

Coolselector2

Project information

Project name:
 Comments:
 Created by: Vladimir Beljanski
 Coolselector2 version: 3.8.4. Database: 60.60.2.25.13.40
 Printed: 14. 05 .2022.
 Preferences used: All applications

Compressors 1

Operating conditions

Refrigerant:	R407C		
Evaporating dew point temperature:	5.0 °C	Condensing dew point temperature:	45.0 °C
Evaporating pressure:	5.471 bar	Condensing pressure:	17.51 bar
Evaporating mid-point temperature:	2.8 °C	Subcooling:	2.0 K
Useful superheat:	8.0 K	Additional subcooling:	0 K
Additional superheat:	0 K	Total subcooling:	2.0 K
Return gas temperature:	13.0 °C	Liquid temperature:	22.6 °C
Rating conditions:	<i>Custom</i>		
Required cooling capacity:	<i>10.91 kW</i>		

Selection: HRP048T4, R407C

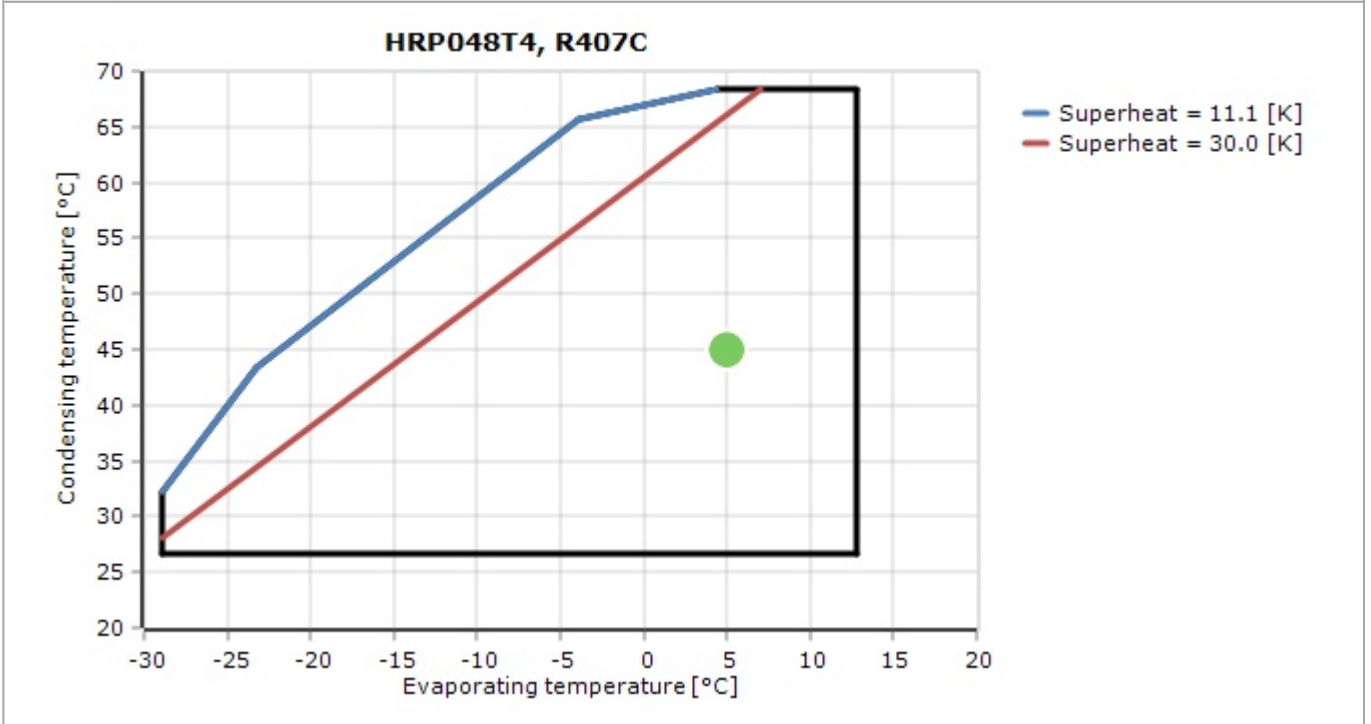
Model	HRP048T4
Technology	Scroll
Configuration	Single
Refrigerant	R407C
Capacity control	Fixed speed
Speed [rpm]	2900
Cooling [kW]	10.91
Heating [kW]	13.71
COP cooling [W/W]	3.90
COP heating [W/W]	4.90
Power [kW]	2.799
Current [A]	5.305
Frequency [Hz]	50
Power supply	380 - 400 V (415 V) 3 ph*
Mass flow [kg/h]	243.0

