Energy Power System Application Manual

Design For You A Cleaner World
Wind Turbine Energy - GO GREEN With You

DIMON
TECHNOLOGY
WIND POWER ENERGY

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DIMON Technoogy Ltd - ENERGY Factory is a high-tech manufacturer focused on design, production and application of high performance and reliable small wind turbine products. The factory was established in 2001 located in northern part of Guangzhou city, factory has 150 workers, and a 10 people R&D team dedicated in higher performance and reliability of the wind turbine. We owns 35 patent designs on wind turbine blade, slip ring, rotor structure, over-speed control system etc. Each and every component of the wind turbine is independently designed and manufactured in house. Our factory owns advanced wind turbine quality testing equipments and a strict quality control system, all products will go through 22 quality control processes all in our factory facility. All products has certificated with CE, ETL, RoHS and ANAB.

With over 12 years experience in production & application of wind & solar hybrid power system, DIMON Energy has developed over 20 different application fields of wind and wind solar hybrid system such as residential grid-tie power system, residential off-grid power system, stand-alone wind solar hybrid street lighting, wind solar hybrid powered telecom tower, wind solar hybrid powered monitoring system etc. Most of these applications have been widely applied around world and enjoyed a good reputation by its system quality, reliability and professional pre-sales and after-sales service of our team. Furthermore, all components of each system solutions are either developed by DIMON Energy or customized & optimized by supporting vendor according to our wind turbine special features or some specific project, this could maximize the system power production and also improves reliability and compatibility of the system. Our engineering team could provide whole system design and full construction support base on your specific requirements. We believe soon you will benefit from our professionalism.

Content

Wind power grid-tie system

Wind power grid-tie system is a semi-autonomous electrical generation or grid energy storage system which links to the mains to feed excess capacity generated by wind turbine back to the local main electrical grid. When insufficient electricity is generated electricity drawn from the mains grid can make up the shortfall.

Residences and businesses that have a wind power grid-tie system permitted in many countries to sell their energy to the utility grid. Electricity delivered to the grid can be compensated in either net metering or feed-in-tariff, I wind power grid-tie system offers complete system solutions for both compensation ways.

DIMON I series wind power grid-tie inverter is the core part of the whole system, the inverter is developed specially for I series wind turbine according to I series wind turbine special features with an optimized power curve pre-written into inverter and smart over-voltage braking protection, which offers a reliable combination of high efficiency, easy-installation, high wind protection and grid-failure protection.

DIMON I-10/15CL

DIMON I-30CL

Special Features

- Integrated Controller – easy for installation
- Integrated Isolation Transformer – extra safety protection
- Wider Input Voltage Range – harvesting more power from breeze to gale
- Programmable 20 Points of Power Curves – optimize power harvest from wind
- Optional Remote Monitoring system – Monitoring remotely your installation
- High Conversion Efficiency up to 95%
- Certified with DIN VDE 0126-1 Grid Standard

System Protections

- High Wind Protection – software controlled braking system provides high wind protection with 3 minutes, 10 minutes and 30 minutes time-lapse braking modes. It's a consideration of system safety under the worst wind condition in natural environment.

- Galvanic Isolation Protection – DIMON I-15CL is constructed and designed to assure maximum safety during installation and operation. The maximum possible degree of safety is being assured by galvanic isolation of input and output; In case of any grid AC power failure, the grid feed-in will be shut down automatically according to the country-specific standard

