# DTSX - DTSXY
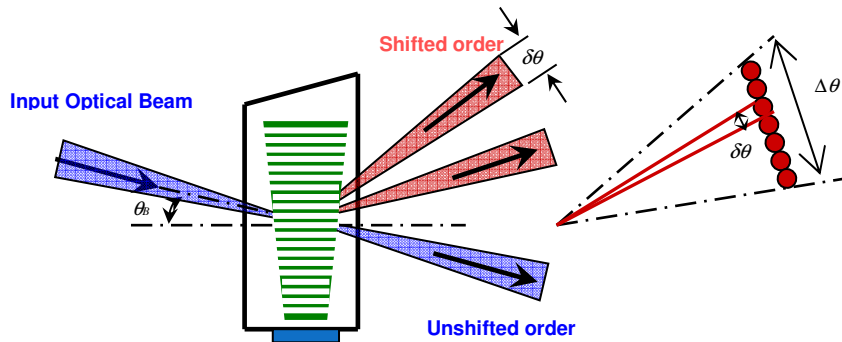## AO DEFLECTORS 1-axis/2-axis

Product Overview

These high-resolution deflectors operate with Te02 shear mode and hence offers a large scan angle, resolution up to 400 dots and, large aperture up to 7.5 mm. Associated to the appropriate RF driver, this device will provide high precision and accuracy which is required for most application such as optical tweezers, biomedical diagnostics and many others. They are available as 1-axis or 2-axis deflectors.

1-axis

2-axis

Features

- Large active aperture
- Large scan angle
- High resolution
- High diffraction efficiency

2-axis compact
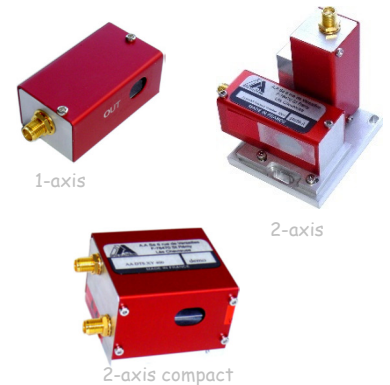
		DTSX (1-axis)	DTSXY (2-axis)
Material-Acoustic mode-Velocity		*TeO2 [S] – 650 m/s*	
Optical Wavelength range (AR coated) (λ)		*Designed for a single wavelength, on request in 405-1550 nm*	
Optical Transmission		*>95 % per axis*	
Input / Output Polarization		*Linear / Polarization flip 90° per axis*	
Active aperture	250 series	*4.5 x 4.5 mm²*	
	400 series	*7.5 x 7.5 mm²*	
Frequency range (ΔF)		*50 MHz @ 532 nm*	
Scan angle		*49 mrd @ 1064 nm*	*49 mrd² @ 1064 nm*
Static Extinction Ratio		*>33 dB*	
Rise time (Tr)		*1µs/mm*	
Access time (Ta)		*1.5µs/mm*	
Diffraction Efficiency (η)		*>70%*	*> 40%, nom 50%*
Resolution (N)	250 series	*300 @ 633 nm*	*300x300 @ 633 nm*
	400 series	*500 @ 633 nm*	*500x500 @633 nm*
Max Optical power density	532 nm	*5 W/mm²*	
	1064 nm	*10W/mm²*	
Input impedance		*50Ω*	
V.S.W.R.		*<.2:1*	
RF Power (P)	532 nm	*1 W*	
	1064 nm	*2 W*	
Weight		*approx 60 g*	
Packaging		*IN PRO 163*	*IN PRO 161 (Standard)* *IN PRO 180 (Compact)*
Operating Temperature (non condensing)		*+ 10℃ to + 40℃ non-condensing*	
Storage Temperature (non condensing)		*-20℃ to +50℃ non-condensing*	
RoHS Compliance		*Yes*	

