



- Built-in transformer
- Universal replacement part
- Compatible with electronic T186 room sensor

Description

Viconics' innovative **R842** electronic relay has been designed for silent control of high voltage resistive heater loads (120V to 600 Vac) from a low voltage control circuit. Typical applications include control of electric baseboard and cabinet heaters in commercial buildings. Inductive motor loads can also be controlled (120 and 240 Vac models only).

Using advanced microprocessor-based circuitry, the R842 is capable of handling greater than 500,000 cycles (typical). It has a built-in transformer and is compatible with most industry standard electromechanical or electronic thermostats with on/off outputs. A unique feature of product is that it can operate with a value priced Viconics' T186 electronic PI (proportional and integral) room thermostat with setpoint capability, providing exceptional accuracy, comfort, and energy savings.



Fig.1 - R842 relay for electric baseboards

Features	Benefits
<ul style="list-style-type: none"> • Unique compatibility with Viconics' own designer electronic thermostat 	<ul style="list-style-type: none"> ⇒ Permits fully electronic PI control ⇒ Improved accuracy (+/-0.3°C) and comfort ⇒ Energy savings ⇒ Aesthetically pleasing thermostat
<ul style="list-style-type: none"> • Reliable microprocessor-based design 	<ul style="list-style-type: none"> ⇒ Long life
<ul style="list-style-type: none"> • Compatible with all standard 24 V thermostats 	<ul style="list-style-type: none"> ⇒ Adds flexibility
<ul style="list-style-type: none"> • Constant 10 second time delay 	<ul style="list-style-type: none"> ⇒ Not affected by ambient temperatures typically found in older, thermal type baseboard relays
<ul style="list-style-type: none"> • Built-in transformer 	<ul style="list-style-type: none"> ⇒ Less inventory to stock ⇒ Easier installation
<ul style="list-style-type: none"> • Broad voltage ranges available: 120, 208, 240, 277, 347, 600 Vac. 	<ul style="list-style-type: none"> ⇒ Covers most voltage applications
<ul style="list-style-type: none"> • Status LED 	<ul style="list-style-type: none"> ⇒ Confirms operation ⇒ Simplifies troubleshooting
<ul style="list-style-type: none"> • Silent operation 	<ul style="list-style-type: none"> ⇒ Will not disturb occupants
<ul style="list-style-type: none"> • Direct replacement of competitive models 	<ul style="list-style-type: none"> ⇒ Easy to retrofit
<ul style="list-style-type: none"> • Large resistive amperage load rating 	<ul style="list-style-type: none"> ⇒ Will handle the largest baseboards with ease
<ul style="list-style-type: none"> • Inductive ratings 	<ul style="list-style-type: none"> ⇒ Used to control motor loads (fans, pumps, etc)
<ul style="list-style-type: none"> • Compact enclosure 	<ul style="list-style-type: none"> ⇒ Fits inside baseboard
<ul style="list-style-type: none"> • Standard ½" male conduit bushing 	<ul style="list-style-type: none"> ⇒ Can be installed on most electrical junction boxes
<ul style="list-style-type: none"> • 2 year warranty 	<ul style="list-style-type: none"> ⇒ Assured dependability

Description (Cont'd)

The R842 has several advantages over traditional electromechanical baseboard relays. The latter use the principle of thermal expansion to make or break the high voltage circuit. This operation typically takes 45 seconds and adds inaccuracy to the temperature control loop. The R842, with enhanced electronic circuitry, substantially reduces this long time delay and is not affected by ambient temperature conditions.

Due to its compact design, the R842 easily fits into most electric baseboard enclosures and can replace most competitive models. For junction box mounting, a standard 1/2" male screwed fitting is available. In addition, a high intensity LED is provided to indicate operation and simplify troubleshooting. Silent operation will ensure that each installation is trouble free.

R842 Relay Models

Model No.	Voltage (Vac)	Amperage (A)
R842-120	120	22
R842-208	208	22
R842-240	240	22
R842-277	277	19
R842-347	347	18
R842-600	600	10

T186 Electronic PI Thermostat

The microprocessor-based design of the R842 permits the use of T186 electronic room sensor with setpoint as an alternative to electromechanical thermostats. The T186 transmits the actual temperature and setpoint to the R842. The resulting solid state PI control loop is much more accurate than that offered by conventional thermostats and eliminates wasted energy caused by on/off cycling with these types of thermostats (see Fig. 2).