System Solution detail

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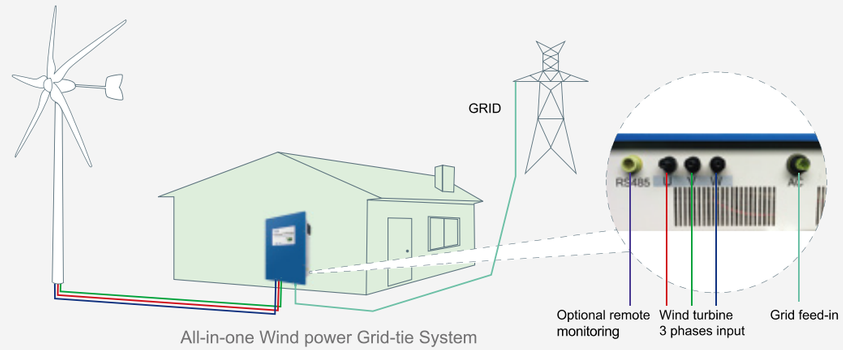
Model No.	DIMON I-10CL	DIMON I-15CL	DIMON I-30CL
INPUT SIDE			
DC Input Voltage Range(Power Curve)	40V-450V	40V-450V	60V-550V
Rated DC Input Power	1000W	1500W	3000W
Maximum DC Input Power	1100W	1600W	3300W
Power Curve Points	Max. 20 Points Programmable	Max. 20 Points Programmable	Max. 20 Points Programmable
OUTPUT SIDE			
Rated AC Power	1000W	1500W	3000W
AC Voltage Range	190-260V AC	190-260V AC	190-260V AC
Output Frequency Range	50Hz / 60Hz	50Hz / 60Hz	50Hz / 60Hz
Nominal Power Factor	>0.995	>0.995	>0.995
Max. Efficiency	95%	95%	95%
Stand-by Consumption	<7 W	<7 W	<7 W
Total Current Harmonic Distortion	<2%	<2%	<2%
PHYSICAL			
Dimensions(W×H×D)	555×420×125mm	555×420×125mm	480×680×235mm
Weight	29kg	29kg	56kg
Enclosure Rating	IP20	IP20	IP20
Installation	Wall-mounted	Wall-mounted	Wall-mounted
Ambient Temperature Range	-25℃ ～ +60℃	-25℃ ～ +60℃	-25℃ ～ + 60℃
Cooling	Fan & Convection	Fan & Convection	Fan & Convection
Power Curve Points	Min.5, Max.20	Min.5, Max.20	Min.5, Max.20
Display	LCD & Signal Lamps	LCD & Signal Lamps	LCD & Signal Lamps
Communication	RS485	RS485	RS485
SAFETY			
Isolation	Transformer Isolated	Transformer Isolated	Transformer Isolated
Certificate	CE	CE	CE
Safety and EMC Standard	EN61000-6-1 EN61000-6-3 IEC 62103 EN50178	EN61000-6-1 EN61000-6-3 IEC 62103 EN50178	EN61000-6-1 EN61000-6-3 IEC 62103 EN50178
Grid Standard	VDE 4105/0126-1	VDE 4105/0126-1	VDE 0126-1-1, G83/1, UL1741

System Circuit Diagram



All-in-one Wind power Grid-tie System

System Solution detail

System Detail	DM-1000W	DM-1500W	DM-3000W
Rated AC output	1000W	1500W	3000W
Wind turbine	DM-1000 110V, 5 blade	DM-1500 120V, 5 blade	DM-3300 220V, 5 blade
Wind power grid-tie controller Inverter	DIMON I-10CL Rated DC Input: 1000W Max. DC input: 1100W Rated AC output: 1000W AC voltage range: 190-260V Output Frequency Range: 50-60Hz VDE 4105/0126-1 5 years warranty	DIMON I-15CL Rated DC Input: 1500W Max. DC input: 1600W Rated AC output: 1500W AC voltage range: 190-260V Output Frequency Range: 50-60Hz VDE 4105/0126-1 5 years warranty	DIMON I-15CL Rated DC Input: 3000W Max. DC input: 3300W Rated AC output: 3000W AC voltage range: 190-260V Output Frequency Range: 50-60Hz VDE0126-1, G83, UL1704 5 years warranty
Suggested Tower installation	DM-WF10 (3m) for wall fixation installation	DM-WF15 (3m) for wall fixation installation	DM-FRK30 (4m) for flat roof installation
	DM-FRK10 (4m) for flat roof installation	DM-FRK15 (4m) for flat roof installation	DM-HT30-10.4P3 hydraulic tower 10.4 meters
	DM-HT15-10.4P3 hydraulic tower 10.4 meters	DM-HT15-10.4P3 hydraulic tower 10.4 meters	DM-HT30-13.4P3 hydraulic tower 13.4 meters

Estimated System Yearly Power Production(KWH)

Annual Avg.wind speed	3m/s	3.5m/s	4m/s	4.5m/s	5m/s	5.5m/s	6m/s	6.5m/s	7m/s	8m/s	9m/s
DM-1000W	810	950	1300	1490	1660	1920	2150	2320	2400	2580	2820
DM-1500W	1140	1350	1760	1990	2260	2600	2850	3040	3270	3560	3840
DM-3000W	2350	3030	3680	4220	4680	4980	5380	5750	5880	6340	6650

Remarks: Above system yearly power production is calculated base on annual average wind speed at 10 meter high free-standing tower installation under standard air density 1.225KG/m³, actual system production may varies with installation site air density and surrounding obstacle etc. You may input your target installation site location at following website to check more accurate wind speed data.

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Actual Installation

DM-1000 grid-tie system with wall fixation installation - Lyon France - 2011

DM-1000 grid-tie system with flat rooftop installation - Lebanon - 2008

DM-1000 grid-tie system with lattice tower - Liverpool UK- 2009

DM-1000 grid-tie system with free standing tower - California U.S - 2009

DM-1500 grid-tie system with 10.4m hydraulic tower installation - Sweden 2012

DM-3000 grid-tie system with 13.4m hydraulic tower installation - Florianopolis Brazil 2010

Wind solar hybrid off-grid power system

A typical stand-alone system consists of a small wind turbine and solar panels to generate electricity connected to a charge controller which controls the pace at which batteries are recharged which is connected the battery bank. You will then need an off-grid inverter to convert the DC electricity stored in the battery bank to AC electricity which is more commonly used in home & business appliances.

