

VLC
Inverter and Fix Scroll Chiller
Air condensing

klimatix





klimatix

Klimatix is the Air Conditioning product brand of Mecalor Group, including the manufacture of fluid chillers and precision air conditioners to serve data centers, industries, commercial buildings, shopping centers and hospitals.

A brand with global reach that is born with the tradition of more than 60 years in thermal engineering.

This Klimatix's business division has the mission of bringing knowledge, technical competence, and technological innovation to the air conditioning market, with products of great costbenefit, extraordinary after-sales service and application engineering capable of understanding the needs of designers, installers and customers.

Schedule a visit to our plant.
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Chilled Water Stations

Chiller Scroll for air conditioning

Capacity of 15 and 18 TR



VLC



Different models



EC Fan



Scroll Compressor



Coolant



Air Condensation



Inverter System

The Variable Load Chiller is the ideal solution for the air conditioning sector. With its interconnection by scalable units, VLC allows unparalleled flexibility to adapt to different applications and cooling capacities. In addition, its state-of-the-art technology ensures reliable and efficient operation, enabling a long service life and low maintenance cost. The integrated control management system enables constant optimization of cooling capacity to meet thermal demand. The communication network between the units ensures operation without master or slave, offering even more flexibility and simplicity in system management. Choose the Variable Load Chiller and enjoy high-quality and efficient cooling.



Benefits

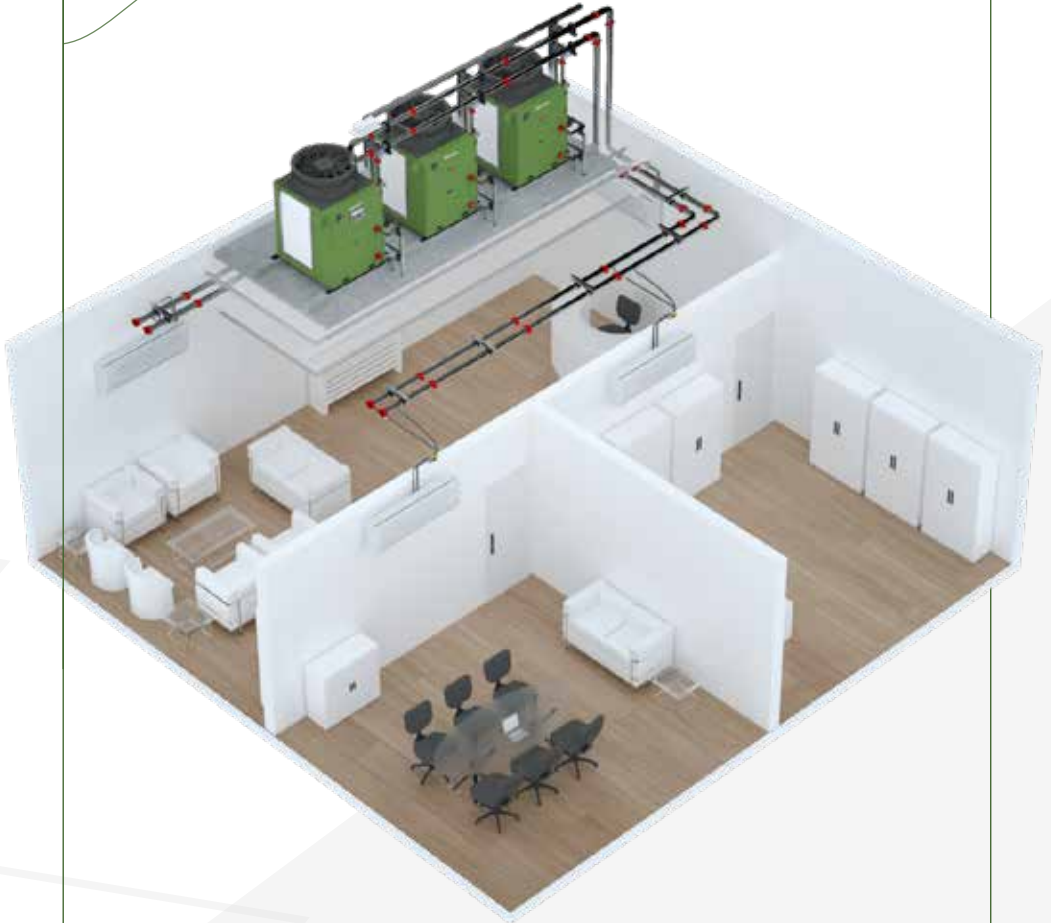
- Victaulic flow Sensor and connections supplied with the equipment;
- High energy efficiency in compliance with AHRI 90.1;
- Modularity allowing for future capacity expansion;
- Easy installation (low footprint) and maintenance;
- Automation of ice water system and pumps;
- Reliable 24/7 operation with low noise;
- Free master-slave control structure;
- Low refrigerant charge.



