Kaneka K60 60W Thinfilm Solar Panel

List Price: $8,475.00
Our Price: $5,299.00  Save: $3,176.00 (37%)
Model:  K60 (GSA-60)- QTY 25
Brand:  Kaneka
Availability:  Call for Availability
Volts:  48 V  Our Code: KAN60-K60
Amps:  0.9 A
Watts:  1500 W

Product Documentation click to view
- Kaneka_SOLAR_MODULE_K60.pdf

Add-Ons & Accessories click to view
These items are commonly used with the Kaneka K60 60W Thinfilm Solar Panel
- Blue Sky SOLAR BOOST 6024HL 60A, No Display
- Blue Sky Solar Boost Sb3048L 30A,24/48V No Disply

Bulk pack, quantity 25, of Kaneka K60 thin film solar panels. Because of the low profile nature of this panels frames you need to use UniRac's SolarMount with top clamps or Two Seas Genesis Pro mounts to mount this panel.

PLEASE NOTE SHIPPING COSTS, based on region and quantity of panels: TRUCK FREIGHT ONLY!
These are ESTIMATES:
- East Coast (except FL): 1-5 panels: $120; 6-24 panels: $175; pallet: $200
- Colorado and West: 1-5 panels: $300; 6-24 panels: $450; pallet: $750
- In between: 1-5 panels: $200; 6-24 panels: $300; pallet: $450
Kaneka Corporation
Thin Film Silicon PhotoVoltaics
K60 or GSA-60
60W Solar Panels

Features
- power tolerance +10%... -5%
- IEC 61646 tested and certified
- safety class II for system voltage up to 530 V (projected)
- power warranty 25 years (80%), 12 years (90%)*
- product guarantee 5 years*
- higher yield on plant due to higher power output on delivery
- high yields even at high module temperatures
- ecological advantage – extremely low consumption on material – energy payback time less than 2 years
- delivered ready for connection with cable and Multi-Contact plug-in connectors
- integrated bypass diodes
- 100% end control

Environmental pollution and energy shortages are now of global concern. More interest is focusing on photovoltaic (PV) power generation, which can use an unlimited source of clean energy - the sun. Kaneka decided to begin research into thin film silicon PV modules at an early stage. This has allowed the company to assume a leading position in the industry over the past 20 years.

Kaneka’s accumulated expertise now makes it possible to offer next-generation energy all over the world through its advanced PV systems that empower individuals to take a proactive environmental role in their daily lives.

Crystalline-Si PV modules lose some power-generating capability with rises in temperatures. But Amorphous-Si PV modules have higher power generation capability during extreme summer time. Amorphous-Si PV modules can deliver maximum performance during summer afternoons. Therefore the amorphous-Si PV systems can contribute during the time when the electricity is needed most for air-conditioners in houses and offices.

*Kaneka Silicon PV’s generated watt-power is approximately same as that of other crystalline silicon PVs during the winter months, but in summer the Kaneka Silicon PV generates significantly more power compared to other crystalline silicon PVs.
Source: "NEDO/Ritsumeikan University Demographic Module Field Test and Operational Analysis" presented at the International PV SEC-11, Sapporo, Hokkaido, Japan, 1999.
Installation location: Kusatsu, Shiga Prefecture Japan Slope angle: 15.3 degree
Kaneka's amorphous silicon (a-Si) has superior light absorption per nominal watt power. Compared with mono-crystalline (c-Si) or poly-crystalline (poly-Si), it generates considerably more power per nominal watt power.

Assuming that the total solar radiation per year (1.323kWh/m2) is 100%, Kaneka Silicon PV can produce 90.95% of actually generated watt-power, much higher than that of other crystalline silicon PVs (80 to 84%).

Source: "NEDO/Ritsumeikan University Demographic Module Field Test and Operational Analysis" presented at the International PV SEC-11, Sapporo, Hokkaido, Japan, 1999. Installation location: Kusatsu, Shiga Prefecture Japan
Slope angle: 15.3 degree
Another advantage is that the single junction a-Si layer can be made extremely thin. The thickness of a-Si cell is 0.3, which is 1/600 of that of crystalline silicon cell. This uses less material and energy thereby enabling high productivity for mass production (approx. 200).

