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Thermal management system

Thermal management system

Thermal conditioning of electric and electronic switchboards: a need

What is thermal control?

Technological evolution

The miniaturisation of components, the generalisation of electronics and the appearance of new electronically powered products have made temperature management into a growing need which must necessarily be considered when designing electrical and/or electronic switchboards.

What are the advantages of efficient thermal management?

Thermal management of electrical switchboards is a major factor for industrial maintenance.
Many risks are incurred by not having a suitable thermal solution, which can affect the service life of the components and the performance of the facilities to the extent of causing a halt in production.
The service life of the components also depends on the temperature and humidity conditions inside the enclosure. The ideal values range from +25 to +35 ºC for the temperature and 40 to 60 % for the relative humidity (RH).

Cooling, heating, controlling

For the same reasons as the IP/IK protection ratings, equipment installed in enclosures requires suitable thermal protection.
Various solutions to these problems have been put forward. They will be chosen according to environmental conditions, the type of components in the electrical switchboard, etc.
In certain cases, it is sufficient to oversize the enclosure, use fans or air-air exchangers, etc. In other cases, where the ambient temperature is higher, it becomes necessary to install air-water exchangers or cooling units.

A solution for each need

We provide a complete Thermal offer to secure your installations.

Cooling	1. Forced ventilation systems 2. Air-air exchangers 3. Air-water exchangers 4. Cooling units
Heating	5. Resistance heaters
Controlling	6. Thermal control accessories
Calculating	7. New ProClima 5.0 software

Risks

Risks associated with the lack of thermal control

Random breakdowns and production halts result in heavy losses

Thermal control of enclosures extends the service life of the components and reduces their breakdown rate.

Reduction of the service life of the components

The service life of the components is considerably reduced if the temperature and humidity in enclosures are not controlled. Repeated sudden variations speed up the aging process.

Example
Batteries – Accumulators
Manufacturers recommend installing batteries in environments where the controlled temperature is 15 °C...25 °C.
Cold slows down the battery charging and discharging cycles. Heat increases the evaporation of water in the electrolyte and speeds up the oxidation of the plates.
Using batteries at temperatures above the recommended value therefore reduces their service life.

Sudden production halt

The appearance of hot spots increases the breakdown rate and endangers the production process.

Example
Electronic equipment
Most electronic industrial control systems are equipped with axial fans for their own thermal control. A failure of the fan can lead to a production halt.
Reduced service life of the fan is one consequence of the enclosure heating up.
24 V DC axial fan.
Temperature range: –20...+70 °C.
Service life at 20 ºC (L10 at 20 ºC): 50000 h.
Service life at 60 ºC (L10 at 20 ºC): 20000 h.

The service life of the equipment can drop from 50000 h to only 20000 h.

The internal temperature increases with a high degree of IP

In agressive atmospheres: dust, humidity, chemical agents, high temperatures, etc., the equipment is installed in industrial enclosures (IP 54) in order to protect it from the external environment. Nevertheless, it causes a reheating phenomenon which, if left unchecked, will be responsible in the short term for a halt in the operation of the components.

Example
Variable speed drives
A variable speed drive controlling a 45 kW (60 HP) motor is programmed to work at temperatures ranging up to 50 °C or 60 °C.
The power dissipated by this variable speed drive inside the enclosure can reach 1360 W.
This contribution of heat inside the enclosure will cause the top temperature to rise to 60 °C and probably cause a halt in production.

Our solution

Our new thermal offer includes a large range of solutions, suitable for all situations, from installing a ventilation system to exchangers or even a cooling unit.
Do not hesitate to contact us to find out the best thermal solution for your installation.

Choose the solution

How to select the best temperature control auxiliary?



System	Airing	Ventilating	Air-air exchanger
	Natural convection causes the temperature to drop inside the enclosure. Simple solutions for this case include installing grilles (without filter) or lifting the top.	Fans with filters are designed to evacuate a large amount of heat economically.	Air-air exchangers are equipped with an aluminium exchange cassette which separates the internal and external air circuits and prevents the entry of dust.
When should it be used?	This solution can only be used when the power to be dissipated is low, in an environment with small amounts of dust.	When larger amounts of heat need to be evacuated in a polluted environment.	The air-air exchangers are used in highly polluted environments or when it is necessary to evacuate large amounts of heat while guaranteeing the independence of the internal and external air circuits.
Ta: Ambient temperature Td: Desired temperature	 **Ta < Td**	 **Ta < Td**	 **Ta < Td**
The internal and external air circuits must be independent.	**NO**	**NO**	**YES**
Advantages	● Economic solution. ● No maintenance. ● Quick and easy installation.	● Economic solution. ● Easy maintenance. ● Quick and easy installation. ● Even temperature inside the enclosure. ● High protection rating: IP 54 or IP 55.	● The internal and external air circuits are independent. ● Easy maintenance. ● High protection rating: IP 54.
Disadvantages	● Small amount of heat evacuated. ● Reduction of the IP protection rating. ● Entry of dust particles.	● The temperature inside the enclosure is always higher than the external temperature. ● The internal and external air circuits are in contact. ● Maintenance required: filter replacement.	● The temperature inside the enclosure is always higher than the external temperature.
Solutions	 Ventilation devices	 Fans and outlet grilles	 Air-air exchangers

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	Air-water exchanger	Cooling	Heating
	Air-water exchangers reduce the temperature inside the enclosure by means of a water-cooled exchange cassette. Temperature control inside the enclosure is performed by a thermostat which opens and closes an electro-valve.	Air-conditioning device providing efficient cooling of the enclosure, regardless of the outside air, and prevention against hot spots.	The resistance heaters prevent the formation of condensation and guarantee the ideal temperature for the correct operation of the electronic components.
	The air-water exchangers are used to evacuate large amounts of heat. They require a cold-water circuit with stable temperature and flow rate. They are specially recommended in difficult, highly polluted environments where there is no external air circuit.	The cooling units can be used in the harshest environments, where the temperature can reach up to 55 °C. These devices control the temperature inside the enclosure and include an alarm function for signalling operational anomalies.	The resistance heaters are used to reheat the electrical switchboard when the ambient temperature is too low or to prevent the formation of condensation.
	 **Ta > Td**	 **Ta > Td**	 **Ta < Td**
	YES	**YES**	
	● The temperature inside the enclosure does not depend on the external temperature. ● The internal and external air circuits are independent. ● Security device against possible leaks.	● Even temperature inside the enclosure. ● High protection rating: IP 54. ● Use of an environmentally friendly gas.	● Small dimensions. ● Equipped with a PTC-type heating system, which stabilises the surface temperature of the aluminium profile. ● Available in two versions: insulated with low surface temperature or in aluminium when the surface temperature is limited to 75 °C. ● The fan-equipped resistances guarantee an even temperature inside the enclosure.
	● A cold-water supply source is required. ● Specific pumping installation.	● Installation of a drain is recommended. ● Maintenance required: filter replacement.	
	 Air-water exchangers	 Cooling units	 Resistance heaters

Choose the solution

A thermal solution for every environment

Ventilation systems with filters

Specially recommended for installations in which:
- The ambient temperature is lower than the desired temperature inside the enclosure.
- A high protection rating is required: IP 54 or IP 55.
- The surrounding environment is relatively clean, allowing air to enter the enclosure.

Large range of solutions

- 42 possible combinations.
- Colours: RAL 7035 as standard, with the option of changing to RAL 7032 (with replacement grille **NSYCAG●●●LPC**).
- 38 to 850 m^3/h.
- According to 5 input voltages:
  AC: 400/440 V, 230 V, 115 V (50/60 Hz),
  DC: 48 V and 24 V.
- Broad range of accessories (filters, IP 55 & EMC covers, anti-vandalism kit).

Air-air exchangers

Specially recommended for installations in which:
- The ambient temperature is lower than the desired temperature inside the enclosure.
- A high protection rating is required: IP 54 or IP 55.
- The outside environment is highly polluted.

Large range of solutions

- 4 models.
- Two installation versions: top-mounting model and side-mounting model.
- Cooling power from 15 to 70 W/ºK .
- According to the input voltage: 230 V (50/60 Hz).

Air-water exchangers

Specially recommended for installations in which:
- The ambient temperature is higher than the desired temperature inside the enclosure.
- The outside environment is corrosive, the internal and external air circuits are independent.
- The outside environment is highly polluted, the temperature is controlled by cold water without requiring the use of an external air circuit.
- It is necessary to extract the heat from the enclosure to the outside of the building.

Large range of solutions

- 3 models.
- Two installation versions: top-mounting model and side-mounting model.
- Cooling power of 2100 W and 3150 W.
- According to the input voltage: 230 V (50/60 Hz).

Choose the solution

Cooling units

They control the temperature inside the enclosure in order to guarantee the correct operation of the components, regardless of the outside temperature, by separating the internal and external air circuits and reducing the humidity of the enclosure.

Large range of solutions

- 32 models.
- Two versions: top-mounting model and side-mounting model.
- Cooling power from 240 to 4000 W.
- Two control versions: electronic and mechanical.
- According to the input voltage: 230 V (50/60 Hz); 3 × 400/440 V (50/60 Hz); 115 V (50/60 Hz).
- Three installation types: surface, flush and partial flush (SLIM version).
- RAL 7035 and stainless steel.

Resistance heaters

With a double objective:
- To prevent the formation of condensation inside the enclosure.
- To reheat the electrical switchboard when the temperature is too low for the components to operate correctly.

Large range of solutions

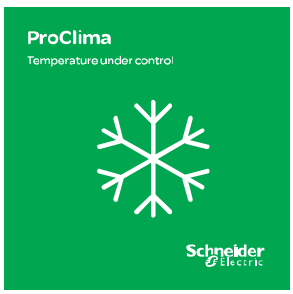
- 30 models.
- Insulated or aluminium versions.
- Versions with natural convection or fan.
- Cooling power from 10 to 550 W.
- According to the input voltage: 12 V to 450 V AC/DC.

Thermal control

Thermostats contol the temperature inside the enclosure and send a signal when certain defined values are exceeded:
- Maximum value (cooling action).
- Minimum value (reheating action).

Large range of solutions

- 15 models.
- Temperature control: adjustable thermostats; single or double.
- Relative humidity control: adjustable hygrostat.
- Temperature and relative humidity control: adjustable hygrotherm.



Calculation assistance: ProClima

We offer our customers and users a software application to help them select thermal accessories.
The programme draws up a heat balance and defines the best ventilation or cooling solution for the inside of the enclosure.

Ventilation systems
Introduction

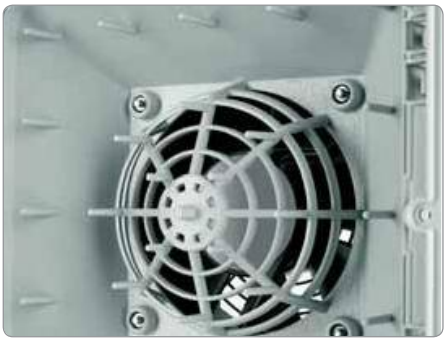
Large range of fans

Flow rate efficiency, high protection rating, quick installation and easier maintenance to secure all the applications.

Optimised flow rate: average increase of 50%

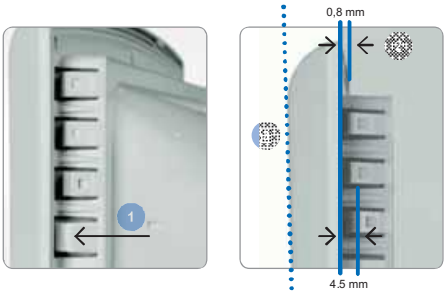
Maximum use of surface

The outlet grille maximises the air circulation.



Minimum loss of pressure

Improved air flow. The corners of the walls, the variable tilt of the slats, the fixing distance of the motor and the dimensions of the device have been studied to guarantee better aerodynamics and a smaller loss of pressure.



High protection rating: IP 54 as standard

Fixing guide (1)

An exclusive new mechanism (patented) is used to centre the body of the fan on the wall of the enclosure. This system corrects machining faults.
In addition, it facilitates the correct operation of the fixing "clips".

Multi-thickness fixing clips (2)

This exclusive device (patented) guarantees easy and reliable fixing of the ventilation system on walls with a thickness of 0.8 to 4.5 mm, with no fixings.
It guarantees perfect compression of the seal around the outline of the cut-out.
The seal between the grille and the wall is guaranteed for all the materials: steel, stainless steel, polyester, aluminium, etc.

Inclined profile of the grille (3)

- This innovating profile helps protect the filter against vertical spraying:
  – Each slat is protected by the slat above it.
  – The external dimensions remain small.

IP 54-55

A patented system allows the evacuation of water absorbed by the filter, in particular during high-pressure spraying.

Hot-fitted sealing gasket

The polyurethane gasket, hot cast, guarantees a long-lasting seal.

Effective system for retaining the filter

The system for holding the synthetic filter in the cavity of the filter holder guarantees a protection rating of IP 54, in the most difficult conditions.

Ventilation systems
Introduction

Innovative design

Innovative design with flowing lines

Easy installation

Quick installation

- Safe, reliable fixing with the assisted fixing device and the system of multi-thickness fixing clips.
- Fixing also possible using screws.
- Easy to invert.
- To operate as extractors, all the motors can be inverted by simply removing four screws.

Easy maintenance

Quick filter replacement

Quick, easy and safe replacement of the filter installed in the fan, even during operation.

Quality of the components

Selection of the motors

Improved flow rate and longer service life.
Large range of input voltages available on all the motors delivered as standard, with alternating 50/60 Hz or direct current.

Ventilation offer

With homologation UL available.

Large range of accessories

Selection of plastic materials

ASA / PC material chosen to manufacture the ventilation system:
- Improved resistance (longer service life) to UV.
- Excellent mechanical operation.
- Standard grille colours: RAL 7035 and RAL 7032 (replacement accessory).

Other colours are available on demand (contact us).
ASA / PC plastic material, self-extinguishing according to standard UL94 V0.

Filtres

IP 55 cover

Large range of accessories

Large variety of filters

- Filters for oily environments (OEM).
- Anti-insect filters.
- Fine filters (improved protection against dust).

