

□ Function & Features

- Frequency or Pulse inputs
- 10-position rotary switch : (x100, x10, x1) x Rate(Hz)
- Rotary Switch Type :
The Input range is set by using a combination of Rate(Hz) and the rotary switches.
The rotary selector value is multiplied by the multiplication factor set on Rate(Hz)
The minimum full-scale value for the input is : 001 x 0.0001 = 0.0001 Hz
The maximum full-scale value for the input is : 999 x 1000 = 999000 Hz
- Display Type : Front-programmable 4-digit LED display
*** (Input of 50KHz or more is an order specification.)
- Four-way isolation (input/output1/output2/power)
- Protection Input and output TVS diode
- Analog One or Two outputs (independent output module)
- Universal power input
- Power fuse (240V/0.12A)



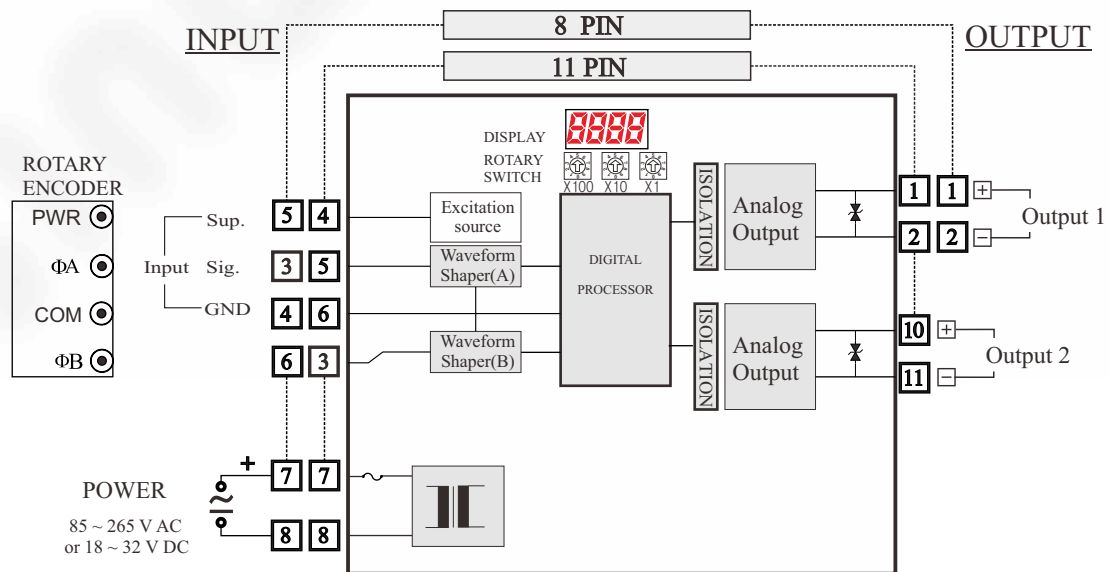
□ PERFORMANCE

- Accuracy : $\pm 0.2\%$ LESS(F.S) at 23 °C
- Temperature Coefficient : $\pm 0.015\%$ / °C
- Response Time : 0.5 Sec or less (< 5Hz)
- Insulation Resistance : 100 MΩ or more with 500V DC between Input / Output / Power
- Dielectric Strength : 1500V AC 0.5 mA/Min (Input to Output to Power)

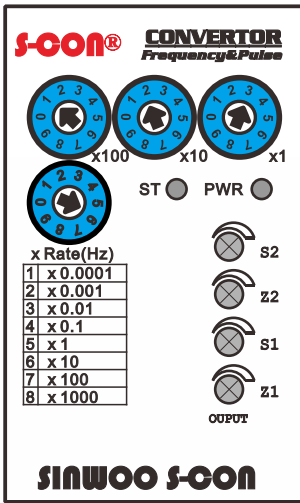
□ GENERAL SPECIFICATIONS

- Construction : Plug-in
- Connection : M3.5 Screw terminals
- Housing material : flame-retardant Poly Carbonate (Black)
- Power supply : AC 85 ~ 265V or DC 18 ~ 32V (about 3VA)
- Operating temperature : -5 ~ 55 °C (23 ~ 131°F)
- Operating humidity : 10 ~ 90 % RH (non-condensing)
- Isolation : Input / Output 1 / Output 2 / Power
- Display range : 4 Digits (-1999 ~ 9999)
- Dimension : W52 x H77 x D112mm (2.04" x 3.03" x 4.40")
- Weight : about 350g

SCHEMATIC CIRCUIT & CONNECTION DIAGRAM



※ ROTARY SWITCH



Input

The Input range is set by using a combination of Rate(Hz) and the rotary switches.
The rotary selector value is multiplied by the multiplication factor set on RATE(Hz)

For Example:

The input frequency full-scale value is 563Hz.
The 100's selector is set to 5, the 10's selector is set to 6 and the 1's selector is set to 3.
The multiplier is then set to 5(x1) (563 x 1 = 563Hz).
The minimum full-scale value for the input is : 001 x 0.0001 = 0.0001 Hz
The maximum full-scale value for the input is : 999 x 1000 = 999000 Hz
*** (Input of 50KHz or more is an order specification.)

Calculation of input frequency :

$$((N \times 100) + (N \times 10) + (N \times 1)) \times (6 : x10 \text{ Rate(Hz)})$$

$$((1 \times 100) + (2 \times 10) + (3 \times 1)) \times (10) = 123 \times 10 = 1230 \text{ Hz}$$

$$((1 \times 100) + (2 \times 10) + (3 \times 1)) \times (0.1) = 123 \times 0.1 = 12.3 \text{ Hz}$$

■ INPUT SPECIFICATIONS

Excitation : 12V DC \pm 2V @30mA

- Open Collector

Max. frequency : 100 KHz
Sensing : Approx. 12V DC @2.5 mA
ON/OFF Level : >OFF (>2.5k Ω /6V), ON (<1.6k Ω /4V)

- DC Voltage Pulse

Max. frequency : 100 KHz
Waveform : Square or Sine
Input impedance : 10 k Ω min.
Input Amplitude : 2~50Vp-p
Detecting Level : 12V pulse : Low(off) < 4V - 6V < High(on)
5V pulse : Low(off) < 1V - 3V < High(on)

- AC Voltage Pulse

Max. frequency : 100 KHz
Waveform : Sine
Input impedance : 10 k Ω min.
Input Amplitude : 0.1~100Vp-p (\pm 50V max.)

- Two-wire Current Pulse

Max. frequency : 100 KHz
Input Resistance : 250 Ω
Input Range : 0 ~ 25mA
Detecting Level : Low(off) < 4mA - 12mA < High(on)

- 10-position rotary switch : (X100,X10,X1) x (X)rate

- Frequency Range : 0.0001 to 999000 (***) Input of 50KHz or more is an order specification.)

■ ANALOG OUTPUT :

- DC Current : 0 ~ 20 mA DC max. (Load resistance : 600 Ω max.)
- DC Voltage : -10V min. ~ +10V DC max. (Load Resistance : 10 K Ω or more)
- 2-Wire Transmitter(4~20mA DC), supply out voltage (9 V ~ 35 V DC)
- Easy Calibration of the Gain (Max. \pm 5% of F.S) and Offset(Max. \pm 5% of F.S)

MODEL & SUFFIX CODE

NFDC - □ □ □ □

Model Type Selection

- 2 : 1 Output with Display
- 5 : 1 Output with Rotary Switch
- 7 : 2 Output with Display
- 8 : 2 Output with Rotary Switch

Input Type Selection

- A : 3-Wire Voltage Pulse
- B : 2-Wire Current Pulse
- C : 2-Wire Voltage Pulse
- D : Open Collector
- E : Dry Contact

R : Other Special Spec.

Output Type & Range Selection (Available for Output 1 & Output 2)

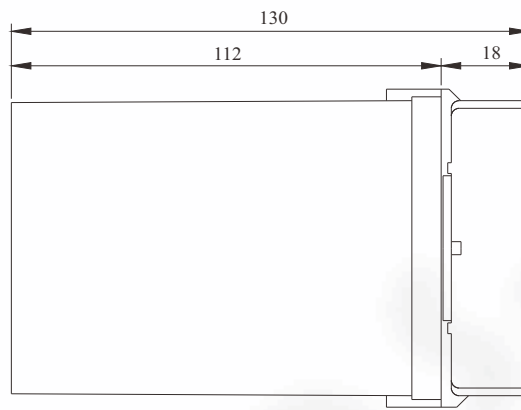
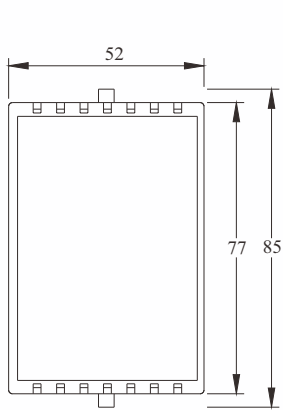
- 0 : Not Used
- 1 : DC 4~20mA (Load Resistance : 0~600 Ω)
- 2 : DC 0~20mA (Load Resistance : 0~600 Ω)
- 3 : DC 1~5V (Load Resistance : 5 KΩ or more)
- 4 : DC 0~5V (Load Resistance : 5 KΩ or more)
- 5 : DC 2~10V (Load Resistance : 10 KΩ or more)
- 6 : DC 0~10V (Load Resistance : 10 KΩ or more)
- 7 : DC -5~+5V (Load Resistance : 10 KΩ or more)
- 8 : DC -10~+10V (Load Resistance : 10 KΩ or more)
- 9 : 2-Wire Transmitter(4~20mA DC) (9V ~ 35V DC)

