

Powering the recovery and rebuild

HVAC SOLUTIONS FOR HOTEL INDUSTRY

- Flexibility
- Sustainable Growth
- Health & well-being

Johnson Controls - Hitachi Air Conditioning

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Hotel-B-2209



Cooling & Heating



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About us

With over 70 years experience in air conditioning, Hitachi Cooling & Heating solutions deliver living harmony through 3 unique philosophies:

- End-to-end thinking which makes it quicker and easier to use our solutions
- Invention & re-invention – an innovation strategy that embraces the new and refines the old
- A focus on the comfort & well being of people who use indoor spaces

In 2015 the Johnson Controls-Hitachi Air Conditioning joint venture was established, combining two 100-year-old cultures and histories to create an exciting new company.



Market Trends & Customer Challenges

The worldwide hotel market was severely impacted by the coronavirus pandemic during 2020 and 2021. Towards the end of 2021, following a global drive for vaccination and relaxing of travel restrictions, the travel market and hotels have experienced a gradual re-opening.

The hotel industry now faces unique challenges related to HVAC systems in the post pandemic world: finding and meeting the needs of new types of customers, lower staffing levels, higher energy prices & tougher sustainability goals, plus the need to optimize indoor air quality (IAQ).



HITACHI HVAC SOLUTIONS FOR HOTEL INDUSTRY

Today's Challenges

New types of customer

Need to attract a balance of domestic and returning international tourism

International business travel is recovering much more slowly, BUT opportunities to serve other workers:

- 'Digital nomad' – travelling workers who want long-stay accommodation
- Home workers looking for a 'third space' between home and office
- ... means different timings on room bookings and use of spaces such as lobbies for 'hot desking'

Lower staffing levels, higher energy prices & sustainability goals

Reduced frontline & maintenance staffing; some furloughed or laid off have not returned

Focus on easy-to-maintain systems which also reduce hotel down-time

Adoption of (tougher) sustainability targets

Must find low-energy solutions that do NOT compromise guest comfort

Optimizing IAQ, promoting well-being

Rising global awareness of IAQ issues – even pre-pandemic

Airborne virus a concern to guests & staff; need to demonstrate action

Ventilation, filtration and air conditioning is an important aspect of indoor health

'Well-being' is a popular trend with related services including re-designed interior spaces, spas, health treatments and 'experiences'

OVERVIEW

Our Experience & Expertise

With a global presence, we have deep industry expertise and end-to-end capabilities that make us a trusted partner for hotel industry leaders. We help them to deliver on the promise to their guests of a comfortable, and healthy environment by providing advanced technology and sustainable solutions.



Our Value Proposition

Hitachi Cooling & Heating provides a full range of air conditioning solutions that are flexible for changing needs, support the sustainable growth of your business and enhance comfort and well-being for your guests.

New types of customer

Do you have difficulty finding space for HVAC equipment or wish you could more easily re-configure it for changing needs?



Flexibility

Integrate HVAC seamlessly into building plans or refurbishments with flexible solutions that can adapt to changing needs

Lower staffing levels, higher energy prices & sustainability goals

Are your energy bills and maintenance costs increasing?



Sustainable growth

Whether new build or a refurb, reduce energy costs, simplify maintenance and meet your sustainability goals

Optimizing IAQ, promoting well-being

Are you investing in new or revamped spaces for improved guest comfort and experience?



Health & well-being

Creating safe, comfortable and relaxing spaces for guests with Hitachi's 3R framework – right temperature, right feeling, and right purity



Our HVAC solution for hotels

Large conference hotel

Guestrooms

IDU
Ducted or Floor Concealed units



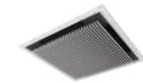
IAQ
ViroSense AQtiv-Ion Kit Total Heat Exchanger for ventilation

Controllers
Wired remote controls with attractive design and easy to use



Conference Rooms

IDU
4-way Ceiling Cassette with Silent-Iconic panel for seamless design integration



