



BLUE STAR

# Air Cooled Screw Chillers **R-134a**

New Generation Screw Chillers from the Experts







A range of air cooled screw chillers for your needs.

- Series I Chillers (375 to 635 KW)
- Series II Chillers (765 to 1395 KW)





Blue Star, India's largest central airconditioning company has been providing expert cooling solutions for over seven decades. It has been manufacturing a wide range of chillers for over two decades. Drawing from this expertise, Blue Star presents a wide range of air cooled screw chillers with environment-friendly R134a refrigerant.

These chillers are manufactured at Blue Star's own ISO 9001 certified factory with the chiller test bench certified by the Airconditioning, Heating and Refrigeration Institute (AHRI). Blue Star screw chillers are equipped with effective capacity control. They provide excellent efficiency making them ideal for varying load applications such as office spaces, hotels, hospitals, malls and multiplexes.

Air Cooled Screw Chillers from Blue Star are available in two series:

- Series I: 375 to 635 KW (AHRI-certified series) – 6 models in capacities of 375, 495, 525, 555, 625 & 635 KW. This series has been certified by AHRI.
- Series II: 765 to 1395 KW – 8 models in capacities of 765, 875, 915, 985, 1055, 1155, 1255, 1395 KW.



## Compressor

The salient features of these compressors are:



Highly efficient and low noise levels.



Due to few moving parts and slider valve, these compressors have minimal wear and tear, thereby, resulting in longer life of the compressor.



This compressor has stepless capacity control, from 25% to 100% making it suitable for varying load applications and efficient under part load conditions. The capacity control also helps in limiting the starting current and the loading is done steplessly.



Due to its inherent characteristics, screw compressor has the highest volumetric efficiency and derating at higher temperature is negligible.



Each compressor has the latest 5 to 6 patented profile design with separate radial and axial force bearings, built-in oil separator, PTC motor winding protection, discharge temperature protection with its controller, oil level switch and oil differential pressure switch. This guarantees reliability and long life of bearings under heavy working operating conditions.



## Economiser

Refrigerant liquid-to-liquid plate type heat exchanger is provided for the Economiser system. The liquid refrigerant is sub-cooled to enhance the capacity, thereby reducing specific power consumption (lkW/TR) and enhancing the Coefficient of Performance (COP).

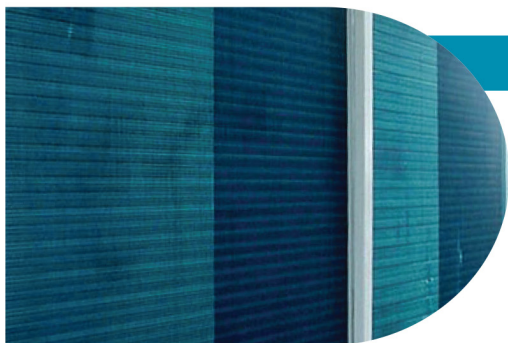






## Cooler

The shell and tube evaporator has been built using imported, internally enhanced and highly efficient finned copper tubes and has been optimised for refrigerant and water velocities. The expansion of the tube is done with torque controlled process.



## Air Cooled Condenser

- Fin and tube condensers are manufactured using Super Slit aluminum fins. The copper tubes used are inner grooved type with higher height trapezoidal cross section to increase the internal surface area of heat transfer.
- Hydrophobic coated fins can be manufactured as an optional feature which give corrosion resistance, typically 3 to 5 times more than the uncoated fins, depending upon the ambient conditions. The coated fins are tested for 500 hours of salt spray test.

## Liquid Injection

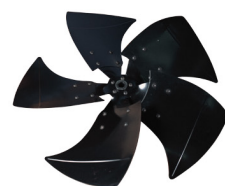
The refrigerant suction gas cools the winding of the semi-hermetic screw compressor motor. During the part load operation where the suction gas circulation is less, as a precaution, liquid refrigerant is injected into the suction side of the compressor to cool the motor winding. This is done to keep the motor winding temperature within limits. It is provided as a standard feature to enhance the life of the compressor.





## Fans

The chiller is incorporated with 5-lobe, bird-wing design fans. This profile optimises the noise level as well as power consumption against the required airflow and static pressure.



## Spring Isolators

Specially designed spring isolators are supplied along with the units to minimise the transmission of vibration.

## Acoustic Enclosure

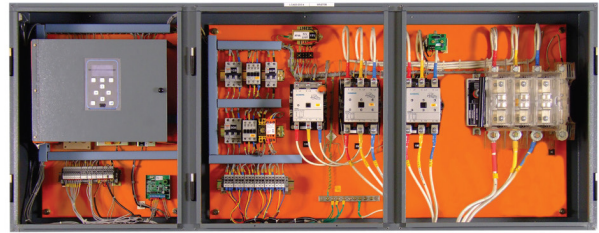
An acoustic enclosure can be optionally provided for the compressor to reduce the noise levels.

## Electronic Expansion Valve

The units are incorporated with electronic expansion valves for precise control of refrigerant flow through the cooler to accurately maintain the desired superheat. The expansion valve is very sensitive to load variations and adjusts the flow of the refrigerant with short response times to achieve power savings. The microprocessor-based control panel provides the signals for accurate operation of the expansion valve based on the superheat.







## Microprocessor Control Panel



The cooler outlet temperature can be controlled accurately within a tolerance of  $\pm 0.5^{\circ}\text{F}$ .



In-built time delays for compressors and condenser fans, single phase/phase reversal protection and anti-freeze protection.



Password protection at three levels.



RS 232 and RS 485 ports for remote connectivity, fault indication and status facility.



