(2) Notes on load

a) Load with small current or sensitive load sometimes disables off-function as the product maintains on-condition resulting from off state leakage current. In such cases, connect shunt resistance (Rp) to be parallel with load and reduce off state leakage current applied on the load.

$$\text{Shunt resistance (Rp)} < \frac{IR \times RL}{ILEK - IR}$$

IR: Load off current RL: Load impedance
ILEK: Off state leakage current

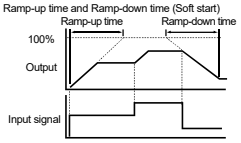
b) The product is designed for the purpose of controlling resistance load. If the load has larger inductance, current phase delays comparing to voltage and may cause disoperation when changing the current flow. Please allow your time to pre-check the function.

(3) Operation

a) The product controls output proportional to the input rating (4 to 20 mA DC) by adopting zero-cross control system.
The product is available for use without analog input by applying external volume adjuster.

b) The Ramp-up/Ramp-down (Soft start) function can be used to suppress rapid change in output voltage by changing the output slowly in case of a rapid change in the output due to input signal changes.

▪ Ramp-up time and Ramp-down time (Soft start)



* The length Ramp-up and Ramp-down time is the same.

(4) Others

Do not connect products in series to raise strength or in parallel to raise the current volume.

SPECIFICATIONS

1. Ratings

Item	SSNZ-15F	SSNZ-25F
Maximum Input Current	24 mA DC	
Max. Load Voltage	264 V AC rms	
Max. Load Current	15 A AC rms	25 A AC rms
1 Cycle Surge Current	146 A	250 A
Isolation Resistance	100 MΩ and above (500 V DC) *	
Dielectric Strength	2500 V AC rms/1 min *	
Ambient Temperature	–20 to +60 °C (No Icing and Condensation)	
Storage Temperature	–30 to +70 °C (No Icing and Condensation)	

* Input (①, ②), Ext. Volume (③, ④) –Output (⑤, ⑥), Power Source (⑦) –Between Cases

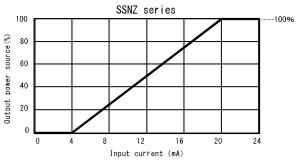
2. Electrical Characteristics (Ta = 25°C)

Item		SSNZ-15F	SSNZ-25F
Input Impedance		250 Ω ± 20 %	
Input Current Range		4 to 20 mA DC	
Load Voltage Range		85 to 264 V AC rms (Sine wave)	
Load Current Range		100 mA AC rms to max. load current *1	
On State Voltage Drop		Below 1.5 V AC rms (at max. output power)	
Off State Leakage Current		Below 9 mA AC rms (load voltage 200 V AC rms, 60 Hz)	
Power Adjustment Range		0 to 100 %	
Output power accuracy		Setting power ± 10 %	
Load Voltage Frequency Range		50 Hz/60 Hz Auto-change 47 to 53 Hz/57 to 63 Hz	
Current Consumption (⑥–⑦)	Analog Input	5.1 mA AC rms (100 V AC rms, 50 Hz)	
	Ext. volume	7.0 mA AC rms (100 V AC rms, 50 Hz)	
Responding Time		Below 1cycle without Soft start *2	
Ramp-up/Ramp-down Time		Approx 0.5 to 40 seconds *2	
Weight		Approx. 260 g	
Standard		UL508 category No. NRNT2	

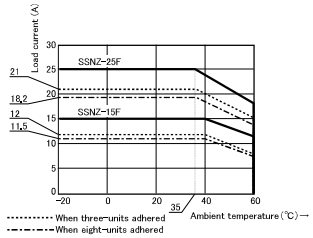
*1 Conduction angle tend to be narrower when the load with minute current applied. Please allow your time to pre-check the function.

*2 The front volume adjuster reach MAX when turned clockwise and reach ZERO when turned counter-clockwise.
The ratings of approx.0.5 to 40 sec. shows changing time of the power from 0 % → 100 % or 100 % → 0 %.

3. Input current vs. Output power



4. Load mitigation



The first edition: MAR. 2005 [IMQ00]
The seventh edition: JUN. 2015 [IMQ00]

RKC INSTRUMENT INC.

