OPHIR® HELIOS

Helios Laser Power Meter for Industrial Automation

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 0.1 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 10 kJ, there is no need for water cooling and the sensor can be kept to a compact size.

Applications

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 main applications for Helios are in automated process manufacturing, such as:

- Quality control
- Quality improvement
- Increased laser efficiency

Benefits of Using Helios

- The Helios boasts a wide dynamic range, as well as high accuracy and repeatability, with a fast response time. At its core is the same thermopile disk that makes Ophir the world standard for laser measurement. That means the power handling, damage threshold, accuracy, and repeatability are equal to the best Ophir sensors.
  The sensor is housed in a dust-resistant industrial body to keep the Helios in clean working order even under harsh factory conditions.
- No water or fan cooling is necessary.
- The protective window is antireflection coated to reduce back reflection of the high power beam, and can be quickly replaced when needed.
- The Helios is equipped with two power and Profinet ports for easy integration into existing line or ring topologies.
- RS232 communication is also included if preferred. When Profinet is used, the RS232 can be useful for convenient testing before integration.

Specifications

Model	**Helios**		
Power range	100 W – 12 kW		
Energy	10 J – 10 kJ		
Irradiation time (see table below)	0.1-10 s (1)		
Wavelength	780 – 1090 nm		
Aperture	50 mm		
Max beam diameter	35 mm		
Maximum energy density	6 kJ/cm^2		
Accuracy	±3% (2)		
Linearity with energy	±1%		
Reproducibility	±1%		
Response time	2 s		
Waiting time for next measurement	10 s		
Maximum exposure before cooling down is necessary	50 kJ (e.g., 10 pulses of 10 kW, 0.5 s)		
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 85 mm (closed); 200 x 110 x 146 (open)		
Position of Mounting Holes	6.6 mm holes spaced at 90x190 mm		
Weight	2.3 kg		
Operating Temperature	10-40 °C		
Humidity	10-80%		
Recommended exposure times and beam diameters (3)	Laser power W	Recommended pulse width s	Minimum 1/e^2 Gaussian beam diameter mm
	100	4	4.1
	500	4	9.2
	1000	1	6.5
	2000	1	9.2
	5000	1	14.6
	10000	0.5	14.6
	12000	0.4	14.6
Connections	2 – RJ45 Industrial Ethernet connectors 2 – Han PushPull Power Metal 24V power connection (4) 1 – DB9 RS232 connection 7 – indicator LEDs		
Shutter	Motor driven cover opens sideways		

Notes:
(1) Repetitive pulses can also be measured as long as the total exposure time is within this range.
(2) The power is calculated by measuring the energy and pulse width. The laser pulse is assumed to be rectangular for this calculation.
(3) Pulses longer than 4s can also be measured as long as the total exposure energy is within the specified energy range.
(4) 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.