



PC-Based CNC Controller

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SYNTEC

Company

Innovative R&D, Caring Service

SYNTEC has made efforts in achieving high-performance, high-efficiency PC-Based CNC controller. Based on the rapid development of PC technology, we have invested in the research and development of hardware and software technology. With the industrial design and the fabrication of high-reliability, we can provide the best electric control program of the machine tool industry.

On the performance, SYNTEC provides outstanding high-speed,high-precision functions to satisfy needs of areas such as molds and high-speed milling. Multi-axis control and multi-program applications make the lathe, milling and multi-axis interpolation control easier. With the abundant and complete GM code and the easy-to-learn interface, first-time users can get started quickly. Thanks to the high degree of horizontal integration capabilities and scalability of the operating interface,machine tool factories can provide a variety of products to meet customers' demands.

It's important to choose our products for fast and attentive services and the whole sales and service team around the world. You do not have to worry about the inadequate services,and there are no technical support limitations. SYNTEC will always be your best partner in technology and services.



High-speed and high-precision Syntec controller

High Efficiency

- High speed and high precision look-ahead function, with a maximum of 2000 single blocks
- High speed drilling and tapping,high speed threading.
- Support up to four path control to meet demands of multi-path machining.
- Axial-coupling, axial-exchange, and virtual axis function to increase the flexibility of the machine.
- Support functions of five-axis machining and feature coordinate-function.

Simplicity And Convenience

- Machining preparation, dry run function, clear and easy-to-use machining monitor.
- Complete operating support, and customize helping screen
- With graphic input interface, users can also edit programs easily even when they are not familiar with G code.
- Provide network and USB disk interface, the most complete PC interface for input and output.

Features

- Provide eHMI function for users to customize software interface conveniently.
- Customized G/M code, dedicated machine can be used easily.
- Provide dipole architecture, users can integrate the customized software on PC.
- Provide optional visual function or pick and place equipments for highly automated integration solutions.

Purpose

- Standard Machine: Lathe, milling machining center, engraving machine, turning-milling center.
- Dedicated machine: Tapping center, glass cutting machine,cutter grinding machine,PCB molding machine,spring machine,laser processing machine, flame cutting machine, stone processing machine...etc.

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SYNTEC

All Series Of SYNTEC Contorller

SYNTEC's controllers combine the system and screen into one integrated controller which is significantly reduce wiring costs and space requirements, thereby enhancing the performance -to-cost ratio.

EZ Series Controller

8-inch LCD screen, universal operator panel, combining with servo axis, spindle, MPG axis, built-in PLC and USB interface, CF CARD reading device. In addition, other advantages are low price, high performance, simple structure, easy to use, and high reliability.



EZ2S Controller



EZ3 / EZ4 Milling Controller



EZ3 / EZ4 T2-Lathe Controller



EZ3 / EZ4 T3-Lathe Controller

10 Series Controller

10.4-inch LCD screen, combining with servo axis, spindle, and MPG axis, built-in PLC and USB interface, CF CARD reading device. In addition, other advantages are easy use, and high reliability. And the internal wires are most simplified, controller reliability is significantly improved.



Split Controller



Panel Type Controller



Standard Type 900 Controller



Standard Type 940 Controller

High-speed and high-precision SYNTEC controller

3 Series Controller

The system includes an 8-inch display and uses the latest embedded architectures and technologies. It uses the 32-bit WinCE operating system which increases computation speed and provides high-precision control as well as stable performance.



Split Controller



Milling controller



M2-Milling Controller



T2-Lathe Controller



T3-Lathe Controller

20 Series Controller

Adopts YASKAWA Mechatrolink-II , Delta DMC NET and EtherCAT serial communication controller that improves wiring and scalability of traditional pulse universal controller and makes the system simpler, more expandable and more easily to assemble. SYNTEC 20 series controller can control the up-to-16-axis synchronous servo motors. I/O contacts not only provide 32 direct input and output but also are able to use RIO serial interface to connect to external I/O module. Based on needs of IO to equip RIO module, selection is more flexible.



10.4-inch Split Controller



8-inch Controller

For more information regarding Syntec's products, including product dimension diagrams and metal hole position diagrams, please visit [SYNTEC-Products].
<http://www.syntecclub.com.tw/2010/HTML/Product.aspx>

Control Panel

Control panels of different styles and sizes are available for use with different controller types, machine functionalities, and machine dimensions.

Lathe Operation Panel

We provide various different combinations of functionality and configuration with our control panels to meet the diverse needs and requirements of lathe operation.



Lathe Operation Panel-400*250 Lathe Operation Panel-440*250



SK4 Membrane Panel SK5 Membrane Panel SK6 Lathe Panel



4012-T2 Operation Panel 4018-T3 Operation Panel

Simple Type Operation Panel

Syntec's simple control panel is suitable for machines with simple functionalities.



Simple Type Operation Panel-1023



Simple Type Operation Panel-1030-M1



Simple Type Operation Panel-440*100(No MPG)



Simple Type Operation Panel-440*120(With MPG)

High-speed and high-precision Syntec controller

Milling Operation Panel

We provide various different combinations of functionality and configuration with our control panels to meet the diverse needs and requirements of milling machine operation.



Milling Operation Panel



SK4 Membrane Panel SK5 Membrane Panel SK6 Milling Panel



4012-M Operation Panel



4018-M2 Operation Panel

Dedicated Operation Panel

The control panel designed for the dedicated machine includes high-quality acrylic buttons and switches that are waterproof as well as oil-proof in order to keep out oil and grease from the processing environment. The replaceable acrylic button design makes it easy to use and maintain the keys on the operation and control panel. Syntec provides users with a clear and simple control interfaced based on common usage models and processing habits, thereby providing an easier operation interface with enhanced convenience.



