

52421

SOLID STATE THERMOSTAT CONTROLLER
Space Application Series...



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

Micropac Industries cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.
Micropac reserves the right to make changes at any time in order to improve design and to supply the best product possible.

GENERAL ELECTRICAL SPECIFICATIONS

(25°C unless otherwise stated)

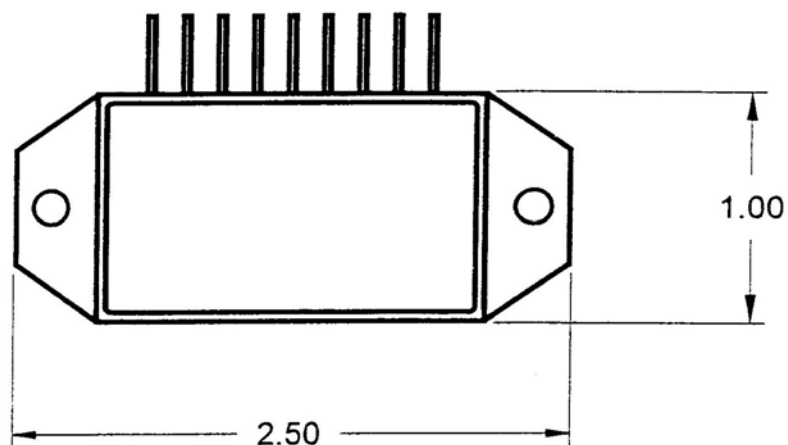
TEST	CONDITIONS	MIN	MAX	UNITS
Quiescent Power Supply Current	Terminal #1 = +126 VDC I_{LOAD} (Terminals 3 and 4) = 0 A RTD = Max		5.5	mA
Over voltage Current Spikes	Between Terminals #1 and #2 = +180 VDC For 5 seconds RTD = Min		50.0	mA
Heater Current	Terminals #3 - #4 = Heater Load Terminal #1 = +120 VDC	1.1		A
Output Off Current	Terminal #1 = +126 VDC Between Terminals #3 and #4 = R shunt \leq 10 ohms RTD = Max $T_{CASE} = 25^{\circ}C$ $T_{CASE} = 125^{\circ}C$ or $T_{CASE} = -55^{\circ}C$		± 250 ± 1	μA mA
Full Load Saturation Voltage	Terminal #1 = +120 VDC Test Load, 120 ohms $\pm 5\%$, 250 Watts RTD = Min V_{SAT} , Measured between Terminals #4 and #2 $T_{CASE} = 25^{\circ}C$ $T_{CASE} = 125^{\circ}C$ or $T_{CASE} = -55^{\circ}C$		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

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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

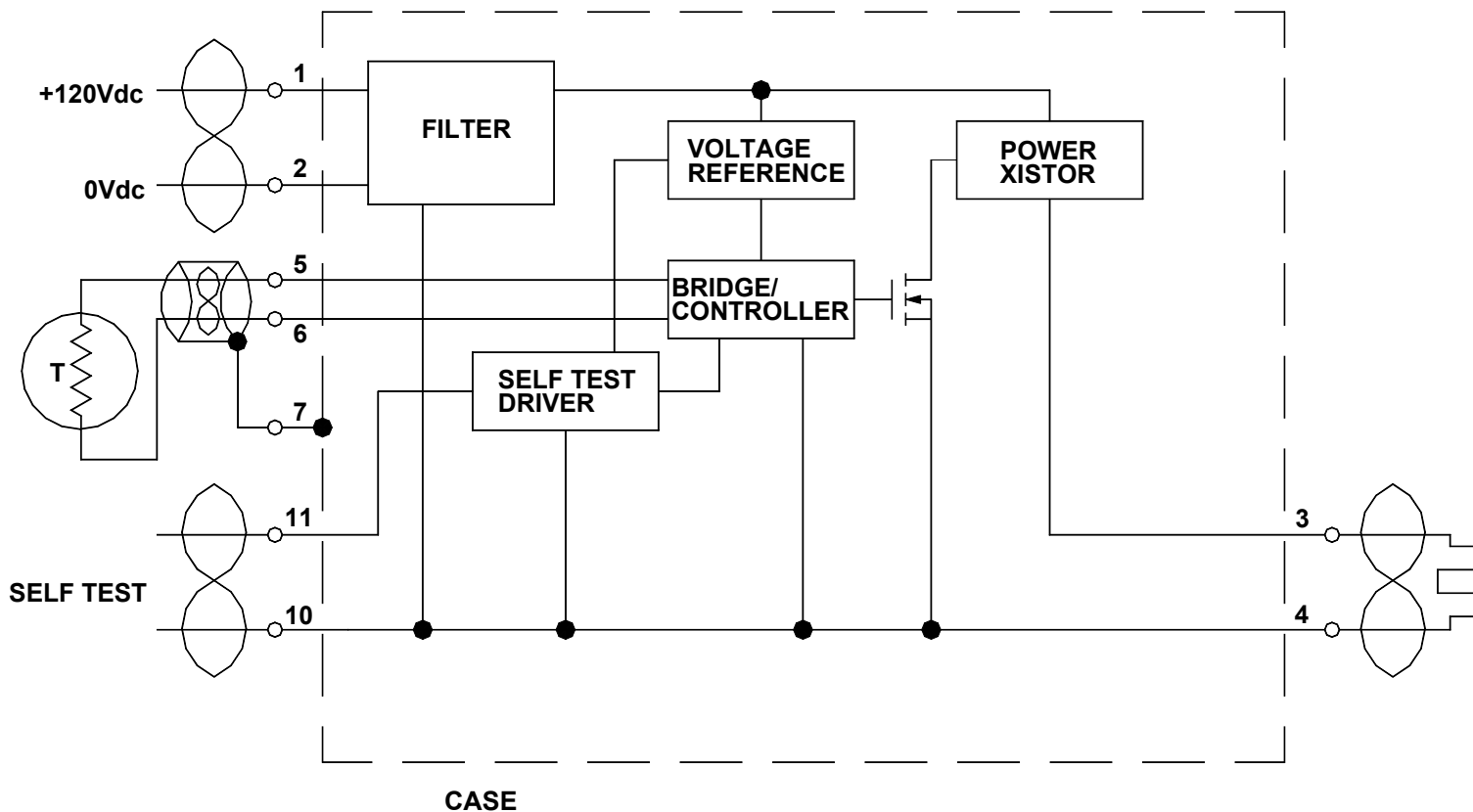
	P/N TBD	P/N TBD	P/N TBD	P/N TBD
Ton	-28°F	-10°F	0°F	23°F
Toff	-21°F	-3°F	7°F	30°F

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.

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Functional Block Diagram



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