

Thermal Heads for Power and Single-Shot Energy - mW to KW, mJ to 300J



- The highest damage threshold in the industry
- Models for 1500W, 5000W and 10KW for high power laser measurement
- LP coating that can withstand up to $6\text{KW}/\text{cm}^2$ (at maximum rated head power) ■

Energy damage threshold up to $250\text{J}/\text{cm}^2$

- EMI rejection
- Single pulse energy measurement up to 600 joules
- Sensitive meters to measure power down to $40\mu\text{W}$ and energy down to $7\mu\text{J}$

Thermal Heads - High Powers 500W and Up

NEW

FL500A

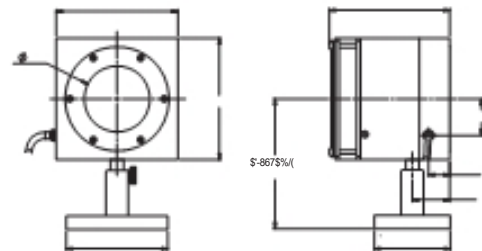
CW & Pulsed Measurements 500mW - 500W 120mJ - 600J

Recommended Use: Very large beams to 500W
 Special Features: Fan cooled Ø65mm aperture, 500W CW

Absorber:	Broadband 0.19-20µm
Aperture:	Ø65mm
Digital Power Scales:	500W / 50W
Maximum Average Power	500W continuous
Maximum Average Power Density:	8KW/cm ² at 500W
Maximum Energy Density J/cm ²	
<100ns	0.3
0.5ms	5
2ms	10
10ms	30
Power Noise Level:	25mW
Power Accuracy:	± 3%
Response Time with Display (0-95%):	2.8s
Linearity with Power:	± 1%
Energy Scales:	600J/60J/6J
Energy Threshold:	100mJ
Cooling:	Fan



FL500A



1000W

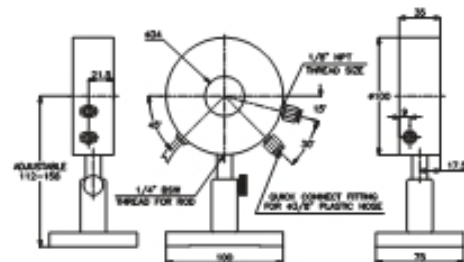
CW & Pulsed Measurements 5W - 1000W 300mJ - 300J

Recommended Use: High power CO₂, YAG and Diode lasers
 Special Features: High power, fast response, compact

Absorber	Broadband, 0.19 - 20µm
Aperture:	Ø34mm
Digital Power Scales:	1000W / 200W
Maximum Average Power Density:	6KW/cm ²
Maximum Energy Density (J/cm ²):	
<100ns	0.3
0.5ms	5
2ms	10
10ms	30
Power Noise Level:	0.2W
Power Accuracy:	± 3%
Response Time with Display (0-95%):	2.5s
Linearity with Power:	± 2%
Energy Scales:	300J/30J
Energy Threshold:	300mJ
Surface Uniformity:	±2.5%
Cooling:	Water - 1.8 liter / minute (minimum) Water temperature range 18 - 30°C Water temperature rate of change <1°C min.



1000W



Ordering information		
Item	Description	Ophir P/N
FL500A	Very large aperture fan cooled power/energy meter to 500W CW	1Z02648
1000W-V1	1000 Watt power/energy meter	1Z02634

For latest updates please visit our website: www.ophiropt.com

L1500W / L1500W-LP

CW & Pulsed Measurements 20W - 1500W 500mJ - 200J

Recommended Use: High power and long pulse YAG, CO₂ and Diode lasers Special Features: High power and energy density, large aperture

Absorber:	Broadband: 0.19 - 20µm, LP: 0.19 - 3µm, 10.6µm	
Aperture:	Ø50mm	
Digital Power Scales:	1500W / 300W	
Maximum Average Power Density:	BB: 5KW/cm ² , LP1: 6KW/cm ²	
Maximum Energy Density (J/cm ²):	Broadband	LP
	<100ns	0.3
	1µs	0.5
	0.5ms	5
	2ms	10
	10ms	30
Power Noise Level:	0.7W	
Power Accuracy:	± 5%	
Response Time with Display (0-95%):	2.7s	
Linearity with Power:	± 2%	
Energy Scales:	200J/20J	
Energy Threshold:	500mJ	
Surface Uniformity:	±2.5%	
Cooling:	Water - 2.5 liter / minute (minimum)	
	Water temperature range 18 - 30°C	
	Water temperature rate of change <1°C/min.	



