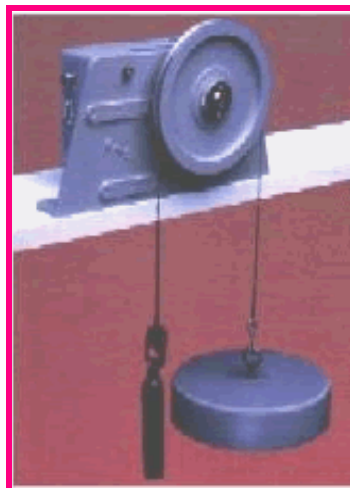


RAINFALL/ RIVER DATA ACQUISITION SYSTEM MODEL RRDL3

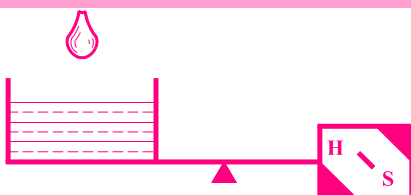


- Tipping Bucket Raingauge Input
- Quadrature Shaft Encoder Input or Timed Analogue Reading.
- Accurate Real Time Clock
- Protection On Inputs & Outputs
- Low Power Operation
- Fully Environmentally Tested
- Programmable Alarms
- RS232 Communication Mode
- Mil. Spec. Connectors (Some Models)
- LCD Digital Display (Some Models)



ISO
9001

QUALITY SYSTEM
CERTIFIED



HYDROLOGICAL SERVICES PTY.LTD.

**HYDROLOGICAL INSTRUMENTS & EQUIPMENTS
DESIGNED AND MANUFACTURED
BY HYDROLOGISTS**

DESCRIPTION:

The **HYDROLOGICAL SERVICES RRDL3** - Rain and River Data Acquisition System is a compact, programmable acquisition device suitable for any short or long term, remote data login application. The powerful communication interfaces and software enables the RRDL3 to alarm dial external phone numbers or to send data via radio, satellite or telephone modem. Alternatively a status report can be generated and transmitted on request.

Available Models:

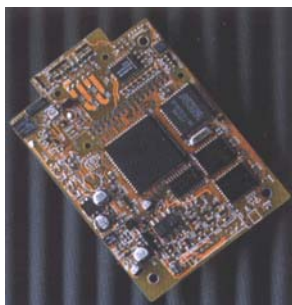
- 1- RRDL3 Data Logger, Durable ABS case.
 - Rain/Quadrature shaft encoder
 - Rain/Quadrature built in shaft encoder
 - Logger upgrade kit to fit all H.S. quadrature shaft encoder
- 2- RRDL3-AN Data Logger, Durable ABS case.
 - Rain/River Gas Purge System.
- 3- RRDL3-AN-HC Data Logger, Hard Aluminium Case with Mill Spec Connectors, No LCD Display.
 - Rain/River Gas Purge System.
- 4- RRDL3-AN-LCD Data Logger, Hard Aluminium Case, with LCD Display and Mill Spec Connectors.
 - Rain/River Gas Purge System.

COMMUNICATION:

An RS - 232 Serial Port allows direct communication with a computer on-site or remote via a modem link (for radio, satellite or telephone).

Communications are two-way so that the RRDL3 can be remotely interrogated to send a status report, download all or part stored data. Alternatively, it can be programmed to automatically dial out to 3 preset phone numbers based upon reaching alarm or trend levels. It can also be programmed to send scheduled messages for river height and rainfall.

All operating parameters can be programmed remotely via a computer and modem. On line HELP instructions are available for every logger command. A full status report on all operating parameters and the battery is available on interrogation



POWER CONSUMPTION:

All RRDL-3 are low power usage devices. However, the power consumption differs between one model and another. All loggers power up when an event is recorded or a programmed timed analogue reading is initiated. In sleep mode the power consumption for each model is as follows:

- a) **RRDL3 Data Logger:** sleep mode 160F A. 6 x AA cells provide a power sufficient for up to 12 months operation.
- b) **RRDL3-AN:** sleep mode 0.5mA. 1x 12VDC, 7 Amp/Hr battery provide a power sufficient for up to 4 months operation
- c) **RRDL3-AN-LCD Data Logger:** Sleep mode 3.0 mA. 1x 12VDC, 18 Amp/Hr battery provide a power sufficient for up to 4 months operation.

