4648/4648R 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 Harbors, Marine operations, Weather forecast and Climate studies.

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

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

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.

4648 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 CANbus interface using an XML based protocol (AiCaP). The Smart sensors can be mounted directly on the top end plate of the Aanderaa or SeaGuard and are automatically detected and recognized.

The output format of 4648 are AiCaP CANbus, RS-232, while the output format of the 4648R version is RS-422. The sensor version must be specified when ordered as the two versions are not interchangeable. The R-version can not be used in SeaGuard applications.

Advantages:
- Smart Sensor technology—plug and play
- Sensor calibration coefficients are stored in the sensor
- Low maintenance needs
- Low current drain
- Output formats 4648: AiCaP CANbus, RS-232
- Output formats 4648R: RS-422
- Short update interval: 1 sec. to 255 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 - 400 kPa
- Max operating depth: 30m
- Real-time XML Output on RS-422 (optional)
- For use in sea and fresh water
- 3 Measurement ranges: 0 - 300m, 0 - 2000m, 0 - 6000m
Pressure:
4648/4648R Range: 0 - 400kPa (58 psia) ~30m depth
Resolution: <0.0001% FSO
Accuracy: ±0.02% FSO
Output parameters: Pressure in kPa, Pressure raw data in LSB

Tide:
Sampling rate: 2 Hz, 4 Hz
Integration time: 10 second - 8 minutes
Output Parameters: Tide pressure in kPa, Tide level in meter

Wave:
Sampling rate: 2 Hz, 4 Hz
Number of samples: 256, 512, 1024, or 2048
Output Parameters: Significant wave height, Maximum wave height, Mean period, Peak period, Mean zerocrossing 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: ±0.4°C/0.2°C 1) (±0.72°F/0.36°F 1))
Response Time (63%): 2 minutes
Temp. parameters: Temp. in °C, Temp. raw data in LSB

Output format:
4648 version: AiCaP CANbus, RS-232 2)
4648R-version: RS-422 2)

Output interval:
RS232/RS422: 1sec.– 255 min.
AiCaP: Controlled by data logger

Supply voltage:
5 to 14Vdc

Current drain(@ 9V):
Max. RS-232/RS-422): 50 mA
Quiescent: 0.4 mA
Average: See table 1

Operating temp.:
-5 – +40˚C (23 – 104˚F)
Operating depth:
Within pressure range

Electrical connection:
10-pin receptacle mating plug CSP

Pressure connections:
Swagelok™ 1/8 inch

Dimensions:
OD: 36 x 101mm (OD:1.4”x3.9”)

Weight:
138g (4.86oz)

Materials:
Titanium, ABS/PC, pom, epoxy casting

ACCESSORIES
not included: RS-232 Sensor Cable 47624)/48655)
RS-422 Sensor Cable 47634)/47995)

The above specifications are for the stand-alone sensor only, not the installation it is utilized with. Specifications subject to change without prior notice.

Visit our Web site for the latest version of this document and more information 
www.aanderaa.no