



Electro-Optics
Pockels Cells

BPR
BPU
RPR

Product Reference

Rev. 04.2024



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IPOptica's BPR line of BBO based Pockels Cells has been specifically designed to satisfy the demands of high power damage threshold, low piezo effect, low insertion loss and other benefits. Operated by IPOptica's fast switching electronic drivers, BPR devices deliver top-industrial laser reliability and performance for high power and high pulse repetition rate lasers at the wavelengths from 190nm to over 2.2μm.

Our BPR devices rely on the Pockels effect including single-crystal and double-crystal design to convince practical usage in Q-switching, pulse picking, cavity dumping, and other applications. To compensate the high voltage request especially on big aperture ones (>3.6mm) for the low electro-optical coefficient of BBO, our double crystals design half the switching voltage, to benefit on expediting the switching times and repetition rate.

FEATURES

- Great suppression of Piezo effects
- High Transmission Rate and low insertion loss
- Broadband working wavelength (190nm~2.2μm)
- High damage threshold
- Reliable structure up to 100W power and HV pulse repetition rate up to 2MHz.
- Low thermal lensing effect and thermal depolarization phenomena

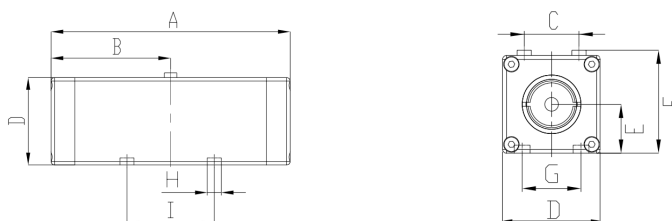
APPLICATIONS

- Suited for high repetition rates Q-Switching
- Pulses coupling application of Picosecond and femtosecond regenerative amplifier
- Pulse picking and optical switch

SPECIFICATIONS

MODEL	BPR320-S / BPR325-S	BPR320-D / BPR325-D	BPR420-S / BPR425-S	BPR420-D / BPR425-D	BPR620-S / BPR625-S	BPR620-D / BPR625-D
Clear Aperture D, mm	2.6		3.6		5.6	
Quantity of Crystals	1	2	1	2	1	2
Single Crystal Dimensions, mm	3x3x20 / 3x3x25		4x4x20 / 4x4x25		6x6x20 / 6x6x25	
1/4 voltage @1030nm, kV (190nm ~ 2200nm on request)	~3.4 / ~2.7	~1.7 / ~1.4	~4.5 / ~3.6	~2.3 / ~1.8	~6.8 / ~5.4	~3.4 / ~2.7
Extinction Ratio	1000:1	500:1	1000:1	500:1	1000:1	500:1
Transmission Rate, %	>99					
Capacitance, pF	4					
Damage Threshold, J/cm ²	>10 J/cm ² @10ns					

DIMENSIONS



	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)	I(mm)
BPR320-S / BPR325-S BPR420-S / BPR425-S BPR620-S / BPR625-S	41	20.5	14	25	12.5	26.7	15	M4	n/a
BPR320-D / BPR325-D BPR420-D / BPR425-D BPR620-D / BPR625-D	68.5	34.3	14	25	12.5	26.7	15	M4	25

Water Cooled BBO Based Pockels Cells

FEATURES

Large aperture BBO based Pockels Cells with water-cooling applied to utmost suppress heating

Great suppression of Piezo effects

High Transmission Rate and low insertion loss

High damage threshold

Reliable structure has been tested up to 700W power with pulse repetition rate up to 500kHz.

Low thermal lensing effect and thermal depolarization phenomena

APPLICATIONS

Pulses coupling application of Picosecond and femtosecond regenerative amplifier

Pulse picking and optical switch

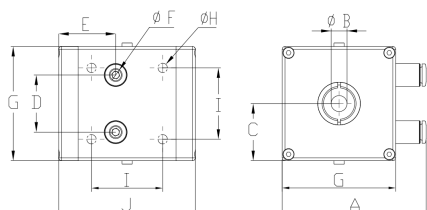
BPU series of BBO based Pockels Cells with large aperture has been specifically designed to satisfy the demands of high pulse energy. Operated by IPO's fast switching electronic drivers, BPU devices deliver top-industrial laser reliability and performance for high power and high pulse repetition rate lasers at the wavelengths from 190nm to over 2.2μm.

Our BPU devices rely on the Pockels effect applied cooling system and a variety of new materials to utmost suppressing heating especially for the request of High power Ultra-fast lasers. To compensate the high voltage request for the low electro-optical coefficient of BBO, the double crystal design half the switching voltage, to benefit on expediting the switching times and repetition rate.

