

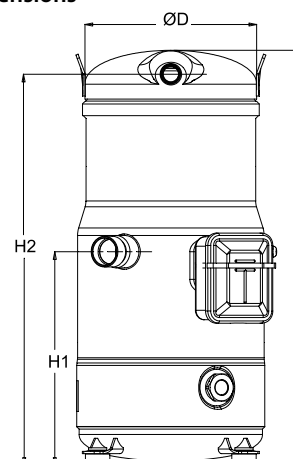
Datasheets

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



General Characteristics

Model number (on compressor nameplate)		SM112A4ALB
Code number for Singlepack*		120H0611
Code number for Industrial pack**		120H0612
Drawing number		8560038a
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		151,5 cm ³ /rev
Displacement @ Nominal speed		26.4 m ³ /h @ 2900 rpm - 31.8 m ³ /h @ 3500 rpm
Net weight		64 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

Dimensions


D=243 mm

H=535 mm

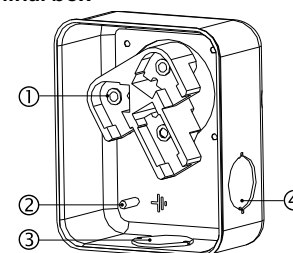
H1=278 mm

H2=504 mm

H3= mm

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

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")

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)

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	11 130	13 856	17 037	20 724	24 970	29 825	35 342	41 573	-
35	10 622	13 275	16 361	19 931	24 037	28 731	34 065	40 090	-
40	10 085	12 653	15 632	19 074	23 029	27 550	32 688	38 496	-
45	-	11 998	14 858	18 159	21 952	26 288	31 220	36 799	-
50	-	-	14 046	17 194	20 813	24 953	29 667	35 006	-
55	-	-	-	16 187	19 620	23 552	28 036	33 122	-
60	-	-	-	-	18 379	22 091	26 334	31 157	-
65	-	-	-	-	17 097	20 579	24 568	29 116	-

Power input in W

30	4 544	4 600	4 683	4 786	4 899	5 015	5 125	5 220	-
35	5 055	5 099	5 175	5 274	5 389	5 509	5 628	5 737	-
40	5 615	5 644	5 708	5 801	5 912	6 035	6 159	6 277	-
45	-	6 252	6 301	6 383	6 487	6 607	6 733	6 857	-
50	-	-	6 970	7 036	7 131	7 244	7 367	7 493	-
55	-	-	-	7 778	7 858	7 961	8 079	8 202	-
60	-	-	-	-	8 687	8 776	8 884	9 002	-
65	-	-	-	-	9 635	9 706	9 799	9 908	-

Current consumption in A

30	11.74	11.80	11.88	11.97	12.08	12.21	12.37	12.56	-
35	12.17	12.24	12.32	12.41	12.51	12.64	12.79	12.98	-
40	12.69	12.76	12.84	12.93	13.03	13.15	13.30	13.47	-
45	-	13.38	13.46	13.55	13.65	13.77	13.90	14.07	-
50	-	-	14.20	14.28	14.38	14.49	14.62	14.77	-
55	-	-	-	15.14	15.23	15.33	15.45	15.60	-
60	-	-	-	-	16.23	16.32	16.43	16.56	-
65	-	-	-	-	17.38	17.46	17.56	17.67	-

Mass flow in kg/h

30	239	294	357	428	510	602	706	822	-
35	237	292	356	428	510	602	706	822	-
40	235	290	354	426	508	600	704	820	-
45	-	288	351	423	505	597	700	816	-
50	-	-	347	419	500	592	695	810	-
55	-	-	-	414	495	586	688	803	-
60	-	-	-	-	488	579	680	794	-
65	-	-	-	-	481	570	671	783	-

Coefficient of performance (C.O.P.)

30	2.45	3.01	3.64	4.33	5.10	5.95	6.90	7.96	-
35	2.10	2.60	3.16	3.78	4.46	5.21	6.05	6.99	-
40	1.80	2.24	2.74	3.29	3.90	4.57	5.31	6.13	-
45	-	1.92	2.36	2.85	3.38	3.98	4.64	5.37	-
50	-	-	2.02	2.44	2.92	3.44	4.03	4.67	-
55	-	-	-	2.08	2.50	2.96	3.47	4.04	-
60	-	-	-	-	2.12	2.52	2.96	3.46	-
65	-	-	-	-	1.77	2.12	2.51	2.94	-

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

Cooling capacity	24 953	W
Power input	7 244	W
Current consumption	14.49	A
Mass flow	592	kg/h
C.O.P.	3.44	