See page **8/20**.

Sealing cover IP 55

- Available in two versions:

– Aluzinc: RAL 7035 grey paint.
– Stainless steel.

See page **8/21**.

EMC cover

Thanks to this accessory, the various ventilation systems offer greater resistance to magnetic fields (EMC), preventing any interference with the equipment installed inside the enclosure.
See page **8/22**.

Anti-vandalism kit

Accessory for outdoor applications, in contact with the public.
It prevents unwanted opening of the grille.
See page **8/20**.

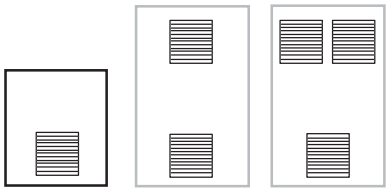
ENVIRONMENTALLY FRIENDLY

Environment

- Recyclable plastic materials and filters.
- Motors according to the RoHS directive.
- Lower power consumption for improved air flow.

Ventilation system
Selection guide

Ventilation systems with filters



	Fan flow rate (m^3/h)			Voltage	Type of connection C = by cable F = by faston (1) B = by terminal block	
	Free with filter	With 1 outlet grille	With 2 outlet grilles			
	50 Hz	50 Hz	50 Hz			
	38	25	33	230 V	C	
	38	27	35	115 V	C	
	58	39	47	24 V DC	C	
	44	34	41	48 V DC	C	
	85	63	71	230 V	F	
	79	65	73	115 V	F	
	80	57	77	24 V DC	F	
	79	59	68	48 V DC	F	
	165	153	161	230 V	F	
	164	153	161	115 V	F	
	188	171	179	24 V DC	F	
	193	171	179	48 V DC	F	
	302	260	268	230 V	F	
	302	263	271	115 V	F	
	262	221	229	24 V DC	F	
	247	210	218	48 V DC	F	
	562	473	481	230 V	B	
	582	485	494	115 V	B	
	838	718	728	230 V	B	
	983	843	854	115 V	B	
	931	798	809	400/440 V	B	

(1) Fan models with connection type (F) are delivered with the connection cord included (2 metres).

	Dimensions (mm)		Reference					
	Total (external)	Cut-out	Fan with filter	Outlet grille	Colour kit	IP 55	IP 55 stainless steel	EMC
			RAL 7035		RAL 7032			
	137 × 117	92 × 92	NSYCVF38M230PF	NSYCAG92LPF	NSYCAG92LPC	-	-	-
			NSYCVF38M115PF					
			NSYCVF38M24DPF					
			NSYCVF38M48DPF					
	170 × 150	125 × 125	NSYCVF85M230PF	NSYCAG125LPF	NSYCAG125LPC	NSYCAP125LZF	NSYCAP125LXF	NSYCAP125LE
			NSYCVF85M115PF					
			NSYCVF85M24DPF					
			NSYCVF85M48DPF					
	268 × 248	223 × 223	NSYCVF165M230PF	NSYCAG223LPF	NSYCAG223LPC	NSYCAP223LZF	NSYCAP223LXF	NSYCAP223LE
			NSYCVF165M115PF					
			NSYCVF165M24DPF					
			NSYCVF165M48DPF					
			NSYCVF300M230PF					
			NSYCVF300M115PF					
			NSYCVF300M24DPF					
			NSYCVF300M48DPF					
	336 × 316	291 × 291	NSYCVF560M230PF	NSYCAG291LPF	NSYCAG291LPC	NSYCAP291LZF	NSYCAP291LXF	NSYCAP291LE
			NSYCVF560M115PF					
			NSYCVF850M230PF					
			NSYCVF850M115PF					
			NSYCVF850M400PF					

Ventilation systems
Forced ventilation 38 m³/h

General characteristics

- The fans comprise an axial motor, a protective housing on the front and rear surfaces and a filter designed to retain dust particles.
- This filter can be replaced during operation without risk of contact with the rotating element.
- The cut-out template supplied with the device avoids the need for marking and protects the surface of the enclosure during handling.
- RAL 7035 grey in the standard offer with the possibility to change to RAL 7032 by means of a replacement grille.

Conditions of use

- The outside temperature (Te) must be 5 °C lower than the desired temperature (Ts) inside the enclosure.
- The filters that equip the fans must be cleaned and replaced regularly.
- The surrounding environment must be relatively clean and overfrequent filter replacement should be avoided.
- Bear in mind the pressure losses caused by the outlet element (grille with filter, ventilation louvre or simple opening) when determining the fan flow rate.

Specifications	Reference			
Colour: RAL 7035	NSYCVF38M230PF	NSYCVF38M115PF	NSYCVF38M24DPF	NSYCVF38M48DPF
Free flow rate with standard filter (m³/h)	38 (50 Hz) 39 (60 Hz)	38 (50 Hz) 39 (60 Hz)	58	44
Flow rate with 1 outlet grille (m³/h)	25 (50 Hz) 26 (60 Hz)	27 (50 Hz) 28 (60 Hz)	39	34
Nominal voltage	230 V (50/60 Hz)	115 V (50/60 Hz)	24 V DC	48 V DC
Voltage range	150 V...250 V	75 V...125 V	10 V...27.6 V	36 V...56 V
Absorbed power (50/60 Hz)	4.5/4.8 W	3.3/3.5 W	3.6 W	3.6 W
Max. intensity (50/60 Hz)	0.16/0.17 A	0.16/0.16 A	0.18 A	70 mA
Noise level	40/41 dB (A)			
Bearing	Balls			
IP	54			
External dimensions (mm)	137 × 117 × 49			
Cut-out (mm)	92 × 92			
Weight	0.220 kg		0.230 kg	
Material	Injected thermoplastic (ASA PC). self-extinguishing according to UL94 V0			
Operating temperature	-10...+70 °C			
Storage temperature	-40...+70 °C			
Max. static pressure (flow rate 0 m³/h)	29 Pa			

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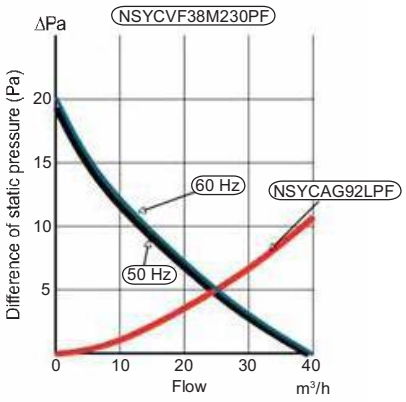
Flow curves



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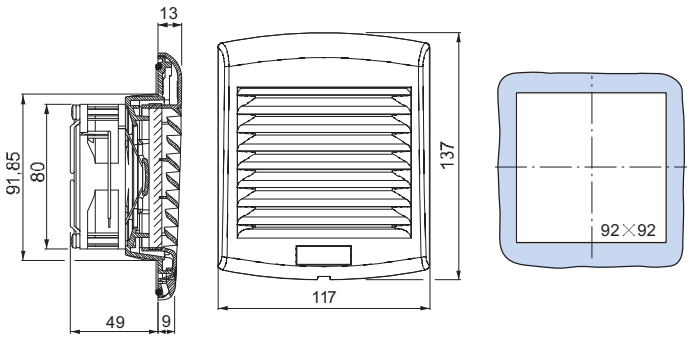


Ventilation systems
Forced ventilation 85 m³/h

General characteristics

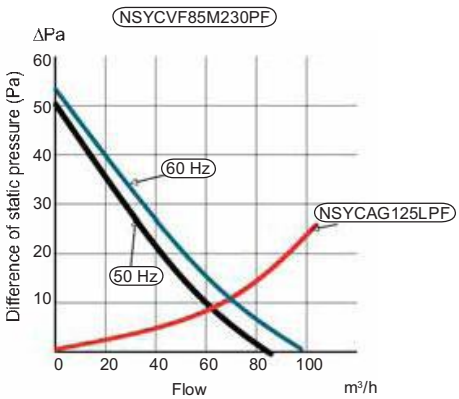
- The fans comprise an axial motor, a protective housing on the front and rear surfaces and a filter designed to retain dust particles.
- This filter can be replaced during operation without risk of contact with the rotating element.
- Optionally, the device can be equipped with a filter that provides even more efficient protection for your sensitive facilities against dust particles.
- The cut-out template supplied with the device avoids the need for marking and protects the surface of the enclosure during handling.
- RAL 7035 grey in the standard offer with the possibility to change to RAL 7032 by means of a replacement grille.

Conditions of use

- The outside temperature (Te) must be 5 °C lower than the desired temperature (Ts) inside the enclosure.
- The filters that equip the fans must be cleaned and replaced regularly.
- The surrounding environment must be relatively clean and overfrequent filter replacement should be avoided.
- Bear in mind the pressure losses caused by the outlet element (grille with filter, ventilation louvre or simple opening) when determining the fan flow rate.

Specifications	Reference			
Colour: RAL 7035	NSYCVF85M230PF	NSYCVF85M115PF	NSYCVF85M24DPF	NSYCVF85M48DPF
Free flow rate with standard filter (m³/h)	85 (50 Hz) 98 (60 Hz)	79 (50 Hz) 92 (60 Hz)	80 m³/h	
Flow rate with 1 outlet grille (m³/h)	63 (50 Hz) 72 (60 Hz)	65 (50 Hz) 74 (60 Hz)	60 m³/h	
Nominal voltage	230 V (50/60 Hz)	115 V (50/60 Hz)	24 V DC	48 V DC
Voltage range	175 V...253 V	75 V...126 V	10 V...27.6 V	25 V...55.2 V
Absorbed power	17/15 W	16/15 W	7.6 W	8 W
Max. intensity (50/60 Hz)	0.121/0.097 A	0.207/0.179 A	0.30 A	0.173 A
Noise level	46/49 dB (A)			
Bearing	Balls			
IP	54			
External dimensions (mm)	170 × 150 × 62			
Cut-out (mm)	125 × 125			
Weight	0.780 kg		0.480 kg	
Material	Injected thermoplastic (ASA PC). self-extinguishing according to UL94 V0			
Operating temperature	-20...+60 °C		-10...+70 °C	
Storage temperature	-40...+70 °C			
Max. static pressure (flow rate m³/h)	50 Pa			

Flow curves



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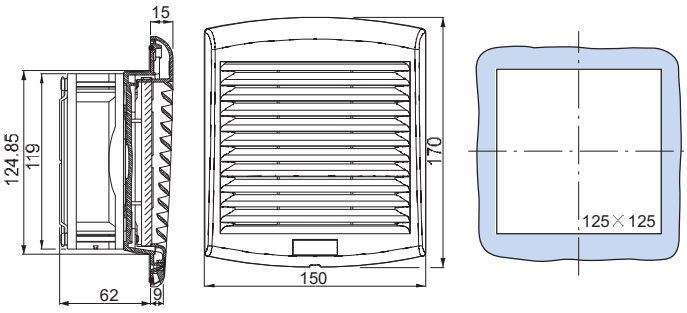

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Ventilation systems
Forced ventilation 165 m³/h

General characteristics

- The fans comprise an axial motor, a protective housing on the front and rear surfaces and a filter designed to retain dust particles.
- This filter can be replaced during operation without risk of contact with the rotating element.
- Optionally, the device can be equipped with a filter that provides even more efficient protection for your sensitive facilities against dust particles.
- The cut-out template supplied with the device avoids the need for marking and protects the surface of the enclosure during the handling.
- RAL 7035 grey in the standard offer with the possibility to change to RAL 7032 by means of a replacement grille.

Conditions of use

- The outside temperature (Te) must be 5 °C lower than the desired temperature (Ts) inside the enclosure.
- The filters that equip the fans must be cleaned and replaced regularly.
- The surrounding environment must be relatively clean and overfrequent filter replacement should be avoided.
- Bear in mind the pressure losses caused by the outlet element (grille with filter, ventilation louvre or simple opening) when determining the fan flow rate.

Specifications	Reference			
Colour: RAL 7035	NSYCVF165M230PF	NSYCVF165M115PF	NSYCVF165M24DPF	NSYCVF165M48DPF
Free flow rate with filter (m³/h)	165 (50 Hz) 193 (60 Hz)		190 m³/h	
Flow rate with 1 outlet grille (m³/h)	153 (50 Hz) 171 (60 Hz)		171 m³/h	
Flow rate with 2 outlet grilles (m³/h)	161 (50 Hz) 175 (60 Hz)		179 m³/h	
Nominal voltage	230 V (50/60 Hz)	115 V (50/60 Hz)	24 V DC	48 V DC
Voltage range	175 V...253 V	75 V...126 V	10 V...27,6 V	25 V...55,2 V
Absorbed power	16.3/14.3 W	15.5/14.4 W	8 W	8.7 W
Max. intensity (50/60 Hz)	0.12/0.94 A	0.20/0.18 A	0.3 A	0.18 A
Noise level	50/51 dB (A)			
Bearing	Balls			
IP	54			
External dimensions (mm)	268 × 248 × 104			
Cut-out (mm)	223 × 223			
Weight	1140 kg		0.810 kg	
Material	Injected thermoplastic (ASA PC), self-extinguishing according to UL94 V0			
Operating temperature	-20...+60 °C		-10...+70 °C	
Storage temperature	-40...+70 °C			
Max. static pressure	50 Pa			

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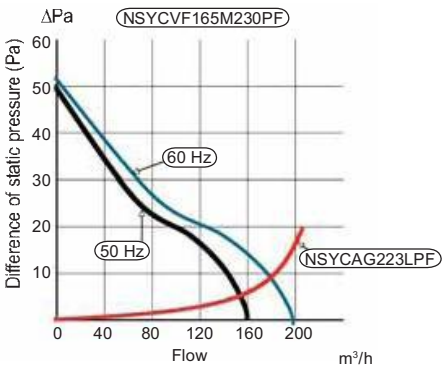
Flow curves



