Aertesi airpower

EOS B

SERIES

TECHNICAL MANUAL

RECOVERY
UNIT
INTEGRATED

CONTENTS

EOS B

Product datasheet in compliance with Regulation (EU) no. 1253/2014 – 1254/2014

Version without CO2 probe

a	Manufacturer	**AERTESI S.r.l.**		
b	Model ID	**EOSB**	**3HW-3HDE-3VW-3VDE**	**6HW-6HDE-6VW-6VDE**
c	**SEC class average climate**		**A**	**A**
	Specific energy consumption average climate *(SEC)*	kWh/(m^{2}a)	-34.4	-34.2
	SEC class cold climate		A+	A+
	Specific energy consumption cold climate *(SEC)*	kWh/(m^{2}a)	**-82.6**	**-81.8**
	SEC class warm climate		F	F
	Specific energy consumption warm climate *(SEC)*	kWh/(m^{2}a)	-9.5	-9.6
d	Declared type		UVB	UVB
e	Type of drive installed or prescribed		Multi-speed >3	Multi-speed >3
f	Type of recovery system (HRS)		Recovery	Recovery
g	System dry thermal efficiency (η_t)	%	86	84
h	Maximum air flow rate	m^3/h	200	400
i	Electric power input at maximum flow rate	W	110	195
j	Casing-radiated sound power level *(L_{WA})*	dB (A)	52	56
k	Reference air flow rate	m^3/s	0.039	0.078
l	Reference pressure	Pa	50	50
m	Specific power input *(SPI)*	kW/(m^3/h)	0.00037	0.00036
n	Control factor and type *(CTRL)*	Timer	0.95	0.95
o	Maximum external leakage rate	%	<3.8	<3.8
	Maximum internal leakage rate or carry over	%	<3	<3
p	n.s.			
q	Replace filter warning		On keyboard	On keyboard
r	n.s.			
s	Website for technical documentation		www.aertesi.com	www.aertesi.com
t	n.s.			
u	n.s.			
v	Annual electricity consumption per 100m“ average climate	kWh/a	4.7	4.6
	Annual electricity consumption per 100m^2 cold climate *(AEC)*	kWh/a	10.1	9.9
	Annual electricity consumption per 100m^2 warm climate *(AEC)*	kWh/a	4.3	4.1
w	Annual heating savings average climate *(AHS)*	kWh	44.7	44.1
	Annual heating savings cold climate *(AHS)*	kWh	87.5	86.3
	Annual heating savings warm climate *(AHS)*	kWh	20.2	19.9

IMPORTANT To keep the energy efficiency of the recovery unit high, ensure air filters are in place and clean and replace them regularly. Read the instructions in the Use and Maintenance Manual.

Product datasheet in compliance with Regulation (EU) no. 1253/2014 – 1254/2014

Version with CO2 probe centralized

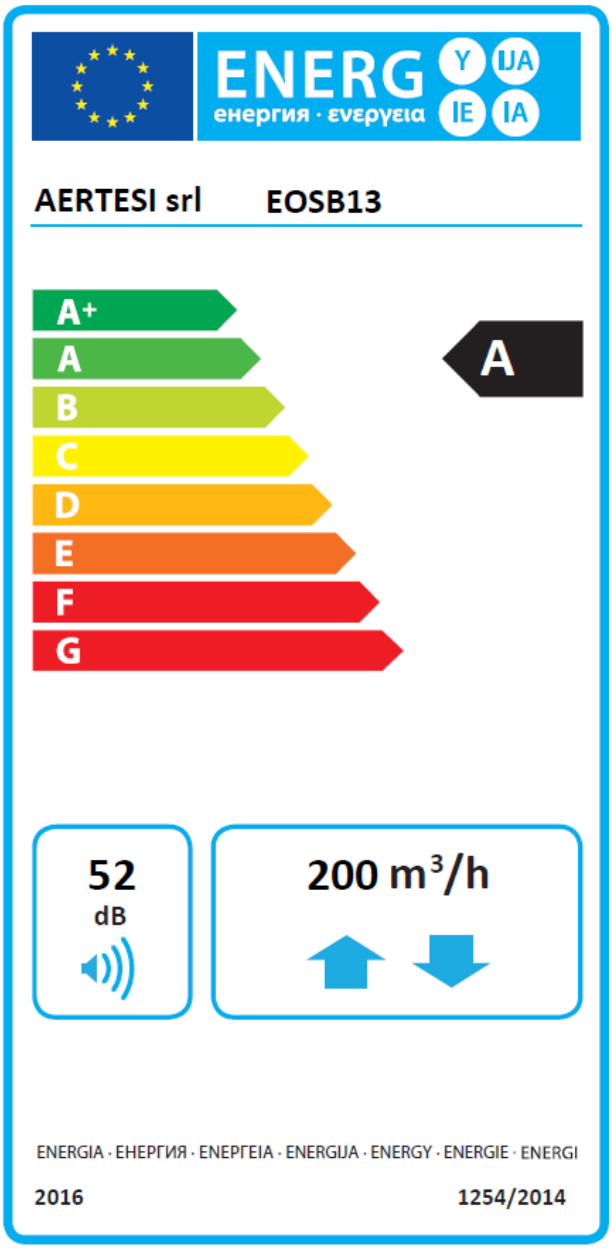
a	Manufacturer	**AERTESI S.r.l.**		
b	Model ID	**EOSB**	**3HW-3HDE-3VW-3VDE**	**6HW-6HDE-6VW-6VDE**
c	**SEC class average climate**		**A**	**A**
	Specific energy consumption average climate *(SEC)*	kWh/(m^{2}a)	-36.5	-36.3
	SEC class cold climate		A+	A+
	Specific energy consumption cold climate *(SEC)*	kWh/(m^{2}a)	-85.1	-84.4
	SEC class warm climate		E	E
	Specific energy consumption warm climate *(SEC)*	kWh/(m^{2}a)	-11.3	-11.4
d	Declared type		UVB	UVB
e	Type of drive installed or prescribed		Multi-speed >3	Multi-speed >3
f	Type of recovery system (HRS)		Recovery	Recovery
g	System dry thermal efficiency (η_t)	%	86	84
h	Maximum air flow rate	m^3/h	200	400
i	Electric power input at maximum flow rate	W	110	195
j	Casing-radiated sound power level (L_{WA})	dB (A)	52	56
k	Reference air flow rate	m^3/s	0.039	0.078
l	Reference pressure	Pa	50	50
m	Specific power input *(SPI)*	kW/(m^3/h)	0.00037	0.00036
n	Control factor and type *(CTRL)*	Centralized	0.85	0.85
o	Maximum external leakage rate	%	<3.8	<3.8
	Maximum internal leakage rate or carry over	%	<3	<3
p	n.s.			
q	Replace filter warning		On keyboard	On keyboard
r	n.s.			
s	Website for technical documentation		www.aertesi.com	www.aertesi.com
t	n.s.			
u	n.s.			
v	Annual electricity consumption per 100m^2 average climate	kWh/a	4.1	4
	Annual electricity consumption per 100m^2 cold climate *(AEC)*	kWh/a	9.5	9.3
	Annual electricity consumption per 100m^2 warm climate *(AEC)*	kWh/a	3.6	3.5
w	Annual heating savings average climate *(AHS)*	kWh	45.2	44.7
	Annual heating savings cold climate *(AHS)*	kWh	88.4	87.4
	Annual heating savings warm climate *(AHS)*	kWh	20.4	20.2
	IMPORTANT To keep the energy efficiency of the recovery unit high, ensure air filters are in place and clean and replace them regularly. Read the instructions in the Use and Maintenance Manual.			

EOS B

Product datasheet in compliance with Regulation (EU) no. 1253/2014 – 1254/2014

Version with CO2 probe local

a	Manufacturer		**AERTESI S.r.l.**	
b	Model ID	**EOSB**	**3HW-3HDE-3VW-3VDE**	**6HW-6HDE-6VW-6VDE**
c	**SEC class average climate**		**A**	**A**
	Specific energy consumption average climate *(SEC)*	kWh/(m^{2}a)	-40.5	-40.3
	SEC class cold climate		A+	A+
	Specific energy consumption cold climate *(SEC)*	kWh/(m^{2}a)	-89.9	-89.3
	SEC class warm climate		E	E
	Specific energy consumption warm climate *(SEC)*	kWh/(m^{2}a)	-14.7	-14.8
d	Declared type		UVB	UVB
e	Type of drive installed or prescribed		Multi-speed >3	Multi-speed >3
f	Type of recovery system (HRS)		Recovery	Recovery
g	System dry thermal efficiency (η_t)	%	86	84
h	Maximum air flow rate	m^3/h	200	400
i	Electric power input at maximum flow rate	W	110	195
j	Casing-radiated sound power level (L_{WA})	dB (A)	52	56
k	Reference air flow rate	m^3/s	0.039	0.078
l	Reference pressure	Pa	50	50
m	Specific power input *(SPI)*	kW/(m^3/h)	0.00037	0.00036
n	Control factor and type *(CTRL)*	Local	0.65	0.65
o	Maximum external leakage rate	%	<3.8	<3.8
	Maximum internal leakage rate or carry over	%	<3	<3
p	n.s.			
q	Replace filter warning		On keyboard	On keyboard
r	n.s.			
s	Website for technical documentation		www.aertesi.com	www.aertesi.com
t	n.s.			
u	n.s.			
v	Annual electricity consumption per 100m^2 average climate	kWh/a	4.1	4
	Annual electricity consumption per 100m^2 cold climate *(AEC)*	kWh/a	9.5	9.3
	Annual electricity consumption per 100m^2 warm climate *(AEC)*	kWh/a	3.6	3.5
w	Annual heating savings average climate *(AHS)*	kWh	45.2	44.7
	Annual heating savings cold climate *(AHS)*	kWh	88.4	87.4
	Annual heating savings warm climate *(AHS)*	kWh	20.4	20.2
	IMPORTANT To keep the energy efficiency of the recovery unit high, ensure air filters are in place and clean and replace them regularly. Read the instructions in the Use and Maintenance Manual.			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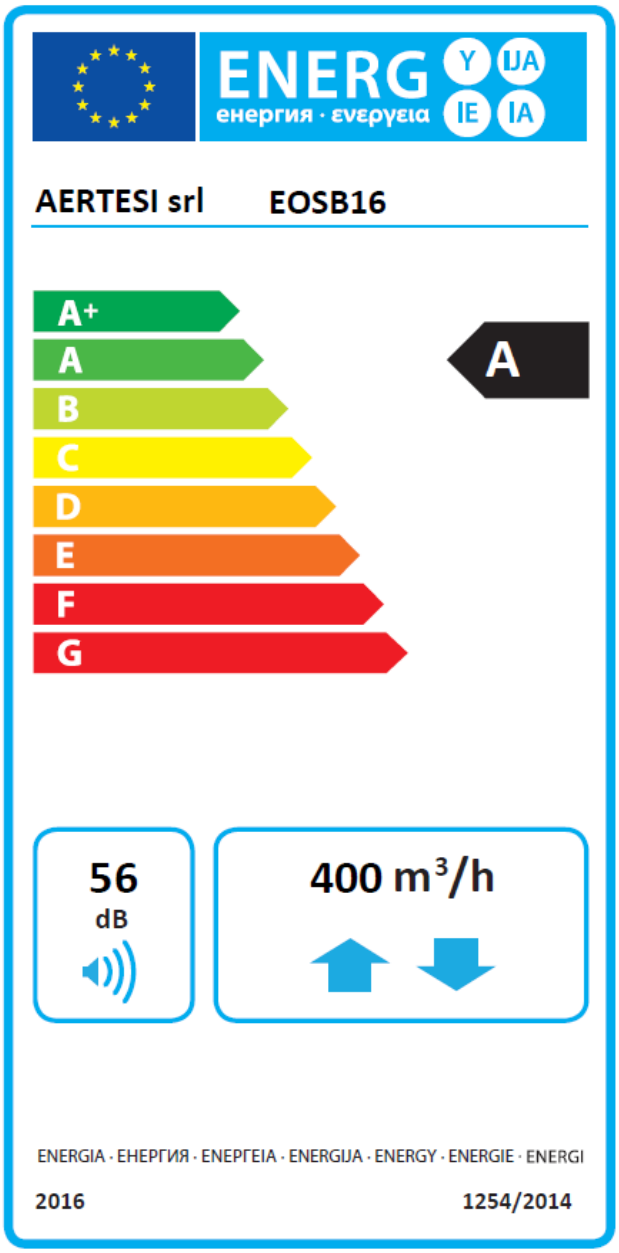
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1-INTRODUCTION

EOS series units are designed for air conditioning in the residential sector, for indoor installation in a place not exposed to freezing conditions or extreme temperatures and in a dust-free, non-explosive atmosphere. The manufacturer cannot be held liable for the consequences of incorrect use of the unit.
These units can be used either in combination with conventional heating/cooling systems (radiators, radiant system, fan-coil, etc.) or as a stand-alone element in homes with low energy needs. They perform the following functions (certain functions are excluded in some versions):

- Renewal with high efficiency heat recovery (>90%)
- Renewal with free-cooling (with optional module)
- Heating / cooling integration in summer and winter
- Dehumidification in summer
- - Possibility of operation in mono-zone or multi-zone mode with dampers in the delivery plenum

2-APPLICATION LIMITS

Electrical power supply	230V (+/-10%) / 50Hz
Coil inlet water temperature (version W)	5°C–60°C
Outside air temperature (indoor unit)	-25°C–50°C
Outside air temperature (outdoor unit)	-15°C–43°C cooling / -15°C–21°C heating
Recirculation air return temperature (indoor unit)	10°C–35°C

The unit should only operate at the extremes of the above application limits briefly because operation at limit conditions for prolonged periods can reduce the normal lifetime of the unit's components.

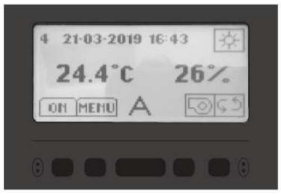
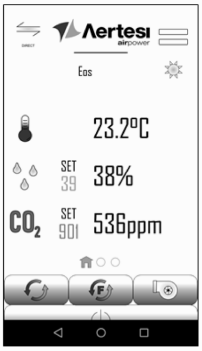
It is recommended to size the channels considering that they can reach the nominal recirculation flow rate, in relation to the graphs of the available head of the fan, otherwise the unit's performance will be lower than stated. To limit electricity consumption and noise emissions, it is advisable to size the ducts considering that this nominal circulation flow rate can be reached at 70% of the maximum fan speed.
In particular for direct expansion units, in order to ensure the correct balance of the refrigerant circuit, the sizing of the channels and the selection of the speed of the recirculation fan (maximum and minimum) must be carried out considering never allowing the flow rate to drop. recirculation air below 70% of the nominal air flow.

