

**Perry, Jenna D.**

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**From:** Harry Lewis, Jr [hrlewisjr@lewispetroleum.com]  
**Sent:** Thursday, October 21, 2010 7:12 PM  
**To:** Perry, Jenna D.  
**Subject:** RE: P2 Project  
**Attachments:** P2 DEP Solar System Proposal.doc; BP 4175B 10 3058US-3 10\_10[1].pdf

Jenna,

Please let me know if the attached information is adequate for our P2 proposal.

Regards,

Harry

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**From:** Perry, Jenna D. [mailto:Jenna.D.Perry@dep.state.fl.us]  
**Sent:** Thursday, October 21, 2010 4:20 PM  
**To:** 'Harry Lewis, Jr'  
**Subject:** P2 Project

Thanks for your previous two emails about the panels. Unfortunately, we need a little more information about the project. I'm attaching two proposals that we approved in the past as a reference for you to see what we need. They are both short (only one page each), and the CDR Systems proposal has some technical sheets attached. If you have any of those, even a brochure or something from their website, please attach it to the proposal.

If you are still interested in pursuing the P2 project, please submit your proposal by Monday. I know this is a tight time frame, but the EPA will be calling us on Tuesday to discuss on-going enforcement cases, and Lewis Environmental will come up. The 360-day time clock that EPA gives us for enforcement cases runs out on Monday for Lewis, so we would like to be able to tell them that a consent order is imminent.

Thank you for your continued cooperation,

Jenna Perry  
Environmental Specialist III - Hazardous Waste  
Florida Department of Environmental Protection  
office: 904-807-3382 | fax: 904-448-4362

*The Department of Environmental Protection values your feedback as a customer. DEP Secretary Mimi Drew is committed to continuously assessing and improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of service you received. Simply click on [this link to the DEP Customer Survey](#). Thank you in advance for completing the survey.*

## Solar System-Proposed P2 Project

- A. Project Description: H.R. Lewis Petroleum Company (Facility) will install a 2,450 watt SUNWORKS SOLAR photovoltaic system. The system will include (14) 4175B BP 175W Photovoltaic modules, Grid-Tie Inverters, rack, permitting and installation. This system will tie into an existing 6,240 WATT solar system bringing the total solar energy output to 8,690 watts.
- B. Environmental and Economic Benefits: Carbon Dioxide (CO<sub>2</sub>) is a colorless, odorless non-flammable gas and is the most prominent Greenhouse gas in Earth's atmosphere. Facility currently uses 6,590 kW hours of energy from the Jacksonville Electric Authority, a coal fire power plant. According to SUNWORKS SOLAR and EPA estimates, over the lifetime (25 years) of the new installation (2,450 watts), there will be an offset of 98 Tons of Accumulated Carbon Dioxide. The total system (8,690) will provide a reduction of 348 Tons of Accumulated Carbon Dioxide.
- C. Project Cost: \$19,800.00 plus tax.

## 175W Photovoltaic module

# BP 4175B

10 3058US-3 10/10



BP Solar has been manufacturing solar wafers, cells and modules for more than 35 years. This experience shows that the best way to optimize module life and electrical energy production is to attend to every detail in the design and manufacture of our products, our process controls and testing methods. BP Solar's latest generation of 72 cell, Monocrystalline B Series solar modules offers the following benefits:



### **Long lasting, innovative frame design**

The aluminum frame has a rounded profile for better handling comfort and is optimized for use with anti-theft bolts to increase security. It can withstand heavy snow loads (5400Pa - 112.8lb/ft<sup>2</sup>) even in end mounting.



### **Uniform appearance, aesthetically-pleasing**

Black frame and back sheet ensures the most attractive photovoltaic solution, maintaining the clean appearance of your roofline.



### **Improved reliability with effective cooling**

IntegraBus™ technology ensures reliable cable management while positioning the bypass diodes and junction box away from the cells ensuring cooler operation and greater energy production.



