CTLF-D25mm
mounted collimating TPX lens for fiber coupled PCA with diameter 25 mm

Fig. 1: CTLF-25mm

Description

CTLF-25mm is an accessory for fiber coupled photoconductive antennas (FC-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. This collimated terahertz beam exits the CTLF-D25mm. It has 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)	30 mm
Collimated THz beam	beam diameter	22.4 mm
Lens Tube	outer diameter	30.5 mm
	total length	54.6 mm

Compatible PCAs The CTLF-D25mm can be used as housing for a FC-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: CTLF-D25mm mounted on SMR1 - side view

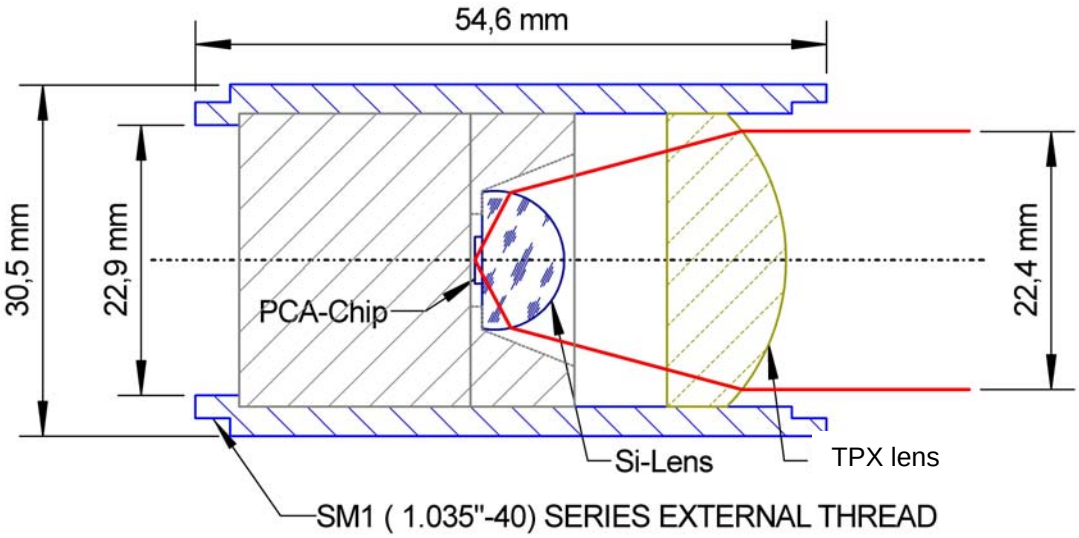

Fig. 3: Schematic section view (FC-PCA not included)

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 FC-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. Tilting the antenna is possible when Thorlabs's KM100T is used.

CTLF-D25mm mounted with SMR1 (front side threaded)

CTLF-D25mm mounted with SMR1 (rear side threaded)

CTLF-D25mm mounted with KM100T

Fig. 4: Recommended mounting options

Assembling CTLF-D25mm on your own

When you purchase CTLF-D25mm separately you'll need to assemble it on your own. The following photo shows you how. You'll start inserting your fiber coupled antenna into the lens tube. Afterwards you insert the distance ring and the lens. Make sure that the lens is oriented with its flat side towards the antenna module. 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.

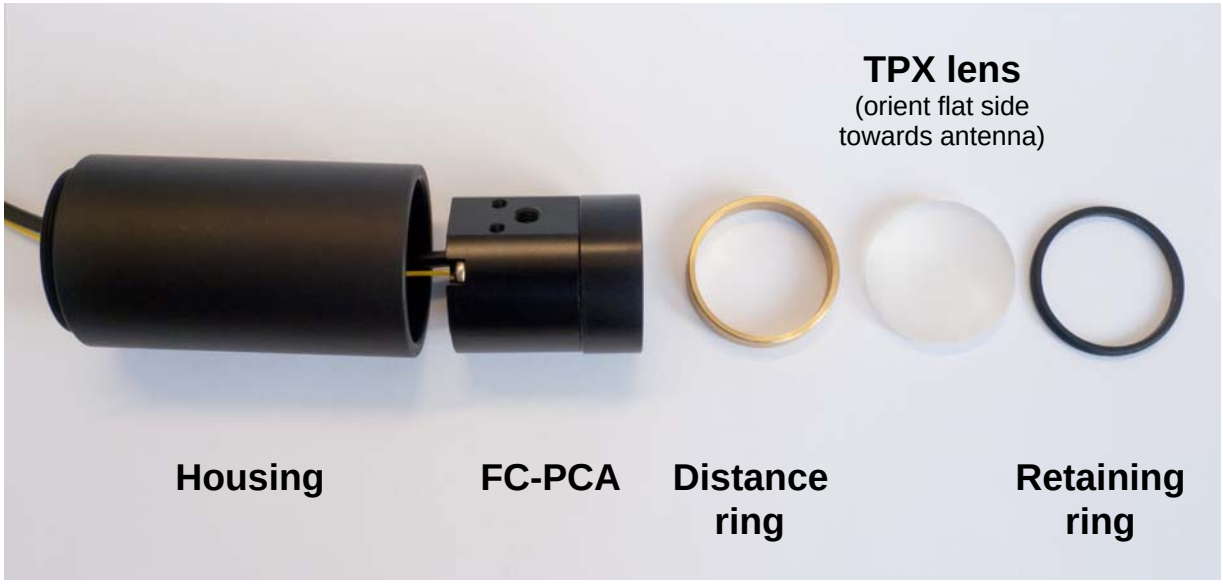

Fig. 5: Order of components of CTLF-D25mm

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: CTLF-D25mm and FTL-f30mm mounted with SMR1