Features and Benefits

General

Standard Features

Size 00–4 magnetic starters include the following standard features:

- Rugged Industrial Design
- Half Sizes for Cost and Space Savings
- Dual Voltage, Dual Frequency Coils
- Solid State or Ambient Compensated Bimetal Overload Protection
- Wide Range of Accessories
- Easy Coil Access
- Overload Test Feature
- Straight Thru Wiring
- Gravity Dropout
- Large Silver Cadmium Contacts

Application

Heavy Duty starters are designed for across the line starting of single phase and polyphase motors.

These controls are available in NEMA Sizes 00 through 8. In addition to the usual NEMA Starter Sizes, Siemens offers three exclusive Half Sizes; 1¾, 2½ and 3½. These integral sizes offer the same rugged, industrial construction as our NEMA Sizes and ensure efficient operating performance. Half Sizes provide a real cost savings by cutting down on over capacity when NEMA Sizes exceed the motor ratings. All Siemens Heavy Duty controls, including our popular Half Sizes comply with applicable NEMA and UL tests.

All starters are supplied with a NO holding interlock that in conjunction with an appropriate pilot device will provide low voltage protection or release.

NEMA starters are ideal for applications requiring dependability and durability. Typical applications include use with machine tools, air conditioning equipment, material handling equipment, compressors, hoists and various production and industrial equipment as well as in demanding automotive applications.

Starters are available as an open type or in NEMA 1, 12/3/3R, 4 (painted), 4/4X (stainless), 4X (fiberglass), and 7 & 9 enclosures.

Gravity Dropout

For added reliability, the gravity dropout of the armature and contacts is assisted by stainless steel springs which help provide quick, precise opening of the contacts.

45 Degree, Wedge Action Contacts

The 45 degree, wedge action contacts reduce tracking and provide faster arc quenching. The resulting self-cleaning and reduced contact bounce mean cooler operation and longer life for the large silver cadmium oxide contacts.

Terminal Design

Control terminals are self-rising pressure type.

Molded Coil

Magnetic coils are carefully wound and then sealed in epoxy. Encapsulation helps seal out moisture, promotes heat transfer and resists electrical, mechanical and thermal stresses.

Dual Voltage/Frequency Coil

Starters are available with dual voltage, dual frequency coils. They are designed to operate on either 50 or 60 Hertz.

Molded Stationary Contact Block

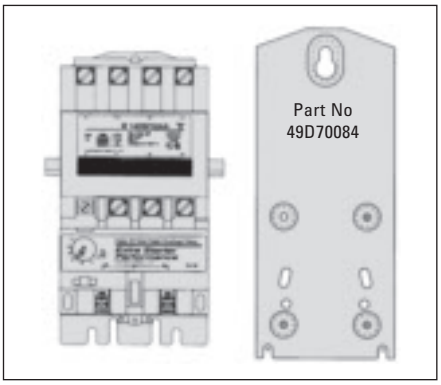
Thermoset materials resist arc tracking and the stresses of heat and severe impact.

Field Modification Kits

All starters can be modified in the field with a complete range of accessories. These include pushbuttons, selector switches, pilot lights, auxiliary contacts and surge suppressors.

Auxiliary Equipment

- NEMA starters are available with built-in START-STOP push buttons for 3 wire control or a HAND-OFF-AUTO selector switch for 2 wire control.
- Field modifications such as auxiliary contacts, pilot lights, push buttons, selector switches, and fuse blocks are available to meet particular application requirements.
- Normally opened or normally closed auxiliary power pole kits are available for Sizes 00 through 1¾.
- Transformers can be ordered as either factory or field modifications. In some cases these may require a larger enclosure.
- A full line of replacement parts are available including contact kits, coils, and overload relays.



Siemens Sizes 00–1¾ have as standard, universal mounting which fits the following:

Cutler Hammer—Citation Series
—Freedom Series

GE —300 Line

Square D —Type S

The Starter with its existing backplate mounts onto the piggyback mounting plate and is secured in place with three mounting screws. The piggyback mounting plate fits the following:

Allen-Bradley —Bulletin 509
—Bulletin 709

Westinghouse —Series A200

Size 5 & 6 Starters Additional Features

- Solid State Overload (3RB type) Standard
- Latest technology in arc quenching to extend contactor life
- Wide variety of enclosures in all starter configurations

Size 7 & 8 Starters Additional Features

- New Compact Design
- Can be mounted in any position
- Same coil voltage is AC or DC

ESP100® Solid State Starter

ESP100® starters combine the rugged characteristics of a NEMA rated contactor with a solid state overload that provides phase loss protection. It offers the industrial user greater protection and added life for motors in heavy duty applications. The inherent benefits of the ESP100® ultimately result in a cost savings to the user.

ESP100® Solid State Overload Relays

These standard features of the ESP100® provide Extra Starter Performance.

- True phase loss protection; trips within 3 seconds.
- High accuracy trip curves; ± 2% repeat trip accuracy.
- Ease of use. Mount, wire, and set FLA.
- Overload is self protected against short circuits.
- Overload is self powered and requires no hard wiring or separate power source.
- Heaterless construction minimizes energy costs and the costs of cabinet ventilation or cooling.
- Class 20 protection is standard. Class 10 and 30 protection are available.
- Provides motor protection for 50/60 Hertz.

Half Size Starters

Half-Size starters feature all the rugged performance characteristics of our NEMA rated starter sizes, but are fractionally sized to more closely match your exact motor rating. As a result, significant economic savings are made possible without sacrificing the reliability you expect from a heavy duty starter.

These additional starter sizes have the reserve capacity to handle occasional plugging and jogging applications without derating. Superior operating performance in heavy duty applications is assured by the large current carrying parts, not by derating the device.

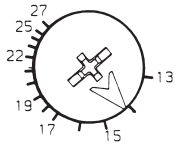
Exclusive "half-sizes" save potentially hundreds, even thousands of dollars per project.

Using the table below, simply match the specific size starter to the horsepower rating of your motor. Every half-size starter saves you money—up to 31%.

All "half-sizes" comply to applicable NEMA and UL standards.

ESP100® FLA Adjustment Dial—Set the adjustment dial on the overload to the FLA of the motor.

Figure 1



Typical Solid-State Overload Adjustment Dial Markings

Each overload is precisely calibrated and labels are individually laser printed and then custom applied for each particular calibration.

Savings for Siemens "Half-Size" Starters in NEMA 1 Enclosures, FVNR

Motor Size		Starter Size	Half Size	"Half-Size" Savings Over Next Full Size
230V	460V			
7½	10	1	—	—
10	15	—	1¾	31%
15	25	2	—	—
20	30	—	2½	20%
30	50	3	—	—
40	75	—	3½	13%
50	100	4	—	—

Solid State Overload with Manual Reset, Class 14

Selection

Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits see pages 8/81.
- Factory Modifications see pages 8/93.
- Dimensions see pages 8/101 open and 8/116 enclosed.
- Wiring Diagrams see page 8/128.
- Replacement Parts see pages 8/152.
- Shipped as standard Class 20. For Class 10 or Class 30 see page 8/95.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240①	A
200–208	D
220–240	G
277	L
220–240/440–480①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/93.

