

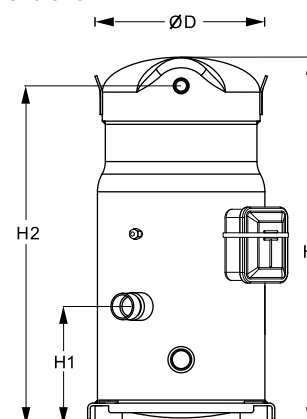
Datasheets

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



General Characteristics

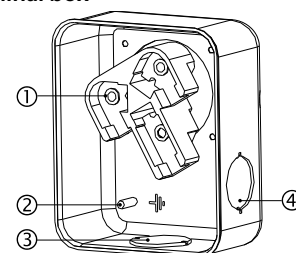
Model number (on compressor nameplate)		SZ110S4VC
Code number for Singlepack*		SZ110-4VI
Code number for Industrial pack**		SZ110-4VM
Drawing number		8552037b
Suction and discharge connections		Brazed
Suction connection		1-3/8" ODF
Discharge connection		7/8" ODF
Oil sight glass		Threaded
Oil equalisation connection		3/8" flare SAE
Oil drain connection		None
LP gauge port		Schrader
IPR valve		None
Swept volume		144,2 cm ³ /rev
Displacement @ Nominal speed		25.1 m ³ /h @ 2900 rpm - 30.3 m ³ /h @ 3500 rpm
Net weight		73 kg
Oil charge		3,25 litre, POE - 160SZ
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		10 kg
Approved refrigerants		R407C, R134a, R404A, R507A

Dimensions


D=254 mm
 H=558 mm
 H1=178,4 mm
 H2=514,5 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)	15.7 A
Maximum Continuous Current (MCC)	22 A
Locked Rotor Amps (LRA)	130 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	21 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.

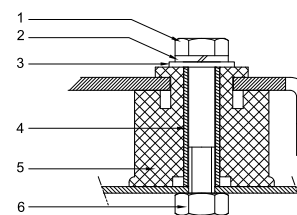
Surface sump heater + bottom insulation, 48 W, 24 V, CE mark, UL	120Z0361
Surface sump heater + bottom insulation, 48 W, 230 V, CE mark, UL	120Z0380
Surface sump heater + bottom insulation, 48 W, 400 V, CE mark, UL	120Z0381
Surface sump heater + bottom insulation, 48 W, 460 V, CE mark, UL	120Z0382
Belt type crankcase heater, 65 W, 460 V, CE mark, UL	120Z0466
Belt type crankcase heater, 65 W, 230 V, CE mark, UL	7773107
Belt type crankcase heater, 65 W, 400 V, CE mark, UL	7773117
Belt type crankcase heater, 65 W, 400 V, CE mark, UL	120Z0039

Miscellaneous accessories
Code no.

Electronic soft start kit, MCI 15 C	7705006
Soft start kit with statoric resistors, prewired box, SCR03	7705001
Acoustic hood for scroll compressor S110-S120	7755010
Bottom insulation for scroll compressor	120Z0356
Discharge thermostat kit	7750009

Spare parts
Code no.

Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	8156138
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

Mounting kit


- 1: Bolt (4x)
- 2: Lock washer (4x)
- 3: Flat washer (4x)
- 4: Sleeve (4x)
- 5: Grommet (4x)
- 6: Nut (4x)

Performance data at 50 Hz, EN 12900 rating conditions
R407C

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

Cooling capacity in W

30	9 302	11 883	14 976	18 633	22 911	27 862	33 544	40 010	-
35	8 669	11 172	14 159	17 684	21 802	26 567	32 034	38 259	-
40	8 018	10 424	13 288	16 663	20 604	25 165	30 400	36 364	-
45	-	9 643	12 365	15 573	19 318	23 656	28 641	34 327	-
50	-	-	11 391	14 412	17 945	22 042	26 758	32 146	-
55	-	-	-	13 184	16 485	20 323	24 751	29 823	-
60	-	-	-	-	14 938	18 498	22 620	27 356	-
65	-	-	-	-	13 305	16 568	20 362	24 742	-

Power input in W

30	4 411	4 455	4 491	4 514	4 520	4 508	4 472	4 409	-
35	4 928	4 972	5 007	5 029	5 035	5 021	4 983	4 919	-
40	5 519	5 562	5 596	5 617	5 622	5 606	5 567	5 501	-
45	-	6 234	6 267	6 287	6 290	6 273	6 233	6 165	-
50	-	-	7 029	7 048	7 050	7 031	6 989	6 918	-
55	-	-	-	7 908	7 909	7 888	7 844	7 771	-
60	-	-	-	-	8 876	8 854	8 808	8 733	-
65	-	-	-	-	9 962	9 938	9 889	9 812	-

Current consumption in A

30	10.42	10.48	10.53	10.56	10.55	10.51	10.42	10.27	-
35	10.93	11.00	11.05	11.08	11.07	11.03	10.94	10.80	-
40	11.56	11.63	11.68	11.71	11.70	11.66	11.58	11.44	-
45	-	12.38	12.43	12.46	12.46	12.42	12.34	12.21	-
50	-	-	13.33	13.36	13.36	13.33	13.25	13.12	-
55	-	-	-	14.41	14.42	14.39	14.31	14.19	-
60	-	-	-	-	15.65	15.63	15.56	15.44	-
65	-	-	-	-	17.08	17.06	16.99	16.88	-

Mass flow in kg/h

30	194	243	301	368	444	532	631	744	-
35	190	240	298	365	443	531	631	743	-
40	185	236	294	362	440	528	628	741	-
45	-	231	290	358	436	524	624	737	-
50	-	-	284	352	430	518	618	730	-
55	-	-	-	345	422	510	609	721	-
60	-	-	-	-	412	500	598	709	-
65	-	-	-	-	401	487	585	695	-

Coefficient of performance (C.O.P.)

30	2.11	2.67	3.33	4.13	5.07	6.18	7.50	9.08	-
35	1.76	2.25	2.83	3.52	4.33	5.29	6.43	7.78	-
40	1.45	1.87	2.37	2.97	3.67	4.49	5.46	6.61	-
45	-	1.55	1.97	2.48	3.07	3.77	4.60	5.57	-
50	-	-	1.62	2.04	2.55	3.13	3.83	4.65	-
55	-	-	-	1.67	2.08	2.58	3.16	3.84	-
60	-	-	-	-	1.68	2.09	2.57	3.13	-
65	-	-	-	-	1.34	1.67	2.06	2.52	-

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

Cooling capacity	22 042	W
Power input	7 031	W
Current consumption	13.33	A
Mass flow	518	kg/h
C.O.P.	3.13	


Pressure switch settings

Maximum HP switch setting	29.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1	bar(g)

Sound power data

Sound power level	77	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
R407C

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

Cooling capacity in W

30	9 976	12 730	16 025	19 918	24 465	29 724	35 750	42 602	-
35	9 343	12 025	15 221	18 988	23 383	28 463	34 285	40 906	-
40	8 690	11 282	14 361	17 985	22 210	27 094	32 693	39 064	-
45	-	10 502	13 447	16 909	20 947	25 616	30 973	37 077	-
50	-	-	12 478	15 761	19 592	24 029	29 128	34 945	-
55	-	-	-	14 541	18 149	22 335	27 156	32 670	-
60	-	-	-	-	16 615	20 533	25 059	30 252	-
65	-	-	-	-	14 994	18 624	22 838	27 690	-

Power input in W

30	4 411	4 455	4 491	4 514	4 520	4 508	4 472	4 409	-
35	4 928	4 972	5 007	5 029	5 035	5 021	4 983	4 919	-
40	5 519	5 562	5 596	5 617	5 622	5 606	5 567	5 501	-
45	-	6 234	6 267	6 287	6 290	6 273	6 233	6 165	-
50	-	-	7 029	7 048	7 050	7 031	6 989	6 918	-
55	-	-	-	7 908	7 909	7 888	7 844	7 771	-
60	-	-	-	-	8 876	8 854	8 808	8 733	-
65	-	-	-	-	9 962	9 938	9 889	9 812	-

Current consumption in A

30	10.42	10.48	10.53	10.56	10.55	10.51	10.42	10.27	-
35	10.93	11.00	11.05	11.08	11.07	11.03	10.94	10.80	-
40	11.56	11.63	11.68	11.71	11.70	11.66	11.58	11.44	-
45	-	12.38	12.43	12.46	12.46	12.42	12.34	12.21	-
50	-	-	13.33	13.36	13.36	13.33	13.25	13.12	-
55	-	-	-	14.41	14.42	14.39	14.31	14.19	-
60	-	-	-	-	15.65	15.63	15.56	15.44	-
65	-	-	-	-	17.08	17.06	16.99	16.88	-

