Version 2.1(2017.03.06) WWW.CONOTEC.CO.KR

CONOTEC

CONOTEC CO., LTD.

DIGITAL TEMPERATURE CONTROLLER

ISO 9001:2008

NF-4HRA,4HR-1 **Instruction Manual**

[NF-4HRA]

[NF-4HR-1]

- ☐ Main relay contact output (Stage 1 output)
- ☐ Auxiliary relay contact output (Stage 2 output or timer output)
- ☐ Selectable humidification/dehumidification mode
- ☐ Differential humidity setting, Differential control mode selection
  Humidity calibration (offset adjustment), Output delay time, Key lock function (lockable settings)

- A user manual for this product is posted on the company website.
- Please download the technical document and communications manual on the company website

01 Safety precautions

Please read the safety precautions carefully for correct operation of the product.

※ The specifications and dimensions specified in this instruction manual may be changed without any notice for performance enhancement.

⚠ Warning

1. This product was not made as a safe device. Therefore, this product should be attached with dual safety devices if it is used for the control purposes (e.g. a device vulnerable to accident and property damage, etc.).
2. Do not wire, inspect or service this product while the power is being supplied.
3. You must attach this product to a panel. Otherwise, it may cause an electric shock.
4. When connecting the power, you must check the terminal number.
5. Do not ever disassemble, process, modify or repair this product.

⚠ Caution

1. Please make yourself familiar with all the operation instructions, safety precautions and warnings before using this product. Comply with related specifications and capacity requirements
2. Do not wire or install this product to any unit with high inductive load (e.g. motor, solenoid, etc.).
3. Use a shielded cable with a proper length when extending a sensor.
4. Do not use any part that generates an arc when used in the same power or directly switched in close proximity.
5. Keep the power cable away from a high-voltage cable and do not install this product in any place that is full of water, oil and dust.
6. Do not install this product in any place that is exposed to direct sunlight or rain.
7. Do not install this product in any place that is subject to strong magnetic power, noise, vibration or shock.
8. Keep this product away from any place that generates strong alkaline or acid substances. Use a separate pipe.
9. Do not sprinkle water onto this product for cleaning when installing it in the kitchen.
10. Do not install this product in any place where the temperature/ humidity ratings are exceeded
11. The sensor cable should not be cut or cracked..
12. Keep the sensor cable away from a signal cable, a power cable or a load cable. Use a separate pipe.
13. Keep in mind that the follow-up service will not be available if this product has been arbitrarily disassembled and modified
14. ⚠ symbol on the terminal wiring diagram indicates a safety statement that alerts a warning or caution.
15. Do not use this product near any device generating strong high-frequency noise (e.g. high-frequency welding machine high-frequency sewing machine, high-frequency radio, large-capacity SCR controller, etc.).
16. Using this product in any method other than those specified by by the manufacturer may lead an injury or a property damage
17. The product is not a toy. Keep it away from children.
18. The product should be installed only by an expert or a qualified person.
19. The company will not be liable for any damage caused by the violation of the above warnings and cautions or by a consumer's fault

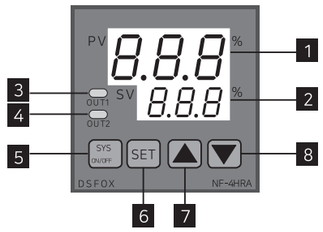
⚠ Danger

Caution: Risk of electric shock

- Electric shock - Do not touch the AC terminal while the current is flowing. It may cause an electric shock.
- You must disconnect the input power when servicing it.

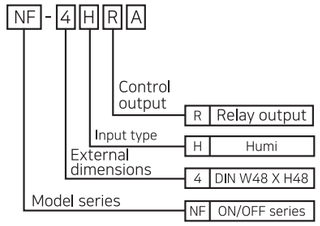
02 Components

※ FOX-4HR has one output indicator lamp.



