

CB200A_J Charge sensitive preamplifier.

The preamplifier **CB200A_J** is a low noise charge sensitive preamplifier. CB200A series has fixed gain values and can be changed by jumpers inside of box. The preamplifier is optimized for high input capacitance (up to 1000pF). The module has bias input (up to 3 or 5 KV, specified in order) and protection circuit to avoid breakdown of the input of the preamplifier circuit. Different number of amplifier can be housed in different box. There are 2 type of box (see below).



| Model | Charge sensitivity | Max. Noise | Energy range |
|---------------------|----------------------|----------------------|--------------|
| | (Si Equivalent 3,62) | (keV/(Si) (Cin=0pF)) | |
| CB200A_J_1_2 | 60 or 45 mV/MeV | <1.5 keV | 125/166 MeV |
| CB200A_J_3_4 | 30 or 15 mV/MeV | <1.5 keV | 250/500 MeV |
| CB200A_J_5_6 | 10 or 5 mV/MeV | <1,9 keV | 750/1500 MeV |

Note 1: Charge sensitivity installed in 3 ranges specified in order. For example, CB200A_J_1_3_6 - correspond 60, 30, 5 mV/MeV ranges.

Note 2: Noise value diagram see on Fig.1.

PERFORMANCE

| | | |
|--------------------------------|---|-----------|
| Decay time | CB200A_J_1_2 | 75/100 us |
| | CB200A_J_3_4 | 75/150 us |
| | CB200A_J_5_6 | 75/150 us |
| Dynamic input capacitance: | up to 1000 pF | |
| Noise/Input capacitance ratio: | CB200A_J_1_2 | 9 e-/pF |
| | CB200A_J_3_4 | 10 e-/pF |
| | CB200A_J_5_6 | 12 e-/pF |
| Integral nonlinearity: | 0,03 % (without termination) | |
| Dynamic output range: | +/- 7,5 V (without termination). +/-3 V (with 100 Ohms termination). | |
| Temperature stability: | +/- 100 ppm/C. | |
| Rise time | Less than 12 ns | |
| Open loop gain: | 30,000 | |
| HV Bias resistor | 25 Meg | |
| Output resistors: | 100 Ohm | |
| Test Capacitance: | 3 pF (+/-3%). | |

INPUTS/ OUTPUT

| | |
|---------------|---|
| INPUT | Accepts positive or negative charge signal. SHV connector standard or BNC connector if module has not bias connection. |
| BIAS | High voltage can be applied through SHV input connector. The serial resistance between input and bias connectors is 25 MegOhm. Optional if any bias used. |
| TEST | Pulse input connector is BNC type connector. Test capacitance is 3 pF. |
| POWER | Input power through 3 meter screened cable from spectrometric amplifier or portable power supply. |
| ENERGY | Output negative or positive linear pulse. BNC connector. |

POWER SUPPLY REQUIREMENTS:

The best solution is alimentation from a NIM standard power supply or special low noise linear power supplies.

Power supply pin out:

| P. Voltage (V) | Current/ch. (mA) |
|----------------|------------------|
| +24 | 19,6 |
| -24 | 10,0 |
| +12 | 10,0 |
| -12 | 11,6 |

| Pin number | |
|------------|----------|
| 7 | +24 Volt |
| 6 | -24 Volt |
| 4 | +12 Volt |
| 9 | -12 Volt |
| 1 | Ground |
| 2 | Ground |

Box dimensions:

- Version 1 (1 channel): 111x80x40 mm.
- Version 2 (2 channels): 111x80x40 mm.
- Version 4 (4 channels): 160x165x103 mm.
- Version 8 (8 channels): 160x165x103 mm.

Cable length 3 m.

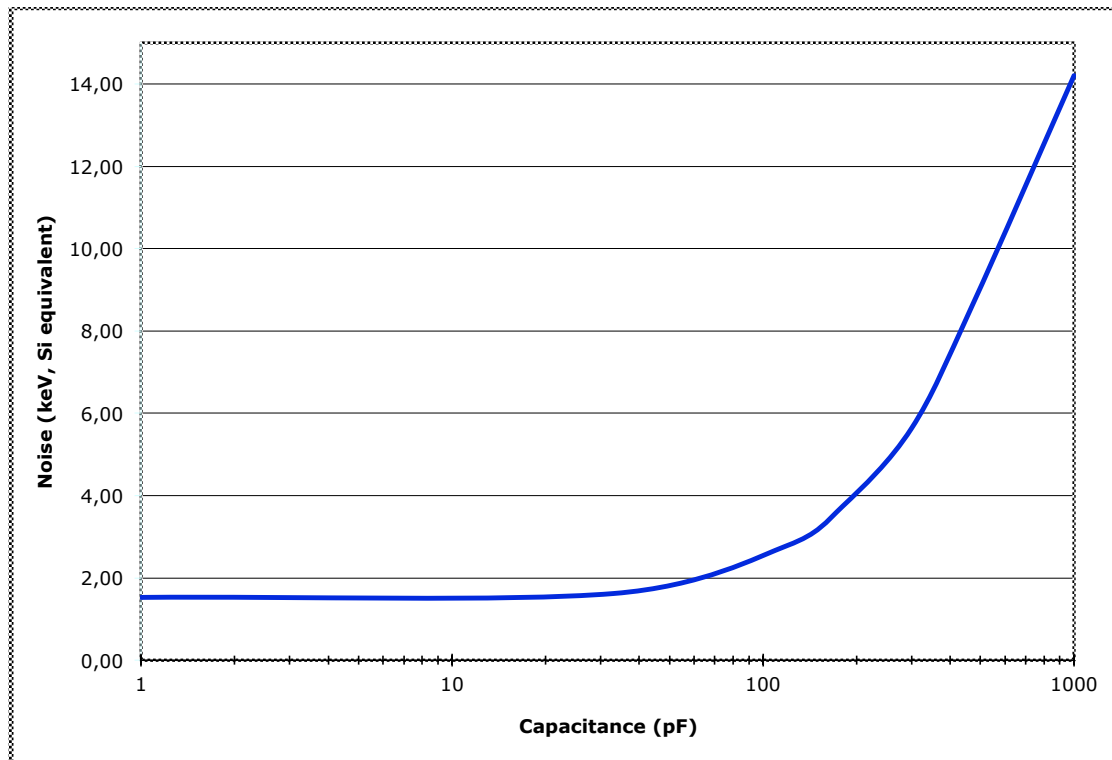


Fig.1. Typical noise as function of input capacitance measured with spectrometric amplifier and 2 us time constant.