

indoor

# HOBO® H8 Family

## 8-Bit Loggers with Serial Interface\*



7 Models to Choose From

- 1-Channel: temperature
- 2-Channels: temperature external
- 2-Channels: temperature relative humidity
- 4-Channels: temperature light intensity relative humidity external
- 4-Channels: temperature relative humidity 2x external
- 4-Channels: intrinsically-safe temperature relative humidity 2x external
- 4-Channels: 4x external

Size/Weight: 60 x 48 x 19 mm (2.4 x 1.9 x 0.8"), approximately 29 gm (1 oz)

### Key Specifications

#### Measurement Ranges:

- Temperature: -20° to 70°C (-4° to 158°F).
- RH: 25% to 95% RH at 25°C (77°F) for intervals  $\geq 10$  seconds
- Light Intensity: 2 to 600 footcandles (lumens/ft<sup>2</sup>) typical
- light sensor response range: approx. 480 to 600 nm

#### Accuracy:

- Temperature:  $\pm 0.7^\circ$  at 21°C ( $\pm 1.27^\circ$  at 70°F)
- RH:  $\pm 5\%$  over the range of 5° to 50°C (41° to 122°F)

- Operating Range: -20° to 70°C (-4° to 158°F), 0 to 95% relative humidity, non-condensing, non-fogging.
- RH sensor operating range is 5° to 50°C (41° to 122°F)

The HOBO H8 family of data loggers provides easy-to-use data collection at affordable prices. Choose single-, two- or four-channel models to measure temperature, relative humidity, light intensity, or external channels accepting external temperature, AC current sensors and 4-20mA or DC voltage cables for input from third-party sensors.

### Features

#### Easy to Use

- User-selectable sampling intervals: 0.5 seconds to 9 hours, recording times up to 1 year
- Programmable start time/date
- Memory modes: Stop when full, Wrap around when full
- Read out and relaunch with optional HOBO Shuttle or HandCar® for Palm™ handhelds
- Precision components eliminate the need for user calibration
- Mounting kit included (hook/loop, magnet and tape)

#### Versatile:

- Seven models from which to choose with 1—4 channels to measure temperature, humidity, light and external inputs
- Models with external input accept external sensors for temperature, AC current, 4-20 mA and 0-2.5 Volts DC
- Internal temperature sensor on 4" wire can extend from case

#### Reliable:

- Capacity: 7943 measurements total except 4-Channel External model which stores 32,520 measurements
- Blinking LED confirms operation
- Battery level indication at launch
- Nonvolatile EEPROM memory retains data even if battery fails
- Time accuracy:  $\pm 1$  minute per week at 20°C (68°F)
- NIST-traceable temperature accuracy certification available
- Compliance certificate available
- Intrinsically-safe Temp/RH/2x external model available
- Drop-proof to 5'



HandCar® software compatible



Compliant with all relevant directives in the European Union (EU)



HOBO® Shuttle-compatible



Intrinsically Safe Model

\*Use with USB port requires USB-Serial Adapter .

### Detailed Specifications

Time Accuracy:  $\pm 1$  minute/week at 20°C (68°F) (see plot a)

Temperature (internal sensor)  
Range: -20° to 70°C (-4° to 158°F)

Range for internal sensor when used outside of case: -40° to 120°C (-40° to 248°F)

Accuracy:  $\pm 0.7^\circ$  at 21°C ( $\pm 1.27^\circ$  at 70°F) (see plot b)

Resolution: 0.4° at 21°C (0.7° at 70°F)

Response time in still air: 15 min. typical to 90% with sensor inside case, 1 min. typical with sensor outside case

Relative humidity (user-replaceable RH sensor)  
Range: 25% to 95% RH at 80°F for intervals of  $\geq 10$  seconds, non-condensing and non-fogging

Accuracy:  $\pm 5\%$  (see plot c)

Response time: 10 min. typical in air

Sensor operating environment: 5° to 50°C (41° to 122°F) non-condensing and non-fogging

Light intensity  
Range: 2 to 600 footcandles (lumens/ft<sup>2</sup>) typical; max. value varies from 300 to 900 footcandles

Light wavelength response (see plot d)

External input accepts the following sensors  
Temperature sensors (TMCx-Hx series)

Split-core CTs for AC current (5 Models)\*

4-20 mA input cable (CABLE-4-20mA)\*

0-2.5 V DC input cable (CABLE-2.5-STEREO)\*

\*Note: Intrinsically Safe versions can only be used with passive voltage devices and do not maintain IS rating when used with CTs, 4-20mA or non-passive sensors.

External 2.5 volt input specifications

(all H8 models except 4 channel external)—2.5 mm jack: external input ground, input, switched 2.5 V output; external input ground connection is not the same as PC interface connection ground and should not be connected to any external ground

H8 4-Channel External models—2.5 mm jack: ground, input-switched 2.5 volts output; ground connection uses the same as the PC interface connector ground.

