

Ultra Series UP55N

Ultra Power and Ultra Performance are what you get with our new UP series detectors. Ultra performance means fast. Ultra performance means flexible. They come ready to mount on a rod, a bracket and the square case even lets you set them right on the table. Ultra performance means expandable. We can easily increase the power capability of your modular UP series detector as your needs change. Ultra performance means accurate. It is hard to do better than our NIST traceable calibration and *Personal wavelength correction™*. Ultra performance means versatile. For all models you can measure pulse energy as well as power (in calorimeter mode). Fiber optic adapters are available, and the Ultras are compatible with all Gentec-E0 monitors. A UP series detector is the best choice for many applications.

The UP55N Family

This family was designed for large beams 1 to 400 watts. They take 40 W stand alone and 100 W with heatsink. Go to 300 W with a fan and 400 W with water cooling in a package only 44 mm deep! The large aperture lets you expand a beam that may be too intense to measure otherwise.

New Disk and Absorber

The Ultra performance of the UP detectors comes from new disk technology developed at Gentec-E0 for both power and speed. Our modular body and cooling modules make it the most versatile detector family available. Moreover, our new H9 absorber is one of the most damage resistant available today.

OEM Ultras

The large Ultra family accommodates a wide range of OEM requirements. Use a Gentec-E0 monitor or your own electronics (requires our internal circuit board). We offer several output connector options. The BNC output gives you fast, easy installation and the best EMI noise shielding. The Molex connector allows you to unplug the detector for service or for use at other locations. The DB-15 contains an EEPROM with the custom calibration data used by Gentec-E0 power meters.

There are 3 output signal options:

1. Natural voltage from the thermopile,
2. Adjusted to a specific sensitivity,
3. Amplified.

Please contact us for the specs on the OEM versions with the internal circuitry. If you don't see exactly what you need, we will provide you with a custom solution.



POWER DETECTORS

High Power – Large Aperture

- **Fast**
- **Compact and Versatile**
- **Flat Spectral Response**
- **Full NIST-Traceability**
- **High Damage Threshold**
- **Smart Interface**



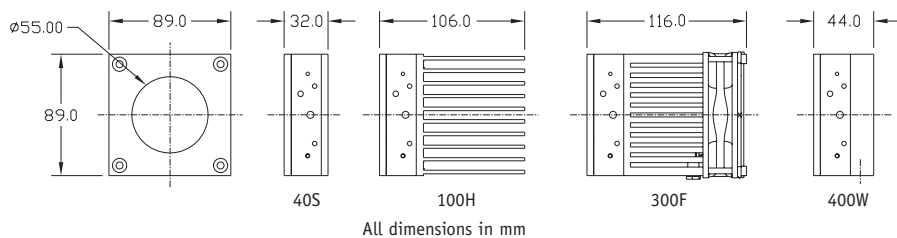
ULTRA SERIES UP55N SPECIFICATIONS

TYPICAL LASERS

- Large beam
- High Power
- YAG (various)
- Excimer
- DPSSL
- CO₂

COMMON APPLICATIONS

- Cutting & drilling
- UV Machining
- Surface manipulation
- Surgery
- Lithography
- Marking



All dimensions in mm

40S

100H

300F

400W

MEASUREMENT CAPABILITY

	40S	100H	300F	400W
Spectral range	0.19 -11 μm	0.19 -11 μm	0.19 -11 μm	0.19 -11 μm
Maximum Measurable Power	40 W	100 W	300 W	400 W
Minimum Detectable Power^a	5 mW	5 mW	5 mW	5 mW
Rise Time (nominal)^b	2 sec	2 sec	2 sec	2 sec
Sensitivity^{c,d}	0.13 mV/W	0.13 mV/W	0.13 mV/W	0.13 mV/W
Calibration Uncertainty^e	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 2.5\%$	$\pm 2.5\%$
Repeatability	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$
Power Resolution	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$
Calorimeter Mode				
Sensitivity	0.03 mV/J	0.03 mV/J	0.03 mV/J	0.03 mV/J
Maximum Measurable Energy ^f	200 J	200 J	200 J	200 J
Minimum Measurable Energy	5 J	5 J	5 J	5 J
Minimum Repetition Period	11.1 sec	11.1 sec	11.1 sec	11.1 sec
Maximum Pulse Width	433 ms	433 ms	433 ms	433 ms
Accuracy with energy calibration option	$\pm 5\%$	$\pm 5\%$	$\pm 5\%$	$\pm 5\%$
Beam size Dependence (centered)	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.5\%$

DAMAGE THRESHOLDS

	40S	100H	300F	400W ^g
Max Average Power (continuous)	40 W	100 W	300 W	400 W ^g
Max Average Power (2 minutes)	60 W	150 W	300 W	400 W ^g
Max. Average Power Densityⁱ	45 kW/cm ²	45 kW/cm ²	45 kW/cm ²	45 kW/cm ²
Pulse Laser Damage Thresholds	Max Energy Density ^h		Peak Power Density	
1.064 μm , 360 μs , 5 Hz	9 J/cm ²		25 kW/cm ²	
1.064 μm , 7 ns, 10 Hz	1 J/cm ²		143 MW/cm ²	
532 nm, 7 ns, 10 Hz	0.6 J/cm ²		86 MW/cm ²	
266 nm, 7 ns, 10 Hz	0.3 J/cm ²		43 MW/cm ²	

PHYSICAL CHARACTERISTICS

Effective aperture diameter	55 mm \emptyset			
Absorber	High Damage Threshold – H9			
Cooling	convection	convection	fan	water
Dimensions	89 H x 89 W x 32 D mm	89 H x 89 W x 106 D mm	89 H x 89 W x 116 D mm	89 H x 89 W x 44 D mm
Weight (head only)	0.62 kg	0.93 kg	1.38 kg	0.84 kg
Effective Area	23.76 cm ²	23.76 cm ²	23.76 cm ²	23.76 cm ²

a. Nominal value, actual value depends on electrical noise in the measurement system.

b. With Gentec-EO TPM 300CE, DUO, SOLO or P-LINK monitor.

c. Maximum output voltage = sensitivity x maximum power.

d. Higher sensitivity with internal circuit. Contact Gentec-EO.

e. Including linearity with power. With Gentec-EO monitor.

f. For 360 μs pulses. Higher pulse energy possible when customized for long pulses (ms), less for short pulses (ns).

g. Minimum cooling flow 1 liter/min, water temperature $\leq 22^\circ\text{C}$, 1/8 NPT compression fittings for 1/4 inch semi-rigid tube. Contact Gentec-EO for clean deionized water cooling module option.

h. A slight discoloration may occur without affecting the performance of the detector head.

i. 1064 nm, 10W CW.

Specifications subject to change without notice



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