iSAL

Light for free

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No more power costs for outdoor lighting!

No costs for grid connection or grid extension!

The **ISAL** product group is the latest generation of **intelligent systems** for **autonomous lighting**.

Advantages and Benefits:

- Low investment costs with virtually no subsequent costs
- No power grid connection required
- No cables to be laid
- Easy mounting
- Maintenance-free
- Environmentally friendly

ISAL systems absorb the freely available daylight and release the stored energy through lighting in the dark.

ISAL systems are always **State of the Art—high-tech** of best quality, in which only top-notch components are installed:

- Solar PV modules
- Integrated Li-Ion battery
- Robust energy-efficient LED lamps
- Intelligent microprocessor-driven charge controller with twilight control
- Infrared motion sensor
- Mounting structure

ISAL systems allow various **mobile or stationary uses** in the illumination of:

- Industrial sites, depots
- Car parks
- Streets
- Footpaths
- Private estates, access roads, parking spaces
- Gardens, terraces

Operating Modes:

- Continuous lighting
- Intermittent lighting
- Motion-detector lighting
- Timer-switch lighting

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ISAL systems are powered by solar energy and thus are grid-independent. Therefore, they provide a reliable alternative to conventional illumination by delivering light from twilight till dawn.

Lighting Functionality:

ISAL systems absorb the freely available solar energy through their solar module in the daytime. Solar energy is converted into direct current by a photovoltaic module and thus charges the battery during the day. At night or at dawn, the LED lamp switches on automatically by using the energy stored in the accumulator. In the morning or with enough daylight, the LED lamp switches off again.

Quality Features of ISAL Products:

- Functional and plain design
- Robust and weather-proof high-quality make
- Powerful light beam of high brightness
- White light with beam uniformity
- High efficiency solar module of the latest generation
- Li-Ion battery (replaceable)
- Charging time about 6 hours
- Aluminium alloy housing
- Theft prevention
- Certified according to CE / RoHS / IP65

- ISAL lights switch to ⅓ luminosity at appropriate brightness.
- ISAL lights are provided with a motion sensor, which turns on full illumination for 1 minute when motion is detected.
- ISAL lights turn off again at appropriate brightness.
- ISAL lights can be operated with continuous light at full brightness.

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Product overview

Description	ISAL-12	ISAL-18	ISAL-25	ISAL-40	ISAL-50	ISAL-60
LED-Lampe						
- Max. power	12 Volt, 12 Watt	12 Volt, 18 Watt	12 Volt, 25 Watt	12 Volt, 40 Watt	12 Volt, 50 Watt	12 Volt, 60 Watt
- Luminosity	1,200-1,320 Lumen	2,160-2,340 Lumen	3,000-3,250 Lumen	4,800-5,200 Lumen	6,000-6,500 Lumen	7,200-7,800 Lumen
Solar module, max. power	18 Volt, 18 Watt	18 Volt, 40 Watt	18 Volt, 50 Watt	18 Volt, 60 Watt	18 Volt, 80 Watt	18 Volt, 90 Watt
Accumulator						
- Discharge time, full utilization	over 7 hours	over 7 hours	over 7 hours	over 10 hours	over 10 hours	over 10 hours
- Discharge time, ⅓ utilization	over 20 hours	over 20 hours	over 20 hours	over 20 hours	over 20 hours	over 20 hours
Mounting height	3 to 4 m	5 to 6 m	5 to 6 m	6 to 7 m	7 to 8 m	8 to 9 m
Space between light	8 to 10 m	18 to 20 m	18 to 20 m	20 to 25 m	25 to 30 m	25 to 30 m
Dimensions						
- Length	51.5 cm	92.0 cm	115 cm	115 cm	108.0 cm	108.0 cm
- Width	32.0 cm	32.5 cm	33 cm	33 cm	45.0 cm	45.0 cm
- Height	5.2 cm	4.3 cm	14 cm	14 cm	15.3 cm	15.3 cm
- Weight	5.8 kg	12.0 kg	18 kg	19 kg	20.0 kg	22.5 kg
Prices (per piece)						
- 1 to 10 pieces	365 EUR	730 EUR	980 EUR	1,285 EUR	1,550 EUR	1,645 EUR
- from the 11th piece	335 EUR	685 EUR	920 EUR	1,205 EUR	1,455 EUR	1,545 EUR

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LED Technology:

LED stands for **light-emitting diode,** or light diode for short. LED is a light-emitting semiconductor component with electric properties corresponding to those of a diode. When electric current flows through the diode in the forward direction, it emits light with a wave length depending on the semiconductor material and the doping.