DATA LOGGER MODEL RRDL3

OPERATION:

MODEL RRDL3 is a rugged, compact data logger for use with Hydrological Services Tipping Bucket Raingauge and Quadrature shaft encoder. This unit records the date and time of occurrence of tips from the tipping bucket raingauge or the +/- encoded signals from a shaft encoder up to 55,000 events able to be stored in the RRDL3's memory. The data is stored in a 128KB Flash EPROM.

The Model RRDL3 is optically isolated smart sensor interface, it fits inside the model TB3 Raingauge or is housed as a freestanding data logger. The compact design of the RRDL3 makes it ideal for incorporation into any piece of equipment where intelligent data acquisition and logging are required.



SPECIFICATIONS:

Microprocessor:	Intel 80C196.
Program memory:	AMD29F010 128kb Flash EPROM (PLCC28) 64 kb Available for Program.
Data Memory:	AMD29F010 128kb Flash EPROM (PLCC28)
Parameter Memory:	PCF8594 512 Bytes EEPROM (SO8) (Min Of 100,000 erase/rate cycles)
Events Recorded:	1 second resolution; Two Partition Memory, User Select

Large Partition

a) 40,000 Digital rain events + 16,000 river events;
Or

b) 16,000 river events + 40,000 Digital rain events

Small Partition

Real time clock:	day/month/year; hour minute second. Battery backed with Lithium Cell 32768 Hz crystal trimable Accuracy 20 secs per month Programmable alarm wake up.
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Inputs:	1x digital raingauge input; 1 x Digital Quadrature Shaft Encoder input; Optically Isolated expansion port for smart sensors > 4-20 mA, 0-5V etc...
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Outputs:	1x O.C output for sensor. 1x batt Switched output for modem power.
Operating Temp Range:	-30°C To +60°C
Humidity:	100% Condensing
Housing:	Durable ABS, IP65
Communications:	RS232 port [TX. RX, TDR AND CD] Hardware handshake or XON/XOFF. Mini modem power control. Direct input and control of INMARSAT Mini 'M' Sat phones.
Power Supply:	6V to 14V DC unregulated; 65mA operating mode; 160F A sleep mode.
Transient Protection:	Each input protected to 500V DC at 20 joules W.R.T. OV
Dimensions:	123mm X 80mm X 55mm, 0.4Kg
Packed Details:	0.6 Kg, 0.001m ³
Help:	Unique on board help system to give available commands as well as individual command description and syntax.

AVAILABLE MODEL CONFIGURATIONS:

RRDL-3	- Rain/Quadrature shaft encoder input
RRDL-3Q	- Rain/Quadrature built into shaft encoder
KQ-1	- Logger upgrade kit to fit all H.S. quadrature shaft encoders
	- Communications & alarm software for all models.

DATA LOGGER MODEL RRDL3-AN

The differences between the RRDL3-AN and RRDL3-AN-HC are the Cast Aluminium case and the Mill spec plugs that the model RRDL3-AN-HC possesses.



RRDL3-AN

OPERATION:

MODEL RRDL3-AN is a rugged, compact data logger for use with Hydrological Services Tipping Bucket Rainauge and Pressure Transducers. This unit records the date and time of occurrence of tips from the tipping bucket rainauge and the analogue inputs from 4 - 20 mA, 0 - 5 volts or 0-100 mVolts transducers with up to 55,000 events able to be stored in the RRDL3's memory. The data is stored in a 128KB Flash EPROM.

SPECIFICATIONS:

Microprocessor:	Intel 80C196.
Program memory:	AMD29F010 128kb Flash EPROM (PLCC28) 64 kb Available for Program.

Events Recorded: 1 second resolution;
Two Partition Memory, User Select

Large Partition

Small Partition

- a) 40,000 Digital rain events + 8,000 Analog river events;
Or
b) 20,000 Analog river events + 16,000 Digital rain events

Real time clock: day/month/year; hour minute second.

