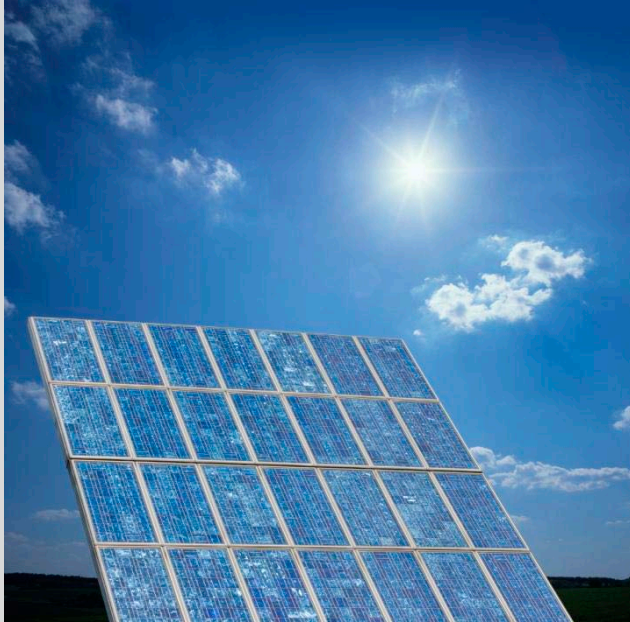


## UV/VIS/NIR Spectrometer for the Analysis of Solar Irradiance



The development and optimization of new absorber layers for the solar industry requires detailed knowledge of the spectral distribution of solar irradiance.

Typically, only a single (spectrally integrated) value for the solar irradiance is used. However, depending on time, location and interaction with the environmental conditions, the actual sun spectrum is varying. For the development of new solar cells, these changes have to be taken into account. In qualification and field tests, the simultaneous measurement of module plants output and spectral characteristics allow a more detailed analysis of the performance of cell technologies.

In close cooperation with our customer, a leading solar energy research institute, the CompactSpec system has been adapted for the measurement of solar irradiance.

### Measurement Principle

The spectral measurement of solar irradiance is performed by a combination of of a high-resolution spectrometer and a diffusor unit. The fast and very reproducible data acquisition are the key advantages of a detector array spectrometer system. The intensity calibration allows the display of measured data on a photometric or radiometric scale. (e.g.  $W/m^2/nm$ ).

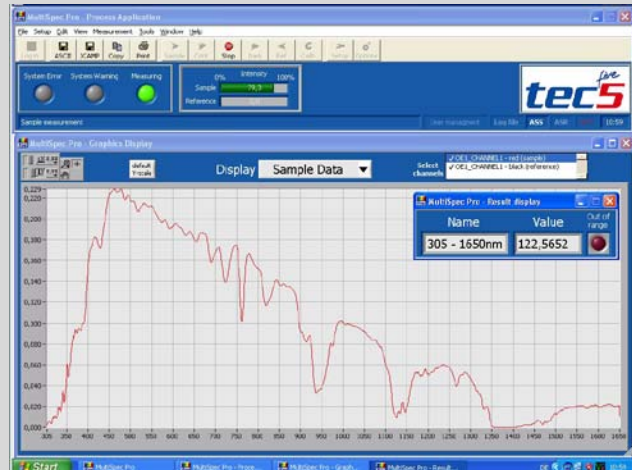


## Measurement System

High sensitivity and dynamic range as well as an excellent signal-to-noise ratio make the diode array based MultiSpec spectrometer systems ideal tools for irradiance measurements. For outdoor use water and dust-tight housings are available. The high-end spectrometer modules by Carl Zeiss feature a rugged design, with outstanding long-time stability. An orientation maintaining SMA connector allows the use of flexible fiber-optic light guides for this application with high reproducibility.

To calculate irradiance data a radiometric or photometric transfer function can be used

directly within the MultiSpec Pro software. The “Automatic Integration Time Control” keeps the diode array intensity always in an ideal level.



## Your Partner in Spectroscopy



Since 1993 **tec5 AG** has been developing fiber-optic spectrometer systems based on diode array technology. Today, tec5 is operating worldwide with subsidiaries in the USA and UK and global representatives are positioned to better serve the market.

At tec5 we pair our core competencies in high speed diode array readout technology, optical, mechanical, electronic and software engineering with excellent customer support. Our high quality products range from standard OEM electronics modules to complete application specific solutions. In close cooperation with our customers, a multitude of applications have been successfully implemented in different industries.

We are proud to be at the frontend in the field of spectroscopy and to provide cutting edge technology – today and in future.



**tec5 AG**  
In der Au 27  
61440 Oberursel, Germany  
Tel: +49 6171 9758-0  
Fax: +49 6171 9758-50  
info@tec5.com • www.tec5.com