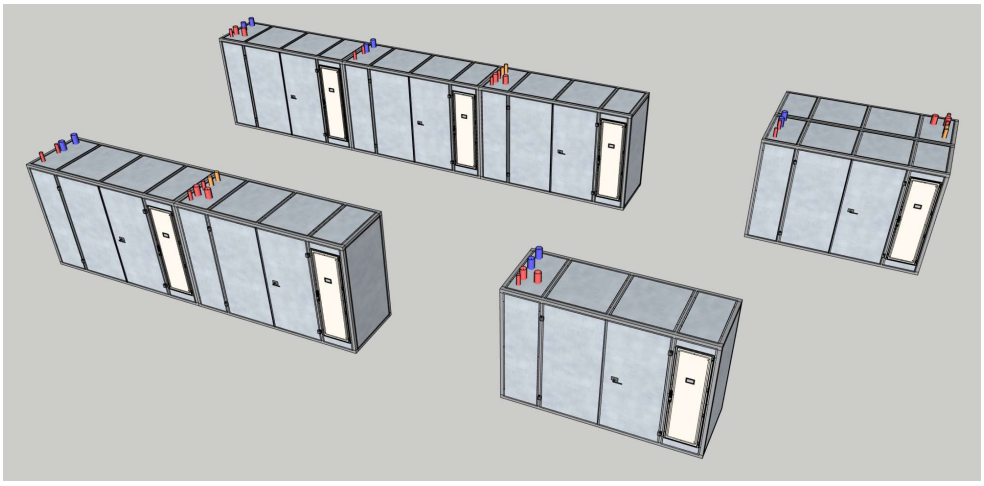
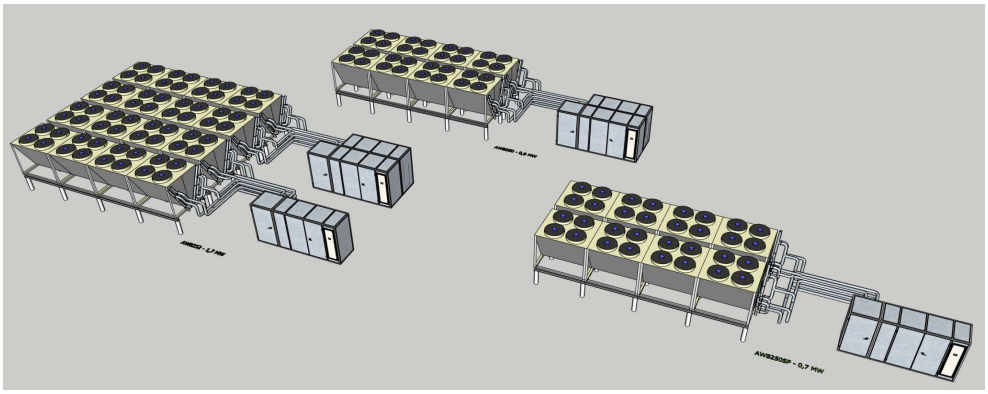
Data sheets standard compressor modules data and combinations

