### 1.1.2.1 Low Noise Lock In Power Sensors

#### 300W to 100mW

**Features**
- Chopper and lock in amplifier for lowest noise and drift
- Wavelength range from UV to deep IR including Terahertz
- RM9 pyro is not sensitive to background radiation

The RM9 series Radiometers use a pyroelectric or photodiode sensor in conjunction with chopped CW or quasi CW radiation, using a digitally synthesized lock-in amplifier to reduce external noise to a minimum. The signal is passed through the 18Hz chopper and the chopped signal is detected by the sensor. All signals not at this 18Hz frequency are suppressed. The output of the sensor is displayed on a standard Ophir meter or PC interface. The chopper may be placed at any convenient location but preferably close to the signal source so as to eliminate interference from all unchopped radiation.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>RMC1 Chopper</th>
<th>RM9 Sensor</th>
<th>RM9 interface module with synch connection</th>
<th>RM9 interface module with synch connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Chopper for RM9 Series</td>
<td>BNC to interface module</td>
<td>PC interface</td>
<td></td>
</tr>
<tr>
<td>Aperture</td>
<td>0.22mm</td>
<td>0.6mm</td>
<td>0.6mm</td>
<td>0.6mm</td>
</tr>
<tr>
<td>Chopping Frequency (kHz)</td>
<td>18Hz</td>
<td>18Hz</td>
<td>18Hz</td>
<td>18Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>85mA</td>
<td>85mA</td>
<td>85mA</td>
<td>85mA</td>
</tr>
</tbody>
</table>

**Notes:**
- (a) At calibrated wavelengths 500 – 1100nm. At other wavelengths, there is an additional error as follows: <500nm add ±8%, 1100 – 3000nm add ±5%, 10.6µm add ±15%
- (b) At calibrated wavelengths 200 – 1100nm. For <700nm add ±2% additional error
- (c) For LaserStar, Pulsar, USBI, Quasar and Nova/Orion, upper limit is 1mW for RM9/RM9-THz and 90nW for RM9-PD. For these models, accuracy may also be less than values given above
- (d) Averaged over 10s
- (e) In a typical laboratory environment
- (f) The RMC1 or another chopper unit that can be set to 18Hz is required for operation of the RM9 series sensors
- (g) The sensor is calibrated for 0.7, 1.5, 2.5, 4 and 10THz. Responses at other frequencies can be interpolated from the graph on page 43. Stated accuracy is for frequencies or interpolated frequencies in the range 0.7 – 5THz. For 5 – 10THz, the calibration uncertainty is 15% and for frequencies outside that range, approximate readings can be calculated from the graph but no specified accuracy is given.

* For drawings and graphs please see page 43