R : Other Special Spec.

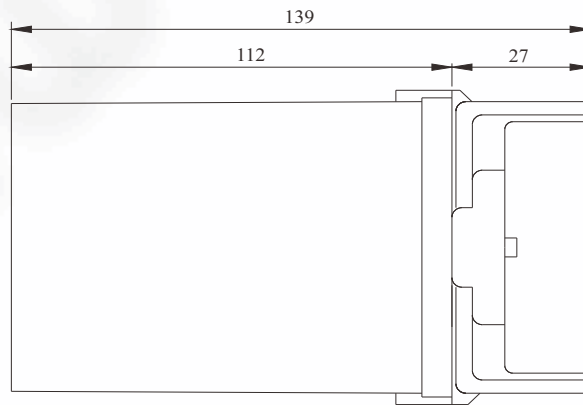
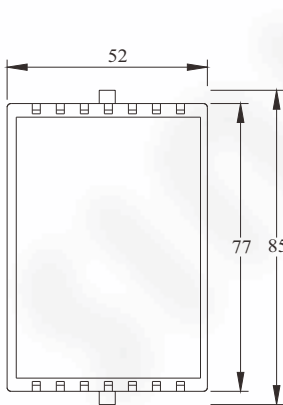
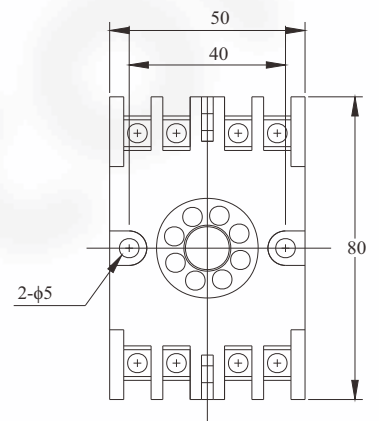
Power Supply

- Z : AC 85~265V
- Y : DC 18~32V
- R : Other Special Spec.

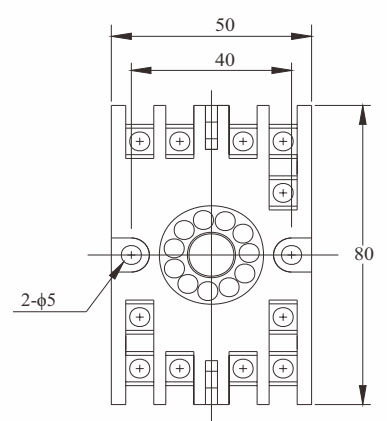
DEMENSION



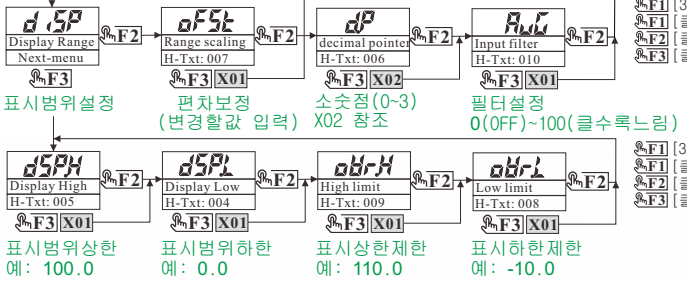
(8 PIN SOCKET)



(11 PIN SOCKET)



F1 Menu (Operating Mode) 운전 모드

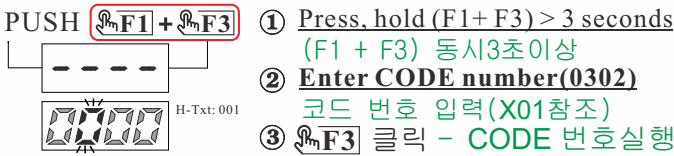


F1 [클릭]-메뉴시작 **d.SP**
F1 [클릭]-복귀 **0.0**

DISPLAY

Press.(F2) > 2 seconds
(F2) Input frequency Display(입력주파수 표시)
Press.(F3) > 2 seconds
(F3) Version Display(제품버전 표시)

