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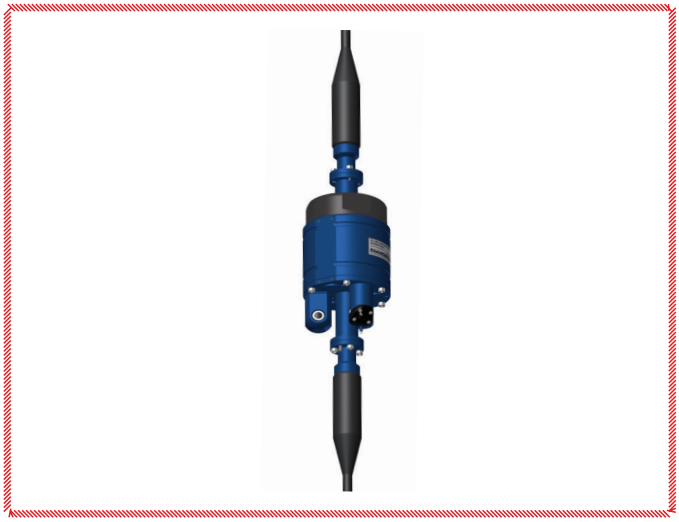

In-line ZPulse Doppler Current Sensor 5800 / 5810 / 5800R / 5800RR / 5810E

The In-line Doppler Current Sensor (DCS) is the first current sensor with the option to directly connect water quality sensors in a robust, integrated package (version 5810). The sensor replaces the successful DCS4100 in-line current sensor using newer technology with extending capabilities. It is designed for easy integration into systems with Aanderaa or third-party dataloggers.

Based on a modified version of the ZPulse Doppler Current Sensor 4520, it connects through a combined mooring and signal cable. For buoy application, when the buoy creates magnetic interferences with the internal sensor compass, it is possible to use an external compass solution.

Working principle:

The DCS sensor is based on the backscatter acoustic Doppler principle. It has two orthogonal transducer axes with two transducers on each axis. This enables the sensor to measure in both directions on each axis which is a great advantage. By utilizing only the two tranducers that are facing upstream, the sensor is insensitive to disturbance from vortex speeds around the mooring and the sensor itself (forward ping functionality). One transducer on each axis transmits a short ultrasonic pulse simultaneously (one ping), the same transducers receive backscattered signals from particles in the water. This gives an orthogonal x and y speed component which is tilt compensated to find the correct horizontal speed components.

The North and East speed components are calculated based on the x and y speed components and the heading from the built-in solid state electronic compass. The sensor takes several of these two-component measurements and finally calculates the averaged north and east speed components and the vector averaged absolute speed and direction.

The two-frequency ZPulse technology provides higher precision data from each ping. This gain can be used either to obtain improved measurement precision or to reduce the average power consumption by halving the number of required pings.

The sensor can be configured using the provided Aanderaa Real Time Collector software either directly connected to a computer or through SmartGuard or SeaGuard Datalogger. The Real Time Collector is a powerful and efficient tool for data collection and control of Aanderaa's oceanographic insruments and sensors.

Data logged by use of the SeaGuard Datalogger can be post-processed using SeaGuard Studio software, while data from SmartGuard can be view and exported by use of the Data Studio software. The Geoview software package is available for customized visualization of real-time data.

Configuration:

Available configuration settings include: polled / non-polled mode, ping rate, recording interval and settings for connected sensors for the 5810.

Features 5800 / 5810 / 5800R / 5800RR / 5810E:

- Rugged and reliable sensor with high accuracy
- Build in solid state 3-axis tilt compensated compass
- Heading and tilt compensated for each ping
- Low power consumption

Available solutions:

Interfaces	Current measurement only	Additional sensors
AiCaP, connection to Aanderaa Dataloggers	5800	5810; up to 6 additional Aanderaa smart sensors
RS 232, system integration, third-party dataloggers	5800RR	5810E
RS 422, system integration, third-party dataloggers	5800R	5810E

5800 / 5810: Up to 4 In-line DCS connected in a string using AiCaP cable, maximum length of 300m.

The 5810E is a version with customized wiring for combinations of Analog, AiCaP, RS232 and RS422 sensors. Contact the Aanderaa Engineering Department for enquiry about possibilities and limitations.

