

Temperature controller

AX series

Digital Temperature Controller

AX series








FEATURES

- Economical price
- PID Controller Function
- 0.1°C / 0.1°F decimal point display
- High speed sampling cycle : 100 ms
- High accuracy temperature controlling : $\pm 0.3\%$ of F.S
- Installation depth : 63 mm
- Multi-input : K, J, R, T and Pt100 Ω
- Multi-output : Relay and SSR
- Vary model : 48(W) X 96(H) mm, 96(W) X 48(H) mm, 48(W) X 48(H) mm, 72(W) X 72(H) mm, 96(W) X 96(H) mm

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AX series

SPECIFICATIONS

Model	AX4	AX3	AX7	AX2	AX9	
Appearance						
Dimension (mm)	48 X 48 X 63	96 X 48 X 63	72 X 72 X 63	48 X 96 X 63	96 X 96 X 63	
Input type	Thermocouple : K, J, R, T, IEC 584-1, RTD : Pt100 Ω, IEC751					
Sampling cycle	100 ms					
Input impedance	max 1 MΩ					
Allowable input wiring resistance	10 V DC					
Display accuracy	Thermocouple K,J,T	± 0.3 % of F.S ±1 digit (RJC error ±0.8%) °C				
	Thermocouple R	±1.0% of F.S ±1 digit in the 0 ~ 600 °C range		± 2.0 °C in the range of 0~600 °C, ± 0.8°C outside of the range		
		±0.3 % F.S ±1 digit in the 600 ~ 1700 °C range				
Pt100	±0.3 % of F.S ±1 digit °C					
Display type	7 Segment LED (PV : red, SV : green)					
Font size (mm)	PV	13.0 X 6.5	15.9 X 7.6	14.5 X 7.0	14.5 X 7.0	22.5 X 11.2
	SV	9.2 X 5.2	12.0 X 6.0	9.4 X 4.7	10.8 X 5.2	18.7 X 9.3
Input resolving power	<ul style="list-style-type: none"> Thermocouple : 0.1°C (K2, J, T), 0.5°C (K1), 0.3°C / 1°F (R) RTD : 0.03°C, (0.1 °F) 					
Insulation resistance	min 20 MΩ, 500 V DC 1 min. (primary terminal-secondary terminal)					
Dielectric strength	2,300 V AC, 50/60 Hz, for 1 min. (primary terminal-secondary terminal)					
Control method	PID control by Auto-tuning, ON/OFF control					
Manual reset	Users set with in the range 0.0% - 100.0%					
Control output operation	Reverse operation / Direct operation selectable by the parameter setting					

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Control output	• Relay output ※Selectable by the parameter setting 1a contact, 3 A 240 V AC, 3 A 30 V DC (resistive load)				
	• Voltage pulse output for running SSR [time sharing proportional control (CYC)]				
	• Voltage plus output for running SSR [phase control(PHR)] 0/12 V DC, pulse voltage (resistive load minimum 600 Ω)				
	4 - 20 mA DC (resistive load max. 600 Ω)				
Power supply voltage	100 - 240 V AC 50 / 60 Hz				
Voltage fluctuation	±10 % of the power supply voltage				
Power consumption	5.5 VA max				
Ambient temperature	-5 ~ 50 °C				
Ambient humidity	35 ~ 85% RH (without condensation)				
Vibration resistance	10 -55 Hz, 0.75 mm, each to direction, X, Y and Z for 2 hours				
Shock resistance	300 m/s ² to direction 6 each 3 times				
Weight	180 g	320 g	300 g	320 g	400g

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Suffix code

Model		Code		Information	
AX	□ -	□	□	Digital temperature controller	
Dimension	2			AX2 : 48 X 96 mm	
	3			AX3 : 96 X 48 mm	
	4			AX4 : 48 X 48 mm	
	7			AX7 : 72 X 72 mm	
	9			AX9 : 96 X 96 mm	
Output selection		1		SSR + Relay1 + Relay2	Relay or SSR as control output (selectable in operator setup mode)
		2		SSR + Relay1 + Relay2 + Relay3	
		1B		SSR + Relay1(Form c) + Relay2	Only for AX2, 3, 7, 9
		2B		SSR + Relay1(Form c) + Relay2 + Relay3	
		3		4 – 20 A + Relay2	Current output as control output
		4		4 – 20 mA + Relay2 + Relay3	
Power supply voltage		A	100 - 240 V AC 50/60 Hz		

※ Form C : Normal close type contact

※ Relay output operates as control output, alarm output and LBA output depending on the internal parameter setting.

