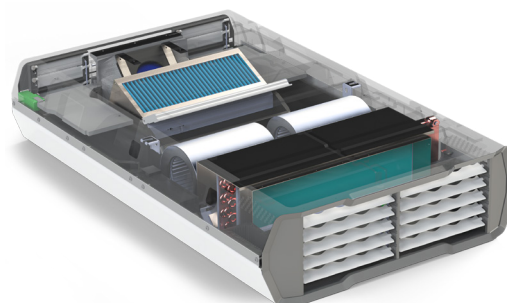


HVR ZERO X+

Hybrid Ventilation Heat Recovery

Product Specification Sheet



Product Concept

HVR Zero sets a new benchmark for the future generation of low energy hybrid ventilation systems that integrate heat recovery ventilation strategies. It provides natural ventilation, hybrid mixing ventilation and low energy mechanical ventilation with heat recovery in one compact unit. The system operates completely autonomously to ensure optimum indoor air quality and thermal comfort with the lowest possible energy use.

The X+ model includes a heating coil that can provide the primary heating needed for a room, using the lower water flow temperatures provided through renewable heating solutions like heat pumps. The X+ model lowers the overall power consumption of buildings by combining ventilation, heat recovery and heating in a highly efficient, integrated solution with a harmonious control strategy.

Key Performance Parameters

130	0.11	250	0.23	80	0.3
Daytime Flow rate (l/s)	Daytime SFP (W/l/s)	Night-time Flow rate (l/s)	Night-time SFP (W/l/s)	Wintertime HX Flow rate (l/s)	Wintertime HX SFP (W/l/s)

Features and Benefits

- Zero embodied carbon
- Zero operational carbon
- Innovative, robust modular construction
- Quiet and no noise disruption
- Low running costs
- Remote data monitoring
- IES modules are available for accurate modelling
- Comfortable environment during peak times

Includes:

- Temperature and CO₂ sensors
- State-of-the-art wall controller
- With or without ducting
- 1-minute data logging as standard
- Fan speeds automatically controlled
- Carbon offsetting certificate



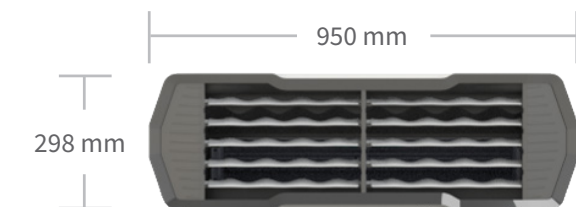
For more information on this product visit, contact:

Monodraught Ltd. Halifax House, Cressex Business Park, High Wycombe, HP12 3SE, United Kingdom

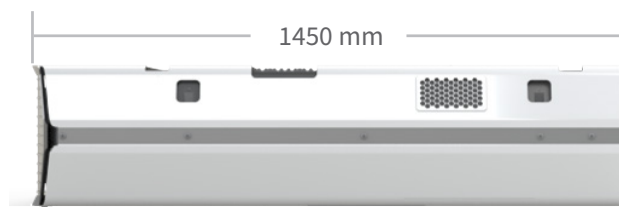
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Variable	Value
Model reference	ZP Model
Dimensions (mm)	950 (w) x 298 (h) x 1450(l)
Weight (Kg)	50
Materials	Powder coated aluminium (T6061); Expanded Polypropylene (flame retardant); Copper piping with aluminium fins
Minimum clear ceiling void (mm)	310
External weather louvre min free area (m ²)	0.13
Louvre panel requirements	Anti-bird mesh grille
Hybrid daytime flow rate (l/s)	130
Daytime power (W)	15.3
Daytime Specific fan power (SFP) (W/l/s)	0.1177
Maximum daytime manual boost flow rate (l/s)	180
Night-time cooling flow rate (l/s)	250
Night-time cooling power (W)	59.1
Night-time SFP (W/l/s)	0.2364
Heating coil capacity (based on 80/60 at 0.1 l/s) (kW)	6
Heating coil capacity (based on 50/40 at 0.1 l/s) (kW)	3.5
Heat exchanger	Cross flow
Heat exchanger material	Hydrophilic coated aluminium
Heat exchanger efficiency (%)	42
Wintertime heat exchanger flow rate (l/s)	80
Wintertime power (W)	27.5
Wintertime SFP (W/l/s)	0.305
Energy recovered at -1°C external temperature (W)	820
Electrical requirement	230V AC mains with switched fused 3A spur
Sensors	<ul style="list-style-type: none"> • External temperature sensor • Recirculation temperature sensor • Mixed air supply temperature sensor • Room temperature sensor (in wall controller) • Room CO₂ sensor (in wall controller) 0-2000 ppm
Guarantee	5 year mechanical and 3 year electrical warranty

