effiTelecentric

Telecentric backlight illuminator by EFFILUX

EFFI-Telecentric is a telecentric backlight illuminator used to get rid of the undesired effects obtained with a diffuse backlighting system.

It is highly recommended to combine EFFI-Telecentric with a telecentric objective to improve the quality of the image.

EFFILUX releases a range of EFFI-Telecentric: this product lining covers output diameters from 20 to 145mm.

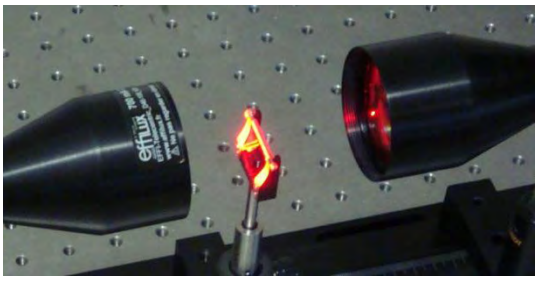
Applications:

- Very accurate quality controls
- Accurate dimensions determination
- Accurate optical sorting (screws, bolts …)
- Accurate edges detection

Benefits using an EFFI-Telecentric

High images contrast
Homogeneous directed backlighting
Perfect coupling with a telecentric objective
Sharp edges of the inspected object
Precise perspective free measurements
Accurate edges detection and measurement
No defined working distance
Complete product lining:

- **Different output diameters**
- **Full range of colors**
- **Wide dimming range**



effiLux Efficient Led Lighting

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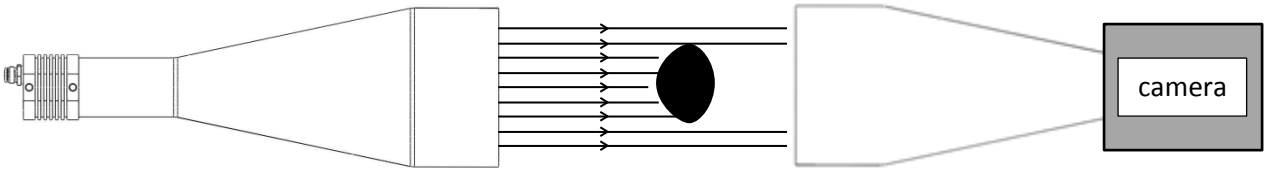
EFFI-Telecentric product lining

	Output beam diameter	Length	Beam divergence
EFFI-Telecentric 20	20 mm	117	±0.76°
EFFI-Telecentric 45/147	45 mm	147	±0.29°
EFFI-Telecentric 45/250	45 mm	250	±0.14°
EFFI-Telecentric 70	70 mm	245	±0.11°

A wide range of wavelengths is available for the complete product lining.
The present table lists the standard product lining: nevertheless, EFFILUX can offer its competences to provide a customized EFFI-Telecentric, optimized for your applications.

Illumination principle



Telecentric illumination

Telecentric objective

Product Nomenclature

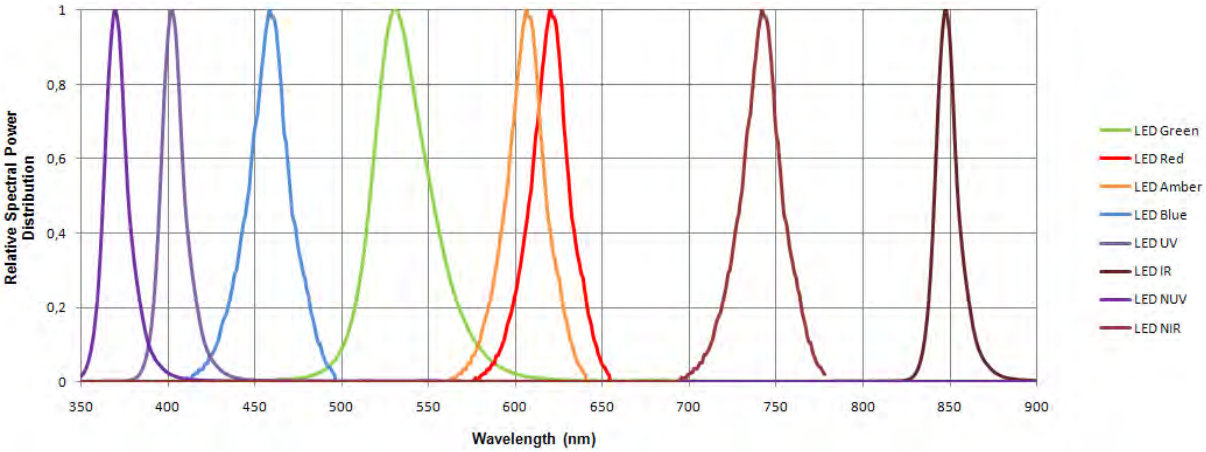
XX	XXX	XXX
Optical output diameter	**Mechanical length (mm)**	**Wavelength (nm)**
20	117	Cool White: 000
45	147	Neutral White: 001
45	250	Warm White: 002
70	245	Available colors (*)

