

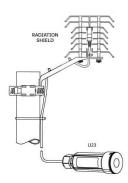
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# HOBO U23-004 Pro V2 Temperature Logger with 1 x External Waterproof Sensor

#### **Product Images**





#### **Short Description**

The HOBO Pro v2 Temperature/External Temperature data logger is a weatherproof data logger with an external soil/water temperature sensor on a 6-foot cable useful for situations where just one temperature probe is required. An internal temperature sensor is also included.

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The HOBO U23-004 data logger is a weatherproof data logger with an external soil/water temperature sensor on a 6-foot cable; useful for situations where just one temperature probe is required. An internal

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## **Highlighted Features**

- Weatherproof housing for use in outdoor or condensing environments
- High accuracy
- Small-diameter external sensor for measurements in tight spaces
- Optical USB interface for fast and reliable download
- Compatible with HOBOware and HOBOware Pro software for logger setup, graphing and analysis.



**IMPORTANT:** HOBO U23 data loggers require either the BASE-U-4 or the U-DTW-1 Data Shuttle to offload data and launch loggers.

HOBO loggers require HOBOware software (free download).

## **Additional Information**

Temperature Sensor Operation range internative sensors: 40° to 70°C (40° to 15°F) Operation range internative sensors: 40° to 70°C (40° to 15°F) U22-003 and U22-000 external sensors: 40° to 70°C (12°F) for to 15°F) U22-003 and U22-000 external sensors: 40° to 70°C (12°F) for one year acable immersion in fresh water up to 50°C (123°F) for one year Accuracy, 0.21°F from 0.50°C (123°F) for one 21°C 12°F) see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 77°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 70°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 70°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 70°F), see Plot A Resolution: 0.00°C at 25°C (0.04°F at 70°F), see Plot A Resolution: 0.00°C (0.00°C at 70°F), see Plot Accuracy 2.00°C at 70°F, see Plot Accuracy 2.	Country of Manufacture	United States
Resolution: 0.02°C at 25°C (0.04° at 77°F), see Plot A    Spegorose Time (typical to 390%)   U23-001 internal sensor: 40 minutes in air moving 1 m/sec   U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec   U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec, 30 seconds in stirred variety in simulates in air moving 1 m/sec, 30 seconds in stirred variety in sensors: 3 minutes in air moving 1 m/sec, 30 seconds in stirred variety in the 100 minutes in air moving 1 m/sec, 30 seconds in stirred variety in the 100 minutes in air moving 1 m/sec, 30 seconds in stirred variety in the 100 minutes in air moving 1 m/sec, 30 seconds in stirred variety in the 100 minutes in air moving 1 m/sec vith protective cap used to 100 minutes in air moving 1 m/sec vith protective cap U23-001: 40 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 5 minutes in air moving 1 m/sec vith protective cap U23-001: 6 minutes in air moving 1 m/sec vith protective cap U23-001: 6 minutes in air moving 1 m/sec vith protective cap U23-001: 6 minutes in air moving 1 m/sec vith protective cap U23-001: 6 minutes in moving 1 m/sec vith protective cap U23-001: 6 minutes in air moving 1 m/sec vith protective cap U23-001: 6 minutes in moving 1 m/sec vith protective cap U23-001: 6 minutes in minutes or greater logging interval Memory (non-volatile) 6 kills by 100 minutes in minutes or protective cap U23-001: 6 minutes in minutes or protective cap U23-001: 6 minutes in minutes or minutes in U23-001: 6 minutes i	Country of Manufacture	Temperature Sensor Operation range internal sensors: -40° to 70°C (-40° to 158°F) U23-002 external temperature sensor: -40° to 70°C (-40° to 158°F) U23-003 and U23-004 external sensors: -40° to 100°C (-40° to 212°F), with tip and
U23-001 internal sensor-0 minutes in air moving 1 m/sec U23-002 external temperature sensor: 5 minutes in air moving 1 m/sec U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec U23-003 stability (drift; > 0.1 fc. 0.18*) propar Relative Humidity Sensor (U23-001, U23-002 only) Operation range: 0.10% Rel. 4.d for 700°C (4.d*) to 18*ff) Exposure to conditions below 20°C (4.d*) or above 95%. RF may temporarily increase the maximum RF sensor error by an additional 15%. Response Time (typical to 90%) U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 5 minutes in air moving 1 m/sec with protective cap U23-003: 6 vice 18 vice 10 vic		Accuracy: ±0.21°C from 0° to 50°C (±0.38°F from 32° to 122°F); see Plot A
U23-002: To minute in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 5 minutes in air moving 1 m/sec with protective cap U23-002: 6 minutes in air moving 1 m/sec with protective cap U23-002 only 158°F). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1/2 A3, 3.6 v/oli (lithium, user-replaceable) (part #19). Battery 1		U23-001 internal sensor: 40 minutes in air moving 1 m/sec U23-002 external temperature sensor: 5 minutes in air moving 1 m/sec U23-003 and U23-004 external sensors: 3 minutes in air moving 1 m/sec; 30 seconds in stirred water Stability (drift): < 0.1°C (0.18°F) per year Relative Humidity Sensor (U23-001, U23-002 only) Operation range: 0-100% RH, -40° to 70°C (-40° to 158°F) Exposure to conditions below -20°C (-4°F) or above 95% RH may temporarily increase the maximum RH sensor error by an additional 1% Accuracy: ±2.5% from 10% to 90% RH (typical), to a maximum of ±3.5% including hysteresis. See Plot B for full range.
