DEF-02N

MINI PROCESS CONTROLLER

PRIMUS

CE

รอเบิกสินค้าถ่ายรูปใหม่

- Input : 0-20 mA, 4-20 mA, 0-10 VDC
- Output : 1 Contact
- Alarm : 1 Contact

Specification

Power Supply		220 VAC ±15% 50/60 Hz	
		15-30VAC/10-30VDC	
Power Consumption		3VA	
		7 Segment 4 Digit , Size 0.39 Inch,1Row	
Input	Input Type	None Decimal Point	Decimal Point
	0- 10 VDC	-1999~9999	-199.9~999.9
	0-20mA		-19.99~99.99
	4-20 mA		-1.999~9.999
	Accuracy	± 0.1% of Full Scale @ Room Temp. (25°C)	
	Sampling Time	250 mSec/0.25 Sec	
	Input Volt Impedance	10 kΩ	
	Input Current Impedance	120 Ω	
	DC Source for Sensor	12 VDC , 50 mA	
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.)		33 x 75 x 65 mm.	
Weight		230 g.	

Description

- Mini Process Controller : DEF-02N is Digital controller and indicator in small size with 4 Digits 7-Segment LED Display.
- Small compact size for limited space panel.
- Support input signals: 0–20 mA, 4–20 mA, 0–10 VDC.
- One main relay, configurable as Control/Alarm in Heating or Cooling and Alarm.
- 1 Alarm Relay (For option model only)
- Hysteresis can set as unit or time.
- Can set Decimal Point value.
- Hysteresis Time start operation at 0-99.59 min.

Operation

DEF-02N is Mini Process Controller is small compact size. It can choose function of operation to be ON/OFF Control or Alarm Function in one main relay.

ON/OFF Control can choose the controlling in 2 ways are Heating and Cooling.

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

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

And it can select model which is Option-B that has added 1 alarm relay more from Main Relay (Main Relay = 1, Alarm Relay = 1).

ON/OFF Control operation

The ON/OFF controlling of DEF-02N can be set in two control modes.

1. Hysteresis Mode, which defines the temperature difference between ON and OFF in °C or °F. The hysteresis value can be adjusted from 0 to 100. The operation of this function is shown in Picture 1.

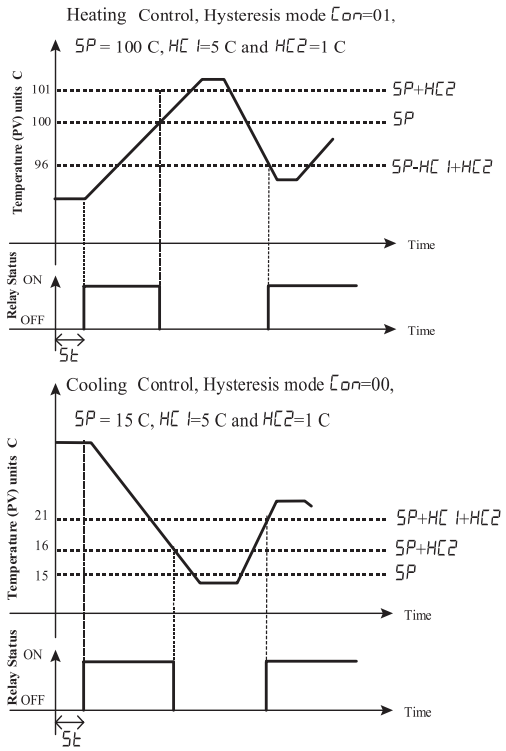
2.Time Mode, which uses Time ON (DT1) and Time OFF (DT2) at the Setpoint Value (SP). The time can be set within a range of 00:00 to 99:59 minutes. The two digits before the decimal point represent the minute value (0 to 99), while the two digits after the decimal point represent the seconds (00 to 59). The operation of this function is shown in Picture 2.

This controlling also allows the user to set a Start Delay Time, measured in minutes, to delay the operation of the main relay and alarm relay when the device is powered ON for the first time. This function helps protect the load from switching ON/OFF too quickly, which may occur due to sudden machine operation or voltage drops, potentially causing damage to compressors or heaters.

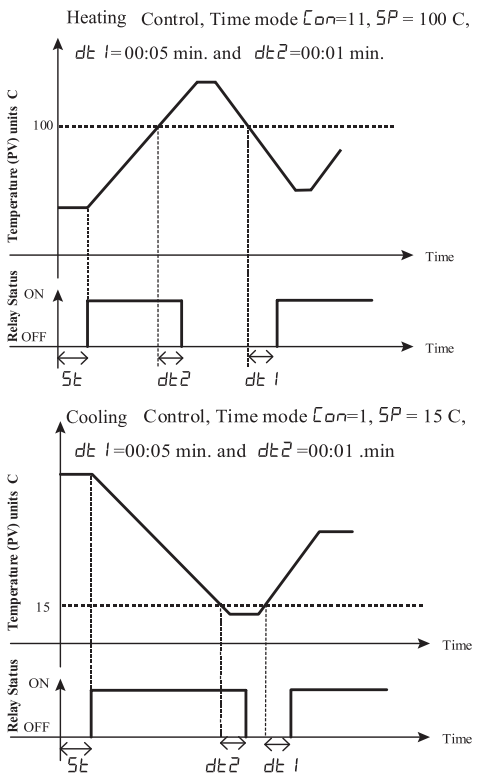
The Start Delay Time can be set within the range of 00:01 to 99:59 minutes. The two digits before the decimal point represent the minute value, which can be adjusted from 0 to 99, while the two digits after the decimal point represent the seconds, adjustable from 00 to 59.

