TEXAS INSTRUMENTS

KLIXON

40/41/42AA Series
ELECTRONIC MOTOR PROTECTION

Product Overview

The 40AA, 41AA, and 42AA series electronic motor protection modules combine high performance and function consolidation in order to provide reliable, cost effective protection for your motor needs. Used with Positive Temperature Coefficient (PTC) sensors the 40/41/42AA modules protect against locked rotor conditions, running overload and high ambient temperature. The innovative design offers additional functions as well, such as minimum off time delay, low voltage cutout and bearing temperature protection. Also the device is very safe and easy to calibrate for voltage (no jumper is required).

Thermal protection is achieved by monitoring the temperature of the motor windings with PTC sensors. These sensors can be the Klixon BA series or any other compatible PTC sensor rated Mark A or B. If the windings exceed the rated trip temperature the sensor undergoes a rapid change in resistance relative to the change in temperature. As a result of this change, the 40/41/42AA modules' internal relays de-energize the control coil of the external line break contactor.

As the motor cools and acceptable motor winding temperatures have been restored the sensor resistance decreases to the reset level. At this point the module will reset itself automatically unless it was set up for manual reset. In this case the user is required to remove power from the system for a minimum of 5 seconds.

The 40/41/42AA series modules are ideal for many applications in the HVAC/R industry as well as for industrial systems. Some applications include global commercial rooftop A/C, global chiller applications, industrial pumps, material handlers, elevators, escalators, air compressors and industrial systems.

Product Specifications

Maximum	Number Channels	Sensors/ Channels	Line Voltage	Sensor Type	Time Delay	Low Voltage	Auto/Man Reset
40AA110E	1	3	120/240	Mark A	None	None	Automatic
40AA115E	1	3	120/240	Mark A	5 min.	None	Automatic
41AA1105A	3	1	24	Mark B	4 min.	None	Automatic
41AA1500E	3	1	120/240	Mark B	None	None	Manual
41AA1600A	3	1	24V	Mark B	2 min.	Yes	Automatic
41AA1600E	3	1	120/240	Mark B	2 min.	Yes	Automatic
41AA1606E	3	1	120/240	Mark B	4 min.	Yes	Automatic
42AA100E	1	3	120/240	Mark B	None	None	Manual
40AA100E	1	3	120/240	Mark B	None	None	Automatic
40AA300E	1	3	120/240	Mark B	4 min.	Yes	Automatic
41AA1504E	3	1	120/240	Mark B	None	Yes	Manual
40AA200E	1	3	120/240	Mark B	4min.	None	Automatic
40AA100A	1	3	24V	Mark B	None	None	Automatic
40AA200A	1	3	24V	Mark B	4 min.	None	Automatic
40AA102A	1	2	24V	Mark B	None	None	Automatic

General Specifications

	Units	Min.	Typical	Max.
Operating Temperature Range	°C	-40		+70
Supply Voltage 24 or 115-230 (±15%)	VAC			
Rated Line Frequency	Hz	45	50/60	62
Low Voltage Cut-Out Trip (24V Input)	VAC	15	16	17
Low Voltage Cut-In Reset	VAC			18
Low Voltage Cut-Out Trip (120V Input)	VAC	79.5	85	90.5
Low Voltage Cut-In Reset	VAC			94.5
Low Voltage Cut-Out Trip (240V Input)	VAC	160	170	180
Low Voltage Cut-In Reset	VAC			184

