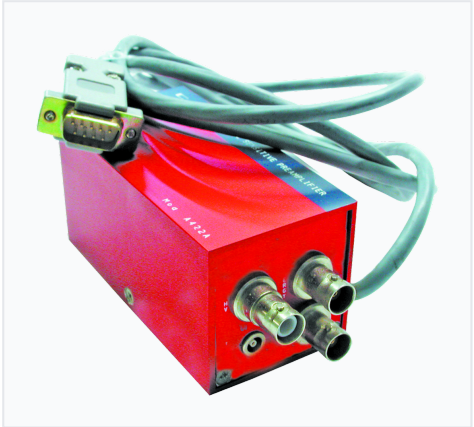
A422A

Charge Sensitive Preamplifier with Timing (Box)

Shielded box	BNC	SHV
Package	Out Conn.	In Conn.

The A422A is a charge-sensitive preamplifier with timing in a box format, designed for semiconductor detectors, including position-sensitive silicon detectors requiring charge division. It accepts positive or negative input pulses and provides selectable energy sensitivity of 5, 30 or 60 mV/MeV (Si). The inverting unipolar energy output is proportional to integrated charge, with a 300 µs decay time. A fast timing output delivers an inverting unipolar pulse with a 15 ns typical rise time across a 50 Ω load. Test input and detector bias up to 5 kV, positive or negative, are included.



Overview

Product Highlights

- Positive or negative input signals
- Energy sensitivity range of 5, 30 or 60 mV/MeV (Si)
- Low noise
- Timing output
- Up to 5 kV (positive or negative) detector bias voltage

Product Description

The CAEN **Mod. A422A** is a charge sensitive preamplifier, designed to be used especially with semiconductor detectors and in particular whenever the charge division is required (as in position sensitive silicon detectors). The unit accepts both positive and negative input pulses. A Test input for detector gain calibration and a HV input (up to 5 kV) for the detector bias are also included.

The output is an inverting unipolar voltage pulse, proportional in amplitude to the integrated charge; decay time is 300 µs. A Timing output provides an unipolar inverting fast voltage pulse, with a 15 ns typical rise time, across a 50 Ω load. Three different sensitivities (5, 30 or 60 mV/MeV) can be selected.

AT A GLANCE

Package	**Shielded box**
Out Conn.	**BNC**
In Conn.	**SHV**
Test Capac. (pF)	**10**
Max Detector Bias Voltage (V)	**±5000**
Integral Non-linearity	**< 0.045%**

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Technical Specifications

Packaging	Alloy box: 100 mm x 50 mm x 50 mm
Input Signals (IN/DETECTOR)	SHV; accepts positive and negative charge pulses from semiconductor detectors and supplies the HV bias to the detector itself. * Output tested by using an input pulse with 50 ns rise time and a 1000 µs fall time.
Input Signals (HV)	SHV; up to 5 kV (positive or negative) for the detector bias. 101 MΩ resistance in series
Input Signals (TEST)	LEMO 00; positive or negative inputs to calibrate the gain of the detector input via Ctest = 10 pF
Output Signals (OUT/ENERGY)	BNC; inverting unipolar voltage pulse proportional in peak amplitude to the charge input. DC offset adjustable to zero via the internal R12 trimmer. 50 ns minimum rise time, 300 µs decay time, ±8 V max. peak amplitude
Output Signals (TIMING)	BNC; inverting unipolar fast voltage pulse. 14 ns minimum rise time. Requires a 50 Ω termination whether it is used or not.
Integral non linearity	± 0.045% (from 0 to ± 8 V peak output)
Gain drift	< ± 50 ppm/°C to (from 0° to 50°C)
Energy sensitivity	60/30/5 mV/MeV (Si) selectable via internal jumpers (± 10%)
Typical noise	17.5 KeV FWHM at 1000 pF capacitance and 60 mV/MeV sensitivity

Power Requirements

- +12 V: 15 mA
- -12 V: 15 mA
- +24 V: 30 mA
- -24 V: 5 mA

Ordering Information

ORDERING CODE	DESCRIPTION
WA422AXAAAAA	A422A – Charge Sensitive Preamplifier with timing(Box)

1. Ordering codes and descriptions are reproduced from the product record. Availability is confirmed at order entry.

Related Products

A1422 — Low-Noise Fast-Rise-Time Charge-Sensitive Preamplifiers (Boxed)

A1422C/D — Low Noise Fast Rise Time Charge Sensitive Preamplifier

A1422E/F — Low Noise Fast Rise Time Charge Sensitive Preamplifiers

DT5423 — Quad Linear Desktop Power distributor for A1422 Preamplifiers and DT57xx Digitizers

N968 — Spectroscopy Amplifier

N1068 — 16 ch Programmable Spectroscopy Amplifier and 16ch CFD

N5424 — Quad NIM Power Distributor for A1422 Preamplifiers

V5425 — Quad VME Power Distributor

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