clean energy products

CATALOG
2012 - 2013
solageo
At Trade Without Borders our focus is on bringing practical product solutions that benefit individuals, households, and entire communities in developing regions of the world.

We are able to do so by leveraging our core competencies in manufacturing, product procurement, product development, and global supply chain management-- and collaborating with a growing network of partners around the globe.

We welcome you to browse this catalog... let us know if our current product solutions meet your needs... or advise us of how we can better meet an unmet need... most importantly, come partner with us in heeding the United Nations’ call to provide Sustainable Energy for All.

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**TWB** is registered through the United Nations Foundation as an Energy Access Practitioner, and is actively working to support the UN General Assembly’s Sustainable Energy for All campaign.

Here are some of the ways in which TWB is contributing to Sustainable Energy for All, including for those residing at the proverbial Base of the Pyramid (BoP).

- We focus on offering the most extensive range of quality and affordable Clean Energy products that are also the most appropriate for BoP markets.

- We provide access to essential daily livelihood needs such as Clean Energy Lighting, Solar Mobile Phone Chargers and Solar Cookers that reduce costs longer-term while improving the quality of life for hundreds of thousands at the BoP.

- We are facilitating global distribution of low-power household appliances that can be powered by solar energy in off-grid locations. One example is a low-power Mosquito Trap. The product has been scientifically tested and proven to reduce the incidence of mosquito vectors that transmit tropical diseases such as Dengue Fever. Moreover, at 3.5W, its power requirements are low enabling it to be powered by a 20W Solar System in off-grid locations.

- We enable inventors of “disruptive” inventions for the BoP to more rapidly scale up the manufacturing and market

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For more information, please visit [www.sustainableenergyforall.org](http://www.sustainableenergyforall.org)
launch of their inventions by leveraging TWB’s core competencies in Product Development and Manufacturing, and importantly, TWB’s intuitive insights into BoP markets.

➢ TWB itself is also working on new, innovative product solutions for BoP markets. Among the projects we are working on is Solar Refrigeration for households and small businesses in BoP markets.

➢ We are working to build an online portal for the Clean Energy products we procure or help to develop that will enable more efficient and sustainable supply chains that extend all the way to the Bottom of the Pyramid.

➢ Through local, inclusive enterprises, we can empower hundreds of local entrepreneurs distributing and servicing TWB products to increase their incomes and improve the quality of theirs, their families’, and their communities’ lives.

➢ Through the shipment of Clean Energy products to BoP markets world-wide, TWB facilitates the offset of thousands of tons of CO2.

➢ We aim to support large, global organizations serving the BoP to more efficiently and effectively procure Clean Energy products for their global members by providing a one-stop marketplace for such products.

➢ We directly contribute to sustainable Social and Economic Development at the BoP by increasing the flow of goods to, from and between developing regions of the world.
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SOLAR MOBILE PHONE CHARGERS
SOLAR CHARGERS FOR LAPTOPS
AND OTHER ELECTRONIC DEVICES

KEY FEATURES
• Built-in 600 mAh Lithium Battery
• Short-term charging for most mobile phones
• Recharge charger by Solar panel or USB
• Super bright LEDs
• Output Voltage - Solar: 5.5V / USB: 5V

SOLAR CHARGER
with LED TORCH
TWB-H779

BATTERY CHARGING TIME

<table>
<thead>
<tr>
<th>USB</th>
<th>Solar Power</th>
<th>Solar Panel</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 hours</td>
<td>17-20 hours</td>
<td>0.2W</td>
<td>Lithium Battery 600mAh</td>
</tr>
</tbody>
</table>

THE IMPACT OF EXTERNAL SOLAR CHARGERS IN KEEPING MOBILE PHONES OPERATIONAL IN OFF-GRID COMMUNITIES

1 hour of charging = 20 minutes talk time
5 hours of charging per week = 100 minutes of talk time per week
Given 52 weeks in a year = 5200 minutes of talk time per year

THE IMPACT OF MOBILE PHONES ON DEVELOPING REGIONS OF THE WORLD

Almost 70% of mobile phone subscriptions are in developing regions of the world.

