

MINIATURE CONTACTORS & CONTROL RELAYS

series
300
miniature

series
310
miniature

When you need reliable motor control and control relays for your control panel, but standard size devices are just too big, look to c3controls. Our Series 300 and Series 310 Miniature Contactors and Series 300 Control Relays are compact in size, available with AC or DC coils, and offer a wide variety of accessories including auxiliary contacts, electronic timers, reversing contactor modules, and more. Small in size, big in performance! It's just another c3controls advantage!

Section 5

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PROVEN



Conformity to Standards:
MINIATURE CONTACTORS
UL 508, 60947-4-1
CSA C22.2 No. 14
IEC 60947-1, 60947-4-1

MINIATURE CONTROL RELAYS
UL 508
CSA C22.2 No. 14
IEC 60947-1, 60947-5-1

Visit www.c3controls.com to download product certifications.

Certifications:

UL File #: E236197 (Guide NLDX, NLDX7), E68568 (Guide NKCR, NKCR7)

CE Marked (per EU Low Voltage Directive 2006/95/EC and RoHS Directive 2011/65/EU)


UL File #: E68568 (Guide NKCR, NKCR7)

CE Marked (per EU Low Voltage Directive 2006/95/EC and RoHS Directive 2011/65/EU)

MINIATURE CONTACTORS & CONTROL RELAYS

c3controls offers a comprehensive line of Motor Control products designed and manufactured to meet the needs of the machine builder. We promise durable products at a price that gives you an edge, and we guarantee same-day shipping. Check out all the features of our Series 300/310 Miniature Contactors and Control Relays below!

DELIVERING SUPERIOR PRODUCT QUALITY AND MANUFACTURING EXCELLENCE

| | |
|--|--|
| ✓ Proven | Our Series 300 Miniature Non-Reversing Contactors and Control Relays and Series 310 Miniature Reversing Contactors are UL Listed and CE marked, meeting global standards requirements.  |
| ✓ Lower Cost | Snap-on, front mounted auxiliary contacts install without the use of tools for lower installed costs. |
| ✓ Convenient | Wide variety of AC and DC operating coils for control circuit application flexibility. |
| ✓ Easy to Install | 35mm DIN rail mounting for all contactors and control relays for fast and easy installation and removal or panel mounting for more secure installation in high shock and vibration applications. |
| ✓ Simplified Installation | Can be installed/mounted in multiple orientations, including upside down. |
| ✓ Modular Design | Modular design allows Series 320 Overload Relays to be easily installed and allows use with the complete range of Series 330 Motor Protection Circuit Breakers and accessories. |
| ✓ Visible Certifications | Our product certifications and electrical ratings are clearly marked on the outside of the devices for easy reference during installation. |
| ✓ Environmentally Friendly | Environmentally friendly contacts are cadmium free and non-metallic materials are asbestos, halogen, and cadmium free. All c3controls products are compliant to the RoHS directives. |
| ✓ Added Safety | IP20 guarded terminals with dual terminal markings prevent accidental contact with live parts. |
| ✓ Limited Lifetime Warranty* | Every product is backed by our limited lifetime warranty—unmatched in the industry—bringing you quality components that perform in the most demanding applications. |
| ✓ Guaranteed Same-Day Shipping* | Product availability reduces inventory, and improves cash-flow—saving you money. With c3controls any order for standard catalog items received by 6:00pm ET is guaranteed to ship same-day. |
| ✓ Advantage Pricing | Our approach to product development, manufacturing, and focus on servicing the OEM and Electrical Equipment Builder reduces cost. The result—the best value in the industry. |

*See c3controls Terms & Conditions

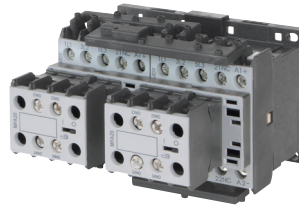
“After ranking each manufacturer by voltage pick-up/drop-off and decibel level, we discovered that when it came to performance versus price, c3controls held an edge over other competitive products.”

Joseph Scott, Project Manager • **Smith Pump Company**

Miniature Non-Reversing Contactor



Miniature Reversing Contactor



Miniature Control Relay



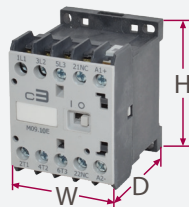
UNIQUE PRODUCT LINE FEATURES

HIGH FAULT SCCR



High fault short circuit current rating of 100kA @ 480V and 600V with Class J fuses, provides safety and reliability in high fault applications.

COMPACT SIZE



H: 58mm (2.28")
W: 45mm (1.77")
D: 52mm (2.05")

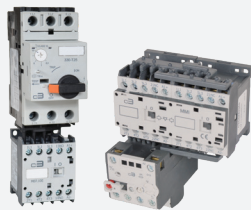
Leading the industry with our compact miniature 10HP contactors and control relays. One frame size (AC or DC) reduces panel area for lower installed costs – 28% reduction in panel area compared to standard devices.

INTEGRAL AUXILIARY



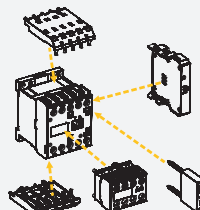
Integral auxiliary contacts, 1 NO or 1 NC, are standard on all c3controls miniature non-reversing contactors.

SEAMLESS COMPATIBILITY



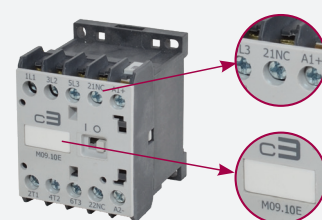
Miniature Reversing Contactors are compatible with direct mounted Series 320-B1 Overload Relays and Series 330 Motor Protection Circuit Breakers.

COMMON ACCESSORIES



Designing starter assemblies and panels is easy! No more remembering which auxiliary works with each contactor. Our complete range of Series 300 Miniature Contactors and Control Relays share common accessories, reducing inventory and simplifying installation and assembly.

QUICK IDENTIFICATION



Enhanced markings, improved identification labels, and dual IEC and NEMA terminal markings ensure quick identification of product from all angles simplifying troubleshooting in panels with many devices.

FIND IT FAST

Miniature Contactors & Control Relays



- Certifications
- Specifications
- Dimension Drawings
- Installation Instructions
- Easy to Buy

www.c3controls.com

Motor Control Device Solutions

c3controls motor control devices are the perfect solution for manufacturers who want proper motor control and superior motor protection without having to overpay or compromise on quality. In fact, we engineer so much performance and flexibility into our products, we can deliver a remarkably better value than our competitors.

c3controls products deliver like no other.



Seamless Compatibility

Contactors, overload relays and motor protection circuit breakers are designed by c3controls to work together, with common connections and accessories, resulting in a high functioning compact starter.

