HOST50 General Mill-Turn system

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Product Overview

HOST50

The HOST50 CNC system is a bus based fully digital CNC device that supports the EtherCAT bus protocol. It has technologies such as multi axis and multi-channel control, high-speed and high-precision, composite machining processes, and multi axis group synchronous control. The system adopts acceleration and deceleration control algorithms, small line segment processing control algorithms, and cubic spline interpolation algorithms to meet the high-speed and high-precision control requirements. This product can be applied in industries such as aerospace, automotive manufacturing, energy and power, hardware molds, and 3C, providing efficient and accurate motion control and process solutions for various industries.

Functional Features

Adopting a 10.4-inch TFT-LCD high-definition LCD display, supporting multiple language displays such as Chinese and English, and supporting 3D tool path graphic display and simulation.

Supports EtherCAT bus control mode, supports multi-channel and multi axis interpolation, with each channel supporting up to 9 feed axes,8 spindles.

Interpolation cycle of 1ms, supporting nanometer level instruction parsing and interpolation operations.

Equipped with refined surface function, supporting intelligent forward-looking processing of 2000 segments of programs, and improving machining speed and accuracy through program.

with tool management function, comparing tool usage records with preset tool life, determining tool remaining life, achieving accurate early life warning, and automatically changing tools.

adapted servo spindle can achieve fast switching of CS axis, high-speed rigid tapping, and tapping retraction.

Equipped with tool management function, comparing tool usage records with preset tool life, determining tool remaining life, achieving accurate early life warning, and automatically changing tools.

It has monitoring functions for system status and machine tool status, recording functions for axis data, alarm information, and processing logs, as well as syntax checking, trajectory preview, and other functions, which facilitate program verification, fault diagnosis, and maintenance.

Features

HOST50 is equipped with a new generation of high-performance, fast response multi-core processor hardware platform. Adopting a brand new integrated low-power, fast cooling, maintenance free pure metal structure chassis, it is sturdy and durable, with extremely high anti-interference ability. The system and operation station button design are clearly classified, with better tactile sensation and better human-computer interaction experience.