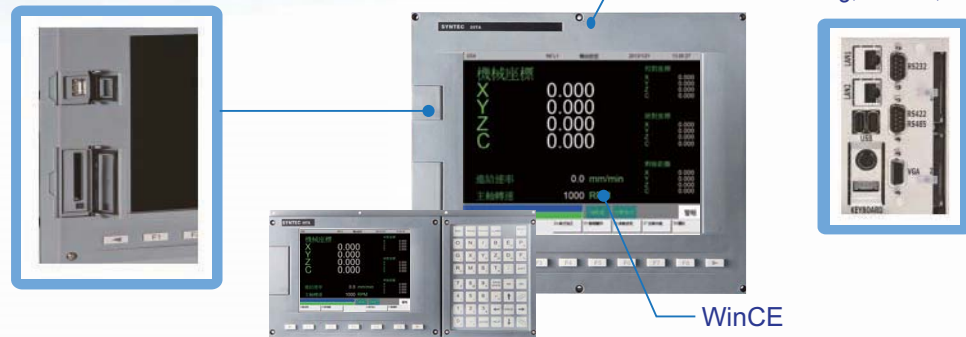
Drilling Machine-SKM1 TAPPING-3030M1 TAPPING-3030M3

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<http://www.syntecclub.com.tw/2010/HTML/Product.aspx>

Syntec 20 Series Turning Controller

USB 、CF Card

Networking, RS232, etc.



High-Speed, High-Precision Serial Motion Control.

20 series controller uses the SYNTEC self-developed multi-axial motion control card, digital communication, replaces the pulse control interface. The control resolution increases to 1.28 million (* 1), so machine tools can implement the complicated machining process. By using digital communication to control motion, interpolation time is shortened and motion is significantly smoother.

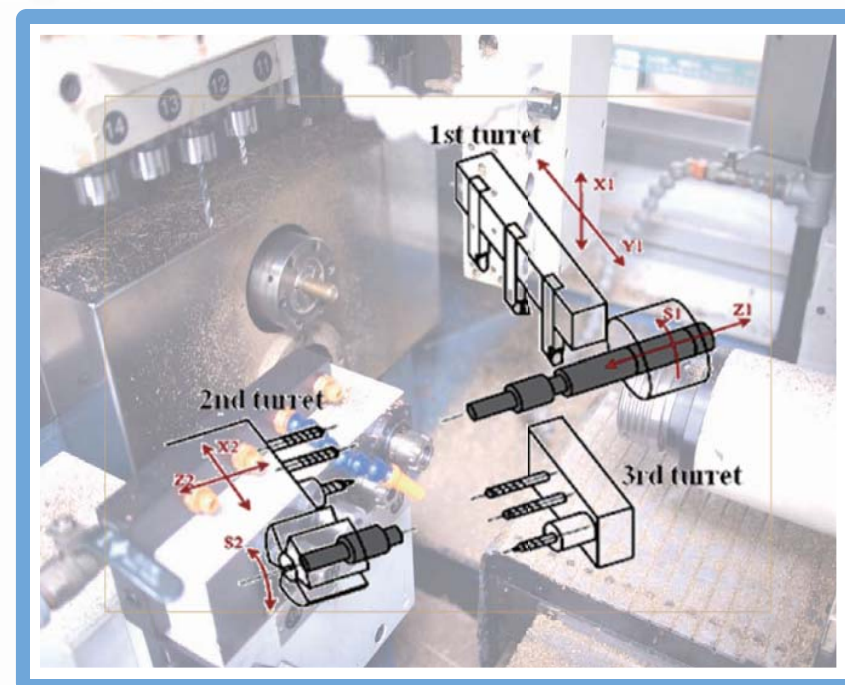
*Adopts Delta serial 1280000
YASKAWA serial 262144

Flexible, And More Flexible

SYNTEC 20 series controller uses WinCE6.0 OS, strengthening the network, USB applications, displaying up to 256 colors, and taking the expertise advantage of PC-based controller. The WinCE interface is the simplest and intuitive man-machine customization developed by SYNTEC e-HMI software. Therefore, even beginners can make the unique HMI. With MACRO and PLC, users can easily implement different operation, so your machine is different from other machines.

High-speed and high-precision Syntec controller

Multi-Tasking Turn-Mill Machine - 10.116



- Up to 4 systems can be controlled; therefore, the maximum number of axis can be up to 16.
- Simple interface.
- The multi-systems is used for multi-tasking turn-mill machine.

SYNTEC

Lathe Function

High-Speed Spindle Synchronization Function

Function of synchronizing the rotation speed and angle of two spindles

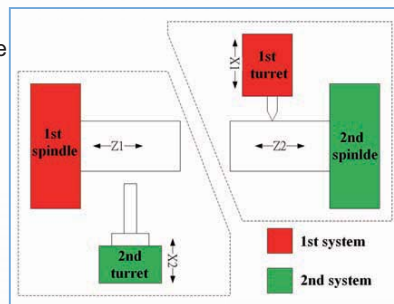
Main Spindle



Subsidiary Spindle

Axis Exchange Control

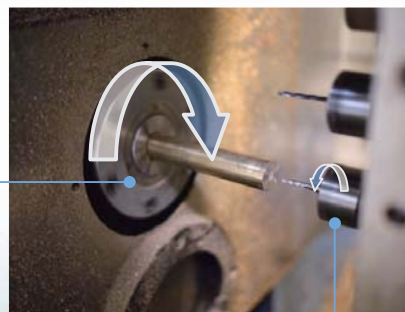
The turret of the first axis groups can be synchronously machined with the second spindle; and at the same time the first spindle occupies the second turret to machine. Reduce the number of machine tools, machine more flexibly, and improve machine efficiency.



Twin Spindles Tapping

Spindle does not need to decelerate speed to zero, or even maintains the original speed, so spindle and tool holder can execute tapping at different speed, which significantly reduces required time for tapping.

Spindle



Driven Tool

High-speed and high-precision Syntec controller

Extreme Speed Threading Mode

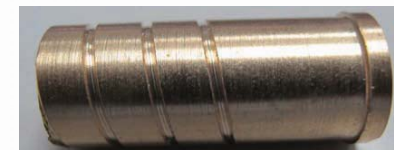
Improving tool retraction movement in threading cycle creates the beautiful thread; the high speed thread cutting mode can enhance threading efficiency.

| 1000 Time Threading | General Threading | Extreme Speed Threading Mode | Time Saring |
|---------------------|-------------------|------------------------------|-------------|
| G21Threading | 36789(Sec) | 29303(Sec) | About 20.3% |
| G78Threading | 24685(Sec) | 18803(Sec) | About 23.8% |



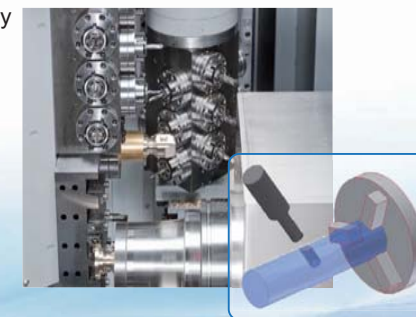
Thread Repairing Function

Processed thread can be jigged and fixed again on the turning spindle to repair.