LEADING THE INDUSTRY
with our compact miniature 10HP contactors and control relays. One frame size (AC or DC)—28% reduction in panel area.

Compact

The small size of c3controls motor control devices, plus features like common accessories, enable assembly into smaller control panels for lower installed costs.

Reliable Protection

Contactors provide the repeated on/off switching for the motor and are designed for motor, actuator, solenoid, and other power switching applications. Overload relays provide Trip Class 10 protection against overload and phase-loss conditions, and have ambient temperature compensation for motor protection in high temperature environments.

Ensures the protection of equipment and user.

Motor protection circuit breakers provide overload, phase-loss and short circuit protection, can be used by themselves as manual motor controllers or with contactors in group motor installations, and can achieve Type 2 coordination for optimum performance.

Type E self-protected combination manual motor controllers provide disconnecting means, branch circuit protection, motor control and motor overload protection all in a single device.

Proven



















Our motor control devices are UL Listed and CE marked, meeting global standards requirements for use anywhere in the world.



NFPA 70 - National Electrical Code (NEC)

Understanding what functions are needed in your motor control circuit is critical when selecting motor control devices. Engineers benefit from the standards and codes established to ensure safety and protection to personnel and equipment.

More than just knowing the standards, c3controls, as a manufacturer of motor control products, has the application expertise you need to select the right products.

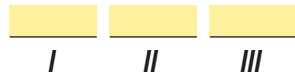
| c3controls & Article 430 - Motors, Motor Circuits and Controllers | | | | | | | |
|---|---|----------|--|--|--|--|--|
| | To Supply | NEC Part | c3controls Product Series | | | | |
| Motor disconnecting means |  | Part IX |  330 |  630 |  Type E: 330 630 | | |
| Motor branch-circuit, short circuit, and ground-fault protection | | Part IV | | |  Type E: 330 630 | | |
| Motor circuit conductor | | Part II | | | | | |
| Motor controller |  | Part VII |  300/310 |  330 |  620 |  630 |  Type E: 330 630 |
| Motor control circuits | | Part VI | | | | | |
| Motor overload protection |  | Part III |  320 |  330 |  620 |  630 |  Type E: 330 630 |
| Motor |  | Part I | | | | | |

Our motor control products align with Article 430 Part VII, Motor Controller, of the NFPA 70, the National Electrical Code.

IT'S EASY TO BUILD YOUR OWN MINIATURE CONTACTOR

Simply pick the code number from each of the sections below and combine them to build your part number.

Miniature Non-Reversing Contactors



Example: To build one of our most popular Miniature Contactors, the part number would be **I + II + III** or **300-M09N30D10**



I. MINIATURE NON-REVERSING CONTACTORS (3 NORMALLY OPEN POLES)

| CODE | MAX. Ie (A) | | RATINGS FOR SWITCHING AC MOTORS - AC-3 | | | | | | | | | | LIST |
|------------|-------------|----|--|----------|------|------|-----------|------|---------|-------|-------|-------|----------|
| | | | kW (50Hz) | | | | HP (60Hz) | | | | | | |
| | | | 3 PHASE | | | | 1 PHASE | | 3 PHASE | | | | |
| | | | 230V | 400/415V | 500V | 690V | 115V | 230V | 200V | 230V | 460V | 575V | |
| 300-M07N30 | 7 | 18 | 1.5 | 3 | 3 | 3 | 1/3 | 3/4 | 1-1/2 | 1-1/2 | 5 | 5 | \$ 37.00 |
| 300-M09N30 | 9 | 20 | 2.2 | 4 | 5.5 | 5.5 | 1/3 | 1 | 2 | 3 | 5 | 7-1/2 | \$ 44.00 |
| 300-M12N30 | 12 | 22 | 3 | 5.5 | 7.5 | 7.5 | 1/2 | 2 | 3 | 3 | 7-1/2 | 7-1/2 | \$ 58.00 |
| 300-M16N30 | 16 | 22 | 4 | 7.5 | 7.5 | 7.5 | 1 | 2 | 3 | 5 | 10 | 10 | \$ 77.00 |

II. COIL VOLTAGE

AC COIL VOLTAGE CODES

| VOLTAGE | 24 | 48 | 110 / 120 | 230 | 240 | 400 | 480 | 600 |
|---------|----|----|-----------|-----|-----|-----|-----|-----|
| 50Hz | — | — | D | — | — | — | — | — |
| 60Hz | — | — | D | — | F | — | R | T |
| 50/60Hz | XC | XJ | — | XN | — | XAM | — | — |

DC COIL VOLTAGE CODES

| | | | | | LIST |
|---------|----|----|-----|-----|----------|
| VOLTAGE | 12 | 24 | 125 | 250 | |
| | ZB | ZC | ZQ | ZP | \$ 14.00 |

III. AUXILIARY CONTACT CONFIGURATION

| CODE | DESCRIPTION | LIST |
|------|---|----------|
| 10 | 1 Normally Open (integral right side mounted) | \$ 17.00 |
| 01 | 1 Normally Closed (integral right side mounted) | \$ 17.00 |

DISCOUNT
SCHEDULE **F**

SOME OF OUR POPULAR CONFIGURATIONS:

MINIATURE NON-REVERSING CONTACTORS

| CATALOG NUMBER | DESCRIPTION | LIST |
|----------------|--|----------|
| 300-M07N30D10 | Miniature Non-Reversing, 7A, 3 Pole, 120V AC Coil, 1 NO Auxiliary Contact | \$ 54.00 |
| 300-M09N30D10 | Miniature Non-Reversing, 9A, 3 Pole, 120V AC Coil, 1 NO Auxiliary Contact | \$ 61.00 |
| 300-M12N30D10 | Miniature Non-Reversing, 12A, 3 Pole, 120V AC Coil, 1 NO Auxiliary Contact | \$ 75.00 |
| 300-M16N30D10 | Miniature Non-Reversing, 16A, 3 Pole, 120V AC Coil, 1 NO Auxiliary Contact | \$ 94.00 |
| 300-M07N30ZC10 | Miniature Non-Reversing, 7A, 3 Pole, 24V DC Coil, 1 NO Auxiliary Contact | \$ 68.00 |
| 300-M09N30ZC10 | Miniature Non-Reversing, 9A, 3 Pole, 24V DC Coil, 1 NO Auxiliary Contact | \$ 75.00 |
| 300-M12N30ZC10 | Miniature Non-Reversing, 12A, 3 Pole, 24V DC Coil, 1 NO Auxiliary Contact | \$ 89.00 |
| 300-M16N30ZC10 | Miniature Non-Reversing, 16A, 3 Pole, 24V DC Coil, 1 NO Auxiliary Contact | \$108.00 |

IT'S EASY TO BUILD YOUR OWN MINIATURE CONTACTOR

Simply pick the code number from each of the sections below and combine them to build your part number.

