

1. Introduction

Module **A-115 (DIVIDER)** is a four-way **frequency divider**.

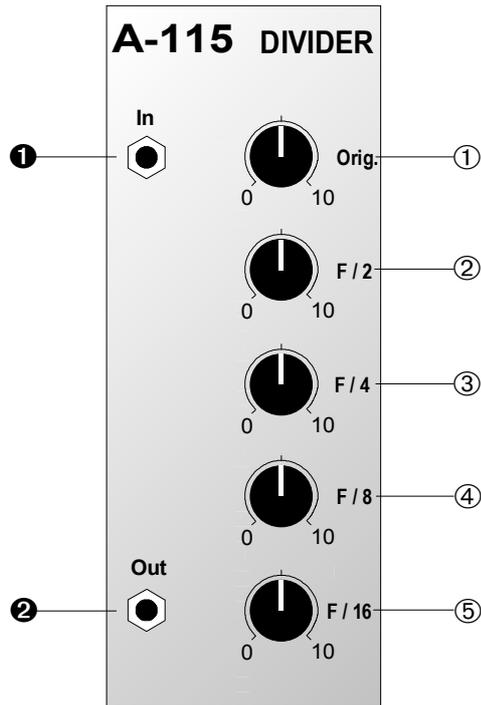
The frequency of a signal at the input is halved (half frequency = first sub-octave), quartered ($1/4$ frequency = second sub-octave), and so on.

In this way, the DIVIDER produces **four sub-octaves** ($F/2$ down to $F/16$).

At the output, the A-115 produces a summed **mix** of the original and the four sub-octaves. There are attenuators to control the amount (ie. **Amplitude**) of the original signal and each of the sub-octaves.

Bear in mind that the sub-octaves output by the A-115 are all true square waves. If you put, eg., a sawtooth into the Divider, it changes it into a square wave before the frequency division takes place (using the Schmitt-Trigger system, if you're interested). At the output, therefore, there are always four square waves and the original signal available.

2. DIVIDER - Overview



Controls:

- ① **Orig :** Attenuator controlling the amount of the original input signal present at the mix output ②
- ② **F / 2 :** Attenuator controlling the amount of the first sub-octave present at the mix output ②
- ③ **F / 4 :** ditto for the second sub-octave
- ④ **F / 8 :** ditto for the third sub-octave
- ⑤ **F / 16 :** ditto for the fourth sub-octave

In / Outputs:

- ① **In :** Signal input
- ② **Out :** Mix signal output

3. Controls

① Orig.

This attenuator controls the **amount of the original input signal** present in the mix output.

② F / 2 ... ⑤ F / 16

These attenuators ② to ⑤ control the **amount of the respective sub-octaves** present in the mix output.

Say your production needs a stronger bass-line: you can add a square wave an octave below the original signal simply by setting attenuators ① and ② to maximum, and attenuators ③ to ⑤ to 0.

4. In / Outputs

① Audio In

Socket ① is the divider's **input**. Connect up the signal whose frequency you wish to divide.

 The divider is basically set up to divide rectangle waveforms. If you put another waveform into the input (for instance a sawtooth) the A-115 will change it into a square wave before dividing it.

② Audio Out

At **output ②** the total mix of the original signal and four sub-octaves (depending on the position of attenuators ① to ⑤) is available.

5. User examples

A-115 as a "frequency generator"

With the A-115, you can start out with a VCO's basic square wave and produce more complex waveforms.

Fig. 1 shows how the A-115 can take a simple square wave and create a new wave form. Turn attenuators ① to ④ up to maximum, and set attenuator ⑤ to 0.

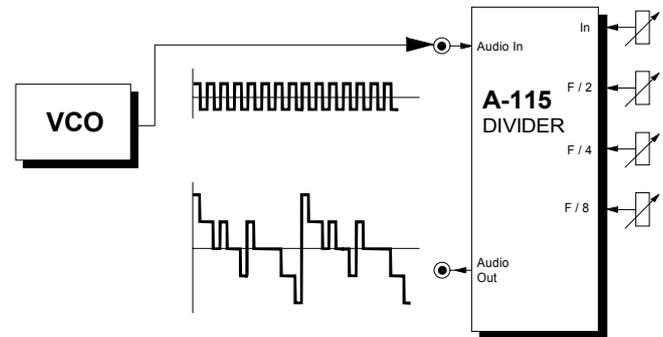


Fig. 1: The A-115 as a frequency generator

Experiment with different level settings for each attenuator, and also with other waveforms (for instance, a square wave modulated by a slow LFO).

Frequency division of external audio

The patch in Fig. 2 shows how the A-115 can frequency-divide an external monophonic signal (such as a vocal, flute, or single-note guitar).

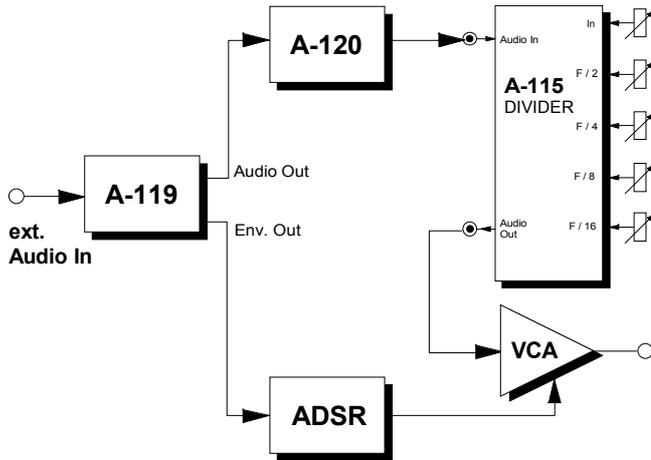


Fig. 2: Frequency division of external audio

The A-119 again has a double task: to bring the external signal up to the level the A-100 needs, so that the divider works properly, and to send voltages to an ADSR. That means that the **Threshold** control must be set relatively high, so that when the signal isn't

gated, there's enough level for the divider to work correctly.

The ADSR controls a VCA, and closes it as soon as the gate shuts down, so that possible glitches (eg. when the sound of a string is dying away), are avoided.



The ADSR's release parameter must be set to Zero.

If you like, you can patch an A-120 low pass filter (not voltage controlled) in before the A-115. This may improve the frequency division.

6. Patch-Sheet

The following diagrams of the module can help you recall your own **Patches**. They're designed so that a complete 19" rack of modules will fit onto an A4 sheet of paper.

Photocopy this page, and cut out the pictures of this and your other modules. You can then stick them onto another piece of paper, and create a diagram of your own system.

Make multiple copies of your composite diagram, and use them for remembering good patches and set-ups.



- Draw in patchleads with colored pens.
- Draw or write control settings in the little white circles.