3-MAIN CONTROL FUNCTIONS

The following functions are possible through the user interface (console):

1) View and set the room temperature and humidity (with humidity probe accessory). These values are used to activate dehumidification and / or air integration. In the case of a multizone system, each zone will have its own settings.
2) Set the CO2 threshold for renewal regulation (with accessory CO2 probe)
3) View the status of the unit and alarms.
4) Set the season.
5) Set the weekly time schedule for renewal and integration (two separate time schedules).
6) Access (via password) the parameters reserved for the installer and the service center.

All user functions (from 1 to 4) can also be managed via the App from a smartphone or tablet or from a management system with Modbus communication protocol.

WALL CONSOLE	APP FOR SMARTPHONE	BMS WITH MODBUS (management program not supplied)
		

The regulation logic is designed so that the unit can self-adapt to changes in the internal and external environment in order to ensure correct comfort within 24 hours of the day and 365 days of the year.
After making the initial settings, frequent further user interventions will not be necessary, thanks to the following automatic functions (some of these require optional modules not included in the base unit):
- two temperature set-points, one summer and one winter, which can be set by the user (for each zone, if multi-zone)
- automatic summer / winter change based on these set points and the room temperature
- two separate weekly time schedules, for recirculation and renewal
- automatic regulation of the recirculation fan speed based on the ambient temperature and humidity
- combined management of temperature and humidity during the summer
- automatic adjustment of the renewal fan speed on the basis of the CO2 level
- automatic season synchronization between indoor and outdoor units (chiller / heat pump in the case of the version with hydronic coil)

4-CODES INTERPRETATION KEY

INTERNAL UNIT

	EOSB	1	3	H	W
Unit model					
1 : reference to regulation release					
3 , 6 : unit size					
H : horizontal installation V : vertical installation					
W : hydronic coil unit DE-I : direct expansion coil - internal unit					

EXTERNAL UNIT

	EOSB	3	DE-E
Unit model			
3 , 6 : unit size			
DE-E : external unit for direct expansion unit			

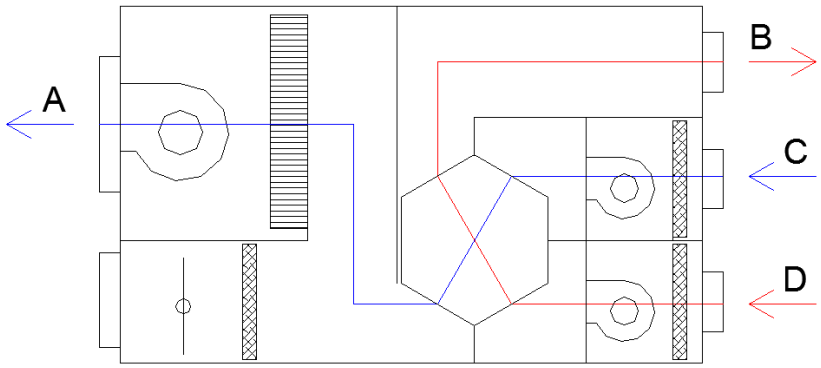
W VERSION: Air treatment unit for indoor installation, with recirculation and partial renewal, equipped with a high-efficiency recovery unit. The unit is equipped with water coil without refrigerant circuit so it must be supplied with low-temperature water (flow temperature between 7°C and 10°C) during the summer and hot water during the winter.

DE VERSION: Split air treatment unit consisting of an indoor and outdoor unit. Indoor unit with recirculation and partial renewal, equipped with a high-efficiency recovery unit and direct expansion coil; outdoor condensing unit with reversible heat pump, inverter and BLDC compressor.

5-OPERATING MODES

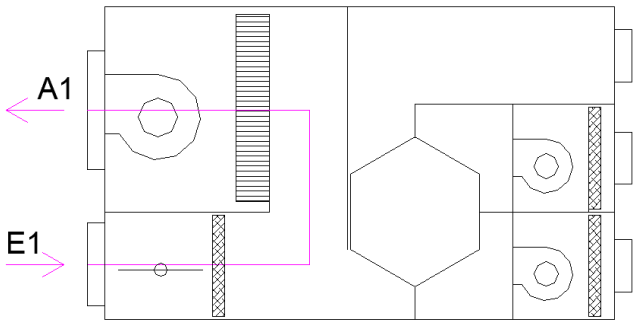
5.1 RENEWAL

In this mode, the coil is not active. The delivery air is 100% renewal air and it is treated exclusively by flowing through the recovery unit.



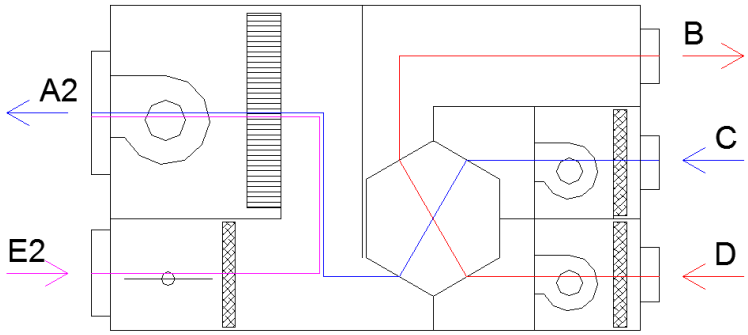
5.2 RECIRCULATION WITH THERMAL INTEGRATION

In this mode, the coil is active. The delivery air is 100% recirculation air. Before it is supplied to the room the air is treated by the coil where, depending on requirements, it is heated or dehumidified and/or cooled.



5.3 RENEWAL WITH RECIRCULATION AND THERMAL INTEGRATION

In this mode, the coil is active. The delivery air is a mixture of renewal air (treated by flowing through the recovery unit) and recirculation air. Before it is supplied to the room the air is treated by the coil where, depending on requirements, it is heated or dehumidified and/or cooled.



		EOS 3	EOS 6
A	Room delivery (in renewal only)	200m3/h	400m3/h
A1	Room delivery (in recirculation only)	500m3/h	1000m3/h
A2	Room delivery (in renewal+recirculation)	500m3/h	1000m3/h
B	Exhaust	200m3/h	400m3/h
C	Outside air intake	200m3/h	400m3/h
D	Stale air return	200m3/h	400m3/h
E1	Recirculation air return (in recirculation only)	500m3/h	1000m3/h
E2	Recirculation air return (in renewal+recirculation)	300m3/h	600m3/h

6-TECHNICAL SPECIFICATIONS

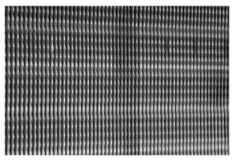
FRAME: load-bearing frame made of galvanized steel sheet. The rugged structure prevents the propagation of vibration and comes complete with ceiling or wall fixing brackets.

ACCESSIBILITY: the filter can be removed without having to first remove the panels. Access to internal components (fan, recovery unit, etc.) is possible by opening the readily accessible front panel, which is secured to the frame with screws.

FILTER: class G4 (EN779), thickness 15mm, made of synthetic material for outside air intake and stale air return; class G2 (EN779), thickness 48mm, in washable material for recirculation air intake.

FANS: backward curved blade fan wheels directly coupled to the motor. The fan wheel is made of reinforced plastic (PA6-25GF nylon). Motor and fan wheels are balanced after assembly to ensure vibration free operation. The motor runs in maintenance-free ball bearings.
Low power consumption EC motor, protection rating IP54, insulation class “B”, emission of disturbances in compliance with EN 61000-6-3 (civil environment), motor and electronics overload protection, locked rotor protection.

COIL: either water or direct expansion coil (depending on the version) made with a copper tube with high efficiency corrugated aluminium fins; manual air bleed valve at the top (for water coil versions). Nominal pressure PN10 for water coil version (45 bar for direct expansion coil). Hydrophilic surface treatment for enhanced heat exchange capacity also with high ambient humidity levels.



CONDENSATE DRIP TRAY: made of powder coated galvanised steel, with welded corners to ensure zero water leakage even after prolonged use. Drip tray shaped to facilitate run-off, thus minimising water accumulation. 3mm thick polyurethane foam insulation.

INSULATION: thermal and acoustic insulation in expanded polystyrene foam (EPS), thickness 10 mm for size 3 and 20 mm for size 6.

RECOVERY UNIT: ultra high efficiency cross-flow counter-current type made of polystyrene, which is resistant to the main corrosive agents.

ELECTRICAL ENCLOSURE: easily accessible, made of galvanised sheet steel. The electrical enclosure contains the electronic circuit board that controls the unit.

CONSOLE: user interface complete with backlit graphic display, designed for recess mounting in a three-module 503 wall box. Includes room temperature sensor.

OUTDOOR CONDENSING UNIT: manufactured in cooperation with one of the major Japanese companies, equipped with BLDC twin-rotary compressor, electronic expansion valve, high-performance finned coil with internally ribbed tube, axial fan with condensation control (plaster white colour).

7-TECHNICAL DATA

GENERAL TECHNICAL SPECIFICATIONS		EOS 3 W / DE	EOS 6 W / DE
Recovery unit nominal efficiency in summer (1)	%	85.0	82.3
Recovery unit nominal efficiency in winter (2)	%	90.5	88.7
Outside air flow rate (nominal)	m3/h	200	400
Delivery air flow rate in renewal only (nominal)	m3/h	200	400
Delivery air flow rate in recirculation only (nominal)	m3/h	500	1000
Delivery air flow rate in renewal+recirculation (nominal)	m3/h	500	1000
Sound power (*)	dB(A)	52	56
Power supply	V-Hz	230V-50Hz	
Maximum absorbed current/power	A-W	2.3A – 270W	4.2A – 510W
Weight of horizontal version (H)	kg	50	65
Weight of vertical version (V)	kg	55	70

(*) Casing-radiated, measured at the reference flow rate and 50Pa (as defined by regulation EU 1253/2014)
Performance values are referred to the following conditions:
(1) Room air 27°C, 50%RH; Outside air 35°C, 50%RH
(2) Room air 20°C, 50%RH; Outside air -5°C, 80%RH

TECHNICAL SPECIFICATIONS WATER VERSION		EOS 3 W	EOS 6 W
Total cooling capacity (3)	kW	3.2	6.3
Sensible cooling capacity (3)	kW	2.4	4.7
Coil water flow rate (3)	l/h	550	1080
Hydraulic circuit pressure drops (3)	kPa	13	12
Heating capacity (4)	kW	4.0	8.0
Hydraulic circuit pressure drops (4)	kPa	11	10

Performance values are referred to the following conditions:
Nominal air flow rate (see previous table)
(3) Room air 27°C, 47%RH; inlet/outlet water 7-12°C
(4) Room air 20°C, 50%RH; inlet water 50°C and same flow rate of condition (1)

TECHNICAL SPECIFICATIONS DIRECT EXP. VERSION		EOS 3 DE	EOS 6 DE
Total cooling capacity (5)	kW	4.0	5.6
Sensible cooling capacity (5)	kW	3.4	4.8
Absorption in cooling (5)	A-kW	4.5A - 0.95kW	7.0A – 1.54
EER (5)		4.20	3.64
Annual energy consumption (cooling)	kWh/a	233	306
Seasonal energy efficiency class (cooling)		A+	A++
SEER		6.01	6.42
Theoretical cooling load (Pdesignc)	kW	4.0	5.6
Heating capacity (6)	W	4.5	6.7
Absorption in heating (6)	A-kW	5.0A - 1.07kW	8.0A – 1.75kW
COP (6)		4.21	3.83
Annual energy consumption (heating)	kWh/a	1182	1731
Seasonal energy efficiency class (heating)		A+	A+
SCOP		4.15	4.37
Theoretical heating load (Pdesignc) at -10°C	kW	3.5	5.4
T° operating limit (Tol)	°C	-15	-15
Power supply	V-Hz	230V-50Hz	
Max. absorbed current/power (indoor unit)	A-W	2.3A – 270W	4.2A – 510W
Max. absorbed current/power (outdoor unit)	A-kW	12A – 2.6kW	15A – 2.9kW
Tube diameter IU-OU	mm(“)	6.35(1/4”) – 12.7(1/2”)	
Max. IU-OU splitting length	m	30	
Max. IU-OU elevation difference	m	20	
Refrigerant pre-charge quantity (R410a)	kg	1.5	
Splitting length without additional charge	m	15	
Additional charge	g/m	20	
Weight outdoor unit	kg	45	
Max. sound pressure level at 1 m outdoor unit	dB(A)	50	54
Max. sound power level outdoor unit	dB(A)	63	64

Performance values are referred to the following conditions:
EOS 3 H: air flow rate 700m3/h (pressure head 25Pa), fan at 10V
EOS 3 V: air flow rate 700m3/h (pressure head 25Pa), fan at 10V
EOS 6 H: air flow rate 1000m3/h (pressure head 120Pa), fan at 10V
EOS 6 V: air flow rate 1000m3/h (pressure head 120Pa), fan at 7V
Seasonal energy efficiency class in accordance with Commission Delegated Regulation (EU) 206/2012 on new energy consumption labels for air conditioners.
SEER and SCOP in accordance with Regulation (EU) 206/2012. Value measured in accordance with harmonised standard EN 14825.
EER and COP in accordance with harmonised standard EN 14511.
(5) Room air 27°C, 47%RH; Outside air 35°C
(6) Room air 20°C; Outside air 7°C, 90%RH

8-CAPACITY CORRECTION FACTOR VERSION DE

F1: corrective factor based on air flow rate

	EOS 3 DE (500m3/h)	EOS 6 DE (1000m3/h)
F1	0.93	1

F2: corrective factor based on tubing length

	7m	10m	15m	20m	25m	30m
F2 (cooling)	1	0.99	0.975	0.965	0.95	0.935
F2 (heating)	1	1	1	1	1	1

F3: corrective factor based on difference in elevation between IU and OU. (IU can be either higher or lower than OU)

