

PRODUCT CERTIFICATE

Vallox Oy

manufactures

wall outlet terminal device Out/in Vario

Out/in Vario are intended to be used as wall outlet and inlet terminal devices of a residential ventilation. The wall outlet terminals comply with the requirements of the certification criteria *SERT R074: Requirements of wall outlet terminal devices for exhaust air and inlet terminal devices for outdoor air of a residential ventilation (Appendix 3)*. Summary of the characteristics of the wall outlet terminal device Out/in Vario, when outlet nozzle is damped with adjusting cone number 18 is presented below. Summary of the characteristics of the wall outlet terminal device Out/in Vario with outlet nozzle damped with other cones is presented in Appendix 1. Technical specification of the devices is presented in Appendix 2.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 16 dm ³ /s (outlet nozzle damped with add-on).
Air velocity of the outdoor air in inlet grille of combination devices	0.29 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 2.2 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 100 % at nominal air flow (class A). Outdoor air: 100 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

This certificate is valid until December 17, 2022 on condition that the product is not essentially changed and the manufacturer and Eurofins Expert Services Oy have a valid contract on quality control. To check the validity of this certificate, www.sertifikaattihaku.fi. Other conditions are listed on the page 2 of the certificate

Espoo December 18, 2020

Tiina Ala-Outinen
 Manager, Structures

Mikko Saari
 Assessor

This document has been signed electronically

PRODUCT CERTIFICATE

Conditions of the validity of the certificate:

Where reference is made in this certificate to any regulations, publications, standards or other documents, it shall be construed as a reference to such publication in the form of which it is in force at the date of this certificate.

The manufacturer is responsible for the quality and continuous quality control of the product. In granting this certificate, Eurofins Expert Services Oy does not accept responsibility to any person or body for any loss or damage incurred in respect of personal injury arising as direct or indirect result of the use of this product.

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This certificate is the English version of the original EUFI29-20005601-C Finnish certificate. In case of dispute the Finnish original of the certificate is valid.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 22.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 20 dm ³ /s
Air velocity of the outdoor air in inlet grille of combination devices	0.37 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 3.4 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 99.5 % at nominal air flow (class A). Outdoor air: 99.7 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 26.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 26 dm ³ /s.
Air velocity of the outdoor air in inlet grille of combination devices	0.47 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 3.9 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 98.6 % at nominal air flow (class B). Outdoor air: 99.9 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 31.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 31 dm ³ /s.
Air velocity of the outdoor air in inlet grille of combination devices	0.57 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 4.2 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 98.9 % at nominal air flow (class B). Outdoor air: 99.8 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 38.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 38 dm ³ /s.
Air velocity of the outdoor air in inlet grille of combination devices	0.70 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 4.5 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 98.0 % at nominal air flow (class B). Outdoor air: 100 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 51.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 25$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 51 dm ³ /s.
Air velocity of the outdoor air in inlet grille of combination devices	0.95 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 5.0 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 97.4 % at nominal air flow (class B). Outdoor air: 100 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Summary of the characteristics of the wall outlet terminal device Vallox Out/in Vario, when outlet nozzle is damped with adjusting cone number 69.

Property	Result
Leakage	Meets the requirement.
Aerodynamic performance (pressure / air flow)	The measured values correspond to the values declared by the manufacturer.
Acoustic performance	$L_{WA} < 30$ dB(A) to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer. Meets the requirements.
Air velocity of the exhaust air in outlet nozzle	5 m/s at nominal air flow 69 dm ³ /s.
Air velocity of the outdoor air in inlet grille of combination devices	1.3 m/s at nominal air flow. Meets the requirement.
Throw pattern of exhaust air jet	Throw length 6.3 m (0.5 m/s) at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Exhaust air: 96.6 % at nominal air flow (class B). Outdoor air: 100 % at nominal air flow (class A). The removal of water from device has been implemented reliably. Meets the requirements.
Amount of exhaust air in outdoor air flow of combination devices.	0 % at nominal air flow. Meets the requirement.
Operation at low outdoor air temperatures	Operation tested at -20 °C outdoor temperature. Meets the requirement.
Installation and maintenance guidelines, user manual	Meets the requirements presented in Appendix 3.

PRODUCT CERTIFICATE

Product information of wall outlet terminal devices for exhaust air and inlet terminal devices for outdoor air of a residential ventilation.

Model: Vallox Out/in Vario

Manufacturer and representative of the devices: Vallox Oy, Myllykyläntie 9 - 11, 32200 Loimaa.
tel. +358 10 7732 200, www.vallox.com

