

### COMPRESSOR DEFINITION

Designation	EM 2X3121U
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513304081

### A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-290		
3 Nominal voltage and frequency	220-240 / 50-60	[ V / Hz ]	
4 Application type	Low-Medium Back Pressure (Light Commercial)		
4.1 Evaporating temperature range	-35°C to 0°C	(-31°F to 32°F)	
5 Motor type	RSCR		
6 Starting torque	LST - Low Starting Torque		
7 Expansion device	Capillary tube		
8 Compressor cooling	Operating voltage range		
		50 Hz	60 Hz
8.1 LBP (32°C Ambient temperature)	Static	198 to 255 V	198 to 255 V
8.2 LBP (43°C Ambient temperature)	Static	198 to 255 V	198 to 255 V
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	18.4	[kgf/cm <sup>2</sup> ] (262 psig)	/ °C - °F
9.2 Peak	20.6	[kgf/cm <sup>2</sup> ] (293 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/3	[hp]
2 Displacement	5.54	[cm <sup>3</sup> ] (0.338 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	16.000	
3 Lubricant charge	150	[ml] (5.07 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO22	
4 Weight (with oil charge)	8.05	[kg] (17.75 lb.)
5 Nitrogen charge	0.2 to 0.3	[kgf/cm <sup>2</sup> ] (2.84 to 4.27 psig)

### C - ELECTRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	220-240 V 50-60 Hz 1 ~ (Single phase)	
2 Starting device type	PTC	
2.1 Starting device	8EA17C3/8EA17E61/8EA17E62/8EA17E63/QPS2-A22MD3	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	5(450)	[µF(VAC minimum)]
5 Motor protection	4TM302KFBYY-53	
6 Start winding resistance	20.80	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	11.70	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	8.20/7.80	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.80/1.70	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	2.00/1.90	[A] - Measured according to UL 984
11 Approval boards certification	CE - IMTRO - IRAM - ISI - TUV - UKCA - VDE	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V50Hz			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
918	231	269	165	0.83	2.73	5.58	1.41	1.64

TEST CONDITIONS: @220V50Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
984	248	288	167	0.84	2.93	5.88	1.48	1.72

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
1123	283	329	197	0.90	3.34	5.72	1.44	1.68

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
1186	299	348	199	0.91	3.53	5.95	1.50	1.74

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static				(Condensing temperature 35°C (+95°F) )			
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
°C (°F)									
-35 (-31)	586	148	172	117	0.62	1.73	5.00	1.26	1.46
-30 (-22)	759	191	222	129	0.67	2.25	5.87	1.48	1.72
-25 (-13)	952	240	279	140	0.72	2.83	6.80	1.71	1.99
-20 (- 4)	1177	297	345	151	0.77	3.51	7.80	1.96	2.28
-15 (+ 5)	1448	365	424	163	0.82	4.34	8.91	2.24	2.61
-10 (+14)	1777	448	521	175	0.87	5.35	10.15	2.56	2.97
-5 (+23)	2177	549	638	188	0.92	6.59	11.57	2.92	3.39
0 (+32)	2660	670	779	202	0.97	8.09	13.18	3.32	3.86

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	562	142	165	122	0.64	1.66	4.60	1.16	1.35
-30	(-22)	736	185	216	137	0.71	2.18	5.35	1.35	1.57
-25	(-13)	924	233	271	151	0.77	2.75	6.11	1.54	1.79
-20	(- 4)	1139	287	334	165	0.83	3.40	6.93	1.75	2.03
-15	(+ 5)	1393	351	408	178	0.89	4.17	7.82	1.97	2.29
-10	(+14)	1699	428	498	192	0.95	5.11	8.82	2.22	2.58
-5	(+23)	2070	522	607	207	1.01	6.26	9.96	2.51	2.92
0	(+32)	2518	635	738	224	1.07	7.65	11.27	2.84	3.30

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	512	129	150	124	0.65	1.51	4.12	1.04	1.21
-30	(-22)	689	174	202	143	0.73	2.04	4.79	1.21	1.40
-25	(-13)	874	220	256	160	0.81	2.60	5.46	1.37	1.60
-20	(- 4)	1081	272	317	176	0.88	3.22	6.14	1.55	1.80
-15	(+ 5)	1321	333	387	193	0.95	3.95	6.87	1.73	2.01
-10	(+14)	1607	405	471	209	1.03	4.83	7.68	1.94	2.25
-5	(+23)	1951	492	572	227	1.10	5.90	8.60	2.17	2.52
0	(+32)	2368	597	694	245	1.18	7.20	9.66	2.43	2.83

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	436	110	128	125	0.65	1.29	3.50	0.88	1.03
-30	(-22)	619	156	181	147	0.74	1.84	4.16	1.05	1.22
-25	(-13)	804	203	236	167	0.83	2.39	4.77	1.20	1.40
-20	(- 4)	1004	253	294	187	0.92	3.00	5.38	1.36	1.58
-15	(+ 5)	1232	311	361	206	1.01	3.69	6.00	1.51	1.76
-10	(+14)	1500	378	440	225	1.10	4.51	6.68	1.68	1.96
-5	(+23)	1822	459	534	245	1.19	5.51	7.44	1.87	2.18
0	(+32)	2208	556	647	266	1.28	6.71	8.31	2.09	2.43

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 35°C (+95°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	711	179	208	135	0.61	2.10	5.26	1.33	1.54
-30	(-22)	918	231	269	152	0.69	2.72	6.04	1.52	1.77
-25	(-13)	1150	290	337	167	0.77	3.42	6.88	1.73	2.02
-20	(- 4)	1415	357	415	182	0.84	4.22	7.80	1.97	2.29
-15	(+ 5)	1724	434	505	196	0.90	5.17	8.83	2.22	2.59
-10	(+14)	2086	526	611	209	0.95	6.28	9.98	2.52	2.93
-5	(+23)	2509	632	735	222	1.01	7.59	11.30	2.85	3.31
0	(+32)	3003	757	880	235	1.06	9.13	12.80	3.22	3.75

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 45°C (+113°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	680	171	199	141	0.64	2.01	4.81	1.21	1.41
-30	(-22)	890	224	261	161	0.73	2.64	5.51	1.39	1.61
-25	(-13)	1120	282	328	180	0.82	3.33	6.22	1.57	1.82
-20	(- 4)	1380	348	404	198	0.91	4.12	6.98	1.76	2.05
-15	(+ 5)	1678	423	492	215	0.99	5.03	7.81	1.97	2.29
-10	(+14)	2025	510	593	231	1.07	6.09	8.74	2.20	2.56
-5	(+23)	2429	612	712	248	1.14	7.35	9.78	2.47	2.87
0	(+32)	2900	731	850	264	1.22	8.82	10.98	2.77	3.22

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 55°C (+131°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	611	154	179	143	0.65	1.81	4.28	1.08	1.26
-30	(-22)	826	208	242	167	0.76	2.45	4.94	1.24	1.45
-25	(-13)	1057	266	310	189	0.87	3.14	5.57	1.40	1.63
-20	(- 4)	1314	331	385	211	0.97	3.92	6.22	1.57	1.82
-15	(+ 5)	1605	404	470	233	1.07	4.81	6.90	1.74	2.02
-10	(+14)	1940	489	568	254	1.17	5.83	7.63	1.92	2.24
-5	(+23)	2327	587	682	275	1.27	7.04	8.46	2.13	2.48
0	(+32)	2778	700	814	296	1.37	8.44	9.39	2.37	2.75

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°F) )					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	504	127	148	139	0.65	1.49	3.64	0.92	1.07
-30	(-22)	728	183	213	168	0.77	2.16	4.29	1.08	1.26
-25	(-13)	963	243	282	196	0.90	2.86	4.90	1.23	1.43
-20	(- 4)	1219	307	357	223	1.02	3.64	5.47	1.38	1.60
-15	(+ 5)	1505	379	441	250	1.14	4.51	6.04	1.52	1.77
-10	(+14)	1831	461	536	276	1.26	5.51	6.64	1.67	1.94
-5	(+23)	2205	556	646	303	1.39	6.67	7.28	1.83	2.13
0	(+32)	2637	665	773	330	1.52	8.01	8.00	2.02	2.34

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal EUEM		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.1.1 Material	Copper		
3.1.2 Shape	Straight		
3.2 DISCHARGE	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.2.1 Material	Copper		
3.2.2 Shape	Straight		
3.3 PROCESS	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.3.1 Material	Copper		
3.3.2 Shape	Straight		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		