Miniature Reversing Contactors

Example: To build one of our most popular Contactors, the part number would be **I + II + III + IV** or **310-M09N30D42**

**I. MINIATURE REVERSING CONTACTORS (3 NORMALLY OPEN POLES)**

| CODE | MAX. I _e (A) | | RATINGS FOR SWITCHING AC MOTORS - AC-3 | | | | | | | | | | LIST |
|------------|-------------------------|----|--|----------|------|------|-----------|------|---------|-------|-------|-------|----------|
| | | | kW (50Hz) | | | | HP (60Hz) | | | | | | |
| | | | 3 PHASE | | | | 1 PHASE | | 3 PHASE | | | | |
| | | | 230V | 400/415V | 500V | 690V | 115V | 230V | 200V | 230V | 460V | 575V | |
| 310-M07N30 | 7 | 18 | 1.5 | 3 | 3 | 3 | 1/3 | 3/4 | 1-1/2 | 1-1/2 | 5 | 5 | \$184.00 |
| 310-M09N30 | 9 | 20 | 2.2 | 4 | 5.5 | 5.5 | 1/3 | 1 | 2 | 3 | 5 | 7-1/2 | \$198.00 |
| 310-M12N30 | 12 | 22 | 3 | 5.5 | 7.5 | 7.5 | 1/2 | 2 | 3 | 3 | 7-1/2 | 7-1/2 | \$226.00 |
| 310-M16N30 | 16 | 22 | 4 | 7.5 | 7.5 | 7.5 | 1 | 2 | 3 | 5 | 10 | 10 | \$264.00 |

II. COIL VOLTAGE**AC COIL VOLTAGE CODES**

| VOLTAGE | 24 | 48 | 110 / 120 | 230 | 240 | 400 | 480 | 600 |
|---------|----|----|-----------|-----|-----|-----|-----|-----|
| 50Hz | — | — | D | — | — | — | — | — |
| 60Hz | — | — | D | — | F | — | R | T |
| 50/60Hz | XC | XJ | — | XN | — | XAM | — | — |

DC COIL VOLTAGE CODES

| VOLTAGE | 12 | 24 | 125 | 250 | LIST |
|---------|----|----|-----|-----|----------|
| | ZB | ZC | ZQ | ZP | \$ 28.00 |

III. AUXILIARY CONTACT CONFIGURATION

| CODE | DESCRIPTION | LIST |
|------|---|----------|
| 02 | 2 Normally Closed ^① | \$ — |
| 42 | 4 Normally Open ^② (2 NO on Forward Contactor and 2 NO on Reverse Contactor) and 2 Normally Closed ^② (1 NC on Forward Contactor and 1 NC on Reverse Contactor) | \$ 30.00 |

- ① Integral right side mounted auxiliary contacts.
② Front mounted auxiliary contacts.

IV. OPTIONS

| CODE | DESCRIPTION | LIST (deduct) |
|---------|-------------------------------------|---------------|
| (Blank) | With Power Wires | — |
| WW | Without Interconnecting Power Wires | — \$ 22.00 |

DISCOUNT
SCHEDULE**F****SOME OF OUR POPULAR CONFIGURATIONS:****MINIATURE REVERSING CONTACTORS**

| CATALOG NUMBER | DESCRIPTION | LIST |
|----------------|--|----------|
| 310-M07N30D42 | Miniature Reversing, 7A, 3 Pole, 120V AC Coil, 4 NO and 2 NC Auxiliary Contacts | \$214.00 |
| 310-M09N30D42 | Miniature Reversing, 9A, 3 Pole, 120V AC Coil, 4 NO and 2 NC Auxiliary Contacts | \$228.00 |
| 310-M12N30D42 | Miniature Reversing, 12A, 3 Pole, 120V AC Coil, 4 NO and 2 NC Auxiliary Contacts | \$256.00 |
| 310-M16N30D42 | Miniature Reversing, 16A, 3 Pole, 120V AC Coil, 4 NO and 2 NC Auxiliary Contacts | \$294.00 |
| 310-M07N30ZC42 | Miniature Reversing, 7A, 3 Pole, 24V DC Coil, 4 NO and 2 NC Auxiliary Contacts | \$242.00 |
| 310-M09N30ZC42 | Miniature Reversing, 9A, 3 Pole, 24V DC Coil, 4 NO and 2 NC Auxiliary Contacts | \$256.00 |
| 310-M12N30ZC42 | Miniature Reversing, 12A, 3 Pole, 24V DC Coil, 4 NO and 2 NC Auxiliary Contacts | \$284.00 |
| 310-M16N30ZC42 | Miniature Reversing, 16A, 3 Pole, 24V DC Coil, 4 NO and 2 NC Auxiliary Contacts | \$322.00 |

MINIATURE CONTACTORS AND CONTROL RELAYS

c3controls Series 300 Miniature Contactors and Control Relays are a compact family of control devices for switching motors and other logic control circuits. Our Series 310 Miniature Reversing Contactors are ideal for reversing motors in applications where panel space is at a premium and device modularity is required to satisfy virtually any application requirement. Common accessories enable the devices to be customized for each application. For motor overload protection, Series 320 Overload Relays can be directly mounted to miniature contactors. Just look and see what our Series 300 Miniature Non-Reversing Contactors and Control Relays and Series 310 Miniature Reversing Contactors have to offer.

Product features include:

- High fault short circuit rating of 100kA @ 480V and 600V with Class J Fuses, provides safety and reliability in high fault applications.
- Removable and replaceable identification marker, standard on all c3controls Miniature Non-Reversing Contactors and Control Relays, for labeling contactors and front mounted auxiliary contacts – simplifies trouble shooting in panels with many contactors.
- Series 330 Motor Protection Circuit Breakers direct mount onto Series 310 Reversing Contactors AC or DC delivering exceptional performance and functionality in a compact solution.
- Enhanced markings and high visibility labels for ease of troubleshooting and maintenance.
- Compact size – one (1) frame size for devices rated up to 16A, 10HP @ 460V (7.5kW @ 400V) reducing panel area requirements – smaller enclosures can be used for lower installed costs.
 - Miniature Non-Reversing Contactors and Control Relays: 45mm wide x 58mm high x 52mm deep (1-49/64" x 2-9/32" x 2-3/64")
 - Miniature Reversing Contactors: 90mm wide x 61mm high x 59mm deep (3-37/64" x 2-13/32" x 2-21/64")
- AC and DC operating coils for control circuit application flexibility – device is the same physical size with an AC or DC coil.
- Modular design and common snap-on accessories are easily installed without the use of tools, lowering assembly and installation costs.
- A wide variety of common accessories including:
 - 2 and 4 circuit front mounted auxiliary contacts with NO and NC configurations
 - Surge suppressors – RC, varistor, and diode
 - Electronic timers – On-Delay and Off-Delay with timing ranges up to 30 seconds
 - Reversing contactor accessories – mechanical interlock and interconnecting wiring modules
 - Printed circuit board link module
- Front mounted auxiliary contacts and surge suppressors install directly on top of the single front mounted mechanical interlock when used with our Miniature Reversing Contactors.
- Miniature Contactors compatible with direct mounted Series 320 Overload Relays with current ratings from 0.28 to 17A.
- IP20 guarded terminals with dual terminal markings prevent accidental contact with live parts.
- Device identification marker for labeling the contactor or control relay simplifies troubleshooting in panels with many devices.
- Universal ratings and markings: A, kW, and HP ratings as well as applicable 3rd party certification markings.
- 35mm DIN rail mounting for fast and easy installation and removal without the use of tools, panel mounting for more secure installation in high shock and vibration applications.
- Miniature Non-Reversing Contactors and Control Relays feature printed circuit board mounting with an accessory link module.
- Control relay includes bifurcated contacts, rated 16A AC-1, A600, and Q600 for high current switching applications up to 600V.
- Four pole control relays with NO and NC contact configurations.



