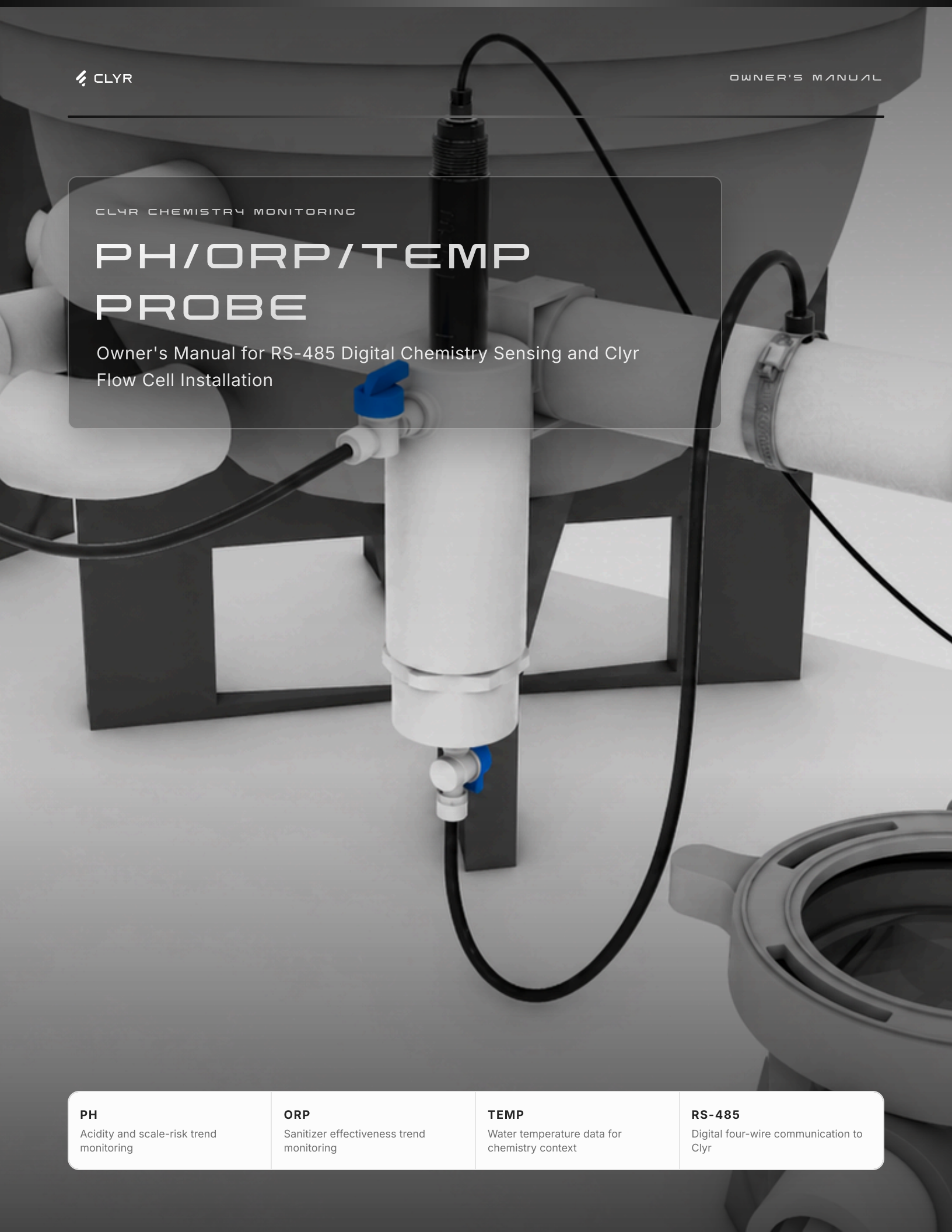

CLYR CHEMISTRY MONITORING

PH/ORP/TEMP PROBE

Owner's Manual for RS-485 Digital Chemistry Sensing and Clyr Flow Cell Installation

PH	ORP	TEMP	RS-485
Acidity and scale-risk trend monitoring	Sanitizer effectiveness trend monitoring	Water temperature data for chemistry context	Digital four-wire communication to Clyr

01

Document Information

This manual covers the Clyr pH/ORP/temperature probe, the Clyr flow cell, basic RS-485 wiring, owner operation, and routine care. It is written for pool owners, installers, and service professionals who need a durable reference after installation.

OPERATOR RISK AND CHEMICAL SAFETY WARNING

Clyr probes and app readings are helpful tools for understanding pool chemistry trends. Any chemical decision, dosing action, recommendation, or decision to follow a recommendation is made entirely at the operator's risk.

- The operator is responsible for confirming the system is installed correctly, plumbed correctly, wired correctly, and sampling representative pool water.
- The operator is responsible for keeping probes clean, wet, calibrated, and verified against reliable manual water testing before chemical changes are made.
- Pool chemicals can cause serious injury or death if inhaled, swallowed, mixed incorrectly, mishandled, mismanaged, or overdosed into pool water.
- Do not rely on probe data, app calculations, or automated recommendations as the only basis for chemical dosing. Follow chemical labels, local codes, and qualified pool-service guidance.

ITEM	DETAIL
Document Type	Owner's Manual / Installation and Operation Reference
Product	Clyr RS-485 Digital pH/ORP/Temperature Probe with Clyr Flow Cell
Revision	Rev A Draft
Intended Controller	Clyr Lite Controller or Clyr Controller with an available RS-485 network
Image Status	Cover image included; installation photos and app screenshots are intentionally left as placeholders for final Clyr imagery.

