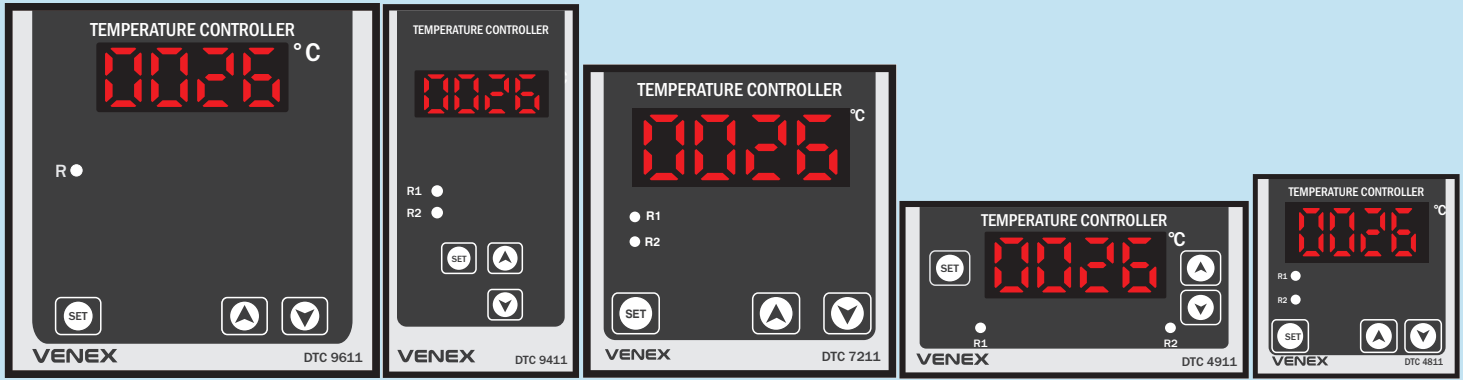


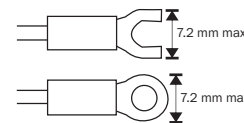
This section gives you all the information necessary to help you monitor and operate your controller including an Operator Interface overview, an explanation of the Displays, keys, LEDs, Mode access, and Operation Modes.



INPUT	Sensor Range	J & K OR RTD & RTD.1 2W/3W (Configurable) (Also available in R/S/T/N/PT 1000) J(0°C to 400°C & 0°C to (600°C), K(0°C to 1200°C), PT-100 2W/3W(0°C to 400°C, - 50.0°C to 200.0°C)
OUTPUT	Control Output Capacity SSR	RELAY + SSR 1CO, 7 Amp, 230 Volt AC 12 V DC Approximately
SPECIFICATIONS	Supply Voltage Set Point Control Mode Operating Mode Accuracy Enclosure Material Operating Temperature Relative Humidity	230v AC, ±10%, 50Hz 1 Set Point Time Proportional / ON-OFF (Configurable) HEAT OR COOL Mode (Factory Set) ±1% of FSD Polycarbonate + ABS Plastic 0°C - 55°C Upto 95% RH Non Condensing
	Note	Sensor Type R, S, T, E, B Available

