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Contactors Overview

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This Control Catalog section brings together products that conform to the International Electrical Commission (IEC) standards for worldwide markets. GE provides several complementary lines to meet the requirements of these standards:

C-2000 Control Contactors and Starters

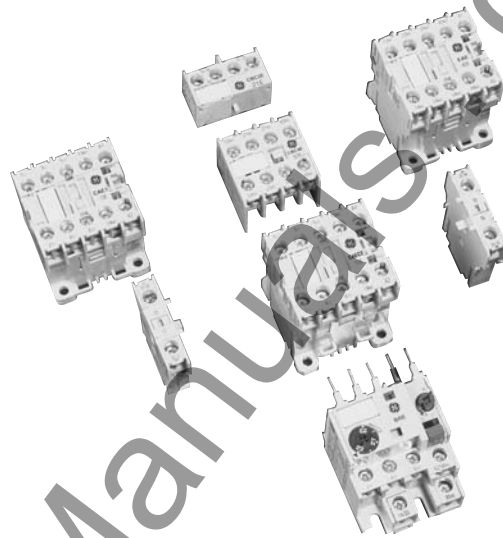
GE's C-2000 Control Contactors and Starters offer a wide array of contactors, relays, accessories, enclosures, and assembled starters to give you greater design versatility. C-2000 components are loaded with features that make them easier to install, allow more flexible configurations, lower inventory requirements, and make better use of panelboard space. These components conform to international standards (UL, cUL and IEC-947) and have dual (U.S./European) markings to ensure global acceptance. A single nomenclature system allows simple sourcing worldwide. AC coils (both 50 Hertz and 60 Hertz versions) and dc coils are available for a wide range of voltages for flexibility.

Mini-Contactors

GE's C-2000 Control Mini-Contactors are compact, convenient and compatible with most installation requirements. Various configurations can be created by combining the MCO contactors and MCR control relays with a wide selection of modular accessories. The high-performance Mini-Contactors are ideal for even highly demanding conditions. With a mechanical life rated at 10 million operations, and electrical life (AC-3) rated in excess of 1 million operations at rated current, they are ideal for many applications including pumps, fans, hoists, conveyors, and irrigation systems.

Positive Guided Contacts

All GE C-2000 contactors and relays offer positive guided contacts. This complies with the requirements of EH 60947-5-1. Except for auxiliary contacts BCL10G and BCLF01G, NO and NC auxiliary contacts and main contacts will **not overlap**. BCL10G and BCLF01G are intentionally designed to be overlapping.



C2000™ Mini-Contactors



Application

The MC family of mini-contactors and the MCR family of control relays offer the user and equipment designer a compact, reliable and versatile solution to today's demanding requirement of high performance in a confined space. In such applications, PLC compatibility is playing an ever increased role.

Contactors and control relays are available in either ac or dc controlled forms, and offer application flexibility through a wide variety of modular accessories. These devices are CE Marked and dual-rated for worldwide acceptance by complying to UL, cUL, and IEC 947 standards. Contactors and control relays may be conveniently mounted using a 35mm DIN rail or by affixing with screws to a base plate.

Featuring a conveniently compact size, a mechanical life rated at 10 million operations, and an electrical life (AC-3) rated in excess of 1 million operations at rated current, the MC/MCR mini-contactor family is suitable for a wide variety of applications—including pumps, fans, door operators, hoists, conveyers, commercial laundry equipment, machine tools, food mixing equipment, irrigation systems, and other utilizations.

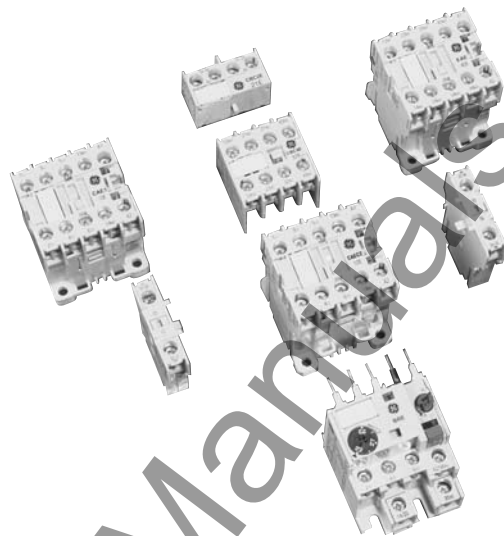
Low coil power consumption greatly expands application flexibility. Standard ac coils require only 1.4 watts and standard dc coils require 3 watts; this translates into low control power supply requirements and low heat losses inside the enclosure. Two special 24 volt PLC interface coil versions are also available to allow coils to be directly operated by PLC outputs.

Accessories

A wide variety of accessories allows application flexibility to meet most installation requirements. Accessories include:

- overload relays,
- overload relay signal contact,
- overload relay separate mounting base,
- 2-pole front auxiliary contacts,
- 4-pole front auxiliary contacts,
- 1-pole side auxiliary contacts,
- surge suppressor,
- mechanical interlock,
- electronic timer

Accessories are designed for quick and easy installation to either the front or side of the contactors or control relays.



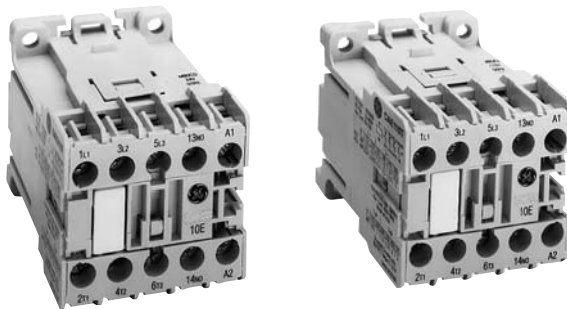
The MC/MCR family of contactors and control relays offers compact size, performance and features typically found in larger contactors and relays. This combination expands application flexibility which is only limited by the imagination of the designer.

IEC Power Devices

Mini Contactors Features and Benefits

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Modular Design—One of the most attractive features of this product family is its modularity. Various configurations can be created by combining the MC contactors and MCR control relays with the wide selection of available accessories.

Compact Size—The contactor/relay mounting profile is approximately 1 3/4" x 1 7/8".

Long Life—The MC/MCR family of contactors and relays offers superior performance. Mechanical life is rated at 10,000,000 operations. Contactor motor ratings (AC-3) are in excess of 1,000,000 electrical operations.

Reliable Operation—These products are manufactured with the latest advancements in materials technology and designed to ensure long, dependable operation. (Coils are designed for protection against burnout during demanding brownout conditions.)

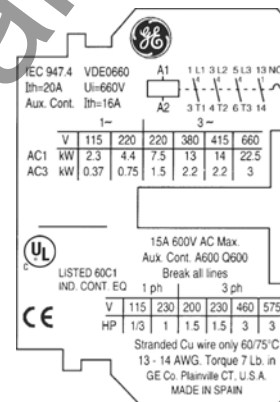
Flexible Mounting—Mounting is not restricted for contactor and relay applications; contactors may be horizontal-, tabletop-, or ceiling-mounted. Mounting flexibility is provided by a dual mounting system using either 35mm DIN rail or two #8 screws in opposite diagonal corners. The DIN rail release is located at the top, providing easy access when configured as a starter. Accessories are easily assembled to the MC/MCR contactors and relays, saving time while affording maximum versatility.

High Short Circuit Current Ratings for UL508A – MC/MCR family of contactors UL rated to withstand 50,000 AIC fault when protected by Class H, L, J, CC or RK-5 fuses providing added performance to use within UL508A control panels.

Easy Installation—Captive universal slot screws are standard on all contactors, relays, overloads, and accessories allowing installation with flat, star, and Phillips screwdrivers. All terminals are in the open position for production line and installation efficiency. Accessories are designed for fast installation on either contactors or relays.

Safety Features—Finger and back-of-hand protection are provided. All screw and quick-connect type terminals are clearly marked with dual markings where applicable, for easy identification and wiring convenience.

International Acceptance—Devices are listed and certified to international standards. Nameplate carries both IEC and North American standards.



Dual markings are provided.

Special Orders—For OEMs and higher-volume applications, special terminal configurations are available, including quick-connect terminals (one 6.3mm Faston or two Faston 2.8mm) and pin terminals for printed circuit boards. Four-pole contactors with 4NO, 2NO/2NC or 4NC contacts can be ordered. Lower wattage 1.2w 24 Vdc and 2w 24 Vdc PLC contactor/relay versions also are available. (See Special PLC-Compatible Products, page 5-15.)



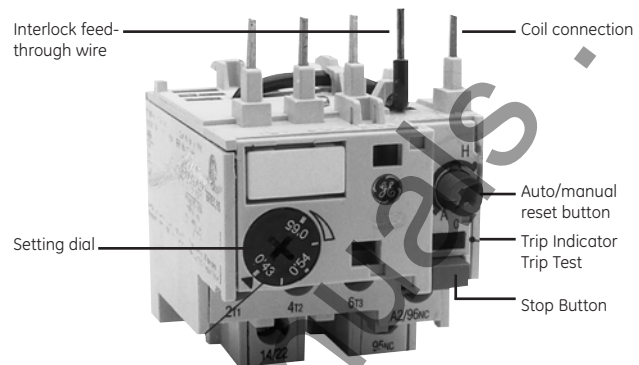
Publications and Reference: See Section 17 for a complete list of additional product-related publications

Overload Relays—The Class 10 overload relay features include loss of phase sensitivity, ambient temperature compensation, choice of automatic or manual reset, trip indication (tripped “O”, operational “I”), trip test, separate stop (red), and reset (blue) buttons. Installation and wiring is simplified; the contactor coil connection A2 is fed directly into terminal 96 (NC contact) of the overload relay, making external coil/contact connecting wire unnecessary. The contactor holding interlock terminal (14) is fed through the overload relay for additional wiring convenience and simplification.

Optional overload relay accessories include an addable snap-on NO signaling contact and a separate mount base/terminal assembly for applications where in-line installation is not convenient. The separate mounting base is suitable for either screw or DIN rail mounting.

Auxiliary Contact Blocks—Front-mounted auxiliary blocks easily snap on the front of the MC/MCR contactors and relays. Front-mounted auxiliary contact blocks are available in either 3- or 4-pole versions. When mounting depth is critical, side auxiliary contact blocks may be easily assembled to each side of the contactor or control relay, using unique U-shaped keys. Up to two side auxiliary contact blocks may be added to each side of the contactor or relay. This unique family of front and side auxiliary contact blocks allows installation flexibility and also convenient mounting of additional accessories such as timers and surge suppressors. Control relays may be assembled with up to a maximum of ten contacts by using both front and side auxiliary contacts. Three-pole contactors may be assembled with up to seven auxiliary contacts, including the NO holding interlock.

Surge Suppressor—Affords transient spike protection and assures proper control circuit operations through suppression of unwanted noise. Easily plugs into the contactor/relay front, making a wireless connection with the coil circuit. Quick, simple installation.



Mechanical Interlock—Designed for either ac or dc contactors. Allows field assembly of components into reversing contactors or starters. The mechanical interlock design is simple, easy to install, and allows a quick two-step conversion of components into reversing configurations.

Electronic Timer—Adjustable from 0.5-60 seconds. The timer is available with wide ac/dc voltage (24-240 V) range, and is wired in series with the contactor or control relay coil. The electronic timer provides accurate, repeatable time delay upon energization. The timer block easily snaps onto the front of the contactor or relay, or may be fitted on the side, or may be panel/DIN rail mounted using the optional mounting base. Quick, efficient, simple and versatile.

Coils—AC and DC coils may be changed to accommodate various voltages at distributor, OEM and user locations to allow inventory management and flexibility to serve a wide range of voltage/frequency requirements.

IEC Power Devices

Mini Contactors Product Offering

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Surge Suppressor
MP0AAE



Mechanical Interlock
MMH0



Electronic Timer
MREB



Optional Timer Base
MVB0R



1-Pole, Side-Mounted
Auxiliary Contact Block
MARL/MACL



Auxiliary Contact
MATV10AT



Overload Relay
MT0



Base For Separate Mount
MVB0T



Input Terminals for
Separate Mount MVE0T



4-Pole, Front-Mounted
Auxiliary Contact Block
MARN4/MACN4



2-Pole, Front-Mounted
Auxiliary Contact Block
MARN2/MACN2



Contactor 5hp @ 460V
MC1



Contactor 3hp @ 460V
MC0



Control Relay
MCR

Mini-Contactors (up to 5 HP) Product Number Selection Instructions

Pages 5-7 to 5-35 in this catalog include ordering and pricing information for the following product offerings, with **G0-10A1** discount schedule:

- Contactors, AC- or DC-controlled,
- Overload relays,
- Reversing contactors,
- Control relays,
- Accessories, including:
 - Contactor auxiliary contact adder blocks,
 - Control relay auxiliary contact adder blocks,
 - Overload relay auxiliary contact adder blocks,
 - Mechanical interlock,
 - Reverser power wiring kit,
 - Electronic timing element,
 - Mounting adapter for electronic timing element,
 - Surge suppressors.

Information includes product numbers, list prices, package quantities, and applicable rating data for proper selection.

1. Be sure to include coil suffix letter in product number where indicated for contactors, reversing contactors, and control relays.
2. For motor starter requirements, select the proper contactor and overload relay to meet your needs.
3. Order by complete product number. **Example:** For a 3.0 hp, 460 V, 3-phase, 60 Hertz motor with full-load amperes, AC-3 type duty current of 4.4 amperes and 120V control power... select open contactor with 120 V, 60 Hertz coil, MCOA310ATJ and overload relays MT03L. For an extra NO auxiliary contact on the overload, also order MATV10AT adder block.

MCOA310ATJ1	\$40.00 ea. G0-10A1
MT03L	\$40.00 ea. G0-10A1
MATV10AT	\$ 8.00 ea. G0-10A1

¹J was added to the end of the product number to get a 120 V coil.

4. Contactors and accessories are packaged in multiple quantities for handling convenience. Order in quantities of 10 whenever possible.

Additional Information

Field-Installed Accessories	pages 5-16
Technical Information	pages 5-32
Dimensions and Weights	pages 5-24



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Mini Contactors Product Descriptions

C-2000

Section 5

Full Voltage Mini Contactors - Nonreversing

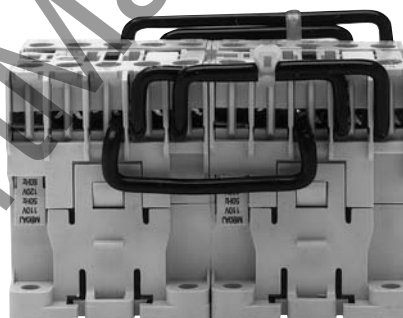
- Contactors are suitable for use on alternating current (ac) control circuits up to 600 volts and dc control circuits up to 240 volts.
- All terminals are dual marked in accordance to EN50012, and U.S. marking standards.
- Contactor may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two #8 screws in diagonal corners.
- Screw and quick-connect terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- Low-coil wattage requirement makes contactors ideal for most applications. 24 Vdc PLC interface versions are available. (See Special PLC-Compatible Products, page 5-15.)
- A wide range of accessories, including front-mounted auxiliary contact blocks, side-mounted auxiliary contact blocks, timer, and surge suppressors, are easily installed on contactors.



Nonreversing Mini Contactor

Full Voltage Mini Contactors - Reversing

- Reversing contactor configuration includes two 3-pole contactors, mechanical interlock, power wiring, with a 1NO or 1NC auxiliary contact on each contactor. An optional auxiliary contact block for each contactor may be required for holding interlock or cross electrical interlock, depending upon the control circuit. Side auxiliary NO contacts may be easily added in the field. These must be added as a separate item, when required.
- Reversing contactors are suitable for use on alternating current (ac) control circuits up to 600 volts, and dc control circuits up to 240 volts.
- All terminals are dual marked in accordance to EN50012, and U.S. marking standards.
- Reversing contactor may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two #8 screws in diagonal corners.
- Optional quick-connect type or PC board terminal configurations are available.
- Screw and quick-connect terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- A wide range of accessories are available.



Reversing Mini Contactor

Full Voltage Mini Contactors - PLC Compatible

Three-Pole—Low Coil Wattage Contactors

While the standard line of MCOC dc operated contactors requires only 3 watts coil holding current, some PLC applications require lower wattage coils to efficiently interface with the PLC. Special contactors are available with 24 VDC coils, which only require 1.2 or 2 watts for pull in and holding. These contactors are available with screw terminal configuration.

- All terminals are dual marked in accordance to EN50012, and U.S. marking standards.
- Contactor may be mounted on 35mm DIN rail EN50022-35, or may be panel mounted using two #8 screws in diagonal corners.
- Screw-type terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- Timer and surge suppressors are easily installed on contactors. A maximum of two auxiliary contacts are permissible on the 2 volt PLC version. Auxiliary contacts may not be utilized on the 1.2 watt version.

Reference Publications

Instructions

GEH-5475 MC Mini-Contactor/MT0 Thermal-Overload Relay, U.S. version.

GEH-5931 MC Mini-Contactor Global Instructions

GEH-5932 MT0 Thermal-Overload Relay Global Instructions

IEC Power Devices

Mini Contactors

C-2000

AC 3-Pole, Up to 600 VAC Coil

Nonreversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Section 5

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0A301AT*	\$40.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0A310AT*	\$40.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1A301AT*	\$44.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1A310AT*	\$44.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2A310AT*	\$51.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2A301AT*	\$51.00	6 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0A301AF*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0A310AF*	\$43.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1A301AF*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1A310AF*	\$47.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2A310AF*	\$54.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2A301AF*	\$54.00	6 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0A301AH*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0A310AH*	\$43.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1A301AH*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1A310AH*	\$47.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2A310AH*	\$54.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2A301AH*	\$54.00	6 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0A301AI*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0A310AI*	\$43.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1A301AI*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1A310AI*	\$47.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2A310AI*	\$54.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2A301AI*	\$54.00	6 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisk (*) in product number with coil product number suffix.)

Coil Voltage Selection

AC Coil Voltages									
Voltage	60 Hz	24	120	208	240-277	480	600		
	50 Hz	24	110		220	380	415	500	
Product Number Suffix		C	D	J	M	N	U	W	Y



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Mini Contactors

C-2000

AC 3-Pole, Up to 250 VDC Coil

Nonreversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Section 5

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0C301AT**	\$50.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0C310AT**	\$50.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1C301AT**	\$54.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1C310AT**	\$54.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2C310AT*	\$61.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2C301AT*	\$61.00	8 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0C301AF**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0C310AF**	\$53.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1C301AF**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1C310AF**	\$57.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2C310AF*	\$64.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2C301AF*	\$64.00	8 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0C301AH**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0C310AH**	\$53.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1C301AH**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1C310AH**	\$57.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2C310AH*	\$64.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2C301AH*	\$64.00	8 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	MC0C301A1**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	MC0C310A1**	\$53.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	MC1C301A1**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	MC1C310A1**	\$57.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NO	MC2C310A1*	\$64.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	1NC	MC2C301A1*	\$64.00	8 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisks (**)) in product number with coil product number suffix.)

Coil Voltage Selection

DC Coil Voltages					
Voltage	DC	12	24	48	125 250
Product Number Suffix		B	D	G	L S

Product Number Selection Instructions: See page 5-7

IEC Power Devices

Mini Contactors

C-2000

AC 4-Pole, Up to 600 VAC Coil

Nonreversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0A400AT*	\$40.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NC	MC0A400AT*	\$45.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0AB00AT*	\$44.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1A400AT*	\$44.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NC	MC1A400AT*	\$49.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1AB00AT*	\$48.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2A400AT*	\$56.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2AB00AT*	\$56.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NC	MC2AA00AT*	\$56.00	6 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0A400AF*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NC	MC0A400AF*	\$48.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0AB00AF*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1A400AF*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NC	MC1A400AF*	\$52.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1AB00AF*	\$51.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2A400AF*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2AB00AF*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NC	MC2AA00AF*	\$59.00	6 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0A400AH*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NC	MC0A400AH*	\$48.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0AB00AH*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1A400AH*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NC	MC1A400AH*	\$52.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1AB00AH*	\$51.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2A400AH*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2AB00AH*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NC	MC2AA00AH*	\$59.00	6 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0A400AI*	\$43.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NC	MC0A400AI*	\$48.00	6 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0AB00AI*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1A400AI*	\$47.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NC	MC1A400AI*	\$52.00	6 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1AB00AI*	\$51.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2A400AI*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2AB00AI*	\$59.00	6 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NC	MC2AA00AI*	\$59.00	6 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisk (*) in product number with coil product number suffix.)

Coil Voltage Selection

AC Coil Voltages							
Voltage	60 Hz	24	120	208	240-277	480	600
50 Hz		24	110		220	380	415
Product Number Suffix		C	D	J	M	N	U
							W
							Y



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Mini Contactors

C-2000

AC 4-Pole, Up to 250 VDC Coil

Nonreversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Section 5

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0C400AT**	\$50.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0CB00AT**	\$54.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1C400AT**	\$54.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1CB00AT**	\$58.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2C400AT*	\$65.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2CB00AT*	\$65.00	8 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0C400AF**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0CB00AF**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1C400AF**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1CB00AF**	\$61.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2C400AF*	\$68.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2CB00AF*	\$68.00	8 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0C400AH**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0CB00AH**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1C400AH**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1CB00AH**	\$61.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2C400AH*	\$68.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2CB00AH*	\$68.00	8 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	4NO	MC0C400AI**	\$53.00	8 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	2NO-2NC	MC0CB00AI**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	4NO	MC1C400AI**	\$57.00	8 oz.
9.0A	3	3	5	5	4	1/2	1.5	2NO-2NC	MC1CB00AI**	\$61.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	4NO	MC2C400AI*	\$68.00	8 oz.
12.0A	3	3	7.5	7.5	5.5	1/2	2.0	2NO-2NC	MC2CB00AI*	\$68.00	8 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisks (**) in product number with coil product number suffix.)

Coil Voltage Selection

DC Coil Voltages

Voltage	DC	12	24	48	125	250
Product Number Suffix		B	D	G	L	S

Product Number Selection Instructions: See page 5-7

IEC Power Devices

Mini Contactors

C-2000

AC 3-Pole, Up to 600 VAC Coil

Reversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLIE1T*	\$112.00	13 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLIE1U*	\$112.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLIE2T*	\$120.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLIE2U*	\$120.00	13 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLIE1E*	\$118.00	13 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLIE1F*	\$118.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLIE2E*	\$126.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLIE2F*	\$126.00	13 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLIE1G*	\$118.00	13 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLIE1H*	\$118.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLIE2G*	\$126.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLIE2H*	\$126.00	13 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLIE1I*	\$118.00	13 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLIE1J*	\$118.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLIE2I*	\$126.00	13 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLIE2J*	\$126.00	13 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisk (*) in product number with coil product number suffix.)

Coil Voltage Selection

AC Coil Voltages									
Voltage	60 Hz	24	120	208	240-277	480	600		
	50 Hz	24	110		220	380	415	500	
Product Number Suffix		C	D	J	M	N	U	W	Y



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Mini Contactors

C-2000

AC 3-Pole, Up to 250 VDC Coil

Reversing

Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Section 5

Standard Screw-Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLICE1T**	\$132.00	16 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLICE1U**	\$132.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLICE2T**	\$140.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLICE2U**	\$140.00	16 oz.

Faston (2 x 2.8 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLICE1E**	\$138.00	16 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLICE1F**	\$138.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLICE2E**	\$146.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLICE2F**	\$146.00	16 oz.

Faston (1 x 6.3 mm) Quick Connection Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLICE1G**	\$138.00	16 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLICE1H**	\$138.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLICE2G**	\$146.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLICE2H**	\$146.00	16 oz.

Printed Circuit Board Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Auxiliary Contacts	Product Number ¹	List Price GO-10A1	Approx. Weight Each
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	TLICE1I**	\$138.00	16 oz.
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	TLICE1J**	\$138.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NO	TLICE2I**	\$146.00	16 oz.
9.0A	3	3	5	5	4	1/2	1.5	1NC	TLICE2J**	\$146.00	16 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisks (**) in product number with coil product number suffix.)

Coil Voltage Selection

DC Coil Voltages

Voltage	DC	12	24	48	125	250
Product Number Suffix		B	D	G	L	S

Product Number Selection Instructions: See page 5-7

IEC Power Devices
Mini Contactors
C-2000
AC 3-Pole, Up to 24 VDC Coil
Nonreversing
Line Voltage - 600 VAC Maximum
HP Ratings AC-3 Duty

Section 5

24 VDC PLC Contactors Standard Screw Type Terminals

Maximum Current @ 460 V (A)	3-Phase HP @60 Hz, 200-208V	3-Phase HP, @60 Hz, 220-240V	3-Phase HP @60 Hz, 460-480V	3-Phase HP @60 Hz, 550-600V	kW @ 50 Hz, 380/415V	1-Phase HP @60 Hz, 115V	1-Phase HP @60 Hz, 230V	Contact Configuration	Coil Wattage	Product Number	List Price GO-10A1
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	1.2w	MC0I310ATD	\$50.00
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	1.2w	MC0I301ATD	\$50.00
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NO	2w	MC0K310ATD	\$50.00
6.0A	1.5	1.5	3	3	2.2	1/3	1	1NC	2w	MC0K301ATD	\$50.00
9.0A	3	3	5	5	4	1/2	1.5	1NO	1.2w	MC1I310ATD	\$54.00
9.0A	3	3	5	5	4	1/2	1.5	1NC	1.2w	MC1I301ATD	\$54.00
9.0A	3	3	5	5	4	1/2	1.5	1NO	2w	MC1K310ATD	\$54.00
9.0A	3	3	5	5	4	1/2	1.5	1NC	2w	MC1K301ATD	\$54.00

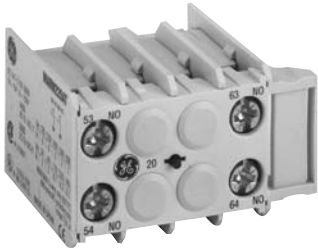
Minimum order is 140 pieces. Packaged in multiples of 10 units. Each product number represents one unit.
Select the Mini-Contactor product number that corresponds to the desired Contactor Rating.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices
Mini Contactors Accessories
C-2000
Contact Rating A600, Q300

Section 5



2-Pole Front-Mounted Auxiliary Contact
Block MARN2/MACN2

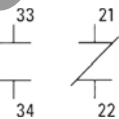


4-Pole Front-Mounted Auxiliary Contact
Block MARN4/MACN4

Contact Arrangement/
Terminal Numbers per EN 50005



MACN202AT

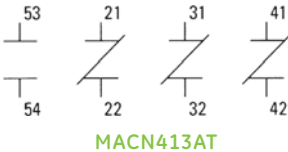


MACN211AT

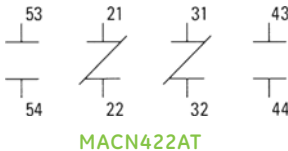
Front-Mounted Auxiliary Contact Blocks

Contact Configuration	For Use With	Product Number	List Price GO-10A1	Approx. Weight Each
2NC	Contactors	MACN202AT	\$12.00	1 oz.
1NO-1NC	Contactors	MACN211AT	\$12.00	1 oz.
1NO-3NC	Contactors	MACN413AT	\$22.00	2 oz.
2NO-2NC	Contactors	MACN422AT	\$22.00	2 oz.
3NO-1NC	Contactors	MACN431AT	\$22.00	2 oz.

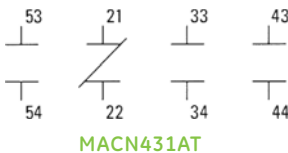
Packaged in multiples of 10 units. Each product number represents one unit.
Front-mounted contacts may be combined with side auxiliary contacts for a total maximum number of six added auxiliary contacts.



MACN413AT



MACN422AT



MACN431AT

IEC Power Devices

Mini Contactors Accessories

C-2000

Contact Rating A600, Q300

Section 5



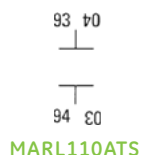
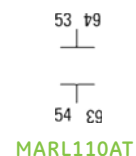
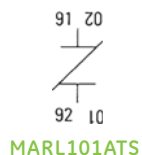
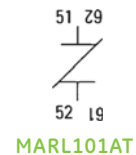
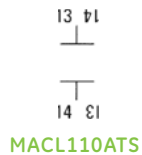
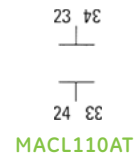
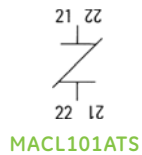
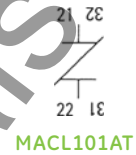
Side-Mounted Auxiliary Contact Block

Side-Mounted Auxiliary Contact Blocks

Contact Configuration	For Use With	Product Number	List Price GO-10A1	Approx. Weight Each
1NC	Contactors	MACL101AT	\$8.00	1 oz.
1NC	Reversers	MACL101ATS	\$8.00	1 oz.
1NO	Contactors	MACL110AT	\$8.00	1 oz.
1NO	Reversers	MACL110ATS	\$8.00	1 oz.
1NC	Not Used in Combination w/ Top Auxiliary	MARL101AT	\$8.00	1 oz.
1NC	In Combination w/ Top Auxiliary	MARL101ATS	\$8.00	1 oz.
1NO	Not Used in Combination with Top Auxiliary	MARL110AT	\$8.00	1 oz.
1NO	In Combination w/ Top Auxiliary	MARL110ATS	\$8.00	1 oz.

Packaged in multiples of 10 units. Each product number represents one unit.
For quick-connect version 2 x 2.8 mm, replace the "T" with an "F" and add \$2.00 (GO-10A1) to the list price.
Up to four side auxiliary contacts may be installed on contactors or relays with standard coils with a maximum of two contacts per side. Optimum performance is obtained when the contact configuration is balanced.
Side contacts may be combined with front-mount auxiliary contacts for a total maximum number of six added auxiliary contacts.

Contact Arrangement/ Terminal Numbers per EN 50005



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Mini Contactors Accessories

C-2000

Section 5

Mechanical Interlock

Used for field assembly of reversing contactors and starters. Kit contains operating lever and 2 keys for joining either AC or DC contactors.

Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (No. Per Set)
MMH0	\$8.00	0.1 oz.	10



Mechanical Interlock

Electronic Timer

Attaches either to the top or side of contactor or relay. Wired in series with the coil. May be used either with AC or DC coils. Timer operation range .5-60 seconds.

Coil Voltage	Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (No. Per Set)
24-240V	MREBC10AC2	\$75.00	2 oz.	10



Electronic Timer

Electronic Timer Base

Allows timer to be either DIN rail- or panel-mounted.

Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (No. Per Set)
MVB0R	\$10.00	0.2 oz.	10

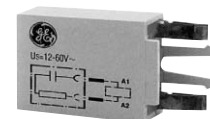


Electronic Timer Base

Surge Suppressor

Used to protect control circuits from voltage transients. Plugs into front of contactor, no external wiring required. RC type for AC and diode for DC.

Coil Voltage Range	Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (No. Per Set)
12-60V 50/60 Hz	MPOAAE1	\$16.00	0.5 oz.	10
72-240V 50/60 Hz	MPOAAE2	\$16.00	0.5 oz.	10
6-240 Vdc	MPOCAE3	\$16.00	0.5 oz.	10



Surge Suppressor

Power Conductors for Reversing Contactor

Used to parallel the input terminals and reverse output terminals of reversing contactors. Consists of six solid-formed wires.

Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (No. Per Set)
MVM01	\$16.00	0.5 oz.	10



Power Conductors

AC Replacement Coils for Contactors and Control Relays

Coil Voltage @ 60 Hz	Coil Voltage @ 50 Hz	Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (minimum/multiples) ¹
6	—	MBOAA	\$14.00	2 oz.	10
12	—	MBOAB	\$14.00	2 oz.	10
24	—	MBOAC	\$14.00	2 oz.	1
—	24	MBOAD	\$14.00	2 oz.	10
32	—	MBOAE	\$14.00	2 oz.	10
48	42	MBOAF	\$14.00	2 oz.	10
60	48	MBOAG	\$14.00	2 oz.	10
110	—	MBOAH	\$14.00	2 oz.	10
120	110	MBOAJ	\$14.00	2 oz.	1
—	115-127	MBOAK	\$14.00	2 oz.	10
208-220	—	MBOAM	\$14.00	2 oz.	1
240-277	220-230	MBOAN	\$14.00	2 oz.	1
—	260	MBOAS	\$14.00	2 oz.	10
380	—	MBOAT	\$14.00	2 oz.	10
440	380-400	MBOAU	\$14.00	2 oz.	1
480	415-440	MBOAW	\$14.00	2 oz.	1
600	500	MBOAY	\$14.00	2 oz.	1
12	12	MBOA10	\$14.00	2 oz.	10
24	24	MBOA1	\$14.00	2 oz.	10
42	42	MBOA2	\$14.00	2 oz.	10
110-115	110-115	MBOA3	\$14.00	2 oz.	10
120	120	MBOA4	\$14.00	2 oz.	10
220	220	MBOA5	\$14.00	2 oz.	10
230	230	MBOA6	\$14.00	2 oz.	10
240	240	MBOA7	\$14.00	2 oz.	10
440	440	MBOA8	\$14.00	2 oz.	10

DC Replacement Coils for Contactors and Control Relays

Coil Voltage @ 60 Hz	Coil Voltage @ 50 Hz	Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity (minimum/multiples) ¹
6	3	MBOCA	\$18.00	3 oz.	10
12	3	MBOCB	\$18.00	3 oz.	1
24	3	MBOCD	\$18.00	3 oz.	1
32	3	MBOCC	\$18.00	3 oz.	10
36	3	MBOCE	\$18.00	3 oz.	10
42	3	MBOCF	\$18.00	3 oz.	10
48	3	MBOCG	\$18.00	3 oz.	1
60	3	MBOCH	\$18.00	3 oz.	10
72	3	MBOCI	\$18.00	3 oz.	10
110	3	MBOCJ	\$18.00	3 oz.	10
120	3	MBOCK	\$18.00	3 oz.	10
125	3	MBOCL	\$18.00	3 oz.	1
220	3	MBOCN	\$18.00	3 oz.	10
240	3	MBOCR	\$18.00	3 oz.	10
250	3	MBOCS	\$18.00	3 oz.	1
15	1.2	MBOI9	\$18.00	3 oz.	10
24	1.2	MBOID	\$18.00	3 oz.	10
24	2	MBOKD	\$18.00	3 oz.	10

¹Coils listed in package quantities of 10 are available in minimum quantities of 10 and in multiples of 10.



IEC Power Devices

Mini Contactors Overload Relays

C-2000

Section 5

Overload Relays

Fixed Heater

C2000 overload relays provide motor overload protection through fixed bimetal heaters. These relays are ambient compensated and utilize a differential mechanism for single-phase sensitivity. The trip setting is adjustable for the range listed.

Overload relays may be set for 2 different operational modes—manual reset only or automatic reset only. Stop is initiated by pushing the red stop button.

- Class 10A trip
- Ambient temperature compensation
- Differential phase loss sensitivity
- Trip indication
- Manual trip test
- Stop button (red)
- Reset button (blue), two positions: manual (H) and automatic (A)
- Pre-wired coil and NC contact connection
- Auxiliary contact feed-through wire, to facilitate installation
- Direct mounting or panel mount with base

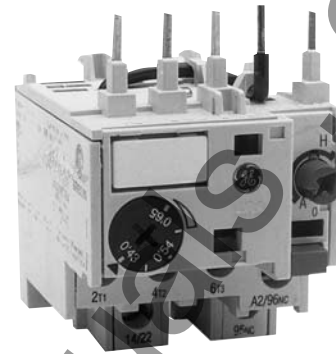
Reference Publications

Instructions

GEH-5475 MC Mini-Contactor/MT03 Thermal-Overload Relay. U.S. version.

GEH-5931 MC Mini-Contactor Global Instructions

GEH-5932 MT03 Thermal-Overload Relay Global Instructions



Mini Contactor Overload Relay

Overload Relays

Current Range Amps (min-max)	Maximum Fuse Rating HRC11	Maximum Fuse Rating K5	Product Number	List Price GO-10A1	Approx. Weight Each
0.11-0.17			MT03A	\$40.00	4 oz.
0.17-0.26			MT03B	\$40.00	4 oz.
0.26-0.43	2	1	MT03C	\$40.00	4 oz.
0.43-0.65	4	1	MT03D	\$40.00	4 oz.
0.65-1.0	6	3	MT03E	\$40.00	4 oz.
0.85-1.3	6	3	MT03F	\$40.00	4 oz.
1.1-1.6	10	6	MT03G	\$40.00	4 oz.
1.35-2.0	10	6	MT03H	\$40.00	4 oz.
1.7-2.4	16	6	MT03I	\$40.00	4 oz.
2.2-3.2	16	10	MT03J	\$40.00	4 oz.
3.0-4.7	16	15	MT03K	\$40.00	4 oz.
4.0-6.3	20	20	MT03L	\$40.00	4 oz.
5.5-8.0	25	30	MT03M	\$40.00	4 oz.
7.5-10.5	35	40	MT03N	\$40.00	4 oz.
10.0-14.0	50	50	MT03P	\$40.00	4 oz.

Fixed Heater With Differential Protection for Direct Mounting to Contactor. Packaged in multiples of 10 units. Each product number represents one unit.

Overload Relay Accessories

Type	Product Number	List Price GO-10A1	Approx. Weight Each	Packing Quantity ¹
Base for Separate Panel/Rail Mount of Overload Relay (Requires Power Input Terminals)	MVB0T	\$3.00	1 oz.	5
Power Input Terminals Used in Conjunction with Base	MVE0T	\$9.00	2 oz.	5
Instantaneous Auxiliary Contact Block for Relay, 1NO Contact	MATV10AT ²	\$8.00	1 oz.	10

¹Pack quantity multiples. Each product number represents one unit. May be ordered in quantities less than 10.

²Adder block may be used with manual operation only.



Base



Power Input Terminal



Instantaneous Auxiliary Contact Block



IEC Power Devices

Mini Control Relays Overview

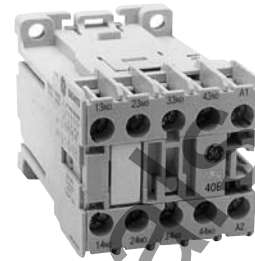
C-2000

Contact Rating A600, Q300

Section 5

Control Relays

- Relays are suitable for use on alternating current (ac) control circuits up to 600 volts, and dc control circuits up to 240 Volts.
- All terminals are marked in accordance to EN50011.
- Control relays may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two or four #8 screws in diagonal corners.
- Screw and quick-connect terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- Low-coil wattage requirement makes relay ideal for most applications. (24 Vdc PLC interface versions are available.)
- A wide range of accessories, including front-mounted auxiliary contact blocks, side-mounted auxiliary contact blocks, a timer, and surge suppressors, are easily installed on relays.



AC Operated Control Relay

PLC Compatible Control Relays

Low Coil Wattage Control Relays

While the standard line of MCRC dc operated relays requires only 3 watts coil holding current, some PLC applications require lower wattage coils to efficiently interface with the PLC. Special relays are available with 24 Vdc coils which only require 1.2 or 2 watts for pull in and holding. These relays are available with screw terminal configuration.

- All terminals are dual marked in accordance to EN50012, and U.S. marking standards.
- Relay may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two #8 screws in diagonal corners.
- Screw-type terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.

Reference Publications

Instructions

GEH-5475 MC Mini-Contactor/MT0 Thermal-Overload Relay, U.S. version

GEH-5931 MC Mini-Contactor Global Instructions

GEH-5932 MT0 Thermal-Overload Relay Global Instructions



IEC Power Devices

Mini Control Relays Selection

C-2000

Contact Rating A600, Q300

Section 5

AC Operated Control Relays

Contact Configuration	Mounting Type	Product Number ^{1,2}	List Price GO-10A1	Approx. Weight Each
4NO	Standard Screw	MCRA040AT*	\$38.00	6 oz.
4NO	2x2.8mm Faston	MCRA040AF*	\$41.00	6 oz.
4NO	1x6.3mm Faston	MCRA040AH*	\$41.00	6 oz.
4NO	PC Board	MCRA040AI*	\$41.00	6 oz.
3NO-1NC	Standard Screw	MCRA031AT*	\$38.00	6 oz.
3NO-1NC	2x2.8mm Faston	MCRA031AF*	\$41.00	6 oz.
3NO-1NC	1x6.3mm Faston	MCRA031AH*	\$41.00	6 oz.
3NO-1NC	PC Board	MCRA031AI*	\$41.00	6 oz.
2NO-2NC	Standard Screw	MCRA022AT*	\$38.00	6 oz.
2NO-2NC	2x2.8mm Faston	MCRA022AF*	\$41.00	6 oz.
2NO-2NC	1x6.3mm Faston	MCRA022AH*	\$41.00	6 oz.
2NO-2NC	PC Board	MCRA022AI*	\$41.00	6 oz.
1NO-3NC	Standard Screw	MCRA013AT*	\$38.00	6 oz.
1NO-3NC	2x2.8mm Faston	MCRA013AF*	\$41.00	6 oz.
1NO-3NC	1x6.3mm Faston	MCRA013AH*	\$41.00	6 oz.
1NO-3NC	PC Board	MCRA013AI*	\$41.00	6 oz.
4NC	Standard Screw	MCRA004AT*	\$38.00	6 oz.
4NC	2x2.8mm Faston	MCRA004AF*	\$41.00	6 oz.
4NC	1x6.3mm Faston	MCRA004AH*	\$41.00	6 oz.
4NC	PC Board	MCRA004AI*	\$41.00	6 oz.

¹Complete product number reference by replacing the "*" with the letter corresponding to the voltage and frequency of the control circuit.

²Packaged in multiples of 20 units. Each product number represents one unit.

(Replace asterisk (*) in product number with coil product number suffix.)

Coil Voltage Selection

AC Coil Voltages

Voltage	60 Hz	24	120	208	240-277	480	600
	50 Hz		110		220	380	500
Product Number Suffix		C	J	M	N	U	W

DC Operated Control Relays

Contact Configuration	Mounting Type	Product Number ^{2,3}	List Price GO-10A1	Approx. Weight Each
4NO	Standard Screw	MCRC040AT**	\$48.00	6 oz.
4NO	2x2.8mm Faston	MCRC040AF**	\$51.00	6 oz.
4NO	1x6.3mm Faston	MCRC040AH**	\$51.00	6 oz.
4NO	PC Board	MCRC040AI**	\$51.00	6 oz.
3NO-1NC	Standard Screw	MCRC031AT**	\$48.00	6 oz.
3NO-1NC	2x2.8mm Faston	MCRC031AF**	\$51.00	6 oz.
3NO-1NC	1x6.3mm Faston	MCRC031AH**	\$51.00	6 oz.
3NO-1NC	PC Board	MCRC031AI**	\$51.00	6 oz.
2NO-2NC	Standard Screw	MCRC022AT**	\$48.00	6 oz.
2NO-2NC	2x2.8mm Faston	MCRC022AF**	\$51.00	6 oz.
2NO-2NC	1x6.3mm Faston	MCRC022AH**	\$51.00	6 oz.
2NO-2NC	PC Board	MCRC022AI**	\$51.00	6 oz.

²Packaged in multiples of 20 units. Each product number represents one unit.

³Complete product number reference by replacing the "**" with the letter corresponding to the voltage and frequency of the control circuit.

(Replace asterisks (**) in product number with coil product number suffix.)

Coil Voltage Selection

DC Coil Voltages

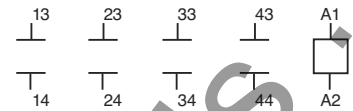
Voltage	DC	12	24	48	125	250
Product Number Suffix		B	D	G	L	S

PLC Control Relays—Standard Screw Type Terminals

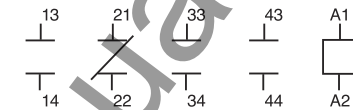
Contact Configuration	Coil Voltage	Coil Wattage	Product Number	List Price GO-10A1
2NO-2NC	24 VDC	1.2w	MCRI022ATD	\$48.00
3NO-1NC	24 VDC	1.2w	MCRI031ATD	\$48.00
4 NO	24 VDC	1.2w	MCRI040ATD	\$48.00
2NO-2NC	24 VDC	2w	MCRK022ATD	\$48.00
3NO-1NC	24 VDC	2w	MCRK031ATD	\$48.00
4NO	24 VDC	2w	MCRK040ATD	\$48.00

Minimum order is 140 pieces. Packaged in multiples of 10 units. Each product number represents one unit.

