NIWA
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NIWA Stream Traveller Users Guide

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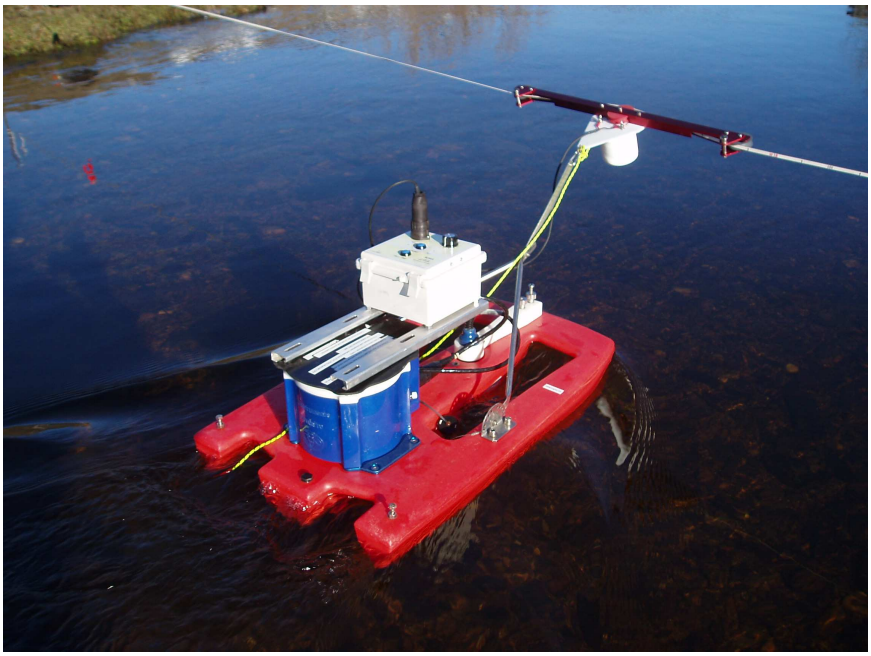

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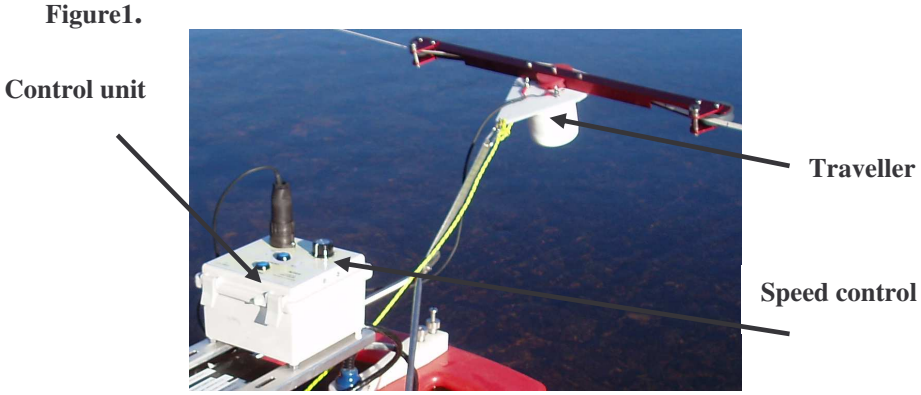
1. General Information

The NIWA ADCP traveller is designed to traverse and tow an unmanned gauging boat such as the StreamPro, from Teledyne RD Instruments, across a measurement cross section at a steady speed. Although Acoustic Doppler Current Profilers (ADCPs) work using bottom tracking and do allow for uneven crossing speeds the results obtained by using a steady and repeatable speed for traversing gives demonstrably more reliable results.

Figure1.



The NIWA traveller consists of two main parts:

- A lightweight motorised traveller unit that attaches to a survey rope strung across the river or stream.
- The controller module that is attached to the 'boat'.

By separating the power supply and control circuitry the weight of the rope mounted traveller has been kept to a minimum.

The following items are also included with the traveller:

- 2 x remote control transmitter
- 1x charging lead for the control module internal battery.
- 1 x carabiner to attach the StreamPro to the traveller
- 2 x rope clips to limit the travel at the river edge.
- Optional Yamayo survey rope (rectangular profile 5mm*2mm). Please note that all testing completed to date has used this rope and its use is therefore highly recommended.

2. Specifications

Traveller Power:	12V 1.2Ah sealed lead acid battery
Max speed (approx)	8 m/min
Min speed (approx)	0.5 m/min
Remote Battery:	12V alkaline eg Duracell MN21; Energizer A23 etc
Traveller weight:	530g
Control module weight:	1400g

3. Controls and Indicators

3.1. Controls

Power: is supplied to the control unit whenever the traveller cable is plugged into the control unit. This connection acts as the on/off switch and should therefore be left disconnected when not in use.

Direction: The direction of movement is controlled either via the 'direction' button on the control unit itself or via the corresponding button on the remote control. Pressing either of these reverses the direction of travel.