Application Solution

Application scheme of Mill-Turn system

HOST50

Operation layer

Servo Drive

X-axis

Y-axis

Z-axis

Servo Drive

Drive control layer

Equipment layer

Motorized spindle

Servo Motor

Servo Motor

Servo Motor

Spindle

Application scheme of CNC milling machine

HOST50

Operation layer

Servo Drive

Feed axis driver

Feed axis driver

Feed axis driver

Drive control layer

Equipment layer

Motorized spindle

Servo Motor

Servo Motor

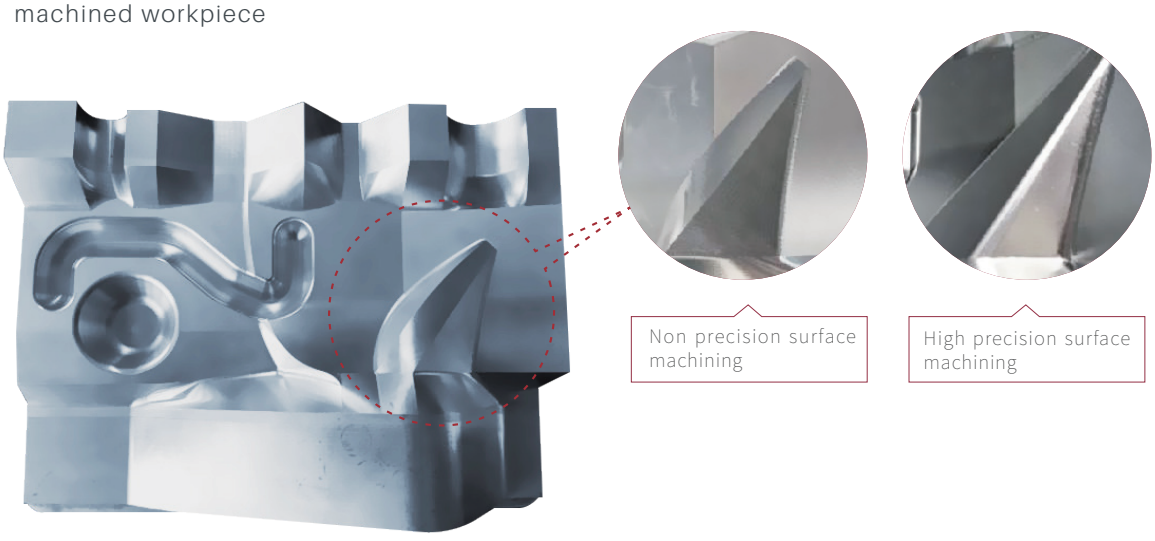
Servo Motor

Function Introduction

Powerful features

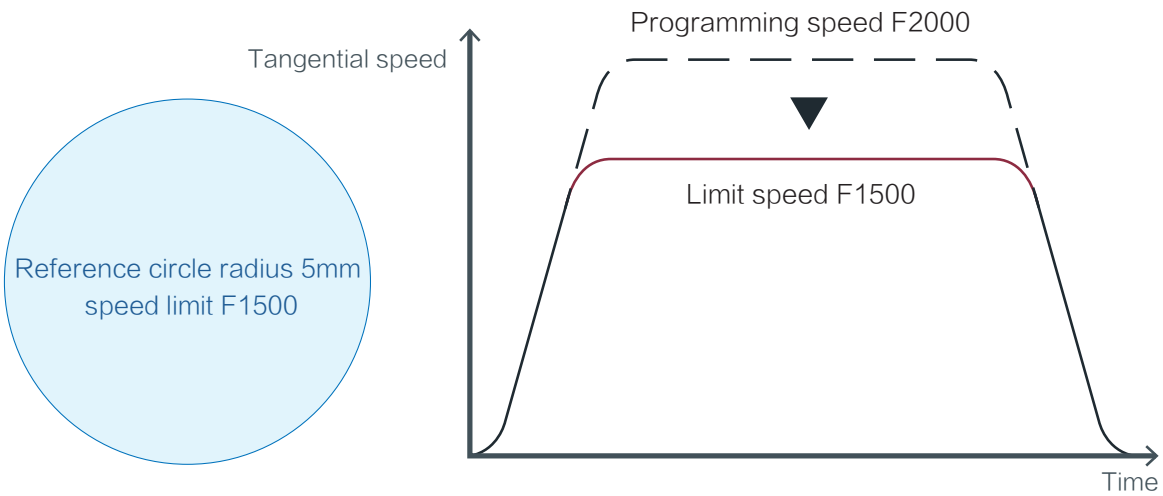
Precision surface machining technology

On the basis of existing techniques such as pre-processing of small program segments and precision priority interpolation, mechanical vibrations generated during the machining process are reduced through machining path strategy planning, path smoothing processing, etc., improving the contour accuracy, surface quality, and machining efficiency of the machined workpiece



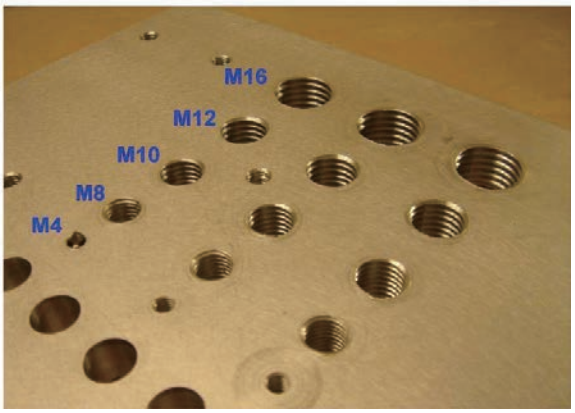
Arc speed limit

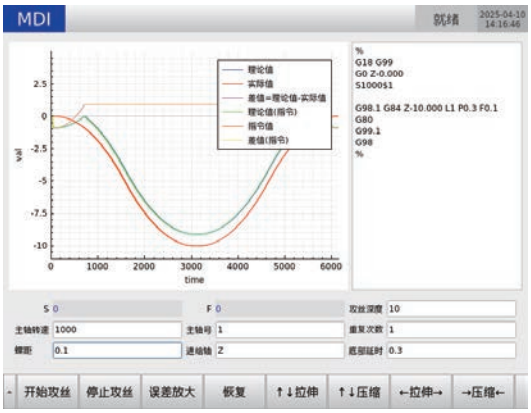
When processing arcs, using the arc speed limiting function can effectively prevent overcutting caused by excessive centripetal force, ensuring the machining effect of arcs.



