

**MESA18-0122Y3**  
**R134a**  
**24 V DC**  
**VARIABLE SPEED (2100-6600 rpm)**



**Brushless DC Variable Speed Compressor Technical Data Sheet**

**General Information**

Compressor Part Number	MESA00011	.256" (6.5 mm) ID Suction .242" (6.15 mm) ID Discharge
Compressor Drawing	DCMX57	
Controller - PWM Speed Control	025F0440	
Controller Drawing	DGMX0101	
Wiring Diagram	DEMXX0066	
Controller - 0-3V Analog Speed Control	025F0441	
Controller Drawing	DGMX0100	
Wiring Diagram	DEMXX0067	

**Design**

Number of Cylinders	1
Total Displacement	0.122 in <sup>3</sup> (2.0 cm <sup>3</sup> )
Oil Quantity	50 cc
Oil Type	POE - 68 cSt
Weight	1.76 lb / .80 kg

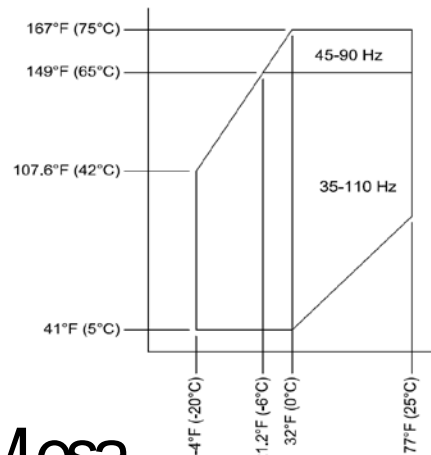
**Application Information**

Evaporator Temperature Range	-4° F to 77° F (-20° C to 25° C)
Condenser Temperature Range	41° F to 167° F (5° C to 75° C)
Maximum Discharge Temperature	239° F (115° C)
Maximum Compression Ratio	8:1
Minimum Compression Ratio	1.2:1
Minimum Compressor Cooling	1 m/s airflow over compressor
Maximum Refrigerant Charge	.33 lbs (150g)

**Rating Condition**

		HBP
Condensing Temperature	130°F	(54.4°C)
Evaporating Temperature	45°F	(7.2°C)
Return Gas Temperature	95°F	(35.0°C)
Liquid Temperature	115°F	(46.1°C)
Ambient Temperature	95°F	(35.0°C)
Compressor Cooling	1 m/s air cooling	

**Operating Envelope**



**Packaging Options**

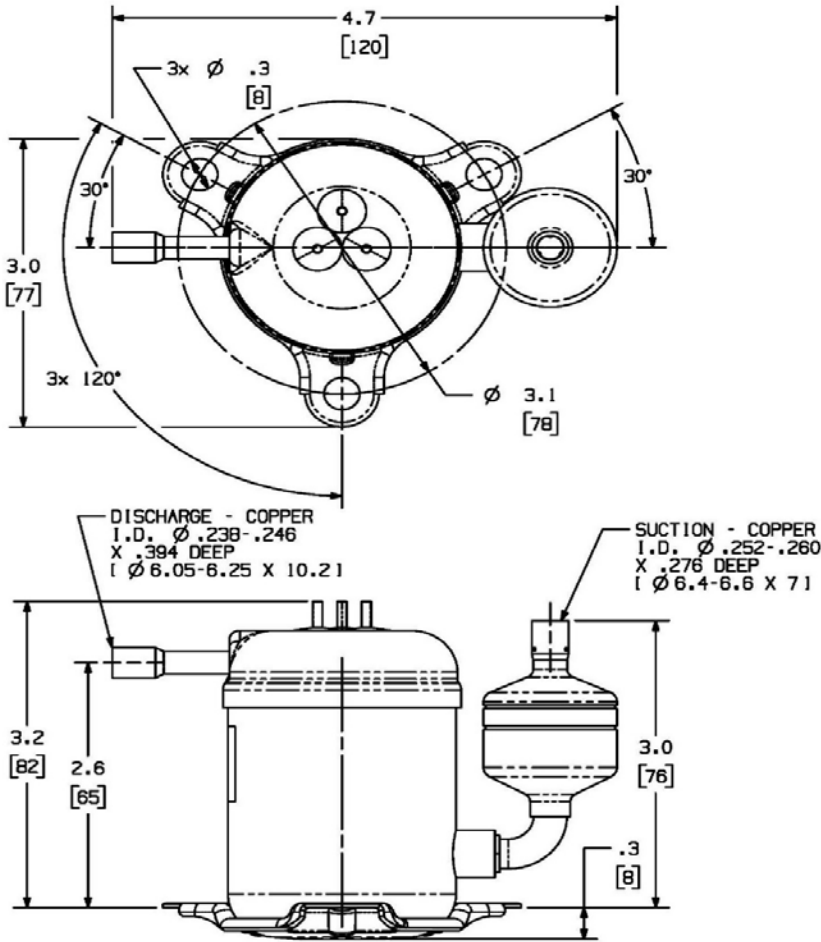
- Multi-Pack (18 pieces per box)

