Order Information

Block means optional functions with additional charge

Model	Output 1	Output 2	Alarm	TRS	Remote	COMM	Input type	Power	Accessories
1	**0**	**1**	**0**	**0**		**0**	**01**	**A**	**N**
NFY900(Red/Green light)	0 None	0 None	0 None	0 None	0 None	0 None	See input type table code	A AC 85-265V	N None
NFY901(Blue/White light)	1 Relay	1 Relay	1 1Set	1 1Set	1 4-20mA	3 TTL		D DC 24V	T Terminal Cover
NFY902(Large LED)	2 Voltage Pulse (SSR Drive)	2 Voltage Pulse (SSR Drive)	2 2Sets	2 2Sets	2 0-20mA	B RS-485(FY)			W IP65
PNFY900(Program)	3 4-20mA	3 4-20mA	3 3Sets	A 0-20mA	A 0-5V	C RS-485(NFY)			R Terminal Cover +IP65
	4 0-20mA	4 0-20mA	A HBA	B 0-5V	B 0-10V				
NFY400 48x48mm	A 0-5V	A 0-5V	B HBA+AL2	C 1-5V	C 1-5V				
NFY600 96x48mm	B 0-10V	B 0-10V	C HBA+AL2+AL3	D 2-10V	D 2-10V				
NFY700 72x72mm	C 1-5V	C 1-5V			E DI				
NFY800 48x96mm	D 2-10V	D 2-10V			F Remote+DI				
NFY900 96x96mm					M Motor valve control feedback				
	5 1φSCR zero cross control				J PT(Second Input)				
PNFY400 / 401 48x48mm	6 3φSCR zero cross control				K TC(Second Input)				
PNFY600 / 602 96x48mm	7 Motor valve control				L Linear(Second Input)				
PNFY700 / 701 72x72mm	8 1φSCR phase angle control								
PNFY800 / 801 48x96mm									
PNFY900 / 901 / 902 96x96mm									

※ HBA :Heater Break Alarm (HBA must use AL 1 as alarm relay)
※ The Second Input FY600/800/900only

Input Type Table

TYPE	Thermocouple														RTD		
	K		J		R	S	B	E	N	T		W	PLII	L	PT100		
Kind	K1	K2	J1	J2	R	S	B	E	N	T1	T2	W	PLII	L	DP1	DP2	DP3
Code	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17

Range °C (chart — maximum / minimum values):

Kind	Max	Min
K1	600.0	-50.0
K2	1200	-50
J1	400.0	-50.0
J2	1200	-50
R	1760	-50
S	1760	-50
B	1820	-50
E	900	-50
N	1300	-50
T1	400.0	-199.9
T2	400	-199
W	2320	-50
PLII	1200	-50
L	800	-50
DP1	850.0	-199.9
DP2	850	-199
DP3	850	0

TYPE	LINEAR											
	AN1	AN2						AN3	AN4			
Code	18	19	20	21	22	23	24	25	26	27	28	29
Range	0~25mV	0~50mV	0~20mA	0~1V	0~2V	0~5V	0~10V	0~70mV	4~20mA	10~50mV	1~5V	2~10V
	4 kinds of choices：-1999~9999 -199.9~999.9 -19.99~99.99 -1.999~9.999											

Before operating this product, read the instruction manual carefully to avoid incorrect operation.
This product is intended for use with industrial machines, test and measuring equipment.
It is not design for use with medical equipment.
If it is possible that an accident may occur as a result of the failure of the product or some other abnormality, an appropriate independent protection device must be installed.

