MAKLUMAT SPESIFIKASI ITEM

www.fineprocurementplus.uitm.edu.my

UNIVERSITI TEKNOLOGI MARA

MAKLUMAT SPESIFIKASI ITEM

No Pelawaan	:	UiTM/B1/PER/SHR/B/0625/0036
Butiran Tawaran	:	Cadangan Membekal, Menghantar, Memasang, Mengujilari Dan Menyelenggara Peralatan Pengajaran dan
Keterangan Item	:	0609010700027 : Electrical/Electricity/Electronic Wares - Multimeter/Multitester/Ammeter/Voltmeter
Nama Spesifikasi	:	FKE 2025 SEMI Precision Source/Measure Unit (2ch, 100fA resolution, 210V, 3A DC/10.5A pulse) version 3
Kuantiti	:	2.000

Butiran Keperluan	**Calit**	**Tawaran Syarikat**
1 GENERAL REQUIREMENTS		
I Vendors must comply with all the requirements specified in this tender document	☐	
II Vendors must bear all costs of supplying the specified quantity of items to UiTM. Such costs shall include the costs of delivery, installation, commissioning, training, troubleshoot and maintenance work (including parts labour and on-site service) within the specified warranty period	☐	
2 SPECIFICATION		
I **Measurement Capabilities** -Configuration supports 2-channel setup -Minimum source resolution at 1 pA / 1 µV, minimum measurement resolution at 100 fA / 100 nV -Maximum output at 210 V, 3 A DC / 1 0.5 A pulse -Waveform generation (arbitrary) and digitizing capabilities from 20 µs interval **Features** -Measurement capabilities with an integrated 4-quadrant source -Color ±4.3-inch display supports both graphical and numerical view modes -Application software facilitates PC-based instrument control included at no charge -High throughput and SCPI command support conventional SMU’s command set	☐	

Butiran Keperluan	Calit	Tawaran Syarikat
I **Dimensions** - The dimension range between (150-200 mm x 240-280 mm x 450-500 mm)with handle and feet **Front panel operation** -Front panel interface: ±4.3” TFT color display (range between 450-500 x 270-275, in mm, with LED backlight) with keypads and rotary knob -View mode: Single view, Dual view, Graph view and Roll view -Hard keys: Single Trigger and Auto Trigger control, 10-key, Rotary Knob and Cursors, Channel on/off, View, Cancel/Local -Softkeys: Function, System and Input Assist Keys -Indicators: Channel (measurement) status, System status		
II **SPECIFICATION CONDITIONS** Temperature : 23 °C ±5 °C Humidity : 30% to 80% RH After 60 minutes warm-up : Ambient temperature change less than ±3 °C after self-calibration execution Calibration period : 1 year Measurement speed : 1 PLC (power line cycle)	☐	
III **Maximum voltage and current** DC or pulsed : 210 V (max voltage), 0.105 A (max current) DC or pulsed : 6 V (max voltage), 3.03 A (max current) Pulsed only : 200 V (max voltage), 1.515 A (max current) Pulsed only : 6 V (max voltage), 10.5 A (max current)	☐	
IV **Maximum current limitation** Ch 1 voltage : ± (0 V V ≤ 6 V) Ch 2 voltage : ± (0 V V ≤ 6 V) Max total current limitation of Ch 1 and Ch 2 : Ch 1 current + Ch 2 current ≤ 4 A Ch 1 voltage : ± (6 V V ≤ 21 V) Ch 2 voltage : ± (6 V V ≤ 21 V) Max total current limitation of Ch 1 and Ch 2 : Ch 1 current + Ch 2 current ≤ 2.5 A	☐	
V **Voltage source specifications** Range : ±200 mV Programming resolution: 1 µV Accuracy (% reading + offset) : ± (0.015 % + 225 µV) Noise (peak to peak) 0.1 Hz to 10 Hz: ≤ 10 µV Max voltage (over range): ±210 mV Range : ±200 V Programming resolution: 1 mV Accuracy (% reading + offset) : ± (0.015 % + 50 mV) Noise (peak to peak) 0.1 Hz to 10 Hz:≤ 2 mV Max voltage (over range): ±210 V	☐	

