



SYNTEC AUTOMATION CONTROLLER



TRUSTED TECHNICAL SERVICE

SYNTEC AUTOMATION CONTROLLER

SYNTEC

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ABOUT SYNTEC

26 +

Syntec 26-years
Service Experience

1

One-Station
Service

50 +

Worldwide
Service Bases

NO.1

PCbaseNo.1

SYNTEC specializes in PC-based motion control through excellent research and development for 25 years.

Totally integrated automation

Supply automation, IOT, software and hardware solutions.

With 50+ service locations around the world

Made in Taiwan

Consistent production process

**Company vision:**

Trustworthy intelligent manufacturer partner

Company mission:

Comprehensive smart factory solution

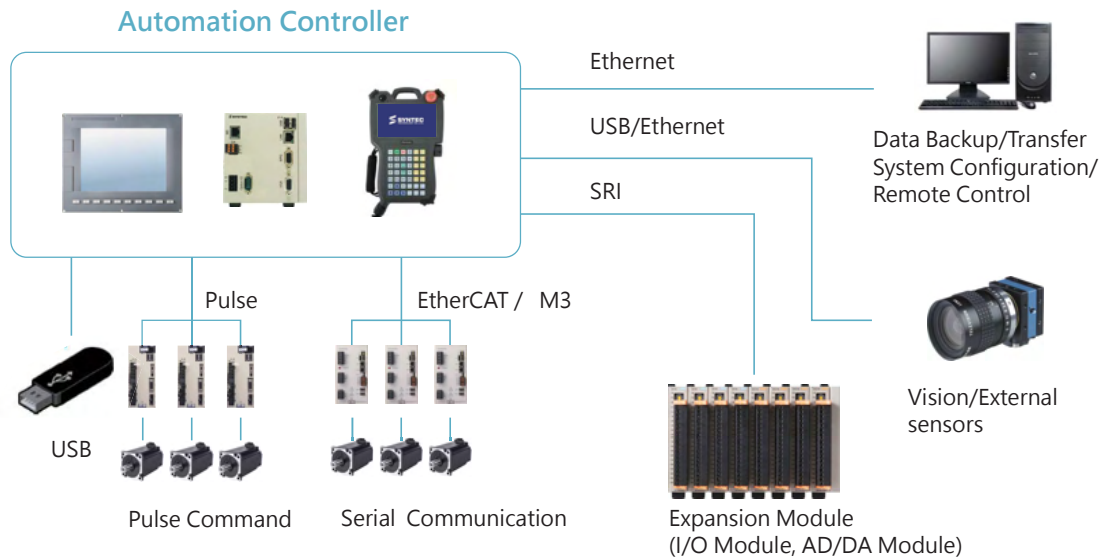
Under the industry 4.0 global trend, the industrial sector no longer relies on traditional production methods. What replaced them are diverse, customization centered, and small quantity productions. LEANTEC is able to respond to global industrial changes in providing comprehensive solutions to clients, thereby realizing our vision of achieving smart manufacturing and creating smart factories.

In moving towards industry 4.0, LEANTEC uses its smart manufacture system integration as its core advantage in accumulating experience through small quantity & diverse productions, cyber physical system integration, on-site services, and complemented by multiple sales channels, in providing one-stop comprehensive solutions.



SYNTEC AUTOMATION CONTROLLER

Hardware Description



Product Highlights

- Support 5-Axes interpolation and three points circular interpolation
- M3 and EtherCAT protocol supported
- Support G code and M code
- Integrated environment for fast customization and easily develop and simulate on PC
- Various communication interface, simply integrates with sensor, such as vision device
- Support Syntec Cloud to realize smart factory monitoring



FC



eHMC

HARDWARE FEATURES

eHMC Controller

- **Integrated with touch-panel**
All-in-one design that integrates with PLC and HMI
- **Multiple screen size selection**
8/10/15 inches touch panel



eHMC

FC Controller

- **High Flexibility**
 - Compatible with commercial touch panel
 - Support VGA port
 - Easy to setup and expansion



