



SHORT QUOTATION NOTICE

TU/11-24/Pur/Qtn/2017-18/4398 Dated: 05.01.2018.

Sealed quotations are invited from reputed manufacturers/authorized dealers/vendors for supply, installation & commissioning etc. of following items required for the IUCERCE Project of Dr. Nabin Sarmah, Department of Energy, Tezpur University.

Item with Technical Specification:

Item1# IV Curve Tracer Set-Up

SL.	Components	Parameters	Technical Specifications
1	IV Characterisation Device	Voc Range	Up to 1500V
		Isc Range	Up to 15A
		DC Voltage Range	15.0V to 99.9V/Resolution 0.1V
			100.0V to 1499.9V/ Resolution: 0.3V
		AC TRMS Voltage Range	50.0V to 265.0V/ Resolution: 0.1V
		DC Current Range (by external transducer clamp):	-1100mV to -5mV and 5mV to 1100mV/ Resolution 0.1mV
		AC TRMS Current (by External Transducer Clamp)	1mV to 1200mV/ Resolution: 0.1mV
		Frequency Range	47.5 to 63.0Hz/ Resolution: 0.1Hz
		Irradiance measurements	Reference Cell
		Irradiance (by reference cell) Range	1.0mV to 65.0mV/ Resolution: 0.1mV
		Cell Temperature Measurement	PT1000 Probe
		Temperature (by external probe) range	-20.0°C to 100.0°C/ Resolution 0.1°C
		Measurement of temperature	Automatic or by means of probe
		Remote irradiation and temperature measurement Unit	Required
		Measuring method	4-terminal measurement method
Display	128 x 128 Pxl custom LCD with backlit		
Memory Capability	256kbytes (minimum)		
Saved Data	Max 99 yield test; 249(IV-Curve Test) curves, 999IVCK		



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		Internal Power Supply	6 x 1.5V alkaline battery AA Type
		PC Communication Port	Optical/USB and wifi
		Compatibility	APP on Ios & Andriod
		Auto Power off	Required, after 5 min of idleness
		Wireless RF Communication	Yes
		Safety	IEC/EN61010-1
		EMC	IEC/EN61326-1
		Insulation	Double Insulation
		Pollution Degree	2
		Option for Auto Start function to measure multiple strings in sequence	Availability-Optional
		Testing outcome:	OK or NOT OK
		I-V curve test by using of remote unit	Yes
		I-V curve test with direct measurement of Irr/Temp parameters	Yes
		Measurement of the resistance of photovoltaic module series	Yes
		Mechanical inclinometer to detect correct solar irradiation	Yes
		Comparison with standard conditions (STC 1000 W/m ² , 25°C)	Yes
		Display of real-time irradiation and temperature	Yes
		Recording of parameters with programmable IP (5s – 60min)	Yes
		Synchronization with remote unit	Yes
		Set 4 Cables and 4 Alligator Clip	Required as standard accessories
		Set of 3 Adapters MC3 Compliance	Required as standard accessories



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		Set of 2 Adapters MC4 Compliance	Required as standard accessories		
		Mechanical Inclinator	Required as standard accessories		
		Transducer Clamp 10-100A DC	Required as standard accessories		
		Transducer Clamp for AC Current up to 200A	Required as standard accessories		
		Optical/USB Cable	Required as standard accessories		
		Hard Carrying Case	Required as standard accessories		
		ISO Calibration Certificate	Required		
		User Manual, Quick Reference Guide	Required		
		Data Monitoring set-up	13.3-inch (diagonal) LED-backlit glossy widescreen display 1.8GHz dual-core processor HD Graphics, SDXC card slot, Wi-Fi wireless networking		
		Warranty	1 year		
2	Portable Spectrometer with fibre optics cable	Sub-Component	Technical Specification		
			Parameters	Specifications	
		Spectrometer head	Wavelength Range	250-1100 nm	
			Pixel size	14 x 200 um	
			Grating g/mm	600	
			Optical Resolution	0.8	
			Diffraction Gratings	Holographic & Ruled	
			Spectrograph	f/4, SymX-Czerny-Turner	
			Order sorting filters	Integrated & High Pass	
			Signal to noise	1000:1	
			Digitizer	16-bit	
			Dynamic range	2000:1 with 6 decades	
			Detector type	CCD or PDA, 2k/3k pixels	
			Interface	USB-2 or USB-2 Hub	
Detector Integration	1 ms to 65 s				
Stray light	<0.1% at 435 nm <0.05% at 600 nm				
Fiber optic input	SMA905 0.22na single fiber				