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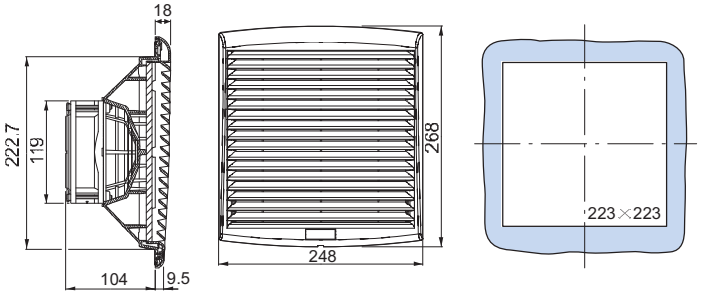


Ventilation systems
Forced ventilation 300 m³/h

General characteristics

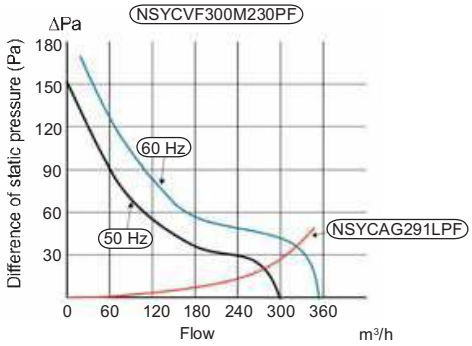
- The fans comprise an axial motor, a protective housing on the front and rear surfaces and a filter designed to retain dust particles.
- This filter can be replaced during operation without risk of contact with the rotating element.
- Optionally, the device can be equipped with a filter that provides even more efficient protection for your sensitive facilities against dust particles.
- The cut-out template supplied with the device avoids the need for marking and protects the surface of the enclosure during handling.
- RAL 7035 grey in the standard offer with the possibility to change to RAL 7032 by means of a replacement grille

Conditions of use

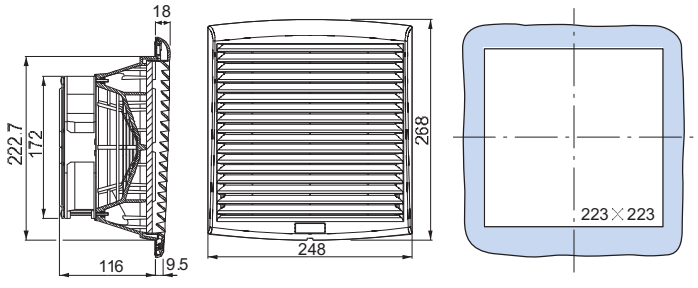
- The outside temperature (Te) must be 5 °C lower than the desired temperature (Ts) inside the enclosure.
- The filters that equip the fans must be cleaned and replaced regularly.
- The surrounding environment must be relatively clean and overfrequent filter replacement should be avoided.
- Bear in mind the pressure losses caused by the outlet element (grille with filter, ventilation louvre or simple opening) when determining the fan flow rate.

Specifications	Reference			
Colour: RAL 7035	NSYCVF300M230PF	NSYCVF300M115PF	NSYCVF300M24DPF	NSYCVF300M48DPF
Free flow rate with filter (m³/h)	300 (50 Hz) 350 (60 Hz)		262 m³/h	
Flow rate with 1 outlet grille (m³/h)	260 (50 Hz) 307 (60 Hz)		221 m³/h	
Nominal voltage	230 V (50/60 Hz)	115 V (50/60 Hz)	24 V DC	48 V DC
Voltage range	145 V...253 V	75 V...126 V	12 V...30 V	25 V...60 V
Absorbed power	36/37 W	36/36 W	13 W	11 W
Max. intensity (50/60 Hz)	0.17/0.16 A	0.35/0.32 A	0.53 A	0.24 A
Noise level	55/56 dB (A)			
Bearing	Balls			
IP	54			
External dimensions (mm)	268 × 248 × 116		268 × 248 × 103,4	
Cut-out (mm)	223 × 223			
Weight	1.3 kg		1.1 kg	
Material	Injected thermoplastic (ASA PC), self-extinguishing according to UL94 V0			
Operating temperature	-10...+70 °C		-10...+70 °C	
Storage temperature	-40...+70 °C			
Max. static pressure	158 Pa			

Flow curves



Dimensions



8

Ventilation systems
Forced ventilation 560-850 m³/h

General characteristics

- The fans comprise an axial motor, a protective housing on the front and rear surfaces and a filter designed to retain dust particles.
- This filter can be replaced during operation without risk of contact with the rotating element.
- Optionally, the device can be equipped with a filter that provides even more efficient protection for your sensitive facilities against dust particles.
- The cut-out template supplied with the device avoids the need for marking and protects the surface of the enclosure during handling.
- RAL 7035 grey in the standard offer with the possibility to change to RAL 7032 by means of a replacement grille.

Conditions of use:

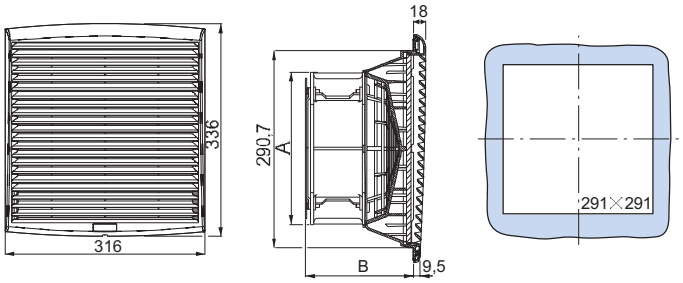
- The outside temperature (Te) must be 5 °C lower than the desired temperature (Ts) inside the enclosure.
- The filters that equip the fans must be cleaned and replaced regularly.
- The surrounding environment must be relatively clean and overfrequent filter replacement should be avoided.
- Bear in mind the pressure losses caused by the outlet element (grille with filter, ventilation louvre or simple opening) when determining the fan flow rate.

Specifications	Reference				
Colour: RAL 7035	**NSYCVF560M230PF**	**NSYCVF560M115PF**	**NSYCVF850M230PF**	**NSYCVF850M115PF**	**NSYCVF850M400PF**
Free flow rate with filter (m³/h)	562 (50 Hz) 586 (60 Hz)		838 (50 Hz) 803 (60 Hz)	983 (50 Hz) 944 (60 Hz)	931 (50 Hz) 803 (60 Hz)
Flow rate with 1 outlet grille (m³/h)	473 (50 Hz) 477 (60 Hz)		718 (50 Hz) 568 (60 Hz)	843 (50 Hz) 642 (60 Hz)	798 (50 Hz) 568 (60 Hz)
Nominal voltage	230 V (50/60 Hz)	115 V (50/60 Hz)	230 V (50/60 Hz)	115 V (50/60 Hz)	400 V (50/60 Hz)
Voltage range	207 V...244 V	103 V...122 V	207 V...244 V	103 V...122 V	396 V...466 V
Absorbed power	68/85 W	65/83 W	150/195 W	145/182 W	126/126 W
Max. intensity (50/60 Hz)	0.52/0.370 A	0.60/0.72 A	0.65/0.85 A	1.279/1.6 A	0.226/0.232 A
Noise level	59/59 dB (A)		76/75 dB (A)	78/77 dB (A)	77/75 dB (A)
Bearing	Balls				
IP	54				
External dimensions (mm)	336 × 316 × 161		336 × 316 × 162		
Cut-out (mm)	291 × 291				
Weight	3.2 kg		4.1 kg		
Material	Injected thermoplastic (ASA PC). self-extinguishing according to UL94 V0				
Operating temperature	-15...+60 °C				
Storage temperature	-40...+70 °C				
Max. static pressure	140 Pa		170 Pa		

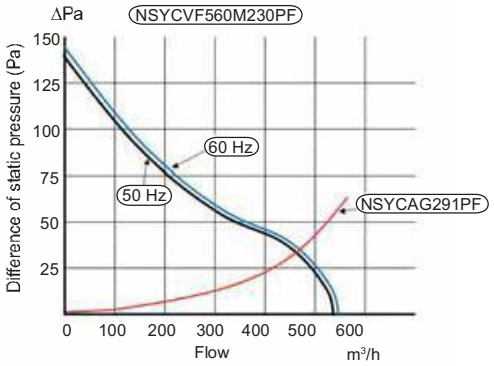
Ventilation systems
Forced ventilation 560-850 m³/h

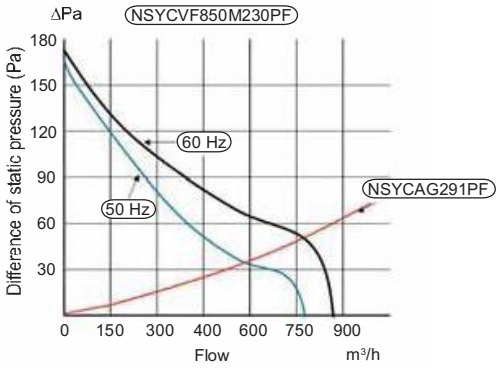
Dimensions

A	B	Reference
225	160.5	**NSYCVF560M230PF** **NSYCVF560M115PF**
280	162	**NSYCVF850M230PF** **NSYCVF850M115PF**



Flow curves





8

Ventilation systems

RAL 7035

Outlet grilles

- Delivered with G2 M1 synthetic standard filter.
- Material: Injected thermoplastic (ASA PC), self-extinguishing according to UL94 V0.

Dimensions (mm)		IP	Reference RAL 7035
Total (external)	Cut-out		
137 × 117 × 13	92 × 92	54	**NSYCAG92LPF**
170 × 150 × 15	125 × 125	54	**NSYCAG125LPF**
268 × 248 × 18	223 × 223	54	**NSYCAG223LPF**
336 × 316 × 18	291 × 291	54	**NSYCAG291LPF**

RAL 7032

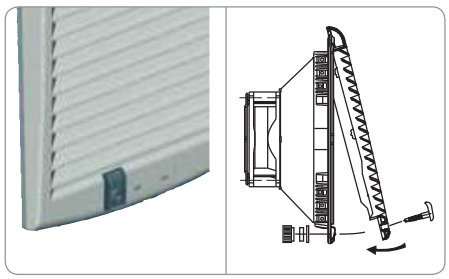
Replacement grilles in RAL 7032

- External part of the grille (for fan or outlet grille) for changing the colour to RAL 7032.

Dimensions (mm) Total (external)	IP	Reference RAL 7032
137 × 117 × 13	54	**NSYCAG92LPC**
170 × 150 × 15	54	**NSYCAG125LPC**
268 × 248 × 18	54	**NSYCAG223LPC**
336 × 316 × 18	54	**NSYCAG291LPC**

Filters

Concept	For fans and grilles		Pack.	Reference
	External dimensions (mm)	Cut-out (mm)		
G2 M1 synthetic standard filters	137 × 117	92 × 92	5	**NSYCAF92**
	170 × 150	125 × 125	5	**NSYCAF125**
	268 × 248	223 × 223	5	**NSYCAF223**
	336 × 316	291 × 291	5	**NSYCAF291**
Filters for greasy environments G2 M1	170 × 150	125 × 125	5	**NSYCAF125O**
	268 × 248	223 × 223	5	**NSYCAF223O**
	336 × 316	291 × 291	5	**NSYCAF291O**
G3 M1 synthetic fine filters	170 × 150	125 × 125	5	**NSYCAF125T**
	268 × 248	223 × 223	5	**NSYCAF223T**
	336 × 316	291 × 291	5	**NSYCAF291T**
Stainless-steel anti-insect filters	137 × 117	92 × 92	1	**NSYCAF92M**
	170 × 150	125 × 125	1	**NSYCAF125M**
	268 × 248	223 × 223	1	**NSYCAF223M**
	336 × 316	291 × 291	1	**NSYCAF291M**



Anti-vandalism kit

- Prevents the grille from being opened from the outside.
- The unlocking thumbwheel is accessed from the inside of the wall-mounting enclosure.
- RAL 7011 colour (same material as the grille: ASA PC).

Minor packaging	Reference
2	**NSYCAAPV**

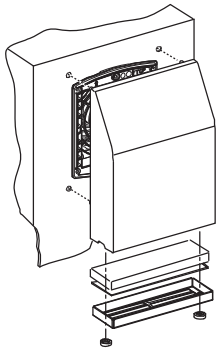
Ventilation systems

Sealing cover IP 55

- This solution protects the fan or the grille from any direct sprays.
- 2 materials available:
  – Aluzinc for RAL 7035 outdoor applications.
  – Stainless steel 304 for food and beverage applications.
- Protection rating: IP 55.
- Resistance to mechanical impacts: IK 10.
- Double insulation maintained if installed in an insulated enclosure.
- UL certification.
- The cover is placed over the fan or the grille with a filter located at the bottom of the cover to prevent the entry of particles.
- Easy access to the filter: only two screws needed.
- When mounting: remove the external part of the fan or the grille as well as the filter.
- The cover is the preferred solution to guarantee the following:
  – An efficient air flow for cooling.
  – And true IP 55 rating.
- It is necessary to order 1 fan + 1 grille + 2 covers to have a complete system.

Flow rate (m^3/h)* with cover		Dimensions (mm)		Cover reference		Spare filter for cover	Fan reference	Grille reference
Free	With 1 outlet grille	External	Cut-out	Aluzinc RAL 7035	Stainless steel 304	Minor pack. 5 p	RAL 7035	RAL 7035
74	53	240 × 180 × 60	125 × 125	**NSYCAP125LZF**	**NSYCAP125LXF**	**NSYCAF125L55**	**NSYCVF85M230PF**	**NSYCAG125LPF**
110	82	350 × 305 × 80	223 × 223	**NSYCAP223LZF**	**NSYCAP223LXF**	**NSYCAF223L55**	**NSYCVF165M230PF**	**NSYCAG223LPF**
165	123	350 × 305 × 80	223 × 223	**NSYCAP223LZF**	**NSYCAP223LXF**	**NSYCAF223L55**	**NSYCVF300M230PF**	**NSYCAG223LPF**
316	265	430 × 373 × 105	291 × 291	**NSYCAP291LZF**	**NSYCAP291LXF**	**NSYCAF291L55**	**NSYCVF560M230PF**	**NSYCAG291LPF**
502	430	430 × 373 × 105	291 × 291	**NSYCAP291LZF**	**NSYCAP291LXF**	**NSYCAF291L55**	**NSYCVF850M230PF**	**NSYCAG291LPF**

*The impact on the flow rates of the fans supplied with the other voltages is similar to those provided by the 230 V fans.



