

Plug-in Signal Conditioners M-UNIT

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

MODEL **AS4V**

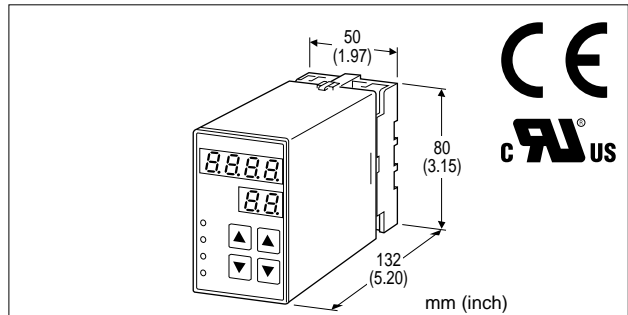
MODEL & SUFFIX CODE SELECTION

AS4V-□□-□□

MODEL _____
 INPUT _____
Current
Z1 : Range 0 – 50mA DC
Voltage
S1 : Range -1 – +1V DC
S2 : Range -10 – +10V DC
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

ORDERING INFORMATION

Specify code number. (e.g. AS4V-S22-R)



Functions & Features

- Providing relay outputs at preset DC input levels
- Quad or dual trip • Front display indicates values in engineering unit • 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

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
Range: -1999 to 9999
 (decimal point position selectable)
PV indication: input signal 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

INPUT & OUTPUT

INPUT

• **DC Current:** 0 – 50mA DC; shunt resistor attached to input terminals (100Ω, 0.5W)

Operational range: 0 – 70mA DC (with 100Ω/0.5W)

Minimum increment: 0.1mA

• **DC Voltage:** -1 – +1V DC for S1;
-10 – +10V DC for S2

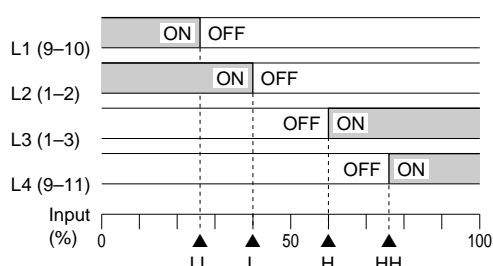
Operational range: -1.15 – +1.15V DC for S1;
-11.5 – +11.5V DC

Minimum increment: 10mV for S1; 100mV for S2

Input resistance: 1MΩ minimum

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 (cosφ=1)

240V AC @0.5A (cosφ=1)

30V DC @1A (resistive load)

electrical life 10⁵ 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 × 10⁷ cycles

•Dual Alarm

Relay rating: 120V AC @5A (cosφ=1)

240V AC @2.5A (cosφ=1)

30V DC @5A (resistive load)

electrical life 10⁵ 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 × 10⁷ cycles

INSTALLATION

Power input

AC: operational voltage range 85 – 264V;
(90 – 264V for UL);

47 – 66 Hz, approx. 6VA

DC: operational voltage range for R: 24V ±10%
or P: 85 – 150V (110V ±10% for UL);
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-2.

PERFORMANCE in percentage of FS input

Setpoint accuracy (trip point accuracy):

±(0.1% of FS + 1 digit)

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

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

Response time: ≤0.5 seconds (0 – 100% at 90% setpoint)

