Description:

The PA-9 preamplifier is ideal for high-impedance photodiodes such as cryogenically cooled InSb, Ge and InAs. It offers superior high-frequency performance, with low current noise and ultra-low voltage noise. When ordered with a detector, the preamp is matched for maximum gain and sensitivity. Alternatively, the customer may specify gain and/or minimum required bandwidth. Bandwidth is a function of detector resistance and capacitance as well as preamp gain, as shown on the reverse side of this bulletin.

Gain Stages:

The PA-9 has a first stage transimpedance gain and a second stage voltage gain. Output from both stages are accessible to the user.

Normal gain for the first stage is 10^7, 10^6, or 10^5 V/A. For lowest noise, choose the highest gain possible to achieve the desired bandwidth.

The second stage is set for a 10 V/V gain. Choosing 10 V/V results in lower bandwidth for the second stage. The second stage is normally AC coupled but can be DC coupled per customer specifications.

Connections:

Input and output connections are BNC feed-throughs. The power jack is a a 5-pin male Lemo connector; the mating female Lemo connector is included with the preamp.

Specifications:

- Bandwidth (maximum) .................. DC to 750 KHz
- First Stage Gain .................. 10^7, 10^6 or 10^5 V/A
- Voltage Noise Density @1 KHz ............... 6.5 nV Hz^-1/2
- Current Noise Density @1 KHz ............... 0.04 pA Hz^-1/2
- Input Offset Voltage ................. ± 10 mV Typ.
- Input Bias Current .................. ± 1 pA Typ.
- Maximum Output (First Stage) .......... 6 V P-P
  (Second Stage) ............. 10 V P-P
- Power Requirements: ±12VDC or ±15VDC, 20 mA
- Size .................................. 3”x 4.5”x 1”

1 Using a 100K feedback resistor

Cautions:

Do not turn on the preamp power supply unless the detector is connected.

Assure that the power supply is +12V to ground and -12V to ground (NOT ±24V).

Observe correct power supply polarity (see drawing on the reverse side of this bulletin). Improper polarity will damage the preamplifier.

Preamplifier/Detector Matching Information for PA-9-____

<table>
<thead>
<tr>
<th>Preamplifier Serial #</th>
<th>Matched to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detector Model#</td>
<td>Detector Serial #</td>
</tr>
<tr>
<td>Detector Impedance R_D</td>
<td>Detector Capacitance C_D</td>
</tr>
<tr>
<td>Customer Name:</td>
<td>S/O #:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Stage</th>
<th>Second Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain: _____ x 10E _____ V/A</td>
<td>Gain: _______ V/V</td>
</tr>
<tr>
<td>Bandwidth: DC to _______ kHz</td>
<td>Bandwidth: _______ Hz to _____ kHz</td>
</tr>
</tbody>
</table>

Tested by: __________________ Date: _______________
Approved by: __________________ Date: ____________
Information in this document is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice.