



Intelligently
WIDE
Application

FREEZER CHILLER



TRULY NTELLIGENT REFRIGERATION CDU



WIDE APPLICATIONS
-40° C to + 10° C (Selected Models)



SILENT OPERATION
With 6 Poles Fan Motor
& Speed Controls



HIGH EFFICIENCY
Rotary & Scroll Compressors With
Vapor Injection Technology



ROBUST CASING
Heavy Duty Materials



HOT GAS DEFROST
Hot Gas Defrosting by Demand



USER FRIENDLY
Easy Maintenance & Repair



ENERGY SAVINGS
High C.O.P.

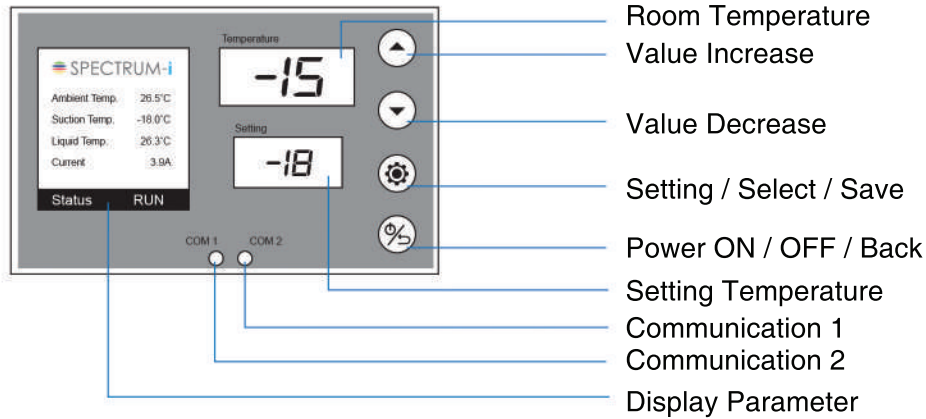


EASY INSTALLATION
Reduce Workmanship

CDU MODEL NOMENCLATURE

G	C	030	A	S	M	A
Brand	Type	HP	Cooling	Compressor Type	Working Condition	Electrical Code
GREFAC	Compact CDU Open Type CDU Insert CDU Rack Unit Multi System Unit	3 HP 13 HP	Air Cooled Water Cooled Without Condenser	Rotary 2-Stage Rotary Rotary + EVI Rotary + Liquid Injection Inverter Rotary Scroll Semi-Hermetic Scroll Scroll + EVI Scroll + Liquid Injection Inverter Scroll Semi-Hermetic Piston 2-Stage Semi Hermetic Piston Inverter Semi Hermetic Piston Screw Inverter Screw Compact Screw with Oil Separator	High Temperature Unit Medium Temperature Unit Low Temperature Unit Ultra Low Temperature Unit (below -50°C)	1 phase 50Hz, 220/240V 3 phase 50 Hz, 380/415V
C	O	030	A	R	H	A
I	R	130	W	RD	M	B
R	D		N	RG	L	
D				RL	S	
				RV		
				S		
				SB		
				SG		
				SL		
				SV		
				B		
				BD		
				BV		
				T		
				TV		
				TY		

i-CONTROLLER SPECIFICATION



i-CONTROLLER PARAMETER (Factory Default Setting)

