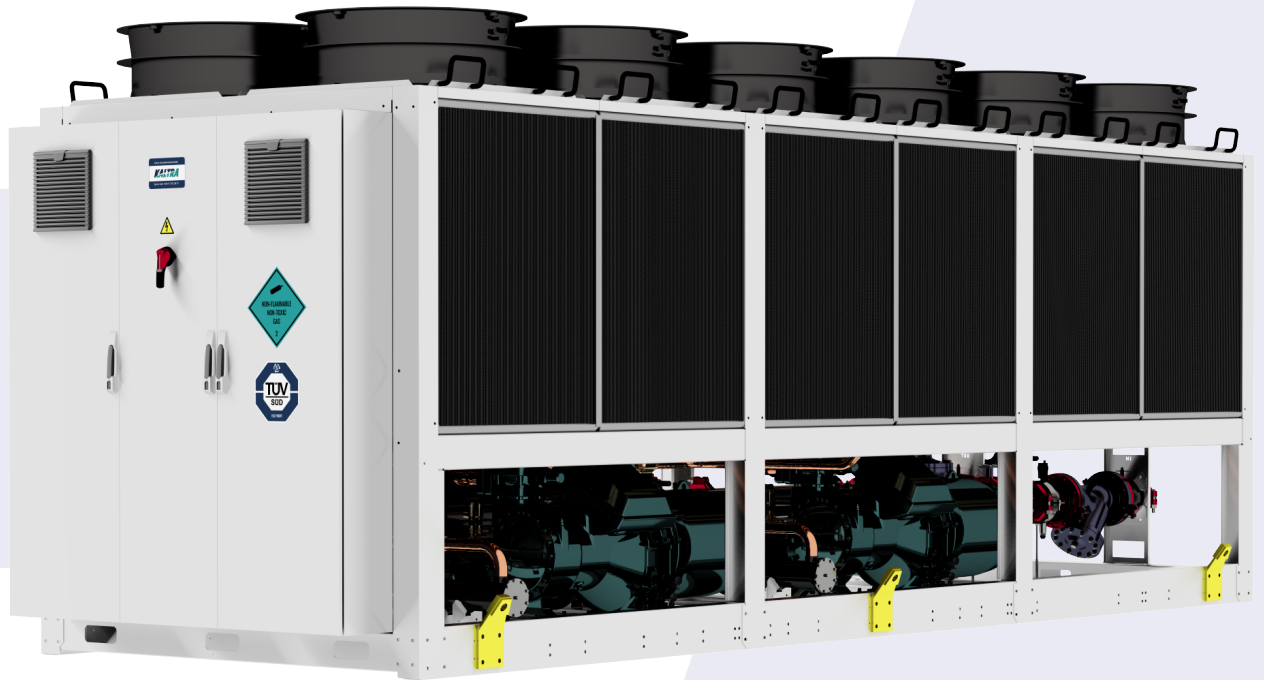


Lightstream Screw

AIR-COOLED CHILLERS WITH SCREW COMPRESSORS



300-1600kW

- ▶ CLASS A ENERGY EFFICIENCY
- ▶ HIGH THERMAL STABILITY
- ▶ PROVEN RELIABILITY, APPLICATION FLEXIBILITY



High reliability and top performance

LIGHTSTREAM SCREW FAMILY IS AN EXCEPTIONALLY RELIABLE AIR-COOLED CHILLERS OFFERING DIVERSE COOLING CAPACITIES AND FEATURING A HUGE ARRAY OF OPTIONS AND ACCESSORIES, INCLUDING PARTIAL AND TOTAL HEAT RECOVERY. LIGHTSTREAM SCREW COMBINES ALL THE LATEST COMPRESSOR, FAN AND HEAT EXCHANGER TECHNOLOGIES AVAILABLE.

The benefits at a glance:

- ▶ ENERGY EFFICIENCY RATIO UP TO 3.36
- ▶ ESEER UP TO 4.45
- ▶ INTELLIGENT HEAD PRESSURE CONTROL
- ▶ HIGH EVAPORATION TEMPERATURES
- ▶ RELIABLE THERMAL CONTROL

Lightstream Screw has been designed with attention to every detail to maximize its reliability, and fits ideally to the requirements of such applications like industrial and commercial cooling, data centers, telecom facilities and cleanrooms, and in every area where reliability is a key factor.

With the ability to provide high temperature stabilities, Lightstream Screw chillers are bringing outstanding precision to the industrial and commercial markets.

