



Hangzhou Dahe Thermo-Magnetics CO.,Ltd.  
Address: No.668 Binkang Road, Binjiang District, Hangzhou City, Zhejiang 310053, P.R.China.  
Pre sales technical consultation: 15967138668  
After-sales service tel: (+86) 0571-86696188  
Code: 310053  
Fax: 021-6432 5393  
E-mail: wangyf@ferrotec.com.cn  
URL: www.ferrotec.com.cn



# CHILLER

## Chiller Product Introduction Manual

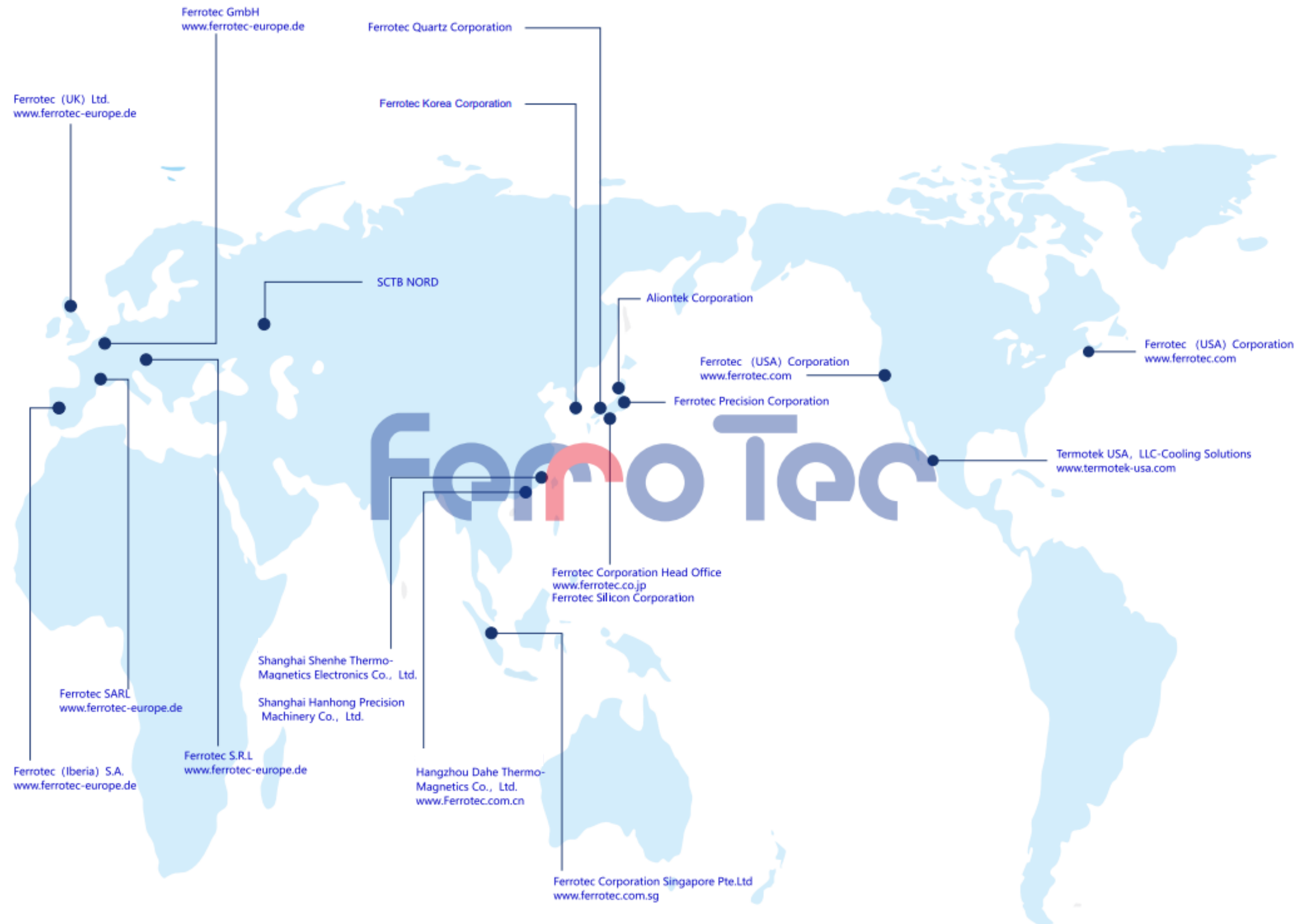


○○●

TEC thermo-chiller, vapor compression thermo-chiller, thermal shock and other products are provided. Comprehensive service for research and development/production/technical consultation

2023





CONTENTS

Group profile.....	02
Thermoelectric division development path.....	03
R&D equipment and team members.....	04
Scope of application.....	05
Principles and characteristics of TEC series products.....	06
TEC series chiller(Air-cooled).....	07-10
TEC series chiller(Water-cooled).....	11-15
Accessories introduction.....	16
Accessories (Cold plate system and thermo-con).....	17-22
Principles and characteristics of compression series products.....	23
Compression series chiller(Air-cooled).....	24-26
Compression series chiller(Water-cooled).....	27-30
Low temperature compression series chiller.....	31
Thermal shock.....	32
Industrial series chiller(Air-cooled).....	33-35
Cascade refrigeration series chiller.....	36
Product model naming system.....	37
Customer request form.....	38

Product series overview

TEC series chiller	Air-cooled	Air-cooled 300W	8 inches	150W
		Air-cooled 320W		200W
		Air-cooled 600W	Air-cooled	Air-cooled 1500W
		Air-cooled 1200W		Air-cooled 2400W
	Water-cooled	Water-cooled 300W		Air-cooled 5000W
		Water-cooled 600W	Water-cooled	Water-cooled 1500W
		Water-cooled 600W (30m lift)		Water-cooled 2400W
		Water-cooled 900W		Water-cooled 5000W
		Water-cooled 1200W		Water-cooled 10KW
Accessories (Cold plate system and thermo-con)	Integrated	FCSW0022301	Low temperature compression series chiller	
	Thermo-con	FCSE0004820	Thermal shock	
	4 inches	75W	Industrial series chiller	
	6 inches	120W	Cascade refrigeration series chiller	

# ABOUT US

## Group profile

Ferrotec group, is headquartered in Tokyo, Japan. It is a multinational group that dedicated to providing global customers with advanced thermo-electrical semiconductor materials, components, systems, and product solutions. It always adheres to the principle of quality first. The high-end technical support from Japan ensures the realization of the business philosophy and principles. After more than thirty years of continuous accumulation, the company can design the most reasonable and suitable products, based on customers' different application scenarios and usage demands. With professional technical analysis and means, the company provides customers with highly cost-effective products, thereby it can achieve a win-win situation.

### Legacy technologies

Hangzhou Dahe Thermo-Magnetics Co., Ltd was founded on January 31, 1992, with more than 30 years of technical accumulation and talent reserves, and strong technical support, production management capabilities from Japanese group companies.

### Strong product delivery capability

Ferrotec has advanced production technology, stable product output, excellent sales and technical team. We provide customers with stable product output and technical services on time, with the rigorous lean manufacturing management policy of Japanese enterprises, and we insist the quality policy is vital to our enterprise.

### Stable product output

After years of efforts by our company, a stable production line has been formed and continues to grow every year. The company's advanced production technology greatly shortens customer delivery time and has the professional advantage of "efficiency and high performance". At present, the company has a good market prospect and stable production efficiency. The semiconductor refrigeration sheets, thermo-con and other related thermoelectric products have been widely used in the semiconductor, industrial laser, medical testing and other industry markets. The development of new products is also increasing. The completion of the project will significantly improve the company's industry competitiveness and market share.

### Fast response to after-sales service

Ferrotec has built a global marketing network and after-sales service in China, Japan, the United States, Germany, France, Britain, Italy, Russia, Singapore, South Korea and some other places, and provides customers with timely, efficient, and worry free after-sales service. Let customers enjoy the product without any worries.





## Thermoelectric division development path



**1992** Hangzhou Dahe Thermo-Magnetic Co., Ltd. was established and began to produce thermoelectric modules.



**1993** The thermoelectric cooler was successfully manufactured and started mass production. (The yield of products increased to 95%, annual volume gets 6000 pieces)



**2005** The automotive industry management system ISO/TS16949 was successfully introduced. (Quality management climbed to a new level)



**2010** Assembly automation was realized. (With the cooperation of Microsoft and other large enterprises to expand the market share again)