Serial Communication



Pulse Command

Teach pendant Controller

- **Flexible working distance**
No distance restriction bwtween controller and machine
- **Mutiple function keys**
 - Button customization
 - Mode switch
 - Emergency stop
 - MPG
- **7-inch touch panel**

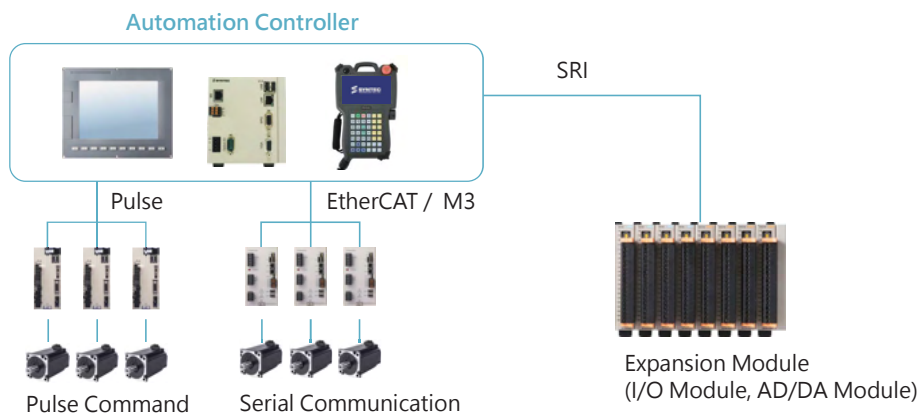


Teach pendant controller

Various Interface

- **Support**

- Pulse, EtherCAT, M3
- SRI: Syntec Remote Interface, high speed serial communication
- Support serial P2P axis



Product Highlights

- **Various Module Integration**

- Expand I/O and AD/DA module
- Monitoring module state on controller



Classification	Model	Specification
Power Supply Module	FC-PWR	24VDC
	FC-PWR-2DA	2 DA outputs (12bit) 1 SRI
I/O Module	FC-DI16	24VDC, 5ma, 16 channel inputs
	FC-DO16	12 to 24VDC, 2A, 16 channel outputs
	FC-DI32	2 IDC-16pin
	FC-DO32	2 IDC-16pin
AD/DA Module	FC-SLSR	1 PWM output 4 DA outputs (12bit) 8 AD inputs (12bits)
	FC-ADDA	4 DA outputs (12bit) 8 AD inputs (12bits)
	FC-LWM	1 PWM output 4 DA outputs (12bit) 8 AD inputs (12bits) 8 DO outputs (500mA) 16 DI inputs
Functional Module	FC-Resolver	ADC (16 bit)
	FC-MPG	1 MPG
	FC-KTY84	4 KTY84 temperature inputs

