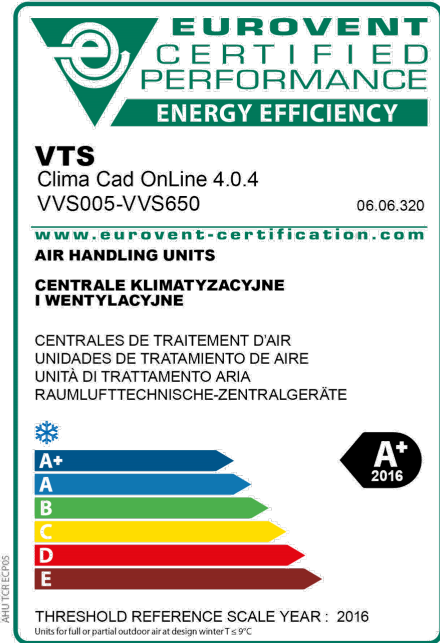
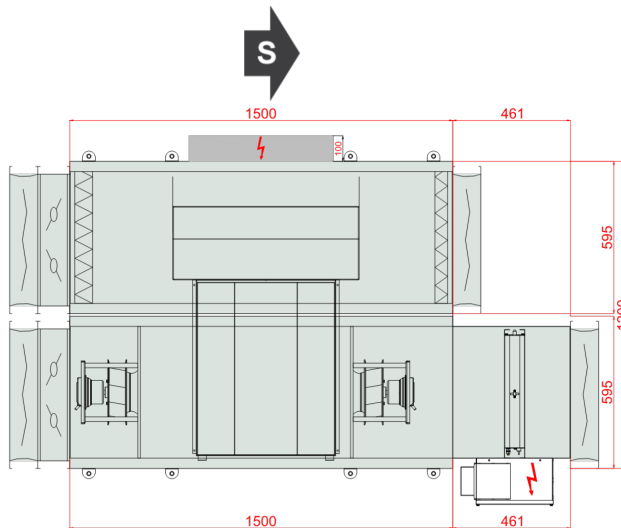


| | |
|---|---------------------------------|
| Type | RecoveryHexHorizontal |
| Unit Type: | Indoor |
| Project Tag | 13577153 |
| Size | VVS010s |
| Set | VVS010s-R-FPVH/VVS010s-L-FPV_cd |
| Insulation thickness | 40 mm |
| Insulation | Mineral Wool |
| Weight of the set (+/- 10%)* | 212 Kg |
| Supply airflow 2 | 1100.00 m³/h |
| External pressure | 300 Pa |
| Exhaust airflow 2 | 1100.00 m³/h |
| External pressure | 300 Pa |
| SFP Winter | 1.57 kW/m³/s |
| SFP Summer | 1.63 kW/m³/s |
| Ecodesign | Yes (2018 +) |
| Eurovent Energy efficiency class (Winter 2016 / Summer 2020) | A+ 2016 |



