
# WATER / WASTEWATER PROCESSES

## REFRESHING SOLUTIONS

# WELCOME TO THE HORNER FAMILY

## National Feel, Global Reach

Horner Lighting, and Horner Automation are individually unique organizations working within Horner APG (Advanced Product Group) – a subsidiary of Horner Electric. Horner Electric can trace it's roots back to 1949 when George and Mary Horner started their small, family-run business; with APG getting its start in 1985. Horner APG, and the organizations of which it comprises, is headquartered in Indianapolis, IN.

### Horner Lighting Group

Horner Lighting Group prides itself on being the main driver of innovation in the fields of Solid State and Remote Phosphor LED Lighting. Horner's unique product designs have superior efficacy, glare reduction, even light distribution, and life cycle improvement. In addition to their innovative remote phosphor technology, Horner also has a complete array of DLC-certified white LED products.

### Horner Automation Group

Horner Automation Group designs, builds, and markets a wide array of industrial All-in-One controllers, consisting of programmable HMI, I/O, software and peripherals for the Industrial, Process Control, and Building Automation markets.

Through well-calculated acquisitions and timely partnerships over the past 65+ years, Horner Electric has diversified into Horner Industrial Group, an industrial services company, and Horner APG. The milestones achieved by Horner over the years comprise the finest businesses in their respective fields, creating a comprehensive portfolio of services, products, and markets.

While many of Horner APG's products are manufactured and assembled in the United States, the reach of the organization is truly global; including a worldwide distributor network. With offices and locations across the globe from Brazil to China, you can easily find a Horner APG product almost anywhere you need.

HORNER APG

HORNER LIGHTING GROUP

HORNER AUTOMATION GROUP

Class I, Division 2
Groups A, B, C, D
Type 4X

## INTEGRATED WATER CONTROL SOLUTIONS

The Water / Wastewater industry has evolved over time to handle increased demand as technology advances and efficiency becomes a high priority. Water management systems require trusted process control, flexible and scalable integration into existing systems, and the ability to store and communicate several data points digitally via a serial or Ethernet-based network.

The overall goal of enhanced control systems is to lower operational costs, energy consumption, and total cost of ownership. With Horner Automation, these core factors are addressed optimally (with less hardware) increasing both functionality and efficiency while digitizing the way we record, view, and manage our water.

A trusted, global controls partner with proven industry experience, our focus is to develop new products and solutions to better serve our environmental partners and the way we manage the resources we have.

## MODERNIZE EXISTING OR NEW WATER APPLICATIONS

Smart water management has led to an increased integration of process hardware into digital systems. Collecting data and controlling processes with reduced effort and labor leads to higher efficiency and cost savings.

With the development of web-friendly, expansive ways to view, control, network, datalog, communicate, and analyze information, Horner Automation has developed an all-in-one solution to water management. This technology can also be added to existing equipment, enhancing – existing functionality and preventing total redesign.

The Horner X and XL series Operator Control Station (OCS) provide a customizable Human-Machine Interface (HMI), Programmable Logic Controller (PLC), on-board digital and analog I/O, and communications/networking all-in-one device, using one piece of software to program and commission. These features make the X and XL series perfect for RTU applications.

NEMA 4X standard and harsh environment options for down to -40°F allow select X and XL series controllers to be installed in the most demanding processes.

The Horner X and XL OCS families support a variety of different Ethernet and serial protocols, making them simple to add to an existing network, or to design a system that could be expanded in the future as demands grow. The XL series has six built-in I/O options while the X series has a standard set of built-in I/O unique to each model.

Along with the OCS controllers, Horner Automation provides a full basket of remote I/O solutions that can be used to expand any process capabilities. Our I/O systems are easily configured in the same Cscape Software along with the HMI and PLC components.

| | DC In | DC Out (+) | Relay Out | HSC In | PWM Out | mA/V In | mA/V RTD/TC | ma/V Out |
|---|---|---|---|---|---|---|---|---|
| **Model 0** | - | - | - | - | - | - | - | - |
| **Model 2** | 12 | | 6 | 4 | | 4 | | |
| **Model 3** | 12 | 12 | | 4 | 2 | 2 | | |
| **Model 4** | 24 | 16 | | 4 | 2 | 2 | | |
| **Model 5** | 12 | 12 | | 4 | 2 | | 2 | 2 |
| **Model 6** | 12 | 12 | | 4 | 2 | | 6 | 4 |

