CHIPPMANN
electronic musical instruments

CS-8 Series

Owners' manual
DST2

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The manufacturer *Schippmann electronic musical instruments* is constantly striving for improvements and developments of their products. Therefore, we reserve the right to change technical specifications which improve our products at any time without notice. This includes the look of the unit which might differ from pictures in this manual.

PREFACE

First of all, congratulations on the purchase of this 3U Eurorack synthesizer module. This manual contains a condensed description of the functionality and addresses users with a certain level of elementary technical knowledge.

The CS-8 **DST2** is a very effective and very low noise distortion based on the principle of band saturation. It is working as a 2-band-distortion, where the input signal will be spectral separated via a crossover network at a crossover frequency of 113 Hz feeding afterwards the respective distortion stages. By this a more detailed result can be obtained without loss of warmth. It is designed for mounting into a 3U Eurorack with an internal +/- 12V power supply.

The technical principle is borrowed our well-known product "ebbe und flut" and highly improved in respect of inherent noise by substitution of electronic components.

Design and implementation meet highest technical standards concerning usability, sound quality, and signal-to-noise ratio. The front panel is made from powdered and printed piece of aluminium sheet metal of 2 mm gauge. The entire design and production work was done in Germany.

Made in Germany

1. WARRANTY

1.1 Limited Warranty

Schippmann electronic musical instruments warrants the mechanical and electronic components of this product for a period of two (2) years from the original date of purchase, according to the warranty regulations described below. If the product exhibits any faults within the specified warranty period that are not excluded from this warranty, *Schippmann electronic musical instruments* shall, at its discretion, either replace or repair the product. This warranty exists in addition to the general terms of business of the manufacturer *Schippmann electronic musical instruments*.

1.2 Terms of Warranty

Schippmann electronic musical instruments reserves the right to execute warranty services only if the product comes with a copy of the dealer's original invoice. Final discretion of warranty coverage lies solely with *Schippmann electronic musical instruments*. Any *Schippmann electronic musical instruments* product deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced within 30 days after receiving the product at *Schippmann electronic musical instruments*. Damages or defects caused by improper handling or opening of the unit by unauthorized personnel (user included) are not covered by this warranty. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer´s expense and returned C.O.D. with an invoice for labour, materials, return shipping, and insurance. Products repaired under warranty will be returned with shipping prepaid by *Schippmann electronic musical instruments*. **Outside Germany, products will be returned at the buyer´s expense**.

1.3 Warranty transferability

This warranty is extended to the original purchaser and cannot be transferred. No other person (retail dealer, etc) shall be entitled to give any warranty promise on behalf of *Schippmann electronic musical instruments*.

1.4 Claim for damages

Schippmann electronic musical instruments does not accept claims for damages of any kind, especially consequential loss or damage, direct or indirect of any kind however caused. Liability is limited to the value of this product. The general terms of business drawn up by *Schippmann electronic musical instruments* apply at all times.

Please note: The controls are **no real-time controllers!** Tweak them carefully since we cannot be held liable for "abused" potentiometers and jacks.

2. CE AND FCC COMPLIANCE STATEMENTS

This device has been tested and deemed to comply with the **DIN EN 60065** standards.

This device has been tested and deemed to comply with the requirements, listed in FCC Regulations, part 15. The device complies with **EN 55103-1** and **EN 55103-2** standards.

Because of the entirely analogue construction, this device does not generate radio frequencies and will not interfere with radio frequencies generated by other electronic devices.

3. DISPOSAL

This device has been manufactured to RoHS-standards, in compliance with the requirements of the European parliament and council and is thus free of lead, mercury, and cadmium.

!! Notice: This product is still special waste and is not to be disposed of through regular household waste !!

For disposal, please contact your local dealer or *Schippmann electronic musical instruments*

4. SAFETY INSTRUCTIONS

BEFORE USING THIS PRODUCT FOR THE FIRST TIME, PLEASE READ THE ENTIRE USER MANUAL THOROUGHLY.

