Module Type Controller SRZ

Current transformer input module

Z-CT INSTRUCTION MANUAL

IMS01T16-E5

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 this manual in a convenient location for easy reference.
This manual describes the mounting, wiring and specifications only. For detailed handling procedures and various function settings, please refer to separate Z-CT Instruction Manual [Detailed version] (IMS01T21-E□).

The above manuals can be downloaded from our website:
URL: http://www.rkcinst.com/english/manual_load.htm

■ Product Check

Z-CT Instruction Manual (this manual) 1
Joint connector cover (KSRZ-517A).....2
Power terminal cover (KSRZ-518A).....1

■ 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.
- RKC 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

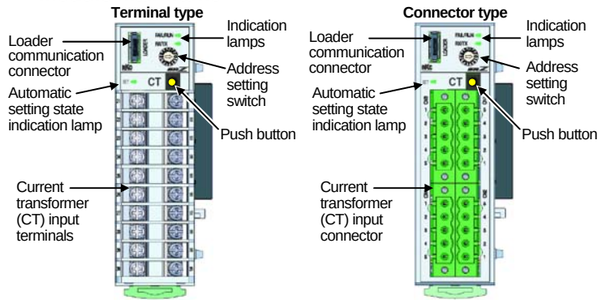
- This product is intended for use with industrial machines, test and measuring equipment. It is not designed for use with medical equipment and nuclear energy.
- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take adequate 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.

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.
- 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.

1. PARTS DESCRIPTION

■ Module Mainframe



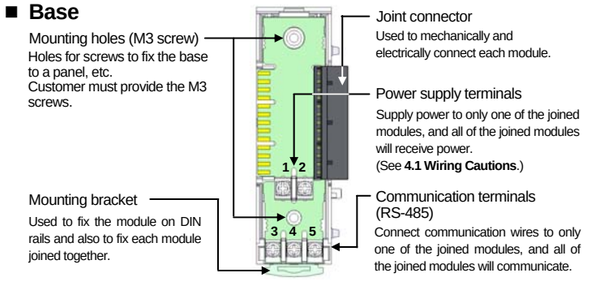
[Indication lamps]

- **FAIL/RUN**
  When normal (RUN): A green lamp is on
  Self-diagnostic error (FAIL): A green lamp flashes
  Instrument abnormality (FAIL): A red lamp is on
- **RX/TX**
  During data send and receive: A green lamp turns on
- **SET**
  During automatic setting execution: A green lamp is on
  Automatic setting failure: A green lamp flashes

[Push button]

Use when the heater break alarm set value or heater over current alarm set value should be automatically set.

■ Base



2. COMMUNICATION SETTING

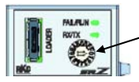
Set communication setting before mounting and wiring of the Z-CT.

CAUTION

Do not separate the module mainframe from the base with the power turned on. If so, instrument failure may result.

2.1 Module Address Setting

Set an address for the module using a small blade screwdriver.

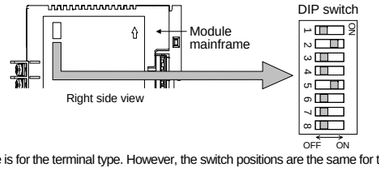


Address setting switch
Setting range: 0 to F [0 to 15: Decimal]
Factory set value: 0

- **For RKC communication, the value obtained by adding "32" to the set address corresponds to the address used for the actual program.**
- **For Modbus, the value obtained by adding "33" to the set address corresponds to the address used for the actual program.**
- **To avoid problems or malfunction, do not duplicate an address on the same communication line.**

2.2 Protocol Selections and Communication Speed Setting

Use the DIP switch on the right side of module to select communication speed, data bit, configuration and protocol.
The data changes become valid when the power is turned on again.



(The above figure is for the terminal type. However, the switch positions are the same for the connector type.)

