

*phocos*



Off-Grid Solutions

## Off-Grid Experts

Our passion is off-grid. Our mission is to deliver high-quality, off-grid power solutions that maximize system reliability and minimize total cost of ownership. With millions of products in service worldwide, we offer solutions to bring light and electricity to some of the most remote places on Earth.

## Global Leader, Local Partner

With our headquarters in Ulm, Germany, we operate four sales, support and R&D subsidiaries and a network of dependable distributors worldwide. Our commitment to local service and support anywhere in the world makes Phocos much more than a supplier of components and solutions for off-grid systems. It makes us "Your Off-Grid Partner."

## From PV Components to Turnkey Systems

Our technical leadership started with the development of our solar charge controller technologies. Today, we use our decades of off-grid experience in optimizing performance of PV systems to design reliable and cost-effective DC lighting, DC appliances and turnkey systems.

# Rely on Phocos



### Innovative

Leading in advanced technologies for clean, reliable and affordable energy.



### Reliable

Setting industry standards in first-class quality and superior reliability.



### Cost Effective

Optimizing features-to-cost ratio to minimize total cost of ownership.

## Off-Grid Applications

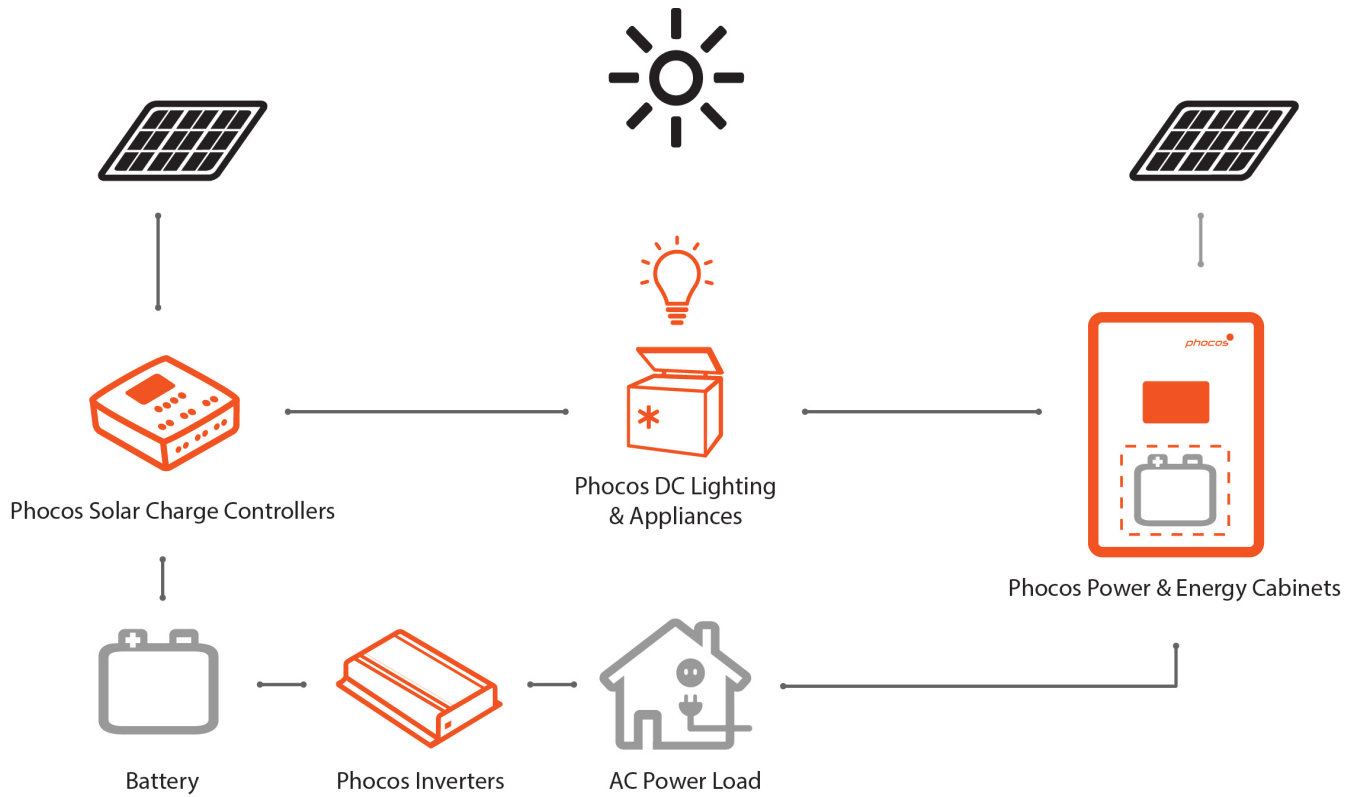
Our innovative technologies are used in homes, businesses and industry. Phocos offers a variety of products to support a broad range of off-grid solar power applications.