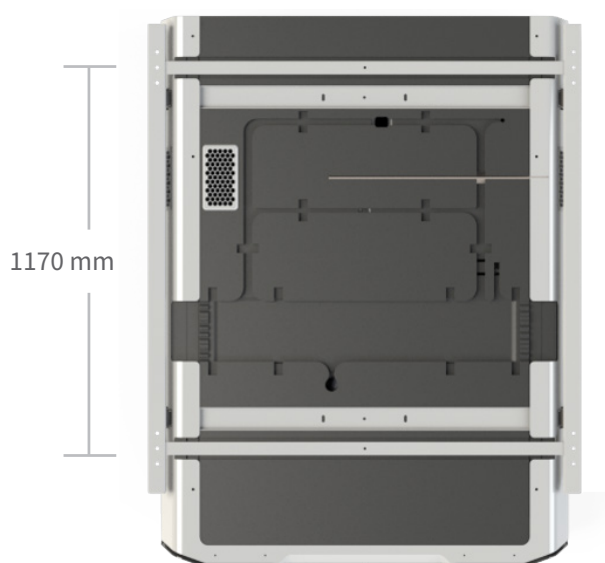
Dimensions



FRONT



SIDE



PLAN

Connection Options

Wall Controller	Modena Touch Screen
Central Control	iNVent Acuity
Fire Alarm	Relay Connection (N/O)
Inhibit/Run	Relay Connection (N/O)
Science Mode	Relay Connection (N/O)

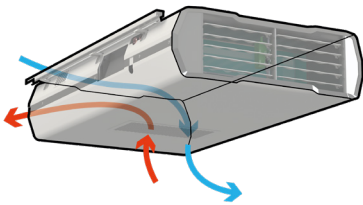
System Requirements

Modulating Actuator	24DC 0-10V Modulating control actuator
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Acoustics

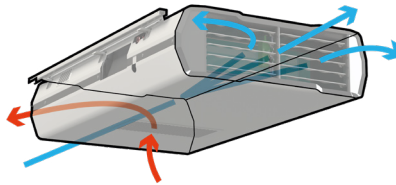
Predicted in room noise of 33dB with two units in a 55m² room									
Airflow (l/s)	Octave Band (Hz) Sound Power Level dB re. 1pW								LwA
	63	125	250	500	1000	2000	4000	5000	
130	46.0#	36.5*	41.0	39.9	33.3*	25.0*	18.8#	21.9#	39.6
*denotes figures corrected for background					#denotes background levels				
System tested with a standard 50mm external louvre arrangement									

Operation Modes



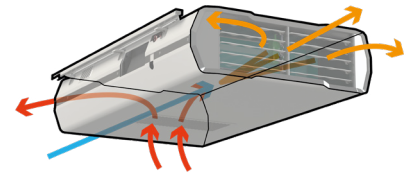
1. Natural Ventilation Mode

Dampers are opened, natural ventilation combined with openable windows expels stale air and ventilates the space with fresh external air.



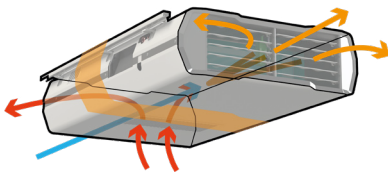
2. Boost Fan Mode

Dampers are opened and mechanical fan operates to bring fresh air into the room. Especially useful in summer months.



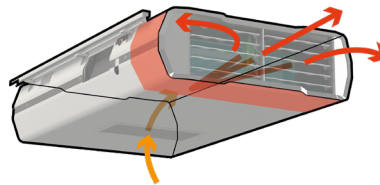
3. Mixed Recirculation Mode

Dampers are opened, mechanical fan operates, stale indoor air is expelled, warm internal air is recirculated and tempers fresh external air via separate discharge pathways.



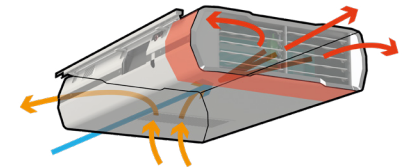
4. Heat Recovery Mode

During winter periods, the cross flow heat exchanger increases the temperature of the intake outside air by harvesting heat from the indoor environment whilst expelling stale air.