1	2	Communication speed
OFF	OFF	4800 bps
ON	OFF	9600 bps
OFF	ON	19200 bps
ON	ON	38400 bps

Factory set value: 19200 bps

3	4	5	Data bit configuration	Settable communication
OFF	OFF	OFF	Data 7-bit, without parity, Stop 1-bit	RKC communication
OFF	ON	OFF	Data 7-bit, Even parity, Stop 1-bit	
ON	ON	OFF	Data 7-bit, Odd parity, Stop 1-bit	
OFF	OFF	ON	Data 8-bit, without parity, Stop 1-bit	RKC communication Modbus
OFF	ON	ON	Data 8-bit, Even parity, Stop 1-bit	
ON	ON	ON	Data 8-bit, Odd parity, Stop 1-bit	

Factory set value: Data 8-bit, without parity

6	Protocol
OFF	RKC communication
ON	Modbus

Factory set value: RKC communication

- **Switch No. 7 and 8 must be always OFF. Do not set to ON.**
- **When two or more modules are connected on the same communication line, the DIP switch settings of all modules must be the same. However, when a Z-CT module is joined to a Z-TIO-C/D or Z-TIO-E/F module used for "PLC communication," set the communication speed and data bit configuration to the same settings as the Z-TIO-C/D or Z-TIO-E/F module and set the communication protocol to "RKC communication."**
- **Connect a termination resistor between the communication terminals (No.3 and 4) of the module at the end of the communication line from the host computer.**

3. MOUNTING

WARNING

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

3.1 Mounting Cautions

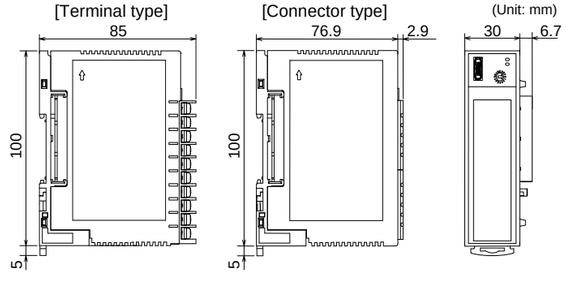
(1) This instrument is intended to be used under the following environmental conditions. **(IEC61010-1)** [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]
(2) Use this instrument within the following environment conditions.
- Allowable ambient temperature: –10 to +50 °C
- Allowable ambient humidity: 5 to 95 %RH
  (Absolute humidity: MAX. W. C 29.3 g/m^3 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:
- 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, or the like. 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.
- 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 the easy reach of the operator. It should be marked as the disconnecting device for the equipment.

3.2 Dimensions

(Unit: mm)



- When the module is mounted on the panel, allow a minimum of 50 mm at the top and bottom of the module to attach the module to the mainframe.
- Space for connectors and cable must be considered when installing.
- For instruction of module joining, mounting and removal, refer to the **Z-TIO Instruction Manual (IMS01T01-E□)**.

Up to 16 Z-CT modules can be connected. The maximum number of SRZ modules (including other function modules) on the same communication line is 31.

The Z-CT module cannot transmit data to or receive data from a PLC. If connected to a Z-TIO-C/D or Z-TIO-E/F module, use host communication or loader communication.

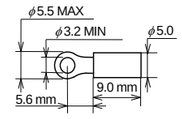
4. WIRING

WARNING

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

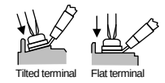
4.1 Wiring Cautions

- To avoid noise induction, keep input/output signal wires 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.
- Power supply wiring must be twisted and have a low voltage drop.
- For an instrument with 24 V power supply, supply power from a SELV circuit.
- A suitable power supply should be considered in the end-use equipment. The power supply must be in compliance with a limited-energy circuits (maximum available current of 8 A).
- Supply the power to only one of the joined modules. When power is supplied to any one of the joined modules, all of the joined modules will receive power.
- Select the power capacity which is appropriate for the total power consumption of all joined modules and the initial current surge when the power is turned on.
  Power consumption (at maximum load): 35 mA max. (at 24 V DC)
  Rush current: 10 A or less
- For the connector type module, use the following our connector (plug) [sold separately].
  Connector type: SRZP-01 (Front-screw type), SRZP-02 (Side-screw type)
  Screw size: M2.5
  Recommended tightening torque: 0.43 to 0.5 N·m (4.3 to 5.0 kgf·cm)
  Used cable specifications:
  Lead wire type:
  Solid (AWG 28 [cross-section: 0.081 mm^2] to 12 [cross-section: 3.309 mm^2]) or
  Twisted wire (AWG 30 [cross-section: 0.051 mm^2] to 12 [cross-section: 3.309 mm^2])
  Stripping length: 9 to 10 mm (SRZP-01), 7 to 8 mm (SRZP-02)
- For the power supply terminals and communication terminals, use the specified solderless terminals. Only these specified solderless terminals can be used due to the insulation between the terminals.
  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 mm^2
  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)