UNIQUE PRODUCT FEATURES

The Printed Circuit Board Link Module installs directly on the terminals of standard miniature contactors and control relays enabling them to be direct mounted on an electronic printed circuit board. The module is rated 16A AC-3 and 22A AC-1 to take full advantage of the maximum switching capability of the miniature contactor and control relay.

The insulated, over-molded wiring modules provide error free interconnections for reversing the power poles, and provide the electrical interlock through the integrated normally closed auxiliary contacts.



IT'S EASY TO BUILD YOUR OWN MINIATURE CONTROL RELAY

Simply pick the code number from each of the sections below and combine them to build your part number.

Miniature Control Relays**300-C16N**

/

II

III

Example: To build one of our most popular Miniature Control Relays, the part number would be **300-C16N + II + III** or **300-C16N22D**

**I. MINIATURE CONTROL RELAYS**

| CODE | DESCRIPTION | CONTACT RATINGS | LIST |
|----------|-----------------------------|----------------------|---------|
| 300-C16N | Four (4) Pole Control Relay | 16A AC-1, A600, Q600 | \$43.00 |

II. CONTACT CONFIGURATION

| CODE | DESCRIPTION |
|------|---------------|
| 22 | 2 NO and 2 NC |
| 31 | 3 NO and 1 NC |
| 40 | 4 NO |
| 13 | 1 NO and 3 NC |
| 04 | 4 NC |

II. COIL VOLTAGE**AC COIL VOLTAGE CODES**

| VOLTAGE | 24 | 48 | 110 / 120 | 230 | 240 | 400 | 480 | 600 |
|---------|----|----|-----------|-----|-----|-----|-----|-----|
| 50Hz | — | — | D | — | — | — | — | — |
| 60Hz | — | — | D | — | F | — | R | T |
| 50/60Hz | XC | XJ | — | XN | — | XAM | — | — |

DC COIL VOLTAGE CODES

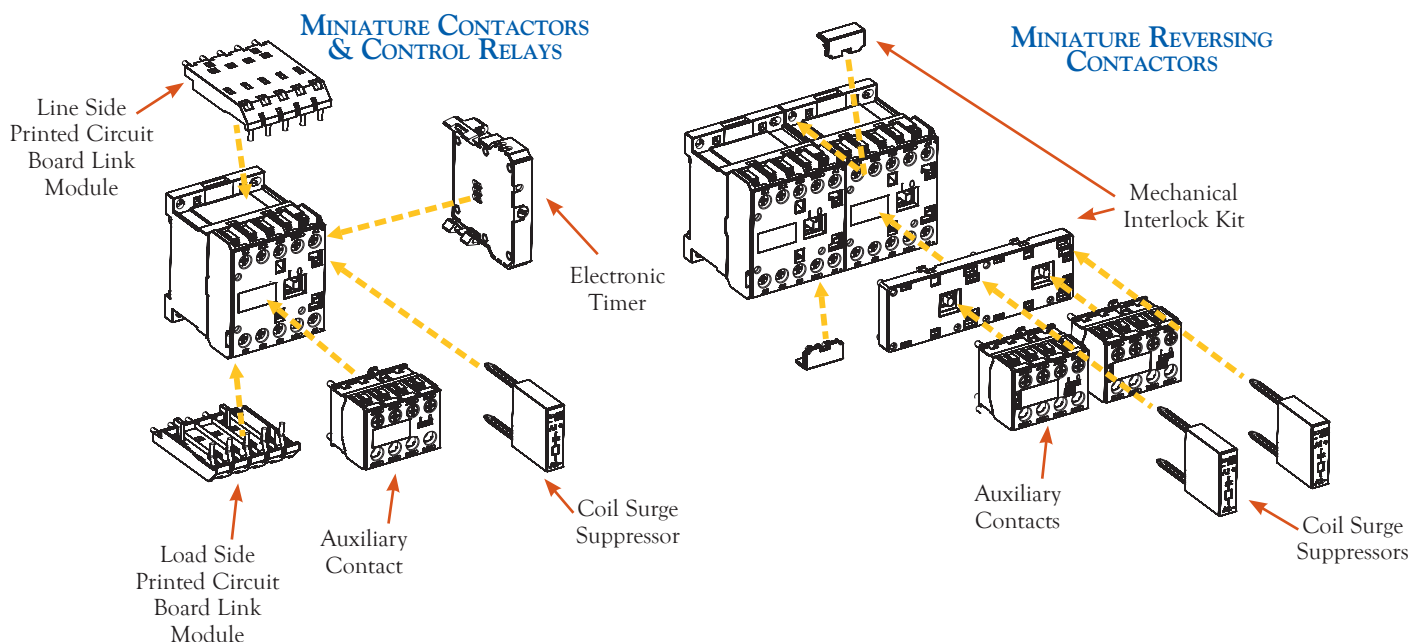
| VOLTAGE | 12 | 24 | 125 | 250 | LIST |
|---------|----|----|-----|-----|----------|
| | ZB | ZC | ZQ | ZP | \$ 14.00 |

DISCOUNT
SCHEDULE**F****SOME OF OUR POPULAR CONFIGURATIONS:****MINIATURE CONTROL RELAYS**

| CATALOG NUMBER | DESCRIPTION | LIST |
|----------------|--|---------|
| 300-C16N22D | Miniature Control Relay, 2 NO and 2 NC, 120V AC Coil | \$43.00 |
| 300-C16N22ZC | Miniature Control Relay, 2 NO and 2 NC, 24V DC Coil | \$57.00 |
| 300-C16N40D | Miniature Control Relay, 4 NO, 120V AC Coil | \$43.00 |
| 300-C16N40ZC | Miniature Control Relay, 4 NO, 24V DC Coil | \$57.00 |

ACCESSORIES FOR MINIATURE CONTACTORS AND CONTROL RELAYS

The complete range of Series 300 Miniature Contactors and Control Relays share common accessories including auxiliary contacts, electronic timers, reversing contactor modules, surge suppressors and a printed circuit board link module if you don't want to mount these devices on a panel or 35mm DIN rail. Designing starter assemblies and panels is easy – you don't have to remember which auxiliary is required for each contactor or control relay, they all work together. Installation is easy too – once you learn how to install each accessory, it's always the same no matter what contactor or control relay it's being installed on. If simple design and assembly are not enough – you'll also reduce your inventory and maximize its flexibility, because unique accessories are not required for each size contactor or control relay.



