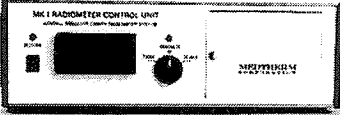


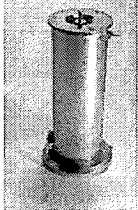

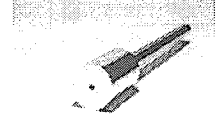
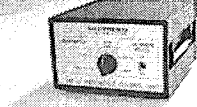
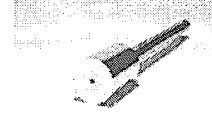


KENDALL ABSOLUTE RADIOMETERS

The MEDTHERM-Kendall radiometers are self-calibrating cavity radiometers which provide an accurate absolute standard for total irradiance. The radiometer receiver is a blackbody cavity which has an electrical heater installed so that substituted electrical heating is equivalent to the incoming irradiance at the radiometer aperture. By accurate measurement of the electrical power to the calibration heater, together with the thermopile response, the radiometer is calibrated without reference to other standards. These radiometers were originally developed by J.M. Kendall, Sr. and C.M. Berdahl at NASA-JPL as reported in Applied Optics 9(5): 1082-1091 (1970). They were formerly made commercially by Technical Measurements, Inc. (TMI) and are manufactured by MEDTHERM since 1996 to the original Kendall/Berdahl and TMI drawings and specifications.

There are six MEDTHERM-Kendall absolute radiometers currently offered, and three different Control Units.

<p>The Kendall MK I is the Control Unit (with power supply) required for operation of the Kendall MK IV, MK VI, and MK XI radiometers.</p> <p>The Kendall MK Ia is a modified MK I Control Unit with built-in temperature controller required for operation of the MK V heater control (no water cooling) type radiometer.</p>	
<p>The Kendall MK IV is a water cooled self-calibrating, cavity type absolute radiometer with a field of view (solid angle) of 85 degrees for measurement of irradiance from 0.02 to 4.2 W/cm². It is widely used in vacuum solar thermal simulation testing and is used as a standard for the radiant calibration of heat flux transducers.</p>	
<p>The Kendall MK V is an electrically heated temperature controlled self-calibrating, cavity type absolute radiometer with a field of view (solid angle) of 85 degrees for measurement of irradiance from 0.02 to 4.2 W/cm². It is used in vacuum solar thermal simulation testing when it is desired to eliminate the use of coolant fluids inside the vacuum chamber.</p>	
<p>The Kendall MK VI is a self-calibrating, cavity type normal-incidence absolute pyrheliometer of very high accuracy. The field of view (solid angle) is 5 degrees for measurement of direct solar insolation from 0.02 to 0.2 W/cm². This radiometer has participated in the International Pyrheliometer Comparisons conducted at Davos, Switzerland in 1975, 1980, 1985, and 1990.</p>	
<p>The Kendall MK VIII is a very high intensity water cooled self-calibrating, cavity type absolute radiometer with a field of view (solid angle) of 120 degrees (with cosine response) for measurement of irradiance from 20 to 2000 W/cm². This radiometer is mounted on a water cooled sting arm and includes the MK X mini-control unit.</p>	
<p>The Kendall MK IX is a very high intensity water cooled self-calibrating, cavity type absolute radiometer with a field of view (solid angle) of 120 degrees (with cosine response) for measurement of irradiance from 10 to 1000 W/cm². This radiometer is mounted on a water cooled sting arm and includes the MK X mini-control unit.</p>	
<p>The Kendall MK X is a mini-control unit provided with the MK VIII and MK IX radiometers and is not sold separately. A precision external digital multimeter, a precision external power supply, and an external temperature reference must be supplied by the user.</p>	
<p>The Kendall MK XI is a medium intensity water cooled self-calibrating, cavity type absolute radiometer with a field of view (solid angle) of 120 degrees for measurement of irradiance from 0.1 to 20 W/cm². The MK XI is a new radiometer intended for use as a standard for the radiant calibration of heat flux transducers and infrared radiometers.</p>	

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