

Instruction for Use

021062/01/06

Silicon-Sensor PAR 5.3

7.1418.00.xxx



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1 Models

Order- No.	Elect. output	Measuring range	Operating Voltage
7.1418.00.040	0 ... 20 mA	0 ... 2255 $\mu\text{mol}/(\text{s}\cdot\text{m}^2)$	+10 ... +24 V DC
7.1418.00.041	4 ... 20 mA	0 ... 2255 $\mu\text{mol}/(\text{s}\cdot\text{m}^2)$	+10 ... +24 V DC
7.1418.00.051	0 ... 5 V	0 ... 2255 $\mu\text{mol}/(\text{s}\cdot\text{m}^2)$	+10 ... +24 V DC
7.1418.00.061	0 ... 10 V	0 ... 2255 $\mu\text{mol}/(\text{s}\cdot\text{m}^2)$	+14 ... +24 V DC

2 Application

With the *Sensor PAR 5.3* photochemical development processes both in outdoor plants and in greenhouse plants can be optimised.

The ability of a plant to absorb light through chlorophyll is of eminent importance for its growth. The sensitivity of the sensor corresponds to the optimum effectiveness of chlorophyll.

When there is insufficient light, the plant has too little energy to organize its growth. In the presence of too much light, it emits energy in the form of fluorescence. This is a criterion for the condition of the plant.

Too much light leads to desiccation and burning.

3 Construction

The *Sensor PAR 5.3* is a fragile electronic-optical device. The housing is made of anodized aluminium with an uv-transparent dome of plastic. The instrument is protected against jets of water and rain. A small package of silica-gel serves for drying the inner housing and protects the dome against steaming-up.

The measured value is emitted as a standardized analogue signal in correspondence with the measuring range.

Every *Sensor PAR 5.3* includes a testing certificate.

4 Installation

The mounting shall be effected with greatest care. The *Sensor PAR 5.3* is fixed with two screws M4 onto a suited holder, and should be exactly in horizontal position. The mounting site should be selected in a way, that the sun radiation reaches the surface of the sensor all day. The *Sensor PAR 5.3* must have a free horizon into all directions.

For the data transmission please use the cable available. For the connector pin assignment please refer to chapter 5. When connecting the cable coupling to the *Sensor PAR 5.3* please take care that the mounting notches of coupling and plug coincide. The cap nut is to be screwed tightly.

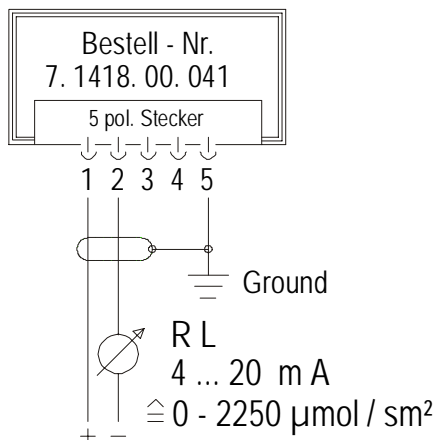
In case of cable extension please select a 3- or 5-core version, watertight.

A cable length of up to 50 m is possible for instruments with voltage output. Recommended is then a cable with shielding (for ex. 5 x 0,25 mm² LiYCY).

Moreover, in mounting the instrument, make sure that the instrument dome is easily accessible as dirt and impurities influence the measurement results considerably. - Please bear the operating voltage in mind.

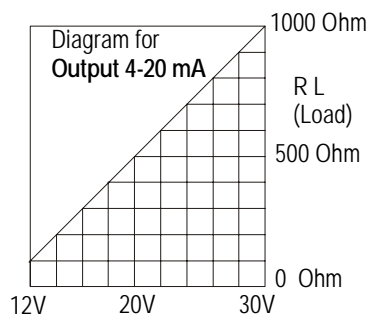
5 Connecting Diagram

Order – No.
7.1418.00.041

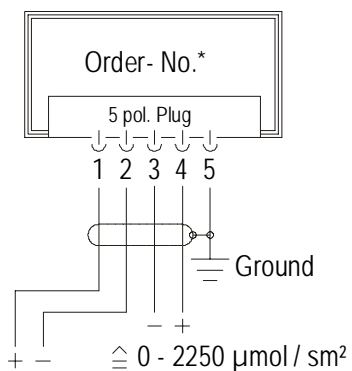


Main Power
see Diagram

RL- Function of the Main Power



Order – No.
7.1418.00.040
7.1418.00.051
7.1418.00.061

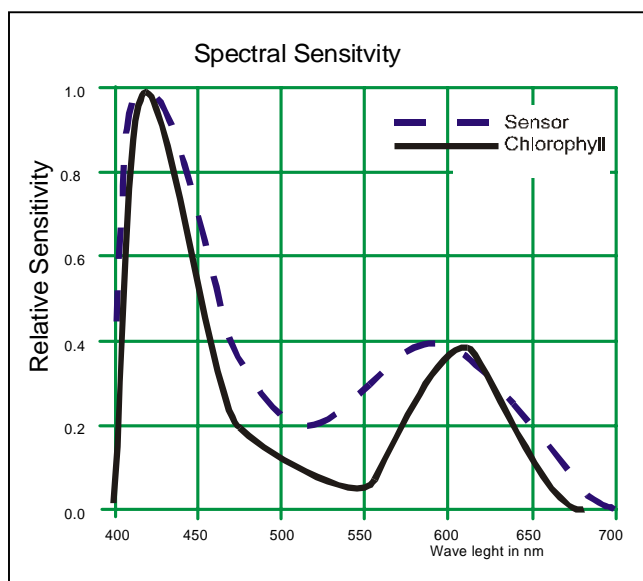


Power	Output	*Order-No.
10 ... 24 V DC	0 ... 20 mA	7.1418.00.040
10 ... 24 V DC	0 ... 5 V	7.1418.00.051
14 ... 24 V DC	0 ... 10 V	7.1418.00.061

