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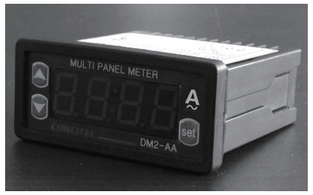
CONOTEC

CONOTEC CO., LTD.

DIGITAL TEMPERATURE CONTROLLER

ISO 9001:2008

FOX-DM2 Instruction Manual



* 8-step input range
* User scale function
* Decimal point position setting function
* Zero and span calibration function
* True RMS measurement when using AC

- 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 Model Types

DM 2 - DA

Measurement Input Specifications

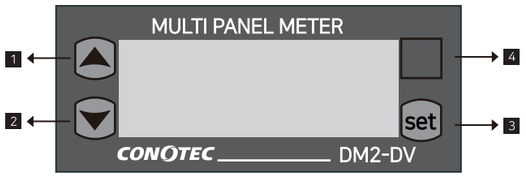
DV	DC Voltage
DA	DC Ampere
AV	AC Voltage(True RMS)
AA	AC Ampere(True RMS)

External Dimensions

2	DIN SIZE 76 X 35

DM	Digital Multi Meter

03 Components

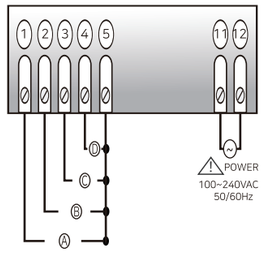


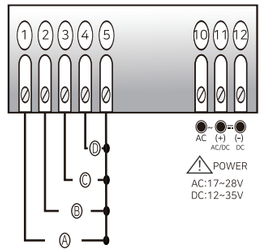
1 Increase Setting Value (UP Key) 2 Decrease Setting Value (DOWN Key)
3 Enter Setting Mode / Change Settings 4 Unit Sticker Attachment Area

* All DATA is saved when set is pressed for more than 5 seconds,or automatically saved after 1 minute with no key input, and then returns to the current measurement display.

04 Terminal wiring diagram

[FOX-DM2-□ / FOX-DM2-□-D]

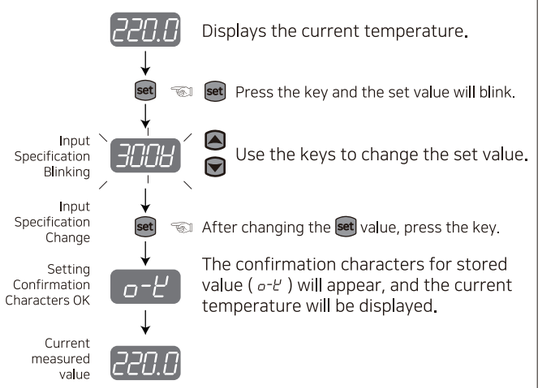




Model \ Terminal	Ⓐ	Ⓑ	Ⓒ	Ⓓ
DM2-AV	600V/300V	100V/50V	20V/10V	2V/1V
DM2-AA	5A/2.5A	1A	500mA/250mA	100mA/50mA
DM2-DV	800V/160V	50V/10V	5V/1V	250mV/50mV
DM2-DA	5A/2A	500mA/200mA	50mA/20mA	5mA/2mA