Ventilation systems

IP 54 EMC Fan

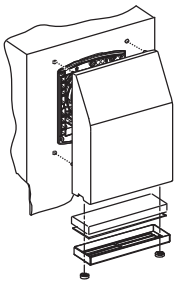
To effectively protect the equipment against electromagnetic disruptions, the EMC fan is equipped with:
- A steel frame covering the plastic elements (self-extinguishing ABS according to standard UL94 V0).
- A metal grille attached to the frame.
- A beryllium gasket guaranteeing conductivity between the perimeter of the fan unit and the enclosure.

Dimensions (mm)		Flow rate (m^3/h)	Voltage (V)	Reference
External	Cut-out			
150 × 150 × 36	125 × 125	56	230	**NSY17990**
250 × 250 × 36	223 × 223	130	230	**NSY17991**
325 × 325 × 36	291 × 291	460	230	**NSY17992**

IP 54 EMC outlet grille

Grille equipped with:
- A steel frame covering the plastic elements (self-extinguishing ABS according to standard UL94 V0).
- A metal grille attached to the frame.
- A beryllium gasket guaranteeing conductivity between the perimeter of the grille and the enclosure.

Dimensions (mm)		Reference
External	Cut-out	
150 × 150 × 36	125 × 125	**NSY17996**
250 × 250 × 36	223 × 223	**NSY17997**
325 × 325 × 36	291 × 291	**NSY17998**



EMC cover IP 55

- This solution guarantees protection against electromagnetic disruptions and guarantees IP 55.
- The EMC cover is installed on the fans or standard IP 54 outlet grilles.
- The cover, made from aluzinc sheet steel, completely covers the fan or outlet grille.
- Conductivity is obtained by means of:
  – A conductive coating (2 Ω).
  – A conductive copper braid.
- Protection degree: IP 55.
- Resistance to mechanical impacts: IK 10.
- RAL 7035 grey.
- Absorption curve according to standard IEEE 299 1997 (UNE 50147-1).

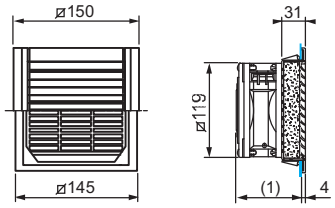
Flow rate (m^3/h)*		Dimensions (mm)		Cover ref.	Spare filter for cover	Fan reference	Grille reference
Free	With 1 outlet grille	External	Cut-out	Aluzinc RAL 7035	Minor pack. 5 p	RAL 7035	RAL 7035
74	53	240 × 180 × 60	125 × 125	**NSYCAP125LE**	**NSYCAF125L55**	**NSYCVF85M230PF**	**NSYCAG125LPF**
110	82	350 × 305 × 80	223 × 223	**NSYCAP223LE**	**NSYCAF223L55**	**NSYCVF165M230PF**	**NSYCAG223LPF**
165	123	350 × 305 × 80	223 × 223	**NSYCAP223LE**	**NSYCAF223L55**	**NSYCVF300M230PF**	**NSYCAG223LPF**
316	265	430 × 373 × 105	291 × 291	**NSYCAP291LE**	**NSYCAF291L55**	**NSYCVF560M230PF**	**NSYCAG291LPF**
502	430	430 × 373 × 105	291 × 291	**NSYCAP291LE**	**NSYCAF291L55**	**NSYCVF850M230PF**	**NSYCAG291LPF**

*The impact on the flow rates of the fans with different voltages is similar to the impact of the 230 V fans.

Ventilation systems

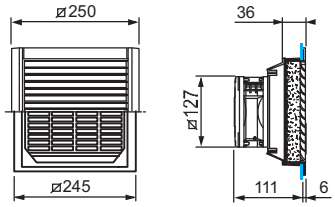
IP 55 EMC dimensions

NSY17990



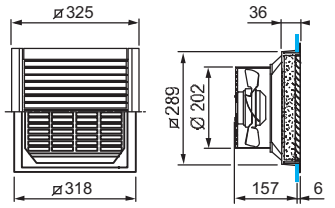
NSY17996

NSY17991



NSY17997

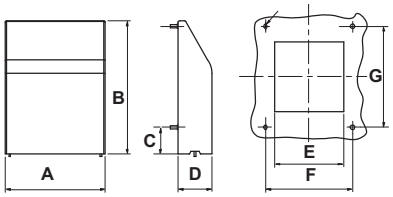
NSY17992



NSY17998

Dimensions of IP 54 and EMC covers

Dimensions (mm)										
A	B	C	D	E	F	G	Nb. of fixing points	Cover reference		
								IP 54		CEM
180	240	49	60	125	157	182	4	NSYCAP125LZF	NSYCAP125LXF	NSYCAP125LE
305	350	61	80	223	283	280	8	NSYCAP223LZF	NSYCAP223LXF	NSYCAP223LE
373	430	73	105	291	351	348	8	NSYCAP291LZF	NSYCAP291LXF	NSYCAP291LE



Ventilation systems
Fans by components

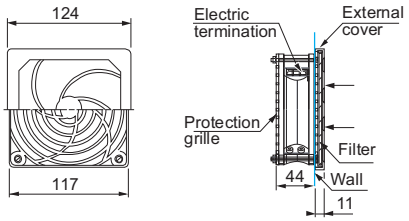
IP 20 fans

- Free flow without filter or grille: 170 m³/h.
- Two models according to the input voltage: 230 and 115 V, 50-60 Hz.
- Accessories: IP 20 outlet grille (ABS, black) and filter (black polyurethane foam).

Voltage (V)	Flow rate (m³/h)	Reference
115	65	**NSYCVF65M115PF**
230	65	**NSYCVF65M230PF**

Accessories

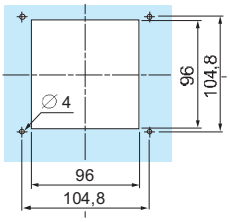
Dimensions (mm)	Description	Reference
124 × 124 × 11 mm	Outlet grille	**NSYCAG108LP**
-	Filter	**NSYCAF108**



IP 33 ventilation kit

- Ventilation kit comprised of:
  – one 120 120 × 120 × 38 mm fan, 230 V-50/60 Hz, free flow rate 170 m³/h, IP 33/IK 10.
  – two 120 × 120 mm metal louvres, RAL 7035.
  – two 115 × 98 mm anti-insect grilles, stainless-steel 304L wire ∅ 0.32 mm braided, 1.07-mm meshes.
  – A power cord.
  – The fixings required for installation.
- Overall flow rate: 54 m³/h.
- Resistance to mechanical impacts: IK 10.

Voltage (V)	Flow rate (m³/h)	Reference
230	54	**NSYCVF54M230MM2**



Top-mounting fan
ref. **NSYCVF575M230MF** / **NSYCVF570M115MF**

Top hood with top fan IP 54

- Fan with hood, for floor-standing enclosures.
- Device delivered with fixings and connection terminal block.
- Electric power: 85 W.
- A flow rate of 350 m³/h is obtained with an outlet grille ref. **NSYCAG291LPF**, (cut-out 291 × 291 mm).
- Noise level: 64 dB (A).
- Installation and removal from the outside.

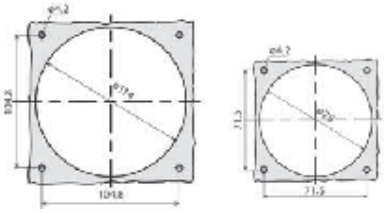
Flow rate* (m³/h)	Voltage (V)	Weight (kg)	Reference
570	115	5.8	**NSYCVF570M115MF**
575	230	5.8	**NSYCVF575M230MF**

* Flow rate measured without counter-pressure.

Ventilation systems
Fans by components

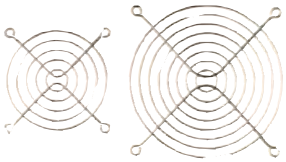
Fan motor

- Turbine-type fan motor for ventilation/extraction.



Outlet grilles

- Outlet filter kit for enclosure ventilation. For coupling to fans **NSYCVF156M●●●** and **NSYCVF35M●●●**.



Rear protective grille

- Protective grille for enclosure fan motor. For coupling to fans **NSYCVF156M●●●** and **NSYCVF35M●●●**.

Fan connection cable

- For coupling to the connection terminal of the fan motors.

Reference
NSYCVAC100

Fan motor reference	Flow rate (m^3/h)	Voltage (V)	Absorbed power (W)	Noise level (dB)	External dimensions (mm)	Outlet grille reference	Protective grille reference
NSYCVF156M230	156	230/50-60	17/15	42	120 × 120 × 38	**NSYCAG114LPF**	**NSYCVA114M**
NSYCVF156M115	156	120/50-60	17/15	42	120 × 120 × 38	**NSYCAG114LPF**	**NSYCVA114M**
NSYCVF35M230	35	230/50-60	16/14	32	80 × 80 × 25	**NSYCAG78LPF**	**NSYCVA78M**
NSYCVF35M115	35	120/50-60	16/14	32	80 × 80 × 25	**NSYCAG78LPF**	**NSYCVA78M**

Ventilation systems
Circulating

Circulation fan

- User protection according to DIN 31001.
- Power: 17 W.
- Dimensions:

– Fan: 119 × 119 × 38 mm.
– Collar: length: 140 mm; fixing centre-to-centre distance: 130 mm.

- Installation on ball-bearing.

Flow rate (1) (m³/h)	Voltage (V)	Weight (kg)	dB (A)	Reference
170	230	0.82	41	**NSYCVF170M115**
170	115	0.82	41	**NSYCVF170M230**

(1) Free flow.

Tangential fan, 19" 2 U

- Air is sucked in from the front, filtered and forced vertically through the equipment.
- Voltage: 230 V/50-60 Hz.
- Electric power: 37 W.
- Delivered without connection cord.

Flow rate (1) (m³/h)	Voltage (V)	Reference
300	230	**NSYAVG2U300**

(1) Flow rate measured without counter-pressure.

Circulation fan, 19" 1 U

- Increases the speed of upward air circulation, in particular between trays with cards.
- Frontal operation LED.
- Delivered without connection cord.
- It is advisable to install slides, ref. **NSYGB140** to guarantee optimal support of the fan.

Flow rate (1) (m³/h)	Voltage (V)	No.	Weight (kg)	Reference
486	230	3	3.3	**NSYAVD1U480**
972	230	6	5.5	**NSYAVD1U970**
1458	230	9	7.8	**NSYAVD1U1450**
552	48 (2)	3	3.3	**NSYAVD1U550M48**

(1) Flow rate measured without counter-pressure.
(2) Direct current.

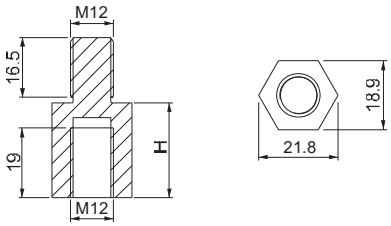
P (W)	I (mA)	dB (A)	Depth (mm)	Reference
45	300	43	208	**NSYAVD1U480**
90	600	44	330	**NSYAVD1U970**
135	900	45	452	**NSYAVD1U1450**
21.3	330	43	208	**NSYAVD1U550M48**

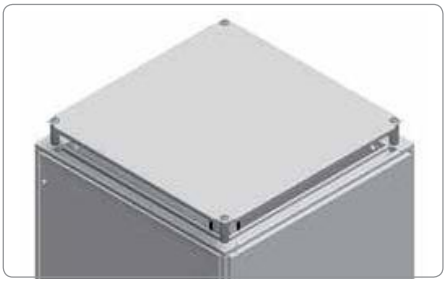
Ventilation systems
Natural airing

Roof elevators

- Allow the roof to be raised, providing natural airing.
- They are screwed onto the structure, at the roof fixing point.
- Material: zinc-coated steel.
- Supply: 4 elevators.

Top elevation (mm) (H)	Reference
26	**NSYRE26**
60	**NSYRE60**

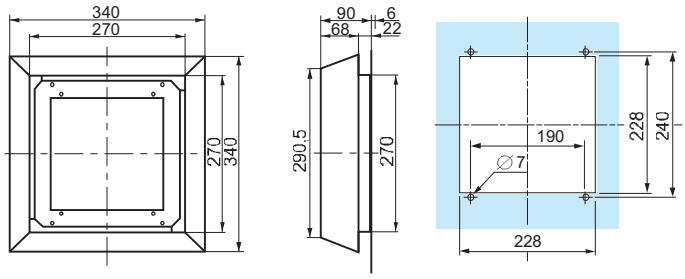




Hood for natural airing, IP 54

- Natural airing device for coupling to the top of metal floor-standing enclosures.
- Solution for combining with the ventilation slots.
- Fixing to the top by means of caged nuts and special screws.
- Material: steel.
- Finish: painted with epoxy-polyester resin, textured RAL 7035 grey.
- Protection rating: IP 54.
- Weight: 4.6 kg.
- Supply: one hood for natural airing and fixing elements.

Reference
NSYCAC228RMF



Spare filter

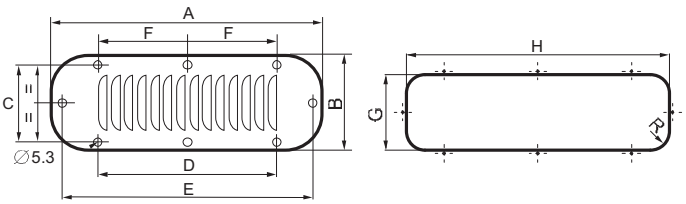
Reference
NSYCAF228R

8

Ventilation systems
Natural airing

Metal louvre plate, rectangular

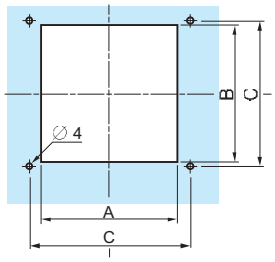
- Louvres designed to be installed on the sides of the enclosure.
- Fixing by screws.
- Material: steel.
- Finish: painted with epoxy-polyester resin, textured RAL 7035 grey.
- Supply: one metal louvre and fixing elements.
- Protection rating: IP 20.



