



Minimum Evaporating Temp. With:

- 20 K Suction Superheat    
 ■ 20 °C Suction Gas Return    
 ■ 0 °C Suction Gas Return
- Maximum Evaporating Temperature

Suction Return Temperature 20.0°C

Liquid Subcooling 0.0K

Evaporating Temperature, °C

Additional restrictions, please see application guidelines

50 Hz

4MAD-22X

R513A

| Cond<br>°C | Cooling Capacity, kW |       |       |       |       |       |       |       |       |       |       |      |      |
|------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
|            | -25.0                | -20.0 | -15.0 | -10.0 | -5.0  | 0.0   | 5.0   | 7.0   | 10.0  | 12.5  | 15.0  | 20.0 | 25.0 |
| 16.0       | 15.60                |       |       |       |       |       |       |       |       |       |       |      |      |
| 20.0       | 14.85                | 18.55 |       |       |       |       |       |       |       |       |       |      |      |
| 25.0       | 13.95                | 17.50 | 21.90 | 27.10 |       |       |       |       |       |       |       |      |      |
| 30.0       | 12.95                | 16.40 | 20.60 | 25.60 | 31.40 | 38.30 |       |       |       |       |       |      |      |
| 35.0       | 12.00                | 15.30 | 19.25 | 24.00 | 29.50 | 36.00 | 43.50 | 46.80 | 52.10 | 56.80 |       |      |      |
| 40.0       | 11.00                | 14.15 | 17.90 | 22.40 | 27.60 | 33.70 | 40.70 | 43.80 | 48.80 | 53.20 | 58.00 |      |      |
| 45.0       | 9.98                 | 12.95 | 16.50 | 20.70 | 25.60 | 31.30 | 37.90 | 40.80 | 45.40 | 49.60 | 54.00 |      |      |
| 50.0       | 8.97                 | 11.75 | 15.10 | 19.00 | 23.60 | 28.90 | 35.00 | 37.70 | 42.00 | 45.80 | 50.00 |      |      |
| 55.0       |                      | 10.60 | 13.65 | 17.30 | 21.50 | 26.40 | 32.00 | 34.50 | 38.50 | 42.00 | 45.80 |      |      |
| 60.0       |                      | 9.37  | 12.20 | 15.55 | 19.40 | 23.90 | 29.00 | 31.30 | 34.90 | 38.10 | 41.60 |      |      |
| 65.0       |                      |       | 10.75 | 13.75 | 17.25 | 21.30 | 25.90 | 28.00 | 31.30 | 34.20 | 37.30 |      |      |
| 70.0       |                      |       | 9.29  | 12.00 | 15.10 | 18.70 | 22.80 | 24.70 | 27.60 | 30.20 | 33.00 |      |      |
| 75.0       |                      |       |       | 10.20 | 12.90 | 16.10 | 19.70 | 21.30 | 23.90 | 26.20 | 28.60 |      |      |
| 80.0       |                      |       |       | 8.38  | 10.75 | 13.45 | 16.55 | 17.95 | 20.10 | 22.10 | 24.20 |      |      |
| 85.0       |                      |       |       |       | 8.52  | 10.80 | 13.40 | 14.55 | 16.35 | 18.00 | 19.75 |      |      |