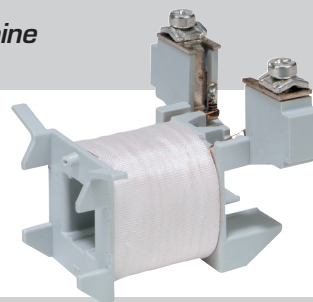
IT'S EASY TO BUILD YOUR OWN OPERATING COIL

Simply pick the code number from each of the sections below and combine them to build your part number.

Operating Coils



Example: To build one of our most popular Operating Coils, the part number would be **I + II** or **ACM16D**



I. OPERATING COIL TYPE

| CODE | DESCRIPTION | CONTACT RATINGS | LIST |
|-------|-------------------|----------------------|---------|
| ACM16 | AC Operating Coil | 16A AC-1, A600, Q600 | \$17.00 |
| DCM16 | DC Operating Coil | 16A AC-1, A600, Q600 | \$38.00 |

DISCOUNT SCHEDULE

F

II. COIL VOLTAGE

AC COIL VOLTAGE CODES

| VOLTAGE | 24 | 48 | 110 / 120 | 230 | 240 | 400 | 480 | 600 |
|---------|----|----|-----------|-----|-----|-----|-----|-----|
| 50Hz | — | — | D | — | — | — | — | — |
| 60Hz | — | — | D | — | F | — | R | T |
| 50/60Hz | XC | XJ | — | XN | — | XAM | — | — |

DC COIL VOLTAGE CODES

| VOLTAGE | 12 | 24 | 125 | 250 |
|---------|----|----|-----|-----|
| | ZB | ZC | ZQ | ZP |

AUXILIARY CONTACTS



Our front mounted auxiliary contact modules feature IP20 guarded terminals to protect against accidental contact with live parts. The modules are available in 2 and 4 circuit configurations. The device identification marker simplifies trouble shooting in panels with many devices. These modules snap-on and install without the use of tools. NOTE: See chart below for maximum number of front mounted auxiliary contacts.

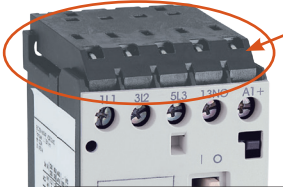
CONTACT CONFIGURATION

| CODE | NO | NC | FOR USE WITH CONTACTORS | LIST |
|-----------|----|----|-------------------------|---------|
| 300-MFA20 | 2 | 0 | M07, M09, M12, M16 | \$20.60 |
| 300-MFA11 | 1 | 1 | | \$20.60 |
| 300-MFA02 | 0 | 2 | | \$20.60 |
| 300-MFA40 | 4 | 0 | | \$40.40 |
| 300-MFA22 | 2 | 2 | | \$40.40 |
| 300-MFA04 | 0 | 4 | | \$40.40 |
| 300-MFA31 | 3 | 1 | | \$40.40 |
| 300-MFA13 | 1 | 3 | | \$40.40 |
| CODE | NO | NC | FOR USE WITH RELAYS | LIST |
| 300-CFA20 | 2 | 0 | C16 | \$20.60 |
| 300-CFA11 | 1 | 1 | | \$20.60 |
| 300-CFA02 | 0 | 2 | | \$20.60 |
| 300-CFA40 | 4 | 0 | | \$40.40 |
| 300-CFA22 | 2 | 2 | | \$40.40 |
| 300-CFA04 | 0 | 4 | | \$40.40 |
| 300-CFA31 | 3 | 1 | | \$40.40 |
| 300-CFA13 | 1 | 3 | | \$40.40 |

MAXIMUM NUMBER OF FRONT MOUNTED AUXILIARY CONTACTS

| COIL CODE | MAXIMUM NUMBER |
|-----------------------------|----------------|
| D, F, R, T, XC, XJ, XN, XAM | 4 |
| ZB, ZC, ZD, ZQ, ZP | 2 |

PRINTED CIRCUIT BOARD LINK MODULE



The printed circuit board module enables miniature contactors and control relays to be mounted directly on electronic printed circuit boards. The module is rated 16A AC-3 and 22A AC-1.

| CODE | DESCRIPTION | LIST |
|-----------|-----------------------------------|---------|
| 300-MPCLM | Printed Circuit Board Link Module | \$ 7.00 |

WIRING MODULE



Reversing contactor power wiring modules make field assembly of reversing contactors easy.

| CODE | FOR USE WITH CONTACTORS | LIST |
|-----------|-------------------------|---------|
| 300-RWM16 | M07, M09, M12, M16 | \$22.00 |

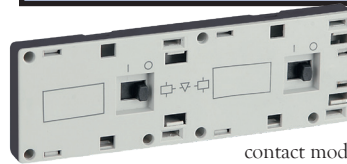
ELECTRONIC TIMERS



Right side mounted electronic timers are available in On-Delay and Off-Delay configurations with timing ranges up to 30 seconds. The modules install without the use of tools, and can be used in conjunction with all other accessories.

| CODE | FUNCTION | TIMING RANGE (Secs.) | VOLTAGE | LIST |
|-------------|-----------|----------------------|------------------|---------|
| 300-MTED3M | On-Delay | 0.3 ~ 3 | 24 ~ 240V AC/DC | \$80.00 |
| 300-MTED10M | | 1 ~ 10 | | \$80.00 |
| 300-MTED30M | | 3 ~ 30 | | \$80.00 |
| 300-MTDD3 | Off-Delay | 0.3 ~ 3 | 24 ~ 60V AC/DC | \$80.00 |
| 300-MTDD10 | | 1 ~ 10 | | \$80.00 |
| 300-MTDD30 | | 3 ~ 30 | | \$80.00 |
| 300-MTDD3M | Off-Delay | 0.3 ~ 3 | 100 ~ 240V AC/DC | \$80.00 |
| 300-MTDD10M | | 1 ~ 10 | | \$80.00 |
| 300-MTDD30M | | 3 ~ 30 | | \$80.00 |

MECHANICAL INTERLOCK



Our front mounted mechanical interlock is for reversing contactors. The interlock prevents the forward and reverse contactors from being actuated at the same time. Auxiliary

contact modules, surge suppressors, and timers can be used in conjunction with the mechanical interlock.

