The Parameters of the 512

The 512 is a module containing two VCO (Voltage Controlled Oscillator) units that have the same parameters.

PW (Pulse width control)

Specifies the pulse width (the ratio between the upper and lower portions of the pulse wave).

* To produce a square wave (symmetrical pulse wave), set the slider to 50%.

PW MOD (Pulse width modulation control)

Adjusts the depth of pulse width modulation based on the voltage that is input from the PW IN jack.
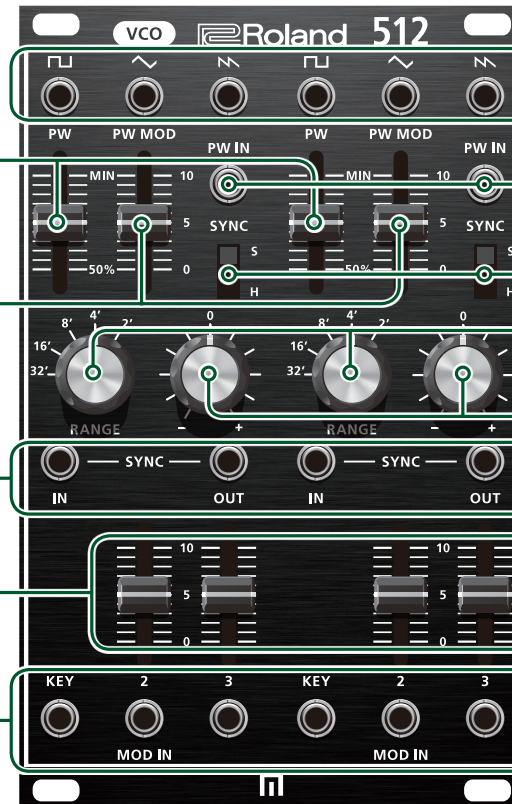
SYNC IN/OUT

These jacks input or output synchronization signals.

Attenuator for CV input 2/ 3.

Adjust the level of the voltage that is input from the MOD IN 2/3 jacks.

MOD IN KEY/2/3

These jacks input voltages that control the VCO.

VCO OUT

These jacks output the signal from each VCO (pulse wave, triangle wave, sawtooth wave).

PW IN (Pulse width IN)

This jack inputs a voltage used to control the pulse width (PWM) from an external source.

SYNC

Switches the accuracy of synchronization (S: Soft, H: Hard).

RANGE

Switches the pitch range of the VCO.

You can switch the range up or down in one-octave steps in a five-octave range from 32' to 2'.

* If this is set to 8' and a voltage of 2V is applied, the middle C pitch is sounded.

Pitch control

Fine tune adjustment.

About pulse width

A pulse wave in which the upper and lower portions of the waveform have unequal width is called an asymmetrical pulse wave, and the numerical ratio of the upper and lower widths (to be precise, the portion of one cycle occupied by the upper portion) is called the pulse width. The pulse width value significantly changes the overtone structure, modifying the tonal character of the sound.

* If the pulse width is 1/n, the harmonics at multiples of 'n' are missing. For example, if the pulse width is 1/3 (33%), the 3rd, 6th, 9th, . . . harmonics are missing. The technique of using a control voltage (such as LFO or ENV) to control the pulse width is called pulse width modulation (PWM).

About SYNC (synchronization)

SYNC synchronizes the frequency of a VCO with the frequency of another VCO. By synchronizing two VCOs you can create waveforms that cannot be produced by a single VCO.

If the SYNC switch is set to S: Soft, the VCO of the 512 module synchronizes perfectly to the frequency that is input from the SYNC IN jack. If the SYNC switch is set to H: Hard, the VCO of the 512 module synchronizes to integer ratios of that frequency, such as 1/2, 2/3, 3/4, 1/1, 4/3, 3/2, or 2/1.