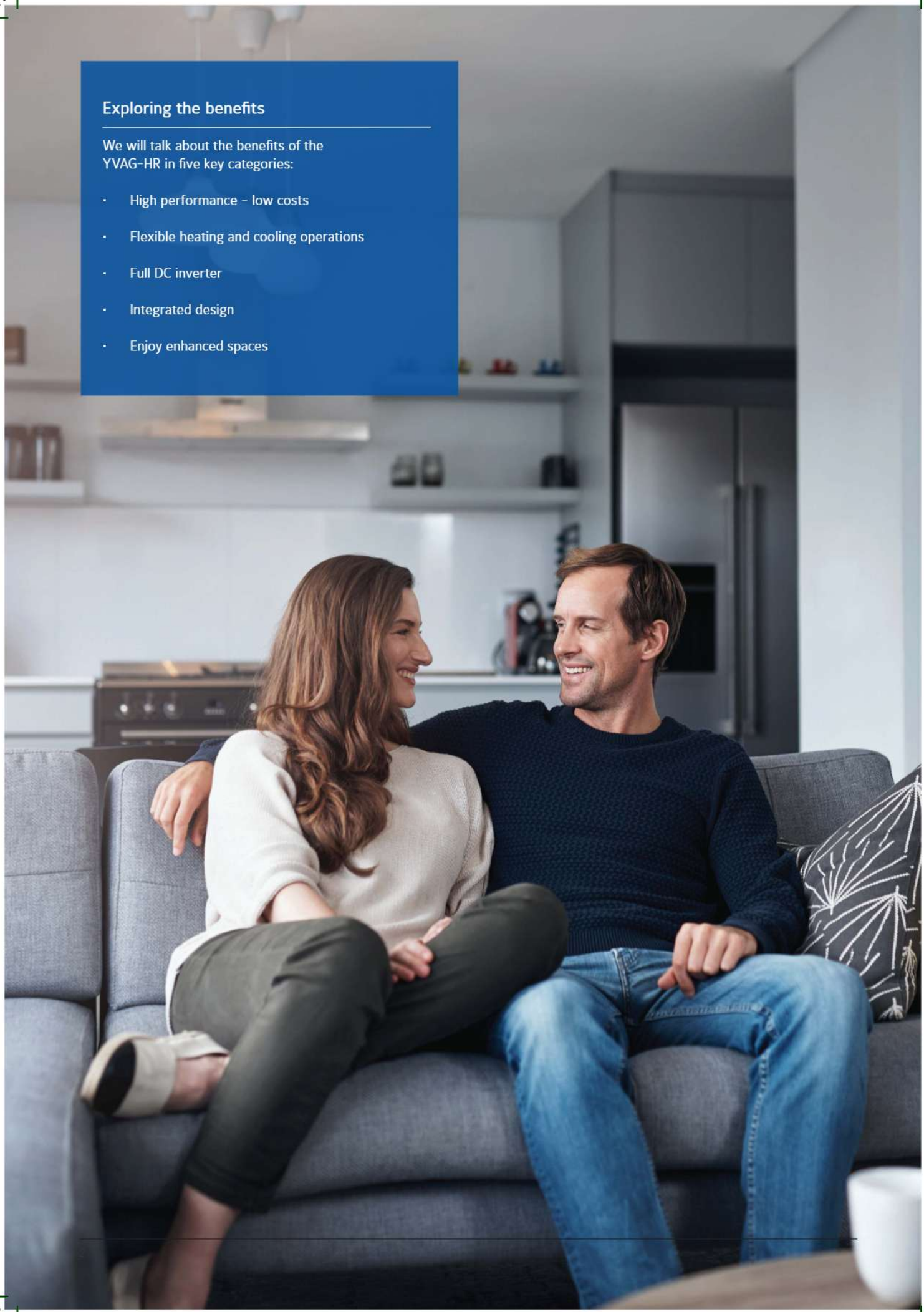
YORK®

# YORK® YVAG Heat Recovery Air-Cooled Inverter Heat Pumps



The power behind **your mission**

Johnson Controls



## Exploring the benefits

We will talk about the benefits of the YVAG-HR in five key categories:

- High performance – low costs
- Flexible heating and cooling operations
- Full DC inverter
- Integrated design
- Enjoy enhanced spaces

