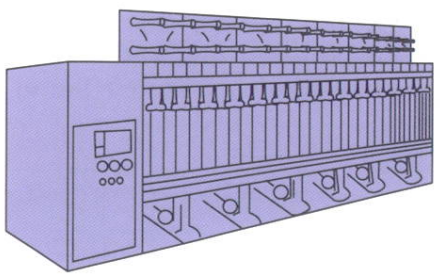
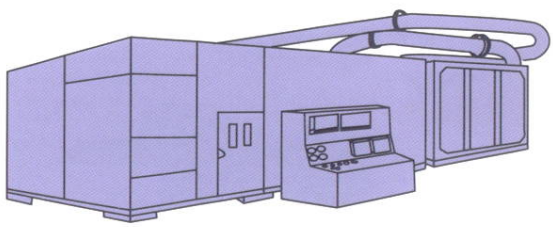
RKC

SR Mini HG SYSTEM

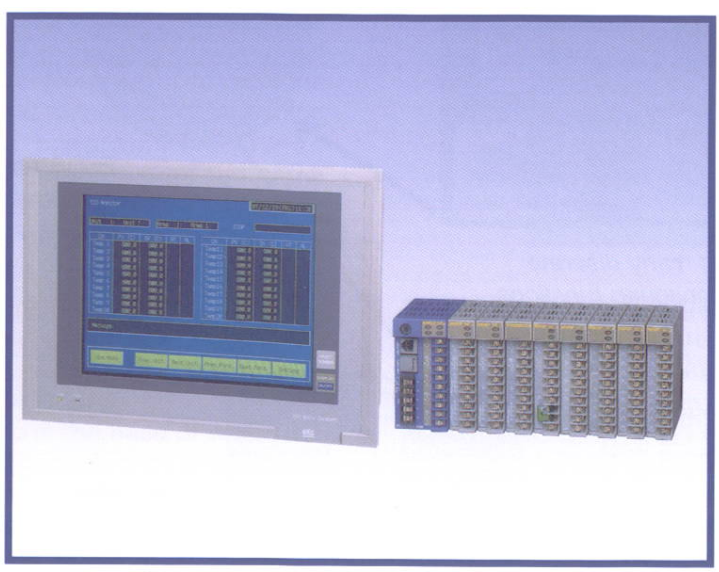
HIGH PERFORMANCE PROCESS CONTROL AND MONITORING

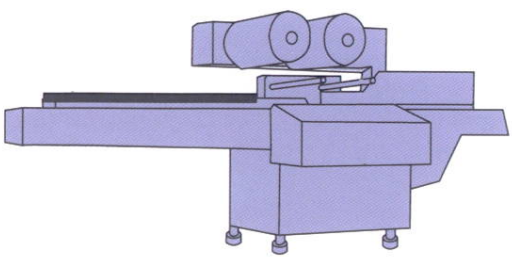


Textile Processing Equipment

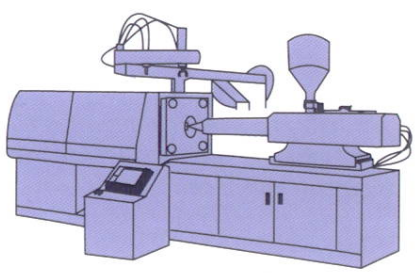


Semi-Conductor Manufacturing Equipment





Packaging Process Equipment



Plastics Processing Equipment

Process Control and Monitoring from One Panel Display

Industrial machinery has become increasingly automated with the use of personal computers, PLC's and process controls. When replacement or rebuilding is required, expansion or modification of system specifications to improve quality or process control has been very difficult. Difficulties arise when:

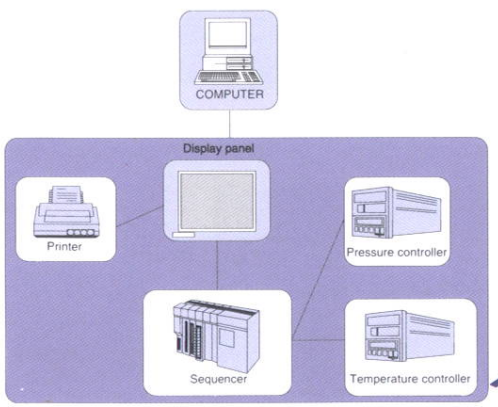
- Machine control panels have a limited amount of space.
- Different types of process controls require different communication protocols.
- Man-machine interfaces from differing systems do not inteface with other controllers.