Open Type & Standard Width Enclosure, 3 Phase, 3 Pole

Max Hp							Enclosure					
							Open Type Standard Auxiliary Contacts⑦	**NEMA 1** General Purpose	**NEMA 4/4X Stainless**② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel (316 Stainless Steel Available)⑧	**NEMA 4X Fiberglass** Watertight, Dusttight Corrosion Resistant	**NEMA 7 & 9 NEMA 3 & 4** Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Class III Bolted Enclosures Indoor/Outdoor Use	**NEMA 12 NEMA 3/3R**② Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Overload Amp Range	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
⅛	⅛	⅓	½	00	—	0.25–1	**14BSA32A***	**14BSA32B***	**Use Size 0**	**Use Size 0**	**Use Size 0**	**Use Size 0**
½	¾	1½	2	00	—	0.75–3	**14BSB32A***	**14BSB32B***	**Use Size 0**	**Use Size 0**	**Use Size 0**	**Use Size 0**
1½	1½	2	—	00	—	2.5–10	**14BSD32A***	**14BSD32B***	**Use Size 0**	**Use Size 0**	**Use Size 0**	**Use Size 0**
⅛	⅛	⅓	½	0	—	0.25–1	**14CSA32A***	**14CSA32B***	**14CSA32W***	**14CSA32F***	**14CSA32H***	**14CSA320***
½	¾	1½	2	0	—	0.75–3	**14CSB32A***	**14CSB32B***	**14CSB32W***	**14CSB32F***	**14CSB32H***	**14CSB320***
2	2	5	5	0	—	2.5–10	**14CSD32A***	**14CSD32B***	**14CSD32W***	**14CSD32F***	**14CSD32H***	**14CSD320***
3	3	—	—	0	—	9–18	**14CSE32A***	**14CSE32B***	**14CSE32W***	**14CSE32F***	**14CSE32H***	**14CSE320***
⅛	⅛	⅓	½	1	—	0.25–1	**14DSA32A***	**14DSA32B***	**14DSA32W***	**14DSA32F***	**14DSA32H***	**14DSA320***
½	¾	1½	2	1	—	0.75–3	**14DSB32A***	**14DSB32B***	**14DSB32W***	**14DSB32F***	**14DSB32H***	**14DSB320***
2	2	5	5	1	—	2.5–10	**14DSD32A***	**14DSD32B***	**14DSD32W***	**14DSD32F***	**14DSD32H***	**14DSD320***
3	3	10	10	1	—	9–18	**14DSE32A***	**14DSE32B***	**14DSE32W***	**14DSE32F***	**14DSE32H***	**14DSE320***
7½	7½	—	—	1	—	13–27	**14DSF32A***	**14DSF32B***	**14DSF32W***	**14DSF32F***	**14DSF32H***	**14DSF320***
—	—	15	15	—	1¾	13–27	**14ESF32A***	**14ESF32B***	**14ESF32W***	**14ESF32F***	**14ESF32H***	**14ESF320***
10	10	—	—	—	1¾	20–40	**14ESG32A***	**14ESG32B***	**14ESG32W***	**14ESG32F***	**14ESG32H***	**14ESG320***
—	—	15	20	2	—	13–27	**14FSF32A***	**14FSF32B***	**14FSF32W***	**14FSF32F***	**14FSF32H***	**14FSF320***
10	15	25	25	2	—	22–45	**14FSH32A***	**14FSH32B***	**14FSH32W***	**14FSH32F***	**14FSH32H***	**14FSH320***
—	—	30	30	—	2½	22–45	**14GSH32A***	**14GSH32B***	**14GSH32W***	**14GSH32F***	**14GSH32H***	**14GSH320***
15	20	—	—	—	2½	30–60	**14GSJ32A***	**14GSJ32B***	**14GSJ32W***	**14GSJ32F***	**14GSJ32H***	**14GSJ320***
—	—	30	40	3	—	30–60	**14HSJ32A***	**14HSJ32B***	**14HSJ32W***	**14HSJ32F***	**14HSJ32H***	**14HSJ320***
25	30	50	50	3	—	45–90	**14HSK32A***	**14HSK32B***	**14HSK32W***	**14HSK32F***	**14HSK32H***	**14HSK320***
30	40	75	75	—	3½	57–115	**14ISL32A***	**14ISL32B***	**14ISL32W***	**14ISL32F***	**14ISL32H***	**14ISL320***
40	50	100	100	4	—	67–135	**14JTM32A***	**14JTM32B***	**14JTM32W***	**14JTM32F***	**14JTM32H***	**14JTM320***
75	100	200	200	5	—	55 - 250	**14LPU32A***	**14LPU32B***	**14LPU32E*④**	—	**14LPU32H***	**14LPU320***
150	200	400	400	6	—	200–540	**14MPX32A***	**14MPX32B***	**14MPX32E*④**	—	—	**14MPX320***
—	300	600	600	7⑤	—	420–820	**14NHY32A***	**14NHY32B***	**14NHY32E***	—	—	**14NHY320***
—	450	900	900	8⑥	—	420–1220	**14PHZ32A***	**14PHZ32B***	**14PHZ32E***	—	—	**14PHZ320***

Open Type & Standard Width Enclosure, Single Phase, 2 Pole③

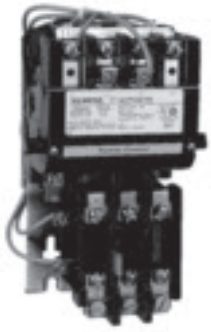
Max Hp				Enclosure					
				Open Type Standard Auxiliary Contacts ⑦	**NEMA 1** General Purpose	**NEMA 4/4X Stainless**② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel (316 Stainless Steel Available)⑧	**NEMA 4X Fiberglass** Watertight, Dusttight Corrosion Resistant	**NEMA 7 & 9 NEMA 3 & 4** Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	**NEMA 12 NEMA 3/3R**② Industrial Use Weatherproof
115 Volts	208/230 Volts	NEMA Size	Overload Amp Range	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
⅛	¼	0	0.75–3	**14CSB12A***	**14CSB12B***	**14CSB12W***	**14CSB12F***	**14CSB12H***	**14CSB120***
¼	½	0	2.5–10	**14CSD12A***	**14CSD12B***	**14CSD12W***	**14CSD12F***	**14CSD12H***	**14CSD120***
1	2	0	5.0–16	**14CSE12A***	**14CSE12B***	**14CSE12W***	**14CSE12F***	**14CSE12H***	**14CSE120***
⅛	¼	1	0.75–3	**14DSB12A***	**14DSB12B***	**14DSB12W***	**14DSB12F***	**14DSB12H***	**14DSB120***
¼	½	1	2.5–10	**14DSD12A***	**14DSD12B***	**14DSD12W***	**14DSD12F***	**14DSD12H***	**14DSD120***
1	2	1	5.0–16	**14DSE12A***	**14DSE12B***	**14DSE12W***	**14DSE12F***	**14DSE12H***	**14DSE120***

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating. **For higher Hp single phase motors, use 3 phase starters, wire and set per diagram on page 8/128.**

① Dual voltage coils not available in size 5–8 starters.
② For conduit hubs and conversion instructions, see page 8/87.
③ Coils D, F, or G will be wired for Incoming Voltage. J coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.
④ Enclosure is NEMA Type 4 (painted steel).
⑤ Only available S coil 24-60V DC, F coil 100-250V AC 50/60Hz, or DC, H coil 150-500V AC 50/60Hz, or DC
⑥ Only available F coil100-250V AC 50/60Hz, or DC
⑦ Standard Auxiliary Contacts, Same as Contactors, refer to page 8/44.
⑧ For 316 Stainless Steel option see page 8/97.

Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 14

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Heater elements see page 8/148. Single phase starters require 1 heater element. 3 phase starters require 3 heater elements.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits page 8/81.
- Factory Modifications page 8/93.
- Dimensions see page 8/102 open and 8/116 enclosed.
- Wiring Diagrams see page 8/128.
- Replacement Parts see page 8/152.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240	A
200–208	D
220–240	G
277	L
220–240/440–480	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/93.

Open Type & Standard Width Enclosure, 3 Phase, 3 Pole

Max Hp							Enclosure					
							Open Type Standard Auxiliary Contacts④	NEMA 1 General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel (316 Stainless Steel Available)⑤	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12 NEMA 3/3R② Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Rating	NEMA Size	Half Size	Catalog No	Catalog No	Catalog No	Catalog No	Catalog No	Catalog No
1 ½	1 ½	2	2	9	00	—	14BP32A*81	14BP32B*81	Use Size 0	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	14CP32A*81	14CP32B*81	14CP32W*81	14CP32F*81	14CP32H*81	14CP320*81
7 ½	7 ½	10	10	27	1	—	14DP32A*81	14DP32B*81	14DP32W*81	14DP32F*81	14DP32H*81	14DP320*81
10	10	15	15	40	—	1¾	14EP32A*81	14EP32B*81	14EP32W*81	14EP32F*81	14EP32H*81	14EP320*81
10	15	25	25	45	2	—	14FP32A*81	14FP32B*81	14FP32W*81	14FP32F*81	14FP32H*81	14FP320*81
15	20	30	30	60	—	2½	14GP32A*81	14GP32B*81	14GP32W*81	14GP32F*81	14GP32H*81	14GP320*81
25	30	50	50	90	3	—	14HP32A*81	14HP32B*81	14HP32W*81	14HP32F*81	14HP32H*81	14HP320*81
30	40	75	75	115	—	3½	14IP32A*81	14IP32B*81	14IP32W*81	14IP32F*81	14IP32H*81	14IP320*81
40	50	100	100	135	4	—	14JG32A*81	14JG32B*81	14JG32W*81	14JG32F*81	14JG32H*81	14JG320*81

Open Type & Standard Width Enclosure, Single Phase, 2 Pole③

Max Hp					Enclosure					
					Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel (316 Stainless Steel Available)⑤	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12 NEMA 3/3R② Industrial Use Weatherproof
115 Volts	208/230 Volts	Contactor Amp Rating	NEMA Size	Half Size	Catalog No	Catalog No	Catalog No	Catalog No	Catalog No	Catalog No
⅓	1	9	00	—	14BP12A*81	14BP12B*81	Use Size 0	Use Size 0	Use Size 0	Use Size 0
1	2	18	0	—	14CP12A*81	14CP12B*81	14CP12W*81	14CP12F*81	14CP12H*81	14CP120*81
2	3	27	1	—	14DP12A*81	14DP12B*81	14DP12W*81	14DP12F*81	14DP12H*81	14DP120*81
3	5	35	1P	—	14EP12A*81	14EP12B*81	14EP12W*81	14EP12F*81	14EP12H*81	14EP120*81
3	7 ½	45	2	—	14FP12A*81	14FP12B*81	14FP12W*81	14FP12F*81	14FP12H*81	14FP120*81
5	10	60	—	2½	14GP12A*81	14GP12B*81	14GP12W*81	14GP12F*81	14GP12H*81	14GP120*81

Extra Wide Enclosure, 3 Phase, 3 Pole①

Max Hp							Enclosure			
							NEMA 1 General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel (316 Stainless Steel Available)⑤	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12 NEMA 3/3R② Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Rating	NEMA Size	Half Size	Catalog No	Catalog No	Catalog No	Catalog No
1 ½	1 ½	2	2	9	00	—	14BP82B*81	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	14CP82B*81	14CP82W*81	14CP82H*81	14CP820*81
7 ½	7 ½	10	10	27	1	—	14DP82B*81	14DP82W*81	14DP82H*81	14DP820*81
10	10	15	15	40	—	1¾	14EP82B*81	14EP82W*81	14EP82H*81	14EP820*81
10	15	25	25	45	2	—	14FP82B*81	14FP82W*81	14FP82H*81	14FP820*81
15	20	30	30	60	—	2½	14GP82B*81	14GP82W*81	14GP82H*81	14GP820*81
25	30	50	50	90	3	—	14HP82B*81	14HP82W*81	14HP82H*81	14HP820*81
30	40	75	75	115	—	3½	14IP82B*81	14IP82W*81	14IP82H*81	14IP820*81
40	50	100	100	135	4	—	14JG82B*81	14JG82W*81	14JG82H*81	14JG820*81

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating. **For higher Hp single phase motors, use 3 phase starters, wire and set per diagram on page 8/128.**

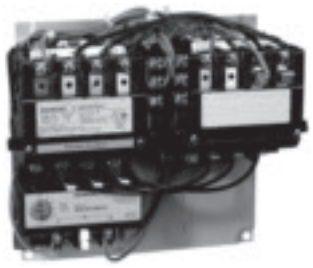
① To receive a single phase starter in an extra wide enclosure, order the Enclosure Kit from pg 8/90 and the open style Starter from pg 8/14 or 8/16 as separate items.

