

# Diffuse reflection light source



L16462-01

## Near infrared (up to 2500 nm) light source for diffuse reflection measurement

The L16462-01 is a module with built-in lamps and an optical fiber for doing diffuse reflection measurement in near-infrared spectrophotometry. This module irradiates a sample with light from lamps, and the light that enters the sample and is diffused/reflected is introduced into the optical fiber. It is connected to a near-infrared spectrometer for use. With this product, in which plural lamps and an optical fiber are arranged close to each other, the weak diffused light emitted from the sample can be detected efficiently.

### Features

- ➔ Compact:  $\phi 28.0$  mm  $\times$  35.5 mm
- ➔ Long life: 7000 hr (average)
- ➔ High detection efficiency (built-in multiple lamps)
- ➔ Wide wavelength range: 400 to 2500 nm

### Applications

- ➔ Spectrophotometry
- ➔ PAT: process analytical technology (medicine, food, etc.)
- ➔ Recycling (plastic, etc.)

### Structure

Parameter		Specification	Unit
Tungsten lamp	Quantity	4	pcs
	Irradiation angle*1	Approx. 60	degrees
	Recommended supply voltage	+5	V
	Average lifetime*2	7000	hr
	Warranty lifetime*3	2000	hr
Focal position*4	With spacer attached	Approx. 0	mm
	With spacer detached	Approx. 3	mm
Built-in optical fiber angle*1		Approx. 90	degrees
Built-in optical fiber		Core diameter=1000 $\mu$ m, NA=0.22	-
Optical fiber connector		SMA905	-
Power connector		EGG.00.302.CLL (LEMO)	-
Dimensions (excluding protrusions)		$\phi 28 \times 35.5$	mm
Window material		Quartz glass	-

\*1: Angle with the light emission surface of the case

\*2: Average lifetime of lamp itself. Time until 50% of the lamps burn out, when the lamps are lit continuously at an ambient temperature of 25° C at the recommended supply voltage of 5 V.

\*3: Time after delivery, not lamp lighting time

\*4: Distance from the case light emission surface to the focal point. The focal point is the point where the light outputs of the four lamps overlap.

Note: There is a fee for replacement of burned out lamps. Please contact your local Hamamatsu sales office.

### Absolute maximum ratings (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Value	Unit
Operating temperature	Topr	No dew condensation*5	+5 to +50	°C
Storage temperature	Tstg	No dew condensation*5	-20 to +70	°C
Maximum supply voltage	Vin max		+6	V
Maximum input current	Iin max		550	mA

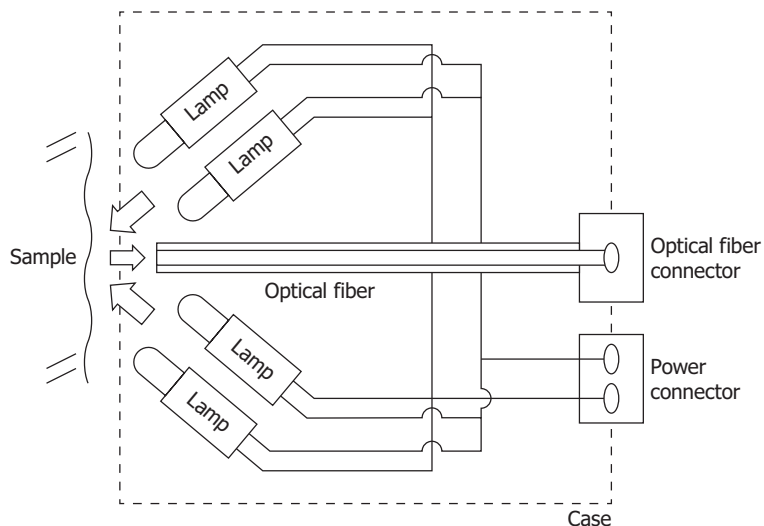
\*5: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