The system network for each machine must be recreated every time a change is required.

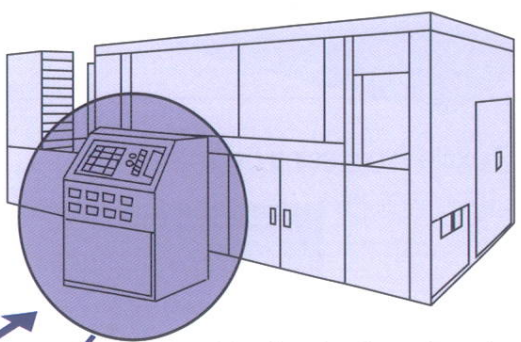
Simplify Panel Configuration

Since most control systems lack the flexibility to expand and adapt to changing application requirements,RKC introduces the SR Mini HG System to address the problems of saving space, simplifying equipment operation and standardizing operation/control panels.

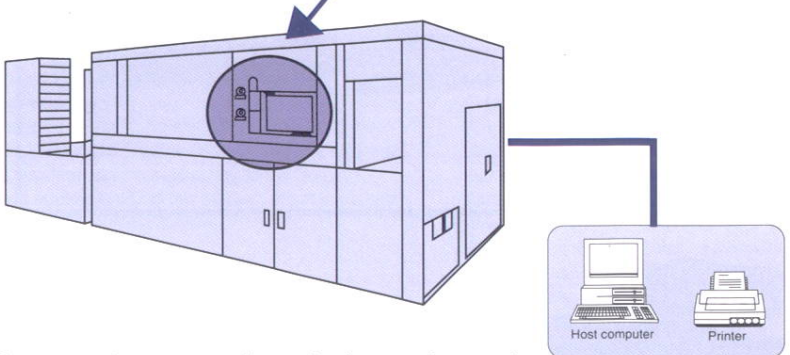
The SR Mini HG System features a unique operation panel that displays temperature controls and PLC variables from individual units in one control panel installation. And most importantly, this connection can be made without programming. Each control system can be designed to vary system specifications and/or number of temperature and analog zones controlled without increased panel space.



A process has many discrete control and monitoring functions.