05 Setting process

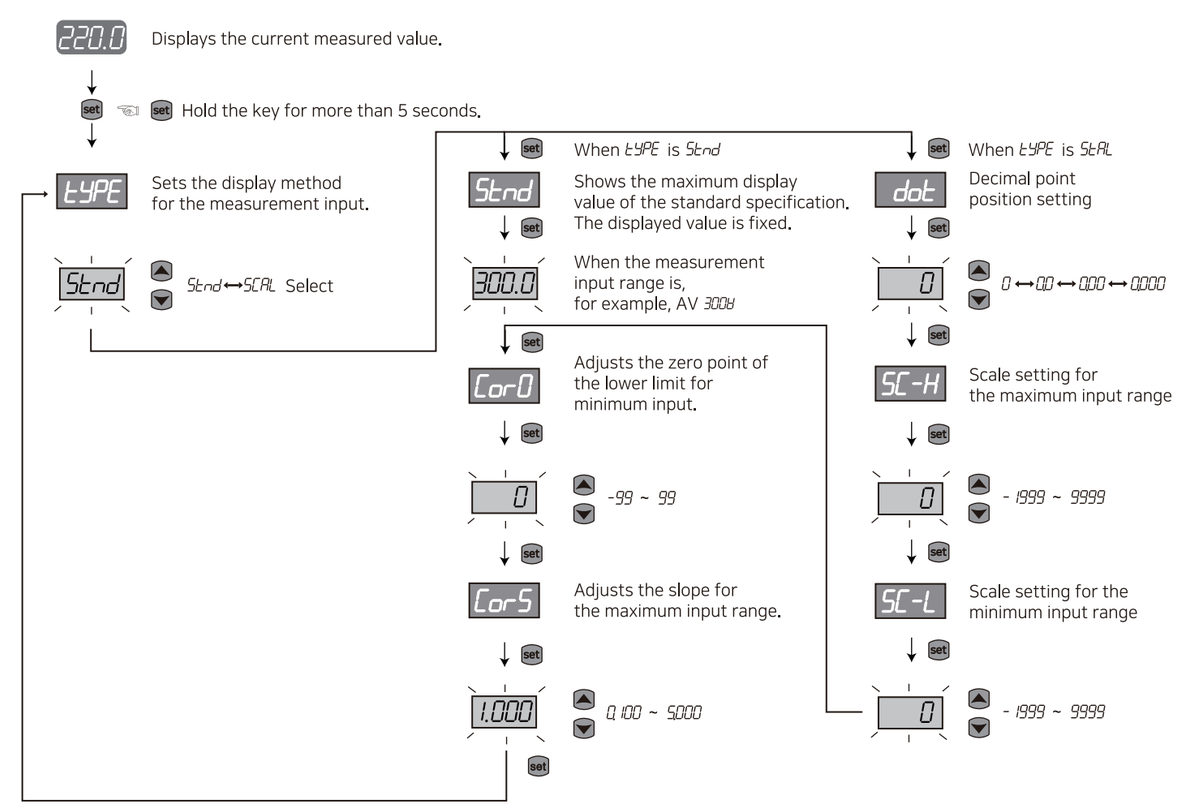
Measurement Input Specification Setting



<Model-specific Measurement Input Specification Table>

Model	Measurement Input Range
DM2-AV	600V ⇄ 300V ⇄ 100V ⇄ 50V ⇄ 20V ⇄ 10V ⇄ 2V ⇄ 1V
DM2-AA	5A ⇄ 2.5A ⇄ 1A ⇄ 0.5A ⇄ 0.25A ⇄ 0. 1A ⇄ 50mA
DM2-DV	800V ⇄ 160V ⇄ 50V ⇄ 10V ⇄ 5V ⇄ 1V ⇄ 0.25V ⇄ 50mV
DM2-DA	5A ⇄ 2A ⇄ 0.5A ⇄ 0.2A ⇄ 50mA ⇄ 4-20 ⇄ 5mA ⇄ 2mA

Program setting (The value of each item is the factory setting.)



06 Function details

Measurement Input & Range Table

	Measurement Input Range		Display Range[Stnd]	Scale Range[SCAL]
DC Voltage	0 ~ 800V	[800V]	0.0 ~ 800.0(fixed)	
	0 ~ 160V	[160V]	0.0 ~ 160.0(fixed)	
	0 ~ 50V	[50V]	0.00 ~ 50.00(fixed)	
	0 ~ 10V	[10V]	0.00 ~ 10.00(fixed)	
	0 ~ 5V	[5V]	0.000 ~ 5.000(fixed)	
	0 ~ 1V	[1V]	0.000 ~ 1.000(fixed)	
	0 ~ 250mV	[0.25V]	0.00 ~ 250.0(fixed)	
	0 ~ 50mV	[50mV]	0.00 ~ 50.00(fixed)	
DC Current	0 ~ 5A	[5A]	0.000 ~ 5.000(fixed)	
	0 ~ 2A	[2A]	0.000 ~ 2.000(fixed)	
	0 ~ 500mA	[0.5A]	0.0 ~ 500.0(fixed)	
	0 ~ 200mA	[0.2A]	0.0 ~ 200.0(fixed)	
	0 ~ 50mA	[50mA]	0.00 ~ 50.00(fixed)	
	4 ~ 20mA	[4-20]	4.00 ~ 20.00(fixed)	
	0 ~ 5mA	[5mA]	0.000 ~ 5.000(fixed)	
	0 ~ 2mA	[2mA]	0.000 ~ 2.000(fixed)	
AC Voltage	0 ~ 600V	[600V]	0.0 ~ 600.0(fixed)	
	0 ~ 300V	[300V]	0.0 ~ 300.0(fixed)	
	0 ~ 100V	[100V]	0.0 ~ 100.0(fixed)	
	0 ~ 50V	[50V]	0.00 ~ 50.00(fixed)	
	0 ~ 20V	[20V]	0.00 ~ 20.00(fixed)	
	0 ~ 10V	[10V]	0.00 ~ 10.00(fixed)	
	0 ~ 2V	[2V]	0.000 ~ 2.000(fixed)	
	0 ~ 1V	[1V]	0.000 ~ 1.000(fixed)	
AC Current	0 ~ 5A	[5A]	0.000 ~ 5.000(fixed)	
	0 ~ 2.5A	[2.5A]	0.000 ~ 2.500(fixed)	
	0 ~ 1A	[1A]	0.000 ~ 1.000(fixed)	
	0 ~ 500mA	[0.5A]	0.0 ~ 500.0(fixed)	
	0 ~ 250mA	[0.25A]	0.0 ~ 250.0(fixed)	
	0 ~ 100mA	[0.1A]	0.0 ~ 100.0(fixed)	
	0 ~ 50mA	[50mA]	0.00 ~ 50.00(fixed)	

