TOPDUAL

WATER-COOLED CHILLER / HEAT PUMP

R290 / R1270

TOPDUAL

Indoor and outdoor installation

Natural refrigerant: Propane (R290) or propylene (R1270)

Maximum flow temperature[1]: 65 °C (90 °C)

Cooling capacity range[2]:

from 43 kW to 574 kW

Heating capacity range[3]:

from 53 kW to 718 kW



[1] Up to 90 °C available on request

[2] Evaporator inlet/outlet water temperature 15/10 °C

[3] Condenser inlet/outlet water temperature 40/45 °C

EN 378 compliant
enclosed housing

FRIGOPLUS
NATURAL COOLING & HEATING

R290 R1270

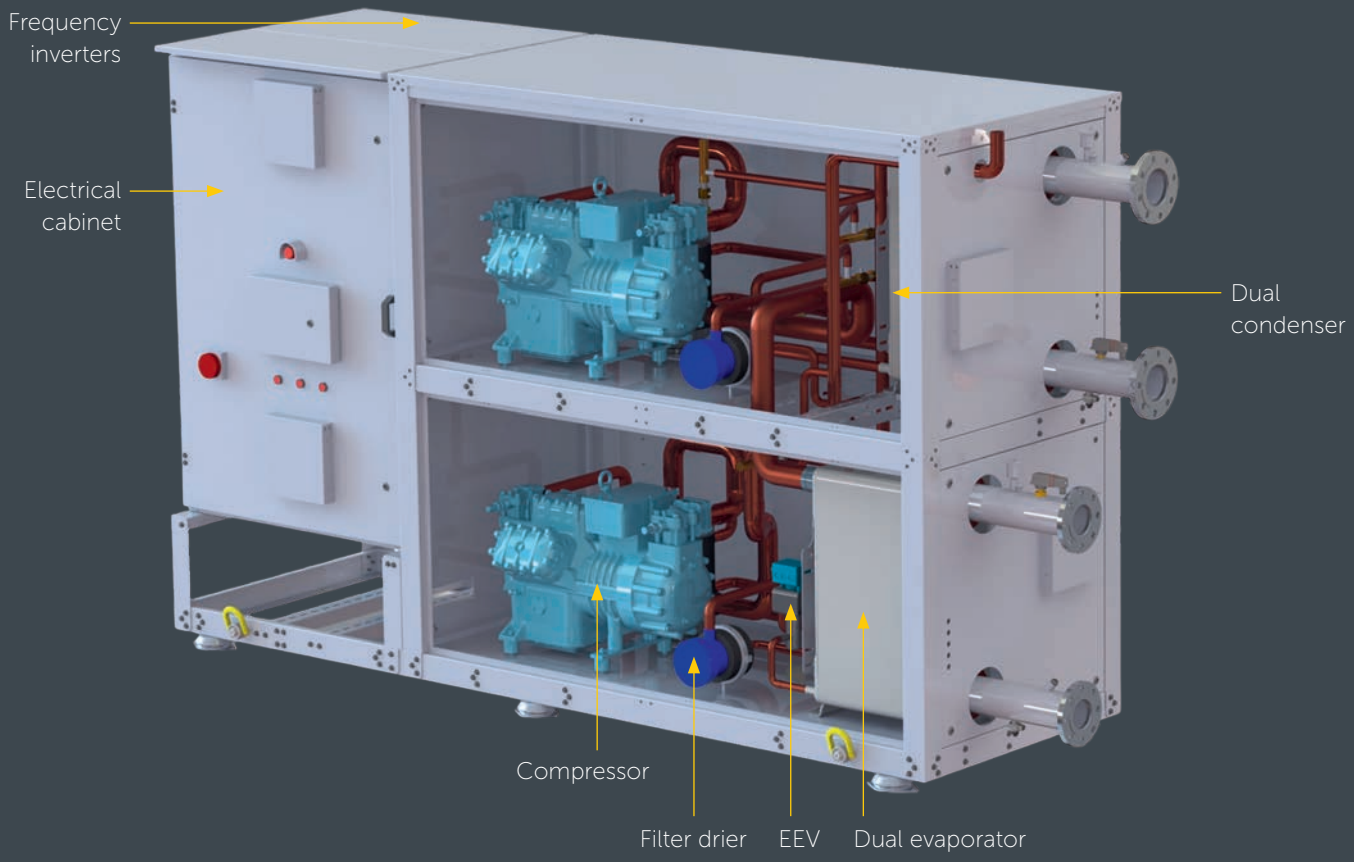
TOPDUAL

WATER-COOLED CHILLER / HEAT PUMP

TOPDUAL series consists of high-efficiency water-cooled units of compact design, suitable for indoor and outdoor installation. They are designed to meet heating and cooling demands from small to large-capacity systems. Furthermore, TOPDUAL units allow for parallel configuration in order to increase total available capacity.

REFRIGERATION CIRCUIT

- Two refrigerant circuits, each with a variable-speed semi-hermetic reciprocating compressor
- True Dual heat exchangers – Evaporator and condenser of highest quality and performance
- Electronic expansion valve (EEV)
- Selected ATEX-Certified components available on request



EN 378 compliant:

✓ Enclosed housing - All refrigerant circuit components installed inside the housing

✓ Safety strategy: refrigerant gas leak detector + differential air pressure switch + ATEX fan

✓ Refrigerant charge below 4,9 kg for indoor installation purposes

HYDRONIC CIRCUIT

Standard equipment:

- Stainless steel piping with thermal insulation
- Mechanical flow switches
- Air vent valves
- Drain valves
- Temperature probes



