TOSHIBA

HEATING & COOLING
WITHOUT COMPROMISE

Universal Smart

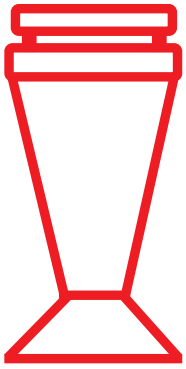
X EDGE

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.

A choice of integrated pump or pumpless models provides additional flexibility to meet specific system and installation requirements.



Capacity range

50 HP (150 kW) | 60 HP (180 kW) | 70 HP (200 kW)

	50HP/60HP Standard & 50HP/60HP Powerful Heating Type					70 HP			
Pump output (kW)	1.5 (Std)	2.2	3.7	5.5	7.5	2.2 (Std)	3.7	5.5	7.5

Suitable for a Wide Range of Commercial Sectors

- Commercial Offices
- Phased Construction Projects
- Education
- Healthcare
- Hotels
- Industrial
- Retail

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key benefits that deliver real value

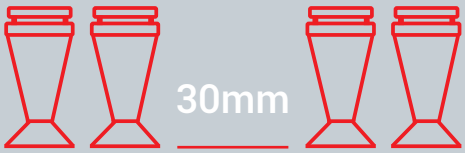
Universal Smart X EDGE is built to deliver performance, efficiency and reliability at scale, helping you achieve your performance, energy and operational objectives.

25.6 MW
System Capacity

The modular controller connects up to 16 modules and the group controller connects up to 8 banks of 16 combined for a total capacity of up to 25.6MW.

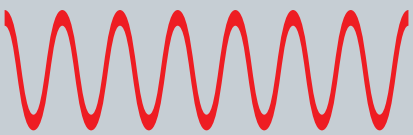
70%
Less Installation Space

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.

Phased construction projects

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.

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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.

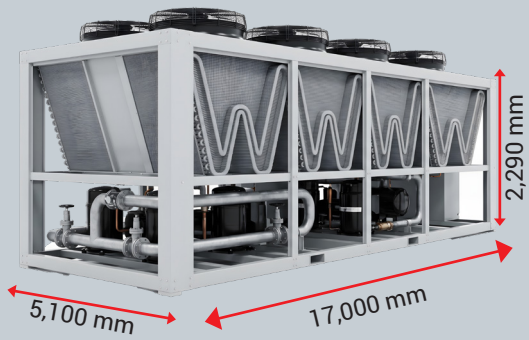
This unique design allows USX EDGE modules to be installed with just 30mm clearance between units, without compromising performance.

70%
LESS INSTALLATION SPACE

Installation Footprint

134 m² → 40.5 m²

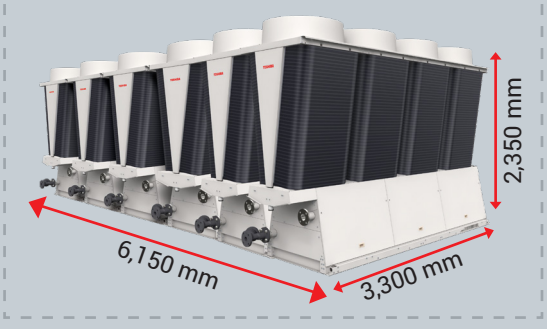
CONVENTIONAL SOLUTION
4 × 100 HP UNITS



Total cooling capacity
1,200 kW

Installation area
134 m²
Including
installation clearances

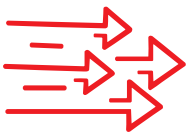
USX EDGE SOLUTION
6 × 70 HP (200 kW) MODULES



Total cooling capacity
1,200 kW

Installation area
40.5 m²
Including
installation clearances

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.

