

Nonlinear crystal oven

Nonlinear crystal (NLC) materials which are used in higher laser frequency generation requires phase matching to be kept in stable temperature conditions, therefore crystal holder plays key part in this role. To avoid temperature drift, issues with water absorption for hygroscopic crystals, temperature of NLC needs to be controlled by a stable crystal oven.

The Digital Thermo Control (DTC) nonlinear crystal oven models **DTC-A**, **DTC-B**, **DTC-C** and **DTC-HT** have excellent temperature control stability of $\pm 0.1^\circ\text{C}$ in the range of 30–71°C, at the same time assuring precise and stable mechanical angle-tuning construction.



The **DTC-A** model ovens are designed and recommended for crystals with apertures 2×2, 3×3, 4×4, 5×5mm and length up to 30mm.

The **DTC-B** is specified for crystals with apertures 6×6, 8×8, 10×10, 12×12 and 15×15mm, length up to 30mm.

Larger aperture size and length exceeding 30 mm of nonlinear crystals are supported by **DTC-C** oven.

The new **DTC-HT** model designed for high temperature (up to **220°C**) NCPM application. The standard model accepts crystals for up to 6×6 mm aperture and up to 50 mm in length.

On request we can manufacture ovens for crystals with aperture up to >60×60 mm or even bigger. Each oven model is optimized for best performance at up to specified crystal aperture sizes.

Example of **DTC-HT** application:

LBO Type I NCPM SHG @ 1064 nm ($\theta=90^\circ$, $\phi=0^\circ$), T = 149 °C.

Temperature settings are stored in internal memory of thermo-controller and can be easily changed via USB cable via Geola Thermo-Tool software provided along with any of DTC oven model.

After temperature is set and DC 24V power supply is applied, oven works in completely autonomous regime (DTC doesn't require any cable connection with PC).

Typical Specifications*

Specification	Value			
Temperature stability / precision	$\pm 0.1^\circ\text{C} / 0.1^\circ\text{C}$			
Preset temperature range	DTC-A	DTC-B	DTC-C	DTC-HT
	25...71 °C			25...220 °C
Celsius (C) and Fahrenheit (F) scales	C			C & F
Warmup Time Control (°C/min)	-			YES
Parameters setting type	PC			PC & Knob
Default angle adjustment tilt ¹	$\geq \pm 3$ deg			
Crystal aperture size ²				
	DTC-A	2×2mm, 3×3mm, 4×4mm, 5×5mm		
	DTC-B	6×6mm, 8×8mm, 10×10mm, 12×12mm and 15×15mm		
	DTC-C	From 16×16mm to $\geq 25 \times 25$ mm		
	DTC-HT	3×3mm, 4×4mm, 5×5mm, 6×6mm		
Maximal crystal length ³	up to 50 mm			
Optical window	YES, 3mm			
Maximal oven dimensions (W x H x D), mm	Please see typical drawing on next page			
Power supply / Control interface (PC)	24 V DC / USB			

* Specifications marked 'typical' are indications of typical performance and will vary with each unit we manufacture.

¹ Other adjustment angles are available on request

² The non-standard crystal sizes and custom DTC modifications are welcome.

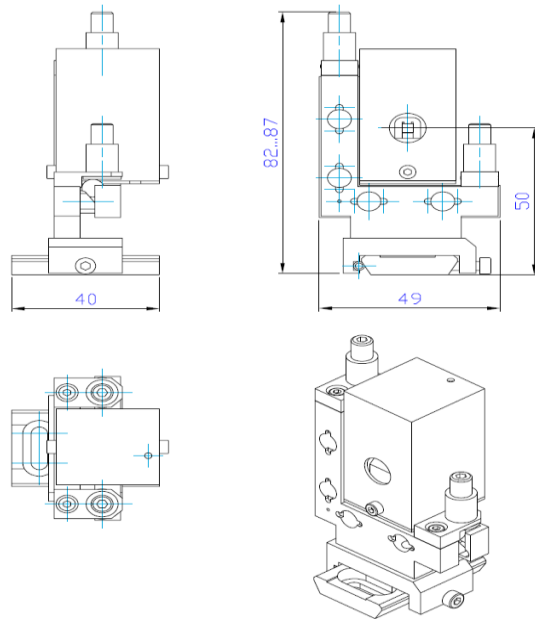
³ The non-standard crystal length and custom DTC modifications are welcome.

