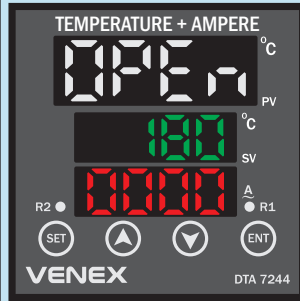
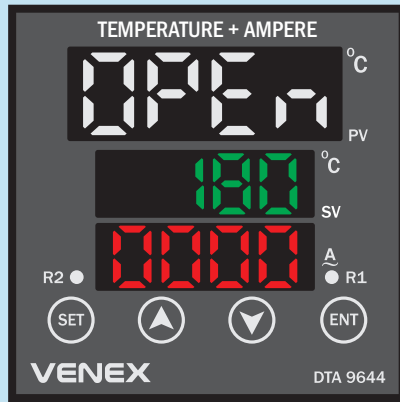


This section gives you all the information necessary to help you monitor and operate your controller including an Operator Interface overview, an explanation of the Displays, keys, LEDs, Mode access, and Operation Modes.



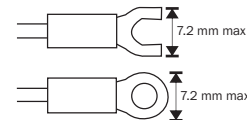
### KEY OPERATION:

Keys	Functions
	To View & Edit Parameter And to be set Value And Move To The next Step.
	To Increment Parameter Value.
	To Decrement Parameter Value.
	To Enter Parameters + Save and Exit.
	Auto Tune

<b>INPUT</b>	Sensor Range CT Input	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) 50A
<b>OUTPUT</b>	Control Output Capacity SSR	RELAY + SSR / RELAY + RELAY / RELAY + RELAY + SER (Factory Set) 1CO, 7 Amp, 230 Volt AC 12 V DC Approximately
<b>SPECIFICATIONS</b>	Supply Voltage Set Point Control Mode Operating Mode Accuracy Enclosure Material Operating Temperature Relative Humidity	230v AC, ±10%, 50Hz 1 Set Point / 2 Set Point Time Proportional / ON-OFF / PID (Configurable) HEATING/ COOLING Mode ±1% of FSD Polycarbonate + ABS Plastic 0°C - 55°C Upto 95% RH Non Condensing

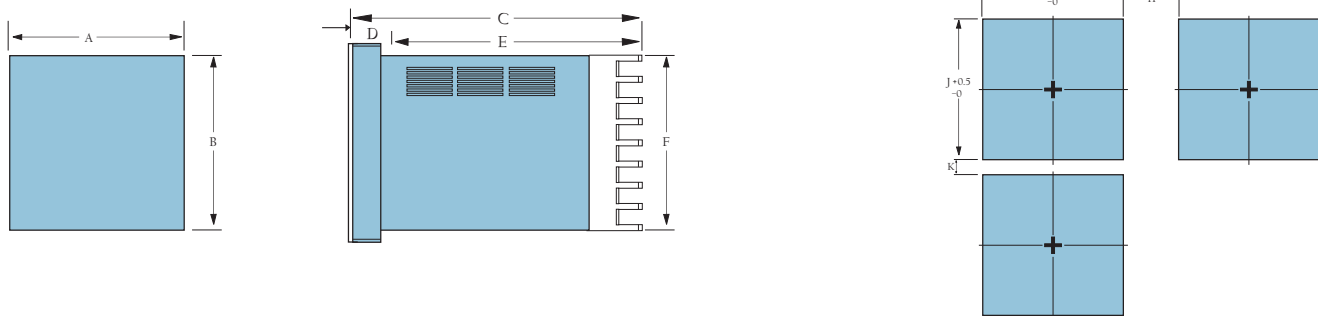
### PRECAUTIONS WHEN WIRING

- 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 mm<sup>2</sup>). (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

The controller can be mounted on either a vertical or tilted panel using the mounting bracket supplied. Adequate access space must be available at the back of the panel for installation and servicing activities. Overall dimensions and panel cutout requirements for mounting the controller are shown in Figure