High speed rigid tapping and rigid tapping rollback

The system is equipped with a bus spindle, which can achieve high-speed rigid tapping operation at 4000r/min



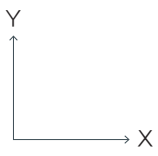


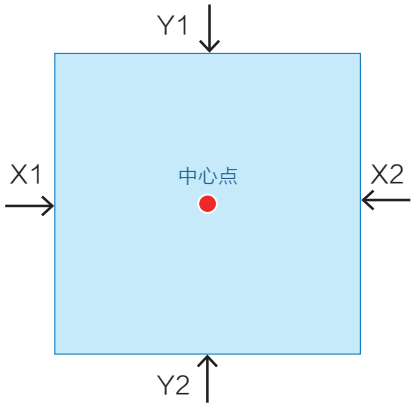
Coordinate division

Moving the feed axis and reading the coordinates of two points on the workpiece contour can quickly achieve two-point centering. Supports dividing the contour coordinates of two conventional workpieces, rectangular and circular.

Step by step (taking X direction as an example):

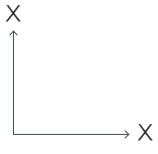
1. Move to X1 and press "Coordinate 1"
2. Move to X2 and press "Coordinate 2"
3. Press "Save"
4. Complete on average

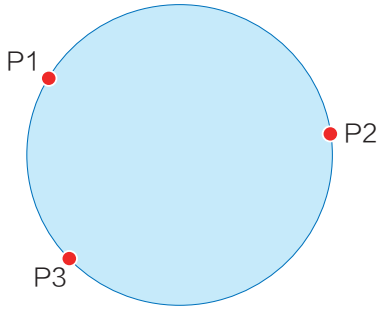




Arc centering steps:

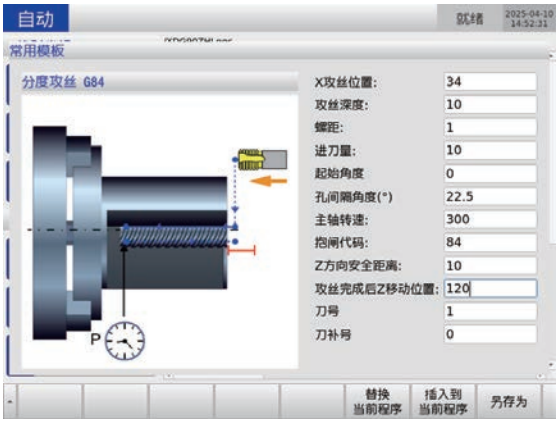
1. Move to P1 and press "Coordinate 1"
2. Move to P2 and press "Coordinate 2"
3. Move to P3 and press "Coordinate 3"
4. Press' Save '
5. Complete on average

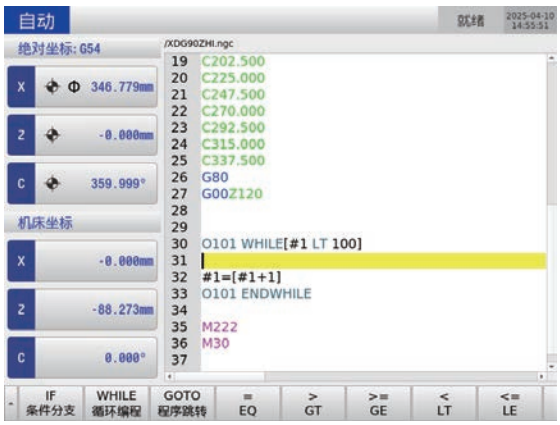


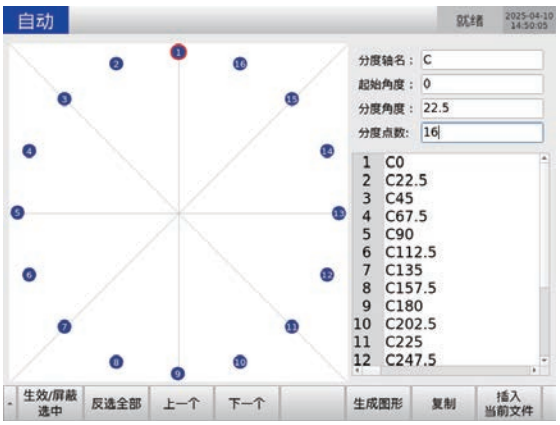


Humanized auxiliary programming function

It can achieve simple and fast programming and solve complex machining tasks.