IAQ
ViroSense Z2 filter
Total Heat Exchanger for ventilation

Controllers
Wired remote controls with attractive design and easy to use

Guestrooms, Restaurants & Gym

Topflow VRF
One comprehensive solution delivers comfort and efficiency



Independent Coffee Shop

Primary large single split
Reliable, easy to maintain and inexpensive



Hotel HVAC management solution

- H-LINK wiring network connecting all HVAC systems
- Connect to BACnet BMS system via adapter
- Touch screen central controller
- airCloud Pro IoT app and SW for remote maintenance



Resort hotel

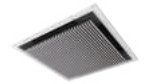
Remote Service Centre

Primary large single split
Easy to maintain and change if building usage changes



Wellness Centre including spa & gym

IDUs
4-way Ceiling Cassette with Silent-Iconic panel for seamless design integration and intelligent sensors for advanced comfort features Ultra-quiet Ducted units



IAQ
ViroSense Z2 filter for cassettes ViroSense AQtiv-Ion Kit for Ducted units Total Heat Exchanger for ventilation

Hotel HVAC management solution

- H-LINK wiring network connecting all HVAC systems
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Guestrooms, Restaurants & Wellness Centre

Topflow VRF
One comprehensive solution delivers comfort and efficiency



Guestrooms

IDU for guest rooms
Ducted or Concealed units



IAQ for guest rooms
Total Heat Exchanger for ventilation

Controllers
Wired remote controls with attractive design and easy to use



Our HVAC solution for hotels

City hotel

Guestrooms

IDU

Ducted or Floor
Concealed units

IAQ

Total Heat Exchanger
for ventilation

Controllers

Wired remote controls
with attractive design
and easy to use

Guestrooms, Restaurant & Lounge

SideSmart VRF

One comprehensive solution
Requires less outdoor space
than traditional VRF

Hotel HVAC management solution

- H-LINK wiring network connecting all HVAC systems
- Touch screen central controller
- airCloud Pro IoT app and SW for remote maintenance

Independent Shop

Primary large single split
Reliable, easy to maintain
and inexpensive

Restaurant, Lounge & Lobby

IDUs

4-way Ceiling Cassette
Ultra-quiet Ducted units

IAQ

ViroSense Z2 filter for cassettes
ViroSense AQtiv-Ion Kit for Ducted units
Total Heat Exchanger for ventilation

A full-scale HVAC solution provider

VRF | a flexible solution for spaces throughout the hotel



guest rooms

- Quiet rooms
- Clean air
- Easy control



kitchens

- Oil-proof cabinet
- Oil-proof controller
- Easy-to wash filter



restaurants,
bars & lounges

- Higher rates of air flow and air-renewal
- Avoid direct airflow on guests



gyms & spas

- High air-flow rate
- Ventilation may be needed
- Automatic control of AC based on occupancy to save energy

Hitachi Solutions

Range of IAQ solutions including filters and ionizers provide cost-effective ways to improve air quality in guest rooms without installing separate equipment

Ceiling Suspended units can direct airflow up to 8m away, making them ideal for kitchens where cooler air needs to be dispersed over a wide area

Automatically direct airflow away from people to avoid creating draughty spaces in restaurants, bars and lounges. Requires compatible 4-way Cassette with Twin-Sense panel

Total Heat Exchanger is a 2-way ventilation unit that expels dirty indoor air and brings fresh air indoors, while using heat recovery to reduce energy consumption



lobbies

- Adequate zoning to ensure even temperature distribution
- High ceilings and large windows require efficient cooling and heating solutions



meeting rooms

- Adequate zoning to ensure even temperature distribution
- Automatic control of AC based on occupancy to save energy



mid-sized
banqueting spaces

- Ducted solutions that blend into interior design features
- Variable occupation density depending on the type of event hosted, requiring a HVAC solution that can efficiently adjust in real-time
- High capacity solutions needed for large open spaces

Build HVAC networks of up to 160 indoor units across 64 independent control zones with H-LINK wiring and modular VRF solutions

