

### COMPRESSOR DEFINITION

|                           |                           |
|---------------------------|---------------------------|
| Designation               | <b>EM 2U3121Z</b>         |
| Nominal Voltage/Frequency | <b>220-240 V 50-60 Hz</b> |
| Engineering Number        | <b>513305599</b>          |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|                                    |   |                                   |              |
|------------------------------------|---|-----------------------------------|--------------|
| 1 Type                             | Hermetic reciprocating compressor                 |                                   |              |
| 2 Refrigerant                      | R-134a  |                                   |              |
| 3 Nominal voltage and frequency    | 220-240 / 50-60                                   | [ V / Hz ]                        |              |
| 4 Application type                 | Low-Medium Back Pressure (Commercial Compressors) |                                   |              |
| 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) | -   | -                                 | -            |
| 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                      | 14.2  | [kgf/cm <sup>2</sup> ] (202 psig) | / °C - °F    |
| 9.2 Peak                           | 15.9  | [kgf/cm <sup>2</sup> ] (226 psig) | / °C - °F    |
| 10 Maximum winding temperature     | 130   | [ °C ]                            |              |

### B - MECHANICAL DATA

|                               |               |  |
|-------------------------------|---------------|--|
| 1 Commercial designation      | 1/4           | [hp]                                       |
| 2 Displacement                | 8.41          | [cm <sup>3</sup> ] (0.513 cu.in)           |
| 2.1 Bore [mm]                 | 24.000        |  |
| 2.2 Stroke [mm]               | 18.600        |  |
| 3 Lubricant charge            | 180           | [ml] (6.09 fl.oz.)                         |
| 3.1 Lubricants approved       |               |  |
| 3.2 Lubricants type/viscosity | ESTER / ISO22 |  |
| 4 Weight (with oil charge)    | 7.96          | [kg] (17.55 lb.)                           |
| 5 Nitrogen charge             | 0.2 to 0.3    | [kgf/cm <sup>2</sup> ] (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                               |                                    |
| 3 Start capacitor                            | -                                     | [μF(VAC minimum)]                  |
| 4 Run capacitor                              | 5(450)                                | [μF(VAC minimum)]                  |
| 5 Motor protection                           | 4TM319KFBYY-53                        |                                    |
| 6 Start winding resistance                   | 20.04                                 | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 8.89                                  | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (50/60 Hz)     | -                                     | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50/60 Hz)  | -                                     | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (50/60 Hz)   | -                                     | [A] - Measured according to UL 984 |
| 11 Approval boards certification             | TUV                                   |                                    |

### D - PERFORMANCE - CHECK POINT DATA

|                                      |          |     |                                     |                               |  |  |           |       |
|--------------------------------------|----------|-----|-------------------------------------|-------------------------------|--|--|-----------|-------|
| TEST CONDITIONS:<br><b>@220V50Hz</b> |          |     | <b>ASHRAELBP32</b><br><b>Static</b> |                               | Evaporating temperature<br>(Condensing temperature | <b>-23.3°C (-9.94°F)</b><br><b>54.4°C (129.92°F)</b> |           |       |
| Cooling capacity<br>+/- 5%           |          |     | Power consumption<br>+/- 5%         | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                            | EFFICIENCY RATE<br>+/- 7%                            |           |       |
| [Btu/h]                              | [kcal/h] | [W] | [W]                                 | [A]                           | [kg/h]   | [Btu/Wh]   | [kcal/Wh] | [W/W] |
| 822                                  | 207      | 241 | 159                                 | 0.95                          | 4.67   | 5.16   | 1.30      | 1.51  |

|                                      |          |     |                                     |                               |  |  |           |       |
|--------------------------------------|----------|-----|-------------------------------------|-------------------------------|--|--|-----------|-------|
| TEST CONDITIONS:<br><b>@220V60Hz</b> |          |     | <b>ASHRAELBP32</b><br><b>Static</b> |                               | Evaporating temperature<br>(Condensing temperature | <b>-23.3°C (-9.94°F)</b><br><b>54.4°C (129.92°F)</b> |           |       |
| Cooling capacity<br>+/- 5%           |          |     | Power consumption<br>+/- 5%         | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                            | EFFICIENCY RATE<br>+/- 7%                            |           |       |
| [Btu/h]                              | [kcal/h] | [W] | [W]                                 | [A]                           | [kg/h]   | [Btu/Wh]   | [kcal/Wh] | [W/W] |
| 977                                  | 246      | 286 | 178                                 | 0.84                          | 5.55   | 5.48   | 1.38      | 1.61  |