Top View

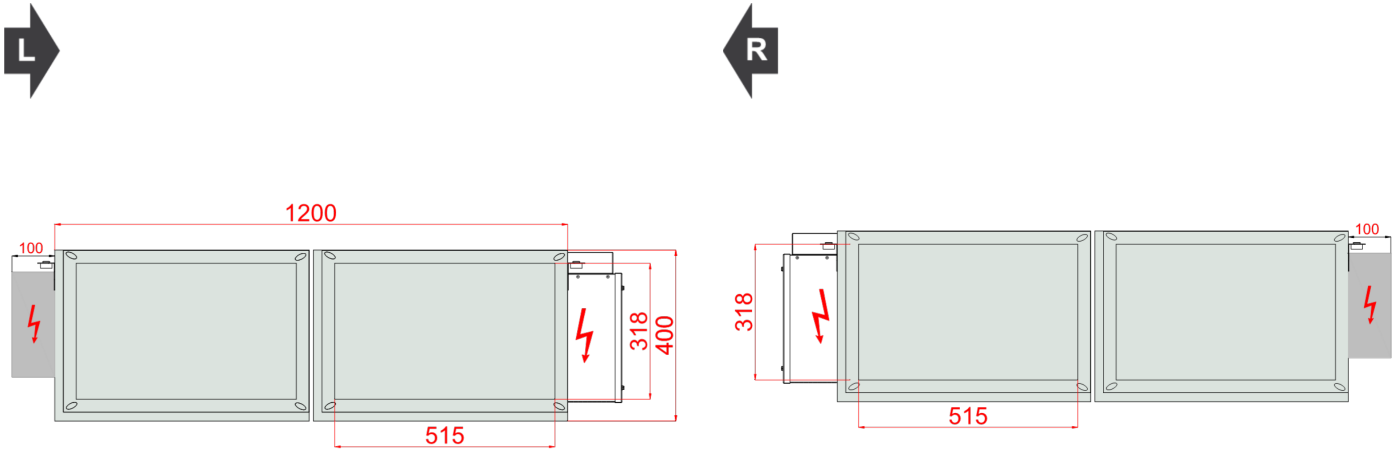


Comment 1:

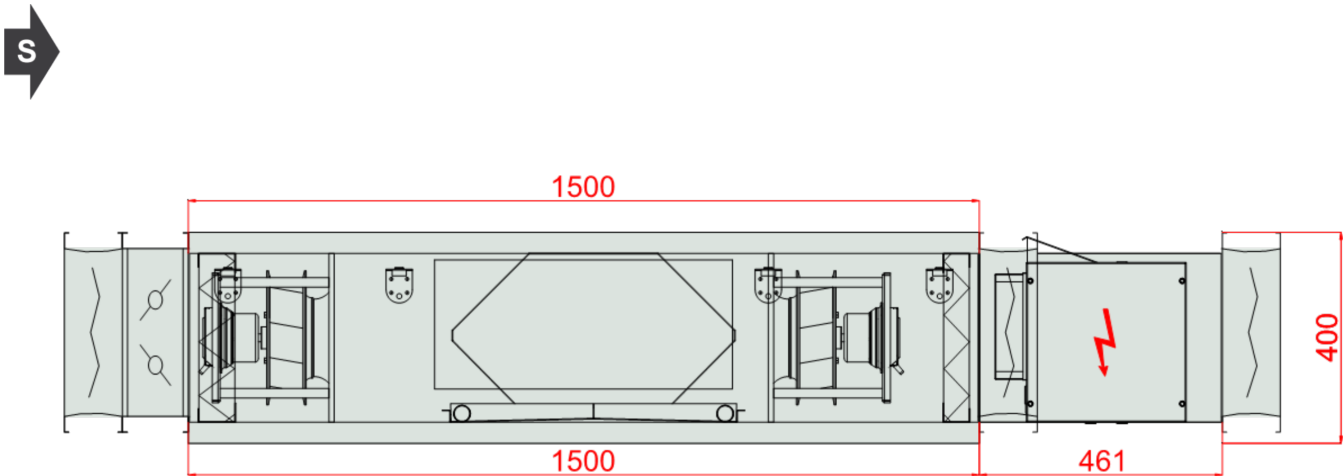


Front View (left)

Front View (right)



Inspection Panels



Sizes [mm]

| | | | | |
|-----------------------|---------|----------|--------|---------|
| Air intake Supply FF | 515x318 | Lt 1961 | Hi 320 | Wi 515 |
| Air outlet Supply FF | 515x318 | LtA 2306 | H 400 | W 595 |
| Air inlet Exhaust FF | 515x318 | L1 1961 | | W2 1200 |
| Air outlet Exhaust FF | 515x318 | L22 461 | | |

Unit design

Walls filled with MW 40mm, double skin made of steel, excluding silencer and electric heater sections

Down base unit inspection

Casing anti-corrosion protection: Aluzinc AZ 150.
 Base unit with pre-configured EC motors drives
 Energy recovery efficiency meet EC 1253/2014 requirements

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/m³ | 20.0 °C | 65 % | 1.2000 kg/m³ |
| Winter | -20.0 °C | 100 % | 1.2000 kg/m³ | 20.0 °C | 40 % | 1.2000 kg/m³ |

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 118 Pa
 Initial Air Pressure Drop 85 Pa
 100% Dirty Air Pressure Drop 150 Pa
 Air velocity 1.91 m/s