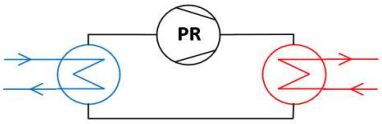
Water to water



Air to water



Heat pumps for -25 to 115 C



Data sheet - compressor unit motor 2

Size	60PR	80PR	140PR	170PR	200PR	250PR
Heat power - kW	185	245	435	576	652	847
Cooling power kW - kW	130	173	306	405	459	596
Evaporation temp. - C	0	0	0	0	0	0
Water temp flow - C	4	4	4	4	4	4
Water temp return - C	9	9	9	9	9	9
Flow - m3/h	22,4	29,7	52,6	69,7	78,9	102,5
KV value - m3/h at 1 bar	84	84	182	182	364	364
Pressure diff. - Bar	0,07	0,12	0,08	0,15	0,05	0,08
Pipe size - DN	DN80	DN80	DN100	DN100	DN125	DN125
Condensation temp. - C	60	60	60	60	60	60
Water temp flow - C	60	60	60	60	60	60
Water temp return - C	40	40	40	40	40	40
Flow - m3/h	7,9	10,5	18,7	24,7	28,0	36,4
KV value - m3/h at 1 bar	52	52	132	132	140	140
Pressure diff. - Bar	0,02	0,04	0,02	0,04	0,04	0,07
Pipe size - DN	DN65	DN65	DN80	DN80	DN100	DN100
Compressor type	Semih. screw	Semih. screw	Semih. screw	Semih. screw	Semih. screw	Semih. screw
Swept vol - m3/h	199	264	468	620	702	912
Current - Amp.	92	123	221	284	331	404
Max. allowed current - Amp	128	160	282	375	427	474
Sound level 1 m - dBa	77,0	78,0	82,0	82,0	83,0	84,0
(Cabinet lower sound level by aproxx 20 dBa)						
Length - m	3,7	3,7	3,7	3,7	3,7	3,7
Width - m	1,2	1,2	1,2	1,2	1,2	1,2
Height - m	2,7	2,7	2,7	2,7	2,7	2,7
(Cabinet size)						
Weight incl. cabinet - kg	2053	2060	2827	3414	3847	3877

Standard: up to 65 C temperature on R290

With evaporator and condeser as water to water unit - data given at Te = 0 C, Tc = 60 C and 17 C subcooling

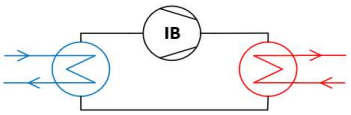
Variations :

1: Without evaporators for air to water direct expansion in air coolers

2: With hot gas output valve for hot gas defrost of air coolers

3: Without condenser where hot gas goes to high temperature unit cascade heat exchanger

Solid energy a/s



Data sheet - compressor unit motor 1

Size	60IB	80IB	140IB	170IB	200IB	250IB
Heat power - kW	201	267	474	627	710	923
Cooling power kW - kW	164	218	386	511	579	752
Evaporation temp. - C	25	25	25	25	25	25
Water temp flow - C	29	29	29	29	29	29
Water temp return - C	34	34	34	34	34	34
Flow - m3/h	28,2	37,4	66,3	87,9	99,5	129,3
KV value - m3/h at 1 bar	84	84	182	182	364	364
Pressure diff. - Bar	0,11	0,20	0,13	0,23	0,07	0,13
Pipe size - DN	DN80	DN80	DN100	DN100	DN125	DN125
Condensation temp. - C	70	70	70	70	70	70
Water temp flow - C	70	70	70	70	70	70
Water temp return - C	35	35	35	35	35	35
Flow - m3/h	4,9	6,6	11,6	15,4	17,4	22,7
KV value - m3/h at 1 bar	52	52	132	132	140	140
Pressure diff. - Bar	0,01	0,02	0,01	0,01	0,02	0,03
Pipe size - DN	DN65	DN65	DN80	DN80	DN100	DN100
Compressor type	Semih. screw	Semih. screw	Semih. screw	Semih. screw	Semih. screw	Semih. screw
Swept vol - m3/h	199	264	468	620	702	1085
Current - Amp.	59	72	128	177	184	285
Max. allowed current - Amp	80	125	198	283	315	490
Sound level 1 m - dBa	77,0	77,5	82,2	82,4	82,7	87,1
(Cabinet lower sound level by aproxx 20 dBa)						
Length - m	3,7	3,7	3,7	3,7	3,7	3,7
Width - m	1,2	1,2	1,2	1,2	1,2	1,2
Height - m	2,7	2,7	2,7	2,7	2,7	2,7
(Cabinet size)						
Weight incl. cabinet - kg	2040	2055	2825	3370	3817	3952

Standard: up to 90 C temperature on R600a

With evaporator and condeser as water to water unit - data given at Te =25 C, Tc = 70 C and 32 C subcooling

Variations :

1: Without evaporators and with cascade heat exchanger instead.