Tilting Plane Machine

Function of rotating coordinates helps users simply write machining program on the inclined surface. Milling, drilling, and tapping on the inclined plane are simply implemented by NC program, without complex CAD / CAM processing.



Mill Function

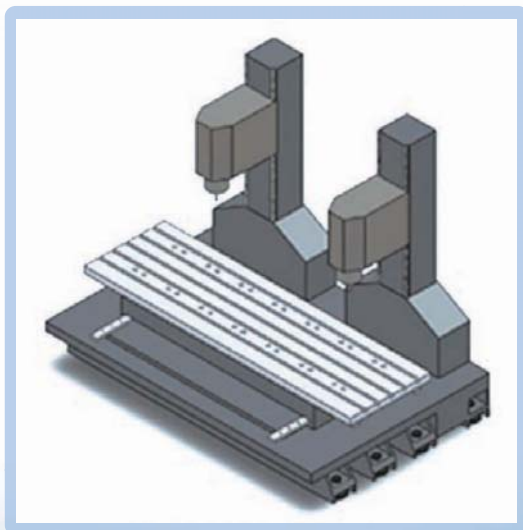
Fast Tool Retraction In Tapping Process

- Use parameter to set tool retraction speed, maximum to 300%.
- Support the bell-shaped curve of acceleration and deceleration with the advantage of high speed and stability.

| The Percentage Of Retraction | 100% | 150% | 200% | 300% |
|------------------------------|------|--------|--------|--------|
| Tapping Time (100 Holes) | 310 | 273 | 255 | 240 |
| Save percentage | - | 11.94% | 17.74% | 22.58% |

Multi-Spindles Tapping

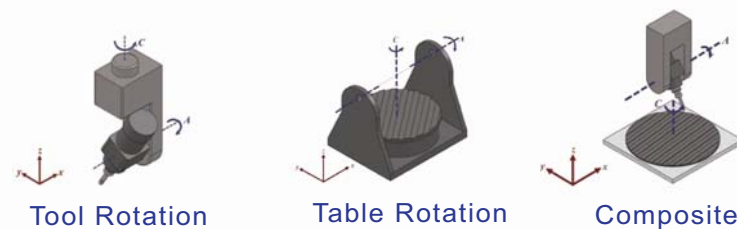
- Provide multi-spindles machine to enhance the productivity corresponding to the same program.
- Support multi-spindles tapping, improve the productivity.
- Flexibly select the machining spindle according to different machine conditions
- Support up to 6 spindles



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Five-Axis Control Function

Support Various Types of Five-Axis Compensation



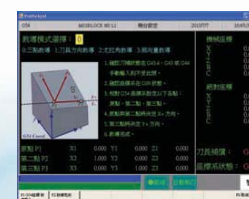
Support Various Types Of Five-Axis Compensation

Provide 5 axis tool compensation so that users can write tool center machining path and the controller compensate the tool length and kinematic length.



Tilt Working Plane Machining

For oblique cutting tool or rotating worktable, provides correction function to define the tilt machining plane conveniently .



SYNTEC

High Efficiency Machining

High-Speed, High-Precision Machining (HSHP)

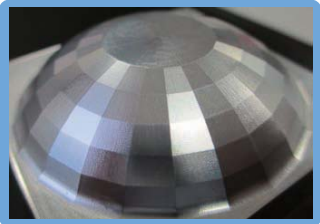
The HSHP function can process 1500 blocks per second in WINCE. There are 2000 blocks in look-ahead mode. These enable smooth motion and enhance surface quality. In order to advance the precision, HSHP function also controls the corner and arc feed rate efficiently.



Smooth Precision Advanced (SPA)

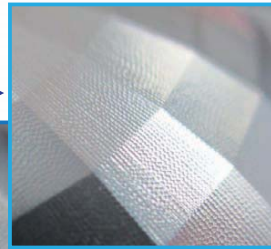
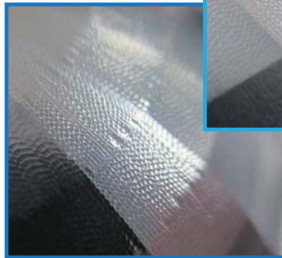
SPA can eliminate the machining problems because of the servo lag in digital servo control and improve the precision and quality of the surface.

High-Speed Machining



SPA ON

SPA OFF



Path Smoothing

By trimming the rough program path generated by CAD/CAM software with a tolerance, the desired smooth and fine path is estimated by Path Smoothing function. This improves the surface finish, machining efficiency and stability of machine tool.



Eliminate cutting flaws caused by program path

Enhance the brightness of the surface and reflect obviously

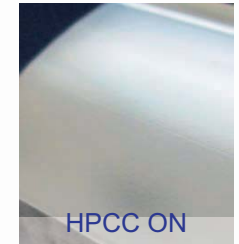
High-speed and high-precision Syntec controller

High Precision Contour Control (HPCC)

The tool path generated by CAD/CAM software is generally discontinuous, and it causes negative effects on machining operations. The problems will be more serious because of larger CAD/CAM tolerance. HPCC function fits the discontinuous blocks into a smooth-curve path, and this will enhance the machining precision and reduce the mechanical shock.



