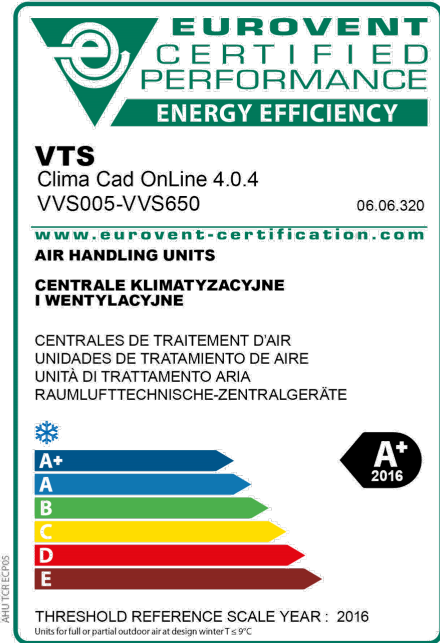
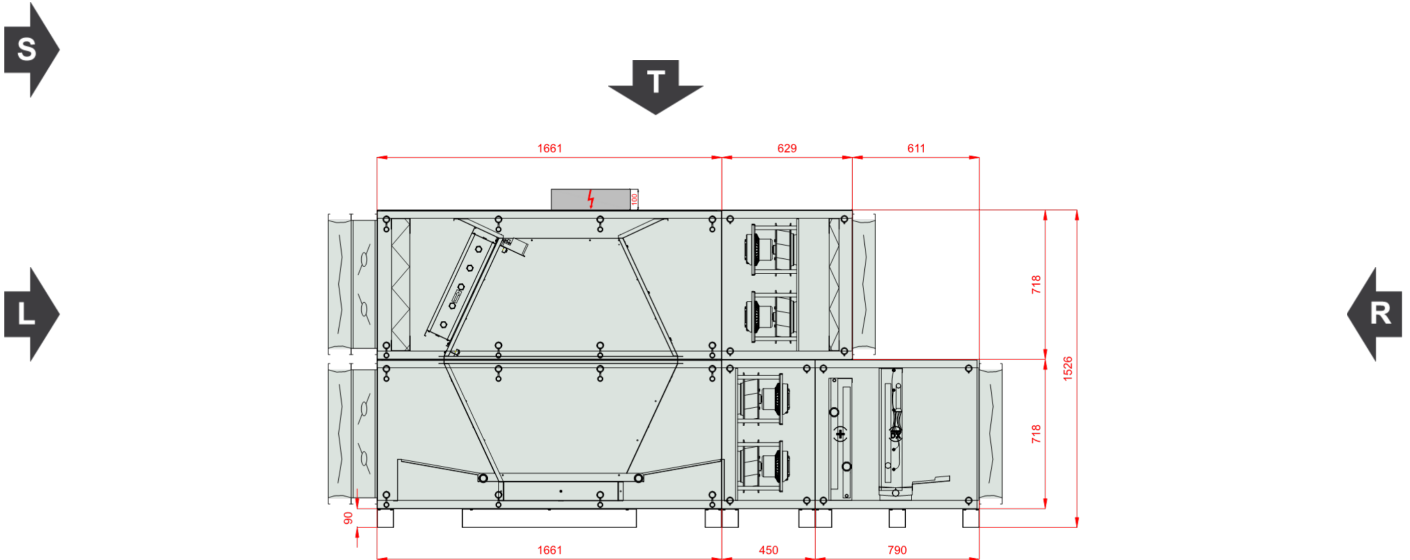


|   |                                  |
|---|----------------------------------|
| <b>Type</b>   | RecoveryHexVerticalCompact       |
| <b>Unit Type:</b>   | Indoor                           |
| <b>Project Tag</b>  | 13577224                         |
| <b>Size</b>   | VVS055c                          |
| <b>Set</b>  | VVS055c-R-FPVHC/VVS055c-L-FVP_cd |
| <b>Insulation thickness</b>   | 40 mm                            |
| <b>Insulation</b>   | Mineral Wool                     |
| <b>Weight of the set (+/- 10%)*</b>                                 | 671 Kg                           |
| <b>Supply airflow 2</b>   | 6000.00 m³/h                     |
| <b>External pressure</b>  | 300 Pa                           |
| <b>Exhaust airflow 2</b>  | 6000.00 m³/h                     |
| <b>External pressure</b>  | 300 Pa                           |
| <b>SFP Winter</b>   | 2.20 kW/m³/s                     |
| <b>SFP Summer</b>   | 2.26 kW/m³/s                     |
| <b>Ecodesign</b>  | Yes (2018 +)                     |
| <b>Eurovent Energy efficiency class (Winter 2016 / Summer 2020)</b> | A+ 2016                          |