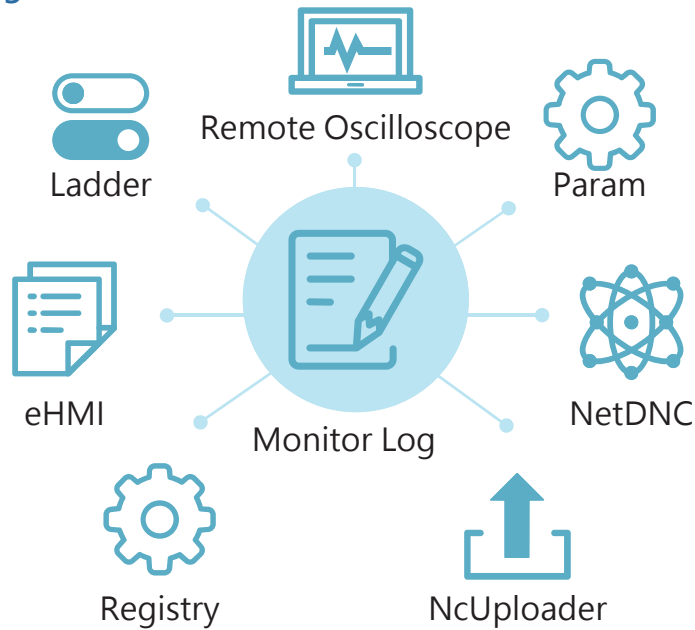
Modular Design



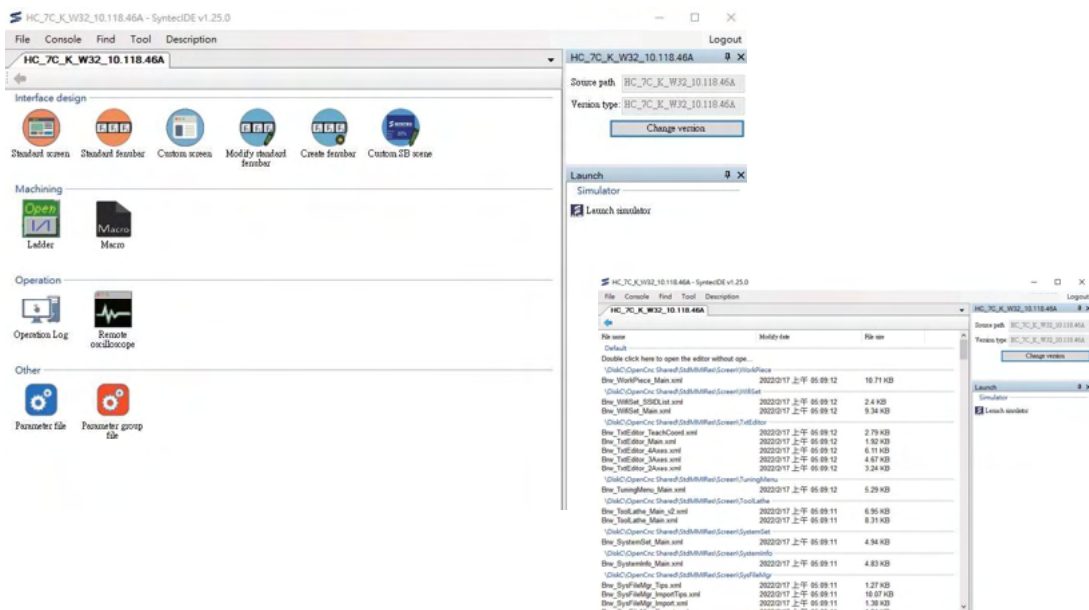
DEVELOP SOFTWARE

Syntec IDE Integration

- APP Management

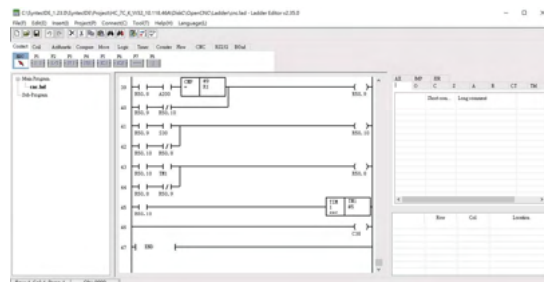


- Reduce development time by Syntec IDE



PLC Editor - MLCedit

- **Friendly Operating Interface**
 - Support register table for checking
 - Support real-time simulation
 - Offer logic and grammar check



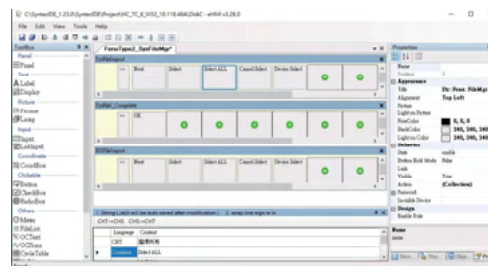
Controller Simulator



- **Easy to Use**
Portable software
- **Friendly file management**
One folder to one project, easy to manage
- **Exactly the same**
Precisely display the operations according to customized HMI, MACRO and PLC