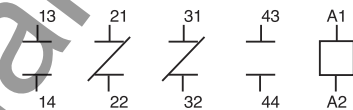
Contact Arrangement/ Terminal Numbers per EN 50011



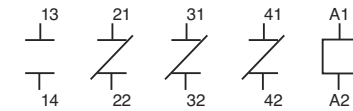
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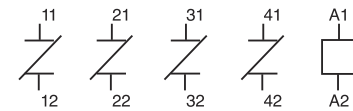
3 NO - 1 NC



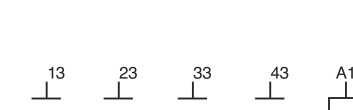
2 NO - 2 NC



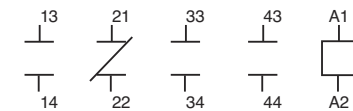
1 NO - 3 NC



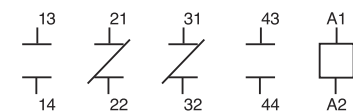
4 NC



4 NO



3 NO - 1 NC



2 NO - 2 NC



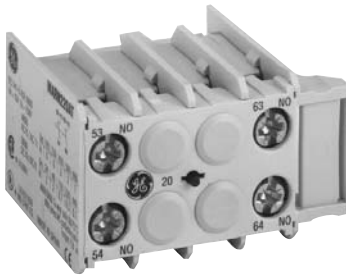
IEC Power Devices

Mini Control Relays Accessories

C-2000

Contact Rating A600, Q300

Section 5



2-Pole Front-Mounted Auxiliary Contact Block MARN2/MACN2



4-Pole Front-Mounted Auxiliary Contact Block MARN4/MACN4

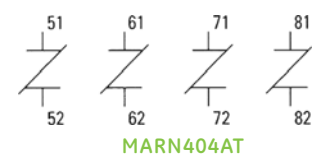
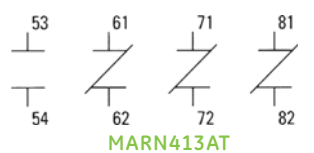
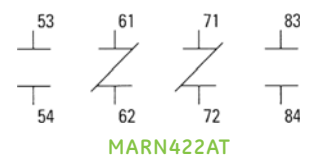
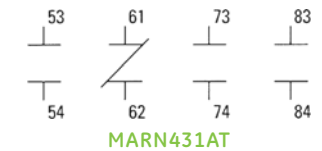
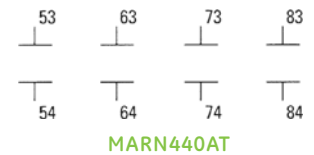
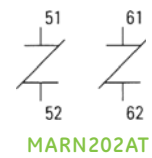
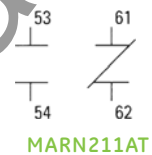
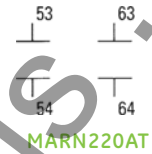
Front-Mounted Auxiliary Contact Blocks

Contact Configuration	For Use With	Product Number	List Price GO-10A1	Approx. Weight Each
2NO	Relays	MARN220AT	\$12.00	1 oz.
1NO-1NC	Relays	MARN211AT	\$12.00	1 oz.
2NC	Relays	MARN202AT	\$12.00	1 oz.
4NO	Relays	MARN440AT	\$22.00	2 oz.
3NO-1NC	Relays	MARN431AT	\$22.00	2 oz.
2NO-2NC	Relays	MARN422AT	\$22.00	2 oz.
1NO-3NC	Relays	MARN413AT	\$22.00	2 oz.
4NC	Relays	MARN404AT	\$22.00	2 oz.

Packaged in multiples of 10 units. Each product number represents one unit.

Front-mounted contacts may be combined with side auxiliary contacts for a total maximum number of six added auxiliary contacts.

Contact Arrangement/
Terminal Numbers per EN 50005



Outlines and Dimensions (in mm) For Estimating Only

ion 5

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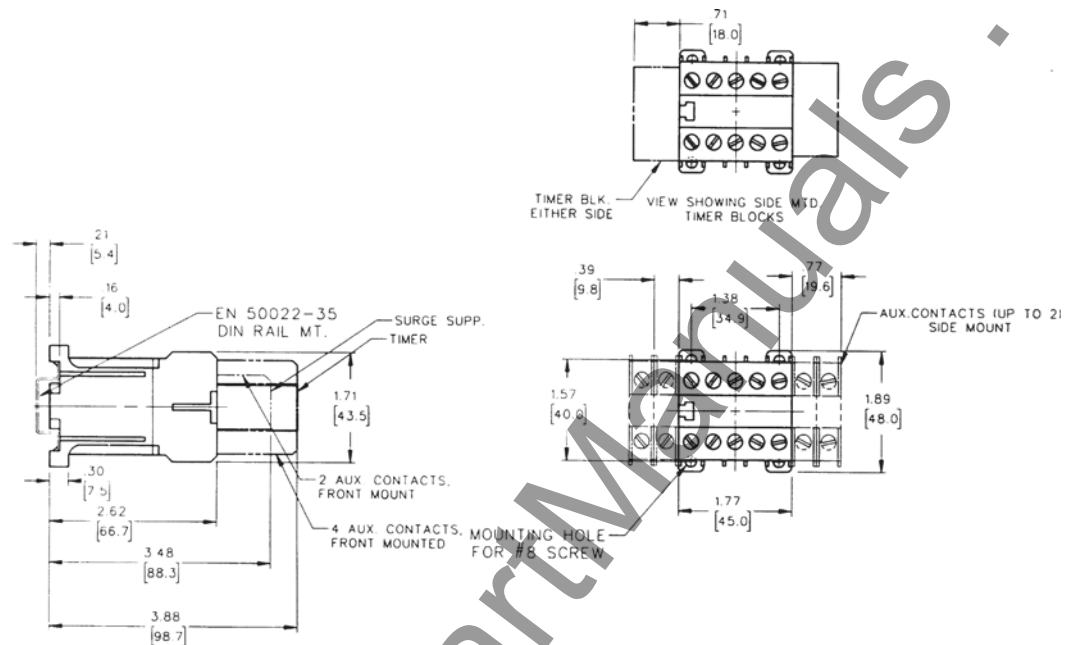
IEC Power Devices

Mini Contactors Dimensions

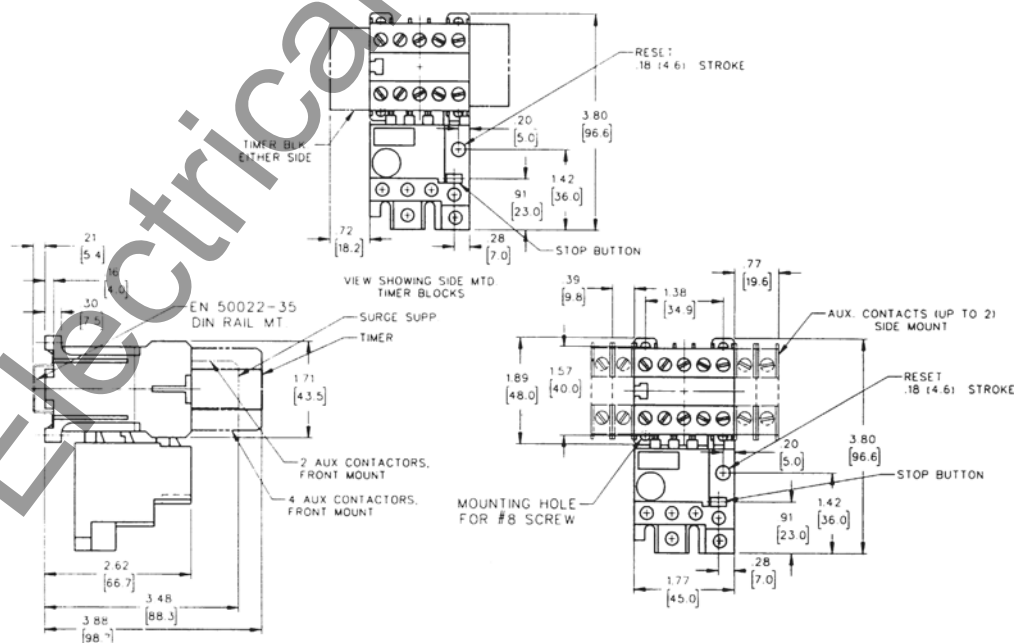
C-2000

Outlines and Dimensions (mm) For Estimating Only

Section 5



Open-Type, DC-Controlled Contactors and Control Relays, STD and Quick-Connect Terminal



Open-Type, DC-Controlled Starter, STD and Quick-Connect Terminal



Publications and Reference: See Section 17 for a complete list of additional product-related publications

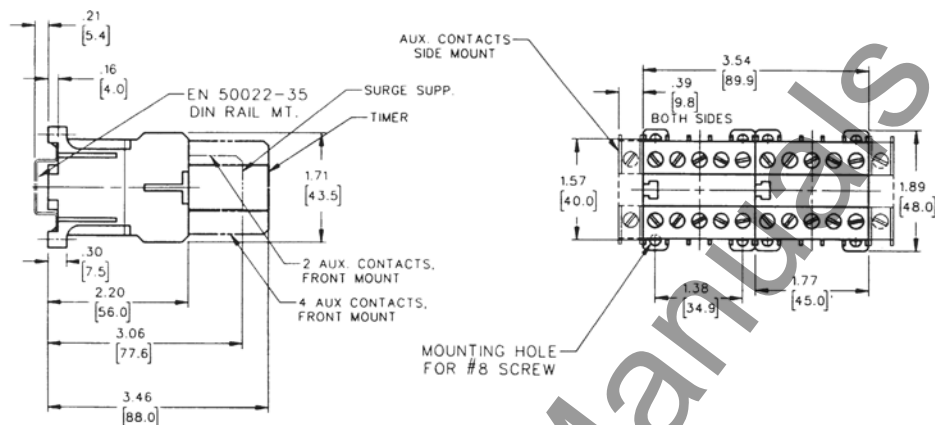
IEC Power Devices

Mini Contactors Dimensions

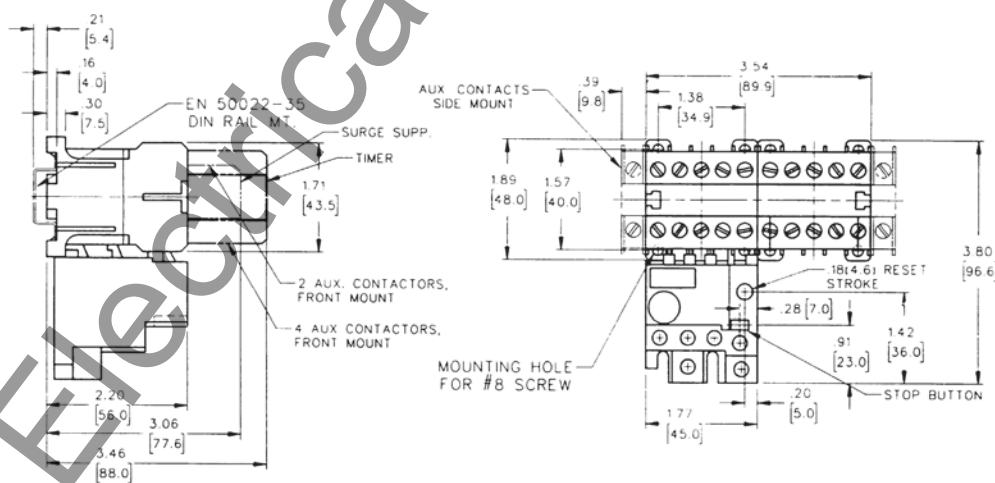
C-2000

Outlines and Dimensions (mm) For Estimating Only

Section 5



Open-Type, AC-Controlled Reversing Contactors, STD and Quick-Connect Terminal



Open-Type, AC-Controlled Reversing Starter, STD and Quick-Connect Terminal

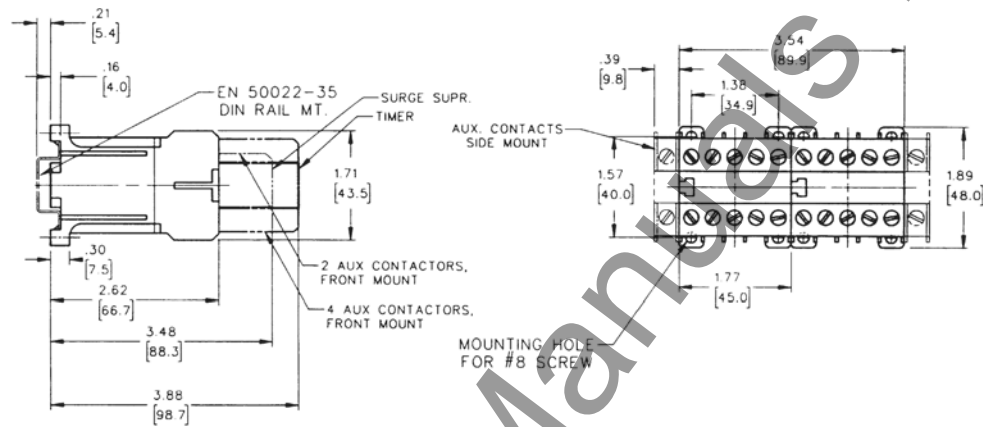
IEC Power Devices

Mini Contactors Dimensions

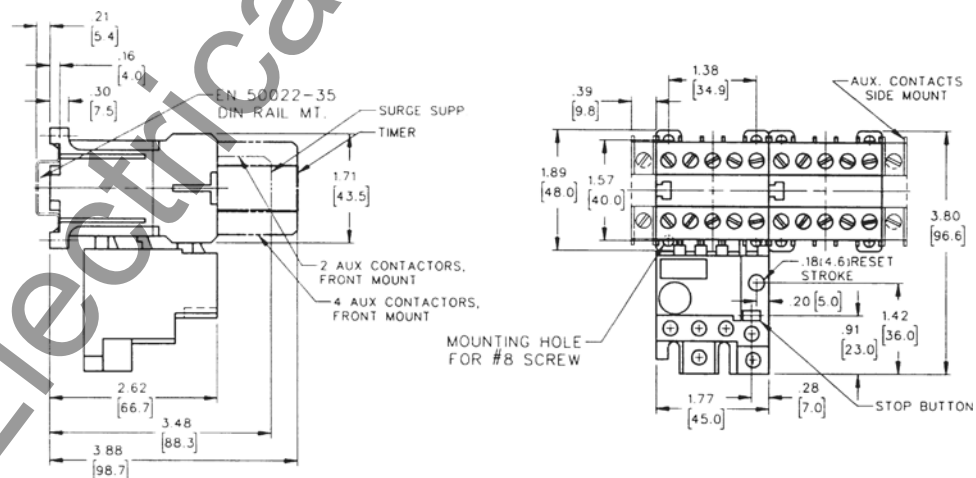
C-2000

Outlines and Dimensions (in mm) For Estimating Only

Section 5



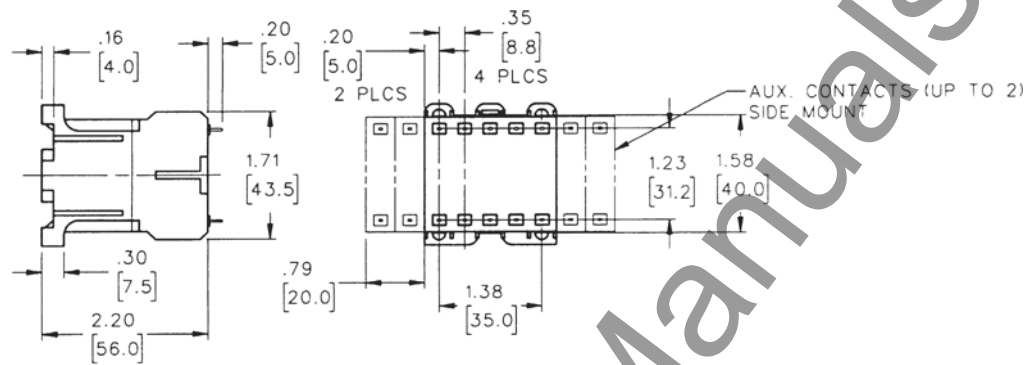
Open-Type, DC-Controlled Reversing Contactors, STD and Quick-Connect Terminal



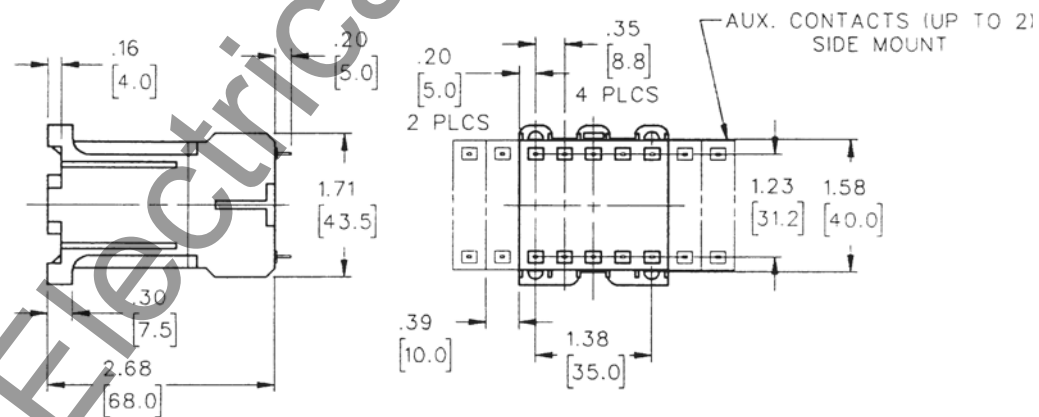
Open-Type, DC-Controlled Reversing Starter, STD and Quick-Connect Terminal



Publications and Reference: See Section 17 for a complete list of additional product-related publications



Open-Type, AC-Controlled Contactors and Control Relays, PC Board Terminals



Open-Type, DC-Controlled Contactors and Control Relays, PC Board Terminals

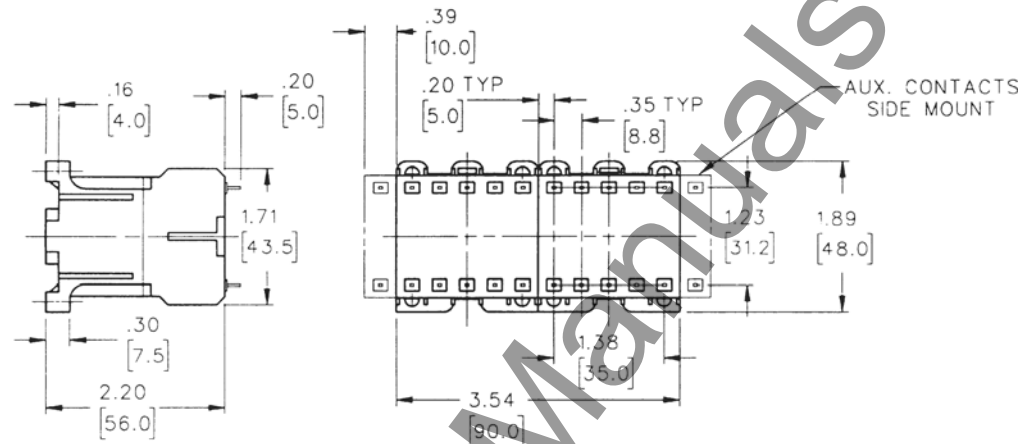
IEC Power Devices

Mini Contactors Dimensions

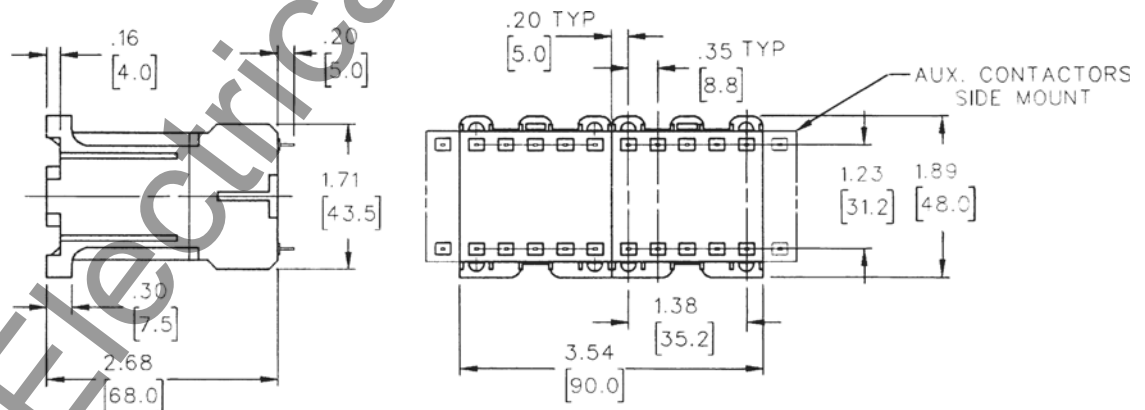
C-2000

Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5



Open-Type, AC-Controlled Reversing Contactors, PC Board Terminals



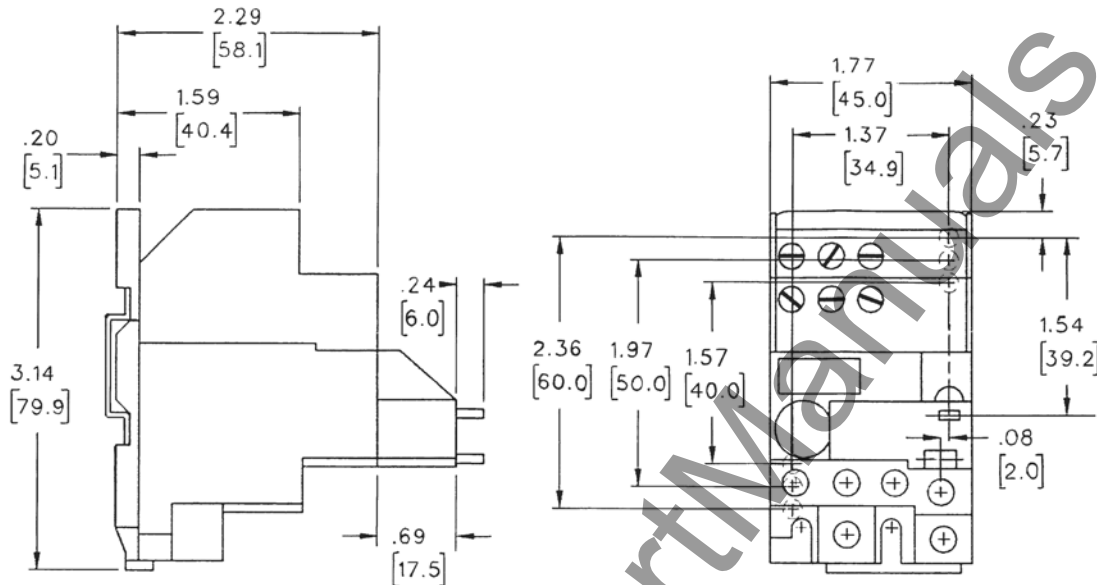
Open-Type, DC-Controlled Reversing Contactors, PC Board Terminals



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices
Mini Contactors Dimensions
C-2000
Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5



Panel-Mount Overload Relay

Standards and Listings

International Certification Marks: In addition to stating the product number, the contactor nameplate also lists the international certification marks. All contactors, control relays, overload relays, and accessories are UL listed and CSA Certified.

Contactors and relays also conform to International Standards:

- UL listed (Underwriters Laboratories, U.S. -UL 508, cUL);
- CE Mark;
- IEC 947-1,4 (International Electrotechnical Commission);
- BS 5424 (British Standards, UK);
- VDE 0660 (Verband Deutscher Elektotechniker, Federal Republic of Germany);
- (S) (SEV, Switzerland-SEV 10254);
- (D) (DEMCO, Denmark);
- (N) (NEMCO, Norway);
- (FI) (SETI, Finland);

plus other specifications approvals...

- CEI 17-3, 17-7 (Comitato Elettrotecnico Italiano, Italy);
- Bureau Veritas, France;
- SEMKO, Sweden.

Operating Characteristics/Technical Data: Contactors and Control Relays

Ambient Conditions

Operating Temperature	-20 to +55°C (-4 to +131°F)
Storage Temperature	-30 to +80°C (-22 to +176°F)

Altitude

Derating Up to 10,000 ft. (3,000 m)	Rated current
Derating 10,000 to 13,200 ft. (3,000 to 4,000 m)	.9 x's rated current
Derating 13,200 to 16,000 ft. (4,000 to 5,000 m)	.8 x's rated current

Shock Resistance (All Axis)

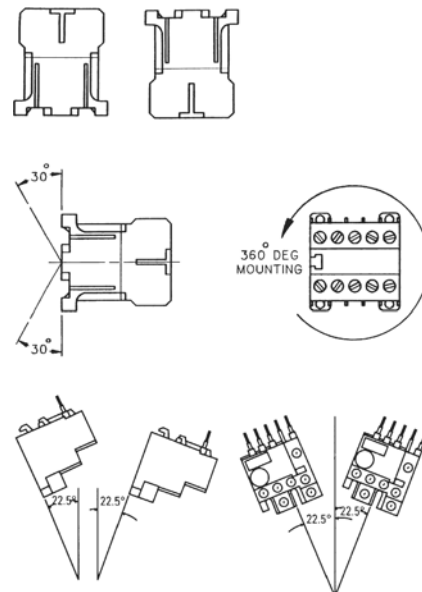
Closed 80% voltage - Admissible accel.	30g
Closed 80% voltage - Impulse duration	11 ms
Open no voltage - Admissible acceleration	10g
Open no voltage - Impulse duration	11 ms

Vibration Resistance

Closed 80% voltage-Admissible accel.	10g
Closed 80% voltage - Sweep between	10-200 hz
Open No voltage-Admissible accel.	5g
Open No voltage - Impulse duration	10-200 hz

Terminal Capacity

Screw Terminal Wire size	(2) #14-18 AWG max.
Screw Terminal Wire temperature class	60°C/75°C wire
Quick connect (Faston 2.8mm) Wire size	(2) 1mm ²
Quick connect (Faston 2.8mm) Max. thermal current	8 amps
Printed circuit terminal - Hole size	1.8mm
Tightening Torque	7 inch lbs.



Operating Position



Main Contacts Data - Contactors

Rated insulation voltage (IEC 947-1)	660V
Rated thermal current (UL 508)	16 amps
Frequency limits	25-400 Hz
Impedance per pole	1.76 m ohm
Power dissipation AC-1	0.7 W
Power dissipation AC-3	.13W
Insulation resistance	>10 m ohm
No overlap between NO and NC contacts - Space	1mm
No overlap between NO and NC contacts - Time	>2ms

Main Contacts Data - Control Relays

Rated insulation voltage (IEC 947-1)	660V
Rated thermal current (UL 508)	10 amps
Contact Rating	A600, Q600
Frequency limits	25-400 Hz
Impedance per pole	2.4 m ohm
No overlap between NO and NC contacts - Space	1.1mm
No overlap between NO and NC contacts - Time	>2ms

Instantaneous Auxiliary Contact Data

Rated insulation voltage (IEC 947-1)	660V
Rated thermal current (UL 508)	10 amps
Contact Rating	A600, Q600
Frequency limits	25-400 Hz
Impedance per pole	2.4 m ohm
Insulation resistance	>10 m ohm
No overlap between NO and NC contacts - Space	1mm
No overlap between NO and NC contacts - Time	>2ms

Overload Relay Auxiliary Contact Data

Rated insulation voltage (IEC 947-1)	660V
Rated thermal current (UL 508)	6 amps
Contact Rating	B600, R300
Frequency limits	25-400 Hz

Control Circuit Ratings

120 Vac, 125 Vdc

Time	Rating	Carry Continuous	Make Momentary	Break Amperes
		Amperes	Amperes	
A600	AC	10	60	6
B600	AC	5	30	3
Q600	DC	2.5	0.55	0.55
R300	DC	1.0	0.22	0.22

For other voltages, reference NEMA ICS 3-125 or contact your nearest GE Consumer & Industrial Representative.

Control Circuit Data: Pickup/Dropout % Coil Voltage

Type Coil	Pick-up	Drop-out
AC Controlled	80%-110%	35%-55%
DC Controlled	80%-110%	20%-40%
PLC interface (1.2w)	80%-125%	20%-30%
PLC interface (2w)	70%-125%	20%-35%

Opening/Closing Time

Type Coil	Voltage	Making (on Energization) (ms)		Breaking (on De-energization) (ms)	
		NO Contact	NC Contact	NO Contact	NC Contact
AC Controlled (ms)	+10-15%	6-13	8-16	5-11	6-13
	Nominal	7-12	8-16	6-10	6-13
DC Controlled (ms)	+10-15%	22-36	9-12	18-27	5-7
	Nominal	24-27	9-11	20-26	5-8
PLC Interface (1.2w) (ms)	+25-20%	30-70	9-16	20-45	5-9
	Nominal	25-45	9-16	25-35	5-9
PLC Interface (2w) (ms)	+25-30%	20-50	9-16	18-35	5-9
	Nominal	25-40	9-16	20-30	5-9

Maximum Operating Rate

	Operations per Hour
No load	9000 OPS/H
AC1 and AC3 at rated power	1200 OPS/H
AC4 at rated power	300 OPS/H

Coil Consumption

Type Coil	Pick-up (Watts)	Pick-up (VA)	Holding (Watts)	Holding (VA)	Power Dissipation (Watts)
AC Controlled		26		4	1.4
DC Controlled	3		3		
PLC Interface (1.2w)	1.2		1.2		
PLC Interface (2w)	2		2		

Operating Characteristics/Technical Data: Electronic Timer

For use with all AC- and DC-controlled mini contactors and control relays.

Time Setting	0.5-60 seconds (adjustable)
Reset Time	<100 milliseconds
Repeatability	± 1 percent
Voltage Range (AC/DC)	24-240V
Voltage Operating Limits	80-110%
Ambient Operating Temperature	-20°C to +55°C (-4°F to +131°F)
Ambient Storage Temperature	-30°C to +80°C (-22°F to +176°F)
Voltage Drop	3 volts maximum
Load Current	10 mA minimum
Load (maximum) @ 20° C	.9 amps
Load (maximum) @ 40° C	.72 amps
Load (maximum) @ 60° C	.55 amps
Leakage Current	<5mA@240 volts

Performance Characteristics

Contactor Electrical Life Utilization Categories

Utilization categories are used to describe the type of motor load and duty cycle. Life/Load curves are then used to estimate electrical life of a specific controller.

The most common utilization categories are described below. (Each category has full-load current ratings defined to meet IEC standard requirements.)

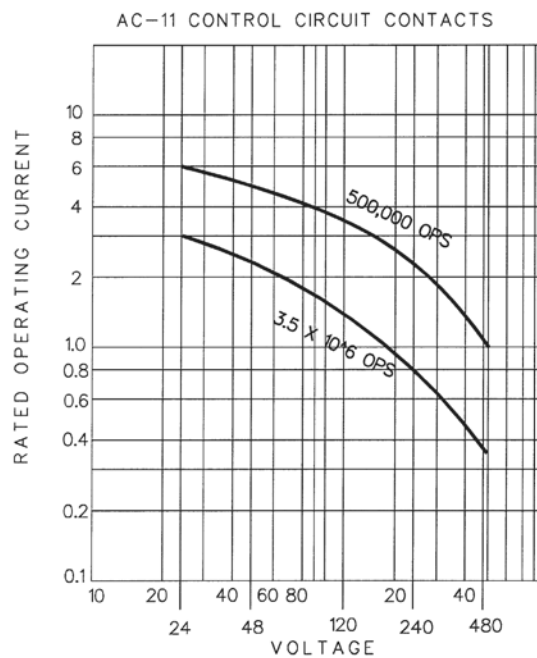
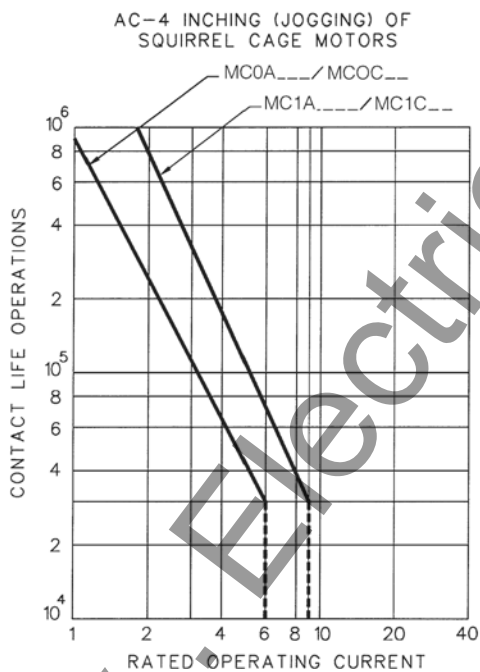
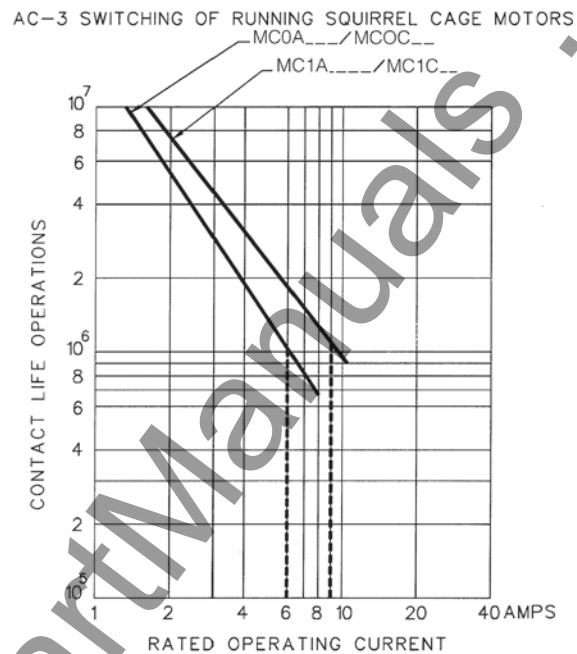
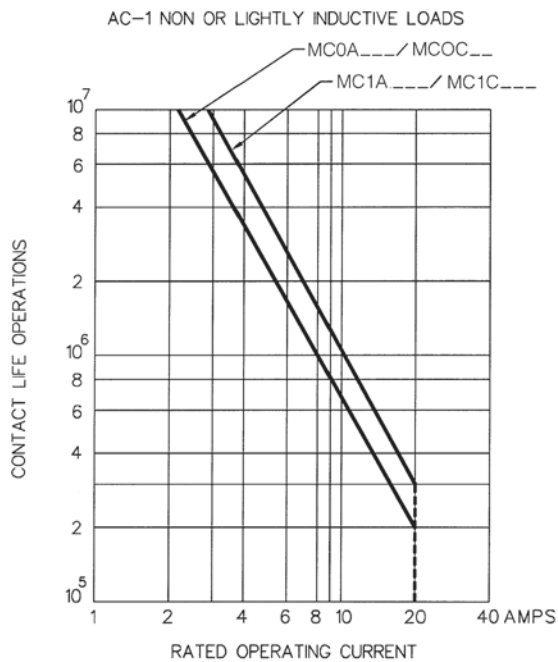
- AC-1-noninductive or slightly inductive loads, e.g., resistance furnaces.
- AC-2-starting of slip ring motors without plugging.
- AC-3-starting and stopping of squirrel-cage motors, i.e., this utilization category is typical of the standard type of motor duty encountered in most industrial applications.
- AC-4-starting of squirrel-cage motors in inching, plugging, and reversing applications, i.e., this means continuous inching, plugging, and reversing.
- AC-11-control circuit contact characteristics.

Life/Load Curves

Life/Load curves are used to estimate contact electrical life (millions of operations), based on rated operating current.

First, determine the appropriate utilization category for which the contactor will be used. Select appropriate mini-contactor, based on motor horsepower, voltage, and full-load current to meet application needs. Estimated contact life (millions of operations) can then be determined by locating the point of intersection on the appropriate contactor curve of the rated operating current and contact life axes. (Curves are valid for up to 600 volt, 600 Hz operation.)





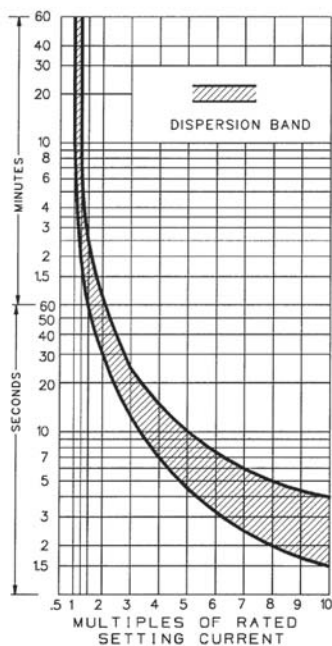
IEC Power Devices

Mini Contactors Application Information

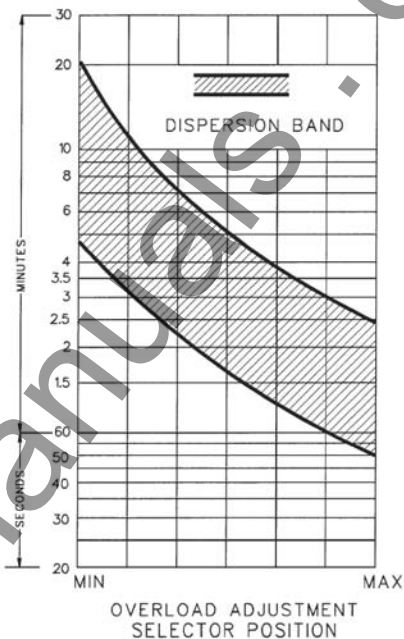
C-2000

Overload Relay Performance Curves

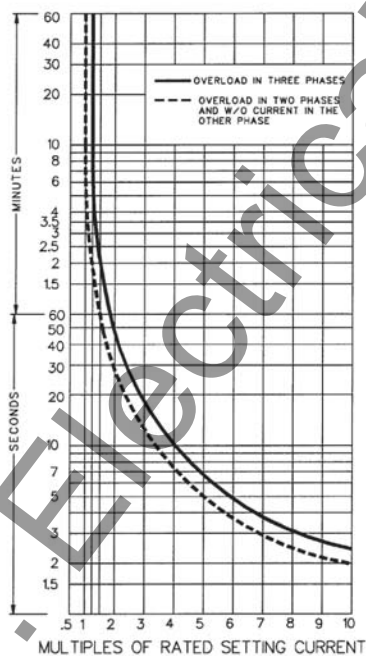
Section 5



- Typical overload relay time-current trip curve
- Balanced 3 phase from cold state



- Phase failure differential tripping from warm state (IEC292-1,2)
- Two phases with 1.32 x current setting, third phase without current



- Typical overload relay
- Tripping curve from cold state
- Average values



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

Contactors & Starters Introduction

C-2000

Section 5

Broad Line

A wide array of contactors, relays, accessories, enclosures, and assembled starters give you greater design versatility.

Broad Features

C-2000 Control components are loaded with features that make them easier to install, allow more flexible configurations, lower inventory requirements, and make better use of panel space. And their performance is second to none.

Broad Applications

C-2000 components conform to international standards (UL, CSA, and IEC-947) and have dual (U.S./European) markings to ensure global acceptance. A single nomenclature system allows simple sourcing worldwide. AC coils (both 50 Hz and 60 Hz versions) and DC coils are available for a wide range of voltages for flexibility.

For more information, refer to these other publications:

DEA-016	Promotional Brochure
DEP-070	Selection Guide
DET-034	Technical Information



IEC Power Devices

Contactors & Starters Selection Instructions

C-2000

Section 5

Your Choice: Components or Assembled Forms

The C-2000 Starters & Contactors line offers ordering flexibility—individual components can be purchased, as well as assembled forms. Below are detailed instructions for ordering individual components—contactors, overloads, control relays, and accessories. For instructions on ordering assembled forms, please refer to pages 5-89 through 5-104.

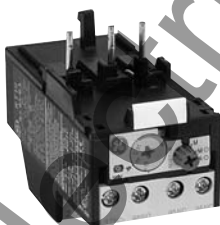


Contactors

When the phase, horsepower, voltage, frequency, and full-load amps have been established (assuming AC-3 motor duty category¹), use the following steps as a guide to ordering:

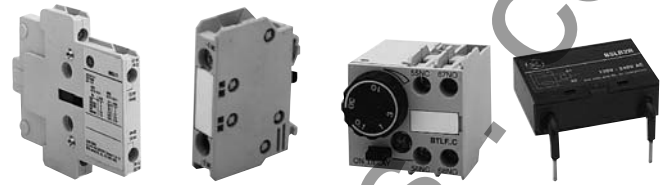
- Step 1. Refer to contactor selection tables on pages 5-38 to 5-43. Select the correct table based upon number of poles (3 or 4), nonreversing or reversing, and coil operation (ac or dc).
- Step 2. Using the above motor characteristics, select the appropriate contactor product number.
- Step 3. Select correct coil suffix digit or letter from corresponding **Coil Selection** table.
- Step 4. To complete product number, replace asterisk (*) or crosshatch (#) with the selected coil suffix.

¹If the motor duty is other than category AC-3, refer to the application life curves on pages 5-72 to 5-74 for selection of contactor.



Overload Relays

- Step 1. Using the Overload Relay selection tables on pages 5-54 to 5-56, select the correct Overload Relay based on the following criteria:
 - Manual/Automatic with/without Stop or Manual Only
 - Class 10, 20, or Class 30
 - Contactor frame size
 - Motor full-load amps (Select the overload in which the motor FLA falls within the overload current range.)
- Step 2. Select necessary accessories from the Accessories section, page 5-57.



Accessories

Select any required accessories from the Accessories section, pages 5-44 to 5-50.



Enclosures

For field installation of an enclosed contactor or starter, select the proper enclosure from the Enclosures section (pages 5-51 to 5-52) based on the following criteria:

- Type of enclosure: NEMA 1, NEMA 12/3R, or NEMA 4
- Contactor frame size



Control Relays

- Step 1. Select control relay from selection table on page 5-63. Selection is based upon:
 - Contact arrangement (number of normally open and normally closed contacts)
 - AC or DC coil controlled
- Step 2. Select correct coil suffix symbol from corresponding **Coil Selection** table.
- Step 3. To complete product number, replace asterisk (*) with the selected coil suffix.
- Step 4. Select control relay accessories from Control Relay Accessories section on pages 5-64 to 5-66.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactors

C-2000

Nonreversing and Reversing

AC Controlled, 3-Pole

HP Ratings AC-3 Duty

Section 5



5-75 Hp (460V) Nonreversing Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	CL00A310T*	\$86.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	CL01A310T*	\$109.00
17.5A	1	3	5	5	10	15	7.5	1NO	CL02A310T*	\$124.00
22A	1.5	3	5	7.5	15	15	11	1NO	CL25A310T* ²	\$138.00
32A	2	5	10	10	20	25	16	1NO	CL04A310M*	\$157.00
34A	3	5	10	10	25	25	18.5	1NO	CL45A310M* ²	\$173.00
48A	3	7.5	15	15	30	40	22	1NO-1NC	CL06A311M* ³	\$200.00
62A	5	10	20	20	40	50	30	1NO-1NC	CL07A311M* ³	\$240.00
68A	5	15	20	25	50	60	37	1NO-1NC	CL08A311M* ³	\$295.00
80A	7.5	15	25	30	60	75	45	1NO-1NC	CL09A311M* ³	\$333.00
96A	10	20	30	40	75	75	55	1NO-1NC	CL10A311M* ³	\$475.00

¹To complete the contactor product number, replace * in the product number with the appropriate digit from the Coil Selection table.

²A 1NO front mounted auxiliary contact block is supplied (unassembled) with contactors that begin with CL25 and CL45. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), add **\$11.00 GO-10C2** to list price (example: **CL45A310MJS**, list price **\$173.00 + \$11.00 = \$184.00 GO-10C2**).

³A 1NO and 1NC front-mounted auxiliary contact block are supplied (unassembled) with contactors that begin with CL06, CL07, CL08, CL09, and CL10. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), no addition in price adder.

5-10 Hp (460V) Nonreversing with Ring Terminal Capacity

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	CL00A310R*	\$94.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	CL01A310R*	\$117.00
17.5A	1	3	5	5	10	15	7.5	1NO	CL02A310R*	\$132.00

¹To complete the contactor product number, replace * in the product number with the appropriate digit from the Coil Selection table.