CDU Models	Compressors Models	Evaporating High & Low Temperature Limit		Refrigerant	Electronic Expansion Valves Combination	Electrical Phase Setting	Alarm Setting for Current (A)	Alarm Setting for Discharge Temp. °C
		Evap. High Limit	Temp. Low Limit					
GC-020ARLL-A	WHP07140DCV	5	-30	R404A (factory default setting)	2EXV+LIQ.Inj	0	14A	115
GC-030ARLL-A	WHP09800DCV	5	-30	R404A (factory default setting)	2EXV+LIQ.Inj	0	16A	115
GC-030ARLL-B	DTH488LC	5	-30	R404A (factory default setting)	2EXV+LIQ.Inj	1	9A	115
GC-050ARGL-B	WHP19460	5	-30	R404A (factory default setting)	2EXV+Ftank	1	14A	115
GC-060ASGL-B	ZFI26KQE	0	-30	R404A (factory default setting)	2EXV+Ftank	1	14A	125
GC-080ASGL-B	ZFI36KQE	-10	-30	R404A (factory default setting)	2EXV+PHX	1	16A	125
GC-100ASGL-B	ZFI50KQE	-10	-30	R404A (factory default setting)	2EXV+PHX	1	25A	125
GC-130ASGL-B	ZFI59KQE	-10	-30	R404A (factory default setting)	2EXV+PHX	1	29A	125
GC-150ASGL-B	ZFI68KQE	-15	-30	R404A (factory default setting)	2EXV+PHX	1	30A	125
GC-080ASM-B	ZB58KQE	5	-18	R404A (factory default setting)	1EXV	1	23A	125
GC-100ASM-B	ZB76KQE	5	-18	R404A (factory default setting)	1EXV	1	28A	125
GC-130ASM-B	ZB95KQE	5	-18	R404A (factory default setting)	1EXV	1	37A	125
GC-150ASM-B	ZB114KQE	5	-18	R404A (factory default setting)	1EXV	1	40A	125

INTRODUCTION

With utmost enthusiasm, we are proud to introduce to the refrigeration industry the World's 1st Intelligent Condensing Unit - Spectrum-i. The futuristic features that every installer had dreamed of, is now brought to you in a complete and intelligent package.

Every Grefac's Spectrum-i Condensing Unit (i-CDU) is equipped with our intelligent controller to tackle & monitor the fundamentals of a complete installation. Electronic expansion valves (EXVs) and a 4-Way Reversing Valve are also pre-installed in Spectrum-i. These EXVs & 4-Way Reversing Valve are driven by the intelligent controller to :

- (1) ensure precise superheat control in the evaporator,
- (2) to optimise the vapor/liquid injection for an overall efficient refrigeration system &
- (3) to maximise defrost efficiency only when necessary.

It is time to say 'goodbye' to the headaches & troubles to replace faulty defrost heaters and the frustration to constantly throttling the txv.

With Spectrum-i, you can count on a fast & efficient installation. We are confident that our customers will be standing out amongst their industry's peers after every Spectrum-i installations. They will be proud to boast about the 'good deeds' that they had generously contributed to their clients' refrigeration applications after every Spectrum-i installation. In the remaining pages of this booklet, you will find out further details of the features built-in with Spectrum-i. We assure you that your imaginations will run wild on the possibilities of how these features can save you the resources that you have been wasting in your past installation experiences.

We look forward to bring our customers continuous breakthrough on technologies that can enhance our daily needs on refrigeration applications.

We take this opportunity to express our sincere appreciation for the support that we have been getting from our customers. We will continue to stand firm to focus on sustainable solutions that will lead to a better environment for the future generations.



i-CONTROLLER (All-in-One Master Controller)

The 'brain' behind all the controls for :

- Room Temperature Control & Setting
- Evaporator Electronic Expansion Valve (EXV) Superheat Control
- Liquid/Vapor Injection Electronic Expansion Valve (EXV) Control
- Hot Gas Defrost On-Demand Control via 4-Way Reversing Valve
- Monitoring Alarm & Provide Diagnostic Information
- Large Display Screen Enable User To Read & Understand Diagnostic Without Referring To Error Codes on Manuals



Hot Gas Defrost ON-DEMAND

- Our i-Controller's is Programmed To Activate Defrost Cycle On-Demand Using Hot Gas
- Rapid Defrost Cycle (Within 5 Minutes)
- Defrost Cycle Substantially Reduced During 'Idle-Mode'
- Eliminating High Energy Consumption of Defrost Heaters
- Efficient & Through Defrost Result
(100% Evaporator Coil Defrost)
- Enhance Room Temperature Stability
(between 3°C~5°C vs Heaters Defrost 8°C~10°C)
- Ideal For High Humidity Environment



Wide Temperature Range Application

- -25°C to +5°C Evaporating Temperature Range for Most Medium Temperature Spectrum-i CDU Models
- Rotary-EVI CDUs Can Cover -40°C to +10°C Evaporating Temperature Range