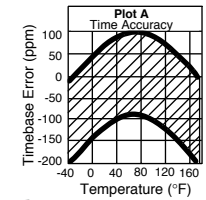
Input range: 0 to +2.5 DC Volts

Accuracy:  $\pm 10$  mV  $\pm 3\%$  of reading

Resolution: 10 mV (8-bit)

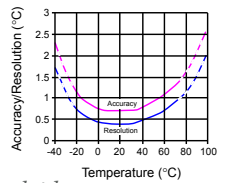
Output power: +2.5 DC Volts at 2 mA, active only during measurements

### Time Accuracy



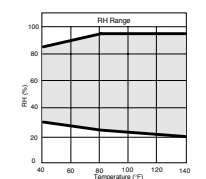
plot a

### Temperature Accuracy



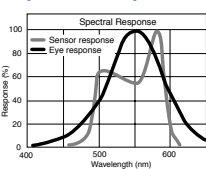
plot b

### RH Accuracy



plot c

### Spectral Response



plot d

# indoor

## HOBO H8 and U12 External Sensors and Input Cables

Cables on this page can be plugged directly into the external input jacks of H8 or U12 Family loggers to expand the range of measurement options and applications. Accuracy specifications reflect the combined performance of the logger and sensor.

### Temperature sensors

#### Wide-range temperature sensors

Range: -40° to 100°C (-40° to 212°F) in air  
 Accuracy: w/H8; ±0.5° at 20°C (±0.9° at 68°F);  
 w/U12: ±0.25° at 20°C (±0.45° at 68°F)  
 Resolution: w/H8; 0.41° at 20°C (0.7° at 68°F);  
 w/U12: 0.03° at 20°C (0.05° at 68°F)  
 Response time: in air moving 1 m/sec (2.2 mph):  
 2.5 min. typical to 90%; in stirred water:  
 30 sec., typical to 90%



TMCx-HA  
Temperature Sensor

0.2" diameter sensor (fits in 1/4" holes)

*Note: Do not use for more than 3 months total in water less than 30°C (86°F), or more than 1 month total in water over 30°C (86°F).*

#### Water/Soil temperature sensors

Range: 0° to 50°C (32° to 122°F) in water or  
 soil; -40° to 100°C (-40° to 212°F) in air  
 Accuracy: w/H8; ±0.5° at 20°C (±0.9° at 68°F);  
 w/U12: ±0.25° at 20°C (±0.45° at 68°F)  
 Resolution: w/H8; 0.41° at 20°C (0.7° at 68°F);  
 w/U12: 0.03° at 20°C (0.05° at 68°F)



TMCx-HD  
Temperature Sensor

Response time: in air moving 1 m/sec (2.2 mph):  
 3 min. typical to 90%, in stirred water: 1 min. typical to 90%

Probe dimensions: 0.7 cm x 2.5 cm (0.275" x 1")  
*Note: Sensor tip and cable immersion in fresh water up to 50°C (122°F) for 1 year; radiation shield recommended for use in sunlight.*

#### High-accuracy temperature sensor for H8 loggers

Range: 0° to 44°C (32° to 110°F) in air  
 Accuracy: w/H8; ±0.4° at 20°C (±0.7° at 68°F);  
 w/U12: ±0.25° at 20°C (±0.45° at 68°F)  
 Resolution: w/H8; 0.2° at 20°C (0.3° at 68°F);  
 w/U12: 0.03° at 20°C (0.05° at 68°F)



TMC6-HB  
High-accuracy  
Temperature Sensor

Response time in air moving 1 m/sec (2.2 mph)  
 4.5 min. typical to 90%; in stirred water: 1 min.,  
 typical to 90%

0.3" diameter sensor (fits in 3/8" holes)

6' cable

*Note: Do not use for more than 3 months total in water less than 30°C (86°F), or more than 1 month total in water over 30°C (86°F).*

### Adapter for old-style temperature sensors

(TMCx-1T-Adapter)

Allows use of older TMCx-1T temperature sensors with H8 Family loggers (except the Outdoor/Industrial logger). Smaller temperature sensor (0.14" diameter) with a more flexible cable provides accuracy and resolution comparable to the H8 internal temperature sensor. Available in 1', 2', 6', 50' and 300' lengths.

