

SIERRA17-0982U3
R290
48 VDC
VARIABLE SPEED



Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor Part Number	SIERRA00213	1/2" ID Suction - 5/16" ID Discharge
Compressor Drawing	DCMX33-002	M5 Threaded Terminal Connections
Compressor Part Number	SIERRA00214	#10 MIO Suction - #8 MIO Discharge
Compressor Drawing	DCMX27-002	M5 Threaded Terminal Connections
Compressor Part Number	SIERRA00229	#10 MIO Suction - #8 MIO Discharge
Compressor Drawing	DCMX27-002	#10-32 Threaded Terminal Connections
Controller Options (37-60V)	025F0158, 025F0152	
Wiring Diagram Drawing	DEM0010	

Application Information

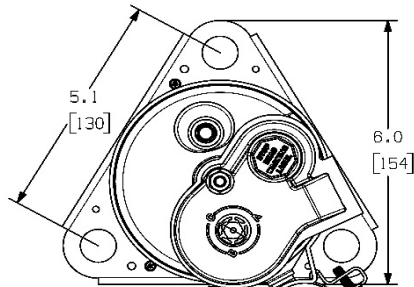
Application	HBP, A/C
Refrigerant	R290
Evaporator Temperature Range	-23.3°C to 12.8°C (-10°F to 55°F)
Condenser Temperature Range	26.7°C to 65.6°C (80°F to 150°F)
Maximum Discharge Temperature	130 °C (265 °F)
Maximum Compression Ratio	8:1
Minimum Airflow Over Compressor	425 cfm @ 6" from Outside Diameter 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
Weight with Fittings	6.6 kg / 14.5 lb



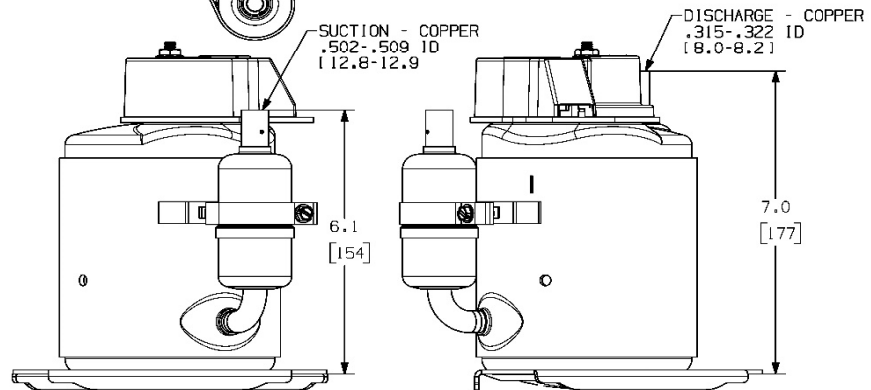
Compressor Dimensions



Packaging Options

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

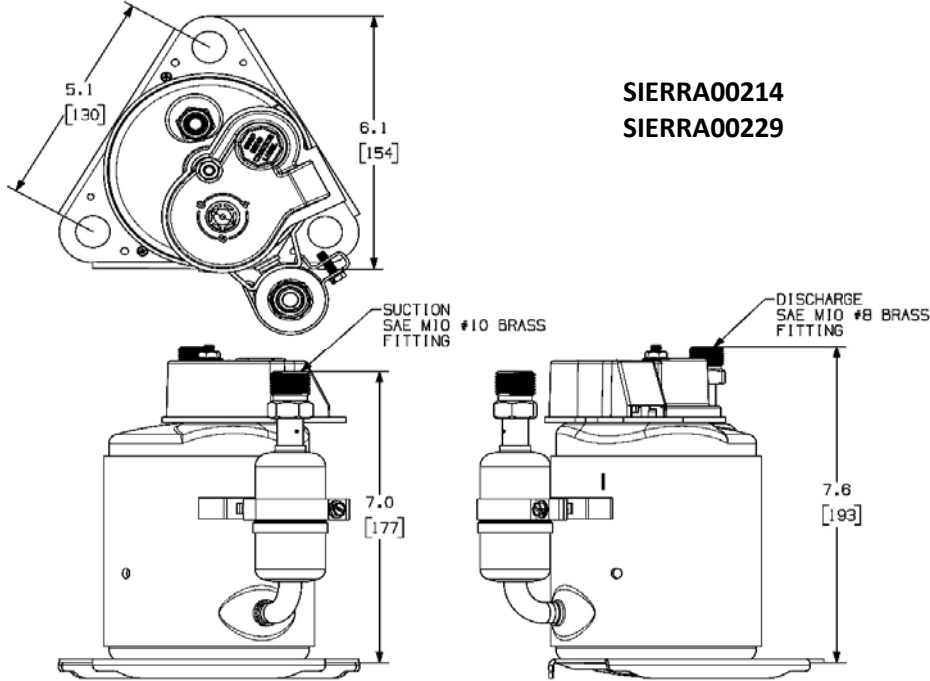
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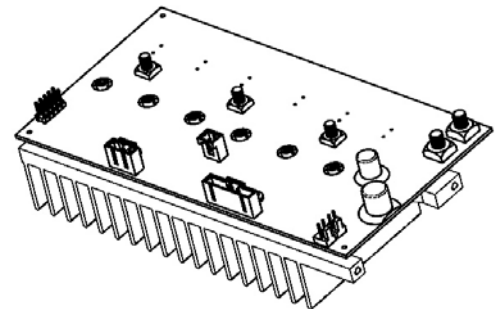
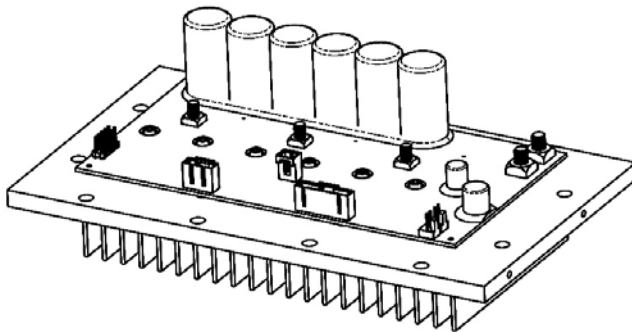


