



## Wave and Tide Sensor 5218/5218R

The Wave and Tide Sensor is a compact fully integrated sensor for measuring wave and tide conditions. The 5218 sensor is designed to be mounted on the Aanderaa SeaGuard top-end plate or connected to SmartGuard using AiCaP CANbus or in other measurement systems using the RS-232 interface. The 5218R sensor is designed for use with long cables by means of RS-422 full duplex interface.

### Features:

- Smart sensor technology - plug and play
- Calibration coefficients are stored in the sensor
- Low maintenance needs
- Low current drain
- Output formats 5218: AiCaP CANbus, RS-232
- Output formats 5218R: RS-422
- Selectable interval from 1 sec. to 255 min.
- Tidal averaging period: 10 sec. to 8 min.
- 2Hz and 4Hz sampling frequency
- 256, 512, 1024 and 2048 samples
- New updated wave parameters every 1 sec.
- Output parameters: see overleaf
- Real-time XML output
- Measurement range: 0-400kPa
- Maximum operating depth: 90m

5218/5218R is based on a silicon piezoresistive pressure sensor. The pressure measurements are sampled and temperature compensated by an advanced Digital Signal Processor.

The sensor application areas are in fixed installations, either deployed in a seabed installation in shallow waters, or mounted onto a fixed structure in the upper water column. Typical applications for the sensor are measurements of wave and tide in Ports and Harbours, Marine operations, Weather forecast and Climate studies.

The tide measurement is an average of the hydrostatic pressure measured over a time period of 10 seconds to 8 minutes (integration time configurable by the user). The update interval is between 1 second and 255 minutes.

The wave measurements are based on the pressure time series measured over a time period of 64 second to 17minutes (configurable by the user). The update interval is between 1 second and 255 minutes.

The wave and tide sensor output parameters are Pressure, Tide Level, Tide Pressure, Temperature, Significant wave height, Maximum wave height, Mean period, Peak period, Energy wave period, Mean zero-crossing period, Wave steepness and irregularity of sea-state. Since all calibration and temperature compensation data are stored inside the sensor, the parameters are by default presented directly in engineering

units without any external calculation. The sensor also provides raw data of the pressure and the temperature measurements.

5218 is a compact yet intelligent sensor designed to be used with Aanderaa SmartGuard or SeaGuard as well as in other measuring systems.

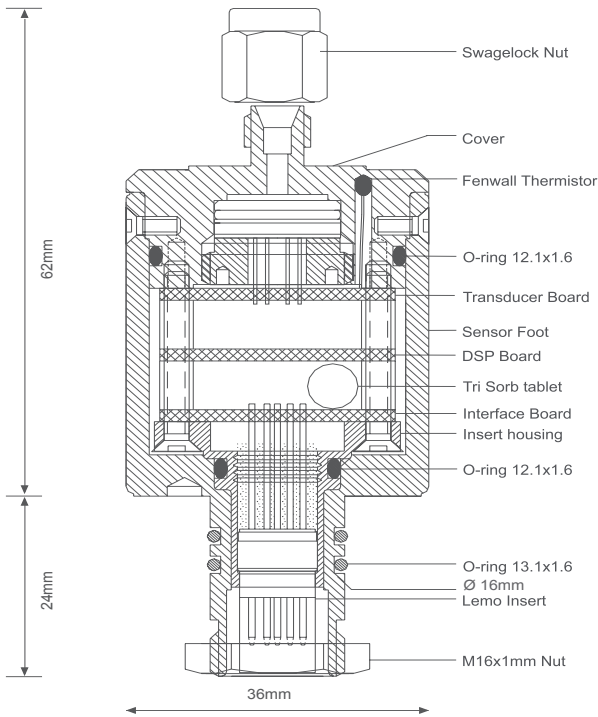
The SmartGuard/SeaGuard and the smart sensors are interfaced by means of a reliable AiCaP, CANbus interface using an XML based protocol. The smart sensors can be mounted directly on the top-end plate of the Aanderaa SeaGuard and are automatically detected and recognized.

The output format of 5218 are AiCaP CANbus and RS-232, while the output format of the 5218R version is RS-422. The sensor version must be specified when ordered as the two versions are not interchangeable. The R-version cannot be used in SeaGuard applications.

The Tide Sensor can be used as stand-alone sensor with Aanderaa Real-Time Collector for real-time data.