Separately, wind and solar energy are effective ways to power a home or a business but can be limited due to lack of sun or a sudden shift in wind velocity. Using a combination of these will provide a stable, higher energy output to power your home or business. Wind solar hybrid power system includes a solar panel array and one or more wind turbines, and they create a more constant flow of power than either single source provided.

Wind & Solar hybrid power system provides a much more reliable power supply for 24 x 7 powers for off-grid applications. Off-grid systems can provide power anywhere; there is no shortage of possibilities or limits. Our packaged systems are ideally suited to remote homes, schools and other off-grid applications. They can also be retrofitted to existing diesel-generator systems to save on high fuel costs and minimize noise.

DIMON Energy offers standard hybrid systems solution with all necessary components such as solar panel, wind turbine, deep cycle battery, controller and inverter, mounting towers etc., each and every component has been well developed and tested for years in the fields and offers the highest levels of reliability, efficiency and ease of use, we can also custom design a system base on your project specific requirements.

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Major Application:

- Living off the grid, from large home to a small cabin
- Off-grid fishing or hunting cabins
- Remote security monitoring and communication facilities
- Remote mining and drilling operations
- RV or marine vessels
- Farms, ranches & vineyards
- Remote holiday hotel, military base camp
- Relief team or scientific research team working off the grid

Benefit of Wind solar hybrid off-grid power system

Minimize Your Impact - Capturing the energy that is freely available in the wind and sun, you will be able reduce your impact on the environment - contributing to the health of our planet.

Take Control - Producing your own energy allows you to choose a clean, renewable energy source, allowing you to go green on your own terms.

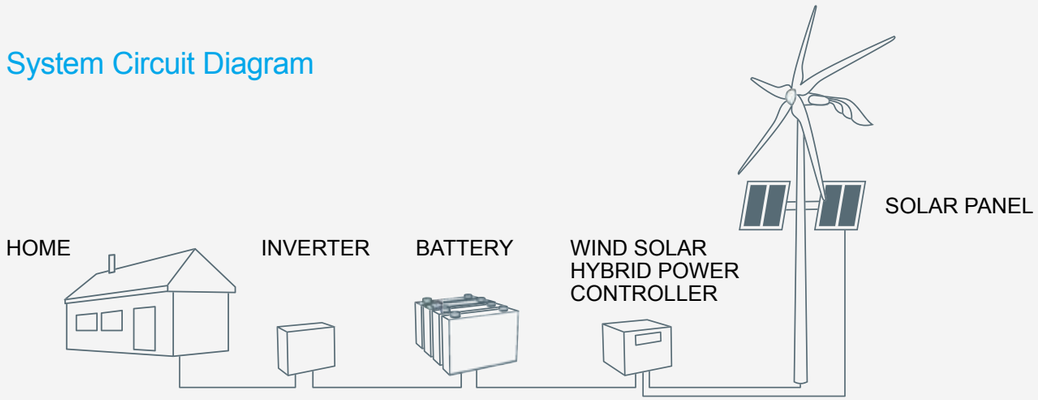
Live off the grid - Our wind/solar hybrid solutions allow you to live off the grid and overcome unreliable energy sources. Keep the power on.

Save Money - With ever-rising electricity prices, it will be a relief to take charge and lower your utility bills.

DIMON Wind Solar Hybrid Off-grid Power Systems Include:

- DM series small wind turbine 400W/600W/1000W/1500W/3000W
- High Quality Solar Modules with 25 Year Warranty
- Wind solar hybrid charge controller and MPPT & charging boost function
- 600W - 6000W Pure Sine Wave Inverter 110V/220V/230V/240V
- High Quality Deep Cycle Battery (100/150/200AH2/4/6/12V)
- PV Mounting Frames (Roof top, ground mount, pole mount etc.)
- Wind turbine towers (guyed tower, standing-free tower, hydraulic tower etc.)