### Rural Electrification

High-quality energy solutions for locations and populations without access to reliable grid power

# Phocos in an Off-Grid System



## Phocos System Components

We provide reliable and cost-effective components for everything between the PV array and batteries in an off-grid system:

- MPPT and PWM Solar Charge Controllers
- Off-Grid Inverters
- DC Lighting
- DC Refrigeration

## Phocos Turnkey Systems

Our all-in-one power cabinets and Solar Home System kits, combine our quality components and expertise to make off-grid system installation and operation easy:

- Power Cabinets
- Solar Home System Kits
- Portable Light & Energy Kits



### Recreation

Supporting clean, sustainable living on the road, on the water or off the beaten path



### Solar Lighting

Rugged, efficient and dependable solutions with advanced lighting controls



### Industry

Reliable industrial power for remote monitoring, oil & gas, traffic signals, security and telecom towers

# Solar Charge Controllers



## Optimizing Energy from PV Arrays

Our MPPT and PWM solar charge controllers are designed with an optimal feature-to-cost ratio to minimize total cost of ownership of the off-grid system. For homes, cabins and RVs, our controllers are easy to use, reliable and include mobile device charging. Our controllers for industrial applications are designed to withstand the harshest conditions while offering industry-leading features like data monitoring to maximize reliability and prevent outage. For solar lighting systems, our controllers include an array of advanced control options including automatic seasonal adjustments as well as time, voltage and motion controlled dimming.

## Our models offer these advantages:

- **CML:** Designed for rural electrification and mobile device charging
- **ECO:** Compact size and economical choice for low-power industrial applications
- **CXN:** Advanced features and intelligence for industry and lighting applications
- **CIS:** Built for the harshest environments with advanced lighting control features
- **Multi-purpose:** Engineered for reliability in low- to high-power applications

## MPPT Solar Charge Controllers



ECO-N-MPPT



CIS-MPPT



MPPTsolid

Max Solar Ratings				Battery Voltage				Features						
Model	Current	Voltage	Power	12V	24V	36V	48V	Potted	Data Logging	Low Voltage Disconnect	Grounding	Lighting Control	Dimming	LED Driver
<b>ECO: Compact size and economical choice for low-power industrial applications</b>														
New! ECO-N-MPPT-85/15	15A	85 Voc	250W/500W	•	•			•		•	NEG			
<b>CIS: Built for the harshest environments with advanced lighting control features</b>														
CIS-MPPT-85/15	15A	85 Voc	250W/500W	•	•			•	•	•	NEG	•	•	
CIS-MPPT-85/15-LED	15A	85 Voc	250W/500W	•	•			•	•	•	NEG	•	•	•
CIS-MPPT-85/20	20A	85 Voc	400W/800W	•	•			•	•	•	NEG	•	•	
<b>Multi-purpose Applications: Engineered for reliability in low- to high-power applications</b>														
MPPT-100/40	40A	95 Voc	800W/1600W	•	•				with MCU		NEG			
MPPTsolid 230/100	100A	230 Voc	3kW/4.5kW/6kW		•	•	•		•		NEG			

## PWM Solar Charge Controllers



ECO-N-T



CXNup



CIS-N-LED

Max Solar Ratings				Battery Voltage				Features								
Model	Current	Voltage	Power	12V	24V	36V	48V	Potted	LCD	USB Charger	Data Logging	Low Voltage Disconnect	Grounding	Lighting Control	Dimming	LED Driver

### CML: Designed for rural electrification and mobile device charging

CM04	4A	30V	70W	•									POS			
CM10	10A	30V	175W	•									POS			
CML05-USB	5A	30V/50V	87W/175W	•	•					•		•	POS			
CML10-USB	10A	30V/50V	175W/350W	•	•					•		•	POS			
CML20-USB	20A	30V/50V	350W/700W	•	•					•		•	POS			
CMLsolid30	30A	30V/50V	525W/1050W	•	•					•		•	POS			

### ECO: Compact size and economical choice for low-power industrial applications

ECO10	10A	30V	175W	•				•				•	POS			
ECO-N-10-T	10A	30V/50V	175W/350W	•	•			•				•	NEG			
ECO-N-20-T	20A	30V/50V	350W/700W	•	•			•				•	NEG			

