ZC24A34 Series

ELECTRIC HEAT SEQUENCERS

DESCRIPTION

The positive temperature coefficient (PTC) heater element provides voltage compensation over a wide voltage range without danger of over-heating at high voltage. It is self-current limiting, and assures device actuation under low voltage conditions. The PTC has a unique feature of always stabilizing temperature, regardless of ambient temperature or voltage range.

(ZC24A34-3)

KEY FEATURES

- Solid State PTC Heaters
- Replaces most Klixon & TOD Brands
- Quick-Connect Terminals
- Shock and Vibration Resistant
- Mounts in any position
- Contact Ratings - to 25 Amps at 120 or 240 Volts, and 12.5A at 480 Volts
- Full-Load Rated Auxiliary Contacts
- Standard Operating Ambience Between - 50° F (-45.5°C) and 165° F (73.8°C)
- Custom Timing's Available
- UL File E237660, UL873; CSA approved

APPLICATIONS

Sequencing of heater banks in:

- Electric Furnaces
- Baseboard Heaters
- Duct Heaters
- Suspension Heaters
- Recreational vehicle blower and element control
- Heat pump blower and heating element control
- Motor speed switching in air conditioning (high speed) / heating systems (low speed) where a single set of contacts handle combination motor and heater element loading in the heating function.
- Control circuits requiring definite sequence on both start up and shut down.

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COIL DATA

Coil Voltage	24VAC
Inrush Current	0.75A
Steady State Current	0.16-0.20A
Ambient Temperature	-46C(-50F) to 74C (165F)

STANDARD TIMINGS

Model Number	Timings	Switches	ON Timings					OFF Timings				
			M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	M1-M2	M3-M4	M5-M6	M7-M8	M9-M10
ZC24A34-1	1	1	1-20	-	-	-	-	40-110	-	-	-	-
ZC24A34-2	1	1	-	30-90	-	-	-	-	-	1-30	-	-
ZC24A34-3 (1)	1	2	1-20 ■	1-20	-	-	-	40-110 ■	40-110	-	-	-
ZC24A34-4	1	2	-	-	30-90 ■	30-90	-	-	-	1-30 ■	1-30	-
ZC24A34-5 (1)	2	3	1-110 ■	1-110	1-110	-	-	1-110 ■	1-110	1-110	-	-
ZC24A34-6 (1)	2	4	1-110 ■	1-110 ■	1-110	1-110	-	1-110 ■	1-110	1-110 ■	1-110	-
ZC24A34-14 (1)(2)	4	5	1-160 ■	1-160	1-160	1-160	1-160	1-160 ■	1-160	1-160	1-160	1-160

CANADIAN TIMINGS

Model Number	Timings	Switches	ON Timings					OFF Timings				
			M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	M1-M2	M3-M4	M5-M6	M7-M8	M9-M10
ZC24A34-3-021	1	1	1--20	-	-	-	-	1--60	-	-	-	-
ZC24A34-3-022	1	1	15-45	-	-	-	-	1--30	-	-	-	-
ZC24A34-3-023	1	1	25-60	-	-	-	-	15-45	-	-	-	-
ZC24A34-3-024	1	1	30-90	-	-	-	-	1--40	-	-	-	-
ZC24A34-3-025	1	1	30-90	-	-	-	-	1--30	-	-	-	-
ZC24A34-3-026	2	2	1--20	30-90	-	-	-	40--90	1--30	-	-	-
ZC24A34-6-027	2	2	1-160	1-160	-	-	-	1-160	1-160	-	-	-
ZC24A34-2-029	1	1	15-35	-	-	-	-	25-55	-	-	-	-
ZC24A34-3-036	2	2	1--20	30-90	-	-	-	45-110	1--30	-	-	-
ZC24A34-5-037	1	1	1-110	-	-	-	-	1-110	-	-	-	-

TABLE NOTES

(1) M1-M2 and M3-M4 are always the first switches to turn ON and last to turn OFF. All other switches are random ON and random OFF.
(2) 24A34-14 Switch contacts designated F1-F2 instead of M1-M2.

ON TIME - Elapsed time to make contacts after heater is energized (Min. to Max.)
OFF TIME - Elapsed time to make contacts after heater is de-energized (Min. to Max.)
OFF Timings determined after PTC heater has been electrified for a total of 5 minutes.
Standard Timings determined at 25° C . Timing's at temperatures above or below 25° will vary.
Canadian timings with CSA approval only.

