

# Attenuator selection guide

To select the right Watt pilot model one should consider the application carefully. Beam diameter, laser power, pulse duration, bandwidth, polarization, environmental conditions, requirements for maximum attenuation and beam misalignment should be taken into consideration. In order to pick a suitable device, please follow the selection guide below which will help you to get straight to the right model of Watt Pilot.

Model, page	Band-width	Configuration	Optimization	Attenuation range at CWL	Typical application	Damage threshold <sup>1</sup>
<b>Standard,</b> 198	±2 nm	λ/2 LO waveplate + cemented PBS cube	Transmission/ reflection mode	0.5-95%	CW medium power lasers and LDs	>0,3 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm
	±10 nm	λ/2 ZO waveplate + cemented PBS cube	Transmission/ reflection mode	0.5-95%	CW medium power lasers and LDs	>0,3 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm
	±10 nm	λ/2 ZO waveplate + optically contacted PBS cube	Transmission/ reflection mode	0.5-95%	High power CW and pulsed lasers, LDs	>20 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm
<b>Enhanced,</b> 200	±5 nm	λ/2 ZO waveplate + 2x TFP	Reflection mode	0.3-99%	High power CW and pulsed lasers, LDs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±20 nm	λ/2 ZO waveplate + 2x Brewster TFP	Reflection mode	0.5-98%	High power CW and pulsed lasers, LDs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±5 nm	λ/2 ZO waveplate + 1x Brewster TFP	Transmission mode	0.3-95%	High power CW and pulsed lasers, LDs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±20 nm	λ/2 High energy waveplate + 1x high contrast TFP	Transmission mode	0.04-99%	High power CW and pulsed lasers	>20 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064nm
<b>Ultrafast,</b> 202	±25 nm	λ/2 ZO waveplate + 2x broadband (ultrafast) TFP	Max power mode	4-96%	Ultrafast, broadband laser sources with pulse length 100 - 50 fs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±25 nm	λ/2 ZO waveplate + 2x broadband (ultrafast) TFP	Max blocking mode	0.1-70%	Ultrafast, broadband laser sources with pulse length 100 - 50 fs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±50 nm	λ/2 achromatic waveplate + 2x broadband (ultrafast) TFP	Max power mode	4-96%	Ultrafast, broadband laser sources with pulse length <50 fs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
	±50 nm	λ/2 achromatic waveplate + 2x broadband (ultrafast) TFP	Max blocking mode	0.1-70%	Ultrafast, broadband laser sources with pulse length <50 fs	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm; or >100 mJ/cm <sup>2</sup> 1 kHz 100 fs, 800 nm
<b>Broadband,</b> 204	up to 5000 um	λ/2 Achromatic waveplate + Glan laser polarizer	Transmission mode	1-90%	NIR to MID-IR	>5 J/cm <sup>2</sup> 10 Hz, 10 ns, 1064 nm