IMR02A02-E7 JUN. 2015

Single Phase Power Controller
Zero-cross Control Type

SSNZ-15F/SSNZ-25F

User's Manual

RKC INSTRUMENT INC. IMR02A02-E7

Thank you for purchasing this RKC product.
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.
The instruction manual is intended for those who have the knowledge on electronic devices.

SAFETY INSTRUCTION

★ SYMBOLS

WARNING Incorrect application may result in fire or potential hazard to human body.

CAUTION Incorrect application may result in damage to the unit or other equipment.

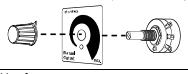
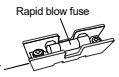
WARNING

1. Risk of electric shock
- Power source should be disconnected when wiring.
- The terminal cover should be attached whenever it is operating.
- Do not remove the outer case.
- Do not touch the product when operating.
- Do not touch the terminal immediately after it is switched off. It may cause an electric shock by electricity charged in the condenser.

2. Risk of fire or fire burn
- Do not touch the heat sink while on operation or immediately after it is switched off.
- Do not use the product near inflammable gas or explosive gas.
- Keep combustibles away from the product.
- Apply fuse or breaker for safety reason in order to prevent overcurrent, short circuit, or breakdown.
- Wiring to terminals must be screwed with adequate torque. (It may cause excessive heat generation on terminals.)

3. Others
- Use the unit within the specified ratings.
- Do not drop the product on any of your body parts.

The following accessories may be available from us.

Accessories	Model code
External Volume (Complete with Volume, Scale plate and Knob.) 	NPZP-S01
Rapid blow fuse For 15 A For 25 A 	660CF15UL 660CF25UL
Fuse holder *	HK1038UL
Fuse holder cover *	HC10

* Same fuse holder/cover for 15 A, 25 A

CAUTION

- Do not soak the product in water, washing liquid or chemicals.
- Do not put any metallic particles or conducting materials inside the product.
- Do not overhaul or remodel them.
- Use correct size of wires according to the current.
- Do not drop the product, give vibration or physical shock.
- Use the power source within the rated frequency range.
- Using the product under the following condition may cause failure, malfunction or degradation.
  - ▪ Exposed to water, oil or chemicals.
  - ▪ Exposed to corrosive gas.
  - ▪ In the high heat or high humidity.
  - ▪ Exposed to dust or metal powders.
- As the product self-heats while on operation, heat sink is attached as a radiator. If the heat convection is obstructed by surrounding equipment and parts, it will lead to possible cause of fire or damage by excessive heat generation.
- Check the polarity of wires and apply adequate voltage.
- The load should be within the rated range.

NOTICE

- The figures, diagrams and numeric values used in this manual are only for purpose of illustration.
- RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.
- RKC 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. RKC 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.
- No portion of this document may be reprinted, modified, copied, transmitted, digitized, stored, processed or retrieved through any mechanical, electronic, optical or other means without prior written approval from RKC.
- Check specifications or any standards if it conforms to the product when used with other equipment. We are not responsible for the item's conformity if the pre-confirmation is not carried out.
- When using the product with the following application, do not apply the maximum ratings on the item and take safety measures in advance in order to minimize the damage to the product.

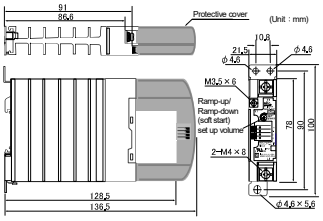
a) When using outside, using under the condition with potential damage by chemicals or electric obstruction or under the condition not specified in the instruction manual or specifications.
b) Any facilities of nuclear power control, incineration, railways, airways, vehicles, medical devices, safety devices and the facilities regulated by administrative organ or private sectors.
c) Any system or machinery which may endanger person or property.
d) Any facilities which requires high reliability such as the suppliers of gas, electricity and water or the system continuously operating 24 hours.
e) Any other application when an advanced security is required.