5-75 Hp (460V) Reversing Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	LAR00A*	\$247.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	LAR01A*	\$293.00
17.5A	1	3	5	5	10	15	7.5	1NO	LAR02A*	\$323.00
22A	1.5	3	5	7.5	15	15	11	1NO	LAR25A* ⁴	\$351.00
32A	2	5	10	10	20	25	16	1NO	LAR04A*	\$419.00
34A	3	5	10	10	25	25	18.5	1NO	LAR45A* ⁴	\$451.00
48A	3	7.5	15	15	30	40	22	1NO-1NC	LAR06A* ⁵	\$545.00
62A	5	10	20	20	40	50	30	1NO-1NC	LAR07A* ⁵	\$625.00
68A	5	15	20	25	50	60	37	1NO-1NC	LAR08A* ⁵	\$735.00
80A	7.5	15	25	30	60	75	45	1NO-1NC	LAR09A* ⁵	\$861.00
96A	10	20	30	40	75	75	55	1NO-1NC	LAR10A* ⁵	\$1145.00

¹To complete the contactor product number, replace * in the product number with the appropriate digit from the Coil Selection table.

⁴Reversing contactors with prefixes LAR25 and LAR45 supplied with 1NO front-mounted holding interlock mounted on each contactor. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), add **\$22.00 GO-10C2** to list price (example: **LAR25AJS**, list price **\$351.00 + \$22.00 = \$373.00 GO-10C2**).

⁵Reversing contactors with prefixes LAR06, LAR07, LAR08, LAR09, and LAR10 supplied with 1NO and 1NC front-mounted auxiliary on each contactor. Add suffix "S" to product number for 1NO-1NC side auxiliary, no additional price adder.

(Replace asterisk (*) in product number with appropriate digit from table below.)

Coil Selection Table

AC Voltage 60 Hz	50 Hz	*Coil Suffix
24	24	1
48	42	F
120	110	J
208	—	L
277	220/230	N
240	—	S
480	380/400	U
—	415	W
600	500	Y

Note: Additional coils available, see page 5-50

Product Number Selection Instructions: See page 5-37

5-25 Hp (460V) Nonreversing Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	CL00D310T#	\$109.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	CL01D310T#	\$133.00
17.5A	1	3	5	5	10	15	7.5	1NO	CL02D310T#	\$147.00
22A	1.5	3	5	7.5	15	15	11	1NO	CL25D310T# ²	\$166.00
32A	2	5	10	10	20	25	16	1NO	CL04D310M#	\$195.00
34A	3	5	10	10	25	25	18.5	1NO	CL45D310M# ²	\$252.00

¹To complete the contactor product number, replace the # in the product number with the appropriate digit from the Coil Selection table.

²A 1NO front mounted auxiliary contact block is supplied (unassembled) with contactors that begin with CL25 and CL45. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), add \$11.00 GO-10C2 to list price (example: CL45D310MKS, list price \$252.00 + \$11.00 = \$263.00 GO-10C2).

5-10 Hp (460V) Nonreversing with Ring Terminal Capacity

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	CL00D310R#	\$117.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	CL01D310R#	\$141.00
17.5A	1	3	5	5	10	15	7.5	1NO	CL02D310R#	\$155.00

¹To complete the contactor product number, replace the # in the product number with the appropriate digit from the Coil Selection table.

5-25 Hp (460V) Reversing³ Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
10A	0.5	1.5	3	3	5	7.5	4	1NO	LDR00A#	\$290.00
13.8A	0.75	2	3	3	7.5	10	5.5	1NO	LDR01A#	\$337.00
17.5A	1	3	5	5	10	15	7.5	1NO	LDR02A#	\$366.00
22A	1.5	3	5	7.5	15	15	11	1NO	LDR25A# ⁴	\$399.00
32A	2	5	10	10	20	25	16	1NO	LDR04A#	\$495.00
34A	3	5	10	10	25	25	18.5	1NO	LDR45A# ⁴	\$609.00

¹To complete the contactor product number, replace the # in the product number with the appropriate digit from the Coil Selection table.

³Reversing contactor consists of two (2) contactors, a mechanical interlock (BEL02) with built-in NC cross electrical contact, power wiring and cross electrical wiring and holding interlock.

⁴Reversing contactors with prefixes LDR25A and LDR45A supplied with 1NO front-mounted holding interlock mounted on each contactor. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), add \$22.00 GO-10C2 to list price (example: LDR25AKS, list price \$399.00 + \$22.00 = \$421.00 GO-10C2).

(Replace crosshatch (#) in product number with appropriate digit from table below.)

Coil Selection Table

(CL00, CL01, CL02, CL25, CL04, CL45)

DC Voltage	#Coil Suffix
12	B
24	D
48	G
125	K
250	T

Note: Additional coils available, see page 5-50.



IEC Power Devices

IEC Contactors

C-2000

Nonreversing and Reversing

AC/DC Controlled, 3-Pole

HP Ratings AC-3 Duty

Section 5

30-75 Hp (460V) Nonreversing Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
48A	3	7.5	15	15	30	40	22	1NO 1NC	CL06E311M† ²	\$265.00
62A	5	10	20	20	40	50	30	1NO 1NC	CL07E311M† ²	\$279.00
68A	5	15	20	25	50	60	37	1NO 1NC	CL08E311M† ²	\$364.00
80A	7.5	15	25	30	60	75	45	1NO 1NC	CL09E311M† ²	\$404.00
96A	10	20	30	40	75	75	55	1NO 1NC	CL10E311M† ²	\$520.00

¹To complete the contactor product number, replace the † in the product number with the appropriate digit from the Coil Selection table.

²**Nonreversing:** A 1NO and 1NC front-mounted auxiliary contact block are supplied (unassembled) with contactors that begin with CL06, CL07, CL08, CL09 and CL10. Add suffix "S" to product number for 1NO-1NC side auxiliary (assembled), no addition price adder.

30-75 Hp (460V) Reversing Standard Terminals

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts	Product Number ¹	List Price GO-10C2
48A	3	7.5	15	15	30	40	22	1NO 1NC	LER06A† ³	\$675.00
62A	5	10	20	20	40	50	30	1NO 1NC	LER07A† ³	\$703.00
68A	5	15	20	25	50	60	37	1NO 1NC	LER08A† ³	\$873.00
80A	7.5	15	25	30	60	75	45	1NO 1NC	LER09A† ³	\$1003.00
96A	10	20	30	40	75	75	55	1NO 1NC	LER10A† ³	\$1235.00

¹To complete the contactor product number, replace the † in the product number with the appropriate digit from the Coil Selection table.

³**Reversing:** Reversing contactors with prefixes LER06, LER07, LER08, LER09, and LER10 supplied with 1NO and 1NC front-mounted auxiliary on each contactor. Add suffix "S" to product number for 1NO-1NC side auxiliary, no additional price adder.

(Replace dagger (†) in product number with appropriate digit from table below.)

Coil Selection Table

(CL06, CL07, CL08, CL09, CL10)

AC/DC Voltage	†Coil Suffix
24-28	D
42-48	F
110-127	J
220-250	N
380-415	U
440-500	Y

100-500 Hp (460V) Nonreversing Bus Bar Terminals without Lugs

Maximum Current @ 460 V (A) AC-3	3-Phase HP @60 Hz, 200V	3-Phase HP @60 Hz, 230V	3-Phase HP @60 Hz, 460V	3-Phase HP @60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts ²	Product Number ¹	List Price GO-10C2
140A	40	50	100	125	75	1NO-1NC	CK75CE311†	\$725.00
156A	50	60	125	125	90	1NO-1NC	CK08CE311†	\$945.00
192A	60	75	150	150	132	1NO-1NC	CK09BE311†	\$1325.00
302A	100	100	250	300	160	1NO-1NC	CK95BE311†	\$1800.00
398A	125	150	300	400	220	1NO-1NC	CK10CE311† ³	\$2700.00
398A	125	150	300	400	220	1NO-1NC	CK10BE311†	\$2970.00
480A	150	200	400	500	280	1NO-1NC	CK11CE311† ³	\$4200.00
480A	150	200	400	500	280	1NO-1NC	CK11BE311†	\$4620.00
602A	200	250	500	600	375	1NO-1NC	CK12BE311†	\$5700.00

¹To complete the contactor product number, replace the † in the product number with the appropriate digit from the Coil Selection table.

²NO-1NC side auxiliary contact shipped unassembled (A600, Q600).

³CK10C and CK11C versions are for applications with maximum fuse 1000A, maximum breaker 600A. For higher ratings use CK10B and CK11B. Note that the CK10C and CK11C require less panel space.

100-500 Hp (460V) Reversing⁴ Bus Bar Terminals without Lugs

Maximum Current @ 460 V (A) AC-3	3-Phase HP @60 Hz, 200V	3-Phase HP @60 Hz, 230V	3-Phase HP @60 Hz, 460V	3-Phase HP @60 Hz, 575V	kW @ 50 Hz, 380/415V	Auxiliary Contacts ²	Product Number ¹	List Price GO-10C2
140A	40	50	100	125	75	1NO-1NC	KAR75C†	\$2035.00
156A	50	60	125	125	90	1NO-1NC	KAR08C†	\$2475.00
192A	60	75	150	150	132	1NO-1NC	KAR09B†	\$3105.00
302A	100	100	250	300	160	1NO-1NC	KAR95B†	\$4165.00
398A	125	150	300	400	220	1NO-1NC	KAR10C†	\$6365.00
398A	125	150	300	400	220	1NO-1NC	KAR10B†	\$6905.00
480A	150	200	400	500	280	1NO-1NC	KAR11C†	\$9365.00
480A	150	200	400	500	280	1NO-1NC	KAR11B†	\$10205.00
602A	200	250	500	600	375	1NO-1NC	KAR12B†	\$12665.00

¹To complete the contactor product number, replace the † in the product number with the appropriate digit from the Coil Selection table.

²NO-1NC side auxiliary contact shipped unassembled (A600, Q600).

⁴Reversing contactor consists of two (2) contactors, a mechanical interlock, baseplate, power bus bars, cross electrical wiring, and 1NO/1NC side-mounted auxiliary contact for cross electrical and holding interlock. Completely assembled. Note: KAR09 and KAR95 baseplate not suitable for starter assembly. Refer to page 5-88 for reversing starters.

(Replace dagger (†) in product number with appropriate digit from table below.)

Coil Selection Table

AC 60/50 Hz	DC	†Coil Suffix
24-28	24-28	D
42-48	42-28	F
110-127	110-127	J
220-250	220-250	N
380-415	380-415	U
440-500	440-500	Y

Coil suitable for either AC or DC power.



IEC Power Devices

IEC Contactors

C-2000

Nonreversing

AC, DC, AC/DC Controlled, 4-Pole

HP Ratings AC-3 Duty

Section 5

7.5-60 Hp (460 V) Standard Terminals AC Controlled

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	Auxiliary Contacts	Coil Type	Contact Configuration	Product Number ¹	List Price GO-10C2
13.8A	0.75	2	3	3	7.5	10	None	AC	4NO	CL01A400T	\$109.00
13.8A	0.75	2	3	3	7.5	10	None	AC	2NO-2NC	CL01AB00T*	\$109.00
17.5A	1	3	5	5	10	15	None	AC	4NO	CL02A400T*	\$143.00
17.5A	1	3	5	5	10	15	None	AC	2NO-2NC	CL02AB00T*	\$143.00
25A	2	3	7.5	7.5	15	20	None	AC	4NO	CL03A400M*	\$176.00
25A	2	3	7.5	7.5	15	20	None	AC	2NO-2NC	CL03AB00M*	\$176.00
32A	2	5	10	10	20	25	None	AC	4NO	CL04A400M*	\$225.00
32A	2	5	10	10	20	25	None	AC	2NO-2NC	CL04AB00M*	\$225.00
42A	3	7.5	10	15	30	30	None	AC	4NO	CL05A400M*	\$340.00
42A	3	7.5	10	15	30	30	None	AC	2NO-2NC	CL05AB00M*	\$340.00
62A	5	10	20	20	40	50	None	AC	4NO	CL07A400M*	\$425.00
62A	5	10	20	20	40	50	None	AC	2NO-2NC	CL07AB00M*	\$425.00
68A	5	10	20	25	50	60	None	AC	2NO-2NC	CL08AB00M*	\$447.00
80A	7.5	15	25	30	60	75	None	AC	4NO	CL09A400M*	\$475.00

(Replace asterisk (*) in product number with appropriate digit from table below.)

Coil Selection Table

AC Voltage		*Coil Suffix
60 Hz	50 Hz	
24	24	1
48	42	F
120	110	J
208	—	L
277	220/230	N
240	—	S
480	380/400	U
—	415	W
600	500	Y

Additional Coils Available, see page 5-50.

7.5-20 Hp (460 V) Standard Terminals DC Controlled

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	Auxiliary Contacts	Coil Type	Contact Configuration	Product Number ¹	List Price GO-10C2
13.8A	0.75	2	3	3	7.5	10	None	DC	4NO	CL01D400T#	\$132.00
13.8A	0.75	2	3	3	7.5	10	None	DC	2NO-2NC	CL01DB00T#	\$132.00
17.5A	1	3	5	5	10	15	None	DC	4NO	CL02D400T#	\$166.00
17.5A	1	3	5	5	10	15	None	DC	2NO-2NC	CL02DB00T#	\$166.00
25A	2	3	7.5	7.5	15	20	None	DC	4NO	CL03D400M#	\$232.00
25A	2	3	7.5	7.5	15	20	None	DC	2NO-2NC	CL03DB00M#	\$232.00
32A	2	5	10	10	20	25	None	DC	4NO	CL04D400M#	\$263.00
32A	2	5	10	10	20	25	None	DC	2NO-2NC	CL04DB00M#	\$263.00

(Replace crosshatch (#) in product number with appropriate digit from table below.)

Coil Selection Table

DC Volts	#Coil Suffix
12	B
24	D
48	G
120/125	K
250	T

30-60 Hp (460 V) Standard Terminals AC/DC Controlled

Maximum Current @ 460 V (A) AC-3	1-Phase HP @ 60 Hz, 115V	1-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 200V	3-Phase HP @ 60 Hz, 230V	3-Phase HP @ 60 Hz, 460V	3-Phase HP @ 60 Hz, 575V	Auxiliary Contacts	Coil Type	Contact Configuration	Product Number ¹	List Price GO-10C2
48A	3	7.5	10	15	30	30	None	AC/DC	4NO	CL05E400M†	\$405.00
48A	3	7.5	10	15	30	30	None	AC/DC	2NO-2NC	CL05EB00M†	\$405.00
62A	5	10	20	20	40	50	None	AC/DC	4NO	CL07E400M†	\$484.00
62A	5	10	20	20	40	50	None	AC/DC	2NO-2NC	CL07EB00M†	\$484.00
68A	5	10	20	25	50	60	None	AC/DC	2NO-2NC	CL08EB00M†	\$516.00
80A	7.5	15	25	30	60	75	None	AC/DC	4NO	CL09E400M†	\$544.00

(Replace dagger (†) in product number with appropriate digit from table below.)

Coil Selection Table

DC/AC Volts	†Coil Suffix
24-28	D
42-42	F
110-127	J
220-250	N

¹To complete the contactor product number, replace the *, # or † in the product number with the appropriate digit from the Coil Selection table. Auxiliary contact shipped unassembled.

Product Number Selection Instructions: See page 5-37



IEC Power Devices
IEC Contactors
C-2000
Nonreversing
AC/DC Controlled, 4-Pole
HP Ratings AC-3 Duty

Section 5

125-500 Hp (460V) Standard Terminals

Maximum Current @ 460 V (A) AC-3	3-Phase HP @60 Hz, 200V	3-Phase HP @60 Hz, 230V	3-Phase HP @60 Hz, 460V	3-Phase HP @60 Hz, 575V	Auxiliary Contacts ²	Contact Configuration	Product Number ¹	List Price GO-10C2
156A	50	60	125	125	1NO-1NC	4NO	CK08BE411†	\$1375.00
192A	60	75	150	150	1NO-1NC	4NO	CK09BE411†	\$1750.00
302A	100	100	250	300	1NO-1NC	4NO	CK95BE411†	\$2250.00
398A	125	150	300	400	1NO-1NC	4NO	CK10CE411†	\$3520.00
398A	125	150	300	400	1NO-1NC	4NO	CK10BE411†	\$3872.00
480A	150	200	400	500	1NO-1NC	4NO	CK11CE411†	\$5250.00
480A	150	200	400	500	1NO-1NC	4NO	CK11BE411†	\$5775.00
602A	200	250	500	600	1NO-1NC	4NO	CK12BE411†	\$6900.00

¹To complete the contactor product number, replace the †, in the product number with the appropriate digit from the Coil Selection table.

²Auxiliary contact shipped unassembled.

(Replace dagger (†) in product number with appropriate digit from table below.)

Coil Selection Table

AC 60/50 Hz	DC	†Coil Suffix
24-28	24-28	D
42-48	42-48	F
110-127	110-127	J
220-250	220-250	N
380-415	380-415	U
440-500	440-500	Y



IEC Power Devices

IEC Contactors Accessories

C-2000

Section 5

Front-Mount Auxiliary Contact Blocks

Front-mount auxiliary contact blocks clip onto front face of contactor.
Contact Rating: A600, Q600.

For Use With	Terminal Type	Contact Configuration	Product Number	List Price GO-10C2
CL Contactors	Standard	1NO	BCLF10	\$11.00
CL Contactors	Standard	1NC	BCLF01	\$11.00
CL Contactors	Standard	1NO	BCLF10G ¹	\$15.00
CL Contactors	Standard	1NC	BCLF01G ¹	\$15.00
CL Contactors	Ring	1NO	BCRF10	\$13.00
CL Contactors	Ring	1NC	BCRF01	\$13.00

¹Overlapping contacts.

Side-Mount Auxiliary Contact Blocks

Side-mount auxiliary contact blocks can be mounted on either left or right sides of contactor. Positive displacement contacts are designed to prevent simultaneous closing of NO and NC contacts to avoid overlapping between opposing functions. Contact Rating: A600, Q600.

For Use With	Terminal Type	Type	Contact Configuration	Product Number	List Price GO-10C2
CL/CK Contactors	Standard	Base Block	1NO-1NC	BCLL11	\$19.00
CL/CK Contactors	Standard	Base Block	2NO	BCLL20	\$19.00
CL/CK Contactors	Standard	Adder Block	1NO-1NC	BRLL11	\$19.00
CL/CK Contactors	Standard	Adder Block	2NO	BRLL20	\$19.00

Mechanical Interlock

Mechanical interlocks, used for horizontal interlocking of two contactors mounted side-by-side, prevent the closing of one contactor (as long as the other remains closed). BEL02 includes two built-in NC contacts. Contact Rating: A600, Q600.

For Use With	Product Number	List Price GO-10C2
5-75 Hp contactors (All CL Contactors)	BEL02	\$35.00
100-500 Hp contactors (All CK Contactors)	BEKH	\$65.00

Pneumatic Timer

Pneumatic timers are adjustable time-delayed auxiliary contacts. They come equipped with two time-delayed contacts: 1NO and 1NC, electrically separated. Setting is scaled over a 350° rotation by means of a knurled knob with timing guide marks. To mount a pneumatic timer, simply clip it on front face of contactor. Contact Rating: A600, Q600.

For Use With	Terminal Type	Type	Time range	Contact Configuration	Product Number	List Price GO-10C2
CL Contactors	Standard	Time Delay On	1-30 sec	1NO-1NC	BTLF30C	\$120.00
CL Contactors	Standard	Time Delay On	1-60 sec	1NO-1NC	BTLF60C	\$120.00
CL Contactors	Standard	Time Delay Off	1-30 sec	1NO-1NC	BTLF30D	\$120.00
CL Contactors	Standard	Time Delay Off	1-60 sec	1NO-1NC	BTLF60D	\$120.00
CL Contactors	Ring	Time Delay On	1-30 sec	1NO-1NC	BTRF30C	\$124.00
CL Contactors	Ring	Time Delay On	1-60 sec	1NO-1NC	BTRF60C	\$124.00
CL Contactors	Ring	Time Delay Off	1-30 sec	1NO-1NC	BTRF30D	\$124.00
CL Contactors	Ring	Time Delay Off	1-60 sec	1NO-1NC	BTRF60D	\$124.00

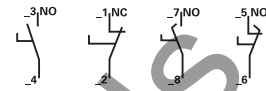
Electronic Timers

Time-on delay and time-off delay modules for sequencing control of contactors. They deliver high repeatability, ±3% in ambient temperatures from 32° to 104°F. A red LED provides indication during time-delay operation.

For Use With	Type	Time-Delay Range	Product Number	List Price GO-10C2
CL00-CL10 with ac coils 24-250 V	On delay	0.1-2 s	BETL02C	\$75.00
CL00-CL10 with dc coils 24-250 V	On delay	1.5-45 s	BETL45C	\$75.00
CL00-CL10 with ac coils 24-250 V	Off delay	0.1-2 s	BETL02D	\$85.00
CL00-CL10 with dc coils 24-250 V	Off delay	1.5-45 s	BETL45D	\$85.00



Front-Mounted Block



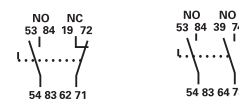
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BCRF10/BCRF01



Side-Mounted Block



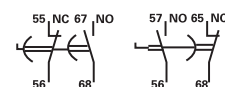
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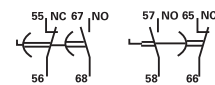
Mechanical Interlock



Pneumatic Timer



BTRF30C/BTRF60C/BTRF30D/BTRF60D



BTLF30C/BTLF60C BTLF30D/BTLF60D



Electronic Timer

Product Number Selection Instructions: See page 5-37

IEC Power Devices

IEC Contactor Accessories

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Section 5

Surge Suppressor

For suppression of disturbances in circuit voltage occurring upon opening of the contactor. Mounts directly on the top of the coil.

Note: Surge suppression is built into CK electronic coil module.

For Use With	Surge Suppressor Type	Voltage	Product Number	List Price GO-10C2
CL00, CL01, CL02, CL25, CL04, CL45	RC	24-48 VAC	BSLR2G	\$24.00
CL00, CL01, CL02, CL25, CL04, CL45	RC	50-127 VAC	BSLR2K	\$24.00
CL00, CL01, CL02, CL25, CL04, CL45	RC	130-240 VAC	BSLR2R	\$24.00
CL06, CL07, CL08, CL09, CL10	RC	24-48 VAC	BSLR3G	\$24.00
CL06, CL07, CL08, CL09, CL10	RC	50-127 VAC	BSLR3K	\$24.00
CL06, CL07, CL08, CL09, CL10	RC	130-240 VAC	BSLR3R	\$24.00
All CL contactors	Diode	12-600 VDC	BSLDZ	\$24.00
All CL contactors	Varistor	24-48 VAC, DC	BSLV3G	\$24.00
All CL contactors	Varistor	50-127 VAC, DC	BSLV3K	\$24.00
All CL contactors	Varistor	130-250 VAC, DC	BSLV3R	\$24.00
All CL contactors	Varistor	380-500 VAC, DC	BSLV3U	\$32.00

Amplifier

Provides for low level signals (24 VDC) to operate contactor while control coils operate at the line voltage. Two forms are available: a panel-mount form (for CK contactors) and a side-mount form (for CL contactors).

For Use With	Product Number	GO Schedule	List Price GO-10C2
CL Contactors	CLXA01	GO-10C2	\$73.00
CK Contactors	CR305X112P	GO-10G	\$54.00

Mechanical Latch Block

Mechanical latch block is used to convert a standard contactor into a latched contactor. Easy to mount, it clips onto front face of contactor. Contact Rating: A600, Q600.

For Use With	Voltage Application	Release Voltage Range	Product Number	List Price GO-10C2
All CL Contactors	50/60 Hz and DC	24-32	RMLFD	\$70.00
All CL Contactors	50/60 Hz and DC	42-48	RMLFG	\$70.00
All CL Contactors	50/60 Hz and DC	110-125	RMLFJ	\$70.00
All CL Contactors	50/60 Hz and DC	208-277	RMLFN	\$70.00
All CL Contactors	50/60 Hz and DC	380-480	RMLFU	\$70.00
All CL Contactors	50/60 Hz and DC	500-600	RMLFY	\$70.00

Unlatching coil is rated for intermittent duty. The latch block features an integral coil contact to clear the circuit after unlatching.

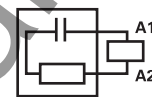
References

Instructions

GEH-5517 Amplifier CLXA01



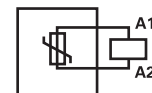
Surge Suppressor



BSLR__RC



BSLDZ Diode



BSLV__Varistor



Amplifier



Mechanical Latch Block



RMLF



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactor Accessories

C-2000

Section 5

These modules add flexibility to C-2000 contactors and relays, providing time-delay functions, an interface for low voltage PLC applications or contactor-mounted manual-auto functions. Easily installed, these modules plug right into the contactor coil terminals. All modules include a status indicating LED and accept plug-in voltage surge suppressors.

Interface Modules

Interface modules allow contactor operation from 24 Volt or 48 Volt sources (such as a PLC output). Current consumption is 15 mA @ 24 Vdc and 25 mA @ 48 Vdc. A red LED provides indication when voltage is applied to E1-E2.

For Use With	Input voltage	Type	Product Number	List Price GO-10C2
CL00-CL10 with ac coils 24-250 V	24 VDC	Relay	IMRD	\$50.00
CL00-CL45 with dc coils 24-250 V				
CL00-CL10 with ac coils 24-250 V	48 VDC	Relay	IMRG	\$50.00
CL00-CL45 with dc coils 24-250 V				
CL00-CL10 with ac coils 24-250 V	24 VDC	Relay with manual override switch	IMRFD	\$65.00
CL00-CL45 with dc coils 24-250 V				
CL00-CL10 with ac coils 24-250 V	48 VDC	Relay with manual override switch	IMRFG	\$65.00
CL00-CL45 with dc coils 24-250 V				
CL00-CL10 with ac coils 24-250 V	5-30 VDC	Solid State (optical isolation)	IMSSD	\$60.00
CL00-CL10 with dc coils 24-250 V				



Interface Module

Auto-Manual-Stop Modules

Auto-Manual-Stop modules allow local and/or remote operation of the contactor coil. The Auto-Manual switch selects the input connected to the coil circuit—A1 for automatic or remote operation, B1 for local operation. In both connections, the manual On-Off switch is in series and controls power to the coil. Auto-Manual can be switched only when the On-Off switch is in the Off position. A red LED provides indication when the coil is energized.

For Use With	Product Number	List Price GO-10C2
CL00-CL10 with ac coils 24-250 V	IMAMS	\$32.00
CL00-CL45 with dc coils 24-250 V		



Auto-Manual-Stop Module

Voltage Surge Suppressors

Voltage surge suppressors plug into timer, interface, or auto-stop-manual modules.

Contactors Size	Coil Voltage	Surge Suppressor Type	Product Number	List Price GO-10C2
CL00A-CL45A	24-48 VAC	Resistive/Capacitive (R/C)	IMRC2G	\$24.00
CL00A-CL45A	50-127 VAC	Resistive/Capacitive (R/C)	IMRC2K	\$24.00
CL00A-CL45A	130-240 VAC	Resistive/Capacitive (R/C)	IMRC2R	\$24.00
CL05A-CL10A	24-48 VAC	Resistive/Capacitive (R/C)	IMRC3G	\$24.00
CL05A-CL10A	50-127 VAC	Resistive/Capacitive (R/C)	IMRC3K	\$24.00
CL05A-CL10A	130-240 VAC	Resistive/Capacitive (R/C)	IMRC3R	\$24.00
CL00D-CL45D	24-250 VAC	Diode	IMD1Z	\$24.00
CL00-CL10	24-48 VAC or DC	Varistor	IMV3G	\$24.00
CL00-CL10	50-127 VAC or DC	Varistor	IMV3K	\$24.00
CL00-CL10	130-240 VAC or DC	Varistor	IMV3R	\$24.00



Voltage Surge Suppressor

IEC Power Devices

IEC Contactors Accessories

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Section 5

Starter Mounting Base

For use with overload requiring jumpers.

For Use With	Overload	Product Number	List Price GO-10C2
CK08, CK09, CK95 contactors	RT4, RT4L	CKXB01	\$40.00



Starter Mounting Base

Overload Jumpers

Overload jumpers allow an overload to be mounted to a contactor. Each product number represents a set of three overload jumpers.

CKXJ02 consists of three insulated bus bar straps. Overloads and contactors are panel mounted.

CKXJ10/CKXJ11 consist of three insulated bus bar straps, mounting brackets and mounting bracket hardware.

For Use With	Overload	Packing Quantity (No. Per Set)	Product Number	List Price GO-10C2
CK09B, CK95B contactors	RT4	3	CKXJ02 ¹	\$50.00
CK10C, CK11C contactors	RT5	3	CKXJ10	\$60.00
CK10B, 11B, 12B contactors	RT5	3	CKXJ11	\$60.00

¹CK95B uses 2 straps per terminal (2x CKXJ02) above 192 Amps.



Overload Jumper

Reversing Wiring Kits

These kits provide interconnecting power wires for 3-phase squirrel-cage reversing contactors.

For Use With	Product Number	List Price GO-10C2
CL00, CL01, CL02 contactors	CLXC01	\$18.00
CL25 contactors	CLXC11	\$20.00
CL04 contactors	CLXC21	\$30.00
CL45 contactors	CLXC31	\$32.00
CL06, CL07, CL08 contactors	CLXC41	\$48.00
CL09, CL10 contactors	CLXC51	\$60.00



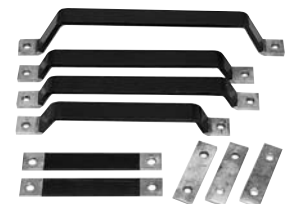
Reversing Wiring Kit

Reversing Bus Bar Kits

Connection set for main power poles for assembly of reversing contactors.

Note: The CKXC01, CKXC04, CKXC10, and CKXC11 are universal reversing contactor and starter bus bar kits consisting of three (3) line side and three (3) load side insulated bus bars plus six (6) power terminal extenders with bolts and hardware. When assembling reversing starters only three (3) power terminal extenders are required. Three (3) load side terminal extenders are replaced by overload connection straps purchased separately.

For Use With	Product Number	List Price GO-10C2
CK75C, CK08C contactors	CKXC04	\$105.00
CK09B, CK95B contactors	CKXC01	\$125.00
CK10C, CK11C contactors	CKXC10	\$195.00
CK12B contactors	CKXC11	\$205.00



Reversing Bus Bar Kit



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactor Accessories

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Section 5

Wye-Delta Wiring Kits

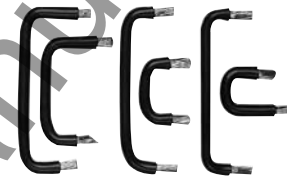
Wiring kit consists of incoming terminal block and power wires.

Delta Contactor M1	Delta Contactor M2	Wye Contactor S1	Product Number	Motor Hp - 60 Hz, Three-Phase				List Price
				200-208	230	460	575	
CL01, CL02	CL01, CL02	CL00, CL01	CLXC02	-	-	15	20	\$58.00
CL25	CL25	CL01	CLXC12	-	-	25	25	\$63.00
CL04	CL04	CL04	CLXC22	15	20	40	50	\$63.00
CL06	CL06	CL04	CLXC42	25	30	60	75	\$125.00
CL07	CL07	CL06	CLXC43	30	40	75	100	\$125.00
CL09, CL10	CL09, CL10	CL07	CLXC52	40, 60	50, 60	100, 125	125	\$160.00

Wye-Delta Bus Bar Kits

Connection set for main power poles for assembling wye-delta starters. Includes straps for connection to overload relay.

For Use With	Product Number	List Price
CK75C, CK08C contactors, with RT3 overload	CKXC05	\$150.00
CK09B, CK95B contactors, with RT4 overload	CKXC03	\$180.00
CK10C, CK11C contactors, with RT5 overload	CKXC13	\$255.00
CK10B, CK11B, CK12B contactors, with RT5 overload	CKXC12	\$295.00



Wye-Delta Wiring Kit

Electronic Timing Relay

For use with wye-delta starters.

Input voltage	Time range	Product Number	List Price
24 V (min.) to 240 V (max.) AC or DC	1-60 sec. with 100ms pause between wye contacts(17-18) opening and delta contact (17-28) closing	METV	\$89.00



Wye-Delta Bus Bar Kit

Lugs

Connector lugs with anti-turn feature. Suitable for copper wire only. Each lug kit contains three lugs.

For Use With	Wire Size	Product Number	List Price
CK75C, CK08C contactors w/wo RT3 Overload	6-250 kcmil	CKX03	\$52.00
CK09B, CK95B contactors w/wo RT4 Overload	6-350 kcmil	CKX02 ¹	\$60.00
CK10, CK11, CK12 contactors w/wo RT5 Overload	6-500 kcmil 2/0-600 kcmil (2 wire lug)	CKX01	\$80.00

¹CK95: use 2 lugs per terminal above 218 Amps.



Electronic Timing Relay



Lugs

IEC Power Devices

IEC Contactors Accessories

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Contact Sets

For Use With	Packing Quantity (No. of Contact Sets)	Contact Configuration	Product Number	List Price GO-10C2
CL05 contactors	4	2NO-2NC	VB1205B	\$89.00
CL06 contactors	3	NO	V31206B	\$67.00
CL07 contactors	3	NO	V31207B	\$80.00
CL07 contactors	4	2NO-2NC	VB1207B	\$106.00
CL08 contactors	3	NO	V31208B	\$98.00
CL08 contactors	4	2NO-2NC	VB1208B	\$130.00
CL09 contactors	3	NO	V31209B	\$111.00
CL10 contactors	3	NO	V31210B	\$160.00
CK75C contactors	3	NO	V31175CA	\$242.00
CK08C contactors	3	NO	V31108CA	\$380.00
CK09B, CK08B contactors	3	NO	V31109BA	\$450.00
CK95B contactors	3	NO	V31195BA	\$620.00
CK10C contactors	3	NO	V31110CA	\$900.00
CK11C contactors	3	NO	V31111CA	\$1300.00
CK12B, CK10B, CK11B contactors	3	NO	V31112BA	\$1925.00

Each set consists of 2 fixed contacts, 1 moving contact, and accessory parts.



Contact Set



Miscellaneous Kits

Type of Kit	For Use With	Product Number	List Price GO-10C2
35 mm DIN Rail (1 meter)	CL00, CL01, CL02, CL25, CL04, CL45, CL06, CL07, CL08, CL09, CL10 contactors	CLXR35	\$8.00
Power Take-Off Terminals (wire size 12-18 AWG)	CK75C, CK08C contactors	CKXT03	\$8.00
Power Take-Off Terminals (wire size 12-18 AWG)	CK09B, CK95B, CK10C, CK11C contactors	CKXT01	\$10.00
Power Take-Off Terminals (wire size 12-18 AWG)	CK12B contactors	CKXT02	\$12.00
Terminal Screw Kit	CK75C, CK08C contactors	KVF75C	\$5.00
Terminal Screw Kit	CK09, CK95, CK10, CK11, CK12 contactors	KVF08C	\$6.00

35mm DIN Rail



Power Take-Off Terminals

Pole Terminal Protection

For Use With	Product Number	List Price GO-10C2
CK75 - CK08	PTPCK75	\$120.00
CK75 - CK95	PTPCK95	\$94.00
CK10 - CK12	PTPCK11	\$104.00



Terminal Screw Kit



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactor Coils

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Section 5

AC Coils

For Use With	Coil Frequency	Product Number	List Price GO-10C2
CL00, CL01, CL02, CL25 contactors	AC	LB1A*	\$24.00
CL04, CL45 contactors	AC	LB3A*	\$33.00
CL06, CL07, CL08, CL09, CL10 contactors	AC	LB4A*	\$38.00

AC Voltage Selection

Note: Frequency/voltage combinations shaded in gray are available by special order only.

*AC Voltage 60 Hz	Designation Letter	*AC Voltage 50 Hz	Designation Letter	*AC Voltage 50/60 Hz	Designation Letter
24	C	24	D	24	1
48	F	32	E	42	2
110	H	42	F	110/115	3
120	J	48	G	120	4
208	L	110	J	220	5
220	M	127	K	230	6
277	N	220/230	N	240	7
240	S	240	R	440	8
380	T	380/400	U	—	—
440	V	415	W	—	—
480	U	440	X	—	—
600	Y	500	Y	—	—
—	—	660/690	Z	—	—

DC Coils

For Use With	Coil Frequency	Product Number	List Price GO-10G2
CL00, CL01, CL02, CL25 contactors	DC	LB1D#	\$36.00
CL04, CL45 contactors	DC	LB3D#	\$50.00

DC Voltage Selection

#DC Voltage	Designation Letter
12	B
24	D
36	E
42	F
48	G
60	H
72	I
110	J
120/125	K
220	N
250	T

To complete coil product number, replace the *, or # with the appropriate "Designation Letter/Digit" (from **AC Voltage Selection** and **DC Voltage Selection** tables above) corresponding to the voltage and frequency of the control circuit.

Special order coils (shaded in gray):

Minimum order, LB1A*: 20 units; all others: 10 units

AC/DC Coils

For Use With	Coil Frequency	Item	Product Number	List Price GO-10C2
CL06, CL07, CL08, CL09, CL10 contactors Electronic Coil & Module Combination	AC/DC		LB4E†	\$80.00
3-pole CK75C, CK08C contactors	AC/DC	Coils for use w/ electronic module	KB4E†	\$105.00
3-pole CK75C, CK08C contactors	AC/DC	Electronic module	KM4E†	\$195.00
3-pole CK08B, CK09B, CK95B contactors	AC/DC	Coils for use w/ electronic module	KB5E†	\$125.00
3-pole CK08B, CK09B, CK95B contactors	AC/DC	Electronic module	KM5E†	\$205.00
4-pole CK08B, CK09B, CK95B contactors	AC/DC	Coils for use w/ electronic module	KB6E†	\$220.00
3- and 4-pole CK12B contactors				
4-pole CK08B, CK09B, CK95B contactors	AC/DC	Electronic module	KM6E†	\$240.00
3- and 4-pole CK12B contactors				
3- and 4-pole CK10C, CK11C contactors	AC/DC	Coils for use w/ electronic module	KB7E†	\$185.00
3- and 4-pole CK10C, CK11C contactors	AC/DC	Electronic module	KM7E†	\$225.00

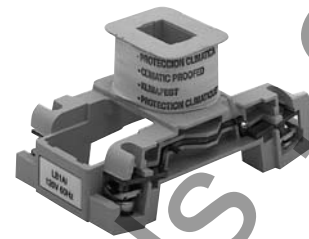
AC/DC Voltage Selection

Note: When assembling a coil for use with an electronic module, the voltage on both the coil and electronic module must be the same.

†Voltage	Designation Letter
24-48	D
42-48	F
110-127	J
220-250	N
380-415	U
440-500	Y

To complete product numbers, replace the † with the appropriate Designation Letter from **AC/DC Voltage Selection** table above. Order one coil and one electronic module to function together.

Product Number Selection Instructions: See page 5-37



Coil

IEC Power Devices

IEC Contactor Enclosures

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Section 5

NEMA Enclosures¹

Enclosure type	For Use With	Contactors Size	Product Number	List Price GO-10C2
NEMA Type 1	Contactors and Starters, No CPT, Lift-Off Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE1A	\$20.00
NEMA Type 1	Contactors and Starters, No CPT, Lift-Off Cover	CL06, CL07, CL08 contactors	CLXE1B	\$33.00
NEMA Type 1	Contactors and Starters, No CPT, Lift-Off Cover	CL09, CL10 contactors	CLXE1C	\$58.00
NEMA Type 1	Contactors and Starters, With CPT ² , Lift-Off Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE1D	\$29.00
NEMA Type 1	Contactors and Starters, With CPT, Lift-Off Cover	CL06, CL07, CL08 contactors	CLXE1E	\$47.00
NEMA Type 1	Contactors and Starters With CPT ² , Lift-Off Cover	CL09, CL10 contactors	CLXE1F	\$69.00
NEMA Type 1	Reversing Contactors and Starters, Wye-Delta Starters With/ Without CPT ² , Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE1G	\$140.00
NEMA Type 1	Reversing Contactors and Starters With/Without CPT ² , Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE1H	\$192.00
NEMA Type 1	Wye-Delta Starters With/ Without CPT ² , Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE1L	\$268.00
NEMA Type 12/3R ³	Contactors and Starters No CPT, Lift-Off Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE2A	\$90.00
NEMA Type 12/3R ³	Contactors and Starters No CPT, Lift-Off Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE2B	\$122.00
NEMA Type 12/3R ³	Contactors and Starters With CPT Hinged Cover, Reversing Contactors and Starters No CPT, Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE2C	\$142.00
NEMA Type 12/3R ³	Contactors and Starters With CPT Hinged Cover, Reversing Contactors and Starters No CPT, Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE2D	\$168.00
NEMA Type 12/3R ³	Reversing Contactors and Starters With CPT, Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE2E	\$159.00
NEMA Type 12/3R ³	Reversing Contactors and Starters With CPT, Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE2F	\$213.00
NEMA Type 12/3R ³	Wye-Delta Starters With/ Without CPT, Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE2G	\$211.00
NEMA Type 12/3R ³	Wye-Delta Starters With/ Without CPT, Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE2H	\$388.00
NEMA Type 4	Contactors and Starters No CPT, Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE4A	\$326.00
NEMA Type 4	Contactors and Starters No CPT, Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE4B	\$346.00
NEMA Type 4	Contactors and Starters With CPT Hinged Cover, Reversing Contactors and Starters No CPT, Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE4C	\$343.00
NEMA Type 4	Contactors and Starters With CPT Hinged Cover, Reversing Contactors and Starters No CPT, Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE4D	\$478.00
NEMA Type 4	Reversing Contactors and Starters With CPT Hinged Cover, Wye-Delta Starters, With/Without CPT ² , Hinged Cover	CL00, CL01, CL02, CL25, CL04, CL45 contactors	CLXE4E	\$537.00
NEMA Type 4	Reversing Contactors and Starters With CPT ² , Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE4F	\$589.00
NEMA Type 4	Wye-Delta Starters With/ Without CPT ² , Hinged Cover	CL06, CL07, CL08, CL09, CL10 contactors	CLXE4H	\$994.00

¹Enclosures are suitable for AC controlled contactors, starters and reversers, and wye-delta starters. For devices with front-mounted accessories and DC control, contact GE Customer Service at 1-800-GE-1-STOP. Enclosures are not sized for front-mounted accessories. Includes externally operated reset button kit to be field installed as required.

²Standard capacity (50 VA) product number CR308XT1**A and extra capacity (150 VA) product number CR308XT1**B (listed on page 5-52)

³Type 12/3R enclosures have hole locators for both pilot devices and reset. For 3R, application plug must be removed.

