35 Watt Remote Mixer Amplifier

ULTRA HIGH EFFICIENCY **MADE IN U.S.A.**

HD-RA35U
4 Ω / 8 Ω

HD-RA35UA
25 V, 70 V, 100 V

- Four audio inputs
- Paging input with front-panel volume control
- Three inputs with VCA volume control adjusted using RDL remote control
- Bass and Treble tone controls
- Designed for background music with paging and music-on-hold
- Manual or automatic (VOX) priority ducking
- Balanced inputs and amplified outputs on detachable terminal blocks
- Unbalanced inputs and outputs on RCA jacks
- Includes power supply
- Automatic sleep mode meets strictest energy saving standards

The HD-RA35U is a four input audio mixer amplifier for systems demanding the broadest range of features and the highest energy efficiency. Two output power amplifier zones, 35 W (Zone 1) and 4 W (Zone 2), are driven from high-efficiency Class D amplifier stages. The mixer and amplifier sections all normally shut down (standby "sleep" mode) when audio is absent and automatically turn on when needed. A paging source is normally connected to Input 1. The Zone 1 amplifier output level for inputs 2, 3 and 4 is VCA controlled using various optional RDL remote controls. This allows the user controls to be conveniently wall mounted without running audio to and from the remote control location. The Zone 1 output drives 4 Ω or 8 Ω speakers. The output impedance is switch-selectable on the rear panel. The Zone 2 amplifier output drives an 8 Ω speaker and/or 600 Ω telephone equipment. The HD-RA35UA has all the features of the HD-RA35U except its 35 W (Zone 1) amplifier provides a constant voltage output (25 V, 70 V or 100 V) instead of a low impedance speaker output.

The HD-RA35U is engineered, tested and manufactured in the U.S.A. to strict energy conservation standards. The unit consumes less than 1W of mains power in standby mode, and meets power amplifier efficiency specifications with analog-filtered Class-D digital output stages for both power amplifier output zones and for the 600 Ω output.

The HD-RA35U features two mixers. The Zone 1 mixer is split between the front-panel (Paging Input 1 and tone controls) and a remote control (Inputs 2, 3 and 4) providing user level controls for the 35 W amplifier output. The tone controls adjust the equalization at the Zone 1 amplifier output and can be switch selected on the rear panel to also adjust the equalization at the line-level output. The Zone 2 mixer on the rear panel provides level trimmers normally set by the installer to provide music-on-hold and/or for background music in a small zone equipped with an 8 Ω speaker. The Zone 2 section includes a 4 W amplifier, a 600 Ω transformer-balanced MOH output, and an active balanced line-level output that may be used to feed another audio power amplifier.

The HD-RA35U has four inputs that are common to both mixers. Inputs 1 and 2 accept balanced mic or line level sources. Inputs 3 and 4 accept unbalanced mono or stereo line-level sources.

- Input 1 is switch-selectable MIC or LINE. Phantom voltage (IEC standard 24 Vdc) is switch-selectable for the microphone input. The line input is transformer isolated and accepts balanced or unbalanced, high or low impedance audio sources. A gain trimmer is provided to set the input preamplifier to the optimum gain for the installation.
- A paging source is normally connected to Input 1. This input is equipped with push-to-talk terminals and with an adjustable threshold VOX circuit with LED threshold indicator, either (or both) of which may be set to duck ("fade down" or "mute") inputs 2, 3 and/or 4 by 25 dB when a paging signal is active on Input 1. The attenuated inputs fade up to normal volume when the paging message is finished. A rear-panel trimmer allows the start of the fade-up to be delayed from 2 to 6 seconds.
- Input 2 is switch-selectable MIC or LINE. Phantom voltage (IEC standard 24 Vdc) is switch-selectable for the microphone input. The line input is active balanced and accepts balanced or unbalanced, high or low impedance sources. A gain trimmer is provided to set the input preamplifier to the optimum gain for the installation.
- An RDL Dual-LED VU meter is provided on the rear panel to indicate proper gain adjustment for Inputs 1 and 2. Correct input gain adjustment insures adequate mixer stage headroom.
- Inputs 3 and 4 each provide unbalanced stereo RCA input jacks, summed to mono.

