Plug-in Signal Conditioners *M-UNIT*

RTD ALARM
(dual or quad alarm trip; field-configurable)

MODEL **AS4R**

MODEL & SUFFIX CODE SELECTION

AS4R–❑–❑❑

MODEL

OUTPUT

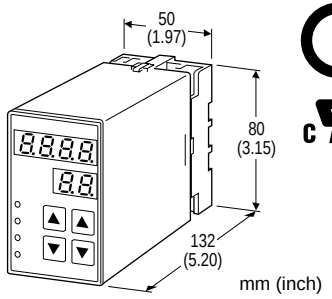
2 : 4 points; N.O. or make contact
3 : 4 points; N.C. or break contact
5 : 2 points; SPDT or transfer contact

POWER INPUT

AC Power	DC Power
M2 : 100 – 240V AC	**R** : 24V DC
	P : 110V DC

OPTIONS

/UL : UL approval



Functions & Features

• Providing relay outputs at preset temperature levels • Quad or dual trip • Setting and display in engineering unit values • Setpoint adjustments with the front keypad • Software lock • Adjustable hysteresis (deadband) • On-delay timer • Hi/Lo trip and energized/de-energized coil independently selectable for each setpoint • Enclosed relays • Relays can be powered by 200V AC and 100V DC • High-density mounting on DIN rail

Typical Applications

• Annunciator • Various alarm applications

ORDERING INFORMATION

Specify code number. (e.g. AS4R-2-R)

GENERAL SPECIFICATIONS

Construction: plug-in
Connection: M3.5 screw terminals
Housing material: flame-resistant resin (black)
Isolation (basic insulation): input to output to power
Setpoint adjustments: front key pad
Sampling cycle: 100 millisec.

■DISPLAY

LED: 8 mm (.31") 7 segment, red
Number of display digits: 4 digits for DATA display; 2 digits for ITEM display
PV indication: temperature in engineering unit
Overrange indication: LEDs flashing
Power saving mode: displays turn off if the keys are untouched for a preset time period
LEDs: red lights turn on in tripped conditions
Burnout protection: upscale standard; downscale or no burnout optional by programming

INPUT & OUTPUT

■INPUT: 2- or 3-wire RTDs

Maximum leadwire resistance: 200Ω per wire (3-wire)

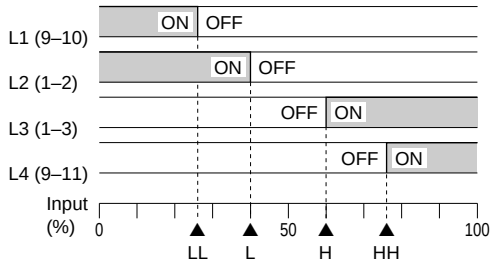
Sensing current: ≤1.0mA

Temperature range

RTD	USABLE RANGE	
	°C	°F
JPt 100 (JIS '89)	-235 to +560	-391 to +1040
Pt 100 (JIS '89)	-240 to +900	-400 to +1652
Pt 100 (JIS '97/DIN/IEC)	-240 to +900	-400 to +1652
Pt 50Ω (JIS '81)	-235 to +700	-391 to +1292
Ni 508.4Ω	-100 to +330	-148 to +572
Pt 1000	-240 to +900	-400 to +1652
Ni 100	-100 to +250	-148 to +482
Cu 10	-210 to +310	-346 to +590

■OUTPUT

Alarm Trip Operation Example with quad N.O. contacts (LL, L, H, HH); Terminal No. in parentheses



Trip Operation in Power Failure

- **Output Code 2**: all relays turn OFF.
- **Output Code 3**: all relays turn ON.
- **Output Code 5**: Terminals 1 – 3, 9 – 11 turn ON.

•Quad Alarm

Relay rating: 120V AC @1A (cosø=1)
240V AC @0.5A (cosø=1)
30V DC @1A (resistive load)
electrical life 10^5 cycles (rate 30/min.)

Maximum switching voltage: 380V AC or 125V DC

Maximum switching power: 100VA or 30W

Minimum load: 5V DC @10mA

Mechanical life: 5×10^7 cycles

•Dual Alarm

Relay rating: 120V AC @5A (cosø=1)
240V AC @2.5A (cosø=1)
30V DC @5A (resistive load)
electrical life 10^5 cycles (rate 30/min.)

Maximum switching voltage: 380V AC or 125V DC

Maximum switching power: 500VA or 150W

Minimum load: 5V DC @10mA

Mechanical life: 5×10^7 cycles

INSTALLATION

Power input

AC: operational voltage range 85 – 264V;
47 – 66 Hz, approx. 6VA

DC: operational voltage range for R: 24V ±10%
or P: 85 – 150V;
approx. 3.5W (ripple 10% p-p max.)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: surface or DIN rail

Dimensions: W50×H80×D132 mm (1.97"×3.15"×5.20")
See General Spec. Sheet Figure C-2.

Weight: 500 g (1.1 lbs)

Terminal assignment: See General Spec. Sheet Figure D-1.

