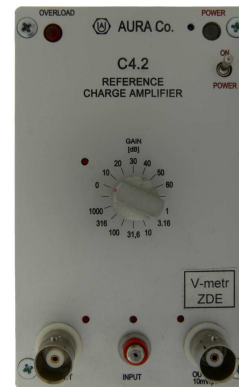


- ◆ low noise
- ◆ accurate charge transmission
- ◆ switchable gain
- ◆ large frequency range
- ◆ high time stability
- ◆ battery power supply



Purpose

The C4.2 charge amplifier is determined for amplification of signals from piezoelectric vibration sensors (piezoelectric accelerometers). In conjunction with the sensor type SV100 it is suitable for using in referential chains of vibration and in conjunction with suitable alternating-current voltmeter is applicable such as company vibration standard.

Description

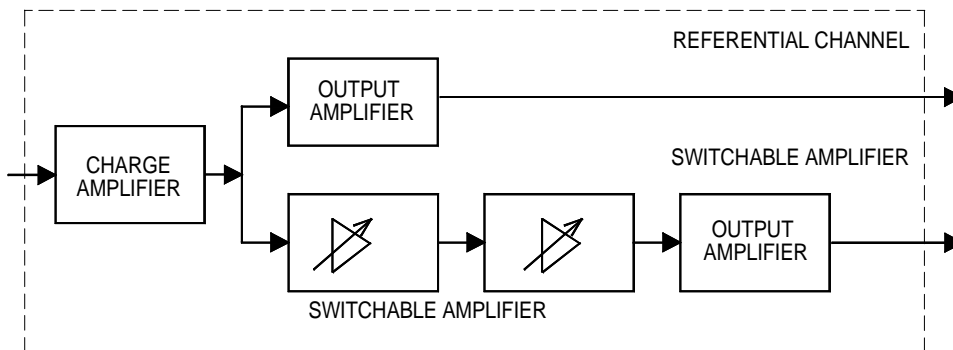
The amplifier consists of two channels – referential and switchable. The referential channel has its gain hardly set up for value 10 mV/pC. It is characterized by the low noise, extended frequency range and high time stability of the transmission. The switchable channel has its gain adjustable 10dB step between values 10 mV/pC to 10 V/pC. This channel is determined for universal vibration measurement, when amplifier's high gain is required. With regard to the referential channel it has narrower frequency band and higher noise at high gain. Also the absolute value of the transmission for individual degrees of amplification has the higher toleration than the accuracy of referential channel is.

The C4.2 charge amplifier is placed in the robust metal case with dimensions 64x105x160 mm. There are placed control elements on the front side and on the back side there is the connector for power supply and instrument card. The input connector is coaxial with 10-32 UNF screw. The output connector of the referential channel and connector of switchable channel are BNC type. The independent part of the delivery of the C4.2 charge amplifier is mains supply source.

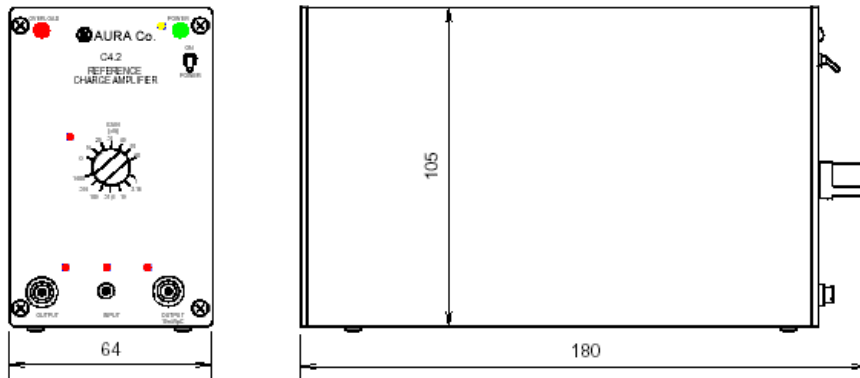
Function

The function of this apparatus is described by the below mentioned block diagram. The input signal is toned up by means of the low-frequency low-noise charge amplifier. Behind the charge amplifier, the signal divides into two channels. In the referential channel is arranged and exactly calibrated by means of the input amplifier and brought out on the output connector. In the switchable channel it traverses by the pair of switchable amplifiers with the gain 0 to 30 dB constructed for conservation the same frequency characteristics and time and phase delay at every settings.

The amplifier has an independent screening and it is connected by any pole to the metal box of the apparatus.



Dimensioned sketch of the amplifier



Parameters	
Power supply	12 V built-in accumulator charging: external source 230 V/50 Hz
Operating time from full charging	min. 24 hrs at 20°C
Input quantity	electric charge
Dynamic range of amplifier's input	1000 pC
Input impedance	virtual earth
Impedance of charge's source	capability 100 pF to 5 nF
Referential sensitivity of amplifier on frequency 160 Hz	10 mV/pC \pm 0,25%
Frequency error in the band 10 Hz to 1 kHz	typ. +0,5 to -0,25%
Switchable sensitivity on frequency 160 Hz	10 mV/pC to 10 V/pC step 10 dB \pm 0,2 dB
Frequency range of the amplifier (3 dB) referential channel:	0,2 Hz to 100 kHz
switchable channel:	0,2 Hz to 40 kHz
Noise of the amplifier ref. channel in the range 3 Hz to 100 kHz:	typ. $2 \cdot 10^{-3}$ pC
switch. channel in range 3 Hz to 40 kHz:	typ. $14 \cdot 10^{-3}$ pC (on max. amplification)
Output impedance	max. 100 Ω
Max. output voltage	\pm 4 V
Output load current	mas. 10 mA
Mass	1,16 kg
Dimensions (h x w x d)	105 x 64 x 180 mm
Time stability	better than 0,2% per year
Temperature coefficient of channels	typ. +0,03%/K
Operating time	8 years except the accumulator
Environment	
Operating range of temperatures	+5°C to +55°C with reduced accuracy -25°C to +85°C
Operating range of pressures	86 to 108 kPa
Relative humidity (RH)	0 to 90% non-condensing
Sealing	IP 44
Storage in original wrappage	Dry store with temperatures -25°C to +85°C