

VACRE

中国的世界低温品牌

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CHINA'S WORLD-CLASS CRYOGENIC BRAND

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VACRE 万瑞冷电

低温真空泵与G-M制冷机
CRYOPUMP & G-M CRYOCOOLER

产品手册 PRODUCT BROCHURE

企业简介 COMPANY PROFILE

中国电子科技集团公司控股三级企业

A third-tier enterprise held by China Electronics Technology Group Corporation

成立于2003年，由中国电科第16研究所三个研究室整体改制组建完成

Established in 2003, Vacree was formed through the overall restructuring of three labs under the 16th Research Institute of China Electronics Technology Group Corporation

专业从事低温与真空、气体分离技术和产品研究开发的国家高新技术企业

Vacree is a national high-tech enterprise specialized in the research and development of cryogenic & vacuum and gas separation technology and products

企业核心价值观 CORE VALUES

以客户为中心

Customer Centered

以价值创造者为本

Value Creation Oriented

追求卓越，共同成就

Pursue Excellence, Achieve Together

企业荣誉 CORPORATE HONORS

国家级“专精特新”小巨人企业

National level specialized and sophisticated little giant enterprise

国家知识产权优势企业

National intellectual property advantage enterprise

安徽省专精特新企业50强

Top 50 specialized and sophisticated enterprises in Anhui Province

国家高新技术企业、国家科技型中小企业

National high-tech enterprise and technology-based SME

6项

获得省部级以上科学技术奖6项

Honored by 6 science and technology awards at or above provincial and ministerial level

8项

获得省级科技成果8项

8 products are certified as provincial-level technological achievements

80+

获得国家授权专利80+

Granted with over 80 national patents

2003th

安徽万瑞冷电科技有限公司
成立于2003年

Anhui Vacree Technologies Co., Ltd.
was established in 2003

17项

获得新产品及高新技术产品

17 products were identified as new and high-tech products

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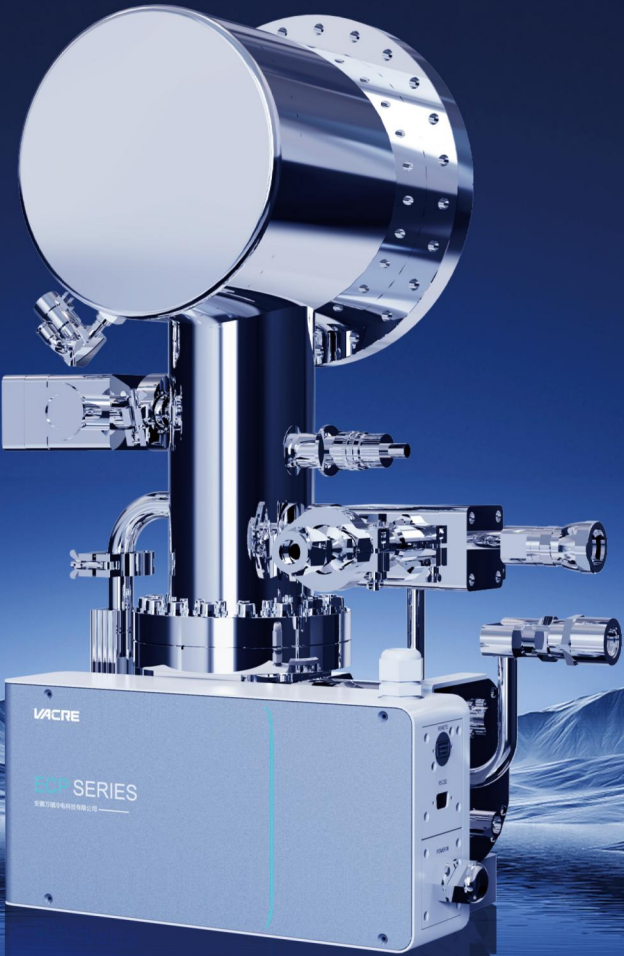
CRYOPUMP

低温真空泵

技术概述 Technical Overview

低温真空泵(简称低温泵、又称冷泵)是一种利用低温冷凝和低温吸附原理抽气的超高真空获得设备。低温真空泵广泛应用于半导体、集成电路、光学镀膜、太阳能电池板、平板显示器、光电子器件和真空电子器件的制造工艺过程，是集成电路制造工艺设备PVD、离子注入的关键零部件之一。低温真空泵也用于各种空间环境模拟、高能物理、加速器、真空校准检测等真空应用设备中。

The cryopump is a kind of ultra-high vacuum equipment which uses the principle cryocondensation and cryosorption to extract air. It is widely used in the manufacturing process of semiconductors, integrated circuits, optical coatings, solar panels, flat panel displays, optoelectronic devices and vacuum electronic devices. It is one of the key components of PVD and ion implantation process equipment for integrated circuit manufacturing. Cryopumps are also used in various vacuum applications such as space environment simulation, high energy physics, accelerator, vacuum calibration and detection, etc.