Applications:

- Ocean / coastal observatories
- Harbour monitoring systems
- Data buoys
- Sensor strings
- Winch profiling systems

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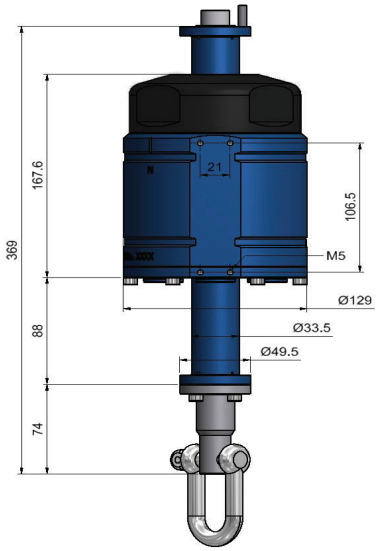
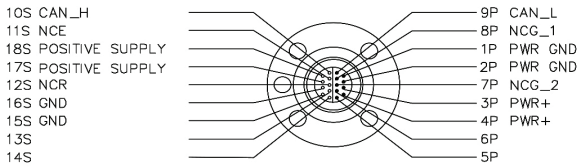
Specifications



PIN CONFIGURATION 5800 AND 5810 (AiCaP)

pin = • bushing = ◦



Interfaces:

5800 / 5810:	AiCaP protocol
5800RR:	RS-232 [8]
5800R:	RS-422
5810E:	Engineering - Analog, AiCaP, RS-23 or RS-422

Power

Supply voltage:	6-14VDC

Environmental

Depth rating:	2000m
Operating temperature:	-5 to +40°C
Dimensions:	D: 129mm H: 369mm
Materials and finish:	Durotong, titanium
Weight:	5,5 kg

Velocity measurement:

Current Speed:	(Vector averaged)
Range:	0–300cm/s
Resolution:	0.1mm/s
Mean Accuracy:	±0.15cm/s
Relative:	± 1% of reading
Statistic precision (std):	0.3cm/s (ZPulse mode), 0.45cm/s [1]

[1] Standard deviation based on 300 pings
[2] Extended calibration range available on request
[3] Requires enhanced calibration, additional fee apply
[4] Pressure conversion: 1000kPa = 100m depth
[5] 4835 to be used down to 300m, 4330 down to 2000m depth
[6] requires salinity compensation for salinity variations > 1mS/cm, and pressure compensation for pressure > 100meter
[7] within calibrated range 0 - 120%
[8] 9600 baud, 8 data bits, 1 stop bit, no parity, Xon/Xoff Handshake

Current Direction:

Range:	0–360° magnetic
Resolution:	0.01°
Accuracy:	±5° for 0-15° tilt ±7.5° for 15-35° tilt
Tilt Circuitry:	Compass Circuitry:
Range:	0-35°
Resolution: 0.01°	Resolution: 0.01°
Accuracy: ±1.5°	Accuracy: ±3°

Acoustics:

Frequency:	1.9 to 2.0MHz
Power:	25 Watts in 1ms pulses
Beam angle (main lobe):	2°

For version 5810 / 5810R: Optional sensors:

Temperature Sensor 4060

Range:	-4-36°C (32-96.8°F)[2]
Resolution:	0.001°C (0.0018°F)
Accuracy:	±0.03°C (0.054°F)
Response Time 63%:	< 2 seconds

Conductivity Sensor 4319

Range:		0-7.5 S/m
Resolution:		0.0002 S/m
Accuracy 4319	A:	±0.005 S/m - 4319
	B:	±0.0018 S/m
Response Time:		< 3s
Temperature:		
Range:		-5–40°C (23-104˚F)
Resolution:		0.01°C (0.018°F)
Accuracy:		±0.1°C (0.18°F)
Response Time (63%):		<10 sec

Wave and Tide Sensor 5217/5218

Tide:
Several ranges available, wave max: 1000kPa [4] (145psia)

Resolution:	<0,0001% FSO
Accuracy:	±0.02% FSO, ±0.01%

FSO on request [3]
Wave:

Sampling rate:	2Hz, 4Hz,
No. of samples:	256, 512, 1024, 2048

Pressure Sensor 4117, several ranges available

Resolution:	<0.0001% FSO
Accuracy:	±0.02% FSO, ±0.01%, FSO on request [3]
Temperature:	
Range:	0 – 36°C (32 – 96.8˚F)
Resolution:	<0.001°C (0.0018°F),

Accuracy: ±0.1°C (0.18°F), Response Time (63%): <10 sec

Oxygen Optode 4835/4330[5]

	O_2-Concentration	Air Saturation
Range:	0 – 500 µM	0 - 150%
Resolution:	< 1 µM	0.4 %
Accuracy:	<8 µ M or 5%[6] (whichever is greater)	<5%[7]
With multipoint calibration:	<±2 µM or ±1.5%	
Temperature:		
Range:	-5 to +40°C (23 - 104˚F),	
Resolution:	0.01°C (0.018°F)	
Accuracy:	±0.03°C (0.18°F),	
Response Time (63%):	<2sec	

[1] Based on 300 pings
[2] Calibrated range 0-35⁰
[3] Breaking strength 4044: 800 kg, 3824A: 8000kg
[4] Extended range available on request.
[5] Dependent on flow through cell bore
[6] Available on request
[7] Sensor is non-linear above 750 FTU
[8] Requires salinity compensation for salinity < 1mS/cm
[9] Within calibrated range 0-120%

Specifications subject to change without prior notice.

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