

Digital Temperature Controller

RB series

(RB100|RB400|RB900)

Installation Manual

IMC05B01-E1

In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference. This Manual describes mounting, wiring, parts descriptions, etc.

For detailed handling procedures and key operations, contact Durex Industries:

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■ Product Check

Installation Manual (this manual).....1

Quick Operation Manual (IMC05B02-E□).....1

Parameter List (IMC05B03-E□).....1

Communication Quick Instruction Manual (IMC05B04-E□)
[For RB series with Communication].....1

Mounting bracket (with screw).....2*

Case rubber packing (Optional) [Waterproof/Dustproof].....1

* RB900 Waterproof/Dustproof type: 4

■ Optional (Sold separately)

Terminal cover.....1

[RB100: KCA100-517 RB400/900: KFB400-58<1>]

Front cover.....1

[RB100: KRB100-36 RB400: KRB400-36 RB900: KRB900-36]

■ Safety Precautions

⚠ WARNING

●An external protection device must be installed if failure of this instrument could result in damage to the instrument, equipment or injury to personnel.

●All wiring must be completed before power is turned on to prevent electric shock, fire or damage to instrument and equipment.

●This instrument must be used in accordance with the specifications to prevent fire or damage to instrument and equipment.

●This instrument is not intended for use in locations subject to flammable or explosive gases.

●Do not touch high-voltage connections such as power supply terminals, etc. to avoid electric shock.

●Durex is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel. Malfunction can occur and warranty is void under these conditions.

⚠ CAUTION

● This product is intended for use with industrial machines, test and measuring equipment. (It is not designed for use with medical equipment and nuclear energy.)

● This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take additional measures.

● This instrument is protected from electric shock by reinforced insulation. Provide reinforced insulation between the wire for the input signal and the wires for instrument power supply, source of power and loads.

● Be sure to provide an appropriate surge control circuit respectively for the following:
- If input/output or signal lines within the building are longer than 30 meters.
- If input/output or signal lines leave the building, regardless the length.

● This instrument is designed for installation in an enclosed instrumentation panel. All high-voltage connections such as power supply terminals must be enclosed in the instrumentation panel to avoid electric shock by operating personnel.

● All precautions described in this manual should be taken to avoid damage to the instrument or equipment.

● All wiring must be in accordance with local codes and regulations.

● To prevent instrument damage or failure, protect the power line and the input/output lines from high currents with a protection device such as fuse, circuit breaker, etc.

● Prevent metal fragments or lead wire scraps from falling inside instrument case to avoid electric shock, fire or malfunction.

● Tighten each terminal screw to the specified torque found in the manual to avoid electric shock, fire or malfunction.

● For proper operation of this instrument, provide adequate ventilation for heat dispensation.

● Do not connect wires to unused terminals as this will interfere with proper operation of the instrument.

● Turn off the power supply before cleaning the instrument.

● Do not use a volatile solvent such as paint thinner to clean the instrument. Deformation or discoloration will occur. Use a soft, dry cloth to remove stains from the instrument.

● To avoid damage to instrument display, do not rub with an abrasive material or push front panel with a hard object.

● When high alarm with hold action/re-hold action is used for Event function, alarm does not turn on while hold action is in operation. Take measures to prevent overheating which may occur if the control device fails.

NOTICE

● This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications.

● The figures, diagrams and numeric values used in this manual are only for purpose of illustration.

● Durex is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.

● Durex is not responsible for any damage and/or injury resulting from the use of instruments made by imitating this instrument.

● Periodic maintenance is required for safe and proper operation of this instrument. Some components have a limited service life, or characteristics that change over time.

- Every effort has been made to ensure accuracy of all information contained herein. Durex makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior notice.
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1. MOUNTING

⚠ WARNING

To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.

