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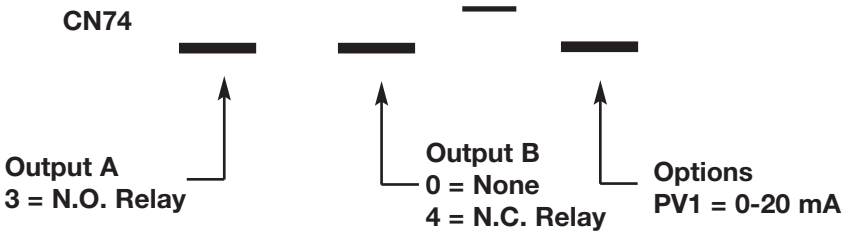
MODEL IDENTIFICATION



Options:

PV1 Analog Retransmission of Process Variable, 4 to 20 mAdc.

LV 12 - 24 Vdc/Vac 50 - 400 Hz power supply (control operates on low voltage equipment).

GETTING STARTED

1. Install the control as described on page 4.

2. Wire your control following the instructions on page 5. If you are using a two-wire transmitter as a input, see the drawing and instructions on page 6. Option wiring instructions are on page 7. Option descriptions are specific instructions start on page 16.

3. Most controls do not need many (if any) program changes to work on your process. For best results when programming changes are necessary, make all the necessary changes in the Secure Menu (page 26) before making changes to the Secondary Menu (page 19). If error messages occur, check the Diagnostic Error Messages on page 35 for help.

Take the example of a Model CN7430 that comes from the factory programmed for type J thermocouples. Suppose for this example you wish to change the input to type K and limit the set point range between 0° and 1000°C.

First, enter the Secure menu as instructed on Page 5. Press the INDEX key until the display shows **Inp** and press the DOWN ARROW until the display shows **CA**. Don't forget to press the ENTER key to retain your setting.

Next, press the INDEX key to display **Unit**. Press the DOWN ARROW until the display shows **C**. Press ENTER.

Next, press the INDEX key until **SPL** is displayed (pass the **dPt** and **InPt** selections). Press the UP ARROW until the display shows **0**. Press ENTER.

Finally, press INDEX key to display **SPH**. Press the DOWN ARROW until the display shows **1000**. Press ENTER.

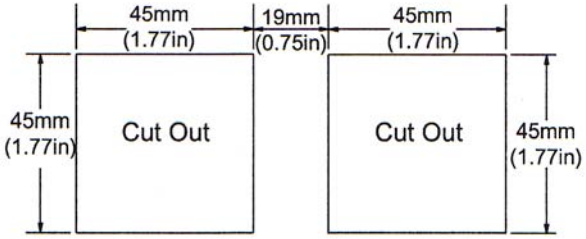
The necessary program changes are now complete. After 30 seconds the display will switch back to the temperature reading. If you want to return faster, press the UP ARROW and ENTER keys (at the same time) and then press the DOWN ARROW and INDEX keys (again at the dame time). This will 'back out' of the menu and immediately display the temperature reading.

INSTALLATION

Mount the instrument in a location that will not be subject to excessive temperature, shock, or vibration. All models are designed for mounting in an enclosed panel.

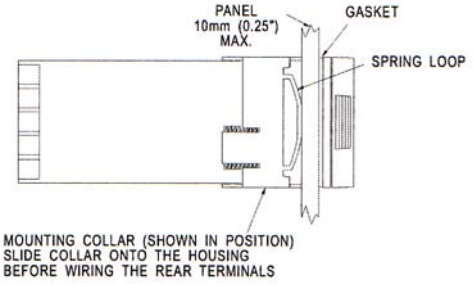
Select the position desired for the instruments on the panel. If more that one instrument is required, maintain the minimum of spacing requirements as shown on the drawing below. Closer spacing will structurally weaken the panel, and invalidate the IP66, UL type 4 rating of the panel.

Prepare the panel by cutting and deburring the required opening.



From the front of the panel, slide the housing through the cut out. The housing gasket should be against the housing flange before installing.

From the rear of the panel slid the mounting collar over the housing. Hold the housing with one hand and using the other hand, push the collar evenly against the panel until the spring loops are slightly compressed. The ratchets will hold the mounting collar and housing in place.



Caution: It is not necessary to remove the instrument chassis from the housing for installation. If the instrument chassis is removed from the housing, you must follow industry standard practice for control and protection against Electro-Static Discharge (ESD). Failure to exercise good ESD practices may cause damage to the instrument.