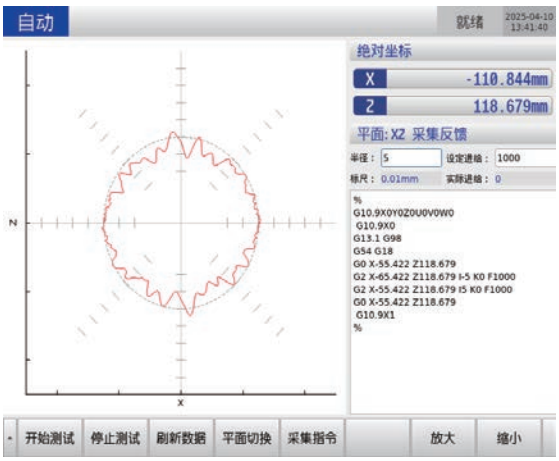


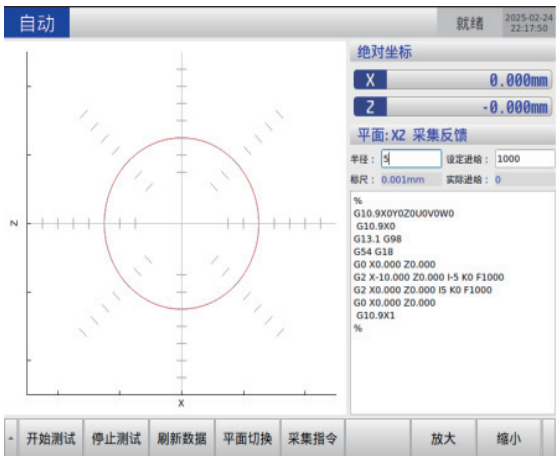




Analysis of roundness error

click collection of actual roundness on site and comparison with preset standard circles for error analysis, achieving data visualization and assisting roundness debugging.

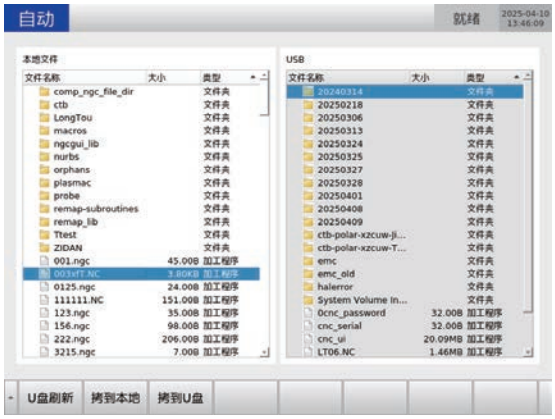




Humanized operating interface

Program management

Capable of uploading and downloading workpiece file programs, as well as local editing, renaming, and deleting functions.



Multi level permission management

Give operators different permissions for confidentiality and prevention of misoperation.

Authorized status

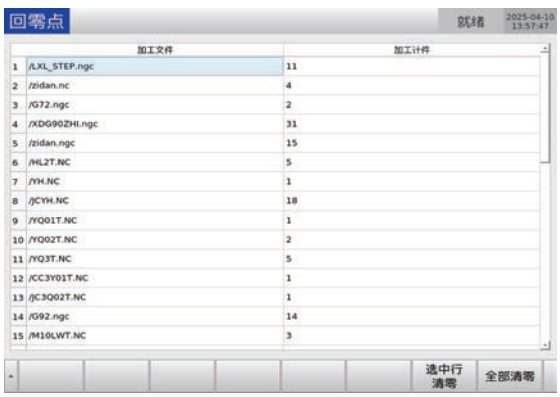
No Authorized status

Tool Management

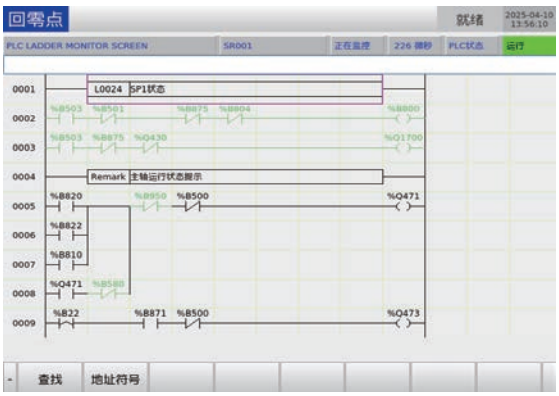
Capable of managing the lifespan and offset of various types of cutting tools.

