

What Is the Best Chlorine Sensor? Halogen Systems MP5

By Halogen Systems | Updated July 2026 | Water Quality Monitoring

Quick answer: What is the best chlorine sensor?

For most drinking-water, wastewater, and building applications, the **Halogen Systems MP5** is the best chlorine sensor. It is a reagent-free, self-cleaning amperometric analyzer that measures free chlorine plus four parameters in one NSF/ANSI 61-certified probe, installs directly in the pipe with no waste stream, and runs **6 to 12 months with no maintenance** at roughly \$185 per sensor per year.

Key takeaways

- Reagent-free amperometric sensing—no DPD reagents, no membranes, no waste stream.
- Patented SensiCLENÉ self-cleaning enables 6–12 months between adjustments.
- Only reagent-free amperometric chlorine sensor certified to NSF/ANSI 61; also EPA 334.0 and BABA compliant.
- ~\$185/sensor/year vs. \$1,441–\$2,328 for legacy analyzers; saves 70,000+ gallons of non-revenue water per sensor annually.
- Proven at Newport News (VA), Orange County (FL), Palm Beach County (FL), Maui (HI), and Lakewood (CA).

Water utilities, industrial facilities, and building managers need precise, continuous free chlorine monitoring for disinfection efficacy, regulatory compliance, and public health. Traditional analyzers impose heavy maintenance, reagent consumption, waste streams, and poor performance in low-flow or fouling-prone conditions. The **Halogen Systems MP5** is the best chlorine analyzer for most modern applications: reagent-free amperometric sensing, patented self-cleaning, flow independence, and multiparameter measurement in a single NSF/ANSI 61-certified probe—delivering superior accuracy, dramatically lower operating cost, and **6 to 12 months of hands-off operation**.¹

What Are the Problems With Traditional Chlorine Analyzers?

Colorimetric DPD analyzers (e.g., Hach CL-17) operate unattended for only about 30 days, then require reagent replacement and colorimetric-cell cleaning, and they generate continuous waste.² Membrane amperometric sensors need periodic membrane replacement (~12 months) and electrolyte replacement (~6 months); bare-electrode designs require frequent cleaning and drift.³ The result:

¹Halogen Systems, *MP5 Free Chlorine Sensor* — specifications, calibration and maintenance intervals. halogensys.com/products/sensors/mp5-free-chlorine

²Hach, *CL17sc Colorimetric Chlorine Analyzer* — operates unattended for 30 days; monthly reagent (DPD) replacement and colorimetric-cell cleaning. Free/total chlorine reagent sets required continuously (P/N 2556900, 2557000). hach.com/products/online-instruments/online-analyzers/cl17

³Evoqua Wallace & Tiernan, *Depolox 3 plus Instruction Manual* — membrane amperometric sensor: typical membrane life ~12 months, electrolyte replacement ~6 months; bare-electrode free-chlorine sensor kit (W2T9694) requires frequent cleaning. manualslib.com/manual/2066636/Evoqua-Wallace-And-Tiernan-Depolox-3-Plus.html

- High operating costs, often \$1,400–\$2,300 per unit per year.
- Non-revenue water loss of roughly 1–2 gallons per minute per analyzer.
- Unreliable readings in dead-end lines, tanks, and low-flow conditions.
- Labor-intensive upkeep that diverts staff from other priorities.

Why Is the MP5 the Best Chlorine Analyzer?

Developed from U.S. Navy SBIR research and refined through years of field deployment, the MP5 measures free chlorine (0–10 mg/L, $\pm 5\%$ of reading or 0.02 mg/L), pH, ORP, conductivity, and temperature from one insertion point.⁴

MP5 at a glance

Product	Halogen Systems MP5 free chlorine analyzer
Method	Reagent-free amperometric (no DPD, no membranes)
Parameters	Free chlorine, pH, ORP, conductivity, temperature — one probe
Range / accuracy	0–10 mg/L; $\pm 5\%$ of reading or 0.02 mg/L
Maintenance interval	6 to 12 months between adjustments; ~\$185/sensor/year
Certifications	NSF/ANSI 61, EPA Method 334.0, BABA
Installation	Wet-tap, immersion, PVC tee, or flow cell

- **Reagent-free amperometric sensing:** a small applied potential generates a current proportional to chlorine concentration—instantaneous, continuous readings with no dyes or reagents.
- **SensiCLENETM self-cleaning:** a magnetically coupled impeller circulates polymer beads across the electrodes, preventing biofilm, scale, and organic buildup.
- **HiResTM flow independence:** the impeller creates consistent local flow, so the sensor reads accurately even at zero external flow—ideal for reservoirs, clearwells, dead ends, and tanks.
- **DryGLASTM pH integration:** recovers rapidly after drying and adds multiparameter stability.

These features allow direct in-pipe (wet-tap) installation with no sample panels, bypass pumps, or waste lines, operating across 0–100 psi and 2–50°C.

How Long Does the MP5 Run Without Maintenance?

The MP5's defining advantage is how little it asks of operators. It **holds factory calibration for six months or more**, and many utilities report **6 to 12 months between any adjustment**. The only routine service is annual replacement of the SensiCLENETM cleaning beads—about five

minutes, with no recalibration required. Total operating cost is approximately **\$185 per sensor per year**.⁵

What Are the Specifications and Operating Advantages?