Dimensions (mm)									Reference
A	B	C	D	E	F	G	H	R	
144	62	36	110	-	-	110	46	10	**NSYCAG110X46M**
208	90	72	94	190	-	180	62	18	**NSYCAG180X62M**
244	90	72	130	226	-	216	62	18	**NSYCAG216X62M**
345	118	100	231	327	115.5	317	90.5	30	**NSYCAG317X91M**
345	148	130	231	327	115.5	317	120	30	**NSYCAG317X120M**
445	148	130	267	427	148.5	417	120	30	**NSYCAG417X120M**

Metal louvre plate, square

- Supply: one metal louvre.
- Protection rating: IP 23.



Dimensions (mm)	A	B	C	Slot width	No. of slots	Reference
120 × 120	95	104	104.8	90	5	**NSYCAG104X95LM**
160 × 160	110	130	140	100	5	**NSYCAG130X110LM**
220 × 220	190	170	200	180	5	**NSYCAG170X190LM**

Anti-insect filters for metal louvre plate, square

- Installation is made between the enclosure and the metal louvre.
- Material: Stainless steel 304L ∅ 0.32 mm wire mesh, of 1.07 mm, thickness 0.6 mm.
- Increases protection rating to IP 33.
- Weight: 0.8 kg/m².
- Supply: one anti-insect filter.

Louvre plate reference	External dimensions (mm)	Filter reference
NSYCAG104X95LM	98 × 115	**NSYCAF104X95X**
NSYCAG130X110LM	133 × 158	**NSYCAF130X110X**
NSYCAG170X190LM	197 × 215	**NSYCAF170X190X**

Ventilation systems
Natural airing

NSYCAG45LP

NSYCAG33LP

NSYCAG35LP

NSYCAG19LP

NSYCAG38LP

NSYCAG12LPH●

Plastic ventilation louvres

- Four models available according to IP rating, in vertical position.
- Supply: 2 plastic ventilation louvres.

cut-out ∅	IP	Reference
45.5 mm	22	**NSYCAG45LP**
35 mm	30/44 (1)	**NSYCAG35LP**
38 mm	45	**NSYCAG38LP**
33 mm	44	**NSYCAG33LP**
19 mm	45	**NSYCAG19LP**

(1) According to installation in the Thalassa enclosure.

Sealed anti-condensation valve

- Controls the pressure to avoid condensation following an internal temperature increase.
- Maintains IP 68.
- Material: PA6-V2, acrylic co-polymer membrane, water and oil repellent.
- Temperature of use: –40…+105 °C.

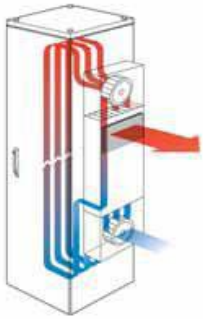
Cut-out ∅	Permeability (1)	Pressure difference (2)	Minor pack.	Reference
M12	16 litres/h	ΔP < 1 bar	10	**NSYCAG12LPH1**
M12	120 litres/h	ΔP < 0.1 bar	10	**NSYCAG12LPH2**

(1) Air flow under ΔP = 0.07 bar.
(2) Condition for IP 68.

Applications

- Protection of equipment for lighting, industrial control, rolling systems, pumps, etc.

Air-air exchanger
Introduction

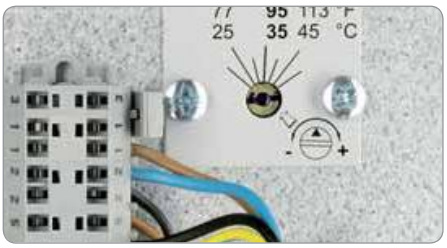


Complete range of solutions, meeting all requirements

- Available in two installation versions: top-mounting model or side-mounting model.
- Power from 15 W/ºK to 70 W/ºK .

Easy maintenance of the exchange cassette

- Easy access to the inside of the ventilation system allowing easier cleaning and maintenance.
- The special configuration of the exchange cassette makes it easier to clean. The space between the slats allows access to the inside aluminium walls for easy maintenance.



Built-in thermostat

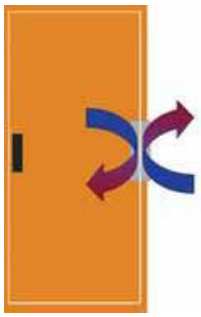
The exchangers are equipped as standard with an adjustable thermostat which controls the temperature inside the enclosure and which:

- Avoids the need to install an auxiliary thermostat.
- Guarantees the correct reading of the temperature inside the enclosure.

Temperature control range: +20...+50 ºC.

Without the need of filter

The air-air exchangers do not need to use any filters; they therefore require very little maintenance.



Guaranteed sealing

The internal and external air circuits are independent. The assembly guarantees IP 54.

Two fans guarantee air circulation in each one of the circuits:

- Internal circuit fan:
  It operates permanently and guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- External circuit fan:
  The internal thermostat controls the fan of the external circuit and starts it up when the internal temperature exceeds the maximum value displayed.

Air-air exchanger
Applications

Air circuits separation for very harsh environments

The specific configuration of the air-air exchangers is the ideal solution for cooling electric enclosures installed in highly polluted environments.
It is advisable to use this type of device in cases where the ambient temperature is at least 5 °C lower than the desired internal temperature.
The exchanger is specially recommended in cases in which:
- The internal and external air circuits must be independent.
- The air inlet filters can be blocked by a large concentration of dust or greasy material in suspension.

Solution

The air-air exchanger is the ideal solution for cooling the inside of floor-standing enclosures installed in the following environments:
- Cement works.
- Ceramic factories.
- Workshops.
- Wastewater treatment plants.

Installation tips

- Make the cut-outs in accordance with the indications of the cut-out template enclosed with the device.
- Make sure the devices are not damaged by external impacts.
- Do not install any cable ducts or devices against the opening of the enclosure since the air flow, and therefore the performance of the exchanger, could be affected.
- Do not obstruct, even partially, the air inlets and outlets. A minimum distance of 40 cm must be left between these openings and a wall or a partition.
- Install the side-mounting exchanger as high as possible to aspirate hot air and improve circulation.

Air-air exchanger
Selection guide

Dimensions (mm)			Performance	Voltage	Assembly	Built-in thermostat	Reference
Height	Width	Depth					
700	270	144	15 W/°K	230 V/50 Hz-60 Hz	Side	Yes	**NSYCEA15W230VL**
780	325	144	35 W/°K	230 V/50 Hz-60 Hz	Side	Yes	**NSYCEA35W230VL**
780	325	144	35 W/°K	230 V/50 Hz-60 Hz	Side	No	**NSYCEA35W230VLE**
1480	450	144	70 W/°K	230 V/50 Hz-60 Hz	Side	Yes	**NSYCEA70W230VL**
340	600	360	50 W/°K	230 V/50 Hz-60 Hz	Top	Yes	**NSYCEA50W230VRE**

Air-air exchanger
Side-mounting models

General characteristics

- Main components: thermostatic adjustment system, exchange cassette, circulation fans for internal and external circuits.
- The desired temperature inside the enclosure can be adjusted over a range of +25 ... +50 °C.
- The internal and external air circuits are completely separated (IP 54). Two fans guarantee air circulation in each of these circuits. The one on the internal circuit (which circulates the air inside the enclosure) is permanently on to avoid the appearance of hot spots in the electric circuits or components.
- The devices are delivered with a cut-out template, an instruction sheet and a sealing gasket to be placed between the exchanger and the enclosure.
- RAL 7035 grey.
- Voltages on demand with 400 V AC, three phase or single phase.

Conditions of use

- The exchangers can only be used if the outside temperature is at least 5 ºC lower than the desired temperature inside the enclosure.
- The enclosure must be sealed to prevent the entry of external air: at least IP 54.

	Reference			
	NSYCEA15W230VL	NSYCEA35W230VL	NSYCEA35W230VLE	NSYCEA70W230VL
Cooling characteristics				
Specific power (1)	15 W/°K	35 W/°K	35 W/°K	70 W/°K
Air flow of the external circuit	200 m^3/h	450 m^3/h	450 m^3/h	450 m^3/h
Air flow of the internal circuit	200 m^3/h	450 m^3/h	450 m^3/h	450 m^3/h
Exchange surface	1.23 m^2	1.5 m^2	1.5 m^2	6.6 m^2
Adjustment	Yes	Yes	No	Yes
Type	Thermostatic	Thermostatic	-	Thermostatic
Temperature setting range	+25...+50 °C	+25...+50 °C	-	+25...+50 °C
Nature of the fluid	Air	Air	Air	Air
Electric characteristics				
Input voltage	230 V - 50/60 Hz	230 V - 50/60 Hz	230 V - 50/60 Hz	230 V - 50/60 Hz
Starting/rated current	2.1/0.7 A	2.1/0.7 A	2.1/0.7 A	2.1/0.7 A
Electrical energy absorbed	150 W	150 W	150 W	150 W
Physical characteristics				
External dimensions A × B × C (mm)	700 × 270 × 144	780 × 325 × 144	780 × 325 × 144	1480 × 450 × 144
Internal IP / external IP	IP 54/IP 22	IP 54/IP 22	IP 54/IP 22	IP 54/IP 22
Weight of unit	12 kg	15 kg	15 kg	35 kg
Noise level	64 dB	64 dB	64 dB	64 dB

(1) The power in watts is obtained by multiplying the specific power by the difference between inside temperature and outside temperature.
Example: for exchanger ref. **NSYCEA35W230VL** with Δ °C = 10º, the system power is 35 × 10 = 350 W.

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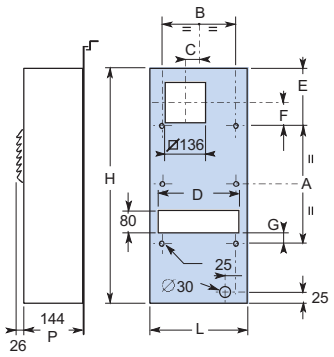
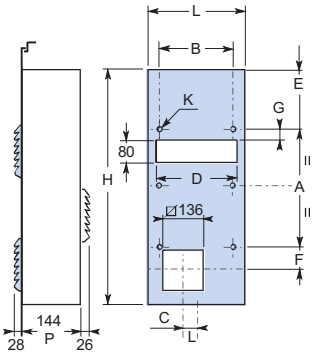
Air-air exchanger
Side-mounting models

External mounting



Internal mounting



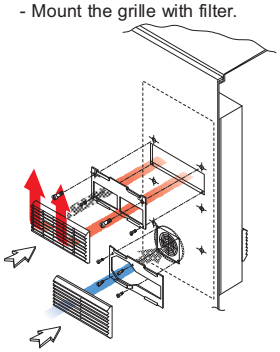
Dimensions in mm	NSYCEA15W230VL	NSYCEA35W230●●●	NSYCEA70W230VL
A	366	413	1113
B	226	266	393
C	40	52	115
D	220	294	420
E	167	183.5	183.5
F	82	77.5	77.5
G	13	35.5	35.5
H	700	780	1480
K	4 × 8 ∅	4 × 8 ∅	6 × 8 ∅
L	270	325	450

Accessories for internal mounting of the exchanger

- Installation principle of the filter-holder grilles when installing a side-mounting exchanger inside the enclosure.
- Filter ref. **NSYCEAF**.
- To be ordered in multiples of 24 filters.

For exchanger	Grille reference
NSYCEA15W230VL	NSYCEA15WG
NSYCEA35W230●●●	NSYCEA35WG
NSYCEA70W230VL	NSYCEA70WG

- Tips for installing the exchanger on the inside:
  - Place the top of the exchanger at the bottom and then turn it upside down. See diagram.
  - Change the thermostat connection.
  - Mount the grille with filter.



Installation (internal mounting)

Air-air exchanger
Top-mounting model

NSYCEA50W230VRE

General characteristics

- Main components: thermostatic adjustment system, exchange cassette, circulation fans for internal and external circuits.
- The desired temperature inside the enclosure can be adjusted over a range of +25 ...+50 °C.
- The internal and external air circuits are completely separated (IP 54). Two fans guarantee air circulation in each of these circuits. The one on the internal circuit (which circulates the air inside the enclosure) is permanently on to avoid the appearance of hot spots in the electric circuits or components.
- The devices are delivered with a cut-out template, an instruction sheet and a sealing gasket to be placed between the exchanger and the enclosure.
- RAL 7035 grey.
- Voltages on demand with 400 V AC, three phase or single phase.

Conditions of use

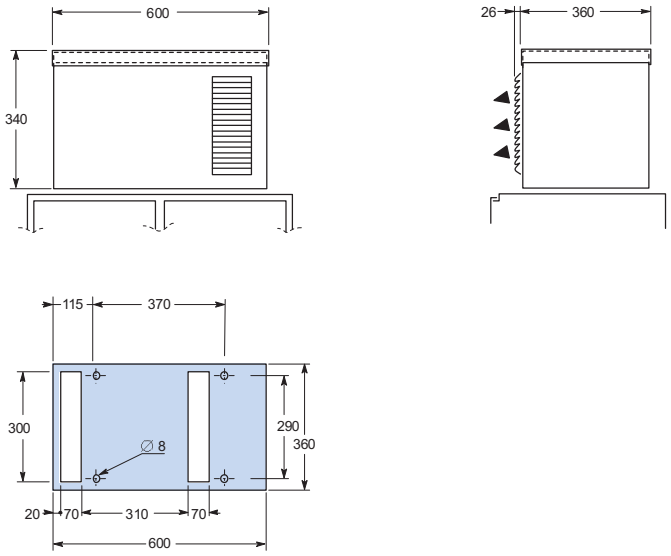
- The exchangers can only be used if the outside temperature is at least 5 °C lower than the desired temperature inside the enclosure.
- The enclosure must be sealed to prevent the entry of external air.