- Easy accommodation in service elevators;
- Compact equipment;



Developed system
for a high
efficiency.



Illustrative
application for
buildings.

Nomenclature-VLC

VLC - A - 15 - F - 220 /G/I/N

Variable Load Chiller

A: Air condensation

15: 15 TR
18: 18 TR

F: Fix
I: Inverter

Special characters

/1: Main machine

/G: Air filter

/I: Service HMI

/M: Condenser with E-coat paint

/N: Bacnet Protocol

VLC standard voltage

3 F, 220 V, 60 Hz

3 F, 380 V, 60 Hz

3 F, 440 V, 60 Hz



Technical Description

The equipment of the VLC line are water cooling units for application in air conditioning and air treatment systems designed for continuous, reliable operation and long service life.

Developed for ice water plants with multiple units, it has integrated management of control and operation of the equipment in order to

optimize the available cooling capacity with the thermal load demand as well as energy efficiency.

The integrated management system of control is carried out by network communication of equipment without the presence of master and slave units (Free Master Slave).



Features

The VLC-A Equipment line consists of four equipment with nominal capacities of 15 and 18 TR in fix or inverter compressor versions.

Operating conditions:

- Room temperature of 10°C to 45°C
- Ice water temperature of 5°C to 15°C

Efficiency according to AHRI 551/591:

- IPLV from 4,802 up to 5,626 kW / kW
- COP from 2,933 up to 3,270 kW / kW

Design and manufacture in compliance with NR-10 and NR-12 standards.

Cooling

Two options of scroll compressors being the first with a high efficiency inverter compressor and variable rotation control from 30% to 100% and the second with two fix compressors mounted in tandem, with a capacity control of 50% and 100%.



Brazed plate evaporator (BPHE) made of AISI316 stainless steel plates with a temperature measuring well.



Microchannel condenser (MCHE) manufactured with aluminum tubes and fins ensuring greater protection against galvanic corrosion.



Axial fan with EC type electric motor and proportional rotation control mounted on an air diffuser that ensures high efficiency and low noise level.



Electronic expansion valve that allows precise control on refrigerant flow.



Hydraulics

Flow Sensor made of stainless steel and calorimetric measuring principle incorporated into the equipment and without moving parts .



Filter with housing made of thermoplastic material and filter element in the form of discs and high filtration capacity.



Pipe made of AISI 304 stainless steel and Victaulic connections.

Electrical and control

Electrical components for sectioning, protection and drive of motors assembled according to NBR5410 on a plate made of galvanized carbon steel.

Communication using Modbus TCP/IP and Modbus RTU protocols that allows remote access to operating conditions, actuation, parameterization and verification of operating history.

Drive, protection and control functions of the primary pumping system integrated into the PLC.

Rotary switch with three positions to turn on, off and enables the remote actuation of the equipment

Indicator light for fault indication

Reversing relay and lack of Phase

Control panel with semigraphic MMI that allows visualization of operating conditions and parameterization of control variables.



Monitoring of operating conditions and parameterization via web.

Communication and operation management of up to fourteen networked devices.

Office

Made of galvanized carbon steel and finished with electrostatic painting in green RAL 6005.



Stainless steel fixing elements.