TOPDUAL HYDRO MODULE

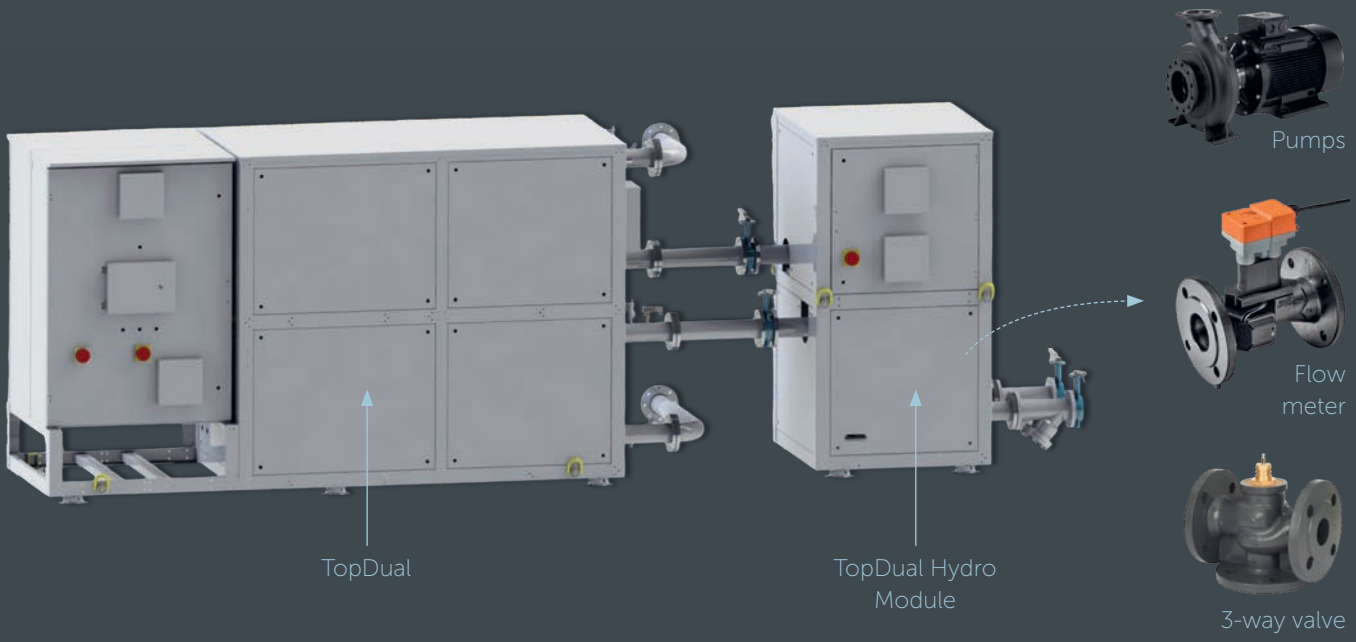
TOPDUAL Hydro Module provides a convenient upgrade for the hydronic circuit. Designed specifically for a TOPDUAL unit, it offers:

✓ Circulation pumps for cold & hot side, providing centralized and effective flow control

✓ Flow meter on cold side, 3-way valve on hot side, filter driers, safety valves, closing valves

✓ Fast and simplified installation with quick-connect flanged connections

✓ Greater application flexibility of TOPDUAL units for a wide range of systems



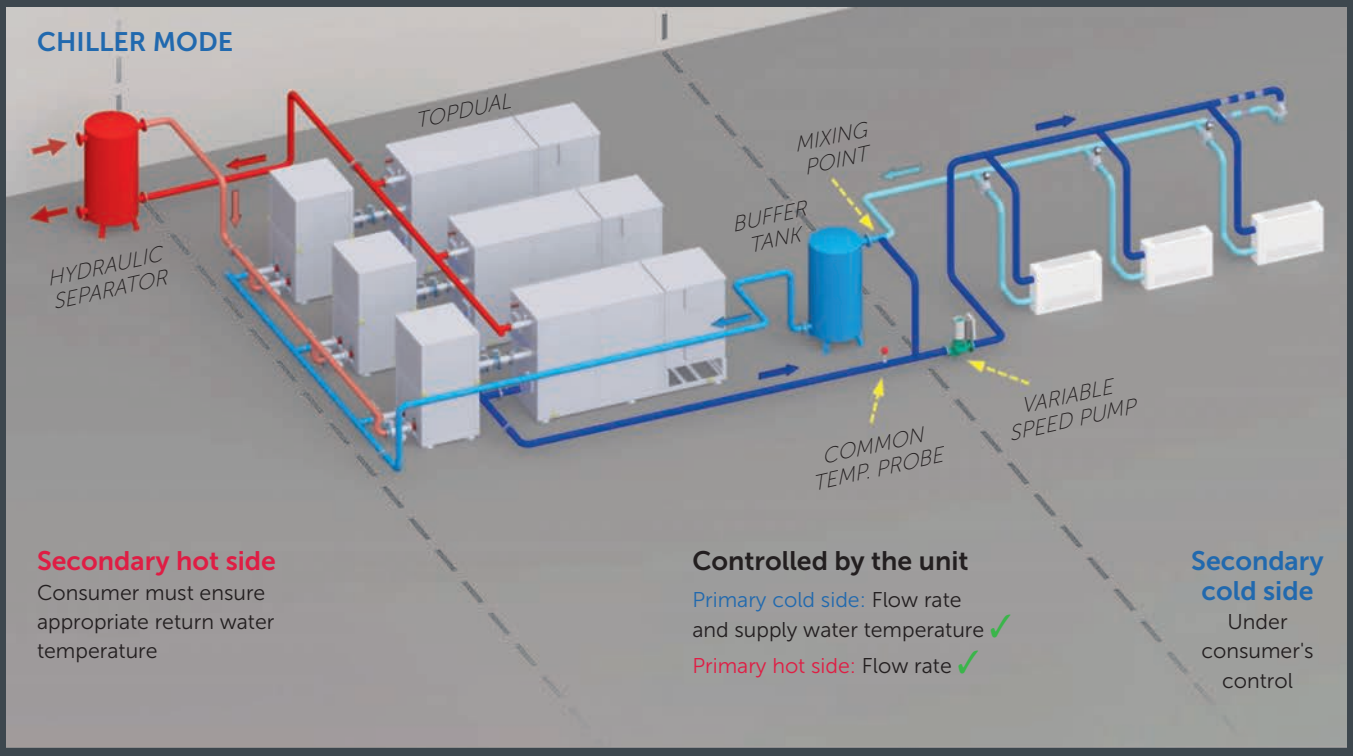
TOPDUAL units can also be paired with standardized Hydro Modules which offer buffer tank / hydraulic separator with up to 2500 L volume with primary and secondary pumps on both cold and hot side.