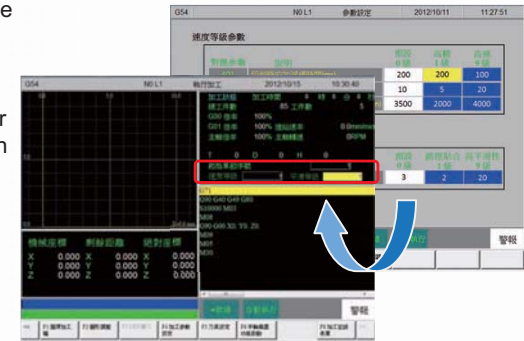
HPCC OFF



HPCC ON

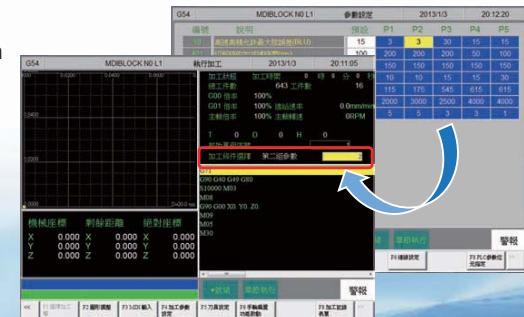
Quick Parameter Setting

The function provides a simple and intuitive interface to control velocity and smooth characteristic for machining. The velocity and smooth level are ranged from level1 to level9 respectively, and user can select the suitable conditions for rough or finish machining easily.



Precision Parameter Setting

To retain the excellent surface quality and save the machining time in various machining conditions, SYNTEC provides five sets of motion parameters for users. Users can even adjust all the parameters freely for high speed, high precision, rough machining or finish machining by the simple interface.



Friendly Operating Interface

Users can get started easily and immediately operate it right for the first time.

Graphic Conversational Input

Provide the whole of conversational programming edit menu; therefore, users can edit customized cycles directly on the screen.



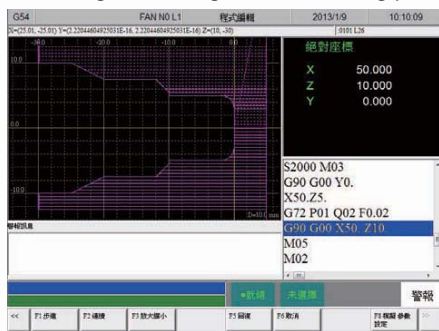
Lathe



Mill

Graphic Simulation Function

Convenient simulation function, provide look-ahead simulation, path checking and observing for moving status in cutting process.



Lathe

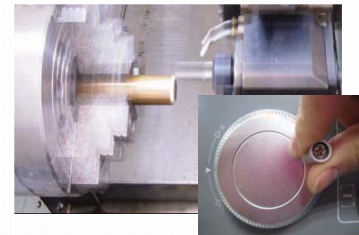


Mill

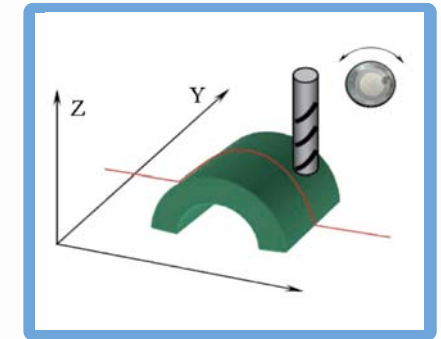
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MPG Simulation

In the dry run process, users can decide the cutting speed and direction with moving MPG forward or backward.



Lathe



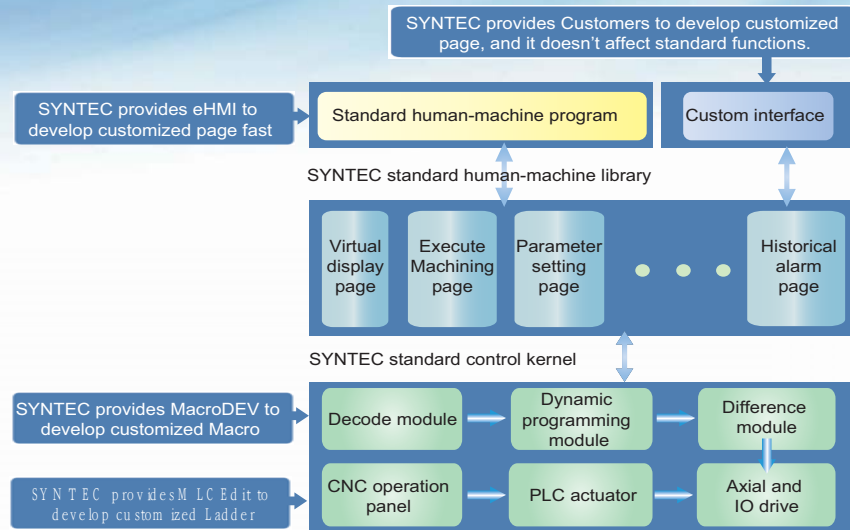
Mill

Work Record

Provide Work Record to record processing details and then users can verify cutting time and machine utilization rate easily.



Open Architecture

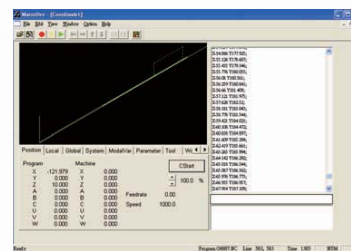


Complete Development Tools

SYNTEC' Macro Editor Program Software-MacroDEV

Macro Support

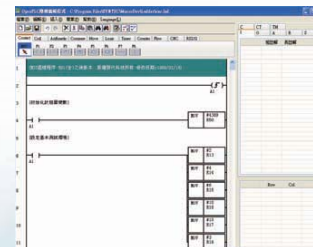
Windows based development environment which is compatible with CNC and has following characters:
Open file, save file, single simulation,
3-perspective view simulation and checking for system variables.



SYNTEC' Ladder Editor Program Software-MLC Edit

Ladder Support

Windows based Ladder programming software
Online ladder display, convenient for debugging
Ladder supports open file, input short and long comment,
save file, cut, paste, copy, redo, and syntax check



High-speed and high-precision Syntec controller

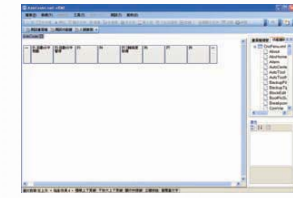
Open Human-Machine Interface Editing Software - eHMI

Introduction - Open Platform, Easy To Learn And Easy To Use Environment

eHMI can help developer to edit HMI intuitively without complicated programming process.
Because it provides a more efficient, easier and more user-friendly operation interface to
reduce development process for any NC equipment.



