

Aptus Automation

Temperature Controller

User Manual

Notice before start-up

Please confirm the specification of instrument is to totally with your requirement before using it, also read this manual in detail.



Danger

Danger! Electric Shock!

DON'T touch AC power wiring terminals when instrument has been powered! Keep the power off until all of the wirings are completed!



Warning

- 1) Please confirm the AC power wiring to instrument is correct, otherwise it would be caused aggravated damage on instrument.
- 2) Be sure to use the rated power supply, otherwise it would be caused aggravated damage on instrument.
- 3) Please confirm wires are connected with correct terminal (Power, Input and Output).
- 4) Avoid installing instrument in following spaces:
 - I. A place where the ambient temperature may reach beyond the range from 0 to 50°C
 - II. A place where the ambient humidity may reach beyond the range from 20 to 90% RH.
 - III. A place where the instrument likely to come into contact with water, oil, chemicals, steam and vapor.
 - IV. A place where the instrument is subject to interface with static electricity, magnetism and noise.
- 5) For proximity input, use shield compensating lead wire.

TECHNICAL SPECIFICATIONS

Product Name : Temperature Controller

Model No. : A3004-X-L

Output : Up to 2 nos. of Relay (5 Amp. 1 CO), 1 SSR output (12Vdc)
O/P 1 :- 1 Relay or 1 SSR . For Control O/P PID, ON/OFF.

Input : RTD-PT 100(2W,3W), Thermocouples K Type, J Type

Range : RTD-PT 100 (0.1 °C) - -99.9 to 400.0°C
RTD-PT 100 (1°C) - -99 to 400°C
Thermocouple K Type - 0000 to 1200°C
Thermocouple J Type - 0000 to 650°C

Resolution : RTD-PT 100 - 1°C or 0.1°C
K Type - 1°C
J Type - 1°C

Accuracy : Better than $\pm 0.5\%$ of Full Scale

Power Supply : 230VAC $\pm 10\%$, 50Hz.

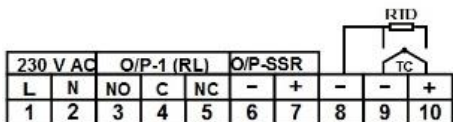
A3004-A (96x96) Terminal Wiring

MODEL: A3004-A-L

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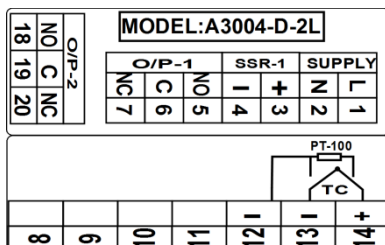
MO: 9727731662, 9727731665

☐ RTD(PT,PT.1)
☐ IC: J,K



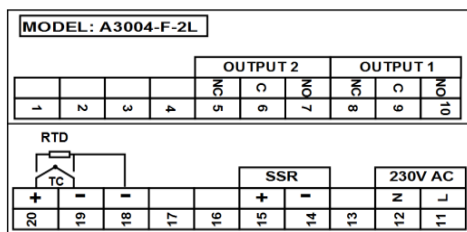
INPUT TYPE	A3004-A-L/A3004-A-2L
230 V AC Power supply	Terminal 1 & 2
Thermocouple Sensor Input	Terminal 10(TC+) & 9(TC-)
RTD Sensor Input	Terminal 10(A),9(B) &8(B')
Output 1(Relay)	Terminal 3(NO), 4(C) & 5(NC)
Output 1(SSR)	Terminal 7(SSR+) & 6(SSR-)

A3004-D (72x72) Terminal Wiring



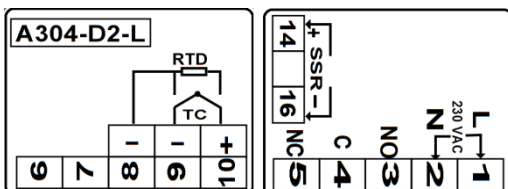
INPUT TYPE	A3004-D-L/A3004-D-2L
230 V AC Power supply	Terminal 1 & 2
Thermocouple Sensor Input	Terminal 14(TC+) & 13(TC-)
RTD Sensor Input	Terminal 14(A), 13(B) & 12(B')
Output 1(Relay)	Terminal 5(NO), 6(C) & 7(NC)
Output 1(SSR)	Terminal 3(SSR+) & 4(SSR-)
Output 2(Relay)	Terminal 18(NO), 19(C) & 20(NC)