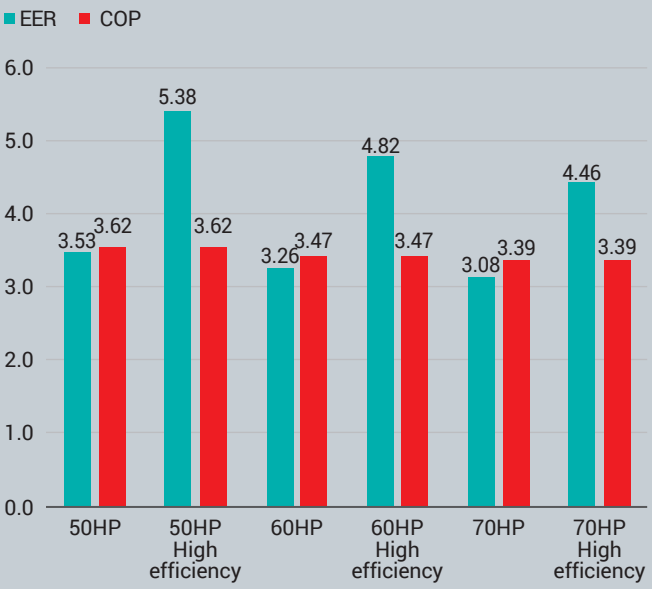
Outstanding energy efficiency at full and part load, thanks to the combination of the low GWP refrigerant R32 and a new generation of DC inverter compressors.

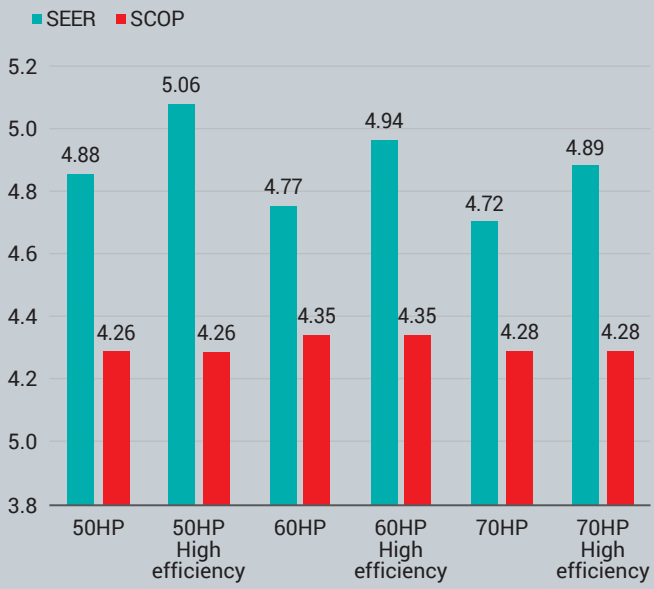
Precise control of water volume and pressure based on the required load, thanks to the internal pump module with variable flow bypass control, for greater system efficiency.

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.

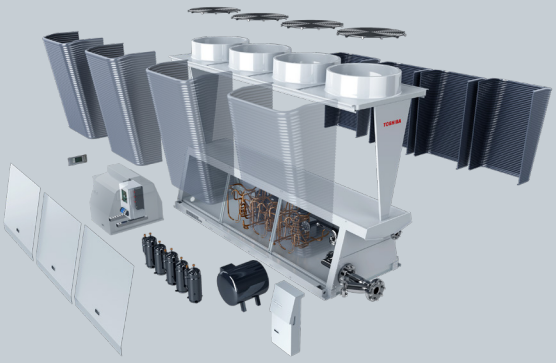
Each USX EDGE module features four independent refrigerant circuits, helping to maintain system operation if an individual compressor requires defrosting, maintenance or repair.

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

X

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/(4xN) in the case of N-module applications.

Continuous Performance

Reduced Capacity Impact:
Independent operation limits the effect that individual compressor shut-downs 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	USX EDGE WITH PWM CONVERTER with advanced harmonic suppression
Power Factor **85-90%**	Power Factor **99%**
Higher harmonics increase current distortion and reduce efficiency.	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.

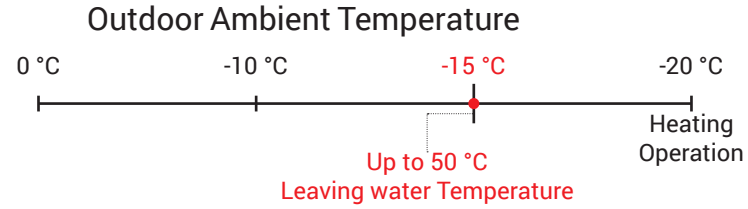
Enhanced Heating Capacity at Low Temperatures

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.

