Overload Relays

Solid State ESP100 & 3RB20, Special Use 958, Oil Field 958L, and Thermal

General

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
- -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

3RB20 Solid State Overload Relay

- -Marking Strip
- —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. 160-630A
- 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 16-48.

958 ESP100 Special Use Solid State **Overloads**

958 ESP100 special use solid state overloads provide excellent protection of hermetically sealed compressors and

958 or 958L Solid State

Overload

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.



Ambient Compensated **Bimetal**—Single Phase and Three Phase

TYPICAL SOLID-STATE

OVERLOAD ADJUSTMENT

Figure 1

NEMA & Genera Purpose Contro

Overload Relays

Solid State and Thermal, Class 48, ESP100 and 3RB20

Selection



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

Full Load Amp Current Range	Phase	Frame [®] Size	Manual Reset Class 10 Catalog Number	List Price \$	Manual Reset Class 20 Catalog Number	List Price \$	Manual Reset Class 30 Catalog Number	List Price \$
0.25-1	3	A	48ASA3M10	117.00	48ASA3M20	117.00	48ASA3M30	117.00
0.75–3	3	A	48ASB3M10	117.00	48ASB3M20	117.00	48ASB3M30	117.00
2.5–10	3	A	48ASD3M10	117.00	48ASD3M20	117.00	48ASD3M30	117.00
9–18	3	A1	48ASE3M10	117.00	48ASE3M20	117.00	48ASE3M30	117.00
13-27	3	A1	48ASF3M10	117.00	48ASF3M20	117.00	48ASF3M30	117.00
20-40	3	A1	48ASG3M10	151.00	48ASG3M20	151.00	48ASG3M30	151.00
13-27	3	В	48BSF3M10	163.00	48BSF3M20	163.00	48BSF3M30	163.00
22-45	3	В	48BSH3M10	163.00	48BSH3M20	163.00	48BSH3M30	163.00
30–60	3	В	48BSJ3M10	198.00	48BSJ3M20	198.00	48BSJ3M30	198.00
45-90	3	В	48BSK3M10	198.00	48BSK3M20	198.00	48BSK3M30	198.00
57–115	3	В	48BSL3M10	289.00	48BSL3M20	289.00	48BSL3M30	289.00
67–135	3	В	48BSM3M10	289.00	48BSM3M20	289.00	48BSM3M30	289.00
81-162 ²	3	В	48BSN3M10	289.00	48BSN3M20	289.00	48BSN3M30	289.00
100-2103	3	A	48ASS3M10	143.00	48ASS3M20	143.00	48ASS3M30	143.00
100-2703	3	A	48ASU3M10	143.00	48ASU3M20	143.00	48ASU3M30	143.00
200-5404	3	A	48ASX3M10	143.00	48ASX3M20	143.00	48ASX3M30	143.00
250-750 [®]	3	A	48CSH3M10	143.00	48CSH3M20	143.00	48CSH3M30	143.00
420-820 ^⑤	3	A	48CSY3M10	143.00	48CSY3M20	143.00	48CSY3M30	143.00
420-1220 [©]	3	A	48CSZ3M10	143.00	48CSZ3M20	143.00	48CSZ3M30	143.00
0.25-1	1	A	48ASA1M10	107.00	48ASA1M20	107.00	48ASA1M30	107.00
0.75-3	1	A	48ASB1M10	107.00	48ASB1M20	107.00	48ASB1M30	107.00
2.5-10	1	A	48ASD1M10	107.00	48ASD1M20	107.00	48ASD1M30	107.00
5-16	1	A	48ASE1M10	107.00	48ASE1M20	107.00	48ASE1M30	107.00

Solid State—3RB206, 3-Phase[®]

For	Setting	Manual/Automatic Reset					
Contactor	Range	Class 10	List	Class 20	List		
Size	Amps	Catalog Number	Price \$	Catalog Number	Price \$		
5	55-250	3RB2066-1GC2	377.00⑦	3RB2066-2GC2	397.00⑦		
	160-630	3RB2066-1MC2	540.00⑦	3BB2066-2MC2	560.00⑦		

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 60 100 180	1 NC 1 NC 1 NC 1 NC	5A (B600) & 5A (P300)	48DA18AA4 48GA18AA4 48HA18AA4 48JA18AA4	38.00 56.00 72.00 117.00
	3	30 30 60 60	1 NC 1 NO/NC 1 NC 1 NO/NC	10A (A600) & 5A (P300)	48DC38AA4 48DC39AA4 48GC38AA4 48GC39AA4	77.00 111.00 111.00 147.00
		100 180	3 NC 3 NC	5A (B600) & 5A (P300)	48HA38AA4 48JA38AA4	198.00 285.00

Retrofit Plates for Contactors, Class 48

	Replacement for Starter Sizes	ESP100 Overload Frame Size	Retrofit Plate Suffix	Plate Kit Separate	Price Adder \$
	Size 00-13/4	A or A1	1P	49ASMP1	14.30
	Size 2, 21/2	В	2P	49ASMP2	14.30
Γ	Size 3, 3½	В	3P	49ASMP3	14.30
	Size 4	В	4P	49ASMP3	14.30

① To determine frame size of replacement solid state

overload, refer to retrofit plates table above. @ Temperature rating -20° to 60°C.

3 Requires use of 300:5 Current Transformers-3 of 97CT005.

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 Discount Code: IEC.

[®] Requires use of 750:5 Current Transformers-3 of 97CT009.

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 16-157.

NEMA & General Purpose Control

Overload Relays

Special Use Solid State Overloads, Class 958 and 958L

Selection



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3

3

3

Ordering Information

958CA32A

958DA32A

958EA32A

958FA32A^①

374.00

374.00

410.00

430.00

- ► Field Modification Kits see page 16-79.
- Dimensions see page 16-108.

Current Transformers						
Rating	Catalog No.	List Price \$				
150:5	97CT002	158.00				
200:5	97CT003	158.00				
250:5	97CT004	158.00				
300:5	97CT005	158.00				
400:5	97CT006	158.00				
600:5	97CT008	158.00				
750:5	97CT009	158.00				
1200:5	97CT012	158.00				

Standard Class 958 — Manual Reset, Trip Curve A						
Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number	List Price \$		
15–30	3	1-1 ³ /4	958AA32A	323.00		
22–44	3	1 3/4	958BA32A	323.00		

2-3

3-31/2

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Full Load Amp Current Range	Phase	For Use On Controller Sizes	Catalog Number	List Price \$
5.6-11.6	3	0-13/4	958L109307U	158.00
7–14	3	0-13/4	958L109308U	158.00
11–22	3	1, 1 ³ ⁄4	958L109309U	158.00
14–28	3	1, 1 ³ /4	958L109330U	158.00
18–36	3	1 3/4	958L109331U	193.00
20-40	3	1 3/4	958L109332U	193.00
18–36	3	2-4	958L109313U	206.00
28-56	3	2 1/2-4	958L109314U	239.00
35-70	3	3–4	958L109329U	239.00
43-86	3	3–4	958L109315U	239.00
50-90	3	3–4	958L109311U	239.00
60-126	3	4	958L109316U	330.00
75–150	3	—	958L109312U	186.00
84–174	3	_	958L109327U	186.00
105-210	3		958L109328U	186.00
132-264	3		958L109522U	186.00
264-528	3		958L109523U	186.00

Trip Curve A

33–66

50-100

75-150

90-180



958L Trip Curve



Temperature rating -20° to $+60^{\circ}$ C.

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