



DVS – Vertical dehumidifiers for swimming pool

TECHNICAL MANUAL

PRODUCT DESCRIPTION

DVS series dehumidifiers are thought for the usage in small swimming pools, where a 24 hrs/day functioning is required. Even if their typical installation is for swimming pools, the technical characteristics of these units make them suitable also for other applications, such as museum, archives, churches, cellars, warehouses and, in general, for those ambiances where condensate and humidity can damage the structure and/or the product, or create discomfort.

DVS dehumidifiers combine avant-garde technical solutions and a sober, but fine, looking, so they are easily adaptable also in design and prestigious ambiances.

The top-quality refrigeration, hydraulic, aerodynamic and electrical components make DVS units the state of the art dehumidifiers in terms of efficiency, reliability and sound power emitted.

Moreover, they have been designed to be easily inspected and maintained.

A complete list of options and accessories allows to meet any type of requirement and, in the event that the standard range and available accessories are not enough to meet these demands, HiDew can offer specific solutions according to Customer's needs.

DVS series is composed by 7 models according to the air flow rate (from 600 up to 1400 m³/h) and to the capacity of dehumidification (from 67 up to 225 L/day).

Thanks to this wide and complete range, and to the great looking, this line of products represents a reference on the market.

COMPONENTS

Refrigerant circuits

The refrigerant circuit is completely realized in our Factory, using only top-quality components.

Production operators are a qualified Team.

Each DVS unit is assembled, welded, wired and tested within our Factory, as a granted top-quality product.

DVS units respect the 97/23/CE Directive. All the units are realized with the ecological gas R410a.

Refrigerant components:

- Compressors: rotative or scroll type, of primary international brand. The engines are thermally protected by an internal protection which controls the temperature of windings and turns off the power supply if necessary
- De-hydrator filter with molecular sieve
- Thermal expansion valve or rolling organ (according to the model)
- Liquid indicator
- High pressure switch
- Schrader valve for the control of working pressure and/or the maintenance of the refrigerant circuit
- Thermal exchange coils varnished and with anti-corrosion treatment

Ventilation

Single suction electronic centrifugal fans with plastic fan are used, in order to grant additional protection against corrosion and also for a sensible reduction of the sound level emitted, to grant a major acoustic comfort.

SERIES

There are 7 available models, according to air flows and dehumidification capacities.
The number is an indication of the dehumidification capacity, expressed in L/day.

| | | |
|-----|-----|-----|
| 70 | 90 | 100 |
| 160 | 190 | |
| 210 | 230 | |

INSTALLATION

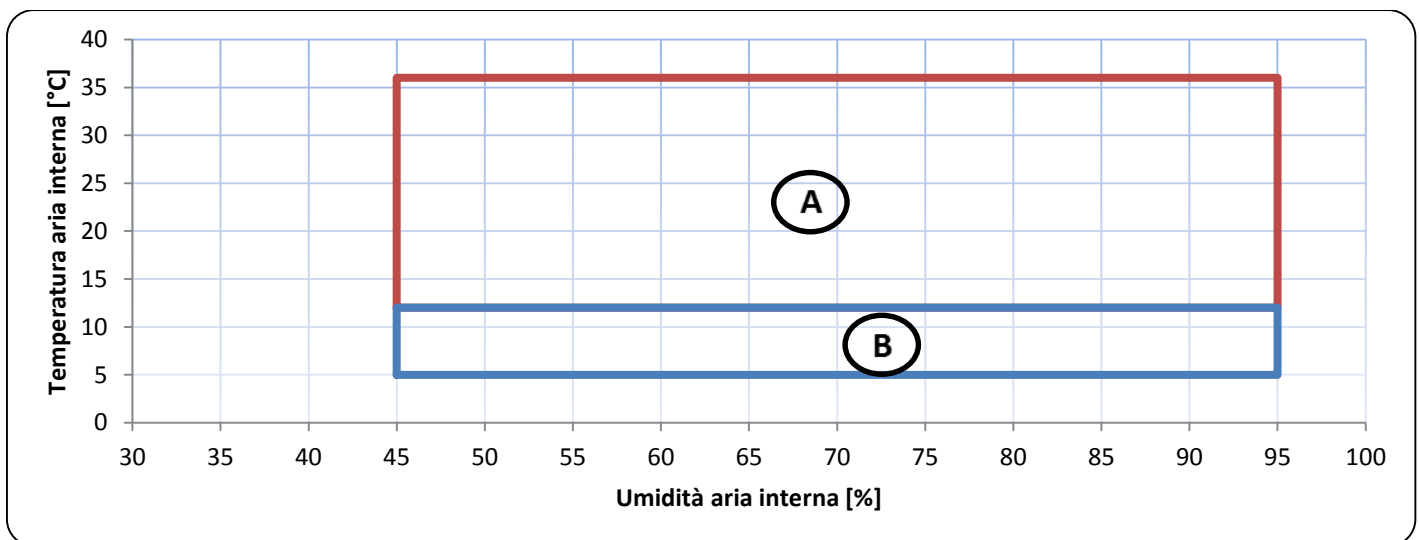
DVS units are conceived for a direct vertical installation in the ambience you want to dehumidify.

