Our products
for solar radiation measurement

- **Pyranometer**
- **Radiometers for global radiation, UV, PAR, nIR, brightness**
- **Sunshine duration and energy sensors**
- **Radiation balance meter and albedometer**
- **Light lances and ball sensors**
- **Soil heat flux and temperature sensors**

including amplifiers, leveling and ventilation units, shade brackets and power supplies, data loggers and dial-up adapters

Main application fields
of our sensors

- **Meteorology and environmental research**
- **Public information (f.i. UV-index)**
- **Building control systems (BCS) (three-side-sensor)**
- **Agriculture and forestry**
- **Solar Energy Industry / PV systems**
- **Materials science and building physics**

Spectral-range

Gamma rays — Cosmic radiation
X-rays
Ultraviolet
Visible radiation
Infrared
Microwaves
Radio waves
Short waves
Long waves
Alternating current (AC)

Nomenklatura
of standard devices

type 11.6.61XY.ZZaa

X... Spectral-range
1 UV-B/UV-E
2 UV-A
3 Global radiation
4 V-Lambda (Illumination)
5 PAR
6 Quantum
7 IR
8 Sunshine duration
9 SSD and components

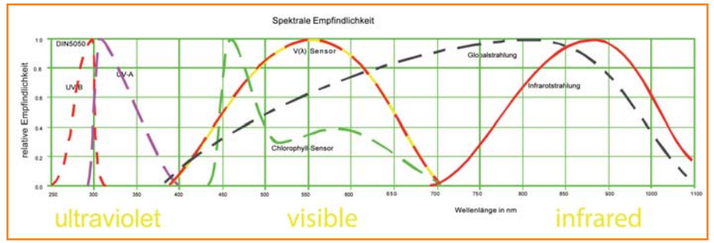
Y... design 1...7

ZZ... acces-sories z.B. .10 with mounting plate
.20 with ventilation
(for more see list)

aa... el. output signal
.40 with 0...20mA output
.41 with 4...20mA output
.51 with 0... 5 V output
.61 with 0...10 V output
.71 with 0...2,5 V output
.81 with 0...2,0 V output

Sensor spectra

The measuring instruments are used depending on the design professional measurements in meteorology or the general environmental monitoring and can function with spectral changes in the areas UV-A, UV-B, UV-E (erythema), V(λ), global radiation, photosynthesis (PAR) and nIR also in other f.i. agricultural and energy-related applications. Additionally, sunshine- and energy sensors are available. Various housing designs allow the use to hand-held devices as well as in building management or autonomous environmental monitoring stations.



Our services
in environmental engineering

Engineering and scientific services

- Consulting, planning and design of air quality, meteorological and hydrological measurement systems and monitoring networks
- Independent power supplies with photovoltaic technologies, wind and / or fuel cell use
- Supervision of operational installation of the measuring technique including commissioning and on-site inspection (worldwide)
- Highly qualified after-sales service for many years
- Implementation of service measurements for detection of wind, turbulence, precipitation, evaporation and solar radiation, including data processing
- Serverdeployment for geodata delivery over Internet data portal via www.meteosens.de or www.hydrosens.de
- Data analysis and reports in the technical climatology

