RKc®

Digital Control Equipment

PRODUCT INFORMATION

Temperature controllers
Process controllers
Power controllers
Communication converters
Indicators
Sensors

An Industry Leader Since 1937

RKC INSTRUMENT INC.

Digital Controller

Module Type Temperature/Process Controller
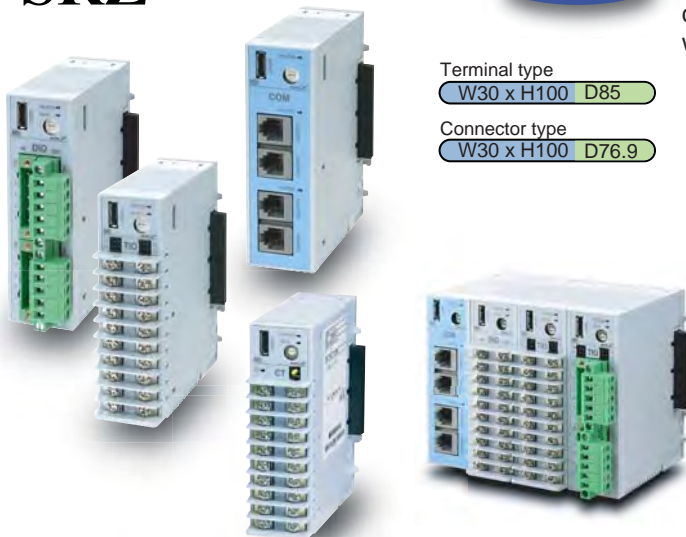
Modular type
Process/Temperature Controllers

SRZ

CE c RU us

Temp (std)

Pressure/Flow

Terminal type
W30 x H100 | D85

Connector type
W30 x H100 | D76.9

The SRZ is a DIN rail mounted module type process/ temperature controller. 4 or 2-loop control can be performed with a single compact module. Power supply and communication lines are via a connection on the side, no wiring required.
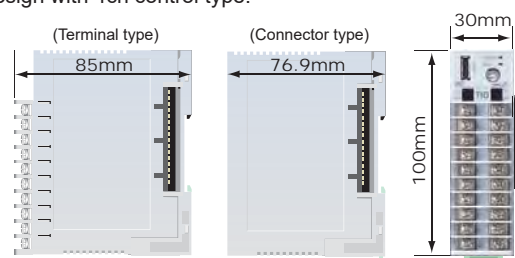
● Compact

Width 30mm, depth 85mm (connector type : 76.9mm) compact design with 4ch control type.

(Terminal type) 85mm
(Connector type) 76.9mm
30mm
100mm

● Distributed installation

Modules can be remotely distributed by connecting them via RS-485 communication. Up to 16 Z-TIO and 16 Z-DIO modules (Overall max. 31 modules) can be connected to one serial communication line by distributed installation.
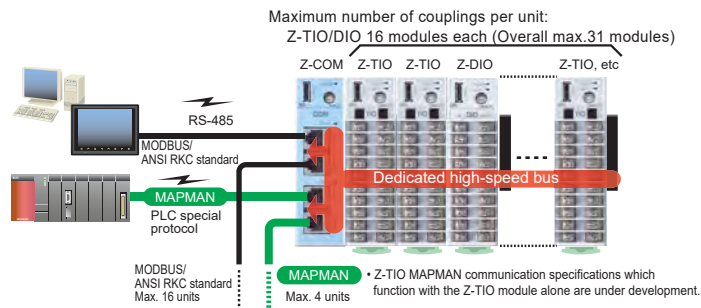The maximum number of modules connected by distributed installation is 31.

Z-TIO   Z-TIO Z-DIO   Z-TIO

RS-485   RS-485   RS-485
MODBUS   MODBUS   MODBUS
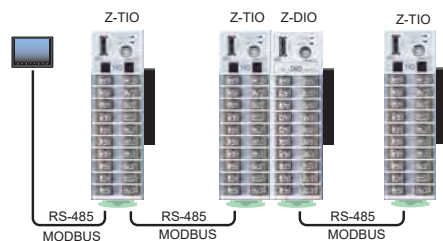
● High-speed communication for large channel systems, Program-less connection to PLC's

Z-COM module can manage data from connected control modules via high-speed bus connection. MAPMAN program-less connection to PLC is also available.

Program-less connectable PLCs: Mitsubishi Electric MELSEC Series, Omron SYSMAC Series (As of June 2006)

Maximum number of couplings per unit:
Z-TIO/DIO 16 modules each (Overall max.31 modules)

Z-COM Z-TIO Z-TIO Z-DIO   Z-TIO, etc

RS-485

MODBUS/ ANSI RKC standard

MAPMAN
PLC special protocol

Dedicated high-speed bus

MODBUS/ ANSI RKC standard Max. 16 units

MAPMAN Max. 4 units

• Z-TIO MAPMAN communication specifications which function with the Z-TIO module alone are under development.

● Programless connection to PLCs (Temperature control module with PLC communication : Z-TIO-C/D)

MITSUBISHI MELSEC series

Temperature control module with PLC communication
Z-TIO-C/D   Z-TIO-C/D
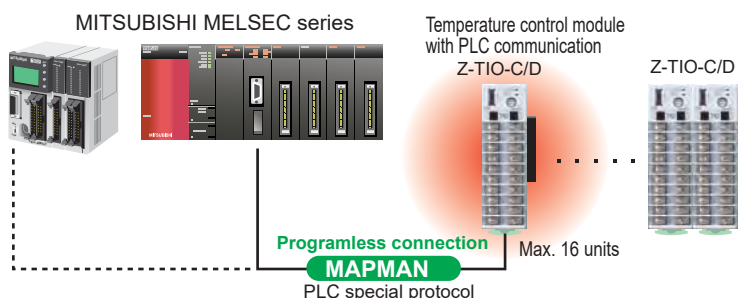
Corresponding to MITSUBISHI MELSEC PLC series :
1. A compatible, 1C frame (type 4).
   AnA/AnU common command (QR/QW)
   (ANA/QNA series, Q series)
   QnA compatible, 3C frame (type 4), command (0401/1401).
   (QnA/Q series) * ZR register only
2. A compatible, 1C frame (type 4).
   ACPU common command (WR/WW)
   (A series, FX2N, FX2NC series)

