



Application expertise



Wide & versatile range



Configurator and support

Electrical accessories and controls

Alfa-V and AlfaBlue electrical accessories overview



Accessories for AC fans

What are you looking for?

	Connection box	Switchboards	
Function	CB	BS	BSP/BST
Protection		✓	✓
Wiring	✓	✓	✓
Input signal probe			✓

Overview

	Technical data			Alfa-V			AlfaBlue		
Option code	Min temp	Max temp	Protection class	VDD	ACV/ANV	VXD	BD	BC/BN	BX
SW	-40 °C	+55/80 °C*	IP65/IP66*	✓	✓	✓	✓	✓	✓
SWE	-40 °C	+80 °C	IP66	✓	✓	✓			
CB	-25 °C	+60 °C	IP56	✓	✓	✓	✓	✓	✓
BS	-25 °C	+45 °C	IP54	✓	✓	✓	✓	✓	✓
BSP	-25 °C	+45 °C	IP54		✓			✓	
BST	-25 °C	+45 °C	IP54	✓			✓		
SWS	+4 °C	+40 °C	IP55	✓	✓	✓			

Accessories for EC fans

What are you looking for?

	Connection box		Switchboards				
Function	CBP	CBMP/CBMT	ECCB	ECCBM	ECCBMP/ECCBMT	ICM	ICMP/ICMT
Protection			✓	✓	✓	✓	✓
Wiring	✓	✓	✓	✓	✓	✓	✓
Input signal probe		✓			✓		✓

Overview

	Technical data			Alfa-V			AlfaBlue		
Option code	Min temp	Max temp	Protection class	VDD	ACV/ANV	VXD	BD	BC/BN	BX
SW	-40 °C	+55/80 °C*	IP65/IP66*	✓	✓	✓	✓	✓	✓
CBP	-25 °C	+60 °C	IP56	✓	✓	✓	✓	✓	✓
CBMP	-25 °C	+55 °C	IP55		✓			✓	
CBMT	-25 °C	+55 °C	IP55	✓			✓		
ECCB	-25 °C	+50 °C	IP54	✓	✓	✓	✓	✓	✓
ECCBM	-25 °C	+50 °C	IP54	✓	✓	✓	✓	✓	✓
ECCBMP	-25 °C	+50 °C	IP54		✓			✓	
ECCBMT	-25 °C	+50 °C	IP54	✓			✓		
ICM	-20 °C	+40 °C	IP54	✓	✓	✓	✓	✓	✓
ICMP	-20 °C	+40 °C	IP54		✓			✓	
ICMT	-20 °C	+40 °C	IP54	✓			✓		
SWS	+4 °C	+40 °C	IP55	✓	✓	✓			

* According to design specifications and factory availability

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Electrical accessories and controls

Alfa LU-VE is a leading global provider of specialized products and integrated solutions.

We help our customers to cool products such as oil, water, chemicals, beverages, foodstuffs and pharmaceuticals. Our worldwide organization works closely with customers to help them stay ahead.

Air Heat Exchangers

Alfa LU-VE manufactures air heat exchangers characterized by high technical standards combined with competitive pricing. These products are manufactured in state-of-the-art production sites in Italy, Finland and Poland.

Our factories are equipped with the newest machinery and tools for design, production of coils and casing parts, assembly and testing of controls and electrical panels.

All Alfa LU-VE production sites are certified according to ISO 9001 (Quality) and ISO 14001 (Environment).

Alfa LU-VE air heat exchangers are built according to the strictest international standards in terms of safety, energy efficiency and environmental sustainability.

All units are given a 2-year guarantee.

State of the art control systems

The Alfa-V and AlfaBlue series feature optimized controls and electrical accessories for both EC and AC fans, for greater performance efficiency and control. This document gives a full overview of electrical accessories for our industrial platforms of dry coolers, air cooled condensers and gas coolers.

Controls are developed inhouse by our specialized team of electrical experts for best integration with our heat exchangers, selection software and to fully exploit Alfa LU-VE technological expertise.