Application

- Shows the speed of motor from Inverter, DC Drive.
- Install inside the control cabinet.
- Food, Chemical and process industry etc.



Pic 1 Picture 1 shows the operation ON/OFF controller in Hysteresis mode.



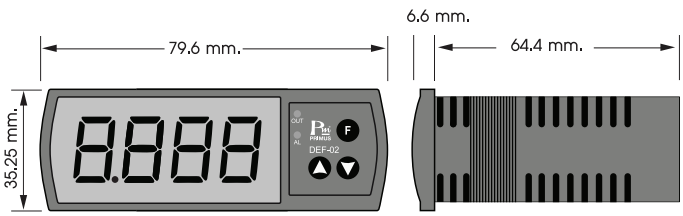
Pic 2 Picture 2 shows the operation ON/OFF controller by using time as Hysteresis in minute unit.

Display Range Table

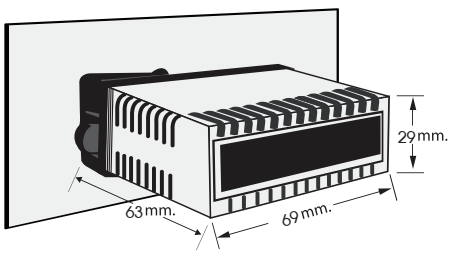
Table 1. Select input sensors and setting range.

Symbol	Input Type	Setting Range/Display Range	
		Non-decimal point	Decimal point
00	0-20 mA	-1999 ~ 9999	-199.9 ~ 999.9
01	4-20 mA		-19.99 ~ 99.99
02	0-10 VDC		-1.999 ~9.999

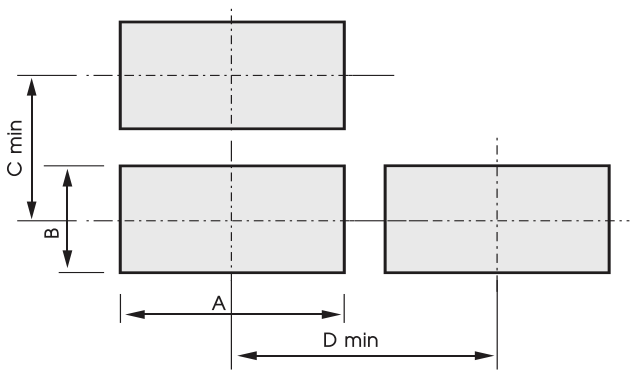
Dimension



Installation

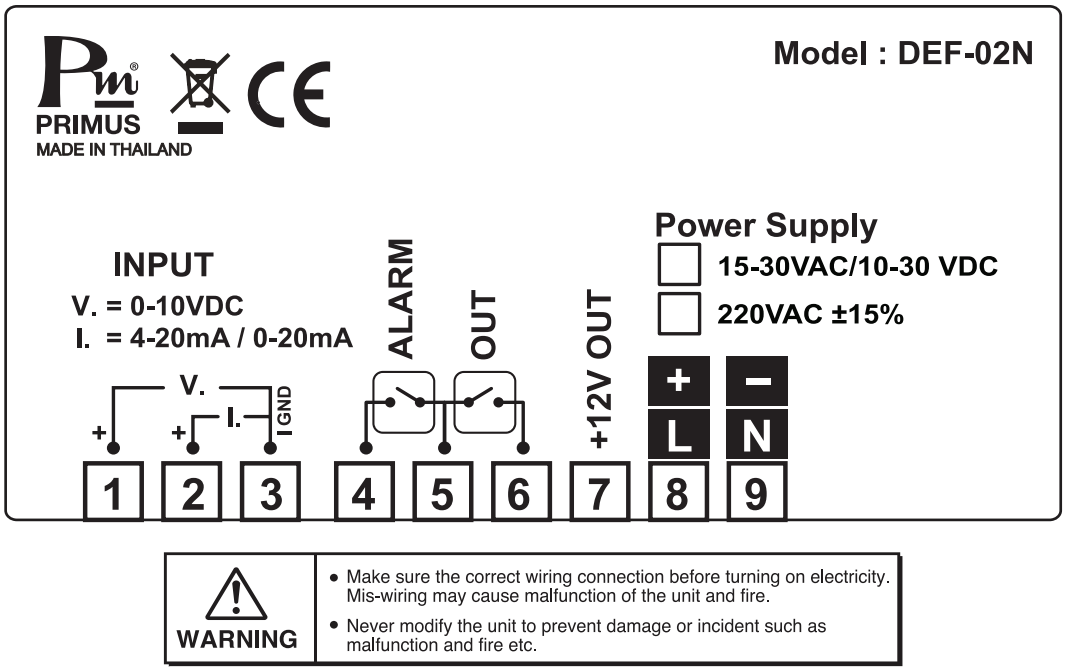


Die Cut



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

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.

