

Datasheets

Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



General Characteristics

Model number (on compressor nameplate)		SM124A4ALB
Code number for Singlepack*		120H0185
Code number for Industrial pack**		120H0186
Drawing number		8560003d
Suction and discharge connections		Brazed
Suction connection		1-3/8" ODF
Discharge connection		7/8" ODF
Oil sight glass		Threaded
Oil equalisation connection		1-3/4" Rotolock
Oil drain connection		None
LP gauge port		Schrader
IPR valve		None
Swept volume		169,5 cm ³ /rev
Displacement @ Nominal speed		29.5 m ³ /h @ 2900 rpm - 35.6 m ³ /h @ 3500 rpm
Net weight		64,2 kg
Oil charge		3,3 litre, Mineral - 160P
Maximum system test pressure Low Side / High side		25 bar(g) / 32 bar(g)
Maximum differential test pressure		24 bar
Maximum number of starts per hour		12
Refrigerant charge limit		7,9 kg
Approved refrigerants		R22, R417A-160SZ

Electrical Characteristics

Nominal voltage	380-400V/3/50Hz - 460V/3/60Hz
Voltage range	340-440 V @ 50Hz - 414-506 V @ 60Hz
Winding resistance (between phases) +/- 7% at 25°C	1.05 Ω
Rated Load Amps (RLA)	17.9 A
Maximum Continuous Current (MCC)	25 A
Locked Rotor Amps (LRA)	142 A
Motor protection	Internal overload protector

Recommended Installation torques

Oil sight glass	50 Nm
Power connections / Earth connection	3 Nm / 2 Nm
Mounting bolts	15 Nm

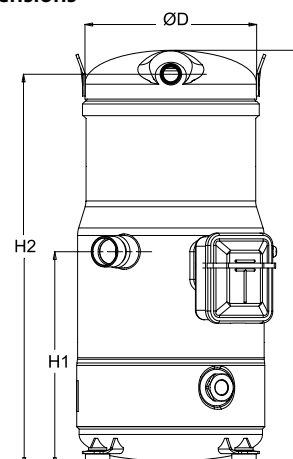
Parts shipped with compressor

Mounting kit with grommets, bolts, nuts, sleeves and washers
Initial oil charge
Installation instructions

Approvals : CE certified, UL certified (file SA6873), -

*Singlepack: Compressor in cardboard box

**Industrial pack: 8 Unboxed compressors on pallet (order per multiples of 8)

Dimensions


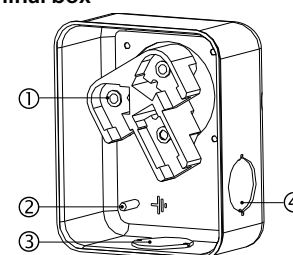
D=243 mm

H=540 mm

H1=278 mm

H2=509 mm

H3= mm

Terminal box


IP54 (with cable gland)

1: Power connection, 3 x 4.8 mm (3/16")

2: Earth M4-12

3: Knock-out Ø 29 mm (1.14")

4: Knock-out Ø 25.5 mm (1.00")

Rotolock accessories, suction side
Code no.

Solder sleeve, P10 (1-3/4" Rotolock, 1-3/8" ODF)	8153003
Rotolock valve, V10 (1-3/4" Rotolock, 1-3/8" ODF)	8168022
Gasket, 1-3/4"	8156132

Rotolock accessories, discharge side
Code no.

Rotolock valve, V05 (1-1/4" Rotolock, 7/8" ODF)	8168030
Gasket, 1-3/4"	8156132

Rotolock accessories, sets
Code no.

Solder sleeve adapter set (1-3/4" Rotolock, 1-3/8" ODF), (1-1/4" Rotolock, 7/8" ODF)	120Z0405
Valve set, V10 (1-3/4"~1-3/8"), V05 (1-1/4"~7/8")	7703392
Gasket set, 1-1/4", 1-3/4", 2-1/4", OSG gaskets black & white	8156013

Oil / lubricants
Code no.

Mineral oil, 160P, 2 litre can	7754001
Mineral oil, 160P, 5 litre can	7754002

Crankcase heaters
Code no.

Surface sump heater, 80 W, 24 V, CE mark, UL	120Z0388
Surface sump heater, 80 W, 230 V, CE mark, UL	120Z0389
Surface sump heater, 80 W, 400 V, CE mark, UL	120Z0390
Surface sump heater, 80 W, 460 V, CE mark, UL	120Z0391

Miscellaneous accessories
Code no.

Acoustic hood for scroll compressor SH105-161 & SM124, SM147	120Z0035
Gasket, 1-3/4"	8156132
Discharge thermostat kit	7750009

Spare parts
Code no.

Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	120Z0066
Oil sight glass with gaskets (black & white)	8156019
Gasket for oil sight glass (white teflon)	8156129
Service kit for terminal box 96 x 115 mm, including 1 cover, 1 clamp	8156135
T block connector 52 x 57 mm	8173230

Performance data at 50 Hz, EN 12900 rating conditions
R22

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	12 915	15 896	19 365	23 379	27 994	33 269	39 259	46 022	-
35	12 338	15 251	18 633	22 541	27 031	32 162	37 989	44 570	-
40	11 715	14 545	17 824	21 610	25 959	30 930	36 578	42 962	-
45	-	13 784	16 945	20 594	24 787	29 582	35 036	41 206	-
50	-	-	16 007	19 502	23 523	28 127	33 371	39 311	-
55	-	-	-	18 343	22 176	26 573	31 591	37 286	-
60	-	-	-	-	20 755	24 929	29 705	35 139	-
65	-	-	-	-	19 268	23 204	27 722	32 880	-

Power input in W

30	4 917	5 023	5 146	5 278	5 411	5 534	5 639	5 716	-
35	5 450	5 546	5 670	5 811	5 960	6 110	6 249	6 370	-
40	6 039	6 120	6 235	6 377	6 536	6 704	6 870	7 026	-
45	-	6 759	6 859	6 994	7 155	7 333	7 518	7 701	-
50	-	-	7 558	7 678	7 833	8 013	8 209	8 412	-
55	-	-	-	8 446	8 586	8 761	8 960	9 175	-
60	-	-	-	-	9 432	9 593	9 788	10 007	-
65	-	-	-	-	10 386	10 526	10 708	10 923	-

Current consumption in A

30	12.30	12.43	12.57	12.72	12.90	13.11	13.36	13.65	-
35	12.77	12.89	13.03	13.17	13.34	13.54	13.77	14.04	-
40	13.32	13.44	13.57	13.71	13.87	14.06	14.27	14.53	-
45	-	14.09	14.22	14.35	14.51	14.68	14.88	15.12	-
50	-	-	14.98	15.11	15.26	15.43	15.62	15.84	-
55	-	-	-	16.01	16.16	16.32	16.50	16.71	-
60	-	-	-	-	17.21	17.36	17.54	17.74	-
65	-	-	-	-	18.43	18.58	18.75	18.94	-

Mass flow in kg/h

30	277	337	405	483	572	672	784	911	-
35	275	336	405	484	573	674	787	914	-
40	273	334	403	482	572	674	788	915	-
45	-	330	400	480	570	671	786	914	-
50	-	-	396	475	565	667	782	910	-
55	-	-	-	469	559	661	776	904	-
60	-	-	-	-	552	653	767	895	-
65	-	-	-	-	542	643	757	884	-

Coefficient of performance (C.O.P.)

30	2.63	3.16	3.76	4.43	5.17	6.01	6.96	8.05	-
35	2.26	2.75	3.29	3.88	4.54	5.26	6.08	7.00	-
40	1.94	2.38	2.86	3.39	3.97	4.61	5.32	6.11	-
45	-	2.04	2.47	2.94	3.46	4.03	4.66	5.35	-
50	-	-	2.12	2.54	3.00	3.51	4.07	4.67	-
55	-	-	-	2.17	2.58	3.03	3.53	4.06	-
60	-	-	-	-	2.20	2.60	3.03	3.51	-
65	-	-	-	-	1.86	2.20	2.59	3.01	-

Nominal performance at to = 5 °C, tc = 50 °C

Cooling capacity	28 127	W
Power input	8 013	W
Current consumption	15.43	A
Mass flow	667	kg/h
C.O.P.	3.51	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	73	dB(A)
With acoustic hood	67	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 10 K , Subcooling = 0 K

All performance data +/- 5%

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 50 Hz, ARI rating conditions
R22

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	13 706	16 856	20 519	24 753	29 619	35 176	41 482	48 598	-
35	13 139	16 228	19 809	23 945	28 693	34 113	40 266	47 209	-
40	12 525	15 535	19 021	23 041	27 655	32 924	38 906	45 662	-
45	-	14 788	18 161	22 050	26 515	31 617	37 414	43 967	-
50	-	-	17 240	20 982	25 283	30 201	35 798	42 133	-
55	-	-	-	19 847	23 967	28 688	34 069	40 172	-
60	-	-	-	-	22 578	27 086	32 238	38 093	-
65	-	-	-	-	21 129	25 409	30 317	35 912	-