System Circuit Diagram



System Solution Detail

System Detail	DM-H1000W-Basic	DM-H2000W-Starter	DM-H3000W-Advance	DM-H6000W-Premium	DM-H12000W-Super
Rated Capacity	1000W	2000W	3000W	6000W	12KW
Wind turbine	DM-600 24V, 5 blade	DM-1000 48V, 5 blade	DM-1500 48V, 5 blade	DM-3000 96V, 5 blade	DM-3000 x 2 110V, 5 blade
PV modules	200W (24V) x 2	250W (24V) x 4	250W (24V) x 6	250W (24V) x 12	135W (12V) x 45
Wind Solar Hybrid off-grid controller Inverter	input: 600W wind/400W solar Output: 600W 110-240Vac 50/60hz Grid by-pass switch: optional	input: 1000W wind/1000W solar Output: 1000W 110-240Vac 50/60hz Grid by-pass switch: optional	input: 1500W wind/1500W solar Output: 1500W 110-240Vac 50/60hz Grid by-pass switch: optional	input:3000W wind/3000W solar Output: 3000W 110-240Vac 50/60hz Grid by-pass switch: optional	input: 6000W wind/6000W solar Output: 5000W 110-240Vac 50/60hz Grid by-pass switch: optional
Deep Cycle battery AGM gel	150AH x 2	150AH x 4	200AH x 4	200AH x 8	200AH x 18
PV module mounting bracket	flat roof/tile roof/corrugated Metallic roof/ ground mount	flat roof/tile roof/corrugated Metallic roof/ ground mount	flat roof/tile roof/corrugated Metallic roof/ ground mount	flat roof/tile roof/corrugated Metallic roof/ ground mount	flat roof/tile roof/corrugated Metallic roof/ ground mount
Suggested Tower installation	DM-WF10 (3m) for wall fixation installation	DM-WF10 (3m) for wall fixation installation	DM-WF15 (3m) for wall fixation installation	DM-FRK30 (4m) for flat roof installation	DM-FRK30 (4m) for flat roof installation
	DM-FRK10 (4m) for flat roof installation	DM-FRK10 (4m) for flat roof installation	DM-FRK15 (4m) for flat roof installation	DM-HT30-10.4P3 hydraulic tower 10.4 meters	DM-HT30-10.4P3 hydraulic tower 10.4 meters
	DM-HT15-10.4P3 hydraulic tower 10.4 meters	DM-HT15-10.4P3 hydraulic tower 10.4 meters	DM-HT15-10.4P3 hydraulic tower 10.4 meters	DM-HT30-13.4P3 hydraulic tower 13.4 meters	DM-HT30-13.4P3 hydraulic tower 13.4 meters

Estimated System Yearly Power Production(KWH/year)

Annual Avg.wind speed	3m/s	3.5m/s	4m/s	4.5m/s	5m/s	5.5m/s	6m/s	6.5m/s	7m/s	8m/s	9m/s
DM-H1000W-Basic	940	1020	1170	1310	1480	1680	1800	1910	2020	2180	2220
DM-H2000W-Starter	1910	2050	2400	2590	2760	3020	3250	3420	3500	3680	3920
DM-H3000W-Advance	2790	3000	3410	3640	3910	4250	4500	4690	4920	5210	5490
DM-H6000W-Premium	5750	6300	6970	7500	7880	8400	8800	9110	9250	9520	9780
DM-H12000W-Super	11500	12600	13940	15000	15760	16800	17600	18220	18500	19040	19560

Estimated System Daily Power Production (KWH/day)

Annual Avg.wind speed	3m/s	3.5m/s	4m/s	4.5m/s	5m/s	5.5m/s	6m/s	6.5m/s	7m/s	8m/s	9m/s
DM-H1000W-Basic	2.6	2.8	3.2	3.6	4.1	4.6	4.9	5.2	5.5	6.0	6.1
DM-H2000W-Starter	5.2	5.6	6.6	7.1	7.6	8.3	8.9	9.4	9.6	10.1	10.7
DM-H3000W-Advance	7.6	8.2	9.3	10.0	10.7	11.6	12.3	12.8	13.5	14.3	15.0
DM-H6000W-Premium	15.8	17.3	19.1	20.5	21.6	23.0	24.1	25.0	25.3	26.1	26.8
DM-H12000W-Super	31.5	34.5	38.2	41.1	43.2	46.0	48.2	49.9	50.7	52.2	53.6

Remarks: Above system yearly power production is calculated base on annual average wind speed at 10 meter high free-standing tower installation under standard air density 1.225KG/m³, actual system production may varies with installation site air density and surrounding obstacle etc. You may input your target installation site location at following website to check more accurate wind speed data.

Recommended household electric appliance - DM-H1000W-Basic

Electric Equipments	Specification	Power(W)	Working hours	Daily power consumption(KWh)
Light	25W×3pcs	75	6	0.45
LCD TV	100W×1pc	100	5	0.5
fan	70W x 1pc	70	4	0.28
small fridge(50L)	120W x 1pc	120	24	0.4
laptop	85W×1pcs	100	6	0.6
other small home appliances	135W	135	2	0.27
	total capacity suggested:	600W	total daily power consumption	2.5