Reference	NSYCEA50W230VRE
Cooling characteristics	
Specific power (1)	50 W/°K
Air flow of the external circuit	450 m^3/h
Air flow of the internal circuit	450 m^3/h
Exchange surface	3.3 m^2
Adjustment	Yes
Type	Thermostatic
Temperature setting range	+20...+50 °C
Nature of the fluid	Air
Electric characteristics	
Input voltage	230 V - 50/60 Hz
Starting/rated current	2.1/0.7 A
Electrical energy absorbed	150 W
Physical characteristics	
External dimensions A × B × C (mm)	390 × 600 × 365
Internal IP / external IP	IP 54/IP 22
Weight of unit	19 kg
Noise level	64 dB

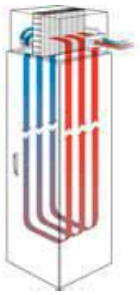
(1) The power in watts is obtained by multiplying the specific power by the difference between inside temperature and outside temperature.

Air-air exchanger
Dimensions

Top-mounting model



Air-water exchanger
Introduction



Side-mounting or top-mounting model.

Available in two installation versions: top-mounting model or side-mounting model.

Easy maintenance

Easy and practical installation and removal. Easy access to the exchange battery allows for easier cleaning.
The principle of the air-water exchanger does not require inlet filters, thus reducing maintenance.

Internal temperature control

The exchangers are equipped as standard with an adjustment thermostat that controls the temperature inside the enclosure. It avoids the need to install an auxiliary control thermostat and guarantees a precise reading of the temperature inside the enclosure.
Temperature control range: +20...+50 ºC.

Guaranteed sealing

- Guaranteed protection rating: IP 54.
- The fan runs permanently to maintain an even temperature inside the enclosure and prevent the appearance of hot spots.

ANTI-LEAK system

Maximum safety

- The thermostat controls the water inlet electro-valve and regulates the temperature. The risk of condensation is therefore very low.
- In cases of a loss in the circuit, the detection system automatically closes the water inlet.

Air-water exchanger
Applications

- Minimum maintenance in very difficult environments.
- The air-water exchanger is recommended even when the ambient temperature is higher than the desired internal temperature.
- It is particularly suitable for highly polluted environments since it fully prevents the entrance of outside air.
- The heat produced by the components is evacuated to the outside of the workshop.

Examples: printing presses, paper plants, chemical factories, etc.

Installation tips

- Make the cut-outs in accordance with the indications of the cut-out template delivered with the device.
- Make sure the devices are not damaged by external impacts.
- Do not install any cable ducts or devices against the openings of the enclosure since the air flow, and therefore the performance of the exchanger, would be reduced.
- Interrupt the operation of the exchanger when the door of the enclosure is open.
- Make sure there is a water source near the electric enclosure with stable temperature and flow rate (cold-water supply and evacuation of reheated water).

Air-water exchanger
Selection guide

Dimensions (mm)			Cooling power L 35/W 10/200 W	Voltage	Assembly	Reference
Height	Width	Depth				
830	360	113	2100 W	230 V/50 Hz-60 Hz	Side	**NSYCEW2100W230VL**
950	400	190	3150 W	230 V/50 Hz-60 Hz	Side	**NSYCEW3150W230VL**
310	600	365	2100 W	230 V/50 Hz-60 Hz	Top	**NSYCEW2100W230VR**

Air-water exchanger
Side and top-mounting models

General characteristics

- Main components: thermostatic adjustment system, exchange cassette, fans for the internal circuit of the enclosure, safety device against possible leaks.
- The desired temperature inside the enclosure can be adjusted over a range of +25...+50 °C.
- The alarm which detects an interruption in the water circuit is activated by closing a switch. This can be used to activate a light or a siren, connected to the input of an automation device. The water supply is automatically cut.
- System for evacuating condensation water to the outside.
- RAL 7035 grey.

Conditions of use

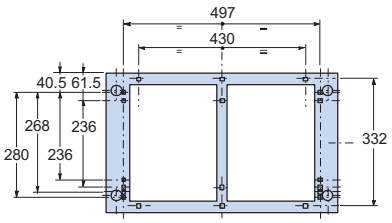
- Air-water exchangers can be used even when the outside temperature is higher than the desired temperature inside the enclosure.
- The enclosure must be sealed to prevent the entry of external air: at least IP 54.

	Reference		
	NSYCEW2100W230VR (top)	NSYCEW2100W230VL (side)	NSYCEW3150W230VL (side)
Cooling characteristics			
Specific power A 35 W 10-200 l/h	2100 W	2100 W	3150 W
Maximum water pressure	1 MPa	1 MPa	1 MPa
Air flow of the external circuit	250 m^3/h	350 m^3/h	820 m^3/h
Adjustment	Yes	Yes	Yes
Type	Thermostatic	Thermostatic	Thermostatic
Temperature setting range	+25...+50 °C	+25...+50 °C	+8...+50 °C
Nature of the fluid	Water	Water	Water
Electric characteristics			
Input voltage	230 V - 50/60 Hz	230 V - 50/60 Hz	230 V - 50/60 Hz
Starting/rated current	1/0.5 A	1/0.5 A	1.3/1.7 A
Electrical energy absorbed	90 W	90 W	295 W/385 W
Type of switching alarm	Inverter contact	Inverter contact	Inverter contact
Physical characteristics			
External dimensions A x B x C (mm)	310 × 600 × 365	830 × 360 × 113	950 × 400 × 190
IP-DIN 40050	IP 54	IP 54	IP 55
Weight of unit	26 kg	19 kg	21 kg
Noise level	64 dB (A)	62 dB (A)	54 dB (A)

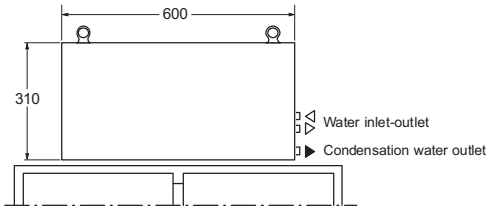
Air-water exchanger
Dimensions

Top-mounting model

Supplies:
- Cut-out template.
- Mounting accessories.
- Installation and operation instructions.

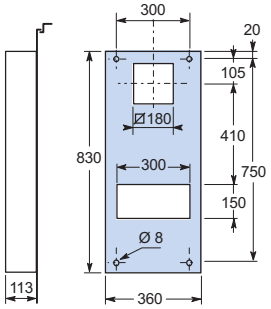


Front view of the enclosure



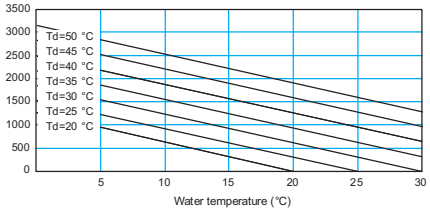
Side-mounting model

Supplies:
- Cut-out template.
- Mounting accessories.
- Installation and operation instructions.
- Installation inside or outside the enclosure.

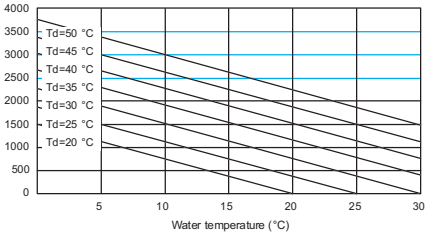


Curves

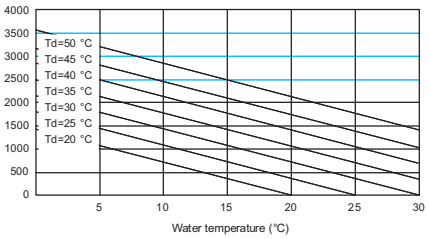
Power exchanged by the exchangers for a water flow of 100 l/h.



Power exchanged by the exchangers for a water flow of 300 l/h.



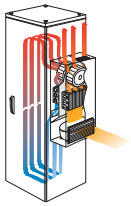
Power exchanged by the exchangers for a water flow of 200 l/h.



Example: For a water flow of 100 l/h at 15 °C with a desired temperature of 35 °C.
Power = 1400 W.

8

Cooling unit with mechanical control
Introduction



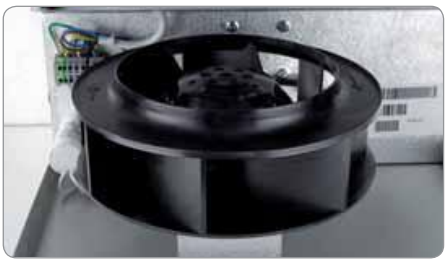
Complete range of solutions, meeting all requirements

- Available in two installation versions: top/side mounting or partial flush model.
- The power of the cooling units with mechanical control ranges from 240 W to 4000 W. This means you will find the equipment that best meets your needs.
- Easy and practical installation and removal.

55 °C

Withstands extreme environments

- Equipped with high-pressure compressors, the cooling units guarantee an optimum operation with temperatures of up to 55 °C.



Guaranteed sealing

The internal and external air circuits are completely separated and maintain the protecting rating of IP 54.
Two fans guarantee air circulation in each one of the circuits:

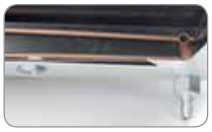
- **Fan on the internal circuit**
  It operates permanently and guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure. In addition, it provides a correct reading of the temperature inside the enclosure thanks to the thermostat setting.
- **Fan on the external circuit**
  The internal thermostat controls the fan and starts it up when the internal temperature exceeds the maximum value displayed.

Very high efficiency: The best is in the inside

The internal components have been chosen for maximum efficiency and performance.

Built-in thermostat

The cooling units are equipped with an adjustable thermostat which controls the temperature inside the enclosure:
- It avoids the installation of an auxiliary control thermostat.
- It guarantees the exact reading of the temperature inside the enclosure. Temperature control range: +20...+50 ºC (pre-set and recommended temperature of 35 ºC).



Automatic evaporation system (top mounting)

- The top-mounting models are additionally equipped with a device for evaporating and controlling the condensation water level which causes the machine to halt or triggers the alarm if the level is exceeded.
- They also have an exclusive evacuation system for draining the water stored in the condensation tray.

Maximum safety

- They are equipped as standard with an automatically reset pressostat, which, when it detects a value greater than the safe pressure value, stops the compressor and the external fan.
- In the event of a breakdown, a relay triggers an alarm and halts the operation of the cooling unit.

Easy maintenance

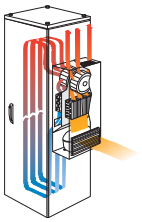
- Easy access to the condenser allows easier cleaning by blowing.
- The high-pressure compressor and the external fan can be maintained without removing the unit.

ENVIRONMENTALLY FRIENDLY

Environmentally friendly

- Respect for the environment.
- Use of ecological gas R134a (HFC).

Cooling unit with electronic control
Introduction



Complete range of solutions, meeting all requirements

- Available in two installation versions: top-mounting model or side-mounting model.
- The power of the cooling units with electronic control ranges from 1100 W to 1800 W (the SLIM range offers powers of 1100 W to 2700 W).
  This means you will find the equipment that best meets your needs.

Easy installation

Easy and practical installation and removal

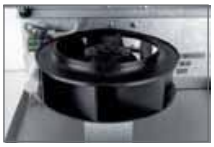
The side-mounting models have an exclusive quick-installation system:
- Two retractable handles allow them to be installed instantly by a single person.
- The quick-fixing device with no screws simplifies the installation on the enclosure and guarantees a protection rating of IP 54.
- The electrical connection is made by means of the supplied removable connectors.

A single cut-out dimension

One single machining size, regardless of the power of the side-mounting cooling unit.

Easy maintenance

Easy access to the inside of the device allows easier cleaning and maintenance. Thanks to its design, no filter needs to be used in most applications. Nevertheless, in especially polluted environments, it is advisable to install a filter on the external air circuit.
The design of the aluminium slats of the condenser allow for easier, less-frequent maintenance.



Guaranteed sealing

The internal and external air circuits are completely separated and maintain the enclosure's protection rating of IP 54.
Two fans guarantee air circulation inside each of the circuits:
- **Fan on the internal circuit**
  It operates permanently and guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- **Fan on the external circuit**
  The internal thermostat controls the fan and starts it up when the internal temperature exceeds the maximum value displayed.

Electronic temperature control

Electronic control allows:
- Precise control of the temperature setting:
– Switches on the compressor with setting temperature +1 °C.
– Switches off the compressor with setting temperature -5 °C.
- Door switch management,
- Alarm management,
- Alarm reset,
- Control of the operating and stand-by times of the compressor.

Automatic evaporation system

All the models are equipped with a system for automatically evaporating condensation.

Environmentally friendly

- Respect for the environment.
- Use of ecological gas R134a (HFC).

ENVIRONMENTALLY FRIENDLY

8

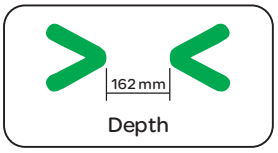
Cooling unit
SLIM electronic control

SLIM for perfect integration

1 bloc:
- 4 power levels
- 3 voltage levels

1 cover:
- Flush
- Partial-flush
- Surface

66 models, from 1100 to 2700 W, 115 to 460 V, flush mounting, partial-flush mounting or surface mounting, with or without electronic display, IP 55, UL compliant.



Minimum depth

All the models of the SLIM range have a depth of 162 mm to maximise the volume inside the enclosure.

Modular system

- There are 66 possible combinations with only 17 catalogue references.
- Three different installation types are possible with the same air-conditioning unit (surface, partial flush and flush).

Power ranges

1100 W, 1500 W, 2200 W and 2700 W.

Versions

- RAL 7035 and stainless steel.
- Option to provide other colours on demand.

Internal IP 55

The SLIM range is supplied as standard with an expanded polyurethane gasket, ensuring optimum sealing with IP 55 throughout the enclosure.

UL/UR certification

UL certification awarded for the entire SLIM range.

The best is inside

The best material has been selected to offer maximum reliability and durability. The compressors, and the fans as well as the rest of the components are top quality.

Electronic regulation as standard

- Programmed to control the enclosure temperature of 35 ºC. This temperature should be enough to protect the electrical and electronic equipment installed in the enclosure.
- Supplied with an electronic thermostat to provide greater reliability and precision for the cooling unit.
- Electronic display as option for reading and controlling the temperature setting, ref. **NSYCUAY**.

55 ºC

High resistance to outside ambient temperatures of up to 55 ºC

The high-quality compressors used allow work to be performed in areas with extreme temperatures of up to 55 ºC.

