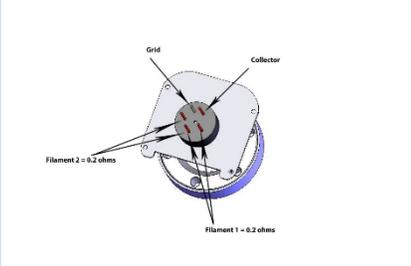


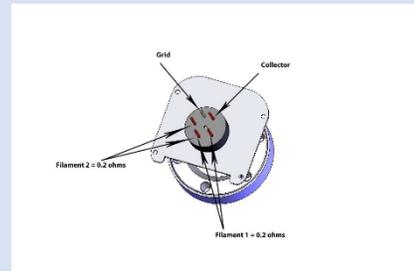
Issue	Possible Cause	Possible Solution
<b>Clear ERROR message</b>	<ol style="list-style-type: none"> <li>Must be done before the ion gauge can be turned on after receiving an ERROR message</li> </ol>	<ol style="list-style-type: none"> <li>SETUP UNIT --&gt; CLR IG ERROR (if using the FRONT PANEL CONTROL)</li> </ol>
<b>Display is off / blank</b>	<ol style="list-style-type: none"> <li>No power</li> <li>The connector may not be wired correctly</li> </ol>	<ol style="list-style-type: none"> <li>Check cable connections</li> <li>Check cable connections               <ol style="list-style-type: none"> <li>Page 12 of manual for the analog pin-out</li> <li>Page 13 of manual for the RS485 pin-out</li> </ol> </li> </ol>
<b>Readings are very different from expected pressure</b>	<ol style="list-style-type: none"> <li>Sensor not installed in the proper location</li> <li>The process gas is different from the gas used to calibrate the gauge (nitrogen)</li> <li>Sensor has been dropped</li> <li>Gauge sensor is contaminated</li> <li>Leak in the vacuum system</li> </ol>	<ol style="list-style-type: none"> <li>Ensure sensor is located in the right place (page 10 of manual)</li> <li>Apply gas sensitivity correction factor if applicable or select the appropriate gas from the 354 display menu (page 29 of manual)               <ol style="list-style-type: none"> <li>Front Panel Control - SETUP UNIT --&gt; GAS TYPE</li> </ol> </li> <li>Ion gauge sensor is possibly contaminated.               <ol style="list-style-type: none"> <li>Go into R&amp;D Mode                   <ol style="list-style-type: none"> <li>MENU --&gt; SETUP DISP --&gt; MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current.                       <ol style="list-style-type: none"> <li>If voltage &gt; 1.7 V and current is &gt; 2.5 A at 100 uA setting, there is possible contamination</li> <li>If voltage &gt; 2.3 V and current is &gt; 2.7 A at 4 mA setting, there is possible contamination.</li> </ol> </li> <li>Degas sensor if values exceed limits from point 3                       <ol style="list-style-type: none"> <li>Degassing basic information, page 16 of manual</li> <li>Front Panel Control --&gt; DEGAS ON</li> <li>RS-485 - page 32 of manual</li> </ol> </li> <li>Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>Contact sales@lesker.com with R&amp;D values                       <ol style="list-style-type: none"> <li>Possibly need to replace the sensor</li> </ol> </li> </ol> </li> </ol> </li> <li>Re-check for a leak in the system; metal seals should be used when operating below 1x10<sup>-7</sup> Torr</li> </ol>

<p><b>Ion gauge cannot be turned on</b></p>	<ol style="list-style-type: none"> <li>1. Pressure exceeds 1.00 x 10<sup>-3</sup> Torr at 4 mA emission</li> <li>2. Pressure exceeds 5.0 x 10<sup>-2</sup> Torr at 0.10 mA (100 µA) emission</li> <li>3. Emission Control not functioning</li> </ol>	<ol style="list-style-type: none"> <li>1. Decrease pressure below required value</li> <li>2. Decrease pressure below required value</li> <li>3. Switch to the other filament <ol style="list-style-type: none"> <li>1. Front Panel Control - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>4. Ion gauge sensor is possibly contaminated. <ol style="list-style-type: none"> <li>1. Go into R&amp;D Mode <ol style="list-style-type: none"> <li>1. MENU --&gt; SETUP DISP --&gt; MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current. <ol style="list-style-type: none"> <li>i. If voltage &gt; 1.7 V and current is &gt; 2.5 A at 100 uA setting, there is possible contamination</li> <li>ii. If voltage &gt; 2.3 V and current is &gt; 2.7 A at 4 mA setting, there is possible contamination.</li> </ol> </li> </ol> </li> <li>2. Degas sensor if values exceed limits from point 4 <ol style="list-style-type: none"> <li>1. Degassing basic information, page 16 of manual</li> <li>2. Front Panel Control --&gt; DEGAS ON</li> <li>3. RS-485 - page 32 of manual</li> </ol> </li> <li>3. Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>4. Contact sales@lesker.com with R&amp;D values <ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol> </li> </ol> </li> </ol>
<p><b>Research Screen shows filament Voltage is present but filament current stays at 0</b></p>	<ol style="list-style-type: none"> <li>1. Filament is open</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch to second filament <ol style="list-style-type: none"> <li>1. Front panel - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>2. RS485 - page 32 of manual</li> </ol> </li> <li>2. Check the resistance between filaments 1 and 2 (page 37) <ol style="list-style-type: none"> <li>1. Remove the ion gauge transducer from the control module (page 78, steps 1-5)</li> <li>2. Measure the resistance using an ohmmeter; a good intact filament will have a resistance of 0.2 ohms (page 73 of manual)</li> </ol> </li> </ol>

