

SCHOTT® FLM 4

Super-luminosity LED fiber lighting module, CT 5700K, CRI 70, max. 4.5A LED current

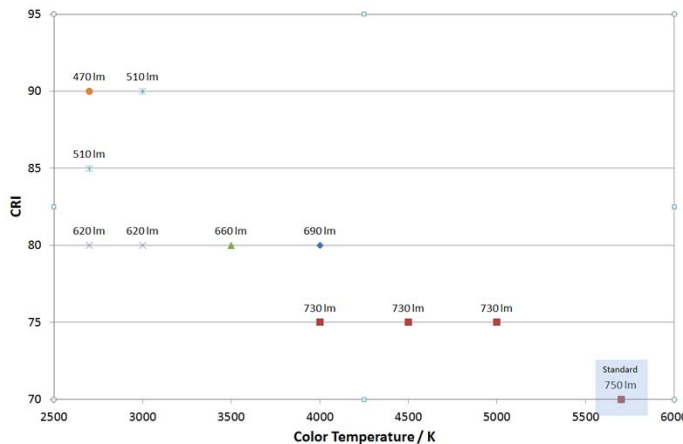


SCHOTT® FLM 4-4.5A

The SCHOTT® LED fiber lighting module - FLM - platform has been specifically developed for most efficient coupling of LED light into small-size fiber optic bundles. This makes the SCHOTT® FLM 4 optics module an excellent choice for medical applications, where smaller light guides with active diameters from 3.0 to 5.0 mm are commonly used.

Utilizing high brightness LEDs combined with an optimized optical focusing system the SCHOTT® FLM 4 generates 750lm out of a typical SCHOTT® universal light guide at a medical suitable color temperature of 5700K and a typical CRI of 70. Customized versions with higher Color Rendering Indexes (CRI) as well as different color temperatures (CT) are available on request*:

Typical luminous flux with PURAVIS® glass optical fiber GOF70, active diameter 4.8 mm, input hot-fused, length 2300 mm



* Customized versions are only made upon customer request and require minimum order and call-off quantities!

The encapsulated SCHOTT® FLM- containing LEDs and focusing optics - has an integrated fan to ensure optimum cooling for long lifetime. The small footprint of the module allows easier integration into end-users systems.

The separate control electronics monitors the LEDs for overheating condition, ensuring the system to have a long lifetime. Driven by constant current the light intensity of the LEDs can be continuously dimmed between 0 and 100% - while being flicker-free.

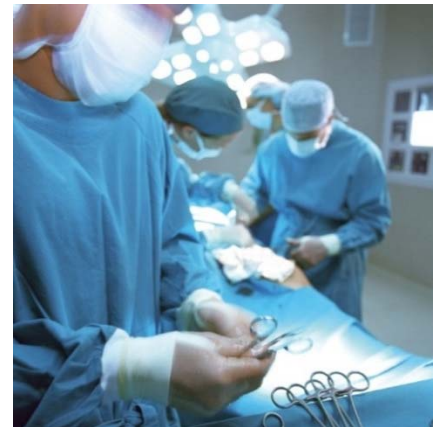
The external triggering option can be utilized to make fast movements visible - a feature important for applications in the ENT environment to make movement of vocal chords visible.

For more information please contact:



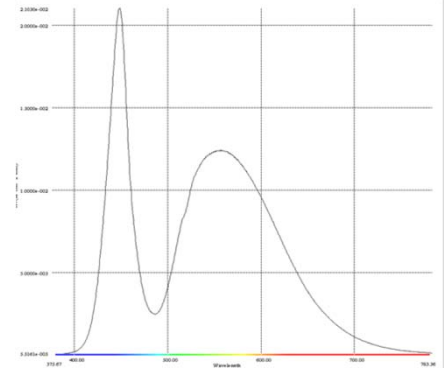
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Spectrum

Spectrum of the SCHOTT® FLM 4, measured with SCHOTT® Universal Light Guide*)



*) PURAVIS® glass optical fiber GOF70, active diameter 4.8 mm, input hot-fused, length 2300 mm

Fiber Optic Light Guides

The SCHOTT® FLM 4 illuminates active light guide diameter between 3.0 – 5.0 mm.