Installation

Electrical accessories are supplied mounted for plug&play installation.



Electrical accessories for AC fans

Switch on/off **SW**

Fan motor switch. Wired. One switch per each fan.
Cable glands included.

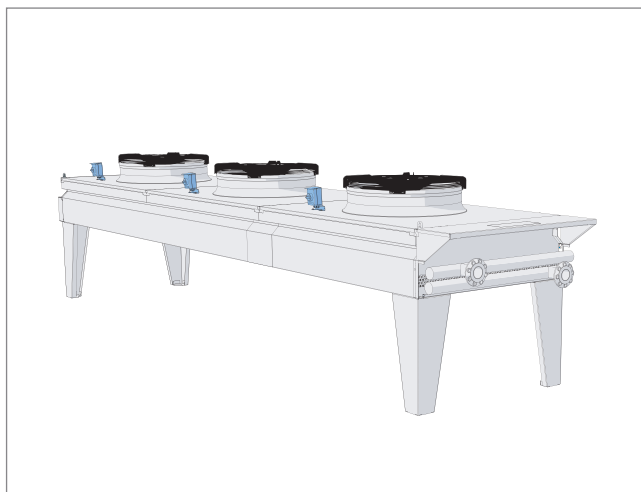
In Alfa-V platform:



- Application temperatures: -40 to +55 °C / -40 to +80 °C*
- Protection class: IP65 / IP66*

* According to design specifications and factory availability

In AlfaBlue platform:



EMC certified switch on/off **SWE**

As an additional option, EMC certified switches are available.
Tested according to EN 55011. EMC cable glands included.

For Alfa-V platform only:

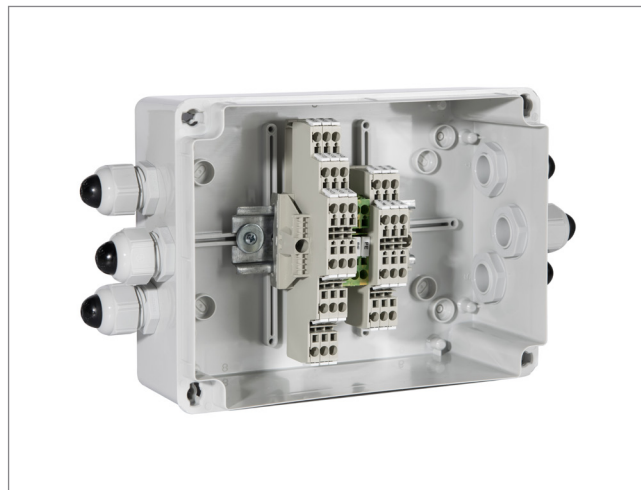


- Application temperatures: from -40 °C to +80 °C
- Protection class: IP66

Connection box **CB**

All fan motors wired to a central connection box for common power and thermal contact (TK) connection. For dual fan row units, one connection box for each fan row. For Alfa-V platform it is possible to select EMC certified connection boxes. EMC cable glands and cables included.

- Application temperatures: from -25 °C to +60 °C
- Protection class: IP56
- Power supply: 400 V/3 ph/50 Hz
- Nominal current: max 10 A per fan
- Material: ABS



In Alfa-V platform:



In AlfaBlue platform:



Basic switchboard **BS**

Basic switchboard cabinet fitted with AC fan protection, main switch and terminals for fan alarm signal. Same pictures and positioning of BSP/BST applies.

- Application temperatures: from -25 °C to +45 °C
- Protection class: IP54
- Power supply: 400 V/3 ph/50 Hz
- Material: painted steel

