



User manual

(This user manual must always be accessible, available and within range of the Powerstream)

POWERSTREAM DSB DSB Airlock DSB Comfort

(+ active dehumidification cold/warm)



V6 202506



Masterveil Europe

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GENERAL INFORMATION:

This manual is a generic description of various standard Powerstream concepts. Individual adjustments to your system may cause certain parts of the manual to deviate. Masterveil reserves the right to change the manual and make a new version available. In addition, Masterveil can provide custom drawings for the particular project.

Please always request the most recent version of this document before taking any action.



EC Declaration of Conformity IIA



EC DECLARATION OF CONFORMITY ACCORDING TO ANNEX IIA

Machinery Directive 2006/42/EC
Low Voltage Directive 2014/35/EU
Directive "EMC" 2014/30/EU

Manufacturer: Name: Masterveil Europe/Deweerd BV
Address: Brusselbaan 192 9230 Erembodegem

Description of the machine: Name: Powerstream
Type: DSBlock – DSBlock/Airlock/Comfort
Serial number: XXX
Year of manufacture: XXX

I, the undersigned, Peter Deweerdt, mandated by Masterveil Europe/Deweerd BV confirms that the machine described above, if installed, maintained and used in accordance with the instructions for use and the rules of good workmanship, meets the relevant essential health and safety requirements of the "Machinery" directive.

Signature

Peter Deweerdt
Signed:
Date: 01/01/2019
Function: Manager
Place: Erembodegem
Belgium



General Safety Instructions

- The operation of the Powerstream unit requires the availability of this manual and compliance with the safety instructions.
- The Powerstream system should only be operated and maintained by people with appropriate knowledge.
- Repairs to electrical components may only be carried out by people authorized for electrical installations.
- The Powerstream unit should not be installed in areas where explosion-proof equipment is required or where there is a risk of a possible chemical reaction with airborne particulate matter.
- Disconnect the Powerstream unit from the power supply before opening a service panel.
- Allow the Powerstream unit to cool down for at least 15 minutes after use and before servicing.
- Marks and indications on the Powerstream unit must not be removed or altered.
- All scheduled maintenance and checks on the Powerstream unit must be carried out according to the specified schedule.
- Only original spare parts may be used.
- Any changes or modifications require the written consent of Masterveil Europe.

Applications

Special design for the protection of freezer doors

- Available in versions DSBLOCK, DSB Airlock, DSB Comfort, DSB + DEHUMIDIFIER.
- Different versions are available to allow the widest possible range of applications.
- Reducing air exchange will achieve the clearest, most secure and ice-free access to your frozen storage, with active treatment of residual moisture, if necessary.
- To achieve significant savings by reducing air exchange when opening.
- Comfort management.
- Moisture problems such as fog, slippery soil, and ice formation have been eliminated (*), with the lowest energy consumption ever seen in the industry.
- This makes it possible for the first time to step in and expand further investments

(*) Depending on the pre-room conditions and moisture load

Remark:

Your special attention to condensation droplets and/or regular cleaning of the front room. In such a case, we recommend "actively" cooling and/or dehumidifying the front room so that the moisture load remains below the limit value (in most cases this is in a cooled environment (indication 1°C to 10°C - <70% RH).



The Art of invisible doors: POWERSTREAM SYSTEM

Basics:

A natural exchange of air takes place at every open door between two rooms in which different conditions prevail. The greater the temperature difference (Delta T), the faster the air exchange takes place. The cold air flows over the floor to the warm area. The warm air flows over the top of the door to the cold part. The losses incurred must be re-cooled or reheated, depending on the type of application. In extreme environments, such as freezer rooms, humidity is even more important. Even conditioned air in the front room can contain 10 times more moisture than the freezer. This can lead to icing, slippery floors, fog and even snow, but in this case, it is the natural law that the condensation point is exceeded by the contact of the freezing air with the conditioned air from the antechamber. In contrast to conventional air curtains, which try to avoid this condensation problem with a huge kW heating capacity, the POWERSTREAM system achieves its efficiency by reducing this natural air flow and, together with an insulating layer of air, forming a buffer between the humid (front room) and dry (freezer) air.



How your POWERSTREAM works:

This decentralized type high-pressure air curtain comes with a custom-made air outlet drum that exactly matches the specified length. The nozzle is based on the POWERSTREAM® patent, can blow out 100% freely and has a completely smooth inner surface to prevent mini turbulence, to achieve an air curtain with better performance.

The air outlet drum generates a high dynamic flat airflow, which forms a barrier between the extreme temperature differences.

For optimal moisture control in freezer rooms, the air outlet unit is combined with a second air outlet chamber that creates an induction layer and can be used as an insulating layer between the different moisture levels. The insulation layer has an optimal air volume to reduce the required kW of heat capacity. Depending on the situation, this can be an active dehumidifier, a heat battery/exchanger, or just a small electrical resistance.

This ensures that the invisible doors not only provide optimal temperature control, but also provide solutions to existing problems with snow, ice formation, high energy consumption, etc.

At the customer's request, we can provide additional information about the various options.

Contact your Masterveil certified partner.

- The Powerstream unit is available in basic components and can be expanded with various external parts in order to obtain a working machine.
- Regular ductwork, small material and cables are normally NOT included in the delivery unless explicitly stated
- Depending on the project, we provide active conditioning (e.g. heating, cooling, dehumidification)*, unless stated otherwise.
- Any residual losses must be treated with the current cooling- or heating system.
- As part of the solution, your Powerstream unit can be equipped with additional options.
- The position of the people, the product type and the working methods are the key to the first choice and further fine-tuning or additional equipment options.
- All components used to complete the installation must not infringe Intellectual Property
- All components used must always comply with local legislation.
External inspection is advised.
- We are only responsible for the supplied components.
- To be checked in case of doubt.

* Not applicable in USA/Canada (to be organized locally)

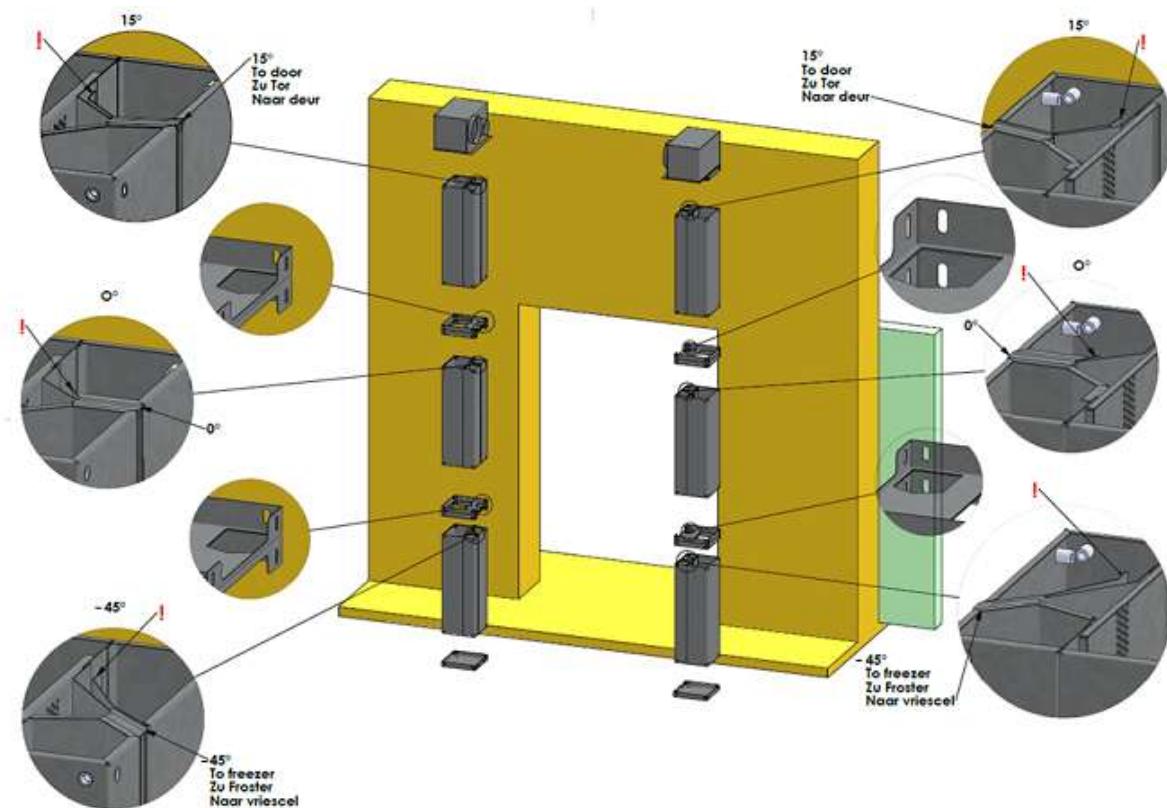
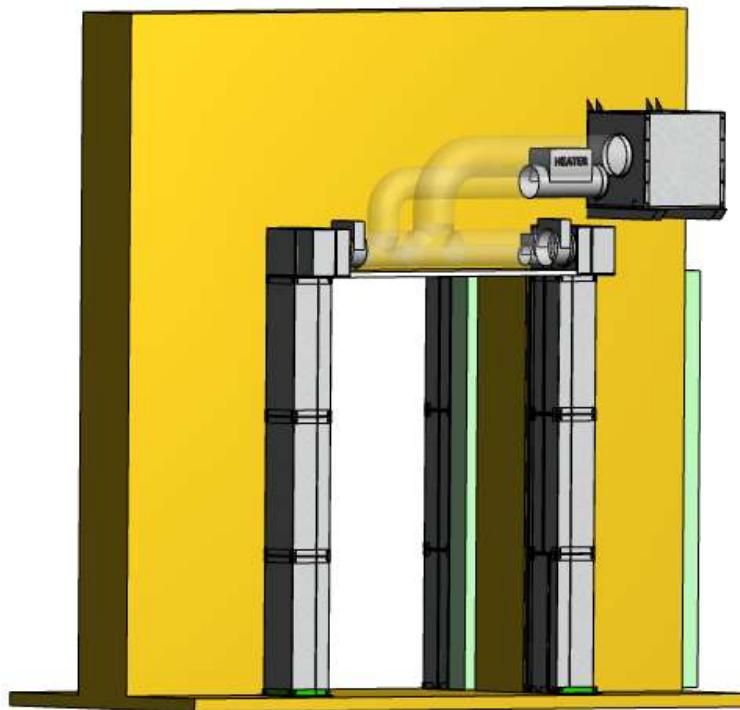


CONCEPT OF THE BASIC SYSTEM STRUCTURE

The degrees are indicated based on the position where the position refers to the room where the Powerstream is mounted. Example when the Powerstream is set up in the freezer:

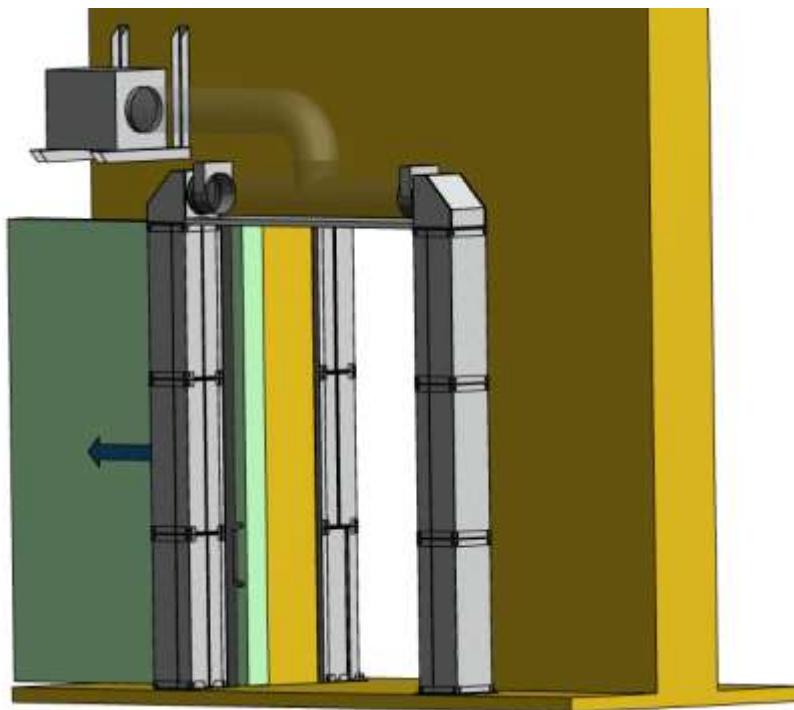
- Negative degrees (e.g. -45°) means that the air stream is blown towards the freezer.
- Positive degrees (e.g. 15°) means that the air stream is blown to the other room.

