

# Lightstream Screw

AIR-COOLED CHILLERS WITH SCREW COMPRESSORS

- ▶ CLASS A ENERGY EFFICIENCY
- ▶ MICROCHANNEL CONDENSERS
- ▶ RELIABLE SCREW COMPRESSORS



# 300-1540kW

AVAILABLE IN 10 FRAME SIZES, TOTAL 29 MODELS WITH A HUGE ARRAY OF OPTIONS AND ACCESSORIES



SCREW



R134A



EC-FANS



MICROCHANNEL



HEAT RECOVERY

# 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. LIGHSTREAM 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
- ▶ LOW CONDENSING TEMPERATURES

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**

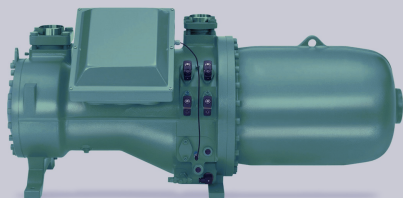


## Flooded evaporator



The flooded evaporator enables to operate at the higher saturated evaporating temperature when compared to many others evaporator types and allows achieving higher cooling capacity with correspondingly higher efficiency.

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.



**R134a**

## Latest screw compressors

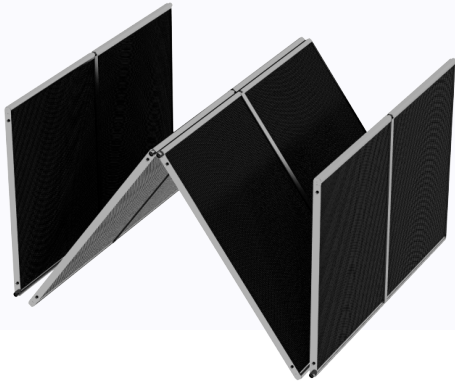
### Increased chiller reliability and efficiency

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.

# Microchannel condensing coils

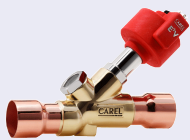
Better heat transfer. Lower condensing temperatures. Higher efficiency.



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.

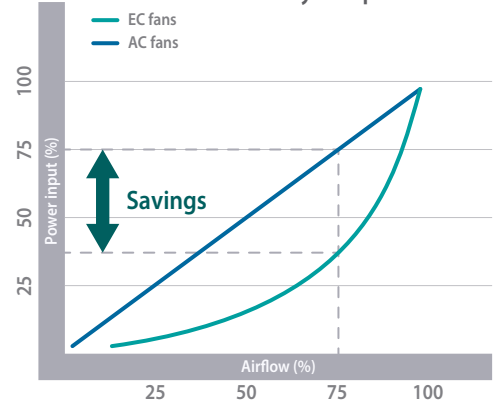
## 25% energy savings through the use of EEV



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



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

## Intelligent fan system

EC-type fans with reduced power consumption

Lightstream Screw's new generation fan system not only reduces power consumption by up to 30% while easily managing the extraordinary high volume flows – it also works at much reduced operating noise.

The smart fan system includes the unique fans with bionic wing concept, the most advanced EC motor technology, and multifunctional air diffusers, resulting in an extra economic efficiency for the customers.

EC motor technology does not provide savings only during full-load operation - it is exactly when operating under partial load that EC motors lose much less of their efficiency.

