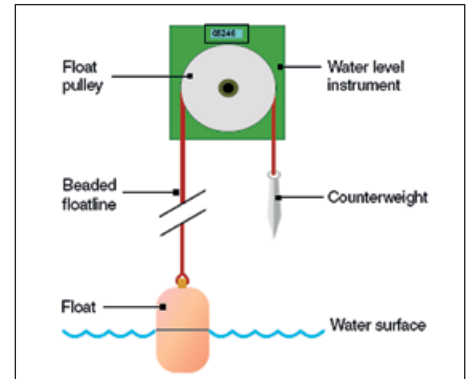
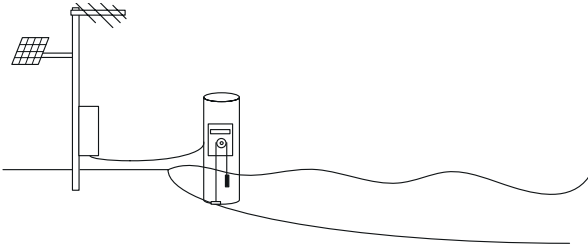


## Water Level Monitoring

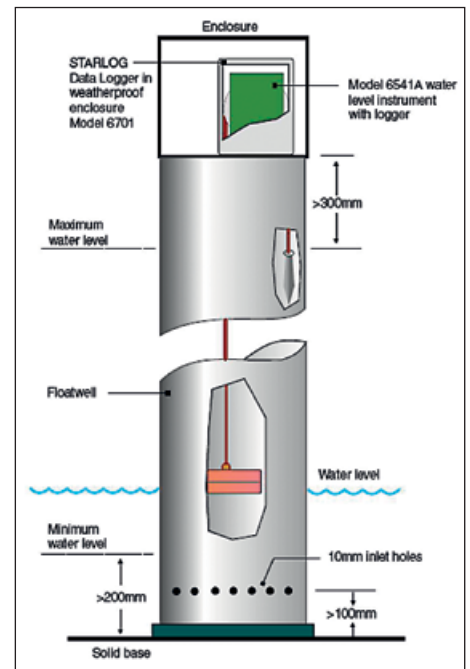
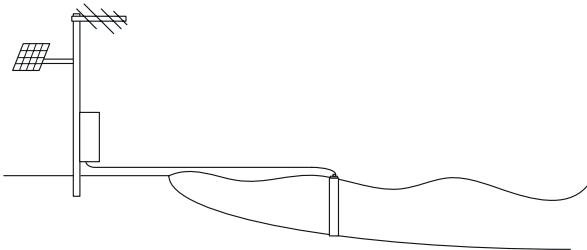
### Method 1

Shaft Encoder  
Water Level  
Instrument



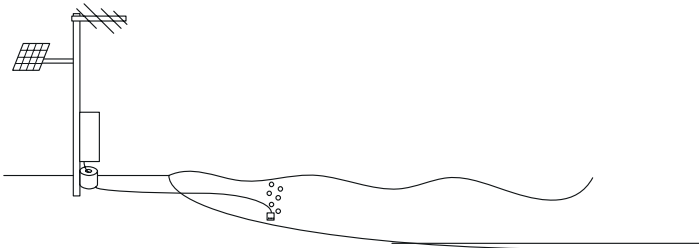
### Method 2

Hydrostatic Depth  
Gauge Instrument



### Method 3

Bubbler Water  
Level Instrument



## Application Background

Water level can be measured using any one of the methods below:

- **Method 1** - A shaft encoder / float and wheel / beaded float line system
- **Method 2** - A pressure sensor which is immersed into the stream or river
- **Method 3** - A more complex pressure bubbler system which allows for a small open tube to be immersed into the stream or river with a gas pump or gas cylinder to inject small bubbles into the open tube and measure water depth by measuring the back pressure required to force bubbles out of the tube in the water .

There are also emerging technologies such as radar and ultrasonic which can be used to measure water depth.

While there are many methods / technologies available, the most common and the most stable method is the shaft encoder float and wheel system. This method required a stilling well or a smaller pipe to be installed on the stream or river bank or on a bridge structure to provide a stable / not disturbed by flow or wind measurement environment for a small float, a float line and a counter weight so the movement in stream / river level can be measured by rotation of the shaft of a wheel. Typically the shaft rotation is measured very accurately by light or laser encoder, and the data is shown on the display and is recorded in the data logger within the instrument.

## Application Detail

The Unidata Model 6541 Precision Water Level instrument can achieve operating accuracy and resolution of 0.2mm. This accuracy is maintained for the service life of the instrument without calibration or maintenance, apart from battery changes.

The 6541 instrument has the range to monitor surface and under-ground waters, and the precision to monitor rainfall and evaporation. The very low mechanical friction and inertia of the instrument mean that it can produce data with high precision and accuracy. Unidata Precision Water Level Instruments have been installed at over 5000 sites. The power consumption of this instrument is tiny, only a few micro amps is needed to operate it, so it can be run on a single battery for more than a year.

The 6541 instrument is normally "connected" to the water surface by a float system. On installation, the instrument is set to display the water level. An optical encoder is mounted on the input shaft so, as the water level changes, the input shaft and encoder rotate. The rotation of the encoder is continuously monitored so the instrument



tracks water level changes. These changes update the LCD display and are recorded by the instrument's internal data logger.