**Electrical and optical characteristics (Ta=25 °C, Vin=5 V)**

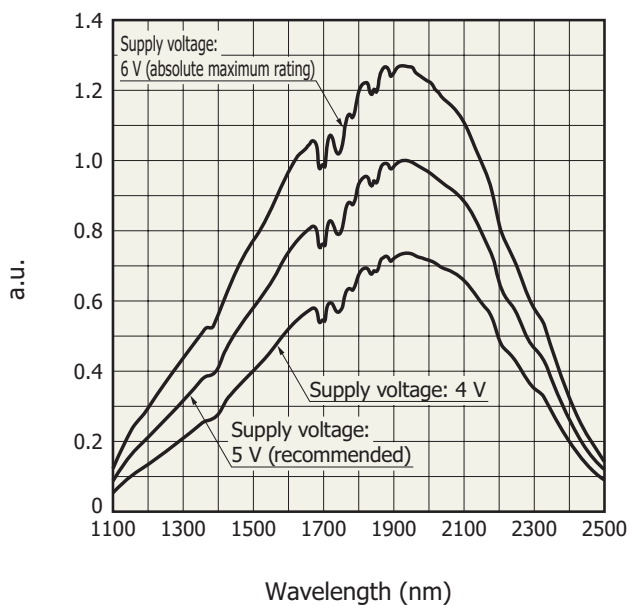
Parameter	Min.	Typ.	Max.	Unit
Current consumption	385	460	515	mA
Wavelength range	-	400 to 2500	-	nm

**Block diagram**



KACCC1181EA

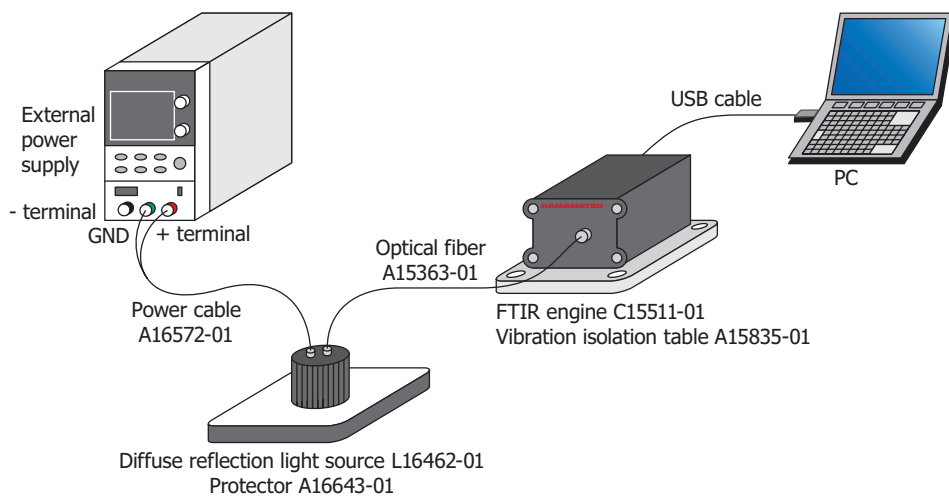
**Spectrum (when FTIR engine C15511-01 is used, typical example)**



KACCB0732EA

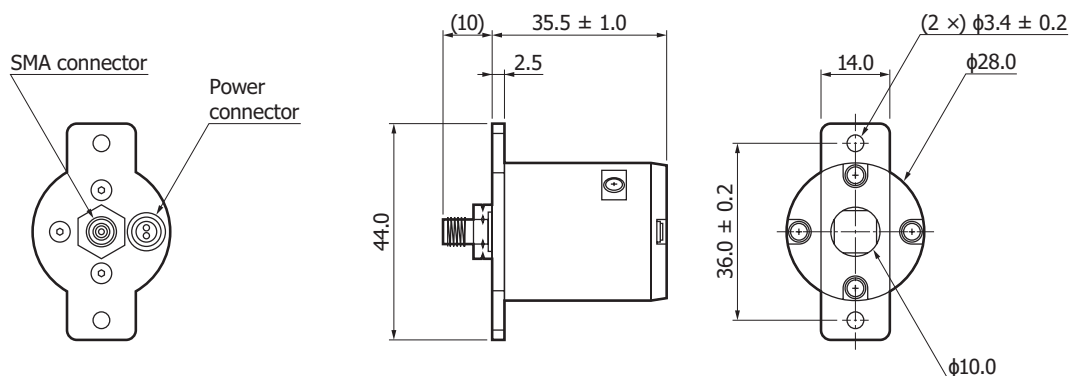
**Connection example**

A connection example using Hamamatsu FTIR engine (C15511-01) is shown below.