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

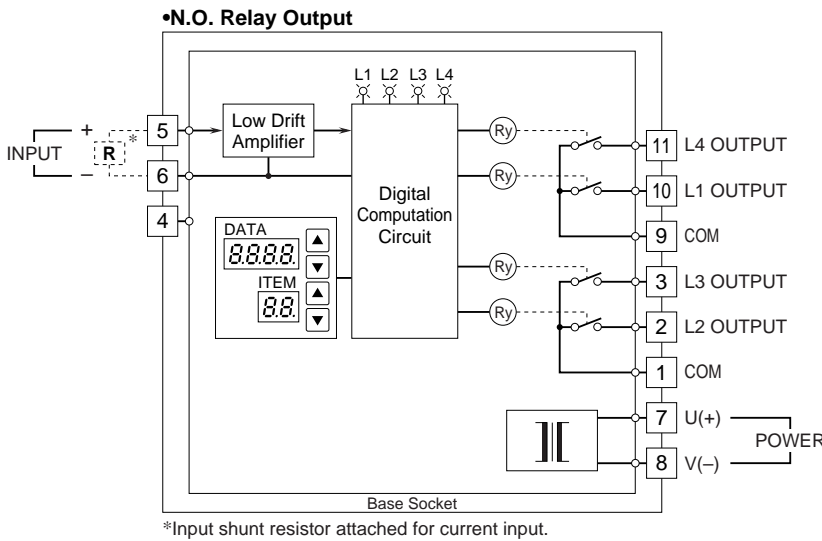
Input to output to power – Basic insulation

Approval: UL/C-UL general safety requirements

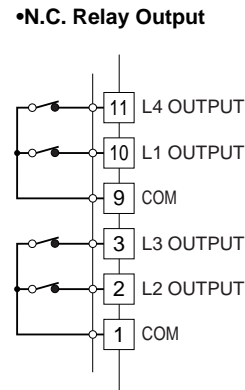
(UL 3111-1, CAN/CSA-C22.2 No.1010-1)

