

1.1.2.7 High Power Thermal Sensors

1.1.2.7.4 Helios - Short Exposure High Power Sensor

200W to 12000W

Features

- No water cooling, up to 12000W
- Profinet and RS232 interface
- Remote actuated protective cover



The Helios measures high power industrial lasers of up to 12kW by measuring the energy of a short time exposure to this power. The laser is set to a pulse of from 0.3 to several seconds. The Helios measures the energy and exposure time of this sample of the power, and from this calculates the power. By keeping the pulse energy under 5 kJ, there is no need for water cooling and the sensor can be kept to a compact size. The Helios was designed with factory automation in mind. The cover can be opened and closed remotely to protect the sensor when not in use. The Helios laser power meter can communicate via Profinet or RS232 and comes with a simple PC application for easier integration into the customer's system. The Helios boasts a wide dynamic range, as well as high accuracy and repeatability, with a fast response time. The sensor is housed in a dust-resistant industrial body to keep the Helios in clean working order even under harsh factory conditions. Its protective window is antireflection coated to reduce back reflection of the high power beam. The Helios is equipped with two power and Profinet ports for easy integration into existing line or ring topologies. In addition, RS232 communication is also included if preferred.

Model	Helios					
Use	High power industrial laser measurement					
Absorber Type	LP2, absorption ~94%					
Power Range	200W - 12kW					
Energy Range	200J - 5kJ					
Exposure Time (see table below)	0.3- 4s ^(a)					
Wavelength	750 - 1100nm					
Aperture	50mm					
Max Beam Diameter	35mm					
Maximum Energy Density	4kJ/cm ²					
Accuracy	±3% ^(b)					
Linearity with Energy	±1.5% ^(c)					
Reproducibility	±1%					
Response Time	2.5s					
Waiting Time for Next Measurement	12s					
Maximum Exposure Before Cooling Down is Necessary	Maximum operating temperature of 60degC will be reached after exposure to 30kJ (e.g. 6 shots at 5000W, 1s). Cooling down time before another 5kJ shot, 3min.					
Power Supply	24 VDC ±5%, max 5 A (for daisy-chaining)					
Power Consumption	24 VDC ±5%, max 2 A					
Communication	Profinet, RS232					
Dimensions	(L x W x H) 200 x 100 x 84 mm (closed); 200 x 123 x 144 (open)					
Position of Mounting Holes	6.6 mm holes spaced at 90x190 mm					
Weight	2.5kg					
Operating Temperature	10-60°C					
Humidity	10-80%					
Recommended exposure times and 1/e ² Gaussian beam diameters	Laser power W	Recommended exposure s	min 1/e ² beam dia. mm	Laser power W	Recommended exposure s	min 1/e ² beam dia. mm
	500	2	9	5000	1	18
	1000	1	9	10000	0.3	22
	2000	1	12	12000	0.3	25
Connections	2 – RJ45 Industrial Ethernet connectors, 2 – Han PushPull Power Metal 24V power connection ^(d) , 1 – DB9 RS232 connection, 7 – indicator LEDs					
Cover	Motor driven cover opens sideways					
Replacement Window	Replacement window for Helios (P/N 7Z08332)					
Version						
Part number	7Z02768					

Notes: (a) Repetitive pulses can also be measured as long as the total exposure time is within this range.

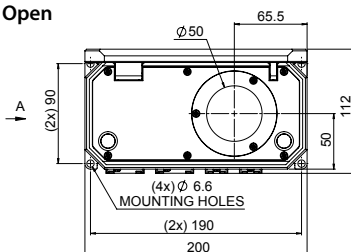
(b) The power is calculated by measuring the energy and exposure time. The laser pulse is assumed to be rectangular for this calculation.

(c) For pulse widths in the range 0.3 – 4s.

(d) External power supply should be connected to the right-hand power jack. The left power connector can be used to connect power to another device (in a ring or line topology).

If left unconnected, a plug is provided to keep the connector clean.

Helios with Cover Open



Helios with Cover Closed

