C1000T introduction

Product introduction

C1000T can control 5 feed axes (including C axis), 2 analog spindles, 1ms high-speed interpolation, 0.1μm control precision, which can obviously improve the machining efficiency, precision and surface quality.
Technical specification

Controllable axes
Controllable axes: 5 (X, Z, Y, 4th, 5th)
Link axes: 4

Feed axis function
Least input unit: 0.001mm (0.0001 inch) and 0.0001mm (0.00001 inch)
Least command unit: 0.001mm (0.0001 inch) and 0.0001mm (0.00001 inch)
Position command range: ±99999999 × least command unit
Rapid traverse speed: max. speed 60m/min in 0.001mm command unit
Rapid override: F0, 25%, 50%, 100%
Feedrate override: 0 ~ 150% 16 grades to tune
Interpolation mode: linear interpolation, arc interpolation (three-point arc interpolation), thread interpolation and rigid tapping
Automatic thread chamfer function

Thread function
General thread (following spindle)/rigid thread
Single/multi metric, inch straight thread, taper thread, end face thread, constant pitch thread and variable pitch thread
Thread run-out length, angle, speed characteristics can be set
Thread pitch: 0.01mm ~ 500mm or 0.06 tooth/inch ~ 2540 tooth/inch

Acceleration/deceleration function
Cutting feed: front acceleration/deceleration linear, front acceleration/deceleration S back acceleration/deceleration linear, back acceleration/deceleration exponent
Rapid traverse: linear, S type
Thread cutting: linear, exponential
Initial speed, termination speed, time of acceleration/deceleration can be set by parameters.

Spindle function
2-channel 0V ~ 10V analog voltage output, two-spindle control
1-channel spindle encoder feedback, spindle encoder line can be set (100p/r ~ 5000p/r)
Transmission ratio between encoder and spindle: (1 ~ 255) : (1 ~ 255)
Spindle speed: it is set by S or PLC, and speed range: 0r/min ~ 9999r/min
Spindle override: 50% ~ 120% 8 grades to tune
Spindle constant surface speed control
Rigid tapping

Tool function
Tool length compensation
Tool nose radius compensation (C)
Tool wear compensation
Tool life management
Tool setting mode: fixed-point tool setting, trial-cut tool setting, reference point return tool setting, automatic tool setting
Tool offset execution mode: modifying coordinate mode, tool traverse mode

**Precision compensation**
- Backlash compensation
- Memory pitch error compensation

**PLC function**
- Two-level PLC program, up to 5000 steps, the 1st program refresh period 8ms
- PLC program communication download
- PLC warning and PLC alarm
- Many PLC programs (up to 20PCS), the PLC program currently running can be selected
- Basic I/O: 18 input signals / 18 output signals

**Man-machine interface**
- 8.0" wide screen LCD, resolution: 800X600
- Chinese, English display
- Planar tool path display
- Real-time clock

**Operation management**
- Operation mode: edit, auto, MDI, machine zero return, MPG/single, manual, program zero return
- Multi-level operation privilege management
- Alarm record

**Program edit**
- Program capacity: 56MB, 400 programs (including subprograms and macro programs)
- Edit function: program/block word search, modification, deletion, copying, pasting
- Program format: ISO command, statement macro command programming, relative coordinate, absolute coordinate and compound coordinate programming
- Program call: macro program call with parameter, 4-level program built-in

**Communication function**
- RS232: two-way transmitting part programs and parameters, PLC program, system software serial upgrade
- USB: U file operation, U file directly machining, PLC program, system software U upgrade

**Safety function**
- Emergency stop
- Hardware travel limit
- Software travel check
- Data backup and recovery
G command table

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Environment and conditions

C1000T storage delivery, working environment as follows:

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<tr>
<td>Ambient temperature</td>
<td>0℃ ~ 45℃</td>
<td>-40℃ ~ +70℃</td>
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<tr>
<td>Ambient humidity</td>
<td>≤90%(no freezing)</td>
<td>≤95%(40℃)</td>
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<tr>
<td>Atmosphere pressure</td>
<td>86 kPa ~ 106 kPa</td>
<td>86 kPa ~ 106 kPa</td>
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<tr>
<td>Altitude</td>
<td>≤1000m</td>
<td>≤1000m</td>
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</table>
Power supply

C1000T can normally run in the following AC input power supply.
Voltage: within (0.85 ~ 1.1) × rated AC input voltage (AC 220V); Frequency: 49Hz ~ 51Hz continuously changing

1.1.5 Guard

C1000T guard level is not less than IP20.

CNC system of machine tools and CNC machine tools

CNC machine tool is an electro-mechanical integrated product, composed of Numerical Control Systems of Machine Tools, machines, electric control components, hydraulic components, pneumatic components, lubricant, cooling and other subsystems (components), and CNC systems of machine tools are control cores of CNC machine tools. CNC systems of machine tools are made up of computerized numerical control (CNC), servo (stepper) motor drive devices, servo (or stepper) motor etc.

Operational principles of CNC machine tools: according to requirements of machining technology, edit user programs and input them to CNC, then CNC outputs motion control commands to the servo (stepper) motor drive devices, and last the servo (or stepper) motor completes the cutting feed of machine tool by mechanical driving device; logic control commands in user programs to control spindle start/stop, tool selections, cooling ON/OFF, lubricant ON/OFF are output to electric control systems of machine tools from CNC, and then the electric control systems control output components including buttons, switches, indicators, relays, contactors and so on. Presently, the electric control systems are employed with Programmable Logic Controller (PLC) with characteristics of compact, convenience and high reliance. Thereof, the motion control systems and logic control systems are the main of CNC machine tools.

C1000T Turning Machine CNC system has simultaneously motion control and logic control function to control two axes of CNC machine tool to move, and has nested PLC function. Edit PLC programs (ladder diagram) according to requirements of input and output control of machine tool and then download them to C1000T Turning Machine CNC system, which realizes the required electric control requirements of machine tool, is convenient to electric design of machine tool and reduces cost of CNC machine tool.

Software used to control C1000T Turning Machine CNC system are divided into system software (NC for short) and PLC software (PLC for short). NC system is used to control the display, communication, edit, decoding, interpolation and acceleration/deceleration, and PLC system for controlling explanations, executions, inputs and outputs of ladder diagrams.

Standard PLC programs are loaded (except for the special order) when C1000T Turning Machine CNC System is delivered, concerned PLC control functions in following functions and operations are described according to control logics of standard PLC programs, marking with “Standard PLC functions” in C1000T Turning CNC System User Manual. Refer to Operation Manual of machine manufacturer about functions and operations of PLC control because the machine manufacturer may modify or edit PLC programs again.
C1000T contour dimension
Additional panel dimensions