EPT (Energy Pay-back Time)

EPT = E0/Eg
E0 : Energy for manufacturing PV
Eg : Generated power by PV for one year

EPT is the time a PV module to "pay back" the energy used in its manufacture by its own power generation. The EPT of amorphous-Si PV is 1.6 years, which is approximately 6 months shorter than that of crystalline silicon PV (2.2 years). EPT is one of the most important aspects when evaluating the ecological benefit of PV systems.

Quality
- IEC 61646 tested and certified
- safety class II for 530 V system voltage (projected)

Guarantee
- 25 years power warranty (80%)*
- 12 years power warranty (90%)*
- 5 years product guarantee*
High performance
- power tolerance +10%... -5%
- higher yield on plant due to higher power output on delivery
- high yields even at high module temperatures

Ecological advantage
- Extremely low consumption on material - energy payback time less than 2 years

Design
- Homogeneous colouring of frame and module surface - high-class, harmonic appearance

<table>
<thead>
<tr>
<th>Electrical Characteristics</th>
<th>Stabilised values</th>
<th>Initial values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal peak power (Wp)</td>
<td>60.0</td>
<td>79.0</td>
</tr>
<tr>
<td>Guaranteed minimum power (Wp)</td>
<td>57.0</td>
<td>75.05</td>
</tr>
<tr>
<td>Nominal voltage (V)</td>
<td>67.0</td>
<td>74.0</td>
</tr>
<tr>
<td>Nominal current (A)</td>
<td>0.90</td>
<td>1.04</td>
</tr>
<tr>
<td>Open-circuit voltage (V)</td>
<td>92.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Short-circuit current (A)</td>
<td>1.19</td>
<td>1.22</td>
</tr>
<tr>
<td>Max fuse rating (A)</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum system voltage (V)</td>
<td>530</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>960 (37.8&quot;)</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>990 (39&quot;)</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>40 (1.58&quot;)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>14 (31 lbs)</td>
</tr>
<tr>
<td>Assembly holes Ø 8 mm (pieces)</td>
<td>4</td>
</tr>
</tbody>
</table>

Kaneka
Blue Sky SOLAR BOOST 6024HL 60A, No Display

- **List Price**: $572.00
- **Our Price**: $545.71  **Save**: $26.29 (5%)
- **Model**: 6024HL
- **Brand**: Blue Sky Energy
- **Availability**: In Stock
- **Amps**: 60 A  **Our Code**: BLSSB6024HL

**Add-Ons**

- Blue Sky 930-0022-20 Battery Temp Sensor, 20'
- Blue Sky Solar Boost Sb50Rd25 Remote Display 25'
- Blue Sky Charge Voltage Calibration Tool
- Blue Sky SB50 Cover w/ Built-in Display

Solar Boost 6024HL MPPT Charge Controller, 60 amps, 12 or 24 volt DC out. Does not include front panel digital display.

**Blue Sky Energy**

**SOLAR BOOST™ 6024HL**

**HIGH VOLTAGE INPUT**

**MAXIMUM POWER POINT TRACKING**

**PHOTOVOLTAIC CHARGE CONTROLLER**

Patented MPPT Technology Increases Charge Current up to 30% Or More!

- Special High Voltage Input design accepts 36V or 48V Solar Module Arrays
- Charges 12V or 24V Batteries At Up To 60A Output Charge Current
- Three Stage Charge Control Optimizes Charge Parameters To Battery Size & Type
- Electronic Current Limit Prevents Overload Or Nuisance Fuse Blow
- Available Digital Display Monitors PV Charge Performance
- Durable Powder Coat Finish & Conformal Coated Electronics Resist Corrosion
- Fully Protected Against Excess Current, Temperature, Transient Voltage & Polarity
- Full 36 Month Limited Warranty, Optional Extended Coverage Available
- ETL Listed To UL STD. 1741, Certified to CAN/CSA STD. E335-1/2E, CE Labeled

Patented Maximum Power Point Tracking (MPPT) technology allows Solar Boost 6024H to increase charge current up to 30% or more compared to conventional charge controllers. Don’t waste money by throwing PV power away! Get the power you paid for with a Solar Boost charge controller.

