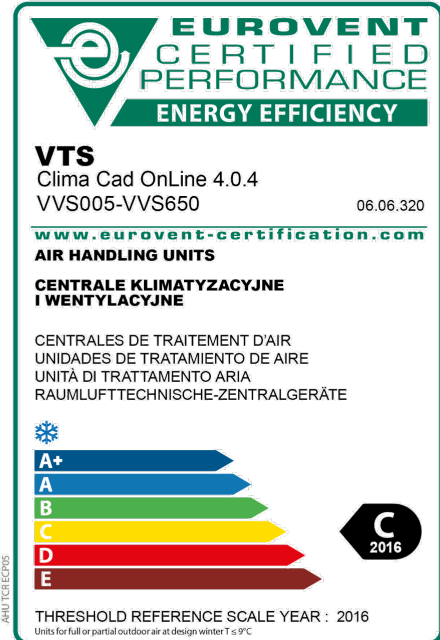
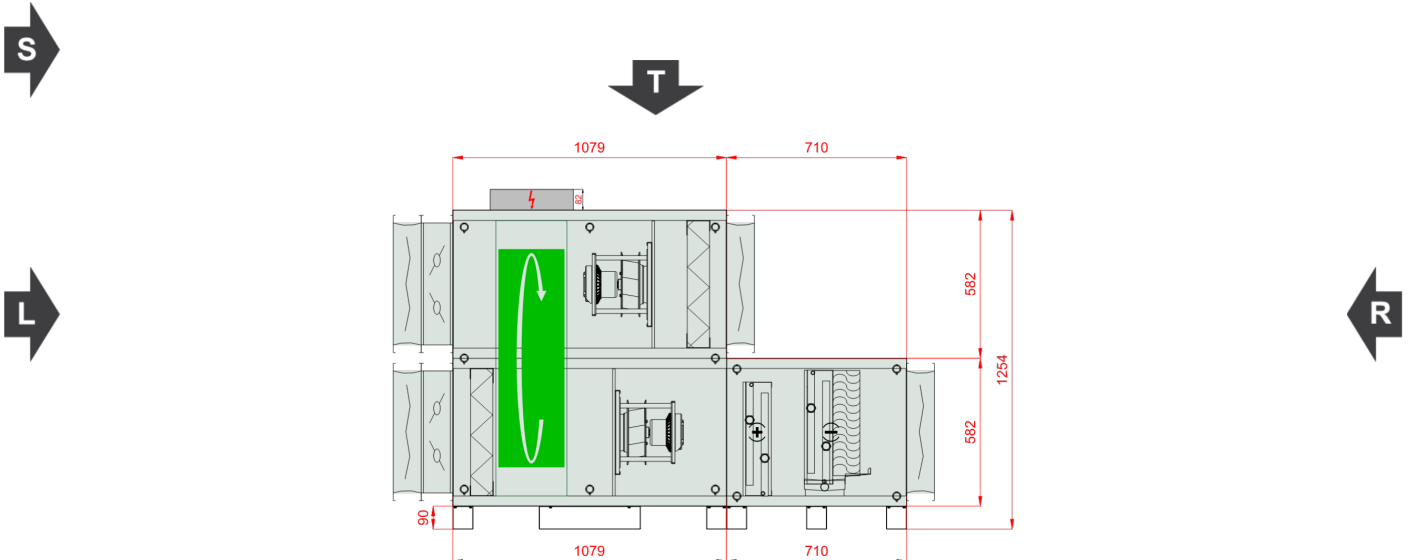


<b>Type</b>	RecoveryRotaryVerticalCompact
<b>Unit Type:</b>	Indoor
<b>Project Tag</b>	13577226
<b>Size</b>	VVS030c
<b>Set</b>	VVS030c-R-FRVHC/VVS030c-L-FVR_cd
<b>Insulation thickness</b>	40 mm
<b>Insulation</b>	Mineral Wool
<b>Weight of the set (+/- 10%)*</b>	357 Kg
<b>Supply airflow 2</b>	3900.00 m³/h
<b>External pressure</b>	300 Pa
<b>Exhaust airflow 2</b>	3900.00 m³/h
<b>External pressure</b>	300 Pa
<b>SFP Winter</b>	2.52 kW/m³/s
<b>SFP Summer</b>	2.60 kW/m³/s
<b>Ecodesign</b>	Yes (2018 +)
<b>Eurovent Energy efficiency class (Winter 2016 / Summer 2020)</b>	C 2016



