

### 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.

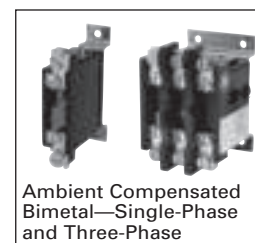
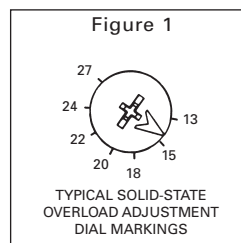
#### 958L ESP100 Oil Field Solid State Overload Relays

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


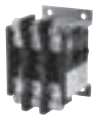

These thermal type overload relays are used to protect motors from excessive heat resulting from sustained motor overloads, rapid motor cycling and stalled rotor conditions. Although these devices function based on thermal principles they are designed to compensate for the ambient air temperature surrounding 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.



# Overload Relays

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

### Selection

 <p>ESP100 Solid State Overload Relay</p>	 <p>Ambient Compensated Bimetal 3 Phase Overload Relay</p>	 <p>3RB10 Solid State Overload Relay</p>	<h4>Ordering Information</h4> <ul style="list-style-type: none"> <li>▶ For Thermal Overloads, order heater elements by code number at <b>\$11.60</b> each.</li> <li>▶ Technical Data see <a href="http://www.sea.siemens.com/controls">www.sea.siemens.com/controls</a>.</li> <li>▶ Field Modification Kits see page 8/79.</li> <li>▶ Dimensions see page 8/107.</li> <li>▶ 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 <b>\$12.80</b> to the list price. Example: 48ASE3M20<b>1P</b>. Or order the Plate Kit Separate 49ASMP1, 2, or 3.</li> </ul>
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### Solid State—Class 48 ESP100, 3 Phase, Single Phase<sup>Ⓞ</sup> (Panel Mount and Replacement)

Full Load Amp Current Range	Phase	Frame <sup>Ⓞ</sup> Size	Manual Reset Class 10 Catalog Number	Manual Reset Only		
				Manual Reset Class 20 Catalog Number	List Price \$	Manual Reset Class 30 Catalog Number
0.25-1	3	A	48ASA3M10	48ASA3M20	104.00	48ASA3M30
0.75-3	3	A	48ASB3M10	48ASB3M20	104.00	48ASB3M30
2.5-10	3	A	48ASD3M10	48ASD3M20	104.00	48ASD3M30
9-18	3	A1	48ASE3M10	48ASE3M20	104.00	48ASE3M30
13-27	3	A1	48ASF3M10	48ASF3M20	104.00	48ASF3M30
20-40	3	A1	48AG3M10	48AG3M20	135.00	48AG3M30
13-27	3	B	48BSF3M10	48BSF3M20	146.00	48BSF3M30
22-45	3	B	48BSH3M10	48BSH3M20	146.00	48BSH3M30
30-60	3	B	48BSJ3M10	48BSJ3M20	177.00	48BSJ3M30
45-90	3	B	48BSK3M10	48BSK3M20	177.00	48BSK3M30
57-115	3	B	48BSL3M10	48BSL3M20	258.00	48BSL3M30
67-135	3	B	48BSM3M10	48BSM3M20	258.00	48BSM3M30
81-162 <sup>Ⓞ</sup>	3	B	48BSN3M10	48BSN3M20	258.00	48BSN3M30
100-210 <sup>Ⓞ</sup>	3	A	48ASS3M10	48ASS3M20	128.00	48ASS3M30
100-270 <sup>Ⓞ</sup>	3	A	48ASU3M10	48ASU3M20	128.00	48ASU3M30
200-540 <sup>Ⓞ</sup>	3	A	48ASX3M10	48ASX3M20	128.00	48ASX3M30
250-750 <sup>Ⓞ</sup>	3	A	48CSH3M10	48CSH3M20	128.00	48CSH3M30
420-820 <sup>Ⓞ</sup>	3	A	48CSY3M10	48CSY3M20	128.00	48CSY3M30
420-1220 <sup>Ⓞ</sup>	3	A	48CSZ3M10	48CSZ3M20	128.00	48CSZ3M30
0.25-1	1	A	48ASA1M10	48ASA1M20	96.00	48ASA1M30
0.75-3	1	A	48ASB1M10	48ASB1M20	96.00	48ASB1M30
2.5-10	1	A	48ASD1M10	48ASD1M20	96.00	48ASD1M30
5-16	1	A	48ASE1M10	48ASE1M20	96.00	48ASE1M30