Controls for AC fans

Step controller

BSP

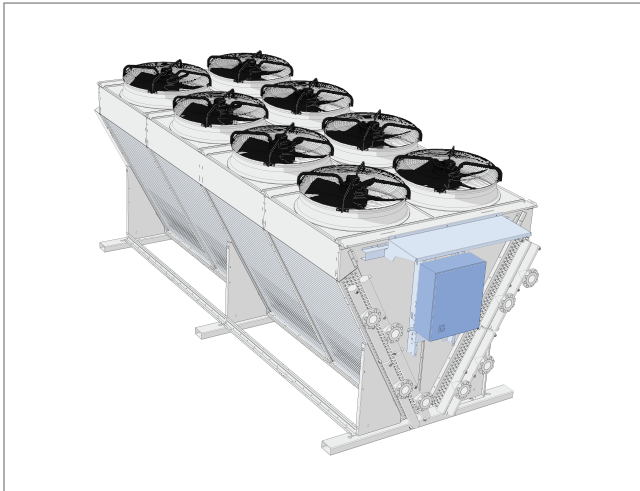
BST

Switchboard including an automatic multistage step controller (1 to 4 steps), which allows to control the fluid outlet temperature (BST, for liquid coolers) or the refrigerant pressure (BSP, for condensers).

- Application temperatures: from -25 °C to +45 °C
- Protection class: IP54
- Power supply: 400 V/3 ph/50 Hz
- Material: ABS (for Alfa-V), painted steel (for AlfaBlue)



In Alfa-V platform:



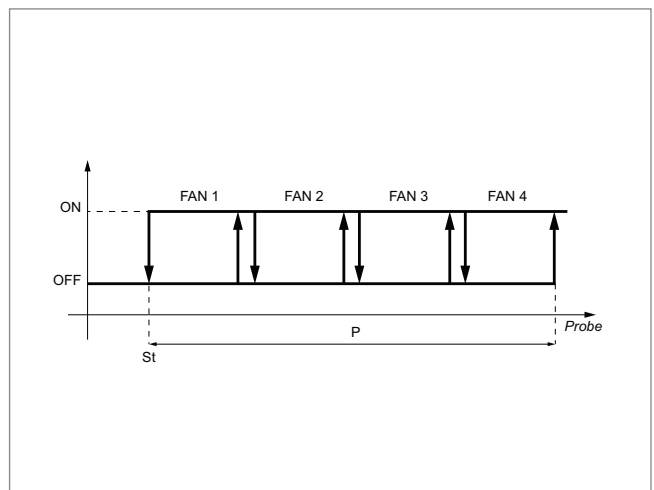
In AlfaBlue platform:



On/off regulation of fans according to the input signal. The output is activated if the value measured is greater than the set point plus a differential.

The controller ensures the value being controlled (temperature or pressure) does not exceed the set point (St). If it does, the fans are activated in sequence. The activation of the fans is distributed equally across the differential (P). When the value measured is greater than or equal to $St+P$, all the outputs are activated. Similarly, if the value measured starts falling, the outputs are deactivated in sequence. When reaching St , all the outputs are deactivated.

Automatic rotation of steps for uniform fan functioning time and longest service life: the fan which has the fewest operating hours is activated.



Electrical accessories for EC fans

Switch on/off **SW**

Fan motor switch. Wired. One switch per each fan.
Same pictures and positioning of AC fans switch applies.

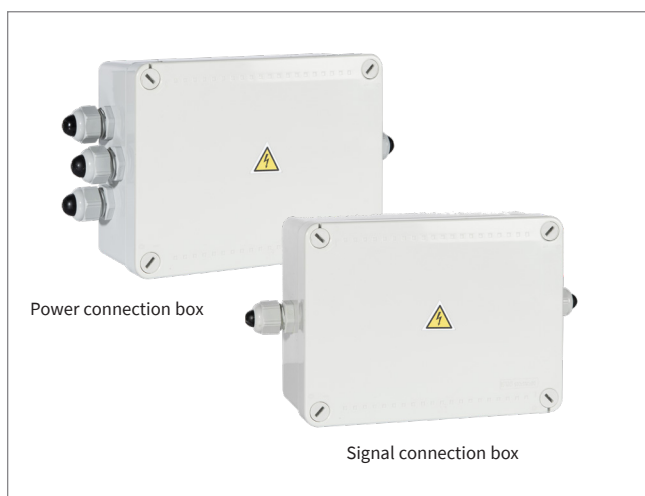
- Application temperatures: -40 to +55 °C / -40 to +80 °C*
- Protection class: IP65 / IP66*

* According to design specifications and factory availability

Connection box parallel **CBP**

Fans are wired to a connection box for common power connection (one per fan row) and the signal is wired to a different smaller connection box. EC fans are provided with specific settings. The main input signal is 0-10 V from the Customer.

