52421	SOLID STATE THERMOSTAT CONTROLLER Space Application Series...	Mii HYBRID MICROELECTRONICS PRODUCTS DIVISION

Features:

- Operates With RTD Temperature Sensor
- Output Is Either "ON" Or "OFF"
- Standard And Custom Factory Settings Of:
  - Resistance Control Set Points (Temperatures),
  - Hysteresis, (Minimum/Maximum) And
  - Timing (On/Off Delays)
  - Test (Load Power On/Off) Capability
- Optional Mounting Configurations Available

Applications:

Meets The Demanding Requirements Of *Space Platform Environments*, Where Precise Temperature Control Is Required.

DESCRIPTION

Micropac's Space level Thermostat Controller 52421 operates with external RTD (Resistance Temperature Device) temperature sensor and provides a power switched (On / Off) output within a temperature window. The RTD sensor is conditioned then controls a high-side MOSFET power switch for an external HEATER.

Models are available with dual channels providing either "OR" or "AND" configurations.

Wired combinations of the "OR" configuration device, along with a single channel device, provides a tri-redundancy control system which guarantees both the power ON and power OFF states of the Heater

ABSOLUTE MAXIMUM RATINGS

Operating Temperature (T_A) ..... -55°C to +125°C
Storage Temperature (T_{STG}) ..... -65°C to +165°C
Maximum Steady State V_{IN} .....+132 Volts DC
Peak Transient Input $V_{IN(T)}$ .....+180 Volts DC for 5 Secs.
Steady State Load Current…(Source or Sink).....1.1Amps.

APPLICABLE QUALITY STANDARDS OF MICROPAC INDUSTRIES, INC.

- MIL-PRF-38534 Class H and Class K Qualified.
- MIL-PRF-19500 JAN S Qualified.
- MIL-STD-883 Test Methods and Procedures
- ISO 9001 Quality Standard

GENERAL ELECTRICAL SPECIFICATIONS

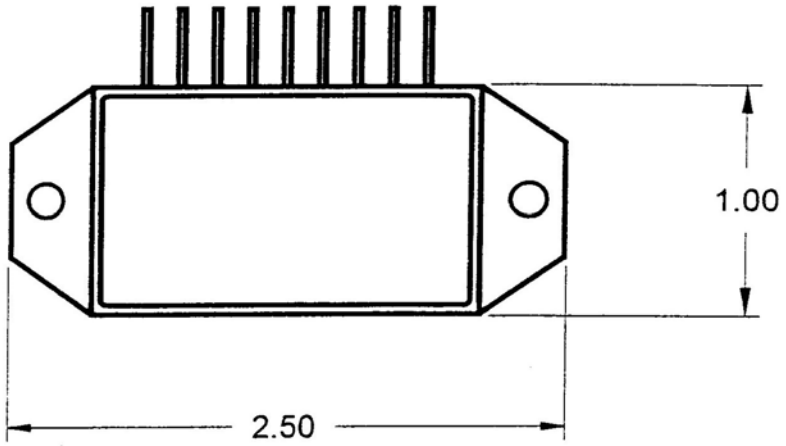
(25°C unless otherwise stated)

TEST	CONDITIONS	MIN	MAX	UNITS
Quiescent Power Supply Current	Terminal #1 = +126 VDC I_{LOAD} (Terminals 3 and 4) = 0 A RTD = Max		5.5	mA
Over voltage Current Spikes	Between Terminals #1 and #2 = +180 VDC For 5 seconds RTD = Min		50.0	mA
Heater Current	Terminals #3 - #4 = Heater Load Terminal #1 = +120 VDC	1.1		A
Output Off Current	Terminal #1 = +126 VDC Between Terminals #3 and #4 = R shunt $\leq$ 10 ohms RTD = Max T_{CASE} = 25°C T_{CASE} = 125°C or T_{CASE} = -55°C		 ±250 ±1	 uA mA
Full Load Saturation Voltage	Terminal #1 = +120 VDC Test Load, 120 ohms ±5%, 250 Watts RTD = Min $V_{SAT,}$ Measured between Terminals #4 and #2 T_{CASE} = 25°C T_{CASE} = 125°C or T_{CASE} = -55°C		 1.9 2.8	 V V
Self Test Input Impedance	Terminal #1 = +120 VDC RTD = Max As Measured between Terminals #8 and #9	5,000,000		Ω
On Time, Load Current	Terminal #1 = +120 VDC RTD switched Max to Min Measuring the 10-90 time of the rising Heater Load Current, Terminals #3 and #4	1.0		mS
Off Time, Load Current	Terminal #1 = +120 VDC RTD switched Min to Max Measuring the 90-10 time of the falling Heater Load Current, Terminals #3 and #4	2.0		mS

DUAL CHANNEL TERMINAL NUMBER DESCRIPTION

TERMINAL	REF	DESCRIPTION
1	Vin	Positive power supply voltage
2	AGND	Power return for all function
3	+H	Current source for Heater (High Side)
4	-H	Current return for Heater
5	RTD1-H	Current source for RTD #1
6	RTD1-L	Current return RTD #1
7	RTD1-S	for RTD #1 Shield to case
8	ST1	Self Test #1, "ON"
9	ST1 Return	Self test #1 Common

Package Dimensions



TYPICAL PRESET "RTD" PROFILES AVAILABLE

	P/N TBD	P/N TBD	P/N TBD	P/N TBD	P/N TBD
Ton	-80°F	-70°F	-60°F	-50°F	-42°F
Toff	-73°F	-63°F	-53°F	-43°F	-35°F

	P/N TBD	P/N TBD	P/N TBD	P/N TBD
Ton	-28°F	-10°F	0°F	23°F
Toff	-21°F	-3°F	7°F	30°F

RTD SENSORS **NOT PROVIDED** BY Micropac Industries, Inc.

The above preset thresholds and switching levels are based on the use of standard 1000 ohm RTDs. Example: IEC-751, 1000 ohms at 0°C (ice point), resistance curve with an alpha of 0.003891 and with an error not to exceed 0.75 °F.

Functional Block Diagram