| CODE | DESCRIPTION | LIST |
|---------|------------------------------------|---------|
| 300-MMI | Front Mounted Mechanical Interlock | \$22.00 |

SURGE SUPPRESSORS



Front mounted surge suppressors protect sensitive electronic components from damaging line voltage spikes. The modules install without the use of tools, and can be used in conjunction with all other accessories.

| CODE | VOLTAGE RANGE | TYPE | LIST |
|-----------|-----------------------------|----------|---------|
| 300-MRCXC | 12 ~ 24V 50/60Hz | RC | \$19.00 |
| 300-MRCXJ | 24 ~ 48V 50/60Hz | | \$19.00 |
| 300-MRCAH | 50 ~ 127V 50/60Hz | | \$19.00 |
| 300-MRCXF | 130 ~ 250V 50/60Hz | | \$19.00 |
| 300-MRCQ | 275 ~ 380V 50/60Hz | | \$19.00 |
| 300-MRCT | 400 ~ 510V 50/60Hz | | \$19.00 |
| 300-MVXSJ | 12 ~ 48VAC / 12 ~ 60VDC | Varistor | \$19.00 |
| 300-MVSAH | 50 ~ 127VAC / 60 ~ 180VDC | | \$19.00 |
| 300-MVSP | 130 ~ 250VAC / 180 ~ 300VDC | | \$19.00 |
| 300-MVSQ | 277 ~ 380VAC / 300 ~ 510VDC | | \$19.00 |
| 300-MVST | 400 ~ 510VAC | Diode | \$19.00 |
| 300-MDST | 12 ~ 600VDC | | \$19.00 |

DISCOUNT SCHEDULE

F

SPECIFICATIONS:

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|--------------|--------------------------------|------------|------------|------------|
| | | M07 | M09 | M12 | M16 |
| ELECTRICAL GENERAL | | | | | |
| | UNITS | | | | |
| Rated Operating Frequency | Hz | 25 ~ 400 | | | |
| Rated Coil Frequencies | | AC: 50Hz, 60Hz, 50/60Hz and DC | | | |
| ELECTRICAL UL/CSA APPLICATIONS | | | | | |
| Rated Operating Voltage, Ue | VAC | 600 | | | |
| General Purpose Current Rating | A | 18 | 20 | 22 | 22 |
| RATED 1 PHASE OPERATING CURRENT, Ie | | | | | |
| 115V | A | 7.2 | 7.2 | 9.8 | 16 |
| 230V | A | 6.9 | 8 | 12 | 12 |
| RATED 1 PHASE OPERATING POWER, Pe | | | | | |
| 115V | HP | 1/3 | 1/3 | 1/2 | 1 |
| 230V | HP | 3/4 | 1 | 2 | 2 |
| RATED 3 PHASE OPERATING CURRENT, Ie | | | | | |
| 200V | A | 6.9 | 7.8 | 11 | 11 |
| 230V | A | 6 | 6.8 | 9.6 | 9.6 |
| 460V | A | 7.6 | 7.6 | 11 | 14 |
| 575V | A | 6.1 | 9 | 9 | 11 |
| RATED 3 PHASE OPERATING POWER, Pe | | | | | |
| 200V | HP | 1-1/2 | 2 | 3 | 3 |
| 230V | HP | 1-1/2 | 3 | 3 | 5 |
| 460V | HP | 5 | 5 | 7-1/2 | 10 |
| 575V | HP | 5 | 7-1/2 | 7-1/2 | 10 |
| Standard Short Circuit Current | kA | 5 | 5 | 5 | 5 |
| Maximum Fuse Size | A | 30 | 30 | 30 | 40 |
| High Fault Short Circuit Current | kA | 100 | 100 | 100 | 100 |
| Maximum Fuse Size (Class J) | A | 15 | 15 | 15 | 20 |
| ELECTRICAL IEC APPLICATIONS | | | | | |
| Rated Insulation Voltage, Ui | V | 690 | | | |
| Rated Operating Voltage, Ue | VAC | 690 | | | |
| Rated Thermal Current, Ith | A | 18 | 20 | 22 | 22 |
| RATED AC-1 OPERATING CURRENT, Ie | | | | | |
| At 55° C (131° F) | A | 18 | 20 | 22 | 22 |
| RATED AC-3 OPERATING CURRENT, Ie | | | | | |
| 220 ~ 240V | A | 6.8 | 9.6 | — | — |
| 380 ~ 400V | A | 6.3 | 8.1 | 11 | 14.8 |
| 415 ~ 440V | A | 7 | 9 | 12 | 16 |
| 500V | A | 5 | 9 | 12 | 12 |
| 660 ~ 690V | A | 3.5 | 6.7 | 9 | 9 |
| RATED AC-3 OPERATING POWER, Pe | | | | | |
| 220 ~ 240V | kW | 1.5 | 2.2 | 3 | 4 |
| 380 ~ 400V | kW | 3 | 4 | 5.5 | 7.5 |
| 415 ~ 440V | kW | 3 | 4 | 5.5 | 7.5 |
| 500V | kW | 3 | 5.5 | 7.5 | 7.5 |
| 660 ~ 690V | kW | 3 | 5.5 | 7.5 | 7.5 |
| RATED AC-4 OPERATING CURRENT, Ie | | | | | |
| 220 ~ 240V | A | 2.5 | 4 | 4 | 5 |
| 380 ~ 400V | A | 2.5 | 4 | 4 | 5 |
| 415 ~ 440V | A | 2.5 | 4 | 4 | 5 |
| RATED AC-4 OPERATING RATINGS, kW (200,000 operations) | | | | | |
| 220 ~ 240V | kW | 1.1 | 1.5 | 2.2 | 3 |
| 380 ~ 400V | kW | 2.2 | 3 | 4 | 5.5 |
| 415 ~ 440V | kW | 2.2 | 3 | 4 | 5.5 |
| 500V | kW | 3 | 3 | 4 | 5.5 |
| 660 ~ 690V | kW | 3 | 4 | 4 | 5.5 |
| RATED AC-4 OPERATING RATINGS, A (200,000 operations) | | | | | |
| 220 ~ 240V | A | 5.8 | 7.5 | 10 | 13.3 |
| 380 ~ 400V | A | 5.8 | 7.5 | 10 | 13.3 |
| 415 ~ 440V | A | 5.8 | 7.5 | 10 | 13.3 |
| 500V | A | 5.4 | 6.3 | 7.3 | 10.8 |
| 660 ~ 690V | A | 4.1 | 5 | 5.5 | 8.1 |

