

**Case No. 13-0106-EL-REN**  
**Heritage Sign & Display**  
**Staff Interrogatories – Initial Set**

Question 1: In section N you state that you will using a Engenuity 5 amp revenue grade meter as the meter that you will using to report generation data to GATS. Since your facility is greater than 6 kW, the meter that will used to report generation data must be “utility grade.” A utility grade meter is one that conforms to ANSI 12.1 which calls for an accuracy of +/- 2% or better. Please submit documentation that shows that the meter that measures the generation data has an accuracy of +/- 2% or better.

**Borrego Solar Systems, Inc.**

360 22<sup>nd</sup> Street, Suite 600

Oakland, CA 94612

[www.borregosolar.com](http://www.borregosolar.com)

License #814435, C46 Solar



February 12, 2013

The following documentation shows the packing slip and data sheet for the revenue-grade meter installed at Heritage Sign & Display. On the third page of this attachment, you'll see that it's rated "ANSI C12.20 Class 0.2," and on the final page, you'll see that the Accuracy is noted as "Better than 0.2% of reading."

Amy Stice

Manager, Policy & Business Development

Borrego Solar Systems, Inc.

(510) 496-8709 / [astice@borregosolar.com](mailto:astice@borregosolar.com)





2165 W. Pecos Rd. Ste. 1  
Chandler, AZ 85224

Phone: 800-375-3353  
Int'l: 480-782-5600  
Fax: 480-782-5601  
sales@engenuity.com

# Packing Slip

SO-22632

11/1/2010



<b>Customer</b>		<b>Contact</b>		<b>Ship To</b>		
Borrego Solar Accounts Payable 1810 Gillespie Way, Ste 108 El Cajon CA 92020		Borrego Solar Charlie Hughes 1810 Gillespie Way, Ste 108 El Cajon CA 92020 Tel: (856) 258-6229 Fax: (888) 843-6778		Jason Kiwak Charlie Hughes 120 Main Street SHOEMAKERSVILLE PA 19555 Tel: (888) 898-6273 Fax: (888) 843-6778		
<b>Account</b>	<b>Terms</b>	<b>Due Date</b>	<b>Account Rep</b>	<b>Schedule Date</b>		
1618133	Net 30	12/1/2010	DAN MCKENNA			
<b>Quotation</b>	<b>PO #</b>	<b>Reference</b>	<b>Ship VIA</b>	<b>Page</b>	<b>Printed</b>	
SQ-27271	SF-PO-014485	Heritage sign an	FedEx Ground	1	11/1/2010 10:43:14AM	
<b>L</b>	<b>Item / Model / Brand Description</b>	<b>Order</b>	<b>Ship</b>	<b>Price UM</b>	<b>Discount %</b>	<b>Amount</b>
1	RMOX3W3P600NO / M-3P-3W-208-0600 / FAT eBoxx 5Amp Revenue Grade Meter	1		XXXXXXXXXX EA	XXXXXXXXXX	XXXXXXXXXX
2	Gateway Option:With Gateway; Wire Configuration:3 Wire; System Phase:THREE PHASE 208; CT Type:600 Amp 3 inch CT (QTY 3); Add on option:No Option; ***Send the meter registration form to Fat Spaniel Technologies upon receipt of your hardware to enable your data service, unless a Site Survey has been provided in advance.					
Standard Terms and Conditions apply.  Please send all payments to:  Engenuity Systems, Inc. 2165 W. Pecos Rd., Ste. 1 Chandler, AZ 85224				<b>Taxable</b>		XXXXXXXXXX
				<b>Total Tax</b>		XXXXXXXXXX
				<b>Exempt</b>		XXXXXXXXXX
				<b>Total</b>		XXXXXXXXXX
				<b>Paid</b>		XXXXXXXXXX
				<b>Balance</b>		XXXXXXXXXX
				<b>Dep.Avail</b>		XXXXXXXXXX
Amount Shown in USD Rate: 1.0						

## UNIVERSAL POWER TRANSDUCER

The WattsOn universal digital power transducer uses cutting-edge metering technology to provide unprecedented accuracy and metering information for any electrical installation. WattsOn monitors each phase individually and incorporates the functions of single-phase, split-phase, and three-phase meters, to provide over 15 electrical measurements, *per phase*.

