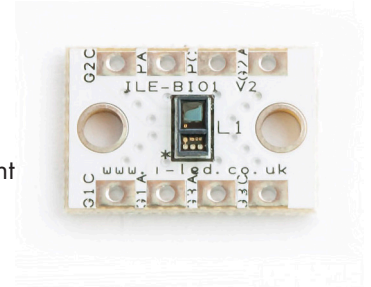


SFH 7051 BIOFY® Health Monitoring Eco 1

ILE-BI01-GGGP-SC201.

Product Overview

At the heart of each BIOFY® Eco 1 is a BIOFY SFH 7051 sensor. The SFH 7051 consists of a large-format photo diode and three green LEDs with a wavelength of 530 nanometres (nm). It is used for monitoring heart rate by measuring the volume of blood passing through blood vessels. It works by shining light on the surface of the skin. Different amounts of this light are absorbed by blood and the surrounding tissue. The light not absorbed is reflected to the detector. With its green emission spectrum the SFH 7051 is ideal for measuring the pulse rate at the wrist. Eco 1s are compact, powerful LED light sources built on FR4 with thermal vias for optimal thermal management. BIOFY® Eco 1s generate very little heat and therefore do not require any secondary Heat Sinking.



Applications

- Heart Rate Monitoring

Technical Features

- BIOFY® Eco 1s contain a BIOFY® SFH 7051 Sensor*
- Mounting holes using M3 screws allows easy installation
- Size (LxWxH): 20.25x13.70x0.90mm

*This datasheet should be read in conjunction with the relevant OSRAM Opto Semiconductors data on the LED used

Important Information and Precautions

- The BIOFY® Eco 1's LED, when powered up, is very bright. Thus it is advised that you do not look directly at it. Turn the Eco 1 away from you and do not shine into the eyes of others.
- Do not operate BIOFY® Eco 1's with a Power Supply with unlimited current. Connection to constant voltage Power Supplies that are not current limited may cause the Eco 1 to consume current above the specified maximum and cause failure or irreparable damage.
- The Eco 1 board is a DOUBLE sided board for ease of connections, please ensure that one side is insulated to avoid shorting.
- DO NOT HOT PLUG ON LED SIDE OF POWER SUPPLY.
- DO NOT TOUCH or PUSH on the LED as this can cause irreparable damage.

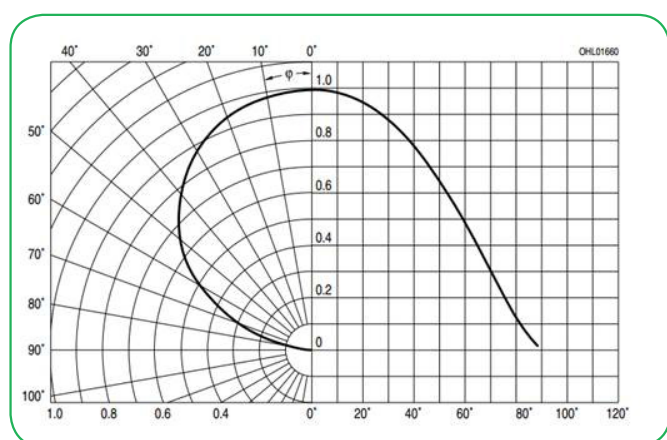
Product Options

ILS PART NUMBER	Colour	Relevant OSRAM LED Data
ILE-BI01-GGGP-SC201.	Please consult the relevant OSRAM Datasheet for further information on Parameters of the BIOFY®	SFH 7051

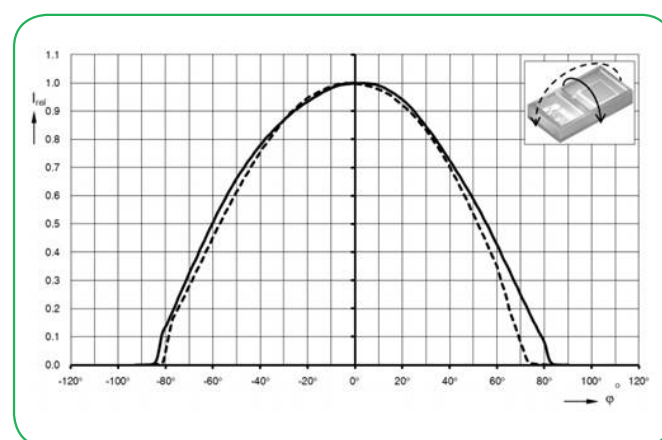
Minimum and Maximum Ratings

ILS PART NUMBER	Operating Temperature [°C]	Storage Temperature [°C]
ILE-BI01-GGGP-SC201.	-40...85°C	-40...85°C