ELECTRICAL SPECIFICATIONS (CONTINUED)

| | | M07 | M09 | M12 | M16 |
|---|--------------|-----|-----|-----|-----|
| ELECTRICAL IEC APPLICATIONS (CONTINUED) | | | | | |
| | UNITS | | | | |
| MAXIMUM ELECTRICAL SWITCHING RATE | | | | | |
| AC-1 & AC-4 | Ops./Hr. | | 300 | | |
| AC-3 | Ops./Hr. | | 600 | | |
| Electrical Endurance, AC-3 at Maximum Rated 3 Phase Operating Power (@400V) | Ops. (mil.) | 1.4 | 1.3 | 1.2 | 1.1 |
| Short Circuit Current Rating with (gG/gL) fuses | | | | | |
| Type 1 | A | 35 | 35 | 35 | 35 |
| Type 2 | A | 20 | 20 | 25 | 25 |

COIL CHARACTERISTICS, MECHANICAL, ENVIRONMENTAL & CONSTRUCTION SPECIFICATIONS

| | | |
|-----------------------------------|-----------------|--------------------------|
| COIL CHARACTERISTICS | | |
| | UNITS | |
| Rated Insulation Voltage, Ui | V | 690 |
| OPERATING LIMITS | | |
| 50HZ, 60HZ, 50/60HZ | | |
| Operating | xUc | 0.8 ~ 1.1 |
| Pick-Up | xUc | 0.6 ~ 0.8 |
| Drop-Out | xUc | 0.4 ~ 0.6 |
| DC | | |
| Operating | xUc | 0.8 ~ 1.1 |
| Pick-Up | xUc | 0.4 ~ 0.7 |
| Drop-Out | xUc | 0.3 ~ 0.5 |
| COIL CONSUMPTION | | |
| 50HZ, 60HZ, 50/60HZ | | |
| Pick-Up | VA | 16 |
| Hold-In | VA | 2 ~ 3 |
| DC | | |
| Pick-Up | W | 2 ~ 3 |
| Hold-In | W | 2 ~ 3 |
| OPERATING TIMES | | |
| AC | | |
| Pick-Up | msec. | 20 ~ 30 |
| Drop-Out | msec. | 20 ~ 30 |
| DC | | |
| Pick-Up | msec. | 25 ~ 35 |
| Drop-Out | msec. | 25 ~ 35 |
| POWER DISSIPATION | | |
| 50Hz, 60Hz, 50/60Hz | W | 2 ~ 3 |
| POWER FACTOR | | |
| Closed | cos(φ) | 0.27 |
| Open | cos(φ) | 0.8 |
| MECHANICAL | | |
| Mechanical Endurance | Ops. (mil.) | 10 |
| Maximum Mechanical Switching Rate | Ops./Hr. | 2000 |
| ENVIRONMENTAL | | |
| Ambient Operating Temperature | °C / °F | -25 to +55 / -13 to +131 |
| Ambient Storage Temperature | °C / °F | -55 to +80 / -67 to +176 |
| Altitude | m / ft | 3,000 / 9,792 |
| CONSTRUCTION | | |
| INGRESS PROTECTION | | |
| Main Circuits | — | IP20 |
| Control Circuit Terminations | — | IP20 |
| Weight | kg. / lbs. | 0.18 / 0.40 |
| TERMINAL CAPACITY | | |
| AWG Wire | | 2 x 20 ~ 14 |
| Solid | mm ² | 2 x 0.5 ~ 2 |
| Stranded | mm ² | 2 x 0.5 ~ 2 |
| Tightening Torque | lb-in. | 8.8 ~ 10.6 |
| | Nm | 1.0 ~ 1.2 |

For RoHS compliance documentation by product, refer to www.c3controls.com.

SPECIFICATIONS:

| ELECTRICAL & COIL CHARACTERISTICS SPECIFICATIONS | | |
|---|-----------------|-----------------------------------|
| ELECTRICAL GENERAL | | C16 |
| | UNITS | |
| Rated Operating Frequency | Hz | 25 ~ 400 |
| Rated Coil Frequencies | | AC: 50Hz, 60Hz, 50/60Hz and DC |
| RATED AC-1 OPERATING CURRENT, I_e | | |
| At 55° C (131° F) | A | 16 |
| CONTACT RATINGS | | |
| Rated Voltage, U_e | | |
| IEC | V | 690 |
| UL/CSA | V | 600 |
| Pilot Duty Rating | AC | A600 |
| | DC | Q600 |
| Make/Break | | |
| AC-15 | | |
| @240V AC | A | 10 |
| @415V AC | A | 5 |
| @500V AC | A | 4 |
| DC-13 | | |
| @24V DC | A | 6 |
| @60V DC | A | 1.5 |
| @110V DC | A | 0.7 |
| @220V DC | A | 0.35 |
| Electrical Life | Ops. (mil.) | 1 |
| COIL CHARACTERISTICS | | |
| Rated Insulation Voltage, U _i | V | 690 |
| OPERATING LIMITS | | |
| 50HZ, 60HZ, 50/60HZ | | |
| Operating | xU _c | 0.8 ~ 1.1 |
| Pick-Up | xU _c | 0.6 ~ 0.8 |
| Drop-Out | xU _c | 0.4 ~ 0.6 |
| DC | | |
| Operating | xU _c | 0.8 ~ 1.1 |
| Pick-Up | xU _c | 0.4 ~ 0.7 |
| Drop-Out | xU _c | 0.3 ~ 0.5 |
| COIL CONSUMPTION | | |
| 50HZ, 60HZ, 50/60HZ | | |
| Pick-Up | VA | 16 |
| Hold-In | VA | 2 ~ 3 |
| DC | | |
| Pick-Up | W | 2 ~ 3 |
| Hold-In | W | 2 ~ 3 |
| OPERATING TIMES | | |
| AC | | |
| Pick-Up | msec. | 20 ~ 30 |
| Drop-Out | msec. | 20 ~ 30 |
| DC | | |
| Pick-Up | msec. | 25 ~ 35 |
| Drop-Out | msec. | 25 ~ 35 |
| POWER DISSIPATION | | |
| 50Hz, 60Hz, 50/60Hz | W | 2 ~ 3 |
| POWER FACTOR | | |
| Closed | cos(φ) | 0.27 |
| Open | cos(φ) | 0.8 |

MECHANICAL, ENVIRONMENTAL & CONSTRUCTION RELAY SPECIFICATIONS

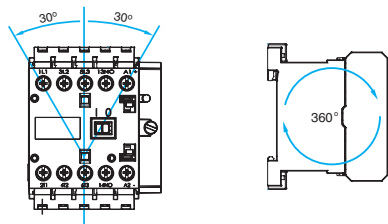
| | | C16 |
|-------------------------------|-----------------|--------------------------|
| MECHANICAL | | |
| | UNITS | |
| Mechanical Life | Ops. (mil.) | 10 |
| ENVIRONMENTAL | | |
| Ambient Operating Temperature | °C / °F | -25 to +55 / -13 to +131 |
| Ambient Storage Temperature | °C / °F | -55 to +80 / -67 to +176 |
| Altitude | m / ft | 3,000 / 9,792 |
| CONSTRUCTION | | |
| INGRESS PROTECTION | | |
| Protection Class | | IP20 |
| Weight | kg./lb. | 0.18/0.42 |
| TERMINAL CAPACITY | | |
| AWG Wire | | 2 x 20 ~ 14 |
| Solid | mm ² | 2 x 0.5 ~ 2 |
| Stranded | mm ² | 2 x 0.5 ~ 2 |
| Tightening Torque | lb-in. | 8.8 ~ 10.6 |
| | Nm | 1.0 ~ 1.2 |

For RoHS compliance documentation by product, refer to www.c3controls.com.