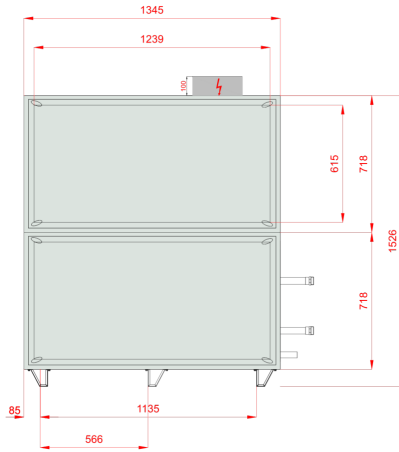
Inspection Panels



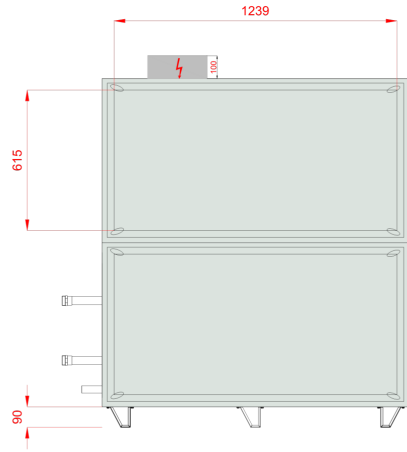
Comment 1:



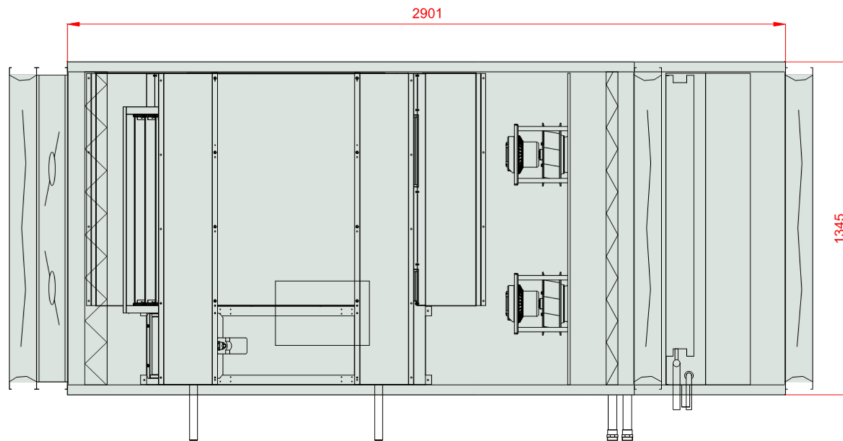
Front View (left)



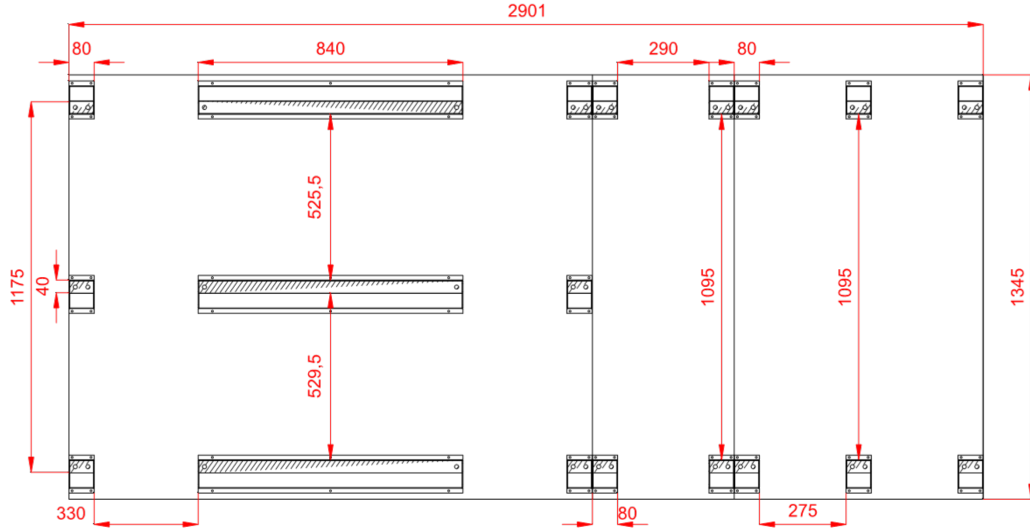
Front View (right)