Programless connection
MAPMAN
PLC special protocol

Max. 16 units

● Open Network Connectivity

Ethernet [MODBUS/TCP] Communication Converter

EtherNet/IP Communication Converter

EtherCAT Communication Converter

Ethernet Communication Converter [Ethernet MAPMAN]

DeviceNet Communication converter

Ethernet (Modbus/TCP) Communication Converter
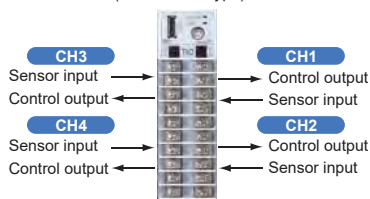
CC-Link Communication Converter

COM-ME-1   COM-ME-2   COM-ME-3   COM-ME-6

COM-JH   COM-JL   COM-JC

RS-485 (MODBUS)
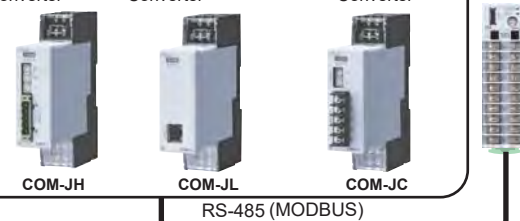
Input/Output Configuration

Temperature Control Module : Z-TIO
(4ch terminal type)

CH3		CH1
Sensor input →		→ Control output
Control output ←		← Sensor input
CH4		CH2
Sensor input →		→ Control output
Control output ←		← Sensor input

Digital Input/Output Module Z-DIO
(Terminal type)

Digital input → **8 points** → Digital output **8 points**
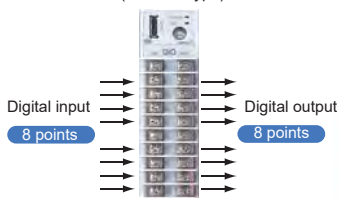
CT (Current transformer)
Input Module : Z-CT
(Terminal type)

CT input → **6 points** ← CT input **6 points**
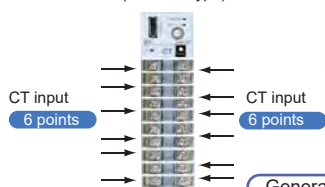
Main Features

- Brilliant II PID control
- Start-up tuning and Autotuning
- Remote setpoint
- Memory area (8)
- Heater break alarm
- Auto-temperature-rise with
  learning function
- Cascade control
- Output ratio distribution function
- Digital communications
- Loader communication (USB port)

Input	Thermocouple, RTD mV/V/mA DC
Sampling	0.25sec
Accuracy	±(0.2% of display + 1digit)
Control	Brilliant II PID control, also with * Heat/Cool control Position-proportional control without feedback resistance
Output	M • V • R • E • T • D
Communication	RS-485/RS-422A* (Protocol: RKC/ANSI, MODBUS) MAPMAN* (*) Use Z-COM module CC-Link**, DeviceNet**, MECHATROLINK**, Ethernet** (**) Use exclusive converters.

Major Applications

General purpose temperature control applications

Inside control cabinets and distributed installations
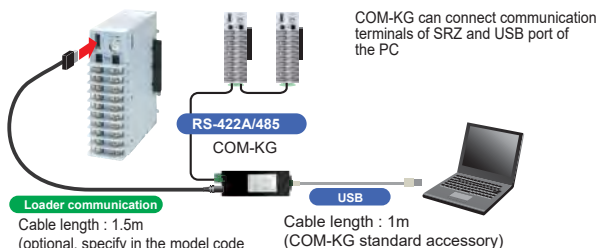

USB communication converter

COM-KG

Easy parameter setup via USB loader port with PROTEM2 software
(Loader communication)

The SRZ module has a standard loader port on the front panel to connect to a PC USB port via COM-KG (USB communication converter).
Using PROTEM2 software on the PC, parameter settings can be easily saved on the PC in CSV format, and the same parameter settings are easily copied to other SRZ modules.
• PROTEM2 is on the RKC Instrument website (www.rkcinst.com).

The Loader port is only for parameter setup

COM-KG can connect communication terminals of SRZ and USB port of the PC

RS-422A/485
COM-KG

USB

Loader communication
Cable length : 1.5m
(optional, specify in the model code when ordering)

Cable length : 1m
(COM-KG standard accessory)

• The power to COM-KG is supplied from the PC via the USB port so no power supply is necessary.

How to select proper instruments

Temp (std)
Standard temperature process applications

Temp (accu)
Temperature process with accuracy

Temp (Res)
Temperature process with high stability and accuracy

Temp (Fast)
Temperature process with fast response

Pressure/Flow
Pressure/Flow process

Monitor/Alarm
Analog value monitoring (with alarm)

Temp.monitor/alarm
Temperature monitoring (with alarm)

Temp.monitor
Temperature monitoring

Safety standards

CE Marking   RCM

UL/cUL recognized   TUV

UKCA   VDE

Digital Control Equipment

● Digital Controllers

● Indicators/Limit controller

● Accessories

● Sensors

● Handheld thermometers

● Applications

High Speed Sampling Digital Controller

RTP and fast processes

Furnaces with fast response, RTP and other process applications

Fast Response >>

Fast sampling controller. Input with high resolution as well as numerous parameters settable in 1/100 units.
Performs excellent control in fast changing process applications.
Applications include RTP (Rapid Thermal Processing), pressure, flow and other processes.
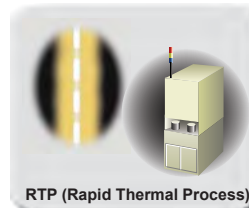
RTP (Rapid Thermal Process)

High accuracy digital controllers

GZ400
W96 x H96 | D65
CE c**RU**us
Temperature (fast process)

GZ900
W48 x H96 | D65
CE c**RU**us
Pressure/Flow

Fast sampling time assures stable process control application.
1 or 2 loop controls in a single instrument.
Other features include: 16 recipes available with Memory Area Function, Front Loader Communication Port, Ramp/Soak Program Control, and Programless connection to PLCs.