ENVIRONMENTALLY FRIENDLY

Cooling fluid used: R134a (HFC)

This is a gas that respects the ozone layer.

Easy opening and closing of the covers

The cover of the cooling unit is released by simply unscrewing two screws. This saves time and facilitates maintenance tasks.

Easy maintenance

- Internal details such as the space between the aluminium plates enable easier access during the cleaning process.
- The inside can be accessed by removing only two screws.

Cooling unit
Selection guide

Side-mounting models

External dimensions (mm)	Cooling power EN 14511 L35 - L35 (50 Hz)	Input voltage Vol-Hz	Control	Reference
450 × 350 × 140	240 W (819 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU240W230VL**
620 × 300 × 170	370 W (1263 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU370W230VL**
800 × 350 × 195	760 W (2594 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU760W230VL**
900 × 400 × 195	1050 W (3584 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU1050W230VL**
1010 × 400 × 240	1100 W (3755 Btu/h)	230 V - 50/60 Hz	Electronic controller	**NSYCUE1100W230L**
1010 × 400 × 240	1400 W (4780 Btu/h)	230 V - 50/60 Hz	Electronic controller	**NSYCUE1400W230L**
1010 × 400 × 240	1400 W (4780 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Electronic controller	**NSYCUE1400W400L**
1000 × 400 × 220	1650 W (5631 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU1650W230VL**
1000 × 400 × 220	1800 W (6143 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU1800W400VL**
1010 × 400 × 240	1800 W (6145 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Electronic controller	**NSYCUE1800W400L**
1406 × 502 × 300	2500 W (8533 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU2500W400VL**
1406 × 502 × 300	4000 W (13652 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU4000W400VL**

Cooling unit
Selection guide

Top-mounting models

External dimensions (mm)	Cooling power EN 14511 L35 - L35 (50 Hz)	Input voltage Vol-Hz	Control	Reference
340 × 600 × 350	760 W (2594 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU760W230VR**
400 × 700 × 400	1050 W (3584 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU1050W230VR**
415 × 750 × 412	1400 W (4780 Btu/h)	230 V - 50/60 Hz	Electronic controller	**NSYCUE1400W230R**
400 × 700 × 400	1460 W (4983 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU1460W230VR**
430 × 700 × 400	1650 W (5631 Btu/h)	230 V - 50/60 Hz	Thermostat	**NSYCU1650W230VR**
415 × 750 × 412	1800 W (6145 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Electronic controller	**NSYCUE1800W400R**
430 × 700 × 400	2000 W (6826 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU2000W400VR**
470 × 800 × 450	2450 W (8362 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU2450W400VR**
470 × 800 × 450	3100 W (10580 Btu/h)	3 × 400 V 50 Hz / 440 V 60 Hz	Thermostat	**NSYCU3100W400VR**

SLIM electronic control models (modular)

- Flush mounting.
- Partial-flush mounting.
- Surface mounting.

	Power	1,100 W	1,500 W	2,200 W	2,700 W
Cooling unit block	230 V	**NSYCUB1100W230S**	**NSYCUB1500W230S**	**NSYCUB2200W230S**	**NSYCUB2700W230S**
	400-460 V (50-60 Hz)	**NSYCUB1100W400S**	**NSYCUB1500W400S**	**NSYCUB2200W400S**	**NSYCUB2700W400S**
	115 V	**NSYCUB1100W115S**	**NSYCUB1500W115S**	**NSYCUB2200W115S**	

Covers	Side-mounting type	
RAL 7035	Surface-mounting	**NSYCUCL**
	Partial flush-mounting	**NSYCUCH**
	Flush-mounting	**NSYCUCF**
Stainless-steel	Surface-mounting	**NSYCUCLX**
	Partial flush-mounting	**NSYCUCHX**
	Flush-mounting	**NSYCUCFX**

Modular version: Always order one SLIM cooling unit reference plus one cover reference.

Cooling unit
Mechanical control

NSYCU760W230VL

Side-mounting

Cooling units for electrical switchboards

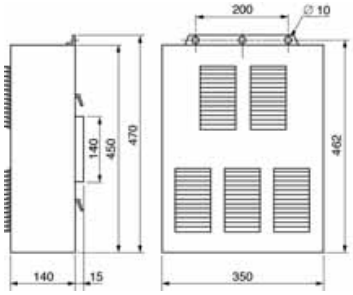
- Respect for the environment by using environmentally friendly gas R134a (HFC).
- Cooling power from 240 W to 4000 W.
- Option of partial-flush mounting for certain models.

General characteristics

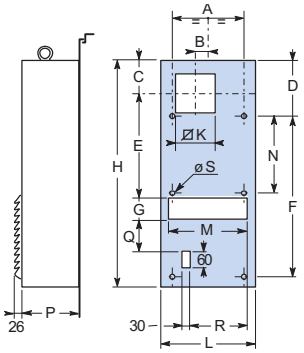
- The temperature setting can be adjusted from +20 to +50 °C.
- They are equipped as standard with an automatically reset pressure gauge and a switching thermostat which, when it detects a value greater than the safe pressure value, interrupts the compressor and the external fan.
- The internal and external air circuits are independent. A protection rating of IP 54 is guaranteed between the outside and the inside of the enclosure.
- The fan of the internal circuit permanently guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- The devices are equipped with switches for reporting an alarm.
- Cooling power from 240 W to 4000 W.
- RAL 7035 colour for the standard offer.
- Units in RAL 7032 as option, please contact us.
- Stainless-steel version and other voltages on demand.

Reference	NSYCU240W230VL	NSYCU370W230VL	NSYCU760W230VL
Voltage	230 V, 50/60 Hz		
Cooling power (50/60 Hz) according to EN 14511 L35-L35 L35-L50	 240 W (819 Btu/h) 190 W (649 Btu/h)	 370/390 W (1,263/1,331 Btu/h) 300/310 W (1,024/1,058 Btu/h)	 760/810 W (2,594/2,765 Btu/h) 610/640 W (2,082/2,184 Btu/h)
Dimensions Height Width Depth	 450 mm 350 mm 140 mm + (15 mm internal)	 620 mm 300 mm 170 mm	 800 mm 350 mm 195 mm
Intensity Starting current Rated current	 2.8 A 0.7 A	 5.8/6.7 A 1.5/1.8 A	 7.7/8.8 A 2.0/2.3 A
Power consumption absorbed L35-L35 L35-L50	 140 W 160 W	 290/330 W 330/380 W	 380/440 W 440/500W
Energy efficiency ratio (EER) L35-L35	 1.7	 1.3/1.2	 2.0/1.8
Control type	Thermostat		
Temperature setting range	+20...+45 °C	+20...+50 °C	
Maximum outside temperature	50 °C	55 °C	
Noise level	58 dB (A)	65 dB (A)	67 dB (A)
Air flow of the internal circuit of the external circuit	 160 m^3/h 320 m^3/h	 160/175 m^3/h 210/230 m^3/h	 350/385 m^3/h 350/385 m^3/h
Alarm type	Inverter contact		
Weight of unit	15 kg	21 kg	33 kg
Cooling gas type	R134a (0.25 kg)	R134a (0.3 kg)	R134a (0.5 kg)
IP (IEC 60529) On the internal circuit On the external circuit	 	 54 34	
External circuit filter	Option	Yes	
Assembly	Side		
Thermal protection recommended (fuse melt curve)	T1.6A	T3A	T3A

Cooling unit
Mechanical control

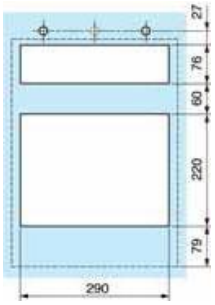


Reference **NSYCU240W230VL**

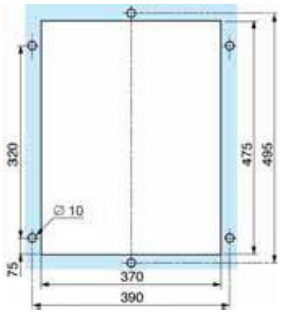


Reference **NSYCU370W230VL** and **NSYCU760W230VL**

NSYCU240W230VL: dimensions and cut-outs



External mounting



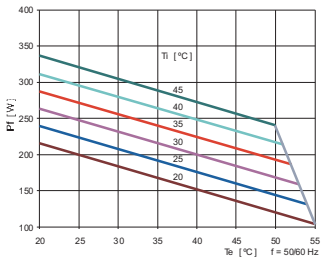
Partial-flush mounting

NSYCU370W230VL and NSYCU760W230VL: cut-out

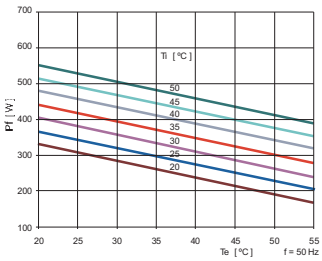
Dimensions in mm	NSYCU370W230VL	NSYCU760W230VL
A	260	266
B	0	52
C	80	116
D	40	193.5
E	300	375
F	540	413
G	60	80
H	620	800
K	136	136
L	300	350
M	240	294
N	-	-
P	170	195
Q	35	149
R	0	24
S	8	8

Curves

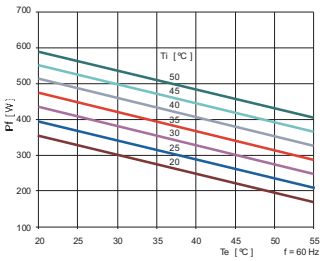
NSYCU240W230VL



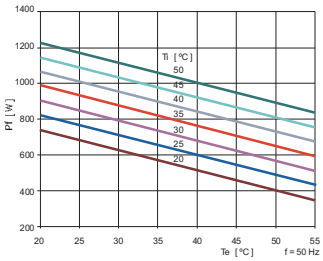
NSYCU370W230VL 50 Hz



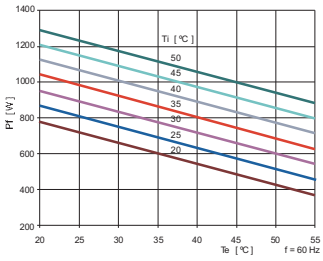
NSYCU370W230VL 60 Hz



NSYCU760W230VL 50 Hz



NSYCU760W230VL 60 Hz



8

Cooling unit
Mechanical control

NSYCU1650W230VL

Side-mounting

Cooling units for electrical switchboards

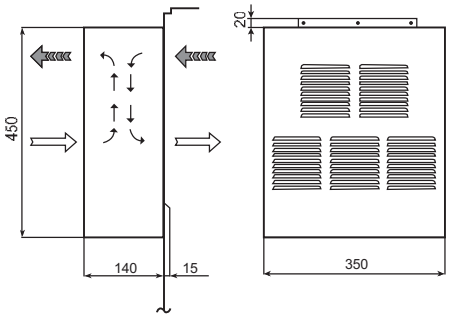
- Respect for the environment by using environmentally friendly gas R134a (HFC).
- Cooling power from 240 W to 4000 W.

General characteristics

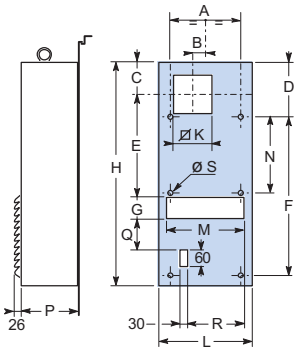
- The temperature setting can be adjusted from +20 to +50 ºC.
- They are equipped as standard with an automatically reset pressure gauge and a switching thermostat which, when it detects a value greater than the safe pressure value, stops the compressor and the external fan.
- The internal and external air circuits are independent. A protection rating of IP 54 is guaranteed between the outside and the inside of the enclosure.
- The fan of the internal circuit permanently guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- The devices are equipped with switches for reporting an alarm.
- Cooling power from 240 W to 4000 W.
- RAL 7035 colour for the standard offer.
- Units in RAL 7032 as option, please contact us.
- Stainless-steel version and other voltages on demand.

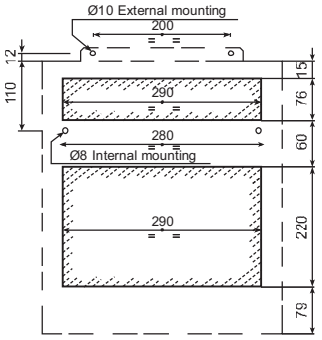
Reference	NSYCU1050W230VL	NSYCU1650W230VL
Voltage	230 V; 50/60 Hz	
Cooling power (50/60 Hz) according to EN 14511 L35-L35 L35-L50	 1050/1100 W (3584/3755 Btu/h) 840/890 W (2867/3038 Btu/h)	 1650/1700 W (5631/5802 Btu/h) 300/1400 W (4438/4779 Btu/h)
Dimensions Height Width Depth	 900 mm 400 mm 195 mm	 1000 mm 400 mm 220 mm
Intensity Starting current Rated current	 10.1/11.6 A 2.7/3 A	 16.1/18.5 A 4.2/4.9 A
Power consumption absorbed L35-L35 L35-L50	 500/580 W 580/660 W	 800/920 W 920/1100 W
Energy efficiency ratio (EER) L35-L35	 2.1/1.9	 2.1/1.9
Control type	Thermostat	
Temperature setting range	+20...+50 °C	
Maximum outside temperature	55 °C	
Noise level	67 dB (A)	67 dB (A)
Air flow of the internal circuit of the external circuit	 350/385 m^3/h 510/560 m^3/h	 550/600 m^3/h 620/680 m^3/h
Alarm type	Inverter contact	
Weight of unit	39 kg	42 kg
Cooling gas type	R134a (0.7 kg)	R134a (0.75 kg)
IP (IEC 60529) On the internal circuit On the external circuit	 54 34	
External circuit filter	Yes	
Assembly	Side	
Thermal protection recommended (fuse melt curve)	T4A	T6A

Cooling unit
Mechanical control



Side-mounting models: dimensions

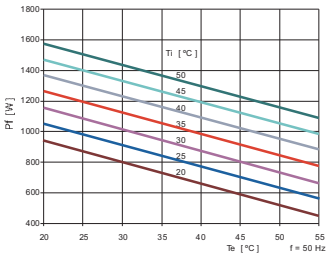




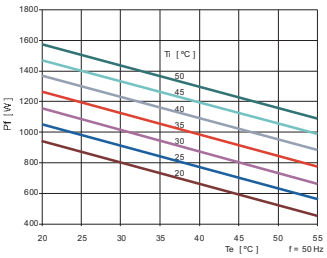
Dimensions (mm)	NSYCU1050W230VL	NSYCU1650W230VL	NSYCU1800W400VL
A	300	300	300
B	0	0	0
C	135	135	135
D	30	30	30
E	465	475	475
F	840	840	840
G	100	100	100
H	900	1000	1000
K	180	180	180
L	400	400	400
M	320	320	320
N	-	470	470
P	195	220	220
Q	35	25	25
R	195	195	195
S	0	10	10

Curves

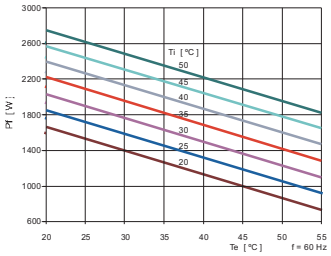
NSYCU1050W230VL 50 Hz



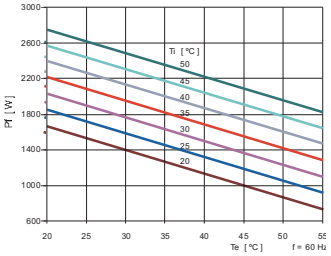
NSYCU1650W230VL 50 Hz



NSYCU1050W230VL 60 Hz



NSYCU1650W230VL 60 Hz



8

Cooling unit
Mechanical control

NSYCU4000W400VL, NSYCU1800W400VL

Side-mounting

Cooling units for electrical switchboards

- Respect for the environment by using environmentally friendly gas R134a.
- Cooling powers of 2500 W and 4000 W.