Shifted order $\delta\theta$

Input Optical Beam

θ_B

Unshifted order
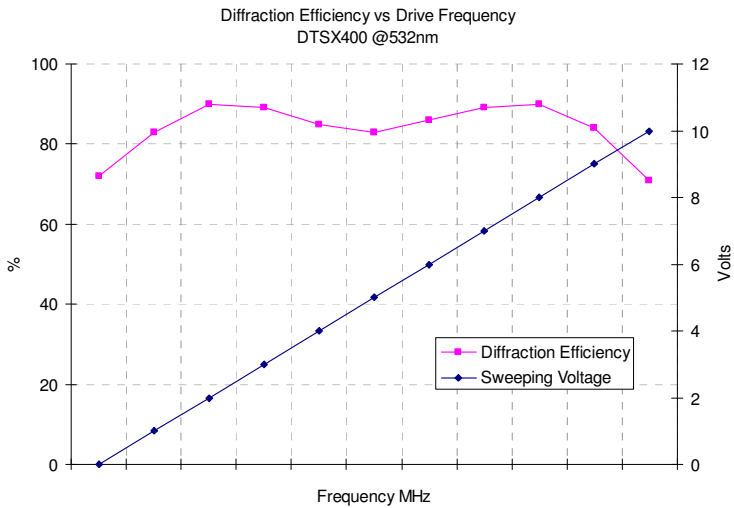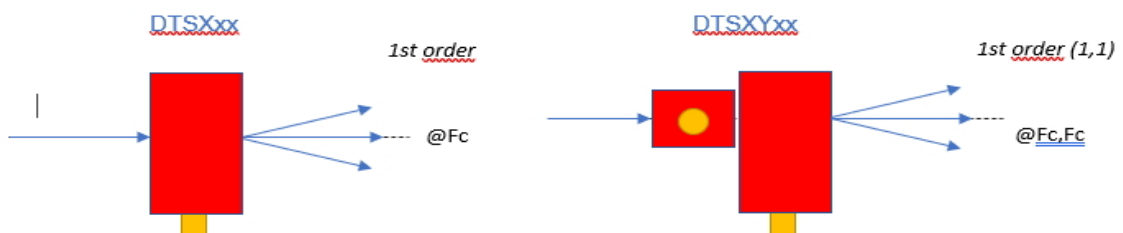
$\Delta\theta$

$\delta\theta$

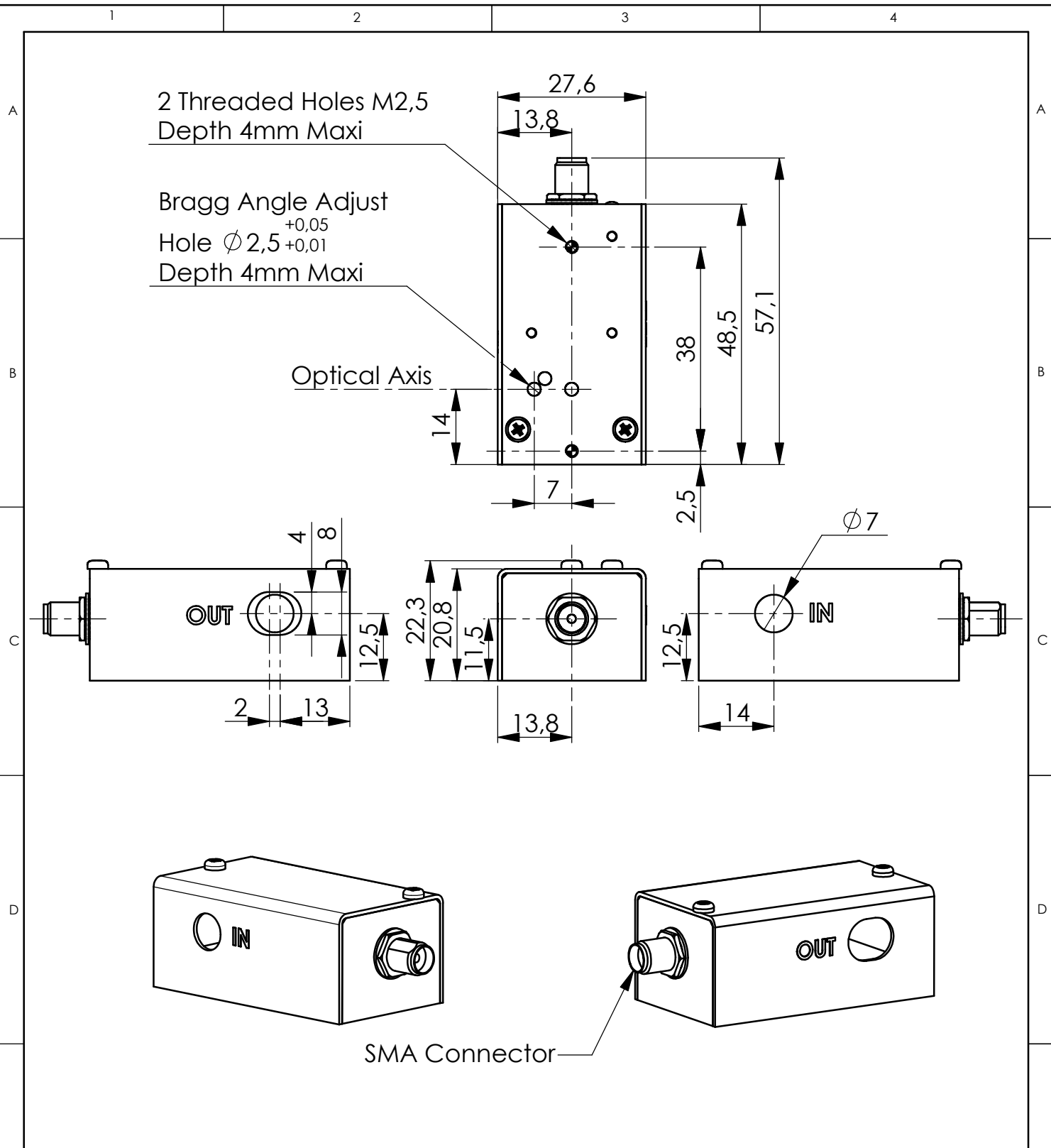$$N = T_a \times \Delta f \qquad N = \frac{\Delta\theta}{\delta\theta} \qquad T_a = \frac{\phi}{V}$$