GZ400   **GZ900**

Main Features

- Max.2 loops (cascade control available)
- Brilliant PID control
- High resolution PID setting
- Three Indicators
- Event output (max.4)
- Event input (max.6)
- Remote setpoint (1 loop type only)
- Analog output (max.1)
- Memory area (16)
- Heater break alarm
- Digital communications
- Loader communication

Input	Thermocouple, RTD DC voltage/current
Sampling	0.01 sec.
Accuracy	±0.1% of PV for T/C and RTD ±0.1% of span for DC inputs
Control	Brilliant PID
Output	M, V, R, E, B
Digital communication	RS-485 (RKC/ANSI, Modbus)

Fast sampling high accuracy digital controllers (Modular type)

SRX
CE c**RU**us

Basic module	W40.5 x H125	D100
Expansion module	W30 x H125	D100
DI/DO module	W30 x H125	D100

Temperature (fast process)   Pressure/Flow

1 or 2 loop control in a compact modular design. Up to 31 modules can be connected in a system (basic module + expansion modules + DI/DO modules). Connected modules can be installed in different control zones for saving space and wiring.
Each loop has up to 16 patterns of ramp/soak programs (16 segments/pattern) to provide fast ramp/soak program control.
Digital I/O module handles up to 28 inputs/outputs per module for switching operation modes, various event status outputs (e.g. event output and Run/Stop) independently.

DI/DO modules   Expansion module   **SRX**   Basic module

Main Features

- 1 or 2 loops
- Brilliant PID control
- PID setting with high resolution
- Enhanced autotuning
- Ramp/Soak program (16 patterns by 16 segments)
- Digital communication
- Heater break alarm
- Digital inputs/outputs (DI/DO module, max. 28 points per module)

Input	Thermocouple, RTD DC voltage/current
Sampling	0.025 sec.
Accuracy	±(0.1% of PV ±1digit) for T/C and RTD ±(0.1% of span) for DC inputs
Control	Brilliant PID
Output	M, V, R, E
Communication	RS-485 (RKC/ANSI, Modbus) MapMman

Profibus/DeviceNet version available.

Digital Controller

Standard Process/Temperature Controllers

Digital Process/Temperature Controllers

RB900
W96 x H96   D60
CE cULus

RB700
W72 x H72   D60
CE cULus

RB500
W96 x H48   D60
CE cULus

RB400
W48 x H96   D60
CE cULus

RB100
W48 x H48   D63
CE cULus

Temp (std)
Temp (moni)
AI (moni)
Pressure/Flow

RB400   RB900
RB100
RB500
RB700

Main Features

• Large display
• Heat/cool control
• Digital communication
• Digital input/output
• Analog output
• Heater break alarm
• Loop break alarm
• IP66
• Fine-tuning, Startup tuning
• Timer function
• Loader communication

white base

Major Applications

General purpose temperature control applications

Plastic, packaging, food, environmental, semiconductor industries

Input	T/C, RTD, DC voltage/current
Sampling	0.25 sec
Accuracy	±0.2% of displayed value
Control	PID control (heat/cool control available)
Output	M, V, R, E, D, T
Communication	RS-485 (RKC/ANSI, Modbus) MapMan * Loader communication

* External converter required.

1/32DIN (48x24mm)
Digital Temperature Controllers

SA200/201
W48 x H24   D100
CE cULus UKCA

Temp (std)
Temp (moni)
AI (moni)

white base

black base

SA201
(PV/SV : Red display)

Main Features

• Red-Red LED available (SA201)
• Digital communication
• Self-tuning (active tuning)
• Heat/Cool control
• Alarm output
• Digital input
• Loop break alarm
• PV/SV display selectable
• IP66

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec / 0.25 sec
Accuracy	±(0.3% of displayed value +1digit)
Control	PID control (heat/cool control available)
Output	M, V, R
Communication	RS-485 (RKC/ANSI, Modbus)

Major Applications

General purpose temperature control applications

Plastic, packaging, food, environmental, semiconductor industries

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Socket mounting
Digital Temperature Controller

SA100
W48 x H48   D80
CE cULus UKCA

mounting socket is sold separately.

Temp (std)
Temp (moni)
AI (moni)

Main Features

• Digital interface
• Self-tuning (adaptive tune)
• Heat/cool control
• Alarm output
• Analog output
• Digital input
• Loop break alarm
• PV/SV contents programmable

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec / 0.25 sec
Accuracy	TC : ±(1% of displayed value +1digit) RTD: ±(0.3% of displayed value +1digit)
Control	PID control (heat/cool control available)
Output	M, V, R
Communication	RS-485 (RKC/ANSI, Modbus)

Major Applications

In-panel mounting

* Din-rail mount unit for heat, cool, heat/cool control, over-temperature protection

Digital Controller

Output coding
M: Relay output
V: SSR drive logic output
R: Current output
E: Continuous voltage output
G: Triac trigger output
B, D: Open collector output
T: Triac output

Temperature, pressure, flow ··· for various process applications

High Performance Process/Temperature Controller

FZ110 FZ400 FZ900

| W48×H48 | D81 | W48×H96 | D65 | W96×H96 | D65 |

Temp (high)   Pressure/Flow

FZ400

FZ900

FZ100

The FZ Series is a high performance process controller with 0.1% of accuracy, sampling cycle time of 0.05/0.1/0.25 secondadvanced control, loader communication, 2 inputs in short depth housing.

Main Features

- Brilliant II PID control
- Two Input Control
  - Cascade Control (Control loop combination)
  - Control with PV select
  - Math Control
- Suppressing Overshoot (Proactive Function)
- Level PID Function
- Switching Direct/Reverse action
- Front loader communicationt
- Memory area (16)
- Heater break alarm
- Ramp-Soak program control
- Digital communications

Input	Thermocouple, RTD mV/V/mA DC
Sampling	0.05sec * Two Inputs :0.1 seconds.
Accuracy	±(0.1% of display + 1digit)
Control	Brilliant II PID control, also with * Heat/Cool control Position-proportional control without feedback resistance
Output	M • V • R • E • B
Communication	RS-485/422A (Protocol: RKC/ANSI, MODBUS) MAPMAN

Major Applications

Temperature and process control

High Performance Process/Temperature Controller

FB900 FB400 FB100

| W96 x H96 | D60 | W48 x H96 | D60 | W48 x H48 | D74 |

Temp (high)   Pressure/Flow

The FB Series is a high performance process controller with a more advanced Brilliant II PID, autotuning, advanced tuning, selectable sampling cycle time of 0.05/0.1/0.25 second and 0.1% of accuracy in short depth housing.

