Sense can convert and amplify asignal from almost any type of analog sensor into control voltage and gate signals. You can use sensors with variable resistance (light dependent resistors, body contacts, water contacts etc.) or sensors that already output voltage (pulse sensor, accelerometer, inductors, piezo etc.) amplify them and calibrate them in the way to have suitable control voltage and gate output signals.

connecting the sensor

❶

Select whether the signal is voltage (V) or resistance (Ω) based and use an appropriate input for the signal.

❷

If you are using very low amplitude voltage (V) signal (such as an inductor to pick up an electromagnetic field), put the pre-amp switch into the upper position to increase the input gain by 50. Note: The pre-amp stage is AC coupled and inverting so if you want non-inverted signal output use the "- CV OUT" output.

❸

If you are using any a dedicated (Arduino based) analog sensor, you can use the mini pin-header patchbay to plug your sensor to the required driving voltage and connect its output to the (V) IN voltage input pin on the patch bay. See the instructions of the specific sensor for more details. The (V) IN of the patch bay is normalised to the (V) IN mono-jack connector.

❹

If you are using a resistance based sensor hooked up to a mono-jack cable, this input is simply the two poles of the resistance based sensor.

❺

Select a pullup resistance similar to the resistance of your sensor. The closer the sensor resistance to the pullup resistor, the easier it is to calibrate and gain a useful signal. Just try different settings which work best for you.

controls and outputs

❻

The Gain knob adjusts how much gain is applied to the input.

❼

The Clipping LEDs show you whether the signal is amplified too much and the signal is clipping.

❽

The AC / DC switch selects whether the input is AC or DC coupled. To simplify it: use AC if you are picking up signals at audio rate. Use DC coupling for slower signals.

❾

The Offset knob sets the voltage offset applied to the signal. When the AC / DC switch is in the DC position the offset is added before the gain stage. If the AC/DC switch is in the AC position the offset is added after the gain stage (see calibration).

❿

The CV OUTs output the amplified and offseted signal. "CV OUT +" is the non-inverted and "CV OUT -" is the inverted version of the signal.

⓫

The Threshold knob sets a voltage threshold for a comparator that outputs gate signals.

⓬

The Threshold LEDs indicate a Gate signal. They are also very useful for calibration.

⓭

"Gate OUT +" outputs a gate when the positive signal is above the threshold set by the threshold knob. "Gate OUT -" outputs a gate when the positive signal is below the threshold.

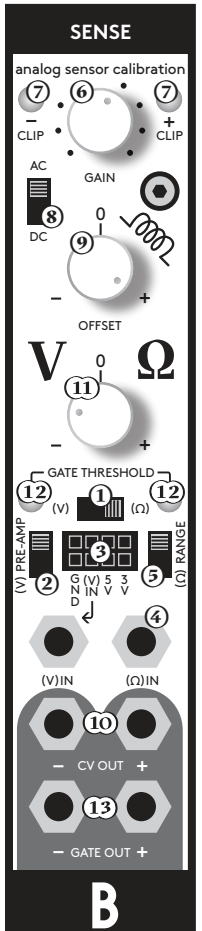
fatures

- voltage and resistance inputs
- pin header patchbay for connecting Arduino compatible sensors (5V or 3V)
- resistance range switch
- pre-amp for voltage sensors
- gain knob with clipping indicator
- voltage offset (positive or negative)
- AC or DC coupling for gain stage
- threshold for gate outputs
- CV output and inverted CV output
- GATE output and inverted GATE output

technical details

- 5HP
- PTC fuse and diode protected 10 pin power connector
- 50mm deep
- current +12: <35mA, -12: <25 mA (can be affected by the actual current draw of the sensor used)

ANALOG SENSOR CALIBRATION MODULE B



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Sense

Calibration

The point of the calibration is to amplify the part of the signal that contains useful information.
For example, let's say you are using the resistance input and most of the interesting signal is floating somewhere around +3 volts. The aim of the calibration is to shift the signal (down) and amplify the interesting signal variations around 3 volts.

DC calibration

The following procedure is valid for the AD/DC switch in the DC position. In this position the voltage offset is added before the gain stage which gives you the possibility to amplify the signal which is already affected by the offset knob.

(a) Turn the offset and threshold knobs to their middle positions and the gain knob to the full left position.

(b) Turn the offset knob to a position where the threshold LEDs start to change. This will make the signal float around ground which is what we want, because the gain stage works best with a signal floating around ground.

(c) Turn the gain knob a little bit and re-adjust the offset knob so the signal floats around ground again. Keep doing this until your signal is amplified enough.

(d) If the CLIP LEDs start to light up it means you are amplifying the signal a bit too much and it is being clipped. In that case turn the gain a little bit down or adjust the offset in a way that the clipping doesn't occur.

AC calibration

If you are using the AC/DC switch in AC position, the offset is added after the gain stage. The AC position means that there is a capacitor in front of the gain stage which removes the DC offset automatically and lets your signal float around the ground. When using the AC method simply put the offset and threshold knobs to their middle positions and adjust the gain. Use the offset knob only if you need the signal to be shifted afterwards.
After your signal is calibrated, adjust the threshold knob to get the gate signals you desire.

connecting module to your system

Be
di ct your system from power !

Double check the polarity of the ribbon cable and that it is not shifted in any direction. The red cable should be attached to the -12V rail, both on the module and on the bus board side!

please make sure of the following

- you have a standard pinout eurorack bus board
- you have +12 and -12 power rails on that bus board
- the power rails are not overloaded

Although we put protection circuits in the device, we do not take any responsibility for damages caused by wrong power supply connection.
After you connected everything, double checked it and closed your system so no power lines can be touched by your hand, turn on your system and test the module.

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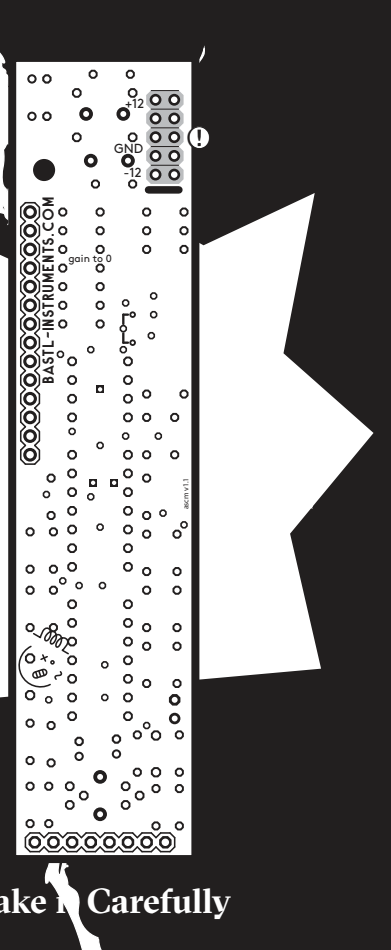

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Take it Carefully