Solid energy a/s

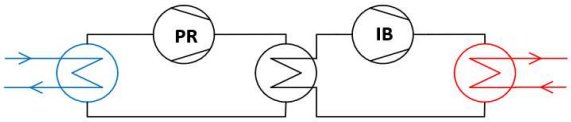
Combination of compressor units - two stage based units

2 stage unit - named 60IB/PR, 80IB/PR, 140IB/PR, 170IB/PR, 200IB/PR and 250IB/PR

Made by:

1 pcs. IB compressor as second stage compressor variation 1 with cascade heat echanger for evaporation

1 pcs. PR compressor as first stage compressor variation 3 with condensation in second stage cascade heat exch.



2 step heating unit - named 62IB/PR-PR, 82IB/PR-PR,

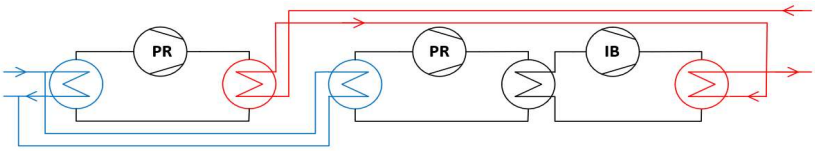
142IB/PR-PR, 172IB/PR-PR, 202IB/PR-PR and 252IB/PR-PR

Made by:

1 pcs. IB compressor as second stage in 2 stage unit, variation 1 with cascade heat echanger for evaporation.

1 pcs. PR compressor as first stage in 2 stage unit, variation 3 with condensation in second stage cascade heat exch.

1 pcs. PR compressor standard as first step heating before two stage unit takes it to flow temperature level.



3 step heating unit - named 63IB/PR-PR-PR, 83IB/PR-PR-PR,

143IB/PR-PR-PR, 173IB/PR-PR-PR, 203IB/PR-PR-PR and 253IB/PR-PR-PR

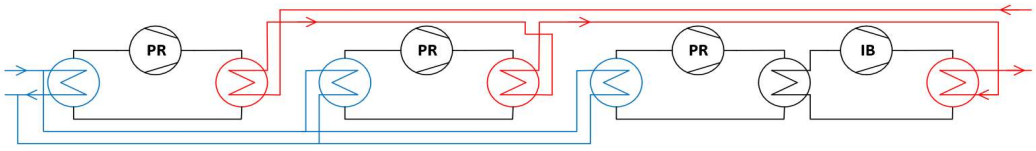
Made by:

1 pcs. IB compressor as second stage in two stage unit, variation 1 with cascade heat echanger for evaporation.

1 pcs. PR compressor as first stage in two stage unit, variation 3 with condensation in second stage cascade heat exch.

1 pcs. PR compressor standard as second step heating before two stage unit takes it to flow temperature level.

1 pcs. PR compressor standard as first step heating before next one stage unit takes it to higher temperature level.



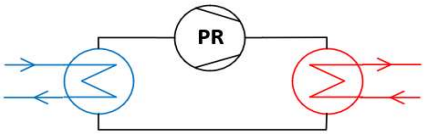
Combination of compressor units - one 1 stage based units

1 stage unit - named 60IB, 80IB, 140IB, 170IB, 200IB and 250IB

or 60PR, 80PR, 140PR, 170PR, 200PR and 250PR

Made by:

1 pcs. IB or PR compressor

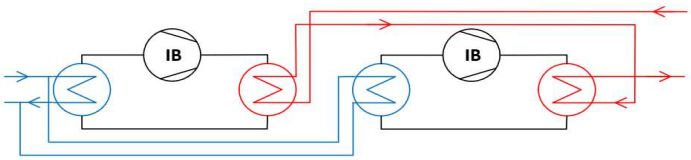


2 step heating unit - named 62IB-IB, 82IB-IB, 142IB-IB, 172IB-IB, 222IB-IB and 252IB-IB

or 62PR-PR, 82PR-PR, 142PR-PR, 172PR-PR, 202PR-PR and 252PR-PR

Made by:

2 pcs. IB or PR compressor with the possibillity to run evaporators in series and run condensers in series
if temperatur differens on flow and return are high enough.