POWERSTREAM DSBLOCK freezer

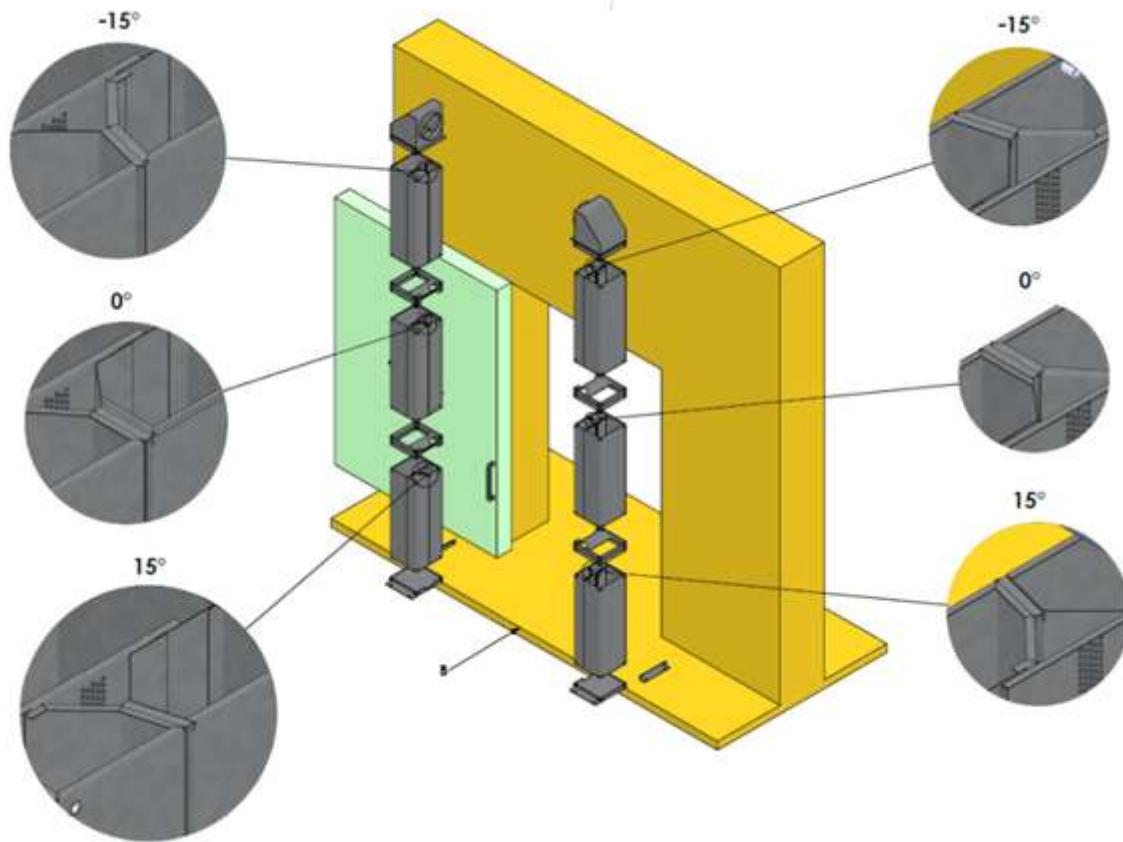




POWERSTREAM DSB Airlock front room – (Warm/Single-line)

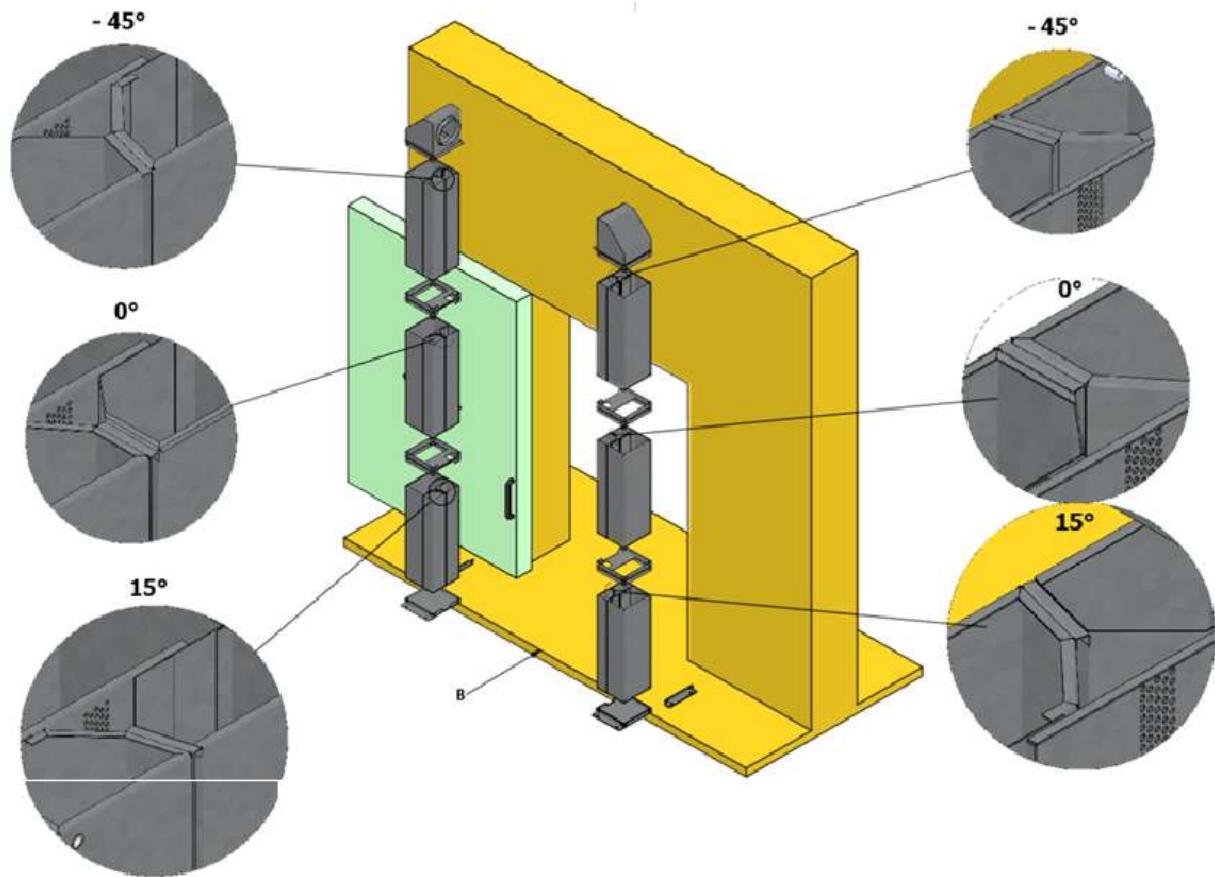


With single-line Airlock





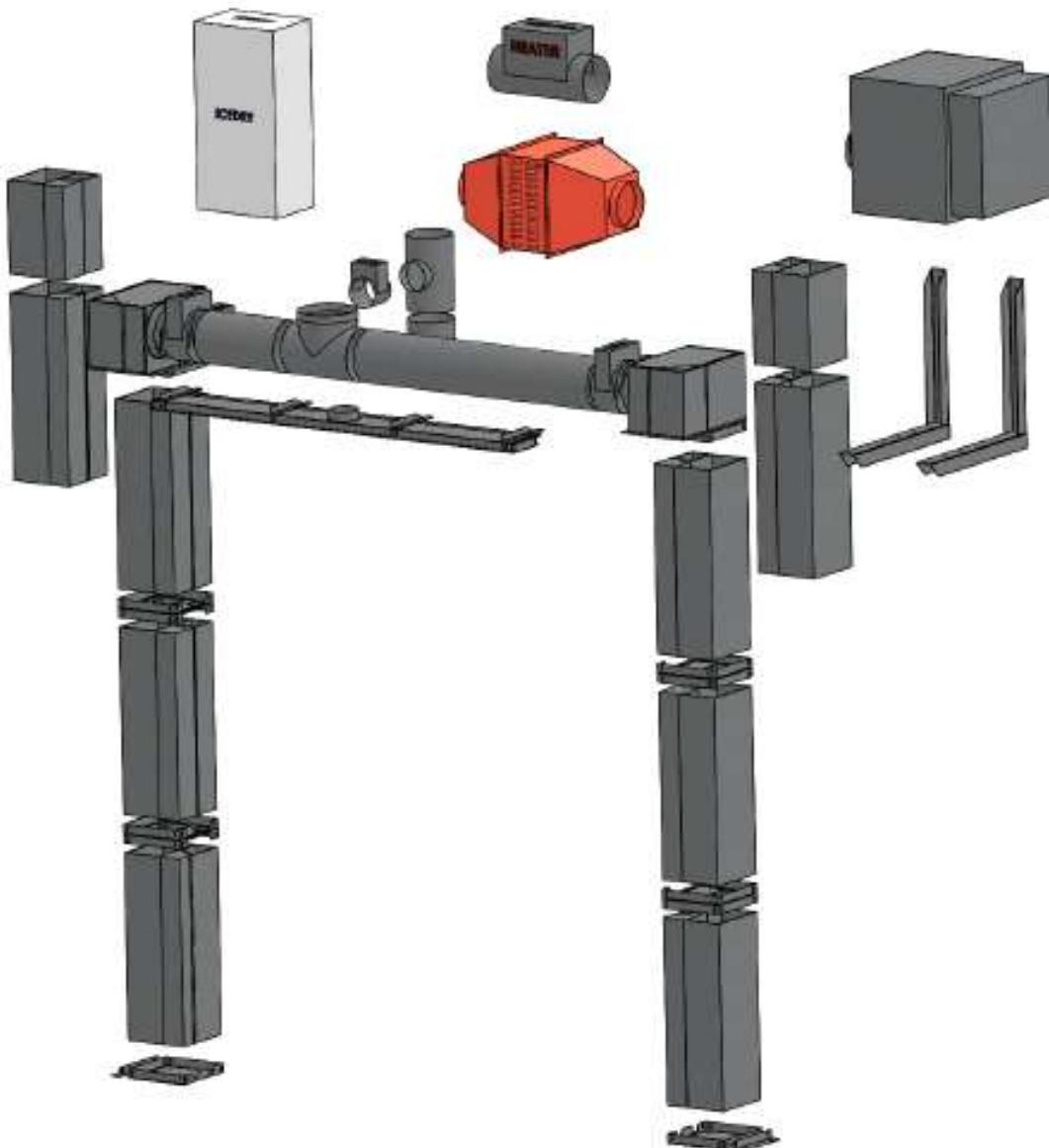
DSB COMFORT



Drawings, dimensions and technical data Powerstream-Unit:
See separate database



TOTAL COMPONENTS DSBLOCK (Cold/Double-line)