Selected code number and spare parts

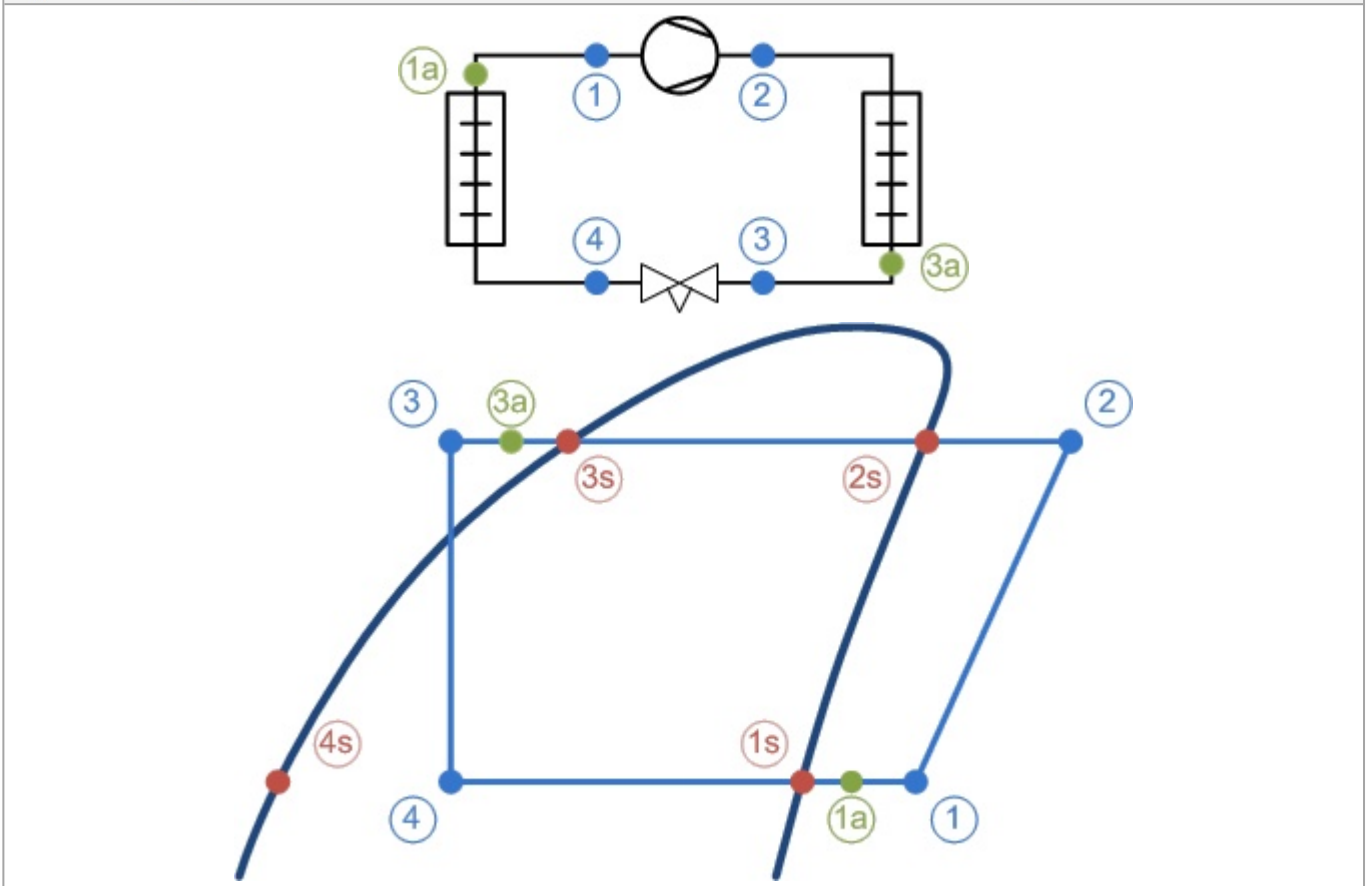
Code number: 120U1653. HRP048T4LP6. Min. order quantity: 16 pcs

