**DredgeGUARD**

*Real Time Dredging Information designed for digging equipment such as excavators, bucket dredgers and backhoe dredgers*

**INTRODUCTION**

DREDGEGUARD is positioning hardware and software for a wide range of digging equipment such as excavators, bucket dredgers, backhoes, DOP-pumps and clamshell dredgers.

The position of the digging tool in relation to the defined dredging area and area topography is presented in a clear manner. With a high degree of accuracy the operator on board can follow the dredging process under the water line. In this way the efficiency and production of each project can be improved.

The survey data is loaded into a color coded matrix. The survey data can come from single beam data, multibeam data or multiple transducer data. The system will monitor the exact position and depth of the digging tool and keep track of an ‘As Dredged’ surface. The user is able to see exactly where the digging tool is in plan view and in profile view. He is also able to see the channel design depth and channel overdepth in profile view. Dredging plans can be simple channels or complex surfaces.

DREDGEGUARD is used for other underwater activities such as dumping and ground levelling as well.
DredgeGuard Software

Much consideration has been given to present the information in a clear and relevant manner with straightforward control in order for DREDGEGUARD to be productive from day one. DREDGEGUARD has various alarm functions. The program monitors the depth tolerances, GPS quality and all other connected sensors. By means of colour changes of the indicated information the status and reliability of the signals are shown.

DREDGEGUARD provides the possibility for the logging of the dredge position and depth on the basis depth and theoretical profile. DREDGEGUARD has the possibility to “dredge” colours.

With this function, the colour map is automatically updated with the information of digging/dredging tool position and depth. This is shown in the map window where the black area is “on-depth” within a tolerance of 10 cm.

The work preparation at the office comprises the generation of the colour-depth map with the available hydrographic survey information and designed profile parameters.

This is a partly automated process. The generated information is “loaded” into DREDGEGUARD by a single keystroke. The software is also capable to import/export survey data from all kind of survey packages.

DREDGEGUARD supports the following standard data exchange formats, such as DXF, Microstation Design, XYZ txt files etc. The above process is very straightforward thus facilitating easy updating of the very latest survey data into the system on board. A wide range of interfaces and software drivers is available.
Technical Datasheet DredgeGuard:

**Heading and Motion, RTK Sensor Specifications:**

Receiver Type: L1, C/A code, with carrier phase smoothing

Channels: Two 12-channel, parallel tracking

SBAS Tracking: Two 10-channel when tracking SBAS

Update Rate: Standard 10 Hz, optional 20 Hz

Horizontal Accuracy:
- RMS (67%): 10 mm + 1 ppm
- 2DRMS (95%): 20 mm + 2 ppm

OmniSTAR HP:
- 0.08 m
- 0.16 m

SBAS (WAAS):
- 0.25 m
- 0.5 m

Autonomous, no SA:
- 1.2 m
- 2.5 m

Heading Accuracy:
- < 0.17° rms @ 0.5 m antenna separation
- < 0.09° rms @ 1.0 m antenna separation
- < 0.04° rms @ 2.0 m antenna separation

Pitch / Roll Accuracy: < 1° rms

Heave Accuracy:
- 30 cm (DGPS), 10 cm (RTK),
- Timing (1PPS) Accuracy: 20 ns

Rate of Turn: 90°/s maximum

Cold Start: < 60 s typical (no almanac or RTC)

Warm Start: < 20 s typical (almanac or RTC)

Hot Start: < 1 s typical (almanac, RTC and position)

Heading Fix: < 10 s typical (valid position)

Antenna Input Impedance: 50 Ω

Maximum Speed: 1,850 kph (999 kts)

Maximum Altitude: 18,288 m (60,000 ft)

RS-232 Ports: 2 full-duplex RS-232, 1 full-duplex RS-422 port & 1 USB-A port

**Power**

Input Voltage: 8 to 36 VDC

Power Consumption:
- < 6.2 W nominal (GPS L1/L2), GLONASS (L1/L2) and L-band DGNSS/HP/XP)
- < 5.3 W nominal (GPS L1/L2) and GLONASS (L1/L2))

Current Consumption:
- < 0.52 A nominal (GPS L1/L2), GLONASS (L1/L2) and L-band DGNSS/HP/XP)
- < 0.44 A nominal (GPS L1/L2) and GLONASS (L1/L2))

**Inclinometer specifications:**

Measuring range: ±10°... ±80°

Standard sensitivity: 0.1 mA/degree

Resolution: < 0.01°

Output: 4 - 20 mA Output current

Input Voltage: 10Vdc...30Vdc either polarity

Operating temperature: -40°C to +85°C

Dry weight: 15 kg

Depth rating: 100 msw

**Dredging Software:**

Precise digging over complex plans

Real time visualization:

Plan view

Sectional views

3DTV Perspective view

Work in depth or elevation mode

Satisfies USACE Silent Inspector requirements

OPC Network capable