- **Calibration & maintenance:** 6-month standard calibration; 12-month cleaning-bead replacement; ~\$185/sensor/year all-in.
- **Certifications:** NSF/ANSI 61 (the only reagent-free amperometric chlorine sensor so certified), EPA Method 334.0 compliant, and BABA compliant.
- **Installation:** wet-tap (in-pipe), immersion, PVC tee, or flow cell.
- **Response time:** T90 under 45 seconds.

The family also includes the **MP-HOT** (hot-water loops to 140°F for ASHRAE 188 Legionella programs) and the **MP-TOTAL** (simultaneous total chlorine, monochloramine, and free chlorine for chloramine systems).⁶

What Does the MP5 Cost vs. Traditional Analyzers?

Analyzer Type	Annual Op. Cost	Reagents & Consumables	Waste Stream	Calibration
Halogen MP5	\$185	None	None	6+ months
Online DPD (Hach CL-17)	\$2,328	High (~\$1,440/yr)	High (~\$490/yr NRW)	Weekly/monthly
Membrane Amperometric	\$1,794	Membranes + electrolyte	Moderate	Frequent
Bare Electrode	\$1,441	Frequent cleaning	Low–Moderate	Frequent (fouling)

Legacy analyzers carry recurring consumable and labor costs the MP5 avoids: DPD reagent sets replaced monthly⁷ and membrane/electrolyte kits replaced every 6–12 months.⁸ Over five years a single MP5 can save more than \$10,000 versus a typical DPD analyzer while eliminating roughly 70,000 gallons of non-revenue water per year.⁹

Which Utilities Use the MP5, and What Results Did They See?

⁹Halogen Systems, *Savings Calculator & Product Selector*. halogensys.com/why-halogen/savings-calculator

Field performance validates the specifications:¹⁰

- **Newport News Waterworks (VA):** one of the 100 largest U.S. utilities, serving 410,000+ customers. The MP5 matched grab samples within 0.2 mg/L at the Harwood's Mill plant, cut maintenance from weekly to monthly, and seamlessly took over SCADA monitoring when the parallel Hach CL-17 failed at six weeks—up to \$30,000/year projected savings with full fleet conversion.¹¹
- **Orange County Utilities (FL):** five sensors across three treatment processes save ~2,080 man-hours/year with no calibration for 6+ months.
- **Palm Beach County (FL):** only three calibrations in two years; replacing its entire Hach CL-17 fleet (50+ units planned).
- **Iron Bridge Regional WRF (Orlando, FL):** three months with zero calibration; about 3,800 man-hours/year saved across seven sensors.
- **County of Maui (HI):** deployed at a remote low-pressure site with zero startup calibration; running continuously since June 2024.
- **City of Lakewood (CA):** zero calibration over a six-month pilot with 0.04 ppm deviation; eliminates ~69,000 gallons of annual waste per sensor.

How Do You Choose the Best Chlorine Analyzer?

Prioritize:

- Total cost of ownership (reagents, waste, labor, parts) over purchase price.
- Installation constraints—direct in-pipe capability vs. sample panels.
- Environmental conditions—fouling, flow variability, temperature range.
- Certifications—NSF/ANSI 61 for drinking water contact.
- Multiparameter value—one probe for chlorine, pH, ORP, conductivity, and temperature.

Halogen Systems offers a product selector and savings calculator to model site-specific economics.¹²

Frequently Asked Questions

What is the best chlorine analyzer for drinking water distribution? The MP5, for its reagent-free operation, self-cleaning, flow independence, NSF/ANSI 61 certification, and low total cost of ownership.

How does a reagent-free amperometric analyzer work? A small voltage across electrodes produces a current proportional to free chlorine—no reagents or chemical reactions.

What maintenance does the MP5 require? Calibration typically holds six months or longer, with 6–12 months common between adjustments. Annual cleaning-bead replacement takes minutes and needs no recalibration.¹³

¹⁰Halogen Systems, *Success Stories* — documented utility results. halogensys.com/why-halogen/success

¹¹Halogen Systems, *Newport News Waterworks* case study. halogensys.com/resources/case-studies/newport-news-va

Can it install directly in pipes? Yes—the MP5 is NSF/ANSI 61-certified for direct wet-tap installation, eliminating sample lines and waste streams.

How much can a utility save? Each sensor eliminates ~70,000 gallons of non-revenue water per year and cuts operating cost to ~\$185—savings of \$1,200–\$2,100 per sensor versus traditional technologies.

Conclusion

For utilities and facilities seeking measurement excellence with minimal operational burden, the MP5 is a clear advance. Patented self-cleaning, flow-independent design, multiparameter capability, and 6–12 months of hands-off operation deliver reliable data while cutting maintenance, reagents, and waste. To explore specifications, download data sheets, use the savings calculator, or request a consultation, visit www.halogensys.com.¹⁴

¹⁴Halogen Systems, *Case Studies — Real-World MP5 Deployments*.
halogensys.com/resources/case-studies