### **Increased energy production**

High transmission ARC glass and enhanced design push the laminate to the front, maximizing the energy production and reducing dirt accumulation and soiling losses.

### **Enhanced warranty offer**

BP Solar launches an industry leading warranty offer, with lower degradation rates on our modules manufactured beginning January 1st, 2010. Our internal testing standards that go well beyond international requirements back this innovative offer.

# 175W Photovoltaic module

## BP 4175B



### Electrical characteristics

|   | (1) STC 1000W/m <sup>2</sup>           | (2) NOCT 800W/m <sup>2</sup> |
|---|--|------------------------------|
| Maximum power (P <sub>max</sub> )               | 175W                                   | 126W                         |
| Voltage at P <sub>max</sub> (V <sub>mpp</sub> ) | 35.4V                                  | 31.5V                        |
| Current at P <sub>max</sub> (I <sub>mpp</sub> ) | 4.94A                                  | 3.95A                        |
| Short circuit current (I <sub>sc</sub> )        | 5.45A                                  | 4.41A                        |
| Open circuit voltage (V <sub>oc</sub> )         | 43.6V                                  | 39.7V                        |
| Module efficiency                               | 14.0%                                  |                              |
| Tolerance P <sub>max</sub>                      | -3/+5%                                 |                              |
| Nominal voltage                                 | 24V                                    |                              |
| Efficiency reduction at 200W/m <sup>2</sup>     | <5% reduction (efficiency 13.3%)       |                              |
| Limiting reverse current                        | 5.45A                                  |                              |
| Temperature coefficient of I <sub>sc</sub>      | 0.105%/ °C                             |                              |
| Temperature coefficient of V <sub>oc</sub>      | -0.360%/ °C                            |                              |
| Temperature coefficient of P <sub>max</sub>     | -0.45%/ °C                             |                              |
| (3) NOCT  | 47±2°C                                 |                              |
| Maximum series fuse rating                      | 20A                                    |                              |
| Application class (according to IEC 61730:2007) | Class A                                |                              |
| Maximum system voltage                          | 600V (U.S. NEC) 1000V (IEC 61730:2007) |                              |

1: Values at Standard Test Conditions (STC): 1000W/m<sup>2</sup> irradiance, AM1.5 solar spectrum and 25°C module temperature  
 2: Values at 800W/m<sup>2</sup> irradiance, Nominal Operation Cell Temperature (NOCT) and AM1.5 solar spectrum  
 3: Nominal Operation Cell Temperature: Module operation temperature at 800W/m<sup>2</sup> irradiance, 20°C air temperature, 1m/s wind speed

All solar modules are individually tested prior to shipment; an allowance is made within our factory measurement to account for the typical power degradation (LID effect) which occurs during the first few days of deployment.

### Mechanical characteristics

|               |   |
|---------------|---|
| Solar cells   | 72 monocrystalline 5" silicon cells (125x125mm) in series   |
| Front cover   | High transmission 3.2mm (1/8th in) ARC glass  |
| Encapsulant   | EVA   |
| Back cover    | Black polyester   |
| Frame         | Black anodized aluminum (Universal II)  |
| Diodes        | IntegraBus™ with 3 Schottky diodes  |
| Junction box  | Potted (IP 67); certified to meet UL 1703 flammability test   |
| Output cables | 4mm <sup>2</sup> cable with latching MC4 connectors<br>Asymmetrical cable lengths: (+)1250mm (49.21in) / (+)800mm (31.50in)<br>Certified as PV Wire according to UL4703 and PV1-F according to VDE EPV 01:2008-02 standards |
| Dimensions    | 1587x790x50mm / 62.5x31.1x2in   |
| Weight        | 15.4kg / 33.95lbs   |

All dimensional tolerances within ±1% unless otherwise stated.

