RACK-UP® SERIES
Models RU-VCA2A & RU-VCA6A
Digitally Controlled Attenuators

- Local or Remote Audio Level Control
- Mono or Stereo Attenuation (RU-VCA2A)
- Six Channel / Surround Attenuation (RU-VCA6A)
- Noiseless Zero-Crossing Adjustment Steps
- 96 dB Attenuation Range in 0.5 dB Steps
- Data Bus Provides Adjustment of Multiple Modules
- Multiple Remote Control Locations Possible
- Precise Level Tracking on Each Channel
- Balanced or Unbalanced Line Inputs/Outputs
- Adjustable Ramp Up/Down Rates
- Controllable Using Various RDL Remote Controls
- Selectable Level Control Options:
  - Pushbuttons (Internal or External)
  - Momentary Pulses (External/Rotary Encoder)
  - 0 to 10 Vdc or 10 kΩ Potentiometer
- Selectable Power-Up Return to PRESET or LAST Level
- Selectable MASTER/SLAVE Mode for Control Expansion

The RU-VCA is part of the group of RACK-UP products from Radio Design Labs. RACK-UPs feature the advanced circuitry for which RDL products are known, combined with accessible user-friendly controls and displays. The ultra compact design permits high-density installations, with three products mounted in a single rack unit. Optional brackets permit mounting a RACK-UP module above, below, or in front of any flat surface!

APPLICATION: The RU-VCA2A is a full-featured studio-quality dual-channel audio attenuator module for local and/or remote control of balanced or unbalanced line-level sources. The RU-VCA6A has all the features of an RU-VCA2A with four additional audio channels for level control of surround sound (5.1) or six individual analog audio channels. Each module can be remote controlled from a single or multiple locations. Rear-panel terminals provide flexible control options using a variety of RDL remote controls or OEM equipment.

Audio levels are controlled in 0.5 dB steps using noiseless zero-crossing digital attenuators for optimum reliability, precise tracking and long-term click-free service. Exceptional wide-band low-noise performance makes the RU-VCA2A and RU-VCA6A suited to level adjustment in the most demanding applications. Rear-panel inputs and outputs may each be wired balanced or unbalanced.

The RU-VCA2A and RU-VCA6A power up in one of two operating modes set by a rear-panel switch.

MOM (momentary) Mode
In the MOM (momentary) mode, audio level is controlled by momentary pushbuttons or pulses. Remote terminals and front-panel pushbuttons are provided for up and down ramping control. If either button is held in, the audio will ramp automatically. If a button is pulsed (< 0.5 second), the audio will increment one step. The time of both the UP and DOWN ramps is individually adjustable on the front panel. Pushing remote UP and DOWN buttons simultaneously, or pressing the front-panel GO TO PRESET button, returns the audio to a preset level. The preset level is stored by adjusting the desired level using the UP and DOWN buttons, then pressing and holding the front-panel PRESET button for 3 seconds. A rear-panel switch sets the audio power-up level to either the preset level or the last level setting used. Multiple remote control locations are possible in the MOM mode. External control pulses may be either of positive polarity or pulled-to-ground (open-collector).

0 to 10 VDC Mode
In the 0 to 10 VDC mode the preset function is disabled and the audio level is controlled by a remote 10 kΩ linear taper pot or by 0 to 10 Vdc. A single remote control location is possible using a remote 10 kΩ pot.

In both operating modes, two separate 0 to 10 Vdc outputs are provided. The linear RAMP output drives the level display on RDL remote controls; the EQ RAMP output is used to control an automatic RDL Loudness Equalizer (see ST-LEQ1). A front-panel 10-LED string display indicates the relative audio level. Control expansion is possible using the EXTERNAL CONTROL DATA jacks. One module can be set as a MASTER module to control the level of one or more additional RU-VCA2A or RU-VCA6A modules set to the SLAVE mode.
**RACK-UP® SERIES**

**Models RU-VCA2A & RU-VCA6A**

**Digitally Controlled Attenuators**

**Inputs (2, RU-VCA2A; 6, RU-VCA6A): >10 kΩ**

**TYPICAL PERFORMANCE**

- **EXTERNAL CONTROL OPTIONS**
  - **POWER UP SETTINGS**
    - Before applying power, set the POWER UP switches:
      1. Set to LAST if the module should power-up to the last level setting;
      2. Set to MOM (momentary) if module levels are to be adjusted using front-panel buttons or using buttons, remote controls or open-collector pulses connected to the rear-panel IN and OUT terminals.
      3. Set to MASTER if this module is either operating on its own or is intended to control the level of additional modules. Set to SLAVE if this module is to be controlled by another module. (Note: The SLAVE mode inactivates all front and rear panel control of the module.)

