



INDIUM SENSOR

Elektronische Geräte für Industrie und Umwelt

Type X.3 Series



This type has been designed to meet the highest demands. It's equipped with a dome made of Poly(methyl methacrylate) (PMMA). This material is UV-penetrable and long-term resistant against radiation and environmental conditions - that's why it is used for aircraft and submarines windows. Parts are silicone sealed to keep the interior airtight and free of dust. Internal humidity is reduced by a desiccant to prevent the glass from fogging. This desiccant can easily be changed if required. The aluminum housing is anodized and scratch-proof for long term outside use. The natural metal color keeps the device from getting overheated at intense solar radiation.



UV- E - measuring head type 1.3

UV-E-sensitivity

Long UV radiation (above 323 nm) makes people tan and has positive effects on the human immune system. Shorter UV-radiation in contrast may cause irreversible damage and is listed in a recommendation by CIE (Commission Internationale de l'Eclairage) which summarizes all action spectra that may cause damage to the human skin.

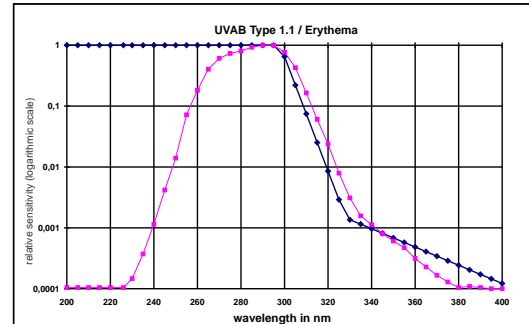
This recommendation is standardized in German DIN 5050.

A popular example is the UVI sunburn index.

UV-E measuring head type 1.3

The measuring head independently determines UV-E-radiation (rom 265 nm - 315 nm).

Measuring results are allowing immediate conclusions about medically and biologically relevant connections within this band of radiation. The measuring head is used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The measuring head type 1.3 has a weatherproof aluminum housing. The dome is made of plastic (PMMA). The values are cosine corrected.

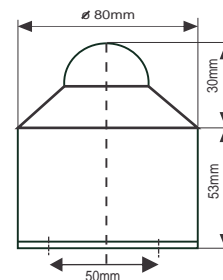


Technical specifications:

| | |
|-----------------------------|---|
| measuring range UV-E | 0 - ca. 0.5 W/m ² |
| spectr. sensitivity UV-E | 265nm - 315nm |
| max. of spectr. sensitivity | 297nm |
| sensor system | SiC |
| working temperature | -30°C - +60°C -22 - +140°F |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| power | +9V - +24V / 750µA |
| turn on time | < 1 s |
| turn off time | < 1 s |
| installation | 2 screws M4 in the bottom |
| connector | downward |
| diffusor | PTFE |
| housing-dome | PMMA |
| cosine correction | error f2 < 3% |
| linearity | < +/-3% |
| absolute error | < +/-10% |
| weight | 400g 14 oz |



Dimensions:



Specifications are subject to change without notice.

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UV- B measuring head type 1B.3

UV-B- sensitivity

Long UV radiation (above 323 nm) makes people tan and has positive effects on the human immune system. Shorter UV-radiation in contrast may cause irreversible damage and is listed in a recommendation by CIE (Commission Internationale de l'Eclairage) which summarizes all action spectra that may cause damage to the human skin.

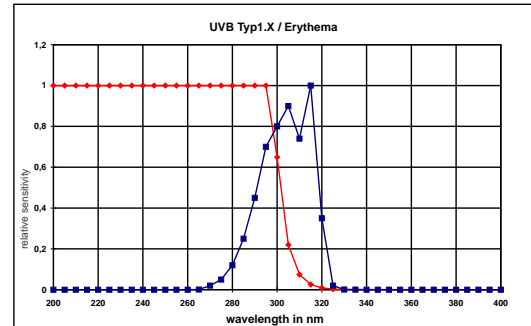
This recommendation is standardized in German DIN 5050.

A popular example is the UVI sunburn index.

UV-B measuring head type 1B.3

The measuring head independently determines UV-B-radiation from 280nm - 320nm.

