

## Air/Water chillers and heat pumps with axial fans and scroll compressors

110 ÷ 930 kW



### TETRIS

Water chiller

#### Unit Frame

Modular self-supporting frame in galvanised sheet steel with baked-on polyester powder coating (colour RAL 5014) and threaded fasteners in stainless steel.

#### Compressors

Hermetic scroll compressors connected in parallel (tandem or trio configuration). Equipped with crankcase heater, thermal protection, liquid line sight glass, contactors and oil equalisation line.

#### Refrigerant Circuit

The circuit includes: liquid line shut-off valve, charge connection, liquid line sight glass, filter dryer, electronic expansion valve, safety valve, pressure transducers to relay information on high and low pressure values and relative condensing and evaporating temperatures for display on the controller, high and low pressure switches.

#### Evaporator

Brazed plate with antifreeze protection and mechanical flow switch.

#### Condenser

Composed of high efficiency coils in "V" execution.

#### Fans

Axial fan directly coupled to 6-pole motors, thermal overload protection and safety guard.

#### Electrical Panel

With main switch, power and control circuit protection and fans.

Microprocessor control with function display.

#### Testing

Units are factory-tested and shipped complete with refrigerant charge and oil.

### TETRIS /HP

Reverse cycle heat pump

In addition to the components featured on TETRIS, this model includes: liquid receiver, 4-way reversing valve. Reverse cycle defrost function (with independent activation on both circuits) in accordance with Blue Box logic, patent no. 1335232, to optimise defrost cycle

operation and duration to obtain an overall increase in the efficiency of the unit.

### HYDRAULIC MODULE OPTIONS

#### TETRIS /ST 3PS

In addition to the components featured on TETRIS, this model includes: insulated storage tank, three water pumps, expansion vessel, check valves and gate valve. (available from 27.4 to 93.12).

#### TETRIS /ST 2PS

In addition to the components featured on TETRIS, this model includes: insulated storage tank, two water pumps (with cyclic rotation and automatic changeover in the case of faults), expansion vessel, check valves and gate valve. (from 10.2 to 24.3).

#### TETRIS /ST 1PS

Unlike model TETRIS /ST 2PS, this unit features only one pump.

#### TETRIS /ST 3P

Unlike model TETRIS /ST 3PS, this unit is not fitted with storage tank (available from 27.4 to 93.12).

#### TETRIS /ST 2P

Unlike model TETRIS /ST 2PS, this unit is not fitted with storage tank (available from 10.2 to 24.3).

#### TETRIS /ST 1P

Unlike model TETRIS /ST 2PS, this unit is not fitted with a storage tank, and has only one pump.

### ACCESSORY VERSIONS

#### TETRIS /DC

Unit with heat recovery condenser for 100% recovery of rejection heat for the production of hot water, liquid receiver and automatic microprocessor control of water temperature.

This accessory is not available in the HP and /ST version indicated in the price list.

### TETRIS /DS

Unit with desuperheater for recovery of 20% of rejection heat, installed in series with the condensing coil. This accessory is not available in the /ST version indicated in the price list.

### TETRIS /LN

In addition to the components of the basic version, this low noise unit features a compressor compartment acoustically insulated with sound absorbing matting and an interposed layer of sound-deadening material.

### TETRIS /SLN

Extra-low noise version: in addition to the components of the TETRIS /LN version, this unit features the fan speed regulator.

### MAIN ACCESSORIES

- Condensing pressure control with fan speed regulator;
- Dual set point (low/high temperature) with single electronic thermostatic valve;
- Kit for low water temperatures;
- RS485 serial interface supporting Carel, Modbus, Echelon and Bacnet, combinable also with Johnson and Trend supervision (from 20.3 to 93.12);
- Power factor correction  $\cos \phi \geq 0.9$ ;
- Remote user terminal panel (in addition to the on-board terminal);
- Variable set point with remote signal (0-1V, 0-10V, 0-20mA, 4-20mA) (from 20.3 to 93.12);
- Coils with special anti-corrosion treatment
- Rubber or spring type anti-vibration mounts
- Non-standard RAL paint colours.

