

WATER FLOW MONITORING



APPLICATION BACKGROUND

Simply recording water depth does not provide a reliable measure of water flow, for example, depth may vary while flow remains constant. In such cases it is essential to measure depth and velocity and then determine the flow measurement.

Unidata's Starflow Ultrasonic Doppler instrument is ideal for smaller open channel and pipe measurements as it is a complete hydrographic data collection system.

Starflow measures water velocity, depth, flow and temperature, enabling you to do a complete stream study with a single instrument.

Starflow operates in a wide range of water qualities from fresh streams to primary sewerage channels. It measures both forward and reverse flows, and is particularly useful at sites where a stable stage / velocity relationship does not exist.

For very small flow monitoring the Unidata Tipping Bucket Flow Gauge can be used.

APPLICATION DETAIL

Open channels, partly filled pipes, and natural streams have very complex velocity characteristics. Turbulence, waves, stream slope, bed and wall unevenness, rocks and debris, all combine to create an unpredictable velocity profile.

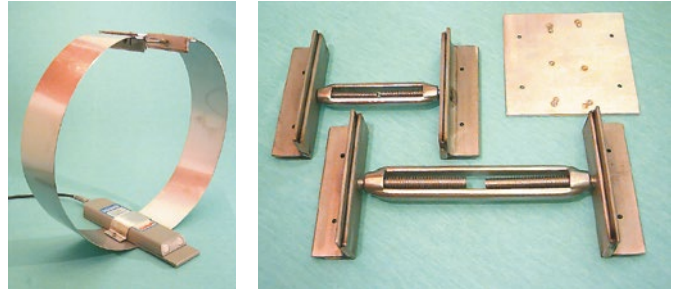
To account for these effects Starflow analyses up to one thousand separate velocity measurements and statistically determines the mean velocity. This approach provides a good "average velocity" even under difficult conditions.

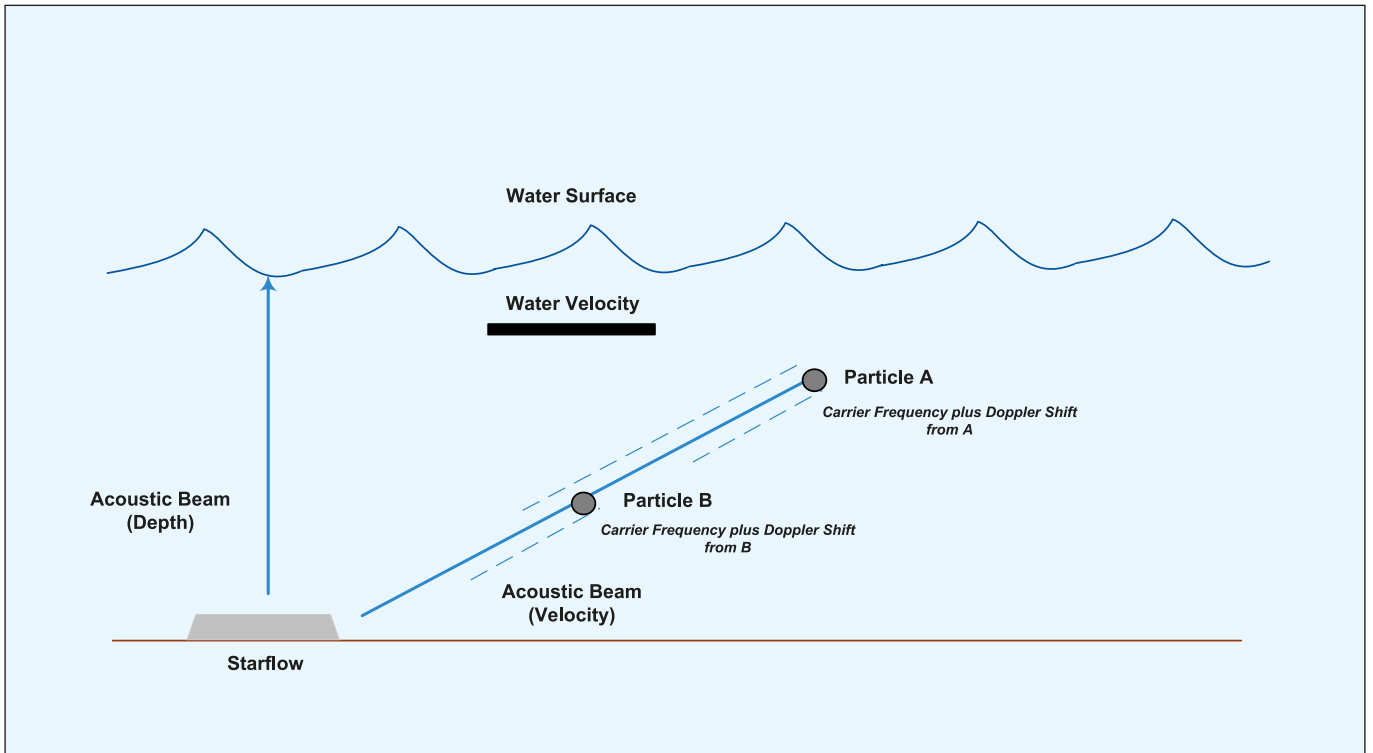
Note, however, that Starflow is not a "current profiler", that is, it does not record a detailed velocity profile.

