Repurpose a VIKINX SDI0106D Distributor as a Reference Frequency Distribution Unit

Matthias, DD1US, June 19th 2025, rev 1.0

Recently I bought second hand a VIKINX SDI0106D Serial Digital Video Distributor 1x6 Dual. It comes in a 19” form factor as it is recommended for studio and broadcast applications. I decided to give it a try as a distribution unit for the 10 MHz reference signals from my GPSDO to the various test equipment I have on my workbench.

Here is a brief datasheet of the unit:

SDI0106D Serial Digital Video Distributor ~ 1x6 Dual

- D1 4:2:2 270Mbps component
- D2 177Mbps PAL composite
- High performance Broadcast quality
- Ultra compact 19" design

The SDI0106D provides two separate 1 to 6 video distribution amplifiers in a single rack space ultra low profile enclosure. Looped inputs allow you to form different configurations. This high performance amplifier in SMD technology allows the digital transparent distribution of D1 and D2 signals. The signal passes the amplifier without any signal processing. The SDI0106D is designed for all distribution purposes in studio, duplication and Broadcast applications.

SPECIFICATIONS

SDI0106D Serial Digital Video Distributor ~ 1x6 Dual

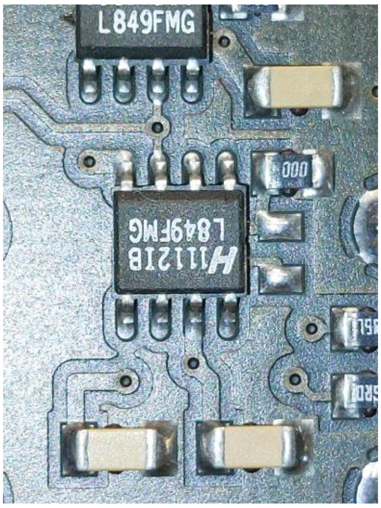
Data rate:	143Mbps - 270Mbps
Min. signal level:	0.25 nom.0.8V
Max. signal level:	4.5V
Number of inputs:	2 looped
Number of outputs:	2x6
Impedance:	75 ohms
Signal processing:	none
Connector:	BNC
AC power:	External power supply 100–260VAC
DC power:	±5V, connector DB9 male
Dimensions:	483x44x40 mm (19", 1RU)

A ±5VDC desktop power supply with IEC mains connector (non-captured) is included in the price.

This unit consists of 2 parts. Each part has a high impedance input port, a loop-through output port and 6 buffered output ports. When not using the loop-through output port it is advised to terminate this port with the characteristic system impedance which is 75 Ohms. The loop-through ports allow an easy cascading of the 2 parts resulting in a 1 to 12 signal distributor. All signal connectors are BNC type.

The unit is normally powered by an external power supply which is connected by a 9 pin SUB-D connector. My unit came without a ±5 V power supply. As I am not using such a dual voltage supply regularly on my workbench, I decided to modify the unit and integrate a DC/DC converter which takes +12 V at its input and delivers +5 V and -5 V at its outputs. The current consumption of the SDI0106D is +5 V, 76 mA and -5 V,

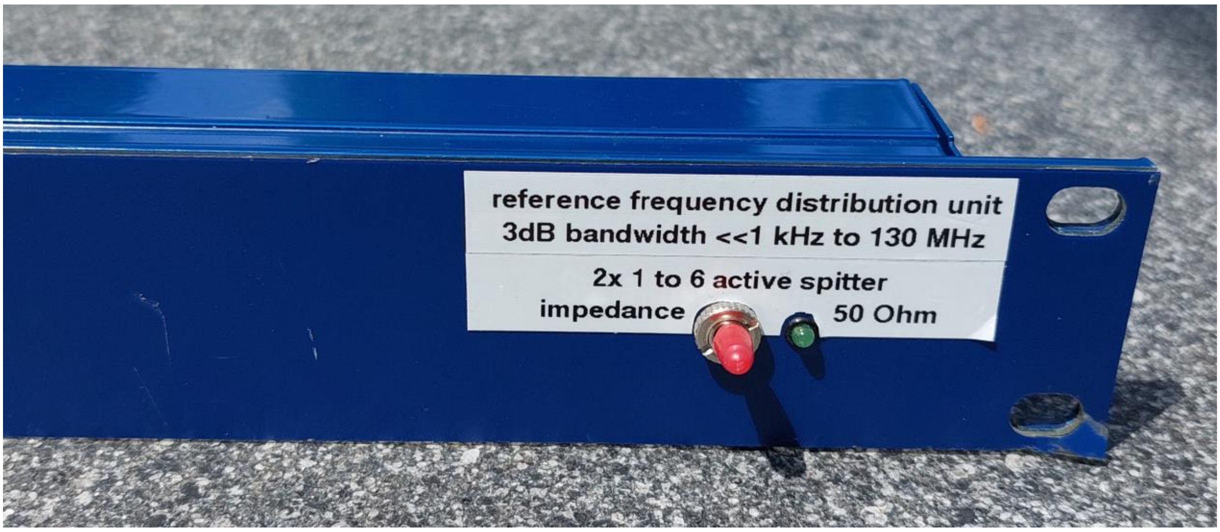
76 mA. I had a SD12-5D400 DC-DC-Converter available and thus used this. The SD12-5D400 accepts an input voltage in the range of 8 V to 15 V. I replaced the 9 pin Sub-D connector by a 5.5/2.1 DC power jack. I can now use any of the 12 V power supplies as the current consumption is only 126 mA.
I analyzed the internal structure of the distribution unit and it is based on 6 fast operational amplifiers H1112IB.

