

# CNCmakers Limited

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## 980TDb TURNING MACHINE CNC SYSTEM

### Brief Introduction

980TDb, controls 5 feeding axes (including C axis), 2 analog spindles, 2ms interpolation in high speed, 0.1  $\mu\text{m}$  control precision, which obviously improve the efficiency, precision and surface quality of parts processing. With new USB interface, it supports the file operation and program running in USB.



980TDb



980TDb-V

### Characteristics

- Five axes of x, z, y, 4th and 5th control, the axial name and type of y, 4th and 5th can be defined.
- 2ms interpolation cycle, precision of 1  $\mu\text{m}$  or 0.1  $\mu\text{m}$  can be selected.
- Max. rapid speed 60m/min (when it is 0.1  $\mu\text{m}$ , the maximum speed is 24m/min).
- Equipped with servo spindle can realize spindle continuous position, rigid tapping, rigid thread processing.
- With many PLC programs built in, the current running PLC program can be selected
- G71 command supports the cycle cutting of groove shape outline
- Supports the programming of macro command in sentence type and the calling of macro program with parameter.
- Supports programming in metric system/inch system, with function of auto tool-setting, auto chamfering, tool life management.
- Displays in Chinese/ English/ Spanish/ Russian, which can be set with parameter.
- With USB interface, it supports file operation in flash disk, system configuration and software upgrade.
- Analog voltage output of 0v~10v in two channels, support two spindles
- One channel for handwheel, supporting external MPG.
- Common input in 41 points/common output in 36 points



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## Technical Specification

### ◆ Number of control axes

- Number of control axes: 5 axes (X, Z, Y, 4th and 5th )
- Number of linkage axes: 3 axes
- Number of PLC control axes: 4 axes

### ◆ Feeding axes function

- Minimum command unit: 0.001mm or 0.0001mm is selectable
- Position command range:  $\pm 99,999,999 \times$  minimum command unit
- Rapid traverse speed: When the command unit is 0.001mm, the maximum speed is 60m/min; 0.0001mm, the maximum speed is 24m/min.
- Rapid override: Total four levels: F0, 25%, 50% and 100%, real-time adjusting
- Feeding override: Total 16 levels: 0~150%, real-time adjusting
- Interpolation mode: Interpolation of linear, arc (support arc interpolation of three points), thread, cylindrical, polar coordinate, ellipse and parabola and rigid tapping.
- Auto chamfering

### ◆ Thread function

- Common thread (follow the spindle)/rigid thread
- Single-headed/multiple thread of straight, taper and end surface in metric system/inch system, equal and variable pitch thread
- Thread retraction length, angle and speed characteristics can be set
- Thread pitch: 0.01mm~500mm or 0.06 tooth/inch~25,400 tooth/inch

### ◆ Acceleration and deceleration function

- Cutting feeding: Linear type or index type is selectable.
- Rapid traverse: Linear type or S type
- Thread cutting: Linear type or index type is selectable.
- The starting speed, finishing speed and time of acceleration and deceleration are set by the parameter.

### ◆ Spindle function

- Analog voltage 0V~10V output in two channels, support two-spindle control.
- Spindle encoder feedback in one channel, the resolution of spindle encoder can be set (100p/r~5000p/r) .
- The transmission ratio between encoder and spindle is: (1~255) : (1~255)
- Spindle speed: It is set by S code or PLC signal, the speed range is 0rpm~9999rpm.
- Spindle override: Total 8 levels: 50%~120%, real-time adjusting
- Spindle constant surface speed control
- Rigid tapping

### ◆ Tool function

- Tool length compensation 32 sets
- Tool nose radius compensation (C type)
- Tool wearing compensation 32 sets
- Tool life management 8 type per set
- Method of tools setting: Tool-setting in fixed position, trial cutting tool-setting, return to reference point, auto tool-setting
- Tool offset executing mode: Rewriting coordinate mode, tool traverse mode

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## ◆ Precision compensation

- Backlash compensation
- Pitch error compensation in memory type

## ◆ PLC function

- PLC program in two levels, maximum 5,000 steps, the refresh cycle of the 1st level program: 8ms
- PLC program communication download
- Support PLC warning and PLC alarm
- Support many PLC programs (max 16), the current running PLC program can be selected
- Basic I/O: input in 41 points/output in 36 points

## ◆ Human machine interface

- 7.4 " colored LCD
- Display in Chinese, English, Spanish or Russian, etc
- Display in 2D tool path graph
- Real-time clock

## ◆ Operation management

- Operation mode: Edit, Auto, MDI, Machine zero-return, MPG, Single step, Manual, Program Zero-return
- Multiple-level password management
- Alarm record

## ◆ Editing program

- Program capacity: 40MB, 10,000 programs (including subprograms, macro programs)
- Editing function: program/block/characters research, rewriting and deleting
- Program format: ISO code, support macro command programming in sentence type,
- programming of relative coordinate, absolute coordinate and hybrid coordinate.
- Calling program: Support macro program with parameter, subprogram nesting of 4 layers.