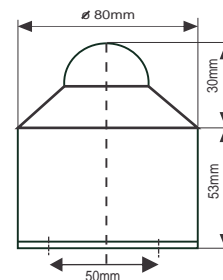
Measuring results are allowing immediate conclusions about medically and biologically relevant connections within this band of radiation. The measuring head is used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The measuring head type 1B.3 has a weatherproof aluminum housing. The dome is made of plastic (PMMA). The values are cosine corrected.



Technical specifications:

| | | |
|--------------------------|---|----------------------------|
| measuring range | UV-B | 0 - ca. 5 W/m ² |
| spectr. sensitivity UV-B | 280nm - 320nm | |
| max. spectr. sensitivity | 315nm | |
| sensor system | SiC interf. filter | |
| working temperature | -30°C - +60°C -22 - +140°F | |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** | |
| power | +10V - +24V / 750µA | |
| time to switch on | < 1 s | |
| time to switch off | < 1 s | |
| installation | 2 screws M4 in the bottom | |
| connector | bottom, downward | |
| diffusor | PTFE | |
| housing-dome | PMMA | |
| cosine correction | error f2 < 3% | |
| linearity | < +/-3% | |
| absolute error | < +/-10% | |
| weight | 400g 14 oz | |

Dimensions:



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UV-E measuring head type 1E.3

UV-E sensitivity

Long UV radiation (above 323 nm) makes people tan and has positive effects on the human immune system. Shorter UV-radiation in contrast may cause irreversible damage and is listed in a recommendation by CIE (Commission Internationale de l'Eclairage) which summarizes all action spectra that may cause damage to the human skin.

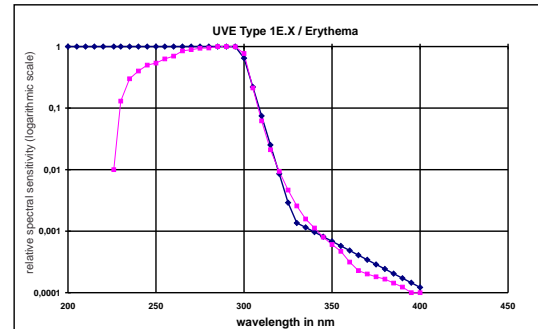
This recommendation is standardized in German DIN 5050.

A popular example is the UVI sunburn index.

UV-E measuring head type 1E.3

The measuring head determines radiation in the UV-E spectral range (Erythema).

Measuring results are allowing immediate conclusions about medically and biologically relevant connections within this band of radiation. The measuring head is used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The measuring head type 1.E1 features a weatherproof aluminum housing. The dome is made of plastic (PMMA). The values are cosine corrected.

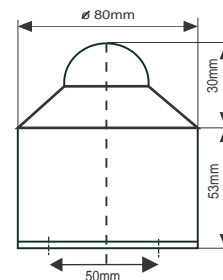


Technical specifications:

| | |
|-----------------------------|--|
| measuring range UV-E | 0 - ca. 0.5 W/m ² |
| spectr. sensitivity UV-E | 230nm - 310nm |
| max. of spectr. sensitivity | 295nm |
| sensor system | SiC interf. filter |
| working temperature | -30°C - +60°C -22 - +140°F |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** +10V - +24V / 750µA |
| power | < 1 s |
| time to switch on | < 1 s |
| time to switch off | < 1 s |
| installation | 2 screws M4 in the bottom |
| connector | bottom, downward |
| diffusor | PTFE |
| housing-dome | PMMA |
| cosine correction | error f2 < 3% |
| linearity | < +/-3% |
| absolute error | < +/-10% |
| weight | 400g 14 oz |



Dimensions:



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UV- A measuring head type 2.3

UVA sensitivity

Long UV radiation (above 313 nm) makes people tan and has positive effects on the human immune system. Shorter UV-radiation in contrast may cause irreversible damage and is listed in a recommendation by CIE (Commission Internationale de l'Eclairage) which summarizes all action spectra that may cause damage to the human skin.