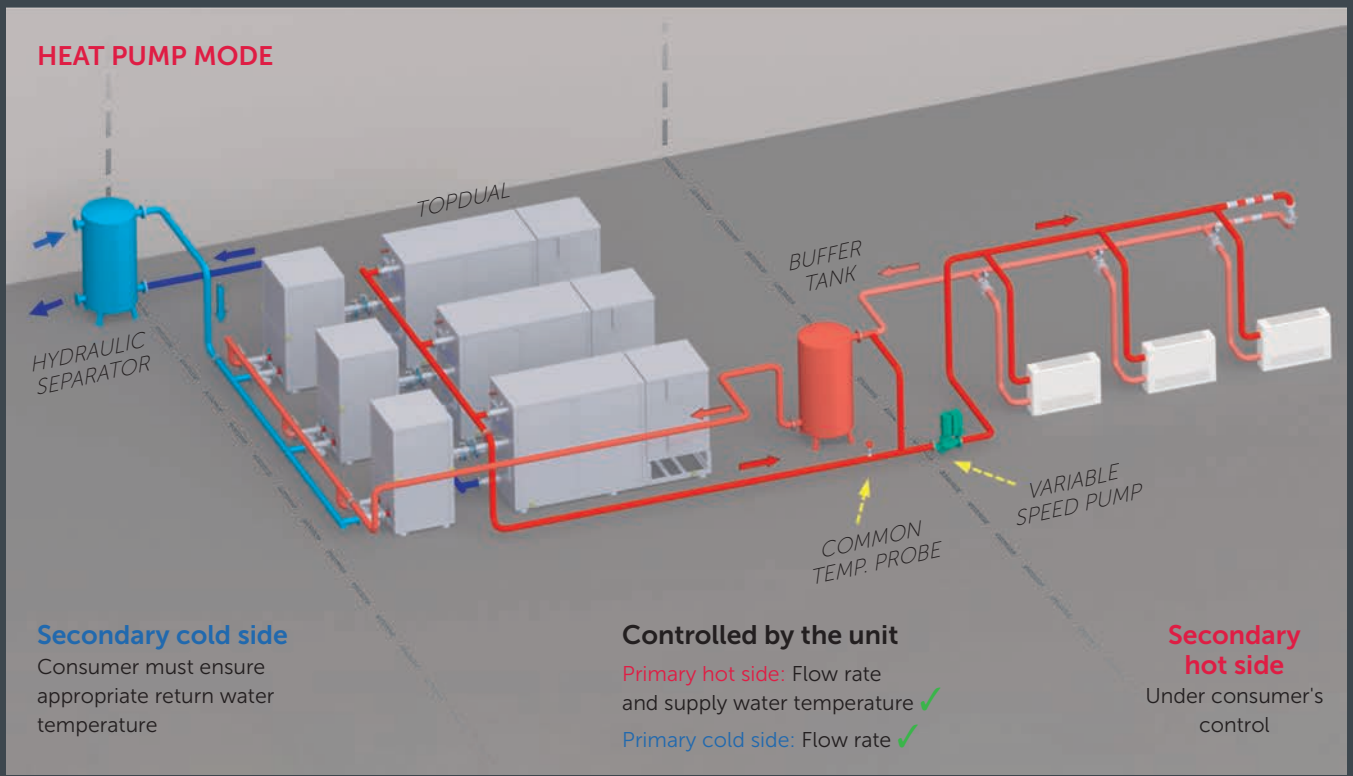
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INTEGRATION INTO HYDRONIC SYSTEMS

TOPDUAL can be easily integrated into hydronic systems using collectors and a buffer tank placed on the return pipe.

> Whether the system consists of one or multiple TOPDUAL units in parallel configuration, the integrated controller regulates the supply temperature and flow rate on the controlled primary side. The return temperature on the opposite side (hot side in chiller mode, cold side in heat pump mode) must be maintained by the external system within the unit's specified operating range.

