

CNCmakers Limited

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980MDa DRILLING AND MILLING MACHINE CNC SYSTEM

Brief Introduction

980MDa can control five feeding axes (including C axis), two analog spindles, 2ms interpolation in high speed, 0.1 μ m precision, which obviously improve the efficiency, precision and surface quality of processing parts. The new USB interface, supports the file operation and program running in flash disk. It provides 26 cycle commands of rigid tapping, drilling, boring and milling, etc. It supports the macro command in sentence type and calls the macro program with parameter. The command function is powerful, convenient and flexible in programming.



Characteristics

- The five axes of X, Z, Y, 4th and 5th control, any three axes linkage movement, the axial name and the axial type of 4th and 5th can be defined.
- 2ms interpolation cycle, the precision of 1 μ m or 0.1 μ m can be selected.
- Maximum speed: 60m/min When, it is 0.1 μ m, the maximum speed is 24m/min
- Multiple functions, it can realize the drilling/boring, roughing of round groove/rectangle groove, finishing of full circle/rectangle, continuous drilling of straight line/rectangle/arc, and support spiral, cylindrical and polar coordinate interpolation, etc.
- Adapted servo spindle can realize spindle continuous position, rigid tapping function.
- Built-in many PLC programs, PLC programs can be selected, edited, uploaded and downloaded.
- Memory capacity: 40MB, total 10,000 part programs.
- Support macro command programming in sentence type and the calling of macro program with the parameter.

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- Support metric system/inch system, with the function of scaling, programmable mirror, coordinate system rotation, auto chamfering and tool life management.
- Display in Chinese, English, Spanish, and Russian, which can be selected by the parameter.
- With USB interface, support USB file processing, system configuration and software upgrade.
- DNC in high speed, realize part program real-time transmission processing .
- Analog voltage output of 0V 10V in two channels, support two-spindle control.
- One channel for handwheel, supporting external MPG.
- Common input in 41 points/output in 36 points, which meet the requirements of the logic control for the circular disc tool magazine and umbrella-type tool magazine

Technical Specification

◆ Control axes

- Control axes: 5 axes (X, Z, Y, 4th and 5th)
- Interpolation axes: X, Y, Z, 4th and 5th linear interpolation; X, Y and Z three axes linear and spiral interpolation, any two axes arc interpolation;

◆ Feeding axis function

- Minimum command unit: 0.001mm or 0.0001mm can be selected
- Position command range: 99999999 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: F0, 25%, 50% and 100%, total four levels, real-time adjustment;
- Feeding override: total 16 levels: 0 150%, real-time adjustment;
- Interpolation mode: linear, arc and spiral interpolation, cylindrical, polar coordinate interpolation and rigid tapping
- Auto chamfering

◆ Acceleration and deceleration function

- Cutting feeding: index type
- Rapid traverse: linear type
- Tapping: linear type/index type
- 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 feed back in one channel, the resolution of spindle encoder can be set (0 or 100p/r~5000p/r)
- Transmission ratio between encoder and spindle is: (1~255) : (1~255)
- Spindle speed: It is specified by S code or PLC signal, the speed range is 0rpm~9999rpm.
- Spindle override: total 8 levels: 50%~120%, real-time adjustment
- Spindle constant surface speed control
- Tapping cycle/rigid tapping

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◆ Tool function

- Tool length compensation: 32 sets
- Tool radius compensation (C type): 32 sets
- Tool wearing compensation: 32 sets
- Tool life management: 32 sets (8 types per set)

◆ 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 (maximum 16), the current running PLC program can be selected by parameter
- Basic I/O: input in 41 points/output in 36 points

◆ Human machine interface

- 7.4 colored LCD, the resolution is 234×480
- Display in Chinese, English, Spanish or Russian, etc
- Display in processing path and it can real-time zoom in and out, translation and scroll lock.
- Real-time clock

◆ Operation management

- Operation mode: Edit, AUTO, MDI, machine zero-return, MPG/single step, manual and DNC.
- Operation authority of multiple levels management
- Alarm record

◆ Editing program

- Program capacity: 40M, 10,000 programs (including subprograms, macro programs)
- Editing function: program/block/characters research, rewrite and delete
- Program format: ISO code, support macro command programming in sentence type
- Calling program: It supports 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, DNC real-time processing, support PLC program, serial ports of system software upgrade.
- USB: File operation, directly processing files in USB, support PLC program, system software upgrade by USB.