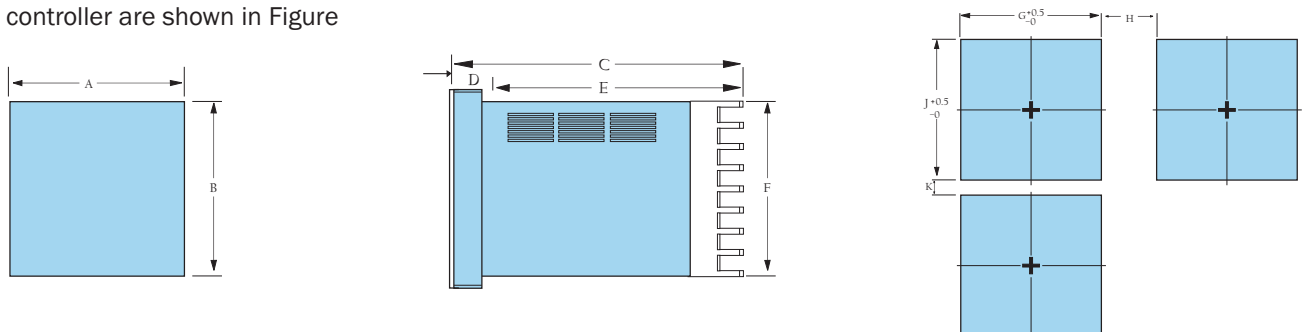
PRECAUTIONS WHEN WIRING

- Separate input leads and power lines in order to prevent external noise.
- Use specified size (M3.5, width 7.2 mm or less) crimped terminals for wiring. To connect bare wires to the terminal block, use copper braided or solid wires with a rated temperature of over 70 °C and a gauge of AWG24 to AWG14 (equal to a cross-sectional area of 0.205 to 2.081 mm²). (The stripping length is 5 to 6 mm.) Up to two wires of same size and type, or two crimped terminals can be inserted into a single terminal.
- Use crimp terminals when wiring the terminals.
- Use the suitable wiring material and crimp tools for crimp terminals.
- Tighten the terminal screws to between 0.74 and 0.90 N-m.
- Use the following types of crimp terminals for M3.5 screws.



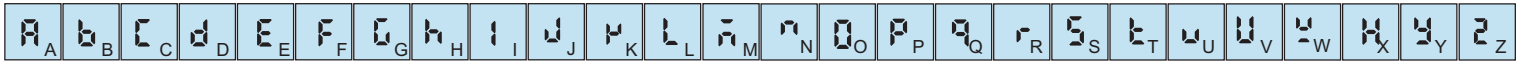
MOUNTING

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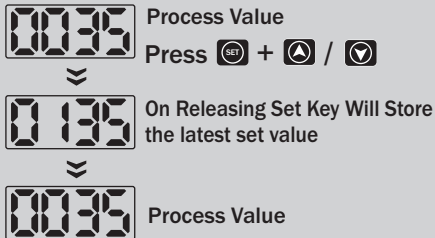
Size	A	B	C	D	E	F	G	H(Min)	J	K(Min)
(96*96)	100	100	45	3	42	90	92	25	92	25
(96*48)	51	96	73	3	70	86	44	25	88	25
(72*72)	72	72	62	3	59	65	66	25	66	25
(48*48)	50	50	100	3	97	43	44	25	44	25
(48*96)	96	51	73	3	70	86	88	25	44	25

