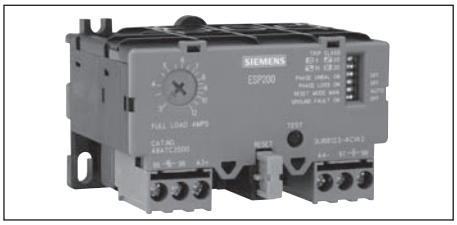
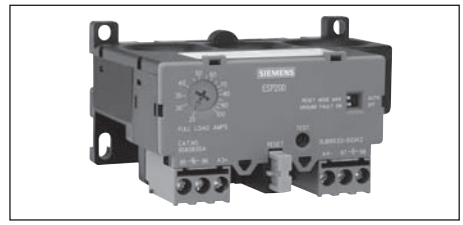
# Solid State ESP200, Class 48, 958 and 958L

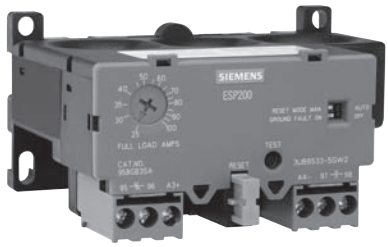
## General



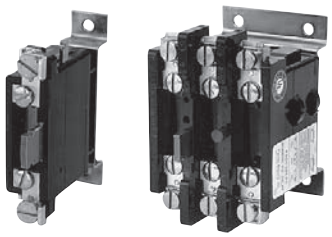


| Features | Benefits |
|---|---|
| ▪ Trip Classes - 5, 10, 20, or 30 Selectable by DIP-switches | ▪ Field changeable reduces time and inventory. Suitable for light, normal and heavy starting conditions |
| ▪ Phase Loss Protection - Trips in less than 3 Seconds | ▪ Protects motor burn out and minimizes motor heating up |
| ▪ Phase Unbalance - Trips based on Trip Class selected | ▪ Minimizes temperature rise of the motor on a asymmetrical three-phase-system |
| ▪ Ground Fault - Trips 60% of Motor Current | ▪ Provides optimum system protection of motors against high-resistance short-circuits or ground faults due to moisture, condensation, damage of insulation or any other reason |
| ▪ Trip Indicator - Visible | ▪ Save time, faster to identify overload Trip |
| ▪ Ambient Insensitive | ▪ Prevents nuisance tripping |
| ▪ No Heaters Required | ▪ Saves cost and eliminates time for installation of heaters |
| ▪ Self-Powered - No outside source required | ▪ Reduce cost for external power supply |
| ▪ FLA dial with wide Adjustment - 4:1 ratio | ▪ Provides wide range, reduces inventory |
| ▪ Self Protected in short circuit condition (when used with proper fuses or motor starter protector) | ▪ Unlike bimetal overloads, this eliminates replacement of the overload heaters after short circuit |
| ▪ Test Button - Tests Electronics | ▪ Tests the complete electronic functions including the trip mechanism. Increases up time |
| ▪ Thermal Memory | ▪ Prevents re-starting motor when it is still hot |
| ▪ Conformally coated circuit board | ▪ Resists against environmental conditions |
| ▪ 1 NO and 1NC Contacts Standard. B600, R300 | ▪ Makes it easier for user to wire local contacts |
| ▪ Operating Temperature: -25 °C - 65 °C | ▪ Wide operating temperature range prevents nuisance tripping with temperature changes |
| ▪ Repeat Accuracy <1%. | ▪ For more precise settings and reduced nuisance tripping |
| ▪ Removable Terminal Block | ▪ Terminal Block can be removed without removing wires. Saves time for replacements |
| ▪ Automatic reset | ▪ Auto. Reset is 3 minutes after tripping, allowing motor to cool down before re-start. If Manual Reset is selected, overload can be reset immediately |
| ▪ Remote reset | ▪ As an alternative to the mechanical RESET options, an electrical remote RESET can be used by applying 24 V DC to terminals A3 and A4 |
| ▪ DIN Rail Mounted | ▪ Reduces installation time |
| ▪ Touch - Safe Terminals | ▪ Protects against accidental touching of live circuits |
| ▪ UL listed CSA certified | ▪ Third party approval standard |

ESP200 Solid State Overload



958 or 958L Solid State Overload


Ambient Compensated Bimetal
Single Phase and Three Phase

## Applications

### ESP200 Solid State Overloads

Designed for a wide variety of applications. The field selectable Trip Class 5, 10, 20 or 30 can easily be set by 2 DIP switches. This eliminates the guess factor of an application requirements and provides reduced inventory for multiple applications. The inherent benefits of the ESP200 ultimately results in cost savings for the user.

ESP200 has a 4:1 current adjustment range with a fine adjustment dial labeled in full load amps. The heaterless overload minimizes the heat trapped in the enclosures, reduces cost for ventilation or cooling. Easily accessible Reset button, provides visible and audible indications to ensure the tripped overload is ready to re-start.

