

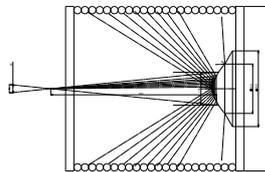
## 1.1.2.8 Calorimetric Power Meters

### 1.1.2.8.2 Ultra-High Power Water Cooled Calorimetric Sensors

100W to 150kW

#### Features

- Highest powers
- Calorimetric
- Up to 150kW
- Ø200mm aperture



Laser Beam Path

120K-W / 150K-W



Model	120K-W	150K-W
Use	Measuring Highest powers to 120kW	Measuring Highest powers to 150kW
Measurement Type	Calorimetric, water cooled beam absorber chamber with deflecting cone. Separate power measuring unit monitoring input and output cooling water flow and temperature	Calorimetric, water cooled beam absorber chamber with deflecting cone. Separate power measuring unit monitoring input and output cooling water flow and temperature
Spectral Range $\mu\text{m}$	0.9 – 1.1 <sup>(a)</sup>	0.9 – 1.1 <sup>(a)</sup>
Aperture mm	Ø200	Ø200
Power Range for Calibrated Reading	10kW – 120kW	10kW – 150kW
Power Noise Level	±20W with stable water temperature	±20W with stable water temperature
Backscattered Power	Less than 1%	Less than 1%
Maximum Average Power Density kW/cm <sup>2</sup>	The 1/e <sup>2</sup> beam diameter should have a divergence of 0 to 6 degrees and at full power should be no less than Ø100mm in diameter at the reflecting cone (see sketch above where the beam may also be collimated and not divergent as long as beam diameter requirement is met). Maximum beam size (enclosing 99% of power) is Ø200mm.	The 1/e <sup>2</sup> beam diameter should have a divergence of 0 to 6 degrees and at full power should be no less than Ø100mm in diameter at the reflecting cone (see sketch above where the beam may also be collimated and not divergent as long as beam diameter requirement is met). Maximum beam size (enclosing 99% of power) is Ø200mm.
Beam Centering Requirements IMPROPERLY CENTERED BEAM CAN CAUSE DAMAGE TO SENSOR	Beam to be centered on deflecting cone ±5mm and parallel ±2degrees	Beam to be centered on deflecting cone ±5mm and parallel ±2degrees
Response Time 0-95% typ	40s at flow rate 60 liter/min and 60s at flow rate 20 liter/min	<40s at flow rate 75 liter/min and 60s at flow rate 20 liter/min
Calibration Uncertainty ±%	1.9	1.9
Power Accuracy ±%	5 <sup>(a)</sup>	5 <sup>(a)</sup>
Linearity with Power ±%	2	2
Variation with Beam Size ±%	NA	NA
Cooling Requirements	Water flow rate, 60 liters/min at max power. Inlet temperature 15-20degC. Inlet water temperature rate of change <0.3degC/min at full power, proportionately less at lower power <sup>(b, c)</sup>	Water flow rate, 75 liters/min at max power. Inlet temperature 15-20degC. Inlet water temperature rate of change <0.5degC/min
Water Pressure Drop across Beam Absorber	0.4MPa at 60 liter/min flow rate	0.45MPa at 75 liter/min flow rate
Water Connections	Up to 4 meters in each direction of 1" OD 13/16" ID flexible nylon tubing	Up to 4 meters in each direction of 1" OD 13/16" ID flexible nylon tubing
Outputs	1. Cable terminated in DB9 plug with RS232 ASCII output reading power, flow rate and temperature on PC (using WaterFlowMeter PC App). Cable lengths 10 meters (recommended for access to full data). 2. Cable terminated in DB15 Ophir smart plug reading power.	1. Cable terminated in DB9 plug with RS232 ASCII output reading power, flow rate and temperature on PC (using WaterFlowMeter PC App). Cable lengths 10 meters (recommended for access to full data). 2. Cable terminated in DB15 Ophir smart plug reading power.
Dimensions	See drawing on next page	See drawing on next page
Weight kg	Beam Absorber 50kg. Power measuring unit 10kg	Beam Absorber 50kg. Power measuring unit 10kg
Compliance	CE, UKCA, China RoHS	CE, UKCA, China RoHS
Version		
Part number	<b>7Z02691</b>	<b>7Z07152</b>

Note: (a) Calibrated for 1.07  $\mu\text{m}$

Note: (b) Minimum flow rate should not be below 20 liter/min. It is recommended that the user install a safety interlock flow switch on the return water line (after beam dump) to immediately shut down the laser if flow rate drops

Note: (c) For solutions for prolonged usage with untreated water (tap water, non DI water), please contact Ophir

\* For drawings please see page 92

120K-W / 150K-W