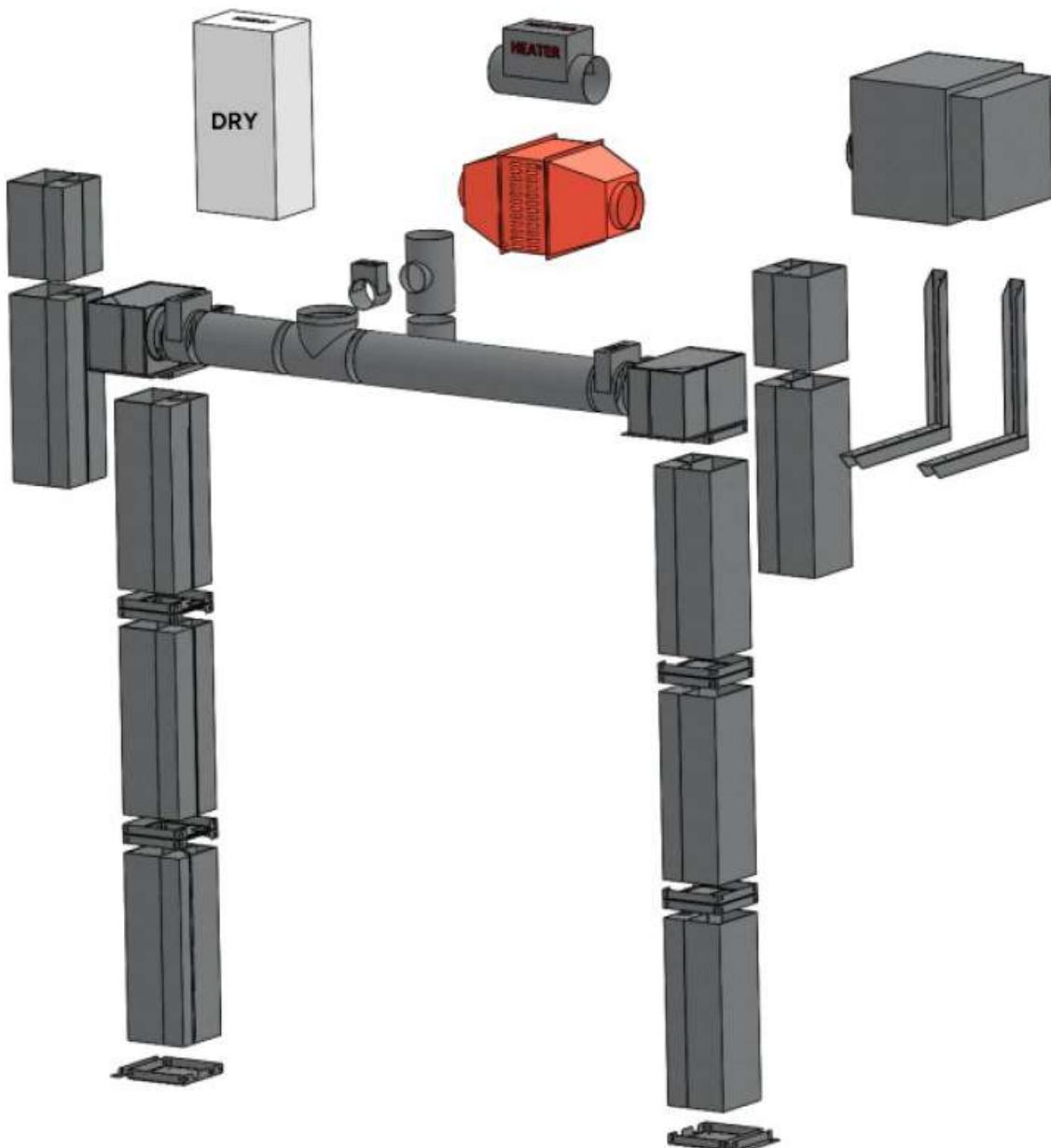
TOTAL COMPONENTS AIRLOCK (Warm/Single-line)



(E.g. in an Airlock setup)



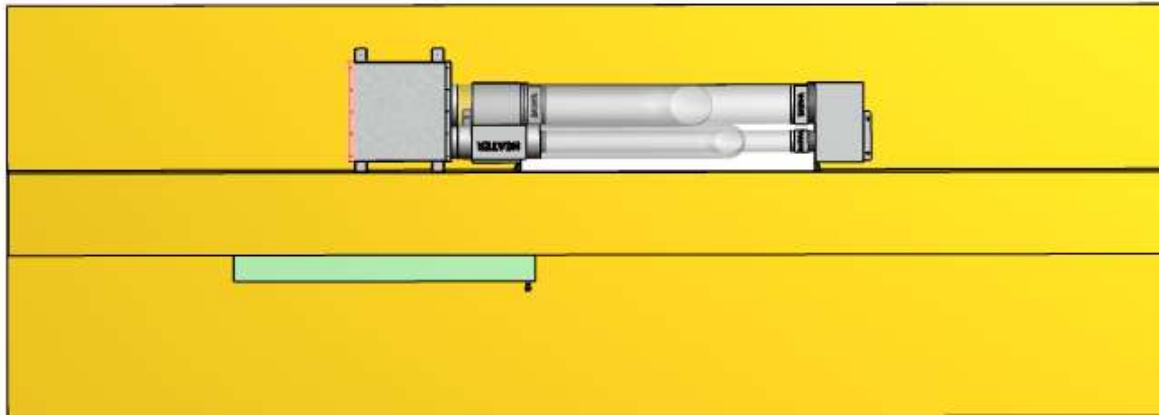
TOTAL COMPONENTS COMFORT (Warm/Double-line)



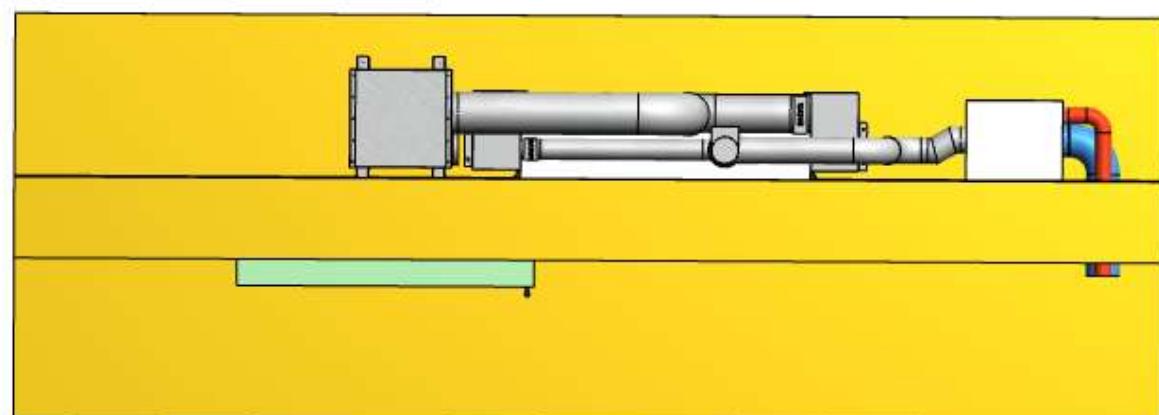


Set-up options:

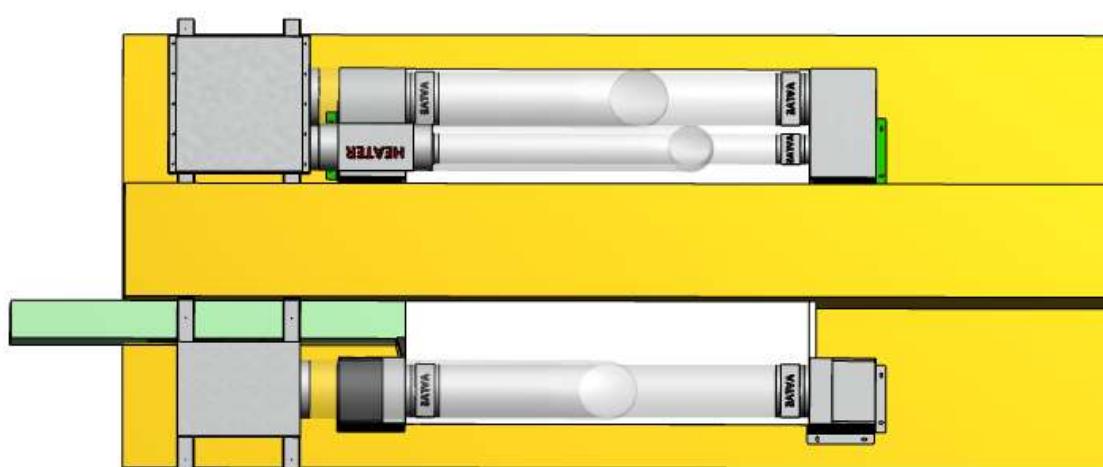
DSBLOCK with electric heating* in the freezer room



DSBLOCK with dehumidifier* in freezer or comfort setup



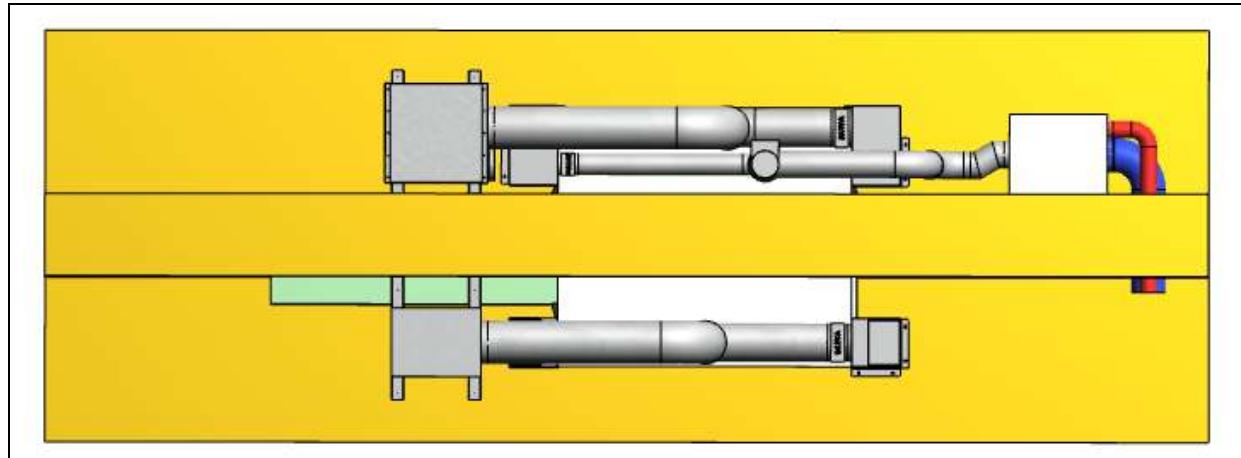
DSBLOCK with electric heating* in freezer room + Airlock in the front room



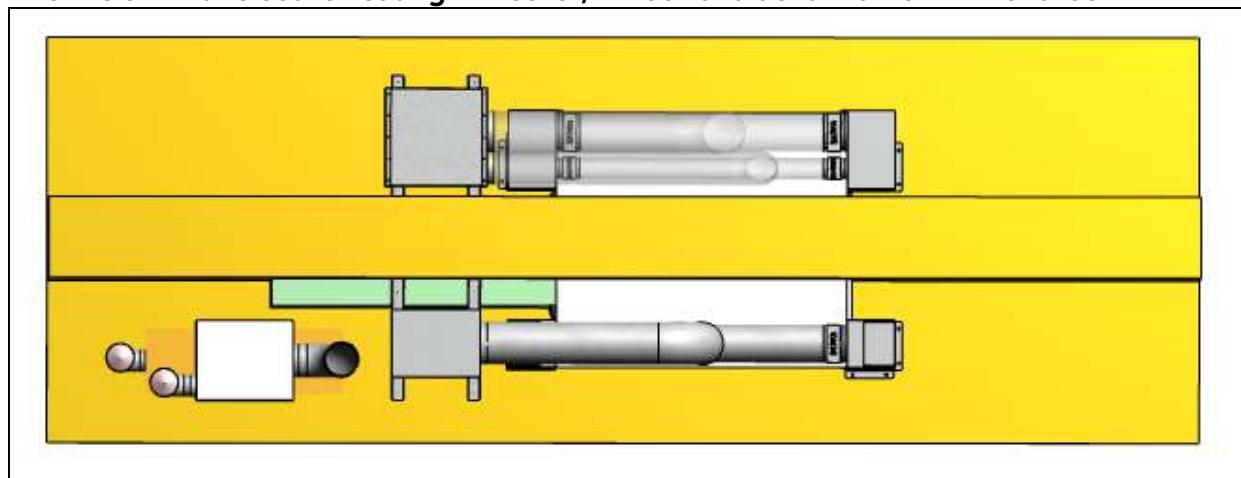
* Not applicable in USA/Canada (to be organized locally)