Mass flow in kg/h

30	193	242	299	366	442	529	628	739	-
35	189	239	296	363	440	528	627	739	-
40	184	234	293	360	437	525	625	736	-
45	-	229	288	356	433	521	620	732	-
50	-	-	282	350	427	515	614	725	-
55	-	-	-	343	420	507	606	716	-
60	-	-	-	-	410	497	595	705	-
65	-	-	-	-	399	485	582	691	-

Coefficient of performance (C.O.P.)

30	2.26	2.86	3.57	4.41	5.41	6.59	7.99	9.66	-
35	1.90	2.42	3.04	3.78	4.64	5.67	6.88	8.32	-
40	1.57	2.03	2.57	3.20	3.95	4.83	5.87	7.10	-
45	-	1.68	2.15	2.69	3.33	4.08	4.97	6.01	-
50	-	-	1.78	2.24	2.78	3.42	4.17	5.05	-
55	-	-	-	1.84	2.29	2.83	3.46	4.20	-
60	-	-	-	-	1.87	2.32	2.85	3.46	-
65	-	-	-	-	1.51	1.87	2.31	2.82	-

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

Cooling capacity	24 598	W
Power input	7 764	W
Current consumption	14.22	A
Mass flow	550	kg/h
C.O.P.	3.17	

Pressure switch settings

Maximum HP switch setting	29.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1	bar(g)

Sound power data

Sound power level	77	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 50 Hz, EN 12900 rating conditions
R134a

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

Cooling capacity in W

35	7 617	9 723	12 195	15 070	18 384	22 173	26 474	-	-
40	7 152	9 182	11 561	14 326	17 512	21 157	25 295	-	-
45	6 661	8 604	10 880	13 524	16 572	20 061	24 027	-	-
50	6 144	7 990	10 152	12 665	15 564	18 887	22 670	-	-
55	-	7 341	9 379	11 750	14 490	17 637	21 224	-	-
60	-	-	8 561	10 780	13 351	16 309	19 691	-	-
65	-	-	-	9 756	12 146	14 906	18 071	-	-
70	-	-	-	8 680	10 878	13 427	16 364	-	-

Power input in W

35	3 499	3 520	3 535	3 539	3 531	3 509	3 470	-	-
40	3 898	3 922	3 938	3 944	3 939	3 920	3 885	-	-
45	4 345	4 371	4 389	4 398	4 396	4 380	4 348	-	-
50	4 844	4 871	4 891	4 903	4 904	4 892	4 864	-	-
55	-	5 425	5 449	5 464	5 468	5 460	5 436	-	-
60	-	-	6 064	6 082	6 090	6 086	6 067	-	-
65	-	-	-	6 762	6 774	6 774	6 760	-	-
70	-	-	-	7 507	7 523	7 527	7 518	-	-

Current consumption in A

35	9.65	9.68	9.69	9.70	9.69	9.66	9.61	-	-
40	9.99	10.02	10.04	10.05	10.05	10.02	9.98	-	-
45	10.40	10.44	10.46	10.47	10.47	10.45	10.41	-	-
50	10.89	10.93	10.96	10.98	10.98	10.96	10.93	-	-
55	-	11.51	11.54	11.56	11.57	11.56	11.53	-	-
60	-	-	12.22	12.24	12.26	12.25	12.23	-	-
65	-	-	-	13.02	13.04	13.04	13.03	-	-
70	-	-	-	13.91	13.93	13.94	13.93	-	-

Mass flow in kg/h

35	185	231	283	343	410	485	570	-	-
40	182	229	282	341	409	485	569	-	-
45	179	226	279	339	407	483	567	-	-
50	175	222	276	336	404	479	563	-	-
55	-	218	271	331	399	474	558	-	-
60	-	-	265	325	392	467	550	-	-
65	-	-	-	317	384	458	541	-	-
70	-	-	-	307	373	447	529	-	-

Coefficient of performance (C.O.P.)

