

SIERRA03-0434H3
R1234yf
24/48V DC
VARIABLE SPEED



Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor Part Number	SIERRA00126	3/8" ID Suction - 5/16" ID Discharge
Compressor Drawing	DCMX33-001	#10-32 Threaded Terminal Connections
Voltage Range:	19-60 VDC	
Controller Options (24/48V)	025F0149, 025F0349, 025F0129, 025F0350	
Controller Options (48V)	025F0158, 025F0152	
Wiring Diagram Drawing	DEM0010	

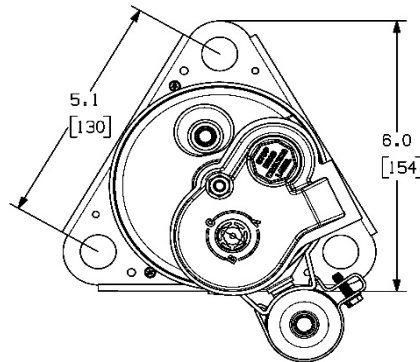
Application Information

Application	HBP, A/C
Refrigerant	R1234yf
Evaporator Temperature Range	-23.3°C to 12.8°C (-10°F to 55°F)
Condenser Temperature Range	26.7°C to 65.6°C (80°F to 150°F)
Maximum Discharge Temperature	130 °C (265 °F)
Maximum Compression Ratio	8:1
Minimum Airflow Over Compressor	425 cfm @ 6" from Outside Diameter of Housing

Design

Displacement	7.1 cm ³ (0.434 in ³)
Oil Quantity	290 cc
Oil Type	PVE 68cSt
Weight	4.8 kg / 10.5 lb

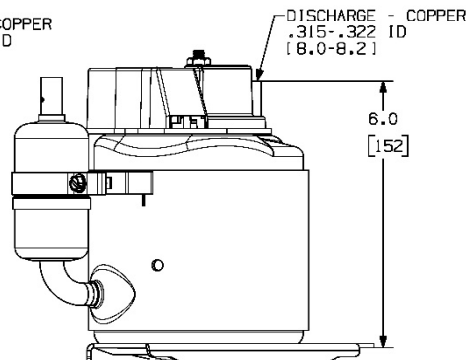
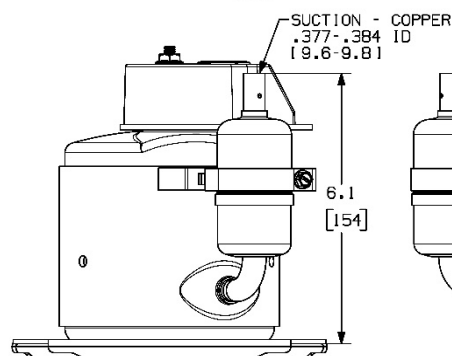
Compressor Dimensions



Packaging Options

- Single Pack (add -SP suffix to part number when ordering)
- Pallet Pack (25 piece multiples)

SIERRA00126

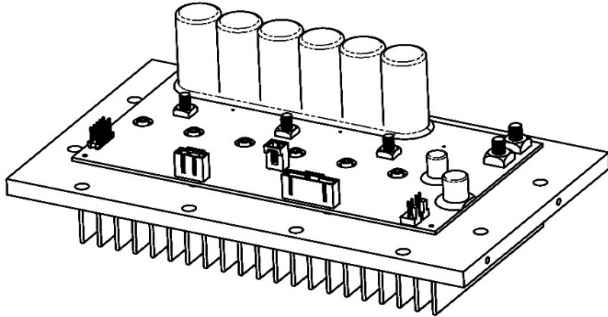


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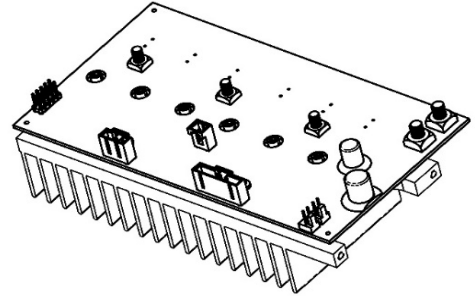


Controller Configurations

Custom controllers and configurations available



**025F0129,
025F0350,
& 025F0152**



**025F0149,
025F0349,
& 025F0158**

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

RPM	Evaporator Temperature													
	-10°F (-23°C)	10°F (-12°C)	20°F (-7°C)	30°F (-1°C)	40°F (4°C)	45°F (7°C)	55°F (13°C)							
1800	522 (153)	916 (268)	1063 (311)	1229 (360)	1456 (426)	1605 (470)	1999 (585)							
2400	812 (238)	1320 (387)	1542 (452)	1797 (526)	2125 (622)	2329 (682)	2843 (833)							
3000	1036 (303)	1659 (486)	1958 (574)	2302 (674)	2733 (800)	2992 (876)	3627 (1062)							
3600	1211 (355)	1952 (572)	2328 (682)	2763 (809)	3296 (965)	3612 (1058)	4368 (1279)							