Diagnostics

System status information diagnosis



Processing information



PLC ladder diagram diagnosis

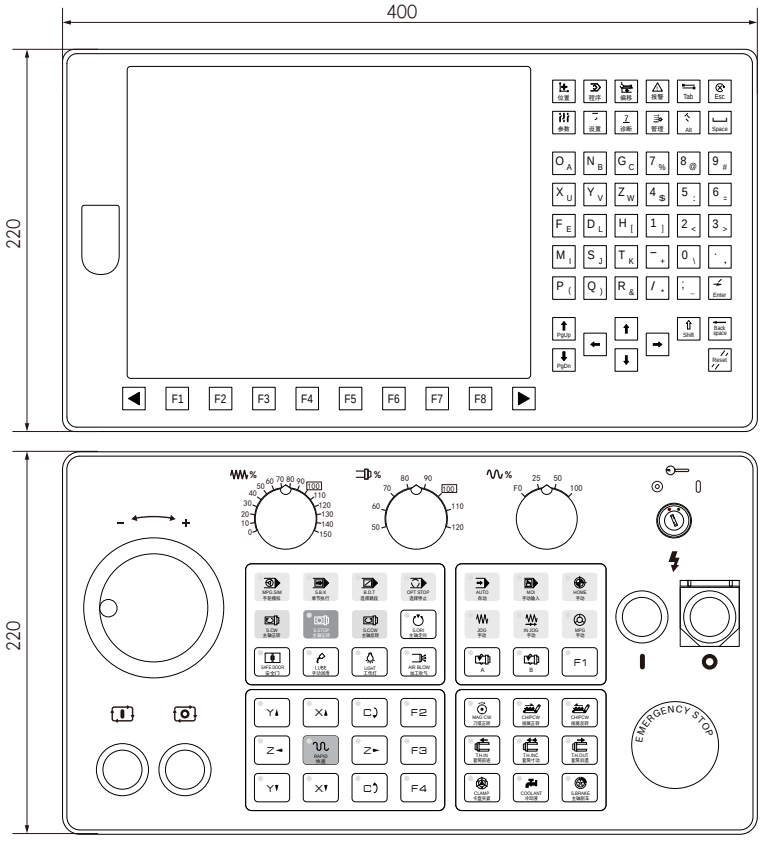
HOST50 CNC System Technical Specifications

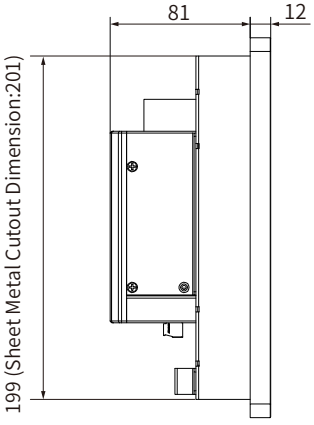
Feature Name	Specification
Axis Control Functions	
Max. Controlled Axes	9 feed axes
PLC Controlled Axes	Factory default: 3 axes (Expandable as required)
Automatic Accel/ Decel	Linear acceleration/deceleration, S-curve acceleration/deceleration, Jerk control
High-Speed & High-Precision Machining	High-speed look-ahead for short segments, trajectory smoothing, Look-ahead and pre-reading up to 2000 blocks
Program Functions	
Program Format	ISO instruction standard
Interpolation Functions	Positioning, Linear interpolation, Circular interpolation, Helical interpolation, Cylindrical interpolation, Polar coordinates, Spline interpolation
Work Coordinate Systems (WCS)	Basic WCS (G54-G59), Additional extended WCS G50
Tool Compensation	Cutter compensation (C-type), Tool offset compensation: 299 groups
Programming Functions	Over 100 G codes, including 10 common fixed cycles, 15 special/complex fixed cycles, Face milling, Coordinate system rotation, Scaling, Mirroring, Automatic tool length measurement, Tool center point control (TCPC), Tilted plane machining commands. Subroutine nesting: 4 levels, User macros.
Program Storage	Program storage capacity: >50GB
Reference Point Functions	G28 Return to reference point; G29 Return from reference point; G30 Return to 2nd, 3rd, 4th reference points
Skip Function	G31 Skip function (for tool/workpiece measurement)
Programmable Control Functions	Programmable stroke limit (G22, G23), Programmable data input (G10)
Operation & Display Functions	
Operation Mode Selection	Auto, MDI, Handwheel, Continuous jog, Incremental jog, Reference point return
Switch Operations	Single block, Block skip, Machine lock, Auxiliary function lock, Optional stop, Dry run, Restart, Emergency stop, Cycle start, Feed hold, Manual continuous feed, Single-step feed, Rapid feed, Handwheel trial cut, Handwheel, Spindle override, Feedrate override, Rapid traverse override
Setting Operations	Tool length compensation measurement input, Work offset measurement input, Parameter setting help, Servo parameter setting
Program Operations	New, Edit, Delete, Rename, Search, Copy, Duplicate, Paste, Read-in, Output, Background editing, Dynamic graphic simulation