**Inspection Panels**

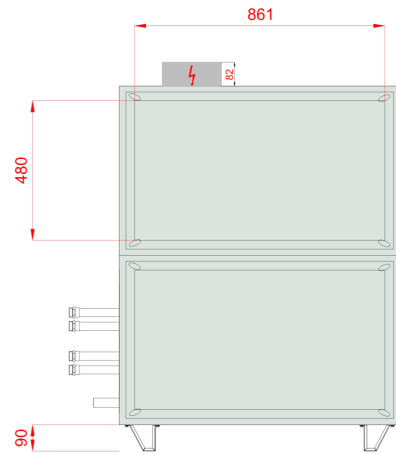
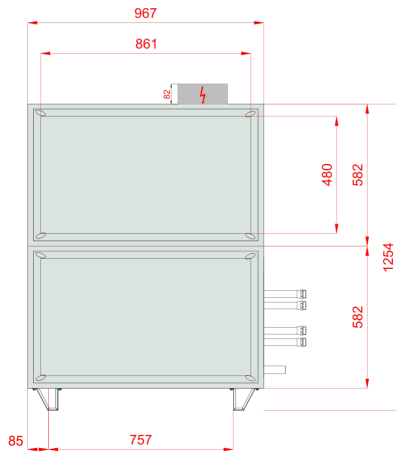


Comment 1:

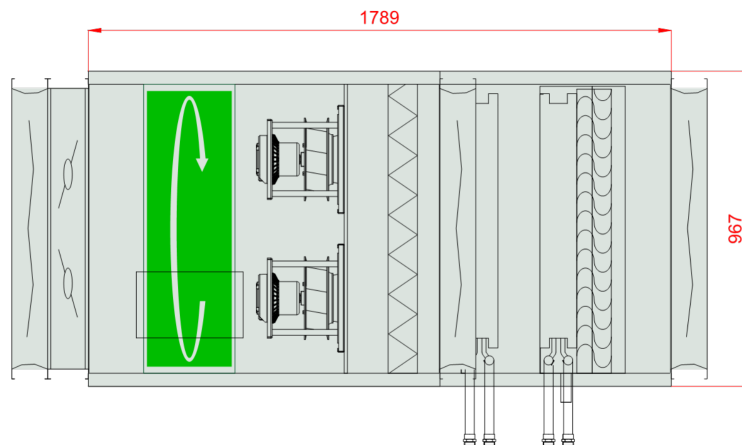


Front View (left)

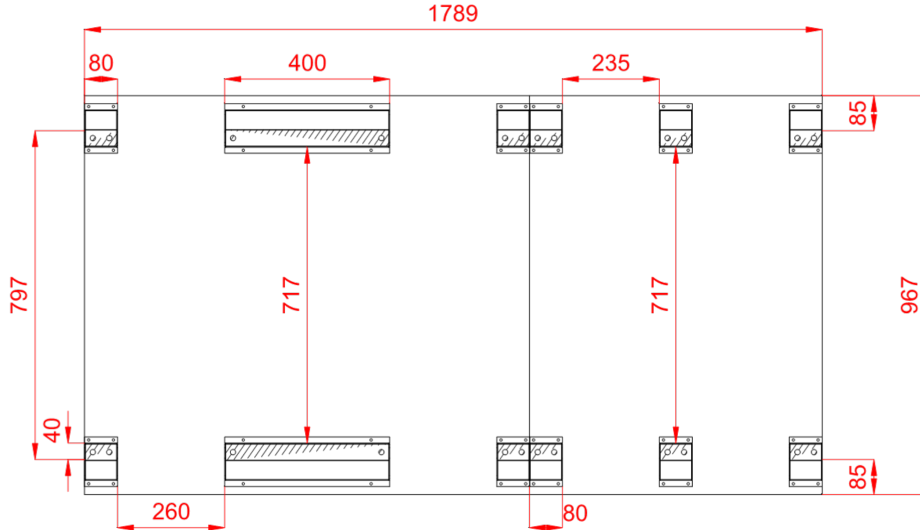
Front View (right)