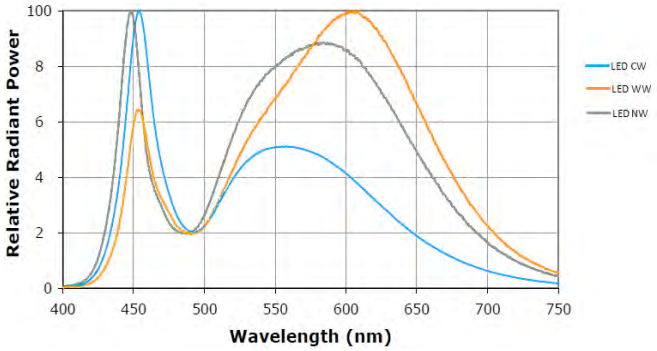
(*) Available colors

NUV
UV
Blue: 465
Green: 535
Amber: 590
Red: 625
NIR
IR

Optical characteristics

Typical LED spectra





Electrical characteristics

Two options are offered to supply an EFFI-Telecentric:

1. Use an EFFI-Supply Wire (Supplied by Effilux)
2. Use a direct current source

Warning:

Changes or modifications not expressly approved by Effilux could void the user's authority to operate this device: use only the proper type of power supply and never exceeds the maximum ampere rate.
This device should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, use only the EFFI-Supply Wire.

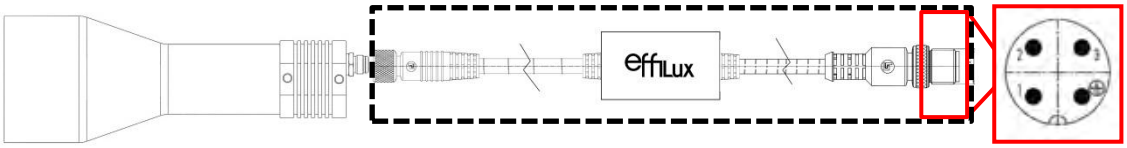
EFFI-Supply Wire

EFFI-Supply Wire converts the input voltage into constant current, used to drive the high power LEDs. EFFI-Supply Wire is specially designed for a high current level stability and an analogue voltage dimming.

EFFI Supply Wire

Electrical considerations

Pin	1	2	3	4
Identification	24VDC	n.c.	GND	DIM
Wire color	**Brown**	**White**	**Blue**	**Black**



EFFI Supply Wire

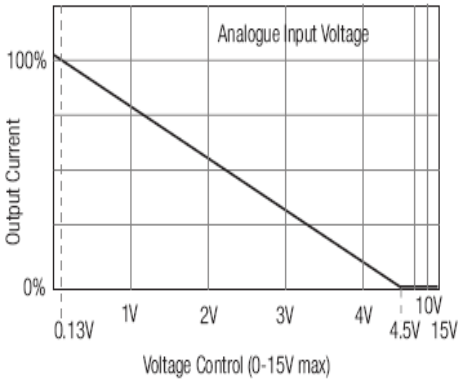
EFFI-Supply Wire presentation

Model	*EFFI-Supply Wire 0.7*
Input voltage	**24 VDC (±10 %)**
Power consumption	**See section 'LED Power Ratings'**
Intensity control	**Current control system**
Forward current	**700 mA**
ON / OFF Time	**300 µs**
Maximum Dimming Frequency	**300 Hz**
Operating environment	**Temp. : 0 to 40 °C, humidity : 10 to 90 %RH**

Dimming control

EFFI Telecentric can be dimmed by an analogue voltage. If the dimming control is not used, leave the pin opens.

