

Datasheet

CT100 2-channel phono stage / RIAA preamplifier module

Datasheet

CT100 2-channel phono stage / RIAA preamplifier module

The CT100 is a two-channel phono preamplifier module with very accurate RIAA equalization and many features. It is realized with the best semiconductors available and non-inductive, low noise, SMD metal film resistors. The circuit is designed to accept both moving coil (MC) and moving magnet (MM) transducers/cartridges directly in order to eliminate the need for an external MC step-up transformer or amplifier.

MC/MM input loading and input nominal level values are easy to select with high resolution by DIP-switches.

The CT100 is ideal for the most demanding applications requiring accurate RIAA equalization, very low noise, extremely low distortion and superior sonic performance.

CT100 is a pre-assembled PCB ready for building into an enclosure or, even better, into your turntable (shorter signal cables).

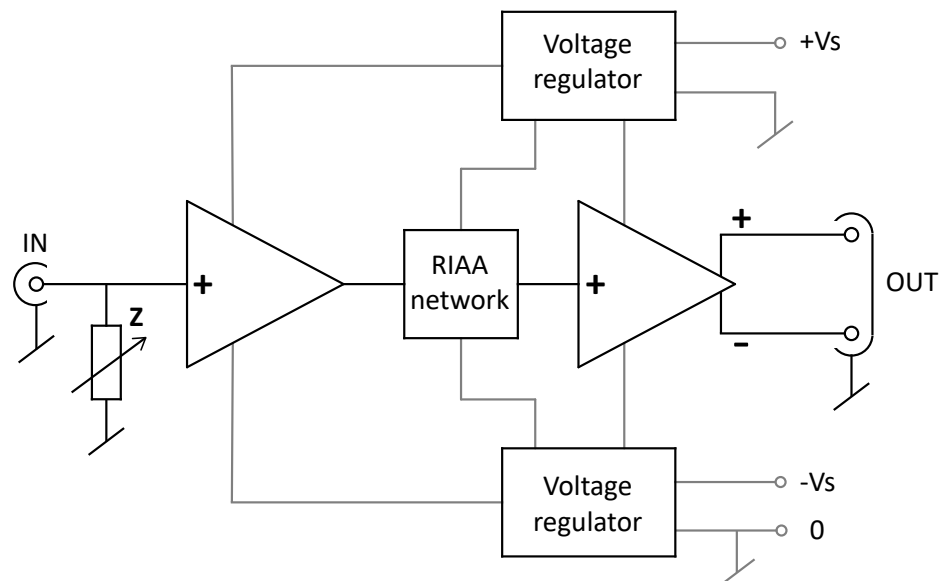
The high output voltage from CT100 makes it equivalent to other signal sources like CD-players.

- **Phono preamplifier module with very accurate RIAA equalization (0.05dB).**
- **Adapts to practically all MC and MM cartridges on the market through a wide range of gain, input resistance and input capacitance settings.**
- **No step-up transformer required for MC cartridges.**
- **Dual-mono design with option for using two separate power supplies.**
- **Balanced output option built in.**

Compact design. Dual-mono. Very low noise
Balanced output option
Non-inductive low noise SMD metal film resistors
Input accepts moving coil/moving magnet (MC/MM) cartridges directly without step-up transformer
Input loading 10 Ohm to 47kOhm for MC/MM selectable in 21 steps
Input nominal levels 0.1mV to 10mV selectable in 34 steps
High output drive. Balanced 28V. Unbal. 14V

High accuracy RIAA equalization with 0.05dB tolerance
Additional time constants of 3.18uS and/or 7950uS are selectable
Total harmonic distortion 0.0003%
Low output impedance - drives long signal cables
High output current capability - drives even high impedance headphones
Two-stage dual-supply voltage regulator on-board for each channel.
Separate DC supply input for each channel (dual mono)

Fig. 1. CT100 block diagram



Datasheet

CT100 2-channel phono stage / RIAA preamplifier module

MAXIMUM RATINGS

Notes	Symbol	Parameter	Comment	Value	Unit
1	V_S	Supply voltage		±50	V
1	V_{IN}	Input voltage	$A_V = 40\text{dB}$ to 80dB	±1	V
1	T_S	Storage temperature range		-40 to +85 (-40 to 185)	°C F

OPERATING RATINGS

Notes	Symbol	Parameter	Comment	Value	Unit
2	V_S	Supply voltage range		±9 to ±35	V
2	T_A	Ambient temperature range		-25 to +70 (-13 to 158)	°C F