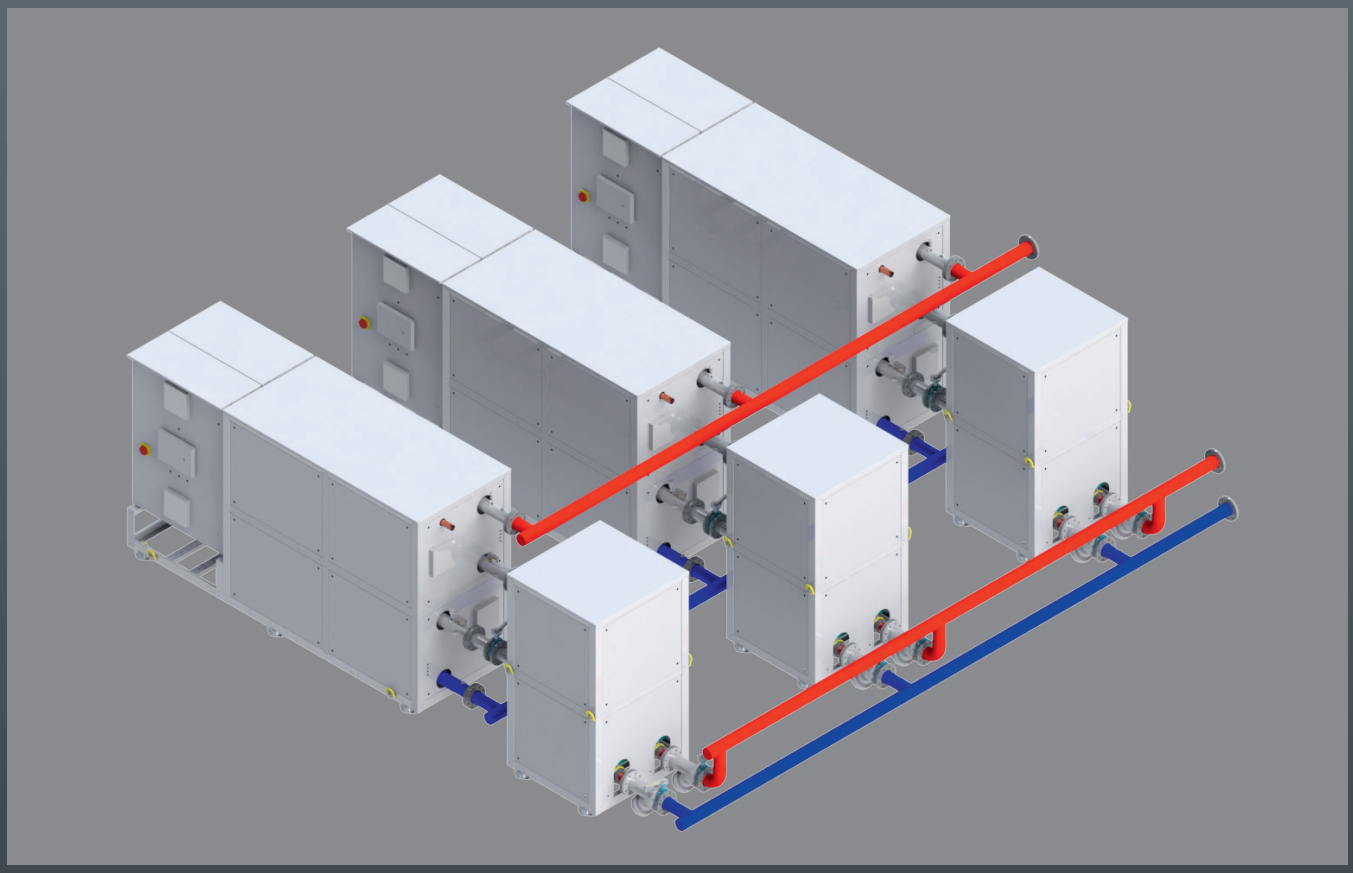




PARALLEL CONFIGURATION

TOPDUAL units support parallel configuration, enabling scalable capacity, with the compact design further enhancing flexibility and efficiency of system layout.

Control is based on the leading-following principle, with one unit operating as the lead unit while others operate as follower units.



WHY PARALLEL?

SCALABLE CAPACITY
Capacity can be increased by simply adding units.

BUILT-IN REDUNDANCY
System remains operational even if one unit is unavailable.

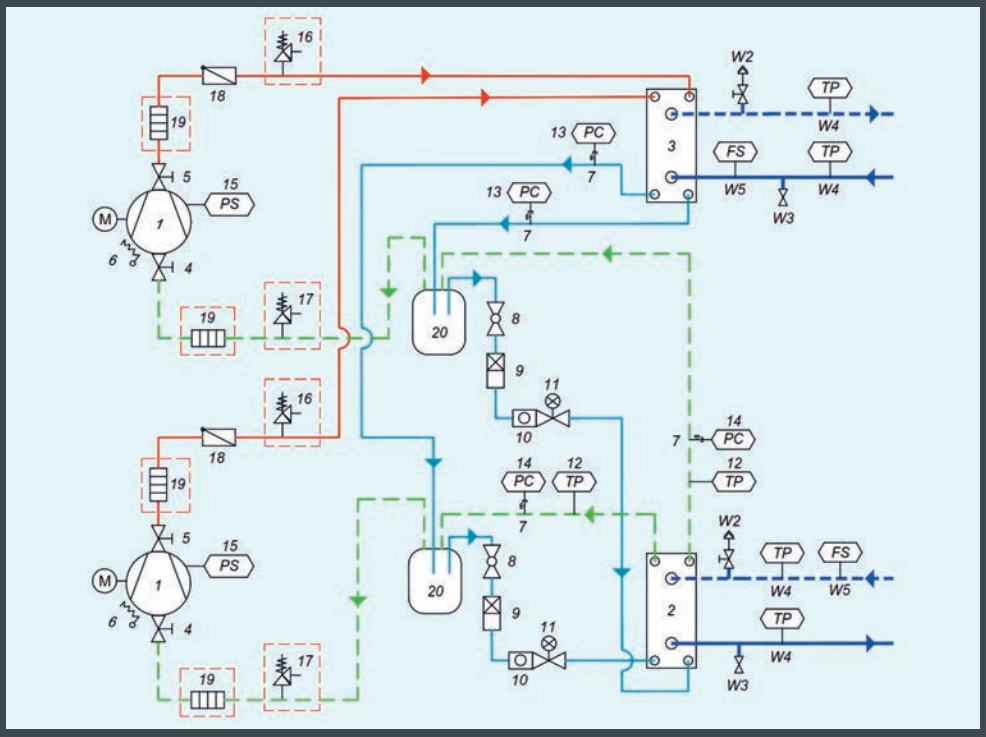
HIGH PART-LOAD EFFICIENCY
Only the required number of units operates, saving energy.