② For conduit hubs and conversion instructions, see page 8/87.

③ Coils D, F, or G will be wired for Incoming Voltage. S coil will be wired for separate source. Coils E, H, and L do not apply to single phase starters.

④ Standard Auxiliary Contacts, Same as Contactors, refer to page 8/44.

⑤ For 316 Stainless Steel option see page 8/97.



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits see page 8/83.
- Factory Modifications see page 8/93.
- Dimensions see pages 8/103 open and 8/121 enclosed.
- Wiring Diagrams see page 8/130.
- Replacement Parts see page 8/152.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240①	A
200–208	D
220–240	G
277	L
220–240/440–480①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/93.

Open Type & Standard Width Enclosure, 3 Phase, 3 Pole③

Max Hp							Enclosure					
							Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12② NEMA 3/3R Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	NEMA Size	Half Size	Overload Amp Range	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1/6	1/6	1/3	1/2	00	—	0.25–1	22BSA32A*	22BSA32B*	Use Size 0	Use Size 0	Use Size 0	Use Size 0
1/2	3/4	1 1/2	2	00	—	0.75–3	22BSB32A*	22BSB32B*	Use Size 0	Use Size 0	Use Size 0	Use Size 0
1 1/2	1 1/2	2	—	00	—	2.5–10	22BSD32A*	22BSD32B*	Use Size 0	Use Size 0	Use Size 0	Use Size 0
1/6	1/6	1/3	1/2	0	—	0.25–1	22CSA32A*	22CSA32B*	22CSA32W*	22CSA32F*	22CSA32H*	22CSA320*
1/2	3/4	1 1/2	2	0	—	0.75–3	22CSB32A*	22CSB32B*	22CSB32W*	22CSB32F*	22CSB32H*	22CSB320*
2	2	5	5	0	—	2.5–10	22CSD32A*	22CSD32B*	22CSD32W*	22CSD32F*	22CSD32H*	22CSD320*
3	3	—	—	0	—	9–18	22CSE32A*	22CSE32B*	22CSE32W*	22CSE32F*	22CSE32H*	22CSE320*
1/6	1/6	1/3	1/2	1	—	0.25–1	22DSA32A*	22DSA32B*	22DSA32W*	22DSA32F*	22DSA32H*	22DSA320*
1/2	3/4	1 1/2	2	1	—	0.75–3	22DSB32A*	22DSB32B*	22DSB32W*	22DSB32F*	22DSB32H*	22DSB320*
2	2	5	5	1	—	2.5–10	22DSD32A*	22DSD32B*	22DSD32W*	22DSD32F*	22DSD32H*	22DSD320*
3	3	10	10	1	—	9–18	22DSE32A*	22DSE32B*	22DSE32W*	22DSE32F*	22DSE32H*	22DSE320*
7 1/2	7 1/2	—	—	1	—	13–27	22DSF32A*	22DSF32B*	22DSF32W*	22DSF32F*	22DSF32H*	22DSF320*
—	—	15	15	—	1 3/4	13–27	22ESF32A*	22ESF32B*	22ESF32W*	22ESF32F*	22ESF32H*	22ESF320*
10	10	—	—	—	1 3/4	20–40	22ESG32A*	22ESG32B*	22ESG32W*	22ESG32F*	22ESG32H*	22ESG320*
—	—	15	20	2	—	13–27	22FSF32A*	22FSF32B*	22FSF32W*	22FSF32F*	22FSF32H*	22FSF320*
10	15	25	25	2	—	22–45	22FSH32A*	22FSH32B*	22FSH32W*	22FSH32F*	22FSH32H*	22FSH320*
—	—	30	30	—	2 1/2	22–45	22GSH32A*	22GSH32B*	22GSH32W*	22GSH32F*	22GSH32H*	22GSH320*
15	20	—	—	—	2 1/2	30–60	22GSJ32A*	22GSJ32B*	22GSJ32W*	22GSJ32F*	22GSJ32H*	22GSJ320*
—	—	30	40	3	—	30–60	22HSJ32A*	22HSJ32B*	22HSJ32W*	22HSJ32F*	22HSJ32H*	22HSJ320*
25	30	50	50	3	—	45–90	22HSK32A*	22HSK32B*	22HSK32W*	22HSK32F*	22HSK32H*	22HSK320*
30	40	75	75	—	3 1/2	57–115	22ISL32A*	22ISL32B*	22ISL32W*	22ISL32F*	22ISL32H*	22ISL320*
40	50	100	100	4	—	67–135	22JTM32A*	22JTM32B*	22JTM32W*	22JTM32F*	22JTM32H*	22JTM320*
75	100	200	200	5	—	55–250	22LPU32A*	22LPU32B*	22LPU32E*④	—	—	22LPU320*
150	200	400	400	6	—	200–540	22MPX32A*	22MPX32B*	22MPX32E*④	—	—	22MPX320*
—	300	600	600	7⑤	—	420–820	22NHY32A*	22NHY32B*	—	—	—	22NHY320*
—	450	900	900	8⑥	—	420–1220	22PHZ32A*	22PHZ32B*	—	—	—	22PHZ320*

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating.

① Dual voltage coils not available in size 5–8 starters.

② For conduit hubs and conversion instructions, see page 8/87.

③ For single phase, select a starter with bimetal OL on page 8/28.

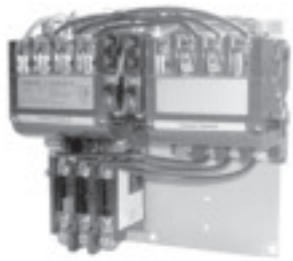
④ Enclosure is rated only NEMA 4 (painted steel).

⑤ Only available
S coil 24-60V DC
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

⑥ Only available
F coil100-250V AC 50/60Hz, or DC

Ambient Compensated Bimetal Overload with Manual and Auto Reset, Class 22

Selection



Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Heater elements see page 8/148. Single phase starters require 1 heater element. 3 phase starters require 3 heater elements.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits see page 8/83.
- Factory Modifications see page 8/93.
- Dimensions see pages 8/103 open and 8/121 enclosed.
- Wiring Diagrams see page 8/130.
- Replacement Parts see page 8/152.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240	A
200–208	D
220–240	G
277	L
220–240/440–480	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/93.

Open Type & Standard Width Enclosure, 3 Phase, 3 Pole

Max Hp							Enclosure					
							Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless① Watertight, Dusttight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant Indoor/Outdoor Use	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures	NEMA 12① NEMA 3/3R Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	Cont-actor Amp Rating	NEMA Size	Half Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1½	1½	2	2	9	00	—	22BP32A*81	22BP32B*81	Use Size 0	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	22CP32A*81	22CP32B*81	22CP32W*81	22CP32F*81	22CP32H*81	22CP320*81
7½	7½	10	10	27	1	—	22DP32A*81	22DP32B*81	22DP32W*81	22DP32F*81	22DP32H*81	22DP320*81
10	10	15	15	40	—	1¾	22EP32A*81	22EP32B*81	22EP32W*81	22EP32F*81	22EP32H*81	22EP320*81
10	15	25	25	45	2	—	22FP32A*81	22FP32B*81	22FP32W*81	22FP32F*81	22FP32H*81	22FP320*81
15	20	30	30	60	—	2½	22GP32A*81	22GP32B*81	22GP32W*81	22GP32F*81	22GP32H*81	22GP320*81
25	30	50	50	90	3	—	22HP32A*81	22HP32B*81	22HP32W*81	22HP32F*81	22HP32H*81	22HP320*81
30	40	75	75	115	—	3½	22IP32A*81	22IP32B*81	22IP32W*81	22IP32F*81	22IP32H*81	22IP320*81
40	50	100	100	135	4	—	22JG32A*81	22JG32B*81	22JG32W*81	22JG32F*81	22JG32H*81	22JG320*81

Open Type & Standard Width Enclosure, Single Phase, 3 Wire, 2 Pole②

Max Hp				Enclosure					
				Open Type	NEMA 1 General Purpose	NEMA 4/4X Stainless① Watertight, Dusttight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12① NEMA 3/3R Industrial Use Weatherproof
115 Volts	208/ 230 Volts	Contactor Amp Rating	NEMA Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
⅓	1	9	00	22BP12A*81	22BP12B*81	Use Size 0	Use Size 0	Use Size 0	Use Size 0
1	2	18	0	22CP12A*81	22CP12B*81	22CP12W*81	22CP12F*81	22CP12H*81	22CP120*81
2	3	27	1	22DP12A*81	22DP12B*81	22DP12W*81	22DP12F*81	22DP12H*81	22DP120*81
3	5	35	1P	22EP12A*81	22EP12B*81	22EP12W*81	22EP12F*81	22EP12H*81	22EP120*81

Note: Hp's shown above are based on the overload amp range for the FLA's (per the National Electric Code) of typical industrial motors. All Starter Sizes carry one maximum Hp rating.