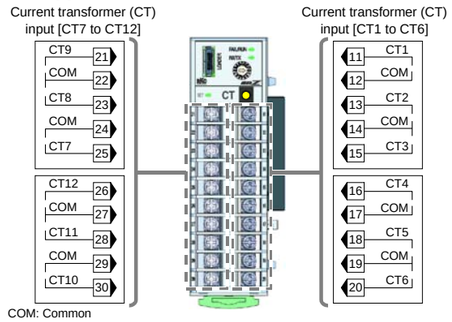
- Make sure that the any wiring such as solderless terminal is not in contact with the adjoining terminals.

When tightening a screw of the instrument, make sure to fit the screwdriver properly into the screw head mounted tilted or flat as shown in the right figure. Tightening the screw with excessive torque may damage the screw thread.



4.2 Terminal Configuration

■ Terminal type



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■ Connector type

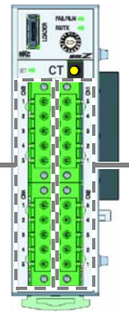
Current transformer (CT) input [CT7 to CT12]

CN3

Pin No.	Description
1	CT9
2	COM
3	CT8
4	COM
5	CT7

CN4

Pin No.	Description
1	CT12
2	COM
3	CT11
4	COM
5	CT10



Current transformer (CT) input [CT1 to CT6]

CN1

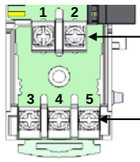
Pin No.	Description
5	CT1
4	COM
3	CT2
2	COM
1	CT3

CN2

Pin No.	Description
5	CT4
4	COM
3	CT5
2	COM
1	CT6

COM: Common

■ Base



Power supply terminals

Terminal No.	Description
1	24 V DC (+)
2	24 V DC (–)

Communication terminals

Terminal No.	Description
3	T/R (A)
4	T/R (B)
5	SG

For communication wiring, see **Z-TIO Host Communication Quick Instruction Manual (IMS01T02-E□).**

5. SPECIFICATIONS

Current transformer (CT) input

Number of inputs: 12 points
Current transformer (CT): CTL-6-P-Z, CTL-6-P-N or CTL-12-S56-10L-N
(Current transformer (CT) is sold separately.)
Input capture range: CTL-6-P-Z: 0.0 to 10.0 A
CTL-6-P-N: 0.0 to 30.0 A
CTL-12-S56-10L-N: 0.0 to 100.0 A
Sampling cycle: 3 seconds

Performance (Ambient temperature: 23±2 °C However, excluding CT error)

Current transformer (CT) input accuracy:
0.0 to 10.0 A: ±0.3 A
0.0 to 30.0 A, 0.0 to 100.0 A: ±2 % of reading or ±1.0 A
Input resolution: CTL-6-P-Z: 1/30000
CTL-6-P-N: 1/7500
CTL-12-S56-10L-N: 1/20000
Input influence caused by ambient temperature (5 to 40 °C):
0.0 to 10.0 A: ±0.012 % of Span/°C
0.0 to 30.0 A, 0.0 to 100.0 A: ±0.02 % of Span/°C
Influence of power frequency (Load power):
47.5 to 52.5 Hz: 3.6 % of reading
57.0 to 63.0 Hz: 2.5 % of reading

Event (alarm) function

● Heater break alarm (HBA) [time proportioning output]

Number of HBA: 12 points
[One point CT input per one heater break alarm (HBA)]
Setting range: 0.0 to 100.0 A (0.0: heater break alarm (HBA) function OFF)
However, no heater break alarm function is activated if the time proportioning cycle ON time and OFF time are less than 0.5 seconds.
Additional function: Number of heater break alarm (HBA) delay times
Alarm interlock
Alarm contents: Heater break, operating unit melting

● Heater overcurrent alarm [time proportioning output]

Number of HBA: 12 points
[One point CT input per one heater overcurrent alarm]
Setting range: 0.0 to 105.0 A (0.0: heater overcurrent alarm function OFF)
However, no heater overcurrent alarm function is activated if the time proportioning cycle ON time and OFF time are less than 0.5 seconds.
Additional function: Number of heater break alarm (HBA) delay times
Alarm interlock

