The KP3000 series is a 96x96mm digital program setter with the analog output accuracy of ±0.1% and maximum 30 program patterns (maximum 19 steps/pattern). Output signal can be specified from analog output type and digital output type. By combination with a digital indication controller with digital input, the configuration of low cost program control system is enabled.

**FEATURES**

- **Program pattern**
  Settings of maximum 19 steps per pattern and maximum 30 sets of patterns are enabled. Repeating of a whole program pattern, linking of program patterns and repeating of a specific step in a program pattern are enabled, too.

- **Analog output type and digital output type**
  Output of setting unit is selected from high accuracy (0.1%FS) analog output type and digital output type which has no setting error by using communications function.

- **Communications 2-port type provided**
  Models with 2 communications ports are available. In addition, speeding up and highly-functionalization of communications have been realized. For example, you can use 1 port for high order communications with a personal computer and another port for the communications remote (digital remote) function. The communications protocol can be arbitrarily selected from [MODBUS] and [PRIVATE]. In the digital output type, however, 1-port type of communications is only available.

- **DI/DO arbitrarily-allocation**
  When the digital input (DI) or the digital output (DO) is added, arbitrarily-allocation for assigning functions to those DI/DO’s is enabled. It is the function enabling allocations such as [External drive input] to DI1 to DI3 and [Pattern selecting input] to DI4 to DI6.

- **Conforming to international safety standards and European directives (CE)**
  The controller is conformity with European directives (CE), and is UL and c-UL approved.

- **Conforming to RoHS**
  The controller is an environmental consideration product which does not contain directed hazardous substances such as lead, etc.

**MODELS**

<table>
<thead>
<tr>
<th>Models</th>
<th>KP3-100C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>1: Digital output (RS422A)</td>
</tr>
<tr>
<td>2: Analog output (4 to 20mA)</td>
<td></td>
</tr>
<tr>
<td>4: Analog output (0 to 10V)</td>
<td></td>
</tr>
<tr>
<td>5: Analog output (0 to 1V)</td>
<td></td>
</tr>
<tr>
<td>6: Analog output (Others)</td>
<td></td>
</tr>
<tr>
<td>7: Digital output (RS485)</td>
<td></td>
</tr>
<tr>
<td>1st zone</td>
<td>0: None</td>
</tr>
<tr>
<td>P: 6 Digital inputs</td>
<td></td>
</tr>
<tr>
<td>T: 6 Digital outputs</td>
<td></td>
</tr>
<tr>
<td>2nd zone</td>
<td>0: None</td>
</tr>
<tr>
<td>T: 6 Digital outputs*1</td>
<td></td>
</tr>
<tr>
<td>3rd zone*</td>
<td>0: None</td>
</tr>
<tr>
<td>R: Communications 1 port (RS232C) + 3 Digital inputs*2</td>
<td></td>
</tr>
<tr>
<td>S: Communications 1 port (RS485) + 3 Digital inputs*2</td>
<td></td>
</tr>
<tr>
<td>B: Communications 2 ports (RS232C + RS232C) + 1 Digital input*3</td>
<td></td>
</tr>
<tr>
<td>C: Communications 2 ports (RS232C + RS422A) + 1 Digital input*4</td>
<td></td>
</tr>
<tr>
<td>D: Communications 2 ports (RS232C + RS485) + 1 Digital input*4</td>
<td></td>
</tr>
<tr>
<td>E: Communications 2 ports (RS485 + RS232C) + 1 Digital input*4</td>
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</tr>
<tr>
<td>F: Communications 2 ports (RS485 + RS422A) + 1 Digital input*4</td>
<td></td>
</tr>
<tr>
<td>G: Communications 2 ports (RS485 + RS485) + 1 Digital input*4</td>
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</tr>
<tr>
<td>P: 6 Digital inputs*4</td>
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</tr>
<tr>
<td>T: 6 Digital outputs*4</td>
<td></td>
</tr>
<tr>
<td>U: 8 Digital inputs*4</td>
<td></td>
</tr>
<tr>
<td>W: 8 Digital outputs*4</td>
<td></td>
</tr>
<tr>
<td>Y: 3 Digital inputs</td>
<td></td>
</tr>
<tr>
<td>Z: 4 Digital inputs</td>
<td></td>
</tr>
</tbody>
</table>

- **Panel sealing and terminal cover**
  0: None
  1: Terminal cover
  2: IP54 panel sealing
  3: IP54 panel sealing + Terminal cover

- **Power supply voltage**
  A: 100 to 240V (AC)
  D: 24VAC/24VDC

**Notes:**
- *1 It can be selected when the control signal is 1 or 7 only.
- *2 It can be selected when the control signal is 1 or 7.
- *3 It can be selected when the control signal is 2, 4, 5, 6 or 7 only.
- *4 It can be selected when the control signal is 2, 4, 5, 6 or 6 only.

