

MESA17-0085Y3
R134a
48 V DC
VARIABLE SPEED (2100-6000 rpm)



Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor Part Number	MESA00002	1/4" (6.54 mm) ID Suction 3/16" (4.95 mm) ID Discharge
Compressor Drawing	DCMX44	
Controller	025F0363	
Controller Drawing	DGMX0098	
Wiring Diagram	DEM0064	

Design

Number of Cylinders	1
Total Displacement	0.085 in ³ (1.4 cm ³)
Oil Quantity	40 cc
Oil Type	POE - 170 cSt
Weight	2.25 lb / 1.02 kg

Application Information

Application	HBP, A/C
Refrigerant	R134a
Evaporator Temperature Range	-13° F to 68° F (-25° C to 20° C)
Condenser Temperature Range	47.5° F to 162° F (8.6° C to 72° C)
Maximum Discharge Temperature	239° F (115° C)
Maximum Compression Ratio	13:1
Minimum Compressor Cooling	1 m/s airflow over compressor

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	
Controller	025F0363	

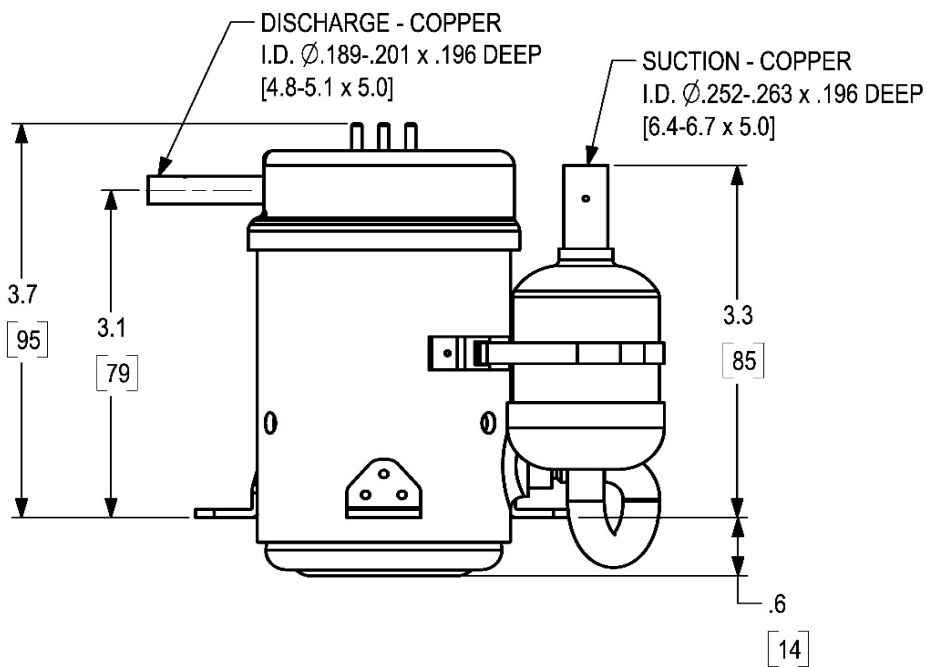
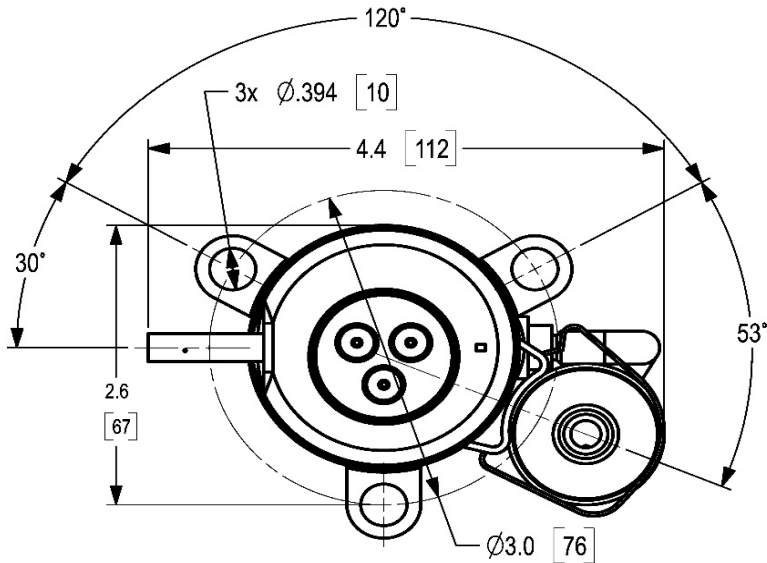
Packaging Options

- Single Pack (add -SP suffix to part number when ordering)
- Pallet Pack (77 piece multiples) (add -FP suffix to part number when ordering)

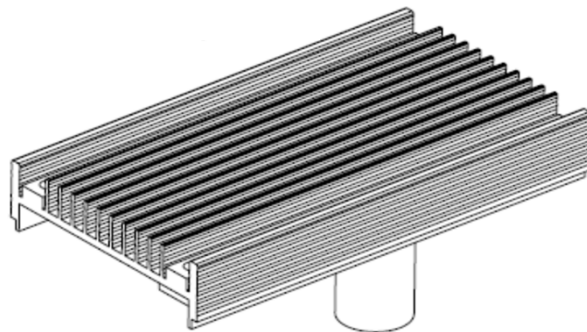
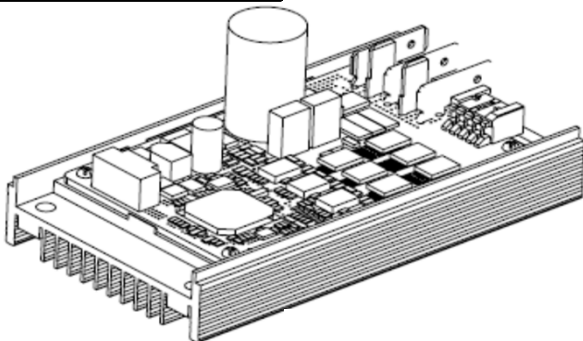
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Compressor Dimensions