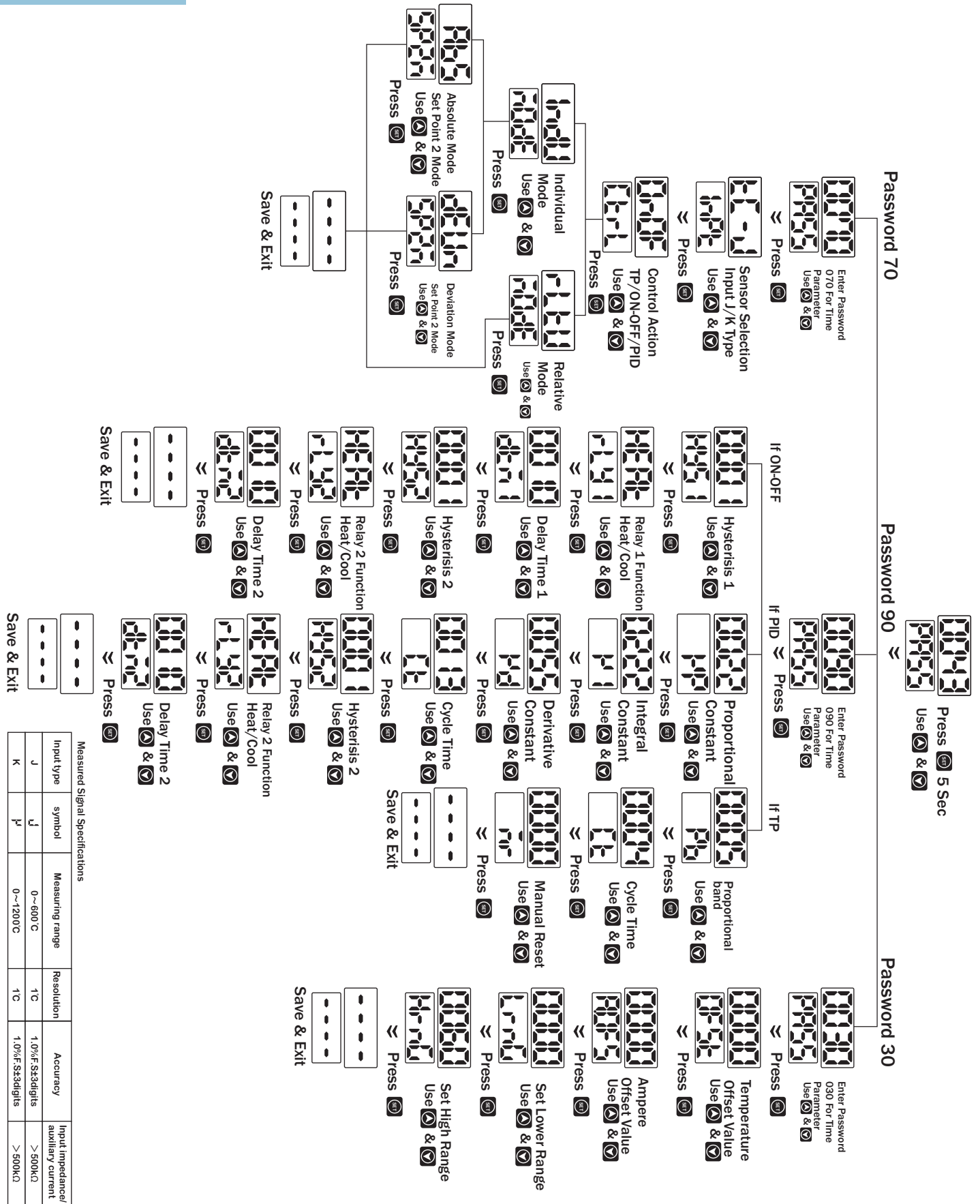


Size	A	B	C	D	E	F	G	H(Min)	J	K(Min)
(96*96)	96	96	64	3	61	90	92	25	92	25
(72*72)	72	72	62	3	59	65	66	25	66	25

## Display Alphabet Characters

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

## PARAMETER SETTING



### SET POINT 1

0035 Process Value  
00 Set Value

Press [Enter]

000 Set Point 1  
SE1 Use [Enter] & [Enter]

Press [Enter]

--- Save & Exit

### SET POINT 2

0035 Process Value  
00 Set Value

Press [Enter]

0005 Set Point 2  
SE2 Use [Enter] & [Enter]

Press [Enter]

