## Specifications

| | |
|---|---|
| *Selectable (Root or Power):* | 1 through 5 (±0.5 adjustment) |
| *Accuracy:* | Includes linearity, zero & span drift and offset zero |
| | Root or Power: 0.5 through 2.5: 0.25% |
| | 2.5 through 5.5: 0.5% |

| | | | |
|---|---|---|---|
| *Stability:* | 0.05%/°C | *Repeatability:* | ±0.1% FS |
| *Response Time:* | 100ms | *Input Impedance:* | >100kΩ |

*For general Series 8000 specifications, see the Series 8000 manual, which provides general information for the entire series.*

## Setup Procedure

I.   Disassemble the Series 8000 unit as described on page 6 of the main manual
II.  Remove the Power Term/N$^{th}$ Root Function Board.
III. Setup the board  as described below.
IV.  Calibrate (adjust) to provide maximum accuracy for your purpose.
V.   Reassemble the unit as described in the main manual, pages 4 to 6.

## Setup Instructions

### Select Function (Power (A$^{Nth}$) or Root ($^{N}\sqrt{A}$) )

Determine whether you will be using the Power or Root function.  Set the appropriate pin jumpers for that function as shown below (see page    -3 for pin locations):

#### Function Selection Chart

| | Closed | Open |
|---|---|---|
| **Power:** | E11-E12, E14-E15 | E12-E13, E15-E16 |
| **Root:** | E12-E13, E15-E16 | E11-E12, E14-E15 |

### Select Value of Power/Root

Select the value you wish to use and set the pin jumpers as shown below (if using a non-integral value, select the closest value):

#### Power/Root Value Chart

| Power/Root Value | Pin Jumper Settings | |
|---|---|---|
| | Closed | Open |
| 1 | E1-E2 | E3-E4, E5-E6, E7-E8, E9-E10 |
| 2 | E3-E4 | E1-E2, E5-E6, E7-E8, E9-E10 |
| 3 | E5-E6 | E1-E2, E3-E4, E7-E8, E9-E10 |
| 4 | E7-E8 | E1-E2, E3-E4, E5-E6, E9-E10 |
| 5 | E9-E10 | E1-E2, E3-E4, E5-E6, E7-E8 |

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## Setting Non-Integer Power/Root Values

Having set the pin jumpers for the closest integer value to your value, use the adjustment potentiometer to select the precise value that you require (i.e. if you need the power of 1.41, you set the pin jumpers for the power of one, and adjust the potentiometer, checking the unit output until you get a reading showing that you have set the value you need).

*Note that zero is not a valid input. The board will not return a valid signal for such an input.*

*Note also that the stated accuracy of the board is limited to a 20:1 ratio from greatest to least value in the output span. For example, with the top of the span being 1.00V, the least value available for which the stated accuracy is reliable is 50mV.*

## Calculating Expected Outputs

*Note that all inputs are internally normalized to a 0-1V range, regardless of your actual input range 0-10V, 4-20mA, etc.). Thus if you are using a 0-10V input range, your maximum input will correspond to 1V.*

Example: Square Root, Input Range: 0 to 5V
Input = 5V; this is normalized to 1V (maximum input), the square root of 1 is 1—unit output will be maximum.
Input = 2V; normalized to 0.4V, the square root of 0.4 is 0.632—unit output will be 63% of maximum.

## Calibration

Step 1. Apply full input, and check that the unit provides the full output value. Adjust the span potentiometer to set the full output if needed.

Step 2. Calculate 30% of your input range (e.g. 0-10V input range, 30% = 3V) Set your input to that value.

Step 3. Set the R10 potentiometer to adjust the output value to match your calculation.

If the voltage output to the output card called for needs to be 1.33V, open solder jumper SB1. Otherwise, it should remain closed (the standard setting), providing a maximum output value from the function board of 1.0V.

## Power Term/Nth Root Function Board Part Locations