Recommended household electric appliance - DM-H2000W Starter

Electric Equipments	Specification	Power(W)	Working hours	Daily power consumption(KWh)
Light	25W×4pcs	100	6	0.6
LCD TV	125W×1pcs	125	8	1.0
Fridge	180W×1pcs	180	24	1.5
fan	70W x 2pcs	140	6	0.8
Washing Machine	250W×1pcs	250	1	0.3
laptop	85W×1pcs	100	4	0.4
other small home appliances	105W	105	4	0.4
	total capacity suggested:	1000W	total daily power consumption	5.0

Recommended household electric appliance - DM-H3000W-Advance

Electric Equipments	Specification	Power(W)	Working hours	Daily power consumption(KWh)
Light	25W×4pcs	100	6	0.6
LCD TV	125W×1pcs	125	6	0.75
DVD player	150W x 1pcs	150	4	0.6
Fridge	200W×1pcs	200	24	1.5
fan	70W x 3pcs	210	6	1.26
Washing Machine	300W×1pcs	300	1.5	0.45
Computer	200W×1pcs	200	5	1
other small home appliances	170W	190	3	0.57
	total capacity suggested	1500W	total daily power consumption	6.7

Recommended household electric appliance - DM-H6000W-Premium

Electric Equipments	Specification	Power(W)	Working hours	Daily power consumption(KWh)
Light	25W×10pcs	250	6	1.5
LCD TV	125W×2pcs	250	8	2
DVD player	150W x 1pcs	150	4	0.6
Fridge	200W×1pcs	200	24	2
fan	70W x 3pcs	210	8	1.68
Washing Machine	300W×1pcs	300	2	0.6
Electric Cooker	250W×1pcs	250	2	0.5
Oven	1000W x 1pcs	1000	2	2
Computer	200W×1pcs	200	8	1.6
other small home appliances	190W	190	4	0.76
	total capacity suggested	3000W	total daily power consumption	13.2

Recommended household electric appliance - DM-H12000W-Super

Electric Equipments	Specification	Power(W)	Working hours	Daily power consumption(KWh)
Light	25W×16pcs	400	6	2.4
LCD TV	125W×2pcs	250	8	2
DVD player	150W x 1pcs	150	8	0.6
Fridge	200W×1pcs	200	24	2
fan	70W x 4pcs	280	8	2.24
Washing Machine	300W×1pcs	300	2	0.6
Oven	1000W x 1pcs	1000	2	2
Computer	200W×2pcs	400	10	4
water pump	1500W x 1pcs (2HP)	1500	5	7.5
other farming electric appliances	520W	520	10	5.2
	total capacity suggested:	5000W	total daily power consumption	28.5

Actual Installations

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1.5KW wind solar hybrid off-grid power system for residential - Bangalore India - 2011

10KW wind solar hybrid off-grid power system for villa – Shanghai 2009

1KW wind solar hybrid off-grid power system for residential - Hainan Island China - 2007

800W wind solar hybrid off-grid power system for remote village – Tibet 2006

4KW wind solar hybrid off-grid power system for small business enterprise rooftop – South Korea 2010

3KW wind solar hybrid off-grid power system for mining field – Chile 2008

Solar street lights are fresh alternative to traditional street lamps such as LPS, HPS, or MH street lights. LED lighting provides a multitude of advantages over conventional incandescent light: LED solar street lights are environmental friendly, energy efficient, and cost-effective. This smart, 'green' option for outdoor LED lighting has emerged on the green scene due to the recent technological advancements of LED illumination.

The system is mainly composed of solar panel, light source, controller and battery. In daytime, when there is sunshine, the solar panel can convert the solar energy to electric power and store it in maintenance-free battery. At night or rainy or cloudy condition, the controller can control the lights automatically on when day off, auto-off when day break, and the battery shall supply the power for lighting.

Major Applications

- Major Roadways
- Residential Streets
- Pedestrian Walkways
- Parking Lots
- Docks and Piers
- Remote and Rural Locations
- landscape lighting
- Roundabouts
- Camp sites
- Beaches
- Service station

Special Features

Ultra-low maintenance & long product life –5 years warranty on solar panels & LED light with rated for 60,000 hours of maintenance free operation, sealed deep cycle (AGM gel type) maintenance free battery.

Green Light Source - 40-70% less power consumption than other light sources. LED lights emit no light pollution, provides bright white light which improves color recognition and improves night visibility from 400%-1000% over other light sources.

Flexible configuration - solar lights can be easily configured to suite your requirements with solar module, wind module and battery banks

Advanced control unit - Solar light controller provides easy configuration, automatic operations and advanced work modes.

