AANDERAA

a xylem brand

SEAGUARDII DCP Doppler Current Profiler

The SeaGuardII DCP is the latest acoustic profiler joining the SeaGuard family. It features innovative development of the acoustic profiling capacity and an exceptional ability to collect high quality current information on moving and tilting moorings.

Available as a self recording instrument, it also integrates unique real time features to meet your application needs.

The SeaGuardII is a smart data hub that combines the SeaGuard electronics with the advanced management firmware of Aanderaa SmartGuard data hub.

SeaGuardII DCP is a 600kHz frequency profiler with multi-sensor capability. By design, we offer increased deployment time, optimized configuration flexibility and unique features to cope with demanding upper ocean environments.

Optional parameters are available using Aanderaa range of smart sensors that include temperature, pressure, conductivity, oxygen, wave, tide and turbidity.

In addition the SeaGuardII has 4 analog inputs, 2 serial ports with power control and direct connection for real time data transmission.

Applications:

- *Buoy mounted*
- *Hyd/Met systems*
- *In mooring line with upside down possibility*
- *Two DCPS sensors connected to one instrument*
- *Ocean observatory with sensors string*
- *Bottom mounted*
- *Multiparameter ocean observations*

Unique extendable platform
Easy connection of additional sensors

- Wide range of additional parameters available; wave, tide, temperature, conductivity, pressure, oxygen and turbidity, and integration from third party: ORP, pH, total algae, etc
- Can easily be extended to an effective ocean observatory.
- Double the measuring range with two DCPS tranducer heads connected to one instrument
- Measure in the blanking zone or boundary layer by combining with a single point Doppler Current Sensor
- LED indicator; visual confirmation of the instrument's status

Exceptional compensation for environment interference

- Tilt compensation of each ping to correct data for dynamic movements
- Advanced tilt compensation algorithm with cell position adjustment; achieve true horizontal current measurements

Optimal flexibility

- User selectable broadband or narrowband modes
- Address different applications scenarios using a single instrument; set up to three configurations simultaneously
- Surface current feature; measure in the top cms layer
- Surface referred columns; follow water level changes

Increased deployment time

- 24 months deployment at 30min sampling interval
- Reduced power consumption with broadband technology
- Increased internal battery capacity
- Optional user assembled battery

Smart Data quality control

- Increased data quality control
- Automatic flagging of bad data; status report for each cell
- User selectable advanced autobeam algorithm; automatic selection of the best 3-beams combination to remove faulty cells

Enhanced real time functionality

- Modem support with power control
- Support AIS, GOES, pseudo binary formats
- Flexible configuration allows optimal limitation of transmitted data
- Independent configuration of the recording and transmission intervals
- Automatic retransmission of missing data

User friendly set up and data analyzing

- Predeployment configuration software; RT Collector
- Rapid visualization post processing software Data Studio (soon available)
- Geoview web based display for real time application

Specifications - PRELIMINARY

Velocity profile measurement

Acoustic frequency:	600 kHz
Typical profiling range:	Broadband: 30-70m Narrowband 35-80m[1]
Cell size:	0.5m - 5m
Cell overlap:	0-90%
Velocity range:	Narrowband: 0-500 cm/s – (0-1000cm/s with max tilt ± 5°) Broadband: 0-400 cm/s
Velocity accuracy:	0.3 cm/s or ±1,5% of reading
Velocity resolution:	0.1 cm/s
Velocity precision:	<3,3cm[2]
Ping rate:	Up to 10Hz
Cell positioning:	Static (instrument referred) Dynamic (surface referred)[3] Multiple columns
Number of columns:	3 simultaneous columns + Surface cell[3]
Max. number of cells:	150 total, 75 for first column, 50 for second and 25 for third
Blanking zone:	1m

Transducers

Number of beams:	4
table:	Advanced autobeam algo-rithm[4]
Beam angle:	25°
Beam width:	2.5°

Echo intensity

Dynamic range:	> 50dB
Resolution:	< 0.01dB
Precision:	< 0.01dB

Tilt and compass

Type:	Internal solid state
Pitch / roll range:	± 90°[5] / ± 180°[5]
Tilt / Heading accuracy:	± 1.5° / ± 3.5°
Tilt / Heading resolution:	< 0.1°

Embedded temperature sensor (optional, on request)