Display Alphabet Characters

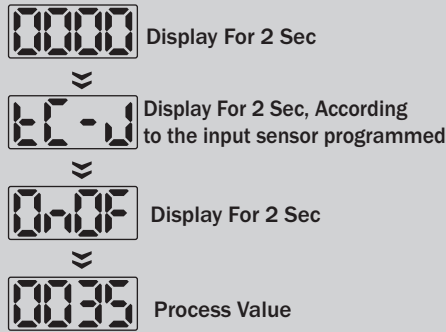


STARTING MENU

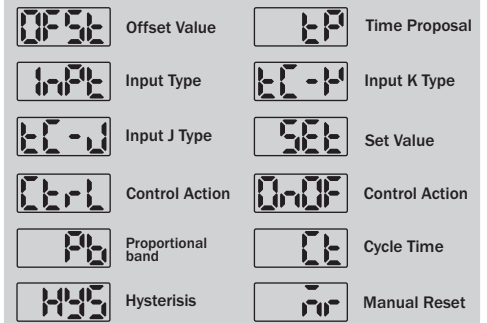
SET POINT SETTING



POWER ON



DISPLAY MESSAGES



PARAMETER SETTING

PR55

Press SET

0043

PASSWORD 30

0030

Press SET

0F5E Offset Value
Use ▲ & ▼

Press SET

0000 Offset Value
Use ▲ & ▼

Press SET

Save & Exit

PASSWORD 70

0070

Press SET

1-PE Sensor Selection
Use ▲ & ▼

Press SET

EC-U Input J/K Type
Use ▲ & ▼

Press SET

0-0F Control Action
Use ▲ & ▼

Press SET

0-0F TP/ON-OFF
Use ▲ & ▼

Press SET

Save & Exit

PASSWORD 90

0090

If TP Press SET If ON-OFF

P- Proportional band
Use ▲ & ▼

Press SET

0005 Proportional band
Use ▲ & ▼

Press SET

0E Cycle Time
Use ▲ & ▼

Press SET

0004 Cycle Time
Use ▲ & ▼

Press SET

1P Manual Reset
Use ▲ & ▼

Press SET

0000 Use ▲ & ▼

Press SET

Save & Exit

H-5 Hysteresis
Use ▲ & ▼

Press SET

0002 Hysteresis
Use ▲ & ▼

Press SET

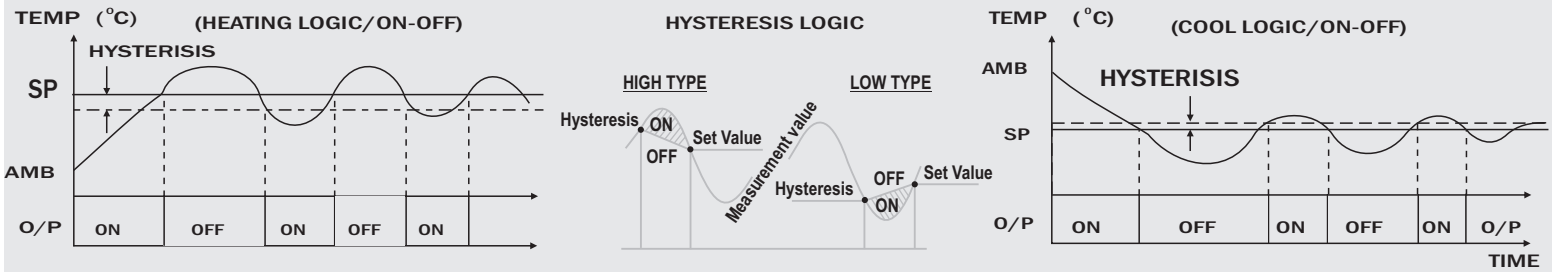
Save & Exit

Measured Signal Specifications

Input type	symbol	Measuring range	Resolution	Accuracy	Input impedance/ auxiliary current
J		0~600°C	1°C	1.0%F.S±3digits	>500kΩ
K		0~1200°C	1°C	1.0%F.S±3digits	>500kΩ

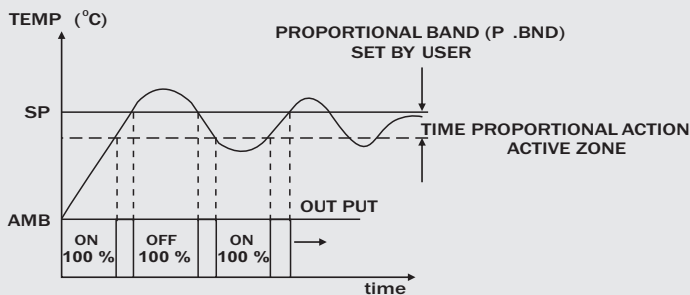
ON-OFF Algorithm

When high accuracy of a temperature control is not required, Especially for the high time constant and small delay, it is possible to use ON-OFF control with hysteresis. Disadvantage of this method to use ON-OFF control with hysteresis. Disadvantage of this method is the occurrence of oscillations, even at small hysteresis values.



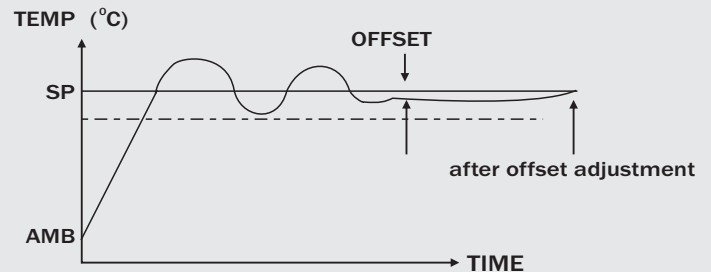
TIME PROPORTIONAL ACTION:

In this mode, ON & OFF time of output (Relay/SSR) varies proportionally in every cycle (cycle time settable by user) depending on the deviation of PV w.r.t. Set Value. This action Starts/continues only when PV enters or is within the band.



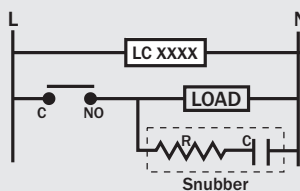
MANUAL RESET (OFFSET ADJUSTMENT):

In some application, after adopting Time proportionating action, system may stabilize at particular temperature over a period of time which can be different than the set value. This steady state (error) offset can be eliminated by setting this value equal and opposite to the existing offset.

