



# CONVEYOR COMPONENTS COMPANY

Division Of Material Control, Inc.

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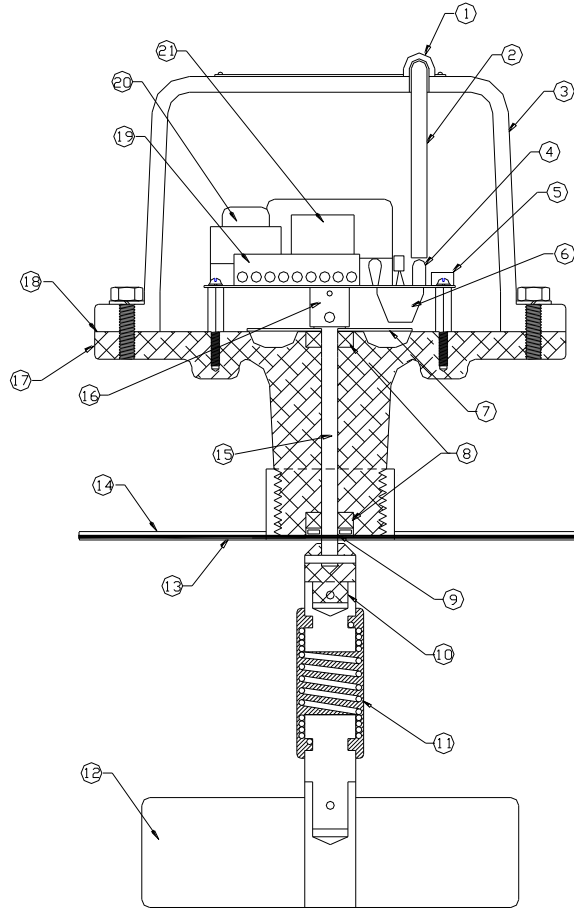
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## MODEL CRU: CR ULTRA ROTO-LEVEL CONTROL

The operation of the Model CR-ULTRA is based on our time tested motion switch technology. A rotating paddle is driven by a low torque synchronous motor at 1 RPM. The rotation of the paddle is monitored by an opto-electrical sensor that has been proven through the years of use in our motion sensors. The pulses generated by the opto-electrical sensor are monitored by a sophisticated digital circuit that watches for the paddle to slow or stop. When material contacts the paddle and slows or stops its rotation, the circuit actuates an output relay to provide a signal to attached equipment. The rotation of the paddle is monitored constantly via an external LED to indicate proper function.

1. **LED** – Flashes to indicate rotation.
2. **Light Pipe** – Transmits LED signal to outside cover.
3. **Cover** – Cast aluminum, or cast iron (optional).
4. **Fail Safe Jumper** – Selects high or low-level fail-safe.
5. **Time Delay Adjustment** – Variable 3 sec to 30 sec to prevent false signals.
6. **Rotation Sensor** – Senses rotation of disk.
7. **Slotted Disk** – Produces pulses proportional to speed.
8. **Bearings** – Sealed, permanently lubricated precision ball bearings.
9. **Shaft Seal** – Dust and moisture tight. Rated ½ micron at 30 PSI [2 bar].
10. **Output Shaft** – Standard.
11. **Flexible Shaft** – Other shaft types available.
12. **Paddle** – All metal parts made of stainless steel. Various types interchangeable in field. See bulletin for options.
13. **Mounting Gasket** – 1/16" [1.6 mm] thick fiber.
14. **Mounting Plate** – 8" [203 mm] diameter with 1-1/4" NPT welded pipe coupling. Powder coated is standard. Stainless steel is optional. Flexible to conform to curved bins.
15. **Drive Shaft** – Precision machined stainless steel. Impervious to moisture and corrosion build-up.
16. **Clutch** – Slips to prevent damage to motor gears.
17. **Base** – Cast aluminum standard with 1-1/4" NPT mounting thread. Conduit connection is ¾" NPT. Optional cast iron base.
18. **Cover Gasket** – 1/16" [1.6mm] thick neoprene.
19. **Terminal Block**
20. **Transformer** – 120 VAC standard. 240 VAC available.
21. **Relay** – DPDT contacts rated 5 amps.