1.1 Mounting Cautions

(1) This instrument is intended to be used under the following environmental conditions. (IEC61010-1) [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]

(2) Use this instrument within the following environment conditions:

- Allowable ambient temperature: 0 to 50 °C
- Allowable ambient humidity: 10 to 90 %RH (Absolute humidity: MAX. W. C 29.3 g/m³ dry air at 101.3 kPa)
- Installation environment conditions: Indoor use, Altitude up to 2000 m

(3) Avoid the following conditions when selecting the mounting location:

- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes.
- Excessive dust, salt or iron particles.
- Excessive induction noise, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Exposure to direct sunlight.
- Excessive heat accumulation.

(4) Mount this instrument in the panel considering the following conditions:

- Provide adequate ventilation space so that heat does not build up.
- Ensure at least 50 mm space on top and bottom of the instrument for maintenance and environmental reasons.
- Do not mount this instrument directly above equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors.)
- If the ambient temperature rises above 50 °C, cool this instrument with a forced air fan, cooler, etc. Cooled air should not blow directly on this instrument.
- In order to improve safety and the immunity to withstand noise, mount this instrument as far away as possible from high voltage equipment, power lines, and rotating machinery.
High voltage equipment: Do not mount within the same panel.
Power lines: Separate at least 200 mm.
Rotating machinery: Separate as far as possible.
- The view angle of this controller is 30° to the upper side and the lower side from the center of the display.

(5) If this instrument is permanently connected to equipment, it is important to include a switch or circuit-breaker into the installation. This should be in close proximity to the equipment and within easy reach of the operator. It should be marked as the disconnecting device for the equipment.

1.2 Dimensions

RB100
(Unit: mm)

RB900
(Unit: mm)

RB400
(Unit: mm)

*1 Case rubber packing (optional) [Waterproof/Dustproof]

*2 Terminal cover (optional) [sold separately]

Panel thickness: 1 to 10 mm
(When mounting multiple RB series controllers close together, the panel strength should be checked to ensure proper support.)

● Panel cutout

RB100/900
(Unit: mm)

RB400
(Unit: mm)

*1 To keep the instrument as waterproof as possible, make sure that the panel surface has no burr or distortion where the hole is to be cut out.

*2 Remove the case rubber packing. When the RB series is mounted closely protection will be compromised and they will not meet IP66 (NEMA4X) standards.

1.3 Procedures of Mounting and Removing

■ Mounting procedures

1. Prepare the panel cutout as specified in **1.2 Dimensions**.
2. Insert the instrument through the panel cutout.
3. Insert the mounting bracket into the mounting groove of the instrument.
4. Push the mounting bracket forward until the bracket is firmly secured to the panel. (Fig. 1)
5. Only turn one full revolution after the screw touches the panel. (Fig. 2)
6. The other mounting bracket should be installed the same way described in **3. to 5.**

The front of the instrument conforms to **IP66 (NEMA4X)** [Specify when ordering] when mounted on the panel. For effective Waterproof/Dustproof, the gasket must be securely placed between instrument and panel without any gap. If gasket is damaged, please contact Durex sales office or the agent.

● The mounting position of the mounting bracket

	RB100	RB400	RB900
Individual mounting			
Close horizontal mounting			

If only two mounting brackets are used on the Waterproof/Dustproof type controller as shown in the figure (marked*), sufficient Waterproof/Dustproof performance cannot be obtained.

■ Removal procedures

1. Turn the power OFF.
2. Remove the wiring.
3. Loosen the screw of the mounting bracket.
4. Lift the latch of the mounting bracket (①), then pull the mounting bracket (②), to remove it from the case. (Fig. 3)
5. The other mounting bracket should be removed in the same way as described in **3. and 4.**
6. Pull out the instrument from the mounting cutout while holding the front panel frame of this instrument. (Fig. 4)

Use long-nose pliers to remove mounting brackets from the instrument that is installed in a narrow place or installed tightly in a vertical position.

