



مواصفات العطاء رقم (2021/42)

توريد وتركيب وتشغيل اجهزة مختبر قياس الطاقة والتحكم- حاجة كلية الهندسة

Item No.	Item Name and Description	Unit	Quan.	U.P./JD.	T.P./JD.
1	<p>Item name: Pyrheliometer</p> <p>Item description: It is an instrument designed specifically to measure the direct beam solar irradiance with a field of view limited to 5°, also known as DNI: direct normal incidence.</p> <p>Technical specification:</p> <p>Spectral range (50% points) 200 to 4000 nm</p> <p>Response time (63%) < 0.7 s</p> <p>Response time (95%) < 2 s</p> <p>Zero offset due to temperature change (5K/h) < 1 W/m²</p> <p>Temperature dependence of sensitivity (-30 °C to +60 °C) < 0.5 %</p> <p>Analogue output (-V version) 0 to 1 V</p> <p>Analogue output (-A version) 4 to 20 mA</p> <p>Digital output 2-wire RS-485</p> <p>Power supply 5 to 30 VDC</p> <p>Spectrally Flat Class A</p> <p>Classification to ISO 9060:2018</p>	Each	2		
2	<p>Item name: Supervisory Control and Data Acquisition (SCADA)</p> <p>Item description: Web Studio software for industrial automation, process control and supervisory monitoring. SCADA software is an open and extensible HMI that enables flexibility in custom application design with connectivity to the broadest set of automation devices.</p> <p>Technical specification:</p> <p>SCADA 150 tags</p> <p>Functions Trending, alarming, reporting, security, event and others functions.</p> <p>Package contains Software DVD, license key</p>	Each	1		

3	<p>Item name: Pyranometer</p> <p>Item description: It is used to measures solar radiation. The SMP3 is a smart pyranometer with low maintenance and industry standard digital and analogue amplified outputs.</p> <p>Technical specification:</p> <table border="0"> <tr> <td>Spectral range (50% points)</td> <td>300 to 2800 nm</td> </tr> <tr> <td>Response time (63%)</td> <td>< 1.5 s</td> </tr> <tr> <td>Response time (95%)</td> <td>< 12 s</td> </tr> <tr> <td>Zero offset A</td> <td>< 15 W/m²</td> </tr> <tr> <td>Zero offset B</td> <td>< 5 W/m²</td> </tr> <tr> <td>Directional response (up to 80° with 1000 W/m² beam)</td> <td>20 W/m²</td> </tr> <tr> <td>Temperature dependence of sensitivity (-20 °C to +50 °C)</td> <td>< 3 %</td> </tr> <tr> <td>Analogue output (-V version)</td> <td>0 to 1 V</td> </tr> <tr> <td>Analogue output (-A version)</td> <td>4 to 20 mA</td> </tr> <tr> <td>Digital output</td> <td>2-wire RS-485</td> </tr> </table>	Spectral range (50% points)	300 to 2800 nm	Response time (63%)	< 1.5 s	Response time (95%)	< 12 s	Zero offset A	< 15 W/m ²	Zero offset B	< 5 W/m ²	Directional response (up to 80° with 1000 W/m ² beam)	20 W/m ²	Temperature dependence of sensitivity (-20 °C to +50 °C)	< 3 %	Analogue output (-V version)	0 to 1 V	Analogue output (-A version)	4 to 20 mA	Digital output	2-wire RS-485	Each	2				
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4	<p>Item name: Sun Tracker</p> <p>Item description: Fully automatic sun tracker with integrated GPS at BSRN level.</p> <p>Technical specification:</p> <table border="0"> <tr> <td></td> <td>< 0.1° passive tracking / < 0.02° active tracking</td> </tr> <tr> <td>Pointing accuracy</td> <td>(with optional sun sensor)</td> </tr> <tr> <td>Payload</td> <td>20 Kg</td> </tr> <tr> <td>Power supply</td> <td>18 to 30 VDC and 90 to 264 VAC (50/60Hz)</td> </tr> <tr> <td>Operating temperature range, DC</td> <td>-20 to + 50 °C</td> </tr> <tr> <td>Operating temperature range, AC</td> <td>-40 to +50 °C</td> </tr> <tr> <td>Mounting base</td> <td>Tripod stand</td> </tr> <tr> <td>Dimensions</td> <td>50x34x38 cm / 23 kg (tracker) 5kg (tripod)</td> </tr> <tr> <td>Communication interface</td> <td>Ethernet / Web interface</td> </tr> <tr> <td>Transmission type</td> <td>Inverted tooth belts</td> </tr> <tr> <td>Power consumption</td> <td>21 W (reduces to 13 W at night) 100 W extra when heater is operating (AC only)</td> </tr> </table>		< 0.1° passive tracking / < 0.02° active tracking	Pointing accuracy	(with optional sun sensor)	Payload	20 Kg	Power supply	18 to 30 VDC and 90 to 264 VAC (50/60Hz)	Operating temperature range, DC	-20 to + 50 °C	Operating temperature range, AC	-40 to +50 °C	Mounting base	Tripod stand	Dimensions	50x34x38 cm / 23 kg (tracker) 5kg (tripod)	Communication interface	Ethernet / Web interface	Transmission type	Inverted tooth belts	Power consumption	21 W (reduces to 13 W at night) 100 W extra when heater is operating (AC only)	Each	1		
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	<p>DC Regulates 12-20 V from solar panel and charges 12 V lead acid battery</p> <p>Solar power Power consumption Memory card type Communication</p> <p>1 mA standby, 7 mA typical during measurement, 50 mA with modem on</p> <p>SD card (512 MB included) RS-232, USB, quad-band GSM / GPRS modem with external antenna</p>				
6	<p>Item name: I-V curve tracers</p> <p>Item description: Specialist types of test equipment that sweep an electrical load connected to the solar PV module or string and measure both the current and voltage at multiple points during the sweep.</p> <p>Technical specification:</p> <p>Detection of I-V curve on PV modules and strings 1500V/10A - 1000V/15A</p> <p>Quick IVCK test for measuring Voc and Isc on PV modules and strings VOC 1500V / ISC 15A</p> <p>Internal memory capacity 249 I-V Curves</p> <p>Use of remote unit SOLAR-02 with USB \ RF connection RF</p> <p>Custom management of internal PV module database 30 internal / 30.000 on software/app</p> <p>Temperature measurement of cell and environment Backlit LCD display</p> <p>Measurement of irradiation with reference cell Auto Power OFF</p> <p>Summary table of main electric parameters</p> <p>Provided PC interface with software for Windows</p> <p>Integrated WiFi connection and compatibility with HTANALYSIS App</p>	Each	1		
7	<p>Item name: IR thermal imaging system with a professional tripod</p> <p>Item description: Thermal imaging is a method of using infrared radiation and thermal energy to gather information about objects, in order to formulate images of them, even in low visibility environments.</p> <p>Technical specification:</p> <p>Display 4", 640 × 480 pixel touchscreen LCD with auto-rotation</p> <p>FLIR Inspection Enabled in camera</p> <p>Route</p> <p>Laser Pointer Yes</p> <p>Programmable 1</p>	Each	1		