**Built-In Digital & Analog I/O**

## Water/Wastewater Control and Monitoring Solution

Having local controls, I/O points, and connectivity built in to one device offers several benefits to the Water/Wastewater industry:

- Single source of engineering – HMI, I/O, PLC, and communications programmed with Cscape
- Small package saves din rail or panel real estate
- Easily cloned and reproduced to expand or add systems to a network
- Save on commissioning and start-up time
- Flexible and simple networking into a larger system, or act as a standalone device (powerful RTU)

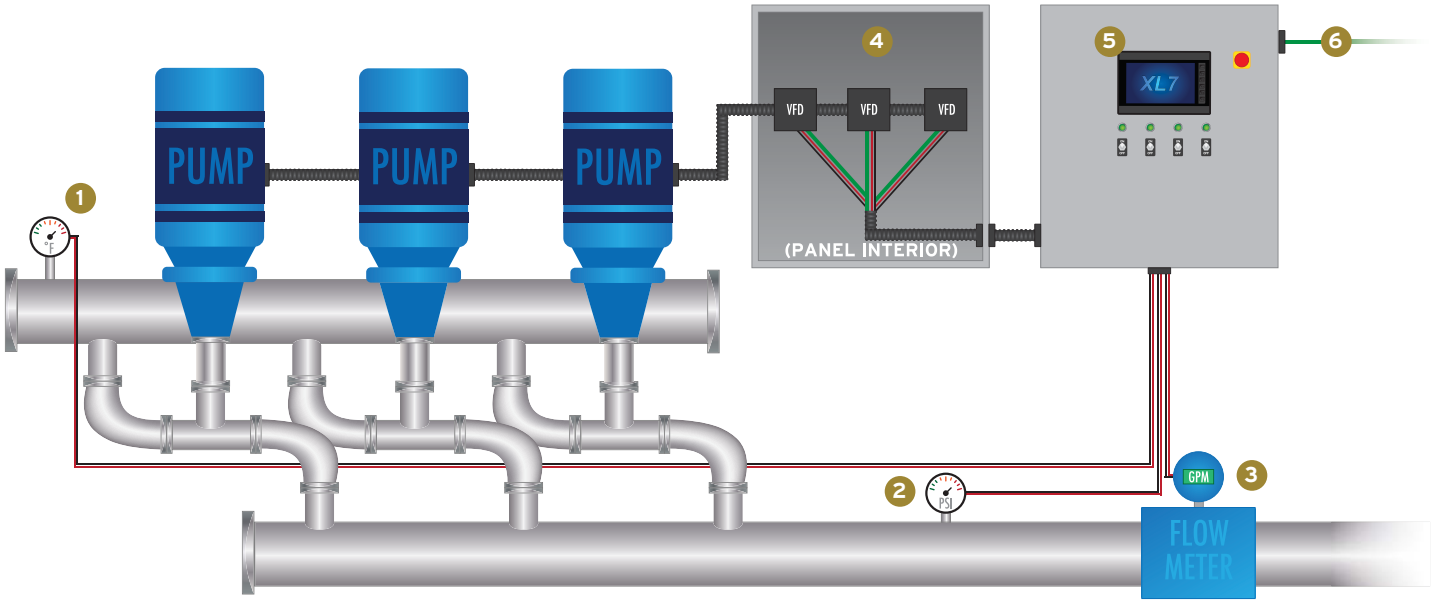
An industry standard pumping application or water filtration system will have several different points of measurement and control:

1. Point level switches or floats
2. Variable Frequency Drive (VFD) control
3. Temperature measurements
4. Flow measurements – either flow rate or totalized flow
5. Continuous Level – ultrasonic, radar, etc.
6. Pressure or differential pressure measurements
7. Timers and scheduling
8. PID loop control

Below, the triplex booster is being controlled and monitored by a single XL7 controller. Customizable IEC 61131 programming allows for pump sequencing, run timers, and pump protection.

Standard, antiquated pump controllers require several different devices to provide the same solution, adding hardware, engineering time, and cost of initial system.

The booster application uses pressure as a process variable for the XL7. The XL7 controls a VFD via analog output or Modbus to maintain a consistent pressure. Full datalogging on-board makes our data more manageable in a digital world.