The presence of a signal on any of the inputs causes the HD-RA35U to fully turn on, activating both Zone 1 and 2 power amplifiers and all associated mixing, equalization and compressor circuitry. When input signals are absent, a delay timer is initiated. Rear-panel DIP switches are provided to set the power-down delay timer to a value between 10 minutes and 2 hours in 10 minute increments. After the time-out period, the HD-RA35U enters the sleep mode until an input signal is received. The switches may be set to disable the sleep mode for systems specifying continuous amplifier operation.

The HD-RA35U is equipped with an RJ45 jack for direct connection of an RDL triple remote level control (sold separately). Remote controls have three user volume controls and are available with pushbutton muting with LED indicators for each input. Remote control model examples: D-RC3 and D-RC3M. A rear-panel switch is provided to defeat the front-panel tone controls for Input 1, normally used when a paging source is connected to Input 1.

A dual-mono line-level output is provided on RCA jacks to feed the mono or stereo inputs of other audio equipment or power amplifiers. A rear-panel switch enables or disables the front-panel tone controls from adjusting the LINE OUT equalization. The Zone 1 mixer preamplifier output feeds the associated power amplifier input through a send/return effects loop on RCA jacks, normally bypassed by a rear-panel switch. This switch is turned off if an external module is connected to the loop. Ground-referenced 24 Vdc power is available on a rear-panel terminal block to power an optional external RDL module which may be mounted on the panel space provided. External module type examples: audio filtering or processing, mixing, isolation, twisted-pair sender/receiver.

The Zone 1 amplifier includes an analog compressor/limiter for audio fidelity noticeably superior to conventional class D amplifiers with digital limiting. Increasing the input gain can substantially increase the average output power beyond that of a standard 35 W amplifier. A red front-panel LED flashes when the compressor is preventing output clipping. Normal audio level signals remain unaffected by the compressor thereby preserving audio dynamics. The audio is compressed according to three dynamic time constants providing aural transparency while maintaining clean, unclipped amplified audio for input overloads of up to 20 dB. The HD-RA35U, with compression, is capable of producing average audio output levels and clarity normally expected from amplifiers with a much higher output power rating.