NFY
Series Controller

NFY400 ◆ NFY700
NFY600 ◆ NFY800
NFY900

New-Generation NFY Series

Digital PID Temperature Controller

TAIE

TAIWAN INSTRUMENT & CONTROL CO., LTD

Classical Re-evolution

Double Loop

Precise Control

High Reliability

High Quality & High Performance
With Best Process Control

Sampling Time 50ms

High Accuracy ±0.1%

Speed upper to 115200 bps

PV 25.0
SV 90.0
OUT1
0 20 40 60 80 100 %
SET A/M
TAIE FY900

Function block diagram

Digital input

Remote SV

4~20mA

CT input

SC 80-T

Sensor input

PV 25.0
SV 200.0
OUT1
0 20 40 60 80 100 %
SET A/M
TAIE FY900

RS-485

Alarm

RELAY Output

Transmission

12.00 mA

RELAY   SSR   Current   Thyristor   Motor valve

SSR

mA

M

Features

Various I/O Types

Thermocouple

Input

RTD

Current / Voltage

PV 25.0
SV 200.0
OUT1
0 20 40 60 80 100 %
SET A/M
TAIE FY900

Output

NO
NC
COM

Relay

SSR

Current / Voltage

Thyristor

Motor valve

M

Excellent Anti-Interference Ability

Adopt new anti-interference algo-rithm and pass the highest level of EMC verification in CE certification.It can resist electromagnetic interfer-ence in heavy noise environment.

EMC Shielding ✓

High Speed Sampling and High Accuracy

Both loops can perform high-speed sampling for 50ms, enabling stable control and response. Built-in 18-bit high resolution ADC circuit provides up to 0.1% accuracy.

50ms
ADC
18bit

Customize Function Key

It can be quickly executed the event by A/M key.
Ex: auto/manual switch, run/stop switch etc.

A/M

Status Indicator Light

Real time monitor the status of output(OUT1/OUT2)、alarm(AL1/AL2/AL3),auto-tunning(AT),manual output(MAN) and program execute(PRO).

OUT1 OUT2 AT AL1 AL2 AL3 MAN PRO

Double-Loop Design

The input adopts double-loop design, which can accept two sensor input and drive two output module at the same time, realize temperature and humidity control on a NFY900.

Certification and Universal Voltage

All models get CE approval.operate on any voltage from AC 85~265V at 50/60 Hz,DC 24V is also available.

CE

Parameter Lock Function

All parameters are separated in five operation levels (Level1~Level5). Each parameter can be hidden or locked to prevent users unautho-rized changes.
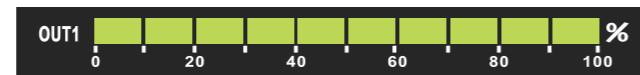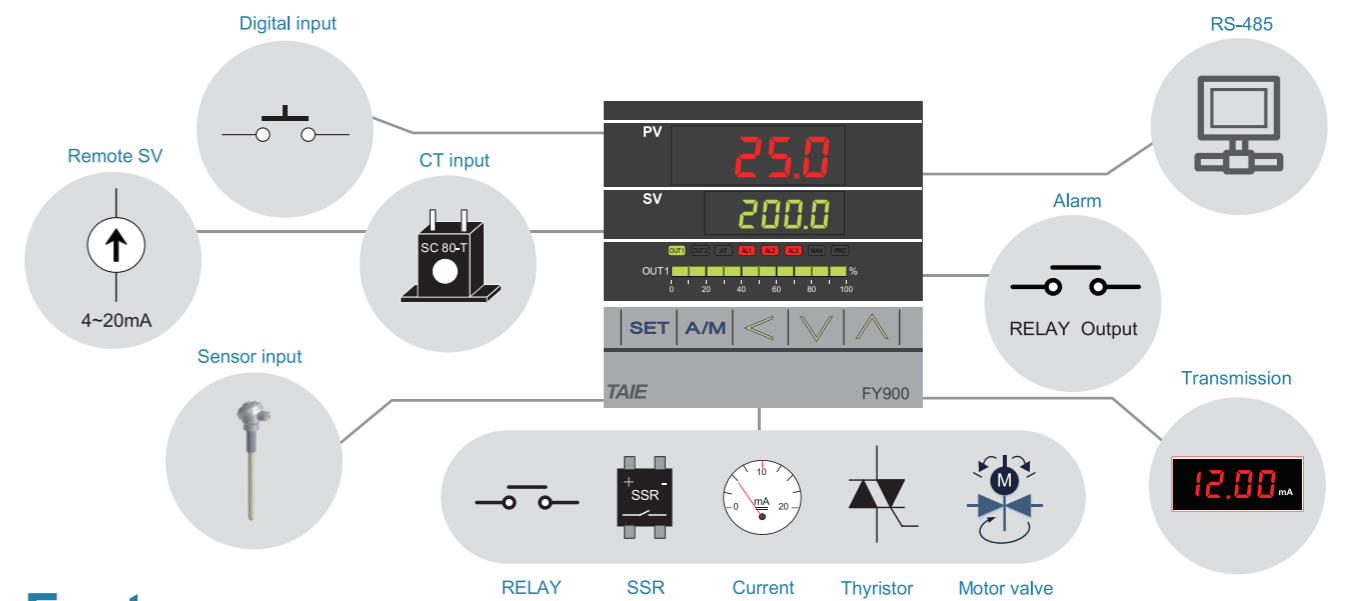
Bar-Graph

