

## Dual Output Plug-in Signal Conditioners W-UNIT

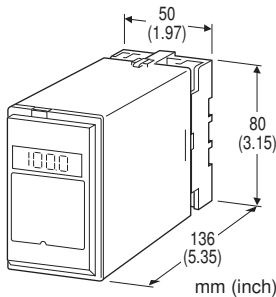
### ANALOG SUBTRACTOR

#### Functions & Features

- Receives 2 analog signals and outputs signal proportional to their difference
- DC isolation between input and output
- Dielectric strength of 2000 V AC between input and output
- LCD meter indicates subtracted values
- High-density mounting

#### Typical Applications

- Computing differences of two temp., flows, etc.
- DC input transmitter for a power installation (dielectric strength 2000 V AC, 110V DC power)



## MODEL: WSBS-[1][2][3]-[4][5]

### ORDERING INFORMATION

- Code number: WSBS-[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5]. (e.g. WSBS-6A6-B/E/Q)
- Special input and output ranges (For codes Z & 0)
- Parameters (e.g.  $K_1 = 2.00$ ,  $K_2 = 0.10$ )
- Specify the specification for option code /Q (e.g. /C01/S01)

Note: When the user requires a current and a voltage output, specify the current to be the Output 1 which allows a greater load.

### [1] INPUT

#### Voltage

- 1: 0 - 10 mV DC (Input resistance 10 k $\Omega$  min.)
- 15: 0 - 50 mV DC (Input resistance 10 k $\Omega$  min.)
- 16: 0 - 60 mV DC (Input resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Input resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Input resistance 1 M $\Omega$  min.)
- 4: 0 - 10 V DC (Input resistance 1 M $\Omega$  min.)
- 5: 0 - 5 V DC (Input resistance 1 M $\Omega$  min.)
- 6: 1 - 5 V DC (Input resistance 1 M $\Omega$  min.)

4W: -10 - +10 V DC (Input resistance 1 M $\Omega$  min.)

5W: -5 - +5 V DC (Input resistance 1 M $\Omega$  min.)

0: Specify voltage (See INPUT SPECIFICATIONS)

### [2] OUTPUT 1

#### Current

- A: 4 - 20 mA DC (Load resistance 600  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 1200  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 2400  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 600  $\Omega$  max.)
- E: 0 - 16 mA DC (Load resistance 750  $\Omega$  max.)
- F: 0 - 10 mA DC (Load resistance 1200  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 12 k $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

#### Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Load resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Load resistance 1000  $\Omega$  min.)
- 4: 0 - 10 V DC (Load resistance 10 k $\Omega$  min.)
- 5: 0 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 6: 1 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 4W: -10 - +10 V DC (Load resistance 10 k $\Omega$  min.)
- 5W: -5 - +5 V DC (Load resistance 5000  $\Omega$  min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

### [3] OUTPUT 2

#### Current

- A: 4 - 20 mA DC (Load resistance 350  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 700  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 1400  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 350  $\Omega$  max.)
- E: 0 - 16 mA DC (Load resistance 430  $\Omega$  max.)
- F: 0 - 10 mA DC (Load resistance 700  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 7000  $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

#### Voltage

Same range availability as Output 1

**[4] POWER INPUT**

AC Power  
**B:** 100 V AC  
**C:** 110 V AC  
**D:** 115 V AC  
**F:** 120 V AC  
**G:** 200 V AC  
**H:** 220 V AC  
**J:** 240 V AC  
 DC Power  
**S:** 12 V DC  
**R:** 24 V DC  
**V:** 48 V DC  
**P:** 110 V DC

**[5] OPTIONS (multiple selections)**

Subtraction Indicator

**blank:** Without

**/E:** With (0.0 - 100.0 % display)

Other Options

**blank:** none

**/Q:** Option other than the above (specify the specification)

**SPECIFICATIONS OF OPTION: Q (multiple selections)**

COATING (For the detail, refer to our web site.)

**/C01:** Silicone coating

**/C02:** Polyurethane coating

**/C03:** Rubber coating

TERMINAL SCREW MATERIAL

**/S01:** Stainless steel

**GENERAL SPECIFICATIONS**

**Construction:** Plug-in

**Connection:** M3.5 screw terminals

**Screw terminal:** Chromated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input 1 or input 2 to output 1 to output 2 to power

**Overrange output:** Approx. -10 to +120 % at 1 - 5 V

**Zero adjustment:** -5 to +5 % (front)

**Span adjustment:** 95 to 105 % (front)

Adjustable individually for each output 1 and output 2.

**Equation:** Output =  $K_1 \times \text{Input 1} - K_2 \times \text{Input 2}$

( $K_1 \times \text{Input 1} > K_2 \times \text{Input 2}$ )

$K_1, K_2$ : 0.10 - 2.00 (parameters)

Output, Input 1  $\times K_1$ , Input 2  $\times K_2$ : 0 - 100%

$K_1, K_2$  are ex-factory specified.