Reference Publications

Instructions	
GEH-5521	Enclosures CLXE1G-CLXE1L
GEH-5522	NEMA 1 Lift-Off Enclosures
GEH-5523	CLXR11, 12 Reset Push Button
GEH-5524	CLXR21, CKXR11, 12 Reset Button
GEH-5525	CLXP-B, C Start/Stop Push Button
GEH-5526	CL NEMA 12/3R Enclosures
GEH-5527	CL NEMA 4 Enclosures



NEMA Type 1



NEMA Type 12/3R



NEMA Type 4



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices Contactor Enclosures Accessories C-2000

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Enclosure Accessories

Enclosure Accessory Type	For Use With	Product Number	List Price GO-10C2
Start-Stop Push Button Without Light	CL00, CL01, CL02, CL25, CL04, CL45 starters with or without CPT	CLXP1B	\$39.00
Start-Stop Push Button Without Light	CL06, CL07, CL08 starters with or without CPT	CLXP2B	\$39.00
Start-Stop Push Button Without Light	CL09, CL10 starters with or without CPT	CLXP3B	\$39.00
Start/Stop Push Button With Light	CL00, CL01, CL02, CL25, CL04, CL45 starters with or without CPT	CLXP1C*	\$112.00
Start/Stop Push Button With Light	CL06, CL07, CL08 starters with or without CPT	CLXP2C*	\$112.00
Start/Stop Push Button With Light	CL09, CL10 starters with or without CPT	CLXP3C*	\$112.00
H-O-A Switch	CL00, CL01, CL02, CL25, CL04, CL45 starters with or without CPT	CLXP1D	\$39.00
H-O-A Switch	CL06, CL07, CL08 starters with or without CPT	CLXP2D	\$39.00
H-O-A Switch	CL09, CL10 starters with or without CPT	CLXP3D	\$39.00
On-off Switch	CL00, CL01, CL02, CL25, CL04, CL45 starters with or without CPT	CLXP1E	\$39.00
On-off Switch	CL06, CL07, CL08 starters with or without CPT	CLXP2E	\$39.00
On-off Switch	CL09, CL10 starters with or without CPT	CLXP3E	\$39.00
Red Indicating Light	CL00, CL01, CL02, CL25, CL04, CL45 starters with or without CPT	CLXP1F	\$67.00
Red Indicating Light	CL06, CL07, CL08 starters with or without CPT	CLXP2F	\$67.00
Red Indicating Light	CL09, CL10 starters with or without CPT	CLXP3F	\$67.00
Reset Kit	CL00-45 Starters with and without CPT, Type 1 (CLXE1A, 1D)	CLXR11	\$8.00
Reset Kit	CL05-10 Starters, CL00-10 Reverser and Wye-Delta Type 1 (CLXE1B-1C, CLXE1E-1L)	CLXR12	\$8.00
Reset Kit	CL00-10 Starters, Reverser and Wye-Delta Type 12/3R and 4 (CLXE2A-2H, CLXE4A-4H)	CLXR21	\$8.00
Reset Kit	CK75-12 Starters, Reverser and Wye-Delta Type 1	CKXR11	\$10.00
Reset Kit	CK75-12 Starter, Reverser and Wye-Delta Type 12/3R and 4	CKXR12	\$10.00
Control Power Transformer (CPT)	Standard capacity (50 VA)	CR308XT1**A	\$108.00
Control Power Transformer (CPT)	Extra capacity (150 VA)	CR308XT1**B	\$180.00

Replace asterisk (*) in product number for Start/Stop Push Button With Light with appropriate voltage code.

Voltage Selection*

*Code	Voltage
1	115 Volts
2	230 Volts
4	460 Volts
5	575 Volts

**To complete product number, replace ** with the appropriate digits from below:

Control Power Transformer Voltage Selection**

Digit	Voltage	Frequency
04	Dual Primary Reconnectable 220/230/240 and 440/460/480 Volt Primary, 110/115/120 Volt Secondary	60 Hz
05	550/575/600 Volt Primary, 110/115/120 Volt Secondary	60 Hz
23	200/208 Volt Primary, 115/120 Volt Secondary	60 Hz

Reference Publications

Instructions	
GEH-5521	Enclosures CLXE1G-CLXE1L
GEH-5522	NEMA 1 Lift-Off Enclosures
GEH-5523	CLXR11, 12 Reset Push Button
GEH-5524	CLXR21, CKXR11, 12 Reset Button
GEH-5525	CLXP-B, C Start/Stop Push Button
GEH-5526	CL NEMA 12/3R Enclosures
GEH-5527	CL NEMA 4 Enclosures



Start/Stop Push Button Without Light



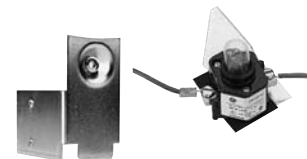
Start/Stop Push Button with Light



H-O-A Switch



On-Off Switch



Red Indicating Light



Reset Kit



Control Power Transformer

Product Number Selection Instructions: See page 5-37

IEC Power Devices

IEC Contactors Thermal Overload Relays

C-2000

Section 5

Overload Relays

Fixed Heater

C2000 RT overload relays provide motor overload protection through fixed bimetal heaters. These relays are ambient compensated and utilize a differential mechanism for single-phase sensitivity. The trip setting is adjustable for the range listed.

Overload relays may be set for 4 different operational modes—manual reset only, automatic reset only, manual reset/stop, or automatic reset/stop. Stop is initiated by pushing the reset button which interrupts the holding circuit in the latter two listed modes.

Overload relays feature visible trip indication, reset on the upstroke, weld check, and trip test.

Reference Publications

Instructions

GEH-6237	RT1* (Class 10) Overload
DEH-040	RT12* (Class 20) Overload
GEH-6238	RT2* (Class 10) Overload
DEH-041	RT22* (Class 20) Overload
GEH-6239	RT3* (Class 10) Overload
DEH-042	RT32* (Class 20) Overload
GEH-6240	RT4* (Class 10, 30) Overload
GEH-6241	RT5* (Class 10, 30) Overload
GEH-5520	RT5 Overload Connection Kit
DEH-055	Remote Electrical Reset



RT1 Overload Relay



RT2 Overload Relay



RT3 Overload Relay



RT4 Overload Relay



RT5 Overload Relay



IEC Power Devices

IEC Contactors Thermal Overload Relays

C-2000

Section 5

RT1 - Direct Mount Manual

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CL00, CL01, CL02, CL25, CL04, CL45	0.16-0.26	Manual	Class 10	1	15	RTN1B	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.25-0.41	Manual	Class 10	1	15	RTN1C	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.4-0.65	Manual	Class 10	3	15	RTN1D	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.65-1.1	Manual	Class 10	6	15	RTN1F	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1-1.5	Manual	Class 10	6	15	RTN1G	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1.3-1.9	Manual	Class 10	6	15	RTN1H	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1.8-2.7	Manual	Class 10	10	15	RTN1J	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	2.5-4.1	Manual	Class 10	15	15	RTN1K	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	4-6.3	Manual	Class 10	20	15	RTN1L	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	5.5-8.5	Manual	Class 10	25	15	RTN1M	\$57.00
CL00, CL01, CL02, CL25, CL04, CL45	8.0-12.0	Manual	Class 10	40	30	RTN1N	\$57.00
CL01, CL02, CL25, CL04, CL45	10.0-16.0	Manual	Class 10	50	35	RTN1P	\$57.00
CL02, CL25, CL04, CL45	14.5-18	Manual	Class 10	60	40	RTN1S	\$57.00
CL25, CL04, CL45	17.5-22	Manual	Class 10	70	50	RTN1T	\$57.00
CL04, CL45	21-26	Manual	Class 10	80	60	RTN1U	\$57.00
CL04, CL45	25-32	Manual	Class 10	100	80	RTN1V	\$65.00
CL45	30-40	Manual	Class 10	100	80	RTN1W	\$78.00

RT1 - Direct Mount Manual/Auto

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CL00, CL01, CL02, CL25, CL04, CL45	0.16-0.26	Manual/Auto w/wo stop	Class 10	1	15	RT1B	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.25-0.41	Manual/Auto w/wo stop	Class 10	1	15	RT1C	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.4-0.65	Manual/Auto w/wo stop	Class 10	3	15	RT1D	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.65-1.1	Manual/Auto w/wo stop	Class 10	6	15	RT1F	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1-1.5	Manual/Auto w/wo stop	Class 10	6	15	RT1G	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1.3-1.9	Manual/Auto w/wo stop	Class 10	6	15	RT1H	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1.8-2.7	Manual/Auto w/wo stop	Class 10	10	15	RT1J	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	2.5-4.1	Manual/Auto w/wo stop	Class 10	15	15	RT1K	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	4-6.3	Manual/Auto w/wo stop	Class 10	20	15	RT1L	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	5.5-8.5	Manual/Auto w/wo stop	Class 10	25	15	RT1M	\$57.00
CL00, CL01, CL02, CL25, CL04, CL45	8.0-12.0	Manual/Auto w/wo stop	Class 10	40	30	RT1N	\$57.00
CL01, CL02, CL25, CL04, CL45	10.0-16.0	Manual/Auto w/wo stop	Class 10	50	35	RT1P	\$57.00
CL02, CL25, CL04, CL45	14.5-18	Manual/Auto w/wo stop	Class 10	60	40	RT1S	\$57.00
CL25, CL04, CL45	17.5-22	Manual/Auto w/wo stop	Class 10	70	50	RT1T	\$57.00
CL04, CL45	21-26	Manual/Auto w/wo stop	Class 10	80	60	RT1U	\$57.00
CL04, CL45	25-32	Manual/Auto w/wo stop	Class 10	100	80	RT1V	\$65.00
CL45	30-40	Manual/Auto w/wo stop	Class 10	100	80	RT1W	\$78.00
CL00, CL01, CL02, CL25, CL04, CL45	0.4-0.65	Manual/Auto w/wo stop	Class 20	3	15	RT12D	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	0.65-1.1	Manual/Auto w/wo stop	Class 20	6	15	RT12F	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1-1.5	Manual/Auto w/wo stop	Class 20	6	15	RT12G	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	1.3-1.9	Manual/Auto w/wo stop	Class 20	6	15	RT12H	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	2.5-4.1	Manual/Auto w/wo stop	Class 20	15	15	RT12K	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	4-6.3	Manual/Auto w/wo stop	Class 20	20	15	RT12L	\$55.00
CL00, CL01, CL02, CL25, CL04, CL45	5.5-8.5	Manual/Auto w/wo stop	Class 20	25	15	RT12M	\$57.00
CL00, CL01, CL02, CL25, CL04, CL45	8.0-12.0	Manual/Auto w/wo stop	Class 20	40	30	RT12N	\$57.00
CL01, CL02, CL25, CL04, CL45	10.0-16.0	Manual/Auto w/wo stop	Class 20	50	35	RT12P	\$57.00
CL02, CL25, CL04, CL45	14.5-18	Manual/Auto w/wo stop	Class 20	60	40	RT12S	\$57.00
CL25, CL04, CL45	17.5-22	Manual/Auto w/wo stop	Class 20	70	50	RT12T	\$57.00
CL04, CL45	21-26	Manual/Auto w/wo stop	Class 20	80	60	RT12U	\$57.00
CL04, CL45	25-32	Manual/Auto w/wo stop	Class 20	100	80	RT12V	\$65.00
CL45	30-40	Manual/Auto w/wo stop	Class 20	100	80	RT12W	\$78.00

¹Do not exceed contactor current rating when selecting and adjusting overload relays. For panel mount use base adapter RTXP.

IEC Power Devices

IEC Contactors Thermal Overload Relays

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Section 5

RT2 - Direct Mount Manual

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CL06, CL07, CL08, CL09, CL10	11.5-15	Manual	Class 10	35	25	RTN2A	\$98.00
CL06, CL07, CL08, CL09, CL10	14.5-19	Manual	Class 10	50	45	RTN2B	\$98.00
CL06, CL07, CL08, CL09, CL10	18.5-25	Manual	Class 10	70	60	RTN2C	\$98.00
CL06, CL07, CL08, CL09, CL10	24-32	Manual	Class 10	90	80	RTN2D	\$98.00
CL06, CL07, CL08, CL09, CL10	30-43	Manual	Class 10	100	100	RTN2E	\$98.00
CL06, CL07, CL08, CL09, CL10	42-55	Manual	Class 10	150	125	RTN2G	\$98.00
CL07, CL08, CL09, CL10	54-65	Manual	Class 10	175	150	RTN2H	\$98.00
CL08, CL09, CL10	64-82	Manual	Class 10	225	200	RTN2J	\$117.00
CL10	78-97	Manual	Class 10	225	225	RTN2L	\$143.00
CL10	90-110	Manual	Class 10	225	250	RTN2M	\$143.00

RT2 - Direct Mount Manual/Auto

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CL06, CL07, CL08, CL09, CL10	11.5-15	Manual/Auto w/wo stop	Class 10	35	25	RT2A	\$98.00
CL06, CL07, CL08, CL09, CL10	18.5-25	Manual/Auto w/wo stop	Class 10	70	60	RT2C	\$98.00
CL06, CL07, CL08, CL09, CL10	14.5-19	Manual/Auto w/wo stop	Class 10	50	45	RT2B	\$98.00
CL06, CL07, CL08, CL09, CL10	24-32	Manual/Auto w/wo stop	Class 10	90	80	RT2D	\$98.00
CL06, CL07, CL08, CL09, CL10	30-43	Manual/Auto w/wo stop	Class 10	100	100	RT2E	\$98.00
CL06, CL07, CL08, CL09, CL10	42-55	Manual/Auto w/wo stop	Class 10	150	125	RT2G	\$98.00
CL07, CL08, CL09, CL10	54-65	Manual/Auto w/wo stop	Class 10	175	150	RT2H	\$98.00
CL08, CL09, CL10	64-82	Manual/Auto w/wo stop	Class 10	225	200	RT2J	\$117.00
CL10	78-97	Manual/Auto w/wo stop	Class 10	225	225	RT2L	\$143.00
CL10	90-110	Manual/Auto w/wo stop	Class 10	225	250	RT2M	\$143.00
CL06, CL07, CL08, CL09, CL10	24-32	Manual/Auto w/wo stop	Class 20	90	80	RT22D	\$98.00
CL06, CL07, CL08, CL09, CL10	30-43	Manual/Auto w/wo stop	Class 20	100	100	RT22E	\$98.00
CL06, CL07, CL08, CL09, CL10	42-55	Manual/Auto w/wo stop	Class 20	150	125	RT22G	\$98.00
CL07, CL08, CL09, CL10	54-65	Manual/Auto w/wo stop	Class 20	175	150	RT22H	\$98.00
CL08, CL09, CL10	64-82	Manual/Auto w/wo stop	Class 20	225	200	RT22J	\$117.00
CL10	78-97	Manual/Auto w/wo stop	Class 20	225	225	RT22L	\$143.00
CL10	90-110	Manual/Auto w/wo stop	Class 20	225	250	RT22M	\$143.00

¹Do not exceed contactor current rating when selecting and adjusting overload relays. For panel mount use base adapter RT2XP.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactors Thermal Overload Relays

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Section 5

RT3 - Direct or Panel Mount

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CK75, CK08	55-80	Manual	Class 10	225	200	RTN3B	\$185.00
CK75, CK08	63-90	Manual	Class 10	250	225	RTN3C	\$185.00
CK75, CK08	90-120	Manual	Class 10	350	300	RTN3D	\$185.00
CK75, CK08	110-140	Manual	Class 10	400	350	RTN3E	\$225.00
CK08	140-190	Manual	Class 10	450	500	RTN3F	\$225.00
CK75, CK08	55-80	Manual/Auto	Class 10	225	200	RT3B	\$185.00
CK75, CK08	63-90	Manual/Auto	Class 10	250	225	RT3C	\$185.00
CK75, CK08	90-120	Manual/Auto	Class 10	350	300	RT3D	\$185.00
CK75, CK08	110-140	Manual/Auto	Class 10	400	350	RT3E	\$225.00
CK08	140-190	Manual/Auto	Class 10	450	500	RT3F	\$225.00
CK75, CK08	63-90	Manual/Auto	Class 20	250	225	RT32C	\$185.00
CK75, CK08	90-120	Manual/Auto	Class 20	350	300	RT32D	\$185.00
CK75, CK08	110-140	Manual/Auto	Class 20	400	350	RT32E	\$225.00
CK08	140-190	Manual/Auto	Class 20	450	500	RT32F	\$225.00

¹Do not exceed contactor current rating when selecting and adjusting overload relays.

RT4 - Separate Mount

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Terminal Type	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CK09, CK95	120-190	Manual	Class 10	Bus bar ²	600	500	RTN4N	\$285.00
CK09, CK95	175-280	Manual	Class 10	Bus bar ²	800	700	RTN4P	\$285.00
CK95	200-310	Manual	Class 10	Bus bar ²	900	800	RTN4R	\$380.00
CK09, CK95	120-190	Manual/Auto	Class 10	Bus bar ²	600	500	RT4N	\$285.00
CK09, CK95	175-280	Manual/Auto	Class 10	Bus bar ²	800	700	RT4P	\$285.00
CK95	200-310	Manual/Auto	Class 10	Bus bar ²	900	800	RT4R	\$380.00
CK09, CK95	45-70	Manual/Auto	Class 30	Clamp	225	175	RT4LK	\$285.00
CK09, CK95	60-90	Manual/Auto	Class 30	Clamp	300	225	RT4LL	\$285.00
CK09, CK95	80-125	Manual/Auto	Class 30	Clamp	400	350	RT4LM	\$285.00
CK09, CK95	120-190	Manual/Auto	Class 30	Bus bar ²	600	500	RT4LN	\$285.00
CK09, CK95	175-280	Manual/Auto	Class 30	Bus bar ²	800	700	RT4LP	\$285.00
CK95	200-310	Manual/Auto	Class 30	Bus bar ²	900	800	RT4LR	\$380.00

¹Do not exceed contactor current rating when selecting and adjusting overload relays.

²Can be mounted to contactor with Overload Jumpers (listed on page 5-47) and Base Plate (CKXB01) (listed on page 5-47).

RT5 - Separate Mount²

Overload Relay for use with Contactors ¹	Current Range Amps (min-max)	Reset Type	Trip Class	Maximum Fuse Rating Amps	Maximum Circuit Breaker Rating Amps	Product Number	List Price GO-10C2
CK10, CK11, CK12	120-190	Manual	Class 10	800	500	RTN5A	\$641.00
CK10, CK11, CK12	175-280	Manual	Class 10	1200	700	RTN5B ³	\$641.00
CK10, CK11, CK12	250-400	Manual	Class 10	1200	1000	RTN5C ³	\$641.00
CK10, CK11, CK12	315-500	Manual	Class 10	1200	1200	RTN5D ³	\$903.00
CK11, CK124	30-650	Manual	Class 10	1200	1200	RTN5E ³	\$903.00
CK10, CK11, CK12	120-190	Manual/Auto	Class 10	800	500	RT5A	\$641.00
CK10, CK11, CK12	175-280	Manual/Auto	Class 10	1200	700	RT5B ³	\$641.00
CK10, CK11, CK12	250-400	Manual/Auto	Class 10	1200	1000	RT5C ³	\$641.00
CK10, CK11, CK12	315-500	Manual/Auto	Class 10	1200	1200	RT5D ³	\$903.00
CK11, CK124	30-650	Manual/Auto	Class 10	1200	1200	RT5E ³	\$903.00
CK10, CK11, CK12	120-190	Manual/Auto	Class 30	800	500	RT5LA	\$641.00
CK10, CK11, CK12	175-280	Manual/Auto	Class 30	1200	700	RT5LB	\$641.00
CK10, CK11, CK12	250-400	Manual/Auto	Class 30	1200	1000	RT5LC	\$641.00
CK10, CK11, CK12	315-500	Manual/Auto	Class 30	1200	1200	RT5LD	\$903.00
CK11, CK12	430-650	Manual/Auto	Class 30	1200	1200	RT5LE	\$903.00

¹Do not exceed contactor current rating when selecting and adjusting overload relays.

²Can be mounted to contactor with Overload Jumpers (listed on page 5-47).

³Maximum fuse rating of 1000 amps/maximum circuit breaker rating of 600 amps when used with CK10CE or CK11CE contactors. Use CK10BE or CK11BE with higher rated protective devices indicated. CK12BE suitable for all ratings listed.

IEC Power Devices

IEC Contactors Thermal Overload Relays Accessories

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Section 5

Remote Electrical Reset

Remote electrical resets are used in applications where the motor starter is inaccessible or in automated control systems where it is required to reset the overload relay remotely after the fault has been cleared. Electrical reset coils are rated for intermittent duty and for use with momentary contacts. Minimum time .2 sec. on for reliable operation. Maximum time 1 sec. on/30 sec. off, 5 sec. on/90 sec. off, 10 sec. on/180 sec. off. Power consumption is 100VA/100 watts.

For Use With	Voltage 50/60 Hz AC or DC	Product Number	List Price GO-10C2
All RT overload relays	12	RTXRRB	\$55.00
All RT overload relays	24	RTXRRD	\$55.00
All RT overload relays	48	RTXRRG	\$55.00
All RT overload relays	110-120	RTXRRJ	\$55.00
All RT overload relays	220-240	RTXRRN	\$55.00
All RT overload relays	380-415	RTXRRU	\$55.00
All RT overload relays	440-480	RTXRRX	\$55.00



RTXRR Remote Electrical Reset



RT Overload Base Adapter

Overload Base Adapter

Permits mounting of RT1 or RT2 overload on panel or DIN rail.

For Use With	Product Number	List Price GO-10C2
RT1	RTXP	\$12.00
RT2	RT2XP	\$24.00

Transparent Cover for Range Adjustment Dial

Deters tampering with dial.

For Use With	Product Number	List Price GO-10C2
All Overload Relays	RTX3 ¹	\$19.00

¹Product number represents a quantity of 10 pieces.



RTX3 Transparent Cover

Locking Plug for Manual/Auto Selector

Prevents changing reset mode after installation.

For Use With	Product Number	List Price GO-10C2
All Overload Relays	RTXL ¹	\$10.00

¹Product number represents a quantity of 10 pieces.



RTXL Locking Plug

Flexible Cable Reset Button

Allows manual reset of overload when overload is mounted in a special or inaccessible position. Fits standard 22.5 mm panel hole.

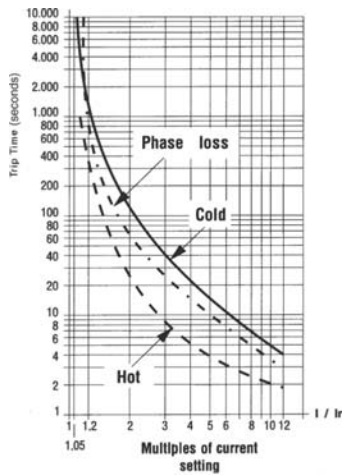
For Use With	Cable Length	Product Number	List Price GO-10C2
All Overloads	.5 meter	RTXR	\$55.00
All Overloads	1.0 meter	RTXRL	\$80.00



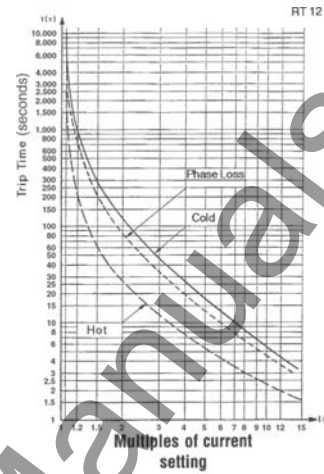
RTXR Flexible Cable Reset Button



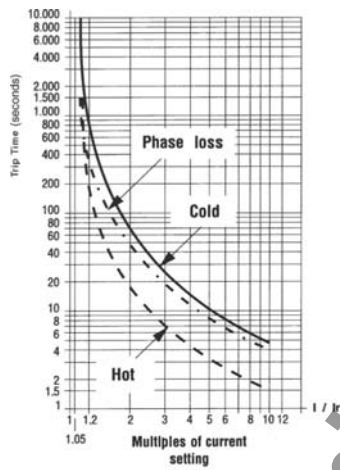
Publications and Reference: See Section 17 for a complete list of additional product-related publications



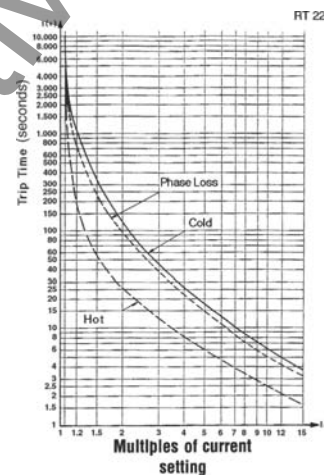
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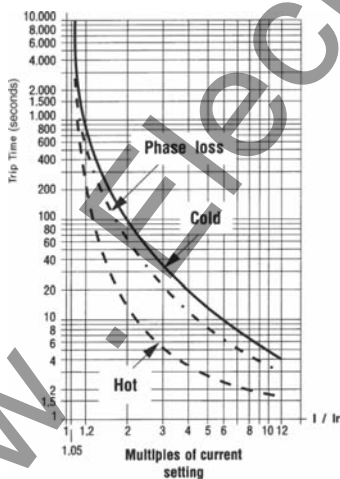
Class 20 RT12



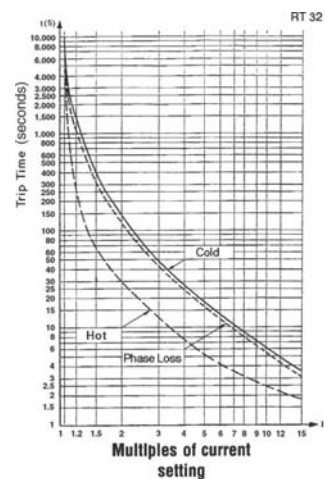
Class 10 RT2



Class 20 RT22



Class 10 RT3



Class 20 RT32

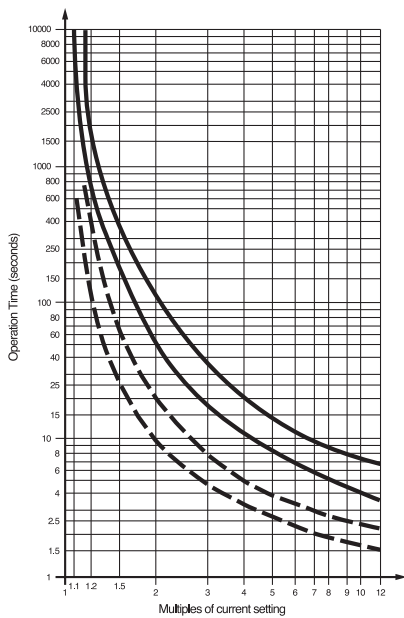
IEC Power Devices

IEC Contactors Thermal Overload Relays

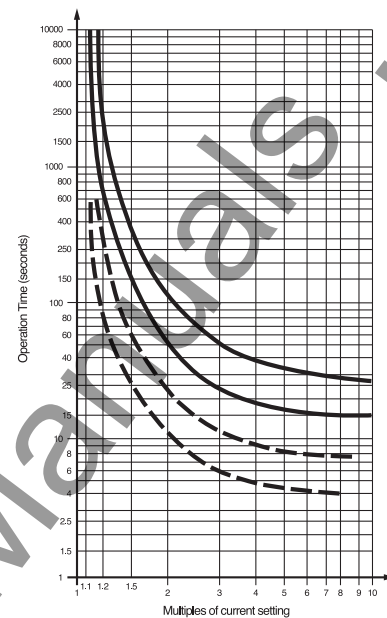
Technical Characteristics

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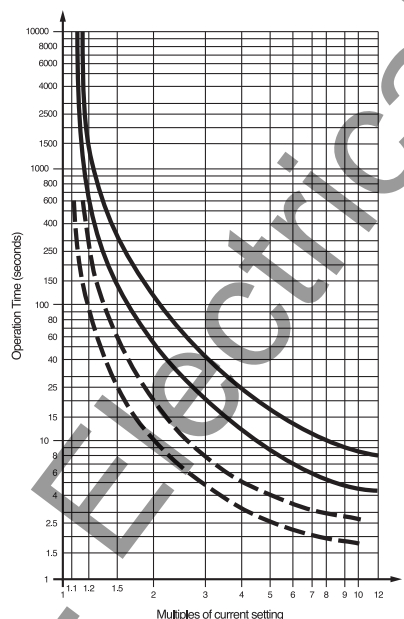
Section 5



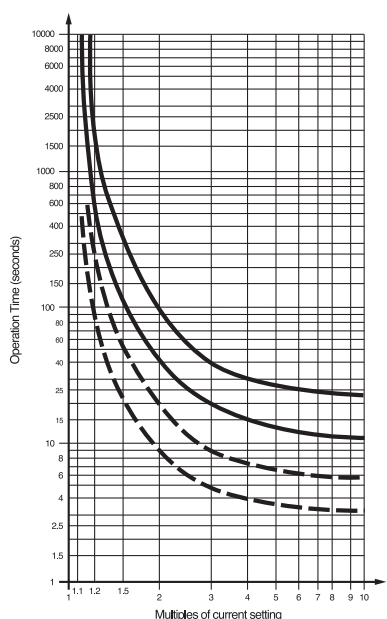
RT4



RT4L



RT5



RT5L



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Control Relays Selection Guide

C-2000

Section 5

AC Operated Standard Terminals

Contact Configuration	Product Number	List Price GO-10C2
4NO	RL4RA040T*	\$57.00
3NO-1NC	RL4RA031T*	\$57.00
2NO-2NC	RL4RA022T*	\$57.00
4NC	RL4RA004T*	\$57.00

AC Operated with Ring Terminal Capacity

Contact Configuration	Product Number	List Price GO-10C2
4NO	RL4RA040R*	\$65.00
3NO-1NC	RL4RA031R*	\$65.00
2NO-2NC	RL4RA022R*	\$65.00
4NC	RL4RA004R*	\$65.00

To complete the product number, replace the asterisk (*) with the appropriate digit from the Coil Selection table. Contact Rating: A600, P600.

AC Coil Selection

AC Voltage		* Coil Suffix
60 Hz	50 Hz	
24	24	1
48	42	F
120	110	J
208	—	L
277	220/230	N
240	—	S
480	380/400	U
—	415	W
600	500	Y

DC Operated Standard Terminals

Contact Configuration	Product Number	List Price GO-10C2
4NO	RL4RD040T#	\$100.00
3NO-1NC	RL4RD031T#	\$100.00
2NO-2NC	RL4RD022T#	\$100.00
4NC	RL4RD004T#	\$100.00

DC Operated with Ring Terminal Capacity

Contact Configuration	Product Number	List Price GO-10C2
4NO	RL4RD040R#	\$108.00
3NO-1NC	RL4RD031R#	\$108.00
2NO-2NC	RL4RD022R#	\$108.00
4NC	RL4RD004R#	\$108.00

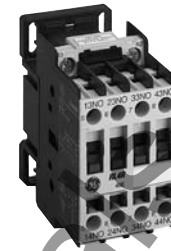
To complete the product number, replace the crosshatch (#) with the appropriate digit from the Coil Selection table. Contact Rating: A600, P600.

DC Coil Selection

DC Voltage	# Coil Suffix
12	B
24	D
48	G
125	K
250	T

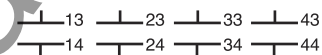
Reference Publications

Instructions	
GEH-6248	RL Relay

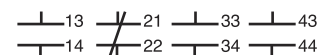


Control Relay

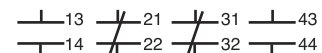
Control Terminal Relay Markings



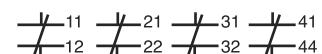
RL4R_040_



RL4R_031_



RL4R_022_



RL4R_004_

IEC Power Devices

IEC Control Relays Accessories

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Section 5

Front-Mount Auxiliary Contact Blocks

Front-mount auxiliary contact blocks clip onto front face of relay.
Contact Rating: A600, Q600.

For Use With	Terminal Type	Contact Configuration	Product Number	List Price GO-10C2
RL Control Relays	Standard	1NO	BCLF10	\$11.00
RL Control Relays	Standard	1NC	BCLF01	\$11.00
RL Control Relays	Standard	1NO	BCLF10G ¹	\$15.00
RL Control Relays	Standard	1NC	BCLF01G ¹	\$15.00
RL Control Relays	Ring	1NO	BCRF10	\$13.00
RL Control Relays	Ring	1NC	BCRF01	\$13.00

¹Overlapping contacts.

Side-Mount Auxiliary Contact Blocks

Side-mount auxiliary contact blocks can be mounted on either left or right sides of relay. Positive displacement contacts are designed to prevent simultaneous closing of NO and NC contacts to avoid overlapping between opposing functions. Contact Rating: A600, Q600.

For Use With	Terminal Type	Type	Contact Configuration	Product Number	List Price GO-10C2
RL4 Control Relays	Standard	Adder Block	1NO-1NC	BRLL11	\$19.00
RL4 Control Relays	Standard	Adder Block	2NO	BRLL20	\$19.00

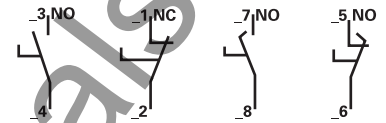
Pneumatic Timer

Pneumatic timers are adjustable time-delayed auxiliary contacts. They come equipped with two time-delayed contacts: 1NO and 1NC, electrically isolated. Setting is scaled over a 350° rotation by means of a knurled knob with timing guide marks. To mount a pneumatic timer, simply clip it on front face of contactor. Contact Rating: A600, Q600.

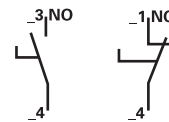
For Use With	Terminal Type	Type	Time range	Contact Configuration	Product Number	List Price GO-10C2
RL4 Control Relays	Standard	Time Delay On	1-30 sec	1NO-1NC	BTLF30C	\$120.00
RL4 Control Relays	Standard	Time Delay On	1-60 sec	1NO-1NC	BTLF60C	\$120.00
RL4 Control Relays	Standard	Time Delay Off	1-30 sec	1NO-1NC	BTLF30D	\$120.00
RL4 Control Relays	Standard	Time Delay Off	1-60 sec	1NO-1NC	BTLF60D	\$120.00
RL4 Control Relays	Ring	Time Delay On	1-30 sec	1NO-1NC	BTRF30C	\$124.00
RL4 Control Relays	Ring	Time Delay On	1-60 sec	1NO-1NC	BTRF60C	\$124.00
RL4 Control Relays	Ring	Time Delay Off	1-30 sec	1NO-1NC	BTRF30D	\$124.00
RL4 Control Relays	Ring	Time Delay Off	1-60 sec	1NO-1NC	BTRF60D	\$124.00



Front-Mounted Block



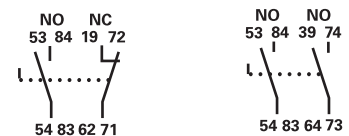
BCLF10/BCLF01/BCLF10G/BCLF01G



BCRF10/BCRF01



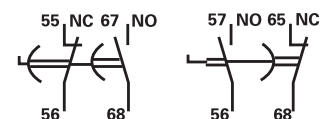
Side-Mounted Block



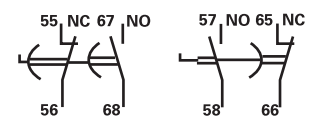
BRLL11/BRLL20



Pneumatic Timer



BTRF30C/BTRF60C/BTRF30D/BTRF60D



BTLF30C/BTLF60C BTLF30D/BTLF60D



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Control Relays Accessories

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Section 5

Surge Suppressor

For suppression of disturbances in circuit voltage occurring upon opening of the relay. Mounts directly on the top of the coil.

For Use With	Terminal Type	Surge Suppressor Type	Voltage	Product Number	List Price GO-10C2
RL4 Control Relays	Standard and Ring	RC	24-48 VAC	BSLR2G	\$24.00
RL4 Control Relays	Standard and Ring	RC	50-127 VAC	BSLR2K	\$24.00
RL4 Control Relays	Standard and Ring	RC	130-240 VAC	BSLR2R	\$24.00
RL4 Control Relays	Standard and Ring	Diode	12-600 VDC	BSLDZ	\$24.00
RL4 Control Relays	Standard and Ring	Varistor	24-48 VAC, DC	BSLV3G	\$24.00
RL4 Control Relays	Standard and Ring	Varistor	50-127 VAC, DC	BSLV3K	\$24.00
RL4 Control Relays	Standard and Ring	Varistor	130-250 VAC, DC	BSLV3R	\$24.00
RL4 Control Relays	Standard and Ring	Varistor	380-500 VAC, DC	BSLV3U	\$32.00

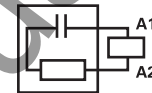
Mechanical Latch Block

Mechanical latch block is used to convert a standard relay into a latched relay. Easy to mount, it clips onto front face of contactor. Contact Rating: A600, Q600.

For Use With	Terminal Type	Voltage Application	Coil Voltage Range	Product Number	List Price GO-10C2
RL4 Control Relays	Standard	50/60 Hz and DC	24-32 Vdc	RMLFD	\$70.00
RL4 Control Relays	Standard	50/60 Hz and DC	42-48 Vdc	RMLFG	\$70.00
RL4 Control Relays	Standard	50/60 Hz and DC	110-125 Vdc	RMLFJ	\$70.00
RL4 Control Relays	Standard	50/60 Hz and DC	208-277 Vdc	RMLFN	\$70.00
RL4 Control Relays	Standard	50/60 Hz and DC	380-480 Vdc	RLMFU	\$70.00
RL4 Control Relays	Standard	50/60 Hz and DC	500-600 Vdc	RMLFY	\$70.00



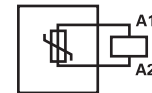
BSL_ _ Surge Suppressor



BSLR_ _ RC



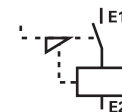
BSLDZ Diode



BLSV_ _ Varistor



RMLF_Mechanical Latch Block



RMLF_

IEC Power Devices

IEC Control Relays Accessories

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Electronic Timer and Interface Modules

These modules add flexibility to C-2000 relays, providing time-delay functions, and interface for low voltage PLC applications or contactor-mounted manual-auto functions. Easily installed, these modules plug right into the contactor coil terminals. All modules include a status indicating LED and accept plug-in voltage surge suppressors.

Timers

Time-on delay and time-off delay modules for sequencing control of contactors. They deliver high repeatability, $\pm 3\%$ in ambient temperatures from 32° to 104°F. A red LED provides indication during time-delay operation.

For Use With	Type	Time-Delay Range	Product Number	List Price GO-10C2
All RL4 Control Relays	On delay	0.1-2 s	BETL02C	\$75.00
All RL4 Control Relays	On delay	1.5-45 s	BETL45C	\$75.00
All RL4 Control Relays	Off delay	0.1-2 s	BETL02D	\$85.00
All RL4 Control Relays	Off delay	1.5-45 s	BETL45D	\$85.00



BETL__Timer

Interface Modules

Interface modules allow relay operation from 24 Volt or 48 Volt sources (such as a PLC output). Current consumption is 15 mA @ 24 Vdc and 25 mA @ 48 Vdc. A red LED provides indication when voltage is applied to E1-E2.

For Use With	Input Voltage	Type	Product Number	List Price GO-10C2
All RL4 Control Relays	24 VDC	Relay	IMRD	\$50.00
All RL4 Control Relays	48 VDC	Relay	IMRG	\$50.00
All RL4 Control Relays	24 VDC	Relay with manual override switch	IMRFD	\$65.00
All RL4 Control Relays	48 VDC	Relay with manual override switch	IMRFG	\$65.00
All RL4 Control Relays	5-30 VDC	Solid State (optical isolation)	IMSSD	\$60.00



IM__Interface Module

Auto-Manual-Stop Modules

Auto-Manual-Stop modules allow local and/or remote operation of the relay coil. The Auto-Manual switch selects the input connected to the coil circuit—A1 for automatic or remote operation, B1 for local operation. In both connections, the manual On-Off switch is in series and controls power to the coil. Auto-Manual can be switched only when the On-Off switch is in the Off position. A red LED provides indication when the coil is energized.

For Use With	Product Number	List Price GO-10C2
All RL4 Control Relays	IMAMS	\$32.00



IMAMS Auto-Manual-Stop Module

Voltage Surge Suppressors

Voltage surge suppressors plug into timer, interface, or auto-stop-manual modules.