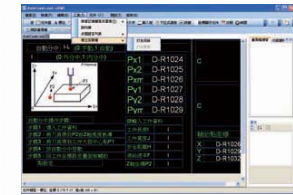
Man-machine browser editing



Man-machine Fenubar editing



Integrated test results with the same display on the controller



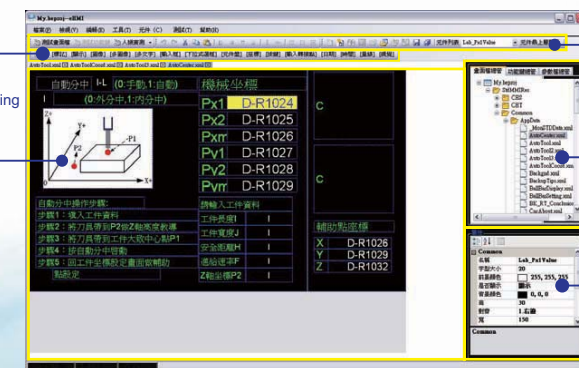
Package the project and then install directly on the controller

Convenient And User-Friendly Operation Interface

Drag and drop function

Convenient auxiliary toolbar

Easy to understand browser editing

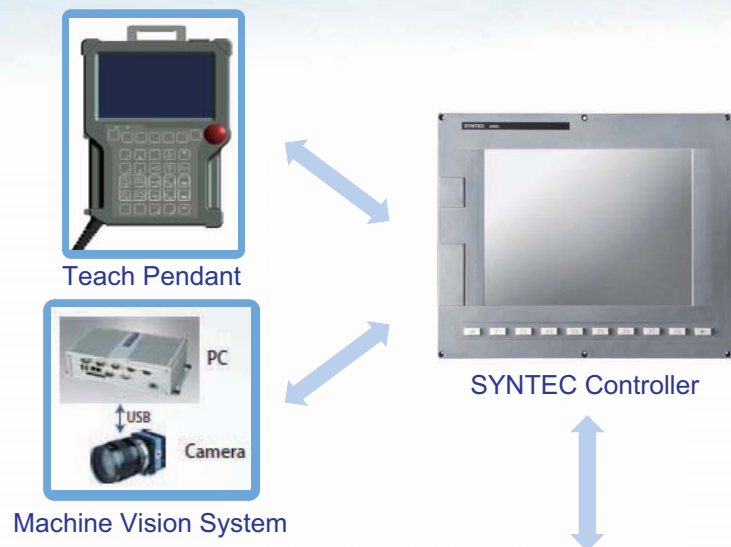


Complete project information

Convenient worksheet properties

SCARA Robot

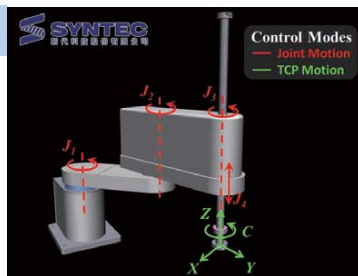
Depends on user's requirement, TCP posture or joint positions can be inputted to generate TCP motion or simultaneous joint motion.



Multiple Command Mode

Robot motion can be programmed using G code. Manipulation tasks can be achieved fast and easily!

SCARA Robot



Teach Mode

Robot motion can be easily generated using teach mode.



High-speed and high-precision Syntec controller

Vision Alignment System

Combined with vision system, the offset and rotation information of work piece can be obtained and compensated into controller. By this way, the machining accuracy can be significantly improved. Our vision system provides simple and intuitive manipulation and teaching interface, supports up to 4 CCDs, and is very convenient for users' setting.

Easy To Manipulate

All operations are reached on the controller only, another monitor or control box is unnecessary.

Easy To Use

Provide standard alignment macro for general application. For different size of work piece, users only need to modify parameters.

Easy To Set Up

Provide waterproof box. All the vision accessories are calibrated and set up inside. Users only need to install the waterproof box.

Easy To Customize

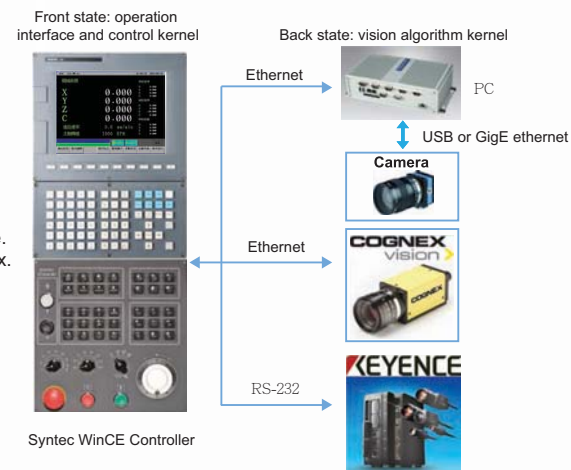
Through eHMI, users can easily modify the browser layout.

High Openness

Modify macro parameter to reach different needs.

High Compatibility

Support Cognex, Keyence, and Omron visual system.



Identify Targets

Cross mark, circular mark, arbitrary pattern, line, L-mark, intersection.



Standard Visual Pages

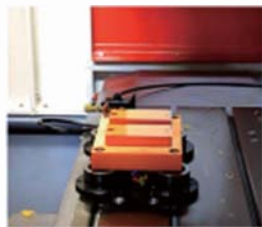
Include parameter setting, image monitoring, and result display.



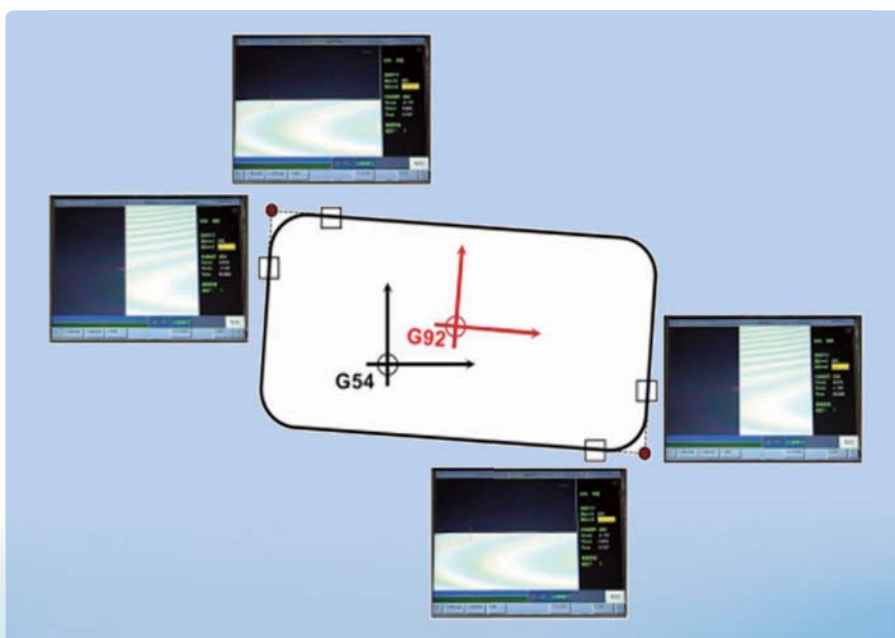
Vision Application: Glass Grinding

Glass panel are mainly processed by grinding, with high demands on precision and gloss. Generally, the work pieces are picked and placed manually and the final position may be different. Using fixture may only slightly reduce the place error.