PERFORMANCE in percentage of FS input

Setpoint accuracy (trip point accuracy):
±(0.1% of FS + 1 digit)
±(0.2% of FS + 1 digit) for Cu 10

Display accuracy: ±(0.1% of FS + 1 digit)

Temp. coefficient: ±0.015%/°C (±0.008%/°F)

Response time: ≤1.5 seconds (0 – 100% at 90% setpoint)

Burnout response: ≤5 seconds

Line voltage effect: ±0.1% over voltage range

Insulation resistance: ≥100MΩ with 500V DC

Dielectric strength: 2000V AC @1 minute
(input to output to power to ground)

STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)
EMI EN61000-6-4
EMS EN61000-6-2
Low Voltage Directive (73/23/EEC)
Installation category II
Pollution degree 2
Max. operating voltage 300V
Input to output to power – Basic insulation

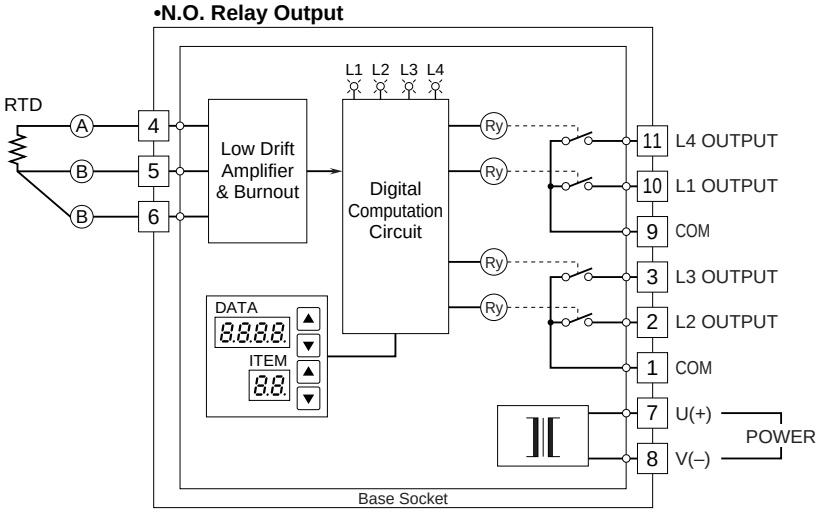
Approval: UL/C-UL general safety requirements
(UL 3111-1, CAN/CSA-C22.2 No.1010-1)

Specifications subject to change without notice.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

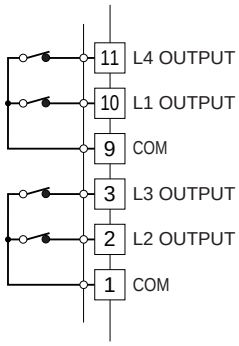
■ **OUTPUT SUFFIX CODE: 2**

•N.O. Relay Output



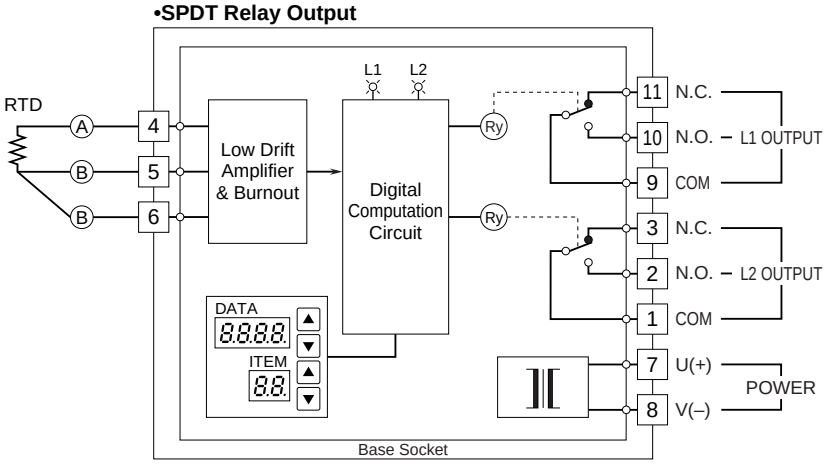
■ **OUTPUT SUFFIX CODE: 3**

•N.C. Relay Output



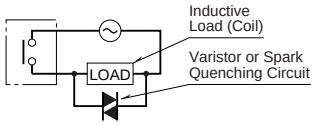
■ **OUTPUT SUFFIX CODE: 5**

•SPDT Relay Output

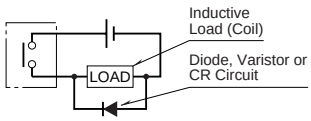


■Relay Protection

•AC Powered



•DC Powered



FRONT PANEL CONFIGURATION & PROGRAMMING

■PROGRAMMING PROCEDURE

1. Press ITEM UP or DOWN key until ITEM display indicates “01”.

2. Press DATA UP or DOWN key and choose “1” or “2” on DATA display.

1 : Only alarm setpoints are modifiable.