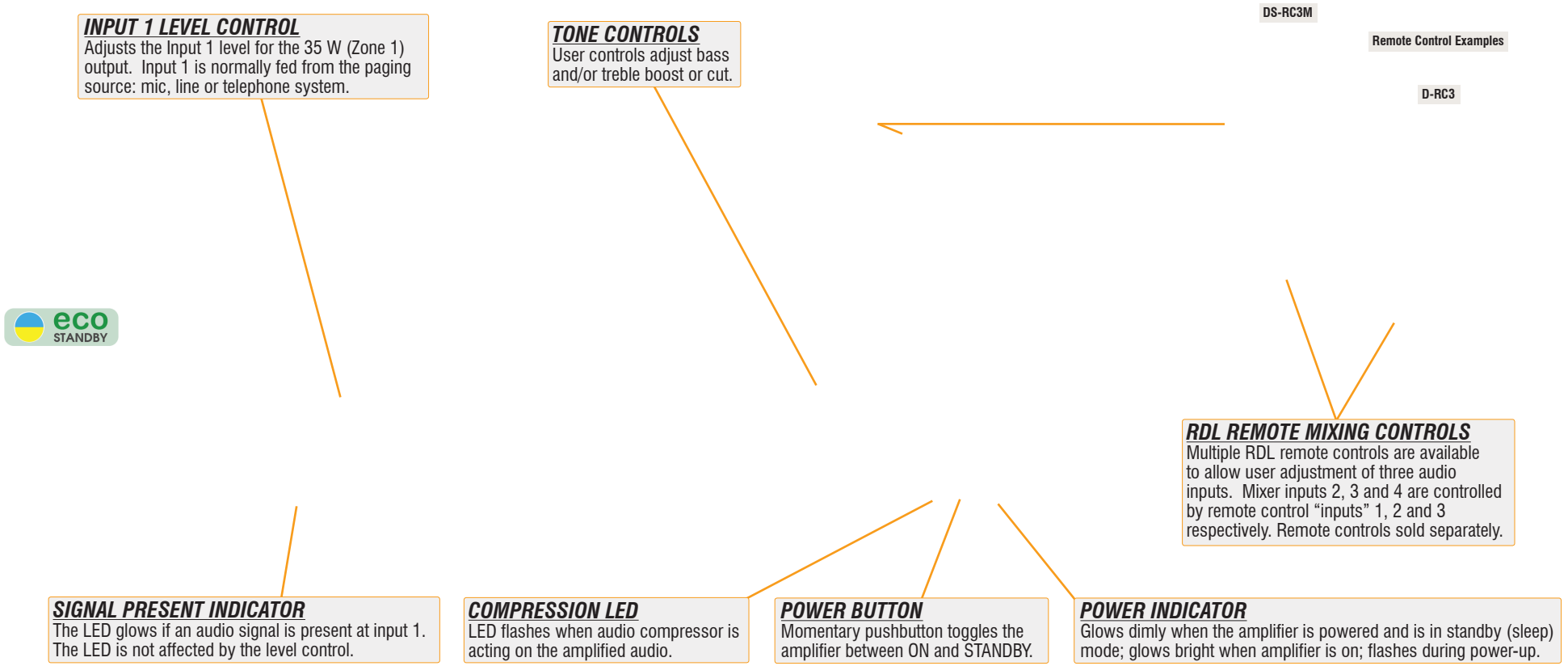
During power-up and power-down, the amplifier and preamplifier outputs are protected against clicks, pops and thumping by internal soft-start solid-state switches.

A blue POWER LED illuminates when the HD-RA35U is powered from its external 24 Vdc power supply (included). The power LED is dim when the mixer amplifier is in the standby mode, and is bright when the amplifiers are fully active. A front-panel pushbutton is provided to manually cycle between standby and active modes. The power amplifiers are equipped with both thermal and output short-circuit protection. The high-efficiency Class D output stages produce minimal heat for all levels of expected voice or music modulation.

