SIERRA17-0982Y3
R134a / R513A / R1234yf
48 VDC
VARIABLE SPEED

MASTERFLUX

Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor Part Number	SIERRA00212	1/2" ID Suction - 5/16" ID Discharge
Compressor Drawing	DCMX33-002	#10-32 Threaded Terminal Connections
Controller Options (37-60V)	025F0158, 025F0152	
Wiring Diagram Drawing	DEMX0010	

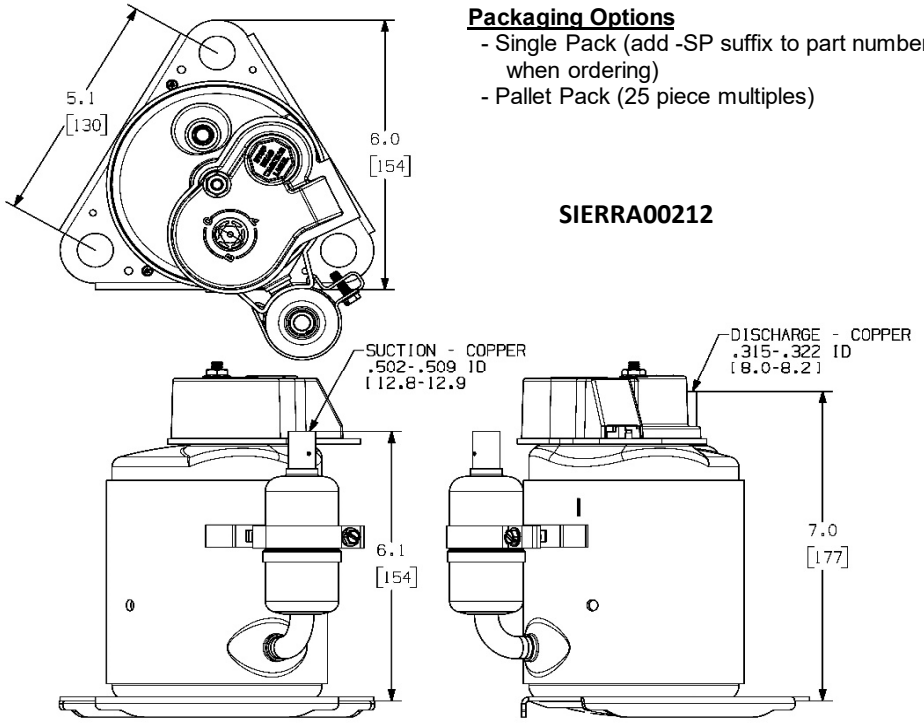
Application Information

Application	HBP, A/C
Refrigerant	R134a, R513A, 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	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)

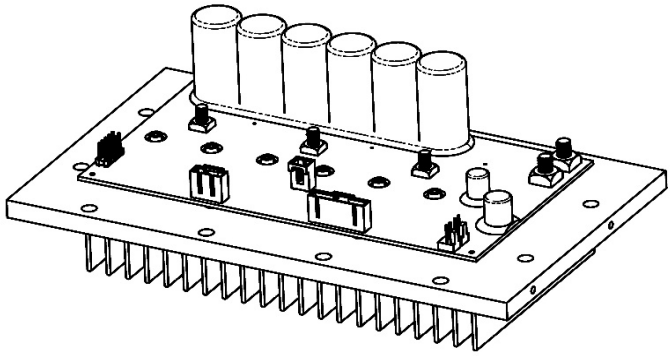
SIERRA00212

the Sierra

SIERRA17-0982Y3

Controller Configurations

Custom controllers and configurations available



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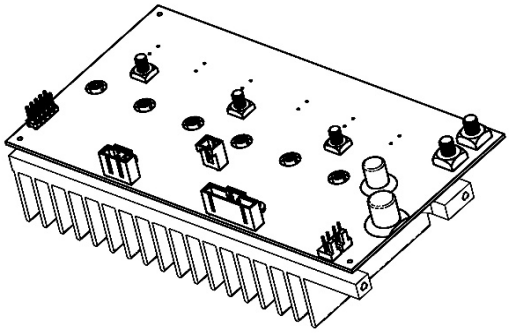

025F0152

SIERRA17-0982Y3

Cooling Capacity (48V) - ARI HBP - R134a / R513A														BTU/hr (Watt)
	Evaporator Temperature													
RPM	-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	1046	(306)	1955	(573)	2309	(676)	2725	(798)	3301	(967)	3680	(1078)	4678	(1370)
2400	1648	(483)	2824	(827)	3363	(985)	3999	(1171)	4830	(1414)	5348	(1566)	6652	(1948)
3000	2100	(615)	3545	(1038)	4270	(1251)	5127	(1502)	6213	(1820)	6872	(2013)	8484	(2485)
3600	2443	(716)	4159	(1218)	5071	(1485)	6150	(1801)	7492	(2194)	8293	(2429)	10212	(2991)