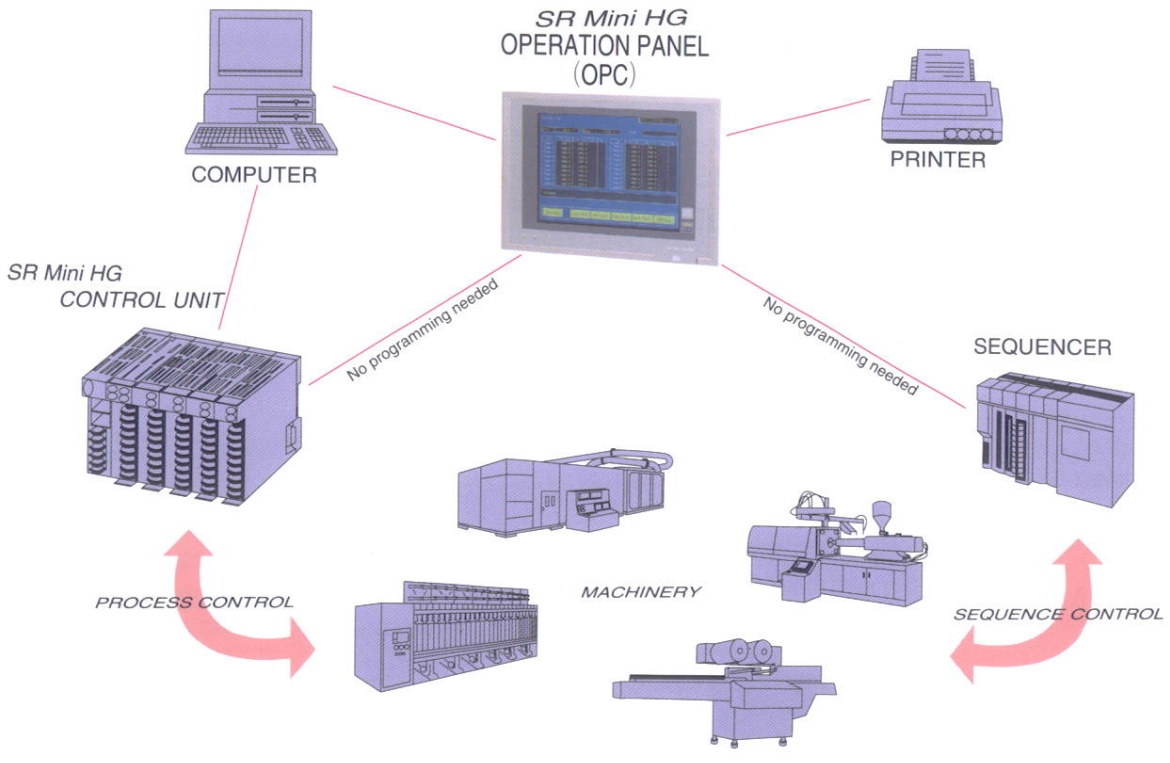


Previously, these functions were combined near machines as cumbersome control panels.



The SR Mini HG system integrates all monitoring and control functions into one area accessible from an easy-to-use custom touch screen interface.

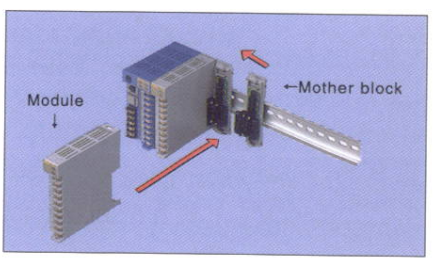
Simplify Integration of Process Control with PLC's



Eliminates Time-Consuming Programming
The SR Mini HG multi-zone temperature control system enables a system designer to connect sequencers and various other process controls within one multi-functional touch screen operation panel (OPC) without programming. When connected to the host computer, all functions can be monitored and controlled from one centralized location. Daily operation reports are automatically created to document quality control procedures or error occurrence.

Easily Integrates
Temperature Control Functions
But of greater importance is the ease of which the SR Mini HG System integrates multi-zone temperature control into the process. Whether it is textile, packaging, plastics or semi-conductor machinery, this system is capable of controlling up to 320 temperature zones per interface.

With unique DIN rail mounting, the input and output modules, are designed to be built directly into the panel so that the



system can be easily expanded by simply snapping additional modules on the rail. A completed SR Mini HG System combines a power supply/CPU module and up to ten I/O modules.

Each module, about as large as a 3 1/2" floppy disk, has 2 PID loops. A fully configured system requires only 96 × 288 × 100 mm (3.78 × 11.34 × 3.94") of space.

Power Supply/CPU Module

The CPU module supplies power to each module, controls data and interfaces with the OPC or host computer. One power supply/CPU module is required for each control unit.

Temperature Control Modules

Temperature Control Module I
High performance temperature control is achieved with brilliant PID control action. This module has a measurement accuracy of 0.3% of full scale and a sampling cycle of 0.5 seconds. Modules can be specified as heat only, Heat/Cool with one or two control zones. All types of thermocouples and RTD inputs are available in one module.

- TIO - A 1 Zone with 0.3% measuring accuracy, F.S., 0.5 sec sampling cycle
- TIO - B 2 Zones with 0.3% measuring accurracy, F.S., 0.5 sec sampling cycle
- TIO - C 1 Zone - Heat/Cool with 0.3% measuring accuracy, F.S., 0.5 sec sampling cycle
- TIO - D 2 Zones - Heat/Cool with 0.3% measuring accuracy, F.S., 0.5 sec sampling cycle
- TIO - P 2 Zones Fuzzy Logic with 0.3% measuring accuracy. F.S, 0.5 sec sampling cycle

Temperature Control Module II
For higher measuring accuracy,this temperature control module has a measurement accuracy of 0.1% of full scale and 0.1 sec sampling cycle. This module features brilliant PID control action. All types of thermocouples and RTD inputs are available in one module.