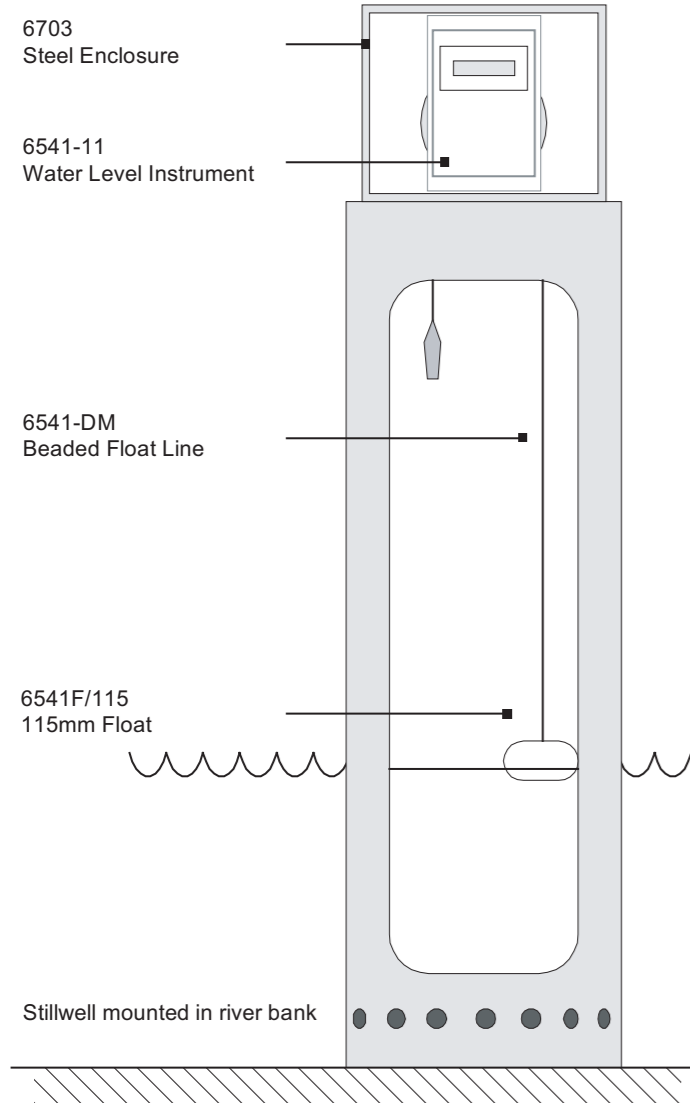
Your choice of encoding wheel diameter, length of float line, and type of float will depend on the site conditions and measurement objectives.

You can add the additional internal 6541L micrologger assembly and or a neon remote Terminal to provide a temporary store of the data until it is transmitted to a central neon sever on a regular basis, perhaps hourly, or more frequently in a flood monitoring application.

When connected with a Neon Remote Terminal or Module you can monitor data recorded by the instrument, you can also re-program the unit, and check the health of the site, all from a web browser on the internet.

This can be done over cellular or satellite communication links. Using telemetry decreases the need for time consuming site visits.

When you use one of the telemetry options you may need to provide external power such as a solar panel, external battery, and regulator.



## Typical Configuration

### Application Specific Instruments/Inputs

Options	Unidata Part Number	Description
Water Level Instrument	6541C-11	WLI with 500mm Pulley & Alk Batt Metric (Imperial version available)
Float	6541F-115	WLI Float Assembly - Cylinder 115mm (other options available)
Float Line	6541D-M	WLI Beaded Float line Metric (Imperial version available)

### Neon Telemetry - NRT / RTU / Field Units

Options	Unidata Part Number	Description
Cellular RTU GPRS	2011E-AB0	Neon Metering Module GSM+Ant+Batt
Cellular RTU 3G	2013D-AB0	Neon Metering Module 3G+Ant+Batt
Cellular RTU GPRS-Industrial	2014E-AB0	Neon Remote Terminal-Terrestrial+Ant+Batt
Cellular RTU 3G-Industrial	2016D-AB0	Neon Remote Terminal-Terrestrial+Ant 3G+Bat
Low Earth Orbit Satellite - Globalstar	2015D-AB0	Neon Remote Terminal-Satellite Globalstar+Ant+3 Bat
Ethernet	2017E-0B0-1 or 3	NRT Ethernet - 1 or 3 Ethernet Ports with Batteries
Equatorial Orbit Satellite - Inmarsat	2018E-AB0-1	NRT Ethernet with Inmarsat M2M Modem & 1 Ethernet Port & Bat
Wi-Fi	2019E-AB0-1	NRT Ethernet Wi-Fi - 1 Ethernet Port & Batteries
LCD Display	2500E	NRT LCD Display
Field Termination Strip	2103E	2014E, 2015D, 2016D & 2017E NRT FTS
NRT Firmware Option	2303A-8M	8M Extended Memory
NRT Firmware Option	2303A-8M-CAM	8M Extended Memory & Camera Option
NRT Firmware Option	2303A-CAM	Camera Option

### 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

### Conventional Dataloggers / Field units

Options	Unidata Part Number	Description
Standard Starlogger	6004D-11	Red logger 512K + Alkaline Battery
Display Starlogger	6004D-21	Blue logger with LCD 512K + Alkaline Battery
Prologger	7001E-11	Green logger 1M + Alkaline Battery
Micrologger	8010B-EUR	Micrologger 512K
Field Termination Strip Starlogger	6103E	6004D FTS
Field Termination Strip Prologger	7100E	7001E FTS

### Starlog 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

[www.unidata.com.au](http://www.unidata.com.au)

Unidata Pty Ltd (Unidata) owns the copyright in this information and much of the information in it is Unidata's proprietary information. No person may reproduce or otherwise deal with this information (or any part of it) or any of the proprietary information (or any part of it) for commercial purposes except with Unidata's prior written consent.