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SYNTEC AUTOMATION CONTROLLER



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SYNTEC TECHNOLOGY

T R U S T E D T E C H N I C A L S E R V I C E

SYNTEC

Automation Controller

eHMC combines HMI module and PLC/Direct IO module, simplify the system structure and the wiring process. With G M codes functions, provide an easy interface for motion planning. Moreover, the modular HMI facilitates the HMI development process.

eHMC

Hardware Specification	Features
<p>The diagram shows the eHMC unit connected to various components: Ethernet (monitor), Data transfer/backup (USB), System setting/development (laptop), Syntec Remote AP (cable), TB terminal block, External PLC IO module, and Serial Bus Communication MECHATROLINK-II (Pulse/Serial bus servo interface).</p>	<ul style="list-style-type: none"> ▪ Touch Screen ▪ Support pulse command/serial bus communication interface ▪ Supports 3 axes (linear and arc interpolation) ▪ Open-architecture HMI structure ▪ Compatible to market vision system ▪ Syntec Remote AP function, remotely monitor the status in real time

eHMC Software Feature

Various applications HMI module	File Management
<p>Provides various applications HMI module, shorten the HMI development time. Easy to modify via Syntec eHMI tool.</p>	<p>• Programming Management</p> <p>eHMC supports G M codes functions, facilitates motion planning development. Modular control different motion in different files, easy to manage and maintain.</p>

Electrical Cam

Features

Mechanical Cam

Maintaining cost

- Physical size
- Difficult to modify

V.S

Electrical Cam

Cam mechanical position relation can be imported to Syntec software directly, simplifying design process.

User Interface

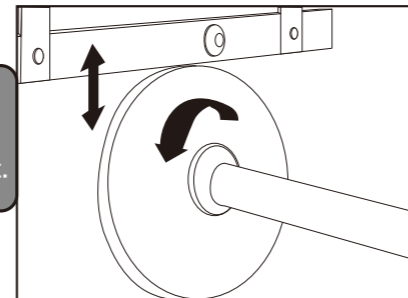
PLC interface (C301~C308)

- Triggered by input signal
- Supports multi independent electrical cam

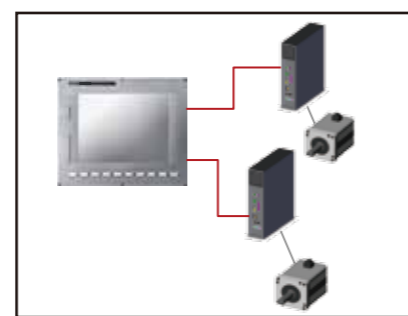
- Provides electrical cam editing tool
- Graphical User Interface
- Supports 8 set, totally 32 functions (position relationship)
- Each function supports 200 points
- Supports .csv file

Application - Grove packing

Special purpose machine (grove packing) designed with mechanical CAM, chain, and driving mechanism, has problems such as huge machine size, and complicated mechanism causing high maintaining cost.



Electrical CAM Solution



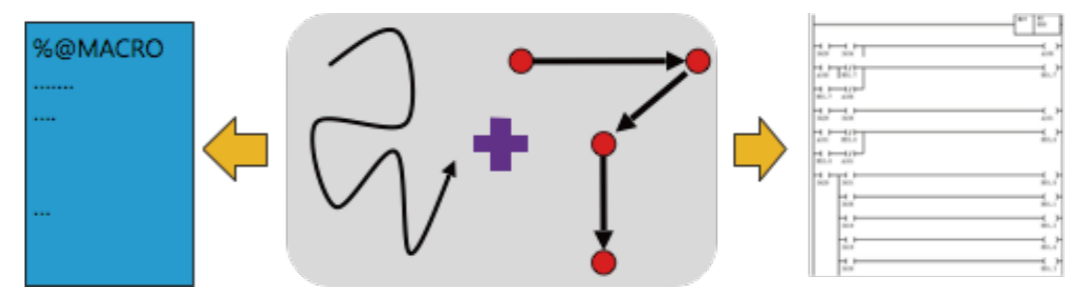
With same productivity, but simplify the mechanism and lower the maintaining cost. Moreover, increase the flexibility to modify the manufacture line

P to P axis

Exclude in system axes number, maximum up to 26 P to P axes (M-II)

Provides standard HMI interface, can also be customized via Syntec eHMI tool

Command via PLC interface



System axes are independent to P to P axes, increase the flexibility

Will not consume CPU resources



Application

Stamping + Part loading/Unloading

The stamping motion requires 3 axes linear interpolation, plus 8 loading/unloading axes, totally 11 axes.