	5m	10m	15m	20m
F3	0.99	0.98	0.97	0.96

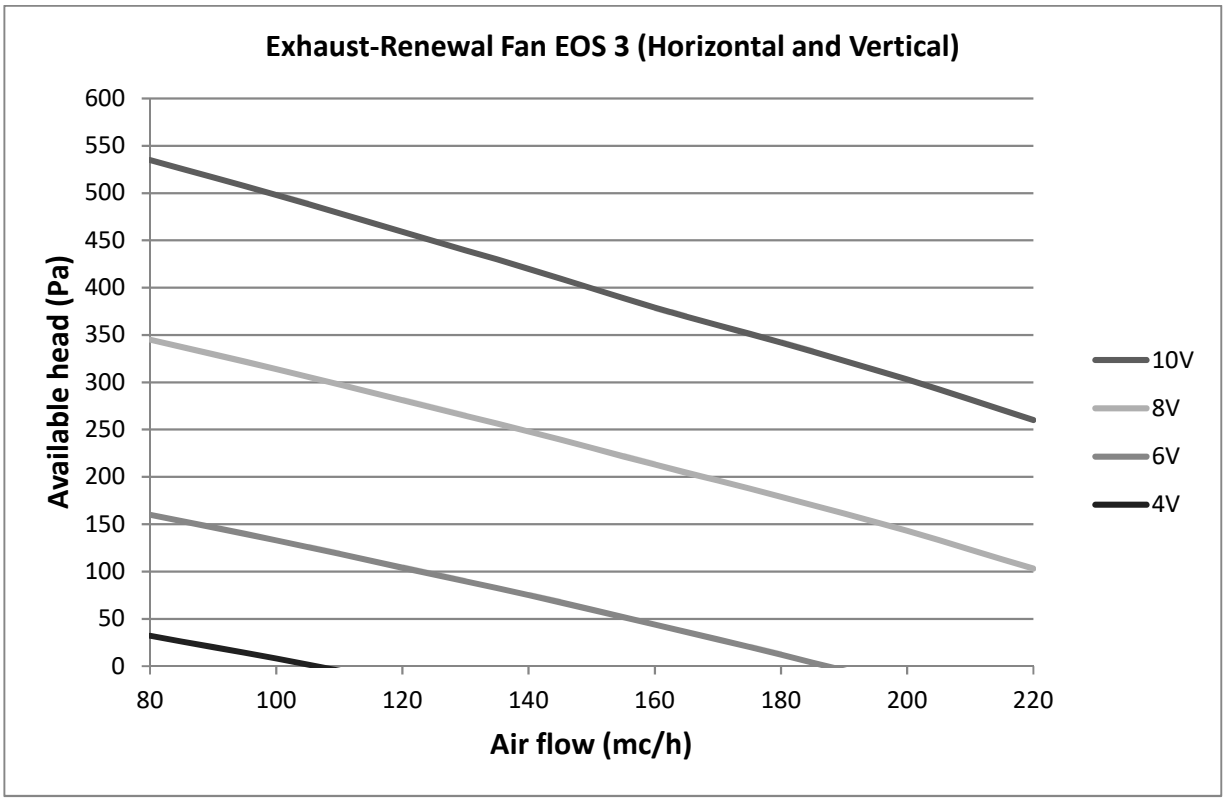
F4: corrective factor based on outside temperature

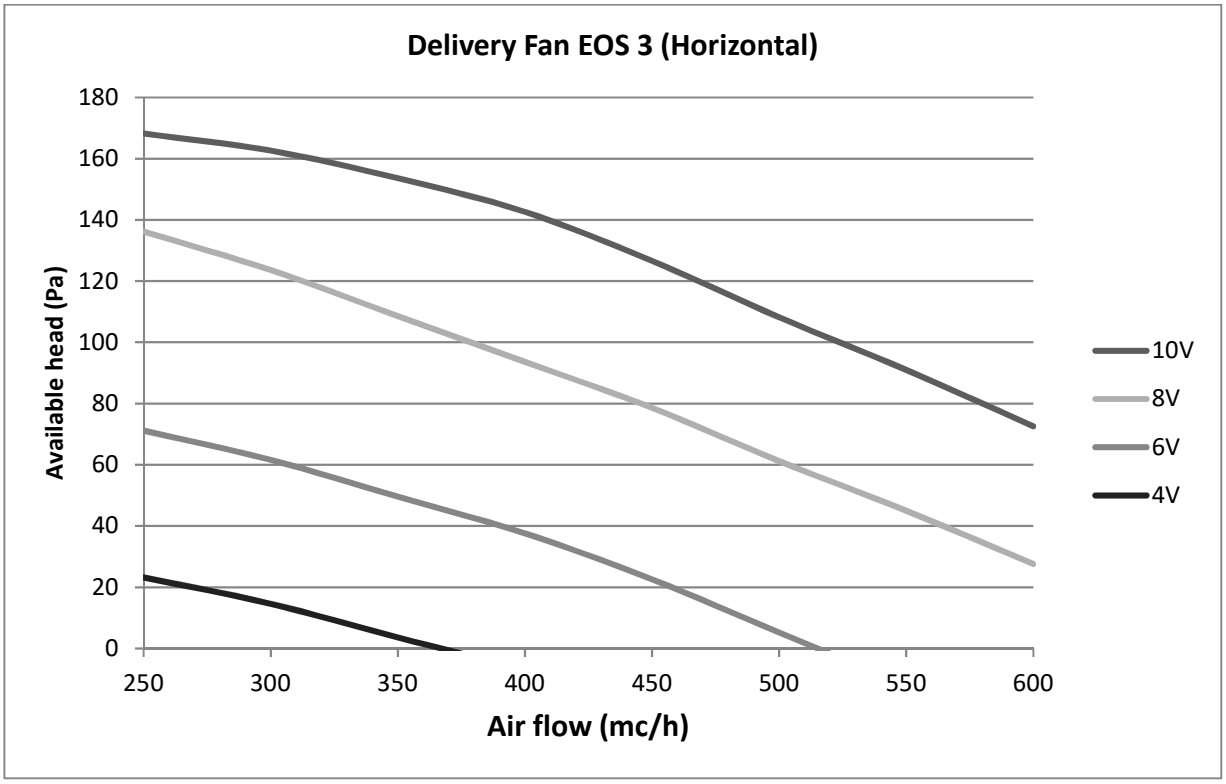
	31°C	35°C	39°C	43°C
F4 (cooling)	1.03	1	0.97	0.94

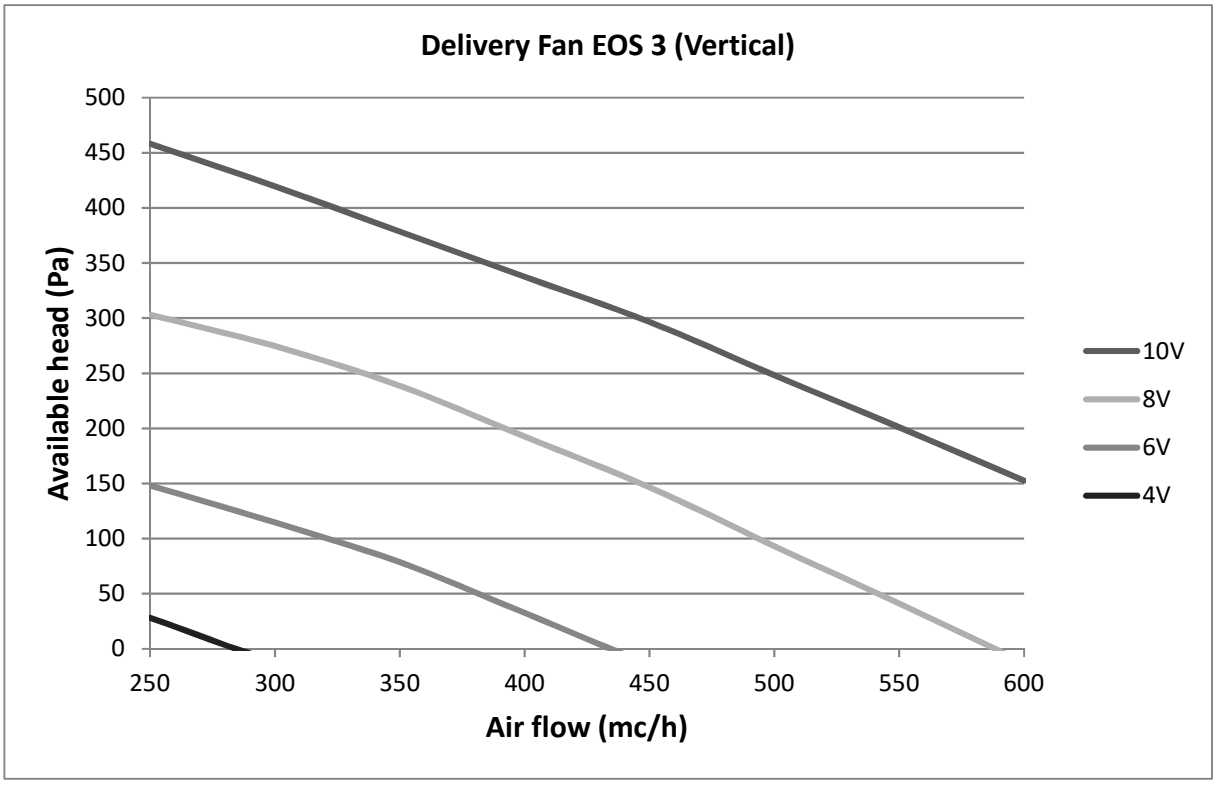
	-11°C	-5°C	1°C	7°C
F4 (heating)	0.61	0.70	0.75	1

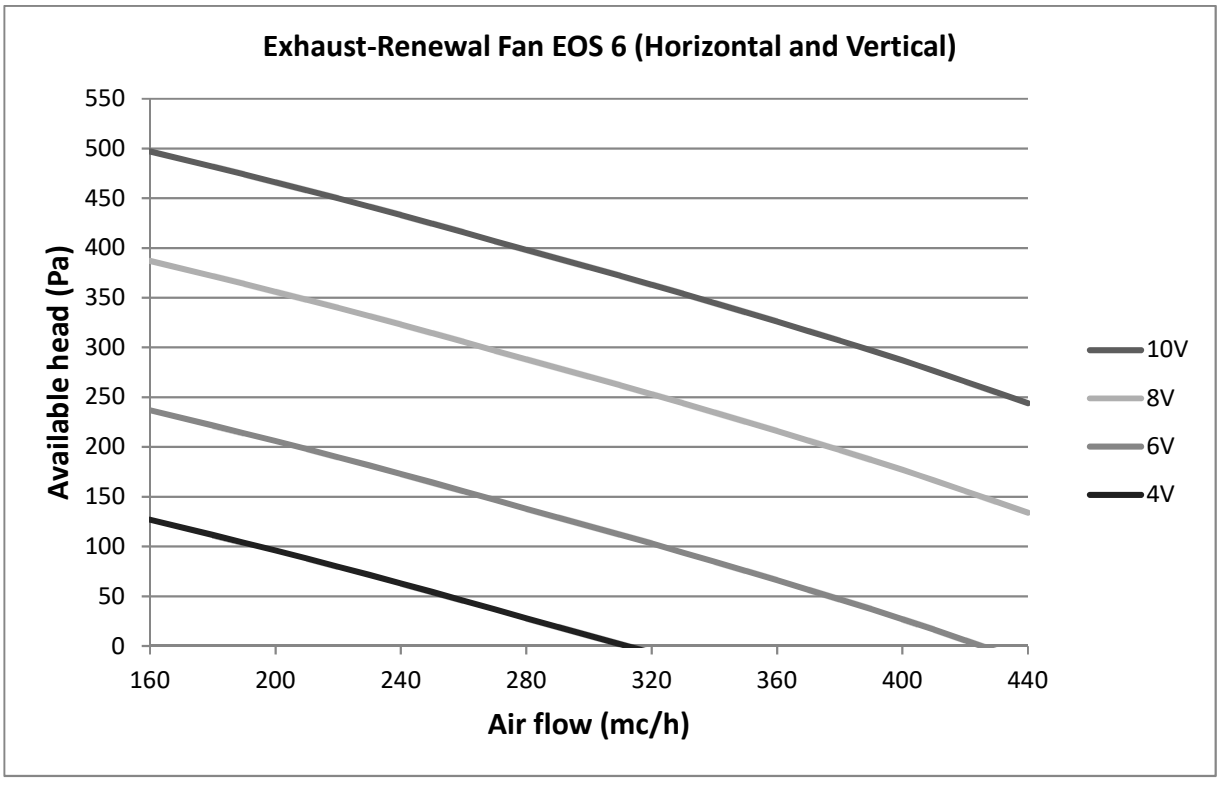
Real capacity = Nominal capacity * F1 * F2 * F3 * F4
(where the nominal capacity, in heating and cooling, is that specified in the table under section 7).