CONVENTIONAL CRYOPUMP

常规低温泵

1.1 标准口径低温泵 STANDARD INLET PORT CRYOPUMP

型号 / Model		CP/ICP200N CP/ICP200	CP/ICP250N CP/ICP250	CP/ICP320N CP/ICP320	CP/ICP400	CP/ICP500
泵口法兰	Pump flange	CF 200	CF 250	CF 320	ISO 400	ISO 500
		ISO 200	ISO 250	ISO 320		
		ANSI 8in(NW)	ANSI 10in(NW)	ANSI 12in(NW)	ANSI 16in(NW)	ANSI 20in(NW)
粗抽接口	Roughing port flange	KF 25	KF 25	KF 25	KF 25	KF 25
最低工作压力 (Pa)	Base pressure (Pa)	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷
抽气速率 (L/s)	Pumping speed (L/s)	For H ₂ O	4000	6500	9500	16000
		For Air	1500	2200	3200	6000
		For H ₂	2200	3200	5400	9000
		For Ar	1200	1800	2800	5000
		For Ar	1000	1600	2000	2500
抽气容量 (Std.L)	Pumping capacity (Std.L)	For H ₂	12	16	22	25
降温时间 (Min)	Cooldown time (Min)		<100	<130	<150	<180
最大抽气能力 (Sccm)	Argon throughput (Sccm)		700	700	700	1000
渡越容量 (Torr.L)	Crossover (Torr.L)		150	150	150	450

型号名称中,前缀“I”表示集成智能控制系统,后缀“N”表示为卧式结构泵体

口径DN200mm到DN500mm，抽口法兰可选择CF、ISO、ANSI任一形式或特殊定制

CP系列标准配置:氦气压缩机、氦气管线、温度显示器、连接电缆

ICP系列标准配置:氦气压缩机、氦气管线、连接电缆、粗抽阀、吹扫阀、真空规、智能控制器、再生加热器、手操器

In the model names, the prefix “I” indicates integrated intelligent control system, and the suffix “N” represents horizontal pump body structure

Inlet port: DN200mm to DN500mm, The pumping flange can be CF, ISO or ANSI type or be customized as needed

CP series standard configuration: Helium compressor, helium pipelines, temperature monitor, connection cables

ICP series standard configuration: Helium compressor, helium pipelines, connection cables, roughing valve, purge valve, vacuum gauge, intelligent controller, regenerative heater, manual operator

CONVENTIONAL CRYOPUMP

常规低温泵

1.2 大口径低温泵 LARGE INLET PORT CRYOPUMP

型号 / Model		CP630	CP800	CP900	CP1000LN	CP1250LN
泵口法兰	Pump flange	ISO 630	ISO 800	ISO 900	ISO 1000	ISO 1250
最低工作压力 (Pa)	Base pressure (Pa)	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷
抽气速率 (L/s)	Pumping speed (L/s)	For H ₂ O	46000	70000	92000	110000
		For Air	18000	28000	36000	40000
		For H ₂	14000	30000	33000	34000
		For Ar	13500	23000	31000	32000
最大抽气能力 (Torr.L/s)	Argon throughput (Torr.L/s)	For Ar	14	18	18	18
抽气容量 (Std.L)	Pumping capacity (Std.L)	For Ar	6000	6500	8000	8000
		For H ₂	65	70	110	110
降温时间 (Min)	Cooldown time (Min)		<180	<240	<240	<330
液氮耗量 (L/h)	Liquid nitrogen consumption (L/h)		-	-	16	20

口径DN630mm到DN1250mm
结构与配置可定制
型号名称中,后缀“LN”为液氮辅冷

Inlet port: DN630mm to DN1250mm
Customizable structure and configuration
In the model names, the suffix “LN” indicates liquid-nitrogen auxiliary cooling



