3.8.2 BeamWatch® Non-contact, Focus Spot Size and Position Monitor
for high power YAG, Diode and Fiber lasers

- Instantly measure focus spot size
- Dynamically measure focal plane location during start-up
- From 400W and up – no upper limit (So far we have measured up to 100kW)
- Non-contact, laser beam is completely pass-through
- Automation Control Interface for System Integration
- GigE camera interface for local network installation
- Patented

BeamWatch utilizes disruptive technology to measure laser beam characteristics of very high power lasers. By not intercepting the beam and yet providing instantaneous measurements, you can now monitor the beam at frequent intervals without having to shut down the process or remove tooling and fixtures to get access. In addition, you can now measure focal spot location at several times per second and know if there is any focal spot shift during those critical start-up moments.
Specifications

Model | BW-NIR-2-155 | BW-NIR-2-65
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**Beam Profiling**
Wavelength | 980-1080nm | 980-1080nm
Minimum power density | 2 Megawatts/cm² | 2 Megawatts/cm²
Minimum spot size | 155 microns | 55 microns
Depth of field (DOF) | 25.74mm | 9.01mm
DOF resolution | 16.5µm | 5.5µm
Maximum diameter at entrance/exit | 12.5mm | 12.5mm

**Accuracy**
- Waist width (Spot size) ±5% ±5%
- Waist location ±125 micrometers within the BeamWatch window ±125 micrometers within the BeamWatch window
- Focal shift ±50 microns ±50 microns
- Beam parameter product ±3.5% RMS ±3.5% RMS
- Divergence ±3.5% RMS ±3.5% RMS

**General**
- Communication to PC GigE GigE
- Power supply 12 Volts DC, 1.67 Amps max, 100-240V AC 12 Volts DC, 1.67 Amps max, 100-240V AC
- Particulate purge Clean Dry Gas, approximately 10 LPM Clean Dry Gas, approximately 10 LPM
- Weight 3.9 Kg 3.9 Kg
- Dimensions 16in x 7in x 35in 16in x 7in x 35in

**Ordering information**
Part Number | SP90390 | SP90391

**Suggested Add-Ons**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>P/N</th>
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<tbody>
<tr>
<td>Cup aperture</td>
<td>For those applications where the standard flat aperture does not position the delivery head close enough to the measurement centerline. Includes alignment tool</td>
<td>SP90476</td>
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<tr>
<td>Rotation Mount</td>
<td>Add-on 180° manual rotation mount to bottom of BeamWatch</td>
<td>SP90346</td>
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<tr>
<td>Locking Ethernet Cable</td>
<td>Replace standard Ethernet cable with one that locks into place, IP67 rated</td>
<td>SP90394</td>
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<tr>
<td>5000W-BB-50</td>
<td>3kW water cooled power sensor</td>
<td>7Z02754</td>
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<tr>
<td>10K-W-BB-43</td>
<td>10kW water cooled power sensor</td>
<td>7Z02756</td>
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<tr>
<td>30K-W-BB-74</td>
<td>30kW water cooled power sensor</td>
<td>7Z02757</td>
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<tr>
<td>120K-W</td>
<td>100kW water circulated power sensor for laser with an approximately Gaussian beam and fiber output</td>
<td>7Z02691</td>
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<tr>
<td>Juno</td>
<td>Compact module to operate one Ophir sensor from your PC USB port</td>
<td>7Z01250</td>
</tr>
<tr>
<td>Vega</td>
<td>Hand held color universal power meter</td>
<td>7Z01560</td>
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![Optional BeamWatch cup aperture](image-url)
Operating Space Charts

The plots are intended to give a visual indication of the recommended operating space for BeamWatch. If BeamWatch is operated outside of this space, it may be more difficult to see the curvature of the caustic or the beam may be large enough at the edges of the image that it is out of focus.

The maximum waist is dependent on the power density and $M^2$ of the beam. Specified is a minimum power density of 2 megawatts/cm$^2$ and the $M^2$ vs waist width is shown in the corn-looking graphs. Following these charts also covers the 12.5mm max beam size as it enters and exits the unit.

The 12.5mm maximum beam size at entrance and exit is the physical clear aperture of unit, and is the same for all models.

- Optimal has at least 3 Rayleigh lengths on both sides of the waist, with the waist at the center of the image
- Near Optimal has at least 3 Rayleigh lengths on 1 side of the waist, with the waist at the end of the image
- Acceptable has at least 1.5 Rayleigh lengths on both sides of the waist, with the waist at the center of the image