Coolselector2

Envelope



System diagrams



Coolselector2

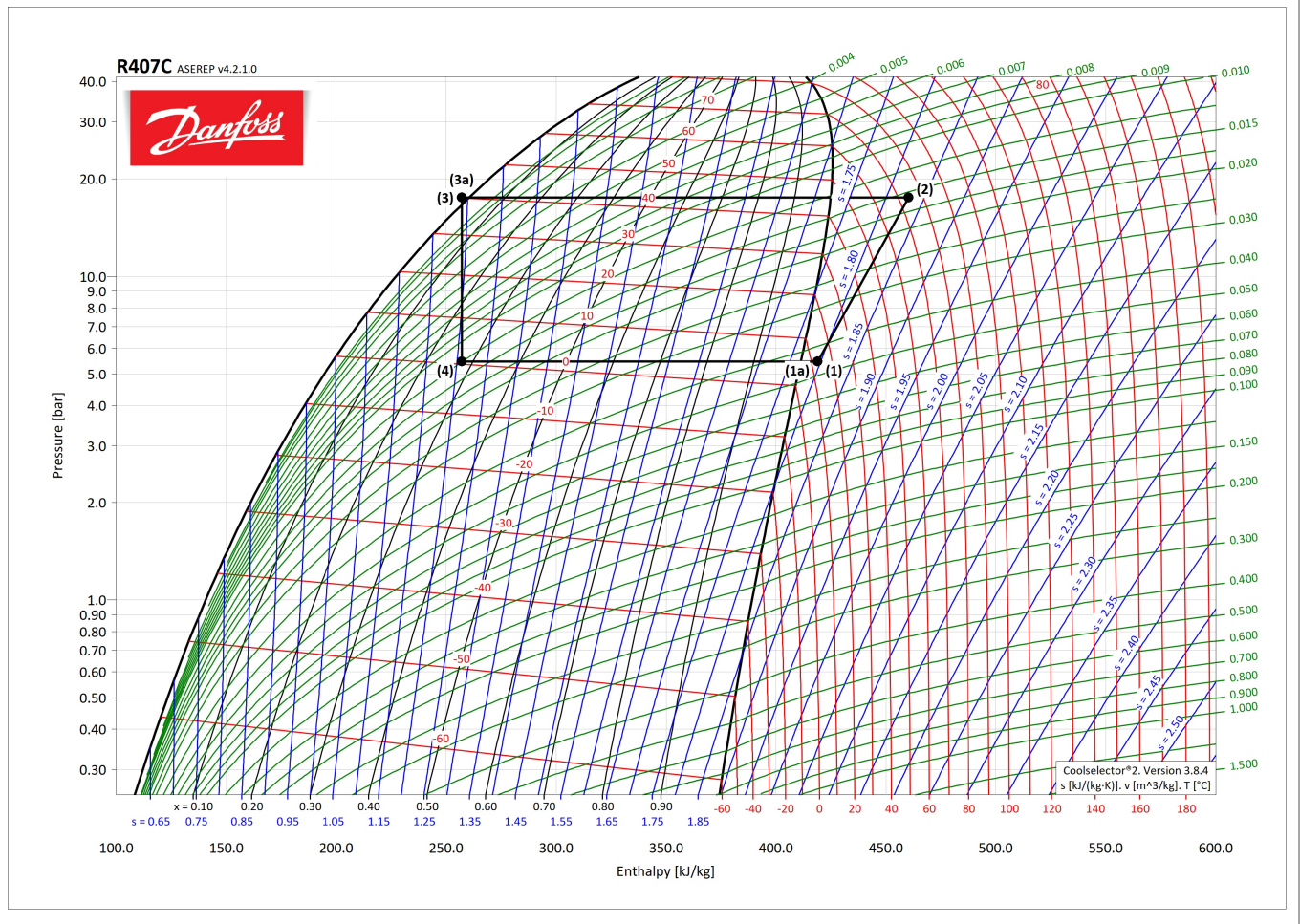
Mass flows

Mass flow in evaporator: 243.0 kg/h Mass flow in compressor: 243.0 kg/h

State points

		Temperature	Pressure	Density	Enthalpy	Entropy
Point	Description	[°C]	[bar]	[kg/m ³]	[kJ/kg]	[kJ/(kg·K)]
1	Compressor suction	13.0	5.471	22.3	418.8	1.795
2	Compressor discharge (estimated)	74.2	17.51	63.71	460.3	1.83
2s	Condensation dew point	45.0	17.51	78.76	424.7	1.723
3s	Condensation bubble point	40.1	17.51	1067	260.4	1.202
3a	Condenser out	38.1	17.51	1077	257.1	1.192
3	Including additional subcooling	38.1	17.51	1077	257.1	1.192
4	After expansion valve	0.6	5.471	80.49	257.1	1.208
4s	Evaporation bubble point	-1.1	5.471	1241	198.4	0.9945
1s	Evaporation dew point	5.0	5.471	23.32	411.2	1.768
1a	Evaporator out	13.0	5.471	22.3	418.8	1.795

Detailed log(p)-h diagram



Technical Data

Economizer	No
Capacity control	Fixed speed
Configuration code	Single
Swept volume [cm ³]	64.4 cm ³
Motor protection	Internal overload protector
Refrigerant charge [kg] [Max]	5.44 kg
Rotational speed at 50Hz [rpm]	2900 rpm
Nominal heating capacity at 50Hz	6.4 kW
Brand technique	Scroll compressor
Colour	Black
Rotational speed at 60Hz [rpm]	3500 rpm
IP protection class	IP22
Glass mounting	None
Oil drain	None
Gauge port LP	None
Gauge port HP	None
Oil equalization	None

Relief valve	Yes
Approval standard	CE;UL
Net weight	37.5 kg

Dimensions

Length [mm]	239 mm
Drawing number	0XR6002B-2
Diameter [mm]	184 mm
Width [mm]	239 mm
Total height [mm]	455 mm
Suction connection height [mm]	280 mm
Discharge connection height [mm]	422 mm

Electrical Specifications

Phase	3
Frequency [Hz]	50/60
Compressor power supply [V/Ph/Hz]	400/3/50 460/3/60
Low value of nominal voltage at 50Hz [V]	380 V
High value of nominal voltage at 50Hz [V]	415 V
Low value of nominal voltage at 60Hz [V]	460 V
High value of nominal voltage at 60Hz [V]	460 V
Low value of voltage range at 50Hz [V]	342 V
High value of voltage range at 50Hz [V]	457 V
Low value of voltage range at 60Hz [V]	414 V
High value of voltage range at 60Hz [V]	506 V
Winding resistance 1-2 [Ohm]	2.6 Ohm
Winding resistance 1-3 [Ohm]	2.61 Ohm
Winding resistance 2-3 [Ohm]	2.65 Ohm
MCC	12 A
RLA	7.7 A
LRA	55.2 A
Power connections	Spade

Mechanical Connections

Connection type	Brazed
Suction connection pipe size [in]	7/8 in
Discharge connection size [in]	1/2 in
Suction connection size [in]	7/8 in
Fitting standard	ODF

Oil Data

Oil reference	320HV
Oil type	PVE
Oil charge [L]	1.57 L
Viscosity [cP]	68 cP
Shipped oil	Initial oil charge

Packaging

Packing quantity	16
Shipped instructions	Installation instructions
Shipped mounting	Mounting kit with grommets and sleeves