- TIO - E 1 Zone with 0.1% measuring accuracy, F.S., 0.1 sec. sampling cycle.
- TIO - F 2 Zones with 0.2% measuring accuracy, F.S., 0.2 sec. sampling cycle.(Only RTD input)
- TIO - G 1 Zone - Heat/Cool with 0.1% measuring accuracy, F.S, 0.1 sec. sampling cycle.
- TIO - R 1 Zone - Fuzzy Logic with 0.1% measuring accuracy, F.S, 0.1 sec. sampling cycle.

Temperature Control Module with Voltage/Current Input III
This is a highly accurate control module with DC voltage/current input specifications. In addition to various input types, it can respond to applications other than temperature control at a sampling cycle of 0.1 sec. Thermocouple and RTD inputs are not available on this module.

- TIO - H 1 Zone with 0.1% measuring accuracy, F.S., 0.1 sec. sampling cycle.
- TIO - J 2 Zones with 0.1% measuring accuracy, F.S., 0.2 sec. sampling cycle.

Cascade Control Module

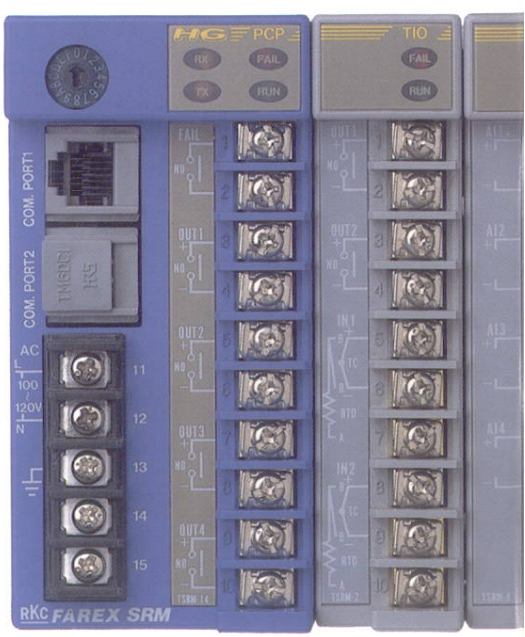
This is module works effectively in case that the time-lag between control object and heat source is big. A primary controller (Master contrioller) and the secondary controller (Slave controller) to send out compensated signal are mounted in one piece of module.

- CIO - A Master 1 zone, slave 1 zone with 0.1% maesuring accuracy, F.S., 0.1 sec. sampling cycle.

Temperature Control Module for control moter drive

This module controls the control moter without feed-back resistor. This module also monitors the valve opening by utilizing feedback resistor input.

- TIO - K 1 zone, with 0.3% measuring accuracy, F.S., 0.5 sec. sampling cycle.



selection of SR Mini HG modules!

Analog Input/Output Modules

Analog Input Module
This module accepts an analog input signal from the production line equipment and use it for line monitoring.

AI - A Inputs 4 points, with 0.1% measuring accuracy, F.S., 0.2 sec. sampling cycle. Not insulated between channel

AI - B Inputs 2 points, with 0.1% measuring accuracy, F.S., 0.1 sec. sampling cycle. Insulated between channel

Analog Output Module
This module retransmits the process value or set value via the analog signal. It can be connected to a recorder to log the operation status of the controller.

AO - A Outputs 4 points, Not insulated between channel

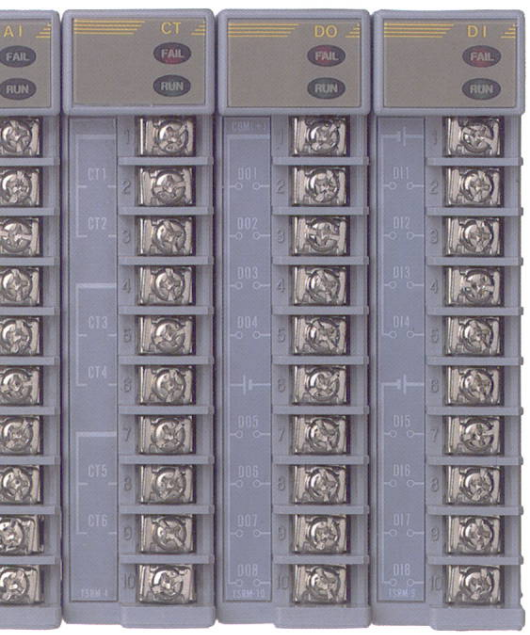
AO - B Outputs 2 points, Insulated between channel

Tempereture Input Module
This is a module for thermocouple, RTD, that can be used for temperature or any other input monitoring. For tighter control specifications, a special temperature input module is available.

