

# Lightstream Scroll

## ULTRACOMPACT II

COMPACT AIR-COOLED CHILLERS WITH SCROLL COMPRESSORS

- ▶ EXTREME EFFICIENCY WITH EER UP TO 3.29
- ▶ OPTIONAL EVAPORATIVE PRE-COOLING
- ▶ MICROCHANNEL CONDENSING COILS
- ▶ COMPACT & LIGHTWEIGHT DESIGN



# 50-300kW

AVAILABLE IN 4 FRAME SIZES, TOTAL 22 MODELS WITH A WIDE SELECTION OF OPTIONS AND ACCESSORIES



SCROLL



R410a



EC-FANS



MICROCHANNEL



EVAPORATIVE

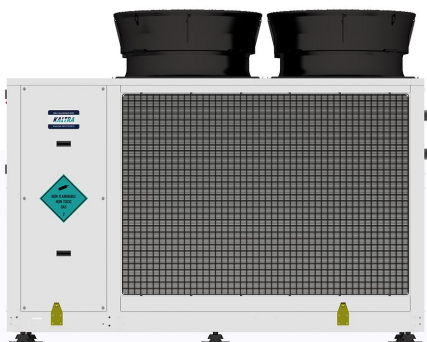


HEAT RECOVERY

# Scroll chillers with extreme efficiency

**LIGHTSTREAM SCROLL ULTRACOMPACT II AIR-COOLED CHILLER FAMILY PROVIDES CAPACITY-MATCHED COOLING, PRECISE THERMAL PARAMETERS, AND WATERFLOW.**

These chillers display excellent performance, small footprint, and deliver best-in-class efficiency thanks to comprehensive engineering and first-grade components. The classic, time-approved design and built-in reliability of UltraCompact II make this machine a big league player in the field of process cooling, air conditioning, and refrigeration applications.



## 10% ENERGY SAVINGS

Compared to leading competitors with standard parameters:  
- ambient air temperature/humidity: 35°C/50%rH  
- chilled water temperature: 7/12°C

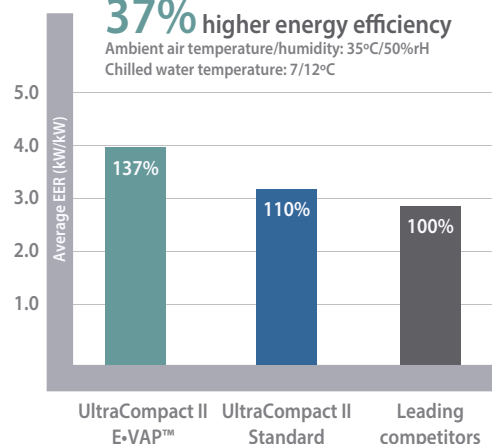


## 37% ENERGY SAVINGS

Compared to leading competitors with standard parameters:  
- ambient air temperature/humidity: 35°C/50%rH  
- chilled water temperature: 7/12°C

**37%** higher energy efficiency

Ambient air temperature/humidity: 35°C/50%rH  
Chilled water temperature: 7/12°C



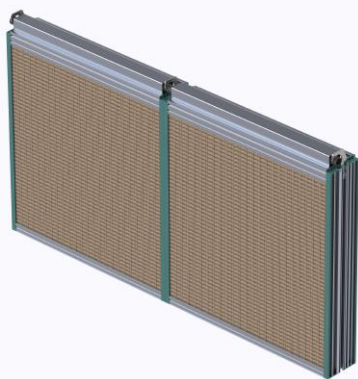
## UltraCompact II Standard

- ▶ EXTREME ENERGY EFFICIENCY WITH EER UP TO 3.29
- ▶ COMPACT & LIGHTWEIGHT DESIGN
- ▶ INTELLIGENT HEAD PRESSURE CONTROL
- ▶ WATER TEMPERATURES OF UP TO -12°C
- ▶ HEAT RECOVERY OPTIONS
- ▶ LOW OVERALL TCO