Not surprising as mobile phones:
> Provide a leap of technology access to modern communication facilities
> Enable rural households to keep in contact with family and friends who have migrated to the cities
> Serve as a valuable income generating tool for farmers, traders, village shop owners, Self-Help Groups and many others. In one World Bank study of 120 countries, for every 10% points increase in the penetration of mobile phones, there is an increase in economic growth of 0.8% points in developing countries.

AS MANY AS 500 MILLION PEOPLE WITH MOBILE PHONES LIVE IN AREAS WITH NO ACCESS TO ELECTRICITY

[source: GSMA]
### SOLAR CHARGER WITH LED TORCH

**TWB-H353**

#### KEY FEATURES
- Built-in 350mAh Lithium Battery
- Short-term charging for most mobile phones
- Recharge charger by Solar panel or USB
- Super bright LEDs
- Output Voltage - Solar: 5.5V / USB: 5V
- Output Current - Solar: 35mA / USB: 300mA

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**TWB-H733-1**

#### KEY FEATURES
- Built-in 1200mAh Lithium Battery
- Rubberized exterior for added protection
- Charge most mobile phones
- Recharge charger by Solar panel or USB
- Bright LED torch
- Output Voltage - Solar: 5.5V / USB: 5V
- Output Current - Solar: 60mA / USB: 350mA

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**TWB-H-751/H-751-1**

#### KEY FEATURES
- Built-in 1000mAh (TWB-H-751) / 2000mAh (TWB-H-751-1) Lithium Battery
- Charge most mobile phones
- Charge by Solar Panel or via USB
- LED Battery Indicator
- Output Voltage - Solar: 5.5V / USB: 5V
- Output Current - Solar: 50mA / USB: 300mA
SOLAR CHARGER WITH LED FLASHLIGHT
TWB-SB-3077

**KEY FEATURES**
- Charge battery via sunlight or 9V AC/DC adaptor (not included)
- Multiple light settings: 1 LED; 3 LEDs; 3 LEDs flashing
- Bright LED lighting
- Charge a mobile phone for emergency use
- Charging indicator
- Output voltage: 5.4V
- Output current: 500mA

**BATTERY CHARGING TIME**
- AC Adaptor: 4 hours
- Solar Power: 8 hours
- Solar Panel: 0.325W x 3
- Battery: NiMH 3.6V/700mAh
- Lumens: 8

EXTERNAL SOLAR CHARGER
TWB-SL-1505

**BATTERY CHARGING TIME**
- USB: 2.5 hours
- Solar Power: 12 hours
- Solar Panel: 117 x 70 x 9mm 0.72W
- Battery: NiMH 4.8V/800mAh

**KEY FEATURES**
- Separate Solar Panel & Battery Box
- Overcharge / Over-discharge protection
- Replaceable Rechargeable Batteries
- Standard: 10 pcs. Mobile Phone Connectors
- 3 LEDs for Flashlight functionality
- Carrying Strap
PORTABLE SOLAR CHARGER

Fully charge your mobile phone, laptop and other digital devices

TWB-MP-S500

KEY FEATURES
• Foldable Panels for easy portability
• Solar Panel Dimensions: 140 x 80mm x 2pcs
• Output: 3W (max)
• Output Voltage: 5V +/-0.2V
• Output Current: 600mA (max.)
• Dimensions (closed): 170 x 115 x 26mm
• Dimensions (open): 230 x 175 x 15mm
• Weight 205g

TWB-MP-S750

KEY FEATURES
• Foldable Panels for easy portability
• Solar Panel Dimensions: 90 x 70mm x 6pcs
• Output: 4.8W (max.)
• Output Voltage: 5V +/-0.2V
• Output Current: 960mA (max.)
• Dimensions (closed): 145 x 135 x 65mm
• Dimensions (open): 790 x 135 x 13mm
• Weight 310g