> **Important:** This manual does not replace local codes, plumbing best practices, pool chemical labels, test-kit directions, or the instructions supplied with pumps, heaters, chlorinators, and other pool equipment.

How to Use This Manual

- Read all safety pages before drilling plumbing, opening equipment, wiring terminals, or handling chemicals.
- Use the installation pages as a sequence: site selection, flow cell plumbing, flow verification, wiring, app setup, and commissioning.
- Use the chemistry pages to understand what pH, ORP, and temperature mean in the app.
- Keep the installation record and service log with the pool equipment records.

02

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Safety Symbol Key

Warning

Indicates a hazardous situation that could result in injury, equipment damage, loss of water containment, or unsafe pool operation if ignored.

Important Information

Identifies setup details that affect reliable operation, including flow direction, network selection, probe power, or app configuration.

Electrical Voltage

Identifies wiring, terminals, low-voltage power, or nearby equipment that may expose the installer to hazardous voltage or damaging miswiring.

Water and Pressure

Identifies plumbing, pump, filter, and flow-cell steps where pressure control, leak checks, or water containment are required.

Prohibited Action

Identifies actions that should not be performed, such as drilling pressurized pipe, installing the bypass after a chlorinator, or relying on probe data without manual water verification.

04

Chemical, Water, and Electrical Warnings

Chemical Handling

Pool chemicals can injure people and damage surfaces. Always follow chemical product labels, wear appropriate protection, and never mix chemicals outside the pool water.

Probe Data Is Not a Test Kit

The probe provides digital trend data for Clyr automation and monitoring. Owners should still verify water balance with a reliable test kit or pool professional, especially before major chemical corrections.

Pressurized Water

Turn off the pump breaker and relieve pressure before drilling pipe, cutting tubing, opening the flow cell, removing the probe, or changing quick-connect tubing.

Low-Voltage Wiring

Only connect the probe to the controller terminals specified for low-voltage RS-485 sensor wiring. Do not connect sensor wires to high-voltage pump, light, heater, or relay circuits.

Do not install the flow-cell bypass after a chlorinator or salt cell. The probe should sample representative filtered water. Concentrated sanitizer streams can distort readings and may shorten probe life.

Owner Responsibility

- Keep chemical containers away from the controller, probe cable, and flow-cell fittings.
- Do not use probe readings as the only basis for swimming safety decisions.
- Inspect the probe and flow cell after freezing weather, plumbing service, equipment replacement, and chemical upsets.
- Contact a pool professional if readings are erratic, if water is cloudy, or if swimmers report irritation.

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Probe Overview

The Clyr probe is a digital 3-in-1 water-quality sensor. It measures pH, ORP, and water temperature, then sends readings to a Clyr controller over a four-wire RS-485 connection.

PH

Water Balance

Tracks acidity and basicity so the owner can see drift, comfort risk, sanitizer efficiency, and scale or corrosion risk.

ORP

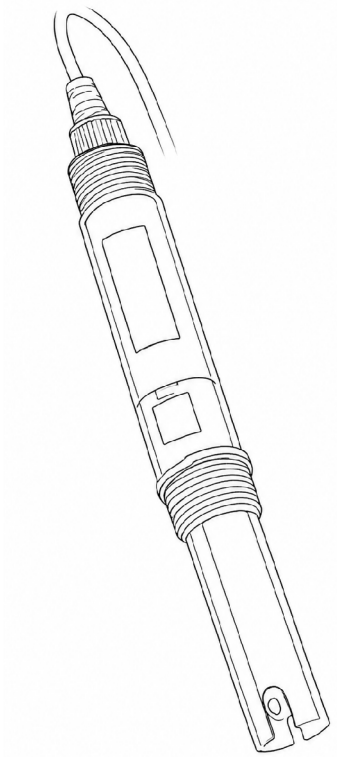
Sanitizer Strength

Tracks oxidation-reduction potential, a useful indicator of sanitizer effectiveness and water response.

TEMP

Water Context

Reports temperature so chemistry trends and app guidance can be interpreted with water conditions in mind.



Clyr digital pH/ORP/temperature probe reference.

System Components

COMPONENT	PURPOSE	OWNER NOTE
Digital probe	Measures pH, ORP, and temperature	Keep probe wet during normal operation and protect the tip during service.
Clyr flow cell	Provides a controlled sample path through the probe body	Gentle, continuous flow is better than high-pressure turbulence.
Quick-connect tubing	Routes water from pipe to flow cell and back to pipe	Inspect for kinks, leaks, brittleness, and secure seating.
RS-485 cable	Provides power and digital communication	Network selection in the app must match the A/B terminals used.