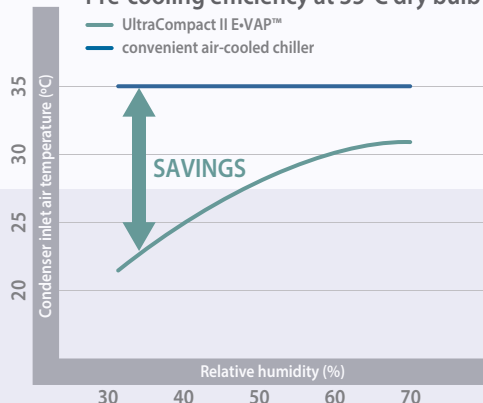
## UltraCompact II E•VAP™

- ▶ UP TO 30% ENERGY SAVINGS ON COMPRESSORS
- ▶ CUTTING COMPRESSOR PEAK LOADS
- ▶ INCREASED COOLING CAPACITY - UP TO 8.5%
- ▶ EXPANDED OPERATING ENVELOPE
- ▶ WORKING CONDITIONS OF UP TO +55°C
- ▶ LOWER NOISE EMISSIONS

# E•VAP™ evaporative pre-cooling



Pre-cooling efficiency at 35°C dry bulb



## Effective way to reduce compressor hours

E•VAP™ evaporative pre-cooling system allows reducing the temperature of air delivered to condensers even in hot and humid environments and expands the operating envelope of the UltraCompact II chillers for up to +55°C while remaining at the same level of efficiency. Equipping UltraCompact II chillers with evaporative pads results in significant electricity savings of up to 30%.

The evaporative media of E•VAP™ is based on water retaining finned aluminium plates designed for maximum evaporation: the saturation efficiency reaches 90% and more at the air velocities of up to 2m/s. The internal geometry and special fin coating of evaporative media facilitate cleanliness of the evaporative media during the operation.

In order to achieve maximum efficiency and minimal water usage, E•VAP™ pre-cooling system can be equipped with a pumping station which includes the circulation pump, water treatment module and control system with state-of-the-art algorithms that monitor the ambient conditions and determine the operation modes, ensuring the E•VAP™ system is active only when necessary. The fully automated water management system continuously monitors water quality, drains the system and refreshes the water when mineral levels reach certain values.

Evaporative pads can be easily detached for maintenance and access the chiller's condensing coils for cleaning.

## Scroll compressors

### Proven performance and reliability

The combination of an energy efficient motor and an optimized scroll wrap for refrigeration applications delivers high efficiency in UltraCompact II's fixed-speed compressors.

Reliability is built into this compressor range, from the compliant scroll design and the engineered bearings to the simplified design. The thermal fault protection also contributes to excellent reliability.

The customers of Lightstream UltraCompact II systems with fixed-speed compressors can benefit from proven reliability, low sound levels, low vibration and low operating and maintenance costs.

## Evaporators

### Brazed plate heat exchangers

Brazing the stainless steel plates together eliminate the need for gaskets and thick frame plates, which makes the heat exchanger compact. The brazing material seals and holds the plates together at the contact points ensuring optimal heat transfer efficiency and pressure resistance. Using advanced design technologies and extensive verification guarantees the highest performance and longest possible service lifetime.

# Powered by trendsetting technologies

## Optimum air flow for maximum efficiency



Axial fans used in UltraCompact II design have outstanding characteristics in every respect, including performance and efficiency, weight, noise pollutions, and robustness.

EC fan technology is an excellent solution for demand responsive cooling, and we equip UltraCompact II chillers with the latest EC motors which demonstrate impressive performance, low energy consumption, high torque, and durable design. EC fans with integrated electronic control can easily be varied in speed to match airflow demand. For the same air volume, they consume distinctly less energy than AC motors.

The most common cause of fan motor failure and consequent capacity reduction of the chiller is overheating. EC fans of UltraCompact II chiller have temperature sensors built into the internal electronics package that act as a safety device in the case of overheating.

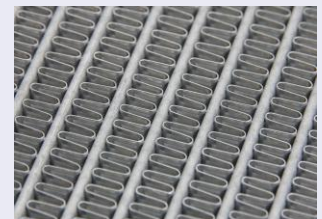
Compared to AC motors, EC-type motors have longer service life due to lower winding temperatures resulting in lower wear and tare. Comprehensive corrosion protection measures have been taken that allow the fans to be used in almost all climatic applications with outstanding operating reliability.

## Microchannel condensers

### Enhanced heat transfer and low condensing temperature

Microchannel condensers used in UltraCompact II design give a number of advantages, including higher heat transfer rate, low airside pressure drops, and closer approach temperatures. The end result is up to 40% higher energy efficiency in comparison to traditional fin/tube heat exchanger design.

Smaller coil face, thin design, up to 50% less weight, and less refrigerant charge translate to lower system cost. Microchannel condensers used in UltraCompact II chiller range are true HVAC coils developed and optimized especially for refrigeration applications and enable remarkable low condensing temperatures.



