

SIERRA04-0982H3 High-Efficiency R1234yf 72 VDC VARIABLE SPEED



Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

Compressor w/ Fittings Part Number	SIERRA00200	M24 Suction - M22 Discharge
Compressor Drawing	DCMX35-002	M5 Threaded Terminal Connections
Compressor w/ Fittings Part Number	SIERRA00232	M24 Suction - M22 Discharge
Compressor Drawing	DCMX35-002	#10-32 Threaded Terminal Connections
Compressor w/Fittings (Low Oil) Part Number	SIERRA00201	M24 Suction - M22 Discharge
Compressor Drawing	DCMX35-002	M5 Threaded Terminal Connections
Controller Options	025F0164, 025F0139	
Wiring Diagram Drawing	DEM0021	

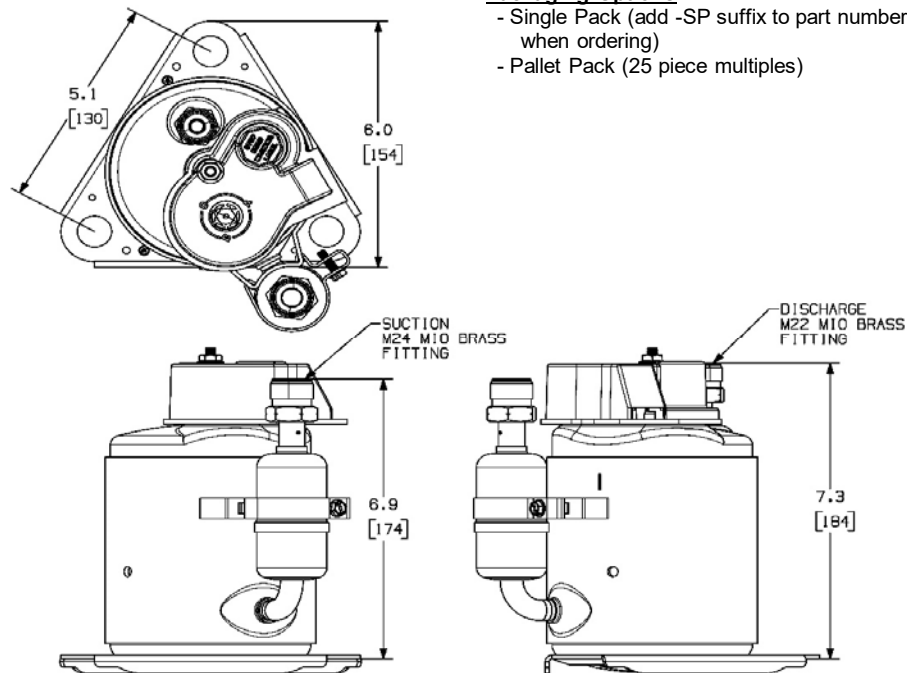
Application Information

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	16.1 cm ³ (0.982 in ³)
Oil Quantity	290 cc
Oil Quantity (Low Oil)	175 cc
Oil Type	PVE 68cSt
Compressor Weight with Fittings	6.6 kg / 14.5 lb
Compressor Weight w/Fittings (Low Oil)	6.5 kg / 14.3 lb

Compressor Dimensions



Packaging Options

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

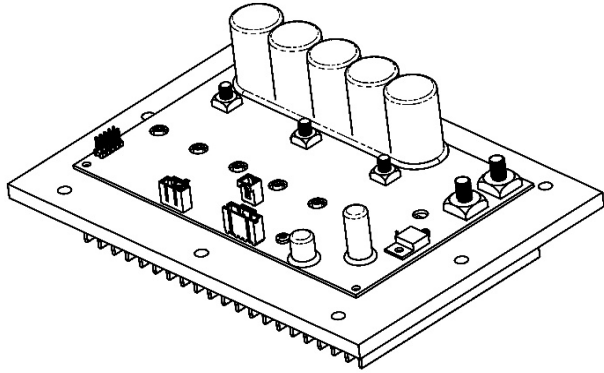
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SIERRA04-0982H3 High-Efficiency