# One unit - multiple functions

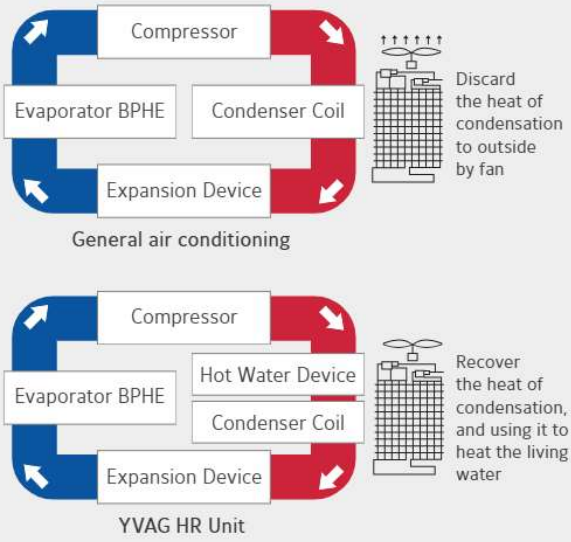
YORK® YVAG Heat Recovery (HR) Air-Cooled Inverter Reversible Heat Pumps are a flexible, efficient and high-performing solution for a range of applications.

Key to what makes the YVAG-HR special is its amazing capacity to provide air conditioning, heating, and domestic hot water supply – all in one unit.

This multi-in-one functionality means you can get more from less, making it a high-value, top-class utility.

The YVAG-HR is built to last with the quality materials and processes you would expect from a market leader like YORK.

In fact, at YORK, comfort is more than a feeling – it's a promise: to innovate, to assure and, most of all, to deliver.




# High performance - low costs

## Free hot water for the entire year

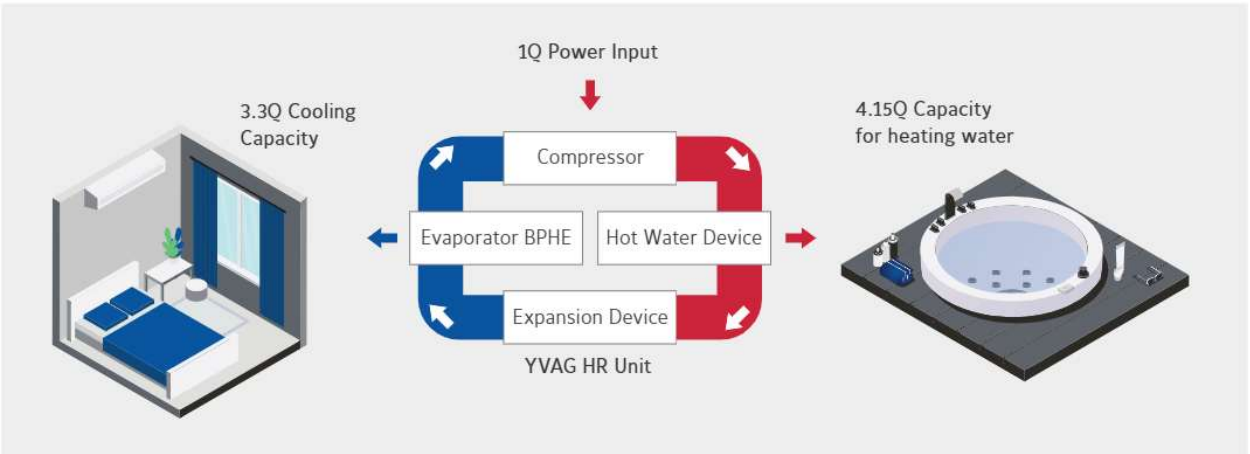
Unlike standard air conditioning setups, the YVAG-HR can recover the heat produced during condensation. It then uses this warmth to heat water while in cooling mode without any additional power input.

So not only do you get hot water, there is no additional energy cost associated with the hot water production. This is literally something for nothing.

## High Efficiency

Energy efficiency ratio for heat recovery up to 7.45
Input: 1Q Power
Output: 3.3Q Cooling Capacity+4.15Q Capacity for heat water

As you can see from the diagrams above and below, a low-power compressor drives the system as it recovers the warmth from indoor spaces to heat the water in a smooth, efficient cycle.