2 : All parameters are modifiable.

3. Press ITEM UP or DOWN key until ITEM display shows the ITEM No. you need to change.

4. Press DATA UP or DOWN key and choose a DATA No. or value you need on DATA display.

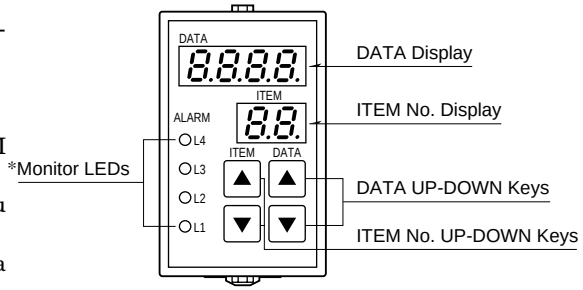
5. Repeat above 3 and 4. (Entered data is stored when you move to a new ITEM.)

6. Press ITEM UP or DOWN key until ITEM display indicates “01”.

7. Press DATA UP or DOWN key and choose “0” on the display.

8. Press ITEM UP or DOWN key until ITEM display indicates “P”. DATA display shows process input. You can now check data setting by choosing ITEM No.

Note: DO NOT press UP and DOWN keys simultaneously.



*L3 or L4 does not turn on for dual output type.

ITEM	MDF. CODE	DATA	CONTENTS	DEFAULT SETTING
P	N/A	-240 – 900*1	Process input display in engineering unit	— *1
L1	1, 2	-240 – 900*1	L1 setpoint in engineering unit	Quad: 20.0 Dual: 20.0*1
L2	1, 2	-240 – 900*1	L2 setpoint in engineering unit	Quad: 30.0 Dual: 80.0*1
L3	1, 2	-240 – 900*1	L3 setpoint in engineering unit*2	Quad: 70.0*1
L4	1, 2	-240 – 900*1	L4 setpoint in engineering unit*2	Quad: 80.0*1
01		0, 1, 2	Modification code 0 : Data indication only. 1 : Only ITEM L1 – L4 are modifiable. 2 : All parameters are modifiable.	1
02	N/A	0 – 99	Status indication ("0" is normally indicated.) 0: Normal 1: Memory error 10: Out of input range -15 – 115%	
03	N/A	4	Input type code	
04	2	0 – 99	Power ON-delay time (seconds)	5
05	2	0 – 99	ON-delay time (seconds)	0
06	2	0, 1, 2, 3, 4	Moving average (sampling cycle: 100 msec.) 0: No, 1: 4 samples, 2: 8 samples, 3: 16 samples, 4: 32 samples	0
07	2	0, 1	L1 trip operation (0 : Lo, 1: Hi)	Quad: 0 Dual: 0
08	2	0, 1	L2 trip operation (0 : Lo, 1: Hi)	Quad: 0 Dual: 1
09	2	0, 1	L3 trip operation (0 : Lo, 1: Hi)*2	Quad: 1
10	2	0, 1	L4 trip operation (0 : Lo, 1: Hi)*2	Quad: 1
11	2	-1, 0, 1 – 60	Power-saving mode -1 : Continuous display upon startup 0 : Continuous display after the last access 1 – 60 : Minutes before display turned off after the last access	10
12	2	0, 1	L1 coil at alarm (0: Energized, 1: De-energized)	0
13	2	0, 1	L2 coil at alarm (0: Energized, 1: De-energized)	0
14	2	0, 1	L3 coil at alarm (0: Energized, 1: De-energized)*2	0
15	2	0, 1	L4 coil at alarm (0: Energized, 1: De-energized)*2	0
16	N/A	—	Version No. indication	—
17	2	0.0 – 900	L1 hysteresis (deadband) in engineering unit	1.0
18	2	0.0 – 900	L2 hysteresis (deadband) in engineering unit	1.0
19	2	0.0 – 900	L3 hysteresis (deadband) in engineering unit*2	1.0
20	2	0.0 – 900	L4 hysteresis (deadband) in engineering unit*2	1.0
21	2	0, 1	Burnout protection (0: Downscale, 1: Upscale)	1
22	2	-240 – 900*1	Upper range temperature limit Display flashing with higher temperature	500.0*1 PV flashing at upscale burnout.
23	2	-240 – 900*1	Lower range temperature limit Display flashing with lower temperature	-100.0*1 PV flashing at downscale burnout.
24	2	0, 1, 2	Temperature unit (0: °C, 1: °F, 2: K)	0
25	2	0 – 7	RTD type 0: JPt 100 (JIS '89), 1: Pt 100 (JIS '89), 2: Pt 100 (JIS '97, DIN, IEC751), 3: Pt 50Ω (JIS '81) 4: Ni 508.4Ω, 5: Pt 1000, 6: Ni 100, 7: Cu 10	2 (Pt 100 [JIS '97, DIN, IEC751])

*1. According to the temperature unit specified in ITEM 24.

*2. Quad alarm trip type only