



BLUE STAR

# DATA CENTRE CHILLER. THE ADVANCED COOLING TECHNOLOGY YOUR DATA NEEDS.



# DATA CENTRE CHILLER SERIES

Blue Star, India's largest central air conditioning company, has been providing expert HVACR solutions for eight decades now. As a leader in the industry, the company has always been at the forefront of bringing new and innovative products into the market. Now they're proud to introduce another innovative product range to the Indian market: the Data Centre Chiller series. A first-of-its-kind in the country, this new series offers the highest reliability and operating efficiency in chillers of this class; thus ensuring excellent power savings and a high return on investment.

Manufactured at Blue Star's world-class ISO-9001 certified factory at Wada, Maharashtra, this new range of data centre chillers has several features that have rarely been seen in this class of chillers: a high degree of reliability, application versatility, energy efficiency, precision temperature control, ease of installation and operational cost effectiveness.

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**Range: Upto 550 TR**



## HIGHEST RELIABILITY

Delivering continuous and unhindered cooling as per design conditions is vital for data centres. In order to achieve non-stop cooling, the chillers need to be rugged with sufficient back-up of power requirements to its critical components.

Blue Star's new range of chillers for data centres provides the highest reliability through its strong and robust design, especially of critical components. Some of the critical and differentiated design considerations include:



Dual power back-up for non-stop running of the chiller controller



Auto transfer switch with dual input power for the entire chiller

- The use of the most reliable semi-hermetic screw compressor with variable Vi and unlimited starts/stops
- Dual power back-up for non-stop running of the chiller controller
- Auto transfer switch with dual input power for the entire chiller
- Automatic shift back to grid power upon power resumption
- In-built UPS for controller in case of grid power failure/DG
- Advanced DC fans for condensers

## RETURN ON INVESTMENT WITHIN ONE YEAR

Most data centres run continuously throughout the year. Also, unlike commercial applications, the internal heat generated by the racks and blades inside data centres constitute the biggest cooling load. This means that the efficiency of chillers has a direct bearing on the operating costs of data centres.

Blue Star's new data centre chiller series is designed with highly efficient semi-hermetic screw compressors, inner grooved and externally finned coolers and condensers, along with advanced controllers, to provide excellent power savings compared to conventional chillers.

The return on investment is less than one year in applications where the chiller operates at least 18 hours a day and for 350 days a year. The savings increase further as the operational hours increase.

### Annual Cost Savings



## QUICK RESTART

Data centres require continuous maintenance of cooling conditions inside the premises. Any sudden rise in temperature due to cooling loss can result in a malfunction of the DC racks, affecting the reliability of the data centre. Conventional chillers take approximately 5 to 15 minutes to restart when the power comes back on. This can significantly impact the temperature inside the premises.

Blue Star's new advanced data centre chillers restart within 15 seconds of power resumption, thereby maintaining design conditions with negligible impact to the racks/blades. This unique feature is achieved through the use of:

- Advanced semi-hermetic compressors that allow unlimited starts/stops
- A special controller with 24x7 in-built power back up



## RAPID COOLING

Data centres require the inside design conditions to be achieved immediately upon switching on the air conditioning system in order to avoid overheating of the DC racks. Conventional chillers require at least 15 to 20 minutes to reach full cooling capacity which will not serve the cooling requirement of data centres.

Blue Star's new range of screw chillers for data centres offers a unique rapid cooling mode which helps attain full capacity within 60 seconds of switching on. This unique benefit is achieved by:



Immediate start and ramp-up of the compressor speed to its full capacity



Use of EC fans



24x7 power back up for the controller

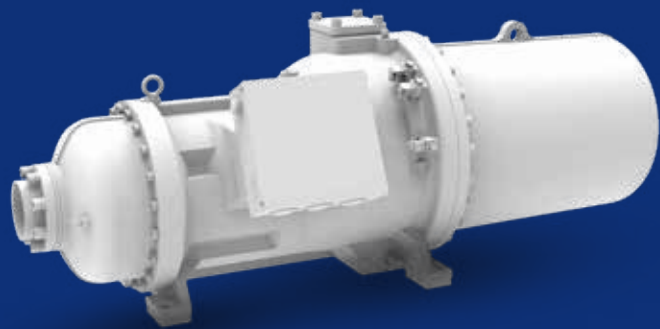


## HIGHLY RELIABLE SEMI-HERMETIC COMPRESSOR

Chillers providing cooling solutions to data centres need to be highly reliable as any loss of cooling or change in design parameters can significantly impact the performance of the server blades and racks inside the data centre. This can lead to malfunction and loss of important data. It is imperative that the chiller, especially the compressor which is the heart, is robust and completely dependable.

Blue Star's new range of data centre chillers uses highly efficient and reliable semi-hermetic compressors.