Top View



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



**Sizes [mm]**

|                              |          |                 |                |                |
|------------------------------|----------|-----------------|----------------|----------------|
| <b>Air intake Supply</b> FF  | 1239x615 | <b>Lt</b> 2901  | <b>Hi</b> 638  | <b>Wi</b> 1265 |
| <b>Air outlet Supply</b> FF  | 1239x615 | <b>LtA</b> 3246 | <b>H</b> 808   | <b>W</b> 1345  |
| <b>Air inlet Exhaust</b> FF  | 1239x615 | <b>L1</b> 2901  | <b>H2</b> 1526 |                |
| <b>Air outlet Exhaust</b> FF | 1239x615 | <b>L2</b> 2290  | <b>Hf</b> 90   |                |
|                              |          | <b>L22</b> 611  |                |                |

**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/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 120 Pa  
 Initial Air Pressure Drop 89 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.08 m/s

#### Air Filter Sizes

P.FLT (1-2-0301-0216) 6,000 x Pcs

#### Summer operation

50% Dirty Air Pressure Drop 120 Pa  
 Initial Air Pressure Drop 89 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.08 m/s

## Counter-Flow Recuperator (Hexagonal)

#### Type PCR VVS055c Hex

HIPS 2.0 (SR)

#### Winter operation

##### Supply

Intake air DBT / RH -20.0 °C / 100 %  
 Discharge air DBT / RH 15.5 °C / 6 %  
 Air velocity 2.52 m/s  
 Pressure drop Wet / Dry Wet 193 Pa  
 Air Pressure 101325 Pa  
 Air Density 1.2000 kg/m<sup>3</sup>  
 Air Volume Flow 6000.00 m<sup>3</sup>/h  
 Recovery capacity Sensible / Total Total 71.6 kW  
 Actual efficiency / at balanced flow Real / BalancedFlow 89 % / 89 %  
 Dry efficiency in winter 80 %

#### Winter operation

##### Exhaust

Intake air DBT / RH 20.0 °C / 40 %  
 Discharge air DBT / RH -6.5 °C / 97 %  
 Air velocity 2.52 m/s  
 Pressure drop Wet / Dry Wet 223 Pa  
 Air Pressure 101325 Pa  
 Air Density 1.2000 kg/m<sup>3</sup>  
 Air Volume Flow 6000.00 m<sup>3</sup>/h  
 Recovery Bypass Yes  
 Air Damper Yes

Counter-Flow (Hex)

Max Internal Leakage 0.25%

#### Summer operation

##### Supply

Intake air DBT / RH 32.0 °C / 45 %  
 Discharge air DBT / RH 23.7 °C / 74 %  
 Air velocity 2.52 m/s  
 Pressure drop Wet / Dry Wet 232 Pa  
 Air Pressure 101325 Pa  
 Air Density 1.2000 kg/m<sup>3</sup>  
 Air Volume Flow 6000.00 m<sup>3</sup>/h  
 Recovery capacity Sensible / Total Total -19.4 kW

#### Summer operation

##### Exhaust

Intake air DBT / RH 20.0 °C / 45 %  
 Discharge air DBT / RH 30.0 °C / 36 %  
 Air velocity 2.52 m/s  
 Pressure drop Wet / Dry Wet 223 Pa  
 Air Pressure 101325 Pa  
 Air Density 1.2000 kg/m<sup>3</sup>  
 Air Volume Flow 6000.00 m<sup>3</sup>/h  
 Eco Design Class Eco Design



## Recovery Additional Info

PlateExchangers

## 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 1.33x4 |
|                           | Qty in section | x 4               |

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 4

|                         |              |                                     |              |
|-------------------------|--------------|-------------------------------------|--------------|
| Total Static Pressure   | 718 Pa       | Impeller efficiency: Static / Total | 71 %/76 %    |
| Dynamic pressure        | 52 Pa        | Shaft power                         | 0.42 kW x 4  |
| External pressure       | 300 Pa       | Working revolutions                 | 3848 1/min   |
| Total Pressure          | 770 Pa       |                                     |              |
| <b>Winter operation</b> |              | <b>Summer operation</b>             |              |
| Air Volume Flow         | 6000.00 m³/h | Air Volume Flow                     | 6000.00 m³/h |

