

FRIENDESS



FSCUT Series Laser Cutting Control Product Selection Guide

V 3.0

Content

FSCUT1000—Low Power Laser Cutting Control System

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BLT831—High Power Laser Cutting Head

BLT640—High Power Laser Cutting Head

CypVision—High Precision Vision Positioning System

BCS100—Capacitive Height Controller

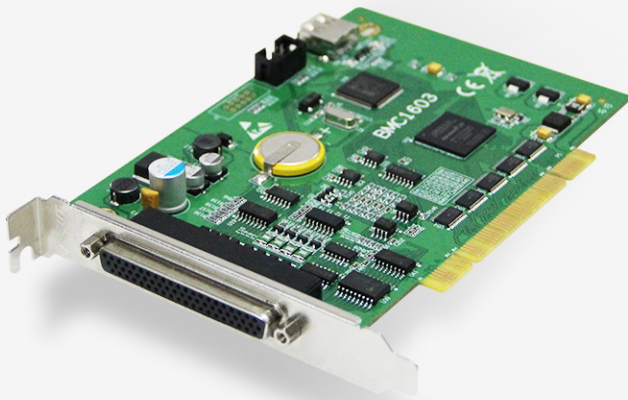
I/O and Servo Control Output Extension Module

BMH510—Automated Laser Cutting Ink-Jet Printing System

Cables and Accessories

CypNest—Sheet Nesting Software

TubesT—3D Tube Nesting Software



Introduction

FSCUT1000S is a low-cost solution for small power range fiber laser cutting application. FSCUT1000S is simplified from FSCUT2000 system, it integrates motion control and height control unit in one, is a cost-effective laser cutting control system.



Specification

Model	FSCUT1000S
Feature	
Software	CypOne
Control card	BMC1603
Interface	32-bit PCI bus, 132MB/s
I/O terminal	BCL4562
Power supply	24V DC/2A
Motor control	X/Y1/Y2 pulse output, 3MHz Z axis analog output, -10~+10V X,Y1,Z axes access encoder feedback, sampling frequency 10MHz
Dedicated output	2 DA: 0~10V, 50mA 1 PWM: 5V/24V options, accuracy 5KHz(0.1%)
Dedicated input	6, X/Y1/Z +/- limit input
Common input	6, low-level active, NO/NC options
Common output	8, relay output, 30V DC/5A
Work environment	Temperature: 0~55°C Humidity: 5%~95%RH(no dewing)

Performance Features

Feature	Description
Technique	Support up to two-stage piercing process.
	Support domestic laser brands of Raycus, Max, Feibo etc.
	Support Fly Cut and frog-leap laser head lifting pattern.
	Support auto focus with extension module, pallet changer, simple nesting. Doesn't support advanced technique of thick material cutting.
Control	Trajectory accuracy 0.05mm, positioning accuracy 0.01mm.
	Maximum cutting speed 100m/min, max travel speed 100m/min.
	Maximum acceleration 1 G.
	Doesn't support dual-drive position alarm and pitch compensation. Capture limit signal in return origin.

Accessories

Item	Model	Description	Qty.
Hand-held remote	WKB	Used for remote control	1
I/O terminal	BCL4562	3 pulse axes+1 analog axis	1
Pre-Amplifier	BCL_AMP	For capacitance sampling	1
Connector	DB15-M/F	Welded cable connector	1
62-pin cable	C62-2/5/10	Connect PCI card and I/O terminal	1
Servo control cable	C15-1.5/2.5/4	Standard 1.5m, options 2.5m/4m	3
RF cable	SPC-140/180	Standard 140mm, options 180mm	2
4-pin cable	HC-5/15/20	Standard 15m, options 20m/25m	1
LAN cable	LAN-3X/7X/17X	Standard 3m, options 7m/17m	1

Application



Metal decoration

Metal name card

Saw blade

Advertising decoration

Electronic appliance

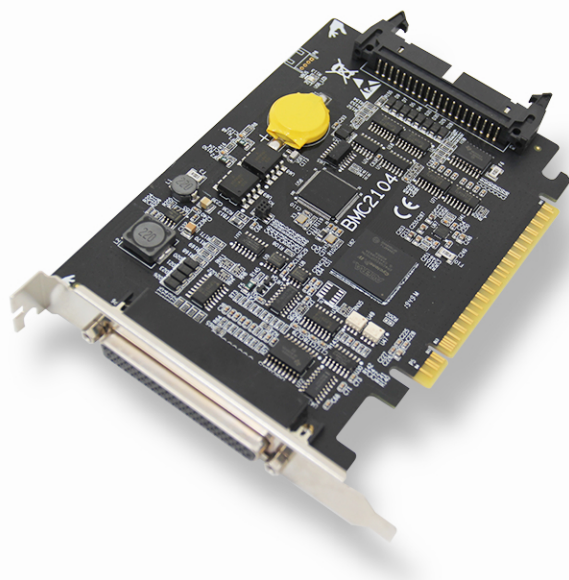


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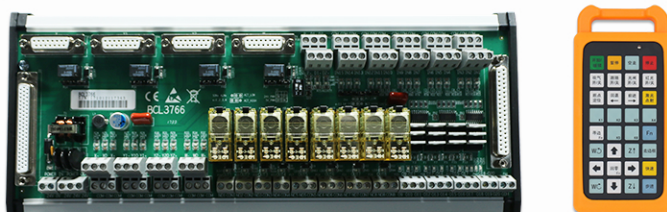
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FSCUT2000 — Medium Power Laser Cutting Control System



Introduction

FSCUT2000S is a full-solution open-loop control system specially designed for sheet metal fabrication industry, with features of easy to install and adjust, excellent performance and fully integrated solutions, it is upgrade version from FSCUT2000C system.



Specification

Model	FSCUT2000S
Feature	
Software	CypCut
Control card	BMC2104
Interface	PCIe bus, x16 interface, 250MB/s
I/O terminal	BCL3766
Power supply	24V DC/2A
Motor control	X/Y1/Y2/W pulse output, highest 3MHz
	X/Y1/Y2 access encoder feedback, highest sampling rate 10MHz
	W port for auto focus or rotary axis
Dedicated output	2 DA: 0-10V, 50mA
	1 PWM: 5V/24V options, accuracy 50KHz (0.1%)
Dedicated input	8 limit, X/Y1/Y2/W +/- limit inputs
	4 origin, X/Y1/Y2/W origin inputs
Common input	15 inputs, low-level active, NO/NC options IN13~IN15 support high-level active
Output	Relay output: 8 relay output, load 250V AC/5A, 30V DC/5A
	SCR-output: 12 outputs, load DC 24V/500mA
Work environment	Temperature: 0~55°C
	Humidity: 5%~95%RH (no dewing)

Performance Features

Feature	Description
Tech	Support up to 5-stage piercing process, segmented and stepping patterns
	Support communication with mainstream laser brands on market
	Support basic technique of Fly Cut, frog-leap, kerf compensation, leads etc.
	Support advanced functions of find edge, auto focus, pallet changer, break-point locate, QR code generation, remnant split, round tube cutting etc.
	Support advanced tech of cooling point, sharp corner ring path, bend relief etc.
	Support turn on gas in advance to stabilize gas pressure and avoid lens pollution
	Support fine cutting technique, smooth start and end of toolpath
	Support barrier avoidance, and smart frog-leap pattern
Control	Support scan QR import drawing, task scheduling, and multi-area production etc.
	Open loop control system, 3rd generation motion control algorithms
	Trajectory accuracy 0.03mm, positioning 0.001mm, repeatability 0.003mm
	Maximum cutting speed 80m/min, maximum travel speed 150m/min
	Maximum acceleration 1.5G
	Support dual-drive position error detect function

Accessories

	Item	Model	Description	Qty.
Standard	Remote	WKB	Used for remote control	1
	I/O terminal	BCL3766	4 axes pulse output and I/O	1
Cables	62-pin cable	C62-2/5/10	Connect I/O board with PCIe card	1
	37-pin cable	C37-2/5/10	Connect I/O board with PCIe card	1
	C15-X cable	C15-1.5/2.5/4	Standard 1.5m, options 2.5m/4m	4

Application

Fit for 1500W ~ 6000W fiber laser cutting machine, widely used in fabricating industries of metal workpiece, kitchen utensils, lamps, cabinets and more.



