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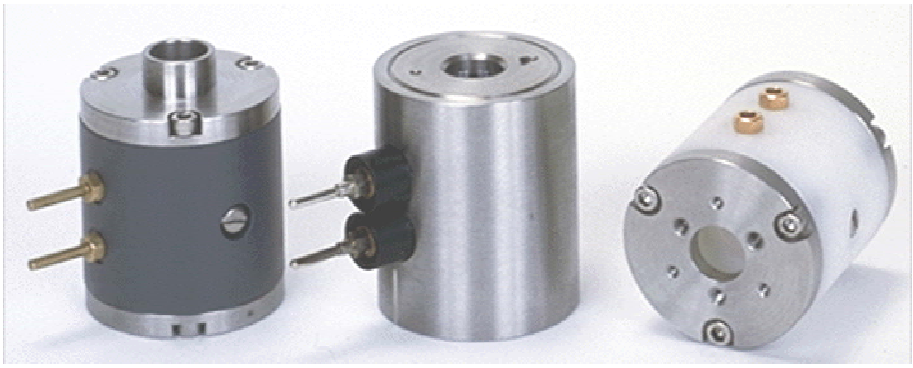
1059 SERIES POCKELS CELL

Q-SWITCHES / MODULATORS

SOL GEL AR COATINGS Are Standard On All Models In This Series



1059P C1059 Q1059P Q1059P12

Lasermetrics 1059 E-O Modulator/Q-switches are electro-optic devices that are used in many laser systems world-wide. The 1059 Series originated in 1970 and have been continuously upgraded and improved. They will accommodate the most demanding high peak power laser applications. All models within the series utilize an enhanced internal crystal support and superior sealing system. The devices incorporate highest quality crystals, fused quartz windows and high damage threshold antireflection coatings.

E-O performance of the 1059 Series is based on highly deuterated (98^{+}%D)-KDP (KD*P) crystals, selected for the absence of strain and stria, lowest residual birefringence and wavefront distortion. A cylindrical ring electrode-crystal configuration produces the most uniform retardation field currently available. Crystals are mounted in durable and mechanically stable thermoplastic housings. Stainless steel aperture plates are used in all models. Windows are bubble and strain-free fused quartz with high efficiency antireflection coatings.

Sol Gel antireflection coatings can be applied to the crystal for highest peak and average power applications. Sol Gel coatings are extremely efficient, having reflectance losses of about 0.05%. Damage threshold for Sol Gel coatings is at least as high as that of the KD*P crystal material

While Sol Gel crystal coatings have largely replaced Index Matching Fluid (IMF) for the visible through Near IR, these coatings are not efficient in the UV range below 400 nm. For UV applications, when IMF is required to minimize reflection losses at the window-crystal interfaces, we recommend our Series 1040 and Model 1058 Pockels cells.

A variety of antireflection coatings options are available. A key feature of the 1059 Series is the user's ability to adjust the alignment of the fused quartz windows. This may be done while the device is in position in the laser optical train. Simple hex wrench adjustments can tilt each window to be precisely on or off-axis by as much as 2 degrees. The Q1059P model can be specified with wedged or parallel window surfaces and with the crystal cut at a desired off-axis or wedge angle.

In very fast pulse gating applications, with laser pulses widths less than 100 picoseconds, the 1059 Series has a nominal damage threshold of 20 Gigawatts/cm^2. In Q-switching the devices will tolerate in excess of 850 Megawatts/cm^2 at less than 10 nanoseconds pulse width.

Lasermetrics Q-switch drivers 5055, 5056, 5060, and Laser Extraction/Chopping Systems 5046, 5057 and 8025RS can be used with all 1059 models within the series.

Q1059P Series devices are guaranteed against defects in materials and workmanship for one year.

NOTES:

A 12 mm aperture unit with same outer dimensions as 10 mm aperture model is available as Model Q1059P12SG

Models C1059 & 1059P are shown for information only. The 1057, C1059 and 1059P are not current production models. They have been replaced by the Model Q1059P

CONTINUED - OVER

1059 SERIES - NOMINAL SPECIFICATIONS

Aperture Diameter	10 mm diameter *(12 mm in Model Q1059P12)
Crystal Material	98.5 + % Deuterated D-KDP (KD*P)
Peak Optical Power Density Capability (Uniform Beam, no Hot Spots)	850 Megawatts/cm^2 for pulses <10 nsec wide 10 Gigawatts/cm^2 for pulses <500 psec wide >20 Gigawatts/cm^2 for pulses <100 psec wide
λ Range for Peak Power Density	400-1100 nanometers
Transmission, with "V" AR coatings	>98% from 350 nm to 1064 nm
Quarter Wave Retardation Voltage	@ 694 nm: 2.1 kilovolts @ 1064 nm: 3.2 kilovolts
Extinction Ratio (Contrast Ratio) with Full Aperture Beam	1000:1 at 633 nm
Intrinsic Rise Time	<350 picoseconds
Capacitance*	6 picofarads
Weight (approximate)	90 grams

*** The 12 mm aperture Model Q1059P12- is identical in size to the 10 mm version and has the same operating parameters. Capacitance is ≈6 pf.**