--- Save & Exit

### POWER ON

0000 Display for 2 Sec

0000

0000

0000 Display for 2 Sec  
According to the input  
Sensor Programmed

0000

0000 Display for 2 Sec  
According to the Action  
Selection

0035 Process Value

### DISPLAY MESSAGES

0050 Offset Value	000 Time Proposal	000 Cooling mode
000 Input Type	000 Input K Type	000 Heating mode
000 Input J Type	000 Set Value	000 Relative mode
000 Control Action	000 Control Action	000 Set Point 2 Mode
000 Proportional band	000 Cycle Time	000 Mode Selection
000 Hysteresis	000 Manual Reset	000 Absolute Mode
000 Set Lower Range	000 Integral Constant	000 Derivative constant
000 Set High Range	000 Hysteresis 2	000 Deviation Mode
000 Proportional Constant	000 Individual Mode	000 Ampere Offset Value

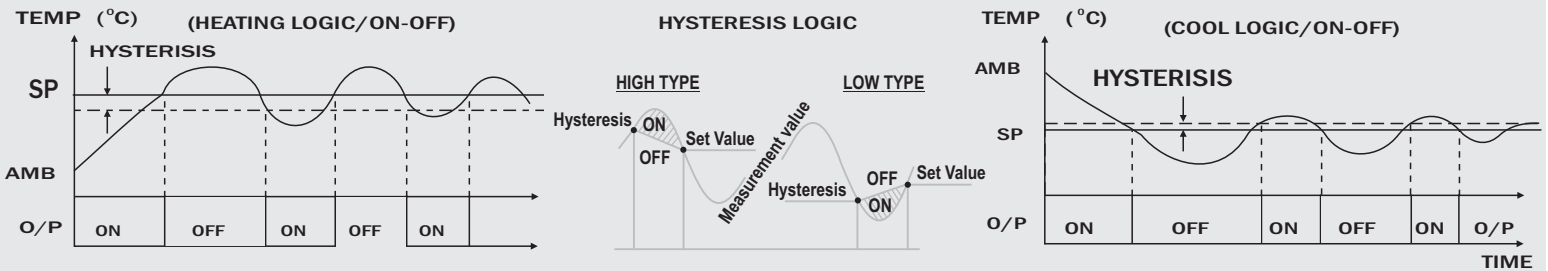
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If the control performance by using auto-tuning is still unsatisfactory, User can apply the further adjustments of P, I & D values as shown below

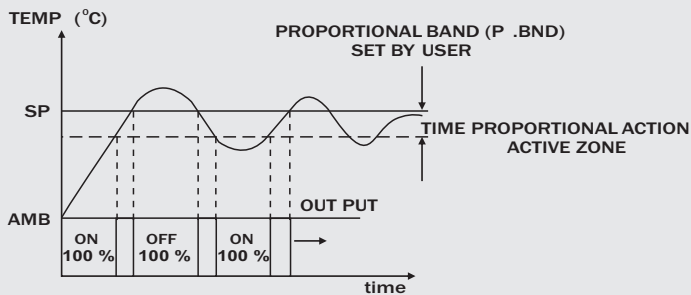
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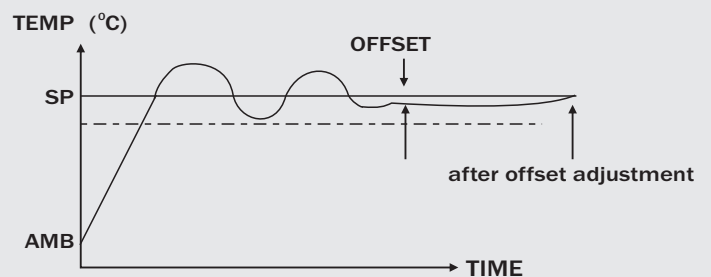
## TIME PROPORTIONAL ACTION:

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.



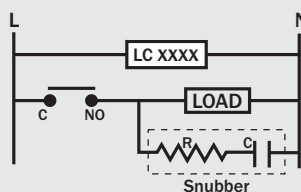
## MANUAL RESET (OFFSET ADJUSTMENT):

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.

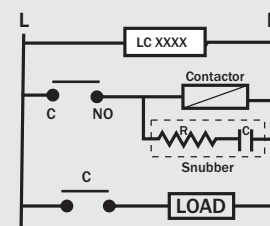


## Load connection

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 we 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.

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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

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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.