| Cond<br>°C | Power, kW |       |       |       |       |       |       |       |       |       |       |      |      |
|------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
|            | -25.0     | -20.0 | -15.0 | -10.0 | -5.0  | 0.0   | 5.0   | 7.0   | 10.0  | 12.5  | 15.0  | 20.0 | 25.0 |
| 16.0       | 4.83      |       |       |       |       |       |       |       |       |       |       |      |      |
| 20.0       | 5.03      | 5.45  |       |       |       |       |       |       |       |       |       |      |      |
| 25.0       | 5.24      | 5.75  | 6.17  | 6.49  |       |       |       |       |       |       |       |      |      |
| 30.0       | 5.42      | 6.02  | 6.54  | 6.97  | 7.29  | 7.48  |       |       |       |       |       |      |      |
| 35.0       | 5.55      | 6.24  | 6.87  | 7.41  | 7.85  | 8.17  | 8.36  | 8.39  | 8.40  | 8.36  |       |      |      |
| 40.0       | 5.63      | 6.42  | 7.15  | 7.80  | 8.37  | 8.82  | 9.15  | 9.25  | 9.35  | 9.38  | 9.38  |      |      |
| 45.0       | 5.66      | 6.54  | 7.37  | 8.14  | 8.83  | 9.42  | 9.90  | 10.05 | 10.25 | 10.35 | 10.45 |      |      |
| 50.0       | 5.64      | 6.61  | 7.55  | 8.43  | 9.24  | 9.96  | 10.60 | 10.80 | 11.10 | 11.30 | 11.45 |      |      |
| 55.0       |           | 6.62  | 7.66  | 8.65  | 9.59  | 10.45 | 11.20 | 11.50 | 11.85 | 12.15 | 12.40 |      |      |
| 60.0       |           | 6.56  | 7.70  | 8.81  | 9.87  | 10.85 | 11.75 | 12.10 | 12.60 | 12.95 | 13.30 |      |      |
| 65.0       |           |       | 7.68  | 8.90  | 10.10 | 11.20 | 12.25 | 12.65 | 13.25 | 13.70 | 14.10 |      |      |
| 70.0       |           |       | 7.58  | 8.92  | 10.25 | 11.50 | 12.70 | 13.15 | 13.80 | 14.35 | 14.85 |      |      |
| 75.0       |           |       |       | 8.86  | 10.30 | 11.70 | 13.05 | 13.55 | 14.30 | 14.95 | 15.50 |      |      |
| 80.0       |           |       |       | 8.72  | 10.30 | 11.80 | 13.30 | 13.90 | 14.75 | 15.45 | 16.10 |      |      |
| 85.0       |           |       |       |       | 10.20 | 11.85 | 13.50 | 14.15 | 15.10 | 15.85 | 16.60 |      |      |

Additional restrictions, please see application guidelines

50 Hz

4MAD-22X

R513A

| Cond<br>°C | Current at 400 V, A |       |       |       |       |       |       |       |       |       |       |      |      |
|------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
|            | -25.0               | -20.0 | -15.0 | -10.0 | -5.0  | 0.0   | 5.0   | 7.0   | 10.0  | 12.5  | 15.0  | 20.0 | 25.0 |
| 16.0       | 14.95               |       |       |       |       |       |       |       |       |       |       |      |      |
| 20.0       | 15.07               | 15.37 |       |       |       |       |       |       |       |       |       |      |      |
| 25.0       | 15.23               | 15.61 | 15.97 | 16.28 |       |       |       |       |       |       |       |      |      |
| 30.0       | 15.37               | 15.84 | 16.31 | 16.73 | 17.08 | 17.30 |       |       |       |       |       |      |      |
| 35.0       | 15.48               | 16.04 | 16.62 | 17.17 | 17.66 | 18.04 | 18.28 | 18.32 | 18.33 | 18.27 |       |      |      |
| 40.0       | 15.57               | 16.22 | 16.90 | 17.58 | 18.22 | 18.76 | 19.18 | 19.30 | 19.43 | 19.48 | 19.47 |      |      |
| 45.0       | 15.61               | 16.35 | 17.14 | 17.95 | 18.73 | 19.45 | 20.05 | 20.25 | 20.50 | 20.66 | 20.77 |      |      |
| 50.0       | 15.60               | 16.43 | 17.34 | 18.27 | 19.20 | 20.09 | 20.87 | 21.16 | 21.53 | 21.80 | 22.02 |      |      |
| 55.0       |                     | 16.46 | 17.47 | 18.54 | 19.62 | 20.67 | 21.65 | 22.01 | 22.51 | 22.89 | 23.22 |      |      |
| 60.0       |                     | 16.41 | 17.54 | 18.74 | 19.97 | 21.19 | 22.35 | 22.80 | 23.43 | 23.91 | 24.36 |      |      |
| 65.0       |                     |       | 17.53 | 18.86 | 20.24 | 21.63 | 22.99 | 23.51 | 24.27 | 24.87 | 25.43 |      |      |
| 70.0       |                     |       | 17.43 | 18.90 | 20.43 | 22.00 | 23.54 | 24.15 | 25.03 | 25.74 | 26.42 |      |      |
| 75.0       |                     |       |       | 18.84 | 20.53 | 22.27 | 24.00 | 24.69 | 25.70 | 26.53 | 27.33 |      |      |
| 80.0       |                     |       |       | 18.68 | 20.52 | 22.43 | 24.36 | 25.13 | 26.28 | 27.21 | 28.13 |      |      |
| 85.0       |                     |       |       |       | 20.40 | 22.49 | 24.61 | 25.47 | 26.74 | 27.79 | 28.82 |      |      |