EER OF UP TO
3.36



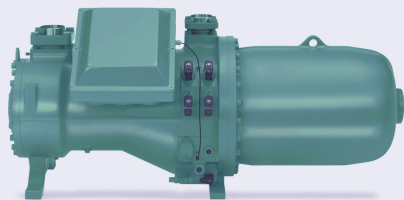
Intelligent controls

Centralized, accurate thermal control

The control hub of Lightstream Screw chillers is a sophisticated controller with advanced software developed for efficient operation of air-cooled chillers. It manages and optimizes the chiller's performance, giving the complete control over the system for plant operator.

Control software can be directly linked to the existing building management system. Integration with a BMS allows collecting and analyzing operating data of chilled water plant and helps to maintain optimal equipment settings, save energy, identifies trouble-prone areas, provides maintenance schedules and generate safety and security alarms.

For the efficient operation of multiple units on a single chilled water plant, the sequencing software permits interlinked operation of the complete system, thus providing optimal temperature control and minimal energy consumption.



Latest screw compressors

Increased chiller reliability and efficiency

Lightstream's compact semi-hermetic screw compressors are distinguished by a further improvement in energy efficiency at full and part load conditions. Moreover, the application limits have been substantially extended towards low condensing temperatures as well as to high pressure ratios – without compromises regarding operating reliability.

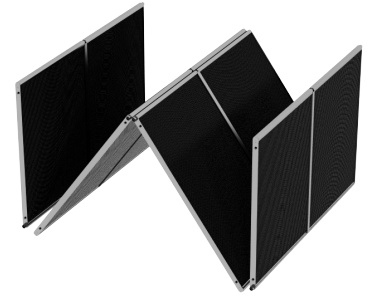
Accordingly, these compressors exceed the international efficiency standard of compact screws with respect to the seasonally weighted energy requirements to an even higher degree than before. This results in particularly high ESEER/IPLV and SCOP values.

Condensing coils

Microchannel heat exchangers

Microchannel condensers used in Lightstream Screw 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 Lightstream Screw chillers are true HVAC coils developed and optimized especially for refrigeration applications and enable remarkable low condensing temperatures.



Low-GWP refrigerant option



Refrigerants with low global warming potential (GWP) are becoming more and more important in the refrigeration and air conditioning industry in Europe and beyond.

Recently developed R1234ze refrigerant features low global warming potential and zero ozone depletion potential and fulfills EU regulatory requirements for reducing the use of high global warming potential (GWP) substances. At the same time, R1234ze almost exactly matches the efficiency of R134a.

With low-GWP refrigerants, Lightstream Screw chiller is the environmentally-friendly leader of the range, while achieving the best energy performance levels for applications.

Evaporators

Flooded-type heat exchangers

The design of the Lightstream Screw evaporators provides optimum system efficiency at both full and partial load operation. The tubes in flooded evaporator are fully immersed in liquid refrigerant and enable a smaller approach temperature between the refrigerant temperature in its shell and chilled water temperature in the tubes to be achieved. The refrigerant pool behaves as a flywheel, allowing the controls of the flooded evaporator to track the varying load of a batch process, while optimized tube geometry ensures optimal refrigerant distribution.

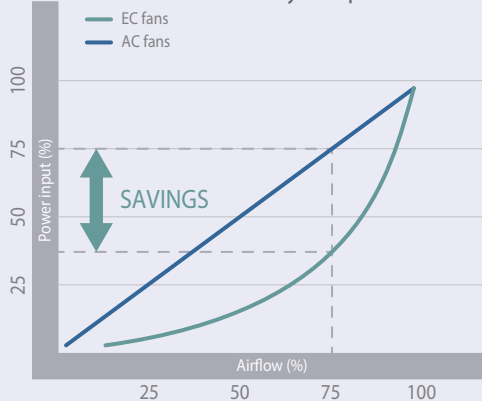
With flooded evaporator, the compressors operate at higher saturated evaporation temperature and generate more cooling capacity with the same power input.

25% energy savings thru the use of EEV

The electronic expansion valve (EEV) reduces the need for high head pressure when running at part load and lower ambient conditions. EEV is controlled by a driver which regulates its opening according to the performance levels required by the system and guarantees the minimal overheating under all operating conditions.



Fan motors efficiency comparison



Intelligent fan system

EC-type fans with reduced power consumption

EC motors use commutation electronics to sense the rotor position and adjust supply current, thus eliminating the need for mechanical brushes to deliver current to the motor windings. Elimination of physical contact reduces internal wear within the fan motor and significantly increases reliability.