SolarSens
UTK-type No. 11.6.6XXX.XXXX

Spectral-range	Measuring range	Unit	Design 1 (Quartz-glass-dome) d = 80 mm electr. output				Design 2 (glass-dome) d = 80 mm electr. output				Design 3 (PMMA-dome) d = 80 mm electr. output				Design 4 (glass-calotte) d = 42 mm electr. output				Design 5 (PMMA-calotte) d = 42 mm electr. output			
			0...20 mA	4...20 mA	0...5 VDC	0...10 VDC*	0...20 mA	4...20 mA	0...5 VDC	0...10 VDC*	0...20 mA	4...20 mA	0...5 VDC	0...10 VDC*	0...20 mA	4...20 mA	0...5 VDC	0...10 VDC*	0...20 mA	4...20 mA	0...5 VDC	0...10 VDC*
			Type-number				Type-number				Type-number				Type-number				Type-number			
UV																						
UV-B	0...5	W/m²	6111.X340	6111.X341	6111.X351	6111.X361	-	-	-	-	6113.X040	6113.X041	6113.X051	6113.X061	-	-	-	-	6115.X040	6115.X041	6115.X051	6115.X061
UV-E	0...0,5	W/m²	6111.X440	6111.X441	6111.X451	6111.X461	-	-	-	-	6113.X140	6113.X141	6113.X151	6113.X161	-	-	-	-	6115.X140	6115.X141	6115.X151	6115.X161
UV-A	0...100	W/m²	6111.X240	6111.X241	6111.X251	6111.X261	-	-	-	-	6123.X040	6123.X041	6123.X051	6123.X061	-	-	-	-	6125.X040	6125.X041	6125.X051	6125.X061
UV-A/B	0...100/5	W/m²	6111.X040	6111.X041	6111.X051	6111.X061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UV-A/E	0...100/0,5	W/m²	6111.X140	6111.X141	6111.X151	6111.X161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Global																						
Box sensitivity	0...1.300	W/m²	6131.X040	6131.X041	6131.X051	6131.X061	6132.X040	6132.X041	6132.X051	6132.X061	6133.X040	6133.X041	6133.X051	6133.X061	6134.X040	6134.X041	6134.X051	6134.X061	6135.X040	6135.X041	6135.X051	6135.X061
Si sensitivity	0...1.300	W/m²	6131.X140	6131.X141	6131.X151	6131.X161	6132.X140	6132.X141	6132.X151	6132.X161	6133.X140	6133.X141	6133.X151	6133.X161	6134.X140	6134.X141	6134.X151	6134.X161	6135.X140	6135.X141	6135.X151	6135.X161
Pyranometer sensitivity	0...1.300	W/m²	6131.X240	6131.X241	6131.X251	6131.X261	6132.X240	6132.X241	6132.X251	6132.X261	-	-	-	-	-	-	-	-	-	-	-	-
V-Lambda																						
illumination 1	0...100	Klux	-	-	-	-	6142.X040	6142.X041	6142.X051	6142.X061	6143.X040	6143.X041	6143.X051	6143.X061	6144.X040	6144.X041	6144.X051	6144.X061	6145.X040	6145.X041	6145.X051	6145.X061
illumination 2	0...150	Klux	-	-	-	-	6142.X140	6142.X141	6142.X151	6142.X161	6143.X140	6143.X141	6143.X151	6143.X161	6144.X140	6144.X141	6144.X151	6144.X161	6145.X140	6145.X141	6145.X151	6145.X161
twilight	0...10	Klux	-	-	-	-	6142.X240	6142.X241	6142.X251	6142.X261	6143.X240	6143.X241	6143.X251	6143.X261	6144.X240	6144.X241	6144.X251	6144.X261	6145.X240	6145.X241	6145.X251	6145.X261
Combisensor	0...10/150	Klux	-	-	-	-	6242.X040	6242.X041	6242.X051	6242.X061	6243.X040	6243.X041	6243.X051	6243.X061	-	-	-	-	-	-	-	-
PAR																						
PAR	0...250	W/m²	6151.X040	6151.X041	6151.X051	6151.X061	6152.X040	6152.X041	6152.X051	6152.X061	6153.X040	6153.X041	6153.X051	6153.X061	6154.X040	6154.X041	6154.X051	6154.X061	6155.X040	6155.X041	6155.X051	6155.X061
Quantum	0...250	W/m²	6161.X040	6161.X041	6161.X051	6161.X061	6162.X040	6162.X041	6162.X051	6162.X061	6163.X040	6163.X041	6163.X051	6163.X061	6164.X040	6164.X041	6164.X051	6164.X061	6165.X040	6165.X041	6165.X051	6165.X061
IR																						
near IR	0...400	W/m²	-	-	-	-	-	-	-	-	6173.X040	6173.X041	6173.X051	6173.X061	-	-	-	-	-	-	-	-
TriSolar																						
	3 selectable	W/m²	-	-	-	-	-	-	-	-	6333.X040	6333.X041	6333.X051	6333.X061	-	-	-	-	-	-	-	-
Sunshine duration 5)																						
Status	yes/no		-	-	-	-	6182.X040	6182.X041	6182.X051	6182.X061	-	-	-	-	-	-	-	-	-	-	-	-
Status + global radiation	0...1.300	W/m²	6181.X040	6181.X041	6181.X051	6181.X061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Status + components	0...1.300	W/m²	6191.X040	6191.X041	6191.X051	6191.X061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Albedometer																						
Global radiation BS	2x 0...1.300	W/m²	-	-	-	-	-	-	-	-	6233.X040	6233.X041	6233.X051	6233.X061	-	-	-	-	-	-	-	-
PAR	2x 0...250	W/m²	-	-	-	-	-	-	-	-	6253.X040	6253.X041	6253.X051	6253.X061	-	-	-	-	-	-	-	-
Quantum	2x 0...250	W/m²	-	-	-	-	-	-	-	-	6263.X040	6263.X041	6263.X051	6263.X061	-	-	-	-	-	-	-	-
Accessories																						
mounting platform	1)		61X1.1X40	61X1.1X41	61X1.1X51	61X1.1X61	61X2.1X40	61X2.1X41	61X2.1X51	61X2.1X61	6XX3.1X40	6XX3.1X41	6XX3.1X51	6XX3.1X61	61X4.1X40	61X4.1X41	61X4.1X51	61X4.1X61	61X5.1X40	61X5.1X41	61X5.1X51	61X5.1X61
Ventilation unit			61X1.2X40	61X1.2X41	61X1.2X51	61X1.2X61	61X2.2X40	61X2.2X41	61X2.2X51	61X2.2X61	-	-	-	-	-	-	-	-	-	-	-	-
Internal logger	2) 3)		-	-	61X1.3X00	-	-	-	61X2.3X00	-	-	-	61X3.3X00	-	-	-	-	-	-	-	-	-
Drying agent cartridge	4)		61X1.4X40	61X1.4X41	61X1.4X51	61X1.4X61	61X2.4X40	61X2.4X41	61X2.4X51	61X2.4X61	-	-	-	-	-	-	-	-	-	-	-	-