**2016** The annual sales of Ferrotec(China) TE division exceeded RMB 500 million.



**2017** A new plant in Changshan was established and started production.

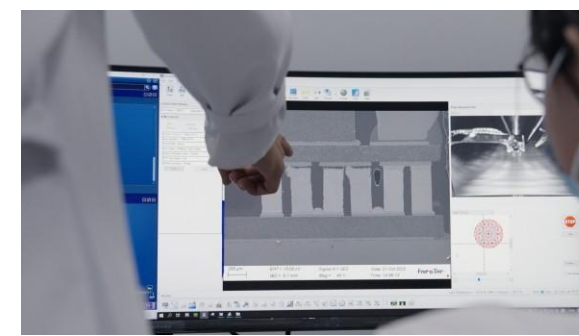
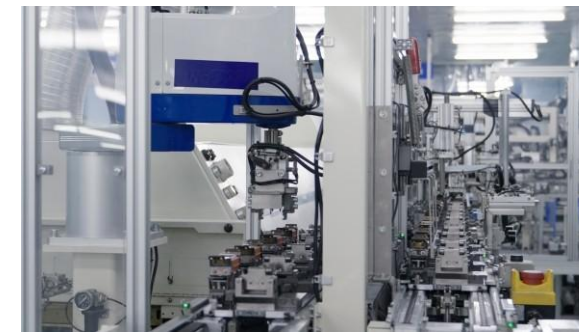
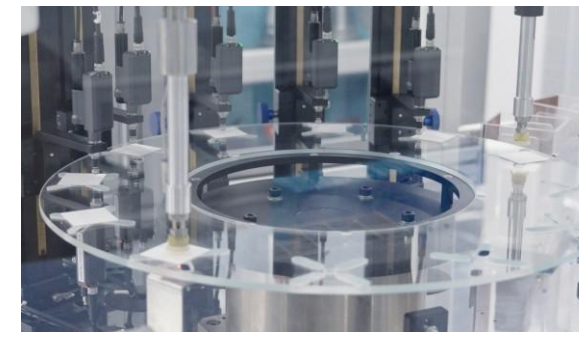


**2020** Cooling pads was supplied to Huawei 5G base stations. (With a maximum monthly shipment of over 450000 chips)



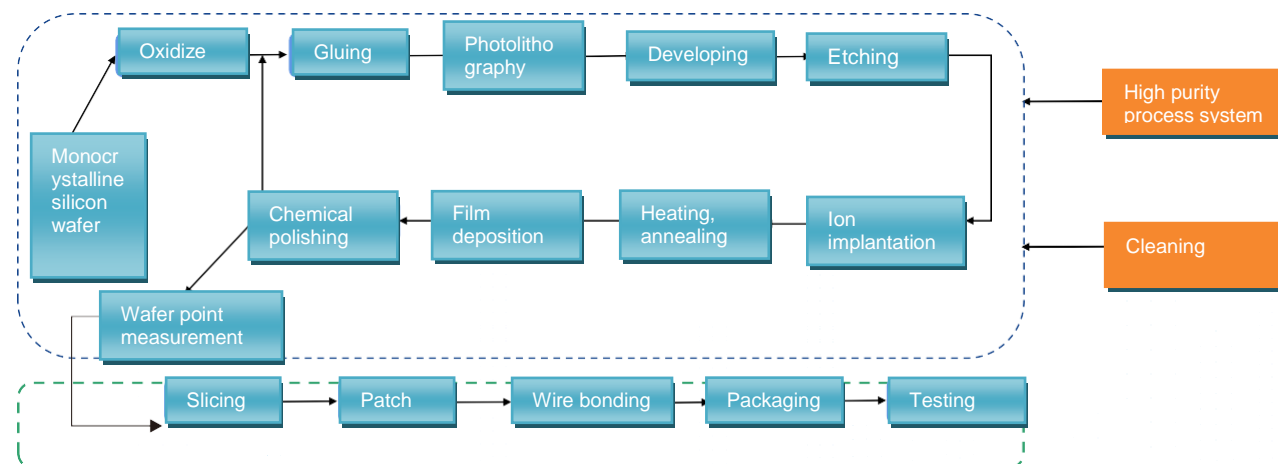
**2021** 100% acquisition of Russian RMT company (The group's top 1 position in the semiconductor refrigeration chip field was consolidated.)

## R&D equipment and team members





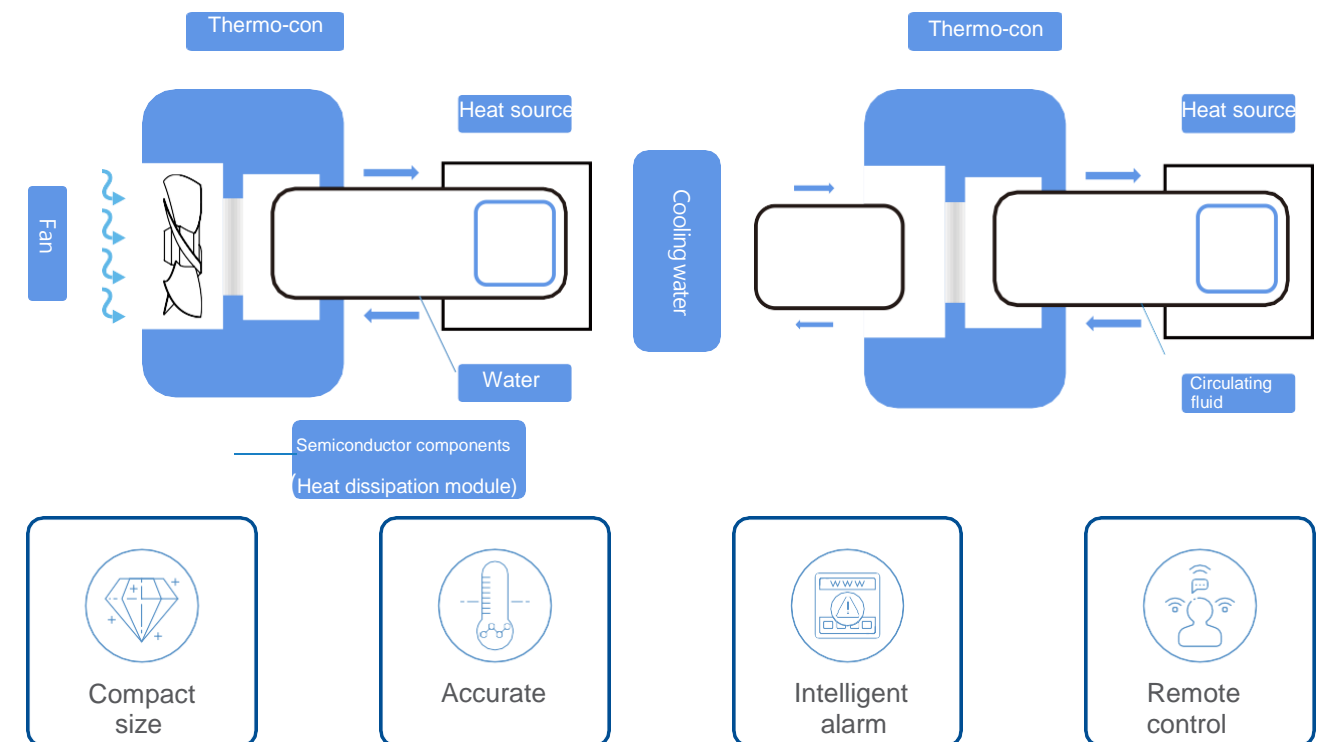
## Scope of application



Chiller aims to help achieve precise temperature control and transform into a perfect "leader in thermal solutions". The best solution for intelligent and comfortable human life was provided.



## Principles and characteristics of products



Thermoelectric Cooler (TEC) is a semiconductor device consisting of many small and effective heat pumps. By applying a low-voltage DC power source, the heat will be moved through the module from one side to the other. One module face, therefore, will be cooled while the opposite face simultaneously is heated. Multiple pairs of semiconductor components in series form a thermo-electric module assembly, heat absorption causes a decrease in temperature. Fast response and cold/hot surface conversion achieves high-precision temperature control.

The temperature range of FCP series semiconductor thermo-con is from 5 °C to 65 °C, and the cooling power is from 300W to 1800W. By using air-cooled/water-cooled methods, semiconductor components of the thermo-cons have stable performance, highly accurate temperature control, compact size and closed system. The thermo-cons can achieve remote control of communication methods such as RS485/RS232, ETH and Ethernet, combined with multi-functional alarm system, security system, data transmission system. Ferrotec can provide custom lead products according to specific requirements.

TEC series chiller (Air-cooled)

FCP30021A

Model introduction

This device is an air-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

Technical parameters



Model	FCP30021A	Tank Capacity	Approx 3.0L
Cooling Method	Thermoelectric modules	Port Size	IN/OUT G3/8;Drain G3/8 (with plug)
Radiating Method	Forced air-cooling	Wetted Parts Material	Stainless steel 304,EPDM,PE,ABS
Control Method	Cooling/Heating PID control	Power Supply	Single-phase 100 to 240 VAC, 50/60Hz
Ambient Temperature/Humidity	10~35℃,35~80%RH	Overload Current	13.5A
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution	Current Consumption	6A(100V)~2.2A(240V)
Operating Temperature Range	10.0~60.0℃	Communications	I/O、ETH、RS232、RS485
Cooling Capacity	320W (25℃)	Noise	60dBA
Heating Capacity	780W (25℃)	Weight	Approx 18kg
Temperature Stability	±0.05℃	Safety Standards	EN60204-1 CE marking
Pump	Magnetic drive pump 22L/min,11m lift	Product Size	475.5*213.5*357.5mm

TEC series chiller (Air-cooled)

