MX20L-04 • MX20L-01 • MX20L-02

HOBO MX Water Level Data Logger

Bluetooth data offload

A low-cost, research-grade data logger with Bluetooth data offload to continuously monitor water level and temperature. Measures at depths of up to 13, 30, or 100 feet in a wide range of underwater environments, both freshwater and saltwater.

Important Information
Requires a compatible mobile device or Windows computer and the HOBOconnect app. System requirements can be found at the bottom of the HOBOconnect software page.

Compatible with
HOBOconnect Monitoring App

Supported Measurements

Absolute Pressure, Barometric Pressure, Water Level, Water Temperature

Features

- Self-contained, non-vented design enables easy deployment
- Ideal for use in both freshwater and saltwater environments, including wells, streams, lakes, wetlands, and tidal areas
- Depth measurement options of up to 13, 30, or 100 feet depending on model
- Durable ceramic pressure sensor withstands freezing
- Streamlined data offload via Bluetooth to the free HOBOconnect app
- HOBOconnect app provides easy extraction and visulization of water level data
- Extended battery life up to 10 years (power-saving mode requires magnetic fob to activate Bluetooth for data download)

Note: A calibration certificate is not offered for this logger. If you require a NIST-traceable calibration certificate, please see the U20-001-01 (freshwater) or U20-001-01-Ti (saltwater).

HOBO MX Water Level Data Logger (MX20L) Specifications

Pressure (Absolute) and Water Level Measurements MX20L-01

Operation Range	0 to 207 kPa (0 to 30 psia); approximately 0 to 9 m (0 to 30 ft) of water depth at sea level, or 0 to 12 m (0 to 40 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 207 kPa, 0° to 40°C (10 to 30 psia, 32° to 104°F)
Burst Pressure	310 kPa or 18 m depth (45 psia or 60 ft depth)
Water Level Accuracy*	Typical error: ±0.1% FS, 1.0 cm (0.03 ft) Water Maximum error: ±0.2% FS, 2.0 cm (0.06 ft) Water
Raw Pressure Accuracy**	±0.3% FS, 0.62 kPa (0.09 psi) Maximum error
Resolution	<0.02 kPa Water (0.007 ft Water)
Pressure Response Time (90%)***	<1 second at a stable temperature; measurement accuracy also depends on temperature response time

Pressure (Absolute) and Water Level Measurements MX20L-02

Operation Range	0 to 400 kPa (0 to 58 psia); approximately 0 to 30.6 m (0 to 100 ft) of water depth at sea level, or 0 to 33.6 m (0 to 111 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 400 kPa (10 to 58 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	500 kPa (72.5 psia) or 40.8 m (134 ft) Depth
Water Level Accuracy*	Typical error: ±0.1% FS, 3.0 cm (0.1 ft) Water Maximum error: ±0.2% FS, 6.0 cm (0.2 ft) Water
Raw Pressure Accuracy**	±0.3% FS, 1.20 kPa (0.17 psi) Maximum error
Resolution	<0.04 kPa (0.006 psi), 0.41 cm (0.013 ft) Water
Pressure Response Time (90%)***	<1 second at a stable temperature; measurement accuracy also depends on temperature response time

Pressure (Absolute) and Water Level Measurements MX20L-04

Operation Range	0 to 145 kPa (0 to 21 psia); approximately 0 to 4 m (0 to 13 ft) of water depth at sea level, or 0 to 7 m (0 to 23 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 145 kPa (10 to 21 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) Depth
Water Level Accuracy*	Typical error: ±0.1% FS, 0.4 cm (0.013 ft) Water Maximum error: ±0.2% FS, 0.8 cm (0.026 ft) Water
Raw Pressure Accuracy**	±0.3% FS, 0.43 kPa (0.063 psi) Maximum error
Resolution	<0.014 kPa (0.002 psi), 0.14 cm (0.005 ft) Water
Pressure Response Time (90%)***	<1 second at a stable temperature; measurement accuracy also depends on temperature response time

Temperature Measurements (All Models)

Operation Range	-20° to 50°C (-4° to 122°F)
Accuracy	±0.2°C from 0° to 50°C (±0.36°F from 32° to 122°F)
Resolution	0.10°C at 25°C (0.18°F at 77°F)
Response Time (90%)	10 minutes in water (typical)
Stability (Drift)	0.1°C per year (0.18°F per year)

Logger

Wireless Standard	Bluetooth 5 LE
Transmission Range	Approximately 30.5 m (100 ft) line-of-sight
Radio Power	1mW (0 dBm)
Real-time Clock	±1 minute per month 0° to 50°C (32° to 122°F)
Battery	2/3 AA, 3.6 Volt lithium, factory-replaceable
Battery Life (Typical Use)	3 years with 1-minute logging and Bluetooth always on 7 years with 1-minute logging and Bluetooth off and LED off 10 years with 5-minute logging and Bluetooth off and LED off
Battery Indication	Battery status shown in HOBOconnect app (approximate)
Memory (Non-volatile)	Approximately 400,000 sets of pressure and temperature measurements
Data Download Time (with Bluetooth 5+ devices)	Full Memory: Approximately 3.5 minutes (1000,000 measurements < 1 minute)
Weight	Approximately 154 g (5.43 oz) in air Approximately 53.9 g (1.9 oz) in fresh water
Dimensions	3.18 cm (1.25 inches) diameter, 15.24 cm (6.0 inches) length; mounting hole 6.3 mm (0.25 inches) diameter
Wetted Materials	Polypropylene housing and lanyard; Viton and Buna-N O-rings; ceramic sensor in acetal end cap; stainless steel screws suitable for saltwater
Logging Modes	Fixed-interval (normal or statistics), burst or multiple intervals with up to 8 user-defined intervals and durations; logging intervals from 1 second to 18 hours. Refer to the HOBOconnect User's Guide for details.
Start Modes	Immediate, next interval, date & time, button start (fob or app)
Stop Modes	Memory full, never stop (overwrite oldest data), date & time, or after set logging period
Pause	Pause and restart with HOBOconnect app
Alarms	Log high- or low-alarm events; alarm status shown in HOBOconnect app
Environmental Rating	IP68

* Water Level Accuracy: With accurate reference water level measurement, known water density, accurate barometric compensation data, and a stable temperature environment.
** Raw Pressure Accuracy: Absolute pressure sensor accuracy includes all sensor drift, temperature, and hysteresis-induced errors.
*** Changes in Temperature: Allow 20 minutes in water to achieve full temperature compensation of the pressure sensor. Maximum error due to rapid thermal changes is approximately 0.5%.