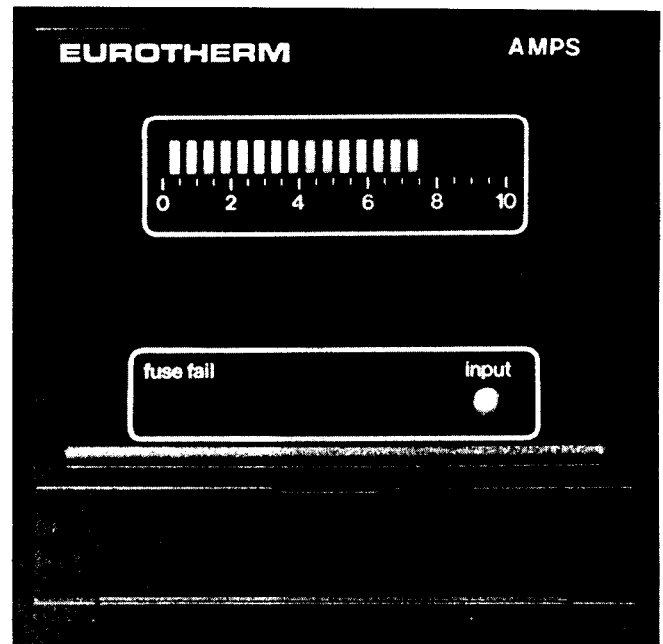


## Front panel mounting SCR assembly/ solid state contactor

Model  
831

- Compact 1/4-DIN sized sleeve
- Plug-in construction
- Current ratings from 10A to 40A
- Single 120/240V design
- Fully protected electronics and isolated heat sink for safety
- Available with fast cycle, ON/OFF or pulse-input firing
- Analog, logic and SCR pulse inputs available
- Incorporated fuse with front-panel fuse failure indication (external fuse and fuseholder required for 40A models)
- Optional 20-segment red LED bargraph ammeter
- Front panel LED indicating presence of input signal
- Full protection against line voltage spikes



Model 831. 120/240V, 10A.

The Model 831 SCR assemblies are plug-in, door mountable units for general purpose applications requiring load currents up to 40A.

They are available in 2 basic types: zero-crossing solid state contactors with logic inputs for resistive loads, and SCR assemblies with an analog current input for fast-cycle firing. The 831 can also accept SCR pulses from Eurotherm controllers for phase-angle or fast-cycle firing.

All inputs are isolated from the power line. No supplementary control power supply is required; the 831 control electronics are powered by the load supply.

As an option a front-panel bargraph ammeter is available. It indicates the true rms current for phase-angle fired loads and the mean (average) current for time proportioned loads. Other indications on the fascia include a fuse failure lamp and an LED that lights when the input signal is present.

The units fit into standard 1/4-DIN size panel cutouts and are retained by two mounting screws; units can be removed from their sleeves without unwiring. Wiring connections are made on the rear of the sleeve to screw terminals with pressure plates.

Eurotherm backs the Model 831 with a 2-year warranty.

## FEATURES

### Mechanical features

The 831 SCR assembly is housed in a 1/4 DIN-size sleeve for front-panel mounting into a 3.62 inch square cutout. The sleeve is held in place from the rear side of the panel by 2 mounting screws. The unit itself (composed of the SCRs, heatsink, and control electronics boards all connected to the fascia) slides into the sleeve from the front. It is held secured in the sleeve by a locking screw accessible behind the fascia-panel access door.

The 831 can be removed from the front without access to the panel interior; it is not necessary to disconnect any power or signal wiring made to the rear of the sleeve assembly. Both the signal and power wiring connections are made to 6 appropriately sized screw terminals with pressure plates.

All control electronics are mounted on printed circuit boards inside the unit for physical protection. A cutout in the sleeve exposes the isolated heatsink for convection cooling of the SCRs.

### Inputs and firing modes

Three basic types of inputs are available. The pulse inputs are transformer coupled for isolation and can accept input signals from Eurotherm SCR pulse-output controllers. They can be either zero-crossing synchronized pulses for time-proportioned firing, or phase-angle pulses. In both cases the controller synchronizes the pulses to the load voltage.

