APPENDIX 1

DATA SHEET OF GPS RECEIVER JP3

A1.1 GLOBAL POSITIONING SYSTEM

The Global Positioning System (GPS) uses satellite navigation, an entirely new concept in navigation. GPS has become established in many areas, for example, in civil aviation or deep-sea shipping. The GPS system is operated by the government of the United States of America, which also has sole responsibility for the accuracy and maintenance of the system. The system is constantly being improved and may entail modifications effecting the accuracy and performance of the GPS equipment. The top view and receiver architecture of the GPS receiver JP3 are given in Figures A1.1 and A1.2.

A1.2 RECEIVER ARCHITECTURE

Figure A1.1 Top View of GPS Receiver JP3
A1.2 GPS Receiver JP3 Architecture

A1.3 TECHNICAL SPECIFICATIONS

General

Frequency        L1, 1575.42 MHz
C/A code         1.023 MHz chip rate
Channels         12

Accuracy

Position         10 meters CEP without SA
Velocity         0.1 meters/second, without SA
Time             1 microsecond synchronized to GPS time

Datum

WGS-84
**Acquisition Rate**

Snap start  < 3 sec., average

Hot start  < 8 sec., average

Warm start  < 38 sec., average

Cold start  < 45 sec., average

**Dynamic Conditions**

Altitude  18,000 meters (60,000 feet) max.

Velocity  < 515 meters/second (1000 knots) max.

Acceleration  4 g, max.

Jerk  20 meters/second³, max.

**DC Power**

Main power  + 3.3 V DC ±5 %

Continuous mode  65 mA at 3.3 V DC

Backup battery power  typical 3 V DC (min. 1.85 V, max. 3.6 V)

**Serial Port**

Electrical interface  Two full duplex serial communication, CMOS.

Protocol messages  SiRF binary and NMEA-0183, version 2.20 with a baud rate selection
SiRF binary – position, velocity, altitude, status and control NMEA – GGA, GLL, GSA, GSV, RMC and VTG
Factory settings are:

NMEA 4800 baud, 8 data bits, no parity, 1 stop bit.

DGPS protocol: RTCM SC-104, version 2.00, type 1, 5 and 9

**Time – 1PPS Pulse**

<table>
<thead>
<tr>
<th>Level</th>
<th>CMOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse duration</td>
<td>100 ms</td>
</tr>
<tr>
<td>Time reference</td>
<td>At the pulse positive edge</td>
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</table>
**APPENDIX 2**

**ROUTING INFORMATION PROTOCOL**

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<thead>
<tr>
<th>8</th>
<th>16</th>
<th>32 bit</th>
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<tbody>
<tr>
<td>Command</td>
<td>Version</td>
<td>Unused</td>
</tr>
<tr>
<td>Address family identifier</td>
<td>Route tag (only for RIP 2; 0 for RIP 1)</td>
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</tr>
<tr>
<td>IP address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subnet mask (only for RIP 2; 0 for RIP 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Next hop (only for RIP 2; 0 for RIP 1)</td>
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<td></td>
</tr>
<tr>
<td>Metric</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure A2.1  Protocol Structure of RIP**