

# Series CT8 Thermal Overload Relays

Simple and effective  
motor protection  
for applications to  
12 Amps

Sprecher + Schuh has been a leader in providing superior motor protection. The CT8 is an economical thermal overload relay yet includes proven features like “Differential tripping”, Automatic / Manual reset modes, and isolated alarm circuit contacts as standards.

## Consistent and reliable protection

The consistent high quality of Sprecher + Schuh thermal overload relays is ensured by a complex current calibration procedure performed after each unit is at full operating temperature. Calibration is performed at the largest and smallest current the overload can handle. The accurate time/current characteristic curve obtained in this manner guarantees reliable motor protection every time.

## Superior Class 10 characteristics

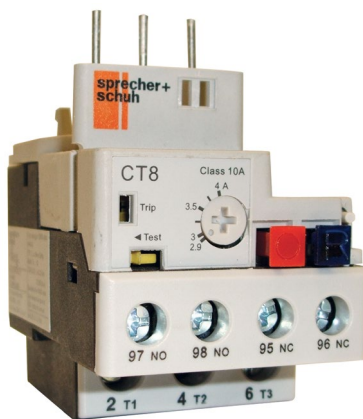
Today’s T-Frame motors have less copper and iron than the old U-Frame motors that were popular when traditional Class 20 overload relays were designed. For this reason, faster Class 10 overloads like the CT8 Series have been recognized by many motor manufacturers as the ideal type to

assure optimum protection of “T” frame motors.



## Protection from single phase conditions

A unique feature not found in traditional thermal overload relays provides accelerated tripping under single phase conditions. This is accomplished with a special “differential tripping” mechanism built into CT8 (see illustration at right).



Sprecher + Schuh provides outstanding motor protection with our CT8 Thermal Overload Relay

## Ambient temperature compensation

All Sprecher + Schuh thermal overload relays are temperature compensated. An additional bimetallic ambient compensation strip, built into the conductor-bimetal transmission path, ensures that the tripping characteristics of the relay remain constant over an ambient temperature range of  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

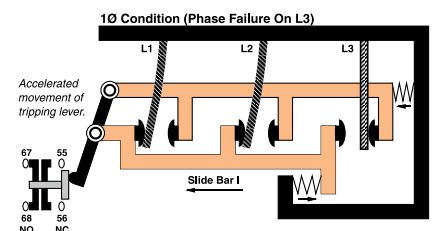
## Single phase applications

CT8 Series thermal overload relays can be applied for protection of single phase AC motors. The relays have the same characteristics as shown for three phase operation. To maintain these characteristics, each element of the overload relay must carry the motor current as shown in the connection diagram on page B3:4.

## Other standard features

CT8 thermal overload relays feature a fail-safe “trip-free” design that prevents the device from being held closed during an overload. In addition, a selectable lever permits the user the option to choose the manual or automatic reset modes.

A separate NO signal contact is also provided on CT8 overloads which is isolated from the NC trip contact. This permits the use of a trip signal voltage different than that of the control voltage.




CT8 Thermal Overload Relays offer accelerated tripping under single phase conditions

B3

CT8 Overload Relays




**CT8 Thermal Overload Relays - Trip Class 10, Manual or Automatic reset ❶**

Overload Relay	Directly Mounts to Contactor..	Adjustment Ranges [A]	Catalog Number
 CT8	CA8-09...12	0.10...0.16	CT8-A16
		0.16...0.25	CT8-A25
		0.25...0.4	CT8-A40
		0.35... 0.5	CT8-A50
		0.45...0.63	CT8-A63
		0.55...0.80	CT8-A80
		0.75...1.0	CT8-B10
		0.90...1.3	CT8-B13
		1.10...1.6	CT8-B16
		1.4...2.0	CT8-B20
		1.8...2.5	CT8-B25
		2.3...3.2	CT8-B32
		2.9...4.0	CT8-B40
		3.5...4.8	CT8-B48
		4.5...6.3	CT8-B63
		5.5...7.5	CT8-B75
		7.2...10	CT8-C10
	CA8-12	9.0...12.5	CT8-C12

**Thermal Overload Relay Features:**

- Standard motor protection for AC and DC motors
- Overload protection Trip Class 10A
- Auxiliary switch (1 NO and 1 NC)
- Phase loss sensitivity
- Manual/Auto reset button
- Test release
- Stop button
- Trip indicator

