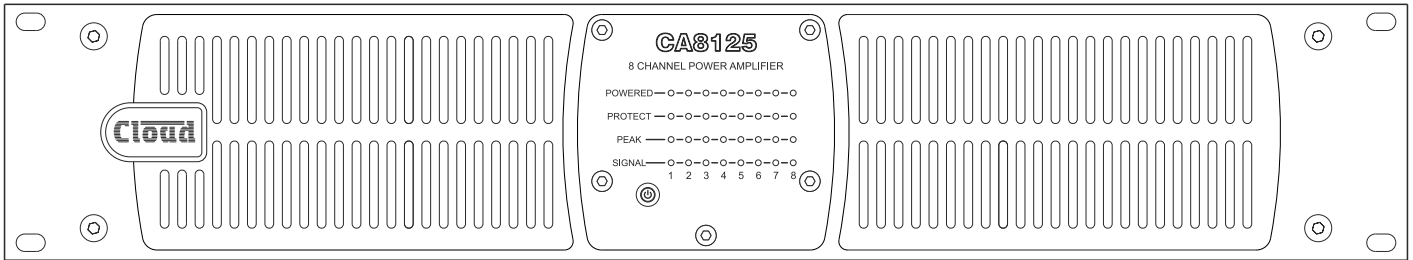
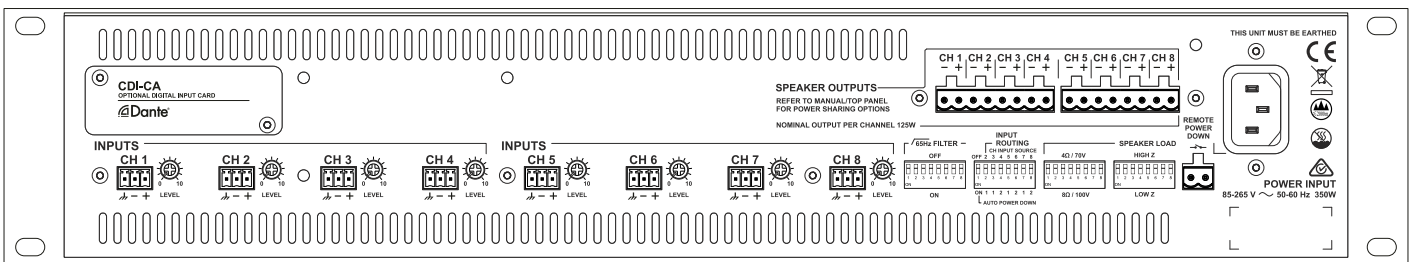


# CLOUD CA SERIES POWER AMPLIFIERS

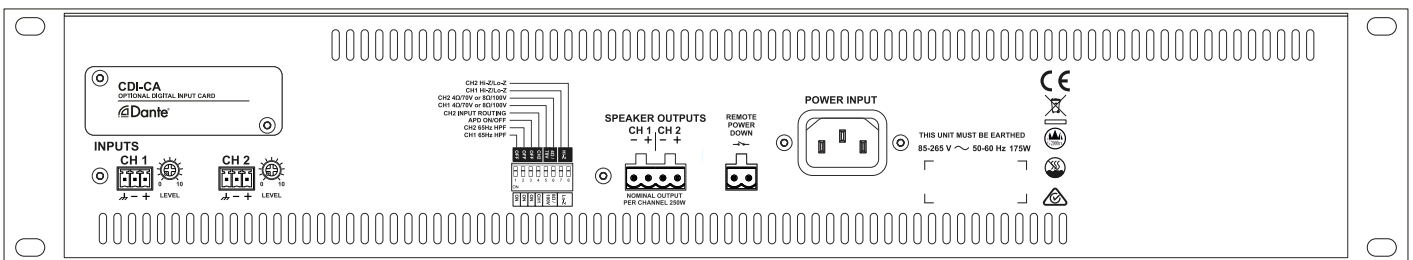
## MODELS: CA2250/CA2500/CA4250/CA6160/CA8125



Cloud CA8125 – front panel view (other models differ only in number of LEDs)



Cloud CA8125 - rear panel view (CA6160/4250/2500 differ only in the number of channels and DIP switch poles)



Cloud CA2250 – rear panel view

## General Description

Cloud CA amplifiers are versatile multi-channel power amplifiers of advanced design, able to drive both low impedance loudspeakers (4 or 8 ohms) and high impedance (70/100 V-line) loudspeaker systems. They are ideal for sound reinforcement applications in the retail, leisure, hospitality, commercial or industrial sectors. CA Series amplifiers may form part of a Dante® AoIP audio network with the addition of an optional interface card.