Designed to replace thermal, or ESP100 overload relays for any application. It has the same dimensions and footprint of the ESP100 overload relays. It can be directly coupled to the contactors or remotely mounted. In addition to the NEMA contactor applications, it also can be used with other types of controllers for applications requiring DP or IEC contactors. As a retrofit for other brands, it is used with a plate available for retrofitting competitive products.

### 958 ESP200 Special Use Solid State Overloads

This overload is specifically designed for special applications, to provide excellent protection of hermetically sealed and artificially cooled motors that require ambient insensitive and quick trip response times. Combined with a series lockout relay, it provides 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 are customized to provide proper overload protection for these loads without causing nuisance tripping.

It has selectable manual or automatic reset mode, and provides ground fault selection to protect equipment from damage in case of a fault.

### 958L ESP200 Oil Field Solid State Overloads

Specifically designed for the oil market and the cycling loads experienced with these types of pumping applications. These overload relays provide protection for standard motors, oil well pump motors, multi-torque connections, and ultra-high slip motors.

Rotors can be damaged in less than 15 seconds during motor stall conditions if electrical power is not removed. To prevent damage during motor stall, the 958L solid state overload removes the power in 7 seconds at 250% lock rotor current. Therefore, the motor casing and the rotor will be protected from being damage saving the user money and time.

- **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

### 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.

## Selection

3-Phase, 48ATC3S00

### Ordering Information

- For CT's see Accessories page 9/67.
- Dimensions see page 9/140.
- To retrofit or direct mount to a contactor, order 49ASMP1, 2, or 3 separately. See Retrofit Plates below.
- For remote mounting of frame size A order 49ASMS1 terminals separately, see page 9/104.

### Solid State—Class 48

| Current Adjustment Range | Phase | Frame Size | Catalog Number | MRPD/MLFB | List Price $ |
|---|---|---|---|---|---|
| 0.25–1 | 3 | "A" | **48ATA3S00** | **3UB81134AB2** | |
| 0.75–3.4 | 3 | "A" | **48ATB3S00** | **3UB81134BB2** | |
| 3–12 | 3 | "A1" | **48ATC3S00** | **3UB81234CW2** | |
| 5.5–22 | 3 | "A1" | **48ATD3S00** | **3UB81234DW2** | |
| 10–40 | 3 | "A1" | **48ATE3S00** | **3UB81234EW2** | |
| 13–52 | 3 | "B" | **48BTF3S00** | **3UB81334FW2** | |
| 25–100 | 3 | "B" | **48BTG3S00** | **3UB81334GW2** | |
| 50–200 | 3 | "B" | **48BTH3S00** | **3UB81334HW2** | |
| 100–300 | 3 | "A1" ② | **48ATJ3S00** | **3UB81234JW2** | |
| 133–400 | 3 | "A1" ⑧ | **48ATK3S00** | **3UB81234KW2** | |
| 200–600 | 3 | "A1" ④ | **48ATL3S00** | **3UB81234LW2** | |
| 250–750 | 3 | "A1" ⑦ | **48ATM3S00** | **3UB81234MW2** | |
| 400–1220 | 3 | "A1" ⑤ | **48ATN3S00** | **3UB81234NW2** | |
| 0.25–1 | 1 | "A" | **48ATA1S00** | **3UB88134AB2** | |
| 0.75–3.4 | 1 | "A" | **48ATB1S00** | **3UB88134BB2** | |
| 3–12 | 1 | "A1" | **48ATC1S00** | **3UB88234CW2** | |
| 5.5–22 | 1 | "A1" | **48ATD1S00** | **3UB88234DW2** | |
| 25-100 | 1 | "B" | **48BTG1S00** | **3UB88334GW2** | |

### Solid State—3RB206③⑥, 3-Phase, Manual/Auto Reset

| For Contactor Size | Setting Range Amps | Class 10 Catalog Number | List Price $ | Class 20 Catalog Number | List Price $ |
|---|---|---|---|---|---|
| 5 | 55 - 250 | **3RB2066-1GC2** | | **3RB2066-2GC2** | |
| 6 | 160 - 630 | **3RB2066-1MC2** | | **3RB2066-2MC2** | |

### Retrofit Plates for Contactors, Class 48

| Replacement for Starter Sizes | ESP200 Overload Frame Size① | Retrofit Plate Suffix | Plate Kit Separate | Price Adder $ |
|---|---|---|---|---|
| Size 00–1¾<br>Size 2, 2½ | A or A1<br>B | 1P<br>2P | **49ASMP1**<br>**49ASMP2** | |
| Size 3, 3½<br>Size 4 | B<br>B | 3P<br>4P | **49ASMP3**<br>**49ASMP3** | |

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

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

① To determine frame size of replacement solid state overload, refer to retrofit plates table above.
② Requires use of 300:5 Current Transformers–3 of **97CT005**.
③ Product Category: IEC.
④ Requires use of 600:5 Current Transformers–3 of **97CT008**.
⑤ Requires use of 1200:5 Current Transformers–3 of **97CT012**.
⑥ Overload has busbar connections.
⑦ Requires use of 750:5 Current Transformers–3 of **97CT009**.
⑧ Requires use of 400:5 Current Transformers–3 of **97CT006**.


