

# Signature 250

300 m

**Intermediate current profiling range that includes wave height/direction and ice tracking capability**



The Signature 250 ADCP is a medium-range current profiler with a suite of extra features. It has a current profiling range of 200 m, and can measure wave height, period and direction at depths as great as 150 m. The Signature 250 ADCP can also measure acoustic ranging to ice. Its compact design and low power consumption make it an ideal tool for long-term deployments in all waters.

Download our guide to Signature ADCPs [here](#).

## Highlights

- ✓ 200 m current profiling range
- ✓ Wave height and direction from 150 m installation depth
- ✓ Acoustic ranging to ice
- ✓ Onboard wave processing

## Applications

- ✓ Ice drift and draft measurements
- ✓ Long-term deployments requiring directional wave measurements and mid-depth current profiles
- ✓ Upwelling and downwelling, large-scale mixing studies

## Technical specifications

| Water velocity measurements |                                                   |
|-----------------------------|---------------------------------------------------|
| Maximum profiling range*    | 200 m                                             |
| Cell size                   | 1-8 m                                             |
| Minimum blanking            | 0.5 m                                             |
| Maximum number of cells     | 200 (average)                                     |
| Velocity range (along beam) | User-selectable 1.0 to 5.0 m/s                    |
| Minimum accuracy            | 1% of measured value $\pm$ 0.5 cm/s               |
| Velocity precision          | Broadband processing, consult instrument software |
| Velocity resolution         | 0.1 cm/s                                          |
| Max sampling rate           | 3 Hz (1 Hz at max power)                          |

\*Dependent on measurement conditions

| AD2CP Measurement modes |                       |
|-------------------------|-----------------------|
| Single                  | Average               |
| Concurrent              | Average and waves/ice |
| Alternate               | N/A                   |

### Echo Intensity (along slanted beams)

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Sampling                      | Same as velocity                                      |
| Resolution/ dynamic range     | 0.5 dB / 70 dB                                        |
| Transducer acoustic frequency | 250 kHz                                               |
| Number of beams               | 5; 4 slanted at 20°, 1 vertical at 500 kHz (optional) |
| Beam width                    | 2.3° (slanted), 2.2° (vertical)                       |

### Echo sounder option

|                               |                                            |
|-------------------------------|--------------------------------------------|
| Transducer acoustic frequency | 500 kHz                                    |
| Resolution                    | 6 mm - 1 m                                 |
| Number of bins                | 12000                                      |
| Transmit pulse length         | 32 us - 1 ms                               |
| Transmit pulse                | Monochromatic or pulse compressed (25% BW) |
| Resolution / dynamic range    | 0.01 dB / 70 dB                            |

### Wave measurement option

|                                  |                                                                                  |
|----------------------------------|----------------------------------------------------------------------------------|
| AST frequency                    | 500 kHz                                                                          |
| AST max distance                 | 170 m                                                                            |
| Maximum wave measurement depth   | 150 m                                                                            |
| Height range                     | -15 to +15 m                                                                     |
| Accuracy/resolution (Hs)         | < 1% of measured value / 2 cm                                                    |
| Accuracy/resolution (Dir)        | 2° / 0.1°                                                                        |
| Period range                     | 2-50 s                                                                           |
| Cut-off period (Hs)              | 25 m depth; 2 sec, 50 m depth; 2 sec, 100 m depth; 2.2 sec, 150 m depth; 2.7 sec |
| Cut-off period (dir)             | Please inquire                                                                   |
| Sampling rate (velocity and AST) | 1 Hz                                                                             |

### Ice measurement option

|            |                                                                 |
|------------|-----------------------------------------------------------------|
| Parameters | Acoustic ranging to ice, speed and direction, echo sounder data |
|------------|-----------------------------------------------------------------|

### Sensors

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Temperature:              | Thermistor in head (sampled at meas. rate)       |
| Temp. range               | -4 to +40 °C                                     |
| Temp. accuracy/resolution | 0.1 °C/0.01 °C                                   |
| Temp. time response       | 2 min                                            |
| Compass:                  | Solid State magnetometer (max 1 Hz sample rate)  |
| Accuracy/resolution       | 2° for tilt < 30°/0.01°                          |
| Tilt:                     | Solid State accelerometer (max 1 Hz sample rate) |
| Accuracy/resolution       | 0.2° for tilt < 30°/0.01°                        |
| Maximum tilt              | Full 3D                                          |
| Up or Down                | Automatic detect                                 |
| Pressure:                 | Piezoresistive (sampled at meas. rate)           |
| Standard range            | 0-300 m (inquire for options)                    |
| Accuracy/precision        | 0.1% FS / Better than 0.002% of full scale       |