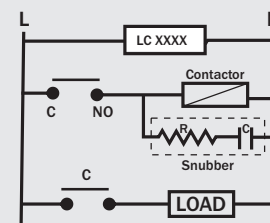


Load connection

For Load Current Less Than 0.5A



For Bigger Loads, use Interposing relay / Contactor



Warranty and Application Considerations

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Warranty and Limitations of Liability

WARRANTY

(12 Months, unless agreed otherwise by us) We undertake to replace or repair at our option any defective product that needs replacement or repair, by reason of defective workmanship or defective materials, brought to our notice within the period specified below as "Warranty Period" after delivery to the buyer, providing also that it so require, the part in respect of which a complaint is made must, before liability can be entertained under this clause, be sent at buyer's expense to our works or our office, as we may determine. Under no circumstances do we undertake liability for indirect or consequential loss or damage of any nature. This guarantee is given in lieu of and excludes every other condition or warranty whether statutory or otherwise.

LIMITATIONS OF LIABILITY

VAPL Shall Not Be Responsible For Special, Indirect, Or Consequential Damages, Loss Of Profits, Or Commercial Loss In Any Way Connected With The Products, Whether Such Claim Is Based On Contract, Warranty, Negligence, Or Strict Liability.

In no event shall the responsibility of VAPL for any act exceed the individual price of the product on which liability is asserted

In No Event Shall VAPL Be Responsible For Warranty, Repair, Or Other Claims Regarding The Products Unless VAPL's Analysis Confirms That The Products Were Properly Handled, Stored, Installed, And Maintained And Not Subject To Contamination, Abuse, Misuse, Or Inappropriate Modification Or Repair.

Application Considerations

SUITABILITY FOR USE

VAPL shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products. Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

Never Use The Products For An Application Involving Serious Risk To Life Or Property Without Ensuring That The System As A Whole Has Been Designed To Address The Risks, And That The VAPL Products Are Properly Rated And Installed For The Intended Use Within The Overall Equipment Or System.

DISCLAIMERS

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of VAPL's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the VAPL Warranty and Limitations of Liability.

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your VAPL representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

SAFETY PRECAUTIONS

Do not touch the terminals while power is being supplied. Doing so may occasionally result in minor injury due to electric shock.



Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the product. Doing so may occasionally result in electric shock, fire, or malfunction.



Do not use the product where subject to flammable or explosive gas. Otherwise, minor injury from explosion may occasionally occur.



Never disassemble, modify, or repair the product or touch any of the internal parts. Minor electric shock, fire, or malfunction may occasionally occur



If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy. The life expectancy of output relays varies considerably with the output load and switching conditions



Tighten the terminal screws to between 0.74 and 0.90 N·m. Loose screws may occasionally result in fire.



Set the parameters of the product so that they are suitable for the system being controlled. If they are not suitable, unexpected operation may occasionally result in property damage or accidents.



A malfunction in the Temperature Controller may occasionally make control operations impossible or prevent alarm outputs, resulting in property damage. To maintain safety in the event of malfunction of the Temperature Controller, take appropriate safety measures, such as installing a monitoring device on a separate line.



VBTRON AUTOMATION PVT. LTD.

132, Vishala industrial Estate,
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Kathwada, Ahmedabad.
(GUJARAT) INDIA

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product improvement, specifications are
subject to change without notice.

PRECAUTIONS FOR SAFE USE

Be sure to observe the following precautions to prevent operation failure, malfunction, or adverse effects on the performance and functions of the product. Not doing so may occasionally result in unexpected events.