### Solid State—3RB106, 3 Phase<sup>Ⓞ</sup>

For Contactor Size	Setting Range Amps	Manual/Automatic Reset		Manual Reset Only		
		Class 10 Catalog Number	Class 20 Catalog Number	Class 10 Catalog Number	List Price \$	Class 20 Catalog Number
5	55-250	3RB1066-1GG0 <sup>Ⓞ</sup>	3RB1066-2GG0 <sup>Ⓞ</sup>	3RB1065-1GG0 <sup>Ⓞ</sup>	305.00	3RB1065-2GG0 <sup>Ⓞ</sup>
6	200-540	3RB1066-1KG0 <sup>Ⓞ</sup>	3RB1066-2KG0 <sup>Ⓞ</sup>	3RB1065-1KG0 <sup>Ⓞ</sup>	450.00	3RB1065-2KG0 <sup>Ⓞ</sup>
	300-630	3RB1066-1LG0 <sup>Ⓞ</sup>	3RB1066-2LG0 <sup>Ⓞ</sup>	3RB1065-1LG0 <sup>Ⓞ</sup>	800.00	3RB1065-2LG0 <sup>Ⓞ</sup>

### Ambient Compensated Bimetal—Open Type Class 48 Single Phase, 3 Phase (Panel Mount Only)<sup>Ⓞ</sup>

Poles	Amp Rating	Auxiliary Contacts	Contact Rating	Catalog Number
1	25	1 NC	5A (B600)	48DA18AA4
	60	1 NC	&	48GA18AA4
	100	1 NC	5A (P300)	48HA18AA4
	180	1 NC		48JA18AA4
3	30	1 NC	10A (A600)	48DC38AA4
	30	1 NO/NC	&	48DC39AA4
	60	1 NC	5A (P300)	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 00-1 1/4	A or A1	1P	49ASMP1
Size 2, 2 1/2	B	2P	49ASMP2
Size 3, 3 1/2	B	3P	49ASMP3
Size 4	B	4P	49ASMP3

Ⓞ To determine frame size of replacement solid state overload, refer to retrofit plates table above.  
 Ⓞ Temperature rating -20° to 60°C.  
 Ⓞ Requires use of 300:5 Current Transformers-3 of 97CT005 \$141 each.  
 Ⓞ Requires use of 600:5 Current Transformers-3 of 97CT008 \$141 each.

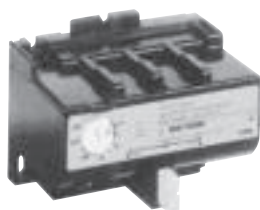
Ⓞ Requires use of 1200:5 Current Transformers-3 of 97CT012 \$141 each.  
 Ⓞ Overload has busbar connections.  
 Ⓞ Discount Code: SIRIUS 3R Contactors, OL's, MSP's.  
 Ⓞ Requires use of 750:5 Current Transformers-3 of 97CT009 \$141 each.

Ⓞ See note under Ordering Information to retrofit existing Thermal Starters with ESP100 Solid State Overload Relay.  
 Ⓞ For replacement of Starter Mounted Overload Relay, refer to page 8/154.

# Overload Relays

## Special Use Solid State Overloads, Class 958 and 958L

Selection



### Ordering Information

- ▶ Technical Data see [www.sea.siemens.com](http://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

