

1500°C Muffle Furnace:



Model	SH-FU-4MH	SH-FU-11MH	SH-FU-22MH	SH-FU-36MH
Max Temp	1500°C (2732°F)			
Temp Controller	Programmable Controller -222p			
Sensor	R type			
Heater Capa	5000 W	7600 W	9600 W	18 KW
Capa	4.5 L	11 L	22 L	36 L
Dimension Internal (W×D×H)	150x200x150(mm)	200x270x200(mm)	250x350x250(mm)	300x400x300(mm)
	5.91x7.87x5.91(inch)	7.87x10.63x7.87(inch)	9.84x13.78x9.84(inch)	11.81x15.75x11.81(inch)
Dimension External (W×D×H)	820x560x737(mm)	870x625x787(mm)	920x705x867(mm)	970x760x920(mm)
	32.28x22.05x29.02(inch)	34.25x24.61x30.98(inch)	36.22x27.76x34.13(inch)	38.19x29.92x36.22(inch)
Weight	92 Kg	102 Kg	1 47 Kg	154 Kg
Heater Element	SiC			
Insulation	Ceramic Board & Wool			
Electrical Requirements 230V ,50/60Hz, 1Φ	21.7 A	33.0 A	41.7 A	N/A
Cat. No.	FU4MH230	FU11MH230	FU22MH230	
Electrical Requirements 230V ,50/60Hz, 3Φ	N/A			47.3 A
Cat. No.				FU36MH230-3

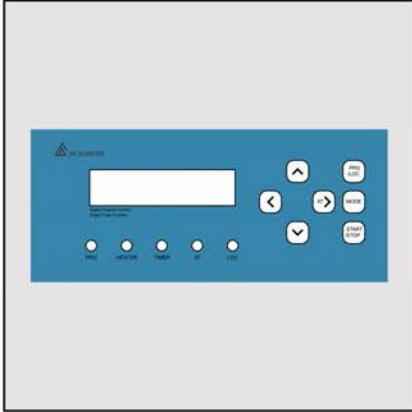
| Option

 Digital recoder-224p
 Hybrid recoder-225p

| Safety Device

 Automatic reset function incoming power cut
 Buzzer on when set time arrived
 Over temperature protection

Controller(Programmable):



- LCD Display
- Program mode, Standard Mode Selectable.
- Parameter setting
- Auto tune function
- Timer function
- PV,SV can be displayed together

Display	Size	190mmx75mm(WxH)
	PV/SP Display	4 Digit
Operation Mode		Program / Standard
Control Mode		1CH Control
Max Channel		-
Features	Patterns & Segments	5 patterns, 9 Segments / pattern, Total 45 Segments
	Cycles	1 ~ 999
Input	TC	K
Output	Control Output	SSR(Voltage Pulse)
Sampling Time		250ms
Accuracy		$\pm 0.1\%$ $\pm 1\%$ digit of Full Scale
Power	Power	100 ~ 240V AC, 50 ~ 60Hz
	Power Consumption	Max 6W

Programmable Controller Options:



- High Accuracy(±0.1%) with excellent Function
- Multi Input : TC, RTD, DCV
- Simultaneous and Multi output available in Max 4 Points
- Easy parameter and value setting
- Function to protect over shoot
- RUN/STOP Function in the external Input contact point
- Display of Running status in Auxiliary Output
- Large Program Capacity : 2 Patterns / 30 Segments
- Variety of Auxiliary Output available (ex IS, TS, PEND etc)
- Input Piece Bias Function(Max 4 zone)
- Automatic PID Parameter Calculation
- Variety of communication Protocols
- Reliable quality(CE, CUL, ISO applied)

Display	Size	72(W) * 72(H) * 100(L) mm
	PV/SP Display	4 Digit
Operation Mode		Program / Reset, 2 Zone PID
Control Mode		1CH Control
Max Channel		-
Pattern & Segments		2 Pattern / Max 30 segments
Input	TC	K, J, E, T, R, B, S, L, N, U, W, C, Platinel II
	RTD	Pt100Ω, JPt100Ω
	Analog Voltage Input	-10~20mV, 0~100mV, 0.4~2.0V DC, 1~5V DC, 0~10V DC
Output	Control Output	RELAY, SSR(Voltage Pulse)
	Current Output	4 ~ 20mA DC
	Voltage Output	-
	Transmission Output	4 ~ 20mA (PV, SP, MV)
Digital Input	Contact Type	2 Points / 4 Types(RUN, HOLD, STEP, RESET)
	Contact capacity	-
Digital Output	Relay	Normal Open 30V DC A, 250V AC 1A Normal Close 30V DC3A 250V AC 3A
	Open Collector	ON voltage across contacts at less than 2V, the leakage current less than 100μA
Sampling Time		250ms
Accuracy		±0.1% ±1% digit of Full Scale
Event	Alarm	1 Point / Max 3 Points(20 Types)
	Inner Signal	2 Points (PV, SP, TSP)
	Time Signal	1 Point
	Other	1 Point (RUN, Pattern END, UP, DOWN, SOAK)
Communication	Interface	RS485
	Protocol	PC-Link, MODBUS(ASCII, RTU), SYNC(Master, Slave)
	Speed	Max 19,200 bps
Power	Power	100 ~ 240V AC, 50 ~ 60Hz
	Power Consumption	Max 6W
Operating environment		-
Weight		-