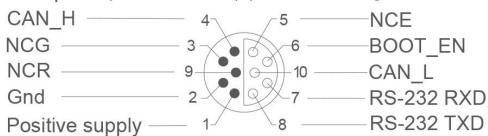
The WTS sensor can be used as stand-alone sensor with Real-Time Collector for real-time data.

# Specifications



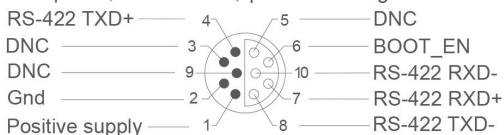
## PIN CONFIGURATION FOR 5218

Receptacle, exterior view; pin = ● bushing = ○



## PIN CONFIGURATION FOR 5218R

Receptacle, exterior view; pin = ● bushing = ○



Output Interval		2 sec	1 min	10 min	30 min
2 Hz:	AiCaP	7.9 mA	4.8 mA	4.2 mA	1.6 mA
	RS-232	19.5mA	6.7 mA	4.7 mA	1.7 mA
	RS-422	19.5mA	6.0 mA	5.2 mA	2.4 mA
4 Hz:	AiCaP	11.7mA	9.3 mA	4.2 mA	1.6 mA
	RS-232	24mA	10.5 mA	4.7 mA	1.7 mA
	RS-422	24mA	10.5 mA	5.2 mA	2.4 mA

Table 1: 1024 samples, 40 seconds tidal average



<sup>1)</sup> Tide disabled and output interval ≥ 2 seconds  
<sup>2)</sup> 9600 baud, 8 data bits, 1 stop bit, no parity, Xon/Xoff Flow control  
<sup>3)</sup> With tide disabled. See D362 for Pressure current drain  
<sup>4)</sup> SP Cable with free end for real-time data  
<sup>5)</sup> SP Cable to PC with 9pin D-sub for real-time data

The above specifications are for the stand-alone sensor only, not the installation it is utilized with.

Specifications subject to change without prior notice.

## Sensor versions:

5218/5218R: 0 - 400kPa (58psia) ~30m depth  
 5218A/5218AR: 0 - 1000kPa (145psia) ~90m depth

## Pressure:

Resolution: <0.0001% FSO  
 Accuracy: ±0.02% FSO  
 ±0.01% FSO on request (requires enhanced calibration, additional fee apply)

Output parameters: Pressure in kPa, Pressure raw data in LSB

## Tide:

Sampling rate: 2Hz, 4Hz  
 Integration time: 10 sec. - 8 min.  
 Tide Parameters: Tide pressure in kPa, Tide level in meter

## Wave:

Number of samples: 256,512,1024,2048  
 Output Parameters: Significant wave height, Max wave height, Mean period, Peak period, Mean zero-crossing period, Energy period, Steepness, Irregularity of sea-state, Cut-off frequency, Pressure series, Last pressure sample index, Wave spectrum.

## Temperature:

Range: 0 - 36°C (32 - 96.8°F)  
 Resolution: <0.001°C (0.0018°F)  
 Accuracy: ±0.2°C/0.1°C 1) (±0.36°F/0.18°F)<sup>1)</sup>  
 Response Time (63%): <10 sec.  
 Parameters: Temperature in °C, Temperature raw data in LSB

## Output format:

5218 version: AiCaP CANbus, RS-232<sup>2)</sup>

5218R-version: RS-422<sup>2)</sup>

## Output interval:

RS232/RS422: 1 sec. - 255 min.

AiCaP: Controlled by data logger

5 to 14Vdc

## Supply voltage:

## Current drain (@ 9V)<sup>3)</sup>:

Max.(RS-232/RS-422): 50 mA

Quiescent: 0.4 mA

Average: See table 1

## Operating temperature:

-5 - +40°C (23 - 104°F)

## Operating depth:

Within pressure range

## Electrical connection:

10-pin receptacle mating plug SP

## Pressure connection:

Swagelok™ 1/8 inch

## Dimensions:

OD: 36 x 86mm (OD:1.4"x3.4")

## Weight:

160g (5.47oz)

## Materials:

Titanium, epoxy coating

## Accessories:

not included:

RS-232 Sensor Cable 4762<sup>4)</sup>/4865<sup>5)</sup>

RS-422 Sensor Cable 4763<sup>4)</sup>/4799<sup>5)</sup>