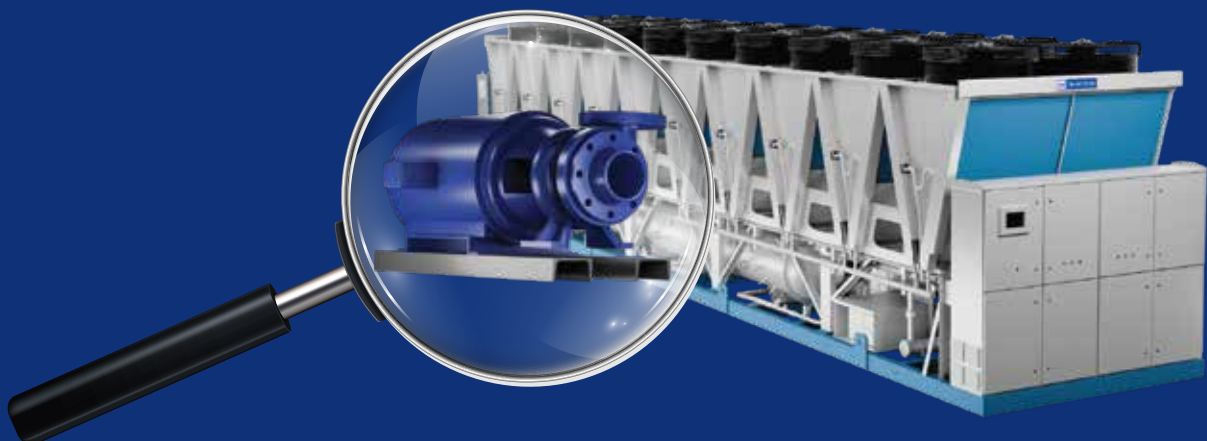
- The twin-screw semi-hermetic compressor is more rugged than a mono-screw design. With no dissimilar metals, it significantly enhances compressor reliability and longevity.
- Twin-rotor compressors are specially engineered to ensure both radial and axial stability while operating at high speeds.
- Uniform low-temperature refrigerant distribution around the motor windings ensures effective motor cooling, thereby improving overall compressor reliability.



## IN-BUILT HYDRONICS

Most data centres are designed to be cooled using a series of air-cooled chillers. Such chillers are generally located on the terrace and are connected to various air handlers through chilled water pumps. Conventionally designed chilled water systems have separately supplied chillers and pumps driven through individual controllers installed by different vendors. This variation can lead to error if not optimised through a Building Management System.

Blue Star's advanced data centre series of chillers come with in-built chilled water pumps integrated and tested at the factory. This advanced feature not only enhances the accuracy and reliability of the chillers and pumps but also reduces the space requirement to install the pumps separately outside the chillers.



## ENERGY OPTIMISATION FOR HOT AND DRY CLIMATES

The data centre business is expanding rapidly in India and data centres are now installed at various locations across the country. Some of the data centres are coming up in hot and dry locations like Noida, Hyderabad, and in other places where peak summer temperatures reach 46°C, especially with low humidity levels.

Blue Star's new range of data centre chillers provide energy optimisation during such peak summer conditions by reducing the air entry temperature of the condenser coils through factory supplied adiabatic kits.

These adiabatic kits are designed to spray water across the condenser coil, thereby significantly reducing the temperature of air entering the condenser. They are also integrated and supplied from Blue Star's factory and are effective at reducing power consumption during hot summer.