- PLEASE AVOID SHARP BENDING OF ANY CORDS AND CABLES.
- CORDS SHOULD NOT BE INSTALLED WITHIN THE REACH OF CHILDREN OR PETS.
- DO NOT TREAD THE ENCLOSURE OF THE PRODUCT, DO NOT PLACE HEAVY OBJECTS ON IT.
- BEFORE REMOVING THE PRODUCT FROM THE RACK, PLEASE DISCONNECT THE POWER PLUG AND ALL OTHER CABLE CONNECTIONS.
- PLEASE DISCONNECT THE POWER PLUG FROM THE OUTLET IN CASE OF A THUNDERSTORM.
- NEVER OPEN THE ENCLOSURE OF THE PRODUCT! NEVER TRY TO MODIFY THE INTERNAL CIRCUITRY! ONLY QUALIFIED SERVICE PERSONNEL IS ALLOWED TO OPEN THE ENCLOSURE.
- DO NOT PLACE OPEN FIRE ON TOP OF THE PRODUCT (CANDLES, ASH TRAYS, HOT THAI CURRIES ETC).
- NEVER EXPOSE THE PRODUCT TO WATER, BEER, OR MOISTURE.
- ADULTS ARE TO MAKE SURE THAT CHILDREN FOLLOW ALL SAFETY INSTRUCTIONS. SAME THING GOES FOR PETS.
- AVOID MECHANICAL STRESS OR IMPACT. DO NOT DROP THE PRODUCT; EVEN IF THERE IS A CONTROL LABELLED "DROP"!.
- DO NOT USE THE PRODUCT WITH TOO MANY OTHER ELECTRONIC DEVICES RUNNING FROM ONE SINGLE OUTLET, ESPECIALLY IN CONNECTION WITH EXTENSION CORDS. DO NOT ATTEMPT TO SAVE MONEY ON CHEAP SOLUTIONS. BUY PROPER HIGH-DUTY POWER DISTRIBUTORS AND CORDS!
- NEVER USE EXTENSION CORDS WITH LESS MAXIMUM LOAD THAN THE TOTAL POWER CONSUMPTION OF ALL DEVICES CONNECTED TO A SINGLE POWER OUTLET COMBINED. OVERLOADING EXTENSION CORDS CAN CAUSE FIRE.
- **AVOID MECHANICAL STRESS ON JACKS AND KNOBS / SWITCHES.**
- **PROTECT YOUR SPEAKERS AND EARS (!) AGAINST EXCESSIVE AUDIO LEVELS. THE CS-8 DST2 UNIT IS CAPABLE OF PROCESSING EXTREMELY LOW AS WELL AS EXTREMELY HIGH FREQUENCIES. BOTH MIGHT CAUSE SERIOUS DAMAGE TO AUDIO EQUIPMENT**

AND EAR-DRUMS!

5. MAINTAINANCE/ CLEANING

- BEFORE CLEANING THE PRODUCT, PLEASE DISCONNECT THE POWER PLUG FROM THE OUTLET OR DISCONNECT THE MODULE FROM ITS POWER CONNECTOR BY PULLING THE FLAT RIBBON CABLE.
- USE A DRY OR SLIGHTLY MOIST CLOTH OR COMPRESSED AIR FOR CLEANING. NEVER USE ANY CLEANER OR THINNER (E.G. PAINT THINNER OR ACETON). PRINTS AND PAINTWORK WILL IMEDIATELY BE DESTROYED!! ALSO AVOID ALCOHOL (ISOPROPYLIC), GAS, SPIRITS (SCOTCH SINGLE MALTS, FOR A START) OR ABRASIVE HOUSEHOLD CLEANERS!

6. GETTING STARTET

6.1 Unpacking

The box should contain the following items:
- 1 x CS-8 Series DST2 3HU rack-mount module
- 1 x Ribbon cable (20 cm length with two 16 pole IDC-connectors)
- 4 x M3 screws
- 4 x polypropylene washers
- this owners' manual

If the content of the box turns out to be incomplete, please get in touch with your dealer or *Schippmann electronic musical instruments* immediately. In case of damage caused in transit, please get back to the responsible carrier and *Schippmann electronic musical instruments* immediately. We will support you in this case.

6.2 Installation

Place the unit on a clean, dry and sturdy surface, or use a suitable keyboard stand or 19" rack. For 19" rack mounting, a suitable rack (3U Eurorack with +/- 12V power supply rails) is required. The CS-8 DST2 uses discrete all-analogue electronics. We recommend placing the CS-08 DST away from heat sources

such as radiators, lamps or other units that produce heat (e.g. power amps or internal power supplies).

7. CONTROLS

7.1 Front panel

Fig. 1 shows the front panel with consecutively numbered controls and jacks.

Fig. 1

1. **Input** Controller – attenuates the incoming audio signal at *jack 3* between 0 and 1
2. **Drive** Controller – drives the input signal at *jack 3* into the saturation or hard clipping, resp. from 1% to 100%
3. **Input** jack (input) – routes the applied signal via *Cont. 1* to the distortion input
4. **Out** jack (output) – provides the distortion output signal

7.2 Back

Fig. 2 shows the back of the module with consecutively numbered elements.

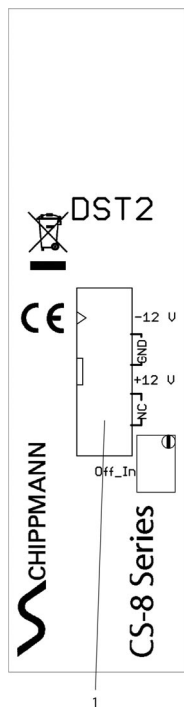

Fig. 2

7.3 Initial operation

The power connector's **(1)** pin-out in top view (refer to fig. 2) is assigned as follows:
Bottom to top, left to right. Thus pin 1 is located at bottom left, pin 2 above pin 1 etc. Pin 15 is at bottom right, pin 16 at top right.