EASY SERVICE & MAINTENANCE
Individual units can be serviced with minimal impact on the system.

KEY FEATURES

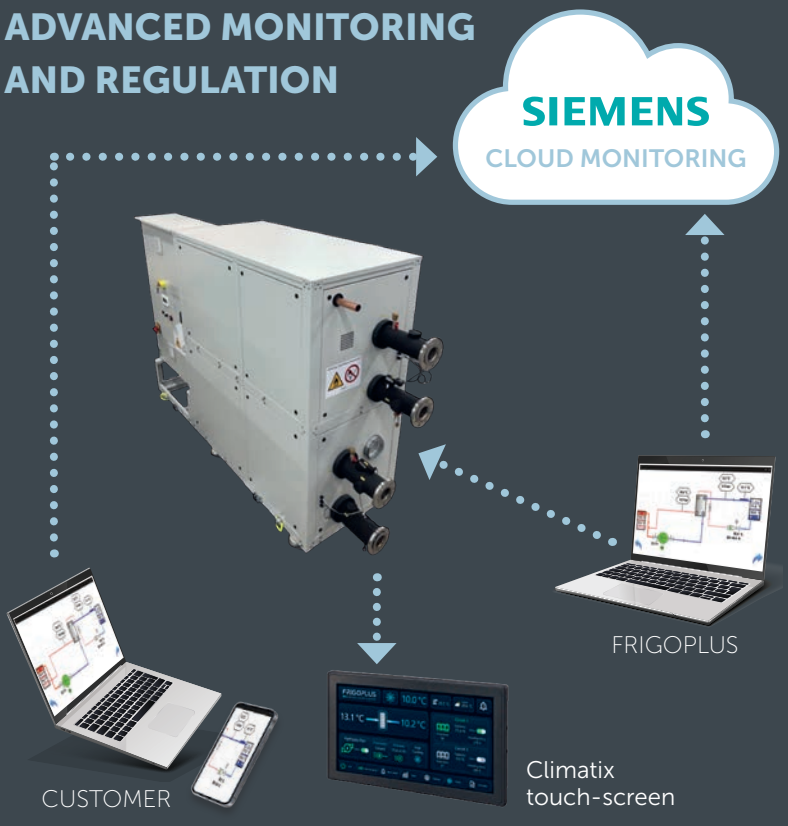
- Lead/follow control strategy
- Automatic unit staging ON/OFF
- Variable-speed compressors for maximum efficiency
- Compact design saves space in the plant room
- Easy future expansion

SIMPLIFIED P&ID



Pos.	Part name
1	Compressor
2	Evaporator (BPHE)
3	Condenser (BPHE)
4	Rotalock valve LP
5	Rotalock valve HP
6	Crankcase heater
7	Tee access fitting
8	Shut-off valve
9	Filter drier
10	Sight glass
11	El. expansion valve
12	Temperature probe
13	Pressure probe HP
14	Pressure probe LP
15	Pressure switch
16	Safety valve HP
17	Safety valve LP
18	Check valve
19	Anti-vibration tube
20	Suction separator
W2	Air vent valve
W3	Drain valve
W4	Temperature probe
W5	Flow switch

ADVANCED MONITORING AND REGULATION



SIEMENS controller:

- Intuitive and user friendly touch-screen
- Advanced compressor frequency regulation depending on the required water temperature regime
- Electronic expansion valve & superheat control
- Primary circuit pump regulation
- Easy connectivity with standard MODBUS or BACnet protocols
- Unit protection and alarm management for safe and reliable operation

SIEMENS cloud:

- Live data tracking
- Data archiving
- Process variable comparison
- Alarm monitoring & diagnostics

SAFETY & QUALITY

All units are designed in accordance with the highest safety standards and follow EN 378 for refrigerants from group A3.

- Units tested according to HRN EN 14 511
- ISO 9001 : 2015
- Module A2 - Monitoring of Final Assessment, according to Directive 2014/68/EU

