FAREX
SR Mini HG System

General Description

The SR Mini HG System is an advanced high performance multi-zone PID temperature control system. This space-saving system is designed to be mounted inside an instrument panel and replace multiple temperature controllers. Not only does the SR Mini HG simplify panel configuration with its compact size and provide smooth connectivity with PLCs, computers and process controls, it is dedicated to integrating temperature control into the process.

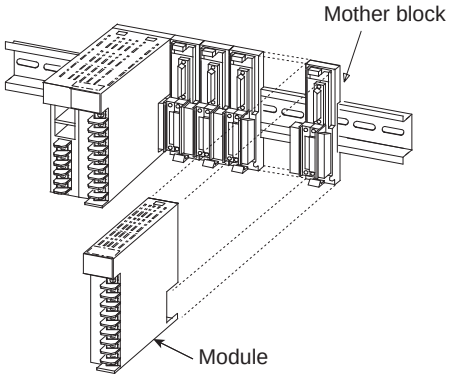
The single SR Mini unit consists of a power supply/CPU module and up to ten I/O modules per DIN rail. With two control zones per module, twenty zones per unit, up to sixteen units can be connected so that the system can expand up to a maximum of 320 control zones. The SR Mini HG SYSTEM offers over 25 different types of control modules with which to configure your system. Modules such as temperature, Heat/Cool, voltage/current input, cascade, valve motor, analog and digital inputs and outputs and conveyor belt speed.

Features

- ☆ Integrates process control with PLCs
- ☆ Control/monitor from one location
- ☆ Maximum of 320 control loops
- ☆ DIN rail mounting
- ☆ MODBUS/ ANSI protocols
- ☆ CC-link or direct communication
- ☆ PLC direct communication (MAPMAN)

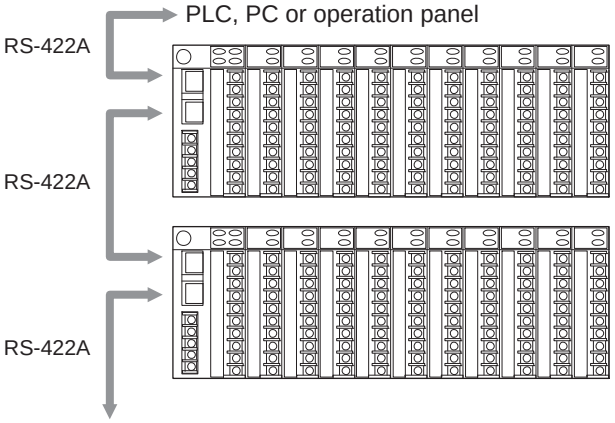
Flexible Installation

The SR Mini HG System utilizes DIN rail mounting for flexible installation. Your system can be customized and expanded to meet your specific application requirements by simply attaching additional modules on the rail.



Expandability

A single SR Mini unit consists of a power supply/CPU module and up to ten I/O modules per DIN rail. With two control zones per module, (Heat/Cool zones use a double wide module), twenty zones per unit, up to sixteen units can be combined so that the system can be expanded up to a maximum of 320 control zones. This system can be connected to an operation panel or PC as one system. With this configuration flexibility, each system can be designed for specific control and installation requirements.



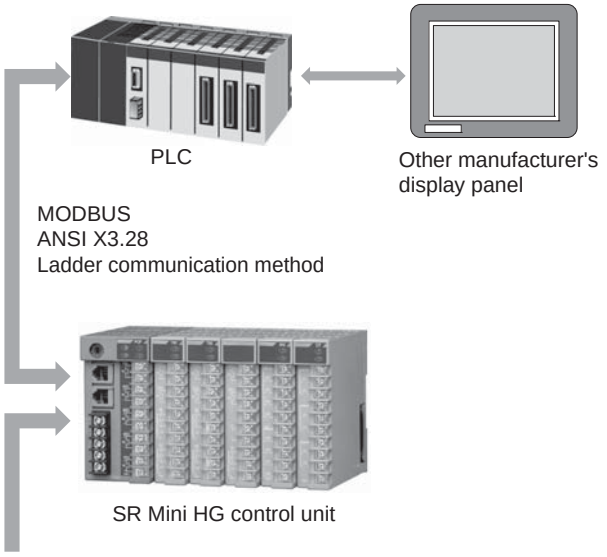
Up to 16 units (Max. 320 loops) are available when connected to a RKC touch screen operation panel, PLC or a host computer.