Top View



**Frame Top View, within the AHU outline contour**



**Sizes [mm]**

<b>Air intake Supply</b> FF	861x480	<b>Lt</b> 1789	<b>Hi</b> 502	<b>Wi</b> 887
<b>Air outlet Supply</b> FF	861x480	<b>LtA</b> 2134	<b>H</b> 672	<b>W</b> 967
		<b>L1</b> 1789	<b>H2</b> 1254	
<b>Air inlet Exhaust</b> FF	861x480	<b>L2</b> 1079	<b>Hf</b> 90	
<b>Air outlet Exhaust</b> FF	861x480	<b>L22</b> 710		

**Unit design**

40mm insulated walls , double skin made of steel

Unit Power Supply 400V/3ph/50Hz

Casing anti-corrosion protection: Aluzinc AZ 150. Corrosion resistance (salt spary test): over 2400 hours

In case of delivery with controls a base unit fully wired, with pre-configured controller and EC motors drives

Energy recovery efficiency exceeding 86% (for EC 1253/2014 conditions)

**Temperature Conditions**

Reference atmospheric pressure 101325 Pa

Winter outdoor reference temperature -20.0 °C

	External air			Return air		
	DBT	RH	DA	DBT	RH	DA
Summer	32.0 °C	45 %	1.2000 kg/m <sup>3</sup>	20.0 °C	65 %	1.2000 kg/m <sup>3</sup>
Winter	-20.0 °C	100 %	1.2000 kg/m <sup>3</sup>	20.0 °C	40 %	1.2000 kg/m <sup>3</sup>



**Supply**

**Panel Filter**

**Type F7/50.EU7MPleat.Int.Sld**

ePM2,5 65% (ISO16890) - EFF CLASS E Flat Mini-Pleat Filter[27.0]

Filter Energy Performance Class E

**Winter operation**

50% Dirty Air Pressure Drop 137 Pa  
 Initial Air Pressure Drop 124 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.46 m/s

**Summer operation**

50% Dirty Air Pressure Drop 137 Pa  
 Initial Air Pressure Drop 124 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.46 m/s

