

## Air handling unit "Aeromaster"

Sales Order Number:  (PO / OD):  Type and size:  Position:

*For example XP 06; Cirrus 84*

The serial number of the control unit:  Designation of HVAC equipment according to specifications (by the execution):

*If Remak control (VCS) is not used, fill in "without VCS control"*

Name of contract:

## Air handling unit with fan power control for constant air pressure

**Commissioning**

**Operating service**

*Check the box to indicate the type of work to be performed*

### 1. Connection of main electrical supply, phasing, control of main switch

Cable:  Fusing:  Connected from switchboard:

Yes / No

Check the power switch function

Without defects


### 2. Checking the connection of the HMI control module to the controller

Without defects

### 3. Checking input circuit functions, temperature measurement, Modbus communication

Temperature measurement

Without defects

With the HMI-SG press the button  , scroll through "+" "-" buttons, press to end 

Digital inputs

Without defects

Modbus communication

Without defects

### 4. Connect the air handling unit heater

Outdoor temperature at the time of execution of works:  °C

#### 4.1. Hot water heater

Heating water parameters: (actual when commissioning)  °C

Operating pressure of heating system:  kPa

Yes / No

Yes / No

Valve actuator connection at SUMX

Bleeding the heater

Done

Connection of circulation pump in SUMX

Bleeding the circulating pump

Done

#### 4.2. Electric heater

Power:  kW Fusing:  A

Electric heater control mode:

Working current:  A

Switching the section  PWM  ON / OFF

Yes / No

### 5. Inspection of flexible cuffs for air duct connection

Done

Yes / No

### 6. Check the seal of the service panels and doors of the unit chambers

Done

## 7. Checking the fan chambers

<input type="checkbox"/> Frekquency inverters	<input type="checkbox"/> EC motors
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Yes / No

Check mechanical assembly of the fan supply air, silentblocks check

Without defects

Check mechanical assembly of the fan exhaust air, silentblocks check

Without defects

### Air supply fan

Power.....W, 50Hz, Voltage.....V, Speed ...../min, Current....A

*Fill in the data read from the motor nameplate*

Impeller diameter..... .mm; "K" factor .....; Measuring range ..... Pa

*Fill in the data read from the fan nameplate*

Fill in the following data only when controlling the fans with frequency inverters:

Yes / No

Check the Modbus signal control settings

Parameter 8-01=2

Set

Parameter 8-02=1

Set

Parameter 8-30=2

Set

Working Frequency:

 Hz

Communication

address:

Yes / No

Parameter 8-31=1

Set

Communication address of the second fan (for Cirruss units):

Yes / No

Parameter 8-31=2

Set

Minimum Frequency:

20 Hz

Ramp run up time

Parameter 3-41: ..... sec

Maximum Frequency:

 Hz

Ramp run down time:

Parameter 3-42: ..... sec

### Air exhaust fan

Power.....W, 50Hz, Voltage.....V, Speed ...../min, Current....A

*Fill in the data read from the motor nameplate*

Impeller diameter..... .mm; "K" factor .....; Measuring range ..... Pa

*Fill in the data read from the fan nameplate*

Fill in the following data only when controlling the fans with frequency inverters:

Yes / No

Check the Modbus signal control settings

Parameter 8-01=2

Set

Parameter 8-02=1

Set

Parameter 8-30=2

Set

Working Frequency:

 Hz

Communication address:

Yes / No

Parameter 8-31=5

Set

Communication address of the second fan (for Cirruss units):

Yes / No

Parameter 8-31=6

Set

Minimum Frequency:

20 Hz

Ramp run up time

Parameter 3-41: ..... sec

Maximum Frequency:

 Hz

Ramp run down time:

Parameter 3-42: ..... sec

## 8. Setting parameters for constant air flow control

Yes / No

### 8.1. Unicon flow controllers

	Supply	Exhaust
Base Setup	Mode 4.00	Mode 4.00
Measuring Range	Pa	Pa
Offset (Sensor alignment)	0 Pa	0 Pa
In PLC parameter:	Pa	Pa

Set	
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### 8.2. Setting the air flow control parameters in the controller

#### 8.2.1. Setting parameters using HMI-TM, DM module:

After logging in "MENU": Settings / Fans / Flow Control (Pressure) to set the desired value.