Setting Mode (설정 모드)



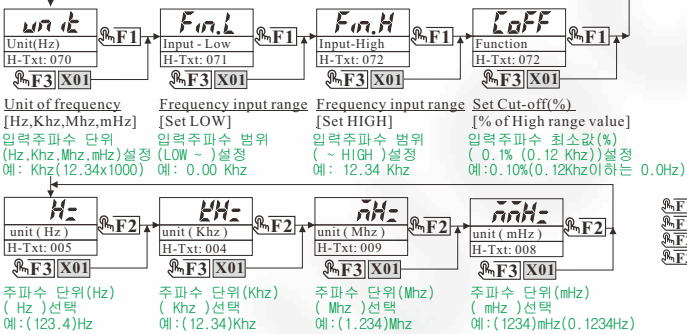
** 주의가 필요합니다 [Needs attention.]

Executable CODE (Setup setting)

CODE	Description
302	Set frequency input range [First, set the unit(Hz,Khz,Mhz,mHz)]
330	[FL.Ad]Display Filter(0:off~100),[FL.FV]Allowable fluctuation value (%)

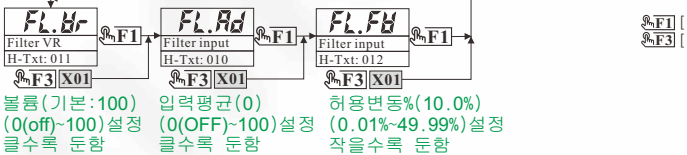
실행할 CODE 번호
(000) 취소 (cancel)
(302) 주파수 입력 범위 설정 (먼저, 단위 설정)
(330) 필터 (0~100), 허용변동값 (%) 0.01~49.99%

302 (Input Range) 입력범위 설정



F1 (Hold) > 3sec. (302) 주파수 입력 범위 설정 (먼저, 단위 설정)
X05 (Exit) X05 참조
F1 [3초이상누름] - 복귀 X05참조
F1 [클릭]-다음메뉴
F3 [클릭]-선택 (값변경) X01참조

330 (Filter) 입력평활



F1 (Hold) > 3sec. (330) 필터 (평활) 설정
X05 (Exit) X05 참조
F1 [3초이상누름] - 복귀 X05참조
F1 [클릭]-다음메뉴
F3 [클릭]-설정 (값변경) X01참조

HELP-Text :

- [001] [----] Enter Setup (see the CODE number table)
- [004] [dSP.L] Set display range low (display readout low)
- [005] [dSP.H] Set display range high (display readout high)
- [006] [dP] Set the decimal point position to a number (0 ~ 3)
- [007] [oFFt] Display range scaling for deviation correction
Low value calibration is less than 40% of displayed
High value calibration is more than 60% of displayed
Offset clear at display 50%
- [008] [oVr.L] Set lower limit of display value.
- [009] [oVr.H] Set upper limit of display value.
- [010] [AvG][FL.Ad] Set input filter(0(off) ~ 100) It is similar to the input average(def: 0)[The higher the value, the slower it is.]
- [011] [FL.Vr] Set VR(zs) filter(0(off) ~ 100) It is similar to the input average(def: 100)
- [012] [FL.FV] Allowable Fluctuation Value(0.01 ~ 49.99%) [The smaller the value, the slower it is]

- [020] [unit] (INPUT-A) Input Type (see the CODE(Input-A) table) [0 ~ 6]
- [021] [Fin.L] (INPUT-B) Input Type (see the CODE(Input-B) table) [0 ~ 6]
- [022] [Fin.H] (FUNCTION) Selection of function (see the CODE(Function) table) [0 ~ 10, 101 ~ 109]
- [023] [CoFF] Set a low input value for the display range (ex. : 4.00)

X01 (Set Value)
값 설정 (값변경)
-1999 ~ +9999

F1 Next Digit
다음 자리

F2 Inc. Value
숫자 올림

F3 Set END
설정 완료

X02 (D.P.)
소숫점설정
0000 ~ 0003
0 0
1 0.0
2 00.00
3 000.000

X05 (Exit)
메인 복귀

F1

Press & hold > 3sec.
3초이상 누름
DISPLAY (표시)