Controller Configuration



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Cooling Capacity (48V) - ASHRAE HBP BTU/hr (Watt)

RPM	Evaporator Temperature													
	0°F	(-17.8°C)	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)	68°F	(20°C)
2100	102	(30)	138	(41)	187	(55)	247	(72)	361	(106)	452	(132)	589	(173)
3000	154	(45)	210	(62)	284	(83)	377	(110)	549	(161)	686	(201)	892	(261)
4000	202	(59)	278	(82)	379	(111)	504	(148)	737	(216)	924	(270)	1202	(352)
5000	251	(73)	344	(101)	468	(137)	624	(183)	914	(268)	1146	(336)	1494	(437)
6000	309	(90)	417	(122)	562	(165)	744	(218)	1088	(319)	1363	(399)	1776	(520)

Power Consumption (48V) - ASHRAE HBP Watt Current (48V) - ASHRAE HBP Amp

RPM	Evaporator Temperature								Evaporator Temperature							
	0°F	10°F	20°F	30°F	45°F	55°F	68°F	0°F	10°F	20°F	30°F	45°F	55°F	68°F		
2100	36	40	43	46	50	51	51	0.75	0.83	0.90	0.97	1.04	1.07	1.06		
3000	43	48	53	56	61	62	62	0.90	1.00	1.09	1.18	1.26	1.30	1.29		
4000	53	59	65	70	75	77	77	1.11	1.24	1.35	1.45	1.56	1.60	1.60		
5000	64	72	78	84	90	93	93	1.34	1.49	1.63	1.75	1.88	1.93	1.94		
6000	75	84	92	99	107	109	110	1.57	1.76	1.92	2.07	2.22	2.28	2.30		

Efficiency (48V) - ASHRAE HBP BTU/hr/W (W/W)

RPM	Evaporator Temperature													
	0°F	(-17.8°C)	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)	68°F	(20°C)
2100	2.85	(0.84)	3.49	(1.02)	4.31	(1.26)	5.32	(1.56)	7.22	(2.11)	8.84	(2.59)	11.59	(3.39)
3000	3.56	(1.04)	4.37	(1.28)	5.41	(1.58)	6.67	(1.95)	9.04	(2.65)	11.04	(3.23)	14.41	(4.22)
4000	3.80	(1.11)	4.70	(1.37)	5.84	(1.71)	7.24	(2.12)	9.85	(2.88)	12.05	(3.53)	15.69	(4.59)
5000	3.90	(1.14)	4.80	(1.41)	5.97	(1.75)	7.41	(2.17)	10.10	(2.96)	12.36	(3.62)	16.06	(4.70)
6000	4.09	(1.20)	4.94	(1.45)	6.09	(1.78)	7.51	(2.20)	10.20	(2.99)	12.45	(3.65)	16.12	(4.72)

* all points are at 35°C (95°F) ambient temperature, 35°C (95°F) suction, 8.33°C (15°F) subcooling, 54.4°C (130°F) condenser

Performance Coefficients (48V) - ASHRAE HBP

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	4.612708E+03	-6.183829E+02	-1.288298E+01	
C2	2.548038E-01	-1.243190E-02	-2.589980E-04	
C3	-2.236940E-05	1.937916E-06	4.037326E-08	
C4	1.592397E-09	-1.516403E-10	-3.159172E-12	
C5	-7.903501E+00	-4.466434E-01	-9.305072E-03	
C6	-6.398987E-03	-1.584543E-04	-3.301130E-06	
C7	4.805053E-06	-3.822596E-05	-7.963741E-07	
C8	-1.123362E+02	1.509428E+01	3.144642E-01	
C9	8.884358E-01	-1.181477E-01	-2.461410E-03	
C10	-2.325979E-03	3.101686E-04	6.461845E-06	
C11	3.965778E-06	2.545386E-06	5.302888E-08	
C12	-7.509768E-11	1.416299E-10	2.950623E-12	
C13	-1.424988E-07	1.382917E-08	2.881077E-10	
C14	-5.140162E-08	-8.913032E-09	-1.856882E-10	
C15	2.979489E-03	-7.664682E-05	-1.596809E-06	
C16	-1.305014E-03	1.282637E-04	2.672160E-06	
C17	9.162342E-02	5.434298E-03	1.132145E-04	
C18	-1.259063E-07	-1.380631E-08	-2.876314E-10	
C19	5.042843E-05	-2.776962E-06	-5.785337E-08	
C20	2.549019E-08	3.161661E-09	6.586794E-11	
C21	2.234097E-06	-3.002857E-07	-6.255952E-09	
C22	2.476788E-06	1.884300E-05	3.925625E-07	
C23	-3.505034E-04	-6.841049E-06	-1.425218E-07	

TO BE DETERMINED

Performance Equation

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

X₁ = RPM
 X₂ = E_t (°F)
 X₃ = C_t (°F)