### Models:

The range comprises five models:

MODEL	CHANNELS	POWER
CA2250	2	2 x 250 W
CA2500	2	2 x 500 W
CA4250	4	4 x 250 W
CA6160	6	6 x 160 W
CA8125	8	8 x 125 W

The amplifiers use an energy-efficient Class D output stage which dispenses with line output transformers, and consequently offer great savings in weight and size over traditional designs of equivalent power ratings. Safety features of the design include output DC detection, overcurrent protection, and thermal monitoring. A switch-on delay provides loudspeaker protection at power-up. All models are built in a 2U steel enclosure, and use variable-speed forced-air cooling.

Models CA2500, CA4250, CA6160 and CA8125 have a total power output capability of 1 kW; Model CA2250 has a total power output capability of 500 W. When in use with low impedance loudspeakers (4 or 8 ohms), the nominal power output of each channel is available as per the table above.

When used to drive 70/100-V line loudspeaker systems, the amplifier's maximum power may be shared equally between odd-numbered channels (in any combination), and even-numbered channels (in any combination). Thus in Models CA2500, CA4250, CA6160 and CA8125, the odd-numbered channels can deliver

a total of 500 W and similarly, the even-numbered channels can deliver 500 W. In Model CA2250, the maximum available power of 500 W may be shared between the two channels. This high-impedance mode power sharing feature allows – for example – one multi-channel amplifier to drive loudspeaker systems in areas of a building differing in size, while optimising the overall power capability.

Particular design attention has been paid to the amplifiers' energy efficiency. If no input signal is detected for 15 minutes, the channel (or odd/even group of channels) is muted, to reduce power consumption. Resumption of an input signal will immediately "wake up" the channel/group. If no input signal is detected for 25 minutes, an Automatic Power-Down feature (APD) then puts the channel/group into a low-power standby mode; when all channels are in this mode the power consumption is less than 2.5 W. The amplifiers also include a remote standby/wake up function, enabling them to be placed into standby mode - and subsequently powered-up again - by a simple external contact closure. Wake-up time is typically 500 ms.

In addition to the "soft" power switch and associated LED, the front panels are fitted with four LEDs for each channel: these confirm signal presence (SIGNAL), peak level (PEAK), activation of the protection circuitry (PROTECT) and amplifier power status (POWERED). A Mute state is confirmed by simultaneous illumination of the PEAK, PROTECT and POWERED LEDs.

The inputs are electronically balanced, on plug-in multiway connectors. Rear panel controls are provided for individual channel levels; multi-pole DIP switches allow the configuration of input routing options and the selection of per-channel 65 Hz high-pass filters (to help prevent loudspeaker transformer core saturation in 70/100 V-line systems). Further DIP switches allow selection of output type: 4 ohms, 8 ohms, 70 V-line or 100 V-line.

The amplifiers have a rear panel expansion slot for an optional Dante® input card. Cards versions CDI-CA2, CDI-CA4 and CDI-CA8 are available, offering two, four and eight Dante channels respectively.