PED

Low side max pressure (Ps)	26.2 bar
High side max pressure (Ps)	31.1 bar

Acoustic power

Sound 1	69 db(A)
Sound 2	64 db(A)

Polynomials. General information

Compressor performance data according to EN12900/ARI540

Superheat	11.1	K
Subcooling	8.3	K
Q	Cooling capacity	W
P	Power consumption	W
I	Current	A
M	Mass flow	kg/s
Te	Evaporating temperature	°C
Tc	Condensing temperature	°C

$$Y = C0 + C1*Te + C2*Tc + C3*Te^2 + C4*Te*Tc + C5*Tc^2 + C6*Te^3 + C7*Tc*Te^2 + C8*Te*Tc^2 + C9*Tc^3$$

Polynomials

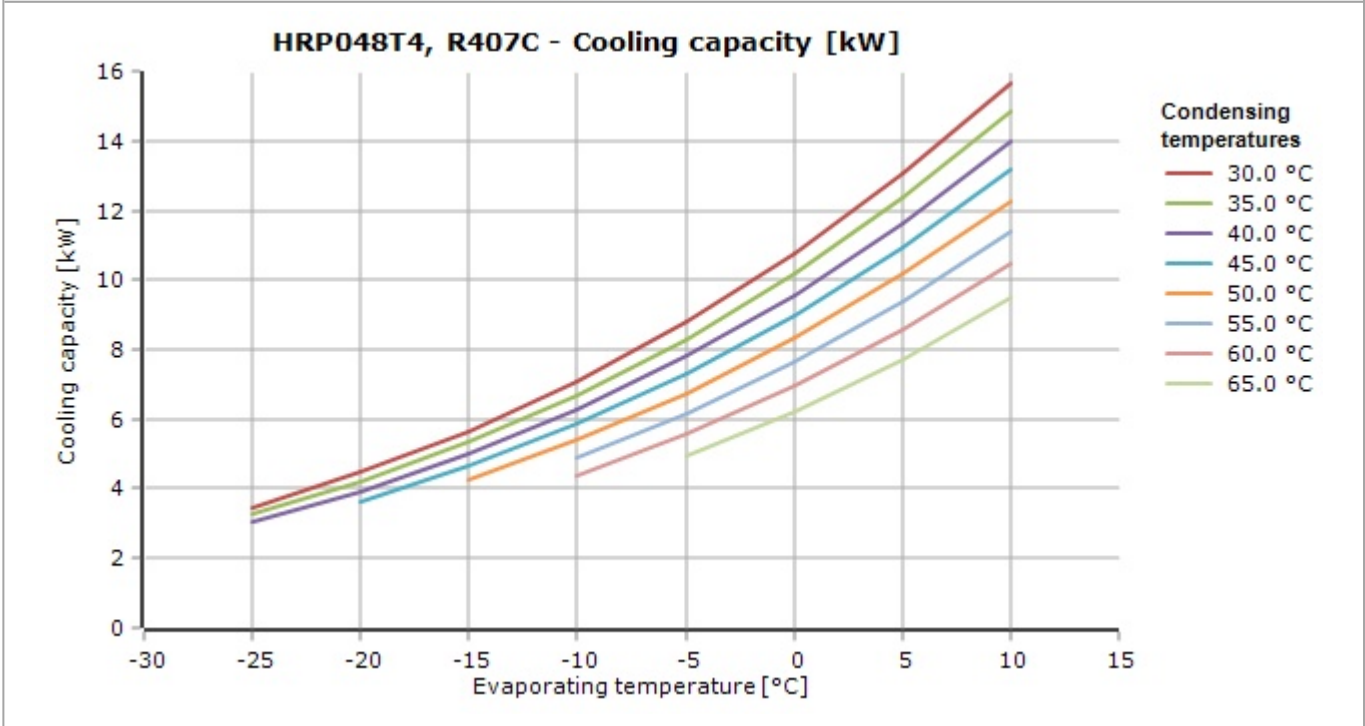
	Q [W]	P [W]	I [A]	M [kg/s]
C0	14770.4433511963	710.482100486755	-10.0394324055193	0.0652154798151089
C1	573.471555880737	-5.87094767689705	0.160694836455961	0.00236437579421242
C2	-122.060651533127	51.457997238636	0.941568738238319	-0.000265943750853247
C3	7.90547575338364	-0.402108887135982	-0.00243331719473976	2.96563857330942E-5

Coolselector2

C4	-4.41534166225433	-0.107989015951753	-0.00654770029392454	-7.08577796630622E-6
C5	0.409129754304886	-0.35756470207125	-0.0203705449111738	5.13528684283982E-6
C6	0.0337017275440693	-0.00516206403449178	-6.27352180055569E-5	1.27661587812519E-7
C7	-0.0497346260436773	0.00400068741291761	3.79599968256388E-5	-4.12511729550469E-8
C8	0.00412295339548588	0.00283530558901839	6.9121951145389E-5	4.43828929083459E-8
C9	-0.00627268079017103	0.00579802233818918	0.000156050327095275	-6.31820531682993E-8

Coolselector2

HRP048T4, R407C - Cooling capacity [kW]