STRUCTURE

The exclusive design of the unit grants the complete inaccessibility to all the components.
The frontal removable panel grant a complete accessibility to the unit, and makes maintenance very easy.
Screws and fixing systems are in INOX or in carbon steel, with passivation treatment.
The drain box is in INOX steel, too.
Carpentry are completely painted with polyester powders, in order to resist to corrosion.
Heat exchanger are painted with anticorrosion.

OPERATION LIMITS

Units' correct functioning outside the below indicated limits, is not granted.



A. Dehumidifier's operation limit

B. Dehumidifier's operation limit with optional hot gas defrost

FUNCTIONS

DVS units are equipped with an advanced control, complete of temperature and humidity probes on board, which make the dehumidifier completely autonomous in the reading and in the management of temperature and humidity.

The control is composed by a programmable micro-processor and a graphic display which allows a large number of functions and options, easy to manage thanks to a simple, complete and intuitive interface.

The management software is completely developed in our Company, thanks to high-qualified technicians.

The display can be placed at distance, up to 20 mts and, thanks to the temperature and humidity probes mounted on board, it can manage temperature, humidity and on/off through time-bands.

Customized soft-wares are available on request, as special.



Here are all the controller's functions:

- Display of the unit functioning modes and/or alarms' status
- Temperature and humidity probes on board
- Evaporation low-pressure protection probe
- Management of 3 speeds of ventilation during dehumidification, recirculation, heating
- On/off management through time bands
- Temperature management through time bands
- Humidity management through time bands
- Alarm history management
- Electrical heaters and hot water with 3-ways valve contemporaneity management
- Automatic static defrost management
- Automatic hot gas defrost management
- Alarm on terminal box signal
- Retro-lighted graphic display
- Possibility of having the display at distance

OPTIONS

- Kit for display at distance (5, 10 or 20 mts)
- Post-heating water coil
- Post-heating water coil with 3-ways valve
- Electrical heaters
- Hot gas defrost
- Silent version
- RS485 serial board
- Display mounted on the unit

KIT FOR DISPLAY AT DISTANCE (5, 10 OR 20 MTS)

It allows the placement of the display at distance, thanks to a cable (5, 10 or 20 mts)

POST-HEATING WATER COIL

It is composed by a post-heating coil, to heat up the supply air, thanks to the hot water coming from a boiler or a heat pump. The unit is supplied with the coil already built in.

For the placement of water pipes, check the drawings in the following paragraphs.

POST-HEATING WATER COIL WITH 3-WAYS VALVE

In addition to the water coil, the units can be equipped with a 3-ways valve, directly managed from the controller of the unit. As for the coil, also the valve is already mounted on the unit, when ordered.

ELECTRICAL HEATERS

They allow to heat the supply air when hot water is not available.

The safety is granted by a thermostat that, in case of overheating, enables the electrical heaters and gives the alarm.

When required, the unit is supplied with the electrical heaters already mounted on board.

SILENT VERSION

The silent version option, allows to reduce the emitted sound level from the compressor, so the unit is more silent.

It consists of an insulation of the compressor vain that reduces the noise, increasing the acoustic comfort

RS485 SERIAL BOARD

The modbus RS485 connection is available, in order to supervise the unit at distance through a domotic system.

Additional information available on request.

HOT GAS DEFROST

It is composed by a gas valve which inlets hot gas on the evaporating coil, allowing a quick defrosting and enlarging the possibilities of applications of the unit.

