

KP SERIES DIGITAL PROGRAM SETTER



Model KP3000 series are high-function digital program setters. The digital program setters are used with existing ON-OFF controllers or PID type controllers. The output signals are digital signal (RS-422A) and analog signals (4 to 20mA DC, 0 to 1V DC, 0 to 10V DC and voltage signal-equivalent to thermal electromotive force).

■ FEATURES

• 19 program patterns

A maximum of 19 program patterns, each consisting of a maximum of 19 steps, can be stored in memory.

• Free program pattern linkage and repetition

Flexible pattern configurations including partial pattern repetition, pattern linkage or whole pattern repetition.

• Excellent operability, clear graphic display

A full dot-matrix color LCD with back-lit illumination display the pattern of the step being executed as well as the steps before and after it. Parameters are set by interactive operation for easy access to many advanced functions.

• Versatile display showing progress of process

The executing pattern and one of the elapsed time of the pattern, the remaining time of the pattern, the elapsed time of the step or the remaining time of the step, are displayed. The displays are accompanied by real-time bar-graph displays so you can check progress at a glance.

• Free power supply

The power supply range is from 85 to 264VAC so the unit can be used with any local supply voltage.

• Wide range of options

Many options are available including communication interfaces, transmission signal output and external signal input and output.

• CE-marking (option)

The models with CE-marking are optionally available.



■ MODEL

KP3- ☐ 0 ☐ ☐ ☐ ☐

Output signal

- 1 : Digital output, RS422A
- 2 : Current output, 4 to 20mA
- 3 : Output equivalent to thermal electromotive force
- 4 : Voltage output, 0 to 10V
- 5 : Voltage output, 0 to 1 V
- 6 : Other

CE-marking

- B : None
- E : With CE-marking

Communication interface (Zone 1)*

- 0: None
- R: RS232C
- A: RS422A
- T: 5 Time signal output
- S: 4 Status output +End signal
- D: 4 External drive input
- P: Pattern select input
- M: 4 Time signal output +End signal
- Note) Cannot be specified when the output signal is the digital output.

External input/output signal (Zone 2)*

- 0: None
- T: 5 Time signal output
- S: 4 Status output +End signal
- D: 4 External drive input
- P: Pattern select input
- M: 4 Time signal output +End signal
- Note) Can be specified only when the output signal is the digital output.

External drive input (Zone 3)*

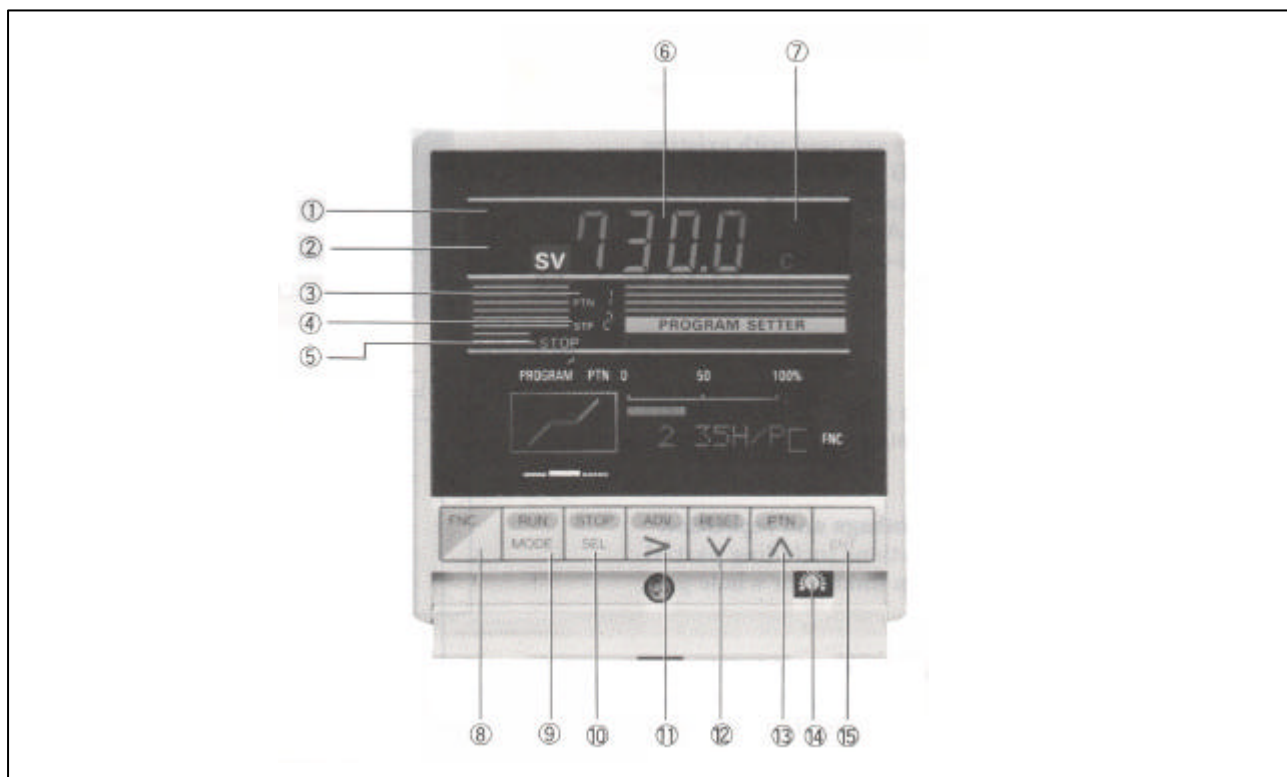
- 0: None
- 5: 4 Time signal output +End signal +3 External drive input
- 6: 5 Time signal output +3 External drive input
- 7: 4 Status output +4 External drive input
- 8: 3 External drive input +Pattern select input
- T: 5 Time signal output
- S: 4 Status output +End signal
- D: 4 External drive input
- P: Pattern select input
- M: 4 Time signal output +End signal