Range	-4- +40°C
Resolution	0,001°C
Accuracy	± 0,05°C
Response Time (63%):	<5 sec

Communication and recording

Data storage:	2GB SD Card exchangeable and remote downloadable
Remote operation:	Device layout Configuration Recording start/stop Status monitoring
Available telemetry	Cable, radio modem, GPRS, GOES, GSM, Iridium
Configuration and real time data software:	RT Collector (for Windows®XP, Windows®7)
Configuration interface:	USB / RS232 / RS422
Recording system:	Multiple sensors groups with individual recording interval and activation, immediate, aligned or delayed start.
Recording interval:	From 30sec to 3hrs

Power

External power supply:	12-30V
Internal battery:	2 batteries inside the instru-ment: Alkaline 3988: 9V, 15Ah[6] Lithium 3908: 7V, 35Ah
Current drain example:	4,2 mA[6]

Environmental

Depth rating:	300m
Operating temperature:	-5 to +40°C
Dimensions:	D: 160mm H: 585mm
Weight:	In Air In Water 10,8 kg 3,6 kg
Materials:	PET, PUR, Titanium, Stainless steel 316

Optional sensors

Temperature Sensor 4060

Range:	-4-36°C (32-96.8°F)[7]
Resolution:	0.001°C (0.0018°F)
Accuracy:	±0.03°C (0.054°F)
Response Time 63%:	< 2 seconds

Conductivity Sensor 4319

Range:	0-7.5 S/m
Resolution:	0.0002 S/m
Accuracy	
4319 A:	±0.005 S/m
4319 B:	±0.0018 S/m
Response Time:	<3s[8]

Pressure Sensor 4117

Resolution:	<0.0001% FSO
Accuracy:	±0.01% FSO
4117A Range:	0 – 1000kPa (0 – 145 psia)
4117B Range:	0 – 4000kPa (0 – 580 psia

Wave and Tide Sensor 5217/5218

	Resolution : <0,0001% FSO
	Accuracy: ±0,01% FSO
	Sampling rate: 2Hz, 4Hz

Tide:

5217 Range:	0 – 400kPa (0 – 58 psia)
5217A Range:	0 – 1000kPa (0 – 145 psia)
5217B Range:	0 – 4000kPa (0 – 580 psia
Wave:	No. of samples:256, 512, 1024, 2048
5218 Range:	0 – 400kPa (0 – 58 psia)
5218A Range:	0 – 1000kPa (0 – 145 psia)

Turbidity Sensor 4112: 0-5V Analog Output
4 models: 0-25, 0-125, 0-500, 0-2000FTU

Oxygen Optode 4835/4330[9]:

	O_2-Concentration	Air Saturation
Measurement Range:	0 – 500 µM	0 - 150%
Resolution:	< 1 µM	0.4 %
Accuracy:	<8 µM or 5%[10] whichever is greater	<5 %[11]

With multipoint calibration: <±2 µM or ±1.5%

Response Time (63%):
4330F (fast response foil) <8 sec
4835/4330 (standard foil) <25 sec

Analog and serial inputs:

Analog:	4 channels 0-5V
Serial:	2 channels with sensor and power switching one RS232 port and one RS422[12]

[1] Typical range with normal backscatter conditions. The measurement range is highly dependent on the scattering conditions. For waters with low amount of scatters, expect a shorter range than for waters with a high amount of scatters
[2] Standard deviation For the horizontal velocity in broadband mode, 3m cell size
[3] Requires pressure sensor 4117
[4] Optimal selection of the the best 3-beams conbination to avoid interference and beam failures
[5] Compensation calibrated up to ± 35°
[6] It is not recommended to use alkaline battery in the upper compartment of the instrument, as it may interfere with the compass
[7] In Broadband mode, 30min interval, 20*2 pings, 2m cell size, 20 cells
[8] Extended range available on request.
[9] Dependent on flow through cell bore
[10] Multipoint calibration available on request: 40 points at 5 temperatures and 8 oxygen concentrations
[11] Requires salinity compensation for salinity < 1mS/cm
[12] Within calibrated range 0-120%
[13] The serial ports may be used either as serial sensor inputs or serial real-time outputs

xylem
Let's Solve Water

Visit our Web site for the latest version of this document and more information

www.aanderaa.com