For operation as a solid state contactor, both AC and DC optically coupled logic inputs are available: DC current and voltage, and AC voltage. The DC current input is used when one controller drives several Model 831s with separate loads; the inputs are connected in series. The 831 synchronizes the input signal to the zero-crossings of the load voltage to minimize RFI.

A 4-20mA analog current input can be selected for fast cycle firing outputs only.

**Current limit** (pulse input, phase angle firing only)

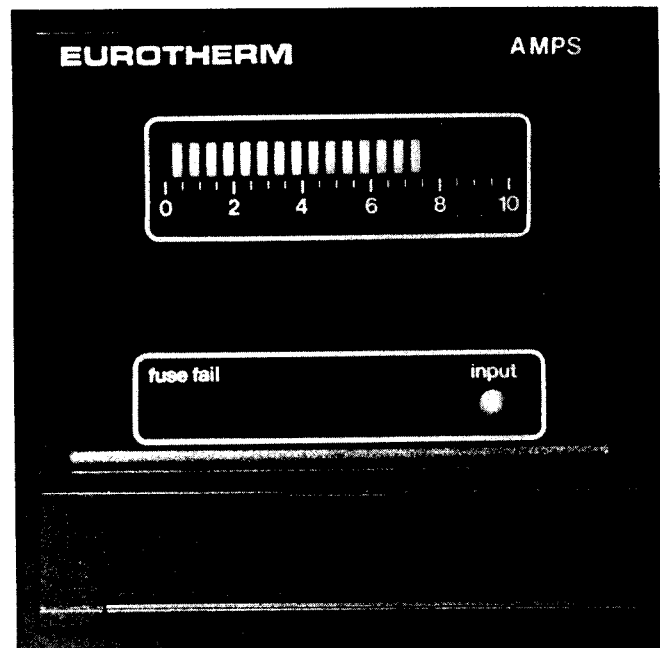
In phase-angle pulse input units, the full-wave rectified load current signal is available at the output terminals for current limiting by the controller. This signal is isolated from the load voltage.

### Front panel

An optional 20-segment red LED ammeter is available on all versions. On the phase-angle firing models it indicates the true rms load current. On all others, the mean (average) current is displayed.

The neon "fuse fail" lamp lights when the incorporated semiconductor fuse is blown. The red "input" LED indicates when the input signal is present.

Behind the front-panel access door is threshold adjustment potentiometer for the current limit feature. Also there is a "load test" pushbutton on all units with logic or analog signal inputs. When depressed this button applies 100% output current to the load.



Model 831 SCR assembly.

## Specifications

### ABSOLUTE MAXIMUM RATINGS

Voltage between input signal(s) and load  
Operating temperature range (heatsink fins vertical)

264Vac rms  
0 to 60°C (32 to 140°F)—10, 20, and 30A units  
0 to 50°C (32 to 122°F)—40A unit

### 1. OUTPUT

#### Voltage

Nominal load supply voltage

85-264Vac

#### Current

Rated load current

10Arms, 20Arms, 30Arms, or 40Arms

## 2. INPUTS

### **Analog** (fast cycle outputs only)

Current	
Range	4-20mA
Minimum required source compliance	6V

### **Logic** (ON/OFF output)

#### **DC Voltage**

Turn-on range	5-30Vdc
Required source current	2mA (@5Vdc) to 30mA (@30Vdc)
Maximum turn-off voltage	4Vdc

#### **DC Current**

Turn-on range	2-30mAdc
Required source compliance	4Vdc
Maximum turn-off current	0.3mAdc

#### **AC Voltage**

Turn-on range	85-135Vac
Input impedance	3k $\Omega$
Maximum turn-off voltage	20Vac

### **Pulse** (output from any Eurotherm pulse-output controller or driver is suitable)

Required output voltage of driver	8-10V
Pulse train duty cycle	20 $\mu$ s ON, 200 $\mu$ s OFF
Pulse repetition frequency	5kHz (approx.)