5. Pre-Heating Mode

Recirculates indoor air across the heat exchanger coil to pre-heat the room before the start of the day.



6. Occupied Heating Mode

When the room is too cool, the off coil temperature is limited, flow rate reduced, and room air is recirculated.

7. Night-time Cooling

Peak ventilation during summer nights removes warm air from the space ready for the next day.

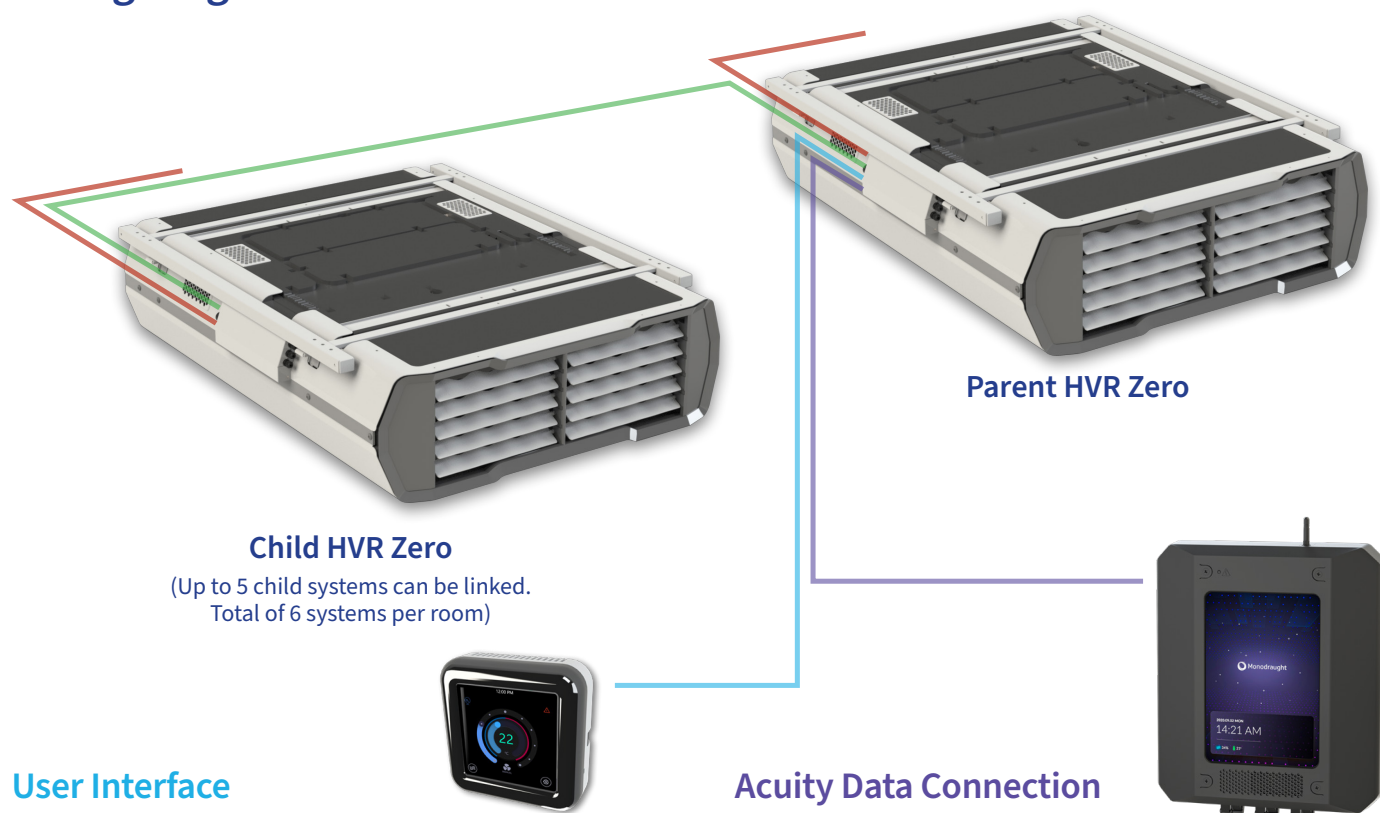
Self-learning Algorithm

The X+ model will preheat the room before the occupied period, allowing higher air flow rates, temperatures and velocities, therefore heating the room more efficiently whilst keeping noise to a minimum during occupied periods. The space is actively heated by recirculating room air which is blown across the heating coil.

