

SIERRA03-0982H3 - High Capacity Model

R1234yf

24/48 V DC

VARIABLE SPEED



Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor Part Number	SIERRA00129	1/2" ID Suction - 5/16" ID Discharge
Compressor Drawing	DCMX33-002	#10-32 Threaded Terminal Connections
Controller Options (24/48V)	025F0149, 025F0129	
Controller Options (48V)	025F0158, 025F0152	
Wiring Diagram Drawing	DEMX0010	

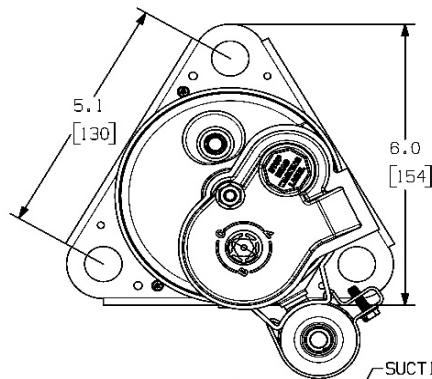
Application Information

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	9:01
Minimum Airflow Over Compressor	425 cfm @ 6" from Outside Diameter of Housing

Design

Displacement	16.1 cm ³ (0.982 in ³)
Oil Quantity	290 cc
Oil Type	PVE 68cSt
Weight	6.4 kg / 14.1 lb

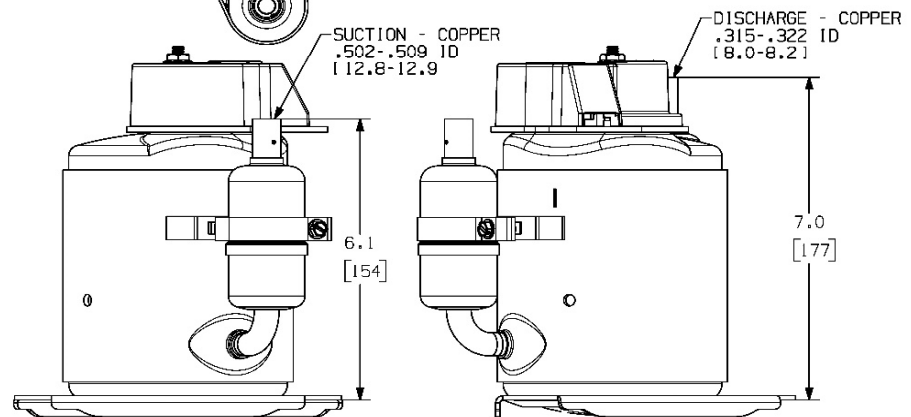
Compressor Dimensions



Packaging Options

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

SIERRA00129



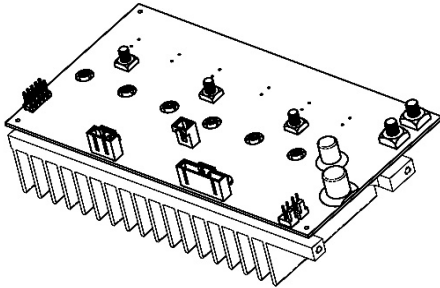
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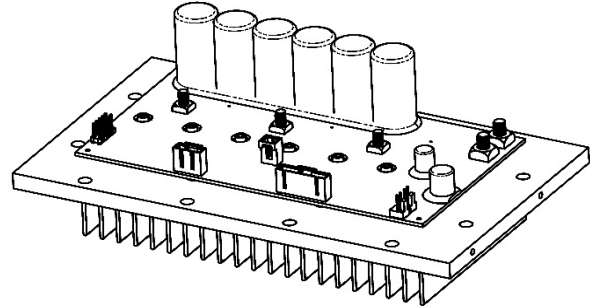