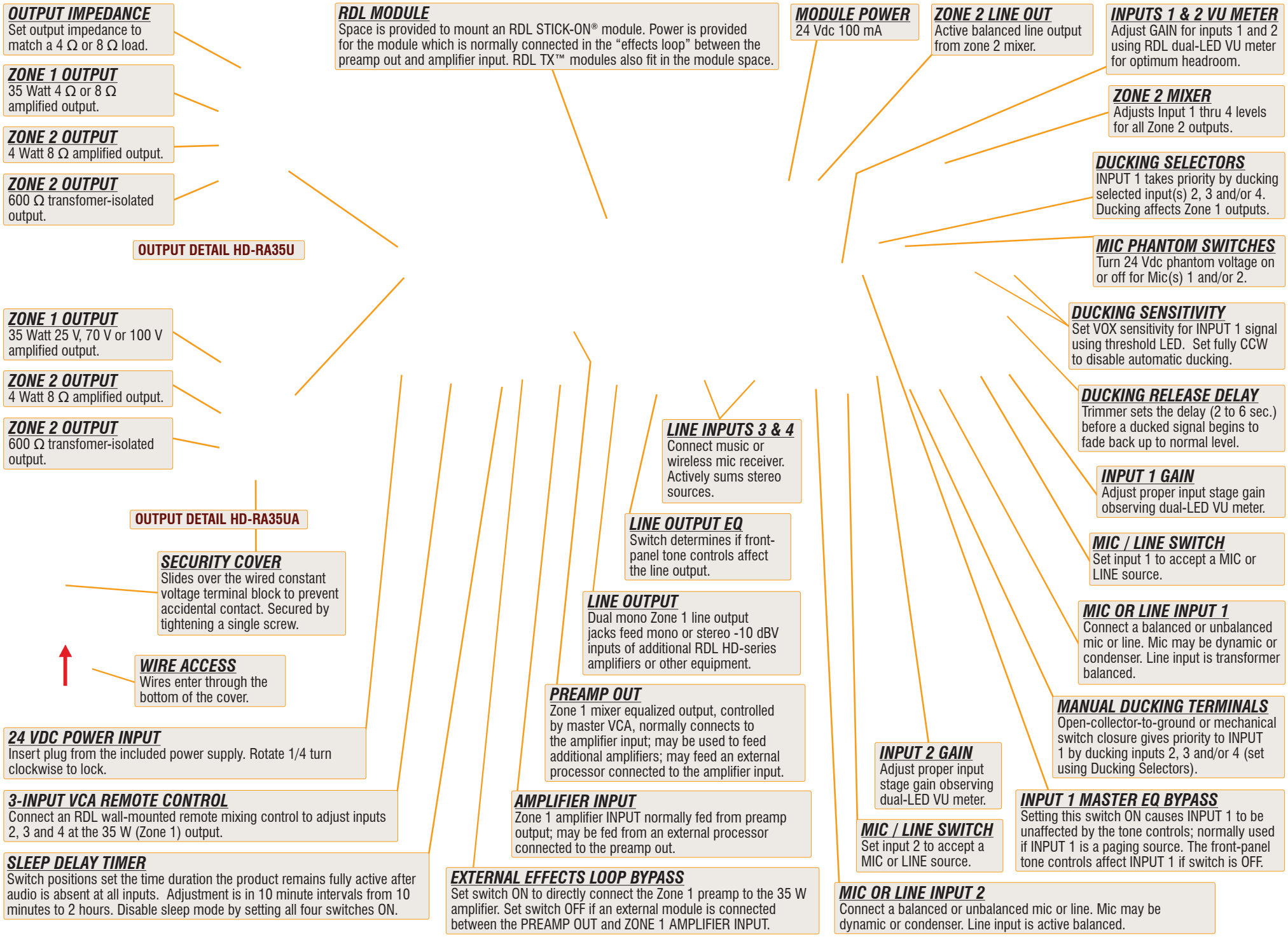
HD-RA35U & HD-RA35UA

Remote Mixer Amplifiers

HD-RA35U: Low Impedance Output 4 or 8 Ω HD-RA35UA: Constant Voltage Output 25 V, 70 V or 100 V



- Audio Mixer Amplifier with ECO Standby/Sleep Mode
- Automatic Power-Up and Standby "Sleep Mode" Power-Down
- Programmable Sleep Mode Delay with Selectable Bypass
- Primary "Zone 1" Amplifier: 35 W RMS
- Output Impedance Switch-Selectable 4 Ω or 8 Ω (HD-RA35U)
- Constant Voltage Outputs 25 V, 70 V, 100 V (HD-RA35UA)
- Secondary "Zone 2" Amplifier: 4 W into 8 Ω and 600 Ω Transformer
- Two Balanced Switch-Selectable Mic/Line Inputs
- Two Unbalanced Stereo-Summing Line Inputs
- Mic/Balanced Line Input Gain Trimmers with Dual-LED VU Meter
- Front-Panel Tone Controls for Zone 1
- Selective Input Ducking from Paging VOX or Contact Closure
- Balanced Inputs and Outputs on Detachable Terminal Block
- Remote Control Connection for Inputs 2, 3 and 4 on RJ45 Jack
- Compatible with RDL Remote Mixing Controls
- Transformer-Isolated Telephone/Line Input and Output
- Aurally Transparent Compressor Controls Clipping
- Compressor Maximizes Average Output Power and Level
- Audio Compression Threshold LED
- Rear-Panel Mixer Using Audio Gain Trimmers for Zone 2
- High-Efficiency Class D Operation
- Thermal and Short-Circuit Protection


