



DITOS Transformer-Coupled Balanced Output DI Board for ComplQ Stella Pro Compressor Pedal MANUAL

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TECHNICAL SPECIFICATIONS

Input impedance: $1M\Omega$
Transformer output impedance: $10K\Omega$
Output connector: 1/4" TRS (equivalence to XLR: Tip = Pin 2, Ring = Pin 3, Sleeve = Pin 1)
Output signal: Balanced or Floating Unbalanced
Signal phase: Tip = Cold (-); Ring = Hot (+); Sleeve = Chassis/GND
THD (Stella + DITOS): $< 0.2\%$ @ 1kHz, 0dBu in/out, 600 Ω load, 24KHz BW, 12VDC power, measured through 6th harmonic
Max Input Level: +10dBu
Max Output Level: +12dBu
Frequency response: -1dB @ 40Hz; 0dB in between 300Hz and 22KHz
Power voltage range: 9-18VDC (do not exceed max. voltage!)
Current consumption: $< 10\text{mAh}$ @ 9-18VDC
Product weight: 0.022Kg
Shipping weight: 0.2Kg

DIRECT INJECTION TRANSFORMER OUTSMART BOARD

Thank you for upgrading the ComplQ Stella Pro Compressor pedal!

The optional DITOS board allows the convenience of having a high-performance Blackmer® VCA compressor coupled with an active DI in one ultra-compact and downsized package. This combination enhances Stella's amazing versatility, suited for various professional scenarios on stage or in the studio. The DITOS DI perfectly complements Stella's crystal-transparent main output, featuring an audio transformer and a pristine, low-noise balanced line driver. The output transformer delivers a warm richness ideal for instrument recording, direct mixing, or tone-conditioning for various electric instruments bass, guitars, synths, keyboards, vocals, and more - with the right preamp. It can also function as an unbalanced floating output for routing signals to another pedal, introducing a new warm voicing to your audio processing.

INSTALLATION

The DITOS board is compatible only with ComplQ Stella units made after September 2021, which have a main board set up for connection using a short 4-wire cable. Once installed, the DITOS

board takes the place of the 9V battery in the ComplQ Stella, removing its battery-powered functionality.

If the DITOS board is ordered together with the ComplQ Stella, it comes pre-installed. However, if ordered separately, you'll need to drill the enclosure yourself to accommodate its 1/4" TRS output connector. Contact us if you require a drilling template. Ensure that the stiff solid wire soldered on the DITOS board is firmly secured against the inner side of the chassis for a proper electrical connection. The wire's thickness helps position the board against the tapered walls of the enclosure.



Within, the DITOS circuit directly receives its input signal from Stella's main output. It seamlessly complements the Burr-Brown signal conditioning in the primary circuit, working exceptionally well in tandem.

PEDAL BYPASS

When Stella is in bypass at its main output, the signal still passes through the DITOS DI's circuit that follows after, accounting for an active compression bypass. In contrast, the main output remains true bypassed. This results in a distinct coloration of the DITOS audio signal.

OUTPUTS USAGE / SIGNAL PHASE

Even though the unbalanced VCA's main output and the DITOS transformer balanced output can be utilized simultaneously, the latter is phase-reversed. If you intend to use both outputs concurrently, you have options: use a balanced cable with Hot/Cold wires reversed or adjust the phase for the DITOS output in your recording software or on the mixing console.

GROUND LIFTING: WHEN AND WHY

Internally, Ground & Chassis Lift Jumpers are provided to address potential ground loop noise concerns. The Ground Lift Jumper, situated on Stella's main board near the input connector, defaults to ON (closed). This jumper links the chassis to Stella's circuit power ground. Additionally, the Chassis Lift Jumper on the DITOS board near the transformer is also set to ON (closed) by default. This jumper connects the sleeve in the DITOS output connector to Stella's chassis.

In certain usage scenarios, it might be necessary to exclude the chassis from the circuit ground. For example, when using the DITOS output alone as isolated balanced or floating, or when utilizing both outputs simultaneously.

Despite the provided jumpers for conditional interconnection between our circuits and exterior devices regarding Chassis-Ground-Shielding, there's a possibility of power grounding being affected outside ComplQ Stella. For example, when both outputs are used to record signals on the same interface, the shielding of the balanced cable might come into contact with the unbalanced cable's shielding (and Ground) on the interface.

To maintain transformer isolation in such cases, the Chassis Lift Jumper on the DITOS board can be removed. As a result, the balanced cable shielding will no longer connect to the Chassis. The Chassis will still be part of Stella's circuit Ground through the Ground Lift Jumper on the main board (if present).

Please note that despite the removal of the Ground Lift Jumper, the power ground may still be affected from the outside through the mono jack inserted at the pedal's input. This occurs because this jack shorts the Sleeve to Ring inside the TRS input connector, which also functions as a general power switch.