Items marked with * are options.

Note 1. Options common to all zones shall be specified in the order of T, S, D, P and M, with Zone 3 having priority.

NEW KP SERIES

FUNCTIONS OF COMPONENT PARTS



● DISPLAY 1

- ① • Program running (RUN) display Light while a program is being executed.
- ② • Setting mode (SET) display Lights in the setting mode (initiated by pressing the MODE key).
- ③ • Execution pattern number (PTN) display Display the number of the pattern selected or being executed.

● DISPLAY 2

The display alternates between the operation screen and the setting screen whenever the Mode key is pressed.

● Setting screen

This displays various parameters when setting constants and selecting functions.



- ④ • Execution step number (STP) display Display the number of the execution step of the pattern being executed.
- ⑤ • Program stop (STOP) indicator Light when program execution is stopped.
- ⑥ • Set value (SV) display Display the set value.
- ⑦ • Unit display Display the set unit (°C, °F, K, %, blank).

● Operation screen

Three steps of the pattern and the time are displayed (digitally and by a bar graph).



Time display

One of the elapsed time of the pattern, the remaining time of the pattern, the elapsed time of the step, or the remaining time of the step can be displayed.

Program pattern display

Three steps are displayed graphically, the current step and the steps before and after the current step.

● OPERATION SECTION

- ⑧ ● **Function (FNC) key**
Press when the upper functions of the other six keys are required.
- ⑨ ● **RUN key (Upper function)**
Press to start running a program.
- **MODE key (Lower function)**
Press to switch between the operation screen and setting screen.
- ⑩ ● **STOP key (Upper function)**
Press to stop a program during execution.
- **Select (SEL) key (Lower function)**
Press to switch setting modes on setting screen.
- ⑪ ● **Advance (ADV) key (Upper function)**
Press to advance program execution to the beginning of the next step.
- **Shift (>) key (Lower function)**
Press to shift digits or select functions when setting constants.
- ⑫ ● **RESET key (Upper function)**
Press to reset the program being executed, after suspending it.
- **DOWN (V) key (Lower function)**
Press to count down the set value one by one.
- ⑬ ● **Pattern select (PTN) key (Upper function)**
Press to select the number of the program pattern to be executed.
- **Up (L) key (Lower function)**
Press to count up the set value one by one.
- ⑭ ● **View angle adjustment trimmer**
Adjusts the angle of view of the LCD dot display screen (Display 2).
- ⑮ ● **Entry (ENT) key**
Press to enter the constant set or the function selected.

■ OUTPUT SETTING

| | Output | Output Range (Setting Range) | |
|--------------|----------|------------------------------|----------------|
| Thermocouple | B | 0 to 1820°C | 32 to 3300°F |
| | R | 0 to 1760°C | 32 to 3200°F |
| | S | 0 to 1760°C | 32 to 3200°F |
| | K | -200 to 1370°C | -300 to 2450°F |
| | E | -270 to 1000°C | -450 to 1800°F |
| | J | -200 to 1200°C | -300 to 2100°F |
| | I | -270 to 400°C | -450 to 700°F |
| | WRe5-26 | 0 to 2320°C | 32 to 4200°F |
| | WRe0-26 | 0 to 2320°C | 32 to 4200°F |
| | Ni-NiMo | 0 to 1310°C | 32 to 2350°F |
| | AuFe-Cr | 0 to 300.0K | -400 to 80°F |
| | N | 0 to 1300°C | 32 to 2350°F |
| | PR5-20 | 0 to 1800°C | 32 to 3250°F |
| | PR20-40 | 0 to 1880°C | 32 to 3400°F |
| | Platinel | -100 to 1390°C | -100 to 2500°F |
| | U | -200.0 to 400.0°C | -300 to 750°F |
| | L | -200.0 to 900.0°C | -300 to 1650°F |
| DC Voltage | | 0 to 1V, 0 to 10V | |
| DC Current | | 4 to 20mA | |

■ GENERAL SPECIFICATIONS

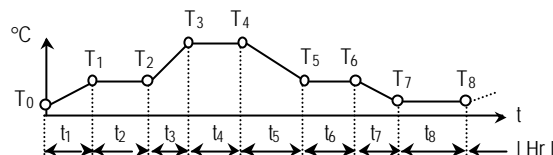
Display:

Display 1: SV value display (4-digit digital display and unit display), execution pattern step No. display (2-digit digital display), set mode display, running status display.

Display 2: Graphic display of pattern and digital/ bargraph displays of time in the operation mode. Display of mode setting contents in setting mode.

Program pattern setting system:

Key switch setting (Temperature/Time system)



Number of program pattern steps:

Max. 19 steps/pattern

Number of program patterns:

Max. 19 patterns

Number of program pattern repetitions:

Max. 9999 times

Number of program step repetitions:

Max. 99 times

Setting range:

Temperature: Refer to "Output Settings" below.

DC voltage, current: Arbitrary if not more than 4 digits

Time: 0 to 999 hrs./59 mm. (setting resolution 1 mm.)

Output signals:

Linear output, 4 to 20mADC, 0 to 1VDC, 0 to 10VDC.

Voltage corresponding to thermal electromotive force.

Output update period:

0.5 sec.

Output resolution:

Approx. 1/30000

Power supply:

Free supply from 85 to 264 VAC, 50/60Hz

Operating temperature range:

-10 to 50°C

Operating humidity range:

Less than 90%RH

(non-condensing)

Power failure measure:

Set contents are backed

up for more than 5 years

by lithium battery.

Insulation resistance:

Across output terminals and protective conductor terminal:

500VDC, 20MΩ, or more

Across power supply terminals and protective conductor terminal:

500VDC, 20MΩ, or more

Across output terminals and power supply terminals:

500VDC, 20MΩ, or more

Withstand voltage:

Across output terminals and protective conductor terminal:

500VAC, 1 mm.

Across power supply terminals and protective conductor terminal:

1500VAC, 1 mm.

Across output terminals and power supply terminals:

1500VAC, 1 mm.

Power consumption:

100V Max. 15VA, 200V Max. 20VA

Case:

ABS resin

Mounting:

Panel flush mounting

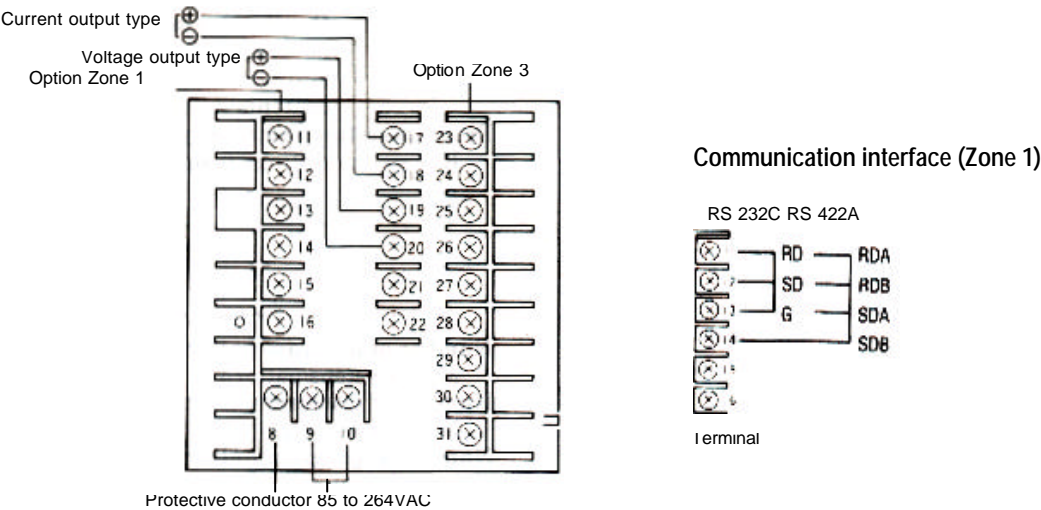
Weight:

Approx. 750g

NEW KP SERIES

■ TERMINAL BOARD LAYOUTS

- Analog output type terminal board



External drive input (Zone3)

| Terminal | 5 | 6 | 7 | 8 |
|----------|----------------|----------------|----------|----------|
| 23 | T ₁ | T ₁ | RUN/STOP | 10 |
| 24 | T ₂ | T ₂ | ADVANCE | 8 |
| 25 | T ₃ | T ₃ | RESET | 4 |
| 26 | T ₄ | T ₄ | WAIT | 2 |
| 27 | END | T ₅ | WAIT | 1 |
| 28 | RESET | RESET | RESET | RESET |
| 29 | ADVANCE | ADVANCE | ADVANCE | ADVANCE |
| 30 | RUN/STOP | RUN/STOP | RUN/SOP | RUN/STOP |
| 31 | COM | COM | COM | COM |

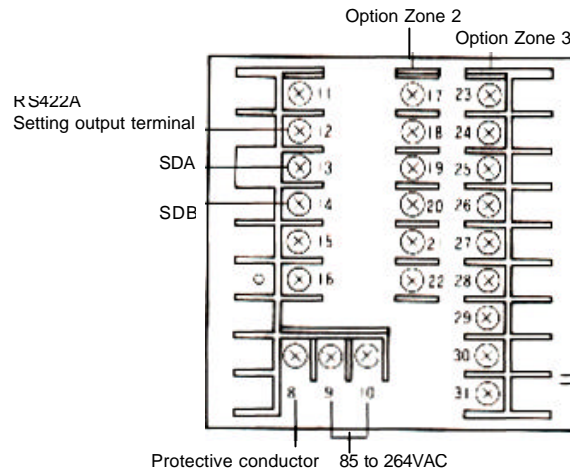
- 5:4 Time signal output + End signal + 3External drive input
- 6: 5 Time signal output + 3External drive input
- 7: 4 Status output + 4External drive input
- 8:3 External drive input + Pattern select input

External input/output signals (Common for all zones)

| Terminal | T | M | S | P | D |
|----------|----------------|----------------|----------|-----|----------|
| Zone1 | Zone2 | | | | |
| 23 | T ₁ | T ₁ | RUN/STOP | 10 | |
| 24 | T ₂ | T ₂ | ADVANCE | 8 | WAIT |
| 25 | T ₃ | T ₃ | RESET | 4 | RESET |
| 26 | T ₄ | T ₄ | WAIT | 2 | ADVANCE |
| 27 | T ₅ | END | END | 1 | RUN/STOP |
| 28 | COM | COM | COM | COM | |

- T : 5 Time signal output
- S : 4 Status output + End signal
- D: 4 External drive input
- P: Pattern select input
- M: 4 Time signal output + End signal

• Digital output type terminal board



External drive input (Zone 3)

| Terminal | 5 | 6 | 7 | 8 |
|----------|----------------|----------------|----------|----------|
| | T ₁ | T ₁ | RUN/STOP | 10 |
| | T ₂ | T ₂ | ADVANCE | 8 |
| | T ₃ | T ₃ | RESET | 4 |
| | T ₄ | T ₄ | WAIT | 2 |
| | | T ₅ | WAIT | 1 |
| | END | | RESET | RESET |
| | RESET | RESET | ADVANCE | ADVANCE |
| | ADVANCE | ADVANCE | RUN/STOP | RUN/STOP |
| | RUN/STOP | RUN/STOP | | |
| | COM | COM | COM | COM |