**Accessories**




Enclosure	Description	For Use With...	Catalog Number
	<b>Remote Reset Solenoid - ❹❹</b> For remote resetting of the overload relay	CT7N CT8 24V AC 50-60Hz 110V 50Hz/120V 60Hz 220-240V 50-60Hz 24V DC 110V DC 125V DC	<b>CMR7N-24V50-60</b> <b>CMR7N-110V50-120V60</b> <b>CMR7N-220-240V50-60</b> <b>CMR7N-24VDC</b> <b>CMR7N-110VDC</b> <b>CMR7N-125VDC</b>
	<b>External Reset Button -</b> Used for manually resetting overloads mounted in enclosures	CT7N all	Use D7 Reset
	<b>Adaptor External Reset -</b> Mounts on relay reset button and provides larger actuation surface.	CT7N CT8	CT7N-RA3

❶ Contactors noted will physically attach to the overload relays listed. This reference is not intended to be a guide for selecting contactors. Size overload relays using the full load current of the motor.

### Electrical Data

<b>Main Circuits</b>		
<b>Rated Insulation Voltage <math>U</math></b>	[V]	690 AC
<b>Rated Impulse Strength <math>U_{imp}</math></b>	[kV]	6 AC
<b>Rated Operating Voltage <math>U_e</math></b>	IEC/UL [V]	690/600 AC




### Terminations - Power

			M3.5
Terminal Type			
 Fine stranded w/ ferrule	[mm²]		2 x (1.5...4)
 Solid or coarse stranded	[mm²]		2 x (1.5...4)
	[AWG]		2 x (16...12)
Torque Requirement	[Nm]		1.2
	[Lb-in]		10.6
Pozidrive screwdriver	Size		2
Slotted screwdriver	[mm]		1 x 6



### Control Circuits

<b>Rated Insulation Voltage <math>U</math></b>	[V]	690 AC
<b>Rated Impulse Strength <math>U_{imp}</math></b>	[kV]	4 AC
<b>Rated Operating Voltage <math>U_e</math></b>	IEC/UL [V]	690/600 AC
<b>Rating Designation</b>		A600/Q300 N.O./N.C.
<b>Rated Operating Current</b>	$I_e$	
AC-15	24V [A]	4
	240V [A]	2
	400V [A]	1.6
	600V [A]	0.15
DC-13	24V [A]	2
	110V [A]	0.4
	220V [A]	0.25
	440V [A]	0.08
Thermal Current	$I_{the}$ [A]	5
Short Circuit Withstand, fuse gG	[A]	6
Contact Reliability		15V, 2mA

### Terminations - Control

			M3.5
Terminal Type			
 Fine stranded w/ ferrule	[mm²]		2 x (1...4)
 Solid or coarse stranded	[mm²]		2 x (1...4)
	[AWG]		2 x (18...12)
Torque Requirement	[Nm]		1.2
	[Lb-in]		10.6
Pozidrive screwdriver	Size		2
Slotted screwdriver	[mm]		1 x 6

### General Data

<b>Weight</b>	[kg (lb)]	0.115 (.25)
<b>Standards</b>		IEC/EN 60947-1, -4-1, -5-1; UL508; CSA C22.2 NO. 14
<b>Approvals</b>		 
<b>Temperature Compensation</b>		Continuous (Temperature Range -5...+40°C per IEC 60947-4-1, EN60947; PTB: -20...+60°C)
<b>Vibration Resistance</b>	(PER IEC 68-2-6) [G]	3
<b>Shock Resistance</b>	(PER IEC 68-2-27) [G]	30
<b>Type of Protection</b>		IP2X

### Environmental

<b>Ambient Temperature</b>	Storage	-55...+80 °C (-67...+176 °F)
	Operating	-20...+60 °C (-4...+140 °F)
<b>Humidity</b>	Operating	5...95% Non-condensing per IEC 68-2-3 and IEC 68-2-30
<b>Max. Altitude</b>	[m]	2000
<b>Pollution Environment</b>		Pollution Degree 3
<b>Protection</b>	Type of Relay	Ambient Compensated, Time Delay, Phase Loss Sensitive
	Nature of Relay	Bimetallic Overload Relay
	Trip Rating	125% FLA
	Trip Class	IEC: 10A, UL 10
	Reset Mode	Automatic or Manual
<b>Power dissipation</b>	up to 0.4 A	7 W
	0.5...12.5 A	6 W

### Operating Limits

<b>Maximum Command Impulse</b>	<b>CMR7N</b>
AC 50/60Hz	Pick-up [ $x U_s$ ] 0.8...1.1
	Drop-out [ $x U_s$ ]
DC	Pick-up [ $x U_s$ ] 0.7...1.25
	Drop-out [ $x U_s$ ]

