IRRIGATION CHANNEL MEASUREMENT AND CONTROL

APPLICATION BACKGROUND

Open-channel irrigation water intakes can be monitored for water level / flow and they can be optionally controlled by opening and closing a gate to deliver programmed flow.

This technology can save water and cost of water and can eliminate the hands on requirements of a manual system.

Such systems enable irrigators to monitor and control the water they are allowed to take from rivers and streams for irrigation. These range from basic monitoring-only to an automated and tele metered solution, where irrigators can access their system remotely via the internet using a smartphone, as if they were at the site.

APPLICATION DETAIL

The simplest option is monitoring-only. However many clients opt for full automation - with automatic gate control - which reduces the need to carry out manual tasks such as adjusting gates and downloading data.

A typical system is comprised of these interlinked parts:

- A flow measurement section, a weir/flume fitted with a water sensing structure.

- A Neon Remote Logger for logging data and transmitting it.

- An optional inlet gate structure with gate control system.

In the basic monitoring system, the abstracted flow is measured and recorded by 6541 Precision Water Level Instrument. This option may be sufficient where there is no gate control or when an irrigator is happy to control the flow with a manually-operated gate and periodically download flow data.

In an automatic monitoring system, a control gate automatically adjusts its position to maintain the flow within a user programmed target range. The gate controller receives flow rate information from the flow measurement instrument and compares it with the target.

If the flow is lower than the target the controller increases the gate opening to increase the flow and vice versa. The gate controller adjusts the gate to keep the flow on target.

Because the Neon system is Internet-capable it also enables you to monitor the site and allows you make changes to the flow target, without having to visit the site. It allows you to view activity, data and to change flow settings via the Internet, saving time and reducing operational costs. Telemetry of data, between the site and the Neon server, is possible anywhere there's cellular or satellite coverage at the site.

Neon provides a window on your irrigation monitoring system. You can check it remotely at any time, or change flow targets (for sites with flow control gates), by viewing secure data from your tele metered sites over the internet. And you don't have to do this from your desktop computer. Your smartphone can provide a mobile view of flow and gate control status, wherever there's cellular coverage. If your site has a control gate, you can also use your phone to change the flow.

If 'out-of-range' flows or other malfunctions should occur, with tele metered sites, you can receive programmed alarms via text or email.

Any required flows can be programmed allowing irrigators to set exact flow requirements. The weir is usually hydraulically coupled to the stilling well. The Neon Remote Logger converts water level from the sensor to flow rate. It also provides feedback for the gate controller and can be accessed by a standard web browser.

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

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-00I / 3008A-00I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat & 3G/4G	3016A-C0I / 3008A-C0I	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	3004AC0 / 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** I 40 Ladner Street, O'Connor, 6163 Western Australia I Tel: +61 8 9331 8600 I info@unidata.com.au

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