

## **Model H-522**

Data Logger with Integrated  
HDR GOES Transmitter



The **WATERLOG**<sup>®</sup> H-522 Data Logger with Integrated HDR GOES Transmitter is a High Level Data Logger designed for remote operations with a built-in High Data Rate GOES Radio system. This system allows any of the sensor readings to be transmitted over the GOES Radio system. It can transmit at 100, 300 or 1200 baud rates and has a built-in GPS.

### **KEY FEATURES**

- Menu driven user interface
- Self-timed and random transmissions
- Configuration Query allows examination of set-up parameters
- Low standby power
- Binary or ASCII data format
- Selectable data order
- Ability to transmit different data than what is logged to the internal memory
- Extensive built-in software
- Configuration and Control implemented by external device via RS-232 interface
- User programmable data rates of 100BPS, 300BPS or 1200BPS
- Time of day query retrieves GPS time
- Complex function software for special applications
- Two RS-232 Serial Ports for use with local terminals, modems, GOES Radios, remote displays, etc.

- Four analog inputs
- SDI-12 Master mode
- Two programmable digital inputs/outputs
- One event counter input (Tipping Bucket Rain Gauge)
- Frequency input (wind speed)
- Quadrature shaft encoder input
- Scalable and programmable 4-20 mA output
- Data logging capability using nonvolatile internal storage (16 Meg and up)
- Sealed, corrosion-resistant, nonconductive enclosure
- Operating temperature range of -40° to 60°
- Simple RS-232 connection for downloading data, and programming with a laptop and/or PDA unit with no special software required
- XL Basic programming capabilities
- PCMCIA Flash Card port for easy data collection and Firmware updating

# SPECIFICATIONS

## Performance

### General Analog Input

Channels: 4 (Single Ended)  
Ranges: Programmable (Channel 1 Only)  
Resolution: 16-Bit Resolution (1 Part in 65536)  
Accuracy:  $\pm 0.02\%$   
Input Ranges: 0 to 5 Volts (All Channels)  
0 to 500 mV (Additional Input Range Only Available on Channel 1)  
Excitation: 5.0V Switched, Ratiometric with 10mA (max load)  
Accuracy:  $\pm 1.0$  mV Over Load and Temperature Range

### Frequency Input

Input Range: 1-10 KHz at  $\pm 75$  mVolts or greater  
1-15 KHz at  $\pm 1$  Volt or greater  
Input Amplitude:  $\pm 5.0$  Max  
Accuracy:  $\pm 0.1\%$   
Resolution:  $1/10000 * \text{Reading}$

### Counter Input

Type: Switch closure or voltage pulse, Internal 50k pull up resistor, falling edge triggered.  
Input Voltage: 0-5 Volts  
Minimum Pulse Width: 5 mS  
Input Frequency: 100Hz (max)

### Digital I/O

Channels: 2, Independently configured for input or output  
Input Voltage: 0-5 Volt  
High Level: 3.5 V (min)  
Low Level: 0.8 V (max)

### Output Voltage

Low: 0.4 V (max)@ -5mA  
High: 3.5 V (min)@+5mA

### 4-20 mA Output

Resolution: 4.0  $\mu$ A

### Data Storage

Type: Non-Volatile FLASH  
Size: 16 Mega Byte Minimum (Expandable)

### Interface

**SDI-12** SDI-12 Master Mode  
Protocol: SDI-12, 7-bit even parity, 1 stop bit  
Baud Rate: 1200

**RS-232** 2 RS-232 Communication Ports  
Protocol: RS-232, 8-bit, no parity, 1 stop bit  
Baud Rate: Programmable

### Power

Input Voltage: 10.0 to 16.0 Volts  
Input Current: Sleep Mode: 4mA typical  
Active: 60 mA average  
Transmit: < 2.75 A  
Standby: < 4mA typical

### Environment

#### Temperature

Extended Operating Range:  $-40^{\circ}$  to  $60^{\circ}$ C  
Storage:  $-40^{\circ}$  to  $80^{\circ}$ C  
Humidity: 0-95% non-condensing

## Miscellaneous

### Options

Data Logging: Data is stored internally to Nonvolatile Memory  
GOES: H-222 (1200 baud High Data Rate GOES Radio with built-in GPS)

### Accessories (Supplied)

Cables/Connector: - 9-pin D connector cable required for RS-232 communication available (H-350-RSC)  
- 9-pin D Male to Male Gender Changer  
- RS-232 Null Modem Adaptor  
- Sensor Terminal Block

### Frequency Coverage

100 and 300 BPS: GOES Domestic Channels (1-199)  
100 BPS: International Channels (202-266)  
1200 BPS: HDR Domestic Channels (1-100)

### Frequency Stability

Over Temperature:  $\pm 0.4$  PPM  
Long Term:  $\pm 1$  PPM (including temperature)  
Frequency Setting: To an accuracy of 1 Hz under software control

### Output Power

100 / 300: 6 Watts (nominal) Linear  
1200: 9 Watts (nominal) Linear  
Output Dependence: 50 Ohms, short and open circuit protected  
Interface: RS-232  
Time Keeping: < 0.5 seconds with embedded GPS Receiver  
DC Power Input Voltage:  $12 \pm 1.8$  V

### Environment

Humidity: 90% non-condensing  
Temperature Range:  
-Operating:  $-20^{\circ}$  to  $+50^{\circ}$  C ( $-40^{\circ}$  to  $+122^{\circ}$  F)  
-Storage:  $-55^{\circ}$  to  $+75^{\circ}$  C ( $-67^{\circ}$  to  $+167^{\circ}$  F)

### Mechanical Data

Enclosure: Sealed, corrosion resistant fiberglass case  
Mounting: Hardware supplied for wall mounting

### Miscellaneous

Certification: NOAA/NESDIS certified for self-timed and random GOES transmissions

### Warranty

The **WATERLOG**<sup>®</sup> H-522 is warranted against defects in materials and workmanship for one year from date of shipment.

### Note

Specifications subject to change without prior notice due to on going commitment to product testing and improvement.  
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