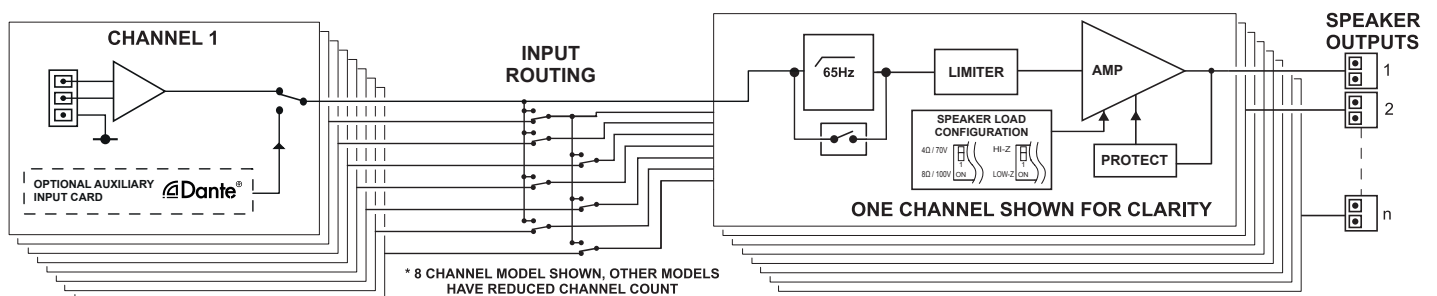
## Key Features

### Amplifier:

- Advanced design of 2, 4, 6 and 8-channel Class D power amplifiers
- Transformerless output stage can drive 70/100 V-line systems directly
- Nominal power ratings: 2 x 250 W (CA2250), 2 x 500 W (CA2500), 4 x 250 W (CA4250), 6 x 160 W (CA6160) and 8 x 125 W (CV8125)
- Thermal protection, overcurrent limiting and DC offset protection
- Switch-on delay for speaker protection during power-up
- On 4, 6 and 8 channel models, power sharing allows odd and even channel groups to deliver a maximum of 500 W each: CA2250 also features power sharing up to 500 W between channels
- Per-channel, front panel LEDs for signal presence, peak level, protection activity and power status
