Brightness Transmitter

Instruction for Use

7.1414.51.150
7.1414.51.550

Dok. No. 021328/09/22

THE WORLD OF WEATHER DATA

Safety Instructions

- Before operating with or at the device/product, read through the operating instructions.
  This manual contains instructions which should be followed on mounting, start-up, and operation.
  A non-observance might cause:
  - failure of important functions
  - endangerment of persons by electrical or mechanical effect
  - damage to objects
- Mounting, electrical connection and wiring of the device/product must be carried out only by a qualified technician who is familiar with and observes the engineering regulations, provisions and standards applicable in each case.
- Repairs and maintenance may only be carried out by trained staff or **Adolf Thies GmbH & Co. KG**. Only components and spare parts supplied and/or recommended by **Adolf Thies GmbH & Co. KG** should be used for repairs.
- Electrical devices/products must be mounted and wired only in a voltage-free state.
- **Adolf Thies GmbH & Co KG** guarantees proper functioning of the device/products provided that no modifications have been made to the mechanics, electronics or software, and that the following points are observed:
- All information, warnings and instructions for use included in these operating instructions must be taken into account and observed as this is essential to ensure trouble-free operation and a safe condition of the measuring system / device / product.
- The device / product is designed for a specific application as described in these operating instructions.
- The device / product should be operated with the accessories and consumables supplied and/or recommended by **Adolf Thies GmbH & Co KG** .
- Recommendation: As it is possible that each measuring system / device / product may, under certain conditions, and in rare cases, may also output erroneous measuring values, it is recommended using redundant systems with plausibility checks for **security-relevant applications**.

Environment

- As a longstanding manufacturer of sensors Adolf Thies GmbH & Co KG is committed to the objectives of environmental protection and is therefore willing to take back all supplied products governed by the provisions of "*ElektroG*" (German Electrical and Electronic Equipment Act) and to perform environmentally compatible disposal and recycling. We are prepared to take back all Thies products concerned free of charge if returned to Thies by our customers carriage-paid.

- Make sure you retain packaging for storage or transport of products. Should packaging however no longer be required, please arrange for recycling as the packaging materials are designed to be recycled.

Documentation

- © Copyright **Adolf Thies GmbH & Co KG**, Göttingen / Germany
- Although these operating instructions have been drawn up with due care, **Adolf Thies GmbH & Co KG** can accept no liability whatsoever for any technical and typographical errors or omissions in this document that might remain.
- We can accept no liability whatsoever for any losses arising from the information contained in this document.
- Subject to modification in terms of content.
- The device / product should not be passed on without the/these operating instructions.

Table of contents

1 Models

Order-No.	Meas. Range (Lux) (Output 1)	Meas. Range (Lux) (Output 2)	Electrical Output	Supply Voltage	Cable Length
7.1414.51.150	0...150 000 * 0...100 000 0.....50 000 0.....10 000	0...1000Lux	0...20mA 4...20mA * 0…10V(max. 5mA)	15...36V DC oder 15...24V AC	5m
7.1414.51.550	0...750 * 0...500 0...250 0.....50	0...5Lux			12m

*** = Factory setting**

2 Application

The direction-independent brightness transmitter is adapted to the sensitivity of the human eye, and serves for the acquisition of the brightness. The measuring values are delivered as analogue signals. There are two outputs available. Output 1 serves for different measuring ranges. Output 2 is used as fixed measuring range, particularly for the twilight range.
Both output signals of the brightness transmitter can be delivered as proportional voltages or currents, and can be used, for example, as input signal for the regulation of shading devices, heating and irrigation plants in automatically controlled green houses or as twilight sensor.

3 Mode of Operation

Through the sensor, and a connected electronic system the falling daylight is converted into a proportional output size. This output size can be a current of 0/4...20mA or a voltage of 0...10V (selectable through DIP-switch) according to the conditioned method of operation. Thanks to its special construction the sensor achieves an almost direction-independent sensibility in the elevation angle (height) of 0° up to 90°, and in the azimuth of 0° up to 360 °.

4 Programming of Measuring Ranges and electrical outputs

After removing of the locking screw Pg 16 (bottom part) the DIP-switch and the change-over-switch are visible.