- Application temperatures: from -25 °C to +60 °C
- Protection class: IP56



In Alfa-V platform:



In AlfaBlue platform:



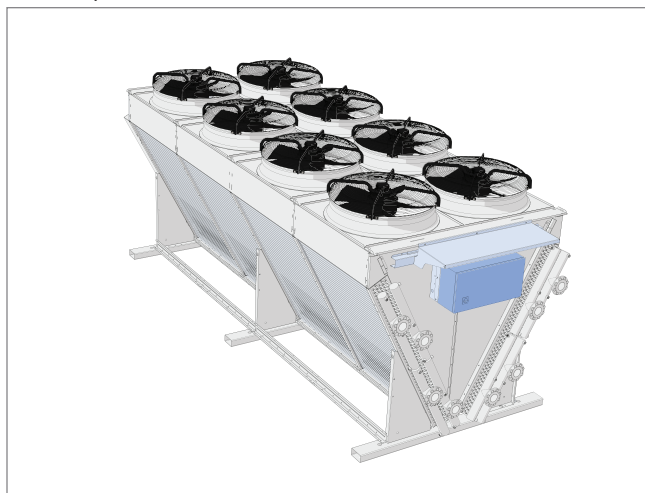
Basic switchboard ECCB

ECCB is a basic switchboard, featuring a main switch and protections for each fan (circuit breakers). Terminals are available for input signal and cumulative fan alarm.

- Application temperatures: from -25 °C to +50 °C
- Protection class: IP54
- Power supply: 400 V/3 ph/50 Hz
- Nominal current: max 10 A per fan
- Material: painted steel



In Alfa-V platform:



In AlfaBlue platform:

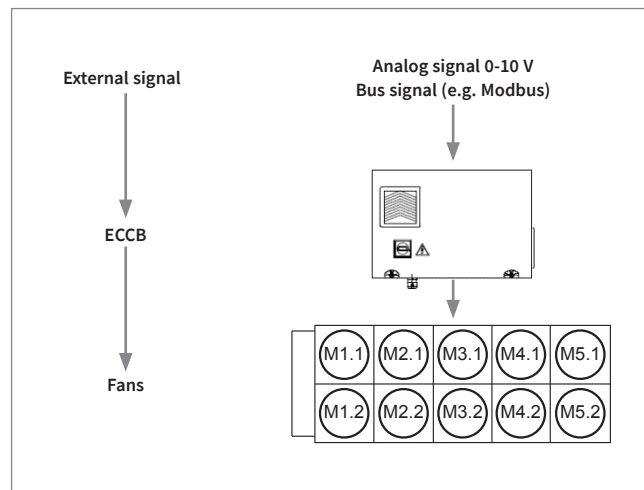


By default fans are driven by a 0-10 V signal.

ModBus communication is possible with a dedicated fans setting available on request.

Standard cabling is suitable for Modbus communication.*

ECCB can be used in combination with the master controller for optimal control.



* excluded 910 Q&R fans

Controls for EC fans

Master Controller

The Master Controller features a signal converter which converts the probe signal to 0-10 V to drive the EC fans, enabling master/slave control.