ΔF: RF frequency range
λ: Wavelength of laser beam
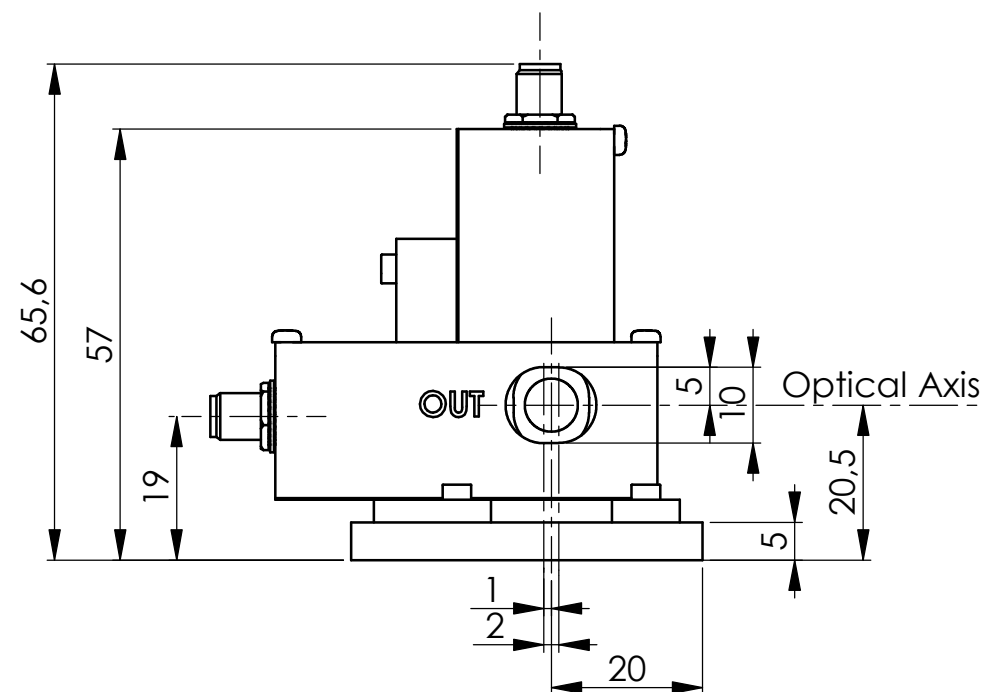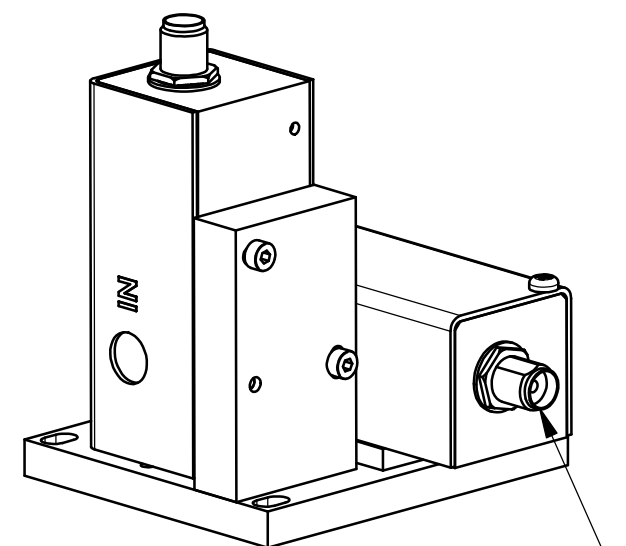