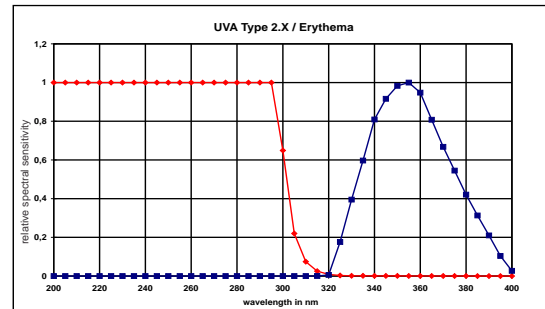
This recommendation is standardized in German DIN 5050.

A popular example is the UVI sunburn index.

UVA measuring head type 2.3

The measuring head independently determines UV-A-radiation (global, from 310nm - 400nm).

Measuring results are allowing immediate conclusions about medically and biologically relevant connections within this band of radiation. The measuring head is used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The measuring head type 2.3 has a weatherproof aluminum housing. The dome is made of plastic (PMMA). The values are cosine corrected.



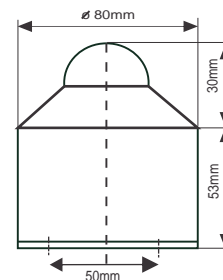
Technical specifications:

| | |
|-----------------------------|---|
| measuring range UV-A | 0 - ca. 100 W/m ² |
| spectr. sensitivity UV-A | 310nm - 400nm |
| max. of spectr. Sensitivity | 355nm |
| sensor system | SiC filter |
| working temperature | -30°C - +60°C -22 - +140°F |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| RL | 0 Ohm .. 100 Ohm |
| power | +10V - +24V / 750µA |
| turn on time | < 1 s |
| turn off time | < 1 s |
| installation | 2 screws M4 in the bottom |
| connector | bottom, downward |
| diffusor | PTFE |
| housing-dome | PMMA |
| direction char.of rad. | error f2 < 3% |
| linearity | < 1% |
| absolute error | < 10% |
| weight | 400g 14 oz |

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UV-A/UV-B measuring head type 2AB.3

UVA/UVB sensitivity

Long UV radiation (above 313 nm) makes people tan and has positive effects on the human immune system. Shorter UV-radiation in contrast may cause irreversible damage and is listed in a recommendation by CIE (Commission Internationale de l'Eclairage) which summarizes all action spectra that may cause damage to the human skin.

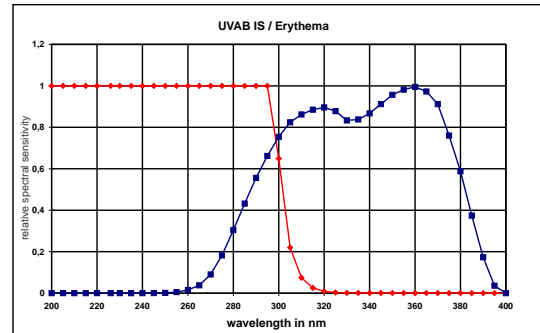
This recommendation is standardized in German DIN 5050.

A popular example is the UVI sunburn index.

UVA/UVB measuring head type 2AB.3

The measuring head independently determines UVA- and UVB-radiation (global, from 280nm - 400nm).

Measuring results are allowing immediate conclusions about medically and biologically relevant connections within this band of radiation. The measuring head is used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The measuring head type 2AB.3 has a weatherproof aluminum housing. The dome is made of plastic (PMMA). The values are cosine corrected.



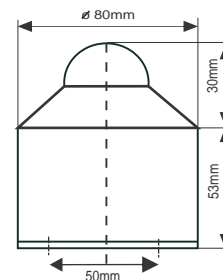
Technical specifications:

| | |
|-----------------------------|--|
| measuring range UV-AB | 0 - ca. 150 W/m ² |
| spectr. sensitivity UV-AB | 280nm - 400nm |
| max. of spectr. Sensitivity | 365nm |
| sensor system | GaP |
| working temperature | -30°C - +60°C -22 - +140°F |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** +10V - +24V / 750µA |
| power | |
| turn on time | < 1 s |
| turn off time | < 1 s |
| installation | 2 screws M4 in the bottom |
| connector | bottom, downward |
| diffusor | PTFE |
| housing-dome | PMMA |
| direction char.of rad. | error f2 <3% |
| linearity | < 1% |
| absolute error | < 10% |
| weight | 400g 14 oz |

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Elektronische Geräte für Industrie und Umwelt

Global radiation measuring head type 3.3

Global radiation

All diffuse and direct solar radiation reaching the surface of the earth is called global radiation.

