Fuji Instrumentation \& Control

## Series Digital Temperature Controller Micro Controller PXG series



- Profile recovery -Profile cycling
- Delayed start $\cdot$ PV starft
- 4 patterns, max 32 segments/program
- Guaranteed soak
- Password function
- Alarm Flicker function

PXC

Fuji Electric Co., Ltd.

## PXG SERIES

## 200 ms sampling cycle and $\pm 0.3 \%$ FS

Model:PXG



Enoul Universal process value input

- Resistance bulb Pt100,
-Thermocouple
(J,K,R,B,S,T,N,PL-II)
-DC voltage ( $1-5 \mathrm{~V}, 0-5 \mathrm{~V}$, $0-10 \mathrm{~V}, 2-10 \mathrm{~V}, 0-100 \mathrm{mV}$ )


## noin Remote-SV input

DC voltage ( $1-5 \mathrm{~V}, 0-5 \mathrm{~V}$ )
Resin Position feedback input
100ohmes to 2.5 k ohmes
E. H ) Digital input (Max 5 points)

En (PXG9 only)
PPV/SV light out

## -wim Control-output

 (5types)-Relay contact
-SSR/SSC drive
-DC0-20mA/DC4-20mA
-DC0-5V/1-5V/0-10V/2-10V

- Motor-operated valve manipulating


## Fix Digital output

Relay contact : 3 points
Open collector: 2 points
$2 R S 485$ modbus communication function communication speed: Max. 19200bps
8. PC Ioader interface and software through RS-232C Communication
8.2 PID palette (for 8 combinations)

## Smart Ramp-soak

1 Maximum 32 segments/program (Increasing from 8 steps to 16 steps)


- The number of steps has been increased from 8 to 16.
- 16 steps can be used in 7 patterns. ptn0:step1 to 4, ptn1:step5 to 8, ptn2:step1 to 8, ptn3:step9 to 12 ptn4:step13 to 16, ptn5:step9 to 16 ptn6:step1 to 16

3 PV start

- When beginning ramp soak,

Controller searches for the starting
Program-SV the equal PV
Then, ramp soak will begin to run from the first detected point.


## 5 Delayed start function

This function is useful for manufacturing process.

## 2 Guaranteed soak

This function guaranteed the soak time.
Only soak time within the specified range of temperature for SV is counted towards soak time.


4 Continuous mode

- You can select the restart mode of Ramp-soak when the power failure returns.

| TYPE | Action |
| :--- | :--- |
| Reset | Ramp soak will Reset. |
| Continuous | Ramp soak will restart from <br> the Time when blacking out. |
| Initial start | When main power is restored ramp/soak <br> start from first segment of selected <br> pattern. |

## 6 Abundant digital inputs

5 digital inputs are available.
This function is useful combination with PLC and timer and so on.


| DI |  |
| :--- | :--- |
| $-\frac{1}{00}$ | OFF |
| $-\frac{1}{00}$ | RUN |
| $-\frac{1}{0}-$ | HOLD |
| $-\frac{1}{0-}$ | A/M |
| $-\frac{1}{O O}$ | AT |

DO
$\rightarrow$ G.S.
$\rightarrow 0$ END
$\rightarrow$ Seg 3
$\rightarrow$ Seg 5
$\rightarrow-\operatorname{Seg} 9$

## PXG SERIES

## Application example

## 1 Re-Transmission Output

## Averaging Temperature in Furnace



2 Soft Start Function

## Plastic Extrusion Machine



To protect nozzle material at turning on power of the machine, immediate heating the nozzle shall be with soft start function.

## 3 PID palette

PID Palette and SV seledt


## 4 Servo control and PFB control



## Ordering code

## - PXG4 (Standard type)



Note 1: If output 1 was for current or voltage output, option cannot be assigned to CT1. (If 7th digit was assigned to G or $\mathrm{J}, 5$ th digit cannot be assigned to E nor P.)