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Nr. Odhav Ring Road Circle,  
Kathwada, Ahmedabad.  
(GUJARAT) INDIA

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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 mm<sup>2</sup>). (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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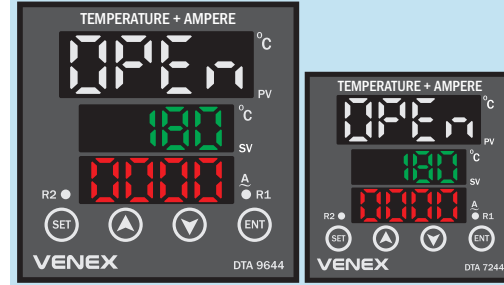
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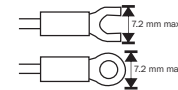
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	To Increment Parameter Value.
	To Decrement Parameter Value.
	To Enter Parameters + Save and Exit.
	Auto Tune

<b>INPUT</b>	Sensor Range CT Input	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) 50A
<b>OUTPUT</b>	Control Output Capacity SSR	RELAY + SSR / RELAY + RELAY / RELAY + RELAY + SER (Factory Set) 1CO, 7 Amp, 230 Volt AC 12 V DC Approximately
<b>SPECIFICATIONS</b>	Supply Voltage Set Point Control Mode Operating Mode Accuracy Enclosure Material Operating Temperature Relative Humidity	230v AC, ±10%, 50Hz 1 Set Point / 2 Set Point Time Proportional / ON-OFF / PID (Configurable) HEATING/ COOLING Mode ±1% of FSD Polycarbonate + ABS Plastic 0°C - 55°C Upto 95% RH Non Condensing

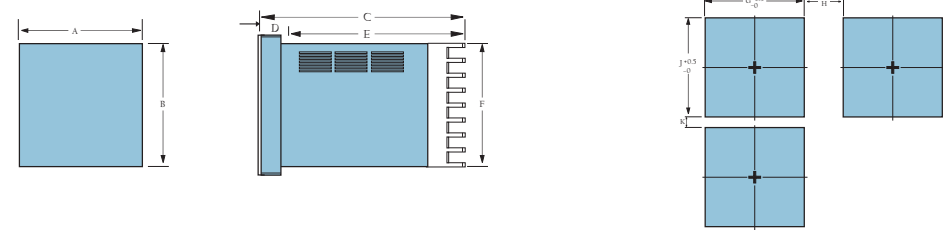
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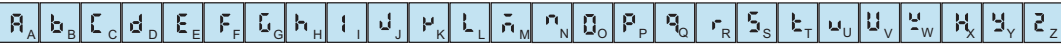
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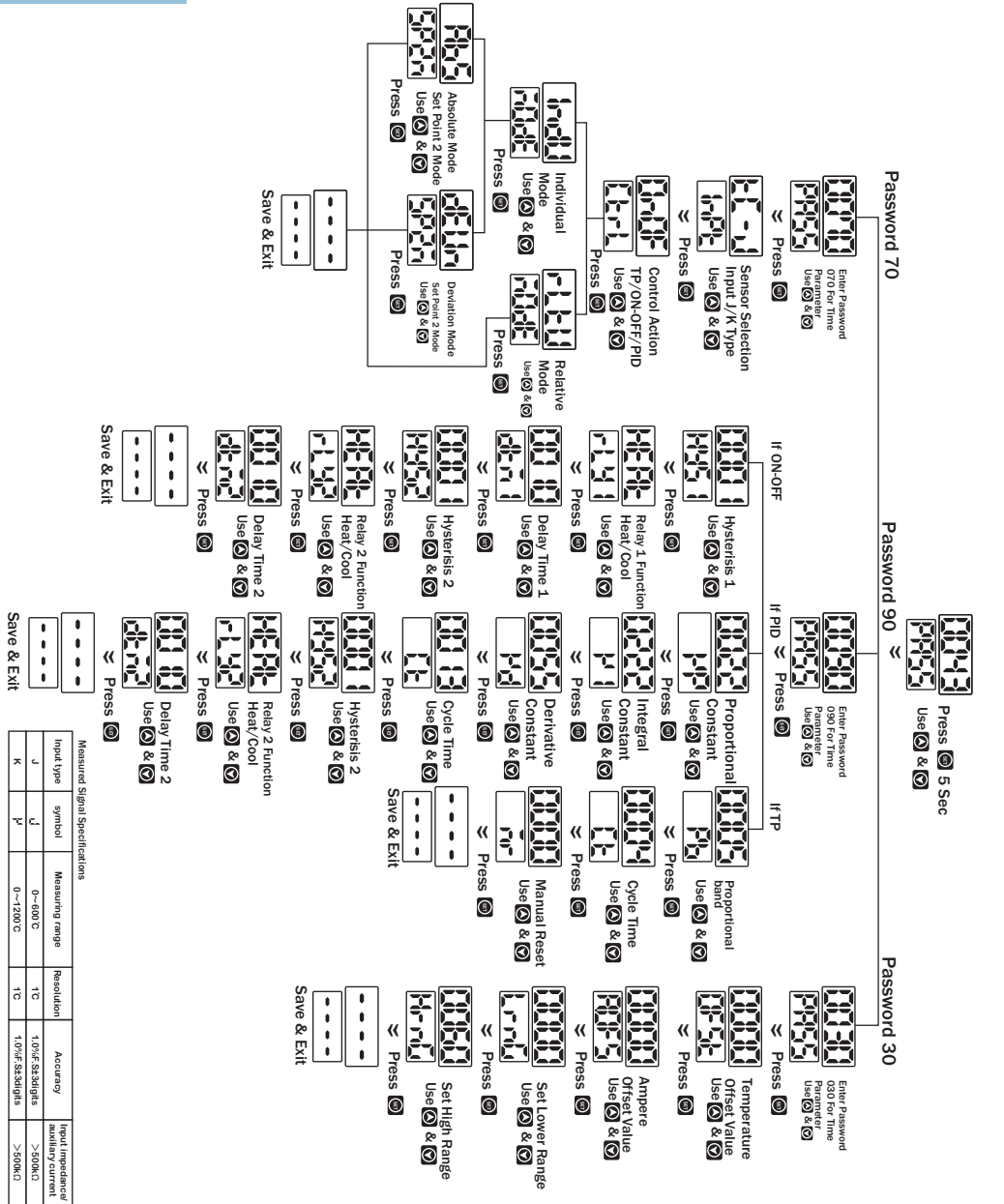
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Display Alphabet Characters



