

Product information

Decentralised undersill ventilation units,
for supply and return air applications, model type 190
PI/FSL/4/EN/2

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Undersill ventilation unit, installed



The system

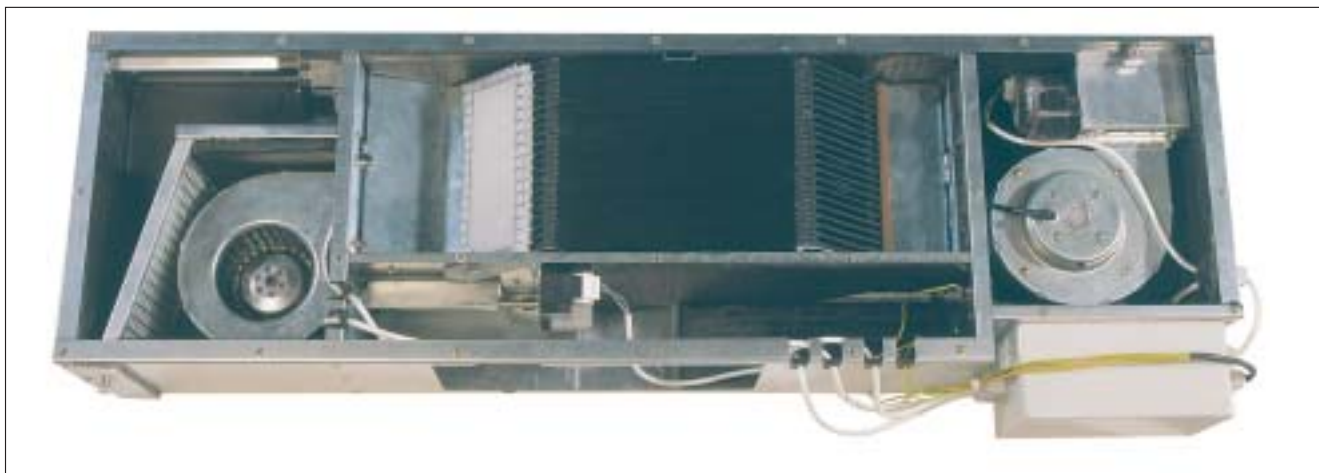
Type 190 undersill ventilation units provide decentralised ventilation for local rooms and complete buildings. The units, just 190 mm high, are integrated into the shell of the building perimeter between the upstand and the window/window sill area. In addition to providing just ventilation, the systems can be upgraded to provide cooling and heating. The energy input is minimised by integral heat recovery. The modular design of the systems ensures a high degree of flexibility in the event of a change of use.

Design

The various configuration options of the undersill ventilation system are achieved by a base module with supply and exhaust air openings, which is installed in the facade or exterior wall during the early stages of the construction process. Then, when the usage of the building is specified and the required functionality known, heating and sound insulating boxes or function boxes are fitted to the base module. The function boxes are casings clad with sound and thermal insulation, and provide fans, shut-off dampers and backdraught dampers for supply and exhaust air and a recuperative heat recovery unit with a bypass damper. The simplest unit configuration consists of the base module as described together with a function box. A room side thermal switch and a heat exchanger can additionally be installed. A coordinated control system comprising a supply air sensor, dampers, damper actuators, a controller and an in-room control unit completes the decentralised ventilation system (see PI/FSL/5/EN/1).

The undersill ventilation units can also be supplied with minimal dimensions without heat recovery units.