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	75	dB(A)
With acoustic hood	69	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	11 811	14 693	18 052	21 943	26 419	31 535	37 344	43 899	-
35	11 311	14 125	17 394	21 172	25 515	30 475	36 106	42 463	-
40	10 782	13 515	16 682	20 337	24 533	29 326	34 769	40 916	-
45	-	12 871	15 924	19 443	23 482	28 096	33 339	39 265	-
50	-	-	15 128	18 499	22 370	26 793	31 825	37 519	-
55	-	-	-	17 514	21 204	25 426	30 235	35 686	-
60	-	-	-	-	19 993	24 003	28 579	33 776	-
65	-	-	-	-	18 749	22 535	26 867	31 801	-

Power input in W

30	4 544	4 600	4 683	4 786	4 899	5 015	5 125	5 220	-
35	5 055	5 099	5 175	5 274	5 389	5 509	5 628	5 737	-
40	5 615	5 644	5 708	5 801	5 912	6 035	6 159	6 277	-
45	-	6 252	6 301	6 383	6 487	6 607	6 733	6 857	-
50	-	-	6 970	7 036	7 131	7 244	7 367	7 493	-
55	-	-	-	7 778	7 858	7 961	8 079	8 202	-
60	-	-	-	-	8 687	8 776	8 884	9 002	-
65	-	-	-	-	9 635	9 706	9 799	9 908	-

Current consumption in A

30	11.74	11.80	11.88	11.97	12.08	12.21	12.37	12.56	-
35	12.17	12.24	12.32	12.41	12.51	12.64	12.79	12.98	-
40	12.69	12.76	12.84	12.93	13.03	13.15	13.30	13.47	-
45	-	13.38	13.46	13.55	13.65	13.77	13.90	14.07	-
50	-	-	14.20	14.28	14.38	14.49	14.62	14.77	-
55	-	-	-	15.14	15.23	15.33	15.45	15.60	-
60	-	-	-	-	16.23	16.32	16.43	16.56	-
65	-	-	-	-	17.38	17.46	17.56	17.67	-

Mass flow in kg/h

30	238	292	355	426	507	599	702	818	-
35	236	291	354	425	507	599	702	818	-
40	234	289	352	424	505	597	700	815	-
45	-	286	349	421	502	593	696	811	-
50	-	-	346	417	498	589	691	806	-
55	-	-	-	412	492	583	684	798	-
60	-	-	-	-	486	575	676	789	-
65	-	-	-	-	478	567	667	779	-

Coefficient of performance (C.O.P.)

30	2.60	3.19	3.85	4.59	5.39	6.29	7.29	8.41	-
35	2.24	2.77	3.36	4.01	4.74	5.53	6.42	7.40	-
40	1.92	2.39	2.92	3.51	4.15	4.86	5.65	6.52	-
45	-	2.06	2.53	3.05	3.62	4.25	4.95	5.73	-
50	-	-	2.17	2.63	3.14	3.70	4.32	5.01	-
55	-	-	-	2.25	2.70	3.19	3.74	4.35	-
60	-	-	-	-	2.30	2.73	3.22	3.75	-
65	-	-	-	-	1.95	2.32	2.74	3.21	-

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

Cooling capacity	27 645	W
Power input	7 921	W
Current consumption	15.28	A
Mass flow	627	kg/h
C.O.P.	3.49	

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	75	dB(A)
With acoustic hood	69	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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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	13 884	17 237	21 145	25 672	30 882	36 840	43 610	51 257	-
35	13 247	16 498	20 275	24 642	29 664	35 404	41 928	49 298	-
40	12 585	15 724	19 361	23 559	28 383	33 896	40 163	47 248	-
45	-	14 920	18 408	22 428	27 045	32 322	38 323	45 112	-
50	-	-	17 422	21 255	25 655	30 685	36 411	42 894	-
55	-	-	-	20 043	24 217	28 992	34 431	40 599	-
60	-	-	-	-	22 736	27 245	32 388	38 229	-
65	-	-	-	-	21 214	25 446	30 282	35 785	-

Power input in W

30	5 507	5 637	5 780	5 935	6 102	6 281	6 473	6 679	-
35	6 068	6 190	6 327	6 478	6 644	6 825	7 022	7 234	-
40	6 705	6 814	6 940	7 084	7 244	7 423	7 619	7 833	-
45	-	7 521	7 633	7 763	7 914	8 085	8 277	8 489	-
50	-	-	8 416	8 530	8 666	8 825	9 008	9 213	-
55	-	-	-	9 395	9 512	9 655	9 823	10 018	-
60	-	-	-	-	10 465	10 587	10 737	10 915	-
65	-	-	-	-	11 536	11 633	11 760	11 918	-

Current consumption in A

30	10.71	10.84	10.96	11.09	11.25	11.45	11.71	12.05	-
35	11.21	11.35	11.48	11.61	11.76	11.95	12.19	12.51	-
40	11.79	11.95	12.09	12.22	12.37	12.54	12.77	13.06	-
45	-	12.65	12.80	12.93	13.08	13.24	13.45	13.72	-
50	-	-	13.61	13.76	13.90	14.06	14.25	14.50	-
55	-	-	-	14.70	14.84	15.00	15.18	15.41	-
60	-	-	-	-	15.92	16.07	16.24	16.46	-
65	-	-	-	-	17.13	17.28	17.45	17.65	-

Mass flow in kg/h

30	298	365	443	531	631	744	872	1 014	-
35	296	363	441	529	629	742	869	1 011	-
40	293	361	438	526	626	738	865	1 007	-
45	-	358	435	522	622	734	860	1 001	-
50	-	-	431	518	617	728	853	993	-
55	-	-	-	513	611	721	845	984	-
60	-	-	-	-	604	714	837	974	-
65	-	-	-	-	597	705	827	963	-

Coefficient of performance (C.O.P.)