2. WIRING

⚠ WARNING

To prevent electric shock or instrument failure, do not turn on the power until all wiring is completed. Make sure that the wiring is correct before applying power to the instrument.

2.1 Wiring Cautions

- For thermocouple input, use the appropriate compensation wire.
- For RTD input, use low resistance lead wire with no difference in resistance between the three lead wires.
- To avoid noise induction, keep input signal wire away from instrument power line, load lines and power lines of other electric equipment.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
 - Shorten the distance between the twisted power supply wire pitches to achieve the most effective noise reduction.
 - Always install the noise filter on a grounded panel. Minimize the wiring distance between the noise filter output and the instrument power supply terminals to achieve the most effective noise reduction.
 - Do not connect fuses or switches to the noise filter output wiring as this will reduce the effectiveness of the noise filter.
- Allow approximately 5 seconds for contact output when the instrument is turned on. Use a delay relay when the output line is used for an external interlock circuit.
- Power supply wiring must be twisted and have a low voltage drop.
- This instrument is not furnished with a power supply switch or fuse. If a fuse or power supply switch is required, install close to the instrument.
 - Recommended fuse rating: Rated voltage 250 V, Rated current 1 A
Fuse type: Time-lag fuse
- For the current input specification, a shunt resistor of 250Ω ±0.02 % (Temperature characteristics: ±10 ppm/°C, Specified voltage: 0.25 W or more) must be connected between the input terminals.
- For an instrument with 24 V power supply, supply power from a SELV circuit.
- Use the solderless terminal appropriate to the screw size.
Screw size: M3 × 7 (with 5.8 × 5.8 square washer)
Recommended tightening torque: 0.4 N·m (4 kgf·cm)
Applicable wire: Solid/twisted wire of 0.25 to 1.65 mm²
Specified dimension: Refer to Fig. at the right
Specified solderless terminals:
Manufactured by J.S.T MFG CO., LTD.
Circular terminal with isolation V1.25-MS3
(M3 screw, width 5.5 mm, hole diameter 3.2 mm)
- Make sure that the any wiring such as solderless terminal is not in contact with the adjoining terminals.

If specified terminal lugs other than those in not recommended dimensions are used, terminal screws may not be tightened. In such a case, bend each solderless terminal lug in advance and then conduct wiring. If the terminal screw is forcibly tightened, it may be damaged.

Up to two solderless terminal lugs can be connected to one terminal screw. However, in this case, reinforced insulation cannot be used.

Caution for the terminal cover usage:
If each solderless terminal lug touches the terminal cover, remove each projection (marked *A) from the terminal cover by manually bending it in front and in rear until broken.

* The same type of the terminal cover for RB900 can be used on RB400.