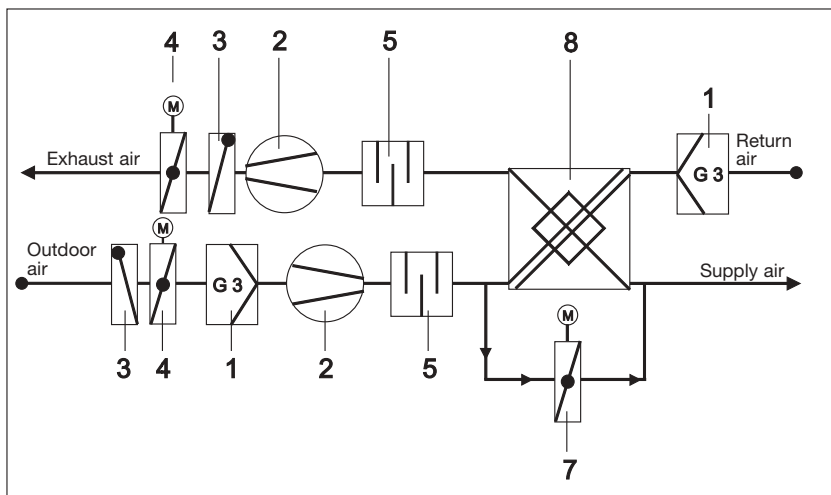
Function box, supply and return air with heat recovery



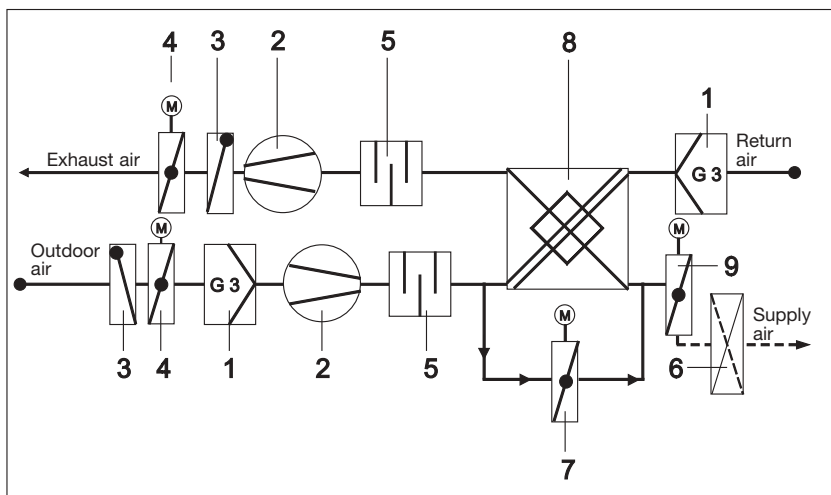
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Ventilation setup – simple configuration (1)



Ventilation setup – expanded configuration (2)



- 1 Coarse dust filter
- 2 Fan
- 3 Backdraught damper
- 4 Motorised shut-off damper
- 5 Acoustic attenuator
- 6 Air heater or cooler
- 7 Bypass damper
- 8 Recuperative heat recovery unit
- 9 Thermal switch

Mode of operation

Configuration 1 – base module with function box

The outside air is drawn in by the supply air fan through the facade and filtered by the class 3 supply-side air filters. A backdraught damper positioned at the unit intake which prevents room air from being drawn out of the building through the supply air duct in the event of negative pressure occurring on the outside of the facade. The shut-off damper, fitted with a spring return actuator, is closed when the ventilation unit is off and in the event of a power failure, so there is no flow through the ventilation unit in the event of either positive or negative pressures occurring on the outside of the facade. In the heat recovery unit, arranged downstream of the fan in the direction of flow, a portion of the energy contained in the return air is transferred to the supply air. At extremely low outside temperatures and in the transitional period the heat recovery unit can be bypassed by opening a bypass damper. The supply air is fed into the room in the area of the client-

installed radiator. The return air is extracted through a composite window or underneath the window sill and routed through a coarse filter positioned at the return air intake, in order to protect the downstream heat recovery unit and fan against dirt contamination. Backdraught and shut-off dampers with the same functionality as in the supply air system are integrated into the exhaust air duct.

Configuration 2 with additional room side thermal switch, heat exchanger and control

In this unit variant the supply air can be heated or cooled in the heat exchanger before being fed into the room. It is possible to switch from ventilation mode to static heating mode using the integrated room side thermal switch, so the heat exchanger can be used as a convector for static heating when the ventilation unit is off. The units are operated by way of the integrated LON bus compatible single room control, the operation of which is described in more detail in PI/FSL/5/EN/1.

