



► CNC SYSTEM BROCHURE

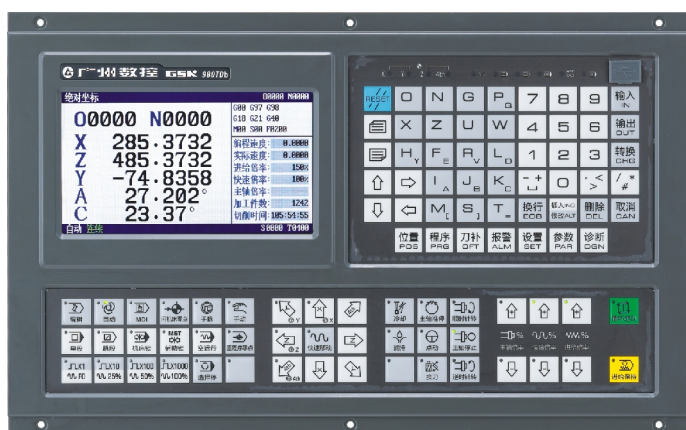


GSK CNC EQUIPMENT CO., LTD.

GSK980TDb TURNING MACHINECNC SYSTEM

Brief Introduction

GSK980TDb is a new product, which controls 5 feeding axes (including C axis), 2 analog spindles, 2ms interpolation in high speed, 0.1 μ m control precision, which obviously improve the efficiency, precision and surface quality of parts processing. New USB interface, it supports the file operation and program running in flash disk.



GSK980TDb



GSK980TDb-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 μ m or 0.1 μ m can be selected.
- Max. rapid speed 60m/min (when it is 0.1 μ m, the maximum speed is 24m/min).
- Adapted servo spindle can realize spindle continuous position, rigid tapping, rigid thread processing.
- Built-in many plc programs, 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 or Russian, which can be selected by 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



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
- 24 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 0.06tooth/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 setting tools: 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



◆ 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" large screen LCD, the resolution is 234×480
- 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: 40M, 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 and DNC processing, 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

GSK980TDb Turning Machine CNC System



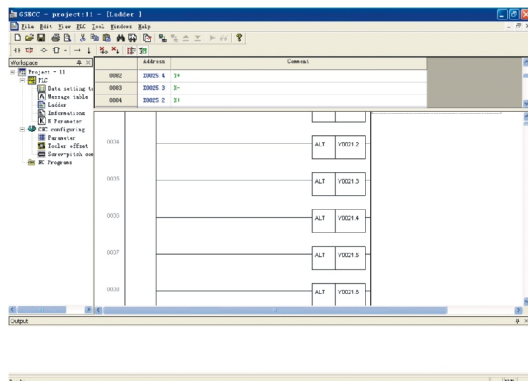
CODE	FUNCTION
G04	Dwell, exact stop
G05	Arc interpolation of three points
G6.2	CW ellipse interpolation
G6.3	CCW ellipse interpolation
G7.2	CW parabola interpolation
G7.3	CCW parabola interpolation
G10	Data input mode is valid
G11	Cancel data input mode
G20	Select unit in inch system
G21	Select unit 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
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

CODE	FUNCTION
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

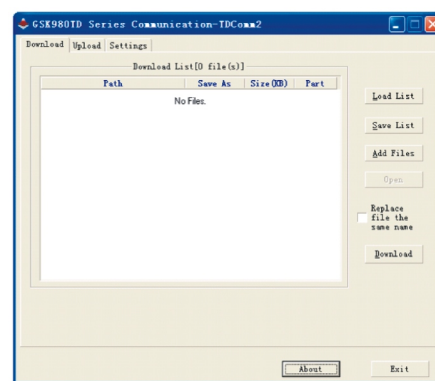
Communication Software and PLC Ladder Diagram Editing Software



GSK980TDb uses communication software GSKComm, and PLC ladder diagram editing software GSKLadder. GSKComm and GSKLadder run in WIN98/2000/XP. The users can edit part program, transmit the part programs, parameter, tool compensation and pitch error compensation between PC and CNC in two-way in GSKComm of PC, and DNC real-time processing. The machine manufacturer can edit the PLC ladder diagram in GSKLadder, and upload and download PLC programs between PC and CNC.



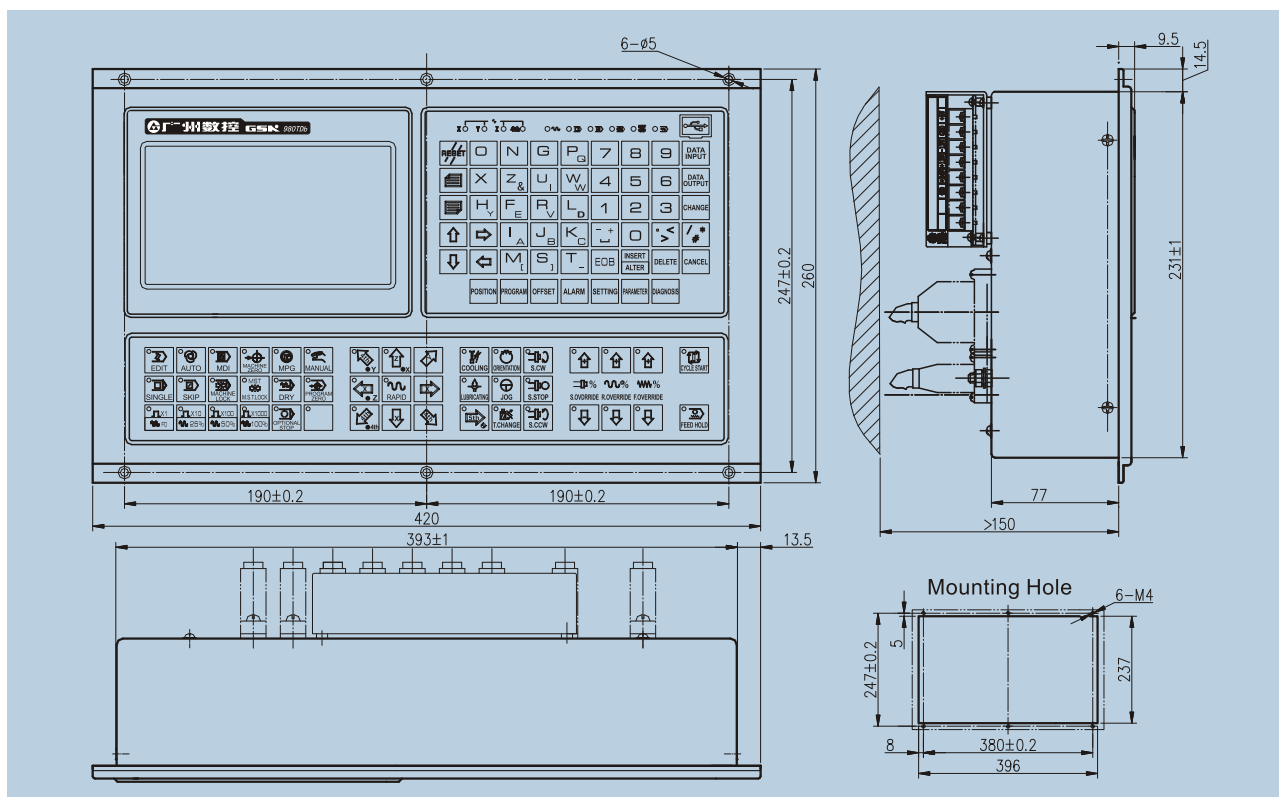
PLC ladder diagram editing software (GSKLadder)



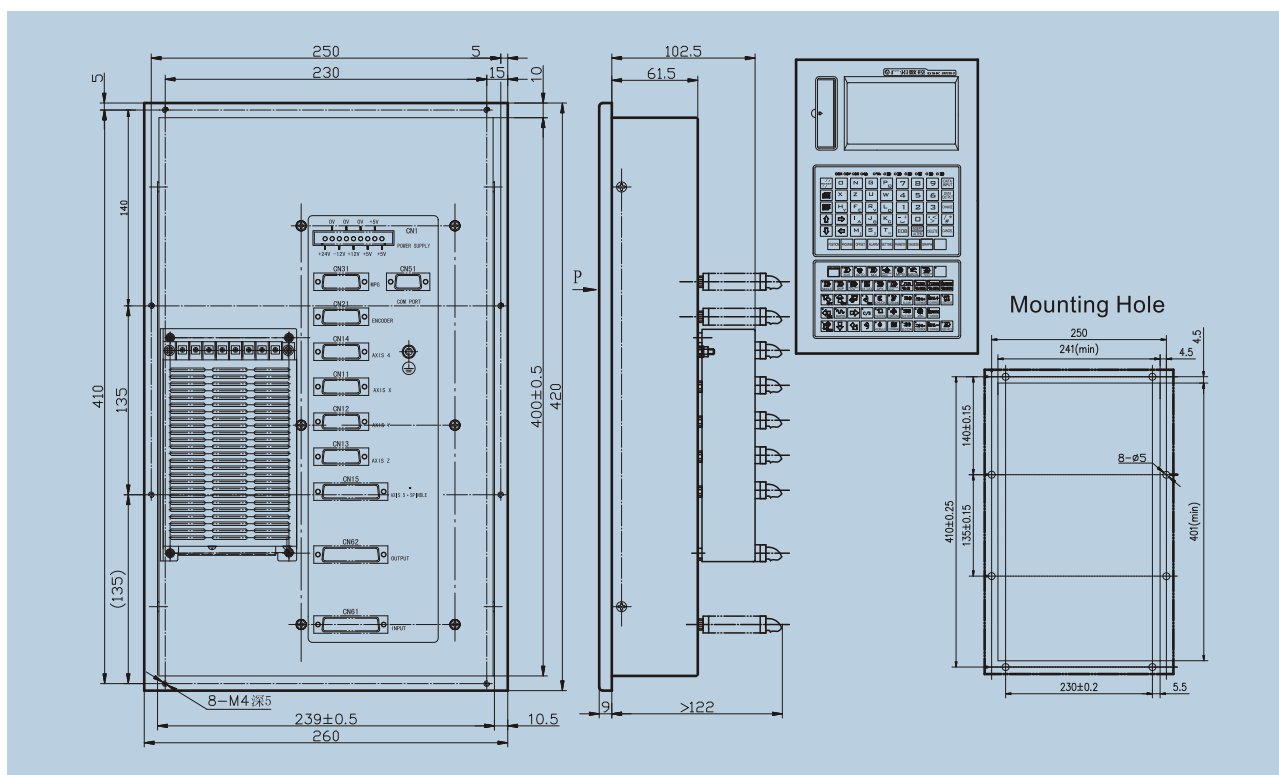
Communication software (TDComm)

Overall Installation Dimension

● GSK980TDb (Horizontal type)



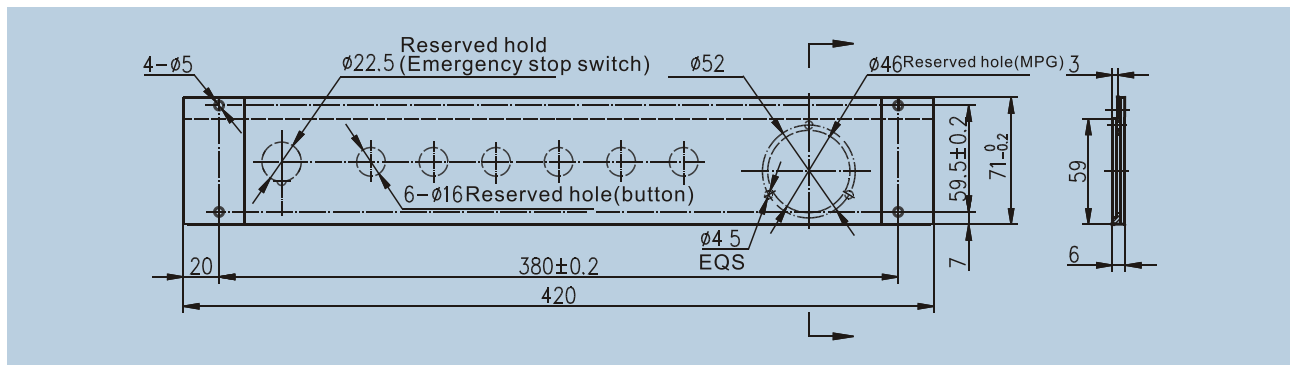
● GSK980TDb-V (Vertical type)



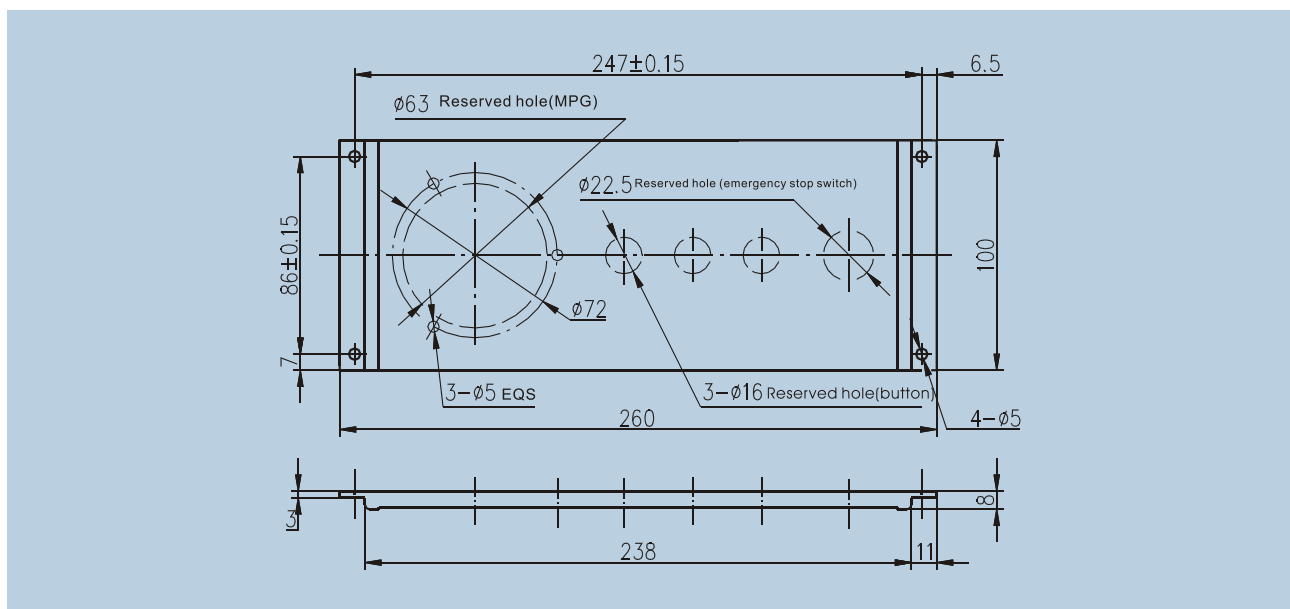
GSK980TDb Turning Machine CNC System



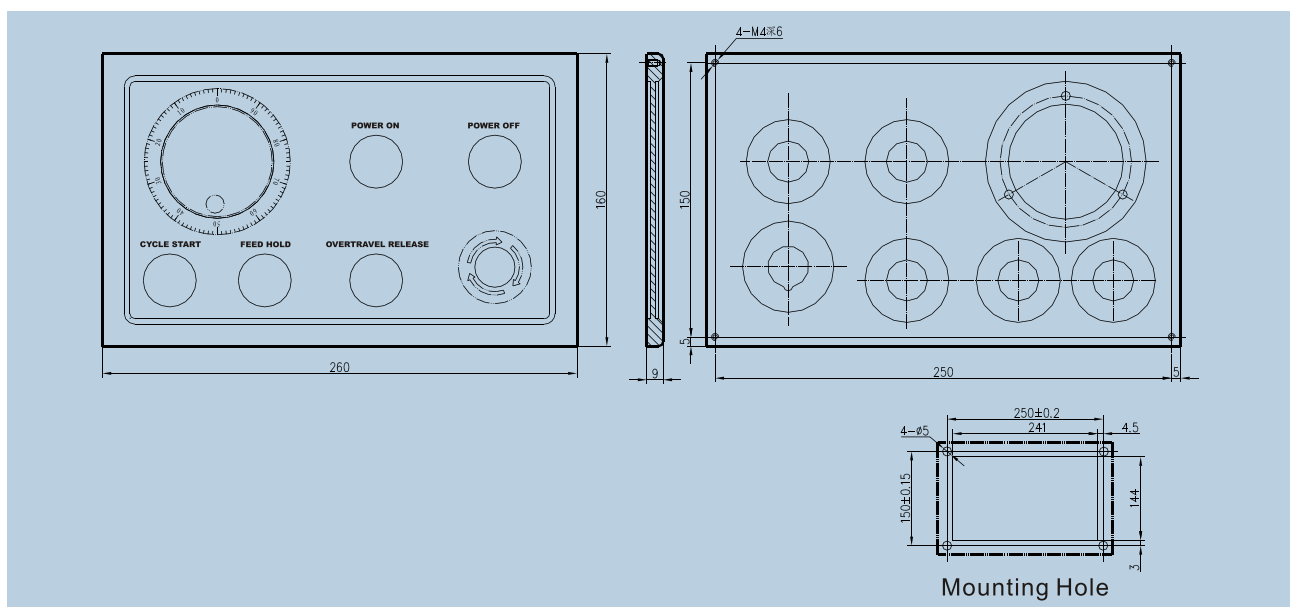
Additional panel AP01 (Bottom installation for GSK980TDb)



Additional panel AP02 (Side installation for GSK980TDb)



Additional panel AP03 (Bottom installation for GSK980TD-V)



GSK988T TURNING CENTER CNC SYSTEM

Brief Introduction

GSK988T is a new CNC product for slant bed CNC turning center, adopt micro processor of 400MHz, and it can control five feeding axes (including Cs axis), two analog spindles, real-time communication between GSKCAN serial bus and servo unit, the adapted servo motor adopts absolute encoder in high resolution, realize $0.1\mu\text{m}$ position precision, and satisfy the requirements of combined processing of turning and milling in high precision. GSK988T is equipped with internet interface, and it supports remote monitor and file transmission and satisfies the requirements of internet education and workshop management. GSK988T is the best Choice for slant bed CNC turning center.



GSK988T-H



GSK988T

Characteristics

- Five feeding axes (including Cs axis), any three axes linkage, two analog spindles, support combined processing of turning and milling.
- Command unit: 1 m or 0.1 m is selected, max. rapid speed is 60m/min; when it is $0.1\mu\text{m}$, and the max. rapid traverse speed is 24m/min.
- Adapted with GSKCAN servo unit, it can realize servo parameter setting and servo unit real-time monitor.
- Built-in many PLC programs, PLC ladder diagram is edited on-line, real-time monitor.
- Background edit part program.
- Supports internet interface, support file transmission and remote monitor.
- With USB interface, it supports file operation, system configuration and software upgrade in flash disk.
- 8.4 true color LCD, it supports 2D traverse path graph.