OUTPUT IMPEDANCE
Set output impedance to match a 4 Ω or 8 Ω load.
ZONE 1 OUTPUT
35 Watt 4 Ω or 8 Ω amplified output.
ZONE 2 OUTPUT
4 Watt 8 Ω amplified output.
ZONE 2 OUTPUT
600 Ω transfomer-isolated output.
OUTPUT DETAIL HD-RA35U
RDL MODULE
Space is provided to mount an RDL STICK-ON® module. Power is provided for the module which is normally connected in the "effects loop" between the preamp out and amplifier input. RDL TX™ modules also fit in the module space.
MODULE POWER
24 Vdc 100 mA
ZONE 2 LINE OUT
Active balanced line output from zone 2 mixer.
INPUTS 1 & 2 VU METER
Adjust GAIN for inputs 1 and 2 using RDL dual-LED VU meter for optimum headroom.
ZONE 2 MIXER
Adjusts Input 1 thru 4 levels for all Zone 2 outputs.
DUCKING SELECTORS
INPUT 1 takes priority by ducking selected input(s) 2, 3 and/or 4. Ducking affects Zone 1 outputs.
MIC PHANTOM SWITCHES
Turn 24 Vdc phantom voltage on or off for Mic(s) 1 and/or 2.
DUCKING SENSITIVITY
Set VOX sensitivity for INPUT 1 signal using threshold LED. Set fully CCW to disable automatic ducking.
DUCKING RELEASE DELAY
Trimmer sets the delay (2 to 6 sec.) before a ducked signal begins to fade back up to normal level.
INPUT 1 GAIN
Adjust proper input stage gain observing dual-LED VU meter.
MIC / LINE SWITCH
Set input 1 to accept a MIC or LINE source.
MIC OR LINE INPUT 1
Connect a balanced or unbalanced mic or line. Mic may be dynamic or condenser. Line input is transformer balanced.
MANUAL DUCKING TERMINALS
Open-collector-to-ground or mechanical switch closure gives priority to INPUT 1 by ducking inputs 2, 3 and/or 4 (set using Ducking Selectors).
INPUT 1 MASTER EQ BYPASS
Setting this switch ON causes INPUT 1 to be unaffected by the tone controls; normally used if INPUT 1 is a paging source. The front-panel tone controls affect INPUT 1 if switch is OFF.
MIC OR LINE INPUT 2
Connect a balanced or unbalanced mic or line. Mic may be dynamic or condenser. Line input is active balanced.
INPUT 2 GAIN
Adjust proper input stage gain observing dual-LED VU meter.
MIC / LINE SWITCH
Set input 2 to accept a MIC or LINE source.
EXTERNAL EFFECTS LOOP BYPASS
Set switch ON to directly connect the Zone 1 preamp to the 35 W amplifier. Set switch OFF if an external module is connected between the PREAMP OUT and ZONE 1 AMPLIFIER INPUT.
AMPLIFIER INPUT
Zone 1 amplifier INPUT normally fed from preamp output; may be fed from an external processor connected to the preamp out.
PREAMP OUT
Zone 1 mixer equalized output, controlled by master VCA, normally connects to the amplifier input; may be used to feed additional amplifiers; may feed an external processor connected to the amplifier input.
LINE OUTPUT
Dual mono Zone 1 line output jacks feed mono or stereo -10 dBV inputs of additional RDL HD-series amplifiers or other equipment.
LINE OUTPUT EQ
Switch determines if front-panel tone controls affect the line output.
LINE INPUTS 3 & 4
Connect music or wireless mic receiver. Actively sums stereo sources.
ZONE 1 OUTPUT
35 Watt 25 V, 70 V or 100 V amplified output.
ZONE 2 OUTPUT
4 Watt 8 Ω amplified output.
ZONE 2 OUTPUT
600 Ω transfomer-isolated output.
OUTPUT DETAIL HD-RA35UA
SECURITY COVER
Slides over the wired constant voltage terminal block to prevent accidental contact. Secured by tightening a single screw.
WIRE ACCESS
Wires enter through the bottom of the cover.
24 VDC POWER INPUT
Insert plug from the included power supply. Rotate 1/4 turn clockwise to lock.
3-INPUT VCA REMOTE CONTROL
Connect an RDL wall-mounted remote mixing control to adjust inputs 2, 3 and 4 at the 35 W (Zone 1) output.
SLEEP DELAY TIMER
Switch positions set the time duration the product remains fully active after audio is absent at all inputs. Adjustment is in 10 minute intervals from 10 minutes to 2 hours. Disable sleep mode by setting all four switches ON.