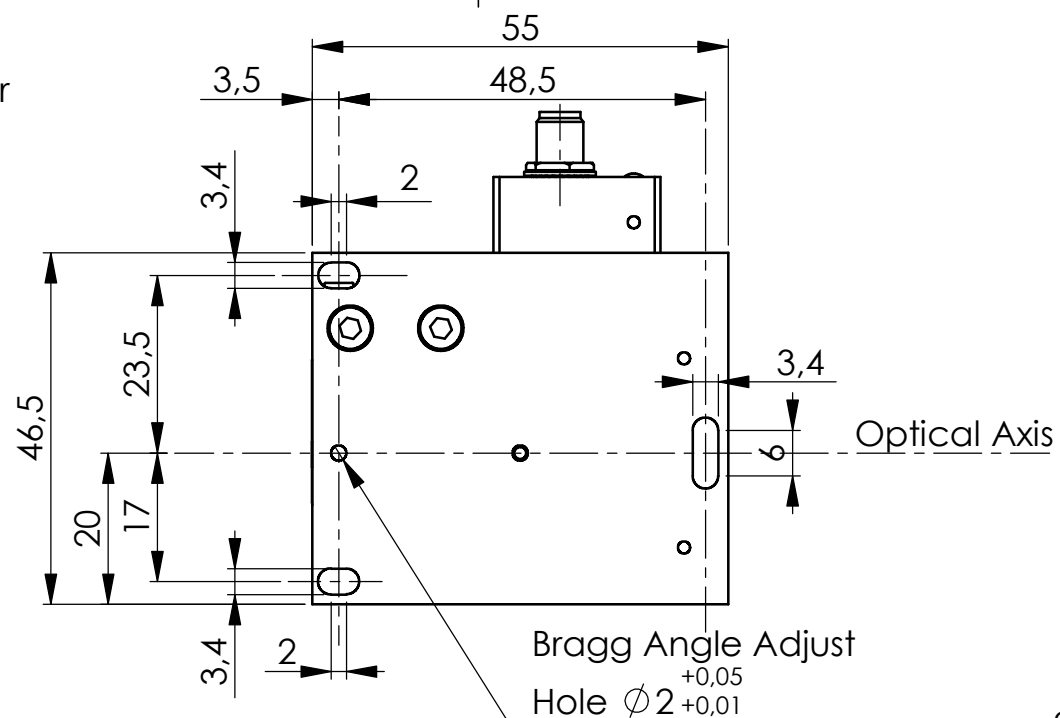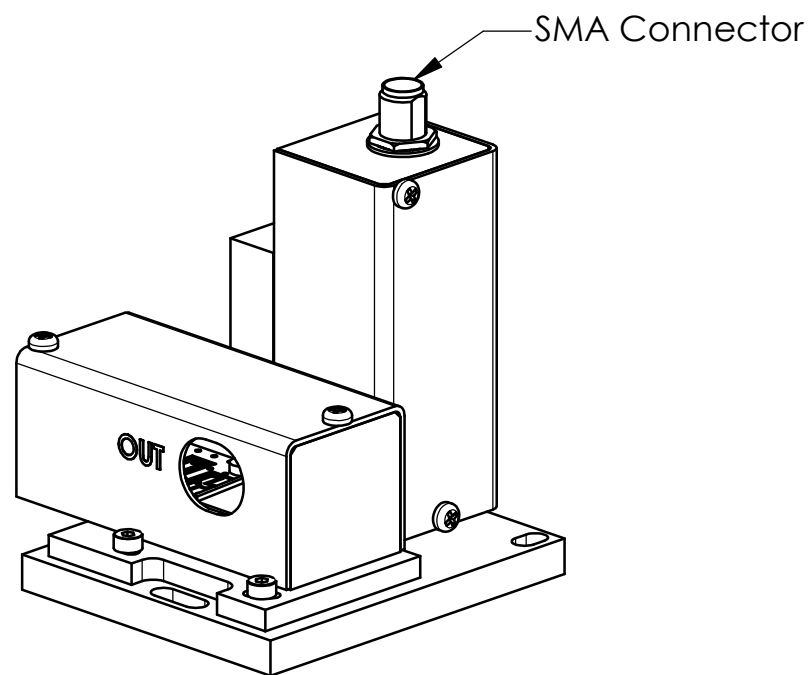**Δθ**: Scan Angle
V: Acoustic velocity
N: number of resolvable points