Summer operation

50% Dirty Air Pressure Drop 118 Pa
 Initial Air Pressure Drop 85 Pa
 100% Dirty Air Pressure Drop 150 Pa
 Air velocity 1.91 m/s

Air Filter Sizes

P,FLT F7 513x320x48 (1-2-0301-0244) 1,000 x Pcs

Counter-Flow Recuperator (Hexagonal)

Type PCR VVS010s Hex

HIPS or AL 3.0 (SR)

Winter operation

Supply

| | |
|--|---------------------------|
| Intake air DBT / RH | -20.0 °C / 100 % |
| Discharge air DBT / RH | 11.2 °C / 8 % |
| Air velocity | 2.51 m/s |
| Pressure drop Wet / Dry Wet | 82 Pa |
| Air Pressure | 101325 Pa |
| Air Density | 1.2000 kg/m ³ |
| Air Volume Flow | 1100.00 m ³ /h |
| Recovery capacity Sensible / Total Total | 11.5 kW |
| Actual efficiency / at balanced flow Real / BalancedFlow | 78 % / 78 % |
| Dry efficiency in winter | 72 % |

Winter operation

Exhaust

| | |
|-----------------------------|---------------------------|
| Intake air DBT / RH | 20.0 °C / 40 % |
| Discharge air DBT / RH | -2.2 °C / 89 % |
| Air velocity | 2.51 m/s |
| Pressure drop Wet / Dry Wet | 108 Pa |
| Air Pressure | 101325 Pa |
| Air Density | 1.2000 kg/m ³ |
| Air Volume Flow | 1100.00 m ³ /h |
| Recovery Bypass | Yes |
| Air Damper | No |
| Counter-Flow (Hex) | |
| Max Internal Leakage | 0.25% |

Summer operation

Supply

| | |
|---|---------------------------|
| Intake air DBT / RH | 32.0 °C / 45 % |
| Discharge air DBT / RH | 23.4 °C / 75 % |
| Air velocity | 2.51 m/s |
| Pressure drop Wet / Dry Wet | 116 Pa |
| Air Pressure | 101325 Pa |
| Air Density | 1.2000 kg/m ³ |
| Air Volume Flow | 1100.00 m ³ /h |
| Recovery capacity Sensible / Total Total | -3.2 kW |
| Actual efficiency / at balanced flow Real | 72 % |

Summer operation

Exhaust

| | |
|-----------------------------|---------------------------|
| Intake air DBT / RH | 20.0 °C / 65 % |
| Discharge air DBT / RH | 27.6 °C / 42 % |
| Air velocity | 2.51 m/s |
| Pressure drop Wet / Dry Wet | 108 Pa |
| Air Pressure | 101325 Pa |
| Air Density | 1.2000 kg/m ³ |
| Air Volume Flow | 1100.00 m ³ /h |
| Eco Design Class | Eco Design |

Recovery Additional Info

PlateExchangers

Plug-Fan Set

Fan Section PLUG_DD_225_0,38_1.64

| | | |
|---------------------------|-------------|--------------------|
| EC_IE4_F_IMB14_71_1.64p_T | 771.3.550-3 | 225 0.38kW 1.64x1 |
| | | Qty in section x 1 |

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 1





| | | | |
|-------------------------|--------------|-------------------------------------|--------------|
| Total Static Pressure | 531 Pa | Impeller efficiency: Static / Total | 71 %/75 % |
| Dynamic pressure | 28 Pa | Shaft power | 0.23 kW x 1 |
| External pressure | 300 Pa | Working revolutions | 3102 1/min |
| Total Pressure | 559 Pa | | |
| Winter operation | | Summer operation | |
| Air Volume Flow | 1100.00 m³/h | Air Volume Flow | 1100.00 m³/h |

Motor EC_IE4_F_71_IMB14_1.64p_0.38_50x 1

| | | | |
|---------------------|------------------|-------------------|-------------|
| 771.3.550-3 | EC | 50Hz | |
| FLA | 2.1 A | MCA | 2.7 A |
| MCB | 6.0 A | | |
| | | Rated revolutions | 3650 1/min |
| Operational Voltage | 230 V/1 ph | Rated Power | 0.38 kW x 1 |
| Name plate RPM | 230 V/1 ph/50 Hz | | |

