

TOSHIBA

HEATING & COOLING WITHOUT COMPROMISE

Universal Smart

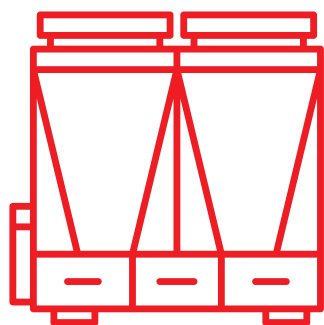
X EDGE



Better Air Solutions

Introducing Universal Smart **X** EDGE

Universal Smart X EDGE is Toshiba's high-capacity modular air source heat pump solution for commercial and industrial applications. Engineered for demanding environments, it combines industry-leading modular scalability with advanced inverter-driven compressor technology and efficient R32 refrigerant.



Capacity range

50 HP
(150 kW)

60 HP
(180 kW)

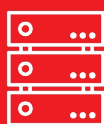
70 HP
(200 kW)

Suitable for a Wide Range of Commercial Sectors

Commercial
Offices



Data Centres



Education



Healthcare



Hotels



Industrial



Retail



key benefits that **deliver real value**

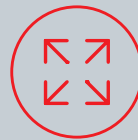
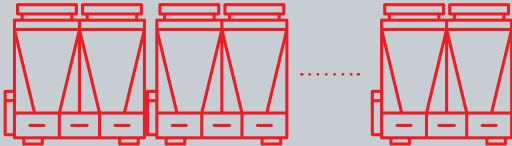
Universal Smart X EDGE is built to deliver performance, efficiency and reliability at scale, helping you achieve your performance, energy and operational objectives.



25.6 MW

System Capacity

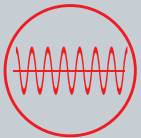
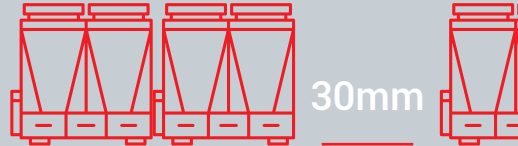
Connect up to 16 units per group and up to 8 groups of 16 combined units for a total capacity of up to 25.6MW.



70%

Less Installation Space

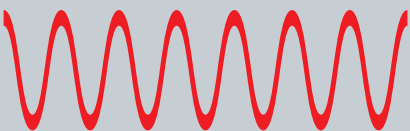
The patented X-frame design optimises airflow and allows units to be installed with just 30mm spacing between them without compromising performance.



99%

Power Factor

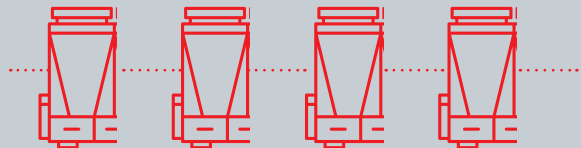
Advanced harmonic suppression technology as standard achieves up to 99% power factor, reducing infrastructure requirements and installation costs.



4

Independent Circuits

Each module features four independent refrigerant circuits, delivering exceptional risk diversification and ensuring your building keeps running.



The Smart Choice

From commercial offices and healthcare facilities to educational establishments and data centres, Universal Smart X EDGE delivers scalable, efficient and reliable heating and cooling solutions across a wide range of applications.



Data Centres

Reliable cooling solutions that maximise uptime, improve energy efficiency and support critical digital infrastructure.



Healthcare

Reliable climate solutions that support patient comfort, health and operational performance.



Care Homes

Efficient heating and cooling solutions that support resident comfort, well-being and reliable year-round operation.



Retail

Reliable climate solutions that enhance customer comfort and improve operational efficiency.



Industrial

Robust solutions for process cooling, ventilation and temperature-controlled environments.



Commercial Offices

Energy-efficient solutions for offices, mixed-use developments and commercial buildings.



Education

Creating healthy learning environments that enhance well-being and productivity.



Hotels

Intelligent climate solutions that enhance guest comfort and operational efficiency.

Why **USX EDGE?**

Universal Smart X EDGE has been engineered to support the evolution of commercial heating and cooling systems.

Combining R32 low GWP refrigerant, advanced inverter technology and intelligent modular control, USX EDGE delivers reliable performance, low running costs and installation flexibility.