Communication

Interface: Based on RS-485 EIA standard
Synchronous method: Start/stop synchronous type
Communication speed: 4800 bps, 9600 bps, 19200 bps or 38400 bps
Connection method: 2-wire system, half-duplex multi-drop connection
Protocol: RKC communication (ANSI X3.28-1976 subcategory 2.5, B1)
Modbus-RTU

General specifications

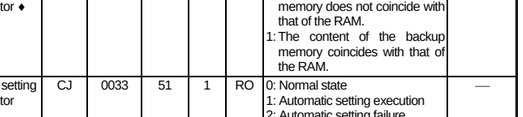
Power supply voltage: 24 V DC (Rating)
21.6 to 26.4 V DC [Including power supply voltage variation]
Power consumption (at maximum load):
35 mA max. (at 24 V DC)
Rush current: 10 A or less
Allowable ambient temperature:
–10 to +50 °C
Allowable ambient humidity: 5 to 95 %RH
(Absolute humidity: MAX.W.C 29.3 g/m^3 dry air at 101.3 kPa)
Installation environment conditions:
Indoor use
Altitude up to 2000 m
Weight: Terminal type module: Approx. 140 g
Connector type module: Approx. 120 g

Standard

CE marking:
EMC: EN61326-1
Safety standards: UL: UL61010-1
cUL: CAN/CSA-C22.2 No.61010-1
RCM: EN55011

6. COMMUNICATION DATA MAP

- Modbus register address (HEX: Hexadecimal DEC: Decimal)
This is the register address of Z-CT module communication data.
- Digits
The number of communication data digits in RKC communication.
- Attribute
RO: Read only data (Host computer ← The controller)
R/W: Read and Write data (Host computer ↔ The controller)
- Data



Symbols used in MAP
♠: Data for each channel ♦: Data for each module

For details on the communication data, see the **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

The data of address 0179H to 01F1H are engineering setting data.
The engineering setting data should be set according to the application before setting any parameter related to operation. Once the engineering setting data are set correctly, no further changes need to be made to data for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the engineering setting.

■ Communication data (RKC communication/Modbus)