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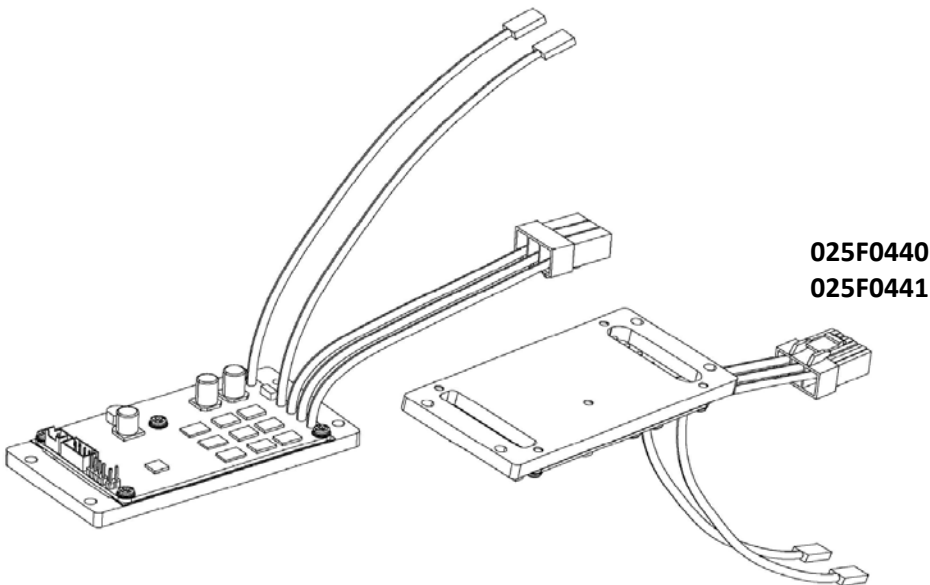
# MESA18-0122Y3



## Compressor Dimensions



## Controller Configuration



**Cooling Capacity (24V) - ARI HBP** BTU/hr (Watt)

RPM	Evaporator Temperature											
	10°F (-12.2°C)	20°F (-6.7°C)	30°F (-1.1°C)	45°F (7.2°C)	55°F (12.8°C)	65°F (18.3°C)	77°F (25°C)					
2100	163 (48)	217 (64)	295 (86)	456 (134)	592 (173)	750 (220)	970 (284)					
3200	270 (79)	377 (110)	519 (152)	796 (233)	1024 (300)	1285 (376)	1643 (481)					
4200	359 (105)	504 (148)	695 (204)	1065 (312)	1367 (400)	1712 (501)	2185 (640)					
5400	453 (133)	633 (185)	871 (255)	1333 (391)	1713 (502)	2148 (629)	2744 (804)					
6600	529 (155)	731 (214)	1003 (294)	1540 (451)	1984 (581)	2496 (731)	3200 (937)					

**Power Consumption (24V) - ARI HBP** Watt **Current (24V) - ARI HBP** Amp

RPM	Evaporator Temperature							Evaporator Temperature						
	10°F	20°F	30°F	45°F	55°F	65°F	77°F	10°F	20°F	30°F	45°F	55°F	65°F	77°F
2100	63	69	75	80	83	83	82	2.63	2.90	3.12	3.35	3.44	3.47	3.43
3200	78	87	95	102	105	106	104	3.27	3.64	3.95	4.26	4.37	4.41	4.34
4200	96	107	117	126	129	130	128	4.00	4.48	4.86	5.25	5.39	5.43	5.34
5400	123	137	149	160	165	166	163	5.12	5.71	6.19	6.69	6.86	6.91	6.80
6600	157	174	188	202	208	209	206	6.53	7.25	7.83	8.44	8.65	8.72	8.59