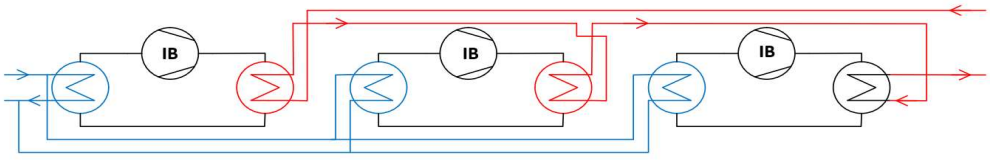


3 step heating unit - named 63IB-IB-IB, 83IB-IB-IB, 143IB-IB-IB, 173IB-IB-IB, 203IB-IB-IB and 253IB-IB-IB

or 63PR-PR-PR, 83PR-PR-PR, 143PR-PR-PR, 173PR-PR-PR, 203PR-PR-PR and 253PR-PR-PR

Made by:

3 pcs. IB or PR compressor with the possibillity to run evaporators in series and run condensers in series
if temperatur differens on flow and return are high enough.



Models heat power and COP

Compressor units overview - 65 C - Nominal heat power kW and COP

Single stage			Evaporation -20 - 12 C, Condensation 30 - 65 C				Nominal efficiency at 60/40-0, COP heat =		3,38
LW60PR	LW80PR	LW140PR	LW170PR	LW200PR	LW250PR	LW340PR	LW400PR	LW500PR	LW750PR
185	245	435	576	652	847	1.152	1.304	1.694	2.541
Two single stage in series			Evaporation -20 - 12 C, Condensation 30 - 65 C				Nominal efficiency at 60/40-0, COP heat =		3,60
LW62PR-PR	LW82PR-PR	LW142PR-PR	LW172PR-PR	LW202PR-PR	LW252PR-PR	LW342PR-PR	LW402PR-PR	LW502PR-PR	LW752PR-PR
364	483	857	1.135	1.285	1.670	2.271	2.571	3.340	5.010
Three single stage in series			Evaporation -20 - 12 C, Condensation 30 - 65 C				Nominal efficiency at 60/40-0, COP heat =		3,68
LW63PR-PR-PR	LW83PR-PR-PR	LW143PR-PR-PR	LW173PR-PR-PR	LW203PR-PR-PR	LW253PR-PR-PR	LW343PR-PR-PR	LW403PR-PR-PR	LW503PR-PR-PR	LW753PR-PR-PR
545	723	1.281	1.697	1.921	2.496	3.394	3.843	4.992	7.488

* Nominal efficiency at Flow temp. / Return temp. - evaporation temp.

