

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.
✓ 36-Month Warranty*	Every product is backed by our 36-Month Warranty—giving you confidence in the quality, reliability, and performance of components designed for 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



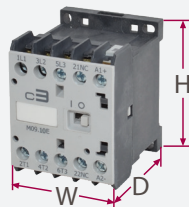
UNIQUE PRODUCT LINE FEATURES

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")

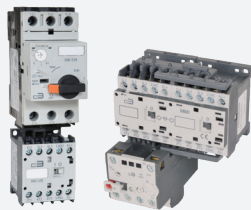
Leading the industry with our compact miniature 10HP contactors and control relays. One frame size (AC or DC) reduces panel area for lower installed costs – 28% reduction in panel area compared to standard devices.

INTEGRAL AUXILIARY



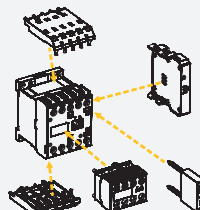
Integral auxiliary contacts, 1 NO or 1 NC, are standard on all c3controls miniature non-reversing contactors.

SEAMLESS COMPATIBILITY



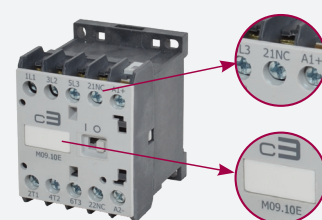
Miniature Reversing Contactors are compatible with direct mounted Series 320-B1 Overload Relays and Series 330 Motor Protection Circuit Breakers.

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.

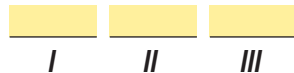
c3controls & Article 430 - Motors, Motor Circuits and Controllers							
	To Supply	NEC Part	c3controls Product Series				
Motor disconnecting means		Part IX	 330	 630	 Type E: 330 630		
Motor branch-circuit, short circuit, and ground-fault protection		Part IV			 Type E: 330 630		
Motor circuit conductor		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. 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	
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:

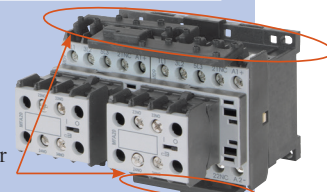
- High fault short circuit rating of 100kA @ 480V and 600V with Class J Fuses, provides safety and reliability in high fault applications.
- Removable and replaceable identification marker, standard on all c3controls Miniature Non-Reversing Contactors and Control Relays, for labeling contactors and front 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

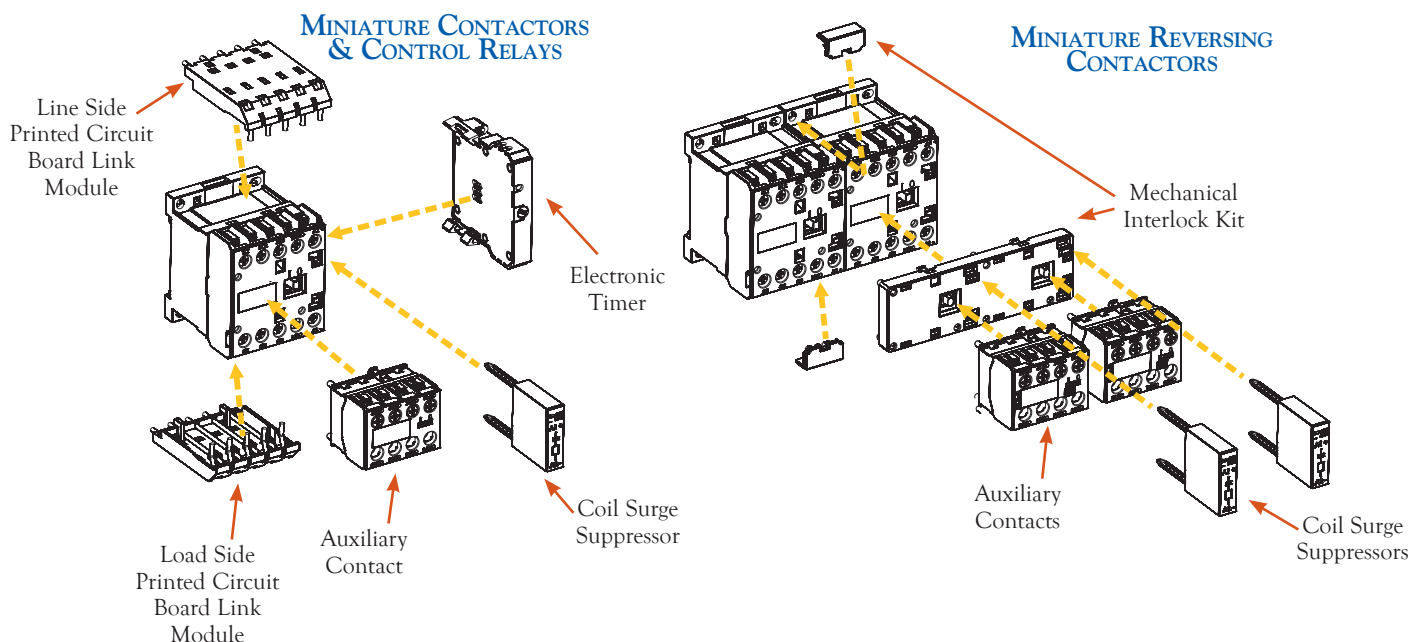
VOLTAGE	12	24	125	250	LIST
	ZB	ZC	ZQ	ZP	\$ 14.00