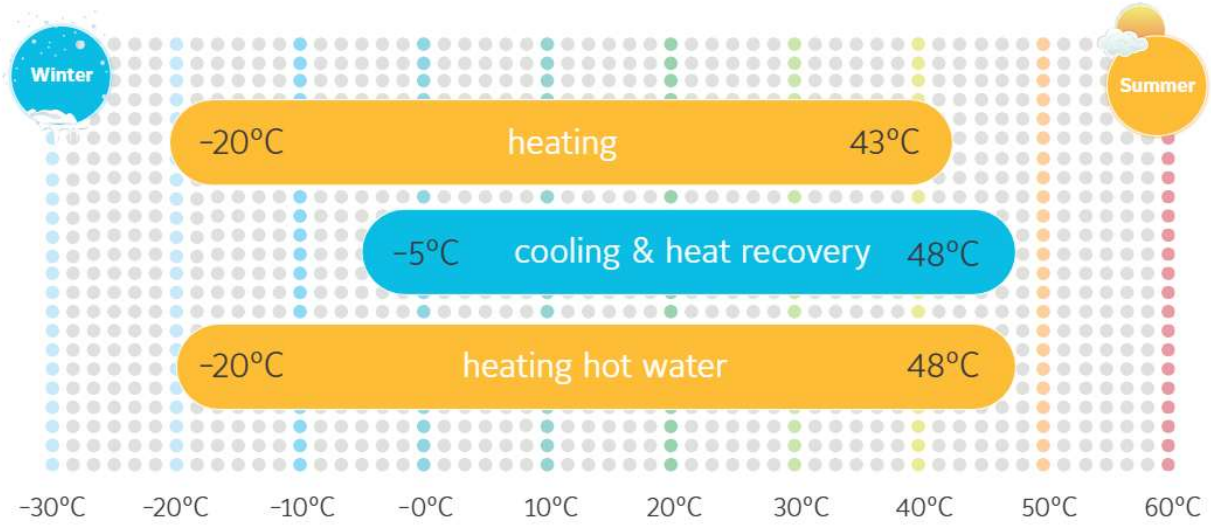
# Flexible heating and cooling operations

## Wide operating envelope for a range of functionalities

With its wide operating range, the YVAG-HR is suitable for all climates. It does not matter if the ambient temperature in summer is 48°C or if in winter it is -20°C, the unit will maintain its efficiency and stable operations. This ensures users can enjoy comfortable air conditioning and convenient hot water access whenever it is required.

## High efficiency that saves you money

The YVAG-HR uses air sources for hot water heating. It can even provide hot water for a full year without air conditioning. This is achieved through a stunning energy efficiency ratio for heating water of 4.67, which is only 20 percent of the energy consumption of a standard electric water heater.




## Whatever you need, whenever you need it

With its patented adaptable design, the YVAG-HR can meet the needs of different applications. It can supply cooling and heat recovery at same time, or heat hot water without providing air conditioning. Hot or cold, multi- or single-function – the YVAG-HR can do it all for you.