Compressor units overview - 90 C - Nominal heat power kW and COP

Single stage			Evaporation 0 - 40 C, Condensation 55 - 90 C				Nominal efficiency at 70/35-25, COP heat =		5,41
LW60IB	LW80IB	LW140IB	LW170IB	LW200IB	LW250IB	LW340IB	LW400IB	LW500IB	LW750IB
201	267	474	627	710	923	1.255	1.421	1.846	2.769
Two single stage in series			Evaporation 0 - 40 C, Condensation 55 - 90 C				Nominal efficiency at 70/35-25, COP heat =		5,87
LW62IB-IB	LW82IB-IB	LW142IB-IB	LW172IB-IB	LW202IB-IB	LW252IB-IB	LW342IB-IB	LW402IB-IB	LW502IB-IB	LW752IB-IB
401	532	943	1.249	1.414	1.837	2.498	2.828	3.674	5.511
Three single stage in series			Evaporation 0 - 40 C, Condensation 55 - 90 C				Nominal efficiency at 70/35-25, COP heat =		6,03
LW63IB-IB-IB	LW83IB-IB-IB	LW143IB-IB-IB	LW173IB-IB-IB	LW203IB-IB-IB	LW253IB-IB-IB	LW343IB-IB-IB	LW403IB-IB-IB	LW503IB-IB-IB	LW753IB-IB-IB
600	796	1.411	1.869	2.116	2.749	3.738	4.232	5.498	8.247
Two stage			Evaporation -20 - 12 C, Condensation 55 - 90 C				Nominal efficiency at 70/35-0, COP heat =		2,96
LW60IB/PR	LW80IB/PR	LW140IB/PR	LW170IB/PR	LW200IB/PR	LW250IB/PR	LW340IB/PR	LW400IB/PR	LW500IB/PR	LW750IB/PR
169	224	397	526	596	774	1.052	1.192	1.548	2.322
Two stage + single stage in series			Evaporation -20 - 12 C, Condensation 55 - 90 C		Return temp. max = 65 - (Flow temp. - 65)		Nominal efficiency at 70/35-0, COP heat =		3,24
LW62IB/PR-PR	LW82IB/PR-PR	LW142IB/PR-PR	LW172IB/PR-PR	LW202IB/PR-PR	LW252IB/PR-PR	LW342IB/PR-PR	LW402IB/PR-PR	LW502IB/PR-PR	LW752IB/PR-PR
333	442	783	1.037	1.175	1.526	2.075	2.349	3.052	4.578
Two stage + two single stage in series			Evaporation -20 - 12 C, Condensation 55 - 90 C		Return temp. max = 65 - ((Flow temp. - 65) x 2		Nominal efficiency at 70/35-0, COP heat =		3,34
LW63IB/PR-PR-PR	LW83IB/PR-PR-PR	LW143IB/PR-PR-PR	LW173IB/PR-PR-PR	LW203IB/PR-PR-PR	LW253IB/PR-PR-PR	LW343IB/PR-PR-PR	LW403IB/PR-PR-PR	LW503IB/PR-PR-PR	LW753IB/PR-PR-PR
498	660	1.171	1.551	1.756	2.281	3.101	3.512	4.562	6.843

* Nominal efficiency at Flow temp. / Return temp. - evaporation temp.

Swept vol. at primary compressor

199	264	468	620	702	912	1240	1404	1824	2736

Models heat power and COP

Compressor units overview - 115 C - Nominal heat power kW and COP

Single stage			Evaporation 25 - 60 C, Condensation 80 - 115 C				Nominal efficiency at 115/100-50, COP heat =		3,29
LW60BU	LW80BU	LW140BU	LW170BU	LW200BU	LW250BU	LW340BU	LW400BU	LW500BU	LW750BU
163	216	382	506	573	745	1.013	1.147	1.490	2.235
Two single stage in series			Evaporation 25 - 60 C, Condensation 80 - 115 C				Nominal efficiency at 115/100-50, COP heat =		3,42
LW62BU-BU	LW82BU-BU	LW142BU-BU	LW172BU-BU	LW202BU-BU	LW252BU-BU	LW342BU-BU	LW402BU-BU	LW502BU-BU	LW752BU-BU
322	428	758	1.004	1.137	1.477	2.008	2.274	2.954	4.431
Three single stage in series			Evaporation 25 - 60 C, Condensation 80 - 115 C				Nominal efficiency at 115/100-50, COP heat =		3,46
LW63BU-BU-BU	LW83BU-BU-BU	LW143BU-BU-BU	LW173BU-BU-BU	LW203BU-BU-BU	LW253BU-BU-BU	LW343BU-BU-BU	LW403BU-BU-BU	LW503BU-BU-BU	LW753BU-BU-BU
482	640	1.134	1.502	1.701	2.210	3.005	3.402	4.420	6.630
Two stage			Evaporation -20 - 12 C, Condensation 80 - 115 C				Nominal efficiency at 115/100-0, COP heat =		1,89
LW60BU/PR	LW80BU/PR	LW140BU/PR	LW170BU/PR	LW200BU/PR	LW250BU/PR	LW340BU/PR	LW400BU/PR	LW500BU/PR	LW750BU/PR
160	213	377	500	566	735	999	1.132	1.470	2.205
Two stage			Evaporation 0 - 40 C, Condensation 80 - 115 C				Nominal efficiency at 115/100-25, COP heat =		2,43
LW60BU/IB	LW80BU/IB	LW140BU/IB	LW170BU/IB	LW200BU/IB	LW250BU/IB	LW340BU/IB	LW400BU/IB	LW500BU/IB	LW750BU/IB
224	297	527	698	791	1.027	1.396	1.581	2.054	3.081
Two stage + single stage in series			Evaporation 0 - 40 C, Condensation 80 - 115 C				Nominal efficiency at 110/70-25, COP heat =		3,18
LW62BU/IB-IB	LW82BU/IB-IB	LW142BU/IB-IB	LW172BU/IB-IB	LW202BU/IB-IB	LW252BU/IB-IB	LW342BU/IB-IB	LW402BU/IB-IB	LW502BU/IB-IB	LW752BU/IB-IB
392	520	922	1.222	1.383	1.797	2.443	2.766	3.594	5.391

