

Product Data Sheet

HKK70VSD

Revision 1

(Variant Code E)

1 Application

| Application | Refrigerant | Expansion Device | Cooling Type |
|-------------|-------------|------------------|--------------|
| LBP | R600a | Capillary | Static |

To be used also in appliances with stop valve (technical consultation with Wanbao-ACC is required).

1.1 Application Conditions

| | | |
|---|------|-----|
| Max. Ambient temp. ¹ | [°C] | 43 |
| Max. Steady discharge temp. ² | [°C] | 120 |
| Max. Peak discharge temp. ^{2,5} | [°C] | 135 |
| Max. Steady condensing temp. ³ | [°C] | 60 |
| Max. Peak condensing temp. ^{3,5} | [°C] | 70 |
| Max. Winding temp. ⁴ | [°C] | 130 |

¹...static

²...measured on discharge tube, 50 mm from the shell

³...measured in the middle of condenser

⁴...calculated out of the measured difference of resistance

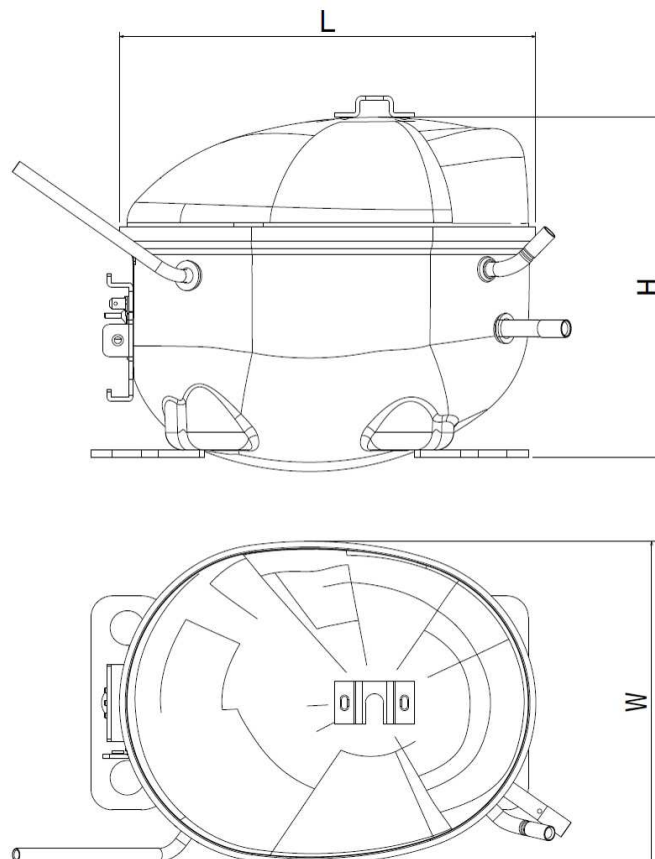
⁵...max 5% of lifetime

Variant code according to Label; see General Product Documentation

2 Mechanical Data

| | | |
|-------------------------------|-------------------------|-------------|
| Displacement | [cm³] | 6,6 |
| Net Weight¹ | [kg] | 6,7 |
| Oil Type | | mineral |
| Oil Charge | [ml] | 285 |
| Oil Viscosity | [cst] | 7 |
| Suction muffler | | Semi direct |
| Free Gas Volume | [cm³] | 1650 |
| Length L | [mm] | 237,5 |
| Width W | [mm] | 151,5 |
| Height H | [mm] | 159 |

¹...Compressor without accessories



3 Electrical Data

| | | |
|-----------------------------------|-------|-----------------|
| Power supply | [V] | 220 - 240 |
| Voltage range ¹ | [V] | 187 - 264 |
| Frequency | [Hz] | 50 / 60 |
| Phase | [ph] | 1 |
| Motor type | | PMM |
| Speed range | [rpm] | 1400 up to 4000 |
| Locked rotor current ² | [A] | 0,6 |
| Phase wind. Resistance @ 25°C | [Ω] | 10,4 |

¹...Operating and starting (starting condition @ +43°C windings temperature, 3,5 barA equalized pressure)

²... Current absorbed by the driver

The compressor terminals must never be connected directly to the power supply!

