

Technical Data  
Datasheet 4119, Rev. B

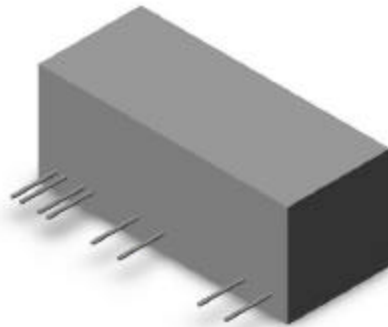
## AC/DC Solid State Power Controller Module

### Description:

The Solid State Power Controller (SSPC) Module is a microcontroller based Solid State Relay, designed to be used in Aircraft or Navy in 115VAC/150VDC applications. This module has integrated current sensing and over current / over temp protection. The module is equivalent to a DPST relay with a common single side isolated control.

### Compliant Documents & Standards:

MIL-STD-167-1 (1) 19 June 1987	Mechanical Vibrations of Shipboard Equipment
MIL-STD-217F Notice 2 28 Feb 1995	Reliability Prediction of Electronic Equipment
P4855-1A January 1989	Navy Power Supply Design and Reliability Guidelines (NAVMAT)



**Patent Pending**

### Module Features:

- Epoxy Shell Construction
- Solid State Reliability; Low Weight (60 gms) - High Power Density
- Similar footprint as a mechanical relay: 2.8"x1.15"x1.15"
- Single-in-line pins to ease pcb assembly

### Electrical Features:

- 115VAC Input: Current rating of 8A with very low drop; 180mV typ
- Current rating upto 12A with drop @ 280mV
- Advanced TRUE  $I^2t$  algorithm to compensate for different current waveforms
- 2-Pole operation: 500V DC isolation between poles
- High control circuit isolation: 1500V DC to either pole
- Cross-trip feature: Fault on one pole trips the other within 10 $\mu$ sec
- Very low control current: 14 mA @ 24V typ
- True  $I^2t$  Protection from 11A to 90A
- Instant Trip Protection (3 $\mu$ sec typ) for loads over 100A
- High Overload Capability up to 250A; Repetitive Fault handling capability
- Built-in Transient Voltage Suppressor to handle Short Circuit Turn-Off Spikes
- Over-temperature Protection: 75 °C Amb typ
- Internally generated isolated supply to drive the switch
- Opto Isolated Control Signal input and Status output
- Soft Turn-on to reduce EMC issues
- Module Reset with a Low Level Signal; Trip Reset Circuit is Trip-Free
- Built-in Hysteresis and Noise Filtering to avoid nuisance Turn-ON/OFF

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**Datasheet 4119, Rev. B****Electrical Characteristics**

<b>Control &amp; Status</b>	
Vcc	24V DC Nominal 20V to 36V DC
Control Vcc Current (from +24V)	14 mA typ 20 mA max
Alarm Out Signal	ON: High (internal pull-up to +24V); Output can source upto 5 mA OFF: Logic Low Output shall remain below 2V sink upto 5 mA
Control signal	ON: Logic Low (internal pull-up to +24V) Turns ON when input is pulled below 4V Input current @ Control pin < 0.5 mA OFF: Open Turns OFF when input is float or pulled above 12V
Reset	Thro cycling of Control signal Thro cycling of Vcc

<b>Power</b>	
Input Voltage	0 to 170V DC 0 to 120V AC 10 Hz to 440 Hz
Power Dissipation	< 2.5W @ 8A @ 70°C Amb per pole
Current (Pole #1 and Pole #2)	8A Continuous 250A for 2 µsec
Max Voltage Drop (Each Pole)	180 mV typ @ 8A, T <sub>A</sub> = 25 °C 260 mV max T <sub>A</sub> = -40 °C ~ 70 °C
Turn ON time (measured from Input Signal)	3 msec max Both Poles turn-on together
Turn OFF time (measured from Input Signal)	50 µsec max Both Poles turn-off together
Time Difference at Turn-on between Poles	20 µsec max
Time Difference at Turn-off between Poles	20 µsec max
Min Trip current (Each Pole)	8.8A DC 8.8A AC RMS
Trip time	
11A	460 msec ~ 860 msec
20A	140 msec ~ 260msec
30A	62 msec ~ 115 msec
50A	22 msec ~ 42 msec
90A	7 msec ~ 13 msec
100A and above	Less than 3 µsec
Repetitive Fault current Rating	250A
Output Rise Time (turn ON)	5 µsec typ
Output Fall Time under normal turn-off	300 nsec typ
Output Fall Time under Fault	300 nsec typ
Min Load Requirement	Nil