Power Consumption (48V) - ARI HBP - R134a / R513A							Watt
	Evaporator Temperature						
RPM	-10°F	10°F	20°F	30°F	40°F	45°F	55°F
1800	258	340	397	444	467	464	420
2400	380	431	483	531	561	564	536
3000	499	526	575	627	667	677	669
3600	618	626	675	734	786	805	820

Current (48V) - ARI HBP - R134a / R513A							Amp
	Evaporator Temperature						
-10°F	10°F	20°F	30°F	40°F	45°F	55°F	
5.37	7.08	8.27	9.26	9.73	9.66	8.74	
7.91	8.99	10.06	11.07	11.69	11.75	11.18	
10.40	10.96	11.98	13.06	13.89	14.10	13.94	
12.88	13.04	14.07	15.28	16.38	16.78	17.08	

Efficiency (48V) - ARI HBP - R134a / R513A														BTU/hr/W (W/W)
	Evaporator Temperature													
RPM	-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	4.05	(1.19)	5.76	(1.69)	5.82	(1.70)	6.13	(1.80)	7.07	(2.07)	7.93	(2.32)	11.15	(3.27)
2400	4.34	(1.27)	6.55	(1.92)	6.96	(2.04)	7.53	(2.20)	8.61	(2.52)	9.48	(2.78)	12.40	(3.63)
3000	4.21	(1.23)	6.74	(1.97)	7.43	(2.17)	8.18	(2.39)	9.32	(2.73)	10.15	(2.97)	12.68	(3.71)
3600	3.95	(1.16)	6.64	(1.94)	7.51	(2.20)	8.38	(2.45)	9.53	(2.79)	10.30	(3.02)	12.46	(3.65)

*** 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 (48V) - ARI HBP - R134a / R513A

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	-1.416978E+04	-2.046399E+03	-4.263330E+01	-2.034164E+02
C2	2.918585E+00	5.309466E-01	1.106139E-02	2.796228E-02
C3	-3.031178E-04	-3.409906E-05	-7.103971E-07	-2.825652E-06
C4	3.168748E-08	2.036591E-09	4.242899E-11	2.498261E-10
C5	2.547616E+02	1.462957E+01	3.047826E-01	1.281964E+00
C6	-7.186143E-01	8.163985E-01	1.700830E-02	7.525860E-03
C7	1.620815E-02	-2.577138E-03	-5.369038E-05	1.188066E-04
C8	3.203621E+02	3.247541E+01	6.765710E-01	4.763349E+00
C9	-2.534614E+00	-1.109907E-01	-2.312307E-03	-3.839735E-02
C10	6.128652E-03	-1.585624E-04	-3.303382E-06	9.837328E-05
C11	1.517656E-03	1.708762E-05	3.559921E-07	1.433789E-05
C12	3.295947E-08	5.528694E-09	1.151811E-10	4.227007E-10
C13	-2.017177E-07	1.954778E-06	4.072453E-08	2.606284E-08
C14	-7.799236E-06	-5.929659E-07	-1.235346E-08	-7.249366E-08
C15	-4.387516E-02	3.640357E-03	7.584078E-05	-2.738471E-04
C16	-1.033664E-02	-6.244274E-03	-1.300890E-04	-7.651051E-05
C17	-4.463238E+00	-5.623899E-01	-1.171646E-02	-2.882155E-02
C18	-4.140785E-06	-3.280219E-07	-6.833790E-09	-5.668466E-08
C19	3.143432E-04	-2.010026E-04	-4.187554E-06	1.314290E-06
C20	-1.015077E-06	1.503729E-07	3.132770E-09	-3.070176E-09
C21	6.080003E-05	2.884837E-05	6.010077E-07	4.219426E-07
C22	-3.537261E-03	-6.198249E-03	-1.291302E-04	-1.108327E-04
C23	1.952243E-02	4.085395E-03	8.511240E-05	1.413719E-04

Performance Equation

$$Y=C_1+C_2x_1+C_3x_1^2+C_4x_1^3+C_5x_2+C_6x_2^2+C_7x_2^3+C_8x_3+C_9x_3^2+C_{10}x_3^3+C_{11}x_1x_2x_3+C_{12}x_1^2x_2x_3+C_{13}x_1x_2^2x_3+C_{14}x_1x_2x_3^2+C_{15}x_1x_2+C_{16}x_1x_3+C_{17}x_2x_3+C_{18}x_1^2x_2+C_{19}x_1x_2^2+C_{20}x_1^2x_3+C_{21}x_1x_3^2+C_{22}x_2^2x_3+C_{23}x_2x_3^2$$

x_1 = RPM

$x_2 = E_t$ (°F)

$x_3 = C_t$ (°F)

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Cooling Capacity (48V) - ARI HBP - R1234yf — BTU/hr (Watt)

	Evaporator Temperature													
RPM	-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	1114	(326)	2082	(610)	2459	(720)	2903	(850)	3517	(1030)	3920	(1148)	4983	(1459)
2400	1755	(514)	3008	(881)	3582	(1049)	4260	(1248)	5145	(1507)	5697	(1669)	7087	(2075)
3000	2237	(655)	3776	(1106)	4549	(1332)	5461	(1600)	6618	(1938)	7320	(2144)	9037	(2647)
3600	2603	(762)	4430	(1297)	5402	(1582)	6551	(1919)	7981	(2337)	8834	(2587)	10879	(3186)