Manufacture-related deviations may occur in the colour temperature and brightness values in the **production** of light-emitting diodes. Therefore, the data sheets of each offered class („bin“) show various illumination intensity.

LED has already taken about 50% of the **lighting market**. This is mainly due to its high energy efficiency, its natural and cool light, its lifespan, its gradual and not just sudden outage as well as its robustness.

LEDs installed in ISAL systems **illuminate a relatively large area** due to their lighting viewing angle of 120°. At the same time, they are characterized by a **high light output** of 120-130 lm/W (lumens per watt). Thus they are many times more efficient than conventional incandescent lamps (about 10-14 lm/W) or halogen lamps (15 - 20 lm/W), and even much more efficient than fluorescent lights (70 - 90 lm/W).

Unlike with incandescent lamps, LEDs show **increased efficiency** when operated at lower than the nominal power, for instance **with intelligent intermittent switching**. At the same time, the lifespan **is longer** due to the reduced temperature.

The **life expectancy of LEDs is over 50,000 hours**, which is about 5 times higher than that of comparable fluorescent or halogen lamps. The switching frequency, in contrast to halogen and fluorescent lamps, has no negative impact on the life expectancy of LEDs either. Thus the combination of a LED lamp with a motion detector is not associated with lower life expectancy of LED lighting.

Considering all material and energy flows, from manufacturing to the end of useful life, light generation accounts for over **98% of total energy consumption**. LED lamps are therefore **very efficient** both in their **use** and **production**. By way of example, according to the Stiftung Warentest (2013), the **life cycle assessment** of LED lamps is better than that of compact fluorescent lamps or even halogen bulbs.

Unlike fluorescent lamps, LEDs are free of mercury and thus pose **no health risk** to people even in case of damage. However, the electronic components and rare earths contained in LEDs must be disposed of as electronic scrap.

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Photovoltaic Technology:

A photovoltaic system is a solar power system, in which a portion of **solar radiation** is **converted into electric energy** by means of solar cells. Such typical direct type of energy conversion is called photovoltaic.

The solar module consists of series-connected solar cells, which are hermetically sealed. Monocrystalline solar cells are manufactured separately and are subsequently connected by metal foils, while silicon serves as a semiconductor.

At option, the **off-grid** solar power modules of ISAL systems are separated permanently or temporarily from the power grid. **Power supply** is **not required**.

During the day, the unused power is stored provisionally to be further used according to the needs. ISAL systems are operated with **12 volts DC**.

Accumulator Technology:

The applied accumulators for solar energy storage, the so-called **solar batteries**, show high cycle stability (charge and discharge), i.e. **long lifetime**.

High-quality Li-Ion batteries maintain the lead against the cheaper lead-acid batteries, as their operating costs are significantly lower due to their longevity. Thus we assume that the battery needs to be **replaced every 5 years at most**.

Accumulators installed in ISAL systems to store solar energy are protected against deep discharge or overcharge through a charge controller.

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Data Sheets

Type	ISAL-12	ISAL-18
Solar panel max. power	18 Volt, 18 Watt (silicon solar cell)	18 Volt, 40 Watt (silicon solar cell)
Solar panel Life time	25 years	25 years
Battery type	lithium battery (Life time 5 years)	lithium battery (Life time 5 years)
LED max. power	12 Volt, 12 Watt	12 Volt, 18 Watt
LED chip brand	Epistar, Taiwan with high brightness	Bridgelux, USA with high brightness
Luminosity	1,200 - 1,320 Lumen	2,160 - 2,340 Lumen
LED Life time	50,000 hours	50,000 hours
Lighting viewing angle	120°	120°
Charge time (with enough strong sun)	6 - 7 hours	6 - 7 hours
Discharge time	more than 20 hours (saving mode)	more than 20 hours (saving mode)
Working temperature	from -20° to +60° Celsius	from -20° to +60° Celsius
CCT	6,500 - 7,000 Kelvin (daylight white)	6,500 - 7,000 Kelvin (daylight white)
Mounting height	3 - 4 Meter	5 - 6 Meter
Space between light	8 - 10 Meter	18 - 20 Meter
Lamps material of main	aluminium alloy	aluminium alloy
Certificate	ISO / CE / RoHS / IP65	ISO / CE / RoHS / IP65
Warranty period	2 years	2 years
Unit size	51.5 cm * 32.0 cm * 5.2 cm	92.0 cm * 32.5 cm * 4.3 cm
N.W.	5.8 kg	12 kg
Inner box	53.0 cm * 39.0 cm * 14.0 cm	
Carton size	56.0 cm * 57.0 cm * 41.0 cm	96.0 cm * 38.0 cm * 19.5 cm
Quantity/carton	4 sets	1 set
GW for carton	27 kg	14.5 kg
20 GP container	800 pieces	580 sets
40 GP container	1,600 pieces	1,200 sets

