

FastPulse Technology, Inc.

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MODEL CF1043 POCKELS CELLS LARGE APERTURE DKDP ELECTRO-OPTIC LIGHT MODULATORS

- Highest Damage Threshold
- Highest Deuteration Crystals
- Convenient Mounting
- Versatile Connections
- Rugged, Sealed Housing
- Used World-Wide in University,
& National Labs, OEM Markets



The Models CF1043-16 & CF1043-20 Pockels cell are larger aperture versions of smaller aperture devices in the Series 1040 Pockels Cell Light Modulators. They are designed for operation with larger diameter, laser beams in high speed shutter and pulse chopper applications external or internal to the laser cavity. They are also utilized as Q-Switches, cavity dumpers and polarization rotators. The basic mechanical design is configured to accept a variety of connection devices to meet most system requirements.

Basically capacitive in impedance, they can be specified with a variety of electrical connections to for convenient connection to differing electronics drivers. Low inductance, wide copper tab leads minimize device RC and L/R time constants thereby allowing switching times as fast as 350 picoseconds. Miniature banana pins (CF Styles) or pins with threaded screw and nut connections are useful for direct connection and to printed circuit board drivers. Coaxial connectors such as N, BNC, HN, MHV and SHV type connectors for cable-impedance matching are available. For capacitive or source terminated use, tab leads are located on one side while the "straight through" configuration, with matching input and output copper tab leads, is used for load terminated applications.

The CF1043 mechanical configuration yields the lowest capacitance devices for a given aperture size. This facilitates application to impedance matching with transmission lines, Blumlein structures, spark gaps, and solid state FET or avalanche transistor drivers.

Crystals used in the CF1043 Series are DKDP (also known as KD*P) with >98.5% deuteration. Our proprietary crystal growth process insures that they are free from strain, stria, and inclusions. The standard optical flatness finish on crystals is $\leq 1/8$ wave. Windows are bubble and strain-free fused quartz with a 10-5 optical finish. Wedged crystals and windows as well as integrally mounted polarizers, and internal index matching fluids are available options.

Sol Gel antireflection coatings are applied to crystals for highest peak and average power applications. Sol Gel coatings are extremely efficient, having reflection losses of $\approx 0.1\%$ per surface. Damage threshold for Sol Gel coatings is at least as high as that of the KD*P crystal material. They are available for the wavelength range of 532 to 1100 nanometers.

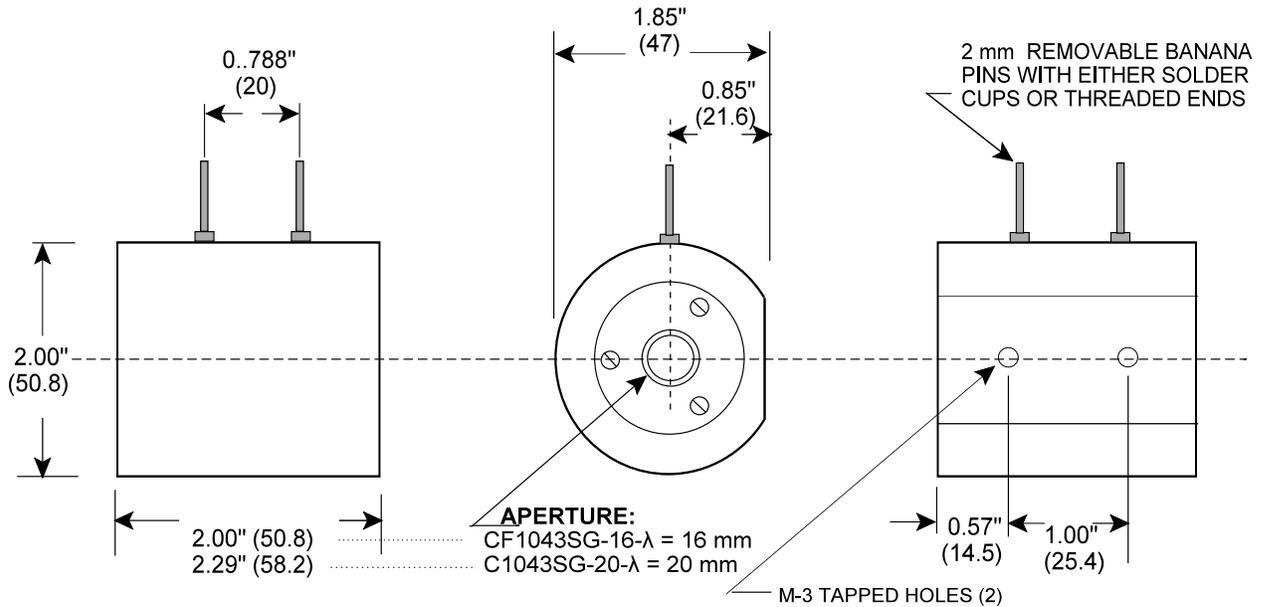
For larger apertures, refer to our 1144 Series Pockels cells.

CF1043-16 & 1043-20 - NOMINAL SPECIFICATIONS

MODEL		CF1043SG-16-λ	CF1043SG-20-λ	
Aperture Diameter, mm		16	20	
Number of Crystals		1	1	
Crystal Material	98.5%+ Deuterated D-KDP KD*P)			
Peak Optical Power Density Capability, Uniform Beam, No Hot Spots, sol gel coatings	750 Megawatts/cm ² for pulses <20 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	450 to 1100 nanometers			
Transmission, 400 to 1064 nm		~98%	~97%	
Half Wave Retardation Voltage kV @694 nm kV @1064 nm		4.3 6.6	4.4 6.7	
Extinction Ratio (Contrast Ratio), Full Aperture Beam, @633 nm		>1000:1	>800:1	
Rise Time, 10% to 90%, picoseconds		300	400	
Capacitance, picofarads		~8	~10	
Weight, kilograms		~0.18.	~0.22	

ORDERING: Specify Wavelength (λ) for antireflection coatings. Specify Terminals: Solder Cup or Threaded Terminals with Washers & Nuts. Contact Engineering Sales for details on special configurations

CONFIGURATIONS AND DIMENSIONS



MODELS CF1043SG-16 & CF1043SG-20 LARGE APERTURE MODULATORS