- Balanced line level inputs

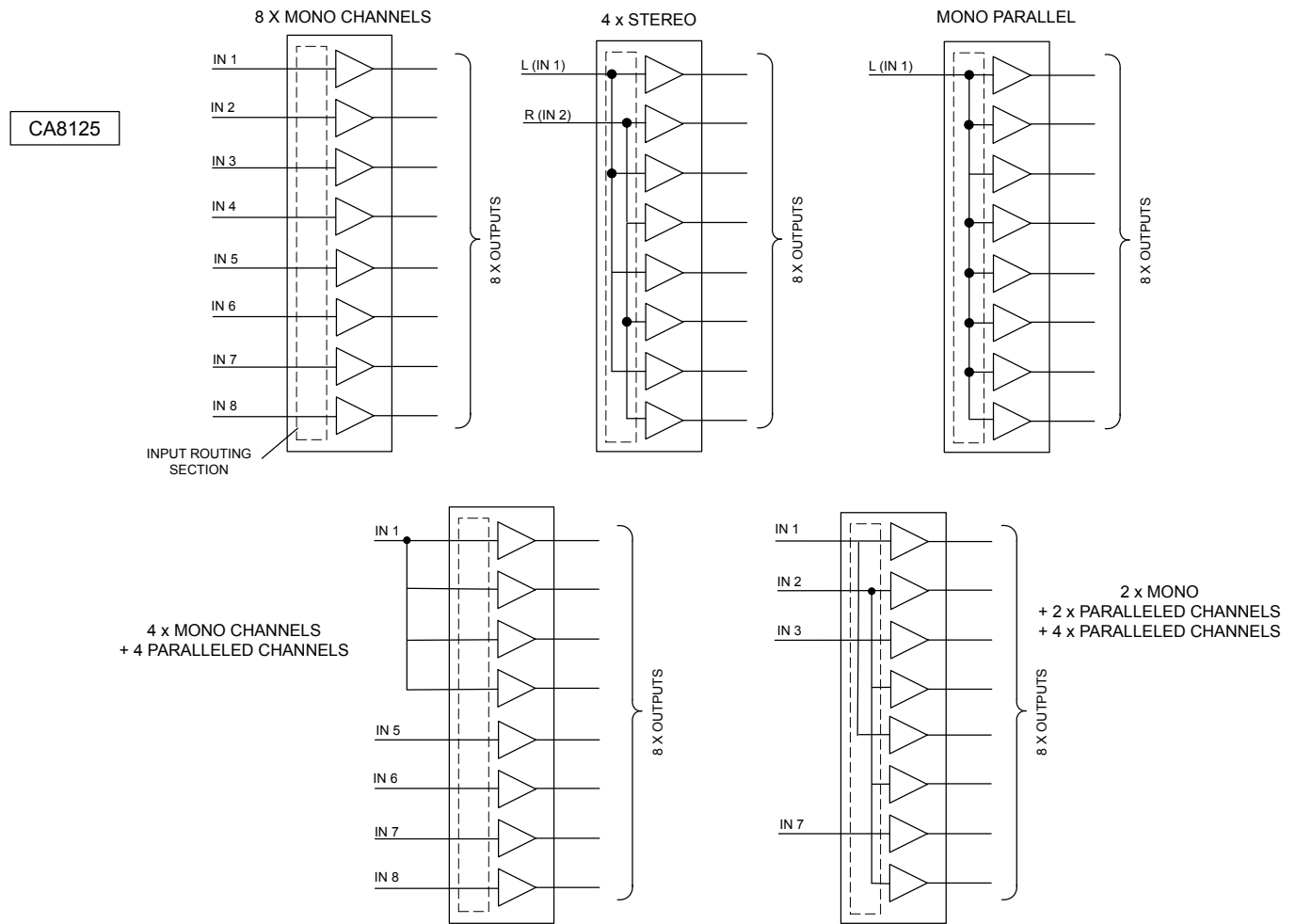
- Optional Dante® input cards available for all models
- Per-channel output level controls
- Rear panel input routing switches configure amplifier for manual selection of multichannel, stereo or mono operation
- Rear panel switches select 4 or 8 ohm low-impedance operation, or 70 V-line or 100 V-line output levels
- Per-channel high-pass filter (65 Hz) to protect against transformer saturation in 70/100 V-line systems
- Independent Automatic Power Down (APD) on odd and even channel groups; minimises power consumption in absence of an input signal
- APD may be globally disabled
- Remote Power Down control input
- Variable speed forced-air cooling
- 2U 19" rackmounting units