Alarm System Operation

The user can select the alarm system pattern from 8 available patterns (as shown in Picture 3), with 2 types of operation.

1. Deviation is a setpoint used to activate or deactivate the alarm operation. It operates in relation to the setpoint value (SP) and can be classified into 4 types: High-Low Alarm, High Alarm, Low Alarm, and High-Low Range Alarm.

Example: If the setpoint (SP) is 100 °C and the High Alarm (FU=2) is selected with the High Alarm limit (Hi) set to 10, the Alarm Relay will activate when the temperature exceeds 110 °C. If the SP is changed to 120 °C, the Alarm Relay will activate when the temperature exceeds 130 °C. For more details, refer to the alarm function table.

2.Absolute is a setpoint used to activate or deactivate the alarm operation. It is independent from the process setpoint value (SP) and can be classified into 4 types: High-Low Alarm, High Alarm, Low Alarm, and High-Low Range Alarm.

Example If the setpoint (SP) is 100 °C and the High Alarm (FU=6) is selected with the High Alarm limit (Hi) set to 110 °C, the Alarm Relay will activate when the temperature exceeds 110 °C. If the SP is later changed to 120 °C, the Alarm Relay will still operate at 110 °C as before. For more details, refer to the alarm function table.

How to select the function of Main Relay and Alarm Relay

The Main Relay of the DEF-02 can be selected to operate as either ON/OFF Control or Alarm Function. This allows the relay operation to follow the selected mode as described below.

1. DEF-02N-A has only a Main Relay, which allows the user to select one of the following operations: Absolute High-Low Alarm, Absolute High Alarm, Absolute Low Alarm, or Absolute High-Low Range Alarm.

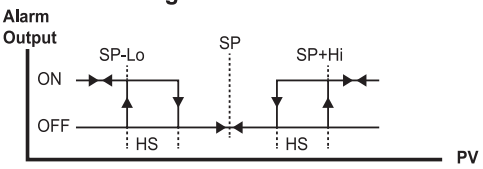
2.DEF-02N-A-B has both a Main Relay and an Alarm Relay. The Main Relay can be set as the output function for Heating or Cooling control. The Alarm Relay can be set to operate in 8 types of alarms, including Deviation and Absolute Alarm, as shown in the Alarm Function Table.

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

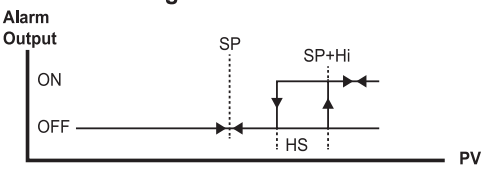
Alarm Function

Pic 3

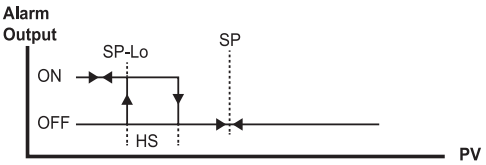
1. Deviation High Low Band Alarm



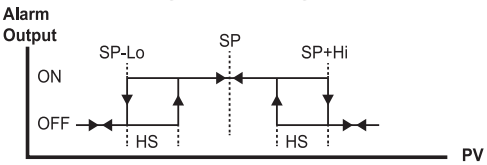
2. Deviation High Alarm



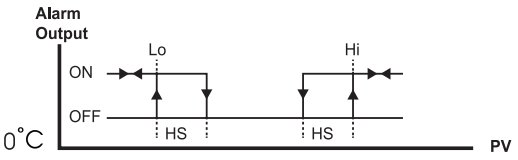
3. Deviation Low Alarm



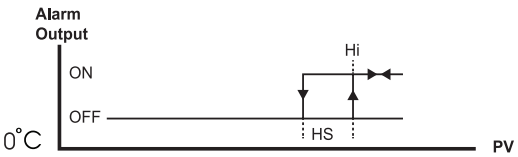
4. Deviation High Low Range Alarm



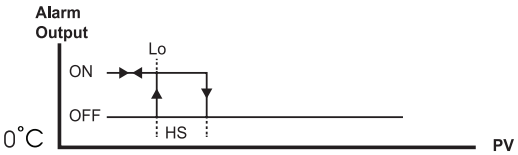
5. Absolute value High Low Band Alarm



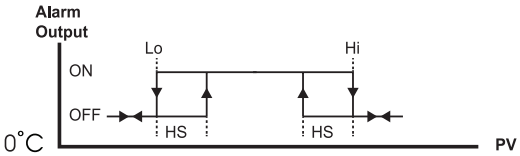
6. Absolute value High Alarm



7. Absolute value Low Alarm



8. Absolute value High Low Range Alarm



Ordering Code

DEF -02N -A- [ ] - [ ]

CODE	SUPPLY
24	15-30 VAC/10-30 VDC
220	220 VAC ±15% 50-60 Hz

CODE	OPTION
B	Alarm

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