① For conduit hubs and conversion instructions, see page 8/87.

② Coil D, F, or G will be wired for Incoming Voltage. J coil will be wired for 24V separate source. Coils E, H, and L do not apply to single phase starters.

3 Phase, Class 40

Selection

Ordering Information

- Replace the (*) with a letter from the coil table. Dual voltage coils are wired on high voltage unless specified on order.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits see page 8/83.
- Factory Modifications see page 8/93.
- Dimensions see pages 8/105 open and 8/117 enclosed.
- Wiring Diagrams see page 8/134.
- Replacement Parts see page 8/152.

Coil Table

60Hz Voltage	Letter
24 Separate Control	J
120 Separate Control	F
110–120/220–240①	A
200–208	D
220–240	G
277	L
220–240/440–480①	C
440–480	H
575–600	E

For other voltages and frequencies, see Factory Modifications page 8/93.

Open Type & Standard Width Enclosure, 3 Phase, 3 Pole

Max Hp							Enclosure					
							Open Type⑥	NEMA 1 General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel	NEMA 4X Fiberglass Watertight, Dusttight Corrosion Resistant	NEMA 7 & 9 NEMA 3 & 4 Div1 and Div 2 Class I Groups C & D Class II Groups E, F & G Bolted Enclosures Indoor/Outdoor Use	NEMA 12② NEMA 3/3R Industrial Use Weatherproof
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Rating	NEMA Size	Half Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1½	1½	2	2	9	00	—	40BP32A*	40BP32B*	Use Size 0	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	40CP32A*	40CP32B*	40CP32W*	40CP32F*	40CP32H*	40CP320*
7½	7½	10	10	27	1	—	40DP32A*	40DP32B*	40DP32W*	40DP32F*	40DP32H*	40DP320*
10	10	15	15	40	—	1¾	40EP32A*	40EP32B*	40EP32W*	40EP32F*	40EP32H*	40EP320*
10	15	25	25	45	2	—	40FP32A*	40FP32B*	40FP32W*	40FP32F*	40FP32H*	40FP320*
15	20	30	30	60	—	2½	40GP32A*	40GP32B*	40GP32W*	40GP32F*	40GP32H*	40GP320*
25	30	50	50	90	3	—	40HP32A*	40HP32B*	40HP32W*	40HP32F*	40HP32H*	40HP320*
30	40	75	75	115	—	3½	40IP32A*	40IP32B*	40IP32W*	40IP32F*	40IP32H*	40IP320*
40	50	100	100	135	4	—	40JG32A*	40JG32B*	40JG32W*	40JG32F*	40JG32H*	40JG320*
75	100	200	200	270	5	—	40LP32A*	40LP32B*	40LP32E*③	—	40LP32H*	40LP320*
150	200	400	400	540	6	—	40MP32A*	40MP32B*	40MP32E*③	—	—	40MP320*
—	300	600	600	810	7⑦	—	40NH32A*	40NH32B*	40NH32E*③	—	—	40NH320*
—	450	900	900	1215	8⑦	—	40PH32A*	40PH32B*	40PH32E*③	—	—	40PH320*

Extra Wide Enclosure, 3 Phase, 3 Pole

Max Hp							Enclosure			
							NEMA 1⑥ General Purpose	NEMA 4/4X Stainless② Watertight, Dusttight Corrosion Resistant 304 Stainless Steel	NEMA 7 & 9 NEMA 3 & 4 Div 1 and Div 2 Class I Groups C & D Class II Groups E, F & G Indoor/Outdoor Use	NEMA 12② NEMA 3/3R Industrial Use Weatherproof Bolted Enclosures
200 Volts	230 Volts	460 Volts	575 Volts	Contactor Amp Range	NEMA Size	Half Size	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1 ½	1 ½	2	2	9	00	—	40BP82B*	Use Size 0	Use Size 0	Use Size 0
3	3	5	5	18	0	—	40CP82B*	40CP82W*	40CP82H*	40CP820*
7 ½	7 ½	10	10	27	1	—	40DP82B*	40DP82W*	40DP82H*	40DP820*
10	10	15	15	40	—	1 ¾	40EP82B*	40EP82W*	40EP82H*	40EP820*
10	15	25	25	45	2	—	40FP82B*	40FP82W*	40FP82H*	40FP820*
15	20	30	30	60	—	2 ½	40GP82B*	40GP82W*	40GP82H*	40GP820*
25	30	50	50	90	3	—	40HP82B*	40HP82W*	40HP82H*	40HP820*
30	40	75	75	115	—	3 ½	40IP82B*	40IP82W*	40IP82H*	40IP820*
40	50	100	100	135	4	—	40JG82B*	40JG82W*	40JG82H*	40JG820*

① Dual voltage coils not available in size 5-8 starters.
② For conduit hubs and conversion instructions, see page 8/87.
③ Enclosure is NEMA Type 4 (painted steel).

④ Only available
S coil 24-60V DC
F coil 100-250V AC 50/60Hz, or DC
H coil 150-500V AC 50/60Hz, or DC

⑤ Only available
F coil100-250V AC 50/60Hz, or DC

⑥

Standard Auxiliary Contacts			
Type	Size (3rd Character	Configuration	Internal / External
All FVNR Starters & Contactors	B Thru E	1N.O.	Internal
	F Thru J	1N.O.	External
	L Thru M	2N.O., 2N.C.	External
	N Thru P	1N.O., 1N.C.	External

⑦ Lugs are not included, refer to page 8/86

Features

- **Solid State ESP100, 958 & 958L Overloads**
  - —Phase Loss Protection—Trips Within 3 Seconds
  - —Ambient Insensitive
  - —Heaterless Design
  - —Self-Powered
  - —±2% Repeat Trip Accuracy
  - —NEMA Class 10, 20 & 30 Trip Curves Available
  - —FLA Adjustment Dial with Wide Adjustment Range (Fig. 1)
  - —Short Circuit Self Protected
  - —Thermal Memory Circuit
  - —Conformally Coated Circuit Board
  - —–22°F to 159°F (–30°C to 70°C)
  - —NC Contact Rated NEMA A600, P600 (10 Amps 600VAC Max., 5 Amps 600VDC Max.)
  - —"Must Hold Amps" Adjustment Dial (958 only)
- **Ambient Compensated Bimetal Overloads**
  - —Automatic or manual reset adjustment.
  - —A manual test button is provided to test the operation of the 3 pole overload relay control contacts.
  - —±15% nominal trip current adjustment.
  - —Accept either standard Class 20 or Quick Trip (NEMA Class 10) heater elements without any other changes or adjustments.
  - —Available with a normally open contact for an alarm circuit (SPDT) up to 60A.
  - —Compensated bimetal overload relays provide a constant trip time in ambient temperatures from –20°F to +170°F for a given heater rating.
- UL Listed File #E22655 or Component Recognized
- CSA Certified File #LR6535
- **3RB10 Solid State Overload Relay**
  - —Marking Strip.
  - —Manual/automatic RESET selector switch.
  - —STOP button.
  - —1 NO and 1 NC contacts.
  - —Trip class 10 or 20.
  - —Test function and switch position indicator.
  - —4:1 current adjustment dial e.g. 200-540A.
  - —Phase loss protection.
  - —Self-powered.

Application

ESP100 Solid State Overloads

ESP100 solid state overload relays are self powered, requiring no separate 120V source to power the circuit board. They provide phase loss protection, fewer connection points and high repeat trip accuracy which results in longer motor life and cost savings. NEMA Class 10, 20 and 30 trip curves are available for a variety of applications.

The ESP100 solid state overload provides phase loss protection for the motor by tripping within three seconds upon complete loss of one phase of a three phase motor branch circuit.

Each overload has at least a 2:1 current adjustment range with the adjustment dial reading out in full load amps. In addition to the markings on the dial there are audible clicks which allow for extremely fine tuning.

The heaterless construction of these overloads minimizes energy costs and the costs of cabinet ventilation or cooling. Solid state overloads can be used at temperatures from –30°C to +70°C and are rated for 50Hz and 60Hz applications.

ESP100 panel mounted overloads can be used to upgrade existing starter applications where panel mounted thermal overloads are used. In addition, ESP100 overloads can be panel mounted when used with other types of controllers, such as DP, IEC contactors, and soft starts.

ESP100 overloads can be used on high voltage applications, making them ideal for use with vacuum contactors and other high voltage control.

ESP100 overloads can be retrofitted on existing contactors using the retrofit plate suffixes or on other brands using the plates listed in the competitive retrofit plates table on page 8/48.

958 ESP100 Special Use Solid State Overloads

958 ESP100 special use solid state overloads provide excellent protection of hermetically sealed compressors and artificially cooled motors which require ambient insensitivity and quick trip response times. Combined with a series lockout relay, they can provide unsurpassed protection for hermetically sealed compressor motors in air conditioning applications. The combination of high trip speed, current adjustment, and ease of installation makes it suitable for these applications. The trip curves have been custom tailored to provide proper overload protection on such loads without causing nuisance tripping.

