

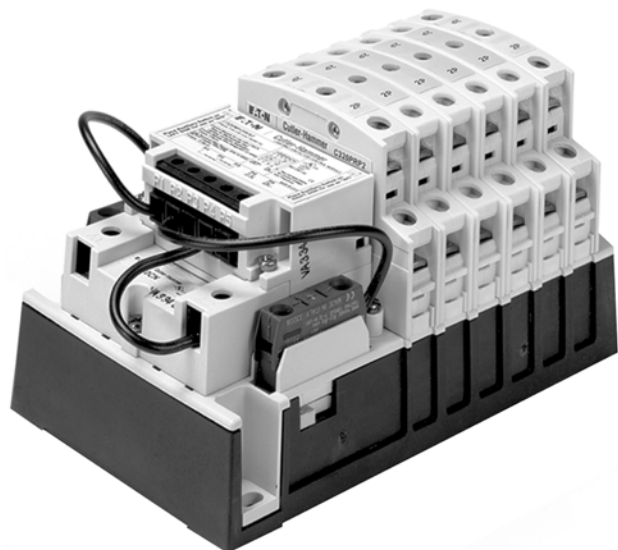


Powering Business Worldwide

## 2-Wire & 3-Wire Control for C30CNM Mechanically Held 30 Ampere Lighting Contactors

Application Guide AP03702001E

Effective May 2019



### Overview

C30CNM Mechanically Held Lighting Contactors feature an electronic control module that allows coil operation at line voltage and control at the same voltage or at a different voltage. Since the coil burden is not directly on the control circuit, longer wire runs between lighting control and contactor are possible. A built-in positive lockout delay determines the armature status, accepts only the correct input commands, and will not allow a repeat command for 500 ms. This feature eliminates the possibility of contact and coil fatigue from overly rapid cycling. And, since the coil is disconnected after being energized, there is no electrical hum or energy loss.

There is a 2-wire and a 3-wire Electronic Control Module available for the C30CNM Lighting Contactors. The customer selects the lighting contactor with the appropriate electronic control module based on whether the specific application requires 2-wire or 3-wire control.

In the 3-wire control configuration, the contactor operates and latches with just a pulse of energy when the close/latch command is given to the electronic control module, then returns the contactor to its original state when a second pulse is given. This is ideal when multiple switching locations are required and momentary switches are used.

The 2-wire control module engages the contactor when voltage is applied across the input terminals of the electronic control module but, unlike electrically held contactors, the contactor latches in this position and the coil is removed from the circuit. Once voltage is removed from the electronic control module, the latch is released and the contactor returns to its original state. Two-wire control is the choice for a single output from a single-pole switch, a time clock, or photoelectric and other lighting/energy management controls.

## 2-Wire Control

For 2-wire control, once the ON command is given, it is sensed by the micro-controller of the electronic control module to ensure if it is a 50/60 Hz signal. Then, the status of the contactor is sensed through the NC auxiliary contact. This is done in order to validate that the contactor is ready to be switched ON. After validating the input signal, the controller fires a triac for 60 ms which in turn energizes the coil — the contactor operates — latches to ON position. Now the NC auxiliary has changed its state. So, any additional ON command will not be responded by the electronic control module. When the OFF command is given, (i.e., the single-pole switch is switched OFF), the module senses the loss of power supply and sends out another 60 ms pulse to energize the coil. This makes the contactor de-latch and contactor switches OFF.

The control supply voltages for 2-wire C30CNM Lighting Contactors are: 12 – 24 Vac, 110 – 120 Vac, 200 – 277 Vac and 24 Vdc.

## Key Features

- The coil is powered for fixed time duration of 60 ms. There is NO RISK of coil burn-out.
- Control command is IMMUNE to noise as the module is designed to respond to signals only in frequency band (50/60 Hz).
- Coil clearing is INDEPENDENT to the latching of the contactor.
- FEEDBACK loop from NC auxiliary contact ensures proper coordination between contactor status and control command.

