

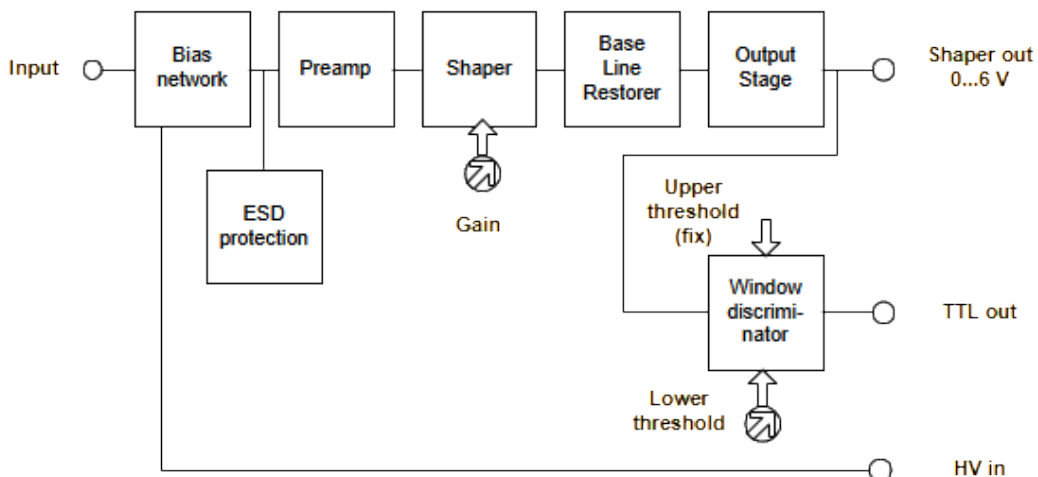
The mesytec MRS-2000 is a preamplifier, shaper, window discriminator with amplitude and TTL output. It is designed for neutron detector tubes and monitor counters. Due to the square shaper, the amplitude resolution is significantly enhanced compared to standard amplifiers.

## Features:

- Wide range of input sensitivity
- Square shaper amplifier with baseline restorer
- Window discriminator
- Gain and threshold adjustable
- Both outputs can be terminated with 50  $\Omega$
- 3 standard types for different tubes and monitors



## Schematics:



## Types available

### **Type 1: (very fast counting)**

- for detectors with fast signal risetime ( $t < 0.8$  us), max countrate: 150 kHz
- typical detectors: fast counting devices, monitors.

### **Type 2: (standard)**

- for detectors with signal risetime ( $t < 2.5$  us), max countrate: 50 kHz
- typical detectors: standard 1 inch diameter tubes.

### **Type 3: (highest gamma suppression)**

- for detectors with slow signal risetime ( $t < 7$  us), max countrate: 20 kHz
- typical detectors: 2 inch diameter tubes.
- typical applications: very high amplitude resolution and gamma suppression.

## Technical Data

### Input stage

- Input connector: MHV or SHV
- Charge sensitive preamplifier, adjustable maximum range:  $2.5 * 10^{-14}$  C to  $8 * 10^{-13}$  C.
- Anode readout (negative input charge).
- ESD protected input

### Pulser input

- Lemo input, not terminated, 1pF. Injected charge: 1pC / V.

### Bias

- Bias input: SHV
- Operating voltage: max 2500 V
- Filter R- C- R (50 M $\Omega$  – 3.6 nF – 50 M $\Omega$ )
- Leakage current: max 50 nA

### Shaper

- Square shaper of 12<sup>th</sup> order.
- Passive baseline restorer avoids baseline shift at high rates
- Max output amplitude 6 V
- Output can be terminated with 50  $\Omega$
- DC-Offset:  $V_{DC} < \pm 0.1$  V

### Window discriminator

- Fixed upper threshold of 4.2 V
- Variable lower threshold, adjustable from 3 % to 85 % (4 V output amplitude = 100 %)
- Threshold voltage monitor output: 4 V = 100 % threshold
- TTL output, bandwidth limited to avoid reflections if not terminated
- Can be terminated with 50  $\Omega$  (useful if lines longer than 10 m)

### Dark rate

- Typ. < 5 /h at 1000 V, lower rate types available.

### Power consumption: (max 0.75 W)

- +12 V      30 mA
- -12 V      -15 mA

### How to adjust gain and threshold

- Adjust thermal peak amplitude (with gain adjust) to 3.5 V.
- For 20 % threshold turn sense (with threshold adjust) to 0.7 V.