TECHNICAL DATA

TABELLE DATA SHEET

| MODEL | | DVS 070 | DVS 090 | DVS 100 |
|---|-------------------|----------------|------------|------------|
| Dehumidifying capacity | L/day | 67 | 92 | 99 |
| Nominal air flow | m ³ /h | 600 | 700 | 800 |
| Available static pressure | Pa | 40 | 40 | 40 |
| Sound pressure | dB(A) | 46 | 47 | 48 |
| Hot water coil capacity | kW | 6,1 | 6,8 | 7,5 |
| Load losses water coil without valve | kPa | 23 | 28 | 33 |
| Load losses water coil with valve | kPa | 33 | 40 | 47 |
| Power supply | V/ph/Hz | 230 / 1+N / 50 | | |
| Electrical heaters capacity | kW | 2 | 3 | 3 |
| Electrical heaters current | A | 8,7 | 13 | 13 |
| Compressor nominal power | kW | 0,9 | 1,5 | 1,5 |
| Compressor nominal current | A | 4,3 | 7 | 7 |
| Unit nominal power | kW | 1 | 1,5 | 1,6 |
| Unit max power | kW | 1,3 | 1,9 | 1,9 |
| Unit nominal current | A | 4,9 | 7,7 | 8 |
| Unit max current | A | 6,6 | 9,8 | 9,8 |
| Inrush current | A | 20 | 38,3 | 38,3 |
| Unit max power with electrical heaters | kW | 3,3 | 4,9 | 4,9 |
| Unit max current with electrical heaters | A | 15,3 | 22,9 | 22,9 |
| Unit inrush current with electrical heaters | A | 28,7 | 51,3 | 51,3 |
| Weight | Kg | 80 | | |
| Refrigerant gas | | R410A | | |

The dehumidification capacity is declared at the nominal conditions: 30°C / 80% UR.

Absorbed currents and powers are declared at the nominal conditions: 30°C / 80% UR.

The capacity of the hot water coil is declared at the following conditions: ambience air 30°C / water in 80°C and out 70°C.

The sound pressure is declared at 1 mt in free field.

At different conditions, the declared values can vary in a sensible way: the more they are far from the nominal ones, the more the variations will be important.

| MODEL | | DVS 160 | DVS 190 |
|---|-------------------|----------------|------------|
| Dehumidifying capacity | L/day | 161 | 182 |
| Nominal air flow | m ³ /h | 1000 | 1200 |
| Available static pressure | Pa | 40 | 40 |
| Sound pressure | dB(A) | 50 | 52 |
| Hot water coil capacity | kW | 10,4 | 11,9 |
| Load losses water coil without valve | kPa | 25 | 31 |
| Load losses water coil with valve | kPa | 34 | 44 |
| Power supply | V/ph/Hz | 230 / 1+N / 50 | |
| Electrical heaters capacity | kW | 4 | 4 |
| Electrical heaters current | A | 17,4 | 17,4 |
| Compressor nominal power | kW | 2,3 | 2,5 |
| Compressor nominal current | A | 10,8 | 11,5 |
| Unit nominal power | kW | 2,4 | 2,6 |
| Unit max power | kW | 3,1 | 3,2 |
| Unit nominal current | A | 11,5 | 12,4 |
| Unit max current | A | 15,2 | 15,8 |
| Inrush current | A | 63,8 | 63,8 |
| Unit max power with electrical heaters | kW | 7,1 | 7,2 |
| Unit max current with electrical heaters | A | 32,6 | 33,2 |
| Unit inrush current with electrical heaters | A | 81,2 | 81,2 |
| Weight | Kg | 140 | |
| Refrigerant gas | | R410A | |

The dehumidification capacity is declared at the nominal conditions: 30°C / 80% UR.

Absorbed currents and powers are declared at the nominal conditions: 30°C / 80% UR.

The capacity of the hot water coil is declared at the following conditions: ambience air 30°C / water in 80°C and out 70°C.

The sound pressure is declared at 1 mt in free field.