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Dimension and panel cutout / connection diagram

Unit : mm

			AX2
			AX3
			AX4
			AX7
			AX9

Temperature controller

HX series

Digital Temperature Controller

HX series








FEATURES

- Economical price
- PID Controller Function
- 0.1°C / 0.1°F decimal point display : 7 Segment 4 digits
- High speed sampling cycle : 62.5 ms
- High accuracy temperature controlling : $\pm 0.3\%$ of F.S
- Installation depth : 63 mm
- Multi-input : Thermocouple type K, J, E, T, R, B, S, N, C and RTD : Pt100 Ω , KPt 100 Ω
- Multi-output : Relay, SSR and 4-20 mA
- Vary model : 48(W) X 96(H) mm, 96(W) X 48(H) mm, 48(W) X 48(H) mm, 72(W) X 72(H) mm, 96(W) X 96(H) mm
- Communication : RS485, RS422

Temperature controller

HX series

SPECIFICATIONS

Model	HX4	HX3	HX2	HX7	HX9
Appearance					
W x H x D (mm)	48 x 48 x 63	96 x 48 x 63	72 x 72 x 63	48 x 96 x 63	96 x 96 x 63
Input	Type	Thermocouple 12 type, RTD 2 type, DC Voltage 2 type			
	Sampling cycle	62.5 ms			
	Accuracy	±0.5% of F.S(Depend on input type)			
	Allowable voltage	Within ±20 V d.c (VDC), within ±10 V d.c (TC, RTD)			
	Reference junction compensation accuracy	±3.5°C (0 ~ 50°C)			
	Operation after input break	T.C : OFF, UP/DOWN RTD : UP			
Control output	Relay	NO : 5 A 250 V a.c, 5 A 30 V d.c (resistive load)			
		NO : 3 A 250 V a.c, 1 A 30 V d.c (resistive load)			
	S.S.R(voltage pulse)	ON voltage : 12 V d.c min, OFF voltage : 0.1 V d.c max			
		Load resistance 600 Ω min			
S.C.R(current)	range : 4 - 20 mA (±5%), accuracy : ±0.2 mA				
	Load resistance 600 Ω max				
Retransmission output	range : 4 - 20 mA (±5%), accuracy : ±0.2 mA				
	Load resistance 600 Ω max				
Alarm output	5 A 250 V a.c, 5 A 30V d.c (resistive load)				
Contact input	OFF resistance : 10 kΩ min, ON resistance : 1 kΩ max				
2 degrees of freedom P.I.D	1 ~ 100% of proportional band				

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Control	Method	ON/OFF, P.I.D control
	Output operation	Reverse operation, Direct operation
	Anti-reset windup	Auto(A=0), 0.1 ~ 100.0 %
Interface	Standard	EIA RS 485
	Max connection unit	31 units (but, ADDRESS setting : 1 ~ 99)
	Communication method	2 wire half duplex
	Data transmission	asynchronous
	Communication sequence	None
	Communication distance	1.2 km max
	Communication Speed	2400, 4800, 9600, 14400, 19600 BPS (selectable by parameter)
	Start bit	1 BIT
	Data length	7 or 8 BIT
	Parity bit	NONE, EVEN, ODD
	Stop bit	1 or 2 BIT
	Protocol	PC.LINK, PC.LINK SUM, MODBUS-ASCII, MODBUS-RTU
	Response time	Processing time in receiving + (response time X 10 ms)
Power supply	100 - 240 V a.c ($\pm 10\%$), 50/60 Hz	
Power consumption	6 W max, 10 VA max	
Insulation resistance	20 M Ω min (primary terminal - secondary terminal)	
Dielectric strength	2,300 V a.c, for 1 minute (primary terminal - secondary terminal)	
Operating ambient temperature	0 ~ 50°C, (without condensation)	
Operating ambient humidity	35 ~ 85% R.H (without condensation)	

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Suffix code

Model		Code		Information
HX	<input type="checkbox"/> - <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital temperature controller
Dimension	2			HX2 : 48 X 96 mm
	3			HX3 : 96 X 48 mm
	4			HX4 : 48 X 48 mm
	7			HX7 : 72 X 72 mm
	9			HX9 : 96 X 96 mm
Control Output		0		Normal (heating control)
		1		Heating/cooling control (simultaneous control)
HX 2/3/9 option		0		None
		1		RS485 communication + Heater break alarm (H.B.A)
HX7 option		0		None
		1		RS485 communication + D.I 2 contacts (SV2, SV3)
HX4 option		0		None
		1		RS485 communication + D.I 1 contact (SV2)
		2		RS485 communication + Heater break alarm (H.B.A)

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Dimension and panel cutout / connection diagram

Unit : mm

	Dimension	Panel cutout	Connection diagram
HX2			
HX3			
HX4			
HX7			
HX9			