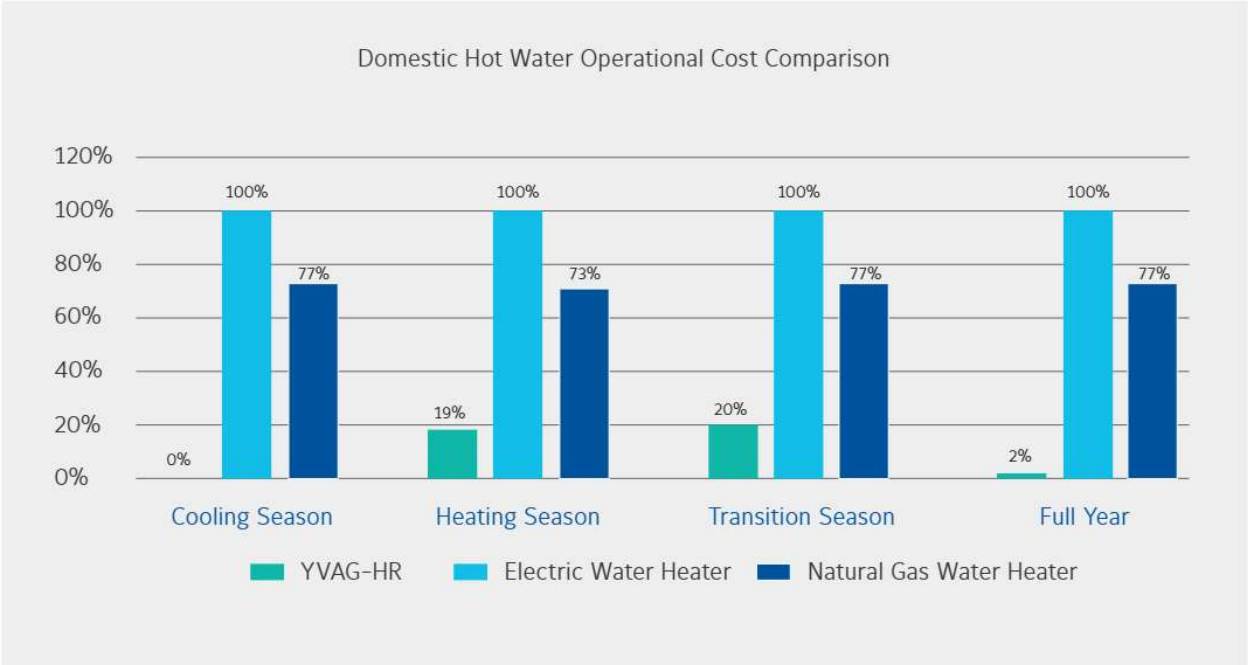






# Case study

**Chiller:** YVAG016HSE
**Water Tank:** YTH200 (200L)



# Full DC inverter

## Performance that goes beyond the ordinary

The YVAG-HR is designed for real-world efficiency with its DC inverter compressor. Part-load performances meet the highest efficiency values and deliver performance beyond the typical heat pump efficiency levels in cooling, warming, and heating hot water.

## High efficiency – low noise

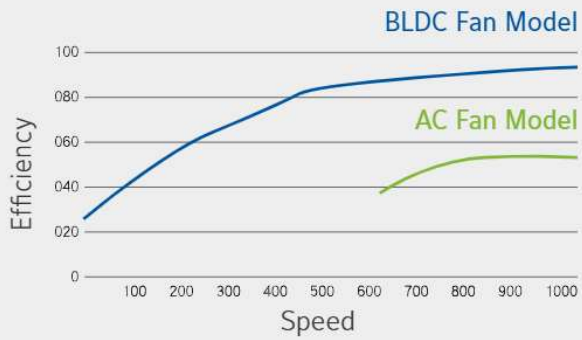
Dual fans work with a high-efficiency, low-noise DC inverter motor that adjusts the airflow to exactly match the capacity in a more accurate and efficient way. This means there is no wasted energy and thus no added resource costs.

## Speed adjustment drives accuracy and efficiency

Our YVAG-HR units utilize a high-efficiency DC inverter water pump for hot water equipped with advanced variable frequency drive technology. This monitors and adjusts the speed to exactly match frictional resistance in the pipes in a far more accurate and efficient way.

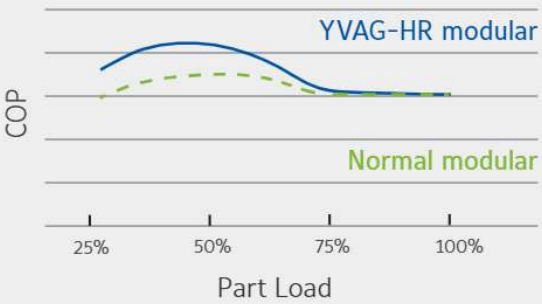
The stats bear this out. Variable speed functionality brings about a 30 percent lower power input than fixed-speed canned pumps, and an 80 percent reduction in power input when compared with fixed-speed centrifugal pumps.

Less power means less energy, which means reduced costs. The math is really that simple.






BLDC




## Managing operating speeds for efficient outcomes

The smart control system can regulate the operating speed of the DC motor and DC compressor to realize a 14-20 percent efficiency improvement on normal modular designs.



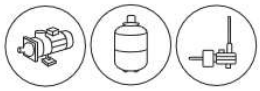
# Smart design means easy installation and efficient operations

## Divide and conquer

We split up the components of our YVAG-HR units to ensure we can save space, expedite delivery, and make installations simple and fast.

