

超低温制冷机组



设备制冷温度低。设备采用多元自复叠技术，或多级复叠技术；温度可达 -125°C 以下，本机具有运行稳定可靠，低噪音，能量损耗低，制冷功率大特点，是部分替代液氮制冷的优先方案。主要应用于航空航天，军工，电子制造等行业。

新一代 DPK/V 系列超低温制冷机组是本公司为提高真空度，快速吸附环境中水汽分压，通过多年的研发、测试，具有多项专利产权的设备。具有提高真空度，缩短抽真空时间，提升设备稼动率等特点；特别是采用自复叠制冷形式的超低温机组，具有能耗低、制冷快、噪音低、占地面积小等特点，取代传统多级复叠制冷机组及液氮制冷机组，深受客户青睐；

设备特点

- 1: 采用自复叠制冷技或多级复叠制冷技术;
- 2: 自复叠采用本公司自主研发制冷单元, 制冷剂无泄漏, 延长设备使用年限;
- 3: 采用原装进口压缩机, 具有运行平稳, 噪音低, 功率小, 能耗低, 寿命长。
- 4: 自行研发设计高效油过滤器, 分离效果达到 99.9%以上, 提高制冷效率;
- 5: 超低温, 降温稳定迅速;
- 6: 可连续长时间制冷输出, 满足试验要求。
- 7: 可设计多路输出, 均可独立进行制冷动作, 互不影响;
- 8: 西门子 PLC+HMI/Deepcold 专业开发的控制系统, 全方位自动监控控制设备运行; 保障设备运行可靠性, 运行状态一目了然;
- 9: 具有温度、时间显示与设定功能, 提供曲线记录数据保存等功能;
- 10: 特殊设计, 制冷空间温度范围广, 确保设备安全运行;

11: 满足空间试验条件，能运行于从高温阶段（180℃以上）制冷流程；

应用行业图谱

型号定义：

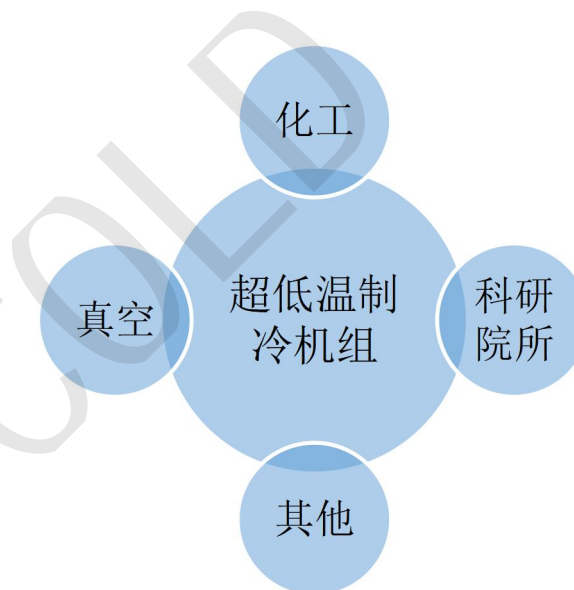
DC/V-①②③/④/⑤/⑥/⑦/⑧/⑨/⑩/⑪/⑫

型号说明：

DC/TP: 蒂珀克®真空超低温机组；

备注：①~⑤为基础型号，⑥~⑨为扩展型号；

例如：DC/V-1102/100/W/3/S/20/16



DC/VR	1	2	3	4	5	6	7	8	9	说明
蒂珀克										蒂珀克®真空超低温机组;
制冷原理	1									单机自覆叠
	2									双级覆叠
	3									三级覆叠
	4									单机双级覆叠
机组名义功率 (HP):		10								07~7HP; 依此类推;
输出路数			0							1路输出
			2							2路输出, 依此类推;
制冷温度 (°C):				120						120~-120°C, 依此类推
冷凝方式:					W					水冷
					F					风冷
系统电压 (V)						2				系统电压220V
						3				系统电压380V
压缩机形式							S			半封闭压缩机
							T			全封闭压缩机
匹配管路长度 (M)								20		20~20M, 依此类推
匹配管路直径 (mm)									06	06~Φ6mm 12~Φ12mm; 依此类推;
DC/VR	1	2	3	4	5	6	7	8	9	说明