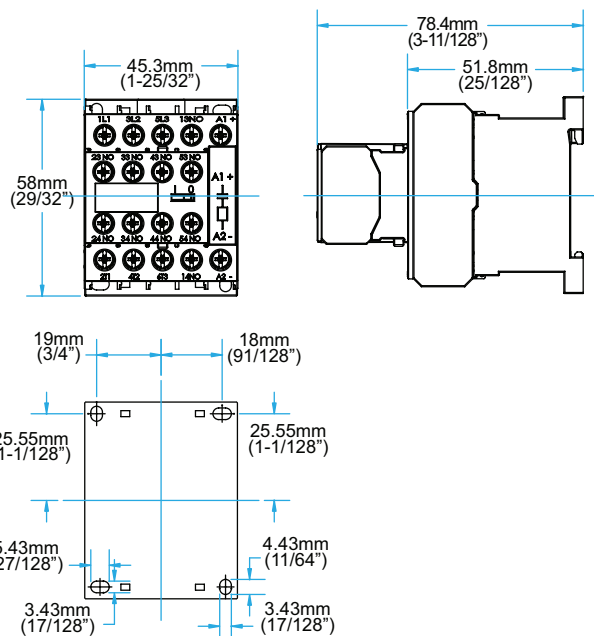
AUXILIARY CONTACTS SPECIFICATIONS

| | | 300-MFA, 300-CFA |
|--|-----------------|------------------|
| ELECTRICAL UL/CSA APPLICATIONS | | |
| | UNITS | |
| Rated Operating Voltage, Ue | VAC | 600 |
| PILOT DUTY RATING | | |
| AC | | A600 |
| DC | | Q600 |
| ELECTRICAL IEC APPLICATIONS | | |
| Rated Insulation Voltage, Ui | V | 690 |
| Rated Operating Voltage, Ue | VAC | 690 |
| Rated Thermal Current, Ith | A | 10 |
| RATED AC-15 OPERATING CURRENT, Ie | | |
| 220V | A | 10 |
| 380 ~ 400V | A | 5 |
| RATED DC-13 OPERATING CURRENT, Ie | | |
| 24V | A | 1.5 |
| CONSTRUCTION | | |
| TERMINAL CAPACITY | | |
| AWG Wire | | 2 x 20 ~ 14 |
| Solid | mm ² | 2 x 0.5 ~ 2 |
| Stranded | mm ² | 2 x 0.5 ~ 2 |
| Tightening Torque | lb-in. | 8.8 ~ 10.6 |
| | Nm | 1.0 ~ 1.2 |

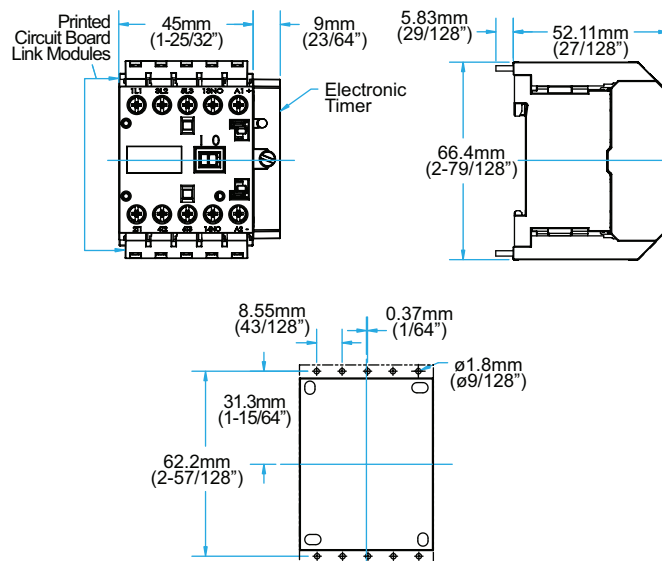
For RoHS compliance documentation by product, refer to www.c3controls.com.

MOUNTING POSITIONS FOR MINIATURE CONTACTORS AND CONTROL RELAYS


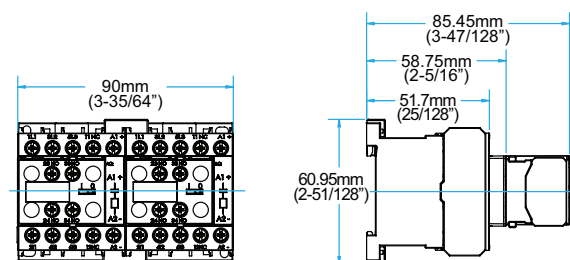
MINIATURE NON-REVERSING CONTACTOR & CONTROL RELAY WITH AUXILIARY CONTACTS & SURGE SUPPRESSOR



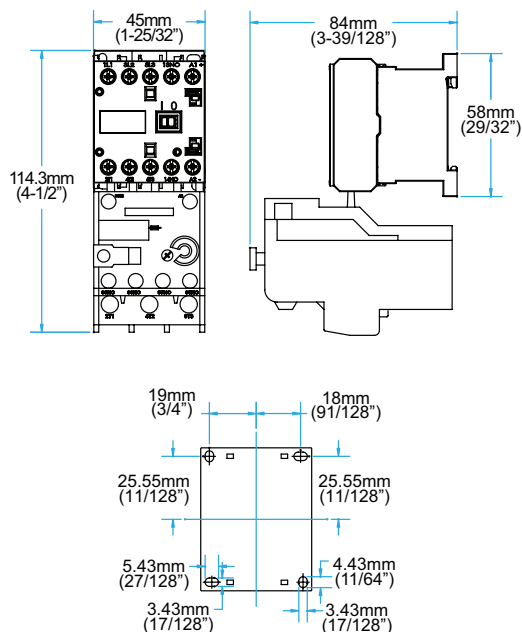
MINIATURE NON-REVERSING CONTACTOR & CONTROL RELAY WITH PRINTED CIRCUIT BOARD LINK MODULE AND ELECTRONIC TIMER



MINIATURE REVERSING CONTACTOR WITH AUXILIARY CONTACTS & SURGE SUPPRESSOR



MINIATURE NON-REVERSING CONTACTOR WITH OVERLOAD RELAY ASSEMBLY



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