DIP-Switch (5-pole)

Black Design

OPEN

CLOSED

or

DIP-Switsch (5-pole)

Red Design

ON

OFF

DIP-Switch (5-pole): Black Design						
Meas. Range	**Switch position**					**Order - No**
	S1	S2	S3	S4	S5	
0….10 KLux	CLOSED	OPEN	OPEN			7.1414.51.150
0…..50 KLux	OPEN	CLOSED	OPEN			
0…100 KLux	OPEN	OPEN	CLOSED			
0…150 KLux	OPEN	OPEN	OPEN			
0....50 Lux	CLOSED	OPEN	OPEN			7.1414.51.550
0...250 Lux	OPEN	CLOSED	OPEN			
0...500 Lux	OPEN	OPEN	CLOSED			
0…750 Lux	OPEN	OPEN	OPEN			
0…20 mA				OPEN	OPEN	
4…20 mA				CLOSED	CLOSED	
U / I	V ■□ mA			V □■ mA		

DIP-Switch (5-pole): Red Design						
Meas. Range	**Switch position**					**Order - No**
	S1	S2	S3	S4	S5	
0…. 10 KLux	ON	OFF	OFF			7.1414.51.150
0…..50 KLux	OFF	ON	OFF			
0…100 KLux	OFF	OFF	ON			
0…150 KLux	OFF	OFF	OFF			
0.... 50 Lux	ON	OFF	OFF			7.1414.51.550
0.. .250 Lux	OFF	ON	OFF			
0... 500 Lux	OFF	OFF	ON			
0…750 Lux	OFF	OFF	OFF			
0…20 mA				OFF	OFF	
4…20 mA				ON	ON	
U / I	V ■□ mA			V □■ mA		

5 Montage

Remark

When mounting the instrument, please take into consideration that this sensor valuates also laterally falling light, and accumulates it to the directly falling sun light.
If the brightness transmitter is mounted horizontally in front of a strongly reflecting vertical wall, the measuring values are considerably higher than they would be in the free field, or in front of a hardly reflecting surface.

The mounting of the transmitter could be done for example at a support with a boring of PG 21 or on hangers with a boring of 29mm ∅.

Mounting is carried out in vertical position.

Tools:

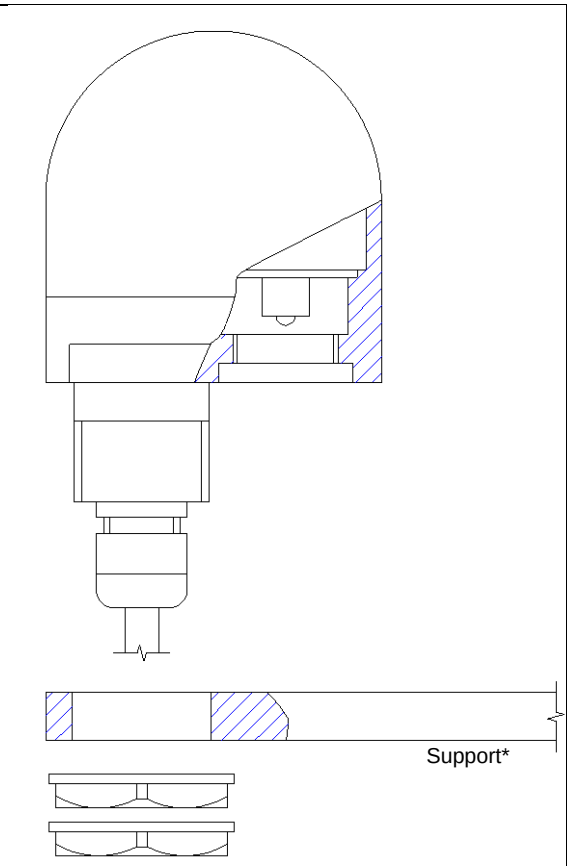
Hexagonal wrench SW36 / SW22

Procedure:

1. Push cable of the brightness transmitter through the borehole of the mast, tube, arm etc.
2. Put brightness transmitter on mast, tube, arm etc.
3. Safeguard the brightness transmitter by two hexagonal nuts (PG21, SW 36).

