DC/AC/Potentiometer Input Board Part Locations

Solder Jumpers (top to bottom: SB3, SB4 & SB5)

Zero Adjustment

J23

Span Adjustment
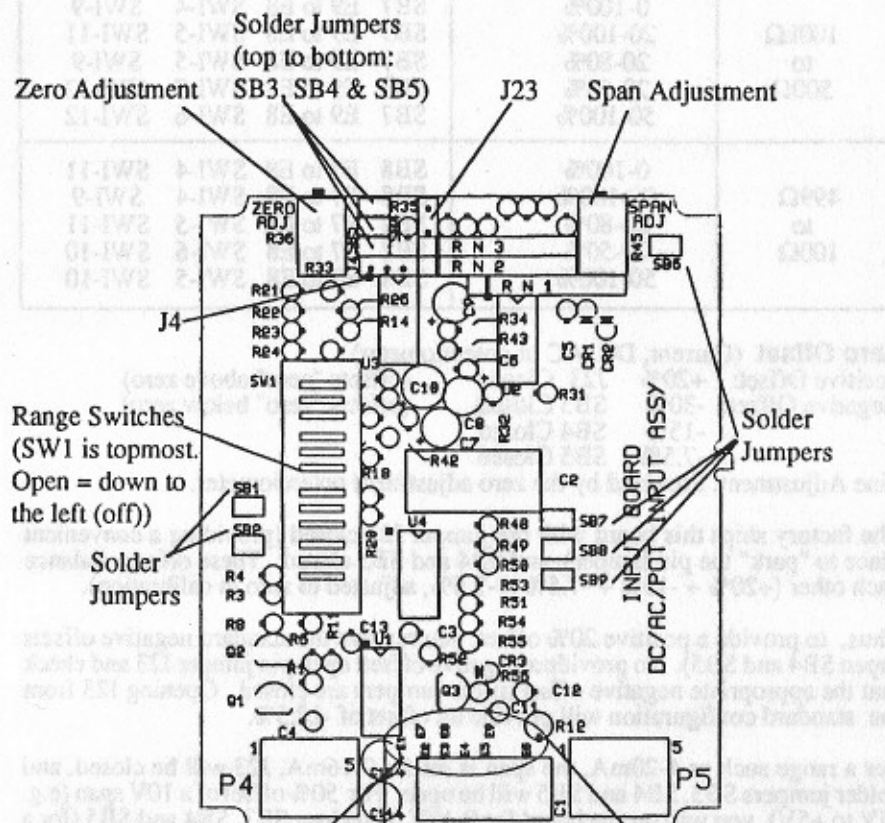
Range Switches (SW1 is topmost. Open = down to the left (off))

Solder Jumpers

Solder Jumpers

J4

Pin Jumpers (pins E1 through E9)

Pin Jumpers set for standard factory setup (which is 0—10VDC). Note that E8 is not connected to E7 or E9 and that the pin jumper is shown "parked" on E7—a convenient place to leave the jumper when not in use without risk of losing it.

Specifications

Stability (% of span/°C): 0.025   *Linearity (% of span):* 0.05 (DC), 0.2 (AC)
Repeatability (% of span): 0.05   *Response Time:* 300ms (DC), <1s (AC)

Voltage
Minimum Span: 100mV   *Maximum Full Scale Input:* 300V
Input Impedance: >1MΩ

Current
Minimum Span: 1mA   *Maximum Full Scale Input:* 100mA
Input Impedance: 10Ω

DC
Bi-polar Inputs: ±50mVDC to ±150VDC
Current Inputs >100mA to 5A: use P/N SR006 (0.1Ω shunt resistor)

AC
40Hz to 1kHz
Current Inputs >1A to 5A: use P/N SR006 (0.1Ω shunt resistor)

Potentiometer
Minimum Span: 20%   *Maximum Full Scale Span:* 0-100%
Stability (% of span/°C): 0.02   *Linearity (%of span):* 0.05
Repeatability (%of span): 0.05   *Response Time:* 100ms
Inputs: Any potentiometer from 0-100Ω to 0-100kΩ

For general specifications, see the Series 8000 manual which came with this unit.

Setup Procedure

Set all range switches to OFF prior to beginning setup. See page 01-4 for part locations and switch position information.

I. Disassemble the unit as described on page 6 of the Series 8000 manual.
II. Remove the DC/AC/Potentiometer Board.
III. Select the needed configuration and follow the setup instructions on pages 01-1 through 01-3.
IV. Calibrate the unit as described on page 01-3.
V. Reassemble the unit as described in the Series 8000 manual, pages 4 to 6.

Setup Instructions

Select Input Type

DC Setup (voltage/current)   The following pin jumpers must be set for DC input: E1 to E2, E3 to E4, and E5 to E6. J4 must be in the following configuration:
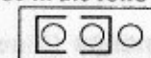
AC Setup (voltage/current)   The following pin jumpers must be set for AC input: E2 to E3 and E4 to E5. J4 must be in the following configuration:
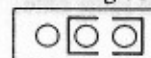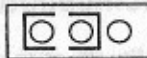
For use on Input board # 2800-5400

Potentiometer Setup

The following pin jumpers <u>must</u> be set for <u>all</u> potentiometer inputs: E1 to E2, E3 to E4, and E5 to E6. Pin jumper J4 must be in the following configuration:

For potentiometers of 500Ω to 100kΩ, also close SB7
For potentiometers of 100Ω to 499Ω, also close SB8

Range Selection

1. Determine input span (Span = Input$_{max}$ — Input$_{min}$). For potentiometer inputs, use percentage of potentiometer figures (i.e. Span = 80% - 20% = 60%).
2. Set the range switches (as noted in the tables) associated with your input span..
3. For current operation, set the Input Shunt Resistance.
4. Set Zero Offset.