Syntec Vision system provides total solution for alignment detection and compensation. After work piece is placed, the offset and rotation owing to place error can be obtained by Syntec vision system, and then compensated in controller. By this way, the efficiency can be greatly improved.



- Application: rectangular glass, rounded glass, glass with printing, PCB, welding machine
- Precision: 10~20um (depend on different applications)



High-speed and high-precision Syntec controller

Syntec Vision Package

| Feature | A type Cheap, dedicated | B type All with fixed distance | C type All with different distance |
|-----------------------|---|--|--|
| Appliance | Glass Metal mark | Glass: rarely Other: OK | All |
| Camera | 1.3 megapixel CCD  USB Interface DMK-72AUC02 GigE: DMK-23K445 | | |
| Lens | Telecentric Lens (coaxial)  | Telecentric Lens  | CCTV Lens  |
| Lighting | Spot Light  | Direct Ring Light  | Coaxial Light  |
| Dimmer LED-Power | 1CH Analog Dimmer  | 1CH Analog Dimmer  | 1CH Analog Dimmer  |
| Resolution | =5um/pixel | =5um/pixel | =5-50um/pixel |
| Field of View-FOV | ≈ 4.8mm*6.4mm | ≈ 4.8mm*6.4mm | ≈ 5mm*7mm ~50mm*70mm |
| Working Distance (WD) | 110mm | 110mm | 110mm-500mm |

2D DXF Import And CAD/CAM Solution

CAD/CAM Platform

● Loading AutoCAD DXF File

SYNTEC provides the function of loading DXF files, the complex graphic can also be loaded.

● Editing The Image File Loading From AutoCAD

Providing the editing function after loading DXF files, users can delete or add the line segment in DXF files.

● CAM Path Optimization Function

Providing the capability to optimize the machining path in the DXF file, complex segments of DXF can be automatically determined and arranged to create the smooth machining path.

● Function Of Setting CAM Machining Program

Users can edit their own machining processes; do not need to follow these steps: the tool feeding → the machining path → the tool relieving ... converting to NC files.

● Function Of Setting Relieving Point In CAM

Allowing users to choose feeding points according to users' need.

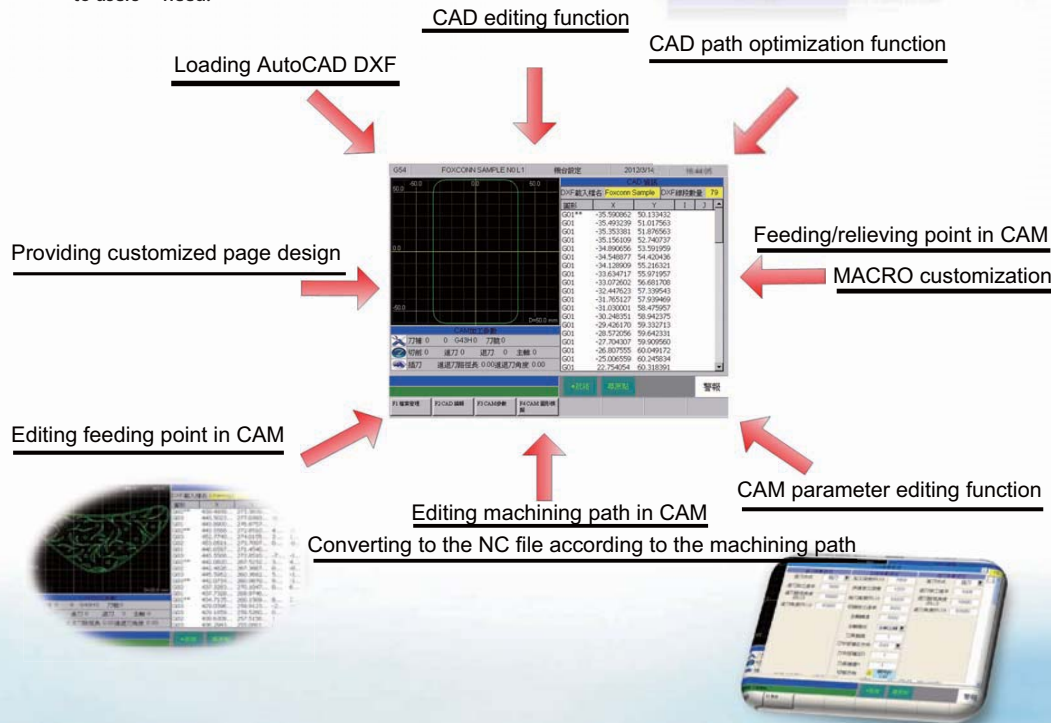
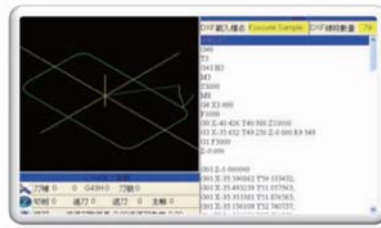
Open Development Platform

● Function Of Editing CAM Parameter

SYNTEC provides customers with CAM parameters page to self-define or self-customize dedicated customized surface.

● MACRO Program To Set Tool Feeding/Relieving In CAM

Providing the MACRO program to design the tool feeding/relieving in CAM, users can design the tool feeding/relieving path according to operation of dedicated machine.