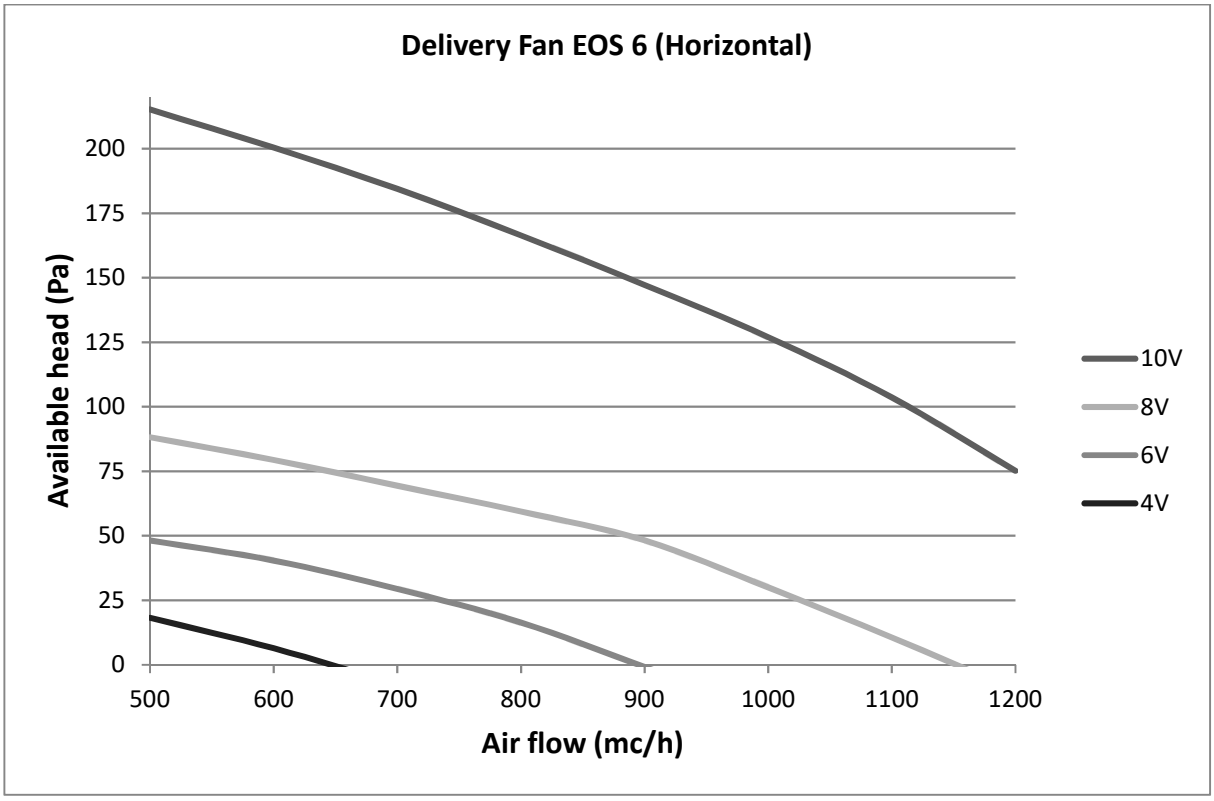
9-FAN CURVES

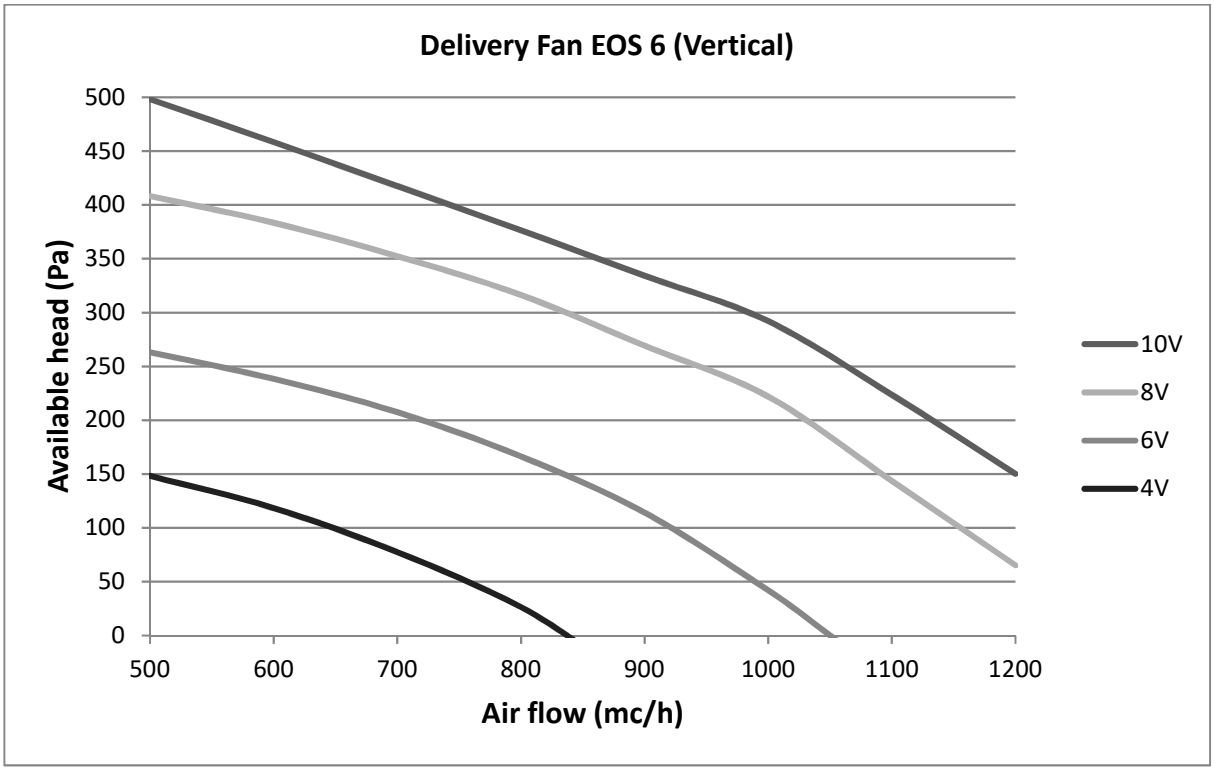

Exhaust-Renewal Fan EOS 3 (Horizontal and Vertical)
Available head (Pa)
600
550
500
450
400
350
300
250
200
150
100
50
0
80
100
120
140
160
180
200
220
Air flow (mc/h)
10V
8V
6V
4V


Delivery Fan EOS 3 (Horizontal)
Available head (Pa)
180
160
140
120
100
80
60
40
20
0
250
300
350
400
450
500
550
600
Air flow (mc/h)
10V
8V
6V
4V

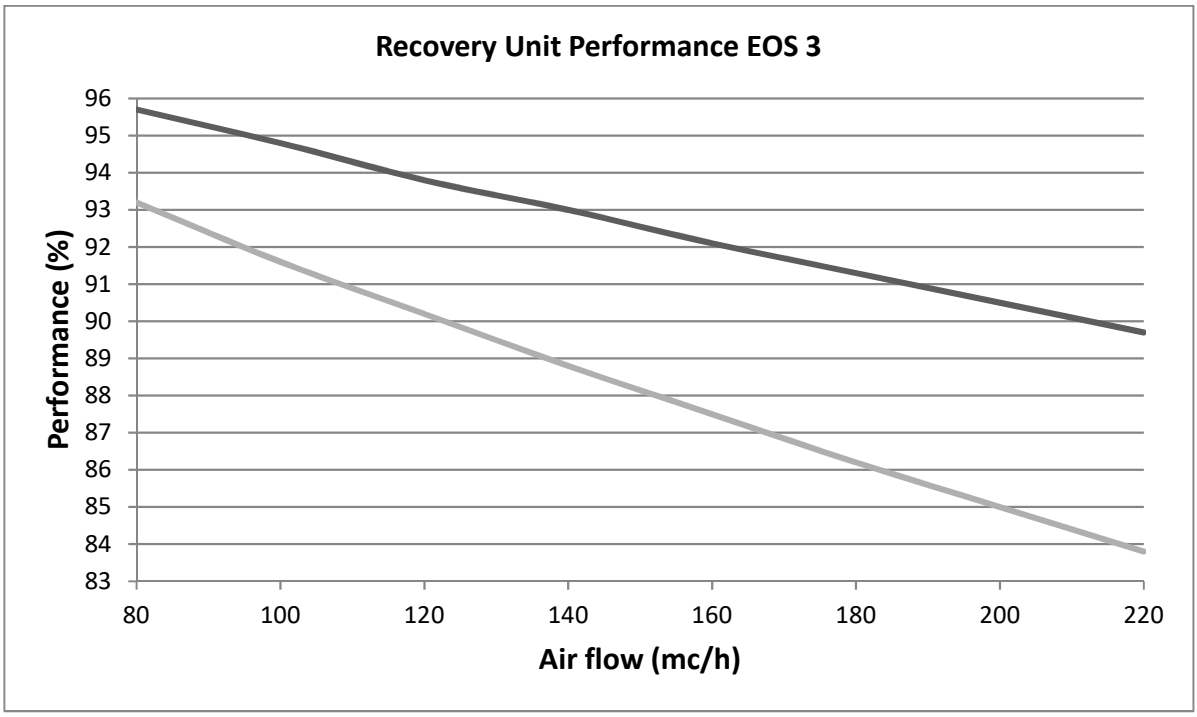

Delivery Fan EOS 3 (Vertical)
Available head (Pa)
500
450
400
350
300
250
200
150
100
50
0
250
300
350
400
450
500
550
600
Air flow (mc/h)
10V
8V
6V
4V

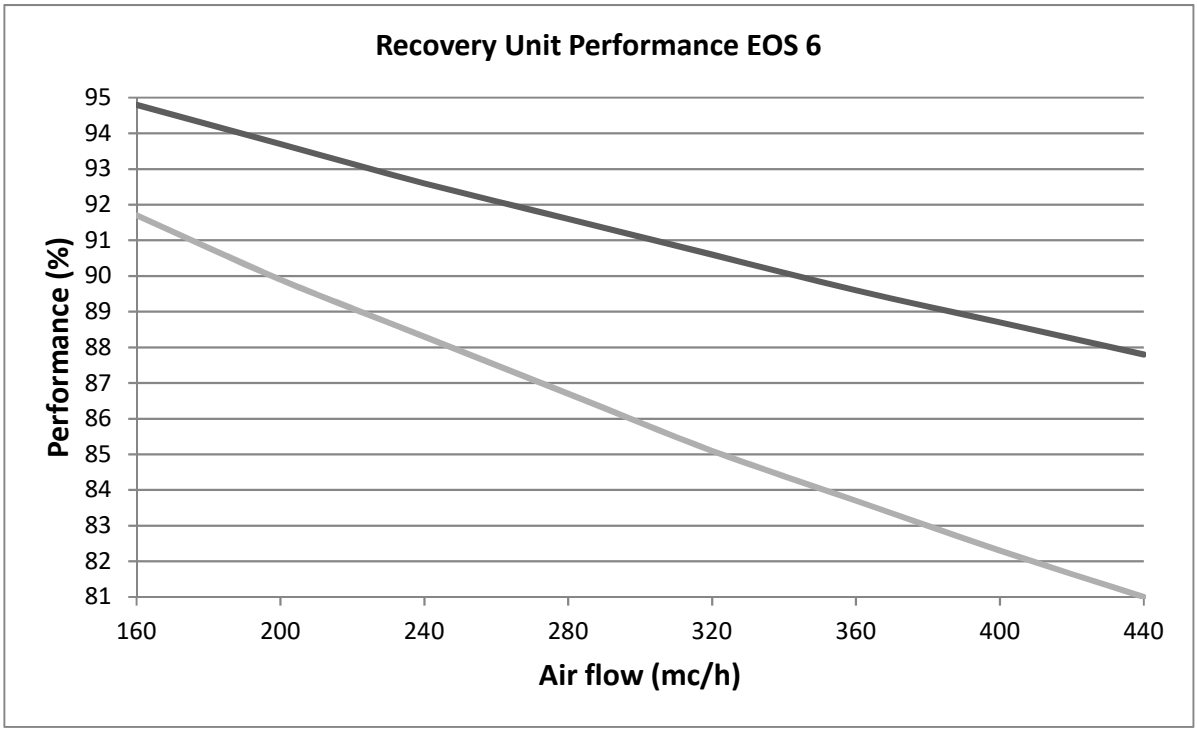

Exhaust-Renewal Fan EOS 6 (Horizontal and Vertical)
Available head (Pa)
550
500
450
400
350
300
250
200
150
100
50
0
160
200
240
280
320
360
400
440
Air flow (mc/h)
10V
8V
6V
4V


Delivery Fan EOS 6 (Horizontal)
Available head (Pa)
200
175
150
125
100
75
50
25
0
500
600
700
800
900
1000
1100
1200
Air flow (mc/h)
10V
8V
6V
4V


Delivery Fan EOS 6 (Vertical)
Available head (Pa)
500
450
400
350
300
250
200
150
100
50
0
500
600
700
800
900
1000
1100
1200
Air flow (mc/h)
10V
8V
6V
4V

10-RECOVERY UNIT PERFORMANCE





Performance values are referred to the following conditions:

SUMMER: Room air 27°C, 50%RH; Outside air 35°C, 50%RH

WINTER: Room air 20°C, 50%RH; Outside air -5°C, 80%RH

11-SYSTEM MANAGEMENT

The unit's logic configuration makes it possible to manage the system in single-zone mode (standard configuration) or multi-zone mode (by adding accessories).

11.1 SINGLE-ZONE SYSTEM MANAGEMENT

In this operating mode, when the unit is turned on it supplies air to all the delivery vents. The regulation logic is as follows:

Recirculation mode with thermal integration: it is activated if the temperature probe placed inside the console (or the humidity probe if present) is in call and if you are inside the time slot (set by the console's chronoprogram) of recirculation. Through the App or Modbus it is possible to force the switching on or off even outside these preset time slots.

Renewal mode with heat recovery: it is activated if you are within the time period (set by the console's time schedule) for renewal activation. If equipped with free-cooling, the recovery damper bypass damper opens automatically if the internal and external ambient temperatures are favorable for this function.

Recirculation fan: if the recirculation mode is active, the fan modulates the air flow rate (between a maximum and a minimum value) according to the difference between the ambient temperature (read by the temperature probe inside the console) and the set temperature. The maximum, minimum speed and the proportional control band can be set by parameter.

Renewal and expulsion fans: if the renewal mode is active, the fans are active at the speed set by parameter (fixed). If the CO2 probe is present, the fans modulate their speed based on the difference between the ambient CO2 and the set value. The proportional adjustment band can be set by parameter.

11.2 MULTI-ZONE SYSTEM MANAGEMENT

In this operating mode, it is possible to supply air only to the delivery vents corresponding to the rooms (divided into zones) that really need it. The regulation logic is as follows:

Recirculation mode with thermal integration: it is activated if at least one temperature / humidity probe of an area is in call and if you are within the time band (set by the console's chronoprogram) for activation of the recirculation. Through the App or Modbus it is possible to force the switching on or off even outside these preset time slots.

Renewal mode with heat recovery: as in the monozone case

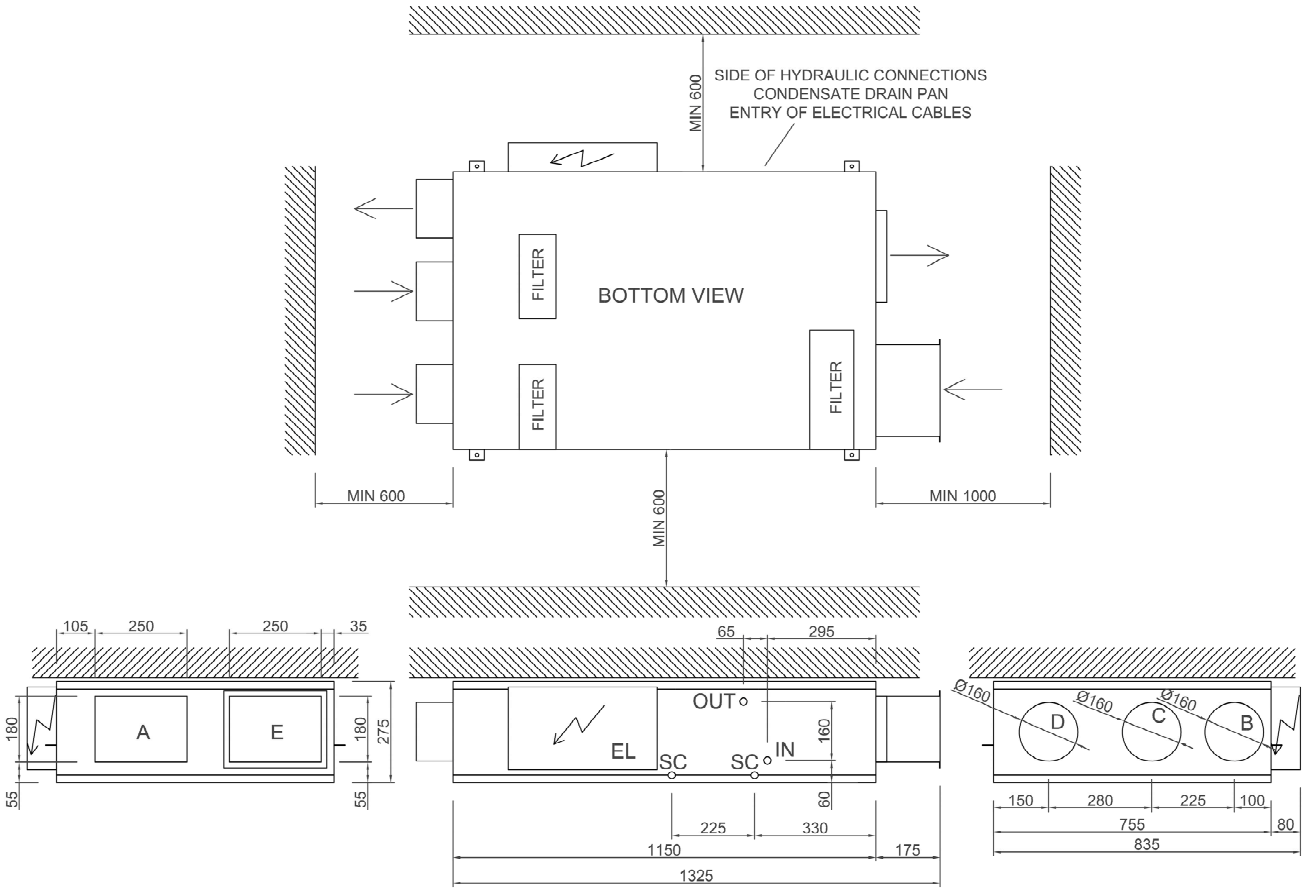
Zone damper: If no zone temperature / humidity probe is in call and if the recirculation mode is not active, all zone dampers are closed (the unit does not supply air to any zone). If at least one zone probe is in call, whether the recirculation mode is active or not active, the corresponding zone dampers open (the unit supplies hot or cold air according to the season only to the areas that need it, possibly mixed with fresh air). If no zone probe is in call and if the recirculation mode is active, all the zone dampers open (the unit supplies fresh air to all the zones).

