2100C Logie Fish Counter

- **Multi-channel** One to four channel capacity
- **Mains/battery operation** 24V dc mains power supply or a 24V battery.
- **Easy installation** Just connect to the electrodes and switch on - the counter self adjusts to the current electrode resistance
- **Automatic recalibration** Self-calibrates every 30 minutes
- **Sophisticated discrimination** The counter rejects most non-fish events
- **Environmental compensation** The counter operates consistently under varying environmental conditions
- **Local or remote operation** Data is read from the counter and its settings adjusted using a personal computer which is either connected locally or remotely via a modem and telephone line
- **Data logging** Up to 65536 sets of fish movement records may be stored
- **Graphical records** PC resident software allows individual fish movement signals to be viewed and analysed
- **Comprehensive control features** Includes independent up/down threshold levels, user-definable relay outputs, password protection

The Logie series of resistivity fish counters have been developed by Aquantic Ltd., working in conjunction with Scottish Office freshwater fisheries scientists. The 2100C model is the latest in the series and incorporates developments and refinements derived from over ten years of experience of counter operation at many sites in the UK and overseas.

The Logie fish counter is used in conjunction with an electrode set to detect the upstream and downstream passage of fish in the body of water in which the electrode set is installed. The electrode set comprises 3 stainless steel conductors placed in a parallel alignment for weir use, or a closed cylindrical configuration for tube use. The passage of a fish causes a transient reduction in the resistance detected between an electrode pair, and this reduction is the basis of its detection by the counter. Other non-fish events can cause resistance reductions; the Logie counter runs a software algorithm that assesses each incoming signal against a template of a typical “fish” signal, thus allowing genuine events to be substantially discriminated from false events.

Wide variations can be expected in those factors that mainly determine inter-electrode resistance, namely depth and conductivity. The Logie fish counter regularly measures the bulk resistance between the electrodes and automatically adjusts the sensitivity of its signal processing path in order to compensate for any change. On sites where low water conductivities occur, additional compensatory adjustments can be made with the aid of precise conductivity data supplied from an optional environmental card.

The user sets signal threshold levels that define a size below which a fish will not be counted. Separate UP and DOWN thresholds allows cognisance to be taken of the different position in the water column of upward and downward moving fish.

If recording equipment is connected to the counter (which requires additional optional components) then the user may opt to record only genuine signals or to record all signals that exceed the threshold. The latter option helps the user to build confidence in the counter in that all events may be inspected visually so that a manual check may be made on the counter's performance.

The instrument is provided with a total of 12 programmable relays. These may be allocated by the user to such ancillary equipment as is being used with the counter and which, on detection of an event, requires activation by the opening or closing of a switch. Typical examples of the application of such relays include the activation of chart recorders and data loggers.

The instrument is equipped with two serial ports, and software is supplied to allow the counter to be controlled, and data displayed and logged, by personal computer. The computer can either be sited at the counter location, or remotely via a modem and telephone link.

By their very nature, fish counters are susceptible to damage from lightning activity. It is not necessary for the weir electrodes or the wiring from them to the counter to sustain a "direct hit" for damaging voltages to be applied to the counter. Even a strike in the vicinity of the counter can cause problems, as the stroke current produces very high magnetic fields. If these fields link with the counter input circuits formed by the electrodes and wiring, then high voltages are induced which may damage the input circuit components. Damage can be prevented by inserting surge protection devices between the counter input circuits and any external wiring. In normal operation these devices are transparent to counter operation. On the occurrence of voltage transients, they act to limit the transient voltage magnitude and divert surge currents harmlessly to earth. Aquantic Ltd can supply a transient suppression panel for use with the Logie fish counter that provides suppression for all counter input connections, including the mains connection.

Summary Specification

Electrodes	Open channel or enclosed tube	
Channels	One, two, three or four channel operation	
Electrode separation	Consistent with fish length of interest; 450mm is a typical separation for salmon counting	
Electrode bulk resistance range:	12-500Ω	
Fish resistance	Up to 500 times the electrode bulk resistance	
Signal discrimination	Substantially discriminates between fish and non-fish events. *It should be noted that wind-induced hydraulic conditions can sometimes closely mimic the passage of fish. Where possible, The fish counting station site should be carefully chosen to avoid such conditions.*	
Environmental compensation	Compensates for changes due to water depth, conductivity and temperature	
Control	By local or remotely connected personal computer	
Direction	Up or Down movements detected and logged separately	
Fish speed	Up to 6m/s	
Fish separation	0.5s minimum	
Acceptance thresholds	Separate thresholds for Up and Down movements, settable in the range 10-99% of full scale	
Event logging	Date, time, channel number, direction, signal magnitude, conductivity, (maximum 65536 events)	
Graphics	Separate PC based package to log/view fish traces	
Lightning suppression	Available as an optional extra for all signal and power connections.	
Operating temperature	0-50°C	
Supply voltage	24V dc from 24v mains supply or battery	
Supply current (min)	Single high impedance channel	0.3A
Supply current (max)	Four low impedance channels	0.8A
24V 40 Ah battery life (max)	Single high impedance channel	5 days approx.
24V 40 Ah battery life (min)	Four low impedance channels	2 days approx.

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