All data measured according to EN 60335

3.1 Electrical Component Data

| Control mode | Short Code |
|---|------------|
| Electronic driver slave mode frequency controlled | F05_ _ |
| Electronic driver autologic mode | A23_ _ |

3.2 Motor Protector

Included in Electronic Driver.

4 Performance Data

4.1 Cooling Capacity, COP and Input Power

Performance Table Cooling Capacity @ 1400rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 36,3 | 45,3 | 57,8 | 62,9 | 73,8 | 93,3 | 116,2 |
| | | 45 | 33,7 | 43,1 | 55,9 | 60,9 | 71,9 | 91,3 | 114,1 |
| | | 50 | 31,1 | 40,9 | 53,9 | 59,0 | 70,0 | 89,4 | 112,0 |
| | | 55 | 28,5 | 38,7 | 51,9 | 57,0 | 68,2 | 87,5 | 109,9 |
| | | 60 | 25,9 | 36,4 | 49,9 | 55,1 | 66,3 | 85,6 | 107,9 |
| | EN12900 (CECOMAF) [°C] | C55 | 23,7 | 32,2 | 43,2 | 47,5 | 56,7 | 72,8 | 91,5 |

Performance Table Cooling Capacity @ 1600rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 39,7 | 49,7 | 63,6 | 69,2 | 81,4 | 103,2 | 129,0 |
| | | 45 | 36,7 | 47,2 | 61,5 | 67,1 | 79,4 | 100,9 | 126,2 |
| | | 50 | 33,6 | 44,8 | 59,3 | 65,1 | 77,3 | 98,6 | 123,4 |
| | | 55 | 30,6 | 42,3 | 57,2 | 63,0 | 75,2 | 96,4 | 120,6 |
| | | 60 | 27,6 | 39,9 | 55,1 | 60,9 | 73,1 | 94,1 | 117,8 |
| | EN12900 (CECOMAF) [°C] | C55 | 25,5 | 35,2 | 47,6 | 52,4 | 62,6 | 80,2 | 100,4 |

Performance Table Cooling Capacity @ 1800rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 44,1 | 56,0 | 72,2 | 78,7 | 92,7 | 117,6 | 146,7 |
| | | 45 | 41,1 | 53,3 | 69,7 | 76,2 | 90,1 | 114,7 | 143,4 |
| | | 50 | 38,1 | 50,7 | 67,1 | 73,6 | 87,5 | 111,9 | 140,2 |
| | | 55 | 35,1 | 48,0 | 64,6 | 71,0 | 85,0 | 109,0 | 136,9 |
| | | 60 | 32,1 | 45,3 | 62,1 | 68,6 | 82,4 | 106,2 | 133,6 |
| | EN12900 (CECOMAF) [°C] | C55 | 29,2 | 39,9 | 53,8 | 59,2 | 70,7 | 90,7 | 113,9 |

Performance Table Cooling Capacity @ 2400rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|-------|-------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 54,6 | 71,5 | 94,2 | 103,3 | 122,8 | 157,3 | 197,6 |
| | | 45 | 53,1 | 69,1 | 91,0 | 99,9 | 119,0 | 153,0 | 193,0 |
| | | 50 | 51,6 | 66,6 | 87,8 | 96,4 | 115,2 | 148,7 | 188,5 |
| | | 55 | 50,1 | 64,2 | 84,6 | 93,0 | 111,3 | 144,4 | 183,9 |
| | | 60 | 48,6 | 61,8 | 81,4 | 89,5 | 107,5 | 140,2 | 179,3 |
| | EN12900 (CECOMAF) [°C] | C55 | 41,7 | 53,4 | 70,4 | 77,4 | 92,6 | 120,2 | 153,0 |

Performance Table Cooling Capacity @ 3000rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|-------|-------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 70,3 | 90,8 | 118,3 | 129,3 | 152,8 | 194,3 | 242,8 |
| | | 45 | 65,4 | 86,4 | 114,2 | 125,2 | 148,8 | 190,3 | 238,6 |
| | | 50 | 60,5 | 81,9 | 110,0 | 121,1 | 144,8 | 186,3 | 234,4 |
| | | 55 | 55,7 | 77,5 | 105,9 | 117,0 | 140,8 | 182,2 | 230,2 |
| | | 60 | 50,8 | 73,1 | 101,7 | 112,9 | 136,8 | 178,2 | 225,9 |
| | EN12900 (CECOMAF) [°C] | C55 | 46,3 | 64,5 | 88,1 | 97,4 | 117,1 | 151,6 | 191,5 |

