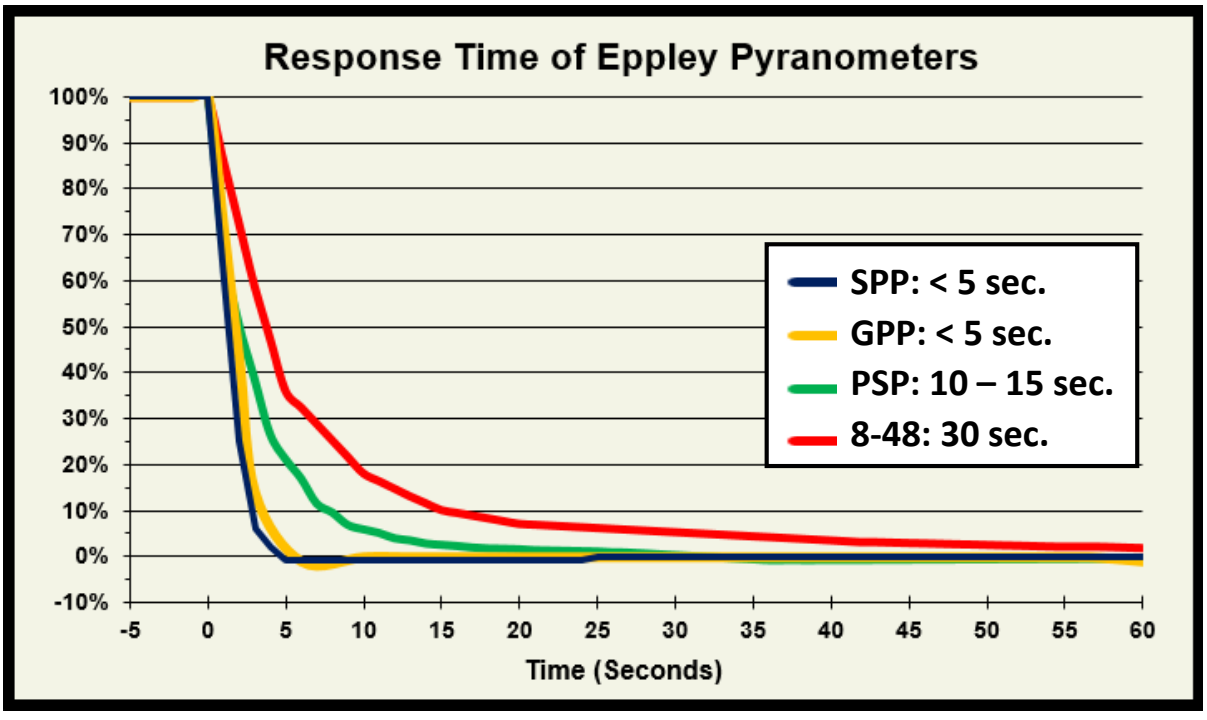
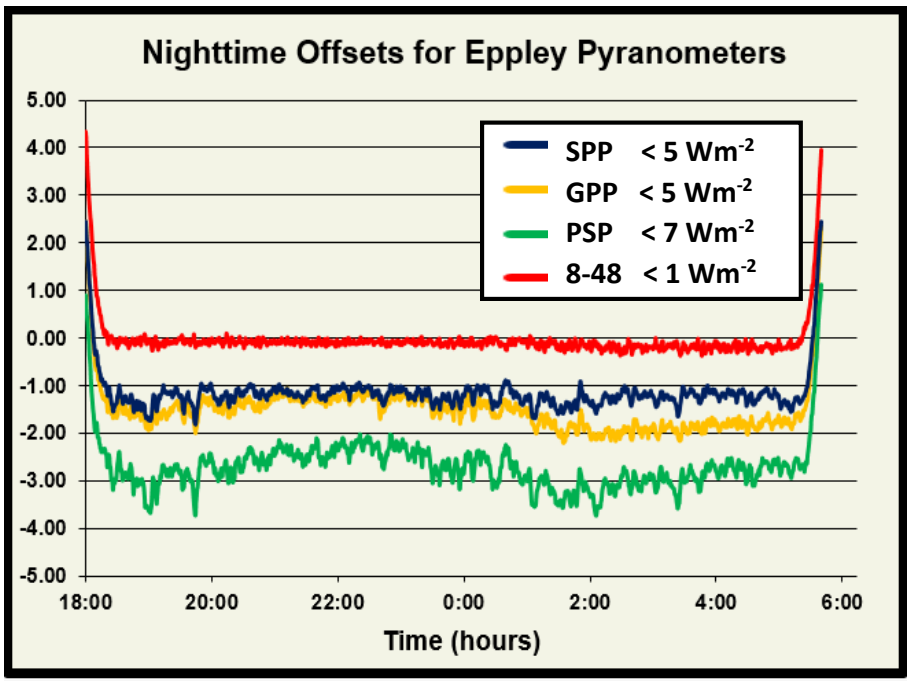
ISO 9060 Pyranometer Classification