3-5 days backup power – for rainy, stormy and cloudy days

Complete stand-along & no bill to pay –system is designed completely off-the-grid, there will never be an electricity bill to pay

DIMON Solar Street Light Systems Include

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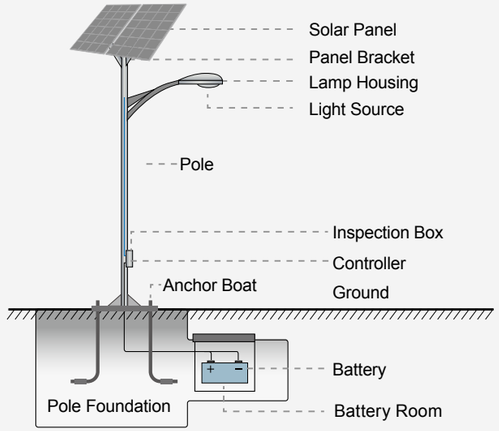
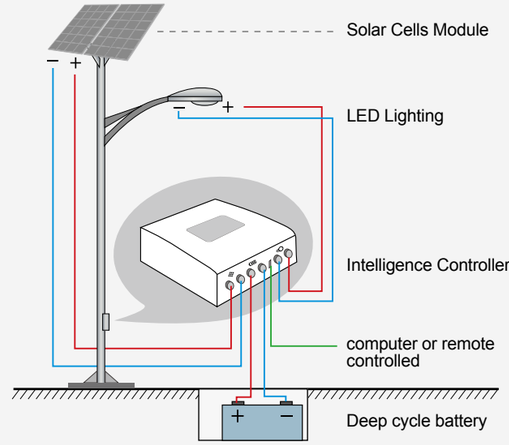
- **Photovoltaic (PV) module** – monocrystalline/polycrystalline
- **Light source** – ultra bright LED light 20/30/40/60/80/90/120W
- **Controller** – 5/10/15A automatic light controller, automatic operation, multi work mode, over charge protection
- **Energy Storage** – sealed maintenance free AGM gel deep cycled battery
- **Battery Box** – water proof design battery box
- **Light Pole** – 6/8/10/12/16m light pole with 30/50m/s wind resistance

Solar Street Light Structure



System Circuit Diagram



Operation time options

DM solar street light system has the added advantage of intelligent operation time that allows for a change in illumination levels throughout the course of a night. Illumination can be provided at its brightest level during peak times of pedestrian activity, and then dimmed to accommodate times of reduced usage.

Dusk till dawn - designed to provide a consistent level of illumination throughout the night, the dusk till dawn option turns the fixture on at dusk and off at dawn.

Split night - designed to provide alternating levels of illumination, a split-night profile turns the fixture on at full intensity for a set number of hours after dusk, and then reduces intensity down by a set percentage for the remainder of the night.

Fixed night - designed for a steady level of illumination, a fixed-night option turns the fixture on for a preset number of hours and then shuts it off.

Partial or full PIR - Passive Infrared (PIR) option enables the usage of motion detection to turn the streetlight on when pedestrians cross underneath the pole. The system can be setup to enable partial reliability on the PIR throughout the night


Dusk till dawn


Split night


Fixed night


Partial or full PIR

Lamp Bracket – available in both single and dual fixture

System Solution Detail

Major Component	DM-SL30	DM-SL40	DM-SL60	DM-SL80	DM-SL90
PV module	90W 12V	120W 12V	90W 12V x 2	120W 12V x 2	135W 12V x 2
Light source	30W LED	40W LED	60W LED	80W LED	90W LED
solar charge controller	12V/5A controller	12V/10A controller	24V/10A controller	24V/10A controller	24V/10A controller
battery	100AH 12V	120AH 12V	100AH 12V x 2	150AH 12V x 2	200AH 12V x 2
light pole	4/5/6M steel pole	5/6/8M steel pole	6/7/8M steel pole	8/9/M steel pole	8/9/10M steel pole

Remarks

- Above standard solution designed base on effective sunshine 5 hours per day
- Above standard solution designed for battery backup for 3 consecutive rainy and cloudy days
- Above standard solution designed base for 10 lighting hours, Lighting hours can be customized base on specific requirement and project site solar radiation level
- Light pole and light source shape can be custom designed to fit better into landscape
- Optional split night lighting & Passive Infrared (PIR)
- Above standard solutions for your reference only, for each specific project DIMON will design the complete system according to project location solar resource condition and specific requirement about ground average LUX, illumination distribution, light color temperature etc. A complete system proposal will be provided by HYE with detailed data and graphic diagrams included.

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Actual Installations

30W LED solar lighting for mining field – Para Brazil - 2010

40W LED street lighting - Akaki Kality Ethiopia - 2011

60W solar street light – Wuxi China 2011

45W LED solar lighting for factory plant - Guangzhou China 2010

80W LED solar street lighting project – Melaka Malaysia 2010

90W LED solar street light project – Denizli Turkey 2012

Wind solar hybrid street lighting is an intelligent and complete stand-alone LED street lighting system. Composed of solar modules and small wind turbine, deep cycle batteries, controller and one or few street lights, this hybrid system harvests energy from both wind and solar and store it in deep cycle batteries to power street lights during night. Using a combination of wind & solar resources the system will provide a stable and constant flow of electricity to power the street lighting.