Technical Specification



◆ Control axes

- Maximum axes: 5 axes (including Cs axis)
- Maximum linkage axes: 3 axes
- Number of PLC control axes: 5 axes

◆ Feeding axis function

- Min. command unit: 0.001mm or 0.0001mm is selected.
- Position command range: $\pm 99999999 \times$ min. command unit
- Rapid traverse speed unit: when the command unit is 0.001mm, the maximum speed is 60m/min;
- When the precision is 0.0001mm, the maximum speed is 24m/min.
- Rapid override: total 4 levels: F0, 25%, 50% and 100%, real-time adjusting
- Feeding override: total 16 levels: 0 150%, real-time adjusting
- Interpolation mode: linear, arc, spiral and polar coordinate interpolation and rigid tapping

◆ Thread function

- Common thread (following the spindle)/rigid thread
- Single-headed/multiple thread of straight, taper and terminal 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 0.01inch~9.99inch

◆ Acceleration and deceleration function

- Cutting feeding: Lineartype or indextype is selectable.
- Rapid traverse: Lineartype
- Thread cutting: Lineartype or indextype 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, spindle encoder feedback in two channels and two-spindle control
- Spindle speed: It is set by S code or PLC signal, the speed range is 0rpm~20,000rpm
- Spindle override: Total 8 levels: 50%~120%, real-time adjusting
- Spindle constant surface speed control
- Rigid tapping

◆ Tool function

- Tool length compensation: 99 sets
- Tool wearing compensation: 99 sets of data
- Tool nose radius compensation (C type)
- Tool life management
- Methods of setting tools: fixed position, trial cutting, reference point return.
- Tool offset mode: rewriting coordinate mode, tool traverse mode

◆ Precision compensation

- Backlash compensation: range $(-9999 \sim +9999) \times$ detection unit
- Pitch error compensation in memory type: 1024 compensation points in total, the number of points of each axis is determined by the parameter, and the compensation range of each point $(-700 \sim +700) \times$ detection unit

◆ PLC function

- 13 types of basic commands, 30 types of function commands
- PLC ladder diagram edit on-line, real-time monitor
- PLC program in two levels, maximum 5,000 steps, the refresh cycle of the 1st level program: 8ms.
- Support PLC warning and PLC alarm
- Support many PLC programs (maximum 16), the current running PLC program can be selected by parameter

◆ I/O unit

- Basic I/O: Input in 40 points/output in 32 points
- Operational panel I/O: input in 96 points/output in 96 points

◆ Human machine interface

- Display in Chinese and English, etc.
- Display in 2D tool path graph
- Servo state monitor
- Servo parameter configuration on-line
- Many system configurations can be selected
- Real-time clock
- Help on-line

◆ Operation management

- Operation mode: Auto, Manual, Edit, MDI, DNC, MPG and reference point return
- Multiple levels password management
- Alarm record
- Multi-turn off management

◆ Editing program

- Program memory capacity: 36M, 10,000 programs (including subprograms, macro programs)
- Editing function: Edit in full screen, support the background edit of part program
- Editing function: Program/block/character research, rewriting, deleting, block copy/block deleting
- Program format: ISO codes, it supports the commands without space, hybrid programming of relative coordinate and absolute coordinate.
- Macro command: Support macro command programming in sentence type
- Calling program: Support the macro program calling with parameter, subprogram nesting of 12 layers
- Grammar check: Check grammar after editing the programs. (without running program)

◆ Communication function

- RS232: Transmit the files of part program and parameter, etc, DNC processing, support PLC program and software serial port upgrade.
- USB: File operation, directly process files and support PLC programs and software upgrade.
- LAN: Remote monitor, internet DNC processing, file transmissions, support part program, system parameter, servo parameter of PLC program

◆ Safety function

- Emergency stop
- Hardware travel limit
- Travel limit in many memory types
- Data backup and recovering

GSK988T Turning Center CNC System



List of G codes



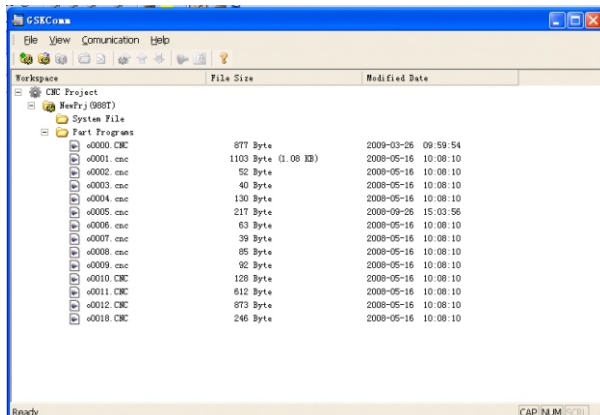
CODE	FUNCTION
G00	Rapid traverse
G01	Linear interpolation
G02	CW arc interpolation
G03	CCW arc interpolation
G04	Dwell, exact stop
G12.1	Polar coordinates interpolation
G13.1	Cancel polar coordinates interpolation
G17	Select XpYp plane
G18	Select ZpXp plane
G34	Cut in variable thread pitch
G40	Cancel tool nose radius compensation
G41	Tool nose radius left compensation
G42	Tool nose radius right compensation
G50	Set work piece coordinate system
G52	Set part coordinate system
G53	Set machine coordinate system
G54	Select work piece coordinate system 1
G55	Select work piece coordinate system 2
G56	Select work piece coordinate system 3
G57	Select work piece coordinate system 4
G58	Select work piece coordinate system 5
G59	Select work piece coordinate system 6
G65	Macro program non-mode calling
G66	Macro program mode calling
G67	Cancel macro program mode calling
G70	Finishing cycle

CODE	FUNCTION
G19	Select YpZp plane
G20	Input system inch
G21	Input system metric
G22	Check memory travel
G23	Cancel memory travel check
G28	Reference point return
G30	Reference points of 2nd , 3rd and 4th return
G31	Jumping function
G32	Cut in equal thread pitch
G71	Axial roughing cycle
G72	Radial roughing cycle
G73	Close cutting cycle
G74	Axial grooving cycle
G75	Radial grooving cycle
G76	Multiple thread cutting cycle
G80	Cancel tapping cycle
G84	Tapping cycle on face
G88	Tapping cycle on side
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

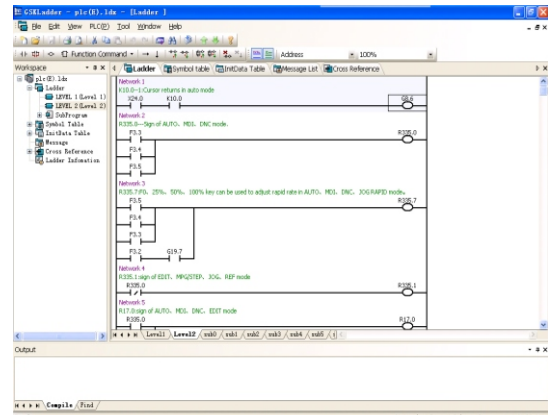
Communication Software Ladder and PLC Diagram Editing Software



The communication software GSKComm and PLC ladder diagram editing software GSKLadder of GSK988T all run in WIN98/2000/XP. Through software GSKComm, the user can edit part program on PC, upload and download the files of part program, parameter, tool compensation and thread compensation, etc between PC and CNC, and DNC real-time processing. Through software GSKLadder, the machine manufacturer can edit the ladder diagram on PC, upload and download PLC program between PC and CNC.



Communication software GSKComm



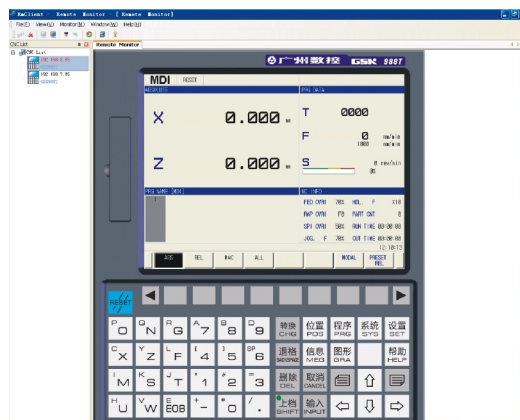
PLC Ladder diagram editing software GSKLadder



GSK988T Turning Center CNC System

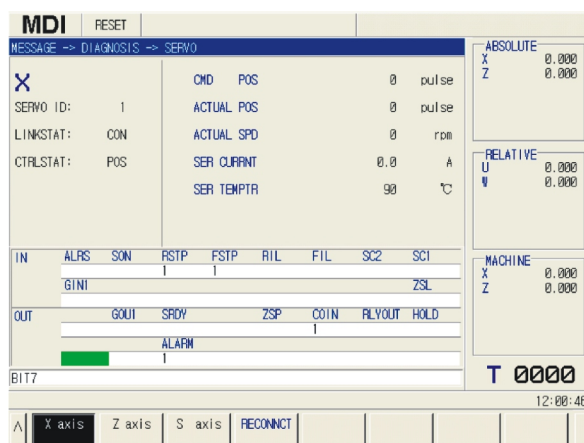
Remote Monitor Software: GSKMonitor

GSKMonitor runs under WIN98/2000/XP, and supports remote assistance and monitor and five transmission through GSK988T LAN interface.



Servo State Diagnosis and Monitor

Through GSK-CAN, GSK988T realizes diagnosis and monitor of servo state (command position, feedback position, motor speed and motor current, etc).



Servo state diagnosis interface



Servo parameter configuration interface

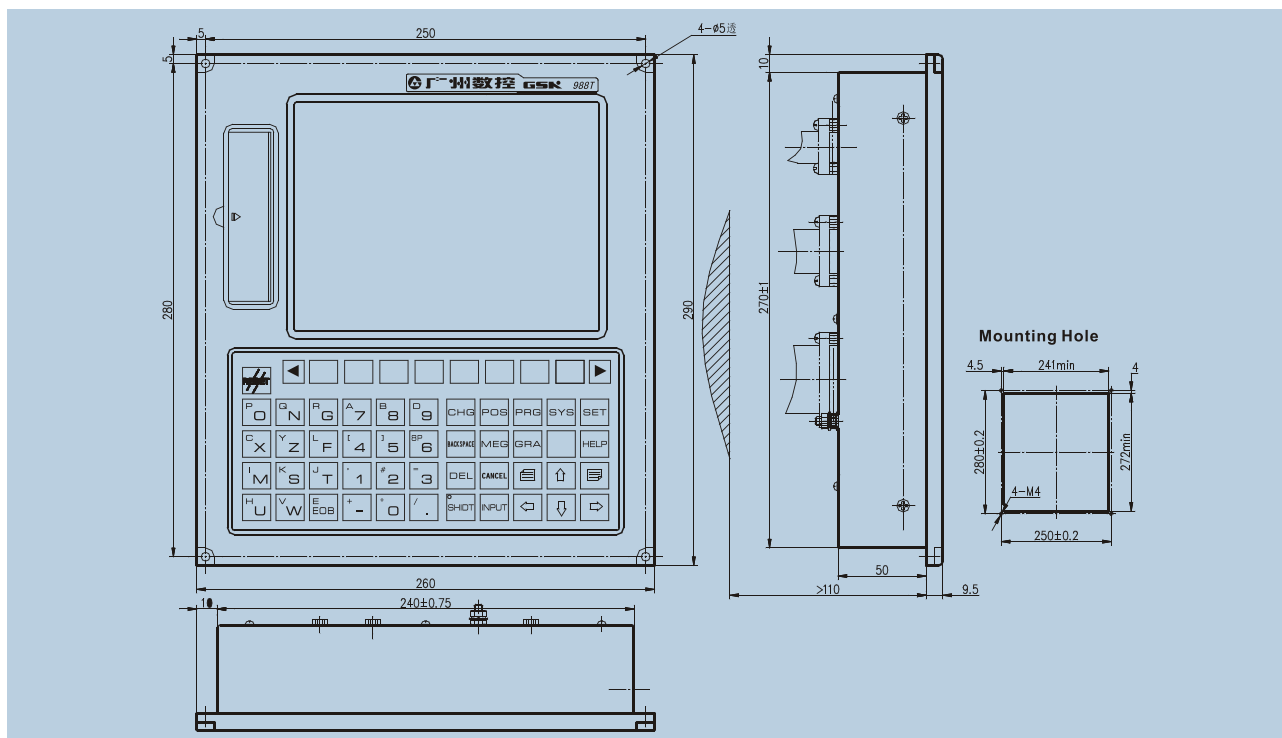
GSK988T Turning Center CNC System



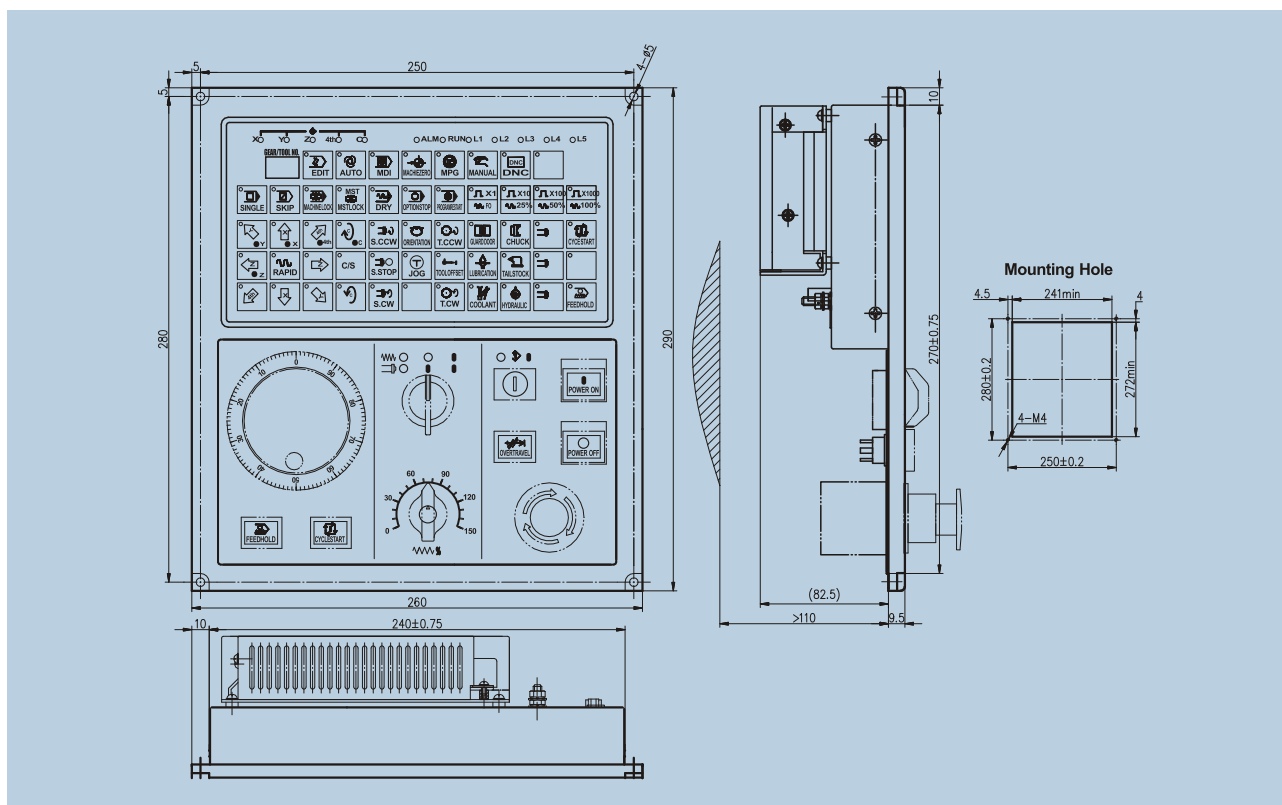
Overall Installation Dimension



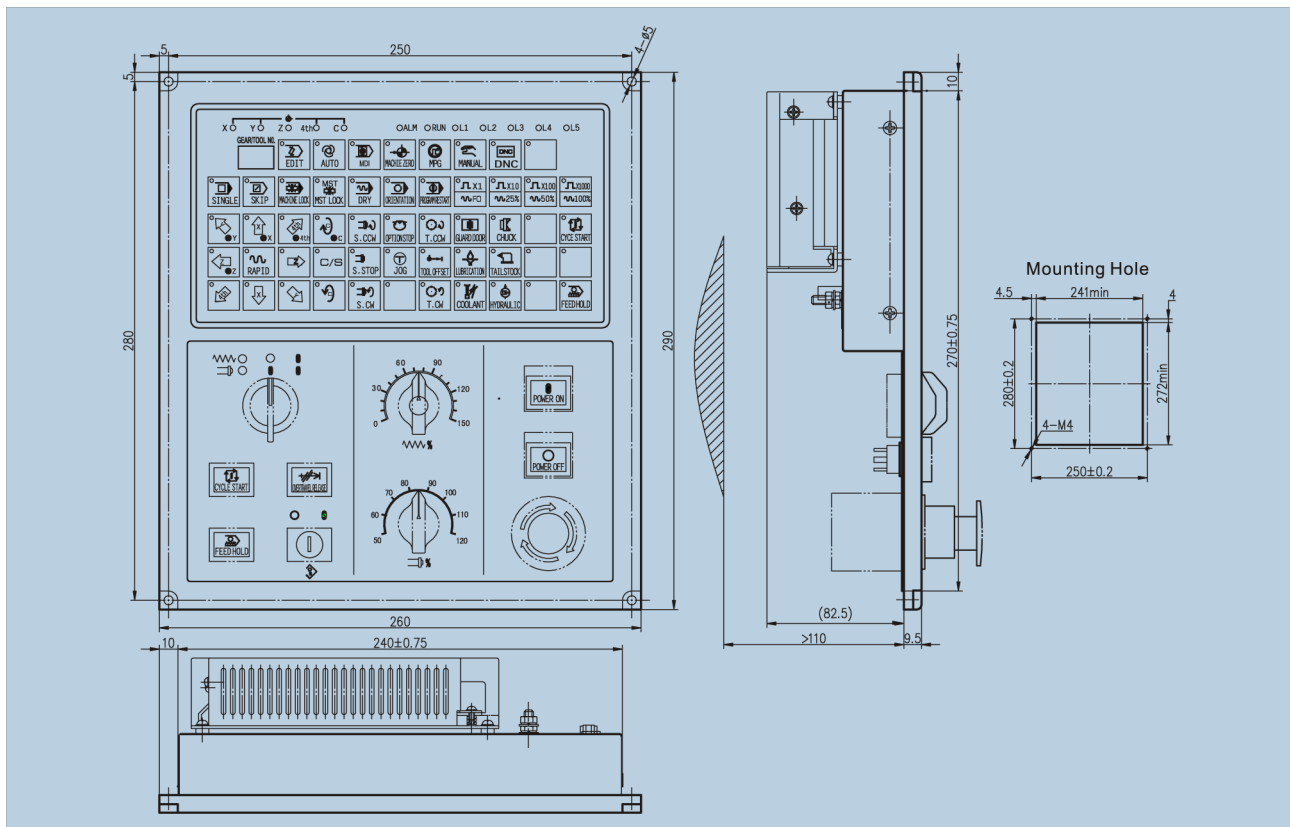
● GSK988T



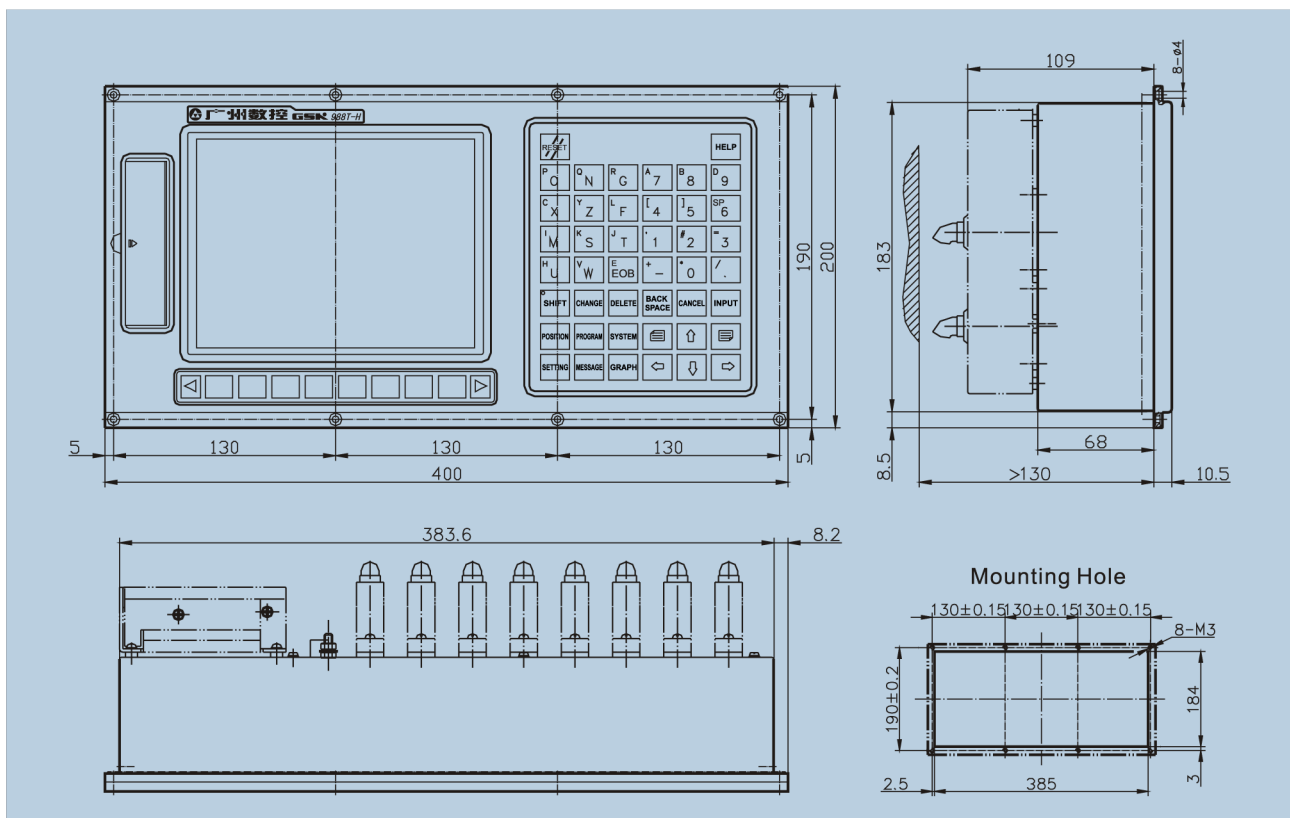
● Additional panel: MPU02A (for GSK988T)



● Additional panel: MPU02B (for GSK988T)