It ranges from short (300nm (UV-B)) to long (5000 nm (IR)) wavelength.

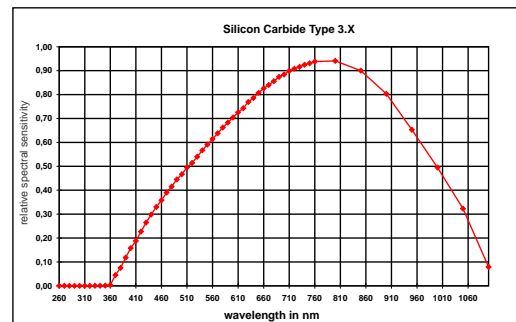
Global measuring head type 3.3

The sensor detects almost 90% of sunlight in the range of wavelength between 400 nm and 1100 nm and is covering the range of the uv-, vis- and some of the ir-light.

The measuring results are allowing conclusions about medical and biological connections by comparing to other spectral ranges.

The measuring head can be used in medical and biological research, in weather information and forecast systems, in climate research, in agriculture and for public information in general.

The measuring head type 3.3 features a weatherproof aluminum housing. The results are cosine corrected. The dome is made of plastic (PMMA). This device can be equipped with 4 different output signal variations.

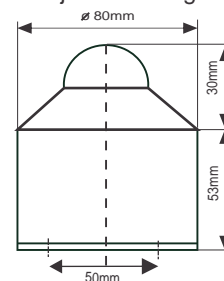


Technical specifications

| | |
|---------------------------|---|
| Global measuring range | 0 - ca. 1300 W/m ² |
| Spectr. sensitivity | 400 nm - 1100 nm |
| Max. spectral sensitivity | 780 nm |
| Sensor system | Silicon |
| Working temperature | -55 - +80°C -70 - +170 °F |
| Signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| Power supply | +9V - +24V/*+14V-+24V **RL(0-100Ohm) |
| Installation | 2 screws M4 in the bottom |
| Connector cable | downward |
| Diffusor material | PTFE |
| Dome material | PMMA |
| Cosine correcture | error f2 < 3% |
| Linearity | < 1% |
| Abs. error | < 10 % |
| Dark voltage (E=0) | < 10 mV |
| Weight | 400g 14 oz |

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V-Lambda (Luminosity) radiation sensor type 4.3

V-Lambda radiation

Luminosity (V-Lambda) covers the spectral range of visible light, it corresponds to the sensitivity of the human eye. The measured value is allowing clues about the perceived brightness of light.

Spectral range stretches from the end of ultraviolet (400nm) to the beginning of infrared (720). Maximum sensitivity is reached around 555nm.

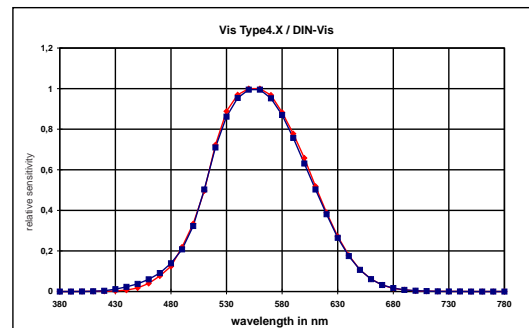
Detected exposure rates can easily be converted into Illuminance in Lux.

Measurements in this range do have a great significance for illumination projects and workplace design, for example.

Luminosity measuring head type 4.3

V-Lambda sensors are used in medical research, agricultura, automotive industry and measurement of artificial light. Spectral sensitivity of the sensor closely resembles the one of the human eye.

The measuring head type 4.3 features a weatherproof aluminum housing. The results are cosine corrected. The dome is made of plastic (PMMA).