Main Features

- Brilliant II PID control
- Start-up tuning and Autotuning
- Bar-graph display
- Digital input/output
- Remote setpoint
- Analog output
- Memory area (8)
- Heater break alarm
- Ramp-Soak program control
- Digital communications
- Inter-controller communication
- Loader communication

FB900   FB400   FB100

Input	Thermocouple, RTD mV/V/mA DC
Sampling	0.1sec * 0.05sec/0.25sec is selectable.
Accuracy	±(0.1% of display + 1digit)
Control	Brilliant II PID control, also with * Heat/Cool control Position-proportional control without feedback resistance
Output	M • V • R • E • T • D
Communication	RS-485/422A/232C (Protocol: RKC/ANSI, MODBUS) MAPMAN *, CC-Link *, DeviceNet * PROFIBUS *, Ethernet * (*) Use exclusive converters.

Major Applications

Temperature and process control

Various plastic machines (extrudes, injection machine, etc), electric furnaces, semiconductor, food processing, environmental chambers and many others.

Digital Temperature Controllers

CB900 CB400

| W96 x H96 | D100 | W48 x H96 | D100 |

CB903   CB403

Optional analog output and digital input   Optional analog output and digital input

CB700 CB100

| W72 x H72 | D100 | W48 x H48 | D100 |

CB500 CB103

| W96 x H48 | D100 |

Optional analog output and digital input

Temp (std)
Temp (moni)
AI (moni)

White base

Black base

CB100   CB500   CB700   CB400   CB900

Main Features

- Digital communication *1
- Large display
- Self-tuning (active tune)
- Heat/cool control
- Alarm output
- Analog output *2
- Digital input *2
- Heater break alarm
- Loop break alarm
- IP66

*1 Not available on CB103/403/903.
*2 Available on CB103/403/903 only.

Major Applications

General purpose temperature control applications

Plastic, packaging, food, environmental, semiconductor industries

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec
Accuracy	±(0.3% of displayed value +1digit)
Control	PID control (heat/cool control available)
Output	M, V, R
Communication	RS-485 (RKC/ANSI, Modbus)

Digital Controller

Temperature Controllers

Multi-loop Digital Temperature Controllers

Temp (ML)

MA900
4-loop control

W96 x H96   D100

CE c UL us

MA901
8-loop control

W96 x H96   D100

CE c UL us

Main Features

- 4 or 8 loops
- Digital communication
- PID control
- Heat/Cool control
- Multi-memory area
- Heater break alarm
- Loop break alarm
- Digital input (Di)
- IP65

Input	T/C, RTD DC voltage and current
Sampling	0.5 sec (MA900), 1 sec (MA901)
Accuracy	±(0.3% of displayed value + 1 digit)
Control	Brilliant PID control (Heat/Cool available on MA900)
Output	M, V, R, D
Digital communication	RS-485 (RKC/ANSI, Modbus)

Major Applications

General purpose temperature control applications

Conveyor furnaces, extruders, injection machines, etc

1-channel Temperature Controller with Built-in SSR

Temp (std)

SB1

W57 x H133   D44

CE c UL us

Applications
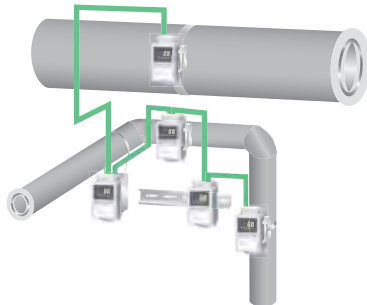
Main Features

- SSR and controller integrated into a compact temperature control box. (Allowable load current: 7A)
- The SB1 can be supplied with pipe wrapping type, pipe hanging type, DIN-rail mounting type, or panel mounting type.
- Digital input/Digital output
- Load Power Shutoff Function

Input	T/C, RTD
Sampling	0.25 sec
Accuracy	±(0.3% of displayed value +1digit)
Control	PID control
Output	T
Communication	RS-485 (RKC/ANSI, Modbus)

7

Ramp/Soak Digital Controller

Output coding
M: Relay output
V: SSR drive logic output
R: Current output
E: Continuous voltage output
G: Triac trigger output
D: Open collector output
T: Triac output

Ramp/Soak Profilers

Ramp/Soak Controllers

Max. 1024 segments (99 patterns with 10 segments each to 10 patterns with 99 segments each).

PF900

W96 x H96 D80

Temp (Accu)
Temp (Std)
Press./Flow

PF901

PF900

Main Features

- RSS (Ramp Soak Stabilizer)
- Fast sampling of 0.05 sec.
- Max.3 point program pattern outputs
- 3 modes (PRG/MAN/FIX)
- 3-mode PV start
- Two types of signal modes
  (Time signal/Segment signal output)
- Segment PID or Level-PID
- Flexible pattern end output
- Flexible WAIT function
- Segment repeat
- Inter-controller communication
- Front loader interface

● **Collaborative program operation (Inter-controller communication)**

Up to four slave instruments (FB/RB series) can be connected via exclusive communication port. Isolated communication without setting error can be established because of digital communication. Ratio setting of individual slave controller is possible as well as memory area selection and Run/Stop switch-over.

PF901 (Master)

RS-485 Inter-controller COM

Memory area selection RUN/STOP

(Slave) (Slave) (Slave) (Slave)
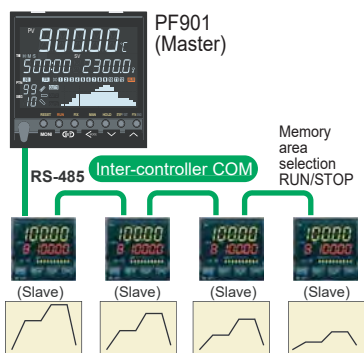
• Memory area needs to be selected on FB series.