## Block Diagram

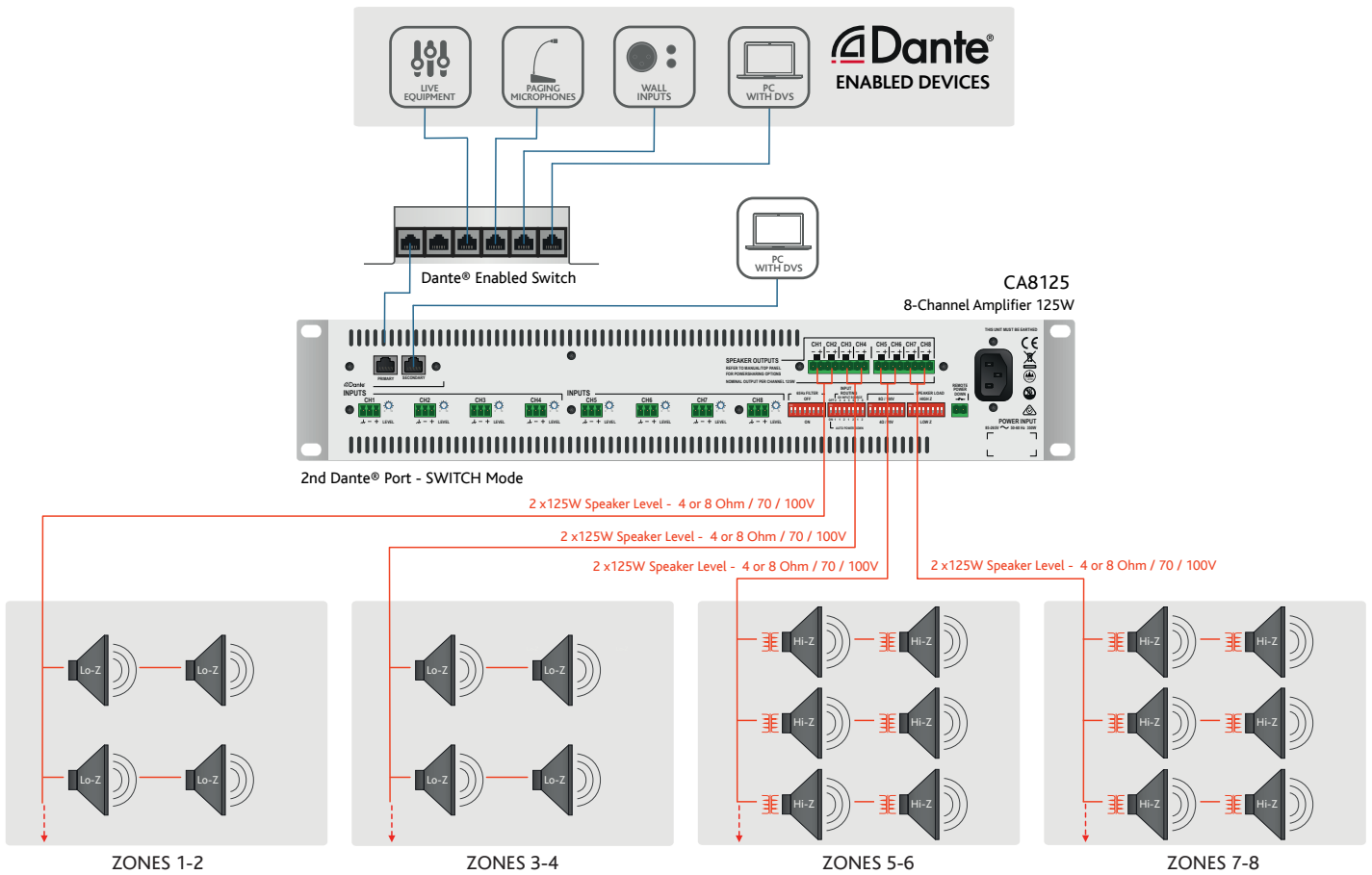


## Input Routing

The input routing switches permit various permutations of mono, stereo and multi-channel operation without any external parallel wiring. Some possibilities are shown below (CA8125 shown as example):



## Application Example

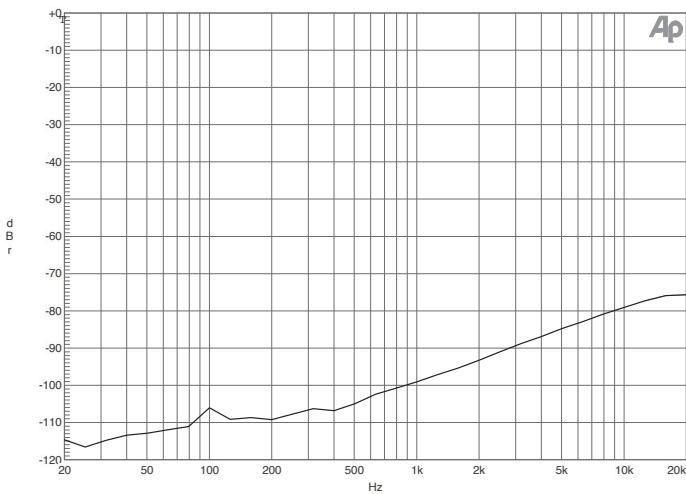


The example above shows how the eight channels of a CA8125 amplifier may be used to provide stereo audio to different zones of a building. Both 70/100 V-line and low impedance loudspeakers are installed (in different zones), and the system may be extended to additional speakers in each zone as required, provided the total 500 W power capacity of the odd/even channel groups is not exceeded.