The major advantage of wind solar hybrid street lighting system is that when solar and wind power productions are used together, the reliability of the system is enhanced. Additionally, the size of battery storage can be reduced slightly as there is less reliance on one method of power production. Often, when there is no sun, there is plenty of wind. Wind speeds are often low in periods (noon time & summer) when the sun resources are at their best. On the other hand, the wind is often stronger in periods (evening time & spring, winter) when there are less sun resources. Even during the same day, in many regions worldwide or in some periods of the year, there are different and opposite patterns in terms of wind and solar resources. And those different patterns can make the wind solar hybrid systems the best option for street lighting.

Advantages Compare with Solar Street Lighting

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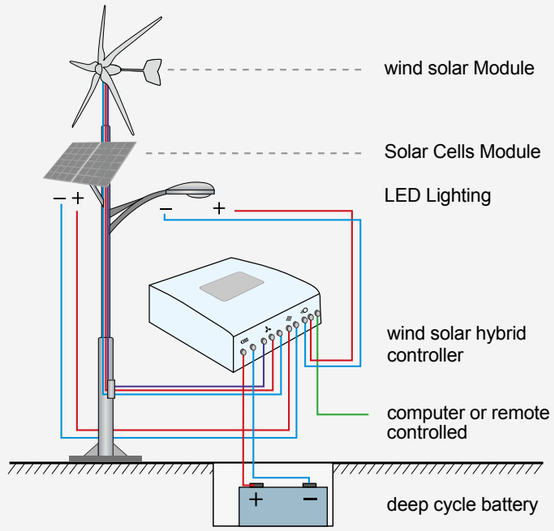
- Wider applicable areas – hybrid system offers a much better reliability and sustainability to areas with less solar radiation level, long rainy season or long winter.
- Longer battery life – normally wind turbine generates more power during night, part of power generated will supply the light directly, part of power could charge the battery during night, so less charging and discharging loss from battery and also each battery charging cycle is prolonged.
- More cost-effective in windy areas – in the area with annual wind speed of 5-7m/s, wind solar hybrid system could have higher production to power higher capacity LED lights or more lights which could lower the system overall cost.
- Easier installation & Maintenance – solar street light system cannot put bigger (max. 360W in two sections) PV panels on light pole considering wind load; wind solar hybrid system allows bigger capacity installed on light pole, which could generate enough electricity to power 2-4 LED lights, which means one power system supply for 2-4 lights, it will be easy for installation and maintenance.

DIMON Solar Street Light Systems Include

- Photovoltaic (PV) module – monocrystalline/polycrystalline
- DM Series small wind turbine 400W/600W/1000W/1500W/3000W (12V/24/48/96V)
- Light source – ultra bright LED light 20/30/40/60/80/90/120W
- Controller – 5/10/15A wind solar hybrid controller, automatic light controller, automatic operation, multi work mode, over charge protection, high wind protection etc.
- Energy Storage – sealed maintenance free AGM gel deep cycled battery
- Battery Box – water proof design battery box
- Light Pole – 6/8/10/12/16m light pole with 30/50m/s wind resistance

System Circuit Diagram



DIMON TECHNOLOGY

Unicorn Series - one power source one Light

Major Component	DM-SWL60A	DM-SWL80A	DM-SWL90A	DM-SWL120A
Wind turbine	DM-400 24V	DM-400 24V	DM-600 24V	DM-600 24V
PV module	60W 12V x 2	90W 12V x 2	100W 12V x 2	140W 12V x 2
Light source	60W LED	80W LED	90W LED	120W LED
hybrid charge controller	12V/10A controller	24V/10A controller	24V/10A controller	24V/15A controller
battery	100AH 12V x 2	120AH 12V x 2	150AH 12V x 2	200AH 12V x 2
Main pole(with power system)	10M, lamp height 6-8M	10M, lamp height 8-10M	12M, lamp height 8-10M	12M, lamp height 8-10M

Triad Series - one power source three Lights

Major Component	DM-SWL20C	DM-SWL30C	DM-SWL40C	DM-SWL60C
Wind turbine	DM-400 24V	DM-600 24V	DM-600 24V	DM-1000 48V
PV module	60W 12V x 2	100W 12V x 2	140W 12V x 2	180W 24V x 2
Light source	20W LED x 3	30W LED x 3	40W LED x 3	60W LED x 3
hybrid charge controller	12V/10A controller	24V/10A controller	24V/15A controller	48V/10A controller
battery	100AH 12V x 2	150AH 12V x 2	200AH 12V x 2	150AH 12V x 4
Main pole(with power system)	10M, lamp height 4-6M	10M, lamp height 4-6M	10M, lamp height 4-6M	12M, lamp height 6-8M
Regular light pole	4-6M steel pole x 2	4-6M steel pole x 2	4-6M steel pole x 2	6-8M steel pole x 2

