

## 1.1.2.7 High Power Thermal Sensors

### 1.1.2.7.4 Very High Power Water Cooled Thermal Sensors

#### 100W to 11kW

##### Features

- Very high powers
- Water cooled
- Up to 11kW
- Up to Ø45mm apertures



<b>Model</b>	<b>10K-W-BB-45</b>			
<b>Use</b>	<b>High power up to 11kW</b>			
Absorber Type	Beam deflector + broadband absorber			
Spectral Range $\mu\text{m}$ <sup>(a)</sup>	0.8 - 2, 10.6			
Aperture mm	Ø45mm			
Power Range	100W – 11kW			
Power Scales	11kW / 6kW / 600W			
Power Noise Level	1W			
Backscattered Power <sup>(b, e)</sup>	~3.5% without Scatter Shield, ~1% with Scatter Shield			
Maximum Average Power Density kW/cm <sup>2</sup>	See note <sup>(c)</sup> and table <sup>(1)</sup> below			
Response Time with Meter (0-95%) typ. s	2.7			
Calibration Uncertainty $\pm\%$	1.9			
Power Accuracy $\pm\%$	5 <sup>(a)</sup>			
Linearity with Power $\pm\%$	2			
Cooling	water <sup>(d)</sup>			
Minimum Water Flow Rate	8 liter/min at full power <sup>(d)</sup>			
Water Connectors <sup>(e)</sup>	Quick connector for 3/8" OD nylon tubing			
Cable Length	5 meters			
Optional Scatter Shield Accessory <sup>(e)</sup>	10K-W / 15K-W Scatter Shield (P/N 7Z08295)			
Weight kg	4.5			
Compliance	CE, UKCA, China RoHS			
Version	V4			
<b>Part number</b>	<b>7Z07102</b>			
IPM-10KW Ruggedized Industrial Version	<b>7Z07106</b> see page 92			
Note: (a)	Calibrated at 1.07 $\mu\text{m}$ and 10.6 $\mu\text{m}$ . For other wavelengths in the ranges of 0.8 - 0.95 $\mu\text{m}$ & 1.1 - 2 $\mu\text{m}$ add up to $\pm 2\%$ to the calibration error.			
Note: (b)	When scatter shield is installed, use the NIRS setting to compensate for slightly higher reading. When not installed, use the NIR setting.			
Note: (c)	For circular beam centered within 1/4 of beam diameter. IMPROPERLY CENTERED BEAM CAN CAUSE DAMAGE TO SENSOR. Maximum tilt angle $\pm 5$ degrees. For rectangular beam please consult Ophir representative.			
Note: (d)	Water temperature range 18-30°C. Water temperature rate of change <1°C/min. Pressure drop across sensor 0.1MPa. The recommended flow rate can be lowered proportionately at lower than full power but should not be below 3 liter/min. The response time will be optimum with the recommended flow rate. For solutions for prolonged usage with untreated water (tap water, non DI water), please contact Ophir.			
Note: (e)	Heavy duty stand is available as optional extra. For further information and other options see <b>Accessories for High Power Sensors</b> on pages 97-100.			
Table: (1)	Beam diameter	Max power density	Max energy density	
			1ms pulse width	3ms pulse width
			10ms pulse width	
	<15mm	10kW/cm <sup>2</sup>	30J/cm <sup>2</sup>	60J/cm <sup>2</sup>
	15 - 20mm	7kW/cm <sup>2</sup>	20J/cm <sup>2</sup>	40J/cm <sup>2</sup>
	20 - 40mm	5kW/cm <sup>2</sup>	15J/cm <sup>2</sup>	30J/cm <sup>2</sup>
	40 - 45mm	4kW/cm <sup>2</sup>	12J/cm <sup>2</sup>	25J/cm <sup>2</sup>

#### 10K-W-BB-45