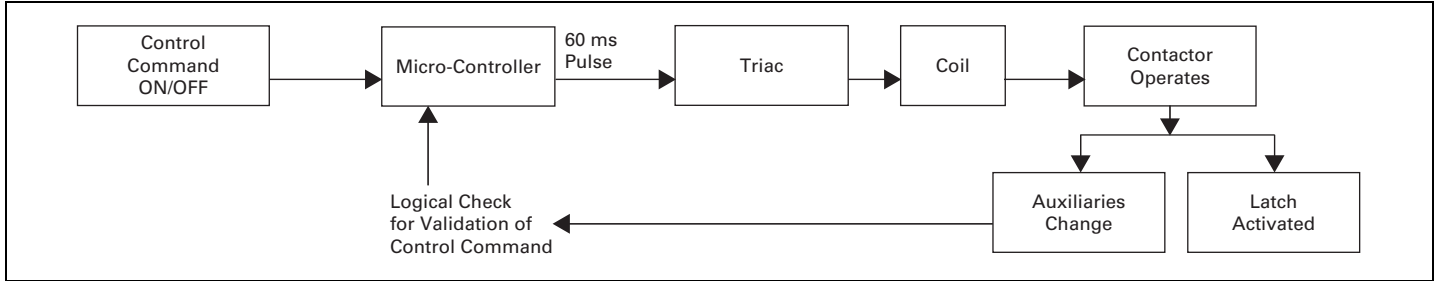


FIGURE 1. 2-WIRE CONTROL

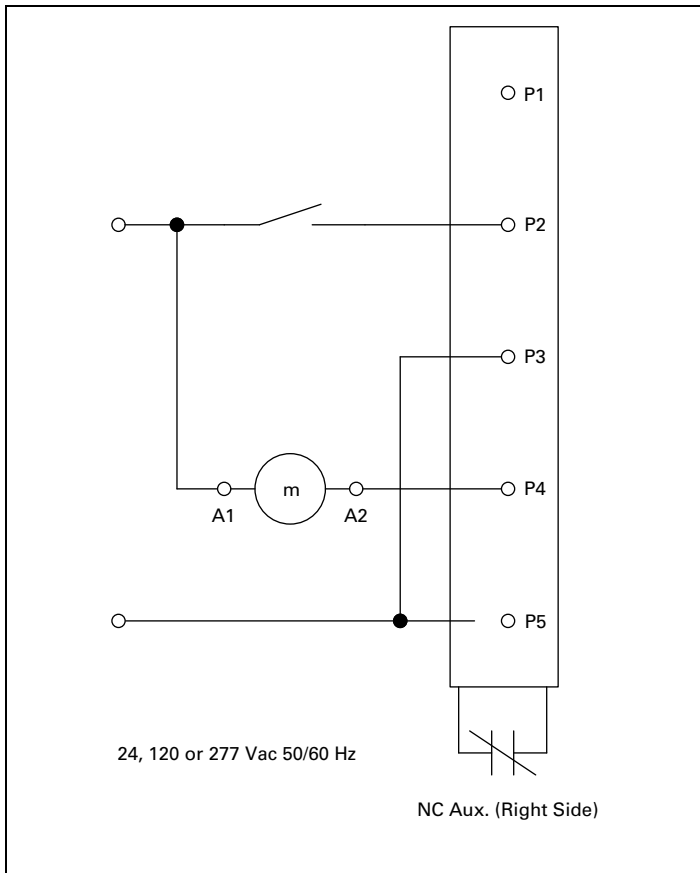


FIGURE 2. 2-WIRE CONTROL WIRING – ONE SOURCE

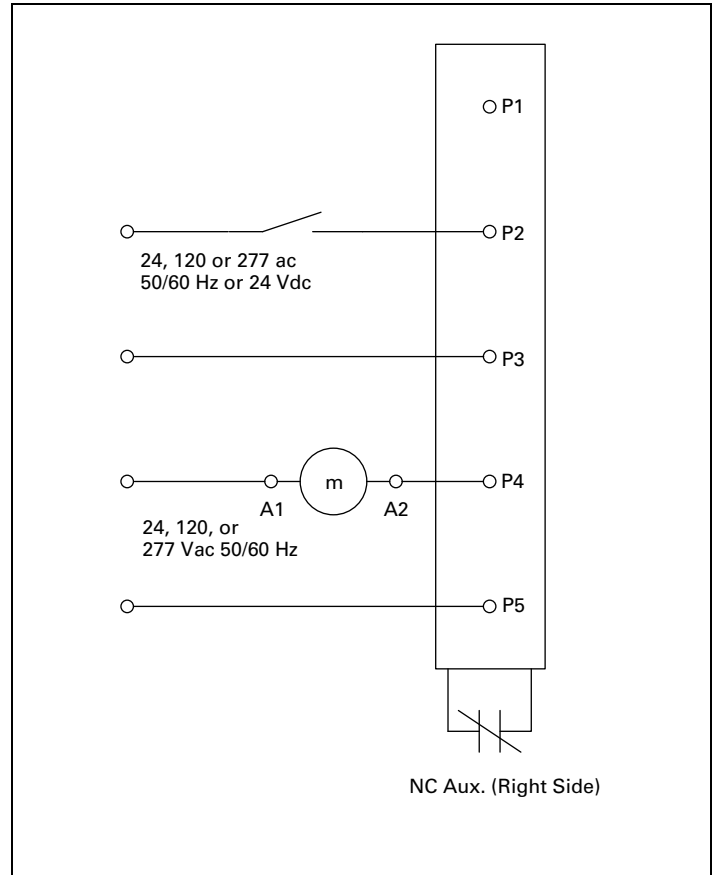


FIGURE 3. 2-WIRE CONTROL WIRING – TWO SOURCES

### 3-Wire Control

For 3-wire control, the ON command is given through NC auxiliary contact and OFF command through NO auxiliary contact. This will ensure that the contactor gets the correct command every time. As in 2-wire, the electronic control module senses if the input command signal is in the 50 – 60 Hz frequency band and then sends out a pulse to energize the coil. When the ON command is taken off, the module realizes this and gets ready to receive the next command. In this arrangement, any type of 3-wire system can be used (i.e., single-pole, double-throw both maintained contact type and momentary type, and pushbuttons).

The control supply voltages for 3-wire C30CNM Lighting Contactors are: 12 – 24 Vac, 110 – 120 Vac, 200 – 277 Vac and 24 Vdc.

### Key Features

- Can be used to control the lighting contactor from multiple locations.
- Can be used with SPDT maintained, momentary devices, as well as pushbuttons.
- Contactor does not chatter even if the ON and OFF pushbuttons are operated simultaneously.
- The coil is powered for fixed time duration of 60 ms. There is NO RISK of coil burn-out.
- Control command is IMMUNE to noise as the module is designed to respond to signals only in frequency band (50/60 Hz).
- Coil clearing is INDEPENDENT to the latching of the contactor.
- Contactor does not respond to repeat commands.