■ These contacts switch simultaneously

OPTIONAL CUSTOMER 4 DIGIT SUFFIX

Custom ON and OFF Timings are available. A four digit suffix code will be added to model number with the closest Timings. i.e DPDT sequencer with ON time of 1-60 and OFF time of 1-45 will be designated ZC24A34-3 XXXX. Please consult factory for further details.

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ELECTRIC HEAT SEQUENCERS

ELECTRICAL RATINGS

Single Load Contact Ratings (Models -1 thru -14):

VAC	Resistive (Non-Inductive) NO Contacts (Terminals 1-3)		Motor Ratings (Inductive)		Pilot Duty	UL Endurance Cycles
	Watts	Amps	Full Load	Locked Rotor		
120	3000	25.0	10.0A	60.0A	125VA	100K
240	6000	25.0	5.0A	30.0A	125VA	
480	6000	12.5	3.0A	18.0A	480VA	

Combined Load Contact Ratings (All Models):

VAC	Resistive (Non-Inductive)		Motor Ratings (Inductive)		Combined
	Watts	Amps	Full Load	Locked Rotor	Amps
240	5520	23.0	7	42	30

HEATER-SWITCH ACTIONS AND CONFIGURATIONS

The ZC24A34-1 (reference Figure 1), ZC24A34-2 (reference Figure 2) utilizes one bi-metal disc to achieve single-timing operation. They are available in SPST (reference Figure 3) switch actions. This configuration can be automatically reset and built to close a set of contacts on temperature rise within a specified time range.

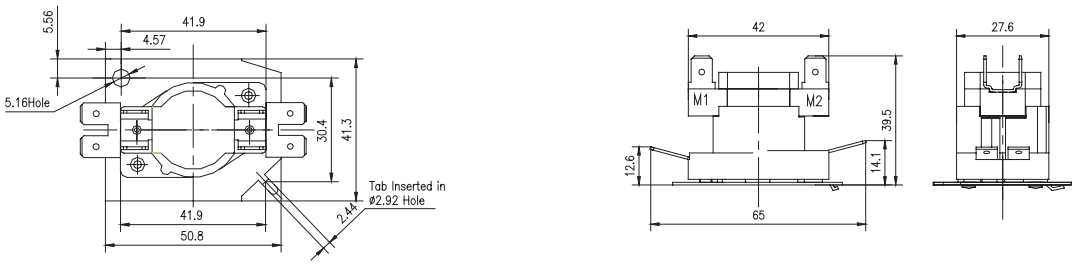

Figure 1

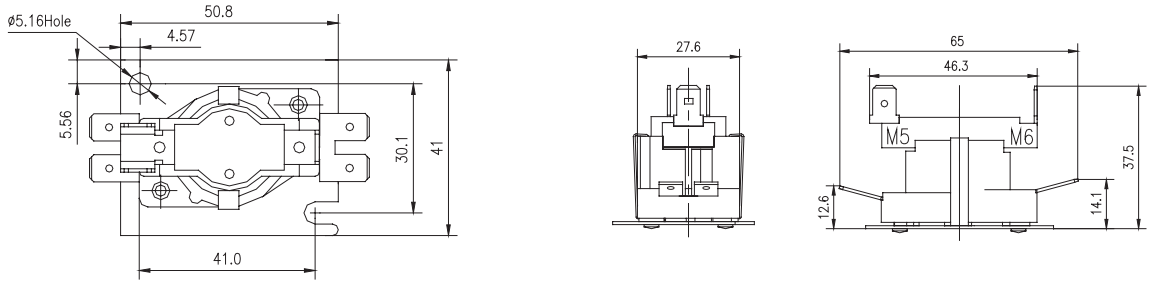

Figure 2

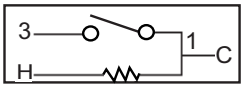

Figure 3 Single Pole Single Throw (SPST)

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ZC24A34 Series

ELECTRIC HEAT SEQUENCERS

HEATER-SWITCH ACTIONS AND CONFIGURATIONS

The ZC24A34-3 (reference Figure 4), ZC24A34-4 (reference Figure 5) utilizes one bi-metal disc to achieve single-timing operation. They are available in DPST (reference Figure 6) switch actions. This configuration can be automatically reset and built to close a set of contacts on temperature rise within a specified time range.

