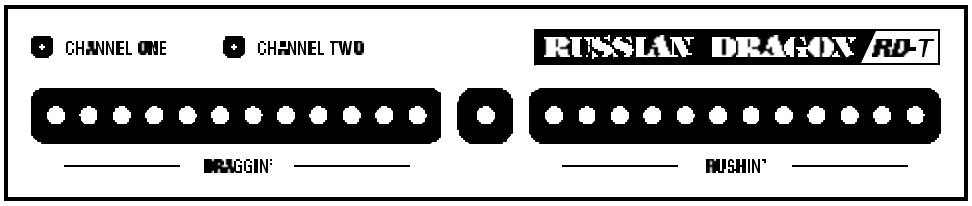
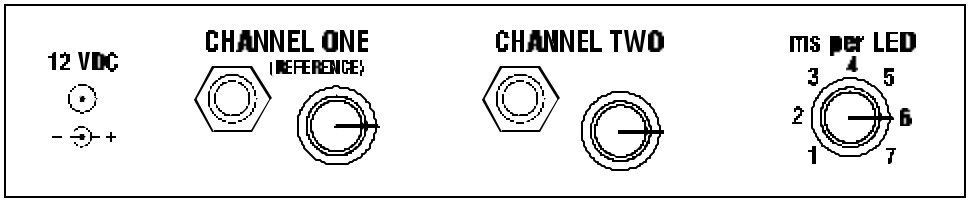
RUSSIAN DRAGON

MODEL RD-T

OPERATING INSTRUCTIONS



FRONT PANEL



BACK PANEL

OVERVIEW –

The RUSSIAN DRAGON is a brand new type of measurement meter. It measures the timing accuracy of two sounds that were meant to happen at the same time. For example, it shows how closely a drummer is playing along with a click track; it detects the time delay between an acoustic drum and it's triggered replacement; it reveals timing inaccuracies in MIDI systems; it monitors how tightly a percussion overdub it performed. The RUSSIAN DRAGON compares the timing of any two events, and gives an instantaneous visual display of who's rushin' and who's draggin' and by how much.

The Russian Dragon has two inputs. Channel One is the reference or click input. Channel Two takes the signal of the instrument or sound that is to be checked. Both channels use sophisticated circuitry enabling them to accommodate various signals - acoustic drums, drum machines, keyboards, metronomes, percussion instruments, guitars, drum pads, bass guitars, trigger sensors. The front panel Channel One and Channel Two LEDs indicate that the channel is receiving an input signal.

The Russian Dragon uses a row of 25 LEDs as it's display. The green LED in the center flashes each time the click or reference (Channel One) occurs. The Channel Two signal will light one of the other 24 LEDs indicating its timing accuracy compared to Channel One. The greater the distance from the lit LED to the center, the more time differential there is between the two input signals. The 12 LEDs to the left of center show that the Channel Two signal is late (draggin').

The 12 LEDs to the right of center indicate that the Channel Two signal is early (rushin'). If the two input signals happen at exactly the same time (within .5 millisecond), the Russian Dragon gives the "Snake Eyes" display - both LEDs on either side of the center are lit.

The ms per LED control sets the time value of the LEDs in the display. It can be varied from 1 millisecond per LED to 7 milliseconds per LED. For example, if the ms per LED control is set on 5 and the 8th LED on the rushin' side is lit, the Russian Dragon is indicating that the Channel Two signal is 40 milliseconds ahead of the reference.

GETTING STARTED –

Plug in the external 12-volt DC power supply. When power is first applied, the two LEDs on each side of center are lit.

For ease of illustration, let us assume that we are using the Russian Dragon to monitor how closely a drummer is playing along with a click (metronome). The reference input (Channel One) is connected to the click track. Channel Two is connected to the drummer's snare drum. (Keep in mind that this is only one of the Russian Dragon's many applications.)

Plug the metronome signal into Channel One. This can be the signal from an electronic metronome or drum machine. Or, if you have a metronome that doesn't have any kind of electrical output, just attach an inexpensive pickup to the body of the unit and run the output of the pickup into the Russian Dragon. Adjust the rear panel

Channel One sensitivity control so that the red front panel Channel One LED flashes on each click.