WIRING

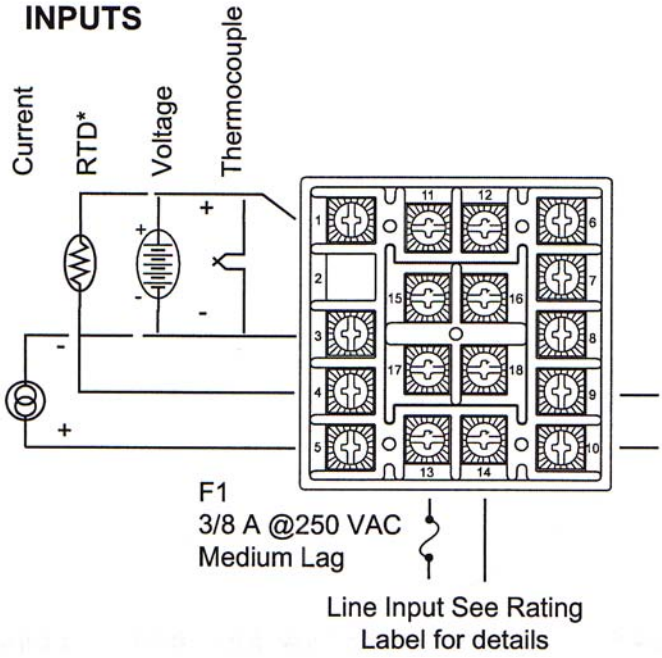
Do not run thermocouple or other class 2 wiring in the same conduit as power leads. Use only the type of thermocouple or RTD probe for which the control has been programmed. Maintain separation between wiring of sensor, auxiliary in or out, and other wiring. See the “Secure Menu” for input selection.

For thermocouple input always use extension leads of the same type designated for your thermocouple.

For supply connections use No. 16 AWG or larger wires rated for at least 75°C. Use copper conductors only. All voltage output circuits must have a common disconnect and be connected to the same pole of the disconnect.

Input wiring for thermocouple, current, and RTD; limit reset function; and output wiring for the 15VCD is rated CLASS 2.

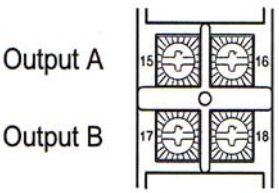
Control wiring is as shown.



Alarm Reset
An external normally open contact may be wired across terminals 9 and 10 for remote reset. Multiple units can not share common contacts. Terminals 9 and 10 share a common ground with the input.

• For 2-wire RTD use terminals 1 & 3 and place a jumper wire between terminal 3 & 4.

OUTPUTS



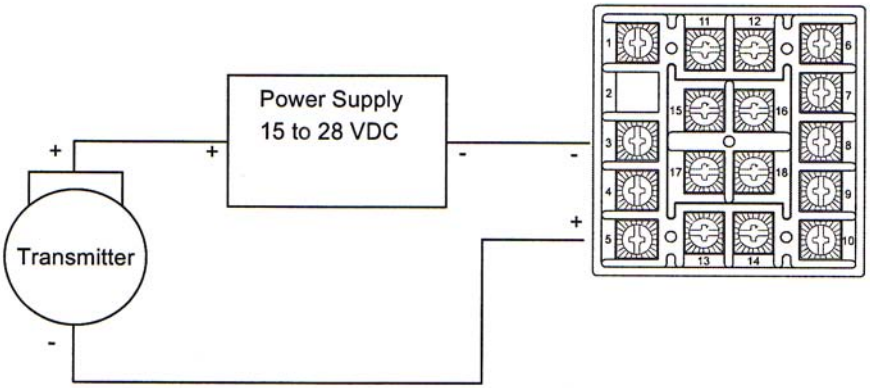
Output A Relay (N.O.) wires to terminals 15 & 16.
Output B Relay (N.C.) wires to terminal 17 & 18.

Wiring for 4 to 20mA Transmitter inputs

Wire power and outputs as shown above. Two-wire transmitters wire as shown below.

For three of four wire transmitters follow the wiring instructions provided with your transmitter.

CAUTION: DO NOT WIRE THE 24 VOLT POWER SUPPLY ACROSS THE INPUT OF THE CONTROL. DAMAGE TO THE CONTROL INPUT CIRCUITRY WILL RESULT