Recirculation fan: if the recirculation mode is active, the fan modulates the air flow rate (between a maximum and a minimum value) taking into account multiple factors including the number of active zones compared to the total number and the average difference between room temperature and set in the zones. The maximum, minimum speed and the proportional band can be set by parameter.

Renewal and expulsion fans: as in the single-zone case

12-DIMENSIONS

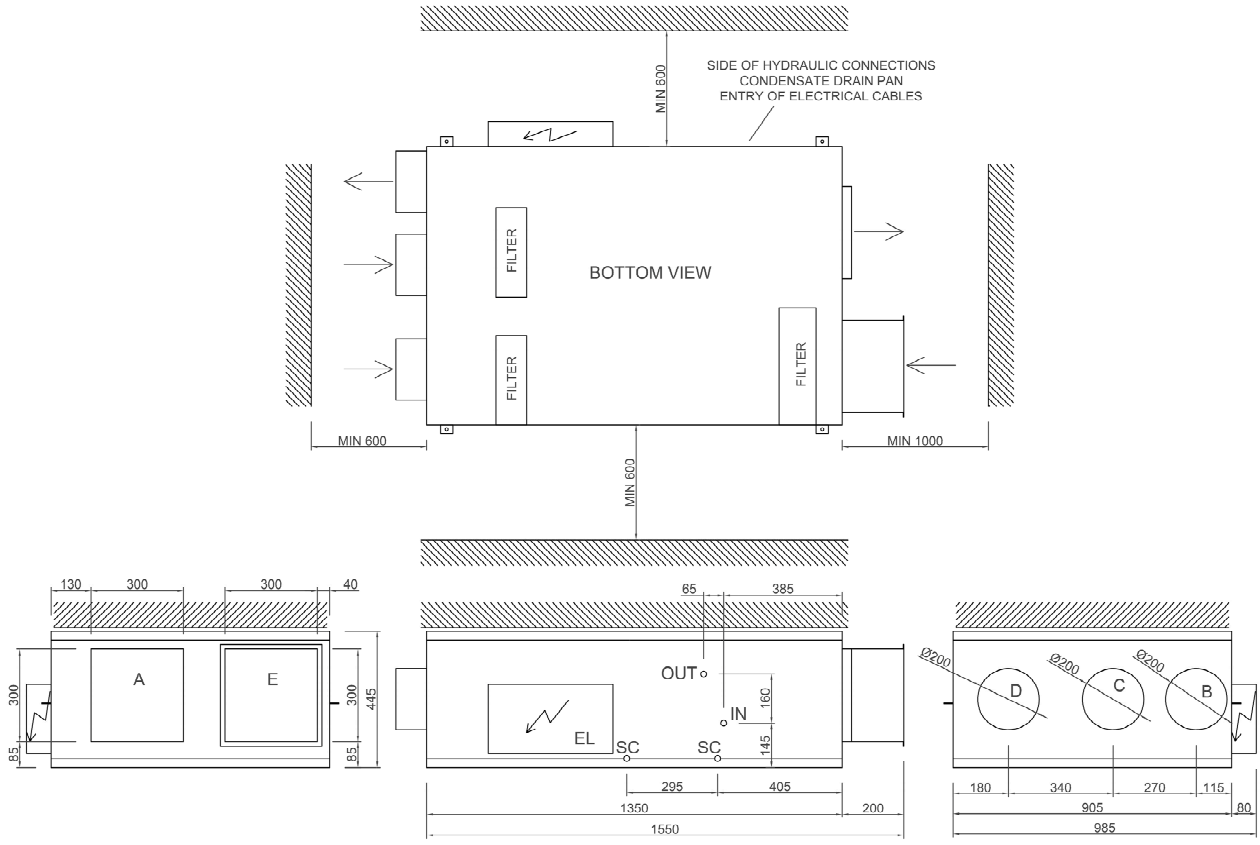
12.1-EOS 3 H DIMENSIONS



A	Room delivery
B	Exhaust
C	Outside air intake
D	Stale air return
E	Recirculation air return

IN	Main coil IN	1/2”
OUT	Main coil OUT	1/2”
SC	Condensate drain	d.16
EL	Electrical cables inlet	

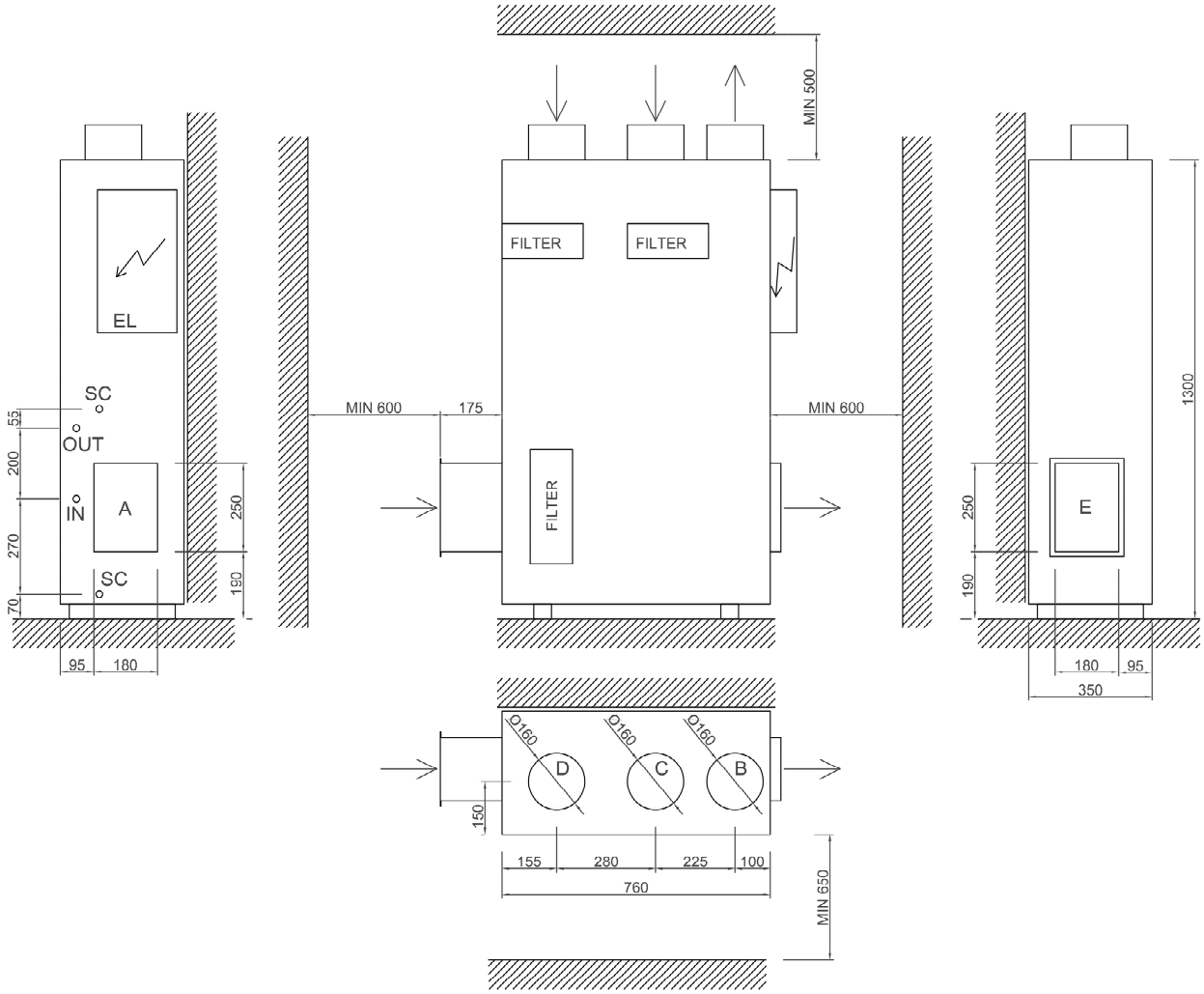
12.2-EOS 6 H DIMENSIONS



A	Room delivery
B	Exhaust
C	Outside air intake
D	Stale air return
E	Recirculation air return

IN	Main coil IN	1/2”
OUT	Main coil OUT	1/2”
SC	Condensate drain	d.16
EL	Electrical cables inlet	

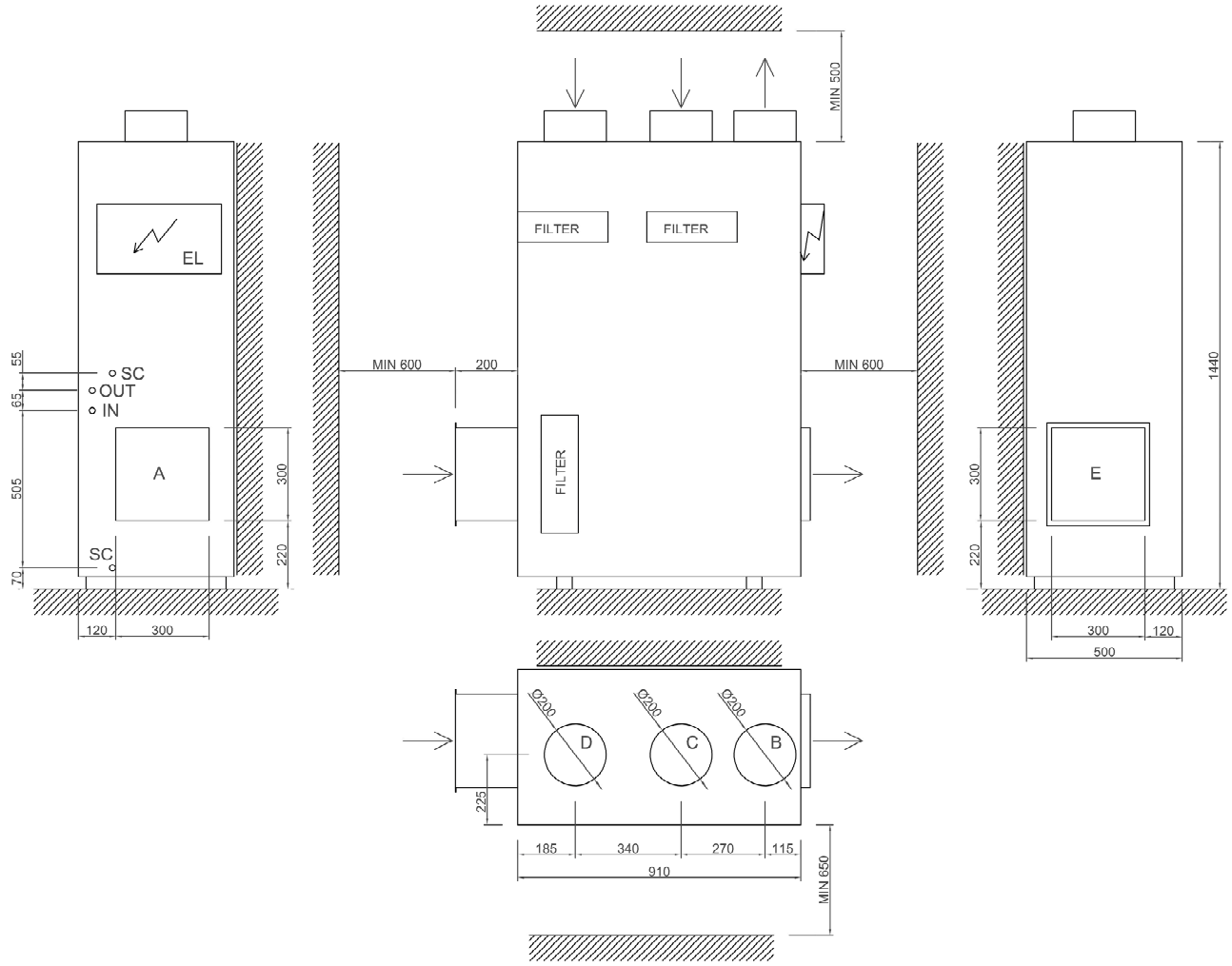
12.3-EOS 3 V DIMENSIONS



A	Room delivery
B	Exhaust
C	Outside air intake
D	Stale air return
E	Recirculation air return

IN	Main coil IN	1/2”
OUT	Main coil OUT	1/2”
SC	Condensate drain	d.16
EL	Electrical cables inlet	

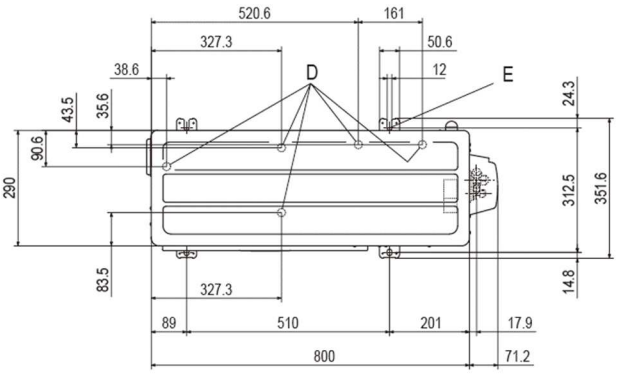
12.4-EOS 6 V DIMENSIONS

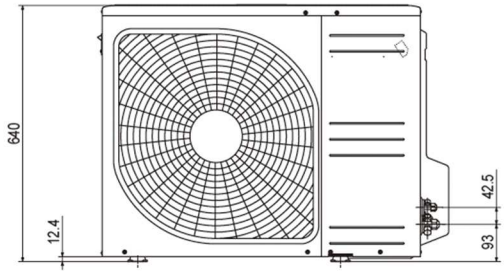


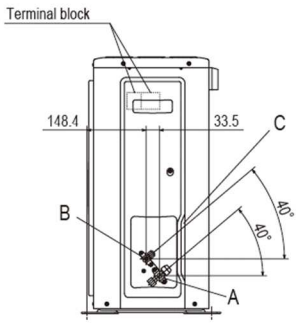
A	Room delivery
B	Exhaust
C	Outside air intake
D	Stale air return
E	Recirculation air return

