

DUPLEX PUMP CONTROLLER



STATION MASTER™ 2000

FEATURES

- User-friendly graphical interface
- Ultra-bright daylight viewable LEDs for all setpoints and configuration information
- Sealed front, door mounted
- Pump Up or Pump Down operation
- Isolated analog input
- Solid state triac outputs are individually fused
- Level simulation
- Configurable security protection
- SCADA Ready, Modbus® protocol

PUMP CONTROL WITH A SIMPLE TWIST

It's as simple as Turn, Select, Turn, Set. That's all it takes to move to a pump control or alarm setpoint and change the current value.

Contegra's STATION MASTER 2000 controller is an Easy-to-See and Easy-to-Set (EZ2 See/EZ2 Set™) automatic duplex pump control and alarm monitoring system.

The STATION MASTER 2000 controller is ideal for sewage lift stations, water systems, or other process control applications. The EZ2 See/EZ2 Set™ interface makes installation and operation a simple process. The graphical display shows the current tank level, pump 1 and 2 on/off setpoints, and the high and low alarm setpoints.

EASY TO SEE

All adjustments, including controller configuration, pump on/off settings, and alarm setpoints are shown on the front of the controller. A simple turn of the knob is all it takes to adjust the controller.

EASY TO SET

How simple is it?

- Turning the knob moves the cursor
- Pressing SELECT activates the setpoint
- Turning the knob changes the setpoint
- Pressing SET confirms the change

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STATION MASTER™ 2000

EZ2 SEE DISPLAY

Ultra-bright LED indicators provide daylight viewable indication of the current tank level, pump on/off setpoints, and high and low alarm setpoints, along with complete controller setup information (e.g. alternator sequence, pumping direction, etc.)

The STATION MASTER controller displays the tank level on a 40-segment, 4" column of LEDs located at the controller's left edge. Two additional columns of LEDs show bands of control that denote the pump on and off setpoints. The fourth column shows the High & Low Alarm adjustment bands. A fifth column of LEDs shows the controller's configuration. Two LEDs at the top of the controller show the activation of each of the differential pump control stages.

EZ2 SET ADJUSTMENTS

The easy-to-use interface leads the operator through the setpoint and configuration selections. The features include simple setpoint adjustment, convenient selection of the pumping order, pumping direction (i.e. Pump Up/Pump Down), and numerous other easily understood and readily accessible features. This 'guided tour' of the controller's features makes operating the controller as easy as turning a knob to select and change the setpoint.

With the STATION MASTER controller's sealed front cover there are no programming switches to move or jumpers to lose. The interface makes setup, adjustment and confirmation of the controller's operating parameters EZ2 See/EZ2 Set™.

The controller typically operates in conjunction with a Contegra SLX 100 or SLX 220 submersible level transducer. However, the controller can accept any analog input signal ranging from 4-20 mADC or 0-5 VDC. The STATION MASTER controller typically accepts a ranged input signal (e.g. 4-20 mA over 0-10 feet). It has the ability to scale an uncalibrated input.

A Feature Packed System

The controller is easy to install. The customer simply mounts the controller, wires the necessary interconnections to the pumping station, and configures the system.

Whether dealing with a new installation or retrofitting an existing site, the STATION MASTER controller provides outstanding control, alarm, and telemetry.

The STATION MASTER 2000 controller is more than just an intuitive pump controller; it is versatile and can be used as an intelligent Remote Terminal Unit (RTU) and a competent member of your SCADA (Supervisory Control and Data Acquisition) system. MODBUS protocol is standard.

The controller has an on-board audible alarm and an external alarm driver that activate on High or Low Level Alarm or Sensor Failure Alarm (i.e. input out of range).

The STATION MASTER 2000 controller is available in several standard operating ranges, including 10', 15', 20', 30', and 40'. Custom ranges are available. A small slip-in pocket provides a means by which the scale can be changed to meet the application's needs.

Manual level simulation allows the operator to test the controller's operation and confirm the configuration. Pressing the SIM button activates simulation. Turning the knob adjusts the simulated level.