Figure 4

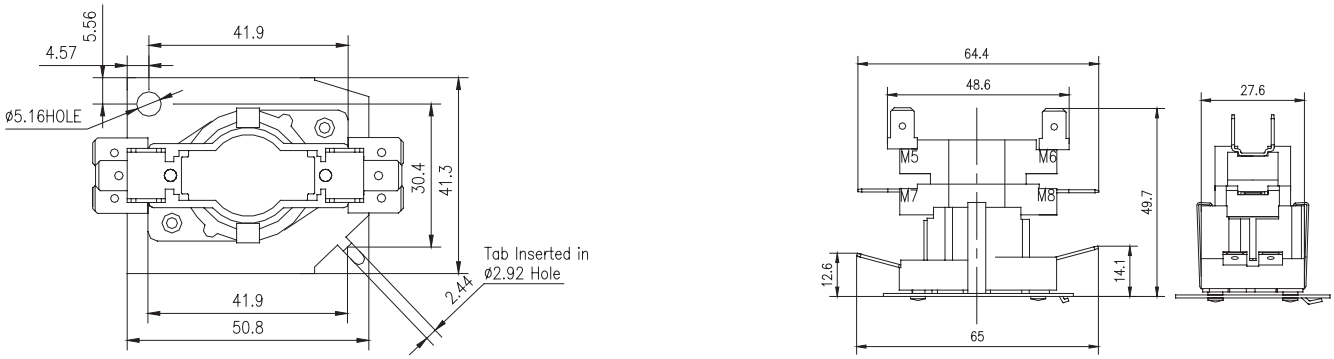

Figure 5

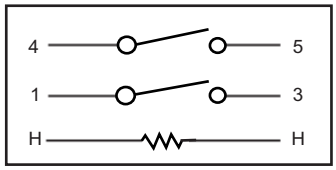

Figure 6 Double Pole Single Throw (DPST)

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ZC24A34 Series

ELECTRIC HEAT SEQUENCERS

HEATER-SWITCH ACTIONS AND CONFIGURATIONS

The ZC24A34-5 (reference Figure 7) utilizes two bi-metal discs in conjunction with one SPST and one DPST switch action to achieve two independent timings. The ZC24A34-6 (reference Figure 8) utilizes two bi-metal discs in conjunction with two DPST switch actions to also achieve two independent Timings. This configuration can be automatically reset, and built to close three or four sets of contacts on temperature rise within a specified time range.