Ultralow Temperature Refrigerating Unit

The refrigerating temperature of equipment is low. Equipment applies the single-stage multiple auto-cascade technology, or ARC technology with the temperature can reach below -125°C ; This equipment is featured by stable operation, low noise, low energy consumption and large refrigerating power, making it a prioritized plan for replacing the liquid nitrogen refrigeration. It is mainly applied to the industries e.g. aviation, aerospace, military industry, electronic manufacturing etc.

The new-generation DC/V series ultralow temperature refrigerating unit is one equipment with several patent properties that company has been researching, developing and testing for years in order to enhance vacuum degree and rapidly adsorb the water vapor partial pressure in environment. It is featured by improving vacuum degree, shortening vacuum extraction time, and enhancing equipment utilization etc.; It specially applies the ultralow temperature unit of auto-cascade refrigerating mode with features e.g. low energy consumption, low noise, space saving etc. It has replaced the traditional multi-stage cascade refrigerating unit and liquid nitrogen refrigerating unit with a deep preference by customers;

Equipment Feature

- 1: Using ARC technology or multi-level overlapping refrigeration technology;
- 2: The self-overlapping adopts the company's own refrigeration unit and refrigerant without leakage to extend the useful life of equipment;
- 3: Adopting the original imported compressor with features of a smooth operation, low noise, low power, low energy consumption and long life.
- 4: High-efficiency oil filter of independent research and development can realize a separation effect over 99.9%, enhancing the refrigerating efficiency;
- 5: Ultra-low temperature and stable and rapid cooling;
- 6: Having continuously long time cooling output to meet the test requirements.
- 7: Double-channel output allows any action for independent refrigerating/defrosting without mutual impact;
- 8: Controlling system professionally developed by Siemens PLC+HMI or Deepcold can realize an all-around automatic monitoring and controlling of equipment operation; Ensure a reliable operation of equipment and a transparent operation status;

- 9: It has functions of temperature, time display and setting, providing curve, recording and saving data;
- 10: It is designed specially with a wide range of cooling space temperature, to ensure safe operation of equipment;
- 11: Meet conditions of spatial experiment, capable of operating refrigerating procedure from the high temperature stage (below 180°C);

Applicable Industry Guide:

Model Definition:

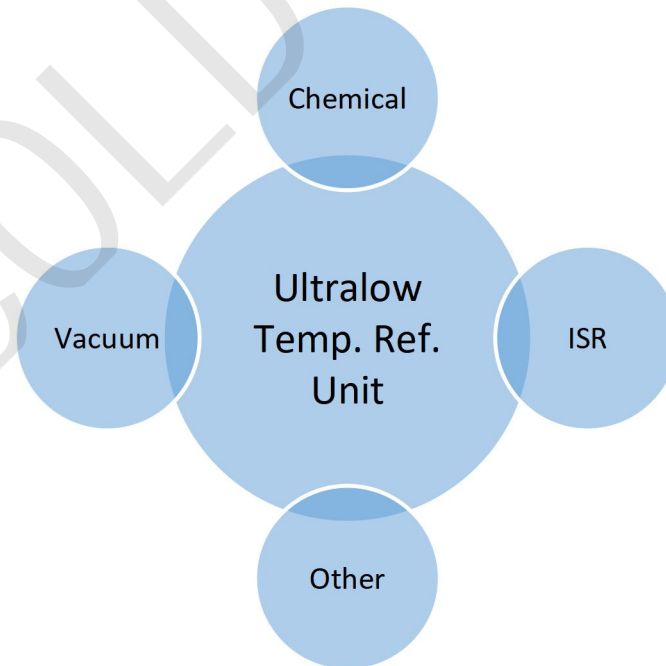
DC/V-① ② ③ / ④ / ⑤ / ⑥ / ⑦ / ⑧ / ⑨ / ⑩ / ⑪ / ⑫

