SPEED POST

SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, SURAT
GUJARAT-395 007

No. DoME/RSY/Seed Money/ 3113 / 1682 /2022-23 Date: 09/09/2022

10 SEP 2022

To,

Institute Website

SUB: - Enquiry for XYZ axes CNC Motion Controller and Power Supply System

Dear Sir,

You are requested to quote your prices for supply of stores listed overleaf. The quotations may be sent to the undersigned in a sealed envelope and subscribed as: "Quotation with reference to Enquiry No. DoME/RSY/Seed Money/ 3113 / /2022-23 dated: 09/09/2022. Your quotation should reach the undersigned on or before **26/09/2022at 5:00 pm.**

The quotations should be furnished with the following information.

1) The brand or make of each item should be specifically stated and wherever necessary, Complete set of specifications and dimensions should be given.
2) If asked, samples accompany the quotations
3) Sales tax, General tax, Central Sales tax, Custom duty, Insurance charges, Packing and Forwarding charges, if not included in the prices quoted, should be clearly specified.
4) The period of validity of the quotation should be at least 45 Days. Offers subject to prior sale may please be avoided.
5) The delivery period is to be clearly mentioned in the quotation.
6) The mode of delivery of the stores may be mentioned. The delivery should be F.O.R. Surat or at the Institute.
7) All concessions available to an educational institution should be specified and also taken intoaccount while quoting.
8) This Institute is located within the limits of S.M.C. & exempted from the paying of octroi duty on incoming goods from outside limits of S.M.C.
9) This Institute is registered with the Dept. of Scientific&Industrial Research (DSIR) for the purpose of availing custom duty exemption & central excise duty exemption, and hence the certificate to this effect will be issued wherever it is necessary on demand.
10) Payment is normally made by cheque drawn on the S.V.N.I.T. Branch Office of State Bank of India, Surat-395007 within a period of thirty days from the date of receipt of stores.
11) Your specifications & terms- conditions should be as per the format attached, must be on your company letterhead & signed by an authorized person.
12) Offered quotation may be rejected if any ambiguity is found in offered specifications, terms & conditions supplied by party in specified tabular format.
13) The Director reserves the right to accept stores, which are not strictly in confirming with the specifications but otherwise, found suitable.

Yours faithfully,

09/09/22

Head, Dept. of Mech. Engg.

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XYZ axes CNC Motion Controller with Accessories and Power Supply System

A. Followings are the requisite specifications of 4 Axes CNC Motion Controller:

1. Input Supply and operating conditions:

- Operating Voltage : 24 V DC (with filter)
- Operating temperature : 0°C - 45°C or higher
- Optimum operating temperature : 5°C - 40°C or higher
- Operating humidity : 10% - 90% or higher
- Optimum operating humidity : 20% - 85% or higher

2. System technical characteristics: Followings are the technical parameters specified and should be associated with the CNC controller.

- Control axes : 04 or more Axes (X, Y, Z, and spindle control etc.),
- Simultaneous control axes : 04 Axes or more (X, Y, Z, and spindle control etc.),
- Minimum setting unit as input instruction: 0.001 mm or lower,
- Minimum moving unit as input instruction: 0.001 mm or lower,
- Maximum input instruction value : 700 mm or higher
- Feeding speed range of X, Y, and Z axes : 0.0062 mm/min or lower to 600 mm/min or higher
- Feeding speed acceleration/deceleration : Automatic
- Manual Continuous manual feeding : Yes
- Manual returning to reference point : All control axes return to reference pointSimultaneously
- Manual Single-step function : Yes
- Interpolation : Positioning, linear interpolation, arc interpolation (G00, G01, G02/G03)
- Operating mode : MDI, auto, manual, single - step, edit
- Testing function : Test run, single program segment, hand wheel
- Pause (sec/ms) : G04 X/P_
- Coordinate system setting : G92 (M series), G50 (L series)
- Automatic coordinate system setting : Yes
- Safety function : Soft & hard limit check, and Emergency stop
- Program storage capacity : 2 GB, No limit on processing file quantity
- Program storage quantity : 100 work areas,
- Program edit : Insert, modify, delete, cancel
- Program No., sequence No., address, character retrieval: Yes
- Decimal point programming : Yes
- G code track preview, real-time tracking and syntax check function: Yes

3. Display and Machine Operating Panel (MOP)/Human Machine Interface: Thefollowing feature should be included in the **Display andMachine Operating Panel.**

- Screen display size : 800×480 pixels 7" LCD or larger
- Screen Information display : Position screen, program edit, tool compensation setting, alarm display
- Working Information display : Handwheel test, diagnosis screen, parameter setting, graphic simulation
- Function display : Auxiliary function (M code), spindle function [S0-S15 (gear control) and S15-S99999 (analog)], tool function T code.
- Compensation function: 30 tools length and radius tool compensation memory, reverse clearance compensation
- Other functions : Measurement centered, Automatic tool regulator, Specify arc radius /center position, and electronic gear ratio
- The main menus of the system : Include [Autorun/Monitor], [Program Edit],[Parameter], [Coordinate], and [Diagnosis]; Submenus.
- Operating keys/touch panel for purposes:
  - Cancel alarm, reset CNC,
  - Enter letters, numbers etc.,
  - Confirm or cancel operation,
  - Program edit (insert, delete, modify),
  - Select operating mode,
  - Four keys for UP, Down, Left, and Right movements/ to move cursor,
  - Page key for up-down page,
  - Select menus,
  - Coolant and lubricant on/off,
  - Spindle clockwise/Anticlockwise, on/off,
  - Automatic running pauses/starts,
  - Other requisite keys if any .