Our new generation fan system not only reduces power consumption by up to 30% while efficiently managing the extraordinarily high volume flows – it also works at much reduced operating noise. The smart fan system includes the unique fan impellers with bionic wing concept, the most advanced EC motor technology, and multifunctional air diffusers, resulting in an extra economic efficiency for the customers.

Package, options and accessories

Description			
General			
Soundproof compressor enclosures	■	Anti-vibration mounts	□
Low noise design (grades 1 to 3)	□	Anti-vibration springs	□
E-coated condenser coils	□	High-ambient kit	□
Hi-sided paneling	□	Brine kit (to -10°C)	□
		Mesh guards for coils	□
		Partial heat recovery system	□
		Total heat recovery system	□
		Thermal insulation	■
Waterside			
External pump control	□	Flowmeter	□
Pump 1x fixed-speed, 2-pole motor, low head	□	Pump 2x fixed-speed, 2-pole motor, low head	□
Pump 1x fixed-speed, 2-pole motor, high head	□	Pump 2x fixed-speed, 2-pole motor, high head	□
Pump 1x variable-speed, 2-pole motor, low head	□	Pump 2x variable-speed, 2-pole motor, low head	□
Pump 1x variable-speed, 2-pole motor, high head	□	Pump 2x variable-speed, 2-pole motor, high head	□
		Grooved water connections	■
		Pump 2x fixed-speed, 4-pole motor, low head	□
		Pump 2x fixed-speed, 4-pole motor, high head	□
		Pump 2x variable-speed, 4-pole motor, low head	□
		Pump 2x variable-speed, 4-pole motor, high head	□
Refrigerant side			
Oil cooling system	□	Evaporator immersion heater	■
Service valves on compr. suction/discharge	□	Flooded shell-and-tube evaporator	■
Electronic expansion valves	■	Safety valves on high/low sides	■
		Gas leakage detection	■
		Pressure indication on high/low sides	■
		Compressor backflow prevention valves	■
Airside			
AC fans	■	EC fans	□
		High-efficient fan diffusers	□
Electric and controls			
Touch screen HMI	■	Dual power supply w/ ATS	□
Electric panel heater	□	BMS connectivity	■
Compressor power factor capacitor	□	SNMP connectivity	■
Energy monitoring	□	GSM connectivity	□
Automatic circuit breakers on loads	■	Soft start system	□
Phase sequence control	■	Electric heater for pump(s)	□
		Sequence management	□
		Compressor operation indication	■
		Remote monitoring software	■
		Controller power backup	□
		Electrical panel lighting w/ 230V socket	□
		Electrical panel heater	□

- Standard feature
- Optional feature

Model identification

Lightstream Screw

F 800 W 6 / 2 - N - R134a

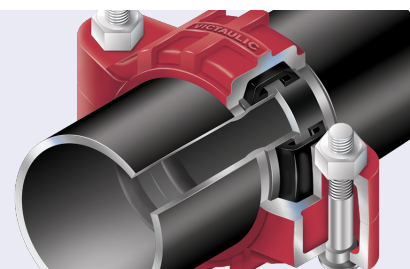
Type of compressors	F	Screw compressor
Nominal cooling capacity		kW
Type of condensing coils	W	W-bank microchannel coils
Condenser size		Number of W-banks
Number of refrigeration circuits		
Noise level	N	Normal
	L	Low
	U	Ultra-low
Refrigerant type		ASHRAE number

Frame sizes

Frame size		F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Length	mm	3425	4695	5655	6825	7740	8910	9825	10995	11910	13080
Width	mm	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250
Height	mm	2550	2550	2550	2550	2550	2550	2550	2550	2550	2550

Grooved connections

We use a piping system with grooved couplings because of its rigidity, flexibility, noise and vibration attenuation, and ease 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