At different conditions, the declared values can vary in a sensible way: the more they are far from the nominal ones, the more the variations will be important.

| MODEL | | DVS 210 | DVS 230 |
|---|-------------------|----------------|---------|
| Dehumidifying capacity | L/day | 213 | 225 |
| Nominal air flow | m ³ /h | 1400 | 1400 |
| Available static pressure | Pa | 40 | 40 |
| Sound pressure | dB(A) | 53 | 54 |
| Hot water coil capacity | kW | 13,3 | 13,3 |
| Load losses water coil without valve | kPa | 35 | 35 |
| Load losses water coil with valve | kPa | 55 | 55 |
| Power supply | V/ph/Hz | 400 / 3+N / 50 | |
| Electrical heaters capacity | kW | 4 | 4 |
| Electrical heaters current | A | 17,4 | 17,4 |
| Compressor nominal power | kW | 3,7 | 3,8 |
| Compressor nominal current | A | 6,5 | 6,7 |
| Unit nominal power | kW | 3,8 | 3,9 |
| Unit max power | kW | 4,7 | 4,7 |
| Unit nominal current | A | 7,7 | 7,9 |
| Unit max current | A | 9,3 | 9,4 |
| Inrush current | A | 49,8 | 49,8 |
| Unit max power with electrical heaters | kW | 8,7 | 8,7 |
| Unit max current with electrical heaters | A | 26,7 | 26,8 |
| Unit inrush current with electrical heaters | A | 67,2 | 67,2 |
| Weight | Kg | 160 | |
| Refrigerant gas | | R410A | |

The dehumidification capacity is declared at the nominal conditions: 30°C / 80% UR.

Absorbed currents and powers are declared at the nominal conditions: 30°C / 80% UR.

The capacity of the hot water coil is declared at the following conditions: ambience air 30°C / water in 80°C and out 70°C.

The sound pressure is declared at 1 mt in free field.

At different conditions, the declared values can vary in a sensible way: the more they are far from the nominal ones, the more the variations will be important.

DIMENSIONS

| | 70 | 90 | 100 | 160 | 190 | 210 | 230 |
|----|------------------|----|-----|------------------|-----|-----|-----|
| mm | 550 x 1700 x 330 | | | 750 x 1700 x 330 | | | |

YIELD CURVES

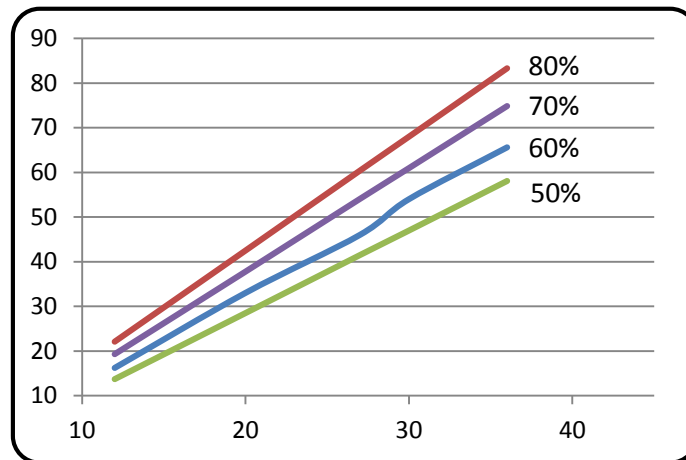
On the horizontal line there is the indication of temperature.

On the vertical line there is the indication of the dehumidifying capacity.

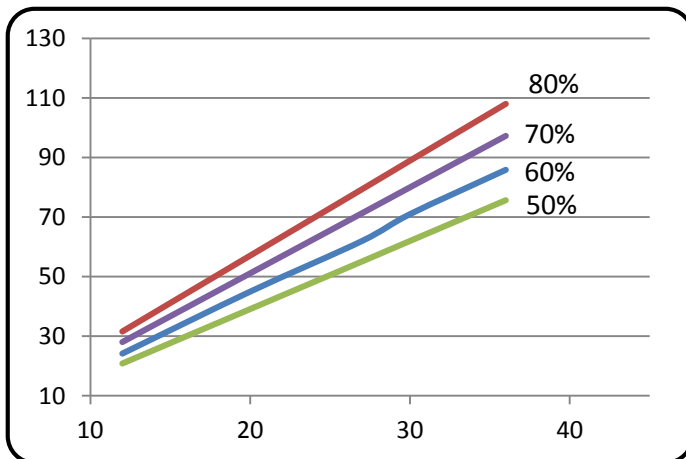
To calculate the dehumidifying capacity in a specific operation point:

- Place on the horizontal line at ambience temperature
- Rise to the top till you cross the ambience humidity curve
- Move towards left until you read the dehumidification capacity at that specific operation point.

