

COMPRESSOR DEFINITION

Designation	EM 2X3121U
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513304101

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 - Curves until T.Evap -4		
4.1 Evaporating temperature range	-40°C to 0°C	(-40°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/Fan	198 to 255 V	198 to 255 V
8.2 LBP (43°C Ambient temperature)	Static/Fan	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 ²] (262 psig)	/ °C - °F
9.2 Peak	20.6	[kgf/cm ²] (293 psig)	/ °C - °F
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/3	[hp]
2 Displacement	5.54	[cm ³] (0.338 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	16.000	
3 Lubricant charge	180	[ml] (6.09 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 ²] (2.84 to 4.27 psig)

C - ELETRICAL 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	4TM232RFBYY-53	
6 Start winding resistance	20.68	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	14.06	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	8.10/7.50	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.00/0.72	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	1.29/0.98	[A] - Measured according to UL 984
11 Approval boards certification	IRAM - TUV	

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 +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
961	242	282	164	0.83	2.86	5.86	1.48	1.72

TEST CONDITIONS: @220V50Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature	-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
988	249	290	165	0.84	2.94	5.99	1.51	1.76

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature	-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
1169	295	343	192	0.88	3.48	6.09	1.53	1.78

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature	-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
1199	302	351	193	0.89	3.57	6.21	1.56	1.82

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static					(Condensing temperature 35°C (+95°F))			
Evaporating temperature	Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%			
	°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]
-40	(-40)	526	133	154	107	0.63	1.55	4.91	1.24	1.44
-35	(-31)	649	164	190	119	0.67	1.92	5.44	1.37	1.59
-30	(-22)	804	203	236	131	0.71	2.38	6.12	1.54	1.79
-25	(-13)	994	250	291	143	0.76	2.96	6.96	1.75	2.04
-20	(- 4)	1223	308	358	154	0.81	3.65	7.95	2.00	2.33
-15	(+ 5)	1493	376	437	164	0.85	4.47	9.11	2.30	2.67
-10	(+14)	1808	456	530	174	0.89	5.44	10.44	2.63	3.06
-5	(+23)	2172	547	637	182	0.92	6.57	11.95	3.01	3.50
0	(+32)	2588	652	758	189	0.95	7.87	13.64	3.44	4.00

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	485	122	142	108	0.64	1.43	4.50	1.13	1.32
-35	(-31)	609	153	178	123	0.68	1.80	4.97	1.25	1.46
-30	(-22)	761	192	223	137	0.74	2.26	5.54	1.40	1.62
-25	(-13)	947	239	278	151	0.79	2.82	6.23	1.57	1.82
-20	(- 4)	1169	295	343	165	0.85	3.49	7.03	1.77	2.06
-15	(+ 5)	1430	360	419	179	0.91	4.28	7.95	2.00	2.33
-10	(+14)	1734	437	508	192	0.97	5.22	9.00	2.27	2.64
-5	(+23)	2085	525	611	205	1.02	6.30	10.18	2.57	2.98
0	(+32)	2484	626	728	217	1.07	7.55	11.50	2.90	3.37

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	434	109	127	110	0.65	1.28	3.97	1.00	1.16
-35	(-31)	557	140	163	126	0.70	1.65	4.44	1.12	1.30
-30	(-22)	707	178	207	142	0.75	2.10	4.96	1.25	1.45
-25	(-13)	887	224	260	159	0.82	2.64	5.55	1.40	1.63
-20	(- 4)	1102	278	323	176	0.89	3.29	6.22	1.57	1.82
-15	(+ 5)	1353	341	396	194	0.96	4.05	6.96	1.75	2.04
-10	(+14)	1645	415	482	211	1.04	4.95	7.78	1.96	2.28
-5	(+23)	1981	499	580	227	1.11	5.99	8.70	2.19	2.55
0	(+32)	2363	596	692	244	1.18	7.18	9.71	2.45	2.84