EC Motor Controller

| | | | |
|--|-------|---|-------|
| | _EC | _EC | |
| Motor Drive FLA (Full-Load Amperes) | 2.1 A | Motor Drive MCA (Min. Circuit Ampacity) | 2.7 A |
| Motor Drive MCB (Max. Circuit Breaker) | 6.0 A | | |
| EC Controller Settings | 42 Hz | | |

| | | | |
|-----------------------------------|--------------|-----------------------------------|--------------|
| Winter operation | | Summer operation | |
| EPC for mean contaminated filters | 0.26 kW | EPC for mean contaminated filters | 0.28 kW |
| EPC for clean filters | 0.25 kW | EPC for clean filters | 0.26 kW |
| SFP for clean filters | 0.81 kW/m³/s | SFP for clean filters | 0.86 kW/m³/s |

Fan Section Power Supply Additional Info

C20/1

⊕ Ducted electric heater (w/o insulation)

Type VVS010s-6,00kW-400/3/50-RES **Version** N2_400_3_50_FullControls_RES_NO

L1/L2/L3=26/15/15 [A]

| | | | |
|--------------------------|---------------|-----------------------------|---------------|
| Rated Electric Power | 12.00 kW | Maximum heating capacity | 12.0 kW |
| Full Load Amperage (FLA) | 26.0 A | MCA | 32.5 A |
| Protection size | 40.0 A | | |
| Intake air DBT / RH | 11.2 °C / 8 % | Discharge air DBT / RH | 20.0 °C / 4 % |
| Air velocity | 2.78 m/s | Pressure drop Wet / Dry Wet | 31 Pa |
| Air Volume Flow | 1100.00 m³/h | | |
| Heating capacity | 3.2 kW | | |



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)] | 49.4 | 55.5 | 53.4 | 48.3 | 44.8 | 48.4 | 45.5 | 59.4 |
| Outlet | [dB(A)] | 46.7 | 60.0 | 66.0 | 65.4 | 63.7 | 57.4 | 51.8 | 70.6 |
| Environment | [dB(A)] | 34.6 | 45.9 | 51.9 | 48.2 | 48.5 | 29.0 | 21.4 | 55.2 |

| 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)] | 27.6 | 38.9 | 44.9 | 41.2 | 41.5 | 22.0 | 14.4 | 48.2 |

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 107 Pa
 Initial Air Pressure Drop 64 Pa
 100% Dirty Air Pressure Drop 150 Pa
 Air velocity 1.91 m/s

Summer operation

50% Dirty Air Pressure Drop 107 Pa
 Initial Air Pressure Drop 64 Pa
 100% Dirty Air Pressure Drop 150 Pa
 Air velocity 1.91 m/s

Air Filter Sizes

P,FLT M5 513x320x48 (1-2-0301-0246) 1,000 x Pcs

Plug-Fan Set

Fan Section PLUG_DD_225_0,38_1.64

EC_IE4_F_IMB14_71_1.64p_T 771.3.550-3 225|0.38kW|1.64x1

Qty in section x 1

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 1

| | | | |
|-------------------------|--------------|-------------------------------------|--------------|
| Total Static Pressure | 515 Pa | Impeller efficiency: Static / Total | 71 %/75 % |
| Dynamic pressure | 28 Pa | Shaft power | 0.22 kW x 1 |
| External pressure | 300 Pa | Working revolutions | 3071 1/min |
| Total Pressure | 543 Pa | | |
| Winter operation | | Summer operation | |
| Air Volume Flow | 1100.00 m³/h | Air Volume Flow | 1100.00 m³/h |

Motor EC_IE4_F_71_IMB14_1.64p_0.38_50x 1

771.3.550-3 EC 50Hz





| | | | |
|---------------------|------------------|-------------------|-------------|
| FLA | 2.1 A | MCA | 2.7 A |
| MCB | 6.0 A | | |
| | | Rated revolutions | 3650 1/min |
| Operational Voltage | 230 V/1 ph | Rated Power | 0.38 kW x 1 |
| Name plate RPM | 230 V/1 ph/50 Hz | | |