SEMICONDUCTOR SPECIAL CRYOPUMP

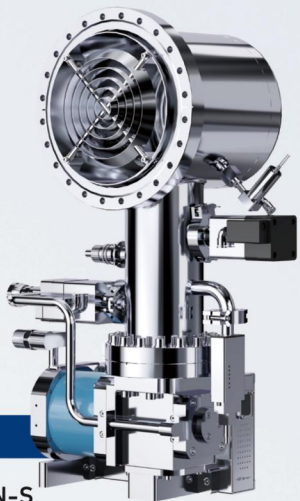
半导体专用低温泵

1.3 PVD专用200mm口径低温泵 DN200 PVD SPECIAL CRYOPUMP

型号 / Model		ICP200N	ECP200N-C	ECP200N-S
泵口法兰	Pump flange	CF 200 ISO 200 ANSI 8in(NW)	CF 200 ISO 200 ANSI 8in(NW)	CF 200 ISO 200 ANSI 8in(NW)
容 量 (Std.L)	Capacity (Std.L)	N ₂	590	700
		Ar	800	1000
抽气速率 (L/s)	Pumping speed (L/s)	H ₂ O	4000	4000
		Air/N ₂	1500	1500
		Ar	1200	1200
		H ₂	2200	2200
最大抽气能力 (Sccm)	Argon throughput (Sccm)	Ar	≥700	≥700
再生时间 (Min)	Regeneration time (Min)		<160	<120
变频技术	Variable frequency technology	/	VF	VF

智能化指标(软件通讯) Intelligent indicators (software communication)	ICP200N 运行状态远程监控、自动化再生控制 Remote monitoring of operational status Automated regeneration control
	ECP200N-C/S 运行状态远程监控、自动化再生控制、自动气量调节、变频控温，可并联组网、单泵控制 Remote monitoring of operating status, automated regeneration control Automatic gas volume regulation, variable frequency temperature control,Parallel networking, single pump control
	压缩机带泵能力(泵组系统构建) Pump driving capacity of compressor (Multi-pump group construction)
	1拖3 1 to 3
	1拖 6-11 1 to 6-11
	1拖 6-11 1 to 6-11

针对PVD工艺需求，提升氩气抽气容量
The argon pumping capacity is increased to meet the requirements of PVD process



SEMICONDUCTOR SPECIAL CRYOPUMP

半导体专用低温泵



1.4 离子注入专用250mm/320mm口径低温泵 DN250/320 ION IMPLANTATION SPECIAL CRYOPUMP						
型号 / Model			ICP250N	ECP250N	ICP320N	ECP320N
泵口法兰	Pump flange		CF 250 ISO 250 ANSI 10in(NW)	CF 250 ISO 250 ANSI 10in(NW)	CF 320 ISO 320 ANSI 12in(NW)	CF 320 ISO 320 ANSI12in(NW)
抽气速率 (L/s)	Pumping speed (L/s)	N ₂	2200	2200	3200	3600
		H ₂	6500	7000	12000	12500
容 量 (Std.L)	Capacity (Std.L)	H ₂	18	24	30	30
再生时间 (Min)	Regeneration time (Min)		<195	<135	<220	<150
变频技术	Variable frequency technology		/	VF	/	VF
智能化指标(软件通讯)		ICP250N/320N 运行状态远程监控、自动化再生控制 Remote monitoring of operating status and automatic regeneration control				
Intelligent indicators (software communication)		ECP250N/320N 运行状态远程监控、自动化再生控制、自动气量调节、变频控温、可并联组网、单泵控制 Remote monitoring of operating status, automatic regeneration control, automatic gas flow regulation, variable frequency temperature control, parallel networking, and single pump control				
压缩机带泵能力(泵组系统构建)			1拖2	1拖5	1拖1	1拖5
Pump driving capacity of compressor (Multi-pump group construction)			1 to 2	1 to 5	1 to 1	1 to 5
针对离子注入工艺需求，提升氢气抽气速率及容量 The hydrogen pumping speed and capacity are increased to meet the requirements of ion implantation process						

XENON CRYOPUMP

氙低温泵

氙低温泵 XENON CRYOPUMP						
型号 / Model		CP400Xe	CP500Xe	CP630Xe	CP900Xe	CP1250Xe
泵口法兰	Pump flange	ISO 400	ISO 500	ISO 630	ISO 900	ISO 1250
极限压力 (Pa)	Ultimate pressure (Pa)	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷	10 ⁻⁷
		Xe	6700	10500	18000	34000
		H ₂ O	18200	28500	46000	92000
		N ₂	6800	10500	18000	36000
		Ar	5800	7300	13500	31000
		H ₂	6400	7800	14000	33000
		Ar	2500	5500	7800	8000
		H ₂	25	38	50	110
		Xe	7500	9000	12000	20000
降温时间 (Min)	Cooldown time (Min)	<180	<210	<210	<240	<300