FCP30025A

Model introduction

This device is an air-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

Technical parameters



Model	FCP30025A	Tank Capacity	Approx 5.0L
Cooling Method	Thermoelectric modules	Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Radiating Method	Forced air-cooling	Wetted Parts Material	Stainless steel 304,EPDM,PE,ABS
Control Method	Cooling/Heating PID control	Power Supply	Single-phase 100 to 240 VAC 50/60Hz
Ambient Temperature/Humidity	10~35℃,35~80%RH	Overload Current	13.5A
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution	Current Consumption	5.2A(100V)~2.2A(240V)
Operating Temperature Range	10.0~60.0℃	Communications	I/O、ETH、RS232、RS485
Cooling Capacity	320W (25℃)	Noise	60dBA
Heating Capacity	780W (25℃)	Weight	Approx 18.5kg
Temperature Stability	±0.05℃	Safety Standards	EN60204-1 CE marking
Pump	Magnetic drive pump 22L/min,11m lift	Product Size	476*213.5*385.5mm

TEC series chiller(Air-cooled)  
FCP60022A

● Model introduction

This device is an air-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

● Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

● Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

● Technical parameters



Model	FCP60022A	Tank Capacity	Approx 3.0L
Cooling Method	Thermoelectric modules	Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Radiating Method	Forced air-cooling	Wetted Parts Material	Stainless steel 304,EPDM,PE,ABS
Control Method	Cooling/Heating PID control	Power Supply	Single-phase 100 to 240 VAC 50/60Hz
Ambient Temperature/Humidity	10~35℃,35~80%RH	Overload Current	13.5A
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution	Current Consumption	9.5A(100V)~3.9A(240V)
Operating Temperature Range	10.0~60.0℃	Communications	I/O、ETH、RS232、RS485
Cooling Capacity	600W（25℃）	Noise	75dBA
Heating Capacity	900W（25℃）	Weight	Approx 27.2kg
Temperature Stability	±0.05℃	Safety Standards	EN60204-1 CE marking
Pump	Magnetic drive pump 19L/min,20m lift	Product Size	475.5*213.5*488.5mm

TEC series chiller(Air-cooled)  
FCP01232A

● Model introduction

This device is an air-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

● Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

● Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

● Technical parameters



Model	FCP01232A	Tank Capacity	Approx 5.0L
Cooling Method	Thermoelectric modules	Port Size	IN/OUT G1/2 Drain G3/8 (with plug)
Radiating Method	Forced air-cooling	Wetted Parts Material	Stainless steel 304,EPDM,PE,ABS
Control Method	Cooling/Heating PID control	Power Supply	Single-phase 200 to 240 VAC 50/60Hz
Ambient Temperature/Humidity	10~35℃,35~80%RH	Overload Current	20.25A
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution	Current Consumption	9.5A(100V)~3.9A(240V)
Operating Temperature Range	10.0~60.0℃	Communications	I/O、ETH、RS232、RS485
Cooling Capacity	1200W（25℃）	Noise	75dBA
Heating Capacity	1800W（25℃）	Weight	Approx 40kg
Temperature Stability	±0.05℃	Safety Standards	EN60204-1 CE marking
Pump	Magnetic drive pump 36L/min,30m lift	Product Size	475.5*213.5*488.5mm



TEC series chiller(Water-cooled)  
FCP30023W

● Model introduction

This device is a water-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

● Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 ℃ tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

● Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

● Technical parameters



Model	FCP30023W	Circulating Fluid	Pump	Magnetic drive pump 22L/min,11m lift
Cooling Method	Thermoelectric modules		Tank Capacity	Approx 3.0L
Radiating Method	Forced water-cooling		Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS 304, EPDM, PE, ABS
Ambient Temperature/Humidity	10~35℃,35~80%RH	Factory cooling water	Temperature Range	10~35℃
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution		Pressure Range	≤1MPa
Operating Temperature Range	10.0~60.0℃		Required Flow Rate	3~7L/min
Cooling Capacity	320W (25℃)		Port Size	G3/8
Heating Capacity	680W (25℃)		Wetted Parts Material	SUS 304, EPDM, PE
Temperature Stability	±0.05℃		Communications	I/O、ETH、RS232、RS485
Power Supply	Single-phase 100 to 240 VAC 50/60Hz		Product Size	360*192*253mm
Overload Current	13.5A		Weight	Approx 10.5kg
Current Consumption	4.8A(100V)~2.0A(240V)		Safety Standards	EN60204-1 CE marking

TEC series chiller(Water-cooled)  
FCP60024W

● Model introduction

This device is a water-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

● Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 ℃ tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

● Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

● Technical parameters



Model	FCP60024W	Circulating Fluid	Pump	Magnetic drive pump 19L/min,20m lift
Cooling Method	Thermoelectric modules		Tank Capacity	Approx 3.0L
Radiating Method	Forced water-cooling		Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS 304, EPDM, PE, ABS
Ambient Temperature/Humidity	10~35℃,35~80%RH	Factory cooling water	Temperature Range	10~35℃
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution		Pressure Range	≤1MPa
Operating Temperature Range	10.0~60.0℃		Required Flow Rate	≥7L/min
Cooling Capacity	600W (25℃)		Port Size	G3/8
Heating Capacity	900W (25℃)		Wetted Parts Material	SUS 304, EPDM, PE
Temperature Stability	±0.05℃		Communications	I/O、ETH、RS232、RS485
Power Supply	Single-phase 100 to 240 VAC 50/60Hz		Product Size	493.5*234.5*358mm
Overload Current	13.5A		Weight	Approx 21.5kg
Current Consumption	7.5A(100V)~3.2A(240V)		Safety Standards	EN60204-1 CE marking

TEC series chiller(Water-cooled)  
FCP60024L30W

Model introduction

This device is a water-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

Technical parameters

Model	FCP60024L30W	Circulating Fluid	Pump	Magnetic drive pump 19L/min,30m lift
Cooling Method	Thermoelectric modules		Tank Capacity	Approx 3.0L
Radiating Method	Forced water-cooling		Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS 304, EPDM, PE, ABS
Ambient Temperature/Humidity	10~35℃,35~80%RH	Factory cooling water	Temperature Range	10~35℃
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution		Pressure Range	≤1MPa
Operating Temperature Range	10.0~60.0℃		Required Flow Rate	≥7L/min
Cooling Capacity	600W (25℃)		Port Size	G3/8
Heating Capacity	900W (25℃)		Wetted Parts Material	SUS 304, EPDM, PE
Temperature Stability	±0.05℃		Communications	I/O、ETH、RS232、RS485
Power Supply	Single-phase 100 to 240 VAC 50/60Hz		Product Size	539.5*234.5*358mm
Overload Current	13.5A		Weight	Approx 22kg
Current Consumption	7.5A(100V)~3.2A(240V)		Safety Standards	EN60204-1 CE marking



TEC series chiller(Water-cooled)  
FCP90026W

Model introduction

This device is a water-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

Technical parameters

Model	FCP90026W	Circulating Fluid	Pump	Magnetic drive pump 19L/min,30m lift
Cooling Method	Thermoelectric modules		Tank Capacity	Approx 3.0L
Radiating Method	Forced water-cooling		Port Size	IN/OUT G3/8 Drain G3/8 (with plug)
Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS 304, EPDM, PE, ABS
Ambient Temperature/Humidity	10~35℃,35~80%RH	Factory cooling water	Temperature Range	10~35℃
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution		Pressure Range	≤1MPa
Operating Temperature Range	10.0~60.0℃		Required Flow Rate	≥10L/min
Cooling Capacity	900W (25℃)		Port Size	G3/8
Heating Capacity	1400W (25℃)		Wetted Parts Material	SUS 304, EPDM, PE
Temperature Stability	±0.05℃		Communications	I/O、ETH、RS232、RS485
Power Supply	Single-phase 100 to 240 VAC 50/60Hz		Product Size	558.5*259.5*358mm
Overload Current	20.25A		Weight	Approx 28kg
Current Consumption	11.5A(100V)~5.2A(240V)		Safety Standards	EN60204-1 CE marking



TEC series chiller(Water-cooled)  
FCP01231W

● Model introduction

This device is a water-cooled chiller with functions such as liquid level drop, power outage reset, anti freezing water pump, remote control and the touch screen.

● Performance characteristics

This device has excellent performance, small size, low noise, low power consumption, high thermal efficiency. And the control temperatures are lapped with 0.05 °C tolerance. Ferrotec can provide custom lead products according to requirements. The device is suitable for environments with good temperature and humidity control. It has functions such as temperature compensation and self diagnosis. In addition, the device can achieve multiple alarm functions such as overheating, overload and water shortage. Remote control is convenient and can be controlled by various communication methods such as RS232, RS485, ETH.

● Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

● Technical parameters

Model	FCP01231W	Circulating Fluid	Pump	Magnetic drive pump 36L/min,30m lift
Cooling Method	Thermoelectric modules		Tank Capacity	Approx 3.0L
Radiating Method	Forced water-cooling		Port Size	IN/OUT G1/2 Drain G3/8 (with plug)
Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS 304, EPDM, PE, ABS
Ambient Temperature/Humidity	10~35℃,35~80%RH		Temperature Range	10~35℃
Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution	Factory cooling water	Pressure Range	≤1MPa
Operating Temperature Range	10.0~60.0℃		Required Flow Rate	≥12L/min
Cooling Capacity	1200W (25℃)		Port Size	G3/8
Heating Capacity	1800W (25℃)		Wetted Parts Material	SUS 304, EPDM, PE
Temperature Stability	±0.05℃		Communications	I/O、ETH、RS232、RS485
Power Supply	Single-phase 100 to 240 VAC 50/60Hz		Product Size	552*408*293mm
Overload Current	20.25A		Weight	Approx 35kg
Current Consumption	15A(100V)~6.4A(240V)		Safety Standards	EN60204-1 CE marking



Accessories introduction

● Introduction

Ferrotec can provide variable TE modules and assemblies, used in all kinds of the cooling and heating applications.