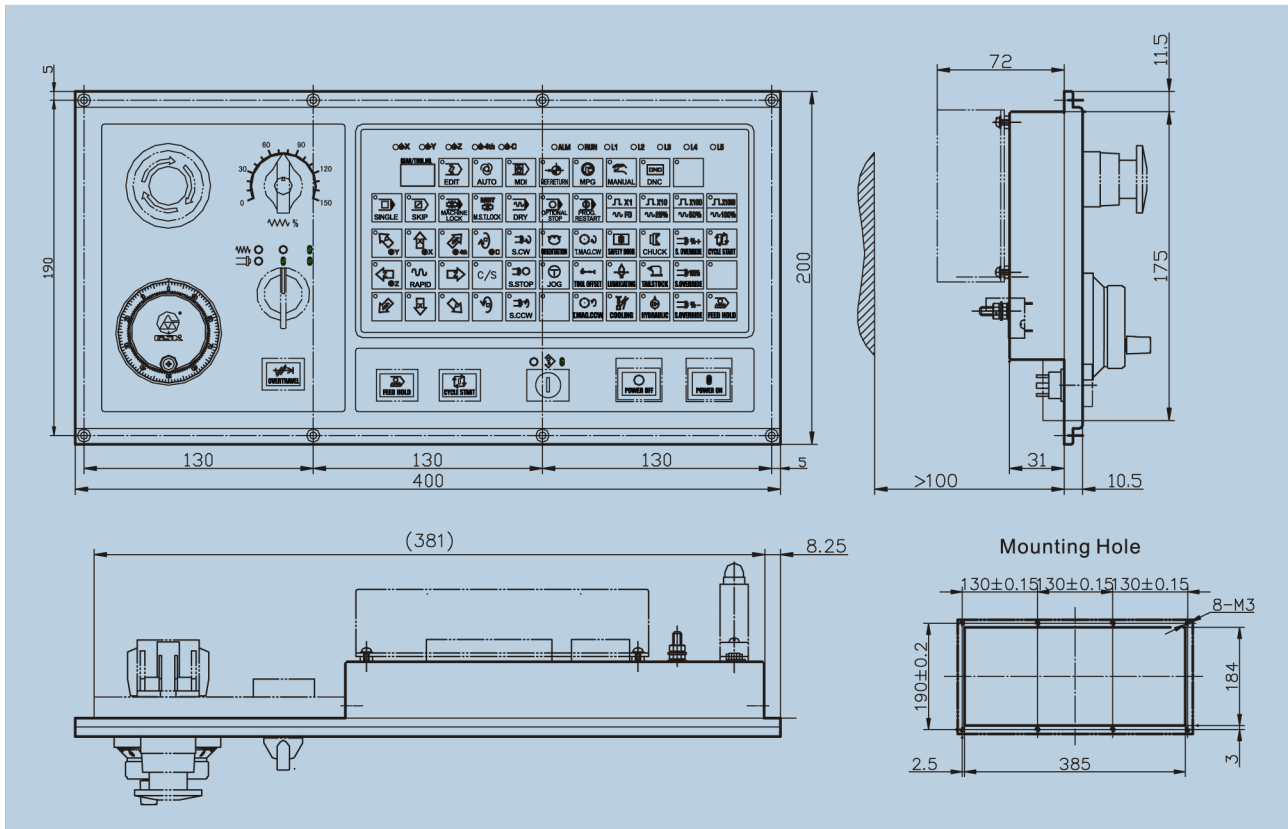
● GSK988T-H



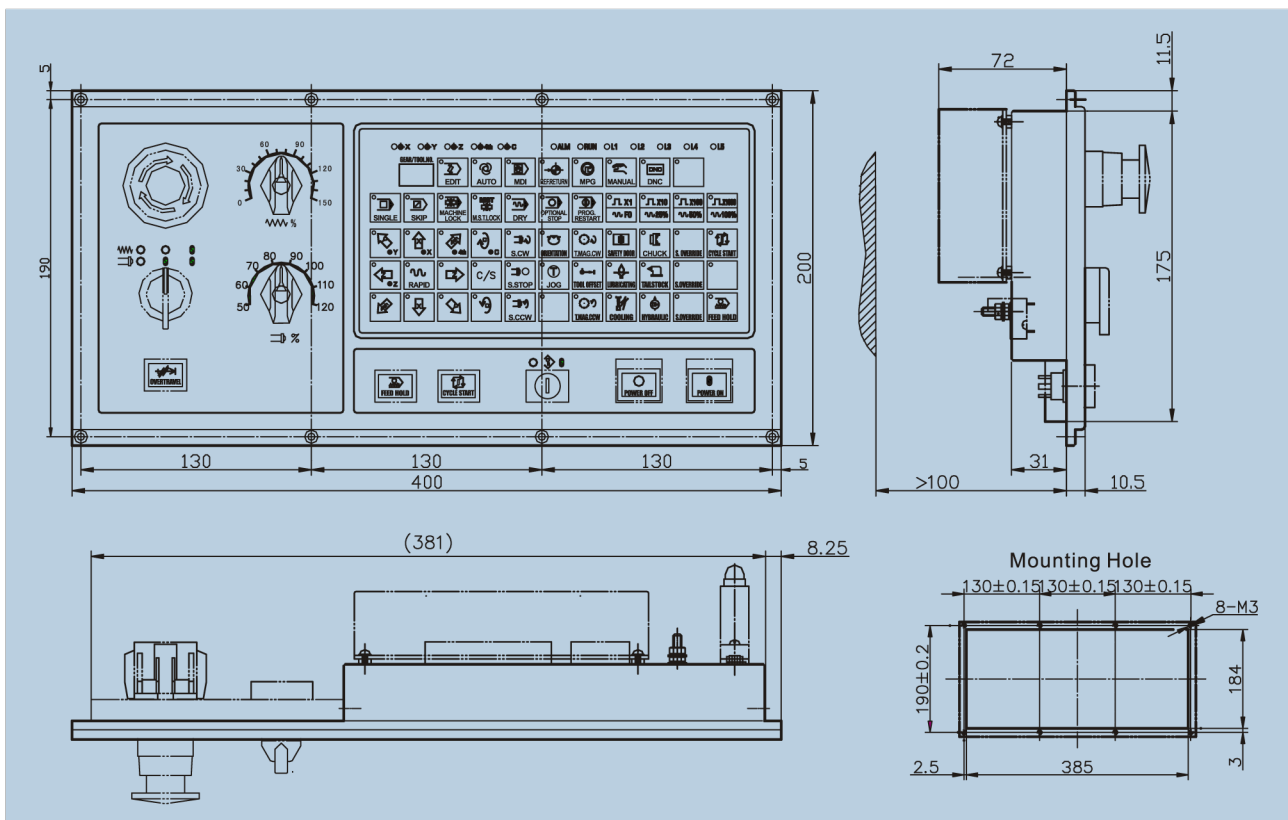
GSK988T Turning Center CNC System



● Additional panel: MPU03A (for GSK988T-H)



● Additional panel: MPU03B (for GSK988T-H)



Brief Introduction

Characteristics

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- www.qsk.com.cn

GSK928TEa Turning Machine CNC System



- Macro command in sentence type: realizing the complicated program machining (ellipse and parabola, etc.); defining special M commands, and defining the I/O point (similar to the PLC functions) and process monitoring.
- USB and RS232 interfaces.
- Multiple levels password management.
- Supports speed/position control of the servo spindle.

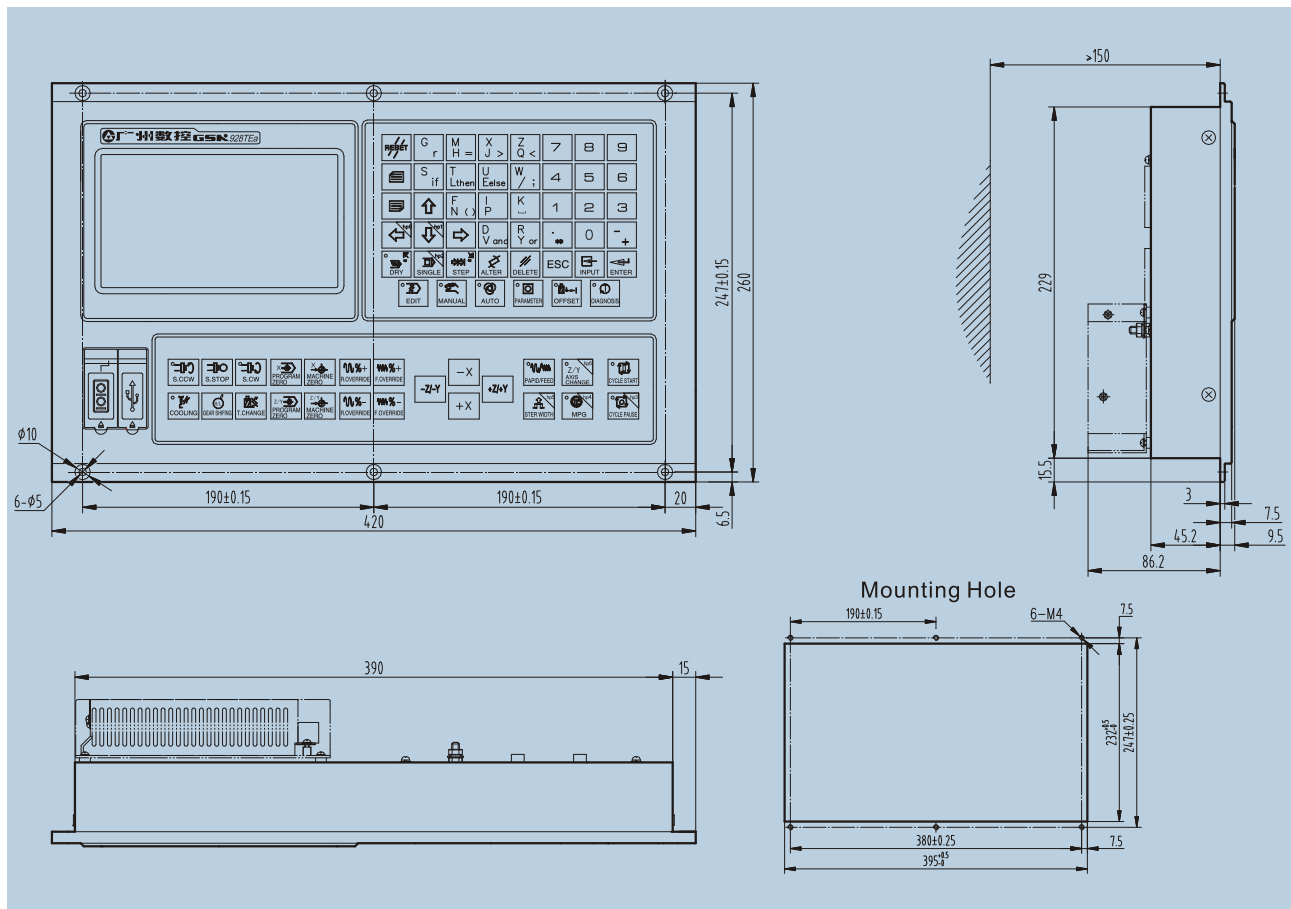
Specifications



Motion control	Controllable axis: X, Z and Y axis; linkage axis: two axes
	Interpolation function: X, Z two axes linear, arc and thread interpolation; Z/Y or X/Y two axes linear interpolation
	Position command range: -9999.999 mm~9999.999mm; the minimum unit: 0.001mm
	Electronic gear ratio: command multiple coefficient 1~99,999, command frequency-division coefficient 1~99,999
	Max. rapid traverse speed: 30,000mm/min; rapid override: 4 levels real-time adjustment (25%, 50%, 75% and 100%)
	Max. feeding speed: 15000mm/min; feeding override: 0~150% 16 levels real-time adjustment
	Manual traverse speed: 0mm/min~1,260mm/min 16 levels real-time adjustment or defined by user.
	MPG feeding override: 0.001mm, 0.01mm and 0.1mm (3 level)
	Acceleration/deceleration: exponential type or linear type.
G code	34 kinds: G00, G01, G02, G03, G04, G05, (G22/G80), G26, G28, G30, G31, G32, G33, G34, G40, G41, G42, G50, G51, G52, G71, G72, G73, G74, G75, G76, G90, G92, G94, G96, G97, G98 and G99
Thread machining	Single/multiple, metric/inch straight thread, cone thread and end surface, variable pitch thread; the thread retraction length, angle and speed can be set; thread pitch: 0.001mm~500mm or 0.06tooth/inch ~25400 tooth/inch; consecutive thread machining and tapping.
	Spindle encoder: resolution range: 100 p/r~5000p/r; Transmission ratio between encoder and spindle is 1:1.
Precision compensation	Backlash compensation: 0 mm~10.000mm
	Pitch error compensation: Max. 300 compensation points for each axis; adopting the constant interval description or inflection point description to perform a fine linear compensation.
	Tool offset: 16 positions, 64 sets tool length compensation and radius compensation. Tool setting mode: trial cutting tool-setting and fixed point tool-setting; Tool offset executing mode: rewriting coordinate mode, tool traverse mode
M code	M00, M02, M30, M30, M03, M04, M05, M08, M09, M10, M11, M12, M32, M33, M41, M42, M43, M44, M47, M48, M78, M79, M80, M96, M97, M98, M99, M91, M92, M93, M94, M21, M22, M23 and M24; M60~M74 codes can be defined by user for special function.
T code	Max. 16 positions; tool change type is selected by parameter.
Spindle speed control	Speed switch control mode: S01-S04 (4-gear directly output) S00-S15 (16-gear BCD code output)
	Analog voltage: 0~10V voltage output; supporting 4-grade gear spindle (M41~M44); Constant surface speed control
	Supporting speed/position control of servo spindle, the servo spindle can link simultaneously with Z or X axis.

I/O function	I/O diagnoses I/O: 23 points input / 18 points output
Macro command program	Macro command in sentence type: assignment statement (assignment, multiple arithmetic, logic calculation, etc.) Conditional statement: (conditional judge, jump, etc.)
Display	480×234 colorful LCD, Chinese or English display interface is set by parameter. Real-time tool path graph
Program edit	Program capacity: 255 programs, total 4400KB
	Full screen edit in Edit mode: calling sub-program multiple nesting Programming of the relative coordinate, absolute coordinate and hybrid coordinate
	Detecting the program by simulation graph
Communication	USB and RS232 interface; Transmitting or receiving programs, parameters, tool compensations, system softwares and system memory data in LST format
Matched driver	AC servo with pulse + direction signal input or step driver

Overall Installation Dimension



GSK983Ma-H/V Machining Center CNC System



GSK983Ma-H/V MACHINING CENTER CNC SYSTEM

Brief Introduction



GSK983Ma-H/V Machining Center CNC System is a product of great-lead-forward development based on the former GSK983M series CNC products, and its installation is compatible with GSK 983M-H. It is improved by various designs. It adopts the integrated structure design, and adds more USB interfaces. A new non-volatile component (without battery), Wince operation system, and multi-language are applied. It uses the multi-level password protection function, and uses the U disk to import/export the user's ladder. Its software U disk has been upgraded and its interpolation speed has been increased. Compared to the former GSK983 series system, its usability, reliability and performance have been fully improved and upgraded about to get more cost-performance.



GSK983Ma-H



GSK983Ma-V



GSK983Ma-H/V Machining Center CNC System

Newly added and improved functions for GSK983Ma

- New design for user interface with richer colors and easier operation;
- New design for the display page of PLC dynamic diagnosis;
- U disk function: parameters, PLC parameters, import and export of machining programs, upgrade for software and PLC;
- Addition of DNC memory area with 163MB memory capacity;
- Addition of parameter switch and time setting page;
- Addition of display for diagnosis annotation and version information;
- Improvement for the graphic display function;
- Smaller and more compact I/O units for convenient installation and connection; whether high/low level of I/O input point is valid is selected by user;
- Directly display the detailed information of NC alarm and external alarm, convenient for trouble judgment.
- Support multiple-language by software setting (only support Chinese and English currently);
- Three authority levels, including user, machine tool builder and system factory. Corresponding password is set to each level for convenient management and maintenance;
- On-line explanation for system parameters for convenient debugging and maintenance without Any manual.

Product features

● High-precision machining

High-performance control chip of position closed loop and high-precision position detecting components are applied to realize high-precision and fast-response position control. Drive-chain mechanical errors (e.g., ballscrew pitch error) can be offset by stored pitch error compensation, and feedrate override can be adjusted automatically when machining corner contour.

● High-speed machining

System resolution: $1\mu\text{m}$, maximum rapid traverse speed: 60,000mm/min, feed rate: 30,000mm/min. It is applicable for the control of milling machine and machining center. Continuous high-speed machining to small blocks is realized due to the distributed process by multiple high-speed CPUs. Up to 500 blocks can be processed per second.

● Multiple control functions

Max. 5 feeding axes and one spindle control, scaling up and down, mirror image, coordinate system rotation, compound canned cycle, background editing, graphic display and Type B macro program. Some special mechanical machining can be performed easily by using these functions.

● Ultra mini and ultra thin integrated CNC

The mainframe unit is integrated into the MDI unit as the NC unit to improve the integrated level and the reliability of the system, which facilitates and simplifies installation and connection.

GSK983Ma-H/V Machining Center CNC System



● Modularized I/O unit

Max. 64/40 I/O point. I/O unit is connected to CNC with high-speed serial link. Input signal can realize high/low level selection while output signal can directly drive a relay and other loads. Therefore, simple circuit design as well as rapid and convenient troubleshooting is realized, meanwhile, the space and wires are saved.

● Machine operator's panel

Max. 56 buttons and 2 band switches, each button corresponding to one LED indicator can be defined by PLC program compiling. In addition, its connection to external hand wheel is available. It uses the separate structure, and is connected to the CNC system by the high-speed serial communication interface. There is no need for user to assemble another operator's panel, so the cost is greatly saved.

● Wince operation system

The IT performance of the system has been greatly improved by applying Wince operation system (e.g., U disk function, FAT 32 file system, multi-language support, windows type user interfaces and various display functions).

Technical Specification

NC function	
Controlled axis	Control axes and universal drive shafts: 5 feed axes at most plus one spindle control Standard configuration: three-axis linkage. Configuration selection: four axes with three-axis linkage, four-axis linkage, five axes with three-axis linkage or five axes with four-axis linkage can be selected according to order requirement.
	interpolation mode: linear(G01), circular(G02,G03), sine(G07)
	Maximum command value: metric: $\pm 99,999.999\text{mm}$; inch: $\pm 9,999.9999\text{inch}$
	Least input unit: 0.001mm/metric 0.0001inch/inch
	Setting unit Least motion unit: X axis: 0.001mm(metric) 0.0001inch(inch) Y axis: 0.001mm(metric) 0.0001inch(inch) Z axis: 0.001mm(metric) 0.0001inch(inch) 4 th axis: 0.001deg(rotary axis) 0.001mm/0.0001inch(linear axis) 5 th axis: 0.001deg(rotary axis) 0.001mm/0.0001inch(linear axis)
	Rapid feedrate 60,000mm/min or 24,000inch/min
	Cutting feedrate G94: 30,000mm/min or 1,200.00inch/min G95: 500.00mm/rev or 50.0000inch/rev
	Automatic acceleration/deceleration: linear acceleration/deceleration is automatically performed during rapid feed in manual or auto operation to shorten positioning time.
	Automatic acceleration and deceleration in cutting feed: The time constant of exponential acceleration/deceleration function in cutting feed and manual feed is set by parameter within the range from 2ms to 4000ms.
	Flexible tapping function; rigid tapping function, time adjustment for acceleration/ deceleration of rigid tapping: the stability of rigid tapping is improved.
MSTB function	Buffer register: commands of the next two blocks are pre-read to prevent NC command action from being interrupted by command reading, which raises working efficiency. Industrial Ethernet bus control technology: the connection between CNC and servo is simplified and the system reliability is enhanced. (also provided in 983 Me)
	Tool function: ● T2 bit /T4 bit ● 200 groups of tool offset ● tool position offset ● tool length compensation ● tool radius compensation B/C ● tool offset value communication input ● tool length measurement

MSTB function	Spindle function: ● S2 bit ● S4 bit A (12 bits BCD output/analog output) ● S4 bit B (12 bits BCD output/analog output) (four-level gear input) ● upper limit of spindle speed ● spindle speed real-time display ● automatic shift between high gear and low gear.
	Miscellaneous function: specified by address M with 2 digits. Program end: M02, M30, program stop: M00, optional stop: M01, subprogram call: M98, subprogram end: M99. Other M functions are defined by user with PLC provided by the system.
	The secondary auxiliary function: specified by address B with three digits. The BCD code signals of the digits are sent to machine side. This function is used for the positioning of index table.
Precision compensation	Stored pitch error compensation: errors caused by machine position, for example, pitch error of feed screw, are offset to improve machining precision. Compensation data is saved into memorizer as parameters.
	Backlash compensation: the loss of momentum of the machine is offset.
	Tool length compensation and tool radius compensation: tool length compensation (G43, G44, G49) and tool radius compensation (G43, G44, G49) can be performed by specified G codes and the compensation value of each tool is saved into memorizer. Maximum compensation value is $\pm 999.999\text{mm}$ or $\pm 99.9999\text{inch}$
Reliability and safety	emergency stop; ● overtravel; ● stored stroke limit; ● NC Ready signal; ● Servo Ready signal; ● MST Function Completion signal; ● Auto Operation Start Indicator signal; ● Auto Operation in Progress signal; ● Feed Hold Indicator signal; ● door interlock;
	NC alarm: ● program error and operation error; ● overtravel error; ● servo system error; ● IO communication error; ● PLC error; ● memorizer (ROM and RAM) error; Nearly 1000 alarm numbers in 5 categories to ensure reliable system operation and rapid system troubleshooting.
	Self-diagnosis function: the diagnoses below can be performed: ● system abnormality checking ● position control part abnormality ● servo system abnormality ● CPU abnormality ● ROM abnormality ● RAM abnormality ● connection to IO unit and machine operator's panel abnormality ● RS232 read-in abnormality ● PC data transmission abnormality etc.
Operation function	● Dry run ● interlock ● single block ● optional block skip ● manual absolute value ON/OFF ● auxiliary function lock ● machine lock ● feed hold ● cycle start ● override cancel ● emergency stop ● external reset signal ● external power supply ON/OFF ● manual continuous feed ● incremental feed ● manual pulse generator ● skip function ● Additional skipping over selected blocks ● rapid feed override ● manual insertion function ● sequence number search ● program number search ● external workpiece number search ● external data input ● sequence number comparison and stop ● program restart ● menu switch ● graphic display ● external position display ● Workpiece coordinate system measurement ● 1/2 coordinates ● coordinate clearance
Display	● Horizontal installation H/vertical installation V: 8.4inch / 10.4inch 800×600 color LCD screen, no need to adjust contrast ratio. ● machine coordinates, absolute coordinates, relative coordinates ● current operation mode ● System parameter, diagnosis number, alarm number, macro variable value, tool offset setting, MDI command, MST state ● actual feedrate, spindle rotation ● graphic display for machining path ● system running time and other information about NC commands and state ● Various help information: NC parameter, PC parameter, diagnosis information, NC alarm information, etc. ● Current time display
PLC function	Control mode: cyclical motion; processing speed: 15us/step basic command; input/output: maximum 192/128; capacity: 5,000 steps (having display function for the information of Chinese and English external alarm as well as user operation)
	Development method: PLC; user PLC is written into the system directly with U disk (programming); user PLC can be dynamically displayed in the system; user PLC can be edited and debugged directly in the system (developing)
	36 commands: 12 basic commands; 24 functional commands (functional commands for displaying DISP information and DISPB Chinese and English information are newly added)
DNC function	The first method (recommended): copy the program to be machined to system DNC volume with U disk, choose corresponding NC file in the DNC volume, then start machining by pressing Cycle Start button. DNC volume capacity is 160 Mb without limiting the number of files. The second method (traditional): perform DNC machining to the files transmitted from PC with RS232 interface. Transmission baudrate: 38.4k
U disk function	● Input and output of parameter, PLC parameter and machining program; ● software and PLC upgrade;