The output percentage is directly displayed on the panel with a bar-graph indicator 10 LED's corresponding to every 10% differential in output (0~100%) (except NFY400).
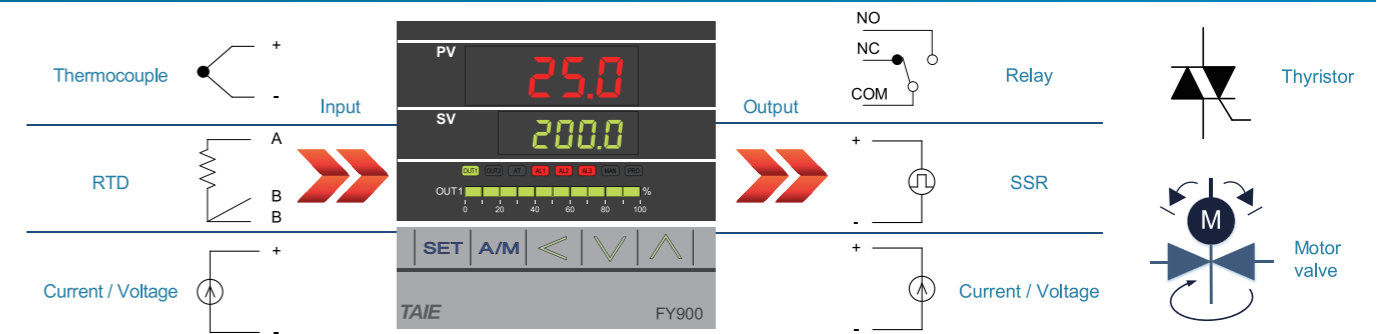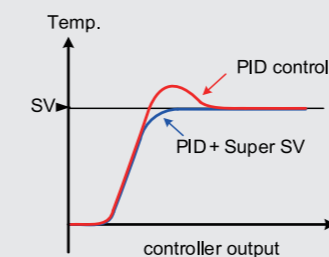
OUT1
0 20 40 60 80 100 %

Excellent Control Performance

PID Control
Super SV function can effectively suppress temperature overshoot and quickly reach the set temperature.
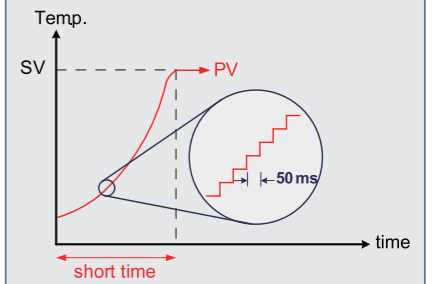
Temp.
SV
PID control
PID + Super SV
controller output
time

Auto-tuning
Calculate the optimal PID of the system value automatically, to achieve precise control effect.

Temp.
PV
SV
Auto-tuning calculation Auto-tuning complete
time
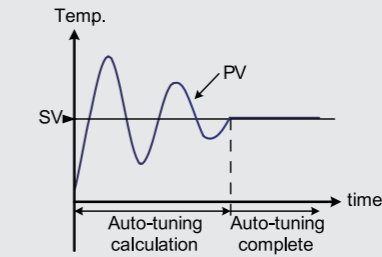
High speed control
50ms sampling time for fast and precise control of the occasion.

Temp.
SV
PV
50 ms
short time
time

Powerful Program Control

Provides 15 patterns of 10 segments of program control, each segment can be arbitrarily set to ramp, soak ,step or cool down temperature, the user can be arbitrary according to the demand, the maximum can support to 150 segments program control.