DC ELECTRICAL CHARACTERISTICS Typical values at $T_A = +25^\circ\text{C}$ (77F), $R_L = 1\text{k}\Omega$ unless otherwise specified

Notes	Symbol	Parameter	Comment	Value	Unit
	R_{IN}	Input resistance	DIP-switch selectable	10,15,18,20,25,30, 40,50,60,70,80,90, 100, 150, 180, 200, 250, 400, 600, 1k, 47k	Ohm
	C_{IN}	Input capacitance	DIP-switch selectable	Approx. 100, 200, 300, 400	pF
3	I_B	Input bias current	(Input bias current cancellation pre-adjusted)	Max. 0.5	uA
4	PSRR	Power supply rejection ratio	$A_V = 40\text{dB}$, 10Hz to 20kHz	120	dB
	R_O	Output resistance	$V_O = 1\text{V}$, DC to 100kHz	0.1	ohm
	V_O	Output voltage swing	Unbalanced operation	±14.2	V
	I_O	Output current swing	$R_L = 100\Omega$	±25	mA
	I_S	Supply current, each channel	Each channel	22	mA

AC ELECTRICAL CHARACTERISTICS Typical values at $T_A = +25^\circ\text{C}$ (77F), $V_S = \pm 20\text{V}$, $R_L = 1\text{k}\Omega$ unless otherwise specified

Notes	Symbol	Parameter	Comment	Value	Unit
	V_{IN}	Input nominal levels	($V_O = 1\text{V}$) (DIP-switch selectable) (0.10mV ~ $A_V = 80\text{dB}$) (1.0mV ~ $A_V = 60\text{dB}$) (10mV ~ $A_V = 40\text{dB}$)	0.10, 0.12, 0.15, 0.18, 0.20, 0.25, 0.30, 0.40, 0.45, 0.50, 0.55, 0.60, 0.70, 0.80, 0.90, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 7.0, 8.0, 9.0, 10.0	mV
	V_{INO}	Input overload level	($f = 1\text{kHz}$, $A_V = 40\text{dB}$)	100	mV
	A_V	Voltage gain	DIP-switch selectable	40 to 80	dB
4, 5	dA_V	RIAA equalization deviation	(Ref. = 1kHz, 10Hz to 20kHz)	0.05	dB
	BW	Bandwidth	-3dB, $V_O = 1\text{V}$, $A_V = 40\text{dB}$)	2	MHz
4	e_n	Input noise voltage density	$f = 1\text{kHz}$, $A_V = 80\text{dB}$	0.5	nV*sqrt(Hz)
4, 6	S/N	Signal to noise ratio	$A_V = 40/60/80\text{dB}$	98/90/71	dB
4	CS	Channel separation	$A_V = 40\text{dB}$, 10Hz to 20kHz	120	dB
4	THD	Total harmonic distortion	$A_V = 40\text{dB}$, $f_o = 1\text{kHz}$	0.0003	%

Notes

- 1 Exposure to maximum rating conditions for extended periods of time may affect device reliability.
- 2 Operating ratings indicate conditions for which other device parameters may not apply.
- 3 At power up and power down the value may be maximum 5uA for less than one second.
- 4 Measured with Panasonic Audio Analyzer VP-7722P
- 5 RIAA time constants are 75uS, 318uS and 3180uS. Additional time constants of 3.18uS and 7950uS are DIP-switch selectable.
- 6 Input short-circuited. Reference: 1V. Response: RMS. Weighting: IHF-A

Table 1. CT100 specifications

Specifications are subject to change without any further notice. Danish Audio Connect does not authorize or warrant the use of any of its products in life support devices and/or systems. Danish Audio Connect shall not be liable for any damages to connected equipment like amplifiers and loudspeakers.
Copyright © Danish Audio Connect ApS, Denmark. All rights reserved. www.DACT.com