## ◆ Communication function

- RS232: Files of part program and parameter, etc can be transmitted in two-way, support PLC program, Serial Ports of software upgrade.
- USB: File operation , support PLC programs, software upgrade.

## ◆ Safety function

- Emergency stop
- Hardware travel limit
- Software travel limit
- Data backup and recovering

## List of G codes



CODE	FUNCTION
G00	Rapid positioning
G01	Linear interpolation
G02	CW arc interpolation
G03	CCW arc interpolation

CODE	FUNCTION
G41	Tool nose radius left compensation
G42	Tool nose radius right compensation
G50	Set work piece coordinate system
G65	Macro command non-mode calling



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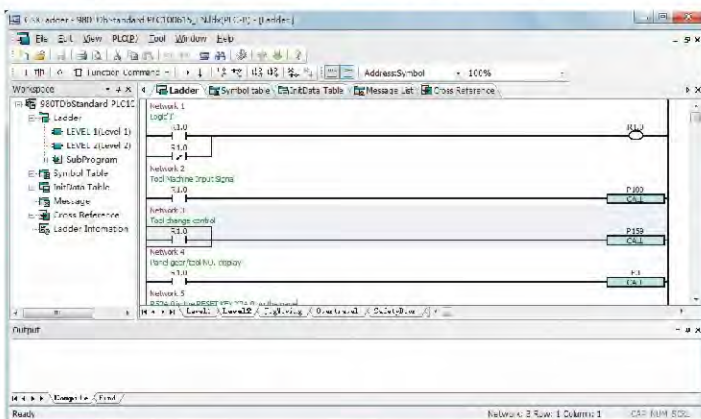
CODE	FUNCTION
G04	Dwell, exact stop
G05	Arc interpolation of three points
G6.2	CW ellipse interpolation
G6.3	CCW ellipse interpolation
G7.1	Cylindrical interpolation
G7.2	CW parabola interpolation
G7.3	CCW parabola interpolation
G10	Data input mode is valid
G11	Cancel data input mode
G12.1	Polar coordinate interpolation
G13.1	Polar coordinate interpolation
G17	Plane selection
G18	Plane selection
G19	Plane selection
G20	Select unit in inch system
G21	Select unit in metric system
G28	Auto return to mechanical zero point
G30	Reference point 2nd, 3rd and 4th return on machine
G31	Jumping function
G32	Equal thread pitch cutting
G32.1	Rigid thread cutting
G33	Z axis tapping in cycle

CODE	FUNCTION
G34	Variable thread pitch cutting
G36	Auto tool compensating and measuring X
G37	Auto tool compensating and measuring Z
G40	Cancel tool nose radius compensation
G66	Macro program mode calling
G67	Cancel macro program mode calling
G70	Finishing cycle
G71	Axial roughing in cycle (support groove cycle)
G72	Radial roughing cycle
G73	Close cutting cycle
G74	Axial grooving cycle
G75	Radial grooving cycle
G76	Multiple thread cutting cycle
G80	Cancel rigid tapping state
G84	Axial rigid tapping
G88	Radial rigid tapping
G90	Axial cutting cycle
G92	Thread cutting cycle
G94	Radial cutting cycle
G96	Constant surface speed control
G97	Cancel constant surface speed control
G98	Feeding/min
G99	Feeding/rev

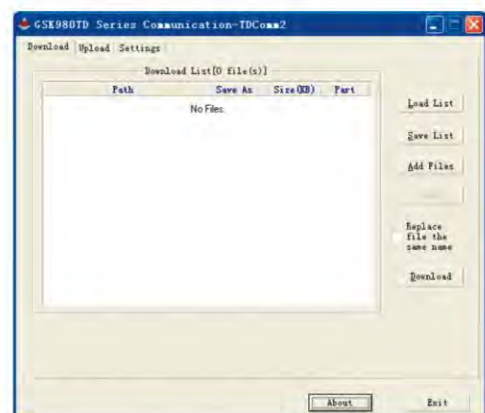
## Communication Software TDCOMM and PLC Ladder Diagram Editing Software GSKLadder



Through TDCOMM, the programs files, parameter, tool compensation, and pitch error compensation, etc., can be edited on PC and transmitted between PC and CNC by users. The PLC ladder diagram can be edited in GSKLadder by machine manufacturers, and PLC programs can be uploaded and downloaded between PC and CNC as well.