PARAMETER SETTING



Measured Signal Specifications

Input type	symbol	Measuring range	Resolution	Accuracy	Input impedance
J	J	0~500°C	1°C	1.0%/±0.3%dig	>50kΩ
K	P	0~1200°C	1°C	1.0%/±0.3%dig	>50kΩ

### SET POINT 1

Process Value Set Value

Press [Enter]

Set Point 1 Use [Up] & [Enter]

Save & Exit

### SET POINT 2

Process Value Set Value

Press [Enter]

Set Point 2 Use [Up] & [Enter]

Save & Exit

### POWER ON

Display for 2 Sec

Display for 2 Sec According to the Input Sensor Programmed

Display for 2 Sec According to the Action Selection

Process Value

### DISPLAY MESSAGES

Offset Value	Time Proposal	Cooling mode
Input Type	Input K Type	Heating mode
Input J Type	Set Value	Relative mode
Control Action	Control Action	Set Point 2 Mode
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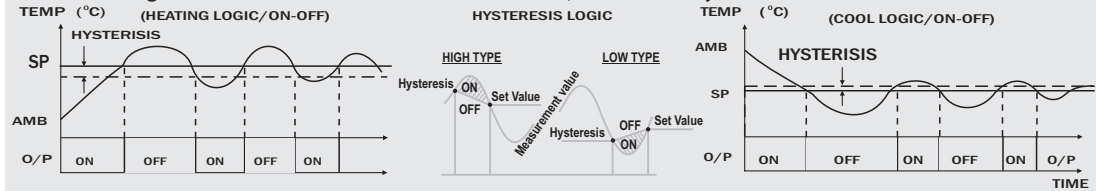
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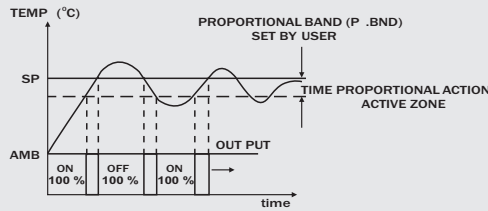
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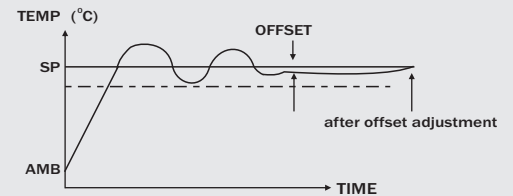
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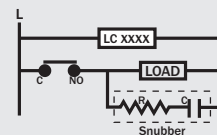
**MANUAL RESET (OFFSET ADJUSTMENT):**

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

