



### Exceptional compensation in moving applications

Measurements are compensated for instrument movement;

- Each ping is compensated for the corresponding tilt and heading, taking into account mooring or buoy motions
- The Doppler current profiler sensor calculates the correct vertical distance to a specific cell for each beam.

### Optimal flexibility

In addition to its ease of use, the DCPS configuration flexibility makes it possible to address all scenarios of ocean observations.

- Upward or downward looking
- User selectable broadband or narrowband modes matching different applications
- Address different applications scenarios using a single instrument; address up to three profiling configurations simultaneously; each profiling column can be set up with individual cell size and cell overlap.
- Surface current feature; measure in the top cms layer<sup>\*)</sup>
- Surface referred columns; the column keeps a fixed distance to the surface to follow water level changes<sup>\*)</sup>
- Direct readout of engineering data
- Configurable output format

### Increased deployment time

- Low power consumption
- Reduced power consumption with broadband technology

### Smart Data quality control

- Increased quality control
- Automatic flagging of bad data; status report for each cell
- User selectable advanced autobeam algorithm; automatic selection of the best 3-beam combination to remove faulty cells in case of an object passing in front of one beam

### Sensor communication protocol:

The AADI Real-time collector PC software can be used together with the DCPS 5400/ DCPS 5400R. This makes it easy to configure the sensor and save sensor data to files

<sup>\*)</sup>Surface referred columns and surface cell require pressure data from an external pressure sensor. This functionality is only available when the DCPS is used together with an Aanderaa Datalogger, SmartGuard or SeaGuardII in combination with a pressure sensor.

## DCPS 5400/5400R - Doppler Current Profiler Sensor

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. It is a 300m depth rated sensor intended for commercial as well as research use. It comes with an integrated temperature sensor that can be calibrated on request.

The DCPS 5400 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 using the AADI Real Time Collector or SmartSensor Terminal protocol. It makes it the ideal cost effective solution of obtaining current profiles in systems already containing a Datalogger. The 5400R has RS-422 interface for use on longer cables..

on a PC. The AADI Real-Time communication protocol is a XML-based protocol which also includes numerous metadata for all the data parameters from the sensor.

The Smart Sensor Terminal protocol is a simpler protocol which gives smaller message sizes since it includes a limited amount of metadata in the output (parameter names and units, which also can be excluded).

The size of the output message can be reduced in both protocols by only enabling the necessary data parameters. Both protocols use ASCII output which makes it directly readable without any conversion (no binary data). The Smart Sensor Terminal protocol is recommended in systems where small messages sizes are required or if there are limited processor resources (limited data buffer and parsing capabilities).

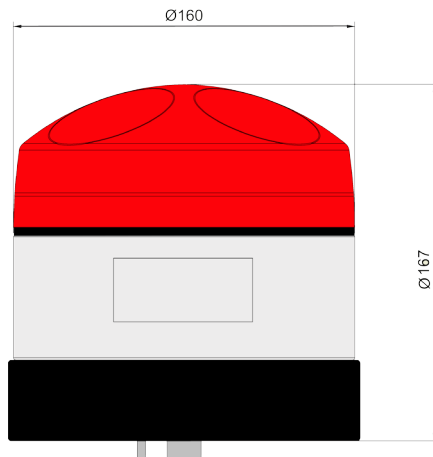
### Key features

- Build in solid state 3-axis tilt compensated compass
- Heading and tilt compensation for each ping
- Low power consumption
- Insensitive to fouling
- Low maintenance needs
- Direct readout of engineering data
- Fast sampling rate (up to 10Hz)
- Output interval from 30s to 2 hours
- RS-232/RS-422 output for integration to most third party Data loggers
- Configurable output for easy integration
- Cell size selectable from 0,5 to 5m
- Up to 150 individual cells divided into three user configurable profile columns