Electronic Expansion Valve c/w Japan Origin SAGINOMIYA Pressure Transducer

- Evaporator EXV To Provide High Accuracy & Efficient Superheat Control
- Faster Temperature Pull Down Time
- Better Compressor Protection Due To Quick Respond To Close/Open Preventing Liquid Flood Back
- No More Worry On Wrong TXV Selection
- Vapor/Liquid Injection EXV Provide Faster Cooling Effect As Compared To TXV



Easy Installation and Fast Testing & Commissioning (T&C)

- Spectrum-i Comes With Pre-Charged R404a (Sufficient For Installation Up To 12 Meters Piping)
- i-Controller's Comprehensive Features Protect & Diagnosed Installation Errors/Faults
- Spectrum-i Only Requires Incoming Power Supply To Start Operation
- Set The Desired Room Temperature on i-Controller & T&C Will Be Taken Care By Its Intelligent Module



Optional Package System (Cost Effective Evaporator Unit Cooler)

- Our Spectrum-i Advanced Hot Gas Defrost Enable Combination of Lower Cost Evaporators
- Evaporators Cost are Lower Due to Simple Design That Does Not Require Defrost Heaters
- The Advanced & Efficient Hot Gas Defrost On Demand Also Means Evaporator With Smaller Fin Space Suitable for Any Applications
- Inner Groove Piping Reduce Surface Area of Evaporators & Less Refrigerant Charge

MEDIUM-LOW TEMPERATURE ROTARY CDU (R404A/50HZ)

CDU Model	Nominal HP	Compressor Model		Ambient Temp. C°	Evaporating Temperature (Watt)											
					-40	-35	-30	-25	-20	-15	-10	-5	0	5	7	10
GC-020ARLL	2HP Low-Medium Temperature	WHP07140 Liquid Injection	Capacity	32	1011	1279	1521	1915	2474	2850	3400	4089	4952	5966	6541	7182
				38	964	1234	1482	1894	2395	2691	3170	3865	4598	5446	6018	6593
				43	901	1116	1354	1684	2129	2490	2983	3559	4287	5174	5867	6241
			Power	32	1273	1309	1358	1382	1415	1579	1498	1501	1535	1598	1601	1605
				38	1372	1437	1489	1544	1580	1632	1655	1734	1759	1814	1834	1855
				43	1423	1464	1527	1615	1674	1732	1792	1829	1899	1983	2001	2072

MEDIUM-LOW TEMPERATURE SCROLL CDU (R404A/50HZ)

CDU Model	Nominal HP	Compressor Model		Ambient Temp. C°	Evaporating Temperature (Watt)										
					-40	-35	-30	-25	-20	-15	-10	-5	0	5	7
GC-060ASGL	6HP Low Temperature	ZFI26KQE	Capacity	27	5090	6120	7330	8740	10390	12300	14490	17010	19860	23060	24450
				38	5080	5970	7030	8320	9840	11620	13700	16100	18830	21940	23300
			Power	27	3850	4070	4280	4470	4650	4810	4970	5120	5260	5390	5440
GC-080ASGL	8HP Low Temperature	ZFI36KQE	Capacity	27	6310	7730	9410	11350	13500	15650	18400	21600			
				38	6310	7500	8850	10600	12650	14700	17400	20600			
			Power	27	4220	4610	4960	5270	5540	5860	6050	6230			
GC-100ASGL	10HP Low Temperature	ZFI50KQE	Capacity	27	8620	10600	12800	15350	18200	21400	25200	29500			
				38	7990	9590	12100	14450	17150	20100	23800	28100			
			Power	27	5770	6210	6600	6960	7310	8010	8280	8520			
GC-130ASGL	13HP Low Temperature	ZFI59KQE	Capacity	27	10700	13100	15850	19000	22500	25900	30500	35800			
				38	9900	11870	15000	17900	21300	24300	28800	34000			
			Power	27	7150	7690	8180	8630	9060	9700	10000	10300			
GC-150ASGL	15HP Low Temperature	ZFI68KQE	Capacity	27	12100	14900	17500	21500	25500						
				38	11230	13460	17000	20300	24100						
			Power	27	8310	8940	9510	10050	10550						
GC-080ASM	8HP Medium Temperature	ZB58KQE	Capacity	27				7050	9250	11700	14400	17500	21000	24900	
				38				5259	6900	9100	11500	14150	17100	20400	
			Power	27				5750	5750	5750	5750	5750	5800	5850	
GC-100ASM	10HP Medium Temperature	ZB76KQE	Capacity	27				10900	13300	16100	19400	23300	27800	33000	
				38				9179	11200	13200	15700	18700	22200	26400	
			Power	27				7250	7300	7400	7450	7500	7600	7700	
GC-130ASM	13HP Medium Temperature	ZB95KQE	Capacity	27				12785	15600	19600	23850	28500	33900	40000	
				38				11312	13500	15500	19500	23750	28350	33550	
			Power	27				9336	9400	9430	9500	9590	9690	9780	
GC-150ASM	15HP Medium Temperature	ZB114KQE	Capacity	27				14998	18300	23050	28250	34100	40700	48200	
				38				11143	12200	14200	17310	21380	26450	32150	
			Power	27				11143	11220	11260	11310	11380	11470	11570	