Name	RKC Identifier	Modbus register address HEX	Modbus register address DEC	Digits	Attribute	Data range	Factory set value
Model code ♦	ID	—	—	32	RO	Model code (character)	—
ROM version ♦	VR	—	—	8	RO	ROM version	—
Current transformer (CT) input value monitor ♠	M4	0000 ⋮ 000B	0 ⋮ 11	7	RO	CTL-6-P-Z: 0.0 to 10.0 A CTL-6-P-N: 0.0 to 30.0 A CTL-12-S56-10L-N: 0.0 to 100.0 A Displays the input value of current transformer (CT).	—
Load factor conversion CT monitor ♠	M5	000C ⋮ 0017	12 ⋮ 23	7	RO	0.0 to 100.0 A Displays the mean current value or root mean squared value.	—
Heater break alarm (HBA) state monitor ♠	AF	0018 ⋮ 0023	24 ⋮ 35	1	RO	0: Normal 1: Break 2: Melting	—
Heater overcurrent alarm state monitor ♠	AG	0024 ⋮ 002F	36 ⋮ 47	1	RO	0: Normal 1: Heater overcurrent	—
Error code ♦	ER	0030	48	7	RO	RKC communication 1: Adjustment data error 2: Data back-up error 4: A/D conversion error	—
						Modbus b0: Adjustment data error b1: Data back-up error b2: A/D conversion error b3 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 7]	—
Integrated operating time monitor ♦	UT	0031	49	7	RO	0 to 19999 hours	—
Backup memory state monitor ♦	EM	0032	50	1	RO	0: The content of the backup memory does not coincide with that of the RAM. 1: The content of the backup memory coincides with that of the RAM.	—
Automatic setting state monitor ♦	CJ	0033	51	1	RO	0: Normal state 1: Automatic setting execution 2: Automatic setting failure	—
Unused	—	0034	52	—	—	Do not use this register address as it is used for the internal processing.	—
Unused	—	0035 ⋮ 0093	53 ⋮ 147	—	—	—	—
Heater break/ Heater over-current alarm automatic setting selection ♠	BT	0094 ⋮ 009F	148 ⋮ 159	1	R/W	0: Automatic setting is disabled. (Alarm set value cannot be automatically set by the push button and communication.) 1: Automatic setting for heater break alarm is enabled. 2: Automatic setting for heater overcurrent alarm set value is enabled. 3: Automatic setting for heater break alarm (HBA) and heater overcurrent alarm set values are enabled.	1
Automatic setting transfer ♠	BU	00A0 ⋮ 00AB	160 ⋮ 171	1	R/W	0: Normal state 1: Automatic setting execution 2: Automatic setting failure (RO)	0
Heater break alarm (HBA) set value ♠	A8	00AC ⋮ 00B7	172 ⋮ 183	7	R/W	0.0 to 100.0 A 0.0: Heater break alarm function (HBA) OFF (HBA function OFF: The current transformer (CT) input value monitoring is available.)	0.0
Heater break alarm (HBA) selection ♠	BZ	00B8 ⋮ 00C3	184 ⋮ 195	1	R/W	0: Heater break alarm (HBA) unused 1: Heater break alarm (HBA) 2: Heater break alarm (HBA) (With alarm interlock function)	1
Heater overcurrent alarm set value ♠	A6	00C4 ⋮ 00CF	196 ⋮ 207	7	R/W	0.0 to 105.0 A 0.0: Heater overcurrent alarm function OFF	0.0
Heater overcurrent alarm selection ♠	BO	00D0 ⋮ 00DB	208 ⋮ 219	1	R/W	0: Heater overcurrent alarm unused 1: Heater overcurrent alarm 2: Heater overcurrent alarm (With alarm interlock function)	1
Heater break alarm (HBA) interlock release ♠	CX	00DC ⋮ 00E7	220 ⋮ 231	1	R/W	0: Normal state 1: Interlock release execution	0
Heater overcurrent alarm interlock release ♠	CY	00E8 ⋮ 00F3	232 ⋮ 243	1	R/W	0: Normal state 1: Interlock release execution	0
Unused	—	00F4 ⋮ 0177	244 ⋮ 375	—	—	—	—
Set lock ♦	LK	0178	376	1	R/W	0: Unlock 1: Lock	0
The following data are engineering setting data.							
CT type ♠	BV	0179 ⋮ 0184	377 ⋮ 388	1	R/W*	0: CTL-6-P-N (0.0 to 30.0 A) 1: CTL-12-S56-10L-N (0.0 to 100.0 A) 2: CTL-6-P-Z (0.0 to 10.0 A)	Depends on model code When not specifying: 0
CT ratio ♠	XT	0185 ⋮ 0190	389 ⋮ 400	7	R/W*	0 to 9999	Note 1
Number of heater break alarm (HBA) delay times ♠	DI	0191 ⋮ 019C	401 ⋮ 412	7	R/W*	0 to 255 times	5
Automatic setting factor for heater break alarm (HBA) ♠	BW	019D ⋮ 01A8	413 ⋮ 424	7	R/W*	1 to 100 %	75
Automatic setting factor for heater overcurrent alarm ♠	B9	01A9 ⋮ 01B4	425 ⋮ 436	7	R/W*	100 to 1000 %	200
Determination current value for automatic setting ♠	BP	01B5 ⋮ 01C0	437 ⋮ 448	7	R/W*	0.0 to 100.0 A	1.0
Automatic setting time ♠	BQ	01C1 ⋮ 01CC	449 ⋮ 460	7	R/W*	10 to 250 seconds	60
Module address assignments for CT input ♠	BX	01CD ⋮ 01D8	461 ⋮ 472	7	R/W*	0 to 99 Set the address of the Z-TIO or Z-DIO module to which the current value is captured.	0
Module channel assignments for CT input ♠	BY	01D9 ⋮ 01E4	473 ⋮ 484	7	R/W*	1 to 99 Set the channel number of the Z-TIO or Z-DIO module to which the current value is captured.	1
Load factor conversion method ♠	IC	01E5 ⋮ 01F0	485 ⋮ 496	1	R/W*	0: Mean conversion 1: Root mean squared value conversion	0
Interval time ♦	ZX	01F1	497	7	R/W*	0 to 250 ms	10

* When the set lock is set to "0: Unlock," writing data is possible.
Note 1: CTL-6-P-N, CTL-6-P-Z: 800
CTL-12-S56-10L-N: 1000

7. AUTOMATIC SETTING FUNCTION

Heater break alarm (HBA) set value and heater overcurrent alarm set value can be automatically set by the push button or communication.