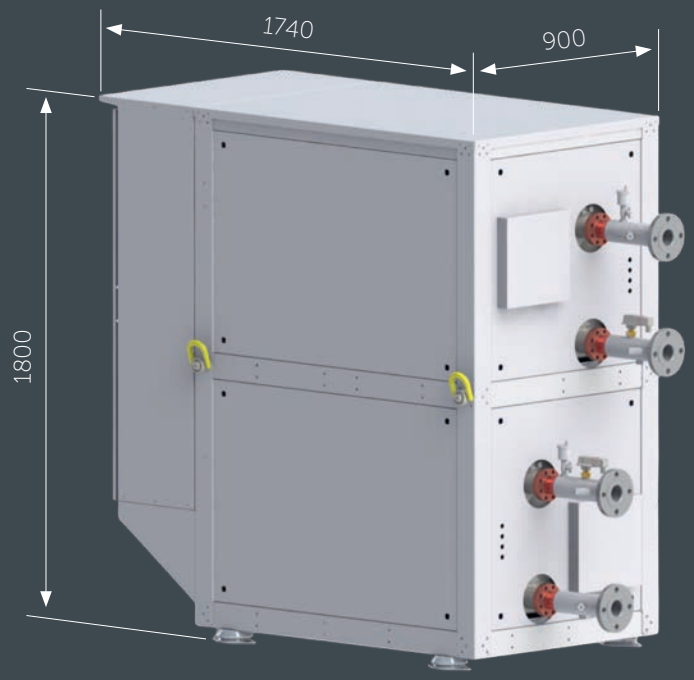
TOPDUAL A

		A021	A025	A033	A036
Cooling capacity (1)	kW	43	51	62	75
EER (1)	-	4,29	4,07	3,61	4,08
Heating capacity (2)	kW	53	64	79	94
COP (2)	-	5,29	5,07	4,61	5,08
Refrigerant charge per circuit (est.)	kg	1,0	1,3	1,4	1,6
Compressor		Semi-hermetic reciprocating			
Compressors / circuits	no	2/2	2/2	2/2	2/2
Evaporator (cooling side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	7,4	8,8	10,6	12,9
Head loss	-	Up to 40 kPa			
Type of connection	Flange	DN 50	DN 50	DN 50	DN 65
Condenser (heating side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	9,2	11,1	13,7	16,3
Head loss	-	Up to 40 kPa			
Type of connection	Flange	DN 50	DN 50	DN 50	DN 65
Noise levels (3)					
Sound power lev.	dB(A)	69,0	69,0	73,0	73,5
Sound pressure lev. @10m	dB(A)	37,4	37,5	41,4	41,9
Dimensions					
Length	mm	1740			
Width	mm	900			
Height	mm	1800			
Operating weight (est.)	kg	850	860	880	890
Electrical characteristics					
Power supply	-	TN-S (400/3/50 + PE + N)			
Maximum current	A	22	27	41	41
Recommended dim. of power supply cable	mm^2	5x4	5x6	5x10	5x10
Capacity					
Heating capacity, B0/W45	kW	45	60	65	82
Heating capacity, B0/W55	kW	37	49	57	71

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511.

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.



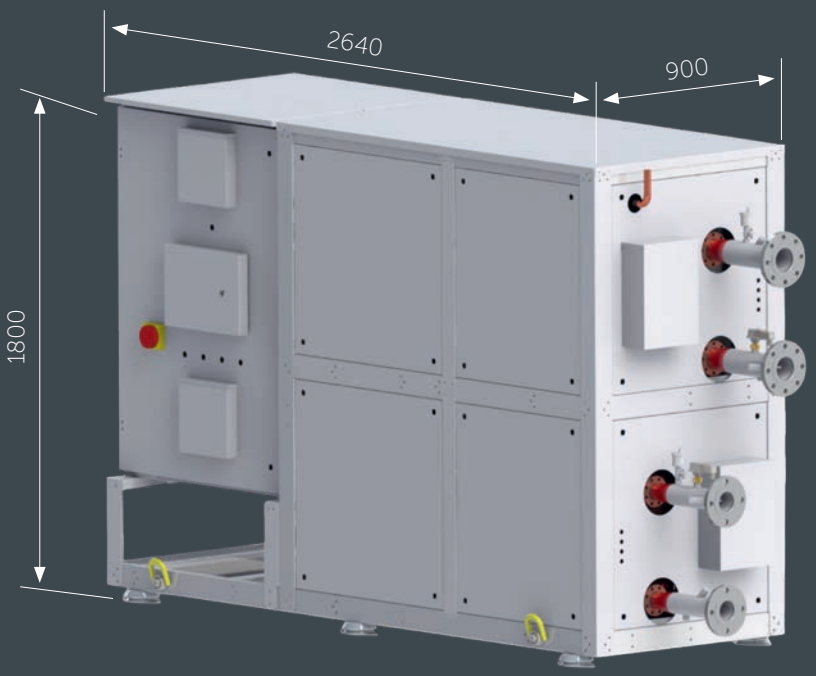
TOPDUAL B

		B042	B052	B056	B063
Cooling capacity (1)	kW	85	104	115	124
EER (1)	-	4,11	4,08	3,81	3,62
Heating capacity (2)	kW	106	130	145	158
COP (2)	-	5,11	5,08	4,81	4,62
Refrigerant charge per circuit (est.)	kg	2,0	2,3	2,5	2,6
Compressor		Semi-hermetic reciprocating			
Compressors / circuits	n°	2/2	2/2	2/2	2/2
Evaporator (cooling side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	14,7	17,9	19,8	20,6
Head loss	-	Up to 45 kPa			
Type of connection	Flange	DN 65	DN 65	DN 80	DN 80
Condenser (heating side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	18,4	22,6	25,2	26,6
Head loss	-	Up to 45 kPa			
Type of connection	Flange	DN 65	DN 80	DN 80	DN 80
Noise levels (3)					
Sound power lev.	dB(A)	74,0	76,0	78,0	78,0
Sound pressure lev. @10m	dB(A)	42,3	44,3	46,3	46,3
Dimensions					
Length	mm	2640			
Width	mm	900			
Height	mm	1800			
Operating weight (est.)	kg	1310	1340	1370	1390
Electrical characteristics					
Power supply	-	TN-S (400/3/50 + PE + N)			
Maximum current	A	43	57	72	76
Recommended dim. of power supply cable	mm^2	5x10	5x25	5x25	5x35
Capacity					
Heating capacity, B0/W45	kW	93	104	113	127
Heating capacity, B0/W55	kW	78	91	100	110

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511.

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.



