

# WATERLOG®

YSI incorporated

## XL SERIES DATA LOGGERS™ Data Collection Platform (DCP)

The WaterLOG® XL data logger series is an extremely reliable and history proven Data Collection Platform (DCP) consisting of four models which accommodate various applications for remote operation.

Depending upon the application and desired communication the four models H-500XL, H-350XL, H-522 and H-522+ provide the means for reliable data collection under extreme environmental conditions.

### KEY FEATURES

The XL data logger is a stand alone DCP capable of communicating with Satellite, GPRS/GSM modems, Telephone among other means of communication. The XL is ideal for small Hydrometeorological systems.

The basic features for all XL DCP's include the following:

- Simple menu driven user interface
- Low standby power
- External button allows simplified means to view current data values
- USB Type A Host and Mini B Device (2.0)
- Three RS-232 Serial Ports for use with local terminals, 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)
- XL Basic Programming



*H-500XL Datalogger*

## Specifications for All Models

PERFORMANCE		
<b>General Analog Input</b>	Channels	4 (Single Ended) 1 Differential
	Resolution	24-Bit Resolution
	Accuracy	±0.02% FS
	Input Ranges	0 to 5 Volts (All Channels) 0 to 500 mV (Additional Input Range Only Available on Channel 1)
<b>Excitation</b>	5.0V Switched, Ratiometric with 10mA (max load)	
<b>Accuracy</b>	± 1.0 mV Over Load and Temperature Range	
<b>Frequency Input</b>	Input Range	1 to 10 KHz at ± 75mVolts or greater 1 to 15 KHz at ± 1 Volt or greater
	Input Amplitude:	± 5.0 V Max
	Accuracy	± 0.1%
	Resolution	1/10000 * Reading
<b>Counter Input</b>	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)
	Channels	2, Independently configured for Input or Output
<b>Digital I/O</b>	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: 3.5V (min)@+5mA
<b>4-20mA Output</b>	Resolution	4.0 A
<b>Data Storage</b>	Type	Non-Volatile FLASH
	Size	16 Mega Byte Minimum (Expandable)
<b>SDI-12 Version 1.3</b>	Supports both Master and Slave modes	
	Protocol	SDI-12, 7-bit even parity, 1 stop bit
	Baud Rate	1200
<b>Power</b>	Input Voltage	10.0 to 16.0 VDC
	Input Current	
INTERFACE		
<b>USB</b>	USB Type A Host 2.0	
	USB Mini B Device 2.0	
<b>RS-232</b>	3 RS-232 Communication Ports	
	Baud Rate	Programmable
<b>RS-485</b>	1 RS-485 Communication port	
ENVIRONMENT		
<b>Temperature</b>	Extended Operating Range	-40 to +60°C
	Storage	-40 to +80°C
	<b>Humidity</b>	0-95% non-condensing
MECHANICAL DATA		
<b>Physical</b>	Enclosure	Sealed, corrosion resistant fiberglass
	Mounting	Hardware supplied for wall mounting
MISCELLANEOUS		
<b>Accessories (Supplied)</b>	Cables/ Connectors	9-pin D connector cable required for RS-232 communication (H-350-RSC) 9-pin D Male to Male Gender Changer RS-232 Null Modem Adaptor USB Cable Sensor Terminal Block
<b>Warranty</b>	The WaterLOG® XL is warranted against defect in materials and workmanship for 24 months from the date of shipment.	
<b>Note</b>	Specifications subject to change without prior notice due to on-going commitment to product testing and improvement LR February 15, 2011. D12 0311.	

## H-500XL Unique Features

PERFORMANCE		
<b>Physical</b>	Enclosure	Sealed, corrosion resistant fiberglass with clear Lexan® window
	Size	8.5 in wide x 7 in long 4.3 in deep (22cm x 18cm x 11cm)
	Weight	4.25 lbs (2kg)
	Keypad Display	1 Line 20 Character Vacuum Florescent LED Display
<b>Power</b>	Input Voltage	10.0 to 16.0 VDC
	Input Current	Sleep Mode: 4mA typical Active Mode: 80 mA average (measuring, display off) Active Mode: 250mA average (measuring, display on) Auto display shut-off after 5 minutes
<b>Options</b>	GOES/METEOSAT	External H-2221 Satellite Transmitter
	INSAT	H-222DASE (Signal Engineering) Transmitter

## H-350XL Pressure Measurement System/Data Collection Platform (DCP)

The WaterLOG® H-350XL is a microprocessor controlled pressure sensor/datalogger and includes all the features of the H-500XL yet is designed for use with the H-3551 self contained bubbler system.

### KEY FEATURES

- Built in temperature compensated pressure measurement sensor with auto-zero functions
- RS-485 Communication with H-3551 self contained bubbler system
- Simple method of calculating offset for stage reading