The Starlog companion software allows a user to define the stream, channel or pipe profile, so that the velocity and depth readings can be converted to a true flow reading.

Starflow contains a micrologger with 512kb of memory; enough for 250,000 measurements. It will acquire instantaneous, maximum, minimum and averaged readings. Starflow is equipped with the SDI-12 communications facility, intelligent battery supervision and an interface to a telemetry system, such as Neon.

Starflow Instrument can connect to an SDI-12 Data Recorder as a slave or it can act as an SDI-12 Data Recorder master to which other SDI-12 instruments can be connected. You will generally mount the Starflow on (or near to) the bottom of the stream, pipe or culvert where you are measuring flow, however you can also mount it on the side of larger channels.





A single cable connects the instrument to a 12VDC power source. The unit also provides a control output for initiating a water-sampling unit. The sampling control is fully programmable and can be based on flow, velocity, depth or a combination of these conditions. By connecting a rain gauge you can make a complete storm water monitoring system.

Starflow can be equipped with the 6256LCD Starflow Liquid Crystal Display Module to display the values obtained from the most recent scan on demand. The 6256LCD is packaged in a compact weatherproof polycarbonate enclosure, fitted with pre-wired SQL type connectors.

A Neon Remote logger can be connected with the Starflow Instrument in order to record and transmit measured perimeters to a Neon Server routinely. When the data arrives at the Neon Server, it can be viewed on a standard web browser. The data can be checked automatically for any out of limit readings and an appropriate alarm action can be issued.



TYPICAL CONFIGURATION

APPLICATION SPECIFIC INSTRUMENTS/INPUTS

Options	Unidata Part Number	Description
Ultrasonic Doppler Instrument - velocity, depth & flow	6526J-21	Starflow Ultrasonic Doppler Instrument 0-2m
Ultrasonic Doppler Instrument - velocity, depth & flow	6526J-51	Starflow Ultrasonic Doppler Instrument 0-5m
Ultrasonic Doppler SDI-12 Instrument - velocity & depth	6527A	Starflow QSD Ultrasonic Doppler SDI-12 Instrument
Tipping Bucket Flow Gauge	6506G/6506H	Flow Gauge 75ml / 130ml

NEON TELEMETRY - NRL / RTU / FIELD UNITS

Options	Unidata Part Number	Description
Ethernet	3016A-000 / 3008A-000	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G	3016A-C00 / 3008A-C00	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G and LoRa	3016A-CL0 / 3008A-CL0	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat	3016A-001 / 3008A-001	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat & 3G/4G	3016A-C01 / 3008A-C01	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Low Earth Orbit Satellite - Globalstar	3016A-00G / 3008A-00G	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Satellite - Iridium Short Burst Data	3016A-00R / 3008A-00R	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Standalone RTU/NRL - Industrial	3004A-00 / 3004A-0L	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
Cellular RTU/NRL 3G/4G - Industrial	3004A-C0 / 3004A-CL	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
M – Series Standalone RTU/NRL	3004A-M000 / 3004A-M0B0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Cellular RTU/NRL 3G/4G	3004A-MC00 / 3004A-MCB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series LoRa RTU/NRL	3004A-ML00 / 3004A-MLB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Ethernet RTU/NRL	3004A-MEBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Microsatellite RTU/NRL	3004A-MHBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Iridium Short Burst Data RTU/NRL	3004A-MIBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional

NEON APPLICATION SOFTWARE - CUSTOMER SERVER

Options	Unidata Part Number	Description
Neon Applications Software	2302A	Neon Server Software Licence Incl 5 NAL
Neon Applications Software	2302A-10	Additional 10 NRT Access Licence
Neon Applications Software	2302A-20	Additional 20 NRT Access Licence
Neon Applications Software	2302A-50	Additional 50 NRT Access Licence

NEON HOSTING SERVICE - UNIDATA SERVER

Options	Unidata Part Number	Description
Neon Hosting Service	2301A	Neon Data Initial Subscription Setup Fee
Neon Hosting Service	2301A-01	Neon Data Service Fee for 1-50 NRT
Neon Hosting Service	2301A-02	Neon Data Service Fee for 51-100 NRT
Neon Hosting Service	2301A-10	Neon Data Service Fee Metering

DATALOGGER MANAGEMENT SOFTWARE

Options	Unidata Part Number	Description
Starlog V4 Management Software	6308A-AUE	STARLOG V4 Full Licence Key

AVAILABLE FROM: **Unidata Pty Ltd** | 40 Ladner Street, O'Connor, 6163 Western Australia | Tel: +61 8 9331 8600 | info@unidata.com.au