Precision Navigation for the Marine Environment

The WORKHORSE NAVIGATOR is the industry’s first choice for precision navigation applications. Teledyne RDI’s highly acclaimed Doppler Velocity Log (DVL) provides precise velocity and altitude updates for a wide variety of underwater tasks.

The highly flexible design allows the unit to be used in a stand-alone configuration or integrated with other navigation systems.

The compact and powerful Workhorse Navigator provides:

- Broadband processing technology, providing users with both short and long-term high-precision velocity data
- Reliable, accurate high-rate navigation and positioning data
- Proven bottom detection algorithms, and single ping bottom location, for robust and reliable bottom tracking over indeterminate terrain
- Superior low-altitude bottom tracking capability
- Real-time current profiling data

**PRODUCT FEATURES**

**Navigator Full Suite of Capabilities:**
- Bottom track velocity
- Water track velocity
- Altitude: 4 individual measurements
- Error velocity (data quality indicator)
- Temperature
- Heading/Tilt
- Acoustic echo intensity

**Navigator Applications:**
- Subsea vehicle and surface vessel navigation
- Hydrographic, geophysical, and oceanographic survey positioning data
- LBL and USBL position aiding
- Spool piece metrology

**Navigator Applications:**
- Inertial navigation correction and integration
- Cable burial operations
- Deep water positioning
- Station keeping and autopilot control
- Pipeline touchdown monitoring
- Dredge spoils, plume, and sediment tracking

A Teledyne Marine Company
## TECHNICAL SPECIFICATIONS

### Bottom Velocity

<table>
<thead>
<tr>
<th></th>
<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single-ping precision</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std dev at 1m/s¹</td>
<td>±0.4cm/s</td>
<td>±0.3cm/s</td>
<td>±0.3cm/s</td>
</tr>
<tr>
<td>Std dev at 3m/s¹</td>
<td>±0.7cm/s</td>
<td>±0.5cm/s</td>
<td>±0.5cm/s</td>
</tr>
<tr>
<td>Std dev at 5m/s¹</td>
<td>±0.9cm/s</td>
<td>±0.7cm/s</td>
<td>±0.7cm/s</td>
</tr>
<tr>
<td>Long-term accuracy</td>
<td>±0.4%±0.2cm/s</td>
<td>±0.2%±0.1cm/s</td>
<td>±0.2%±0.1cm/s</td>
</tr>
<tr>
<td><strong>Minimum altitude¹</strong></td>
<td>1.0m</td>
<td>0.7m</td>
<td>0.5m (0.25 optional)</td>
</tr>
<tr>
<td><strong>Maximum altitude¹</strong></td>
<td>200m</td>
<td>90m</td>
<td>25m</td>
</tr>
</tbody>
</table>

### Parameters

<table>
<thead>
<tr>
<th></th>
<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Velocity range¹</strong></td>
<td>±10m/s</td>
<td>±10m/s</td>
<td>±10m/s</td>
</tr>
<tr>
<td><strong>Velocity resolution</strong></td>
<td>0.1cm/s</td>
<td>0.1cm/s</td>
<td>0.1cm/s</td>
</tr>
<tr>
<td><strong>Ping rate</strong></td>
<td>7Hz max</td>
<td>7Hz max</td>
<td>7Hz max</td>
</tr>
</tbody>
</table>

### Water Reference Velocity

<table>
<thead>
<tr>
<th></th>
<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>±0.4%±0.2cm/s selectable</td>
<td>±0.3%±0.2cm/s selectable</td>
<td>±0.2%±0.1cm/s selectable</td>
</tr>
<tr>
<td><strong>Layer size</strong></td>
<td>1.9m</td>
<td>1.2m</td>
<td>0.8m</td>
</tr>
<tr>
<td><strong>Minimum range</strong></td>
<td>110m</td>
<td>50m</td>
<td>15m</td>
</tr>
<tr>
<td><strong>Maximum range</strong></td>
<td>3000m or 6000m</td>
<td>3000m or 6000m</td>
<td>3000m or 6000m</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th></th>
<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-5 to 45°C</td>
<td>-5 to 45°C</td>
<td>-5 to 45°C</td>
</tr>
<tr>
<td><strong>Storage temperature</strong></td>
<td>-30 to 60°C</td>
<td>-30 to 60°C</td>
<td>-30 to 60°C</td>
</tr>
<tr>
<td><strong>Depth rating</strong></td>
<td>3000m or 6000m</td>
<td>3000m or 6000m</td>
<td>3000m or 6000m</td>
</tr>
<tr>
<td><strong>Weight in air</strong>: 3000m</td>
<td>15.8kg</td>
<td>15.8kg</td>
<td>12.4kg</td>
</tr>
<tr>
<td>6000m</td>
<td>20.1kg</td>
<td>20.1kg</td>
<td>18.0kg</td>
</tr>
<tr>
<td><strong>Weight in water</strong>: 3000m</td>
<td>8.8kg</td>
<td>8.8kg</td>
<td>6.1kg</td>
</tr>
<tr>
<td>6000m</td>
<td>13.6kg</td>
<td>13.6kg</td>
<td>12.1kg</td>
</tr>
</tbody>
</table>

### Power

<table>
<thead>
<tr>
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<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC input current</strong></td>
<td>66w</td>
<td>21w</td>
<td>8w</td>
</tr>
<tr>
<td><strong>Transmit Peak power @ 24VDC</strong></td>
<td>8w</td>
<td>3w</td>
<td>3w</td>
</tr>
<tr>
<td><strong>Average power (typical)</strong></td>
<td>20–50VDC, external supply (48VDC typical)</td>
<td>0.4A minimum power supply capability</td>
<td></td>
</tr>
</tbody>
</table>

### Standard Sensors

<table>
<thead>
<tr>
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<th>WHN 300</th>
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<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compass</strong></td>
<td>±2° @ 60° dip, 0.5g</td>
<td>±0.5° up to ±15°</td>
<td>±0.5° up to ±15°</td>
</tr>
<tr>
<td><strong>Tilt</strong></td>
<td>±0.5° up to ±15°</td>
<td>±0.5° up to ±15°</td>
<td>±0.5° up to ±15°</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-5° to 45°C</td>
<td>-5° to 45°C</td>
<td>-5° to 45°C</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
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<th>WHN 300</th>
<th>WHN 600</th>
<th>WHN 1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Configuration</strong></td>
<td>4-beam Janus array convex transducer, 30° beam angle</td>
<td>NMEA0183, ASCII, or binary outputs at 1200–115,200 baud user-selectable; serial port is switch-selectable for RS232 or RS422</td>
<td></td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Trigger inputs</strong></td>
<td>1) ASCII; 2) RDS3; 3) low latency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Options

- Current profiling firmware upgrade
- Integrated pressure sensor (±0.25% full scale)
- 25m serial/DC/computer cable
- 5m serial/DC/computer cable
- Internal memory cards (2GB max)
- Enhanced low altitude bottom tracking for model 1200

### Dimensions

<table>
<thead>
<tr>
<th></th>
<th>WHN 300/600: Height 244.5mm, diameter 225.2mm</th>
<th>WHN 1200: Height 242.9mm, diameter 201.9mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(line drawings available upon request)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Standard deviation refers to single-ping horizontal velocity, specified at half the maximum altitude.
² @5°C and 35 ppt, 42VDC.
³ Maximum bottom-tracking range may be reduced due to flow noise at high speed and/or cavitation.
⁴ @ 15% duty cycle at peak power (standby 1mW).

Specifications subject to change without notice.
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