The A111F is a high density version of the Amptek A111 Charge Sensitive Preamplifier and Discriminator. The A111F features a Single In-line Package (SIP).

**A111F DIAGRAM**

**A111F PIN CONFIGURATION**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
</tr>
<tr>
<td>2</td>
<td>Ground &amp; Case</td>
</tr>
<tr>
<td>3 &amp; 4</td>
<td>Threshold Adjust</td>
</tr>
<tr>
<td>4</td>
<td>Analog Monitor</td>
</tr>
<tr>
<td>5</td>
<td>V (+4 to +18 VDC)</td>
</tr>
<tr>
<td>6</td>
<td>Output</td>
</tr>
</tbody>
</table>

**APPLICATION NOTE: A111F THRESHOLD ADJUSTMENT**

A) Increasing the Threshold of the A111F:

Increasing the threshold of the A111F beyond the $x_{10}$ provided by shorting out Pins 3 & 4 can be achieved by an RC feedback as shown below.

Apart from unit to unit variation, the discrimination levels will be as follows:

1) Shorting out Pins 3 and 4 will result in $x_{10}$ increase of nominal threshold:
   \[
   (5 \times 10^4 \text{ electrons}) \times 10 = 5 \times 10^5 \text{ electrons.}
   \]

2) Shorting out Pins 3 and 4 plus feedback:
   \[
   R = 50 \text{ k} \quad C = 2.2 \text{ pF : } x_{17}
   \]
   \[
   R = 20 \text{ k} \quad C = 3.3 \text{ pF : } x_{23}
   \]
   \[
   R = 5 \text{ k} \quad C = 4.7 \text{ pF : } x_{40}
   \]
   \[
   R = 2 \text{ k} \quad C = 6.8 \text{ pF : } x_{88}
   \]
   Intermediate values can be obtained by adjusting the value of $R$.

B) Decreasing the Threshold of A111F:

Decreasing the threshold of the A111F beyond the nominal $5 \times 10^4$ electrons can be achieved by adding a resistor from Pin 4 to ground. A 300 ohm resistor will approximately double the sensitivity resulting in a threshold of $2.5 \times 10^4$ electrons.

*Please refer to the A111 specifications for further information.*