### Motor EC\_IE4\_F\_71\_IMB14\_1.33p\_0.74\_50x 4

|                     |                   |             |             |
|---------------------|-------------------|-------------|-------------|
| 771.3.570-2         | EC                | 50Hz        |             |
|                     | Rated revolutions | 4500 1/min  |             |
| Operational Voltage | 230 V/1 ph        | Rated Power | 0.74 kW x 4 |
| Name plate RPM      | 230 V/1 ph/50 Hz  |             |             |

## EC Motor Controller

EC Controller Settings 43 Hz

### Winter operation

|                                   |              |
|-----------------------------------|--------------|
| EPC for mean contaminated filters | 1.95 kW      |
| EPC for clean filters             | 1.87 kW      |
| SFP for clean filters             | 1.12 kW/m³/s |

### Summer operation

|                                   |              |
|-----------------------------------|--------------|
| EPC for mean contaminated filters | 2.05 kW      |
| EPC for clean filters             | 1.98 kW      |
| SFP for clean filters             | 1.19 kW/m³/s |

## Fan Section Power Supply Additional Info

C32/3

### + Hot Water Coil

**Type** WCL VVS055c 2R DT SH.St.St.Std      **Number of rows** 2      **Connection Supply/Return:** 1 1/4"/1 1/4"

|                        |                           |                             |                          |
|------------------------|---------------------------|-----------------------------|--------------------------|
| Standard Circuits      | 4,71 [dm <sup>3</sup> ]   |                             |                          |
| Medium                 | Water                     | Maximum working pressure    | 16 bar                   |
| Intake air DBT / RH    | 15.5 °C / 6 %             | Discharge air DBT / RH      | 20.0 °C / 4 %            |
| Air velocity           | 2.57 m/s                  | Pressure drop Wet / Dry Wet | 52 Pa                    |
| Air Pressure           | 101325 Pa                 | Air Density                 | 1.2000 kg/m <sup>3</sup> |
| Air Volume Flow        | 6000.00 m <sup>3</sup> /h |                             |                          |
| Total heating capacity | 9.0 kW                    | Medium temperature          | 70.0 °C/50.0 °C          |
| Medium flow rate       | 0.39 m <sup>3</sup> /h    | Medium pressure drop        | 0.34 kPa                 |

### - DX Cooling Coil

**Type** DXC VVS055c 2R-1 TD SH.Cu.St.Std      **Number of rows** 2      **Sections** 1      **Connection Supply/Return:** Ø22/Ø28

|                                    |                           |                                   |                          |
|------------------------------------|---------------------------|-----------------------------------|--------------------------|
|                                    | 2,71 [dm <sup>3</sup> ]   | DX VVS055c 2R-1 SH.Cu.St.Std 516  |                          |
| Medium                             | R410A                     | Maximum working pressure          | 38 bar                   |
| Intake air DBT / RH                | 23.7 °C / 73 %            | Discharge air DBT / RH            | 20.0 °C / 82 %           |
| Air velocity                       | 2.68 m/s                  | Pressure drop Wet / Dry Wet / Dry | 53 Pa / 28 Pa            |
| Air Pressure                       | 101325 Pa                 | Air Density                       | 1.2000 kg/m <sup>3</sup> |
| Air Volume Flow                    | 6000.00 m <sup>3</sup> /h |                                   |                          |
| Cooling capacity: Sensible / Total | 7.7 kW/14.8 kW            | Evaporation temperature           | 6.0 °C                   |
| Medium flow rate                   | 0.25 m <sup>3</sup> /h    |                                   |                          |

### 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)]   | 58.7     | 64.9     | 62.7     | 57.6      | 54.1      | 57.7      | 54.8      | 68.7       |
| Outlet                       | [dB(A)]   | 56.0     | 63.1     | 48.3     | 52.2      | 44.2      | 37.9      | 33.2      | 64.3       |
| Environment                  | [dB(A)]   | 41.9     | 53.3     | 51.2     | 45.5      | 37.8      | 30.3      | 16.7      | 56.0       |

| 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)]   | 34.9     | 46.3     | 44.2     | 38.5      | 30.8      | 23.3      | 9.7       | 49.0       |

## 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 108 Pa  
 Initial Air Pressure Drop 67 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.08 m/s