Compressor Dimensions



Controller Configurations

Custom controllers and configurations available



SIERRA17-0982U3



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)
1800	1371	(402)	2563	(751)	3027	(887)	3573	(1046)	4328	(1268)	4824	(1413)	6133	(1796)
2400	2160	(633)	3702	(1084)	4409	(1291)	5243	(1535)	6332	(1854)	7011	(2053)	8721	(2554)
3000	2753	(806)	4647	(1361)	5598	(1639)	6721	(1969)	8145	(2385)	9009	(2639)	11122	(3257)
3600	3203	(938)	5452	(1597)	6648	(1947)	8063	(2361)	9822	(2877)	10872	(3184)	13388	(3921)

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	
1800	268	353	413	462	486	482	436	5.59	7.36	8.60	9.63	10.12	10.05	9.09	
2400	395	449	502	553	584	587	558	8.23	9.35	10.47	11.52	12.16	12.22	11.63	
3000	519	547	598	652	693	704	696	10.82	11.40	12.46	13.59	14.45	14.67	14.50	
3600	643	651	702	763	818	838	853	13.40	13.57	14.63	15.90	17.04	17.45	17.76	

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)
1800	5.11	(1.50)	7.25	(2.12)	7.33	(2.15)	7.73	(2.26)	8.91	(2.61)	10.00	(2.93)	14.05	(4.11)
2400	5.47	(1.60)	8.25	(2.42)	8.77	(2.57)	9.48	(2.78)	10.85	(3.18)	11.95	(3.50)	15.63	(4.58)
3000	5.30	(1.55)	8.49	(2.49)	9.36	(2.74)	10.31	(3.02)	11.75	(3.44)	12.79	(3.75)	15.98	(4.68)
3600	4.98	(1.46)	8.37	(2.45)	9.47	(2.77)	10.56	(3.09)	12.01	(3.52)	12.98	(3.80)	15.70	(4.60)

* 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	-1.857657E+04	-2.128868E+03	-4.435143E+01	-1.053971E+02
C2	3.826262E+00	5.523437E-01	1.150716E-02	1.448823E-02
C3	-3.973870E-04	-3.547325E-05	-7.390261E-07	-1.464068E-06
C4	4.154225E-08	2.118666E-09	4.413888E-11	1.294436E-10
C5	3.339921E+02	1.521914E+01	3.170654E-01	6.642301E-01
C6	-9.421025E-01	8.492994E-01	1.769374E-02	3.899409E-03
C7	2.124886E-02	-2.680997E-03	-5.585411E-05	6.155782E-05
C8	4.199943E+02	3.378417E+01	7.038368E-01	2.468056E+00
C9	-3.322875E+00	-1.154636E-01	-2.405492E-03	-1.989500E-02
C10	8.034655E-03	-1.649524E-04	-3.436509E-06	5.097061E-05
C11	1.989645E-03	1.777625E-05	3.703386E-07	7.428959E-06
C12	4.320982E-08	5.751500E-09	1.198229E-10	2.190159E-10
C13	-2.644517E-07	2.033555E-06	4.236573E-08	1.350406E-08
C14	-1.022479E-05	-6.168624E-07	-1.285130E-08	-3.756148E-08
C15	-5.752029E-02	3.787064E-03	7.889716E-05	-1.418897E-04
C16	-1.355133E-02	-6.495919E-03	-1.353316E-04	-3.964275E-05
C17	-5.851299E+00	-5.850542E-01	-1.218863E-02	-1.493345E-02
C18	-5.428564E-06	-3.412412E-07	-7.109192E-09	-2.937029E-08
C19	4.121035E-04	-2.091030E-04	-4.356312E-06	6.809793E-07
C20	-1.330765E-06	1.564330E-07	3.259020E-09	-1.590765E-09
C21	7.970877E-05	3.001096E-05	6.252283E-07	2.186231E-07
C22	-4.637345E-03	-6.448038E-03	-1.343341E-04	-5.742627E-05
C23	2.559388E-02	4.250037E-03	8.854243E-05	7.324969E-05

Performance Equation

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

$x_1 = \text{RPM}$
 $x_2 = E_t \text{ (°F)}$
 $x_3 = C_t \text{ (°F)}$