TI - A RTD input, 4 Zones. with 0.3% measuring accuracy,F.S.,and 0.5 sec, Sampling cycle.

TI - B RTD ,thermocouple input, 2 Zones. with 0.1% measuring accuracy, F.S.,and 0.1 sec Sampling cycle.

TI - C Thermocouple input, 4 Zones with 0.3% measuring accuracy, F.S.,and 0.5 sec, Sampling cycle.



Digital Input/Output Modules

Digital Input Module
This module changes the control unit operation conditions by using a 24 volt input signal to change multi-memory area selection execution/stop of temperature control selection and alarm interlock cancellation.

DI - A Inputs 8 points, open collector only

Digital Event Input Module

This module takes in the digtal input form outside and monitors the input on communication. And the logic output corresponding to many inputs is possible as the input can be built in a simple logic . The output can be output from digital event output module beside communication.

DI - B Inputs 4 points, open collector only.

Digital Output Module
This module outputs temperature, heater break,burnout and loop break alarms.

DO - A Outputs 8 points either relay or open collector.

DO - B Outputs 4 points, relay contact only.

Digital Event Output Module
This module will have an event output for each channel. It can output independent alarm settings, controller status or data comparison result. Besides the normal temperature and analog alarms, this module can output status alarms which include heater break, loop break alarms 1 or 2, sensor burnout or PID autotuning status.

DO - C Outputs 8 points, open collector only.

Current Transformer Input Module
This is a current transformer (CT) input module and can be used for the heater break alarm function combined with the temperature control module. It can be used for both single and three-phase applications.

Communication Conversion Module
This module converts the communication protocol from RS-232C to RS-422A or from RS-232C to RS-485

Easy-to-Use
Touch Screen Displays

Compact Touch Screen (OPC)
The OPC can be connected to the SR Mini HG control unit and third party PLC's without any programming. Numerous options such as host communications interface or printer interface, memory card,etc, are available.

DIN size

OPC-SE
EL Display
Number of pixels:640 X 400 dots
Display area: 192 X 92 mm
Power supply:100 to 240VAC
O.D.:192 X 288 X 94mm
(7.56 X 11.34 X 3.7")

OPC-HC
TFT type color LCD display
Number of pixels: 640 X 480 dots
Display area: 211 X 158 mm
Power supply: 100 to 240 VAC
O.D : 240 X 328 X 97mm
(9.45 X 12.91 X 3.82")

DIN size

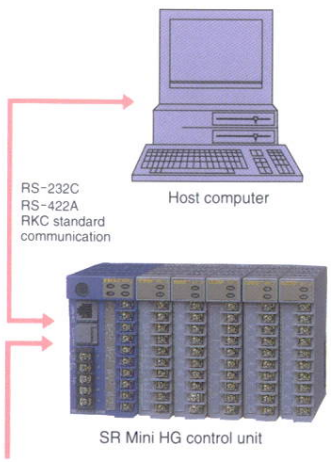
OPM-CL STN Type
Monochrome LCD Display
Number of pixels:320 X 240 dots
Display area:122 X 92 mm
Power supply:100 to 240 VAC
O.D.: 144 X 192 X 85 mm
(5.7 X 7.56 X 3.35")

Compact Cost Effective Touch Screen (OPM)
The OPM operation panel can be used without programming. It can also be connected to the host computer via the communications interface. This touch screen panel is less expensive than the OPC. For brightly lit areas, an OPM-HL with a blue back-light display.