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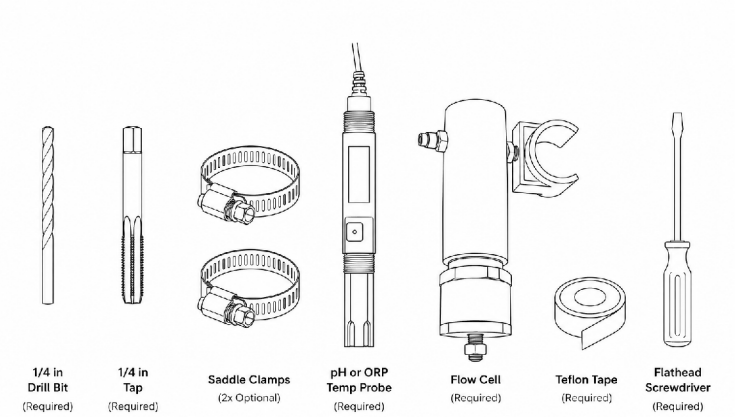
Before You Begin

Package Contents

- Clyr pH/ORP/temperature digital probe
- Clyr flow cell
- 1/4 inch NPT sample-port fittings, or saddle clamp fittings when tapping the line directly is not practical
- Quick-connect tubing
- Flow limiter valve, if supplied
- Installation hardware supplied with the kit

Tools Needed

- 1/4 inch drill bit and 1/4 inch NPT tap for direct pipe taps
- Flow cell, pH/ORP/temp probe, Teflon tape, and flathead screwdriver
- Optional saddle clamps if direct tapping is not practical



Tools and parts for Clyr probe installation: 1/4 inch drill bit, 1/4 inch tap, optional saddle clamps, probe, flow cell, Teflon tape, and flathead screwdriver.

Pre-Installation Checks

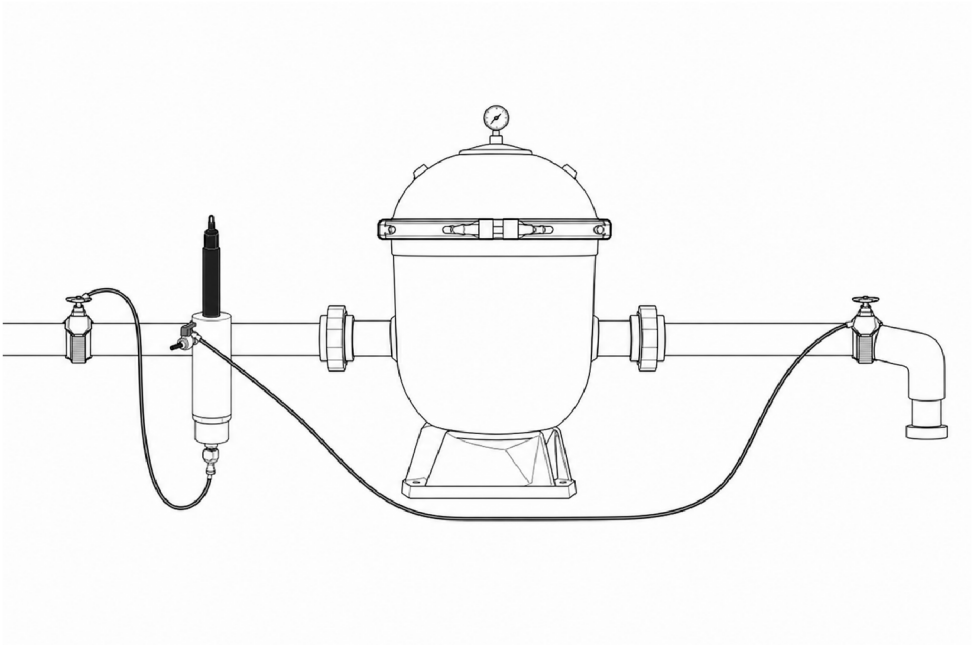
1. Confirm the controller is online and assigned to the correct pool location in the Clyr app.
2. Confirm an RS-485 network is available for the probe: Network 1 uses A1/B1 and Network 2 uses A2/B2.
3. Identify the pipe entering the filter, the pipe leaving the filter, and the downstream heater, chlorinator, salt cell, and return plumbing before selecting the sample points.
4. Plan cable routing so the probe cable has a drip loop and cannot be pulled tight during filter service.
5. Plan tubing routing so the tubes are short, protected, and not kinked.

> **Recommended network planning:** If the controller is monitoring existing automation on one RS-485 network, use the other Clyr RS-485 network for the chemistry probe when possible.

07

Installation Option 1: Across Filter

Option 1 is the preferred installation. Place one sample tap on the line entering the filter and one sample tap on the line leaving the filter. Normal filter pressure differential helps move water through the Clyr flow cell.



Option 1: preferred across-filter installation with one tap before the filter and one tap after the filter.