Butiran Keperluan	Calit	Tawaran Syarikat
VI **Current source specifications** Range : ±10 nA Programming resolution: - Accuracy (% reading + offset) :± (0.10 % + 50 pA) Noise (peak to peak) 0.1 Hz to 10 Hz: ≤ 1 pA Max voltage (over range): ±10.5 nA Range : ±10 A , 5 Programming resolution: 100 µA Accuracy (% reading + offset) :± (0.4 % + 25 mA) Noise (peak to peak) 0.1 Hz to 10 Hz: - Max voltage (over range): ±10.5 A	☐	
VII **VOLTAGE MEASUREMENT SPECIFICATIONS** Range: ±200 mV Measurement resolution: 100 nV Accuracy (% reading + offset): ± (0.015 % + 225 µV) Range: ±200 V Measurement resolution: 100 µV Accuracy (% reading + offset): ± (0.015 % + 50 mV)	☐	
VIII **CURRENT MEASUREMENT SPECIFICATIONS:** Range: ±10 nA Measurement resolution:- Accuracy (% reading + offset): ± (0.10 % + 50 pA) Range: ±10 A 3, 5 Measurement resolution: 10 µA Accuracy (% reading + offset): ± (0.4 % + 25 mA) 6	☐	
IX **TIMER AND TRIGGERING SPECIFICATION** Timer Time stamp: TIMER value automatically saved when each measurement is triggered Trigger timing resolution: 1 µs to 100 ms Accuracy: ±50 ppm Arm/trigger delay: 0 µs to 100,000 s Arm/trigger interval: 20 µs to 100,000 s Arm/trigger event: 1 to 100,000 Triggering Digital I/O Trigger IN to Trigger OUT: ≤ 5 µs Digital I/O Trigger IN to source change: ≤ 5 µs LXI Trigger IN to source change: Minimum 100 µs, Typical 200 µs, Maximum unknown LXI Trigger IN to measurement: Minimum 100 µs, Typical 200 µs, Maximum unknown	☐	

Butiran Keperluan	Calit	Tawaran Syarikat
IX Internal event to external LXI trigger output: Minimum 100 µs, Typical 200 µs, Maximum unknown LXI event send/receive latency: Unknown Minimum trigger interval: 10 µs		
X **SOURCE RESOLUTION** - Digit: 5.5 digit or equivalent - Min. voltage: 1uV or equivalent - Min. current: 1pA or equivalent -Lowest current range: 100nA or equivalent	☐	
XI **MEASUREMENT RESOLUTION** - Digit: 6.5 digit or equivalent - Min voltage: 100nV or equivalent - Min current: 100fA or equivalent - Min trigger interval: 20 us or equivalent - Max. trigger count: Infinite - Max. data buffet size: 100,000 or equivalent - Limit Test: Included - Fast transient mode: Included - Easy file access: Included	☐	
XII **INCLUDED WITH (SUPPLIED ACCESSORIES)** - Current-voltage curve measurement software with Node-locked perpetual license and care Support 12 months - HP Pro 400 G9 TWR i5-14500/16GB/512GB/Wif/W11P/3/3/3 or equivalent -> Tower, Windows 11 Pro 64, CPU INTL i5-14500 5.00 14C 65W, RAM 16GB (1x16GB) DDR5 4800, SSD 512GB 2280 PCIe NVMe Value, with wired keyboard and wired mouse, No included ODD, Intel UHD Graphics 770, WLAN AX211 Wi-Fi 6E 160MHz +BT 5.3 WW (in case there is no available model or stock at that time, will replace with other PC with equivalent specification) - BNC Plug to Banana Plug Adapter x4 - BNC CABLE M to M x5 - BNC Tee (female) - DSUB 29	☐	
3 CATALOGUES / BROCHURES		
I Vendors must provide the catalogues / brochures / technical specification manuals with the tender proposal	☐	

Butiran Keperluan		Calit	Tawaran Syarikat
II	Original copies of user and operational manual of the equipment must be provided	☐	
4	TRAINING		
I	Tenderers are required to provide training for the use, maintenance and troubleshoot of the equipment to the Technical Staff & Lecture of Fakulti Kejuruteraan Elektrik, UiTM Shah Alam and all training-related costs are borne by the tenderers.	☐	
II	A minimum of one (1) day training for a minimum of one (1) participant covering each module. (Vendors must provide details/syllabus of the training module)	☐	
III	Complete training materials and documentation must be provided to all participants	☐	
IV	The training MUST be conducted by trainers who are certified by principal. Please attach the trainer's certification that is certified by principal supplier.	☐	
5	WARRANTY AND SUPPORT		
I	Vendors must have local service for repair services and provide on call services when required by UiTM	☐	
II	Vendors must provide details of warranty. INCLUDING ALL parts, labour, basic phone support for hardware issue, repairs onsite). Please attach the Letter of Warranty (LOW) from the principle, which states that UiTM is entitled to 3 years of warranty upon project completion	☐	
III	Vendors be responsible for the installation, commissioning and test-run of the equipment and accompanying software (if applicable) to the satisfaction of UNIVERSITI TEKNOLOGI MARA before final acceptance.	☐	
IV	All cost on delivery. installation, commissioning and test run shall be borne by the vendor.	☐	
V	The vendors MUST provide a genuine product. The vendors must be supported back-to-back by a principle (manufacturer) to provide maintenance services for equipment supplied. The vendors should attach a Letter of Authorization (LOA) from Distributors/ Principal.	☐	
VI	Free support through fax, email, telephone must be provided during the warranty period	☐	
6	OTHER REQUIREMENTS		
I	Note that all other related material, components and cabling, which are required to ensure full operation of the above package must be supplied and borne by vendors	☐	