Caution: ***The Hexagon nuts must be tightened to 6Nm.***

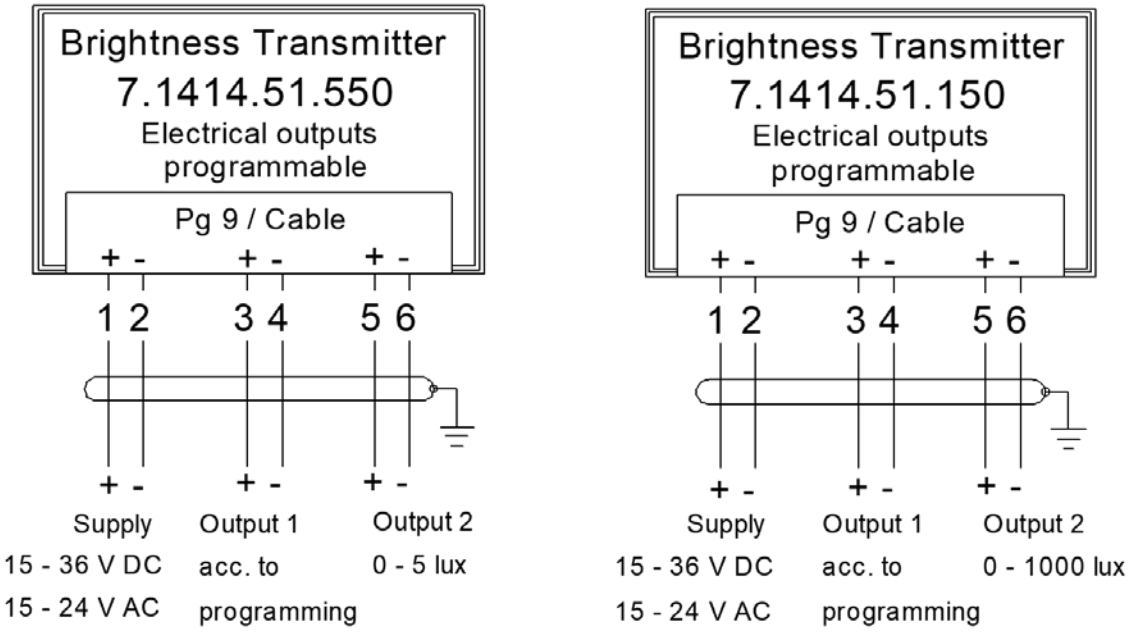
- The support* is not included in delivery.



Attention:

The output voltage of this brightness sensor can be compared only with brightness measuring transmitters showing no cosine action in the elevation angle of 0° up to 90 °, and measuring independently from direction also in the azimuth of 0° up to 360°.

6 Connecting Diagram



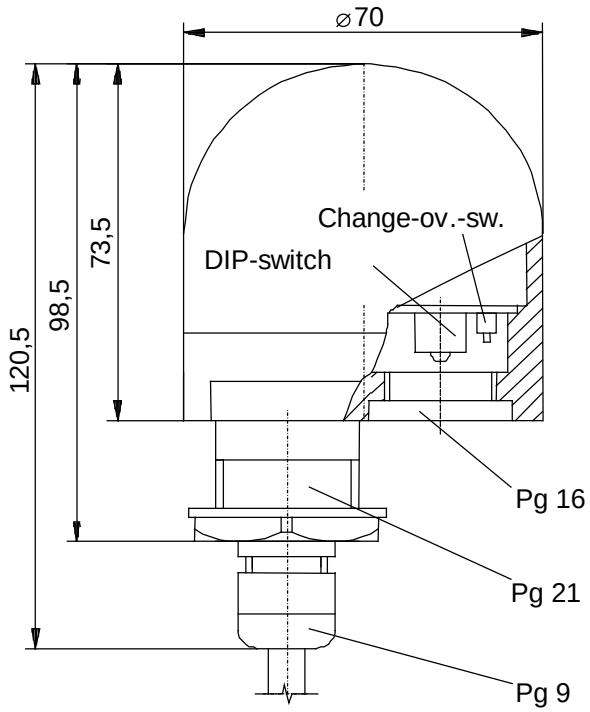
7 Maintenance

Clean the light dome at regular intervals – depending on the extent of soiling – with a soft cloth and pure water (no additives).