Option 1 Rules

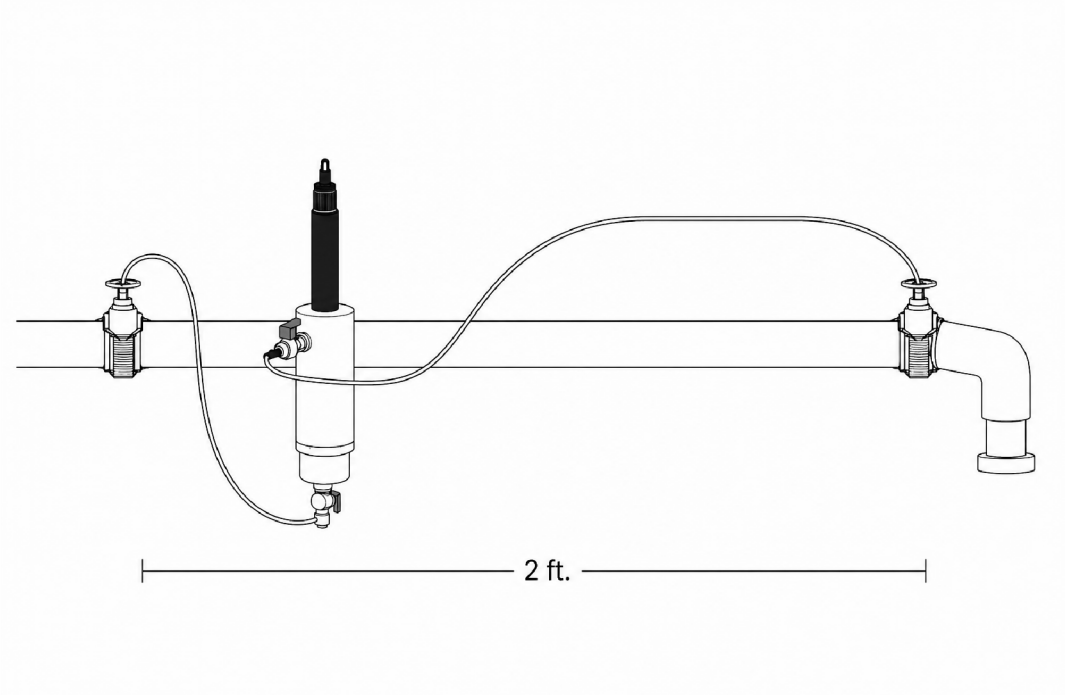
RULE	REASON
Tap before and after the filter	Use one tap roughly one foot before the filter and one tap roughly one foot after the filter.
Prefer direct tapped fittings	Use a 1/4 inch drill bit and 1/4 inch NPT tap when practical. Use saddle clamps only when direct tapping is not practical.
Keep before sanitizer equipment	Avoids localized chemistry changes from chlorine generation or direct chemical injection.
Keep tubing and cable serviceable	Allows filter cleaning, probe removal, leak checks, and winterization without strain.

> **Shut down and de-pressurize first.** Turn off the pump breaker before drilling. Do not rely only on app commands or schedules to keep the pump off while plumbing is open.

08

Installation Option 2: Downstream Before Salt Cell

Option 2 places both sample taps downstream of the filter but before the salt cell or other sanitizer equipment. Use this layout when the across-filter installation is not practical.



Option 2: downstream of the filter and before the salt cell, with at least two feet between fill and return taps.

Option 2 Rules

RULE	REASON
Install after the filter	Filtered water reduces debris exposure and keeps the flow cell easier to service.
Install before the salt cell	Avoids sampling concentrated sanitizer immediately after chlorine generation.
Keep two feet between taps	The fill and return taps should be separated by at least two feet on the pipe run.
Prefer direct tapped fittings	Use a 1/4 inch drill bit and 1/4 inch NPT tap when practical. Use saddle clamps only when direct tapping is not practical.

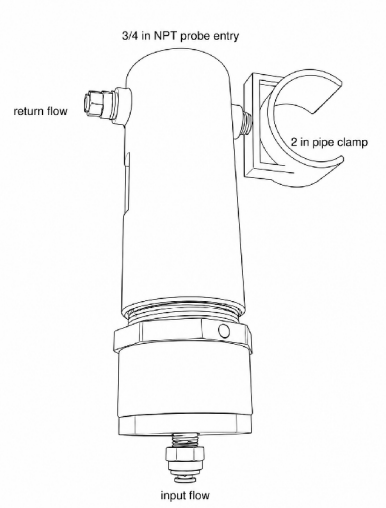
> **Flow direction matters:** Route the fill-side sample port to the bottom of the flow cell and route the top of the flow cell back to the return-side sample port.

09

Flow Cell Plumbing

The flow cell uses two small sample ports: one to bring filtered water into the bottom of the flow cell and one to return water from the top of the flow cell back to the pipe.

1. With the pump breaker off and pressure relieved, mark the two sample-port locations. For Option 1, mark one point roughly one foot before the filter and one point roughly one foot after the filter.
2. For Option 2, mark both sample-port locations downstream of the filter but before the salt cell, with at least two feet between the fill and return taps.
3. Prefer direct pipe taps: drill the marked locations with a 1/4 inch drill bit, then use a 1/4 inch NPT tap to thread the line for the sample-port fittings.
4. If direct tapping is not practical, install the supplied saddle clamps at the marked sample-port locations and tighten evenly.
5. Mount or snap the flow cell in the planned position between the two sample ports.
6. Connect tubing from the fill-side sample port to the bottom quick-connect fitting of the flow cell.
7. Connect tubing from the top of the flow cell to the return-side sample port.



Flow cell plumbing reference: input flow enters at the bottom and return flow exits at the side.

> **Flow direction matters:** Water should enter the bottom of the flow cell and exit from the top so air can purge and the probe remains consistently wetted.