Execute by communication

Execute by key

PV 25.0
SV 200.0
OUT1
SET A/M
TAIE FY900

Pattern 1   Pattern 2   Pattern 15
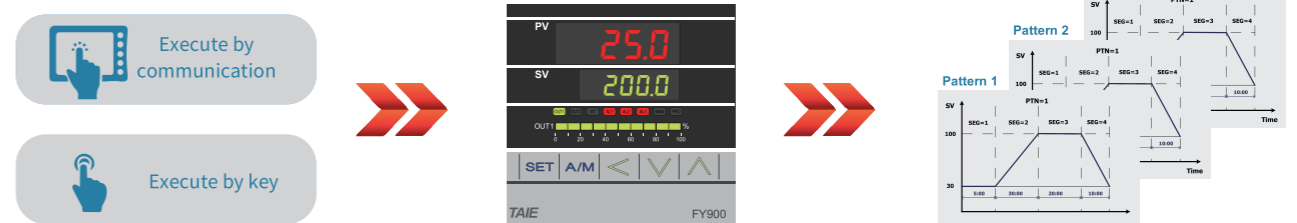
Features

Double Loop Control

Double Loop design, accept two sensor inputs at the same time, independently control two systems, effectively reduce system costs.

LOOP2 control output
LOOP1 control output
SCR-2
SCR-1
Hot Press
Sensor 1
Sensor 2
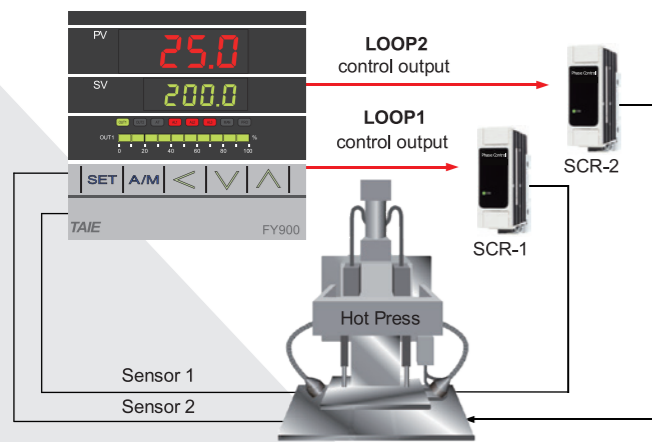
Motor Valve Control

Can use position feedback control of valve opening input or servo control without valve opening input.

Position feedback
Sensor Input
Motor valve control output
Stove
OIL
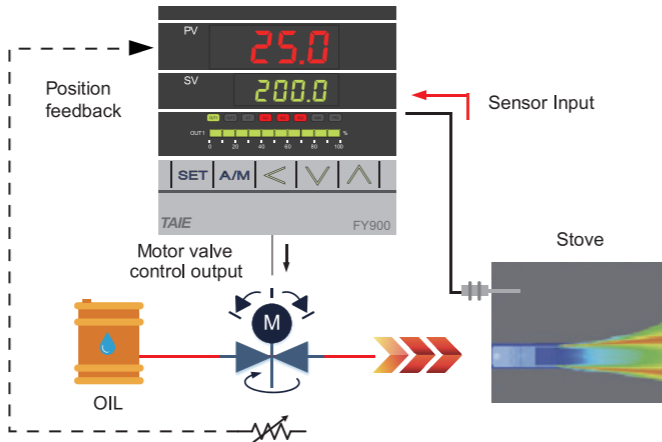
Transmission

Transfer parameter digital values as analog signals to external devices.
signals : 0~20mA , 4~20mA , 0~5V , 1~5V , 0~10V …
parameters : SV1, PV1,MV1…