**Efficiency (24V) - ARI HBP** BTU/hr/W (W/W)

RPM	Evaporator Temperature											
	10°F (-12.2°C)	20°F (-6.7°C)	30°F (-1.1°C)	45°F (7.2°C)	55°F (12.8°C)	65°F (18.3°C)	77°F (25°C)					
2100	2.58 (0.76)	3.13 (0.92)	3.95 (1.16)	5.67 (1.66)	7.17 (2.10)	9.01 (2.64)	11.79 (3.45)					
3200	3.44 (1.01)	4.31 (1.26)	5.47 (1.60)	7.78 (2.28)	9.75 (2.86)	12.15 (3.56)	15.79 (4.62)					
4200	3.73 (1.09)	4.69 (1.37)	5.96 (1.75)	8.45 (2.47)	10.56 (3.09)	13.15 (3.85)	17.06 (5.00)					
5400	3.69 (1.08)	4.62 (1.35)	5.86 (1.72)	8.31 (2.43)	10.40 (3.05)	12.95 (3.79)	16.82 (4.92)					
6600	3.38 (0.99)	4.20 (1.23)	5.33 (1.56)	7.61 (2.23)	9.55 (2.80)	11.93 (3.49)	15.52 (4.54)					

\* all points are at 95°F (35°C) ambient temperature, 20°F (11.1K) superheat, 15°F (8.33K) subcooling, 130°F (54.4°C) condenser

**Performance Coefficients (24V) - ARI HBP**

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	1.020106E+03	-1.472725E+02	-6.136352E+00	1.083913E+01
C2	8.464218E-02	2.134879E-02	8.895328E-04	3.492155E-03
C3	1.802001E-06	-7.064374E-07	-2.943489E-08	-5.437968E-07
C4	-3.525618E-10	1.146714E-10	4.777974E-12	3.230217E-11
C5	-2.041597E+01	-1.039044E+00	-4.329350E-02	-1.211158E-01
C6	3.100940E-02	-1.803750E-03	-7.515625E-05	-1.851379E-04
C7	-4.714655E-05	-9.354212E-06	-3.897588E-07	1.811220E-06
C8	-2.143786E+01	3.831185E+00	1.596327E-01	-3.336185E-01
C9	1.517890E-01	-2.736881E-02	-1.140367E-03	2.607455E-03
C10	-3.534985E-04	6.897987E-05	2.874161E-06	-6.468898E-06
C11	-5.889416E-05	-2.253589E-06	-9.389954E-08	-6.403904E-08
C12	3.887950E-09	6.138191E-10	2.557579E-11	1.311753E-11
C13	-3.689801E-07	2.390802E-08	9.961676E-10	-3.041307E-09
C14	2.355221E-08	-4.005995E-09	-1.669164E-10	-1.545261E-11
C15	1.285944E-02	6.420311E-04	2.675129E-05	7.651410E-05
C16	2.794657E-04	-2.919854E-04	-1.216606E-05	1.344185E-05
C17	1.142798E-01	7.808579E-03	3.253575E-04	3.946149E-04
C18	-9.470081E-07	-7.562907E-08	-3.151211E-09	-7.645890E-09
C19	9.882474E-05	-5.604409E-06	-2.335170E-07	1.121755E-06
C20	1.680898E-08	9.925549E-09	4.135645E-10	6.620711E-10
C21	-4.448685E-06	1.320915E-06	5.503812E-08	-1.128196E-07
C22	-1.307469E-04	1.330438E-05	5.543490E-07	1.219193E-07
C23	-1.421991E-04	1.347845E-05	5.616020E-07	-9.674019E-07

**Performance Equation**

$$Y = C_1 + C_2 X_1 + C_3 X_1^2 + C_4 X_1^3 + C_5 X_2 + C_6 X_2^2 + C_7 X_2^3 + C_8 X_3 + C_9 X_3^2 + C_{10} X_3^3 + C_{11} X_1 X_2 X_3 + C_{12} X_1^2 X_2 X_3 + C_{13} X_1 X_2^2 X_3 + C_{14} X_1 X_2 X_3^2 + C_{15} X_1 X_2^2 X_3 + C_{16} X_1 X_3 + C_{17} X_2 X_3 + C_{18} X_1^2 X_2 + C_{19} X_1 X_2^2 + C_{20} X_1^2 X_3 + C_{21} X_1 X_3^2 + C_{22} X_2^2 X_3 + C_{23} X_2 X_3^2$$

x<sub>1</sub> = RPM  
 x<sub>2</sub> = E<sub>t</sub> (°F)  
 x<sub>3</sub> = C<sub>t</sub> (°F)