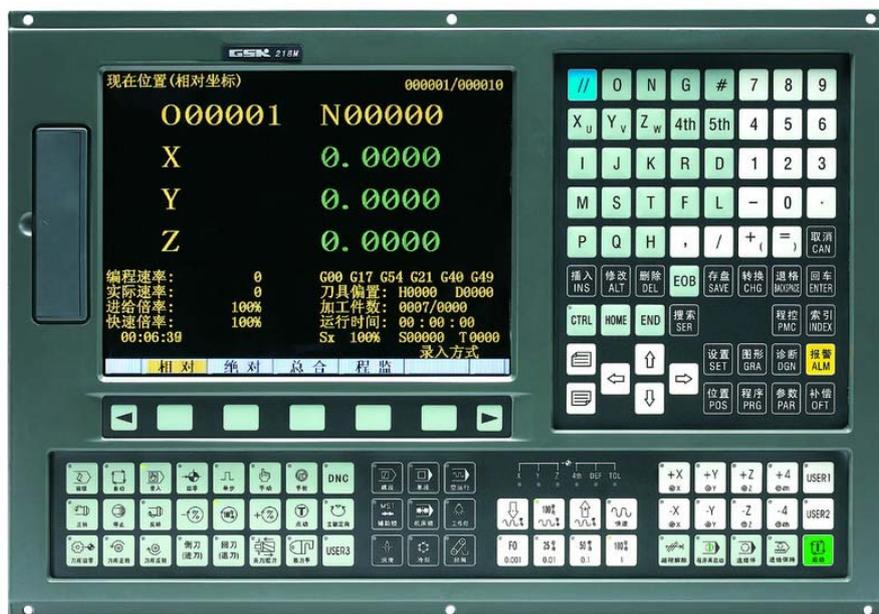


GSK218M Milling Machine CNC System

GSK218M is widespread CNC system (matched with machining center and general milling machine) employed with 32-bit high performance CPU and super-large-scale programmable drive unit FPGA, real-time control and hardware interpolation technology to ensure the system gets the high efficiency with the high-level precision, and its PLC can be edit on-line, which makes the logic control function become more flexible and strong.



Characteristics:

- The standard configuration of system is 4-axis 3 link, and the rotation axis can be set by parameters;
- The max. positioning speed can reach 30m/min, and the max. interpolation speed can reach 15m/min;
- Linear, exponential and S acceleration/deceleration is optional;
- Bidirectional pitch error compensation, backlash error compensation, tool length and tool radius compensation are available;
- Convenient management for the system with multilevel operation password;
- 10.4 inch chromatic LCD .The Chinese and English and Russian interface can be selected by setting the related parameter;

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- The system has 56M program memory capacity to store up to 400 programs and has the back stage edit function and can edit the program on the background,
- The system has the standard RS232 and USB interface which can realize the bidirectional transmission of programs, parameters and PLC programs between CNC and PC;
- The system has DNC control and its baud rate can be set;
- Its built-in PLC can realize the various of logic control functions; its ladder can be edit , uploaded and downloaded on-line;
- It is easy to switch manner of automatic and manual by the function of manual intervention and return.
- It can be implemented that coordinate moved in automatic operation by the manual handle intervention and step intervention.
- It's supported that editing a program while executing another program by background editing.
- It can be selected by parameter between rigid tapping and tapping of spindle followed.
- 3 level automatic gearing, the voltage of frequency conversion may be changed by setting spindle speed at any moment.
- It is supported some advanced functions that rotation, scaling, polar coordinate and many canned cycle, etc.
- By USB function, it's easy to upload and download programs, to machine workpieces online.