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

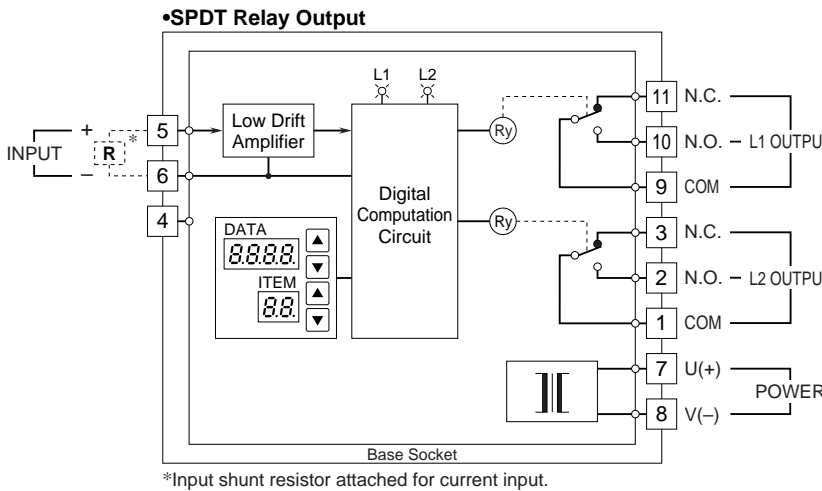
■ OUTPUT SUFFIX CODE: 2



■ OUTPUT SUFFIX CODE: 3

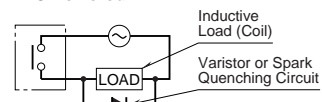


■ OUTPUT SUFFIX CODE: 5

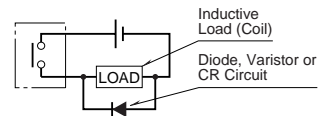


■Relay Protection

•AC Powered



•DC Powered

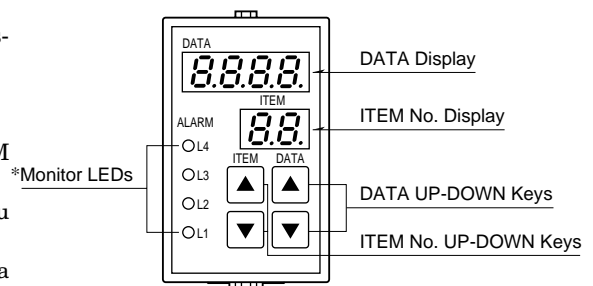


FRONT PANEL CONFIGURATION & PROGRAMMING

■PROGRAMMING PROCEDURE

- Press ITEM UP or DOWN key until ITEM display indicates "01".
- 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.
- Press ITEM UP or DOWN key until ITEM display shows the ITEM No. you need to change.
- Press DATA UP or DOWN key and choose a DATA No. or value you need on DATA display.
- Repeat above 3 and 4. (Entered data is stored when you move to a new ITEM.)
- Press ITEM UP or DOWN key until ITEM display indicates "01".
- Press DATA UP or DOWN key and choose "0" on the display.
- 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	-1999 – 9999	Process input display in engineering unit (as set in ITEM 07/08)	—
L1	1, 2	-1999 – 9999	L1 alarm setpoint in engineering unit	Quad: 20.0 Dual: 20.0
L2	1, 2	-1999 – 9999	L2 alarm setpoint in engineering unit	Quad: 30.0 Dual: 80.0
L3	1, 2	-1999 – 9999	L3 alarm setpoint in engineering unit *1	Quad: 70.0
L4	1, 2	-1999 – 9999	L4 alarm setpoint in engineering unit *1	Quad: 80.0
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	0, 1, 4	Input range 0: S1, 1: S2, 4: Z1	Specified when ordering
04	N/A	-15.0 – 115.0	Input indicated in % (as set in ITEM27, 28)	—
05	2	-19.99 – 99.99	Zero adjustment (%) (fine adj. of the value set in ITEM 27)	0.00
06	2	0.000 – 9.999	Gain adjustment (fine adj. of the value set in ITEM 28)	1.000
07	2	-1999 – 9999	Display range scaling 0% *2	0.0
08	2	-1999 – 9999	Display range scaling 100% *2	100.0
09	2	0, 1, 2, 3	Decimal point position 0 : _ _ _ _ (Specify the number of 1 : _ _ _ . _ digits 2 : _ _ . _ _ 3 : _ . _ _ _)	1
10	2	0 – 99	Power ON-delay time (seconds)	5
11	2	0 – 999	Alarm ON-delay time (seconds)	0
12	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
13	2	0, 1	L1 trip operation (0: Lo, 1: Hi)	Quad: 0 Dual: 0
14	2	0, 1	L2 trip operation (0: Lo, 1: Hi)	Quad: 0 Dual: 1
15	2	0, 1	L3 trip operation (0: Lo, 1: Hi) *1	Quad: 1
16	2	0, 1	L4 trip operation (0: Lo, 1: Hi) *1	Quad: 1
17	2	0, 1 – 60	Power-saving mode 0: Continuous display 1 – 60: Time before display turned off (minutes)	10
18	2	0, 1	L1 coil at alarm (0: Energized, 1: De-energized)	0
19	2	0, 1	L2 coil at alarm (0: Energized, 1: De-energized)	0
20	2	0, 1	L3 coil at alarm (0: Energized, 1: De-energized) *1	0
21	2	0, 1	L4 coil at alarm (0: Energized, 1: De-energized) *1	0
22	N/A	—	Version No. indication	—
23	2	1 – 9999	L1 hysteresis (deadband) in engineering unit	1.0
24	2	1 – 9999	L2 hysteresis (deadband) in engineering unit	1.0
25	2	1 – 9999	L3 hysteresis (deadband) in engineering unit	1.0
26	2	1 – 9999	L4 hysteresis (deadband) in engineering unit	1.0
27	2	S2: -10.0 – 10.0*3	0% input voltage/current (ITEM 27 < ITEM 28)	S1: -1.00V, S2: -10.0V, Z1: 4.0mA
28	2	S2: -10.0 – 10.0*3	100% input voltage/current (ITEM 27 < ITEM 28)	S1: 1.00V, S2: 10.0V, Z2: 20.0mA
29	2	0, 1	Latching control (0: Disabled, 1: Enabled) Selecting “0” resets latching relays. Turning power supply off also resets them.	0
30	—	0000 – 1111	Coil status indication (0: De-energized, 1: Energized) The MSD indicates the L1, while the LSD indicates the L4.	—

*1: Quad alarm trip type only

*2: Of the range set in ITEM 05/06. ITEM 07 < ITEM 08.

*3: S1-1.00 – 1.00, Z1: 0.0 – 50.0