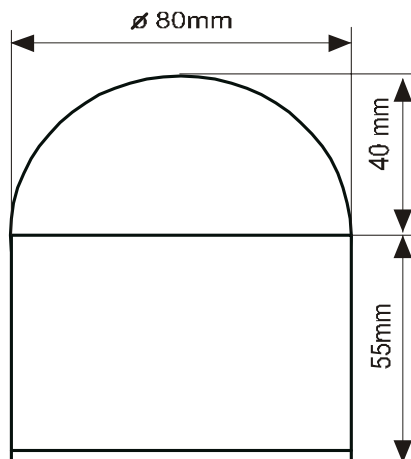
6 Technical Data

Measuring range	0... 2255 $\mu\text{mol}/(\text{s}\cdot\text{m}^2)$ corresponds to 0.... 500 W/m^2	
Spectral range	380 ... 700 nm	
Max. spectral sensitivity	420 nm and 600 nm	
Operating temperature	-20°C - +60°C	
Output	Electr. Output:	Load:
7.1415.09.040	0 ...20 mA	see RL- Diagram
7:1415:09:041	4. 20 mA	see RL- Diagram
7.1415.09.051	0 ... 5 V	>1M Ω
7.1415.09.061	0 ...10V	>1M Ω
Power supply	Operation voltage:	Power consumption:
7.1415.09.040	10 ...24 V DC	typ. 3 mA + I out / max. 6 mA + I out
7:1415:09:041	10 30 V DC , 2-leads-circuit	I out (4-20 mA)
7.1415.09.051	10 24 V DC	typ. 3 mA / max. 6 mA
7.1415.09.061	14 ...24 V DC	typ. 3 mA / max. 6 mA
Switch on time	< 1 sec	
Switch off time	< 12 sec	
Sensor type	Silicon- photodiode	
Diffuser material	PTFE	
Dome	Plastics (PMMA)	
Cosine correction	fault f2 <3%	
Linearity	< 1%	
Abs. fault	< 10%	
Installation	2 screws M4 in the ground of housing	
Kind of connection	Plug with 5 m cable	
Weight	approx. 0.3 kg	

- For the sensor PAR 5.3 applies: $1\text{W}/\text{m}^2 = 4,51 \mu\text{mol}/(\text{s}\cdot\text{m}^2)$



7 Dimension diagram



8 Maintenance

The electronic-optical part of the *Sensor PAR 5.3* needs no service. A check of the calibration is possible acc. to the customer's request. The dome, and the housing are to be cleaned, if necessary, with a soft and wet cloth twice a year. Please use only liquid cleaning agents without abrasive additives or solvents. The outer cleaning should be done with clear water or possibly with washing-up liquid.

9 Guarantee

Broken glass or damage resulting from improper handling is not included in the guarantee. The guarantee expires immediately if the instrument is opened.

10 Accessories (optional)

Adapter compact	506664	(mounting plate)
Universal Mast holder	506614	(clamping range 48 - 102 mm)

11 EC-Declaration of Conformity

Document-No.: 000319

Month: 06 Year: 08

Manufacturer: **ADOLF THIES GmbH & Co. KG**

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Description of Product: **Pyranometer; Silicon Pyranometer; UVAB Sensor; UVB Sensor; Silicon-Sensor PAR; Sunshine Indicator**

Article No.	7.1415.05.040	7.1415.05.041	7.1415.05.051	7.1415.05.061
7.1415.09.040	7.1415.09.041	7.1415.09.051	7.1415.09.061	7.1416.10.040
7.1416.10.041	7.1416.10.051	7.1416.10.061	7.1416.20.040	7.1416.20.041
7.1416.20.051	7.1416.20.061	7.1418.00.040	7.1418.00.041	7.1418.00.051
7.1418.00.061	7.1420.00.000			

specified technical data in the document: **021430/12/04; 021006/07/01; 021052/11/03; 021054/05/02; 021051/01/06; 021049/05/04**

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

- 2004/108/EC DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
- 2006/95/EC DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
- 552/2004/EC Regulation (EC) No 552/2004 of the European Parliament and the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)

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

Reference number	Specification
IEC 61000-6-2: 2005	Electromagnetic compatibility Immunity for industrial environment
IEC 61000-6-3: 2006	Electromagnetic compatibility Emission standard for residential, commercial and light industrial environments
IEC 61010-1: 2001	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements

Place: Göttingen

Date: 26.06.2008

Legally binding signature:

issuer:

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Wolfgang Behrens, General Manager

.....
Joachim Beinhorn, Development Manager

This declaration certifies 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.



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