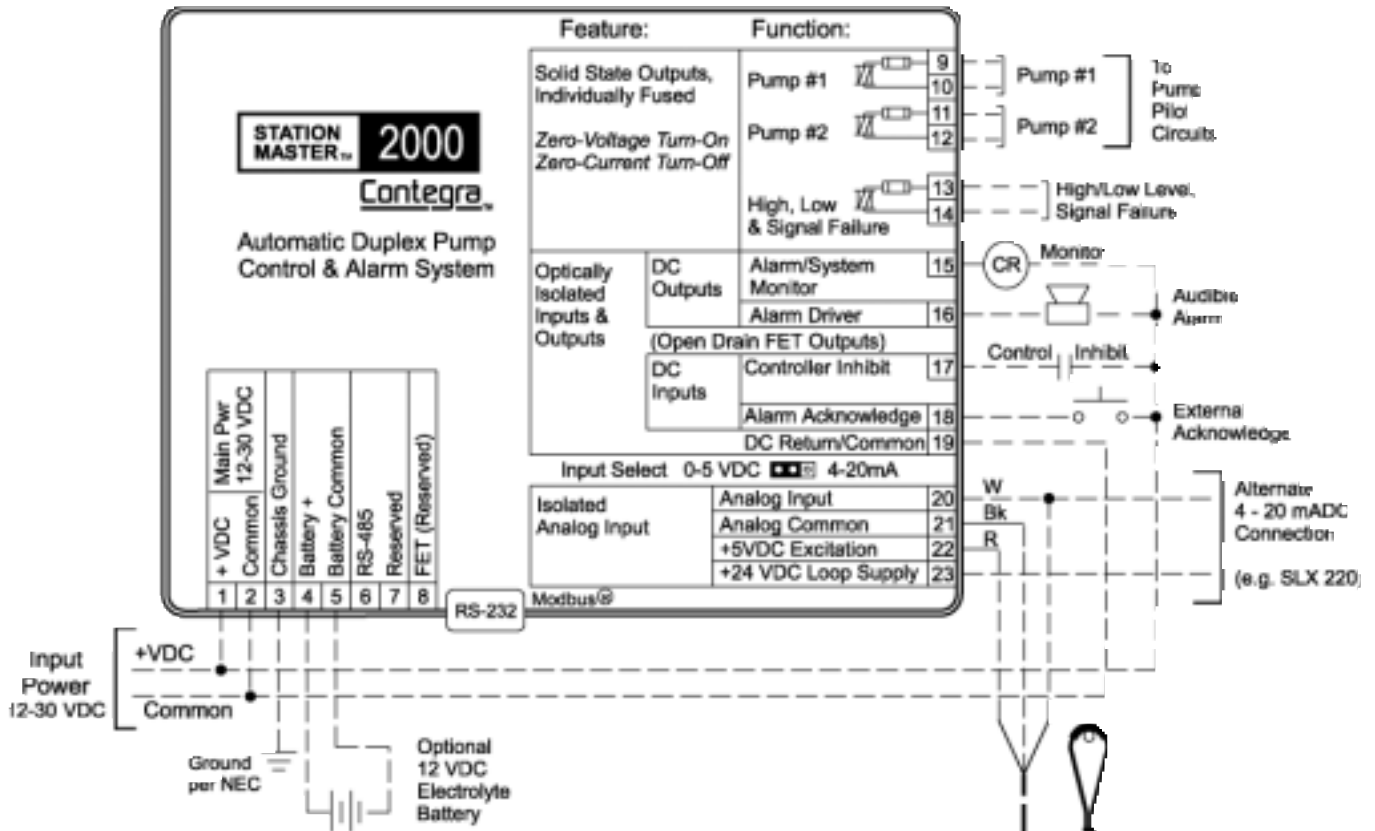
The EZ2 See/EZ2 Set™ interface allows the operator to easily set the alternation order to 1st On/1st Off, 1-2 Fixed, 2-1 Fixed, or Auto Rotate.

The controller is powered by 12 to 30 VDC. It contains a battery charging circuit (battery optional) that includes automatic switchover on power failure.

A configurable security code prevents unauthorized changes to the system settings.

STATION MASTER™ 2000

Robust Input/Output for Noisy Environments



The **STATION MASTER** controller's inputs and outputs are isolated to improve their performance in electrically noisy environments.

The **STATION MASTER 2000's** I/O features:

- The isolated analog input accepts a 4-20 mA or 0-5 VDC signal. The input has integral 5 and 24 VDC supplies for powering a transducer.
- Two external inputs: alarm acknowledge and control inhibit.
- Three isolated, individually fused solid-state triac outputs capable of switching 1.5 Amps @ 120 VAC (Pump 1 & 2 Required and Common Alarm).
- Two DC/FET outputs: system monitor and external audible alarm.

