

DUPLEX CONTROLLER

Analog Input , Selectable Pump-Up/Pump-Down



MODEL CA-230

FEATURES

- Analog control for duplex constant speed pump applications
- Alternation (Selectable): FOFO, 1-2, 2-1
- Two User-Configurable Alarm Outputs
- Discrete Inputs:
 - Alarm Acknowledge
 - Controller Inhibit
 - Pump 1 Fault
 - Pump 2 Fault
 - Simulation Enable
- User Configurable Scale
- Process Simulation
- Reduced Door Wiring: The Door-Mounted HMI & Panel-Mounted IO Module interconnect via a standard Ethernet cable.
- Backlit HMI
 - White Backlight indicates Normal Operation
 - Amber Backlight indicates Alarm Condition
- Retro-Fit
 - Gorman-Rupp EPS 2000 / 2100
 - USFilter D152

Overview

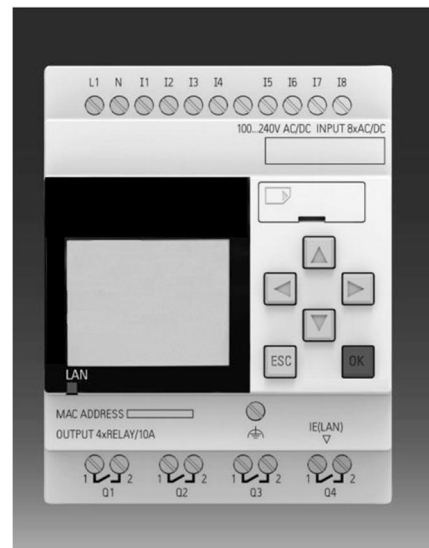
The CA-230 provides automatic duplex pump control for either pump-down (tank-emptying) or pump-up (tank-filling) operation. The CA-230's control operation is based on an analog input such as a 4-20 mA level-sensing device (e.g. Contegra's SLX 130-M or MIS or SLX 160 submersible transducers).

The CA-230 contains two analog inputs (process and simulation), six discrete inputs (Inhibit, Acknowledge, Pump Fault [Q2] & Simulation) and four relay outputs (Pump Control [Qty 2] & User-Selectable Alarm [Qty 2]) .

The CA-230 contains adjustable On/Off setpoints for Pump Control, High and Low Alarm. The setpoints are adjusted in increments of feet and tenths of feet. Setpoints include: Low Level On & Off, Lead Pump Off & On, Lag Pump Off & On and High Level Off & On.

The CA-230's control span is user/field configurable. Typical calibrated spans are 11.5, 15.0, 23.1 or 34.6 feet. These spans correlate with the use of 5, 6.5, 10 and 15 PSI level transducers (respectively). Typically the analog input is derived from a 2-wire, loop-powered level transmitter such as Contegra's SLX 160-M, SLX 130-M/MIS or Ultrix 200 transducers.

Pumps are called into service as the level rises (Pump-Down) or falls (Pump-Up) to the Pump On setpoint. The CA-230's alternator automatically selects the lead pump. The FOFO (First-On / First-Off alternator tends to balance pump running times. The alternator is user/field configurable for FOFO (First-On/First-Off) automatic or fixed (e.g. 1-2 or 2-1) alternation. Pumps are removed from service as the level falls (Pump-Down) or rises (Pump-Up) to the Pump Off setpoint.



CA-230 IO Module >



MODEL CA-230

Engineering Specifications

The Model CA-230 Analog Controller

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

The controller shall provide automatic duplex pump control based on a 4-20 mA process level input that represents a 0-_____ foot level excursion. The controller shall be used in a (Choose: Pump-Up ... or ... Pump-Down) control application for automatic control of two constant speed pumps. In order to minimize the expense of wiring to the control-panel door, the controller shall be comprised of two interconnected modules. The first module, the HMI, shall be door-mounted. The second module, the IO, shall be mounted in accordance with the plan drawings. The two modules shall be interconnected by an industry-standard Ethernet cable.

The HMI shall have an integral operator interface comprised of a 6-line by 20-character, backlit LCD display four function buttons (Status, Alarm, Setup and Help) and six cursor pushbuttons for menu navigation and setpoint configuration. The LCD display shall provide not only the requisite status information (e.g. tank level & pump operating information) but shall also provide a convenient mechanism by which to adjust the control setpoints. The operator shall be able to view the status displays and, while viewing, conveniently change the Pump On/Off setpoints and Alarm On/Off setpoints.

Controllers which integrate the Operator Interface (i.e. HMI) and IO into a single door-mounted unit require substantial labor for wiring to the enclosure door. Such all-in-one controllers are not acceptable and are precluded by specification.

The controller shall contain individually programmable differential control stages for the Low Alarm On/Off, Lead Pump On/Off, Lag Pump On/Off and High Alarm On/Off.

The controller shall provide automatic alternation. The controller shall contain an integral alternator selector-switch that shall allow the selection of either a FOFO (First-On / First-Off) automatic alternation or 1-2 / 2-1 FIXED sequence.

Process level simulation shall be provided by an external analog input and a discrete enable/disable input. Simulation shall be enabled by an alternate action pulse applied to the simulation enable input. The simulation level is provided by an optional external reference source (e.g. process meter)

The controller shall accept Pump Fault inputs. Activating a fault input shall 1) generate an alarm condition 2) cause the control to call for the remaining, available pump as a replacement for the pump that is in the fault condition.

The controller shall contain four relay outputs. Two outputs shall be used for pump control. The controller shall contain two selectable alarm outputs. Alarm outputs shall automatically clear/silence when the alarm condition clears.

The controller shall accept an external alarm acknowledge/silence input and a pumping inhibit input.

The controller shall be UL 508 Listed. The controller shall be a CONTEGRA CA-230.

Ref: Simulated Process Signal - See Contegra's mACS [milli-Amp Current Simulator]

Specifications

Power: 24 VDC (20.4 - 28.8 VDC) reverse polarity protection. The 24 VDC can also power the submersible level transducer.

Display: LCD (Liquid Crystal Display) 6 lines by 20 characters

Inputs: Four, +VDC (input power), non-isolated

Analog: One — 0-10 VDC
The controller is provided with a 475Ω resistor for a 4-20 mA Process-level input.

Digital: Seven
Off Voltage: < 5 VDC
On Voltage: > 8 VDC

Relays: 4 independent, normally open, isolated, rated 10A @ 120/240 VAC (resistive), 3A @ 120/240 (inductive)

Weight: 0.4 pounds (approx.)

Ratings: UL 508

Options: 120 VAC-24 VDC power supply, DIN Rail mounted.

Ordering Information:

Model CA-230

Accessories:

CD-PS24 Power Supply

Contegra is the registered trademark of Contegra Inc. Specifications subject to change without notice.

Contegra offers a full line of analog level sensors including the SLX 160, SLX 130, SLX 330 and Ultrix 200.



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