dot	Display digit
0	- 1999 ~ 9999
00	- 1999 ~ 999.9
000	- 1999 ~ 99.99
0000	- 1999 ~ 9.999

* Dot position changes depending on the display range.

* Select and connect to an appropriate input terminal whose measurement range falls within 30% to 100% of the maximum allowable input. If the applied input exceeds the rated capacity of the terminal, it may cause damage and lead to the display range being exceeded, while connecting to a terminal rated below 30% of the required input range may result in reduced measurement accuracy.

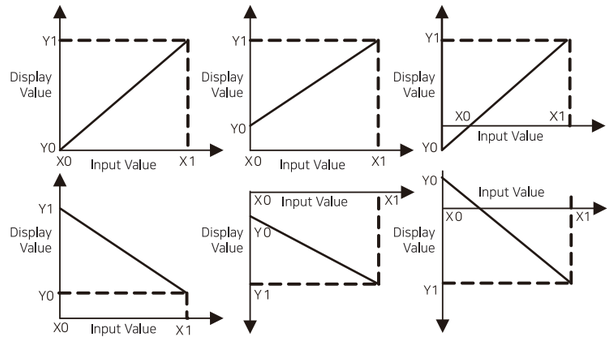
Error Display

Display	Description
n-HH	When the measurement input exceeds 110% of the maximum range
n-LL	When the measurement input is below -10% of the minimum range
I -HH	When the entered scale upper limit exceeds the max display range 9999
I -LL	When the entered scale lower limit exceeds the min display range -1999

* Error : Display disappears automatically when the input returns to normal.
* n-LL Display : When using the 4-20mA input range (SM), the negative polarity is displayed automatically for DC reverse input.

PreScale Function[SC-H / SC-L]

The PreScale function allows you to set any desired upper and lower display values (-1999 to 9999) corresponding to the upper and lower limits of the measurement input. As shown in the figure below, if the measurement inputs are X0 and X1 and the desired display values are Y0 and Y1, the display becomes linear so that Y0 = X0 and Y1 = X1 for the inputs X0 and X1.

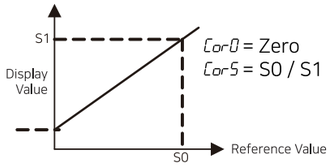


Error Compensation Function[CorO / CorS]

The error compensation function is used to reduce value differences between instruments when there is an error caused by the input source or between meters. Zero and Span adjustments can be used to reduce these errors between instruments.

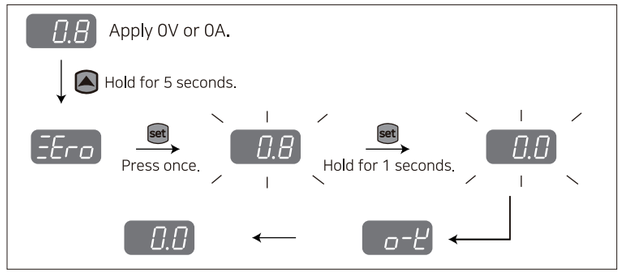
1.CorO adjusts the zero point based on the difference between the maximum input value and the maximum display value. For example, if the scaling is 0.0 to 600.0 and the input source is 0V but 1.2V is displayed, set the Cor0 value to 12.