PLC ladder diagram editing software (GSKLadder)



Communication software (TDCOMM)



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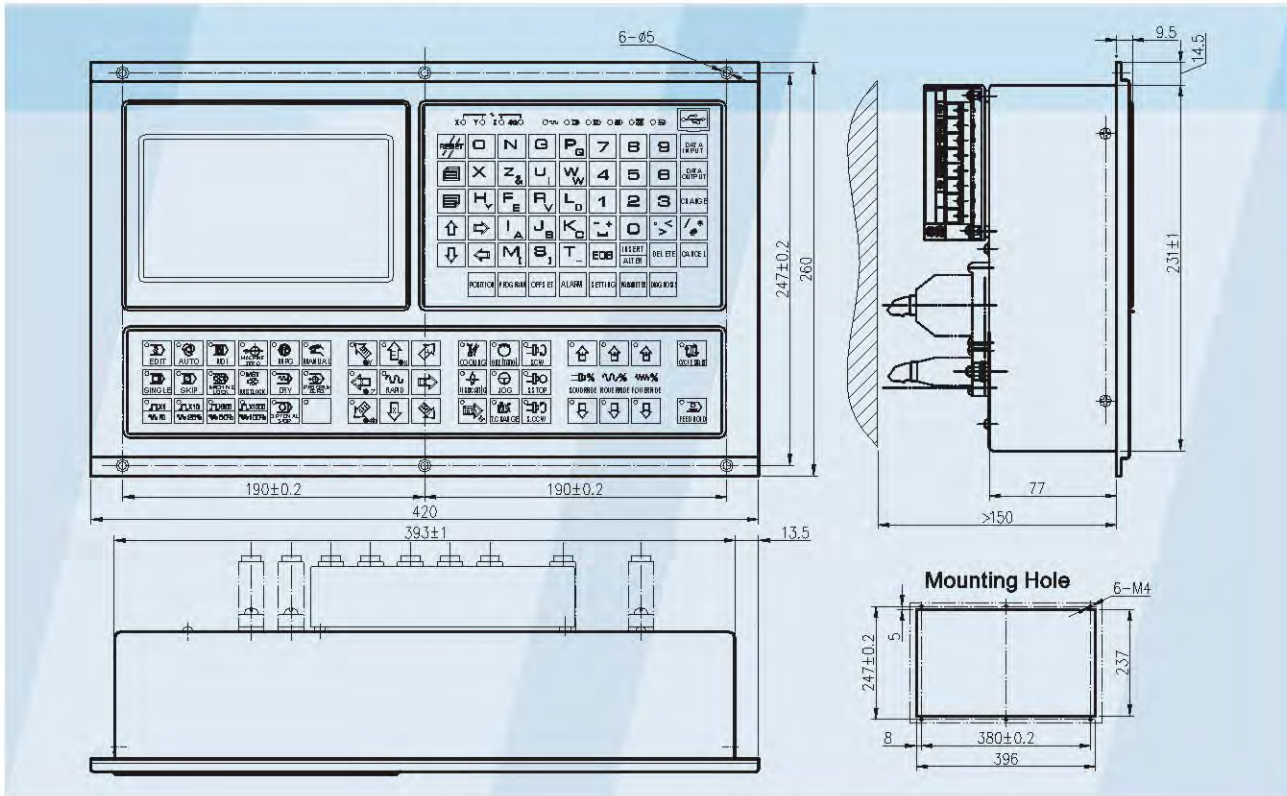
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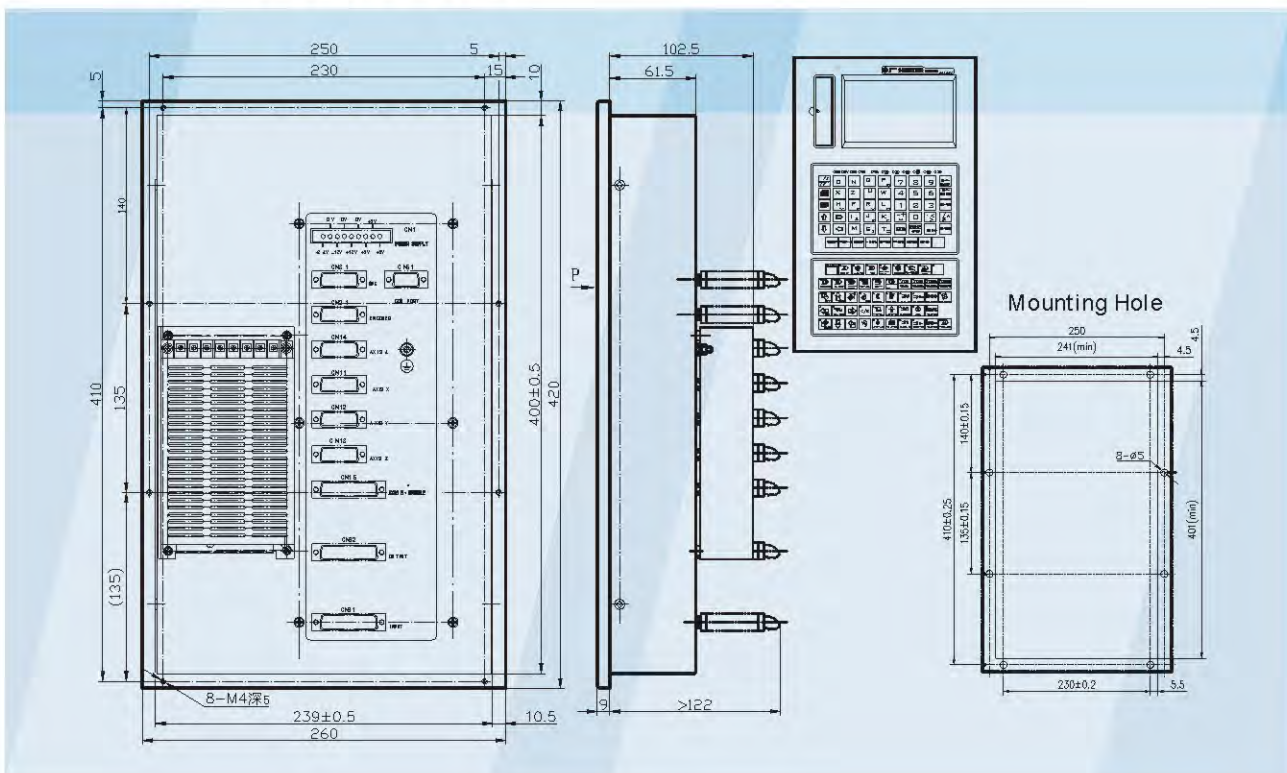
## Overall Installation Dimension