CT100 2-channel phono stage / RIAA preamplifier module

Dimensions in mm

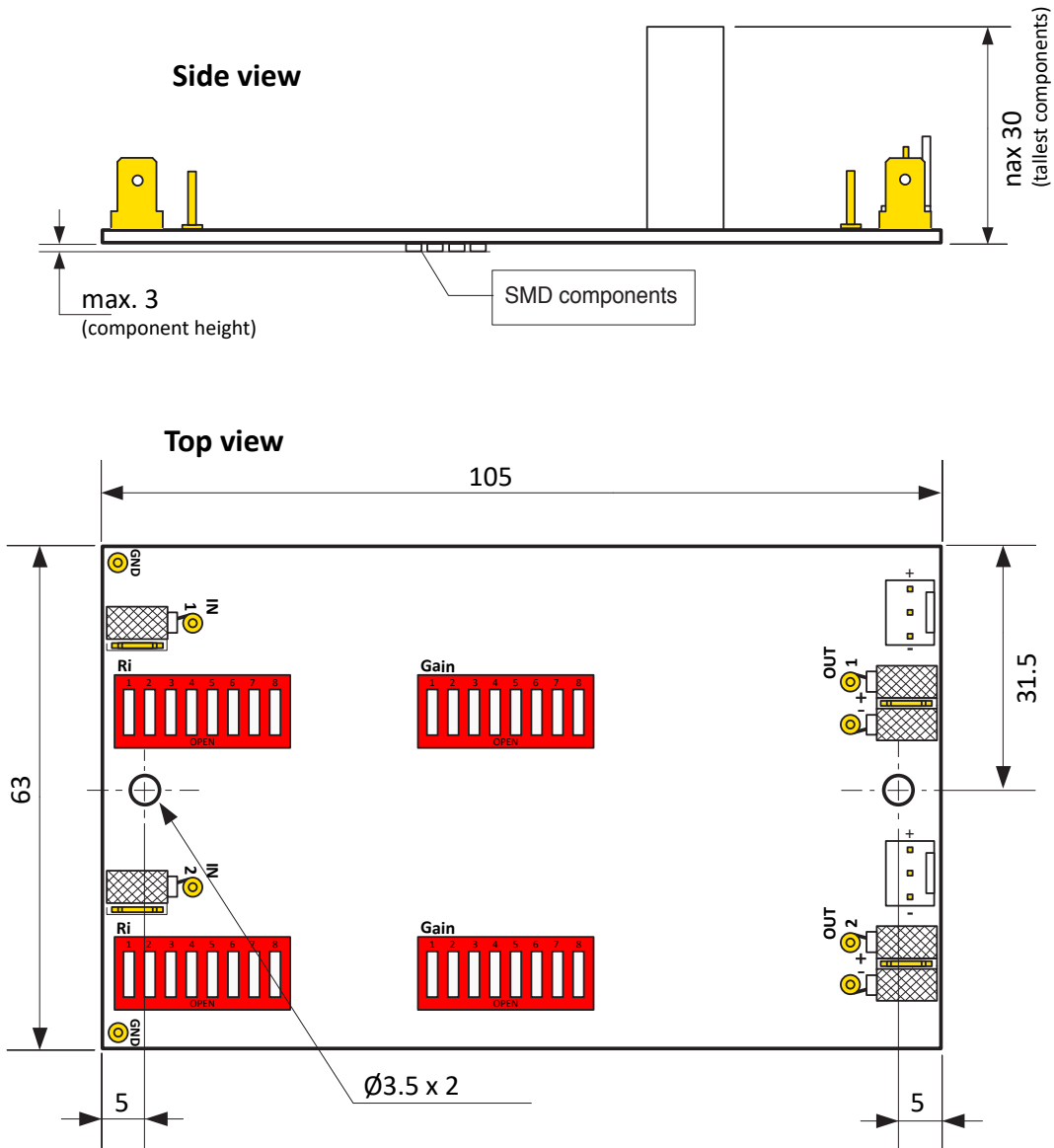
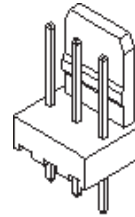
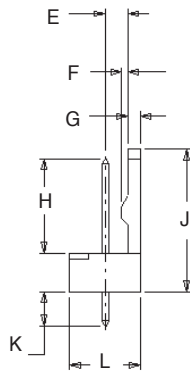
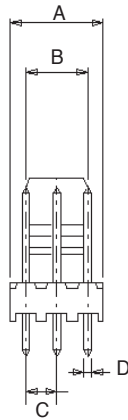


Fig. 2. CT100 layout drawing and dimensions
Only components interfacing with the user are shown