**Enclosure:**

- a. Standard Enclosure: Designed to be weather tight and dust tight NEMA type 4/IP65. For use indoor and outdoors. Cast aluminum base and cover.
- b. Dust Ignition Proof: For Hazardous Locations NEMA type 9, Class II, Groups E, F, and G. Cast aluminum base and cover.
- c. Explosion Proof Units available with cast aluminum enclosure. Meet requirements of NEMA type 9.

**Electrical Specifications:**

The Model CR Ultra is available with operating voltage of 120 VAC, or 240 VAC single phase.

**Input:**

Voltage:	120 VAC, or 240 VAC	Power:	4 Watts
Frequency:	50/60 Hertz	Speed:	1 RPM

**Output:**

5 amps @ 120 or 240 VAC. Double pole, double throw.

**Location:**

The CR Ultra should be mounted where there is a free flow of material to and away from the paddle. The unit should be out of the direct flow of incoming material.

**Mounting Plate or Coupling:**

If a mounting plate is used at either the top or side mounting positions, it will be necessary to lay out a 7" [178 mm] bolt circle, drill and tap or drill six (6) equally spaced holes in the bin wall for 1/4" [6 mm] bolts or cap screws (see mounting plate template). A 5" [127 mm] diameter hole should be cut to allow the paddle to pass through the bin. Please see the template that came with the mounting plate for proper layout (drawing # A0010092). A protective baffle may be required to protect the shaft and paddle from the flow of incoming materials.

If instead of the mounting plate a pipe coupling is used to mount the unit to the bin, the 1 - 1/4" NPT coupling should be welded so that only half of the coupling protrudes inside of the bin. A half coupling should be used for side mounting and a full coupling used for top mounting.

**SIDE MOUNTING:** Install the unit so that the conduit opening is pointing down. Mount the unit on the bin so that the gasket is between the mounting plate and the bin wall. Use rubber and steel washers under the mounting bolts.

**TOP MOUNTING:** The mounting plate should be installed with rubber and steel washers on top of the mounting plate. When cutting the 1/8" pipe shaft extension, be sure to include the length of the paddle and the optional CR-71 flexible shaft (if used). A 1/8" [3 mm] hole should be drilled through the pipe extension, 7/16" [11 mm] from each end. The extension is then assembled to the unit or flexible shaft using CR-72 coupling and lock pins.

The 1-1/4" pipe guard should be cut on the non-threaded end, 5" [127 mm] shorter than the overall length of the shaft and paddle assembly. The guard is then screwed securely into the mounting plate over the shaft extension.