Specifications

Controlled axes	Controlled and linked axes: up to 4 feed axes, one spindle, 3linked axes
	Interpolation method: positioning (G00), linear (G01), arc (G02, G03), helical interpolation
	Max. stroke: metric: ± 9999.9999 mm, least input increment:0.0001 mm Inch: ± 9999.9999 inch, least input increment:0.0001 inch
	Electronic gear: command multiplication coefficient 1 ~ 255, command division coefficient 1~255
	Traverse speed: max. 30m/min
	Rapid override: F0, 25%, 50%, 100% real-time adjustment
	Cutting feedrate: max. 15m/min (G94) or 500.00mm/r (G95)
	Feedrate override: 0~150% divided into 16 levels to real-time adjustment
	Manual feed override: 0~150% divided into 16-level to real-time adjustment
MPG feed: 0.001mm, 0.01mm, 0.1mm	
Single step feedrate: 0.001mm, 0.01mm, 0.1mm	

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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 Hermit 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>
M command	Miscellaneous function M: Specified by the sequential 2 digits after address M.
	Special M commands (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, M12, M13, M16, M17, M19, M21, M22, M32, M33
G command	77 kinds of G command: G00, G01, G02, G03, G04, G10, G11, G15, G16, G17, G18, G19, G20, G21, G22, G23, G24, G25, G26, G27, G28, G29, G30, G31, G33, G34, G35, G36, G37, G38, G39, G40, G41, G42, G43, G44, G49, G50, G51, G53, G54, G55, G56, G57, G58, G59, G60, G61, G62, G63, G64, G65, G68, G69, G73, G74, G76, G80, G81, G82, G83, G84, G85, G86, G87, G88, G89, G90, G91, G92, G94, G95, G96, G97, G98, G99
T command	Tool function: ●T2 digists●256 group tool offset ●tool position offset● tool length compensation ●tool nose radius compensation ● communication input of tool offset value● tool length measurement
Spindle speed control	Spindle function S: ●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 p/r~5000p/r)
	Transmission ratio between encoder and spindle (1~255): (1~255)
Automatic compensation	●Storage bidirectional compensation of pitch error: compensation points can be set. It is used for compensating the error resulted by machine position (such as the pitch error of the feed screw) to improve the machining precision. The compensated data as parameters are stored in storage.
	●Backlash compensation: it can set the machine's momentum loss compensated by the fixed frequency or acceleration/deceleration.
	Tool length compensation: it is done by the specified G code (G43, G44, G49); the vertical plane can be selected by parameters.
	●Tool nose radius compensation (G40, G41, G42): C tool compensation Max. compensation value: ±999.999mm or ±99.9999inch.

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Reliability and safety	<ul style="list-style-type: none"> ●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
	<p>NC alarm: ●program or operation error; ●overtravel error; ●servo system error; ●connection error, PLC error; ●storage (ROM and RAM) error; over 300 alarms classified into 5 categories to provide the stable operation and rapid troubleshooting for the system.</p>
	Historic alarm and operation record
	<p>Self-diagnosis function to check the followings: ● system abnormality; ● position control abnormality; ● servo system abnormality; ●RS232 reading abnormality; ● PC data transmission abnormality and so on.</p>
Operation function	<ul style="list-style-type: none"> ● dry run ● interlock ● single block ● optional block skip ● Manual absolute ON/OFF ● M.S.T. lock ● machine lock ● feed hold ● cycle start ● emergency stop ● external reset signal ● external power ON/OFF● Manual continuous feed ● incremental feed ● MPG ● skip ●additional optional block skip ● sequence number search ● program number search ● external data input ● program restart ● menu switch ● graphics display● MPG interruption
Display	<ul style="list-style-type: none"> ●10.4 inch 640×480 chromatic LCD● machine coordinates, absolute coordinates, relative coordinates, residual movement
	<ul style="list-style-type: none"> ● User program ● current operation mode ● system parameter, diagnosis number, alarm number, macro variables, tool offset setting, MDI commands, MST
	<ul style="list-style-type: none"> State ● actual feedrate, spindle speed ● machining path display ● real-time wave diagnosis
	<ul style="list-style-type: none"> ●System running time and other NC commands and state messages
Program edit	<p>Program capacity: 56M, max. 400 programs, customer macro calling and 4-level subprogram built-in are available</p>
	<p>Background edit, absolute, relative coordinate and complex coordinate programming are supported</p>
PLC function	<p>Control mode: cycle run; processing speed: 3μs/per basic command; max. 3000 steps</p>
	<p>I/O unit :input point/output point: 48/48, expandable</p>
	<p>Development method: PLC commands or ladder</p>
	<p>Command amount: 40 including 10 basic commands, 30 functional commands</p>
DNC function ALCE	<p>Serial DNC, and the baud rate can be set</p>
Communication	<p>Standard RS-232 and USB interface</p>
	<p>Bidirectional transmission of programs, parameters and ladder between CNC and PC</p>
Optional drive	<p>DA98 series digital AC servo drive unit or DY3 series stepper drive unit with input pulse and direction signal</p>