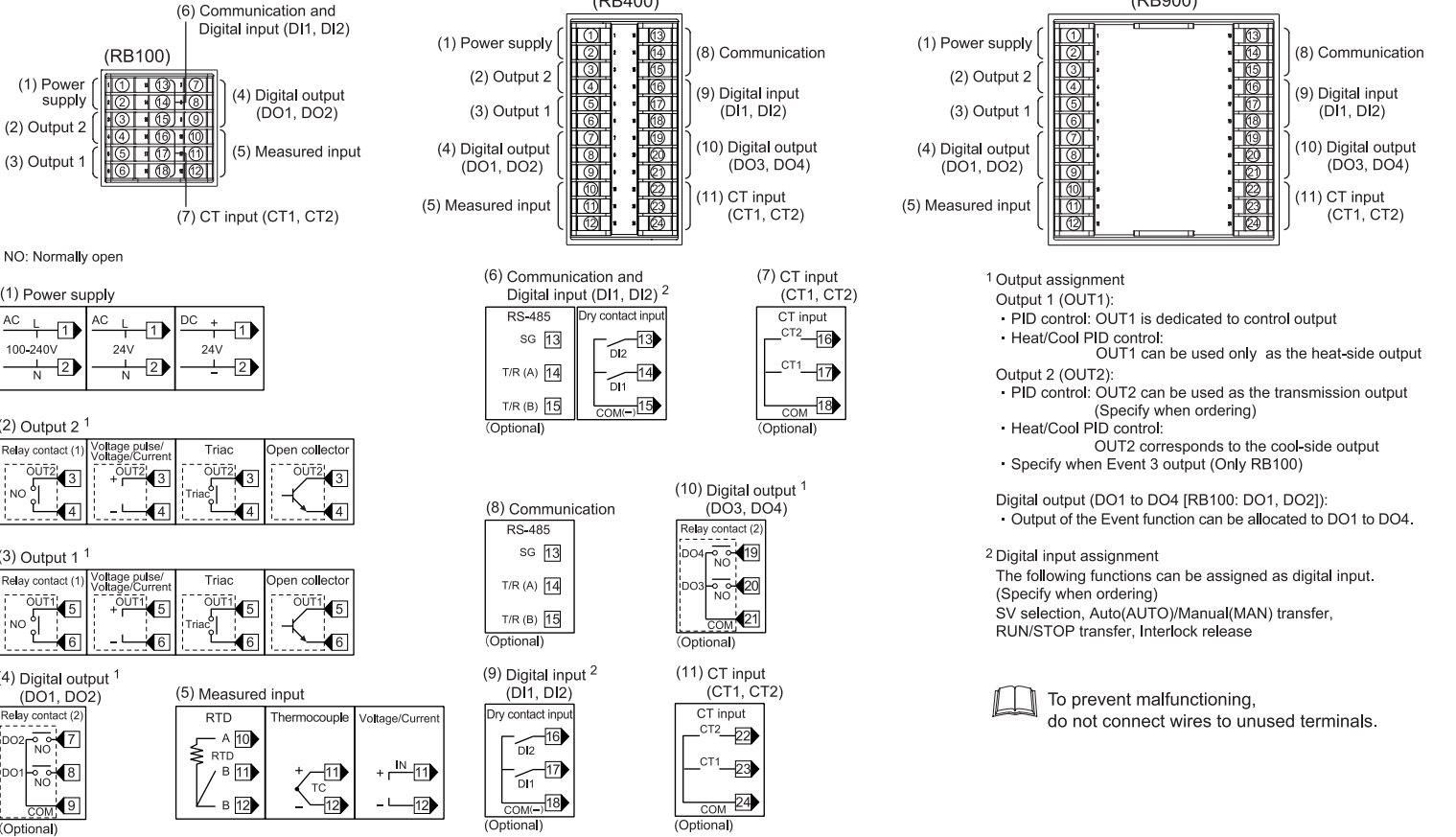
*A

For isolated device input/output blocks, refer to the following:

¹ Outputs are isolated if output 1 (OUT1) or output 2 (OUT2) is "relay contact output" or "triac trigger output." If both outputs are "relay contact output" or "triac trigger output," outputs are not isolated.

² Outputs of DO1/DO2 and DO3/DO4 are isolated.
DO1 and DO2 or DO3 and DO4 use the same common terminal (No. 9 for DO1/DO2, and No. 21 for DO3/DO4) and are not isolated.

2.2 Terminal Configuration



Output type:		OUT1	OUT2	RB100	RB400/900
				DO1, DO2	DO1 to DO4
Relay contact output (1)	[M]	○	○		
Relay contact output (2)	[M]			○	○
Voltage pulse output	[V]	○	○		
Current output		○	○		
Voltage output		○	○		
Triac output	[T]	○	○		
Open collector output	[D]	○	○		

([]): Model code symbol, ○: Indicates that an output specification is supported.)