*Options common to 1st zone, 2nd zone and 3rd zone, assign them in order of [P] and [T] from 3rd zone first.*
KP3000 SERIES

SCRENS

1. Operation status (RUN) indication
   Lights in operation.

2. Operation stop (STOP) indication
   Lights in the state of operation stop.

3. RESET indication
   Lights when operation is cancelled and returns to
   the start point.

4. Pattern No. (PTN) indication

5. Program remote (REM) indication
   Lights when operation is executed by digital input.

6. Executing step number (STP) indication
   The step No. being executed is indicated.

7. Function (FNC) operation indication
   Lights when the function key is operated.

8. FNC key
   With the operation screen displayed, pressing it puts the controller in the
   operation key mode. With the settings screen displayed, pressing it puts
   the controller in the setting key mode and it operates to move the cursor
   backwards.

9. RUN key
   In the operation key mode, it operates as Run key. With the settings
   screen displayed, pressing it puts the controller in the setting key mode
   and it is used for switching between the operation screen and the mode
   screen of Mode 0, or for switching from the settings screen to the mode
   screen.

10. STOP key
    In the operation key mode, it operates as Stop key. With the settings
        screen displayed, pressing it puts the controller in the setting key mode
        and it is used to switch the settings screen.

11. ADV key
    In the operation key mode, it operates as Advance key. With the settings
        screen displayed, pressing it puts the controller in the setting key mode
        and it is used for moving the cursor and for selecting a parameter.

12. RESET key
    In the operation key mode, it operates as Reset key. With the settings
        screen displayed, pressing it puts the controller in the setting key mode
        and it is used for changing a setting value (or selecting a parameter) in
        descending order.

13. PTN key
    In the operation key mode, it operates as Pattern key. With the settings
        screen displayed, pressing it puts the controller in the setting key mode
        and it is used for changing a setting value (or selecting a parameter) in
        ascending order.

14. ENT key
    It is used for registering the settings.

15. Set value (SV) indication

16. Time signal (TS1 to TS8) indication

17. A wide variety of operation screens are prepared and arbitrarily-selection is enabled.
    On the whole program pattern display screen, the simultaneous display of the shape of whole program pattern and the progressed
    pattern position has been realized.

18. Engineering port

19. Engineering port

15. Set value (SV) indication

16. Time signal (TS1 to TS8) indication

17. A wide variety of operation screens are prepared and arbitrarily-selection is enabled.
    On the whole program pattern display screen, the simultaneous display of the shape of whole program pattern and the progressed
    pattern position has been realized.

18. Engineering port
**Output Specifications**

- **Output Signal:** Analog output 4 to 20mA, 0 to 1V, 0 to 10V
- **Digital Output:** RS422A, RS485
- **Accuracy Rating:** ±0.1% of full scale
- **Output Updating Cycle:**
  - Analog output: Approximately 0.1 seconds
  - Digital output: Approximately 1 second
- **Resolution:**
  - Analog output: Approximately 1/30000
- **Load Resistance:**
  - Voltage output: Approximately 10Ω
  - Current output: 400Ω or more

**Display Specifications**

- **Upper Display:** LCD (with back light)
- **Lower Display:** LED
- **No. of Program Patterns:** 30 patterns
- **Pattern Repetition:** Max. 9999 times
- **No. of Program Steps:** 19 steps/pattern
- **Step Repetition:** Max. 99 times
- **Rated Power Voltage:**
  - Without options: 24VAC 10VA
  - With options: 24VAC 15VA
- **Rated Power Frequency:**
  - General power supply specifications 50/60Hz
  - 24V Power supply specifications 24VDC/24AC

**Output Specifications**

- **Voltage Output:** 50kΩ
- **Resolution:** Approximately 1/30000
- **Output Updating Cycle:**
  - Digital output: Approximately 1 second
  - Analog output: Approximately 0.1 seconds

**General Specifications**

- **Digital Output:** RS422A, RS485
- **Analog Output:** 4 to 20mA, 0 to 1V, 0 to 10V

**Power Failure Countermeasures:**

- Settings stored in EEPROM (Rewrite count: One million times or more) and stored by a lithium battery for 5 years or more

**Terminal Screws:** M3.5

**Insulation Resistance:**

- Between primary terminals and secondary terminals: 20MΩ or more (500VDC)
- Between primary terminals and protective conductor terminal: 20MΩ or more (500VDC)
- Between secondary terminals and protective conductor terminal: 20MΩ or more (500VDC)

**Withstand Voltage:**

- Between primary terminals and secondary terminals: 1500VAC (For 1 minute)
- Between primary terminals and protective conductor terminal: 1500VAC (For 1 minute)
- Between secondary terminals and protective conductor terminal: 500VAC (For 1 minute)

**Temperature:**

- Ambient temperature: -10°C to 50°C (-10°C to 40°C for closed installation)
- Ambient Humidity: 10 to 90%RH (no condensation)
- Power Voltage: General power supply specifications 90 to 264VAC
- Power Voltage: 24V Power supply specifications 21.6 to 26.4VDC/AC

**Mounting Condition:**

- Single-unit panel mounting (Space above and below of the unit is needed.)