EC Motor Controller

| | | | |
|--|-------|---|-------|
| | _EC | | _EC |
| Motor Drive FLA (Full-Load Amperes) | 2.1 A | Motor Drive MCA (Min. Circuit Ampacity) | 2.7 A |
| Motor Drive MCB (Max. Circuit Breaker) | 6.0 A | | |
| EC Controller Settings | 42 Hz | | |

Winter operation

| | |
|-----------------------------------|--------------|
| EPC for mean contaminated filters | 0.26 kW |
| EPC for clean filters | 0.23 kW |
| SFP for clean filters | 0.77 kW/m³/s |

Summer operation

| | |
|-----------------------------------|--------------|
| EPC for mean contaminated filters | 0.26 kW |
| EPC for clean filters | 0.23 kW |
| SFP for clean filters | 0.77 kW/m³/s |

Fan Section Power Supply Additional Info

C20/1

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)] | 44.7 | 58.0 | 63.9 | 64.3 | 62.6 | 57.2 | 51.6 | 69.2 |
| Outlet | [dB(A)] | 47.4 | 60.7 | 66.6 | 67.0 | 65.3 | 60.8 | 55.2 | 72.0 |
| Environment | [dB(A)] | 34.4 | 45.7 | 51.6 | 48.0 | 48.3 | 28.8 | 21.2 | 55.0 |

| 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)] | 27.4 | 38.7 | 44.6 | 41.0 | 41.3 | 21.8 | 14.2 | 48.0 |

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 515x318 | Front 515x318 |
| Air Outlet | Front 515x318 | Front 515x318 |
| AirDamper | Supply | Exhaust |
| Air Inlet | Provided 485x288 | Not Provided |
| Air Outlet | Not Provided | Provided 485x288 |
| Flexible Connection | Supply | Exhaust |
| Air Inlet | Provided 485x288 | Provided 485x288 |
| Air Outlet | Provided 485x288 | Provided 485x288 |

Control application





Functional Code AP|3|0|0|0|0|0|0|6|3|0|0|0|0|0|1
APP Code uPC3 (AP-162)
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 10Nm | ADMP.ACT.SET ON-OFF 10Nm | 2 |
| Air Damper Actuator 0-10 2Nm | ADMP.ACT.SET 0-10 2Nm | 1 |

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

| Transducers and Switches | | |
|--------------------------------------|---------------|-----|
| Name | Code | Set |
| Differential Pressure Transducer CAV | PRSS.TRDC_CAV | 1 |

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 | | VVS010s-F-P-V-H |
| 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 | | 0.31 / 0.31 |
| 8 | Effective electric power input | kW | 0.26 / 0.26 |
| 9 | Internal Specific Fan Power (SFPint) | w/m³/s | 271.38 / 278.18 |
| 10 | Face velocity | m/s | 2.04 |
| 11 | Nominal external pressure | Pa | 300.00 / 300.00 |
| 12 | Internal Pressure Drop of ventilation components Δps,int | Pa | 167.49 / 171.66 |
| 13 | Internal pressure drop of non-ventilation components Δps,add | Pa | 63.74 / 43.53 |
| 14 | Maximum Leakage Rate | % | 0.01 / 0.01 |
| 15 | Energy performance of filters (declared information about the calculated annual anergy consumption) | | EU7MPleat / F7 / - / EU5MPleat / M5 / - |
| 16 | Description of visual filter warning for NRVUs | | Supported by control application |
| 17 | Casing sound power level LWA | dBA | 55 |
| 18 | Internet address for disassembly instructions | | http://www.vtsgroup.com |
| 19 | Ecodesign Compliance | | Yes (2018 +) |

Section splits

| Transport Sections | Mass [Kg] | LENGTH [mm] | WIDTH [mm] | HEIGHT [mm] |
|--------------------|-----------|-------------|------------|-------------|
| 1 | 198 | 1500 | 1200 | 400 |



2

11

461

595

400

Transport Sections Dims