Sensor Input
ammeter
Transmission DC4~20mA
oven
Paperless Recorders
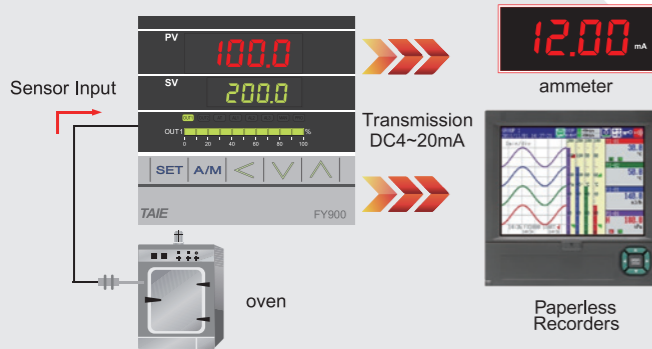
Remote SV

SV value is controlled by an analog signal from an external device.
signals : 0~20mA , 4~20mA , 0~5V , 1~5V , 0~10V …
parameters : SV

Sensor Input
Remote SV input
Transmitter
oven
Control output
SSR
Power
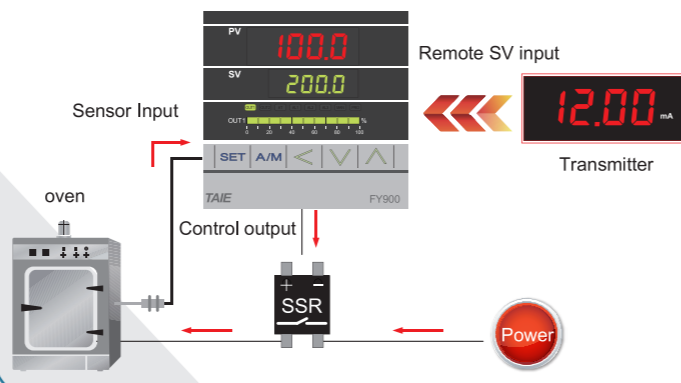
Communication

Compatible with Modbus RTU communication protocol to quickly establish links with HMI, PLC or SCADA software.

USB to RS-485 Converter
KA301
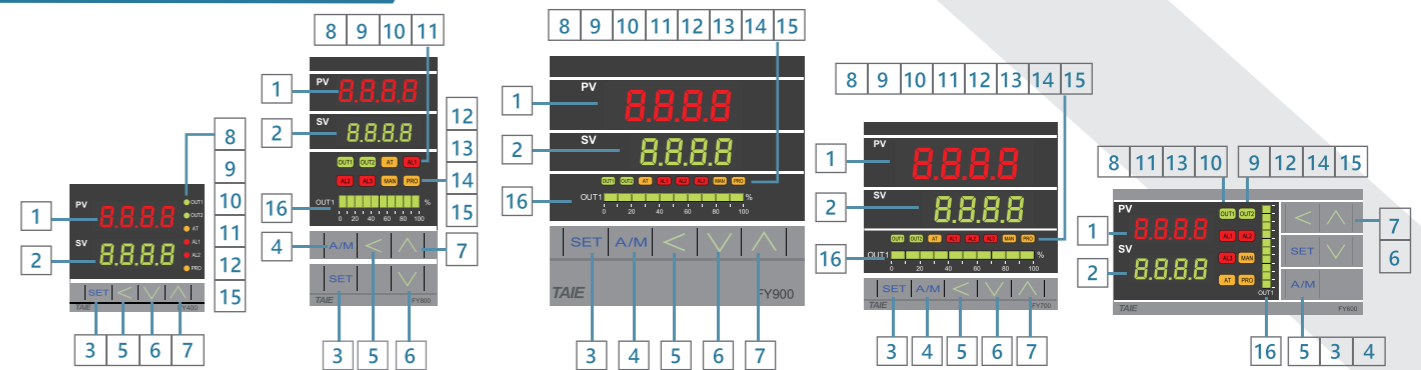RS-485 up to 31 units
IDNO: 1
IDNO: 2
IDNO:3
IDNO:31
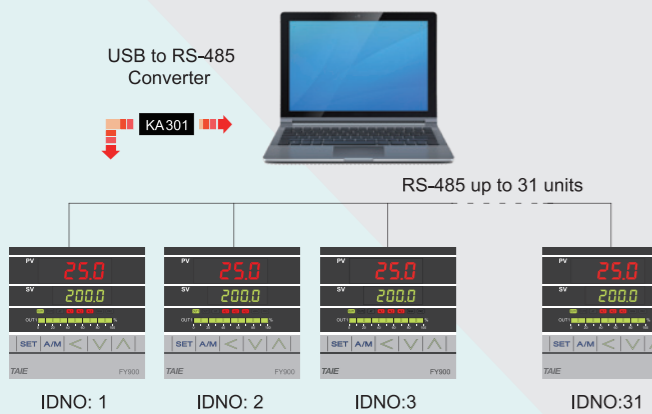
Heater Break Alarm(HBA)