氙低温泵

提供洁净无油的真空环境
高效抽取氙气
安装方便快捷

XENON CRYOPUMP

Clean and oil-free vacuum environment
High Xe pumping speed
Easy and fast installation

ULTRA-HIGH VACUUM CRYOPUMP

超高真空低温泵

最高可获得10⁻⁹Pa极限真空

Up to 10⁻⁹pa of ultimate vacuum can be obtained

适用于客户全方位安装

Suitable for customers' all-round installation

操作简单，使用寿命长

Easy to operate, long service life

广泛应用于分子束外延设备(MBE)

Widely used in molecular epitaxy equipment (MBE)

CP200UHV 低温泵 / CRYOPUMP

型号 / Model		CP200UHV	
泵口法兰	Pump flange	CF 200	
最低工作压力 (Pa)	Base pressure (Pa)	10 ⁻⁸	
抽气速率 (L/s)	Pumping speed (L/s)	For H ₂ O	4000
		For Air	1500
		For H ₂	2200
		For Ar	1200
容 量 (Std.L)	Capacity (Std.L)	For Ar	1000
		For H ₂	12
降温时间 (Min)	Cooldown time (Min)	<110	
外形尺寸 (mm)	Outline dimension (mm)	409 x 253 x 523	
重量 (Kg)	Weight (Kg)	≤25	

C100W压缩机支持CP200UHV一拖三;C50W压缩机支持CP200UHV一拖一
One C100W compressor can drive three CP200UHV pumps, and one C50W compressor can drive one CP200UHV pump

标准配置 / Standard configuration

CP200UHV低温泵

C50W氦气压缩机

氦管1/2"-3m*2

冷头电源线5m

压缩机电源线5m

温度测量仪

CP200UHV cryopump

C50W helium compressor

1/2" helium pipe - 3m*2

Cold head power cord 5m

Compressor power cord 5m

Thermometric indicator

CP300UHV 低温泵 / CRYOPUMP

型号 / Model		CP300UHV	
泵口法兰	Pump flange	CF 300	
最低工作压力 (Pa)	Base pressure (Pa)	10 ⁻⁸	
抽气速率 (L/s)	Pumping speed (L/s)	For H ₂ O	9000
		For Air	3000
		For H ₂	5000
		For Ar	2500
容 量 (Std.L)	Capacity (Std.L)	For Ar	2000
		For H ₂	24
降温时间 (Min)	Cooldown time (Min)	<150	
外形尺寸 (mm)	Outline dimension (mm)	461 x 356 x 552	
重量 (Kg)	Weight (Kg)	≤40	



C100W压缩机支持CP300UHV一拖一
One C100W compressor can drive one CP300UHV pump

标准配置 / Standard configuration

CP300UHV低温泵	CP300UHV cryopump
C100W氦气压缩机	C100W helium compressor
氦管1/2"-3m*2	1/2" helium pipe - 3m*2
冷头电源线5m	Cold head power cord 5m
压缩机电源线5m	Compressor power cord 5m
温度测量仪	Thermometric indicator



COLD TRAP

冷阱

产生77~120K(-196~-153℃)深低温

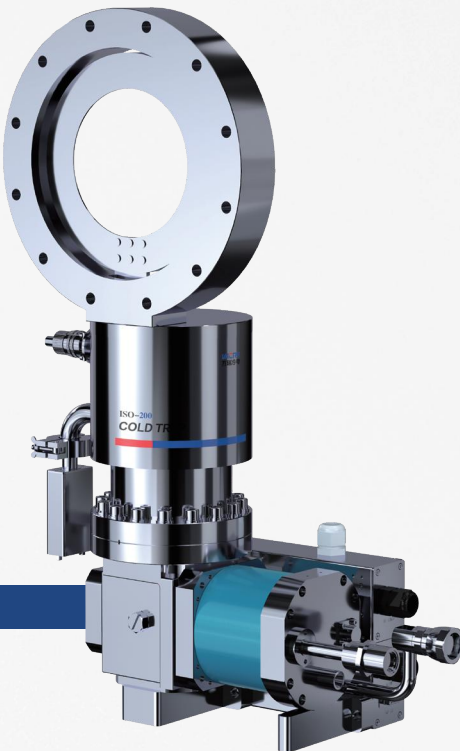
通过低温表面冷凝捕集冷凝点温度高于冷阱温度的气体分子(例如H₂O)