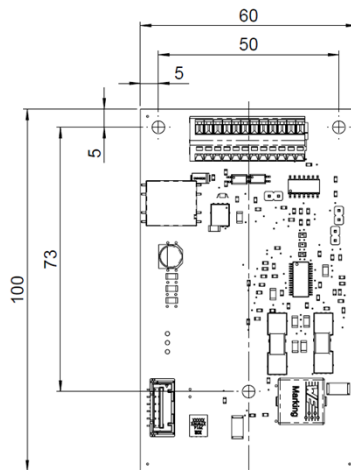
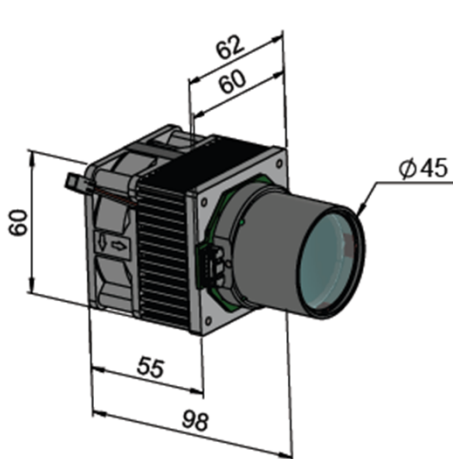
Smaller diameter require an optimized optical system. Hot-fused input ends can increase overall light output by 15%.

Please contact your SCHOTT representative for further information.



Technical Data for SCHOTT® FLM 4-4.5A

Optical Data	LED Type	White High Brightness LED
	Color Temperature CCT	5700 Kelvin (initial value)
	Color Rendering Index CRI	Approximately 70
	Typical Luminous Flux	2000lm in Focal Area
	Aperture angle	750 lm out of SCHOTT® Universal Light Guide (4.8 mm, 2300 mm)
	Average LED Lifetime	65° in 5 mm focal diameter 30,000 hours (Luminous Flux reduced to 70% of Maximum)
	Please note	LEDs are subject to certain manufacturing variations and can change their intensity and chromaticity depending on the type, power rate, life time and environmental conditions.
Electronic Data /PCB		
	Operating Voltage / Current	12 V DC +2V/-1V DC, 6.5A max.
	LED Safety/redundancy	Serial chain
	Power Consumption	72 watt max
	Analog Input Voltage	0 - 5 V
	Range for Dimming	0 - 100 %
	Applicable Potentiometer for Dimming	10 K Ω
	Method of LED Dimming	Only for analog dimming: Linear Current Control 0-4000 mA / LED
	External Trigger Input	5 Hz – 1.2 KHz, var. pulse/pause ratio
	Interface/PCB	10-pin terminal connector socket for dimming, overheating protection, external trigger signal, 2-pin connector socket for power supply
Dimensions		
	Optics Module / Fan	Diameter 45 mm / 62mm x 62 mm, Length 98 mm
	Focal Distance	16 mm from front plane of metal housing
	Weight	Approximately 250 g
	PCB dimension (L x W)	100 mm x 60 mm
Operating Conditions		
	Ambient Temperature	+ 5 - + 35 °C
	Relative Humidity	85% max. (non-condensing)
Transportation and Storage		
	Temperature	-20°C - +70 °C
	Relative Humidity	10 ... 95 % (non-condensing)



All dimensions in mm

Part Numbers

SCHOTT® FLM 4-4.5A Set 5700K, CRI 70, max. 4.5A LED current Optics Module with fan, Control PCB and connection cable	164 0009
SCHOTT® Universal Light Guide, grey (4.8 mm, 2300 mm, other lengths and colors available)	130 5027

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SCHOTT® FLM 4

Super-luminosity LED fiber lighting module, CT 5700K, CRI 70, max. 2A LED current



SCHOTT® FLM 4-2A

The SCHOTT® LED fiber lighting module - FLM - platform has been specifically developed for most efficient coupling of LED light into small-size fiber optic bundles. This makes the SCHOTT® FLM 4 an excellent choice for medical applications, where smaller light guides with active diameters from 3.0 to 5.0 mm are commonly used.

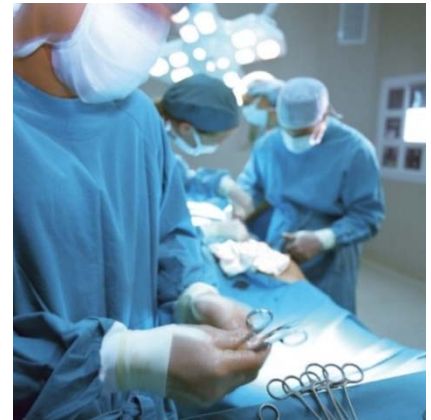
This 2A version was specially designed for a small footprint of the unit. Utilizing high brightness LEDs combined with an optimized optical focusing system the SCHOTT® FLM 4 generates app. 400lm out of a typical SCHOTT® universal light guide at a medical suitable color temperature of 5700K and a typical CRI of 70. Customized versions with higher Color Rendering Indexes (CRI) as well as different color temperatures (CT) are available on request*.

The encapsulated SCHOTT® FLM - containing LEDs and focusing optics - has an integrated fan to ensure optimum cooling for long lifetime. The small footprint of the module allows easier integration into end-users systems.