Input Voltage Range:		**0.3V to 15V**
Control Voltage Range Limits:	**Full On**	**0.13V ± 50mV**
(see Graph)	**Full Off**	**4.5V ± 50mV**
Analogue Current :		**V_c=5V 0.2mA max.**



Connection example

Supply with a current source

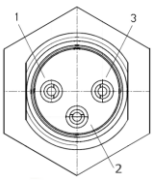
A current source, with the correct settings and the correct wires, can be used to supply EFFI Telecentric: details can be found in the following table and pictures.

To pulse and/or to strobe at high frequency the EFFI Telecentric, use an appropriate current source.

Direct current Source	
Input voltage	**See the section " LED Power Ratings"**
Power consumption	**See "LED Power Ratings "**
Maximum continuous forward current	**1000 mA**
Peak pulsed forward current	**1800 mA**
Maximum flash frequency	**1 MHz**
Maximum strobe pulse width	**50 µs**

Wires connections for direct LED control

M8, 3 pins.
Reference: 79-3406-42-03
Manufacturer : binder USA
SERIES 718



Pin	1	2	3
Terminal	Anode (A)	Cathode (K)	n.a.
Sign	+	-	n.a.
Wire color	Blue	Black	n.a.

Connection example

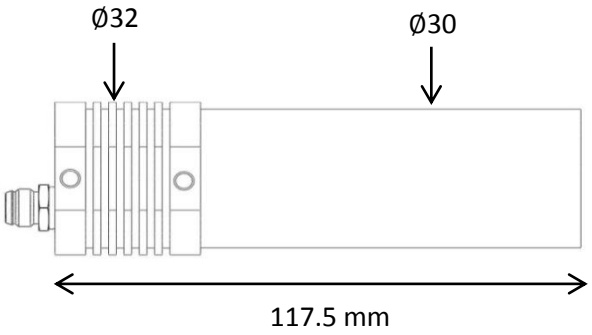
LED Power Ratings

Products	Wavelength peak (nm)	Forward voltage (Volt)	Forward current (mA)
EFFI-Telecentric WHITE	n.a.	3.8	700
EFFI-Telecentric NUV	365	3.7	700
EFFI-Telecentric UV	385	3.7	700
EFFI-Telecentric BLUE	460	3.8	700
EFFI-Telecentric GREEN	520	3.8	700
EFFI-Telecentric AMBER	590	2.6	700
EFFI-Telecentric RED	630	2.6	700
EFFI-Telecentric NIR	750	1.6	700
EFFI-Telecentric IR	850	1.6	700

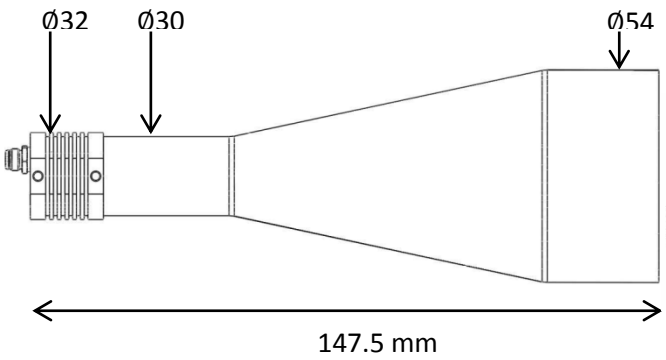
Mechanical characteristics

Correct alignment of both the illumination and the receptor to fully obtain characteristics of the illumination system.