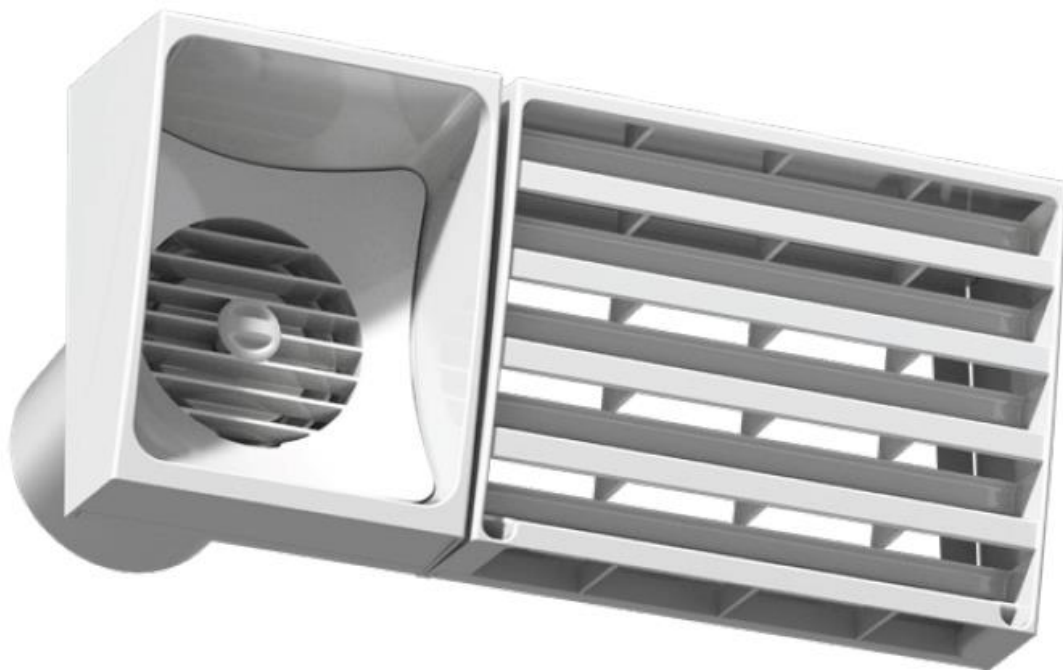
Outer dimensions: 610 mm (width), 289 mm (height) and 139 mm (depth) / with duct connection 339 mm (depth)

Weight: with all adjusting cones 3.5 kg

Main manufacturing material: UV protected ABS-plastic, mass of the metal components is 0.9 kg

Air duct connections: Exhaust air duct diameter is 160 mm and certified device was equipped with outdoor air duct diameter 160 mm (maximum diameter 200 mm may be used)

Control of air flows: With low air flows the air velocity of the exhaust air in outlet nozzle may be increased by damped the outlet nozzle with adjusting cones. There are seven cones and setpoints. Diameters of the cones are: number 18 = 134 mm, nr 22 = 129 mm, nr 26 = 123 mm, nr 31 = 117 mm, nr 38 = 108 mm, nr 51 = 90 mm ja nr 69 = 52 mm.



PRODUCT CERTIFICATE

Requirements of the certification criteria SERT R074: Requirements of wall outlet terminal devices for exhaust air and inlet terminal devices for outdoor air of a residential ventilation.

Property	Determination method	Requirement
Leakage	EN 1751	$\leq 0.2 \text{ dm}^3/\text{s}$ at a test pressure of 250 Pa. ¹⁾
Aerodynamic performance (pressure / air flow)	EN 12238	The measured values correspond to the values declared by the manufacturer. ²⁾
Acoustic performance	ISO 3741, ISO 5135	$L_{WA} \leq 45 \text{ dB(A)}$ to the external surrounding at nominal air flow. The measured values correspond to the values declared by the manufacturer.
Air velocity of the exhaust air in outlet nozzle	$q_v / A_{\text{free area}}$, minimum	$\geq 5 \text{ m/s}$ at nominal air flow
Air velocity of the outdoor air in inlet grille of combination devices	$q_v / A_{\text{free area}}$	$\leq 2.0 \text{ m/s}$ at nominal air flow
Throw pattern of exhaust air jet	EN 12238	The measured throw patterns (velocity 0.5 m/s) correspond to the values declared by the manufacturer.
Rainwater rejection efficiency of exhaust air outlet, and outdoor air inlet of combination devices.	Tests with at least three air flows, EN 13030	$\geq 80 \%$ at applicable velocities. The removal of water from device has been implemented reliably.
Amount of exhaust air in outdoor air flow of combination devices.	Tracer gas method EN 13141-8, CFD-simulation, if necessary	$\leq 0.6 \%$ at nominal air flow, isothermal occasion without wind
Operation at low outdoor air temperatures	Performance test in laboratory applying EN 13141-8 ³⁾	Operation tested and confirmed at $-20 \text{ }^\circ\text{C}$ outdoor temperature. ³⁾
Installation and maintenance guidelines, user manual	Inspection and assessment ⁴⁾	Meets the requirements presented below ⁴⁾

Requirements:

- 1) Leakage: Leakage air flow rate at most $0.2 \text{ dm}^3/\text{s}$ at a test pressure of 250 Pa. Decree of the Ministry of the Environment on the type approval of the ventilation terminal devices. 2008.
- 2) Aerodynamic performance: Suitable air flow range and nominal air flow are declared by manufacturer. Air velocity of the exhaust air in outlet nozzle is calculated according to the free area of the nozzle. If the free area is altered in the jet direction, minimum area is used.
- 3) Operation at low outdoor air temperatures ($-20 \text{ }^\circ\text{C}$, at least 6 hours): The freeze prevention and removal of condensed water from exhaust air has been implemented reliably. Frosting and freezing shall not affect negatively to the ventilation system or cause other hazards to the building or their users. During the test with exhaust air velocity 5 m/s the pressure drop shall increase at most 50 Pa or in actual operation, the air flow decreases at most 20 %. Temperature of exhaust air is $0 \text{ }^\circ\text{C}$ and relative humidity 70 - 95 %. Temperature of exhaust air is $+5 \text{ }^\circ\text{C}$ in icicle test. Ice shall not accumulate in the device in such a way that it can cause danger if dropped (the mass of falling ice does not exceed 100 g).
- 4) Installation instructions: The junction between the device and the outer wall must be made in such a way that airtightness, watertightness and cold bridging are taken into account. Maintenance: Serviceability, cleanability and the functionality of any protective nets and air filters are assessed for pressure drop, possible blockage and bypass.