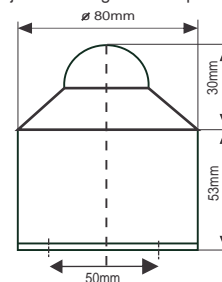
Technical specifications

| | |
|---------------------------|--|
| Measuring range | 0 - ca. 170 kLux |
| Spectr. sensitivity | 360 nm - 760 nm |
| Max. spectral sensitivity | 550 nm |
| Sensor system | Si interf. filter |
| Working temperature | -55 - +80°C -70 - +170 °F |
| Signal output | 0V - 5V/0V-10V* / 4mA-20mA/0mA-20mA** |
| Power supply | +9V - +24V/* +14V-+24V **RL(0-100Ohm) |
| Installation | 2 screws M4 in the bottom |

| | |
|--------------------|---------------|
| Connector cable | downward |
| Diffusor material | PTFE |
| Dome material | PMMA |
| Cosine correcture | error f2 < 3% |
| Linearity | < 1% |
| Abs. error | < 10 % |
| Dark voltage (E=0) | < 10 mV |
| Weight | 400g 14 oz |

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Quantum radiation measuring head type 6.3

Quantum Radiation

The ability to absorb light radiation is required for herbal life, chlorophyll has a special significance in that process.

If the intensity of light is too low, the plant will not get enough energy to grow, if the intensity is too high the plant will emit energy as fluorescence. This is an indication for the growth conditions of a plant.

If the light is too strong the plant will get dry and burned.

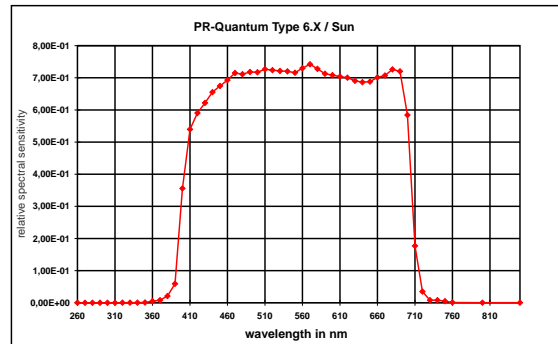
Quantum sensor type 6.3

Sensitivity corresponds to the absorption spectrum of chlorophyll. Measuring results are allowing immediate conclusions about the conditions for plant growth.

The quantum measuring head may be used for optimizing photochemical processes of open-land and greenhouse agriculture.

The sensor is used in agricultural research, gardening, agriculture as well as in education.

The housing is made of weatherproof anodized aluminum. Results are cosine corrected. The dome is made of plastic (PMMA).



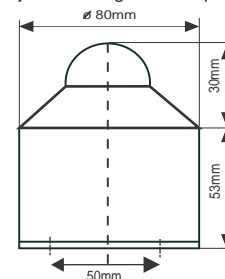
Technical specifications

| | |
|---------------------------|--|
| Measuring range | 0 - ca. 3000 $\mu\text{mol}/\text{sm}^2$ |
| Spectr. sensitivity | 380 nm - 720 nm |
| Max. spectral sensitivity | 420 nm and 700 nm |
| Sensor system | Si interf. filter |
| Working temperature | -55 - +80°C -70 - +170 °F |
| Signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| Power supply | +9V - +24V/*+14V+24V **RL(0-100Ohm) |
| Installation | 2 screws M4 in the bottom |

| | |
|--------------------|---------------|
| Connector cable | downward |
| Diffusor material | PTFE |
| Dome material | PMMA |
| Cosine correcture | error f2 < 3% |
| Linearity | < 1% |
| Abs. error | < 10 % |
| Dark voltage (E=0) | < 10 mV |
| Weight | 400g 14 oz |

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INDIUM SENSOR

Elektronische Geräte für Industrie und Umwelt

Global radiation measuring head type 7.3

Global radiation

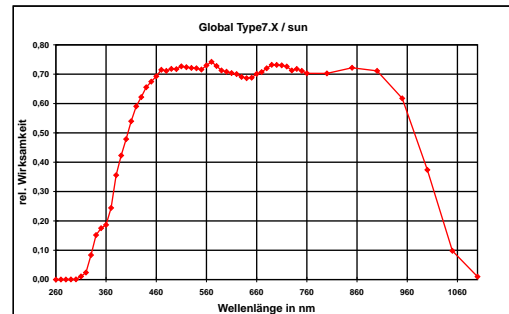
The complete direct and diffuse sun radiation hitting the ground is called global radiation. The spectral range extends from the short-wave range at 300 nm (UV-B) to the long-wave range at 5000 nm (IR). The radiation energy above 1000nm however is less than 10% only.