### E - PERFORMANCE - CURVES

|                                      |                            |          |                                  |                             |   |                         |                           |           |       |
|--------------------------------------|----------------------------|----------|----------------------------------|-----------------------------|---|-------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS:<br><b>@220V50Hz</b> |                            |          | <b>ASHRAE32</b><br><b>Static</b> |                             | (Condensing temperature <b>35°C (+95°F)</b> ) |                         |                           |           |       |
| Evaporating temperature              | Cooling capacity<br>+/- 5% |          |                                  | Power consumption<br>+/- 5% | Current consumption<br>+/- 5%                 | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C (°F)                              | [Btu/h]                    | [kcal/h] | [W]                              | [W]                         | [A]   | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| <b>-35 (-31)</b>                     | 472                        | 119      | 138                              | 108                         | 0.77  | 2.67                    | 4.35                      | 1.10      | 1.28  |
| <b>-30 (-22)</b>                     | 683                        | 172      | 200                              | 126                         | 0.81  | 3.87                    | 5.37                      | 1.35      | 1.57  |
| <b>-25 (-13)</b>                     | 906                        | 228      | 266                              | 144                         | 0.86  | 5.15                    | 6.29                      | 1.58      | 1.84  |
| <b>-20 (- 4)</b>                     | 1158                       | 292      | 339                              | 162                         | 0.92  | 6.59                    | 7.20                      | 1.81      | 2.11  |
| <b>-15 (+ 5)</b>                     | 1453                       | 366      | 426                              | 180                         | 0.99  | 8.30                    | 8.17                      | 2.06      | 2.39  |
| <b>-10 (+14)</b>                     | 1809                       | 456      | 530                              | 196                         | 1.06  | 10.36                   | 9.26                      | 2.33      | 2.71  |
| <b>-5 (+23)</b>                      | 2240                       | 564      | 656                              | 212                         | 1.13  | 12.89                   | 10.57                     | 2.66      | 3.10  |
| <b>0 (+32)</b>                       | 2762                       | 696      | 809                              | 226                         | 1.20  | 15.97                   | 12.15                     | 3.06      | 3.56  |

|                                      |                            |          |                                  |                             |  |                         |                           |           |       |
|--------------------------------------|----------------------------|----------|----------------------------------|-----------------------------|--|-------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS:<br><b>@220V50Hz</b> |                            |          | <b>ASHRAE32</b><br><b>Static</b> |                             | (Condensing temperature <b>45°C (+113°F)</b> ) |                         |                           |           |       |
| Evaporating temperature              | Cooling capacity<br>+/- 5% |          |                                  | Power consumption<br>+/- 5% | Current consumption<br>+/- 5%                  | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C (°F)                              | [Btu/h]                    | [kcal/h] | [W]                              | [W]                         | [A]  | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| <b>-35 (-31)</b>                     | 427                        | 108      | 125                              | 109                         | 0.77   | 2.41                    | 3.91                      | 0.98      | 1.14  |
| <b>-30 (-22)</b>                     | 628                        | 158      | 184                              | 128                         | 0.81   | 3.56                    | 4.84                      | 1.22      | 1.42  |
| <b>-25 (-13)</b>                     | 843                        | 212      | 247                              | 149                         | 0.87   | 4.79                    | 5.66                      | 1.43      | 1.66  |
| <b>-20 (- 4)</b>                     | 1087                       | 274      | 318                              | 170                         | 0.95   | 6.18                    | 6.43                      | 1.62      | 1.88  |
| <b>-15 (+ 5)</b>                     | 1375                       | 347      | 403                              | 191                         | 1.04   | 7.85                    | 7.22                      | 1.82      | 2.11  |
| <b>-10 (+14)</b>                     | 1724                       | 435      | 505                              | 212                         | 1.13   | 9.88                    | 8.11                      | 2.04      | 2.38  |
| <b>-5 (+23)</b>                      | 2149                       | 542      | 630                              | 234                         | 1.22   | 12.37                   | 9.17                      | 2.31      | 2.69  |
| <b>0 (+32)</b>                       | 2667                       | 672      | 781                              | 256                         | 1.31   | 15.41                   | 10.47                     | 2.64      | 3.07  |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@220V50Hz |       | ASHRAE32<br>Static         |          |     | (Condensing temperature 55°C (+131°F)) |                               |                         |                           |           |       |
|-------------------------------|-------|----------------------------|----------|-----|--|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature       |       | Cooling capacity<br>+/- 5% |          |     | Power consumption<br>+/- 5%            | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C                            | (°F)  | [Btu/h]                    | [kcal/h] | [W] | [W]                                    | [A]                           | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| -35                           | (-31) | 372                        | 94       | 109 | 105                                    | 0.77                          | 2.10                    | 3.52                      | 0.89      | 1.03  |
| -30                           | (-22) | 563                        | 142      | 165 | 126                                    | 0.82                          | 3.19                    | 4.43                      | 1.12      | 1.30  |
| -25                           | (-13) | 769                        | 194      | 225 | 148                                    | 0.89                          | 4.37                    | 5.19                      | 1.31      | 1.52  |
| -20                           | (- 4) | 1004                       | 253      | 294 | 172                                    | 0.97                          | 5.71                    | 5.86                      | 1.48      | 1.72  |
| -15                           | (+ 5) | 1285                       | 324      | 376 | 197                                    | 1.07                          | 7.33                    | 6.53                      | 1.65      | 1.91  |
| -10                           | (+14) | 1627                       | 410      | 477 | 223                                    | 1.18                          | 9.32                    | 7.26                      | 1.83      | 2.13  |
| -5                            | (+23) | 2045                       | 515      | 599 | 251                                    | 1.30                          | 11.77                   | 8.13                      | 2.05      | 2.38  |
| 0                             | (+32) | 2556                       | 644      | 749 | 279                                    | 1.42                          | 14.78                   | 9.21                      | 2.32      | 2.70  |