- Application temperatures: from -30 °C to +55 °C
- Protection class: IP55
- Power supply: 230-400 V/3 ph/50 Hz

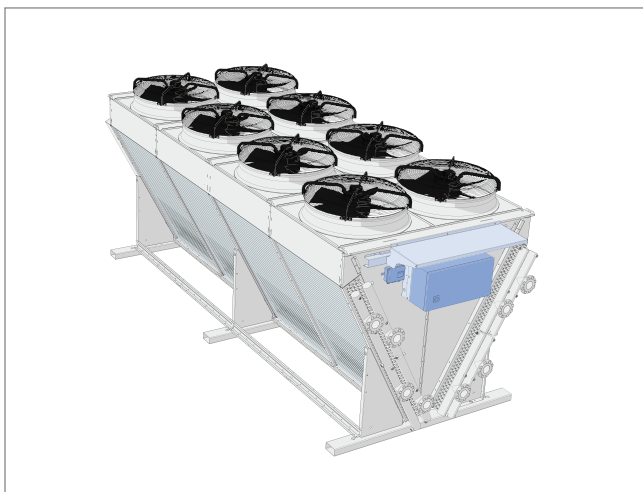
Available configurations:

- Connection box + Master Controller and pressure probe (for condensers) **CBMP**
- Connection box + Master Controller and temperature probe (for liquid coolers) **CBMT**
- ECCB switchboard + Master Controller for external customer signal 4-20 mA **ECCBM**
- ECCB switchboard + Master Controller and pressure probe (for condensers) **ECCBMP**
- ECCB switchboard + Master Controller and temperature probe (for liquid coolers) **ECCBMT**

In Alfa-V platform:



In AlfaBlue platform:



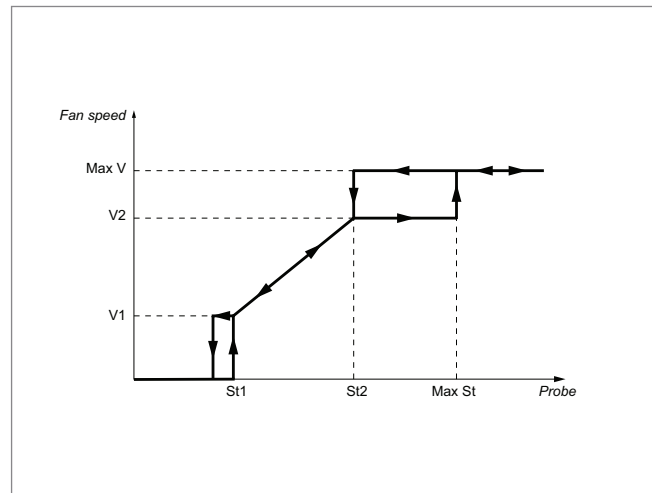
The master controller can be supplied in combination with either the connection box CBM or the ECCB. The control is managed by the Master Controller. The CBM acts as the "power box". The ECCB acts as both a power box and protection for the unit.

Fans are off until the probe reaches the set point (St1), after which fans start to work with min speed (V1). Above the St1, the speed increases proportionally to the input signal until the set point St2, after which it is kept constant.

The controller ensures the fan speed does not exceed the max limit by exploiting the hysteresis logic. When the probe reaches the maximum set point (Max St), the fan speed is triggered to the max value (Max V) and kept constant until the control value falls below the set point (St2).

The control panel visualizes in real time the inputs and outputs and allows to set the parameters.

This solution includes additional features, such as: dual speed (night mode), unit remote on/off and spray system activation (on units where spray system is available).



ICM premium controller

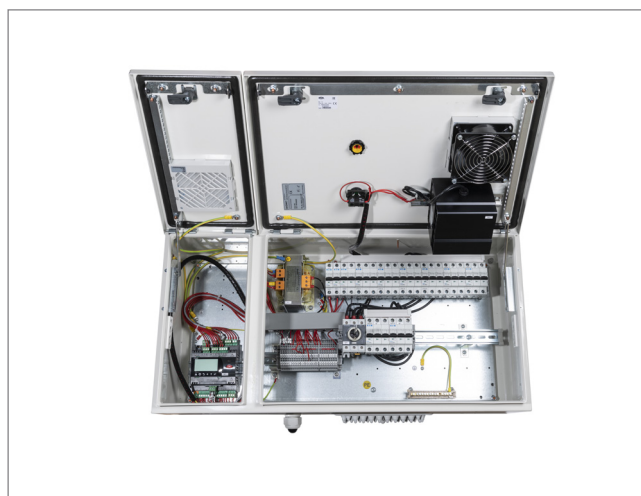
ICM is a solution for complete fan management, developed in close cooperation with leading fan suppliers.