Class 958, 958L

## Ordering Information

► Dimensions see page 9/140.

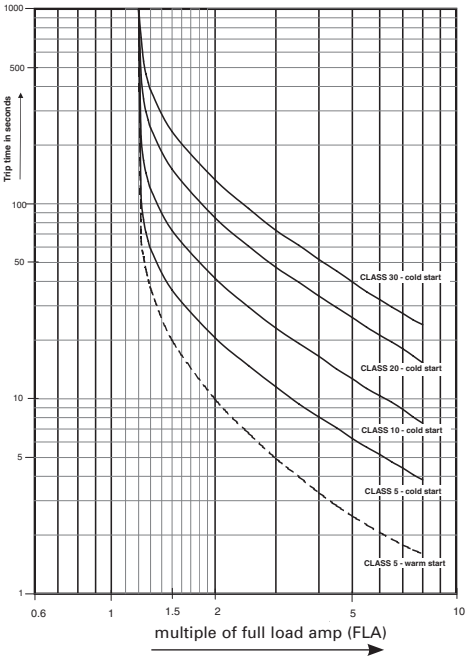
**Current Transformers**

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

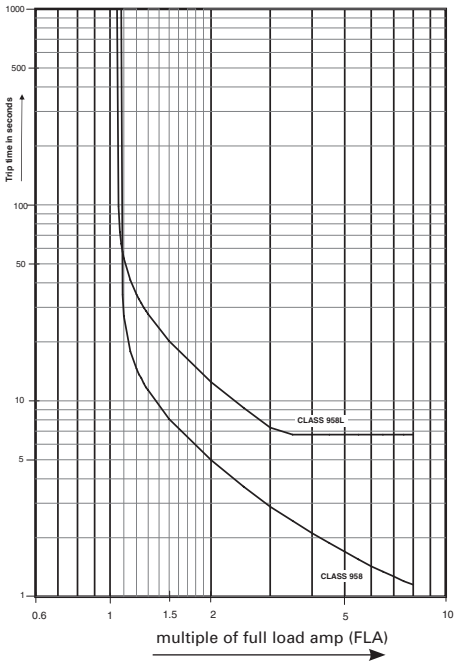
### Solid State—Class 958 and 958L

| Current Adjustment Range | Phase | Frame Size | Catalog Number | MRPD/MLFB | List Price $ |
|---|---|---|---|---|---|
| 10–40 | 3 | "A1" | **958EB3SA** | **3UB85235EW2** | |
| 25–100 | 3 | "B" | **958GB3SA** | **3UB85335GW2** | |
| 50–200 | 3 | "B" | **958HB3SA** | **3UB85335HW2** | |
| 5.5–22 | 3 | "A1" | **958LDB3SA** | **3UB85236DW2** | |
| 10–40 | 3 | "A1" | **958LEB3SA** | **3UB85236EW2** | |
| 13–52 | 3 | "B" | **958LFB3SA** | **3UB85336FW2** | |
| 25–100 | 3 | "B" | **958LGB3SA** | **3UB85336GW2** | |
| 50–200 | 3 | "B" | **958LHB3SA** | **3UB85336HW2** | |

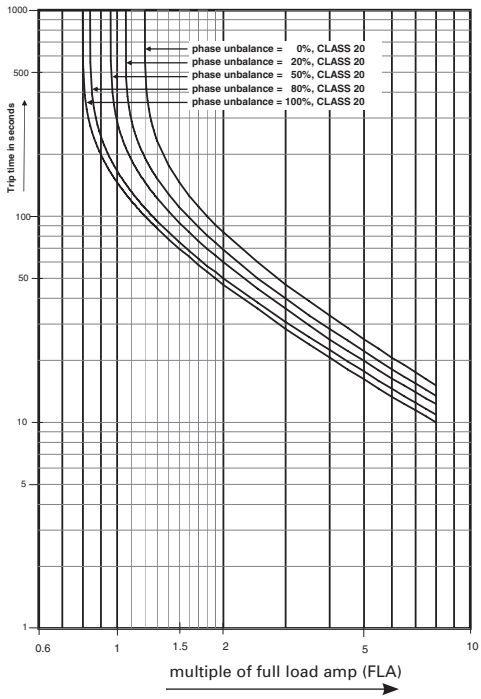
**Time - Current - Characteristics CLASS 48**




**Time - Current - Characteristics CLASS 958, 958L**




**Trip - curve depending on unbalance CLASS 20**




① Temperature rating −25° to +60°C.