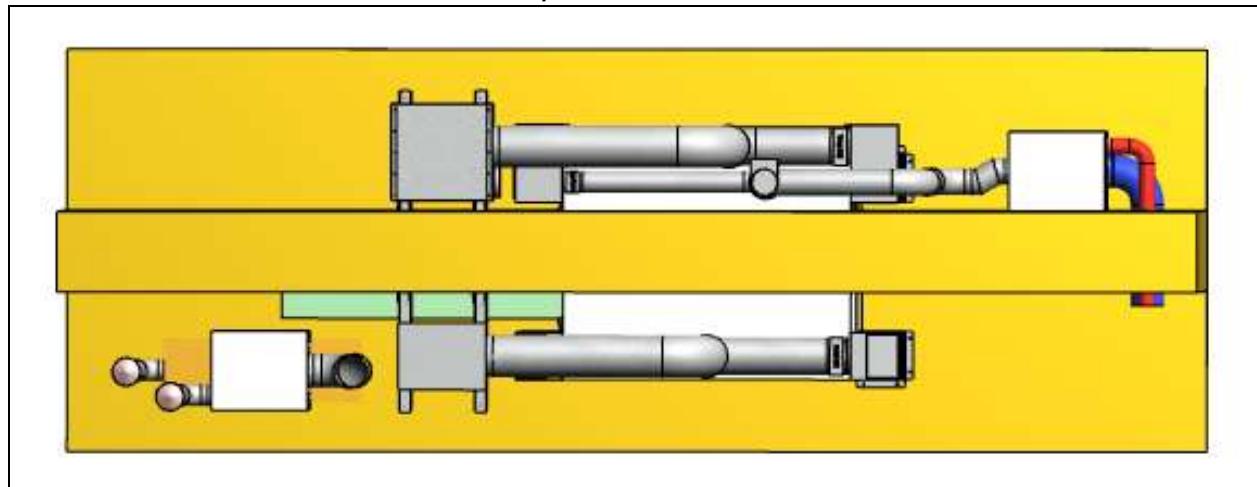
DSBLOCK with dehumidifier* in freezer + Airlock in front room



DSBLOCK with electric heating in freezer, Airlock and dehumidifier* in front room



DSBLOCK with dehumidifier in freezer, Airlock and dehumidifier* in front room



* Not applicable in USA/Canada (to be organized locally)



Advice on combination

Type of application		3mH	4mH	4,6mH	5mH
DSB	<3mB	(1)+15° (1)+0° (1)-45°	(1)blind (1)+15° (1)+0° (1)-45°	(1)blind (1,2)+15° (1,2)+0° (1,2)-45°	(2)blind (1,2)+15° (1,2)+0° (1,2)-45°
AIRLOCK*	<3mB	(1)-15° (1)+0° (1)+15°	(1)blind (1)-15° (1)+0° (1)+15°	(1)blind (1,2)-15° (1,2)+0° (1,2)+15°	(2)blind (1,2)-15° (1,2)+0° (1,2)+15°
Comfort	<3mB	(1)-45° (1)+0° (1)+15°	(1)blind (1)-45° (1)+0° (1)+15°	(1)blind (1,2)-45° (1,2)+0° (1,2)+15°	(2)blind (1,2)-45° (1,2)+0° (1,2)+15°

The respective blind modules can also be replaced in some cases by +15°, -15° or -45° modules.
Always check which version applies.

(* Dry air can also be injected into the intake of the fan)

Heating

	Width 8.20 ft 2,5 m	9.84 ft 3,0 m	Glycol
Height ft m 9,84 3,0	9 kW	9 kW	+/- 13 kW (900m³/h)
10,50 3,20	9 kW	9 kW	+/- 13 kW (900m³/h)
11,48 3,50	9 kW	9 kW	+/- 14 kW (1000 m³/h)
13,12 4,00	12 kW	12 kW	+/- 18 kW (1300 m³/h)
14,76 4,50	15 kW	2x9 kW	+/- 18 kW (1300 m³/h)
15,75 4,80	15 kW	2x9 kW	2 x +/- 13 kW (1800m³/h)
16,40 5,00		2x9 kW	2 x +/- 13 kW (1800m³/h)



Unpacking your equipment

Upon receipt of the goods, the delivery note (Fig. 1) and all components (Fig. 2) must be checked for completeness and possible damage and the inspection must be visually documented. The material is always shipped with special insurance. Damage must be reported in writing within 24 hours. Describe the problem in detail and include the visual documentation (clear photos and videos).

Packing list cold side (double line – cold/comfort)

Naam:		Paklijst		MASTERVEIL
Adres:		10/03/2025		
Land:				
Order nr:				
NUMMER	Palettennummer			
#	Artikel	#		
Vloerplaat	L-profiel	Tussenplaat	Kleine onderdelen	
Module 15°	Module 0°	Module -45°	Extra Module	Blind Module
				1/2

Naam:		Paklijst		MASTERVEIL
Adres:		10/03/2025		
Land:				
Order nr:				
NUMMER	Palettennummer			
#	Artikel	#		
Top box L	Top box R	Fanbox	Heater	
Beugel	Plastic flaps	Fan	Stuurpaneel	
				2/2



Packing list warm side (single line – Airlock)

Naam:
Adres:
Land:
Order nr:

Paklijst
10-03-2025

MASTERVEIL

NUMMER Palettenummer
Artikel

Vloerplaat	L-profiel	Tussenplaat	Kleine onderdelen
Module -15°	Module 0°	Module 15°	Blind Module

1/2

Naam:
Adres:
Land:
Order nr:

Paklijst
10-03-2025

MASTERVEIL

NUMMER Palettenummer
Artikel

Top box L	Top box R	Fanbox	
Beugel	Plastic flaps	Fan	Stuurpaneel

2/2



DSBLOCK- Packing list:

Example of a basic setup

Description	DSBLOCK
DSB freezer	X
DSB front room	X
Fan box/Parts freezer	X
Fan box/Parts front room	X
Sealing panels	Opt.
Brush	Opt.
Electrical resistance*	X
T-piece 280 – 315 – 280 (2pcs)	Opt
T-piece 160 – 250 – 160 (1pc)	Opt
Duct 280 (2pcs)	Opt
Valve dia 280 (4pcs)	Opt
Steering panel*	X
Door contact*	X
Signal battery door*	Opt
Glycol	Opt
Dehumidifier*	Opt

For details, connections and/or deviations from your custom installation, please refer to the order confirmation and your CAD design drawing.

The Masterveil package contains only the required main components. The ducts, such as those between the fan and the T-pieces, must be purchased by the installer, they are not part of the delivery. Ensure that the ducts are installed without obstruction with as little (1) pressure loss (<150 Pa) as possible. It is necessary to use pipes/ducts that are environmentally friendly and resistant to potentially aggressive cleaning agents.

Seams are preferably sealed with tape (or rubber seal).

* Not applicable in USA/Canada (to be organized locally)



Assembly information

Minimize the distance between the Powerstream DSB and the door. Too great a distance can lead to incorrect air movements and this in turn gives a chance of ice formation and/or slippery floors.

The structure is looking from the location of the device to the opposite space.

Make sure that the DSB modules with insulating air layer are placed in the freezer room.

Comfort on the warm side.

Place the floor slabs where the DSBLOCK will be placed. Now build up the DSBLOCK and make sure that a connecting element (intermediate plate) is placed between each module.

Example DSB: Make sure that the module with the negative air outlet angle is at the bottom, with the air outlet angle facing the freezer room (for both the left and right column) and this to block any escaping cold air. In the middle are the modules with the neutral air outlet corners. At the top, the module with the positive air outlet angle with the air outlet angle facing the front chamber is placed to block any incoming hot air. (See p.15 for the respective angles.)



(Cfr. remark "Sealing" p.24)

Particular attention has to be paid to the pre-mounted air outlet angles, typical of the DSBLOCK family.
Module with negative air outlet angle: at the bottom, air outlet angle towards freezer.
Module with neutral air outlet angle: middle.
Module with positive air outlet angle: at the top, air outlet angle towards the front room.
Make sure that the insulation line (small outflow with Z-structure) is always placed between the moisture load and the main layer. Example for the situation warm front room and freezer: place PWS DSB modules in the freezer with insulation layer towards the warm room. Example when installing a double line PWS module (cfr. Comfort arrangement) in a warm room: make sure that the insulation layer is close to the freezer on the side. (To make a buffer between the warm side of the humidity and the freezer that does not support humidity)

Now place the top boxes with the duct connections on the columns.

Connect the 2 columns with spiral tubes and fittings. The main stream is fed by a duct with a diameter of 280mm. The insulating air layer is fed by a duct with a diameter of 160mm.

Depending on where the motor is installed (*) (left or right of the freezer door) it will be determined where the large T-piece will be placed (this in case 1 fan is used to power the 2 columns). Make sure that the T-piece of the insulating air is placed in the middle of the pipe. (*see Triple Jet expansion).

Do not place the 2 T-pieces at the same distance from the top boxes, this will make the connection of the duct difficult. 2 control valves are placed (both left and right) against the top boxes.



Connections on the top boxes are intended for easy assembly.
Ensure that the correct amount of air is supplied in each drum with the control valves, both for the main line and for the insulation line



Make sure the columns are level and then secure them with the L-profiles provided.
Make sure the blowout drums can blow freely. (*) see fan.

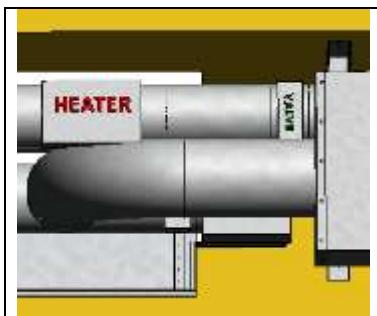
Now place the fan (see note "Fan" p.26) on the supplied brackets with the connection rings facing the DSBLOCK. Now connect the 2 T-pieces to the fan. Install an air valve on the outlet of the fan (insulation air dia250) so that the prescribed amount of air can be regulated over the heater with this valve. Always use fixed spiral tubes and fittings.

Electric heating* (when used) to supply the insulation layer

The DSBLOCK can be combined with an electric heater. The electric heater must always be installed on the pressure side of the insulating air layer. For safety reasons, it must be ensured that the electric heater is connected to the control panel. It is forbidden to switch on the electric heater without fan operation. Always consider a cooldown time after activation.

The defined air for the insulating air layer flows through the 6 or 9 kW (depending on door height) heater to obtain a temperature increase of about 10 - 20°C. The aim is to distance yourself from the condensation line. (see HX-diagram)

The distance between the motor and the electrical resistance is determined by the following formula: Connection diameter times 2. E.g.: 250 x 2 = 500mm. This means that the distance between motor and electrical resistance must be at least 500mm. For further installation instructions, please refer to the packaging/nameplate of the electrical resistor.



If the duct, after heating, is longer than 2 meters, this duct must be insulated.

Heating data (see "Heating" p.15)

Electrical resistance*/glycol battery/heat pump*/dehumidifier*: See separate data files.
When connecting active dehumidifier, it is advised to place an electric heating line (pressure controlled) in the pulsion here as well. The aim is to keep the room insulation line above 0°C to avoid frost, if the dehumidifier does not offer sufficient Delta T.

Note on ducts

Make sure that the ducts do not show any leakage losses and ensure a smooth air supply.
Avoid unnecessary bends/curves as they will cause pressure drops and reduced performance (see 1).