Dipole Solution

Dual System Solution

SYNTEC provides dual-system architecture with expectation that users can benefit from PC-Based CNC. Dual-system architecture provides connection between front-end computer and back-end CNC by cable. Front-end computer can process various applications such as Vision, CAD/CAM and other high level software applications, allowing customers to integrate hardware and software resources.

- SYNTEC provides standard API to facilitate customers to develop front-end application programs.
- Front-end computer can use Win xp or Win7 and other platforms, easy to integrate with other
- Front-end computer develops relatively fast in order to PC, and all human-machine interface is executed in the front-end computer, does not affect the back-end CNC's performance.
- SYNTEC provides standard platform ensuring real-time quality at the back-end.



Customers use dual-system architecture to self-develop 3D simulation control software and operator panel to operate the controller at the front-end computer.

Syntec standard back-end

Remote Monitor--RemoteCNC

One-To-One Diagnostic

● Remote diagnostic

Monitor CNC status through internet, remote machining status and diagnostic function are given to help service engineer trouble shooting easily.

● Remote update and backup

Engineer can update and backup software remotely, keep CNC controller best performance.

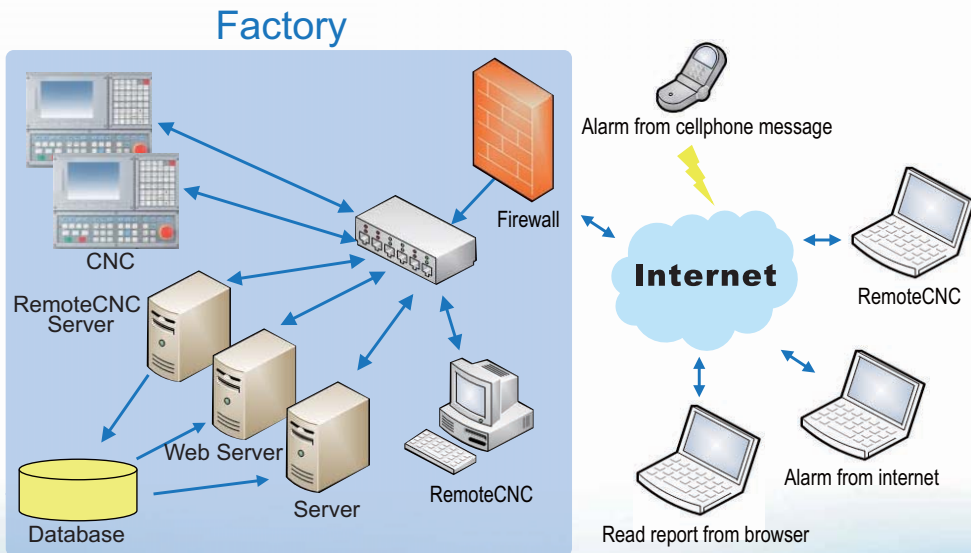
One-To-All Monitoring

● Production Line Management

Supervise all machines through RemoteCNC, reduce labor costs.

● Customized Interface

With eHMI software, Supervisor customized monitoring interface himself are available.



High-speed and high-precision Syntec controller

Common Function Of Lathe And Milling Machine

| | SYNTEC spec. | EZ series | 3 series | 10series | 20series | Additional |
|----------------------|---------------------------------------|-----------|----------|-----------|------------|--------------------------------------|
| Hardware | Operation system | DOS/WinCE | WinCE | DOS/WinCE | WinCE | |
| | Panel size | 8.4" | 8.4" | 10.4" | 8.4"/10.4" | LCD color" |
| | RAM | 128 | 256 | 128/256 | 128/256 | |
| | Serial | — | — | — | — | Yaskawa MII/Delta DMC NET |
| | Machine lock | ○ | ○ | ○ | ○ | |
| Control | Software stroke limit | ○ | ○ | ○ | ○ | |
| | Backlash compensation | ○ | ○ | ○ | ○ | |
| | Pitch error compensation | ○ | ○ | ○ | ○ | |
| | Quad-peak error positive compensation | ○ | ○ | ○ | ○ | |
| | Axis coupling | ○ | ○ | ○ | ○ | |
| | Virtual axis | — | — | ○ | ○ | |
| | Multiple channel | ○ | ○ | ○ | ○ | |
| | Least control unit | 0.0001mm | 0.0001mm | 0.0001mm | 0.0001mm | |
| Operation | MPG simulation | ○ | ○ | ○ | ○ | |
| | MPG simulation return | ○ | ○ | ○ | ○ | |
| | Dry run program | ○ | ○ | ○ | ○ | |
| | Optional stop program | ○ | ○ | ○ | ○ | |
| | Single block | ○ | ○ | ○ | ○ | |
| | Virtual MPG | — | — | ○ | ○ | |
| | Breakpoint start | ○ | ○ | ○ | ○ | |
| | External offset setting | ○ | ○ | ○ | ○ | |
| Program input | Restart | — | ○ | ○ | ○ | |
| | Optional skip | 1 sets | 10 sets | 10 sets | 10 sets | Ignore the single block by using "/" |
| | B stop/program end | ○ | ○ | ○ | ○ | |
| | Absolute coordinate | ○ | ○ | ○ | ○ | G92 |
| | Workpiece coordinate | 6 sets | 32 sets | 100 sets | 100 sets | |
| Customized function | Extension G code | ○ | ○ | ○ | ○ | |
| | eHMI | ○ | ○ | ○ | ○ | Customized graphic screen |
| Auxiliary function | Auxiliary Function(M-PLC) | ○ | ○ | ○ | ○ | |
| | Auxiliary Function(M-Macro) | ○ | ○ | ○ | ○ | |
| Tool manager | Rapid spindle positioning | — | — | ○ | ○ | |
| | Tool life management | ○ | ○ | ○ | ○ | |
| Program edit | Background edit | ○ | ○ | ○ | ○ | |
| | Edit protection | ○ | ○ | ○ | ○ | |
| Remote control | Dipole front & backstage architecture | — | ○ | ○ | ○ | |
| | NETWORK | ○ | ○ | ○ | ○ | |
| Information transfer | FTP | ○ | ○ | ○ | ○ | |
| | RS-232 | — | — | ○ | ○ | |
| | RS-422 | — | — | ○ | ○ | |
| | RS-485 | — | — | ○ | ○ | |
| | CF-Card | ○ | — | ○ | ○ | |
| | USB | — | 2 sets | 3 sets | 3 sets | |
| Information display | Alarm | ○ | ○ | ○ | ○ | |
| | Operating records display | ○ | ○ | ○ | ○ | |
| | Graphic simulation | ○ | ○ | ○ | ○ | |
| | Linear scales self diagno | — | ○ | ○ | ○ | |
| | On-line help | ○ | ○ | ○ | ○ | |