# TETRIS - TECHNICAL DATA R410A



Unit size			10.2	12.2	13.2	15.2	16.2	20.3	24.3	27.4	29.4
<b>TETRIS - Cooling</b>											
Nominal cooling capacity	(1)	kW	110,1	120,8	130,79	143,2	160	196,61	229,92	266,52	288,92
Total power input for cooling	(1),(2)	kW	38,50	45,30	52,32	55,51	64,00	78,56	84,68	105,31	114,29
EER	(1)		2,86	2,67	2,50	2,58	2,50	2,50	2,72	2,53	2,53
ESEER	(1)		3,95	3,92	3,68	3,84	3,59	3,94	3,82	4,17	4,12
<b>TETRIS /HP - Cooling</b>											
Nominal cooling capacity	(1)	kW	106,9	117,31	127,04	139,03	155,29	190,92	229,92	258,69	280,39
Total power input for cooling	(1),(2)	kW	41,83	48,58	55,62	58,81	67,94	83,47	89,63	111,87	120,93
EER			2,56	2,41	2,28	2,36	2,29	2,29	2,57	2,31	2,32
ESEER	(1)		3,53	3,55	3,36	3,52	3,28	3,60	3,61	3,81	3,78
<b>TETRIS /HP - Heating</b>											
Nominal heating capacity	(3)	kW	107,1	118,1	128,0	145,0	161,9	191,9	229,9	255,8	281,2
Total power input for heating	(2),(3)	kW	37,30	42,16	46,79	50,39	56,89	69,63	84,75	92,03	98,55
COP	(3)		2,87	2,80	2,74	2,88	2,85	2,76	2,71	2,78	2,85
<b>Compressors</b>											
Quantity / Circuits		n°/n°	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1	3 / 1	3 / 1	4 / 2	4 / 2
Capacity steps		n°	2	2	2	2	2	3	3	4	4
<b>Fans</b>											
Quantity x Installed power		n°x kW	2 x 2,0	2 x 2,0	2 x 2,0	2 x 2,0	2 x 2,0	3 x 2,0	3 x 2,0	4 x 2,0	4 x 2,0
Air flow		m <sup>3</sup> /h	42.000	42.000	42.000	42.000	42.000	63.000	63.000	84.000	84.000
<b>Evaporator</b>											
Water flow		l/h	18.934	20.774	22.492	24.626	27.515	33.811	39.539	45.833	49.685
Pressure drop	(7)	kPa	46,30	51,00	51,80	50,00	50,00	45,90	45,50	41,90	36,40
<b>Hydraulic module</b>											
External available pressure	(6)	kPa	105,7	118,9	99,3	132,7	122,4	173,8	138,5	189,9	181,8
Tank capacity	(6)	l	300	300	300	300	300	300	300	300	300
<b>Sound level</b>											
Sound power value (standard unit)	(4)	dB(A)	89	89	89	89	89	92	92	95	95
Sound pressure value (standard unit)	(5)	dB(A)	61	61	61	61	61	64	64	67	67
Sound power value (LN version)	(4)	dB(A)	86	86	86	86	86	87	88	89	90
Sound pressure value (LN version)	(5)	dB(A)	58	58	58	58	58	59	60	61	62
<b>Basic unit size and weights</b>											
Length		mm	1.158	1.158	1.158	1.158	1.158	2.302	2.302	2.302	2.302
Width		mm	2.302	2.302	2.302	2.302	2.302	2.302	2.302	2.302	2.302
Height		mm	2.397	2.397	2.397	2.397	2.397	2.397	2.397	2.397	2.397
Operating weigh		kg	848	889	928	977	998	1.507	1.636	1.933	2.004
<b>Power supply</b>											
Power supply			400/3~/50 ±5%								

(1) Ambient air temperature 35°C; evaporator inlet/outlet water temperature 12-7 °C

(2) Total power input is sum of compressors and fans power input

(3) Ambient air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40-45 °C

(4) Sound power values calculate in compliance with ISO 3744

(5) Sound pressure values measured at 10 meters from the unit in free field conditions and directional factor Q=2

