This intelligent signal conditioner has programmable specifications of abundant functions such as input signals range setting, etc. through communication with Handy Terminal.
◉ Settings of computing parameter and input range, zero/span adjustment, input/output value monitoring, etc. are available through communication.
◉ Constructions of function are available for free program type.

WXT□-□□□N-□

MODEL

OUTPUT SPECS.
A : Current
V : Voltage

FUNCTION
A : Free Program
R : Temperature Compensation
S : Add/Subtract
T : Multiple/Divide
U : Square Root Extract
V : Hi Selector
W : Lo Selector

INPUT SIGNAL
1 : -10~+10V DC Span more than 0.1V
A : 0~50mA DC Span more than 1mA

OUTPUT SIGNAL

[WXTA]	[WXTV]
A : 4~20mA DC	1 : 0~10 mV DC
B : 2~10mA DC	2 : 0~100mV DC
C : 1~5mA DC	3 : 0~1V DC
D : 0~20mA DC	4 : 0~10V DC
E : 0~16mA DC	5 : 0~5V DC
F : 0~10mA DC	6 : 1~5V
G : 0~1mA DC	7 :-10~+10V DC
Z :(CUSTOM)	0 :(CUSTOM)
Current Signal Refer Table 1	Voltage Signal Refer Table 1 (Less than ±10V DC)

POWER SUPPLY
1 : 24VDC±10%
2 : 85~264V AC

Input & Output Specifications

Input signal	: DC voltage or current signal 3 points (3 inputs are same range)
Input range setting	:

Input range setting :
Input type   Setting range
1 : -10~+10V DC Span more than 0.1V
Accuracy limits for span less than 1V or elevation more than -50~50%
A : 0~+50mA DC Span more than 1mA
Accuracy limits for span less than 10mA or elevation more than 50%

Input resistance	: Current input : 100Ω Voltage input : 1MΩ (when power on) 100kΩ (when power off)
Applicable input	: Current input : 70mA DC Voltage input : ±15V DC
Output signal	: DC voltage or current signal 1 point

Allowable load resistance :

Output range [WXTA]		Output range [WXTV]	
4~20mA DC	Below 750Ω	0~ 10mV DC	Over 250kΩ
2~10mA DC	Below 1500Ω	0~100mV DC	Over 250kΩ
1~ 5mA DC	Below 3000Ω	0~ 1V DC	Over 2kΩ
0~20mA DC	Below 750Ω	0~ 10V DC	Over 10kΩ
0~16mA DC	Below 900Ω	0~ 5V DC	Over 2KΩ
0~10mA DC	Below 1500Ω	1~ 5V DC	Over 2KΩ
0~ 1mA DC	Below 15kΩ	-10~ +10V DC	Over 10KΩ

Input adjust function	±1% of span (both for zero·span adjust)
Output adjust function	±10% of span (both for zero·span adjust)

Standard Performance

Accuracy rating	±0.1% of span
Computation period	0.1 second
Response speed	500ms 63% response (10~90%)
Insulation resistance	: 100MΩ (500V DC) between input~output~powersupply~ground

Withstand voltage:
DC Drive 1500V AC/minute between input~output·power supply
          500V AC/minute between output~power supply
AC Drive 1500V AC/minute between input~output~power supply ~ground

Temperature range	0~50℃
Humidity range	5~95%RH (no condensation)
Power supply voltage	24V DC±10% or 85~264V AC (47~63Hz)

Effect of fluctuation of power supply voltage :
Less than ±0.1% of span for fluctuation of 24V DC±10% or 85~264V AC

Effect of ambient temperature change :
Less than ±0.2% of span for change of 10℃

Current dissipation	24V DC 75mA
Power dissipation	100V AC 3.5VA, 200V AC 5.5VA

Mounting, Shape & Accessories

Material	Case : ABS plastic
Mounting method	Rack, Wall, DIN rail mountings
Connecting method	M4 screw terminal
External dimension	72x48x127mm (HxWxD)
Weight	DC Drive : abt. 150g, AC drive : abt. 300g
Accessories	Mounting block .... 2 Range label 1

CUSTOM ORDER SPECS.

