiver measures and calculates positions according to fix interval setting.

In SLEEP stage, the GPS receiver goes into sleep mode, where DSP stays in Power Save mode, RF works in FULLY_ACTIVE mode. In this stage, the GPS receiver will stop receiving navigation data(ephemeris, almanac, etc.)



DataField:

PMTK221,RunDuration,RunInterval

RunDuration: Duration [msec] to fix for (or attempt to fix for) before switching from running mode back to a minimum power sleep mode.

Flag: '0' : Disable

>= '200' : Enable

RunInterval: Interval[msec] to come out of a minimum power sleep mode and start running in order to get a new position fix.

Some restrictions for the parameters:

(1) RunDuration >= 200 ms

(2) RunDuration <= RunInterval

(3) RunInterval <= 86400 ms

Example:

Fix 5 seconds and then sleep 5 seconds periodically

$PMTK221,5000,10000*07<CR><LF>

1.4.4 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>

1.4.5 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].

USB Interface : Must be larger than 100.

UART Interface : Must be larger than 200.

Example:

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

1.4.6 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’: SBAS

Example:

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

1.4.7 Packet Type: 313 PMTK_API_SET_SBAS_ENABLED

Packet Meaning:

API_Set_Sbas_Enabled

Enable to search a SBAS satellite or not.

DataField:

PMTK313,Enabled

Enabled: Enable or disable

‘0’ = Disable

‘1’ = Enable

Example:

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

1.4.8 *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_GLL**	*Geographic Position - Latitude longitude*
1	**NMEA_RMC**	*Recomended Minimum Specific GNSS Data*
2	**NMEA_VTG**	*Course Over Ground and Ground Speed*
3	**NMEA_GGA**	*Global Positioning System Fixed Data*
4	**NMEA_GSA**	*GNSS DOPS and Active Satellites*
5	**NMEA_GSV**	*GNSS Satellites in View*
6~18		**NOT Supported**

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:

$PMTK314,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0*28<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.

You can also restore the system default setting via issue:

$PMTK314,-1*04<CR><LF>

1.4.9 Packet Type: 320 PMTK_API_SET_PWR_SAV_MODE

Packet Meaning:

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*2F<CR><LF>

1.4.10 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>

1.4.11 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>

1.4.12 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>

1.4.13 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>

1.4.14 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>

1.4.15 *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>

1.4.16 *Packet Type: 500 PMTK_DT_FIX_CTL*

Packet Meaning:

These parameters control the rate of position fixing activity.

DataField:

FixInterval: Position fix interval. (msec).

USB Interface : interval >= 100

UART Interface : interval >= 200

Example:

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

1.4.17 *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’: SBAS

Example:

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

1.4.18 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>

1.4.19 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:

$PMTK514,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0*2E<CR><LF>

1.4.20 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>

◆ 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	Tamzamia
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

No	Datum	Region
35	Australian Geodetic 1984	Australia, Tasmania
36	Ayabelle Lighthouse	Djibouti
37	Bellevue (IGN)	Efate and Erromango Islands
38	Bermuda 1957	Bermuda
39	Bissau	Guuinea-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, Antarctia
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 (Slcily)
66	European 1950	Malta

No	Datum	Region
67	European 1950	Mean For Austria, Belgium,Denmark, Finland, France, WGermany,Gibraltar,Greece,Italy,Luxembourg,Netherlands,Norway,Portugal, 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 l Astro	Guadalcanal Island
80	Herat North	Afghanistan
81	Hermannskogel Datum	Croatia-Serbia, Bosnia-Herzegoivna
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

No	Datum	Region
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)

No	Datum	Region
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 IncludingLouisiana,Missouri, Minnesota)
137	North American 1927	Mean For Conus (West of Mississippi, Rive ExcludingLouisiana,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 Meteorologico1939	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

No	Datum	Region
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)

No	Datum	Region
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)	Czechoslavakia
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	Czechoslavakia (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	Brazial
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

No	Datum	Region
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