High-performance louvered fins



### Remote control

The control hub of UltraCompact II chillers is a sophisticated controller and advanced software developed for efficient operation of scroll-based chillers. It manages and optimizes the chiller's performance, giving the complete control over the system for plant operator, either directly or remotely.

### Circulation pumps

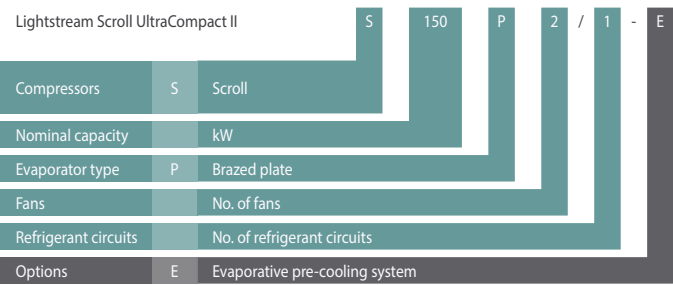
UltraCompact chillers can be equipped with high-quality single-stage single or twin pumps in inline design. The pumps feat reduced life cycle costs, optimized efficiency, and high standard of corrosion protection thanks to cataphoretic coating. Inverter-driven pumps are available optionally. Inverter-driven pumps have broad performance range, which enables them perform efficiently under widely varied conditions and to meet a wide range of requirements.



# Package, options and accessories

Description					
General					
E-VAP™ evaporative pre-cooling system	<input type="checkbox"/>	MCHE e-coating	<input type="checkbox"/>	Low noise design (grades 1-4)	<input type="checkbox"/>
E-VAP™ pumping station	<input type="checkbox"/>	MCHE mesh guard	<input type="checkbox"/>	-6°C brine kit	<input type="checkbox"/>
Partial heat recovery system	<input type="checkbox"/>	Anti-vibration mounts	<input type="checkbox"/>	-12°C brine kit	<input type="checkbox"/>
Total heat recovery system	<input type="checkbox"/>	Anti-vibration springs	<input type="checkbox"/>	Water tank (F2/F3/F4 enclosure sizes)	<input type="checkbox"/>
Waterside					
Pump (single/twin inline pumps - fixed-speed/inverter)	<input type="checkbox"/>	Pump coolant heater	<input type="checkbox"/>	Flowmeter	<input type="checkbox"/>
Refrigerant side					
Electronic expansion valve(s)	<input checked="" type="checkbox"/>	High-efficient refrigerant filters	<input checked="" type="checkbox"/>	Safety valves on high/low pressure sides	<input type="checkbox"/>
Service valves (compressor suction/discharge)	<input checked="" type="checkbox"/>	Pressure indication on high/low pressure sides	<input type="checkbox"/>	Thermal insulation	<input checked="" type="checkbox"/>
Airside					
EC fans	<input checked="" type="checkbox"/>	AC fans	<input type="checkbox"/>	High-efficient fan diffusers	<input type="checkbox"/>
Electric and controls					
Electric panel heater	<input type="checkbox"/>	BMS connectivity	<input checked="" type="checkbox"/>	Touch screen HMI	<input type="checkbox"/>
Phase sequence relay	<input type="checkbox"/>	SNMP connectivity	<input type="checkbox"/>	Remote monitoring software	<input type="checkbox"/>
Variable flow control	<input type="checkbox"/>	Energy monitoring	<input type="checkbox"/>	Pumping group control system	<input type="checkbox"/>
<input checked="" type="checkbox"/> Standard feature					
<input type="checkbox"/> Optional feature					

## Frame sizes and model identification



Frame size		F1	F2	F3	F4
Length	mm	2075	2675	3675	5275
Width <sup>1</sup>	mm	1200	1200	1200	1200
Height <sup>2</sup>	mm	1825	1825	1825	1825

(1) without E-VAP™ system  
(2) with standard fans/no diffusers



## Grooved connections

We use grooved end connections because of their rigidity, flexibility, noise and vibration attenuation, and easy of installation and maintenance. The groove is made by cold forming or machining a groove into the end of a pipe. A gasket encompassed by the coupling housing is wrapped around the two grooved pipe ends, and the key sections of the coupling housing engage the grooves. The bolts and nuts are tightened with a socket wrench or impact wrench.



