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# DUPLEX

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# CONTROLLERS

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## MODEL CD-2

### FEATURES

- Redundant or Primary Duplex pump control
- Alarm and Monitor outputs with silence
- Pump alternation sequence selection
- Pump overtemperature and no-flow protection with lockout.
- Multiple internal timers for pump on and off delay timing, pump stagger starting, and alarm on and off delay timing.

The CD-2 line of controllers are based upon a powerful PLC hardware platform but their real power is in the unique control and timing functions Contegra has incorporated into the packages.

The CD-2R (pictured above) has eight inputs and four outputs. To meet more extensive input/output needs, some of the CD-2 controllers have twelve inputs and eight outputs.

#### **CD-2R Redundant Pump Controller**

The CD-2R provides redundant control for a primary control system. The CD-2R's outputs are wired in parallel with the primary system's control contacts. The CD-2R can use either two float switch On/Off inputs, for differential level control, or a single abnormal level float switch input with a "timed off" function. The CD-2R's "timed off" function is a programmable off-delay timer that continues the pump(s) operation after the single 'abnormal level' switch has opened. The off-delay timer is adjustable from 0-10:00 minutes. The alarm circuit automatically silences and resets following the end of each pumping cycle.

#### **CD-2PC Duplex Pump Controller w/Common Alarm Output**

The CD-2PC provides primary control for a float based duplex pump control system. The CD-2PC has High & Low alarm inputs and from one to three inputs for pump control. When pump On/Off operation is based on a single float input, the pump starts when the input is activated and stops after the input deactivates AND an internal timer completes its Off-Delay timing cycle. If multiple floats are used for pump control then the pumps are called into service by the activation of the Lead and Lag Pump Required inputs. The pump(s) stop when the Pump Off input deactivates. The CD-2PC contains three timers: Lag Pump ON-delay, High Alarm ON-Delay and Pump OFF-delay. The control provides four outputs: Pump 1, Pump 2, common 'Audible' and common 'Monitor' alarm. The controller's float inputs are: Low, Off, Lead, Lag and High. Additional inputs include: alternator selector (1-2, Auto, 2-1) and alarm silence inputs. The alarm circuit automatically silences and resets following the end of each pumping cycle.

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## **CD-2PD Primary Controller w/Multiple Alarm Outputs**

The CD-2PD provides primary control for a float based duplex pump control system. The CD-2PD has High & Low alarm inputs and from one to three inputs for pump control. When pump On/Off operation is based on a single float input, the pump starts when the input is activated and stops after the input deactivates AND an internal timer completes its Off Delay timing cycle. If multiple floats are used for pump control then the pumps are called into service by the activation of the Lead and Lag Pump Required inputs. The pump(s) stop when the Pump Off input deactivates. The CD-2PD

contains three timers: Lag Pump ON-delay, High Alarm ON-Delay and Pump OFF-delay. The control provides eight outputs: Pump 1, Pump 2, common 'Audible' and common 'Monitor' alarm, Low 'Visual', Low 'Audible', High 'Visual' and High 'Audible'. The controller has Low, Off, Lead, Lag and High float inputs. Additionally, alternator selector (1-2, Auto, 2-1), alarm silence and 'High' and 'Low' alarm selection inputs are provided (e.g. High Alarm outputs are Monitor OR Alarm outputs). The alarm circuit automatically silences and resets following the end of each pumping cycle.

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## **CD-2PE Primary Controller w/Independent On & Off**

The CD-2PE is similar to the CD-2PC with Independent Pump Off inputs. The CD-2PE has Common High & Low alarm inputs and from one to three inputs for pump control. When pump On/Off operation is based on a single float input, the pump starts when the input is activated and stops after the input deactivates AND an internal timer completes its Off Delay timing cycle. If multiple floats are used for pump control then the pumps are called into service by the activation of the Lead and Lag Pump Required inputs. The pump(s) stop

when the Pump Off input deactivates. The CD-2PE contains three timers: Lag Pump ON-delay, High Alarm ON-Delay and Pump OFF-delay. The control provides four outputs: Pump 1, Pump 2, common 'Audible' and common 'Monitor' alarm. The controller has Low, Lead-off, Lag-off, Lead-on, Lag-on and High float inputs. Additionally, alternator selector (1-2, Auto, 2-1) and alarm silence inputs are provided. The alarm circuit automatically silences and resets following the end of each pumping cycle.

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## **CD-T Pump Overtemperature Protection**

The CD-2T provides overtemperature alarm indication and pump lockout. The controller provides two independent RESET inputs for manual restoration.

The CD-2T accepts two normally-closed overtemperature sensor inputs and two Overtemperature RESET inputs. On power-up, the CD-2T tests each overtemperature sensor input to ensure that an overtemperature condition does not exist. If

the overtemperature sensor is closed, the CD-2T completes the respective Pump Enable output. If an overtemperature condition exists, the respective pump is held from service and the respective overtemperature alarm output is activated.

Upon an overtemperature condition, the CD-2T disables the the pump motor pilot circuit and alarms.

