

COMPRESSOR DEFINITION

| | |
|---------------------------|--------------------|
| Designation | EM 2X3121U |
| Nominal Voltage/Frequency | 220-240 V 50-60 Hz |
| Engineering Number | 513304098 |

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 | - | [kgf/cm ²] |

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 | 6.1 +0.10/+0.00 | [mm] | (0.240" +0.004"/+0.000") |
| 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 parallel BP+24°to Back | | |
| 3.3 PROCESS | 6.1 +0.10/+0.00 | [mm] | (0.240" +0.004"/+0.000") |
| 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 | | |