

We provide specially design precision crystal oven and temperature controller to install, heat and stabilize crystal to a certain temperature. In response to the demand of precision crystal oven and temperature controller, and the trend of miniaturization of optical devices, AOTK now introduces our second generation of crystal oven and temperature controller.

Precision Crystal Oven Specifications

Host Crystal Size	up to 7mm×7mm×25mm
Standard Mount	standard 1" mirror mount
Temperature Range	Room Temperature to 220°C
Accuracy	0.1°C
Weight	105g
Power Consumption	15W/110VAC or 15W/220VAC
Connector	4-pin audio plug
Cable	4 lines cable about 1 meter

Option: Oven can be added windows on both end faces

The crystal oven has a small footprint which allows the oven to be mounted on standard 1" optical mounts. This is very important for quick experiments where limited space and time do not allow specially designed mechanical part to fit in. It also saves precious time and money for product development.

Temperature Controller Specifications

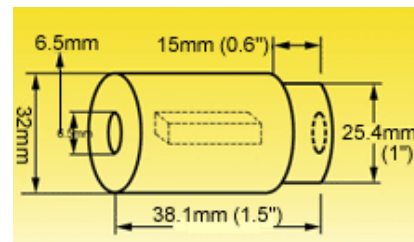
The temperature controller is microprocessor controlled, and has dual line 4 digits LED display (set point and real temperature). It is very easy to operate, and accepts both 110V and 220V power sources.

Physical Size	155(L)×105(W)×70(H)mm
Temperature Range	Room Temperature to 220°C
Warm-up Time	60 minutes
Resolution	0.1°C
Stability	better than $\pm 0.1^\circ\text{C}$
Dissipation Power	< 25W
Power Consumption	< 5VA
Environment Temperature	-10°C to +55°C
Weight	300g
Set point range	Selectable

- **Slow heating rate is suggested for LBO crystal, in order to prevent coating crack due to its inhomogeneous expansion.**

Applications

- LBO NCPM SHG of Nd:YAG/YLF/YVO₄ Lasers
- LBO NCPM OPO Pumped by SHG of Nd:YAG/YLF/YVO₄ or Ti:Sapphire Lasers
- KNbO₃ NCPM SHG of 860-940nm (a-cut); SHG 990-1070nm (b-cut)
- LiNbO₃ NCPM SHG of YAG/YLF/YVO₄
- Increase damage threshold of KTP, LiNbO₃ and BBO crystals
- Stabilized high power SHG, THG, 4HG and 5HG of Nd:YVO₄



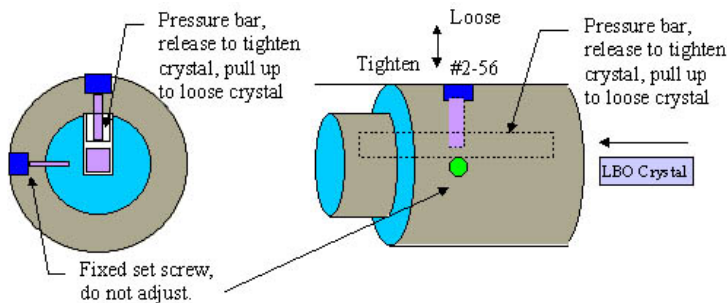
Application Notes

One of the major application of temperature controlling in nonlinear optical conversion is to use the Non-Critical Phase-Matching (NCPM) for some non-linear optical crystals, e.g. LBO and KNbO₃. NCPM is preferred because it could generate superior beam quality and efficiency. It has very large acceptance angle and zero walk-off which are very important for doubling tightly focused laser beam or laser beams with large divergence.

NCPM Applications

Crystal	NLO Applications	Temperature
LBO	SHG (I) 1064nm,1053nm,1047nm	148°C - 170°C
	SHG (II) 1320nm	40°C
KNbO ₃ (a-cut)	SHG 860-940nm	20°C - 180°C
LiNbO ₃	SHG 1064nm	120°C
KD*P	SHG 532nm	52.1°C
ADP	SHG 532nm	51.2°C

Installation of Crystals



As the figure shown above, to install crystal in the crystal oven:

1. Turn the #2-56 screw on the side of the crystal oven clockwise to pull up the pressure bar inside the crystal oven, until there is enough room for the crystal.
2. Put the crystal into the oven by sliding it into the square hole of the crystal oven. Use wide blade plastic tweezers to hold the crystal and push it into the square hole. Avoid touching the surface of the crystal clear aperture at all time. Put the crystal in the center of the oven.
3. Turn the same #2-56 screw on the side of the crystal oven counter-clockwise to release the pressure bar inside the crystal oven, after the pressure bar touches the crystal top, release an extra two rounds – this will give enough force for the pressure bar to hold the crystal.



Caution!

- Do not try to adjust the fixed setscrew, which is glued to the crystal oven.
- Do not release the pressure bar without the crystal inside the crystal oven, and do not continue to release the pressure bar when the #2-56 screw is already out of the threaded hole – try to screw the #2-56 screw back into the pressure bar for at least one round. Over-release the pressure bar will let the pressure bar fall off the crystal oven and it is very difficult to put it back on, without special tools.

Ordering Information

- Crystal Oven (Specify the exact crystal size to be hosted, 110V or 220V)
- Temperature Controller (Auto detect 110V or 220V)
- Customized oven sizes and structures available upon request, call for price