Designed to help consultants, contractors and building owners overcome today's HVAC challenges, USX EDGE provides the efficiency, scalability and resilience required for modern commercial buildings.

- Wide operating range
- Advanced defrost control
- Space-saving chassis design
- High system and part load efficiencies
- Award-winning modular design
- R32 Refrigerant with a GWP of 675
- Module-in-module design to maximise risk diversification
- Patented X-frame design to optimise airflow around / through the air heat exchanger
- Large-capacity DC inverter twin rotary compressor enhancing heating operation down to -20°C
- Reduced installation costs due to advanced electronics to suppress harmonic current & improve power factor correction (up to 99%) for the installation
- A module can be isolated for servicing, allowing maintenance to be completed without taking the entire system offline.



R32
low GWP
Refrigerant



Reduced cost
to Installer and
End users



FlashMonitor
application for data
collection & analysis



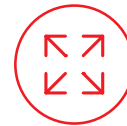
Large Capacity DC
inverter twin rotary
compressor

Compact by **Design**

Big Performance. **Smaller Footprint.**

The patented X-frame chassis has been developed to optimise airflow while minimising installation space.

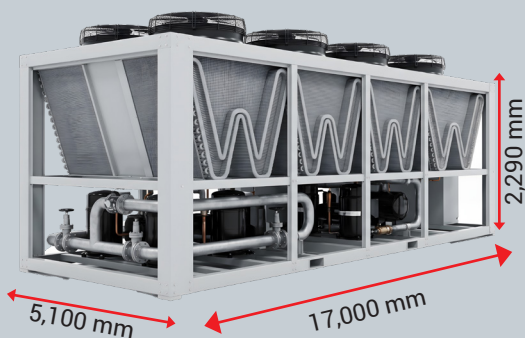
This unique design allows USX EDGE modules to be installed with just 30mm clearance between units, without compromising performance.



70%

LESS INSTALLATION SPACE

CONVENTIONAL SOLUTION 4 × 100 HP UNITS

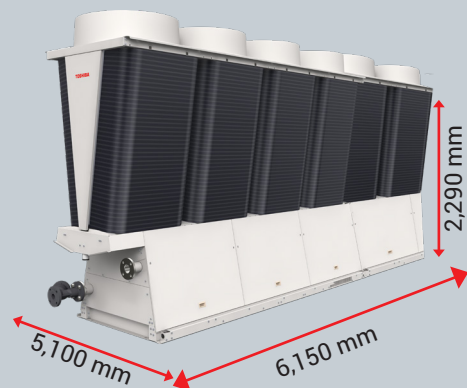


Total cooling capacity
1,200 kW



Installation area
86.7 m²

USX EDGE SOLUTION 6 × 70 HP (200 kW) MODULES

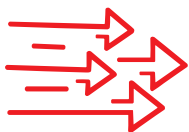


Total cooling capacity
1,200 kW



Installation area
25.5 m²

The X-frame Advantage



Optimised Airflow:

The unique X-frame chassis supports effective air distribution across the heat exchanger, maintaining high performance even with minimal spacing.



Just 30 mm Clearance:

Modules can be positioned side by side with only 30 mm clearance, reducing the required installation footprint without compromising output.



Flexible Installation:

Compact modular design supports restricted plant areas, phased installation and future replacement with minimal disruption to building operations.

Smart Performance

Outstanding Efficiency All Year Round.

Outstanding energy efficiency at full and part load, thanks to the combination of the low GWP refrigerant R32 and a new generation of DC inverter compressors.