# Technical Specs - Standard

Lightstream Scroll UltraCompact II		S50	S75	S100	S125	S150	S175	S200	S225	S250	S275	S300
		P1/1	P1/1	P2/1	P2/1	P2/1	P3/1	P3/1	P3/1	P4/2	P4/2	P4/2
		F1	F1	F2	F2	F2	F3	F3	F3	F4	F4	F4
Cooling capacity <sup>1</sup>	kW	50.4	72.7	97.9	118.5	141.8	169.1	192.8	215.1	237.3	261.0	283.3
EER		3.29	3.15	3.29	3.20	3.08	3.24	3.17	3.08	3.21	3.12	3.09
Net weight	kg	540	560	920	950	980	1040	1080	1120	1910	1970	2090
Compressors							Scroll					
Quantity		2	2	2	2	2	2	2	2	4	4	4
Power input	kW	14.6	20.9	28.2	34.2	40.9	48.6	55.3	62.0	68.5	76.0	81.9
Absorbed current	A	28.7	41.3	51.1	59.6	70.6	84.4	95.4	106.3	119.2	133.8	141.1
Capacity steps		2	2	2	2	2	2	2	2	4	4	4
Fans							EC-type axial					
Quantity		1	1	2	2	2	3	3	3	4	4	4
Airflow	m³/h	17500	26250	34750	43200	53200	60900	70800	81000	86000	96000	106000
Power input	kW	0.7	2.2	0.8	1.4	2.5	1.2	1.8	2.6	1.4	2.0	2.5
Evaporator							BPHE					
Water flow rate	m³/h	8.6	12.4	16.8	20.3	24.3	29.0	33.0	36.8	40.6	44.7	48.5
Pressure drop	kPa	5.9	7.3	18.2	19.1	19.9	20.8	31.8	30.4	24.1	26.5	29.0
Evaporation temp.	°C	5	5	5	5	5	5	5	5	5	5	5
Refrigerant circuits							R410a					
Quantity		1	1	1	1	1	1	1	1	2	2	2
Charge	kg	5.5	5.5	8.0	8.0	8.0	12.5	12.5	12.5	16.0	16.0	16.0

(1) Coolant: Water 100%; Coolant temperatures: 7/12°C; Ambient temperature: 35°C

# Technical Specs - E•VAP™

Lightstream Scroll UltraCompact II		S50	S75	S100	S125	S150	S175	S200	S225	S250	S275	S300
		P1/1-E	P1/1-E	P2/1-E	P2/1-E	P2/1-E	P3/1-E	P3/1-E	P3/1-E	P4/2-E	P4/2-E	P4/2-E
		F1	F1	F2	F2	F2	F3	F3	F3	F4	F4	F4
Cooling capacity <sup>1</sup>	kW	56.3	81.2	109.5	132.9	158.6	189.8	216.0	240.5	265.1	291.3	317.5
EER		4.23	4.02	4.17	4.07	3.76	4.08	3.92	3.74	4.06	3.86	3.78
Net weight	kg	540	560	920	950	980	1040	1080	1120	1910	1970	2090
Compressors							Scroll					
Quantity		2	2	2	2	2	2	2	2	4	4	4
Power input	kW	14.6	20.9	28.2	34.2	40.9	48.6	55.3	62.0	68.5	76.0	81.9
Absorbed current	A	28.7	41.3	51.1	59.6	70.6	84.4	95.4	106.3	119.2	133.8	141.1
Capacity steps		2	2	2	2	2	2	2	2	4	4	4
Fans							EC-type axial					
Quantity		1	1	2	2	2	3	3	3	4	4	4
Airflow	m³/h	17500	26250	34750	43200	53200	60900	70800	81000	86000	96000	106000
Power input	kW	0.7	2.2	0.8	1.4	2.5	1.2	1.8	2.6	1.4	2.0	2.5
Evaporator							BPHE					
Water flow rate	m³/h	9.6	13.9	18.7	22.7	27.2	32.5	37.0	41.2	45.4	49.9	54.4
Pressure drop	kPa	7.2	9.0	22.5	22.8	24.7	26.0	39.5	37.6	29.9	32.8	36.2
Evaporation temp.	°C	5	5	5	5	5	5	5	5	5	5	5
Refrigerant circuits							R410a					
Quantity		1	1	1	1	1	1	1	1	2	2	2
Charge	kg	5.5	5.5	8.0	8.0	8.0	12.5	12.5	12.5	16.0	16.0	16.0

(1) Coolant: Water 100%; Coolant temperatures: 7/12°C; Ambient temperature: 35°C; Relative humidity: 50%

MODELS

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AVAILABLE

The development of Kaltra products and services is continuous and the information in this document may not be up to date. Please check the current position with Kaltra.