A3004-F (96x48) Terminal Wiring



INPUT TYPE	A3004-F-L/A3004-F-2L
230 V AC Power supply	Terminal 11 & 12
Thermocouple Sensor Input	Terminal 20(TC+) & 19(TC-)
RTD Sensor Input	Terminal 20(A), 19(B) & 18(B')
Output 1(Relay)	Terminal 10(NO), 9(C) & 8(NC)
Output 1(SSR)	Terminal 15(SSR+) & 14(SSR-)
Output 2(Relay)	Terminal 7(NO), 6(C) & 5(NC)

A3004-D2 (48x48) Terminal Wiring



INPUT TYPE	A3004-D2-L/A3004-D2-2L
230 V AC Power supply	Terminal 1 & 2
Thermocouple Sensor Input	Terminal 10(TC+) & 9(TC-)
RTD Sensor Input	Terminal 10(A), 9(B) & 8(B')
Output 1(Relay)	Terminal 3(NO), 4(C) & 5(NC)
Output 1(SSR)	Terminal 14(SSR+) & 16(SSR-)
Output 2(Relay)	Terminal 13(NO), 12(C) & 11(NC)

CONFIGURATION MENU

- Press SET Key till 1 sec to enter in this menu.
- Otherwise Press the SET Key for 5 Seconds to go into configuration menu.
- Then press the Enter key to exit & save changes.

KEY	DISPLAY	FUNCTION	RANGE
SET (> 1 sec)	SEt	Set: Set value of Temperature for Relay-1 operation. Press SET key to set this parameter.	-
SET	100	Using UP & DOWN key to set the required value.	rngL~rngH
SET	SEt 2	Set 2: Set value of Temperature for Relay-2 operation. Press SET key to set this parameter. (This parameter is available if the Con.2 mode is not selected to OFF)	-
SET	50	Using UP & DOWN key to set the required value.	rngL~rngH
SET (> 5 sec)	PASS	Password: Enter the Password 0808 to go into configuration menu. Press SET to key set this parameter.	-
SET	0100	Using UP & DOWN key to set the required value.	0-9999

Configuration menu:

KEY	DISPLAY	FUNCTION	RANGE
ENTER	InPt	Input Type: Set the Input sensor type. Press SET to key set this parameter.	-
SET	J	Using UP key to change the Input sensor type. ----- Thermocouple type K sensor ----- Thermocouple type J sensor ----- 1° RTD Pt-100 [three-wire] sensor ----- 0.1° RTD Pt-100 [three-wire] sensor	K/ J / rtd1 / rtd.1
SET	OFSt	Offset Value: Set the Offset value. Press SET to key set this parameter.	-
SET	0	Using UP & DOWN key to set the required value.	-999~999
SET	rngL	Range Low: Set the value of range low parameter for display. Press SET to key set this parameter.	-
SET	0	Using UP & DOWN key to set the required value.	-
SET	rngH	Range High: Set the value of range high parameter for display. Press SET to key set this parameter.	-
SET	1200	Using UP & DOWN key to set the required value.	-
SET	Con.1	Control Output-1: Set the mode of Relay-1 operation. Press SET to key set this parameter.	-
SET	PId	PId: Relay-1 will work in PID mode. HEAt: Relay-1 will work in HEATING mode → [PV<=(Set1-HYS), Relay-1 On], [PV>=(Set1), Relay-1 Off] COOL: Relay-1 will work in COOLING mode. → [PV<=(Set1), Relay-1 Off], [PV>=(Set1+HYS), Relay-1 On] Using UP key to set the Relay-1 operation mode.	PId/HEAt/ COOL