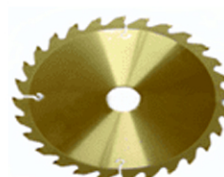
Cabinet



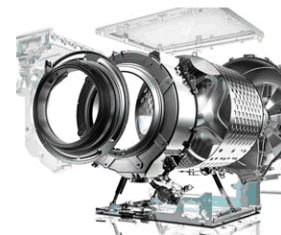
Kitchen ware



Metal workpiece



Nonferrous metal



Home appliance



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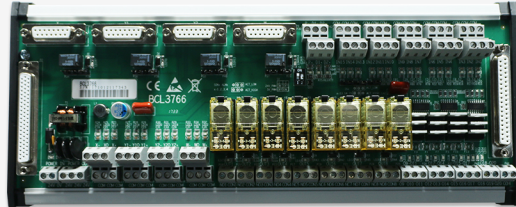
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Introduction

FSCUT3000S system is designed for tube cutting control, support standard tube(rectangle, circle, ellipse and obround etc.), free form, and steel channels(T/U/H/L shape) production of high precision and efficiency.



Specification

Model	FSCUT3000S
Feature	
Software	TubePro tube cutting software/ CypCut sheet cutting software
Control card	BMC1805
PCI type	32-bit PCI bus, 132MB/s
I/O terminal	BCL3766
Power supply	24V DC/2A
Motor control	X/Y1/Y2/W pulse output, highest 3MHz X/Y1/Y2 receive encoder feedback, highest sampling rate 10MHz W port for auto focus or rotary axis
Dedicated output	2 DA: 0-10V, 50mA 1 PWM: 5V/24V options, accuracy 5 kHz (0.1%)
Dedicated input	8 limit, X/Y1/Y2/W +/- limit inputs 4 origin, X/Y1/Y2/W origin inputs
Output	relay output 8 relays, load 250V AC 5A, 30V DC/5A scr-output 12 scr-outputs, load DC 24V/500mA
Common input	15 inputs: low-level active, NO/NC IN13-IN15 support high-level active
Work environment	Temperature: 0~55°C Humidity: 5%~95%RH (no dewing)

Performance Features

System	FSCUT3000S	FSCUT3000
Tech	Support offset tube center error in production to improve through holes cutting precision	Doesn't support tube center offset, require high mechanic center precision
	Support steel channels cutting	Doesn't support steel channels cutting
	Support separate technique for corner cutting	No separate technique for corner cut
	Support auto loading/unloading process, cycle production and automatic feeding	Support manual activate loading/unloading
Control	Support all functions of FSCUT2000 system	Support all functions of FSCUT2000 system
	Open-loop control system, Friendless 5th generation motion control algorithms	Open-loop control system, FSCUT 2nd generation motion control algorithms
	Trajectory accuracy 0.02mm, positioning 0.001mm, repeatability 0.003mm	Trajectory accuracy 0.03mm, positioning 0.001mm, repeatability 0.003mm
	Access encoder feedback in real time, to compare command and machine toolpath	Support access encoder feedback, but doesn't support toolpath compare

Accessories

Item	Model	Description	Qty.
Remote	WKB	Used for remote control	1
I/O board	BCL3766	4 axes pulse output and I/O	1
62-pin cable	C62- 2/5/10	Connect I/O board with PCI card	1
37-pin cable	C37- 2/5/10	Connect I/O board with PCI card	1
C15-X cable	C15- 1.5/2.5/4	Connect I/O board with servo driver	4

Application

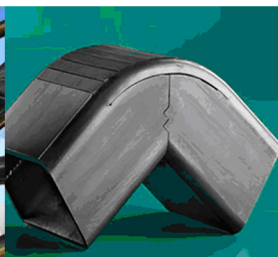
Fit for tube cutting or tube-sheet combo machine. Widely used in furniture, display shelf, architecture, sport equipment industries.



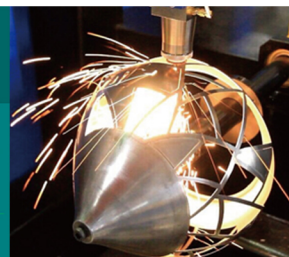
Fitness equipment



Metal architecture



Tubular parts



Lamp shell



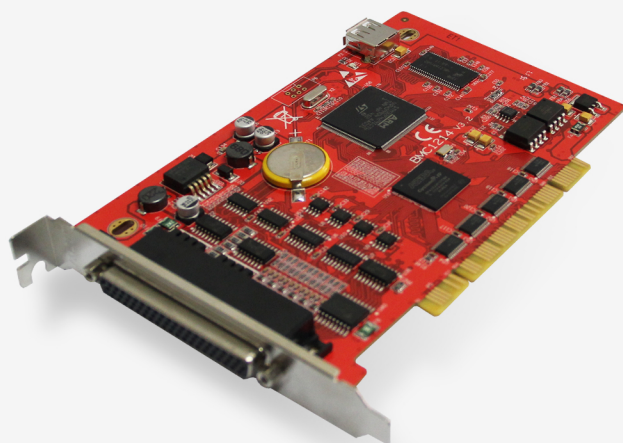
Metal furniture



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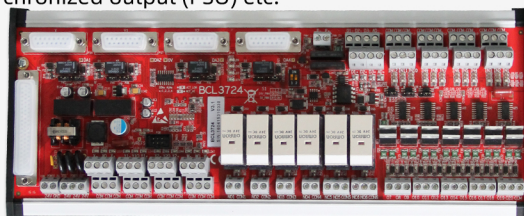
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Introduction

FSCUT4000 is a close loop laser cutting control system designed for high speed and precision cutting. It provides most advanced technology that allows to self-adjust and cross-coupling control toolpath in production, offers user defined and flexible piercing technique, supports position synchronized output (PSO) etc.



