



## RX2100-WL Data Logger

### MicroRX Water Level Station

The HOBO MicroRX Water Level Station is a cellular, web-enabled water level monitoring solution for stormwater, floodwater, irrigation, hydrologic, and environmental applications. Pre-programmed water flow formulas for select weirs, flumes, and a stage discharge table result in an easy and intuitive configuration.

New water flow and accumulated rainfall calculations, which are performed directly on the station at time of measurement, trigger immediate notifications of critical water level conditions.

The compact and durable station, together with the non-vented water level sensor, enables harsh condition deployments and reliable monitoring. The optional integrated solar panel or battery power, with a wide range of plug-and-play smart sensors, supports flexible environmental monitoring.



#### Supported Measurements:

Absolute Pressure, Barometric Pressure, Evapotranspiration, Leaf Wetness, Light Intensity, PAR, Pulse Input, Rainfall, Relative Humidity, Soil Moisture, Temperature, Water Level and Wind

#### Key Advantages:

- Station-side alarms for water flow and accumulated rainfall triggered at time of measurement
- Non-vented ceramic water level sensor with a choice of four ranges
- Interchangeable, Kevlar-reinforced water level sensor cables
- Integrated barometric pressure sensor
- Compact IP66/NEMA 4X enclosure
- Built-in LCD confirms proper setup and operation
- Two power options:
  - Integrated 1.7 W solar panel with rechargeable battery pack
    - 5 W and 15 W external solar panels can be added (RX2104 only)
  - User-replaceable AA lithium batteries
- Inputs for five plug-and-play smart sensors
- Up to 10-minute connections rates via 4G cellular data plans
- Cloud-based monitoring and data access through HOBOLink

## RX2100-WL Data Logger Specifications

<b>Operating Range</b>	RX2103: -40° to 60°C (-40° to 140°F) RX2104: -20° to 60°C (-4° to 140°F)
<b>Smart Sensor Connectors</b>	5
<b>Smart Sensor Network Cable Length</b>	100 m (328 ft) maximum
<b>Smart Sensor Data Channels</b>	Maximum of 15 (some smart sensors use more than one data channel; see sensor manual for details)
<b>Logging Rate</b>	1 minute to 18 hours
<b>Time Accuracy</b>	±8 seconds per month in 0° to 40°C (32°F to 104°F) range; ±30 seconds per month in -40° to 60°C (-40° to 140°F) range
<b>Battery Type/Power Source</b>	RX2103: 6 AA 1.5 V lithium batteries or AC power adapter (P-AC-1) RX2104: Integrated 1.7 watt solar panel and NiMH rechargeable battery pack; optional AC power adapter (P-AC-1) or external solar panel (SOLAR-xW) can be used in place of integrated solar panel
<b>Battery Life</b>	<p><b>RX2103 Battery Life:</b> Battery life with daily connections: • RX2103: 1 year with 2 minute logging Battery life with hourly connections and 1 minute logging: • RX2103: 2 months Note: Deployments in areas with weak cellular strength could reduce battery life.</p> <p><b>RX2104 Battery Life:</b> Typical 3–5 years when operated in the temperature range -20° to 40°C (-4° to 104°F); operation outside this range will reduce the battery service life. Maximum connection rates with built-in solar panel, in full sun: • 10 minute connections year round for latitudes less than ±40° • 10 minute connections through three seasons in other regions, reduced to 30 minute connections in winter Maximum connection rates with external 5W or 15W solar panels: • 10 minute connections year round, in full sun • Connection rate with external solar panels may be less if deployed in partial sun Battery life without solar recharging, with hourly connections and 1 minute logging: • RX2104: 2 months</p>
<b>Memory</b>	16 MB, 1 million measurements, continuous logging
<b>Alarm Notification Latency</b>	Logging interval plus 2–4 minutes, typical
<b>Enclosure Access</b>	Hinged door secured by two latches with eyelets for use with user-supplied padlocks
<b>LCD</b>	LCD is visible from 0° to 50°C (32° to 122°F); the LCD may react slowly or go blank in temperatures outside this range
<b>Materials</b>	Outer enclosure: Polycarbonate/PBT blend with brass inserts; Interior: Polycarbonate/PBT; Gasket: Silicone foam; Cable channel: Santoprene™ TPE; U-Bolts (not included): Steel with zinc dichromate finish
<b>Dimensions</b>	19.95 x 13.68 x 7.49 cm (7.85 x 5.39 x 2.95 in.)
<b>Weight</b>	678 g (23.9 oz)
<b>Mounting</b>	Optional U-bolts are compatible with masts up to 4.14 cm (1.63 in.) mast diameter; can also be mounted with zip ties or mounted to a flat surface with screws
<b>Environmental Rating</b>	Weatherproof enclosure, NEMA 4X and IP66 (requires proper installation of cable channel system)
<b>Wireless Radio</b>	GSM/GPRS/EDGE: Quad band 850/900/1800/1900 MHz UMTS/HSPA+: Seven band 800/850/900/1800/1900/2100 MHz LTE: Twelve Band 700/800/850/900/1800/1900/2100/2600 MHz
<b>Antenna</b>	4G LTE



The CE Marking identifies this product as complying with all relevant directives in the European Union (EU)