可与分子泵组合使用,有效提升真空系统性能

Generate a deep low temperature of 77~120k (-196~-153℃)

Gas molecules such as (H₂O) with condensation point higher than the cold trap temperature are captured by low-temperature surface condensation

Capable of effectively improving the performance of vacuum systems when being used with molecular pumps



优势特点 ADVANTAGES AND CHARACTERISTICS

辅助增强水汽抽速	Helpful for increasing water vapor pumping speed
快速降温/升温	Rapid cooling/heating
循环再生,使用寿命长	Cycle regeneration, long service life
适用客户全方位安装和多场景使用	Suitable for all-round installation and application in multiple scenarios by customers
与ECP冷泵共用控制系统和压缩机	Shared control system and compressor with ECP cryopump

应用领域 APPLICATION AREAS

航空航天	Aerospace
半导体PVD装备	Semiconductor PVD equipment
表面处理	Surface treatment
半导体离子注入机	Semiconductor ion implantation machine
真空镀膜设备	Vacuum coating equipment
光电子	Photoelectron
化学气相沉积	Chemical vapor deposition

产品技术参数 PRODUCT TECHNICAL PARAMETERS

型号 / Model		EWP200N
泵口法兰	Pump flange	200mm (8")
形状	Shape	薄型 Thin Type
性能指标	水汽抽速 H ₂ O Pumping speed	4000L/s (used with molecular pumps)
	氮气通导 N ₂ Throughput	2000L/s
	降温时间 Cooldown time	<25min (300K→100K)
	升温时间 Warm up	<30min (100K→300K)
三维尺寸 (mm)	Dimensions (mm)	665 x 438 x 193
重量 (Kg)	Weight (Kg)	≤30

EC100W压缩机支持EWP200N一拖六 One EC100W compressor can drive six EWP200N pumps

标准配置 / Standard configuration

氦气压缩机、氮气管线、连接电缆、真空规、智能控制器、手操器
Helium compressor, helium pipeline, connecting cable, vacuum gauge, intelligent controller, operation panel unit

G-M CRYOCOOLER

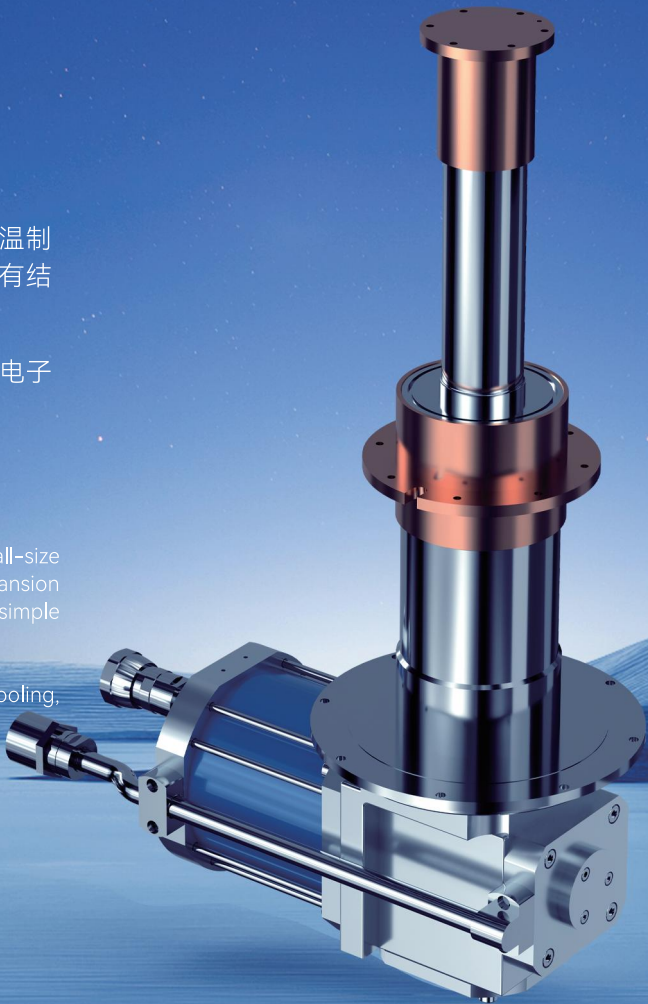
G-M制冷机

Gifford-McMahon制冷机(简称G-M制冷机)是一种回热式小型低温制冷机，它利用绝热放气膨胀(又称为西蒙膨胀)原理获得低温，具有结构简单、运转可靠性能稳定、使用寿命长等许多优点。