Specification

Feature	Model	FSCUT4000
Software	CypCut	
Control card	BMC1214	
Interface type	32-bit PCI bus, 132MB/S	
I/O board	BCL3724	
Power supply	24V DC/2A	
Motor control	X/Y1/Y2/W analog output, -10~+10V X/Y1/Y2/W access encoder feedback, highest sampling rate 10MHz	
Dedicated input	4 origin inputs: low-level active, NO/NC 8 limit inputs: low-level active, NO/NC	
Dedicated output	4 DA outputs: 0-10V, 50mA 1 PWM output: 5V/24V options, accuracy 50KHz(0.1%)	
Common input	12 inputs: low-level active, NO/NC option IN10/11/12 can jump-wire to active-high	
Output	relay output	6 relay outputs, 250V AC/5A, 30V DC/5A
	scr-output	14 scr-outputs, 24V DC/500mA
Work environment	Temperature: 0~55°C Humidity: 5%~95%RH (no dewing)	

Performance Features

Feature	Description
Technique	Flexible piercing technique, auto adjust focal position in piercing
	Support advanced technique for thick material cutting
	Support motor runaway risk detect, find edge, auto focus, pallet changer, auto nest, Fly Cut, QR code generation, remnant split, laser head frog-leap etc.
	Support task scheduling, multi-area production, scan QR import file
Control	Support fine cutting technique of smooth start and end toolpath
	Close-loop control, 4th generation motion control algorithms
	Control accuray 0.005mm, trajectory accuracy 0.01mm, positioning accuracy 0.001mm, repeatability0.002mm
	Maximum cutting speed 80m/min. maximum travel speed 200m/min
	Maximum acceleration 2.5G
	Master-slave dual drive, cross coupling control, speed look-ahead tech

Accessories

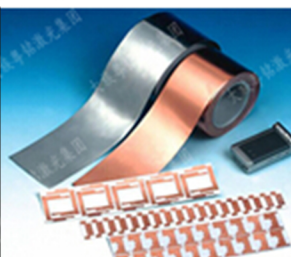
Item	Model	Description	Qty.
Remote	WKB	Used for remote control	1
I/O board	BCL3724	Provide 4 axes analog output and I/O	1
62-pin cable	C62- 2/5/10	Connect I/O board with PCI control card	1
C15-X cable	C15-1.5/2.5/4	Servo control cable1.5m, options 2.5m/4m	4

Application

Fit for high precision cutting machine. Widely used in 3C industry, thin and fragile material production like ceramic glass, polymer film and eye glasses frame etc.



Mobile screen



Metal workpiece



Glasses frame



Vehicle parts



Stone screen

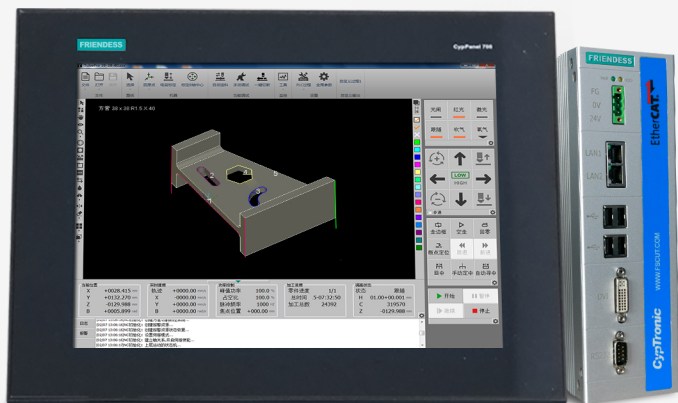


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FSCUT5000 — EtherCAT Tube Cutting Control System



Introduction

FSCUT5000 series is EtherCAT bus system for fiber laser tube cutting machine. FSCUT5000A applied to 3-chuck delivering structure, FSCUT5000B applied to 2-chuck structure, work with TubesT 3D nesting software, it will achieve most efficiency and least waste.



Specification

Feature	EtherCAT Bus System		Pulse System	
System	FSCUT5000A	FSCUT5000B	FSCUT3000S	FSCUT3000
Software	TubePro	TubePro	TubePro, CypCut	CypTube, CypCut
Application	3-chuck 7-axis linkage Tube cutting	2-chuck feeding Tube cutting	2-chuck feeding Tube, tube-sheet combo	Tube, tube-sheet combo
Tube center offset	●	●	●	—
Corner technique	●	●	●	—
Tube feeding	●	●	●	—
Real time bus	●	●	—	—
Active control	●	●	—	—
3-chuck delivering	●	—	—	—

Performance

Performance Feature	
Functions	Offset tube center error in production to improve through holes cutting precision
	Active control based on ethercat bus technology, more faster and stable in corner cutting
	Support holders following up tube in rotation to guarantee cutting quality
	Support hollow chuck feeding tube in cutting to allow longer tube production in shorter machine travel range
	Support 3-chuck delivering tube in production to improve cutting quality and minimize waste
Nest software	TubesT 3D tube nesting software make it easier in parts drawing and toolpath generation

Accessories

	Item	Model	Description	Qty.
Standard	EtherCAT station	CypTronic-E	EtherCAT master station, running control system	1
	Extension board	BCL4516E	EtherCAT I/O extension board	1
	Height control	BCS100E	Capacitive height control and follow unit	1
Cable	LAN/SPC/HC cable (optional length)			

Application: fit for tube cutting machine of high speed and precision. Widely used in fitness equipment industry and automation line.



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Introduction

FSCUT7000 is EtherCAT system developed for ultrafast picoseconds and femtosecond laser precision cutting. Adopting latest algorithm and EtherCAT technology, by standard communication protocol and parallel PLC, it can achieve high speed and precision laser control of 0.1um~10um interval (PSO)output, and highly automated production.



Specification

Item	Model	FSCUT 7000
Software	UltraCut	
Station	CypTronic-EP PC	
I/O	HPL2720E	EtherCAT I/O board
	BCL4516E	EtherCAT I/O board(optional)
Power supply	24V DC/ 5 A	
PSO	Support 9 laser control modes, laser interval 0.1um-10um adjustable	
Motor control	Support up to 32 EtherCAT servo drivers control same time	
Extension	Support up to 32 EtherCAT I/O stations extension	
Performance	Maximum control acceleration 5G	
Precision	Theroical control precision ±1um	
Work Environment	Temperature:0~60°C	
	Humidity:10%~90%RH(no condensation)	

Accessories

Item	Name	Model	Description	Qty.
Standard	EtherCAT master station	CypTronic-EP	Bus station, run UltraCut software	1
	Precision controller	BPC6203E	Laser output controller	1
	I/O board	HPL2720E	EtherCAT I/O slave station	1
	Wireless remote	WKB V6P	Remote control	1
Standard cable	LAN-0.3 cable	LAN 0.3	LAN connection	4
	LAN-3 cable	LAN 3	LAN connection	4
	BNC-5 signal cable	BNC-5	Connect laser and BPC6203E	2
	C15-2 control cable	C15-2	Connect driver and BPC6203E	3
Options	I/O extension board	BCL4516E	EtherCAT I/O slave station	1
Vision unit options	Camera	MV- CE050-30GM	500 black white pixel	1
	LENS	MVL- HY-15-110C	Range 110mm, 1.5X	1
	light source	JL- DL25- 3	White light dot	1
	Light controller	JL- APT- 3W-2	2 outputs 3W	1
	LAN cable	LAN- 7X	Length 7m	1
	Light source cable	Light source	Length 5m	1
	Power supply cable	Light controller	Length 2m	1
	Camera power cable	Camera	6-pin length 3m	1

Function Performance





Performance features	
Functions	Support laser position synchronized output(PSO function), laser output interval 0.1-10um.
	Support 9 laser control modes, and compatible with various ultrafast laser brands.
	Communicate with laser by RS232 and Ethernet for parameter and status access.
	Support technique of transition line, lead line, Fly Cut, speed turning point, speed adjust in curve position.
	Support dual-Y structure production.
	Support to edit and execute parallel PLC process.
	Compatible with ModbusTCP, ADS and other standard protocols to guarantee online production.
	Provide optional vision positioning module to locate production by circle and cross mark.
Control	Communication: RTOS real time core, signal cycle 1ms.
	Precision: control precision 1um.
	Support compensate pitch error from interferometer measure data, also support offset mechanic orthogonality.