Input	Thermocouple, RTD mV/V/mA DC
Sampling	0.1sec * 0.05sec/0.25sec is selectable.
Accuracy	±(0.1% of display + 1digit)
Control	Brilliant II PID control, also with * Heat/Cool control Position-proportional control
Output	M • V • R • E • T • D
Communication	RS-485/422A/232C (Protocol: RKC/ANSI, MODBUS) Loader communication

Major Applications

Ramp/Soak program control of various processes

Ramp/soak control of temperature and pressure in textile dyeing, autoclaves, etc.

Easy-to-use Ramp/Soak Temperature Controllers

PZ400   PZ900

16 segments
16 patterns

W48 x H96 D65   W96 x H96 D65

Main Features

- Fast sampling of 0.05 sec.
- 3 modes (PRG/MAN/FIX)
- Time signal output
- Level-PID Autotuning
- Flexible pattern end output
- Pattern link function
- Segment repeat
- Front loader interface

Input	Thermocouple, RTD mV/V/mA DC
Sampling	0.05sec
Accuracy	±(0.1% of PV ±1digit) for T/C and RTD ±(0.1% of span ±1digit) for DC inputs
Control	Brilliant II PID control, also with * Heat/Cool control Position-proportional control
Output	M, V, R, E, B
Communication	RS-485/422A (RKC/ANSI, MODBUS) MapMan Loader communication

Major Applications

General Ramp/Soak temperature control

Sterilizer, pottery kiln, drying furnace, etc

PZ400   **PZ900**

Indicator/Limit Controller

Digital Indicators with alarms
AG500

Moni+Alarm
AO Moni+Alarm

W96 x H48 D60

CE c**UL**us

RoHS compliant

Main Features

- Large LED display
- Universal inputs
- Peak and bottom hold
- Digital outputs (max.6)
- Digital communication
- Analog output
- Digital input
- 12V or 24V DC sensor power supply

Input	T/C, RTD DC voltage/current
Sampling	0.25 sec
Accuracy	±(0.1% of display value + 1 digit)
Digital outputs	Relay (max. 6)
Analog output	DC voltage/current
Digital communication	RS-485/422A (RKC/ANSI)

Digital Indicators with alarms
AE500

Moni+Alarm

black

W96 x H48 D100

CE c**UL**us

RoHS compliant

Main Features

- Large LED display
- Digital outputs (max.4)
- Digital communication
- Analog output

white

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec
Accuracy	±(0.3% of display value + 1digit)
Digital outputs	Relay (max. 4)
Analog output	DC current
Digital communication	RS-485 (RKC/ANSI)

Input Selector Unit
SP500

Black and white base available

W96 x H48 D100

RoHS compliant

SP500

Limit controllers
SA200L

W48 x H24 D100

CE c**UL**us FM APPROVED UK CA

RoHS compliant

Main Features

- Over/Under temperature protection
- Peak temperature measurement
- Over temperature timer
- Digital communication
- Analog output

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec / 0.25 sec
Accuracy	±(0.3% of displayed value +1digit)
Output	M
Communication	RS-485 (RKC/ANSI, Modbus)

Limit controllers

Socket mounting
SA100L

W48 x H48 D80

CE c**UL**us FM APPROVED UK CA RoHS compliant

Main Features

- Over/Under temperature protection
- Peak temperature measurement
- Over temperature timer
- Digital communication

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec / 0.25 sec
Accuracy	±(0.3% of displayed value +1digit)
Output	M
Communication	RS-485 (RKC/ANSI, Modbus)

Panel mounting
CB100L

W48 x H48 D100

CE c**UL**us FM APPROVED

RoHS compliant

Main Features

- Over/Under temperature protection
- Peak temperature measurement
- Over temperature timer
- Digital communication

Input	T/C, RTD DC voltage/current
Sampling	0.5 sec
Accuracy	±(0.3% of displayed value +1digit)
Output	M
Communication	RS-485 (RKC/ANSI, Modbus)

Accessories

Communication Converters

Ethernet

Modbus Ethernet

[MODBUS/TCP]

Ethernet Converter

COM-ME-1

Available Controller
SRZ Series

FZ110 / FZ400 / FZ900
GZ400 / GZ900

RS-485 (MODBUS)

EtherNet/IP®

[Ethernet/IP]

EtherNet/IP Converter

COM-ME-2

Available Controller
SRZ Series

EtherCAT®

EtherCAT Converter

COM-ME-3

Available Controller
SRZ Series

FZ110 / FZ400 / FZ900
GZ400 / GZ900

RS-485 (MODBUS)

[Ethernet MAPMAN]

*1 MAPMAN : Programless connection to PLCs

Ethernet/MAPMAN Converter

COM-ME-6

Available Controller
SRZ Series

MITSUBISHI PLC: QnA-compatible 3E
fame/SLMP ASCII or binary

PROFINET®

Ethernet Converter

COM-ML-4

Available Controller
SRZ Series

Field Bus

CC-Link

CC-Link Converter

COM-JC

SRZ
FB Series

RS-485 (MODBUS)

DeviceNet™

DeviceNet Converter

COM-JH

SRZ
FB Series

RS-485 (MODBUS)

Accessories

Output Devices

Digital controlled (fast response) Single-phase Thyristor Units

THV-10 series

20A	80A
30A	100A
45A	150A
60A	200A

100 to 240V AC

CE c**UL**us

Main Features
- Digital controlled
- Digital display/setting
- For fast response process
- Phase angle and zero-cross
- Gradient setting
- Soft-start/down
- Current limiter
- Heater break alarm
- Output limiter/bias
- Input-voltage/Power/Phase angle proportional control
- Protection function for control of primary side of a transformer

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High Performance Digital controlled Single Phase Thyristor Unit

THV-A1 series

20A	60A
30A	80A
45A	100A
150A	200A

100 to 240V AC

CE c**UL**us

Main Features
- Digital controlled
- Digital display/setting
- For fast response process
- Phase angle and zero-cross
- Gradient setting
- Constant current/Constant voltage/Constant Power control
- Communication function
- Memory area
- Soft-start/down
- Current limiter
- Heater break alarm (Available for non-linear load)
- Over current alarm
- Output limiter/bias
- Input-voltage/Power/Phase angle proportional control
- Protection function for control of primary side of a transformer