Performance Table Cooling Capacity @ 4000rpm @ ASHRAE / EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|-------|-------|-------|-------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 79,7 | 115,2 | 156,5 | 171,9 | 203,7 | 256,8 | 315,7 |
| | | 45 | 72,4 | 107,5 | 149,0 | 164,6 | 196,9 | 251,3 | 312,1 |
| | | 50 | 65,2 | 99,9 | 141,5 | 157,3 | 190,2 | 245,8 | 308,4 |
| | | 55 | 58,0 | 92,2 | 134,0 | 150,0 | 183,4 | 240,2 | 304,7 |
| | | 60 | 50,8 | 84,6 | 126,5 | 142,6 | 176,6 | 234,7 | 301,0 |
| | EN12900 (CECOMAF) [°C] | C55 | 48,2 | 76,7 | 111,5 | 124,8 | 152,6 | 199,9 | 253,5 |

Performance Table COP @ 1400rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,73 | 1,96 | 2,24 | 2,35 | 2,55 | 2,86 | 3,16 |
| | | 45 | 1,65 | 1,84 | 2,10 | 2,19 | 2,39 | 2,70 | 3,02 |
| | | 50 | 1,56 | 1,72 | 1,96 | 2,05 | 2,24 | 2,55 | 2,88 |
| | | 55 | 1,47 | 1,61 | 1,83 | 1,91 | 2,10 | 2,41 | 2,75 |
| | | 60 | 1,37 | 1,50 | 1,70 | 1,79 | 1,97 | 2,27 | 2,62 |
| | EN12900 (CECOMAF) [°C] | C55 | 1,22 | 1,33 | 1,52 | 1,59 | 1,74 | 2,00 | 2,28 |

Performance Table COP @ 1600rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,67 | 1,89 | 2,17 | 2,27 | 2,47 | 2,79 | 3,11 |
| | | 45 | 1,61 | 1,80 | 2,04 | 2,14 | 2,33 | 2,63 | 2,95 |
| | | 50 | 1,54 | 1,70 | 1,93 | 2,02 | 2,19 | 2,48 | 2,79 |
| | | 55 | 1,47 | 1,61 | 1,82 | 1,90 | 2,07 | 2,34 | 2,65 |
| | | 60 | 1,39 | 1,52 | 1,72 | 1,79 | 1,95 | 2,21 | 2,51 |
| | EN12900 (CECOMAF) [°C] | C55 | 1,22 | 1,34 | 1,51 | 1,58 | 1,72 | 1,95 | 2,20 |

Performance Table COP @ 1800rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,62 | 1,89 | 2,21 | 2,33 | 2,56 | 2,90 | 3,24 |
| | | 45 | 1,58 | 1,80 | 2,07 | 2,18 | 2,38 | 2,71 | 3,03 |
| | | 50 | 1,53 | 1,71 | 1,94 | 2,03 | 2,22 | 2,52 | 2,85 |
| | | 55 | 1,48 | 1,61 | 1,82 | 1,90 | 2,07 | 2,36 | 2,67 |
| | | 60 | 1,42 | 1,52 | 1,70 | 1,78 | 1,93 | 2,20 | 2,51 |
| | EN12900 (CECOMAF) [°C] | C55 | 1,23 | 1,34 | 1,51 | 1,58 | 1,72 | 1,96 | 2,22 |

Performance Table COP @ 2400rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,59 | 1,81 | 2,11 | 2,22 | 2,45 | 2,81 | 3,19 |
| | | 45 | 1,54 | 1,73 | 1,99 | 2,09 | 2,30 | 2,64 | 2,99 |
| | | 50 | 1,49 | 1,64 | 1,87 | 1,97 | 2,16 | 2,48 | 2,81 |
| | | 55 | 1,45 | 1,56 | 1,77 | 1,85 | 2,03 | 2,33 | 2,64 |
| | | 60 | 1,40 | 1,48 | 1,66 | 1,74 | 1,90 | 2,18 | 2,49 |
| | EN12900 (CECOMAF) [°C] | C55 | 1,20 | 1,30 | 1,47 | 1,54 | 1,69 | 1,93 | 2,20 |