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.



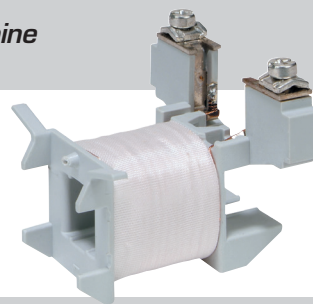
IT'S EASY TO BUILD YOUR OWN OPERATING COIL

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

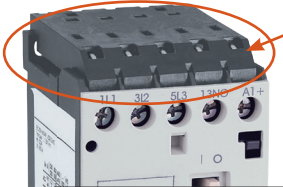
CODE	NO	NC	FOR USE WITH CONTACTORS	LIST
300-MFA20	2	0	M07, M09, M12, M16	\$20.60
300-MFA11	1	1		\$20.60
300-MFA02	0	2		\$20.60
300-MFA40	4	0		\$40.40
300-MFA22	2	2		\$40.40
300-MFA04	0	4		\$40.40
300-MFA31	3	1		\$40.40
300-MFA13	1	3		\$40.40

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

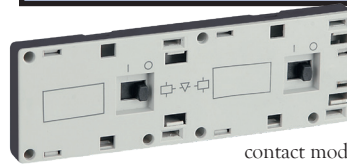
ELECTRONIC TIMERS



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-MVSXJ	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

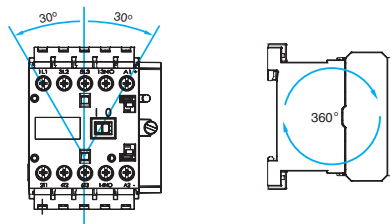
For RoHS compliance documentation by product, refer to www.c3controls.com.

AUXILIARY CONTACTS SPECIFICATIONS

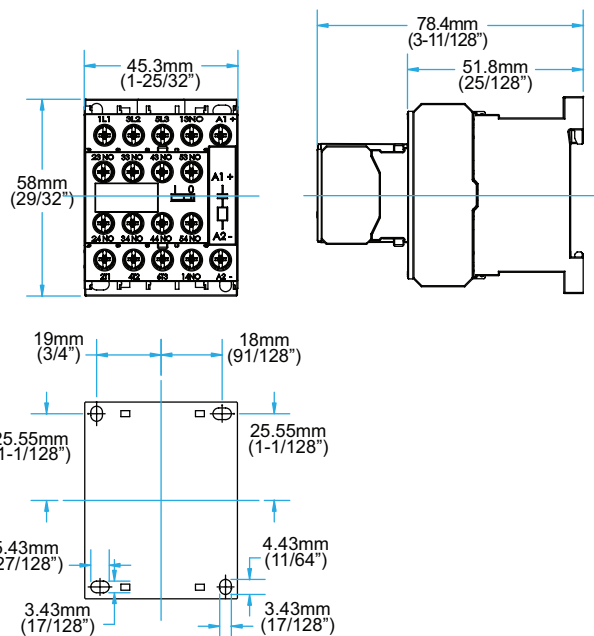
		300-MFA, 300-CFA
ELECTRICAL UL/CSA APPLICATIONS		
	UNITS	
Rated Operating Voltage, Ue	VAC	600
PILOT DUTY RATING		
AC		A600
DC		Q600
ELECTRICAL IEC APPLICATIONS		
Rated Insulation Voltage, Ui	V	690
Rated Operating Voltage, Ue	VAC	690
Rated Thermal Current, Ith	A	10
RATED AC-15 OPERATING CURRENT, Ie		
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.