◆ Safety function

- Emergency stop
- Hardware travel limit

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- Software travel limit
- Data restoring and recovering

List of G codes



| CODE | FUNCTION |
|-------|--|
| G00 | Positioning (rapid traverse) |
| G01 | Linear interpolation (cutting feeding) |
| G02 | CW arc/spiral interpolation |
| G03 | CCW arc/spiral interpolation |
| G04 | Dwell, exact stop |
| G10 | Set the compensation value |
| G11 | Tool life management end |
| G15 | Polar coordinate command mode cancel |
| G16 | Polar coordinate command mode start |
| G17 | Select XY plane |
| G18 | Select ZY plane |
| G19 | Select YZ plane |
| G20 | Input system inch |
| G21 | Input system metric |
| G28 | Reference point return |
| G29 | Return from reference point |
| G30 | Reference points 2nd,3rd and 4th return |
| G31 | Jumping function |
| G40 | Cancel tool radius compensation |
| G41 | Tool radius left compensation |
| G42 | Tool radius right compensation |
| G43 | Tool length positive compensation |
| G44 | Tool length negative compensation |
| G49 | Cancel tool length compensation |
| G50 | Zooming cancel |
| G50.1 | Programmable mirror image cancel |
| G51 | Zooming start |
| G51.1 | Programmable mirror image start |
| G52 | Partial coordinate system setting |
| G53 | Select coordinates system for machine tool |
| G54 | Work piece coordinate system 1 |
| G55 | Work piece coordinate system 2 |
| G56 | Work piece coordinate system 3 |
| G57 | Work piece coordinate system 4 |
| G58 | Work piece coordinate system 5 |
| G59 | Work piece coordinate system 6 |
| G65 | Macro command |

| CODE | FUNCTION |
|------|---|
| G66 | Macro program modal call |
| G67 | Macro program modal call cancel |
| G73 | Deep hole processing cycle in high speed |
| G74 | Laevorotatory tapping cycle |
| G80 | Cancel fixed cycle |
| G81 | Drilling hole in cycle (dot drilling cycle) |
| G82 | Drilling in cycle (boring stage hole cycle) |
| G83 | Deep hole drilling in cycle |
| G84 | Tapping in cycle |
| G85 | Boring hole in cycle |
| G86 | Drilling hole in cycle |
| G88 | Boring hole in cycle |
| G89 | Boring hole in cycle |
| G90 | Absolute value programming |
| G91 | Increment value programming |
| G92 | Set coordinate system |
| G94 | Feeding/min |
| G95 | Feeding/rev |
| G98 | Return to initialization plane during fixed cycle |
| G99 | Return to point R plane during fixed cycle |
| G110 | CCW round groove roughing |
| G111 | CW round groove roughing |
| G112 | Finishing in CCW full circle |
| G113 | Finishing in CW full circle |
| G114 | CCW outer circle finishing |
| G115 | CW outer circle finishing |
| G134 | CCW rectangle groove roughing |
| G135 | CW rectangle groove roughing |
| G136 | CCW rectangle groove finishing |
| G137 | CW rectangle groove finishing |
| G138 | CCW rectangle outer finishing |
| G139 | CW rectangle outer finishing |
| G140 | CW rectangle continuous drilling |
| G141 | CCW rectangle continuous drilling |
| G142 | CW arc continuous drilling |
| G143 | CCW arc continuous drilling |