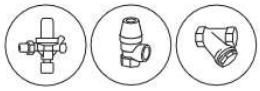
We factory-mount:

- Air conditioning water pumps
- Hot water pumps
- Expansion tanks
- Flow switches



We also ship some components loose:

- Safety valves
- Water strainers
- Automatic make-up valves



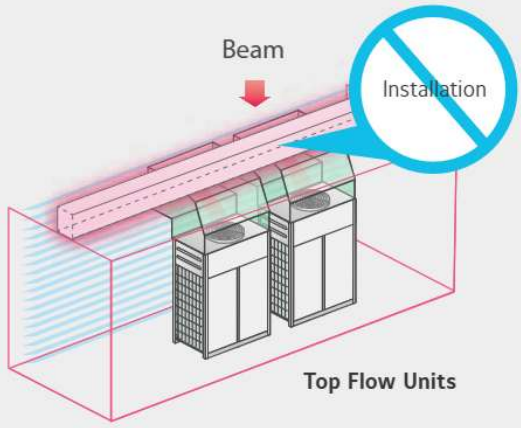
These are ready to field-mount on delivery.

This unit is designed for outdoor installation at ground level, on rooftops or balconies, and any other suitable place. Compared with the VRF system, there is no pipe range limiting YVAG-HR units.

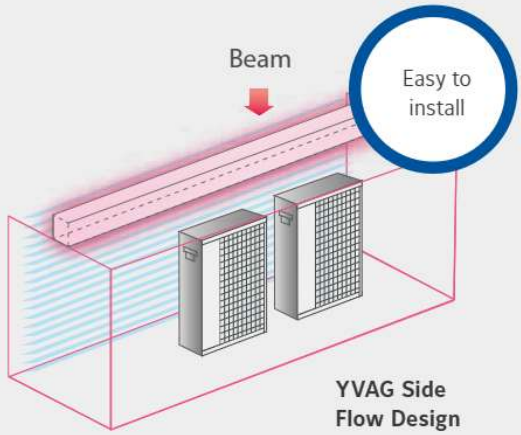
The overall package is a compact design which is easy to transport by both passenger and goods lifts.

These design measures ensure you can get things up and running as quickly as possible when you receive your unit.

28 and 33 kW Model




**Top Flow Units**




**YVAG Side Flow Design**

## Connectivity for increased capacity

The YVAG-HR is based on a modular design that can accommodate up to four additional components. It can be connected with not only other HR units but also the standard YVAG unit. This can boost cooling capacity from 11.2 to 124kW to meet different residential needs.



# SMART control



The T8610 is a vital component of the YORK® YVAG-HR intelligent controls system. The T8610 is an intelligent thermostat that allows you to automatically adjust the temperature and humidity of any room in your home. This smart device offers you a wide range of functionality. It is sensitive to the slightest change in room temperature, easy to use, adaptable to the needs of any user, and extremely reliable.

## Sensitive



The system collects the temperature of each room instantly via the T8610 thermostat, giving you valuable information about your usage requirements. This helps to meet the needs of you and your family by automating everything from room to water temperatures.

## Manageable



Set the rooms in your home to the desired temperature, including underfloor heating, using just one intuitive control panel. The T8610 allows you to control the main unit, fan, and floor heating at the same time. It simplifies the use of the air conditioning system as it can be turned on or off with a single key. In addition, indoor and outdoor units can be directly controlled using the Building Automation System, enabling convenient access to a smart home system.

## Adaptive



Get more comfort using less power, which reduces the operating costs of your system. The system adaptively adjusts the water temperature, compressor, and water pump running state in accordance with indoor and outdoor load changes. This supplies you with even more comfortable temperatures and humidity levels, which also reduces annual operating costs by up to 18 percent.

## Reliable



Enjoy peace of mind with one of the most reliable thermostats on the market. The T8610 uses operational data to detect and diagnose faults, reducing downtime. When combined with the automatic exhaust system of the YORK YVAG, the result is an even more reliable platform.

## Top-quality design



The advanced design of the system allows you to enhance its capacity in the future. The system can be expanded with other components, including variable frequency water pumps, and can be controlled remotely via an app for mobile phones, laptops, and tablets.

# Enjoy enhanced spaces

## Quiet quality comfort

Thanks to the YVAG-HR's intelligent design, the unit's sound emissions are as low as 51 dB(A) at full load, going down to as low as 40 dB(A) during part-load operation.

This model also has a silent mode, which reduces the sound level emissions by 5 dB(A) below full-load levels.

## Strong dehumidifying ability but not dry

Automatic humidify or dehumidify, maintain the ambient humidity under comfortable level.