With a CT (current transformer) to monitor the heater current in real time, when the current value is abnormally reduced an alarm signal can be output to notify the user.
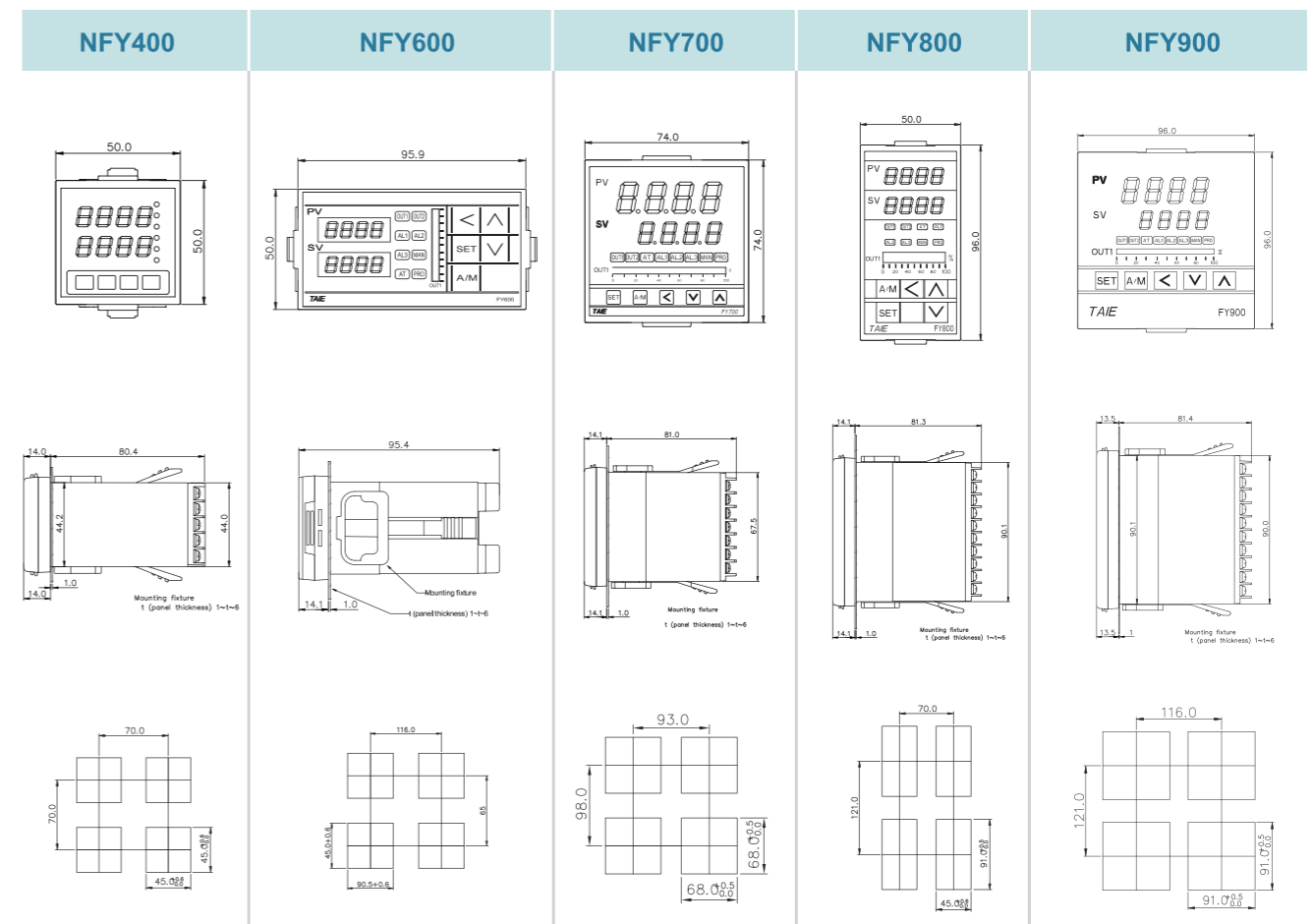
Alarm action
Sensor Input
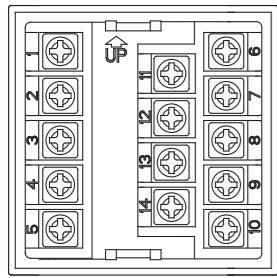oven
Control output
SSR
CT
SC 80-T
Power
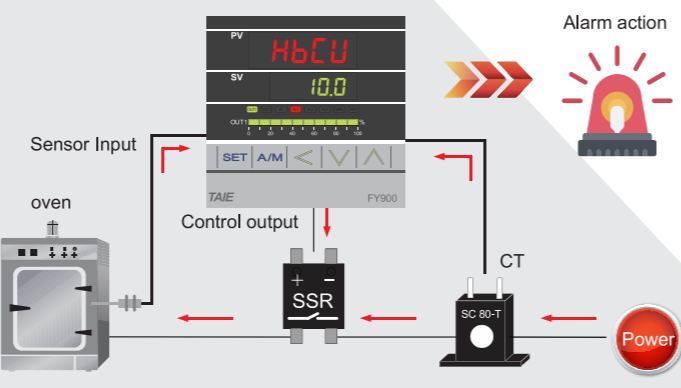
Appearance