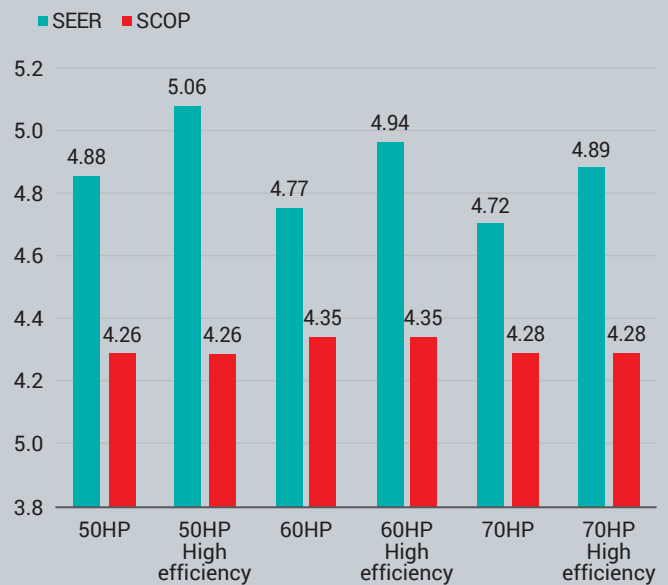
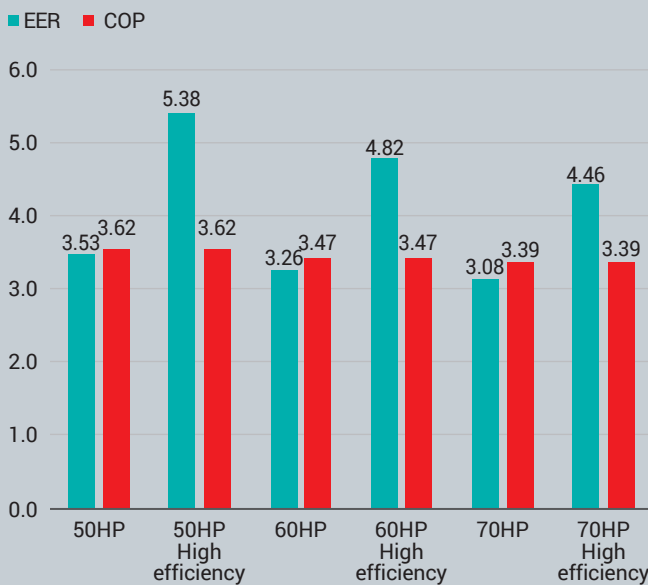
Precise control of water volume and pressure based on the required load, thanks to the internal pump module with variable flow bypass control, for greater system efficiency.



UP TO

12%

ENERGY SAVINGS*



Real Savings. Real Results



Lower Total Cost Of Ownership:

Efficiency today,
savings for tomorrow.



Optimal Performance:

Intelligent load distribution
ensures stable, efficient operation.



Reduce Energy Consumption:

High seasonal efficiency for lower
running costs.

*Example based on Toshiba testing under the following conditions: 50% load, outlet water temperature 7°C, ambient temperature 35°C and 430 L/min water flow per unit. Actual performance will vary according to application, system design and operating conditions.

Highly Reliable **Modular System**

Reliability **Built In.**

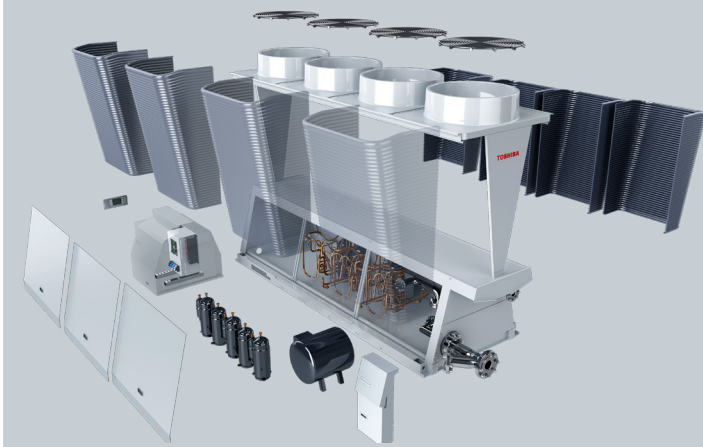
Each USX EDGE module features four independent refrigerant circuits, helping to maintain system operation if an individual compressor requires defrosting, maintenance or repair.

From defrosting to maintenance, USX EDGE is designed to keep your building running with minimal disruption.



4

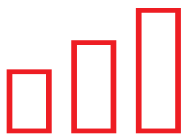
**INDEPENDENT REFRIGERANT
CIRCUITS**



There are four independent refrigerant circuits in each module, allowing excellent diversification.

A cost-effective approach to system resilience, with reduced backup capacity requirements. The reduction in available capacity for maintenance or repair is extremely limited: from a maximum of 1/4 of the total power in the case of single-module applications up to $1/(4 \times N)$ in the case of N-module applications.