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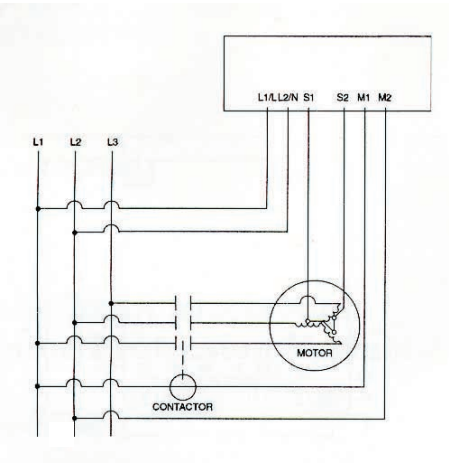
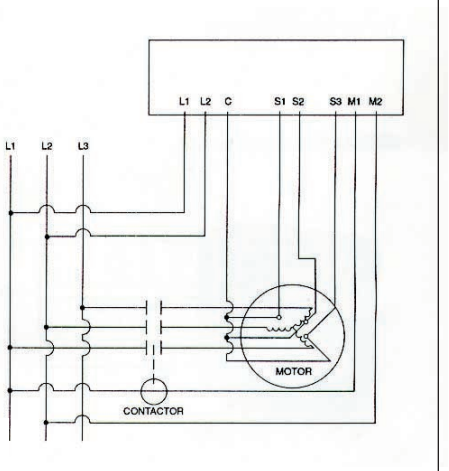
Electrical Schematic

40AA, 42AA Series

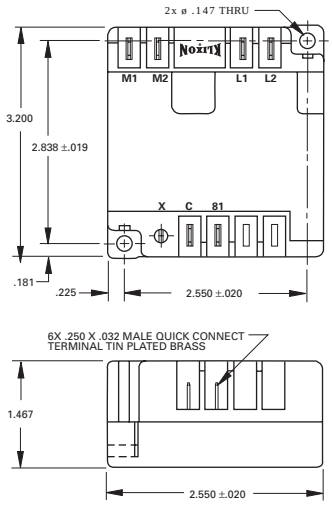


41AA Series

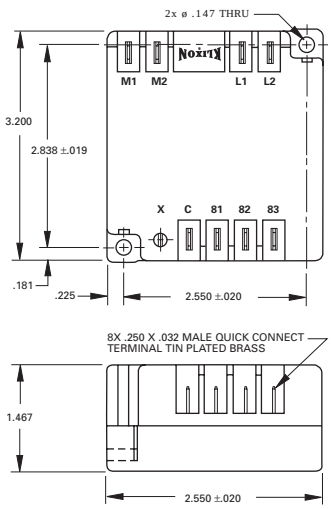


Envelope Drawing

40AA, 42AA Series



41AA Series



Thermal Motor Specification*

40AA Single Channel Ratings (Series Sensors)	**Nominal Resistance**
Sensor Trip Resistance	28.0 KΩ
Sensor Reset Resistance	11.0 KΩ
Sensor Resistance @ 25°C	1.5 - 7.5 KΩ
41AA Three Channel Ratings (Parellel Sensors)	**Nominal Resistance**
Sensor Trip Resistance	14.0 KΩ
Sensor Reset Resistance	3.25 KΩ
Sensor Resistance @ 25°C	0.5 - 2.5 KΩ
42AA Single Channel Ratings (Series Sensors)	**Nominal Resistance**
Sensor Trip Resistance	20.0 KΩ
Sensor Reset Resistance	Manual Reset
Sensor Resistance @ 25°C	1.5 - 7.5 KΩ

*Resistance measurement with analog meter instrument on Mark B sensors.

Protected Conditions

- Locked Rotor
- Running Overload
- High Motor Ambient
- Blocked Ventilation
- Single Phasing
- Loss of Hermetic Compressor Charge

Summary of Protection Features

- Thermal overload of Windings
- Low Voltage Cutout
- Electrically - Isolated Power Supply
- Power Off Manual Resaet
- Automatic Reset with Minimum Off Delay Timer
- UL File Number SA3745 (41AA)
- UL/CSA/CE pending on all other ratings

Specifications

Supply Voltages..... 24VAC or 115-230 VAC (±15%)
Frequency..... 50/60 Hz
Control Circuit..... 2.5A, 600VA, 250V Max.
Minimum Permissible Load..... 5VDC, 100mA
Maximum Load..... 30VDC
Cycle Life..... 250k Cycles Min.
Weight..... 290 Grams

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