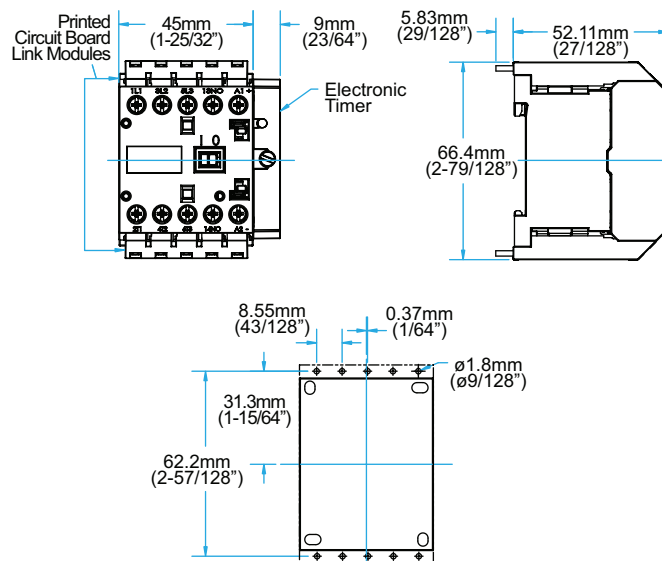
MOUNTING POSITIONS FOR MINIATURE CONTACTORS AND CONTROL RELAYS



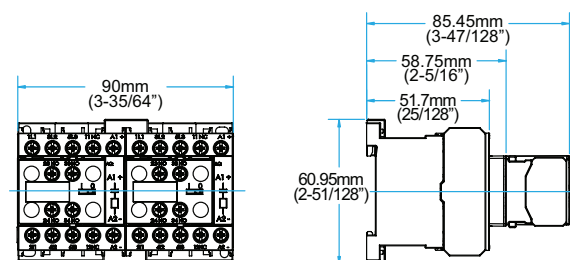
MINIATURE NON-REVERSING CONTACTOR & CONTROL RELAY WITH AUXILIARY CONTACTS & SURGE SUPPRESSOR



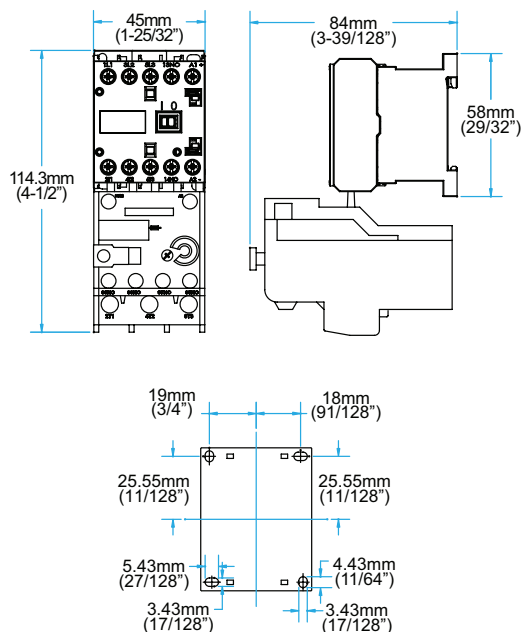
MINIATURE NON-REVERSING CONTACTOR & CONTROL RELAY WITH PRINTED CIRCUIT BOARD LINK MODULE AND ELECTRONIC TIMER



MINIATURE REVERSING CONTACTOR WITH AUXILIARY CONTACTS & SURGE SUPPRESSOR



MINIATURE NON-REVERSING CONTACTOR WITH OVERLOAD RELAY ASSEMBLY



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