### Warranty

- Free from defects in materials and workmanship for 5 years
- 93% min. power output over 12 years
- 85% min. power output over 25 years

### Certification

Certified according to the extended version of the IEC 61215:2005 (Crystalline silicon terrestrial photovoltaic modules - Design qualification and type approval)

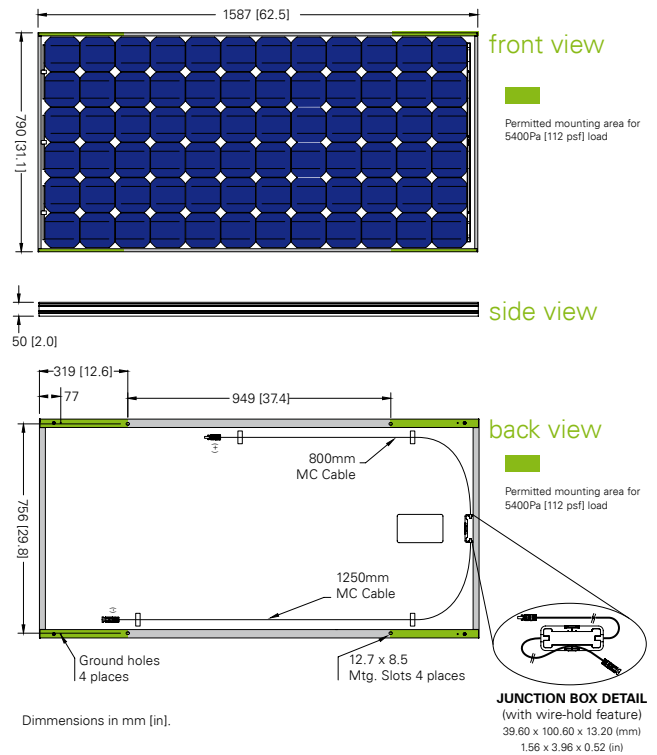
Certified according to IEC 61730-1 and IEC 61730-2. (Photovoltaic module safety qualification, requirements for construction and testing)

Listed to UL 1703 and ULC ORD-C1703 Standard for Safety by Intertek ETL

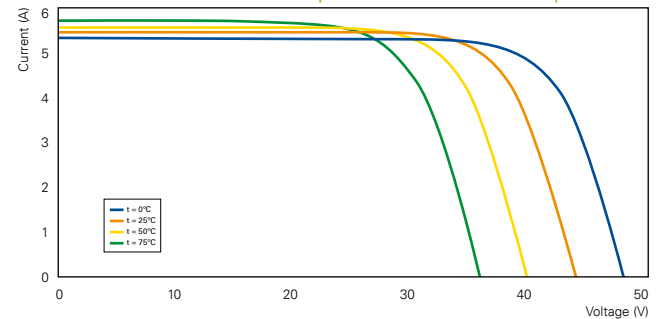
Manufactured in ISO 9001 and ISO 14001 certified factories

Module electrical measurements are calibrated to World radiometric reference via third party international laboratories

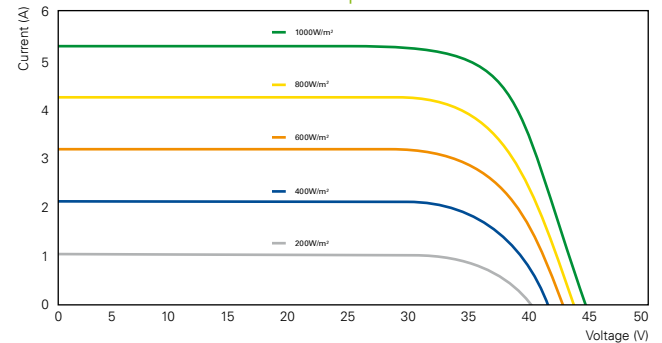
This data sheet complies with the EN 50380 requirements.  
 This publication summarises product warranty and specifications which are subject to change without notice.



### Dependence of the temperature



### Dependence of the irradiance



### Contact:

Your BP Solar partner