* Nominal efficiency at Flow temp. / Return temp. - evaporation temp.

Compressor units overview - 150 C - Nominal heat power kW and COP

Single stage			Evaporation 45 - 75 C, Condensation 110 - 145 C				Nominal efficiency at 140/130-75, COP heat =		3,11
LW60IP	LW80IP	LW140IP	LW170IP	LW200IP	LW250IP	LW340IP	LW400IP	LW500IP	LW750IP
119	157	279	370	419	544	740	837	1.088	1.632
Two single stage in series			Evaporation 45 - 75 C, Condensation 110 - 145 C				Nominal efficiency at 140/120-75, COP heat =		3,70
LW62IP-IP	LW82IP-IP	LW142IP-IP	LW172IP-IP	LW202IP-IP	LW252IP-IP	LW342IP-IP	LW402IP-IP	LW502IP-IP	LW752IP-IP
268	356	631	836	947	1.230	1.672	1.894	2.460	3.690
Three single stage in series			Evaporation 45 - 75 C, Condensation 110 - 145 C				Nominal efficiency at 140/120-75, COP heat =		4,34
LW63IP-IP-IP	LW83IP-IP-IP	LW143IP-IP-IP	LW173IP-IP-IP	LW203IP-IP-IP	LW253IP-IP-IP	LW343IP-IP-IP	LW403IP-IP-IP	LW503IP-IP-IP	LW753IP-IP-IP
449	596	1.057	1.400	1.585	2.059	2.800	3.170	4.118	6.177
Two stage			Evaporation -20 - 12 C, Condensation 110 - 145 C				Nominal efficiency at 140/120-0, COP heat =		1,54
LW60IP/PR	LW80IP/PR	LW140IP/PR	LW170IP/PR	LW200IP/PR	LW250IP/PR	LW340IP/PR	LW400IP/PR	LW500IP/PR	LW750IP/PR
82	109	192	255	289	375	510	577	750	1.125
Two stage			Evaporation 0 - 40 C, Condensation 110 - 145 C				Nominal efficiency at 140/120-25, COP heat =		1,89
LW60IP/IB	LW80IP/IB	LW140IP/IB	LW170IP/IB	LW200IP/IB	LW250IP/IB	LW340IP/IB	LW400IP/IB	LW500IP/IB	LW750IP/IB
127	168	298	395	447	581	790	894	1.162	1.743
Two stage			Evaporation 25 - 60 C, Condensation 110 - 145 C				Nominal efficiency at 140/120-40, COP heat =		2,27
LW60IP/BU	LW80IP/BU	LW140IP/BU	LW170IP/BU	LW200IP/BU	LW250IP/BU	LW340IP/BU	LW400IP/BU	LW500IP/BU	LW750IP/BU
134	178	316	419	474	616	838	948	1.232	1.848

Controls specification

Compressor units contains compressor controller with HMI panel and frequenzy converter

From HMI panel:

Start and stop unit
See pressures and temperatures
See valve positions
See frequency inverter speed
See alarm messages
Adjust heat output temperature
Adjust unit load

Through BUS comunication cable:

Take unit into remote control
Start and stop unit
Get run / stop and alarm signal
See pressures and temperatures
See valve positions
See frequency inverter speed
See alarm messages code number
Give general reset signal for resetting all allowed alarms
Adjust heat output temperature
Adjust unit load

Through " hard wired " in and outputs:

Send start signal digital
Send load signal 4-20 mA
Send temperature output signal 4-20 mA
Receive "Run" signal digital
Receive "Alarm" signal digital

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