5000W / 5000W-LP

CW Power 100W - 5000W

Recommended Use: High power and long pulse YAG, CO₂ and Diode lasers Special Features: High power and energy density, large aperture

Absorber:	Broadband: 0.19 - 20µm, LP: 0.19 - 1.5µm, 10.6µm	
Aperture:	Ø50mm	
Digital Power Scales:	5000W / 500W	
Maximum Average Power Density:	BB: 3KW/cm ² , LP: 4KW/cm ²	
Maximum Energy Density (J/cm ²):	Broadband	LP
	<100ns	0.3
	1µs	0.5
	0.5ms	5
	2ms	10
	10ms	30
Power Noise Level:	1W	
Power Accuracy:	± 5%	
Response Time with Display (0-95%):	3s	
Linearity with Power:	± 2%	
Energy Scales:	N.A.	
Cooling:	Water - 4.5 liter / minute (minimum)	
	Water temperature range 18 - 30°C	
	Water temperature rate of change <1°C/min.	



Ordering information		
Item	Description	Ophir P/N
L1500W-V1	Water cooled 1500 Watt power/energy meter	1Z02660
L1500W-LP	Water cooled 1500 Watt power/energy meter with damage resistant LP coating	1Z02082
5000W	Water cooled 5000 Watt power/energy meter	1Z02119
5000W-LP	Water cooled 1500 Watt power/energy meter with damage resistant LP coating	1Z02255

10K-W

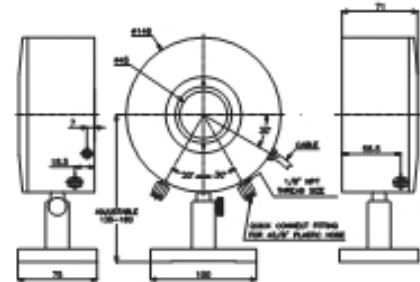
CW Power 200W - 10,000W

Recommended Use: Very high powers and power densities

Special Features: Withstands up to 10KW/cm² at 10,000W

Absorber:	Broadband 0.8 - 1.1µm and 10.6 µm with special beam intensity reduction.				
Aperture:	Ø 4.5mm				
Digital Power Scales:	10KW / 1KW				
Maximum Average Power Density :	BB: 3KW/cm ² , LP1: 4KW/cm ²				
Maximum Ave. Power and Energy Density	Beam Diameter	Max Power	Max Energy Density		
		Density	1ms pulse w.	3ms p.w.	10ms p.w.
	<15mm	10KW/cm ²	30J/cm ²	60J/cm ²	150J/cm ²
	15-20mm	7KW/cm ²	20J/cm ²	40J/cm ²	100J/cm ²
	20-40mm	5KW/cm ²	15J/cm ²	30J/cm ²	70J/cm ²
	40-45mm	4KW/cm ²	12J/cm ²	25J/cm ²	60J/cm ²
Power Noise Level:	2 W				
Power Accuracy :	± 5%				
Response Time with Display (0 -9.5%) :	< 3s				
Linearity with Power:	± 2%				
Energy Scales:	N.A .				
Cooling:	Water - 9 liter / minute (minimum)				
	Water temperature range 18 - 30 °C				
	Water temperature rate of change <1°C/min.				

10K-W



Laser Power & Energy

Heads

Displays

Beam Profile
Wavelength

Integrated Systems

OEM Products

Ordering information		
Item	Description	Ophir P/N
10K-W	Water cooled 10,000 Watt power/energy meter	1Z02645