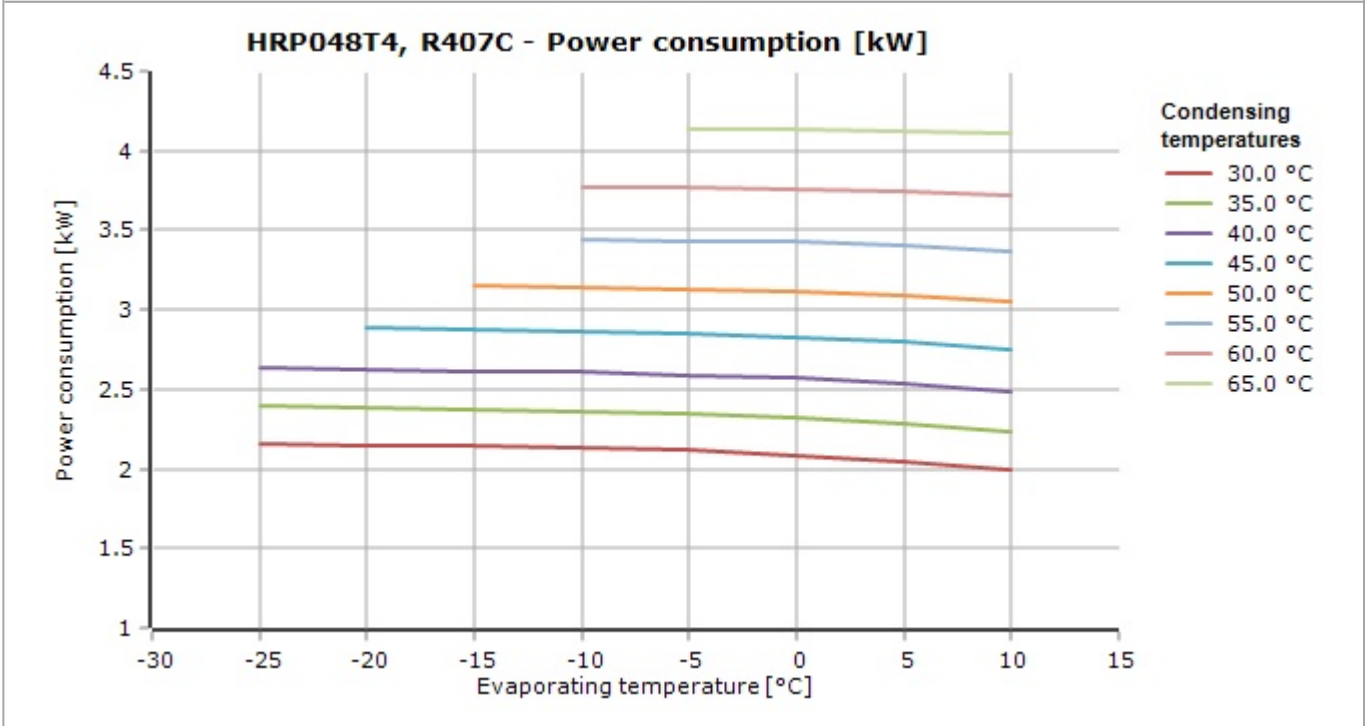


HRP048T4, R407C - Cooling capacity [kW]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	3.479	4.467	5.665	7.097	8.790	10.77	13.05	15.67	-
35.0	-	3.263	4.201	5.338	6.696	8.302	10.18	12.35	14.85	-
40.0	-	3.029	3.920	4.995	6.281	7.800	9.578	11.64	14.01	-
45.0	-	-	3.618	4.634	5.847	7.281	8.961	10.91	13.16	-
50.0	-	-	-	4.249	5.390	6.739	8.322	10.16	12.28	-
55.0	-	-	-	-	4.906	6.171	7.656	9.386	11.38	-
60.0	-	-	-	-	4.390	5.572	6.960	8.580	10.45	-
65.0	-	-	-	-	-	4.938	6.229	7.738	9.489	-
70.0	-	-	-	-	-	-	-	-	-	-

Coolselector2

HRP048T4, R407C - Power consumption [kW]