The T186 can also be used as lower cost alternative to the use of solid state relays and pulse width modulated thermostats, sometimes used to control electric heat baseboards.

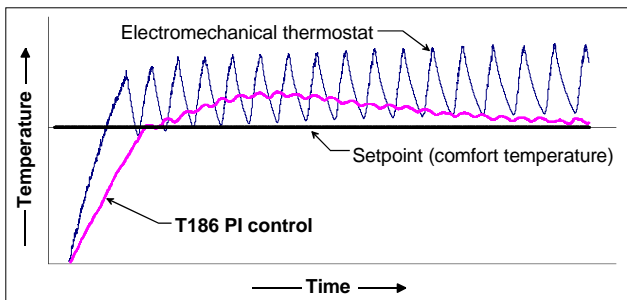


Fig.2 - On/Off mechanical control vs PI electronic control

T186 Sensor Models

Model No.	Scale Range
T186C-01	5 °C to 30 °C
T186F-01	40 °F to 90 °F



Fig.3 - T186 electronic PI room sensor with setpoint

Typical Guide Specification

The relay shall be a microcomputer-based with PI, time proportioning control capability. It should have an average life of greater than 500,000 cycles and include a built-in transformer. Relays shall be compatible with all of the following control signals: Viconics T186 electronic room sensor with setpoint permitting PI control with an accuracy of +/-0.3°C and standard 24 Vac thermostats. Relay shall have a constant 10 second time delay and shall not be affected by ambient temperatures. The relays shall be equipped with a status LED to confirm operation. Required quality: R842 electronic baseboard relay from Viconics.

Installation

Important: All wiring must conform to local and national electrical code regulations. Please read these instructions carefully before the installation. Failure to follow the instructions could damage the product or cause a hazardous condition. Installation must only be performed by a qualified service technician. Disconnect power supply before installing in order to prevent electrical shock. There are two basic methods to install the R842 baseboard relay.

A. Installation Inside Electric Baseboard

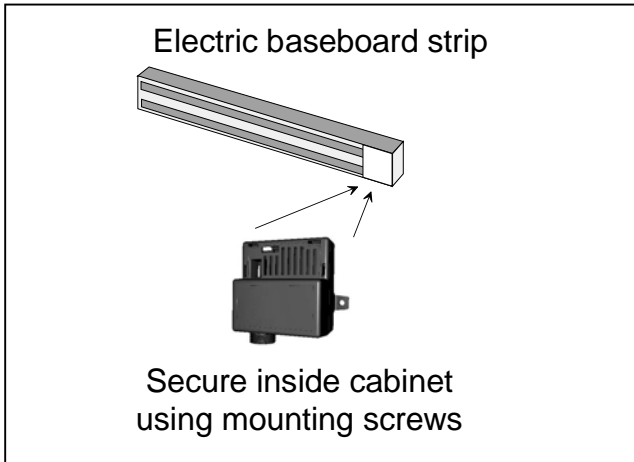


Fig.4 - R842 relay installation

1. Use the plastic mounting tabs to secure the unit to the inside of the electrical enclosure.
2. Secure to the cabinet with screws.
3. Cut one or both plastic mounting tabs if space is needed inside the enclosure.
4. If a high voltage separation barrier is needed, please contact the baseboard manufacturer.
5. Do not exceed the maximum rated temperature of the R842 unit. (65°C/149°F)