Continuous Performance



Reduced Capacity Impact:
Independent operation limits the effect that individual compressor shutdowns have on overall system capacity.



Smarter Defrosting:
Defrosting is performed separately for each compressor, helping to maintain the temperature of the hot water produced by the module.



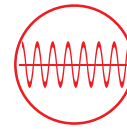
Simplified Maintenance:
Modular and circuit-level backup functions support maintenance while limiting disruption to the wider system.

Powering Performance

Improved Harmonic Suppression Function.

Advanced harmonic suppression technology is provided as standard across the USX EDGE range, achieving a power factor of up to 99%.

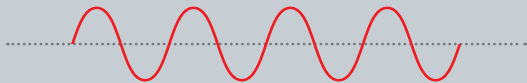
This helps reduce electrical infrastructure requirements and supports lower installation costs.



99%

POWER FACTOR

TRADITIONAL SYSTEM
without harmonic suppression



Power Factor
85-90%

Higher harmonics increase current distortion and reduce efficiency.

USX EDGE WITH PWM CONVERTER
with advanced harmonic suppression



Power Factor
99%

Clean power supply, lower current and higher electrical efficiency.

Advanced Technology



Lower Infrastructure Costs:

Reduced transformer requirements and lower harmonic distortion mean less electrical infrastructure is required, helping to reduce installation costs.



Improved Electrical Efficiency:

A power factor of up to 99% reduces current demand and associated losses, improving overall system efficiency.



Standard Across the Range:

Advanced harmonic suppression technology is included as standard on all USX EDGE models - delivering performance you can rely on.

Enhanced Heating Capacity at Low Temperatures

Reliable Heating When Temperatures Drop.

USX EDGE is engineered to maintain dependable heating performance across demanding outdoor conditions, helping commercial buildings remain comfortable and operational throughout the colder months.

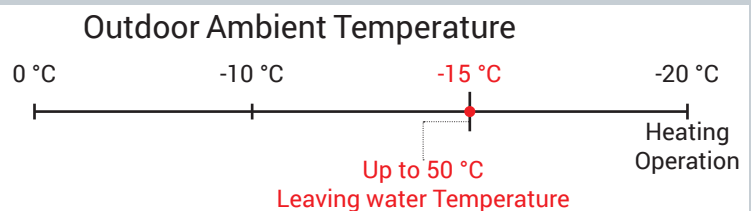


-20 °C

HEATING OPERATION



Up to
50 °C
Leaving Water Temperature at
-15 °C Ambient



- At outside temperatures as low as -15 °C, the system is still able to produce hot water up to 50 °C. At -20 °C, the hot water produced is up to 45 °C.
- Performance between -20 °C and -25 °C is not guaranteed. Exceptional environmental factors, such as blizzards, may inhibit operation at temperatures of -20 °C or below.

Intelligent Heating Control



Consistent Comfort:
Reliable heating performance helps maintain comfortable internal environments during colder conditions.



Adaptive Capacity:
Inverter control adjusts output to match changing heating demand, improving efficiency and reducing running costs.



Commercial Confidence:
Designed for demanding applications where dependable winter performance is essential.

