

Datasheets

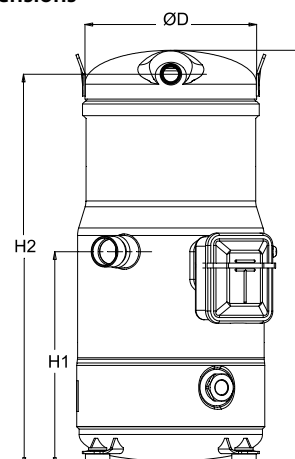
Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



General Characteristics

Model number (on compressor nameplate)		SH105A4ALC
Code number for Singlepack*		120H0211
Code number for Industrial pack**		120H0212
Drawing number		8560003h
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		103.5 cm ³ /rev
Displacement @ Nominal speed		18.0 m ³ /h @ 2900 rpm - 21.7 m ³ /h @ 3500 rpm
Net weight		64.2 kg
Oil charge		3.3 litre, POE - 160SZ
Maximum system test pressure Low Side / High side		33.3 bar(g) / 48.7 bar(g)
Maximum differential test pressure		37 bar
Maximum number of starts per hour		12
Refrigerant charge limit		7.9 kg
Approved refrigerants		R410A

Dimensions

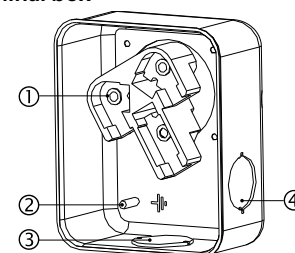


D=243 mm
H=540 mm
H1=278 mm
H2=509 mm
H3=- mm

Electrical Characteristics

Nominal voltage	380-400V/3/50Hz - 460V/3/60Hz
Voltage range	342-440 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.
POE lubricant, 160SZ, 1 litre can	7754023
POE lubricant, 160SZ, 2.5 litre can	120Z0571

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
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
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	8 503	10 804	13 562	16 834	20 679	25 155	30 323	36 239	42 962
35	8 074	10 319	12 973	16 095	19 744	23 979	28 857	34 438	40 779
40	-	9 791	12 333	15 296	18 740	22 722	27 302	32 537	38 487
45	-	-	11 620	14 414	17 642	21 363	25 634	30 515	36 064
50	-	-	10 810	13 426	16 429	19 879	23 832	28 349	33 487
55	-	-	-	12 309	15 078	18 247	21 873	26 016	30 733
60	-	-	-	-	13 567	16 445	19 734	23 493	27 781
65	-	-	-	-	-	-	17 393	20 759	24 607

Power input in W

30	4 872	4 925	4 987	5 057	5 136	5 223	5 319	5 424	5 538
35	5 380	5 431	5 494	5 568	5 652	5 748	5 854	5 971	6 100
40	-	6 001	6 058	6 129	6 212	6 309	6 418	6 542	6 678
45	-	-	6 703	6 763	6 839	6 930	7 037	7 159	7 297
50	-	-	7 453	7 496	7 557	7 637	7 733	7 848	7 981
55	-	-	-	8 351	8 391	8 451	8 532	8 632	8 753
60	-	-	-	-	9 364	9 398	9 456	9 535	9 637
65	-	-	-	-	-	-	10 529	10 581	10 658

Current consumption in A

30	11.69	11.84	11.95	12.03	12.09	12.16	12.23	12.34	12.49
35	12.22	12.37	12.48	12.57	12.64	12.71	12.81	12.93	13.10
40	-	12.97	13.08	13.16	13.23	13.31	13.41	13.55	13.73
45	-	-	13.77	13.84	13.92	14.00	14.10	14.23	14.42
50	-	-	14.59	14.66	14.72	14.80	14.89	15.03	15.22
55	-	-	-	15.65	15.70	15.76	15.84	15.97	16.16
60	-	-	-	-	16.88	16.92	16.99	17.11	17.28
65	-	-	-	-	-	-	18.37	18.47	18.62

Mass flow in kg/h

30	176	222	276	338	410	493	589	698	821
35	177	224	277	340	411	494	588	695	817
40	-	224	278	340	412	493	586	692	811
45	-	-	278	340	411	491	583	687	804
50	-	-	277	339	409	488	579	681	796
55	-	-	-	336	405	484	573	673	786
60	-	-	-	-	400	478	565	664	774
65	-	-	-	-	-	-	556	652	761

Coefficient of performance (C.O.P.)