	Buttons Text Time Lapse Voice	Predefined list or touchscreen keyboard 10 seconds to 24 hours (infrared) 60 sec. recording added to still images or video via built-in mic (has speaker) or via Bluetooth®				
8	<p>Item name: Sensor Lab</p> <p>Item description: Thermal imaging is a method of using infrared radiation and thermal energy to gather information about objects, in order to formulate images of them, even in low visibility environments.</p> <p>Technical specification:</p> <p>On board display : 7" capacitive touchscreen Connectivity : USB, Ethernet & HDMI</p> <p>Square wave generator : up to 40KHz Low pass filter : up to 30KHz</p> <p>High pass filter : After 40KHz Inverting amplifier : Variable gain 1-10</p> <p>Differential amplifier : Variable gain 1-10 Non inverting amplifier : Variable gain 2-10</p> <p>Instrumentation amplifier: Variable gain 10-20 Frequency to Voltage : Input : 1-10KHz</p> <p>Converter range Output : 1-10Volt Voltage to Frequency : Input : 1-10Volt</p> <p>Converter range Output : 1-10KHz Current to Voltage : Input : 4-20mA</p> <p>Converter range Output : 0-5Volt Voltage to Current : Input : 0-5Volt</p> <p>Converter range Output : 4-20mA Analog/Digital converter : 4 channel (0-5V)</p> <p>Digital/Analog converter : 1 channel (0-3.3V) Input/Output ports : 4-IP / 4-OP</p> <p>Operating voltage range : 0 – 3.3V LM35 : 10mV/ °C</p> <p>K type thermocouple : -200°C to 1250°C Platinum RTD : 100 at 0°C (Temperature coefficient 0.385 /°C)</p> <p>J type thermocouple : - 200°C to +1200°C Operating conditions : 0-40 C, 85% RH</p> <p>AD590 : - 55°C to +150°C NTC thermistor : 4.7kilo ohm</p> <p>BPX65 photo diode : 500nm – 1100nm L14G1 photo transistor : 500nm – 1100nm</p> <p>Photovoltaic Cell : 500mV – 580mV Power Supply : 100V - 240V AC, 50/60Hz</p>	Each	2			