	OUT2 (Including transmission output)						
	No OUT2 output	M, T, D	V (10 mA)	V (20 mA)	Current output	Voltage output	
OUT1*	M, T, D	4	4	4	4	4	
	V (Load: 10 mA)	4	4	4	4	2	2
	V (Load: 20 mA)	4	4	4	2	2	2
	Current output	4	4	2	2	2	2
	Voltage output	4	4	2	2	2	2

(): It represents selection of digital outputs DO3 and DO4 is not available.)
* When the instrument has two digital outputs (DO1 and DO2) and no OUT2 output, "V" type output (load: 40 mA) can be specified for OUT1.

3. SPECIFICATIONS

Measured input	
Number of input:	1 point
TC input:	K, J, T, S, R, E, B, N (JIS C1602-1995), PLII (NBS), W5Re/W26Re (ASTM-E988-96) Input impedance: 1 MΩ or more Influence of external resistance: Approx. 0.25 μV/Ω Pt100 (JIS C1604-1997), JPT100 (JIS C1604-1997, JIS C1604-1981 of Pt100) Influence of input lead : Approx. 0.02 %/Ω of span (10 Ω or less per wire)
RTD input:	0 to 1 V DC, 0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC Input impedance: Approx. 1 MΩ or more
Voltage input:	0 to 20 mA DC, 4 to 20 mA DC Input impedance: Approx. 250 Ω (Connect a 250 Ω resistor to the input terminals)
Current input:	
Input accuracy:	[For Fahrenheit: Converted value of Celsius]
Input type	Input range Accuracy
K, J, T, E	Less than -100 °C ±(2.0 °C + 1 digit)
	-100 °C or more, Less than +500 °C ±(1.0 °C + 1 digit)
N, R, S, PLII, W5Re/W26Re	+500 °C or more ±(0.2 % of Reading + 1 digit)
	Less than 0 °C ±(4 °C + 1 digit)
B	0 °C or more, Less than 1000 °C ±(2 °C + 1 digit)
	1000 °C or more ±(0.2 % of Reading + 1 digit)
Pt100, JPT100	Less than 400 °C ±(70 °C + 1 digit)
	400 °C or more, Less than 1000 °C ±(2 °C + 1 digit)
	1000 °C or more ±(0.2 % of Reading + 1 digit)
	Less than 200 °C ±(0.4 °C + 1 digit)
	200 °C or more ±(0.2 % of Reading + 1 digit)
Voltage/Current input	±(0.2 % of span + 1 digit)
*1: Accuracy is not guaranteed for less than -100 °C *2: Accuracy is not guaranteed for less than 400 °C for Input type R, S, B, and W5Re/W26Re.	
Sampling cycle:	250 ms
Sensor current:	Approx. 200 μA (Only RTD)
Action at input break:	Upscale or downscale (TC) Upscale (RTD) Downscale or Indicates the value near 0 (Voltage/Current input)
Action at input short circuit:	Downscale (RTD)
PV bias:	-1999 to +9999 °C or -199.9 to +999.9 °C (TC/RTD) -Input span to + Input span (Voltage/Current input)
First order lag digital filter:	0 to 100 seconds (0: filter OFF)
Current transformer (CT) input [Optional]	
Number of inputs:	2 points
Input range:	CTL-6-P-N: 0.0 to 30.0 A CTL-12-S56-10L-N: 0.0 to 100.0 A 1 second
Sampling cycle:	1 second
Digital input (DI) [Optional]	
Number of inputs:	2 points (DI1, DI2) Isolated input
Dry contact input:	Open state: 500 kΩ or more Close state: 10 Ω or less Voltage at open: Approx. 5 V DC Contact current: 3.3 mA or less
Capture judgment time :	Approx. 250 ms