Nonlinear Crystal Oven

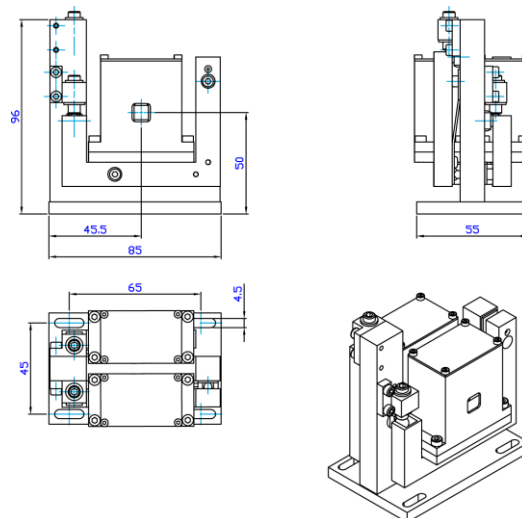
DATASHEET, January 2024



DTC-A type crystal oven

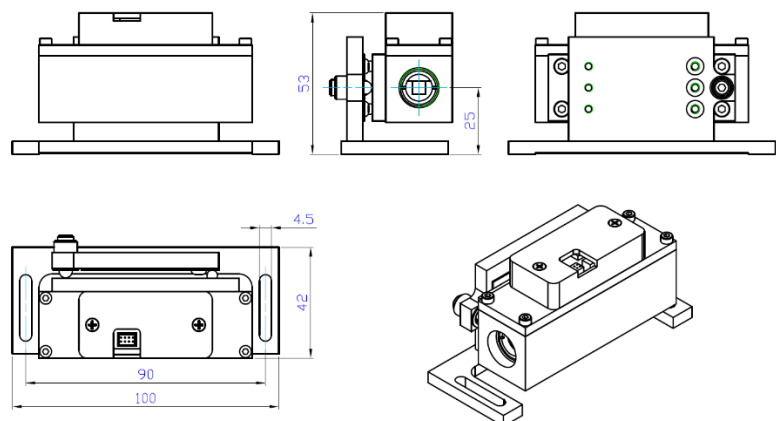


DTC-B type crystal oven (double-crystal design) *



*Also available single crystal design

DTC-C type crystal oven



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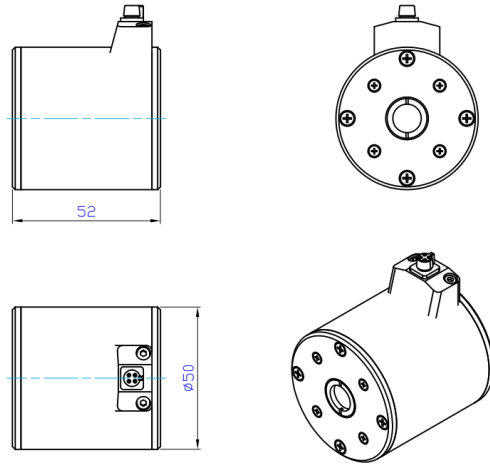
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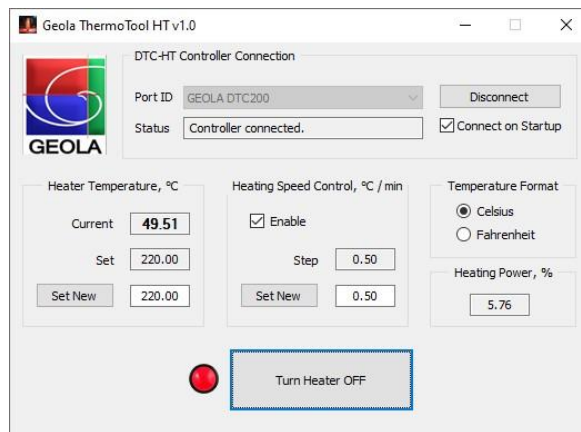
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DTC-HT type crystal oven



Control Software



Ordering information