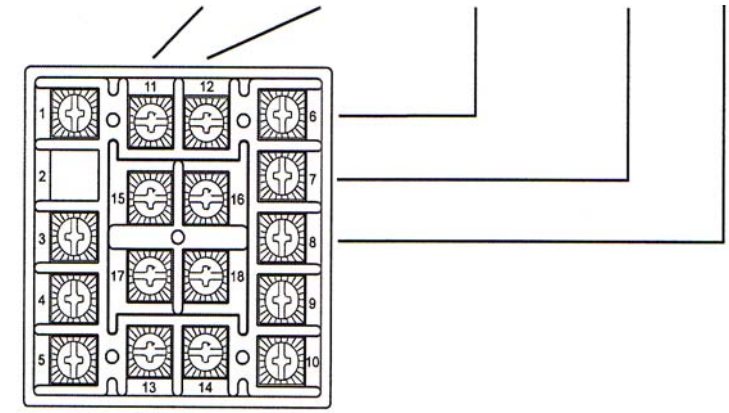


Wiring for Optional Inputs and Outputs

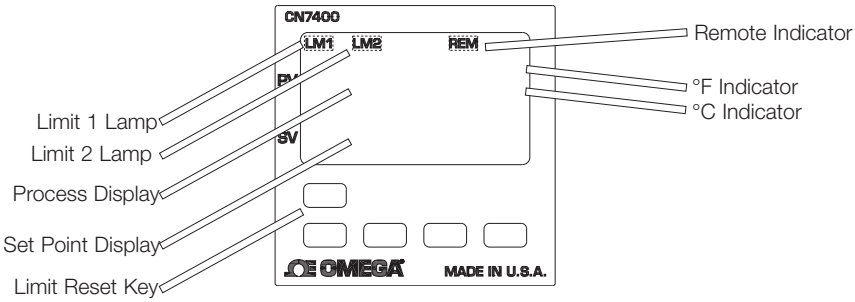
Wire power outputs as shown on page 5 and 6. Wiring for options is shown opposite. All wiring shown below is Class 2.

CAUTION: DO NOT RUN SIGNAL WIRING IN THE SAME CONDUIT OR CHASE AS THE POWER WIRING. ERRATIC OPERATION OR DAMAGE TO THE CONTROL CIRCUITRY WILL RESULT.

OPTION	11	12	6	7	8
PV1	+	-	NA	NA	NA



FRONT PANEL KEY FUNCTIONS



*Limit Reset key flashes when limit condition is present

Keys are illuminated when pressed. Key functions are as follows.

INDEX: Pressing the INDEX key advances the display to the next menu item. May also be used in conjunction with other keys as noted below.

UP ARROW: Increments a value, changes a menu item, or selects the item to ON. The maximum value obtained is 9999 regardless of decimal point placement.

DOWN ARROW: Decrement a value, changes a menu item, or selects the item to OFF. The minimum value obtained is -1999 regardless of decimal point placement.

ENTER: Pressing ENTER stores the value or the item changed. if not pressed, the previous stored value or item will be retained. The display will flash once when ENTER is pressed.

LIMIT RESET: This key resets the limit when the limit condition has been removed. Press and hold for three seconds to activate.

UP ARROW & ENTER: Pressing these keys simultaneously brings up the **second menu** starting at the **SP1d** menu item. Pressing these keys for 5 seconds will bring up the **secure menu**.

INDEX & DOWN ARROW: Pressing these keys simultaneously will allow backing up one menu item, or if at the first menu item they will cause the display to return to the **primary menu**.

INDEX & ENTER: Pressing these keys simultaneously and holding them for 5 seconds allows recovery from the various error messages. The following menu items will be reset:

S1iH: Set Point 1 limit inhibit
S2iH: Set Point 2 limit inhibit
OPEn InP: Input error message
CHEC CAL: Check calibration error

Correct the problem associated with the above conditions before using these reset keys. More than one error could be present. Caution is advised since several items are reset at one time.

While in the Primary of Secondary Menu, if no key is pressed for a period of 30 seconds, the display will return to HOME position displaying the temperature value. While in the Secure Menu, if no key is pressed for a period of 60 seconds, the display will return to the HOME position displaying the temperature value. Outputs are disabled (turned off) when the Secure Menu is active.

NOTE: To move to the Primary Menu quickly from any other menu, press the UP ARROW & ENTER keys followed by pressing the INDEX & DOWN ARROW keys.

SECURITY LEVEL SELECTION

Four levels of security are provided. The Display shows the current security level. To change security levels change the password value using the UP & DOWN ARROW keys and pressing the ENTER key. Refer to the password table (following) for the correct value to enter for the security level desired. The SECr menu item security level may be viewed or changed at any time regardless of the present security level.

To set the access level to, for example, 2, at the SECr menu item press the UP ARROW key until the upper display show the password, 1101. Press the ENTER key. THe display will blink, and return with the level value, 2, in the upper display.

The password value shown in the table cannot be altered, so retain a copy of these pages for future reference. This is the only reference made to password values in this instruction book.

Security Level Menu Status	Displayed Value When Viewed	Password Value To Enter
Primary Locked Secondary Locked Secure Locked	1	1110
Primary Unlocked Secondary Locked Secure Locked	2	1101
Primary Unlocked Secondary Unlocked Secure Locked	3	1011
Primary Unlocked Secondary Unlocked Secure Unlocked	4	111

NOTATION CONVENTIONS FOR THE MENUS

Because the number of features available in this control, information is included that may not apply to your specific control. All usable features are included in this book, but may not be used in your progress. To increase clarity the following conventions are used:

1. Certain features, Menu Items, and functions shown in this book may or may not appear on your control, depending on other Menu item selections. At various places in the Menus there are notes identifying Menu Items that "control" or "direct" other menu items. If you are looking for a particular menu item and can't find it, check the menu item that is its "control" for proper setting.