Power input in W

30	4 917	5 023	5 146	5 278	5 411	5 534	5 639	5 716	-
35	5 450	5 546	5 670	5 811	5 960	6 110	6 249	6 370	-
40	6 039	6 120	6 235	6 377	6 536	6 704	6 870	7 026	-
45	-	6 759	6 859	6 994	7 155	7 333	7 518	7 701	-
50	-	-	7 558	7 678	7 833	8 013	8 209	8 412	-
55	-	-	-	8 446	8 586	8 761	8 960	9 175	-
60	-	-	-	-	9 432	9 593	9 788	10 007	-
65	-	-	-	-	10 386	10 526	10 708	10 923	-

Current consumption in A

30	12.30	12.43	12.57	12.72	12.90	13.11	13.36	13.65	-
35	12.77	12.89	13.03	13.17	13.34	13.54	13.77	14.04	-
40	13.32	13.44	13.57	13.71	13.87	14.06	14.27	14.53	-
45	-	14.09	14.22	14.35	14.51	14.68	14.88	15.12	-
50	-	-	14.98	15.11	15.26	15.43	15.62	15.84	-
55	-	-	-	16.01	16.16	16.32	16.50	16.71	-
60	-	-	-	-	17.21	17.36	17.54	17.74	-
65	-	-	-	-	18.43	18.58	18.75	18.94	-

Mass flow in kg/h

30	276	335	403	481	569	668	780	905	-
35	274	334	403	481	570	670	783	909	-
40	271	332	401	480	569	670	783	910	-
45	-	329	398	477	567	668	781	909	-
50	-	-	394	473	562	664	777	905	-
55	-	-	-	467	556	658	771	899	-
60	-	-	-	-	549	649	763	890	-
65	-	-	-	-	539	639	752	879	-

Coefficient of performance (C.O.P.)

30	2.79	3.36	3.99	4.69	5.47	6.36	7.36	8.50	-
35	2.41	2.93	3.49	4.12	4.81	5.58	6.44	7.41	-
40	2.07	2.54	3.05	3.61	4.23	4.91	5.66	6.50	-
45	-	2.19	2.65	3.15	3.71	4.31	4.98	5.71	-
50	-	-	2.28	2.73	3.23	3.77	4.36	5.01	-
55	-	-	-	2.35	2.79	3.27	3.80	4.38	-
60	-	-	-	-	2.39	2.82	3.29	3.81	-
65	-	-	-	-	2.03	2.41	2.83	3.29	-

Nominal performance at to = 7.2 °C, tc = 54.4 °C

Cooling capacity	31 168	W
Power input	8 752	W
Current consumption	16.28	A
Mass flow	707	kg/h
C.O.P.	3.56	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	73	dB(A)
With acoustic hood	67	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

All performance data +/- 5%

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 60 Hz, EN 12900 rating conditions
R22

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	15 838	19 602	23 992	29 080	34 939	41 641	49 260	57 867	-
35	15 020	18 641	22 855	27 735	33 354	39 783	47 096	55 364	-
40	14 202	17 676	21 712	26 381	31 755	37 908	44 910	52 835	-
45	-	16 710	20 563	25 017	30 144	36 015	42 704	50 282	-
50	-	-	19 411	23 646	28 521	34 107	40 478	47 704	-
55	-	-	-	22 267	26 886	32 184	38 232	45 101	-
60	-	-	-	-	25 240	30 244	35 963	42 471	-
65	-	-	-	-	23 580	28 284	33 670	39 809	-

Power input in W

30	5 880	6 035	6 235	6 477	6 760	7 082	7 438	7 828	-
35	6 502	6 637	6 819	7 046	7 315	7 626	7 974	8 357	-
40	7 210	7 320	7 479	7 686	7 939	8 233	8 568	8 941	-
45	-	8 100	8 233	8 415	8 645	8 921	9 238	9 596	-
50	-	-	9 095	9 248	9 452	9 703	9 999	10 337	-
55	-	-	-	10 201	10 374	10 596	10 866	11 181	-
60	-	-	-	-	11 426	11 616	11 855	12 142	-
65	-	-	-	-	12 626	12 778	12 983	13 237	-

Current consumption in A

30	10.93	11.07	11.24	11.45	11.70	12.00	12.35	12.76	-
35	11.54	11.69	11.86	12.08	12.33	12.64	12.99	13.40	-
40	12.23	12.38	12.56	12.78	13.03	13.33	13.68	14.09	-
45	-	13.17	13.36	13.57	13.82	14.12	14.46	14.85	-
50	-	-	14.28	14.48	14.73	15.02	15.35	15.73	-
55	-	-	-	15.55	15.78	16.05	16.37	16.73	-
60	-	-	-	-	17.00	17.25	17.55	17.89	-
65	-	-	-	-	18.42	18.65	18.92	19.24	-

Mass flow in kg/h

30	340	416	502	601	714	841	984	1 145	-
35	335	411	497	595	707	834	976	1 136	-
40	331	406	491	589	700	826	967	1 126	-
45	-	401	486	583	693	818	958	1 115	-
50	-	-	480	576	686	809	948	1 104	-
55	-	-	-	570	678	801	939	1 093	-
60	-	-	-	-	671	792	929	1 082	-
65	-	-	-	-	663	784	919	1 071	-

Coefficient of performance (C.O.P.)