Table 1 Manufacturable Range

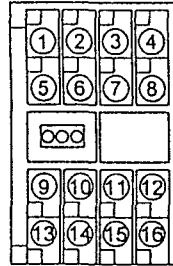|	Current Signal	Voltage Signal
Output Range	0~24mA DC	-10~+10V DC
Span	1~24mA DC	10mV~20V DC
Zero Elevation	0~200%	-100~+200%

Dual Outputs
When dual outputs is designated, put /DO at
tail of Type Code.
However, Output-2 is fixed at 1~5V DC.
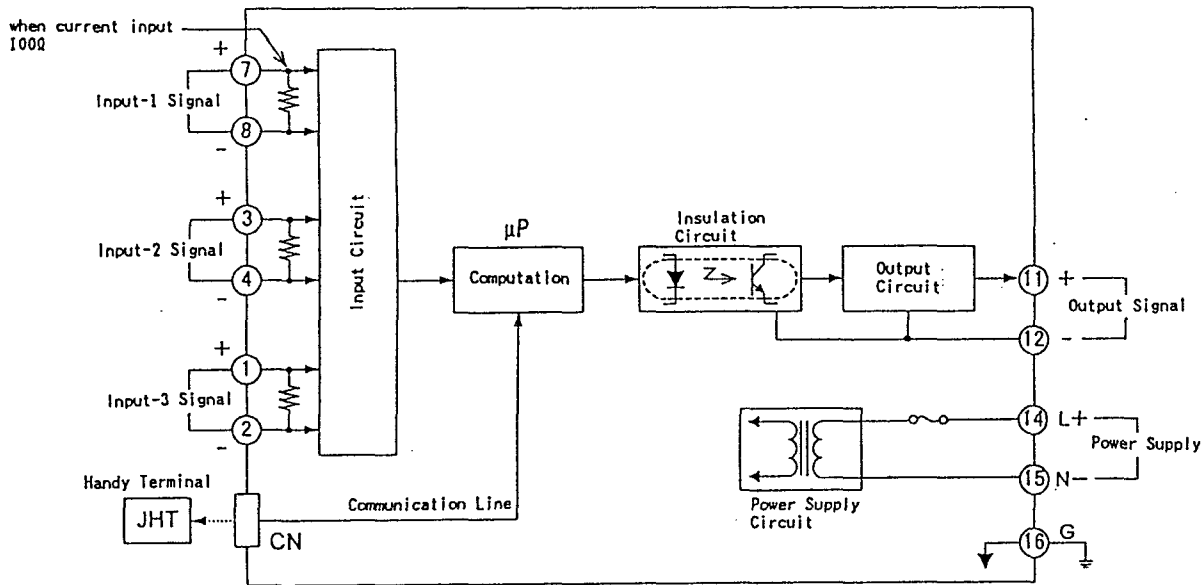Accuracy of Output-2 is within ±0.2%
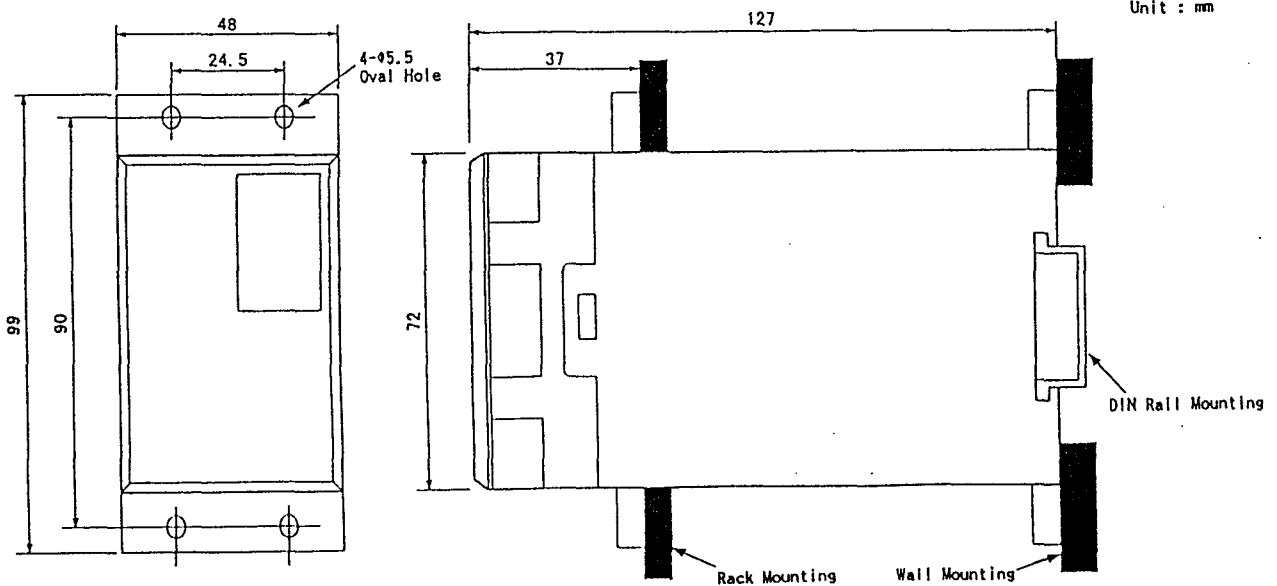of relative error with Output-1.
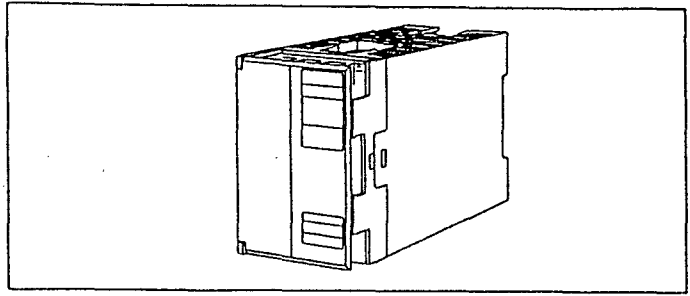
TERMINAL ARRANGEMENT