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High Voltage Type Digital controlled Single-phase Thyristor Units

THV-40 series

20A	60A
30A	80A
45A	100A

Power supply voltage for Load
380 to 480V AC
Power supply voltage for Control : 100 to 240V AC

CE c**UL**us

Main Features
- Digital controlled
- Digital display/setting
- For fast response process
- Phase angle and zero-cross
- Gradient setting
- Constant current control
- Communication function
- Memory area
- Soft-start/down
- Current limiter
- Heater break alarm (Available for non-linear load)
- Over current alarm
- Output limiter/bias
- Input-voltage/Power/Phase angle proportional control
- Protection function for control of primary side of a transformer

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Digital controlled Three-phase Thyristor Units

THW-A series

20A	60A
30A	80A
45A	100A

200 to 240V AC
400 to 440V AC

Main Features
- Digital controlled
- Digital display/setting
- For fast response process
- Phase angle and zero-cross
- Constant current control
- Constant power control
- Constant voltage control
- Gradient setting
- Soft-start/down
- Current limiter
- Heater break alarm
- Output limiter/bias
- Input-voltage/Power/Phase angle proportional control

Single-phase Thyristor Units

SSNP series
c**UL**us

| 15A |
| 25A |

Phase angle control

SSNZ series
c**UL**us

| 15A |
| 25A |

Zero-cross control

Main Features
- Din-rail mounted compact size
- Close mounting
- Soft-start/down

Solid State Relays (SSRs)

SSJ series

| 15A |
| 25A |
| 45A |

SSL series

| 15A |
| 25A |

SSN series

| 45A |

CE VDE c**UL**us
G
RoHS compliant

CE △ c**UL**us
G
RoHS compliant

CE △ c**UL**us
G
RoHS compliant

Sensors

Temperature Sensors

We manufacture various types and sizes of sensors. The sensors shown below represent only a sample. Check with us for additional types or customization for your application.

Types and Appearance	Features	Types and Appearance	Features
General purpose T-101/T-111 (L-shape) T-102 T-30/35 T-80 T-90	Standard type temperature sensors. Other types, sizes, and installation methods are available.	**Bayonet type** T-200/T-210 (L-shaped) T-201/T-211 (L-shaped)	The top of sensor is compressed to the object to be measured with a mounting bracket (holder). Suitable for temperature measurement of a mold.
Noble metal type T-30/T-35 T-80	For high temperature measurement with noble metal elements.	**Bayonet type** T-220 T-221	With a bayonet, an insertion depth can be freely adjusted.
Sheath type T-101S/T-111S (L-shaped) T-30S/T-35S T-80S	Thin sensors are available. Fast in response and strong against shock, vibration and bending.	**Thread type** T-230	The top of sensor is threaded to M6/M8 loose nut. Tap (female connector) is used at an installation point.
Nicrobell sheath type T-101N/T-111N (L-shaped) T-30N/T-35N	Superior in heat-resistance and hard environments. Strong against shock, vibration and bending.	**Surface temperature (with fix screws)** T-240	Suitable for a tiny object. Installed with a screw through the hole at the top.
General purpose RTD R-101/R-111 (L-shaped) R-30/35 R-90	Platinum resistance is used as a measuring element for stability and accuracy. Different from thermocouples, RTDs are not suitable for high temperature measurement. Sheath type RTDs are strong against shock, vibration, and bending.	**For surface measurement (Ring type)** T-250	Suitable for surface temperature measurement on pipe-shaped objects and nozzles.
		Melt-temperature sensors T-260 T-270Z	For melt-temperature measurement on extruders. T-270Z uses a unique corrective structure to eliminate errors by thermal disturbances and others.
Sheath type RTD R-101/R-111S R-30S/35S R-90S		**Surface measurement** ST-50/51	For surface temperature measument. Measuring point is adhesive and fixed on to the object to be measured.
		Surface measurement ST-55/56 (Element diameter: 0.076 to 0.32mm)	For tiny objects and surface temperature measurement with a thin thermocouple element.
		Non-contact type ST-100	For non-contact measurement of moving objects like a roller and sheets.

☞ shows measuring point

Heater Break Alarm

HBA-22, HBA-T20/T30
HBA-T22/T32, HBA-T23/T33

HBA-T130   HBA-T120
For three-phase   For single-phase

Main Features
- Detects heater break when multiple heaters are connected.
- Cancels heater current fluctuation by supply voltage and eliminates false detection.
- HBA-T series is suitable for thyristor used heater circuits.
- HBA-T120P/130P provides automatic setting and excellent repeatability.

Sensors

Pressure sensors

Resin pressure related products

CZ-200P
Rigid Stem Type
Resin Pressure Sensor

Main Features

• Built-in thermocouple
• Various screw types
  (UNF, PF and M14/16)

PG500
Resin Pressure
Digital Indicator

The PG500 is pressure indicator for CZ-200P.

Main Features

• Easy-to-read large LED
• 0.1 sec sampling cycle time
• Digital outputs (max.2)
• Digital communication
• Analog output

PCT-300
Resin Pressure
Output Converter

The PCT-300 converts signal from CZ-200P into analog signal.

Main Features

• Up to 4 analog outputs
• Linearization function

Level Sensors

Chemical level control

LE100
W48 x H48   D100

LE110
W48 x H48   D105
(Differential pressure type)

N2 gas purge

PFA tube

100%
50%
0%

LE100
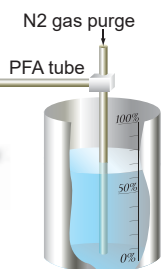
Main Features

• Max. 8 level alarm outputs.
• Compact housing (48x48mm)
• Easy empty/span adjustment.
• Can also be used for pressure control.

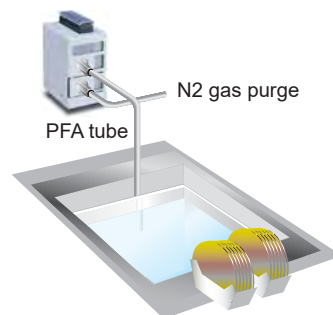**Major Applications**

Accurate level control of chemicals.

Suitable for semi-conductor industry.