KACCC1182EA

**Dimensional outline (unit: mm)**



Tolerance unless otherwise noted:  $\pm 0.5$   
Weight: 50 g

KACCA0490EA

**Accessories**

- CD-ROM (instruction manual)

### Options (sold separately)

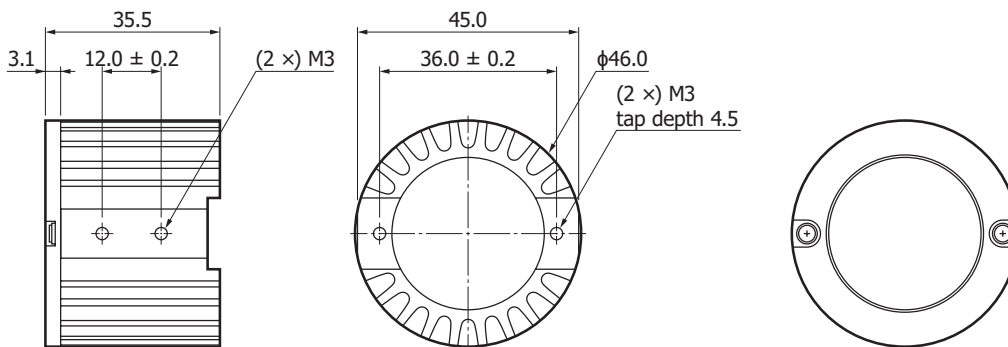
#### Power cable (A16572-01)

Type no.	Name	Connector	Specification
A16572-01	Power cable	FGG.00.302.CLAD35	Length: 1.5 m One end: lead wire soldering Wire: AWG26

#### Optical fiber cable (A15363-01)

Type no.	Name	Core diameter (μm)	Specification
A15363-01	Visible/near infrared optical fiber	600	NA=0.22, length: 1.5 m With SMA905D connector on each end

#### Protector (A16643-01)



Accessories: M3 bolt (× 4), washer (× 4), spring washer (× 4)

Tolerance unless otherwise noted: ±0.5  
Weight: 55 g

KACCA0491EA

## Related products

### FTIR engine C15511-01



This is a compact Fourier transform type near-infrared spectrometer, with a built-in Michelson optical interferometer and a control circuit in a palm-sized case. Spectrum and absorbance can be measured by connecting a PC via USB.

#### Features

- ➔ **Compact: palm size**
- ➔ **Optical fiber input type**
- ➔ **No external power supply required (USB bus powered)**
- ➔ **High S/N: Suitable for diffuse reflection measurement and absorbance measurement**
- ➔ **Spectral response range: 1100 to 2500 nm**

### Mini-spectrometer C14486GA



This is a spectrometer (polychromator) provided in a compact, thin case that houses optical elements, InGaAs image sensor, and driver circuit. The trigger function enables spectroscopic measurement of pulse emissions.

#### Features

- ➔ **Compact, thin case**
- ➔ **Optical fiber input type**
- ➔ **With trigger function**
- ➔ **No external power supply required (USB bus powered)**
- ➔ **Stores wavelength conversion factor\*6 in internal memory**
- ➔ **Spectral response range: 950 to 1700 nm**

\*6: A factor for converting the pixel numbers of the image sensor to wavelengths

## Precautions

- Do not look directly at the emitted light.

This product has built-in tungsten lamps that emit light in the visible to near-infrared region, from the light emitter. Light risk group: classified as exemption according to EN 62471/IEC 62471, but directly looking into the light for a long time or from a very close distance may impair visual function.

- Beware of high temperature.

The temperature of the case of this product rises when the lamp is turned on. If you touch this product for a long time after the lamps are on, your skin may become red, itchy, or develop a rash, and you may get burned. Avoid touching this product when it is hot, as much as possible.

- Do not apply overvoltage.

Applying a voltage or current that exceeds the absolute maximum ratings even momentarily may damage the built-in lamps, so that they cannot be turned on. Make sure to use the product within the absolute maximum ratings. If the lamps are damaged due to overvoltage or overcurrent, there will be a fee for replacement of the lamps even if the lamps are still within its warranty life. Please contact your local Hamamatsu sales office.

## Related information

[http://www.hamamatsu.com/sp/ssd/doc\\_en.html](http://www.hamamatsu.com/sp/ssd/doc_en.html)

- Precautions
- Disclaimer

The content of this document is current as of March 2023.

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