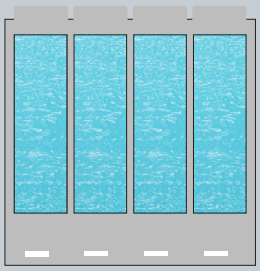
USX EDGE uses intelligent control and independent compressor operation to manage defrost cycles while helping to minimise their effect on system heating output.

Smart Defrost

CONTINUOUS HEATING

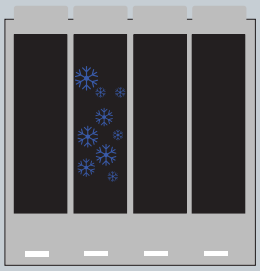
1 Frost detected

Frost builds up on the heat exchanger



2 Individual compressor enters defrost

One compressor is switched to defrost mode

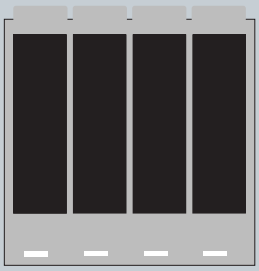


3 Remaining compressors continue operating

The other compressors continue heating.

4 Heating output is maintained as far as possible

System operation maintained with minimal impact



Reduced Defrost Impact

- Independent compressor control enables defrosting to be managed progressively rather than interrupting the entire module simultaneously.

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.

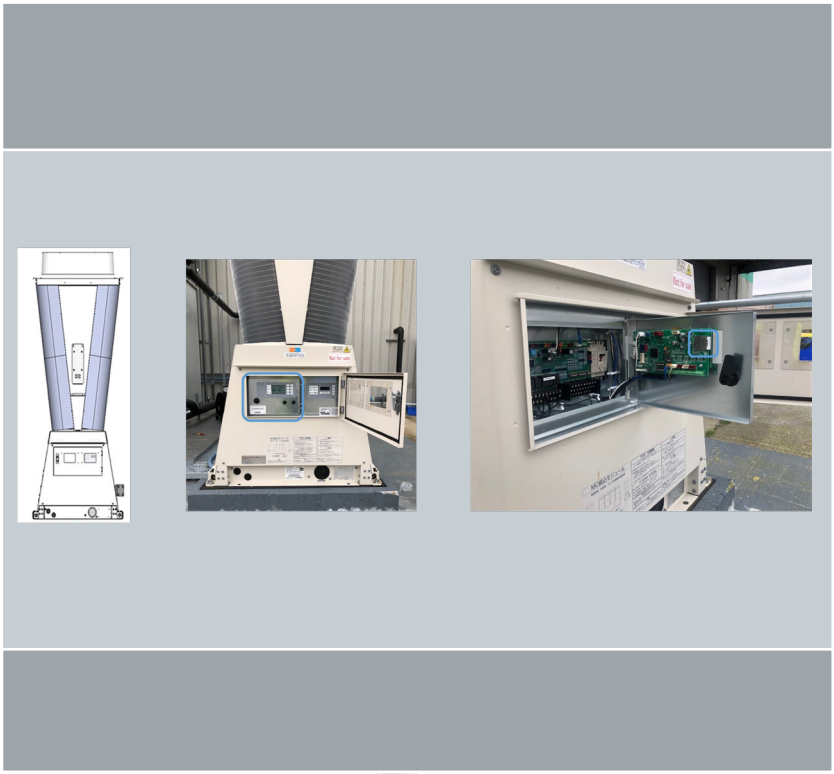
FlashAir Monitor Application

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.

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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	60 HP	70 HP
150 kW	180 kW	200 kW

Available with integrated pump or pumpless configurations

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.