4. Manual operation: Followings are the specified features that should be available in the CNC controller for manual operation.

- Manually returning to the reference point,
- Returning of each axis to the reference point separately,

- Returning of each axis to the reference point simultaneously,
- Reset machine tool position,
- Manual reset the relative position,
- Manual continuous tool feeding,
- Single-step feeding: Single-step increment feeding,
- Manual feeding using handwheel,
- Manual operation of auxiliary function:
  01. Coolant On/Off,
  02. Lubricant On/Off,
  03. Spindle clockwise rotation/anticlockwise rotation/stop,
- Manual magnification adjustment,
- Single-step pitch adjustment,
- Data entry to modify the coordinates,
- Update the coordinate system manually,
- Coordinate Parameter: Offset coordinates, Tool Regulator Parameter, Tool setting by test cutting,
- Data settings: Tool compensation data settings and System parameters setting

5. **Automatic Operation:** Following features/functions should be in CNC controller for automatic operations:
   - The machine tool movement should be according to prepared program as automatic operation.Followings should be the modes of operations:
     01. Memory operation,
     02. Manual Data Input Mode (MDI) operation, and
     03. USB disk DNC operation,
   - Speed rate adjustment: Feeding rate (automatic mode), Manual rate (manual mode), and Spindle rotation (automatic or manual mode),
   - SBK function and BDT function,
   - Stopping automatic operation: Program stops, Program End, and Program Pause, and Reset.
6. **Safety Feature for safe operation:** The CNC controller must have all kind of requisite safety features and some of them described as follows:
   - Emergency stop,
   - Hard limit over travel,
   - Soft limit over travel,
   - Other essential safety feature if any.
7. **Self-diagnosis function and Alarms:** Following features/functions should be in CNC controller for the self-diagnosis function and Alarms:
   - NC program execution error alarm,
   - System environment/position error alarm with error codes display,
   - Self-diagnosis function,
   - Others essential feature if any.
8. **Editing and saving the program:** Following features/functions should be in CNC controller for the editing and saving of program using the keypad:
   - Saving the program in the memory:
     - Keypad input (new program),
     - Computer network access/serial port input,
     - Copying processing files from USB disk,
   - Reading programs into work area:
     - Reading programs from controller into work area,
     - Reading programs from USB disk into work area,
   - Modifying and Editing programs:
     - Single-line copy, paste and delete,
     - Multi-line copy, paste and delete,
     - Macro function fast programming,
   - Deleting files: Deleting files in the memory.
9. **Main interfaces of the system:** Following features/functions should be in Main interfaces of the system of the CNC controller:
   - Position Interface: Absolute Position, Relative Position, Comprehensive coordinates, and Deviation position,
   - Edit: Program edit, new program, and save as,
   - MDI interface,
   - File management: Copy, Paste, Cut, and Connect computer,
   - Graphic Simulation
   - Parameter Interface:Comprehensive Parameter, Axis parameters, Management Parameter, Tool magazine parameters, Spindle parameters, and IO configuration parameters
   - Compensation interface,
   - Milling system workpiece coordinate system setting interface: Workpiece coordinate system, Settings of tool setting parameter, Allowance, Offset, and Screw itch error compensation,
   - Controller diagnosis interface (diagnosis): Alarm check, IO diagnosis interface, Function test, and System Info,
   - Macro variable view interface,
   - Current mode instruction info.
10. **System maintenance:** Followings should be as the feature for system maintenance in the CNC controller:
    - Restart and System upgrade,

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- ❖ Reset, Parameter backup, and restore,
- ❖ Enter BIOS.

11. **NC Program transmission from computer network to the system:** System IP settings should be to connect the controller to the router with a network cable.
12. **Machine Operating Panel (MOP):**
    - ❖ For operator level functions,
    - ❖ Regulating the speed in auto mode,
    - ❖ Spindle speed variations,
    - ❖ Selectable various modes like Auto/ Manual/ Edit/ MPG etc.
    - ❖ It contains Start/Stop push buttons, Various indicators and alarms.
13. **The following are the requisite specifications of Manual Pulse Generator (MPG):**
    - ❖ Manual Pulse Generator for taking precise offset,
    - ❖ Axis Selection POT,
    - ❖ Axis movement by 0.1/0.01/0.001 microns,
    - ❖ Direct Start/Stop, and
    - ❖ Emergency Stop Switches.
14. **The CNC Controller, Machine Operating Panel, DC Power Supply Systems, and other devices should be installed in a single Controller Cabinet Panel.**

B. **AC/DC Power Supply System:**

- ❖ Type of input supply : 200 ~ 264 V AC (phase voltage)
- ❖ Output Voltage : 70 ~ 80 V AC/DC
- ❖ Output Current : 14 ~ 18 A

Or

AC/DC Power Supply Systems (03 in numbers):

- ❖ Type of input supply : 200 ~ 264 V AC (phase voltage)
- ❖ Output Voltage : 70 ~ 80 V AC/DC
- ❖ Output Current : 4.5 ~ 6 A

Others:

- Installation, Commissioning and Training required (provided by supplier)
- Warranty: minimum 1 Years (or as per institute norms)

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