1 FND (Present Humi Display) : Shows present value (PV)
2 FND (Set Humi Display) : Shows set value (SV)
3 OUT1 (Output1 Lamp) : Lights when output is ON
4 OUT2 (Output2 Lamp) : Lights when output is ON
5 SYS ON/OFF (Run/Stop) : Starts or stops operation
6 SET (Setting Key) : Change / Move / Save setting value
7 ▲(Up Key) : Increase value 8 ▼(Down Key) : Decrease value

03 Model Types



04 Sensor Specification

■ Analog Voltage Output Humidity Sensor HCPV-220

Operating Temp Range	-40 ~ 85 ℃
Humidity Operating Range	10 ~ 95%RH
Humidity Accuracy	+3%RH(20to90%RH)

05 Rating / Performance

Model	NF-4HR-1	NF-4HRA
Power Supply	100 ~ 240VAC 50/60Hz	
Voltage Tolerance	90% ~ 110% of rated voltage	
Power Consumption	Approx. 4VA or less	
Display	7Segment LED Display [PV, SV: Red]	
Humi Accuracy	20-90%RH range: +3%RH	
Input Sensor	Humi : HCPV-220	
Control Method	ON/OFF control	
Control Output	Relay SPDT max 250VAC 2A (resistive load)	Relay SPST max 250VAC 2A (resistive load)
Ambient Temp	0℃ to +50℃ (no condensation)	

06 Humidity Range & Factory Default

	NF-4HR-1		NF-4HRA	
Display	Range	Default	Range	Default
SEt	0 ~ 100%RH	30	0.0 ~ 99.9%RH	30.0
tYP	D / H	H	D / H	H
dI S	N/A	P	P / Pn	P
dI F	1 ~ 19%	1	0.1 ~ 19.9%	1.0
dLt	0m00s ~ 9m59s	0.00	0m00s ~ 9m59s	0.00
Cor	-10% ~ +10%	0	-9.9% ~ +9.9%	0.0
LoC	N/A	-	ON / OFF	oFF
St2	N/A	-	0.0 ~ 99.9%RH	30.0
tY2	N/A	-	D / H	H
dS2	N/A	-	P / Pn	P
dI 2	N/A	-	0.1 ~ 19.9%	1.0
dL2	N/A	-	0m00s ~ 9m59s	0.00
nFS	N/A	-	ON / OFF	oFF
onS	N/A	-	SEC / MIN	SEC
ont	N/A	-	0 ~ 999	0
oFS	N/A	-	SEC / MIN	SEC
oFt	N/A	-	0 ~ 999	0

07 Humidity Setting Procedure

1. 

Press SET key during operation to change SV.

2. 

When SEt appears on PV display, adjust value using ▲/▼ keys.

3. 

Press SET key again to save. Returns to run mode after save confirmation.

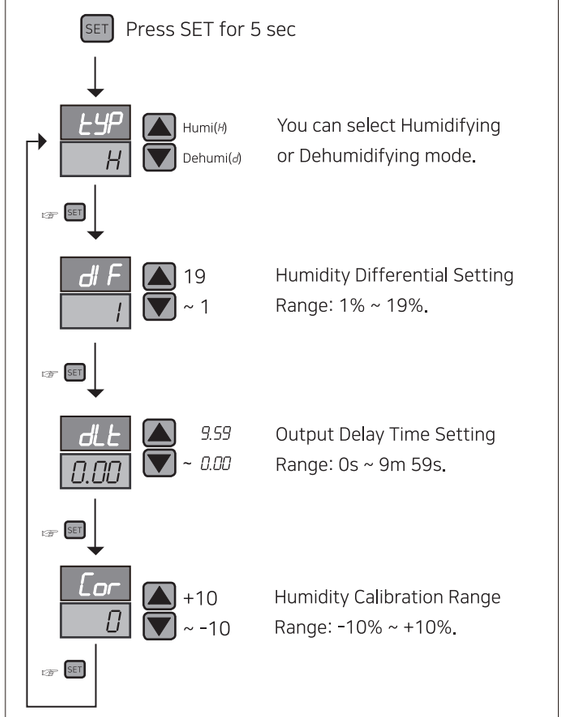
4. 

Confirm SV display changed from 20% to 30%.