Coil Voltage	Surge Suppressor Type	Product Number	List Price GO-10C2
24-48 VAC	Resistive/Capacitive (R/C)	IMRC2G	\$24.00
50-127 VAC	Resistive/Capacitive (R/C)	IMRC2K	\$24.00
130-240 VAC	Resistive/Capacitive (R/C)	IMRC2R	\$24.00
24-48 VAC	Resistive/Capacitive (R/C)	IMRC3G	\$24.00
50-127 VAC	Resistive/Capacitive (R/C)	IMRC3K	\$24.00
130-240 VAC	Resistive/Capacitive (R/C)	IMRC3R	\$24.00
24-250 VAC	Diode	IMD1Z	\$24.00
24-48 VAC or DC	Varistor	IMV3G	\$24.00
50-127 VAC or DC	Varistor	IMV3K	\$24.00
130-240 VAC or DC	Varistor	IMV3R	\$24.00



IM__Voltage Surge Suppressor



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices Specifications C-2000 Contactors, Starters and Relays

Section 5

Standards And Listings

- IEC 947-1
- BS 5424
- CSA C.22.2/14
- IEC 947-4
- BS 775
- EN 50005
- IEC 158-1
- CEI 17-3/252
- UNE 20109
- CENELEC HD419
- ASE 1025
- VDE 0660/102
- NFC 63-110
- UL 508
- CE Mark
- ZH1/457 (Positive Guided Contacts)

Pending Standards And Listings

- SEMKO, NEMKO, DEMKO, Lloyds Register

Ambient Temperature

Operating	−13° to +131°F/−25° to +55°C
Storage	58° to +176°F/50° to 80°C

Altitude Derating

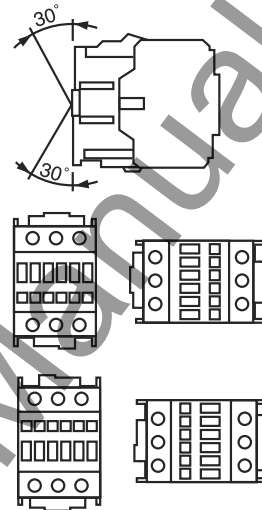
Up to 10,000 ft. (3,000 m)	Nominal Values
10,000 to 13,200 ft. (3,000 to 4,000 m)	90% rated current
13,200 to 16,000 ft. (4,000 to 5,000 m)	80% rated current

Rated Insulation Voltage

- 600 Vac. $U_i = 1000V$ (per IEC 947)

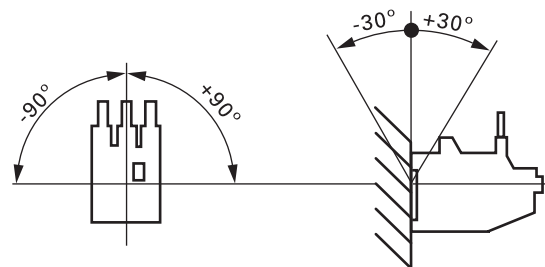
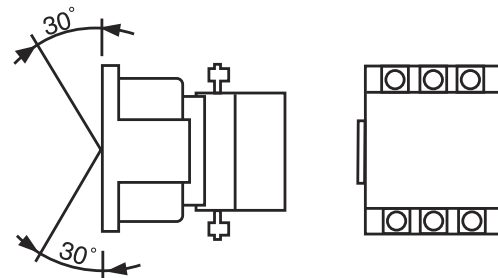
Mounting Position—3-Pole and 4-Pole CL Contactors (5-75 Hp) and RL4 Relays

To maintain operating integrity, the contactor must be mounted in one of the positions shown below:



3-Pole and 4-Pole CK Contactors (100-55 Hp)

The contactor must be installed vertically or tilted a maximum of 30° from vertical, as shown below:



Overload Relays Mounting Positions

IEC Power Devices

IEC Contactors Technical Data

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Section 5

CL/CK Contactors

		CL00A310**, CL00D310**, LAR00A*, LDR00A*	CL01A310**, CL01D310**, LAR01A*, LDR01A*	CL02A310**, CL02D310**, LAR02A*, LDR02A*	CL25A310**, CL25D310**, LAR25A*, LDR25A*	CL04A310**, CL04D310**, LAR04A*, LDR04A*	CL45A310**, CL45D310**, LAR45A*, LDR45A*
Main Contacts							
Continuous Amp Rating (UL508)		25	25	32	32	54	55
AC-1 Amps (IEC 947)		25	25	32	45	60	60
AC-2/AC3 FLA (max)	200 Volts	10	13.8	17.5	22	32	34
	460 Volts	10	13.8	17.5	22	32	34
	575 Volts	10	13.8	17.5	17.5	32	27
AC-2/AC-3 HP(max) 1 Phase	115 Volts	0.5	0.75	1	1.5	2	3
	230 Volts	1.5	2	3	3	5	5
AC-2/AC-3 HP(max) 3 Phase	200 Volts	3	3	5	5	10	10
	230 Volts	3	3	5	7.5	10	10
	460 Volts	5	7.5	10	15	20	25
	575 Volts	7.5	10	15	15	25	25
AC2/3 kW	380/400 Volts	4	5.5	7.5	11	16	18.5
AC2/3 Amps IEC 947	380/400 Volts	9	12	18	25	32	40
AC-4 HP (max) 3 Phase	200 Volts	3	3	5	5	10	10
	230 Volts	3	3	5	7.5	10	10
	460 Volts	5	7.5	10	15	20	25
	575 Volts	7.5	10	15	15	25	25
Maximum Operational Current	AC-1 < 300 ops/hour	25	25	32	32	54	55
460V and below	AC-1 < 600 ops/hour	25	25	32	32	54	55
	AC-1 < 1200 ops/hour	25	25	32	32	54	55
	AC-1 3000 ops/hour	12.5	12.5	16	16	27	27.5
	AC-3 < 300 ops/hour	10	13.8	17.5	22	32	34
	AC-3 < 600 ops/hour	10	13.8	17.5	22	32	34
	AC-3 < 1200 ops/hour	10	13.8	17.5	22	32	34
	AC-3 3000 ops/hour	3.5	4.8	6.1	7.7	11.2	11.9
	AC-4 200 ops/hour max	10	13.8	17.5	22	32	34
	AC-4 300 ops/hour max	10	13.8	17.5	22	32	34
	AC-4 360 ops/hour max	10	13.8	17.5	22	32	34
Wire size - Power Terminals		14-10 AWG	14-10 AWG	14-10 AWG	14-10 AWG	14-10 AWG	14-10 AWG
75C(Cu)							
Torque (Main) in.-lb.		15	15	15	20	16	16
Terminal Type		Clamp	Clamp	Clamp	Clamp	Clamp	Clamp
Terminal Hole	Diameter	-	-	-	-	-	-
(Contactor Bar)	Bolt Size	-	-	-	-	-	-
Noise	dba	25	25	25	25	25	35
Coil and Switching Data Coil Burden							
	Inrush (AC Voltage)	45 va	45 va	45 va	45 va	88 va	88 va
	Holding (AC Voltage)	6 va	6 va	6 va	6 va	9 va	9 va
	Inrush (DC Voltage)	5.5 w	5.5 w	5.5 w	5.5 w	7.5 w	7.5 w
	Holding (DC Voltage)	5.5 w	5.5 w	5.5 w	5.5 w	7.5 w	7.5 w
	Inrush (AC/DC Module)						
	Holding (AC/DC Module)						
Pick-up (% coil voltage)	AC Voltage	85-110	85-110	85-110	85-110	85-110	85-110
	DC Voltage	80-110	80-110	80-110	80-110	80-110	80-110
	AC/DC Module	-	-	-	-	-	-
Drop-out (% coil voltage)	AC Voltage	40-55	40-55	40-55	40-55	40-55	40-55
	DC Voltage	20-40	20-40	20-40	20-40	15-30	15-30
	AC/DC Module	-	-	-	-	-	-
Switching Delay ON (ms)	AC Voltage (at rated voltage)	8-20	8-20	8-20	8-20	10-19	10-19
	AC Voltage (at +10% to -20%)	6-25	6-25	6-25	6-25	7-25	7-25
	DC Voltage (at rated voltage)	40-50	40-50	40-50	40-50	40-65	40-65
	DC Voltage (at +10% to -20%)	35-65	35-65	35-65	35-65	35-70	35-70
	AC/DC Module (at rated voltage)	-	-	-	-	-	-
	AC/DC Module (at +10% to -20%)	-	-	-	-	-	-
Switching Delay OFF (ms)	AC Voltage (at rated voltage)	6-13	6-13	6-13	6-13	5-25	5-25
	AC Voltage (at +10% to -20%)	6-13	6-13	6-13	6-13	5-25	5-25
	DC Voltage (at rated voltage)	30-60	30-60	30-60	30-60	40-65	40-65
	DC Voltage (at +10% to -20%)	30-60	30-60	30-60	30-60	40-65	40-65
	AC/DC Module (at rated voltage)	-	-	-	-	-	-
	AC/DC Module (at +10% to -20%)	-	-	-	-	-	-
Maximum Operations per Hour	AC Voltage (No Load)	9000	9000	9000	9000	9000	9000
	AC Voltage (Rated Load -AC1, AC3)	1200	1200	1200	1200	1200	1200
	AC Voltage (Rated Load -AC4)	360	360	360	360	360	360
	DC Voltage (No Load)	3600	3600	3600	3600	3600	3600
	DC Voltage (Rated Load -AC1, AC3)	1200	1200	1200	1200	1200	1200
	DC Voltage (Rated Load -AC4)	360	360	360	360	360	360
	AC/DC(Module) Voltage (No Load)	-	-	-	-	-	-
	AC/DC(Module) Module (Rated Load -AC1, AC3)	-	-	-	-	-	-
	AC/DC(Module) Module (Rated Load -AC4)	-	-	-	-	-	-
Mechanical Life (millions of Operations)		20	20	20	20	20	20
Aux. Contacts Std Product	Rating A600, Q300	1NO (Built-in)	1NO (Built-in)	1NO (Built-in)	1NO Front	1NO (Built-in)	1NO Front
Aux. Contacts	Maximum Number of Aux. Contacts	4	4	4	4	6	6
	Maximum Aux. Block Configuration	4 front or 1 side-mount each side	4 front or 1 side-mount each side	4 front or 1 side-mount each side	4 front or 1 side-mount each side	4 front plus 1 side or 2 front plus 1 side mount each side	4 front plus 1 side or 2 front plus 1 side mount each side



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactors Technical Data

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Section 5

CL/CK Contactors

		CL06A311**, CL06E311**, LAR06A*, LER06A*	CL07A311**, CL07E311**, LAR07A*, LER07A*	CL08A311**, CL08E311**, LAR08A*, LER08A*	CL09A311**, CL09E311**, LAR09A*, LER09A*	CL10A311**, CL10E311**, LAR10A*, LER10A*	CK75CE311*, KAR75C*
Main Contacts							
Continuous Amp Rating (UL508)		80	100	110(O),102(E)	140(O),120(E)	140(O),120(E)	150
AC-1 Amps (IEC 947)		80	100	110	140	140	200
AC-2/AC3 FLA (max)	200 Volts	48	62	68	80	104	140
	460 Volts	48	62	68	80	96	140
	575 Volts	48	62	68	80	80	140
AC-2/AC-3 HP(max) 1 Phase	115 Volts	3	3	5	7.5	10	10
	230 Volts	7.5	7.5	15	15	20	25
AC-2/AC-3 HP(max) 3 Phase	200 Volts	15	20	20	25	30	40
	230 Volts	15	20	25	30	40	50
	460 Volts	30	40	50	60	75	100
	575 Volts	40	50	60	75	75	125
AC2/3 kW		380/400 Volts	22	30	37	45	55
AC2/3 Amps IEC 947		380/400 Volts	50	65	80	95	105
AC-4 HP (max) 3 Phase	200 Volts	15	20	20	25	30	40
	230 Volts	15	20	25	30	40	50
	460 Volts	30	40	50	60	75	100
	575 Volts	40	50	60	75	75	125
Maximum Operational Current 460V and below	AC-1 < 300 ops/hour	80	100	110			
	AC-1 < 600 ops/hour	80	100	110	120	140(O), 120(E)	150
	AC-1 < 1200 ops/hour	80	100	110	96	112(O), 96(E)	125
	AC-1 3000 ops/hour	40	50	55	48	56(O), 48(E)	50
	AC-3 < 300 ops/hour	48	62	68			
	AC-3 < 600 ops/hour	48	62	68	80	96	140
	AC-3 < 1200 ops/hour	48	62	68	60	72	100
	AC-3 3000 ops/hour	16.8	21.7	23.8	20	24	30
	AC-4 200 ops/hour max	48	62	68	80	96	140
	AC-4 300 ops/hour max	48	62	68	-	-	-
	AC-4 360 ops/hour max	48	62	68	-	-	-
Wire size - Power Terminals 75°C(Cu)		14-10 AWG	14-10 AWG	14-10 AWG	10-2/0 AWG	10-2/0 AWG	6 AWG - 250kcmil
Torque (Main) in.-lb.		40	40	40	60	60	275
Terminal Type		Box Lug	Box Lug	Box Lug	Box Lug	Box Lug	Optional Lug CKX03
Terminal Hole (Contactor Bar)		Diameter	-	-	-	-	0.32
Noise		Bolt Size	-	-	-	-	M-8
Noise		dba	45	45	45	45	45
Coil and Switching Data Coil Burden		Inrush (AC Voltage)	191 va	191 va	191 va	191 va	
		Holding (AC Voltage)	17 va	17 va	17 va	17 va	
		Inrush (DC Voltage)					
		Holding (DC Voltage)					
		Inrush (AC/DC Module)	125 w	125 w	125 w	125 w	350 va
		Holding (AC/DC Module)	2.5 w	2.5 w	2.5 w	2.5 w	20 va
Pick-up (% coil voltage)	AC Voltage	85-110	85-110	85-110	85-110	85-110	
	DC Voltage	-	-	-	-	-	-
Drop-out (% coil voltage)	AC/DC Module	80-110	80-110	80-110	80-110	80-110	80-110
	AC Voltage	40-60	40-60	40-60	40-60	40-60	
	DC Voltage	-	-	-	-	-	-
	AC/DC Module	40-60	40-60	40-60	40-60	40-60	40-60
Switching Delay ON (ms)	AC Voltage (at rated voltage)	15-30	15-30	15-30	15-30	15-30	-
	AC Voltage (at +10% to -20%)	9-35	9-35	9-35	9-35	9-35	-
	DC Voltage (at rated voltage)	-	-	-	-	-	-
	DC Voltage (at +10% to -20%)	-	-	-	-	-	-
	AC/DC Module (at rated voltage)	50-60	50-60	50-60	55-60	55-60	60-70
	AC/DC Module (at +10% to -20%)	60-80	60-80	60-80	40-50	40-50	-
Switching Delay OFF (ms)	AC Voltage (at rated voltage)	9-15	9-15	9-15	9-15	9-15	-
	AC Voltage (at +10% to -20%)	9-15	9-15	9-15	9-15	9-15	-
	DC Voltage (at rated voltage)	55-60	-	-	-	-	-
	DC Voltage (at +10% to -20%)	40-50	-	-	-	-	-
	AC/DC Module (at rated voltage)	55-60	55-60	55-60	55-60	55-60	13-17
	AC/DC Module (at +10% to -20%)	40-50	40-50	40-50	40-50	40-50	-
Maximum Operations per Hour	AC Voltage (No Load)	9000	9000	9000	5000	5000	-
	AC Voltage (Rated Load -AC1, AC3)	1200	1200	1200	1200	1200	-
	AC Voltage (Rated Load -AC4)	200	200	200	200	200	-
	DC Voltage (No Load)	-	-	-	-	-	-
	DC Voltage (Rated Load -AC1, AC3)	-	-	-	-	-	-
	DC Voltage (Rated Load -AC4)	-	-	-	-	-	-
	AC/DC(Module) Voltage (No Load)	2500	2500	2500	2500	2500	1200
	AC/DC(Module) Module (Rated Load -AC1, AC3)	1200	1200	1200	1200	1200	600
	AC/DC(Module) Module (Rated Load -AC4)	200	200	200	200	200	150
Mechanical Life (millions of Operations)		15	15	15	15	15	10
Aux. Contacts Std Product		Rating A600, Q300	1N0, 1NC Front	1N0, 1NC Front	1N0, 1NC Front	1N0, 1NC Front	1N0, 1NC Side
Aux. Contacts		Maximum Number of Aux. Contacts	8	8	8	8	8
		Maximum Aux. Block Configuration	6 front plus 1 side mount or 2 side mount each side	6 front plus 1 side mount or 2 side mount each side	6 front plus 1 side mount or 2 side mount each side	6 front plus 1 side mount or 2 side mount each side	2 side mount each side

IEC Power Devices

IEC Contactors Technical Data

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Section 5

CL/CK Contactors

		CK08CE311*, KAR08C*	CK09BE311*, KAR09B*	CK95BE311*, KAR95B*	CK10CE311*, KAR10C*	CK11CE311*, KAR11C*	CK12BE311*, KAR12B*
Main Contacts							
Continuous Amp Rating (UL508)		175	200	310	500	600	750 (O), 650 (E)
AC-1 Amps (IEC 947)		250	315	500	600	700	1000
AC-2/AC3 FLA (max)	200 Volts	156	192	302	398	480	602
	460 Volts	156	192	302	398	480	602
	575 Volts	156	192	302	398	480	602
AC-2/AC-3 HP(max) 1 Phase	115 Volts	15					
	230 Volts	30					
AC-2/AC-3 HP(max) 3 Phase	200 Volts	50	60	100	125	150	200
	230 Volts	60	75	100	150	200	250
	460 Volts	125	150	250	300	400	500
	575 Volts	150	150	300	400	500	600
AC2/3 kW	380/400 Volts	90	132	160	220	280	375
AC2/3 Amps IEC 947	380/400 Volts	185	250	310	420	550	700
AC-4 HP (max) 3 Phase	200 Volts	50	60	100	125	150	200
	230 Volts	60	75	100	150	200	250
	460 Volts	125	150	250	300	400	500
	575 Volts	150	150	250	400	500	600
Maximum Operational Current	AC-1 < 300 ops/hour				500	600	810
460V and below	AC-1 < 600 ops/hour	175	200	310	400	500	648
	AC-1 < 1200 ops/hour	140	160	250	-	-	-
	AC-1 3000 ops/hour	70	80	120	-	-	-
	AC-3 < 300 ops/hour				398	480	602
	AC-3 < 600 ops/hour	156	192	302	299	360	452
	AC-3 < 1200 ops/hour	115	144	227	-	-	-
	AC-3 3000 ops/hour	39	48	76	-	-	-
	AC-4 200 ops/hour max	156	192	302	398	480	602
	AC-4 300 ops/hour max	-	-	-	398	480	602
	AC-4 360 ops/hour max	-	-	-	-	-	-
Wire size - Power Terminals		5 AWG - 250kcmil	6 AWG - 350kcmil	6 AWG - 350kcmil	2 AWG - 500kcmil ; 2/0 AWG - 600kcmil	2 AWG - 500kcmil ; 2/0 AWG - 600kcmil	2 AWG - 500kcmil ; 2/0 AWG - 600kcmil
75C(Cu)		275	200	200	375	375	375
Torque (Main) in.-lb.							
Terminal Type		Optional Lug CKX03	Optional Lug CKX02	Optional Lug CKX02	Optional Lug CKX01	Optional Lug CKX01	Optional Lug CKX01
Terminal Hole	Diameter	0.32	0.43	0.43	0.43	0.43	0.43
(Contactor Bar)	Bolt Size	M-8	M-10	M-10	M-10	M-10	M-10
Noise	dba	45	45	45	45	45	45
Coil and Switching Data Coil Burden	Inrush (AC Voltage)						
	Holding (AC Voltage)						
	Inrush (DC Voltage)						
	Holding (DC Voltage)						
	Inrush (AC/DC Module)	350 va	425 va	425 va	750 va	750 va	750 va
	Holding (AC/DC Module)	20 va	20 va	20 va	25 va	25 va	25 va
Pick-up (% coil voltage)	AC Voltage						
	DC Voltage	-	-	-	-	-	-
	AC/DC Module	80-110	80-110	80-110	80-110	80-110	80-110
Drop-out (% coil voltage)	AC Voltage						
	DC Voltage	-	-	-	-	-	-
	AC/DC Module	40-60	40-60	40-60	40-60	40-60	40-60
Switching Delay ON (ms)	AC Voltage (at rated voltage)	-	-	-	-	-	-
	AC Voltage (at +10% to -20%)	-	-	-	-	-	-
	DC Voltage (at rated voltage)	-	-	-	-	-	-
	DC Voltage (at +10% to -20%)	-	-	-	-	-	-
	AC/DC Module (at rated voltage)	60-70	60-70	60-70	110-115	110-115	70-80
	AC/DC Module (at +10% to -20%)	-	-	-	-	-	-
Switching Delay OFF (ms)	AC Voltage (at rated voltage)	-	-	-	-	-	-
	AC Voltage (at +10% to -20%)	-	-	-	-	-	-
	DC Voltage (at rated voltage)	-	-	-	-	-	-
	DC Voltage (at +10% to -20%)	-	-	-	-	-	-
	AC/DC Module (at rated voltage)	13-17	13-17	13-17	70-80	70-80	70-80
	AC/DC Module (at +10% to -20%)	-	-	-	-	-	-
Maximum Operations per Hour	AC Voltage (No Load)	-	-	-	-	-	-
	AC Voltage (Rated Load -AC1, AC3)	-	-	-	-	-	-
	AC Voltage (Rated Load -AC4)	-	-	-	-	-	-
	DC Voltage (No Load)	-	-	-	-	-	-
	DC Voltage (Rated Load -AC1, AC3)	-	-	-	-	-	-
	DC Voltage (Rated Load -AC4)	-	-	-	-	-	-
	AC/DC Module Voltage (No Load)	1200	1200	1200	900	900	900
	AC/DC Module Module (Rated Load -AC1, AC3)	600	600	600	300	300	300
	AC/DC Module Module (Rated Load -AC4)	150	150	150	120	120	120
Mechanical Life (millions of Operations)		10	10	10	10	10	10
Aux. Contacts Std Product	Rating A600, Q300	1NO,1NC Side	1NO,1NC Side	1NO,1NC Side	1NO,1NC Side	1NO,1NC Side	1NO,1NC Side
Aux. Contacts	Maximum Number of Aux. Contacts	8	8	8	8	8	8
	Maximum Aux. Block Configuration	2 side mount each side	2 side mount each side	2 side mount each side	2 side mount each side	2 side mount each side	2 side mount each side



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Overload Relays Technical Data

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Section 5

RT Overload Relays

	RT1	RT2	RT3	RT4 Suffix K-M	RT4 Suffix N-R	RT5
Trip Class	10/20	10/20	10/20	10/30	10/30	10/30
Contactor Size	CL00	CL06	CK75	CK09	CK09	CK10
	CL01	CL07	CK08	CK95	CK95	CK11
	CL02	CL08				CK12
	CL25	CL09				
	CL04	CL10				
	CL45					
Rated Insulation Voltage	690V	1000V	1000V	1000V	1000V	1000V
Frequency Limits	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz	50-60 Hz
Terminal Capacity	14-8 AWG	14-1/0 AWG	6 AWG-250kcmil	14-2/0 AWG	6 AWG-350kcmil	8 AWG-500 kcmil
						2/0 AWG-600 kcmil
Terminal Type	Clamp	Box	Optional Lug	Box	Optional Lug	Optional Lug
			CKX03		CKX02	CKXC01
Torque (in.-lb.)	24-14	50	275	105	200	375
Auxiliary Contact 1NO-1NC	B660/Q600	B660/Q600	B660/Q600	B660/Q600	B660/Q600	B660/Q600
Terminal Capacity	22-12 AWG	22-12 AWG	22-12 AWG	22-12 AWG	22-12 AWG	22-12 AWG
Terminal Torque (lb.-in.)	7-12 AWG	7-12 AWG	7-12 AWG	7-12 AWG	7-12 AWG	7-12 AWG
	solid or stranded	solid or stranded	solid or stranded	solid or stranded	solid or stranded	solid or stranded
	75°C copper wire	75°C copper wire	75°C copper wire	75°C copper wire	75°C copper wire	75°C copper wire

IEC Power Devices

IEC Contactors Accessories Technical Data

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Electronic Timer and Interface Modules
Wiring Diagrams/Operation Characteristics

Section 5

Standards

- UL508, UL listed
- CSA C22.2, No. 14, C-UL listed
- IEC 60947-1, 60947-5-1
- CE Marked, EMC and LV Directives

Ambient Temperature

Operating	−13°F to 140°F
Storage	−40°F to 176°F

Relative Humidity

- 95% without condensation

Wire Size/Torque

14-10 AWG, Cu wire
60°-75°C/Torque 7 lbs./in.

Voltage Input

IMRD, IMRFD	17-30 Vdc
IMRG, IMRFG	33-60 Vdc
IMAMS	5-30 Vdc

Switching Rate (200 VA @ 50% PF)

- 1000 ops/hr

Minimum Pulse BETL *D

- 40ms

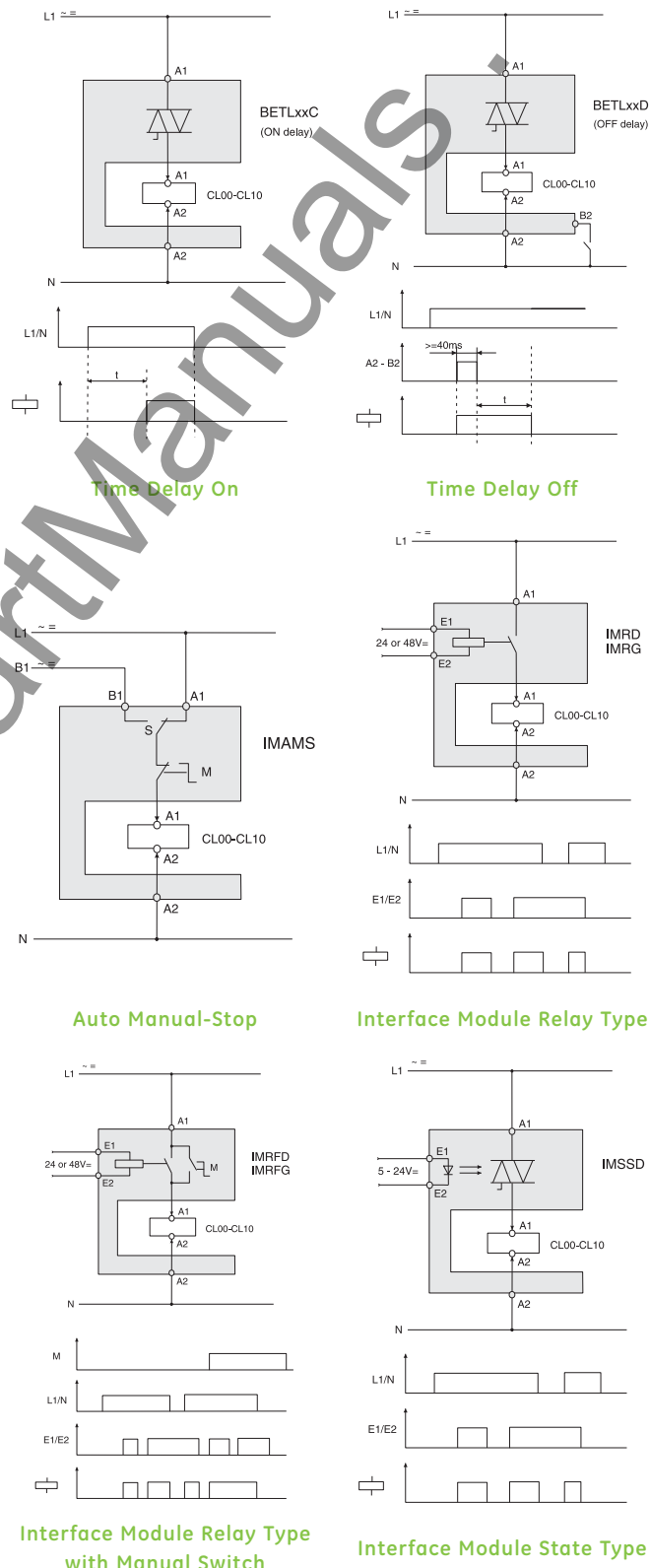
Electrical Endurance (200 VA @ 50% PF)

BETL*	15 million operations
IMR*, IMRF*	3 million operations
IMSSD	15 million operations
IMAMS	10000 cycles

Reference Publications

Instructions

Interface Modules (IMR*, IMRF*, IMSSD, IMAMS)	DEH-174
Surge Suppressors (IMRC*, IMDIZ, IMV*)	DEH-175
Timers (BETL*)	DEH-175



Utilization Categories

Utilization categories are used to describe the type of motor load and duty cycle. Each category has a unique life/load curve which is used to estimate expected electrical life of a specific controller.

Following are descriptions of the most common ac utilization categories:

Utilization Category	Description
AC-1	Noninductive or slightly inductive loads, such as resistance furnaces.
AC-2	Starting of slip-ring motors without plugging.
AC-3	Starting and stopping of squirrel-cage motors. This utilization category is typical of the standard type of motor duty encountered in most industrial applications.
AC-4	Starting of squirrel-cage motors in inching, plugging, and reversing applications.

Life Curves . . . how to use

To determine estimated electrical life for a specific contactor, follow these guidelines:

1. Determine appropriate utilization category. The illustrations below show typical life curves for C-2000 contactors, which will operate the AC-1 utilization categories. AC-2, AC-3, AC-4, and AC-3/AC-4 (mixed-duty) life curves are shown on pages 5-71, 5-72.
2. Once the appropriate utilization category has been determined, then using the appropriate curve, it is easy to determine the expected contactor's life by reading the figure (in millions of operations) to the left of the intersection of the rated operating current and the contactor curve.

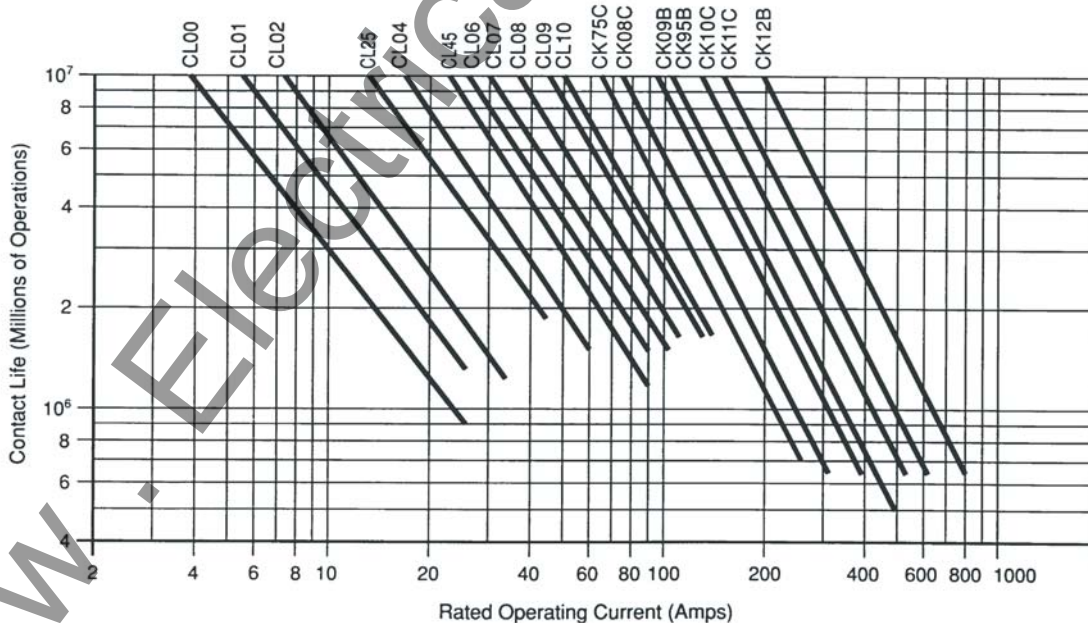
Example: Using a motor duty cycle of starting and stopping (standard) for a three-phase squirrel-cage motor rated 15 horsepower at 460 V with an operating current of 19.6 amperes, choose utilization curve AC-3 and take the following action:

- A. Locate rated operating current on bottom (horizontal) scale and draw a vertical line to intersect the first heavy line which will indicate contactor size. In this example, the drawn vertical line for 19.6 amperes will intersect the CL25 contactor line.
- B. Reading the vertical scale to the left of the intersection point denotes an expected life of approximately 3 million operations for the selected size of contactor (CL25).
- C. If greater contactor life is required, continue the drawn vertical line to intersect with a larger size contactor line.

Caution note: Do not apply a contactor for use on a motor which has greater horsepower rating than shown in the Data Summary table on pages 5-65 through 5-67.

Life Curves

AC-1: Noninductive, or lightly inductive loads, e.g., resistance furnaces



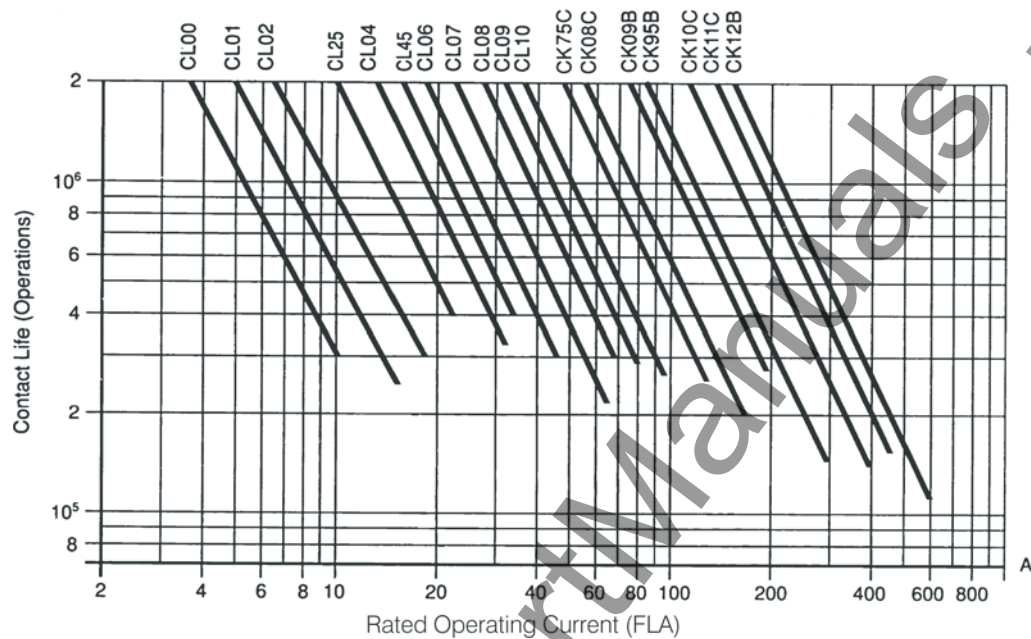
IEC Power Devices

IEC Contactors Lifetime Curves

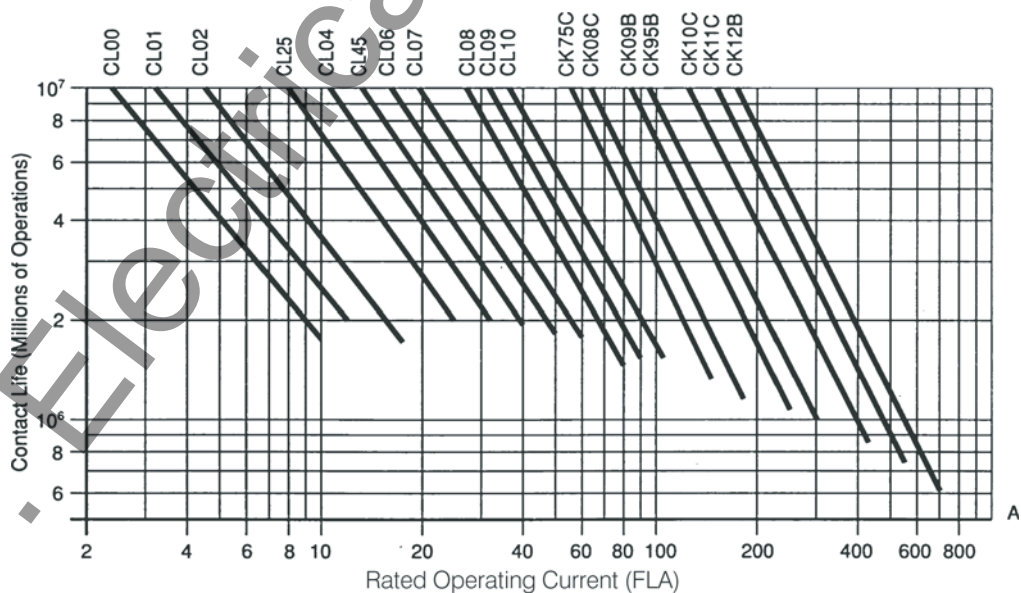
C-2000

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AC-2: Starting of Slip-Ring Motors Without Plugging

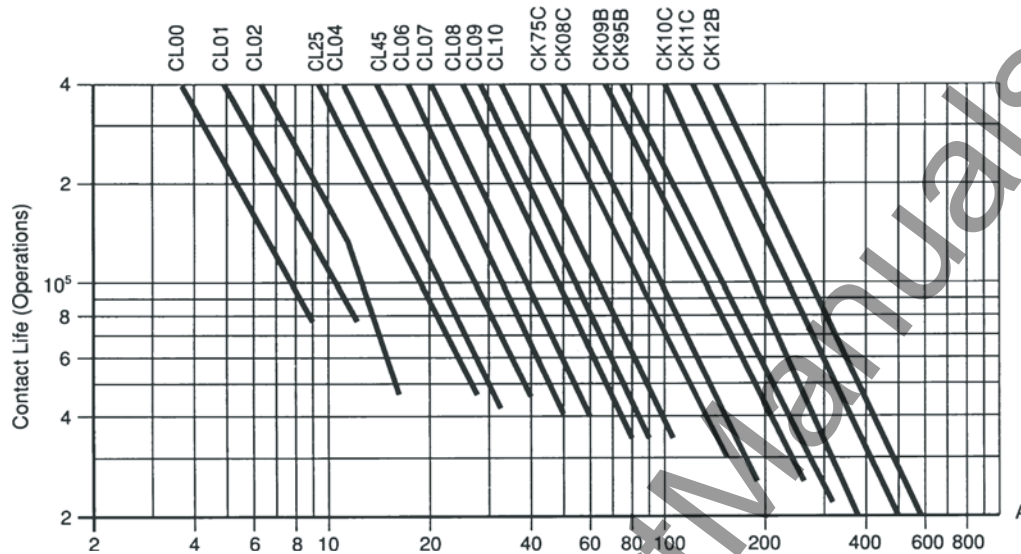


AC-3: Interruption of Running Squirrel-Cage Motors



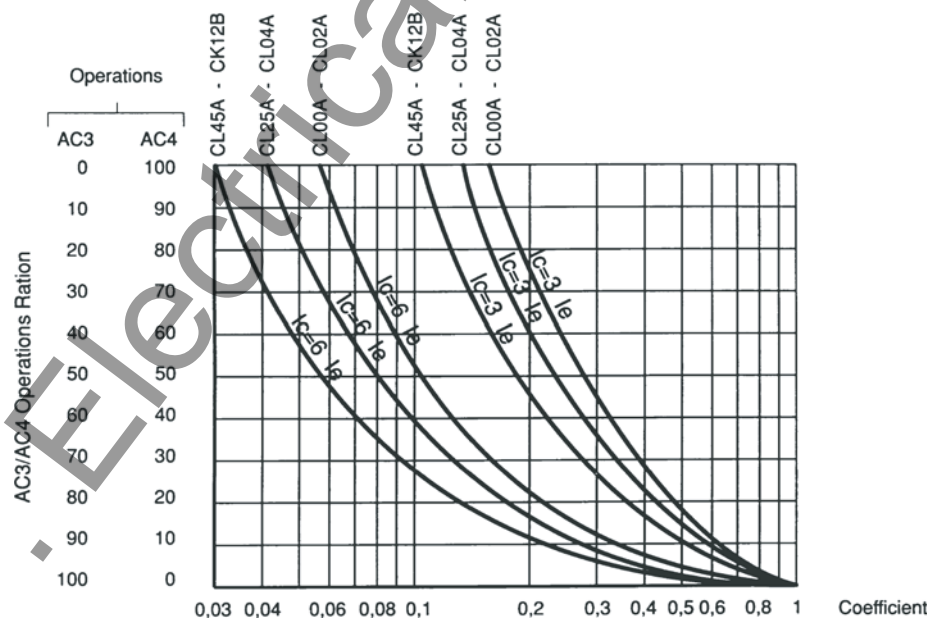
Publications and Reference: See Section 17 for a complete list of additional product-related publications

AC-4: Inching (Jogging) of Squirrel-Cage Motors



AC-3/AC-4: Mixed-Duty with Squirrel-Cage Motors

To calculate mixed AC-3/AC-4 life: Find the ratio of AC-3/AC-4 operations on the left side, read across to the appropriate curve for the contactor and breaking current expected (3 times FLA or 6 times FLA). Then read corresponding coefficient from the bottom of the curve. The product of this coefficient and the AC-3 life from the previous page is the expected life under mixed AC-3/AC-4 conditions.



IEC Power Devices

IEC Contactors Application Ratings-DC

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Section 5

C-2000 Controls can be used as DC contactors in many industrial applications. These include: DC load banks, loop contactors and dynamic braking contactors in adjustable speed DC drives and other special motor control applications. Contact the motor manufacturer as to the starting requirements of a particular motor. Only small motors can be started at full voltage. Medium and large-sized DC motors require resistance in series with armature during acceleration when connected to a constant potential DC system.

AC contactors are conditionally suitable for switching DC. The switching capacity for DC, using AC contactors, is decreased as the voltage increases, and also as inductance is added to the circuit.

Utilization Categories have been assigned to the more popular loads where contactors are required. They include:

DC-1

DC-1 applications involve switching noninductive loads such as resistive load banks.

DC-2

DC-2 applications involve starting and switching off shunt wound DC motors. Shunt wound DC motors are those most frequently used in adjustable voltage, adjustable speed DC drives. Even DC motors with permanent magnet fields are usually considered to be shunt wound.

DC-3

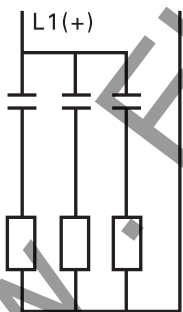
DC-3 applications involve starting, stopping, plugging and jogging shunt wound DC motors. Jogging is an inexpensive and frequently ordered DC drive modification. Care must be taken to determine when jogging is required, since it is more severe than duties covered by category DC-2.

DC-4 and DC-5

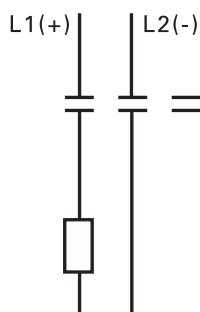
DC-4 and DC-5 applications cover use with series wound, traction-type DC motors. Traction motor requirements are application intensive and should involve factory review.

Ratings for DC Applications (AMPS)

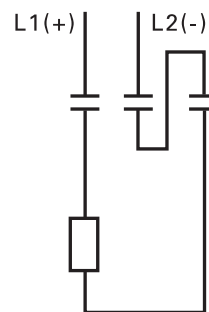
	DC-1 (LR ≤ 15 ms)												DC-3 (LR ≤ 2.5 ms)												DC-5 (LR ≤ 15 ms)																							
Rated Voltage Ue	24V				125V				220V				440V				24V				125V				220V				440V				24V				125V				220V				440V			
Poles in Series	1	2	3	4	1	2	3	4	2	3	4	3	4	1	2	3	4	1	2	3	4	2	3	4	3	4	1	2	3	4	1	2	3	4	2	3	4	3	4									
CL00	18	25	25	—	6	18	25	—	7.5	25	—	8	—	12	18	18	—	2	10	15	—	2	12	—	1.5	—	12	18	18	—	0.8	5	15	—	0.8	3	—	0.5	—									
CL01	18	25	25	25	6	18	25	25	7.5	25	25	8	15	12	18	18	18	2	10	15	—	12	15	6	1.5	6	12	18	18	18	0.8	5	15	15	0.8	3	10	0.5	2									
CL02	18	32	32	32	6	18	25	32	7.5	25	32	8	15	12	18	18	18	2	12	18	18	2	12	18	1.5	6	12	18	18	18	0.8	5	15	18	0.8	3	10	0.5	2									
CL25	25	45	45	—	8	25	32	—	8	32	—	10	—	18	25	25	—	2	18	25	—	2	18	—	1.5	—	18	25	25	—	0.8	5	20	—	0.8	3	—	0.5	—									
CL04	32	60	60	60	8	45	60	60	8	50	60	10	25	25	40	40	40	3	25	32	32	2	25	32	3	6	25	40	40	32	1.2	5	25	32	0.8	3	15	0.7	4									
CL45	40	60	60	—	8	45	60	—	8	50	—	10	—	32	40	40	—	3	32	40	—	2	32	—	3	—	32	40	40	—	1.2	5	32	—	0.8	3	—	0.7	—									
CL06	50	90	90	—	16	80	90	—	20	90	—	15	—	40	65	65	—	3	50	65	—	7	50	—	3	—	40	65	65	—	1.2	50	60	—	3	7	—	1	—									
CL07	65	110	110	110	16	90	110	110	20	110	110	15	90	50	80	80	80	3	60	80	80	7	65	80	3	65	50	80	80	80	1.2	60	70	80	3	7	75	1	50									
CL08	65	110	110	—	16	90	110	—	20	110	—	15	—	50	80	80	—	3	60	80	—	7	65	—	3	—	50	80	80	—	1.2	60	70	—	3	7	—	1	—									
CL09	80	140	140	140	16	110	140	140	20	140	140	15	110	65	105	105	105	3	80	105	105	7	95	150	3	75	65	105	105	105	1.2	85	95	105	4	7	95	1	60									
CL10	80	140	140	—	16	110	140	—	20	140	—	15	—	65	105	105	—	3	80	105	—	7	95	—	3	—	65	105	105	—	1.2	85	95	—	4	7	—	1	—									
CK75	200	250	250	—	25	200	250	—	110	250	250	120	—	150	150	150	—	25	150	150	—	60	150	—	50	—	150	150	150	—	20	95	150	—	50	95	—	40	—									
CK08	200	250	250	250	25	200	250	250	110	250	250	120	200	185	185	185	185	25	185	185	185	70	185	185	55	105	185	185	185	185	20	105	185	185	55	105	185	40	95									
CK09	250	315	315	315	30	250	315	315	150	315	315	150	250	250	250	250	250	30	250	250	250	85	250	250	70	185	250	250	250	250	25	185	250	250	70	185	250	50	150									
CK95	350	450	450	450	50	300	500	500	200	500	500	180	315	309	309	309	309	50	309	309	309	95	309	309	80	205	309	309	309	309	40	205	309	309	80	205	309	60	185									
CK10	500	600	600	600	60	400	600	600	250	600	600	240	400	420	420	420	420	60	420	420	420	140	420	420	120	250	420	420	420	420	50	250	420	420	120	250	420	90	205									
CK11	600	700	700	700	70	500	700	700	250	700	700	300	500	550	550	550	550	70	550	550	550	185	550	550	150	300	550	550	550	550	60	300	550	550	150	300	500	100	250									
CK12	800	1000	1000	1000	100	600	1000	1000	300	1000	1000	400	700	700	700	700	700	100	700	700	700	225	700	700	180	400	700	700	700	700	80	400	700	700	180	400	700	100	300									



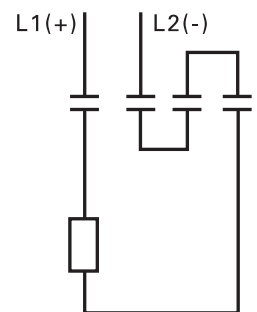
Single-pole operation



Two poles in series



Three poles in series



Four poles in series



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactors Application Ratings-AC

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Section 5

Maximum Three-Phase KVAR Rating for Switching Capacitors

Product Number	10,000 Amp RMS				22,000 Amp RMS			
	Maximum Available Fault Current				Maximum Available Fault Current			
	200V	230V	460V	575V	200V	230V	460V	575V
CL00	3	3	5	5.7	1.5	1.5	2.5	2.8
CL01	4.5	4.5	9.5	11	2.2	2.2	4.5	5.5
CL02	6.5	6.5	11	12.5	3.2	3.2	5.5	6.2
CL25	9	9	15	17.5	4.5	4.5	7.5	8.2
CL04	12.5	12.5	21	24	6.2	6.2	10.5	12
CL45	17	17	30	35	8.5	8.5	15	17.5
CL06	22	22	40	50	11	11	20	25
CL07	25	25	45	65	12.5	12.5	22.5	32.5
CL08	30	30	50	70	15	15	25	35
CL09	40	40	65	95	20	20	32.5	47.5
CL10	50	50	80	120	25	25	40	60
CK75	60	60	100	150	60	60	100	150
CK08	70	70	130	175	70	70	130	175
CK09	95	95	165	230	95	95	165	230
CK95	105	105	190	288	105	105	190	288
CK10	135	135	260	370	135	135	260	370
CK11	190	190	325	450	190	190	325	450
CK12	250	250	400	600	250	250	400	600

Utilization in Category AC-1, General Use

3-Pole Contactors			CL Contactors										CK Contactors							
Max. operational			00	01	02	25	04	45	06	07	08	09	10	75	08	09	95	10	11	12
current at ambient	40°C	A	25	25	32	32	54	55	80	100	102	120	120	150	175	200	310	500	600	650
temperature of:	55°C	A	25	25	32	32	54	55	80	100	102	120	120	150	175	200	310	425	510	546
(for all voltages)	70°C	A	20	20	25	25	41	44	62	78	81	80	80	130	155	175	270	335	432	468

4-Pole Contactors			CL Contactors								CK Contactors					
Max. operational			01	02	03	04	06	07	08	09	08	09	95	10	11	12
current at ambient	40°C	A	25	32	40	54	70	100	110	120	175	200	310	500	550	650
temperature of:	55°C	A	25	32	40	54	70	100	110	120	175	200	310	425	462	543
(for all voltages)	70°C	A	20	25	28	41	52	78	88	80	155	175	270	335	462	468

UL/CSA Elevator Duty Rating

Product Number	Maximum FLA	Max Hp (1-phase)		230 Volts HP (A)	200 Volts HP (A)	Max Hp (3-phase)		480 Volts HP (A)
		115 Volts HP (A)				230 Volts HP (A)		
CL00	7.8	0.33 (7.2)		0.75 (6.9)	2 (7.8)	2 (6.8)		5 (7.6)
CL01	11	0.5 (9.8)		1.5 (10)	3 (11)	3 (9.6)		7.5 (11)
CL02	15.2	0.75 (13.8)		2 (12)	3 (11)	3 (15.2)		10 (14)
CL25	22	1.5 (20)		3 (17)	5 (17.5)	7.5 (22)		15 (21)
CL04	27	2 (24)		3 (17)	7.5 (25)	7.5 (22)		20 (27)
CL06	34	3 (34)		5 (28)	10 (32)	10 (28)		25 (34)
CL07	42	3 (34)		7.5 (40)	10 (32)	15 (42)		30 (40)
CL08	56	5 (56)		10 (50)	15 (48)	20 (54)		40 (52)
CL09	65	5 (56)		10 (50)	20 (62)	20 (54)		50 (65)

IEC Power Devices

IEC Contactors Application Ratings-KVA

C-2000

Section 5

Maximum KVA of Transformer for Primary Switching (50/60 Hz)

Product Number	Max. Peak Closing Current	Phase	Inrush = 20 x Normal					Inrush = 40 x Normal				
			120V	208V	240V	480V	600V	120V	208V	240V	480V	600V
CL00	450 Amps	1	0.6	1	1.2	1.7	2.1	0.3	0.5	0.6	0.8	1
CL00	450 Amps	3	1.1	1.9	2.2	3.1	3.8	0.5	0.9	1.1	1.5	1.9
CL01	450 Amps	1	0.8	1.4	1.7	2.4	3.0	0.4	0.7	0.8	1.2	1.5
CL01	450 Amps	3	1.5	2.6	3.0	4.2	5.2	0.7	1.3	1.5	2.1	2.6
CL02	450 Amps	1	1.2	2.0	2.5	3.5	4.4	0.6	1.0	1.2	1.7	2.2
CL02	450 Amps	3	2.2	3.8	4.5	6.3	7.7	1.1	1.9	2.2	3.1	3.8
CL25	550 Amps	1	1.8	3.1	3.7	5.2	6.4	0.9	1.5	1.8	2.6	3.2
CL25	550 Amps	3	3.2	5.5	6.5	9.1	11.2	1.6	2.7	3.2	4.5	5.6
CL04	550 Amps	1	2.2	3.8	4.5	6.3	7.8	1.1	1.9	2.2	3.1	3.9
CL04	550 Amps	3	4.0	7.0	8.0	11.2	13.7	2.0	3.5	4.0	5.6	6.8
CL45	550 Amps	1	2.8	4.8	5.7	8.0	9.7	1.4	2.4	2.8	4.0	4.8
CL45	550 Amps	3	5	8.6	10	14.0	17	2.5	4.3	5	7.0	8.5
CL06	1000 Amps	1	3.4	5.9	6.8	9.5	12	1.7	2.9	3.4	4.7	6
CL06	1000 Amps	3	6	10.4	12	16.8	21	3	5.2	6	8.4	10.5
CL07	1000 Amps	1	4.2	7.2	8.5	12	14.2	2.1	3.6	4.2	6.0	7.1
CL07	1000 Amps	3	7.5	13	15	21	25	3.7	6.5	7.5	10.5	12.5
CL08	1000 Amps	1	5.7	10	11.4	16	20	2.8	5.0	5.7	8.0	10
CL08	1000 Amps	3	10	17.3	20	28	35	5	8.6	10	14	16
CL09	1280 Amps	1	7.1	12.3	14.2	20	22.8	3.5	6.1	7.1	10	11.4
CL09	1280 Amps	3	12.5	21.6	25	35	40	6.2	10.8	12.5	17.5	20
CL10	1280 Amps	1	8.5	14.7	17.1	24	28.5	4.2	7.3	8.5	12	14.2
CL10	1280 Amps	3	15	26	30	42	50	7.5	13	15	21	25
CK75	1850 Amps	1	10	17.2	20	28	31.3	5	8.6	10	14	15.6
CK75	1850 Amps	3	17.5	30.3	35	49	55	8.75	15.1	17.5	24.5	27.5
CK08	1850 Amps	1	11.4	19.7	22.8	32	34.2	5.7	9.8	11.4	16	17.1
CK08	1850 Amps	3	20	34.6	40	56	60	10	17.3	20	28	30
CK09	2500 Amps	1	14.2	24.6	28.5	40	48.5	7.1	12.3	14.2	20	24.2
CK09	2500 Amps	3	25	43.3	50	70	85	12.5	21.6	25	35	42.5
CK95	3700 Amps	1	18.5	32.0	37.1	52	62.8	9.2	16.0	18.5	26	31.4
CK95	3700 Amps	3	32	55.4	65	91	110	16	27.7	32	45	55
CK10	7000 Amps	1	22.8	39.5	45.7	64	85.7	11.4	19.7	22.8	32	42.8
CK10	7000 Amps	3	40	69.3	80	112	150	20	34.6	40	56	75
CK11	7000 Amps	1	28.5	49.4	57.1	80	97.1	14.2	24.7	28.5	40	48.5
CK11	7000 Amps	3	50	86.6	100	140	170	25	43.3	50	70	85
CK12	8400 Amps	1	45.7	79.2	91.4	128	160	22.8	39.6	45.7	64	80
CK12	8400 Amps	3	80	138.6	160	224	280	40	69.3	80	112	140



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Contactors & Starters

Type 2 Coordination

C-2000

Section 5

C-2000 contactors and starters have been tested and certified to meet IEC 947.4 Type 2 coordination when protected with the type “J” fuses shown in tables.