#### Summer operation

50% Dirty Air Pressure Drop 108 Pa  
 Initial Air Pressure Drop 67 Pa  
 100% Dirty Air Pressure Drop 150 Pa  
 Air velocity 2.08 m/s

#### Air Filter Sizes

P.FLT (1-2-0301-0204) 6,000 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|1.33x3

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 | 632 Pa | Impeller efficiency: Static / Total | 65 %/74 %   |
| Dynamic pressure      | 93 Pa  | Shaft power                         | 0.54 kW x 3 |
| External pressure     | 300 Pa | Working revolutions                 | 4433 1/min  |
| Total Pressure        | 725 Pa |                                     |             |

#### Winter operation

Air Volume Flow 6000.00 m³/h

#### Summer operation

Air Volume Flow 6000.00 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 49 Hz

**Winter operation**

EPC for mean contaminated filters 1.89 kW  
 EPC for clean filters 1.79 kW  
 SFP for clean filters 1.08 kW/m³/s

**Summer operation**

EPC for mean contaminated filters 1.89 kW  
 EPC for clean filters 1.79 kW  
 SFP for clean filters 1.08 kW/m³/s

**Fan Section Power Supply Additional Info**

C25/3

**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)]   | 55.6     | 69.0     | 74.9     | 75.2      | 73.6      | 68.1      | 62.5      | 80.2       |
| Outlet                       | [dB(A)]   | 58.3     | 71.7     | 77.6     | 77.9      | 76.3      | 71.7      | 66.1      | 82.9       |
| Environment                  | [dB(A)]   | 43.3     | 54.7     | 52.6     | 46.9      | 39.3      | 31.7      | 18.1      | 57.5       |

| 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)]   | 36.3     | 47.7     | 45.6     | 39.9      | 32.3      | 24.7      | 11.1      | 50.5       |

**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 1239x615 | Front 1239x615 |
| Air Outlet                             | Front 1239x615 | Front 1239x615 |
| Air Damper                             | Supply         | Exhaust        |
| Air Inlet                              | Provided       | Not Provided   |
| Air Outlet                             | Not Provided   | Provided       |
| Flexible Connection                    | Supply         | Exhaust        |
| Air Inlet                              | Provided       | Provided       |
| Air Outlet                             | Provided       | Provided       |

**Control application**

**Functional Code** AP|1|2|0|0|0|0|0|6|3|0|0|0|0|1  
**APP Code** uPC3 (AP-169)  
**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 |
| Air Damper Actuator 0-10 2Nm      | ADMP.ACT.SET 0-10 2Nm      | 1 |
| Air Damper Actuator 0-10 10Nm     | ADMP.ACT.SET 0-10 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-6,3 | 1   |

#### Transducers and Switches

| Name                                 | Code          | Set |
|--------------------------------------|---------------|-----|
| Frost Switch                         | FRST.SWTCB    | 1   |
| Differential Pressure Transducer CAV | PRSS.TRDC_CAV | 1   |

#### AHU Connection Box

##### AHU Connection Box

|                  |                    |                |                          |
|------------------|--------------------|----------------|--------------------------|
| Rated Power      | 5.18 kW            | Full Load Amps | 26.0 A                   |
| Power Connection | 3x400V AC<br>+N+PE | Power Cord     | 5 x 6,00 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   |                     | VVS055c-F-P-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   | %                   | 81.00   |
| 7   | Nominal NRVU flow rate  |                     | 1.67 / 1.67   |
| 8   | Effective electric power input  | kW                  | 1.95 / 1.89   |
| 9   | Internal Specific Fan Power (SFPint)  | w/m <sup>3</sup> /s | 459.41 / 519.65   |
| 10  | Face velocity   | m/s                 | 2.08  |
| 11  | Nominal external pressure   | Pa                  | 300.00 / 300.00   |
| 12  | Internal Pressure Drop of ventilation components $\Delta p_{s,int}$                                 | Pa                  | 281.61 / 289.92   |
| 13  | Internal pressure drop of non-ventilation components $\Delta p_{s,add}$                             | Pa                  | 136.21 / 42.25  |
| 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                 | 57  |
| 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                  | 354       | 1661        | 1345       | 1526        |
| 2                  | 86        | 450         | 1345       | 808         |
| 3                  | 95        | 790         | 1345       | 808         |
| 4                  | 100       | 629         | 1345       | 718         |

Transport Sections Dims

