Sensors

1.1.2.7 High Power Thermal Sensors

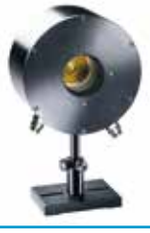
1.1.2.7.4 Very High Power Water Cooled Thermal Sensor

100W to 16kW

Features

- Very high powers
- Water cooled
- Up to 16kW
- Up to Ø55mm apertures
- Over temperature alarm and interlock

15K-W-BB-45



16K-W-BB-55

Model	15K-W-BB-45	16K-W-BB-55
Use	**High power up to 15kW**	**High power up to 16kW, larger aperture, over temperature alarm and interlock**
Absorber Type	Beam deflector + broadband absorber	Beam deflector + broadband absorber
Spectral Range µm [a]	0.8 - 2, 10.6	0.8 – 2, 10.6
Aperture mm	Ø45mm	Ø55mm
Power Range	100W – 15kW	100W – 16kW
Power Scales	15kW / 4kW / 400W	16kW / 4kW / 400W
Power Noise Level	1W	1W
Backscattered Power [b, e]	~3.5% without Scatter Shield, ~1% with Scatter Shield	~3.5% without Scatter Shield, ~1% with Scatter Shield
Maximum Average Power Density kW/cm²	See note [c] and table [1] below	See note [c] and table [1] below
Response Time with Meter (0-95%) typ. s	3.5	3.5
Calibration Uncertainty ±%	1.9	1.9
Power Accuracy ±%	5 [a]	5 [a]
Linearity with Power ±%	2	2
Variation with Beam Size	±1.7% from 15 to 30mm	±1% from 10 to 35mm
Cooling	water [d]	water [d]
Minimum Water Flow Rate	12 liter/min at full power [d]	12 liter/min at full power [d]
Water Pressure Requirements at Max Flow Rate	Pressure drop across sensor ~0.2MPa	Pressure drop across sensor at full flow rate <0.1MPa
Water Connectors [e]	Quick connector for 3/8” OD nylon tubing	Quick connector for 1/2” OD nylon tubing
Over Temperature Warning / Interlock	N.A.	Module on sensor near output cable with over temperature LED, loud audible signal and M8 3 connector interlock
Cable Length and Connections	5 meters terminated in Ophir DB15 smart connector	Signal: 5 meters terminated in DB15 Interlock: M8 connector with 1.5 meter cable terminated in flying leads: Brown - common, Black - N.C., Blue - N.O. 3 blue, 4 black, 1 brown
Optional Scatter Shield Accessory [e]	10K-W / 15K-W Scatter Shield (P/N 7Z08295)	16K-W Scatter Shield (P/N 7Z08355)
Weight kg	6	8
Compliance	CE, UKCA, China RoHS	CE, UKCA, China RoHS
Version		
Part number	**7Z02770**	**7Z02791**

Note: (a) Calibrated at 1.07µm and 10.6µm.
For other wavelengths in the range 0.8 – 2µm, the calibration error may be up to ±2% more.

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 ¼ of beam diameter. IMPROPERLY CENTERED BEAM CAN CAUSE DAMAGE TO SENSOR.
Maximum tilt angle ±5 degrees. For rectangular beam please consult Ophir representative.

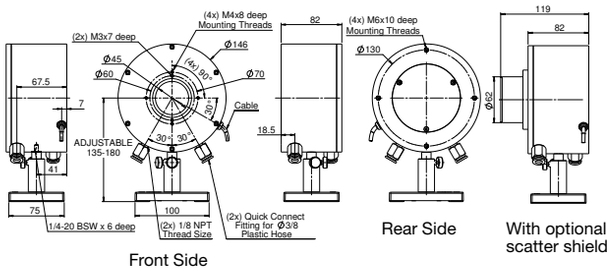
Note: (d) Water temperature range 18-30°C. Water temperature rate of change <1°C/min. The recommended flow rate can be lowered proportionately at lower than full power but should not be below 3 liter/min. The response time will be optimum at near 12 liter/min flow rate. For solutions for prolonged usage with untreated water (tap water, non DI water), please contact Ophir.

Note: (e) For further information and other options see **Accessories for High Power Sensors** on pages 97-101.

Table: (1)

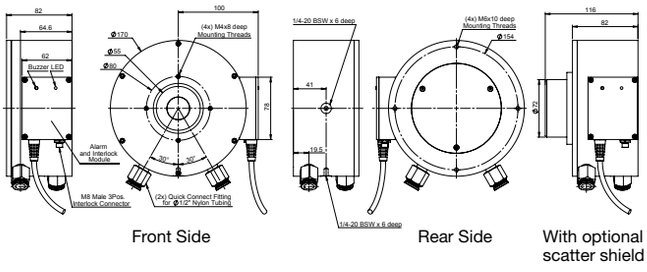
Beam diameter	Max power density	Max energy density		
		1ms pulse width	3ms pulse width	10ms pulse width
<15mm	10kW/cm²	30J/cm²	60J/cm²	150J/cm²
15 - 20mm	7kW/cm²	20J/cm²	40J/cm²	100J/cm²
20 - 40mm	5kW/cm²	15J/cm²	30J/cm²	70J/cm²
40 - 45mm	4kW/cm²	12J/cm²	25J/cm²	60J/cm²

15K-W-BB-45



Front Side | Rear Side | With optional scatter shield

16K-W-BB-55



Front Side | Rear Side | With optional scatter shield