Note 2: If output 2 was for relay contact, SSR drive, current, voltage or retransmission output, 3 digital outputs cannot be assigned
(If 6th digit was assigned to A, C, E, P, R or S, 9th digit cannot be assigned to M.)
Note 3: If CT1 was selected in option 1, None in <Digital output> cannot be assigned. (If 7th digit was assigned to G or $\mathrm{J}, 9$ th digit cannot be assigned to 0 .)

Note 4: If RSV1 in option 1 and digital input 1 were selected simultaneously, output 2 cannot be assigned.
(If 7th digit was assigned to F or 2, 6th digit cannot be assigned to $\mathrm{A}, \mathrm{C}, \mathrm{E}, \mathrm{P}, \mathrm{R}$ nor S .)

PXG4 (Motor-operated valve control type)

|  |  |  |  | ${ }^{1213}$ |
| :---: | :---: | :---: | :---: | :---: |
| Digit | Specifications | Note |  |  |
| 4 | <Front panel size W $\times \mathrm{H}$ > $48 \times 48 \mathrm{~mm}$ |  | 4 : |  |
| 5 | <Output 1> <br> Motorized valve control output (Without PFB) | Note1 | S |  |
| 6 | <Output 2> None |  | Y |  |
| 7 | ```<Option 1> None Digital input (No.1) + RSV1 Digital input (No.1,2,3) RS485 + Digital input (No.1) RS485 + RSV1``` |  | Y $\begin{gathered}\text { Y } \\ \mathrm{H} \\ \mathrm{D} \\ \mathrm{D} \\ \mathrm{V} \\ \mathrm{V} \\ \mathrm{K}\end{gathered}$ |  |
| 8 | <Revision symbol> |  | 1 |  |
| 9 | <Digital output> (relay contact output) <br> None <br> digital output 1 point (No.1) <br> digital output 2 points (No.1,2) <br> digital output 2 points [independent common] (No. 1, 2) |  | (1) $\begin{aligned} & 0 \\ & 1 \\ & F \\ & F \\ & j\end{aligned}$ |  |
| 10 | <Power source, instruction manual> 100 to 240 V AC , no instruction manual 100 to 240 V AC , Japanese instruction manual 100 to 240 V AC, English instruction manual $24 \mathrm{~V} \mathrm{AC/DC}$, no instruction manual <br> $24 \mathrm{~V} \mathrm{AC} / \mathrm{DC}$, Japanese instruction manual <br> $24 \mathrm{~V} \mathrm{AC/DC}$, English instruction manual |  | (ei |  |
| 11 | $\begin{aligned} & \text { <Option 2> } \\ & \text { None } \\ & \hline \end{aligned}$ |  |  |  |
| $\begin{aligned} & 12 \\ & 13 \end{aligned}$ | <Special code> <br> Standard <br> Special codes prepared for shipping destination |  |  |  |

Note 1: If front panel size is $48 \times 48$, position feedback input (PFB input) function is not available.