The separate control electronics monitors the LEDs for overheating condition, ensuring the system to have a long lifetime. Driven by constant current the light intensity of the LEDs can be continuously dimmed between 0 and 100% - while being flicker-free.

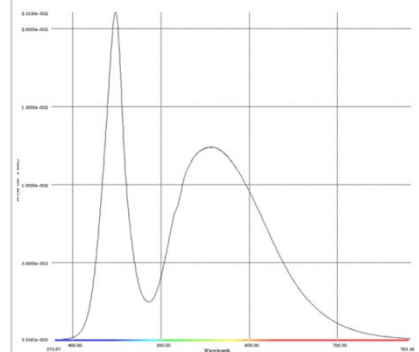
The external triggering option can be utilized to make fast movements visible - a feature important for applications in the ENT environment to make movement of vocal chords visible.

* Customized versions are only made upon customer request and require minimum order and call-off quantities!



Spectrum

Spectrum of the SCHOTT® FLM 4, measured with SCHOTT® Universal Light Guide*)



*) PURAVIS® glass optical fiber GOF70, active diameter 4.8 mm, input hot-fused, length 2300 mm

Fiber Optic Light Guides

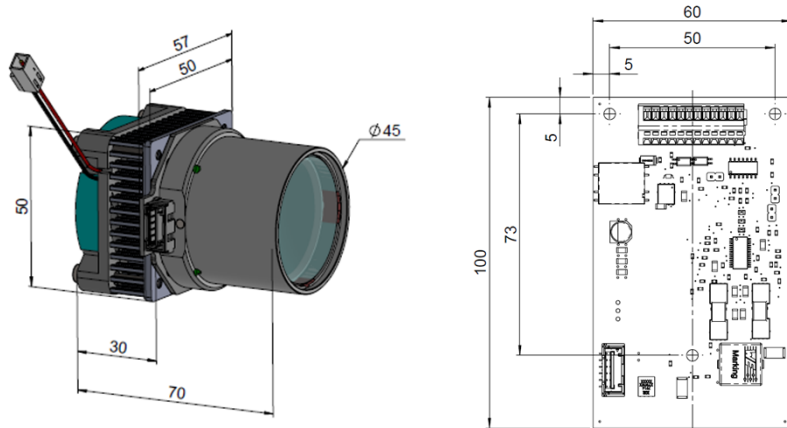
The SCHOTT® FLM 4 illuminates active light guide diameter between 3.0 – 5.0 mm.

Smaller diameter require an optimized optical system. Hot-fused input ends can increase overall light output by 15%.

Please contact your SCHOTT representative for further information.

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Technical Data for SCHOTT® FLM 4-2A		
Optical Data	LED Type	White High Brightness LED
	Color Temperature CCT	5700 Kelvin (initial value)
	Color Rendering Index CRI	Approximately 70
	Typical Luminous Flux	900lm in Focal Area 400 lm out of SCHOTT® Universal Light Guide (4.8 mm, 2300 mm)
	Aperture angle	65° in 5 mm focal diameter
	Average LED Lifetime	30,000 hours (Luminous Flux reduced to 70% of Maximum)
	Please note	LEDs are subject to certain manufacturing variations and can change their intensity and chromaticity depending on the type, power rate, life time and environmental conditions.
Electronic Data /PCB	Operating Voltage / Current	12 V DC +2V/-1V DC, 2 A max.
	LED Safety/redundancy	Serial chain
	Power Consumption	72 watt max
	Analog Input Voltage	0 - 5 V
	Range for Dimming	0 - 100 %
	Applicable Potentiometer for Dimming	10 K Ω
	Method of LED Dimming	Only for analog dimming: Linear Current Control 0-4000 mA / LED
	External Trigger Input	5 Hz – 1.2 KHz, var. pulse/pause ratio
	Interface/PCB	10-pin terminal connector socket for dimming, overheating protection, external trigger signal, 2-pin connector socket for power supply
Dimensions	Optics Module / Fan	Diameter 45 mm / 50mm x 50 mm, Length 70 mm
	Focal Distance	16 mm from front plane of metal housing
	Weight	Approximately 230 g
	PCB dimension (L x W)	100 mm x 60 mm
Operating Conditions	Ambient Temperature	+ 5 - + 35 °C
	Relative Humidity	85% max. (non-condensing)
Transportation and Storage	Temperature	-20°C - +70 °C
	Relative Humidity	10 ... 95 % (non-condensing)



All dimensions in mm

Part Numbers	
SCHOTT® FLM 4-2A Set 5700K, CRI 70, max. 2A LED current Optics Module with fan, Control PCB and connection cable	162 7291
SCHOTT® Universal Light Guide, grey (4.8 mm, 2300 mm, other lengths and colors available)	130 5027

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