● Performance characteristics

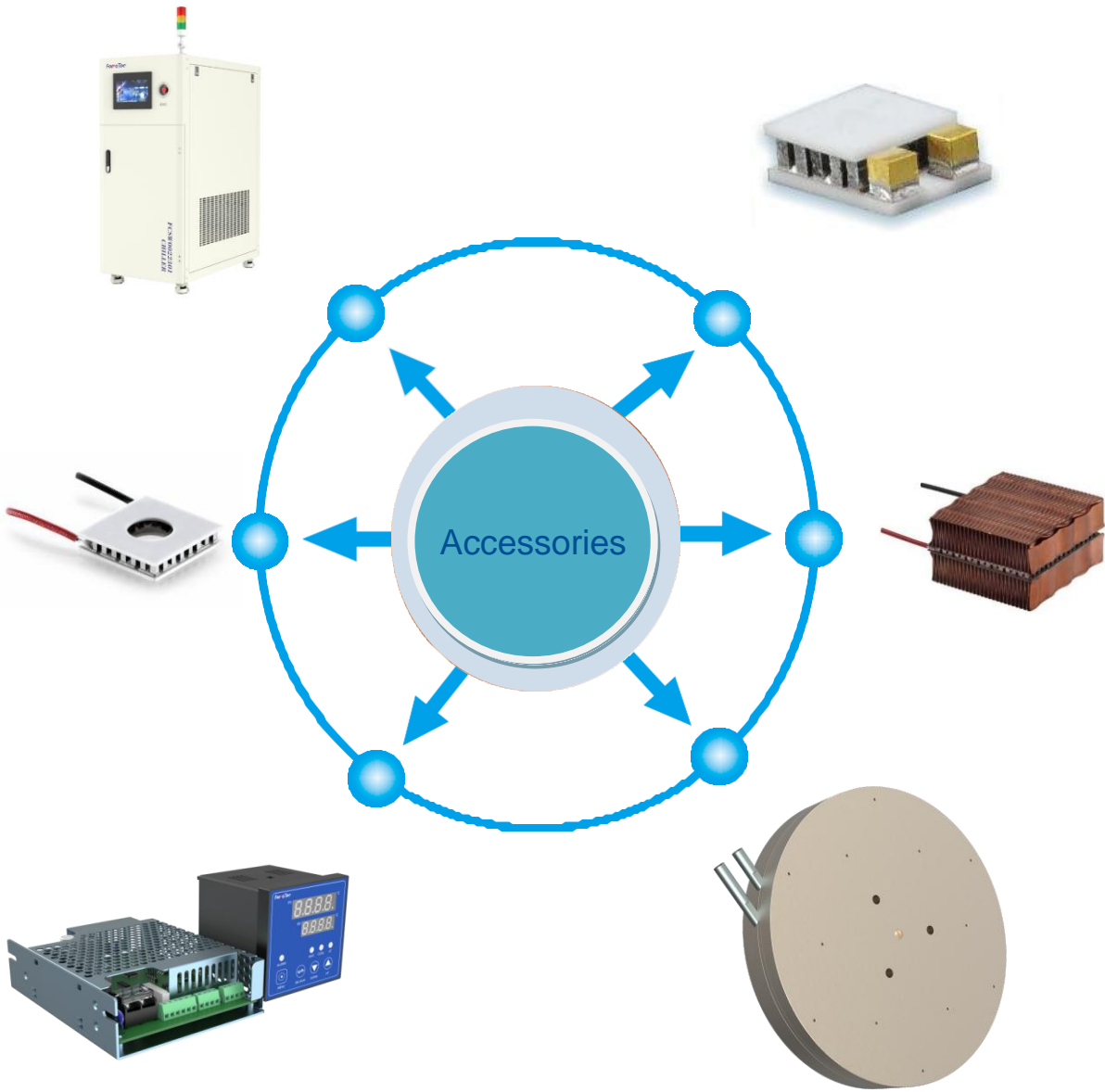
Global leading independent R&D technology of thermoelectric modules significantly improves the performance.

Excellent moisture-proof sealing design prevents moisture from entering the device.

Optimized heat dissipation design, achieves efficient cooling performance.

The isolated structural design enhances the seismic and impact resistance of TEC.

● Applications





Accessories (Cold plate system and thermo-con)  
FCSW0022301

Model introduction

This device is an integrated thermo-con, which can achieve temperature control of the machine, multiple chambers and components. The high-precision thermo-con contains TEC and multiple modular. And the control temperatures are lapped with 0.05 °C tolerance. The modular unit of the peripheral body is selected according to the actual capacity demands, so that the entire machine can meet the highly customized needs.

Applications

Mainly used for integrated temperature control of spin coater and the cold plate. For temperature control of spindle motor and developer, multiple built-in modules can be selected according to actual capacity demands.

Technical parameters

Model		FCSW0022301	Assemblies	Pump	Magnetic drive pump 22L/min,11m lift
Cooling Method		Thermoelectric modules		Tank Capacity	Approx 1.4L
Control Method		Cooling/Heating PID control		Port Size	IN/OUT G3/8 DrainG3/8 (With Plug)
Ambient Temperature/Humidity		10~35℃,35~80%RH		Overload Current	13.5 A
TEC Assemblies	Operating Temperature Range	15.0~35.0℃		Max Input Power	500W
	Out Voltage	12~48V		Quantity	6 assemblies
	Output Current	0~20A		Wetted Parts Material	SUS 304,EPDM,PE,ABS
	Temperature Control Stability	±0.05℃		Temperature Range	10~35℃
	Protection Function	Overload, short circuit, over-temperature	Factory cooling water	Pressure Range	≤1MPa
	Thermocouple Type	4-wire PT100		Required Flow Rate	3~7L/min
	Quantity	9 assemblies		Port Size	G3/8
Assemblies	Circulating Fluid	DI water/15% Ethylene glycol/Fluoride solution		Wetted Parts Material	SUS 304, EPDM, PE
	Operating Temperature Range	10.0~60.0℃		Communications	RS485
	Cooling Capacity	320W (25℃)		Input Voltage	Three-phase 208V 50Hz/ Single-phase 220V 50Hz(optional)
	Heating Capacity	680W (25℃)		Product Size	932*590*1362mm
	Temperature Stability	±0.05℃			



Accessories (Cold plate system and thermo-con)  
FCSE0004820

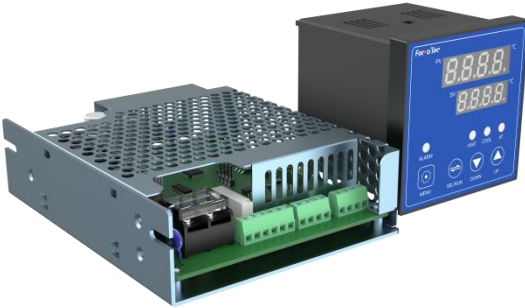
Model introduction

The TEC thermo-con is mainly used for precise control of TEC modules, the cold plate system and the hot plate system. Users can directly set the temperature at the setting panel, or connect the system to remote control the drive and control modules according to the demands.

Applications

Mainly used for temperature control of TEC modules and the cooling system containing TEC modules.

Technical parameters



Model	FCSE0004820	Execution function 3	Temperature compensation
TEC Input Voltage	12~48V	Execution function 4	Power constraints
TEC Output Voltage	12~48V	Output I/O	External alarm status output I/O
Rated High-voltage Driving Current	0~20A	Communication protocol	ModBus-RTU
Temperature Control Stability	0.02℃	Communication Port	RS485 port
Circuit Board Input Voltage	12V	PCB Protection Function	Short circuit protection, overload protection, over temperature protection
Temperature Sensor	Four-wire PT100	TEC Power Supply	Max 48V20A
Control Module Size	132*104*34mm	The Others	USB-TYPE-C Firmware update interface Upper computer software
Execution function 1	PID auto tuning + fuzzy control	Display module Model No.	FCSE0004820-01AC/ FCSE0004820-01DC
Execution function 2	8-stage temperature program	Display module Size	72*72*75mm

Accessories (Cold plate system and thermo-con)

FCSW0052306

● Introduction

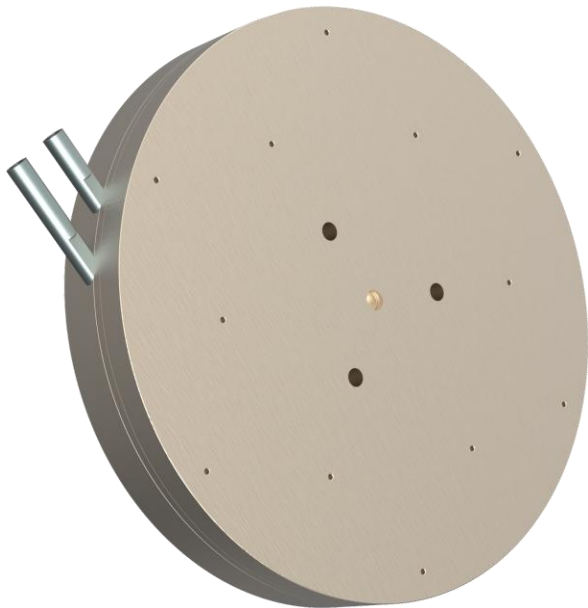
This device is a 4-inch wafer cooling system with built-in TEC modules. The cooling temperatures of surface are lapped with 0.05 °C tolerance. Compared to a pure embedded cold plate, the cooling capacity is more reliable and stable, and the plate surface temperature is more uniform. The device can meet customized needs with a shorter time.