Plug the snare drum signal into Channel Two. The snare drum can be either an acoustic snare drum or an electronic drum. With an acoustic drum, the signal can be derived from either a microphone, or an inexpensive pickup attached to the drum. If you are using an electronic snare drum, just "Y" the snare drum output so that it feeds both the Russian Dragon and your sound system. Or, you can "Y" the output of your snare pad so that it connects both to the Russian Dragon and to its usual destination. Adjust the rear panel Channel Two sensitivity control so that the red front panel Channel Two LED flashes once on each snare beat. The ms per LED control sets the amount of time before and after the reference beat that is monitored by the LEDs on the front panel. The user selects the appropriate setting depending on tempo of music, ability of player, etc. The tightest setting (1 ms per LED) is impractical for live musicians and should be used only for laboratory type measurements. For the application of a drummer and a click track, a setting of 4 ms per LED is a good starting point. If the front panel display stays within 8 LEDs before or 8 LEDs after the center LED, then all snare hits are within 32 milliseconds of the click.

THE DISPLAY –

The Russian Dragon uses a row of 25 LEDs as its display. The green LED in the center flashes each time the click or reference beat occurs. When the drummer plays, one of the other 24 LEDs will light indicating how close to the beat he is playing. The greater the distance of the lit LED from center, the farther off the drummer is from the click. The 12 LEDs to the left of center show that he is behind the beat (draggin'). The 12 LEDs to the right of center indicate that he is playing before the beat (rushin'). The row of LEDs is separated into colors to show quickly just how far off beat the musician is. The LEDs near the center are green - showing he is playing close enough to the beat. The next set of LEDs on each side of center are yellow. They light to indicate caution. The LEDs on each end of the row are red. If one of these illuminates, the Russian Dragon is indicating that the drummer is too far off the beat. He is outside the "window of

tolerance". If the drummer plays so far of beat that he is even beyond the red LEDs, the display will be blank. If the drummer plays even farther off so that he is near half way in between click beats, the Russian Dragon will think that he meant to play an "upbeat". In this case the display will not go blank, it will hold the most recent reading of a hit that was near a click. So, beware. If you are using the Russian Dragon on a drummer that is just learning to play with a click, you could be getting erroneous readings. It is a good idea to start with the widest setting (7 ms per LED) on a beginning drummer. Then gradually tighten the control as he gets the hang of it.

SNAKE EYES -

Occasionally, the two green LEDs on each side of center will light at the same time. (We call this reading "snake eyes"). This occurs when the signals coming in the two inputs happen at exactly the same time (within .5 millisecond). You can use this feature in the recording studio to "line up" two sounds that should happen simultaneously. Run the sound that is early through a digital delay and adjust the delay until you get the “snake eyes” reading. You should use a delay device with a resolution down to .1 millisecond - an SPX-90 will do; a Quadraverb will not. If you do not use a delay with .1 millisecond increments, you may not be able to achieve the “snake eyes” reading. In some applications the SMPTE offset can be changed to shift the timing of events. Note: at 30 frames per second and 80 bits per frame, 1 bit = approximately .4 milliseconds.

SPECIFICATIONS -

Inputs:	Unbalanced 1/4" connectors. Input Impedance is 100K ohms.
Controls:	Input sensitivity controls (2), ms per LED control
Accuracy:	“Snake Eyes” accuracy = 1 ms, all other display readings = 1 ms times the ms per LED setting
Power:	External 12 volt DC, 100 mA adapter. Center pin = negative!
Size:	9" x 1 3/4" x 4 1/2"
Weight:	2 lbs.

12 MONTH
LIMITED WARRANTY

Jeanius warrants to the user who originally purchased this product, that the product will be free from defects in material and workmanship for the following periods after such date of purchase: Material - 12 months, Workmanship - 12 months.

Warranty applies to the original owner; it is not transferable.

This warranty does not apply if the unit has been subject to physical abuse, improper installation, modification, or if the housing has been removed.

Jeanius shall not be liable for any incidental or consequential damages arising from use, misuse, or functioning of the Russian Dragon.

The Russian Dragon is manufactured solely by Jeanius Incorporated. United States patent number 4,919,030. Patent pending in other countries. Russian Dragon is a registered trademark of Jeanius Incorporated.

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