Lightstream Screw		F300	F325	F350	F375	F400	F425	F450	F475	F500	F525	F550	F575	F600	F650	F700
Frame size		W3/2	W3/2	W3/2	W3/2	W3/2	W4/2	W4/2	W4/2	W4/2	W5/2	W5/2	W5/2	W5/2	W5/2	W5/2
Cooling capacity ¹	kW	300	325	346	362	378	412	443	463	482	510	528	567	607	648	690
Energy efficiency (EER)	kW/kW	3.34	3.33	3.31	3.32	3.32	3.33	3.34	3.34	3.33	3.34	3.33	3.34	3.36	3.34	3.31
ESEER	kW/kW	4.01	4.07	4.14	4.19	4.24	4.03	4.10	4.14	4.18	4.01	4.05	4.12	4.19	4.27	4.35
Power input	kW	88.8	95.6	102.4	107.2	111.4	121.2	130.2	136.2	142.2	150.0	156.0	167.0	178.0	191.0	205.0
Absorbed current	A	153	164	175	182	189	208	222	232	241	258	266	284	302	323	345
Net weight	kg	2830	2840	2860	2860	2950	3450	3460	3480	3490	3760	3770	4100	4440	4450	4460
Compressors		Screw compressors														
Quantity		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Power input	kW	77.4	84.2	91.0	95.8	100.0	106.0	115.0	121.0	127.0	131.0	137.0	148.0	159.0	172.0	186.0
Absorbed current	A	124	135	146	153	160	170	184	194	203	210	218	236	254	275	297
Fans		AC-motor axial fans														
Quantity		6	6	6	6	6	8	8	8	8	10	10	10	10	10	10
Airflow	m³/h	144000	144000	144000	144000	144000	192000	192000	192000	192000	240000	240000	240000	240000	240000	240000
Power input	kW	11.4	11.4	11.4	11.4	11.4	15.2	15.2	15.2	15.2	19.0	19.0	19.0	19.0	19.0	19.0
Absorbed current	A	28.8	28.8	28.8	28.8	28.8	38.4	38.4	38.4	38.4	48.0	48.0	48.0	48.0	48.0	48.0
Evaporator		Flooded shell-and-tube														
Water flow	m³/h	52	56	60	62	65	71	76	80	83	88	91	98	104	112	120
Water volume	L	45.5	49.8	54.1	58.5	58.5	52.0	55.2	58.5	63.3	68.2	68.2	74.7	81.2	87.7	87.7
Refrigeration circuits		R134a														
Quantity		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Charge	kg	165	165	162	162	248	256	256	256	256	256	256	256	250	250	250

(1) Fluid: water 100%; Fluid inlet/outlet temperatures: 15/10°C; Ambient temperature: 35°C

Lightstream Screw		F750	F800	F850	F900	F950	F1000	F1100	F1200	F1250	F1300	F1350	F1400	F1500	F1600	
Frame size		W6/2	W6/2	W7/2	W7/2	W7/2	W7/2	W8/2	W8/2	W9/2	W9/2	W10/2	W11/2	W12/2	W12/2	
Cooling capacity ¹	kW	742	778	860	930	984	1035	1120	1182	1232	1268	1345	1426	1490	1540	
Energy efficiency (EER)	kW/kW	3.32	3.30	3.33	3.35	3.34	3.33	3.32	3.27	3.28	3.28	3.28	3.28	3.31	3.29	
ESEER	kW/kW	4.22	4.28	4.20	4.29	4.37	4.45	4.36	4.44	4.35	4.39	4.34	4.26	4.23	4.27	
Power input	kW	219.8	231.8	254.6	273.6	289.6	305.6	331.4	355.4	369.2	382.2	403.0	428.8	443.6	461.6	
Absorbed current	A	372	393	432	463	488	514	558	595	621	641	681	726	751	780	
Net weight	kg	4990	4990	5860	5860	6465	6645	7260	7260	7700	7700	8060	8310	8640	8640	
Compressors		Screw compressors														
Quantity		2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Power input	kW	197.0	209.0	228.0	247.0	263.0	279.0	301.0	325.0	335.0	348.0	365.0	387.0	398.0	416.0	
Absorbed current	A	314	335	365	396	421	447	481	518	535	555	585	620	636	665	
Fans		AC-motor axial fans														
Quantity		12	12	14	14	14	14	16	16	18	18	20	22	24	24	
Airflow	m³/h	288000	288000	336000	336000	336000	336000	384000	384000	432000	432000	480000	528000	576000	576000	
Power input	kW	22.8	22.8	26.6	26.6	26.6	26.6	30.4	30.4	34.2	34.2	38.0	41.8	45.6	45.6	
Absorbed current	A	57.6	57.6	67.2	67.2	67.2	67.2	76.8	76.8	86.4	86.4	96.0	105.6	115.2	115.2	
Evaporator		Flooded shell-and-tube														
Water flow	m³/h	128	134	148	160	169	178	192	202	212	218	232	245	256	265	
Water volume	L	99.0	99.0	115.3	121.8	130.0	136.4	143.0	147.8	156.0	164.0	172.0	182.0	190.0	199.8	
Refrigeration circuits		R134a														
Quantity		2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Charge	kg	320	320	320	320	398	398	398	398	480	480	480	480	480	480	

(1) Fluid: water 100%; Fluid inlet/outlet temperatures: 15/10°C; Ambient temperature: 35°C

TOTAL
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MODELS



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.