Voltage

AC or DC Input Span	Range Switch Closures		
0.1V	E7 to E8,	SWI-7,	SWI-11
0.15V	E7 to E8,	SWI-6,	SWI-10
0.2V	E7 to E8,	SWI-5,	SWI-8
0.25V	E7 to E8,	SWI-5,	SWI-10
0.5V	E7 to E8,	SWI-4,	SWI-11
1.0V	E7 to E8,	SWI-3,	SWI-12
2.0V	E9 to E8,	SWI-5,	SWI-10
5.0V	E9 to E8,	SWI-3,	SWI-8
10V	SWI-1,	SWI-6,	SWI-12
20V	SWI-1,	SWI-4,	SWI-9
50V	SWI-2,	SWI-6,	SWI-9
100V	SWI-2,	SWI-5,	SWI-10
110V	SWI-2,	SWI-5,	SWI-11
120V	SWI-2,	SWI-5,	SWI-12
150V	SWI-2,	SWI-4,	SWI-9
220V	SWI-2,	SWI-4,	SWI-12
240V	SWI-2,	SWI-3,	SWI-8
300V	SWI-2,	SWI-3,	SWI-10

Current

AC or DC Input Span	Input Shunt (Closed SB)	Range Switch Closures		
1mA	SB2	E7 to E8,	SWI-7,	SWI-11
10mA	SB1	E7 to E8,	SWI-7,	SWI-11
12mA	SB1	E7 to E8,	SWI-6,	SWI-8
16mA	SB1	E7 to E8,	SWI-6,	SWI-10
20mA	SB1	E7 to E8,	SWI-5,	SWI-8
40mA	SB1	E7 to E8,	SWI-4,	SWI-9
50mA	SB1	E7 to E8,	SWI-4,	SWI-11
100mA	SB1	E9 to E8,	SWI-6,	SWI-8

Input Shunt Resistance (current inputs only)

Note: Ensure SB1 and SB2 are open when using voltage or potentiometer inputs. For current, SB1 is closed for 10Ω use and SB2 for 100Ω. Both jumpers should <u>never</u> be closed at the same time.

Potentiometer

Potentiometer Value	Potentiometer Range (% of Pot Use)	Switch & Jumper Settings			
100kΩ to 500Ω	0-100%	SB7	E9 to E8	SWI-4	SWI-9
	20-100%	SB7	E9 to E8	SWI-5	SWI-11
	20-80%	SB7	E9 to E8	SWI-5	SWI-9
	20-50%	SB7	E9 to E8	SWI-7	SWI-12
	50-100%	SB7	E9 to E8	SWI-6	SWI-12
499Ω to 100Ω	0-100%	SB8	E7 to E8	SWI-4	SWI-11
	20-100%	SB8	E7 to E8	SWI-4	SWI-9
	20-80%	SB8	E7 to E8	SWI-5	SWI-11
	20-50%	SB8	E7 to E8	SWI-6	SWI-10
	50-100%	SB8	E7 to E8	SWI-5	SWI-10

Zero Offset (Current, DC, AC or potentiometer)

Positive Offset: +20% J23 Closed (offsets "zero" above zero)
Negative Offset: -30% SB3 Closed (offsets "zero" below zero)
           -15% SB4 Closed
           -7.5% SB5 Closed

Fine Adjustment: Provided by the zero adjustment potentiometer.

The factory ships this board with pin jumper J23 closed (providing a convenient place to "park" the pin jumper), and SB4 and SB5 closed. These offsets balance each other (+20% + -15% + -7.5% = -2.5%, adjusted to zero in calibration).

Thus, to provide a positive 20% offset, you remove the standard negative offsets (open SB4 and SB5). To provide a negative offset, open pin jumper J23 and check that the appropriate negative offset solder jumpers are closed. Opening J23 from the standard configuration will provide an offset of -22.5%.

For a range such as 4-20mA, the span is set for 0-16mA, J23 will be closed, and solder jumpers SB3, SB4 and SB5 will be open. For 50% offset of a 10V span (e.g. -5V to +5V), you will set the board for 0-10V, and close SB3, SB4 and SB5 (for a total of -52.5%) using the zero adjustment to back off the offset to -50%.

Calibration

Recalibration is required any time the range setting or input type is changed.

<u>Required Equipment</u>
• 3 1/2 digit DMM with a resolution of 1mV or better
• Calibration source for DC, AC or Potentiometer

<u>Initial Calibration</u>
1. Set input to maximum (DC, AC or Potentiometer)
2. Adjust the span adjustment to achieve maximum required output
3. Set input to minimum (DC, AC or Potentiometer)
4. Adjust zero adjustment (R33) until you get the required zero output
5. Repeat the above procedure to fine tune the zero and span settings.

Note: check SB6 . Its normal setting is <u>closed</u>, and output from the board of 1.00V to 1.18V. In some cases, a board output between 1.15V to 1.33V may be needed, in which case SB6 must be open.