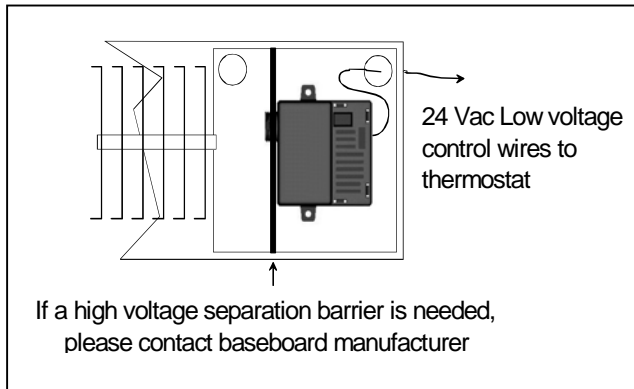


Fig.6 - R842 relay, installation inside baseboard cabinet

B. Junction Box Installation

Use the supplied lock nut to secure the relay to the electrical junction box. It is possible to mount the relay completely inside the junction box or outside, as desired. In the case of the former, make sure that the front of the R842 relay is facing the cover of the junction box. For mounting outside of the junction box, make sure that the front of the relay is visible. In both cases, this will permit the installer to view the red LED in order to confirm operation.

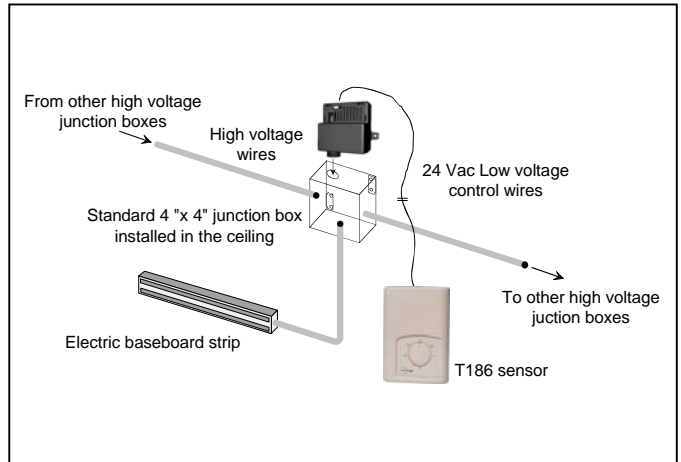


Fig.5 - R842 relay, installation in an electrical junction box

Dip Switch Settings

Whenever using one R842 relay, please set the dip switches as follows, depending on the input signal:

1. Two wire low voltage electromechanical thermostat: set both switches to "ON"
 2. Viconics' T186 set both switches to "OFF"
- For all applications involving multiple R842 relays, please refer to the diagrams on pages 4, 5, and 6

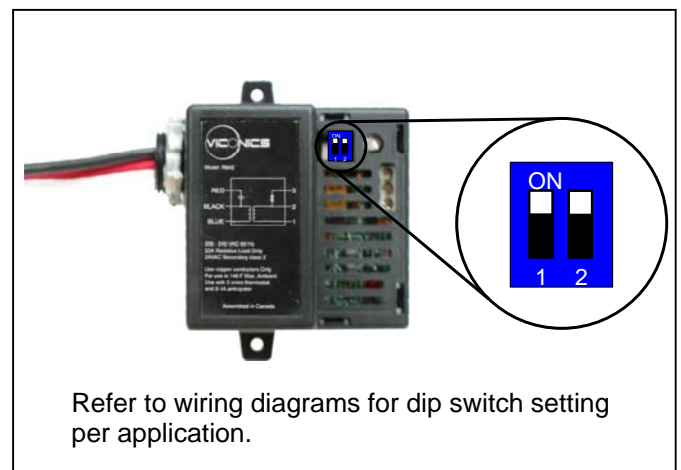
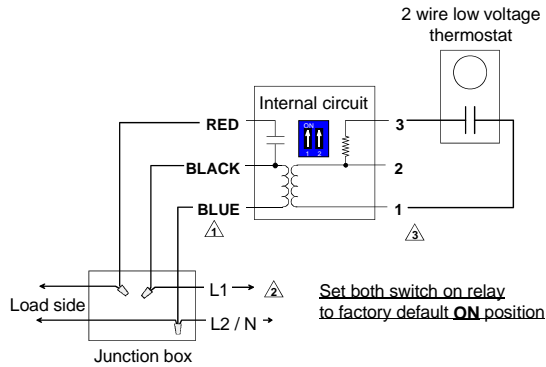