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

RPM	Evaporator Temperature							Evaporator Temperature						
	-10°F	10°F	20°F	30°F	40°F	45°F	55°F	-10°F	10°F	20°F	30°F	40°F	45°F	55°F
1800	126	165	191	211	220	217	192	5.26	6.86	7.94	8.81	9.15	9.03	8.01
2400	185	209	232	253	264	263	246	7.71	8.70	9.66	10.52	10.98	10.97	10.24
3000	243	255	276	298	313	316	307	10.12	10.61	11.50	12.42	13.04	13.16	12.78
3600	301	303	324	349	369	376	376	12.54	12.64	13.51	14.53	15.38	15.65	15.68

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

RPM	Evaporator Temperature													
	-10°F (-23°C)	10°F (-12°C)	20°F (-7°C)	30°F (-1°C)	40°F (4°C)	45°F (7°C)	55°F (13°C)							
1800	4.14 (1.21)	5.57 (1.63)	5.58 (1.63)	5.82 (1.70)	6.63 (1.94)	7.41 (2.17)	10.40 (3.05)							
2400	4.39 (1.28)	6.32 (1.85)	6.65 (1.95)	7.11 (2.08)	8.06 (2.36)	8.85 (2.59)	11.56 (3.39)							
3000	4.26 (1.25)	6.52 (1.91)	7.09 (2.08)	7.73 (2.26)	8.73 (2.56)	9.48 (2.77)	11.82 (3.46)							
3600	4.02 (1.18)	6.43 (1.88)	7.18 (2.10)	7.92 (2.32)	8.93 (2.61)	9.62 (2.82)	11.61 (3.40)							

* all points are at 35°C (95°F) ambient temperature, 18.33°C (65°F) suction, 8.33°C (15°F) subcooling, 54.4°C (130°F) condenser

Performance Coefficients - ARI HBP

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	-6.301343E+03	-9.480740E+02	-3.950308E+01	-1.165521E+02
C2	1.310578E+00	2.587926E-01	1.078303E-02	1.602163E-02
C3	-1.206881E-04	-1.606440E-05	-6.693502E-07	-1.619022E-06
C4	1.337793E-08	9.246969E-10	3.852904E-11	1.431436E-10
C5	1.156555E+02	7.870801E+00	3.279501E-01	7.345305E-01
C6	-3.045512E-01	3.966273E-01	1.652614E-02	4.312113E-03
C7	6.742903E-03	-1.225002E-03	-5.104177E-05	6.807295E-05
C8	1.427033E+02	1.459761E+01	6.082338E-01	2.729269E+00
C9	-1.122185E+00	-4.348034E-02	-1.811681E-03	-2.200064E-02
C10	2.677151E-03	-1.065343E-04	-4.438928E-06	5.636521E-05
C11	6.666571E-04	1.432514E-05	5.968809E-07	8.215221E-06
C12	1.568755E-08	2.432054E-09	1.013356E-10	2.421960E-10
C13	2.481606E-08	9.331686E-07	3.888202E-08	1.493330E-08
C14	-3.464795E-06	-3.071241E-07	-1.279684E-08	-4.153690E-08
C15	-1.908298E-02	1.386536E-03	5.777234E-05	-1.569069E-04
C16	-4.833450E-03	-3.082960E-03	-1.284567E-04	-4.383844E-05
C17	-2.033910E+00	-2.864410E-01	-1.193504E-02	-1.651396E-02
C18	-1.925228E-06	-1.407161E-07	-5.863169E-09	-3.247877E-08
C19	1.017101E-04	-9.740900E-05	-4.058708E-06	7.530524E-07
C20	-5.056611E-07	7.612816E-08	3.172007E-09	-1.759127E-09
C21	2.895978E-05	1.414046E-05	5.891857E-07	2.417616E-07
C22	-1.447846E-03	-3.017419E-03	-1.257258E-04	-6.350412E-05
C23	8.944136E-03	2.031223E-03	8.463428E-05	8.100225E-05