OPM-HL
Blue mode LCD Display
Number of pixels:320 X 240 dots
Display area:122 X 92 mm
Power supply:100 to 240 VAC
O.D.: 158X 210X 92 mm
(6.22 X 8.27 X 3.62")

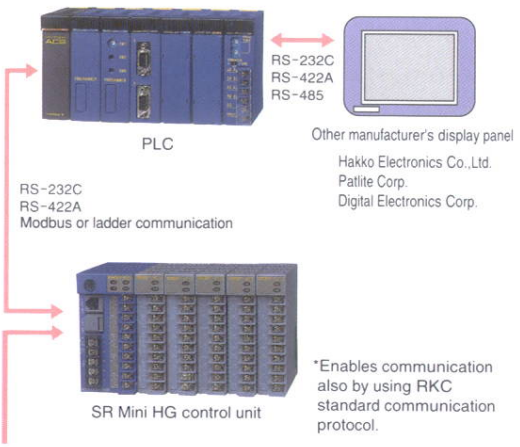
Flexible Communications Configurations

Connection with host computer



Up to 16 units (when RS-422A or RS-485 is used)

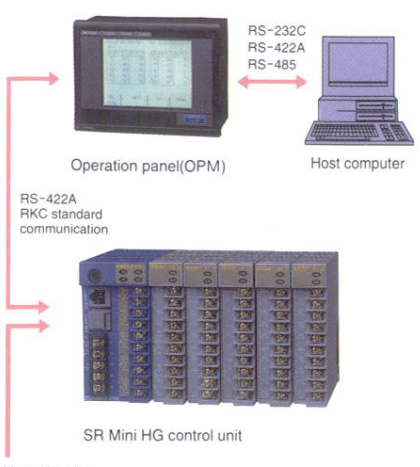
Connection with PLC via ladder communication and with various manufacturer's display panels.



Up to 16 units(when RS-422A or RS-485 is used)

Connection with RKC operation panel (OPM)

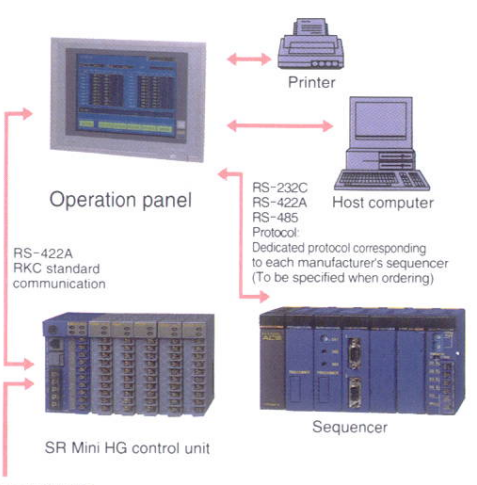
● Each controller can be connected without programming to the OPM



Up to 8 units

Connection with RKC operation panel (OPC)

● The sequencer can be connected without programming to the SR Mini HG control unit