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Model	CypTronic - PRO		BPC6203E		H PL2720E		BCL4516E (option)	
Image								
Hardware Resource	CPU	8th generation Intel® I3 4-core, 4-thread	Core	Dual-core,ARM 400MHz; FPGA, 200MHz	Load	Overall highest output 2.5A	Load	Highest relay load 30V DC/2A
	Memory	8G DDR4				Single channel Highest output 700mA		
	Disk	128GB SSD	Comm	EtherCAT bus (100M)	Comm	EtherCAT bus (100M)	Comm	EtherCAT bus (100M)
	System	Windows 10® IOT LTSC (X64)	Memory	256Mbit, support save laser on position data	Accuracy	PWM precision: 50KHz(0.1%)	Accuracy	PWM precision 50KHz(0.1%)
	Display	DVI-1 *1	PWM	Highest 10MHz *1	Input	Common input *27 NPN type (3PNP)	Input	Common input *18
	LAN	EtherCAT *1	CLK	Highest 10MHz *1	Output	DA *4	Output	DA *2
		EtherNET *3	SYNC	Highest 20MHz *1		PWM *1		PWM *1
	USB	USB 3.0 *6	Encoder	Highest 10MHz *3		Common output *20		Common output*16
	Serial	RS232 *1				Scr-output 24V		AD *2
Power supply	Voltage	DC 24V	Voltage	DC 24V	Voltage	DC 24V	Voltage	DC 24V
	Current	2A (max 5A)	Current	1A	Current	3.5A	Current	1A
Other	Pre-install RTOS system		Support laser PSO function Support laser sync-signal Support dual-channel signal		Support up to 32 I/O station extension		16 relay outputs , 18 common inputs	

Application

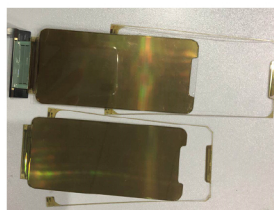
Applied in ultrafast picosecond and femtosecond laser precision cutting. Widely used in fragile material cutting like galss, ceramic, display screen, semiconductor and photovoltaic materials etc.



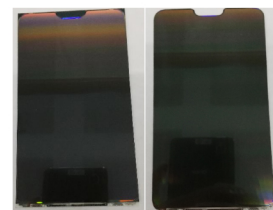
Stone screen



Laser filamentation



OLED screen



LCD screen

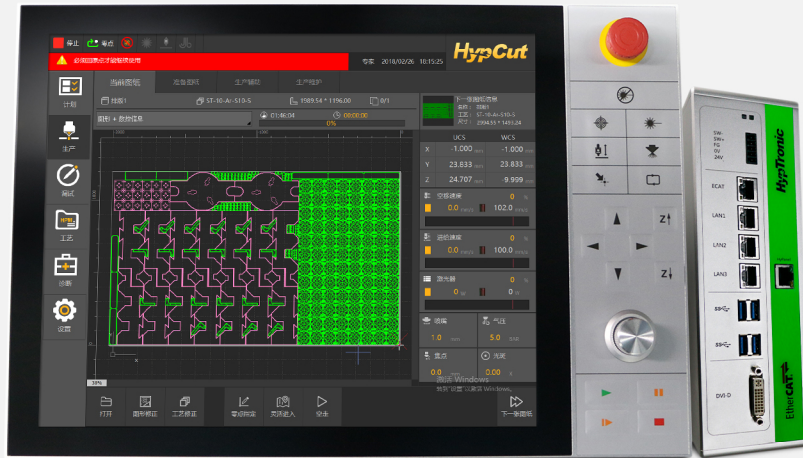


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FSCUT8000 — Ultra High Power EtherCAT Control System



Introduction

FSCUT8000 system is designed for ultra high power fiber laser above 8KW, featured by out of box service, easy to install and adjust, robust quality and security. It supports customization solutions, is the most leading edge EtherCAT laser cutting control system on the market.



Performance

Function Features	
Functions	Technique: multiple piercing solutions for metal sheet of different thickness; piercing slags removal; vibration suppression; close-loop gas control; separate layer technique for large, medium and small contour cutting, all to expand your machine capability.
	Vision remnant reuse: capture remnant sheet by your phone or machine camera to reuse the material with high efficiency.
	Find workpiece edge: up to 500mm/s high speed and precision, also provides optional find edge patterns to meet your production needs.
	File formats: support direct production of DXF and G code; support fast process of LXDS and NRP file generated by CypNest.
	UI: easy operation with guided and visualized interface.
	Automation: support coil feeding production, large format production, and sheet-tube combo production solutions.
	Convenient maintenance: support focus correction, optical pollution check by photo paper, and oscilloscope monitor functions.
Control	Digitalization: provide access with Laser Cloud and MES to collect machine status data and inform maintenance to prolong machine usage.
	Drawing: able to design drawing and create toolpath in HypCut directly without external CAD software.
	Assist functions: quick cut-off remnant sheet, auto clean nozzle, auto lubrication, pallet changer, dust extractor that add selling points of the machine.
	BC-LINK: self-developed BC-LINK technology to realize long distance transmission of display, I/O and USB signals.
	PID self-adjust: click to finish servo PID adjust, theoretical control accuracy within ± 0.01 mm.
	Intelligent hardware: support ethercat proportional valve, laser and laser head to realize full-close loop control.
	Security: torque protection to reduce impact, dual-drive position error correction, barrier avoidance in travel, smart frog-leap lifting.
	Accuracy: theoretical path accuracy ± 0.005 mm, positioning accuracy 0.01mm, repositioning accuracy 0.01mm.
	Speed: maximum acceleration 5G, maximum single spindle speed 300m/min.
	Communication: adopt RTOS real time solution, communication cycle 1ms.
	Algorithm: adopt asymmetrical acceleration and deceleration algorithm, reduce machine impact and prolong machine service.
	Height control: ethercat BCS100-E height control unit, provide robust performance and in distance follow and control.

Application:

Fit for fiber laser cutting machine above 8000W. Widely used in metal sheet fabricating factory, automation line and large fabrication station.