H-350XL Datalogger

# Specifications - For H-500XL, H-350XL, H-522, H-522+

## H-350XL Unique Features

PERFORMANCE			
<b>Pressure Sensor</b>	Accuracy (Maximum percent of error in measurement)		
	Pressure	Less than or equal to 0.02% of full scale output (FSO) over temperature range referenced to a straight line stretched from zero PSI to maximum pressure	
	Temperature	Internal temperature $\pm 1^\circ$ C over temperature range	
<b>Resolution</b>	(Smallest change detectable in output signal)		
	Pressure	1 part in 65,536 (0.002%)	
	Temperature	1 part in 65,536 (0.002%)	
<b>Linearity</b>	Less than 0.02% deviation from a straight line referenced to end points		
<b>Pressure Hysteresis</b>	Less than 0.01% of FSO		
<b>Long-term Stability</b>	Accuracy drift is less than + 0.05% of FSO per year		
<b>Response Times</b>	Pressure only	8-second measurement sequence	
	Pressure & Temp.	8-second measurement sequence	
<b>Pressure Range Options</b>	Pressure	Depth	Accuracy
	0 to 15 psi	0 to 34 ft (11 m)	+ 0.007 ft (2.1mm)
	0 to 30 psi	0 to 69 ft (21 m)	+ 0.014 ft (4.3 mm)
	Custom calibration ranges available to 100 psi		
<b>Pressure Overload</b>	Less than 2 times the rated pressure		
<b>Power</b>	Input Voltage	10.0 to 16.0 VDC	
	Input Current	Sleep Mode: 4mA typical Active Mode: 80 mA average (measuring, display off) Active Mode: 250mA average (measuring, display on) Auto display shut-off after 5 minutes	
MECHANICAL DATA			
<b>Physical</b>	Enclosure	Sealed, corrosion resistant fiberglass with clear Lexan® window	
	Size	8.5 in wide x 7 in long 4.3 in deep (22cm x 18cm x 11cm)	
	Weight	4.25 lbs (2kg)	
	Keypad Display	1 Line 20 Character Vacuum Florescent LED Display	
<b>Options</b>	GOES/METEOSAT	H-2221 Satellite Transmitter	
	INSAT	H-222DASE (Signal Engineering) Transmitter	
ENVIRONMENT			
	Media Compatibility	Non-corrosive dry gases only	
MISCELLANEOUS			
<b>Accessories</b>	Cables	Bubbler communication cable supplied with unit	
	Hardware	Pressure inlet plumbing installation kit provided (H-350-INS)	

## H-522/522+ Data Collection Platform (DCP) with Integrated Satellite Transmitter

The WaterLOG® H-522/522+ is datalogger with a fully integrated HDR Satellite transmitter capable communicating through GOES, METEOSAT or INSAT satellites. The 522 series is designed for use in remote monitoring applications. The logger/transmitter allows for data storage and transmission of sensor values to a satellite network for near real time data retrieval.

### KEY FEATURES

#### GOES Satellite Features

- User programmable data rates of 100, 300 or 1200 bps
- Time of day query retrieves GPS time
- Self-timed and random transmissions
- Binary or ASCII data format

#### METEOSAT Satellite Features

- 100 bps

#### INSAT Satellite Features

- 4800 bps
- Certified for PRBS or TDMA transmission format



H-522

**WATER LOG**  
YSI incorporated

## H-522/522+ Unique Features

PERFORMANCE		
<b>Power</b>	Input Voltage	10.0 to 16.0 VDC
	Input Current	Sleep Mode: 4mA typical Active Mode: 80 mA average (measuring, display off, 522+) Active Mode: 250mA average (measuring, display on, 522+) Auto display shut-off after 5 minutes – N/A H-522 Transmit < 2.75 A
MECHANICAL DATA		
<b>Physical</b>	Keypad Display (H-522+ version only)	1 Line 20 Character Vacuum Florescent LED Display
	Size (H-522)	7.0 in wide x 8.5 in long x 4.3 in deep (18cm x 22 cm x 11 cm)
	Weight (H-522)	4 lbs (1.8kg)
	Size (H-522+)	11 in wide x 9.5 in height x 6 in deep (28cm x 24cm x 15cm)
	Weight (H-522+)	7.5 lbs (3.4kg)
SATELLITE OPTIONS		
<b>Satellites</b>	GOES/METEOSAT	Internal H-2221 (1200 baud High Data Rate GOES/METEOSAT 100 bps Radio with built-in GPS
	INSAT	Internal H-222DASE (4800 baud HDR radio with built-in GPS)
<b>Frequency Coverage</b>	GOES 100 and 300 BPS	GOES Domestic Channels (1-199)
	GOES 100 BPS	International Channels (202-266)
	GOES 1200 BPS	HDR Domestic Channels (1-100)
	METEOSAT 100 BPS	Eumetsat Channels (1-223)
	INSAT 4800 BPS	INSAT Channels (1-62)
<b>Frequency Stability</b>	Over Temperature	+ 0.4 PPM
	Long Term	+ 1 PPM (including temperature)
	Frequency Setting	To an accuracy of 1 Hz under software control
	Carrier Settability (INSAT)	100 Hz from 402.0 Mhz to 403.0 Mhz
	100/300 (GOES)	6 Watts (nominal) Linear
	1200 (GOES)	9 Watts (nominal) Linear
	4800 (INSAT)	0.5 – 10 Watts User Selectable
	Output Dependence	50 Ohms, short and open circuit protected
	Interface	Internal RS-232
	Time Keeping	< 0.5 seconds with embedded GPS Receiver
	DC Power Input Voltage	12 ± 1.8VDC
	Failsafe	A totally independent fail safe circuit prevents any transmission from lasting longer than 1 second – Resettable by external button.

<b>Miscellaneous</b>	Certification NOAA/NESDIS certified for self-timed and random GOES transmission. EUMETSAT certified for self-timed 100 BPS transmission. INSAT certified for PRBS and TDMA transmission formats.
----------------------	--

MISCELLANEOUS		
<b>Accessories (Supplied)</b>	Cables/Antennas	GPS Dome Antenna 20' GPS Antenna cable All other hardware as provided in base H-500XL unit



H-522+

## Quick Specification Details

<b>XL MODEL DIFFERENCES</b>	H-500XL	H-350XL	H-522	H-522+
<b>Keyboard Display</b>	X	X		X
<b>Built in Pressure Sensor</b>		X		
<b>GOES/METEOSAT/INSAT satellite transmitter</b>			X	X

*H-500XL, H-522 and H-522+ can interface to an external pressure sensor (H-3531)*

*H-500XL and H-350XL can interface to external GOES/METEOSAT/INSAT Satellite Transmitter (H-2221, H-222DASE)*