主要应用领域:低温泵、冷阱、材料性能测试、探测器冷却、低温电子学、用户定制的低温制冷系统、超导磁体。

Gifford-McMahon cryocooler (abbreviated G-M cryocooler) is a regenerative small-size low-temperature cryocooler, which uses the principal of adiabatic degassing expansion (also known as the Simon expansion) to obtain low temperatures, and features simple structure, reliable and stable operation, long service life, etc.

Applicability: Cryopump, cold trap, material performance test, detector cooling, cryotronics, customized cryogenic system and superconducting magnet



产品技术参数 PRODUCT TECHNICAL PARAMETERS

型号 / Model	双级制冷机 / Two stage cryocooler				单级制冷机 / Single stage cryocooler	
	GM205	GM215	GM412	GM415	GM150	GM1100
氦气压缩机 Helium compressor	C50W	C100W	C100W	C100W	C50W	C100W
最低温度 Minimum temperature	二级<10K 2 nd stage < 10K	二级 < 8K 2 nd stage < 8K	二级 < 3.5K 2 nd stage < 3.5K	二级 < 3.5K 2 nd stage < 3.5K	-	-
二级制冷量 2 nd stage capacity	5W@20K	5W@10K	1.25W@4.2K	1.5W@4.2K	-	-
一级制冷量 1 st stage capacity	35W@77K	35W@50K	35W@50K	35W@50K	50W@77K	120W@77K
降温时间 Cooldwon time	< 40min to 20K	< 60min to 8K	< 60min to 4.2K	< 60min to 4.2K	< 30min to 77K	< 30min to 77K
电源 Power supply	4.5-5.0kW	6.5-7.2kW	6.5-7.2kW	6.5-7.2kW	4.5-5.0kW	6.5-7.2kW
重量（冷头） Weight (cold head)	≤16 kg	≤17 kg	≤18 kg	≤19 kg	≤14 kg	≤16 kg

最低温度和降温时间仅供参考，规格如有更改，恕不另行通知
Lowest temperature and cooldown time are for reference only. Specifications subject to change without notice.

PULSE TUBE

CRYOCOOLER

脉管制冷机

液氮温区低振动大冷量脉管制冷机利用绝热放气膨胀(又称为西蒙膨胀)原理获得低温，具有结构简单、运转可靠、性能稳定、使用寿命长等优点。脉管制冷机是为量子计算机、综合物性测量系统、扫描隧道显微镜等先进科学仪器提供低温环境的关键设备。

The low-vibration and high-capacity pulse tube refrigerator operating at liquid helium temperature range achieves cryogenic temperatures by adiabatic degassing expansion (also known as Simon expansion) and offers the advantages of simple structure, reliable operation, stable performance and long service life. It is a key device for providing cryogenic environments to advanced scientific instruments like quantum computers, physical property measurement systems (PPMS), and scanning tunneling microscopes(STM), etc.



产品技术参数 PRODUCT TECHNICAL PARAMETERS

型号 / Model		GPT415
压缩机	Compressor	PC100W
无负载温度 (K)	Minimum temperature (K)	< 3.0
二级制冷量	2 nd stage capacity	1.5W@4.2K
一级制冷量	1 st stage capacity	36W@48K
降温时间 (室温至4.2K)	Cooldown time to 4.2K ¹	< 60min
电源	Power supply	380V-3φ-50Hz
功耗 (kW)	Power consumption (kW)	11.5-13.0
三维尺寸 (mm)	Dimensions (mm)	186 * 186 * 539
重量 (Kg)	Weight (Kg)	≤28

最低温度和降温时间仅供参考，规格如有更改，恕不另行通知
Lowest temperature and cooldown time are for reference only. Specifications subject to change without notice.