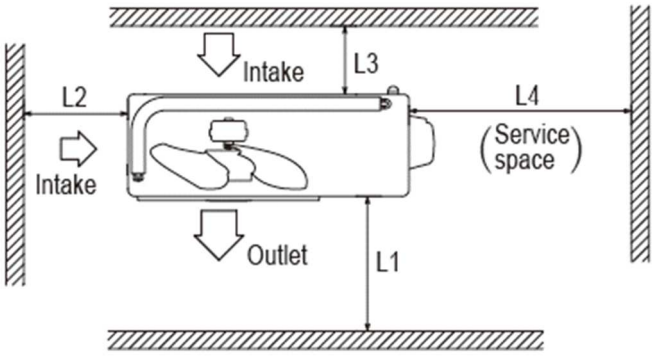
IN	Main coil IN	1/2”
OUT	Main coil OUT	1/2”
SC	Condensate drain	d.16
EL	Electrical cables inlet	

12.5-EOS DE OUTDOOR UNIT DIMENSIONS









Minimum installation space

A	Gas valve	1/2”
B	Liquid valve	1/4”
C	Electrical cables inlet	
D	Condensate drain holes	d.20
E	Anchor holes	M10

Examples of installation / Dimensions	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

13-ACCESSORIES

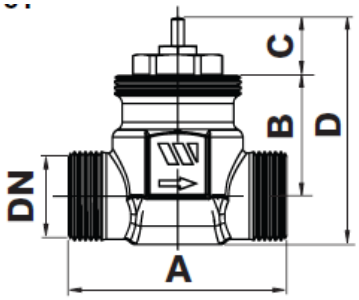
The following accessories are available:

1	**V**	Valves
2	**AQSM**	Wall mounted CO2 probe Modbus
3	**AHSM**	Wall mounted temperature / humidity probe Modbus
4	**PM**	Plenum for multi-zone air distribution (2/3/4 zones) with motorized dampers
5	**PM1**	Plenum for single-zone air distribution
6	**FRC**	Free-cooling device installed inside the unit
7	**SL**	Air supply silencer
8	**APP1**	Wifi modem for App

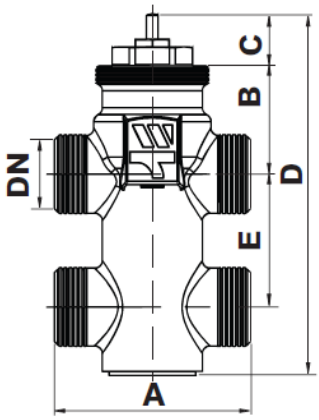
13.1-VALVES

	V	**2**	**2**	**M**	**MI**	**K**	**-**	**EOSB**	**3**	**A**
V : Valves										
2 : 2 pipes										
2 : 2 ways 3 : 3 ways with by-pass										
M : modulating -- : on/off										
MI : with auxiliary contact (micro-switch) -- : without auxiliary contact										
K : kit non mounted										
Unit model										
Unit size										
Eventual revision index										

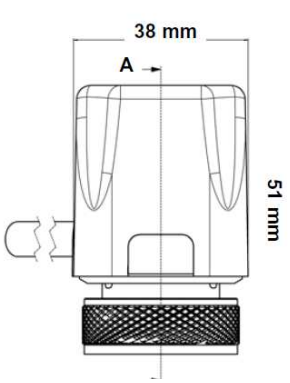
Servo-controlled valves should be used to prevent the formation of condensate on the surface of the unit when the fan is stopped.
The valves are supplied disassembled in kit form to eliminate the risk of damage during transport and installation

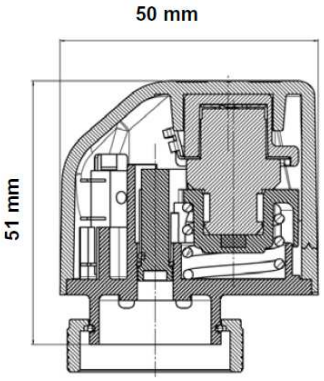


2-way valves		
	DIMENSIONS (mm)	
	80	**160**
A	52	56
B	29	28
C	13.5	13.5
D	51	56



3-way valves		
	DIMENSIONS (mm)	
	80	**160**
A	52	56
B	29	28
C	13.5	13.5
D	95.5	112.5
E	35	50

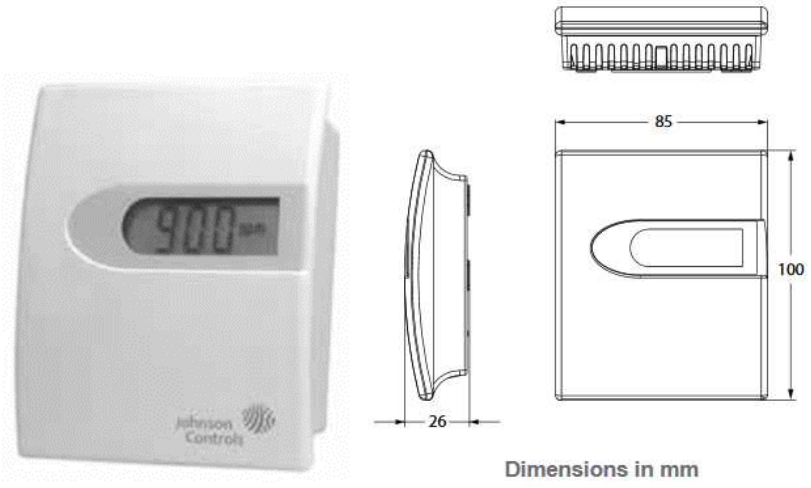




	EOS 3	EOS 6
GENERAL CHARACTERISTICS		
Connections size	1/2”	3/4”
Kv (2-way valve)	1.7	2.5
Kv (3-way valve, direct flow)	1.7	2.5
Kv (3-way valve, by-pass)	1.2	1.6
Max differential pressure	2.0bar	1.0bar
Nominal pressure	16bar	
Water temperature	4°C – 110°C	
ACTUATOR ON/OFF		
Power supply	230V-50Hz	
Absorbed power	2.5W	2.5W
Stroke time	180s	180s
Characteristic (valve+actuator)	N.C. (Normally Closed)	
Protection	IP44	IP44
MODULATING ACTUATOR		
Power supply	230V-50Hz	
Absorbed power	1.5W	1.5W
Stroke time	8s	8s
Control signal	0-10V	0-10V
Control signal impedance	100k	100k
Protection	IP43	IP43

13.2-WALL-MOUNTING AIR QUALITY CO2 SENSOR (AQSM)

The sensor allows you to manage the renewal based on the real level of CO2 present in the environment.
The adjustment allows to use up to 4 sensors connected to the same unit.



Dimensions in mm

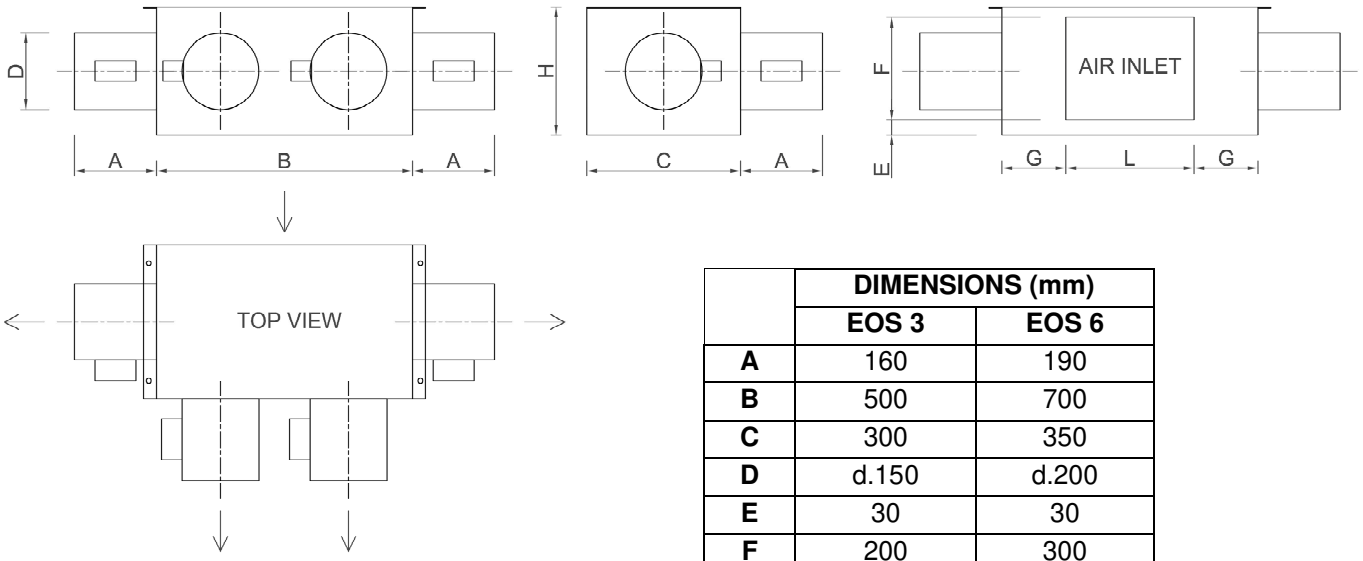
13.3-WALL-MOUNTING HUMIDITY SENSOR (AHSM)

The sensor allows you to enable the summer dehumidification function. The adjustment allows you to use up to 6 sensors connected to the same unit.
In the case of a multi-zone system, the use of a temperature / humidity sensor for each zone is mandatory.
The installation is recessed in a 503 box and is available in many variations for dozens of plates.

13.4- MULTI-ZONE PLENUM WITH MOTOR-DRIVEN DAMPERS (PM)

	PM	2	-	EOSB	3	A
PM : Plenum multi-zone						
2 , 3 , 4 : zone number						
Unit model						
Unit size						
Eventual revision index						

The multizone distribution plenum is available in 2, 3, 4 zone versions. For 2 or 3 zone plenums, the connections can be moved to the 4 available positions.
They are made of galvanized sheet metal with anti-condensation insulation. The motorized shutters already mounted on the plenum and an electrical interface panel between the shutters and the main electrical panel mounted on the machine are included.

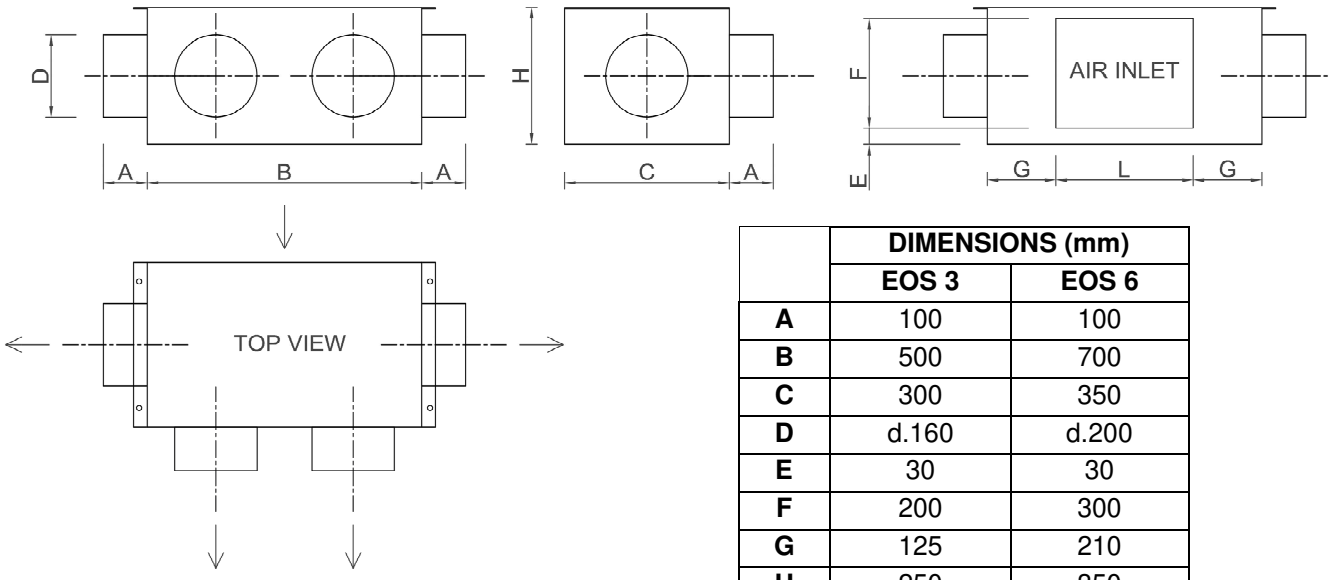


	DIMENSIONS (mm)	
	EOS 3	EOS 6
A	160	190
B	500	700
C	300	350
D	d.150	d.200
E	30	30
F	200	300
G	125	210
H	250	350
L	250	280

13.5- SINGLE-ZONE PLENUM (PM1)

	PM1.	2	-	EOSB	3	A
PM1. : Plenum mono-zone						
2 , 3 , 4 : outlet number						
Unit model						
Unit size						
Eventual revision index						

The monozone distribution plenum is available in 2, 3, 4 outputs version. For 2 or 3-zone plenums, the position of the outputs can be configured when ordering.
They are made of galvanized sheet metal with anti-condensation insulation.



	DIMENSIONS (mm)	
	EOS 3	EOS 6
A	100	100
B	500	700
C	300	350
D	d.160	d.200
E	30	30
F	200	300
G	125	210
H	250	350
L	250	280

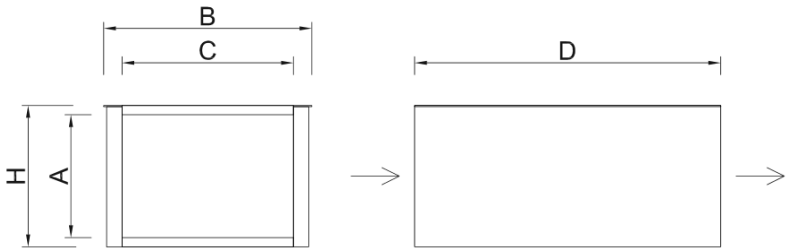
13.6- FREE-COOLING MODULE (FRC)

The free-cooling module is installed inside the unit from the factory and allows to by-pass the heat recovery unit in summer, when the external temperature is lower than the internal temperature. In this way it is possible to cool the environment for free. The free-cooling damper is automatically controlled by the unit control.