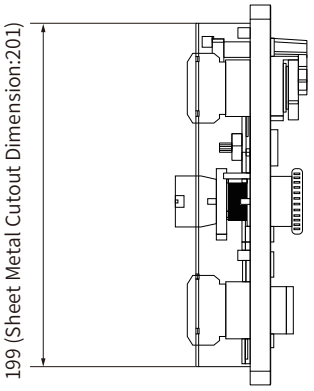
Feature Name	Specification
Display	10.4-inch display, Chinese/English display, Status display, Dynamic graphics, Clock, Machining time, Running time, Part count, Modal information, Actual speed, Software/hardware version, Ladder diagram display, Alarm information, Diagnostic information, Alarm history display
Auxiliary Functions	
M Functions	3-digit M codes, Multiple M code commands, M code macro calls, Subprograms
T Functions	T3-digit (Milling), T4-digit (Turning), Tool life management
S Functions	Bus spindle, 5-digit S code spindle speed designation, Multi-spindle control, Spindle orientation, M-type/T-type gear shifting, Rigid tapping, Spindle override, Spindle speed fluctuation detection
Accuracy Compensation Functions	
Backlash Compensation	Simultaneous compensation for rapid traverse and cutting feed
Pitch Error Compensation	Bidirectional interpolation-type pitch error compensation
Communication & I/O Interface Functions	
Data Interface Function	Rear Ethernet port, Front USB port. Supports data transfer, DNC, and network functions via interfaces.
Data Input/Output	Programs, NC parameters, Compensation values, Offset values, Macro variable values, PLC programs, PLC parameters can be input/output via data interfaces (Ethernet, USB).
I/O Interfaces	Locally configurable: Up to 4 flexible I/O interfaces. Supports bus-based remote I/O modules. Theoretically unlimited I/O interfaces based on remote modules.
PLC Functions	
PLC Specifications	Built-in PLC ladder programming. Features fast/slow logic levels with scan cycles: Fast logic cycle 1ms, Slow logic cycle depends on ladder steps. Factory default supports up to 25,000 steps (expandable). Basic instruction execution time ⩽ 0.1μs. Supports ladder editing, download, upload, and online monitoring.
Safety & Maintenance Functions	
Safety Functions	Emergency stop, Hard limits, Soft limits, Multi-level permission data protection, Spindle safe speed, Feed safe speed, NC alarms, PLC alarms, Servo alarms, Following error monitoring
Maintenance Functions	Alarm history, Machining history, CNC status diagnostics, PLC interface diagnostics, CNC/PLC data backup & restore, Network diagnostics & maintenance, Servo setup & servo load/status monitoring, Diagnostic info