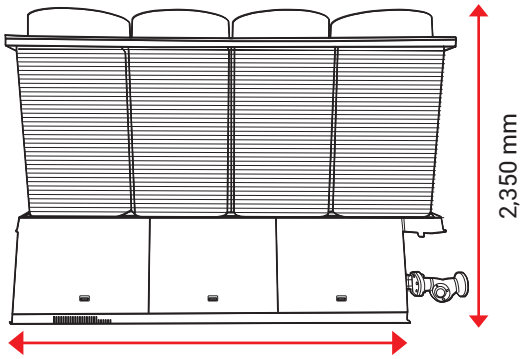
Technical Data & Specification

					Technical Data Usx Edge Series Standard Heat Pump		
					SERIES EDGE 50HP	SERIES EDGE 60HP	SERIES EDGE 70HP
					Standard	Standard	Standard
Model					RUAGP421H18	RUAGP511H18	RUAGP561H28
Nominal cooling capacity				kW	150	180	200
Nominal heating capacity				kW	150	180	200
Power supply			(Note 1)		3Ph + N 50/60Hz 380V/400V/415V		
Current for sizing power cables			(Note 2-3)	(A)	82.1	103	119
Performance	Cooling	Current rating		(A)	65.3	84.8	99.7
		Absorption		kW	42.5	55.2	64.9
		EER			3.53	3.26	3.08
		SEER			4.88	4.77	4.72
		Power factor	(Note 4)	%	99	99	99
	Heating	Current rating		A	63.6	79.6	90.1
		Absorption		kW	41.4	51.9	59
		COP			3.62	3.47	3.39
		SCOP			4.26	4.35	4.28
		Power factor	(Note 4)	%	99	99	99
Compressor	Type				Hermetic Twin Rotary x4		
	Reach			kW	8.8x4	8.8x4	13.2x4
	Starter type				Inverter starter		
	Crankcase heater			W	37x4	37x4	37x4
	Oil charge			L	2.0x4	2.0x4	2.0x4
Air Side Heat Exchanger	Fan				Fin Coil		
		Type			Propeller fan		
		Reach		(m³/min)	1,230 (maximum)		
		Starter type			Inverter starter		
		Output motor power × number		kW	1.2x4	1.2x4	1.2x4
	Pump (1)	Output motor power		kW	1.5	1.5	2.2
		Type			Centrifugal pump		
		Flow Control			Inverter		
		Maximum Current		A	3.1	3.1	4.3
		Minimum power consumption		kW	2	2	2.8
Water Side Heat Exchanger			(Note 5)		Brazed plate (SUS316 equivalent)		
Refrigerant		Type			R32		
		Charge		kg	8.8x4	8.8x4	8.8x4
		Control			Electric expansion valve		
Capacity control steps			(Note 6)	%	0; 5~100	0; 4~100	0; 4~100
Operational control					Microprocessor control based on outlet water temperature and temperature difference		
Defrost system					Reverse Cycle Distributed System		
Protective device					High pressure switch, over current protection, overload protection of inverters (compressors, fans, pump), crankcase heater, phase failure protection, microprocessor control (protections: compressor thunderstorm, antifreeze, high water temperature, low water flow, high supply gas temperature, low pressure, temperature sensors, high water pressure error)		
Sound power level				dB(A)	83.8	87.4	90.9

For the versions: Cooling Only, High Efficiency, Low Temperature and Brine (or combinations thereof) refer to the Technical Data book 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 Data book 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	mm	3,300	3,300	3,300
	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)

Pump Output

	50HP/60HP Standard & 50HP/ 60HP Powerful Heating Type					70 HP			
Pump output (kW)	1.5 (Std)	2.2	3.7	5.5	7.5	2.2 (Std)	3.7	5.5	7.5
Flow rate range (L/min)	150 ~ 600 (Maximum)					150 ~ 650 (Maximum)			
Outlet pump head (kPa)	43 ~ 151	92 ~ 198	190 ~ 315	284 ~ 422	370 ~ 512	64 ~ 198	158 ~ 315	247 ~ 422	335 ~ 512
Max. operating current (A)	3.1	4.3	7.4	10.0	15	4.3	7.4	9.9	15
Max. input power (kW)	2.0	2.8	4.5	6.4	9.8	2.8	4.5	6.4	9.8
Max. allowable boost press. (Mpa)	0.52	0.47	0.36	0.25	0.16	0.47	0.36	0.25	0.16
Max. return head (≤ 60°C water temp)	40	40	40	40	40	40	40	40	40

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 data book, installation manual and performance data.

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OFFICE / TRAINING CENTRE LOCATIONS

Manchester
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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.

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Better Air Solutions