ACCESSORIES

10 Mobile Phone Connectors
Optional Power Bank
**SOLAR CHARGER**

**TWB-RS-009**

- Key Features:
  - Charge your mobile phone or other electronic devices
  - Slim Design
  - Carabiner for easy clip-on functionality
  - Battery Power indicator light (on back)
  - 2 Charging cables and 7 Connector tips to charge a variety of mobile phone models (Nokia 2mm, Nokia 3.5mm, Motorola, Mini USB, Samsung Small, Sony Ericsson Wide, Micro USB); Optional iPhone connector

**LED LIGHTING OPTIONS**

All products listed below include a Solar Charger for recharging

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**RECHARGEABLE LED BOOKLIGHT**

**TWB-A010**

- Battery: 3xAAA Ni-MH 3.6V/300mAH
- Charging Time: 1 hour
- LED: 3 LEDs
- Lumens: Low: 2 Lumens, High: 6 Lumens
- Lighting Time: Low: 12 hours, High: 4 hours
- Key Features:
  - Compact Reading Light
  - Convenient Clip affixes easily to most reading material

**RECHARGEABLE LED FLASHLIGHT**

**TWB-A020**

- Battery: 3xAAA Ni-MH 3.6V/650mAH
- Charging Time: 3 hours
- LED: 12 LEDs
- Lumens: Low: 6 Lumens, Mid: 12 Lumens, High: 25 Lumens
- Lighting Time: Low: 12 hours, Mid: 5 hours, High: 3 hours
- Key Features:
  - Multiple Light Settings for Reading, Working or as a Stand-by Room Light
  - Flexible neck is easily adjustable to different angles
  - Base with Adjustable Arm
    - Lay flat on desk
    - Swing out half-way to elevate the Base
    - Swing out all the way to hang on wall
  - ON-OFF Power Switch

**RECHARGEABLE LED ROOM LIGHT**

**TWB-A040**

- Battery: 3xAAA Ni-MH 3.6V/300mAH
- Charging Time: 3 hours
- LED: 12 LEDs
- Lumens: Low: 6 Lumens, Mid: 12 Lumens, High: 25 Lumens
- Lighting Time: Low: 12 hours, Mid: 5 hours, High: 3 hours
- Key Features:
  - Multiple Light Settings for Reading, Working or as a Stand-by Room Light
  - Flexible neck is easily adjustable to different angles
  - Base with Adjustable Arm
    - Lay flat on desk
    - Swing out half-way to elevate the Base
    - Swing out all the way to hang on wall
  - ON-OFF Power Switch
Through local, inclusive partners we are working to provide communities in off-grid locations with access to appropriate, affordable & quality clean lighting solutions.

**SOLAR LED LAMPS**

- **stable & bright**
  - ~100 lumens/watt
  - ~ $0.05 / klxh

**KEROSENE LAMPS**

- **inconsistent flickering**
  - only ~0.2 lumens/watt
  - ~ $1.80 / klxh (volatile price)

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**BETTER QUALITY + MORE EFFICIENT LED LIGHTING = BETTER VALUE & MORE COST-EFFECTIVE ILLUMINATION**

- More productive working and study hours in off-grid communities
- Better air quality reduces health risks while also eliminating fire hazards
- Green lighting is environmentally friendlier, greatly reducing CO₂ emissions
- Lasts 10 times longer than an incandescent bulb

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**DID YOU KNOW?**

- Kerosene and other fuel powered lights consume 77 billion liters of fuel
- A single kerosene lantern burns, on average, for 4 hours a day and emits over 100kg of CO₂ per year
- Total emissions for all fuel based lighting results in 190 million metric tons of CO₂ emissions, equivalent to 1/3 the total emissions from the UK

[Source: Dr. Evan Mills, The Lumina Project as reported by George Webster for CNN]
RECHARGEABLE MINI LANTERN
TWB-H519