**Air Filter Sizes**

P.FLT (1-2-0301-0214) 2,000 x Pcs



**Rotary Wheel**

**Type RRG VVS030c NHG**

R2\_SR\_NHG

Rated voltage 230 V/1 ph/50 Hz

**Winter operation**

**Supply**

Intake air DBT / RH -20.0 °C / 100 %

Discharge air DBT / RH 8.8 °C / 53 %

Air velocity 4.35 m/s

Pressure drop Wet / Dry Wet / Dry 235 Pa / 274 Pa

Air Pressure 101325 Pa

Air Density 1.2000 kg/m<sup>3</sup>

Air Volume Flow 3900.00 m<sup>3</sup>/h

Recovery capacity Sensible / Total  
Sensible / Total 37.7 kW / 48.0 kW

Actual efficiency / at balanced flow Real /  
BalancedFlow 72 % / 72 %

Dry efficiency in winter 73 %

**Winter operation**

**Exhaust**

Intake air DBT / RH 20.0 °C / 40 %

Discharge air DBT / RH -7.3 °C / 95 %

Air velocity 4.35 m/s

Pressure drop Wet / Dry Wet / Dry 273 Pa / 274 Pa

Air Pressure 101325 Pa

Air Density 1.2000 kg/m<sup>3</sup>

Air Volume Flow 3900.00 m<sup>3</sup>/h

Recovery Bypass No

Rotary Regenerator

Max Internal Leakage 3%

**Summer operation**

**Supply**

Intake air DBT / RH 32.0 °C / 45 %

Discharge air DBT / RH 23.4 °C / 74 %

Air velocity 4.35 m/s

Pressure drop Wet / Dry Wet / Dry 285 Pa / 274 Pa

Air Pressure 101325 Pa

Air Density 1.2000 kg/m<sup>3</sup>

Air Volume Flow 3900.00 m<sup>3</sup>/h

Recovery capacity Sensible / Total  
Sensible / Total 11.2 kW / 11.2 kW

Actual efficiency / at balanced flow Real 72 %

**Summer operation**

**Exhaust**

Intake air DBT / RH 20.0 °C / 65 %

Discharge air DBT / RH 28.9 °C / 38 %

Air velocity 4.35 m/s

Pressure drop Wet / Dry Wet / Dry 273 Pa / 274 Pa

Air Pressure 101325 Pa

Air Density 1.2000 kg/m<sup>3</sup>

Air Volume Flow 3900.00 m<sup>3</sup>/h

Eco Design Class

Eco Design

**Recovery Additional Info**

RotaryExchangers

**Plug-Fan Set**

**Fan Section PLUG\_DD\_225\_0,74\_1.33**

EC\_IE4\_F\_IMB14\_71\_1.33p\_T

771.3.570-2

225|0.74kW|1.33x3

Qty in section

x 3

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

**Fan PLUG\_VS\_225\_AF\_Px 3**



Total Static Pressure	843 Pa	Impeller efficiency: Static / Total	71 %/75 %
Dynamic pressure	39 Pa	Shaft power	0.43 kW x 3
External pressure	300 Pa	Working revolutions	3826 1/min
Total Pressure	882 Pa		
<b>Winter operation</b>		<b>Summer operation</b>	
Air Volume Flow	3900.00 m³/h	Air Volume Flow	3900.00 m³/h

**Motor EC\_IE4\_F\_71\_IMB14\_1.33p\_0.74\_50x 3**

771.3.570-2	EC	50Hz	
		Rated revolutions	4500 1/min
Operational Voltage	230 V/1 ph	Rated Power	0.74 kW x 3
Name plate RPM	230 V/1 ph/50 Hz		

**EC Motor Controller**

EC Controller Settings	43 Hz
------------------------	-------

<b>Winter operation</b>		<b>Summer operation</b>	
EPC for mean contaminated filters	1.48 kW	EPC for mean contaminated filters	1.57 kW
EPC for clean filters	1.46 kW	EPC for clean filters	1.55 kW
SFP for clean filters	1.35 kW/m³/s	SFP for clean filters	1.43 kW/m³/s

**Fan Section Power Supply Additional Info**

C25/3

**Hot Water Coil**

<b>Type</b> WCL VVS030c 2R DT SH.St.St.Std	<b>Number of rows</b> 2	<b>Connection Supply/Return:</b> 1"/1"	
Standard Circuits	2,93 [dm <sup>3</sup> ]		
Medium	Water	Maximum working pressure	16 bar
Intake air DBT / RH	8.8 °C / 53 %	Discharge air DBT / RH	20.0 °C / 26 %
Air velocity	3.12 m/s	Pressure drop Wet / Dry Wet	73 Pa
Air Pressure	101325 Pa	Air Density	1.2000 kg/m³
Air Volume Flow	3900.00 m³/h		
Total heating capacity	14.7 kW	Medium temperature	70.0 °C/50.0 °C
Medium flow rate	0.63 m³/h	Medium pressure drop	1.52 kPa



### Chilled Water Coil with Droplet Eliminator

Type WCL VVS030c 2R DT SH.St.St.Std Number of rows 2 Connection Supply/Return: 1"/1"