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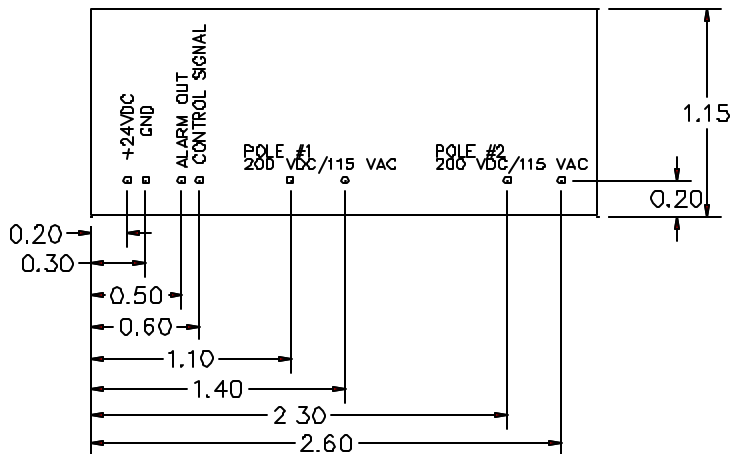
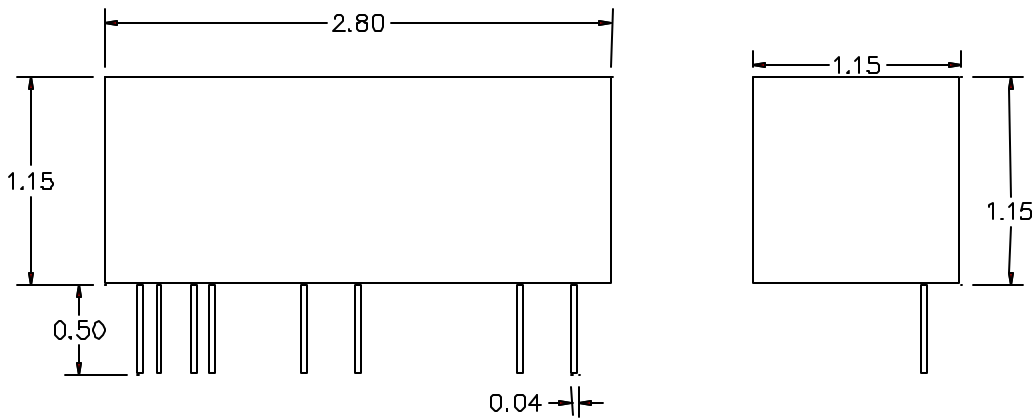
<b>Protection</b>	
Short Circuit Protection	Upto 250A
Voltage Spikes	Built-in Transient Voltage Suppressor to handle short-circuit turn-off spike
OTP (Over Temperature Protection) threshold	typ. 75 °C, min. 70 °C, max 80 °C
OTP response time	typ. 5 sec

**Physical Characteristics**

<b>Temperature</b>	
Operating Temperature	T <sub>A</sub> = -40°C to +70°C
Storage Temperature	T <sub>A</sub> = -55°C to +85°C

<b>Environmental</b>	
Altitude	Upto 30,000 ft Can be installed in an unpressurized area
Case Dimensions	2.8"L x 1.15"W x 1.15"H
Operating Orientation	Any
Weight	60 grams typ
MTBF (Estimate: MIL STD 217F)	100,000 hrs at 25°C Full load

**Mechanical Dimensions (in Inches)**



**TECHNICAL DATA**

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