Fig.7 - R842 relay, location of dip switches

Typical applications & wiring

Two wire low voltage thermostat using R842 baseboard relay internal transformer

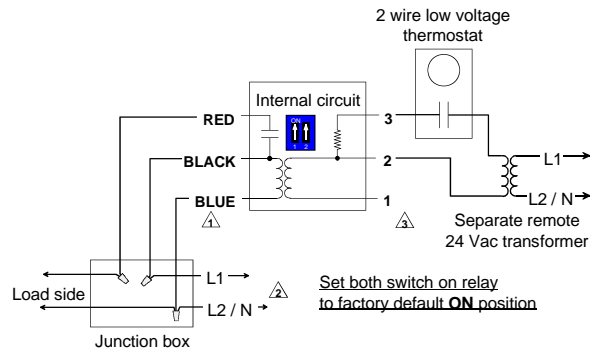
Baseboard(s) / load(s)	One
Relay(s)	One
Thermostat(s)	One
Transformer	Internal



Adjust thermostat anticipator to 0.1 A or less.

Two wire low voltage thermostat using a separate 24 Vac transformer

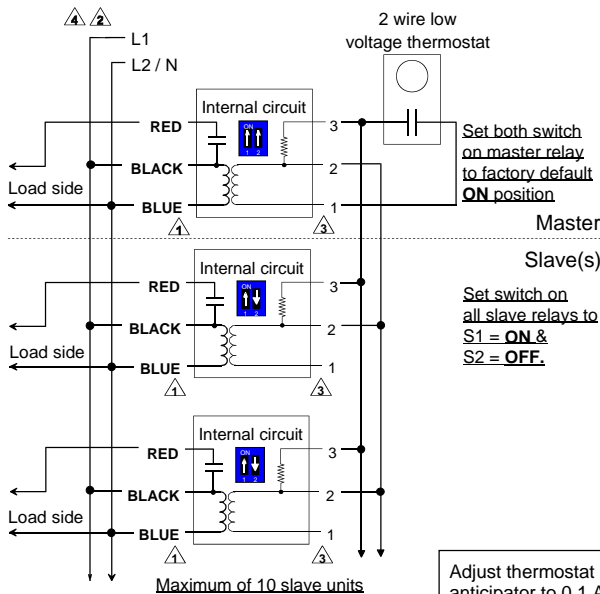
Baseboard(s) / load(s)	One
Relay(s)	One
Thermostat(s)	One
Transformer	External



Adjust thermostat anticipator to 0.1 A or less.

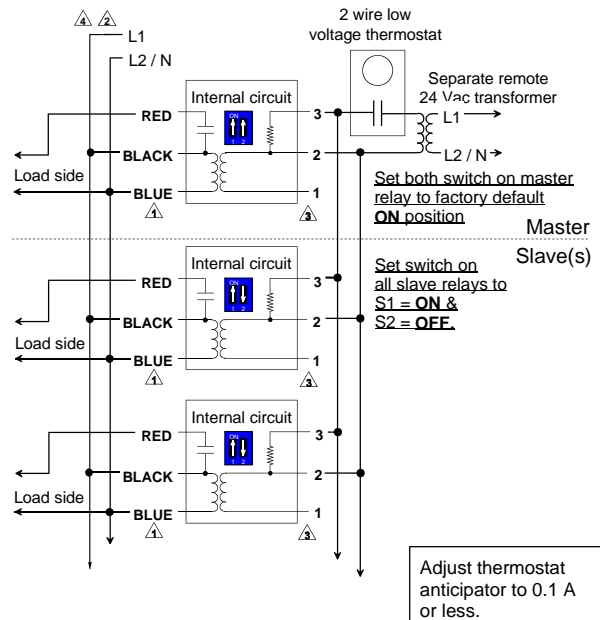
Two wire low voltage thermostat using R842 baseboard relay internal transformer for multiple relay arrangement

Baseboard(s) / load(s)	Multiple
Relay(s)	Multiple
Thermostat(s)	One
Transformer	Internal



Two wire low voltage thermostat using a separate 24 Vac transformer for multiple relay arrangement