Standard Circuits	2,93 [dm <sup>3</sup> ]		
Medium	Water	Maximum working pressure	16 bar
Intake air DBT / RH	23.4 °C / 74 %	Discharge air DBT / RH	20.0 °C / 86 %
Air velocity	3.17 m/s	Pressure drop Wet / Dry Wet / Dry	97 Pa / 60 Pa
Air Pressure	101325 Pa	Air Density	1.2000 kg/m <sup>3</sup>
Air Volume Flow	3900.00 m <sup>3</sup> /h		
Cooling capacity: Sensible / Total	4.6 kW/7.4 kW	Medium temperature: Inlet / Outlet	7.0 °C/12.0 °C
Medium flow rate	1.26 m <sup>3</sup> /h	Medium pressure drop	5.69 kPa

### Acoustic data

Acoustic power level [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB(A)]
Inlet	[dB(A)]	51.7	64.1	69.1	68.6	65.1	58.8	52.3	73.5
Outlet	[dB(A)]	53.5	60.5	44.8	48.8	38.1	26.4	19.9	61.6
Environment	[dB(A)]	41.2	52.5	50.4	44.8	37.1	29.6	16.0	55.3

Acoustic pressure level at 1 meter distance [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB(A)]
	[dB(A)]	34.2	45.5	43.4	37.8	30.1	22.6	9.0	48.3

### Exhaust airflow 3

#### Panel Filter

Type M5/50.EU5MPleat.Int.Sld

ePM10 40% - ISO 16890 - EFF CLASS E Flat Mini-Pleat Filter[26.0]

Filter Energy Performance Class E

#### Winter operation

50% Dirty Air Pressure Drop	122 Pa
Initial Air Pressure Drop	93 Pa
100% Dirty Air Pressure Drop	150 Pa
Air velocity	2.46 m/s

#### Summer operation

50% Dirty Air Pressure Drop	122 Pa
Initial Air Pressure Drop	93 Pa
100% Dirty Air Pressure Drop	150 Pa
Air velocity	2.46 m/s

#### Air Filter Sizes

P.FLT (1-2-0301-0202) 2,000 x Pcs

#### Plug-Fan Set

Fan Section PLUG\_DD\_225\_0,74\_1.33

EC\_IE4\_F\_IMB14\_71\_1.33p\_T 771.3.570-2 225|0.74kW|1.33x2

Qty in section x 2

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.



### Fan PLUG\_VS\_225\_AF\_Px 2

Total Static Pressure	696 Pa	Impeller efficiency: Static / Total	67 %/75 %
Dynamic pressure	88 Pa	Shaft power	0.57 kW x 2
External pressure	300 Pa	Working revolutions	4428 1/min
Total Pressure	784 Pa		
<b>Winter operation</b>		<b>Summer operation</b>	
Air Volume Flow	3900.00 m³/h	Air Volume Flow	3900.00 m³/h

### Motor EC\_IE4\_F\_71\_IMB14\_1.33p\_0.74\_50x 2

771.3.570-2	EC	50Hz	
		Rated revolutions	4500 1/min
Operational Voltage	230 V/1 ph	Rated Power	0.74 kW x 2
Name plate RPM	230 V/1 ph/50 Hz		

### EC Motor Controller

EC Controller Settings	49 Hz
------------------------	-------

<b>Winter operation</b>		<b>Summer operation</b>	
EPC for mean contaminated filters	1.31 kW	EPC for mean contaminated filters	1.31 kW
EPC for clean filters	1.27 kW	EPC for clean filters	1.27 kW
SFP for clean filters	1.17 kW/m³/s	SFP for clean filters	1.17 kW/m³/s

### Fan Section Power Supply Additional Info

C20/3

### Acoustic data

Acoustic power level [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB(A)]
Inlet	[dB(A)]	54.0	67.4	73.3	73.6	72.0	66.5	60.9	78.6
Outlet	[dB(A)]	56.7	70.1	76.0	76.3	74.7	70.1	64.5	81.3
Environment	[dB(A)]	41.7	53.1	51.0	45.3	37.7	30.1	16.5	55.9

Acoustic pressure level at 1 meter distance [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB(A)]
	[dB(A)]	34.7	46.1	44.0	38.3	30.7	23.1	9.5	48.9