“Type 2 coordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and shall be suitable for further use. The risk of contact welding is recognized, in which case the manufacturer shall indicate the measures to be taken as regards the maintenance of the equipment.” (IEC 947.4)

Short Circuit Test Condition.....100,000 Amps (maximum)
Fuse TypeJ
Fuse Manufacturer Product Number or Type
Bussmann.....LPJ-SP
Gould ShawmutAJT

Note: Use of short circuit protective device not in compliance with the above manufacturer’s type may invalidate the coordination.

Type 2 - Maintenance Procedure, C-2000 Products

Before working on contactor/starter, make sure all electrical power is turned off, including the control voltage.

Step 1. Tighten down all terminals, on the CL00 thru CL45, (including 4th pole auxiliary contacts), securing them in place.

Step 2. Remove outer cover, with screwdriver:

CL Products: The cover has a snap fit design. Pry the ends of the cover loose from the contactor with screwdriver, releasing the snaps.

CK Products: The cover is held with two screws. Loosen the screws and remove.

Step 3. Remove inner cover, CL03 thru CL10 only, which is held by 2 or 4 screws. Loosen screws and remove.

Step 4. Examine contacts for welding. If a contact is welded, gently pry the contacts apart using a screwdriver.

Step 5. Reassemble by reversing the above procedure (Steps 4, 3, 2).

To ensure contactor is operating correctly, operate at least ten times with main power off. Confirm that all poles are correctly opening and closing with a continuity meter.

C-2000 Contactors

Product Type	Maximum Amps	Type LPJ-SP or AJT Maximum Fuse
CL00	10	25
CL01	13.8	35
CL02	17.5	40
CL25	22	45
CL03	25	60
CL04	32	60
CL45	34	70
CL05	42	90
CL06	48	100
CL07	62	125
CL08	68	125
CL09	80	150
CL10	104	200
CK08	156	300
CK09	192	400
CK95	302	450
CK10	398	800
CK11	480	900
CL12	602	1000

C-2000 Starters

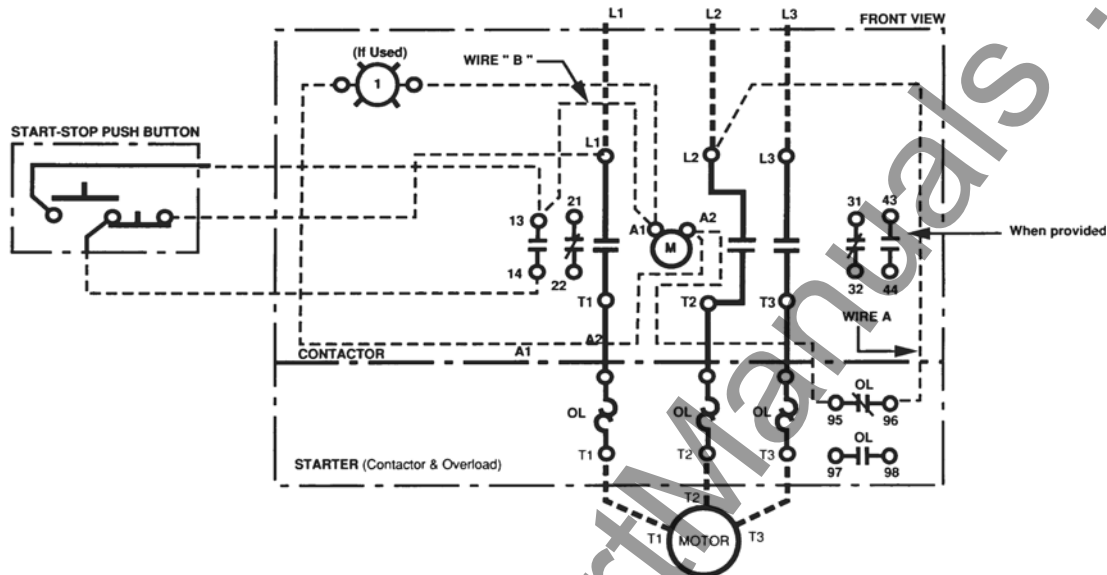
Overload Type	Maximum Amps	Type LPJ-SP or AJT Maximum Fuse
RT1F	0.65 - 1.1	1.5
RT1G	1 - 1.5	2
RT1H	1.3 - 1.9	4
RT1J	1.8 - 2.7	4
RT1K	2.5 - 4.1	8
RT1L	4 - 6.3	10
RT1M	5.5 - 8.5	12
RT1N	8 - 12	20
RT1P	10 - 16	25
RT1S	14.5 - 18	35
RT1T	17.5 - 22	45
RT1U	21 - 26	45
RT1V	25 - 35	60
RT1W	30 - 40	70
RT2A	11.5 - 15	30
RT2B	14.5 - 19	35
RT2C	18.5 - 25	45
RT2D	24 - 32	60
RT2E	30 - 43	70
RT2G	42 - 45	100
RT2H	54 - 65	125
RT2J	64 - 82	150
RT2L	78 - 97	200
RT2M	90 - 110	200
RT3PB	55 - 80	125
RT3PC	63 - 90	150
RT3PD	90 - 120	200
RT3PE	110 - 140	250
RT3PF	140 - 180	300
RT4LN	120 - 190	350
RT4N	120 - 190	350
RT4LP	175 - 280	450
RT4P	175 - 280	450
RT4LR	200 - 310	450
RT4R	200 - 310	450
RT5A	120 - 190	400
RT5LA	120 - 190	400
RT5B	175 - 280	600
RT5LB	175 - 280	600
RT5C	250 - 400	800
RT5LC	250 - 400	800
RT5D	315 - 500	900
RT5LD	315 - 500	900
RT5E	430 - 650	1000
RT5LE	430 - 650	1000

Type 2 Coordination, Group Installation, CR72 Manual Motor Controllers

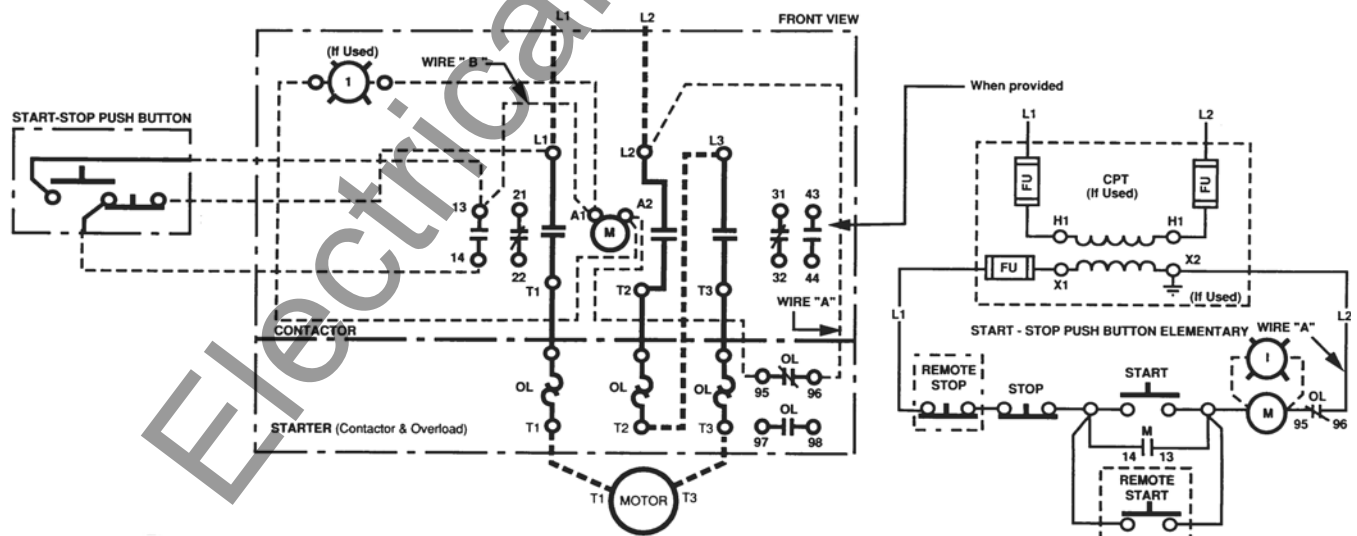
Available Fault Current	Voltage	Motor Control Product Number	C-2000 Contactor Size	Fuse Class Maximum Amps		
				J	RRK-5	CC
42KA	480	CR72AMA-MP	CL00-04	100	30	30

Note: See GEP-1260 for more information on CR72 group installations





Typical Schematic Diagram For C-2000 Three-Phase AC Motor Starters/Contactors Showing Start-Stop Push Button Connections



Typical Schematic Diagram For C-2000 Single-Phase AC Motor Starters/Contactors Showing Start-Stop Push Button Connections

Start-Stop Push Button/Control Transformer Elementary

Notes: Holding interlock is numbered 13 and 14 on some forms and the normally closed auxiliary contact is not standard on all forms.



IEC Power Devices

IEC Contactors & Starters Wiring Diagrams

C-2000

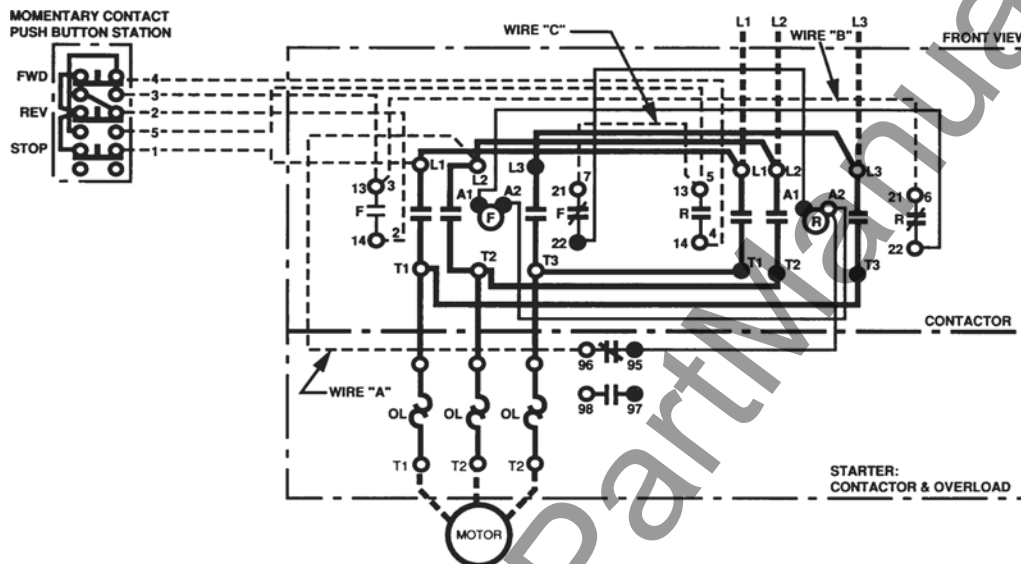
Section 5

Legend

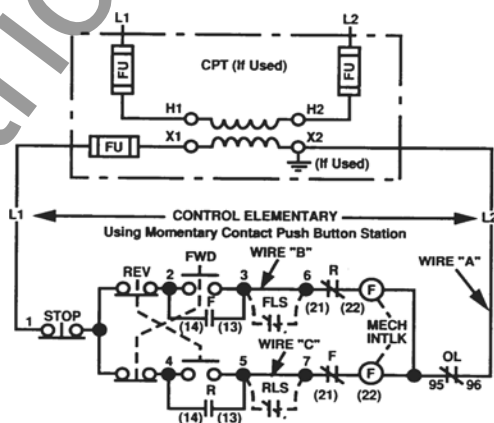
F and R	Forward and Reverse Line Contactors, Mechanically and Electronically Interlocked
FLS	Forward Limit Switch
RLS	Reverse Limit Switch
OL	Thermal Overload Relay

Notes: Cross Electrical interlocks may be marked 01 and 02. Wires "B" and "C" are omitted. These wires must be added if limit switches are not used.

- Factory wired terminals
- Field wired terminals



Typical Schematic Drawing for C-2000 Three-Phase AC Reversing Motor Starter/Contactors Showing Momentary Contact Push Button Station Connections



Momentary Contact Push Button Station/Control Transformer Elementary

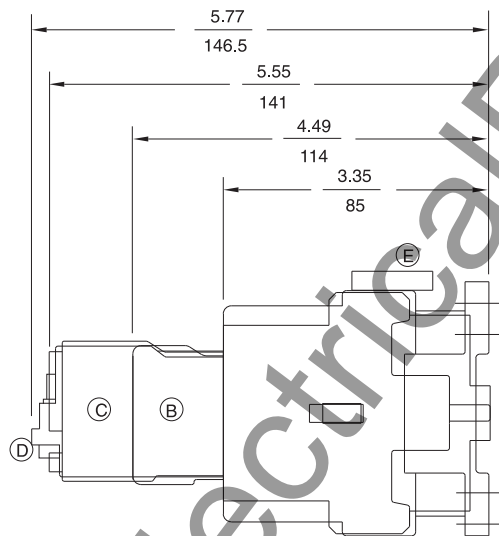
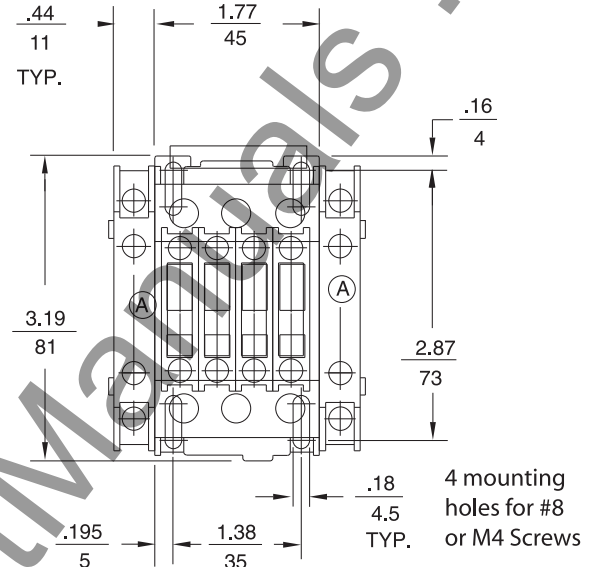
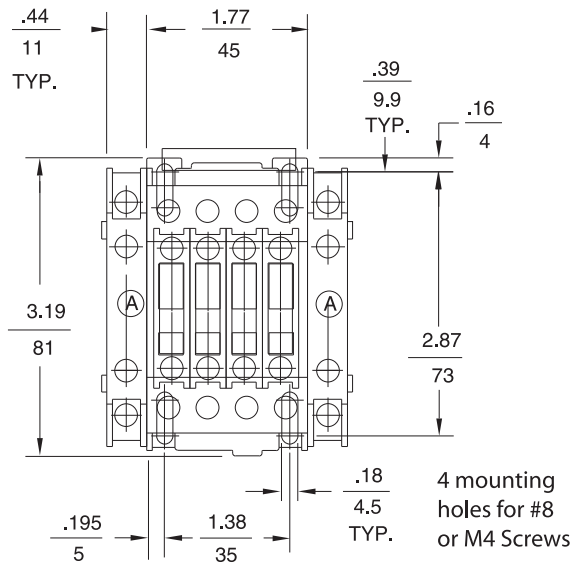
IEC Power Devices

IEC Contactors Dimensions

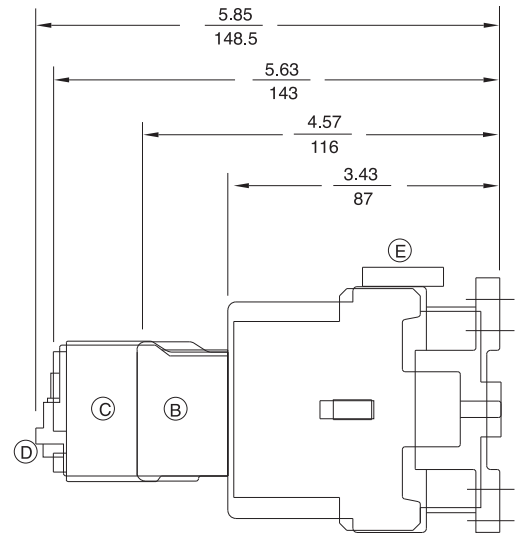
C-2000

Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Contactor Front View and AC Contactor Side View



CL00A310T, CL01A310T, CL02A310T and RL4 Relays



CL25A310T*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

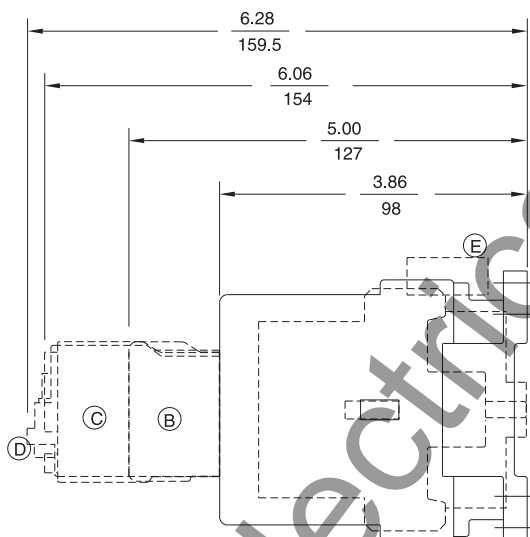
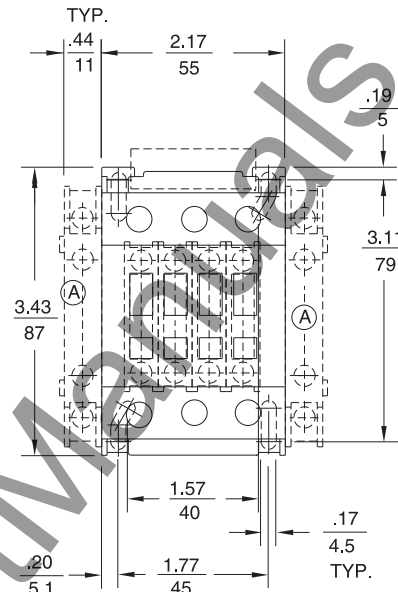
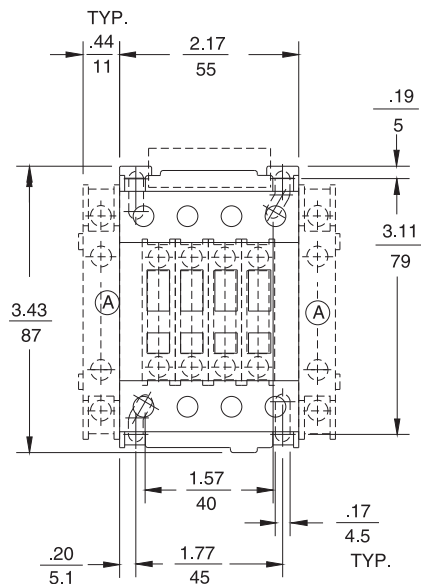
IEC Contactors Dimensions

C-2000

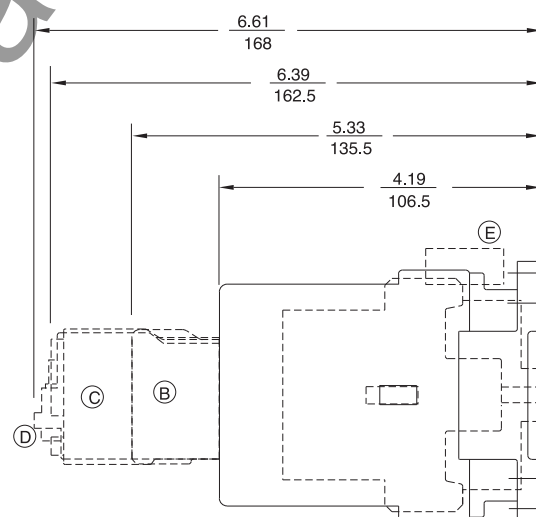
Outlines and Dimensions (in $\frac{in}{mm}$) For Estimating Only

Section 5

Contactor Front View and AC Contactor Side View



CL04A310M*



CL45A310M*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

Product Number Selection Instructions: See page 5-37



IEC Power Devices

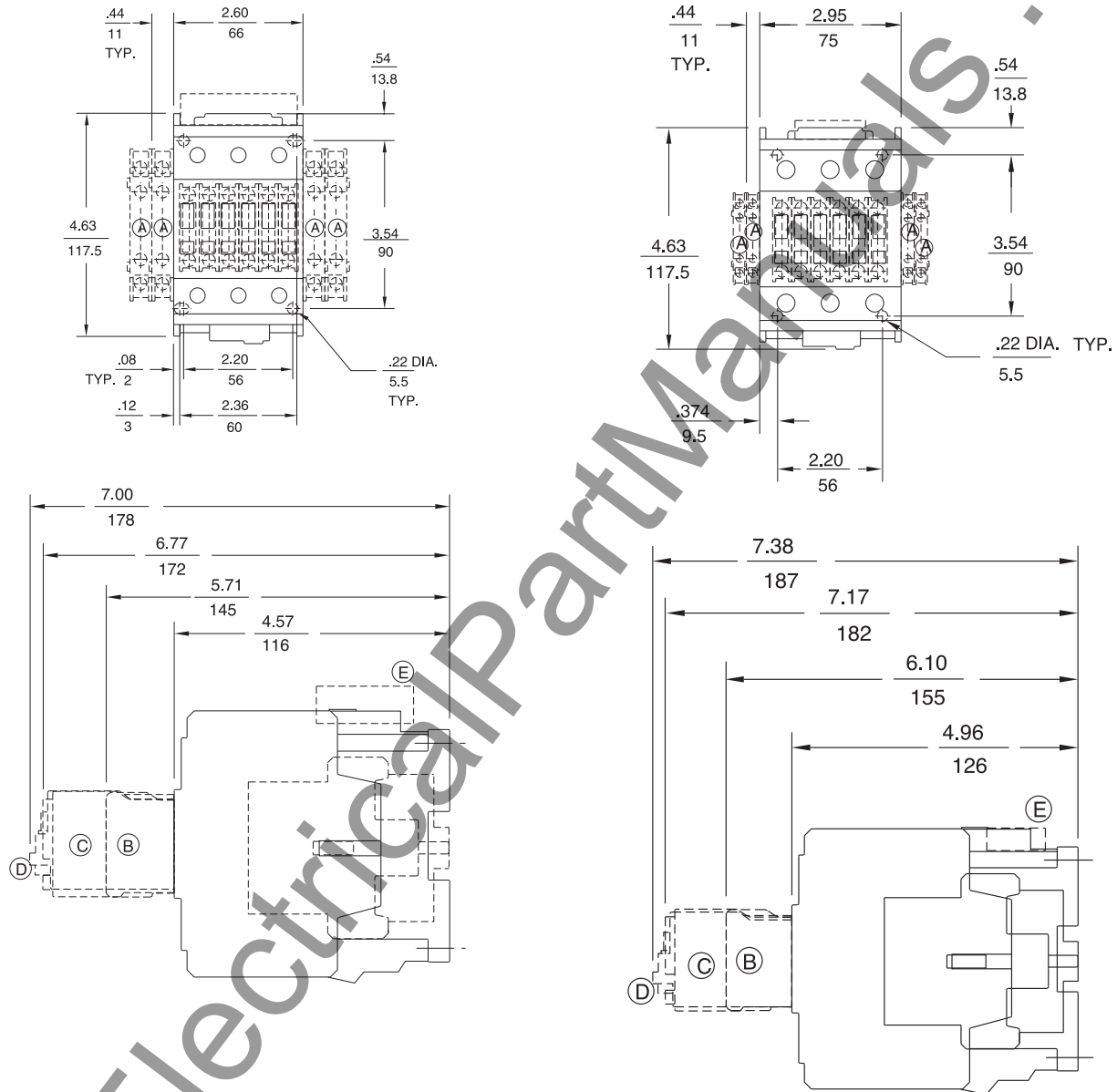
IEC Contactors Dimensions

C-2000

Outlines and Dimensions (in/mm) For Estimating Only

Section 5

Contactor Front View and AC Contactor Side View



CL06A311M*, CL07A311M*, CL08A311M*

CL09A311M*, CL10A311M*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

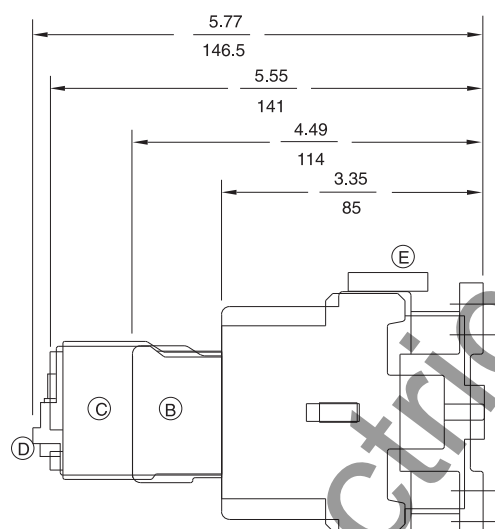
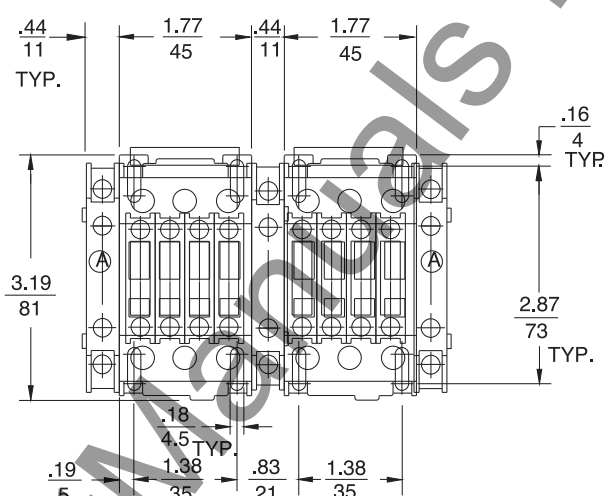
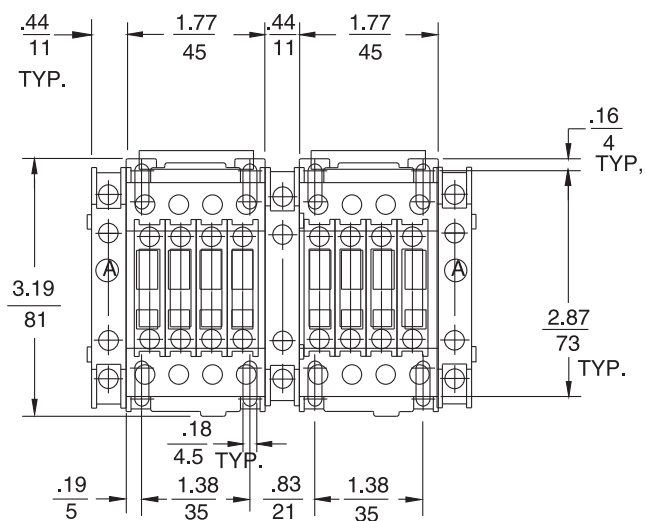
IEC Contactors Dimensions

C-2000

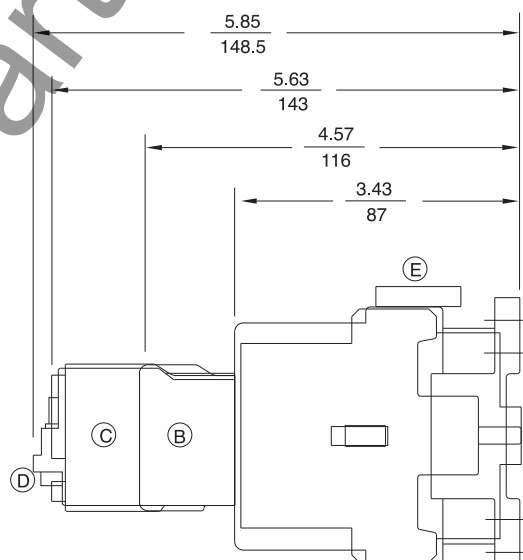
Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5

Reversing Contactor Front View and AC Contactor Side View



LAR00A*, LAR01A*, LAR02A*



LAR25*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

Product Number Selection Instructions: See page 5-37



IEC Power Devices

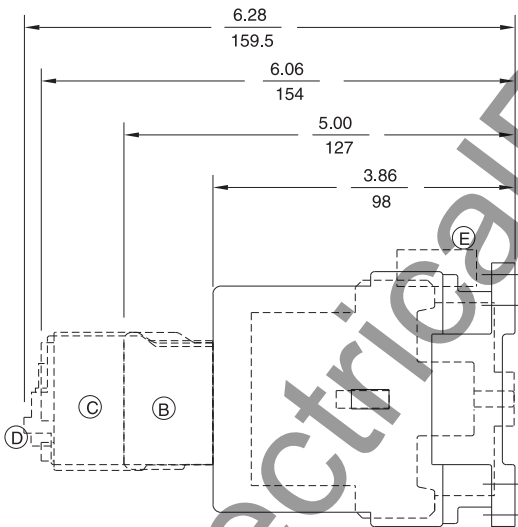
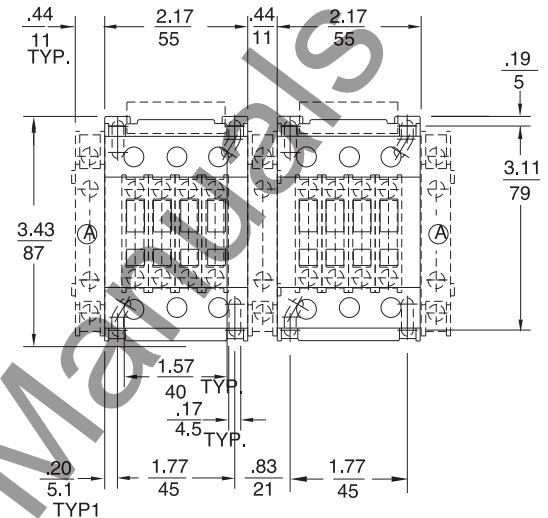
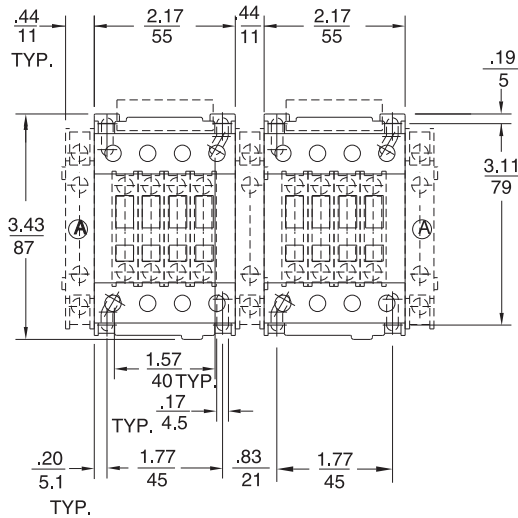
IEC Contactors Dimensions

C-2000

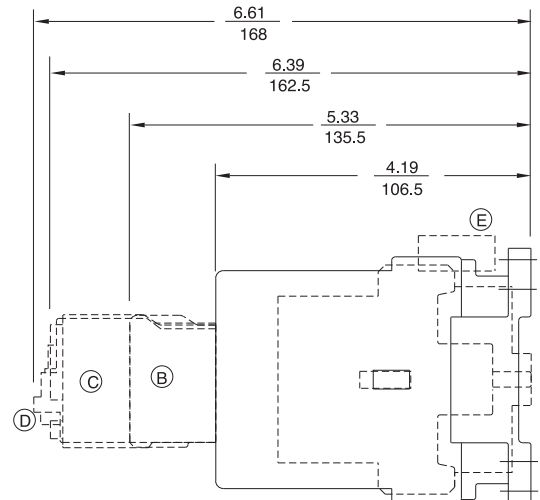
Outlines and Dimensions (in mm) For Estimating Only

Section 5

Contactor Front View and DC Contactor Side View



LAR04A*



LAR45A*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

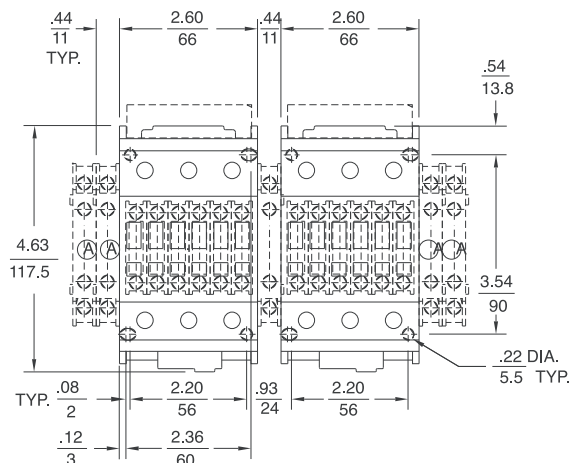
IEC Contactors Dimensions

C-2000

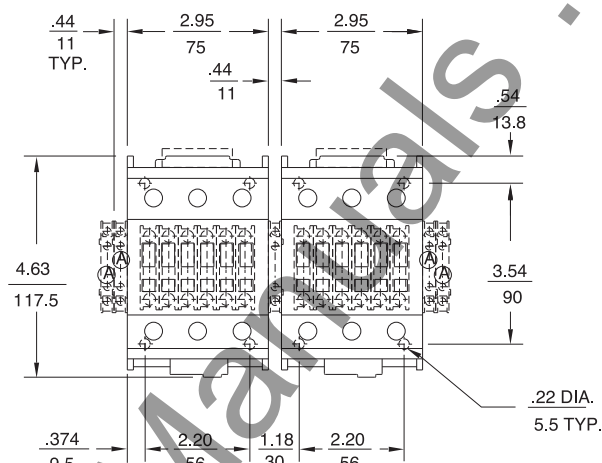
Outlines and Dimensions (in mm) For Estimating Only

Section 5

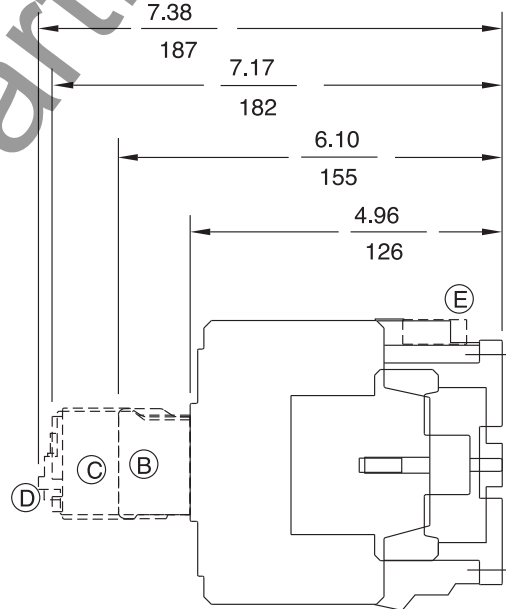
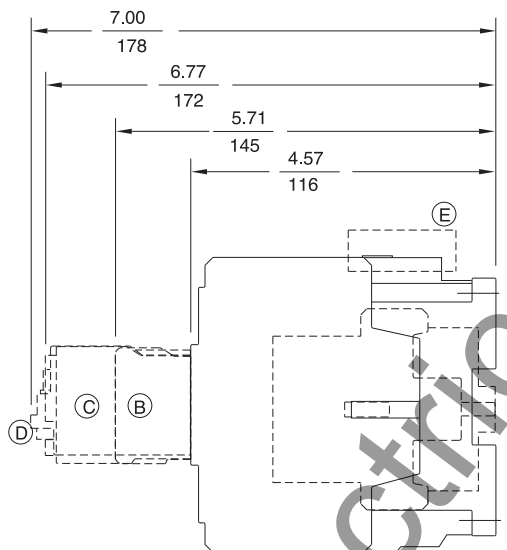
Contactor Front View and DC Contactor Side View