| Cond<br>°C | Suction Mass Flow, g/s |        |        |        |        |        |        |        |        |        |        |      |      |
|------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
|            | -25.0                  | -20.0  | -15.0  | -10.0  | -5.0   | 0.0    | 5.0    | 7.0    | 10.0   | 12.5   | 15.0   | 20.0 | 25.0 |
| 16.0       | 86.70                  |        |        |        |        |        |        |        |        |        |        |      |      |
| 20.0       | 85.30                  | 107.00 |        |        |        |        |        |        |        |        |        |      |      |
| 25.0       | 83.30                  | 105.00 | 131.50 | 163.50 |        |        |        |        |        |        |        |      |      |
| 30.0       | 81.10                  | 103.00 | 129.50 | 161.00 | 199.00 | 243.00 |        |        |        |        |        |      |      |
| 35.0       | 78.60                  | 100.50 | 127.00 | 158.50 | 196.50 | 240.00 | 292.00 | 315.00 | 352.00 | 386.00 |        |      |      |
| 40.0       | 75.80                  | 97.70  | 124.00 | 155.50 | 193.00 | 237.00 | 288.00 | 311.00 | 348.00 | 381.00 | 417.00 |      |      |
| 45.0       | 72.70                  | 94.70  | 121.00 | 152.50 | 189.50 | 233.00 | 284.00 | 306.00 | 343.00 | 376.00 | 411.00 |      |      |
| 50.0       | 69.40                  | 91.40  | 117.50 | 148.50 | 185.50 | 228.00 | 279.00 | 301.00 | 337.00 | 370.00 | 405.00 |      |      |
| 55.0       |                        | 87.70  | 113.50 | 144.50 | 180.50 | 223.00 | 273.00 | 295.00 | 331.00 | 363.00 | 398.00 |      |      |
| 60.0       |                        | 83.60  | 109.50 | 140.00 | 175.50 | 218.00 | 267.00 | 288.00 | 324.00 | 356.00 | 390.00 |      |      |
| 65.0       |                        |        | 104.50 | 134.50 | 170.00 | 211.00 | 260.00 | 281.00 | 316.00 | 348.00 | 382.00 |      |      |
| 70.0       |                        |        | 99.20  | 128.50 | 163.50 | 204.00 | 252.00 | 273.00 | 307.00 | 339.00 | 373.00 |      |      |
| 75.0       |                        |        |        | 122.00 | 156.00 | 196.00 | 243.00 | 264.00 | 298.00 | 329.00 | 363.00 |      |      |
| 80.0       |                        |        |        | 114.50 | 148.00 | 187.50 | 234.00 | 255.00 | 289.00 | 320.00 | 353.00 |      |      |
| 85.0       |                        |        |        |        | 140.50 | 179.50 | 226.00 | 247.00 | 282.00 | 313.00 | 347.00 |      |      |