9	<p>Item name: iPLC Gateway</p> <p>Item description: IIoT remote process control gateway. Supplement the process control setup by adding a gateway for remote monitoring & control.</p> <p>Technical specification:</p> <p>PLC gateway CPU : Cortex A8 600MHz</p> <p>Storage Flash : 128MB RAM : 128MB SD card : Yes (optional)</p> <p>I/O ports USB host : USB 2.0 × 1 Serial port : RS232, RS422/RS485 Ethernet : 3 ports Wi-Fi module : Yes 4G module : Yes</p>	Each	1		
10	<p>Item name: Desktops or laptops</p> <p>Item description: A computer at each workstation.</p> <p>Technical specification:</p> <p>Operating System: Microsoft Windows</p> <p>Office Suite: Microsoft Office 365 for Windows.</p> <p>Memory (RAM): Microsoft Office 365.</p> <p>Storage: 8-16 GB of RAM</p> <p>Video/Graphics: 240 GB solid state drive, or larger.</p> <p>Monitor: Integrated or Discrete graphics processor capable of 1440 X 900 resolution, or better (1920 X 1080 or 1200 ideal).</p> <p>Mouse: for notebook: 13" – 17" display</p> <p>Sound: for desktop: 19" – 27" widescreen flat-panel display</p> <p>Headphones: Built-in or external trackpad, wireless and/or USB, 2-button, optical mouse</p>	Each	5		

	Sound card or built-in audio, and speakers Headphones or Earbuds, with Built-in Microphone Either external USB device or built-in				
Total Price					

الشروط الخاصة:

- 1- تقدم الأسعار بالدينار الأردني شاملة جميع أنواع الضرائب وشاملة ضريبة المبيعات والرسوم الجمركية.
- 2- أن يكون المتقدم مؤهلاً تجارياً، ويحمل رخصة مهن وشهادة تسجيل ساريتي المفعول ضمن مجال الاجهزة العلمية والطبية ويحمل رقما ضريبيا للمنشأة / صاحب المنشأة.
- 3- الاسعار تشمل التركيب والتشغيل والتدريب وبالتنسيق مع الجهة المعنية بالجامعة.
- 4- الأسعار تشمل التوريد في الموقع - المفرق / جامعة ال البيت / مستودعات الجامعة.
- 5- الاسعار تشمل تقديم كتيبات التشغيل لجميع الاجهزة المحالة وتدريب المهندسين والفنيين في الجامعة.
- 6- الجامعة غير مقيدة بأقل الأسعار، ولها الحق في تجزئة العطاء أو إلغائه كلياً أو جزئياً إذا اقتضت مصلحة الجامعة ذلك وفي أي مرحلة من مراحل العطاء، دون أن يكون للمناقصين الحق في المطالبة بأية خسارة أو ضرر ناتج عن ذلك.
- 7- تحديد الماركة والمنشأ والصناعة بشكل واضح ودقيق.
- 8- ضرورة تحديد مدة التسليم من تاريخ التوقيع على قرار الإحالة، ويفضل أن تكون بأقرب مدة ممكنة.
- 9- مدة الصيانة المجانية: لمدة ثلاث سنوات من تاريخ التركيب والتشغيل (شاملة الدعم الفني خلال هذه المدة)
- 10- تكون جميع الاجهزة جاهزة للعمل حسب المواصفات المطلوبة وتوريد جميع توصيلاتها وملحقاتها اللازمة للعمل .
- 11- المواصفات الفنية للأجهزة والأنظمة (شامل الابعاد الفيزيائية، والمواصفات الكهربائية ومديات العمل،... الخ) تمثل الحد الأدنى للمواصفات المطلوبة.
- 12- ارفاق كتيبات التجارب مع الاجهزة للطلاب والمدرس.
- 13- ضمان تركيب وتشغيل الاجهزة مع مراعاة عوامل الامان المعتمدة في مثل هذه الاجهزة والمختبرات.
- 14- الكميات قابلة للزيادة والنقصان حسب طلب الجامعة.
- 15- تسري أحكام نظام المشتريات الحكومية رقم (28) لسنة (2019) وتعليماته على هذا العطاء ولها صفة الأولوية.

2021

16- تلتزم الشركة التي يحال عليها العطاء بتقديم كفالة حسن تنفيذ بنسبة (10%) من القيمة الإجمالية للإحالة.

ضرورة إرفاق (C.D.) يشتمل على عرض الأسعار، بحيث يتم تعبئة الأسعار على نفس دعوة العطاء إلكترونياً (موجودة على برنامج *word + Excel* (نسختين) ضمن صفحة الجامعة الإلكترونية) والمواصفات الفنية لكل بند إلكترونياً.