Twin-Sense Panel with CrowdSense automatically adjusts loading to account for occupation density in the area covered by each indoor unit

Range of ducted indoor units with different capacities and adjustable ESP settings, enabling placement further away from ODUs

A full-scale HVAC solution provider

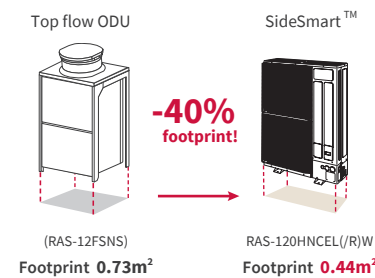
VRF | a flexible solution for spaces throughout the hotel

Flexibility

VRF equipment is compact compared to conventional 'packaged' HVAC units and can also be installed with pipes rather than ducts, saving ceiling plenum space. The modular nature and our wide variety system types provide great flexibility for hotels.

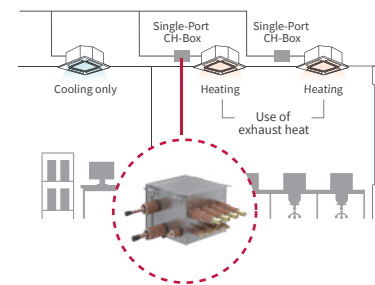
Space-Saving SideSmart

Up to 40% smaller than standard outdoor VRF units, enabling placement on balconies, indoor equipment rooms or rooftops with limited space. Transports easily in elevators making installation cheaper.



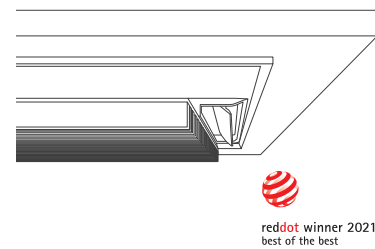
Compact Heat Recovery Systems

For simultaneous cooling & heating, our patented CH-Box eliminates condensation while being small from just 19x30x21cm in size, helping realize higher ceilings in guest rooms and noise-free operation.



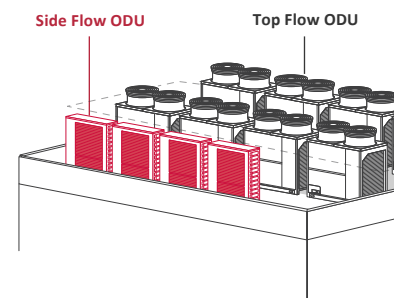
Premium Design

Our unique Silent-Iconic cassette panel combines the benefits of smaller ceiling plenums for non-ducted systems with the visually silent appearance of a ducted unit. Streamlined 4-way air outlets appear as slits, minimizing their visual impact, looking contemporary and minimalist.



Modular Flexibility

200m piping runs support installation of ODUs further away from guest areas, minimizing noise and enabling them to be hidden. Modular system can be added to over time, so you can finish a hotel refurb floor-by-floor based on operational needs or defer installation costs in multi-use buildings where spaces are not yet let to other tenants.



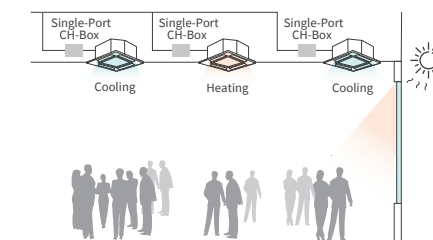
Sustainable Growth

Resuming business post-pandemic while also investing in future growth is a common requirement in today's hospitality industry. Consider Hitachi VRF solutions as a way of reducing future energy bills through both designed-in efficiency of the solution and intelligent management that proactively reduces power consumption and requires less maintenance.