(6) In ST 2PS or ST 3PS versions

(7) Evaporator inlet/outlet water temperature 12-7 °C

# TETRIS - TECHNICAL DATA R410A

Unit size			32.4	33.5	35,5	40.6	43.6	47.6	50,7	53.8	58.8
<b>TETRIS - Cooling</b>											
Nominal cooling capacity	(1)	kW	307,88	327,48	355,22	399,06	429,11	459,48	486,33	533,09	574,49
Total power input for cooling	(1),(2)	kW	123,00	130,86	140,07	157,80	171,22	184,08	198,44	210,53	228,19
EER	(1)		2,50	2,50	2,54	2,53	2,51	2,50	2,45	2,53	2,52
ESEER	(1)		4,14	4,30	4,40	4,20	4,12	4,30	4,20	4,30	4,27
<b>TETRIS /HP - Cooling</b>											
Nominal cooling capacity	(1)	kW	298,92	317,88	344,91	387,33	416,63	450,26	472,08	517,38	557,53
Total power input for cooling	(1),(2)	kW	129,54	139,09	145,26	167,71	181,12	193,98	209,99	223,73	241,52
EER			2,31	2,29	2,37	2,31	2,30	2,32	2,25	2,31	2,31
ESEER	(1)		3,82	3,93	4,12	3,84	3,78	4,00	3,85	3,93	3,92
<b>TETRIS /HP - Heating</b>											
Nominal heating capacity	(3)	kW	306,5	319,8	349,4	383,7	421,8	459,6	485,8	511,6	562,2
Total power input for heating	(2),(3)	kW	105,84	116,41	121,31	137,92	148,06	159,00	171,98	184,06	197,94
COP	(3)		2,90	2,75	2,88	2,78	2,85	2,89	2,82	2,78	2,84
<b>Compressors</b>											
Quantity / Circuits		n°/n°	4 / 2	5 / 2	5 / 2	6 / 2	6 / 2	6 / 2	7 / 3	8 / 4	8 / 4
Capacity steps		n°	4	5	5	6	6	6	7	8	8
<b>Fans</b>											
Quantity x Installed power		n°x kW	4 x 2,0	5 x 2,0	5 x 2,0	6 x 2,0	6 x 2,0	6 x 2,0	7 x 2,0	8 x 2,0	8 x 2,0
Air flow		m3/h	84.000	105.000	105.000	126.000	126.000	126.000	147.000	168.000	168.000
<b>Evaporator</b>											
Water flow		l/h	52.946	56.316	61.087	68.626	73.794	79.016	83.634	91.675	98.794
Pressure drop	(7)	kPa	41,00	31,30	36,80	43,90	42,10	47,10	45,50	41,90	41,90
<b>Hydraulic module</b>											
External available pressure	(6)	kPa	174,6	154,9	234,0	212,9	206,1	188,5	169,0	151,4	129,2
Tank capacity	(6)	l	300	300	300	300	300	300	500	500	500
<b>Sound level</b>											
Sound power value (standard unit)	(4)	dB(A)	96	97	97	97	97	97	98	100	100
Sound pressure value (standard unit)	(5)	dB(A)	68	69	69	69	69	69	70	72	72
Sound power value (LN version)	(4)	dB(A)	91	92	92	93	93	93	94	95	95
Sound pressure value (LN version)	(5)	dB(A)	63	64	64	65	65	65	66	67	67
<b>Basic unit size and weights</b>											
Length		mm	2.302	3.447	3.447	3.447	3.447	3.447	4.604	4.604	4.604
Width		mm	2.302	2.302	2.302	2.302	2.302	2.302	2.302	2.302	2.302
Height		mm	2.397	2.397	2.397	2.397	2.397	2.397	2.397	2.397	2.397
Operating weigh		kg	2.060	2.369	2.429	2.556	2.712	2.790	3.569	3.866	3.993
<b>Power supply</b>											
Power supply			400/3~/50 ±5%								

(1) Ambient air temperature 35°C; evaporator inlet/outlet water temperature 12-7 °C

(2) Total power input is sum of compressors and fans power input

(3) Ambient air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40-45 °C

(4) Sound power values calculate in compliance with ISO 3744

(5) Sound pressure values measured at 10 meters from the unit in free field conditions and directional factor Q=2