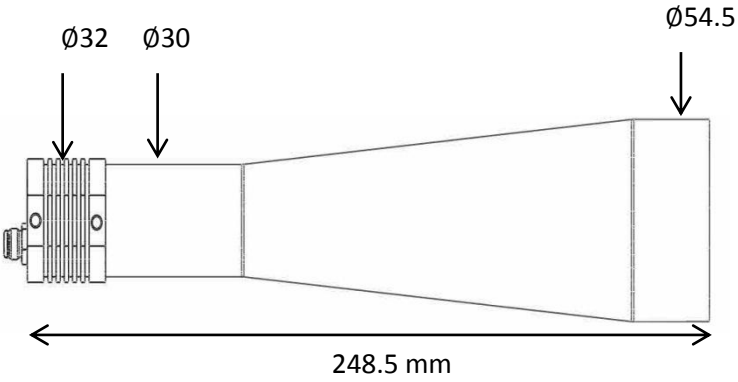
EFFI-Telecentric 20



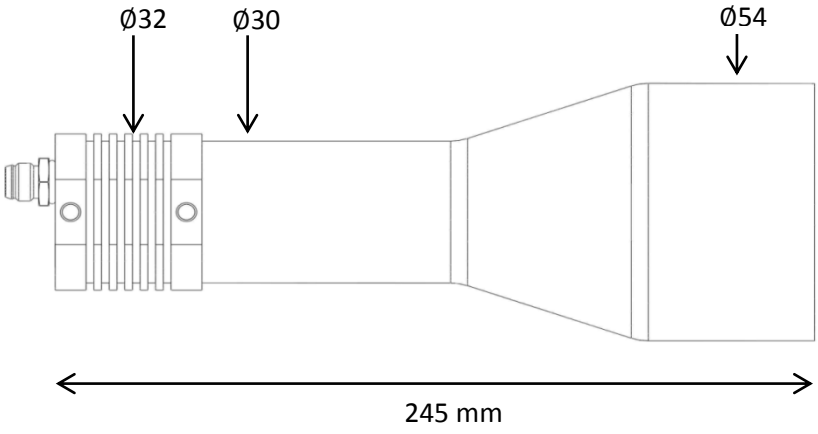
EFFI-Telecentric 45/147



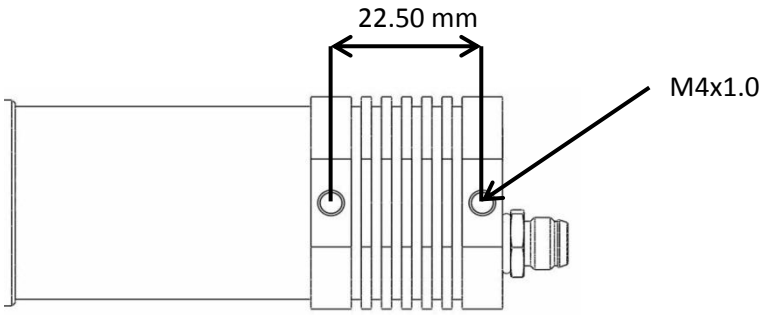
EFFI-Telecentric 45/250



EFFI-Telecentric 70



Fastener



Bill of materials

- **EFFI-Supply Wire_M12/M8_700_300**
  - Input connector M12
  - Output connector M8
  - Size 300 mm
  - Input Power 24 Volt, 5 Watts
  - Output Power 700 mA

Accessories

Other Wires

- **EFFI-Wire_M8_3_2000_angled**
  - Wire gauge (mm²) 0,25 mm²
  - Wire gauge (AWG) 24
  - Cable length 2 m

- **EFFI-Wire_ M8 _3_2000**
  - Wire gauge (mm²) : 0,25 mm²
  - Wire gauge (AWG) : 24
  - Cable length: 2 m

- **EFFI-Wire_M12_4_1000**
  - Wire gauge (mm²) 0,2
  - Wire gauge (AWG) 24
  - Cable length 1 m

Mechanical accessories

In order to improve the EFFI-Telecentric alignment and the accuracy of your measurements, EFFILUX designs mechanical holders. They are available upon request.