### Applications

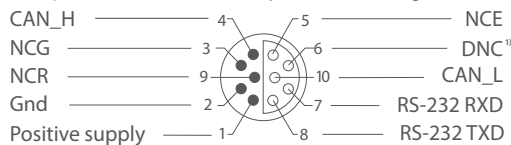
- Oceanographic research
- Marine Transport
- Offshore / Oil & Gas
- Aquaculture / fisheries
- Environmental management
- Infrastructure design / Survey companies
- Integration into third party systems; data buoy, ocean observatory

# Specifications - PRELIMINARY



## PIN CONFIGURATION 5400

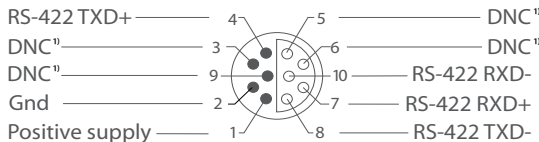
Receptacle, exterior view; pin = ● bushing = ○



DNC = Do Not Connect

## PIN CONFIGURATION 5400R

Receptacle, exterior view; pin = ● bushing = ○



DNC = Do Not Connect

**Specifications subject to change  
without prior notice**

<sup>1)</sup> 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  
<sup>2)</sup> Standard deviation For the horizontal velocity in broadband mode, 3m cell size  
<sup>3)</sup> Requires pressure data, only available when DCPS connected to SmartGuard or SeaGuardII  
<sup>4)</sup> Optimal selection of the best 3-beam combination to avoid interference and beam failures  
<sup>5)</sup> Compensation calibrated up to  $\pm 35^\circ$

## Velocity profile measurement

Acoustic frequency:	600 kHz
Typical profiling range:	Broadband: 30-70m Narrowband 35-80m <sup>1)</sup>
Cell size:	0.5m - 5m
Cell overlap:	0-90%
Velocity range:	Narrowband: 0-500 cm/s other range on request Broadband: 0-400 cm/s
Velocity accuracy:	0.3 cm/s or $\pm 1,5\%$ of reading
Velocity resolution:	0.1 cm/s
Velocity precision:	$< 3,3\text{cm}^2$
Ping rate:	Up to 10Hz
Output interval:	from 30s to 2h
Cell positioning:	Static (instrument referred) Dynamic (surface referred) <sup>3)</sup> Multiple columns
Number of columns:	3 simultaneous columns + Surface cell <sup>3)</sup>
Max. number of cells:	150 total, 75 for first column 50 for the second and 25 for the third
Blanking zone:	1m

## Transducers

Number of beams:	4
Table:	Advanced autobeam algorithm <sup>4)</sup>
Beam angle:	$25^\circ$
Beam width:	$2.5^\circ$

## Echo intensity

Dynamic range:	$> 50\text{dB}$
Resolution:	$< 0.1\text{dB}$
Precision:	$< 0.1\text{dB}$

## Tilt and compass

Type:	Internal solid state
Pitch / roll range:	$\pm 90^{(5)}$ / $\pm 180^{(5)}$
Tilt / Heading accuracy:	$\pm 1.5^\circ$ / $\pm 3.5^\circ$
Tilt / Heading resolution:	$< 0.1^\circ$

## Interfaces:

5400:	AiCaP protocol, RS-232
5400R:	RS-422

## Maximum cable length:

RS-232:	15m
RS-422:	1500m

## Embedded temperature sensor (calibration on request)

Range	$-4 - +40^\circ\text{C}$
Resolution	$0,001^\circ\text{C}$
Accuracy	$\pm 0,05^\circ\text{C}$
Response Time (63%):	$< 5\text{ sec}$

## Power

Supply voltage:	6-30 Vdc
Current drain example:	4,2 mA, in broadband mode, 30min interval, 20*2 pings, 2m cell size, 20 cells

## Environmental

Depth rating:	300m
Operating temperature:	$-5$ to $+40^\circ\text{C}$
Dimensions:	D: 160mm H: 167mm
Materials:	PET, PUR, Titanium, Stainless steel 316