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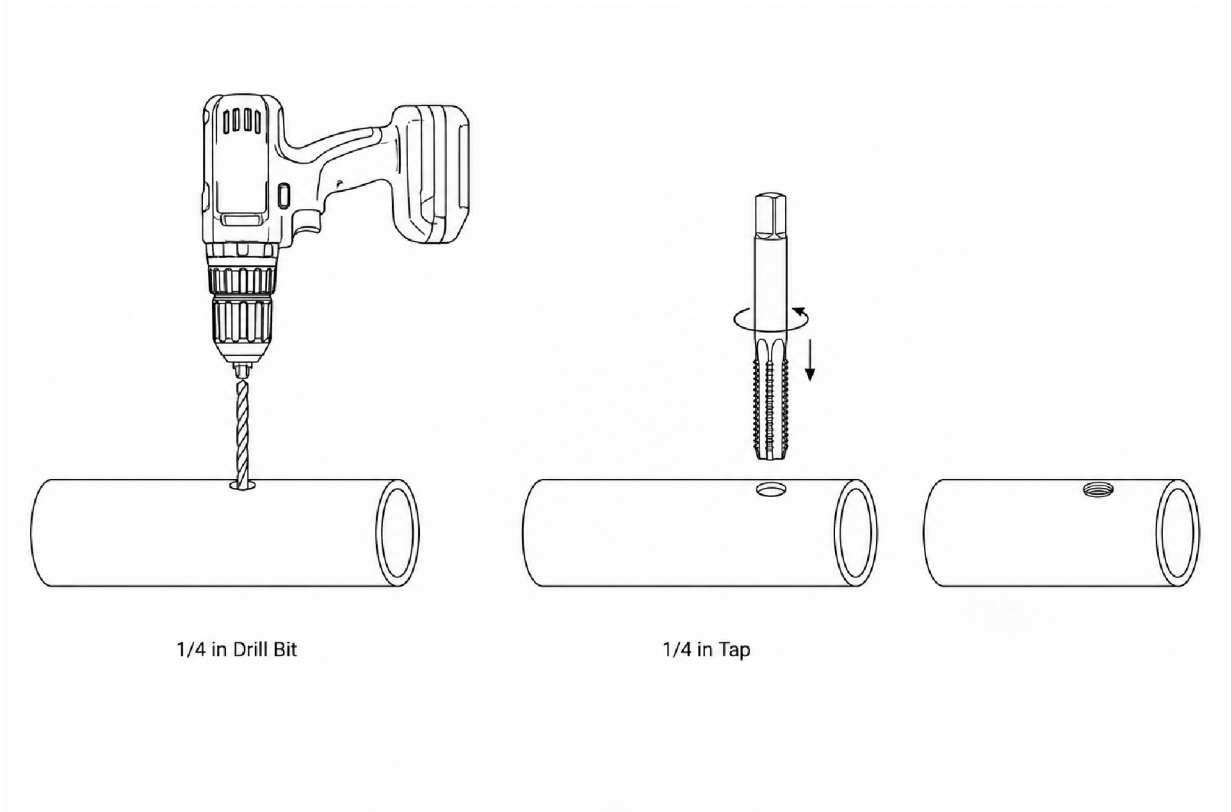
Plumbing Step 1: Drill and Tap Sample Ports

For both Option 1 and Option 2, create two sample ports: one fill port and one return port. Prefer direct tapped ports using a 1/4 inch drill bit and a 1/4 inch NPT tap.



Drill each fill and return location with a 1/4 inch drill bit, then thread each opening with a 1/4 inch NPT tap.

Step Details

1. Confirm the pump breaker is off and the plumbing is fully de-pressurized.
2. Mark the fill and return locations for the selected installation option.
3. Drill both marked pipe locations using a 1/4 inch drill bit.
4. Tap both drilled openings with a 1/4 inch NPT tap so the sample-port fittings can thread directly into the pipe.
5. Remove plastic shavings from the pipe area before installing fittings or restoring flow.

> **Applies to both layouts:** Use this same drill-and-tap process for the fill and return holes on Option 1 across the filter and Option 2 downstream before the salt cell.

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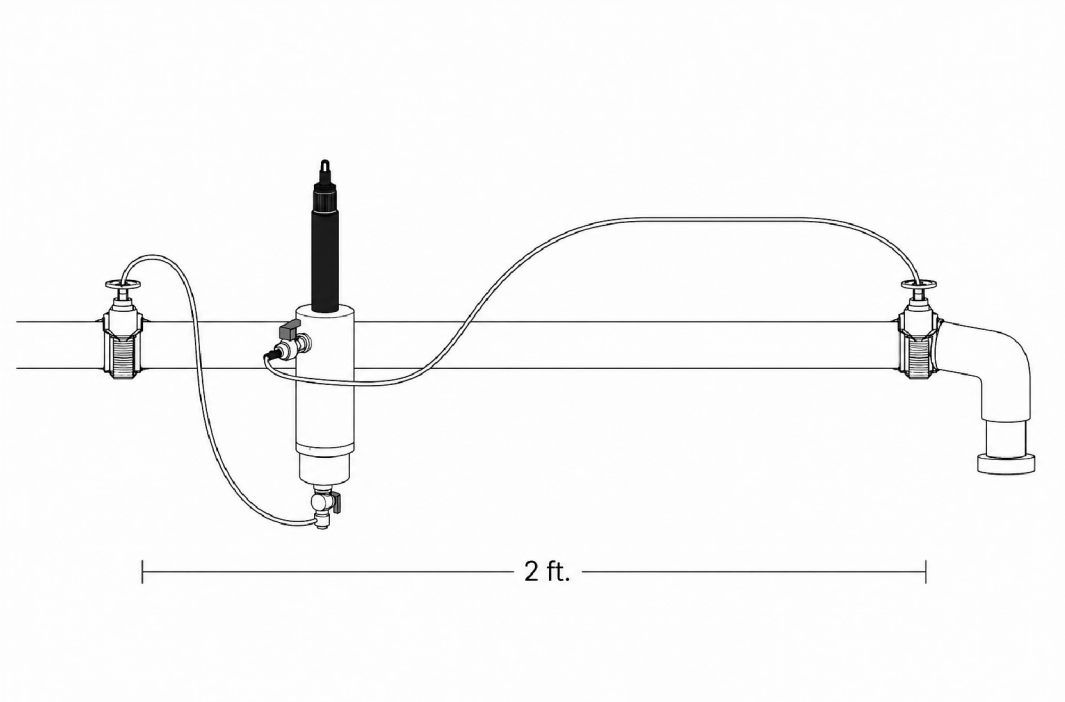
Plumbing Step 2: Mount Probe and Connect Tubing

After drilling and tapping the fill and return ports, mount the flow cell, install the probe, and connect the provided 1/4 inch tubing to the sample ports.