Output	
Number of outputs:	6 points (RB100: 4 points)
Relay contact output (1):	Contact type: 1a contact Contact rating (Resistive load): 250 V AC 3 A, 30 V DC 1 A Electrical life: 100,000 times or more (Rated load) Mechanical life: 20 million times or more (Switching: 360 times/min [no-load])
Relay contact output (2):	Contact type: 1a contact Contact rating (Resistive load): 250 V AC 1 A, 30 V DC 0.5 A Electrical life: 150,000 times or more (Rated load) Mechanical life: 20 million times or more (Switching: 360 times/min [no-load])
Voltage pulse output:	Output voltage (Rating): 0/12 V DC ON voltage: 10 V to 13 V (at 20 mA) OFF voltage: 0.5 V or less
Allowable load resistance:	600 Ω or more (20 mA or less) Not using OUT2: 40 mA or less
Current output:	Output current (Rating): 0 to 20 mA DC, 4 to 20 mA DC
Allowable load resistance:	500 Ω or less
Output impedance:	1 MΩ or more
Voltage output:	Output voltage (Rating): 0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC
Allowable load resistance:	1 kΩ or more
Output impedance:	0.1 Ω or less
Triac output:	Output method: AC output (Zero-cross method) Allowable load current: 0.5 A (Ambient temperature 40 °C or less) Ambient temperature 50 °C: 0.3 A
Load voltage:	75 to 250 V AC
Minimum load current:	30 mA
ON voltage:	1.6 V or less (at maximum load current)
Open collector output:	Output method: Sink type Allowable load current: 100 mA Load voltage: 30 V DC or less Minimum load current: 0.5 mA ON voltage: 2 V or less (at maximum load current) Leakage current at OFF: 0.1 mA or less
Control	
Control type:	PID control (Reverse/Direct action) Heat/Cool PID control P, PI, PD, or ON/OFF action is available Autotuning, Startup tuning, Fine tuning
Additional function:	
Loader communication	
Connection method:	Connection with a loader communication cable for our USB converter COM-K (sold separately).
Synchronous method:	Start/Stop synchronous type
Communication speed:	9600 bps
Data bit configuration:	Start bit: 1 Data bit: 8 Parity bit: Without Stop bit: 1 • Data bit configuration is fixed to the above value. • Address is fixed at 0.
Protocol:	ANSI X3.28-1976 subcategories 2.5 and A4
Maximum connections:	One controller (Only COM-K)

Communication [Optional]	
Interface:	Based on RS-485 EIA standard
Protocol:	ANSI X3.28-1976 subcategories 2.5 and A4 Modbus-RTU
General specifications	
Power supply voltage:	90 to 264 V AC [Including power supply voltage variation] (Rating 100 to 240 V AC), 50/60 Hz
Power consumption (at maximum load):	RB100: 5.5 VA (at 100 V AC) 4.7 VA (at 24 V AC) 8.5 VA (at 240 V AC) 108 mA (at 24 V DC) RB400: 6.0 VA (at 100 V AC) 5.8 VA (at 24 V AC) 8.7 VA (at 240 V AC) 141 mA (at 24 V DC) RB900: 6.2 VA (at 100 V AC) 6.0 VA (at 24 V AC) 9.0 VA (at 240 V AC) 147 mA (at 24 V DC)
Rush current:	5.6 A or less (at 100 V AC) 13.3 A or less (at 240 V AC) 16.3 A or less (at 24 V AC) 11.5 A or less (at 24 V DC)
Memory backup:	Backed up by non-volatile memory Number of writing: Approx. 1,000,000 times Data storage period: Approx. 10 years
Allowable ambient temperature:	0 to 50 °C
Allowable ambient humidity:	10 to 90 %RH Absolute humidity: MAX.W.C 29.3 g/m³ dry air at 101.3 kPa
Installation environment conditions:	Indoor use Altitude up to 2000 m
Material:	Front panel, Case: PC * Terminal block: PPE * Panel sheet: Polyester * Flame retardancy: UL94V-1
Weight:	RB100: Approx. 120 g RB400: Approx. 185 g RB900: Approx. 250 g
Standard	
Safety standards:	UL: UL61010-1 cUL: CAN/CSA-C22.2 No.61010-1
CE marking:	LVD: EN61010-1 OVERVOLTAGE II, POLLUTION DEGREE 2, Class II (Reinforced insulation) EMC: EN61326-1
Panel sealing:	NEMA 4X (NEMA250) IP66 (IEC60529) [Front panel (if specified in the model code)]