It consists of a switchboard featuring a main switch, protections for each fan (circuit breakers) and a PLC with high level communication system.

- Application temperatures: from -20 °C to +40 °C
- Protection class: IP54
- Power supply: 400 V/3 ph/50 Hz
- Material: corrosion resistant metallic casing painted white (RAL9002)

Available configurations:

- ICM for external signal **ICM**
- ICM with pressure probe (for condensers) **ICMP**
- ICM with temperature probe (for liquid coolers) **ICMT**



In Alfa-V platform:



In AlfaBlue platform:



Serial Modbus communication (0-10 V, temperature probe or pressure probe) with all fans. Internal bus system, ready to be connected to any supervision network. ICM allows the heat exchangers to function stand-alone or fully controlled via Modbus.

The controlled value may be pressure (for condensers) or temperature (dry coolers), or alternatively may be based on an external control signal (4-20 mA or 0-10 V), in the latter case there is direct correspondence between the external control signal and the speed the fans are driven at.

ICM can manage two types of control:

- Proportional only: the set point is in the centre of the activation band, therefore when reaching the set point the fans are on, even with proportional control only.
- Proportional + integral: integral action is used to achieve a null control error in steady operation.

ICM manages a series of parameters specifically related to the fans:

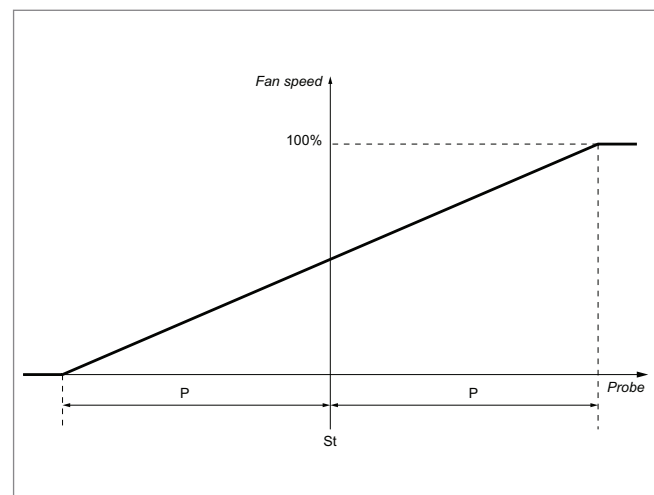
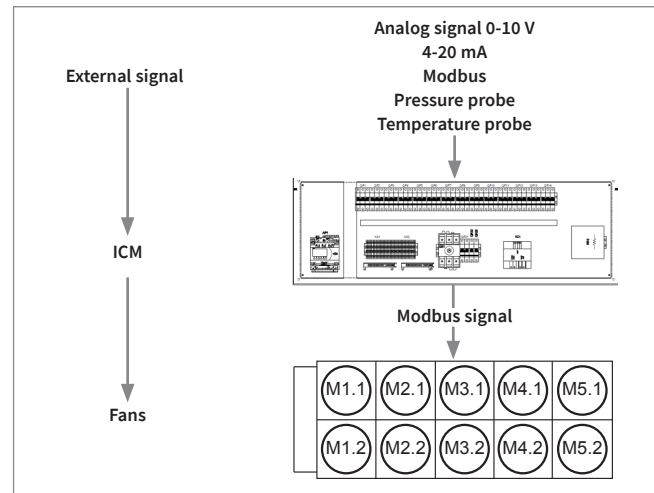
- speed-up: to ensure the fans start correctly, when these are restarted (after being stopped by the controller or external control signal), a time can be set during which maximum speed is applied which helps the fans overcome inertia on starting.
- cut-off: when the control request reaches the set cut-off value, this value is kept constant until the control value falls below the cut-off set point, after which it falls to 0% and remains there until the request exceeds the cutoff value again.
- minimum speed.
- kick function: to ensure correct operation even when the fans are off for an extended period (for example, on condensers in winter), ICM can activate the fans for a certain time at a certain interval.