MOUNTING ACCESSORIES available separately

HD-RA2 Rack Adapter
Mounts 2 HD series products. Mixer amplifiers may be mounted forward for user control, or may be recessed securely behind a filler panel.

Amplifier mounted in HD-RA2

HD-FP1 Filler Panel
Fills an unused half of rack adapter or mounts in front of an HD series product to prevent user adjustment or tampering.

Amplifier mounted behind HD-FP1

HD-FP2L Filler Panel with Lens
Mounts in front of an HD series product to allow viewing while preventing user adjustment or tampering. Lens is removable during setup.

Amplifier mounted behind HD-FP2L

HD-BP1 BACK-PACK Rear Cover
Mounts to an HD series mixer / amplifier to prevent user access to the rear panel. The back-pack holds the power supply and provides a completely closed back for the installed amplifier.

Inside View with Power Supply

BACK-PACK Installed on Mixer Amplifier

Rear View

HD-ASC1 Amplifier Security Cover
Mounts to an HD series mixer / amplifier to prevent user adjustment or tampering. The power button and associated indicators remain accessible with the HD-ASC1 installed.

HD-ASC1 mounted to an amplifier

TYPICAL PERFORMANCE

Amplifier Zones (2):	Zone 1 (Main): 35 W RMS, remote-controlled mixer (3 user controls) with paging input level control on front panel; Zone 2: 4 W RMS (8 Ohms), rear-panel mixer (trimmers)
Audio Inputs (5):	2, balanced, mic or line switch selectable on terminal blocks; 2, unbalanced stereo summing inputs on RCA jacks; 1, unbalanced amp in on RCA jack
Gain Adjustments (2):	Inputs 1 and 2: Rear-panel single-turn trimmer
Maximum Input Level:	Mic Inputs: -9 dBu; Balanced line inputs: + 20 dBu; Unbalanced Inputs: + 5 dBV (+11 dBV, one input); (for 1% THD+N at output)
Phantom Voltage:	24 Vdc (IEC 1938: 1996-12), switch-selectable for each mic input
Ducking/Muting Actuation:	Automatic (Input 1 VOX: rear-panel adjustable signal threshold with LED indicator) or Manual (contact closure to ground)
Ducking/Muting Release Delay:	Rear-panel single-turn trimmer, adjustable 2 to 6 seconds
Ducking/Muting:	Switch-selectable for inputs 2, 3 and/or 4, 25 dB ducking attenuation, nominal
Effects Loop:	Unbalanced RCA jacks (preamp output from main mixer, input to power amplifier)
External RDL Module Power Output:	24 Vdc, 100 mA maximum, ground-referenced
Input level:	(to cross compressor threshold equaling 23 W amplified output) Mic Inputs: -50 dBu (2.5 mV), (front panel and rear trimmer at max.) Balanced line inputs: -21 dBu (70 mV), (front panel and rear trimmer at max.) Unbalanced Inputs: -15 dBV (180 mV, front panel and rear trimmer at max., both inputs driven)
Noise (line or amplified outputs):	Mic or Balanced line inputs: -70 dB (below compressor threshold at max gain); Unbalanced Inputs: <-75 dB (max gain)
THD+N:	< 0.5% (1 kHz at compressor threshold, main amp output); < 0.1% (line output, main)
CMRR:	Mic inputs: > 50 dB (50 Hz to 120 Hz); Balanced line inputs: > 80 dB (50 Hz to 120 Hz, transformer-coupled input)