	SECONDARY STANDARD	FIRST CLASS	SECOND CLASS
Response time	< 15s	< 30s	< 60s
Zero Offset-A	+ 7 Wm^{-2}	+ 7 Wm^{-2}	+ 7 Wm^{-2}
Zero Offset-B	± 2 Wm^{-2}	± 2 Wm^{-2}	± 2 Wm^{-2}
Non-stability	± 0.8%	± 1.5%	± 3%
Non-linearity	± 0.5%	± 1%	± 3%
Directional Response	± 10 Wm^{-2}	± 20 Wm^{-2}	± 20 Wm^{-2}
Spectral selectivity	± 3%	± 5%	± 10%
Temperature response	± 2%	± 4%	± 8%
Tilt response	± 0.5%	± 2%	± 5%

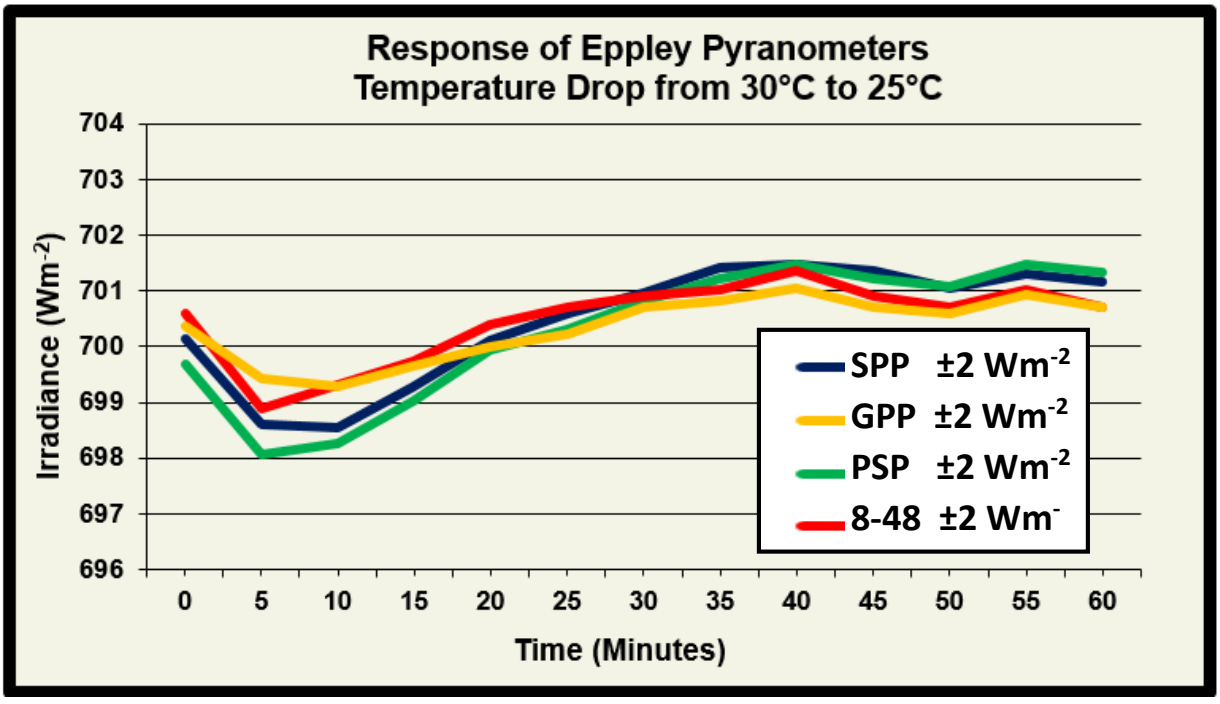
Response Time: Characterized by the time during which the instrument reaches 95% of the final value. Eppley performs this test by capping the instrument in full sun and timing the drop to zero.