KEY FEATURES
- Built-in rechargeable batteries
- Bright LED lighting
- Orange emergency lighting
- Charging indicator light
- Emergency mobile phone charging
- Alternative charging options: Charge using car lighter socket

SOLAR/DYNAMO RECHARGEABLE LED LANTERN
TWB-TF-12

KEY FEATURES
- Dual Lighting Options
  - Flashlight
  - Lantern
- Multiple Charging Options
  - Charge by built-in Solar panel
  - Charge by external Solar panel (not included)
  - Charge by Dynamo Cranking power
  - Charge by car’s cigarette lighter (car adaptor not included)
  - Charge by AC (grid) power (AC/DC adaptor not included)
- Easily replaceable rechargeable batteries
- Temporarily charge your mobile phone in an emergency
- AM/FM Radio
- Built-in Speaker
  - Listen to the radio
  - Aux-in function: Connect your mobile phone or digital music player and listen to your favorite downloaded songs off the Lantern’s speaker.
- Can be powered by back-up disposable batteries [3 x AA, not included]
**SOLAR/DYNAMO LED WATER RESISTANT FLASHLIGHT**

**TWB-SB-6019**

**KEY FEATURES**
- Integrated Solar Panel
- Dynamo cranking power
- No external batteries required
- Multiple Light Settings
  - 1 LED; 3 LEDs; 3 LEDs flashing
- Water Resistant (IP44)

**Battery**
- Ni-Mh
- 3.6V/80mAh

**Charging Time**
- ~1 min cranking
- = 8 min lighting

**LED**
- 6 LEDs

**Lumens**
- 22

**Lighting Time**
- 4 hours

**Solar Panel**
- 0.11W

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**DYNAMO LED FLASHLIGHT WITH RADIO**

**TWB-SB-3030**

**KEY FEATURES**
- Dynamo Charging - no batteries needed
- Multiple Light Settings
  - 1 LED and 3 LEDs;
- FM scanner
- Alarm sound

**Battery**
- Ni-Mh
- 3.6V/80mAh

**Charging Time**
- ~3 min cranking
- = 25 mins light

**LED**
- 3 LEDs

**Lumens**
- 8

**Lighting Time**
- 4 hours
LED SOLAR FLASHLIGHT
TWB-WTE-607

KEY FEATURES
• Durable construction
• Integrated solar panel
• Illumination distance: 5m

LED SOLAR FLASHLIGHT
TWB-WTE-608

KEY FEATURES
• Durable construction
• Integrated solar panel
• Illumination distance: 5m

LED SOLAR FLASHLIGHT
TWB-WTE-604

KEY FEATURES
• Durable construction
• Integrated solar panel
• Illumination distance: 8m
**LED BICYCLE LIGHT**

**TWB-SB-1075**

**KEY FEATURES**
- Dynamo cranking power
- Multiple light settings: Low; High; Flashing
- Adjustable clip to affix to bicycle handlebar; Easily detachable - take it with you.
- Compact Design

**Battery**
- Ni-Mh 3.6V/80mAh

**LED**
- 3 LEDs

**Lumens**
- 10

**Lighting Time**
- 5 hours

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**LED BICYCLE LIGHT**

**TWB-SB-6027A**

**KEY FEATURES**
- Dynamo cranking power
- Multiple light settings: Low; High; Flashing
- Adjustable clip that can rotate 360° to affix to bicycle handlebar; Easily detachable - take it with you
- Use as a Flashlight when not bicycling

**Battery**
- Ni-Mh 3.6V/80mAh

**LED**
- 3 LEDs

**Lumens**
- 10

**Lighting Time**
- 3 hours

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**LED HEAD LIGHT**

**TWB-SB-1058**

**KEY FEATURES**
- Dynamo cranking power
- Multiple light settings: Low; High; Flashing
- Use as a hands-free Head Light or convenient hand-held Flashlight
- Adjustable head strap
- Compact and lightweight

