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

Size	ϕ55×60mm
Host Crystal Size	up to 6×6×35mm
Temperature Range	Room Temperature to 160°C
Accuracy	0.1°C
Weight	300g
Power Consumption	20W/110VAC or 20W/220VAC
Connector	4-pin audio plug
Cable	4 lines cable about 1 meter

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	120(L)×48(W)×96(H)mm
Temperature Range	Room Temperature to 220°C
Warm-up Time	60 minutes
Resolution	0.1°C
Stability	better than $\pm$0.1°C
Dissipation Power	< 25W
Power Consumption	< 5VA
Environment Temperature	-10°C to +55°C
Weight	400g
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/YVO$_4$ Lasers
- LBO NCPM OPO Pumped by SHG of Nd:YAG/YLF/YVO$_4$ or Ti:Sapphire Lasers
- KNbO$_3$ NCPM SHG of 860-940nm (a-cut); SHG 990-1070nm (b-cut)
- LiNbO$_3$ NCPM SHG of YAG/YLF/YVO$_4$
- Increase damage threshold of KTP, LiNbO$_3$ and BBO crystals
- Stabilized high power SHG, THG, 4HG and 5HG of Nd:YVO$_4$

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 KNbO$_3$. 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 SHG (II) 1320nm	$148°C$ - $170°C$ $40°C$
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

1. Clean the end surfaces of crystal.

2. Make the oven in horizontal.

3. Put the crystal into the square hole of the core oven slowly.

Temperature Controller Manual
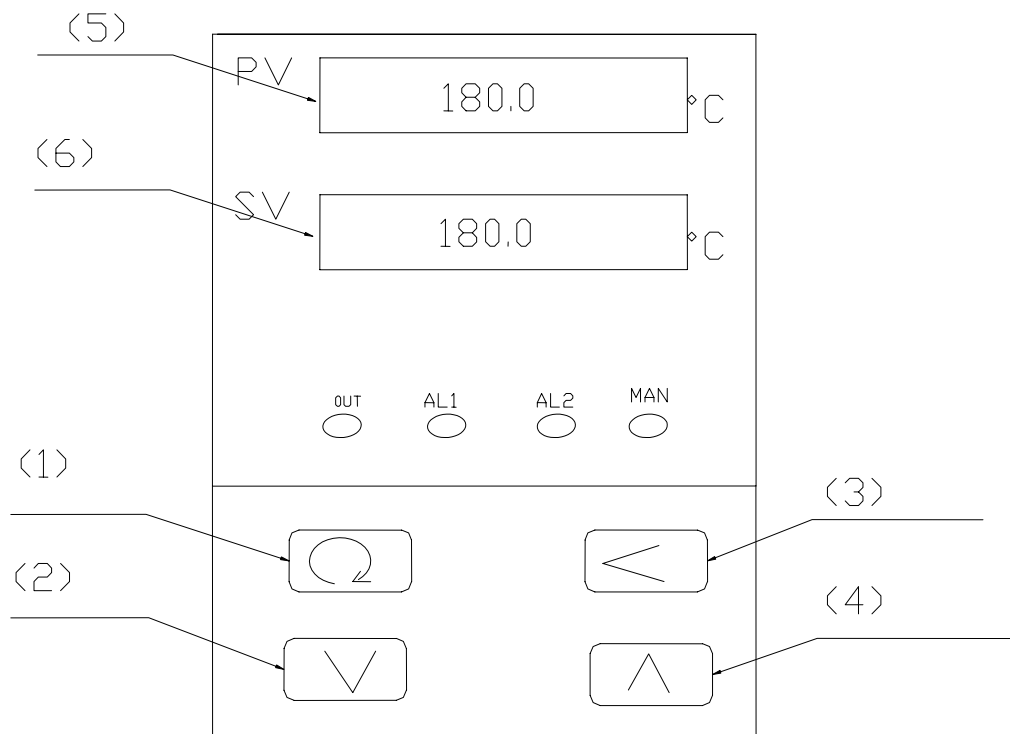
Function of buttons

   (1) Display conversion (and the parameter set)   (2) Data reduces button

   (3) Data moves button   (4) Data increases button

   (5) Measured value LED dispay window   (6) Set value LED display window

Operation

1. Turn on power, the measured value shown on the upper LED display window (PV), the set value shown on the underside LED display window.

2. Set temperature, press down (1) button about 3 seconds, then press (3) button to make selection parameter, to change the value by press (2) or (4) button.

3. Set other parameters, press down (1) button about 3 press about 3 seconds, to set the related parameter.

   (a). HIAL (The upper limit value to bell): The annunciator will bell when the measured value is higher in the HIAL. When the measured value is lower in the HIAL-DF, the annunciator will stop. Establishing the HIAL tacit approval is 165 degree.

   (b). DF (Return to differ): Return bad used for avoiding trapping diagraph importation value to undulate but cause a type regulate a multifarious to break or annunciator. Suppose the initial value SV as 150 degree, the DF parameter establishes to 0.5 degree, then: When measure temperature value higher in or be equal to 150 degree, the OUT breaks after the electric appliances pass, stopping heating. While stopping heating, while measuring a temperature value less than 149.5 degree (SV-DF), just re- connecting to carry on heating then.

   (c). LOC (parameter modification Class)

      LOC=0, allow modification parameter and set a value.

      LOC=1, allow show to look into parameter, disallow a modification, but allow set a value.

      LOC=2, allow show to look into parameter, disallow a modification, also disallow set a value.

      LOC=808, have a power out, again to turn on power, it can be recover the initializtion parameter set by the factory.

4. Generally, set the vale of HIAL and DF, then set the LOC to 1. While using the value which need to adjust SV value. Heating the process (30~160 degree) about 18 minutes, reducing the heat process about 14 minutes.

Ordering Information

- Crystal Oven (Specify the exact crystal size to be hosted, 110V or 220V)
- Temperature Controller (Auto detect 110V or 220V)