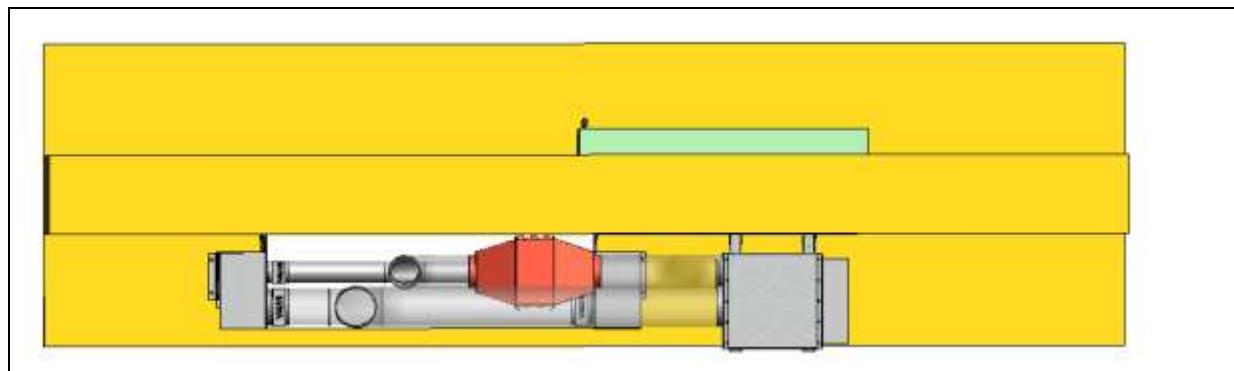
Note regarding freezer entrance

Make sure that the underfloor heating ensures that no dew point is exceeded. This can lead to slippery floors and dangerous situations.

* Not applicable in USA/Canada (to be organized locally)



Hybrid - heating (when applied) to supply the insulation layer



Basic Powerstream DSB system, but this time as a HYBRID glycol system. Recovering energy from the engine room and optimally feeding the heating line instead of using electrical energy. Again, we can only use a small capacity. The system can be adapted to any type of available medium (e.g. glycol).

Make sure that the prescribed heat capacity and regime are always achieved and provide traceability of the regime and air outlet temperature after the heating line.

The DSBLOCK series can be combined with a Hybrid heater. The Hybrid heater must always be installed on the pressure side of the insulating air layer. For safety reasons, make sure that the Hybrid heater is connected to the control panel. With a bypass, x number of volume of heat medium can always flow through the pipes to prevent freezing of the pipes, if installed in the freezer. Always consult your refrigeration specialist for this.

The defined air for the insulating air layer flows through the Hybrid heater to obtain a temperature rise of approximately 20 - 25°C.

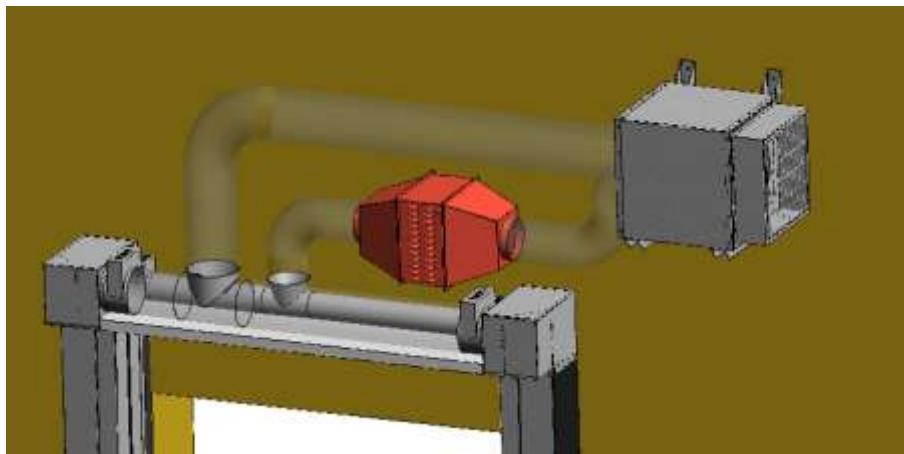
To distance yourself from condensation line. (see HX-diagram)

The distance between the engine and the Hybrid heater is determined by the following formula: Connection diameter times 2. E.g.: $250 \times 2 = 500\text{mm}$. This means that the distance between engine and Hybrid heater must be at least 500mm. If the duct is longer than 2 meters after heating, this duct must be insulated.

The prescribed heat capacity must always be achieved to ensure a correct operation of the system.

ATTENTION: The installation of the Hybrid system may only be carried out by a certified installer (installer must check local legislation).

Provide priority power with necessary capacity. Provide readability of in/out circuit.



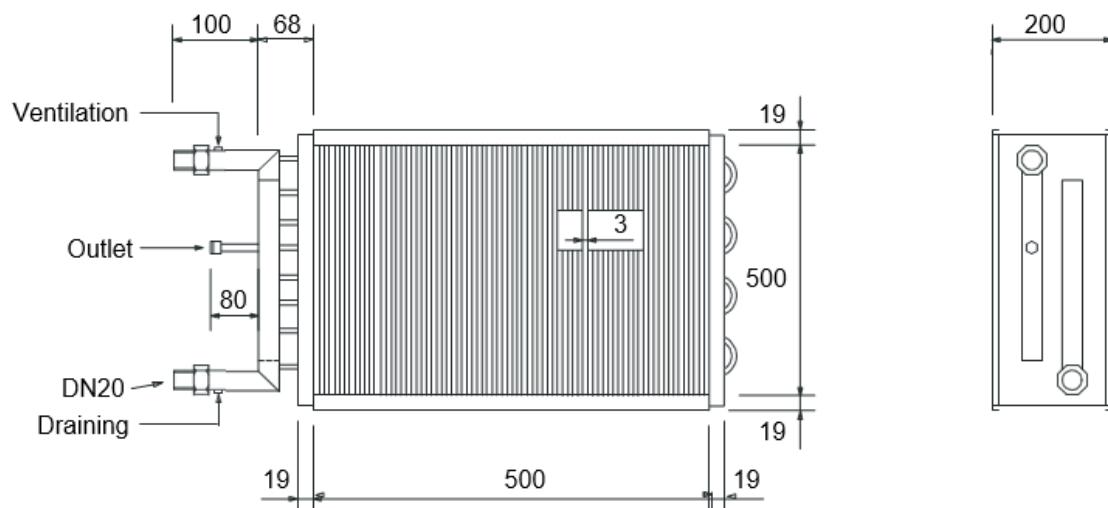


Heating data

Electrical resistance*/glycol battery/heat pumps*/dehumidifier*: See individual data/technical files.

Example

Water 30/15 -> -28 air intake



AIR

Current		
Speed	m ³ /h	13
Temp in	m/s	1,4
Rel. hum. in	°C	-28
Temp out	%	10
Rel. hum. out	°C	21
Pressure drop	Pa	21
Effect	kW	16

MEDIUM

Etylen glycol 45%		
Current	l/s	0,306
Speed	m/s	0,62
Temp in	°C	30,0
Temp out	°C	15,0
Pressure drop	kPa	14,3

* Not applicable in USA/Canada (to be organized locally)



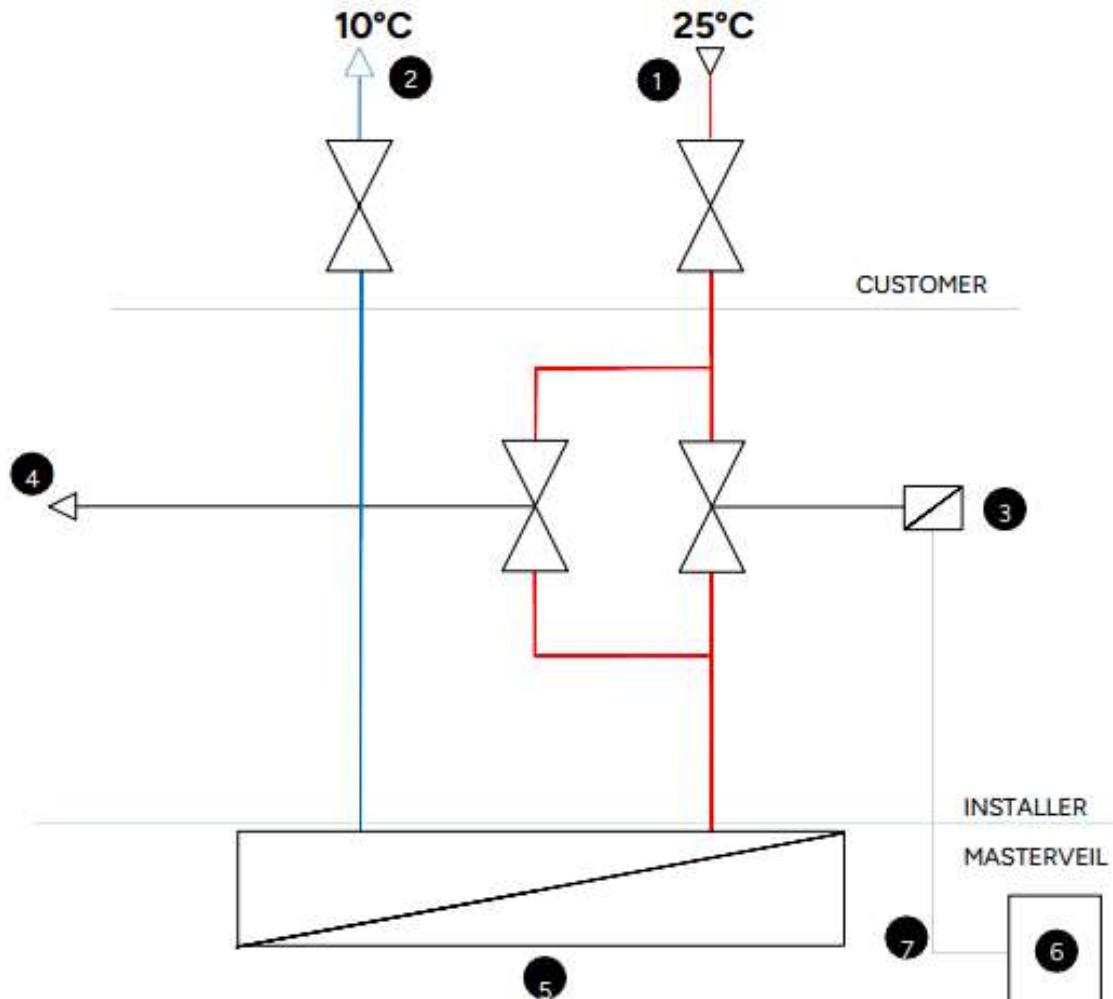
Example

MASTERVEIL

P
OWERSTREAM

Glycol Connection

MASTERVEIL



Interfaces / Who delivers what?