PC connectivity and remote monitoring without BMS through dedicated telephone line and optional gateway and modem.

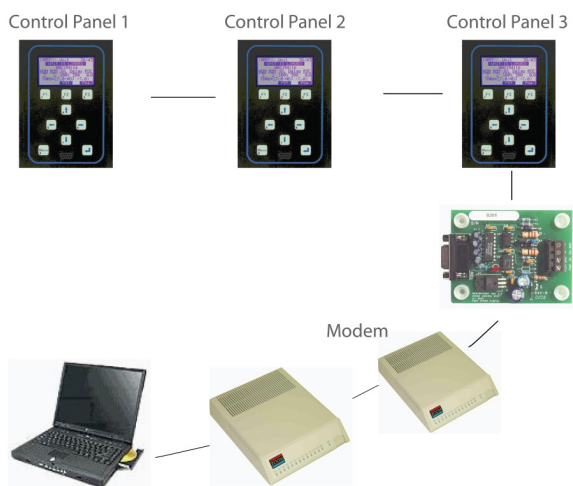


BMS compatibility with Modbus RTU or Johnson N2 as a standard feature. Optional translators available for compatibility with BACnet IP or Modbus IP



Windows based support system provides complete status on all operations both locally and remotely. History, static and dynamic graphing is standard to aid in commissioning, trouble shooting and evaluation.

These features help in accurate operation and protection of the chiller and allow remote monitoring.





# Technical Specifications for Series I R-134a Air Cooled Chillers

DESCRIPTION	UNITS	LCAX1-0375DA	LCAX1-0495DA
Nominal Cooling Capacity	TR	106.70	140.80
<b>Compressor</b>			
Type		Semi-Hermetic Screw	Semi-Hermetic Screw
Quantity	No.	1	1
Operating Speed	RPM	2900	2900
<b>Electrical Power Supply</b>			
<b>Condenser</b>			
No. of Rows	No.	3	4
Fan Qty	No.	6	8
Fan Dia	mm	915	915
Air Flow	CFM	87000	116000
Fan Motor Speed	RPM	910	910
<b>Cooler</b>			
Water Connection Size In / Out	Inch	6	8
No. of Refrigerant Circuit	No.	1	1
<b>Expansion Valve</b>		Electronic	Electronic
<b>Economiser</b>		Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
<b>Overall Dimension</b>			
Length	mm	4374	5502
Width	mm	2235	2235
Height	mm	2570	2570
<b>Weight</b>			
Operating Weight	Kg	3800	4700

#Specifications are subject to change due to continuous product development

Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Air Temperature at 95°F
2. Cooler Leaving Water Temperature at 44°F at the Flow Rate of 2.4 USGPM/TR
3. Cooler Fouling Factor 0.0001 Hr.Sq.ft.Deg.F/BTU





LCAX1-0525DA	LCAX2-0555DA	LCAX1-0625DA	LCAX2-0635DA
149.90	160.5	177.80	184.40
Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
1	2	1	2
2900	2900	2900	2900
360 - 440 V/3 Ph/50 Hz			
4	4	4	4
8	10	10	12
915	915	915	915
116000	145000	145000	174000
910	910	910	910
8	8	8	8
1	2	1	2
Electronic	Electronic	Electronic	Electronic
Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
5502	6986	6420	7846
2235	2235	2235	2235
2570	2570	2570	2570
5192	5750	5471	6900





## Technical Specifications for Series II R-134a Air Cooled Chillers

DESCRIPTION	UNITS	LCAX2-0765D	LCAX2-0875D	LCAX2-0915D	LCAX2-0985D
Nominal Cooling Capacity	TR	217.60	249.70	260	280
<b>Compressor</b>					
Type		Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
Quantity	No.	2	2	2	2
Operating Speed	RPM	2900	2900	2900	2900
<b>Electrical Power Supply</b>					360 - 440 V/3 Ph/50 Hz
<b>Condenser</b>					
No. of Rows	No.	4	4	4	4
Fan Qty	No.	12	14	14	16
Fan Dia	mm	915	915	915	915
Air Flow	CFM	174000	203000	203000	232000
Fan Motor Speed	RPM	910	910	910	910
<b>Cooler</b>					
Water Connection Size In / Out	Inch	10	6 & 8	6 & 8	8 & 8
No. of Refrigerant Circuit	No.	2	2	2	2
<b>Expansion Valve</b>					
		Electronic	Electronic	Electronic	Electronic
<b>Economiser</b>					
		Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
<b>Overall Dimension</b>					
Length	mm	7846	9901	9901	11029
Width	mm	2235	2235	2235	2235
Height	mm	2570	2570	2570	2570
<b>Weight</b>					
Operating Weight	Kg	7406	8500	9271	9200

#Specifications are subject to change due to continuous product development

Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Air Temperature at 95°F
2. Cooler Leaving Water Temperature at 44°F at the Flow Rate of 2.4 USGPM/TR
3. Cooler Fouling Factor 0.0001 Hr.Sq.ft.Deg.F/BTU





LCAX2-1055D	LCAX2-1155D	LCAX2-1255D	LCAX3-1395D
300.10	328.50	356.89	396.79
Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
2	2	2	4
2900	2900	2900	2900
4	4	4	4
16	18	20	22
915	915	915	915
232000	261000	290000	319000
910	910	910	910
8 & 8	8 & 8	8 & 8	8 & 10
2	2	2	3
Electronic	Electronic	Electronic	Electronic
Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
11029	11947	12865	13776
2235	2235	2235	2235
2570	2570	2570	2570
10384	10663	10942	12877



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