2. The "#" symbol is used in two ways. It is used inside a group of characters to indicate which set point function (SP1 or SP2) is being affected. It is also used before a group of characters of a menu item to indicate that there may be more than one selection or value for that menu.

3. Features that apply only to Options will be printed in Italics.

THE HOME DISPLAY

The home display is the normal display while the control is operating. The HOME display may be programmed to operate in one of three different ways. This is controlled by the diSP menu item in the Secure menu.

If diSP is set for Pro, the home display will show only the Process Variable (the temperature, pressure, flow, RH, etc., that is being measured) on the top display with the bottom display blank. If diSP is set for SPt, the home display will show only the Set Variable (Set Point 1) on the top display with the bottom display blank. If diSP is set for both, the HOME display will indicate the Process Variable on the top display and the Set Variable on the bottom.

If no errors of functions are active, the HOME display as programmed will be shown.

OPERATION AND PROGRAMMING OF OPTIONS

Options PV1 isolated Analog Retransmission.

The analog retransmission option allows the Process Variable or the Set Variable to be sent as an analog signal to an external device. The signal 0 (or 4) to 20 mADC. The output may be changed in the field from one to the other by the toggle switch located on the top printed circuit board.

Wire the output as shown on page 7.

Set up the analog retransmission, first determine the scale range that the analog signal will represent. The maximum scale is 9999°F, 5530°C, or 9999 counts. In the Secondary Menu set POL for the scale value that will be represented by the low end of the analog signal (0 Volts or 0 mA). Set POH for the scale value that will be represented by the high end of the analog signal (10 Volts or 20 mA).

If you require a suppressed scale or output, you may use the following equations to determine the proper settings for POL and POH.

K = (Highest desired scale reading-Lowest desired scale reading)/
(maximum desired analog signal-Minimum desired analog signal).
POH = ((Maximum possible analog output-Maximum desired analog signal) *K)
+ Highest desired analog reading.

POL = Lowest desired scale reading - ((Minimum desired analog output) *K).

Next select whether you want the retransmission signal to follow the Process Variable or the Set Variable. Usually the Process Variable is sent to recorders or other data acquisitions devices. Usually the Set Variable is sent to other controls to be used as an analog remote set point. If you want the analog retransmission signal to follow the PV, in the Secondary Menu set POSr to InP. If you want the analog retransmission signal to follow the SV, set POSr to SPt.

Operation is automatic. There are no further programming steps required.

Menu Selection

Primary Menu

Press INDEX to advance to the next menu item. Press UP ARROW or DOWN ARROW to change the value in the display. Press ENTER to retain the value.

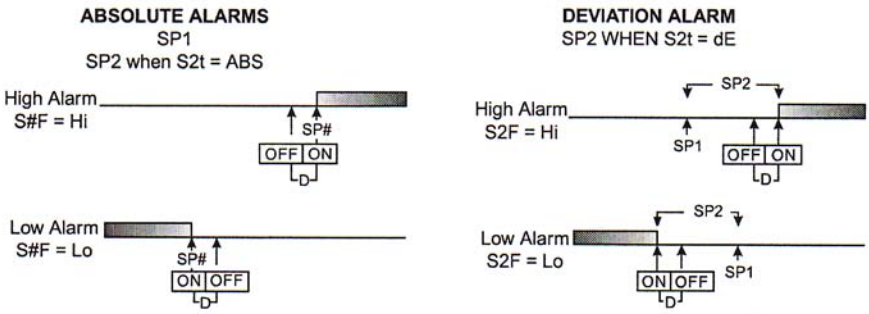
SP1 Set Point 1 Adjust, Limit Point 1

SP2 Set Point 2 Adjust (if equipped), Limit Point 2

Secondary Menu

Hold UP ARROW & ENTER. Press INDEX to advance to the next menu item. Press UP ARROW or DOWN ARROW to change the value in the display. Press ENTER to retain the value.

SP1d Set Point On-Off Differential (hysteresis). Select 1 to 9999 (when S1F=Lo) or -1 to -9999 (when S1F=Hi). Set the value for the amount of differences between the turn on point (Set Point 1 and the turn off point. See the following chart.



The following menu items apply only if your control is equipped with a second sot points (last digit of model number is not zero). If your control does not have a second set point, jump to the "SP" menu item below.

SP2d Set Point On-Off Differential (hysteresis). Select 1 to 9999 (when S2F=Lo) or -1 to -9999 (when S2F=Hi). Set the value for the amount of difference between the turn on point (Set Point 2) and the turn off point. See chart above.