## Strong dehumidification for optimal environments

You can also set the system to automatically humidify or dehumidify to maintain the ambient humidity at a comfortable level.

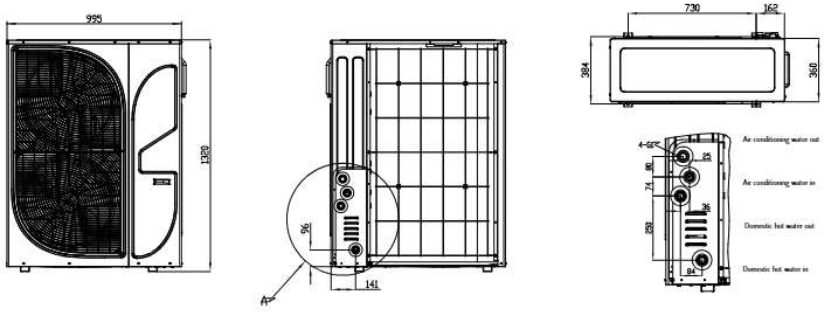


- DC Inverter fan motor
- Axial fan
- Special fan shroud
- Whole Air duct
- Spring bracket for fan motor
- DC Inverter Compressor
- Spring bracket for compressor
- Sound-absorbing cotton

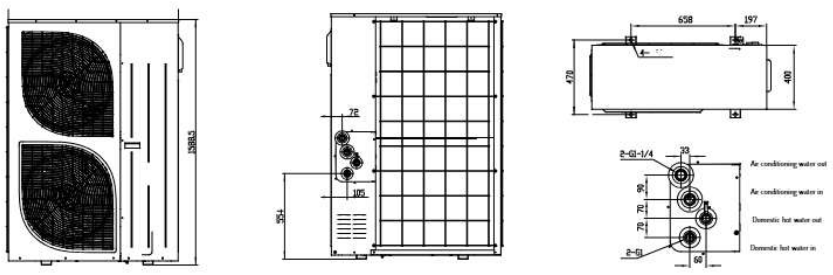


## Dimensional Drawing

YVAG012HSE/YVAG014HSE/YVAG016HSE




YVAG020HSE~033HSE



# Data and specifications

| Unit Model | | | YVAG012HSE | YVAG014HSE | YVAG016HSE | YVAG020HSE | YVAG022HSE | YVAG025HSE | YVAG028HSE | YVAG033HSE |
|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerant | | | R410A | R410A | R410A | R410A | R410A | R410A | R410A | R410A |
| Cooling | Capacity | kW | 11.2 | 14.0 | 15.5 | 20.0 | 22.0 | 25.0 | 28.0 | 31.0 |
| | Total Input Power | kW | 3.4 | 4.7 | 5.2 | 6.2 | 7.3 | 9.1 | 9.5 | 11.3 |
| | EER | kW/kW | 3.29 | 2.98 | 2.98 | 3.23 | 3.01 | 2.75 | 2.94 | 2.74 |
| Heating | Capacity | kW | 12.6 | 16.1 | 18.0 | 22.0 | 24.0 | 27.0 | 30.0 | 33.0 |
| | Total Input Power | kW | 3.9 | 5.2 | 6.0 | 6.7 | 7.5 | 9.0 | 9.8 | 11.2 |
| Heat Recovery | Cooling Capacity | kW | 7.0 | 7.0 | 7.0 | 10.8 | 10.8 | 10.8 | 15.5 | 15.5 |
| | Hot Water Capacity | kW | 9.8 | 9.8 | 9.8 | 14.0 | 14.0 | 14.0 | 19.0 | 19.0 |
| | Total Input Power | kW | 2.4 | 2.4 | 2.4 | 3.3 | 3.3 | 3.3 | 4.7 | 4.7 |
| | ICOP | kW/kW | 7.00 | 7.00 | 7.00 | 7.45 | 7.45 | 7.45 | 7.42 | 7.42 |
| Hot Water | Hot water Capacity | kW | 9.8 | 9.8 | 9.8 | 14.0 | 14.0 | 14.0 | 19.0 | 19.0 |
| | Total Input Power | kW | 2.2 | 2.2 | 2.2 | 3.0 | 3.0 | 3.0 | 4.1 | 4.1 |
| | COP | kW/kW | 4.45 | 4.45 | 4.45 | 4.67 | 4.67 | 4.67 | 4.60 | 4.60 |
| Power Supply | | V/Ph/Hz | 220V/1/50 | | | 380/3/50 | | | | |
| Compressor | Type | / | Rotor | | | Scroll | | | | |
| | Quantity | / | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Air Heat Exchanger | Motor Type | / | BLDC | | | | | | | |
| | Motor Quantity | / | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Total Air Flow Volume | m³/h | 2500~6600 | 2500~6600 | 2500~6600 | 2500~10500 | 2500~10500 | 2500~10500 | 2500~10500 | 2500~10500 |
| AC Water Heat Exchanger | Piping Joint (External Thread) | / | G1' | G1' | G1' | G1-1/4' | G1-1/4' | G1-1/4' | G1-1/4' | G1-1/4' |
| | Flow Rate | m³/h | 1.93 | 2.41 | 2.67 | 3.44 | 3.78 | 4.30 | 4.82 | 5.33 |
| | External Water Head | m | 9.5 | 9 | 8.5 | 22 | 21 | 19 | 18 | 14 |