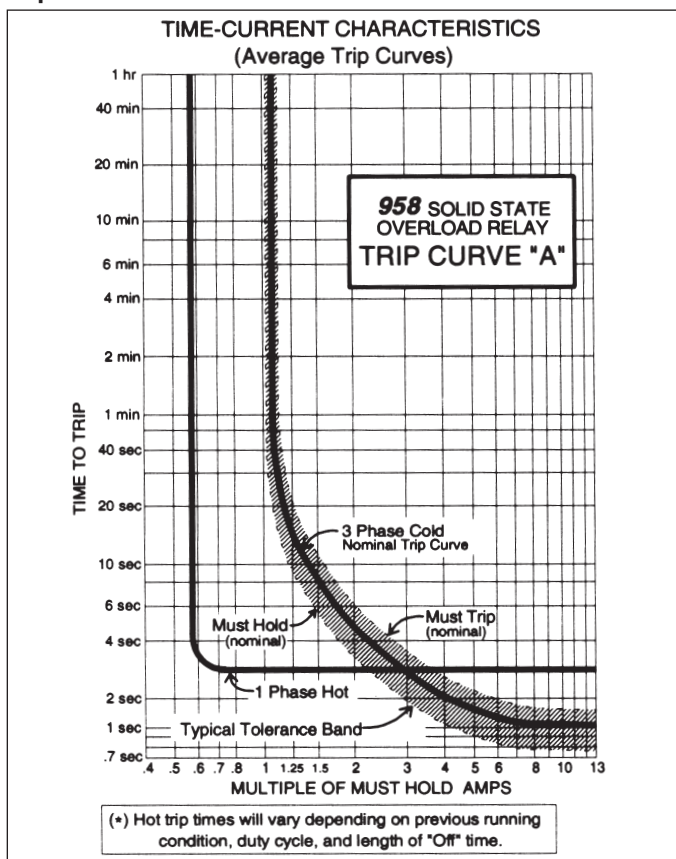
### Standard Class 958—Manual Reset, Trip Curve A

Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number
15–30	3	1–1¼	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 <sup>①</sup>

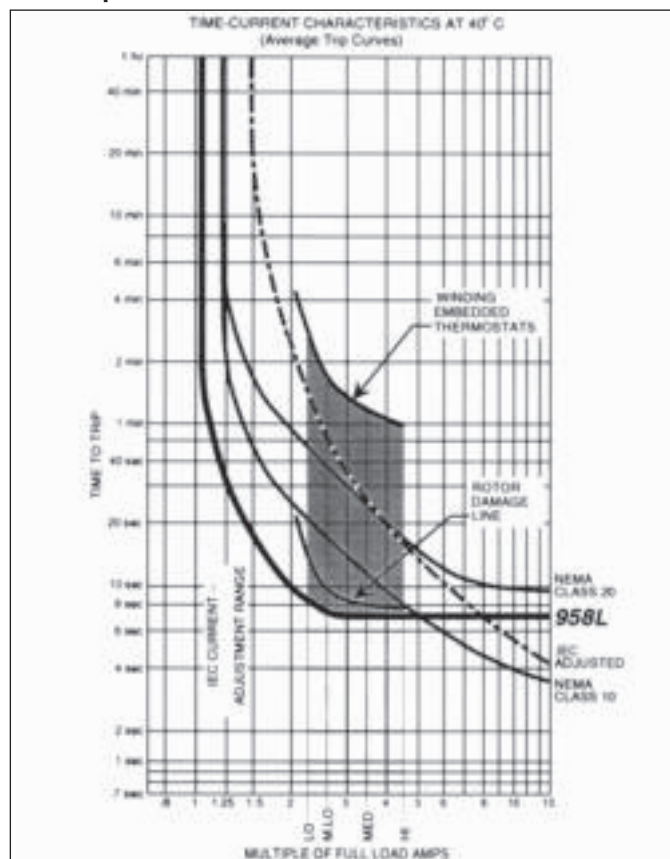
### Oil Field Class 958L—Manual Reset

Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number
5.6–11.6	3	0–1¼	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