Pegasus Series - one power source two Lights

Major Component	DM-SWL30B	DM-SWL40B	DM-SWL60B	DM-SWL80B	DM-SWL90B
Wind turbine	DM-400 24V	DM-400 24V	DM-600 24V	DM-600 48V	DM-1000 48V
PV module	60W 12V x 2	90W 12V x 2	140W 12V x 2	180W 24V x 2	180W 24V x 2
Light source	30W LED x 2	40W LED x 2	60W LED x 2	80W LED x 2	90W LED x 2
hybrid charge controller	12V/10A controller	24V/10A controller	24V/15A controller	48V/10A controller	48V/10A controller
battery	100AH 12V x 2	120AH 12V x 2	200AH 12V x 2	120AH 12V x 4	150AH 12V x 4
Main pole(with power system)	10M, lamp height 4-6M	10M, lamp height 4-6M	12M, lamp height 6-8M	12M, lamp height 8-10M	12M, lamp height 8-10M
Regular light pole	4-6M steel pole	4-6M steel pole	6-8M steel pole	8-10M steel pole	8-10M steel pole

one power source two Lights

one power source three Lights

Sky Driven Series - one power source several Lights					
Major Component	**DM-SWL40D**	**DM-SWL60D**	**DM-SWL80D**	**DM-SWL90D**	**DM-SWL120D**
Wind turbine	DM-3000 48V	DM-3000 48V	DM-3000 48V	DM-3000 48V	DM-3000 48V
PV module	900W of round panel	900W of round panel	900W of round panel	900W of round panel	900W of round panel
Light source	40W LED x 15	60W LED x 10	80W LED x 7	90W LED x 6	120W LED x 5
hybrid charge controller	12V/10A controller	12V/10A controller	12V/10A controller	12V/10A controller	12V/10A controller
pure sine wave inverter	800W 220/230V	800W 220/230V	800W 220/230V	800W 220/230V	800W 220/230V
battery	200AH 12V x 8	200AH 12V x 8	200AH 12V x 8	200AH 12V x 8	200AH 12V x 8
Main pole(with power system)	15M with round panel in 3 parts	15M with round panel in 3 parts	15M with round panel in 3 parts	15M with round panel in 3 parts	15M with round panel in 3 parts
regular light pole	4-6M steel pole x 15	6-8M steel pole x 10	8-10M steel pole x 7	10-12M steel pole x 6	10-12M steel pole x 5

one power source several Lights

Remarks

- Above standard solution designed base on effective sunshine 5 hours per day and project site annual average wind speed 3-3.5m/s.
- Above standard solution designed for battery backup for 3 consecutive rainy and cloudy days
- Above standard solution designed base for 10 lighting hours, Lighting hours can be customized base on specific requirement and project site wind and solar resource condition.
- Light pole and light source shape can be custom designed to fit better into landscape
- Optional split night lighting & Passive Infrared (PIR)
- Above standard solutions for your reference only, for each specific project DIMON will design the complete system according to project location wind & solar resource condition and specific requirement about ground average LUX, illumination distribution, light color temperature etc. A complete system proposal will be provided by DIMON with detailed data and graphic diagrams included.

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Actual Installation

40W LED wind solar hybrid street light for park –Tabriz, Iran - 2011

60W LED wind solar hybrid street light – Saipan Island, CNMI - 2009

80W LED wind solar hybrid street light - Kashgar, Xinjiang 2012

90W LED wind solar hybrid street light - Ussuriysk city, Russia 2010

Pegasus 1 power 4 system 40 LED street light – Unionpay headquarter, Shanghai 2012

Sky Driven system power 7pc 85W LED street light – suburb Guangzhou 2011

Wind Solar Hybrid Off-grid Power System For Telecom Tower

10KW wind solar hybrid off-grid power system for telecom tower – Baili Island, Zhuhai 2011

3KW wind solar hybrid off-grid power system installed on existing telecom tower as a backup power system – Hainan China 2012

DIMON TECHNOLOGY

Total 33KW wind power array off-grid power system for eco-park lighting – 11pcs of DM-3000 wind turbine created off-grid system to power all lights of Binjiang Eco-green park, system is designed and constructed by DIMON– Shanghai 2010

Wind Solar Hybrid off-grid Monitoring System

wind solar hybrid off-grid monitoring system for highway – Shaoyong Highway Guangzhou 2009

Wind solar hybrid off-grid monitoring system for oil field – Qinghai 2011

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Wind solar hybrid off-grid powered seawater desalination system

18KW wind powered stand-alone sea water desalination system - Bureau of Fishery, Fujian 2008

21KW wind powered stand-alone sea water desalination system – Nanpeng island, Shantou 2010