| TEST CONDITIONS:<br>@220V50Hz |       | ASHRAE32<br>Static         |          |     | (Condensing temperature 65°C (+149°F)) |                               |                         |                           |           |       |
|-------------------------------|-------|----------------------------|----------|-----|--|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature       |       | Cooling capacity<br>+/- 5% |          |     | Power consumption<br>+/- 5%            | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C                            | (°F)  | [Btu/h]                    | [kcal/h] | [W] | [W]                                    | [A]                           | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| -35                           | (-31) | 292                        | 74       | 86  | 104                                    | 0.76                          | 1.65                    | 2.82                      | 0.71      | 0.83  |
| -30                           | (-22) | 473                        | 119      | 139 | 125                                    | 0.82                          | 2.68                    | 3.76                      | 0.95      | 1.10  |
| -25                           | (-13) | 669                        | 169      | 196 | 149                                    | 0.89                          | 3.80                    | 4.50                      | 1.14      | 1.32  |
| -20                           | (- 4) | 895                        | 225      | 262 | 175                                    | 0.99                          | 5.09                    | 5.14                      | 1.29      | 1.51  |
| -15                           | (+ 5) | 1167                       | 294      | 342 | 204                                    | 1.11                          | 6.66                    | 5.73                      | 1.44      | 1.68  |
| -10                           | (+14) | 1501                       | 378      | 440 | 235                                    | 1.24                          | 8.60                    | 6.35                      | 1.60      | 1.86  |
| -5                            | (+23) | 1912                       | 482      | 560 | 269                                    | 1.37                          | 11.00                   | 7.07                      | 1.78      | 2.07  |
| 0                             | (+32) | 2416                       | 609      | 708 | 304                                    | 1.52                          | 13.97                   | 7.97                      | 2.01      | 2.34  |

| TEST CONDITIONS:<br>@220V60Hz |       | ASHRAE32<br>Static         |          |     | (Condensing temperature 35°C (+95°F)) |                               |                         |                           |           |       |
|-------------------------------|-------|----------------------------|----------|-----|---------------------------------------|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature       |       | Cooling capacity<br>+/- 5% |          |     | Power consumption<br>+/- 5%           | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C                            | (°F)  | [Btu/h]                    | [kcal/h] | [W] | [W]                                   | [A]                           | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| -35                           | (-31) | 550                        | 139      | 161 | 114                                   | 0.55                          | 3.11                    | 4.80                      | 1.21      | 1.41  |
| -30                           | (-22) | 743                        | 187      | 218 | 133                                   | 0.63                          | 4.22                    | 5.61                      | 1.41      | 1.64  |
| -25                           | (-13) | 991                        | 250      | 290 | 154                                   | 0.72                          | 5.63                    | 6.46                      | 1.63      | 1.89  |
| -20                           | (- 4) | 1298                       | 327      | 380 | 177                                   | 0.83                          | 7.39                    | 7.36                      | 1.85      | 2.16  |
| -15                           | (+ 5) | 1671                       | 421      | 490 | 201                                   | 0.94                          | 9.54                    | 8.32                      | 2.10      | 2.44  |
| -10                           | (+14) | 2115                       | 533      | 620 | 226                                   | 1.06                          | 12.12                   | 9.34                      | 2.35      | 2.74  |
| -5                            | (+23) | 2636                       | 664      | 772 | 253                                   | 1.18                          | 15.17                   | 10.43                     | 2.63      | 3.06  |
| 0                             | (+32) | 3239                       | 816      | 949 | 279                                   | 1.31                          | 18.73                   | 11.60                     | 2.92      | 3.40  |