Response time of 3 minutes typical to 90% in still air



TMC6-HC Stainless Steel Temp Probe

### Stainless Steel temperature probe (TMC6-HC)

4" food-grade stainless-steel probe with pointed tip; 0.12" diameter, 6' cable  
 Range: -40° to 100°C (-40° to 212°F) in air or water  
 Accuracy: w/H8; ±0.5° at 20°C (±0.9° at 68°F)  
 Accuracy: w/U12; ±0.25° at 20°C (±0.45° at 68°F)  
 Resolution: w/H8; 0.41° at 20°C (0.7° at 68°F)  
 Resolution: w/U12; 0.03° at 20°C (0.05° at 68°F)  
 Response time in air moving 1 m/sec (2.2 mph)  
 3 min. typical to 90%; in stirred water  
 15 sec. typical to 90%



4-20mA Cable

### 4-20 mA cable (CABLE-4-20mA)

Range: 0 to 20.1 mA  
 Accuracy: ±0.1 mA ±2.5% of reading;  
 w/U12: ±0.02 mA ±2.5% of reading  
 Resolution: w/H8 0.4% of full scale;  
 w/U12: 0.03% of full scale  
 18" cable with 3.5" tinned braided wire leads



0-2.5 Volt DC Cable

### Voltage input cable (CABLE-2.5-STEREO)

6' cable with 0.5" tinned braided wire leads.  
 For voltage input specifications, refer to the specifications of the model you will be using.

### Split-core AC current sensors\*

Ranges available (AC Amps): 0-20, 0-50, 0-100, 0-200, 0-600  
 Accuracy: w/H8; ± 5% of full scale; w/U12; ± 4.5% of full scale  
 Response time (from 10% to 90% of amplitude):  
 CTV-A approximately 440 milliseconds  
 CTV-B approximately 200 milliseconds  
 CTV-C approximately 100 milliseconds  
 CTV-D approximately 450 milliseconds  
 CTV-E approximately 490 milliseconds



Input current: AC current, sine wave, single phase  
 50 Hz or 60 Hz, load power factor 0.5 to 1.0 lead or lag  
 Voltage rating: 600 VAC

Operating range: 0° to 60°C (32° to 140°F)  
 CTV-A, -B, -C; 0° to 40°C (32° to 104°F) CTV-D, -E  
 Construction and operating environment:  
 Molded plastic housing for indoor use per UL508.

All units have pivoting leg that snaps into place  
 6' cable compatible w/ H8 and U12 external inputs  
 Leg on CTV-D and E-units is removable.

\* *Note: AC current sensors are not CE approved.*

Part #	Range	Window	Outer Length	Outer Width	Height
CTV-A	0-20 Amps AC	1.1 x 0.9"	2.9"	2.6"	1.0"
CTV-B	0-50 Amps AC	1.1 x 0.9"	2.9"	2.6"	1.0"
CTV-C	0-100 Amps AC	1.1 x 0.9"	2.9"	2.6"	1.0"
CTV-D	0-200 Amps AC	1.5 x 1.3"	3.9"	4.7"	1.1"
CTV-E	0-600 Amps AC	2.9 x 2.5"	5.3"	5.9"	1.1"

### HOBO H8 Family Ordering

Description	Part No.
HOBO Temp	H08-001-02
HOBO Temp/External	H08-002-02
HOBO RH/Temp	H08-003-02
HOBO RH/Temp/Light/External	H08-004-02
HOBO RH/Temp/2x External	H08-007-02
HOBO H8 Temp/RH/2x-IS version	H08-007-IS
HOBO 4-Channel Indoor Logger	H08-006-04
HOBO Shuttle (optional)	H09-002-08
Replacement Batteries (Qty. 10)	HRB-TEMP
Replacement RH sensor	HUM-UPS-500
BoxCar Pro 4.3 Starter Kit (Windows)	BCP4.3-DL
BoxCar 3.7 Starter Kit (Windows)	BC3.7-DL
HandCar for Palm™ handhelds	HC 1.1
USB-Serial Adapter	CABLE-USB232

*Note: A BoxCar Pro 4.3 or BoxCar 3.7 starter kit is required to operate the H8 Family loggers. Each starter kit includes software, PC interface cable and software manual. HandCar requires Palm-to-logger cable. For use with USB ports, see USB to Serial Adapter.*

### HOBO H8/U12 Sensors and Cables Ordering

Wide-range temperature sensors	
sensor with 1' cable	TMC1-HA
sensor with 6' cable	TMC6-HA
sensor with 20' cable	TMC20-HA
sensor with 50' cable	TMC50-HA
Water/soil temperature sensors	
sensor with 6' cable	TMC6-HD
sensor with 20' cable	TMC20-HD
sensor with 50' cable	TMC50-HD
High-accuracy temp sensor	TMC6-HB
Stainless steel temp probe	TMC6-HC
TMCx-1T Adapter	TMCx-1T-Adapter
4-20mA cable	CABLE-4-20mA
Voltage input cable	CABLE-2.5-STEREO
Split-core AC Current Sensors*	
0-20 AAC	CTV-A
0-50 AAC	CTV-B
0-100 AAC	CTV-C
0-200 AAC	CTV-D
0-600 AAC	CTV-E

\* *Warranty on CTVs is 5 years from date of original shipment*

#### Waterproof Case for H08-001-02/U12-001

White	SUBC2-WH
Gray	SUBC2-GR
Clear	SUBCASE-CLR