Additional features:

- Terminals available for cumulative fan alarm.
- Separate compartments for the controller and for aux & main power supply.
- Functions like double speed setting, scheduler, reverse fan rotation mode, floating setpoint etc. can be easily enabled from the control display.
- Dedicated solution for independent fan row management available upon request.

Retrofit

ICM controllers are an important component for unit retrofits. Older units equipped with AC fans can be retrofitted with energy efficient EC fans which are managed/connected via Modbus with ICM, ECCB or Master Controller. The use of an ICM device will also reduce fan replacement time.



Spray water solutions

Air heat exchangers are normally selected to accomplish performance requirements in the hot season peaks. As a consequence, units are often oversized and thus more expensive. In such cases a Water Spray System can help in selecting correctly sized units. Benefits of increased global energy efficiency, sound reduction and footprint reduction are combined in simple Alfa LU-VE solutions.



Spray Water Kit KW

The Spray Water Kit is based on Adiabatic Saturation Concept. A simple and smart solution for overcoming heat peaks: Liquid Coolers, Gas Coolers and Condensers can be designed for lower entering air temperature, thus obtaining a smaller dimension unit with a smaller heat exchanger.

It consists of a stainless steel pipe system fitted with several spraying nozzles that nebulize water, saturating the air next to suction side of the coil.



In Alfa-V platform:



In AlfaBlue platform:



Water Spray System

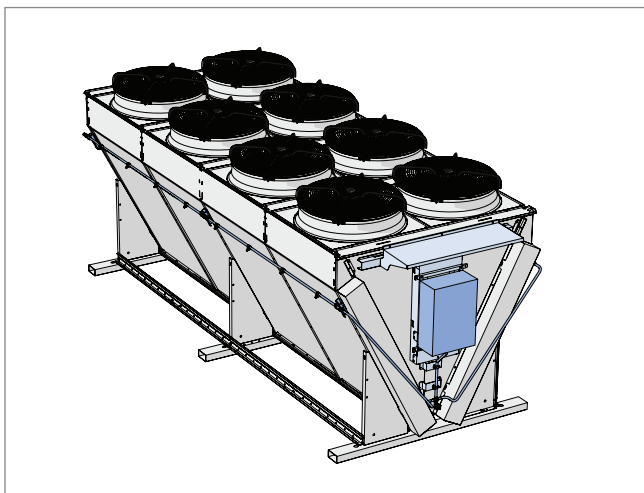
SWS

SWS is a full Water Spray System including 6 bar pump, electrical cabinet and stainless steel piping with spray nozzles.

- Application temperatures: from +4 °C to +40 °C
- Class protection: IP55
- Power supply: 230 V/1 ph/50 Hz
- Material: metal casing in galvanized steel painted RAL9002, stainless steel casing available as optional



For Alfa-V platform only:



SWS is available in three sizes: 500 l/h, 1000 l/h, 2000 l/h to cover all air heat exchanger range needs. SWS is fitted with a draining valve for complete water discharge, then automatically VDI 2047 Part 2 compliant.

Switchboard with pump protection and terminals for signals (remote on/off) and fault alarm.

Integration with control systems

SWS is perfectly integrated with Alfa LU-VE control solutions: ICM and Master Controller can easily manage the complete Water Spray System. According to various parameters (such as pressure or temperature) the spray system is activated to increase capacity and face peak loads.

Selection

SWS Water Spray Systems can be selected by using Alfa LU-VE air heat exchanger selection software. A calculation tool is available to choose the correct size.

Alfa LU-VE in brief

Alfa LU-VE is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers optimize the performance of their processes. Time and time again.

We help our customers to cool products such as water, foodstuffs, beverages, chemicals, pharmaceuticals and oil.

Our worldwide organization works closely with customers to help them stay ahead.

How to contact Alfa LU-VE

Up-to-date contact details for all countries are always available on our corporate website at alfa.luvegroup.com.



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