Performance Equation

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

$X_1 = \text{RPM}$
 $X_2 = E_t (\text{°F})$
 $X_3 = C_t (\text{°F})$

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

RPM	Evaporator Temperature											
	-10°F (-23°C)	10°F (-12°C)	20°F (-7°C)	30°F (-1°C)	40°F (4°C)	45°F (7°C)	55°F (13°C)					
3600	1211 (355)	1952 (572)	2328 (682)	2763 (809)	3296 (965)	3612 (1058)	4368 (1279)					
4500	1421 (416)	2341 (686)	2836 (831)	3407 (998)	4095 (1199)	4496 (1317)	5437 (1592)					
5500	1644 (481)	2768 (811)	3395 (994)	4121 (1207)	4984 (1460)	5480 (1605)	6627 (1941)					
6500	1933 (566)	3265 (956)	4028 (1180)	4910 (1438)	5951 (1743)	6544 (1916)	7899 (2314)					

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

RPM	Evaporator Temperature							Evaporator Temperature						
	-10°F	10°F	20°F	30°F	40°F	45°F	55°F	-10°F	10°F	20°F	30°F	40°F	45°F	55°F
3600	315	318	339	365	386	393	394	6.56	6.61	7.07	7.60	8.05	8.19	8.20
4500	409	402	426	458	490	504	522	8.53	8.38	8.88	9.54	10.21	10.50	10.88
5500	524	513	542	584	632	656	697	10.91	10.68	11.29	12.17	13.17	13.66	14.52
6500	653	646	684	741	808	843	911	13.61	13.45	14.25	15.43	16.83	17.56	18.98

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

RPM	Evaporator Temperature											
	-10°F (-23°C)	10°F (-12°C)	20°F (-7°C)	30°F (-1°C)	40°F (4°C)	45°F (7°C)	55°F (13°C)					
3600	3.84 (1.13)	6.15 (1.80)	6.86 (2.01)	7.57 (2.22)	8.53 (2.50)	9.19 (2.69)	11.09 (3.25)					
4500	3.47 (1.02)	5.82 (1.70)	6.66 (1.95)	7.44 (2.18)	8.36 (2.45)	8.92 (2.61)	10.41 (3.05)					
5500	3.14 (0.92)	5.40 (1.58)	6.27 (1.83)	7.05 (2.06)	7.89 (2.31)	8.36 (2.45)	9.51 (2.78)					
6500	2.96 (0.87)	5.06 (1.48)	5.89 (1.72)	6.63 (1.94)	7.37 (2.16)	7.76 (2.27)	8.67 (2.54)					

* all points are at 35°C (95°F) ambient temperature, 18.33°C (65°F) suction, 8.33°C (15°F) subcooling, 54.4°C (130°F) condenser

Performance Coefficients - ARI HBP

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	-6.301343E+03	-9.922988E+02	-2.067289E+01	-1.165521E+02
C2	1.310578E+00	2.708645E-01	5.643010E-03	1.602163E-02
C3	-1.206881E-04	-1.681376E-05	-3.502867E-07	-1.619022E-06
C4	1.337793E-08	9.678312E-10	2.016315E-11	1.431436E-10
C5	1.156555E+02	8.237950E+00	1.716240E-01	7.345305E-01
C6	-3.045512E-01	4.151287E-01	8.648516E-03	4.312113E-03
C7	6.742903E-03	-1.282145E-03	-2.671136E-05	6.807295E-05
C8	1.427033E+02	1.527855E+01	3.183030E-01	2.729269E+00
C9	-1.122185E+00	-4.550857E-02	-9.480951E-04	-2.200064E-02
C10	2.677151E-03	-1.115038E-04	-2.322995E-06	5.636521E-05
C11	6.666571E-04	1.499336E-05	3.123618E-07	8.215221E-06
C12	1.568755E-08	2.545502E-09	5.303129E-11	2.421960E-10
C13	2.481606E-08	9.766981E-07	2.034788E-08	1.493330E-08
C14	-3.464795E-06	-3.214505E-07	-6.696886E-09	-4.153690E-08
C15	-1.908298E-02	1.451214E-03	3.023362E-05	-1.569069E-04
C16	-4.833450E-03	-3.226771E-03	-6.722439E-05	-4.383844E-05
C17	-2.033910E+00	-2.998026E-01	-6.245887E-03	-1.651396E-02
C18	-1.925228E-06	-1.472800E-07	-3.068334E-09	-3.247877E-08
C19	1.017101E-04	-1.019528E-04	-2.124017E-06	7.530524E-07
C20	-5.056611E-07	7.967931E-08	1.659986E-09	-1.759127E-09
C21	2.895978E-05	1.480007E-05	3.083347E-07	2.417616E-07
C22	-1.447846E-03	-3.158172E-03	-6.579525E-05	-6.350412E-05
C23	8.944136E-03	2.125973E-03	4.429111E-05	8.100225E-05

Performance Equation

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

$X_1 = \text{RPM}$
 $X_2 = E_t \text{ (°F)}$
 $X_3 = C_t \text{ (°F)}$