

# DC-285/100-PM-Yb-ROD

*Ytterbium doped PM ROD fiber with ultra large mode area*



- Ultra large mode area
- Polarization maintaining
- High pump absorption

The DC-285/100-PM-Yb-ROD represents the pinnacle of active gain fibers. The rod is polarization-maintaining and has an effective area above  $4500 \mu\text{m}^2$ . The very large effective area combined with extremely high pump-absorption of up to 30dB/m pushes the nonlinear thresholds to a new regime in fibers. The rod is aimed at high peak-power pulsed amplifiers and has been shown to handle mega-Watt peak-power levels.

The multimode pump light is guided by our proven airclad technology, ensuring low loss, high damage threshold and a large numerical aperture (NA). The large NA relaxes tolerances on coupling optics and facilitates the use of lower brightness diodes.

The DC-285/100-PM-Yb-ROD is a rod fiber with an outer diameter of 1.7 mm – bridging the DPSS and fiber laser world. The large outer diameter ensures that the extremely large core will not suffer from bending loss. Moreover, the rod is coating free to facilitate thermal management in high-power setups. The rods are available with large AR coated end-caps in a range of standard lengths. Other configurations are available upon request.

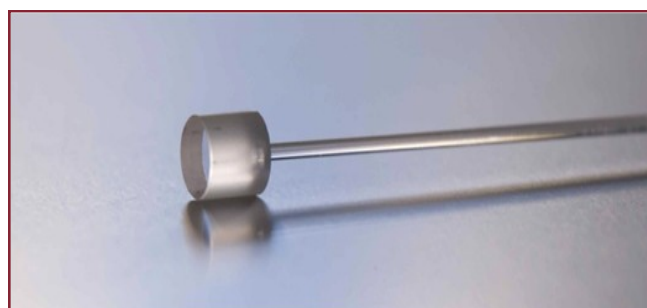
More info on using ROD fibers can be found on our website at [www.nktphotonics.com/application\\_notes](http://www.nktphotonics.com/application_notes)

## Applications

- Ultra high-power amplifiers
- Ultra high-power polarized lasers
- Ultra high-power Q-Switched lasers

Optical properties	
<b>Signal core</b>	
Mode field diameter	$76 \pm 5 \mu\text{m}$
Mode field area	$4500 \pm 200 \mu\text{m}^2$
NA @ 1060 nm	$\sim 0.02$
<b>Multimode pump core</b>	
Numerical aperture @ 950 nm	$0.6 \pm 0.05$
Pump absorption @ 920 nm	$\sim 10 \text{ dB/m}$
Pump absorption @ 976 nm	$\sim 30 \text{ dB/m}$
Slope efficiency	$\sim 60\%$
<b>Polarization Parameters</b>	
Birefringence $\Delta n$	$> 1 \cdot 10^{-4}$
Polarization Extinction Ratio	$15\text{-}25\text{dB}^*$

\* Depending on system configuration. The fiber should be operated in the slow-axis.



## Physical properties

Core material	Yb-doped silica
Outer cladding diameter	$1.7 \pm 0.1 \text{ mm}$
Coating	None
Signal core diameter	$100 \pm 5 \mu\text{m}$
Pump-cladding diameter	$285 \pm 10 \mu\text{m}$
Pump-cladding shape	Circular

## End cap option

Material	Pure silica
Length/diameter	8 mm / 8.2 mm
AR coating, R @ 1040-1080 nm	$< 0.1 \%$
AR coating, R @ 976 nm	$< 0.5 \%$
Angle	$0^\circ \pm 0.7^\circ$
Signal return loss	$< -35 \text{ dB}$
NA supported	$> 0.6$

## Standard configuration

	Rod length	End 1	End 2
Type I	36 cm	End cap	End cap
Type II	55 cm	End cap	End cap
Type III	55 cm	End cap	Sealing
Type IV*	80 cm	End cap	End cap
Type V	80 cm	End cap	Sealing
Type VI	120 cm	Sealing	Sealing

\*Most popular configuration

Sealed ends are angle-cleaved to  $3^\circ \pm 1^\circ$  to minimize reflection from the facet. Sealing length is  $50 \mu\text{m} \pm 25 \mu\text{m}$  (measured on the airclad).

The standard configurations are available from stock. Other configurations can be manufactured upon request.

DC-285/100-PM-Yb-ROD-110615