Range	0-1000mm (when gravity=1)
Sampling	0.2 sec
Repeatability	0.3% of span
Digital output	max.8 (open collector)
Analog output	1 (0-2.5V DC)
Digital communication	RS-485

Chemical level switch

LT1
W39 x H74   D54

N2 gas purge

PFA tube

Main Features

• Adjustment not required.
• Detects a liquid level by a change in backpressure and then outputs a control signal through relay contacts.
• Built-in orifice, it can automatically attain the rated purge flow (input media consumption) only by supplying the gas of 20 kPa.

Input	Non corrosive gas
Input pressure range	0 to 49 kPa
Number of outputs	1 point
Output	Relay contact output

Major Applications

Accurate level control of chemicals.

Handheld Thermometer

Handheld Thermometer
DP-350C*A

W52 x H145 | D25

G
RoHS compliant

Main Features

• Peak hold function.
• 1/0.1°C [°F] resolution selectable.
• Battery alarm.

Range	T/C
Sampling	0.3 sec
Accuracy	±(0.2%+1digit)

Infrared type Thermometer
LTM-100

W60 x H12 | D30

CE

Main Features

• Laser beam marker.
• Fast response.
• Measured value hold.
• Auto-power off.
• Emission rate setting.
• IP67

Range	-40 to +300 °C
Distance	500mm(ø45) to 1000mm(ø90)
Accuracy	±(1% + 1digit) of measured value
Response	1 sec (against 90%)
Emission rate	0.80 to 1.00 (selectable)
Protection	IP67
Safety standards	PS/C and CE

Sensors for DP-350

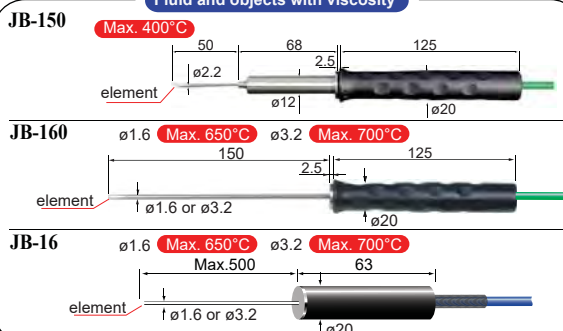We have many other types of sensors.
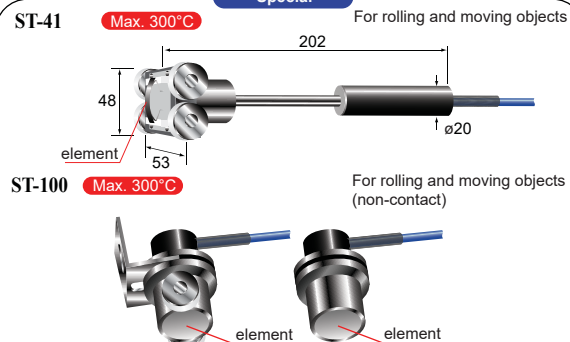Please refer to our data sheet of sensors.

Surface Temperature

ST-230 Max. 300°C
155
24.5 125
ø22
element

ST-32 Max. 600°C
12 138 100
ø12
element ø20

ST-29 Max. 800°C   **ST-29H** Max. 1000°C
ø29 27 460 125
element ø20

Tiny objects

ST-50 Max. 300°C
107
6.7
element
adhesive
proprietary cable
DP-350
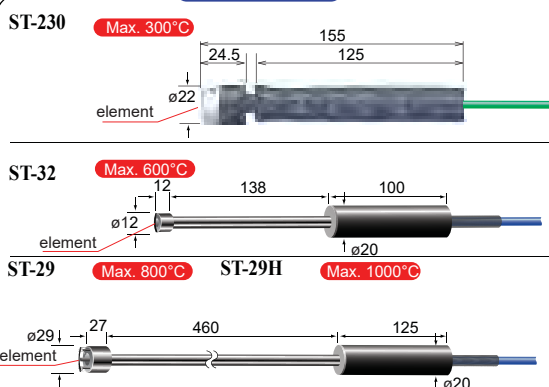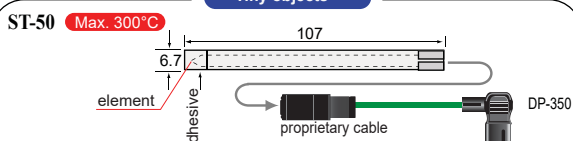
Fluid and objects with viscosity

JB-150 Max. 400°C
50 68 125
ø2.2 2.5
element ø12 ø20

JB-160 ø1.6 Max. 650°C ø3.2 Max. 700°C
150 125
2.5
element ø1.6 or ø3.2 ø20

JB-16 ø1.6 Max. 650°C ø3.2 Max. 700°C
Max.500 63
element ø1.6 or ø3.2 ø20

Special

ST-41 Max. 300°C For rolling and moving objects
202
48
element 53 ø20

ST-100 Max. 300°C For rolling and moving objects (non-contact)
element element

Applications

Semiconductor

SEMICONDUCTOR

Steppers and cater developers
Stability with 1/1000 resolution and PUFF

Temperature
REX-F9000

RTD (4-wire)

PUFF

Output device
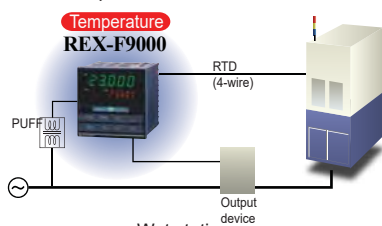
Fast process applications in chambers.
Lamp annealing applications

RAP

RAP

Sensor input

THV

Lamp heater
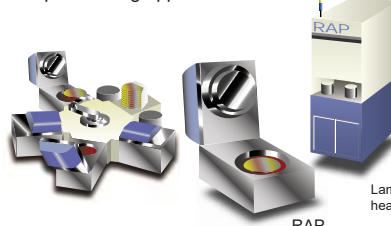
GZ400/900

Sampling: 0.01s (10ms)

FZ110/400/900

Wire bonding machines
Connection through Modbus protocol.
Data management with analog signal.