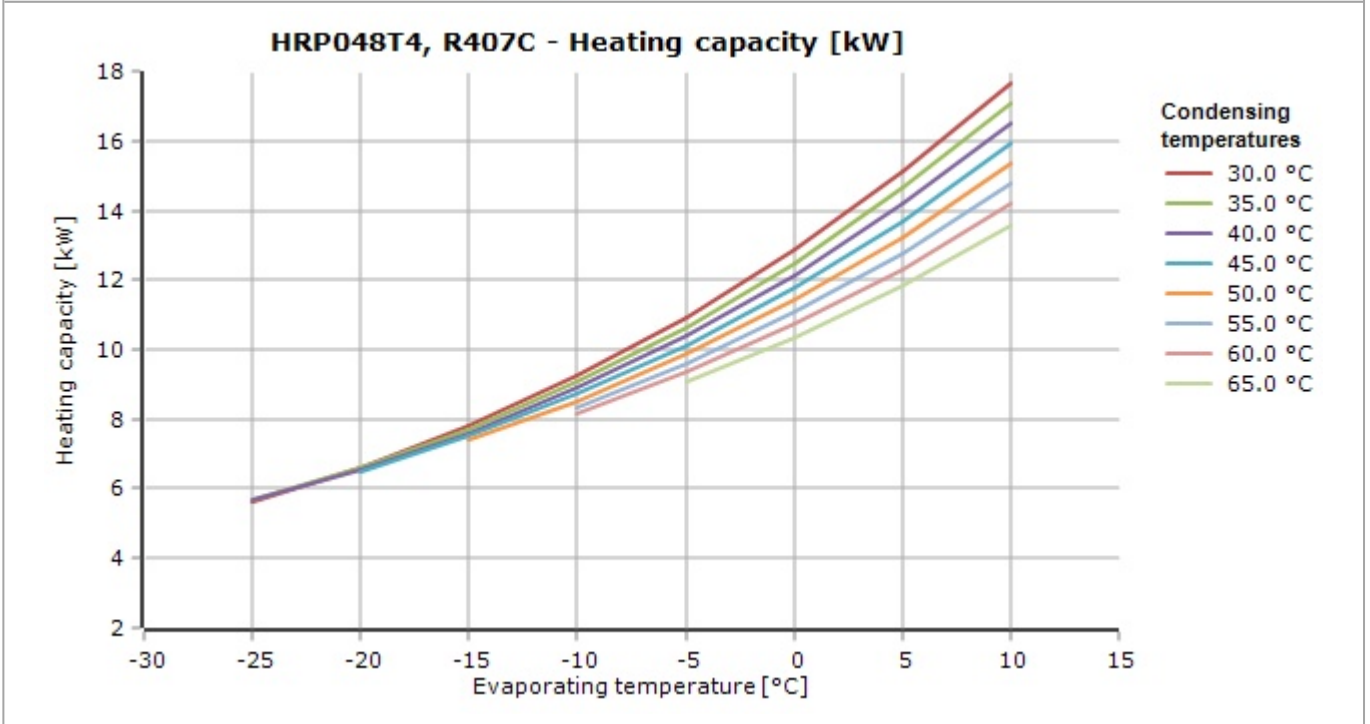


HRP048T4, R407C - Power consumption [kW]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	2.157	2.149	2.141	2.132	2.115	2.089	2.048	1.990	-
35.0	-	2.393	2.382	2.373	2.363	2.347	2.322	2.284	2.229	-
40.0	-	2.638	2.625	2.616	2.605	2.591	2.568	2.533	2.482	-
45.0	-	-	2.883	2.873	2.863	2.850	2.830	2.799	2.753	-
50.0	-	-	-	3.149	3.141	3.131	3.114	3.088	3.047	-
55.0	-	-	-	-	3.443	3.436	3.424	3.402	3.368	-
60.0	-	-	-	-	3.773	3.770	3.763	3.748	3.720	-
65.0	-	-	-	-	-	4.138	4.137	4.128	4.108	-
70.0	-	-	-	-	-	-	-	-	-	-

Coolselector2

HRP048T4, R407C - Heating capacity [kW]