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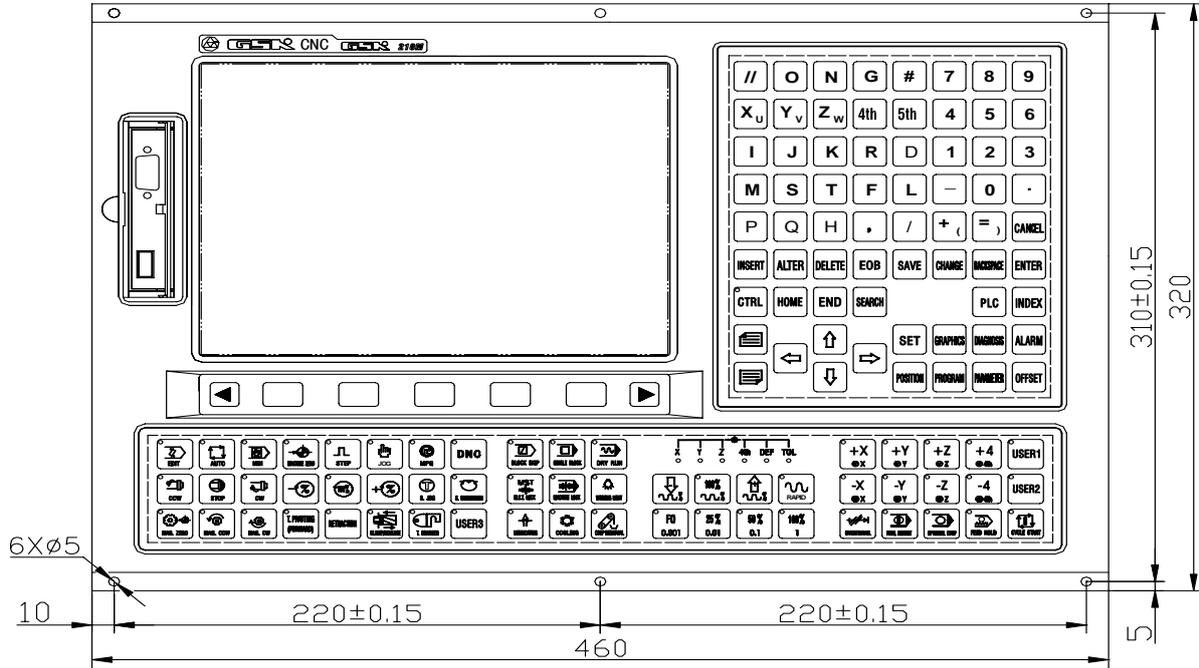
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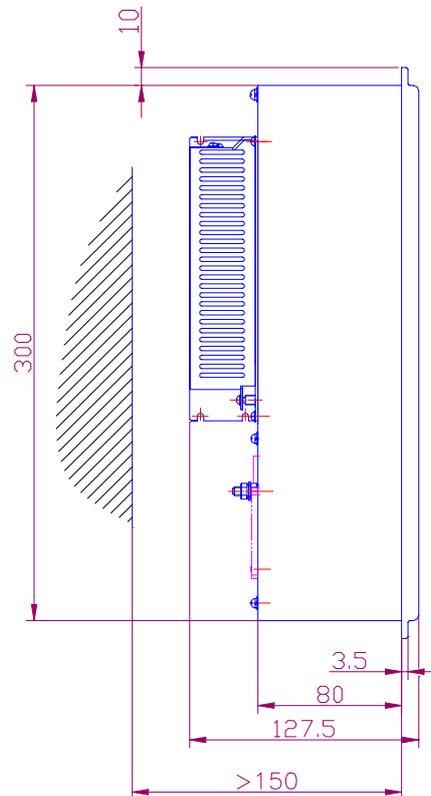
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2. Installation Dimension

