

BLOCK DIAGRAM / VDL-RS

The **VDL-RS Variable Delay Line** is similar to the Convex VDL-2M Delay Line - *but with an RS232 Control Port added*. It is used in simulcast radio and paging systems to match the time delay of diverse transmission paths. Matching prevents garbled reception in "overlap" areas of multiple transmitters. The VDL-RS operates on baseband voice frequencies. It provides a wide range of delay adjustment, and 12 dB of amplitude adjustment.

The VDL-RS can be installed at central or remote sites. **The RS-232 Control Port** is a convenient control method for central sites or when an operator is physically present. Touch-tones provide a convenient means of adjusting units at remote locations. A "DTMF" Indicator is provided as a diagnostic tool. This LED lights when valid (DTMF) touch-tones are detected. Valid DTMF commands are acknowledged with a tone burst output.

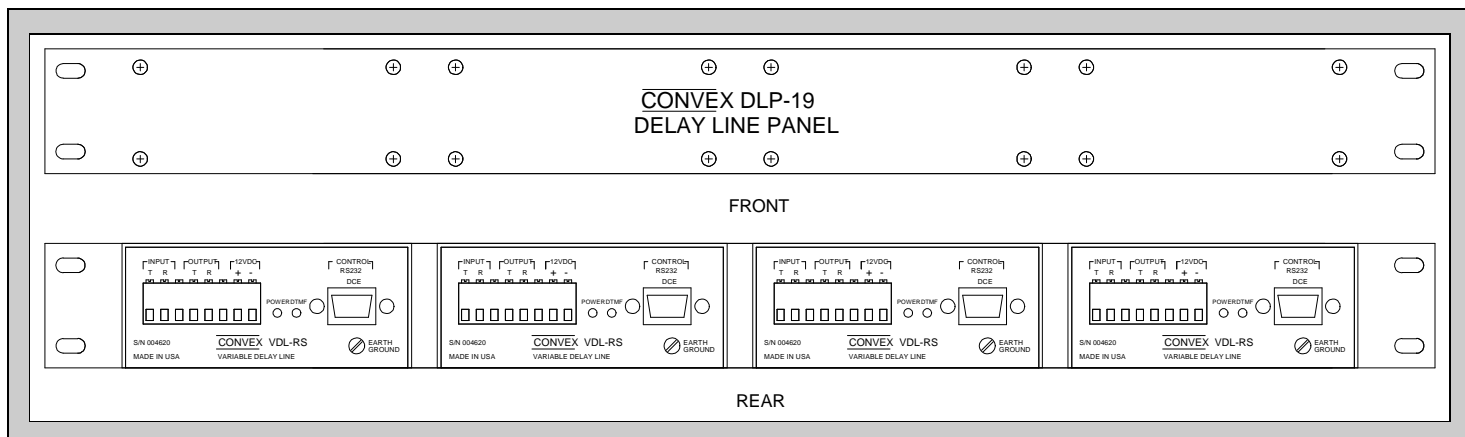
Remote control via touch-tones saves time and resources by eliminating the need to send a truck to the remote sites. The VDL-RS can be adjusted by applying touch-tones to the working channel.

UNIVERSAL DELAY LINE With a delay range of 300 to 2,000,000 micro-seconds, the VDL-RS replaces a variety of passive delay lines. These traditional devices have a narrow adjustment range which requires a fixed delay line in series. Consequently a system can require an assortment of delay lines. In contrast, the VDL-RS

provides a universal solution by combining wide range with high resolution. As a result there is one model to deploy and inventory!

ADDRESSING Since the devices can be controlled by touch-tones and multiple delay lines may serve the same radio channel, an *addressing* arrangement is used. This permits each delay line to be controlled individually. Each VDL-RS can be set to respond to a unique two-digit address. Up to 99 units can be individually controlled from a common source. A **ZONE** Command permits up to 10 groups of VDL's to be silenced or restored. On the other hand, a **universal address** permits all units to be controlled simultaneously. Once adjusted, the VDL-RS's can be made "deaf" to random touch-tones with the security feature.