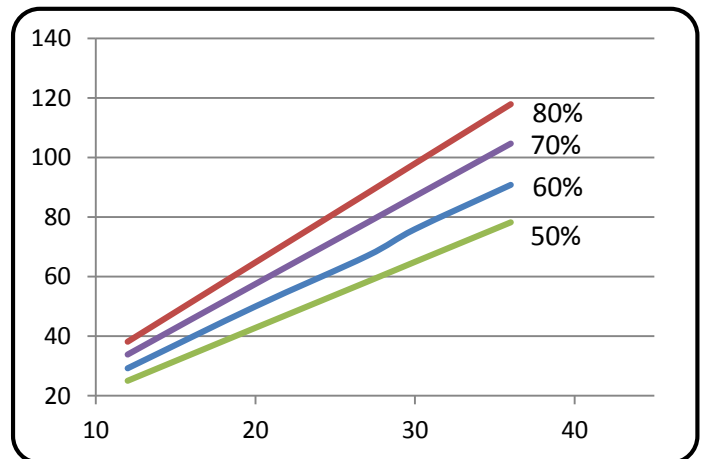
70



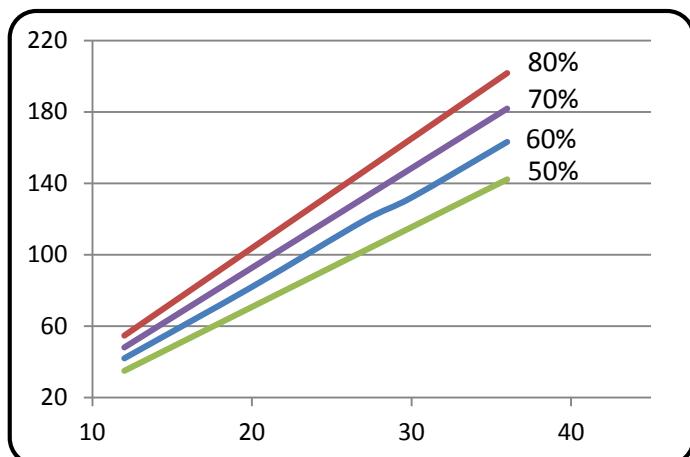
90



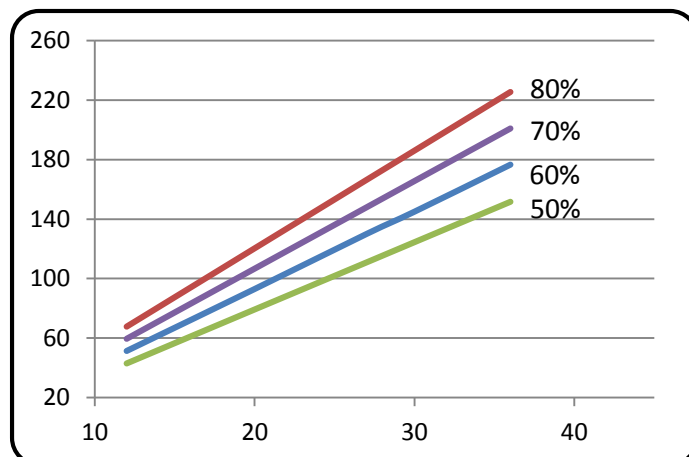
100



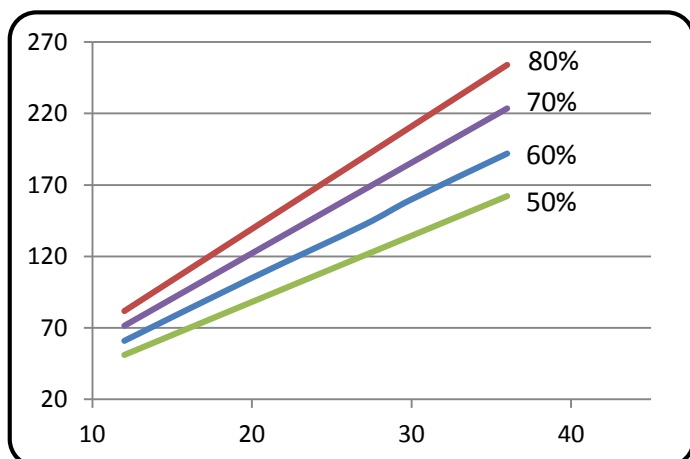
160



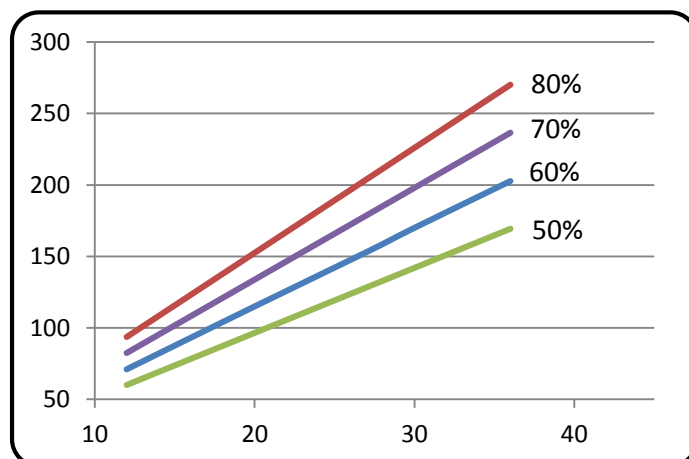