Up to 8 units

Device configuraation

Module		Specifications
Power / CPU Module	H-PCP-A	100 to 120V AC, 50/60Hz FAIL output, Digital output : 4 points, Communication function
		200 to 240V AC, 50/60Hz FAIL output, Digital output : 4 points, Communication function
		24V DC, FAIL output, Digital output : 4 points, Communication function
	H-PCP-B	100 to 120V AC, 50/60Hz, FAIL output, Digital output : 2 points, Digital input : 3 points, Communication function
		200 to 240V AC, 50/60Hz, FAIL output, Digital output : 2 points, Digital input : 3 points, Communication function
		24V DC, FAIL output, Digital output : 2 points, Digital input : 3 points, Communication function
Temperature Control Module I	H-TIO-A	Themocouple, RTD input : 1 zone, Brilliant PID or ON/OFF control, CT : 1 point, Alarm output : 1 point
	H-TIO-B	Themocouple, RTD input : 2 zones, Brilliant PID or ON/OFF control
	H-TIO-P	Themocouple, RTD input : 2 zones, Brilliant PID control with fuzzy
Temperature Control Module I (Heat/Cool type)	H-TIO-C	Themocouple, RTD input : 1 zone, Brilliant PID control, CT input : 1 point
	H-TIO-D	Themocouple, RTD input : 2 zones, Brilliant PID control, CT input : 2 points
Temperature Control Module II	H-TIO-E	Themocouple, RTD input : 1 zone, Brilliant PID or ON/OFF control, Alarm output : 1 point
	H-TIO-F	RTD input : 2 zones, Brilliant PID or ON/OFF control
	H-TIO-R	Themocouple, RTD input : 1 zone, Brilliant PID control with fuzzy, CT : 1 point, Alarm output : 1 point
Temperature Control Module II (Heat/Cool type)	H-TIO-G	Themocouple, RTD input : 1 zone, Brilliant PID control
Temperature Control with Voltage / Current Input Module III	H-TIO-H	DC voltage・DC Current input : 1 zone, Brilliant PID or ON/OFF control, Alarm output : 1 point
	H-TIO-J	DC voltage・DC Current input : 2 zones, Brilliant PID or ON/OFF control,
Cascade Control Module	H-CIO-A	Themocouple, RTD, DC Current input : Master 1 zone/ Slave 1 zone, Brilliant PID control (Hear/Cool control is possible only forslave.), Digtal input : 2 points
Control Module for Control Motor Drive	H-TIO-K	Themocouple, RTD input : 1 zone, PID control, Feedback resistance input (Only input display : No relation control)
Temperature Input Module	H-TI-A	RTD input : 4 zones. Alarm function : 2 points/zone
	H-TI-B	Thermocouple, RTD : 2 zones, Alarm function : 2 points/zone
	H-TI-C	Themocouple, RTD : 4 zones, Alarm function : 2 points/zone
Heater Break Input Module	H-CT-A	6 zones current detector
Digital Output Module	H-DO-A	Alarm output, Relay contact output : 8 points (Common every 4 points)
		Alarm output, Open collector output : 8 points
	H-DO-B	Alarm output, Relay contact : 4 points (All points are Common)
	H-DO-C	Event output, Open collector output : 8 points
Analog Input Module	H-AI-A	Analog input (Not insulated between channel) : 4 points. 0 to 10mV, 0 to 100mV, 0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V, -1 to 1V, -5 to 5V, -10 to 10V, 0 to 20mA, 4 to 20mA DC Alarm function : 2 points/ channel
	H-AI-B	Analog input (insulated between channel) : 2 points. 0 to 10mV, 0to 100mV, 0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V, -1 to 1V, -5 to 5V, -10 to 10V, 0 to 20mA, 4 to 20mA DC Alarm function : 2 points/ channel
Analog Output Module	H-AO-A	Analog output (Not insulated between channel) : 4 points, 0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V, 0 to 20mA, 4 to 20mA DC
	H-AO-A	Analog output (insulated between channel) : 2 points, 0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V, 0 to 20mA, 4 to 20mA DC
Digital Input Module	H-DI-A	24V DC input : 8 points (Common every 4 points)
	H-DI-B	Event input, 24V, DC : 8 points (Common every 4 points)
Operation Panel	OPC-HC1	TFT type color LCD unit, Memory card function, Host communication interface function, Other manufacture's interface function, Printer interface function
	OPC-SE1	EL display unit, Memory card function, Host communication interface function, Other manufacture's interface function, Printer interface function
	OPM-CL2	STN type monochrome LCD display unit, Host communication interface function,
	OPM-HL4	Blue mode LCD display unit, Host communication interface function

Safety Warning

- Before operating this product. read the instruction manual carefully to aid inproper operation.
- This product is intended for use with industrial machines, test and measuring equipment.It isnot designed for use with medical equlment.
- If there will be possibility of an accident occurring to the system due to the break-down or abnomality of this product, Please prepare an appropriate independent protection device.

Do not install this product in the following locations:

- Exposed to direct sunlight.
- Where ambient temperature is lower than 0℃ or higher than 50℃.
- Where dew is formed. Ambient humidity should not be lower than 45% or higher than 85%RH.
- Where water splashes directly on the product.
- Where corrosive or flammable gas is generaed.
- Where the product is directly subjected to vibration or shock.
- Where inductive interference, static electricity, magnetism or noise is generated.

Due to continuous product improvement, product specifications are subject to change without notice.

RKC

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