(6) In ST 2PS or ST 3PS versions

(7) Evaporator inlet/outlet water temperature 12-7 °C

# TETRIS - TECHNICAL DATA R410A

Unit size			62.8	67.9	70.9	74.10	78.10	80.12	87.12	93.12
<b>TETRIS - Cooling</b>										
Nominal cooling capacity	(1)	kW	615,93	660,53	683,61	730,4	771,66	798,12	862,79	927,69
Total power input for cooling	(1),(2)	kW	245,99	262,55	277,34	289,26	307,02	315,63	341,91	368,20
EER	(1)		2,50	2,52	2,46	2,53	2,51	2,53	2,52	2,52
ESEER	(1)		4,28	4,33	4,24	4,37	4,35	4,43	4,42	4,41
<b>TETRIS /HP - Cooling</b>										
Nominal cooling capacity	(1)	kW	597,85	641,5	663,51	708,88	749,63	774,67	837,59	900,52
Total power input for cooling	(1),(2)	kW	259,08	277,4	292,24	305,76	323,52	335,43	361,55	387,97
EER			2,31	2,31	2,27	2,32	2,32	2,31	2,32	2,32
ESEER	(1)		3,95	3,98	3,91	4,01	4,01	4,04	4,05	4,06
<b>TETRIS /HP - Heating</b>										
Nominal heating capacity	(3)	kW	612,9	651,2	689,2	715,4	766,1	767,5	843,3	919,3
Total power input for heating	(2),(3)	kW	211,68	228,66	238,93	251,05	264,84	275,84	297,03	318,01
COP	(3)		2,90	2,85	2,88	2,85	2,89	2,78	2,84	2,89
<b>Compressors</b>										
Quantity / Circuits		n°/n°	8 / 4	9 / 3	9 / 3	10 / 4	10 / 4	12 / 4	12 / 4	12 / 4
Capacity steps		n°	8	9	9	10	10	12	12	12
<b>Fans</b>										
Quantity x Installed power		n°x kW	8 x 2,0	9 x 2,0	9 x 2,0	10 x 2,0	10 x 2,0	12 x 2,0	12 x 2,0	12 x 2,0
Air flow		m <sup>3</sup> /h	168.000	189.000	189.000	210.000	210.000	252.000	252.000	252.000
<b>Evaporator</b>										
Water flow		l/h	105.921	113.591	117.560	125.606	132.702	137.252	148.373	159.534
Pressure drop	(7)	kPa	40,70	45,90	45,50	47,10	47,10	43,90	43,90	47,10
<b>Hydraulic module</b>										
External available pressure	(6)	kPa	176,0	147,2	155,6	154,8	182,7	180,4	161,8	138,2
Tank capacity	(6)	l	500	700	700	700	700	700	700	700
<b>Sound level</b>										
Sound power value (standard unit)	(4)	dB(A)	100	100	100	101	101	102	102	102
Sound pressure value (standard unit)	(5)	dB(A)	72	72	72	73	73	74	74	74
Sound power value (LN version)	(4)	dB(A)	95	96	96	97	98	99	99	99
Sound pressure value (LN version)	(5)	dB(A)	67	68	68	69	70	71	71	71
<b>Basic unit size and weights</b>										
Length		mm	4.604	5.749	5.749	5.749	5.749	6.894	6.894	6.894
Width		mm	2.302	2.302	2.302	2.302	2.302	2.302	2.302	2.302
Height		mm	2.397	2.397	2.397	2.397	2.397	2.397	2.397	2.397
Operating weigh		kg	4.120	4.297	4.426	4.723	4.850	5.112	5.346	5.580
<b>Power supply</b>										
Power supply			400/3~/50 ±5%							

(1) Ambient air temperature 35°C; evaporator inlet/outlet water temperature 12-7 °C

(2) Total power input is sum of compressors and fans power input

(3) Ambient air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40-45 °C

(4) Sound power values calculate in compliance with ISO 3744

(5) Sound pressure values measured at 10 meters from the unit in free field conditions and directional factor Q=2

(6) In ST 2PS or ST 3PS versions

(7) Evaporator inlet/outlet water temperature 12-7 °C