

Doppler Current Profiler Sensor – DCPS

5400/5402/5403



The Doppler Current Profiler Sensor (DCPS) is a medium range, 600kHz current profiler smart sensor. It features innovative development of the acoustic profiling ability to collect high quality current information also on moving and tilting platforms. Available as 300m depth rated (5400/5400R), 4500m (5402/5402R), 6000m (5403/5403R). The 5400P/5400PR is furnished with an internal pressure sensor rated to 100m depth. The DCPS can be connected to a SeaGuardII or SmartGuard using the CANbus based AiCaP protocol. It can also be connected to a PC or third party systems through the RS-232 interface. This makes the DCPS the ideal cost effective solution for obtaining current profiles in systems already containing a Datalogger. The R-version is equipped with RS-422 interface suitable for communication over longer cables.

Advantages:

- Built-in solid state 3-axis tilt compensated compass.
- Heading and tilt compensation for each ping.
- Insensitive to fouling.
- Low maintenance needs.
- Output interval from 30 seconds to 2 hours.
- RS-232/RS-422 output for integration to most third party Dataloggers.
- Configurable output engineering data for easy integration.
- Cell size selectable from 0,5 to 5 meters.
- Up to 150 individual cells divided into three columns.

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Specifications DOPPLER CURRENT PROFILER SENSOR

SPECIFICATIONS XAD411-R3-NOR



Technical Details

Velocity Profile Measurement	
Acoustic frequency:	600 kHz
Typical profiling range:	Broadband: 30-70m. Narrowband 35-80m ¹⁾
Cell size:	0.5m - 5m
Cell spacing:	0.1-30m
Velocity range:	Narrowband: 0-500cm/s (up to 1000cm/s for tilt less than $\pm 5^\circ$) Broadband: 0-400cm/s
Velocity accuracy:	0.3cm/s or $\pm 1\%$ of reading
Velocity resolution:	0.1cm/s
Velocity precision:	$< 3,3\text{cm}^2$
Ping rate:	Up to 10Hz (depends on config)
Output interval:	30s to 2h
Cell positioning:	Static (instrument referred) and/or Dynamic (surface referred) ³⁾
Number of columns:	3 simultaneous columns + Surface cell ³⁾
Max. number of cells:	150 total, 75 for first column, 50 for the second and 25 for the third
Blanking zone:	1m (5400/5400P) 2m (5402, 5403)

Transducers:	
Number of beams:	4
Beam angle:	25°
Beam width:	2.5°

Echo intensity:	
Dynamic range:	$> 50\text{dB}$
Resolution:	$< 0.1\text{dB}$
Accuracy:	$< 0.1\text{dB}$

Tilt and compass:	
Type:	Internal 3-axis tilt solid state
Pitch/roll range:	$\pm 90^{\text{°a)}} / \pm 180^{\text{°a)}})$
Tilt accuracy:	$< 0.5^{\text{(RMS)}} \pm 1.5^\circ$
Heading accuracy:	$< 2^{\text{(RMS)}} \pm 3.5^\circ (0-15^\circ \text{ tilt}) \pm 4.5^\circ (15-35^\circ \text{ tilt})$
Tilt/heading resolution:	$< 0.1^\circ$

Interfaces:	
5400/5400P/5402/5403:	AiCaP protocol, RS-232
5400R/5402R/ 5403R/ 5400PR:	RS-422

Maximum cable length:	
RS-232:	15m
RS-422:	1500m

Embedded temperature sensor 4080 (not included/optional):	
Range:	$-4 - +40^\circ\text{C}$
Resolution:	$0,001^\circ\text{C}$
Accuracy:	$\pm 0,05^\circ\text{C}$
Response time:	$< 5 \text{ sec}$

Embedded pressure sensor (5400P/PR only):	
Range:	0 - 1 M Pa
Resolution:	$< 0,001\%$
Accuracy:	$< 0,2 \%$

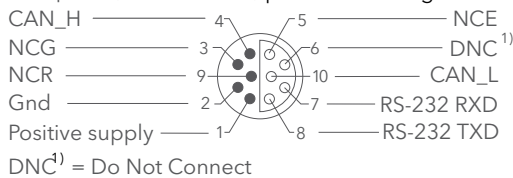
Power	
Supply Voltage:	6-30 Vdc
Current drain example:	$4,2 \text{ mA}^5)$

Environmental:	
Depth rating:	PSW/PRSW: 100m, SW/RSW: 300m, IW/RIW: 4500m, DW/RDW-6000m
Operating Temperature:	$-5 \text{ to } +40^\circ\text{C}$
Dimensions:	D: 160mm H: 167mm
Weight:	In Air In Sea Water
S/W:	5.1kg 1.8kg
IW/DW:	7.2kg 4.0kg

Specifications subject to change without prior notice.

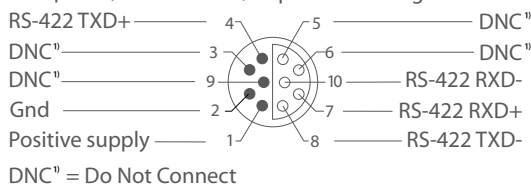
PIN CONFIGURATION 5400/5400P/5402/5403

Receptacle, exterior view; pin = ● bushing ○



PIN CONFIGURATION 5400R/5402R/5403R

Receptacle, exterior view; pin = ● bushing = ○



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 data, only available for 5400P/PR or when the DCPS connected to a SmartGuard or SeaGuardII data logger with pressure sensor.

4) Compensation calibrated up to $\pm 35^\circ$

5) In Broadband mode, 30min. interval, 20x2 pings, 2m cell size, 20 cells

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