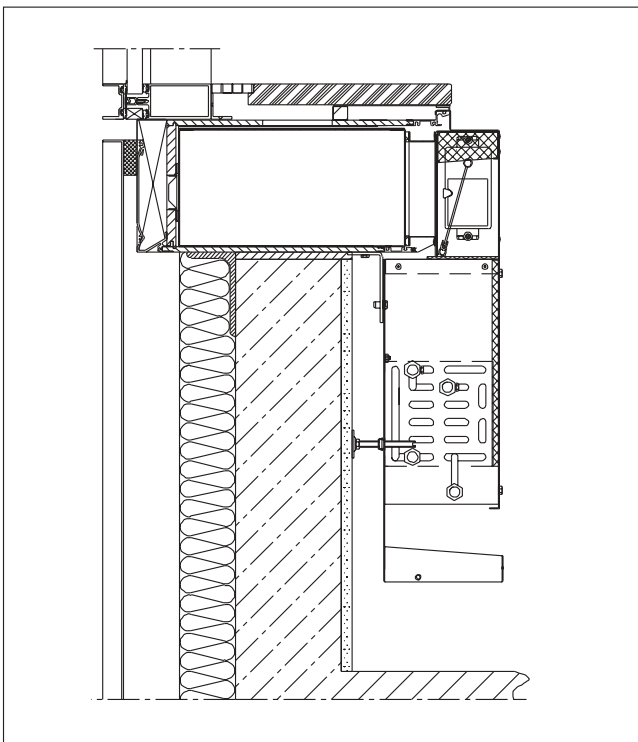
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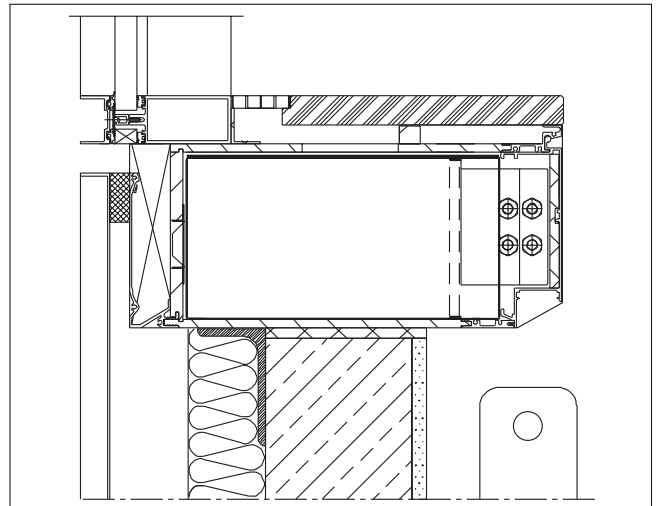
Design variants · Dimensions

The type 190 undersill ventilation units, including base module, are 190 mm high in the area of the facade penetration. The units with integral heat recovery have a minimum width of 1200 mm. Without heat recovery, the unit width can be reduced to a minimum of 740 mm.