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FSCUT8000 — Ultra High Power EtherCAT Control System

Specification

FSCUT8000 Hardware Table									
Item	HypTronic		HypPanel		HPL2720E		BCS100E		
Image									
Hardware	CPU	Intel I5 6440EQ (4-core 3.4GHz)	Screen	21.5-inch 1080P Multi touch capacitive	Load	Overall highest output 2.5A	Feature	Maximum acceleration 3G	
	Memory	Dual-channel 8G DDR4-2133	Transfer	BC-Link video and data (100m)		Single channel highest 700mA		Maximum speed 999mm/s	
	Disk	64GB SSD mSATA	Feature	Multi-function rotary knob	Comm	EtherCAT bus (100M)	Comm	EtherCAT bus (100M)	
	System	64-bit Windows 10 LTSB	Operation	17 operating buttons include E-stop	Accuracy	PWM accuracy: 50KHz (0.1%)	Accuracy	0.001mm	
Resource	Video	BC-LINK *1	Data	BC-LINK *1	Input	Common input *27	None		
		DVI-D *1	Button	Button *15		NPN (3PNP)			
	LAN	EtherCAT *1	Knob	Knob *1	Output	DA *4			
		EtherNET *3	E-stop	E-STOP *1		PWM *1			
	USB	USB 3.0 *4	USB	USB 2.0 *2		Common out *20			
	None				Scr-output 24V				
Power supply	Voltage	DC 24V	Voltage	DC 24V	Voltage	DC 24V	Voltage	AC 220V	
	Current	4A	Current	3A	Current	3.5A	Current	1A	
Other	Installed RTOS system		Up to 100m USB and display signal of stable transmission		Up to 32 I/O slave-station extension		BCS100E-PRO supports PRECITEC laser head		

Accessories

FSCUT8000 Hardware Table				
	Item	Model	Description	Qty.
Standard	Bus station	HypTronic	EtherCAT bus station, running control system	1
	Screen	HypPanel	Adopt BC-Link technology and HMI terminal	1
	I/O terminal board	HPL2720E	EtherCAT I/O terminal board	1
	Height control unit	BCS100E	Capacitive height control and follow unit	1
Cable	LAN cable	LAN-7X	Connect PC and display , options 3m/17m	1
		LAN-3X	Connect PC and slave stations, options 7m/17m	2
		LAN-0.3X	Connect between slave stations, options 3m/7m	4
	RF cable	SPC-140	RF cable140mm, optional 180mm	2
	Signal cable	HC-15	Signal cable of green color 15m, options 5m/20m	1
	LAN cable	LAN-3X/7X/17X	LAN cable 3m, options 7m/17m	1



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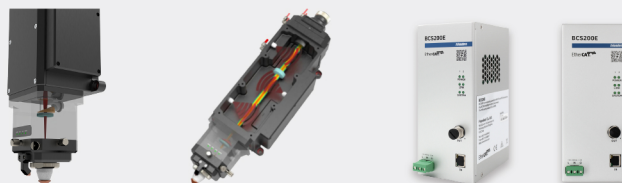
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BLT 831 —High Power Laser Cutting Head



Introduction

BLT high power series designed for metal sheet production industry and adopts EtherCAT bus technology. BLT831 is a full function laser head mounted with all-round sensors, is the most leading edge product on the market.



Model	BLT831
Control unit	BCS200E
Focus	Adjustable spot
Power rating	15KW
Focal range	+50~-50

Software	HYPCUT8000
Interface	POE cable
Spot	Magnification *1.5-4.1
Dimension	630*200*160

Cavity temperature	Monitor cavity temperature avoid thermal effect to optical device
Cavity humidity	Monitor cavity humidity and avoid dewing
Cavity pressure	Monitor cavity pressure and cavity seal tightness
Protective window	Monitor protective window temperature to guarantee cutting quality
Cut gas pressure	Monitor output gas flow and avoid fluctuation damaging cutting edge quality
Capacitance sensor	Monitor distance from workpiece and nozzle
Ambient temperature	Monitor ambient temperature around sensor head
Cut gas temperature	Monitor gas temperature to avoid heated gas affecting cutting quality

Application

BLT831 fits for 6000W-15000W range fiber laser cutting machine. It adopts ultra-precise mechatronics technology integrating optics, precision machining, electronics, information process and control, and special purpose software that gather the collective advantages of common laser head. Both focal position and focal diameter are adjustable, spot magnification from 1.5X-4.1X, with aspherical lens technology it can perform excellent cutting capability in production.



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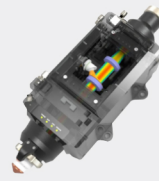
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BLT 640 —High Power Laser Cutting Head



Introduction

BLT high power series designed for metal sheet production industry and adopts EtherCAT bus technology. BLT640 featured by easy-install-and-adjust benefits, and robust performance, is the most intelligent laser head on market.



Model	BLT640
Control unit	BCS200E
Focus	Fixed
Power rating	12KW
Focal range	+50~-50

Software	HYPCUT8000
Interface	POE
Spot	Magnification *2.1
Dimension	427*152*137.6

Focusing lens	Monitor focusing lens status and detect lens pollution
Ambient temperature	Monitor focusing lens ambient temperature
Cavity temperature	Monitor cavity temperature avoid thermal effect to optical device
Cavity humidity	Monitor cavity humidity and avoid dewing
Cavity pressure	Monitor cavity pressure and cavity seal tightness
Protective window	Monitor protective window temperature to guarantee cutting quality
Gas pressure	Monitor output gas flow and avoid fluctuation damaging cutting edge quality
Capacitance	Monitor distance from workpiece and nozzle
Ambient temperature	Monitor ambient temperature around sensor head
Cut gas temperature	Monitor gas temperature to avoid heated gas affecting cutting quality

Application

BLT640 fits for 6000W-12000W range fiber laser cutting machine. With leading edge design and technology, it has robust performance working under industrial environment. Modularized structure allows quick repairment, remote status access and on-site service will ensure a 24-hour production. BLT640 can work with FSCUT laser cutting system seamlessly that improve your production efficiency to a higher level.



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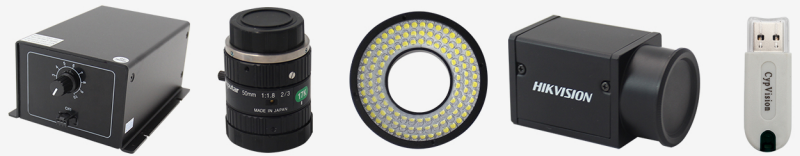
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CypVision — High Precision Vision Positioning System



Introduction

CypVision is designed as an extended vision module for Friendless laser cutting control system. It adopts Gigabit Ethernet industrial CCD and self-developed adaptive algorithms to realize precision cutting of various material including stainless steel, copper, aluminum, ceramics, glass and PCB circuit board etc., has been widely applied in many industries of aluminum substrate, 3C, vision tube cutting and glasses frame.



Specification

Model	CypVision
Item	
Software	CypVision
Industrial camera	130W black white pixel 500W/1000W options
	12V DC power supply ($\pm 10\%$) Support POE power supply
	Global shutter, clear dynamic capture
	Gigabit Ethernet, up to 30Hz (recommend to use Intel net card)
Prime lens	Focal range 50mm, flange distance 13.1mm
	TV distortion -0.3% ($\gamma=4.0$)
	work range 98-142mm
Light source	Ring light source fit for lighting for various materials in production
	Provide optional light source for different application
Light controller	24V DC power supply, 1A
Environment	Temperature: 0~55°C
	Humidity: 5%~80% (no dewing)