* Max return gas temperature of 18.3°C
 * Max Suction Superheat of 11K only
 * Sub-Cooling 0K

Capacity = Cooling Capacity
 Power = Power Input

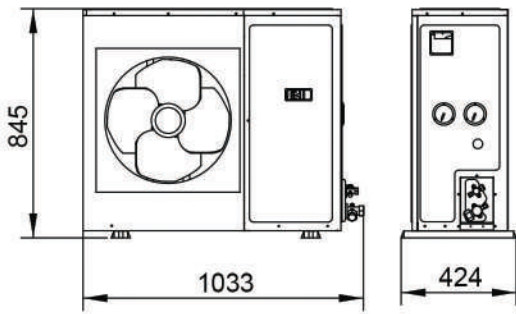
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SYSTEM CDU TECHNICAL SPECIFICATION SUMMARY

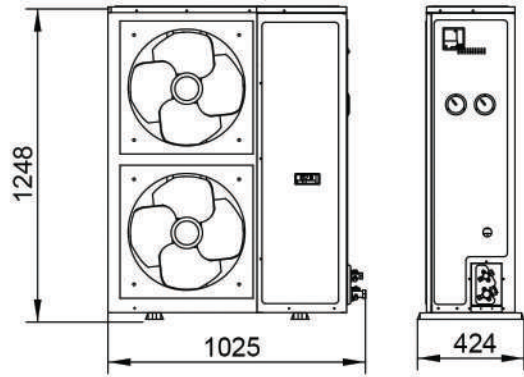
CDU Model	Nominal HP	Electric Power	Compressor Model							CDU								
			Type	Model	Capacity (W)*	Power Input (W)*	COP*	Motor LRA (A)	Motor MCC (A)	Oil Type	Condenser Model	Condenser Fan Size	Qty of Fan	Connection Size		Dimension (WxDxH)	Weight (KG)	
ROTARY in Low Temperature Condition																		
GC-020ARLL-A	2HP	1 phase 50Hz, 220~240V	ROTARY	WHP07140DCV	1915	1382	1.39	49	14	POE	G-SU020	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-030ARLL-A	3HP			WHP09800DCV	1915	1382	1.39	49	16		G-SU030	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-030ARLL-B	3HP	3 phase 50Hz, 220~240V		DTH488LC	2998	1966	1.53	72	9		G-SU030	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-050ARGL-B	5HP			WHP19460	6972	4295	1.62	55	15		G-SU050	450	2	1/2"	3/4"	1025 x 424 x 1248	120	
ROTARY in Medium Temperature Condition																		
GC-020ARLL-A	2HP	1 phase 50Hz, 220~240V	ROTARY	WHP07140DCV	4089	1501	2.72	49	14	POE	G-SU020	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-030ARLL-A	3HP			WHP09800DCV	4089	1501	2.72	49	16		G-SU020	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-030ARLL-B	3HP	3 phase 50Hz, 380~415V		DTH488LC	6757	2422	2.79	72	9		G-SU030	450	1	1/2"	5/8"	1033 x 424 x 845	85	
GC-050ARGL-B	5HP			WHP19460	14586	4765	3.06	55	15		G-SU050	450	2	1/2"	3/4"	1025 x 424 x 1248	120	
SCROLL in Low Temperature Condition																		
GC-060ASGL	6HP	3 phase 50Hz, 380~415V	COPELAND SCROLL	ZFI26KQE	8320	5500	1.51	74	14	POE	G-SU050	450	2	1/2"	3/4"	1025 x 424 x 1248	120	
GC-080ASGL	8HP			ZFI36KQE	10600	6380	1.67	102	16		G-SU080	560	1	3/4"	1 1/8"	765 x 747 x 1003	180	
GC-100ASGL	10HP			ZFI50KQE	14450	8290	1.75	100	25		G-SU100	560	2	3/4"	1 1/8"	774 x 1460 x 1003	220	
GC-130ASGL	13HP			ZFI59KQE	17900	10250	1.75	118	29		G-SU130	560	2	7/8"	1 3/8"	774 x 1460 x 1003	240	
GC-150ASGL	15HP			ZFI68KQE	20300	11950	1.7	139	30		G-SU150	560	2	7/8"	1 3/8"	774 x 1460 x 1003	250	
SCROLL in Medium Temperature Condition																		
GC-080ASM	8HP	3 phase 50Hz, 380~415V	COPELAND SCROLL	ZB58KQE	14150	7350	1.97	86-95	23	POE	G-SU080	560	1	3/4"	1 1/8"	765 x 747 x 1003	180	
GC-100ASM	10HP			ZB76KQE	18700	9250	2.03	110-118	28		G-SU100	560	2	3/4"	1 1/8"	774 x 1460 x 1003	220	
GC-130ASM	13HP			ZB95KQE	23750	11940	1.99	140	37		G-SU130	560	2	7/8"	1 3/8"	774 x 1460 x 1003	240	
GC-150ASM	15HP			ZB114KQE	28200	14120	2	174	40		G-SU150	560	2	7/8"	1 3/8"	774 x 1460 x 1003	250	