**Water Level Sensor:*****Pressure (Absolute) And Water Level Measurements MX2001-01-S and MX2001-01-Ti-S:***

<b>Operation Range</b>	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
<b>Factory Calibrated Range</b>	69 to 207 kPa (10 to 30 psia), 0° to 40°C (32° to 104°F)
<b>Burst Pressure</b>	310 kPa (45 psia) or 18 m (60 ft) depth
<b>Water Level Accuracy*</b>	Typical error: $\pm 0.05\%$ FS, 0.5 cm (0.015 ft) water Maximum error: $\pm 0.1\%$ FS, 1.0 cm (0.03 ft) water
<b>Raw Pressure Accuracy**</b>	$\pm 0.3\%$ FS, 0.62 kPa (0.09 psi) maximum error
<b>Resolution</b>	<0.02 kPa (0.003 psi), 0.21 cm (0.007 ft) water
<b>Pressure Response Time (90%)***</b>	<1 second at a stable temperature

***Pressure (Absolute) And Water Level Measurements MX2001-02-S:***

<b>Operation Range</b>	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
<b>Factory Calibrated Range</b>	69 to 400 kPa (10 to 58 psia), 0° to 40°C (32° to 104°F)
<b>Burst Pressure</b>	500 kPa (72.5 psia) or 40.8 m (134 ft) depth
<b>Water Level Accuracy*</b>	Typical error: $\pm 0.05\%$ FS, 1.5 cm (0.05 ft) water Maximum error: $\pm 0.1\%$ FS, 3.0 cm (0.01 ft) water
<b>Raw Pressure Accuracy**</b>	$\pm 0.3\%$ FS, 1.20 kPa (0.17 psi) maximum error
<b>Resolution</b>	<0.04 kPa (0.006 psi), 0.41 cm (0.013 ft) water
<b>Pressure Response Time (90%)***</b>	<1 second at a stable temperature

***Pressure (Absolute) And Water Level Measurements MX2001-03-S:***

<b>Operation Range</b>	0 to 850 kPa (0 to 123.3 psia); approximately 0 to 76.5 m (0 to 251 ft) of water depth at sea level, or 0 to 79.5 m (0 to 262 ft) of water at 3,000 m (10,000 ft) of altitude
<b>Factory Calibrated Range</b>	69 to 850 kPa (10 to 123.3 psia), 0° to 40°C (32° to 104°F)
<b>Burst Pressure</b>	1,200 kPa (174 psia) or 112 m (368 ft) depth
<b>Water Level Accuracy*</b>	Typical error: $\pm 0.05\%$ FS, 3.8 cm (0.125 ft) water Maximum error: $\pm 0.1\%$ FS, 7.6 cm (0.25 ft) water
<b>Raw Pressure Accuracy**</b>	$\pm 0.3\%$ FS, 2.55 kPa (0.37 psi) maximum error
<b>Resolution</b>	<0.085 kPa (0.012 psi), 0.87 cm (0.028 ft) water
<b>Pressure Response Time (90%)***</b>	<1 second at a stable temperature

***Pressure (Absolute) And Water Level Measurements MX2001-04-S and MX2001-04-Ti-S:***

<b>Operation Range</b>	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
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<b>Factory Calibrated Range</b>	69 to 145 kPa (10 to 21 psia), 0° to 40°C (32° to 104°F)
<b>Burst Pressure</b>	310 kPa (45 psia) or 18 m (60 ft) depth
<b>Water Level Accuracy*</b>	Typical error: $\pm 0.075\%$ FS, 0.3 cm (0.01 ft) water Maximum error: $\pm 0.15\%$ FS, 0.6 cm (0.02 ft) water
<b>Raw Pressure Accuracy**</b>	$\pm 0.3\%$ FS, 0.43 kPa (0.63 psi) maximum error
<b>Resolution</b>	<0.014 kPa (0.002 psi), 0.14 cm (0.005 ft) water
<b>Pressure Response Time (90%)***</b>	<1 second at a stable temperature

**Barometric Pressure (RX2103 and RX2104 station):**

<b>Operation Range</b>	66 to 107 kPa (9.57 to 15.52 psia)
<b>Temperature Calibrated Range</b>	-20 to 50°C (-4 to 122°C)
<b>Accuracy</b>	$\pm 0.2$ kPa ( $\pm 0.029$ psi) over full temperature range at fixed pressure; maximum error $\pm 0.5\%$ FS
<b>Water Level Accuracy*</b>	Typical error: $\pm 0.075\%$ FS, 0.3 cm (0.01 ft) water Maximum error: $\pm 0.15\%$ FS, 0.6 cm (0.02 ft) water
<b>Resolution</b>	<0.01 kPa (0.0015 psi)
<b>Response Time</b>	<1 second at a stable temperature
<b>Stability (Drift)</b>	0.1°C (0.18°F) per year

**Temperature (Water Level Sensors MX2001-0x-S and MX2001-0x-Ti-S):**

<b>Operation Range</b>	-20° to 50°C (-4° to 122°F)
<b>Accuracy</b>	$\pm 0.44$ °C from 0° to 50°C ( $\pm 0.79$ °F from 32° to 122°F)
<b>Resolution</b>	0.1°C at 25°C (0.18°F at 77°F)
<b>Response Time (90%)</b>	5 minutes in water (typical)
<b>Stability (Drift)</b>	0.1°C (0.18°F) per year

\* Water Level Accuracy: With accurate reference water level measurement, known water density, and a stable temperature environment. System Water Level Accuracy equals the sum of the Barometric Water Level Accuracy plus the selected sensor Water Level Accuracy.

\*\* 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. There can be up to 0.5% of additional error due to rapid temperature changes.

Measurement accuracy also depends on temperature response time.

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