GSK983Ma-H/V Machining Center CNC System



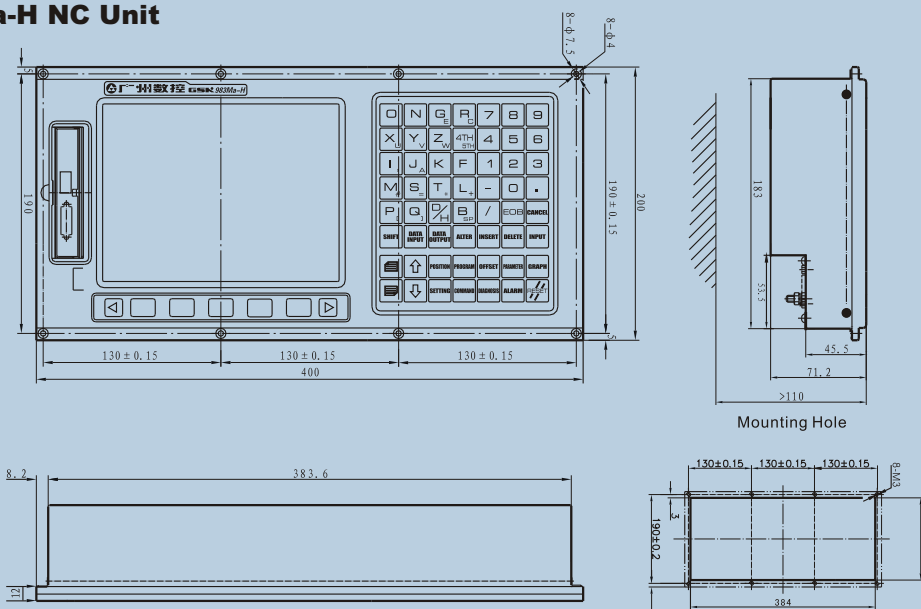
List of G codes

G code	Group	Function
G00	01	Positioning
G01		Linear interpolation
G02		CW circular interpolation
G03		CCW circular interpolation
G04	00	Dwell
G07		Sine-curve interpolation (imaginary axis is specified)
G09		Accurate positioning verifying
G10	00	Offset value and workpiece origin offset value setting
G17	02	XY plane selection
G18		ZX plane selection
G19		YZ plane selection
G20	06	Input in inch
G21		Input in mm
G22	04	Stored stroke limit ON
G23		Stored stroke limit OFF
G27	00	Reference position return check
G28		Reference position return
G29		Return from reference position
G30	01	Return to 2nd, 3rd and 4th reference position
G31		Cutting skip
G33		Thread cutting
G40	07	Tool radius compensation cancel
G41		Tool radius left compensation
G42		Tool radius right compensation
G43	08	Tool length positive compensation
G44		Tool length negative compensation
G49		Tool length compensation cancel
G45	00	Increase tool position offset (+)
G46		Reduce tool position offset (-)
G47		Increase tool position offset by twice
G48	11	Reduce tool position offset by twice
G50		Scaling OFF
G51		Scaling ON
G54	12	Workpiece coordinate system 1 selection
G55		Workpiece coordinate system 2 selection

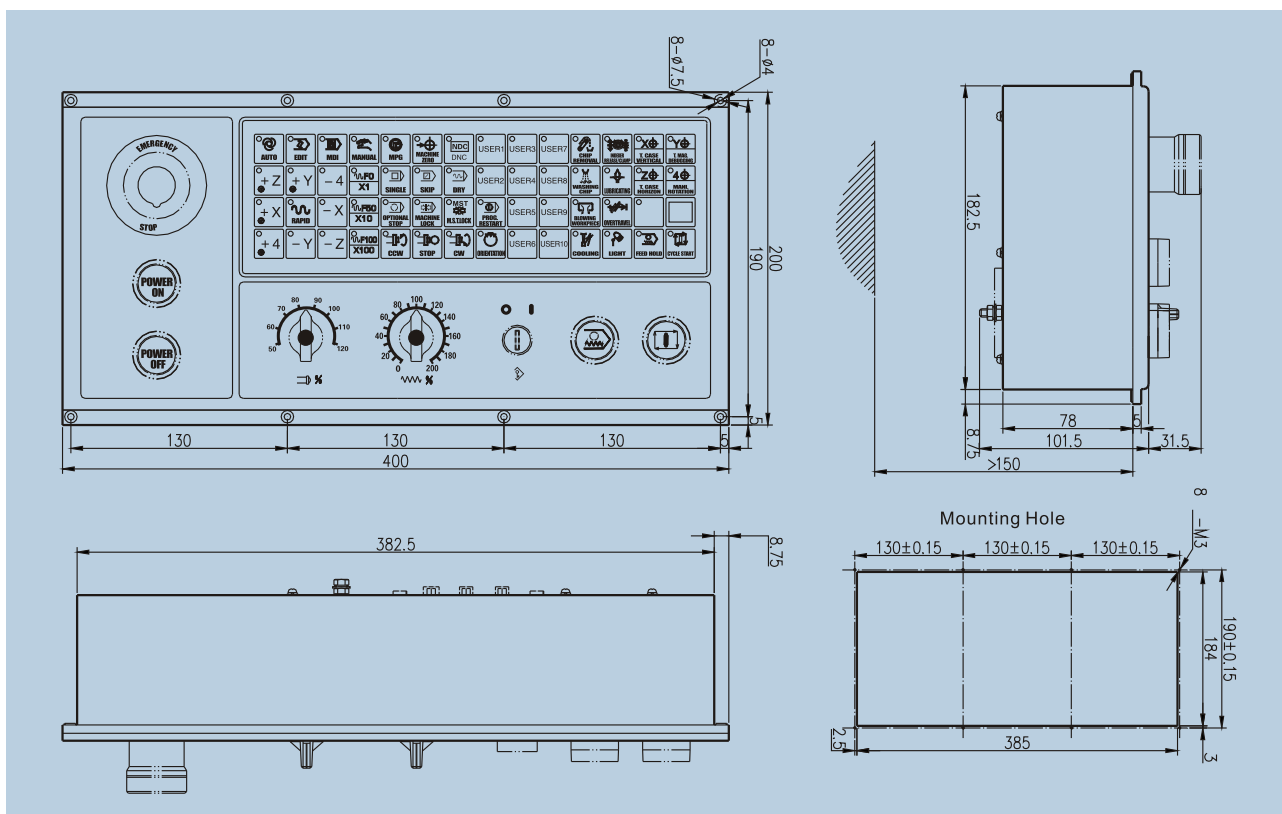
G code	Group	Function
G56	12	Workpiece coordinate system 3 selection
G57		Workpiece coordinate system 4 selection
G58		Workpiece coordinate system 5 selection
G59	00	Workpiece coordinate system 6 selection
G60		Unidirectional positioning
G61		Accurate positioning detecting mode
G62	13	Automatic corner adjustment
G64		Continuous cutting mode
G65	00	Simple recall of custom macro program
G66	14	Modal recall of custom macro program
G67		modal recall of custom macro program cancel
G68	16	Coordinate system rotation ON
G69		Coordinate system rotation OFF
G73	09	Peck drilling cycle
G74		Left-hand tapping cycle
G76		Finish boring
G80		Canned cycle cancel
G81		Drilling cycle, center hole drilling
G82		Drilling cycle, reverse boring
G83		Peck drilling cycle
G84		Tapping cycle
G85		Boring cycle
G86		Boring cycle
G87	03	Reverse boring
G88		Boring cycle
G89		Boring cycle
G90	00	Absolute programming
G91		Incremental programming
G92	05	Coordinate system setting
G94		Feed per minute
G95	10	Feed per revolution
G98		Return to Initial point in canned cycle
G99		Return to point R In Canned cycle
G180	17	Rigid tapping cycle cancel
G184		Rigid tapping cycle

Overall Installation Dimension

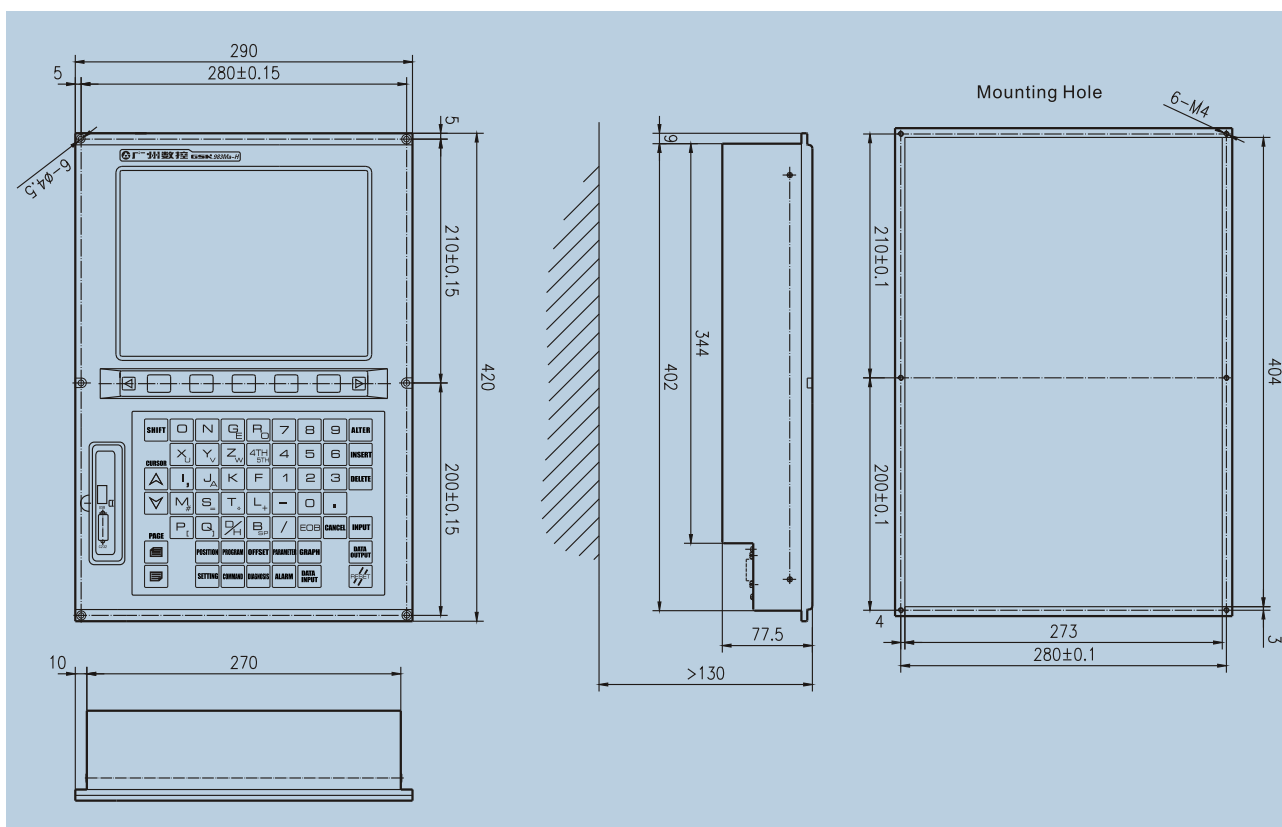
● GSK983Ma-H NC Unit



● GSK983Ma-H Operation Panel



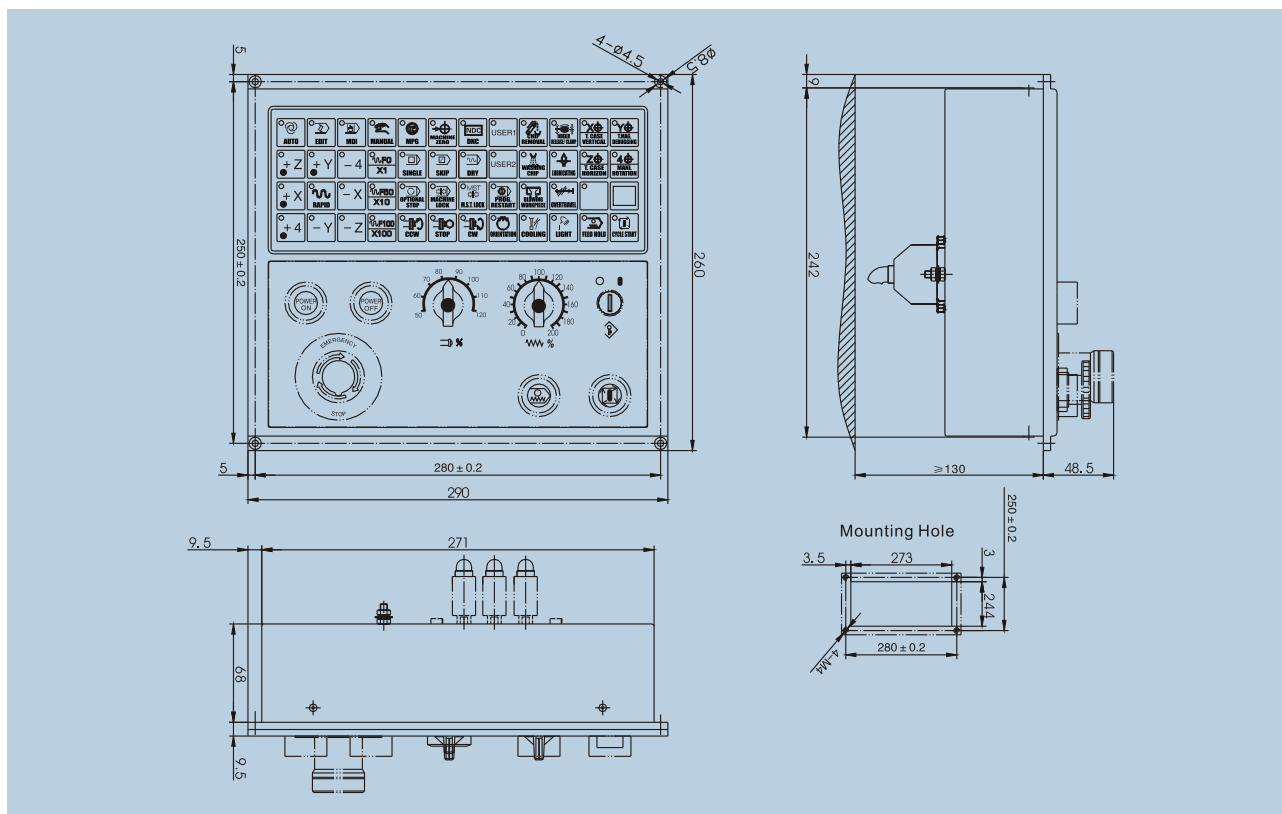
● GSK983Ma-V NC UNIT



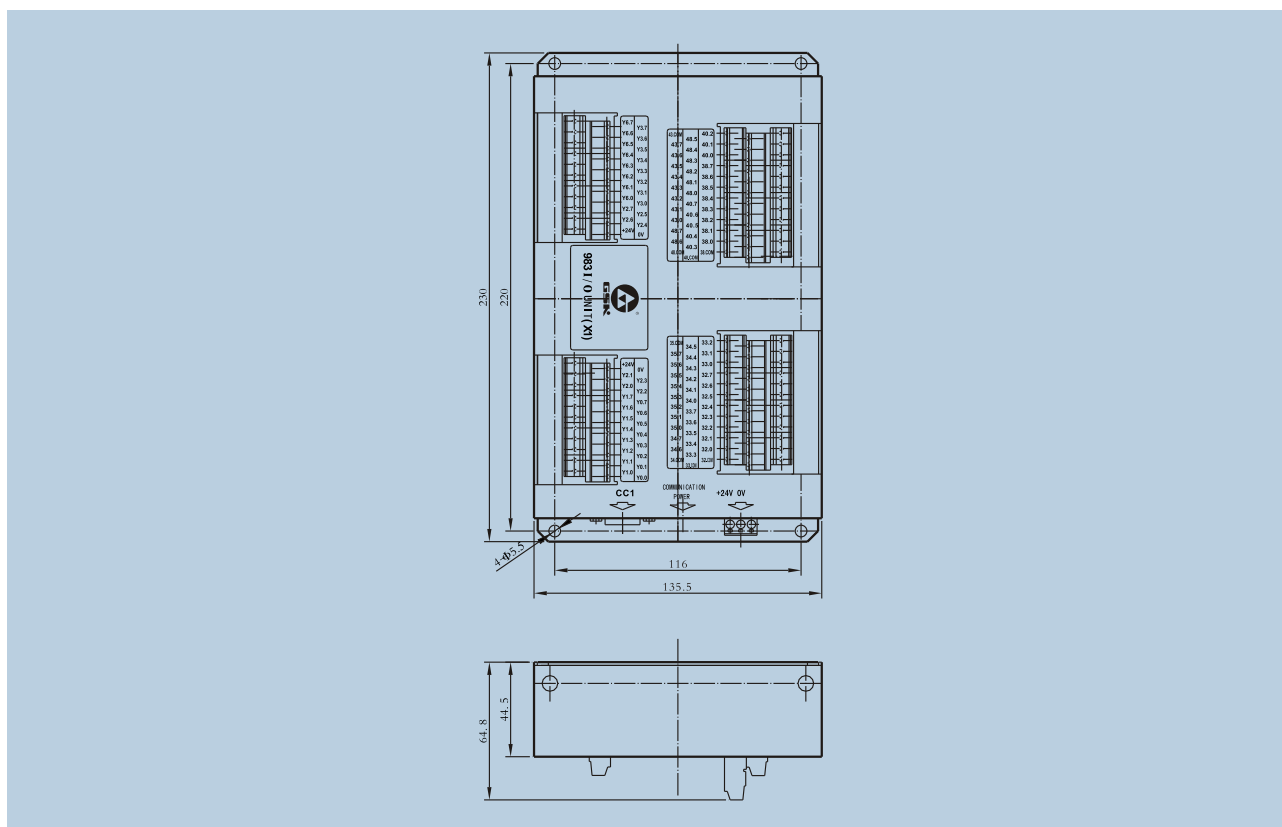
GSK983Ma-H/V Machining Center CNC System



● GSK983Ma-V Operation Panel



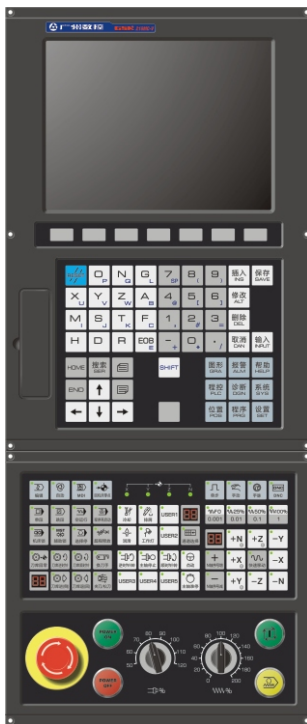
● GSK983Ma-H/V I/O UNIT



GSK218MC MACHINING CENTER CNC SYSTEM

Brief Introduction

GSK218MC and GSK218MC-H/V CNC systems are upgraded products from GSK218M. As the high-speed spline interpolation algorithm is employed in the system, the control precision and dynamic performance are greatly improved. There are two structural types: horizontal and vertical, adopting 8.4" or 10.4" multi-color LCD respectively. The interface is user-friendly and easy to operate. The CNC system can be applied in such areas as Milling Machine, Engraving and Milling Machine, Machining Center, Grinding Machine and Gear Hobbling Machine.