HMI Editor – eHMI

- **Intuitive Operating Interface**
Window base interface
Easily operate by drag and drop
- **Highly integrated with PLC**
Able to set and display on screen
- **Customization files packing**
Provide packing tool, making installation easier

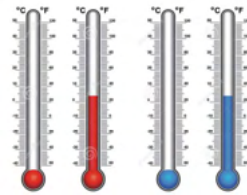


APPLICATION

Communication

Support Protocol

- Modbus - RTU
- Modbus - TCP
- EtherNet/IP



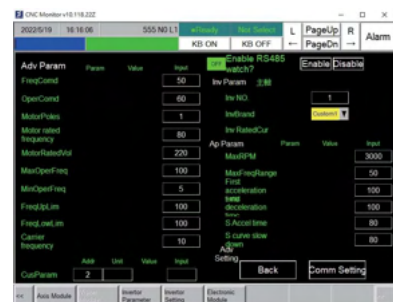
Invertor Module

- Replacing DA invertor port with RS485
Preciser frequency control
- Support standard Inverter Interface
- Support import and export parameter



External Sensor

- High Integration
Sensor data can be seen and used easily on controller



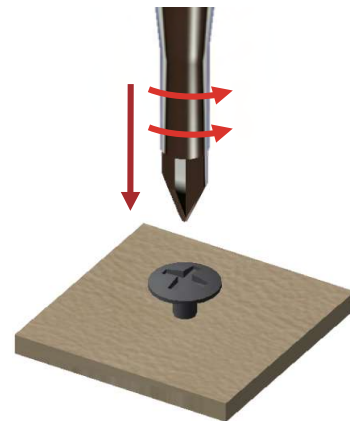
Torque Limiter

- **Torque limit signal checking**
Torque limits can be modified in real-time
- **Application**
Tightening, riveting

Application

Riveting solar panels and its base panels.
There is minor rivet force difference on each different batch

- **Check torque arrival to control rivet force**
 - External sensor to immediately feedback torque value
 - Torque limit parameter can be easily set on customized HMI
- **Check torque arrival to prevent crashes**
 - Define torque limit for gantry path
 - Once crashed, torque arrival signal immediately cut off power for gantry



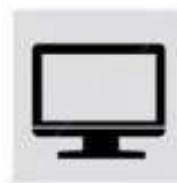
Gantry Pick and Place –
Crash Protection