4. MODEL CODE

■ **Suffix code**

RB100

RB400

RB900

□□□□-□□-□

(1)(2)(3)(4)(5)

* □□-□□/□□/□

(6)(7)(8)(9)(10)(11)(12)

■ **Quick start code (Initial setting code)**

□□□□-□

(A)(B)(C)(D)(E)

(1) Control Method F: PID control with AT (Reverse action) D: PID control with AT (Direct action) G: Heat/Cool PID control with AT A: Heat/Cool PID control with AT (for Extruder [air cooling]) W: Heat/Cool PID control with AT (for Extruder [water cooling])	(5) Power supply voltage N: None 3: 24 V AC/DC 4: 100 to 240 V AC
(2) Measured input and Range □□□: Refer to input range code table.	(6) Digital output (DO1 to DO4) N: None 1: 1 point (DO1) 2: 2 points (DO1, DO2) 4: 4 points (DO1 to DO4) [Only RB400/900]
(3) Output 1 (OUT1) [PID control: Control output Heat/Cool PID control: Heat output] M: Relay contact output V: Voltage pulse output (0/12 V DC) 4: Voltage output (0 to 5 V DC) 5: Voltage output (0 to 10 V DC) 6: Voltage output (1 to 5 V DC) 7: Current output (0 to 20 mA DC) 8: Current output (4 to 20 mA DC) T: Triac output D: Open collector output	(7) Current transformer (CT) input N: None P: CTL-6-P-N (1 point) S: CTL-12-S56-10L-N (1 point) T: CTL-6-P-N (2 points) U: CTL-12-S56-10L-N (2 points)
(4) Output 2 (OUT2) [PID control: Event 3 output (Only RB100), Transmission output Heat/Cool PID control: Cool output] N: None P: Relay contact output (Event 3 output) R: Current output (0 to 20 mA DC) S: Current output (4 to 20 mA DC) X: Voltage output (0 to 5 V DC) Y: Voltage output (0 to 10 V DC) Z: Voltage output (1 to 5 V DC)	(8) Communication function/Digital input (DI) N: None 5: RS-485 (ANSI X3.28-1976) 6: RS-485 (Modbus) A: Digital input (2 points) B: RS-485 (ANSI X3.28-1976) + Digital input (2 points) * C: RS-485 (Modbus) + Digital input (2 points) * * Only RB400/900
	(9) Waterproof/Dustproof N: None 1: Waterproof/Dustproof (NEMA 4X, IP66)
	(10) Case color A: Black
	(11) Quick start code N: None (No need to specify initial setting code) 1: Specify quick start code (Refer to ■Quick start code)
	(12) Instrument specification /Y: Version symbol

Input range code table		
Type	Code	Range
K	K01	0 to 200 °C
	K02	0 to 400 °C
	K03	0 to 600 °C
	K04	0 to 800 °C
	K05	0 to 1000 °C
	K06	0 to 1200 °C
	K41	-200 to +1372 °C
	K43	-199.9 to +400.0 °C
	K09	0.0 to 400.0 °C
	K10	0.0 to 800.0 °C
	KA1	0 to 800 °F
	KA2	0 to 1600 °F
J	K07	-328 to +2501 °F
	KC8	-100.0 to +752.0 °F
	J01	0 to 200 °C
	J02	0 to 400 °C
	J03	0 to 600 °C
	J04	0 to 800 °C
	J05	0 to 1000 °C
	J06	0 to 1200 °C
	J15	-200 to +1200 °C
	J07	-199.9 to +300.0 °C
	JA1	0 to 800 °F
	JA2	0 to 1600 °F
T	JB9	-328 to +2192 °F
	J08	-199.9 to +550.0 °F
	T02	-199.9 to +100.0 °C
	T03	-100.0 to +200.0 °C
	T05	-199.9 to +300.0 °C
	T06	0.0 to 400.0 °C
	TC7	0.0 to 600.0 °F
	TC8	-199.9 to +300.0 °F
	TC9	-328 to +752 °F