● Applications

Widely used in the semiconductor industry as a process adhesive developing device. The device can provide fast cooling for wafers.

● Technical parameters

Model	FCSW0052306	Temperature Controller Model		FCSE0004820
Wafer Size	4-inch	Control Voltage		DC12~48V
Cooling Method	Thermoelectric modules	Factory cooling water	Temperature Range	15~30℃
Radiating Method	Forced water-cooling		Pressure Range	≤1MPa
Control Method	Cooling/Heating PID control		Required Flow Rate	2~5L/min
Ambient Temperature/Humidity	10~35℃, 35~80%RH		Wetted Parts Material	Stainless Steel 304
Hot Surface Circulating Fluid	Factory cooling water	Actual Input Power		≤150W
Operating Temperature Range	15.0~35.0℃	Maximum Output Current		18A
Cooling Capacity	75W（25℃）	Protection Function		Overload, short circuit, over-temperature
Heating Capacity	180W（25℃）	Communications		RS485
Temperature Stability	±0.05℃			



Accessories (Cold plate system and thermo-con)

FCSW0052305

● Introduction

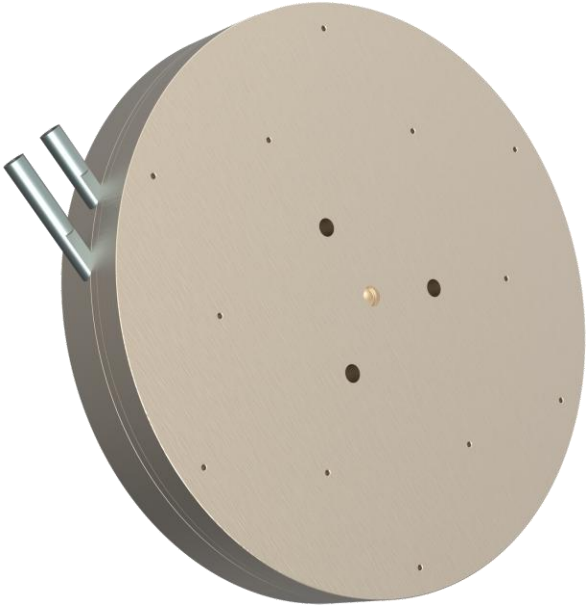
This device is a 6-inch wafer cooling system with built-in TEC modules. The cooling temperatures of surface are lapped with 0.05 °C tolerance. Compared to a pure embedded cold plate, the cooling capacity is more reliable and stable, and the plate surface temperature is more uniform. The device can meet customized needs with a shorter time.

● Applications

Widely used in the semiconductor industry as a process adhesive developing device. The device can provide fast cooling for wafers.

● Technical parameters

Model	FCSW0052305	Temperature Controller Model		FCSE0004820
Wafer Size	6-inch	Control Voltage		DC12~48V
Cooling Method	Thermoelectric modules	Factory cooling water	Temperature Range	15~30℃
Radiating Method	Forced water-cooling		Pressure Range	≤1MPa
Control Method	Cooling/Heating PID control		Required Flow Rate	2~5L/min
Ambient Temperature/Humidity	10~35℃, 35~80%RH		Wetted Parts Material	Stainless Steel 304
Hot Surface Circulating Fluid	Factory cooling water	Actual Input Power		≤150W
Operating Temperature Range	15.0~35.0℃	Maximum Output Current		18A
Cooling Capacity	120W（25℃）	Protection Function		Overload, short circuit, over-temperature
Heating Capacity	270W（25℃）	Communications		RS485
Temperature Stability	±0.05℃			



Accessories (Cold plate system  
and thermo-con)  
FCSW0032304

● Introduction

This device is a 8-inch wafer cooling system with built-in TEC modules. The cooling temperatures of surface are lapped with 0.05 ℃ tolerance. Compared to a pure embedded cold plate, the cooling capacity is more reliable and stable, and the plate surface temperature is more uniform. The device can meet customized needs with a shorter time.

● Applications

Widely used in the semiconductor industry as a process adhesive developing device. The device can provide fast cooling for wafers.

● Technical parameters

Model	FCSW0032304	Temperature Controller Model	FCSE0004820
Wafer Size	8-inch	Control Voltage	DC12~48V
Cooling Method	Thermoelectric modules	Temperature Range	15~30℃
Radiating Method	Forced water-cooling	Pressure Range	≤1MPa
Control Method	Cooling/Heating PID control	Required Flow Rate	3~7L/min
Ambient Temperature/Humidity	10~35℃, 35~80%RH	Wetted Parts Material	Stainless Steel 304
Hot Surface Circulating Fluid	Factory cooling water	Actual Input Power	≤220W
Operating Temperature Range	15.0~35.0℃	Maximum Output Current	18A
Cooling Capacity	150W (25℃)	Protection Function	Overload, short circuit, over-temperature
Heating Capacity	340W (25℃)	Communications	RS485
Temperature Stability	±0.05℃		



Accessories (Cold plate system  
and thermo-con)  
FCSW0032302

● Introduction

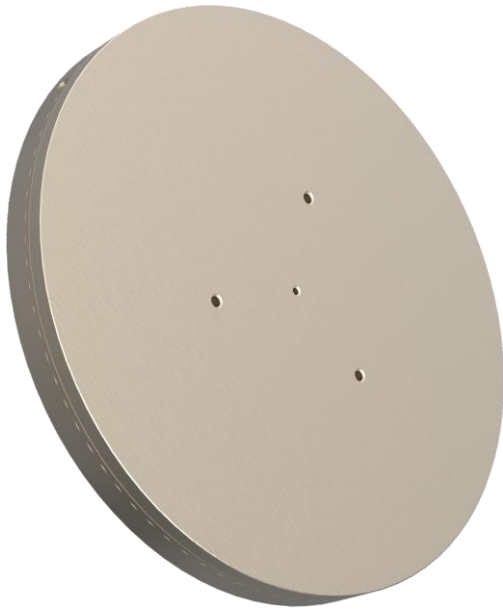
This device is a 12-inch wafer cooling system with built-in TEC modules. The cooling temperatures of surface are lapped with 0.05 ℃ tolerance. Compared to a pure embedded cold plate, the cooling capacity is more reliable and stable, and the plate surface temperature is more uniform. The device can meet customized needs with a shorter time.

● Applications

Widely used in the semiconductor industry as a process adhesive developing device. The device can provide fast cooling for wafers.

● Technical parameters

Model	FCSW0032302	Temperature Controller Model	FCSE0004820
Wafer Size	12-inch	Control Voltage	DC12~48V
Cooling Method	Thermoelectric modules	Temperature Range	15~30℃
Radiating Method	Forced water-cooling	Pressure Range	≤1MPa
Control Method	Cooling/Heating PID control	Required Flow Rate	3~7L/min
Ambient Temperature/Humidity	10~35℃, 35~80%RH	Wetted Parts Material	Stainless Steel 304
Hot Surface Circulating Fluid	Factory cooling water	Actual Input Power	≤250W
Operating Temperature Range	15.0~35.0℃	Maximum Output Current	18A
Cooling Capacity	200W (25℃)	Protection Function	Overload, short circuit, over-temperature
Heating Capacity	380W (25℃)	Communications	RS485
Temperature Stability	±0.05℃		





Principles and characteristics of compression series products

Principles and characteristics of products

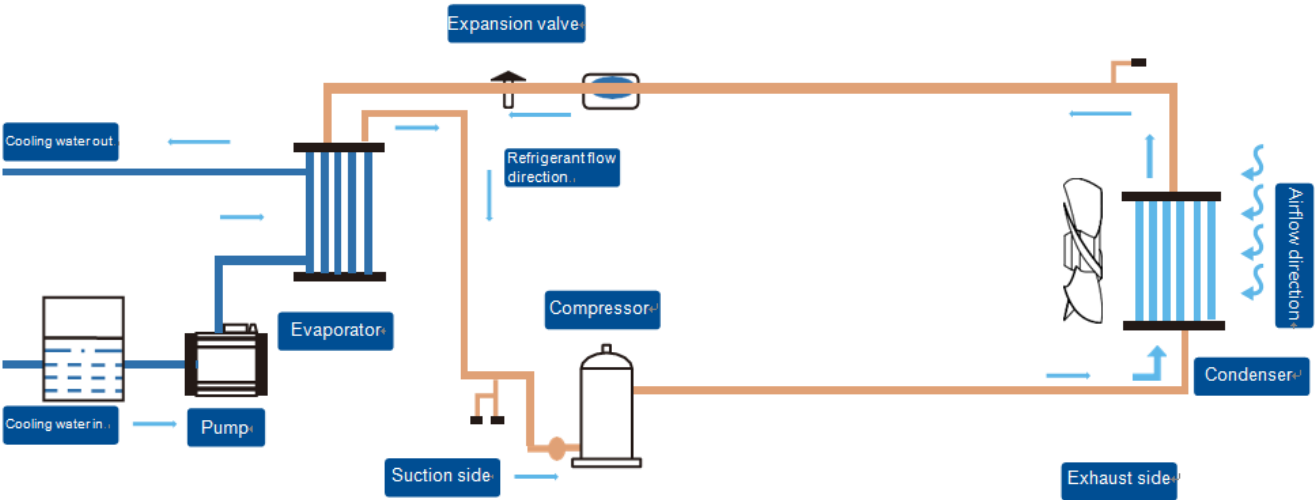
Principles introduction

The refrigeration systems of vapor compression chiller generally consist of the compressor, the condenser, the throttling element, and the evaporator. The compressor compresses the refrigerant gas, outputs high-temperature and high-pressure refrigerant, and liquefies it into high-pressure and normal temperature fluid through the condenser (cooling water or air). Then, the fluid enters the throttling element (expansion valve or capillary tube, etc.) to reduce the pressure and temperature of the refrigerant simultaneously. The throttled refrigerant enters the evaporator and absorbs the heat of the cooled object. Afterwards, the refrigerant is sucked in and compressed by the compressor to circulate. The refrigerant is repeatedly compressed, condensed, expanded, and evaporated in the refrigeration system, continue to absorb heat and vaporize at the evaporator for cooling.

