

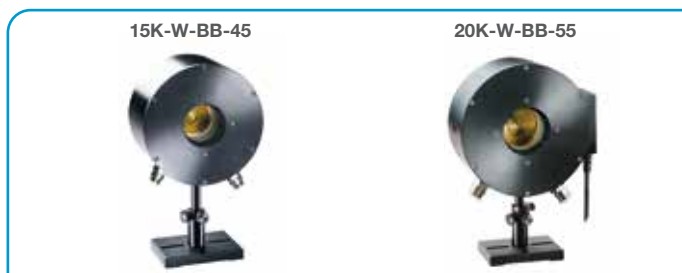
## 1.1.2.7 High Power Thermal Sensors

### 1.1.2.7.4 Very High Power Water Cooled Thermal Sensor

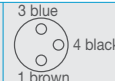
100W to 20kW

#### Features

- Very high powers
- Water cooled
- Up to 20kW
- Up to Ø55mm apertures
- Over temperature alarm and interlock



Model	15K-W-BB-45	20K-W-BB-55
Use	High power up to 15kW	High power up to 20kW, larger aperture, over temperature alarm and interlock
Absorber Type	Beam deflector + broadband absorber	Beam deflector + broadband absorber
Spectral Range $\mu\text{m}$ <sup>(a)</sup>	0.8 - 2, 10.6	0.8 - 2, 10.6
Aperture mm	Ø45mm	Ø55mm
Power Range	100W - 15kW	100W - 20kW <sup>(f)</sup>
Power Scales	15kW / 4kW / 400W	20kW / 5kW / 500W
Power Noise Level	1W	1W
Backscattered Power <sup>(b, e)</sup>	~3.5% without Scatter Shield, ~1% with Scatter Shield	~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	See note <sup>(c)</sup> and table <sup>(1)</sup> below
Response Time with Meter (0-95%) typ. s	3.5	3.5
Calibration Uncertainty $\pm\%$	1.9	1.9
Power Accuracy $\pm\%$	5 <sup>(a)</sup>	5 <sup>(a)</sup>
Linearity with Power $\pm\%$	2	2
Variation with Beam Size	$\pm 1.7\%$ from 15 to 30mm	$\pm 1\%$ from 10 to 35mm
Cooling	water <sup>(d)</sup>	water <sup>(d)</sup>
Minimum Water Flow Rate	12 liter/min at full power <sup>(d)</sup>	20 liter/min at full power <sup>(d)</sup>
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 <sup>(e)</sup>	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.
Optional Scatter Shield Accessory <sup>(g)</sup>	10K-W / 15K-W Scatter Shield (P/N 7Z08295)	20K-W Scatter Shield (P/N 7Z08355) <sup>(g)</sup>
Weight kg	6	8
Compliance	CE, UKCA, China RoHS	CE, UKCA, China RoHS
Version	V2	
Part number	<b>7Z07133</b>	<b>7Z07149</b>



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 $\mu\text{m}$ , the calibration error may be up to  $\pm 2\%$  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 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. 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.

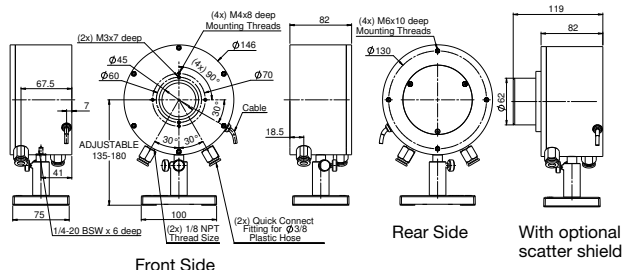
Note: (e) For further information and other options see **Accessories for High Power Sensors** on pages 99-102.

Note: (f) With scatter shield full power is 18kW.

Note: (g) The scatter shield is compatible also with the 16K-W-BB-55 sensor P/N 7Z07131

Beam diameter	Max power density	Max energy density
		1ms pulse width
<15mm	10kW/cm <sup>2</sup>	30J/cm <sup>2</sup>
15 - 20mm	7kW/cm <sup>2</sup>	20J/cm <sup>2</sup>
20 - 40mm	5kW/cm <sup>2</sup>	15J/cm <sup>2</sup>
40 - 45mm	4kW/cm <sup>2</sup>	12J/cm <sup>2</sup>
		3ms pulse width
		10ms pulse width
		60J/cm <sup>2</sup>
		40J/cm <sup>2</sup>
		30J/cm <sup>2</sup>
		70J/cm <sup>2</sup>
		60J/cm <sup>2</sup>

15K-W-BB-45



20K-W-BB-55

