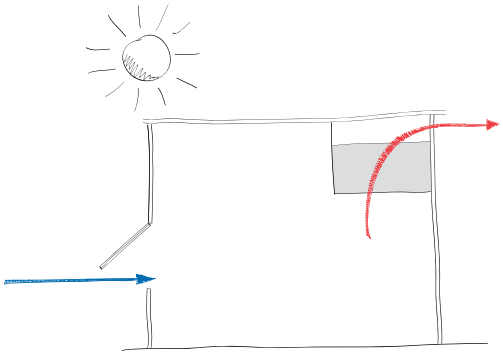
e-stack: F-Series

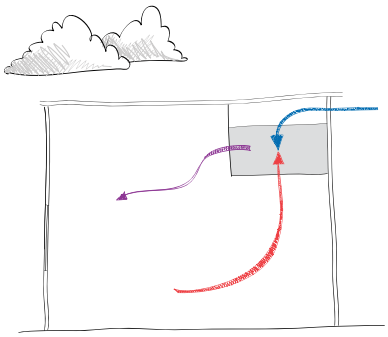
Façade-Based Ventilation

The e-stack ventilation system operates under a natural upwards displacement strategy in summer and a high level mixing mode in winter. The winter mode exploits the heat gains in the building to temper the incoming fresh air, dramatically reducing the heating energy required for the building.



Summer Strategy

Upwards Displacement Ventilation



Winter Strategy

Winter Mixing Ventilation

Winter mode

In winter the system operates under a mixing strategy, where the cold incoming air is mixed with the warm air in the room. The heat gains within heavily occupied spaces (e.g. school classrooms) are often sufficiently high that additional heating is not needed until the external temperature falls to somewhere in the range 5-10 °C, depending on the U-value for the room. This is in contrast to traditional upwards displacement systems that require heating from much higher external temperatures.

Summer mode

Once the external temperature has increased such that air can be brought in at low level directly onto occupants without pre-heating, the ventilation strategy for the system changes to a natural upwards displacement mode. This strategy does not require wind to drive the flow, so ventilation is provided throughout the summer, even on still days.

Controlled Ventilation

The ventilation system is fully controlled with dedicated temperature and CO_2 sensors in the space. This allows the system to optimise the ventilation strategy for comfort and energy use.

School Projects

The units are ideally suited to school areas with their high internal occupancies and heat gains. The units specified are sized to meet the BB101 criteria for typical classrooms, both in terms of meeting the summertime overheating requirements and minimum daily average ventilation of 5l/s/person to limit room CO_2 levels.

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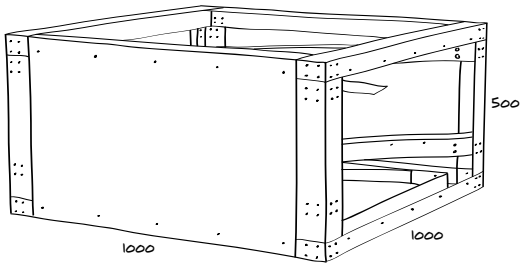
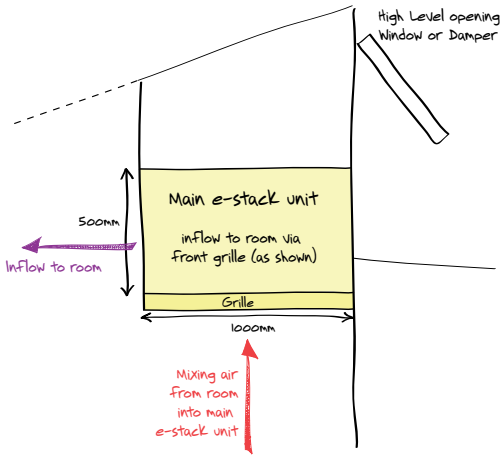
Mechanical and Electrical Specification

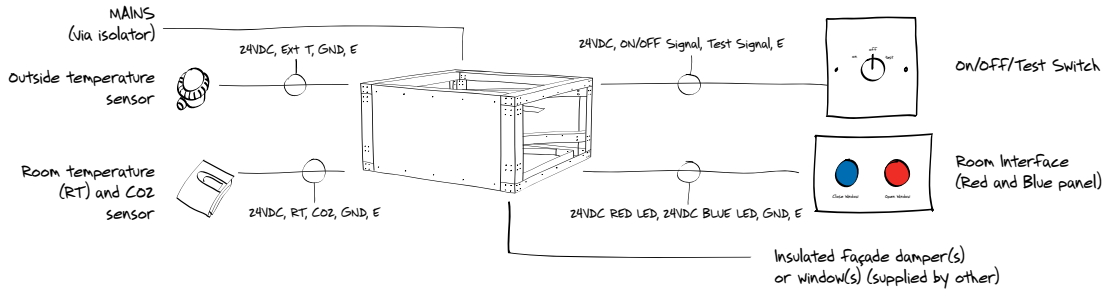




Specification

Dimensions:	1000mm (L) x 1000mm (W) x 500mm (H)
Positioning in the space:	F-Series unit housed in bulkhead or visible within the space. Transition duct is required above the unit to an actuated opening window or actuated vent. An additional high-level opening is required to extract air from the space.
Weight:	60kg
Construction:	Galvanised steel or Zintec
Recommended fixing methods:	Via drop rods and cradle arrangement (by others) or brackets (at additional cost)
Colour:	Standard galvanised finish or Zintec powder coated to RAL9010 as standard (other RAL and BS colours available at additional cost)
Damper:	Actuated window or damper required on facade (by others)
Controller:	Internal controller to operate fans and dampers in response to sensed environmental conditions. Additional control signals for automated high / low level openings can be supplied if required
Sensors:	Combined interior temperature / CO_2 sensor. External temperature sensor
User interface:	Key switch (on/off/test mode). Red / blue “Open/Close Windows” indicator panel (for low level manually opening windows)

Typical Control System Layout



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