Solar Boost 6024HL is specially designed to receive a high voltage 36V or 48V PV array.
input, and charge a 12V or 24V battery at up to 60A. A high efficiency DC-DC voltage converter combined with MPPT technology allows Solar Boost 6024H to provide a cost effective solution for installations where the PV array must be located far from the batteries and charge controller. High voltage input reduces both wiring expense and wiring power loss.

Solar Boost 6024HL also provide an advanced fully automatic three stage charge control system to ensure the battery is properly and fully charged, resulting in enhanced battery performance with less battery maintenance. An equalize function is also included to periodically condition liquid electrolyte lead-acid batteries. An optional user friendly digital display is available to monitor PV charge performance. Optional temperature compensation of charge voltage is also available to further improve charge control and battery performance.

How Do Solar Boost™ Controllers Increase Charge Current?

Typical 75W PV Module Performance

Conventional controller charging at 12V only extracts about 53W.

Solar Boost MPPT controller operates at its maximum power voltage extracting full 75W.

Solar Boost charge controllers increase charge current by operating the PV module in a manner that allows the module to produce all the power it is capable of. A conventional charge controller simply connects the module to the battery when the battery is discharged. When the 75W module in this example is connected directly to a battery charging at 12 volts its power production is artificially limited to about 53 watts. This wastes a whopping 22 watts or nearly 30% of the available power!
Patented MPPT technology used in the Solar Boost 6024HL operates quite differently. The Solar Boost 6024H continually calculates the module’s maximum power voltage, in this case 17 volts per module. It then operates the modules at their maximum power voltage to extract maximum power. The higher power at high voltage extracted from the modules is converted to battery voltage through a high efficiency DC-DC converter, then provided to the battery as increased charge current.

The actual charge current increase you will see varies primarily with module temperature and battery voltage. In comfortable temperatures, current increase typically varies between 10 to 25%, with 30% or more easily achieved with a discharged battery and cooler temperatures. What you can be sure of is that Solar Boost charge controllers will deliver the highest charge current possible for a given set of operating conditions.

Specifications for Solar Boost 6024HL

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Current Rating</td>
<td>60 Amp Maximum</td>
</tr>
<tr>
<td>Nominal Battery Voltage</td>
<td>12 / 24VDC Field Selectable</td>
</tr>
<tr>
<td>Nominal PV Voltage</td>
<td>36VDC / 48VDC (3 or 4 series modules) Field Selectable</td>
</tr>
<tr>
<td>PV Open Circuit Voltage</td>
<td>140VDC Maximum</td>
</tr>
<tr>
<td>Standby Power Consumption</td>
<td>30mA Typical</td>
</tr>
<tr>
<td>Charge On Power Consumption</td>
<td>190 / 120mA @ 12 / 24VDC (with fan operating)</td>
</tr>
<tr>
<td>Charge Algorithm</td>
<td>3 stage charge. Acceptance/Float transition based on charge current matched to battery amp-hours. Can accept external shunt signal for optimal charge control with widely varying loads. Selectable for 2 stage charge.</td>
</tr>
<tr>
<td>Acceptance Voltage Setpoint</td>
<td>13–16VDC / 26–32VDC</td>
</tr>
<tr>
<td>Float Voltage Setpoint</td>
<td>0–2VDC / 0–4VDC &lt; Acceptance</td>
</tr>
<tr>
<td>Equalization Voltage Acceptance</td>
<td>+ 1.0 / 2.0VDC</td>
</tr>
<tr>
<td>Voltage Step-down</td>
<td>Cannot operate as conventional 12VDC or 24VDC charge controller, must operate in high voltage input / low voltage output step-down mode</td>
</tr>
<tr>
<td>Temperature Compensation</td>
<td>Optional temperature sensor adjusts charge voltage setpoint based on measured battery temperature. Field selectable slope, –5.0mV/°C/cell (lead-acid), or –2.0mV/°C/cell (NiCd)</td>
</tr>
<tr>
<td>Power Conversion Efficiency</td>
<td>95% @ 28 Volt 50 Amp Output</td>
</tr>
<tr>
<td>Cabinet Dimensions</td>
<td>10”H x 8¾”W x 3½”D (25.5cm x 22.6cm x 8.74cm)</td>
</tr>
<tr>
<td>Digital Display</td>
<td>Available in the unit, as a remote, or both. Shows PV input current, output charge current, battery voltage, charge mode and state of charge. Remote display mounts in standard duplex box, includes 25 foot (7.6m) cable. Maximum cable length to 300 feet</td>
</tr>
<tr>
<td>Digital Display Range/Accuracy</td>
<td>Voltmeter, 70.0VDC / ±0.30% F.S. Ammeter, 60.0A / ±0.50% F.S.</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Specified Temperature Range</td>
<td>0 to +40 (Extended range -40C to +60C, will operate but may not meet spec. – see Technical Bulletin 100206)</td>
</tr>
</tbody>
</table>