KEY	DISPLAY	FUNCTION	RANGE
SET	p-b	Proportional Gain: Set the Proportional Gain in temperature for PID Action. Press SET to key set this parameter. (This parameter is available if the Con.1 mode is selected to PID)	-
SET	17.7	Using UP & DOWN key to set the required value.	0.1~999.9
SET	In-t	Integral Time: Set the value of this parameter. Press SET to key set this parameter. (This parameter is available if the Con.1 mode is selected to PID)	-
SET	315	Using UP & DOWN key to set the required value.	1~9999
SET	dr-t	Derivative Gain: Set the value of this parameter. Press SET to key set this parameter. (This parameter is available if the Con.1 mode is selected to PID)	-
SET	7	Using UP & DOWN key to set the required value.	1~9999
SET	CY-t	Cycle Time: Set the value of this parameter. Press SET to key set this parameter. (This parameter is available if the Con.1 mode is selected to PID)	-
SET	3	Using UP & DOWN key to set the required value.	1~9999
SET	HYS	Hysteresis-1: Set the Hysteresis in temperature for Relay-1 operation. Press SET to key set this parameter. (This parameter is available if the Con.1 mode is selected to HEAT or COOL)	-
SET	10	Using UP & DOWN key to set the required value.	-99~99
SET	dLY	Delay Time: Set the Delay time in Relay actions in COOL mode. Press SET to key set this parameter. (This parameter is available if either Con.1 or Con.2 mode is selected to COOL)	-
SET	05	Using UP & DOWN key to set the required value.	01~999 sec
SET	Con.2	Control Output-2: Set the mode of Relay-2 operation. Press SET to key set this parameter.	-
SET	OFF	HEAT: Relay-2 will work in HEAT mode. → [PV<=(Set2-HYS2), Relay-2 On], [PV>=(Set2), Relay-2 Off] COOL: Relay-2 will work in COOL mode. → [PV<=(Set2), Relay-2 Off], [PV>=(Set2+HYS2), Relay-2 On] LOAL: Relay-2 will work in LOAL mode. → [PV<=(Set2), Relay-2 On], [PV>=(Set2+HYS2), Relay-2 Off] HIAL: Relay-2 will work in HIAL mode. → [PV<=(Set2-HYS2), Relay-2 Off], [PV>=(Set2), Relay-2 On] LdAL: Relay-2 will work in LdAL mode. → [PV<=(Set-Set2), Relay-2 On], [PV>=((Set-Set2)+HYS2), Relay-2 Off] HdAL: Relay-2 will work in HdAL mode. → [PV<=((Set+Set2)-HYS2), Relay-2 Off], [PV>=(Set+Set2), Relay-2 On] OFF: Relay-2 will be OFF. → [Relay-2 Off] Using UP key to set the Relay-2 operation mode.	HEAt/COOL/ LOAL/HIAL/ LdAL/HdAL/ OFF
SET	HYS2	Hysteresis-2: Set the Hysteresis in temperature for Relay-2 operation. Press SET to key set this parameter. (This parameter is available if the Con.2 mode is not selected to OFF)	-
SET	5	Using UP & DOWN key to set the required value.	-99~99
SET	SEtr	Set in running: Set the Temperature value for Relay-1 operation, in running mode. Press SET to key set this parameter.	-
SET	YES	Using UP key to set the required option. YES: By pressing UP / DOWN key, Temperature value can be changed. nO: By pressing UP / DOWN key, Temperature value can't be changed.	YES/nO

DISPLAY MESSAGES

The explanation of the various Display Messages that would be visible on the instrument.

DISPLAY	DESCRIPTION
IPLO	Input signal below lower range setting
IPHI	Input Signal higher than higher range setting
OPEn	No Signal or I/P Wire Break or Sensor Burn Out
tUnE	Instrument is in Auto Tune PID Control

Display Indication:

- Actual Temperature (PV) ----- = on Upper display
- Set Temperature (SV)----- = on Lower display