# Lighting and Heating Contactors

## Magnetically and Mechanically Latched 20–400 Amps, Class CLM

CLM 20 Amp

CLM 100 Amp

### Class CLM Mechanically Latched 20 Amp Lighting and Heating Contactor

The CLM Lighting Contactors can be used with metal halide, mercury vapor, quartz halogen, tungsten and fluorescent lighting. They provide reliable and convenient lighting control in numerous applications, such as industrial plants, schools, hospitals, office buildings, shopping centers, airports, stadiums . . . literally everywhere lighting is required.

The CLMs are listed under UL 508 with no derating when used open or enclosed.

### Maximum AC/DC Voltage and Amp Ratings

| Load Type | Amperes Continuous | Poles to Load | |
|---|---|---|---|
| | | 1 for 1 Phase | 2 for 1 Phase 3 for 3 Phase |
| Tungsten | 20 | 250V AC | |
| Ballast | 20 | 347V AC | 600V AC |
| General | 30 | 347V AC | 600V AC |
| **Load Type** | **Amperes Continuous** | **Poles to Load** | |
| | | **2 in Series** | **3 in Series** |
| General | 20 | 125V DC | 250V DC |

### Type CLM 20 Amp Lighting Contactor Solid State Control Modules

The CLM 20 amp lighting contactor is an electromagnetically operated, mechanically latched three wire control contactor. The most commonly used method of control is a three position momentary contact switch with a center-off position. The controlling device must be able to make the coil inrush current but need not break it. The coil current
is interrupted by the control contacts within the CLM contactor. Power for the control line may come from a separate source or directly from the line side of the CLM contactor. The CLM contactor can also be controlled by devices such as:

- Break-glass control stations
- Timers having single-pole, double throw contacts
- Photo-electric cells①
- Energy management systems①
- Microprocessors①
- Occupancy sensors①

①Operation through control modules.

The functions of our Solid State Control Modules for the 20 amp CLM are as follows:

Control modules make it possible to use a controlling device that does not have enough current-carrying capacity to control the CLM contactor directly. Control modules are also used when the control station is to be located at a distance greater than the allowable contactor line run.

Another use for control modules occurs when the controlling device is only available as a single-pole single-throw contact necessitating a two wire control line.

Still another application for control modules is when start-stop three wire control, called form 3, is needed.

Control modules also can make it possible to operate the CLM coil from its own incoming line at one voltage while providing the control at a second, perhaps lower voltage.

### Two Wire Control Module (Accessory 47)

The advantages of two wire controls are:

**1.** Control station can have lower ampacity rating.

**2.** Control station can be located an extended distance from the CLM contactor.

**3.** Control module can frequently be controlled directly from microprocessor.

**4.** Control devices can be two wire single-pole, single-throw types.

**5.** Control voltage may be different than the CLM coil circuit and at a lower voltage level.

**Note:** If the control power to the solid state control module is lost while the module is energized the lighting contactor will open. If the line power to the lighting contactor is lost while the contactor is energized the contactor will not change state with return of line voltage. Power will be restored to the load if the control module is still energized. Control station should be the maintained type.

### Three Wire Control Module (Accessory 48)

The advantages of three wire control are:

**1.** The accessory 48 consists of two relays with contacts appropriately interconnected which provides for an interlocking that prevents both relays from being energized simultaneously.

**2.** This module has similar characteristics to the two wire module (Accessory 47) except there is no change of switch contact position upon loss of control line power. Control stations should be the momentary type.

### Stop-Start Control Module, Form 3 (Accessory 49)

Stop-start three wire maintained control called Form 3 is an arrangement used mostly when controlling motors, but can be used in lighting applications.

Any number of momentary contact control stations consisting of normally open start buttons and normally closed stop buttons can be used. Start buttons are connected in parallel and stop buttons in series.

### Class CLM Magnetically Latched 30–200 Amp and Mechanically Latched 300–400 Amp Lighting and Heating Contactors

AC lighting contactors provide a safe convenient means of local or remote switching of relatively large tungsten, fluorescent or mercury arc lamp loads. UL Listed and CSA Certified.

Ballast Load: 600 volts AC, breaking all lines. Tungsten lamp loads, maximum volts: Line-to-Line, 480V AC, Line-to-Neutral, 277V AC.

### Operation (Magnetic Latch)

A permanent magnet is built into the contactor structure of the 30A, 60A, 100A, and 200A contactors that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied that produces a magnetic field that reinforces the polarity of the permanent magnet, and the contactor pulls in immediately. The current to the coil is disconnected by the coil clearing interlock. In order to drop out the contactor, it is necessary to apply a field through the OFF coil in the reverse direction to the permanent magnet. This momentarily cancels the magnetic attraction and the contactor drops out. Coil and module failures are possible when used with solid state relays and PLC outputs. 24-volt systems are ok to use, but 120 volts and above should be discouraged. If higher values cannot be avoided, an interposing relay should be used.
**The 300 amp and 400 amp contactors are mechanically latched.**