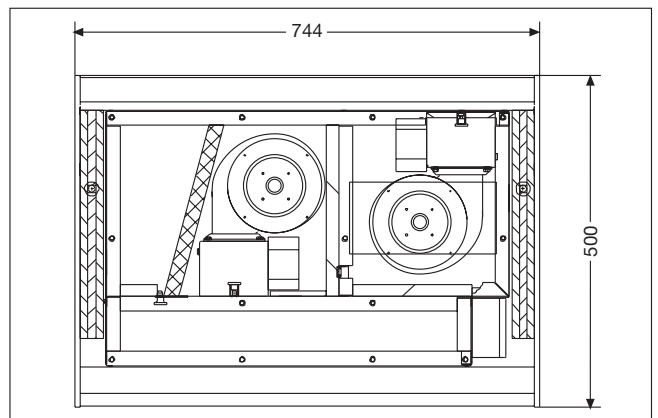
Facade section – unit configuration 2



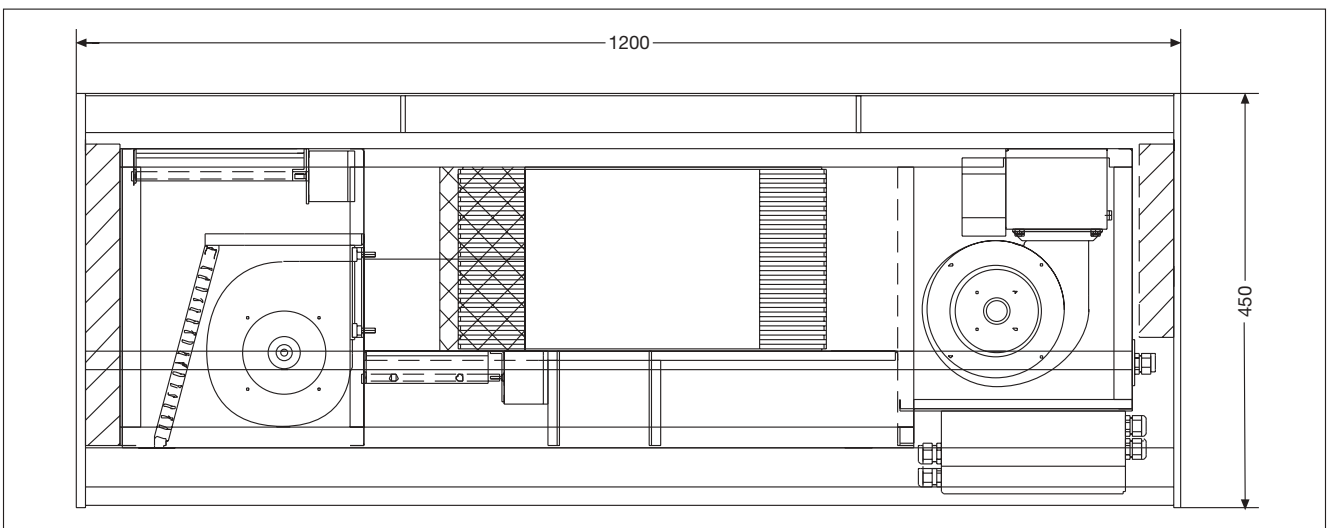
Facade section – unit configuration 1



Undersill ventilation unit without heat recovery – top view



Undersill ventilation unit with heat recovery – top view



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Technical data

Volumetric flow		m ³ /h	Supply and Return Air			
			120	90	80	60
Cooling	Total cooling load	W	559	431	384	286
	Internal cooling load (with 26° room temperature)	W	320	240	210	160
	Air inlet temperature	°C	32	32	32	32
	Air outlet temperature	%	40	40	40	40
	Relative humidity	°C	18	18	18	18
	Water volumetric flow rate	l/h	156	120	96	48
	Water inlet temperature	°C	16	16	16	16
	Water outlet temperature	°C	19	19	19	19
	Pressure drop water side	kPa	2.1	1.2	0.9	0.3
Heating	Total heating load	W	1735	1349	1257	962
	Internal heating load (with 20° room temperature)	W	400	300	266	200
	Air inlet temperature	°C	-12	-12	-12	-12
	Air outlet temperature	°C	30	30	30	30
	Water volumetric flow rate	l/h	360	120	120	60
	Water inlet temperature	°C	55	55	55	55
	Water outlet temperature	°C	51	45	46	41
	Pressure drop water side	kPa	28.7	3.9	3.9	1.2
Room sound pressure level (with 8 dB room attenuation)		dB(A)	41.5	36.5	34	31
Fan voltage		V	130	100	90	76
Run current		A	0.44	0.37	0.34	0.30

System benefits

- High degree of variability based on modular design
- Available as a complete system with single room control, minimising the number of interfaces
- Easy installation and startup
- Minimum unit noise levels and high degree of sound insulation whilst maintaining compact dimensions
- Avoidance of air short circuits by optimum exhaust air routing
- No ducting network required, saving space and enabling installation in refurbishment projects
- Casing and insulation of function box made from non-combustible material