1 Flow temperature 25°C
2 Return temperature 10°C
3 Magnetic valve (24VDC)
4 Bypass (30%) with regulating valve (cfr. TA-valve)

5 Heating battery
6 Steering panel
7 24VDC

* Not applicable in USA/Canada (to be organized locally)

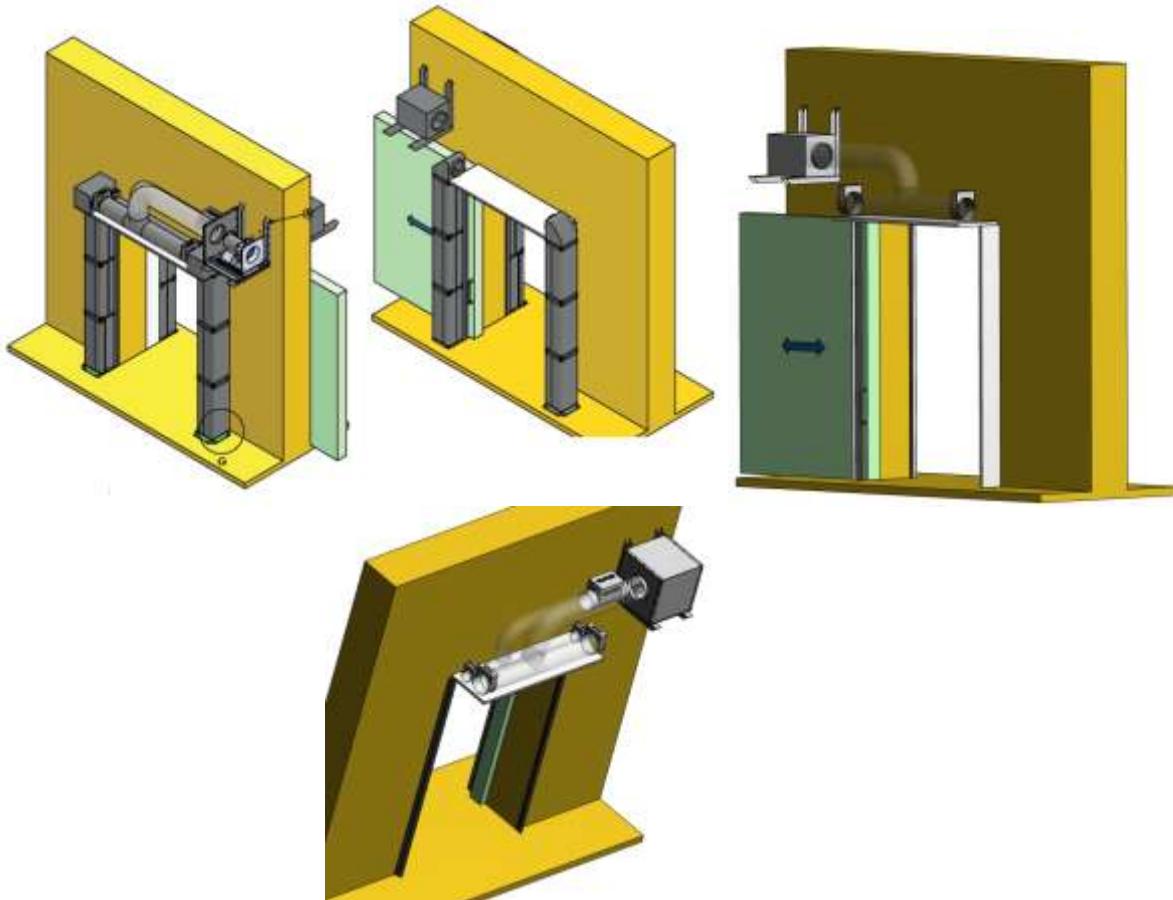


Sealing

Make sure that uncontrolled air is blocked by the use of panels, brushes, ...

All possible openings must be closed!

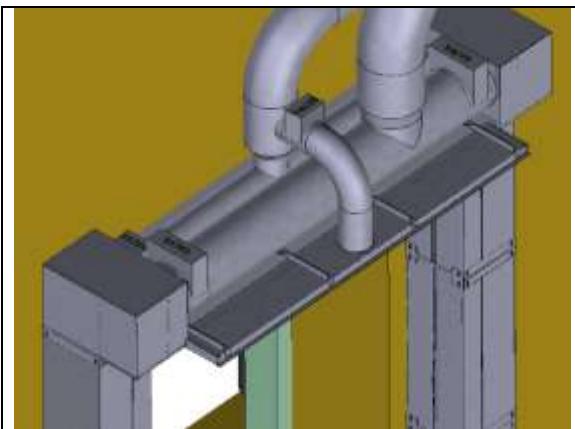
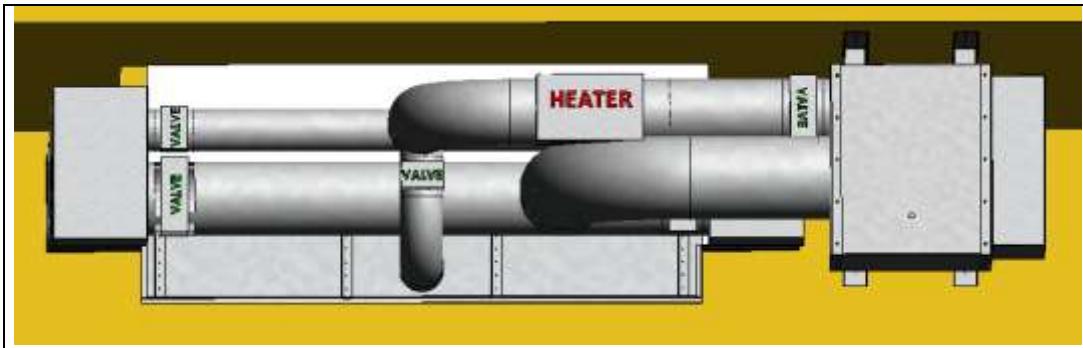
Place the roof on the 2 lips that are in front of the top boxes. Have the roof connect to the wall. The sides of the columns must also be sealed. For this, use panels or sealing brushes.





Triple Jet expansion

Place the Triple Jet system on the front of the roof with the delivered brackets. Connect the heating line duct to the Triple Jet with spiral pipe and fittings. Provide an air valve to correctly regulate the amount of air.



Steering panels (if included in the delivery)*

Make sure they are mounted in an accessible location. If these are hidden somewhere in the technical ceiling, problems arise with maintenance and interventions.

Never install the supplied steering panel in the freezer compartment.

Minimum required functions: door contact, release, low- and high-speed function in function of door contact and/or pre- or after-run functionality, interconnection heating, thermal contact of the fan and the electric heating and/or dehumidifier, alarms, sensors, signal for control valve (Glycol). Use shielded cables if necessary. For self-designed steering panels, provide the possibility for remote monitoring and sensors (temperature and humidity).

Control diagram and safeguards: see separate documentation from the supplier.

Note: in our range, there is a control panel* available that can be equipped with a SIM card (M2M-mini). This SIM card must be provided by the customer. This control panel sends an automatic status overview or error messages to your (mobile) phone or to the phone of the technical manager.

Warning light

Make sure the error message is visibly mounted. If in doubt, an additional signal tower for better error/distance display should be ordered. This allows different colors and thus different error codes to be made visible.

Door contact

Make sure they can't be damaged by the door or misuse.

* Not applicable in USA/Canada (to be organized locally)



Fan

The fans have been specially adapted for Masterveil for the optimal functioning of this system. (In this case, we refer to specific project-specific extensions).

Attention: there are **fans** provided for use on the **cold side**, and there are those provided for the **warm side**. These may **NOT be exchanged** because that will cause damage.

We also have fans that are independent of location (cfr. Availability, stock).

(see color codes, if present: blue for cold side & red for warm side)

Check all parts for damage during transport and allow the impeller to move freely in the housing. The fans are to be installed in the supplied fan box. Lift carefully, and align with the correct bracket, only use stable lifting equipment. In case of increased humidity, it should be avoided that the fan intake is placed in the incoming/humid air. The supplied intake grille must always be installed to avoid accidents. The intake grille must always be free of ice or snow, if necessary, it must be cleaned daily/periodically. In some cases, spacers can also be used between the fan box and the intake grille. Make sure the fan is protected from vibrations and shocks. Adequate ventilation of the drive motor must also be ensured. The maximum permissible ambient temperature is 40°C. (cfr. technical data sheet of the fan in question)

The fan has thermal contact conductors. To protect the motor, they must be connected in the control box. When the temperature of the motor becomes too high, the thermal contacts interrupt the electrical connection.

The fan is designed for continuous operation. The rotation speed can be controlled by the supplied steering panel*.

The fan is not suitable for use with i.a. flammable, hazardous or explosive gases, polishing dust, flour and corrosive cleaning products. If you use 1 of these products, the warranty will expire. For further information, see separate documentation from the supplier.

The fan should only be installed by qualified electricians.

1. Check whether the electrical voltage, frequency, phases, etc. are compatible with the specifications

and operating requirements of the fan.

2. The power supply, installation and connections shall be in accordance with the country of installation to meet electrical safety requirements.

3. The fan must be grounded.

4. It is advisable to use a shielded power cable.

5. The fans comply with the respective EC-/UL-/FCA standard.

(Installer must always check the local regulations)

Checking the direction of rotation

Start the fan briefly and check the direction of rotation. The direction of rotation of the impeller must correspond to the arrows on the motor. If the direction of rotation is wrong, the capacity of the fan will be reduced, and the impeller may be damaged.

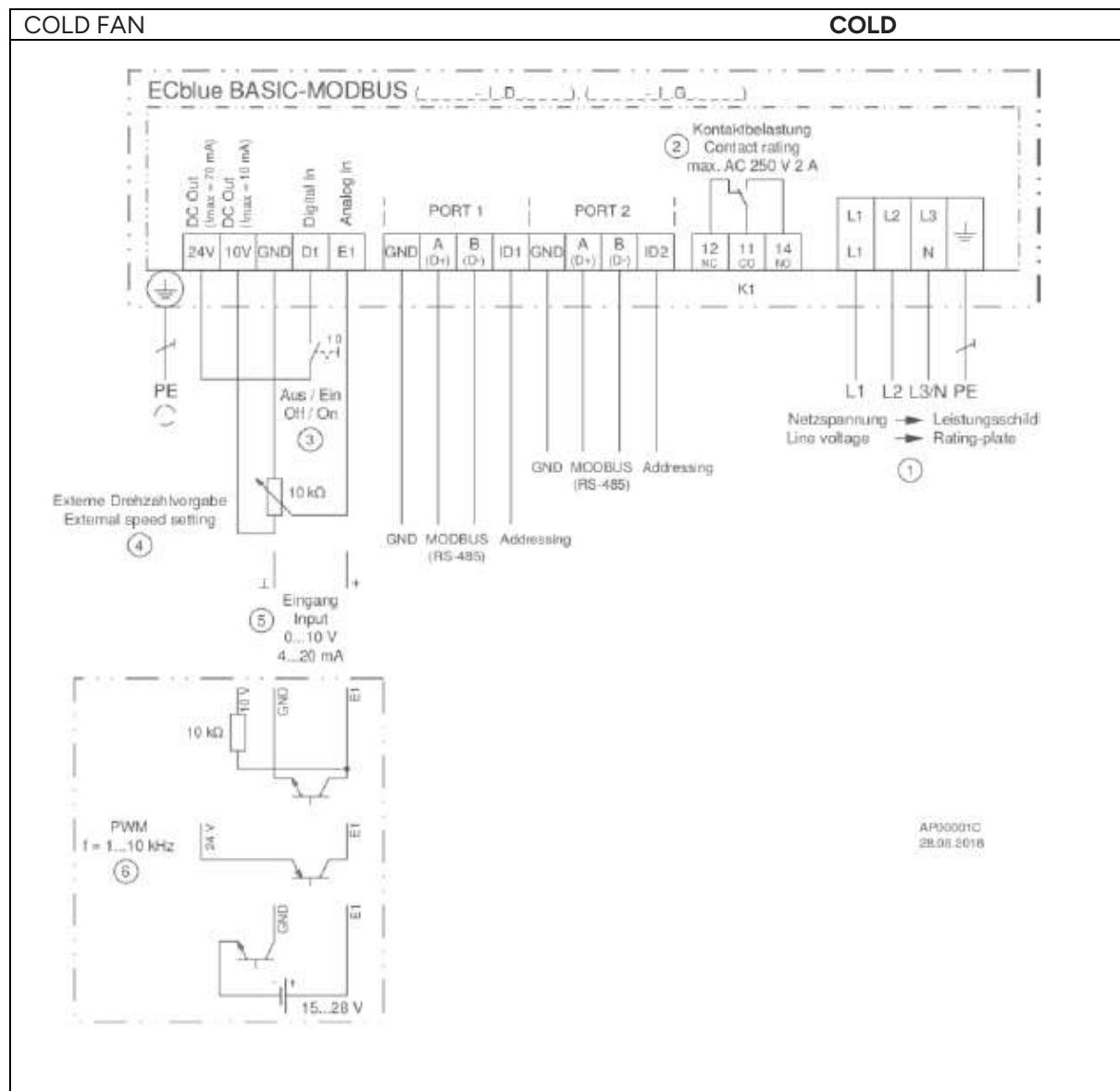
Always place the fan away (left/right) from the door opening so that any residual air (warm/moisture) cannot affect the intake grille (read condensate).