Performance Table COP @ 3000rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,52 | 1,72 | 1,99 | 2,09 | 2,31 | 2,66 | 3,03 |
| | | 45 | 1,45 | 1,64 | 1,89 | 1,98 | 2,18 | 2,51 | 2,85 |
| | | 50 | 1,37 | 1,55 | 1,79 | 1,88 | 2,07 | 2,37 | 2,69 |
| | | 55 | 1,30 | 1,47 | 1,70 | 1,78 | 1,95 | 2,24 | 2,53 |
| | | 60 | 1,21 | 1,39 | 1,60 | 1,68 | 1,85 | 2,11 | 2,39 |
| | EN12900 (CECOMAF) [°C] | C55 | 1,08 | 1,22 | 1,41 | 1,48 | 1,62 | 1,86 | 2,10 |

Performance Table COP @ 4000rpm @ ASHRAE / EN12900(CECOMAF); 220V; [W/W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 1,35 | 1,63 | 1,92 | 2,03 | 2,23 | 2,56 | 2,91 |
| | | 45 | 1,29 | 1,55 | 1,82 | 1,92 | 2,12 | 2,43 | 2,76 |
| | | 50 | 1,22 | 1,47 | 1,73 | 1,82 | 2,01 | 2,30 | 2,62 |
| | | 55 | 1,14 | 1,38 | 1,63 | 1,72 | 1,90 | 2,18 | 2,49 |
| | | 60 | 1,06 | 1,29 | 1,54 | 1,62 | 1,80 | 2,07 | 2,36 |
| | EN12900 (CECOMAF) [°C] | C55 | 0,95 | 1,15 | 1,36 | 1,43 | 1,58 | 1,81 | 2,07 |

Performance Table Input Power @ 1400rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 21,0 | 23,1 | 25,8 | 26,8 | 28,9 | 32,6 | 36,7 |
| | | 45 | 20,5 | 23,5 | 26,7 | 27,8 | 30,1 | 33,8 | 37,8 |
| | | 50 | 20,0 | 23,8 | 27,5 | 28,8 | 31,3 | 35,1 | 38,9 |
| | | 55 | 19,5 | 24,1 | 28,4 | 29,8 | 32,5 | 36,4 | 40,0 |
| | | 60 | 19,0 | 24,4 | 29,3 | 30,9 | 33,7 | 37,7 | 41,1 |
| | EN12900 (CECOMAF) [°C] | C55 | 19,5 | 24,1 | 28,4 | 29,8 | 32,5 | 36,4 | 40,0 |

Performance Table Input Power @ 1600rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 23,7 | 26,3 | 29,4 | 30,5 | 32,9 | 36,9 | 41,5 |
| | | 45 | 22,8 | 26,3 | 30,1 | 31,4 | 34,1 | 38,3 | 42,8 |
| | | 50 | 21,8 | 26,3 | 30,7 | 32,3 | 35,2 | 39,7 | 44,2 |
| | | 55 | 20,8 | 26,3 | 31,4 | 33,1 | 36,4 | 41,1 | 45,6 |
| | | 60 | 19,9 | 26,2 | 32,1 | 34,0 | 37,5 | 42,5 | 47,0 |
| | EN12900 (CECOMAF) [°C] | C55 | 20,8 | 26,3 | 31,4 | 33,1 | 36,4 | 41,1 | 45,6 |

Performance Table Input Power @ 1800rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 27,2 | 29,6 | 32,6 | 33,8 | 36,3 | 40,5 | 45,3 |
| | | 45 | 26,0 | 29,7 | 33,6 | 35,0 | 37,8 | 42,4 | 47,3 |
| | | 50 | 24,9 | 29,7 | 34,6 | 36,2 | 39,4 | 44,3 | 49,3 |
| | | 55 | 23,7 | 29,7 | 35,5 | 37,4 | 41,0 | 46,3 | 51,2 |
| | | 60 | 22,5 | 29,8 | 36,5 | 38,6 | 42,6 | 48,2 | 53,2 |
| | EN12900 (CECOMAF) [°C] | C55 | 23,7 | 29,7 | 35,5 | 37,4 | 41,0 | 46,3 | 51,2 |

