



## TRANSMITTERS FOR ILLUMINANCE, LUMINANCE AND IRRADIANCE MEASUREMENTS

### GENERAL DESCRIPTION

The HD 2021T series allows conversion of photometric and radiometric quantities as illuminance (Lux), luminance (cd/m<sup>2</sup>) and irradiance (W/m<sup>2</sup>) - across UV, UVA, UVB, UVC spectral regions and 400-950nm band - into a 0 ÷ 10 voltage signal. The voltage output 0 ÷ 10 V ( 0 ÷ 1 V, 0 ÷ 5V, 4 ÷ 20mA **on request for substantial orders**) comes factory set calibrated to the full scale range specified at the time of order. HD 2021T transmitters wide range of applications include:

- Measurement of illuminance (HD 2021T ) and luminance (HD 2021T.6) in offices and laboratories, manufacturing plants and production areas, commercial sites, theatres, museums, sports lighting, roadway lighting, tunnels and nursery-gardening systems.
- Measurement of solar irradiance, within 400nm ÷ 950nm spectral band (HD 2021T.1).
- Monitoring tanning lamps irradiance within UVA (HD 2021T.2) and UV (HD2021T.5) spectral regions, as well as efficiency control in filters for high pressure UV lamps.
- Efficiency control in UV lamps used in water purification plants, where UVC (HD2021T.4) band irradiance needs to be constantly monitored.

HD2021T transmitters can be installed either for indoor or outdoor applications (Protection: IP67). Transmitters sensitivity can be modified "on site" (1/100 ratio) using a multiturn potentiometer accessible from the outside, as shown in figure n.1. In case of extremely intense light sources measuring, the transmitter sensitivity can be reduced upon request. The HD 2021T series employs filters and photodiodes especially studied to adjust spectral response to a specific region of interest.

### INSTALLATION OF TRANSMITTERS

After choosing the right position where to install HD2021T, we need to provide the electric connections inside the transmitter. Loosen the four screws on the lid in order to lift it; the inside of the transmitter will look as in figure n.1. On the terminal board we will locate three terminals with the following tags:

GND → meaning the ground referred to power supply and output signal  
 +Vcc → where the positive pole of the power supply has to be connected (in case of continuous power being employed)

Vlux (output) → system output to be connected to the positive pole of a Multimeter or Data Logger

The sample below shows the installation of HD2021T illuminance transmitter monitoring lamps intensity. For this kind of application, HD2021T transmitters are generally installed on ceilings, close to the area where illuminance needs to be monitored (figure 2). Through a reference Luxmeter (ex. DO9721 with probe LP9021 PHOT) previously placed in the operating area, we work on HD2021T potentiometer until we get to the desired reference value. HD2021T output is able to control several adjustable feeders at the same time.

\* The full scale value can be selected in the fields A, B, C and adjusted by the user in one of the following ranges

MODEL	A	B	C	X
HD 2021T	0.02 -2 klux	0.2-20 klux	2-200klux	The full scale value can be set on a fixed value within the available ranges.
HD 2021 T1	0.2-20 W/m <sup>2</sup>	2-200 W/m <sup>2</sup>	20-2000 W/m <sup>2</sup>	
HD 2021 T2	0.2-20 W/m <sup>2</sup>	2-200 W/m <sup>2</sup>	20-2000 W/m <sup>2</sup>	
HD 2021 T3	2-200 W/m <sup>2</sup>	20-2000 W/m <sup>2</sup>		
HD 2021 T4	2-200 W/m <sup>2</sup>	20-2000 W/m <sup>2</sup>		
HD 2021 T5	0.2-20 W/m <sup>2</sup>	2-200 W/m <sup>2</sup>	20-2000 W/m <sup>2</sup>	
HD 2021 T6	20- 2000 cd/m <sup>2</sup>	0.2- 20 kcd/m <sup>2</sup>	2-200 klux	

\*\* For voltage output 0÷10Vdc please indicate: V.  
 For current output 4÷20mA please indicate: A.  
 i.e. HD 2021 TBA: Transmitter for illuminance range 0,2..20klux output 4÷20mA.