30	1.75	2.19	2.72	3.33	4.03	4.82	5.70	6.68	7.76
35	1.50	1.90	2.36	2.89	3.49	4.17	4.93	5.77	6.69
40	-	1.63	2.04	2.50	3.02	3.60	4.25	4.97	5.76
45	-	-	1.73	2.13	2.58	3.08	3.64	4.26	4.94
50	-	-	1.45	1.79	2.17	2.60	3.08	3.61	4.20
55	-	-	-	1.47	1.80	2.16	2.56	3.01	3.51
60	-	-	-	-	1.45	1.75	2.09	2.46	2.88
65	-	-	-	-	-	-	1.65	1.96	2.31

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

Cooling capacity	23 832	W
Power input	7 733	W
Current consumption	14.89	A
Mass flow	579	kg/h
C.O.P.	3.08	


Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	71.5	dB(A)
With acoustic hood	65.5	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

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Performance data at 50 Hz, ARI rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	9 183	11 656	14 616	18 124	22 244	27 037	32 564	38 887	46 068
35	8 776	11 203	14 068	17 436	21 367	25 925	31 171	37 167	43 976
40	-	10 711	13 475	16 692	20 426	24 740	29 697	35 358	41 787
45	-	-	12 812	15 871	19 401	23 463	28 122	33 441	39 483
50	-	-	-	14 954	18 271	22 076	26 431	31 402	37 051
55	-	-	-	13 924	17 025	20 567	24 615	29 235	34 490
60	-	-	-	-	15 662	18 943	22 687	26 959	31 827
65	-	-	-	-	-	-	20 717	24 666	29 174

Power input in W

30	4 872	4 925	4 987	5 057	5 136	5 223	5 319	5 424	5 538
35	5 380	5 431	5 494	5 568	5 652	5 748	5 854	5 971	6 100
40	-	6 001	6 058	6 129	6 212	6 309	6 418	6 542	6 678
45	-	-	6 703	6 763	6 839	6 930	7 037	7 159	7 297
50	-	-	-	7 496	7 557	7 637	7 733	7 848	7 981
55	-	-	-	8 351	8 391	8 451	8 532	8 632	8 753
60	-	-	-	-	9 364	9 398	9 456	9 535	9 637
65	-	-	-	-	-	-	10 529	10 581	10 658

Current consumption in A

30	11.69	11.84	11.95	12.03	12.09	12.16	12.23	12.34	12.49
35	12.22	12.37	12.48	12.57	12.64	12.71	12.81	12.93	13.10
40	-	12.97	13.08	13.16	13.23	13.31	13.41	13.55	13.73
45	-	-	13.77	13.84	13.92	14.00	14.10	14.23	14.42
50	-	-	-	14.66	14.72	14.80	14.89	15.03	15.22
55	-	-	-	15.65	15.70	15.76	15.84	15.97	16.16
60	-	-	-	-	16.88	16.92	16.99	17.11	17.28
65	-	-	-	-	-	-	18.37	18.47	18.62

Mass flow in kg/h

30	175	221	274	336	407	490	585	693	815
35	176	222	276	337	409	490	584	690	810
40	-	223	277	338	409	490	582	687	805
45	-	-	277	338	408	488	579	682	798
50	-	-	-	337	406	485	575	676	790
55	-	-	-	334	403	481	569	668	780
60	-	-	-	-	398	474	561	659	768
65	-	-	-	-	-	-	552	648	755

Coefficient of performance (C.O.P.)