Up to 4 units (Max 80 loops) are available when using MAPMAN, a direct PLC communication.

Simplified Connectivity

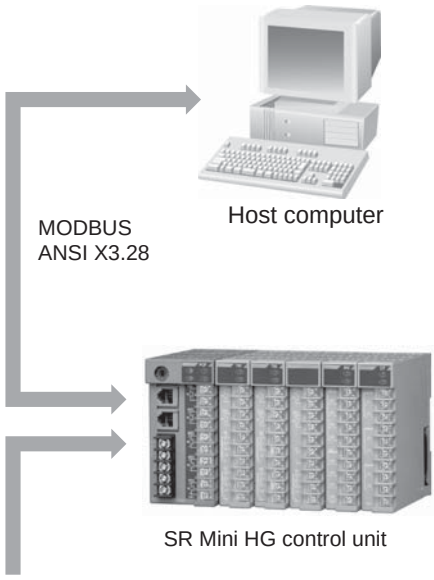
The SR Mini HG System offers various connectivity options to communicate to a host PC or PLC, such as serial communication, Open Network communication, and PLC direct communication "MAPMAN" function. For serial communication, Modbus or ANSI X3.28 protocol is available. For Open Network communication, DeviceNet (via COM-G gateway), Profibus (via COM-G gateway), and CC-Link module are available. Direct communication to PLCs is provided by the MAPMAN function. Without programming, MAPMAN function automatically writes process data into the PLC registers, sends new settings to the controller and updates parameters continuously and automatically through simple flag operations on the PLC side.

SR Mini HG System Connected to PLC



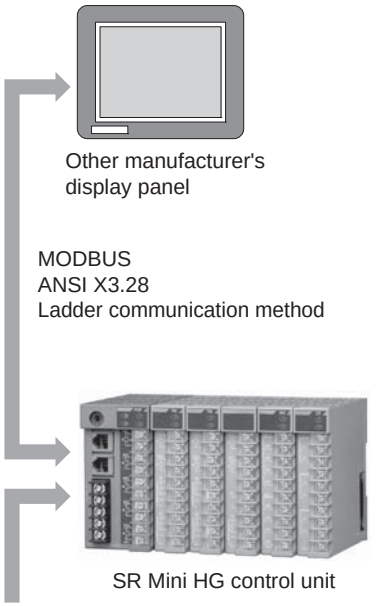
Up to 16 units (when RS-422A is used)

SR Mini HG System Connected to PC



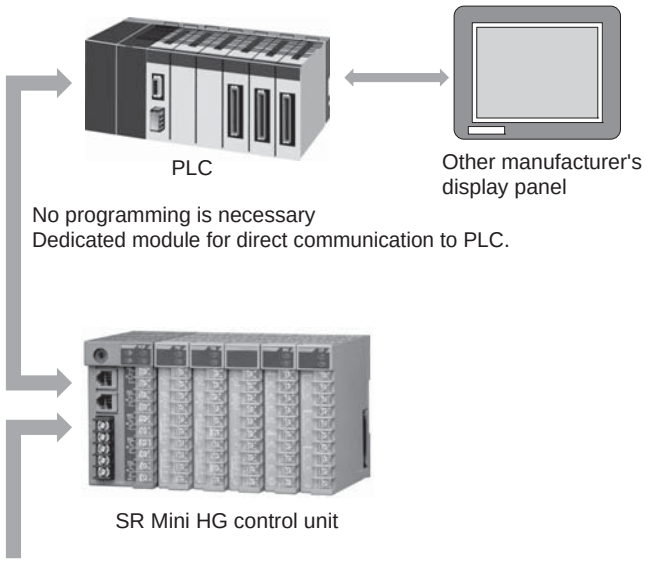
Up to 16 units (when RS-422A is used)