Diffraction Efficiency vs Drive Frequency
DTSX400 @532nm

Diffraction Efficiency vs Drive Frequency
DTSXY400 @532nm
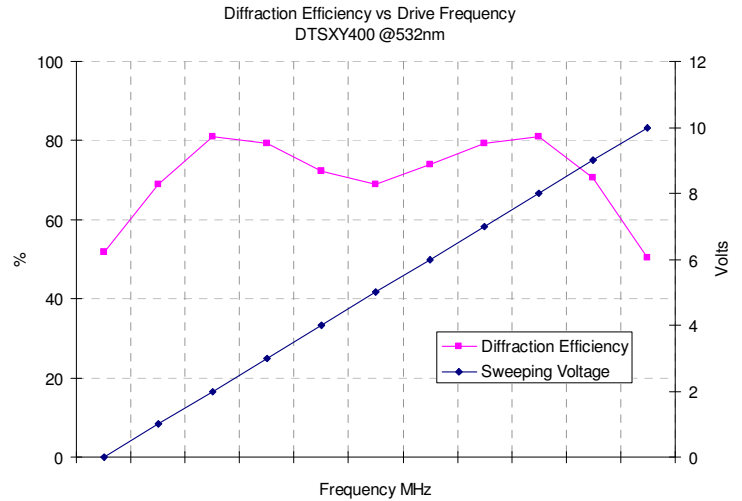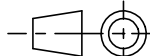
Angular Sketch (Top view): DTSXxx and DTSXYxx devices are « colinear »

DTSXxx

1st order

@Fc

DTSXYxx

1st order (1,1)

@Fc,Fc

Ed 2-18

2 Threaded Holes M2,5
Depth 4mm Maxi

Bragg Angle Adjust
Hole $\emptyset 2,5 \, ^{+0,05}_{+0,01}$
Depth 4mm Maxi

Optical Axis

27,6
13,8
57,1
48,5
38
14
7
2,5

4
8
OUT
12,5
2
13

22,3
20,8
11,5
13,8

$\emptyset 7$
IN
12,5
14

IN

OUT

SMA Connector

SMA Connector

55
3,5
48,5
3,4
2
46,5
23,5
20
17
3,4
2
3,4

Optical Axis

6

Bragg Angle Adjust
+0,05
Hole ∅2 +0,01

OUT

IN

SMA Connector

8,8
21,5

65,6
57
19
5
5
10
20,5

OUT

Optical Axis

∅7

IN

Optical Axis

19
20,5

1
2
20

32,8

20
56,5
65,1

PLAN D'INTERFACE / OUTLINE DRAWING

Optical Axis

57,8

45,8

35,8

∅9
Optical Axis

IN

Optical Axis

OUT

Laser beam Rotation
Y Axis

Laser beam Rotation
X Axis

3 Holes ∅3,2 Through

Y   X

SMA Connectors
RF Input Y

SMA Connectors
RF Input X

IN

Index / Indice	Date	Auteur / Author	Modifications
C	07/01/11	G.M	Gravure X/Y
B	29/10/07	E.D	Modification traitement / Modification of treatment (Surtec 650 -> Black Anodisation)
A	03/10/07	E.D	Plan initial / Initial Drawing

Conception Design	E.D
Vérification Checking	L.F
Tolérance Tolerance	ISO 2768mK
Echelle Scale	1:1
Format	A3

PLAN D'INTERFACE / OUTLINE DRAWING

Référence / Reference

IN-PRO-180

Folio / Sheet 1/1   Indice / Index C