190



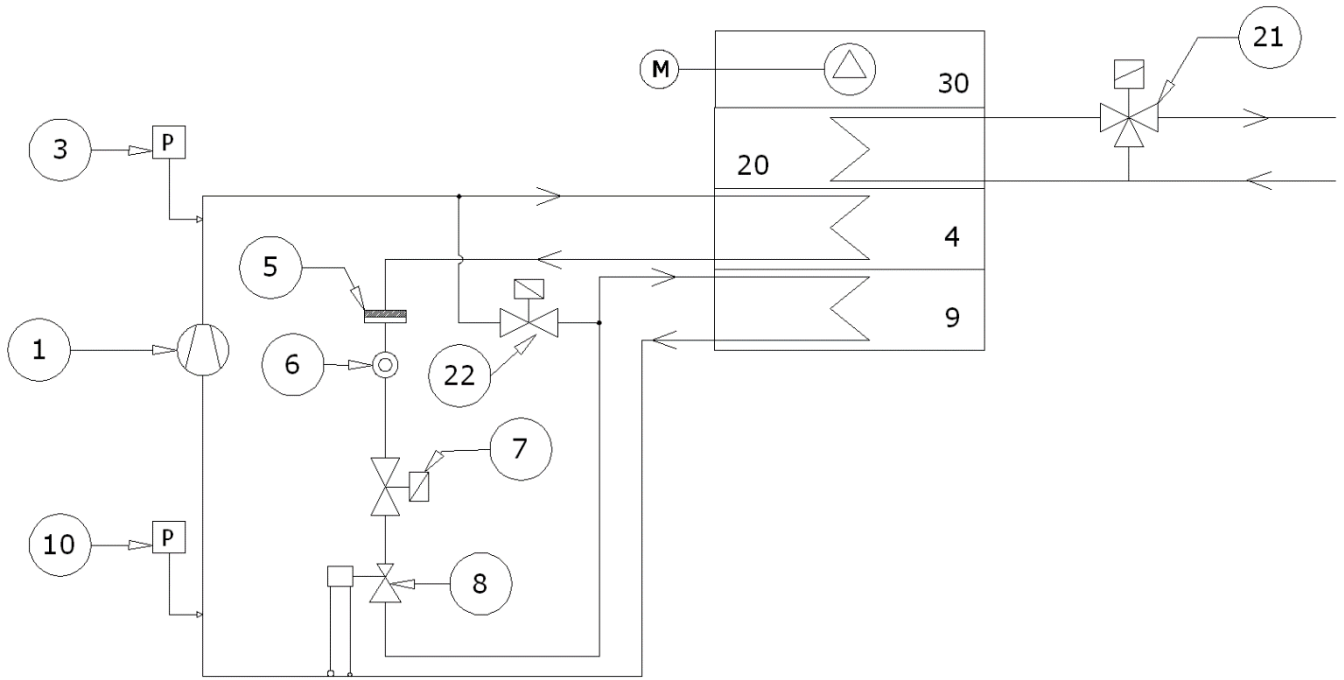
210



230



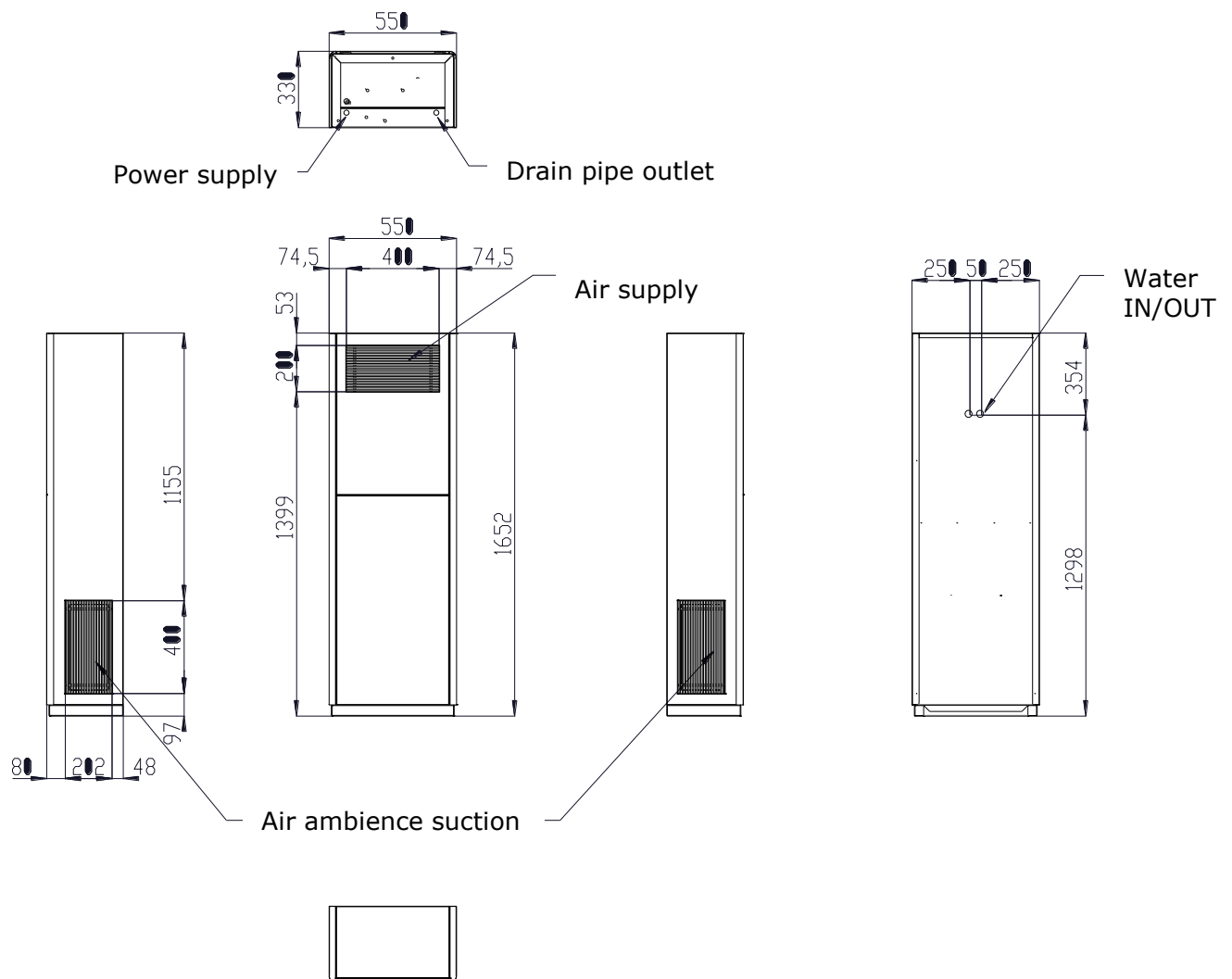
FUNCTIONAL DIAGRAM



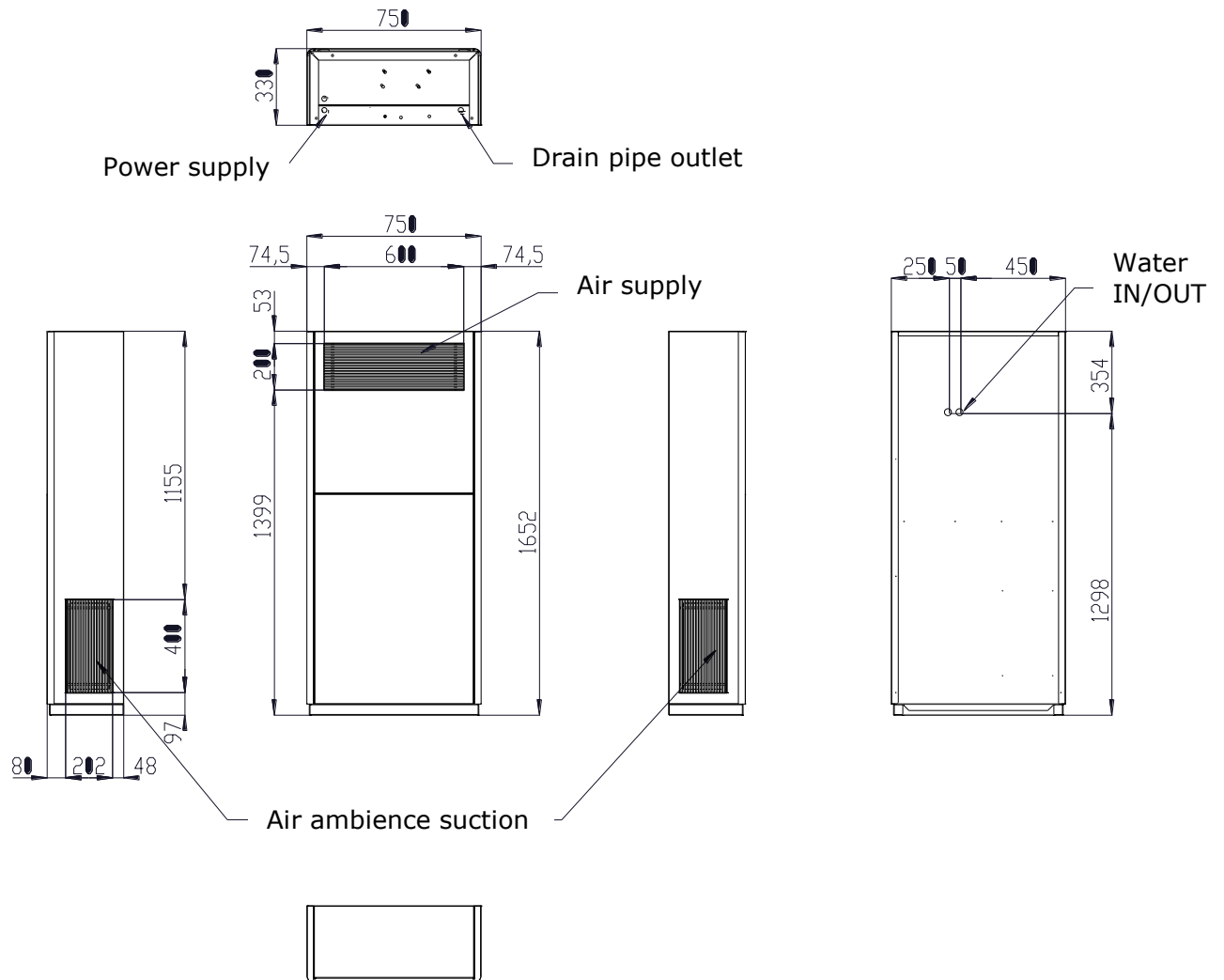
- 1 compressor
- 3 high pressure manostat
- 4 condensing coil
- 5 de-hydrator filter
- 6 flux light
- 7 electro-valve
- 8 thermostatic valve
- 9 evaporating coil
- 10 low pressure probe
- 20 post-heating water coil [option]
- 21 3-ways valve [option]
- 22 hot gas defrost valve [option]
- 30 fan

DIMENSIONAL DRAWING

DIMENSIONAL DVS 70 – 90 - 100



DIMENSIONAL DVS 160 – 190 - 210 – 230





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