



INVITATION FOR QUATATION

23 JUL 2024

Our Ref No. : DBATU/Store/Elect.Engg.Dept./Percentage Basised Differential Relay Trainer Kit/2024/2009

Date: 20/07/2024

Quotation For: Percentage Basised Differential Relay Trainer Kit

Due On: 5/8/2024

Date of Opening: 06/08/2024

Time: 11:30 am

To,

Sub: QUOTATION FOR THE SUPPLY OF STORE

Dear Sir,

Your quotation for the items listed overleaf, may please be submitted to the under signed, so as to reach this Office not later than 05/08/2024

While submitting your quotation, the following procedure may please be observed and other points borne in mind.

1. The maker's name must be specified.
2. The "Terms and Conditions" for supply and delivery of stores, should be clearly indicated in the quotation, stating whether rates are, inclusive of all taxes, Packing and forwarding charge,s Freight charges, etc. or not, however rates offered as including all taxes will be more welcome.
3. If packing and forwarding charges are to be charged separately, it should be so clearly stated in your quotation.
4. Please mention clearly whether consignment would be Ex-Godown, Ex-Shop, of F.O.R. dispatching stations. Preferably terms offered as "Delivery of consignment of stores, on F.O.R."
5. Envelope should be super-scribed "**Quotation for reference No. of dated.....**" It should also be superscripted as per the format given above.
6. The quotation would be opened as per date and timing given above, if desired by you, may depute an authorized representative with a letter of authority to be present at the time of opening of the quotation at this Office on the aforesaid day, date & time.
7. Your quotation must be valid for a minimum 30 (Thirty) working days from the date of it's opening.
8. Quotation received after the date of opening may not be taken into consideration.
9. Items tendered should confirm to the specification shown in the attached list when and where, full or no specifications are indicated against items in the list. Kindly furnish your full specification in accordance with accepted standards against each item tendered. Where reference to catalogue is made, the relevant catalogues/ Pamphlets/ Literature should accompany the quotation,
10. Your quotation should be for all new items and not for second hand.
11. Please state whether items will be available Ex-Stock. If not the minimum period for delivery, or for supplying the items or stores.
12. It should be clearly stated whether GST, Insurance, Freight or packing and forwarding charges, or any other taxes and duties, etc. leviable.
13. It would be appreciated if illustrated catalogues/Literature etc is furnished with the quotation.
14. Expression to as "Complete with standard Equipment" complete with standard accessories "Equipment to" As good as should be avoided. If at all their use is unavoidable then it should be very specifically

- indicated as to what exactly they mean and what exactly would be supplied under them. Any ambiguity or vagueness should be avoided.
15. For convenience, kindly adopt while quoting the same serial Nos. as given in the list detailed below.

Thanking You.

Yours faithfully,

 Registrar

Dr. Babasaheb Ambedkar Technological University, Lonere

List of Items

Sr. No.	Description	Make	Approx. Qty Reg.	Rate per / Each / Unit	Remark
1.	Percentage Basised Differential Relay Trainer Kit		01		

Percentage Basised Differential Relay Trainer Kit Specifications

- **Three phase Power Supply panel:**
 - MCB 4 pole, 4 Amp, 415V AC, 50Hz.
 - RYB power input Indicator (22 mm) x 3 Nos.
 - Volt meter 415V AC (72x72mm)
- **DOL Starter panel:**
 - Contactor 9 Amp, 415V, 50 Hz, 3 Pole, 1 NO.
 - Contactor Coil: 230V, 11VA.
 - Bimetallic over load thermal Relay.
 - Relay Range 1.4A - 2.3A. (Set: 2.3 Amp.)
 - Start-Stop Push Button Switch.
 - DOL ON Red Indicator (22mm)
- **VAF Measurement Panel (2nos.):**
 - Digital VAF meter (96X96mm).
 - 3 Phase 3/4 wire, Voltage line to line & line to neutral.
 - Measurement of 415V, 3 ph. & 230V, 1 ph. parameters.
 - Measures Voltage, Current, Frequency.
 - Current for all 3 ph. up to 5A. (Inbuilt CT 5A:5A x 3 Nos.)
 - LCD/LED display.
 - Aux. Supply 230VAC, 45-65Hz, 5W
- **ON OFF ON, FWD/REV Panel:**
 - Three Ph. ON-OFF-ON with FWD/REV, 3 pole 3 way switch with Centre OFF, 6A/440V.
 - Power ON Red Indicator (22 mm)
- **Single phase Power Supply Panel:**
 - MCB 230V AC, 50Hz. 1 pole/6 Amp.(3 Nos.) 1 pole/10 Amp.(1 No.)
 - Output Terminals: 230V, 6 Amp.(3 Nos.) & 10 Amp.(1 No.)
 - Red Power Indicator (22 mm), Lamp Holder.
 - 8A push button switch (Simulate as centrifugal switch) & Resistor 30E/400W. (Provide if Single ph. Ind. Motor supply)
- **Single Phase AC/DC Resistive(R) Load Panel:**
 - Selector switch, 2 pole, 7 Way. 10A/440 V.
 - Resistors 750E-600E-300E-212E-162E-100E-OFF. 400W / 7 Steps.
 - Separate 60E tap for DC series Generator. (if DC Series Gen. Supply)

- ❑ **Resistive (R) Load Panel:**
 - Resistors with switch selectable 1 off + 6 nos. of taps at 100, 125, 150, 175, 200 & 225 Ohm & SIL tap of 262 Ohm/1KW (3 nos.), Fan cooled.
- ❑ **Over current & elapsed time measurement panel (2nos.):**
 - Consists of AC ammeter of 20A.
 - Elapsed time counter range 999,001 sec, resolution 1 msec.
- ❑ **Variable AC Voltage & Current Injector Panel (2nos.):**
 - Single Phase Dimmer 230V AC /1A
 - Short circuit transformer with primary 230V AC/ 1A, Secondary 0V-2V-8V with 12A Tag.
- ❑ **CT (Current Transformer) panel:**
 - Consist of 5:5 Amp. (CT 6 nos.)
 - Primary side of CTs should brought on 3 x 2 x 2 SBS-5 sockets.
 - Secondary side of CTs should Star connected in group of 3 & brought out on 4 x 2 SBS-5 sockets.
- ❑ **Transformer (415V/230V) Panel**
 - Step down Transformer: Primary Star 415Volt & Secondary Delta 230Volt, 1KVA.
 - All the connection of Transformer primary & Secondary are brought out on this panel.
- ❑ **Differential (% Bias) Relay:**
 - High speed biased differential Relay, rating Current-1A/5A settable using front keypad.
 - EM type biased setting of 15%, 30% & 45% by plug board taps.
 - (Numerical/Electromechanical/Static type)
 - PC communication (Optional)
- ❑ **Differential (% Bias) Relay terminal Panel:**
 - All the connection of relay are brought out on this panel.
 - 2 NO trip contact.
 - Auxiliary supply terminal. (Aux. Supply 110V AC/DC, 230V AC/DC)

✓ **Accessories:** Patch Cord, Manual, Cloth Cover, Dust Cover.

✓ **EXPERIMENT LIST:**

- 1) To plot characteristics of % biased differential relay (Merz price Method)
- 2) Pick up test for differential relay.
- 3) Transformer protection for in zone trips faults.
- 4) Transformer out zone or non-trip faults.