Various ways of axis control

Support PC software, Teach pendant, Joystick



Joystick



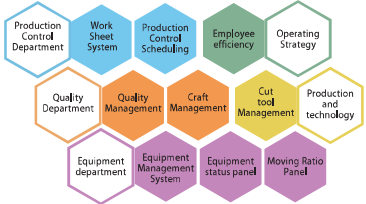
PC



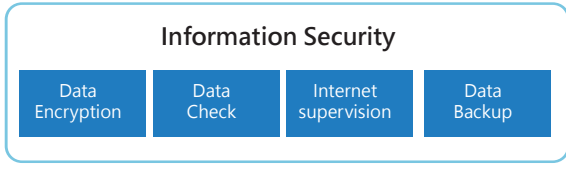
Teach pendant

Factory monitoring and control via Syntec Cloud

Application



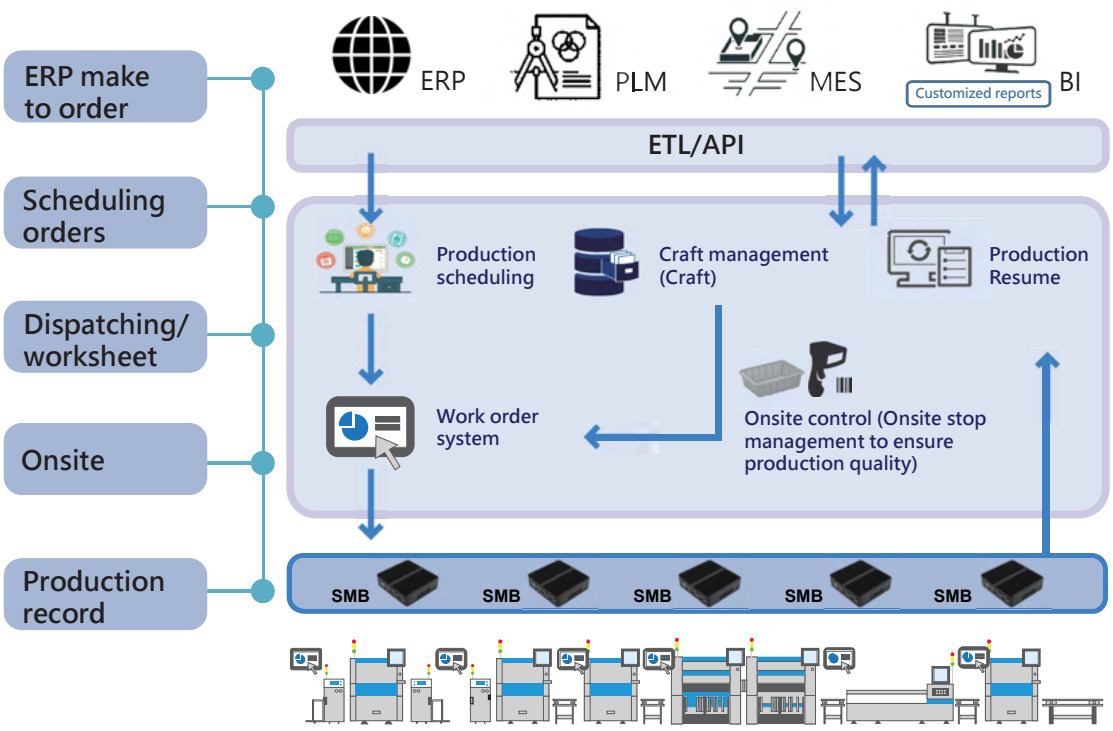
Information equipments



Production Equipments

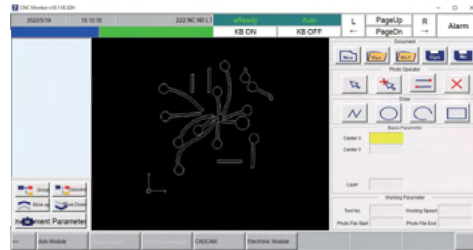


SynFactory Production Smart Cloud



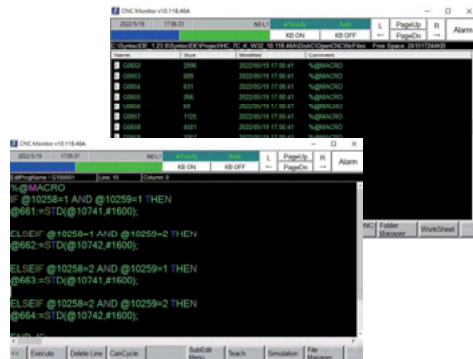
APP functional module

- Concept of APP design**
 Based on the user's need, directly select and apply the corresponding functional module
- Save time in automation development**
 Start develop from existed modules could highly improve efficiency
- CAD/CAM Import**
 Support various industries CAD/CAM developed by Syntec



File Management

- Program management**
 Easy to extract and manage program and information
- Friendly recipe management**
 Improve efficiency and reduce error operation



DXF - in

- Convert DXF to NC**
 Directly convert DXF into G-code, greatly reduce time on editing program
- High flexibility**
 Processing data can be extracted after importing DXF

Application

- DXF-in driller solution**
 DXF-in extracts information of the circle, and then define the center point
 Machine moves directly to the center for tapping