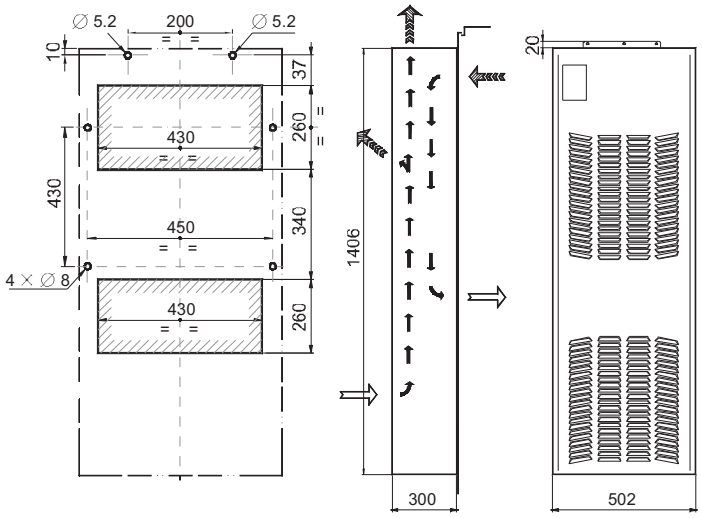
General characteristics

- The temperature setting can be adjusted from +20 to +50 °C.
- They are equipped as standard with an automatically reset pressure gauge and a switching thermostat which, when it detects a value greater than the safe pressure value, stops the compressor and the external fan.
- The internal and external air circuits are independent. A protection rating of IP 54 is guaranteed between the outside and the inside of the enclosure.
- The fan of the internal circuit permanently guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- The devices are equipped with switches for reporting an alarm.
- Option of partial-flush mounting.

Reference	NSYCU1800W400VL	NSYCU2500W400VL	NSYCU4000W400VL
Voltage	3 × 440 V; 50 Hz / 3 × 440 V; 60 Hz	3 × 440 V; 50 Hz / 3 × 440 V; 60 Hz	3 × 440 V; 50 Hz / 3 × 440 V; 60 Hz
Cooling power (50/60 Hz) according to EN 14511 L35-L35 L35-L50	 1800/1900 W (6143/6485 Btu/h) 1400/1500 W (4779/5121 Btu/h)	 2500/2600 W (8533/8876 Btu/h) 2000/2100 W (6828/7169 Btu/h)	 3800/4100 W (12973/13997 Btu/h) 3100/3300 W (10583/11266 Btu/h)
Dimensions Height Width Depth	 1000 mm 400 mm 220 mm	 1406 mm 502 mm 300 mm	 1406 mm 502 mm 300 mm
Intensity Starting current Rated current	 6.8/7.9 A 2.1/2.5 A	 9.8/12.1 A 2.6/3.2 A	 10.0/11.6 A 3.3/3.9 A
Power consumption absorbed L35-L35 L35-L50	 1200/1400 W 1400/1600 W	 1500/1800 W 1800/2100 W	 1900/2200 W 2200/2600 W
Energy efficiency ratio (EER) L35-L35	 1.5/1.4	 1.7/1.4	 2.0/1.9
Control type	Thermostat		
Temperature setting range	+20...+50 °C		
Maximum outside temperature	55 °C		
Noise level	69 dB (A)		
Air flow of the internal circuit of the external circuit	 550/600 m^3/h 620/680 m^3/h	 750/820 m^3/h 1200/1310 m^3/h	 1200/1340 m^3/h 1070/1190 m^3/h
Alarm type	Inverter contact		
Weight of unit	46 kg	75 kg	
Cooling gas type	R134A (0.75 kg)	R134a	
IP (IEC 60529) On the internal circuit On the external circuit (protection of cooling elements)	 54 34	 55 34	
External circuit filter	Yes	No (please consult us for aggressive environments)	
Assembly	Side		
Thermal protection recommended (fuse melt curve)	T 3A	T4 A	T6 A

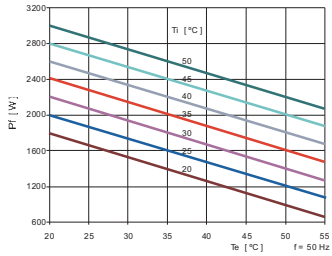
Cooling unit
Mechanical control

Side-mounting models: dimensions

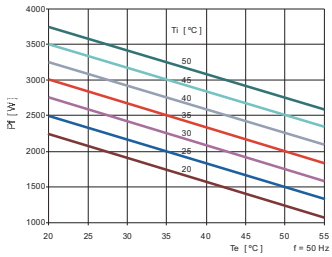


Curves

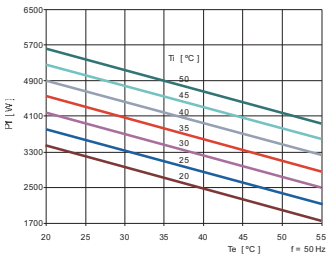
NSYCU1800W400VL 50 Hz



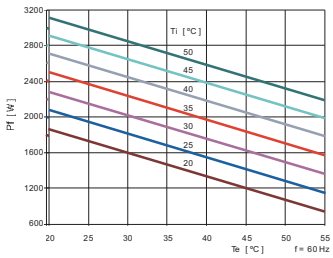
NSYCU2500W400VL 50 Hz



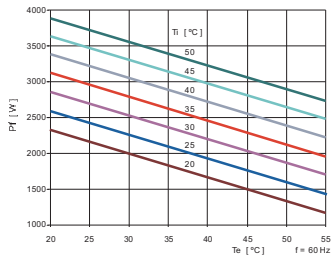
NSYCU4000W400VL 50 Hz



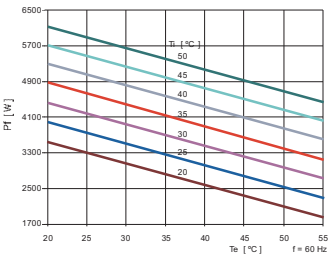
NSYCU1800W400VL 60 Hz



NSYCU2500W400VL 60 Hz



NSYCU4000W400VL 60 Hz



Cooling unit
Mechanical control

NSYCU1050W230VR

Top-mounting

Cooling units for electrical switchboards

- Respect for the environment by using environmentally friendly gas R134a (HFC).
- Automatic evaporation of condensation water.
- Cooling power from 760 W to 3100 W.

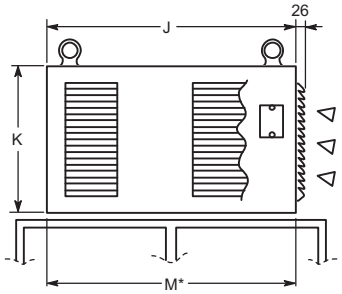
General characteristics

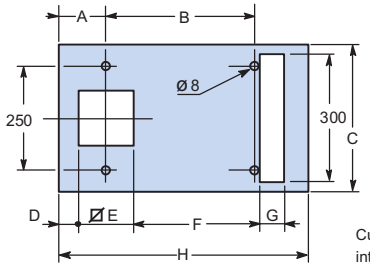
- The temperature setting can be adjusted from +20 to +50 °C.
- They are equipped as standard with an automatically reset pressure gauge and a switching thermostat which, when it detects a value greater than the safe pressure value, stops the compressor and the external fan.
- The internal and external air circuits are independent. A protection rating of IP 54 is guaranteed between the outside and the inside of the enclosure.
- The fan of the internal circuit permanently guarantees prevention against hot spots as well as improved thermal dissipation inside the enclosure.
- The devices are equipped with switches for reporting an alarm.
- System for automatic recovery and evaporation of condensates.
- RAL 7035 colour for the standard offer.
- Units in RAL 7032 as option, please contact us.
- Stainless-steel version and other voltages on demand.

Reference	NSYCU760W230VR	NSYCU1050W230VR	NSYCU1460W230VR
Voltage	230 V; 50/60 Hz		
Cooling power (50/60 Hz) according to EN 14511 L35-L35 L35-L50	 760/810 W (2594/2765 Btu/h) 610/640 W (2082/2184 Btu/h)	 1050/1100 W (3584/3755 Btu/h) 840/890 W (2867/3038 Btu/h)	 1460/1500 W (4983/5121 Btu/h) 1200/1200 W (4096/4096 Btu/h)
Dimensions Height Width Depth	 340 mm 600 mm 350 mm	 400 mm 700 mm 400 mm	
Intensity Starting current Rated current	 7.7 A/8.8 A 2 A/2.3 A	 10.1/11.6 A 2.7/3 A	 14.1/16.2 A 3.7/4.2 A
Power consumption absorbed L35-L35 L35-L50	 380/440 W 440/500 W	 500/580 W 580/660 W	 730/810 W 810/930 W
Energy efficiency ratio (EER) L35-L35	 2.0/1.8	 2.1/1.9	 2.1/1.9
Control type	Thermostat		
Temperature setting range	+20...+50 °C		
Maximum outside temperature	55 °C		
Noise level	67 dB	69 dB	
Air flow of the internal circuit of the external circuit	 350/385 m^3/h 350/385 m^3/h	 400/440 m^3/h 620/680 m^3/h	
Type of zero-potential alarm	Inverter contact		
Weight of unit	33 kg	41 kg	45 kg
Cooling gas type	R134a (0.5 kg)	R134a (0.7 kg)	R134a (0.75 kg)
IP (IEC 60529) On the internal circuit On the external circuit	 54 34		
External circuit filter	Yes		
Assembly	On top		
Thermal protection recommended (fuse melt curve)	T4A	T6A	

Cooling unit
Mechanical control

Top-mounting models, ref. NSYCU760W230VR-NSYCU1050W230VR-NSYCU1460W230VR



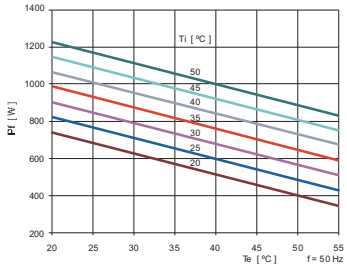


Cut-out template for top mounting without intermediate frame.

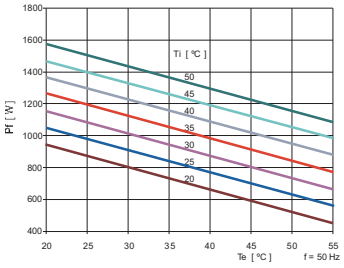
A	B	C	D	E	F	G	H	J	K	M	Reference
108	350	350	40	136	292	80	600	600	340	600	**NSYCU760W230VR**
118	420	400	45	180	328	90	700	700	400	700	**NSYCU1050W230VR**
118	420	400	45	180	328	90	700	700	400	700	**NSYCU1460W230VR**

Curves

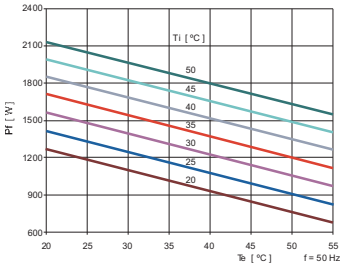
NSYCU760W230VR 50 Hz



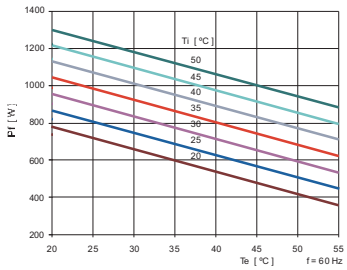
NSYCU1050W230VR 50 Hz



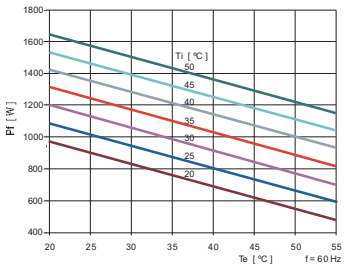
NSYCU1460W230VR 50 Hz



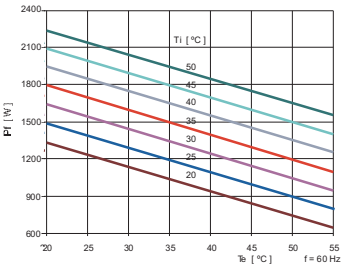
NSYCU760W230VR 60 Hz



NSYCU1050W230VR 60 Hz



NSYCU1460W230VR 60 Hz



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