GSK218MC-V



GSK218MC-H



GSK218MC

Characteristics

- Excellent high-speed interpolation performance; applicable to complex curve surface machining; effective machining speed: 8m/min; optimum machining speed: 4m/min;
- Up to 1000 blocks of interpolation pre-processing capacity improves the precision and fineness;
- Max. positioning speed: 30m/min; max. feedrate: 15m/min;
- Screen resolution: 800 × 600 a better and clearer interface;
- Support RS232 and USB interface-data transfer, DNC machining and USB online machining is possible;

GSK218MC Machining Center CNC System



Specifications



Running control	Controlled and linked axes: up to 4 feed axes, one spindle, standard configuration is 4 linked axes; rotation axis can be set by parameter.
	Interpolation method: positioning (G00), linear (G01), arc (G02, G03), helical interpolation
	Position instruction range: Metric: ± 9999.9999 mm, min. command unit 0.0001 mm Inch : ± 999.9999 inch, min. command unit: 0.0001 inch
	Electronic gear: instruction multiplication coefficient 1~65535, instruction division coefficient 1~65535
	Rapid traverse speed: max. 30m/min Rapid override: F0, 25%, 50%, 100% 4 levels real-time adjustment
	Cutting feedrate: max. 15m/min (G94) or 500.00mm/r (G95) Feedrate override: 0~200% divided into 20 levels to real-time adjustment
	Manual feed override: 0~200% divided into 20 levels to real-time adjustment
	MPG feed: 0.001, 0.01, 0.1mm
	Single step feedrate: 0.001, 0.01, 0.1, 1mm
Acceleration and deceleration	<p>The post acceleration and deceleration can be controlled in Manual mode, and the linear or exponential acceleration and deceleration, and the acceleration and deceleration time constant can be set.</p> <p>MPG mode can select the instant stop and complete run, and the latter is for the acceleration and deceleration after interpolation, can select the linear or exponential acceleration and deceleration, and the acceleration/deceleration time constant can be set.</p> <p>Positioning (G00) can select the linear or deflection positioning. The acceleration/deceleration before/after interpolation is optional. The acceleration/deceleration before interpolation is for the linear or S type, and the ones after interpolation is for linear or exponential. And the acceleration/ deceleration time constant can be set.</p> <p>The system can pre-read most 15 blocks to foreknow the path and speed to get the high speed and smooth of small block, at the same time, it can select Hermite spline interpolation function, applied to the mold machining. The acceleration/deceleration before/after interpolation can be selected in the cutting. The acceleration/deceleration before interpolation can select the linear or S ones, the acceleration/deceleration after interpolation can select the linear or exponential ones, and the acceleration/deceleration time constant can be set</p>
Miscellaneous function	Miscellaneous function M can be specified by the sequential 2 digits after address M, M function can be user-defined.
	Special M instructions(cannot be defined again):end of program M02, M30; program stop M00; optional stop M01; subprogram calling M98; end of subprogram M99
	M codes are defined by the standard PLC: M03, M04, M05, M08, M09, M10,M11,M16, M17, M19, M21, M22, M28, M29
Tool function	<ul style="list-style-type: none"> ●T and 2 digits select the tool ●256 group tool offset value setting ●tool length compensation ●tool nose radius compensation C
Spindle speed control	<ul style="list-style-type: none"> ●S 2 digits (I/O gear input and output) / S 5 digits (analog output) ●max spindle speed limit ●constant surface speed
	Spindle encoder: resolutions can be set (100~5000p/r)
	Transmission ratio between encoder and spindle (1~255) : (1~255)
Automatic compensation	<ul style="list-style-type: none"> ●Storage compensation of pitch error: compensation points, compensation interval and compensation origin point can be set.
	<ul style="list-style-type: none"> ●Backlash compensation: it can set the machine's backlash compensation compensated by the fixed frequency or acceleration/deceleration

Automatic compensation	Tool length compensation: the type (A or B type) can be selected by parameters
	●Tool radius compensation (G40, G41, G42): C tool compensation Max. compensation value: $\pm 999.999\text{mm}$ or $\pm 99.9999\text{inch}$
Reliability and safety	●emergency stop; ●overtravel; ●stored stroke limit; ●NC ready signal; ●servo ready signal ●MST completion signal; ●automatic run start light signal; ●automatic running signal; ●feed hold light signal
	Self-diagnosis function to check the followings: ●system abnormality; ●position control abnormality; ●servo system abnormality; ●RS232 communication abnormality; ●PC data transmission abnormality and so on.
	NC alarm: ●program or operation error; ●overtravel error; ●servo system error; ●connection error, PLC error; ●storage (ROM and RAM) error
Operation function	●dry run ●interlock ●single block ●optional block skip ●M.S.T. Lock ●machine lock ●feed hold ●cycle start ●emergency stop ●external reset signal ●external power ON/OFF ●Manual continuous feed ●step feed ●MPG ●sequence number search ●program number search ●program restart ●MPG interruption ●step interruption ●Manual intervention
Display	●horizontal and vertical type installation structure, separately adopt 8.4" / 10.4" 800×600 lattice chromatic LCD, Chinese, English, Russian and Spanish interfaces can be selected by parameter.
	●Position message ●User program ●current operation mode ●system parameter ●diagnosis number, alarm number ●macro variables ●tool offset setting ●MDI commands ●MST
	●actual feedrate, spindle speed ●machining path display ●real-time wave diagnosis
	●System running time and other NC instructions and state messages
Program edit	Program capacity: 57M, max. 400 programs, user macro calling and 4-level subprogram built-in are available Background edit, absolute and relative coordinate programming are supported
PLC function	Control mode: cycle run; processing speed: 3 μ s/per basic instruction; max. 4700 steps
	I/O unit input point/output: 48/48, expandable
	Development method: ladder diagram
	Instruction amount: 45: including 10 basic instructions, 35 functional instructions
Communication	Standard RS-232 and USB interface
	Bidirectional transmission of programs, parameters and ladder between CNC and PC
	Support serial port DNC machining and USB machining on-line
Optional drive unit	DA98 and GS series AC Servo

Workpiece sample



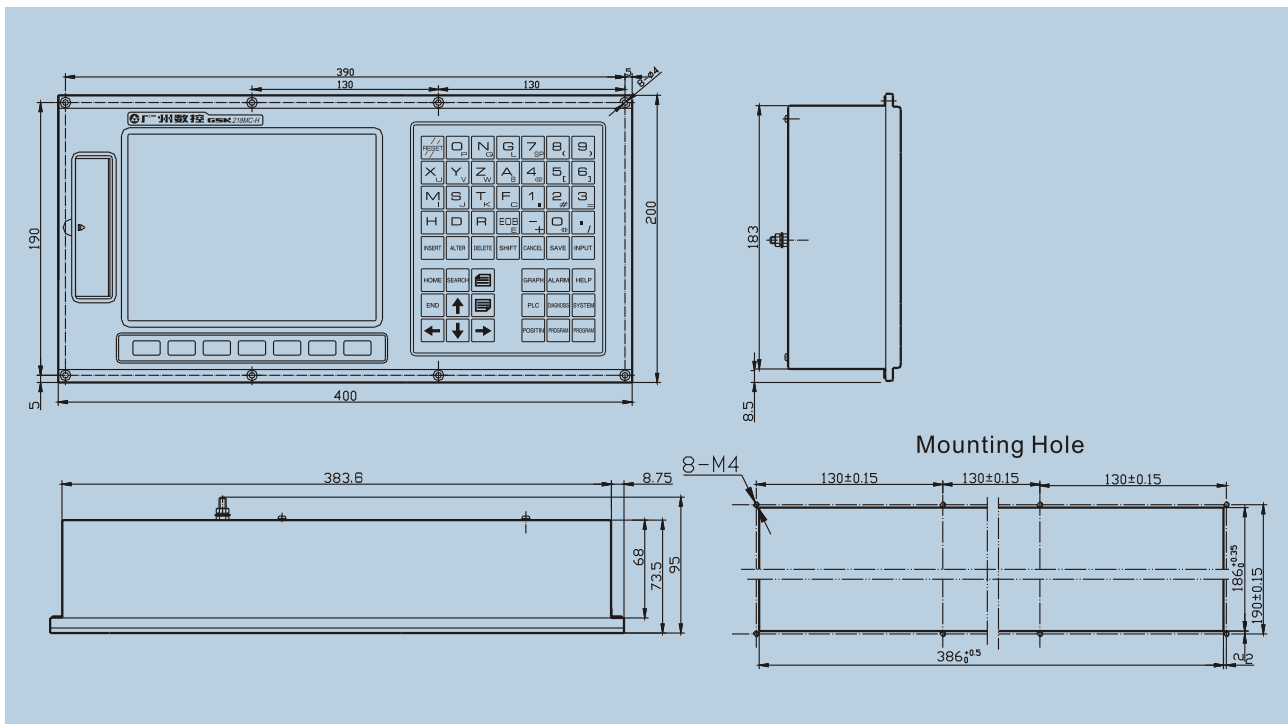
GSK218MC Machining Center CNC System



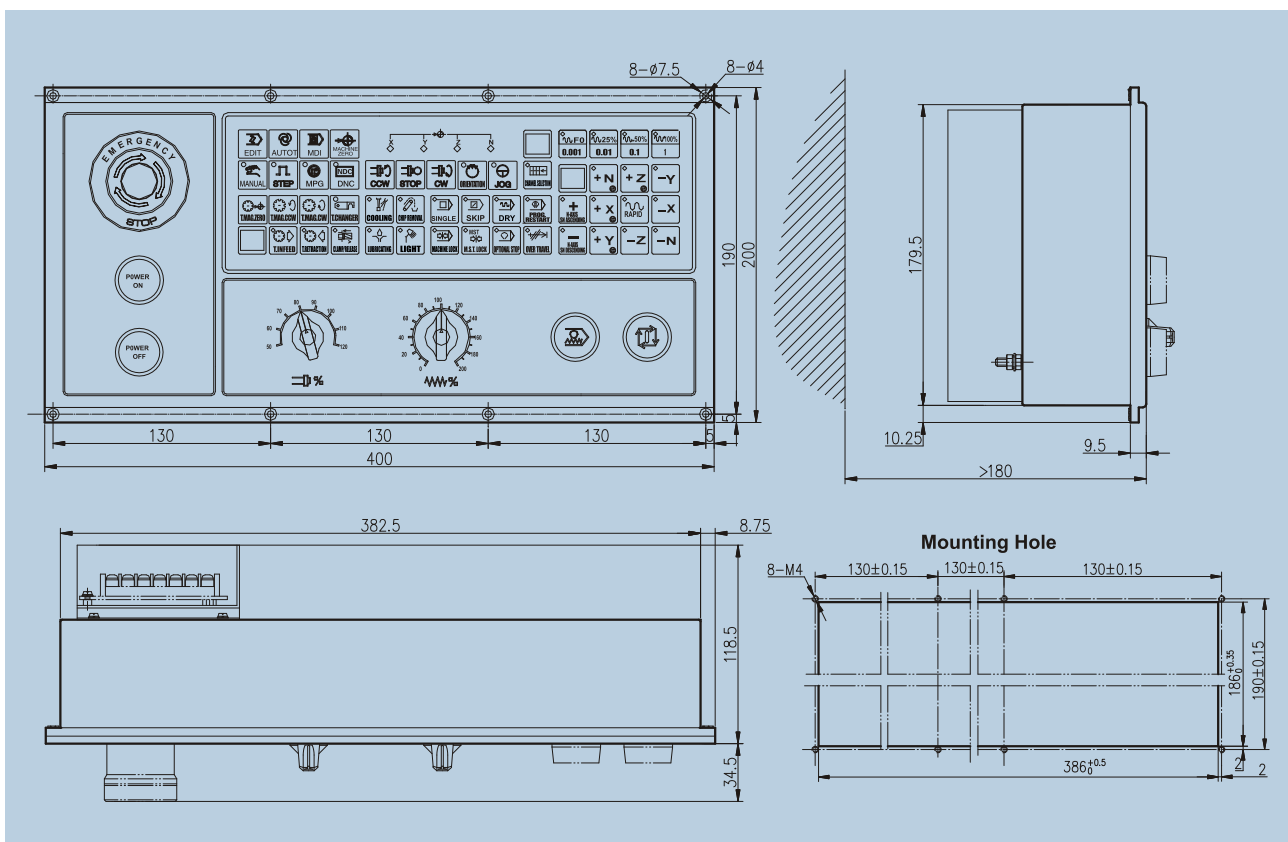
Overall Installation Dimensions



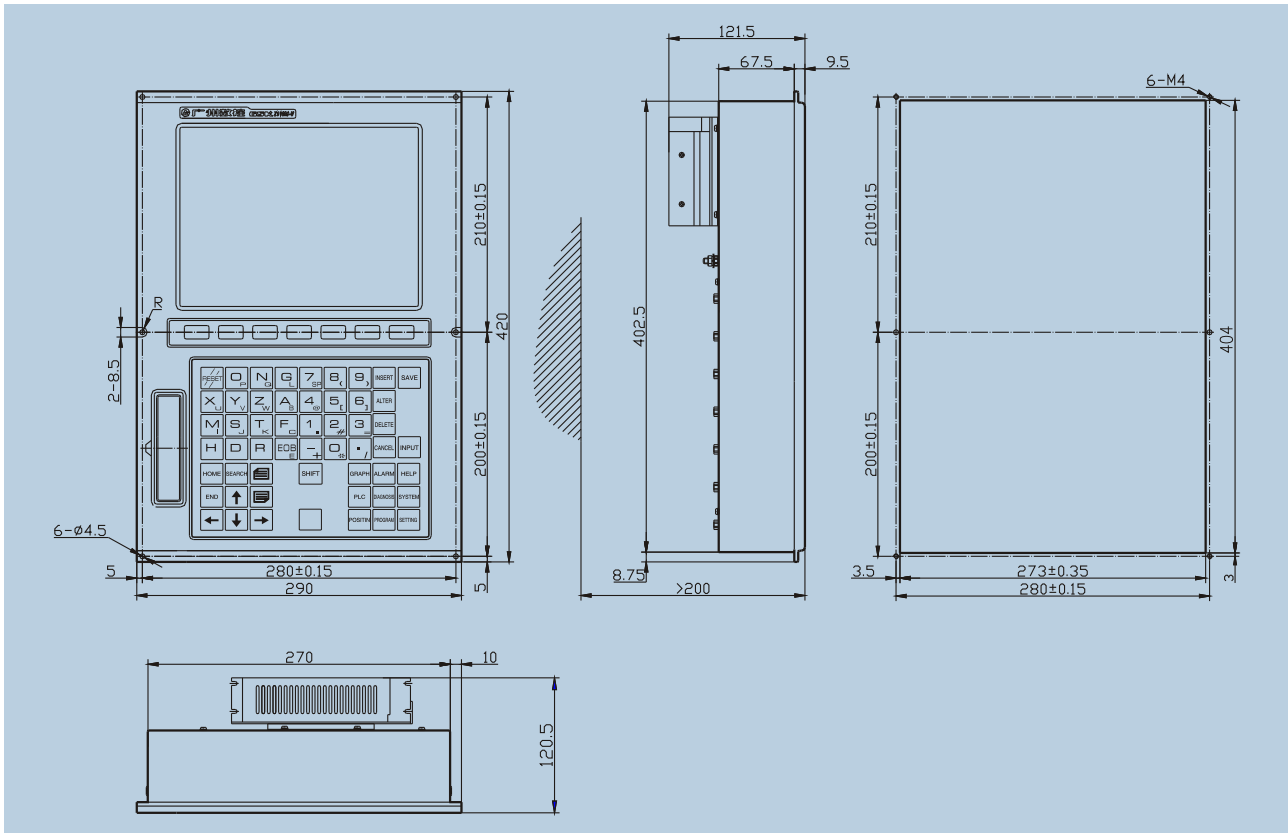
● GSK218MC-H NC Unit



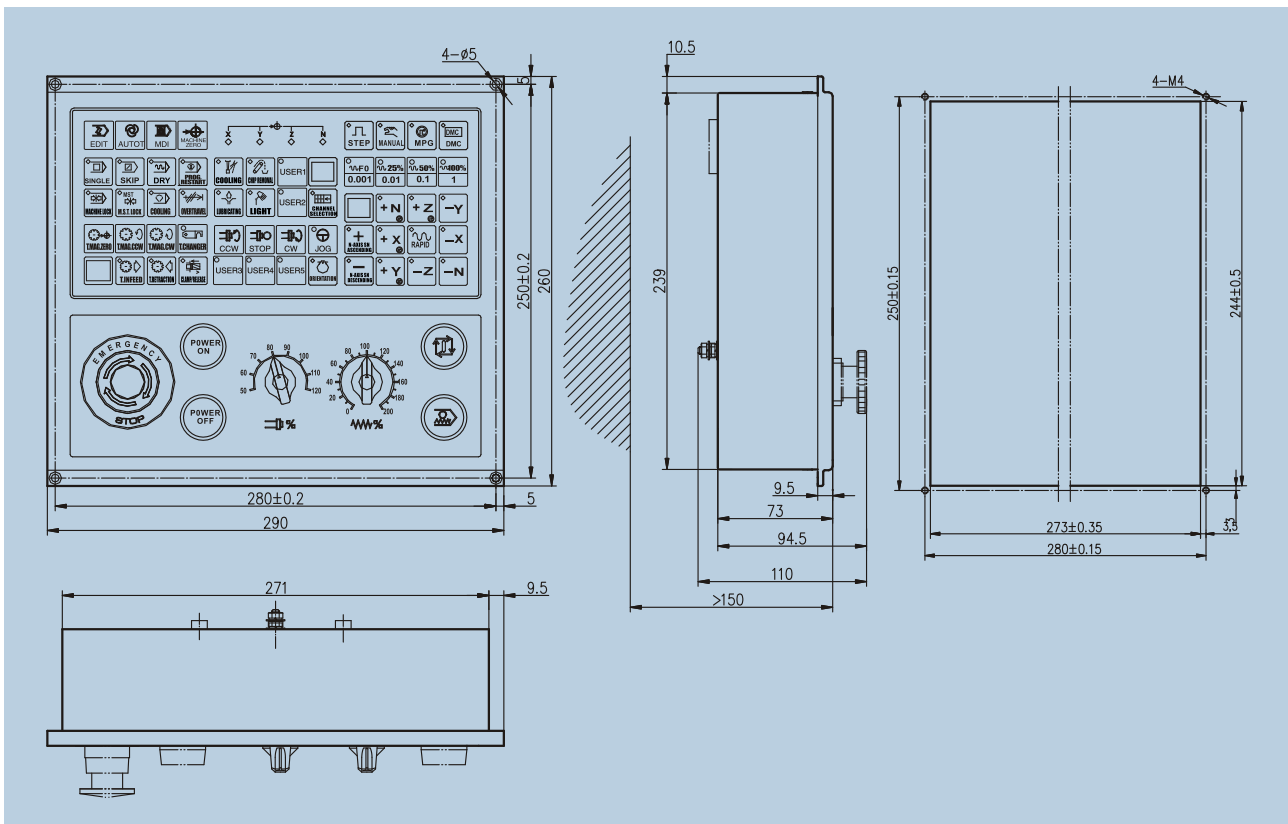
● GSK218MC-H Operation Panel



● GSK218MC-V NC UNIT



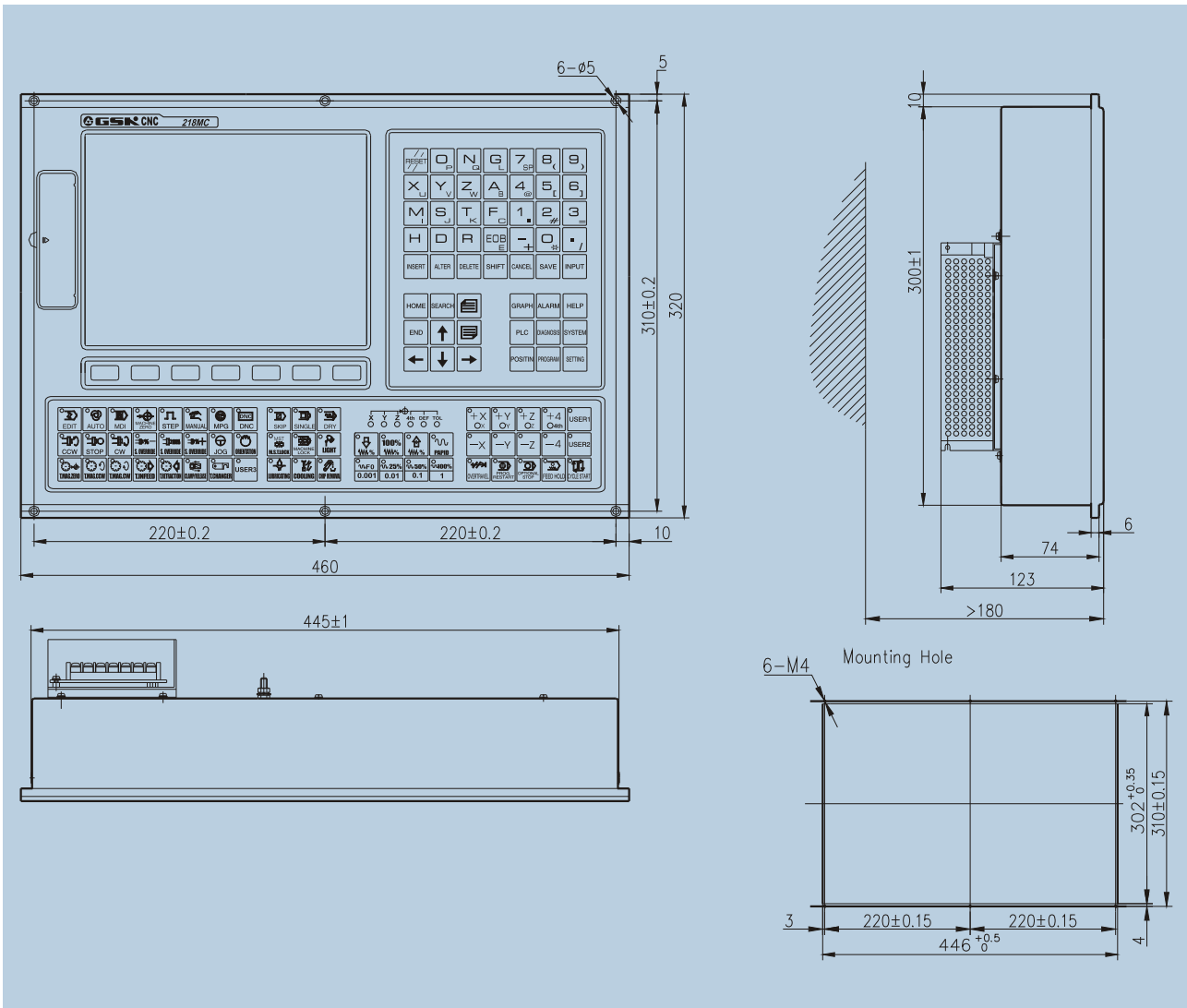
● GSK 218MC-V Operation Panel



GSK218MC Machining Center CNC System



● GSK218MC NC UNIT



GSK980MDa DRILLING AND MILLING MACHINE CNC SYSTEM

Brief Introduction

GSK980MDa can control five feeding axes (including C axis), two analog spindles, 2ms interpolation in high speed, 0.1 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, 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 m or 0.1 m can be selected.
- Maximum speed: 60m/min When it is 0.1 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 straightline/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: 40M, total 10,000 part programs.
- Support macro command programming in sentence type and the calling of macro program with the parameter.

GSK980MDa Drilling and Milling Machine CNC System



- 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;
- PLC control axes: 5 axes

◆ Feeding axis function

- Minimum command unit: 0.001mm or 0.0001mm can be selected
- Position command range: $\pm 99999999 \times$ 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: 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



◆ 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 large screen 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, support PLC program, system software upgrade in flash disc.