- **MASTER/SLAVE CONNECTIONS**
  - A VCA module set as MASTER (switch 3) is able to control the level on multiple modules. The EXTERNAL CONTROL DATA OUT jack provides data to control additional modules. Connect the OUT jack to the IN jack of the first adjacent module. Connect the OUT jack of the first adjacent module to the IN jack of the second adjacent module. Connect additional modules in the same manner. Each connected module must be set to SLAVE mode (switch 3) as shown.

- **EQ RAMP CONNECTIONS**
  - Use RDL D SERIES-RLC10K or D SERIES-RLC10K controls to ramp the level up or down.

- **RDL ST-LEQ1 Connection**
  - To control the level via an entire system of modules with ST-LEQ1.

- **OPERATION**
  - **LEVEL ADJUSTMENT**
    - Momentarily press the UP or DOWN button to step the level 0.5 dB.
  - **RAMP TIME**
    - Adjust the TIME controls for the desired ramp rate. (Note: TIME+ is fastest; TIME- is slowest)
  - **STORE PRESET LEVEL**
    - 1. Set to the audio level to the desired volume using the front-panel or external UP and DOWN buttons.
    - 2. Press and hold the GO TO PRESSET button (3 seconds) until the front-panel level LED flashes.
  - **GO TO PRESET**
    - Press this button to return the audio level to the stored preset value.
  - **STORE PRESET LEVEL**
    - 1. Set the audio level to the desired volume using the front-panel or external UP and DOWN buttons.
    - 2. Press and hold the GO TO PRESET button (3 seconds) until the front-panel LED flashes.

- **DATA OUT jack**
  - Provides data to control additional modules.
  - Connect the OUT jack to the IN jack of the first adjacent module.

- **MULTIPLE REMOTE LOCATIONS**
  - Enable pushbutton control by setting POWER UP switch 2 to MOM (momentary).

- **OPEN-COLLECTORS/SWITCHES**
  - Enable momentary "pull to ground" control by setting POWER UP switch 2 to MOM.

- **TYPICAL PERFORMANCE**
  - **Inputs (2, RU-VCA2A; 6, RU-VCA6A): >10 kΩ**
  - **Frequency Response:**
    - THD+N:
      - 10 Hz to 50 kHz: 0.5 dB
      - >50 Hz (up to 150 Hz): 0.5 dB
    - Crosstalk:
      - >55 dB (1 kHz, typ), >65 dB (20 Hz to 5 kHz), >75 dB (5 kHz to 20 kHz)
  - **Ramp Times**
    - >15 dB (above +4 dBu)
    - Adjustable from unity to <0.05 dB

- **Indicators (10):**
  - **Audio Output (2, RU-VCA2A; 6, RU-VCA6A): Balanced (may be connected unbalanced)**
  - **Ramp Outputs:**
    - EQ Ramp Output: 0 to 10 Vdc (Ground-referenced) Note: Not intended to drive additional VCA 0-10Vdc inputs

- **Power Requirement:**
  - 24 Vdc @ 120 mA, Ground-referenced (RU-VCA2A); 24 Vdc @ 200 mA, Ground-referenced (RU-VCA6A)

- **Case Dimensions:**
  - 5.75” (14.6 cm) W x 1.65” (4.18 cm) H x 3.54” (9.0 cm) D; 3.9” (9.9 cm) D with connectors

**Radio Design Labs Technical Support Centers**

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Declaration of Conformity available from rdlnet.com.

Sole EMC specifications provided on product package.

Specifications are subject to change without notice.