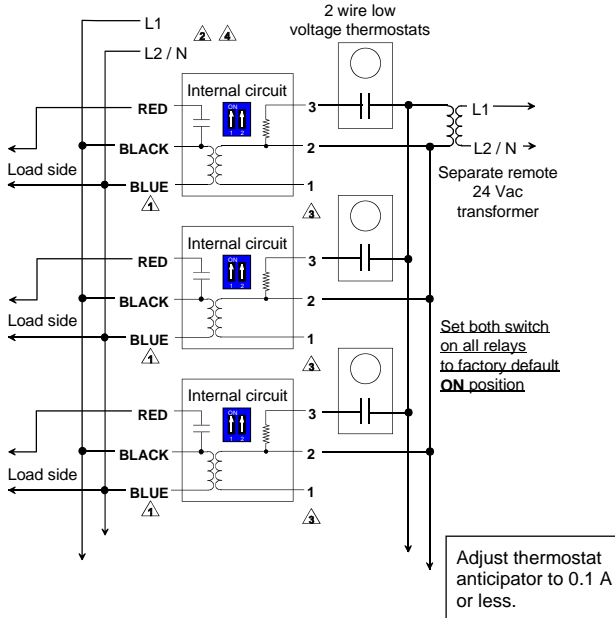
Baseboard(s) / load(s)	Multiple
Relay(s)	Multiple
Thermostat(s)	One
Transformer	External



- High voltage blue wire is always connected. R842 units are powered devices.
- Provide overload protection and disconnect as required.
- Do not use 24 Vac terminal #1 as power supply to an electronic thermostat. Use a separate transformer.
- L1, L2 & L3 can be mixed / matched.
- Operates only if all relays control the same phase of a 3 phase system or on a single phase branch.

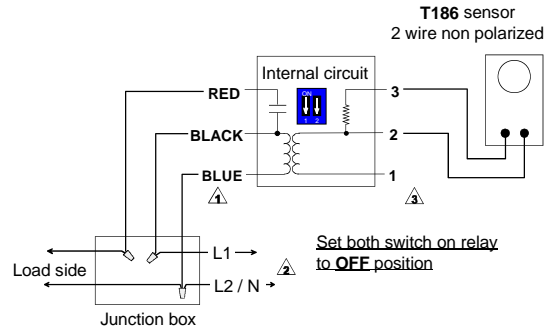
Multiple two wire low voltage thermostats using the same separate 24 Vac transformer to control multiple R842 baseboard relays

Baseboard(s) / load(s)	Multiple
Relay(s)	Multiple
Thermostat(s)	Multiple
Transformer	External



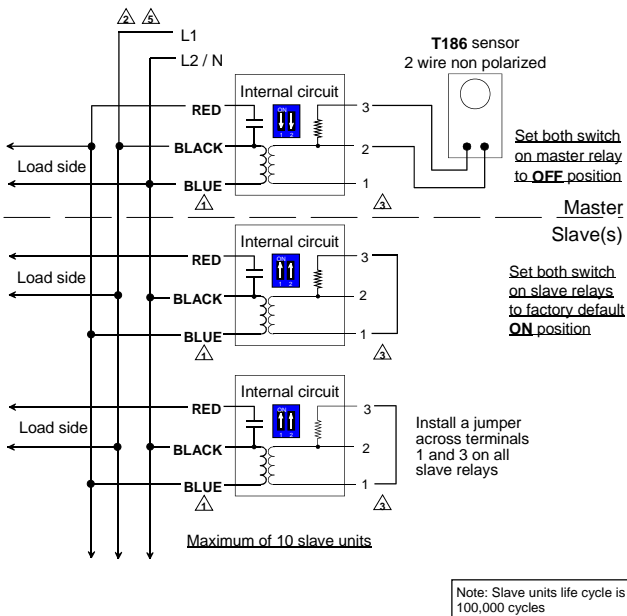
Viconics T186 sensor to control one R842 baseboard relay

Baseboard(s) / load(s)	One
Relay(s)	One
T186 thermostat	One



Viconics T186 sensor for master / slave arrangement of R842 baseboard relays

Baseboard(s) / load(s)	Multiple
Relay(s)	Multiple
T186 Thermostat	One



Model	Volt	Resistive Rating (A)	Inductive Rating (HP)
R842-120	120	22	½ HP 8 Amp
R842-208	208	22	1 HP 8.8 Amp
R842-240	240	22	1 HP 8 Amp
R842-277	277	19	N/A
R842-347	347	18	N/A
R842-600	600	10	N/A