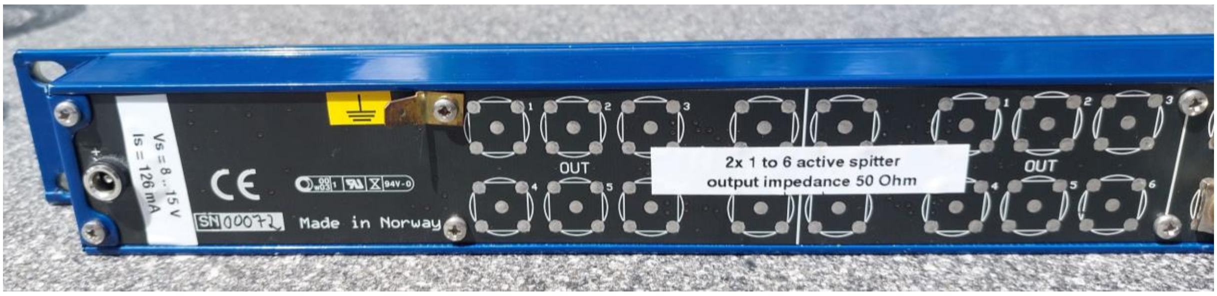


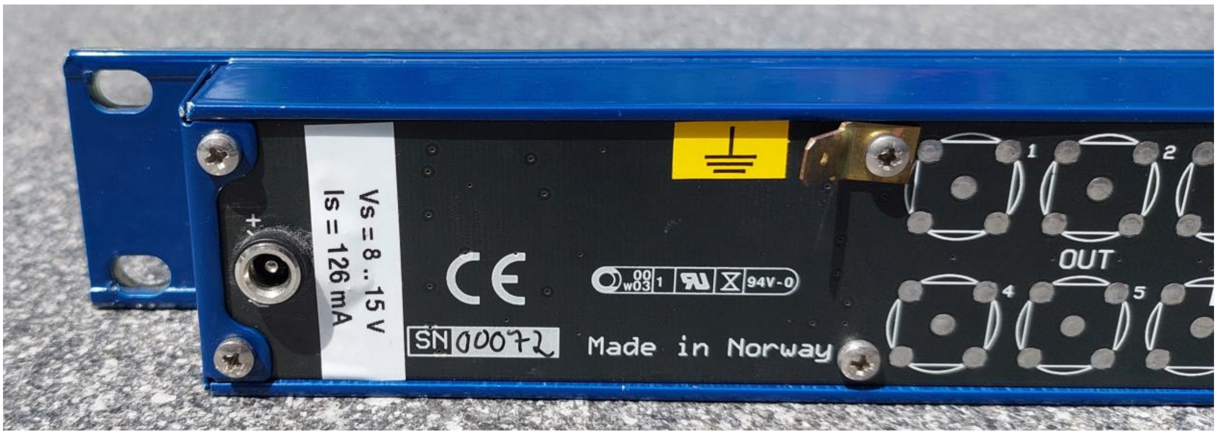
Each of the 2 inputs is split to the high impedance inputs of 2 such operational amplifiers and the output of each op-amp is split to 3 output ports. On the PCB there are 75 Ohm SMD resistors which determine the output impedance of the buffers and as my systems are typically 50 Ohm based, I soldered an additional 150 Ohm SMD resistor on top of each 75 Ohm resistor which resulted in an output impedance of 50 Ohm.

Each output port delivers exactly the same amplitude as the input signal. I checked the maximum input level and there were no significant distortions of the signal up to an input amplitude of ±4 V. Actually, my signal generator did generate distortion when increasing its output level to more than +10 dBm. I measured a 3 dB bandwidth of the SDI0106 of less than 1 kHz to 130 MHz thus I may use this unit in the future also for other purposes where such a nice wide bandwidth is needed.

Here are some pictures of my unit after the modifications:







I am always grateful to get feedback and will be happy to answer questions.

Please direct them to my Email address, which you find on my website.

Best regards Matthias DD1US Homepage: http://www.dd1us.de