Note: For optimal Maximum Power Point Tracking performance, it is recommended that MPPT charge controllers be used in conjunction with uniform solar arrays consisting of multiple, identical solar panels. MPPT charge controllers will still work with mixed arrays, but at reduced efficiencies, which defeats the whole point of MPPT technology. These devices were designed to calculate the most efficient charging characteristics given the assumption of a uniform array. Mixed arrays, by definition throw this calculation off.

Technical Bulletins
- SolarBoost GFCI Use
- SB High Temp Derating
- SB Charge Voltage Set Tool
- SB Sizing for High Input Voltage
- SB Remote Display Signals

Customers who bought the Blue Sky SOLAR BOOST 6024HL 60A, No Display also purchased:
- [Blue Sky Solar Boost Sb50Rd25 Remote Display 25']
- [30' MC1 Connector #10 AWG Male/Female]
- [1/2" Strain Relief with 2 Round Holes]
- [Outback FlexWare FW500 DC breaker enclosure]
- [500A, 50Mv Shunt]
- [Midnite Solar MNPV6 Combiner Box]
List Price: $494.78
Our Price: $458.93     Save: $35.85 (7%)
Model: SB3048L
Brand: Blue Sky Energy
Availability: In Stock
Amps: 30 A

Add-Ons

**Blue Sky SOLAR BOOST FRONT PANEL DSPLY**
for SB3048

**Blue Sky Solar Boost Sb50Rd25 Remote Display 25’**

**Blue Sky 930-0022-20 Battery Temp Sensor, 20’**

**Blue Sky Charge Voltage Calibration Tool**

SB3048L Solar Boost MPPT solar charge controller 30 amps, 24 or 48 volts out.

Blue Sky Energy
Solar Boost 3048
30Amp, 24/48V
MPPT Charge Controller
(Also see Other Options)

Solar Boost 3048 is a 24/48 volt photovoltaic (PV) charge controller capable of delivering up to 30 amps of output current. Patented® Maximum Power Point Tracking (MPPT) technology allows Solar Boost 50 & 3048 to increase charge current up to 30% or more compared to conventional charge controllers. Controllers without MPPT technology simply can't deliver the charge current provided by Solar Boost 3048. Don't waste money by throwing PV power away! Get the power you paid for with the Solar Boost 3048.
Solar Boost 3048 does much more than increase charge current. It offers an advanced fully automatic three stage charge control system to ensure the battery is properly and fully charged, resulting in enhanced battery performance with less battery maintenance. Reliable high efficiency power conversion is achieved using the latest generation power MOSFET transistors, with output power delivered via a series pass Pulse Width Modulation (PWM) control scheme. An electronic current limit feature prevents output current from exceeding 30 amps. Output current limit eliminates worry about overload or nuisance fuse blow when PV power production is unexpectedly high. An equalize function is also included to periodically condition liquid electrolyte lead-acid batteries. An optional user friendly digital display is available to monitor PV charge performance. The display shows battery voltage, solar panel current, output charge current, charge mode and state of charge. It can be provided in the controller as pictured above, as a remote panel installed up to 300 feet away, or both. Optional temperature compensation of charge voltage is also available for both lead-acid and NiCd batteries to further improve charge control and battery performance.