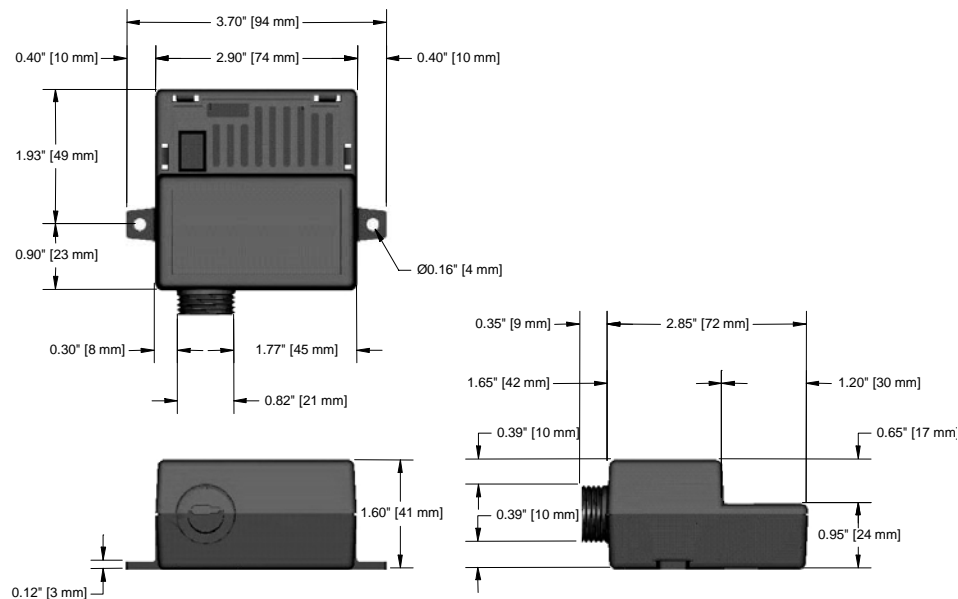
- 1 High voltage blue wire is always connected. R842 units are powered devices.
- 2 Provide overload protection and disconnect as required.
- 3 Do not use 24 Vac terminal #1 as power supply to an electronic thermostat. Use a separate transformer.
- 4 L1, L2 & L3 can be mixed / matched.
- 5 Operates only if all relays control the same phase of a 3 phase system or on a single phase branch.

Specifications

Physical Specifications:

Ambient Operating Temperature and Humidity Limits	<ul style="list-style-type: none"> -20°C to 65°C (-4°F to 149°F) 0 % to 95 % R.H. non-condensing
Ambient Storage Temperature and Humidity Limits	<ul style="list-style-type: none"> -40°C to 80°C (-40°F to 176°F) 0 % to 95 % R.H. non-condensing
Life cycles	<ul style="list-style-type: none"> Greater than 500,000 (typical, resistive loads) 100,000 (typical, inductive loads for models R842-120, R842-208 and R842-240 only)
Internal R842 transformer rating	<ul style="list-style-type: none"> 24 Vac, -15%, +10% 50/60 Hz; 2.4 VA Class 2 transformer
Wire length	<ul style="list-style-type: none"> 8 inches [20 cm]
Net weight	<ul style="list-style-type: none"> 0.51 Lbs / 0.23 Kg
Recommended wire size for screw terminal	<ul style="list-style-type: none"> 18-22 gauge
Agency approval	<ul style="list-style-type: none"> cCSAus File no. LR92123 as per CSA Standard C22.2 no 24

Dimensions:



All R842 series controls are for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verifications prior to shipment to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user / installer / electrical panel designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc...) and/or alarm system to protect the entire system against such catastrophic failures. Tampering of the devices or miss application of the device will void warranty.

NOTE: VICONICS RESERVES THE RIGHT TO MAKE MODIFICATIONS WITHOUT PRIOR NOTICE.