■ **DISPLAY (Subtracted values indicator)**

**LCD digital display:** 0.0 - 100.0 % (min. digit 0.1 %)

(No scaling)

**INPUT SPECIFICATIONS**

■ **DC Voltage:** -300 - +300 V DC

**Minimum span:** 3 mV

**Offset:** Max. 1.5 times span

**Input resistance**

Span 3 - 10 mV :  $\geq 10 \text{ k}\Omega$

Span 10 - 100 mV :  $\geq 10 \text{ k}\Omega$

Span 0.1 - 1 V :  $\geq 100 \text{ k}\Omega$

Span  $\geq 1 \text{ V}$  :  $\geq 1 \text{ M}\Omega$

**OUTPUT SPECIFICATIONS**

■ **DC Current:** 0 - 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 12 V max. for Output 1;  
7 V max. for Output 2

■ **DC Voltage:** -10 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max. at  $\geq 0.5 \text{ V}$

**INSTALLATION**

**Power input**

•**AC:** Operational voltage range: rating  $\pm 10 \%$ ,  
50/60  $\pm 2 \text{ Hz}$ , approx. 3 VA

•**DC:** Operational voltage range: rating  $\pm 10 \%$ ,  
or 85 - 150 V for 110 V rating, ripple 10 %p-p max.,  
approx. 3 W (125 mA at 24 V)

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

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

**Mounting:** Surface or DIN rail

**Weight:** 400 g (0.88 lb)

**PERFORMANCE in percentage of span**

**Accuracy:**  $\pm 0.2 \%$  ( $\pm 0.4 \%$  at  $K_1$  and/or  $K_2 > 1.00$ )

**Display accuracy:**  $\pm (0.2 \%$  of FS + 1 digit)

$\pm (0.4 \%$  of FS + 1 digit) at  $K_1$  and/or  $K_2 > 1.00$

**Temp. coefficient:**  $\pm 0.015 \%$ /°C ( $\pm 0.008 \%$ /°F)

**Response time:**  $\leq 0.5 \text{ sec.}$  (0 - 90 %)

**Line voltage effect:**  $\pm 0.1 \%$  over voltage range

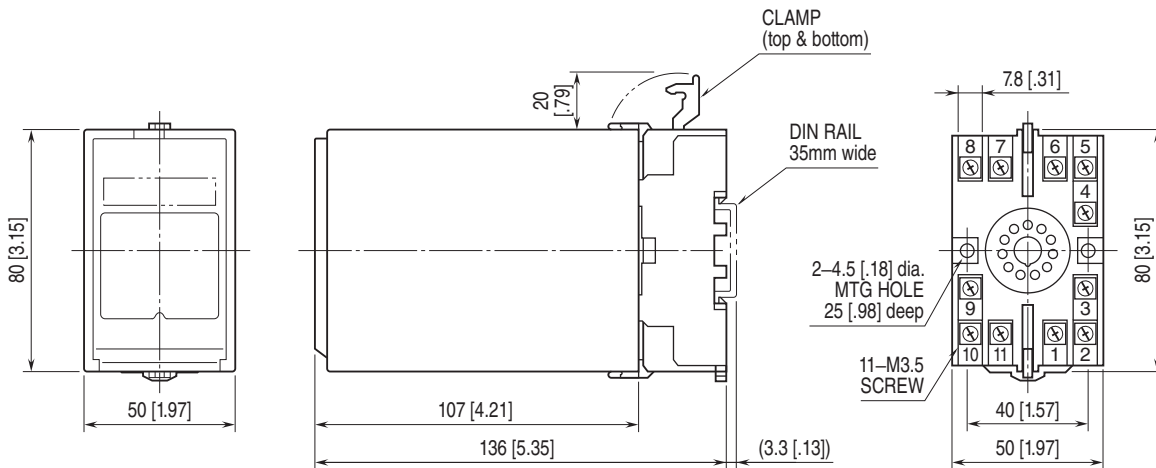
**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

**Dielectric strength:** 2000 V AC @ 1 minute

(input to output to power to ground)

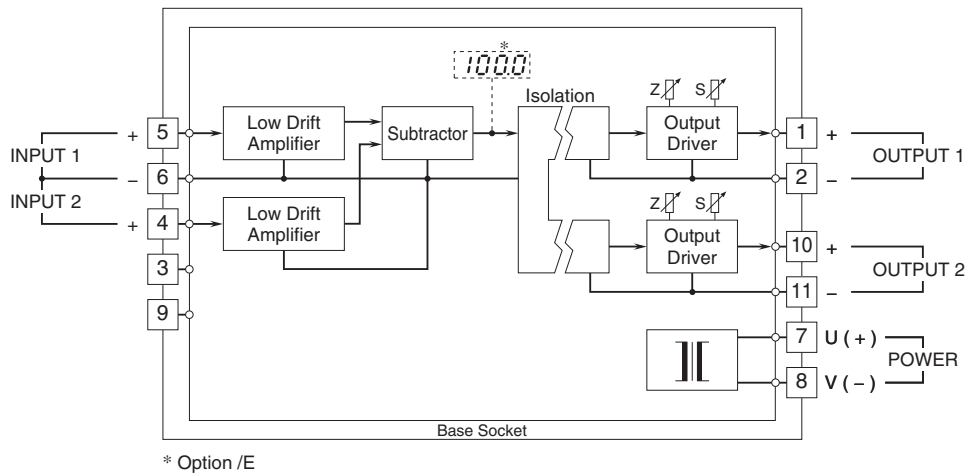
1000 V AC @ 1 minute (output 1 to output 2)

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.