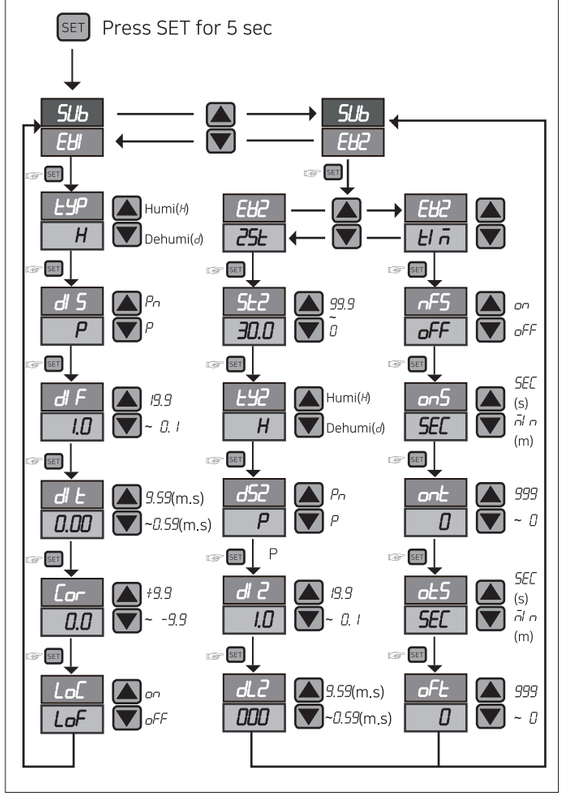
- If no key is pressed for 60 seconds during setting, automatically returns to run mode.
- Press and hold SET on SV display for 5 seconds to return to full run mode.

■ Program Menu Setting Method

NF-4HR-1



NF-4HRA



08 Function details

EU1 : You can change various main-output settings.

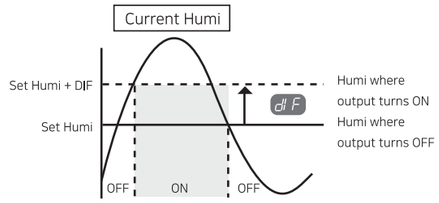
SEt : You can set the main output.

tYP : You can set the main output function.
d = Use for dehumidifying
H = Use for humidifying
Changing between humidifying/dehumidifying during operation is dangerous. Only one mode must be selected; both cannot operate at the same time.

dIS : You can select the output differential mode.
Table 1) P = + differential operation / Pn = ± differential operation

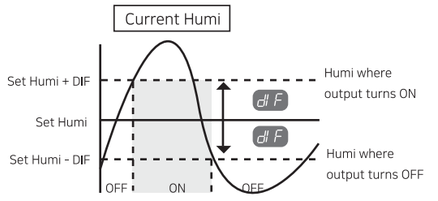
dIF : You can set the differential humidity.

tYP : **d** (dehumidifying) **dIS** : **P** (+Deviation)



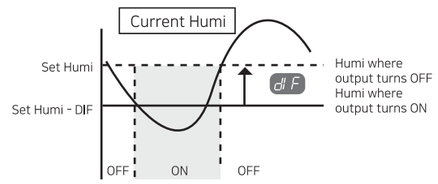
output ON: Current Humi >= Set Humi + DIF
output OFF: Current Humi <= Set Humi

tYP : **d** (dehumidifying) **dIS** : **Pn** (±Deviation)



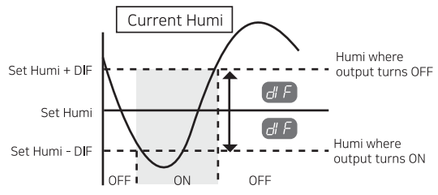
output ON: Current Humi >= Set Humi + DIF
output OFF:Current Humi <= Set Humi - DIF

tYP : **H** (humidifying) **dIS** : **P** (+Deviation)



output ON: Current Humi <= Set Humi - DIF
output OFF: Current Humi >= Set Humi

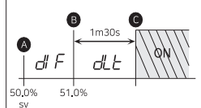
tYP : **H** (humidifying) **dIS** : **Pn** (±Deviation)



output ON: Current Humi <= Set Humi - DIF
output OFF: Current Humi >= Set Humi + DIF

