



Accurate monitoring of pressure, tide, water level and waves in ports, coastal and inland waters, rivers and boreholes is of great importance to many practical projects. This series of sensors measures the hydrostatic pressure caused by the head of water above them. The influence of barometric pressure on the sensors is compensated for by applying air pressure to one side of the transducer through an air pipe and compensating unit. The sensors contain, in addition to the sensing element, a temperature compensating and a range reducing network. The sensor is based on a silicon 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

Vented Pressure 4425/4426/4427 Vented Tide 4445/4446 Vented Wave 4428/4429

are compact fully integrated sensors for measuring pressure, tide or wave conditions, based on measuring the hydrostatic pressure and water temperature in a fixed submerged position. The pressure transducer is vented to facilitate automatic correction for atmospheric pressure fluctuations.

The sensor package consists of:

- Vented Sensor with Thermistor
- Cable with Airpipe
- Compensating Unit

Advantages:

- Smart Sensor technology - plug and play
- Sensor calibration coefficients are stored internally
- Low maintenance needs
- Low current drain
- Short update interval: 1 second to 255 minutes
- 2Hz and 4Hz sampling frequency
- 256, 512, 1024 and 2048 samples
- New updated wave parameters every 1 second
- Output parameters: see overleaf
- Output format: AiCaP CANbus, RS-232 or RS-422
- Real-time XML output

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 seconds to 8 minutes (integration time configurable by the user). The update interval is between 1 second and 255 minutes.

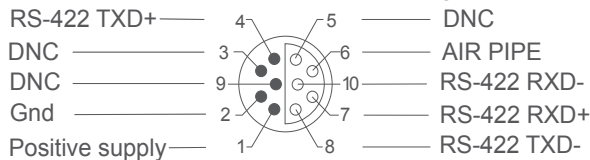
The wave measurements are based on the pressure time series measured over a time period of 64 seconds to 17 minutes (configurable by the user). The update interval is between 1 second and 255 minutes.

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.



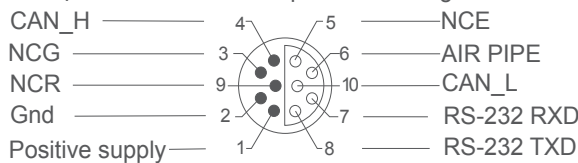
PIN CONFIGURATION RS-422, R-version

Receptacle, exterior view; pin = • bushing = ◦

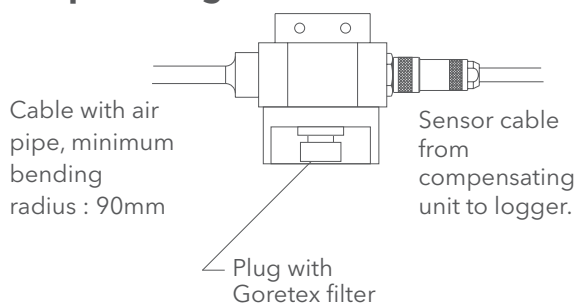


PIN CONFIGURATION RS-232 and AiCaP

Receptacle, exterior view; pin = • bushing = ◦



Compensating Unit 3848



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

Range:
4425,4428,4445: 0 - 50kPa (14 psia) ~ 5m depth
4426,4429,4446: 0 - 100kPa (14 psia) ~ 10m depth
4427,4447: 0 - 200kPa (29 psia) ~ 20m depth

Pressure:
Resolution: <0.0001% FSO
Accuracy: ±0.04% FSO

Tide:
Sampling rate: 2Hz, 4Hz
Integration time: 10 sec - 8 min

Wave:
Sampling rate: 2 Hz, 4 Hz
Number of samples: 256, 512, 1024, or 2048

Output parameters:
All versions: Pressure, temperature, rawdata pressure and rawdata temperature.
Wave & Tide only: Tide pressure, tide level, significant wave height, maximum wave height, mean period, peak period, mean zero-crossing period, energy period, steepness, cut-off frequency, irregularity of sea-state, 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 min

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

Output interval: RS-232/RS-422: 1 sec - 255 min
AiCaP: Controlled by SmartGuard

Supply voltage: 5 to 14Vdc
Current drain (@ 9V)⁽³⁾: Maximum: 50 mA
Quiescent: RS-232: 0.25 mA
RS-422: 1.0 mA

Average (1024 samples, 40seconds tidal average):

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	19.5 mA	6.0 mA	4.7 mA	1.7 mA
	RS-422	19.5 mA	6.0 mA	5.2 mA	2.4 mA
4 Hz:	AiCaP	11.7 mA	9.3 mA	4.2 mA	1.6 mA
	RS-232	24 mA	10.5 mA	4.7 mA	1.7 mA
	RS-422	24 mA	10.5 mA	5.2 mA	2.4 mA

Operating temp.: -5 - +40°C (23 - 104°F)
Operating depth: Within pressure range
Electrical connection: 10-pin receptacle mating plug CSP
Pressure connection: Swagelok™ 1/8 inch
Dimensions: OD: 36 x 108mm (OD: 1.4"x4.3")
Weight: 189g (6.67oz)

Materials: Titanium, POM, epoxycoating

⁽¹⁾ Wave and Tide disabled and output interval ≥ 2 seconds
⁽²⁾ 9600 baud, 8 data bits, 1 stop bit, no parity, Xon/Xoff Flow control
⁽³⁾ Current drain based on wave enabled, for pressure and tide see D381 and D382



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