Digital Recorder Options:



- Touch panel 5.7 Inch 640 x 480 TFT-LCD
- Universal input (Thermocouple, RTD, VDC)
- Trend view mode available
- 80MB internal memory and support SD/SDHC memory card
- RS 485/422 communication (Modbus, PC-link)

Suffix Code		
Model	Code	Information
GR200		Graphic recorder(applied touch panel function) 145(W) × 145(H) mm
Input channel	2	2 channels
	4	4 channels
	8	8 channels
	12	12 channels

Model	GR200
Number of channels	2, 4, 8, 12 (Refer to the type configuration)
Input type	2 thermoresistors (Pt-100, KPt-100) 12 thermocouples (K, J, E, T, R, B, S, L, N, U, Wre 5-26, PL-II) 4 VDC (-10 ~ 20 mV, 0 ~ 100 mV, 1 ~ 5V, 0 ~ 30 V)
Sampling period	250 ms
Current to measure the thermoresistor (RTD)	About 0.21 mA
Input resistor	Thermocouple : More than 1 MΩ, VDC : More than 1 MΩ
Allowable wiring resistor	Thermoresistor : Maximum 100Ω/wire (The RTD is up to 10Ω/wire for the range of -100.00 ~ .150.00) Thermocouple : Less than 200 Ω VDC : Less than 2 kΩ
Impact of the wiring resistor	Thermoresistor : ±0.3 °C/10 Ω (The 3 lines have the same wiring resistors)
Allowable input voltage	Thermocouple : Less than ±10 V DC, VDC : Less than ±33 V DC
Degree	±0.15 % of F.S, ±1 digit (Except the RJC temperature error) ※ Refer to the input table
The error in the reference junction compensation (RJC)	±2.0 °C (0 ~ 50 °C)
Sensor short detection (Burn-out)	UP-Scale for the short

Hybrid Recorder

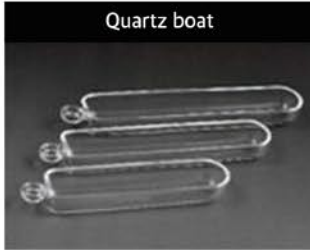
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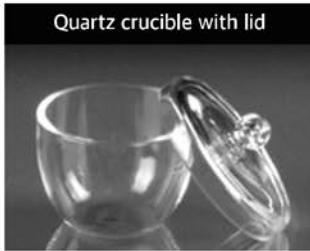
- 50mm thermal transfer method of paper recorder
- Data logger functions for recording without paper
- Supports RS485 communication and dedicated communication port to set or monitor parameters in real-time by PC/PLC
- Multi-input with high accuracy 0.2% level (RTD, TC, Analog)
- 2-channel simultaneous recording in graphic mode and digital mode
- High visibility and easy setting by LCD dot matrix
- Supports various option I/O functions
- Small size(W96×H96×L100 mm), light weight

Record accuracy		±0.5%F.S.
Alarm output		CH1(AL1, AL2), CH2(AL1, AL2) Relay out put(250 VAC/30 VDC 3 A 1 a)
Alarm output hysteresis		ON/OFF interval setting for alarm output: 1 to 999digit variable
Communication output		RS485 communication output(Modbus RTU protocol)
Set method		Setting by front keys
Sampling cycle		500 ms/channel x 2 channels = 1000 ms
Dielectric strength		2300 VAC 50/60 Hz for 1 min.(charging terminal of the other polarity)
Vibration		0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each of X, Y, Z directions for 1 hour
Relay life cycle		Mechanical: Over 5,000,000 operations, Electrical: Over 100,000 operations
Insulation resistance		Over 100 MΩ (at 500 VDC megger)
Noise resistance		Square shaped noise by noise simulator (pulse width 1 μs)±2 kV
Print	Method	Direct thermal line print
	Resolution	8 dot/mm
	Dots	384 dot/Line
	Life cycle	50 km
Record	Graphic mode	<ul style="list-style-type: none"> • Record speed(recording paper speed): 10, 30, 60, 120, 240, 480, 940 mm/hour • Memo cycle: 30 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 2 h, 3 h, 4 h, 8 h, 16 h, 24 h
	Digital mode	TEXT mode record cycle: 00 m 05 s to 99 m 59 s
	Paper	Thermal Direct Receipt Paper (57 mm x 16 m)
	Paper supply method	Clamshell Type
	Language	Korean, English
Environment	Ambient temperature	0 to 50 °C, storage: -20 to 60 °C
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Approval		CE
Unit weight		Approx. 700 g