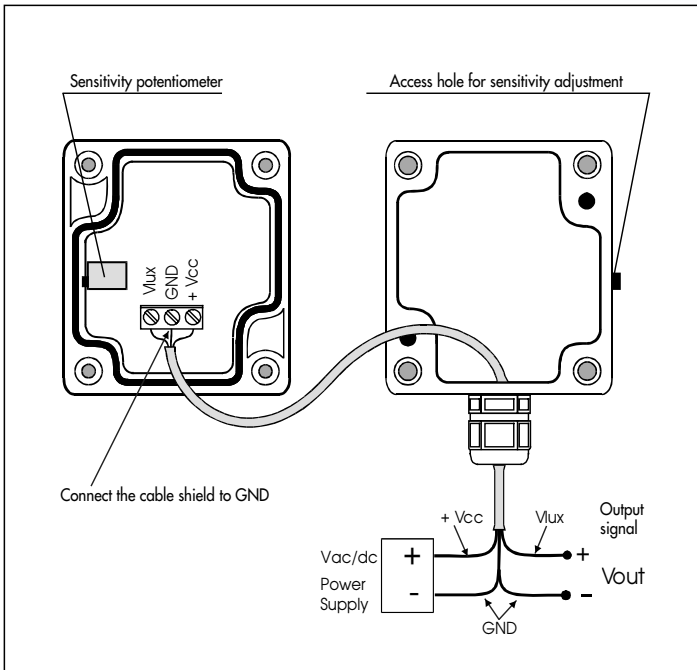


Fig.1

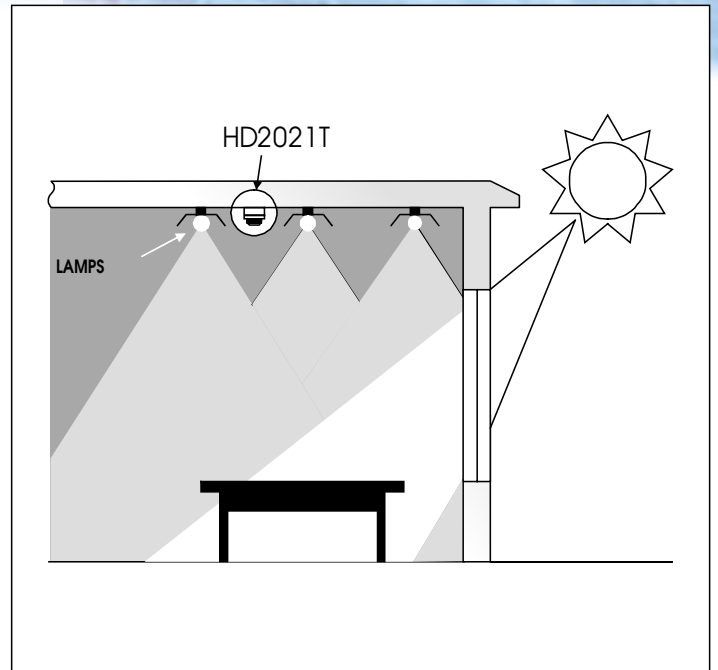
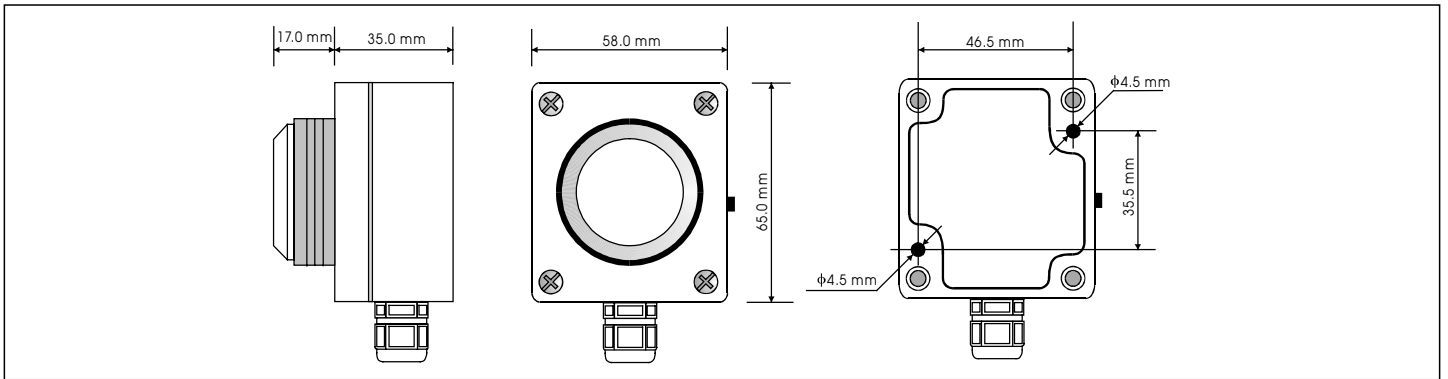
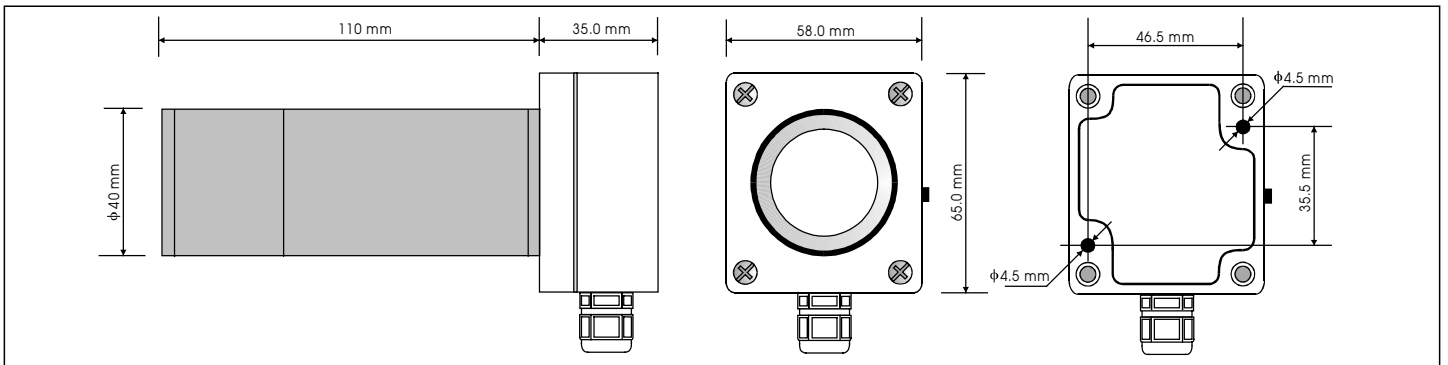