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		Software	Compatible software for irradiance and transmission measurements, Real-time operating software for Windows 9x/XP/VISTA/7 includes integrated applications for Spectro Radiometry, traditional Spectroscopy
		Fiber Optics Cable (Quantity 2)	Armored
			Solarization Resistant
			600 um diameter single strand
			Multimode fiber optic cable for Deep UV application with black PVC jacket
		Cosine receptor	2 SMA connectors-2 m length for wavelengths < 400 nm
			Miniature cosine receptor for UV-VIS-NIR
			1/4" diameter with fiber optic cable attachment for irradiance measurements
		Lamp with Holder	Calibration performed using NIST traceable lamp operating from 200-1700 nm
			10,000 hour Tungsten and Krypton lamp
			2800 Kelvin color temp
			350-2300 nm wavelength range
			UP12V adapter
SL1-FILTER of 0.5" diameter filter holder nose cone			
Holder/ Fixture:	Variety of filters for spectral attenuation, band pass and more		
	Color Equalization filter to improve blue sensitivity		
Calibration	4-way fiber optic cuvette holder for measuring absorbance, transmittance, and fluorescence. Includes 2 Lens-Q-Col Z height: 15mm Pathlength: 1cm Size: 4" x 4" x 2.5"		
Monitoring set-up	Spectro Radiometric Calibration VIS-NIR for wavelength range 300-1100 nm		
Warranty	60.45 cm (23.8inch) diagonal FHD IPS anti-glare WLED-backlit, 2.4 GHz processor, 4GB memory, NVIDIA GeForce 2 GB Graphics		
3	Pyranometer	Spectral range (50% points)	1 year
		Sensitivity	285 to 2800 nm
		Response time	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$
		Maximum solar irradiance measurement	Max 18 s
		Operational temperature range	2000 W/m^2
		Field of view	-40 °C to +80 °C



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		Compliance	ISO 9060:1990 specification for a First Class pyranometer
		Detector type	Thermopile based
		Sensing Element	Sixty four thermocouple junction
		Cover to sensing element	Dome shaped double glass
		Levelling element	Integrated bubble type
		Power requirement	Nil
		Connector and cable	Standard connector and compatible cable supplied with the pyranometer by Supplier (approximately 10 m long)
		Impedance	20 to 200 Ω
		Zero offset A (and B)	< 10 W/m ² (and < 4 W/m ²)
		Directional response (up to 80° with 1000 W/m ² beam)	< 20 W/m ²
		Temperature dependence of sensitivity (-10 °C to +40 °C)	< 4 %
		Warranty	5 years,
4	Metal connector (Welder)	Voltage Rating	100~120V or 220~240V AC
		Store Energy Output	0 to 175 joules
		Cycle time	Charging time at max. energy less than 10 sec.
		Wire gauge	Low : 0.3 ~ 0.5 mm Medium : 0.5- ~ 0.9 mm High : 0.9- ~ 1.2 mm
		Thermocouple type	Suitable for type K/J/E/T/N/R/S/B
		Weld cycle	Min. 5 to 10 weld/min
		Energy Control	3 Position energy sockets (Low/Medium/High)
		Energy Indicator	D.C. Volt display to indicate charging status
		Suitability	Laboratory, Engineering Dept. and Workshop
		Welding Electrodes	Pliers with 500 mm long cable
			Earthing Clip with 1 Met. Cable
			Carbon Electrodes (3 Nos.)
Weld Trigger	Foot switch with 2 Met. cable		
5	Data monitoring and in-situ analysis (Laptop)	Processors	Intel® Core™ i3-7100U Processor (2.4 GHz, 3 MB cache, 2 cores)
		Memory	4 GB DDR4-2133 SDRAM (1 x 4 GB)
		Hard Disk Drives	1 TB 5400 rpm SATA
		Graphics	Integrated Intel® HD Graphics 620
		Display	HD touch display-29.46 cm(11.6) diagonal HD IPS WLED-backlit multitouch-enabled edge-to-edge glass (1366 x 768)