8 Technical Data

Meas. range	see Models
Type of sensor	BPW 21
Accuracy	± 3% of meas. range
Spectral range	350...820nm
Angel of acquisition l (Elevation)	0....90°
Angel of acquisition (Azimuth)	0...360°
Electr. output	See models
Operating voltage	See models
Load for current output	350Ω
Operating current	max. 50mA
Ambient temperature	- 30...+ 70° C
Protection	IP 66
Weight	150g (w/o cable)
Cable type	LIYCY 6 x 0,25mm²

9 Dimensional drawing



10 EC-Declaration of Conformity

Manufacturer: Adolf Thies GmbH & Co. KG
Hauptstraße 76
37083 Göttingen, Germany
http://www.thiesclima.com

Product: Helligkeitsgeber

Doc. Nr. 318-44789_CE

Article Overview:

7.1414.10.003	7.1414.10.040	7.1414.10.041	7.1414.10.061	7.1414.10.541	7.1414.10.561	7.1414.10.941	7.1414.12.040	7.1414.12.041	7.1414.12.061
7.1414.15.040	7.1414.15.041	7.1414.15.061	7.1414.22.040	7.1414.22.041	7.1414.22.061	7.1414.25.040	7.1414.25.041	7.1414.25.061	7.1414.40.002
7.1414.40.102	7.1414.40.103	7.1414.40.112	7.1414.40.141	7.1414.40.152	7.1414.51.150	7.1414.51.550	7.1414.60.000	7.1414.60.040	7.1414.60.041
7.1414.60.500	7.1414.61.000	7.1414.61.040							

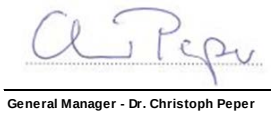
The indicated products correspond to the essential requirement of the following European Directives and Regulations:

2014/30/EU	26.02.2014	DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
2017/2102/EU	15.11.2017	DIRECTIVE (EU) 2017/2102 of the European Parliament and of the Council of November 15, 2017 amending Directive 2011/65 / EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
2012/19/EU	13.08.2012	DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE).
2018/1139/EU	04.07.2018	Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency.

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

DIN EN 61000-6-2	2019-11	Electromagnetic compatibility Immunity for industrial environment
DIN EN 61000-6-3:2007 + A1:2011	2011-09	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments
DIN EN 61010-1	2020-03	Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements
DIN EN 63000	2019-05	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Legally binding signature:



General Manager - Dr. Christoph Peper

Legally binding signature:

Development Manager - ppa. Jörg Petereit

This declaration certificates the compliance with the mentioned directives, however does not include any warranty of characteristics.
Please pay attention to the security advises of the provided instructions for use.

11 UK-CA-Declaration of Conformity

Manufacturer: Adolf Thies GmbH & Co. KG
Hauptstraße 76
37083 Göttingen, Germany
http://www.thiesclima.com

Product: Helligkeitsgeber

Doc. Nr. 318-44789_CA

Article Overview:

7.1414.10.003	7.1414.10.040	7.1414.10.041	7.1414.10.061	7.1414.10.541	7.1414.10.561	7.1414.10.941	7.1414.12.040	7.1414.12.041	7.1414.12.061
7.1414.15.040	7.1414.15.041	7.1414.15.061	7.1414.22.040	7.1414.22.041	7.1414.22.061	7.1414.25.040	7.1414.25.041	7.1414.25.061	7.1414.40.002
7.1414.40.102	7.1414.40.103	7.1414.40.112	7.1414.40.141	7.1414.40.152	7.1414.51.150	7.1414.51.550	7.1414.60.000	7.1414.60.040	7.1414.60.041
7.1414.60.500	7.1414.61.000	7.1414.61.040							

The indicated products correspond to the essential requirement of the following Directives and Regulations:

1091	08.12.2016	The Electromagnetic Compatibility Regulations 2016
RoHS Regulations 2012	01.01.2021	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
3113	01.01.2021	Regulations: waste electrical and electronic equipment (WEEE)
2018/1139/EU	04.07.2018	Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency.

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

BS EN IEC 61000-6-2	25.02.2019	Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments
BS EN IEC 61000-6-3	30.03.2021	Electromagnetic compatibility (EMC). Generic standards. Emission standard for equipment in residential environments
BS EN 61010-1+A1	31.03.2017	Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements
BS EN IEC 63000	10.12.2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Legally binding signature:

General Manager - Dr. Christoph Peper

Legally binding signature:

Development Manager - ppa. Jörg Petereit

This declaration certificates the compliance with the mentioned directives, however does not include any warranty of characteristics.
Please pay attention to the security advises of the provided instructions for use.

Please contact us for your system requirements.
We advise you gladly.

ADOLF THIES GMBH & CO. KG
Meteorology and environmental metrology
Hauptstraße 76 · 37083 Göttingen · Germany
Phone +49 551 79001-0 · Fax +49 551 79001-65
info@thiesclima.com

www.thiesclima.com