Performance Feature

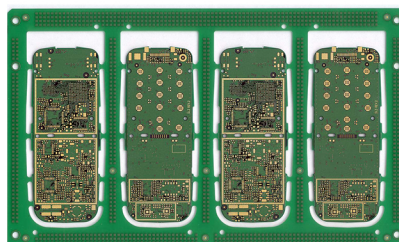
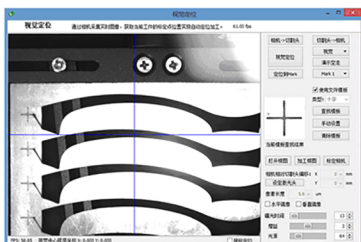
Item	Description
Tech	One click to finish camera pixel calibration, lens and laser head offset setting
	Identify the mark point type and mark point template automatically
	Integrate two dimensional measuring and lens distortion calibration technique
	Support advanced functions including find edge, auto focus, pallet changer, auto - nesting, round tube cutting and break point memory etc.
Control	Support flexible positioning methods to meet your production needs
	Adopts self-developed adaptive algorithms
	Single point positioning accuracy $6\mu\text{m}$, repeatability accuracy 0.012mm
	Single mark point positioning time < 100ms
	Control light source switch and light via RS232 communication

Accessories

Item	Model	Description	数量
Industrial camera	MV-CE013-50GM	Resolution 1280x960, pixel size $3.75\mu\text{m}$	1
Prime lens	Computar M5018	Focal length 50mm, work distance 98-142mm	1
Ring light source	JL-AR7075W	Light source, provide light for image capture	1
Dongle	CypVision	Provide software encryption for OEM user	1
Power adapter	DSA-12PFG-12 FCH 120100	12V, 1A	1
Power cable	HR10A-7P-6S	6pin, length 3M, orange +, grey -	1
Lens clamp	Lans clamp	Clamp lens in fixed position	1
LAN cable	LAN- 7X	CAT.6E, 568A-568B	1
Light controller	JL-APC2-24V-1	Control brightness of light source	1
Gigabit LAN	WY- 546T2	Pci interface, intel 82546	1

Application

3C fabrication and eye glasses printed frame fabrication industry.

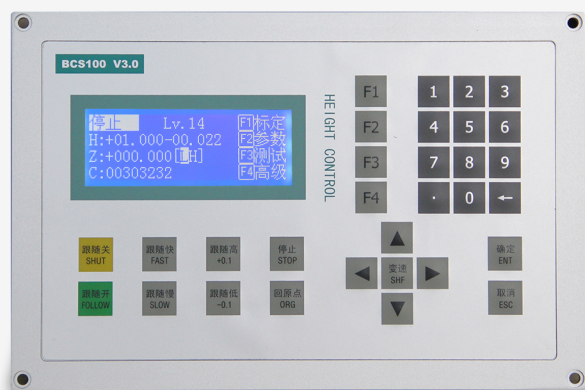


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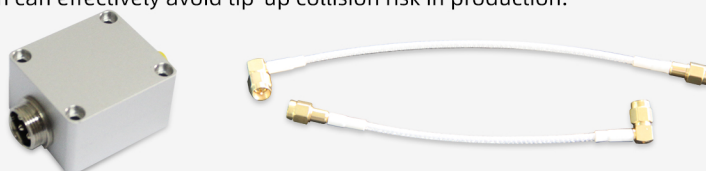
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BCS100 — Capacitive Height Controller



Introduction

BCS100 capacitive height controller provides excellent performance in distance control. It served as height follow unit for FSCUT laser cutting control system via Ethernet communication, can realize functions including height sensing, segmented and stepping pierce technique, detect and find workpiece edge, vibration suppression etc. Latest anti-collision function can effectively avoid tip-up collision risk in production.



Specification

Item	Model	BCS100 height controller
System		FSCUT2000.3000.4000
Software		CypCut. TubePro
Work voltage		24V DC/2A
Interface type		Ethernet(TCP/IP)
Motor control		Analog output, -10~+10V
Follow range		0.2mm- 25mm
Sampling rate		1000Hz
Static measure accuracy		0.001mm
Response accuracy		0.05mm
Maximum speed		999mm/s
Maximum acceleration		2G
Noise suppression		10%
Min mechanic rigidity		2Hz
DA resolution		1 6-bit
DA zero drift		3m V
DA response		0.01ms
Work environment		Temperature: 0-55℃
		Humidity: 5%-95% (no dewing)

Note: for PRECITEC laser head, select BCS100 Pro

Performance Feature

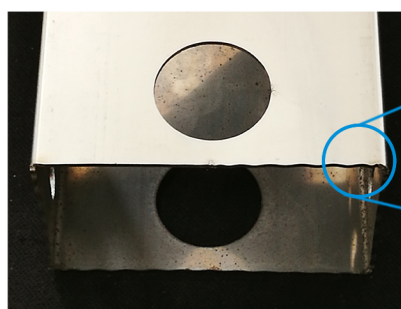
Description
Anti-collision function can effectively avoid tip-up collision risk in production.
Add protection in find edge to avoid laser head hits machine slat.
Support vibration suppression to restrict laser head resonating with vibrated sheet.
Support real time capacitance calibration, and auto offset the local capacitance change caused by temperature drift, collision, nozzle dismantle and plasma cloud etc.
Support functions of 'find workpiece edge', 'frog-leap' and 'stepping pierce' etc.
Support lock down function for security or payment collection.
Support local or online firmware update.
Support oscilloscope function to monitor real time capacitance and height change.

Accessories

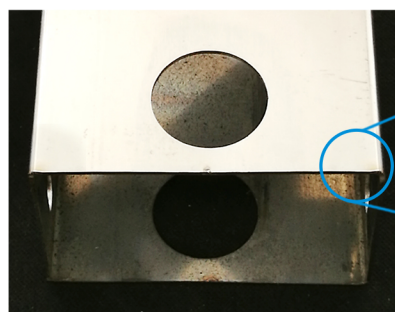
Item	Model	Description	Qty.
Pre-amplifier	BCL_AMP	Used for capacitance sampling	1
Cable connector	KF2EDGKBM	Connect power supply cable	1
Cable connector	DB15- M/F	Welded cable connector	1
Servo cable	C15- 2.5/4	Servo cable 1.5m, options 2.5m/4m	1
RF cable	SPC - 140/180	RF cable 140mm, options 180mm	2
Signal cable	HC - 15/5/20	Signal cable(green color)15m,options 5m/20m	1
Screw	M3*28	To keep AMP fixed	4
LAN cable	LAN- 3X/7X/17X	LAN cable 3m, options 7m/17m	1

Application

Pressured gas will vibrate thin-walled material intensively especially in the marginal area without solid support. BCS100 can effectively suppress the signal noise caused by vibration, down below demonstrates the comparison of cutting performance with and without suppression function.



Cutting edge waves
before apply suppression



Cutting edge after
apply suppression

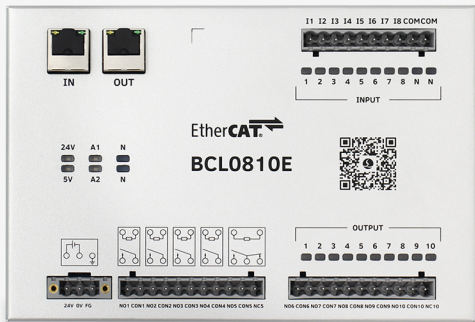


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I/O and Servo Control Output Extension Module



BCL0810E

BCL0810E is universal extension board to provide extra I/O resource.



BCL4508E

BCL4508E is universal extension board to provide one extra servo control output, and two DA outputs.