- The product is designed for indoor use only. Do not use the product outdoors or in any of the following locations.
 - Places directly subject to heat radiated from heating equipment.
 - Places subject to splashing liquid or oil atmosphere.
 - Places subject to direct sunlight.
 - Places subject to dust or corrosive gas (in particular, sulfide gas and ammonia gas).
 - Places subject to intense temperature change.
 - Places subject to icing and condensation.
 - Places subject to vibration and large shocks.
- Use/store within the rated temperature and humidity ranges. Provide forced-cooling if required.
- To allow heat to escape, do not block the area around the product. Do not block the ventilation holes on the product.
- Be sure to wire properly with correct polarity of terminals.
- Use specified size (M3.5, width 7.2 mm or less) crimped terminals for wiring. To connect bare wires to the terminal block, use copper braided or solid wires with a rated temperature of over 70°C and a gauge of AWG24 to AWG14 (equal to a cross-sectional area of 0.205 to 2.081 mm²). (The stripping length is 5 to 6 mm.) Up to two wires of same size and type, or two crimped terminals can be inserted into a single terminal.
- Do not wire the terminals which are not used.
- Allow as much space as possible between the controller and devices that generate a powerful high-frequency or surge. Separate the high-voltage or large-current power lines from other lines, and avoid parallel or common wiring with the power lines when you are wiring to the terminals.
- Use this product within the rated load and power supply.
- Make sure that the rated voltage is attained within two seconds of turning ON the power using a switch or relay contact. If the voltage is applied gradually, the power may not be reset or output malfunctions may occur. into consideration when performing control.
- Make sure that the Controller has 30 minutes or more to warm up after turning ON the power before starting actual control operations to ensure the correct temperature display.
- A switch or circuit breaker should be provided close to this unit. The switch or circuit breaker should be within easy reach of the operator, and must be marked as a disconnecting means for this unit.
- Do not use paint thinner or similar chemical to clean with. Us standard grade alcohol.
- Design system (control panel, etc) considering the 2 seconds of delay that the controller's output to be set after power ON.
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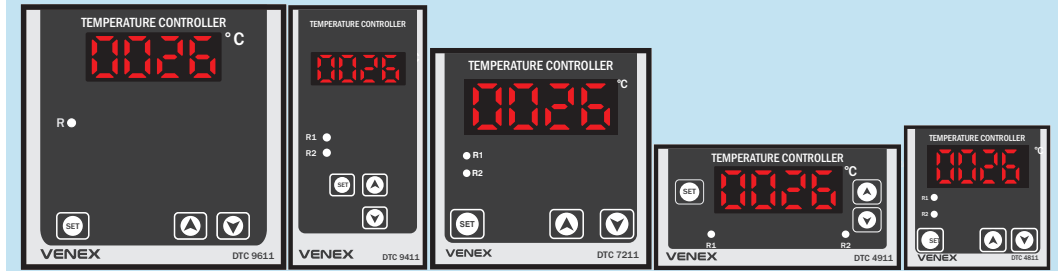
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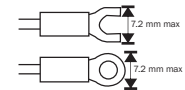
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SPECIFICATIONS	Supply Voltage Set Point Control Mode Operating Mode Accuracy Enclosure Material Operating Temperature Relative Humidity	230v AC, ±10%, 50Hz 1 Set Point Time Proportional / ON-OFF (Configurable) HEAT OR COOL Mode (Factory Set) ±1% of FSD Polycarbonate + ABS Plastic 0°C - 55°C Upto 95% RH Non Condensing

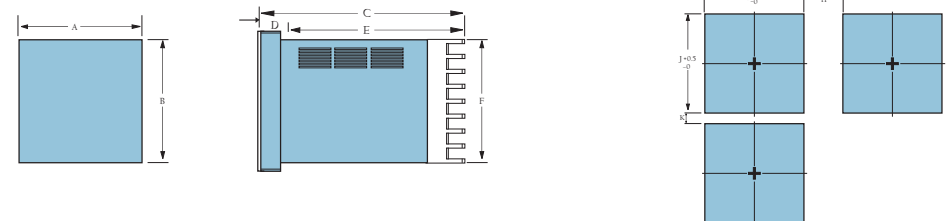
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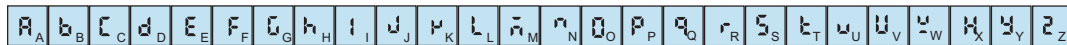
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Size	A	B	C	D	E	F	G	H(Min)	J	K(Min)
(96*96)	100	100	45	3	42	90	92	25	92	25
(96*48)	51	96	73	3	70	86	44	25	88	25
(72*72)	72	72	62	3	59	65	66	25	66	25
(48*48)	50	50	100	3	97	43	44	25	44	25
(48*96)	96	51	73	3	70	86	88	25	44	25