### AHRS option

|                                   |                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Accelerometer dynamic range       | $\pm 2$ g                                                                                                                |
| Gyro dynamic range                | $\pm 250^\circ/\text{sec}$                                                                                               |
| Magnetometer dynamic range        | $\pm 1.3$ Gauss                                                                                                          |
| Pitch and roll range / resolution | $\pm 90^\circ$ (pitch) $\pm 180^\circ$ (roll) /0.01°                                                                     |
| Pitch and roll accuracy           | $\pm 2^\circ$ (dynamic)*, $\pm 0.5^\circ$ (static, $\pm 30^\circ$ )                                                      |
| Heading range / resolution        | 360°, all axis /0.01°                                                                                                    |
| Heading accuracy                  | $\pm 3^\circ$ (dynamic)*, $\pm 2^\circ$ (static, tilt < 20°)                                                             |
| Sampling rate                     | Same as measurement rate (up to 3 Hz)                                                                                    |
| Power                             | Using AHRS draws more power than the regular compass and tilt sensor. Please refer to the Signature Deployment software. |

\*Dynamic specifications depend on the type of motion.

## Data recording

|             |                                                      |
|-------------|------------------------------------------------------|
| Capacity    | 16 GB, 64 GB or 128 GB (inquire for larger capacity) |
| Data record | Consult instrument software                          |
| Mode        | Stop when full                                       |

## Real-time clock

|                                              |                                      |
|----------------------------------------------|--------------------------------------|
| Accuracy                                     | $\pm 1$ min/year                     |
| Clock retention in absence of external power | 1 year. Rechargeable backup battery. |

## Data communications

|                             |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet                    | 10/100 Mbits Auto MDI-X, TCP/IP, UDP/IP, HTTP protocols, Fixed IP / DHCP client /Auto IP address assignment, UPnP and Nortek proprietary instrument discovery over Ethernet |
| Serial                      | Configurable RS-232/RS-422 300-1250000 bps                                                                                                                                  |
| Recorder download baud rate | 20 Mbit/s (Ethernet only) - 1 GB in 6 minutes                                                                                                                               |
| Controller interface        | ASCII command interface over Telnet and serial                                                                                                                              |

## Connectors

|                            |                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| Depending on configuration | MCBH6F (Ethernet), MCBH8F (serial), MCBH2F-G2 (pwr), optional Souriau M-series metal connector for online use (10M) |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|

## Software

|           |                                                                                             |
|-----------|---------------------------------------------------------------------------------------------|
| Functions | Deployment planning, instrument configuration, data retrieval and conversion (for Windows®) |
|-----------|---------------------------------------------------------------------------------------------|

## Power

|                                  |                                                |
|----------------------------------|------------------------------------------------|
| DC input                         | 15-48 V DC                                     |
| Maximum peak current             | 1.5 A                                          |
| Max. average consumption at 1 Hz | 15 W                                           |
| Typical average consumption      | 400 mW                                         |
| Sleep consumption                | 100 $\mu$ A, power depending on supply voltage |
| Transmit power per beam          | 4-200 W, adjustable levels                     |
| Ping sequence                    | Multiplexing or parallel                       |

## Batteries

|          |                                    |
|----------|------------------------------------|
| Internal | 540 Wh alkaline or 1800 Wh lithium |
|----------|------------------------------------|

## Batteries

|          |                                              |
|----------|----------------------------------------------|
| Duration | Depending on configuration, consult software |
|----------|----------------------------------------------|

## Environmental

|                       |                             |
|-----------------------|-----------------------------|
| Operating temperature | -4 to +40 °C                |
| Storage temperature   | -20 to +60 °C               |
| Vibration             | IEC60068-2-64               |
| EMC approval          | IEC/EN 61000-6-2, 61000-6-3 |
| Depth rating          | 300 m                       |

## Materials

|                |                                                                      |
|----------------|----------------------------------------------------------------------|
| Standard model | POM with titanium fasteners. Reinforced polyurethane transducer cups |
|----------------|----------------------------------------------------------------------|

## Dimensions

|                                                    |        |
|----------------------------------------------------|--------|
| Maximum diameter                                   | 464 mm |
| Maximum length with room for internal batteries    | 523 mm |
| Maximum length without room for internal batteries | 308 mm |

## Weight

|                      |                                   |
|----------------------|-----------------------------------|
| In air, no battery   | 18.5 kg (17.1 kg short)           |
| In water, no battery | 1.5 kg (5.2 kg short)             |
| Battery              | 5.1 kg (540 Wh), 3.8 kg (1800 Wh) |