Controller Configurations

Custom controllers and configurations available



**025F0129 &
025F0152**



**025F0149 &
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	982 (288)	1835 (537)	2167 (635)	2558 (749)	3099 (908)	3455 (1012)	4392 (1286)						
2400	1547 (453)	2651 (776)	3157 (925)	3754 (1099)	4534 (1328)	5021 (1470)	6245 (1829)						
3000	1972 (577)	3328 (975)	4008 (1174)	4813 (1410)	5832 (1708)	6451 (1889)	7964 (2332)						
3600	2294 (672)	3904 (1143)	4761 (1394)	5773 (1691)	7033 (2060)	7785 (2280)	9587 (2808)						
4200	2552 (748)	4419 (1294)	5452 (1597)	6674 (1955)	8176 (2394)	9060 (2653)	11153 (3266)						

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	267	352	411	460	484	480	435	11.13	14.66	17.13	19.18	20.15	20.02	18.11
2400	394	447	500	551	581	584	556	16.40	18.62	20.85	22.94	24.22	24.34	23.16
3000	517	545	596	649	691	701	693	21.54	22.70	24.82	27.06	28.77	29.22	28.88
3600	640	649	699	760	814	834	849	26.69	27.03	29.14	31.67	33.93	34.76	35.38
4200	767	761	815	885	955	986	1027	31.94	31.70	33.94	36.87	39.81	41.07	42.79

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	3.67 (1.08)	5.22 (1.53)	5.27 (1.54)	5.56 (1.63)	6.41 (1.88)	7.19 (2.11)	10.10 (2.96)						
2400	3.93 (1.15)	5.93 (1.74)	6.31 (1.85)	6.82 (2.00)	7.80 (2.28)	8.59 (2.52)	11.24 (3.29)						
3000	3.81 (1.12)	6.11 (1.79)	6.73 (1.97)	7.41 (2.17)	8.45 (2.47)	9.20 (2.69)	11.49 (3.36)						
3600	3.58 (1.05)	6.02 (1.76)	6.81 (1.99)	7.60 (2.22)	8.64 (2.53)	9.33 (2.73)	11.29 (3.31)						
4200	3.33 (0.97)	5.81 (1.70)	6.69 (1.96)	7.54 (2.21)	8.56 (2.51)	9.19 (2.69)	10.86 (3.18)						

* 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	-1.330191E+04	-2.120067E+03	-8.833611E+01	-2.471842E+02
C2	2.739828E+00	5.500600E-01	2.291917E-02	3.397874E-02
C3	-2.845525E-04	-3.532659E-05	-1.471941E-06	-3.433629E-06
C4	2.974669E-08	2.109906E-09	8.791276E-11	3.035795E-10
C5	2.391580E+02	1.515621E+01	6.315089E-01	1.557796E+00
C6	-6.746008E-01	8.457879E-01	3.524116E-02	9.145150E-03
C7	1.521543E-02	-2.669912E-03	-1.112463E-04	1.443694E-04
C8	3.007406E+02	3.364449E+01	1.401854E+00	5.788247E+00
C9	-2.379374E+00	-1.149862E-01	-4.791094E-03	-4.665905E-02
C10	5.753285E-03	-1.642704E-04	-6.844601E-06	1.195396E-04
C11	1.424703E-03	1.770275E-05	7.376147E-07	1.742288E-05
C12	3.094077E-08	5.727720E-09	2.386550E-10	5.136504E-10
C13	-1.893629E-07	2.025147E-06	8.438114E-08	3.167061E-08
C14	-7.321550E-06	-6.143120E-07	-2.559633E-08	-8.809164E-08
C15	-4.118791E-02	3.771406E-03	1.571419E-04	-3.327690E-04
C16	-9.703546E-03	-6.469061E-03	-2.695442E-04	-9.297277E-05
C17	-4.189874E+00	-5.826353E-01	-2.427647E-02	-3.502289E-02
C18	-3.887171E-06	-3.398303E-07	-1.415960E-08	-6.888112E-08
C19	2.950903E-04	-2.082384E-04	-8.676602E-06	1.597077E-06
C20	-9.529061E-07	1.557862E-07	6.491092E-09	-3.730766E-09
C21	5.707616E-05	2.988688E-05	1.245287E-06	5.127292E-07
C22	-3.320612E-03	-6.421378E-03	-2.675574E-04	-1.346798E-04
C23	1.832672E-02	4.232465E-03	1.763527E-04	1.717900E-04