## 3. FIRING MODES

### **Fast cycle (zero-crossing)** (zero-crossing pulse or analog inputs only)

Cycle time at 50% output duty cycle	600ms
Minimum ON or OFF time	150ms

### **Phase angle** (phase-angle pulse input only)

Follows input pulses

### **ON/OFF (zero-crossing)** (logic inputs only)

Synchronized with load voltage

## 4. CURRENT LIMIT (phase-angle firing only; phase-angle pulse input)

External feedback signal	Full-wave rectified signal, 7Vpeak @ nominal load current
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## 5. PROTECTION

Overcurrent	Incorporated semiconductor fuse
Spike suppression	Varistor and dV/dt filter

## 6. GENERAL

### **Control electronics power supply**

Powered directly from load power supply

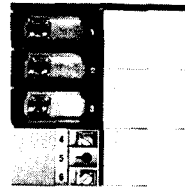
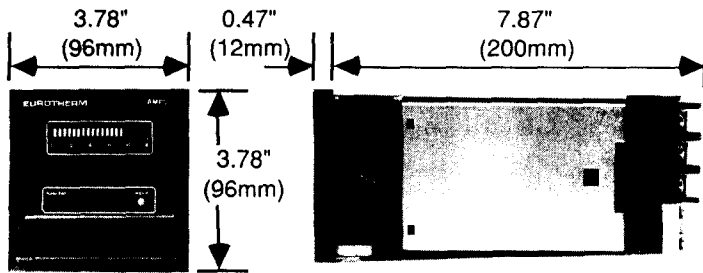
### **Front panel**

Indicators	Fuse fail neon lamp, input signal present LED,
Ammeter (optional)	20-segment LED horizontal bargraph display [RMS current for phase angle firing, average (mean) current for all others]
Adjustments	Current limit setting
Pushbutton	Load test (applies 100% limited current to load)

### **Weight**

2.4lb (5.3kg)

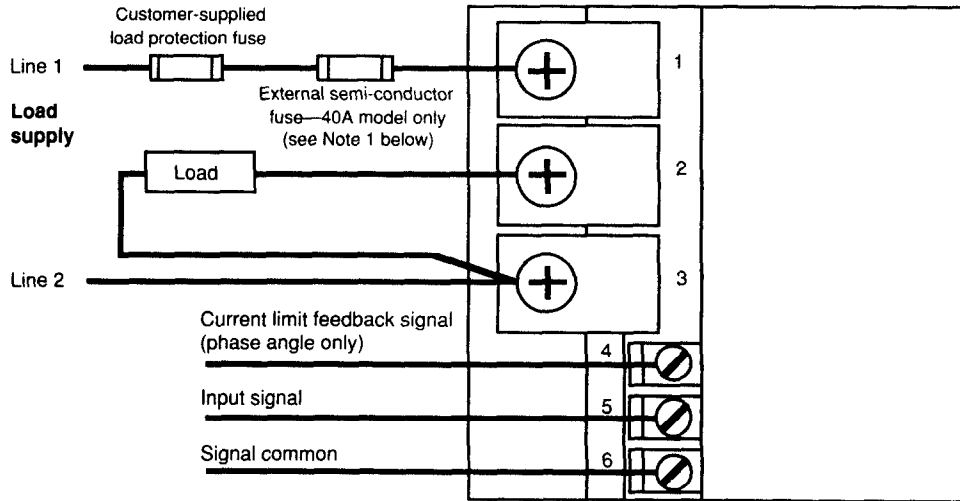
**Dimensions**



3.63x	+0.03	Max. panel thickness: 0.35" (9mm)
3.63"	-0.00	
92x	+0.8	
92mm	-0.0	

Panel Cutout

**Rear terminal connections**



**Product code**

Model	current rating	voltage rating	input	firing mode	option
831		240V			

current rating		
10A	10A rms	
20A	20A rms	
30A	30A rms	
40A	40A rms	[1]

firing mode	
FC	Fast cycle
PA	Phase angle

option	
M	Front-panel ammeter

voltage rating	
240V	120/240V ac

input		
ZCP	Zero-crossing pulse	[2]
PAP	Phase-angle pulse	[3]
LVS	DC logic voltage	[2]
LCS	DC logic current	[2, 4]
120V	AC logic voltage	[2]
4-20mA	4-20mA dc	[2]

**NOTES:**

1. External fuse and fuseholder required. Order part no. 409/40A250V.
2. Specify FC firing mode.
3. Specify PA firing mode.
4. Specify when driving more than one Model 831 from a controller logic output. Minimum of 4V<sub>dc</sub> source compliance required per 831.



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