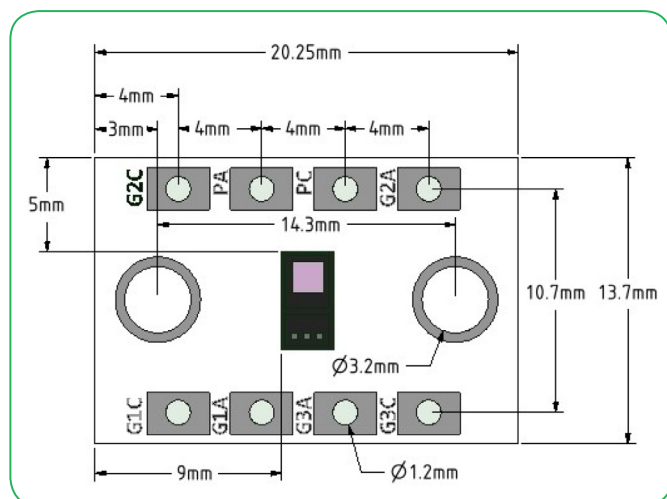
Directional Characteristics of Detector



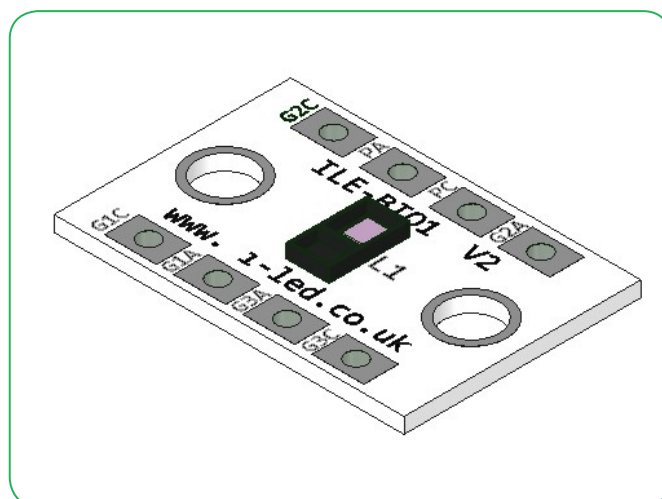
Radiation characteristics of the Green, Red and IR Emitters



Technical Drawing



3D Drawing



Pin Configuration

Name	Function
G1A	Green LED Anode
G1C	Green LED Cathode
G2C	Green LED Cathode
PA	Photodiode Anode
PC	Photodiode Cathode
G2A	Green LED Anode
G3C	Green LED Cathode
G3A	Green LED Anode

BIOFY® Eco 1 Lens and Reflector Options

LEDiL precision-engineered Lenses and Reflectors allow for rapid deployment of all types of light fixtures, including street lights, wall-wash, high-bay, sconces, emergency beacons, parking garage/low-bay, MR and AR down lights and dock lights. Precision-engineered for maximum efficiency and durability, LEDiL Lenses and Reflectors are released alongside the latest product releases from our LED suppliers. You select the best LED for the application; choose LEDiL and you're selecting the best optical solution as well. Currently there are not any recommend Lens options from LEDiL for the BIOFY®, however physical locator pins for a number of LEDiL product families are on the board. In-house Lux testing with a number of these has shown minimal losses. Due to the nature of the device, colour over beam consistency may be an issue for some applications. Beam angle information is not currently available.



BIOFY® Eco 1 Heat Sink Options

ILS has a series of Aluminium Alloy Heat Sinks to be used with our standard range of LED Engines. These Heat Sinks are supplied with fixing screws for the light engine and for fixing to a base plate. They also come with Thermal Interface Material (TIM) attached to the top surface. More versions will be introduced over the coming months and we are also happy to manufacture custom Heat Sinks to your request. This product would normally not require Heat Sinks as heat generated is normally minimal.

Thermal Interface Material Options

ILS have produced a range of high-performance, cost effective Thermal Interface Materials to match perfectly their standard products.

Our product fills the air pockets between the two surfaces, forming a continuous layer to conduct heat away from the LED to the Heat Sink.

As the Eco 1 generates little heat, TIM is therefore not needed. Our double sided thermal tape would be suitable for fixing the Eco 1 to a fixture, Heat Sink and flat substrate.

Assembly Information

- In order to optimise the thermal management, the metal surface needs to be clean (dirt and oil free) and planar for the best contact with the LED module. A thermal grease or heat transfer material is highly recommended.

Safety Information

- The LED module itself and all its components must not be mechanically stressed.
- Assembly must not damage or destroy conducting paths on the circuit board.
- The mounting of the module is carried out by attaching it at the mounting holes. Metal mounting screws must be insulated with synthetic washers to prevent circuit board damage and possible short circuiting.
- To avoid mechanical damage to the connecting cables, the boards should be attached securely to the intended substrate. Heavy vibration should be avoided.
- Observe correct polarity!
- Depending on the product, incorrect polarity will lead to emission of red or no light. The module can be destroyed!
- Pay attention to standard ESD precautions when installing the BIOFY® Eco1.
- The BIOFY® Eco1, as manufactured, have no conformal coating and therefore offer no inherent protection against corrosion.
- Damage by corrosion will not be accepted as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.
- For outdoor usage, housing is definitely required to protect the board against environmental influences. The design of the housing must correspond to the IP standards in the application. It is also the responsibility of the user to ensure any housing or modifications keep the Tc junction temperature to within stated ranges.
- To also ease the luminaire/installation approval, electronic control gear for LED or LED modules should carry the CE mark and be ENEC certified. In Europe the declarations of conformity must include the following standards: CE: EC z 61374-2-13, EN 55015, IEC 61547 and IEC 61000-3-2 - ENEC: 61374-2-13 and IEC/EN 62384.
- The evaluation of eye safety occurs according to the standard IEC 62471:2006 ("photobiological safety of lamps and lamp systems"). Within the risk grouping system of this CIE standard, the LED specified in this data sheet falls into the class "moderate risk" (exposure time 0.25s). Under real circumstances (for exposure time, eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. As is also true when viewing other bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment and even accidents, depending on the situation.

For further information please contact ILS

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.