

# REX-C100/400/700/900 SERIES INSTRUCTION MANUAL

IMCX01-E1

Before operating this instrument, please carefully read this manual and fully understand its contents. And always keep it around you to make it available easily anytime.



## WARNING

- If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
- Do not turn on the power supply until all of the wiring is completed. Otherwise electric shock, fire or malfunction may result.
- Use this instrument within the scope of its specifications. Otherwise fire or malfunction may result.
- Do not use this instrument in the places subject to flammable or explosive gas.
- Do not touch high-voltage blocks such as power supply terminals, etc. Otherwise electric shock may result.
- Never disassemble, repair or modify the instrument. This may cause electric shock, fire or malfunction.

## CAUTION

- Only clean the instrument when power is off.
- Please use a soft cloth or cotton paper to clean up the stain on the display.
- Do not clean up or touch the display by hard matters in case of any scratch.
- Never use sharp & hard matters such as screwdrivers or ball pen to touch the buttons on the panel, in case of any scratch or damage.

## 1. PRODUCT CHECK

Check whether the delivered product is as specified by referring to the following model code list.

REX-□00 □□□□-□□ \* □□ □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

### ① Control action

- F: PID action with autotuning (Reverse action)
- D: PID action with autotuning (Direct action)
- W: Heat/cool PID action with autotuning (Water cooling)
- A: Heat/cool PID action with autotuning (Air cooling)

### ② input type, ③ Range code: See 8. INPUT RANGE TABLE.

### ④ First control output [OUT1] (heat-side)

- M: Relay output      T: Triac      V: Voltage pulse
- 8: Current (4 to 20 mA DC)      G: Trigger (for triac driving)

### ⑤ Second control output [OUT2] (heat-side)

- No symbol: When control action is F or D. M: Relay contact
- T: Triac      V: Voltage pulse

### ⑥ First alarm [ALM1], ⑦ Second alarm [ALM2]

- N: No alarm      G: Deviation high/low alarm with hold action
- A: Deviation high alarm      H: Process high alarm
- B: Deviation low alarm      J: Process low alarm
- C: Deviation high/low alarm      K: Process high alarm with hold action
- D: Band alarm      L: Process low alarm with hold action
- E: Deviation high alarm With hold action
- F: Deviation low alarm With hold action

### ⑧ Communication function

- N: no communication function      5: RS-485 (2-wire system)

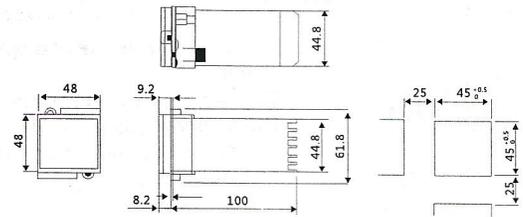
## 2. MOUNTING

### 2.1 Mounting cautions

- (1) This instrument is intended to be used under the following environmental conditions. (Iec1010)
    - \* OVERVOLTAGE CATEGORY II    \* POLLUTION DEGREE-2
  - (2) Avoid the following when selecting the mounting location.
    - Ambient temperature of less than 0°C or more than 50°C/
    - Ambient humidity of less than 45% or more than 85% RH.
    - 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.
- Should be used indoors where the system is not exposed to direct sunlight.  
Heat to be accumulated radiation heat

### 2.2 Dimensions

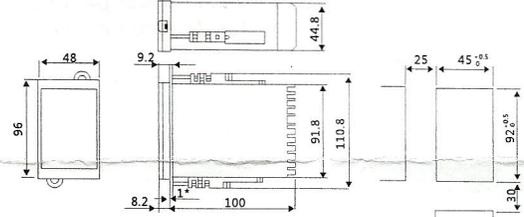
C100



\*1: Rubber packing (option)

This instrument corresponds to a panel thickness of 1 to 10 mm.

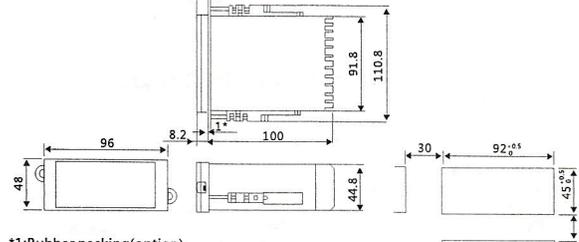
C400



\*1: Rubber packing (option)

This instrument corresponds to a panel thickness of 1 to 10 mm.

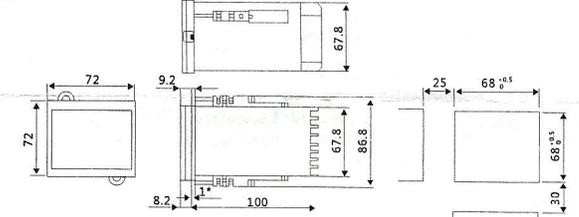
C401



\*1: Rubber packing (option)

This instrument corresponds to a panel thickness of 1 to 10 mm.