◆ Safety function

- Emergency stop
- Hardware travel limit

GSK980MDa Drilling and Milling Machine CNC System



- Software travel limit
- Data restoring and recovering

List of G codes



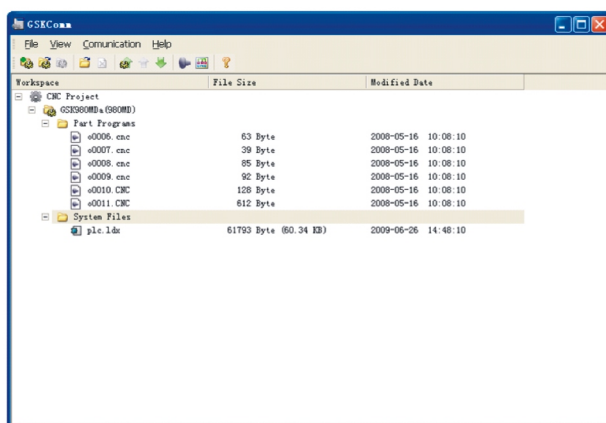
CODE	FUNCTION
G00	Positioning (rapid traverse)
G01	Linear interpolation (cutting feeding)
G02	CW arc/spiral interpolation
G03	CCW arc/spiral interpolation
G04	Dwell, exact stop
G10	Set the compensation value
G17	Select XY plane
G18	Select ZY plane
G19	Select YZ plane
G20	Input system inch
G21	Input system 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
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
G73	Deep hole processing cycle in high speed
G74	Laevorotatory tapping cycle
G80	Cancel fixed cycle

CODE	FUNCTION
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

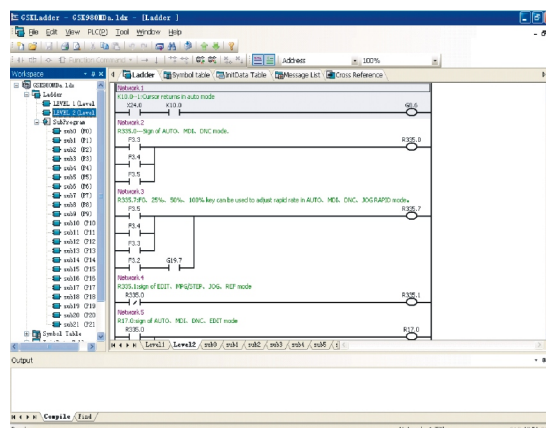
Communication Software and PLC Ladder Diagram Editing Software



GSK980MDa uses communication software GSKComm, and PLC ladder diagram editing software GSKLadder. GSKComm and GSKLadder run in WIN98/2000/XP. The users can edit part program, transmit the part programs, parameter, tool compensation and pitch error compensation between PC and CNC in two-way in GSKComm of PC, and DNC real-time processing. The machine manufacturer can edit the PLC ladder diagram in GSKLadder, and upload and download PLC programs between PC and CNC.



Communication software GSKComm interface

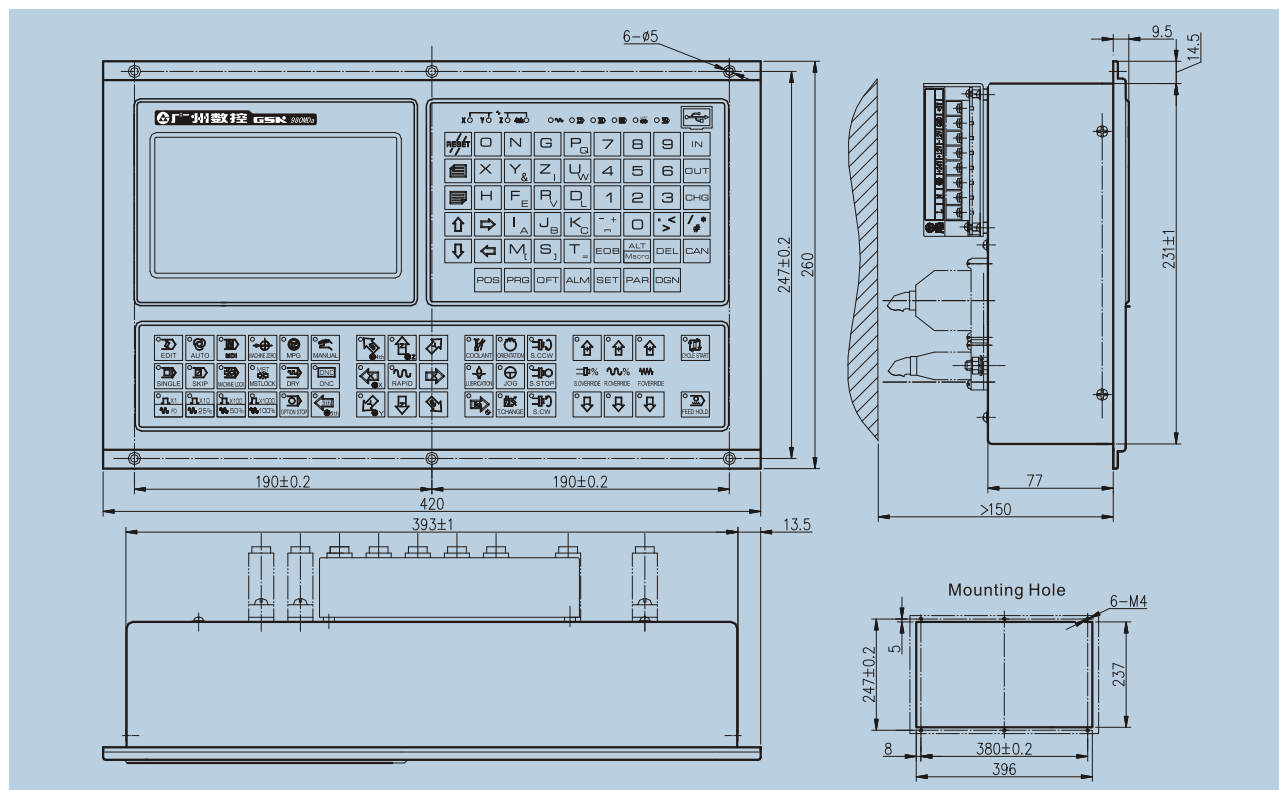


PLC Ladder diagram editing software GSKLadder interface

Overall Installation Dimensions

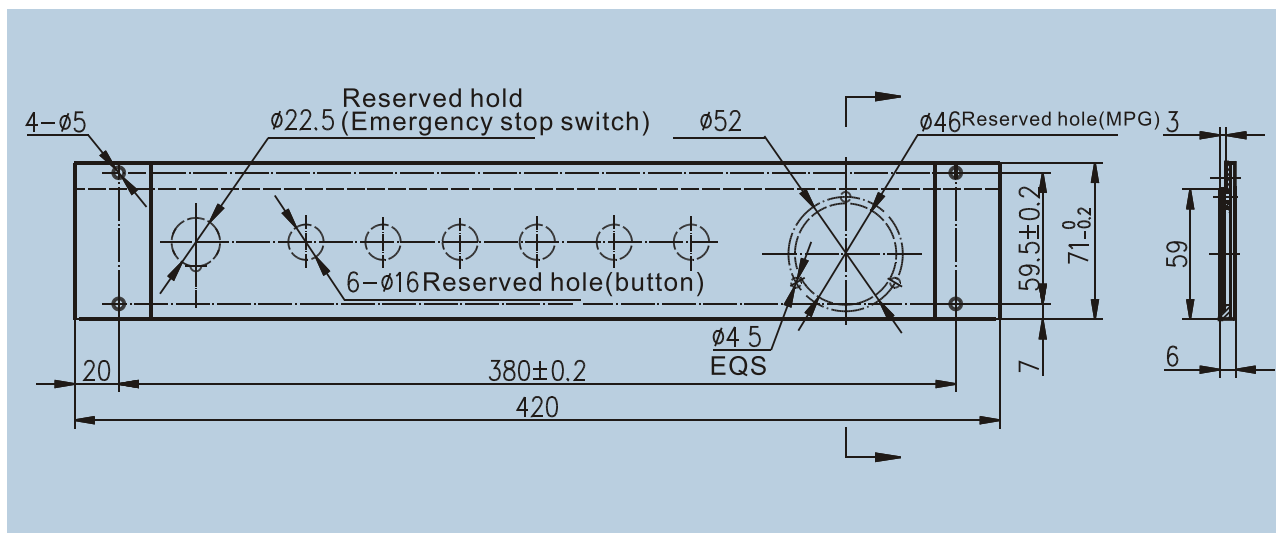


• GSK980MDa

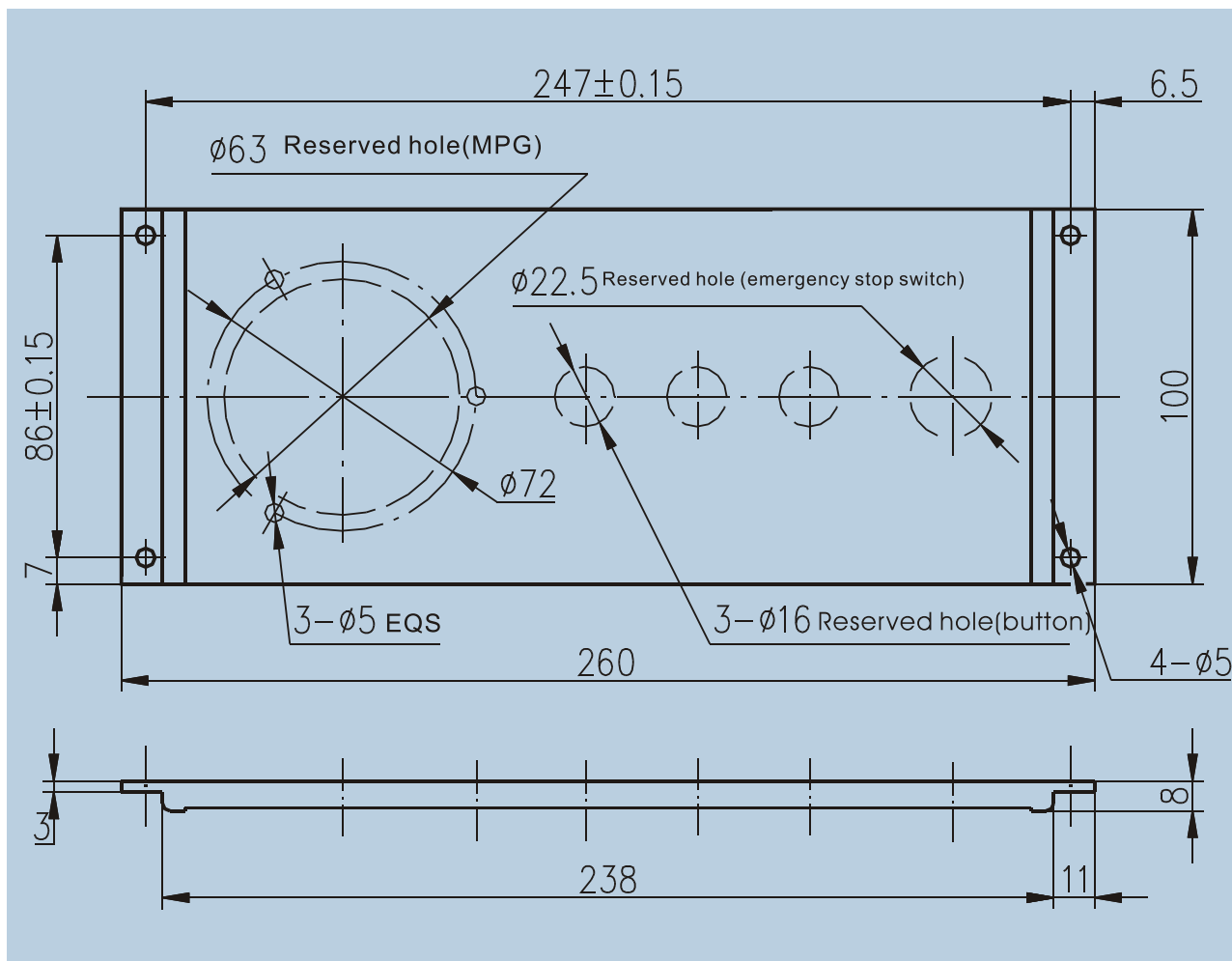




● Additional panel DAP01 (bottom installation)



● Additional panel DAP02 (side installation)



DA98B SERIES DIGITAL AC SERVO DRIVER

Characteristics

- The Max. position command pulse frequency improves to 1MHz; the servo motor encoder resolution increases to 5000; the command speed and position accuracy are enhanced, and the speed wave is reduced; the CNC matched with 0.1μm command accuracy can be carried out the μm level control accuracy.
- It achieves the speed feedforward control and enhances the dynamic response character and reduces the follow error.
- It improves the brake current and shortens the brake time. It can be connected the external brake resistance for the high-speed start/stop and the requirement of the big inertial load.
- It is added the position feedback output electronic gear function, which adapts the different requirements of the position feedback equivalent for the controller.
- It offers the special software of the integration homotaxial control function; the homotaxial cycle movement can be finished without the instruction control unit. The DA98B AC servo control equipment with the integration homotaxial control function has been gained Right of the Chinese Patent.

Model

DA98B—10—110SJT—M040D

Suitable motor model (SJT series) *

Output power: 04,06...23 corresponding to 0.4,0.6...2.3KW

Series symbol



DA98B Series Digital AC Servo Driver



Technical Specification

The rated power of the matched servo motor (kW)	0.5~1.2	1.5~2.3	2.3~3.9
Contour dimension (mm) (W×H×D)	90×240×177.5	110×240×177.5	125×240×177.5
Main power	Three phases AC220V (85%~110%) 50/60Hz		
Power control	Single phase AC220V (85%~110%) 50/60Hz		
Speed ratio	5000: 1		
Speed fluctuation ratio	< ±0.03%		
Speed frequency response	≥200Hz		
Control Mode	Position, External speed, Internal speed, JOG, Manual		
Position mode	Position command mode: ① pulse + direction; ② CCW pulse/CW pulse; ③ A/B two phases orthogonal pulse. The Max. pulse frequency: 1MHz Position command electronic gear ratio: $\frac{1}{32767} \sim 32767$		
External speed mode	Two external speed commands: ① -10V~+10V analog voltage command speed and direction; ② 0V~+10V analog voltage command speed of which the operation direction is selected by the input signal.		
Internal speed mode	There are four kinds of speed can be set by parameters of which the operation speed is selected by the input signal.		
Position feedback input	The incremental encoder installed on the servo motor is regarded as position feedback input, A/B/Z/U/V/W differential signal. Encoder resolution is 5000pps/ 2500 pps		
Position feedback output	Outputting the A/B/Z differential signal based upon the servo motor encoder input signal, which is regarded as position feedback output; the electronic gear ratio between the position feedback output and servo motor encoder input can be set to $1 \sim \frac{1}{32}$		
Input signal	① Servo enabling; ② Alarm clear; ③ CW forbiddance; ④ CCW forbiddance; ⑤ Zero speed clamping; ⑥ Error counter reset/ Speed selection 1; ⑦ Command pulse forbiddance/ Speed selection 2; ⑧ CCW torque limit; ⑨ CW torque limit; etc		
Output signal	① Servo already; ② Servo alarm; ③ Position arrival / Speed arrival; ④ Motor Brake release; ⑤ Zero speed output; ⑥ Z pulse feedback output. etc		
Protective function	It owns some protections, such as overvoltage, undervoltage, overcurrent, overload, Overspeed, position error, brake abnormality and encoder abnormality.		
Operation and display	Four keys; the operations can be performed, such as manual, JOG and parameter modification, write and backup; 6-digit LED; The information can be displayed, such as speed, current position, command pulse accumulation, position error, motor torque, motor current, rotor absolute position and input/output signal state.		
Brake mode	Dynamic-brake, in-board brake resistance, and the external brake resistance can be selected.		

DAT SERIES AC SERVO DRIVER

Characteristics

- It supports the GSKLink serial bus, the CNC can be carried out the servo debugging and real-time control by the serial bus.
- It adapts 17bit/turn resolution and the absolute encoder (BISS bus interface) with the cycle number of the 12bit, which are regarded as position feedback, and it is improve the speed accuracy and position accuracy. When the CNC machine uses the CNC and DAT AC servo drive equipment supported by the GSKLink series bus, the zero switches should not be installed.
- The Max. frequency of the position pulse command is 1MHz. The CNC matched with 0.1μm command accuracy can be carried out the 0.1μm grade controllable accuracy.
- It achieves the speed feedforward control and improves the dynamic response character and reduces the follow error.
- The brake current is improved and the brake time is shortened. The external brake resistance can be connected for the requirement of the high speed start and big inertial load.
- The power-down detection and hold control are enhanced, and the hold response is faster when the power is turned off.

Model

DAT 2 050 C — 130 SJT — M 150 D (A ☐ Y ☐ X ☐)

Matching AC servo motor model(omit if no matching)

Communications mode: C: GSKLink serial communications
None: No serial communications function

IPM module nominal current

Input power grade: 2: AC220V

Product model code

030: 30A
050: 50A
075: 75A
100: 100A





Technical Specification

Drive unit type	DAT2030C	DAT2050C	DAT2075C
The rated power of the matched servo motor (kW)	1.0~1.5	1.6~3.9	4~6
Contour dimension (mm) (W×H×D)	263×115×197		300×105×240
Main power	Three phases AC220V (85%~110%) 50/60Hz		
Control power	Single phase AC220V (85%~110%) 50/60Hz		
Speed ratio	5000: 1		
Speed fluctuation ratio	< ±0.01%		
Speed frequency response	≥200Hz		
Positioning accuracy	≤±0.005° (When the 17bit absolute encoder is used.)		
Control Mode	Position, External speed, Internal speed, JOG, Manual, return to zero.		
Position mode	Position command mode: ① pulse + direction; ② CCW pulse / CW pulse; ③ A/B (two phases) orthogonal pulse. The Max. pulse frequency: 1MHz Position command electronic gear ratio: $\frac{1}{32767}$ ~32767 returning to zero		
External speed mode	Two kinds of external speed commands: ① -10V~+10V analog voltage command speed and direction; ② 0V~+10V analog voltage command speed, and the operating direction is selected by the input signal.		
Internal speed mode	There are four speeds can be set by the parameters, and the operation speed can be selected by the input signal.		
Position feedback input	It adapts the power-off memory absolute encoder with 17bit/turn, BiSS bus interface. The incremental encoder is compatible, A/B/Z/U/V/W differential signal, resolution is 5000pps		
GSKLink bus interface	The data real-time transmission, such as 1Mbps differential serial bus, position, speed, I/O state and parameter.		
Input signal	① Servo enabling; ② Alarm clear; ③ Positive forbriddance; ④ Negative forbriddance; ⑤ Zero speed clamping; ⑥ Error counter clear/ Speed selection 1; ⑦ Command pulse forbriddance/ Speed selection 2; ⑧ CCW torque limit; ⑨ CW torque limit; etc ⑩ common input		
Output signal	① Servo already; ② Servo alarm; ③ Position arrival / Speed arrival; ④ Hold release; ⑤ Zero speed output; ⑥ Z pulse feedback output, etc		
Protective function	Overvoltage, undervoltage, overcurrent, overload, overspeed, position error, brake abnormality and encoder abnormality.		
Operation and display	Some operations can be performed by four keys, such as the manual, JOG and parameter modification, setting, write and back up. 6-digit LED can be display the speed, current position, command pulse accumulation, position error, motor torque, motor current, rotor absolute position and input/output signal state.		
Brake mode	Dynamic brake, in-board brake resistance and the external brake resistance can be selected.		

SJT SERIES AC SERVO MOTOR

Motor Model Significance



EXAMPLE:

80 SJT - M □ 032 E (A□ Y□ X)

AC
synchronous
servo motor

Foundation Number	
80	
110	
130	
175	

Code	Feedback element
M	Photoelectric encoder

Code	Drop-out brake
no	no
Z	With

Note: The zero torque is expressed by a 3-digit number, its value is 3 digits × 0.1, unit: N·m
e.g. 032×0.1=3.2N·m

Zero torque

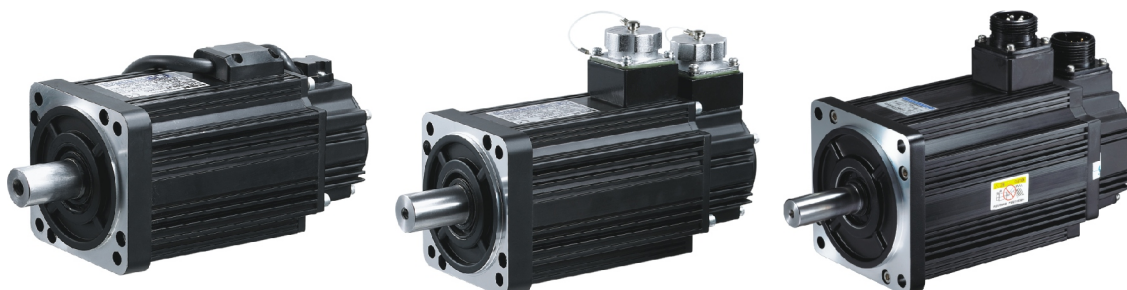
Code	Rated speed (r/min)
B	1500
C	2000
D	2500
E	3000

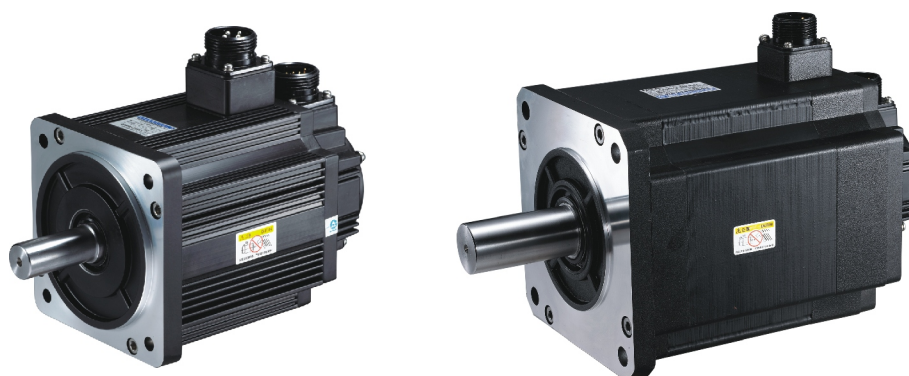
Code	Encoder type
A or no	Incremental 2500 p/r
A1	Absolute
A2	Incremental 5000 p/r
A3	Incremental Separated 2500 p/r

Code	Lead-out type
no	Aviation socket
X	Cable

Code	Shaft extension or installation form
no	Standard shaft extension
(Y□)	Special cylindrical shaft extension
(Z□)	Special conical shaft extension
(S□)	Stepper motor installation form

Note: "□" stands for Arab number code, some digit means a special shaft extension, see details in the installation outline for this motor.