How Does Solar Boost 3048 Increase Charge Current?
A solar module is a constant current device. As shown on a typical voltage-current curve, current remains relatively constant over a wide range of voltage. A typical 75 watt module delivers 4.45 amps @ 17 volts. Conventional controllers connect the module directly to the battery when the battery is discharged. When this 75 watt module is connected to a battery charging at 12 volts, the module still provides about the same current. But, because module output voltage is now held lower by the battery, it can only deliver 53 watts of power. This wastes a whopping 22 watts or nearly 30% of the available power!

Solar Boost's patented MPPT technology operates in a very different fashion. Under these conditions the Solar Boost calculates the maximum power voltage at which the module can deliver its maximum available power, in this case 17 volts. It then operates the module at 17 volts to extract maximum power. Solar Boost 3048 continually recalculates the maximum power voltage as operating conditions change. Solar module power, now 75 watts, feeds a high efficiency power converter which reduces the 17 volt input to battery voltage at the output. The full 75 watts delivered at 12 volts would produce 6.25 amps. A current increase of 1.8 amps or 40% is achieved by converting the 22 watts that would have been wasted into useable charge current. This 12 volt example assumes 100% efficiency to illustrate the principal of operation. Actual boost will be somewhat less as some power is lost in wiring, fuses, and in the Solar Boost 3048 controller.

The actual charge current increase you will receive varies with module temperature and battery voltage. Lower module temperature increases available power, while lower battery voltage increases current for a solar output power level. Under normal conditions in comfortable temperatures, current increase typically varies between 10 to 25%, with 30% or more easily achieved with a discharged battery and cooler temperatures. What you can be sure of is that Solar Boost 3048 will deliver the highest charge current possible for a given set of operating conditions. In conditions where extra solar power is not available, Solar Boost 3048 will operate as a conventional series pass PWM controller.

Three Stage Charging Taken To The Next Level*
Controllers that determine full charge based on time or other arbitrary factors cannot realize all the benefits three stage charging has to offer. The proper indication of when a lead-acid...
battery is fully charged is when net battery charge current during acceptance charge decreases to 1.0 amps per 100 amp-hours of battery capacity. Solar Boost 3048 uses net battery charge current optimized to battery size in amp-hours to determine full charge. This method charges the battery quickly and completely without undercharge, overcharge or excessive water loss. An internal precision alloy shunt is used to measure battery current when battery load during charge is relatively constant. When battery load is highly variable during charge, Solar Boost 3048 can connect to an external shunt measuring net battery current. If desired, Solar Boost 3048 can also operate as a two stage charger.

*Note:* 3 stage charging requires the Temperature Sensor Lug!

### Three Stage Battery Charging

- **Bulk Charge**
  Charge begins with a high current of up to 30 amps. During this stage the battery receives maximum available current to rapidly recharge the battery.

- **Acceptance Charge**
  Following bulk charge the acceptance voltage is applied to the battery. During this stage, charge current decreases as the battery charges.

- **Float Charge**
  Once the battery is fully charged, the float voltage is applied to the battery to properly maintain it in a fully charged state without excessive water loss.

- **Equalization**
  A fourth charge mode. Equalization is a controlled overcharge which is manually enabled to periodically condition flooded lead-acid batteries.