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	2294 (672)	3904 (1143)	4761 (1394)	5773 (1691)	7033 (2060)	7785 (2280)	9587 (2808)					
4500	2670 (782)	4665 (1366)	5787 (1695)	7114 (2083)	8737 (2559)	9688 (2837)	11926 (3493)					
5500	3077 (901)	5505 (1612)	6925 (2028)	8603 (2520)	10632 (3114)	11806 (3458)	14531 (4256)					
6500	3647 (1068)	6513 (1908)	8233 (2411)	10266 (3007)	12703 (3720)	14102 (4130)	17316 (5072)					

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	661	670	722	785	841	861	877	13.78	13.95	15.05	16.35	17.52	17.95	18.27
4500	859	848	906	985	1067	1104	1161	17.89	17.66	18.88	20.51	22.23	23.01	24.20
5500	1096	1080	1153	1257	1377	1437	1548	22.84	22.51	24.02	26.19	28.68	29.93	32.25
6500	1367	1362	1457	1595	1760	1848	2021	28.47	28.37	30.36	33.24	36.67	38.49	42.11

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	3.47 (1.02)	5.83 (1.71)	6.59 (1.93)	7.36 (2.15)	8.36 (2.45)	9.04 (2.65)	10.93 (3.20)					
4500	3.11 (0.91)	5.50 (1.61)	6.39 (1.87)	7.22 (2.12)	8.19 (2.40)	8.77 (2.57)	10.27 (3.01)					
5500	2.81 (0.82)	5.10 (1.49)	6.01 (1.76)	6.84 (2.00)	7.72 (2.26)	8.22 (2.41)	9.39 (2.75)					
6500	2.67 (0.78)	4.78 (1.40)	5.65 (1.65)	6.43 (1.88)	7.22 (2.11)	7.63 (2.23)	8.57 (2.51)					

* 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	-1.330191E+04	-2.189336E+03	-4.561116E+01	-2.471842E+02
C2	2.739828E+00	5.680322E-01	1.183400E-02	3.397874E-02
C3	-2.845525E-04	-3.648082E-05	-7.600171E-07	-3.433629E-06
C4	2.974669E-08	2.178844E-09	4.539258E-11	3.035795E-10
C5	2.391580E+02	1.565142E+01	3.260712E-01	1.557796E+00
C6	-6.746008E-01	8.734224E-01	1.819630E-02	9.145150E-03
C7	1.521543E-02	-2.757147E-03	-5.744056E-05	1.443694E-04
C8	3.007406E+02	3.474376E+01	7.238283E-01	5.788247E+00
C9	-2.379374E+00	-1.187432E-01	-2.473817E-03	-4.665905E-02
C10	5.753285E-03	-1.696376E-04	-3.534118E-06	1.195396E-04
C11	1.424703E-03	1.828116E-05	3.808575E-07	1.742288E-05
C12	3.094077E-08	5.914863E-09	1.232263E-10	5.136504E-10
C13	-1.893629E-07	2.091315E-06	4.356907E-08	3.167061E-08
C14	-7.321550E-06	-6.343835E-07	-1.321632E-08	-8.809164E-08
C15	-4.118791E-02	3.894629E-03	8.113811E-05	-3.327690E-04
C16	-9.703546E-03	-6.680425E-03	-1.391755E-04	-9.297277E-05
C17	-4.189874E+00	-6.016718E-01	-1.253483E-02	-3.502289E-02
C18	-3.887171E-06	-3.509336E-07	-7.311117E-09	-6.888112E-08
C19	2.950903E-04	-2.150423E-04	-4.480047E-06	1.597077E-06
C20	-9.529061E-07	1.608762E-07	3.351588E-09	-3.730766E-09
C21	5.707616E-05	3.086338E-05	6.429870E-07	5.127292E-07
C22	-3.320612E-03	-6.631185E-03	-1.381497E-04	-1.346798E-04
C23	1.832672E-02	4.370752E-03	9.105734E-05	1.717900E-04

Performance Equation

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

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