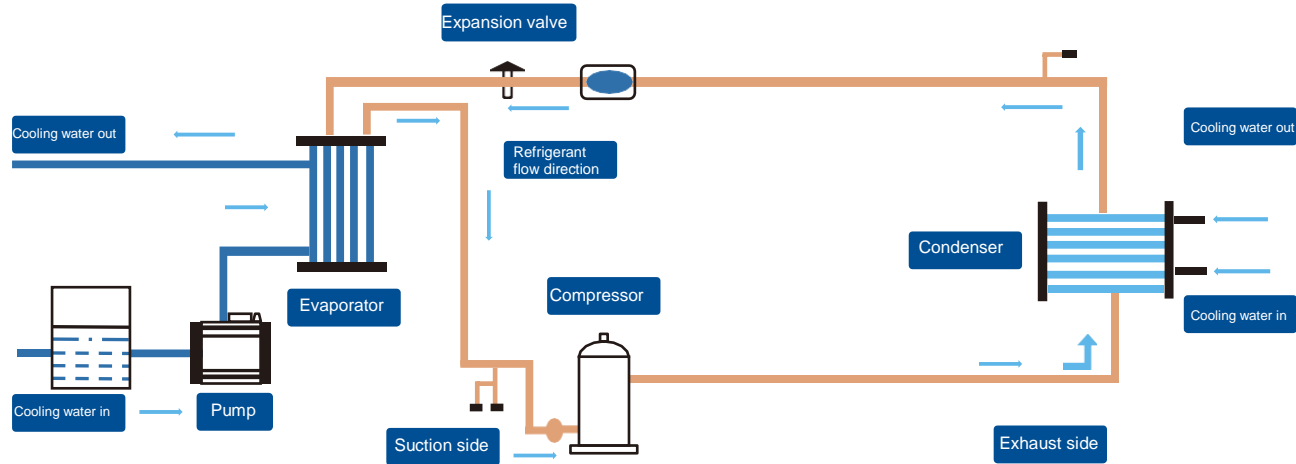
Performance characteristics

Accurate temperature control; reliable & stable; rapid cooling; environment friendly

Air-cooled



Water-cooled



Compression series chiller (Air-cooled)

FCCA0152204

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Circulatory System	Model	FCCA0152204	Electrical System	Tank Capacity	Approx 7.5L
	Cooling Method	Vapor compression refrigeration		In/Out	Rc1/2
	Radiating Method	Forced air-cooling		Drain	Rc1 (with plug)
	Control Method	Cooling/Heating PID control		Wetted Parts Material	SUS304, EPDM, PP, HDPE, VMQ
Electrical System	Ambient Temperature/Humidity	5~40℃, 35~70%RH	Circulatory System	Power Supply	Single-phase AC220V±10% , 50Hz
	Refrigerant	R410A		Overload Protection	10A
	Quantity of Refrigerant	0.45kg		Current Consumption	5.2A (220V)
				Communications	I/O、RS232、RS485
Circulatory System	Circulating Fluid	DI water/15% Ethylene glycol	Circulatory System	Weight	Approx 48kg
	Operating Temperature Range	5~40.0℃		Accessories	Power cord
	Cooling Capacity	≥1500W (20℃)		Noise	67dBA
	Heating Capacity	≈500W (20℃)		Product Size	669*380*606mm
Circulatory System	Temperature Stability	±0.1℃	Circulatory System		
	Pump	Centrifugal pump 16.7L/min, 15.5m lift			



Compression series chiller (Air-cooled)

FCCA0242202

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model		FCCA0242202	Circulatory System	Tank Capacity		Approx 7.5L		
Cooling Method		Vapor compression refrigeration		Port Size	In/Out		Rc1/2	
Radiating Method		Forced air-cooling			Drain		Rc1 （with plug）	
Control Method		Cooling/Heating PID control		Wetted Parts Material		SUS304,EPDM,PP,HDPE,VMQ		
Ambient Temperature/Humidity		5℃~40℃,35~70%RH		Electrical System	Power Supply		Single-phase AC220V±10%, 50Hz	
Refrigerant		R410A			Overload Protection		15A	
Quantity of Refrigerant		0.45kg			Current Consumption		7A （220V）	
Circulatory System	Circulating Fluid	DI water/15% Ethylene glycol			Communications		I/O、RS232、RS485	
	Operating Temperature Range	5.0℃~40.0℃		Weight		Approx 51.5kg		
	Cooling Capacity	≥2100W （20℃）		Accessories		Power cord		
	Heating Capacity	≈500W （20℃）		Noise		67dBA		
	Temperature Stability	±0.1℃		Product Size		669*380*606mm		
	Pump	Centrifugal pump 16.7L/min, 15.5m lift						



Compression series chiller (Air-cooled)

FCCA0502206

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model		FCCA0502206	Circulatory System	Tank Capacity		Approx 7.5L			
Cooling Method		Vapor compression refrigeration		Port Size	In/Out		Rc1/2		
Radiating Method		Forced air-cooling			Drain		Rc1 （with plug）		
Control Method		Cooling/Heating PID control		Wetted Parts Material		SUS304,EPDM,PP,HDPE,VMQ			
Ambient Temperature/Humidity			5℃~40℃,30~70%RH		Electrical System	Power Supply		Single-phase AC220V±10%, 50Hz	
Refrigerant			R410A			Overload Protection		30A	
Quantity of Refrigerant			0.72kg			Current Consumption		11A （220V）	
Circulatory System	Circulating Fluid		DI water/15% Ethylene glycol			Communications		I/O、RS232、RS485	
	Operating Temperature Range		5.0℃~40.0℃			Weight		Approx 83kg	
	Cooling Capacity		≥5000W （20℃）		Accessories		Power cord		
	Heating Capacity		≈800W （20℃）		Noise		68dBA		
	Temperature Stability		±0.1℃		Product Size		755*380*843mm		
Pump		Centrifugal pump 50L/min, 17m lift							



Compression series chiller

(Water-cooled)

FCCW0152203

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model		FCCW0152203	Circulatory System	Port Size	In/Out	Rc1/2
Cooling Method		Vapor compression refrigeration			Drain	Rc1 （with plug）
Radiating Method		Forced water-cooling			Wetted Parts Material	
Control Method		Cooling/Heating PID control	External Cooling System	Temperature Range		5℃-35℃
Ambient Temperature/Humidity		5℃~40℃,30~70%RH		Pressure Range		0.3MPa-0.5MPa
Refrigerant		R410A		Feed Water Capacity		12L/min
Quantity of Refrigerant		0.38kg		S-in S-out Port Size		Rc3/8
Circulatory System	Circulating Fluid	DI water/15% Ethylene glycol		Wetted Parts Material		SUS304, copper
	Operating Temperature Range	5.0℃~40.0℃	Electrical System	Power Supply		Single-phase AC220V±10%, 50Hz
	Cooling Capacity	≥1500W （20℃）		Overload Protection		10A
	Heating Capacity	≈400W （20℃）		Current Consumption		4.4A （220V）
	Temperature Stability	±0.1℃		Communications		I/O、RS232、RS485
	Pump	Centrifugal pump 16.7L/min,15.5m lift		Weight/Size		42kg/504.2*380*579.5mm
	Tank Capacity	Approx 7.5L	Accessories		Power cord	

Compression series chiller

(Water-cooled)

FCCW0242201

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model		FCCW0242201	Circulatory System	Port Size	In/Out	Rc1/2
Cooling Method		Vapor compression refrigeration			Drain	Rc1（带塞）
Radiating Method		Forced water-cooling			Wetted Parts Material	SUS304,EPDM,PP,HDPE,VMQ
Control Method		Cooling/Heating PID control	External Cooling System	Temperature Range	5℃-35℃	
Ambient Temperature/Humidity		5℃~40℃,30~70%RH		Pressure Range	0.3MPa-0.5MPa	
Refrigerant		R410A		Feed Water Capacity	14L/min	
Quantity of Refrigerant		0.4kg		S-in S-out Port Size	Rc3/8	
Circulatory System	Circulating Fluid	DI water/15% Ethylene glycol		Wetted Parts Material	SUS304, copper	
	Operating Temperature Range	5.0℃~40.0℃	Electrical System	Power Supply	Single-phase AC220V±10%, 50Hz	
	Cooling Capacity	≥2500W（20℃）		Overload Protection	15A	
	Heating Capacity	≈500W（20℃）		Current Consumption	6.5A（220V）	
	Temperature Stability	±0.1℃		Communications	I/O、RS232、RS485	
	Pump	Centrifugal pump 16.7L/min,15.5m lift		Weight/Size	46.5kg/504.2*380*579.5mm	
	Tank Capacity	Approx 7.5L	Accessories	Power cord		