Efficiency designed-in

EER up to 5.23 (Top Flow VRF) or 4.51 (SideSmart VRF)

Heat Recovery configurations enable waste heat to be re-used in areas of the hotel which are naturally cooler due to their facing aspect, saving energy bills and improving temperature consistency through the building

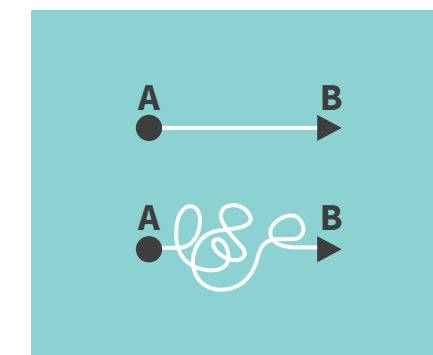


Less is more

Purchase fewer outdoor units with unit capacities up to 96HP

Easier installation with H-LINK wiring: connect units together in any order using the shortest or easiest path

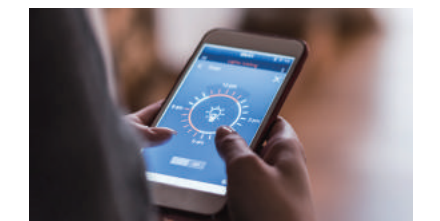
Faster configuration and maintenance with airCloud Tap – copy & paste settings to multiple ODUs from a phone and download operational data faster



Smart Energy Management

Eco Genius – an Active Set-Point Management tool built into airCloud Pro software which enables optimization of cooling & heating based on off-peak energy pricing

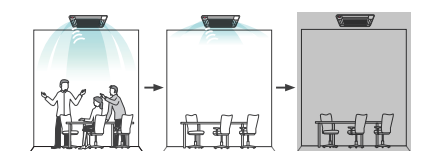
Software and hardware controllers can place caps on power consumption during peak pricing periods and offer modes to moderate capacity



Intelligent operation

For areas with light traffic during parts of the day, (e.g. lounges, restaurants, gyms), Auto-Save enables individual units to automatically reduce output when spaces are vacant and shutdown after a prolonged period of vacancy. Available on a range of units with optional motion sensor kit.

For guest rooms, Setback Mode enables interlock with a hotel key card so that AC is activated based on room occupancy, whilst also setting a baseline temperature to be maintained when guests are out



A full-scale HVAC solution provider

VRF | a flexible solution for spaces throughout the hotel



Health & Well-being

Whether guests are visiting for relaxation, a business trip or staycationing, more than ever hotels are expected to provide a comfortable environment while also taking reasonable precautions to reduce transmission of viruses and germs. Hitachi's 3R philosophy is a useful framework for considering HVAC solutions that can contribute to the health and well-being of hotel guests.

Right temperature

Precise and accurate temperature control with the following features available..

- **SmoothDrive** uses intelligent trend analysis to directly deliver the precise amount of cooling or heating to meet demand at any given moment, improving temperature stability compared with other VRF systems
- In heating mode **FeetWarm** prevents cold floors by detecting a temperature drop on the floor from a sensor in the ceiling cassette and directing warm air to the floor level
- In cooling mode **FloorSense** prevents over-cooling of the floor by detecting floor temperature and adjusting airflow



Right feeling

Control airflow for guest comfort with **Direct/In-Direct airflow control** options. Ideal for spa treatment rooms, restaurants and lounges.

A motion sensor divides the room into 4 areas and can detect human presence in each of them, directing air towards or away from people according to the selection option.

Available with Twin-Sense cassette panel.



Right purity

ViroSense S filter now fitted as standard on all VRF cassette and some ceiling suspended units, providing > 99% inhibition of viruses (exc. SARS-CoV-2) and bacteria.

ViroSense Z2 filter available as an optional upgrade on 4-way cassettes, with proven SARS-CoV-2 inhibition of >99.9%.

AQtiv-Ion Kit for ducted units. Generates negative ions and emits through AC airflow, which bind to pollutants sending them harmlessly to the floor. >99.9% inhibition of SARS-COV-2.

