

CTL-D25mm
mounted collimating TPX lens for PCA with diameter 25 mm



Fig. 1: CTL-D25mm

Description

CTL-25mm is an accessory for photoconductive antennas (PCA) that are mounted on a 25.4 mm diameter Al heat sink and are equipped with BATOP's hyperhemispherical silicon substrate lenses. The divergent THz beam of such an antenna is in a first step slightly collected by the hyperhemispherical silicon lens. In a second step the THz beam is collimated by a 1" diameter TPX (Polymethylpentene) lens, which is also transparent in the visible spectral region. This collimated terahertz beam exits the CTL-D25mm with a diameter of 22 mm. The same configuration can be used to measure a collimated THz beam. An additional focusing TPX lens can be mounted in front of the first TPX lens to obtain a focused THz beam with a focal length of 30 mm.

Collimating TPX lens	material	TPX (Polymethylpentene)
	refractive index n	1.45 @ 1 THz
	absorption coeff. α	0.3 cm ⁻¹
	diameter	25.4 mm
	thickness	10.3 mm
	design focal length	42 mm
	back focal length (from flat surface)	35 mm
	Collimated THz beam	beam diameter
Lens Tube	outer diameter	30.5 mm
	total length	29.2 mm

Compatible PCAs

The CTL-D25mm can be used as housing for a PCA, which is mounted on a 25.4 mm diameter Al heat sink. The electrical cable needs to point towards the front side (laser or chip side) of the PCA. Further the PCA

needs to be equipped with one of BATOP's hyperhemispherical silicon substrate lenses.



Fig. 2_CTL-D25mm mounted on SMR1 - side view

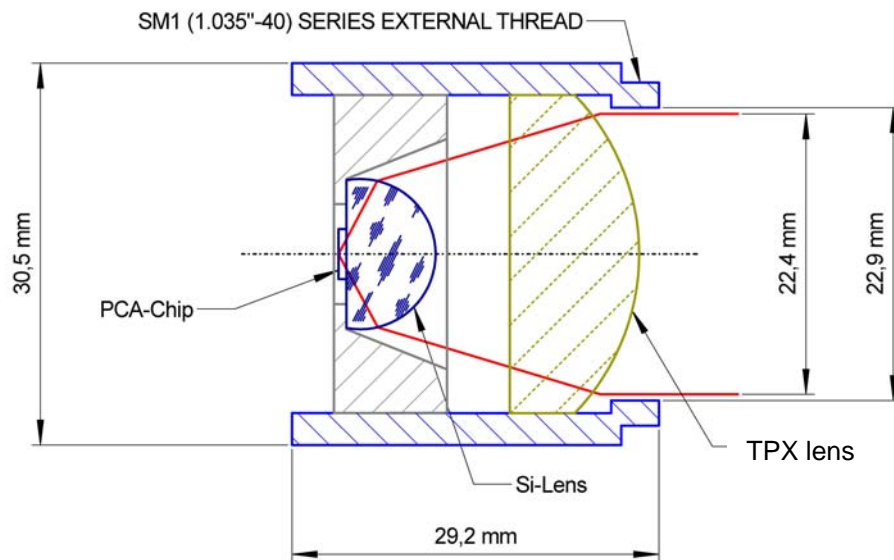


Fig. 3: Schematic section view (PCA + Si-lens not included)

Recommended mounting options

The Lens Tube's SM1 thread allows it to be attached to multiple standard parts equipped with the same thread. It is possible to mount both lens and PCA either with the tube's thread oriented towards the front side, where the radiation is emitted or received, or towards the back side, where fiber and electrical cables exit the antenna module. We recommend using Thorlab's SMR1 as a static mounting solution. CTL-D25mm is compatible to PCAs with mounted aspheric optical lenses. In this case a larger lens tube is required and the length will increase to 2".



SMR1 with pillar and post holder



CTL-D25mm mounted with SMR1



CTL-D25mm mounted with SMR1

Fig. 4: Recommended mounting options

Assembling CTL-D25mm on your own

When you purchase CTL-D25mm separately you'll need to assemble it on your own. The following photo shows you how. You'll start inserting the thinner distance ring into the lens tube. Afterwards you insert the lens and a second, thicker distance ring. Make sure that the lens is oriented with its flat side towards the antenna. Then you insert your PCA. At last you fix the all components by screwing in the retaining ring. Its external thread matches the internal thread of the lens tube. Therefore you'll need an additional tool, for example Thorlabs' SPW602 spanner wrench.



Fig. 5: Order of components of CTL-D25mm

Optional combination with focusing THz lens

An additional second TPX lens **FTL-f30mm** with 30 mm focus length can be mounted on the CTLF-25mm to get a THz focus. Please refer to data sheet for FTL-f30mm for further information.



Fig. 6: CTL-D25mm and FTL-f30mm mounted with SMR1