Power Consumption (48V) - ARI HBP - R1234yf — Watt

	Evaporator Temperature						
RPM	-10°F	10°F	20°F	30°F	40°F	45°F	55°F
1800	247	325	379	425	446	444	401
2400	363	412	462	508	536	539	513
3000	477	503	550	600	637	647	640
3600	591	599	646	702	752	770	784

Current (48V) - ARI HBP - R1234yf — Amp

	Evaporator Temperature						
RPM	-10°F	10°F	20°F	30°F	40°F	45°F	55°F
1800	5.14	6.77	7.91	8.85	9.30	9.24	8.36
2400	7.57	8.59	9.62	10.59	11.18	11.24	10.69
3000	9.94	10.48	11.45	12.49	13.28	13.49	13.33
3600	12.32	12.47	13.45	14.62	15.66	16.04	16.33

Efficiency (48V) - ARI HBP - R1234yf — BTU/hr/W (W/W)

	Evaporator Temperature													
RPM	-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	4.52	(1.32)	6.41	(1.88)	6.48	(1.90)	6.83	(2.00)	7.88	(2.31)	8.84	(2.59)	12.42	(3.64)
2400	4.83	(1.42)	7.29	(2.14)	7.76	(2.27)	8.38	(2.45)	9.59	(2.81)	10.56	(3.09)	13.81	(4.04)
3000	4.69	(1.37)	7.51	(2.20)	8.27	(2.42)	9.11	(2.67)	10.38	(3.04)	11.31	(3.31)	14.13	(4.14)
3600	4.40	(1.29)	7.40	(2.17)	8.37	(2.45)	9.34	(2.73)	10.62	(3.11)	11.47	(3.36)	13.88	(4.06)

*** 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 (48V) - ARI HBP - R1234yf

Coefficient	Capacity (BTU/Hr)	Power (Watts)	Current (Amperes)	Mass Flow (Lbs/Hr)
C1	-1.509427E+04	-1.956900E+03	-4.076874E+01	-1.673984E+02
C2	3.109005E+00	5.077257E-01	1.057762E-02	2.301113E-02
C3	-3.228944E-04	-3.260774E-05	-6.793280E-07	-2.325327E-06
C4	3.375490E-08	1.947521E-09	4.057336E-11	2.055905E-10
C5	2.713832E+02	1.398975E+01	2.914530E-01	1.054973E+00
C6	-7.654995E-01	7.806934E-01	1.626445E-02	6.193291E-03
C7	1.726563E-02	-2.464428E-03	-5.134224E-05	9.777006E-05
C8	3.412638E+02	3.105510E+01	6.469813E-01	3.919925E+00
C9	-2.699982E+00	-1.061366E-01	-2.211178E-03	-3.159851E-02
C10	6.528509E-03	-1.516277E-04	-3.158910E-06	8.095477E-05
C11	1.616674E-03	1.634030E-05	3.404228E-07	1.179915E-05
C12	3.510987E-08	5.286897E-09	1.101437E-10	3.478550E-10
C13	-2.148786E-07	1.869286E-06	3.894345E-08	2.144801E-08
C14	-8.308089E-06	-5.670326E-07	-1.181318E-08	-5.965754E-08
C15	-4.673775E-02	3.481147E-03	7.252389E-05	-2.253583E-04
C16	-1.101105E-02	-5.971182E-03	-1.243996E-04	-6.296315E-05
C17	-4.754437E+00	-5.377939E-01	-1.120404E-02	-2.371825E-02
C18	-4.410946E-06	-3.136759E-07	-6.534915E-09	-4.664777E-08
C19	3.348521E-04	-1.922118E-04	-4.004412E-06	1.081575E-06
C20	-1.081305E-06	1.437964E-07	2.995759E-09	-2.526554E-09
C21	6.476687E-05	2.758669E-05	5.747227E-07	3.472312E-07
C22	-3.768046E-03	-5.927169E-03	-1.234827E-04	-9.120806E-05
C23	2.079615E-02	3.906721E-03	8.139002E-05	1.163398E-04

Performance Equation

$$Y=C_1+C_2x_1+C_3x_1^2+C_4x_1^3+C_5x_2+C_6x_2^2+C_7x_2^3+C_8x_3+C_9x_3^2+C_{10}x_3^3+C_{11}x_1x_2x_3+C_{12}x_1^2x_2x_3+C_{13}x_1x_2^2x_3+C_{14}x_1x_2x_3^2+C_{15}x_1x_2+C_{16}x_1x_3+C_{17}x_2x_3+C_{18}x_1^2x_2+C_{19}x_1x_2^2+C_{20}x_1^2x_3+C_{21}x_1x_3^2+C_{22}x_2^2x_3+C_{23}x_2x_3^2$$

x_1 = RPM
x_2 = E_t (°F)
x_3 = C_t (°F)

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