Step 2: clamp the flow cell to the pipe, install the probe, and connect the 1/4 inch tubing to the fill and return sample ports.

Step Details

1. Clamp the flow cell to the pipe in a serviceable position.
2. Twist off or remove the plastic storage cap from the probe tip. The cap is filled with KCl solution; it is not hazardous, but it should not be ingested.
3. Install the probe into the flow cell and hand-tighten until seated. Do not over-tighten plastic parts.
4. Connect the provided 1/4 inch tubing to the saddle clamps, or use a SharkBite 1/4 inch threaded fitting where the line was drilled and tapped.
5. Route the tubing from the fill-side sample port to the bottom of the flow cell.
6. Route the tubing from the top side outlet of the flow cell to the return-side sample port.
7. Route the probe cable with a drip loop and strain relief so future filter service cannot pull on the probe body.

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Plumbing Step 3: RS-485 Wiring

The Clyr chemistry probe uses a four-wire digital connection: power, ground, and RS-485 A/B communication. Use the same Clyr network in the app that you use at the controller terminals.

12V	A1 or A2	B1 or B2	GND

PROBE WIRE	CLYR TERMINAL	FUNCTION
Red	12V	Low-voltage probe power
Green	A1 or A2	RS-485 A on selected network
White or Yellow	B1 or B2	RS-485 B on selected network
Black	GND	Low-voltage ground

Wiring Procedure

1. Turn off power to the controller before landing or moving wires.
2. Strip only enough insulation for the terminal block. Do not leave bare copper exposed.
3. Land the red and black conductors on 12V and GND.
4. Land green and white/yellow on A1/B1 for Network 1 or A2/B2 for Network 2.
5. Tug-test each conductor and confirm no strands bridge adjacent terminals.
6. Record the selected network in the installation record.

> **Minimum power check:** If readings do not appear, verify that the probe has at least 9V across red and black at the probe connection path and confirm the correct RS-485 network in the app.

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App Setup

The probe is one physical sensor, but pH and ORP are added as separate equipment items in the Clyr app. Both app entries should use the same RS-485 network selected at the controller terminals.

1. Open the Clyr app and go to the correct pool location.
2. Go to Settings, Devices, Add, then Pool Equipment.
3. Select pH Sensor, keep or edit the default name, and choose Network 1 or Network 2 to match the wiring.
4. Save the pH sensor and confirm it appears on the devices page.
5. Repeat the same process for the ORP sensor, using the same network.
6. Go to the Water Quality tab and refresh data after both components have been added.

APP ITEM	SETUP DETAIL	OWNER CHECK
pH Sensor	Add as pH and select the wired network	pH card appears in water quality
ORP Sensor	Add separately as ORP on the same network	ORP card appears in water quality
Temperature	Reported through the same probe data path	Temperature appears with water quality readings

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Water Quality Readings

When the probe is installed, powered, and configured, pH, ORP, and temperature readings are available in the Clyr app. The app can show automatic updates and can also request fresh values from the sensor.

What to Expect

READING	TYPICAL USE	OWNER NOTES
pH	Comfort, equipment protection, sanitizer effectiveness	Clyr recommends keeping pH between 7.2 and 7.8 unless local or professional guidance requires otherwise.
ORP	Sanitizer effectiveness trend	Clyr docs describe a good ORP level as roughly 550 to 800 mV.
Temperature	Chemistry context and equipment decisions	Temperature affects chemistry behavior and interpretation.
Free chlorine estimate	Sanitizer context from ORP and entered stabilizer level	If the user enters CYA in the app, Clyr estimates free chlorine from ORP and CYA; Clyr considers this sanitizer calculation to be within about 15%.
LSI	Scale and corrosion balance	If the user enters the other LSI components in the app, Clyr calculates LSI to help interpret water balance.

After First Install

- Compare app values with a trusted water test before making large chemical corrections.
- Allow new or recently serviced probes time to stabilize before relying on fine trend changes.
- If ORP or calculated free-chlorine guidance seems inconsistent with pool-store testing, verify CYA, salt level, recent chemical additions, and whether the probe has been powered long enough to stabilize.

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Chemistry Interpretation

Clyr chemistry data is designed to help owners see trends sooner and make better decisions. It should be interpreted with manual testing, pool volume, sanitizer type, CYA level, water temperature, and recent chemical additions.

pH

pH measures how acidic or basic the water is. Low pH can irritate swimmers and corrode equipment. High pH can make water cloudy, contribute to scale, and reduce sanitizer effectiveness.

ORP

ORP measures oxidation-reduction potential. It is not the same as free chlorine, but it helps indicate how effectively sanitizer is working in the water at that moment.