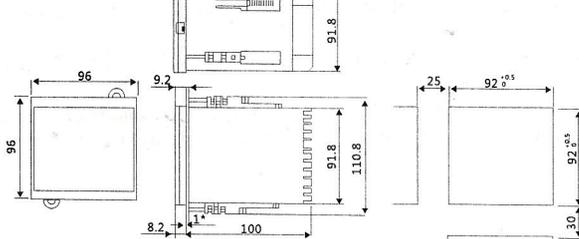
C700



\*1: Rubber packing (option)

This instrument corresponds to a panel thickness of 1 to 10 mm.

C900



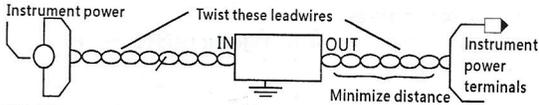
\*1: Rubber packing (option)

This instrument corresponds to a panel thickness of 1 to 10 mm.

### 3. WIRING

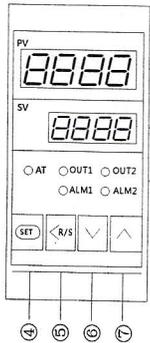
#### 3.1 Wiring cautions

- (1) For thermocouple input, use the specified compensation wire.
- (2) For RTD input, use low resistance and having no resistance differences among the 3 leads.
- (3) Conduct input signal wiring so as not to be influenced by noise from the power and load lines to avoid noise induction
- (4) Conduct instrument power wiring so as not to be influenced by noise from the electric equipment power. If the instrument may be affected by external noise, a noise filter should be used.
  - reduce the distance of power source wire
  - install the filter at controller's panel, then into earth.
  - don't set the protection and switch at the output side of filter.



- (5) For wiring, use wires conforming to the domestic standard of each country.
- (6) About 5 to 6 sec are required as the preparation time for contact output after power on. Use a delay relay when the output line is used for an external interlock circuit.
- (7) This instrument has no power supply switch nor fuses. Therefore, install the fuse to the instrument and the switch, if required.
  - Recommended fuse rating: Rated voltage: 250V    Rated current: 1A
  - Fuse type: Time-lag fuse
- (8) For the current input specification, a resistor of  $250\Omega (\pm 0.02\% \pm 10\text{ppm})$ , 0.25W or more must be provided by the input terminals. This resistor must be provided by the customer.
- (9) Do not excessively tighten the terminal screws. In addition, use the solderless terminal appropriate to the screw size. (Screw size: M3X6, recommended tightening torque:  $0.4\text{N}\cdot\text{m} (4\text{kgf}\cdot\text{cm})$ )
- (10) To the instrument with power supply of 24V, please be sure to supply the power from SELV circuit.

### 4. NAME OF PARTS



- ① Measured value (PV) display unit [Green]
  - Displays measured value (PV).
  - Displays various parameter symbols depending on the instrument.
- ② Set value (SV) display unit [Orange]
  - Displays set value (SV).
  - Displays various parameter set value depending on the instrument.
- ③ Indication lamps\*\*
  - Autotuning (AT) lamp [Green]
  - Flashes during autotuning execution.

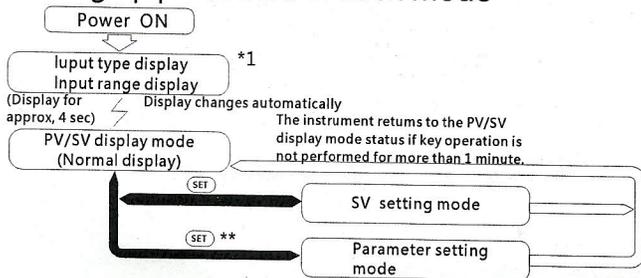
- Control output lamp (OUT1) [Green]
  - Lights when control output is turned on.
- Alarm output lamp (ALM1) [Red]
  - Lights when alarm output is turned on.
- \*\*No OUT2 lamp is used.

- ④ Set key (SET)
  - Used for parameter registration / calling up.

- ⑤ Shift & R/S KEY <R/S>
  - Used to shift the digit when the setting is changed. (Shift Key).
  - Used to select the RUN/STOP Function. (R/S key).
- ⑥ DOWN key v
  - Used to decrease numerals.
- ⑦ UP key ^
  - Used to increase numerals.

### 5. SETTING

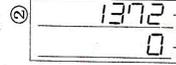
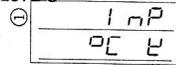
#### 5.1 Calling up procedure of each mode



- \* The RUN/STOP function can be selected. The RUN/STOP function can be selected every time.
- \*\* The <R/S> key is pressed for 1 second. Press the SET key for more than 2 sec.