**Battery**
- Ni-Mh 3.6V/80mAh

**LED**
- 3 LEDs

**Lumens**
- 6

**Lighting Time**
- 5 hours
SOLAR WALL LIGHT WITH MOTION SENSOR
TWB-0294-W

KEY FEATURES
- Sturdy stainless steel housing
- Wall bracket mounting

Solar Panel | Battery | LED | Lumens | Water Resistant | Charging Time | Lighting Time
------------|---------|-----|--------|-----------------|---------------|----------------
0.45W       | Ni-MH 3 x AA 1.2V/600mAh | 9 LEDs | 63 | IPX4 | 6-10 hours | 6-8 hours

SOLAR SECURITY LIGHT WITH MOTION SENSOR
TWB-0114

KEY FEATURES
- High temperature plastic housing
- Wall mounting

Solar Panel | Battery | LED | Lumens | Water Resistant | Charging Time | Lighting Time
------------|---------|-----|--------|-----------------|---------------|----------------
0.7W        | Ni-MH 4 x AA 1.2V/600mAh | 9 LEDs | 100 | IPX4 | 6-10 hours | 6-8 hours

ADDITIONAL SOLAR LIGHTING
We have an extensive portfolio of more than 30 solar outdoor lighting items to choose from.
LED SOLAR STREET LAMPS

KEY FEATURES
• LED Lamps
  - Color Temperature: 2700-7000K
  - Lumens: 130 Lumens/W
  - Life Span: 50,000 hours
  - Beam Angle: 150°
  - Housing: Aluminum; Tempered Glass Cover
  - AC or DC input voltage
• Crystalline Solar Panels
• Maintenance-free Lead Acid Battery
• Intelligent Controller
• Carbon steel pole, hot dip galvanized, with weather-proof coating

Lamp Wattage (exact wattage can vary depending on project requirements)
20W 30W 40W 50W 80W 100W 120W 150W

SOLAR LED LAMP POST
TWB-DY-008-51

KEY FEATURES
• Aluminum Body
• Glass Lens
• Large capacity Solar Panel
• Long-life LED lighting

Solar Panel: 4W
Battery: NiMH 3.6V/4500mAh
Lumens: 203
LEDs: 29x0.07W
Charging Time: 6-10 hours
Lighting Time: 6-8 hours
ENERGY SAVING BULBS

CFL

**KEY FEATURES**
- 7W and above
- 45 Lumens/W
- 8000 hour life
- AC or DC input (select models) voltage
- Cool White or Warm White Color Options
- E27 Base

LED

**KEY FEATURES**
- 3W and above
- 240-400 Lumens
- 50,000 hours
- AC or DC input (select models) voltage
- Cool White or Warm White Color Options
- E27 Base

RECHARGEABLE BATTERIES

**KEY FEATURES**
- NiMH: Standard and Ready-to-Use
- Battery Sizes: AAA, AA or 9V
- Battery capacity
  - 9V: 160-200mAh
  - AAA: 700-1000mAh
  - AA: 1500-2500mAh

Did you know?

Rechargeable batteries can be reused **100 or more times** versus disposable batteries’ one time use.
CLEAN HOME ENERGY SOLUTIONS

AC/DC SOLAR HOME SETS
PORTABLE SOLAR SOLUTIONS
LOW POWER HOME APPLIANCES

Welcome the power of the sun in your home.

PV Modules → Controller → Battery → Inverter → AC → DC → Light

Clean Home Energy Solutions
AC/DC SOLAR HOME SETS
Choose from our Standard Box Set or a Do-It-Yourself Solar Kit

APPLICATIONS:

<table>
<thead>
<tr>
<th>Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED Lamp</td>
</tr>
<tr>
<td>Lantern</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electronic Device Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Phones</td>
</tr>
<tr>
<td>Laptop</td>
</tr>
<tr>
<td>Music Player</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Home Appliances</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED Desk Lamp</td>
</tr>
<tr>
<td>Household Fan</td>
</tr>
<tr>
<td>LED TV</td>
</tr>
</tbody>
</table>

