2.2.11 *Error OL* (Voltage: Output current limit exceeded: or Current: Output compliance limit exceeded)

INITIAL ACTION

- **If Voltage range selected:**
  1. Set Output OFF (Automatic if 100 or 1000V range selected).
  2. Disconnect external circuit.
  3. Set Output ON:
     - If no Error OL or FAIL message, check external circuit for low resistance, drawing output current in excess of specification. Ensure Maximum Capacitive Load constraints are not exceeded (*refer to User's Handbook, Section 6.3*).
     - If Error OL recurs, internal fault persists.

- **If Current range selected:**
  1. Set Output OFF.
  2. Short Output terminals I+ to I-.
  3. Set Output ON:
     - If no Error OL or FAIL message, check external circuit for high resistance, developing output voltage in excess of compliance limit.
     - If Error OL recurs, internal fault persists.

FAULT CONDITION (IN DC RANGES)

- **If Low DC Voltage range (100µV -10V):**

  DC Overcurrent Detector circuit *(page 11.5-2)* has detected a current in the PLO(DCV) line of approx 28mA or more, and has activated LIM ST signal to the CPU.

- If High Voltage range (100V or 1000V): Either

  a. DC Overcurrent Detector circuit *(page 11.5-2)* has detected excessive current in the PLO(DCV) line and has activated LIM DET signal to the CPU, or

  b. DC 1000V Over-Voltage detector *(page 11.14-2)* has detected an output voltage in excess of 1440V and has activated LIM DET signal to the CPU.

In either condition **a.** or **b.**, M10 in the power amplifier removes the 16kHz drive from the input to the PA, and generates HI I ST signal to the CPU; which responds by setting Output OFF, and DC Reference voltage to zero.

- **If Current range selected:**

  Overvoltage detector circuit (M15 in Current/ohms Assembly) has detected a terminal voltage of 4.4V or more and has activated LIM ST signal to the CPU. If 100mA or 1A range selected, the CPU switched Output OFF and reduces DC Reference voltage to zero.

FAULT CONDITION (IN AC RANGES)

- **If 1mV, 10mV, 100mV or 1V Range:**

  Sine Source Assembly overcurrent sense circuit (M49a/ M49b) has detected a current in the AC 1V line of approximatly 25mA RMS or more, and has activated LIM ST signal to the CPU.

- **If 10V range:**

  10V overload detector in the Power Amplifier Assembly has detected a current in the I+ line of approximately 60mA RMS or more. In this condition a hardware limit comes into effect.

- **If High Voltage ranges (100V or 1kV):** Either

  a. 100V Overload detector in the Power Amplifier Assembly has detected a load in excess of 120mA RMS on the 400V power supply,

  b. 1kV Current Overload detector (M8) in the Output Control assembly has detected an excessive output current, or

  c. 1k Overvoltage Detector in the Output Control Assembly has detected a voltage on the PHI(V) line in excess of 1440V RMS.

  In these ranges the output is switched off automatically by the CPU.

- **If Current range selected:**

  Overvoltage detector circuit has detected a terminal voltage of 3V RMS or more and has activated LIM ST signal to the CPU. If 100mA or 1A range selected, the CPU switched Output OFF.

POSSIBLE FAULT LOCATIONS

- External circuit.
- Sine Source Assembly *(page 11.6-1)*.
- AC Assembly *(page 11.7-1)*.
- DC Assembly *(page 11.5-1)*.
- Power Amplifier Assembly *(page 11.9-1)*.
- Current/Ohms Assembly *(page 11.8-1)*.

FURTHER INFORMATION IN THIS HANDBOOK

Technical descriptions:

Low DC Voltage ranges: Section 7.3 and 7.6.

Low AC Voltage ranges: Section 9.4.

100 or 1000V ranges: Section 9.5.

Current ranges: Section 10.1.