DEF-04N

MINI TEMPERATURE CONTROLLER (THERMOCOUPLE & PT100 INPUT)

PRIMUS

รอเบิกสินค้าถ่ายรูปใหม่

- Input : - Thermocouple Type K, J
  - PT100 (RTD)
- Output : 1 Contact
- Alarm : 1 Contact

Specification

Power Supply		220 VAC ±15% 50/60 Hz
		10 to 28 VAC/VDC
Power Consumption		3VA
Display		7 Segment 4 Digit , Size 0.39 Inch, 1 Row
Input	Input Type	TC Type K, J and PT 100
	Range	Please see detail in Table 1..
	Accuracy	± 0.2% of Full Scale @ Room Temp. (25 °C)
	Sampling Time	250 mSec
Output	Relay Output	1 Output 3A/250VAC
	Control Mode	Heating / Cooling
	Hysteresis	0 to 100 °C (ON/OFF)
	Relay Alarm	1 Alarm 3A/250VAC
Ambient Operation	Temperature	-10 °C to 60 °C
	Humidity	85 % RH Non-Condensing
Ambient Storage	Temperature	-20 °C to 80 °C
	Humidity	85 % RH Non-Condensing
Protection Degree	Front Protection Rating	IP52
	Case Protection Rating	IP30
Installation		Panel Mounting
Material		ABS-V0
Size (mm.)		35.25 x 79.5 x 71
Weight		230 g.

Description

- Mini Temperature Controller: DEF-04N is a digital temperature controller and indicator with 4-digit 7-segment LED display.
- Compact design, suitable for panels with limited space.
- Accepts input from thermocouple types K, J, and RTD PT100.
- Main relay (1 set) configurable for heating control, cooling control, or alarm function.
- 1 Alarm Relay (Option model).
- Hysteresis setting available in either unit or time mode.
- Supports 1-position decimal point display.
- Hysteresis time adjustable from 0 to 99.59 minutes.

Operation

DEF-04N is a mini temperature controller that can select the function to be ON/OFF control or Alarm function in the main relay.

ON/OFF Control can be selected in 2 types: Heating and Cooling.

- Heating: Output will turn ON when the measured value (PV) is lower than the setpoint (SV).

- Cooling: Output will turn ON when the measured value (PV) is higher than the setpoint (SV).

It is also able to select Option-B. It has an Alarm Relay, adding 1 more relay to the Main Relay (Main Relay = 1, Alarm Relay = 1).

The operation of ON/OFF Control

ON/OFF Control of DEF-04N can set the control mode pattern in 2 types:

1.Hysteresis Mode: Set the value between ON and OFF in units of °C or °F. The user can set from 0–100 for the operation in this function.

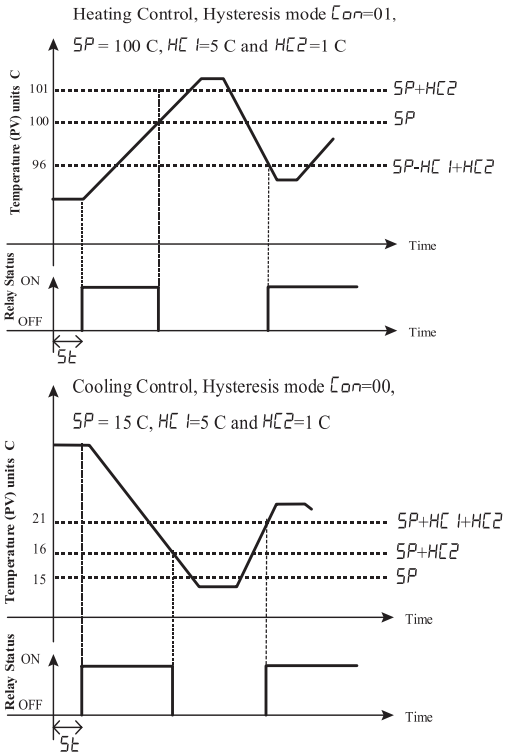
2.Time Mode: Use delay Time ON (DT1) and Time OFF (DT2) at setpoint value (SP) in minute (min) unit. It can be set from 00:00 to 99:59 minutes. The two digits before the decimal point are the minute value (00 to 99), and the two digits after the decimal point are the seconds (00 to 59). The function operation can be seen in picture 2.

And the controlling can set Start Delay Time in minutes to delay the operation of the Main Relay and Alarm Relay when turning on the device for the first time. This prevents the situation of the load switching ON-OFF too quickly, such as sudden restart of the machine or voltage drop, which may cause fast ON/OFF operation and lead to damage of the compressor or heater.