1	INPUT 3	(+)	9	OUTPUT 2	(+)
2	INPUT 3	(−)	10	OUTPUT 2	(−)
3	INPUT 2	(+)	11	OUTPUT 1	(+)
4	INPUT 2	(−)	12	OUTPUT 1	(−)
5			13		
6			14	SUPPLY	(L+)
7	INPUT 1	(+)	15	SUPPLY	(N−)
8	INPUT 1	(−)	16	GND	(G)

BLOCK DIAGRAM

when current input 100Ω

Input-1 Signal +7 −8
Input-2 Signal +3 −4
Input-3 Signal +1 −2

Input Circuit

μP Computation

Insulation Circuit

Output Circuit

11 + Output Signal 12 −

Power Supply Circuit

14 L+ Power Supply 15 N−

16 G

Handy Terminal JHT

Communication Line

CN

EXTERNAL DIMENSION

Unit : mm

48
24.5
4-φ5.5 Oval Hole
99
90

127
37
72

DIN Rail Mounting

Rack Mounting   Wall Mounting

WXT□-A (Free Program)
Applications of this unit are applied by programming commands through Handy Terminal.

WXT□-R (Temperature Compensation)
The following formula (select either one) is used for temperature·pressure compensation of air flow measured through differential pressure flowmeter (Orlifice, Venturi, Flownozzle). Use WXT-T for temperature· pressure compensation of air flow measured through Voltexflow meter, etc.

$$Y = \sqrt{\frac{K2 \cdot X2 + A2}{K3, X3 + A3}} \cdot K1 \cdot \sqrt{X1} \ .. \ (1) \ \text{[when flow input extraction]}$$

$$Y = \sqrt{\frac{K2 \cdot X2 + A2}{K3, X3 + A3}} \cdot K1 \cdot X1 \ .... \ (2) \ \text{[when no flow input extraction]}$$

Y (Output)	: Compensated flow output signal (%)
X1 (Input-1)	: Non-compensated flow input signal (%)
X2 (Input-2)	: Pressure input signal (%)
X3 (Input-3)	: Temperature input signal (%)
K1~K3	: Gain (no unit)
A2, A3	: Bias (%)

Gain·Bias Setting
<Temperature pressure compesation>

$$● K1 = \frac{\text{non-compensated flow input span}}{\text{after compensated flow input span}} \quad .... (a)$$

$$● K2 = \frac{\text{Max. value − min. value (of pressure transmitter range)}}{\text{Standard pressure (kgf/cm}^2\text{)+1.0332*}} \ ..(b)$$
*When kPa, make 1.0322 to 101.323

$$● A2 = \frac{\text{Min. value (of pressure transmitter range)+1.0332}}{\text{standard pressure (kgf/cm}^2\text{)+1.0332*}} \ ..(c)$$
*When kPa, make 1.0322 to 101.323

(Pressure compensation item)

$$● K3 = \frac{\text{Max. value − min. value (of temperature range)}}{\text{Standard temperature τ+273.15}} \ ..(d)$$

$$● A3 = \frac{\text{Min. value (of temperature range)+273.15}}{\text{Standard temperature τ+273.15}} \ ..(e)$$

(Temperature compensation item)

<When carry out only temperature compesation or pressure compensation>
● When carry out only temperature compesation
Take 1 item of pressure compensation.
That is, make out K2=0, A2=100% and calculate other gain and bias by using formular (d), (e).
● When carry out only pressure compesation
Take 1 item of temperature compensation.
That is, make out K3=0, A3=100% and calculate other gain and bias by using formular (b), (c).