Logger Operation range: -40° to 70°C (-40° to 158°F) Real-time clock: ±1 minute per month 0° to 50°C (32° to 122°F) Battery: 17.2 AA, 3.6 Volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 3.6 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt lithium, user-replaceable (part # HP-8) Battery 17.2 AA, 36 volt		U23-001: 40 minute in air moving 1 m/sec with protective cap
All models: ASA styrene polymer housing and mounting clamp; polypropylene protective cap; Buna-N o-ring(s) 1023-001, 1023-002 only: ASA styrene polymer RH sensor cap; modified hydrophobic polyethersulfone membrane Cables U23-001: No cables U23-002: One 184 cm (6 ft.) PVC cable; sensor diameter 1 cm (0.38 in.) U23-002: One 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-003: Two 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-004: One 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-004: One 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-004: One 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-004: One 184 cm (6 ft.) PVC cable; sensor diameter 0.5 cm (0.20 in.) U23-004: In the control of the contro	Explanation	Logger Operation range: -40° to 70°C (-40° to 158°F) Real-time clock: ± 1 minute per month 0° to 50°C (32° to 122°F) Battery: 1/2 AA, 3.6 Volt lithium, user-replaceable (part # HP-B) Battery life (typical use): 3 years with 1 minute or greater logging interval Memory (non-volatile): 64K bytes memory (approx. 21,000 temperature and RH
brief submergence); Units with RH sensors are NEMA 4 equivalent (splash-resistant) Launch modes: Immediate start; delayed start Logging interval: Fixed-rate or multiple logging intervals, with up to 8 user- defined logging intervals and durations; logging intervals from 1 second to 18 hours (refer to HOBOware software manual) Offload modes: Offload while logging; stop and offload Battery indication: Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile. Weight U23-001: 18 g (3.1 oz) U23-002: 18 g (3.1 oz) U23-003: 138 g (3.7 oz) U23-004: 102 g (2.7 oz)  Dimensions: Housing measures 10.2 × 3.8 cm (4.0 × 1.5 in.) NIST certificate: Temperature certificate available for additional charge The CE Marking identifies this product as complying with the relevant directives in the European Union (EU).  Brand Onset HOBO  Channel(s) 2 Onset Product Series U23  Typical applications Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring		All models: ASA styrene polymer housing and mounting clamp; polypropylene protective cap; Buna-N o-ring(s)  U23-001, U23-002 only: ASA styrene polymer RH sensor cap; modified hydrophobic polyethersulfone membrane  Cables  U23-001: No cables  U23-002: One 184 cm (6 ft.) PVC cable; sensor diameter 1 cm (0.38 in.)  U23-003: Two 184 cm (6 ft.) PVC cables; sensor diameter 0.5 cm (0.20 in.)
NIST certificate: Temperature certificate available for additional charge The CE Marking identifies this product as complying with the relevant directives in the European Union (EU).  Brand Onset HOBO Channel(s) 2 Onset Product Series U23 Typical applications Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring		brief submergence); Units with RH sensors are NEMA 4 equivalent (splash-resistant)  Launch modes: Immediate start; delayed start  Logging interval: Fixed-rate or multiple logging intervals, with up to 8 user-defined logging intervals and durations; logging intervals from 1 second to 18 hours (refer to HOBOware software manual)  Offload modes: Offload while logging; stop and offload  Battery indication: Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile.  Weight  U23-001: 57 g (1.5 oz)  U23-002: 118 g (3.1 oz)  U23-003: 138 g (3.7 oz)
the European Union (EU).  Brand Onset HOBO Channel(s) 2 Onset Product Series U23 Typical applications Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring		
Channel(s) 2  Onset Product Series U23  Typical applications Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring		The CE Marking identifies this product as complying with the relevant directives in the European Union (EU).
Onset Product Series  U23  Typical applications  Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring	Brand	Onset HOBO
Typical applications  Environmental (Indoor), Environmental (Outdoor), Field Research, Food Safety, Product Safety, Weather Monitoring	Channel(s)	2
Typical applications Product Safety, Weather Monitoring	Onset Product Series	U23
Measurements Soil Temperature, Temperature, Water Temperature	Typical applications	
	Measurements	Soil Temperature, Temperature, Water Temperature

# **Additional Options**

Connectivity Options	HOBO Universal Optic USB Base Station Base-U-4 (includes Couplers)
	Waterproof Optic Data Shuttle U-DTW-1 (requires HOBOWare Pro)
Temperature Calibration Certificate	2 Point Temperature Calibration (0°C / 60°C)
	2 Point Temperature Calibration (please specify temperature points)
	1 Point Temperature Calibration (0°C)
Radiation Shield Option	RS3 Radiation Shield
<b>HOBOware Pro Software Options</b>	HOBOware Pro on USB Drive (USB cable included)
	HOBOware Pro on CD (USB Cable Included)
	HOBOware Pro - Download Only (USB cable NOT included)
USB Cable (included with HOBOware Pro on USB Drive & CD)	HOBO U-Series to PC USB Cable