Fig.2



DIMENSIONS : HD2021T, HD2021T.1, HD2021T.2, HD2021T.3, HD2021T.4, HD2021T.5



DIMENSIONS : HD2021T.6

TECHNICAL SPECIFICATIONS

	HD2021T	HD2021T.1	HD2021T.2	HD2021T.3	HD2021T.4	HD2021T.5	HD2021T.6
Sensor	Photodiode Si	Photodiode Si	Photodiode GaP	Photodiode SiC	Photodiode SiC	Photodiode Gap	Photodiode Si
Spectral range	Curve V(λ)	450 ÷ 950 nm	UVA	UVB	UVC	UV	Curve V(λ)
Viewing angle	Corrected in accordance with the Cosine law						20 degrees in accordance with CIE 88/90
Sensitivity	5-500 mV/lux	1-100 mV/(mW/m <sup>2</sup> )	1-100 mV/(mW/m <sup>2</sup> )	0.1-10 mV/(mW/m <sup>2</sup> )		1-100 mV/(mW/m <sup>2</sup> )	0.5-50 mV/(cd/m <sup>2</sup> )
Output signal	0 ÷ 10 V (0 ÷ 1 V, 0 ÷ 5 V, 4 ÷ 20mA on request)						
Power supply	16 ÷ 40 Vdc or 24 Vac, output 0 ÷ 10 V - 10 ÷ 40 Vdc or 24 Vac for 0 ÷ 1 V, 0 ÷ 5 V output - 10 ÷ 40 Vdc for 4 ÷ 20 mA output						
Power absorption	10 mA						
Working temperature	-20 ÷ +60 °C						
Electrical protection	Protected against polarity inversions						
Maximum dimensions	58 mm x 65 mm x 52 mm						58 mm x 65 mm x 145 mm
Degree of protection	IP 67						
Maximum cable length	150 m						