Product feature



- Optimizing design, compact, beautiful contour, long-term continuous working in rated working mode;
- High performance rare earth permanent magnet material, high power, large load;
- Excellent reverse potential sine, sine wave current drive and excellent low speed performance;
- Motor inertia meeting machine feed driver;
- F level insulation material to extend motor life;
- Imported feedback components, original imported low-noise motor bearing to reduce vibration and noise;
- Full airproof and high reliability to meet industry environment;
- Optimum matching with our AC servo driver to realize optimum servo performance.

80SJT Series Motor Specifications

Item	Type	80SJT-M024C	80SJT-M024E	80SJT-M032C	80SJT-M032E
Rated power (kW)		0.5	0.75	0.66	1.0
Pole pairs		4			
Drive unit input voltage(V)		3-phase (or single phase)AC220V			3-phase AC220V
Rated current (A)		3	4.8	5	6.2
Zero torque(N · m)		2.4	2.4	3.2	3.2
Rated torque(N · m)		2.4	2.4	3.2	3.2
Max. torque (N · m)		7.2	7.2	9.6	9.6
Rated speed (r/min)		2000	3000	2000	3000
Max. Speed (r/min)		2500	4000	2500	4000
Moment inertia(kg · m ²)		0.83×10^{-4}	0.83×10^{-4}	1.23×10^{-4}	1.23×10^{-4}
Weight (kg)		2.8	2.9	3.4	3.5
Insulation degree		F			
Vibration degree		R			
Protection degree		IP65			
Installation type		IMB5 (flange)			
Working mode		S1 (Continuous)			
Imbedded encoder		Incremental 2500p/r (Standard configuration)			
Brake		N0			

■ 110SJT Series、130SJT Series Motor Specifications

Type	110SJT-M040D	110SJT-M060D	130SJT-M040D	130SJT-M050D	130SJT-M060D
Item					
Rated power (kW)	1.0	1.5	1.0	1.3	1.5
Pole pairs	4				
Drive unit input voltage(V)	3-phase (or single phase)AC220V				
Rated current (A)	4.5	7	4	5	6
Zero torque(N · m)	4	6	4	5	6
Rated torque(N · m)	4	6	4	5	6
Max. torque (N · m)	12	12	10	12.5	18
Rated speed (r/min)	2500	2500	2500	2500	2500
Max. Speed (r/min)	3000	3000	3000	3000	3000
Moment inertia(kg · m ²)	0.68×10^{-3}	0.95×10^{-3}	1.1×10^{-3}	1.1×10^{-3}	1.33×10^{-3}
Weight (kg)	6.1	7.9	6.5	6.5	7.2
Insulation degree	B				
Vibration degree	R				
Protection degree	IP65				
Installation type	IMB5 (flange)				
Working mode	S1 (Continuous)				
Imbedded encoder	Incremental 2500p/r (Standard configuration)				
Brake	DC24V、4N · m, 1.6kg is added to the corresponding motor		DC24V、12N · m, 2.9kg is added to the corresponding motor		

■ 130SJT Series Motor Specifications

Type	130SJT-M075D	130SJT-M100B	130SJT-M100D	130SJT-M150B	130SJT-M 150D
Item					
Rated power (kW)	1.88	1.5	2.5	2.3	3.9
Pole pairs	4				
Drive unit input voltage(V)	3-phase AC220V				
Rated current (A)	7.5	6	10	8.5	14.5
Zero torque(N · m)	7.5	10	10	15	15
Rated torque(N · m)	7.5	10	10	15	15
Max. torque (N · m)	20	25	25	30	30
Rated speed (r/min)	2500	1500	2500	1500	2500
Max. Speed (r/min)	3000	2000	3000	2000	3000
Moment inertia(kg · m ²)	1.85×10^{-3}	2.42×10^{-3}	2.42×10^{-3}	3.1×10^{-3}	3.6×10^{-3}
Weight (kg)	8.1	9.6	9.7	11.9	12.7
Insulation degree	B				
Vibration degree	R				
Protection degree	IP65				
Installation type	IMB5 (flange)				
Working mode	S1 (Continuous)				
Imbedded encoder	Incremental 2500p/r (Standard configuration)				
Brake	DC24V、12N · m, 2.9kg is added to the corresponding motor				

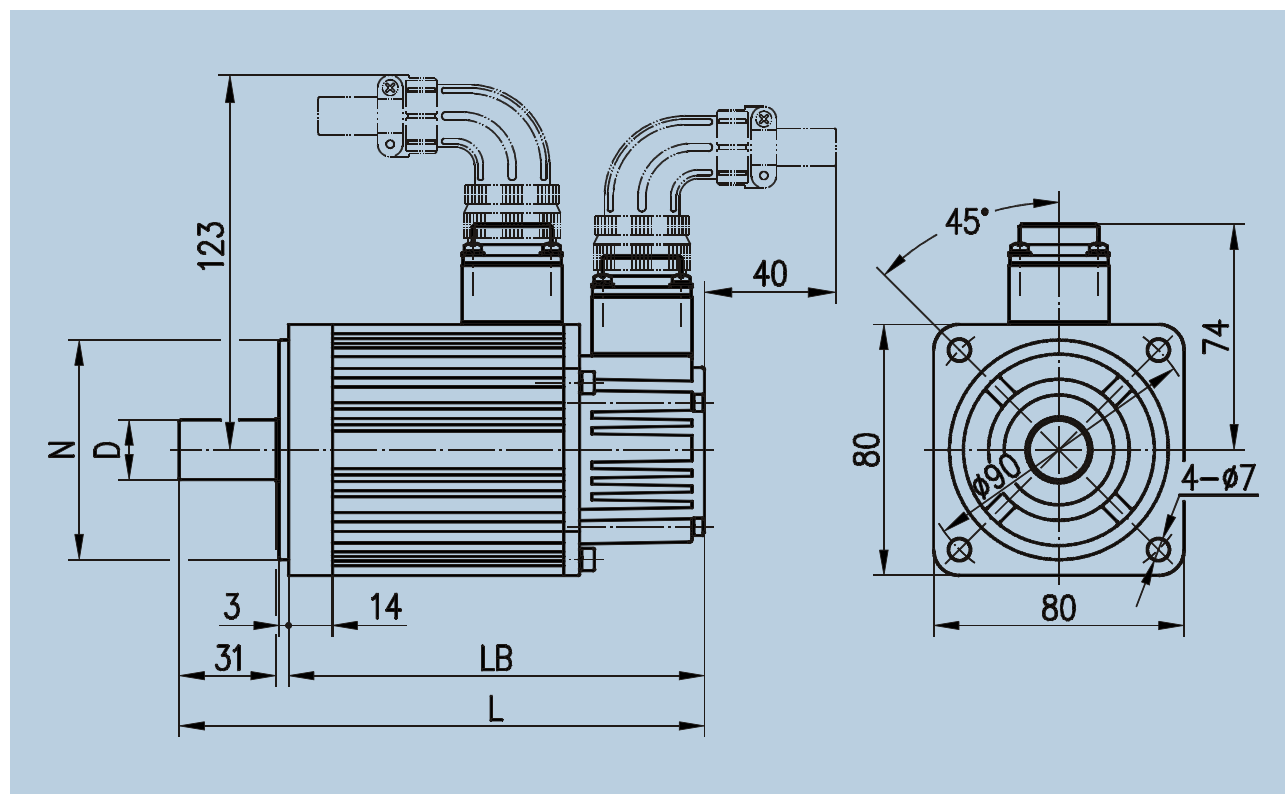


175SJT Series Motor Specifications

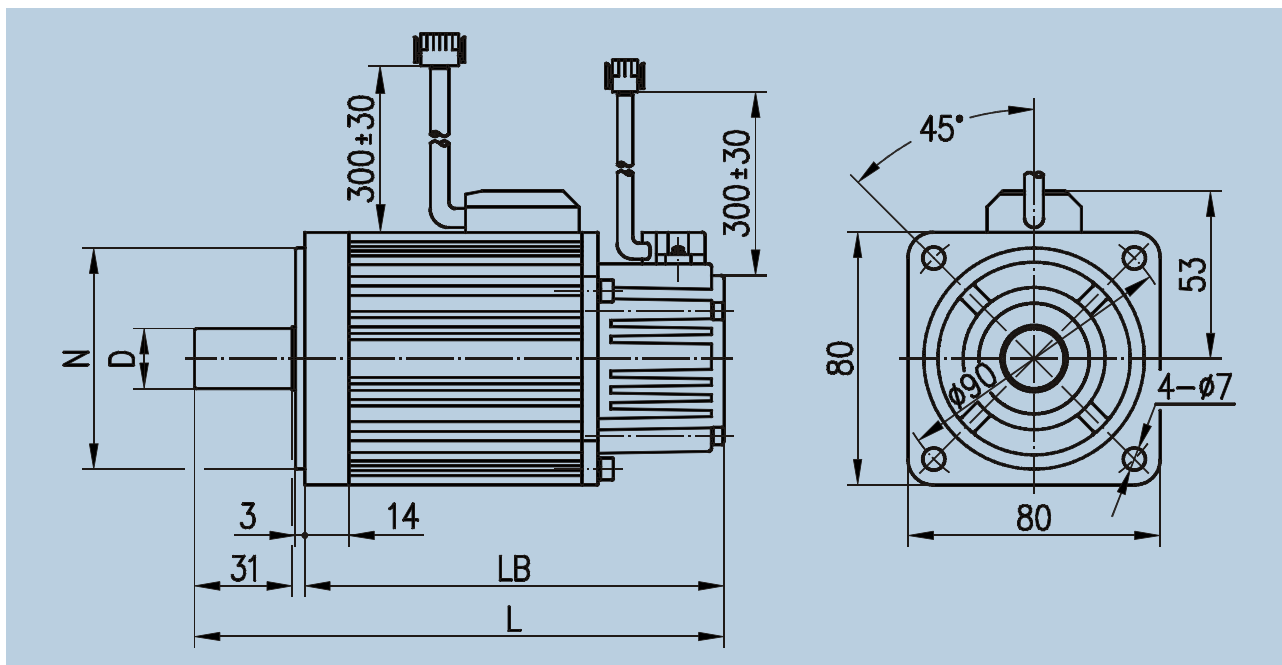
Item	Type	175SJT-M180B	175SJT-M180D	175SJT-M220B	175SJT-M220D	175SJT-M300B	175SJT-M 300D
Rated power (kW)		2.8	3.8	3.5	4.5	3.8	6
Pole pairs		3					
Drive unit input voltage(V)		3-phase AC220V					
Rated current (A)		15	16.5	17.5	19	19	27.5
Zero torque(N · m)		18	18	22	22	30	30
Rated torque(N · m)		18	14.5	22	17.6	24	24
Max. torque (N · m)		36	29	44	35.2	48	48
Rated speed (r/min)		1500	2500	1500	2500	1500	2500
Max. Speed (r/min)		2000	3000	2000	3000	2000	3000
Moment inertia(kg · m ²)		6.5×10^{-3}	6.5×10^{-3}	9.0×10^{-3}	9.0×10^{-3}	11.2×10^{-3}	11.2×10^{-3}
Weight (kg)		22.8	22.9	28.9	29.2	34.3	34.4
Insulation degree		F					
Vibration degree		R					
Protection degree		IP65					
Installation type		IMB5 (flange)					
Working mode		S1 (Continuous)					
Imbedded encoder		Incremental 2500p/r (Standard configuration)					
Brake		DC24V、32N · m, 7.7kg is added to the corresponding motor					

80SJT Series Motor Overall Installation Dimension:

Aviation socket

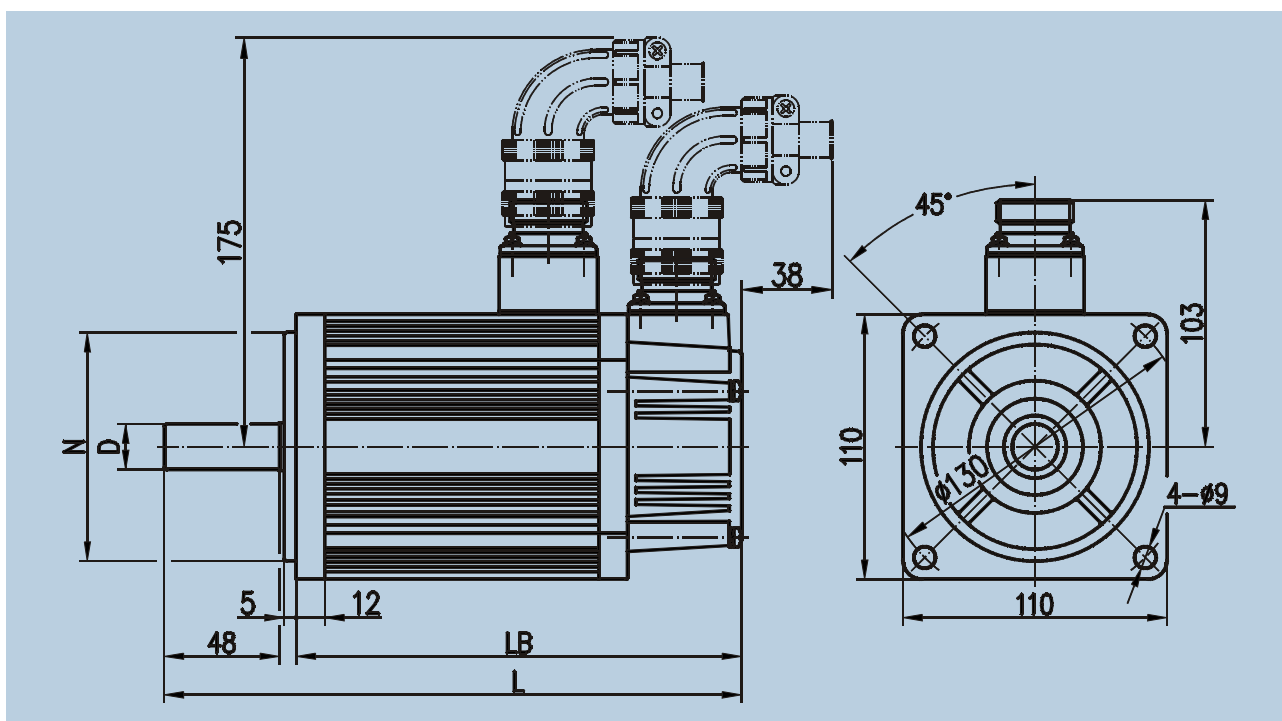


● Cable socket



Type	D(mm)	N(mm)	LB(mm)	L(mm)
80SJT-M024C	$\phi 19^{0}_{-0.013}$	$\phi 70^{0}_{-0.03}$	163	198
80SJT-M024E	$\phi 19^{0}_{-0.013}$	$\phi 70^{0}_{-0.03}$	163	198
80SJT-M032C	$\phi 19^{0}_{-0.013}$	$\phi 70^{0}_{-0.03}$	181	216
80SJT-M032E	$\phi 19^{0}_{-0.013}$	$\phi 70^{0}_{-0.03}$	181	216

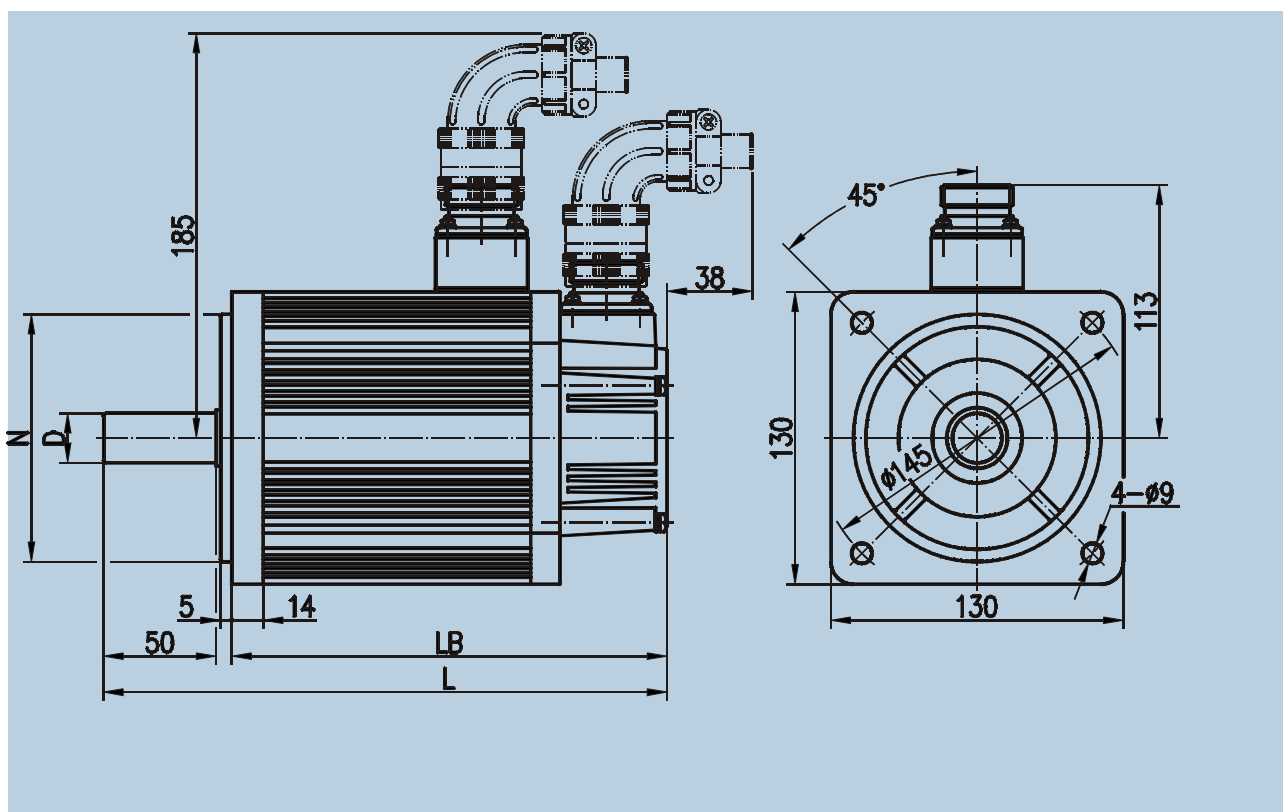
■ 110SJT Series Motor Overall Installation Dimension:





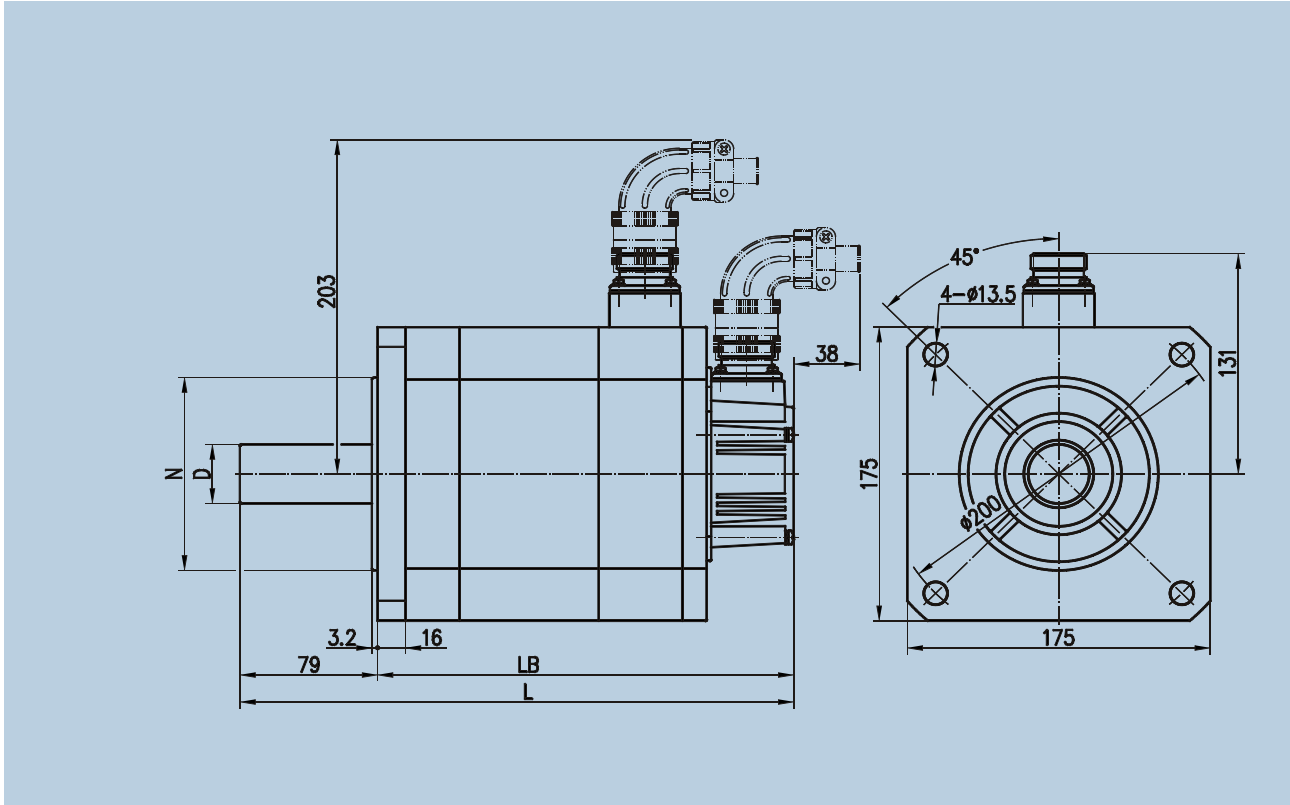
Type	D(mm)	N(mm)	LB(mm)	L(mm)
110SJT-M040D	$\phi 19^0_{-0.013}$	$\phi 95^0_{-0.03}$	186 (237)	241 (292)
110SJT-M060D	$\phi 19^0_{-0.013}$	$\phi 95^0_{-0.03}$	212 (263)	267 (318)
Remark: LB and L values of motor with brake are included in the brackets.				