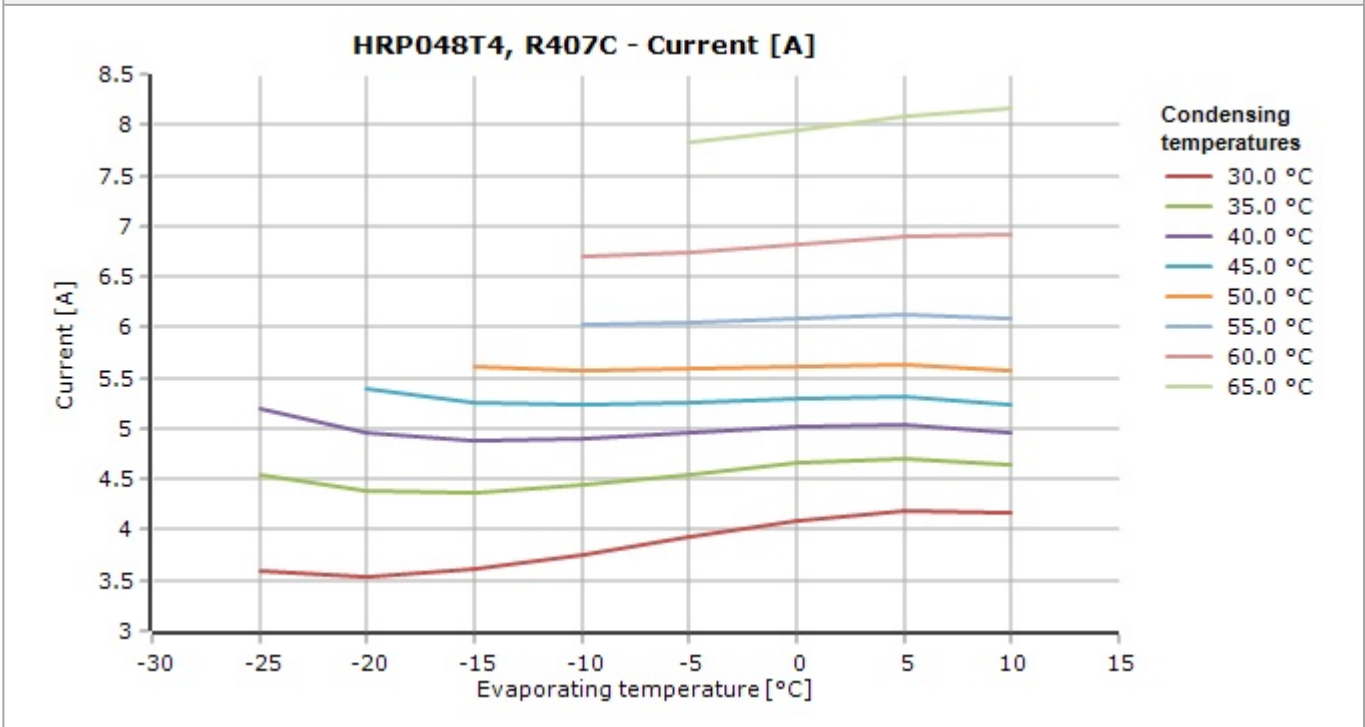


HRP048T4, R407C - Heating capacity [kW]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	5.637	6.615	7.806	9.229	10.91	12.86	15.10	17.66	-
35.0	-	5.656	6.583	7.711	9.059	10.65	12.50	14.64	17.08	-
40.0	-	5.668	6.545	7.611	8.886	10.39	12.15	14.17	16.49	-
45.0	-	-	6.501	7.507	8.710	10.13	11.79	13.71	15.91	-
50.0	-	-	-	7.398	8.531	9.870	11.44	13.25	15.33	-
55.0	-	-	-	-	8.349	9.607	11.08	12.79	14.75	-
60.0	-	-	-	-	8.164	9.342	10.72	12.33	14.17	-
65.0	-	-	-	-	-	9.076	10.37	11.87	13.60	-
70.0	-	-	-	-	-	-	-	-	-	-

Coolselector2

HRP048T4, R407C - Current [A]

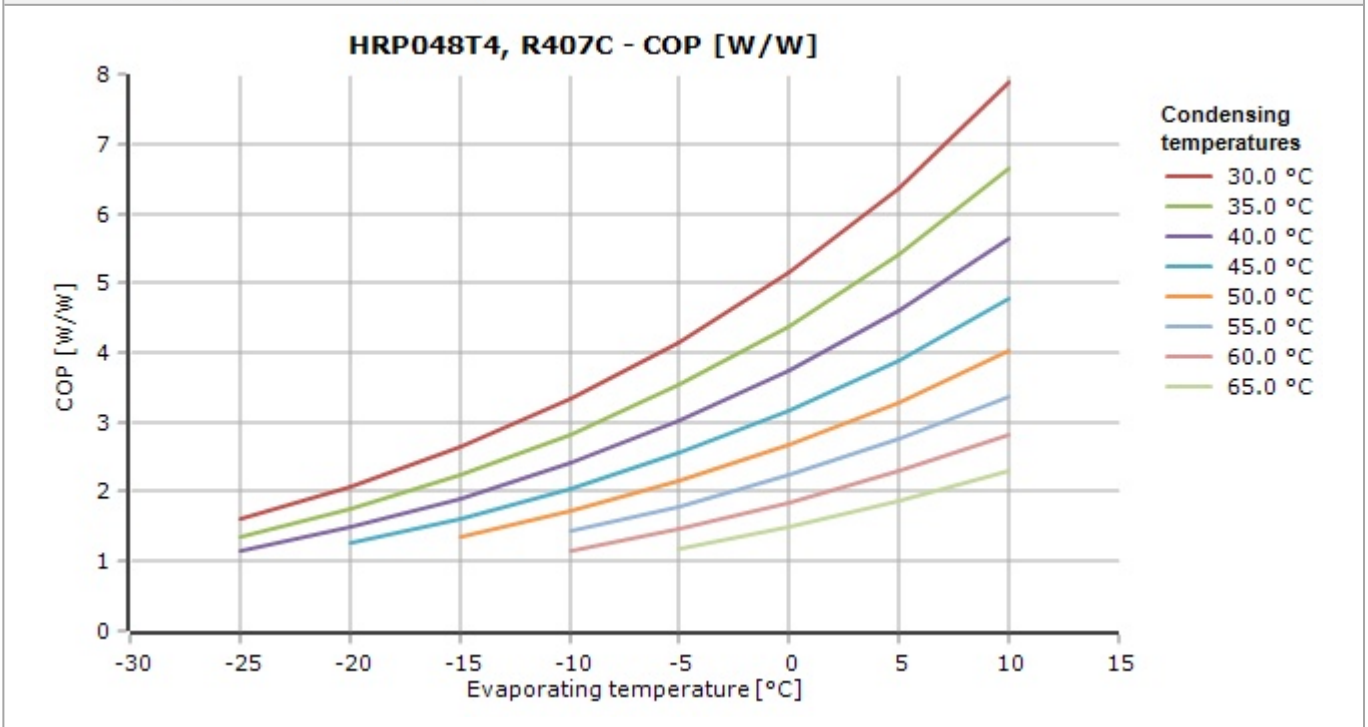


HRP048T4, R407C - Current [A]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	3.597	3.542	3.611	3.756	3.931	4.087	4.180	4.160	-
35.0	-	4.537	4.388	4.372	4.442	4.551	4.652	4.698	4.641	-
40.0	-	5.192	4.966	4.883	4.895	4.956	5.018	5.034	4.957	-
45.0	-	-	5.392	5.259	5.231	5.261	5.301	5.305	5.226	-
50.0	-	-	-	5.618	5.567	5.583	5.619	5.628	5.564	-
55.0	-	-	-	-	6.020	6.040	6.089	6.121	6.088	-
60.0	-	-	-	-	6.708	6.748	6.828	6.899	6.916	-
65.0	-	-	-	-	-	7.825	7.952	8.081	8.164	-
70.0	-	-	-	-	-	-	-	-	-	-