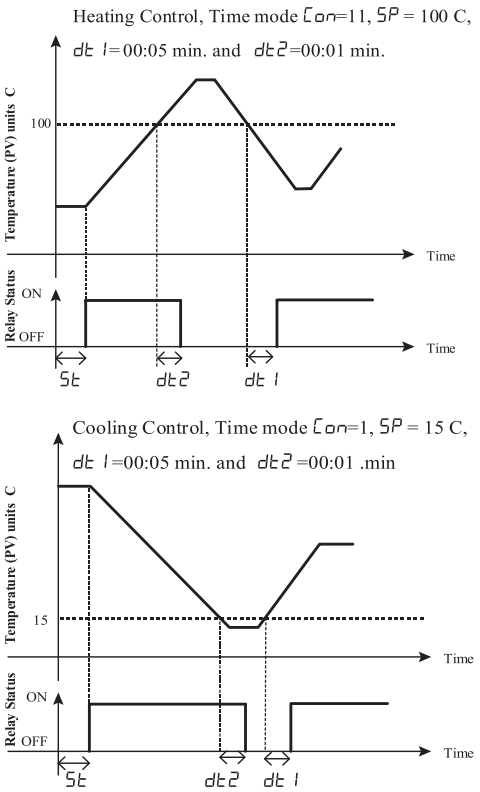
Start Delay Time can be set from 00:01 to 99:59 minutes. The two digits before the decimal point are minutes (00 to 99), and the two digits after the decimal point are seconds (00 to 59).

Application

- Install inside control cabinet.
- Food, chemical and other process factory.



Pic 1 Picture 1 shows the operature ON/OFF Control in Hysteresis mode.



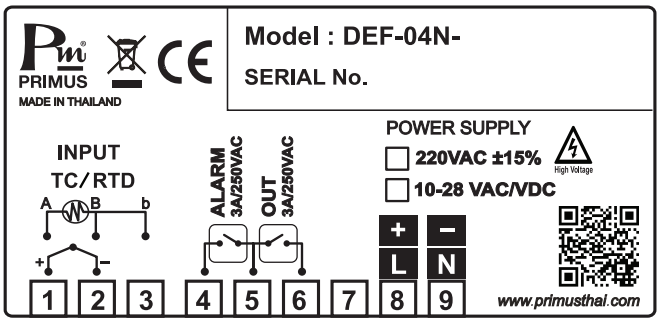
Pic 2 Picture 2 shows operate ON/OFF control by time is Hysteresis with minute unit.

Display range table

Table 1. Select input sensors and setting range.

Symbol	Input Type	Setting Range/Display Range	
		Non-decimal point	Decimal point
00	Thermocouple Type K	-200~1372 °C	-199.9~999.9 °C
		-328~2501 °F	-199.9~999.9 °F
01	Thermocouple Type J	-200~1200 °C	-199.9~999.9 °C
		-328~2192 °F	-199.9~999.9 °F
02	Pt100	-200~850 °C	-199.9~850.0 °C
		-328~1562 °F	-199.9~999.9 °F

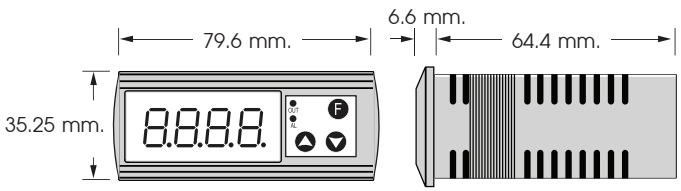
Wiring Diagram



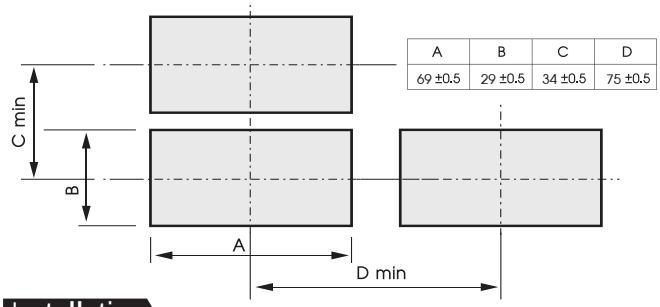
WARNING

- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.

Dimension

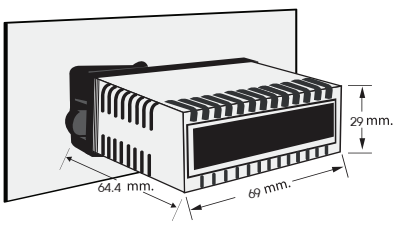


Die-Cut



A	B	C	D
69 ±0.5	29 ±0.5	34 ±0.5	75 ±0.5

Installation



The operation of Alarm

The operation of Alarm allows the user to select 8 alarm operation patterns as shown in picture 3, which can be separated into 2 types.