130SJT Series Motor Overall Installation Dimension:



Type	D(mm)	N(mm)	LB(mm)	L(mm)
130SJT-M040D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	168 (227)	225 (284)
130SJT-M050D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	168 (227)	225 (284)
130SJT-M060D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	176 (235)	233 (292)
130SJT-M075D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	188 (247)	245 (304)
130SJT-M100B	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	208 (267)	265 (324)
130SJT-M100D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	208 (267)	265 (324)
130SJT-M150B	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	238 (297)	295 (354)
130SJT-M150D	$\phi 22^0_{-0.013}$	$\phi 110^0_{-0.035}$	248 (307)	305 (364)
Remark: LB and L values of motor with brake are included in the brackets.				

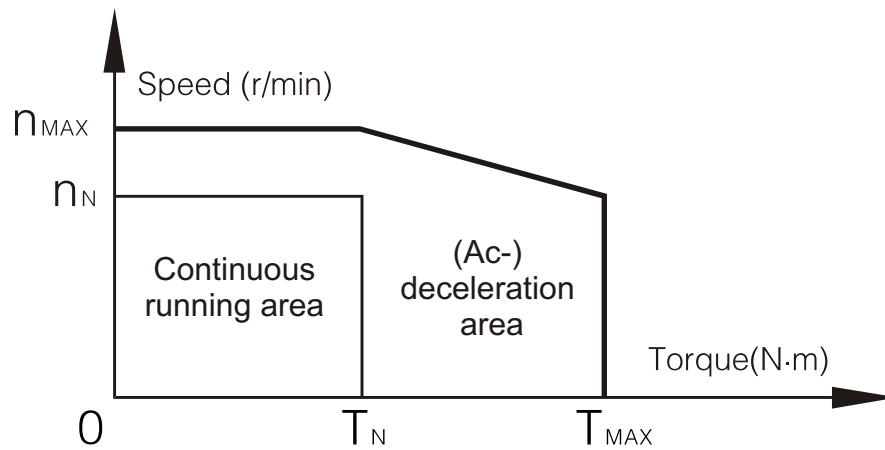
175SJT Series Motor Overall Installation Dimension:



Type	D(mm)	N(mm)	LB(mm)	L(mm)
175SJT-M180B	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	244 (317)	323 (396)
175SJT-M180D	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	244 (317)	323 (396)
175SJT-M220B	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	279 (352)	358 (431)
175SJT-M220D	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	279 (352)	358 (431)
175SJT-M300B	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	309 (382)	388 (461)
175SJT-M300D	$\phi 35_{0}^{+0.01}$	$\phi 114.3_{-0.025}^0$	309 (382)	388 (461)
Remark: LB and L values of motor with brake are included in the brackets.				



Motor Mechanical Characteristic Curve



T_N ——— Rated torque ; T_{MAX} ——— Max. Torque ;
 n_N ——— Rated speed ; n_{MAX} ——— Max. Speed。

DAY3025/DAP03/DAY3100 AC SPINDLE SERVO UNIT

Brief Introduction



DAY, DAP series spindle servo driver achieves the speed control and position control of the three-phase servo motor using the rotor magnetic vector control and weak magnetic control technique, which is not only satisfied with the spindle speed-regulation range, big torque in a low speed and rapidly brake, and also achieved the spindle orientation, rigid tapping and Cs axis control.



Technical Specification



Drive unit type	DAY3025	DAP03—055	DAP03—075	DAP03—110	DAY3100
Input power	Three phases AC380V（85%～110%）50/60Hz±1Hz				
The rated power of the matched motor (kW)	1.5～3.7	5.5	7.5	11	15～18.5
Contour dimension (mm) (W×H×D)	95×335×218.8	214.5×362×230			138×415×291
Speed-regulation ratio by the Constant torque	1000:1				
Speed-regulation ratio by the constant power	4:1				
Speed stabilizing accuracy	Rate speed ×0.1%				
Working mode	speed, position and speed/position. Manual, JOG,				

DAY3025/DAPO3/DAY3100 AC Spindle Servo Unit

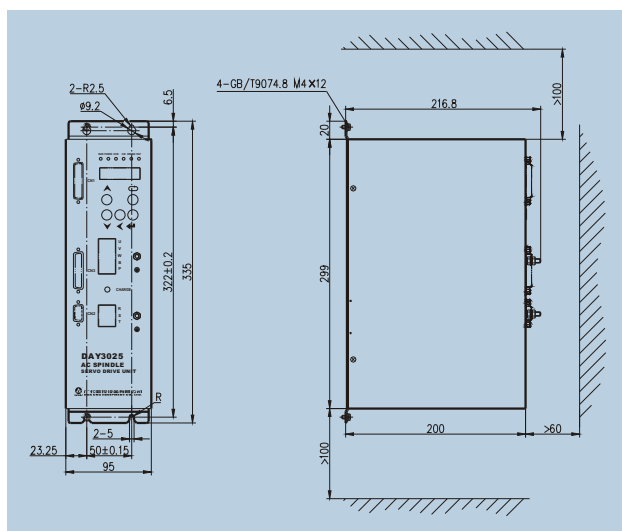


Internal speed mode	The parameter setting of the internal 7-section speed, and the selection of the input point.
External speed mode	Analog command mode: ① $-10V \sim +10V$; ② $0V \sim +10V$.
Position mode	Position command mode: ① pulse + direction; ② CCW pulse/CW pulse; ③ A/B two phases orthogonal pulse.
Orientating function	Eight orientation points on the motorencoder or the 2nd position encoder can be set. The orientation points can be selected by the external contact signal and the motor's (or spindle) orientation is started, its orientation angle error is $180^\circ \times \frac{\text{Encoder resolution}}{\text{Encoder resolution}}$
Electronic gear function	In the speed mode, the analog speed command electronic gear ratio is $0.1 \sim 10$. Position command electronic gear ratio: $\frac{1}{32767} \sim 32767$.
Motor encoder feedback input	Incremental encoder feedback, A/B/Z differential signal and encoder resolution 128p/r \sim 8000p/r can be set.
The 2nd position encoder feedback input	Incremental encoder feedback, A/B/Z differential signal and resolution 128p/r \sim 8000p/r can be set.
Position feedback output	Motor's encoder or the 2nd position encoder signal outputs with 1:1, A/B/Z differential signal.
Input signal	There are 11 points can be input: servo enabling, CCW start, CW start, orientation start, the 2nd speed gain selection, orientation (speed) selection, zero speed clamping, alarm resetting and speed/position shifting.
Output signal	Seven output points: already, zero speed output, position/speed arrival, the completion of the orientation, alarm output, speed/state position state and position feedback Z pulse.
Protective function	Overvoltage, undervoltage, open-phase, overspeed, overcurrent, overload, overheating, encoder abnormality and position error.
Operation and display	Five keys, the manual and JOG operation can be performed; parameter modification, setting, write-in and backup can be operated, 6-digit LED can be selected for displaying the software, working mode, current speed, speed command, encoder current position, current, I/O state, DC bus voltage, alarm code and parameter.
Brake mode	Dynamic braking (External brake resistance)

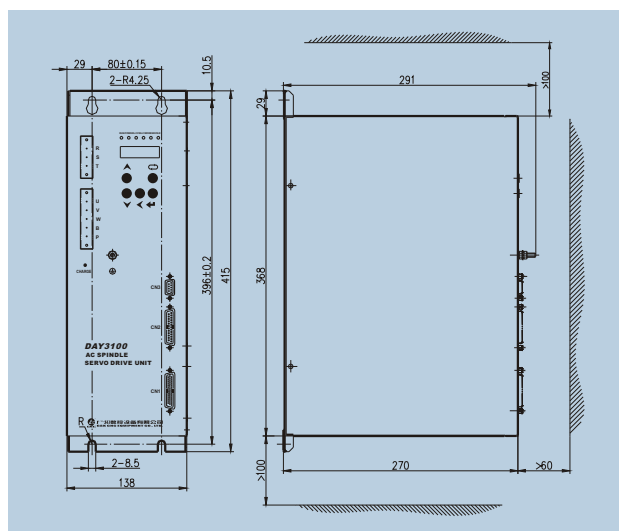
Overall Installation Dimension



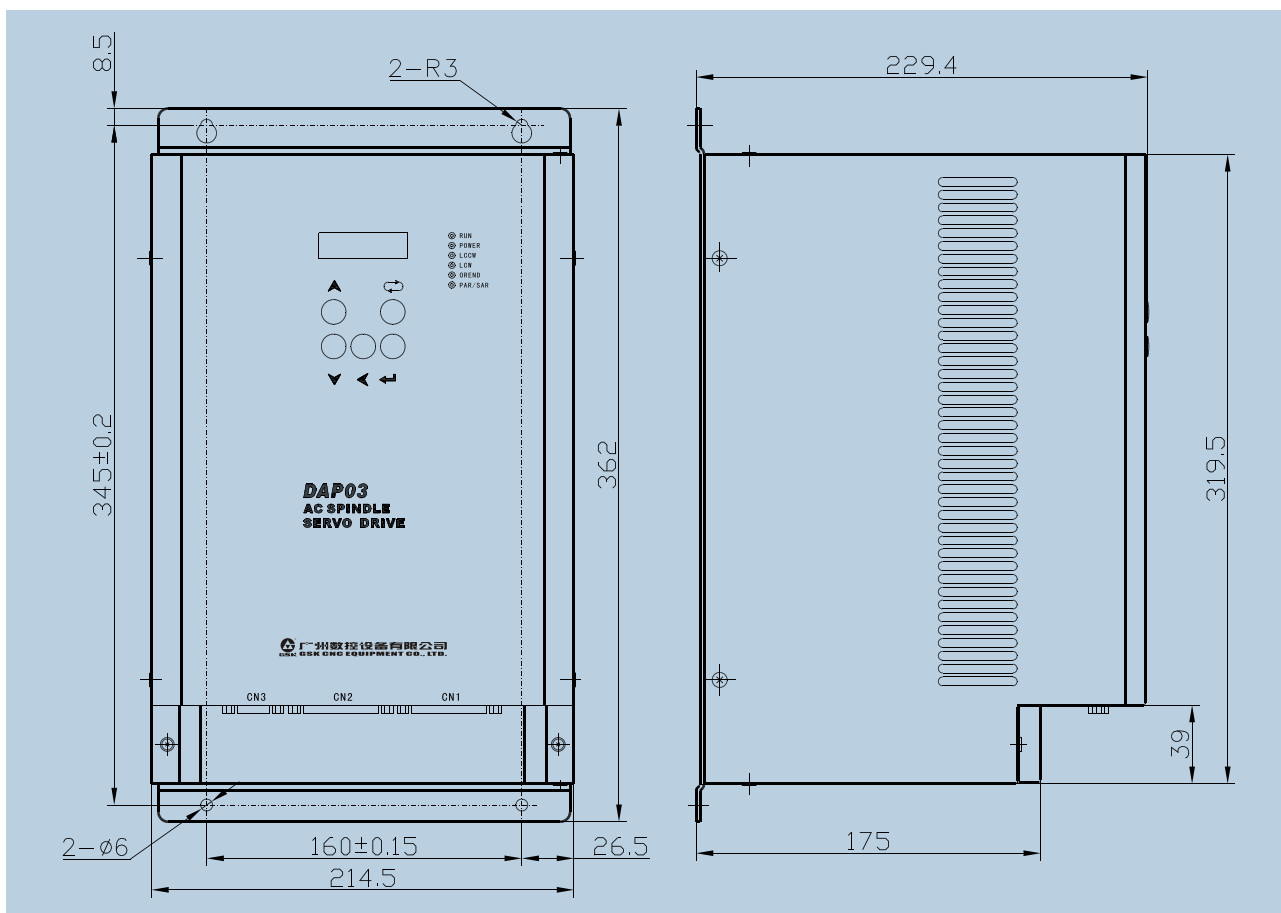
● DAY3025 (unit: mm)



● DAY3100 (unit: mm)



● DAP03 (Unit:mm)



ZJY Series Asynchronous Motor Specifications

Example: ZJY265-7.5BM-B3Y1

ZJY 265 - 7.5 B M - B3 [Y1]

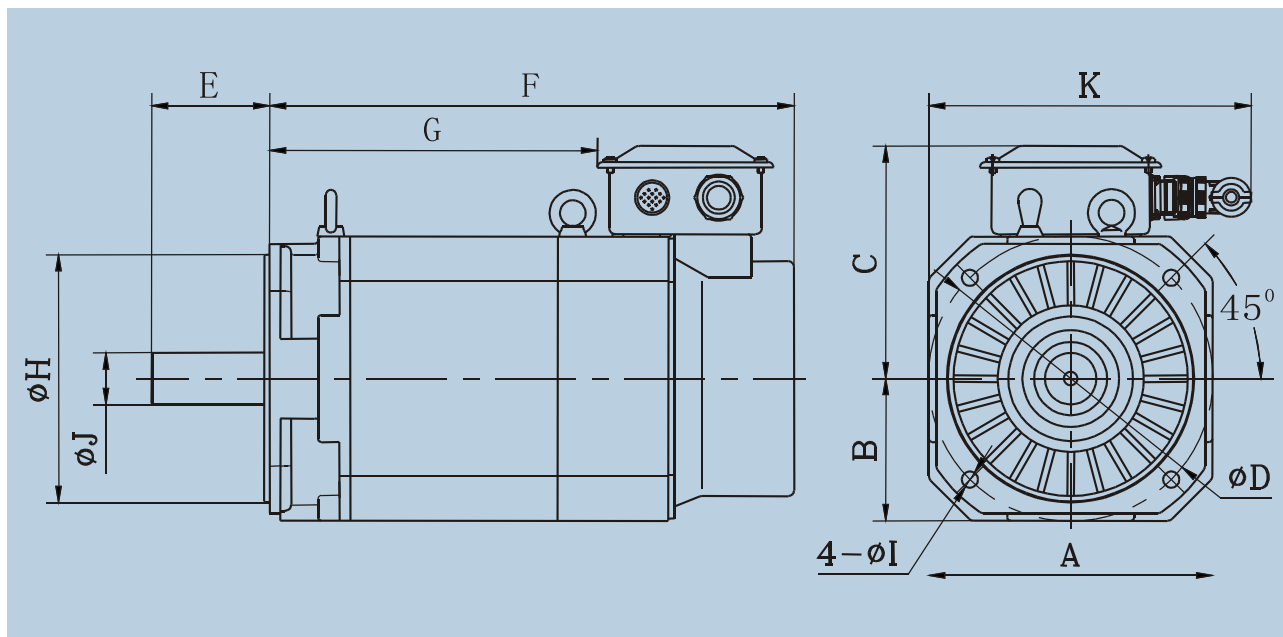
- Shaft extension (No: only shaft, Y1: with standard key slot)
- Configuration installation type (B5, flange; B3, foundation)
- Max. speed (H: high speed 10000 r/min; M: medium speed 7000 r/min)
- Rated speed (B: 1500 r/min)
- Rated power (Unit: kW);
- Foundation No.;
- Spindle servo motor

DAY3025/DAPO3/DAY3100 AC Spindle Servo Unit

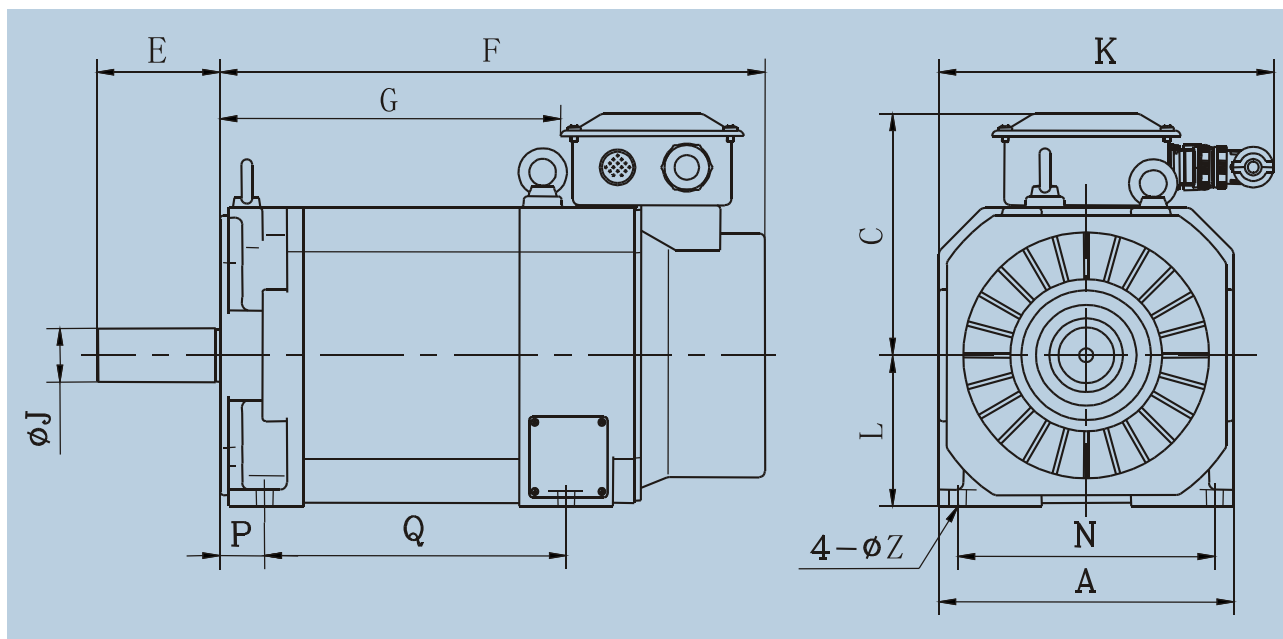


Specification Items		ZJY208-2.2B (Substitution of ZJY132-2.2)	ZJY208-3.7B (Substitution of ZJY132-3.7)	ZJY208-5.5B (Substitution of ZJY132-5.5)	ZJY208-7.5B (Substitution of ZJY132-7.5)	ZJY265-7.5B (Substitution of ZJY160-7.5)	ZJY265-11B (Substitution of ZJY160-11)	ZJY265-15B (Substitution of ZJY160-15)
Rated power (kW)		2.2	3.7	5.5	7.5	7.5	11	15
Driver voltage (V)		3-phase AC 380						
Rated current (A)		9.3	8.9	13.7	18.4	18	26	35
Rated frequency (Hz)		50	50	50	50	50	50	50
Rated torque (N • m)		14	24	35	48	49	72	98
30min power (kW)		3.7	5.5	7.5	11	11	15	18.5
30min current (A)		13.6	13	18	25	26	34	42
30min torque(N • m)		24	35	48	70	74	100	123
Rated speed (r/min)		1500	1500	1500	1500	1500	1500	1500
Constant power range (r/min)		When max. speed is H: 1500 ~ 6000; When max. speed is M: 1500 ~ 5000						
Max. Speed(r/min)		M、H	M、H	M、H	M、H	M	M	M
Moment inertia (kg • m2)		0.0103	0.0168	0.0238	0.0309	0.0413	0.0744	0.0826
Weight (kg)		49	51	66	77	89	107	125
Installation type		IM B5 or B3						
Protection degree		IP54 (GB/T 4942.12001)						
Insulation degree		F (GB 1094.32003)						
Vibration degree		R (GB 100682000)						
Imbedded encoder		Incremental 1024 p/r						
Cooling fan power (V)		3-phase AC 380V 50Hz 40W 0.14A				3-phase AC 380V 50Hz 70W 0.21A		
External dimensions (See figures)	A	208	208	208	208	265	265	265
	B	104	104	104	104	132	132	132
	C	188	188	188	188	216	216	216
	D	215	215	215	215	265	265	265
	E	60	60	80	80	110	110	110
	F	363	413	468	523	443	488	533
	G	187	237	292	347	260	305	350
	H	180h7	180h7	180h7	180h7	230h7	230h7	230h7
	I	15	15	15	15	15	15	15
	J	28h6	28h6	38h6	38h6	48h6	48h6	48h6
	K	272	272	272	272	300	300	300
	L	106	106	106	106	135	135	135
	N	180	180	180	180	230	230	230
	P	40	40	40	40	40	40	40
	Q	160	210	265	320	225	270	315
	Z	12	12	12	12	15	15	15

Overall Installation Dimension



Flange installation type (B5)



Foundation installation type (B3)

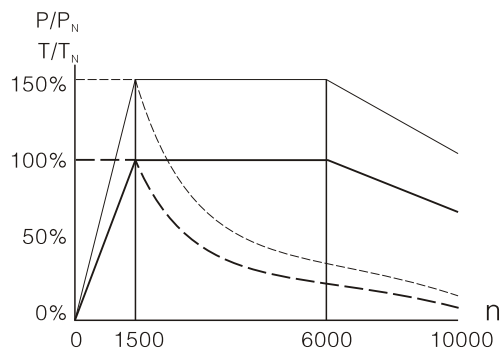


Motor Mechanical Characteristic Curve

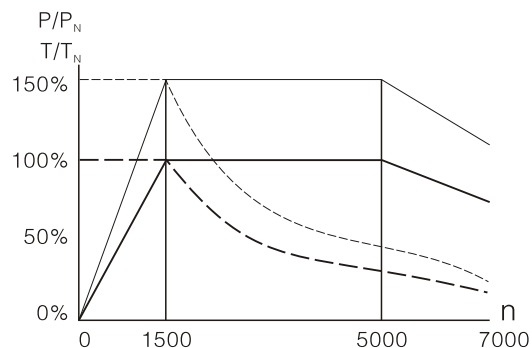


P/P_N — Power/Rated power;
 n — Rated speed.

T/T_N — Torque/ Rated torque;



Motor characteristic curve at max.
 speed H



Motor characteristic curve at max.
 speed M

Notice:

- Power in continuous running;
- Torque in continuous running;
- Power in 30 min running;
- Torque in 30 min running.



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* All specifications and designs are subject to change without notice.