* Not applicable in USA/Canada (to be organized locally)



Technical Data fans

Example of a diagram





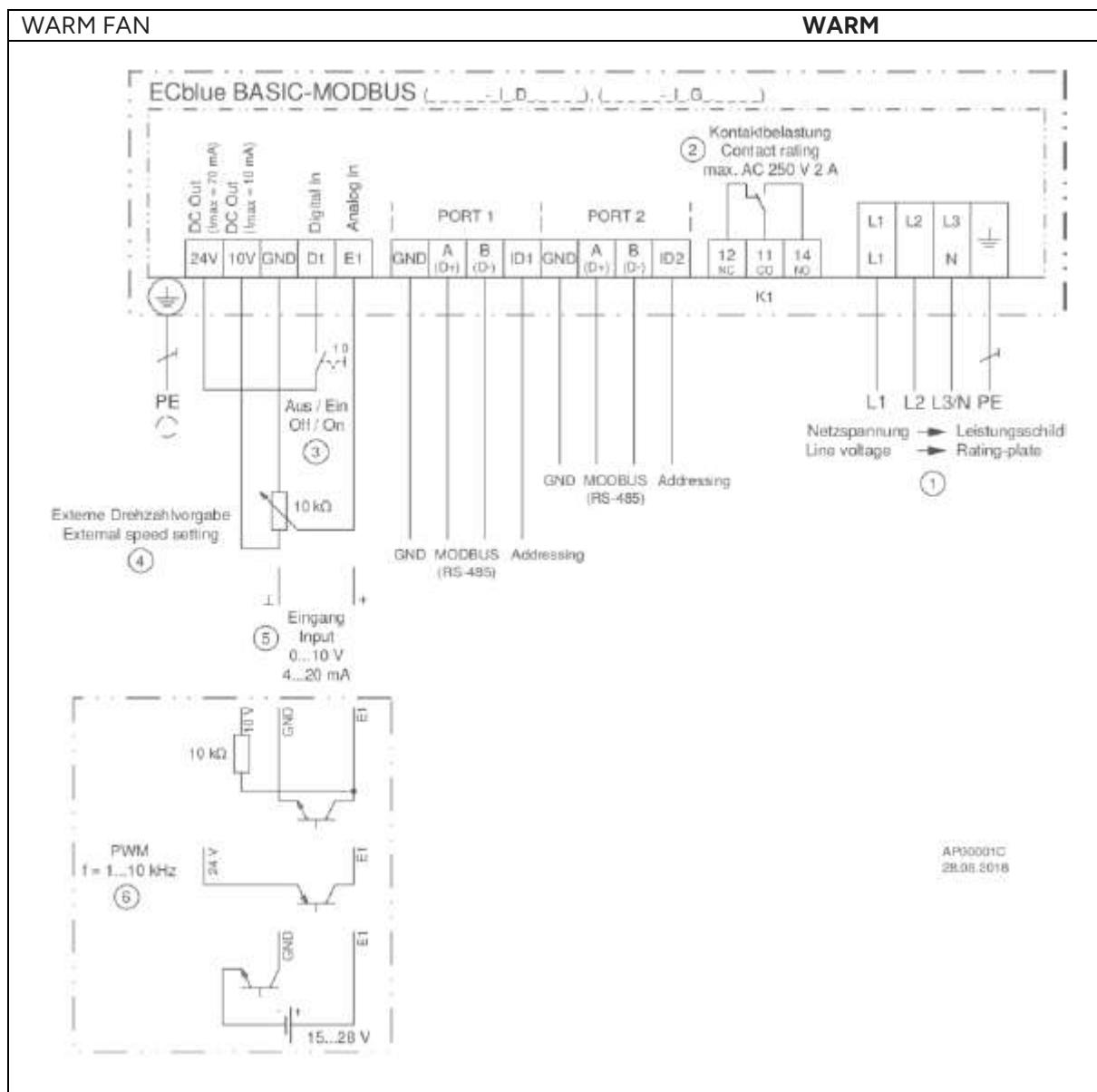
NAMEPLATE

Example

Technical data Article number	184245/A01
Type	Ziehl Abegg
Indication	Ventilation unit with impeller with backward curved blades.
Nominal values	3 ~ 380-480V 50 / 60Hz P1 3,30kW 5,40-4,20A 2700min-1 40 ° C
Electrical connection	Integrated controller
Control	BASIC-MODBUS
Material impeller	Impeller made of ZAmid
Installation position	H / Vu / Vo
Motor protection	Integrated active temperature controller
Type of protection	IP55
Thermal class	Thermal class 155
Saturation point	Moisture and warm climate protection
Quality of bearings	Low-temperature ball bearing lubricate
Labeling UL / CSA	E213826 ZB-155
Certificate	UL Listed Product E213826
Weight (kg)	33,00



Example of a diagram





NAMEPLATE

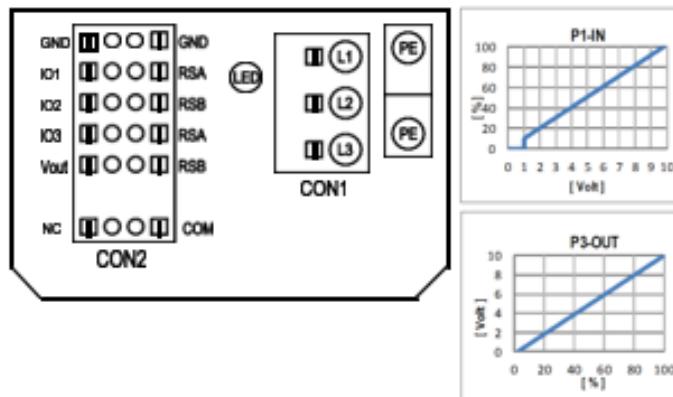
Example

Technical data Article number	116173/A01
Type	Ziehl Abegg
Indication	Ventilation unit with impeller with backward curved blades.
Nominal values	3 ~ 380-480V 50 / 60Hz P1 3,30kW 5,40-4,20A 2700min-1 40 ° C
Electrical connection	Integrated controller
Min. working temperature °C	-20 ***
Control	BASIC-MODBUS
Material impeller	Impeller made of ZAmid
Installation position	H / Vu / Vo
Motor protection	Integrated active temperature controller
Type of protection	IP55
Thermal class	Thermal class 155
Saturation point	Moisture and warm climate protection
Quality of bearings	Long lubrication ball bearing
Labeling UL / CSA	E213826 ZB-155
Certificate	UL Listed Product E213826
Weight (kg)	33,00



NAMEPLATE

Example of a diagram



Nr.	Conn	Designation	Function / allocation
	CON1	L1, L2, L3	Supply voltage, phase, for voltage range see type plate
	PE	PE	Ground wire
	CON2	RSA	RS485-interface for MODBUS, RSA; SELV
	CON2	RSB	RS485-interface for MODBUS, RSB; SELV
	CON2	GND	Reference earth for control interface, SELV
	CON2	IO1	Function can be configured (see table 'Optional interface functions') Factory setting: digital input - high active, function: disable input, SELV - inactive: pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: activation of an error reset when the status changes from 'enabled' to 'disabled'
	CON2	IO2	Function can be parameterised (see table 'Optional interface functions') Factory setting: Analogue input 0-10 V / PWM, $R_i=100 \text{ k}\Omega$, function: Setpoint characteristic can be parameterised (see input characteristic P1-IN), SELV
	CON2	IO3	Function can be parameterised (see table 'Optional interface functions') Factory setting: Analogue output 0-10 V, max. 5 mA, function: Modulation depth Fan characteristic can be parameterised (see output characteristic P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC +/-5%, $P_{max}=800 \text{ mW}$, voltage parameterisable, factory setting: 10 VDC permanently short-circuit proof, power supply for external devices, SELV alternative: 15-50 VDC input for parameterisation via MODBUS without mains voltage
	CON2	COM	Status relay, potential-free status signal contact, common connection, contact rating 250 VAC / 2 A (AC1) min. 10 mA, reinforced insulation for the mains and for the control interface
	CON2	NC	Status relay, potential-free status signal contact, normally open contact in case of fault
		LED	green = status OK, ready for operation orange = status warning red = status error
		P1-IN	Input characteristics
		P3-OUT	Output characteristics



Example

Nominal data

Engine	M3G112-IA
Phase	3~
Nominal voltage / VAC	400
Range nominal voltage / VAC	380 .. 480
Frequency / Hz	50/60
Type	mb
Data recording	
Rotational Speed / min ⁻¹	2700
Capacity reduction / W	3400
Electric consumption / A	5,2
Min. Ambient temp / °C	-40
Max. Ambient temp / °C	40

mb = Max. belasting · ~~vo~~ = Max. rendement · ~~fr~~ = Vrij blazend
 kw = Klantspecificaties · kg = Apparatuur van kliet

Wijzigingen voorbehouden

Technical description

Mass	24,8 kg
Measure	400 mm
Measure engine	112
Rotor surface	Painted in black
Material	kw
Electronic casing	Aluminium die-cast parts
Fan equipment	Aluminium plate
Material support	Galvanised steel sheet
Material support	Steel, painted black
Material of the intake part	Galvanised steel sheet
Number of blades	5
Direction of rotation	Looking to the right on the rotor
Protection class	IP55
Insulation class	[°] F
Humidity class (F) / environmental protection class (H)	H1
Indication of ambient temperature	Occasional start-up at temperatures between -40°C and -25°C is permitted. For prolonged use at ambient temperatures below -25°C (e.g. cooling applications), a fan model equipped with special low-temperature bearings should be used.
Mounting position	See the legend for the product drawing
Condensation drilling	Rotor side
Modus	S1
Motor bearing	Ball bearing
Technical equipment	<ul style="list-style-type: none"> -LED operation and fault indication - External input 15-50 VDC (configurable) - Fault indication relay - Integrated PI controller - Configurable inputs/outputs (I/O) - MODBUS V6.3 - Motor current limitation - RS485 MODBUS-RTU - Soft start - Voltage output 3,3-24 VDC, Pmax = 800 mW - Control interface with SELV potential safely separated from the mains supply - Protection against overheating of electronics/motor - Undervoltage/phase failure detection
Contact current in accordance with IEC 60990 (measurement circuit in Figure 4, TN system)	<= 3,5 mA
Electrical connection	Terminal box
Engine protection	Electronic motor protection
Protection class	I (if the underground cable has been connected by the customer)
Compliance with standards	EN 61800-5-1; CE
Approval	UL 1004-7 + 60730-1; EAC; CSA C22.2 nr.77 + CAN/CSA-E60730-1



Collision protection

In the case of vertical- or double vertical modules, it is advisable to install a collision protection (not included in the delivery) without obstructing the air outlet nozzle. (see photo)



If you have any questions or concerns, please do not hesitate to contact your Masterveil certified partner.



Adjustment based on the applications

Type of application	Purpose	Powerstream-unit	Air outlet angle
DSBLOCK in freezer	Temperature separation	Both sides to the left and right of the door	Bottom: towards the freezer Middle: towards each other Top: towards to front room
AIRLOCK	Temperature separation	Both sides to the left and right of the door	Bottom: towards the freezer Middle: towards each other Top: towards the front room
DSBLOCK with Triple Jet	Temperature separation	Both sides + horizontal	Bottom: towards the freezer Middle: towards each other Top: towards the front room Triple Jet: Top to bottom
DS BLOCK COMFORT	Temperature separation	Both sides	Bottom: towards the freezer Middle: towards each other Top: towards the front room

Contact our Customer Service for further Tips/Tricks

Use an "anemometer*" to check where the air flow splits and thus be able to show the zero point. This means that the "anemometer*" does not move at this point. When the "anemometer*" moves in the direction of the freezer room or in the direction of the front room, the 2 different directions of movement are displayed.