958 overload dials denote must hold amps. Must trip amps are 112% of the must hold setting.

958L ESP100 Oil Field Solid State Overload Relays

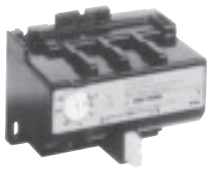
958L ESP100 solid state overloads are designed specifically for the oil market and the cyclical loads experienced with these types of pumping applications. These overloads provide protection on all standard motors, oil well pump motors, multi-torque connections, and ultra-high slip motors.

Rotors can be damaged in 8 to 15 seconds during motor stall conditions if electrical power is not removed. To prevent damage during motor stall, the 958L solid-state overload removes power in 7 seconds at 250% locked rotor current. Therefore, die cast or fabricated rotors will be protected from damage saving the user both time and money.

Ambient Compensated Bimetal Overloads

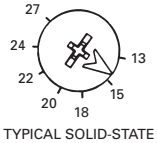
These thermal type overload relays are used to protect motors from excessive heat resulting from sustained motor overloads, rapid motor cycling and stalled rotor conditions. Although these devices function based on thermal principles they are designed to compensate for the ambient air temperature surrounding the overload. This helps prevent the occurrence of nuisance tripping when there are high surrounding ambient temperatures. The percentage of overload determines the length of time required to open the circuit.

ESP100 Solid State Overload

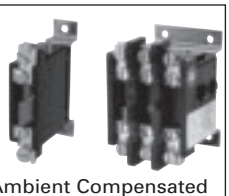


958 or 958L Solid State Overload

Figure 1



TYPICAL SOLID-STATE OVERLOAD ADJUSTMENT DIAL MARKINGS

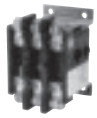


Ambient Compensated Bimetal—Single-Phase and Three-Phase

Solid State and Thermal, Class 48, ESP100 and 3RB10

Selection

ESP100 Solid State Overload Relay



Ambient Compensated Bimetal 3 Phase Overload Relay

3RB10 Solid State Overload Relay

Ordering Information

- For Thermal Overloads, order heater elements by code number at **$11.60** each.
- Technical Data see www.sea.siemens.com/controls.
- Field Modification Kits see page 8/79.
- Dimensions see page 8/107.
- To retrofit existing Thermal Furnas Brand Starters with the ESP100 Solid State Overload Relay add the appropriate suffix to the end of the catalog number from the Retrofit Plates table shown below and also add **$12.80** to the list price. Example: 48ASE3M20**1P**. Or order the Plate Kit Separate 49ASMP1, 2, or 3.

Solid State—Class 48 ESP100, 3 Phase, Single Phase⑨ (Panel Mount and Replacement)

Full Load Amp Current Range	Phase	Frame① Size	Manual Reset Class 10 Catalog Number	Manual Reset Class 20 Catalog Number	Manual Reset Class 30 Catalog Number
0.25–1	3	A	**48ASA3M10**	**48ASA3M20**	**48ASA3M30**
0.75–3	3	A	**48ASB3M10**	**48ASB3M20**	**48ASB3M30**
2.5–10	3	A	**48ASD3M10**	**48ASD3M20**	**48ASD3M30**
9–18	3	A1	**48ASE3M10**	**48ASE3M20**	**48ASE3M30**
13–27	3	A1	**48ASF3M10**	**48ASF3M20**	**48ASF3M30**
20–40	3	A1	**48ASG3M10**	**48ASG3M20**	**48ASG3M30**
13–27	3	B	**48BSF3M10**	**48BSF3M20**	**48BSF3M30**
22–45	3	B	**48BSH3M10**	**48BSH3M20**	**48BSH3M30**
30–60	3	B	**48BSJ3M10**	**48BSJ3M20**	**48BSJ3M30**
45–90	3	B	**48BSK3M10**	**48BSK3M20**	**48BSK3M30**
57–115	3	B	**48BSL3M10**	**48BSL3M20**	**48BSL3M30**
67–135	3	B	**48BSM3M10**	**48BSM3M20**	**48BSM3M30**
81–162②	3	B	**48BSN3M10**	**48BSN3M20**	**48BSN3M30**
100–210③	3	A	**48ASS3M10**	**48ASS3M20**	**48ASS3M30**
100–270③	3	A	**48ASU3M10**	**48ASU3M20**	**48ASU3M30**
200–540④	3	A	**48ASX3M10**	**48ASX3M20**	**48ASX3M30**
250–750⑧	3	A	**48CSH3M10**	**48CSH3M20**	**48CSH3M30**
420–820⑤	3	A	**48CSY3M10**	**48CSY3M20**	**48CSY3M30**
420–1220⑤	3	A	**48CSZ3M10**	**48CSZ3M20**	**48CSZ3M30**
0.25-1	1	A	**48ASA1M10**	**48ASA1M20**	**48ASA1M30**
0.75-3	1	A	**48ASB1M10**	**48ASB1M20**	**48ASB1M30**
2.5-10	1	A	**48ASD1M10**	**48ASD1M20**	**48ASD1M30**
5-16	1	A	**48ASE1M10**	**48ASE1M20**	**48ASE1M30**

Solid State—3RB106, 3 Phase⑥

For Contactor Size	Setting Range Amps	Manual/Automatic Reset		Manual Reset Only	
		Class 10 Catalog Number	Class 20 Catalog Number	Class 10 Catalog Number	Class 20 Catalog Number
5 6	55-250	**3RB1066-1GG0**⑦	**3RB1066-2GG0**⑦	**3RB1065-1GG0**⑦	**3RB1065-2GG0**⑦
	200-540	**3RB1066-1KG0**⑦	**3RB1066-2KG0**⑦	**3RB1065-1KG0**⑦	**3RB1065-2KG0**⑦
	300-630	**3RB1066-1LG0**⑦	**3RB1066-2LG0**⑦	**3RB1065-1LG0**⑦	**3RB1065-2LG0**⑦

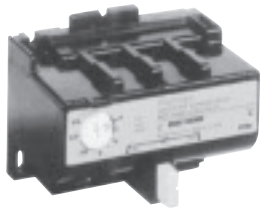
Ambient Compensated Bimetal—Open Type Class 48 Single Phase, 3 Phase (Panel Mount Only)⑩

Poles	Amp Rating	Auxiliary Contacts	Contact Rating	Catalog Number
1	25	1 NC	5A (B600) & 5A (P300)	**48DA18AA4**
	60	1 NC		**48GA18AA4**
	100	1 NC		**48HA18AA4**
	180	1 NC		**48JA18AA4**
3	30	1 NC	10A (A600) & 5A (P300)	**48DC38AA4**
	30	1 NO/NC		**48DC39AA4**
	60	1 NC		**48GC38AA4**
	60	1 NO/NC		**48GC39AA4**
	100	3 NC	5A (B600) & 5A (P300)	**48HA38AA4**
	180	3 NC		**48JA38AA4**

Retrofit Plates for Contactors, Class 48

Replacement for Starter Sizes	ESP100 Overload Frame Size	Retrofit Plate Suffix	Plate Kit Separate
Size 00–1¾	A or A1	1P	**49ASMP1**
Size 2, 2½	B	2P	**49ASMP2**
Size 3, 3½	B	3P	**49ASMP3**
Size 4	B	4P	**49ASMP3**

① To determine frame size of replacement solid state overload, refer to retrofit plates table above.
② Temperature rating −20° to 60°C.
③ Requires use of 300:5 Current Transformers–3 of 97CT005 **$141** each.
④ Requires use of 600:5 Current Transformers–3 of 97CT008 **$141** each.
⑤ Requires use of 1200:5 Current Transformers–3 of 97CT012 **$141** each.
⑥ Overload has busbar connections.
⑦ Discount Code: SIRIUS 3R Contactors, OL's, MSP's.
⑧ Requires use of 750:5 Current Transformers–3 of 97CT009 **$141** each.
⑨ See note under Ordering Information to retrofit existing Thermal Starters with ESP100 Solid State Overload Relay.
⑩ For replacement of Starter Mounted Overload Relay, refer to page 8/154.



Ordering Information

- ► Technical Data see www.sea.siemens.com
- ► Dimensions see page 8/107.