Total Heat Exchanger - a 2-way ventilation unit that expels dirty indoor air and brings fresh air indoors with airflow capacity options from 150-5,000 m³/hr covering small or large spaces



A full-scale HVAC solution provider

VRF SOLUTIONS



Top Flow VRF

Hotels with adequate roof space
Looking to maximize energy savings

Key Specs & Features

- Scalable modular system
- Single ODU cabinet up to 96HP capacity
- EER up to 5.23
- Heat Recovery option for best energy efficiency in seasonal climates and buildings with large variations in ambient conditions
- airCloud Tap available for faster service & maintenance



SideSmart VRF

Hotels where outside space is very limited but can use ground, balcony or indoor equipment rooms with louvred ventilation

Key Specs & Features

- Scalable modular system
- Single ODU cabinet up to 18HP
- 40% smaller footprint than TopFlow VRF - from just 420mm deep and 1050mm wide
- EER up to 4.51
- Designed for indoor equipment rooms with 60Pa ESP setting enabled. Hot air is discharged from the side enabling more effective dispersal



Indoor Units

Wide variety of indoor units including concealed, floor, ceiling suspended, cassette, ducted and wall mounted

- More than 100 models to choose from
- Award-winning **Silent-Iconic** cassette panel for better interior design but without the cost and installation complexity of ducted units
- Intelligent sensors enabling advanced comfort features like **CrowdSense** which automatically adjusts loading to account for occupation density, **FeetWarm** and **FloorSense** which prevent cold air at the floor level
- For areas with light traffic during parts of the day, (e.g. lounges, restaurants, gyms), **Auto-Save** enables individual units to automatically reduce output capacity when spaces are vacant and shutdown after a prolonged period of vacancy.



DUCTED



ECONOFRESH ECONOMIZER



4-WAY CASSETTE



CEILING SUSPENDED



WALL MOUNT



FLOOR EXPOSED

Indoor Air Quality

Ventilation units, filters and ionizers enabling upgrades in indoor air quality without excessively increasing running costs

- **ViroSense S filter** now fitted as standard on all VRF cassette and some ceiling suspended units, providing > 99% inhibition of viruses (exc. SARS-CoV-2) and bacteria
- **ViroSense Z2 filter** available as an optional upgrade on 4-way cassettes, with proven SARS-CoV-2 inhibition of >99.9%
- **AQtiv-Ion Kit** for ducted units. Generates negative ions and emits through AC airflow, which bind to pollutants sending them harmlessly to the floor. >99.9% inhibition of SARS-COV-2
- **Total Heat Exchanger** - a 2-way ventilation unit that expels dirty indoor air and brings fresh air indoors with airflow capacity options from 150-5,000 m³/hr covering small or large spaces. Uses heat recovery to bring outdoor air closer to the required indoor air temperature, reducing energy consumption



ViroSense Z2 filter



AQtiv-Ion Kit



Total Heat Exchanger



A full-scale HVAC solution provider

VRF SOLUTIONS

Physical Controllers

Central Controllers

- Operate up to 160 indoor units across 64 independent control zones
- Visualize energy consumption, errors and program 140+ settings
- Synchronize time/date with individual controllers in guestrooms



Room Controllers

- Stylish room controllers, ergonomically designed for better haptics
- Hotel Setback temperature with interlock to key card
- Temperature limit setting: prevent excessive use
- airCloud Tap compatible: engineers can copy/paste commissioning settings for all guestroom controllers using their phone via NFC



Wireless Controllers

Handheld remotes ideal for bungalows and beach resorts. Our latest Room Controllers include an integrated IR receiver so no need to purchase separately



IoT Controls

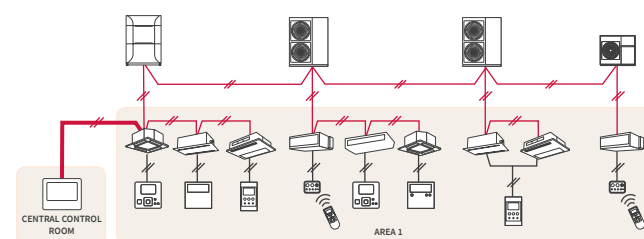
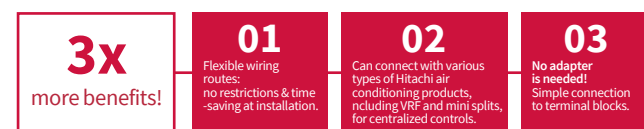
airCloud Pro

