ultra-high performance for scanning mirror applications

optoSiC-PLUS® XY75G

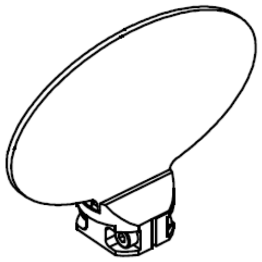
optoSiC-PLUS® XY75G generic scanning mirrors are designed using a unique protected spine and rib structure mirror at < 75,0 mm aperture.

These mirrors are manufactured as optoSiC-PLUS® grade a unique Silicon Carbide to give optimum stiffness, dynamic flatness and high resonant frequencies under high torque loadings while offering very low Moment of Inertia for all moving applications where processing speed and precise performance is paramount.

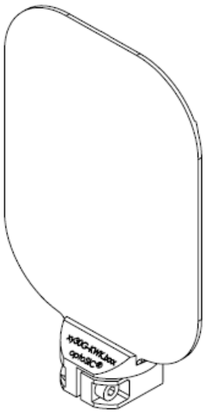
optoSiC-PLUS® XY75G generic scanning mirrors are available and standard polished to interferometric controlled wavefront-error of e.g. 1/4*λ PV @632,8nm, (2*λ….1/8λ on request) either can be coated for 10,6µm- CO$_2$, 1064nm for Nd:YAG IR, 532nm for frequency doubled Nd:YAG VIS, 355nm UV or many other coatings on request. Please refer to technical datasheets for coatings available on optoSiC-PLUS® or see download-links on homepage and ask our sales people for further choices on coatings and mounts.

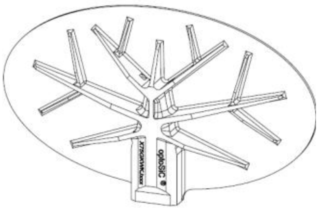
CHOICES for Mounted Mirrors	***X***	***Mirror***	***Y***

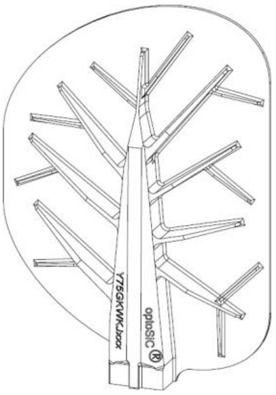
Type SM



OS

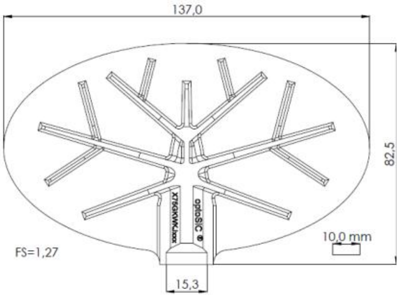
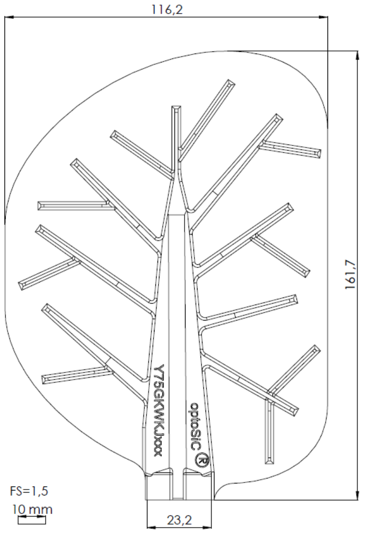






GENERAL	***PROPERTIES***		***Typical values***	
MIRROR SPECs	***Surface Roughness Ra***		< 0,5 nm (polished)	
	Wavefront error		¼ λ PV @ 632,8nm interferometric within CA	
	Aperture		collimated full beam diameter on X+Y is 75,0 mm	
MIRROR-TYPE			***x 75G***	***y 75G***
	Mass	***(g)***	65,7	133,7
	Moment of Inertia	***(g*cm^2)***	478	712
	Resonant Frequency	***(kHz)***	2,85	2,81
	Dynamic Flatness	***(pm/(rad/s^2))***	484	600
	Optical axis hight on rot.axis	***(mm)***	43,5	83,8
	Angle of Incidence	***(˚)***	45	37,5
	x-y Separation	***(mm)***	93	-
	x-Tilt	***(˚)***	-13	-
	Mechanical Scan Angle	***(˚)***	±10,0	-

The Dynamic Flatness is a normalized measure given as the max. deformation (PV) of the mirror surface at a angle acceleration rate of 1 rad/s^2

Mirror Type:	***X75G***	***Y75G***
		

MATERIAL DEPENDING CHARACTERISTICS:

Density [ρ]	> 3,16	g/cm^3	[DIN EN 623-2]
Flexual Strength [σB]	510	MPa	[DIN EN 843-1]
Young's Modulus [E]	420	GPa	[DIN EN 843-2]
Weibull Modulus [m]	15		[DIN EN 843-5]
Poisson's Ratio [ν]	0,17		
Fracture Toughness [SENB]	4,0	K_{IC} [$MPa*m^{0.5}$]	
Vickers Hardness	25,5	HV 1 (GPa)	[DIN EN 843-4]
Open Porosity	0%		
Mean Grain Size	< 2,5	µm typ. 1,5 µm	
CTE [α] (TEC) Coefficient Thermal Expansion	4,1 2,5	[10^{-6}/°K] 20-500°C [10^{-6}/°K] 15-25°C	[DIN EN 821-1]
Thermal Stress [Ri]	246 37	R_1 [K] R_2 [W/mm]	$R_1 = \sigma_B*(1- \nu)/(\alpha*E)$ $R_2 = R_1*\lambda$
Heat Capacity [cp] 20°C 1000°C	0,67 1,27	J/g * K	Specific heat cp (dynamic DSC, DIN EN 821-3)
Heat Conductivity [λ] 20°C Thermal Conductivity [TC] 1000°C	150 54	W/m K @ 20°C kJ/m * h * K	Calculation of thermal conducivity TC based on thermal diffusivity a (Laser-Flash, DIN EN 821-2), specific heat cp (dynamic DSC, DIN EN 821-3), and density (corrected for the thermal expansion TEC, DIN EN 821-1)

Please Contact:

MERSEN Deutschland Holding GmbH & Co. KG
Branch: Baden-Baden
Lange Straße 89a
D-76530 Baden-Baden
Germany

Phone: +49 (0) 7221 973974 0
Fax: +49 (0) 7221 973974 211
E-Mail: info@optoSiC.com
www.optosic.mersen.com