Current Transformers

Rating	Catalog No.
150:5	**97CT002**
200:5	**97CT003**
250:5	**97CT004**
300:5	**97CT005**
400:5	**97CT006**
600:5	**97CT008**
750:5	**97CT009**
1200:5	**97CT012**

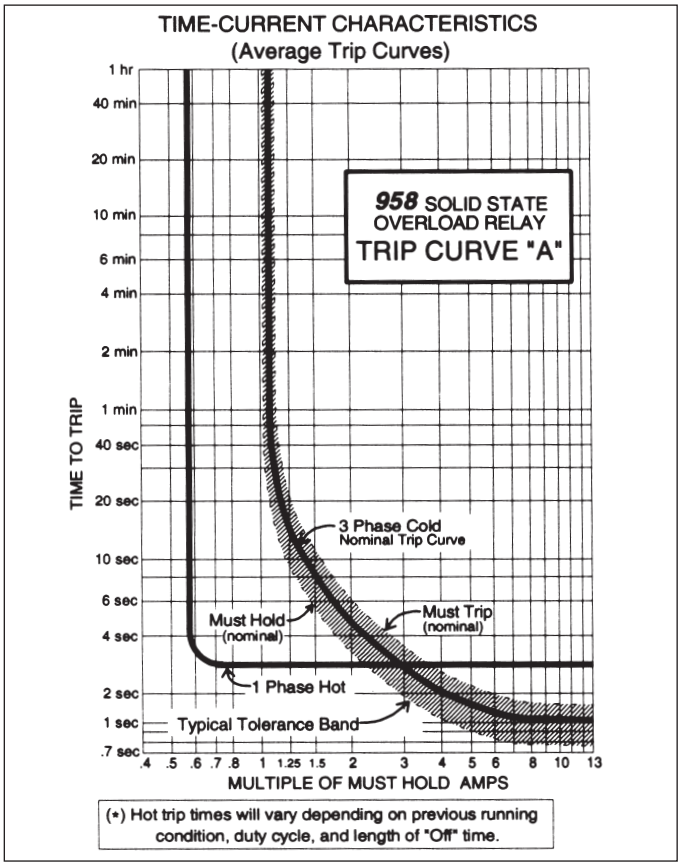
Standard Class 958—Manual Reset, Trip Curve A

Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number
15–30	3	1–1¾	**958AA32A**
22–44	3	1¾	**958BA32A**
33–66	3	2–3	**958CA32A**
50–100	3	3–3½	**958DA32A**
75–150	3	4	**958EA32A**
90–180	3	4	**958FA32A**①

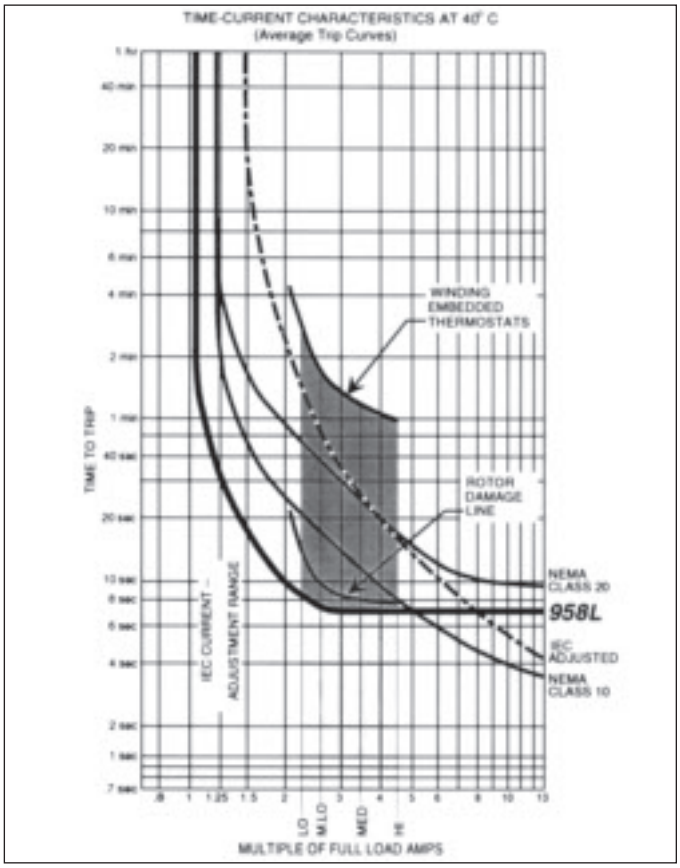
Oil Field Class 958L—Manual Reset

Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number
5.6–11.6	3	0–1¾	**958L109307U**
7–14	3	0–1¾	**958L109308U**
11–22	3	1, 1¾	**958L109309U**
14–28	3	1, 1¾	**958L109330U**
18–36	3	1¾	**958L109331U**
20–40	3	1¾	**958L109332U**
18–36	3	2–4	**958L109313U**
28–56	3	2½–4	**958L109314U**
35–70	3	3–4	**958L109329U**
43–86	3	3–4	**958L109315U**
50–90	3	3–4	**958L109311U**
60–126	3	4	**958L109316U**
75–150	3	—	**958L109312U**
84–174	3	—	**958L109327U**
105–210	3	—	**958L109328U**
132–264	3	—	**958L109522U**
264–528	3	—	**958L109523U**

Trip Curve A



958L Trip Curve



①Temperature rating −20° to +60°C.

Figure 1a

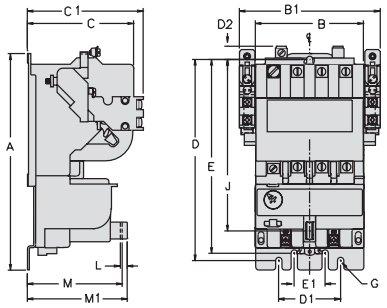


Figure 1b

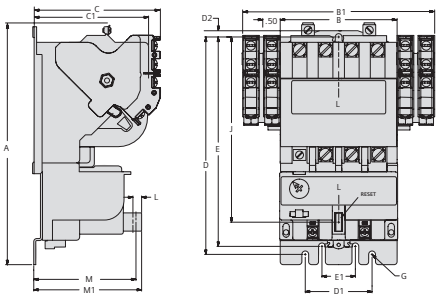


Figure 2

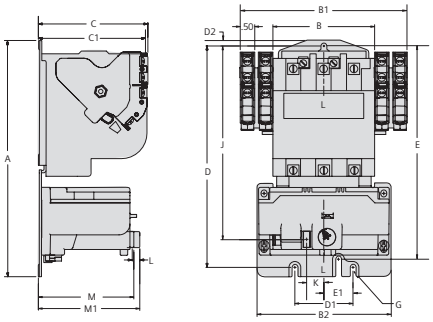


Figure 3

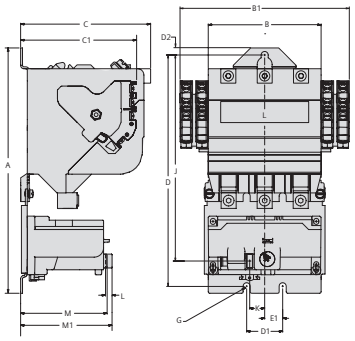


Figure 4

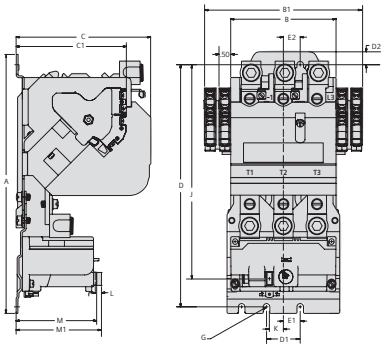
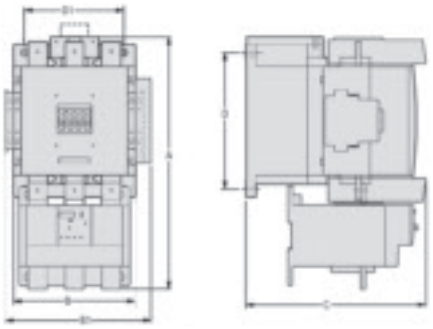


Figure 5



Open Type Solid State Overload

Size	Figure	Outline Dimensions						Mounting Dimensions						Mounting Screw	Reset Dimensions				
		A	B	B1	B2	C	C1	D	D1	D2	E	E1	E2	G	J	K	L	M	M1
0–1¾	1a	7.44 (189)	3.50 (89)	5.75 (146)	—	3.75 (95)	3.50 (89)	6.50 (165)	2.00 (51)	0.19 (5)	6.27 (159)	1.00 (25)	—	#10	5.55 (141)	—	0.26 (7)	3.06 (78)	3.22 (82)
0–1¾	1b	7.44 (189)	3.50 (89)	6.75 (171)	—	3.75 (95)	3.50 (89)	6.50 (165)	2.00 (51)	0.19 (5)	7.34 (186)	1.00 (25)	—	#10	5.55 (141)	—	0.26 (7)	3.06 (78)	3.22 (82)
2–2½	2	8.13 (207)	3.50 (89)	5.75 (146)	4.60 (117)	4.00 (102)	3.77 (96)	7.62 (194)	2.00 (51)	0.19 (5)	—	1.00 (25)	—	#10	6.67 (169)	0.60 (15)	0.26 (7)	3.28 (83)	3.49 (88)
3–3½	3	9.78 (248)	4.50 (114)	6.75 (171)	—	4.66 (118)	5.19 (132)	9.22 (234)	1.44 (37)	0.28 (7)	—	0.72 (18)	—	0.25 (6)	8.22 (209)	0.60 (15)	0.26 (7)	3.44 (87)	3.64 (92)
4	4	11.06 (281)	4.50 (114)	6.75 (171)	—	4.66 (118)	5.75 (146)	10.34 (263)	1.44 (37)	0.44 (11)	—	0.72 (18)	0.72 (18)	0.25 (6)	9.16 (233)	0.72 (18)	0.26 (7)	3.44 (87)	3.64 (92)
5	5	12.76 (324)	5.71 (145)	6.89 (175)	—	8.54 (217)	—	7.09 (180)	4.72 (120)	—	—	—	—	0.35 (9)	—	—	—	—	—
6	5	13.03 (331)	6.30 (160)	7.48 (190)	—	9.29 (236)	—	7.09 (180)	5.12 (130)	—	—	—	—	0.35 (9)	—	—	—	—	—

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Ambient Compensated Bimetal Class 14

