PT-100 TEMPERATURE CONTROL RELAY

Ordering Information:

47A3D412

- When temp is below hysteresis then relay recovers.
- Relay Energize(Relay Inversion/NC to NO) to trip or de-energies(Relay Normal/NO to NC) to trip can be set depending on DIP switch setting.
- A green LED indicates presence of auxiliary supply & Red LED indicates relay status when temp is within range. Also relay contact will open after loss of auxiliary supply for making unit fail safe in Relay normal mode.

PRODUCT DESCRIPTION:

A DIN Rail mounted temperature monitoring device which monitors over-temperature with Pt-100 sensor. The measuring principle is based on a voltage drop across a Pt-100 sensor, where the variation is approximately proportional to change in resistance due to temperature as specified in DIN EN/IEC 60751(ITS 90). As soon as the temperature exceeds the threshold value the output relay change its position according to configured functionality and the front-face LED's display the current status of the device.

FEATURES:

- Wide operating Supply Range 24V to 240V AC/DC.
- Microcontroller based design with tripping accuracy upto ±1°C.
- Sensor Fault detection(open/short) indication through LED's as well as Analog outputs.
- High load switching capacity of output up to 10A.
- The 22.5 mm Product Enclosure with DIN Rail for easy mounting.
- Adjustable Set point (threshold) value 0 to 100%.
- Adjustable Hysteresis of 2 to 20 % (2 to 20°C).
- Two analog outputs of 0 to 10V DC.
- LED Indications for power ON and relay ON status display.
- Adjustable wide temperature range from -50°C to 300°C through Dip switches.
- Auto/Manual reset mode set through Dip switch.
- Relay Normal/Inversion mode set through Dip switch.

⚠ CAUTION:

- Only qualified persons are authorized to install the Pt-100 Temperature Control Relay device.
- Use of contactors is recommended if load exceeds the contact rating.
- Recommended to use of shielded wires at the input sensor terminals(Shield to
- be connected at P3) and analog output terminals(Shield to be connected at C) to minimize noise.
- While replacing the sensor, please switch OFF DUT supply.

OPERATION:

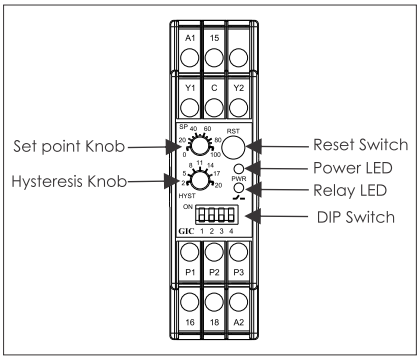
- Permanent Auxiliary supply to be applied between A1(+) & A2(-) (AC/DC). Connect 3 wire Pt-100 Sensor at P1,P2 & P3 terminals as mentioned in connection diagram. Select required temperature range from DIP switches. Adjust Hysteresis and Set point Pot as per requirement.
- Analog output is available on Y2 terminal depending upon set point knob value between 0 to 10V. Ex. 0% 0v, 100% 10V
- Analog Output is available on Y1 terminal depending on temperature measured by device in selected temp range.
- If Measured Temp < Min temp of Selected range --> Analog Output will be 0V.
- If Measured Temp > Max temp of Selected range --> Analog Output will be 10V.
- When input temperature exceeds the Set point value then device trips relay.

PRODUCT DESCRIPTION:

Catalog Nos.	47A3D412
Supply Characteristics:	
Supply Voltage	24V to 240V AC/ DC ±15%
Supply Frequency	50/60Hz ±3Hz
Power Consumption(Max)	For AC <5 VA For DC approx. 1W
Device Characteristics:	
Input Sensor	2/3 wire Pt-100 Sensor
Max Lead Resistance Compensatedin 3 wire Pt-100 Sensor	10 Ohm per Lead
Max Error in 2 wire Sensor	2.6°C per Ohm
Temperature Trip Accuracy	±1°C
Temperature Drift	Max 0.05°C/°C
Temperature Ranges	-50°C to 50°C, 0°C to 100°C,100°C to 200°C, 200°C to 300°C
Set Point	0%-20%-40%-60%-80%-100%
Hysteresis	2%-5%-8%-11%-14%-17%-20%
Pot Setting Accuracy	+/- 10%
Sensor Fault	Open and Short (Relay OFF)
Sensor Fault Detection Time	<500 ms
Sensor Fault Recovery Time	1.8 to 2 sec.
Weight (Unpacked)	140 g
Mounting	Base/ Din Rail
Output Characteristics:	
Contact Arrangement	1 C/O
Contact Ratings	10A @ 250VAC / 30VDC, 4KV Isolation between Coil & Contact.
Utilization Category	AC-15: 3A/250VAC
Response Time(Trip Delay)	min 600 ms to 1 sec
Mechanical Life	$1x10^7$ operations
Electrical Life	$1x10^5$ operations
Analog Output Details:	
Measured Point (Y1)	(0-10) VDC ± 200 mV
Set Point (Y2)	(0-10) VDC ± 100 mV
In case of sensor Fault (Open/Short) Measured Point output (Y1) is 12VDC.	
Ambient Conditions:	
Operating Temperature	-10°C to +55°C
Storage Temperature	-15°C to +60°C
Relative Humidity	5 to 85% RH(non-condensation)
Degree of Protection	IP 20 for terminals & IP 40 for Enclosure