2.CorS adjusts the maximum value. [High-value slope (%) adjustment]
For example, if the scaling is 0.0 to 600.0 and the measurement input specification is 600V but 498.0V is displayed, set CorS = 600/498 = 1.205, which adjusts the slope of the high display value so that the displayed value becomes 600.0.

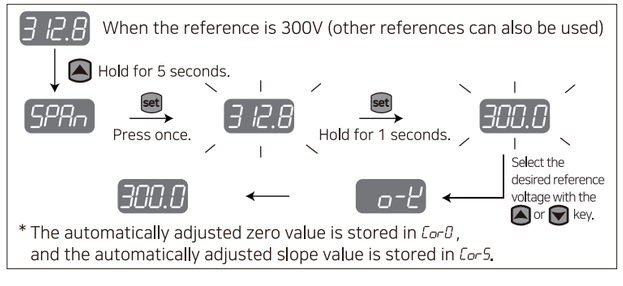


Automatic Error Compensation Function

Zero Calibration



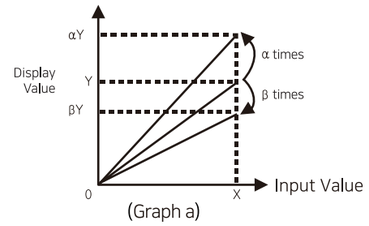
Slope Calibration



* The automatically adjusted zero value is stored in CorO, and the automatically adjusted slope value is stored in CorS.

Slope Adjustment Function[CorS]

1) This is a function that adjusts the slope of the basic display value (Stnd) or the scale value (SCAL). As shown in (Graph a), using the slope adjustment [cors] function, the display value Y for input X can be adjusted to α times or β times of X.

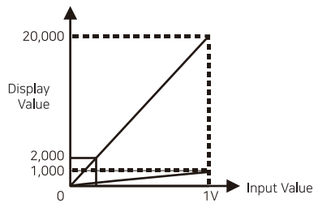


(Graph a)

2) It can also be used as a correction function for the initial display value (SC-H) for the measurement input. The adjustment range is 0.100 to 5.000, and it adjusts by multiplying the current slope value.

Ex) When using DM2-AV and you want to display 2,000 at AC 100mV:

① Set the measurement input specification to [1V]
② With the basic specification [stnd], the maximum measurement for [1V] is 1.000,
so to display 2,000 at AC 100mV, the maximum display value [SC-H] of [SCAL]
must be 20,000. However, since the maximum settable value is 9,999, this cannot be set.
③ In this case, set SC-H × CorS = 20,000.
(SC-H = 5,000, SC-L = 0.000, CorS = 4.000)



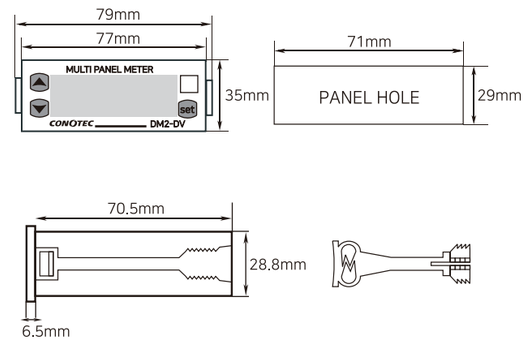
(Slope Adjustment Example)

07 Specifications / Performance

Power Supply Voltage	100 ~ 240VAC 50/60Hz
Power Consumption	5VA
Operating Ambient Temp	0 ~ 50℃
Operating Ambient Humi	35 ~ 85%RH
Storage Ambient Temp	-10 ~ 70℃
Input Signal	Current or Voltage Instrumentation Signal Input
A/D Conversion Method	Successive Approximation Register (SAR) method
Sampling Period	16.6ms(AC 60Hz),50ms(DC)
Maximum Display Range	-1999 ~ 9999 (4 digits)
Display	7-segment LED, character height 14mm
AC Measurement Method	True RMS
Polarity Indication	When the DC input signal is reversed, the "-" sign is automatically displayed

08 Diemension and panel hole sizes

(Unit : mm / error : ±0.5)



※ 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.