Inputs: 1x digital rainauge input; 1 x analogue (4-20mA, 0-5V, 0-10V or 0-100mV)

Outputs: 1x O.C output for sensor.
1x batt Switched output for modem power.

Operating Temp Range: -30°C To +60°C

Humidity: 100% Condensing

Communications: RS232 port [TX. RX, DTR AND CD]
Hardware handshake or XON/XOFF. Mini modem power control. Direct input and control of INMARSAT Mini 'M' Sat phones.

Power Supply: 12V to 14V DC unregulated;
80mA operating mode; 0.5mA sleep mode.

Transient Protection: Each input protected to 500V DC at 20 joules W.R.T. OV

Dimensions: 120mm X 80mm X 55mm, 0.4Kg (RRDL3-AN).
140mm X 140mm X 80 mm, 1.1Kg (RRDL3-AN-HC).

Housing: Durable ABS, IP65 (RRDL3-AN)

Help: Unique on board help system to give available commands as well as individual command description and syntax.

Analogue P.C.B.: Sensor power up selectable 1 to 9 seconds. Transducer reading interval 1 to 99 minutes

Calibration: On board microprocessor; 16 bit resolution; Temperature compensated; Zero drift compensated; Accept up to 24 inputs.

DATA LOGGER MODEL RRDL3-AN-LCD

OPERATION

The RRDL3-AN-LCD is the top of the range data logger. It possesses the manual initiation of level reading and LCD activation via push button.

Model RRDL3-AN-LCD is a rugged, compact data logger for use with Hydrological Services Tipping Bucket Raingauge and Pressure Transducers. This unit records the date and time of occurrence of tips from the tipping bucket raingauge and the analogue inputs from 4 - 20 mA, 0 - 5 volts or 0-100 mVolts transducers with up to 55,000 events able to be stored in the RRDL3's memory. The data is stored in a 128KB Flash EPROM.



SPECIFICATIONS

Microprocessor: Intel 80C196

Program memory: AMD29F010 128kb Flash EPROM (PLCC28) 64 kb Available for Program

Events Recorded: 1 second resolution; Two Partition Memory, User Select

Large Partition

Small Partition

- a) 40,000 Digital rain events + 8,000 Analog river events;
Or
b) 20,000 Analog river events + 16,000 Digital rain events

Real time clock: day/month/year; hour minute second.

Inputs: 1x digital raingauge input; 1 x analogue (4-20mA, 0-5V, 0-10V or 0-100mV)

Outputs: 1x O.C output for sensor
1x batt Switched output for modem power

Operating Temp Range: -30°C To +60°C

Humidity: 100 % Condensing

Displays: LED indicator to show a change has been recognised / logged. 4 line, 20 character high temperature LCD display.

Communications: RS232 port [TX, RX, DTR AND CD] Hardware handshake or XON/XOFF. Mini modem power control. Direct input and control of INMARSAT Mini 'M' Sat phones.

Power Supply: 12V to 14V DC unregulated; 80mA Reading mode for 15 seconds; 3.0 mA sleep mode

Transient Protection: Each input protected to 500V DC at 20 joule W.R.T. OV

Dimensions: 140mm X 140mm X 80mm, 1.1Kg

Housing: Cast aluminium, IP65 rated.

Help: Unique on board help system to give available commands as well as individual command description and syntax.

Analogue P.C.B.: Sensor power up selectable 1 to 9 seconds. Transducer reading interval 1 to 99 minutes

Push Button: Manual initiation of level reading and LCD activation via push button.

Calibration: On board microprocessor; 16 bit resolution; Temperature compensated; Zero drift compensated; Accept up to 24 inputs.

ACCESSORIES

RRDL3 & RRDL3-AN

1. Connecting lead to modem, DL309
2. 9 pin interrogation lead, DL306
3. 25 pin interrogation lead, DL308
4. Communications software, DL312

RRDL3-AN-HC & RRDL3-AN-LCD

1. Connecting lead to modem, DL309-AD
2. 9 pin interrogation lead, DL306-AD
3. 25 pin interrogation lead, DL308-AD
4. Communications software, DL312

Note: Specifications are subject to change at anytime without notice

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