Parts Description

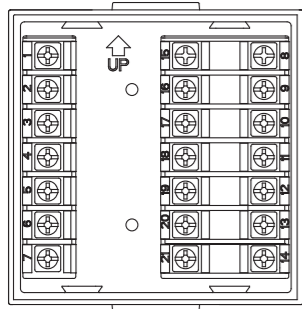| NO.	NAME	Function	NO.	NAME	Function
1	PV	Indicates PV (measured value) and character information such as parameter codes and error codes (Red)	9	OUT2	Lamp lit when OUT2 is activated (Green)
2	SV	Indicates SV (target set value) and parameter Values (Green)	10	AT	Lamp lit when Auto-tuning is activated (Orange)
3	SET	Used for parameter calling up and set value registration	11	AL1	Lamp lit when Alarm 1 is activated (Red)
4	A/M	Auto/manual switch or others function start	12	AL2	Lamp lit when Alarm 2 is activated (Red)
5	<	Shift digits when settings are changed	13	AL3	Lamp lit when Alarm 3 is activated (Red)
6	∨	Decrease Key (-1000,-100,-10,-1)	14	MAN	Lamp lit when controller in manual mode or get error condition (Orange)
7	∧	Increase Key (+1000,+100,+10,+1)	15	PRO	Lights when program running (Orange)
8	OUT1	Lamp lit when OUT1 is activated (Green)	16	OUT%	Output percentage (Green)

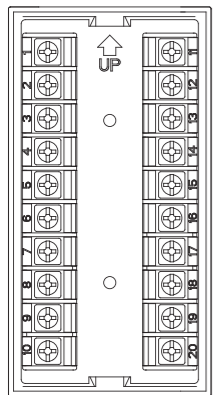## External and Panel Cutout Dimensions

NFY400	NFY600	NFY700	NFY800	NFY900

Terminal Arrangement

NFY400

NFY700

NFY600/800

NFY900

Specifications

Standard Spec.