Installation

The controller is 7" H x 9.5" W x 2" D. The required door cutout is 6.5" H x 8.75" W.

All wiring is terminated at removable terminal blocks located on the rear of the controller.

Contegra's Model SLX 100 transducer (shown) provides a VDC output. The Model SLX 220 provides a 4-20 mA output. Both models provide:

- PVC, Viton®, PVDF, and Teflon® wetted parts for excellent chemical resistance.
- Large diaphragm, preventing clogging.
- Self-suspension by the signal cable.



Contegra
SLX
Transducer

Triplex Control

CONTEGRA offers the **STATION MASTER 2100** controller for triplex pump control. The 2100 offers an expanded set of hardware and software features. Contact CONTEGRA or your local representative to find out more about how we can meet your sensing, monitoring, and control needs.

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STATION MASTER™ 2000

Engineering Specifications

This specification covers a complete and operational automatic duplex pump control and alarm system responding to the _____ level as shown on the plan drawings.

The controller shall accept a single analog input signal over a user definable, field configurable range. To reduce exposure to corrosive environments and ensure the control system's reliable, long-term operation, the controller shall have a sealed, user-friendly, graphical interface. The interface shall be comprised of a rotary knob, switches and five columns of ultra-bright, daylight-viewable red LEDs. Four 40-segment, 4" columns of LEDs shall show the process tank level, the pump on and off control bands, and the high and low alarm setpoint bands. All LEDs within a control band shall be illuminated when operating under normal power. A fifth LED column shall indicate the controller's configuration, status, and active alarms. Alarms shall consist of high alarm, low alarm and input signal out of range. Monitor functions shall include control power and normal system operation. The controller shall contain an internal annunciator and an external alarm driver that activate on an alarm condition. The controller shall contain an integral 'silence' key and an external silence input. Discrete LEDs shall show the activation of the differential pump control stages.

The controller shall provide easy, convenient indication and adjustment of the operating setpoints and controller configuration without the need for tools. For ease of operation and configuration, multiple indicating columns are required. Controllers that provide fewer columns, thus limiting the viewing of relevant and necessary station information, are specifically precluded by this specification.

The control circuits shall be forced OFF by activation of the external inhibit input or upon power loss. Upon power restoration, or removal of the inhibit input, the controller shall enable its outputs in an adjustable time-step sequence as required to meet the demand.

The controller shall continuously indicate the status of the selected alternation sequence, pumping direction, and control modes. The controller shall provide 1st On/1st Off, Fixed, and Auto Rotate alternation sequences and selectable Pump-Up or Pump-Down programming.

Integral span, offset, and damping adjustments shall be easily adjustable. The controller shall have the ability to select from 1 to 40 seconds of input signal averaging/damping. The controller shall have a configurable security lockout feature.

The controller shall be powered by 12-30 VDC. When operating on main power, the controller shall charge an optional, external electrolyte gel-cell battery. Upon loss of power, and when provided with the battery, the controller shall revert to a low-power mode. When applied as an RTU and operating on battery backup, the controller shall continue to provide communication with the host controller.

The controller shall contain a level simulation function that allows manual manipulation of the displayed process variable. While simulating, the controller shall display both the actual process level and the simulated level.

The controller shall provide isolated 5 and 24 VDC for direct power/excitation of a compatible level sensing transducer. The controller shall contain a galvanically isolated analog input, two optically isolated digital inputs, and five digital outputs. The analog input shall accept a nominal 0-5 VDC or 4-20 mADC signal. Three digital outputs shall be individually fused solid-state switches with zero-voltage turn-on and zero-current turn-off. Two discrete outputs shall be provided for common alarm and controller monitor. The controller shall contain an RS-232 communication port and have capabilities for connection to a SCADA (Supervisory Control And Data Acquisition) system. The complete assembly shall be designed for use in UL508 Industrial Control Panels. All job connections shall be at drop-cage type removable terminals.

It is the specific intention of this functional requirement that a standard controller shall be provided with features as described herein. Additionally, this controller shall be a fully-integrated assembly. That is, the furnishing of similar functions using multiple setpoint modules, a custom-configured programmable logic controller (PLC) or extensive relay/timer logic to accomplish control sequences, etc., is specifically precluded by this specification and is not acceptable. The controller shall be a Contegra STATION MASTER 2000.

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