| Hot Water Heat Exchanger | Piping Joint (External Thread) | / | G1' | G1' | G1' | G1' | G1' | G1' | G1' | G1' |
| | Flow Rate | m³/h | 1.68 | 1.68 | 1.68 | 2.41 | 2.41 | 2.41 | 3.27 | 3.27 |
| Dimension | Height | mm | 1320 | 1320 | 1320 | 1588 | 1588 | 1588 | 1588 | 1588 |
| | Length | mm | 995 | 995 | 995 | 1100 | 1100 | 1100 | 1100 | 1100 |
| | Width | mm | 360 | 360 | 360 | 400 | 400 | 400 | 400 | 400 |
| Weight | Operation Weight | kg | 144 | 144 | 157 | 235 | 235 | 235 | 260 | 260 |
| Cooling Rated Current (Cooling/Heating) | | A | 15.5/17.7 | 21.4/23.6 | 23.6/27.3 | 10.1/10.9 | 11.9/12.2 | 14.8/14.7 | 15.8/16.3 | 18.8/18.6 |
| Max. Continuous Current | | A | 26.0 | 30.0 | 33.0 | 17.0 | 17.0 | 19.0 | 21.0 | 22.0 |
| Sound Pressure | Anechoic room | dB(A) | 51.0 | 52.0 | 52.0 | 53.0 | 53.5 | 54.0 | 53.0 | 55.0 |
| Sound Pressure | Semi-anechoic room | dB(A) | 54.0 | 55.0 | 55.0 | 56.0 | 56.5 | 57.0 | 56.0 | 58.0 |

Nominal conditions: Cooling capacities in kW given for 12/7°C water leaving temperature and 35°C ambient temperature
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C ambient temperature

| Water Tank Model | | | YHT100W5 | YHT150W5 | YHT200W5 | YHT300W5 | YHT500W5 |
|---|---|---|---|---|---|---|---|
| Capacity | | L | 100 | 150 | 200 | 300 | 500 |
| Power Supply | | V/Ph/Hz | 220/1/50 | | | | |
| Heater | Type | / | Electronic Heater | | | | |
| | Rated Input Power | kW | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Hot Water Side | Piping Joint (internal thread) | Inch | G1-1/4' | G1-1/4' | G1-1/4' | G1-1/4' | G1-1/4' |
| | External Water Head | m | 5 | 5 | 5 | 5 | 5 |
| Expansion Tank | Capacity | L | 5 | 5 | 5 | 5 | 5 |
| Tank Dimension | Diameter | mm | Φ468 | Φ540 | Φ540 | Φ710 | Φ710 |
| | Height | mm | 1465 | 1565 | 1900 | 1600 | 2195 |
| Net Weight | | kg | 50 | 84 | 93 | 113 | 136 |

YORK®

**About Johnson Controls**

At Johnson Controls, we transform the environments where people live, work, learn and play. From optimizing building performance to improving safety and enhancing comfort, we drive the outcomes that matter most. We deliver our promise in industries such as healthcare, education, data centers and manufacturing. With a global team of 100,000 experts in more than 150 countries and over 130 years of innovation, we are the power behind our customers' mission. Our leading portfolio of building technology and solutions includes some of the most trusted names in the industry, such as Tyco®, YORK®, Metasys®, Ruskin®, Titus®, Frick®, Penn®, Sabroe®, Simplex®, Ansul® and Grinnell®.

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