Panel



Side view

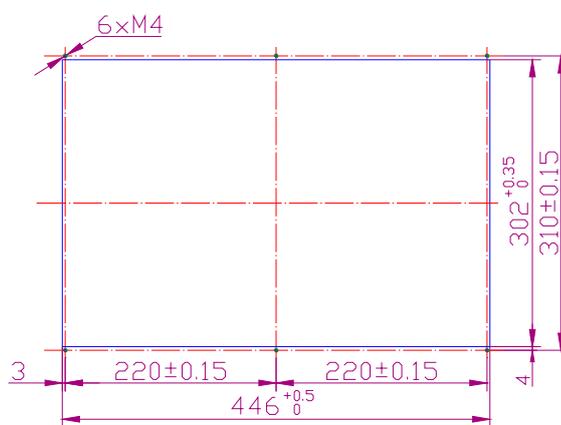
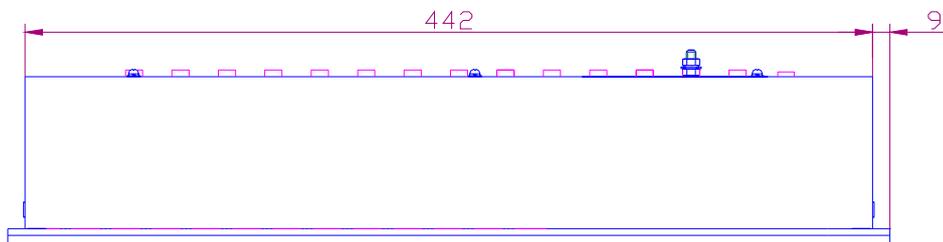


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Back view



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Ordering Type and Configuration

Ordering Type

Type	Spec.	Remark
GSK 218M-XX1	Standard configuration for four-axle and three-linkage	The rigid tapping can be realized when the DAP03 which in our company is applied.
GSK 218M-XX2	Optional configuration for four-axle and four-linkage	With flexible tapping function

GSK218 Configuration

① Unit Configuration

Name	Configuration Type	Explanation
GSK218 System unit	Standard	32-digit high capability CPU and grand scale programmable elements FPGA
MPG unit	Optional	PSG pulse (Changchun Sanfeng)
Electronical mini MPG	Optional	Changchun ZGB-3-001-100
Electronical big MPG	Optional	Changchun LGF-001-100

② Cable Configuration

Name	Standard Configuration	Q'ty (pcs)	Length (m)	Remark
DNC interface connection cable	Standard	1	3	
Matching spindle conversion signal cable	Optional	1	3	The conversion signal cable is cancelled and the spindle signal cable is changed into standard configuration when our appreciated customer uses the servo drive unit of spindle for our company. The signal connection cable of DAP01 and DAP03 are different, the signal cable must be indicated when the optional configuration is applied.
Matching spindle servo drive signal cable	Optional	1	3	
Feed axis and control axis signal cable	Standard	3	3	The selection of control signal cable depends on the drive unit.
I/O system input signal cable	Optional	3	3	When the standard configuration I/O pin-board is applied, the I/O signal cable is changed into I/O pin-board standard configuration cable; when the optional configuration I/O pin-board and I/O signal cable are not applied, three of DB25 male bonding wire and three of DB25 female bonding wire are standard configuration. When the optional configuration electronic MPG is applied, it is changed into standard configuration.
I/O system output signal cable	Optional	3	3	
Electronical MPG cable	Optional	1	0.3	

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③ Attachment Configuration

Attachment Name	Configuration Type	Q'ty (pcs)	Remark
Lenovo (T108)	Optional	1	Capability 128M
Lenovo (B210)	Optional	1	Capability 256M
Lenovo (T160)	Optional	1	Capability 2G
I/O pin-board (input)	Optional	1	With input 1, 2 and 3
I/O pin-board (output)	Optional	1	With output 1, 2 and 3
Additional operation panel	Optional	1	Referring to the appendix panel figure for details
Without auto-lock button: KH-516-B11 (green or red)	Optional	4	It is used for power on, power off, feed hold and cycle start for the system
Key switch	Optional	1	Program lock
ESP button: LAY9-02ZS/1	Optional	1	
DB9 male bonding wire socket (with rubber shell)	Standard	1~2	One for electronic MPG, two for the external MPG
GSK218M programming and operation manual	Standard	1	
GSK218M installation and connection manual	Standard	1	