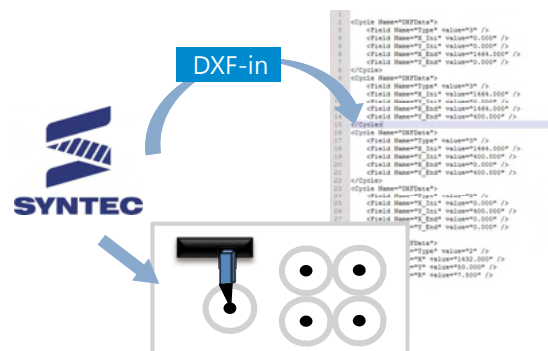



Table Teaching

- **Table Teaching** : Points could be teach or edited
- **Generate program** : Automatically transfer form table to program
- **Customization** : Table is able to be customized

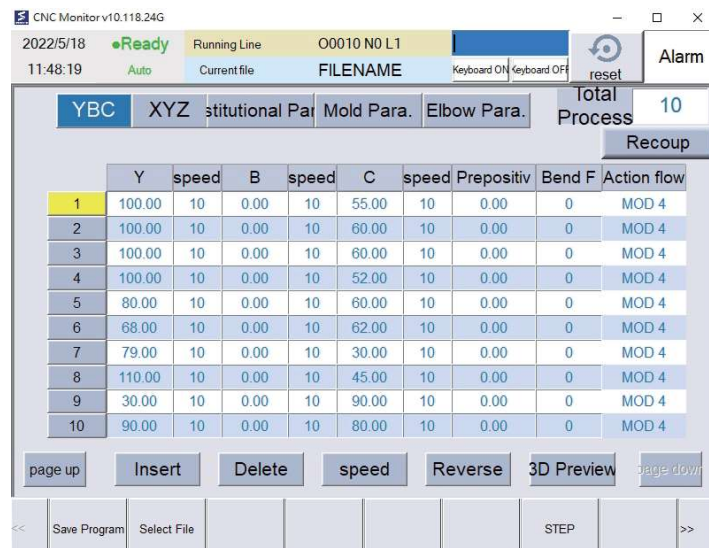


Machine	Absolute	Dist. To Go	Working Rat
X 0.000	X 0.000	X 0.000	100%
Y 0.000	Y 0.000	Y 0.000	MPG Ratio 0
Z 0.000	Z 0.000	Z 0.000	Spindle Ratio 100%
C 0.000	C 0.000	C 0.000	
B 0.000	B 0.000	B 0.000	

Line No.	Action	Description
1	G00 Move	X1.000 • Y2.000 • Z3.000 • C4.000 • B5.000
2	G01 Line	X6.000 • Y7.000 • Z8.000 • C9.000 • B10.000
3	Middle point of circle	X11.000 • Y12.000 • Z13.000 • C14.000 • B15.000
4	End point of circle	X16.000 • Y17.000 • Z18.000 • C19.000 • B20.000
5	Delay	Wait Time:5.000Second

Recipe Function

- **Multi data accessor**
 - **Use in real-time** : Flexibly change craft parameter
 - **Multiple storage** : Support up to 5 sets of recipe
 - **One set with mass data** : Up to 8192 parameters in one set



YBC	XYZ	Institutional Para	Mold Para.	Elbow Para.	Total Process	Recoup			
1	100.00	10	0.00	10	55.00	10	0.00	0	MOD 4
2	100.00	10	0.00	10	60.00	10	0.00	0	MOD 4
3	100.00	10	0.00	10	60.00	10	0.00	0	MOD 4
4	100.00	10	0.00	10	52.00	10	0.00	0	MOD 4
5	80.00	10	0.00	10	60.00	10	0.00	0	MOD 4
6	68.00	10	0.00	10	62.00	10	0.00	0	MOD 4
7	79.00	10	0.00	10	30.00	10	0.00	0	MOD 4
8	110.00	10	0.00	10	45.00	10	0.00	0	MOD 4
9	30.00	10	0.00	10	90.00	10	0.00	0	MOD 4
10	90.00	10	0.00	10	80.00	10	0.00	0	MOD 4