Pin 1, 2 = -12 V (labelled with a triangle)
Pin 3-8 = GND (ground, 0 V), located outward on all jacks
Pin 9, 10 = +12 V
Pin 11-16 = not in use

To hook up power to the module, connect one of the IDC-jacks of the included flat ribbon cable to the connector (refer to fig. 2). Observe guide key for the polarity of the connector in order to avoid pin reversal. The **red tag** of the cable **is to match the triangle-label**.

8. MODULE DESCRIPTION

Structure

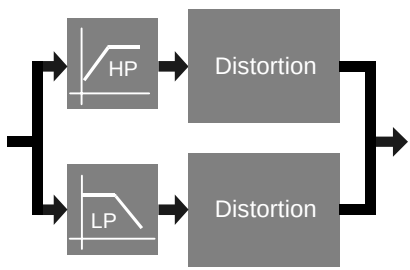

Fig. 3 Structure of DST2

Fig. 3 shows the structure of the distortion unit. The input signal will be spectral separated by a high-/low-pass crossover network at 113 Hz before feeding the respective distortion stage and mixing the results together.

Input

This section includes the ***jack 3 (Input)*** and the ***controller 1 (Input)***. The input signal to be processed by the DST2 flows from *jack 3,* capacitively decoupled, to the ***Cont. 1*** where it is attenuated between 0 (-∞ db) and 1 (0 db). To obtain a signal gain of 1 (input to output, "Drive" at full CCW) at the signal output *Out Cont. 1* has to be set to full CW.

Drive

This section includes the ***controller 2*** **(*Drive*)** and the ***jack 4*** **(*Out*)**. With rising movement from left to right of ***Drive*** in direction to 100% on the scale the input signal will be driven more and more into saturation. With input signals of about 4 Vpp or larger a second kind of distortion starts at position 3 o'clock of ***Drive***, which adds some more "sweet" harmonics to the result at ***jack 4*** **(*Out*)**.

Hint: **This distortion is always working**, so at ***Drive*** at 1%, too! If a totally clear signal is wished, the DST2 should be removed from the signal path.

Fig. 4. shows the transfer function of a distortion stage for rising ***Drive***-positions (left to right). Let be the momentary input voltage values on the horizontal axis and the respective output value on the vertical one.

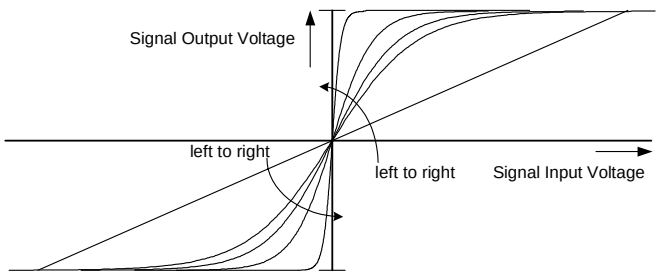

Fig. 4

Fig. 5 gives an illustration of the signal deformation for a triangle input signal (solid line) for rising ***Drive*** values (left to right) in the time domain.

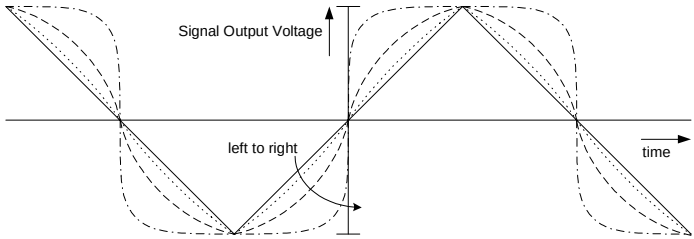

Fig. 5

9. TECHNICAL DATA AND SIGNAL VALUES

9.1 Technical Data (in general)

Input- and output-jacks:	mono jack jacks 3.5 mm (1/8")
Input jacks have grounded switch (0 V)	
Power:	-12 V / +12 V (polarity protection)
Power consumption:	max. 30 mA (for both supplies ±12 V)
Proper ambient temperature:	0 °C – +55 °C / 32F – 131F
Net weight (module only):	approx. 55 g / 0,12 lbs
Dimensions (W x H x D):	6 PU (30.2 mm) x 3 HU (128.5 mm) x 40 mm
Installation depth (behind the panel)	<20 mm

9.2 Signals and ratings

Input impedance (jack 3, Drive from CCW - CW): 11 kΩ - 1 kΩ

Maximum input voltage at jack (3): 10 Vrms (28 Vpp for sinus)

Output noise:

Drive = 1%: 40 µVrms ≅ -88 dbV
Drive = 30-50%: 10 µVrms ≅ -100 dbV
Drive = 100%: 30 µVrms ≅ -90 dbV