Intelligent Winter **Control**

Keep the Heat **Flowing.**

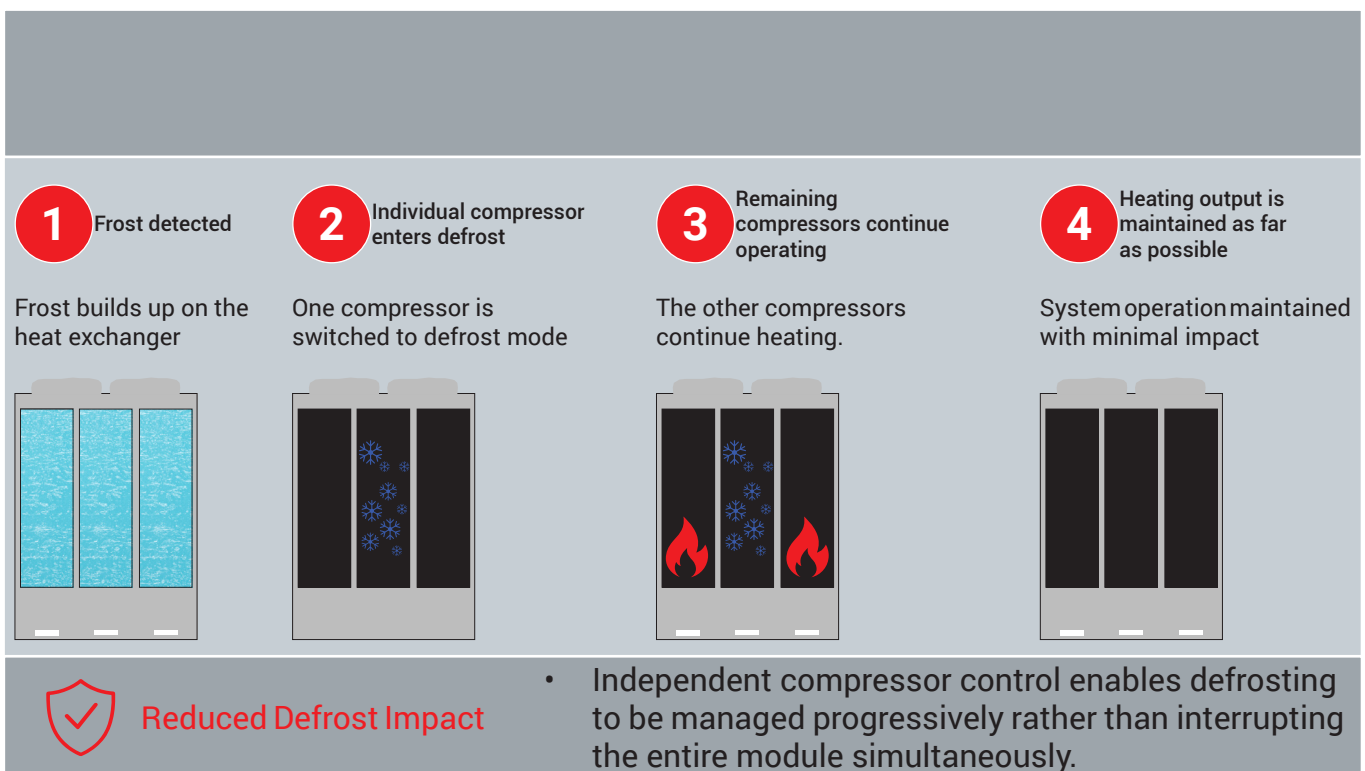
During low-temperature operation, frost can naturally form on the outdoor heat exchanger.

USX EDGE uses intelligent control and independent compressor operation to manage defrost cycles while helping to minimise their effect on system heating output.



Smart **Defrost**

CONTINUOUS HEATING



Consistent Comfort



Intelligent Control:
Defrost operation is activated according to system conditions, optimising performance.



Continued Heating Support:
Compressors that are not in defrost can continue contributing to heating output.



Stable Water Temperature:
Progressive operation helps limit temperature fluctuations and maintains consistent comfort.