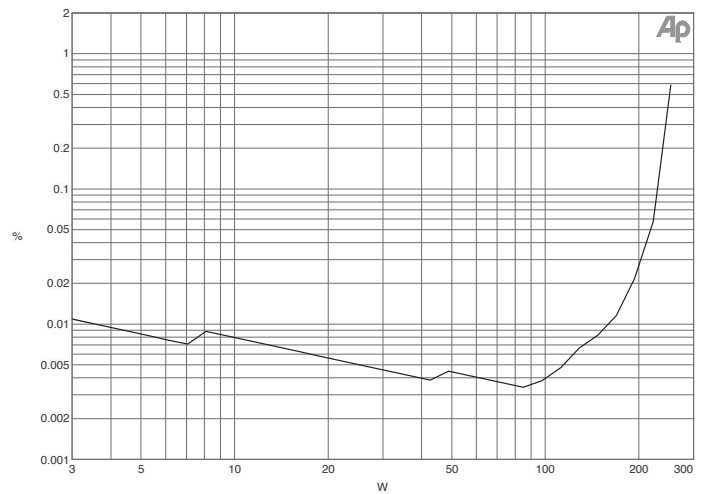
The example shows how the CA8125 can receive its eight inputs (four stereo pairs in this example) from a Dante network when the optional Dante input card is fitted to the expansion slot. Any Dante-enabled device elsewhere on the network – e.g., line sources, wall input plates, paging mics – can be an audio source, routing being under the control of Audinate's Dante Controller software.

## Performance Graphs

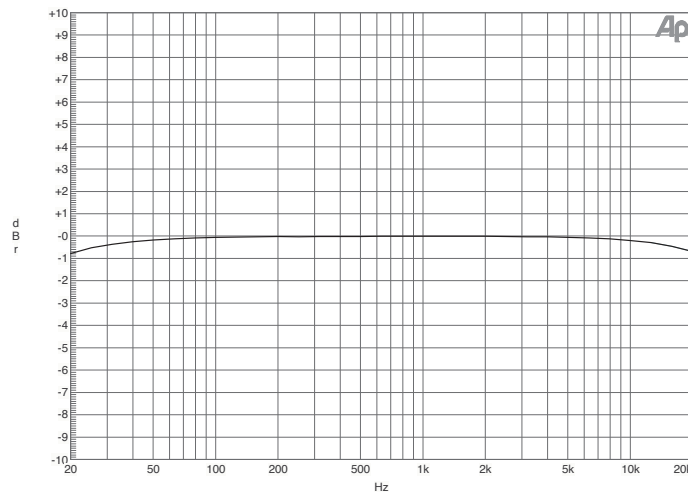
CA Series inter-channel crosstalk (worst case)



THD+N% Output Power 40 Ohm Load, All Models



All Models 100v Maximum Load Frequency Response



## Technical Specifications

Performance	All Models
Output Power:	CA2250: total output power 500 W, both channels CA2500/CA4250/CA6160/CA8125: total output power 1 kW, all channels <sup>1</sup>
Outputs:	Low-impedance: 4 ohms or 8 ohms (selectable) High-impedance: 70 V or 100 V (rms)
Frequency Response:	20 Hz to 20 kHz, +0 dB/-1 dB
High Pass Filter:	-3 dB @ 65 Hz via rear panel switches
Distortion:	0.019%THD+N @1 kHz, 1 dB below rated output
Noise:	-94 dB <sub>r</sub> , 22 Hz to 22 kHz, relative to full power
Crosstalk:	Ch1 to Ch2: < -98 dB @1 kHz, -79 dB @10 kHz Other channel combinations: -107 dB @1 kHz, -98 dB @10 kHz (typical)
Inputs	
Connectors	3-pole 3.5 mm-pitch plug-in screw-terminal connectors
Sensitivity	0 dBu (0.775 V <sub>rms</sub> )
Input Impedance	10 kohms (balanced); 5 kohms (unbalanced)