### FEATURES:

- ◆ ANSI C12.20 Class 0.2
- ◆ 24VAC/VDC excitation power (PLC/DDC compatible)
- ◆ Digital communication via RS-485 (MODBUS RTU)
- ◆ Two pulse outputs
- ◆ Rolling Window Demand calculations
- ◆ Two 0-10V analog outputs may be configured to represent any two instantaneous parameters
- ◆ Small, DIN mount enclosure
- ◆ Optically Isolated output signals



### PRODUCT DESCRIPTION:

The WattsOn® universal power transducer utilizes cutting edge technology to implement a multi-functional power and energy transducer into a small, cost-effective package. WattsOn incorporates three meters into one to provide a unique solution for monitoring up to three single-phase loads, or one three-phase load. By using two of the inputs, it may be used with split-phase loads also.

WattsOn™ provides comprehensive per phase (as well as cumulative) information, including Volts, Amps, Real Power, Reactive Power, Apparent Power, Watt-hours, VAR-hours, VA-hours, Power Factor and Frequency.

Power (Real and Reactive) is a signed measurement and the meter accumulates both import and export energies as well as capacitive and reactive energy *per phase*.

The unit accepts up to 600V (line-to-line) directly without the need for potential transformers. It accepts standard mV output CTs (333mV or 1000mV full scale output), as well as Elkor's line of "safe" mA split and solid core CTs. Optionally, the unit may be equipped with an internal interfacing module to accept any standard 5A CT.

The WattsOn® transducer features a high accuracy chipset and provides register updates up to two times per second. The true-RMS inputs may be used even with distorted waveforms such as those generated by variable frequency drives and SCR loads.

Information is available via the RS-485 (Modbus RTU) output port. In addition, two solid-state relay pulse outputs are available for Wh energy pulses as well as Qh pulses or direction of power flow indication. Optionally, the second pulse output may be substituted for two 0-10VDC outputs that may represent any instantaneous parameter that the meter measures. The analog outputs and their scaling may be field selected and adjusted via the RS-485 output port.

## SPECIFICATIONS:

### INPUTS

<b>Voltage</b>	600 V or 600/347 V 480 V or 480/277 V 208 V or 208/120 V
	Single Phase, Split Phase, Three Phase 50 or 60 Hz
<b>Current</b>	<ul style="list-style-type: none"> <li>333mV or 1000mV full scale output CTs.</li> <li>Elkor "Safe" mA output solid/split core CTs.</li> <li>5A from standard CTs.</li> </ul>

### DEVICE SPECIFICATIONS

<b>Power Supply</b>	15-24VAC or 20-30VDC, 100mA max.
<b>Accuracy</b>	Better than 0.2% of reading (at 25°C, pf>=0.5) for most parameters.
<b>Environment</b>	Protected Installation; -40 to +60°C, 10 to 90% RH non-condensing
<b>Isolation</b>	All line inputs are isolated from the outputs Hi-Pot testing: 2500VAC for one minute
<b>Enclosure</b>	3.7" x 3.8" x 1.7" (94mm x 97 mm x 43 mm) W x L x H (note: height does not include DIN base).
<b>Weight</b>	mA/mV : 150g (5.5 oz) 5A : 200g (7 oz)
<b>Safety</b>	UL Recognized (Canada and US)

### OUTPUTS

**Wh/Qh** Solid state relay (24V, 150mA MAX), change of 100ms pulse on every pre-defined Wh value

Qh output may be configured to represent direction of real power via Modbus.

**Analog Outputs (optional)** Qh output may be substituted for two 0-10V analog outputs. Output parameters and span, and full scale may be field adjusted using Modbus communications.