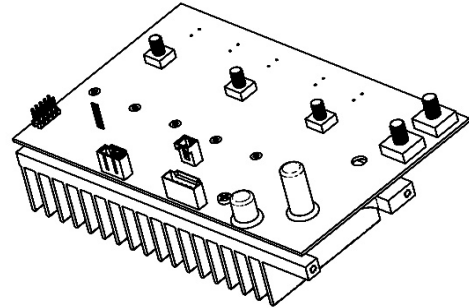


Controller Options:

Custom Controller options are also available



025F0164



025F0139

SIERRA04-0982H3 High-Efficiency



Cooling Capacity (72V) - 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)							
3200	1458	3288	4009	4803	5820	6459	8091							
4000	1840	4070	5028	6082	7384	8174	10127							
4800	2273	4903	6097	7412	8998	9940	12214							
5700	3145	6224	7684	9292	11198	12311	14946							

Power Consumption (72V) - ARI HBP Watt Current (72V) - 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
3200	450	588	673	694	737			6.26	7.56	8.17	8.76	9.34	9.64	10.24
4000	575	759	875	904	962			7.99	9.72	10.54	11.35	12.15	12.55	13.37
4800	701	940	1094	1133	1211			9.73	11.98	13.06	14.13	15.20	15.73	16.81
5700	894	1210	1415	1466	1570			12.42	15.37	16.81	18.23	19.65	20.37	21.81

Efficiency (72V) - 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)							
3200	3.24	6.04	6.82	7.62	8.65	9.31	10.98							
4000	3.20	5.81	6.62	7.44	8.44	9.05	10.52							
4800	3.25	5.68	6.48	7.29	8.22	8.78	10.09							
5700	3.52	5.62	6.35	7.08	7.91	8.40	9.52							

* 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	1.070664E+04	-2.108123E+03	-2.927949E+01	-1.875411E+01
C2	5.600311E+00	7.179658E-01	9.971748E-03	4.028343E-02
C3	-9.005305E-04	-1.369964E-04	-1.902727E-06	-6.174460E-06
C4	8.458107E-08	1.377041E-08	1.912558E-10	9.882694E-10
C5	-3.773762E+02	-1.402372E+01	-1.947739E-01	-1.171804E+01
C6	-9.743476E-01	-2.065626E-02	-2.868925E-04	5.245480E-03
C7	2.508279E-02	1.330498E-04	1.847914E-06	2.919498E-04
C8	-4.457008E+02	3.645531E+01	5.063237E-01	-2.079394E-01
C9	4.322019E+00	-3.067540E-01	-4.260472E-03	1.464347E-03
C10	-1.378720E-02	7.649559E-04	1.062439E-05	-1.941653E-05
C11	-1.152328E-03	-1.358193E-05	-1.886380E-07	-3.679174E-05
C12	1.271380E-07	8.031881E-09	1.115539E-10	3.922595E-09
C13	-4.233551E-06	2.106998E-07	2.926387E-09	-3.595447E-09
C14	3.598322E-07	-1.971391E-07	-2.738042E-09	2.146720E-08
C15	1.687126E-01	5.009996E-03	6.958327E-05	4.578790E-03
C16	-1.991350E-02	-1.785419E-03	-2.479748E-05	-3.488526E-05
C17	3.834660E+00	9.828440E-02	1.365061E-03	1.320745E-01
C18	-1.652807E-05	-7.679661E-07	-1.066620E-08	-4.709448E-07
C19	7.017934E-04	-2.677387E-05	-3.718593E-07	4.906564E-06
C20	-5.754133E-07	-1.959383E-07	-2.721365E-09	-4.485103E-08
C21	8.411397E-05	1.902781E-05	2.642752E-07	1.565560E-06
C22	-5.037998E-03	3.644365E-05	5.061619E-07	-1.602418E-04
C23	-6.634515E-03	2.006717E-04	2.787107E-06	-2.948871E-04

Performance Equation

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

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