*Remarks : For Rotary CDU:
 Low Temperature application based on evaporating temp. at -25°C, condensing temp. at 32°C
 and Medium Temperature based on evaporating temp. at -5°C, condensing temp. at 32°C
 For Scroll CDU:
 Low Temperature application based on evaporating temp. at -25°C, condensing temp. at 38°C
 and Medium Temperature based on evaporating temp. at -5°C, condensing temp. at 38°C

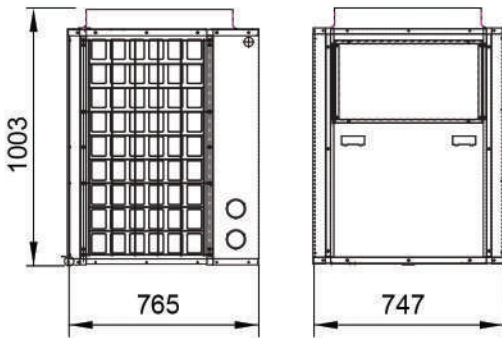
SYSTEM CDU TECHNICAL DRAWING



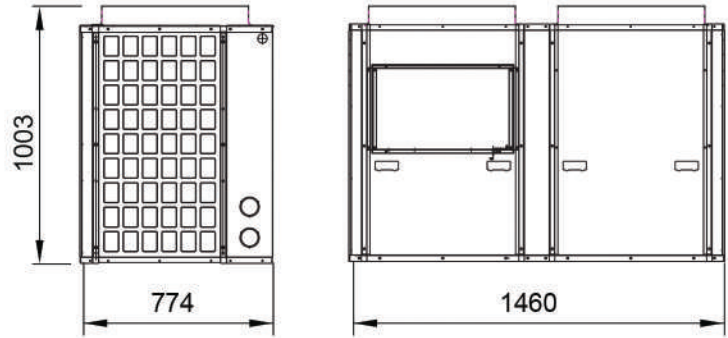
CDU FOR 2HP to 3HP



CDU FOR 5HP & 6HP



CDU FOR 8HP



CDU FOR 10HP, 13HP & 15HP



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Refrigeration Solutions

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REFRIGERATION CONDENSING UNIT

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