

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

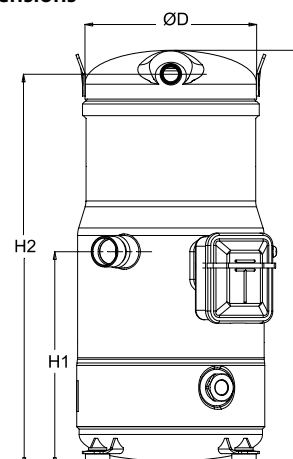
Parts shipped with compressor

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


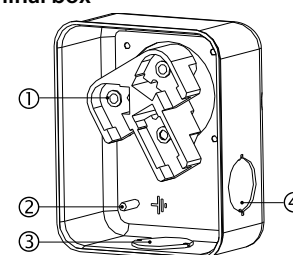
D=243 mm

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%

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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%

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