Zero Off-Set A: Test (a) is for cases when the net thermal radiant flux density is 200Wm^{-2} such as when the instrument is at 30°C and the sky is temperature -10°C. Eppley performs this test in our Blackbody Calibration System and by monitoring Nighttime Offsets.



Zero Off-Set B: Test (b) is the result of a 5 degree change in temperature over one hour and is performed in Eppley's temperature chamber.



Non-Stability: The change in sensitivity per year is primarily due to UV degradation of the Black Optical Lacquer on the thermopile. The simplest method of determining this is through observational data.

SPP	average 0.2% per year (since 2012)
GPP	average 0.2% per year (since 2013 – limited sample)
PSP	average less than 1% per year
8-48	less than 0.5% per year

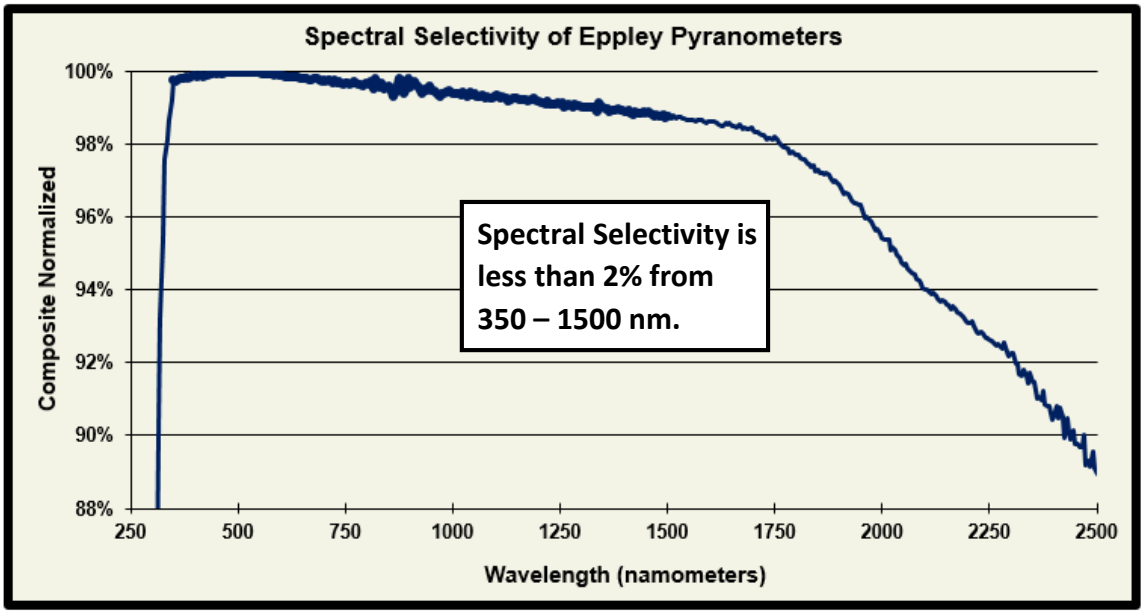
Non-Linearity: Deviation of sensitivity from low (100 Wm^{-2}) to high (1000 Wm^{-2}) Intensity is tested on Eppley High Intensity Lamp Bench.

SPP	± 0.5%
GPP	± 0.5%
PSP	± 0.5%
8-48	± 1.0%

Directional: The cosine response of the Pyranometers is also tested on the High Intensity Lamp Bench at Eppley.

SPP	± 10 Wm^{-2}
GPP	± 10 Wm^{-2}
PSP	± 10 Wm^{-2}
8-48	± 30 Wm^{-2}

Spectral: Eppley has independently tested the Schott Glass WG295 hemispheres as well as the Black Optical Lacquer to assure uniform spectral transmittance from 0.3 to 2.8 microns.



Temperature: Temperature Dependence Tests are performed in Eppley's Temperature Chambers. Note that while the tests are often -30°C to +50°C, these are not the operational limits of the instruments. These instruments can be used in hotter (or colder) climates but you may wish to contact Eppley for a special temperature dependence test in these extreme climate areas.