Model Instruction:

DC/V:Deepcold[®] Ultralow Temperature Refrigerating Unit

Remarks: ①~⑤ are basic models, ⑥~⑩ are expanding model;

For example:DC/V-1102/100/W/3/S/20/12



DC/VR	1	2	3	4	5	6	7	8	9	Remarks
Deepcold										Deepcold®Ultralow Temperature Refrigerating Unit
Ref. Prin.	1									ARC
	2									Double-Stage Cascade
	3									Three-Stage Cascade
	4									Single-Machine Double-Stage Cascade
Unit Nom. Power (HP):		07								For example:07~7HP; and so on;
Number of Output Channel			0							the single channel
			2							the dual output, and so on
Ref. Temperature :				120						For example: 120~-120℃, and so on;
Condensation Mode										Water Cooling
										Forced-air Cooling
System Voltage(V)								2		220Vac
								3		380Vac
Compressor Mode									S	Semi-Hermetic Compressor
									T	Total-Hermetic Compressor
Matching Pipe Length (M)									20	For example:20~20M; and so on;
Defrosting Mode (mm)									06	For example:06~Φ6mm; 12~Φ12mm; and so on;
DC/VR	1	2	3	4	5	6	7	8	9	Remarks

配置表:Configuration Table

型号 Model	DC/VR-1030	DC/VR-1050	DC/VR-1070	DC/VR-1100	DC/VR-1150	DC/VR-1200	DC/VR-1250
制冷量(-100℃)(W) Cooling capacity	600	1200	2200	3600	4500	6000	7000
压缩机功率 (HP) Compressor power	3	5	7	10	15	20	25
制冷温度 (℃) Ref. temperature	-80~-120℃						
制冷工质 Refrigerants	新型环保多元混合制冷剂 Newly environmental and multiple mixed refrigerant						
冷却水管径(inch) Cooling water pipe diameter	1/2		3/4		1	1 1/2	2
冷却水流量(L/min) Cooling water flow	9	12	30	35	50	65	90
预冷时间(min) Precooling time	≤15	≤15	≤15	≤20	≤20	≤25	≤25
制冷时间(min) Cooling time	≤180	≤180	≤160	≤160	≤150	≤150	≤150
总功率 (KW)Total powers	2.5	4	6	8	12	16	20
控制系统 Control system	西门子PLC+HMI/Deepcold开发专用控制器+HMI (选一) Siemens PLC+HMI controls OR Controlling system professionally developed by Deepcold						
数据记录 Data record	温度实时曲线记录、温度历史曲线记录、报警记录、设备运行状态记录, 远程控制; Temperature historical curve record, parameter setting, alarm record, equipment operation state record, Remote control						
安全防护 Safety Protection	相序错相断相保护、压缩机内保护、过载保护; 压力保护, 过热保护装置、冷凝温度保护、传感器故障保护等多种安全保障功能 Configured with various safety protection functions e.g. phase sequence, open-phase protection, electric leakage protection, compressor inner protection, overload protection, overheat protection device, sensor failure protection etc;						
电器指标Electrical indicators	AC220V/AC380V	AC380V*3PH*50/60Hz					
匹配真空腔体数据 Matching vacuum chamber data							
蒸发器表面 (m²) Evaporator surface area	≤0.2	≤0.4	≤0.75	≤2.00	≤3.00	≤4.00	≤5.00
蒸发器管长(M) Evaporator tube length	≤6*1	≤12*1	≤20*1	≤40*1	≤60*1	≤70*1	≤85*1
		≤6*2	≤10*2	≤20*2	≤30*2	≤30*2	≤42*2
蒸发器管径(mm) Evaporator tube diameter	Φ10	Φ10	Φ12	Φ16	Φ16	Φ19	Φ19
配真空腔体(mm) Vacuum chamber	≤400	≤600	≤800	≤1200	≤1500	≤1800	≤2000