



MASTERFLUX

SIERRA02-0434Y3

Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

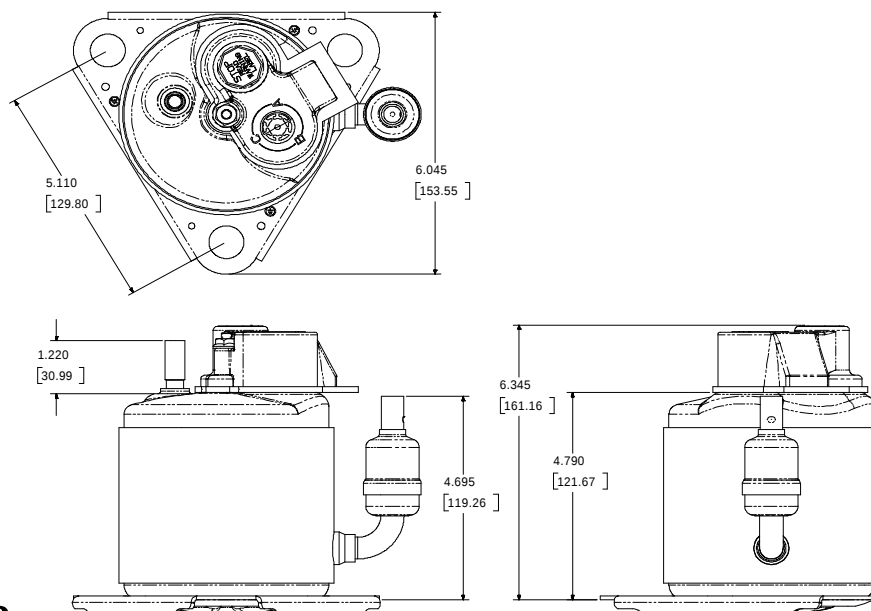
Compressor Part Number - Standard Accumulator (14.4 cc)
Compressor Part Number - Standard Accumulator (81.6 cc)
Sales Compressor Drawing - Standard Accumulator
Sales Compressor Drawing - Standard Accumulator
Sales Controller Drawing
Wiring Diagram

SIERRA00002
SIERRA00003
DCMX01-001
DCMX01-002
DGMX005
DEMX02

Application Information

Application	HBP, A/C
Refrigerant	R134a
Voltage Range	9-30V DC
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

Compressor Dimensions



the Sierra



MASTERFLUX

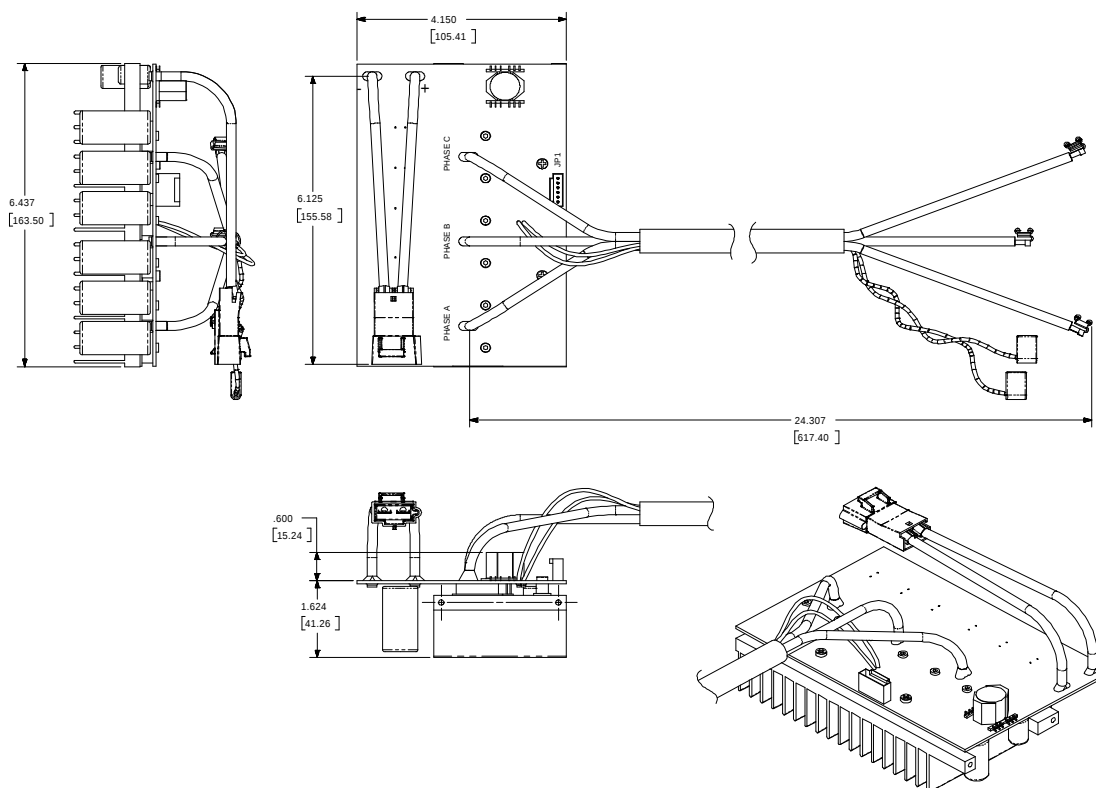
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Brushless DC Variable Speed Compressor Technical Data Sheet