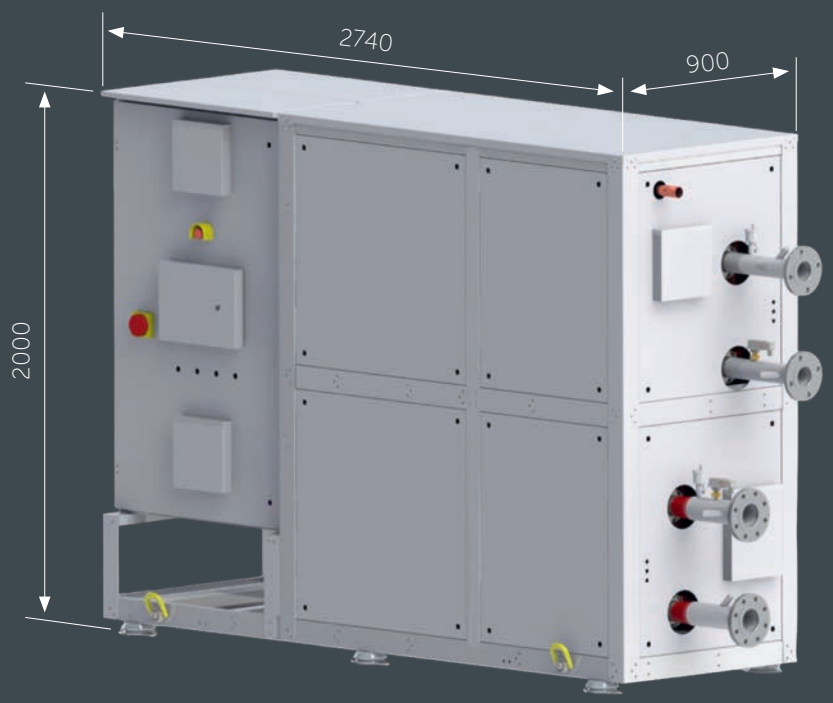
TOPDUAL C

		C071	C093	C103	C123
Cooling capacity (1)	kW	139	181	202	244
EER (1)	-	3,88	4,00	4,04	3,64
Heating capacity (2)	kW	175	227	252	312
COP (2)	-	4,88	5,00	5,04	4,64
Refrigerant charge per circuit (est.)	kg	2,9	3,8	4,3	3,6
Compressor		Semi-hermetic reciprocating			
Compressors / circuits	n°	2/2	2/2	2/2	2/2
Evaporator (cooling side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	23,9	31,2	34,7	42,1
Head loss	-	Up to 60 kPa			
Type of connection	Flange	DN 80	DN 100	DN 100	DN 100
Condenser (heating side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	30,4	39,4	43,8	54,2
Head loss	-	Up to 60 kPa			
Type of connection	Flange	DN 100	DN 100	DN 100	DN 100
Noise levels (3)					
Sound power lev.	dB(A)	77,5	80,0	81,0	82,0
Sound pressure lev. @10m	dB(A)	45,7	48,2	49,2	50,1
Dimensions					
Length	mm	2740			
Width	mm	900			
Height	mm	2000			
Operating weight (est.)	kg	1520	1580	1640	1720
Electrical characteristics					
Power supply	-	TN-S (400/3/50 + PE + N)			
Maximum current	A	74	86	94	141
Recommended dim. of power supply cable	mm^2	5x35	5x35	5x50	5x70
Capacity					
Heating capacity, B0/W45	kW	136	180	206	270
Heating capacity, B0/W55	kW	117	159	183	242

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511.

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.



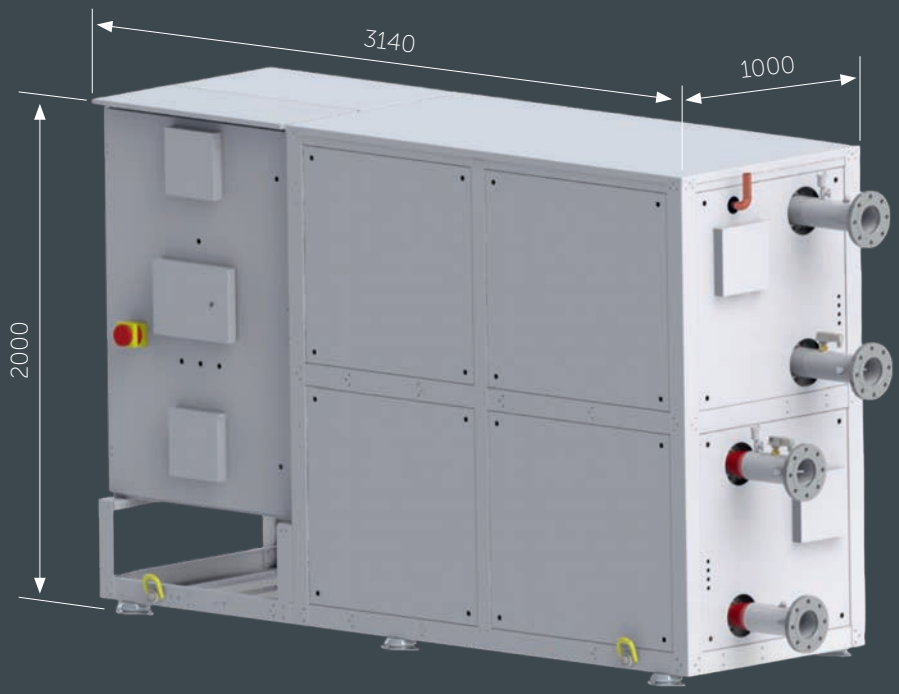
TOPDUAL D

		D106	D126	D140	D168
Cooling capacity (1)	kW	215	246	263	312
EER (1)	-	4,25	4,01	3,99	3,98
Heating capacity (2)	kW	265	308	329	390
COP (2)	-	5,25	5,01	4,99	4,98
Refrigerant charge per circuit (est.)	kg	3,7	4,1	4,2	5,1
Compressor		Semi-hermetic reciprocating			
Compressors / circuits	n°	2/2	2/2	2/2	2/2
Evaporator (cooling side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	37,0	42,4	45,2	53,6
Head loss	-	Up to 60 kPa			
Type of connection	Flange	DN 100	DN 100	DN 100	DN 100
Condenser (heating side)		Brazed plate heat exchanger			
Water flow rate	m^3/h	46,2	53,5	57,2	67,8
Head loss	-	Up to 70 kPa			
Type of connection	Flange	DN 100	DN 100	DN 100	DN 100
Noise levels (3)					
Sound power lev.	dB(A)	82,0	83,5	83,0	83,0
Sound pressure lev. @10m	dB(A)	50,1	51,6	51,1	51,1
Dimensions					
Length	mm	3140			
Width	mm	1000			
Height	mm	2000			
Operating weight (est.)	kg	1900	1900	1950	1950
Electrical characteristics					
Power supply	-	TN-S (400/3/50 + PE + N)			
Maximum current	A	108	122	134	149
Recommended dim. of power supply cable	mm^2	5x50	5x70	5x70	5x95
Capacity					
Heating capacity, B0/W45	kW	226	264	269	310
Heating capacity, B0/W55	kW	200	233	237	272

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511.

