



SEAGUARD® String system

The Aanderaa SeaGuard String System is a complete and flexible subsea observatory, for measurements of e.g. dissolved oxygen, conductivity, temperature, current, pressure and tide etc.

SeaGuard String Logger

The Aanderaa SeaGuard String Logger is the basic module of the SeaGuard String System. The SeaGuard String Logger is capable of handling a large number of sensors. Data stored on internal SD-card or Real-time via cable.

SeaGuard Sensor String

The new Aanderaa SeaGuard Sensor String is designed to be connected to the SeaGuard String logger. The SeaGuard String System can hold up to 25 AiCaP Sensors. Real-time communication and control is available using the Aanderaa Real-Time Collector.

Advantages:

- Great flexibility: data registration from up to 25 nodes
- Customer specified outlet positions
- Protective fastening fixture with hydrodynamic design
- Each outlet position can hold 2 sensors inside
- Optional, sensors can be connected on fly leads (up to 3m) with or without underwater mateable electrical connectors
- Up to 300m cable length
- Low maintenance
- Extended RAM for large number of nodes
- Large storage capacity on an SD card
- Real-Time XML Output RS-422 (optional)
- Short recording interval
- Plug and play sensor configuration
- AiCaP communication bus for automatic detection and recognition of sensors at power up
- Windows CE interface, display in colours
- SeaGuard Studio visualization software
- 300m/2000m/6000m version
- External power supply 12 - 30V internally regulated
- Up to 4 Analog sensor input (0-5V) (optional)
- For use in sea and fresh water

SEAGUARD® String system

The SeaGuard Sensor String is designed to be connected to the SeaGuard String Logger. The string system can hold up to 25 AiCaP sensors. The design of the cable ends enables easy extension of the cable or creation of suitable cable subsections; the maximum cable length is 300m. The positions of the string outlets are customer specified.

The SeaGuard Sensor String offers a highly flexible configuration making the system a perfect tool for measurements of e.g. dissolved oxygen, conductivity, temperature, pressure and tide etc. A typical application is monitoring of a water column. The fly lead option is suitable for measurements in biological sensitive areas, e.g. coral reefs.

Sensors and SeaGuard string mounted onto the Top-end Plate are connected to a hub underneath the Top-end Plate: simply plug the sensor/string onto the Top-end Plate, fasten a set screw, start the instrument, and all sensors are automatically detected and recognized.

The SeaGuard String Logger and the Aanderaa smart sensors are interfaced by means of a reliable CANbus protocol (AiCaP) using XML for plug and play capabilities. During power-up, each of the sensors that are connected to the bus will report their capabilities and specifications to the string logger. The string logger then assembles the information and provides the user with the possibility to configure the instrument based on the present nodes. The solution provides for great flexibility in both use and design of the different elements within the system.

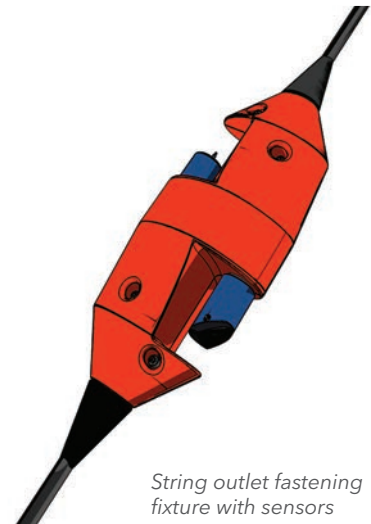
SeaGuard String Logger is a self recording instrument with data storage on an SD card. The current capacity for this card type is up to 4GB, more than adequate for most applications. The instrument is delivered with pressure case, in either 300, 2000 or 6000 meter version. The SeaGuard String System can be used with Aanderaa Real-Time Collector for real-time data and real-time communication with the string logger.

The output parameters are readable in engineering units; the parameters are easily presented in the post processing software, SeaGuard Studio. Each sensor connected to the string can be tagged with e.g. the depth position for easy recognition of correct parameter.

The Top-end Plate of the SeaGuard String Logger can hold 6 sensors; 4 of which can be analog (0 - 5V) sensors. The SeaGuard String Logger has 2 battery compartments



String Logger with 300 meter pressure case



String outlet fastening fixture with sensors

for long deployment time; the AiCaP CANbus based protocol ensures low power drain.

The autonomous sensor topology also gives the sensor designer flexibility and opportunities where each sensor type may be optimized with regard to its operation, each sensor may now provide several parameters without increasing the total system load.

The SeaGuard String Logger can be configured to suit your requirements and applications.

The SeaGuard String System can be deployed in an in-line string mooring, fixed bottom frame mooring, buoy deployment, long term/short term deployment.