Specification

Item	Model	BCL0810E
Software		CypCut, TubePro, HypCut
System		FSCUT2000, 3000, 4000, 5000, 8000
Application		To extend extra I/O resource
Interface type		RJ45 interface
Power supply		24V DC/1A
Input		8 inputs, low-level active
Output		10 relay outputs, highest 30V DC/2A; OUT5 and OUT10 support both NO/NC options, the rest 8 are NO type
Work environment		Temperature: 0-60 °C Humidity: 10%-90% RH (no condensation)

Item	Model	BCL4508E
Software		CypCut, TubePro
System		FSCUT1000, 2000, 3000, 4000, 5000
Application		To provide one servo axis control output, two DA outputs
Interface type		RJ45 interface
Power supply		24V DC/1A
Input		3 limit inputs, EL+, EL-, ORG
Output		1 servo control output, highest 600KHZ
Work environment		Temperature: 0-60 °C Humidity: 10%-90% RH (no condensation)

Applied in pallet changer, auto loading application that require more I/O resource.



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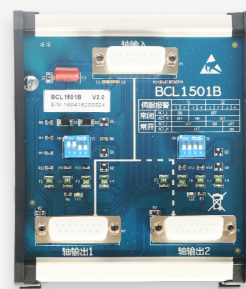
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I/O and Servo Control Output Extension Module



BCL4516 / BCL4516E

BCL4516 and BCL4516E are I/O extension modules served to provide more I/O resource for FSCUT control system. BCL4516E also provides one extra servo control port and two DA outputs.



BCL1501A / BCL1501B

BCL1501A/1501B are extension modules for extra servo axes output and axes switch in combo machine. BCL1501A served to switch controlled servo axes in combo machine. BCL1501B served to duplicate one servo axis control port into two synchronized servo axes control ports.

Specification

Item	Model		Model	
	BCL4516 I/O		BCL1501	
Model	BCL4516	BCL4516E	BCL1501A	BCL1501B
Software	CypCut, CypTube, TubePro			
System	FSCUT2000,3000,4000	FSCUT2000,3000,4000,5000	FSCUT1000,2000,3000	
Application	Extend extra I/O	Extend extra servo control output, DA and I/O	Duplicate servo control output and switch axis	Duplicate servo control output to extend axes
Interface type	RJ45		I/O	I/O
Power supply	24V DC/1A		24V DC/2A	None
Input	15 inputs, low-level active	18: 24V, low-level active IN1-IN6 support jump-wire 2 AD inputs: 0-10V	1 servo control output 2 origin and limit inputs	1 servo control output
Output	16 relay outputs: 30V DC/2A	16 relay outputs: 30V DC/ 2A 2 DA: 0~10V 1 PWM: 5V/24V optional 1 servo axis: 600khz	2 servo control outputs	2 servo control outputs, support NO/NC options, high/low level active
Function features	<ul style="list-style-type: none">Support user-defined pallet changer PLCSupport PLC editEthernet communication, plug-and-play	<ul style="list-style-type: none">Support auto-focus servo motor controlSupport user-defined pallet changer PLCAdopt EtherCAT, support multiple boards extension	<ul style="list-style-type: none">Applied in servo axes extension and switch in combo machineTwo axes output cannot work same time	<ul style="list-style-type: none">Duplicate one servo axis output into two output channels
Accessories	LAN cable: LAN-3X/7X/17X Gigabit switch: TL-SG1008+(optional)		Servo cable: C15-0.6/1.5	
Dimension	315mm*127.8mm		110.5mm*127.8mm	110.5mm*127.8mm
Work environment	Temperature: 0-60 °C			
	Humidity: 5%-95% RH (no condensation)			

Applied in pallet changer, auto loading application that require more I/O resource.



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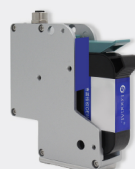
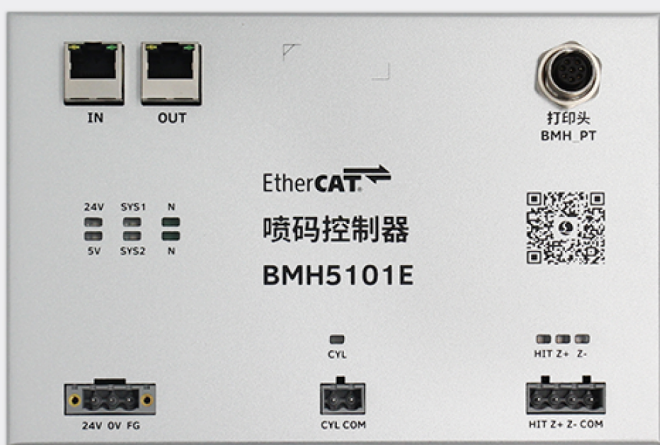
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BMH510 —Automated Laser Cutting Ink-Jet Printing System

Introduction

BMH510 is an automated ink-jet printing system designed for laser cutting machine. It can generate print label in rtf, bar code, QR code and image format. Quick and precise label printing can save a lot human resource and avoid man made errors. Work with MES system will facilitate factory management and production, widely used in large quantity metal sheet production scenario.



Performance Features

	Description
Functions	Automatically set optimal label position and supports user-defined label position on part
	Automatic label generation for each part
	Label positioning accuracy can reach to 0.1mm
	Support rtf, bar code, QR code and image printing
	Maximum printing speed 1500mm/s
	High printing definition, highest DPI 600 adjustable
	EtherCAT real time communication, high speed and low delay
	Removable ink box easy for replace and repair
	Special cable to guarantee long distance communication of 20m
	Provide optional accessories and whole solution to meet your requirement
	Work with BCS100 height controller to realize printing in fixed height
	Real time communication and auto error-correct algorithm can realize 500mm image data transmission per second
	Based on TIJ2.5(thermal foaming inkjet) technology

Hardware

	Item	Model	Description	Qty.
Standard	Ink-jet controller	BMH5101E	Ink-jet printing control	1
	Ink-printer	BMH_PT	Hold driver and ink box	1
	Ink box	BMH-01	Provide ink for printing	1
Cable	Communication cable	LAN-20X cable-PWE	Connect printer and print controller	1
	LAN cable	LAN-3X	Connect PC and print controller	1

Application



Document cabinet



Doors



Counter cabinet



Metal curtain wall








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Cables and Accessories

Item	Servo cable		4-pin cable		LAN cable		RF cable	
Application	Connect BCS100 with servo driver		Connect BCS100 with AMP pre-amplifier		Connect BCS100, BCP5045, BCL4516 that use ethercat communication		Connect AMP pre-amplifier with sensor head	
Image								
Model	C15-2.5 (Standard)	C15-4 (Optional)	HC-15 (Standard)	HC-5/HC-20 HC-25/ HC-30 (Optional)	L AN-3X (Standard)	LAN-0.3X/ LAN-1X/ LAN-7X/ LAN-17X (Optional)	S PC-140 (Standard)	SPC-180/ SPC-140B/ SPC-180B (Optional)
System	BCS100		BCS100		BCS100/ FSCUT1000/FSCUT5000/ FSCUT6000/FSCUT8000/ CypTronic/CypVision		BCS100	
Specification	Color: black 2.5/4 is cable length (Unit: m)		Color: green 15/20/5 is cable length (Unit: m)		Color: yellow 3X/7X/17X is cable length (Unit: m)		Color: white 140/180 is cable length (Unit: mm)	