Compression series chiller (Water-cooled)  
FCCW0502205

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model		FCCW0502205	Circulatory System	Port Size	In/Out	Rc1/2	
Cooling Method		Vapor compression refrigeration			Drain	Rc1（with plug）	
Radiating Method		Forced water-cooling		Wetted Parts Material		SUS304,EPDM,PP,HDPE,VMQ	
Control Method		Cooling/Heating PID control	External Cooling System	Temperature Range		5℃-35℃	
Ambient Temperature/Humidity		5℃~40℃,30~70%RH		Pressure Range		0.3MPa-0.7MPa	
Refrigerant		R410A		Feed Water Capacity		15L/min	
Quantity of Refrigerant		0.6kg		S-in S-out Port Size		Rc3/8	
Circulatory System	Circulating Fluid	DI water/15% Ethylene glycol		Wetted Parts Material		SUS304, copper	
	Operating Temperature Range	5.0℃~40.0℃		Electrical System	Power Supply		Single-phase AC220V±10%, 50Hz
	Cooling Capacity	≥5000W（20℃）			Overload Protection		30A
	Heating Capacity	≈600W（20℃）	Current Consumption		8.5A（220V）		
	Temperature Stability	±0.1℃	Communications		I/O、RS232、RS485		
	Pump	Centrifugal pump 50L/min 17m lift	Weight/Size		72kg/668.5*380*842mm		
	Tank Capacity	Approx 7.5L	Accessories		Power cord		

Compression series chiller (Water-cooled)  
FCCW1002301

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. Ferrotec can provide custom lead products according to requirements. The temperature of the water outlet is lapped with 0.1 °C tolerance. The device can achieve multi-channel output, with multiple loads, suitable for environments with good temperature and humidity control. It is energy-saving & environment friendly, easy to operate. The device has functions such as temperature compensation, self diagnosis, etc. It can also achieve multiple alarm functions such as overheating, overload, and water shortage. This chiller is remote controlled through various communication methods such as I/O, RS232, RS485, etc.

Applications

This compressor chiller is mainly designed for semiconductor coating, developing, etching and other related device, and can be used in printing, laser, packaging, medical, experimental testing and other device.

Technical parameters

Model			FCCW1002301		Circulatory System	Tank Capacity		Approx 20L	
Cooling Method			Water-cooling			Port Size	In/Out	Rc1/2	
Ambient Temperature/Humidity			5℃~45℃,30~70%RH			Wetted Parts Material		EPDM, SUS304,Cu,PVC,PTFE,POM	
Refrigerant			R513A			Over Flow Port Size		Rc3/8	
Circulatory System	Circulating Fluid		DI water/15% Ethylene glycol		Cooling System	Temperature Range		5~40℃	
	Operating Temperature Range		5.0℃~40.0℃			Pressure Range		0.3~0.5MPa	
	Cooling Capacity		10KW（20℃）			Inlet-outlet pressure differential of facility water		≥0.3MPa	
	Heating Capacity		1KW（20℃）			Port Size		Rc1/2	
	Temperature Stability		±0.1℃			Power Supply		Three-phase AC208V,60HZ	
	Pump	Rated Flow (Outlet)	45 L/min（0.45MPa）		Electrical System	Rated Current		30A	
		Maximum Flow	120L/min			Rated operating current		20A	
		Maximum Lifting	50m			Rated power consumption		4.2KW	
	Settable pressure range		0.1~0.5Mpa			Communications		I/O、RS232、RS485	
	Minimum necessary flow rate		20L/min		Weight/Size		150kg/658*991*1255mm		



Low temperature compression series chiller  
FCCW0362303-20

Model introduction

This device adopts a frequency conversion temperature control method to improve energy efficiency and reduce energy consumption. The target cooling capacity can reach 3600W at -20℃. The device can meet the cooling needs of users. It has accurate temperature control technology and can be widely used from -20℃ to 80℃. The temperature is lapped with 0.1℃ tolerance.

Applications

Widely used in etching equipment of semiconductor industry, CMP(Mechanical Polishing), laboratory precision equipment, high precision testing instruments, cosmetic medicine equipment, solid state laser, mold, etc.

Technical parameters



Model		FCCW0362303-20
Cooling Method		Vapor compression refrigeration
Radiating Method		Forced water-cooling
Control Method		Cooling/Heating PID control
Ambient Temperature/Humidity		5~40℃,30~70%RH
Refrigerant		R410A
Power Supply		Three-phase AC208V, 50/60 Hz
Product Size		390*650*1265mm
Circulatory System	Circulating Fluid	DI water/Ethylene glycol/Fluoride solution
	Operating Temperature Range	-20.0~80.0℃
	Cooling Capacity	≈3600W (-20℃)
	Heating Capacity	≈3000W
	Temperature Stability	±0.1℃
	Pump	Centrifugal pump 40L/min, 30m lift
	Tank Capacity	Approx 15L

Thermal shock  
FAM6031

Model introduction

FAM6031 is a precise thermal shock with a wider temperature range from -70℃ to 225℃. This device can provide very advanced temperature conversion testing capabilities. The fastest temperature conversion ranges from -55℃ to+125℃ for about 10 seconds. After long-term verification under multiple working conditions, it meets the requirements of various productions and engineering environments.

Applications

Reliability tests such as characteristic analysis, high and low temperature variation testing, temperature impact testing, failure analysis, etc. For example: chips, microelectronic devices, integrated circuits (SOC, FPGA, PLD, MC U, ADC/DAC, DSP, etc.) Flash, UFS, eMMC, PCBs, MC, Ms, MEMS, IGBT, sensors, small module components Optical communication (such as transceiver high and low temperature test, SFP Optical module high and low temperature test, etc.), other electronic industries, aerospace new materials, laboratory research, etc.

Advantages

Compact structure and mobile design;  
Touch screen operation, human-machine interaction interface;  
Fast DUT temperature stabilization time;  
The temperature can be lapped with 1℃ tolerance and air flow rate can reach up to 18SCFM. The defrosting design can quickly remove the accumulation of water vapor inside. It can meet the US Military Standard MIL system, the domestic military component GJB system and the JEDEC testing requirements.

Technical parameters

Model	FAM6031
Limit Temperature range	-70℃~+225℃
Control Accuracy	±1℃
Heating Rate	-55℃~+125℃ up to about 10S
Cooling Rate	+125℃~-55℃ up to about 12S
Air Outlet Flow	4~18 SCFM(1.9L/s~ 8.5L/s)
Product Size	600*1000*1050mm
Product Weight	250kg
Test Angle	360°
Air Supply System	Optional clean air source treatment system
Options	Multi size test cover
Core Device	Tecumseh compressor imported from France



Industrial series chiller (Air-cooled)

FCCA01010AS/ FCCA01015AS

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. The equipment has two temperature control modes with multiple settings and fault display functions. The bottom universal wheels can be moved and installed easily. The side sheet metal buckle type installs dust screen for easy disassembly and regular cleaning of dust.

Applications

Suitable for environments with good temperature and humidity, energy-saving and environment friendly, with a wide range of temperature applications, stable quality and easy operation  
The selected compressor type chiller is mainly aimed at the industrial laser field and can be used in laser cutting, laser welding, laser marking, laser carving and other related equipments that use laser processing.



Technical parameters

Model		FCCA01010AS/FCCA01015AS		Circulatory System	Circulating Fluid		DI water		
Cooling Method		Vapor compression refrigeration			Operating Temperature Range		5.0℃~40.0℃		
Radiating Method		Forced air-cooling			Cooling Capacity		950W~1000W（20℃）※1 1450W~1500W（20℃）※1		
Control Method		Thermo-con			Heating Capacity		450W~500W（20℃）※1		
Ambient Temperature/Humidity		5~40℃,30~70%RH			Temperature Stability		±0.3℃※2		
Refrigerant		R134A/R410A			Pump		Centrifugal pump 16L/min,16m lift		
Quantity of Refrigerant		0.3kg/0.23kg			Tank Capacity		Approx 6.5L		
Electrical System	Power Supply		Single-phase AC220V, 50HZ		Port Size	In/Out		Φ10	
	Overload protection		10A			Drain		Φ10	
	Current Consumption		2.5A（220V）		Weight		25kg/26kg		
	Communications		Aviation plug		Product Size		292*425*624mm		

Industrial series chiller (Air-cooled)

FCCA01030AM

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. The equipment has two temperature control modes with multiple settings and fault display functions. The bottom universal wheels can be moved and installed easily. The side sheet metal buckle type installs dust screen for easy disassembly and regular cleaning of dust.

Applications

Suitable for environments with good temperature and humidity, energy-saving and environment friendly, with a wide range of temperature applications, stable quality and easy operation  
The selected compressor type chiller is mainly aimed at the industrial laser field and can be used in laser cutting, laser welding, laser marking, laser carving and other related equipments that use laser processing.