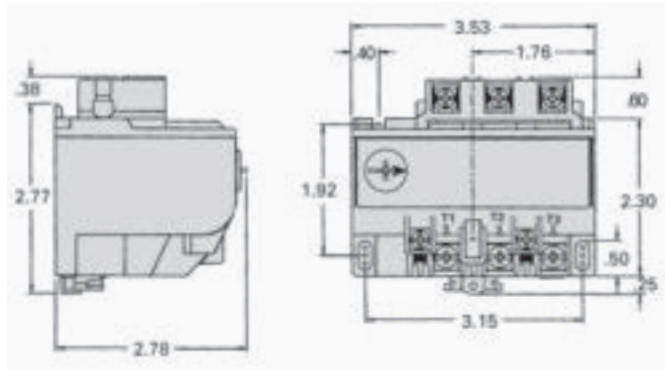


### 958L Trip Curve

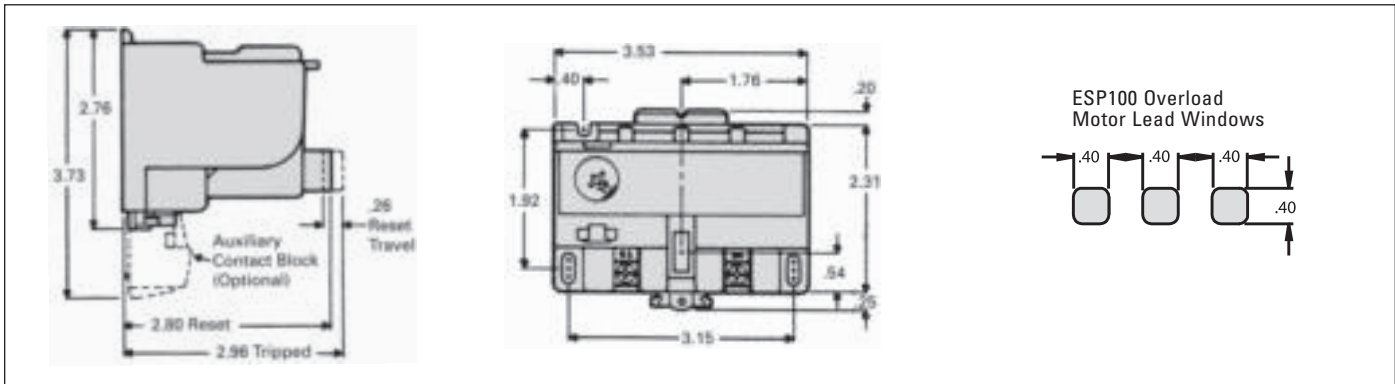


<sup>①</sup>Temperature rating –20° to +60°C.

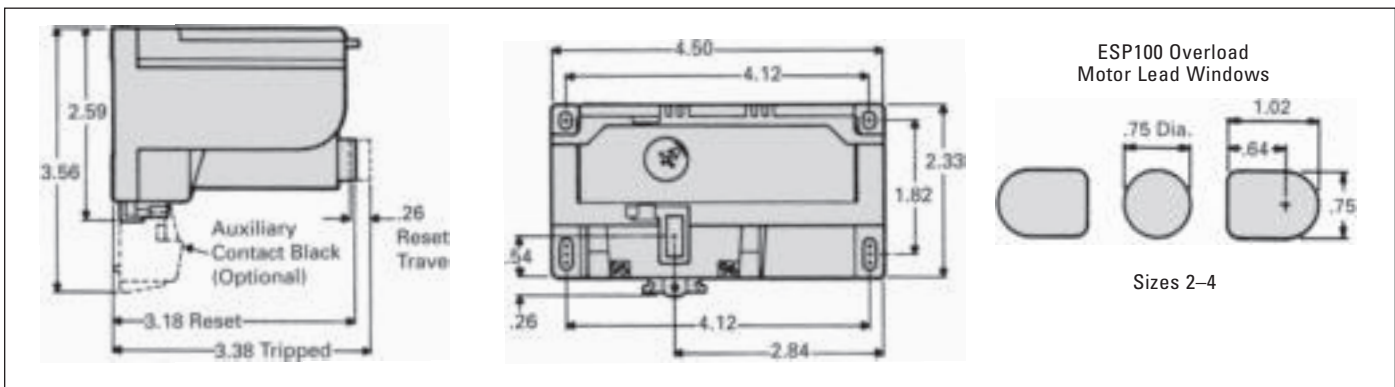
#### Dimensions "A" Frame—ESP100 Solid State Overload



#### Dimensions "A1" Frame—ESP100 Solid State Overload



#### Dimensions "B" Frame—ESP100 Solid State Overload



**Note:** Dimensions for reference, not for construction.  
Dimensions in inches.