Item	Servo cable									62-pin cable		37-pin cable	
Application	Connect BMC control card with servo driver									Connect BMC control card with BCL I/O terminal board		Connect BMC control card with BCL I/O terminal board	
Image													
Model	C1.5- 1.5/2.5 Yaskawa (optional)	C1.5- 1.5/2.5 Panasonic (optional)	C1.5- 1.5/2.5 Fuji (optional)	C1.5- 1.5/2.5 Delta (optional)	C1.5- 1.5/2.5 Schneider (optional)	C1.5- 1.5 (standard)	C1.5- 2.5/4 (standard)	C1.5- 1.5/2.5 Yaskawa (optional)	C1.5- 1.5/2.5 Panasonic (optional)	C62- 2 (standard)	C62- 5/ C62- 10 (standard)	C37- 2 (standard)	C37- 5/ C37- 10 (standard)
System	FSCUT1000/FSCUT2000/FSCUT3000					FSCUT1000/FSCUT2000/ FSCUT3000/FSCUT4000		FSCUT4000		FSCUT1000/ FSCUT2000/ FSCUT3000/ FSCUT4000		FSCUT2000/ FSCUT3000	
Description	Yaskawa plug	Panasonic plug	Fuji driver plug	Delta driver plug	Schneider plug	Unwelded cable		Yaskawa plug	Panasonic plug	Color: black 2/5/10 is cable length (Unit: m)		Color: black 2/5/10 is cable length (Unit: m)	
	Color: orange 1.5/2.5 is cable length (Unit: m)					Color: black 1.5/2.5/4 is cable length (Unit: m)		Color: purple 1.5/2.5 is cable length (Unit: m)					



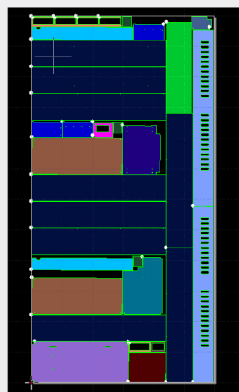
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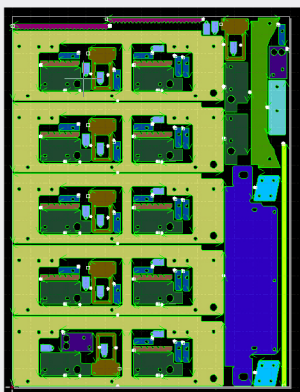
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Introduction

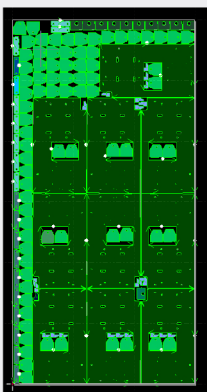
CypNest is designed for FSCUT sheet cutting system. It integrates advanced functions of drawing modification, quick nesting, toolpath generation, analysis report and more to meet your production needs.



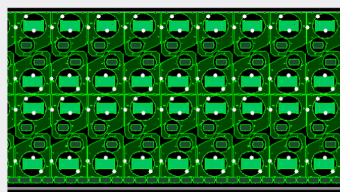
Rectangular nest



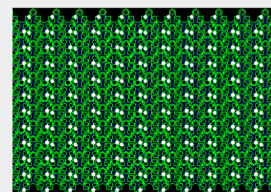
In-part nest



In-part nest



Free shape in-part nest



Free shape parts nest

Drawing modification & import



Intelligent parts recognition, drawing error identification and optimization;
Support file formats of DWG and DXF;
Support batch create and import parts via Excel table.

Nesting strategy



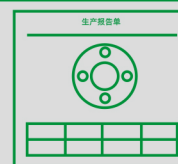
Powerful algorithm engine of high efficiency and production rate;
No limit of sheet and parts quantity in nesting; Support manual and automatic nesting; support free form sheet nesting.

Toolpath optimization



Smart toolpath strategy to minimize travel length; Smooth operation style for toolpath adjusting;
Multiple common line options to meet your production needs.

Assist function

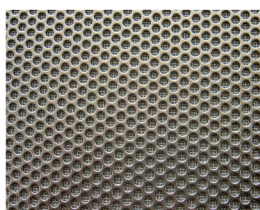


Generate analysis report of production and pricing.
Technique and cutting parameter perfectly match with HypCut/CypCut laser cutting software.

Application



Metal box



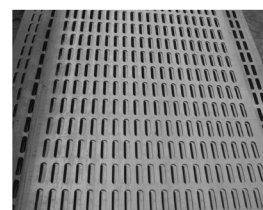
Grid



Mould



Cabinet



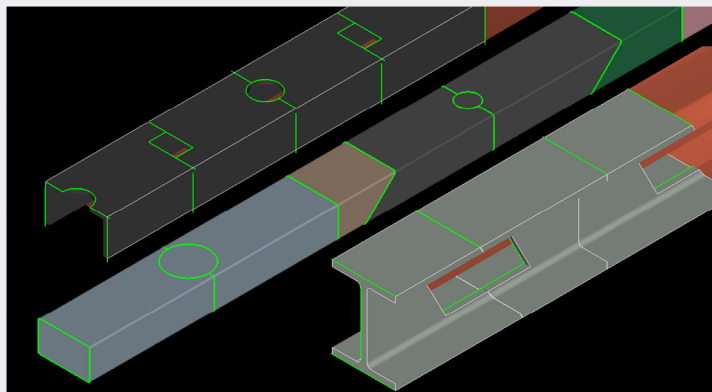
Cooling holes



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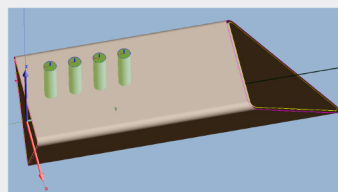
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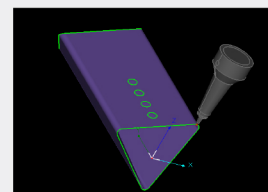
Parts nesting

Introduction

TubesT is designed for CypTube/TubePro laser cutting system. From parts drawing and modification, full type compensation, strategic nesting to report generation, TubesT will meet and exceed your production needs.

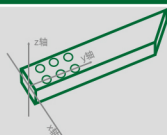


Parts drawing



Toolpath simulation

Parts design



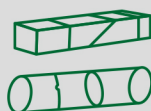
Create parts via standard parameter(circle, rectangle, Obround, U/H/T profiles and free form shape parts);
Allow to create wrapping holes by planar contour of any shape;
3D vision, allow to zoom, rotate and move graphic view and facilitate user to check tube holes and cut-off section.

Quick



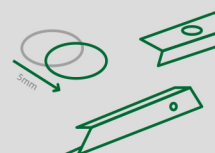
Support import parts of different shape all at once;
Support IGS/SAT and assembly;
Support import and create standard parts via Excel table.

Auto nest



Support auto nest parts of different shape all at once; Support flexible common line styles to minimize waste;
Support round tube rotation in nesting;support manual nest;
Support simple and detailed nest report.

Graphic technique



Support drawing modification of inner/outer contour selection, welding seam avoidance etc; Support auto-add technique of kerf compensation, lead line, micro-joint and cooling point; Support edit 3D vector of profile contour, support bevel cutting technique.

Application



Fitness equipment



Shelves



Medical equipment



Metal furniture



Indoor appliance



Friendess Co., Ltd

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