PEA The Peak feature stores the highest input the control has measured since the last reset or Power On. At Power on **PEA** must be in the lower display. press the **ENTER** key to reset. **PEA** will be reset and display the present input value.

UAL The Valley input stores the lowest input the Instrument has measured since the last reset or Power On. At Power On **UAL** is reset to the present input. To manually reset the value **UAL** must be in the lowest display. Press the **Enter** key. **UAL** will be reset and display the present input value.

InPC Input correction: Select ±500°F, °C, or counts. This feature allows the input value to be changed to agree with an external reference or to compensate for sensor error. **Note**: InPC is reset to zero when the input type is changed, or when decimal position is changed.

FiLT Digital Filter: Select **OFF**, **1**to **99**. In some cases the time constant of the sensor, or noise could cause the display to jump enough to be unreadable. A setting of 2 is usually sufficient to provide enough filtering for most cases, (2 represents approximately a 1 second time constant). When the 0.1 degree resolution is selected this should be increased to 4. If this value is set to high, controlability will suffer.

POL (Option PV1 Analog Retransmission Output) Process Output Low: Select -450°F, -260°C, or -1999 counts to any value less than **POH**.

POH (Option PV1 Analog Retransmission Output) Process Output High: Select from any value greater then **POL** to +9999°F, +5530°C, or 9999 counts.

SECURE MENU

Hold UP ARROW & ENTER for 5 seconds. Press INDEX to advance to the next menu item. Press UP ARROW or DOWN ARROW to change the value in the display. Press ENTER to retain the value.

OUTPUTS ARE DISABLED (TURN OFF) WHILE CONTROL IS IN SECURE MENU.

SECr Security Code: See the Security Level Selection and the Password Table in this manual, in order to enter the correct password.

InP Input Type: Select one of the following. Refer to the input wiring section for the proper wiring.

J-IC	Type "J" Thermocouple
CA	Type "K" Thermocouple
E-	Type "E" Thermocouple
t-	Type "T" Thermocouple
L-	Type "L" Thermocouple
n-	Type "N" Thermocouple
r-13	Type "R" Thermocouple
S-10	Type "S" Thermocouple
b-	Type "B" Thermocouple
C-	Type "C" Thermocouple
P392	100 ohm Platinum (NIST 0.00392 Ω/Ω/°C)
n120	120 ohm Nickel
P385	100 ohm Platinum (DIN 0.00385 Ω/Ω/°C)
1P38	1000 ohm Platinum (DIN 0.00385 Ω/Ω/°C)
Curr	DC Current Input 0.0 to 20.0 or 4.0 to 20.0 mA
UoLT	DC Current Input 0.0 to 10.0 or 2.0 to 10.0 mA
diFF	DC Voltage Input -10 to +10 mV
****	Reserved

OSUP Zero Suppression: Selected On or OFF. Only with Current and Voltage input types.

OFF	THe Input range will start at 0 (zero) Input.
ON	The Input range will start at 4.00 mA or 2.00V.

Unit F, C or NONE

F	°F descriptor is On and temperature inputs will be displayed in actual degrees Fahrenheit.
C	°C descriptor is ON and temperature inputs will be displayed in actual degrees Celsius.
nonE	°F and °C descriptors will be off. This is only available with current and Voltage Inputs.

dPT Decimal Point Positioning: Select 0, 0.0, 0.00, 0.000, or .0000. On temperature type inputs this will only effect the Process Value, SP1, SP2, and InPC. For Current and Voltage Inputs all Menu items related to the input will be affected.

- 0 No decimal point is selected. This is available for all Input Types.
- 0.0 One decimal place is available for Type J, K, E, T, L, RTD's, Current and Voltage Inputs.
- 0.00 Two decimal places is only available for Current and Voltage inputs.
- 0.000 Three decimal places is only available for Current and Voltage inputs.
- .0000 Four decimal places is only available for Current and Voltage inputs.

diSP Home Display: Select Pro, Spt, or both.

- Pro The upper display of the upper HOME display shows the cur rent Process Variable. The lower display is blank.
- SPt The upper display of the upper HOME display shows the cur rent Set Variable. The lower display is blank.
- both The upper display of the upper HOME display shows the cur rent Process Variable. The lower display shows the current Set Variable.

InPt Input Fault Timer: Select OFF, 0.1 to 540.0 minutes. Whenever an Input is out of range (UFL or OFL displayed), shorted, or open the timer will start. When the time has elapsed, the controller outputs will be forced into their de-energized states. If OFF is Selected, the Input Fault Timer will not be recognized (time=infinite).

SEnC Sensor Rate of Change: Select OFF, 1 to 4000°F, °C, or counts per1 second period. This vault is usually set to be slightly greater than the fastest process response expected during a 1 second period, but measured for at least 2 seconds. If the process is faster than this setting, the SEnC bAd error message will appear. The outputs will then be turned off. This function can be used to detect a runaway condition, or speed up detection of an open thermocouple. Use the INDEX and ENTER keys to reset.