POWER OPTIONS: 10W - 160W

COMPONENT | SPECIFICATION
-----------|-----------------|
Solar Panel | 10W TO 160W    |
Controller  | Per Solar Home Set |
Battery     | Per Solar Home Set |
Lighting    | LED lamp 3W, CFL lamp 7W or other options |
PORTABLE SOLAR POWER SOLUTIONS

KEY FEATURES

• Portable Design makes it easy to relocate
  • Easily adjustable solar panels
• Conveniently charge your mobile phone
• Portable Power for household lighting

<table>
<thead>
<tr>
<th>Model No.</th>
<th>AC Power</th>
<th>Solar Power</th>
<th>Battery</th>
<th>Solar Panel</th>
<th>LED</th>
<th>Lumens</th>
<th>Lighting Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>RB5A</td>
<td>8-10 hours</td>
<td>20 hours</td>
<td>Lead Acid 12V/4Ah</td>
<td>2W x 2</td>
<td>3 - Front</td>
<td>80 - Front</td>
<td>30 hours - Front</td>
</tr>
<tr>
<td>RB5B</td>
<td>8-10 hours</td>
<td>20 hours</td>
<td>Lead Acid 12V/4Ah</td>
<td>2W x 2</td>
<td>8 - Side</td>
<td>50 - Side</td>
<td>30 hours - Side</td>
</tr>
</tbody>
</table>

Extra Features:
• Side Panel lighting
• Radio

TWB-RB5B

Extra Features:
• Fold out front lighting
• Radio
LOW POWER HOME APPLIANCES

TWIN 5” RECHARGEABLE FAN
TWB-I503

KEY FEATURES
- DC Input Voltage
- AC/DC Adapter: 7V, 800mA
- Adjustable twin fans for maximum comfort
- 2 Speed Settings
- LED Indicator Lights
- Charging and Fully Charged Indicator Lights
- Compact, Slim Design

BATTERY CHARGING TIME

<table>
<thead>
<tr>
<th></th>
<th>AC Power</th>
<th>Battery</th>
<th>Power</th>
<th>Working Time (Rechargeable Battery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiMh</td>
<td>7 hours</td>
<td>4.8V/1800Ah</td>
<td>5.6W</td>
<td>3 hours [HIGH] 4.5 hours [LOW]</td>
</tr>
</tbody>
</table>

10” RECHARGEABLE FAN with LED LIGHTING
TWB-LW8

KEY FEATURES
- AC or DC Power Supply
- Over-charge and over-discharge protection
- Lightweight and Portable
- 2 Speed settings
- Charging Indicator Light
- Fully Charged Indicator Light
- 38W Power Rating

BATTERY CHARGING TIME

<table>
<thead>
<tr>
<th></th>
<th>AC Power</th>
<th>Battery</th>
<th>LED</th>
<th>Working Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiMh</td>
<td>12 - 18 hours</td>
<td>6V/4Ah</td>
<td>2 x 10 LEDs</td>
<td>Fan : 4 hrs Light : 25 hrs Both : 3 hrs</td>
</tr>
</tbody>
</table>
PORTABLE SOLAR DYNAMO RADIO
TWB-H629

KEY FEATURES
- Built-in 750mAh lithium battery
- Short-term charging for most mobile phones
- Charge by solar panel, Dynamo Cranking, AC/DC adapter (not included), or USB
- Back-up battery compartment for standard disposable batteries
- AM/FM Radio (AM: 525-1720KHz, FM: 88-108MHz)
- LED Lighting

SOLAR / DYNAMO RADIO & FLASHLIGHT
TWB-TF22N

KEY FEATURES
- Operate as a Flashlight or stand upright to use as a Lantern
- 3 Bright LEDs
- Triple Charging Options:
  - Dynamo Cranking Power
  - External AC/DC Adapter (not included)
  - Integrated Solar Panel
- Easily replaceable rechargeable batteries
- Back-up battery compartment for standard disposable batteries (not included)
- AM/FM Radio [AM: 530-1600kHz or AM: 530-1710kHz; FM: 88-108MHz]
- Built-in Speaker