Temperature

RZ110

SRZ

CH1 100.0°C
CH2 100.0°C

HMI

Wet stations
Temperature data management by PLC with program-free connection

MAPMAN
FZ110

Temperature

SA200

Digital outputs (8)

PLC

20.0°C

Level

N2

LE100

Large furnaces for PDP/LCD
Space-saving control for over 1000 loops with open-board controllers.
System engineering using a general-purpose HMI

HMI
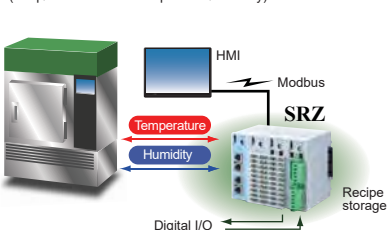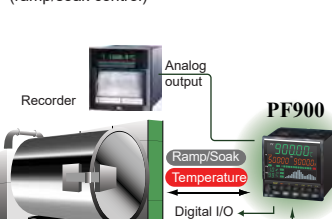
Temperature

SRZ
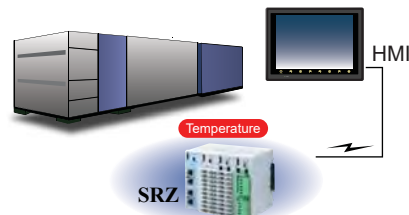
Environmental

SCIENCE • MEDICAL

Environmental chambers
(ramp/soak control of temperature/humidity)

HMI

Modbus

Temperature

Humidity

SRZ

Recipe storage

Digital I/O

Autoclaves and environmental chambers
(ramp/soak control)

Recorder

Analog output

PF900

Ramp/Soak

Temperature

Digital I/O handling

Incubators
Space-saving temperature control (SA200)
Space-saving ramp/soak control (P24)

SA200

Temperature control

FZ110
REX-P24

Ramp/Soak

Temperature control

Food Processing

FOOD • CONFECTIONERY
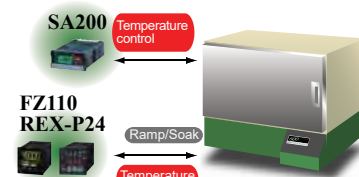
Packing and Sealing machines

Temperature control

MAPMAN
SRZ

CH1 200
CH2 200

HMI

Protocol for PLC

PLC
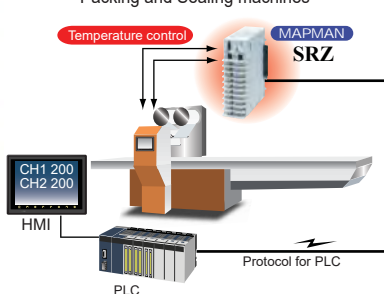
Ovens and Fryers
Ramp/soak control

Protection for over-temperature

FZ110

Temperature control

PZ400/PZ900
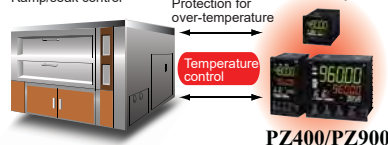
Freezers and De-freezers

CH1: Temperature
CH2: Core temperature

sensor

Temperature monitoring

HMI

Temperature control

SRZ

Temperature measurement of foods

DP-350

Contact type

LTM-100

Non-contact type
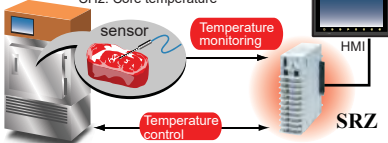
Plastics

PLASTIC

Injection Machines
Program-free connection to PLCs from other suppliers

Operation panel

PLC

Temperature control

MAPMAN **SRZ** MAPMAN
FZ400

Protocol for PLC

Heat/Cool control

FZ400

SA200 **RB series** **MA900**
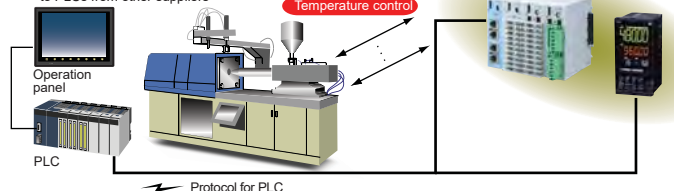
Automate Extrusion Lines
* Automation using PLC instrumentation.
* Retrofitting of existing control system.

HMI

PLC

SRZ
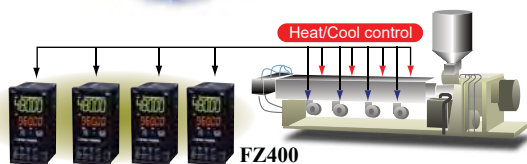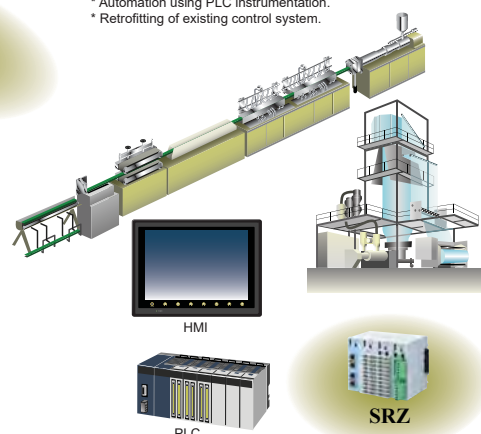
Melt-pressure transducer/transmitter

CZ-200P

RKC INSTRUMENT INC.
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For the most current information and product manuals consult;
www.rkcinst.com

JQA-0480
Quality System
ISO 9001

JQA-EM1600
Environmental System
ISO 14001

Head Office

Factory

Subject to change without notice due to design changes.

Safety Warning	• Before operating this product, read the instruction manual carefully to avoid incorrect operation. • This product is intended for use with industrial machines, test and measuring equipment. It is not designed for use with medical equipment. • If it is possible that an accident may occur as a result of the failure of the product or some other abnormality, an appropriate independent protection device must be installed.

Caution for the export trade

Investigate the final application and final user so that this product is not used in weapons of mass destruction, etc. (military application, military facility, etc.). Regarding resale also be sure it is not to be exported illegally.

Caution for imitated products

As products imitating our product now appear on the market, be careful that you don't purchase these imitated products. We will not warrant such products nor bear the responsibility for any damage and/or accident caused by their use.

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Digital Control Equipment