FlashAir Monitor **Application**

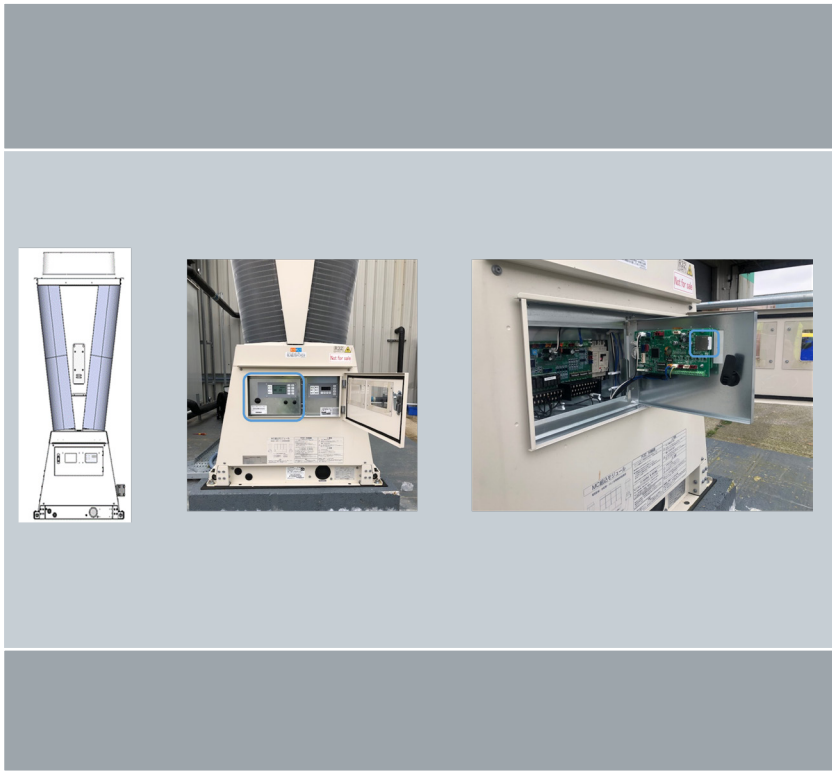
Smarter Control Greater Efficiency

Flash Monitor is a downloadable application designed to communicate with a Toshiba FlashAir wireless LAN SD card, enabling data to be transmitted wirelessly to an engineer's compatible tablet. The application provides direct access to key chiller system information, helping to reduce commissioning time and simplify fault-finding tasks.



FlashAir

FOR DATA COLLECTION &
ANALYSIS

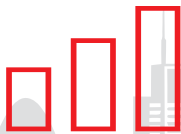


Design Specification	
Supported Operating Systems	Android Version 5.1 to 9.0
RAM	2GB
Storage	32GB
Screen Size	1920 x 1200
	1280 x 800
Confirmed Android Tablets	Samsung Galaxy Tab S3
	Huawei mediapad T2 10.0 pro
	Huawei mediapad T3 10.0 pro
	Lenovo yoga 3 plus (Lenovo TY-X703X)
	ASUS zenpad 10 (Z300CNL)
	NEC Lavie TAB (PC-TE510BAL)
FlashAir SD Cards Confirmed (Optional Purchase)	W-03 / 8GB & 16GB
	W-04 / 16GB*
	*When using version W-04 firmware must be 4.00.01 or higher.

Connected Monitoring



Real-Time Monitoring:
Connect directly to the system and view operational data from a compatible tablet.



Live Performance Insights:
Monitor real-time operating conditions and system performance data.



Smarter Service & Maintenance:
Support faster diagnostics with access to system history, alerts and operational reports.

Flexible Solutions. **Tailored to You**

One Platform. **Multiple Possibilities.**

Every commercial heating and cooling project presents different requirements.

USX EDGE offers a flexible choice of capacities and system configurations, allowing the solution to be tailored to the building, application and installation environment.



Tailored

TO YOUR PROJECT

THREE CAPACITIES. ONE FLEXIBLE PLATFORM

50 HP



150 kW

60 HP



180 kW

70 HP



200 kW

Configure to Suit Your Project



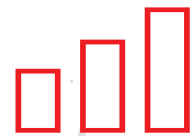
Cooling Only:

Dedicated cooling for applications with continuous or process-led cooling requirements.



Heat Pump:

Efficient heating and cooling from one flexible system.



Standard, High-EER & Low Temperature Options:

Different product configurations are available to support specific performance and operating requirements.

Technical Data & Specification

Technical Data Usx Edge Series Standard Heat Pump				

For the versions: Cooling Only, High Efficiency, Low Temperature and Brine (or combinations thereof) refer to the Technical Databook Cooling: 12°C temp. inlet water (EWT), 7°C temp. water outlet (LWT), 35°C BS, 24°C BU temp. outside air (OAT).

Heating: 40°C temp. inlet water (EWT), 45°C temp. water outlet (LWT), 7°C BS, 6°C BU temp. outside air (OAT).

Always refer to the data in the Technical Databook for selection and sizing.

(1) Integrated pump: 1.5kW for 50 and 60HP sizes, 2.2kW for 70HP size, for all other integrated pumps please refer to the technical data book.

(Note 1) Maximum permissible voltage fluctuation is ± 10%. Maximum permissible frequency fluctuation is ± 2 %.

(Note 2) The power supply differs from the capacity of the pump. Consult the pump information chart to properly design the power supply.