MULTI-FUNCTIONAL DYNAMO RADIO
TWB-TF38

KEY FEATURES
- AM/FM Radio [AM: 530-1600kHz or AM: 530-1710kHz; FM: 88-108MHz]
- Multiple Lighting Functions
  - 3 LED Flashlight
  - 5 LED Adjustable Reading Light
- Built-in Speaker with Aux-in Function
  - Connect your mobile phone or digital music player and hear downloaded songs through the unit’s speakers
- Dual Charging Options:
  - Large Dynamo Handle for easy Cranking Power
  - External AC/DC Adapter (not included)
- Easily replaceable rechargeable batteries
- Back-up battery compartment for standard disposable batteries [not included]
- Large LCD Display
- Emergency Charging for Mobile Phones
- Alarm Clock function

BATTERY CHARGING TIME

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable Solar Dynamo Radio</td>
<td>4.5 hours</td>
<td>6 hours</td>
<td>20 hours</td>
<td>0.3W</td>
<td>1 LED</td>
<td>15 hours</td>
<td></td>
</tr>
<tr>
<td>Solar/Dynamo Radio &amp; Flashlight</td>
<td>6 hours</td>
<td>3.5 hours</td>
<td>16 hours</td>
<td>5V/60mA</td>
<td>3 LEDs</td>
<td>3.3 hours</td>
<td></td>
</tr>
<tr>
<td>Multi-Functional Dynamo Radio</td>
<td>6 hours</td>
<td>1.5 hours</td>
<td>n/a</td>
<td>5V/60mA</td>
<td>3 LEDs</td>
<td>2.5 hours</td>
<td></td>
</tr>
</tbody>
</table>

Portability for long-term use.

Lithium Battery 5V/750mAh
Ni-Mh 3.6V/280mAh
LED DESK LAMPS

KEY FEATURES
- Adjustable Lamp Head
- 4 Light Settings
- LED Color options: White or Warm White
- LED Life - More than 36,000 hours
- Low Power Consumption: 3W
- Power by AC input; Battery back-up power

PORTABLE SOLAR COOKER
TWB-SC-1

KEY FEATURES
- Compact & Lightweight (616g) for easy portability
- Made with high quality carton box material from Japan
- Easy to adjust the angle of the reflective panels as the position of the sun changes
- Suitable for use in a variety of locations
- Best when used with black color cookware

TIP: The best time for cooking with the Solar Cooker is between 10am to 2pm
AC/DC Thermoelectric Refrigerator

- AC or DC Power Supply
- 10L capacity (Optional 18L capacity)
- Can hold 10-12 cans of beverage or store fruits, vegetables or other items
- Cools to 18° - 20°C below the ambient temperature
- Electronic temperature control
- Compact size makes it easy to transport

3-Way Absorption Refrigerator

- 3-Way Power Supply: AC, DC or LPG Gas
- Large 42L capacity
- No Compressor or moving Parts
- Noiseless Operation
- Cools from 20° - 30°C below the ambient temperature

DC Compressor Refrigerator

- AC or DC input voltage
- 60L capacity [50L fridge; 10L freezer]
- Refrigerator and Freezer Functions
- Cooling Capacity:
  - Refrigerator: 0° - 10°C
  - Freezer: -15°C