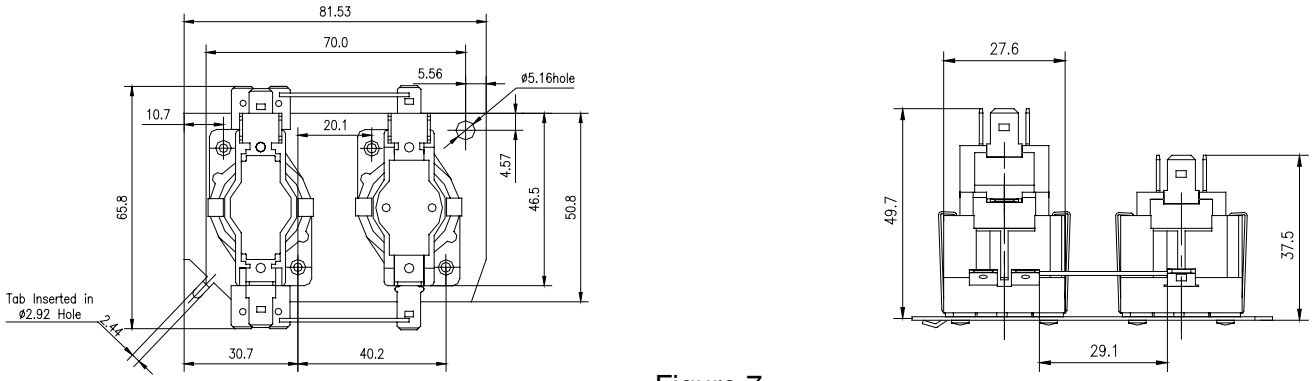

Figure 7

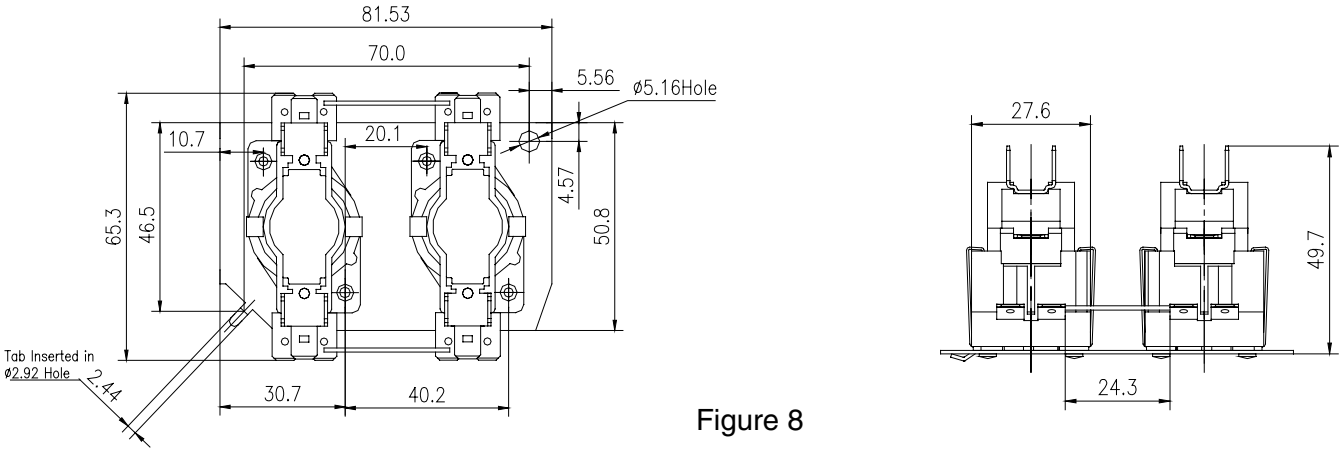

Figure 8

ZC24A34 Series

ELECTRIC HEAT SEQUENCERS

HEATER-SWITCH ACTIONS AND CONFIGURATIONS

The ZC24A34-14 (reference Figure 9), utilizes four bi-metal discs in conjunction with one SPST and two DPST switch actions to achieve four independent Timings. This configuration can be automatically reset, and built to close five sets of contacts on temperature rise within a specified time range.

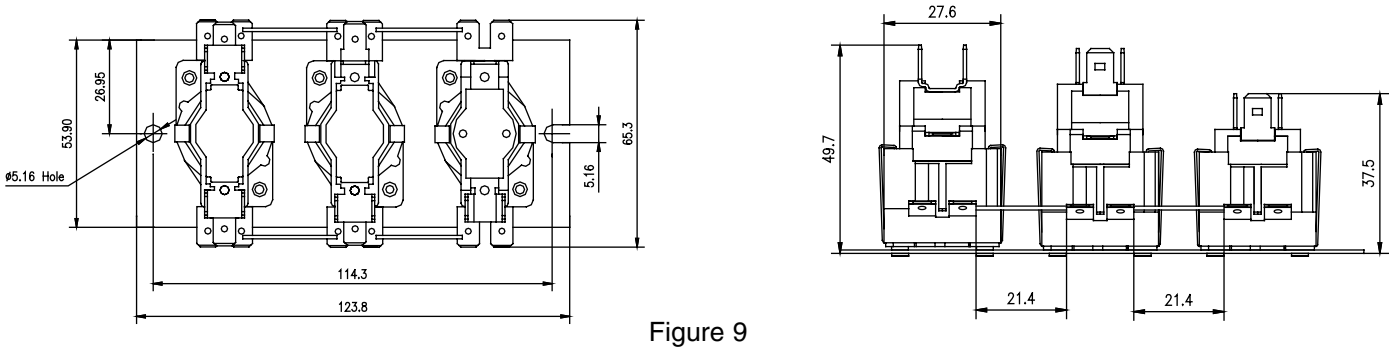

Figure 9

TERMINALS

Standard terminal types are listed below. Special switch terminals such as double quick connects and female quick connects may be available for a specific switch terminal. Consult sales for details.