Max. Altitude	2000 m
Pollution Degree	II
Type of Insulation	Reinforced
Emi/emc Compliance:	
Harmonic Current Emission	IEC 61000-3-2 Class A
ESD	IEC 61000-4-2 Level II
Radiated Susceptibility	IEC 61000-4-3 Level III
EFT on Supply	IEC 61000-4-4 Level IV
EFT on I/P & O/P signal	IEC 61000-4-4 Level II
Surge	IEC 61000-4-5 Level IV
Conducted Susceptibility	IEC 61000-4-6 Level III
Voltage Dips & Interruptions (AC model)	IEC 61000-4-11
Voltage Dips (DC model)	IEC 61000-4-29
Conducted Emission	CISPR 14-1 Class A
Radiated Emission	CISPR 14-1 Class A
Safety Compliance:	
Dielectric test voltage between I/P & O/P	IEC 60947-5-1 3.75kV
Impulse Voltage between I/P & O/P	IEC 60947-5-1 4kV
Single Fault Test	IEC 61010-1
Insulation Resistance	UL 508 >50K ohm
Leakage Current	UL 508 <3.5mA
Environmental Compliance:	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6 (10-55) Hz
Non-Repetative Shock	IEC 60068-2-27 30g, 15ms

FRONT DIAGRAM:

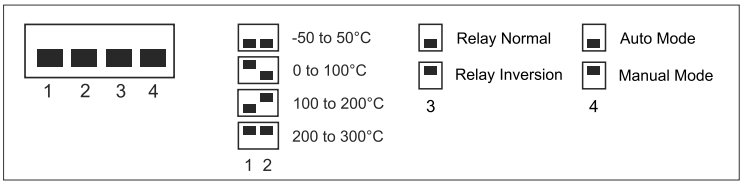


SP: Set point Pot Ranges as 0%, 20%, 40%, 60%, 80%, 100%.

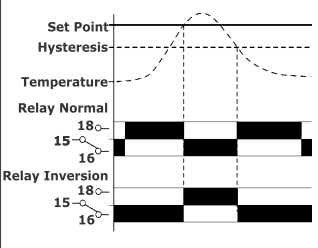
HYST: Hysteresis Pot Ranges as 2%, 5%, 8%, 11%, 14%, 17%, 20%.

RST: Reset switch to recover the relay in Manual mode.

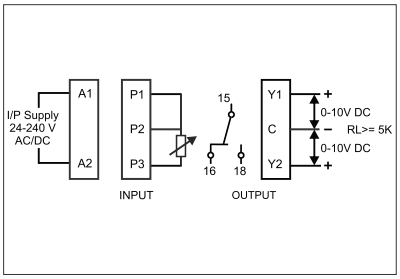
SELECTION OF TEMPERATURE RANGE & MODE



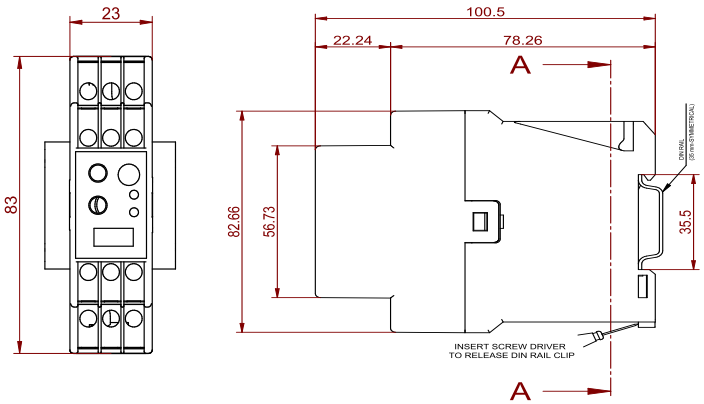
FUNCTION DIAGRAM:



CONNECTION DIAGRAM:



MECHANICAL DIMENSIONS:



TERMINAL DETAILS:

Ø3.5....4.0mm	0.6 N.m (5.3Lb.in) Terminal screw - M3
	1 x 0.5...6 mm² Solid Wire
WG	1 x 20 to 10

LED INDICATION:	
PWR LED ON, RLY LED ON	Device is Healthy and Relay in Normal mode
PWR LED ON, RLY LED OFF	Device is Healthy and Relay in Inversion mode
PWR LED ON, RLY LED BLINK	Sensor Fault
PWR LED BLINK, RLY LED ON	Sensor Temp is above Set Point, RLY is ON
PWR LED BLINK, RLY LED OFF	Sensor Temp is above Set Point, RLY is OFF

ORDERING CODE:

Catalog model number Description for PT-100 Temperature Control Relay:

Non-Display, 22.5 mm DIN-Rail Base Mounting
47A3D412: -50°C to 300°C, 24V to 240V AC/DC, ±15%, 1C/O Relay O/P, Two Analog Outputs(0 -10)VDC.

NOTE:

- Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice.
- Pt-100 sensor characteristic should be as per resistance table defined in IEC Pub 751-1995 as per ITS-90.
- For RTD sensor, use a wiring material with a small lead resistance.
- **For accurate setting of Set Point (SP) , Check Analog Output (Y2) with respect to SP using DMM. (Digital Multimeter) Ex. For 20% of SP, Analog Output(Y2) should be 2V(+/- 50mV). Vary SP pot until Analog Output (Y2) reaches to 2V(+/- 50mV).**

E-Waste Regulatory notice:
Kindly treat, recycle or dispose of this equipment in an environmentally sound manner after End of Life, as per WEEE (Waste Electrical and Electronic Equipment) regulations;
or hand it over to General Industrial ControlsPvt. Ltd, through website https://www.gicindia.com/get-in-touch/

Incase of any query, please write us at service@gicindia.com
Or visit www.gicindia.com