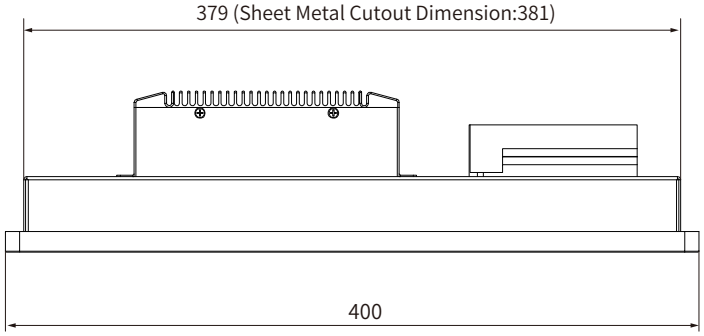
Installation Dimensions

Turning-Milling System Installation Dimensions

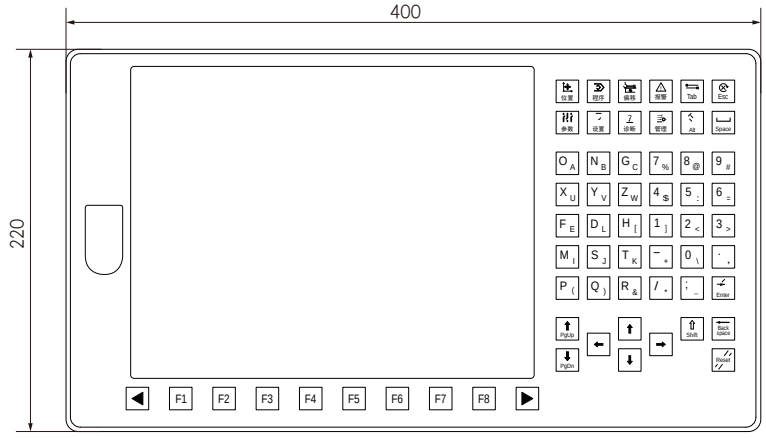


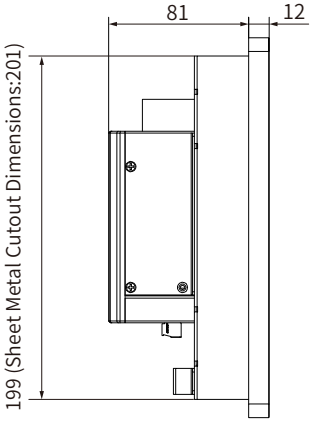


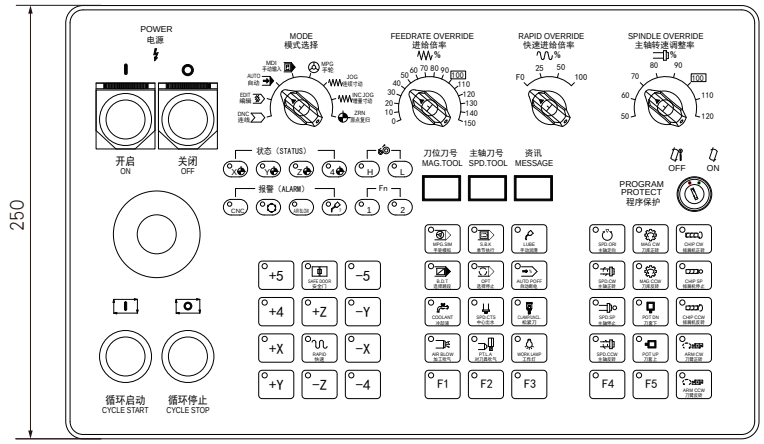


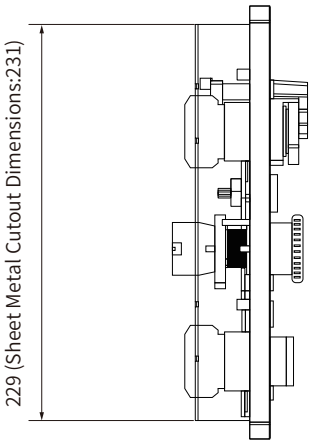


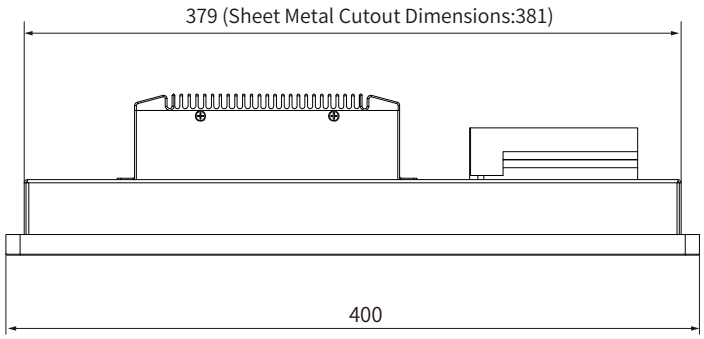
Milling Machine System Installation Dimensions











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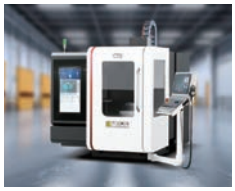


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