SWITCH TERMINALS

1. Solder type
2. Screw type - 0.250” x 0.032” (6.35 x 0.81mm) Q.C.

HEATER-SWITCH ACTIONS AND CONFIGURATIONS

Standard heater terminals are 15° 0.250” x 0.032 (6.35 x 0.81mm), double brass male quick connects. The stage terminals are tin-plated brass.

1.Solder type
2. Screw type-0.250” x 0.0.32” Q.C (Double Q.C terminals available at additional cost)
   Use 12 gauge or larger wire for loads greater then 15 amperes.

ZC24A34 Series

ELECTRIC HEAT SEQUENCERS

HEATER-SWITCH ACTION AND CONFIGURATION

The ZC24A34-15 (Figure10) utilizes a single bi-metal disc in a single pole double throw configuration. The SPDT switch action allows for a single set of timings. Mainly used in heat pump air handlers by providing a delay to the blower motor in cooling mode.

(ZC24A34-15)

STANDARD TIMINGS

Model Number	Timings	Switches	ON Timing	OFF Timing
ZC24A34-15	1	1	1-25	65-115

ELECTRICAL RATINGS

VAC	N.O, Contacts - Terminals 1, 3					N.C. Contacts - Terminals 1, 2			UL Endurance Cycles
	Non-Inductive (Resistive)		Inductive (Motor)		Pilot Duty (VA)	Non-Inductive (Resistive)		Pilot Duty (VA)	
	Amps	Watts	FLA	LRA		Amps	Watts		
120	25	3000	14	72	125	10	1200	125	30K
240	25	6000	7	42	125	5	1200	125	
480	25	6000	3	18	480	-	-	-	

MECHANICAL DATA

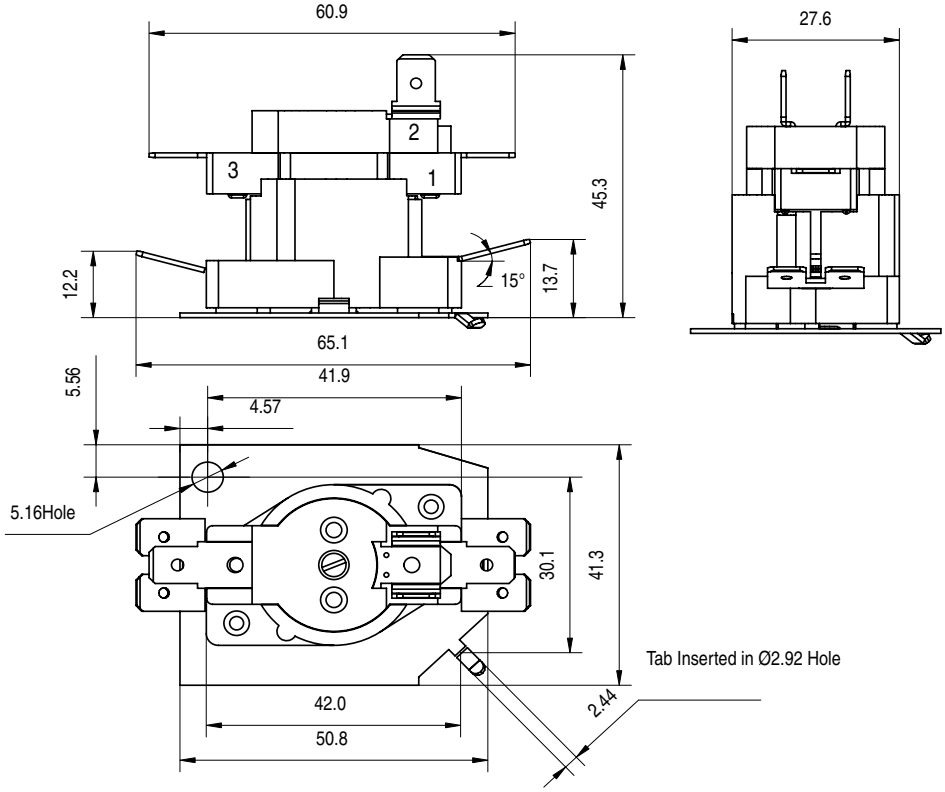

Figure 10