P to P axis solution

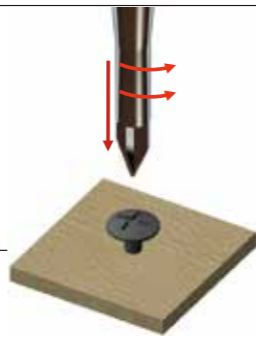
- Integrating both stamping and part loading/unloading in one motion controller - eHMC
- Smooth HMI even various axis number

Torque Control Application

Application
Screw tightening,
bolt pressuring

PLC Interface

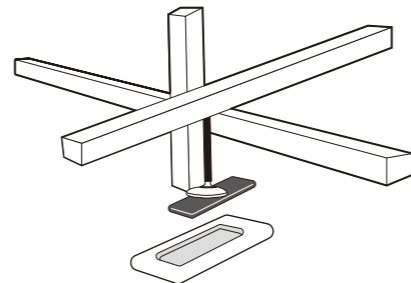
- Torque limit signal
- Modifying torque limit in real time (require Yaskawa M-II servo)



Application - 1

Part Clamping

Clamping the solar power board to the bottom plate require different forces in different parts, with torque control application can assure all parts clamped properly.



Application - 2

Anti-collision function of part loading/unloading system

Setting torque limit in the programmed path of part loading/unloading system, can effectively anti-collision of system.

3D Tube Bending Simulation

Program Checking

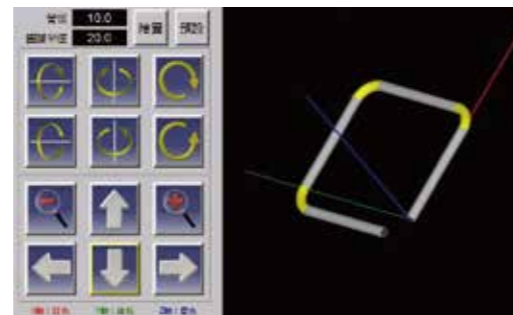
Simulating the program in 3D graphic

Multiple View

Support zoom in/out, and different angle viewing

Highly Flexibility

Flexible to add/develop more function, and provides technical support for more request.



Application



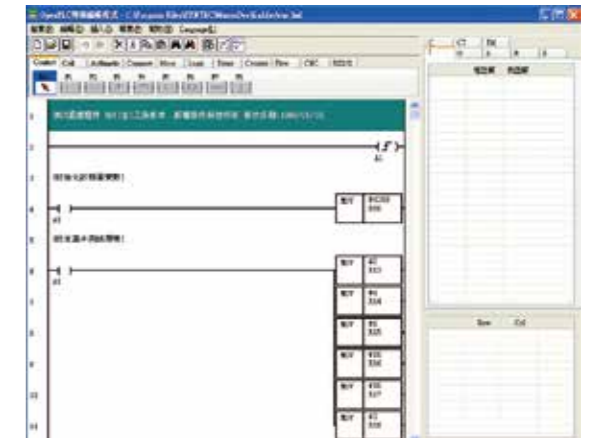
Tube Bending Machine

Showing the XYZ and YBC data into 3D graphic simulation

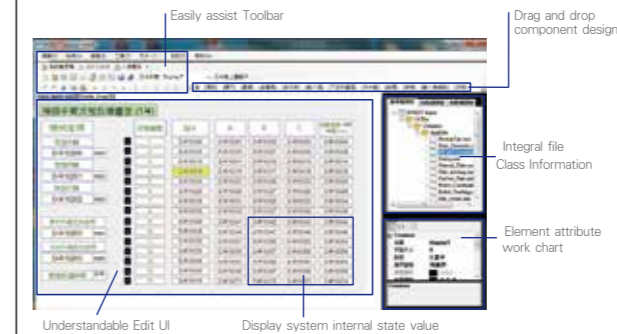
Development tool

Syntec PLC editor - MLCEdit

- Windows base development tool
- Showing ladder diagram online in the controller, facilitates debugging
- Support various user friendly function



Syntec HMI Editor - eHMI



- **Drag and Drop Component Design**
Select the component
Drag and drop to the desire location
Input requested information

- **User Friendly Interface**
Various built-in functions
Easy to learn for first time user

