

Standard PLC vs. Aquavx™ Pro

The Aquavx™ Pro is a purpose-built remote monitoring, telemetry and control device for water & wastewater applications. Here's how it compares with a standard PLC.

✓ Included / Native ● Limited or requires Add-Ons/Programming — Not Available

FEATURES	STANDARD PLC	AQUAVX	NOTES
CONNECTIVITY & COMMUNICATIONS			
Embedded Cellular Modem	—	✓	Aquavx includes an integrated LTE cellular radio, and the devices ship pre-activated and ready to connect. PLCs require a separate cellular gateway, SIM procurement, carrier data plan, and additional configuration.
Peer-to-Peer (P2P) Networking	—	✓	Aquavx units share data directly with each other over cellular (PUSH config). A PLC network requires a central server, VPN, or SCADA host to broker inter-site data.
Modbus RTU / TCP	✓	✓	Both support Modbus Master/Slave over serial and Ethernet. Aquavx includes this natively with configurable register mapping.
Instant Cloud Connectivity	—	✓	Aquavx ships pre-activated and automatically connects to RemoteIQ™ upon power-up with zero network configuration required. PLC cloud connectivity requires IT infrastructure, VPNs, and custom integration.
Ethernet Port	●	✓	Standard on Aquavx. Available on some PLC models, but often requires an additional communications module.
MONITORING & CONTROL			
Analog I/O (4–20mA, 0–10V)	✓	✓	Both support standard analog signals. Aquavx includes 5 analog inputs and 2 analog outputs in the base unit. The remaining inputs are dedicated to power monitoring and other system functions.
Digital I/O	✓	✓	Both support discrete inputs and relay outputs. Aquavx includes digital inputs and relay outputs in the base enclosure.
Pump Control Logic	●	✓	Aquavx has built-in pump control function blocks (lead/lag, alternation, runtime balancing). PLC requires custom ladder logic programming for equivalent functionality.
Alarm Management	●	✓	Aquavx includes a complete alarm engine with high/low setpoints, deadbands, callout rosters, and voice/SMS/email notification. No SCADA software required. PLCs need external alarm dialers or SCADA.
Expressions / Math Functions	✓	✓	Both can perform calculated values. PLC uses ladder/structured text; Aquavx uses a built-in expression engine with cross-register references.
Totalizers & Flow Calculations	●	✓	Aquavx has dedicated totalizer, averages, and rate-of-change function blocks purpose-built for flow metering applications.
OPERATOR INTERFACE & VISUALIZATION			
Included HMI Display	—	✓	Aquavx includes a built-in LCD display with a keypad for local reading and configuration. PLC requires a separate HMI panel (\$500-\$2,000+).
Cloud Dashboard (IoT Platform)	—	✓	Aquavx connects automatically to RemoteIQ for cloud dashboards, historical analytics, and fleet management. PLC requires SCADA software, servers, and IT infrastructure.

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SCADA Integration	✓	✓	Both can integrate with SCADA systems. PLC via OPC/Modbus locally; Aquavx via Modbus, cloud API, or MQTT.
DEPLOYMENT & PACKAGING			
Enclosed / Ruggedized Design	—	✓	Aquavx ships as a complete, IP67-rated, field-ready unit. PLC requires a separate enclosure, power supply, terminal blocks, wiring, and environmental protection.
All-in-One (Controller + Comms + HMI)	—	✓	Aquavx combines an RTU, a cellular modem, an HMI, an alarm dialer, and I/O in one unit. A comparable PLC system requires 4–6 separate components from multiple vendors.
Out-of-Box Deployment Time	—	✓	Aquavx can be configured using the online wizard and deployed in hours. PLC projects typically require weeks of panel build, programming, and commissioning.
PROGRAMMING & CONFIGURATION			
No Specialized Programming Required	—	✓	Aquavx is configured with no ladder logic, structured text, or a PLC programming IDE required. PLCs require trained programmers and vendor-specific software (e.g., Studio 5000, TIA Portal).
Online Configuration Wizard	—	✓	Aquavx includes a web-based configuration wizard that walks users through the setup step by step, from I/O mapping to alarms to pump control. No software installation required. PLC programming requires vendor-specific IDEs installed on a laptop.
Custom Logic Flexibility	✓	●	PLCs offer fully open programming for any custom logic. Aquavx uses pre-built function blocks (alarms, pumps, expressions, control sequences) that cover most water/wastewater use cases but are bounded by its configuration framework.
Hardware Expandability	✓	●	PLCs can add virtually unlimited I/O expansion modules. Aquavx can expand via Modbus slave devices, but has a fixed base I/O count. Best suited for small-to mid-size sites.
COST & TOTAL OWNERSHIP			
Upfront Hardware Cost	—	✓	A complete Aquavx system costs a fraction of the cost of an equivalent PLC panel (PLC + HMI + cellular gateway + alarm dialer + enclosure + power supply). PLC panel builds can easily exceed \$5K–\$15K+.
Engineering / Programming Cost	—	✓	Aquavx eliminates PLC programming hours and integrator fees. Configuration can be done by field technicians, not control engineers.
Cellular / Data Plan Included	—	✓	Cellular data service is bundled with the RemoteIQ subscription — no separate carrier contracts or SIM management. PLC cellular setups require sourcing gateways, SIM cards, and carrier data plans separately.
Voice / SMS / Email Alarm Notification	—	✓	Built-in callout with configurable rosters, escalation, and acknowledgment. PLC requires a separate auto-dialer or SCADA notification server — often \$1K–\$3K+ additional.

Learn more about Aquavx solutions at cattron.com.



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