30	2.52	3.06	3.66	4.33	5.06	5.87	6.74	7.67	-
35	2.18	2.67	3.20	3.80	4.46	5.19	5.97	6.81	-
40	1.88	2.31	2.79	3.33	3.92	4.57	5.27	6.03	-
45	-	1.98	2.41	2.89	3.42	4.00	4.63	5.31	-
50	-	-	2.07	2.49	2.96	3.48	4.04	4.66	-
55	-	-	-	2.13	2.55	3.00	3.50	4.05	-
60	-	-	-	-	2.17	2.57	3.02	3.50	-
65	-	-	-	-	1.84	2.19	2.57	3.00	-

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

Cooling capacity	30 685	W
Power input	8 825	W
Current consumption	14.06	A
Mass flow	728	kg/h
C.O.P.	3.48	

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	78	dB(A)
With acoustic hood	72	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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Datasheet, performance data

Danfoss scroll compressor. SM112-4

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	14 734	18 278	22 404	27 181	32 674	38 952	46 080	54 126	-
35	14 108	17 554	21 555	26 177	31 487	37 553	44 440	52 217	-
40	13 455	16 795	20 661	25 119	30 237	36 082	42 720	50 218	-
45	-	16 007	19 728	24 014	28 930	34 545	40 924	48 135	-
50	-	-	18 764	22 868	27 573	32 948	39 059	45 974	-
55	-	-	-	21 686	26 172	31 299	37 133	43 741	-
60	-	-	-	-	24 733	29 602	35 149	41 443	-
65	-	-	-	-	23 262	27 864	33 116	39 085	-

Power input in W

30	5 507	5 637	5 780	5 935	6 102	6 281	6 473	6 679	-
35	6 068	6 190	6 327	6 478	6 644	6 825	7 022	7 234	-
40	6 705	6 814	6 940	7 084	7 244	7 423	7 619	7 833	-
45	-	7 521	7 633	7 763	7 914	8 085	8 277	8 489	-
50	-	-	8 416	8 530	8 666	8 825	9 008	9 213	-
55	-	-	-	9 395	9 512	9 655	9 823	10 018	-
60	-	-	-	-	10 465	10 587	10 737	10 915	-
65	-	-	-	-	11 536	11 633	11 760	11 918	-

Current consumption in A

30	10.71	10.84	10.96	11.09	11.25	11.45	11.71	12.05	-
35	11.21	11.35	11.48	11.61	11.76	11.95	12.19	12.51	-
40	11.79	11.95	12.09	12.22	12.37	12.54	12.77	13.06	-
45	-	12.65	12.80	12.93	13.08	13.24	13.45	13.72	-
50	-	-	13.61	13.76	13.90	14.06	14.25	14.50	-
55	-	-	-	14.70	14.84	15.00	15.18	15.41	-
60	-	-	-	-	15.92	16.07	16.24	16.46	-
65	-	-	-	-	17.13	17.28	17.45	17.65	-

Mass flow in kg/h

30	297	364	440	528	628	740	867	1 008	-
35	294	362	438	526	626	738	864	1 005	-
40	292	359	436	523	622	734	860	1 001	-
45	-	356	433	520	618	730	855	995	-
50	-	-	429	515	613	724	848	987	-
55	-	-	-	510	608	717	841	979	-
60	-	-	-	-	601	710	832	969	-
65	-	-	-	-	593	701	822	957	-

Coefficient of performance (C.O.P.)

30	2.68	3.24	3.88	4.58	5.36	6.20	7.12	8.10	-
35	2.32	2.84	3.41	4.04	4.74	5.50	6.33	7.22	-
40	2.01	2.46	2.98	3.55	4.17	4.86	5.61	6.41	-
45	-	2.13	2.58	3.09	3.66	4.27	4.94	5.67	-
50	-	-	2.23	2.68	3.18	3.73	4.34	4.99	-
55	-	-	-	2.31	2.75	3.24	3.78	4.37	-
60	-	-	-	-	2.36	2.80	3.27	3.80	-
65	-	-	-	-	2.02	2.40	2.82	3.28	-

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

Cooling capacity	33 989	W
Power input	9 622	W
Current consumption	14.96	A
Mass flow	771	kg/h
C.O.P.	3.53	

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	78	dB(A)
With acoustic hood	72	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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page drawings