SCAL Scale Low: Select 100 to 9999 counts below SCAH. The total span between SCAL and SCAH must be within 11998 counts. Maximum setting range is -1999 to +9999 counts. For current and Voltage inputs, this will set the low range end. Viewable only for Thermocouple and FTD ranges.

SCAH Scale High: Select 100 to 9999 counts above SCAL. The total span between SCAL and SCAH must be within 11998 counts. Maximum setting range is -1999 to +9999 counts. For Current and Voltage inputs, this will set the high range end. Viewable only for Thermocouple and RTD ranges.

SPL Set point Low: Select from the lowest input range value to SPH value. This will set the minimum SP1 or SP2 value that can be entered. The value for SP1 or SP2 will not stop moving when this value is reached.

SPH Set point Low: Select from the lowest input range value to SPL value. This will set the minimum SP1 or SP2 value that can be entered. The value for SP1 or SP2 will not stop moving when this value is reached.

SP10 Set Point 1 Output Select: Select A or A-b.

- A Set Point 1 is routed through Output A, Set Point 2 (if equipped) is routed through Output B.
- A-b Set point 1 is routed through both Output A and Output B. Set Point 2 menu items are suppressed. This allows for both NO and NC (Order Code types 3 and 4) outputs to be driven at the same time.

S1F Set point 1 Function: Select Hi or Lo.

- Hi Output is energized above set point.
- Lo Output is energized below set point.

S1rE Set Point 1 Reset. Select OnOf or Hold.

- OnOf Control will automatically reset when process passes back through SP1d.
- HoLd manual Reset. Reset (acknowledge) by pressing the LIMIT RESET key for 3 seconds.

S1Pi Set Point 1 Power Interrupt. Select On or OFF.

- On Alarm power Interrupt is ON. Control will automatically reset on power-up if no alarm condition exists.
- OFF Alarm power Interrupt is OFF. Control will power-up in alarm condition regardless of condition of process.

S1iH Set Point 1 inhibit: Select On or Off.

- On Alarm Inhibit is On. Alarm action is suspended until the process value first enters a non-alarm condition.
- OFF Alarm Inhibit is OFF.

S1St Set Point 1 State: Select **Eng** or **dEng**.

- **Eng** Output Energized. The output device (per Order Code) will be energized at set point. (Normally Open contacts will close, Normally Closed contacts will open.)
- **dEng** Output De-energized. The output device (per Order Code) will be de-energized at set point. (Normally Open contacts will open, Normally Closed contacts will close.)

S1LP Set Point Lamp: Select **0** on or **OoFF**

- **O on** Lamp ON when Output is On (energized).
- **OoFF** Lamp OFF when Output is On (energized).

If the instrument is not equipped with Set Point 2, then proceed to the option section (next page). If the instrument has no Set Point 2 and no options, then the menu ends.

S2t Set Point 2 type: Select **Abs** or **dE**.

- **AbS** Absolute **SP2**. **SP2** is independent of **SP1**, and may be set anywhere between the limits of **SPL** and **SPH**.
- **dE** Deviation **SP2**. **SP2** is set as a deviation for **SP1**, and allows **SP2** to retain is relationship with **SP1** when **SP1** is changed (tracking **SP2**)

S2F **Set Point 2 Function: Select Hi of Lo.**

- Hi Output is energized above set point.
- Lo Output is energized below set point.

S2rE Set Point 2 Reset. Select **OnOF** or **Hold**.

- **OnOF** Control will automatically reset when process passes back through **SP2d**.
- **HoLd** Manual. Reset. Reset(acknowledge) by pressing the **LIMIT RESET** key for 3 seconds.

S2Pi Set point 2 power Interrupt.Select **On** or **OFF**.

- **On** Alarm Power Interrupt is **On**. Control will automatically reset on Power-up if no alarm condition exists.
- **OFF** Alarm Power Interrupt is **OFF**. Control will power-up in alarm condition regardless of condition of process.

S2iH Set Point 2 Inhibit: Select **On** or **OFF**.

- **On** Alarm inhibit is **On**. Alarm action is suspended until the process value first enters a non-alarm condition.
- **OFF** Alarm Inhibit is **OFF**

S2St Set Point 2 State; Select **Eng** or **dEng**.

- **Eng** Output Energized. The output device (per Order Code) will be energized at set point. (Normally Open contacts will close, Normally closed contacts will open.)
- **dEng** Output De-energized. The output device (per Order Code) will be de-energized at set point. (Normally Open contacts will open, Normally Closed contacts will close.)

S2LP Set point 2 Lamp: Select **O on** or **OoFF**.