Common Reading Context

OBSERVATION	POSSIBLE CONTEXT	OWNER ACTION
pH high	Normal upward drift, aeration, plaster curing, chemical imbalance	Confirm pool gallons and test water before adding pH reducer or using Clyr dosing guidance.
pH low	Recent acid addition, acidic rain, overcorrection	Verify with a test kit and avoid running sensitive equipment if water is aggressively acidic.
ORP low	Low sanitizer effectiveness, high CYA, high pH, contamination, sensor stabilization	Check sanitizer, pH, CYA, salt, and recent bather load or debris events.
ORP changes after pump speed changes	Flow and chlorinator output may be changing sanitizer delivery	Review pump schedule, salt-cell output, and Clyr automation settings.

> **Pool volume matters:** Make sure the pool gallon setting in the app is correct before following chemical-dose guidance. Wrong volume can lead to overcorrection.

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Commissioning Checklist

- Controller is powered, paired, online, and assigned to the correct pool location.
- Flow-cell sample ports are installed using Option 1 across the filter, or Option 2 downstream of the filter before the salt cell with at least two feet between taps.
- Direct 1/4 inch NPT tapped fittings are tight, or saddle clamps are tight and aligned if clamps were used.
- Bottom flow-cell fitting receives water from the fill-side sample port.
- Top flow-cell fitting returns water to the return-side sample port.
- Flow is gentle and stable with the pump running.
- Flow limiter valve is installed if flow was excessive.
- Probe is seated in the flow cell and not over-tightened.
- Probe cable has a drip loop and strain relief.
- Red wire is landed on 12V.
- Black wire is landed on GND.
- Green and white/yellow are landed on A1/B1 or A2/B2 as selected.
- Terminals are tug-tested and no strands bridge adjacent terminals.
- pH sensor is added in the app on the correct network.
- ORP sensor is added in the app on the same network.
- Water Quality tab refresh returns pH, ORP, and temperature values.
- Initial app readings are compared with a manual water test.
- Owner understands that probe data supports, but does not replace, normal water testing.

> **Leave the pool serviceable:** The finished installation should allow filter cleaning, pump basket access, probe removal, and flow-cell inspection without pulling on tubing or cable.

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Owner Maintenance

Chemistry probes are precision water-contact devices. Good maintenance keeps the probe wet, protected, clean, and electrically stable.

INTERVAL	MAINTENANCE ITEM	OWNER ACTION
Weekly	Water reading review	Compare app trends with normal pool appearance, sanitizer routine, and recent weather or use.
Monthly	Visual inspection	Check flow cell, tubing, tapped fittings or saddle clamps, probe cable, and controller terminal area for leaks or damage.
After service	Configuration check	Verify readings after filter cleaning, pump work, plumbing changes, chemical corrections, or controller service.
Seasonal	Probe condition	Inspect for fouling, scaling, trapped air, cracked tubing, and signs of a dried sensor tip.
As needed	Professional water test	Use a reliable test kit or pool professional before large chemical changes or when readings conflict.

Care Guidelines

- Do not let the probe tip dry out during extended service, storage, or winterization.
- Do not scrape the sensing surfaces with metal tools or abrasive pads.
- Do not pull the probe out by the cable.
- Do not leave the flow cell open to insects, debris, direct chemical splash, or freezing water.
- Use service practices recommended by Clyr or a qualified pool professional for cleaning, storage, and replacement.

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Troubleshooting

SYMPTOM	LIKELY CAUSE	RECOMMENDED CHECK
No pH or ORP data	No probe power, loose wire, wrong network, or app item missing	Verify red/black power, terminal seating, pH and ORP app entries, and selected RS-485 network.
Only one app card appears	Only pH or only ORP was added	Add both pH Sensor and ORP Sensor as separate app components on the same network.
Readings appear but seem wrong	Recent install, dry probe, no flow, chemical slug, or water imbalance	Confirm flow, compare with test kit, wait for stabilization, and check install position before dosing.
Values update slowly	Normal polling interval or app refresh not requested	Use the Water Quality refresh action and allow the sensor a few moments to report.
ORP low while chlorine test is acceptable	High pH, high CYA, high salt, contamination, or sensor stabilization	Check pH, CYA, salt, temperature, recent chemicals, and whether the probe has been powered long enough.
Air trapped in flow cell	Wrong tubing direction, excessive turbulence, or poor purge	Confirm bottom inlet and top outlet, reduce excessive flow, and inspect tubing for kinks.
Flow cell leaks	Loose quick-connect, over-tightened part, damaged tubing, loose tapped fitting, or misaligned saddle	Turn pump off, relieve pressure, reseat tubing, inspect fittings, and correct tap or clamp alignment.
Controller reports network errors	A/B swapped, wrong RS-485 bus, damaged cable, or shared-bus conflict	Check green and white/yellow positions, network selection, cable path, and whether other equipment is on the same bus.

Do not keep dosing against questionable readings. If probe data conflicts with pool-store or test-kit results, pause automatic chemical changes and verify installation, water flow, wiring, CYA, and probe condition.