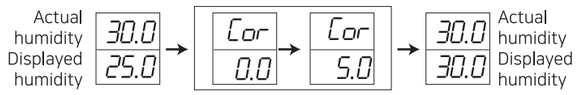
If ON/OFF control switches too frequently, relay contacts or other output terminals may be damaged, and external noise may cause hunting (oscillation/chattering).
Deviation temp prevents this and protects the device.

dLt : Setting Output Delay Time
- The controlled object repeatedly switches ON/OFF
- A momentary power outage or re-energizing occurs (machine protection)



Ex) Set humidity: 51%RH, Type: Dehumidify (D)
Deviation: 1.0%, Delay time: 1 min 30 sec
When the current humidity rises and passes point Ⓑ(51.0%), after the delay time of 1 min 30 sec, the relay turns ON at point Ⓒ
The delay time is applied from point Ⓑ not point Ⓐ because the deviation humidity is set to 1.0%.

Cor : You can correct the current humidity.
Used when the device itself has no error but an error occurs in the external humidity sensor.



LoC : Lock function
A safety function that prevents anyone except the main user from changing settings.

Lon : Lock ON
- All settings cannot be changed except the set humidity.

LoF : Lock OFF
- All settings can be changed.

Eu2 : You can set various setting values for sub output.

2St : Set the sub output to humidify/dehumidify output.

St2 : You can set the sub output.

tY2 : You can set the auxiliary output function.
(Refer to main function **tYP**)

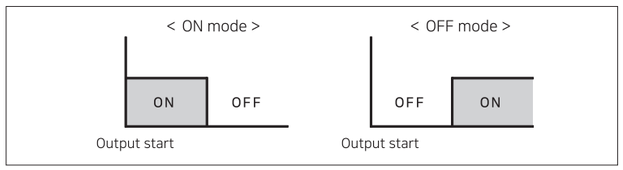
dS2 : You can select the auxiliary output deviation mode.
(Refer to main function **dIS**)

dI2 : You can select the auxiliary output deviation humidity.
(Refer to main function **dIF**)

dL2 : You can select the auxiliary output delay time.
(Refer to main function **dLt**)

tIn : Set the auxiliary output to time output.

nFS : You can select whether the output starts in ON mode or OFF mode.
When ON mode is selected, the output performs ON-time setting.
When OFF mode is selected, the output performs OFF-time setting.



onS : Sets the auxiliary output ON-time unit.
You can select seconds (sec) or minutes (min).

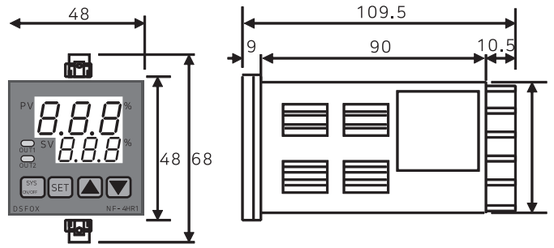
ont : Sets the auxiliary output ON-time.
You can set it from 0 to 999.

oFS : Sets the auxiliary output OFF-time unit.
You can select seconds (sec) or minutes (min).

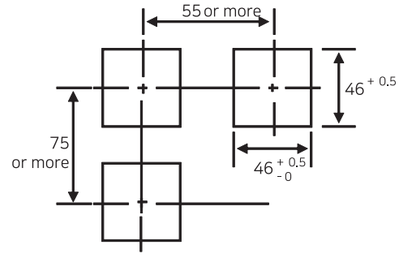
oFt : Sets the auxiliary output OFF-time.
You can set it from 0 to 999.

