

OSA: High-power pulsed light measurement

Applicable model*: AQ6380/AQ6370 series/AQ6360

High-power gas lasers and fiber lasers of several Watt class are used for material processing and marking. These high power lasers are used with pulsed light to reduce the effects of heat generation, and The higher the output, the narrower the pulse width and the lower the repetition frequency. (e.g. pulse width: tens of ns, repetition cycle: tens of Hz)
 With the applicable models, there are three methods to measure pulsed light : peak hold mode, external trigger mode, and normal mode (time average spectrum measurement).

Normal mode (Time average spectrum measurement)

The average power of the pulsed light is measured as the power of the optical spectrum. When the pulsed light is a square wave, the average optical power measured is (peak power of optical pulse [mW]) × (duty ratio of pulsed light). The smaller the duty ratio of the pulsed light, the lower the measurement power, but you can measure even a narrow pulse width. The higher average power has the advantage of being faster than other methods. However, in this mode, the repetition frequency needs to be high enough to measure the average power correctly. If the repetition frequency is low, measurement may be possible by selecting a high sensitivity setting or increasing the number of averaging.

* All versions unless otherwise specified.

Peak hold mode

Capture the peak value within the light pulse repetition period. The measurable pulse width is 100 μs or more.

External trigger mode

Capture the peak value of the optical pulse by supplying the OSA with a trigger signal that is synchronized with the optical pulse. The measurable pulse width is 50 μs or more.

Applicable measurement modes per OSA model

Measurement modes	AQ6360	AQ6380 AQ6370 AQ6373 AQ6374	AQ6375 AQ6376 AQ6377
Time average spectrum	●	●	●
External trigger		●	○
Peak hold		●	○

● : Available
 ○ : Available (conditional)
 Blank : Not available

Note. The external trigger and peak hold measurements are not available in HIGH1, HIGH2, and HIGH3 of AQ6375, AQ6376, and AQ6377 where the high dynamic range "CHOP" mode is used.
 Note. AQ6380 can measure Pulsed Light in "TRAD" mode only.