Specifications

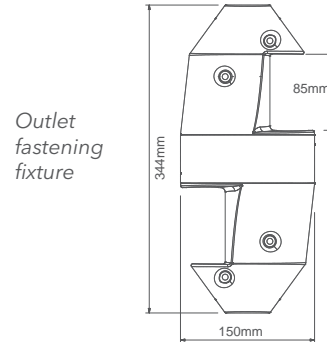
String logger capability:	Up to 25 nodes can be connected to the String Logger
Sensor node capability¹⁾:	Up to 6 sensors can be mounted onto the Top-end Plate, of which 4 can be analog sensors (0-5V), and 1 can be a SeaGuard String (max 300m)
Outlet capacity:	2 sensors per outlet. Single sensor option available on request.
Outlet position:	Customised (on the cable)
Sensor protocol:	AiCaP CANbus based protocol
Serial communication:	RS-422
Outlet dimensions:	344x150mm (LxW)
Cable length:	Maximum 300m
Cable breaking strength:	Maximum 2300kg
Cable capacity:	Maximum 20 AiCaP sensors including DCS and other sensors on the Top-end Plate
Recording system:	Datastorage on SD card
Storage capacity:	≤ 2GB
Battery:	2 batteries inside the instrument
Alkaline 3988:	9V, 15Ah (nominal 12.5Ah; 20W down to 6V at 4°C)
or Lithium 3908:	7V, 35Ah
External battery:	7-14 V. Diode protection required unconditionally when using an external battery. Internal power boost.
External power²⁾:	12 - 30V, 2A (depends on supply cable). External power through string or separate cable. Internal power boost.
Recording interval:	From 2 sec, depending on the node configuration for each instrument
Recording settings:	Fixed interval settings or customized sequence setting
Operating temperature:	-5 - +40°C (23 - 104°F)
Depth capacity:	300m/2000m/6000m
String Logger dimensions:	
300m version (SW):	H: 356mm OD: 139mm
2000m version (IW):	H: 352mm OD: 140mm
6000m version (DW):	H: 368mm OD: 143mm
External materials:	
300m version:	PET, Titanium, Stainless Steel 316
2000/6000m version:	Stainless steel 316, Titanium, OSNISIL,
Fastening fixture material:	PA66
Optional sensor connections:	Up to 3m fly leads In-line underwater mateable connector on fly leads

¹⁾The total number of sensors depends on type of sensor

²⁾ External Power is required in applications with long deployment time and/or long string length

Specifications subject to change without prior notice.

Weight:	in air	in water
300m version (SW):	5.9kg	1.5kg
2000m version (IW):	11.8kg	7.1kg
6000m version (DW):	12.7kg	8.3kg
Cable weight in air:	~40kg per 100m cable	
Outlet weight in air:	<1kg ex sensors	



Accessories included:

- SeaGuard Studio
- SD card: 2 GB
- Alkaline battery 3988
- Documentation on CD

Optional accessories:

- Carrying handle 4132,4032,3965
- SD card with capacity up to 4GB
- AC/DC adapter 4908 for lab use
- Real-time licence and collector 4715
- Offline Configuration 4811
- In-line mooring frame 4044/ 3824A,
- Protecting rods 3783
- Bottom mooring frame 3448R
- Internal Lithium battery 3908
- Internal Alkaline battery 3988
- Internal battery shell 4513
- Maintenance kit 3813/3813A
- Tools kit 3986A
- Conductivity sensor 4319, refer D369
- Temperature sensor 4060, refer D363
- Temperature sensor 4880, refer D391
- Pressure sensor 4117, refer D362
- Oxygen optode 4330, refer D378
- Turbidity 4112 (analog), refer 377
- Electrical terminal for cable connection
- Real-time cables 4902/4901
- Analog cable/license 4564/4802
- SeaGuard end cable 4784
- AiCaP connection cable 9634
- SeaGuard end cable 9635

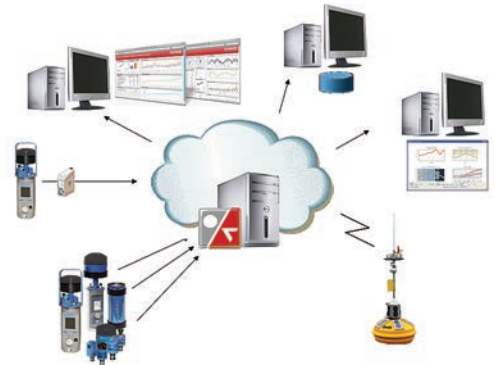
for optional cables refer www.aanderaa.com
 SeaGuard product tag
 for current measurements, refer
 SeaGuard RCM (D368)
 for wave and tide measurements, refer
 SeaGuard WTR (D386)

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Aanderaa Real-time

The data message from the instrument is in XML format. A user application can access the Aanderaa Real-Time Collector over the Internet or intranet. Each user application will experience an individual connection to the instrument data due to a queue management system in the collector. One license per SeaGuard instrument serves multiple user applications. Including Aanderaa Real-Time Collector, Aanderaa Real-Time Viewer, Style Sheets and example application. (Refer B163)



Available sensors for string or Top-end Plate



Examples of string configurations.

Leftmost:

String below instrument with conductivity and temperature sensors monitoring the water column.

Rightmost:

String above instrument with temperature and oxygen sensors.

Note! The platform can also be equipped with optional sensors.



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