Compressor:	Threshold 2 dB below rated output, automatically adjusting attack and release times
Frequency Response (mixer):	Mic to line output: +/- 1.5 dB (40 Hz to 25 kHz); Balanced line input to line output: +/- 1 dB (20 Hz to 20 kHz); Unbalanced line input to line output: +/- 0.5 dB (20 Hz to 20 kHz)
Frequency Response (amplifiers):	Constant voltage: +/- 3 dB (50 Hz to 18 kHz); 4/8 Ohm: +/- 1 dB (50 Hz to 20 kHz)
Tone Controls:	±10 dB @ 10 kHz, ±9 dB @ 100 Hz (front-panel) with center detent
Audio Outputs (2):	-10 dBV nominal (316 mV), dual mono unbalanced RCA (main mixer; FLAT or EQUALIZED, switch-selectable on rear panel); 0 dBu nominal balanced, terminal block (zone 2 mixer)
MOH Output:	0 dBu nominal (775 mV), 600 Ohm transformer-isolated, 16 dB headroom
Power Amplifier Outputs (2):	HD-RA35U: Zone 1 (main, <1% THD+N): 35 W RMS (4 Ohms), 32 W (8 Ohms) on detachable terminal block (switch-selectable 4 or 8 Ohm impedance); HD-RA35UA: Zone 1 (main): 35 W RMS (25, 70 or 100 V) Zone 2: 4 W (8 Ohms, on detachable terminal block)
Indicators (9):	Front-panel: Signal present (4; 1 per input, green), Compressor activity (red), Power (bright=on, dim=standby, blue); Rear-panel: dual-LED VU meter (for inputs 1 and 2, green/red), Ducking/muting threshold (yellow)
VCA (3):	Zone 1 (main) inputs 2, 3 and 4, 0 to 10 Vdc control, RJ45 (compatible with RDL VCA wall controls)
Front-panel controls (4):	Zone 1 (main) paging level control (input 1), EQ (2, bass and treble), Power (momentary pushbutton, toggle on/standby)
Rear-panel controls (22):	Gain trimmers (2, input 1 and 2), Mic/Line switch (2, input 1 and 2), Zone 1 line output pre/post-EQ switch, Effects loop bypass switch, Sleep (standby) mode delay (4 binary switches), Input 1 ducking/muting detector sensitivity trimmer, Phantom voltage switches (2, input 1 and 2), Ducking control switches (3, to duck inputs 2, 3, and/or 4), Tone control paging bypass (includes or excludes input 1 from tone controls), Zone 2 mixer level controls (4, inputs 1 through 4)
Efficiency Standard:	"Energy Star® Program Requirements for Audio/Video" Version 2.0, applicable for passive remote control models (without muting)
Sleep Mode Power Consumption:	< 1 W (amplifier and included power supply)
Sleep Mode Delay:	10 minutes to 2 hours (switch-selectable in 10 minute increments)
Sleep Mode Disable:	Selectable
Active Mode Delay:	2 seconds (nominal) after input audio detected
Audio Detector Threshold:	-80 dBu mic (at max input gain), -55 dBu balanced line (at max input gain), -42 dBV unbalanced
Ambient Operating Environment:	0° C to 50° C Maximum; 20° C Recommended
Power Supply (included):	100 to 240 Vac, 50-60 Hz, 50 W; 24 Vdc output to amplifier chassis
EMC:	CE
Dimensions and Weight:	Height: 3.5 in.(8.89 cm); Width: 8.5 in.(21.6 cm); Depth: 10 in.(25.4 cm); Weight: 5.6 lb.(2.5 kg) (HD-RA35U), 7.3 lb.(3.3 kg) (HD-RA35UA)

RDL • 659 6th Street • Prescott, AZ • USA 86301 • Sales: 800-281-2683 • 928-443-9391 • Tech Support: 800-933-1780 • 928-778-3554
RDL Europe Sales & Support: (31) 20-6238-983 • www.rdlnet.com