## - PXG5/PXG9 (Standard type)

| PXG |  |  |  | $\square^{45678}{ }^{910111213}$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |
| Digit | Specifications | Note |  |  |  |  |  |
| , | $\begin{aligned} & \text { <Front panel size W } \times \mathrm{H}> \\ & 48 \times 96 \mathrm{~mm} \\ & 96 \times 96 \mathrm{~mm} \end{aligned}$ |  |  | ${ }_{5}^{5}$ |  |  |  |
| 5 | <Output 1> <br> Relay contact <br> SSR drive <br> Current ( 0 to $20 \mathrm{~mA} \mathrm{DC/4}$ to 20 mA DC ) <br> Voltage ( 0 to $5 \mathrm{VDC} / 1$ to $5 \mathrm{VDC} / 0$ to $10 \mathrm{VDC} / 2$ to 10 VDC ) | $\begin{array}{\|l\|l\|} \text { Note1 } \\ \text { Note } 1 \\ \hline \end{array}$ |  | A |  |  |  |
| ${ }^{6}$ | ```<Output 2> None Relay contact SSR drive Current ( 0 to \(20 \mathrm{~mA} \mathrm{DC/4}\) to 20 mA DC ) Voltage ( 0 to \(5 \mathrm{VDC/1}\) to 5 V DC/0 to \(10 \mathrm{VDC/2}\) to 10 V DC ) Re-transmission output, current ( 0 to \(20 \mathrm{~mA} \mathrm{DC/4}\) to 20 mA DC ) Re-transmission output, voltage ( 0 to \(5 \mathrm{VDC} / 1\) to \(5 \mathrm{VDC} / 0\) to 10 V D/2 to 10 V DC) Transmitter power supply``` | Note3 <br> Note3 <br> Note3 <br> Note3 <br> Note3 <br> Note3 <br> Note6 |  |  | A |  |  |
| 7 <br>  <br>  <br>  <br>  <br>  | ```<Option 1> None RS485 Digital input (No.1) + Digital input (No.2) Digital input (No.1) + RSV1 Digital input (No.1) + CT1 RS485 + Digital input (No.1) RS485 + RSV1 RS485 + CT1 RS485 + Digital input (No.1) + RSV1 Digital input (No.1) + RSV1 +Digital input (No.2)``` | Note2  <br>   <br> Note1 Note4 <br> Note2  <br> Note1 Note4 <br>   <br> Note3  <br> Note3   | Note5 <br> Note5 |  | Y $:$ <br> $M$  <br> T  <br> T  <br> H  <br> G  <br> G  <br> V  <br> K  <br> J  <br> J  <br> F  <br> 2  <br> 2  <br>   <br>   |  |  |
| 8 | <Revision symbol> |  |  |  | $1{ }_{1}$ |  |  |
| 9 | <Digital output> (relay contact output) <br> None <br> Digital output 1 point (No.1) <br> Digital output 2 points (No.1,2) <br> Digital output 3 points (No.1,2,3) <br> Digital output 2 points [independent common] (No. 1, 2) <br> 2 | Note4 |  |  |  |  |  |
| 10 | <Power source, instruction manual> 100 to 240 V AC , no instruction manual 100 to 240 V AC, Japanese instruction manual 100 to 240 V AC , English instruction manual $24 \mathrm{~V} \mathrm{AC/DC}$, no instruction manual $24 \mathrm{~V} \mathrm{AC/DC}$, Japanese instruction manual $24 \mathrm{~V} \mathrm{AC/DC}$, English instruction manual |  |  |  | A $\begin{gathered}\text { N } \\ Y \\ V \\ V \\ C \\ A \\ A \\ B\end{gathered}$ |  |  |
| 11 | <Option 2> <br> None <br> Digital input (No.3,4,5) + CT2 <br> Digital input (No.3,4,5) <br> Digital input (No.3,4,5) + digital output (No.4,5) [transistor output] <br> Digital input (No.3,4,5) + RSV2 | Note1 Note4 <br> Note2 | Note5 |  |  | ( $\begin{aligned} & \text { Y } \\ & A \\ & B \\ & C \\ & D\end{aligned}$ |  |
| $\begin{aligned} & 12 \\ & 13 \end{aligned}$ | <Special code> <br> Standard <br> Special codes prepared for shipping destination |  |  |  |  |  |  |

Note 1: If output 1 was for current or voltage output, option cannot be assigned to CT1 nor CT2. (If 7 th digit was assigned to G or J , or 11 th digit to $\mathrm{A}, 5$ th digit cannot be assigned to E nor P .)

Note 2: RSV1 in option 1 and RSV2 in option 2 cannot be assigned simultaneously. (If 7 th digit was assigned to H or K , 11th digit cannot be assigned to D .)

Note 3: In case, in option 1, of DI 2 points + RSV1 or RS485 + DI 1 + RSV1, output 2 cannot be assigned.
(If 7th digit was assigned to F or 2 , 6th digit cannot be assigned to $\mathrm{A}, \mathrm{C}, \mathrm{E}, \mathrm{P}, \mathrm{R}$, nor S .
Note 4: In case of CT1 in option 1, or CT2 in option 2, digital output cannot be assigned to None. (If 7 th digit was assigned to G or J , or 11 th digit to $\mathrm{A}, 9$ th digit cannot be assigned to 0 .)