Controller Features

- Over/under voltage protection
- Compressor thermal monitoring
- Controller thermal monitoring
- Locked rotor protection

Controller Dimensions



the Sierra

MASTERFLUX COMPRESSOR PERFORMANCE CHART (12V)
SIERRA02-0434Y3
Capacity (54.4° C Condenser) watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
1800	217	241	267	297	330	368	413	463	520	586
2300	277	310	346	387	432	484	543	609	683	767
2800	349	389	431	480	534	597	669	753	849	958
3200	386	432	483	541	607	681	767	864	974	1099

Power Consumption (54.4° C Condenser) watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
1800	191	196	200	203	207	211	215	221	229	238
2300	226	232	237	242	246	251	257	264	273	284
2800	262	269	274	278	283	288	295	303	313	327
3200	300	307	313	318	323	329	336	346	358	374

Current (54.4° C Condenser) amp

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
1800	15.92	16.33	16.67	16.92	17.25	17.58	17.92	18.42	19.08	19.83
2300	18.83	19.33	19.75	20.17	20.50	20.92	21.42	22.00	22.75	23.67
2800	21.83	22.42	22.83	23.17	23.58	24.00	24.58	25.25	26.08	27.25
3200	25.00	25.58	26.08	26.50	26.92	27.42	28.00	28.83	29.83	31.17

COP (54.4° C Condenser) watt/watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
1800	1.13	1.23	1.34	1.46	1.60	1.75	1.92	2.09	2.27	2.46
2300	1.22	1.34	1.46	1.60	1.76	1.93	2.11	2.31	2.50	2.70
2800	1.33	1.44	1.57	1.73	1.89	2.07	2.27	2.48	2.71	2.93
3200	1.29	1.41	1.54	1.70	1.88	2.07	2.28	2.50	2.72	2.94

Mass Flow (54.4° C Condenser) kg/hr

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
1800	5.62	6.21	6.85	7.57	8.35	9.21	10.21	11.29	12.56	14.02
2300	7.17	7.98	8.85	9.75	10.80	11.93	13.24	14.70	16.33	18.14
2800	9.03	9.98	10.98	12.07	13.29	14.74	16.33	18.19	20.32	22.72
3200	10.09	11.13	12.34	13.73	15.30	17.04	18.96	21.06	23.34	25.79

* all data points are with 11.1° C superheat and 8.3° C subcooling

MASTERFLUX COMPRESSOR PERFORMANCE CHART (24V)
SIERRA02-0434Y3
Capacity (54.4° C Condenser) watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
3700	381	455	535	622	715	814	920	1031	1149	1273
4500	536	610	694	789	896	1013	1141	1280	1430	1590
5300	685	779	882	997	1124	1264	1418	1586	1771	1971
6100	899	973	1064	1170	1293	1431	1585	1756	1942	2145

Power Consumption (54.4° C Condenser) watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
3700	523	548	571	592	609	624	635	642	645	643
4500	562	581	599	615	629	641	651	657	659	658
5300	673	690	707	723	738	752	764	773	780	783
6100	730	750	770	791	811	831	849	866	882	895

Current (54.4° C Condenser) amp

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
3700	21.79	22.83	23.79	24.67	25.38	26.00	26.46	26.75	26.88	26.79
4500	23.42	24.21	24.96	25.63	26.21	26.71	27.13	27.38	27.46	27.42
5300	28.04	28.75	29.46	30.13	30.75	31.33	31.83	32.21	32.50	32.63
6100	30.42	31.25	32.08	32.96	33.79	34.63	35.38	36.08	36.75	37.29

COP (54.4° C Condenser) watt/watt

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
3700	0.73	0.83	0.94	1.05	1.17	1.30	1.45	1.61	1.78	1.98
4500	0.95	1.05	1.16	1.28	1.42	1.58	1.75	1.95	2.17	2.42
5300	1.02	1.13	1.25	1.38	1.52	1.68	1.86	2.05	2.27	2.52
6100	1.23	1.30	1.38	1.48	1.59	1.72	1.87	2.03	2.20	2.40

Mass Flow (54.4° C Condenser) kg/hr

rpm	Evaporator Temperature (° C)									
	-12.0	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2	10.0	12.8
3700	10.84	12.38	13.97	15.74	17.64	19.73	22.00	24.49	27.17	30.12
4500	14.65	16.51	18.51	20.68	23.04	25.63	28.44	31.48	34.84	38.42
5300	18.19	20.41	22.86	25.54	28.44	31.57	34.97	38.69	42.73	47.04
6100	21.09	23.77	26.76	29.94	33.43	37.24	41.32	45.77	50.53	55.66