		 <p>3.</p> <p>3. Contact sales@lesker.com with resistance values</p> <ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol>
<p><b>Unable to initiate degas</b></p>	<ol style="list-style-type: none"> <li>1. System pressure above <math>5.0 \times 10^{-5}</math> Torr</li> </ol>	<ol style="list-style-type: none"> <li>1. Decrease pressure below the required value</li> </ol>
<p><b>Voltage to filament too high</b></p>	<ol style="list-style-type: none"> <li>1. Filament contaminated or near end of its life</li> </ol>	<ol style="list-style-type: none"> <li>1. Check filament current <ol style="list-style-type: none"> <li>a. Go into R&amp;D Mode <ol style="list-style-type: none"> <li>1. MENU --&gt; SETUP DISP --&gt; MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current. <ol style="list-style-type: none"> <li>i. If voltage &gt; 1.7 V and current is &gt; 2.5 A at 100 uA setting, there is possible contamination</li> <li>ii. If voltage &gt; 2.3 V and current is &gt; 2.7 A at 4 mA setting, there is possible contamination.</li> </ol> </li> </ol> </li> </ol> </li> <li>2. Degas sensor if values exceed limits from point 1 <ol style="list-style-type: none"> <li>a. Degassing basic information, page 16 of manual</li> <li>b. Front Panel Control --&gt; DEGAS ON</li> <li>c. RS-485 - page 32 of manual</li> </ol> </li> <li>3. Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>4. Switch to second filament <ol style="list-style-type: none"> <li>a. Front panel - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>b. RS485 - page 32</li> </ol> </li> <li>5. Contact sales@lesker.com with R&amp;D values <ol style="list-style-type: none"> <li>a. Possibly need to replace the sensor</li> </ol> </li> </ol>
<p><b>Setpoint does not actuate</b></p>	<ol style="list-style-type: none"> <li>1. Incorrect setup</li> </ol>	<ol style="list-style-type: none"> <li>1. Check setpoint setup (pages 25-26 of manual)</li> </ol>
<p><b>Error Message - "OVERPRESSURE"</b></p>	<ol style="list-style-type: none"> <li>1. The calculated pressure is greater than the maximum setting for</li> </ol>	<ol style="list-style-type: none"> <li>1. Change to 100 <math>\mu</math>A emission current which will operate at higher pressures OR reduce pressure <ol style="list-style-type: none"> <li>1. Front panel - page 24 (EMISSION SEL --&gt; 100 <math>\mu</math>A)</li> </ol> </li> </ol>

	emission current. System pressure is too high	2. RS485 - page 32
<p><b>Error Message - "EMIS FAIL"</b></p>	<ol style="list-style-type: none"> <li>1. The desired emission current (IE) could not be established.</li> <li>2. Gauge contamination, possible coating on filament or grid surfaces.</li> <li>3. End of filament life</li> <li>4. System pressure too high</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce pressure (if applicable)</li> <li>2. Check filament current <ol style="list-style-type: none"> <li>1. Go into R&amp;D Mode <ol style="list-style-type: none"> <li>a. MENU --&gt; SETUP DISP --&gt; MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current. <ol style="list-style-type: none"> <li>i. If voltage &gt; 1.7 V and current is &gt; 2.5 A at 100 uA setting, there is possible contamination</li> <li>ii. If voltage &gt; 2.3 V and current is &gt; 2.7 A at 4 mA setting, there is possible contamination.</li> </ol> </li> </ol> </li> </ol> </li> <li>3. Switch to 4 mA emission current and attempt repeated filament starts to clean filament <ol style="list-style-type: none"> <li>1. Front panel - page 24 (EMISSION SEL --&gt; 4mA)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>4. Degas sensor if values exceed limits from point 2 <ol style="list-style-type: none"> <li>1. Degassing basic information, page 16 of manual</li> <li>2. Front Panel Control --&gt; DEGAS ON</li> <li>3. RS-485 - page 32 of manual</li> </ol> </li> <li>5. Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>6. Switch to second filament <ol style="list-style-type: none"> <li>1. Front panel - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>7. Check the resistance between filaments 1 and 2 (page 37) <ol style="list-style-type: none"> <li>1. Remove the ion gauge transducer from the control module (page 78, steps 1-5)</li> <li>2. Measure the resistance using an ohmmeter; a good intact filament will have a resistance of 0.2 ohms (page 73 of manual)</li> </ol> </li> </ol> <div data-bbox="987 1682 1222 1875" data-label="Diagram"> <p>The diagram shows a cross-section of a filament assembly. It features two filaments, labeled 'Filament 1 = 0.2 ohms' and 'Filament 2 = 0.2 ohms'. Above the filaments is a 'Grid' and to the right is a 'Collector'. The filaments are positioned in a way that they are close to each other, and the grid and collector are positioned to collect electrons from the filaments.</p> </div> <li>8. Contact sales@lesker.com with R&amp;D and Resistance Values</li>

