

Keuka Lake Sensor (v1.0)



1) High-level overview

What it does

- Measures **water level** (ultrasonic down-looking sensor, 3–5 ft above water) and **water temperature** (DS18B20 probe on lake bottom).
- Provides **plain HTTP** readings at <http://<ip>/> with [waterTempF, medianDistanceInches](#) (two decimals each).
- Hosts a water surface facing **webcam** stream at <http://<ip>/webcam>
- Includes <http://<ip>/admin> protected by Basic Auth with buttons for **update**, **restart service**, **reboot**, and basic device info.

2) Bill of Material

<u>#</u>	<u>Item</u>	<u>Example / Notes</u>	<u>Qty</u>	<u>Est. Unit</u>	<u>Subtotal</u>
1	Raspberry Pi 3A+	Full-size USB, onboard Wi-Fi	1	\$45	\$45
2	microSD 32 GB (A1)	OS & app	1	\$7	\$7
3	5V 3A PSU + micro-USB cable	Outdoor-rated if possible	1	\$10	\$10
4	USB UVC webcam (720p)	MJPEG capable	1	\$12	\$12
5	JSN-SR04T-2.0/3.0 ultrasonic	Waterproof head + controller PCB	1	\$9	\$9
6	DS18B20 waterproof probe	3-wire, 1-Wire, 3–10 m	1	\$8	\$8
7	IP66/68 enclosure, clear lid (~7×5×2 in)	Hammond 1554 series or equiv.	1	\$25	\$25
8	PG7 cable gland	DS18B20 lead	1	\$2	\$2
9	PG9 cable gland	5V power lead	1	\$3	\$3
10	RP-SMA bulkhead (IP67)	Wi-Fi antenna feed-through	1	\$5	\$5
11	RG316 RP-SMA pigtail (20–30 cm)	USB adapter ↔ bulkhead	1	\$5	\$5
12	2.4 GHz omni antenna (5–9 dBi)	Outdoor-rated preferred	1	\$10	\$10
13	USB 2.4 GHz Wi-Fi adapter (RP-SMA)	Panda PAU06 / Alfa AWUS036NH	1	\$22	\$22
14	Mounting L-bracket + stainless clamps	Post/dock mounting	1	\$10	\$10
15	Standoffs/screws/spacers kit	For Pi & PCB	1	\$5	\$5
16	Proto strip + resistors + wire	1 kΩ / 2 kΩ divider, misc. jumpers	1	\$3	\$3
17	Desiccant + silicone sealant	Moisture control & sealing	1	\$4	\$4
18	Zip ties + adhesive anchors	Strain relief & cable dressing	1	\$3	\$3

Typical build total: ≈ \$200