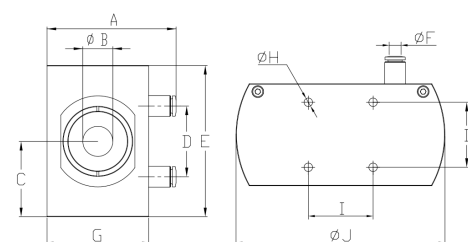
SPECIFICATIONS

MODEL	BPU425-S	BPU625-D	BPU825-S	BPU825-D	BPUX25-S	BPUX25-D	BPUY20-S	BPUY20-D
Clear Aperture D, mm	3.6	5.6	7.6	7.6	9.6	9.6	11.6	11.6
Quantity of Crystals	1	2	1	2	1	2	1	2
Single Crystal Dimensions, mm	4x4x25	6x6x25	8x8x25	8x8x25	10x10x25	10x10x25	12x12x20	12x12x20
1/4 voltage @1030nm, kV	<3.7	<2.8	<7.3	<3.7	<9.1	<4.6	<13.6	<6.8
Extinction Ratio	1000:1	500:1	1000:1	500:1	1000:1	500:1	1000:1	500:1
Transmission Rate, %	>99							
Capacitance, pF	6							
Damage Threshold, J/cm ²	>10 J/cm ² @10ns							

DIMENSIONS



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)
BPU425-S	50.7	3.6	20	20	20	4	40	M4	25	48
BPU625-S	50.7	5.6	20	20	20	4	40	M4	25	48
BPU425-D	50.7	3.6	20	20	20.5	4	40	M4	25	77
BPU625-D	50.7	5.6	20	20	20.5	4	40	M4	25	77



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)
BPU825-S	57.2	7.6	30	37.2	62.3	4	54	M4	25	G
BPUX25-S	57.2	9.6	30	37.2	62.3	4	54	M4	25	G
BPUY25-S	57.2	11.6	30	37.2	62.3	4	54	M4	25	G
BPU825-D	49.8	7.6	29	27.2	58.2	4	39.2	M4	25	80.8
BPUX25-D	49.8	9.6	29	27.2	58.2	4	39.2	M4	25	80.8
BPUY25-D	49.8	11.6	29	27.2	58.2	4	39.2	M4	25	80.8



FEATURES

- Non Piezo effects over 230kHz
- Low Optical Loss
- Broadband working wavelength (400nm~4μm)
- High peak power handling.
- Pulse picking up to 1MHz
- Q-switching up to 230kHz

IPOptica's RPR line of RTP based Pockels Cells with much higher electro-optic effect, has been specifically designed to satisfy the demands of low piezo effect in moderate average power laser applications. Operated by IPOptica's switching electronic drivers, RPR devices industrial reliability without deliquescence phenomenon and features good optical transparency from 400nm to over 4μm.

Our RPR devices rely on the Pockels effect applied are applied in Q-switching, pulse picking, cavity dumping, and other applications.

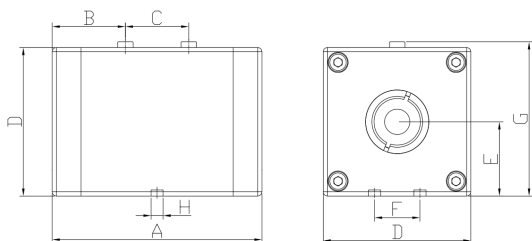
APPLICATIONS

- Suited for high repetition rates Q-Switching
- Pulse picking and optical switch

SPECIFICATIONS

MODEL	RPR310	RPR410	RPR510	RPR610	RPR810	RPRX10
Clear Aperture D, mm	2.6	3.6	4.6	5.6	7.6	9.6
Quantity of Crystals	2					
Single Crystal Dimensions, mm	3x3x10	4x4x10	5x5x10	6x6x10	8x8x10	10x10x10
1/2 voltage @1064nm, kV (400nm ~ 4000nm on request)	~1.2	~1.6	~2	~2.4	~3.2	~4
Typical Dynamic Extinction Ratio	200:1	200:1	300:1	500:1	500:1	500:1
Transmission Rate, %	>98.5					
Capacitance, pF	6					
Damage Threshold, J/cm ²	>7 J/cm ² @10ns					

DIMENSIONS



	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)	H(mm)
RPR310 RPR410 RPR510	50	17.5	15	25	12.5	15	26.7	M4
RPR610 RPR810 RPRX10	50	17.5	15	35	17.5	15	36.7	M4