### 980TDb (Horizontal type)



### 980TDb-V (Vertical type)





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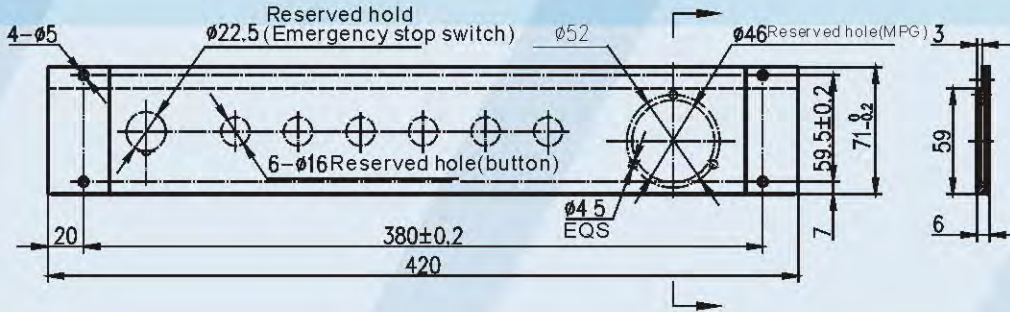
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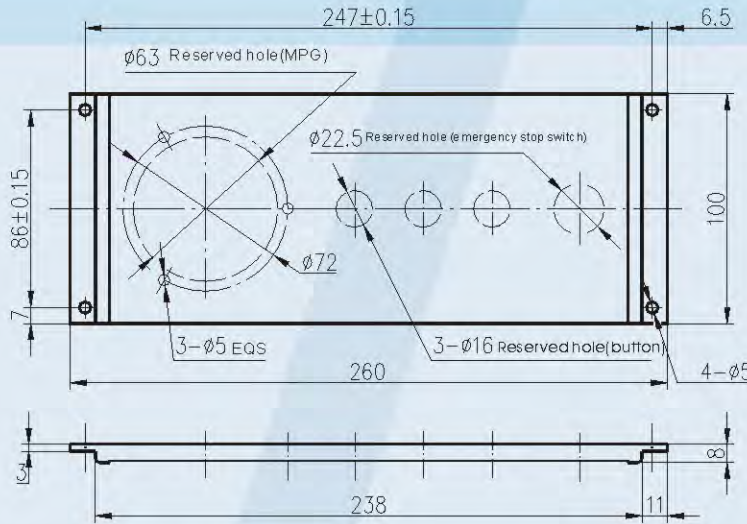
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## Additional panel AP01 (Bottom installation for GSK980TDb)



## Additional panel AP02 (Side installation for GSK980TDb)



## Additional panel AP03 (Bottom installation for GSK980TD-V)