SR Mini HG System Connected to RKC Touch Screen Operation Panel



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

SR Mini HG System Connected to PLC (PLC direct communication: "MAPMAN")



Up to 4 units

Modules

Power Supply / CPU Module

The CPU module (PCP module) supplies power to each connected modules, manages data, and interfaces with a host PC, PLC or an operation panel. One PCP module is necessary for each control unit.

(H-PCP-A, B) Single-communication port

Modbus, or ANSI protocol is available. For DeviceNet, use COM-H as gateway. For Profibus, use COM-G as gateway. For CC-Link, CC-Link module is available as function module.

(H-PCP-J) Dual-communication port

In addition to all communication function available for H-PCP-A/B, MAPMAN function is built into the H-PCP-J which automatically writes data into specified register areas of a PLC, and temperature controller's data is read and written only by PLC flag operations.

Control Module

Temperature Control Module

(H-TIO-A,B,C,D)

These are standard temperature control modules with one or two channels. The input type is thermocouple or RTD. One channel type can have options such as alarm output.

High Accuracy Temperature Control Module

(H-TIO-E,F,G)

These are high accuracy temperature control modules with one or two channels. The sampling time is 0.1 second, and the accuracy is 0.1% of the full scale. The input type is thermocouple or RTD.

Control Module with DC Voltage/Current Input

(H-TIO-H,J)

These are high accuracy control modules with one or two channels. The input type is DC voltage/current input.

Control Module with Fuzzy Logic

(H-TIO-P,R)

These are control modules with fuzzy logic to suppress overshoot and undershoot. TIO-P is the standard type, and TIO-R is the high accuracy type.

Other Control Module

Cascade Control Module

(H-CIO-A)

This module works effectively in applications having a large time-lag between the control object and heat source. To achieve this control, a primary Master controller and a secondary Slave controller are mounted within one module.

Position Proportional Control Module

(H-TIO-K)

This module controls the control motor without feedback resistor. This module also monitors the valve opening by utilizing feedback resistor input.

Conveyor Speed Control Module

(H-SIO-A)

This module controls conveyor belt speed.

Current Transformer Input Module

(H-CT-A)

This module is used with a current transformer (CT) to detect heater break or any loop failure.

Analog Input / Output Module

Analog Input Module

(H-AI-A,B)

These modules have two or four inputs with independent high and low alarms as standard.

Analog Output Module

(H-AO-A,B)

These modules have two or four outputs which are useful for retransmission to recorders, etc.

Temperature Input Module

(H-TI-A,B,C)

These modules have four channels that can be used for temperature input monitoring. The input type is thermocouple or RTD. Two-channel high accuracy type is also available.

Digital Input / Output Module

Digital Input Module

(H-DI-A)

This module is for multi-memory area change, and mode transfer.

Digital Event Input Module

(H-DI-B)

This module allows you to program logics and output from the digital output module. Logic results also can be handled on communication.

Digital Output Module

(H-DO-A,B,D)

These modules can be used for independent alarm output per channel, or various control status output.

Digital Event Output Module

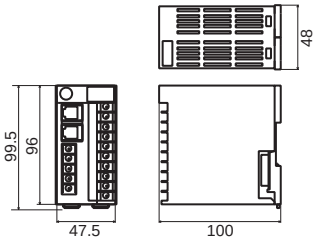
(H-DO-C)

This module allows you to add independent alarms . You can have more than two alarms if you use this module.