Technical parameters

Model		FCCA01030AM	Circulatory System	Circulating Fluid		DI water
Cooling Method		Vapor compression refrigeration		Operating Temperature Range		5.0℃~40.0℃
Radiating Method		Forced air-cooling		Cooling Capacity		≧3000W（20℃）※1
Control Method		Thermo-con		Heating Capacity		≈400W（20℃）※1
Ambient Temperature/Humidity		5~40℃,30~70%RH		Temperature Stability		±0.5℃※2
Refrigerant		R410A		Pump		Brushless pump 19L/min,31m lift
Quantity of Refrigerant		0.52kg		Tank Capacity		Approx 14L
Electrical System	Power Supply	Single-phase AC220V, 50HZ		Port Size	In/Out	Rc1/2
	Overload protection	32A	Drain		Rc1/2	
	Current Consumption	5.0A（220V）	Weight		55kg	
	Communications	Aviation plug	Product Size		765*470*900mm	



Industrial series chiller (Air-cooled)  
FCCA01052AM

Model introduction

The compressor chiller uses a well-known brand compressor with stable and excellent performance. The equipment has two temperature control modes with multiple settings and fault display functions. The bottom universal wheels can be moved and installed easily. The side sheet metal buckle type installs dust screen for easy disassembly and regular cleaning of dust.

Applications

Suitable for environments with good temperature and humidity, energy-saving and environment friendly, with a wide range of temperature applications, stable quality and easy operation  
The selected compressor type chiller is mainly aimed at the industrial laser field and can be used in laser cutting, laser welding, laser marking, laser carving and other related equipments that use laser processing.

Technical parameters

Model		FCCA01052AM	Circulating Fluid		DI water
Cooling Method		Vapor compression refrigeration	Operating Temperature Range		5.0℃~40.0℃
Radiating Method		Forced air-cooling	Cooling Capacity		≥5200W (20℃) ※1
Control Method		Thermo-con	Heating Capacity		≈400W (20℃) ※1
Ambient Temperature/Humidity		5~40℃,30~70%RH	Temperature Stability		±0.5℃※2
Refrigerant		R410A	Pump		Brushless pump 19L/min,31m lift
Quantity of Refrigerant		0.7kg	Tank Capacity		Approx 14L
Electrical System	Power Supply	Single-phase AC220V, 50HZ	Port Size	In/Out	Rc1/2
	Overload protection	32A		Drain	Rc1/2
	Current Consumption	9.2A (220V)	Weight		64kg
	Communications	Aviation plug	Product Size		765*470*900mm



Cascade refrigeration chiller  
FCDA608031

Model introduction

Quality assurance for core component suppliers  
Compressor supplier: Tecumseh; Filter: Danfoss;  
Electronic control display screen: Siemens, Schneider electric; Temperature resistant magnetic pump: wide temperature range, safe and leak free.  
Siemens display screen: core pressure parameters of refrigeration system, real time display of heat transfer oil temperature. Ferrotec can provide custom lead products according to requirements.

Closed cycle system

The entire system is a fully enclosed system, with no oil mist at high temperature and no absorption of water in the air at low temperature. The system will not increase pressure during running due to the high temperature, and will replenish thermal conductivity medium automatically at low temperature.

Safety System

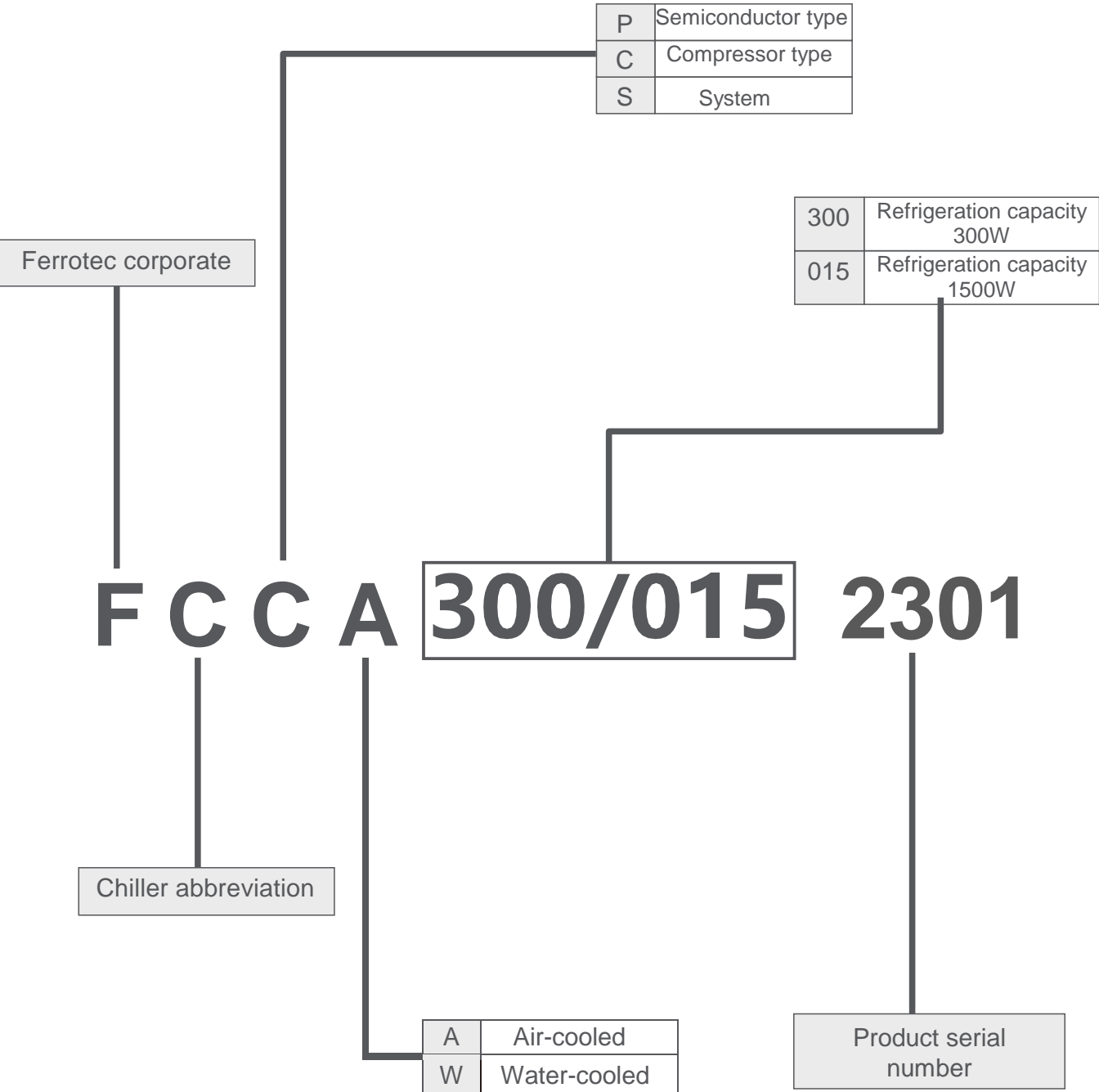
The device has self diagnostic function and multiple security features: phase sequence phase failure protector, freezer overload protection. Continuous temperature control of -60℃ to 180℃ can be achieved.

Technical parameters

Model		FCDA608031	
Cooling Method		Air cooled and frozen	
Refrigeration Form		Two-stage cascade system	
Refrigerant		R404A/R508B	
Ambient Temperature/Humidity/Height		Temperature:10～35℃；Humidity: 30～70%；Height: Below 1000m	
Circulating Fluid	Circulating Fluid		Refrigerant Oil
	Set Temperature Range		-60.0～180.0℃
	Cooling Capacity（50Hz）W		800（-60℃）
	Heating Capacity（50Hz）W		5500W
	Temperature Stability		±0.5℃
	Pump	Maximum Flow（50Hz）L/min	35L/min
		Maximum Lift（50Hz）m	30m
	Tank Capacity		5L
	Product Size		678*480*1615mm



# Product model naming system



## Customer request form

Company		Name	
Address		Position	
E-mail		Telephone	

Request information

Scenarios		Width	W :	[mm]
Price		Length	L :	[mm]
Annual Demand		Height	H :	[mm]

Detailed technical requirements

Temperature Control Range		[°C]
Temperature Control Accuracy		[°C]
Refrigeration Capacity		[kW]
Heat Dissipation	Water-cooled <input type="checkbox"/> Air-cooled <input type="checkbox"/>	
Usage Environment	Indoor O/DR [C] [Rh] Note the temperature and humidity conditions outdoors	
Communication Port (Multiple Choices)	RS232 <input type="checkbox"/> RS485 <input type="checkbox"/> USB <input type="checkbox"/> Others <input type="checkbox"/>	
Tank Capacity		[L]
Pump Requirements (The Specified Brand)		[m]
Power Supply (Multiple Choices)	110V <input type="checkbox"/> 220V <input type="checkbox"/> 240V <input type="checkbox"/> 380V <input type="checkbox"/>	

The chiller device use status below.  
T1<T2, T1: Temperature value of the customer device  
The customer's device achieves ideal cooling state.

Application Notes / Additional Requirements: (Design, component specified brand, useful life )