

# 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® 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.

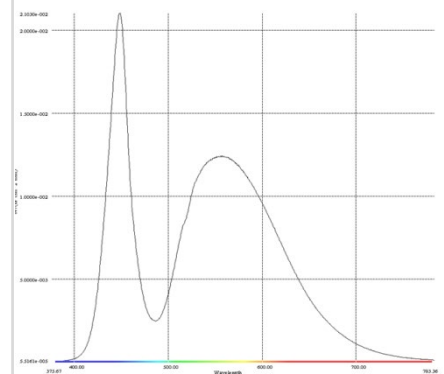
The external triggering option can be utilized to make fast movements visible - a feature important for applications in the ENT environment to make movement of vocal chords visible.

\* 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® light guide\*)



\*) PURAVIS® 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 4-2A

### Optical Data

|                           |   |
|---------------------------|---|
| LED Type                  | White High Brightness LED   |
| Color Temperature CCT     | <b>5700 Kelvin (initial value)</b>  |
| Color Rendering Index CRI | Approximately 70  |
| Typical Luminous Flux     | <b>900lm in Focal Area</b><br><b>400 lm out of light guide (GOF 70, 4.8 mm, 2300 mm)</b>  |
| 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 KΩ  |
| 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

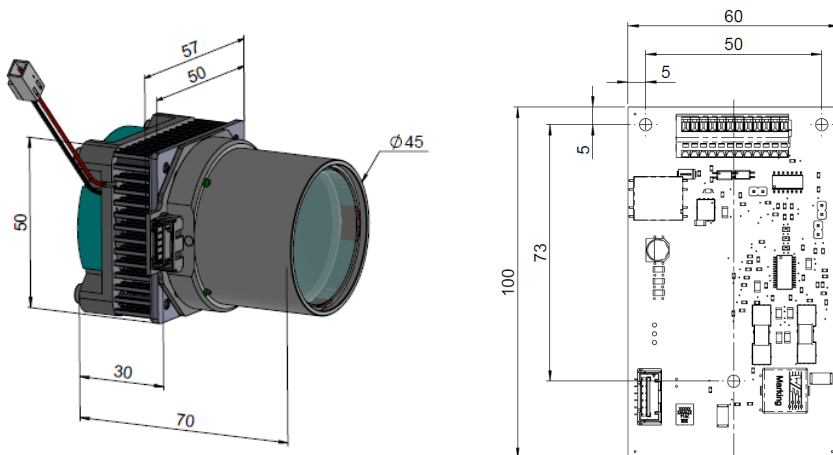
|                       |   |
|-----------------------|---|
| Optics Module / Fan   | Diameter 45 mm / 50mm x 50 mm, Length 70 mm |
| Focal Distance        | 16 mm from front plane of metal housing     |
| Weight                | Approximately 230 g                         |
| PCB dimension (L x W) | 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

|  |          |
|--|----------|
| <b>SCHOTT® FLM 4-2A Set</b><br><b>5700K, CRI 70, max. 2A</b><br><b>LED current</b> | 162 7291 |
| Optics Module with fan,<br>Control PCB and<br>connection cable                     |          |