		<ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol>
<b>Error Message - "ION CUR FAIL"</b>	<ol style="list-style-type: none"> <li>1. The ion current (IC) is below the minimum parameter. Sensor contamination, possible coating on collector inhibiting ion collection</li> <li>2. Electrometer failure</li> </ol>	<ol style="list-style-type: none"> <li>1. Check filament current in R&amp;D Mode <ol style="list-style-type: none"> <li>1. MENU --&gt; SETUP DISP --&gt; MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current. <ol style="list-style-type: none"> <li>i. If voltage &gt; 1.7 V and current is &gt; 2.5 A at 100 uA setting, there is possible contamination</li> <li>ii. If voltage &gt; 2.3 V and current is &gt; 2.7 A at 4 mA setting, there is possible contamination.</li> </ol> </li> </ol> </li> <li>2. Switch to 4 mA emission current and attempt repeated filament starts to clean filament <ol style="list-style-type: none"> <li>1. Front panel - page 24 (EMISSION SEL --&gt; 4mA)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>3. Degas sensor if values exceed limits from point 1 <ol style="list-style-type: none"> <li>1. Degassing basic information, page 16 of manual</li> <li>2. Front Panel Control --&gt; DEGAS ON</li> <li>3. RS-485 - page 32 of manual</li> </ol> </li> <li>4. Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>5. Switch to second filament <ol style="list-style-type: none"> <li>1. Front panel - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>6. Contact sales@lesker.com with R&amp;D values <ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol> </li> </ol>
<b>Error Message - "LV Failure"</b>	<ol style="list-style-type: none"> <li>1. The filament voltage could not be established; electronics failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact sales@lesker.com with R&amp;D and Resistance Values (see Error Message - EMIS FAIL for instructions on how to obtain these values) <ol style="list-style-type: none"> <li>1. Possibly need to replace electronics</li> </ol> </li> </ol>
<b>Error Message - "F1 or F2 OPEN"</b>	<ol style="list-style-type: none"> <li>1. Filament 1 or 2 is open</li> <li>2. Faulty electronics</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the resistance between filaments 1 and 2 (page 37) <ol style="list-style-type: none"> <li>1. Remove the ion gauge transducer from the control module (page 42, steps 1-5)</li> <li>2. Measure the resistance using an ohmmeter; a good intact filament will have a resistance of 0.2 ohms</li> </ol> </li> </ol>



3.

2. Switch to the other filament

1. Front panel - page 25 (SETUP IG --> FILAMENT NUM --> FILAMENT 1/2)

2. RS485 - page 32

3. Contact sales@lesker.com with resistance values

1. Possibly need to replace the sensor or electronics

### R&D MODE Troubleshooting

#### 1. SETUP DISP --> MODE --> RESEARCH

**Filament voltage values are present for several seconds immediately after turning IG ON, but then the values are zero**

1. Filament is contaminated or filament has reached end-of-useful operating life for required emission current setting

1. Check filament current in R&D Mode

1. MENU --> SETUP DISP --> MODE and select RESEARCH. After going to top of menu, it should display several things including FVI. The first digits are filament voltage, the second digits are current.

i. If voltage > 1.7 V and current is > 2.5 A at 100 uA setting, there is possible contamination

ii. If voltage > 2.3 V and current is > 2.7 A at 4 mA setting, there is possible contamination.

2. Switch emission current setting from initial setting and re-start the IG; make several attempts to establish emission current at both 100 µA and 4 mA.