LAR06A*, LAR07A*, LAR08A*



LAR09A*, LAR10A*



Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

IEC Power Devices

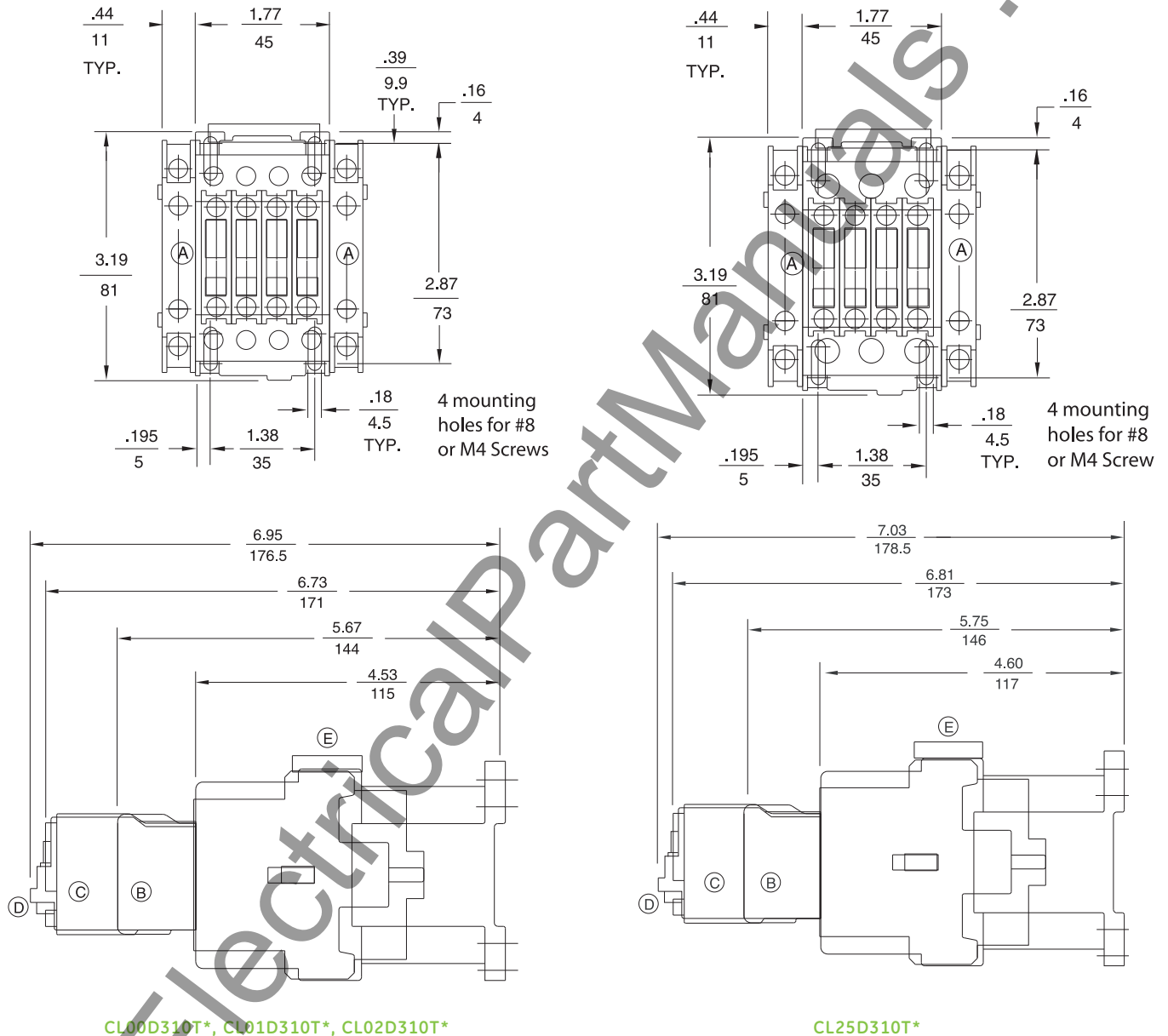
IEC Contactors Dimensions

C-2000

Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5

Contactor Front View and DC Contactor Side View



Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

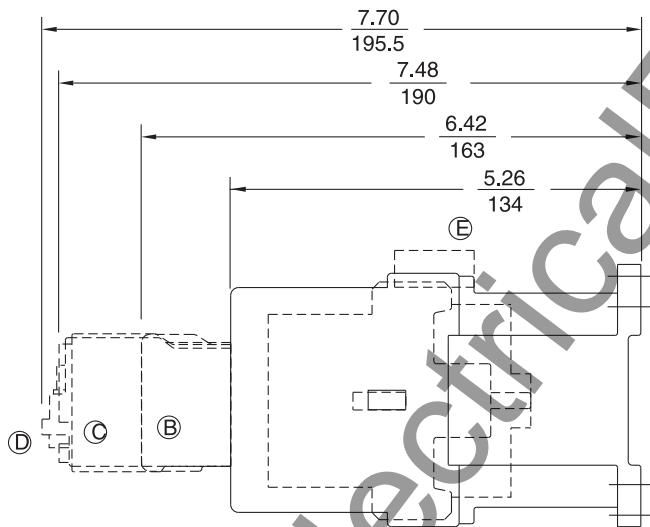
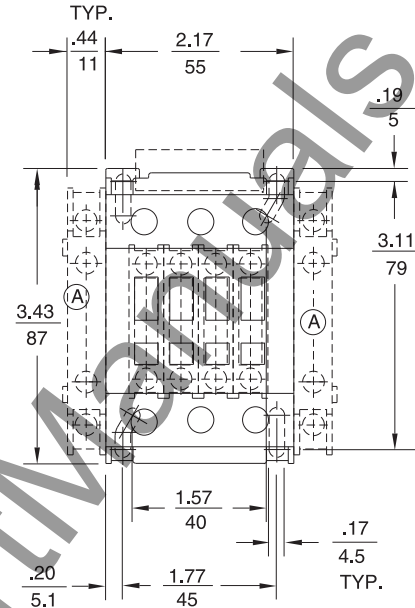
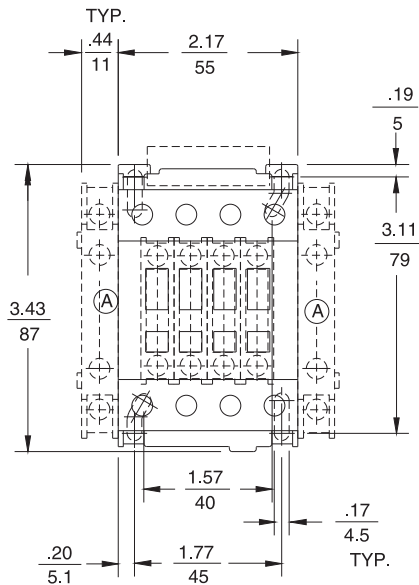
IEC Contactors Dimensions

C-2000

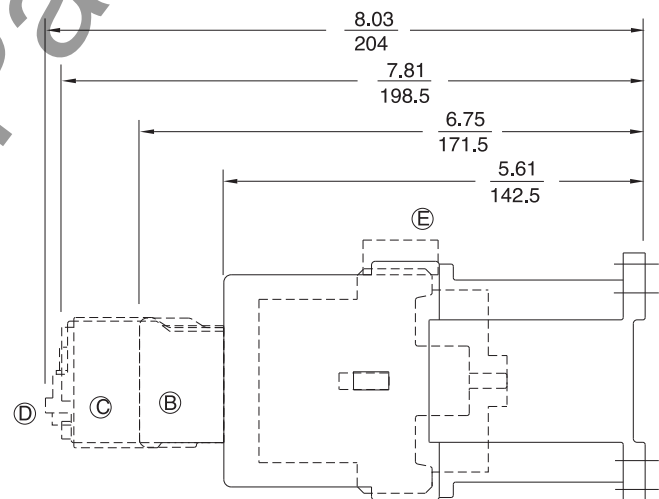
Outlines and Dimensions (in $\frac{in}{mm}$) For Estimating Only

Section 5

Contactor Front View and DC Contactor Side View



CL04D310M*



CL45D310M*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

Product Number Selection Instructions: See page 5-37



IEC Power Devices

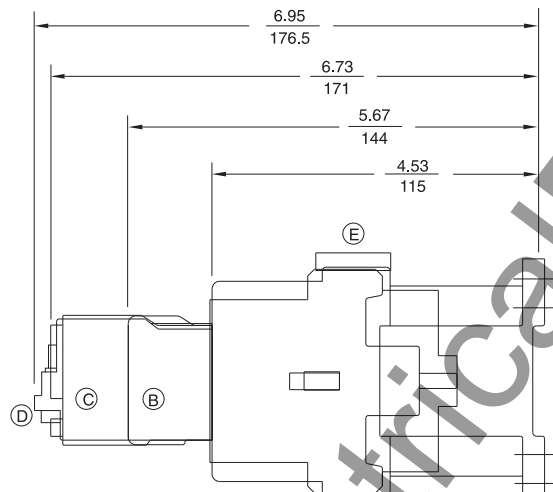
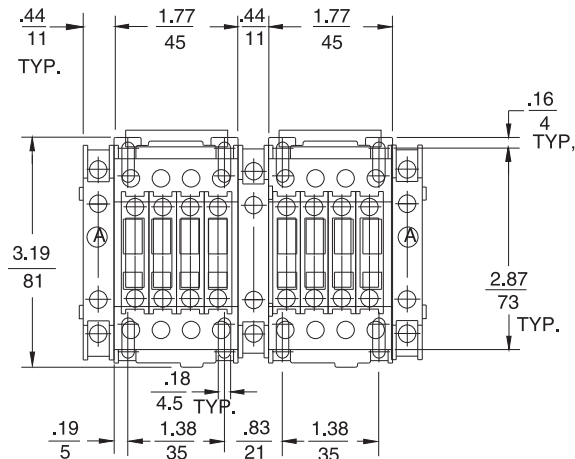
IEC Contactors Dimensions

C-2000

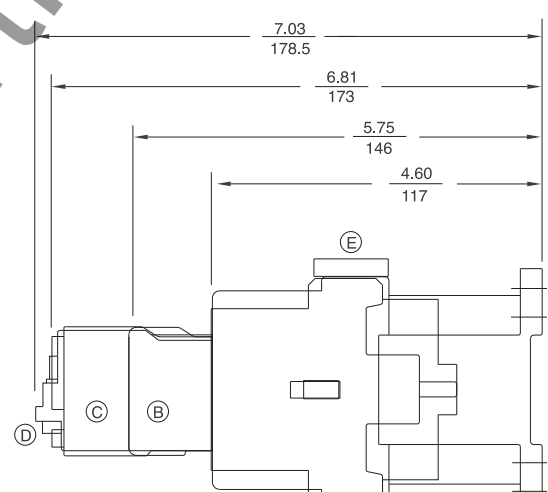
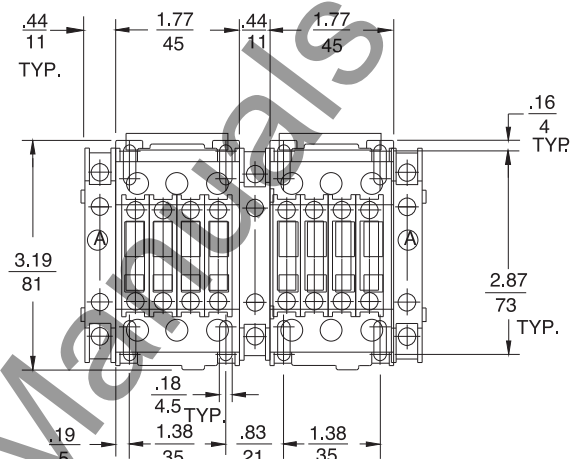
Outlines and Dimensions (in mm) For Estimating Only

Section 5

Reversing Contactor Front View and DC Contactor Side View



LDR00A*, LDR01A*, LDR02A*



LDR25A*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

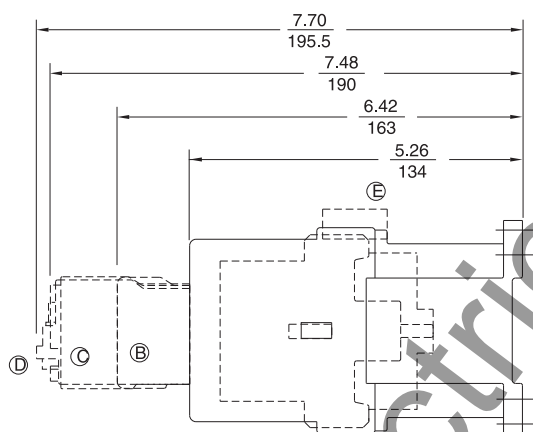
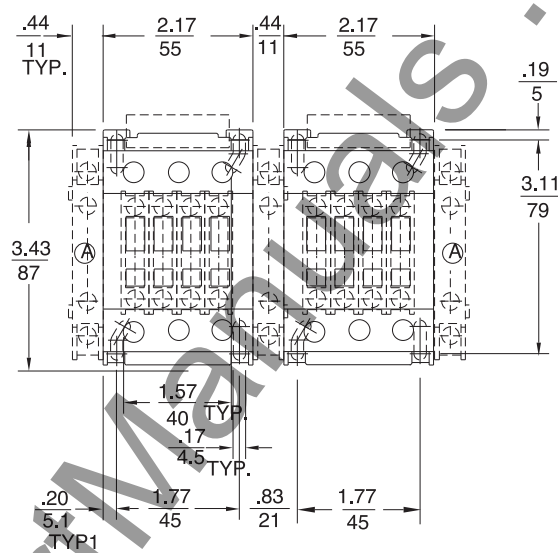
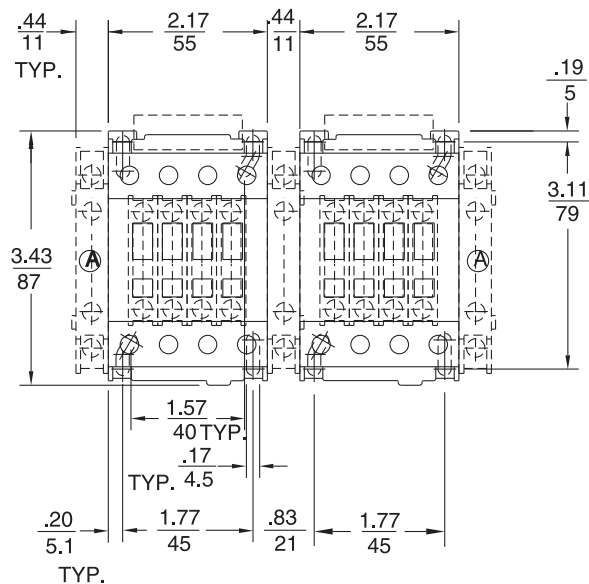
IEC Contactors Dimensions

C-2000

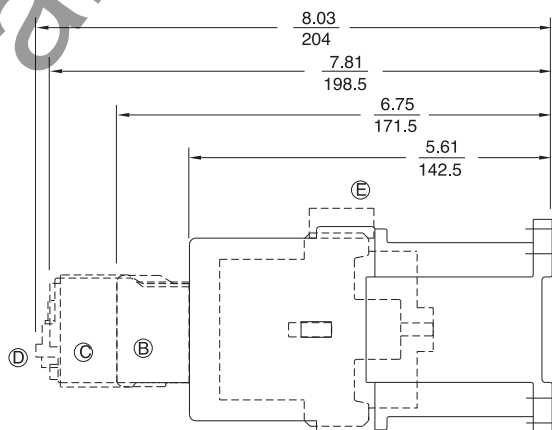
Outlines and Dimensions (in $\frac{in}{mm}$) For Estimating Only

Section 5

Reversing Contactor Front View and DC Contactor Side View



LDR04A*



LDR45A*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

Product Number Selection Instructions: See page 5-37

IEC Power Devices

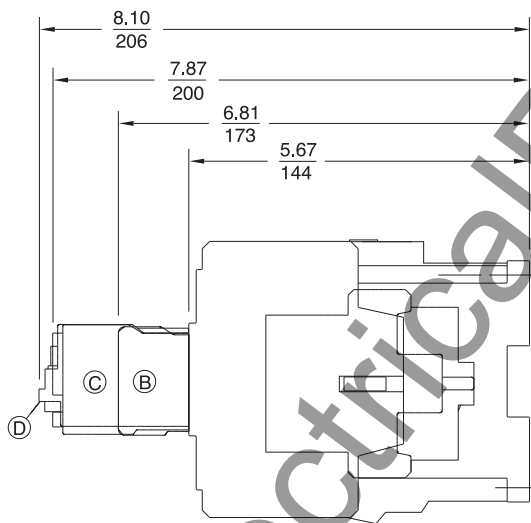
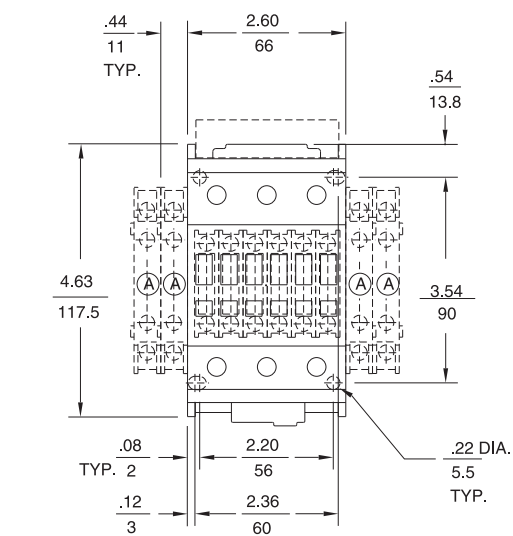
IEC Contactors Dimensions

C-2000

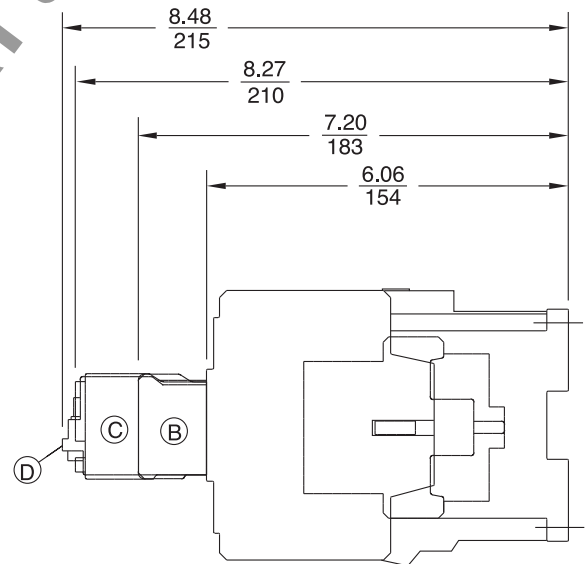
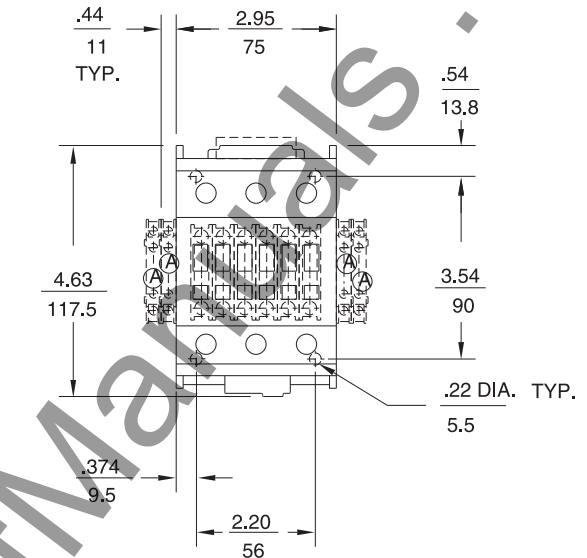
Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5

Contactor Front View and AC/DC Contactor Side View



CL06E311M†, CL07E311M†, CL08E311M†



CL09E311M†, CL010E311M†

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used)
- B Extra Auxiliary Contacts, Front Mounted (if used)
- C Pneumatic Timer (if used)
- D Mechanical Latch (if used)
- E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.



IEC Power Devices

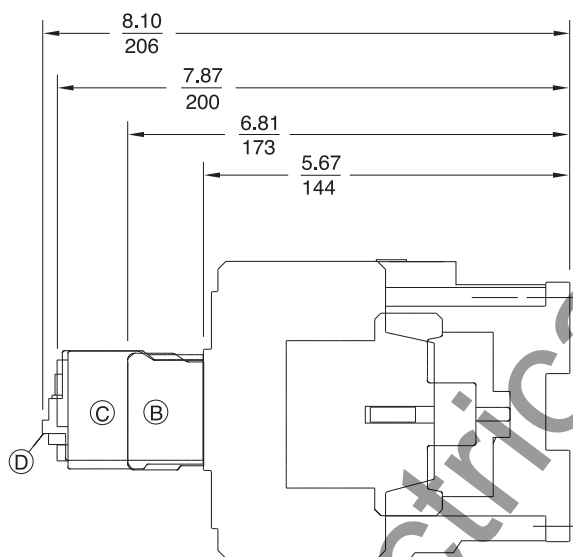
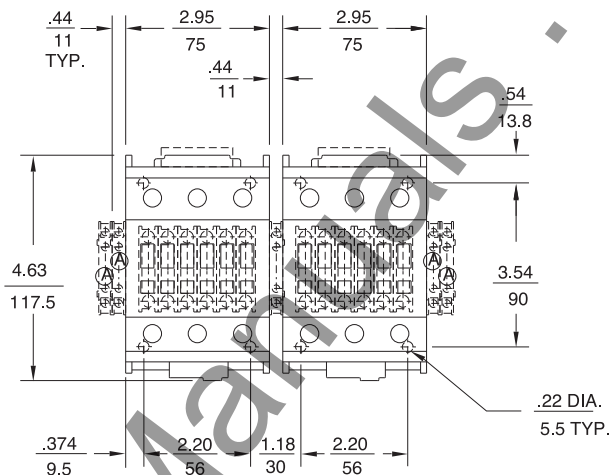
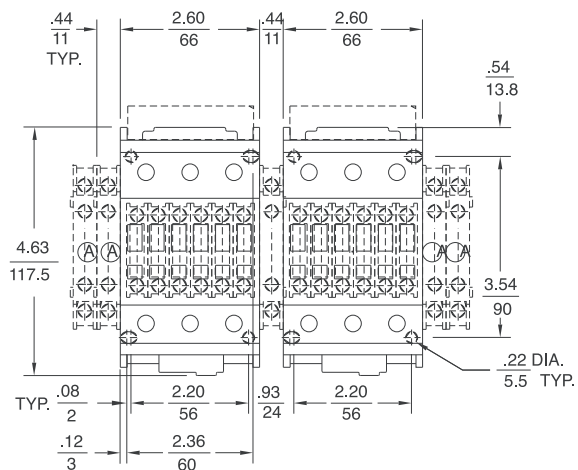
IEC Contactors Dimensions

C-2000

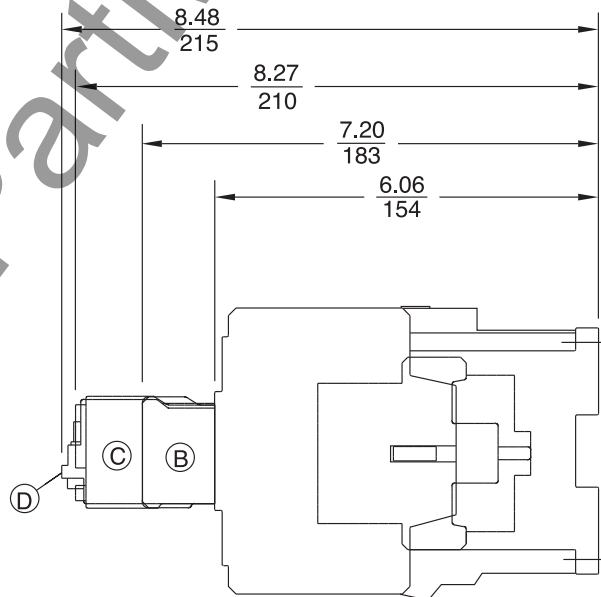
Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Section 5

Reversing Contactor Front View and AC/DC Contactor Side View



LER06A†, LER07A†, LER08A†



LER09A†, LER010A†

Legend and Notes

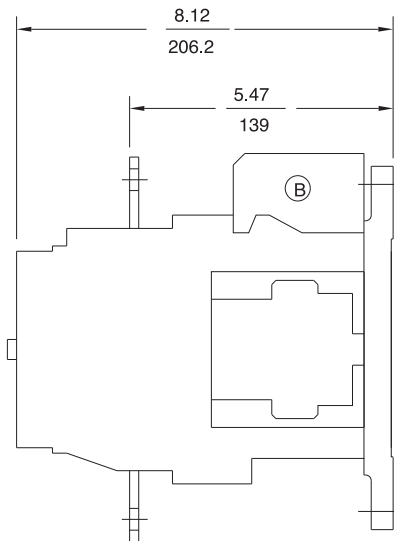
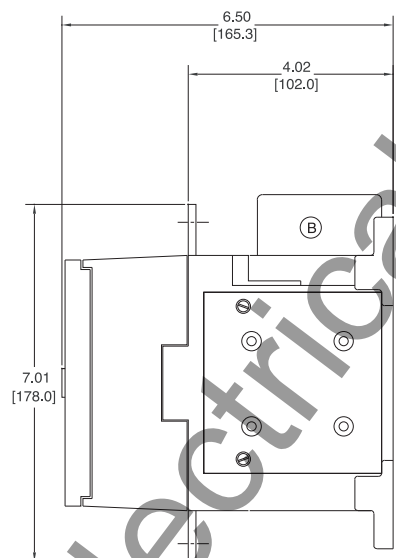
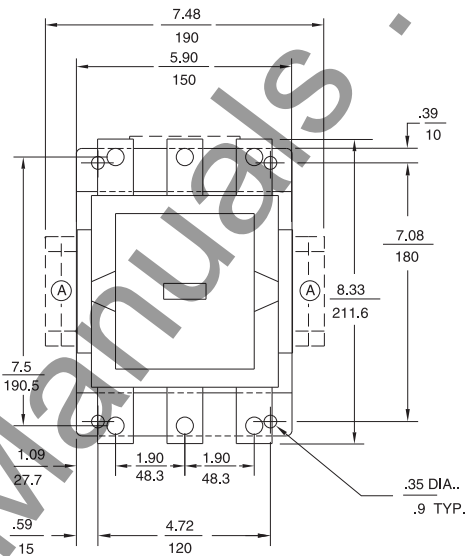
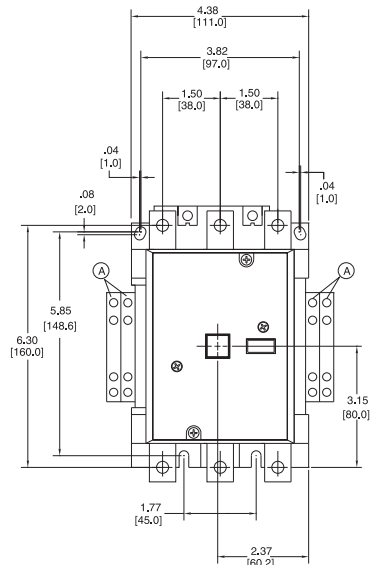
- A Extra Auxiliary Contacts, Side Mounted (if used)
 - B Extra Auxiliary Contacts, Front Mounted (if used)
 - C Pneumatic Timer (if used)
 - D Mechanical Latch (if used)
 - E Transient Voltage Suppressor
- Add 1/2 inch for electrical clearance to enclosure.

Product Number Selection Instructions: See page 5-37



Outlines and Dimensions ($\frac{\text{in.}}{\text{mm}}$) For Estimating Only

Contactor Front View and AC Contactor Side View



CK75CE311*, CK08CE311*

CK09BE311*, CK95BE311*

Legend and Notes

A Extra Auxiliary Contacts, Side Mounted (if used) (1 Standard)
B Electronic Actuator Modulator



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

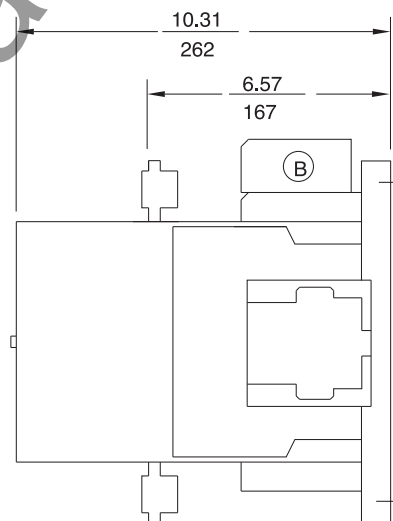
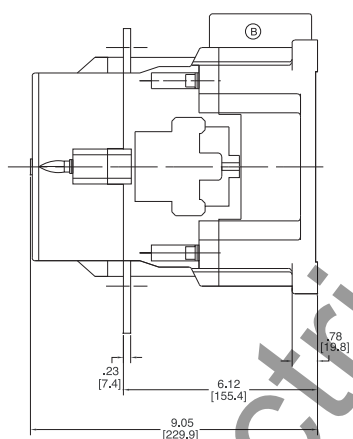
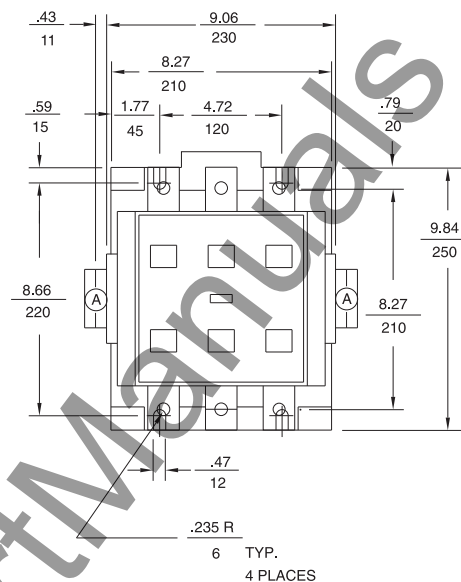
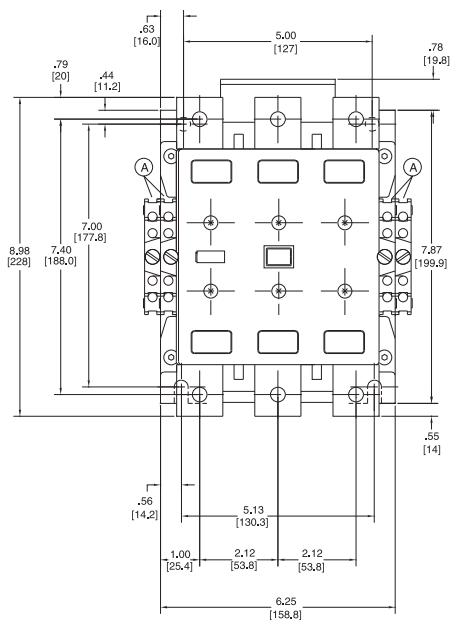
IEC Contactors Dimensions

C-2000

Outlines and Dimensions (in $\frac{in}{mm}$) For Estimating Only

Section 5

Contactor Front View and AC Contactor Side View



CK10CE311*, CK10BE311*, CK11CE311*, CK11BE311*

CK12BE311*

Legend and Notes

A Extra Auxiliary Contacts, Side Mounted (if used) (1 Standard)
B Electronic Actuator Modulator

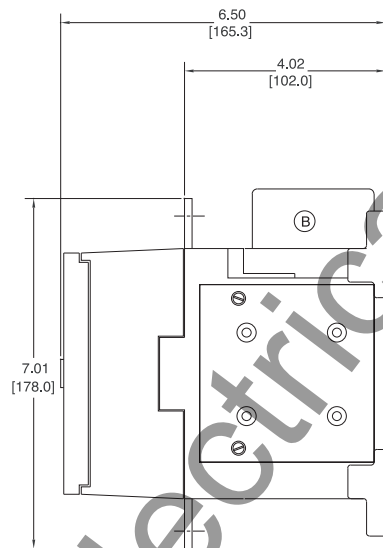
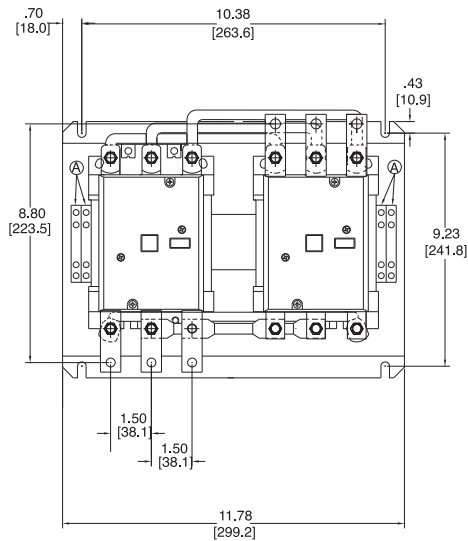
IEC Power Devices

IEC Contactors Dimensions

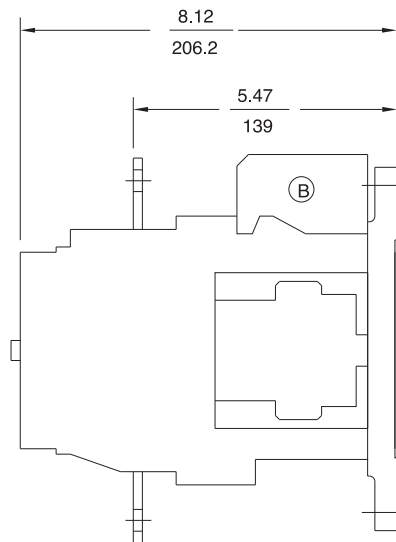
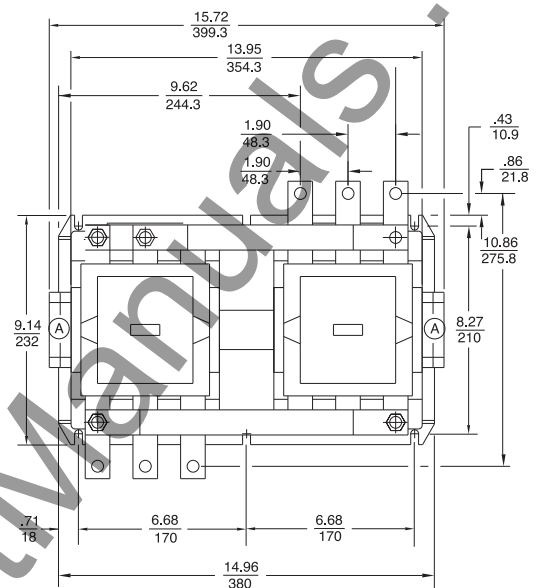
C-2000

Outlines and Dimensions ($\frac{\text{in}}{\text{mm}}$) For Estimating Only

Contactor Front View and AC Contactor Side View



KAR75C*, KAR08C*



KAR09B*, KAR95B*

Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used) (1 Standard)
- B Electronic Actuator Modulator



IEC Power Devices

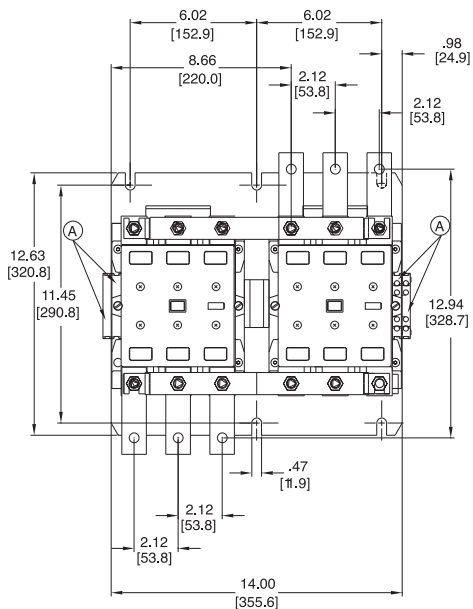
IEC Contactors Dimensions

C-2000

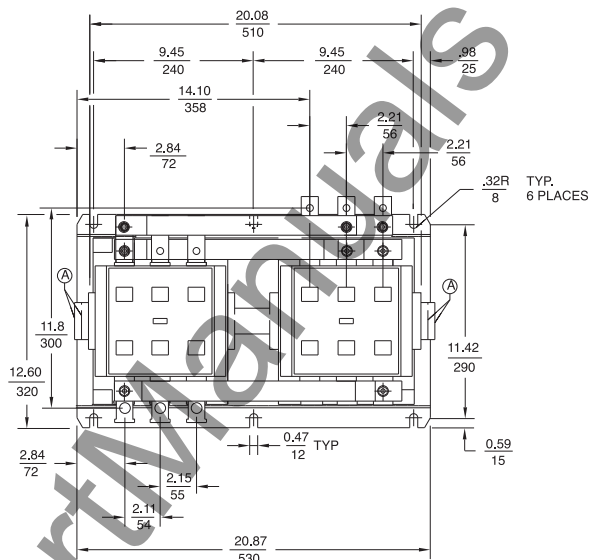
Outlines and Dimensions (in mm) For Estimating Only

Section 5

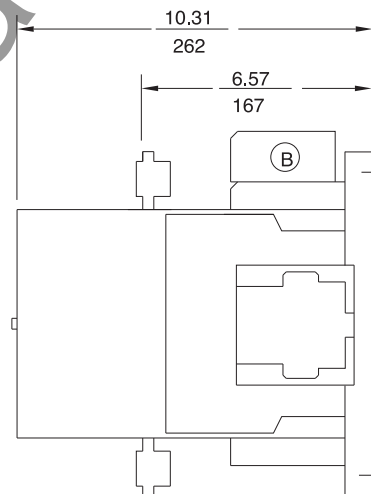
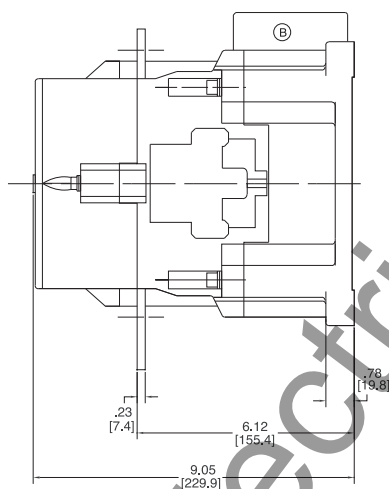
Contactor Front View and AC Contactor Side View



KAR10C*, KAR10B*, KAR11C*, KAR11B*



KAR12B*



Legend and Notes

- A Extra Auxiliary Contacts, Side Mounted (if used) (1 Standard)
- B Electronic Actuator Modulator

IEC Power Devices

IEC Assembled Starters Selection Guide

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Section 5

Nonreversing Starters - AC

Using contactor with CL prefix	LAC	02	A	J	W	L	A	1	B		
Using contactor with CK prefix	KAC	09	B	J	F	N	A	1	B		
	1	2	3	4	5	6	7	8	9	10	11
	Family Name	Starter Size	Contactor Family Version	Coil Selection	Overload Selection	Overload Amp Range	Auxiliary Contacts	Enclosure	Operator	Lights	CPT

Reversing Starters - AC

Using contactor with CL prefix	LAR	02	A	J	W	L	A	1	E		
Using contactor with CK prefix	KAR	09	B	J	F	N	A	1	E		
	1	2	3	4	5	6	7	8	9	10	11
	Family Name	Starter Size	Contactor Family Version	Coil Selection	Overload Selection	Overload Amp Range	Auxiliary Contacts	Enclosure	Operator	Lights	CPT

Nonreversing Starters - Wye-delta

Using contactor with CL prefix	LAD	02	A	J	W	L	A	1	B		
Using contactor with CK prefix	KAD	09	B	J	F	N	A	1	B		
	1	2	3	4	5	6	7	8	9	10	11
	Family Name	Starter Size	Contactor Family Version	Coil Selection	Overload Selection	Overload Amp Range	Auxiliary Contacts	Enclosure	Operator	Lights	CPT

Reversing/Nonreversing Starters - DC controlled

Reversing using contactor with CL prefix	LDR	02	A	J	W	L	A	1	B		
Nonreversing using contactor with CL prefix	LDC	09	B	J	F	N	A	1	B		
	1	2	3	4	5	6	7	8	9	10	11
	Family Name	Starter Size	Contactor Family Version	Coil Selection	Overload Selection	Overload Amp Range	Auxiliary Contacts	Enclosure	Operator	Lights	CPT

1 Family Name

Digits	Description	Contactor Prefix
LAC	Assembled nonreversing starters	CL
KAC	Assembled nonreversing starters	CK
LAR	Assembled reversing starters	CL
KAR	Assembled reversing starters	CK
LAD	Assembled wye-delta starters	CL
KAD	Assembled wye-delta starters	CK
LDC	Assembled nonreversing starters (DC controlled)	CL
LDR	Assembled reversing starters (DC controlled)	CL

3 Contactor Family Version

Digits	Description
A	Contactor with CL prefix
B	Contactor with CK prefix
C	Contactor with CK prefix

2 Starter Size

Contactor No.	Max. Amps @460 V	Horsepower (60 Hz)						KW 50 Hz	
		Single-Phase		Three-Phase					
		115 V	230 V	200 V	230 V	460 V	575 V	380-415 V	
CL	00	10	0.5	1.5	3	3	5	7.5	4
	01	13.8	0.75	2	3	3	7.5	10	5.5
	02	17.5	1	3	5	5	10	15	7.5
	25	22	1.5	3	5	7.5	15	15	11
	04	32	2	5	10	10	20	25	16
	45	34	3	5	10	10	25	25	18.5
	06	48	3	7.5	15	15	30	40	22
	07	62	5	10	20	20	40	50	30
	08	68	5	15	20	25	50	60	37
	09	80	7.5	15	25	30	60	75	45
CK	10	96	10	20	30	40	75	75	55
	75	140	10	25	40	50	100	125	75
	08	156	15	30	50	60	125	125	90
	09	192			60	75	150	150	132
	95	302			100	100	250	300	160
	10	398			125	150	300	400	220
	11	480			150	200	400	500	280
	12	602			200	250	500	600	375

4 Coil Selection

Number or Digit	For Contactor with CL Prefix		For Contactor with CK prefix
	60 Hz	50 Hz	60/50 Hz or DC
1	24 V	24 V	
D			24-28 V
F	48 V	42 V	
J	120 V	110 V	110-127 V
L	208 V		
N	277 V	220/230 V	220-250 V
S	240 V		
U	480 V	380/400 V	380-415 V
W		415 V	
Y	600 V	500 V	440-500 V

5 Overload Selection

Overload Type/Class	
Manual/Automatic	
Digit	Class
W	Class 10
F ¹	Class 30

¹Class 30 overloads available with CK09-CK12 contactors only.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Assembled Starters Selection Guide

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Section 5

6 Overload Amp Range

Digit	Amp Range				
	Class 10 CL00-CL45	Class 10 CL05-CL10	Class 10 CK75-08	Class 10 and Class 30 CK09-95	Class 10 and Class 30 CK10-12
A		11.5-15			120-190
B	0.16-0.26	14.5-19	55-80		175-280
C	0.25-.41	18.5-25	63-90		250-400
D	0.4-.65	24-32	90-120		315-500
E		30-43	110-140		430-650
F	.65-1.1		140-190		
G	1-1.5	42-55			
H	1.3-1.9	54-65			
J	1.8-2.7	64-82			
K	2.5-4.1				
L	4-6.3	78-97		60-90 (Class 30 only)	
M	5.5-8.5	90-110		80-125 (Class 30 only)	
N	8-12			120-190	
P	10-16			175-280	
R				200-310	
S	14.5-18				
T	17.5-22				
U	21-26				
V	25-32				
W	30-40				

For wye-delta starters, overload current rating is determined by multiplying motor amps x .58.

7 Auxiliary Contacts

Digits	Description
A	None
B	1NO-1NC
C	2NO-0NC

8 Enclosure

Digits or Number	Description
1	NEMA 1 w/Reset
2	NEMA 12/3R w/Reset
4	NEMA 4 w/Reset
5	NEMA 1, no Reset
6	NEMA 12/3R, no Reset
8	NEMA 4, no Reset

9 Operator

Digits	Description
A	None
B	Start/Stop Push Button
C	H-O-A Selector Switch
D	On/Off Selector Switch
E	Forward/Off/Reverse Selector Switch
F	Forward/Reverse Selector Switch with Start/Stop Push Button
G	Forward/Stop/Reverse Push Buttons

10 Lights

For Starters

Digits	Description
A	None
B	RIL X-Coil
C	RIL NO Aux.
D	RIL X-Coil, GIL NC Aux.
E	RIL NO Aux., GIL NC Aux.
F	GIL NC Aux.
G	GIL X-Coil

For Reversers Only

Digits	Description
B	RIL/Forward, WIL/Rev. X-Coil
C	RIL/Forward, WIL/Rev. X NO
D	RIL/Forward, WIL/Rev. X-Coil, GIL NC Aux. (2 in series)
E	RIL/Forward, WIL/Rev. X-NO, GIL NC Aux. (2 in series)
F	GIL NC Aux. (2 in series)

For Wye-Delta Only

Digits	Description
B	RIL X-Coil
D	RIL X-Coil, GIL NC Aux.
H	Red/Run, Y/Start X-Coil
J	Red/Run, Y/Start X-Coil, GIL NC Aux.

Note: RIL = Red Indicating Light
 GIL = Green Indicating Light
 WIL = White Indicating Light
 Y = Yellow
 X-Coil = Across Coil

11 CPT

Digits	Description
B	Control Circuit Fusing
C	Wired For Separate Control
D	Separate Control and CCF
F	Standard CPT, 110-120 V Sec (One Sec Fuse, Two Primary Fuses)
H	CPT + ExtraVA, 110-120 V Sec (One Sec Fuse, Two Primary Fuses)

IEC Power Devices

IEC Assembled Starters Nonreversing AC

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Step-By-Step Selection and Pricing

Section 5

This step-by-step process will allow you to select and price your assembled starter.

In each step, find the options—contactor, coil, overload relay, etc.—you need. Transfer the product number digits and price components to the corresponding boxes at the bottom of page 5-100.

When you have finished the appropriate number of steps for your starter, you will have built a complete product number and established the prices that add up to a total list price, GO-10CA.

Not all starters require completion of all steps; note minimum and optional steps required for various starters in the product number and price line form. (Photocopying this form will allow for its repeated use.)

1 Select Contactor

Select contactor and enclosure. Transfer the product number digits to the boxes marked 1 in the product number line and the price to the box marked 1 in the price line.

Contactor	Max. FLA	Horsepower (60 Hertz)						Product No. Digits	List Price, GO-10CA			
		Single-Phase		Three-Phase					NEMA Enclosure (For dimensions, see pp. 5-109, 5-110.)			
		115 V	230 V	200 V	230 V	460 V	575 V		Open	Type 1 (General-Purpose)	Type 12/3R (Dust- and Rain- Tight)	Type 4 (Water-Tight)
CL00	10	0.5	1.5	3	3	5	7.5	LAC00A	\$94.00	\$119.00	\$159.00	\$267.00
CL01	13.8	0.75	2	3	3	7.5	10	LAC01A	\$117.00	\$142.00	\$182.00	\$290.00
CL02	17.5	1	3	5	5	10	15	LAC02A	\$132.00	\$157.00	\$197.00	\$305.00
CL25	22	1.5	3	5	7.5	15	15	LAC25A	\$144.00	\$169.00	\$211.00	\$319.00
CL04	32	2	5	10	10	20	25	LAC04A	\$167.00	\$199.00	\$239.00	\$347.00
CL45	34	3	5	10	10	25	25	LAC45A	\$183.00	\$215.00	\$286.00	\$394.00
CL06	48	3	7.5	15	15	30	40	LAC06A	\$212.00	\$257.00	\$377.00	\$537.00
CL07	62	5	10	20	20	40	50	LAC07A	\$252.00	\$297.00	\$417.00	\$577.00
CL08	68	5	15	20	25	50	60	LAC08A	\$307.00	\$352.00	\$472.00	\$632.00
CL09	80	7.5	15	25	30	60	75	LAC09A	\$347.00	\$425.00	\$518.00	\$718.00
CL10	96	10	20	30	40	75	75	LAC10A	\$489.00	\$567.00	\$660.00	\$860.00
CK75	140	10	25	40	50	100	125	KAC75C	\$875.00	\$1,096.00	\$1,296.00	\$1,896.00
CK08	156	15	30	50	60	125	150	KAC08C	\$1,105.00	\$1,316.00	\$1,516.00	\$2,116.00
CK09	192	—	—	60	75	150	150	KAC09B	\$1,495.00	\$1,706.00	\$1,906.00	\$2,506.00
CK95	302	—	—	100	100	250	300	KAC95B	\$2,070.00	\$2,281.00	\$2,381.00	\$2,981.00
CK10	398	—	—	125	150	300	400	KAC10C ¹	\$2,870.00	\$3,585.00	\$3,820.00	\$4,420.00
CK11	480	—	—	150	200	400	500	KAC11C ¹	\$4,370.00	\$5,085.00	\$5,320.00	\$5,920.00
CK12	602	—	—	200	250	500	600	KAC12B	\$5,870.00	\$6,585.00	\$6,820.00	\$7,420.00

¹ KAC10C and KAC11C are for use with maximum fuse 1000A, and maximum breaker 600A. For higher ratings, substitute "C" version with "B" version in product digit six. Add \$270.00 to List Price for KAC10B and \$420.00 to List Price for KAC11B.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Assembled Starters Nonreversing AC

C-2000

Step-By-Step Selection and Pricing

Section 5

2 Select Coil Voltage

Select coil based on control circuit voltage or, if you plan to add a control power transformer (step ①), on primary circuit voltage instead. Transfer the product number digit to the boxes marked ② in the product number line. Note that there is no price component to this step.

Coil (control circuit voltage)			Prod. No. Digit	Primary Circuit Voltage (for CPT)		
beginning with <u>L</u> AC		beginning with <u>K</u> AC		Primary Volts	Product Number Digit	
60 Hz	50 Hz				60/50 Hz (AC/DC)	For Prod. Nos. beginning with <u>L</u> AC
24	24	—	1	—	—	—
—	—	24-28	D	—	—	—
48	42	42-48	F	—	—	—
120	110	110-127	J	—	—	—
208	—	—	L	208	L	L
277	220/230	220-250	N	220-240	S	N
240	—	—	S	—	—	—
480	380/400	380-415	U	480	U	Y
—	415	—	W	—	—	—
600	500	440-500	Y	600	Y	Z

3 Select Overload Type

Select overload type. Transfer the product number digit to the box marked ③ in the product number line. Note that there is no price component to this step.

Overload Type	Product Number Digit	
	For Product Nos. beginning LAC	For Product Nos. beginning KAC
None	Z	Z
Manual/ Automatic Reset	W	W
	Class 10	Class 30
		F

4 Select Overload Rating

From among the columns that correspond both to your product number from step ① and to the overload class (10 or 30) from step ③, select the specific amp range (be sure to observe the maximum FLA rating for your starter as indicated in step ①). Transfer the product number digit to the box marked ④ in the product number line and the price to the box marked ④ in the price line.

Class 10										Class 30				Product No. Digit
For Product Nos. beginning LAC00-LAC45		For Product Nos. beginning LAC06-LAC10		For Product Nos. beginning KAC75-KAC08		For Product Nos. beginning KAC09-KAC95		For Product Nos. beginning KAC10-KAC12		For Product Nos. beginning KAC09-KAC95		For Product Nos. beginning KAC10-KAC12		
Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	
—	—	11.5-15	\$98.00	—	—	—	—	120-190	\$641.00	—	—	120-190	\$641.00	A
0.16-26	\$55.00	14.5-19	\$98.00	55-80	\$185.00	—	—	175-280	\$641.00	—	—	175-280	\$641.00	B
0.25-41	\$55.00	18.5-25	\$98.00	63-90	\$185.00	—	—	250-400	\$641.00	—	—	250-400	\$641.00	C
0.4-65	\$55.00	24-32	\$98.00	90-120	\$185.00	—	—	315-500	\$903.00	—	—	315-500	\$903.00	D
—	—	30-43	\$98.00	110-140	\$225.00	—	—	430-650	\$903.00	—	—	430-650	\$903.00	E
.65-1.1	\$55.00	—	—	140-190	\$225.00	—	—	—	—	—	—	—	—	F
1-1.5	\$55.00	42-55	\$98.00	—	—	—	—	—	—	—	—	—	—	G
1.3-1.9	\$55.00	54-65	\$98.00	—	—	—	—	—	—	—	—	—	—	H
1.8-2.7	\$55.00	64-82	\$117.00	—	—	—	—	—	—	—	—	—	—	J
2.5-4.1	\$55.00	—	—	—	—	—	—	—	—	45-70	\$285.00	—	—	K
4-6.3	\$55.00	78-97	\$143.00	—	—	—	—	—	—	60-90	\$285.00	—	—	L
5.5-8.5	\$57.00	90-110	\$143.00	—	—	—	—	—	—	80-125	\$285.00	—	—	M
8-12	\$57.00	—	—	—	—	120-190	\$285.00	—	—	120-190	\$285.00	—	—	N
10-16	\$57.00	—	—	—	—	175-280	\$285.00	—	—	175-280	\$285.00	—	—	P
—	—	—	—	—	—	200-310	\$380.00	—	—	200-310	\$380.00	—	—	R
14.5-18	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	S
17.5-22	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	T
21-26	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	U
25-32	\$65.00	—	—	—	—	—	—	—	—	—	—	—	—	V
30-40	\$78.00	—	—	—	—	—	—	—	—	—	—	—	—	W
None	0	None	0	None	0	—	—	None	0	None	0	None	0	Z

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5 Select Auxiliary Contacts

Select additional auxiliary contacts. Transfer the product number digit to the box marked ⑤ in the product number line and the price to the box marked ⑤ in the price line. A holding interlock is standard.

Contacts	Product Number Digit	List Price Adder, GO-10CA
None	A	\$0.00
1NO-1NC	B	\$21.00
2NO	C	\$21.00

This is the last step in selection of open starters.

6 Select Enclosure

Select enclosure. Transfer the product number digit to the box marked ⑥ in the product number line and the price to the box marked ⑥ in the price line. **Note that your enclosure selection here MUST agree with that made in step ①.** Note, too, that the price component for this step is \$0.00 for units with reset and an \$8.00 **subtraction** for units without reset.

	Product No. Digit			List Price Subtraction, GO-10CA
	NEMA Type 1	NEMA Types 12/3R	NEMA Type 4	
With reset	1	2	4	\$0.00
Without reset	5	6	8	(8.00)

This is the last step required for selection of enclosed starters. If desired, select operators, indicating lights and CPTs in steps ⑦ to ⑨.

7 Select Operator

Select operator. Transfer the product number digit to the box marked ⑦ in the product number line and the price to the box marked ⑦ in the price line. Be sure your selection agrees with your contactor selection in step ①.

Operator	For Prod. Nos. beginning LAC in Type 1 enclosures		For Prod. Nos. beginning LAC in Type 12/3R or Type 4 enclosures or KAC in any enclosure	
	Prod. No. Digit	List Price Adder, GO-10CA	Prod. No. Digit	List Price Adder, GO-10CA
None	A	\$0.00	A	\$0.00
START/STOP push button	B	\$40.00	B	\$110.00
HOA selector switch	C	\$40.00	C	\$110.00
ON-OFF selector switch	D	\$40.00	D	\$110.00

8 Select Indicating Light

Select indicating light. Transfer the product number digit to the box marked ⑧ in the product number line and the price to the box marked ⑧ in the price line. Be sure your selection agrees with your contactor selection in step ①.

Indicating Light	For Prod. Nos. beginning LAC in Type 1 enclosures		For Prod. Nos. beginning LAC in Type 12/3R or Type 4 enclosures or KAC in any enclosure	
	Prod. No. Digit	List Price Adder, GO-10CA	Prod. No. Digit	List Price Adder, GO-10CA
None	A	\$0.00	A	\$0.00
Red RUN across coil	B	\$40.00	B	\$75.00
Red RUN across NO auxiliary contact	C	\$40.00	C	\$97.00
Red RUN across coil & green STOP across NC auxiliary contact	—	—	D	\$150.00
Red RUN across NO auxiliary contact & green STOP across NC auxiliary contact	—	—	E	\$172.00
Green STOP across NC auxiliary contact	—	—	F	\$75.00
Green RUN across coil	—	—	G	\$75.00



Publications and Reference: See Section 17 for a complete list of additional product-related publications

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Step-By-Step Selection and Pricing

Section 5

9 Select Control Power Transformer

Select control power transformer. Transfer the product number digit to the box marked 9 in the product number line and the price to the box marked 9 in the price line. Be sure your selection agrees with your contactor selection in step 1.

CPT VA

	For Product Numbers beginning with LAC	For Product Numbers beginning with KAC
Standard	50	250
Extra VA	150	300

Control Power Transformer	For Prod. Nos. beginning LAC		For Prod. Nos. beginning KAC	
	Prod. No. Digit	List Price Adder, GO-10CA	Prod. No. Digit	List Price Adder, GO-10CA
None	—	\$0.00	—	\$0.00
Fused control circuit (without control transformer)—one fuse	B	\$110.00	B	\$110.00
Separate control circuit	C	\$0.00	C	\$0.00
Fused separate control circuit (one fuse)	D	\$110.00	D	\$110.00
Control transformer, standard capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	F	\$300.00	F	\$450.00
Control transformer, extra capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	H	\$390.00	H	\$590.00

	Minimum steps for enclosed starter						Optional steps for enclosed starter		
	Maximum steps for open starter								
	Minimum steps for open starter								
	1	2	3	4	5	6	7	8	9
Product Number									
Price \$		+0	+0	+	+	—	+	+	+
Note: Product Number should not end in a "None" option. For example, KAC08CJZZA should be KAC08CJ.									= Complete Prod. No. = \$ Total List Price, GO-10CA

Control Circuit Fusing

Per the NEC and UL508 Section 18.2 - Control Circuit Fuses must be used when the branch circuit protective device rating is too large to serve as protection for the control circuit. This depends on the control wire size and whether all control circuit wires are within the enclosure. See table below:

Provide supplemental control circuit protection if control circuits with wires longer than 12 inches are connected to branch circuit protection exceeding the ratings below			
Control Circuit Wire Size (AWG)	Maximum Branch Circuit Protection Rating (Amperes)		Maximum Supplemental Control Circuit Protection Rating (Amperes)
	Conductors within Enclosure	Conductors outside Enclosure	
22	12	3	3
20	20	5	5
18	25	7	7
16	40	10	10
14	100	45	20
12	120	60	25

The factory must provide this protection, if the circuit provided by the factory requires the fuses. The factory will provide control circuit fuses in enclosed starters and contactors with pilot devices, control relays or other control components that are factory wired; when used with line voltage control; when the size listed below is being supplied.

Non-combination starters (LAC, LAR, LAD, KAC, KAR, KAD)

Supplied with:

- CL10 Contactors and Larger
- Overload Relays 90 amps and larger

Control Circuit fuses must be added to the enclosed starter or contactor pricing.

All CPTs in enclosed control will be supplied with primary fuses. CPTs without primary fuses are no longer available.

When control circuit fuses are not factory supplied, customer provided wiring or branch circuit protection sizing to these contactors and starters may still require that the customer/installer add the fusing in the field. It will be the customer/installer's responsibility to ensure code compliance under these conditions.

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This step-by-step process will allow you to select and price your assembled starter.

In each step, find the options—contactor, coil, overload relay, etc.—you need. Transfer the product number digits and price components to the corresponding boxes at the bottom of page 5-104.

When you have finished the appropriate number of steps for your starter, you will have built a complete product number and established the prices that add up to a total list price, GO-10CA.

Not all starters require completion of all steps; note minimum and optional steps required for various starters in the product number and price line form. (Photocopying this form will allow for its repeated use.)

1 Select Contactor

Select contactor and enclosure. Transfer the product number digits to the boxes marked ❶ in the product number line and the price to the box marked ❶ in the price line.

Contactor	Max. FLA	Horsepower (60 Hertz)						Product No. Digits	List Price, GO-10CA			
		Single-phase		Three-phase					NEMA Enclosure (For dimensions, see pp. 5-109, 5-110.)			
		115 V	230 V	200 V	230 V	460 V	575 V		Open	Type 1 (General-Purpose)	Type 12/3R (Dust- and Rain-Tight)	Type 4 (Water-Tight)
CL00	10	0.5	1.5	3	3	5	7.5	LAR00A	\$257.00	\$291.00	\$361.00	\$472.00
CL01	13.8	0.75	2	3	3	7.5	10	LAR01A	\$303.00	\$337.00	\$407.00	\$518.00
CL02	17.5	1	3	5	5	10	15	LAR02A	\$333.00	\$367.00	\$437.00	\$548.00
CL25	22	1.5	3	5	7.5	15	15	LAR25A	\$361.00	\$395.00	\$465.00	\$576.00
CL04	32	2	5	10	10	20	25	LAR04A	\$431.00	\$465.00	\$535.00	\$644.00
CL45	34	3	5	10	10	25	25	LAR45A	\$463.00	\$497.00	\$567.00	\$676.00
CL06	48	3	7.5	15	15	30	40	LAR06A	\$559.00	\$618.00	\$708.00	\$995.00
CL07	62	5	10	20	20	40	50	LAR07A	\$639.00	\$698.00	\$788.00	\$1075.00
CL08	68	5	15	20	25	50	60	LAR08A	\$749.00	\$808.00	\$898.00	\$1185.00
CL09	80	7.5	15	25	30	60	75	LAR09A	\$879.00	\$968.00	\$1068.00	\$1453.00
CL10	96	10	20	30	40	75	75	LAR10A	\$1163.00	\$1252.00	\$1352.00	\$1737.00
CK75	140	10	25	40	50	100	125	KAR75C	\$2035.00	\$2385.00	\$2885.00	\$3910.00
CK08	156	15	30	50	60	125	150	KAR08C	\$2475.00	\$3025.00	\$3325.00	\$4350.00
CK09	192	—	—	60	75	150	150	KAR09C	\$3275.00	\$3825.00	\$4165.00	\$5140.00
CK95	302	—	—	100	100	250	300	KAR95B	\$4435.00	\$4985.00	\$5185.00	\$6200.00
CK10	398	—	—	125	150	300	400	KAR10C ¹	\$6535.00	\$7085.00	\$7785.00	\$8971.00
CK11	480	—	—	150	200	400	500	KAR11C ¹	\$9535.00	\$10285.00	\$10785.00	\$11971.00
CK12	602	—	—	200	250	500	600	KAR12B	\$12835.00	\$13585.00	\$14285.00	\$15271.00

¹ KAR10C and KAR11C are for use with max. fuse 1000A, and max. breaker 600A. For higher ratings, substitute "C" version with "B" version in product digit six. Add \$540.00 to List Price for KAR10B and \$840.00 to List Price for KAR11B version.



Publications and Reference: See Section 17 for a complete list of additional product-related publications

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2 Select Coil Voltage

Select coil based on control circuit voltage or, if you plan to add a control power transformer (step 9), on primary circuit voltage instead. Transfer the product number digit to the boxes marked 2 in the product number line. Note that there is no price component to this step.

Coil (control circuit voltage)			Primary Circuit Voltage (for CPT)			
For Product Nos. beginning with LAR		For Product Nos. beginning with KAR	Product No. Digit			
60 Hz	50 Hz	60/50 Hz (AC/DC)	Prod. No. Digit	Primary Volts	For Prod. Nos. beginning with LAR	For Prod. Nos. beginning with KAR
24	24	—	1	—	—	—
—	—	24-28	D	—	—	—
48	42	42-48	F	—	—	—
120	110	110-127	J	—	—	—
208	—	—	L	208	L	L
277	220/230	220-250	N	220-240	S	N
240	—	—	S	—	—	—
480	380/400	380-415	U	480	U	Y
—	415	—	W	—	—	—
600	500	440-500	Y	600	Y	Z

3 Select Overload Type

Select overload type. Transfer the product number digit to the box marked 3 in the product number line. Note that there is no price component to this step.

Overload Type		Product No. Digit	
		For Product Numbers beginning with LAR	For Product Numbers beginning with KAR
None		Z	Z
Manual/ Automatic Reset	Class 10	W	W
	Class 30	—	F

4 Select Overload Rating

From among the columns that correspond both to your product number from step 1 and to the overload class (10 or 30) from step 3, select the specific amp range (be sure to observe the maximum FLA rating for your starter as indicated in step 1). Transfer the product number digit to the box marked 4 in the product number line and the price to the box marked 4 in the price line.

Class 10										Class 30						Prod. No. Digit
Product No. Digit beginning LAR00-LAR45		Product No. Digit beginning LAR06-LAR10		Product No. Digit beginning KAR75-KAR08		Product No. Digit beginning KAR09-KAR95		Product No. Digit beginning KAR10-KAR12		Product No. Digit beginning KAR09-KAR95		Product No. Digit beginning KAR10-KAR12				
Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA	Over-load Amp Range	List Price Adder, GO-10CA			
—	—	11.5-15	\$98.00	—	—	—	—	120-190	\$641.00	—	—	120-190	\$641.00	A		
0.16-26	\$55.00	14.5-19	\$98.00	55-80	\$185.00	—	—	175-280	\$641.00	—	—	175-280	\$641.00	B		
0.25-41	\$55.00	18.5-25	\$98.00	63-90	\$185.00	—	—	250-400	\$641.00	—	—	250-400	\$641.00	C		
0.4-65	\$55.00	24-32	\$98.00	90-120	\$185.00	—	—	315-500	\$903.00	—	—	315-500	\$903.00	D		
—	—	30-43	\$98.00	110-140	\$225.00	—	—	430-650	\$903.00	—	—	430-650	\$903.00	E		
.65-1.1	\$55.00	—	—	140-190	\$225.00	—	—	—	—	—	—	—	—	F		
1-1.5	\$55.00	42-55	\$98.00	—	—	—	—	—	—	—	—	—	—	G		
1.3-1.9	\$55.00	54-65	\$98.00	—	—	—	—	—	—	—	—	—	—	H		
1.8-2.7	\$55.00	64-82	\$117.00	—	—	—	—	—	—	—	—	—	—	J		
2.5-4.1	\$55.00	—	—	—	—	—	—	—	—	45-70	\$285.00	—	—	K		
4-6.3	\$55.00	78-97	\$143.00	—	—	—	—	—	—	60-90	\$285.00	—	—	L		
5.5-8.5	\$57.00	90-110	\$143.00	—	—	—	—	—	—	80-125	\$285.00	—	—	M		
8-12	\$57.00	—	—	—	—	120-190	\$285.00	—	—	120-190	\$285.00	—	—	N		
10-16	\$57.00	—	—	—	—	175-280	\$285.00	—	—	175-280	\$285.00	—	—	P		
—	—	—	—	—	—	200-310	\$380.00	—	—	200-310	\$380.00	—	—	R		
14.5-18	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	S		
17.5-22	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	T		
21-26	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	U		
25-32	\$65.00	—	—	—	—	—	—	—	—	—	—	—	—	V		
30-40	\$78.00	—	—	—	—	—	—	—	—	—	—	—	—	W		
None	0	None	0	None	0	—	—	None	0	None	0	None	0	Z		

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5 Select Auxiliary Contacts

Select additional auxiliary contacts. Transfer the product number digit to the box marked ⑤ in the product number line and the price to the box marked ⑤ in the price line. A holding interlock is standard.

Contacts	Product No. Digit	List Price Adder, GO-10CA
None	A	\$0.00
1NO-1NC	B	\$42.00
2NO	C	\$42.00

This is the last step of open starters.

6 Select Enclosure

Select enclosure. Transfer the product number digit to the box marked ⑥ in the product number line and the price to the box marked ⑥ in the price line. **Note that your enclosure selection here MUST agree with that made in step ①.** Note, too, that the price component for this step is \$0.00 for units with reset and an \$8.00 **subtraction** for units without reset.

	Product No. Digit			List Price Subtraction, GO-10CA
	NEMA Type 1	NEMA Types 12/3R	NEMA Type 4	
With reset	1	2	4	\$0.00
Without reset	5	6	8	(8.00)

This is the last step required for selection of enclosed starters. If desired, select operators, indicating lights and CPTs in steps ⑦ to ⑨.

7 Select Operator

Select operator. Transfer the product number digit to the box marked ⑦ in the product number line and the price to the box marked ⑦ in the price line.

Operator	Product No. Digit	List Price Adder, GO-10CA
None	A	\$0.00
FWD OFF REV selector switch	E	\$110.00
FORWARD-REVERSE selector switch with START/STOP push button	F	\$235.00
FWD STOP REV push buttons	G	\$125.00

8 Select Indicating Light

Select indicating light. Transfer the product number digit to the box marked ⑧ in the product number line and the price to the box marked ⑧ in the price line. Be sure your selection agrees with your contactor selection in step ①.

Indicating Light	Product No. Digit	List Price Adder, GO-10CA
None	A	\$0.00
Red FORWARD, white REVERSE indicating lights across coil	B	\$150.00
Red FORWARD, white REVERSE indicating lights across NO auxiliary contact	C	\$194.00
Red FORWARD, white REVERSE across coil green STOP across NC auxiliary contact (2 in series)	D	\$225.00
Red FORWARD, white REVERSE, green STOP across NC auxiliary contact (2 in series)	E	\$269.00
Green STOP across NC auxiliary contact (2 in series)	F	\$ 75.00



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Step-By-Step Selection and Pricing

Section 5

9 Select Control Power Transformer

Select control power transformer. Transfer the product number digit to the box marked 9 in the product number line and the price to the box marked 9 in the price line. Be sure your selection agrees with your contactor selection in step 1.

CPT VA

	For Product Numbers beginning with LAR	For Product Numbers beginning with KAR
Standard	50	250
Extra VA	150	300

Control Power Transformer	For Prod. Nos. beginning LAR		For Prod. Nos. beginning KAR	
	Prod. No. Digit	List Price Adder, GO-10CA	Prod. No. Digit	List Price Adder, GO-10CA
None	—	\$0.00	—	\$0.00
Fused control circuit (without control transformer)—one fuse	B	\$110.00	B	\$110.00
Separate control circuit	C	\$0.00	C	\$0.00
Fused separate control circuit (one fuse)	D	\$110.00	D	\$110.00
Control transformer, standard capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	F	\$300.00	F	\$450.00
Control transformer, extra capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	H	\$390.00	H	\$590.00

	Minimum steps for enclosed starter Maximum steps for open starter Minimum steps for open starter Optional steps for enclosed starter										
Product Number											= Complete Prod. No.
Price \$											= \$

Note: Product Number should not end in a "None" option.
For example, KAR08CJZZA should be KAR08CJ.

										Total List Price, GO-10CA
--	--	--	--	--	--	--	--	--	--	----------------------------------

Control Circuit Fusing

Per the NEC and UL508 Section 18.2 - Control Circuit Fuses must be used when the branch circuit protective device rating is too large to serve as protection for the control circuit. This depends on the control wire size and whether all control circuit wires are within the enclosure. See table below:

Provide supplemental control circuit protection if control circuits with wires longer than 12 inches are connected to branch circuit protection exceeding the ratings below			
Control Circuit Wire Size (AWG)	Maximum Branch Circuit Protection Rating (Amperes)		Maximum Supplemental Control Circuit Protection Rating (Amperes)
	Conductors within Enclosure	Conductors outside Enclosure	
22	12	3	3
20	20	5	5
18	25	7	7
16	40	10	10
14	100	45	20
12	120	60	25

The factory must provide this protection, if the circuit provided by the factory requires the fuses. The factory will provide control circuit fuses in enclosed starters and contactors with pilot devices, control relays or other control components that are factory wired; when used with line voltage control; when the size listed below is being supplied.

Non-combination starters (LAC, LAR, LAD, KAC, KAR, KAD)

Supplied with:

- CL10 Contactors and Larger
- Overload Relays 90 amps and larger

Control Circuit fuses must be added to the enclosed starter or contactor pricing.

All CPTs in enclosed control will be supplied with primary fuses. CPTs without primary fuses are no longer available.

When control circuit fuses are not factory supplied, customer provided wiring or branch circuit protection sizing to these contactors and starters may still require that the customer/installer add the fusing in the field. It will be the customer/installer's responsibility to ensure code compliance under these conditions.

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Section 5

This step-by-step process will allow you to select and price your assembled starter.

In each step, find the options—contactor, coil, overload relay, etc.—you need. Transfer the product number digits and price components to the corresponding boxes at the bottom of page 5-108.

When you have finished the appropriate number of steps for your starter, you will have built a complete product number and established the prices that add up to a total list price, GO-10CA.

Not all starters require completion of all steps; note minimum and optional steps required for various starters in the product number and price line form. (Photocopying this form will allow for its repeated use.)

1 Select Contactor

Select contactor and enclosure. Transfer the product number digits to the boxes marked 1 in the product number line and the price to the box marked 1 in the price line.

M1 & M2 Line & Delta Contactor	S1 Wye Contactor	Max Motor FLA	Horsepower (60 Hertz)				Prod. No. Digits	List Price, GO-10CA			
			Three-phase					NEMA Enclosure (For dimensions, see pp. 5-109, 5-110.)			
			200 V	230 V	460 V	575 V		Open	Type 1 (General- Purpose)	Types 12/3R (Dust- and Rain- Tight)	Type 4 (Water-Tight)
CL02	CL01	30	—	—	20	20	LAD02A	\$855.00	\$1035.00	\$1106.00	\$1431.00
CL25	CL01	38	—	—	25	25	LAD25A	\$889.00	\$1069.00	\$1140.00	\$1465.00
CL04	CL04	55	15	20	40	50	LAD04A	\$978.00	\$1158.00	\$1229.00	\$1554.00
CL06	CL04	83	25	30	60	75	LAD06A	\$1104.00	\$1412.00	\$1532.00	\$2138.00
CL07	CL06	107	30	40	75	100	LAD07A	\$1227.00	\$1535.00	\$1655.00	\$2216.00
CL09	CL07	138	40	50	100	125	LAD09A	\$1518.00	\$1826.00	\$1946.00	\$2552.00
CL10	CL07	180	60	60	125	125	LAD10A	\$1842.00	\$2150.00	\$2270.00	\$2878.00
CK75	CK75	230	75	75	150	200	KAD75C	\$2981.00	\$3975.00	\$4413.00	\$5861.00
CK08	CK75	270	75	100	200	250	KAD08C	\$3626.00	\$4618.00	\$5058.00	\$6506.00
CK09	CK09	332	100	125	250	300	KAD09B	\$4584.00	\$5576.00	\$6028.00	\$7464.00
CK95	CK09	523	150	200	400	500	KAD95B	\$5622.00	\$6614.00	\$7066.00	\$8502.00
CK10	CK10	689	250	250	500	700	KAD10C ¹	\$9238.00	\$10717.00	\$11289.00	\$13277.00
CK11	CK10	831	300	300	600	800	KAD11C ¹	\$12138.00	\$13617.00	\$14189.00	\$16180.00
CK12	CK12	1042	400	400	800	1000	KAD12B	\$15238.00	\$16717.00	\$17309.00	\$19280.00

¹Maximum fuse 1000A, maximum circuit breaker 600A



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Step-By-Step Selection and Pricing

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2 Select Coil Voltage

Select coil based on control circuit voltage or, if you plan to add a control power transformer (step 9), on primary circuit voltage instead. Transfer the product number digit to the boxes marked 2 in the product number line. Note that there is no price component to this step.

Coil (control circuit voltage)			Primary Circuit Voltage (for CPT)			
For Prod. Nos. beginning with LAD		For Prod. Nos. beginning with KAD	Prod. No. Digit	Product Number Digit		
60 Hz	50 Hz	60/50 Hz (AC/DC)		Primary volts	For Prod. Nos. beginning with LAD	For Prod. Nos. beginning with KAD
24	24	—	1	—	—	—
—	—	24-28	D	—	—	—
48	42	42-48	F	—	—	—
120	110	110-127	J	—	—	—
208	—	—	L	208	L	L
277	220/230	220-250	N	220-240	S	N
240	—	—	S	—	—	—
480	380/400	380-415	U	480	U	Y
—	415	—	W	—	—	—
600	500	440-500	Y	600	Y	Z

3 Select Overload Type

Select overload type. Transfer the product number digit to the box marked 3 in the product number line. Note that there is no price component to this step.

Overload Type		Product Number Digit	
		For Product Numbers beginning LAD	For Product Numbers beginning KAD
None		Z	Z
Manual/ Automatic Reset	Class 10	W	W
	Class 30	—	F

4 Select Overload Rating

From among the columns that correspond both to your product number from step 1 and to the overload class (10 or 30) from step 3, select the specific amp range (be sure to observe the maximum FLA rating for your starter as indicated in step 1). Transfer the product number digit to the box marked 4 in the product number line and the price to the box marked 4 in the price line.

To select overload range for wye-delta starter, multiply motor amps by 0.58.

Class 10										Class 30				Prod. No. Digit
For Product Nos. beginning LAD00-LAD45		For Product Nos. beginning LAD06-LAD10		For Product Nos. beginning KAD75-KAD08		For Product Nos. beginning KAD09-KAD95		For Product Nos. beginning KAD10-KAD12		For Product Nos. beginning KAD09-KAD95		For Product Nos. beginning KAD10-KAD12		
Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	Over- load Amp Range	List Price Adder, GO-10CA	
—	—	11.5-15	\$98.00	—	—	—	—	120-190	\$641.00	—	—	120-190	\$641.00	A
0.16-26	\$55.00	14.5-19	\$98.00	55-80	\$185.00	—	—	175-280	\$641.00	—	—	175-280	\$641.00	B
0.25-41	\$55.00	18.5-25	\$98.00	63-90	\$185.00	—	—	250-400	\$641.00	—	—	250-400	\$641.00	C
0.4-65	\$55.00	24-32	\$98.00	90-120	\$185.00	—	—	315-500	\$903.00	—	—	315-500	\$903.00	D
—	—	30-43	\$98.00	110-140	\$225.00	—	—	430-650	\$903.00	—	—	430-650	\$903.00	E
.65-1.1	\$55.00	—	—	140-190	\$225.00	—	—	—	—	—	—	—	—	F
1-1.5	\$55.00	42-55	\$98.00	—	—	—	—	—	—	—	—	—	—	G
1.3-1.9	\$55.00	54-65	\$98.00	—	—	—	—	—	—	—	—	—	—	H
1.9-2.7	\$55.00	64-82	\$117.00	—	—	—	—	—	—	—	—	—	—	J
2.5-4.1	\$55.00	—	—	—	—	—	—	—	—	45-70	\$285.00	—	—	K
4-6.3	\$55.00	78-97	\$143.00	—	—	—	—	—	—	60-90	\$285.00	—	—	L
5.5-8.5	\$57.00	90-110	\$143.00	—	—	—	—	—	—	80-125	\$285.00	—	—	M
8-12	\$57.00	—	—	—	—	120-190	\$285.00	—	—	120-190	\$285.00	—	—	N
10-16	\$57.00	—	—	—	—	175-280	\$285.00	—	—	175-280	\$285.00	—	—	P
—	—	—	—	—	—	200-310	\$380.00	—	—	200-310	\$380.00	—	—	R
14.5-18	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	S
17.5-22	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	T
21-26	\$57.00	—	—	—	—	—	—	—	—	—	—	—	—	U
25-32	\$65.00	—	—	—	—	—	—	—	—	—	—	—	—	V
30-40	\$78.00	—	—	—	—	—	—	—	—	—	—	—	—	W
None	0	None	0	None	0	—	—	None	0	None	0	None	0	Z

This is the last step in selection of open starters.

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Step-By-Step Selection and Pricing

Section 5

5 Select Enclosure

Select enclosure. Transfer the product number digit to the box marked ⑤ in the product number line and the price to the box marked ⑤ in the price line. **Note that your enclosure selection here MUST agree with that made in step ①.** Note, too, that the price component for this step is \$0.00 for units with reset and \$8.00 **subtraction** for units without reset.

Product Number Digit			List Price Subtraction, GO-10CA
NEMA Type 1	NEMA Types 12/3R	NEMA Type 4	
With reset 1	2	4	\$0.00
Without reset 5	6	8	(8.00)

This is the last step required for selection of enclosed starters. If desired, select operators, indicating lights and CPTs in steps ⑥ to ⑧.

6 Select Operator

Select operator. Transfer the product number digit to the box marked ⑥ in the product number line and the price to the box marked ⑥ in the price line. Be sure your selection agrees with your contactor selection in step ①.

Operator	Product Number Digit	List Price Adder, GO-10CA
None	A	\$ 0.00
START-STOP push button	B	\$110.00
HOA selector switch	C	\$110.00
ON-OFF selector switch	D	\$110.00

7 Select Indicating Light

Select indicating light. Transfer the product number digit to the box marked ⑦ in the product number line and the price to the box marked ⑦ in the price line. Be sure your selection agrees with your contactor selection in step ①.

Indicating Light	Product Number Digit	List Price Adder, GO-10CA
None	A	\$0.00
Red RUN across coil	B	\$75.00
Red RUN across coil & green STOP across NC auxiliary contact	D	\$97.00
Red RUN & yellow START across coil	H	\$150.00
Red RUN & yellow START across coil & green STOP across NC auxiliary contact	J	\$225.00



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

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Step-By-Step Selection and Pricing

Section 5

8 Select Control Power Transformer

Select control power transformer. Transfer the product number digit to the box marked 8 in the product number line and the price to the box marked 8 in the price line. Be sure your selection agrees with your contactor selection in step 1.

CPT VA

	For Product Numbers beginning with LAD	For Product Numbers beginning with KAD
Standard	50	250
Extra VA	150	300

Control Power Transformer	For Product Nos. beginning LAD		For Product Nos. beginning KAD	
	Prod. No. Digit	List Price Adder, GO-10CA	Prod. No. Digit	List Price Adder, GO-10CA
None	—	\$0.00	—	\$0.00
Fused control circuit (without control transformer)—one fuse	B	\$110.00	B	\$110.00
Separate control circuit	C	\$0.00	C	\$0.00
Fused separate control circuit (one fuse)	D	\$110.00	D	\$110.00
Control transformer, standard capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	F	\$300.00	F	\$450.00
Control transformer, extra capacity, 110-120 V 50/60 Hz secondary voltage, one secondary fuse, two primary fuses	H	\$390.00	H	\$590.00

	Minimum steps for enclosed starter				Optional steps for enclosed starter				
	Maximum steps for open starter								
Product Number	1	2	3	4	5	6	7	8	Complete Prod. No.
Price \$		+0	+0	+	+0	-	+	+	= \$
Note: Product Number should not end in a "None" option. For example, KAD08CJZZA should be KAD08CJ.									Total List Price, GO-10CA

Control Circuit Fusing

Per the NEC and UL508 Section 18.2 - Control Circuit Fuses must be used when the branch circuit protective device rating is too large to serve as protection for the control circuit. This depends on the control wire size and whether all control circuit wires are within the enclosure. See table below:

Provide supplemental control circuit protection if control circuits with wires longer than 12 inches are connected to branch circuit protection exceeding the ratings below			
Control Circuit Wire Size (AWG)	Maximum Branch Circuit Protection Rating (Amperes)		Maximum Supplemental Control Circuit Protection Rating (Amperes)
	Conductors within Enclosure	Conductors outside Enclosure	
22	12	3	3
20	20	5	5
18	25	7	7
16	40	10	10
14	100	45	20
12	120	60	25

The factory must provide this protection, if the circuit provided by the factory requires the fuses. The factory will provide control circuit fuses in enclosed starters and contactors with pilot devices, control relays or other control components that are factory wired; when used with line voltage control; when the size listed below is being supplied.

Non-combination starters (LAC, LAR, LAD, KAC, KAR, KAD)

Supplied with:

- CL10 Contactors and Larger
- Overload Relays 90 amps and larger

Control Circuit fuses must be added to the enclosed starter or contactor pricing.

All CPTs in enclosed control will be supplied with primary fuses. CPTs without primary fuses are no longer available.

When control circuit fuses are not factory supplied, customer provided wiring or branch circuit protection sizing to these contactors and starters may still require that the customer/installer add the fusing in the field. It will be the customer/installer's responsibility to ensure code compliance under these conditions.

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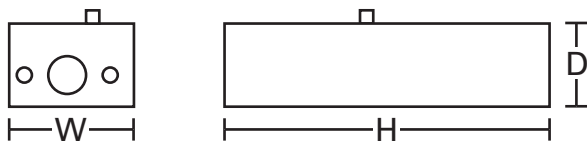
Section 5

NEMA Type 1 (General-Purpose)

NEMA Types 12/3R (Oil-, Dust-, and Rain-Tight)

NEMA Type 4 (Water-Tight)

Dimension Legend



Enclosures For CL Contactors—Dimensions and Outlines

Note: Enclosures are designed for use with ac contactors without front-mounted accessories. Order CL25, CL45, and CL06-CL10 contactors with side-mounted auxiliary contacts for use in these enclosures.

Type	Product Number Basic Enclosure	Assembled Starter Product Number	For Use With	With or Without CPT	Dimensions (in inches)			Outline Number
					H	W	D	
1	CLXE1A	LAC00-45	CL00-45 Starter	without	10	6	4.6	55-215878
	CLXE1B	LAC05-08	CL05-08 Starter	without	13.3	7.4	6.1	55-215895
	CLXE1C	LAC09-10	CL09-10 Starter	without	20.3	8.8	7.3	55-215880
	CLXE1D	LAC00-45	CL00-45 Starter	with	10	10	4.6	55-215879
	CLXE1E	LAC05-08	CL05-08 Starter	with	13.3	12	6.1	55-215896
	CLXE1F	LAC09-10	CL09-10 Starter	with	25	8.8	7.3	55-215898
	CLXE1G	LAR00-45	CL00-45 Reverser	with	16.8	15	6.9	55-215894
	CLXE1G	LAD00-45	CL00-45 Wye-Delta	without	16.8	15	6.9	55-215894
	CLXE1H	LAR05-10	CL05-10 Reverser	with	20.3	16.8	6.6	55-215897
	CLXE1L	LAD05-10	CL05-10 Wye-Delta	without	27	22	8.6	55-215893
12/3R	CLXE2A	LAC00-45	CL00-45 Starter	without	14.5	6.4	5.5	55-215875
	CLXE2B	LAC05-10	CL05-10 Starter	without	16.5	7.8	6.25	55-215891
	CLXE2C	LAC00-45	CL00-45 Starter	with	14.5	10.4	5.5	55-215888
	CLXE2C	LAR00-45	CL00-45 Reverser	without	14.5	10.4	5.5	55-215888
	CLXE2D	LAC05-10	CL05-10 Starter	with	16.5	12.5	6.25	55-215889
	CLXE2D	LAR05-10	CL05-10 Reverser	without	16.5	12.5	6.25	55-215889
	CLXE2E	LAR00-45	CL00-45 Reverser	with	14.5	14.4	5.5	55-215892
	CLXE2F	LAR05-10	CL05-10 Reverser	with	17	16.5	6.25	55-215890
	CLXE2G	LAD00-45	CL00-45 Wye-Delta	with or without	17	16.5	6.5	55-215887
	CLXE2H	LAD05-10	CL05-10 Wye-Delta	with or without	22	21.2	8	55-215886
4	CLXE4A	LAC00-45	CL00-45 Starter	without	17	7.75	6.5	55-215867
	CLXE4B	LAC05-10	CL05-10 Starter	without	17	7.75	6.5	55-215866
	CLXE4C	LAC00-45	CL00-45 Starter	with	14.5	10.5	5.5	55-215865
	CLXE4C	LAR00-45	CL00-45 Reverser	without	14.5	10.5	5.5	55-215865
	CLXE4D	LAC05-10	CL05-10 Starter	with	17	12.5	6.25	55-215864
	CLXE4D	LAC05-10	CL05-10 Reverser	without	17	12.5	6.25	55-215864
	CLXE4E	LAR00-45	CL00-45 Reverser	with	16.5	16.5	6.5	55-215863
	CLXE4F	LAR05-10	CL05-10 Reverser	with	17	16.5	6.5	55-215862
	CLXE4E	LAD00-45	CL00-45 Wye-Delta	with	17	16.5	6.5	55-215863
	CLXE4H	LAD05-10	CL05-10 Wye-Delta	with	26	18	8.0	55-215860



Publications and Reference: See Section 17 for a complete list of additional product-related publications

IEC Power Devices

IEC Assembled Starters Enclosures

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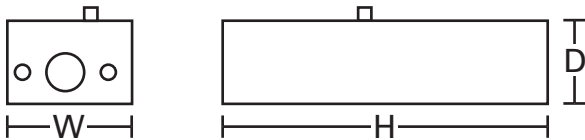
Section 5

NEMA Type 1 (General-Purpose)

NEMA Types 12/3R (Oil-, Dust-, and Rain-Tight)

NEMA Type 4 (Water-Tight)

Dimension Legend



Enclosures For CK Contactors—Dimensions and Outlines

CK enclosures are only supplied with complete factory-assembled contactors and starters.

Type	Assembled Starter Product Number	For Use With	With or Without CPT	Dimensions (in inches)			Outline Number
				H	W	D	
1	KAC75-08	CK75-08 Starter	with or without	28	14	9	55-216404
	KAC09-95	CK09-95 Starter	with or without	36	17	12	55-215859
	KAC10-12	CK10-12 Starter	with or without	46	20	15.5	55-215858
	KAR75-08	CK75-08 Reverser	with or without	28	14	9	55-216404
	KAR09-95	CK09-95 Reverser	with or without	36	17	12	55-215859
	KAR10-12	CK10-12 Reverser	with or without	46	26	15.5	55-215857
	KAD75-08	CK75-08 Wye-Delta	with or without	32	22	9	55-216405
	KAD09-95	CK09-95 Wye-Delta	with or without	48	30	12	55-215856
12/3R	KAD10-12	CK10-12 Wye-Delta	with or without	56	36	15.5	55-215855
	KAC75-08	CK75-08 Starter	with or without	28	18	9	55-216406
	KAC09-95	CK09-95 Starter	with or without	36	22	12	55-215854
	KAC10-12	CK10-12 Starter	with or without	46	20	15.5	55-215858
	KAR75-08	CK75-08 Reverser	with or without	28	18	9	55-216406
	KAR09-95	CK09-95 Reverser	with or without	36	22	12	55-215854
	KAR10-12	CK10-12 Reverser	with or without	46	26	15.5	55-215857
	KAD75-08	CK75-08 Wye-Delta	with or without	32	22	9	55-216407
4	KAD09-95	CK09-95 Wye-Delta	with or without	48	30	12	55-215851
	KAD10-12	CK10-12 Wye-Delta	with or without	56	36	15.5	55-215850
	KAC75-08	CK75-08 Starter	with or without	28	18	9	55-216408
	KAC09-95	CK09-95 Starter	with or without	36	22	12	55-215849
	KAC10-12	CK10-12 Starter	with or without	46	20	15.5	55-215848
	KAR75-08	CK75-08 Reverser	with or without	28	18	9	55-216408
	KAR09-95	CK09-95 Reverser	with or without	36	22	12	55-215849
	KAR10-12	CK10-12 Reverser	with or without	46	27	15.5	55-215847
	KAD75-08	CK75-08 Wye-Delta	with or without	32	22	9	55-216409
	KAD09-95	CK09-95 Wye-Delta	with or without	48	30	12	55-215846
	KAD10-12	CK10-12 Wye-Delta	with or without	56	36	15.5	55-215845