### AHU Discharge and Intake Opening Sizes & Unit Accessories

#### Supply

#### Exhaust

Controls Selection Mode: Functional set

AHU Discharge and Intake Opening Sizes	Supply	Exhaust
Air Inlet	Front 861x480	Front 861x480
Air Outlet	Front 861x480	Front 861x480
AirDamper	Supply	Exhaust
Air Inlet	Provided	Not Provided





Air Outlet	Not Provided	Provided
<b>Flexible Connection</b>	Supply	Exhaust
Air Inlet	Provided	Provided
Air Outlet	Provided	Provided

### Control application

**Functional Code** AR|1|1|0|0|0|0|0|6|3|0|0|0|0|1

**APP Code** uPC3 (AR-133)

**Main Temp. Sensor** Duct Exhaust

#### Human Machine Interface

#### Options

BMS	Yes	Differential Pressure Transducer	CAV
HMI Advanced (Settings)	Yes		
HMI Basic (User)	Yes		
Control Box	Yes		

#### Air damper actuators

Name	Code	Set
Air Damper Actuator ON-OFF S 10Nm	ADMP.ACT.SET ON-OFF S 10Nm	1
Air Damper Actuator ON-OFF 10Nm	ADMP.ACT.SET ON-OFF 10Nm	1

#### Temperature sensor

Name	Code	Set
Resp_Controls_TempSensors_Temp. Sensor NTC10k (Outdoor)	Temp. Sensor NTC10k (Outdoor)	3
Duct temperature sensor NTC 10k	Temp. Sensor NTC10k (Duct)	1
Strap-on temperature sensor NTC 10k	Temp. Sensor NTC10k (Strap-on)	1

#### Hydronic Coils Controls

Name	Code	Set
3-way Valve	VLV.SET-3W-4	2

#### Transducers and Switches

Name	Code	Set
Frost Switch	FRST.SWITCH	1
Differential Pressure Transducer CAV	PRSS.TRDC_CAV	1

### AHU Connection Box

#### AHU Connection Box

Rated Power	3.70 kW	Full Load Amps	22.0 A
Power Connection	3x400V AC +N+PE	Power Cord	5 x 4,00 mm <sup>2</sup>

### DECLARATION OF PERFORMANCE - Product information - (EU) 1253/2014 annex V as referred to in art. 4(2)

No.	Parameter	Unit	Value
1	Manufacturer's name		VTS sp. z o.o.
2	Manufacturer's product code		VVS030c-F-R-V-H-C
3	Declared type		NRVU, BVU
4	Type of drive installed		VFD(AC) or Controller(EC)
5	Type of energy recovery		Other
6	Thermal efficiency of heat recovery	%	73.00



7	Nominal NRVU flow rate		1.08 / 1.08
8	Effective electric power input	kW	1.48 / 1.31
9	Internal Specific Fan Power (SFPint)	w/m³/s	583.70 / 637.26
10	Face velocity	m/s	2.46
11	Nominal external pressure	Pa	300.00 / 300.00
12	Internal Pressure Drop of ventilation components $\Delta ps, int$	Pa	359.55 / 366.76
13	Internal pressure drop of non-ventilation components $\Delta ps, add$	Pa	183.57 / 29.29
14	Maximum Leakage Rate	%	0.01 / 0.01
15	Energy performance of filters (declared information about the calculated annual energy consumption)		EU7MPleat / F7 / - / EU5MPleat / M5 / -
16	Description of visual filter warning for NRVUs		Supported by control application
17	Casing sound power level LWA	dBA	56
18	Internet address for disassembly instructions		<a href="http://www.vtsgroup.com">http://www.vtsgroup.com</a>
19	Ecodesign Compliance		Yes (2018 +)

### Section splits

Transport Sections	Mass [Kg]	LENGTH [mm]	WIDTH [mm]	HEIGHT [mm]
1	249	1079	967	1254
2	80	710	967	672

Transport Sections Dims