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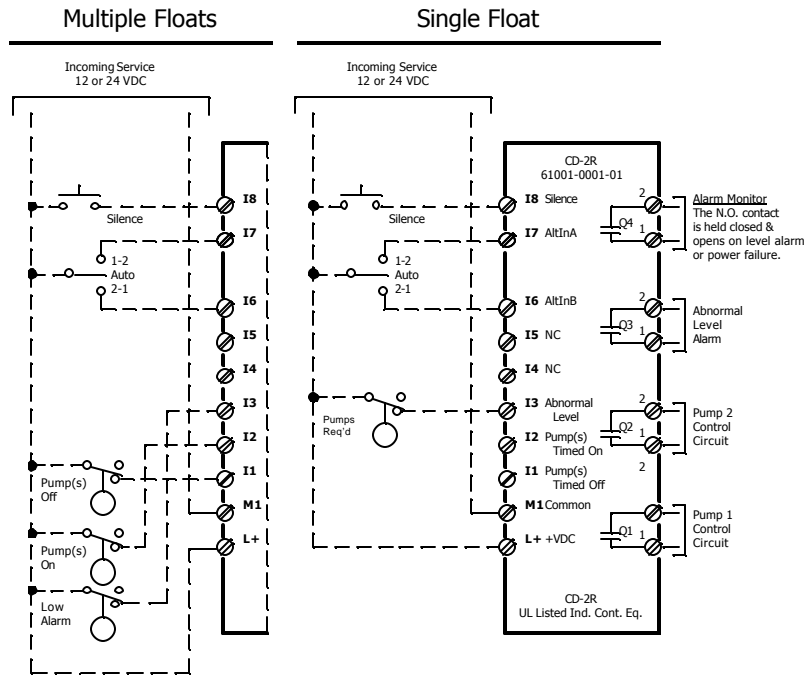
**For Triplex Pump control refer to Contegra's CD-3.**

**Engineering Specifications** are available in text format for copying at [www.Contegra.com](http://www.Contegra.com)

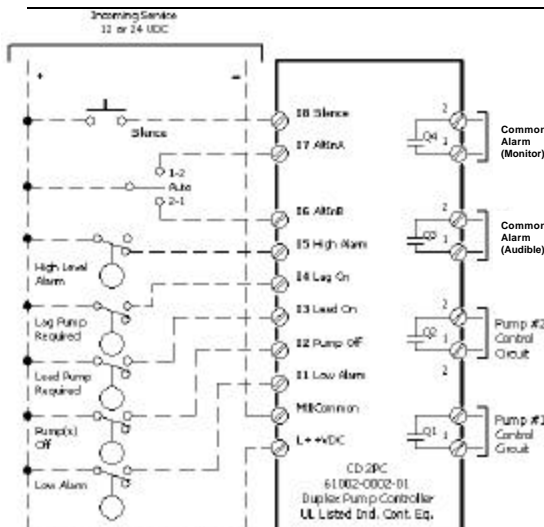
# MODEL CD-2

## Connection Diagrams (selected)

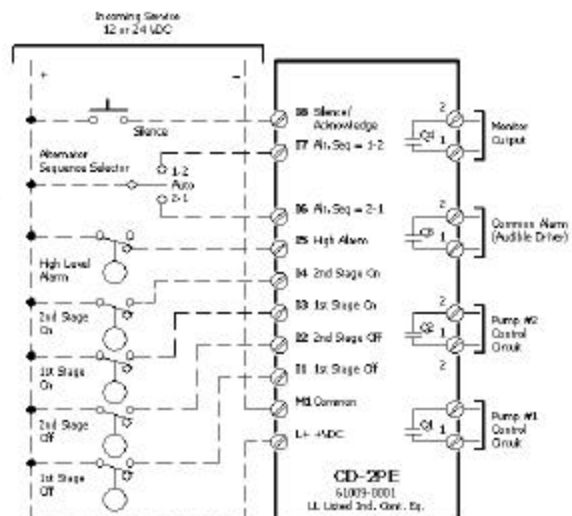
### CD-2R Redundant Pump Controller



### CD-2PC Controller with High and Low Alarms



### CD-2PE Controller with Independent ON and OFF



# MODEL CD-2

## Hardware Specifications

**Power:** 12 VDC (10.8 - 15.6 VDC) or  
24 VDC (20.4 - 28.8 VDC)  
reverse polarity protection

**Display:** LCD (Liquid Crystal Display)  
The display shows the status of the inputs and outputs.  
The following screens appear as necessary:  
initialization, pump timing on, alarm timing on, pump  
timing off, alarm timing off, abnormal level.  
The CD-2T does not have a LCD display.

**Inputs:**  
Eight or twelve as described.  
+VDC (input power), non-isolated  
Off Voltage: < 5 VDC  
On Voltage: > 8 VDC

### Output Relay Contacts:

Four or eight contacts, independent, normally open,  
isolated, rated 3A at 120 or 240 VAC (inductive),  
10A at 120 or 240 (resistive)

### Dimensions:

8 in/4 out modules: 2.8" X 3.5" X 2.2"  
12 in/8 out: 3.8" X 3.5" X 2.2" (WxHxD)  
CD-PS Power Supply adds 1" to the width.

**Weight:** 0.4 pounds (approx.)

**Ratings:** UL 508

### Ordering Information

Model	Description
CD-2R	Redundant Pump Controller
CD-2PC	Duplex Pump Control - w/Common Alarms
CD-2PD	Duplex Pump Control - w/Indendant Alarms
CD-2PE	Duplex Pump Control - w/Indendant On and Off
CD-2T	Duplex Pump Overtemperature Alarm & Lockout

### Accessories

CD-PS12 =12V/7.5W Supply

CD-PS24 =24V/7.5W Supply

For float switches refer to Contegra's FS 90 and FS 96 discrete level sensors.

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Specifications subject to change without notice.



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