30	2.69	3.25	3.85	4.49	5.17	5.88	6.62	7.39	-
35	2.31	2.81	3.35	3.94	4.56	5.22	5.91	6.62	-
40	1.97	2.41	2.90	3.43	4.00	4.60	5.24	5.91	-
45	-	2.06	2.50	2.97	3.49	4.04	4.62	5.24	-
50	-	-	2.13	2.56	3.02	3.52	4.05	4.61	-
55	-	-	-	2.18	2.59	3.04	3.52	4.03	-
60	-	-	-	-	2.21	2.60	3.03	3.50	-
65	-	-	-	-	1.87	2.21	2.59	3.01	-

Nominal performance at to = 5 °C, tc = 50 °C

Cooling capacity	34 107	W
Power input	9 703	W
Current consumption	15.02	A
Mass flow	809	kg/h
C.O.P.	3.52	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	77	dB(A)
With acoustic hood	71	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 10 K , Subcooling = 0 K

All performance data +/- 5%

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 60 Hz, ARI rating conditions
R22

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	16 808	20 786	25 421	30 790	36 967	44 028	52 049	61 105	-
35	15 995	19 834	24 298	29 463	35 404	42 197	49 918	58 642	-
40	15 184	18 880	23 169	28 127	33 829	40 351	47 768	56 156	-
45	-	17 927	22 038	26 786	32 245	38 492	45 603	53 651	-
50	-	-	20 906	25 440	30 654	36 623	43 423	51 129	-
55	-	-	-	24 093	29 057	34 745	41 231	48 591	-
60	-	-	-	-	27 458	32 860	39 030	46 041	-
65	-	-	-	-	25 858	30 972	36 821	43 480	-

Power input in W

30	5 880	6 035	6 235	6 477	6 760	7 082	7 438	7 828	-
35	6 502	6 637	6 819	7 046	7 315	7 626	7 974	8 357	-
40	7 210	7 320	7 479	7 686	7 939	8 233	8 568	8 941	-
45	-	8 100	8 233	8 415	8 645	8 921	9 238	9 596	-
50	-	-	9 095	9 248	9 452	9 703	9 999	10 337	-
55	-	-	-	10 201	10 374	10 596	10 866	11 181	-
60	-	-	-	-	11 426	11 616	11 855	12 142	-
65	-	-	-	-	12 626	12 778	12 983	13 237	-

Current consumption in A

30	10.93	11.07	11.24	11.45	11.70	12.00	12.35	12.76	-
35	11.54	11.69	11.86	12.08	12.33	12.64	12.99	13.40	-
40	12.23	12.38	12.56	12.78	13.03	13.33	13.68	14.09	-
45	-	13.17	13.36	13.57	13.82	14.12	14.46	14.85	-
50	-	-	14.28	14.48	14.73	15.02	15.35	15.73	-
55	-	-	-	15.55	15.78	16.05	16.37	16.73	-
60	-	-	-	-	17.00	17.25	17.55	17.89	-
65	-	-	-	-	18.42	18.65	18.92	19.24	-

Mass flow in kg/h

30	338	413	500	598	710	836	979	1 138	-
35	334	409	494	592	703	829	971	1 129	-
40	329	404	489	586	696	821	962	1 119	-
45	-	399	483	580	689	813	953	1 109	-
50	-	-	478	573	682	805	943	1 098	-
55	-	-	-	567	675	796	934	1 087	-
60	-	-	-	-	667	788	924	1 076	-
65	-	-	-	-	660	779	914	1 065	-

Coefficient of performance (C.O.P.)

30	2.86	3.44	4.08	4.75	5.47	6.22	7.00	7.81	-
35	2.46	2.99	3.56	4.18	4.84	5.53	6.26	7.02	-
40	2.11	2.58	3.10	3.66	4.26	4.90	5.57	6.28	-
45	-	2.21	2.68	3.18	3.73	4.32	4.94	5.59	-
50	-	-	2.30	2.75	3.24	3.77	4.34	4.95	-
55	-	-	-	2.36	2.80	3.28	3.79	4.35	-
60	-	-	-	-	2.40	2.83	3.29	3.79	-
65	-	-	-	-	2.05	2.42	2.84	3.28	-

Nominal performance at to = 7.2 °C, tc = 54.4 °C

Cooling capacity	37 738	W
Power input	10 597	W
Current consumption	16.05	A
Mass flow	856	kg/h
C.O.P.	3.56	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	77	dB(A)
With acoustic hood	71	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

All performance data +/- 5%

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