Coolselector2

HRP048T4, R407C - COP [W/W]

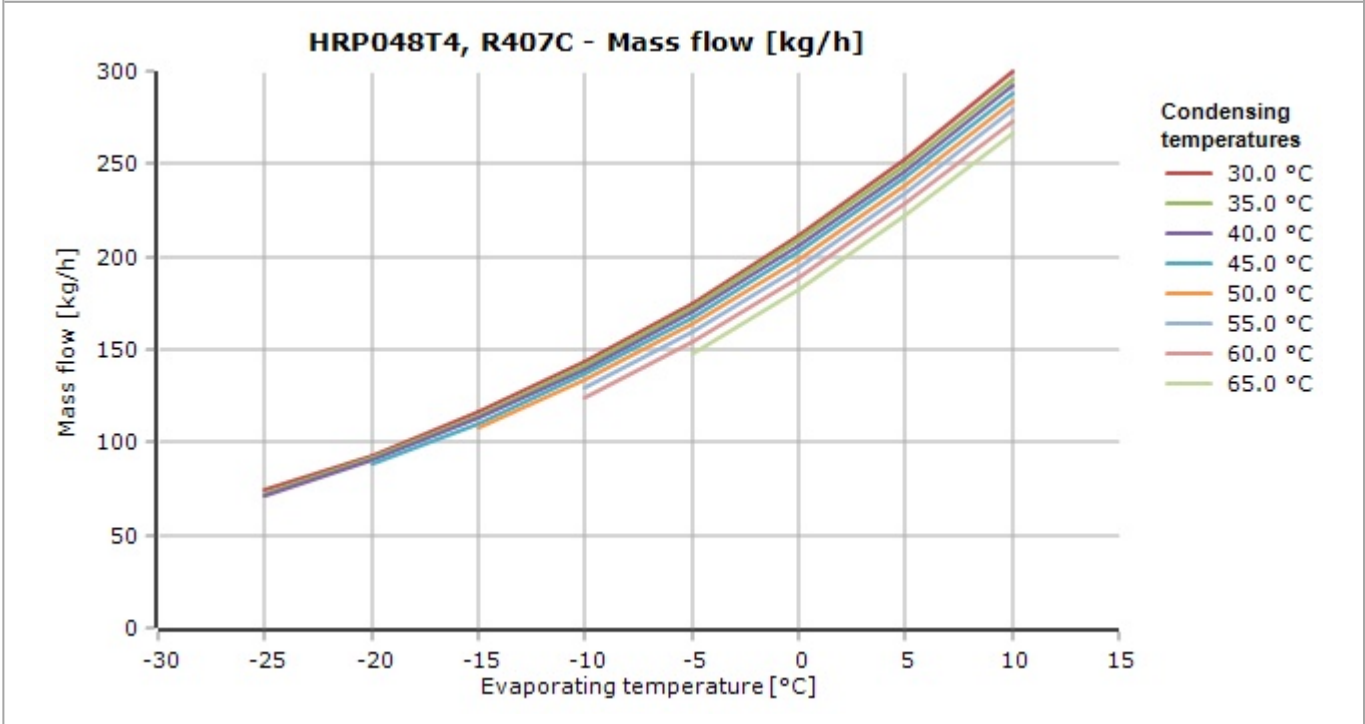


HRP048T4, R407C - COP [W/W]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	1.61	2.08	2.65	3.33	4.16	5.15	6.37	7.88	-
35.0	-	1.36	1.76	2.25	2.83	3.54	4.38	5.41	6.66	-
40.0	-	1.15	1.49	1.91	2.41	3.01	3.73	4.60	5.64	-
45.0	-	-	1.25	1.61	2.04	2.55	3.17	3.90	4.78	-
50.0	-	-	-	1.35	1.72	2.15	2.67	3.29	4.03	-
55.0	-	-	-	-	1.43	1.80	2.24	2.76	3.38	-
60.0	-	-	-	-	1.16	1.48	1.85	2.29	2.81	-
65.0	-	-	-	-	-	1.19	1.51	1.87	2.31	-
70.0	-	-	-	-	-	-	-	-	-	-

Coolselector2

HRP048T4, R407C - Mass flow [kg/h]



HRP048T4, R407C - Mass flow [kg/h]

Tc\Te	-30.0	-25.0	-20.0	-15.0	-10.0	-5.0	0	5.0	10.0	15.0
25.0	-	-	-	-	-	-	-	-	-	-
30.0	-	73.92	93.31	116.4	143.6	175.1	211.4	252.8	299.5	-
35.0	-	72.71	91.97	114.9	141.7	172.9	208.9	249.8	296.1	-
40.0	-	71.06	90.24	112.9	139.6	170.5	206.0	246.6	292.5	-
45.0	-	-	87.96	110.5	136.9	167.5	202.8	243.0	288.6	-
50.0	-	-	-	107.4	133.6	164.0	199.0	238.9	284.2	-
55.0	-	-	-	-	129.5	159.7	194.5	234.2	279.2	-
60.0	-	-	-	-	124.3	154.4	189.0	228.6	273.5	-
65.0	-	-	-	-	-	147.8	182.4	222.0	266.9	-
70.0	-	-	-	-	-	-	-	-	-	-