SECURITY The security feature disables touch-tone control so that delay lines will not be altered by random touch-tones. This feature is activated and deactivated using a specific 8 digit sequence. Once activated the delay line will remain deaf to all touch-tone commands except one. A second 8 digit sequence unlocks the security feature. Further, the security feature can be applied on a selective or universal basis. Selectivity permits control activation of a single unit - keeping all other units locked. Universal application, permits all units to be locked or unlocked simultaneously.



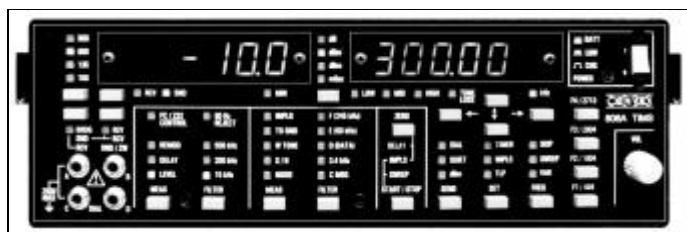
FLAT GAIN Flat gain amplifies or attenuates all frequencies by a variable factor to compensate for transmission differences to diverse transmitters. Flat gain, which is controlled by the RS-232 Port or touch-tones, provides precise level adjustments that can be made from a central site. This permits a system to be conveniently normalized from a central location. Gain is adjustable from 6 dB loss to 6 dB gain in 0.1 dB steps.

MOUNTING The VDL-RS can be wall mounted or rack mounted. It is wall mounted using slotted screw holes in the base. Rack mounting requires (1U) 1.75 inches of vertical space. A rack-mounting panel (**Model DLP-19**) will accommodate up to four delay lines. The delay lines are attached to the panel using four screws

I/O and POWER A two-piece connector with screw locks is provided for signal and power wires. Standard **Power is 12 VDC (VDL-RS-12)**. **Options are:** VDL-RS-24 and VDL-RS-48 (48 VDC). An **AC to 12 VDC Adapter** is available: **DAC-12**. It powers one to four VDL's.

WARRANTY All Convex products are warranted to be free of manufacturing defects for a period of one year from the date of shipment. At its option, Convex will either repair or replace products which prove to be defective during the warranty period, provided they have not been subject to misuse, accident, or unauthorized alterations and are returned to the factory with transportation prepaid. Convex will promptly return the repaired product, transportation prepaid within the USA. No other warranties are expressed or implied. Convex Corporation is not liable for consequential damages. Post warranty repair service is available on a fixed fee basis.

MODEL	ANCILLARY PRODUCTS
DLP-19	1.7"x19" DELAY LINE PANEL,
DAC-12	Universal AC to 12 VDC Power Adapter
806A	Portable TIMS / Simulcast Test Set



SPECIFICATIONS VDL-RS

RS-232 Port	Serial Asynchronous Full Duplex 8 bit ASCII / 1 Stop bit No Parity Baud Rate: 9,600 bps fixed 9 Pin D, Female / DCE
Communications	Simple Menu displays status of all parameters. Select a parameter to be changed.
Touch-Tone Control	Addressable: 00 to 98 Universal address: 99 Zone / Quiet Control 0 to 9
Touch-Tone Range	-26 to -6 dBm
On / Off Time	100 mSec minimum
DTMF LED	ON = valid Touch-Tone
Command ACK	976 Hz Acknowledgment Tone
Security	8 Character sequences disable and enable control. Set individually or universally.
Frequency Range	56 Hz to 3400 Hz
Gain Range	- 6 dB to +6 dB, 0.1 dB steps
Delay Range	300 to 2,000,000 microseconds in 1 microsecond steps
Phase Inversion	Normal = 0° / Reverse = 180°
I/O Impedance	600 ohm - balanced, floating
I/O Return Loss	Greater than 26 dB
Input/Output Level	+10 dBm maximum
Nonlinear Distortion	Less than 1%
Noise	-60 dBmC typical
Environmental	-30° to +60°C, 0 to 95% R.H.
Power Requirements	-12: 10 - 18 VDC / 150 mA max Options: -24: 19 - 36, -48: 37 - 75 VDC
Dimensions	1.7" H x 4.25" W x 9.4" D 4.32 cm x 10.8 cm x 23.9 cm
Weight	1.0 lb., 0.45 kg