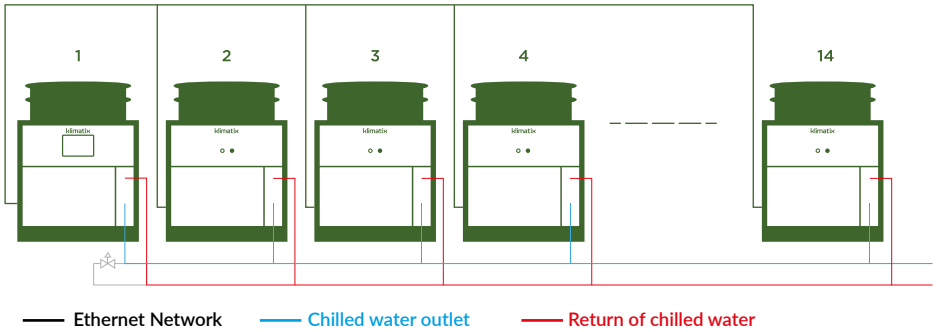


Installation

The integrated control system allows the network connection of up to 14 equipment, thus enabling greater modularity in the capacity of the ice water plant. The main feature of the VLC line is the use of multiple modules installed in parallel in the

hydraulic circuit, thus allowing the expansion of installed capacity as the thematic load demand increases.

The ice water plant must be designed using the first equipment with variable capacity (VLC-A-I) and the others with step control (VLC-A-II).



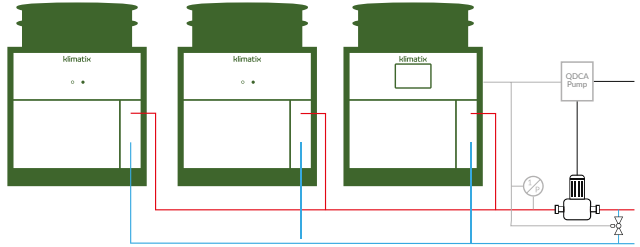
Combinations and capabilities

Inverter	Fix	Qt.	Capacity (kW / TR)	
			VLC-A-15	VLC-A-18
		1	45 / 13	59 / 17
		2	95 / 27	124 / 35
		3	145 / 41	189 / 54
		4	195 / 56	255 / 72
		5	245 / 70	320 / 91
		6	295 / 84	386 / 110
		7	345 / 98	451 / 128
		8	395 / 112	516 / 147
		9	445 / 127	582 / 165
		10	495 / 141	647 / 184
		11	545 / 155	713 / 203
		12	595 / 169	778 / 221
		13	645 / 184	843 / 240
		14	695 / 198	909 / 258

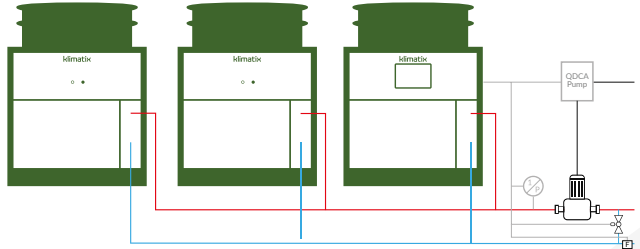
Automation

In the control of the VLC-a line, a basic automation of the pumping, pressure control and water flow components of the hydraulic circuit of the chilled water system is integrated, as described below.

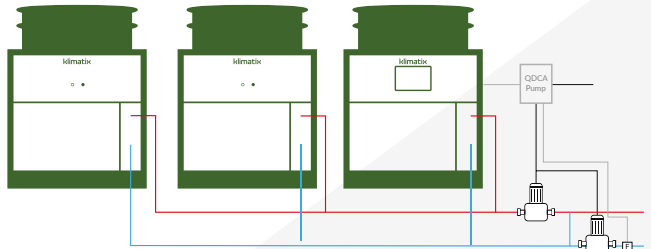
Primary circuit with constant flow and pressure control by proportional valve.



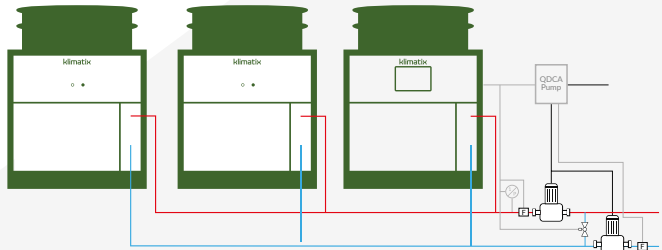
Primary circuit with variable flow, pressure control by proportional valve.