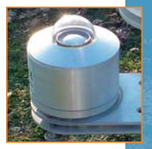
1) Please specify mounting 2) not with 6243 and 6333 (TriSolar) 3) with internal data logger 1 x RS232 instead of analog output 4) not with other accessories 5) dome of special glass *) supply +14...28 VDC otherwise +9...28 VDC date: 01.09.2012

Overview
to designs of solarsens radiation sensors

Design 1 (quartz glass dome)

- Meets the highest standards
- Has a polished dome made of quartz glass
- This is absolutely free of bumps and glass thickness differences
- Ideal radiation entrance window for radiation measurement receiver
- Best reception characteristics
- Very low residual noise in the absence of radiation
- Rubber seals produce a completely air – and dust-proof interior
- Desiccant to prevent condensation on the inside
- Exchange ability of the drying agent from the outside
- Diameter 80 mm, plug connector

Design 2 (opt. glass dome)



- Meets high standards
- Has a calotte made of blown optical glass
- The glass is not UV transparent but long-term stability against environmental influences
- Good radiation entrance window for radiation measurement receiver
- Production-related irregularities increasing the cosine error are insignificant
- Reception characteristics is carefully tested and proven
- Only small residual noise in the absence of radiation
- Gluing the body parts with silicone produce a completely air – and dust-proof interior
- Desiccant in the unit to prevent condensation on the inside
- Diameter 80 mm, plug connector

Design 3 (PMMA dome)

- Meets high standards
- Has a calotte made of injected PolyMethylMethAcrylate (PMMA)
- The material is UV transparent and long-term stable against solar radiation and environmental effects, but not as scratch resistant as glass
- Good radiation entrance window for radiation measurement receiver
- A production-related casting increases cosine error slightly only when absolutely vertical radiation incidence
- Reception characteristics is carefully tested and proven
- Gluing the body parts with silicone produce a completely air – and dust-proof interior
- Desiccant in the unit to prevent condensation on the inside
- Diameter 80 mm, plug connector

Design 4 (round, glass dome)

- Meets standard requirements
- Has a calotte or a cover of optical glass
- The glass is not UV transparent but long-term stability against environmental influences
- Good light entrance window for radiation measurement receiver
- Gluing the body parts with silicone produce a completely air – and dust-proof interior
- Desiccant in the unit to prevent condensation on the inside
- Diameter 42 mm, including 3 m cable

Design 5 (round, PMMA dome)

- Meets standard requirements
- Has a cathedral or a cover of PolyMethylMethAcrylate (PMMA)
- The material is UV transparent and long-term stable against radiation and environmental effects, but not as scratch resistant as glass
- Good light entrance window for radiation measurement receiver
- Gluing the body parts with silicone produce a completely air – and dust-proof interior
- Desiccant in the unit to prevent condensation on the inside
- Diameter 42 mm, including 3 m cable

Applies to all:

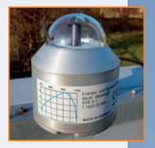
- Anodized aluminum housing is scratch resistant
- Natural metal color prevents excessive heating up at too much sunlight

Accessories

- Assembly aids for mounting on masts and booms with and without leveling
- Heated and unheated ventilation systems
- Measuring amplifier for all radiometers
- Data logger and PLCs for further processing and remote data transmission

Actual devices

Sunshine duration sensor



- Sensor is clear of any moving parts
- Requires no shade ring or movable shield
- Is mounted horizontally as a pyranometer
- Allows the simultaneous detection of global radiation on a horizontal surface
- Issue of direct and / or diffuse solar radiation as an analog signal
- The output is treated as a voltage or current signal
- Therefore, no reading amplifier required
- Sunshine information as a digital signal status
- Weather-resistant, anodized aluminum housing
- The measurement of global radiation is cosine corrected
- Used almost universally possible
- Diameter 80 mm with connector

UV A/B sensor

- Incident light is pre-filtered by an input filter
- Input filter is optimized to improve the cosine characteristic
- The glassy converter allows a linear detection of UV radiation
- The material is a solid and is free of organic material
- The material therefore shows no signs of aging
- The fluorescence property remains in wide temperature range (-30 to 90 °C) unaffected
- The transducer is insensitive to infrared radiation and has a very low leakage current
- Temperature coefficient of only 0.2 % while / Kelvin is additionally corrected
- Weather-resistant, anodized aluminum housing and desiccant
- The dome is made of quartz-glass (see design 1)

TriSolar

- The sensor can be detect close to 90 % of the solar spectrum in the range of 290 nm to 1100 nm
- It can detect the UV-B, UV-A, global radiation, PAR, and the nearest part of the IR
- The sensor has three analog signal outputs
- The output is treated as a voltage or current signal
- It is, therefore, no further measurement amplifier required
- Use in areas of medical and biological research, weather information and the agricultural sector (including greenhouses)
- Weather-resistant, anodized aluminum housing with connector output
- The measurements are cosine corrected
- The device is made of plastic dome (see design 3)

Physical measurements
in water, soil and air

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