HOW TO MOUNT

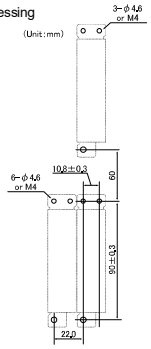
1. Dimensions and Mounting

This product can be mounted on a DIN-rail and the wall of a panel.

(1) Dimensions



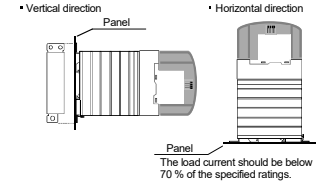
(2) Panel Processing



(3) Torque rate against panel

When mounting the product onto the panel, the tightening torque should be 1.18 to 1.47 N·m.

(4) Mounting direction

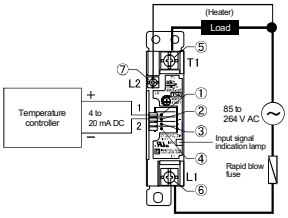


The load current should be below 70 % of the specified ratings.

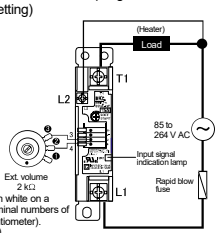
2. Regarding Wiring and Connection

When a load is not connected rightly, a fault may be happened. Please connect the load according to the connection example.

(1) Example of connection with temperature controller



(2) Example connection adopting external volume (Manual setting)



Numbers printed in white on a dark circle are terminal numbers of ext. volume (potentiometer). (Type: NP2P-S01)

* Please purchase ext. volume (potentiometer), rapid blow fuse and fuse holder separately (sold separately).
* When used with a temperature controller, this ext. volume cannot be used as "(Gradient setting)."

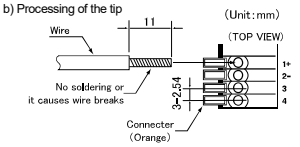
①: Input terminal (1+) ②: Input terminal (2-)
③: Ext. Volume terminal (3) ④: Ext. Volume terminal (4)
⑤: Output terminal (T1) ⑥: Output terminal (L1)
⑦: Power terminal (L2)

Input impedance of the product is 250 Ω (ohm). Ext. Volume terminal (③) outputs 5 V, therefore, the input voltage of the product is;
5 V × 250 Ω/(Resistance on ext. volume + 250 Ω)
Choose the ratings of the external volume in compliance with the amount of electric power adjustments.
The volume is available as an optional part from us.

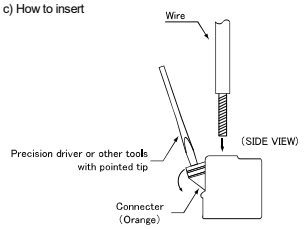
(3) Input wiring

a) Wire size
- Single wire: 0.14 to 0.5 mm^2
- Stranded wire: 0.14 to 0.5 mm^2
- AWG: 20 to 26

b) Processing of the tip



c) How to insert



Insert the connector lever as in the illustration and insert the power cord. If the power cord is pushed in coercively without placing the lever, it may become the cause of bad contact or disconnection.

(4) Output wiring

a) Ring terminals

Terminal No.	Item	φA	φB
⑤/⑥	Output terminal (T1/L1)	Below 9.5 mm	Above 4.3 mm
⑦	Power terminal (L2)	Below 6.5 mm	Above 3.7 mm

b) Screw torque

Terminal No.	Item	Max. rate	Recommendation
⑤/⑥	Output terminal (T1/L1)	1.47 N·m	1.18 to 1.37 N·m
⑦	Power terminal (L2)	0.78 N·m	0.64 to 0.74 N·m

3. Notes on electric circuit design

(1) Protective circuit on output side

a) The product is composed of semi-conductor elements and there is a possibility that the unit fails due to surge voltage and overcurrent. Failures are generally caused by short circuit and it becomes uncontrollable when load is at on state. It is, therefore, more secured to use the product with breaker or contactor as the protective circuit.
b) Output element damages if output side has short-current or overcurrent.
Apply rapid blow fuse within the following range on load circuit.

Isurge > Iff > Ir
Isurge: 1 cycle surge on current
Iff: Fusing current of rapid blow fuse
Ir: Inrush current of load