The system is also able to directly heat fresh air during occupied hours while actively ventilating the indoor space to keep CO₂ levels within a range of specific set points.

To minimise energy use, the heating control system has an adaptive algorithm that estimates how long it will take to heat the room up to the heating set point temperature compensating for weather conditions and room temperatures.

Wiring Diagram



To connect the user interface wall controller a 2 pair shielded cable is required from the HVR Zero parent unit to the wall controller. The cable specification is an RS485 shielded 2 pair cable.

Cable specification – Farnell 3382509 – 9842 EQ Multipair Cable, 2 pair, 24 AWG, 0.203mm²

Data Interlink

When multiple HVR Zero units are used within the same room a data interlink cable is needed. The cable specification is an RS485 shielded 1.5 pair cable.

Cable specification – Farnell 3382509 – 9842 EQ Multipair Cable, 2 pair, 24 AWG, 0.203mm²

To achieve complete connectivity and to enable linking to third party BMS systems, a data cable is required to be daisy chained from the Acuity system to every Parent HVR Zero unit. Up to 50 HVR Zero parent units can be connected to an Acuity system. An RS485 shielded 1.5 pair cable is required for the data connection.

Cable specification – Farnell 3382509 – 9842 EQ Multipair Cable, 2 pair, 24 AWG, 0.203mm²

Power Supply

To simplify wiring each HVR Zero requires connection to a dedicated 3A switched fused spur.

Electronics Enclosure

A side mounted metal electronics enclosure contains the HVR Zero unit PCB. Power must be isolated before removing cover.

Science Use

The HVR Zero systems can be connected to a gas proving device to enable automatic activation of a Science mode ensuring correct ventilation rates.

Additional Components



Louvre Transition

An EPP component that takes the unique aesthetic of HVR Zero to a rectangular form and provides internal separations between intake and exhaust to connect to a louvre arrangement. The louvre transition has a 50mm depth and includes a horizontal seal to separate intake and exhaust louvre blades. Finished in a dark grey textured surface.



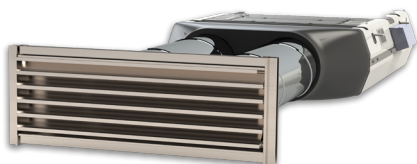
Transition Extension

Used to provide additional depth for the Louvre transition the extension piece is supplied in 100mm increments and up to 4 sections can be used to provide depth for through wall installations when combined with the wall plate. Finished in a dark grey textured surface.



Transition B (to duct)

Allowing a near endless solution to position HVR Zero units within rooms. The Transition B component draws the horizontal air flow paths for intake and exhaust and sweeps them in to separate connections. This enables 250mm diameter spiral wound ducting to be used to connect the unit to external weather louvres.



Weather Louvre

We strongly suggest the inclusion of our weather louvre in the specification to ensure correct ventilation performance. With a minimum louvre face dimension of 900mm x 300mm our glazed in weather louvre is designed to suit a 950mm x 350mm glass size with 28mm or 32mm thickness.

The 50mm deep weather louvre is supplied complete with anti-bird mesh and in any BS or RAL colour. When provided by Monodraught the louvre transition can be provided pre-fitted ensuring an airtight seal at this junction.



Duct Kit

The duct kit is used when the unit is mounted above a suspended ceiling and provides a 3.5m extension from the air outlet to a high-performance ceiling diffuser.

Comprising of an EPP Swept Duct Transition with integrated silencer pods, 3m of spiral wound 250mm diameter ducting, short length of flexible duct, an EPP ceiling grille transition hood with noise attenuating internal profile and a low-pressure linear ceiling diffuser.



Wall Plate

A White RAL 9016 powder coated aluminium closure plate is used to seal between brickwork wall openings and the Transition Extension.



We are pioneers in the design and manufacture of advanced sustainable ventilation, cooling, heating and lighting solutions for new and refurbished commercial and public buildings. We deliver outstanding temperature-control and indoor air quality whilst minimising the consumption of both electricity and refrigerants so as to reduce our carbon footprint. Monodraught have over 45 years' experience and our products have saved the equivalent of nearly 390,000 tonnes CO₂ over the last two decades.

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