1. Front panel - page 24 (EMISSION SEL --> 4mA / 100 uA)

2. RS485 - page 32

3. Degas sensor if values exceed limits from point 1

1. Degassing basic information, page 16 of manual

2. Front Panel Control --> DEGAS ON

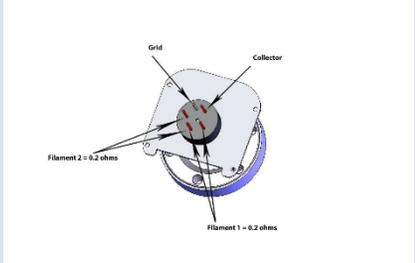
3. RS-485 - page 32 of manual

4. Re-check R&D Mode Values. If nothing changed, sensor is contaminated.

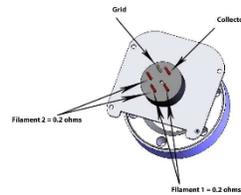
5. Switch to second filament

1. Front panel - page 25 (SETUP IG --> FILAMENT NUM --> FILAMENT 1/2)

2. RS485 - page 32

		<p>6. Check the resistance between filaments 1 and 2 (page 37)</p> <ol style="list-style-type: none"> <li>1. Remove the ion gauge transducer from the control module (page 42, steps 1-5)</li> <li>2. Measure the resistance using an ohmmeter; a good intact filament will have a resistance of 0.2 ohms</li> </ol>  <ol style="list-style-type: none"> <li>3.</li> </ol> <p>7. Contact sales@lesker.com with R&amp;D and resistance values</p> <ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol>
<p><b>All parameters in the R&amp;D screen are zero after IG turn ON is attempted</b></p>	<ol style="list-style-type: none"> <li>1. Failed Electronics</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact sales@lesker.com with R&amp;D and Resistance Values (see Error Message - EMIS FAIL for instructions on how to obtain these values) <ol style="list-style-type: none"> <li>1. Possibly need to replace the electronics</li> </ol> </li> </ol>
<p><b>354 filament voltage is greater than 1.7 V and filament current is greater than 2.5 A with emission current = 100 <math>\mu</math>A</b></p>	<ol style="list-style-type: none"> <li>1. Filament nearing end-of-useful operating-life</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch emission current setting from initial setting and restart the IG; make several attempts to establish emission current at both 100 <math>\mu</math>A and 4 mA. <ol style="list-style-type: none"> <li>1. Front panel - page 24 (EMISSION SEL --&gt; 4mA / 100 <math>\mu</math>A)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>2. Degas sensor if values exceed limits from point 1 <ol style="list-style-type: none"> <li>1. Degassing basic information, page 16 of manual</li> <li>2. Front Panel Control --&gt; DEGAS ON</li> <li>3. RS-485 - page 32 of manual</li> </ol> </li> <li>3. Re-check R&amp;D Mode Values. If nothing changed, sensor is contaminated.</li> <li>4. Switch to second filament <ol style="list-style-type: none"> <li>1. Front panel - page 25 (SETUP IG --&gt; FILAMENT NUM --&gt; FILAMENT 1/2)</li> <li>2. RS485 - page 32</li> </ol> </li> <li>5. Contact sales@lesker.com with R&amp;D values <ol style="list-style-type: none"> <li>1. Possibly need to replace the sensor</li> </ol> </li> </ol>
<p><b>354 filament voltage is greater than 2.3 V and filament current is greater than 2.7 A with emission current = 4 mA</b></p>	<ol style="list-style-type: none"> <li>1. Filament nearing end-of-useful operating-life</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch emission current setting from initial setting and restart the IG; make several attempts to establish emission current at both 100 <math>\mu</math>A and 4 mA. <ol style="list-style-type: none"> <li>1. Front panel - page 24 (EMISSION SEL --&gt; 4mA / 100 <math>\mu</math>A)</li> </ol> </li> </ol>

2. RS485 - page 32
2. Degas sensor if values exceed limits from point 1
  1. Degassing basic information, page 16 of manual
  2. Front Panel Control --> DEGAS ON
  3. RS-485 - page 32 of manual
3. Re-check R&D Mode Values. If nothing changed, sensor is contaminated.
4. Switch to second filament
  1. Front panel - page 25 (SETUP IG --> FILAMENT NUM --> FILAMENT 1/2)
  2. RS485 - page 32
5. Check the resistance between filaments 1 and 2 (page 37)
  1. Remove the ion gauge transducer from the control module (page 42, steps 1-5)
  2. Measure the resistance using an ohmmeter; a good intact filament will have a resistance of 0.2 ohms



6. Contact [sales@lesker.com](mailto:sales@lesker.com) with R&D and Resistance values
  1. Possibly need to replace the sensor

If none of these steps help alleviate the issues, please contact [sales@lesker.com](mailto:sales@lesker.com) with the Troubleshooting form as well as provide the R&D and Resistance Values (see Error Message - EMIS FAIL for instructions on how to obtain these values)