5:4 Time signal output + End signal + 3External drive input

6: 5 Time signal output + 3External drive input

7: 4 Status output + 4External drive input

8:3 External drive input + Pattern select input

External input/output signals (Common for all zones)

| Terminal | | T | M | S | P | D |
|----------|--------|----------------|----------------|----------|-----|----------|
| Zone 2 | Zone 3 | | | | | |
| 17 | 23 | T ₁ | T ₁ | RUN/STOP | 10 | |
| 18 | 24 | T ₂ | T ₂ | ADVANCE | 8 | WAIT |
| 19 | 25 | T ₃ | T ₃ | RESET | 4 | RESET |
| 20 | 26 | T ₄ | T ₄ | WAIT | 2 | ADVANCE |
| 21 | 27 | T ₅ | END | END | 1 | RUN/STOP |
| 22 | 28 | COM | COM | COM | COM | COM |

T:5 Time signal output

S:4 Status output + End signal

D:4 External drive input

P:Pattern select input

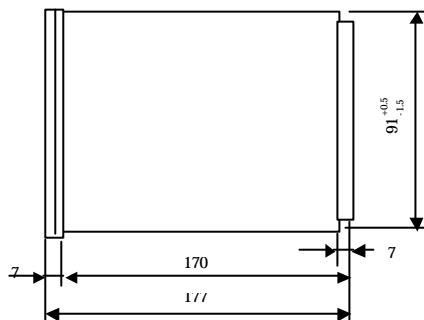
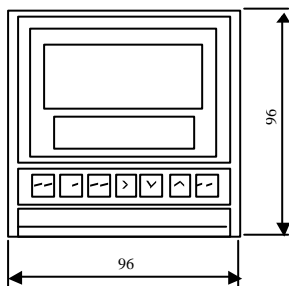
M:4 Time signal output + End signal

• OPTIONAL FEATURES

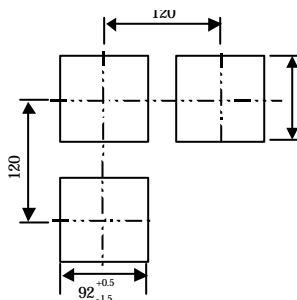
| Option | Details |
|-----------------------------------|--|
| Communication interface | An RS-232C or RS-422A interface can be used to transmit set values, process values and output values from the setter to a personal computer; Parameters can also be set from the computer. |
| Slope setting of program patterns | Patterns can be set by the slope / time system rather than the target temperature / time system. |
| Minute/second time setting | For a higher time resolution, patterns can be set using minute/second units rather than hour/minute units. |
| Time signals | Number of outputs: 5 points (4 circuits when combined with an END signal.) Output format: Open-collector transistor output (load max. 24VDC, 50mA). |

| Option | Details |
|-----------------------|---|
| External drive inputs | 4 modes: RUN/STOP, Advance, Reset, Wait Drive signal: Contact signal (12VDC, 2mA or more) |
| Status outputs | 4 output types: RUN/STOP, Advance, Reset, Wait Output format: Open-collector transistor output (load max. 24VDC, 80mA) |
| Pattern select input | 5 Input types Input format: Selection by BCD code based on combination of 1,2,4,8 and 10 Drive signal: Contact signal (12VDC, 2mA or more) |
| End signal | Output format: Open-collector transistor output (load max. 24VDC, 50mA) |
| CE-marking | CE-marking EN5501 1 Group 1 Class A EN50082-2 (Industrial Environment) EN61 010-1 +A2 The indication equivalent to $\pm 200\mu\text{V}$, the temperature indication equivalent to thermoelectromotive force of $\pm 200\mu\text{V}$ or 5°C may vary under the test environment requested by EMC directive. |

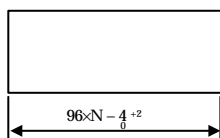
■ EXTERNAL DIMENSIONS



• Panel cutout



• Closed Instrumentation



N: Number of mounted units

Unit: mm

Specifications subject to change without notice. Original

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