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		Ports	1 HDMI; 1 headphone/microphone combo; 3 USB 3.1 Gen 1 (Data transfer only)
		Expansion slots	1 multi-format SD media card reader
		Wireless	Intel® 802.11a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo
		Keyboard & Pointing device	Full-size island-style keyboard; HP Imagepad with multi-touch gesture support
		Audio features	Dual speakers; B&O PLAY; HP Audio Boost
		Battery type	2-cell, 37.2 Wh Li-ion
		Power supplies	65 W EM AC power adapter
		Security Management	Kensington MicroSaver® lock slot
		Operating System	Windows 10 (64bit)
		Form factor	Convertible
		Approximate dimensions (W x D x H)	30 x 20 x 2 cm
		Approximate weight	1.4 kg
		Warranty	1 year

Item2# Thermal Imaging Set-up

SL.	Components	Parameters	Technical Specifications
1	Thermal Camera	IR resolution	384 × 288 pixels
		Available Lenses	24°
		Lens Size	Same for all lenses
		Thermal sensitivity/NETD	<30 mK,
		Field of view (FOV)	24° × 18° (17 mm lens)
		Minimum focus distance	0.15 m (0.49 ft.),
		Spatial resolution (IFOV)	1.09 mrad/pixel,
		Lens Identification	Automatic
		Image frequency	30 Hz
		Focus	Continuous, one shot & manual
		Digital zoom	1-4x continuous
		Detector type	Focal plane array (FPA), uncooled microbolometer
		Spectral range	7.5–14 μm
		Display	Touch screen, 4.0 in. LCD, 640 × 480 pixels
		Image adjustment	Auto, Auto max, Auto min & manual
		Image modes	IR image, visual image, MSX, picture in picture, thumbnail gallery
		Multi Spectral Dynamic Imaging (MSX)	IR image with enhanced detail presentation
		Picture in Picture	Resizable & movable IR area on visual image
Object temperature range	-20°C to +1200°C (-4°F to +2192°F)		
Accuracy	±2°C (±3.6°F) or ±2% of reading		
Spotmeter	3 in live mode,		



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	Area	3 in live mode
	Automatic hot/cold detection	Auto hot or cold spotmeter markers within area
	Color alarm (isotherm)	Above, below, interval, condensation & insulation
	Difference temperature indicator	Delta temperature between measurement functions or reference temperature
	Reference temperature	Manually set or captured from any measurement function
	Emissivity correction	Variable from 0.01 to 1.0 or selected from materials list
	Measurement corrections	Yes
	Color palettes	Arctic, Gray, Iron, Lava, Rainbow and Rainbow HC
	Image storage	Standard JPEG, including measurement data (Infrared-only mode)
	Remote control operation	Using USB cable & on Mobile over Wi-Fi
	Voice Annotation	60 seconds (via Bluetooth)
	Text Annotation	Text from predefined list or soft keyboard on touch screen
	Area measurement information	Yes
	Laser distance meter information	Yes
	GPS	Yes: location data automatically added to every still image and the first frame in video from built-in GPS
	Non-radiometric IR video recording	H.264 to memory card
	Visual video recording	H.264 to memory card
	Radiometric IR video streaming	Required
	Non-radiometric IR video streaming	H.264 (AVC) over RTSP (Wi-Fi), MPEG4 over RTSP (Wi-Fi), MJPEG over UVC and RTSP (Wi-Fi)
	Visual video streaming	Required
	Built-in digital camera	5 MP with LED light
	Laser pointer	Activated by dedicated button
	Wi-Fi	Peer-to-peer (ad hoc) or infrastructure (network)
	Interfaces	USB 2.0, Bluetooth, Wi-Fi, Display Port,
	Video out	Display Port
	Battery type	Rechargeable Li ion battery
	Battery operating time	> 2.5 hours at 25°C (68°F) and typical use
	Charging system	Battery is charged inside the camera or in specific charger
	Power management	Automatic shutdown and sleep mode (user selectable)
	Battery charging unit	AC adapter, 90–260 VAC input, 50/60 Hz
	Operating temperature range	–15°C to +50°C (+5°F to +122°F),



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	Storage temperature range	-40°C to +70°C (-40°F to +158°F)
	Warranty (Camera)	2 Years
	Warranty (Detector)	10 Years