- **Easily connected to PLC**
Call for PLC function in HMI component
- **Packaging function**
Once HMI is developed, support packing function to build an installer package



PC simulator

- Free installation
- Easy to manage
- Real time simulation, including PLC, HMI, and MACRO


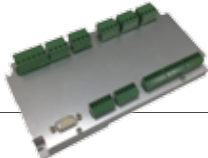




Desktop Robots Controller



- Syntec 5 in 1 stepper drive
- Teaching via Syntec PC tool or handheld teaching box
- Support customized HMI and functions
- Support dxf file
- Option to vision module for positioning
- Applications: dispensing, bolt tightening, welding, printing

Specification

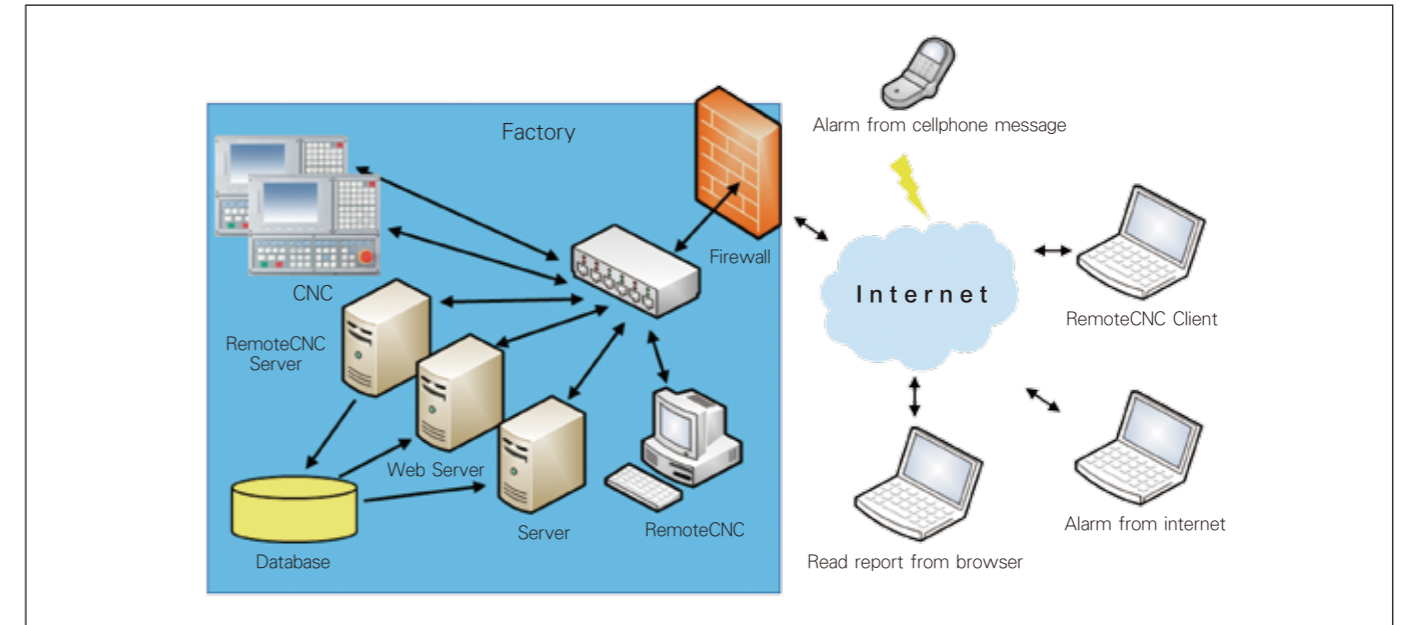
USB PORT	2
Network	10 / 100 Mbps
COM Port	SRI x 1 (RS485 x3)
Axis Number	5 (pulse command)
I/O Number	Build-in 16I/4O (expandable)

SRI	Axis Port	Ethernet	SRI	USB PORT	Ethernet
					
Syntec handheld teaching box	Syntec 5 in 1 stepper drive	Syntec PC tool	FC IO module	Files transfer	Vision module

Remote Monitor

Remote Monitor Structure

With the trend of fast developing intelligent factory, remote monitoring is a crucial function for a control system. Syntec on-board motion controller supports remote monitoring function to aid the intelligent factory for diagnostic, management and statistic purpose.



Application

Maintenance and Diagnostic

Remote monitor for diagnostic

Through Syntec PC tool, engineer/technician can access to all the information of the controller in real-time. Therefore, the problem can be diagnosed without being on the field to save the time for troubleshooting.