Additional restrictions, please see application guidelines

### **COMPRESSOR MECHANICAL AND PHYSICAL DATA**

|  |  |
|--|--|
| Number of cylinders  | 4  |
| Displacement @ 50 Hz, m³/h   | 61.7   |
| Bore/Stroke, mm  | 63.5/56.0                                    |
| Length/Width, mm   | 638/501                                      |
| Height, mm   | 452  |
| Net Weight, kg   | 183  |
| Suction, inch  | 1 5/8  |
| Discharge, inch  | 1 1/8  |
| Oil Quantity, l  | 3.3  |
| Oil type (original charge)   | POE RL32-3MAF                                |
| Oil type (approved oils)   | POE RL32-3MAF, POE MOBIL<br>EAL Arctic 22 CC |
| Base mounting (hole dia), mm   | 381 x 305 (18)                               |
| Sound Pressure @ 1m (MT), dBA  | 68   |
| Sound Power (MT), dBA  | 79   |
| Sound Power with Sound Shell (MT), dBA                                     | 65   |
| Sound Conditions (MT, Temperatures:<br>Evap./Cond./Suction at freq./speed) | -10 / 45 / 20 °C at 50 Hz                    |
| High Side PS gauge, bar  | 32.5   |
| Low Side PS gauge, bar   | 22.5   |
| Digital Modulation   | 50-100%                                      |
| Refrigerant's GWP  | 631  |
| Refrigerant's classification   | A1   |

### **COMPRESSOR ELECTRICAL DATA (380-420 V / 3~ / 50 Hz)**

|                              |                |
|------------------------------|----------------|
| Maximum Operating Current, A | 36.3           |
| Locked Rotor Current, A      | 175            |
| Default Enclosure Class      | IP 54 (IEC 34) |

### **ACCESSORIES INCLUDED**

|                                     |   |
|-------------------------------------|---|
| Oil Pressure Switch (-P)            | OPS2 Sensor   |
| CoreSense Protection (-P)           | Motor protection  |
| Mounting Parts                      | Spring  |
| Copeland Compressor Electronic (-N) | Oil pressure, motor and discharge<br>line temperature protection;<br>advanced diagnostics features and<br>power measurement |

Additional restrictions, please see application guidelines

## ACCESSORIES OPTIONAL

|                                       |                              |
|---------------------------------------|------------------------------|
| Check Valve                           | For unloaded start operation |
| Mounting Parts                        | Rubber                       |
| Adapter Kit                           | For Parallel Operation       |
| Digital Driver                        | EC3-D23                      |
| Additional Cooling                    | 70 W Vertical Air Flow Fan   |
| Crankcase Heater                      | 100 W Internal               |
| Sound Attenuation                     | Sound Shell                  |
| Oil Pressure Switch                   | OPS2 Electronic Switch       |
| Digital Modulation                    | 50-100 %                     |
| Copeland Compressor Electronic module | Modbus extension module      |

## MOTOR OPTIONS

| <b>Motor Code</b> | <b>Power Supply</b>    | <b>Nominal Voltage, V</b> | <b>Start Connection</b> | <b>DOL Connection</b> | <b>Amps Factor</b> |
|-------------------|------------------------|---------------------------|-------------------------|-----------------------|--------------------|
| AWM               | 380-420 V / 3~ / 50 Hz | 400                       | YY/Y                    | Y                     | 1.00               |
| EWL               | 220-240 V / 3~ / 50 Hz | 230                       | Y/DELTA                 | DELTA                 | 1.73               |
| EWL               | 380-420 V / 3~ / 50 Hz | 400                       |                         | Y                     | 1.00               |
| EWM               | 380-420 V / 3~ / 50 Hz | 400                       | Y/DELTA                 | DELTA                 | 1.00               |
| AWR               | 220-240 V / 3~ / 50 Hz | 230                       | YY/Y                    | Y                     | 1.73               |
| AWY               | 500-550 V / 3~ / 50 Hz | 525                       | YY/Y                    | Y                     | 0.76               |
| EWK               | 220-240 V / 3~ / 60 Hz | 230                       | Y/DELTA                 | DELTA                 | 2.10               |
| EWK               | 380-420 V / 3~ / 60 Hz | 380                       |                         | Y                     | 1.20               |
| EWD               | 440-480 V / 3~ / 60 Hz | 460                       | Y/DELTA                 | DELTA                 | 1.00               |
| AWC               | 208-230 V / 3~ / 60 Hz | 230                       | YY/Y                    | Y                     | 2.19               |
| AWX               | 380 V / 3~ / 60 Hz     | 380                       | YY/Y                    | Y                     | 1.20               |
| AWD               | 440-480 V / 3~ / 60 Hz | 460                       | YY/Y                    | Y                     | 1.00               |

Additional restrictions, please see application guidelines