## Technical Specifications

General						
Output connectors		2-pole 5 mm-pitch plug-in screw-terminal connectors				
Power input		85 to 265 V AC, 50 to 60 Hz				
Mains protection		Internal fuses: CA2250: 1 x 250 V fuse, 20 x 5 mm, rating T4AH CA2500, CA4250, CA6160, CA8125: 2 x 250 V fuses, 20 x 5 mm, rating T4AH				
Normal operating temperature		0 °C to 35 °C (Note performance and specifications cannot be guaranteed outside this range)				
Power Consumption		CA2250	CA2500	CA4250	CA6160	CA8125
	Standby & APD <sup>2</sup>	0.795 W (12.43 VA)	1.919 W (24.29 VA)	1.925 W (23.77 VA)	2.284 W (23.55 VA)	2.353 W (23.77 VA)
	Mute <sup>3</sup>	11.24 W (21.09 VA)	17.87 W (36.85 VA)	22.37 W (41.97 VA)	26.87 W (48.15 VA)	25.91 W (48.7 VA)
	Idle <sup>4</sup>	17.07 W (28.13 VA)	24.33 W (43.6 VA)	33.72 W (53.87 VA)	43.45 W (66.54 VA)	53.8 W (78.77 VA)
	1/8th power <sup>5</sup>	88.33 W (105.8 VA)	165.1 W (193.5 VA)	170.0 W (192.3 VA)	170.2 W (205.8 VA)	183.5 W (219.8 VA)
	1/3rd power <sup>6</sup>	200.9 W (213.5 VA)	388.0 W (415.4 VA)	391.0 W (416.0 VA)	378.5 W (403.5 VA)	387.5 W (411.8 VA)
Heat loss	Standby & APD <sup>2</sup>	2.9 kJ/hr (2.7 BTU/hr)	6.9 kJ/hr (6.6 BTU/hr)	6.9 kJ/hr (6.6 BTU/hr)	8.2 kJ/hr (7.8 BTU/hr)	8.5 kJ/hr (8.0 BTU/hr)
	Mute <sup>3</sup>	40.5 kJ/hr (38.4 BTU/hr)	64.3 kJ/hr (61.0 BTU/hr)	80.5 kJ/hr (76.4 BTU/hr)	96.7 kJ/hr (91.7 BTU/hr)	93.3 kJ/hr (88.5 BTU/hr)
	Idle <sup>4</sup>	61.5 kJ/hr (58.3 BTU/hr)	87.6 kJ/hr (83.1 BTU/hr)	121.4 kJ/hr (115.1 BTU/hr)	156.4 kJ/hr (148.3 BTU/hr)	193.7 kJ/hr (183.7 BTU/hr)
	1/8th power <sup>5</sup>	91.7 kJ/hr (87.0 BTU/hr)	108.3 kJ/hr (102.7 BTU/hr)	164.9 kJ/hr (156.4 BTU/hr)	179.5 kJ/hr (170.2 BTU/hr)	211.0 kJ/hr (200.1 BTU/hr)
	1/3rd power <sup>6</sup>	122.5 kJ/hr (116.1 BTU/hr)	197.3 kJ/hr (187.1 BTU/hr)	210.0 kJ/hr (199.1 BTU/hr)	211.3 kJ/hr (200.4 BTU/hr)	242.7 kJ/hr (230.2 BTU/hr)
Amplifier Protection		Overcurrent DC Thermal monitoring Switch-on delay				
Status Indicators		Power applied, Protection active, Signal peak, and Signal present				
Cooling		Variable speed fan				
Dimensions (W x H x D)	Net	CA2250: 482.6 mm x 88 mm x 231.3 mm (19 in x 3.46 in x 9.11 in) CA2500, CA4250, CA6160, CA8125: 482.6 mm x 88 mm x 381.8 mm (19 in x 3.46 in x 15.03 in)				
	Shipping	CA2250: tbc CA2500, CA4250, CA6160, CA8125: 606 mm x 164 mm x 558 mm (23.9 in x 6.5 in x 22 in)				
Weight		CA2250	CA2500	CA4250	CA6160	CA8125
	Net	4.50 kg (10.1 lb)	6.75 kg (15.1 lb)	7.10 kg (15.9 lb)	7.55 kg (16.9lb)	7.95 kg (17.8 lb)
	Shipping	tbc	8.75 kg (19.6 lb)	9.10 kg (20.4 lb)	9.55 kg (21.4 lb)	9.95 kg (22.3 lb)

### NOTES

1. Odd- and even-numbered channel groups can deliver up to 500 W simultaneously (CA2250 excepted), but in models with more than two channels, the available power is reduced proportionately when any channel is delivering more than its nominal rating. On Model CA2250, the maximum power of 500 W is shared between the two channels as required.