Furnace Accessory:



Model No.	Size (ml.LxWxH)	Temp-Limit
SH-QB-2	2ml, 15×48×8	Operation Temp 1100°C Max Temp 1250°C
SH-QB-3	3ml, 16×77×11	
SH-QB-5	5ml, 20×77×11	
SH-QB-8	8ml, 20×92×11	
SH-QB-10	10ml, 20×102×11	
SH-QB-15	15ml, 27×105×11	



Model No.	Capa(ml)	Temp-Limit
SH-QC-30	30 ml	Operation Temp 1100°C Max Temp 1250°C
SH-QC-50	50 ml	
SH-QC-100	100 ml	
SH-QC-250	250 ml	
SH-QC-500	500 ml	



BODY			Lid	
Model No.	Capa(ml)	Dimension(φ)	Model No.	Capa(mm)
SH-CC-15B	15 ml	36	SH-CC-15L	15 ml
SH-CC-30B	30 ml	45	SH-CC-30L	30 ml
SH-CC-50B	50ml	53	SH-CC-50L	50 ml
SH-CC-100B	100 ml	65	SH-CC-100L	100 ml
SH-CC-155B	155 ml	72	SH-CC-155L	155 ml
SH-CC-280B	280 ml	87	SH-CC-280L	280 ml

Lid	
Model No.	Capa(mm)
SH-CC-15L	15 ml
SH-CC-30L	30 ml
SH-CC-50L	50 ml
SH-CC-100L	100 ml
SH-CC-155L	155 ml
SH-CC-280L	280 ml

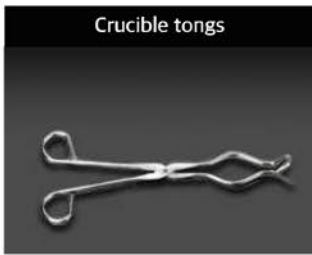


Model No.	Capa(ml)	Temp-Limit
SH-NC-30	30 ml	Operation Temp 600~1000°C
SH-NC-50	50 ml	
SH-NC-100	100 ml	



Model No.	Capacity(ml)	Max Temp
SH-ALC-10	10 ml	1700°C
SH-ALC-20	20 ml	
SH-ALC-30	30 ml	
SH-ALC-50	50 ml	
SH-ALC-100	100 ml	
SH-ALC-150	150 ml	
SH-ALC-200	200 ml	
SH-ALC-250	250 ml	
SH-ALC-500	500 ml	

Lid	
Model No.	Capa(mm)
SH-CC-15L	15 ml
SH-CC-30L	30 ml
SH-CC-50L	50 ml
SH-CC-100L	100 ml
SH-CC-155L	155 ml
SH-CC-280L	280 ml



Model No.	Opening Size(Φ)	Length
SH-CT-300	2~30 Φ	300 mm
SH-CT-400	2~30 Φ	400 mm
SH-CT-500	2~30 Φ	500 mm



Model No.	Size(I.D/O.D×L)
SH-QT-50	46/50×1000(mm)
SH-QT-60	55/60×1000(mm)
SH-QT-80	74/80×1000(mm)
SH-QT-100	94/100×1000(mm)
SH-QT-120	114/120×1000(mm)



Model No.	Temp-Limit
SH-SG-500	Max 500°C
SH-SG-900	Max 900°C



Model No.	Size(I.D/O.D×L)	Alumina Purity : OVER 99%
SH-AT-25	20/25x1000(mm)	
SH-AT-30	24/30x1000(mm)	
SH-AT-35	28/35x1000(mm)	
SH-AT-50	42/50x1000(mm)	
SH-AT-60	50/60x1000(mm)	
SH-AT-70	60/70x1000(mm)	
SH-AT-80	70/80x1000(mm)	
SH-AT-90	80/90x1000(mm)	
SH-AT-100	88/100x1000(mm)	
SH-AT-120	110/120x1000(mm)	