- When the alarm values are automatically set by push button, batch setting of the CT input channels is possible.
- When the alarm values are automatically set by communication, each CT input channel can be separately set.

When using the heater break alarm (HBA) or heater overcurrent alarm, be sure to assign the CT input channels (module address assignments for CT input, module channel assignments for CT input).

The automatic setting function can be used when time proportioning output is used.

If the ON time or OFF time of time proportioning output is 0.5 seconds or less, automatic setting is not possible. In addition, alarm detection is not possible.

■ Procedure for automatic setting of the heater break alarm (HBA) set value by push button

Before performing automatic setting, complete all connections and settings so that the system is ready for operation.

1. To perform automatic setting of the heater break alarm (HBA) set value, set the following Z-CT module parameters from the host computer (loader communication can also be used). Configure the set values according to your operation conditions.

Parameter	Details
Heater break/Heater overcurrent alarm automatic setting selection	Check that the set value is set to "1" or "3." (Factory set value: 1)
Heater break alarm (HBA) selection	Check that the set value is set to "1" or "2." (Factory set value: 1)
CT type	Verify that the set values of the CT model have been set as you specified.
CT ratio	Verify that the number of turns (ratio) has been set as you specified. CTL-6-P-N, CTL-6-P-Z: 800 CTL-12-S56-10L-N: 1000
Number of heater break alarm (HBA) delay times	Configure the set values according to your operation conditions. (Factory set value: 5 times)
Automatic setting factor for heater break alarm (HBA)	Configure the set values according to your operation conditions. (Factory set value: 75 %)
Determination current value for automatic setting	Configure the set values according to your operation conditions. (Factory set value: 1.0 A)
Automatic setting time	Configure the set values according to your operation conditions. (Factory set value: 60 seconds)
Module address assignments for CT input	Set the address of the Z-TIO or Z-DIO module to which the current value is captured.
Module channel assignments for CT input	Set the channel number of the Z-TIO or Z-DIO module to which the current value is captured.

2. Switch the SRZ unit to the RUN state (start control) and turn on output to the heater.
3. Hold down the push button on the front of the Z-CT module for at least two seconds. Automatic setting of the heater break alarm (HBA) set value will begin.
During automatic setting, the "SET" lamp on the front of the Z-CT module will light.

During automatic setting, automatic setting can be stopped by holding down the push button for at least two seconds.

4. When the "SET" light on the front of the Z-CT module turns off, automatic setting has ended.

If automatic setting was not successful, the "SET" lamp will flash.
To clear the flashing, hold down the push button for at least two seconds to start automatic setting again, and then hold down the push button for at least two seconds to stop automatic setting.

■ Checking the heater break alarm (HBA) and heater overcurrent alarm

The Z-CT module does not have a terminal that outputs alarm signals, and thus the alarm status must be checked using one of the methods below.

- Check the alarm status in the communication data (heater break alarm (HBA) state monitor, heater overcurrent alarm state monitor).
- Use a Z-DIO module to check the alarm status in the digital output (DO) *.

* The heater overcurrent alarm state is not output from the digital output (DO) of the Z-DIO module.

For checking by the digital output (DO), see the **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

8. MODEL CODE

Z-CT-A □/□ - □□
(1) (2) (3) (4)

: Code 3 and 4 are for quick start codes to specify software configurable settings.
If not specified, these codes will not be printed on labels and all settings will be factory default.

(1) Wiring type
T: Terminal type C: Connector type

(2) Quick start code
N: No quick start code
1: Specify quick start code

(3) Current transformer (CT) type [Quick start code]
No code: No quick start code
P: CTL-6-P-N (0.0 to 30.0 A)
S: CTL-12-S56-10L-N (0.0 to 100.0 A)
Z: CTL-6-P-Z (0.0 to 10.0 A)

(4) Communication [Quick start code]
No code: No quick start code
1: RKC communication (AXSI X3.28-1976)
2: Modbus

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