13.7- AIR SUPPLY SILENCER (SL)

	SL	-	EOSB	3	A
SL : Silencer					
Unit model					
Unit size					
Eventual revision index					

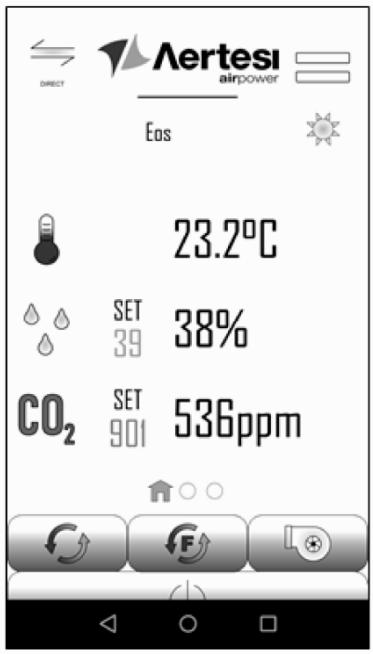
The delivery silencer is installed in the unit's delivery to reduce the sound emissions radiated into the channel. It is designed to be fixed to the unit and to the multi-zone or multi-zone plenum without additional adapters.



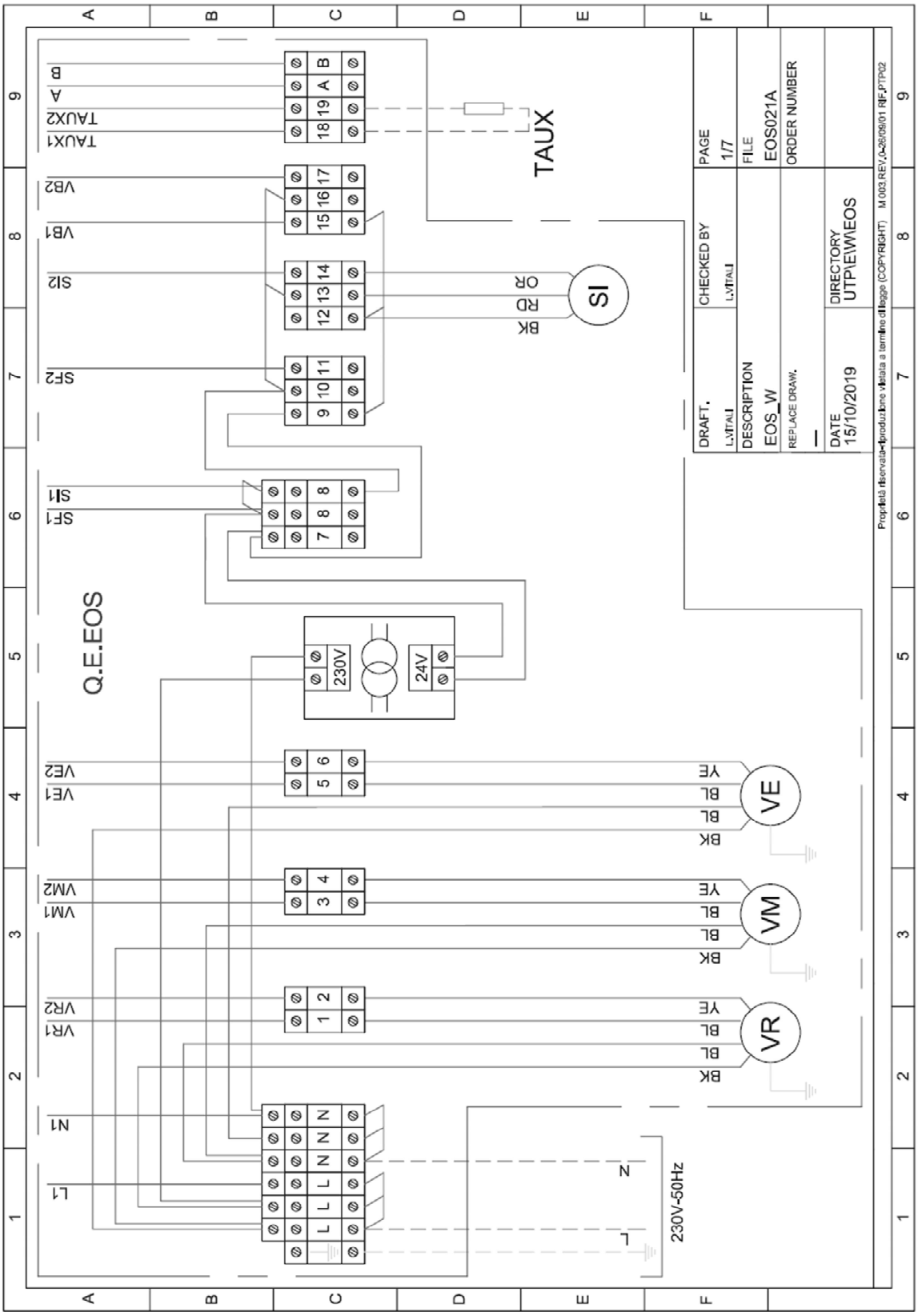
	DIMENSIONS (mm)	
	EOS 3	EOS 6
A	200	300
B	330	360
C	280	310
D	500	700
H	230	330

13.8- WIFI MODEM FOR APP (APP1)

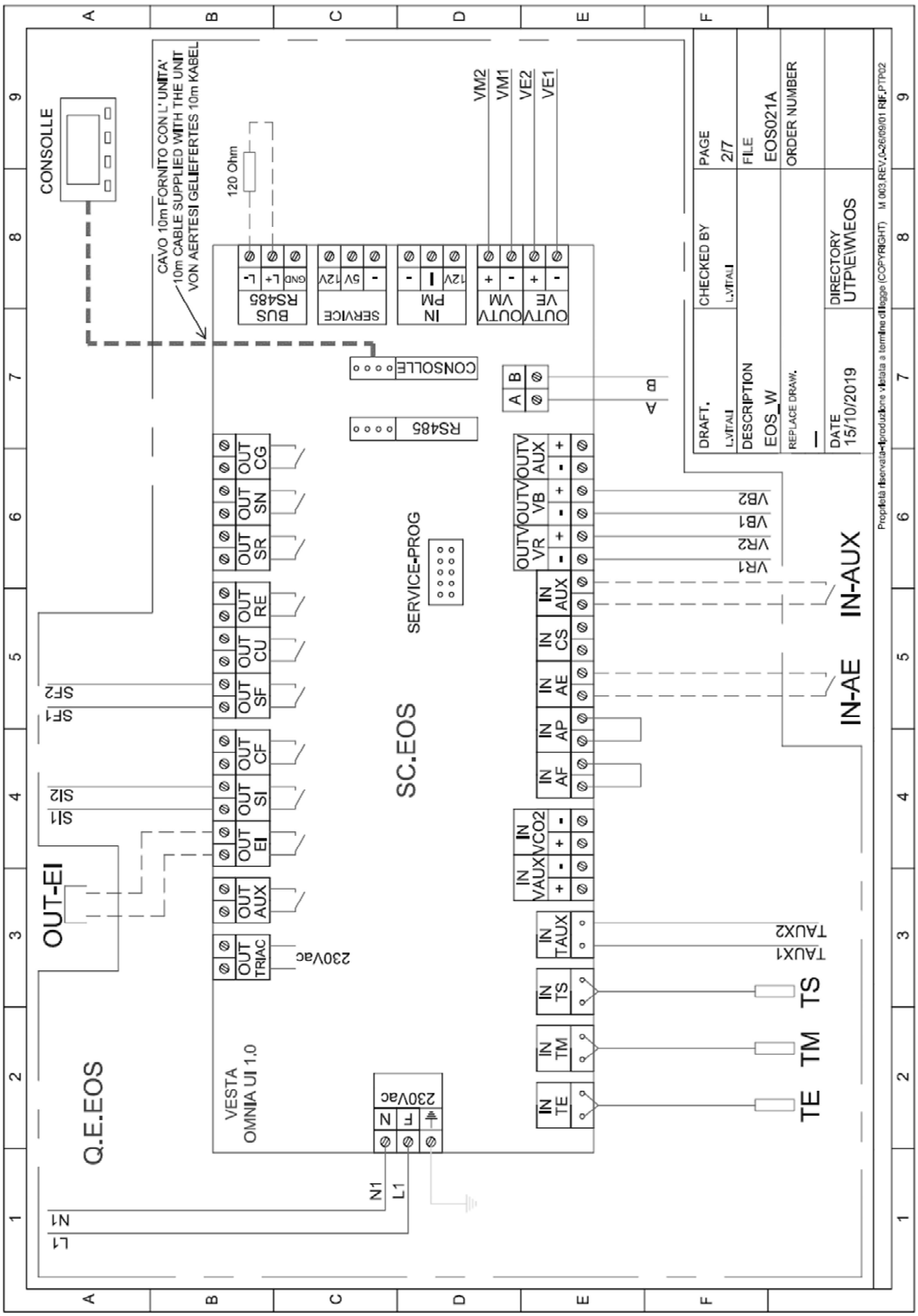
With the wifi modem it is possible to manage all user functions via smartphone or tablet. The wifi modem must be connected to the main electrical panel mounted on the machine and placed close to it. By connecting the wifi modem to your home network, you can also remotely control the unit with a smartphone or tablet equipped with a data connection.

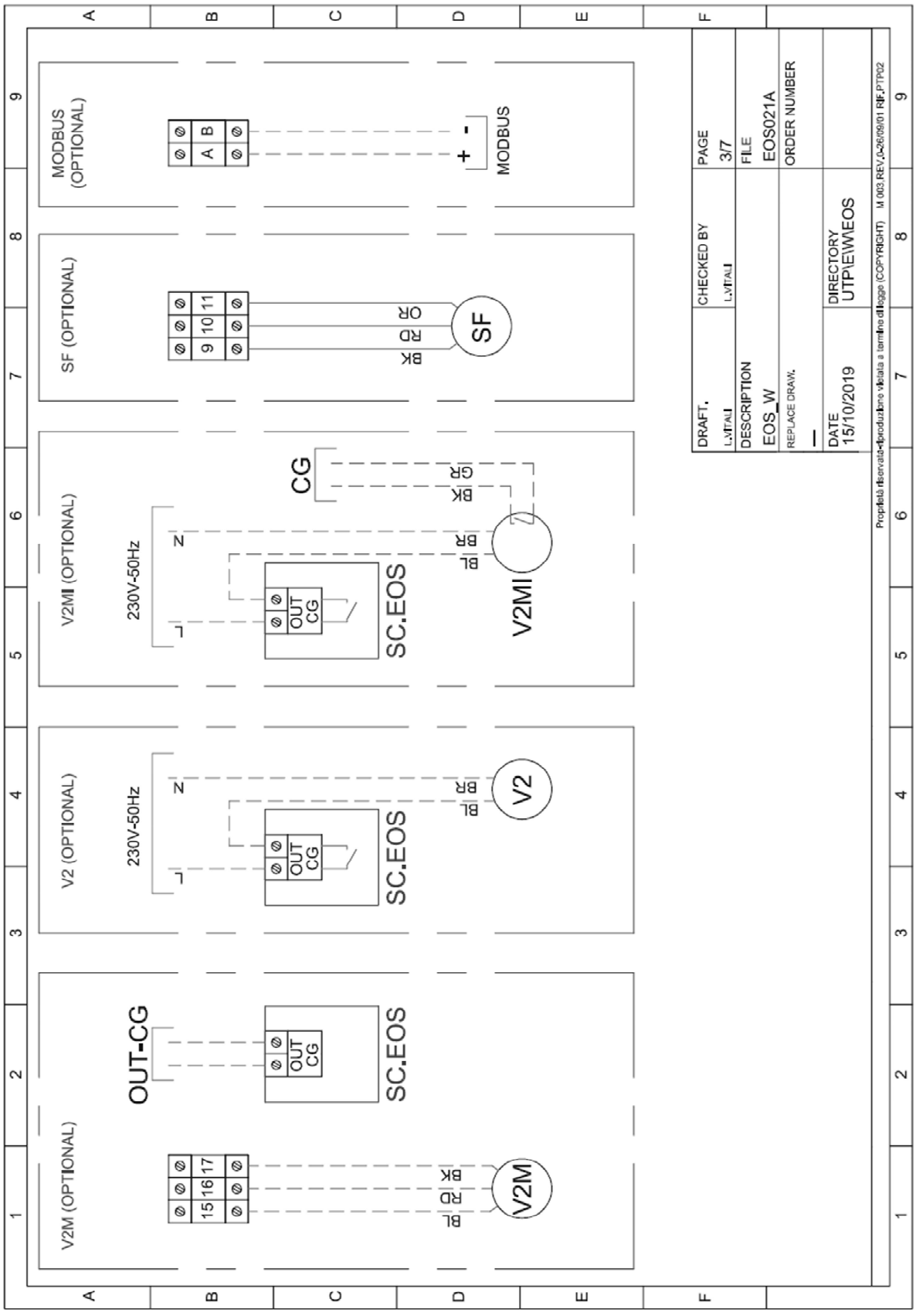


14-ELECTRICAL CONNECTIONS VERSION W



EOS B


CONSOLLE
CAVO 10m FORNITO CON L' UNITA'
10m CABLE SUPPLIED WITH THE UNIT
VON AERTESI GELIEFERTES 10m KABEL
120 Ohm
BUS RS485
SERVICE
IN PM
OUTV VM
OUTV VE
VM2
VM1
VE2
VE1
CONSOLLE
RS485
SERVICE-PROG
SC.EOS
OUT-EI
OUT TRIAC
OUT AUX
OUT EI
OUT SI
OUT CF
OUT SF
OUT CU
OUT RE
OUT SR
OUT SN
OUT CG
SF2
SF1
SI2
SI1
230Vac
IN VAUX
IN VCO2
IN TAUX
IN TS
IN TM
IN TE
IN AF
IN AP
IN AE
IN CS
IN AUX
OUTV VR
OUTV VB
OUTV AUX
VR2
VB2
VR1
VB1
TAUX2
TAUX1
TS
TM
TE
IN-AUX
IN-AE
Q.E.EOS
VESTA
OMNIA UI 1.0
230Vac
N1
L1
DRAFT.
L.VITALI
CHECKED BY
L.VITALI
PAGE
2/7
DESCRIPTION
EOS_W
FILE
EOS021A
REPLACE DRAW.
—
ORDER NUMBER
DATE
15/10/2019
DIRECTORY
UTP\E\WEOS
Proprietà riservata e riproduzione vietata a termine di legge (COPYRIGHT) M 003.REV.04/26/09/01 RIF.PTP02