(Note 3) Always install a residual current circuit breaker. This machine is equipped with an inverter. To avoid malfunction use a high-frequency compatible product.

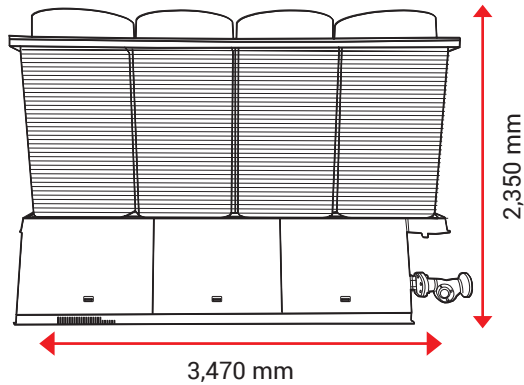
(Note 4) Power factors may vary depending upon the site conditions.

(Note 5) The working pressure is less than 0.7 MPa.

(Note 6) The flow rate adjustment range may vary at times depending upon the operating conditions of the unit.

Dimensions & Installation

Unit Dimensions in mm



			50 HP	60 HP	70 HP
Dimensions	Height	mm	2,350	2,350	2,350
	Width	mm	1,000	1,000	1,000
	Length (flange included)	mm	3,470	3,470	3,470
	Operating weight	kg	1,384	1,384	1,393

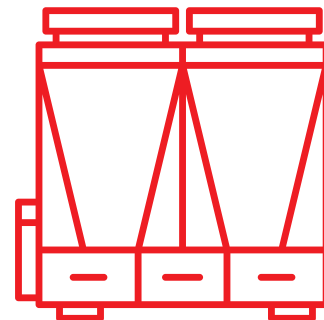
30 mm spacing

The patented X-frame design optimises airflow and allows units to be installed with just 30mm spacing between them without compromising performance.



Capacity range

50 HP (150 kw)	60 HP (180 kw)	70 HP (200 kw)
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Water Connections

		50 HP	60 HP	70 HP
Piping diameter	Cold/hot water inlet	Flange 2-1/2"	Flange 2-1/2"	Flange 3"
	Cold/hot water outlet	Flange 2-1/2"	Flange 2-1/2"	Flange 3"
	Condensate drainage	Male screw PT1-1/2"	Male screw PT1-1/2"	Male screw PT1-1/2"



Need more details?

Scan to access the latest technical databook, installation manual and performance data.

TOSHIBA



OFFICE / TRAINING CENTRE LOCATIONS

Manchester
Carrier Solutions UK Ltd
Unit 15 S:Park Business Park
Hamilton Road
Stockport
Greater Manchester
SK1 2AE
Tel: 0330 236 8630 - opt 2
marketing.uk@toshiba-ac.com

St Albans
Carrier Solutions UK Ltd
Unit 7, Riverside Industrial Estate
Borderlake House
London Colney
St Albans
AL 2 1HG
Tel: 0330 236 8630 - opt 2
marketing.uk@toshiba-ac.com

Telford
Viessmann UK
Hortonwood 30
Hortonwood Roundabout
Telford
Shropshire
TF1 7YP
Tel: 0330 236 8630 - opt 5
marketing.uk@toshiba-ac.com

Plymouth
Carrier Solutions UK Ltd
Porsham Close
Belliver Industrial Estate
Plymouth
Devon
PL6 7DB
Tel: 0330 236 8630 - opt 2
marketing.uk@toshiba-ac.com

DEPARTMENTAL CONTACT DETAILS

Sales Order Processing
0330 236 8630 opt 2 - opt 1
sales.support@toshiba-ac.com

Pre Sales Team
0330 236 8630 opt 2 - opt 2
projects.uk@toshiba-ac.com

Spare Parts
0330 236 8630 opt 2 - opt 3
spares@toshiba-ac.com

Warranty
0330 236 8630 opt 2 - opt 4
warranty@toshiba-ac.com

Technical Support
0330 236 8630 opt 2 - opt 5
technical.enquiries@toshiba-ac.com

Training
0330 236 8630 opt 2 - opt 6
toshiba.training@toshiba-ac.com

Through our commitment to world-class efficiency, versatile scalability and leading quality, Toshiba Air Conditioning advances leading-edge technologies to find the most forward-thinking solutions possible for your world.