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°F))					
Evaporating temperature		Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	373	94	109	112	0.66	1.10	3.30	0.83	0.97
-35	(-31)	494	125	145	129	0.71	1.46	3.82	0.96	1.12
-30	(-22)	640	161	188	148	0.78	1.90	4.35	1.10	1.27
-25	(-13)	815	205	239	167	0.85	2.42	4.90	1.24	1.44
-20	(- 4)	1021	257	299	187	0.93	3.04	5.49	1.38	1.61
-15	(+ 5)	1261	318	370	207	1.02	3.78	6.10	1.54	1.79
-10	(+14)	1540	388	451	228	1.11	4.63	6.76	1.70	1.98
-5	(+23)	1860	469	545	249	1.21	5.62	7.47	1.88	2.19
0	(+32)	2225	561	652	270	1.30	6.76	8.22	2.07	2.41

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	616	155	181	117	0.54	1.82	5.24	1.32	1.53
-35	(-31)	780	197	228	134	0.62	2.31	5.81	1.46	1.70
-30	(-22)	977	246	286	151	0.70	2.90	6.48	1.63	1.90
-25	(-13)	1211	305	355	167	0.77	3.60	7.26	1.83	2.13
-20	(- 4)	1484	374	435	182	0.84	4.43	8.17	2.06	2.39
-15	(+ 5)	1799	453	527	196	0.90	5.39	9.22	2.32	2.70
-10	(+14)	2159	544	633	208	0.96	6.50	10.42	2.63	3.05
-5	(+23)	2567	647	752	218	1.00	7.76	11.80	2.97	3.46
0	(+32)	3025	762	886	225	1.02	9.20	13.35	3.36	3.91

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	557	140	163	120	0.55	1.64	4.66	1.17	1.36
-35	(-31)	721	182	211	139	0.64	2.13	5.19	1.31	1.52
-30	(-22)	918	231	269	158	0.72	2.72	5.78	1.46	1.69
-25	(-13)	1151	290	337	177	0.81	3.42	6.43	1.62	1.88
-20	(- 4)	1423	359	417	197	0.90	4.25	7.16	1.81	2.10
-15	(+ 5)	1737	438	509	216	0.99	5.20	7.99	2.01	2.34
-10	(+14)	2095	528	614	234	1.07	6.30	8.92	2.25	2.61
-5	(+23)	2500	630	733	251	1.15	7.56	9.98	2.51	2.92
0	(+32)	2956	745	866	266	1.21	8.98	11.17	2.81	3.27

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	494	124	145	122	0.56	1.46	4.10	1.03	1.20
-35	(-31)	653	165	191	141	0.65	1.93	4.66	1.17	1.37
-30	(-22)	845	213	248	162	0.74	2.50	5.22	1.32	1.53
-25	(-13)	1072	270	314	184	0.85	3.19	5.80	1.46	1.70
-20	(- 4)	1338	337	392	208	0.95	3.99	6.41	1.61	1.88
-15	(+ 5)	1645	415	482	231	1.06	4.93	7.07	1.78	2.07
-10	(+14)	1997	503	585	255	1.17	6.01	7.78	1.96	2.28
-5	(+23)	2395	603	702	279	1.28	7.24	8.58	2.16	2.51
0	(+32)	2842	716	833	301	1.38	8.64	9.46	2.38	2.77

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°F))					
Evaporating temperature		Cooling capacity +/- 5%			Power consumption +/- 5%	Current consumption +/- 5%	Gas flow rate +/- 5%	EFFICIENCY RATE +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	426	107	125	123	0.57	1.26	3.40	0.86	1.00
-35	(-31)	575	145	169	143	0.66	1.70	4.03	1.01	1.18
-30	(-22)	757	191	222	165	0.76	2.24	4.61	1.16	1.35
-25	(-13)	974	245	285	190	0.87	2.89	5.17	1.30	1.52
-20	(- 4)	1229	310	360	217	1.00	3.66	5.72	1.44	1.68
-15	(+ 5)	1525	384	447	245	1.13	4.57	6.26	1.58	1.84
-10	(+14)	1864	470	546	274	1.26	5.61	6.82	1.72	2.00
-5	(+23)	2250	567	659	303	1.40	6.80	7.41	1.87	2.17
0	(+32)	2685	677	787	333	1.53	8.16	8.04	2.03	2.36

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	Slanted 42° up + 45° to Back		
3.2 DISCHARGE	4.94 +0.08/-0.08	[mm]	(0.194" +0.003"/-0.003")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted 30° up + 24° to Back		
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	Slanted 45° up + 45° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		