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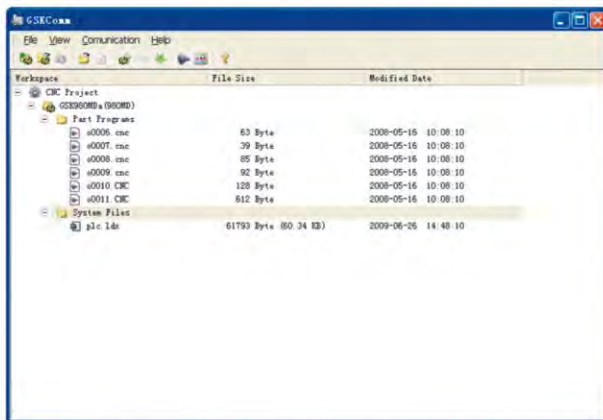
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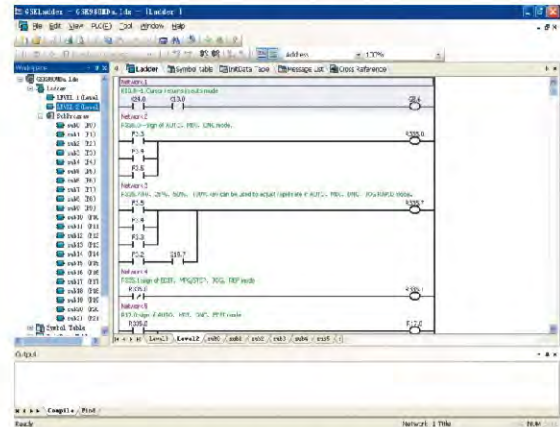
Communication Software GSKComm and PLC Ladder Diagram Editing Software GSKLadder



980MDa adopts GSKComm and GSKLadder. They both run under WIN98/2000/XP. Through GSKComm, the programs files, parameter, tool compensation, and pitch error compensation, etc., can be edited on PC and transmitted between PC and CNC, as well as uploaded and downloaded by users, and the DNC real-time processing can be realized. Through GSKLadder, the ladder diagram can be edited on PC by machine manufacturers. Also, PLC programs can be uploaded and downloaded between PC and CNC.



