

**Pressure Points** is a controller in which 1 of 4 sets of 3 tuned voltages are selected by touching the corresponding printed copper wire at the bottom of the instrument. Touching Pressure Points, you become part of the circuit, generating a gate signal (Gate Out), a control signal proportional to the amount of pressure applied (Press Out) and activating the corresponding Stage. The Tuned Voltages for the activated Stage appear at their respective X, Y and Z Outs. In this way, Pressure Points is like an analog sequencer that is played by hand.

2 pots allow the circuit to be adjusted for desired playing response. Up to 4 of these modules may be chained together to create controllers of varying size and complexity. The Gate and Press Outs are normalized to their respective Combined bus which is output at the last Gate or Press Out in the chain. In addition, stages can also be selected via clock inputs with the separately purchased expander module, **Brains**.

**PRESSURE OUTS:** Unipolar CV Outputs 1, 2, 3, and 4. Sends out a CV signal based on the pressure applied to the corresponding touch plate. Pressure Outputs are displayed using yellow output arrows on Pressure Points.

**ACTIVE STAGE LEDs:** Lights yellow to indicate which stage (1, 2, 3, or 4) is currently active.

**TUNED VOLTAGE ROTARIES:** The top row is Tuned Voltage row X, the middle row is Y, and the bottom row is Z. X range: 0V to 8V. Y & Z range: 0V to 5.5V.

**TOUCH PLATES:** Touch Plates 1, 2, 3, & 4. Pressure Points requires the development of a technique, and clean, bare hands. Touching the upper-most portion of the touchplate with as little of your finger as needed to activate the circuit, will generate simultaneous Pressure and Gate signals, which are sent to the Outs at the top of the associated vertical column. Also, the three Tuned Voltages X, Y, & Z (as set by the column's Tuned Voltage rotaries), found in the middle of the module, are sent out to their corresponding Outs on the module's left side. Each time a Touch Plate is pressed, 5 signals are simultaneously sent out to control other parameters in your system: Pressure, Gate, and 3 Tuned Voltages.

Laying more of your finger down on the touchplate, and pressing harder, will generate a pressure control voltage proportional to amount flesh mashed into the copper of the touchplate. Pressing harder, more of your flesh comes into contact with a sensitive point in the circuit.

**GATE OUTS:** Gate Outputs 1, 2, 3, and 4. Sends out a high gate signal when the corresponding touch plate is pressed, and stays high until a new touch plate is pressed (a new "stage" is enabled). Gate Outputs are displayed using white output arrows on Pressure Points. Only one is referenced here (Gate Out 4).

**TUNED VOLTAGE OUTS:** Each row of Tuned Voltages has a corresponding CV Output that that can be sent to other CV inputs in your system. When a "stage" is enabled with Pressure Points by pressing a touch plate, the corresponding vertical column of Tuned Voltages are simultaneously sent out to all 3 CV Outputs.

**TOUCH SENSITIVITY POTENTIOMETER:** Set the Touch Sensitivity Adjustment Potentiometer further CCW when you want coarser Touch Plate response (less sensitive to the touch). Set it CW when you want finer Touch Plate response (more sensitive to the touch).

**DIGITAL TRIMMER:** If you cannot obtain the desired response, you might need to adjust the internal Digit Trimmer to compensate for size & moisture of your fingers, as well as playing technique and style of system setup (vertical, horizontal, angled). This requires a trimmer tool or jeweler's screwdriver, and access to the module from the right side, where the Digit Trimmer is located on the circuit board.

Always turn the power for Pressure Points off while adjusting the trimmer. Default setting is 40% CW. CCW = less sensitivity. CW = more sensitivity. You will need to experiment with settings to achieve the desired playing response.

**Brains** is a clocked sequential binary event machine, intended to be connected to tactile controllers such as the Pressure Points. as an expansion module. Once connected, Pressure Points provides data input to Brains in the form of touch-selectable Reset stage and Hold stage. Pressure Points also provides the tuned voltages and pulses per stage. Brains, when connected to either 1 or 2 Pressure Points, will drive the stage selection in a sequential fashion, at a rate determined by the incoming clock at Clock In, thus forming a 4-Step or 8-Step, 3-channel analog sequencer. Binary control over Direction of the stage selection, Run/Stop and Reset are provided.



**CLOCK IN:** Selects next stage or number to be counted on rising edge of clock, gate, pulse or trigger, of at least 1V. Patch here to sequence.

**RESET IN:** Jumps to last touched stage on rising edge of clock, gate, pulse or trigger, of at least 1V. Use this input to control when the sequence is reset to the start or beginning of the sequence.

**RUN IN:** Gate or logic high (of at least 1V) will tell Brains to count, and thus run gate. Gate or logic low (below 1V) will stop Brains. Use this input to control when the sequence is turned on or turned off.

**DIRECTION IN:** Gate or logic high (of at least 1V) tells Brains to count forward. Gate or logic low (below 1V) tells Brains to count backward. Use this input to control the forward / backward movement of the sequence.

**TOUCH-GATE OUT:** Generates gate high, 10V, when any Touch Plate on a connected Pressure Points is touched.

**TOUCH-CLOCK IN:** Secondary clock activated when Pressure Points is touched. This input serves a dual purpose. Used without a Master Clock applied to the Clock In, events initiated by touching Pressure Points will be quantized to the timing signal applied to the Touch-Clock In. When used along with the Clock In, a secondary sequence will be initiated whenever Pressure Points is touched, where the length and timing is determined by the relationship of the Touch-Clock to the Master Clock. Also, patching a dummy cable into this input breaks the connection between the Pressure Points Touch Plates and the sequence (stage) selection. In other words, the Pressure Output from the Touch Plates are independent of the stage sequence, and thus, independent of the Gate Output and Tuned Voltage Outputs.

### Pressure Points Tips & Tricks

- The top row of Tuned Voltages range 0 to +8V, and may be used to generate gate signals, where full CCW is Gate Off and full CW is Gate On.
- Process the Pressure CV Signal with a slew limiter and attenuator on Channels 1 or 4 of **Maths** to achieve larger than life modulations.
- Achieve a "Latched," "Toggled," or "Switching" CV signal, use two stages of Pressure Points, where one has a tuned voltage set to 0V (toggled Off), and the other has a Tuned Voltage set to the desired On state (+8V, or full CW, for example). Touch one stage to turn On, and the other to turn Off.
- Use for preset storage, where you have 4 presets of 3 variables in a patch; variables being set by Tuned Voltages X, Y & Z. Additional variation is preset by applying the independent Press and/ or Gate signals from each stage to different patch points. If the Gate is not needed to initiate an event, apply it to a patch point via an Attenuator, and use it as a touch-controlled momentary modulation.
- All Tuned Voltage and Press CV Outs will drive a passive 4-way mult with no loading.
- All Gate Outs may be stacked to one Gate In for Gate mixing.