- Smartphone app and browser-based PC software
- Requires airCloud Pro Gateway adapter to connect HVAC system to the internet
- Enables remote management of HVAC system by offsite personnel, who can manage multiple sites/hotels through a single interface
- Visualization of energy consumption by zone
- Error & filter cleaning notifications for each IDU
- Eco Genius - an Active Set-Point Management tool built into airCloud Pro. It enables building managers to optimize cooling & heating based on off-peak energy pricing



H-LINK Wiring

- Hitachi's proprietary wiring system enables all units and controls to form a single network, regardless whether they are distributed across one or more refrigerant systems.
- Easier installation with H-LINK wiring: connect one or more refrigeration systems via any IDU or ODU - simply connect from one unit to the next on the shortest or easiest path
- Connect Hitachi PAC systems to the same control network as a Hitachi VRF system using the PRIMARY H-LINK Adapter



Connection to BMS

Connect to a BACnet Building Management System using our BACnet adapter, enabling integration with lighting, security and fire alarm systems.

A full-scale HVAC solution provider

PRIMARY | a cost-effective solution for independent areas or separate buildings



- PRIMARY is a 1:1 split system with capacities up to 6.5tons (23kW)
- Choice of Ducted, Cassette or Floor/Ceiling Convertible indoor units
- Available as Heat Pump, Cooling Only and High Ambient types



independent shops & cafes

Independently operated spaces which may have separate energy billings and operating hours

- Areas not operated by the hotel and which may have separate utility billings
- Space might be tenanted later than the hotel so a low-cost retrofit solution is preferred



isolated spaces

Separate smaller buildings, for example small gyms, lounges or cafes in resort hotels

- Not feasible to run refrigerant piping from main buildings
- Spaces may change use and therefore require retrofit



refurbs & retrofits

When it's not practical to install VRF due to cost or lack of space to install piping across multiple rooms

- Historical or converted buildings where installation of VRF piping is not possible
- Retrofits to areas which previously did not require air conditioning



server/equipment room

Rooms for computer servers and other electronic equipment

- Require a stable, cool temperature
- May be installed in addition to another HVAC system as a back-up
- Isolated from main HVAC system in the event of servicing or faults

Hitachi Solutions

PRIMARY includes a choice of indoor units including 4-way Cassette, Ducted and Floor/Ceiling convertibles for different tenant needs

With H-LINK wiring and an adapter, even isolated spaces using PRIMARY can be connected to a Hitachi VRF network, providing seamless central control

PRIMARY Floor/Ceiling convertibles require minimal installation work making them suitable for some refurb scenarios

PRIMARY units include an internal drain pan reducing the risk of blockage from dust and debris, making them more reliable when used for server rooms

A full-scale HVAC solution provider

PRIMAIRY | a cost-effective solution for independent areas or separate buildings



Flexibility

PRIMAIRY are 1:1 split units that can be used when installation of multi-room VRF pipework or ducts is not possible or unnecessary. This includes isolated spaces, independently operated areas of hotels, or refurb and retrofits which may be changing the use of a space post-pandemic.

Compact units for single or multi-storey buildings

Outdoor units can be installed at ground level, small ledges or roofs of low-rise buildings, weight from just 19kg weight and 236x580mm footprint.

Outdoor units can be placed up to 30m above or below indoor units, making them suitable for multi-storey accommodation buildings up to 8 or 9 floors.



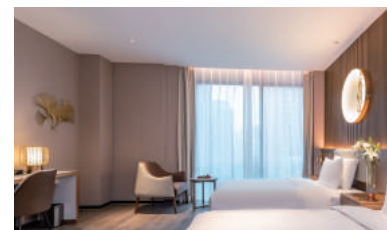
Flexible ducting routes

Hotel accommodation and service areas are more likely to have recesses and areas where AC ducts can't be routed. PRIMAIRY's wide external static pressure (ESP) range from 60-120Pa allow longer ducts with more turns to be installed without impacting air pressure, increasing the flexibility of placement between indoor and outdoor units.