09 Diemension and panel hole sizes

(Unit : mm / error : ±0.5)

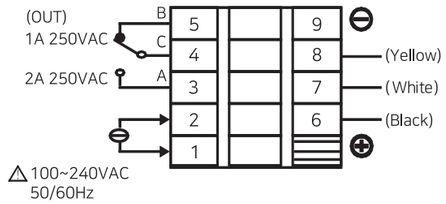


■ Panel Cutout Dimensions

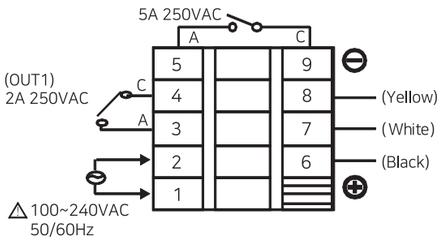


10 Connection Diagram

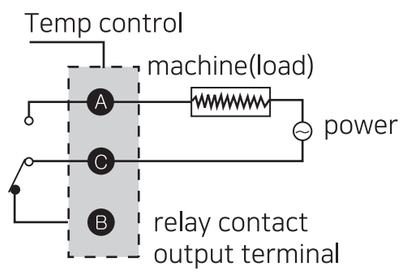
■ NF-4HR-1



■ NF-4HRA



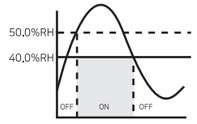
11 Example of a Relay Access



※ Relay contact capacity is less than 250VAC 2A.
If using the load to exceed contact capacity, be cautious on those can be caused by contact deposited, contact failure, relay damaged, etc.

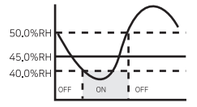
12 Example of Temperature Controller Use

EX1) If you want the dehumidifier to turn OFF at 40%RH and ON at 50%RH, what are the set humi and program values?
(using main output)



Set humidity change mode
Set humidity : 40.0%RH
tYP : d (For dehumidifying)
dIS : P (+ differential)
dIF : 10.0%RH

EX2) If you want the humidifier to turn OFF at 50%RH and ON at 40%RH, what are the set humi and program values?
(using main output)



Set humidity change mode
Set humidity : 45.0%RH
tYP : H (For humidifying)
dIS : Pn (±differential)
dIF : 10.0%RH

13 Easy error diagnosis instructions

※ If an error is displayed while the product is running

- **Er1** : It is case where the product was subject to a strong external noise and internal data memories have been damaged
  In this case, contact us for product service.
- Although this controller was designed to withstand a certain level of external noise, it is not supposed to withstand all levels of noise.
- If the product is subject to a noise greater than 2KV, it could be internally damaged.
- If **oEr** (open error) or **SEr** (short error) is displayed, there is something wrong with a sensor. Please check the sensor.

※ The above specifications may be changed without any notice for performance enhancement. Please make yourself fully familiar with and follow the above precautions.

■ Warranty period: One year from the date of purchase

■ Address : (Street address) 56, Ballyongsandan 1-rp, Jangan-eup, Gijang-gun, Busan, ROK
(Land-lot address) 901-1, Ballyong-ri, Jangan-eup, Gijang-gun, Busan, ROK (46034)

- Product service : 070-7815-8289
- Customer service : 051-819-0425 ~ 0427
- FAX : 051-819-4562
- Email : overseas-sales@conotec.co.kr
- SNS : Facebook, Instagram, Twitter, YouTube ▶ 'Search for '**Conotec**'
- Website : www.conotec.co.kr

◈ Installation precautions

■ This device sholuld be connected to a protective earth terminal and a power supply in order to prevent an electric shock.

■ Do not block the air outlet.

◈ Operation precautions

※ An operating environment of this device is as follows.

■ Ambient temperature : 0 ~ 60℃ ■ Ambient humidity : 80%RH or less
■ Indoor uses only ■ Pollution class 2
■ Altitude under 2000m ■ Installation category : II

■ This device should be laid out in a way that its power cord is easy to handle.

■ Using this product in any method other than those specified by the manufacturer may damage its protection function

■ Major products and development

- Temperature/humidity controller
- Counter and timer controller
- Current and voltage panel meter
- Temperature/humidity indicator
- Oven controller
- CO2 controller
- PID controller
- Unit cooler controller
- Heat pump controller
- Chiller controller
- Thermo-hygrostat controller
- Short message alarm
- Temperature/ humidity transmitter
- Smartphone app and monitoring system

※ This manual was prepared in the Naver Nanum fonts.