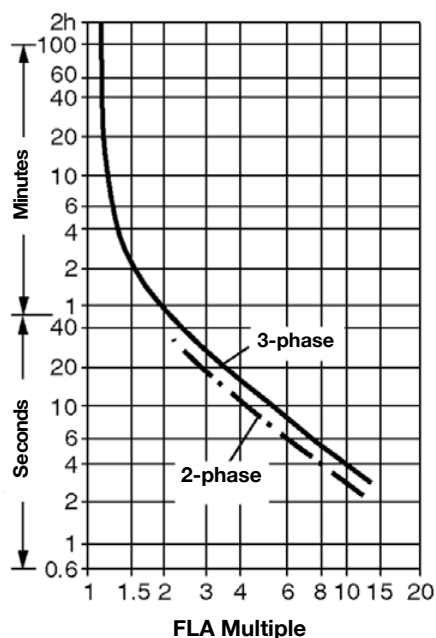
### Coil Consumption

AC 50/60Hz	Pick-up [VA-W]	
	Hold-in [VA-W]	
DC	Pick-up [ $x U_s$ ]	17 (24, 110, 125V) 25 (48V)
	Drop-out [ $x U_s$ ]	17 (24, 110, 125V) 25 (48V)

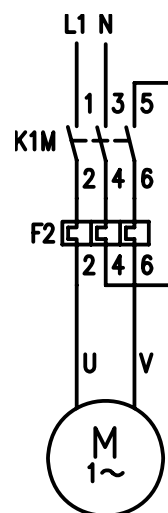
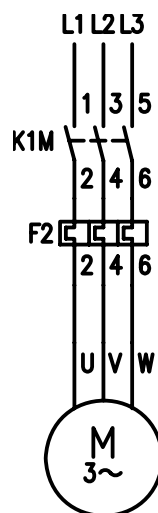
## Tripping Characteristics

These trip characteristics refer to IEC 60947 and are average values from cold start at an ambient temperature of 20 °C. Trip time is pictured as a function of operating current. With the device at normal operating temperature, the trip time decreases to approximately 25% of the shown value.

Trip Class 10A

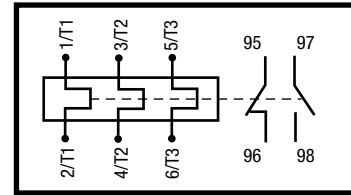
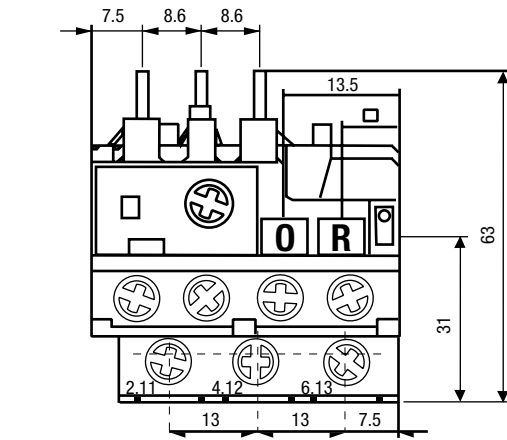


## Connection Diagrams

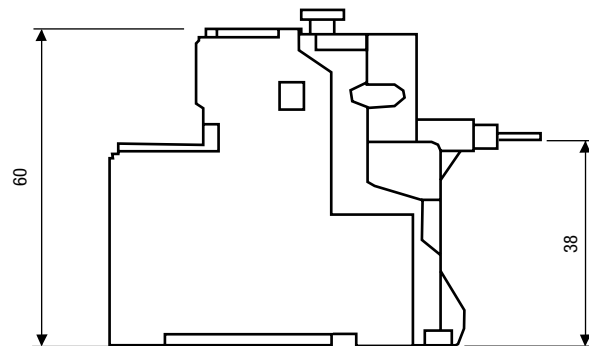
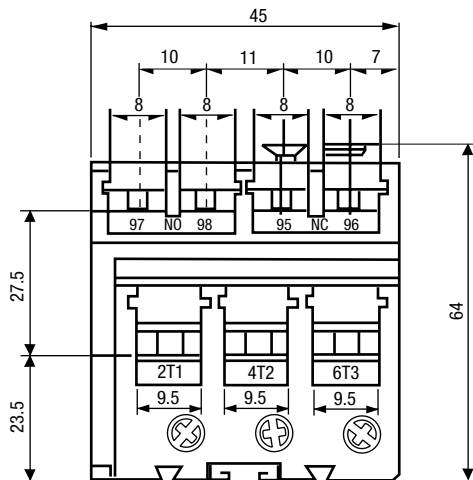


Series CT8

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



Terminal Marking



**B3**

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