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.



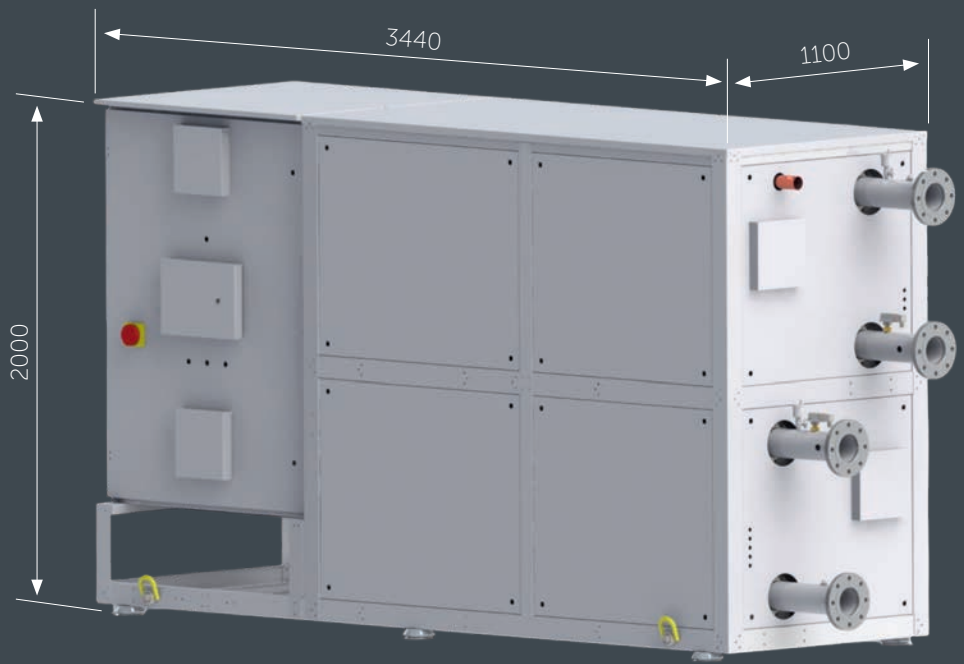
TOPDUAL E

		E187	E206	E240	E259	E284A
Cooling capacity (1)	kW	370	410	444	488	574
EER (1)	-	3,91	3,94	3,86	4,02	4,01
Heating capacity (2)	kW	464	514	559	610	718
COP (2)	-	4,91	4,94	4,86	5,02	5,01
Refrigerant charge per circuit (est.)	kg	5,6	6,5	7,0	7,5	7,2
Compressor		Semi-hermetic reciprocating				
Compressors / circuits	n°	2/2	2/2	2/2	2/2	2/2
Evaporator (cooling side)		Brazed plate heat exchanger				
Water flow rate	m^3/h	63,5	70,5	76,4	84,0	99,0
Head loss	-	Up to 80 kPa				
Type of connection	Flange	DN 100	DN 100	DN 100	DN 100	DN 100
Condenser (heating side)		Brazed plate heat exchanger				
Water flow rate	m^3/h	80,6	89,3	97,3	106,0	125,0
Head loss	-	Up to 80 kPa				
Type of connection	Flange	DN 100	DN 100	DN 100	DN 100	DN 100
Noise levels (3)						
Sound power lev.	dB(A)	87,5	88,0	89,0	86,0	86,0
Sound pressure lev. @10m	dB(A)	55,6	56,1	57,1	54,1	54,1
Dimensions						
Length	mm	3440				3490
Width	mm	1100				1100
Height	mm	2000				2200
Operating weight (est.)	kg	2180	2280	2310	2690	2950
Electrical characteristics						
Power supply	-	TN-S (400/3/50 + PE + N)				
Maximum current	A	200	206	222	272	324
Recommended dim. of power supply cable	mm^2	5x120	5x120	5x120	5x150	5x240
Capacity						
Heating capacity, B0/W45	kW	397	404	440	436	516
Heating capacity, B0/W55	kW	342	350	376	396	470

(1) - Evaporator inlet/outlet water temperature 15/10°C. Values in accordance with EN 14511

(2) - Condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) - Sound data is based on 7/40 °C operation and compressor frequency of 50 Hz.



WATER COOLED CHILLERS / HEAT PUMPS

Water-cooled units are used for indirect cooling or heating for air conditioning of buildings, industrial processes, logistic centers for food retail, precision cooling of data centers etc. Heat transfer fluid can be water, mixture of water and ethylene/propylene glycol or some other secondary heat transfer fluid.

Refrigerant is propane (R290), which due to its excellent thermodynamic properties allows the use of the unit in the temperature range from -25 °C to 20 °C.

ECOLOGY

Natural refrigerant: propane - R290
It belongs to the group of hydrocarbons with GWP_{100} = 0,02 which completely exempts it from the restrictions prescribed by the F-gas Regulation (EU) 2024/573.

ENERGY EFFICIENCY

Thanks to the ideal thermodynamic characteristics of the R290 refrigerant and the optimal selection of the key components of the refrigeration circuit, units have high energy efficiency and meet the requirements of ECODESIGN REGULATIONS.

Producing natural cooling and heating systems since 2002.

FRIGOPLUS
NATURAL COOLING & HEATING

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