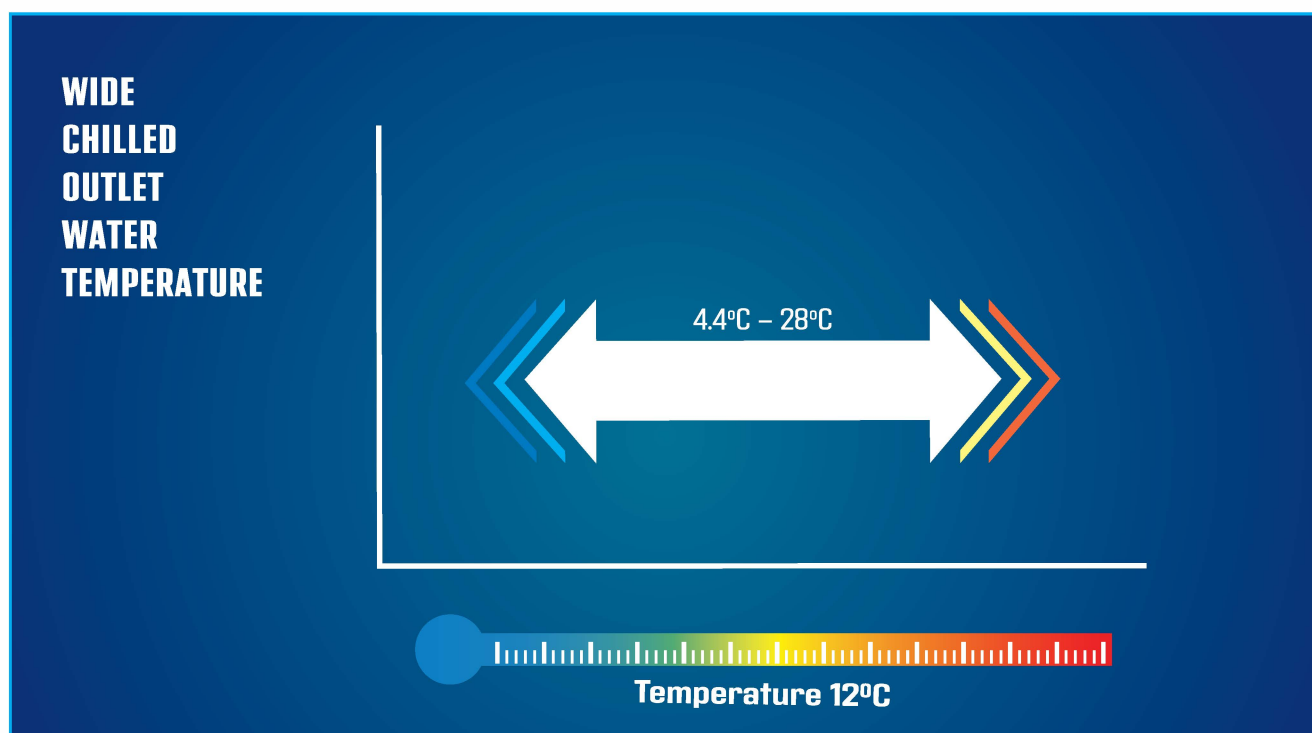
Our data centre chiller series is available with the option of factory-supplied harmonic filters. These filters mitigate the effects of harmonics as per IEEE-519 standards to safeguard sensitive electronic equipment at the data centre from harmonic interference.



## HIGH CHILLED WATER LEAVING TEMPERATURE

New generation data centres are designed with inside temperatures maintained at a higher 27–28°C as compared to the earlier 22–24°C. This new design reduces the power consumption of the chillers significantly and in turn reduces the overall operating cost of a data centre. This design change of a higher inside temperature must therefore be reflected in the chillers too which must now be designed to operate at a higher chilled water leaving temperature.

Blue Star's new range of screw chillers for data centres can be operated in a wide range of chilled water outlet temperature, from 4.4°C to 28°C. Similarly, the chillers are designed with a delta of up to 12°C between the entering and the leaving chilled water temperatures. This high temperature range and flexibility enable these chillers to run optimally under varied design requirements.



## OTHER EXCLUSIVE FEATURES OF THE NEW BLUE STAR DATA CENTRE CHILLER RANGE

### Live display option of capacity and power consumption

In order to ensure the user can validate the committed performance and efficiency of these chillers, our new data centre chiller series is provided with advanced controllers that can display the capacity (TR) and power consumption (kW) in real time. This unique feature not only enables users to validate the capacity and efficiency of each chiller but also helps optimise performance based on past data available in the controller.



### BMS compatibility

Our new data centre chiller range is equipped with a BMS compatible microprocessor control which allows the chiller to be operated through centralised Building Management Systems.

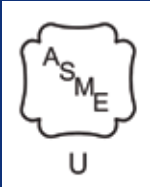


### Touch screen option

The new controller has an elegant touch screen with a back lit display, which helps in easy operation of the unit and also provides a user-friendly graphical interface to access various parameters.

### Easy and quick installation

These new data centre chillers are fully charged, pre-wired and run-tested comprehensively at Blue Star's factory prior to dispatch. The chillers are also provided with Victaulic coupling as a standard feature. This enables users to install the chillers without delay, thus reducing installation time. This also avoids the impact on performance that happens when refrigerant is charged manually at site, as is the case in most conventional chillers.



### ASME stamp option

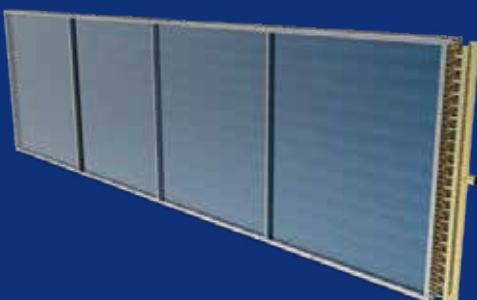
The new data centre chiller series is available with the option of ASME stamping of the evaporator for additional mechanical safety.

### Eco-friendly

Blue Star's new data centre chillers use the environment-friendly R-134a refrigerant.

### Condenser coating for corrosive environments

Applications involving highly corrosive environments can be provided with anti-corrosive hydrophobic coated fins, enhancing the corrosion resistance to more than 5 times the conventional fins. For more severe applications Blygold metallic impregnated polyurethane coating can be provided for coils and fins, protecting the base metal from a wide range of corrosive salts and acids in the atmosphere. Blygold coating not only protects the chillers from stringent corrosive environments but also ensures uniform efficiency with negligible impact on heat transfer and pressure drop.



Blue Fin



Blygold



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