1. **Temperature: Thermocouple, RTD, 4-20mA**
2. **Pressure: 4-20mA, 0-10V**
3. **Flow: 4-20mA or Pulse Totalizer**
4. **VFD: Control via ModBus or Discrete**
5. **XL7: PID Control, Pump Sequencing**
6. **Connectivity: Ethernet or SCADA**

## Collect Data in Any Process

With multiple built-in I/O points and communication options for different digital bus systems, the Horner XL Series platform is able to pull in any necessary analog or digital instrumentation data, and use it to control the process and datalog any vital information.

Expansive On board SD Card memory or USB thumb drive memory compatibility ensures adequate storage necessary at the controller and easy local access.

Datalogging pumping or filtering processes over time, operators and engineers can build a profile for energy usage, pump or filter efficiency, down-time, and schedule maintenance.

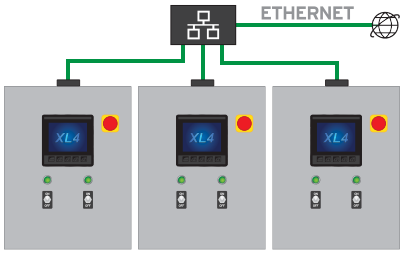
Gathering a full range of data allows all information to:

1. Schedule preventative maintenance prior to a failure
2. Unveil where energy savings could be applied
3. Monitor energy cost per gallon pumped

4. Ensures the system is operating efficiently
5. Optimize throughput
6. Trend and track all measurement points

All of which save on overall operational and maintenance costs.

This information can be exported to a variety of different existing SCADA, controls, or business systems.




## Stay Fully Connected

Adding systems or processes to existing networks has become one of the largest problems in the Water industry. The Horner XL controller easily adds functionality to old installations.

With a variety of different communication protocols and standards, adapting from one to another in order to get the necessary data can lead to increased engineering time, reduced visibility or control, more hardware, and a more complex process.

Machines built for the Water Wastewater industry require the flexibility to communicate with larger systems.

Horner Automation XL Series OCS supports a variety of communication protocols – streamlining any new or existing process. Our focus is to be able to solve any communication problem that may exist.

Support for popular Ethernet, Fieldbus, and Serial digital communication options include:

- Ethernet I/P
- Modbus TCP
- CANOpen
- Profibus DP Slave
- Modbus RTU
- RS232/485 ASCII
- Cellular Wireless
- FTP / HTTP

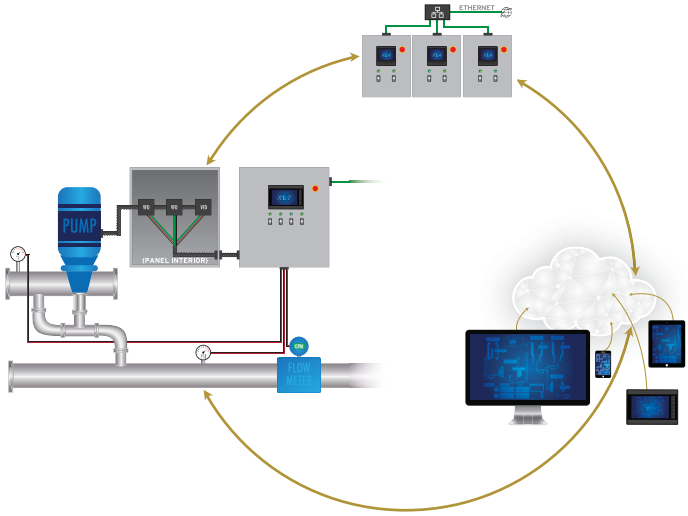
Our Web Machine Interface (WebMI) allows for any controller to be accessed remotely from any web browser, granting full access to the unit. Functionality of the remote access can be limited via secure user logins, ensuring safe operation. Operators, engineers, or even front of office staff would be able to easily access the online information real-time with no update lag.

WebMI not only can replicate the local user interface of the OCS being used at the pump or process level, but can also be used to generate completely different screens that may be more user friendly for remote monitoring of certain systems. For instance, there could be one page for each individual pump or process, then a separate page showing all pumps or processes on that specific network.

## THE ALL-IN-ONE ADVANTAGE

With logic engine, HMI, I/O, and networking all in one cost effective solution, Horner Automation controls provide several cost-saving advantages:

1. Reduced development time
2. Reduced hardware count
3. Increased operational efficiency
4. Less down-time



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