Notes re Power Consumption and Heat Loss measurements:  
All measurements at 230 VAC 50 Hz power input

- Standby: amplifier in Standby and APD states (i.e., after 25 mins of no input)
- Mute: amplifier in Mute state (i.e., after 15 mins of no input)
- Idle: amplifier not in standby state, but no audio output
- 1/8th power: constant sound level at 1/8 of the rated output power (audio mainly clean, only occasional clipping)
- 1/3rd power: constant sound level at 1/3 of the rated output power (audio beginning to become compressed, limited or heavily clipped)

## Architect's and Engineer's Specification

The power amplifiers shall be available in two channel, four channel, six channel and eight channel versions. The output stage shall be transformerless and be capable of driving either low impedance loads of four or eight ohms, or configurable as a constant voltage type able to drive 70 V-line or 100 V-line loudspeaker systems. Each amplifier shall have two groups of channels with a total of 500 watts available from each group: the even numbered channels shall form one group, the odd channels a second group. An alternative two-channel version shall be available with a total maximum power of 500 watts.

The amplifiers will include both an automatic mute and an automatic power-down (APD) function: the mute function will mute an odd or even group of channels if no input signal has been received for 15 minutes and the APD function will shut down either group of channels if no input signal has been received for 25 minutes.

The amplifiers' front panels shall incorporate a "soft" AC power switch with integral LED indication of POWER ON, and LEDs indicating Signal Present, Peak Level, Protect status and Power status for each channel. The Signal Present LEDs shall illuminate when the output level is greater than 2.5 Vrms. The Peak LEDs shall illuminate at the onset of signal clipping. The Protect LEDs shall indicate activation of the channel protection circuitry. The Power status LEDs shall indicate that the channel has not been powered down by the APD system.

The amplifiers shall be provided with a number of inputs equal to the number of channels. The input connectors shall be of removable, screw-terminal type. The inputs shall be electronically balanced and capable of operating with both balanced and unbalanced sources. The input impedance shall be 10 kohms (balanced). It shall be possible to configure the amplifiers to operate in the following configurations as a minimum: all channels independent, one input feeding all channels or two inputs feeding the amplifier channels in pairs for stereo operation. It shall be possible to enable a high-pass 3rd order filter with a turnover frequency of 65 Hz independently in each amplifier channel. The amplifiers shall be provided with externally accessible switches for setting each channel independently for operation with 4 ohm loads, 8 ohm loads, 70 V-line distribution systems or 100 V-line distribution systems. It shall be possible to select all the configurations and settings described in this paragraph without accessing the interior of the amplifier enclosure.

Optional input cards shall be available to permit the amplifiers to form part of a Dante® audio network, and to obtain their input signals from channels within the Dante data stream. The cards shall be retrofittable, and versions able to handle two, four or eight audio channels shall be available.

Output level adjustment will be provided for each amplifier channel via a rear panel control: at the minimum setting, the channel shall be muted. Each channel shall deliver its rated power from an input signal of 0 dBu with the channel level control set at maximum.

Output mute protection on power-up and thermal protection shall be provided. The amplifiers will also be protected against short-circuits at the output, and excessive combination of output voltage and current. The amplifiers' outputs shall be on removable, screw-terminal connectors.

The amplifier shall be built in a steel chassis suitable for mounting in a standard 19" equipment rack, and occupy two rack spaces. Variable speed forced-air cooling shall be employed; the fan shall not operate unless the internal temperature dictates it.

The amplifiers shall operate on all AC supply voltages between 85 V and 265 V. In the absence of an input signal, they shall automatically enter "standby" mode wherein the DC power consumption shall be less than 2.5 W. It shall also be possible to control the power status of the amplifiers via a dedicated control input with an external contact closure.

The power amplifiers shall be the Cloud CA2250 (two channels, 500 W max. power), CA2500 (two channels, 1 kW max. power), CV4250 (four channels, 1 kW max. power), CA6160 (six channels, 1 kW max. power) and CA8125 (eight channels, 1 kW max. power). The optional Dante input cards shall be the Cloud CDI-CA2 (two channels), CDI-CA4 (four channels) and CDI-CA8 (eight channels).