- **O on** Lamp ON when Output is ON (energized).
- **OoFF** Lamp OFF when Output is ON (energized).

DIAGNOSTIC ERROR MESSAGES

DISPLAY	MEANING	SP OUTPUTS	ACTION REQUIRED
No display lighted	Display is blank. instrument is not getting power, or the supply voltage is too low.	Set Point outputs inactive Alarm inactive	Check that the power supply is on, or that the external fuses are good.
FAIL tESt	Fail test appears upon power up if the internal diagnostics detect a fail. This message may occur during operation if failure is detected. Displays flash.	Set points outputs inactive Alarm inactive	The display alternate between FAIL tESt and one of the following messages: FaCtdFLt: Memory may be corrupted. Press the ENTER key and the DOWN ARROW key to start the factory default presure. Recheck controller programming. rEt FACt: Unrecoverable error, return to factory for service.
CHEC SP1, CHEC SP2	This message will appear upon power up if SP1, SP2, or #SP1 is set outside of the SPL or SPH values.	Set Point outputs inactive Alarm Active	Correct the SP1, etc. or adjust the SPL or SPH values by programming new values.
CHEC SPL or CHEC SPH	This message appears at power up if SPL or SPH values are programmed outside the input range ends.	Set points outputs inactive Alarm inactive	Correct the SPL or SPH values by programming new values.
CHEC LorE	This message appears if the Serial Communications has timed out.	Set points outputs inactive Alarm inactive	Restore the communications line and switch the LorE to LOC.
ArEA (Alternates with PV	This message appears when the ambient temperature of the control approaches unacceptable ambiants.	Set points outputs active Alarm inactive	Correct the ambient temperature conditions. Ventilate the area of cabinet or check for clogged filters. If RJC broken, return to factory for service.
ArEA	This message appears if the ambient temperature of the control is out of range or RJC sensor is broken.	Set point outputs active Alarms active	Correct the ambient temperature conditions. Ventilate the area of the cabinet or check for clogged filters. If RJC broken, return to factory for service

DIAGNOSTIC ERROR MESSAGES

DISPLAY	MEANING	SP OUTPUTS	ACTION REQUIRED
UFL or OFL	Underflow or Overflow: Process value has exceeded input range ends	Set Point Outputs active Alarm active	Input signals may normally go above or below range ends. If not, check input and correct.
bAd InP OPEn InP	UFL or OFL will sequence to display on of these messages if the InPT is set for a time value. For RTD inputs RTD is open or shorted. For THERMOCOUPLE Inputs thermocouple is open.	Set points outputs inactive Alarm active	To reset use the INDEX & ENTER keys. When InPt (input fault timer) has been set for a time, the outputs will be turned off after the set time. Setting the time to OFF causes the outputs to remain active, however UFL or OFL will still be displayed. Correct or replace sensor. To reset use the INDEX & ENTER keys.
SEnC bAd	Sensor Rate of Change exceeded the programmed limits set for SEnC	Set Point outputs inactive Alarm Active	Check for the cause of the error. The value setting may be to slow for the process, or the sensor is intermittent. Correct the problem and press INDEX and ENTER to reset.
CHEC CAL	Check calibration appears as the alternating message if the instrument calibration nears tolerance edges	Set points outputs active Alarm active	Remove the instrument for service and / or recalibration. To reset use the INDEX & ENTER keys.
	Check calibration appears as a flashing message if the instrument calibration exceeds specifications.	Set points outputs inactive Alarm active	Remove the instrument for service and / or recalibration. To reset use the INDEX & ENTER keys.

Specifications

Selectable Inputs: Thermocouple, RTD, DC Voltage, or Current selectable
Input Impedance:
Thermocouple = 3 megohms minimum. RTD current = 200pA
Current = 10 ohms. Voltage = 5000 ohms.
Sensor Break Protection: De-energized output(s) to protect system after customer set time. (See InPt in Secondary Menu.)
Set Point Range: Selectable (See Range Chart Page 26).
Display: Two 4 digit, 7 segment 0.3" high LED's.
Output Action: Fully programmable to allow output(s) to energize or de-energize above or below set point(s).
On-Off Differential: Adjustable 1°F, 1°C, 1 count to full scale in 1°F, 1°C, or 1 count steps.
Accuracy: ±0.25% of span, ±1 least significant digit.
Resolution: 1 degree or 0.1 degree, selectable.
Line Voltage Stability: ±0.05% over the supply voltage range.
Temperature Stability: 4µV/°C (2.3 µV/°F) typical, 8 µV/°C (4.5 µV°F) maximum (100 ppm/°C typical \, 200 ppm/°C maximum).
Common Mode Rejection: 140 db Minimum at 60 Hz
Normal Mode Rejection: 65 db typical, 60 db at 60 Hz
Isolation:
Relay outputs: 1500 Vac to all other inputs and outputs.
Process output PV1: 500 VAC to all other inputs and outputs.
Supply Voltage: 100 to 240 Vac, nominal., +10-15%, 50to 400 Hz. single phase; 132 to 240 VDC, nominal., +10-20%
Option-LV: 12 to 24 VDC/VAC, 50 to 400 Hz ±20%.
Power Consumption: 5VA maximum.
Operating temperature: -10 to +55°C (+14 to 131°F).
Storage Temperature: -40 to +80°C (-40 to 176°F).
Humidity Conditions: 0 to 90% up to 40°C non condensing 10 to 50% at 55°C non-condensing.
Memory backup: Nonvolatile memory. No batteries required.
Output Ratings:
Relay: SPST, 3 A@ 240 Vac resistive; 1.5A @240 Vac inductive; Pilot duty rating 240 VA, 2 A @120 Vac or 1 A 240 Vac.