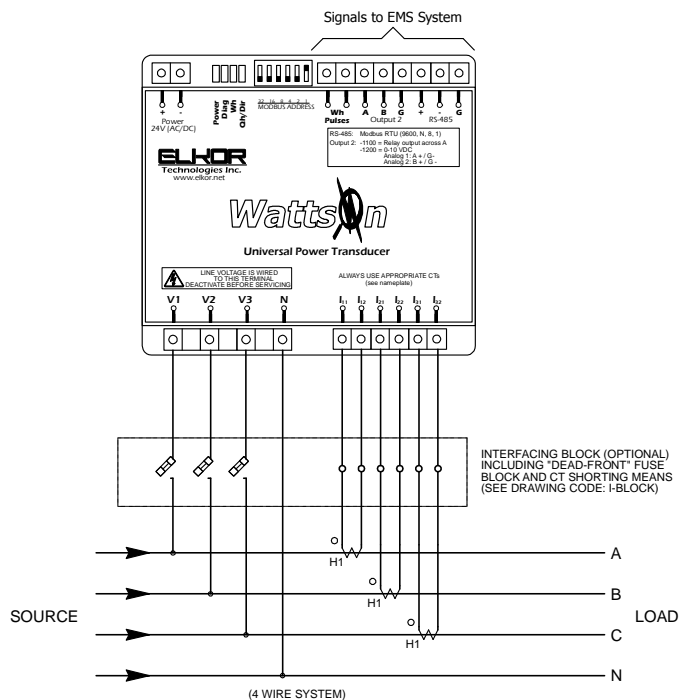
**RS-485** Modbus RTU; up to 64 units may be connected to one 'chain'.

### MEASURED PARAMETERS (available via Modbus)

Voltage [V] (A, B, C, Avg, AB, AC, BC, Avg)  
Current [A] (A, B, C, Avg)  
Active Power [W] (A, B, C, Total) – Bi-directional  
Apparent Power [VA] (A, B, C, Total)  
Reactive Power [VAR] (A, B, C, Total) — Bi-directional  
Power Factor (A, B, C, System) — Bi-directional  
Frequency [Hz]  
Import/Export Energy [Wh] (A, B, C, Total)  
Inductive/Capacitive Energy [VARh] (A, B, C, Total)  
Apparent Energy [VAh] (A, B, C, Total)  
Total Demand Power [W]

All parameters are available in integer and floating point format.

## TYPICAL WIRING:



## ORDERING INFORMATION:

**WattsOn-[1]-[2]-[3]-[4]**

Where:

- [1] Specifies Output Type:  
1100 = RS-485 + 2 x Pulse;  
1200 = RS-485 + 1 x Pulse + 2 x Analog

- [2] Specifies CT Input Type:

**5A** Inputs for 5A CTs  
**MCTA** Inputs for MCTA (Solid Core) CTs (up to 300A)  
**MCTB** Inputs for MCTB (Solid Core) CTs (up to 450A)  
**MSCT1** Inputs for MSCT1 (Split Core) CTs (up to 200A)  
**MSCT2** Inputs for MSCT2 (Split Core) CTs (up to 600A)  
**MSCT3** Inputs for MSCT3 (Split Core) CTs (up to 1500A)  
**MSCT6** Inputs for MSCT6 (Split Core) CTs (up to 3000A)  
**333mV** Inputs for 333mV output CTs  
**1000mV** Inputs for 1000mV output CTs

\*\*\* Contact Elkor for other input options

- [3] Specifies CT full scale current (N/A for 5A, 333mV and 1000mV options)

- [4] Specifies Nominal Frequency (for greater accuracy).  
(60Hz is assumed if not specified)

\*\*\* Note: By default, analog outputs are configured as 1) Total Real Power and 2) Average Current. The anticipated nominal voltage should be stated to properly configure the output scaling. Analog output values and scaling may be changed later via Modbus.

**Example: WattsOn-1200-MSCT3-800A-50Hz**

Specifies transducer with 0-10V analog outputs, and current inputs calibrated for MSCT3 CTs, 800A maximum full scale, with a nominal frequency of 50Hz

**Example: WattsOn-1100-5A**

Specifies transducer with two pulse outputs, calibrated for 5A inputs, and 60Hz nominal frequency.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

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**Case No(s). 13-0106-EL-REN**

Summary: Answer Reply to staff inquiries. electronically filed by Mr. Jason Amodea on behalf of HERITAGE SIGN & DISPLAY