35	2.18	2.76	3.45	4.26	5.21	6.32	7.63	-	-
40	1.83	2.34	2.94	3.63	4.45	5.40	6.51	-	-
45	1.53	1.97	2.48	3.08	3.77	4.58	5.53	-	-
50	1.27	1.64	2.08	2.58	3.17	3.86	4.66	-	-
55	-	1.35	1.72	2.15	2.65	3.23	3.90	-	-
60	-	-	1.41	1.77	2.19	2.68	3.25	-	-
65	-	-	-	1.44	1.79	2.20	2.67	-	-
70	-	-	-	1.16	1.45	1.78	2.18	-	-

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

Cooling capacity	15 564	W
Power input	4 904	W
Current consumption	10.98	A
Mass flow	404	kg/h
C.O.P.	3.17	

Pressure switch settings

Maximum HP switch setting	20.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	0.5	bar(g)

Sound power data

Sound power level	0	dB(A)
With acoustic hood	0	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
R134a

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

Cooling capacity in W

35	8 249	10 513	13 165	16 243	19 785	23 829	28 412	-	-
40	7 788	9 980	12 543	15 516	18 936	22 841	27 268	-	-
45	7 298	9 408	11 872	14 729	18 016	21 770	26 030	-	-
50	6 781	8 797	11 151	13 881	17 024	20 618	24 701	-	-
55	-	8 148	10 382	12 974	15 963	19 386	23 280	-	-
60	-	-	9 565	12 009	14 832	18 073	21 768	-	-
65	-	-	-	10 986	13 633	16 681	20 167	-	-
70	-	-	-	9 905	12 367	15 211	18 476	-	-

Power input in W

35	3 499	3 520	3 535	3 539	3 531	3 509	3 470	-	-
40	3 898	3 922	3 938	3 944	3 939	3 920	3 885	-	-
45	4 345	4 371	4 389	4 398	4 396	4 380	4 348	-	-
50	4 844	4 871	4 891	4 903	4 904	4 892	4 864	-	-
55	-	5 425	5 449	5 464	5 468	5 460	5 436	-	-
60	-	-	6 064	6 082	6 090	6 086	6 067	-	-
65	-	-	-	6 762	6 774	6 774	6 760	-	-
70	-	-	-	7 507	7 523	7 527	7 518	-	-

Current consumption in A

35	9.65	9.68	9.69	9.70	9.69	9.66	9.61	-	-
40	9.99	10.02	10.04	10.05	10.05	10.02	9.98	-	-
45	10.40	10.44	10.46	10.47	10.47	10.45	10.41	-	-
50	10.89	10.93	10.96	10.98	10.98	10.96	10.93	-	-
55	-	11.51	11.54	11.56	11.57	11.56	11.53	-	-
60	-	-	12.22	12.24	12.26	12.25	12.23	-	-
65	-	-	-	13.02	13.04	13.04	13.03	-	-
70	-	-	-	13.91	13.93	13.94	13.93	-	-

Mass flow in kg/h

35	184	229	282	341	408	483	566	-	-
40	181	227	280	340	407	482	566	-	-
45	178	225	278	338	405	480	564	-	-
50	175	221	274	334	402	477	560	-	-
55	-	217	270	330	397	472	555	-	-
60	-	-	264	323	390	465	547	-	-
65	-	-	-	315	382	456	538	-	-
70	-	-	-	306	371	444	526	-	-

Coefficient of performance (C.O.P.)

35	2.36	2.99	3.72	4.59	5.60	6.79	8.19	-	-
40	2.00	2.54	3.19	3.93	4.81	5.83	7.02	-	-
45	1.68	2.15	2.71	3.35	4.10	4.97	5.99	-	-
50	1.40	1.81	2.28	2.83	3.47	4.21	5.08	-	-
55	-	1.50	1.91	2.37	2.92	3.55	4.28	-	-
60	-	-	1.58	1.97	2.44	2.97	3.59	-	-
65	-	-	-	1.62	2.01	2.46	2.98	-	-
70	-	-	-	1.32	1.64	2.02	2.46	-	-

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

Cooling capacity	17 553	W
Power input	5 395	W
Current consumption	11.49	A
Mass flow	429	kg/h
C.O.P.	3.25	

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Pressure switch settings

Maximum HP switch setting	20.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	0.5	bar(g)

Sound power data

Sound power level	0	dB(A)
With acoustic hood	0	dB(A)

All performance data +/- 5%

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