COMPRESSOR

压缩机

氦气压缩机是低温真空泵和低温制冷机的主要组成部分，其作用是 为低温真空泵中的低温制冷机系统提供必要的高压纯净的循环氦气作为系统的制冷工质，氦气的纯度高于 99.999%。可快速就位、快速安装、方便使用。带有万向脚轮便于移动操作，并且它的电源、氦气和冷却水的连接也全部是便于快速安装的结构。氦气压缩机也可以作为一个独立的氦气循环运行单元，能够为单晶炉等提供高纯度的氦气循环。

The helium compressor is a key component of cryopumps and cryocoolers. Its function is to supply the necessary high-pressure pure (>99.999%) helium gas circulating as refrigerant to the low-temperature refrigeration system within the cryopumps. The compressor features readiness for use, easy installation, and convenient operation. It is equipped with universal casters to facilitate movement, and adopts a quick-install design for the connections of power supply, helium, and cooling water. Additionally, the helium compressor can operate as an independent helium circulation unit, capable of supplying high-purity helium circulation for equipment such as single crystal furnaces.



3.1 水冷压缩机型号与参数信息 MODELS AND PARAMETERS OF WITER-COOLED COMPRESSOR

型号 / Model		C100W	
压缩泵	Compression pump	涡旋式	scroll
输入功率	Power consumption	6.5-7.2kW	6.5-7.2kW
制冷工质	Refrigerant	高纯氦气≥99.999%	High purity helium gas≥99.999%
电源需求	Power demand	380V-3φ-50Hz	380V-3φ-50Hz
环境温度	Ambient temperature	5-40℃	5-40℃
冷却水要求	Cooling water requirements	≥6L/min (10℃-32℃)	≥6L/min (10℃-32℃)
平衡压力	Static pressure	1.5±0.1MPa	1.5±0.1MPa
工作压力	Working pressure	高压 1.8~2.1MPa， 低压 0.3~0.6MPa	High pressure 1.8~2.1MPa, low pressure 0.3~0.6MPa
保护装置	Protection	缺水保护;相序保护;过热保护;压力保护	Water shortage protection; Phase sequence protection; Overheating protection; Pressure protection
重量	Weight	≤150kg	≤150kg

3.2 风冷压缩机型号与参数信息 MODELS AND PARAMETERS OF AIR-COOLED COMPRESSOR

型号 / Model		C100A	
压缩泵	Compression pump	涡旋式	scroll
输入功率	Input power	5.5kW	5.5kW
制冷工质	Refrigerant	高纯氦气≥99.999%	High purity helium gas≥99.999%
电源需求	Power demand	380V-3φ-50Hz	380V-3φ-50Hz
环境温度	Ambient temperature	5-35℃	5-35℃
平衡压力	Static pressure	1.5±0.1MPa	1.5±0.1MPa
工作压力	Working pressure	高压 1.8-2.1MPa， 低压 0.3-0.6MPa	High pressure 1.8-2.1MPa, low pressure 0.3-0.6MPa
保护装置	Protection	缺水保护;相序保护	Water shortage protection; Phase sequence protection
重量	Weight	≤150kg	≤150kg

3.3 变频压缩机型号与参数信息 MODELS AND PARAMETERS OF VARIABLE FREQUENCY COMPRESSOR

型号 / Model		EC100W	EC200W
压缩泵	Compression pump	涡旋式 Scroll	涡旋式 Scroll
输入功率	Input power	5.5-13.5kW	4.5-15kW
制冷工质	Refrigerant	高纯氦气≥99.999% High purity helium gas≥99.999%	高纯氦气≥99.999% High purity helium gas≥99.999%
电源需求	Power demand	380V-3φ-50Hz	380V-3φ-50Hz
环境温度	Ambient temperature	5-35℃	5-35℃
冷却水要求	Cooling water requirements	最小4-10L/min(4℃-32℃) Minimum 4-10L/min (4 ℃ -32 ℃)	最小4-10L/min(4℃-32℃) Minimum 4-10L/min (4 ℃ -32 ℃)
平衡压力	Static pressure	1.75-1.85MPa	2.30-2.35MPa
工作压力	Working pressure	高压2.2-2.6MPa， 低压 0.6-1MPa High pressure 2.2-2.6MPaLow pressure 0.6-1MPa	高压 2.85-3.25MPa， 低压 1.35-1.75MPa High pressure 2.85-3.25MPa, low pressure 1.35-1.75MPa
保护装置	Protection	缺水保护;相序保护;过热保护;压力保护 Water shortage protection; Phase sequence protection; Overheating protection; Pressure protection	
重量	Weight	≤170kg	≤180kg

200V电压版本压缩机产品可以定制
Compressor products with a 200V voltage version can be customized