* all data points are with 11.1° C superheat and 8.3° C subcooling

MASTERFLUX COMPRESSOR PERFORMANCE CHART (12V)
SIERRA02-0434Y3

Capacity (130° F Condenser)										BTU/hr
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
1800	740	822	912	1013	1128	1258	1409	1580	1777	2001
2300	945	1058	1183	1321	1477	1654	1853	2079	2333	2620
2800	1193	1327	1473	1638	1825	2039	2286	2571	2898	3272
3200	1318	1476	1651	1848	2072	2327	2618	2950	3326	3753

Power Consumption (130° F Condenser)										watt
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
1800	191	196	200	203	207	211	215	221	229	238
2300	226	232	237	242	246	251	257	264	273	284
2800	262	269	274	278	283	288	295	303	313	327
3200	300	307	313	318	323	329	336	346	358	374

Current (130° F Condenser)										amp
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
1800	15.92	16.33	16.67	16.92	17.25	17.58	17.92	18.42	19.08	19.83
2300	18.83	19.33	19.75	20.17	20.50	20.92	21.42	22.00	22.75	23.67
2800	21.83	22.42	22.83	23.17	23.58	24.00	24.58	25.25	26.08	27.25
3200	25.00	25.58	26.08	26.50	26.92	27.42	28.00	28.83	29.83	31.17

EER (130° F Condenser)										BTU/h/watt
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
1800	3.87	4.19	4.56	4.99	5.45	5.96	6.55	7.15	7.76	8.41
2300	4.18	4.56	4.99	5.46	6.00	6.59	7.21	7.88	8.55	9.23
2800	4.55	4.93	5.38	5.89	6.45	7.08	7.75	8.49	9.26	10.01
3200	4.39	4.81	5.27	5.81	6.41	7.07	7.79	8.53	9.29	10.03

Mass Flow (130° F Condenser)										lb/hr
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
1800	12.40	13.70	15.10	16.70	18.40	20.30	22.50	24.90	27.70	30.90
2300	15.80	17.60	19.50	21.50	23.80	26.30	29.20	32.40	36.00	40.00
2800	19.90	22.00	24.20	26.60	29.30	32.50	36.00	40.10	44.80	50.10
3200	22.24	24.53	27.20	30.27	33.73	37.57	41.81	46.43	51.45	56.85

* all data points are with 20° F superheat and 15° F subcooling

MASTERFLUX COMPRESSOR PERFORMANCE CHART (24V)
SIERRA02-0434Y3

Capacity (130° F Condenser)										BTU/hr
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
3700	1301	1554	1829	2125	2442	2781	3141	3522	3925	4349
4500	1831	2082	2370	2695	3058	3458	3896	4370	4882	5432
5300	2338	2659	3013	3406	3839	4317	4842	5418	6047	6733
6100	3070	3324	3633	3997	4415	4887	5414	5996	6633	7324

Power Consumption (130° F Condenser)										watt
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
3700	523	548	571	592	609	624	635	642	645	643
4500	562	581	599	615	629	641	651	657	659	658
5300	673	690	707	723	738	752	764	773	780	783
6100	730	750	770	791	811	831	849	866	882	895

Current (130° F Condenser)										amp
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
3700	21.79	22.83	23.79	24.67	25.38	26.00	26.46	26.75	26.88	26.79
4500	23.42	24.21	24.96	25.63	26.21	26.71	27.13	27.38	27.46	27.42
5300	28.04	28.75	29.46	30.13	30.75	31.33	31.83	32.21	32.50	32.63
6100	30.42	31.25	32.08	32.96	33.79	34.63	35.38	36.08	36.75	37.29

EER (130° F Condenser)										BTU/h/watt
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
3700	2.49	2.84	3.20	3.59	4.01	4.46	4.95	5.49	6.08	6.76
4500	3.26	3.58	3.96	4.38	4.86	5.40	5.98	6.65	7.41	8.25
5300	3.47	3.85	4.26	4.71	5.20	5.74	6.34	7.01	7.75	8.60
6100	4.21	4.43	4.72	5.05	5.44	5.88	6.38	6.92	7.52	8.18

Mass Flow (130° F Condenser)										lb/hr
	Evaporator Temperature (° F)									
rpm	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
3700	23.90	27.30	30.80	34.70	38.90	43.50	48.50	54.00	59.90	66.40
4500	32.30	36.40	40.80	45.60	50.80	56.50	62.70	69.40	76.80	84.70
5300	40.10	45.00	50.40	56.30	62.70	69.60	77.10	85.30	94.20	103.70
6100	46.50	52.40	59.00	66.00	73.70	82.10	91.10	100.90	111.40	122.70

* all data points are with 20° F superheat and 15° F subcooling