Supply voltage	AC 85 ~ 265V DC 24V ±10％
Power Consumption	AC approx. 6VA DC approx. 4W
Memory	Non-volatile memory Maximum writes : 1000,000 times Data retention : 10 years
Operating temperature	0~50°C (32~122°F)
Humidity range	20% ~ 90% RH
Weight	NFY400 approx. 120g NFY600 approx. 170g NFY700 approx. 150g NFY800 approx. 170g NFY900 approx. 230g
Dimension (mm)	NFY400 48W X 48H X 95.5L (1/16 DIN) NFY600 96W X 48H X 95.5L (1/8 DIN) NFY700 72W X 72H X 95.5L (3/16 DIN) NFY800 48W X 96H X 95.5L (1/8 DIN) NFY900 96W X 96H X 95.5L (1/4 DIN)
Operating environment	Non-corrosive, flammable gas, slight dust ring environment, no high frequency, no direct shock, places the sun is not directly exposed.

Input

Set	Maximum 2 sets	
Accuracy	Cold junction compensation diode external ±(0.1% of reading + 1 digit)	
	Cold junction compensation diode inside ±(0.3% of reading + 1 digit)	
Sampling time	50ms	
TC	K、J、R、S、B、E、N、T、W、PLII、L	
RTD	PT100	
mA dc	0~5V、0~10V、0~2V、1~5V 2~10V、0~25mV、0~50mV、 0~20mA、4~20mA、0~1V、 10~50mV、0~70mV	
Input filter	First-order low-pass filter Time constant : 0.1 to 10.0 sec.(When set to 0, the filter is off)	
PV compensation	Both zero and high points can be compensated	

Output

Set	Maximum 2 sets
Control	1.PID, P, PI, and PD control (including AT function) 2.ON/OFF control 3.Heat and Cooling PID control (including AT function)
Relay	1.SPST-NO, 250VAC, 5A Electrical life : 100,000 times 2.SPDT-NO, 250VAC, 5A Electrical life : 50,000 times 3.SPDT-NC, 250VAC, 2A Electrical life : 20,000 times
SSR	ON : 24 V OFF: 0V Maximum load current : 20mA With short circuit protection circuit
mA	Resolution: 10 bits Signal type: 4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V

Heater Break Alarm (HBA)

CT model	SC-80T, SC-100T
Maximum current	SC-80T : 80A, SC-100T : 100A
Accuracy	SC-80T : ±3%, SC-100T : ±5%
Aperture	SC-80T : 5.9mm, SC-100T : 12.6mm
Output	Free load alarm 1~3

Alarm

Set	Maximum 3 sets
Mode	Program end, System error, HBA, Soak timer, Deviation high, Deviation low, Band, Process high, Process low, Program run, System normal, Ramp Soak Timer, Timer, Counter, 24H Timer
Relay specifications (resistive load)	1.SPST-NO, 250VAC, 5A Electrical life: 100,000 times 2.SPDT-NO, 250VAC, 5A Electrical life: 50,000 timers 3.SPDT-NC, 250VAC, 2A Electrical life: 20,000 times

Timer

set	1 set
Time Format	Hour : Minute. or Minute : second
Maximum Time	99hr.59min、99min.59sec
output	Free load alarm 1~3

Transmission

set	1 set
Resolution	14 bits
Accuracy	0.1%
Parameters	SV1, PV1, MV1, SV1R, PV1R, MV1R, SV2, PV2, MV2, SV2R, PV2R, MV2R
Signal Type	4~20mA, 0~20mA, 0~5V,0~10V, 1~5V, 2~10V

Remote

set	1 set
Resolution	18 bits
Parameters	Local SV
Signal Type	4~20mA, 0~20mA, 0~5V,0~10V, 1~5V, 2~10V

Motor Valve

set	1 set
Resolution	18 bits
Parameters	PV2
Signal Type	1KΩ or 560Ω

Digital Input

set	2 sets
External contact specifications	Dry contact without electricity Open circuit : over 500KΩ Short circuit : less 10Ω
Function	1.SV switching　　　　6.Retransmission RUN/STOP 2.RUN/STOP switching　7.Timer RUN/STOP 3.Manual switching　　8.Counter 4.AT RUN/STOP　　　　9.Program RUN/STOP 5.Remote SV RUN/STOP

Communication

Communication	RS-485
Protocol	Modbus RTU, TAIE
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Communication format configuration	1. Starting bit : 1 2. Information bits : 8 3. Bit check : None, Odd, Even 4. Stop bits : 1 or 2
Reponses time	0~250ms
Maximum connections	31pcs