Global measuring head type 7.3

The sensor is able to detect almost 90% of the sunlight in the range between 400 nm and 1100 nm and includes UV, VIS and some of IR.

Measuring results are allowing immediate conclusions about medically and biologically relevant connections by comparing them to other spectral ranges.

The measuring head may be used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general. The aluminum housing is weatherproof. The dome is made of plastic (PMMA). Measuring results are cosine corrected.

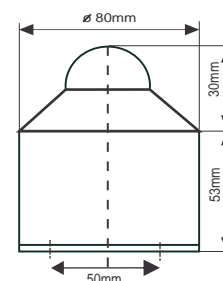


Technical specifications

| | |
|---------------------------|--|
| global measuring range | 0 - approx. 1300 W/m ² |
| spectral sensitivity | 400 nm - 1100 nm |
| max. spectral sensitivity | 780 nm |
| sensor system | Si + filter |
| working temperature | -20 - +80 °C -4 - +180° F |
| signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| power supply | +10 V - +18 V |
| installation | 2 screws M4 in the bottom of the case |
| connector | downward |
| diffusor | PTFE |
| dome | PMMA |
| cosine correction | error f2 < 3% |
| linearity | < 1% |
| abs. error | < 10 % |
| residual voltage (E=0) | < 10 mV |
| weight | 400g 14 oz |

Specifications are subject to change without notice.

Dimensions:



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Infrared radiation measuring head type 8.3

Infrared radiation

The direct and diffuse solar radiation in the range from 700 nm up to 5000 reaching the ground is called infrared radiation.

Infrared measuring head type 8.3

The sensor detects almost 30 % of the sunlight in the range of 800 nm to 1100 nm including the most relevant part of IR.

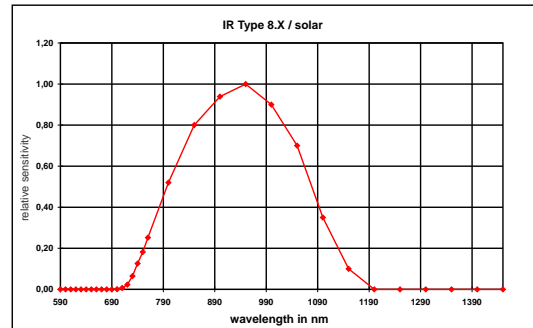
Measuring results are allowing immediate conclusions about medically and biologically relevant connections by comparing them to other spectral ranges.

The measuring head may be used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general.

The measuring head may be used in medicine, biological research, weather information and forecast systems, in climate research and for public information in general.

The aluminum housing is weatherproof, the dome is made of plastic (PMMA).

The measuring results are cosine corrected.



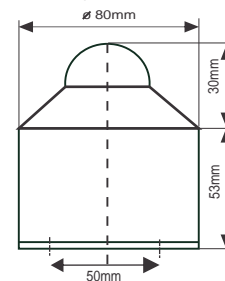
Technical specifications

| | |
|---------------------------|---|
| Measuring range | 0 - ca. 400 W/m ² |
| Spectr. sensitivity | 800 nm - 1100 nm |
| Max. spectral sensitivity | 950 nm |
| Sensor system | Si + filter |
| Working temperature | -20 - +60°C |
| Signal output | 0V - 5V/0V-10V*/ 4mA-20mA/0mA-20mA** |
| Power supply | +9V - +24V/*+14V-+24V **RL(0-100Ohm) |
| Installation | 2 screws M4 in the bottom |

| | |
|--------------------|---------------|
| Connector cable | downward |
| Diffusor material | PTFE |
| Dome material | PMMA |
| Cosine correcture | error f2 < 3% |
| Linearity | < 1% |
| Abs. error | < 10 % |
| Dark voltage (E=0) | < 10 mV |
| Weight | 400g 14 oz |

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