Dimensions

Figure 1

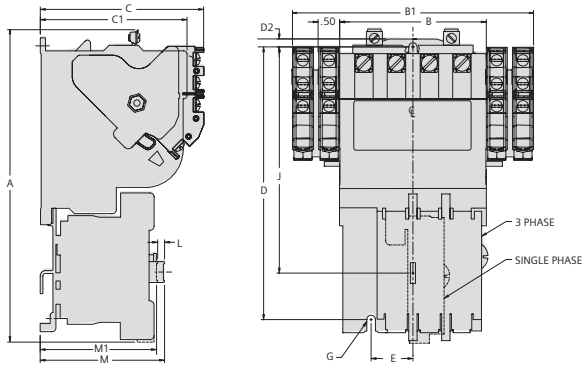


Figure 2

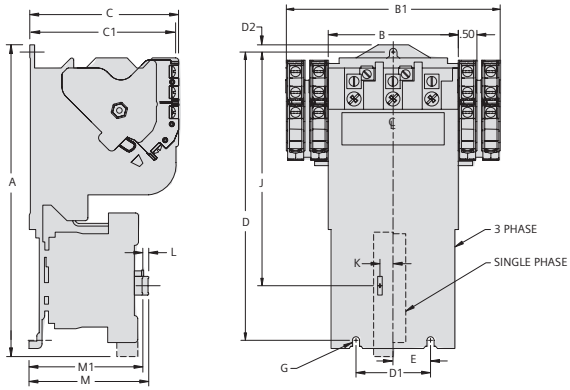


Figure 3

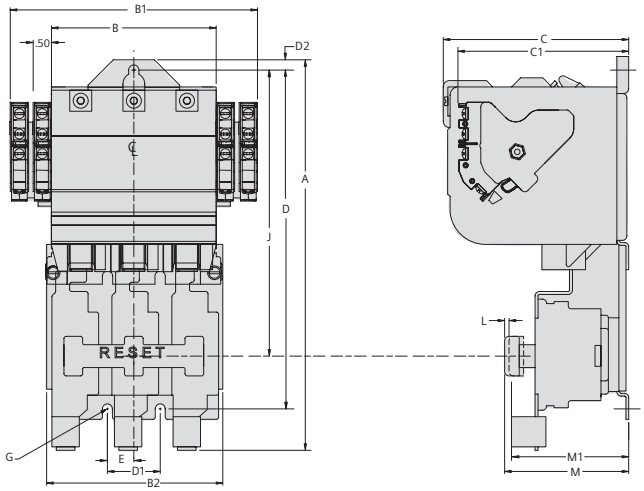
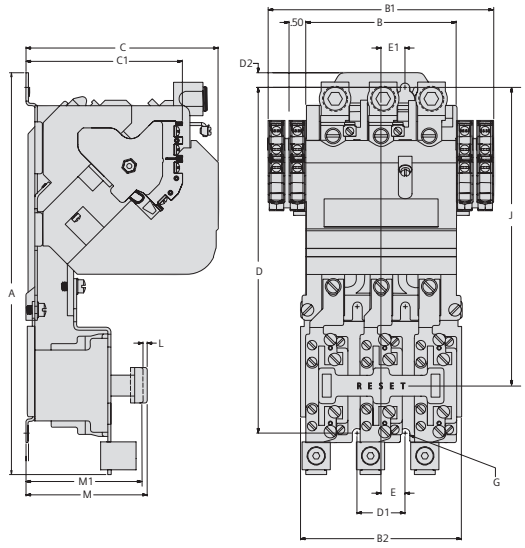


Figure 4



Open Type Ambient Compensated Bimetal Overload

Size	Figure	Outline Dimensions					Mounting Dimensions					Mounting Screw	Reset Dimensions				
		A	B	B1	C	C1	D	D1	D2	E	E1	G	J	K	L	M	M1
00–1¾	1	7.45 (189)	3.50 (89)	5.75 (146)	3.89 (99)	3.50 (89)	6.50 (165)	—	0.19 (4.8)	1.00 (25)	—	#10	5.39 (137)	—	0.16 (4)	2.97 (75)	2.81 (71)
2–2½	2	8.38 (213)	3.50 (89)	5.75 (146)	4.00 (102)	3.77 (96)	7.75 (197)	2.00 (51)	0.19 (4.8)	1.00 (25)	—	#10	6.28 (160)	0.36 (9)	0.16 (4)	3.22 (82)	3.06 (78)
3–3½	3	10.66 (271)	4.50 (114)	6.75 (171)	5.06 (129)	4.66 (118)	9.25 (235)	1.44 (37)	0.28 (7)	0.72 (18)	—	0.25 (6)	7.81 (198)	—	0.12 (3)	3.39 (86)	3.27 (83)
4	4	12.02 (305)	4.50 (114)	6.75 (171)	5.75 (146)	4.66 (118)	10.34 (263)	1.44 (37)	0.44 (11)	0.72 (18)	0.72 (18)	0.25 (6)	8.78 (223)	—	0.12 (3)	3.63 (92)	3.51 (89)

Note: Dimensions in inches (millimeters). Dimensions for reference, not for construction. Contact Sales Office for dimensions not listed.

Figure 1

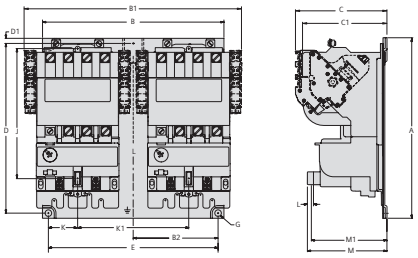


Figure 2

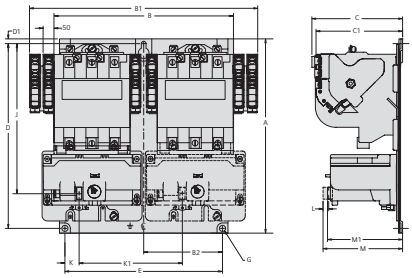


Figure 3

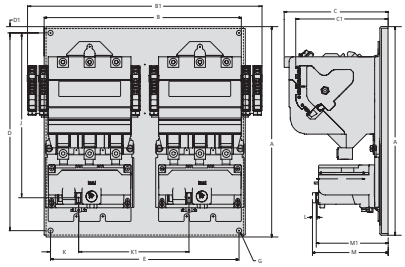


Figure 4

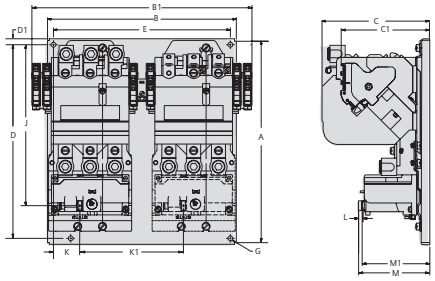


Figure 5

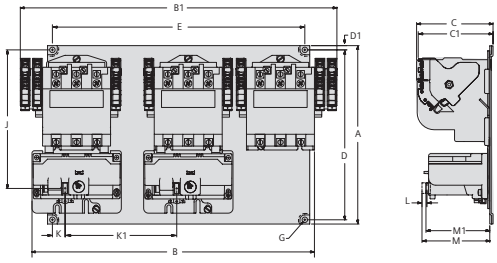


Figure 6

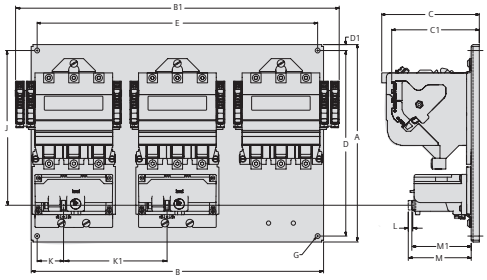
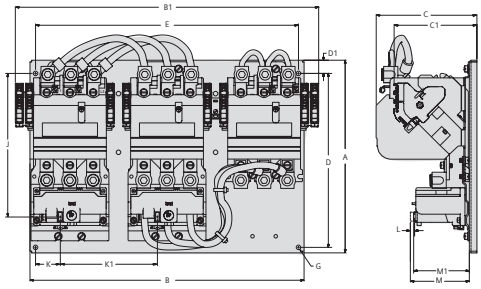


Figure 7



Class 22 Reversing & Class 30 2 Speed/2 Winding

Size	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00–1¾	1	7.69	8.25	10.50	3.62	3.61	3.92	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.26	3.40	3.23
2–2½	2	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	6.89	0.65	4.75	0.26	3.66	3.45
3– 3½	3	11.44	10.94	12.75	—	5.65	5.03	10.75	0.34	10.25	#10	8.97	1.53	6.00	0.26	4.12	3.91
4	4	11.91	10.94	12.75	—	6.22	5.11	11.22	0.34	10.25	0.25	9.32	1.53	6.00	0.21	4.12	3.91

Class 30 2 Speed/1 Winding

Size	Figure	Outline Dimensions						Mounting Dimensions			Mounting Screw	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00–1¾	1	7.69	8.25	10.50	3.62	3.61	3.92	7.25	0.22	7.25	#10	5.77	1.25	4.75	0.26	3.40	3.23
2–2½	5	9.19	14.55	16.30	—	3.94	3.85	8.75	0.22	13.00	#10	7.14	0.65	5.75	0.26	3.50	3.29
3–3½	6	11.44	16.94	18.75	—	5.65	5.07	10.75	0.34	16.25	#10	8.97	1.53	6.00	0.26	3.66	3.45
4	7	11.91	16.94	18.75	—	6.22	5.12	10.75	0.82	16.25	#10	8.87	1.53	6.00	0.26	3.66	3.45

Note: Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
Dimensions are in inches (mm).