**Rate of Ambient Temperature Change:**

- 1°C/hour or less

**Transport Conditions**

- Ambient temperature: -20°C to 60°C
- Ambient Humidity: 5 to 90%RH (no condensation)
- Vibration: 4.9m/s² (10 to 60Hz)
- Impact: 392m/s²

**Storage Conditions**

- Ambient temperature: -20°C to 60°C
- Ambient Humidity: 5 to 90%RH (no condensation)
- Vibration: 4.9m/s²
- Impact: 392m/s²
OPTIONS

● Communications interface
With RS232C, RS422A or RS485, the setting and measured values of the controller can be transmitted to a master CPU and various parameters can be set by the master CPU.

Number of communications points: 2 points
Communications type: RS232C, RS422A, RS485
Communication speed: 2400/4800/9600/19200/38400 bps
Protocol: MODBUS (RTU), MODBUS (ASCII), PRIVATE

● Digital signal input
The following switching is enabled by digital input signal.
Input signal: No-voltage contact, open-collector signal
External contact capacity: 5VDC 2mA
Functions: 1. Selection of pattern No. (6 points)
2. Run/stop
3. Advance
4. Reset
5. Wait
6. Fast

● Digital signal output
Time signal or status signal can be outputted externally open-collector signal.
Output signal: Open-collector signal
Capacity: 24VDC, Maximum 50mA
Functions: 1. Time signal (Maximum 8 points)
2. Run/stop
3. Advance
4. Reset
5. Wait
6. End

● Panel sealing
By mounting the controller to a panel, it has the panel sealing equivalent to [IP54 compliance].

● Terminal cover
It covers the terminals for safe. The cover is transparent.
# TERMINAL ARRANGEMENT

## Option terminals

### Analog output (Voltage/current)

- 100-240V AC
- 24V AC/DC

### Digital output + Communications

<table>
<thead>
<tr>
<th>Communications RS232C</th>
<th>Communications RS485</th>
<th>Digital output RS422A</th>
<th>Communications RS485</th>
<th>Digital output RS485</th>
<th>Digital output RS422A</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>1 digital input</td>
<td>1 digital input</td>
<td>1 digital input</td>
<td>1 digital input</td>
<td>1 digital input</td>
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</tr>
</tbody>
</table>

### Digital output

<table>
<thead>
<tr>
<th>Digital output RS422A</th>
<th>Digital output RS422A</th>
<th>Digital output RS422A</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD</td>
<td>SA</td>
<td>RD</td>
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<tr>
<td>SD</td>
<td>SB</td>
<td>SD</td>
</tr>
<tr>
<td>SG</td>
<td>SG</td>
<td>SG</td>
</tr>
<tr>
<td>RDA</td>
<td>RDA</td>
<td>SA</td>
</tr>
<tr>
<td>RDB</td>
<td>RDB</td>
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</tr>
<tr>
<td>COM</td>
<td>COM</td>
<td>COM</td>
</tr>
</tbody>
</table>

## Option terminals

### Options common to each zone

<table>
<thead>
<tr>
<th>Options common to each zone</th>
<th>P</th>
<th>T</th>
<th>1st</th>
<th>2nd</th>
<th>3rd zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>DO</td>
<td></td>
<td></td>
<td></td>
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<td>DI</td>
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<td>COM</td>
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</table>

### 3rd zone

<table>
<thead>
<tr>
<th>Terminals</th>
<th>R</th>
<th>A</th>
<th>S</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>U</th>
<th>W</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD</td>
<td>RDA</td>
<td>SA</td>
<td>RD1</td>
<td>RD1</td>
<td>RD1</td>
<td>SA1</td>
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<td>DI</td>
<td>DO</td>
<td>DO</td>
<td>DO</td>
<td>DO</td>
</tr>
<tr>
<td>SD</td>
<td>SDB</td>
<td>SB</td>
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<td>SD1</td>
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<td>SB1</td>
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<td>SB1</td>
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<td>DO</td>
<td>DO</td>
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</tr>
<tr>
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</tr>
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</tr>
</tbody>
</table>

Based on combination with other options, assign the zone in the above order.

- R: Communications RS232C + 3 Digital inputs
- A: Communications RS422A + 1 Digital input
- S: Communications RS485 + 3 Digital inputs
- B: Communications RS232C + Communications RS232C + 1 Digital input
- D: Communications RS232C + Communications RS485 + 1 Digital input
- G: Communications RS485 + Communications RS485 + 1 Digital input
- U: 8 Digital inputs
- W: 8 Digital outputs
- Y: 3 Digital inputs + 5 Digital outputs
- Z: 4 Digital inputs + 4 Digital outputs
### ABOUT CRIMP STYLE TERMINALS

- **Ring type**
  - 7 or less
  - 0.8

- **Spade type**
  - 7 or less
  - 0.8

*(in pressed condition)*

*Use terminal with insulation*

### EXTERNAL DIMENSIONS

![External Dimensions Diagram]

- **PANEL CUTOUT**

- **Closed mounting panel dimensions**

  - 96 x N
  - 92

  - Unit: mm

- **Terminal cover**

  - 88 x 88

  - 91 x 91

  - 115

  - 147

- **Mounting metal**

  - 91 x 91

  - 115

- **Closed mounting panel dimensions**

  - 96 x N

  - 92

  - 7

  - 120

  - 120

  - N: Number of mounted instruments