Energy Head with Broadband Coating

ES220C



Description

The ES220C pyroelectric sensor permits direct transformation of radiation energy pulses into voltage pulses, independent of the wavelength of the incidence radiation. The ES220C sensor head is built strictly on a coaxial basis and is therefore extremely insensitive to interference from electromagnetic radiation as emitted from a pulsed gas laser.

The ES220C has an aperture diameter of 20 mm. For best performance, it is recommended to choose a sensor with an area slightly larger than the beams cross section. The active sensor area is coated with a very durable ceramic absorber layer that makes this sensor the right choice for pulsed lasers with high peak power density like Excimer, CO2, TEA and Nd-YAG. Please see the plot below for the absorption spectrum of the ceramic coating. An EPROM located in the BNC to DE-9 mating adapter stores the spectral response calibration parameter required to provide an accurate energy reading over the full wavelength operating range.

The ES220C housing includes an 8-32 threaded mounting hole to accommodate posts and post holders. For electrical insulation of the sensor a metric and an imperial post adapter is included.

The ES220C can directly connect to an oscilloscope with 1 MΩ input resistance via the BNC connector. To accommodate higher repetition rates, the load resistance can be reduced.

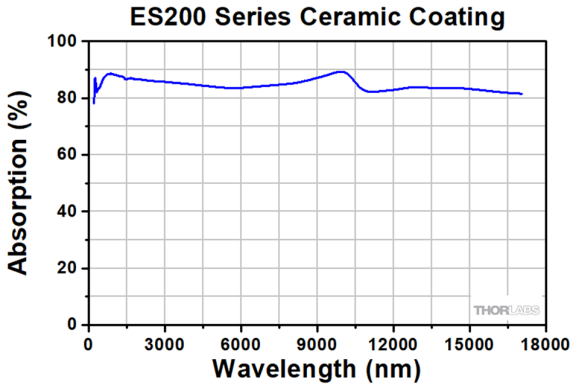
Specifications

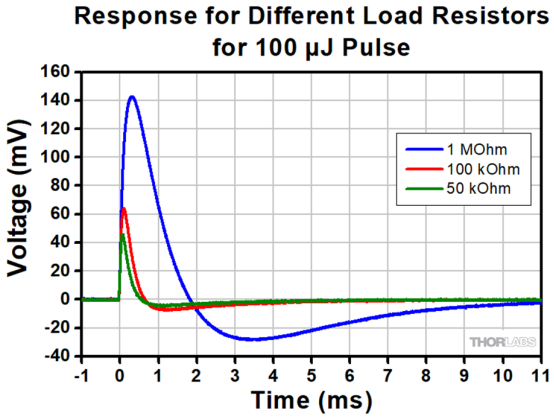
Technical Specifications	
Energy Range	500 µJ - 3 J
Resolution	25 µJ
Wavelength Range	185 nm - 25 µm[a]
Max. Repetition Rate (@ 1 MΩ Load Resistor)	30 Hz
Application	Energy Measurement from Short Pulsed Lasers with High Peak Power Density and Pulse Length from sub-ns up to ms
Detector Type	Pyroelectric Sensor
Coating	Ceramic Coating
Detector Size (Active Area)	Ø20 mm (0.79")
Distance Frontface to Detector	2 mm (0.08")
Measurement Uncertainty	+/- 5% @ 185 nm - 25 µm
Linearity	+/- 1%
Max. Average Power	5 W
Max. Power Density	65 MW/cm² (7 ns Pulse @ 355 nm)[b]
Max. Pulse Energy Density	0.5 J/cm² (7 ns Pulse @ 355 nm)[b]
Thermal Time Constant	20 ms
Cooling	Convection
Sensor Dimensions	Ø50 x 18 mm²
Connector Cable Length	1.5 m
Connector	BNC Male / DE-9p Male, Adapter Included
Mounting and Accessories	4 x #4-40 Cage Threads
Post	#8-32 Mounting Thread, Insulation Adapters for Metric and Imperial Posts Included

Technical Specifications	
Weight	0.15 kg
Compatible Consoles	PM100D, PM400, PM320E
Compatible Interfaces	PM103, PM103A, PM103U, PM100USB

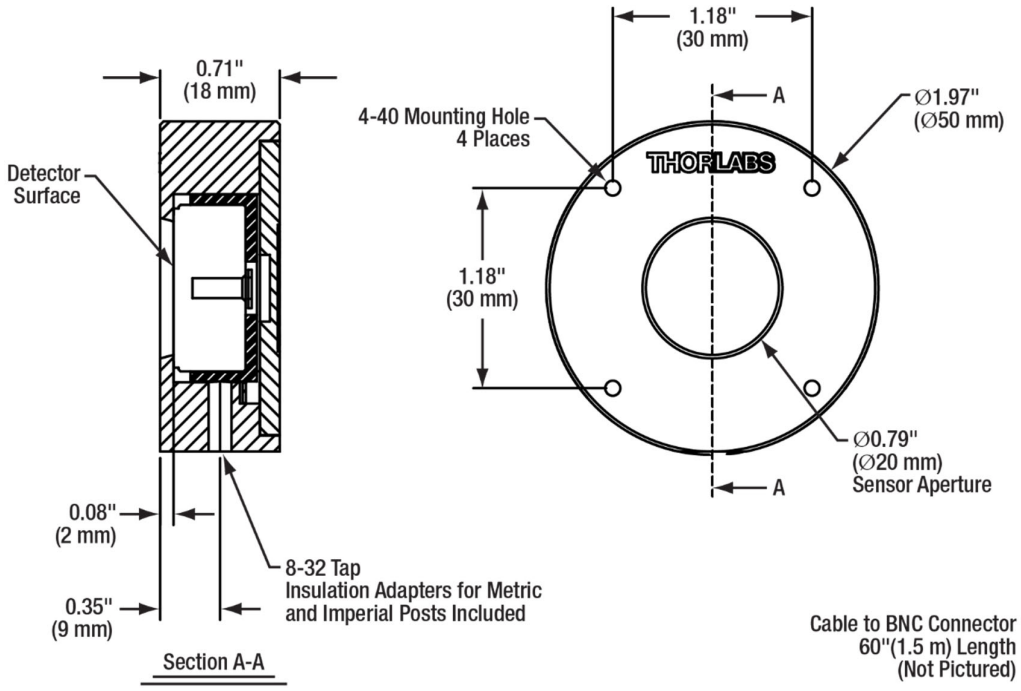
a. With Wavelength Correction

Typical Performance Plots





Drawings



BNC Male / DE-9 Male Adapter



Available Accessories

The ES220C is compatible to Thorlabs imperial and metric post and post-holder series. To attach fiber adapters or other optics to the ES200C sensor, four UNC 4-40 threads are arranged around the detector area. These UNC 4-40 threads are compatible with the Thorlabs 30 mm cage system.

Cleaning and Maintenance

There are no serviceable parts in the ES220C head. The housing may be cleaned by wiping with a soft damp cloth. The sensor on the pyroelectric heads cannot be cleaned. Gently blow off any debris using compressed air. If any scratches of other signs of damage remain on the sensor area, contact Thorlabs service department for repair or replacement. If you suspect a problem with your ES220C please call Thorlabs and an engineer will be happy to assist you.

As long as the sensor has not been exposed to excessive optical power, the calibration should be very stable over long periods of time (well over a year). However, the detector should be calibrated once a year to ensure accuracy.