### CXN: Advanced features and intelligence for industry and lighting applications

New! CXNup-10	10A	30V/50V	175W/350W	•	•				•	•	•	•	NEG	•		
New! CXNup-20	20A	30V/50V	350W/700W	•	•				•	•	•	•	NEG	•		
New! CXNup-40	40A	30V/50V	700W/1050W	•	•				•	•	•	•	NEG	•		
CXNsolid50	50A	30V/50V/100V	875W/1.75kW/3.5kW	•	•		•		•		•	•	NEG			

### CIS: Built for the harshest environments with advanced lighting control features

CIS-N-10	10A	30V/50V	175W/350W	•	•			•				•	NEG	•	•	
CIS-N-20	20A	30V/50V	350W/700W	•	•			•				•	NEG	•	•	
CIS-N-LED-2800	20A	30V/50V	350W/700W	•	•			•				•	NEG	•	•	•
CIS-N-LED-1400	20A	30V/50V	350W/700W	•	•			•				•	NEG	•	•	•
CIS-N-LED-1050	20A	30V/50V	350W/700W	•	•			•				•	NEG	•	•	•

### Multi-purpose Applications: Engineered for reliability in low- to high-power applications

D2020N	20A	30V/50V/100V	350W/700W/1400W	•	•	•	•		•		•	•	NEG	•		
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### Telecom Tower Applications

SPS12D100B	100A	30V	1.75kW	•					•		•	•	By Request			
SPS24D100B	100A	50V	3.5kW		•				•		•	•	By Request			
SPS48D100B	100A	100V	7.0kW				•		•		•	•	By Request			
SPS12D200B	200A	30V	3.5kW	•					•		•	•	By Request			
SPS24D200B	200A	50V	7.0kW		•				•		•	•	By Request			
SPS48D200B	200A	100V	14kW				•		•		•	•	By Request			
SPS12D300B	300A	30V	5.25kW	•					•		•	•	By Request			
SPS24D300B	300A	50V	10.5kW		•				•		•	•	By Request			
SPS24D300B	300A	100V	21kW				•		•		•	•	By Request			





## Plug and Play Off-Grid Systems

Phocos is a global leader in quality and value in off-grid power technologies. Our turnkey systems combine our expertise in optimizing component performance with component quality to deliver systems that are reliable, cost effective, and easy to use.

## P-Box and E-Box Series Off-Grid Power Cabinets

P-Box and E-Box Series are all-in-power cabinets that supply AC or DC power from a PV array. These professionally designed, pre-assembled cabinets simplify purchase decisions and installation — only PV modules and batteries are needed. Sizing and capacity of the control unit, solar charge controllers, inverters, wires, fuses, connections, circuit breakers and enclosure are pre-configured for optimal operation, low maintenance and long life.

P-Box and E-Box are pre-configured with the same system components. E-Box versions include space for batteries inside the enclosure for a clean, one-box installation. P-Box versions do not include space for batteries making them ideal for retrofit installations where the battery storage enclosure does not need replacement.



**P-Box  
AC Series**



**E-Box  
DC Series**

AC Series	Battery Voltage (V)	Nom. PV Power (Wp)	Continuous Power (W)	Surge Power (W) (1 Sec.)	E-Box Only Battery Space
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### Standard P-Box & E-Box AC Models

PBOX/EBOX-SH-40AC700	12/24V	≤600/1200W	700W	<1230W	2 x 8D Batteries
PBOX/EBOX-SH-40AC1000	12/24V	≤600/1200W	1000W	<1750W	4 x 8D Batteries
PBOX/EBOX-SH-40AC1500	12/24V	≤600/1200W	1500W	<2650W	4 x 8D Batteries
PBOX/EBOX-SH-40AC2000	12/24V	≤600/1200W	2000W	<3500W	4 x 8D Batteries
PBOX/EBOX-IN-100AC3000	48V	≤6000W	3000W	<6000W	4 x 8D Batteries
PBOX/EBOX-IN-100AC7000	48V	≤6000W	7000W	<6000W per Inverter	8 x 8D Batteries
PBOX/EBOX-AC3P-6000/48 (3 Phase)	48V	≤6000W	10,500W	<6000W per Inverter	Custom

DC Series	Battery Voltage (V)	Nom. PV Power (Wp)	Max Load Current (ADC)	User Interface	E-Box Only Battery Space
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### Standard E-Box DC Models