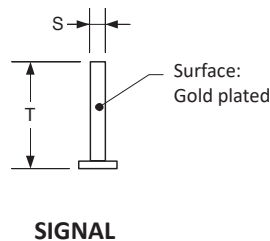
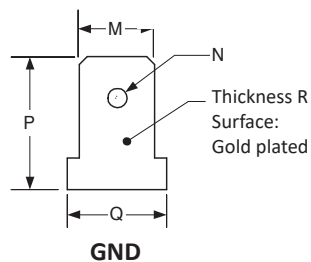
CT100 2-channel phono stage / RIAA preamplifier module



Power supply connector x 2

Contacts:
Gold plated

Dimensions		
Symbol	mm	Inches
A	7.62mm	3/10"
B	5.08mm	2/10"
C	2.54mm x 2	1/10" x 2
D	0.63mm x 0.63mm	1/40" x 1/40"
E	1.88mm	0.74"
F	0.53mm	0.021"
G	1.00mm	0.039"
H	7.50mm TYP.	0.30" TYP.
J	11.7mm	0.46"
K	3.56mm TYP.	0.14" TYP.
L	5.8mm	0.23"
M	4.8mm	0.19"
N	Ø1.4mm	Ø0.055"
P	9mm	0.35"
Q	6.3mm	0.25"
R	0.8mm	0.031"
S	Ø1.3mm	Ø0.051"
T	6.5mm	0.26"



Signal connections x 4

Fig. 3. CT100 connectors

Latest update: August 12, 2024

CT100 2-channel phono stage / RIAA preamplifier module

CT100 is shipped mounted on an aluminium Screen Plate (shown Fig. 4).
The Screen Plate must always be used even if CT100 is built into a metal enclosure. It provides RF shielding, protects the SMD components on the rear side of the PCB and avoids that PCB tracks are short-circuited accidentally.

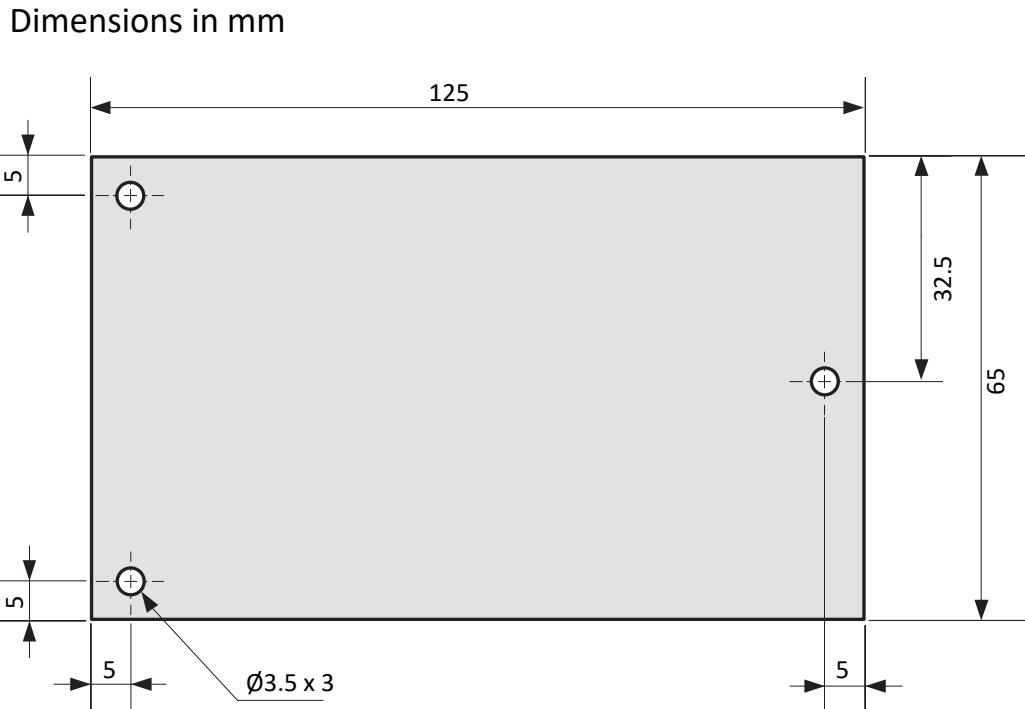


Fig. 4. CT100 screen plate

Latest update: August 12, 2024

Specifications are subject to change without any further notice. Danish Audio Connect does not authorize or warrant the use of any of its products in life support devices and/or systems. Danish Audio Connect shall not be liable for any damages to connected equipment like amplifiers and loudspeakers.
Copyright© Danish Audio Connect ApS, Denmark. All rights reserved.

www.DACT.com