SAVE & RUN (MAIN)
저장 및 복귀

Output Type (OUTPUT-1, 2)			
Type		CODE	Range
Unspecified	OFF	0	
DC current	20 mA	1	4~20mA
	20 mA	2	0~20mA
DC voltage	5 V	3	1~5 V
	5 V	4	0~5 V
	10 V	5	2~10 V
	10 V	6	0~10 V
	±5 V	7	-5 ~ +5 V
	±10 V	8	-10 ~ +10 V

출력(1,2) 유형(0-8)설정(예: 4-20mA)

- (0)출력 없음(없음)
- (1)전류출력(4-20mA)
- (3)전압출력(1-5V)

** 전압 및 전류출력은 주문시 결정 됩니다
 [Voltage and current output are determined when ordering]
 ** 출고시 표준 출력으로 설정 됩니다
 [It is set to standard output at the factory]

Setting Mode (설정 모드)

PUSH **F1 + F3**

- Press, hold (F1+F3) > 3 seconds (F1 + F3) 동시3초이상
- Enter CODE number(0302) 코드 번호 입력(X01참조)
- F3** 클릭 - CODE 번호실행

CODE Number H-Txt: 001

** 주의가 필요합니다
 [Needs attention.]

Setting CODE number (CODE 번호)

200	Output Type & Output range (mA, V) [OUTPUT-1, 2]
210	Display range to output [OUTPUT-1, 2]
800	Calibration Analog output [OUTPUT-1 (0~20mA)]
810	Calibration Analog output [OUTPUT-2 (0~20mA)]

- 실행할 CODE 번호 (0000) 취소 (cancel)
- (200) 출력유형 및 범위 설정 (예:4.00-20.00)
- (210) 출력할 표시범위 설정 (예:0.0-100.0)
- (800) 출력(1) 교정 (0%(0mA)~100%(20mA))
- (810) 출력(2) 교정 (0%(0mA)~100%(20mA))

200 Output-Type & range (mA, V) 출력유형및범위

Output type and Output range in (mA, V) F1(Hold)>3sec. X05 (Exit)

출력설정(예:출력1 또는 출력2)
 F1 [3초이상누름]-복귀X05참조
 F1 [클릭]-다음메뉴
 F3 [클릭]-선택(값변경)X01참조

출력유형 CODE 설정(0~8) X01참조
 출력범위 설정(예: 4.00mA~20.00mA) X01참조

X01 (Set Value)
값 설정(값변경)

-1999~+9999

F1 Next Digit 다음 자리
F2 Inc. Value 숫자 올림
F3 Set END 설정 완료

X05 (Exit)
메인 복귀

F1
Press & hold > 3sec. 3초이상 누름

DISPLAY (표시)

SAVE & RUN (MAIN)
저장 및 복귀

210 (Display range to output) 표시치의 출력할범위

Display value for output range F1(Hold)>3sec. X05 (Exit)

**범위 출력 [Range output]
 F1 [3초이상누름]-복귀X05참조
 F1 [클릭]-다음메뉴
 F3 [클릭]-선택(값변경)X01참조

표시값 설정
 출력(1)하한에 적용됨 예: 0.0 %
 출력(1)상한에 적용됨 예: 100.0 %
 출력(2)하한에 적용됨 예: 0.0 %
 출력(2)상한에 적용됨 예: 100.0 %

800 (Calibration Output-1) 출력(1)

810 (Calibration Output-2) 출력(2)

Output 0% calibration

출력 조정 0%(0mA, 0V)
 F1 [클릭]-(출력올림)
 F2 [클릭]-(출력내림)
 F3 [클릭]-설정완료

Output 100% calibration

출력 조정 100%(20mA, 10V)
 F1 [클릭]-(출력올림)
 F2 [클릭]-(출력내림)
 F3 [클릭]-설정완료

F3 (Complete)

**Check output value with DM. (DM으로 출력값 확인)

Help text in display (H-txt: 000)

- [050] Set Output-1 Type(mA,V)
- [051] Set Output-2 Type(mA,V)
- [052] Display value for output-1 Low (The output range is within display range)
- [053] Display value for output-1 High (The output range is within display range)
- [054] Display value for output-2 Low (The output range is within display range)
- [055] Display value for output-2 High (The output range is within display range)
- [056] Output-1 Low Range in (mA or Voltage)
- [057] Output-1 High Range in (mA or Voltage)
- [058] Output-2 Low Range in (mA or Voltage)
- [059] Output-2 High Range in (mA or Voltage)
- [060] Calibration output LOW to process value 0%
- [061] Calibration output HIGH to process value 100%