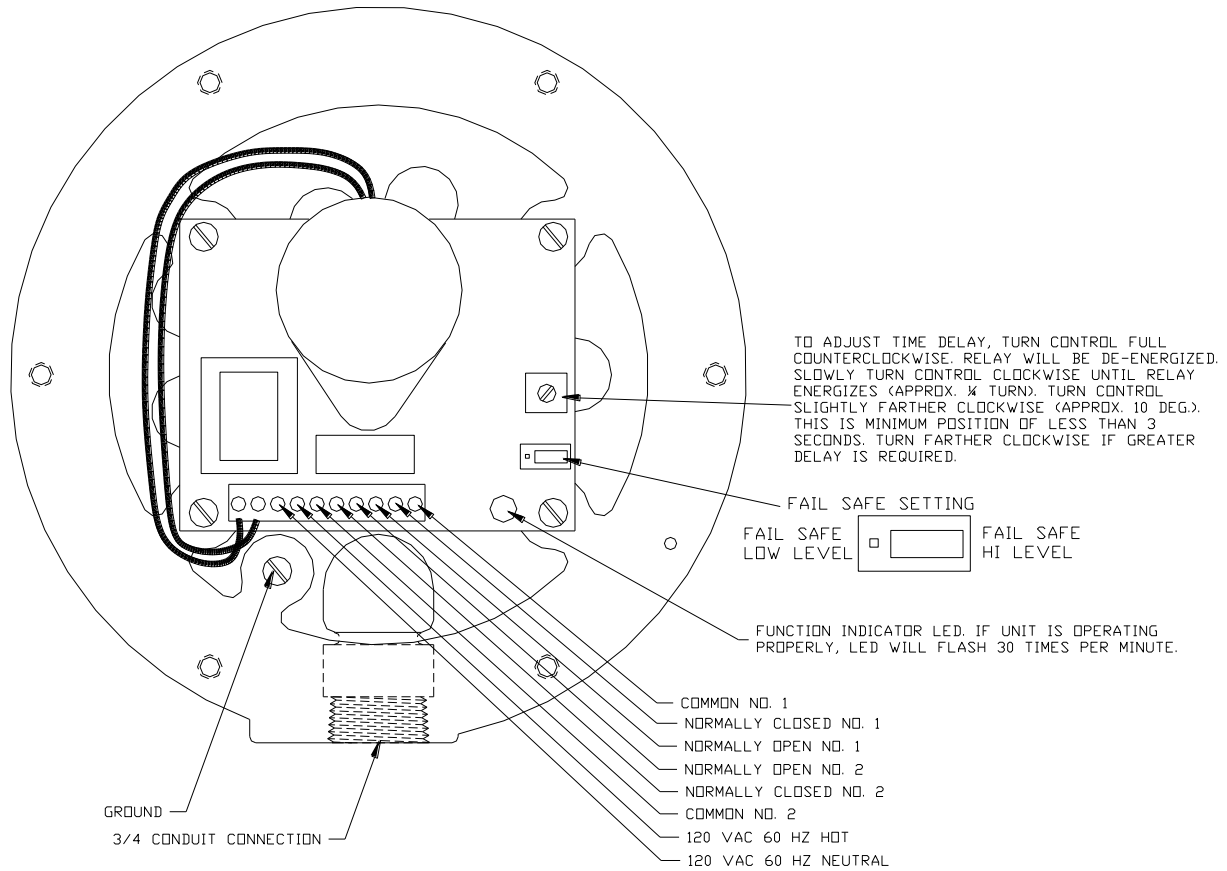
After the pipe guard is attached (if used), the paddle can be attached. If the extension is long, brace the pipe guard to the bin wall at 6 foot [1.8 m] intervals.

**Wiring and adjustment:**

1. Connect the correct power source directly to the terminal block. An uninterrupted continuous power supply must be used.
2. Wiring of the control circuit to the output relay is done separately from the supply. Connect the leads to the common and either the Normally Open or Normally Closed terminals, depending on the type of control circuit to be wired.
3. To adjust time delay, turn control full counterclockwise. Relay will be de-energized. Slowly turn control clockwise until relay energizes (approx. ¼ turn). Turn control slightly farther clockwise (approx. 10 deg.). This is minimum position of less than 3 seconds. Turn farther clockwise if greater delay is required.
4. To adjust the Hi/Low level failsafe operation use the jumper selector. For failsafe low

level detection, adjust the jumper so that it connects the two centermost pins. For failsafe high level detection, adjust the jumper so that it connects the two outermost pins.

5. Operation of the unit should be checked, both with regard to the motor and relay, before the cover is installed.



**Operating Temperature:**

The Model CR Ultra is designed to operate from -40°C to 60°C (-40°F to 140°F).

**Conduit Connection:**

In order to maintain a dust tight and watertight enclosure, the conduit connector and conduit must be rated for IP 65.

**Earth / Ground Connection:**

To ensure a proper earth connection, leads must be attached to the earth/ground screw placing the lead between the brass cup washer and the lock washer.