○ Standard function △ Optional function — No such function

Dedicated Lathe Functions

| | SYNTEC spec. | EZ series | 3 series | 10series | 20series | Additional |
|------------------------------|--|-----------|----------|----------|----------|---|
| Control | Control axes | 2/3/4 | 3/4 | 4/8 | 4/5/8/9 | |
| | PLC axis function | ○ | ○ | ○ | ○ | |
| | Spindle number | 2 | 2 | 4 | 2/4 | |
| | Path | 2 | 2 | 4 | 4 | |
| | Main system axis group | 1 | 1 | 2 | 2 | |
| | PLC axis function | ○ | ○ | ○ | ○ | Axis group can be set as PLC axis group |
| | Axis exchange function | — | — | ○ | ○ | |
| High-speed High-precision | Block lookahead | 100 | 100 | 500 | 2000 | |
| | Block processing time | 150 | 150 | 1500 | 2000 | |
| | Constant Jerk control | ○ | ○ | ○ | ○ | |
| | Auto corner deceleration | ○ | ○ | ○ | ○ | |
| Auxiliaryfunction | Arc radius speed limit | ○ | ○ | ○ | ○ | |
| | Extreme speed threading mode | — | — | ○ | ○ | |
| G code function | Cylindrical Interpolation | ○ | ○ | ○ | ○ | G07.1 |
| | Polar coordinate interpolation | ○ | ○ | ○ | ○ | G12.1/G13.1 |
| | Thread cutting | ○ | ○ | ○ | ○ | G33 |
| | Variable lead threading cutting | ○ | ○ | ○ | ○ | G51.2 |
| | Thread Cutting Cycle | ○ | ○ | ○ | ○ | G72 |
| | End Face Turning Cycle | ○ | ○ | ○ | ○ | G73~G74 |
| | Multilateral cutting | ○ | ○ | ○ | ○ | G75 |
| | Finishing Cycle | ○ | ○ | ○ | ○ | G76~G77 |
| | Stock Removal(Turning/Facing) | ○ | ○ | ○ | ○ | G78 |
| | Pattern Repeating Cycle | ○ | ○ | ○ | ○ | G80~G89 |
| | Peck Drilling Cycle (End Face/Diameter) | ○ | ○ | ○ | ○ | G34 |
| | Multiple Thread Cutting Cycle | ○ | ○ | ○ | ○ | G21 |
| | Canned Cycle For Drilling | ○ | ○ | ○ | ○ | G24 |
| | Synchronously pick and place workpiece | ○ | ○ | ○ | ○ | G114.1 |
| | workpiece | — | — | ○ | ○ | G114.3 |

○ Standard function △ Optional function — No such function

High-speed and high-precision Syntec controller

Dedicated Milling Functions

| | SYNTEC spec. | EZ series | 3 series | 10series | 20series | Additional |
|----------------------------|--|-----------|----------|----------|----------|---|
| Control | Control axes | 2/3/4 | 4 | 4/8 | 6/12 | |
| | PLC axis function | ○ | ○ | ○ | ○ | |
| | Spindle number | 1 | 2 | 2 | 2/4 | |
| | Path | 4 | 2 | 4 | 4 | |
| | Main system axis group | 1 | 1 | 2 | 2 | |
| | PLC axis function | ○ | ○ | ○ | ○ | Axis group can be set as PLC axis group |
| | 5-axis function(RTCP) | — | — | △ | △ | |
| Auxiliary function | Vision function | — | △ | △ | △ | |
| | CAD/CAM | — | △ | △ | △ | |
| Operation | MPG interrupt function | ○ | ○ | ○ | ○ | |
| Tool manager | Auto function | ○ | ○ | ○ | ○ | |
| | Auto tool measurement | ○ | ○ | ○ | ○ | |
| Highspeed Highprecision | Tool displacement | — | ○ | ○ | ○ | |
| | Block lookahead | 100 | 100 | 500 | 2000 | |
| | Block processing time | 150 | 150 | 1500 | 2000 | |
| | Constant Jerk control | ○ | ○ | ○ | ○ | |
| | Auto corner deceleration | ○ | ○ | ○ | ○ | |
| | Arc radius speed limit | ○ | ○ | ○ | ○ | |
| | High-speed and high-precision multiple parameter sets | ○ | — | ○ | ○ | |
| | SPA function | — | — | — | ○ | |
| | G5.1 path smoothing function | ○ | ○ | ○ | ○ | |
| | HPCC | — | — | △ | △ | |
| G code function | Cylindrical Interpolation | ○ | ○ | ○ | ○ | G07.1 |
| | Polar coordinate interpolation | ○ | ○ | ○ | ○ | G12.1/G13.1 |
| | Thread cutting | ○ | ○ | ○ | ○ | G33 |
| | High speed drilling cycle | ○ | ○ | ○ | ○ | G73 |
| | Left hand face tapping cycle | ○ | ○ | ○ | ○ | G74 |
| | Fine drill canned cycle | ○ | ○ | ○ | ○ | G76 |
| | Drill canned cycle | ○ | ○ | ○ | ○ | G81 |
| | Pause drilling cycle | ○ | ○ | ○ | ○ | G82 |
| | Drilling cycle | ○ | ○ | ○ | ○ | G83 |
| | Face tapping cycle | ○ | ○ | ○ | ○ | G84 |
| | Drill canned cycle | ○ | ○ | ○ | ○ | G85 |
| | High speed drill canned cycle | ○ | ○ | ○ | ○ | G86 |
| | Side drilling cycle | ○ | ○ | ○ | ○ | G87 |
| | Side tapping cycle | ○ | ○ | ○ | ○ | G88 |
| | Side boring cycle | ○ | ○ | ○ | ○ | G89 |
| | Tilt plane machine | — | — | △ | △ | G68.2 |

○ Standard function △ Optional function — No such function



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