Performance Table Input Power @ 2400rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 34,4 | 39,4 | 44,7 | 46,5 | 50,2 | 56,0 | 62,0 |
| | | 45 | 34,5 | 40,0 | 45,8 | 47,8 | 51,8 | 58,0 | 64,5 |
| | | 50 | 34,6 | 40,6 | 46,8 | 49,0 | 53,3 | 60,1 | 67,0 |
| | | 55 | 34,6 | 41,2 | 47,9 | 50,3 | 54,9 | 62,1 | 69,6 |
| | | 60 | 34,7 | 41,7 | 49,0 | 51,5 | 56,5 | 64,2 | 72,1 |
| | EN12900 (CECOMAF) [°C] | C55 | 34,6 | 41,2 | 47,9 | 50,3 | 54,9 | 62,1 | 69,6 |

Performance Table Input Power @ 3000rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|------|------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 46,2 | 52,8 | 59,5 | 61,8 | 66,3 | 73,1 | 80,0 |
| | | 45 | 45,1 | 52,8 | 60,5 | 63,1 | 68,2 | 75,9 | 83,7 |
| | | 50 | 44,0 | 52,8 | 61,5 | 64,4 | 70,1 | 78,7 | 87,3 |
| | | 55 | 43,0 | 52,8 | 62,5 | 65,7 | 72,0 | 81,5 | 90,9 |
| | | 60 | 41,9 | 52,7 | 63,4 | 67,0 | 74,0 | 84,3 | 94,5 |
| | EN12900 (CECOMAF) [°C] | C55 | 43,0 | 52,8 | 62,5 | 65,7 | 72,0 | 81,5 | 90,9 |

Performance Table Input Power @ 4000rpm @ ASHRAE /EN12900 (CECOMAF); 220V; [W]:

| Evap. temp. [°C] | | -35 | -30 | -25 | -23,3 | -20 | -15 | -10 | |
|--------------------|------------------------|-----|------|------|-------|------|------|-------|-------|
| Condensing temp. @ | ASHRAE [°C] | 40 | 59,0 | 70,6 | 81,4 | 84,9 | 91,3 | 100,4 | 108,6 |
| | | 45 | 56,2 | 69,4 | 81,7 | 85,6 | 93,1 | 103,6 | 113,2 |
| | | 50 | 53,5 | 68,2 | 81,9 | 86,4 | 94,8 | 106,8 | 117,9 |
| | | 55 | 50,8 | 66,9 | 82,2 | 87,2 | 96,5 | 110,0 | 122,6 |
| | | 60 | 48,0 | 65,7 | 82,4 | 87,9 | 98,3 | 113,2 | 127,3 |
| | EN12900 (CECOMAF) [°C] | C55 | 50,8 | 66,9 | 82,2 | 87,2 | 96,5 | 110,0 | 122,6 |

| Test Conditions @ 220V/50Hz | | ASHRAE | EN12900 (CECOMAF) |
|-----------------------------|------|--------|-------------------|
| Evaporating temp. | [°C] | -23,3 | -25 |
| Condensing temp. | [°C] | 55 | 55 |
| Sub cooling temp. | [°C] | 32 | 55 |
| Suction temp. | [°C] | 32 | 32 |
| Ambient temp. | [°C] | 32 | 32 |

Tolerance Range:

COP ± 5%
 Cooling Capacity ± 5%

4.2 Rated current @ 55°C condensing temperature

| Evaporating temperature | [°C] | -30 | -23,3 | -10 |
|-------------------------|------|------|-------|------|
| Rated current @ 1400rpm | [A] | 0,19 | 0,24 | 0,33 |
| Rated current @ 1600rpm | [A] | 0,21 | 0,26 | 0,37 |
| Rated current @ 1800rpm | [A] | 0,24 | 0,29 | 0,42 |
| Rated current @ 2400rpm | [A] | 0,33 | 0,39 | 0,55 |
| Rated current @ 3000rpm | [A] | 0,41 | 0,51 | 0,71 |
| Rated current @ 4000rpm | [A] | 0,52 | 0,68 | 0,88 |

5 Reliability Tests

| | |
|------------------------------------|--------|
| High Temperature CECOMAF GT4 – 002 | passed |
| Wear CECOMAF GT4 – 003 | passed |
| On – Off CECOMAF GT4 – 004 | passed |
| Transport test ASTM D4728 | passed |