Primary circuit with constant flow and secondary with variable flow.



Primary and secondary circuit with variable flow.



The above examples are illustrative and for more information consult klimatix application engineering

Optional Settings

SERVICE MMI

Remote MMI for point monitoring of a specific equipment of the system, with connection via network cable through the VLC PLC in question.



AIR FILTER

Anodized aluminum frame screen to protect the condenser from dust, insects, leaves, etc.



CONDENSER WITH E-COATING PAINT

Condenser with surface treatment against corrosion caused by sea air or aggressive atmosphere.



PARALLEL INTERCONNECT KIT

Interconnection set with piping made of AISI304 stainless steel and Victaulic connections a balancing valve, two manual ball valves, a solenoid valve for automatic blocking of water flow, proportional control valve and pressure transducer.



COMMUNICATION

BACNET, others on request.



Technical data

	Description		Drive			
	VLC-a line		15		18	
			VLC-A - F	VLC-A - I	VLC-A - F	VLC-A - I
Basic Data	Capacity (1)	kW	50.0	45.3	65.4	58.5
		TR	14.2	12.9	18.6	16.6
	Total power consumption (1)	kW	15.5	15.1	21.6	19.9
	COP (1)	kW/kW	3.221	3.000	3.270	2.933
	PLV (1)	kW/kW	5.069	5.626	4.802	5.52
	Capacity control	%	50 and 100	25 to 100	50 and 100	25 to 100
Minimum capacity	kW	26.4	13.48	35.6	18.19	
		TR	7.5	3.8	10.1	5.2
Cooling	Condensation	-	Air			
	Refrigeration circuits	-	1			
	Cooling fluid	-	R410a			
	Refrigerant charge	kg	4.6	4.6	5.8	5.8
	Compressor	-	Fix Scroll	Scroll Invert	Fix Scroll	Scroll Invert
	Number of compressors	-	2	1	2	1
	Condenser	-	Micro channel Al / Al			
	Fan	-	Axial EC			
	Evaporator	-	Brazing Plates			
Expansion valve	-	Electronic expansion valve				
Hydraulic circuit	Flow rate (1)	m3 / h	8.5	7.7	11.1	9.9
	Loss of charge	kPa	57	51	61	52
	Connection type (2)	-	Victaulic			
	Input connections	inch	1 1/2	1 1/2	1 1/2	1 1/2
Output connections	inch	1 1/2	1 1/2	1 1/2	1 1/2	
Electric	Power supply	-	3Ph/220V/60Hz - 3Ph/380V/60Hz - 3Ph/440V/60Hz			
	HMI (3)	-	Semi-graphical Interface 11x15 pixels			
	Communication	-	Modbus RTU or TCP / IP			
	General key	-	Yes			
	Actuation	-	Button with three positions (on, off and remote control)			
	Light signalling	-	Summary of failures			
Temperature sensor	Sequence and lack of Phase	-	Yes			
	Water outlet	-	Yes			
	Water inlet	-	Yes			
	Anti freezing evaporator	-	Yes			
	Ambient air	-	Yes			
	Evaporator refrigerant outlet	-	Yes			
Sensor	Condenser refrigerant outlet	-	Yes			
	Low pressure (4)	-	Yes			
	High pressure (4)	-	Yes			
	Low pressure switch	-	Yes			
	High pressure switch	-	Yes			
Construction details	Water flow (5)	-	Yes			
	Width	mm	1000			
	Depth	mm	1175			
	Height	mm	1615			
Operating weight	kg	320	350	340	390	

(1) Operating conditions according to AHRI 551/591; Ambient temperature 35°C; Water inlet temperature 12°C; Water outlet temperature 7°C; Atmospheric pressure 101 kPa.

(2) Minimum operational capacity of the equipment under the following conditions: Ambient temperature 35°C; Water outlet temperature 7°C; Atmospheric pressure 101 kPa.

(3) Noise level measured at a certain distance from the equipment. Partial load condition with equipment operating at 50% of capacity.

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Weverton Santos - Technician since 2012

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