Display Alphabet Characters



STARTING MENU

SET POINT SETTING

0035 Process Value
Press **⏏** + **⏏** / **⏏**

0135 On Releasing Set Key Will Store the latest set value

0035 Process Value

POWER ON

0000 Display For 2 Sec

EC-U Display For 2 Sec, According to the input sensor programmed

0-0F Display For 2 Sec

0035 Process Value

DISPLAY MESSAGES

0F5E Offset Value **⏏** Time Proposal

1-PE Input Type **⏏** Input K Type

EC-U Input J Type **⏏** Set Value

0-0F Control Action **⏏** Control Action

⏏ Proportional band **⏏** Cycle Time

H95 Hysteresis **⏏** Manual Reset

PARAMETER SETTING

PASS

Press **⏏**

0043

PASSWORD 30

0030

Press **⏏**

0F5E Offset Value Use **⏏** & **⏏**

Press **⏏**

0000 Offset Value Use **⏏** & **⏏**

Press **⏏**

Save & Exit

PASSWORD 70

0070

Press **⏏**

1-PE Sensor Selection Use **⏏** & **⏏**

Press **⏏**

EC-U Input J/K Type Use **⏏** & **⏏**

Press **⏏**

0-0F Control Action Use **⏏** & **⏏**

Press **⏏**

0-0F TP/ON-OFF Use **⏏** & **⏏**

Press **⏏**

Save & Exit

PASSWORD 90

0090

Press **⏏**

If TP **⏏** Proportional band Use **⏏** & **⏏**

If ON-OFF **⏏** Hysteresis Use **⏏** & **⏏**

Press **⏏**

0005 Proportional band Use **⏏** & **⏏**

0002 Hysteresis Use **⏏** & **⏏**

Press **⏏**

06 Cycle Time Use **⏏** & **⏏**

Press **⏏**

06 Cycle Time Use **⏏** & **⏏**

Press **⏏**

0-0F Manual Reset Use **⏏** & **⏏**

Press **⏏**

0000 Use **⏏** & **⏏**

Press **⏏**

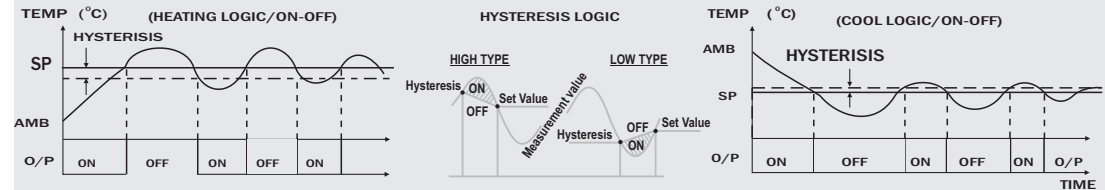
Save & Exit

Measured Signal Specifications

Input type	symbol	Measuring range	Resolution	Accuracy	Input impedance/auxiliary current
J	⏏	0~600°C	1°C	1.0%F.S±3digits	>500kΩ
K	⏏	0~1200°C	1°C	1.0%F.S±3digits	>500kΩ

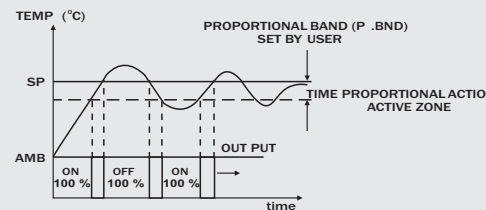
ON-OFF Algorithm

When high accuracy of a temperature control is not required, Especially for the high time constant and small delay, it is possible to use ON-OFF control with hysteresis. Disadvantage of this method to use ON-OFF control with hysteresis. Disadvantage of this method is the occurrence of oscillations, even at small hysteresis values.



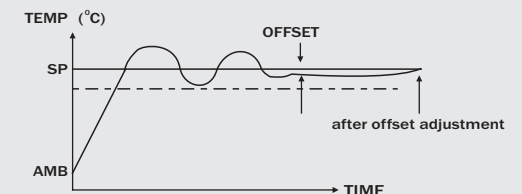
TIME PROPORTIONAL ACTION:

In this mode, ON & OFF time of output (Relay/SSR) varies proportionally in every cycle (cycle time settable by user) depending on the deviation of PV w.r.t. Set Value. This action Starts/continues only when PV enters or is within the band.



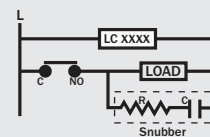
MANUAL RESET (OFFSET ADJUSTMENT):

In some application, after adopting Time proportionating action, system may stabilize at particular temperature over a period of time which can be different than the set value. This steady state (error) offset can be eliminated by setting this value equal and opposite to the existing offset.



Load connection

For Load Current Less Than 0.5A



For Bigger Loads, use

Interposing relay / Contactor