Panel Cutout: 45 mm X 45mm (1.775”X1.775”).
Depth Behind mounting Surfaces: 121.6 mm (4.79”), maximum
Weight: 220 g (8 oz.)
Agency Approvals: FM
Front Panel Rating: IP66, (NEMA4X)

Input Ranges (Field Selected)

Thermocouple Types

Input Type	Type J or L	Type K*	Type T*	Type E*
Range 1°F 1°C	- 100 to +1600 -73 to +871	-200 to +2500 -129 to +1371	-350 to +750 -212 to +398	-100 to +1800 -73 to +982
Input Type	Type R	Type S	Type B	Type C
Range 1°F 1°C	0 to 3200 -17 to +1760	0 to 3200 -17 to +1760	+75 to 3308 -24 to +1820	0 to 4208 -17 to +2320
Input Type	Type N*	*These Input Types can be set for 0.1” display. If temperature goes above 999.9° or less than -199.9° the display will return to whole degree resolution.		
Range 1°F 1°C	-100 to +2372 -73 to +1300			

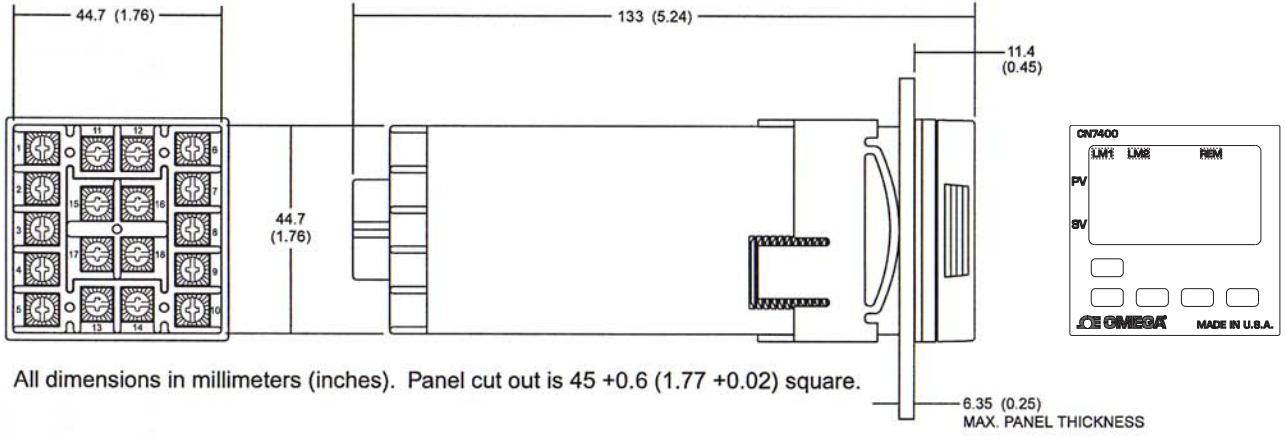
RTD Types

Input Type	100 Ohm Platinum 0.00385 DIN Curve*	100 Ohm Platinum 0.00392 Nist Curve*	100 Ohm Platinum 0.00628 US Curve*	100 Ohm Platinum 0.00385 Nist Curve*
Range 1°F 1°C	-328 to +1607 -200 to +875	-328 to +1607 -200 to +875	-112 to +608 -80 to +320	-328 to +1607 -200 to +875

Process Input Types

The 0 to 20 mAdc, 4 to 20 mAdc, 0 to Vdc, 2 to 10 Vcd, and -10 to +10 mVdc inputs are fully scalable from a Minimum of 100 counts span placed anywhere within the range of -1999 to +9999. Decimal point position is adjustable from the zero place (9999), tenths (999.9), hundreths (99.99), thousandths (9.999), or ten thousandths (.9999).

DIMENSIONS



All dimensions in millimeters (inches). Panel cut out is 45 +0.6 (1.77 +0.02) square.

6.35 (0.25)
MAX. PANEL THICKNESS

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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