Gain Setting range : Effective 4 digits, minimum unit 0.00001 in range of −320~320
Bias Setting range : Effective 4 digits, minimum unit 0.001% in range of −32000~32000%
Computation accuracy : ±0.1%
whereas K1=K2=K3=1, A2=A3=0%
Input (X1) vs. Output when input (X2, X3) fixed at 100%

WXT□-S (Addition/Subtraction)
The following formula is used for addition and subtraction of 3 inputs

$$Y = K4\{K1(X1+A1)+K2(X2+A2)+K3(X3+A3)\}+A4$$

Y (Output)	: Output signal (%)
X1~X3 (Input-1~Input-3)	: Input signal (%)
K1~K4	: Gain (no unit)
A1~A4	: Bias (%)

Set at 0 for K1, K2, K3 of circuit not input applied.
Not necessary to designate A1, A2, A3.
Gain setting range : Effective 4 digits, minimum unit 0.00001 in range of −320~320
Bias setting range : Effective 4 digits, minimum unit 0.001% in range of −32000~32000%
Computation accuracy : ±0.1%
whereas K1=0.5 K2=0.25 K3=0.25 K4=1, A1=A2=A3=A4=0%

WXT□-T (Multiplication/Division)
The following formula is used for multiplication and division of 3 inputs. Temperature pressure compensating calculation can be done applying 3 inputs of air flow signal, temperatrure and presssure signals measured through Voltexflow meter.

$$Y = K4 \cdot \frac{(K1 \cdot X1 + A1) \cdot (K2 \cdot X2 + A2)}{(K3 \cdot X3 + A3)} + A4$$

Y (Output)	: Output signal (%)
X1~X3 (Input-1~Input-3)	: Input signal (%)
K1~K4	: Gain (no unit)
A1~A4	: Bias (%)

Gain·Bias Setting : Get gain and bias by the following information when carry out temperature· pressure compensation for air flow measured through eddy flowmeter.
<Temperature pressure compensation>
● K1 K1=1 since flowmeter output is used as it is.
● A1 A1=0% since flowmeter output is used as it is.
● K2 Calculate by (b) formula ⎤ Pressure
● A2 Calculate by (c) formula ⎦ compensation item
● K3 Calculate by (d) formula ⎤ Temperature
● A3 Calculate by (e) formula ⎦ compensation item
● K4

$$K4 = \frac{\text{non-compensated flow input span}}{\text{after compensated flow input span}}$$

● A4 A4=0% since normally flowmeter output is used as it is.
<When carry out only temperature conpensation or pressure compensation>
● When carry out only temperature compesation
Take 1 item of pressureure compensation.
That is, make out K2=0, A2=100% and calculate other gain and bias by using formular (d), (e).
● When carry out only pressure compesation
Take 1 item of temperature compensation.
That is, make out K3=0, A3=100% and calculate other gain and bias by using formular (b), (c).
Note : When use this unit as multiplier, set K3=0, A3=100%
Gain Setting range : Effective 4 digits, minimum unit 0.00001 in range of −320~320
Bias Setting range : Effective 4 digits, minimum unit 0.001% in range of −32000~32000%
Computation accuracy : ±0.1%
whereas K1=K2=K3=K4=1, A1=A2=A3=A4=0%
Input (X1) vs. Output when input (X2, X3) fixed at 100%

WXT-U (Square Root Extraction)
The following formula is used for square root extraction of 3 inputs.

$$Y = \sqrt{K4 \cdot \frac{(K1 \cdot X1 + A1) \cdot (K2 \cdot X2 + A2)}{(K3 \cdot X3 + A3)} + A4}$$

Y (Output)	: Output signal (%)
$X1 \sim X3$ (Input-1~Input-3)	: Input signal (%)
$K1 \sim K4$	: Gain (no unit)
$A1 \sim A4$	: Bias (%)

Gain Setting range : Effective 4 digits, minimum unit
                     0.00001 in range of -320~320
Bias Setting range : Effective 4 digits, minimum unit
                     0.001% in range of -32000~32000%

Computation accuracy : ±0.1%
   whereas K1=K2=K3=K4=1,   A1=A2=A3=A4=0%
   Input (X1) vs. Output when input (X2, X3) fixed
   at 100%

WXT-V (Hi-Selector)
Highest signal is selected out of 3 input
signals (X1, X2, X3) or 2 input signals
(X1,X2) and then outputs (Y).

WXT-W (Lo-Selector)
Lowest signal is selected out of 3 input
signals (X1, X2, X3) or 2 input signals
(X1,X2) and then outputs (Y).

Subject to change without notice for grade up quality and performance