Comet Laser Power Probes

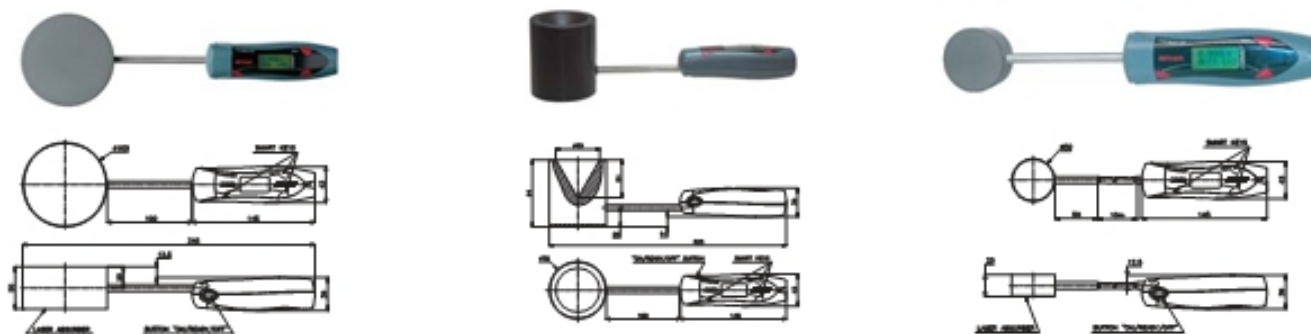
NEW

CW power: Comet 10K, 10K-HD - 200W to 10KW, Comet 1K - 20W to 1KW

Ophir now offers the Comet laser power probe that is simple to use, economical but also highly accurate. It operates by measuring the heat rise from a 10 second exposure to a laser beam and thereby calculates the laser power. It has a sophisticated algorithm to take into account the heat loss due to the Comet temperature and thus can give accurate readings even if the Comet is hot before the measurement. This allows you to take several measurements before cooling the probe with water. Along with the Comet 10K for industrial lasers which measures mainly from 1KW to 10KW, there is the smaller Comet 1K for measuring from ~50W up to 1KW.

Recommended Use: Comet 10K/10K-HD - Industrial Lasers, Comet 1K - quick power check of low-med power lasers

Special Features: Accurate, simple to use and inexpensive

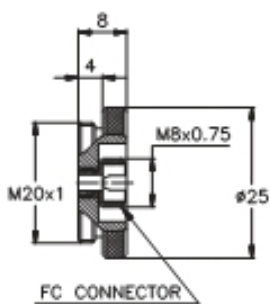


Model	Comet 10K,		Comet 10K HD		Comet 1K	
Power measurement range	200W to 10,000W		200W to 10,000W		20W to 1000W	
Spectral range	CO ₂ , YAG & diode		CO ₂		0.2 - 20µm	
Absolute calibration accuracy at calibrated wavelengths	±5%		±5%		±5%	
Repeatability	±1% for same initial temperature		±1% for same initial temperature		±1% for same initial temperature	
Linearity with power	±2 % from 1KW to 10KW		±2 % from 1KW to 10KW		±2% ±1W from 20W to 1KW	
Number of readings before probe must be cooled (for 25°C starting temp.):	1KW	4	1KW	4	100W	4
	3KW	3	3KW	3	300W	3
	4KW	2	4KW	2	400W	2
	10KW	1	10KW	1	1KW	1
Dimensions	Absorber: Ø100mm dia x 50mm thick. Length: 340mm		Absorber: Ø 78mm dia x 91mm thick. Max beam size 60mm. Length: 323mm		Absorber: Ø 50mm dia x 25mm thick. Length: 295mm	
Damage threshold for Power	Power	Damage threshold	Power	Damage threshold	Power	1K Model
	1KW	3500W/cm ²	1KW	7KW/cm ²	100W	10KW/cm ²
	2KW	2800W/cm ²	2KW	5.5KW/cm ²	200W	8KW/cm ²
	3KW	2500W/cm ²	3KW	5KW/cm ²	300W	6KW/cm ²
	5KW	1500W/cm ²	5KW	3 KW/cm ²	500W	5KW/cm ²
10KW	1000W/cm ²	10KW	2KW/cm ²	1KW	4KW/cm ²	
Damage threshold for Energy	Pulse width					
	<100ns	0.3J/cm ²	0.5J/cm ²		0.3J/cm ²	
	10µs	1J/cm ²	1J/cm ²		1J/cm ²	
	1ms	10J/cm ²	10J/cm ²		10J/cm ²	
10ms	50J/cm ²	30J/cm ²		50J/cm ²		
Time to reading	Initial reading approximately 20s after exposure, final reading 40s after exposure				Initial reading 10s after exposure, final reading 20s after exposure	
Weight	1.2Kg				300g	
Temperature compensation	Temperature compensated to give accurate readings independent of starting probe temperature					
Maximum permitted probe temperature	70°C before measurement, 140°C after measurement					
Swivel mount	Fixed position				Handle swivels ±90 degrees vis a vis absorber for ease of use.	
Display	2x8 character LCD. Character height 5mm					
Operation modes:	AUTO: Automatic measurement with laser set to 10s timed exposure. Unit senses temperature rise and measures automatically. MANUAL: User places probe in front of beam for 10s. Unit beeps to indicate start and stop measurement points.					
History	Stores last three readings					
Calibration	Can be recalibrated by user					
Battery	2 x AA. Lifetime in normal use approximately 1 year.					
Electromagnetic compatibility	CE approved					