Communication software GSKComm interface

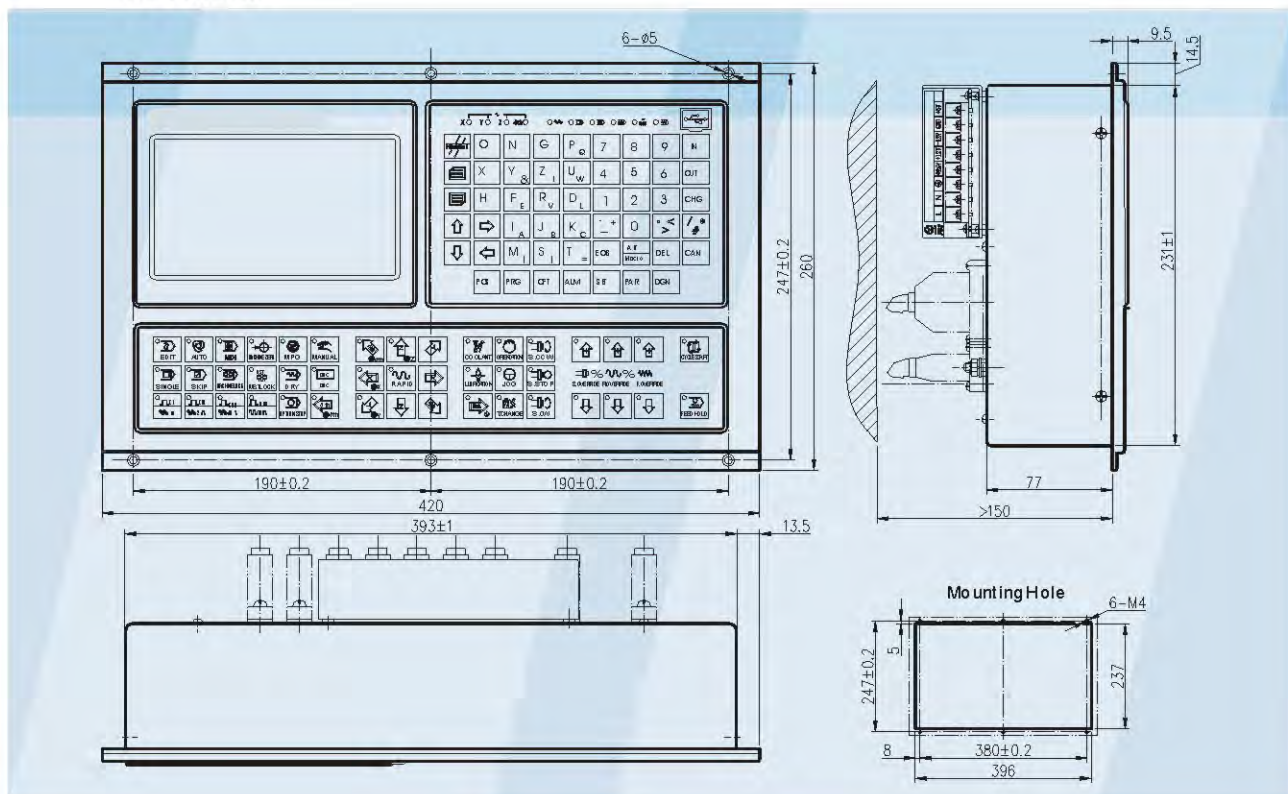


PLC Ladder diagram editing software GSKLadder interface

Overall Installation Dimensions



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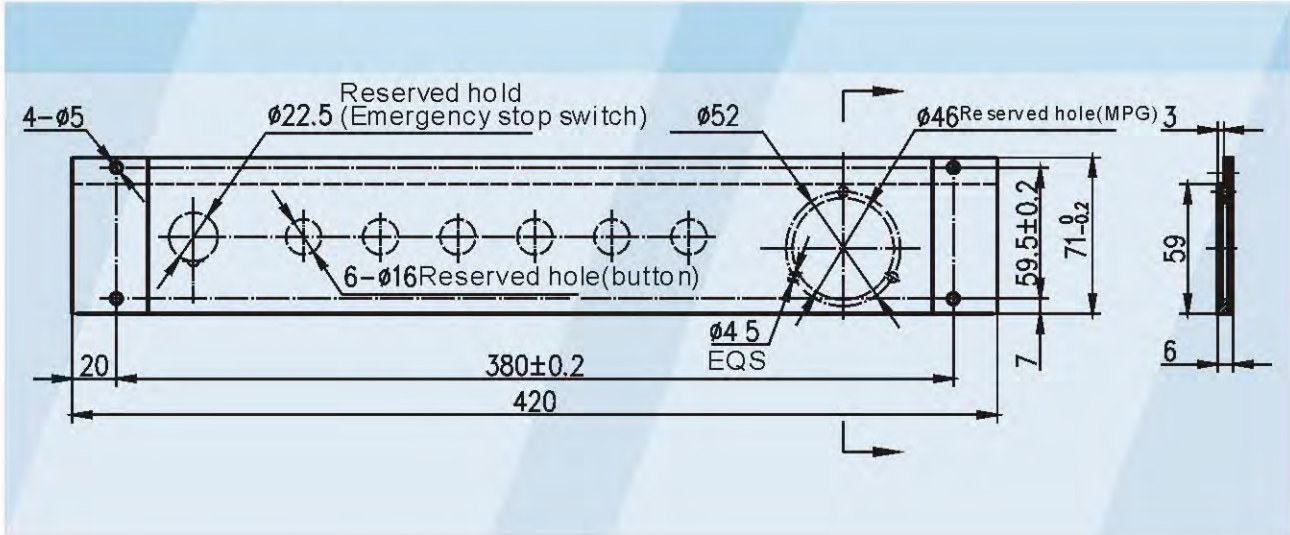
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● Additional panel Ap01 (bottom installation)



● Additional panel Ap02 (side installation)

