

## CA/100/F Hybrid charge amplifier

Robust, miniature, shock/vibration proof; thick film hybrid charge amplifier package; 60dB dynamic range up to 1V/pC; -50/+125°C operating range; single unregulated power supply operation, 10/30V



The basis of the CA/100 is a thick film hybrid microcircuit of similar complexity to our CA/04 charge amplifier, housed in a 24 pin hermetic dip. This is packaged, together with gain controls and connectors, into a machined aluminium block, the whole constituting an extremely robust product capable of sustained operation under conditions of high vibration, mechanical shock, and temperature extremes. The CA/100, by virtue of its 60dB, 1mV/pC - 1V/pC, gain adjustment range, is an extremely flexible interface for trials type applications, allowing quite large compensatory on-line adjustment for the signal level uncertainties that may arise in this type of application. Installation should allow access to gain controls.

### SUPPLY VOLTAGE

The CA/100 is configured for single supply, minimal current operation, and is reverse voltage protected. Supply voltage  $V_s$  may be anywhere within the range 10/30V and there is no specific need for close regulation as supply ripple rejection is of the order 60dB. However,  $V_s$  transient overvoltage protection is not included; maximum safe  $V_s$  is 36V. To maximise dynamic range the internal op amp reference bus, default value 5V, should be biased to  $V_s/2$ , requiring an add-on-test resistor.

### NOISE LEVEL

Low current drain (2mA) conserves power resources at the expense of increased noise level, which, at 0.03pC r.t.i although some 10dB greater than that of the CA/04, is not deemed detrimental to a trials type application.

### GENERAL

Gain controls comprise 20dB range multiturn preset potentiometer and 5 position, 10dB increment rotary switch...

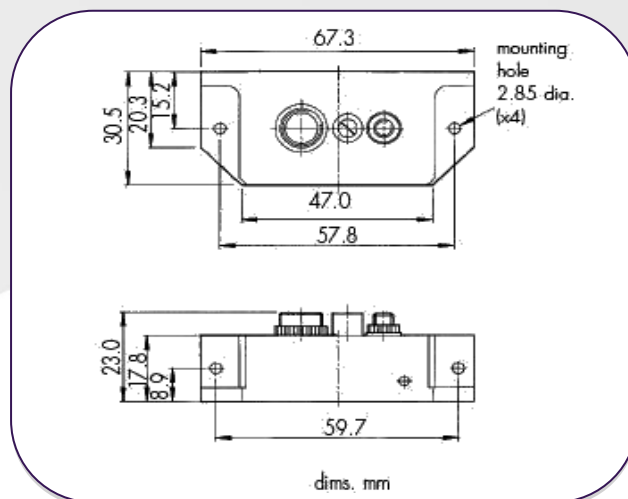
...circuit ground is isolated from the housing; power signal output and housing ground connections are via 5 pole circular connector. Mounting lugs allow 2 axis fixing.

### ENVIRONMENTAL

The CA/100 has operated satisfactorily subjected to vibration severity test level 2 for tracked vehicles (DEFSTAN 0755Pt.2), and over the temperature range -50/+125°C. Product destined for severe environmental conditions should be suitably proof tested.

### CA/100/F

The minimum (-3dB) frequency is extended from 4Hz to 0.5Hz. This considerably increases start up/overload recovery times, exposure to transducer induced pyro-electric and strain noise, and should be selected with due regard to these possible problems.



Type	CA/100 – CA/100/F
Input	Single ended
Max input charge nC @ $V_s=12V$	50, reducing @ 6dB/oct > 30kHz
Input capacitance/1% gain reduct.nF	10
Noise level r.t.i/p @ 1pC/g norm	0.03pC rms O/C + 0.01pC rms/1nF 1/P capacitance
Output	5P, 10/32 UNF Microdot
O/P range, mV/pC	1/1000
Peak O/P V	$(V_s/2) - 1$ (for $V_{ref} = V_s/2$ )
Peak O/P current mA	2
O/P impedance, O/Ps 1 & 2	180Ω in series with 1μF
Supply voltage $V_s$ , V	+10/+30
Supply current @ $V_s = 10V$ , mA	2