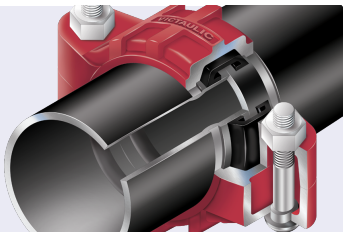


# Package, options and accessories

Description					
General					
Anti-vibration mounts	<input type="checkbox"/>	MCHE electrocoat	<input type="checkbox"/>	High ambient kit	<input type="checkbox"/>
Anti-vibration springs	<input type="checkbox"/>	MCHE thermoguard	<input type="checkbox"/>	Low noise design (grades 1-4)	<input type="checkbox"/>
Soundproof compressor enclosures	<input checked="" type="checkbox"/>	MCHE mesh guard	<input type="checkbox"/>	Partial heat recovery system	<input type="checkbox"/>
High-sided paneling	<input type="checkbox"/>	-10°C brine kit	<input type="checkbox"/>	Total heat recovery system	<input type="checkbox"/>
Waterside					
Pumping group (single/twin pump variable/fixed speed)	<input type="checkbox"/>	Pump(s) antifreeze heater	<input type="checkbox"/>	Flowmeter	<input type="checkbox"/>
Refrigerant side					
Oil cooling system	<input type="checkbox"/>	Service valves (compr. suction/discharge)	<input type="checkbox"/>	Safety valves on high/low pressure sides	<input type="checkbox"/>
Electronic expansion valves	<input checked="" type="checkbox"/>	Pressure indication on high/low pressure sides	<input type="checkbox"/>	Thermal insulation	<input checked="" type="checkbox"/>
Airside					
AC fans	<input checked="" type="checkbox"/>	EC fans	<input type="checkbox"/>	High-efficient fan diffusers	<input type="checkbox"/>
Electric and controls					
Touch screen HMI	<input type="checkbox"/>	Dual power supply w/ ATS	<input type="checkbox"/>	Sequence management	<input type="checkbox"/>
Electric panel heater	<input type="checkbox"/>	BMS connectivity	<input checked="" type="checkbox"/>	Compressor operation indication	<input type="checkbox"/>
Compressor power factor capacitors	<input type="checkbox"/>	SNMP connectivity	<input type="checkbox"/>	Remote monitoring software	<input type="checkbox"/>
Soft-start system	<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					

## 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.

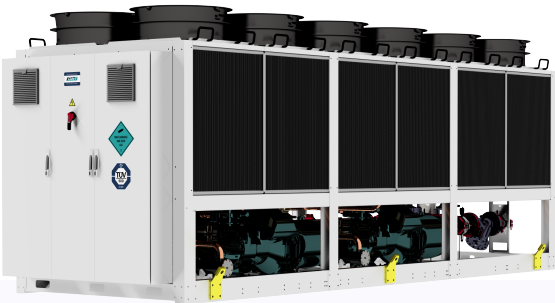


## Frame sizes

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

## Model identification

Lightstream Screw		F	800	W	6	/	2
Compressors type	F	Fixed-speed compact screw					
Nominal capacity		kW					
Condenser	W	W-bank microchannel					
Condenser size		No. of condenser banks					
Refrigerant circuits		No. of refrigerant circuits					



# Lightstream Screw



# Technical Specs

Lightstream Screw		F300	F325	F350	F365	F375	F400	F450	F465	F485	F500	F525	F550	F600	F650	F700
		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 <sup>1</sup>	kW	300	325	346	362	378	412	443	463	482	510	528	567	607	648	690
Frame size		F3	F3	F3	F3	F3	F4	F4	F4	F4	F5	F5	F5	F5	F5	F5
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		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
Net weight	kg	2830	2840	2860	2860	2950	3450	3460	3480	3490	3760	3770	4100	4440	4450	4460
Compressors		Semi-hermetic compact screw														
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-type axial														
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 rate	m³/h	52	56	60	62	65	71	76	80	83	88	91	98	104	112	120
Max flow rate	m³/h	95	105	114	123	123	74	78	83	89	95	95	105	114	123	123
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
Refrigerant 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) Coolant: Water 100%; Coolant temperatures: 10/15°C; Ambient temperature: 35°C

Lightstream Screw		F750	F800	F850	F925	F1000	F1050	F1100	F1200	F1250	F1275	F1350	F1400	F1500	F1550
		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 <sup>1</sup>	kW	742	778	860	930	984	1035	1120	1182	1232	1268	1345	1426	1490	1540
Frame size		F6	F6	F7	F7	F7	F7	F8	F8	F9	F9	F10	F11	F12	F12
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		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
Net weight	kg	4990	4990	5860	5860	6465	6645	7260	7260	7700	7700	8060	8310	8640	8640
Compressors		Semi-hermetic compact screw													
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-type axial													
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 rate	m³/h	128	134	148	160	169	178	192	202	212	218	232	245	256	265
Max flow rate	m³/h	139	139	162	171	182	191	200	207	220	230	242	255	267	280
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
Refrigerant 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) Coolant: Water 100%; Coolant temperatures: 10/15°C; Ambient temperature: 35°C

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.