Check the measured speeds

Use a "pitometer*" for air speed control.

The air velocity should be about 14 to 16 m/s (with the most common door widths).

Behind the zero point, the measured speed must be in the range of 2 to 3 m/s.

It can be checked in person by placing the hand directly in front of the exhaust vent and feeling a perceptible airflow. Stand in the middle of the door, you should feel the slight airflow on both sides of your head.

The volume of the insulating air layer is between 900/1000/1300 m³/h depending on the height of the door.

The volume of the Triple Jet is between 500 and

600m³/h.

In the case of a heated insulating/dehumidified air layer: this would lead to a temperature increase (exhaust/suction) of 10 to 20°C.

When the cold air enters (+/- -20°C), the surface temperature of the ducts is always below freezing point.

* not included



Startprotocol

After starting, always make a note of the settings and pass it on to the customer and your certified Masterveil partner.

Your certified Masterveil partner will have special forms and checklists for this purpose.

Operation and maintenance

Maintenance is limited to cleaning the fan twice a year (if used correctly) and cleaning the columns. Before cleaning: disconnect the fan supply to avoid the risk of electric shock. Wait for the motor impeller to come to a stop. Be careful during disassembly and cleaning so as not to alter the balance of the fan.

Do not use sharp tools – they may damage the outer layer of the impeller. Use pressurized attachment to blow out the perforated grid.

Do not clean the appliance with a water jet or pressure washer.

Do not use cleaning supplies containing acids or solvents.

All of this can damage the device.

What to test	How to test	Frequency	Action
Check the case for damage	Visual inspection	Every 6 months	Repair or replacement of the device
Mounting the connection cables and protective conductor connection	Visual inspection	Every 6 months	Tighten as needed
Checking the insulation of cables for damage	Visual inspection	Every 6 months	Replace cable
Range of Wear/Scale/Corrosion and Damage	Visual inspection	Every 6 months	Clean or replace impeller
Check suction and air outlet, and clear	Visual inspection	Daily	Clean

Check with an anemometer* on the floor where the airflow splits to verify the zero point. This means that the anemometer* should not rotate at this point. If the impeller of the anemometer* then swings out to the cooled room or to the warm side, two different directions of movement must be created.

Also check the electrical values (Amperage/Voltage/...) in accordance with previous technical reports such as installation report (Start protocol) or technical sheet!

Your certified Masterveil partner will have special forms and checklists for this purpose.

Also check heater/safety, air volume, filter of dehumidifiers, ... (if applicable)

You can also make use of the QR-code (if applicable), which is attached to the device/steering panel. The QR-code provides access to the protocols, including the start protocol, previously set parameters and manuals.

CAUTION for fire hazards!!

Repair work on the fan must be carried out by the manufacturer.
We are not liable for repairs by third parties.

* not included



General Checklist

	6 Months	12 Months
Filter: Dehumidifier*	X**	
Cleaning the drum		X
Cleaning the fan box		X
Cleaning the duct		X
Suction fan free	X	
Volume/Speed		X
Zeropoint		X
Checking the temperature of the insulating air layer		X
Checking the air outlet openings	X**	
Electric heating*		X
Steering panel*		X
Filter control panel*		X
Door contact		X
Fan delay Times		X
Current/Power		X
Check the environment		X

* Not applicable in USA/Canada (to be organized locally)

** or when necessary



Problem and solution

Warning – Always unplug the appliance for interventions.

Malfunction/Error	Possible Causes	Possible solution
Insufficient volume from the dehumidifier Air volume weak/unstable	Suction blocked Filter dirty/clogged Phase error Wrong direction of rotation of rotor	Remove blockage Filter replacement Check phases Switch phases
Powerstream unit won't Start	Power supply Door contact BMS-signal	Measuring Connecting/Bridging Connecting/Bridging
Floor becomes moist/slippery	Air over cold floor Temperature/humidity too high or out of range	Faster speed Closing exterior doors/openings Avoiding negative pressure Avoid draughts Activating higher Delta T in the front room via evaporator Cooler front room Dehumidifier front room
Mist in door opening	Too much humidity in the front room	Reduce humidity Closing exterior doors/openings
Too cold in the front room	Low speed Long opening hours	Adjusting speed Reduce opening time
Air outlet opening is frozen	Residual moisture on colder flat surfaces	Clean Checking electrical resistance
Blades (fan) are out of balance	Unbalance of the rotating parts	Cleaning the appliance. If weight clips have been removed during cleaning, make sure they are put back in place after cleaning. If the imbalance persists, replace the device.
Fan does not start up	Voltage	Check the main voltage, restore the power supply.
Fan does not respond to the steering panel	Connection fault	Switch off, correct connection see connection diagram.
General error lamp flashes or stays on, on the fan	Thermal motor protection has been activated.	Allow the engine to cool down, find the cause and rectify the fault, reset the restart lock if necessary To restore the thermal contacts: Disconnect the electrical connection, wait for the motor to cool down, then restore the electrical connection
Engine overheating	Ambient temperature too high Invalid operating conditions Insufficient cooling	If possible, lower the ambient temperature Check the Operation Status Improve cooling
Loud noise or vibrating structure	Resonance	Change speed



If the rated current on the nameplate is exceeded during operation, it must be checked whether the available main voltage and frequency correspond to the technical specifications. The drive motor is designed for performance-requirements up to a maximum allowable pressure. At higher pressures, power consumption increases, resulting in overheating. Please note that overheating due to compression may occur even if the engine power is not exceeded. Overloading can be prevented by installing an overload valve to maintain the maximum operating condition.

Please always inform your certified Masterveil partner of any problems.

Attention!!!

Only a specialist can check electrical connections. There is a high risk of injury from electric shock.
Appliances with metal parts must be properly grounded.

(The installer must always check the local legislation regarding specific rules and legislation)

If the error still cannot be found, you can contact our after-sales service.

Warranty:

Our materials have a warranty of 2 years - excluding interventions / transport /...
If the installation and maintenance are respected.

NOTE: The manufacturer reserves the right to change specifications without prior notice.

Finishing and aftercare

When the machine is assembled, apply the safety indications, the Powerstream mark, identification of the machine (EC/serial number/...) and QR-code.

Afterwards, make sure you have a collision protection that does not interfere with the air outlet!

Where necessary – have it technically inspected.

Electrical inspections are always the responsibility of the end customer.

Masterveil – Powerstream contact details

Masterveil - Deweerdт
Brusselbaan 192
B - 9320 Erembodegem
Phone: 0032(0) 53 60 78 90
Mail: support@deweerdт.be



UL/FCA ADDENDUM for USA/CANADA

1. Equipment which shipped to US or Canada is required to be listed based on the installation requirements / use of the equipment based on NFPA 70 / applicable Canadian requirements (C22.1).

This equipment is intended for installation in [ordinary](#), indoor, non-hazardous locations, and shall be installed in accordance with the latest Edition of the National Electrical Code, NFPA 70 (Canadian Electrical Code, C22.1-1), where the ambient temperature of the facility does not exceed 40°C (104°F) maximum.

Note: The text above does include a hyperlink to the internet. This links contains the relevant information for (US) ordinary locations.

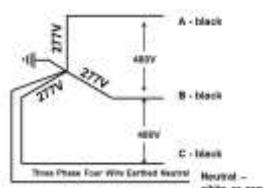
Note that the cULus certified fan / frequency combination has a UL Type 3 environmental rating. This device shall be used within an ordinary location where the assigned environmental rating is suitable for the ordinary environment it is used in.

For reference see Article 110.28 of the NEC (US requirements).

2. Note that the complete fan / frequency converter combination is already cULus listed and complies with US and Canadian listing requirements. The field provided (by end-user) industrial control panel is not included within the scope of the delivery. The system may optional be provided with a field provided (by the end-user) heater or a dehumidification unit.

The field provided industrial control panel (by end-user) shall comply with all of the following:

- a. It shall comply with the requirements for Industrial Control Panels UL 508A (or the Canadian requirements C22.2 No. 286-17; whichever is applicable) and shall be evaluated as General Use panels in accordance with Part 1 of the UL 508A Standard.
- b. The control panel shall have suitable electrical ratings, including environmental ratings for the location it has been used in, and be suitable for a solidly grounded, 4 wire, supply source rated 480/277 Vac/ 60 Hz.



Federal United States "Occupational Safety and Health Administration" ([OSHA](#)) requirements mandate that all electrical equipment in the workplace be "certified (listed)" by a Nationally Recognized Testing Laboratory ([NRTL](#) for the US) or subjected to a complete and thorough evaluation before use (29 CFR 1910.303 and 1910.399) by an electrical engineer or inspector using the applicable listing standard (or the [Canadian certified bodies](#) for Canada; whichever is applicable).



Additionally, many cities, counties, other municipalities, states and regions have regulations requiring building, gas fired and electrical products to be certified or evaluated. For the Canadian market [SCC](#) (Standards Council of Canada) has similar requirements than OSHA for the certification of equipment.

Please note that the regulating authority having jurisdiction (AHJ) for the final installation site provides final approval of this equipment and the installation in accordance with National Electrical Code (NFPA 70; also referred to as Code) requirements. Article 90.4 states the following (for Canada the Canadian Electrical Code CEC [C22.1], rule 2-024 has similar requirements):

This Code is intended to be suitable for mandatory application by governmental bodies that exercise legal jurisdiction over electrical installations, including signaling and communications systems, and for use by insurance inspectors.

The authority having jurisdiction for enforcement of the Code has the responsibility for making interpretations of the rules, for deciding on the approval of equipment and materials, and for granting the special permission contemplated in a number of the rules.

By special permission, the authority having jurisdiction may waive specific requirements in this Code or permit alternative methods where it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety.

This Code may require new products, constructions, or materials that may not yet be available at the time the Code is adopted. In such event, the authority having jurisdiction may permit the use of the products, constructions, or materials that comply with the most recent previous edition of this Code adopted by the jurisdiction.

The complete assembly shall be installed in accordance with the latest applicable Edition of the National Electrical Code, NFPA 70, (US requirements) or the Canadian Electrical Code, C22.1 (Canadian requirements) whichever is applicable.

All used devices shall have proper electrical ratings, including environmental ratings, for the application and be provided with a certification label which is acceptable for the AHJ.

All of the above is a responsibility for the end-user.

3. The plenum parts are interconnected with the fan / power conversion equipment. The continuity of the grounding path shall have a resistance of 0.1 ohm or less. This shall be verified before the equipment is put into operation.

The grounding path between the fan / power conversion and the plenum shall be verified before the device is put into service. The flexible part between the fan and the plenum does not provide a grounding path which meets the above addressed requirements.

It is advised to use knurled rings in combination with locking washers to ensure a good reliable grounding path. See an example below.





4. WARNING

Maintenance on this equipment shall only be performed by trained, qualified, skilled and authorized electricians, using appropriate safe electrical work practices (refer to NFPA 70E for details) including personal protective equipment, approved tools, procedures and accurate drawings / operating manuals of the panels involved.

Prior to maintenance, appropriate lock-out / tag-out procedures shall be followed for all forms of hazardous energy (not only electrical if other sources are also involved). Verification shall be employed to verify if the source is isolated as required in Sections 120.1 and 120.2 of NFPA 70E, Standard for Electrical Safety in the Workplace. Use proper clearance distances for the voltages involved. Circuits may be worked hot if an approved written energized electrical work permit, including signature(s), is available (NFPA 70E; Section 130.2(B)).

Follow safe start-up procedures after the maintenance has been performed.

We deliver Powerstream components to the assembly of a total machine. Local parts, in accordance with the legislation & standards, must be supplemented / assembled locally. If you have any questions, you can always contact the producer.

Unknown components that are not approved by us are not our responsibility.

Deviating components can affect the operation of your system or lead to dangerous situations.

IMPORTANT and check after installation :

Apply safety stickers & necessary markings

Also apply our POWERSTREAM identification plate(s)

Also visibly apply the ARC Flash Hazard indication on the steering panel