30	1.88	2.37	2.93	3.58	4.33	5.18	6.12	7.17	8.32
35	1.63	2.06	2.56	3.13	3.78	4.51	5.32	6.22	7.21
40	-	1.78	2.22	2.72	3.29	3.92	4.63	5.41	6.26
45	-	-	1.91	2.35	2.84	3.39	4.00	4.67	5.41
50	-	-	-	1.99	2.42	2.89	3.42	4.00	4.64
55	-	-	-	1.67	2.03	2.43	2.89	3.39	3.94
60	-	-	-	-	1.67	2.02	2.40	2.83	3.30
65	-	-	-	-	-	-	1.97	2.33	2.74

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

Cooling capacity	26 816	W
Power input	8 472	W
Current consumption	15.77	A
Mass flow	612	kg/h
C.O.P.	3.17	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	71.5	dB(A)
With acoustic hood	65.5	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

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Performance data at 60 Hz, EN 12900 rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	11 109	13 832	17 022	20 747	25 071	30 062	35 784	42 305	49 691
35	10 405	13 049	16 135	19 729	23 895	28 700	34 209	40 488	47 602
40	-	12 212	15 171	18 610	22 595	27 190	32 461	38 473	45 292
45	-	-	14 131	17 393	21 172	25 533	30 541	36 261	42 758
50	-	-	13 017	16 076	19 625	23 726	28 445	33 845	39 991
55	-	-	-	14 654	17 945	21 759	26 158	31 207	36 969
60	-	-	-	-	16 110	19 601	23 645	28 303	33 638
65	-	-	-	-	-	-	20 809	25 017	29 859

Power input in W

30	5 848	5 921	6 009	6 104	6 197	6 277	6 336	6 364	6 352
35	6 458	6 509	6 586	6 679	6 780	6 877	6 964	7 029	7 064
40	-	7 165	7 222	7 305	7 405	7 513	7 619	7 713	7 787
45	-	-	7 944	8 009	8 101	8 210	8 327	8 443	8 548
50	-	-	8 778	8 817	8 893	8 996	9 117	9 246	9 374
55	-	-	-	9 757	9 808	9 897	10 013	10 148	10 291
60	-	-	-	-	10 874	10 940	11 044	11 176	11 326
65	-	-	-	-	-	-	12 235	12 356	12 506

Current consumption in A

30	10.87	11.05	11.18	11.28	11.37	11.46	11.57	11.72	11.93
35	11.42	11.60	11.73	11.83	11.91	12.00	12.11	12.26	12.46
40	-	12.23	12.36	12.46	12.54	12.63	12.74	12.88	13.08
45	-	-	13.10	13.20	13.28	13.37	13.47	13.61	13.81
50	-	-	13.97	14.07	14.15	14.24	14.34	14.48	14.67
55	-	-	-	15.10	15.18	15.27	15.37	15.51	15.69
60	-	-	-	-	16.40	16.49	16.59	16.72	16.91
65	-	-	-	-	-	-	18.02	18.15	18.34

Mass flow in kg/h

30	231	285	346	416	497	590	695	814	949
35	228	283	345	416	497	591	697	817	953
40	-	280	342	414	496	590	697	818	955
45	-	-	339	411	493	587	695	816	954
50	-	-	334	406	489	583	691	813	950
55	-	-	-	400	482	577	685	807	945
60	-	-	-	-	474	569	676	798	936
65	-	-	-	-	-	-	666	788	925

Coefficient of performance (C.O.P.)