CONTROLLER SPECIFICATION



eHMC naming conventions

HC – 10 E – K



eHMC 1st 2nd 3rd

	1 st	2 nd	3 rd
Item	Screen size	Axis Communication Interface	Appearance
Definition	8 : 8 inches 10 : 10 inches 15 : 15 inches	A : Pulse type C : Serial E : Serial S : Pulse type (without feedback)	K : Without function keys S : Without function keys E : Without screen



eHMC - A

Model		HC-8A	HC-10A	HC-8A	HC-10A	Appearance icon
		-K		-S		
Control Axis	Standard	4 (3 axes for HC-8A)				
	Optional	-				
	Spindle No.	6				
Hardware	Axis Communication Interface	pulse				
	I/O	32/32				
	DA	2				
Front Interface	USB	1		0		
	RJ-45	1 (LAN)				
Back Interface	RS-485	1				
	MPG	1				
	USB	0		2		
	KB	1				
	H/K	1				
	5v output	1				



eHMC - C

Model		HC-10C	HC-8C	HC-10C	HC-15C	Appearance icon
		-K	-S			
Control Axis	Standard	4				
	Optional	18				
	Spindle No.	6				
Hardware	Axis Communication Interface	M3/EtherCAT				
	I/O number	-				
	DA	-				
Front Interface	USB	2	0			
Back Interface	RJ-45	3 (LAN*2,M3*1)				
	RIO	1				
	Option I/O	1 (RS-485,SRI)				
	USB	2				
	KB	1				



eHMC - E

Model		HC-8E	HC-10E	HC-8E	HC-10E	HC-15E	Appearance icon
		-K		-S			
Control Axis	Standard	4					
	Optional	18					
	Spindle No.	10					
Hardware	Axis Communication Interface	M3/EtherCAT					
	I/O	32/32					
	DA	2					
Front Interface	USB	1	0				
Back Interface	RJ-45	2 (LAN*1,M3*1)					
	Option I/O	1 (RS-485,SRI)					
	MPG	1					
	USB	0	2				
	KB	1					
	H/K	1					
	5V output	1 (HC-8E not supported)					

eHMC - S

Model		HC-8S		Appearance icon
		-S	-E	
Control Axis	Standard	5		HC-8S-S: 
	Optional	-		
	Spindle No.	6		
Hardware	Axis Communication Interface	pulse (not support feedback)		HC-8S-E: 
	I/O	16/4		
	DA	-		
Back Interface	RJ-45	2 (LAN*2)		
	Option I/O	1 (RS-485,SRI)		
	USB	2		

Teach pendant




Model		HC-7C	Appearance icon
Control Axis	Standard	4	
	Optional	18	
	Spindle No.	6	
Hardware	Axis Communication Interface	M3/EtherCAT	
	I/O	-	
	DA	-	
Back Interface	USB	1	
HHB Module	RJ-45	2 (LAN*1,M3*1)	

FC naming conventions

FC – A
 FC 1st

	1 st
Item	Communication protocol
Definition	A : Pulse type B : Serial C : Serial

FC Model

Model		FC-A	FC-B	FC-C	Appearance icon
Control Axis	Standard	4	4	6	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>FC-A</p> </div> <div style="text-align: center;">  <p>FC-B</p> </div> </div>
	Optional	-	18		
	Spindle No.	6			
Hardware	Axis Communication Interface	pulse	M3/EtherCAT		
	I/O	-			
	DA	0	2		
Front Interface	RJ-45	1 (LAN)	2 (LAN*1, M3*1)		
	Option I/O	1 (RS-485, SRI)			
	MPG	1			
	USB	2			
	VGA	1			
					 <p>FC-C</p>

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