Ambient Compensated Bimetal Overload Class 22, 30

Dimensions

Figure 1a

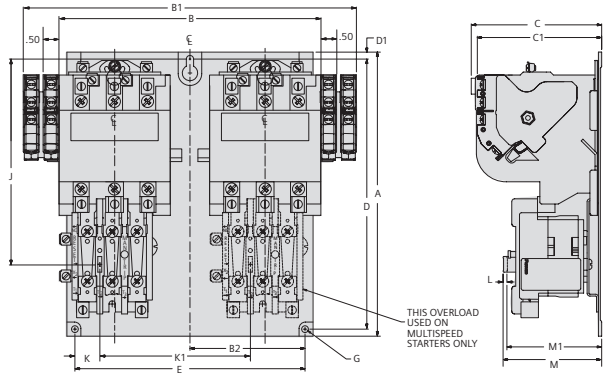


Figure 1b

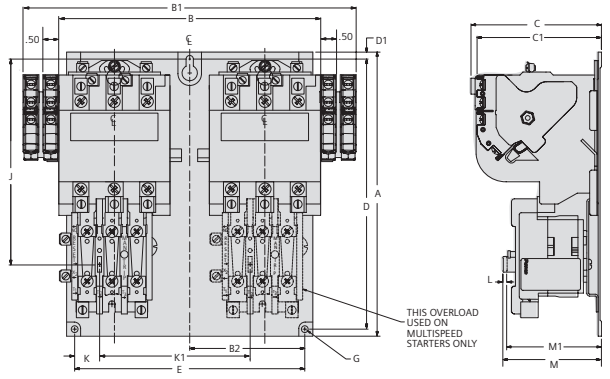


Figure 2

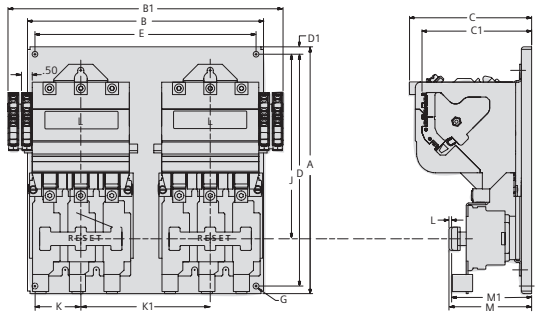


Figure 3

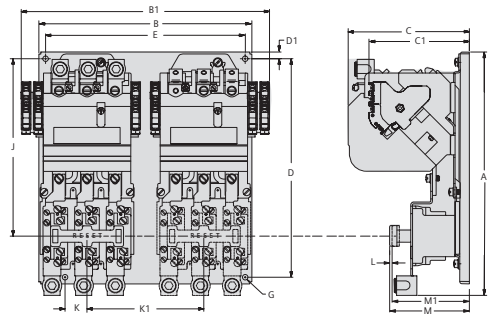


Figure 4

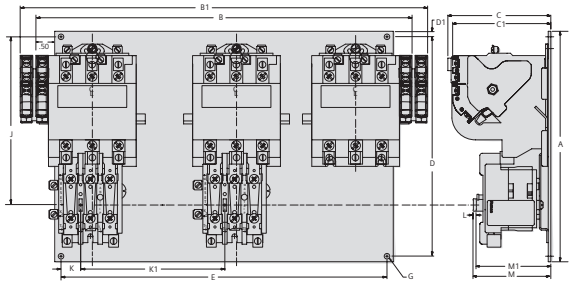
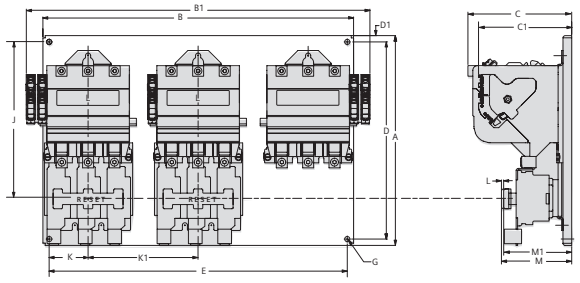


Figure 5



Class 22 Reversing & Class 30 2 Speed/2 Winding with Bi-Metal Overload

Size	Figure	Outline Dimensions						Mounting Screw			Mounting Dimensions	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00–1¾	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07
2–2½	1b	8.94	8.25	10.50	3.62	4.17	3.98	8.50	0.22	7.25	#10	6.46	0.79	4.75	0.16	3.10	3.05
3–3½	2	11.44	10.94	12.94	—	5.66	5.08	10.75	0.34	10.25	#10	8.56	2.12	6.00	0.12	3.83	3.71
4	3	12.50	10.94	12.75	—	6.22	5.16	11.22	0.34	10.25	0.25	9.11	2.12	6.00	0.12	4.09	3.97

Class 30 2 Speed/1 Winding with Bi-Metal Overload

Size	Figure	Outline Dimensions						Mounting Screw			Mounting Dimensions	Reset Dimensions					
		A	B	B1	B2	C	C1	D	D1	E	G	J	K	K1	L	M	M1
00–1¾	1a	7.69	8.25	10.50	3.62	3.92	3.61	7.25	0.22	7.25	#10	5.60	1.25	4.75	0.16	3.12	3.07
2–2½	4	9.19	14.56	16.25	—	4.11	3.92	8.75	0.22	13.00	0.25	6.71	0.78	5.75	0.16	3.10	3.05
3–3½	5	11.44	16.94	18.75	—	5.66	5.08	10.75	0.34	16.25	0.25	8.56	2.12	6.00	0.12	3.83	3.71

Note: Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
Dimensions are in inches (mm).

Full Voltage Open Type NEMA Contactor Size 00-8

Figure 1

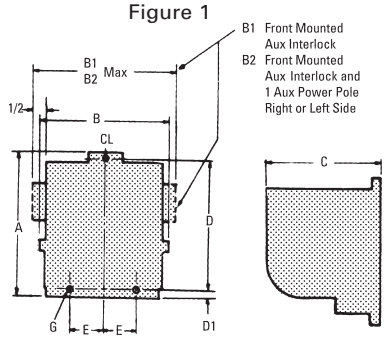


Figure 2

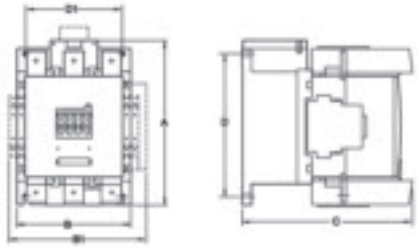


Figure 3

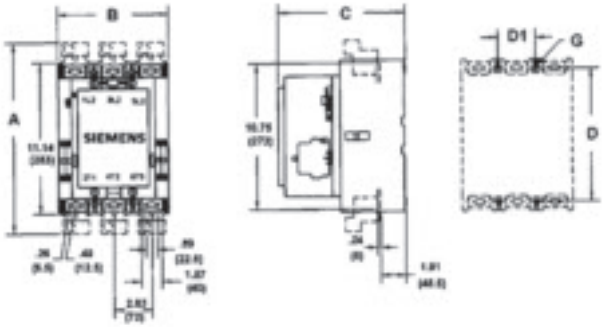
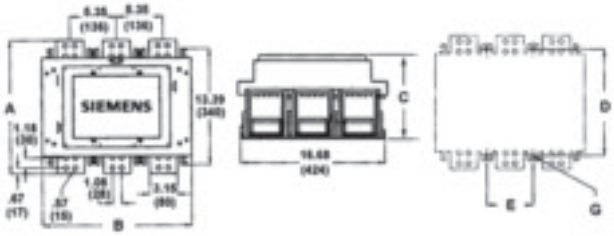


Figure 4



Open Type

Size	3rd Character of Catalog No.①	Outline Dimensions						Mounting Dimensions			Mounting Screw
		Fig	A	B	B1	B2	C	D	D1	E	G
00–1¾	C, D, E	1	4.31 (110)	3.94 (100)	4.25 (108)	4.75 (121)	3.75 (70)	3.94 (100)	0.19 (5)	1.00 (25)	#10
2–2½	F,G	1	4.88 (124)	3.94 (100)	4.25 (108)	—	4.00 (102)	4.50 (114)	0.19 (5)	1.00 (25)	#10
3–3½	H, I	1	6.13 (156)	5.13 (130)	5.50 (140)	—	5.06 (129)	5.63 (143)	0.25 (6)	0.75 (19)	0.25 (6)
4	J	1	7.81 (198)	5.19 (132)	5.50 (140)	—	5.75 (146)	6.56 (167)	0.81 (21)	0.75 (19)	0.5 (13)
5	L	2	8.27 (210)	5.71 (145)	6.89 (175)	—	8.54 (217)	7.09 (180)	4.72 (120)	—	0.35 (9)
6	M	2	8.43 (214)	6.3 (160)	7.48 (190)	—	9.29 (236)	7.09 (180)	5.12 (130)	—	0.35 (9)
7	N	3	14.05 (357)	8.27 (210)	—	—	9.53 (242)	9.80 (249)	2.83 (72)	—	0.25 (6)
8	P	4	15.41 (392)	17.23 (438)	—	—	10.56 (268)	12.28 (312)	—	5.35 (136)	0.35 (9)

Note: Dimensions for reference, not for construction.
Contact sales office for dimensions not listed.
① 3rd character of catalog number identifies contactor rating.