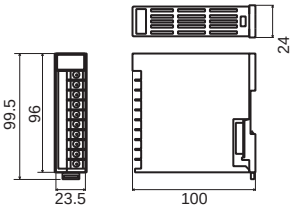
External Dimensions

Unit : mm

• Power supply / CPU module

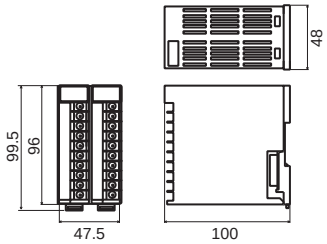


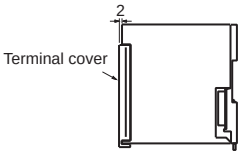
• Single width module



• Double width module

Heat/Cool control module
Cascade control module





Device Configuration

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
	H-PCP-J	100 to 120V AC, 50/60Hz FAIL output, Digital output : 8 points, ANSI/ MODBUS/ MAPMAN command protocol Communication function (Selectable)
		200 to 240V AC, 50/60Hz FAIL output, Digital output : 8 points, Communication function ANSI/ MODBUS/ MAPMAN command protocol Communication function (Selectable)
		24V DC FAIL output, Digital output : 8 points, Communication function ANSI/ MODBUS/ MAPMAN command protocol Communication function (Selectable)
Temperature Control Module	H-TIO-A	Thermocouple, RTD input : 1 zone, Brilliant PID or ON/OFF control, CT input : 1 point, Alarm output : 1 point
	H-TIO-B	Thermocouple, RTD input : 2 zones, Brilliant PID or ON/OFF control
	H-TIO-P	Thermocouple, RTD input : 2 zones, Brilliant PID control with fuzzy logic
Temperature Control Module (Heat/Cool type)	H-TIO-C	Thermocouple, RTD input : 1 zone, Brilliant PID control, CT input : 1 point
	H-TIO-D	Thermocouple, RTD input : 2 zones, Brilliant PID control, CT input : 2 points
High Accuracy Temperature Control Module	H-TIO-E	Thermocouple, 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	Thermocouple, RTD input : 1 zone, Brilliant PID control with fuzzy logic, CT input : 1 point, Alarm output : 1 point
High Accuracy Temperature Control Module (Heat/Cool type)	H-TIO-G	Thermocouple, RTD input : 1 zone, Brilliant PID control
Control with Voltage/Current Input Module	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	Thermocouple, RTD, DC voltage, DC current input : Master 1 zone / Slave 1 zone Brilliant PID control (Heat / Cool control is possible only for slave.) Digital input : 2 points
Control Module for Control Motor Drive	H-TIO-K	Thermocouple, RTD input : 1 zone, PID control, Feedback resistance input (Only input display : No relation control)
Conveyor Speed Control Module	H-SIO-A	DC voltage pulse input : 1 zone, Brilliant PID control, Digital input : 2 points
Temperature Input Module	H-TI-A	RTD input : 4 zones, Alarm function : 2 points/zone
	H-TI-B	Thermocouple, RTD input : 2 zones, Alarm function : 2 points/zone
	H-TI-C	Thermocouple, RTD input : 4 zones, Alarm function : 2 points/zone
CT Input Module	H-CT-A	CT input : 6 points (RKC's proprietary CT)
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 output : 4 points (All points are Common)
	H-DO-C	Event output, Open collector output : 8 points
	H-DO-D	Alarm output, Open collector output : 16 points (Connector type)
Analog Input Module	H-AI-A	Analog input (Not insulated between channels) : 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 channels) : 2 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
Analog Output Module	H-AO-A	Analog output (Not insulated between channels) : 4 points 0 to 1V, 0 to 5V, 0 to 10V, 1 to 5V, 0 to 20mA, 4 to 20mA DC
	H-AO-B	Analog output (Insulated between channels) : 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 input : 8 points (Common every 4 points)
Network Communication Converter	COM-G	PROFIBUS gateway for SR Mini HG (Maximum of 1control unit : 20ch max)
	COM-H	DeviceNet gateway for SR Mini HG (Maximum of 1control unit : 20ch max)
	H-LNK-A	CC-Link gateway for SR Mini HG (1control unit : 16ch max, Total : 256ch max*) *1 control unit occupies 4 stations. The maximun of 64 stations can be used.