1.Deviation: Setpoint that is used to command ON-OFF for the alarm. It will run following or in relation to the setpoint value (SP) and can be separated into four patterns are High-Low Alarm, High Alarm, Low Alarm, and High-Low Range Alarm.

For example, if the setpoint SP = 100 °C, High Alarm is selected (FU= 2), and the High Alarm limit (H ,) is set to 10, the Alarm Relay will operate when the temperature exceeds 110 °C. If the user changes the setpoint SP to 120 °C, the Alarm Relay will operate when the temperature exceeds 130 °C. See the details in the Table of Alarm Function.

2.Absolute: Setpoint is used to command ON-OFF for the alarm operation, separate from the setpoint value(SP). This is the temperature setting to turn ON-OFF the alarm relay without including the setpoint value(SP) in the calculation. It can be configured into four patterns: High-Low Alarm, High Alarm, Low Alarm, and High-Low Range Alarm.

Example Set SP=100 °C choose High Alarm (FU = 6) and High Alarm Limit(H ,) equal to 110 °C. It will make Alarm Relay operate when temperature over 110 °C. If user change SP to be 120 °C but Alarm relay still operate at temperature 110°C as previously. See Alarm output topic.

How to choose the function of Main Relay and Alarm Relay

The Main Relay of DEF-04N can be selected to operate as either ON/OFF control or Alarm function, and the relay operation can be selected as follows.

1. DEF-04N-A has only a main relay, which can be selected to operate as output control or as an alarm function in Absolute type. It can be configured into four patterns: Absolute High-Low Alarm, Absolute High Alarm, Absolute Low Alarm, and Absolute High-Low Range Alarm.

2. DEF-04N-A-B has a Main Relay and an Alarm Relay for user selection. When the Main Relay is set to Output Function, it can be selected as Heating or Cooling control. The Alarm Relay can then be set to operate in 8 patterns, either Deviation or Absolute Alarm, as shown in the Table of Alarm Function.

2.1 In case the Main Relay is set as Alarm Function, both the Main Relay and the Alarm Relay can be selected to operate in all 4 patterns of Absolute Alarm, as shown in the Table of Alarm Function.

Ordering Code

DEF -04N- A- [B] - [ ]

CODE	SUPPLY
24	10-28 VAC/VDC
220	220 VAC ±5%

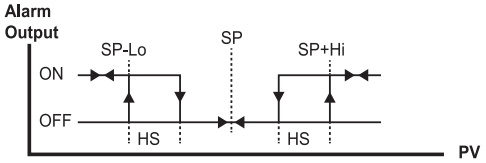
CODE	OPTION
B	Alarm

*** Remark
A=1 Output Relay /Alarm
Standard model.

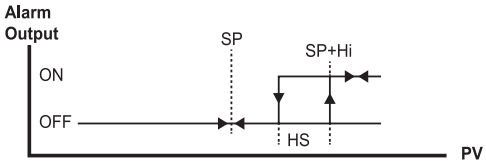
Alarm Function

Pic 3

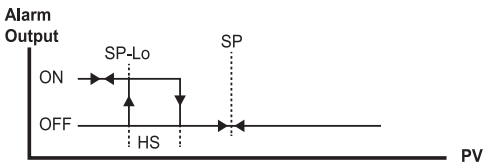
1. Deviation High Low Band Alarm



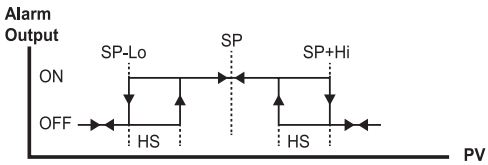
2. Deviation High Alarm



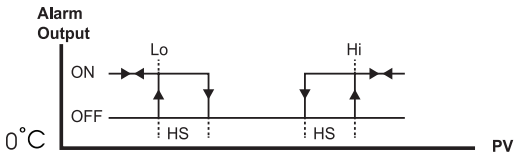
3. Deviation Low Alarm



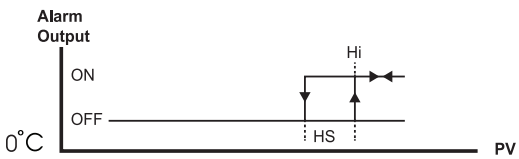
4. Deviation High Low Range Alarm



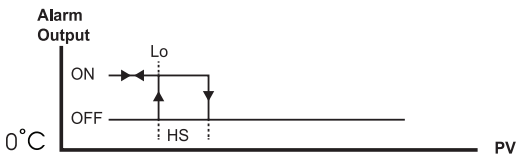
5. Absolute value High Low Band Alarm



6. Absolute value High Alarm



7. Absolute value Low Alarm



8. Absolute value High Low Range Alarm