### Specifications

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>Solar Boost 50</th>
<th>Solar Boost 3048</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Rating</td>
<td>50 Amp Maximum</td>
<td>30 Amp Maximum</td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12 / 24VDC Field Selectable</td>
<td>24 / 48VDC Field Selectable</td>
</tr>
<tr>
<td>PV Open Circuit Voltage</td>
<td>5VDC Maximum</td>
<td>140VDC Maximum</td>
</tr>
<tr>
<td>Standby Power Consumption</td>
<td>30mA Typical</td>
<td></td>
</tr>
<tr>
<td>Charge On Power Consumption</td>
<td>150 / 90mA @ 12 / 24VDC</td>
<td>100 / 70mA @ 24 / 48VDC</td>
</tr>
<tr>
<td>Charge Algorithm</td>
<td>3 stage charge. Acceptance/Final transition based on charge current matched to battery amp-hours. Can accept external shunt signal for optimal charge control with widely varying loads. Selectable for 2 stage charge.</td>
<td></td>
</tr>
<tr>
<td>Acceptance Voltage Setpoint</td>
<td>13–16VDC / 26–32VDC</td>
<td>26–32VDC / 52–64VDC</td>
</tr>
<tr>
<td>Float Voltage Setpoint</td>
<td>0–2VDC / 0–4VDC ≤ Acceptance</td>
<td>0–4VDC / 0–8VDC ≤ Acceptance</td>
</tr>
<tr>
<td>Equalization Voltage</td>
<td>Acceptance + 1.0, 2.0VDC</td>
<td>Acceptance + 2.0 / 4.0VDC</td>
</tr>
<tr>
<td>Voltage step-down</td>
<td>Can charge 12V battery from 24V Array</td>
<td>Can charge 24V battery from 48V Array</td>
</tr>
<tr>
<td>Temperature Compensation</td>
<td>Optional temperature sensor adjusts charge voltage setpoint based on measured battery temperature. Field selectable slope, -5.0mV/C/Cell (lead-acid), or -2.0mV/C/Cell (NiCd)</td>
<td></td>
</tr>
<tr>
<td>Power Conversion Efficiency</td>
<td>97% @ 40 Amp Output</td>
<td>97% @ 25 Amp Output</td>
</tr>
<tr>
<td>Cabinet Dimensions</td>
<td>10&quot;H x 8.5&quot;W x 3.5&quot;D (25.5cm x 22.6cm x 8.8cm)</td>
<td></td>
</tr>
<tr>
<td>Digital Display</td>
<td>Available in unit, as a remote, or both. Shows PV input current, output charge current, battery voltage, charge mode and state of charge. Remote display mounts in standard duplex box, includes 25 feet (7.6m) cable. Maximum cable length to 300 feet (91.4m)</td>
<td></td>
</tr>
<tr>
<td>Digital Display Range/Accuracy</td>
<td>Voltmeter, 70.0VDC ±0.05% FS.</td>
<td>Ammeter, 60.0A ±0.5% FS.</td>
</tr>
<tr>
<td>Specified Temperature Range</td>
<td>0 to +40°C (Extended range -40 to +60°C, will operate but may not meet spec – see Technical Bulletin 10206)</td>
<td></td>
</tr>
</tbody>
</table>

### Other Options

- Solar Boost 3048 w/o display
- Solar Boost 3048D w/digital display
- Solar Boost 3048L w/o display
- Solar Boost 3048DL with display
- Front panel display for SB3048
- Remote display, 25' cable
- Battery Temp. sensor, 20' cable

Note: For optimal Maximum Power Point Tracking performance, it is recommended that MPPT charge controllers be used in conjunction with uniform solar arrays consisting of multiple, identical solar panels. MPPT charge controllers will still work with mixed arrays, but at reduced efficiencies, which defeats the whole point of MPPT technology. These devices were designed to calculate the most efficient charging characteristics given the assumption of a uniform array. Mixed arrays, by definition throw this calculation off.
Technical Bulletins

SB50-3048 Powerboard Replacement
SolarBoost GFCI Use
SolarBoost 50-3048 Multicontroller Use
SolarBoost High Temp Derating
SolarBoost Charge Voltage Set Tool
SolarBoost Sizing for High Input Voltage
SolarBoost Remote Display Signals
Extended Warranty Coverage

Customers who bought the Blue Sky Solar Boost Sb3048L 30A,24/48V No Disply also purchased:

- Blue Sky 930-0022-20 Battery Temp Sensor, 20'
- Blue Sky SOLAR BOOST FRONT PANEL DSPLY for SB3048
- Blue Sky Solar Boost Sb50Rd25 Remote Display 25'
- Kyocera KC130 TM 130W 12V Solar Panel w J-Box
- Blue Sky Charge Voltage Calibration Tool
- 0.1 - 30 Amp, 1-Pole Class R Fuse Block

If you wish to receive information about our ongoing projects please contact us at:

sales@livenergysolutions.com
Info@livenergysolutions.com
GreenerEnergy@Live.com

THANK YOU