MODBUS (OPTIONAL)
A B
+ -
MODBUS
SF (OPTIONAL)
9 10 11
BK RD OR
SF
V2MI (OPTIONAL)
230V-50Hz
N
L
OUT CG
SC.EOS
CG
BK GR
BL BR
V2MI
V2 (OPTIONAL)
230V-50Hz
N
L
OUT CG
SC.EOS
BL BR
V2
V2M (OPTIONAL)
OUT-CG
OUT CG
SC.EOS
15 16 17
BL RD BK
V2M
DRAFT. LVITALI
CHECKED BY LVITALI
PAGE 3/7
DESCRIPTION EOS_W
FILE EOS021A
REPLACE DRAW. —
ORDER NUMBER
DATE 15/10/2019
DIRECTORY UTP\E\W\EOS
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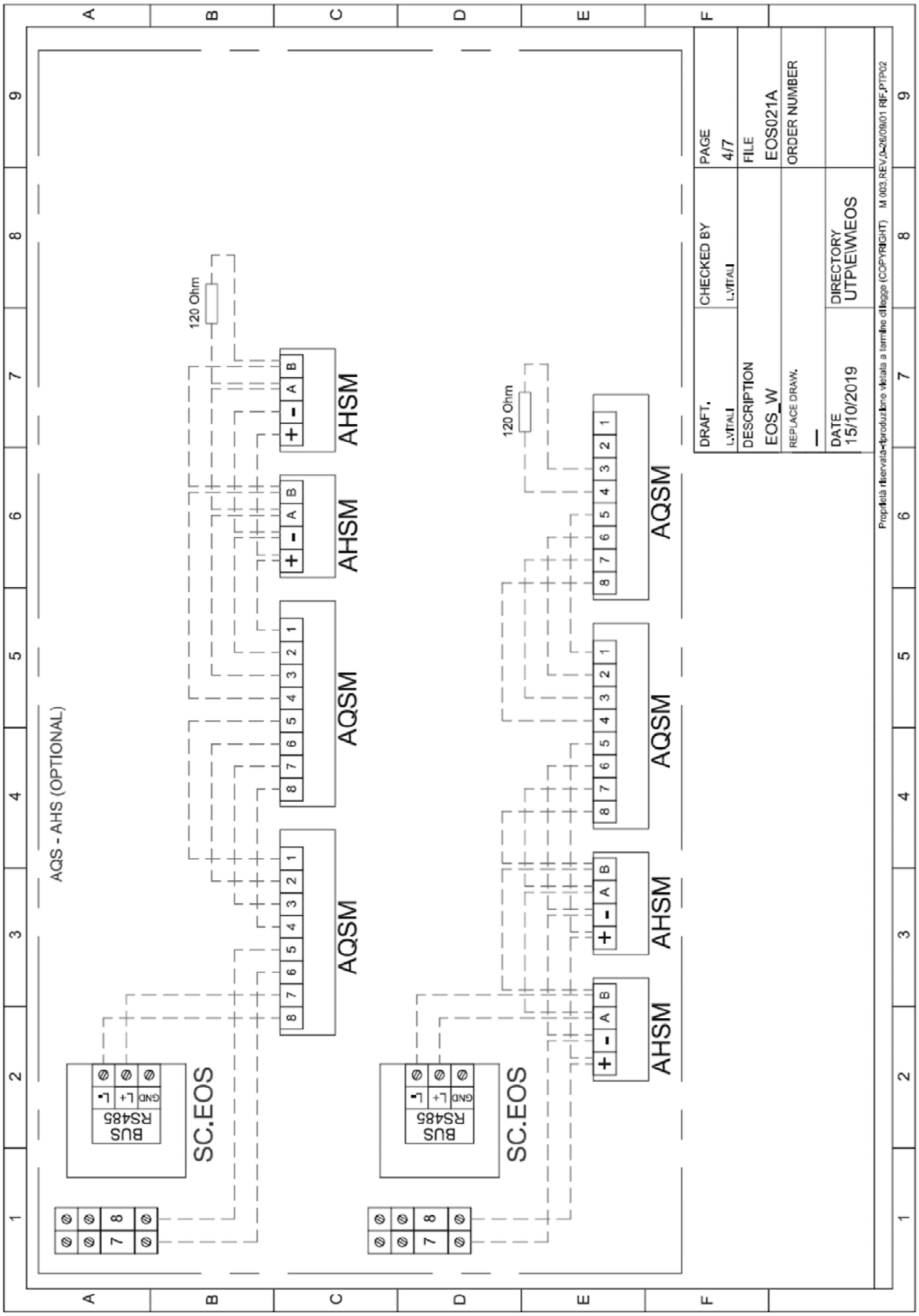
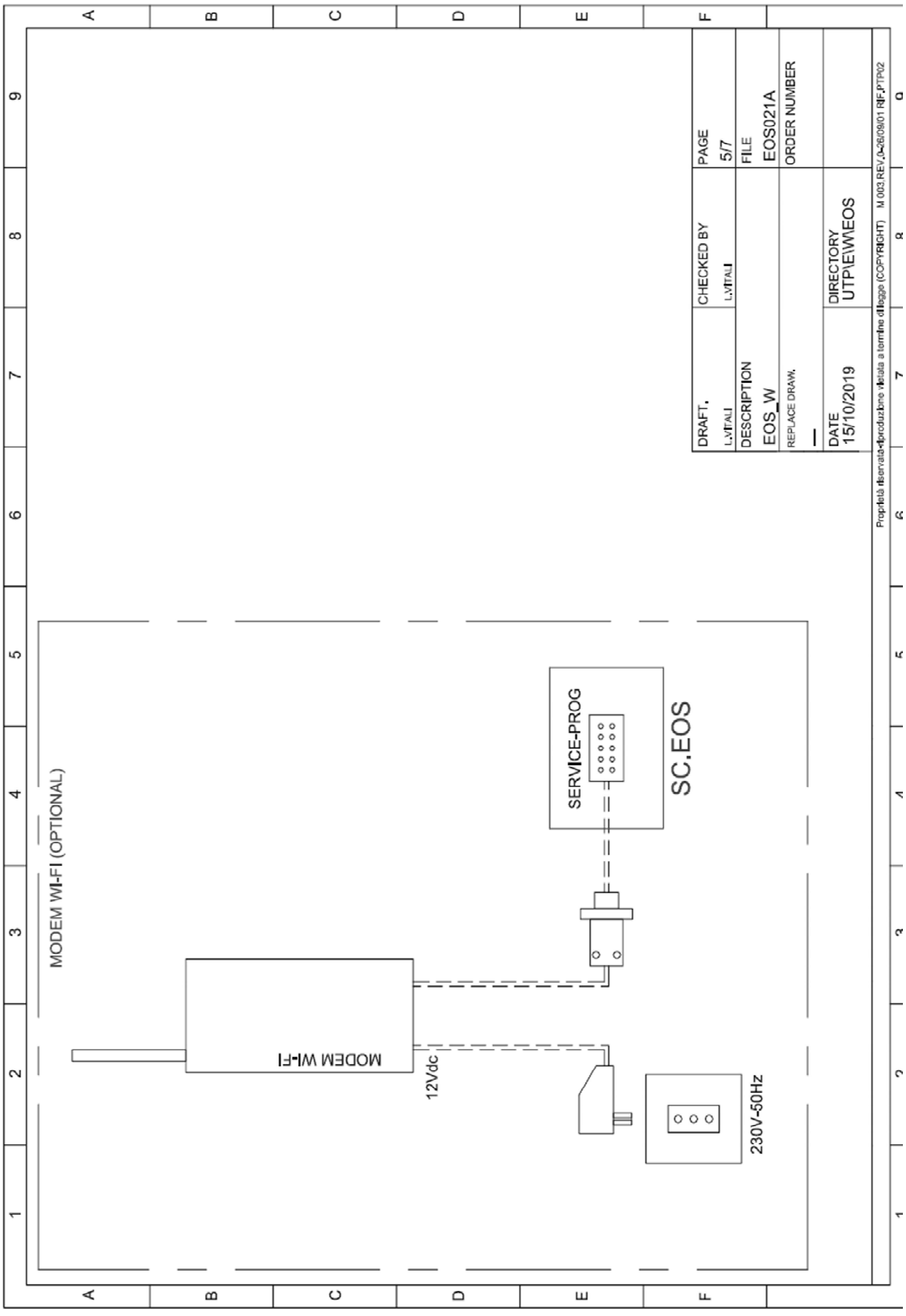
EOS B


AQS - AHS (OPTIONAL)
SC.EOS
BUS RS485
GND L+ L-
120 Ohm
AQSM
AHSM
DRAFT. L.VITALI
CHECKED BY L.VITALI
PAGE 4/7
DESCRIPTION EOS_W
FILE EOS021A
REPLACE DRAW. —
ORDER NUMBER
DATE 15/10/2019
DIRECTORY UTP\EIW\EOS
Proprietà riservata-riproduzione vietata a termine di legge (COPYRIGHT) M 003.REV.04/09/01 RIF.PTP02


MODEM WI-FI (OPTIONAL)
SERVICE-PROG
SC.EOS
MODEM WI-FI
12Vdc
230V-50Hz
DRAFT.
LVITALI
CHECKED BY
LVITALI
PAGE
5/7
DESCRIPTION
EOS_W
FILE
EOS021A
REPLACE DRAW.
—
ORDER NUMBER
DATE
15/10/2019
DIRECTORY
UTP\EW\EOS
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Note per collegamenti elettrici:

1) Installare in prossimità dell'unità un sezionatore manuale e un dispositivo di protezione per i sovraccarichi elettrici (fusibile o magnetotermico)
2) Passare i cavi di segnale (sonde temp., console, sonda umidità,..) in canaline separate dai cavi 230V
3) Le linee tratteggiate rappresentano i cablaggi da effettuare dall'installatore (esterni alla macchina)
4) Installare la consolle e (se presenti) e la sonda CO2 e la sonda umidità tutti nel locale principale (preferibilmente sulla stessa parete), lontani da fonti di calore e dai raggi del sole
5) Per l'installazione a parete della console, è necessaria una scatola da incasso a 3 moduli 503.

Electric connections notes:

1) Manual switch and safety switch (fuse or magnetotermic switch) must be installed near the unit.
2) Power and signal wires must be placed in separated cable ducts 230V.
3) Dashed lines represent customer connections (external to the unit).
4) Console, CO2 and RH probe (if present) must be installed in the main room, far from heat source or sun ray.
5) To install console, a wall box 503 is needed.

Hinweise für die elektrischen Anschlüsse:

1) In Gerätenähe einen manuellen Trennschalter und eine Schutzvorrichtung für elektrische Überlasten (Schmelzsicherung oder Leistungsschutzschalter) installieren.
2) Die Signalkabel (Temperatursonden, Konsole, Feuchtigkeitssonde usw.) in separaten Kanälen getrennt von den 230V Kabeln führen.
3) Die markierten Linien sind die vom Installateur (außerhalb der Maschine) durchzuführenden Verkabelungen.
4) Die Konsole und (wenn vorhanden) die CO2-Sonde und die Feuchtigkeitssonde alle im Hauptraum (wenn möglich an derselben Wand) und von Wärmequellen und Sonnenstrahlen entfernt installieren.
5) Für die Wandinstallation der Konsole ist ein Einbaukasten für 3 Module 503 erforderlich.

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230V-50Hz	ALIMENTAZIONE - POWER SUPPLY - STROMVERSORGUNG
L	LINEA (FASE) - LINE (PHASE) - LINIE (PHASE)
N	NEUTRO - NEUTRAL - NEUTRAL
VR	VENTILATORE DI RICIRCOLO - RECIRCULATION FAN - RÜCKFÜHRUNGSVENTILATOR
VM	VENTILATORE DI MANDATA (RINNOVO) - SUPPLY FAN (FRESH AIR) - VENTILATORAUSBLASS (FRISCHE LUFT)
VE	VENTILATORE DI ESPULSIONE - EXPULSION FAN - AUSSCHLUSSVENTILATOR
SF	SERRANDA DI FREE-COOLING - FREE-COOLING DAMPER - FREE-COOLING DÄMPFER
SI	SERRANDA DI RICIRCOLO - RECIRCULATION DAMPER - RÜCKFÜHRUNGSDÄMPFER
TE	SONDA TEMPERATURA ESTERNA - EXTERNAL TEMPERATURE PROBE - AUSSENTEMPERATURSONDE
TM	SONDA TEMPERATURA MANDATA - SUPPLY TEMPERATURE PROBE - AUSBLASSTEMPERATURSONDE
TS	SONDA TEMPERATURA ESPULSIONE - EXPULSION TEMPERATURE PROBE - AUSSCHLUSSTEMPERATURSONDE
TAUX	SONDA TEMPERATURA AUSILIARIA - AUXILIARY TEMPERATURE PROBE - HILFSTEMPERATURFÜHLER
AHSM	SONDA UMIDITA' - HUMIDITY PROBE - FEUCHTIGKEITSSONDE (Mod-bus)
AQSM	SONDA CO2 - CO2 PROBE - CO2 SONDE (Modbus)
V2M	VALVOLA MODULANTE - MODULATING VALVE - MODULIERENDES VENTIL
V2	VALVOLA ON/OFF - ON/OFF VALVE - ON/OFF VENTIL
V2MI	VALVOLA ON/OFF CON CONTATTO AUSILIARIO - ON/OFF VALVE WITH AUXILIARY CONTACT - ON/OFF VENTIL MIT HILFSKONTAKT
OUT-EI	CONTATTO ESTATE/INVERNO - SUMMER/WINTER OUTPUT - SOMMER/WINTER OUTPUT
OUT-CG	CONTATTO CONSENSO POMPA - OUTPUT ACTIVATION PUMP - OUTPUT FÜR PUMPESTARTEN
Q.E.EOS	QUADRO ELETTRICO EOS - EOS ELECTRIC BOX - ELEKTRO-SCHACHTEL EOS
SC.EOS	SCHEDA EOS - EOS MAIN BOARD - PLATINE EOS
Q.E.R	QUADRO ELETTRICO REMOTO - REMOTE ELECTRIC BOX - ENTFERNTES ELEKTRO-SCHACHTEL
IN-AE	ATTIVAZIONE RINNOVO FORZATO - ENABLE FORCED VENTILATION - AKTIVIERUNG GEZWUNGENE LÜFTUNG
IN-AUX	SELEZIONE ESTATE/INVERNO REMOTO - SUMMER/WINTER REMOTE SELECTION - SOMMER/WINTER FERNAUSSCHALTUNG

BK	NERO - BLACK - SCHWARZ
BL	BLU - BLUE - BLAU
YE	GIALLO - YELLOW - GELB
RD	ROSSO - RED - ROT
OR	ARANCIO - ORANGE - ORANGE
BR	MARRONE - BROWN - BRAUN
GR	GRIGIO - GREY - GRAU

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15- ELECTRICAL CONNECTIONS VERSION DE – INTERNAL UNIT

Electrical diagram to be required to the Company.

16- ELECTRICAL CONNECTIONS VERSION DE – EXTERNAL UNIT

Electrical diagram to be required to the Company.

17- ELECTRICAL CONNECTIONS MULTIZONE PLENUM

Electrical diagram to be required to the Company.

NOTE:

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something different

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Aertesi srl
viale della tecnica, 6/a
35026 Conselve (PD) ITALY

t. +39.049.9501109
f. +39.049.9500823

www.aertesi.com
info@aertesi.com