### E - PERFORMANCE - CURVES

| 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] |
| -35                     | (-31) | 499              | 126      | 146 | 117                                    | 0.56                | 2.82          | 4.28            | 1.08      | 1.25  |
| -30                     | (-22) | 687              | 173      | 201 | 137                                    | 0.65                | 3.89          | 5.01            | 1.26      | 1.47  |
| -25                     | (-13) | 926              | 233      | 271 | 161                                    | 0.76                | 5.26          | 5.76            | 1.45      | 1.69  |
| -20                     | (- 4) | 1223             | 308      | 358 | 187                                    | 0.88                | 6.96          | 6.54            | 1.65      | 1.92  |
| -15                     | (+ 5) | 1582             | 399      | 464 | 215                                    | 1.01                | 9.03          | 7.35            | 1.85      | 2.15  |
| -10                     | (+14) | 2011             | 507      | 589 | 245                                    | 1.15                | 11.52         | 8.20            | 2.07      | 2.40  |
| -5                      | (+23) | 2514             | 633      | 737 | 276                                    | 1.29                | 14.46         | 9.10            | 2.29      | 2.67  |
| 0                       | (+32) | 3097             | 780      | 907 | 309                                    | 1.44                | 17.90         | 10.05           | 2.53      | 2.94  |

| 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] |
| -35                     | (-31) | 438              | 110      | 128 | 115                                    | 0.56                | 2.48          | 3.80            | 0.96      | 1.11  |
| -30                     | (-22) | 622              | 157      | 182 | 138                                    | 0.66                | 3.53          | 4.50            | 1.13      | 1.32  |
| -25                     | (-13) | 855              | 215      | 250 | 165                                    | 0.78                | 4.85          | 5.19            | 1.31      | 1.52  |
| -20                     | (- 4) | 1142             | 288      | 335 | 194                                    | 0.91                | 6.50          | 5.89            | 1.48      | 1.73  |
| -15                     | (+ 5) | 1491             | 376      | 437 | 226                                    | 1.06                | 8.51          | 6.59            | 1.66      | 1.93  |
| -10                     | (+14) | 1906             | 480      | 559 | 261                                    | 1.22                | 10.92         | 7.31            | 1.84      | 2.14  |
| -5                      | (+23) | 2393             | 603      | 701 | 297                                    | 1.39                | 13.77         | 8.05            | 2.03      | 2.36  |
| 0                       | (+32) | 2958             | 745      | 867 | 335                                    | 1.57                | 17.10         | 8.82            | 2.22      | 2.58  |

| TEST CONDITIONS:        |       | ASHRAE32         |          |     | (Condensing temperature 65°C (+149°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] |
| -35                     | (-31) | 366              | 92       | 107 | 112                                    | 0.54                | 2.07          | 3.28            | 0.83      | 0.96  |
| -30                     | (-22) | 548              | 138      | 160 | 137                                    | 0.65                | 3.11          | 3.98            | 1.00      | 1.17  |
| -25                     | (-13) | 776              | 196      | 227 | 166                                    | 0.78                | 4.41          | 4.65            | 1.17      | 1.36  |
| -20                     | (- 4) | 1057             | 266      | 310 | 199                                    | 0.93                | 6.02          | 5.30            | 1.34      | 1.55  |
| -15                     | (+ 5) | 1397             | 352      | 409 | 236                                    | 1.10                | 7.97          | 5.94            | 1.50      | 1.74  |
| -10                     | (+14) | 1801             | 454      | 528 | 275                                    | 1.28                | 10.31         | 6.56            | 1.65      | 1.92  |
| -5                      | (+23) | 2274             | 573      | 666 | 317                                    | 1.48                | 13.08         | 7.19            | 1.81      | 2.11  |
| 0                       | (+32) | 2823             | 711      | 827 | 361                                    | 1.69                | 16.32         | 7.82            | 1.97      | 2.29  |

### F - EXTERNAL CHARACTERISTICS

|                         |                                |      |                          |
|-------------------------|--------------------------------|------|--------------------------|
| 1 Base plate            | Universal EUEM                 |      |                          |
| 2 Tray holder           | No                             |      |                          |
| 3 Connectors            |                                |      |                          |
| 3.1 SUCTION             | 8.2 +0.12/-0.08                | [mm] | (0.323" +0.005"/-0.003") |
| 3.1.1 Material          | Copper                         |      |                          |
| 3.1.2 Shape             | Slanted 42° up + 45° to Back   |      |                          |
| 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             | Slanted parallel BP+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                   |      |                          |