Note 5: CT1 in option 1 and CT2 in option 2 cannot be selected simultaneously. (If 7 th digit was assigned to G or $\mathrm{J}, 11$ th digit cannot be assigned to A .)

Note 6: $\quad$ Transmitter power supply is only for PXG9.

- PXG5/PXG9 (Motor-operated valve control type)


Note 1: Transmitter power supply is only PXG9.

## PXG SERIES

## Specifications

| General | Size and Mass | $48 \times 48 \times 78.8 \mathrm{~mm}, 0.2 \mathrm{~kg}$ $48 \times 96 \times 80 \mathrm{~mm}, 0.3 \mathrm{~kg}$ $96 \times 96 \times 81.5 \mathrm{~mm}, 0.3 \mathrm{~kg}$ |
| :---: | :---: | :---: |
|  | Power supply | AC100(-15\%) - $240 \mathrm{~V}(+10 \%), 50 / 60 \mathrm{~Hz}$ AC $24 \mathrm{~V}( \pm 10 \%), \mathrm{DC} 24 \mathrm{~V}( \pm 10 \%), 50 / 60 \mathrm{~Hz}$ |
|  | Power consumption | 12VA or Less |
|  | External terminal | Screw terminal (M3) |
| Input | Measuring value input | Sampling cycle : 200ms <br> ( 300 ms at position feedback control) Input type : Universal input, thermocouple, resistance bulb mV , voltage, current |
|  | Digital input | Number of input: Up to 5 points <br> (up to 3 points for motor-operated valve manipulating output) |
| Function | Control method | PID control with 8 palette Motor-operated valve control with/without position feedback |
|  | Control mode | Auto/Manual/Remote |
|  | Alarm output | Up to 5 points |
|  | Memory back-up | by non-volatile memory |
| Indication | Accuracy | $\pm 0.3 \%$ FS |
|  | PV indicator | LED 7 segments 4 digit (Red color) |
|  | SV indicator | LED 7 segments 4 digit (Geen color) |
|  | Indication status | 6 indicator lamps |
| output | Control output | Up to 2 points (heating and cooling control if 2 points) <br> 1. Relay contact output <br> Contact structure : 1 NO (SPST) contact <br> Contact rating : AC220V/DC30V, 3A (Resistive load) <br> AC220V/DC30V, 1A (Inductive load) <br> 2. SSR/SSC drive output <br> DC20V (DC18-24V)/Max current 20mA <br> Load resistance : 850ohms MIN <br> 3. DC0-20mA/DC4-20mA output <br> Accuracy : $\pm 5 \%$ FS <br> Linearity : $\pm 5 \%$ FS <br> Load resistance : 600ohms MAX <br> 4. Voltage output DC0-5V/DC1-5V/DC0-10V/DC2-10V <br> 5. Motor-operated valve manipulating output Contact structure : 2 NO (SPST) contacts Contact rating : AC220V/DC30V, 1A Mechanical life : 20 million operations MIN Electrical life : 100,000 operations MIN Output interlock/Output interlock circuit : Provided Except for PXG4 |
|  | Re-transmission output | Current output : (DC0-20mA, DC4-20mA) <br> Voltage output: (DC0-5V/DC1-5V/DC0-10V/DC2-10V) <br> Output type : PV, SV, MV, DV, PFB |
|  | Digital output | Number of outputs : Max. 5 points Contact structure : 1 NO (SPST) contact/Open collecter Contact rating : AC220V/DC30V, 1A/DC30V, 100mA |
|  | Transmitter power supply For PXG9 | DC24V(DC19.5-24V) <br> Max current : $21.6 \mathrm{~mA}, 400 \mathrm{ohms}$ |
| RS232C communication (Loader port interface) | Protocol | Modbus-RTU |
|  | Speed | 9600bps |
| RS485 communication(Option) | Protocol | Modbus-RTU |
|  | Speed | 9600 bps , 19200bps |
| Applied standards |  | UL, CE Mark |

## Outline Diagram and Panel Out runitmm



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