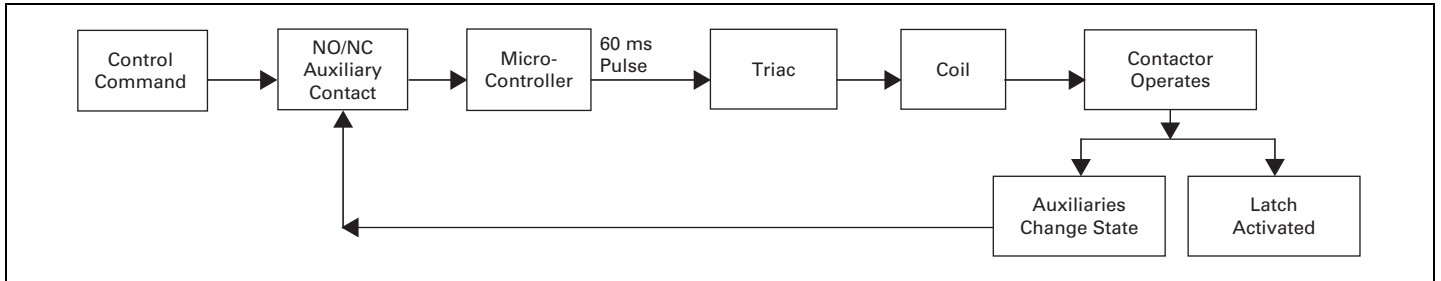


FIGURE 4. 3-WIRE CONTROL

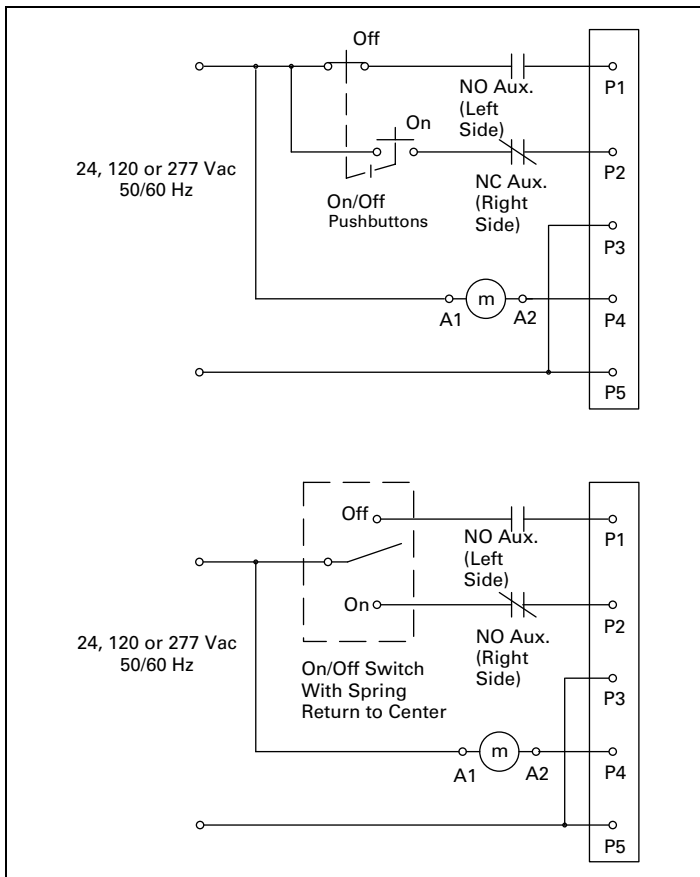


FIGURE 5. 3-WIRE CONTROL WIRING – ONE SOURCE

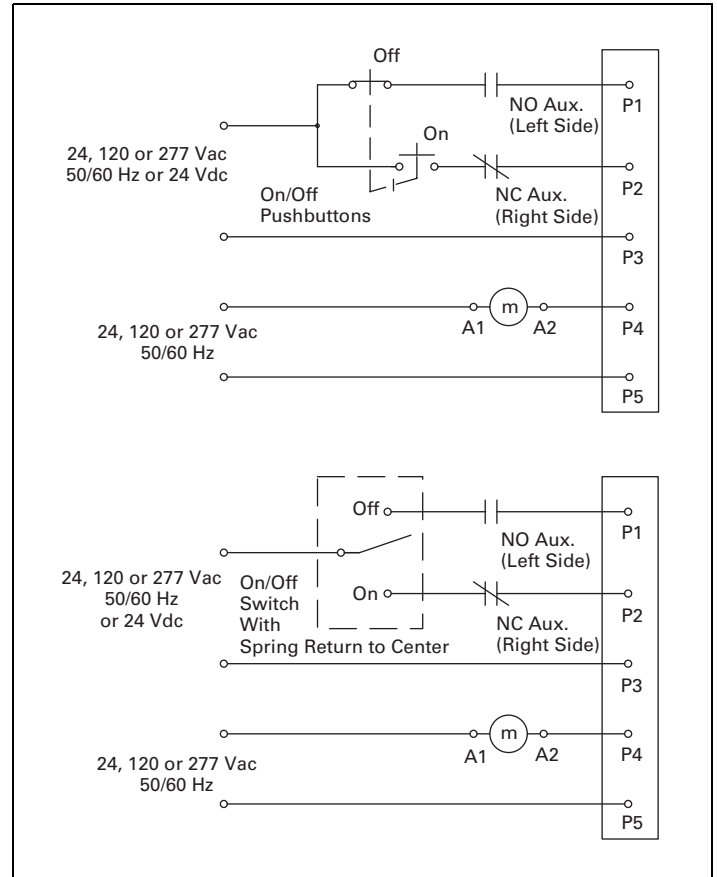


FIGURE 6. 3-WIRE CONTROL WIRING – TWO SOURCES



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