2	Data monitoring and in-situ analysis (Workstation)	Processors	Intel® Xeon® E3- 1240v6 processor (8M Cache, 3.7 GHz)
		Memory	32GB DDR4-2400 ECC (2x16GB) RAM with 4 DIMM slots
		Hard Disk Drives	2TB SATA 7200 rpm 6Gb/s 3.5" HDD
		Graphics Controller	1 x NVIDIA® Quadro® K1200 4GB Graphics
		Optical Drive	Internal 8x DVD-RW drive
		I/O slots	Minimum 2 x PCIe Gen 3 x16, all full height mechanical slots
		Network Interface	1 x 1000BASE-T port
		Display	Workstation OEM 23.8" FHD IPS LED with tilt, internal speakers, TCO 7.0, ENERGY STAR® 7.0 certified
		Ports	9 USB 3.0 ports (at least 2 in front), 2 USB 2.0 ports, 4 audio ports with internal speakers
		Keyboard & Mouse	Workstation OEM 112 key spill-proof keyboard & 1600 dpi 10-button programmable USB mouse
		Power supplies	Maximum 280W (at least 90% efficient) active power factor correcting power supply
		Security	UEFI firmware integrated tool to securely wipe HDD & SSD & records results in an audit proof protocol, TPM 2.0, Intrusion switch
		Operating System	OEM Windows 10 Pro for Workstation with recovery & driver DVD
		Form factor	Small form factor, chassis volume of less than 10 litres, should be capable of mounting in vertical & horizontal position
		Compliance	BIS, CE, CSA, FCC Class B, ENERGY STAR®, EPEAT® Gold, RoHS certified
Warranty	Offered workstation & monitor should be covered under 3 years OEM ONSITE warranty with Next Business Day resolution		

Kindly Note:

1. *The parties quoting all the component and sub-components will be given preference.*
2. *The quoted components and sub-components to be compatible to each other. Any incompatibility issue or missing component may also lead to the rejection of the submitted tender.*

GENERAL TERMS & CONDITIONS:

1. No separate tender paper will be issued from the office; one should only download the specifications/List from the website.



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2. **The rates should be preferably quoted in Indian Rupee and FOR Tezpur University, Napaam basis. Charges for clearing and transportation should be incurred by the supplier.**
3. **Quotations should be accompanied by i) An EMD (in the form of Demand Draft/Call Deposit/TDR) of ₹. 5000/- (Rupees Five Thousand) only drawn/pledged in favor of Registrar, Tezpur University, payable at Tezpur. No request for consideration of earlier deposited EMD will be considered. ii) A non-refundable application (quotation) fee of ₹.1000.00 (Rupees One Thousand) only must be paid only by Demand Draft drawn in favour of Registrar, Tezpur University payable at Tezpur.**
4. The rates should be exclusive of GST and applicable GST in % should be clearly indicated
5. Applicable levies, surcharge and discounts should be clearly indicated itemwise.
6. Quoted rates should be valid at least for a period of 01 year.
7. The rates should be quoted along with supporting documents of specifications and technical features and list of users.
8. The system must be installed at the laboratory, and after installation a basic training must also be provided by the supplier or their Indian counterpart without any additional costs.
9. All the quotations must be accompanied with supporting documents and / or literature.
10. Demonstration may be sought from the vendors for authentication of quoted specification.
11. Details of availability of after sales support will have to be furnished. After sales support, directly from manufacturer and from Assam (Guwahati / Tezpur) will be preferred.
12. The University is exempted from paying Custom and Excise duty.
13. Proprietary items should be quoted with sole Manufacturer/Distributorship certificate.
14. Warranty/Gurantee period should be specifically mentioned in the quotation.
15. No Advance payment will be made. However, for foreign supplier, advance payment will be made either by FDD/Wire Transfer/LC. In such cases 10% Performance Bank Guarantee should be submitted before issuing FDD/Wire Transfer/LC, covering the warranty period.
16. Performance Bank Guarantee also must be submitted for Major equipments of Indian origin, covering the warranty period.
17. Items of Foreign origin should have Insurance up to installation on site.
18. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
19. Quoted price should be inclusive of essential accessories and should be CIF Tezpur University, Tezpur
20. Applications for release of EMD should be submitted to the Registrar/ Joint Registrar.
21. Apart from the above terms and conditions the University has the right to include any other terms and conditions as and when felt necessary.
22. **Quotation should be submitted in the DROP BOX placed in the reception of the Administrative Building of the University on or before 5.00 PM of 19.01.2018. If posted/courierred, should reach on or before the last date addressed to "The Joint Registrar, Tezpur University". The Quotation Notice No. and date should be clearly superscribed in the envelope/packet containing the quotation. Technical and Financial Bid in separate envelopes are to be put in the main envelope alongwith the Tender Fee and EMD.**

Sd/- Joint Registrar
Tezpur University