Type	Code	Range
S	SA2	0 to 1769 °C
	SA2	0 to 3216 °F
	RA2	0 to 1769 °C
	RA2	0 to 3216 °F
	DA5	-199.9 to +300.0 °F
R	DA6	0.0 to 100.0 °F
	DA7	0.0 to 200.0 °F
	DA8	0.0 to 400.0 °F
	DA9	0.0 to 500.0 °F
	DB2	-199.9 to +900.0 °F
E	P01	-199.9 to +649.0 °C
	P02	-199.9 to +200.0 °C
	P03	-100.0 to +50.0 °C
	P04	-100.0 to +100.0 °C
	P05	-100.0 to +200.0 °C
B	P06	0.0 to 50.0 °C
	P07	0.0 to 100.0 °C
	P08	0.0 to 200.0 °C
	P09	0.0 to 300.0 °C
	P10	0.0 to 500.0 °C
N	NA1	0 to 800 °C
	E02	0 to 1000 °C
	EA1	0 to 1600 °F
	EA2	0 to 1832 °F
	B01	400 to 1800 °C
PL	B02	0 to 1820 °C
	BA1	800 to 3200 °F
	BA2	0 to 3308 °F
	NO1	0 to 1200 °C
	NO2	0 to 1300 °C
W5Re W26Re	NA2	0 to 2372 °F
	A01	0 to 1300 °C
	A02	0 to 1390 °C
	AA1	0 to 2400 °F
	AA2	0 to 2534 °F
Pt100	W01	0 to 2000 °C
	W02	0 to 2320 °C
	WA4	0 to 4208 °F
	D01	-199.9 to +649.0 °C
	D02	-199.9 to +200.0 °C
JPT100	D03	-100.0 to +50.0 °C
	D04	-100.0 to +100.0 °C
	D05	-100.0 to +200.0 °C
	D06	0.0 to 50.0 °C
	D07	0.0 to 100.0 °C
	D08	0.0 to 200.0 °C
	D09	0.0 to 300.0 °C
	D10	0.0 to 500.0 °C

(A) DO1 (Event function 1)	(C) DO3 (Event function 3) ¹	(E) Digital input (DI) function assignment
(B) DO2 (Event function 2)	(D) DO4 (Event function 4) ²	N: None
N: None		1: SV1 to SV4 select
A: Deviation high		2: SV1 to SV2 select + RUN/STOP transfer
B: Deviation low		3: SV1 to SV2 select + AUTO/MAN transfer
C: Deviation high/low		4: SV1 to SV2 select + Interlock release
D: Band		5: RUN/STOP transfer + AUTO/MAN transfer
E: Deviation high with hold action		6: RUN/STOP transfer + Interlock release
F: Deviation low with hold action		7: AUTO/MAN transfer + Interlock release
G: Deviation high/low with hold action		
H: Process high		
J: Process low		
K: Process high with hold action		
L: Process low with hold action		
Q: Deviation high with re-hold action		
R: Deviation low with re-hold action		
T: Deviation high/low with re-hold action		
U: Band (High/Low individual setting)		
V: SV high		
W: SV low		
X: Deviation high/low (High/Low individual setting)		
Y: Deviation high/low with hold action (High/Low individual setting)		
Z: Deviation high/low with re-hold action (High/Low individual setting)		
1: Heater break alarm (HBA)		
2: Control loop break alarm (LBA)		
3: FAIL		
4: Monitor during RUN		
5: Output of the communication monitoring result		
¹ In case of RB100, this code is selectable when "P" is specified for "(4) output 2 (OUT2)."		
² In case of RB100, this code must be "N: None."		

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