EBOX-DC-300/24-PWM	12/24V	≤150/300	10A	LED	Qty 1-6, Group 31 Batteries
EBOX-DC-600/24-PWM	12/24V	≤300/600	20A	LED	Qty 1-6, Group 31 Batteries
EBOX-DC-1000/24-PWM	12/24V	≤500/1000	30A	LED	Qty 2-6, Group 31 Batteries Qty 2, 8D Batteries
EBOX-DC-600/24-PWM-LCD	12/24V	≤300/600	20A	LCD	Qty 2-6, Group 31 Batteries Qty 2, 8D Batteries
EBOX-DC-1000/24-PWM-LCD	12/24V	≤500/1000	30A	LCD	Qty 2-6, Group 31 Batteries Qty 2, 8D Batteries
EBOX-DC-500/24-PPT	12/24V	≤250/500	20A	LED	Qty 2-6, Group 31 Batteries Qty 2, 8D Batteries
EBOX-DC-1200/24-PPT	12/24V	≤600/1200	45A	LED	Qty 4, 8D Batteries
EBOX-DC-1200/24-PPT-LCD	12/24V	≤600/1200	45A	LCD	Qty 4, 8D Batteries
EBOX-DC-1200/48-PWM-LCD	48V	≤1200W	35A	LCD	Qty 4, 8D Batteries
EBOX-DC-3400/48-PWM-LCD	48V	1300W-3400W	45A	LCD	Qty 8, 8D Batteries
EBOX-DC-6000/48-PPT	48V	≤6000W	80A	LED	Qty 8, 8D Batteries



## SHS Kits

### SHS Series Plug & Play Solar Home System Kits

Phocos proudly offers Solar Home System (SHS) kits to bring compact autonomous power to remote locations. SHS kits are designed for easy operation and selection, with three different kit wattage options available to meet various energy and budget requirements. Each kit can power different DC electrical appliances; from lights, to fans, to mobile phone charging. The SHS series offers an economical solution that provides safe, quiet and reliable off-grid power. With innovation in mind, the engineering team combined the safest LFP Lithium energy storage technology with energy efficient DC LED lighting, to achieve optimal performance.

Model	PV Panel Power	DC LED Lamps	Battery Capacity	Max. Charge Current	Max. Load Current	Charging Time	Weight	Run Time
SHS-5W	5Wp	3x 1W	7.4 V/2600Ah/19Wh	1000mA	1500mA	8hrs	5.34 lbs (2.42 kg**)	1 Lamp 15h* 2 Lamps 8h* 3 Lamps 5h*
SHS-10W	10Wp	3x 2W	7.4 V/5200Ah/39Wh	1500mA	2600mA	8hrs	4.67 lbs (2.12kg)	
SHS-20W	20Wp	3x 3W	7.4 V/10400Ah/77Wh	3000mA	5000mA	8hrs	5.20 lbs (2.36kg)	

\* Conditions Apply: Back up time varies and depends upon the ambient temperature and operating conditions.

The run time estimate does not account for mobile phone charging.

\*\*With panel inside



## FR Series

### FR Series DC Chest Refrigerator/Freezer

The Phocos FR Series provides flexibility to our customers, creating a valuable solution for various applications. In the field, these units can be set for 12V or 24V requirements, and can operate as a refrigerator or freezer (by simply adjusting the thermostat). The FR series units are battery-powered and do not require an inverter to operate. Their maintenance-free, Danfoss brushless DC compressor allows for direct operation from a battery. Energy-efficient features such as extra-thick insulation and a lockable lid make them especially suited for solar-powered applications.

- FR Series awarded 2016-17 Global LEAP Finalist (Lighting & Energy Access Program)



Model	Operating Voltage	PV Panel Size (typ./max.)	Content (Capacity)	Temperature Range	Door Type	Weight	Cabinet Dimensions (WxHxD)	Inner Dimensions (WxHxD)
FR170MP	12/24V DC	80/160W	170 L	+3 to +43 °F -16 to +6 °C	Top opening	110 lbs (50kg)	34 x 29.7 x 26.7 in 914 x 755 x 680 mm	26.4 x 26.4 x 17.2 in 671 x 670 x 436 mm
FR240MP	12/24V DC	100/200W	240 L			154 lbs (70kg)	45 x 33.4 x 27 in 1144 x 849 x 684mm	35.4 x 26.4 x 17.3 in 900 x 671 x 440 mm

## More Product Families

### Off-Grid Inverters



Pure sine wave inverters

### DC Lighting



Energy-efficient DC LED lamps

### Street Light Systems



All-in-one solution with LED lamps, charge controller, timer and LED driver.

### Pico Solar



Portable solar lights and energy kits

# Phocos Group



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