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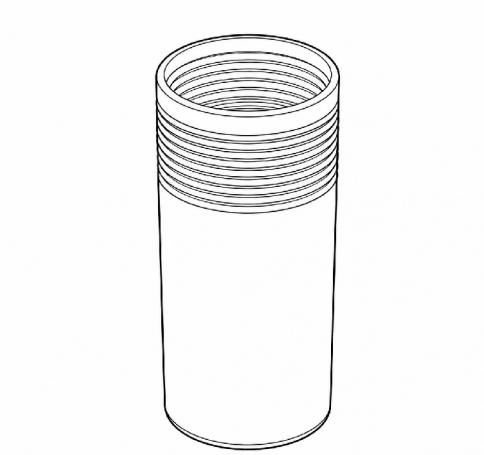
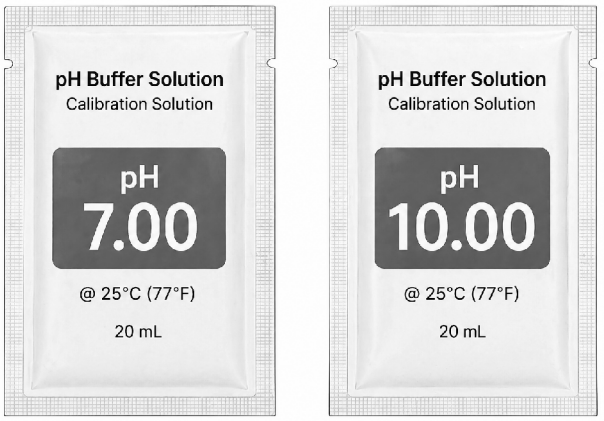
Calibration Supplies

Use the Clyr calibration cap and fresh pH 7.00 and pH 10.00 buffer solutions to perform a two-point pH calibration.





SUPPLY	PURPOSE
Calibration cap	Threads onto the probe tip and holds calibration fluid around the pH sensing element.
pH 7.00 buffer solution	First calibration point. Use fresh solution and do not pour used solution back into the packet or bottle.
pH 10.00 buffer solution	Second calibration point for a two-point pH calibration.
Clean rinse water	Used to rinse the probe and cap between pH 7.00 and pH 10.00 calibration steps.

Calibrate only when the system is stopped. Turn the breaker off, turn the pump off, and relieve pressure as needed before removing the probe from the flow cell.

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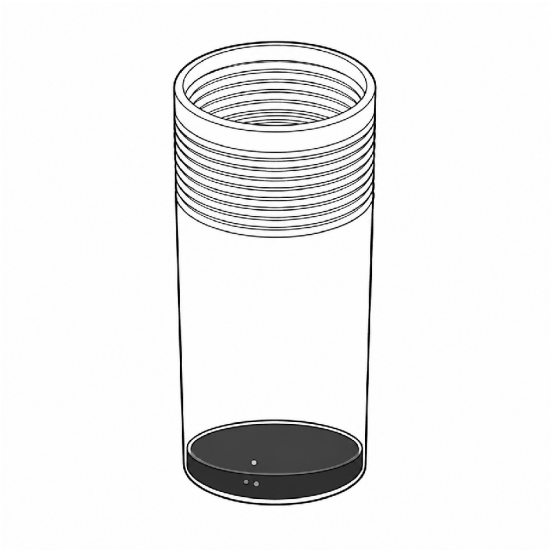
Calibration Procedure

Run pH 7.00 first, then rinse and repeat with pH 10.00 for a two-point calibration.



pH 7.00 Calibration

1. Stop the system. Turn the breaker off, turn the pump off, and relieve pressure as needed.
2. Unscrew the pH probe from the flow cell and remove it from the plumbing.
3. Pour about one inch of pH 7.00 buffer solution into the bottom of the calibration cap.
4. Screw the calibration cap onto the probe tip and wait one minute.
5. In the app, go to Settings > Calibration, select pH 7, and tap Calibrate with the pH 7.00 fluid still on the probe.
6. Go to the Water Quality page and tap Refresh. The pH reading should show approximately 7.

pH 10.00 Calibration

1. Remove the cap, discard the used pH 7.00 solution, and rinse the probe and cap with clean water.
2. Pour about one inch of pH 10.00 buffer solution into the cap, screw the cap onto the probe tip, and wait one minute.
3. In Settings > Calibration, select pH 10 and tap Calibrate.
4. Remove the cap, rinse the probe, reinstall the probe into the flow cell, and restore the system.

> **Do not mix buffer solutions.** Use fresh pH 7.00 and pH 10.00 fluid for calibration, rinse between steps, and keep the probe sensing tip wet during handling.

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Installation Record

ITEM	RECORD
Pool location name	
Controller model	
Controller serial / device ID	
Probe serial / lot ID	
RS-485 network used	Network 1 A1/B1 / Network 2 A2/B2
Installation point	Option 1: across filter, about one foot before and one foot after. Option 2: downstream of filter before salt cell, with at least two feet between fill and return taps.
Installer or service company	
Installer phone / email	
Installation date	
Initial manual pH test	
Initial manual sanitizer test	
Initial CYA reading	
Notes for future service	

Service Log

DATE	SERVICE PERFORMED	READING / RESULT	TECHNICIAN

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Closing Notes and Support

A successful Clyr chemistry-probe installation leaves the owner with a stable flow cell, a protected probe cable, matching RS-485 app configuration, and reliable pH, ORP, and temperature readings in the Water Quality tab.

Before You Leave the Equipment Pad

- Confirm the flow cell has no leaks with the pump running.
- Confirm the probe is seated, wet, and protected from cable strain.
- Confirm pH and ORP are both added in the app on the same wired network.
- Confirm Water Quality refresh returns pH, ORP, and temperature.
- Review basic water testing expectations with the owner.
- Record the network, installation date, and initial manual test values.

> **Keep this manual with the pool equipment records.** Future service work is faster when the installer, owner, or service company can reference the flow-cell plumbing, RS-485 network, commissioning checklist, and service log.

Support Information

ITEM	RECORD
Pool location name	
Clyr controller device ID	
Clyr account email	
Installer or service company	
Support notes	