Low Power Home Appliances Table

<table>
<thead>
<tr>
<th>Model</th>
<th>AC Power</th>
<th>DC Power</th>
<th>Gas</th>
<th>Power</th>
<th>Insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC/DC Thermoelectric</td>
<td>110/230V</td>
<td>12V</td>
<td>n/a</td>
<td>40W</td>
<td>CFC-Free PU Foam</td>
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<tr>
<td>Refrigerator (TWB-MNBX10)</td>
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<tr>
<td>3-Way Absorption</td>
<td>110/230V</td>
<td>12V</td>
<td>15g/hr</td>
<td>90W</td>
<td>CFC-Free C-Pentane Foam</td>
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<td>Refrigerator (TWB-XC-42G)</td>
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<tr>
<td>DC Compressor</td>
<td>110/230V</td>
<td>12/24V</td>
<td>n/a</td>
<td>65W</td>
<td>CFC-Free C-Pentane Foam</td>
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<tr>
<td>Refrigerator (TWB-DC60)</td>
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<td></td>
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</tr>
</tbody>
</table>
MOSQUITO TRAP with OPTIONAL SOLAR POWER
TWB-BIO-1

KEY FEATURES
• Scientifically proven to be effective against mosquito vectors that transmit Dengue Fever, Yellow Fever and other tropical mosquito borne diseases.
• Patented combination of visual signals, air flow and the unique chemical attractant lures and traps mosquitoes
• Low-power: Only 3.5W
• Can be powered by a 20W Solar System in off-grid locations
• Ecologically Safe:
  • Non-Toxic - No Pesticides or Insecticides
  • Safe for people and pets
  • Does not catch beneficial insects
  • Replaceable Chemical Attractant lasts 2-3 months

HOW IT WORKS:
1. AN INTEGRATED FAN GENERATES UPWARD CURRENTS SIMILAR TO A WARM HUMAN BODY.
2. THE PATENTED COMBINATION OF VISUAL SIGNALS, ARTIFICIALLY GENERATED AIR PLUMES, AND THE UNIQUE LURE ATTRACTS THE MOSQUITOES.
3. MOSQUITOES ATTRACTION TO THE TRAP ARE SUCKED INTO THE TRAP WHERE THEY DEHYDRATE AND DIE.
CLEAN ENERGY SOLUTIONS FOR YOUR COMMUNITY

SOLAR POWER STATIONS
HYBRID ENERGY STATIONS
MICRO GRIDS

THESE SOLUTIONS PROVIDE RENEWABLE ENERGY FOR SCHOOLS, HEALTH CLINICS, SMALL FACTORIES, OR EVEN A SMALL VILLAGE COMMUNITY.

Enabling Sustainable Communities
SOLAR POWER STATION
TWB-BX-FD-1.6KW

SAMPLE FEATURES
• Solar panel: 200 Watts 24 volts x 8 pcs
• Solar Charger: 24V 20A x 1 pc
• Inverter: 24V 1500 Watts x 1 pc, Output 110V 60Hz/220V 50Hz
• Combiner Box with breaker function x 1 set
• Mounting pole x 1 set
• Lead-Acid Batteries 12 Volts 225Ah x 2 pcs
• Battery Cables
• Inverter Cable x 1 set

HYBRID ENERGY

[ DIESEL + SOLAR + WIND ]

Reduces diesel fuel consumption by up to 70%
SOLAR SYSTEM COMPONENTS

SOLAR PANELS / MODULES

MONO AND POLY CRYSTALLINE PANELS

- Mono or poly crystalline modules
- Aluminum frame
- IP65 (water resistant)
- CE Certification (all panels)
- IEC Certification (large panels)

AMORPHOUS THIN FILM PANELS

- Stable power output including under indirect or diffuse light
- Aesthetic outlook suitable for BIPV projects
- IEC Certification

FLEXIBLE SOLAR MODULES

- Operating temperature range -40° - 85°C
- Humidity Temperature Test: 85° C, 85% RH 1000h
- Junction Box: 1P 65

OTHER COMPONENTS

CONTROLLERS

INVERTERS

BATTERIES

PLUS ALL OTHER SOLAR SYSTEM COMPONENTS
More unique environmental solutions to come

We have on-going Research & Development activities as we continue to better understand daily livelihood needs in Developing regions, and seek the best product solutions to meet those needs.

To learn more about our unique product solutions and our global trading services to, from and between Developing regions, please contact us for more information.

info@tradewithoutborders.org