Indoor units for every space

- Choose from a range of indoor units:
- 4-way cassettes for large open spaces like gyms and cafes
 - Low profile ducted units from just 190mm height for premium guest accommodation
 - Convertible floor/ceiling units for low-cost retrofits



Fire alarm connection

Outdoor unit includes a PCB connector for wiring connection to a fire alarm and enabling automatic shutdown to prevent the spread of smoke.



Sustainable Growth

Many hotels are looking to re-design spaces to attract guests. PRIMAIRY has lower up-front investment than a VRF system but can still deliver operational energy cost and maintenance savings compared with many other split-systems or packaged units.

16-step compressor control for energy efficiency

Efficient DC motors and 16-step inverter compressor control enables more precise adjustments in output to use just enough energy to maintain the desired temperature.



Preventative maintenance

Small details in PRIMAIRY units add up to a big difference in maintenance costs...

- Hydrophilic aluminum coating prevents water and mineral deposits on the heat exchanger, helping to maintain long-term energy efficiency
- Automatic refrigerant level monitoring
- Internal drain pan reduces the risk of blockage from dust and debris
- Automatic blockage detection triggers shutdown rather than risking water damage to buildings
- Easy to remove and wash indoor unit filters without requiring a HVAC technician



Guest room energy saving

Integrate hotel key card system into operation of the AC for guestrooms to enable auto on/off operation based on occupancy.



A full-scale HVAC solution provider

PRIMARY | a cost-effective solution for independent areas or separate buildings

Health & Well-being

Although hotel guests have heightened awareness of air quality and virus transmission, they are also looking for comfort and relaxation. PRIMARY enables hotels to control temperature and airflow while minimizing noise.

Fresh air inlet function

Optional 1-way ventilation port on indoor units. Sucks outside air into the unit via a pipe, and blends it with conditioned air enabling poorly-ventilated areas



Ultra-quiet 26dB ducted units

For noise-sensitive areas including guest accommodation, spas and relaxation rooms, select our ultra-quiet ducted units from just 26dB-33dB on low-high fan speeds



Advanced airflow control with 4-way cassette

- Horizontal-vertical powered louvre adjustment for complete flexibility in airflow direction
- For rooms with high ceilings, for example lobby areas, a special mode can be enabled automatically adjusting airflow to compensate (requires HCWA21NEHH wired controller)



A full-scale HVAC solution provider

PRIMARY SOLUTIONS

PRIMARY

- For isolated spaces and separate accommodation buildings in a hotel including resort villas
- Independently operated shops & cafes within hotels
- Refurb and retrofit projects, including changing the use of hotel spaces, or where it's not practical to install VRF due to cost or lack of space for piping

Key Specs & Features

- 1:1 split system with capacities up to 6.5tons (23kW)
- Choice of inverter model for lower running costs or fixed speed
- Choice of Ducted, Cassette or Floor/Ceiling Convertible indoor units
- Heat Pump, Cooling Only, Low and High Ambient types



Indoor Units

Choose from 3 types of indoor unit based on the type of hotel space.

4-way Cassettes are ideal for large open spaces with higher ceilings including lobbies, lounges and ports facilities.

- Effective from heights of up to 5.5m with high ceiling operation mode
- 4-direction air flow with horizontal-vertical powered louvre adjustment



Ducted units for premium spaces where seamless integration into interiors is important.

- Low height profile from just 190mm
- Near-silent operation from just 26dB; ideal for guest accommodation



Floor/Ceiling Convertible units can be mounted on the wall at floor level or the ceiling.

- No need for ducting or for running piping through a false ceiling
- Cost-effective way of adding AC to a hotel space that's changing use.



Controllers

Choice of wall-mounted controller with large LCD display or handheld remote control