Understanding how grounding works on Stella with DITOS can help navigate these situations.

For more helpful information, we suggest checking out the technical notes about [Grounding and Shielding Audio Devices](#) and [Sound System Interconnection](#). These notes, authored by Steve Macatee from Rane Audio, provide detailed insights into this topic.

TRANSFORMER BALANCED OUTPUT INTERCONNECTION

The DITOS transformer-coupled balanced output can be used with a balanced cable featuring a 1/4" TRS jack where the pins correspond to an XLR connector: Tip = Pin 2, Ring = Pin 3, Sleeve = Pin 1. At the opposite end, the balanced cable can have either type of balanced connectors, depending on your interconnection requirements.

When plugging a TRS jack into the DITOS output, its Sleeve should only link the balanced cable's shielding to Stella's conductive chassis, effectively extending the enclosure's shielding. The Cold (-) and Hot (+) signals of the balanced cable should connect solely to the Tip and Ring in the DITOS output connector, ensuring a transformer-isolated balanced connection.

This balanced signal is ideal for connecting Stella directly to a mixing console with a balanced input or for routing the signal to a balanced input on a recording interface. Please note that the balanced connectors at the other end of the cable may connect their Pin 1 to their internal circuit's Ground.

If you experience ground loop noises in your setup, it's recommended to turn OFF the Ground Lift Jumper on Stella's main board. This action disconnects the chassis (and consequently the cable shielding) from Stella's electric Ground, potentially alleviating ground loop issues.

The Chassis Lift Jumper on the DITOS board disconnects the Sleeve (Pin 1 on an XLR connector) from the chassis. Leave this jumper ON for balanced cable use. If it's OFF, the Sleeve in the output connector won't link the balanced cable shielding to the pedal's chassis (and the main board circuit Ground).

TRANSFORMER FLOATING OUTPUT INTERCONNECTION

The DITOS transformer-coupled output can function as a floating output, sending the signal out as unbalanced. This is typically done using a mono (instrument) cable with a ¼ TS jack. In such a setup, the shielding of the jack connects to the Sleeve (possibly carrying negative power from the subsequent device/pedal), while the hot signal connects to the Tip.

Inserting a mono jack into a TRS connector shorts the internal Ring and Sleeve using the jack's Sleeve. This links the shielding of the mono cable to one side of the DITOS transformer secondary, with the hot wire connected to the other side of the transformer's secondary.

However, if Ring to Sleeve is shorted within the DITOS output connector, the output cable's shielding now connects to the chassis. If the Ground Lift Jumper on Stella's main board is ON, this connection is no longer isolated, as one side of the transformer secondary becomes part of Stella's main circuit Ground. This doesn't affect the DITOS DI's functionality.

For a transformer-isolated floating output connection and to potentially prevent ground loop occurrences from interconnecting

with other pedals, it's advisable to disconnect the Sleeve in the output connector from the chassis by turning OFF the Chassis Lift Jumper on DITOS (set to ON by default). This also helps maintain a Faraday cage for all circuits inside by keeping the Ground Lift Jumper ON on Stella's main board.

A FEW THINGS TO KNOW

- When connecting Stella to a high-impedance input (like an amplifier or pedal), the DITOS transformer output level should be similar to the main output level. However, connecting to a low-impedance device (like a sound processor, recording interface, or mixing console) may yield different output levels. The Make-up Gain on Stella affects both outputs when the pedal is active, but you can adjust the DITOS transformer output level on the following device or pedal by tweaking its input level.

- The transformer-balanced output aims to mirror the main output but has its distinct character influenced by instrument pickup frequencies. It typically produces tight yet bloomy Lows, somewhat enhanced Low-Mids, and warm, crystal-clear Highs.

- Due to the transformer's warmer Highs, the Stella's Dry Line Saturation engine responds differently compared to the main output. Adjust the Low & Highs Cut-filters on the Dry Line for improved and softer harmonics. The Saturation engine is influenced by pickup tonal profiles and output power: Humbuckers sound stronger and fuller when saturated, while single coils may require more saturation and level adjustments. For bright sources, activate the Hi-Cut filter, and for humbuckers or bass pickups, engage the Low-Cut filter.

- When strumming strings, picks of different thicknesses render different sounds. Thin and sharp celluloid picks emphasize Highs. Thick and rounded picks sound more jazzy (fewer Highs, softer Lows).

- Noise from switching power supplies might cause hissing and humming in pedals. Use power supplies with isolated, linearly regulated, over-voltage protected, and well-filtered outputs.

- Electromagnetic field-generated noise in the room can affect instrument pickups, especially single coils. This noise might sound different at the DITOS transformer output compared to Stella's main output. Minimize noise by adjusting instrument positioning, especially near amplifiers, power outlets, or when long audio cables are near AC power cables.



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