HELIUM PIPELINE

氮气管线

可作为高纯氮气的输送载体,是连接氮气压缩机和低温真空泵或低温制冷机的氮气输送管线,也可作为单独的输气管线使用,比如应用于PVD机台和离子注入机台中作为低温泵组系统氮气的输送和分配管路。管线主要采用洁净不锈钢硬管和柔性软管制作,具备较低的氮气泄漏率、较高的洁净度、方便拆卸的快速连接接头,接头具备自密封功能,保证氮气纯度和密封压力。

The helium pipeline can act as a delivery carrier of high-purity helium that connects the helium compressor with the cryopump or cryocooler. It can also serve as a separate gas transmission line in the PVD machine and ion implanter among others, to convey and distribute helium for the cryogenic pump unit. The pipeline is mainly made of clean stainless steel rigid pipes and flexible hoses, featuring low helium leakage rate, high cleanliness and quick connectors for easy disassembly. The connectors are self-sealed, ensuring both helium purity and sealing pressure.



PVD/离子注入机台环形硬质氮气管路				PVD/ION IMPLANTATION TABLE ANNULAR RIGID HELIUM LINES	
名称 / Name		参数 / Parameter			
最高工作压力	Maximum working pressure	≤5MPa		≤5MPa	
氦气纯度	Helium purity	≥99.999%		≥99.999%	
使用漏率	Leakage rate	≤1x10 ⁻⁶ Pa.m³/s		≤1x10 ⁻⁶ Pa.m³/s	
管体材料	Tube material	304/316L BA/EP级处理，可整体电解抛光		304/316L BA/EP grade treatment; allow for overall electrolytic polishing	
氦管尺寸按需定制，结构按图定制					
The helium pipe size is customizable as needed, and the structure can be customized according to diagrams.					

RELIEF VALVE

溢流阀

溢流阀是一种适用于真空环境的压力开关，当客户装备的腔室压力大于大气压时，该产品会自动开启进行压力释放（可重复使用，泄压次数寿命 > 300万次）使腔室压力维持在大气压水平附近，可以避免腔室压力过高损坏观察窗等易损件以及带来其它破坏风险。当客户装备腔室需要建立真空环境时，该产品的真空气体泄漏率量级低至10⁻¹⁰Pa.m³.s⁻¹，可以支持客户建立10⁻⁶Pa水平及以上的超高真空环境。

The relief valve is a pressure switch suitable for use in vacuum environment. When the chamber pressure of the customer's equipment is greater than the atmospheric pressure, the relief valve will automatically open for pressure release (reusable, with a life span of over 3 million times of pressure relief), maintaining the chamber pressure at a level around the atmospheric pressure and therefore avoiding the risk of damage to vulnerable parts such as observation windows caused by excessive chamber pressure. With a gas leakage rate of as low as 10⁻¹⁰Pa.m³.s⁻¹, this product also allow the customer to establish a 10⁻⁶Pa and above ultra-high vacuum environment in the equipment chamber when needed.



溢流阀产品信息 RELIEF VALVE PRODUCT INFORMATION	
标准品为KF25安装接口	KF25 installation interface for standard version
304不锈钢材质	304 stainless steel material
泄压压力满足0.1-0.3psi要求	Relief pressure 0.1-0.3psi
产品泄漏率<1x10 ⁻⁹ Pa.m³.s ⁻¹	Product leakage rate<1x10 ⁻⁹ Pa.m³.s ⁻¹
产品无故障动作次数>300万次	Number of fault-free actions>3 million times
可定制其它接口及泄压压力 Customizable interface options and pressure relief settings	



MAINTENANCE

维保

30多年制冷机和低温泵维修保养服务的历史和丰富经验， 维修产品覆盖世界各知名品牌制冷机和低温泵

We have over 30 years of history and experience in the repair and maintenance of cryocoolers and cryopumps, covering all types of products from well-known brands around the world.

维保服务内容

Maintenance Services

冷头维修与保养:运动件、活塞、活塞环等

低温泵维修与保养:冷伞、冷屏、挡板等

氦气压缩机维修与保养:换热器、滤油器、吸附器等

整机系统检漏、充氦气

整机替换(用本公司产品或进口产品)

用户认为合适的其他方式

Cold head repair and maintenance: moving parts, pistons, piston rings, etc.

Cryopump repair and maintenance: cold umbrella, cold screen, baffle, etc.

Helium compressor repair and maintenance: heat exchangers, oil filters, adsorbers, etc.

Overall leak detection and helium filling

Overall replacement (using our products or imported products)

Other maintenance services that users may consider appropriate