Remote monitor system for system update and backup

Through remote monitor system, engineer/technician can update/backup the system without being on the field. With routinely backup system, it can be restored remotely if unexpected event occurs.

Product Line Management


Production management

Uploading all the production status to server and improving the production efficiency

Support customized HMI

HMI can be easily customized according to customer's need


HMI Customization



Custom-make table sheet

Custom-make interface

- **Custom-make table sheet**
Provide standard table sheet, customized easily
- **Machine status**
Machine status can be added/modified according to customer's need
- **Data sheet**
All data sheet can be add/modified according to the production line requirement



Customizable data sheet

Software Interface

Mode Selection Sort Monitoring Mode Group

機台名稱	組別	機型	加工單號	需求加工件數	目前加工件數	累積加工時間	開機時間
10	2	6B-2		0	0	000:00:00:25	000:09:09:35
9	2	6B-2		0	0	000:00:00:25	000:09:05:08
8	2	6B-2		0	0	000:00:00:30	000:09:09:36
2	1	6B-1		20000	1756	000:06:17:15	000:06:18:39
5	1	6B-1		20000	1761	000:06:18:30	000:06:21:11

Individual machine status

Showing the machine status in different color

Statistic software Production management personnel CSV

Software interface
Provide different pattern of viewing, sorting function, and grouping function.

Faults alert system
Faults message can be sent to system manager automatically when fault occurs, via pre-set cell phone number, email, or skype id.

Data sheet exporting
All the information can be exported to csv file.

Machine status monitoring
Each machine can be viewed individually, easy to manage.

Vision Module

Syntec provide one-stop total solution to customer, vision module is an option for system integration.

Features

Support different shape locating, e.g. circle, cross-mark, corner, or marked sample.

Support up to 4 set of 500megapixel camera

- All the configurations are operated through the controller
- Provide standard MACRO for vision module, post-development is not necessary but is customizable if required

System Integration

Kernel: Syntec vision featuring algorithm

Operation: User friendly operation

Easy to learn: Standard vision module function, easy to operate and learn

Installation: Modular component, simple to install

Customizable HMI: With Syntec eHMI, all the HMI are customizable

Customizable function: All standard MACRO are provided, and customized if needed.

High Compatibility: Support major brand such as Cognex, Keyence, Omron, and etc.

Connections: Ethernet, USB or GigE, RS-232

Applications

Glass cutting, edge grinding SPM

- PCB board positioning
- LCD board bonding

Dispensing path generated from dxf file

Package Solution

Provide various solution for different customer's need

Feature	Package A (Economy)	Package B (General)	Package C (General – various distance)
Applicable Industry	Glass, Metal marking	Applicable for various material except glass	Applicable for various material
Camera		1.3-megapixel CCD  USB interface DMK-72AUC02 GigE interface DMK-23K445	
Lens	Telecentric lens(Coaxial) 	Telecentric lens 	CCTV Camera 
Lighting	Coaxial point source 	Ring lighting 	Outer-coaxial 
LED-Power	1CH analog dimmer 	1CH analog dimmer 	1CH analog dimmer 
Resolution	≈ 5um/pixel	≈ 5um/pixel	≈ 5-50um/pixel
FOV	≈ 4.8mm * 6.4mm	≈ 4.8mm * 6.4mm	≈ 5mm * 7mm ~ 50mm * 70mm
WD	110mm	110mm	110mm~500mm

Specification

	Desktop Robots Controller	eHMC			
		HC-8A-K	HC-10A-K	HC-8B-K	HC-10B-K
Monitor	–	8" touch screen	10.4" touch screen	8" touch screen	10.4" touch screen
Fenubar	–	5 keys	8 keys	5 keys	8 keys
USB Port	2	2	2	2	2
	10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps
COM Port	RS485 X 1 SRI X 2	RS485 X 1	RS485 X 1	RS485 X 1	RS485 X 1
	Stepper	Pulse	Pulse	M-II	M-II
Axis Number	5	3	4	4(12)	4(12)
D / A Number	–	2	2	2	2
MPG	–	1	1	1	1
I/O Number	16 I / 4 O	32 I / 32 O	32 I / 32 O	32 I / 32 O (96 I / 96 O)	32 I / 32 O (96 I / 96 O)

■ All specifications are subjected to change without prior notification.