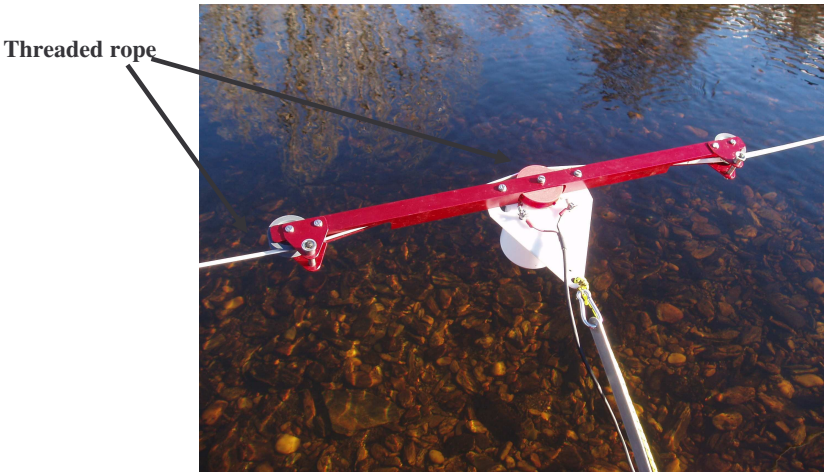
Start/Stop: Movement of the traveller may be started or stopped using the 'Start/Stop' button on the control unit itself or via the corresponding button on the remote control. Pressing either of these toggles between motor running and motor stopped.

3.2. Indicators

Direction indicators: Two sets of LEDs (Light Emitting Diodes) are provided indicating whether the traveller is set to travel to the left or right (as viewed looking upstream as most operators will setup cross sections while standing on the downstream side).
When set to travel to the **right** the 3 **red** LEDs flash.
When set to travel to the **left** the 3 **green** LEDs flash.
Three LEDs are provided such that one faces the lid of the control module, one faces the left river bank and one faces the right river bank. In this way one LED should always be visible to the operator.
When the traveller is stationary the direction LEDs flash slowly to indicate the direction that has been selected.
When the traveller is moving the direction LEDs flash quickly.

Low battery indicator: A single low battery indicator is provided on the control unit itself. This LED is latched so that once a low battery condition has been detected the LED will remain illuminated until the power is removed.

Figure2.



4. Field Operation

Initial Checks

1. Always ensure that the traveller battery is fully charged – overnight trickle charging is recommended using a lead acid.
2. Check that a spare battery for the remote is available.

Field Operation

1. Setup your survey rope/tape so it is tight and approximately level at a height range between 0.3m and 0.7m above water level. This may require well driven long stakes and pegs on each side. The traveller is designed to travel along a survey rope with an approximate width of 2mm x 3mm, but will travel on other ropes as long as they have sufficient diameter to grip on the drive wheel.
2. Mount the traveller on the line by removing the outer retaining pins and threading the line as illustrated in the photograph. The counterweight, if required (low velocity water), can be adjusted to counteract the rotation of the bottom of the traveller.
3. Link the traveller to the boat either with the snap carabiner through the top bridle connection or with a length of rope (may be needed if the line is rigged high).
4. When using a StreamPro with the traveller it is necessary to remove the two locking pins on the outer edge of the StreamPro bridle so it can move freely during the traverse. This prevents the transducer offset changing during the traverse if the line has not been set up exactly level.
5. Mount the control box on top of your pontoon and position it so the boat sits level. For the StreamPro the control unit is designed to slide over the solar shield locking thumbscrews from the front.
6. Plug the traveller cable into the control unit in order to turn on the power.
7. Determine where the edge positions (2 good bins) are by moving the traveller and StreamPro (pinging) to each edge. Mark these by placing the supplied clip on the line on the bank side of the traveller. Note down the offset from the centre drive wheel of the traveller to the bank (traveller centre-line to outer edge of clip = 300mm).
8. Set and test the speed on the control box so each traverse is at least than 3 minutes - see Fig1.
9. The motion and direction can be controlled using either the remote control or buttons on the control box. The LED's on the side change with motion and direction so this is visible from distance.
10. On completion disconnect the traveller cable from the control unit to power them down.

5. Fault Finding

Unit does not work:

Check that the main battery is installed and is charged.
Check that the cable to the traveller is connected to the control module

Remote controls do not work:

Check that the controls on the control unit work correctly if not it is a control unit fault.
Check that the remote battery is not flat – LED on the remote should light when the remote buttons are pressed.
Check that the remote is within range of the control unit.

Traveller moves in the wrong direction

Check that the wires to the traveller motor have not been reversed.

Traveller slips on the rope

Ensure that the correct type of survey rope is being used.
Check that the rope tension is adequate.
Ensure that the rope is not twisted and that it is correctly threaded over the pulleys.

6. Warnings

- Do not over-tighten any of the wing-nuts provided.
- Although the traveller and control unit are protected from water ingress total immersion of either must be avoided at all times.