Type	ISAL-25	ISAL-40
Solar panel max. power	18 Volt, 50 Watt (silicon solar cell)	18 Volt, 60 Watt (silicon solar cell)
Solar panel Life time	25 years	25 years
Battery type	lithium battery (Life time 5 years)	lithium battery (Life time 5 years)
LED max. power	12 Volt, 25 Watt	12 Volt, 40 Watt
LED chip brand	Bridgelux, USA with high brightness	Bridgelux, USA with high brightness
Luminosity	3,000 - 3,250 Lumen	4,800 - 5,200 Lumen
LED Life time	50,000 hours	50,000 hours
Lighting viewing angle	120°	120°
Charge time (by enough strong sun)	6 - 7 hours	6 - 7 hours
Discharge time	more than 20 hours (saving mode)	more than 20 hours (saving mode)
Working temperature	from -20° to +60° Celsius	from -20° to +60° Celsius
CCT	6,500 - 7,000 Kelvin (daylight white)	6,500 - 7,000 Kelvin (daylight white)
Mounting height	5 - 6 Meter	6 - 7 Meter
Space between light	18 - 20 Meter	20 - 25 Meter
Lamps material of main	aluminium alloy	aluminium alloy
Certificate	ISO / CE / RoHS / IP65	ISO / CE / RoHS / IP65
Warranty period	2 years	2 years
Unit size	115 cm * 33 cm * 14 cm	115 cm * 33 cm * 14 cm
N.W.	17.65 kg	19 kg
Inner box		
Carton size	119 cm * 40 cm * 22 cm	119 cm * 40 cm * 22 cm
Quantity/carton	1 set	1 set
GW for carton	18.6 kg	19.5 kg
20 GP container	270 sets	270 sets
40 GP container	550 sets	550 sets

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Data Sheets

Type	ISAL-50	ISAL-60
Solar panel max. power	18 Volt, 80 Watt (silicon solar cell)	18 Volt, 90 Watt (silicon solar cell)
Solar panel Life time	25 years	25 years
Battery type	lithium battery (Life time 5 years)	lithium battery (Life time 5 years)
LED max. power	12 Volt, 50 Watt	12 Volt, 60 Watt
LED chip brand	Bridgelux, USA with high brightness	Bridgelux, USA with high brightness
Luminosity	6,000 - 6,500 Lumen	7,200 - 7,800 Lumen
LED Life time	50,000 hours	50,000 hours
Lighting viewing angle	120°	120°
Charge time (by strong enough sun)	6 - 7 hours	6 - 7 hours
Discharge time	10 hours	10 hours
Working temperature	from -20° to +60° Celsius	from -20° to +60° Celsius
CCT	6,500 - 7,000 Kelvin (daylight white)	6,500 - 7,000 Kelvin (daylight white)
Mounting height	7 - 8 Meter	8 - 9 Meter
Space between light	25 - 30 Meter	25 - 30 Meter
Lamps material of main	aluminium alloy	aluminium alloy
Certificate	ISO / CE / RoHS / IP65	ISO / CE / RoHS / IP65
Warranty period	2 years	2 years
Unit size	108.0 cm * 45.0 cm * 15.3 cm	108.0 cm * 45.0 cm * 15.3 cm
N.W.	20 kg	22.5 kg
Inner box		
Carton size	118.0 cm * 52.0 cm * 21.0 cm	118.0 cm * 52.0 cm * 21.0 cm
Quantity/carton	1 set	1 set
GW for carton	22.5 kg	25 kg
20 GP container	215 sets	215 sets
40 GP container	448 sets	448 sets

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General Agency:

SC GARANT

SC Garant GmbH & Co. KG undertakes the general agency in Germany and other countries regarding products with unique selling points.

The company name stands for the products offered:

The letters „SC“ stand for Selective Cooperation, as cooperation is entered into only with selected manufacturers whose products have high customer benefit and are right on the cutting edge.

At the same time, „Garant“ stands for the reliability and longevity of the products offered as well as for the reliability of our company and our competent local staff towards our customers.

SC Garant GmbH & Co. KG

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