#### \*1. Input type and input range display

This instrument immediately confirms input type and range following power on. Example: For a controller with the K thermocouple input type and range from 0 to 1372°C



- ① Input type display
  - n P Indicates input abbreviation
  - 0 C Indicates engineering unit
  - 2 Indicates input type (See table\*\*A)
- ② Input range display
  - a: Input range high
  - b: Input range low

#### \*\*A: Input type table

Display	U	J	R	S	B	E	T	N	P	W	U	L	J	P	T	U	V	A
Input type	Thermocouple (TC)										RTD		Voltage		Current			
	K	J	R	S	B	E	T	N	P	W5Re/W26Re	U	L	JPT 100	PT 100				

#### 5.2 Detail of each mode

##### ■ PV/SV display mode

Display measured value (PV) on the PV display unit and set value (SV) on the SV display unit. Usually the control is set to this mode excepting that the Set value (SV) and/or the parameter set value are changed. In addition, in this mode, RUN/STOP can be selected.

##### ■ SV setting mode

This is the mode used to set the set value (SV). Factory set value: 0°C or 0.0°C

##### ■ Parameter setting mode

This is the mode used to set various parameters such as alarms, PID constants, etc.

The following parameter symbols are displayed one by one every time the SET key is pressed.

■setting set-value (SV)

Press the set key to enter the SV setting mode. The digit which light brightly is settable. Then press the < key to shift the digit which lights brightly up to the hundreds digit. After the setting, press the set key.

■setting parameters other than value

press the set key for more than 3 sec. to set controller to the parameters setting mode. press set key by the required number of times until the parameters symbol to be set is displayed. the setting procedures are the same as in the above "setting set-value (SV)". When no parameter setting is required, return the controller to the PV/SV display mode.

symbol	name	discription	setting range	Factory set value
	PV/SV	Measured value/set value	all range	
AL1	AL1	1st alarm set	all range	
AL2	AL2	2nd alarm set	all range	
ATU	ATU	self-tuning	0: NO 1: OFF	0
P	P	proportional band	all range	30
I	I	integral time (s)	0-3600	240
d	D	derivative tim (s)	0-3600	60
Ar	Ar		auto set after AT	25
T	T	work period	1-100s	
OH	OH		1-100 (as PV)	2
SC	SC	PV modification value	-200--200	0
LCK	LCK	No set data locked All parameters changeable	0000	0
		Only the SV AL1 AL2 changeable	0001	
		Only the SV changeable	0011	
		All parameters not changeable	0111	

■Technical parameters set

After power the instrument, enter according to the parameter setting mode and find data lock parameters LCK, set its code to 1000, then press the "set" key to confirm, hold both the "set" button and the "<" button for about 3 seconds at the same time; when it displays COD=0000 in the PV display, press the "set" key to get the corresponds parameters in turns.

symbol	set value				discription	setting range
SL 1	0	0	0	0	K	0-1372℃
	0	0	0	1	J	0-1200℃
	0	0	1	0	R	0-1769℃
	0	0	1	1	S	0-1769℃
	0	1	0	0	B	0-1820℃
	0	1	0	1	E	0-800℃
	0	1	1	0	N	0-1300℃
	0	1	1	1	T	-200~400℃~199.9~400℃
	1	0	0	0	Pt100	-200~650℃~199.9~650℃
	1	0	0	1	Cu50	-50~150℃~50~150℃
	1	0	1	0	0-400Ω	-1999℃~9999℃
	1	0	1	1	0-50mA	-1999℃~9999℃
	1	1	0	0	0-20mA	-1999℃~9999℃
	1	1	0	1	0-5v(0-10v)	-1999℃~9999℃
SL 2	0	0	0	0		
SL 3	0	0	0	0		
		0	0	0	No set 1st alarm function	
		0	0	1	Upper deviation alarm	

SL 4		0	1	0	upper/lower deviation alarm	1st alarm type Choose
		0	1	1	Process value alarm	
		1	0	1	lower deviation alarm	
		1	1	0	Area alarm	
		1	1	1	process of lowest alarm	
	0				Standby alarm	1st Standby alarm type Choose
	1				No Standby alarm	
SL 5	0	0	0	0	set 2nd alarm function	as SL 4
SL 6				0	Positive action control (refrigeration)	
				1	Reverse motion control (heating)	
				0	control time scale output	
				1	Control continuous output	
SL 7				0	Incentive alarm	1st alarm
				1	Non incentive alarm	
			0		Incentive alarm	2nd alarm
			1		Non incentive alarm	
SL 8	0	0	0	0		
SL 9	0	0	0	0		
SL 10	0	0	0	0		
SL 11	0	0	0	0		

When it displays COD=0001 in the PV display, press the “set” key to get the following parameters.

symbol	Factory set value	discription	setting range
SLH		Set the upper measuring range	
SLL		Set the lower measuring range	
PGdP	0	decimal places	0-3
oH	2 or 2.0	AT self-tuning output no respond area	0-100 or 0.0-100.0
AH1	2 or 2.0	1st alarm output no respond area	0-100 or 0.0-100.0
AH2	2 or 2.0	2nd alarm output no respond area	0-100 or 0.0-100.0
dF	1	Digital filtering constant	0-100

■ connect diagram