30	1.90	2.34	2.83	3.40	4.05	4.79	5.65	6.65	7.82
35	1.61	2.00	2.45	2.95	3.52	4.17	4.91	5.76	6.74
40	-	1.70	2.10	2.55	3.05	3.62	4.26	4.99	5.82
45	-	-	1.78	2.17	2.61	3.11	3.67	4.29	5.00
50	-	-	1.48	1.82	2.21	2.64	3.12	3.66	4.27
55	-	-	-	1.50	1.83	2.20	2.61	3.08	3.59
60	-	-	-	-	1.48	1.79	2.14	2.53	2.97
65	-	-	-	-	-	-	1.70	2.02	2.39

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

Cooling capacity	28 445	W
Power input	9 117	W
Current consumption	14.34	A
Mass flow	691	kg/h
C.O.P.	3.12	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	74	dB(A)
With acoustic hood	68	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

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Performance data at 60 Hz, ARI rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	11 997	14 921	18 345	22 338	26 969	32 310	38 429	45 397	53 283
35	11 309	14 167	17 498	21 372	25 859	31 029	36 951	43 697	51 334
40	-	13 359	16 575	20 308	24 628	29 605	35 309	41 809	49 175
45	-	-	15 581	19 151	23 282	28 043	33 506	39 738	46 811
50	-	-	-	17 906	21 825	26 348	31 547	37 490	44 247
55	-	-	-	16 577	20 262	24 525	29 438	35 068	41 488
60	-	-	-	-	18 598	22 579	27 182	32 479	38 537
65	-	-	-	-	-	-	24 786	29 726	35 401

Power input in W

30	5 848	5 921	6 009	6 104	6 197	6 277	6 336	6 364	6 352
35	6 458	6 509	6 586	6 679	6 780	6 877	6 964	7 029	7 064
40	-	7 165	7 222	7 305	7 405	7 513	7 619	7 713	7 787
45	-	-	7 944	8 009	8 101	8 210	8 327	8 443	8 548
50	-	-	-	8 817	8 893	8 996	9 117	9 246	9 374
55	-	-	-	9 757	9 808	9 897	10 013	10 148	10 291
60	-	-	-	-	10 874	10 940	11 044	11 176	11 326
65	-	-	-	-	-	-	12 235	12 356	12 506

Current consumption in A

30	10.87	11.05	11.18	11.28	11.37	11.46	11.57	11.72	11.93
35	11.42	11.60	11.73	11.83	11.91	12.00	12.11	12.26	12.46
40	-	12.23	12.36	12.46	12.54	12.63	12.74	12.88	13.08
45	-	-	13.10	13.20	13.28	13.37	13.47	13.61	13.81
50	-	-	-	14.07	14.15	14.24	14.34	14.48	14.67
55	-	-	-	15.10	15.18	15.27	15.37	15.51	15.69
60	-	-	-	-	16.40	16.49	16.59	16.72	16.91
65	-	-	-	-	-	-	18.02	18.15	18.34

Mass flow in kg/h

30	230	283	344	414	494	586	690	808	942
35	227	281	343	413	494	587	692	811	946
40	-	278	340	411	493	586	692	812	947
45	-	-	337	408	490	584	690	811	947
50	-	-	-	403	485	579	686	807	943
55	-	-	-	397	479	573	680	801	937
60	-	-	-	-	471	565	672	793	929
65	-	-	-	-	-	-	661	782	918

Coefficient of performance (C.O.P.)

30	2.05	2.52	3.05	3.66	4.35	5.15	6.07	7.13	8.39
35	1.75	2.18	2.66	3.20	3.81	4.51	5.31	6.22	7.27
40	-	1.86	2.30	2.78	3.33	3.94	4.63	5.42	6.31
45	-	-	1.96	2.39	2.87	3.42	4.02	4.71	5.48
50	-	-	-	2.03	2.45	2.93	3.46	4.05	4.72
55	-	-	-	1.70	2.07	2.48	2.94	3.46	4.03
60	-	-	-	-	1.71	2.06	2.46	2.91	3.40
65	-	-	-	-	-	-	2.03	2.41	2.83

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

Cooling capacity	32 100	W
Power input	9 957	W
Current consumption	15.29	A
Mass flow	732	kg/h
C.O.P.	3.22	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	74	dB(A)
With acoustic hood	68	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

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