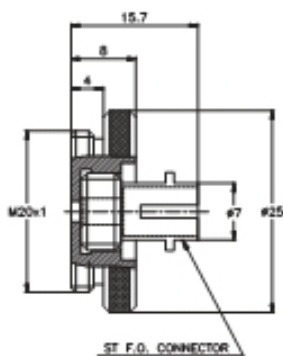
Ordering Information		
Item	Description	Ophir P/N
Comet 10K-V1	Hand held power probe for 200 - 10,000W	1Z02705
Comet 10K HD V2	Hand held power probe for 200 - 10,000W with conical absorber for high damage threshold	1Z02706
Comet 1K	Hand held power probe for 20 - 1000W	1Z02702

Fiberoptic Adapters and Accessories for Thermal Heads

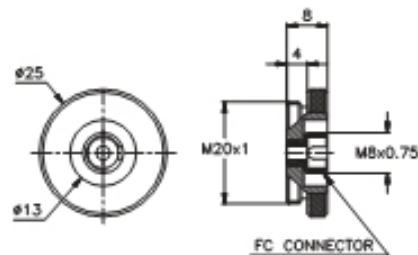
The heads can work either with or without the adapters attached



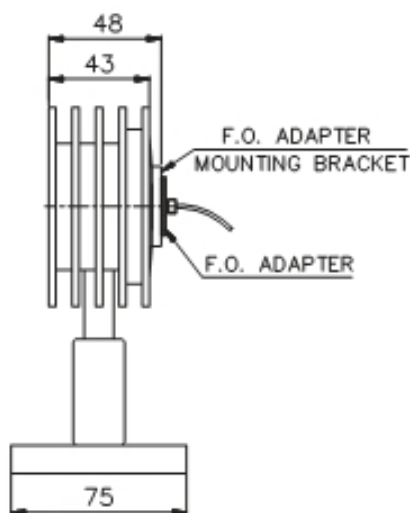
SMA fiber adapter



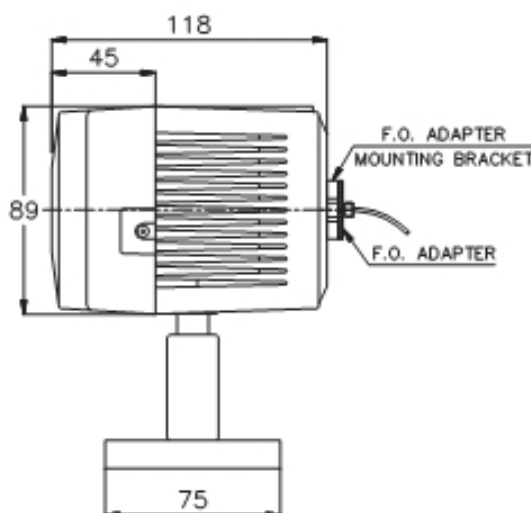
ST fiber adapter



FC fiber adapter



30A / L30A
with F.O. input



FL250A
with F.O. input

Ordering Information for Fiber Adapters for Thermal and Photodiode Heads

Head Series	Fiber adapter mounting bracket (1 bracket will fit all fiber adapters)	SC fiber adapter	LC fiber adapter	ST fiber adapter	FC fiber adapter	SMA fiber adapter
PD300	not needed	1Z08221	Not available	1Z02210	1Z02213	1Z02212
PD300-IRG-V1	not needed		1Z08215		1Z08216	1Z08222
3A-IS-V1	1Z08213	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
F100A-IS	1Z08213	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
3A	not needed	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
3A-P-V1	not needed	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
10A-V1.1	not needed	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
12A / 12A-P	not needed	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30A -V1	1Z08211	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30A-P-V1 / F100A-HE/HE1	1Z08230	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
L30A-V1 / F150A-V1	1Z08210	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
L50A	1Z08210	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30(150)A-HL	1Z08211	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30(150)A-SV	1Z08230	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30(150)A-HE/HE1	1Z08230	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
30(150)A-V1	1Z08211	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
L40(150)A-V2/ L50(150)A	1Z08238 ^a	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
FL250A-V1	1Z08212	1Z08227	1Z08228	1Z08226	1Z08229	1G01236
FL300A / FL300A-LP	1Z08212	1Z08227	1Z08228	1Z08226	1Z08229	1G01236

Note: a. The fiber mounting bracket for these heads is a triple adapter for mounting up to three different fibers looking at same head.

SH to BNC Adapter



Ordering information		
Item	Description	Ophir P/N
SH to BNC Adapter	Allows connection of smart head to voltage measuring device for measurement of raw voltage output.	1Z11010