RegulFans-Flow(Press)	2/5		
SypplyFlowRangeSnsr.....	2000 Pa		
ReturnFlowRangeSnsr.....	2000 Pa		
NmbrOfSplyFans	1	1	
NmbrOfRtrnFans	1	1	
Enable - k Factor	No	No	

Supply Air Flow Sensor Range:  
Set the Unicon sensor value

Exhaust Air Flow Sensor Range: Set

#### 8.2.2. Setting parameters using HMI-SG module:

The following data points apply to the HMI-SG settings:

Control - Air Pressure			Data point
Setting the pressure sensor range - supply		Pa	222
Setting the pressure sensor range - exhaust		Pa	224
Number of supply fans			236
Number of exhaust fans			238

### 8.3. Setting the power stages of the fans

The 70% / 85% / 100% of the unit's rated airflow rate is usually suitable for setting the individual power stages. The "Supply / Exhaust" setting ratio must be adjusted according to the air conditioning so that a slight vacuum is provided in the ventilated space. The "Inlet / Draw" setting ratio must be adjusted according to the air conditioning so that a slight vacuum is provided in the ventilated space.

We set the adjustment from level 5 to grade 1.

#### 8.3.1. Setting parameters using HMI-TM, DM module:

In the "MENU": Settings / fan / **supply-exhaust fan**, we configure the desired values.

Fans	
RegulFans-Flow(Press)	
Fan supply output	
Fan exhaust output	
BlckHighSpeedFan	-60°C
DelayStartFan	45s
FlowActDelayStrtErr	5s
TherContActDelayErr	2s
DelayInverterErr	2s

Power Supply Fan		
1. Stage	632	Pa
2. Stage	869	Pa
3. Stage	1106	Pa
4. Stage	1343	Pa
5. Stage	1580	Pa

Power Exhaust Fan	
1. Stage	596 Pa
2. Stage	820 Pa
3. Stage	1 043 Pa
4. Stage	1 267 Pa
5. Stage	1 490 Pa

8.3.2. Setting parrametres using HMI-SG module:

The following data points apply to the HMI-SG settings:

Power supply fan			Data point	Power exhaust fan		Data point
1st stage		Pa	141		Pa	151
2nd stage		Pa	143		Pa	153
3rd stage		Pa	145		Pa	155
4th stage		Pa	147		Pa	157
5th stage		Pa	149		Pa	159

Yes / No

Set	
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9. The Direction of Rotation of Fans

Should be taken of the increase of caution.

Attention to the open fan of the chamber!!! Fan leave only divaricate, not get off the ground at full power!!!

Use the local HMI to perform a short start of the unit:

HMI-TM,DM: Main Menu / Settings / Manual Mode / Comfort St.1.; HMI-SG: Briefly press button T1



Supply fan		Exhaust fan	
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Check the correct direction of rotation of the impeller by confirming "Correct" in the appropriate box

After the check, switch off the unit:

HMI-TM, DM: Main menu / settings / manual mode / STOP; HMI-SG: Briefly press button T1



10. Checking the rotary heat exchanger, setting the parameters for controlling the heat exchanger motor.

This check is performed when the rotary heat exchanger is integrated into the air handling unit assembly.

		Yes / No
Checking the mechanical assembly and connection to the relevant chambers	Without defects	
Checking the tilt indicator	Without defects	
Checking the mechanical bearing and rotation of the heat exchanger exchanger	Without defects	
Checking the heat exchanger drive belt	Without defects	

Check the setting frequency inverter and the drive function of the heat exchanger

Transmission drive

Power.....W, 50Hz, Voltage.....V, Speed ...../min, Current.....A

Fill in the data read from the motor nameplate

Check the Modbus signal control settings

Parameter 8-01=2

Set

Yes / No

Parameter 8-02=1

Set

Parameter 8-30=2

Set

Working Frequency:

 Hz

Communication address:

Set

Depending on the gearbox used, 50Hz or 85Hz

Parameter 8-31=11

Set

Yes / No

Minimum Frequency:

18 Hz

Ramp run up time

Parameter 3-41: 30 sec

Yes / No

Maximum Frequency:

 Hz

Ramp run up time

Parameter 3-42: 30 sec

Depending on the gearbox used, 50Hz or 85Hz

## 11. Checking and adjusting the unit:

### 11.1- Off Unit turn Off from HMI:

Data point HMI-SG: 125=1

Achieved statuses	Unit Off	Check
<input type="radio"/> Air supply damper	Closed	0%
<input type="radio"/> Air exhaust damper	Closed	0%
<input type="radio"/> Air mixing damper	Open	100%
<input type="radio"/> The damper of By-Passing the recuperator common shaft (the opposite direction)	Open Closed	100% 0%
<input type="radio"/> Heater circulation pump	Current state:	* 1)
<input type="radio"/> Electric heater	Off	0%
<input type="radio"/> Control valve heating	Current state:	* 1)
<input type="radio"/> Integrated cooling Heat pump	Off	0%
<input type="radio"/> Fans	Off	0%

\* 1) Circulation heater pump and SUMX control valve position automatically controlled by active frost protection

### 11.2 The direction of rotation of compressors

Yes / No

Done

In the control unit, activate the cooling circuit / heat pump.

Compressor 1		Compressor 2	
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Check the correct operation of the compressor confirm record "correctly" in the appropriate box

## 12. PLC Parameterization for a given application.

### 12.1. Damper adjustment with activated air mixing function

Main menu/Settings/Control Parameters/Sequence/Mixing

Yes / No

Set

#### Set value:

Data point

Mixing	1/8
MinFreshAir	55%
MixDampTempFullOp	15,0°C
MixDampTmFullOp	60s
ValueOfMixing	60%

Minimum fresh air:

..... %	484
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Opening temperature setting:

..... °C	486
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The activation time opening:

..... sec	488
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### 12.2. Setting limit for supply air temperature:

Yes / No

Set

Data point

Minimum supply air temperature

	°C	194
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Maximum exhaust air temperature

	°C	195
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Maximum deviation between room and inlet air temperature

	°C	121
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Minimum deviation between room and inlet air temperature

	°C	123
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### 12.3. Enable air cooling circuit, heat pump operation

Yes / No

Set

Data point

#### Blocking from the outside temperature:

Temperature for heating mode:

	°C	365
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Temperature for cooling mode:

	°C	378
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**12.4 Set the time schedules**

Yes / No

Set the schedules according to user requirements

Set	
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**12.5 Set the required temperature:**

Yes / No

Set	
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Operation mode		Temperature	HMI-SG data point
Full operatin "Comfort"	Heating	°C	103
Full operation "Comfort"	Cooling	°C	101
Mufled operation "Economic"	Heating	°C	107
Mufled operation "Economic"	Cooling	°C	105

**12.6 Set the required humidity:**

Yes / No

Set	
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Operation mode		Humidity	HMI-SG data point
Full operatin "Comfort"		%	531
Mufled operation "Economic"		%	535

**13. Set the filter clogging sensors:**

Yes / No

Set	
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Air supply (1st stage of

Pa
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Air supply (2nd stage of filtration)

Pa
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Exhaust air

Pa
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**14. Other settings made:**

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**15. Checking the protection circuits of the unit**

Yes / No

Frost protection of the water heater / protection of the electric heater

Without defects	
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Low pressure circuit protection of the heat pump / cooling

Without defects	
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High pressure circuit protection of the heat pump / cooling

Without defects	
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Circuit protection winding motor supply fan

Without defects	
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Circuit protection winding motor exhaust fan

Without defects	
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Yes / No

**16. Test operation of the unit in "Comfort" and "Economy" modes**

Done	
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**Prior to the start of these work, it is necessary to check clearing the chambers, to close all the service panels!**

To check the operation of the unit, switch the "Comfort" / "Economy" mode and set the fan power in stages 1, 2, 3, 4, 5.

Yes / No

Done

17. Testing the operation of the unit in the "Auto" mode

Air supply fan

Parameters read in the control unit

Fan speed

Stage:

Air flow m<sup>3</sup>/hod

% of power signal in VCS

Parameters read in the frequency inverter

Frequency / Hz

Power / W

Current / A

Air exhaust fan

Parameters read in the control unit

Fan speed

Stage:

Air flow m<sup>3</sup>/hod

% of power signal in VCS

Parameters read in the frequency inverter

Frequency / Hz

Power / W

Current / A

Achieved parametres of the microclimate of the ventilated space

Air temperature in the room (in the exhaust duct)

°C

Air humidity in the room (in the exhaust duct)

%

Yes / No

Check of the switching unit operation according to schedule

Without defects

Compliance with the limit set air temperature

Without defects

Verify the correct function of the additional function for VCS

Without defects

Switch off the unit by "Fire" signal

Without defects

Switch off the unit by remote control

Without defects

Yes / No

Without defects

18. Check the integrated cooling circuit, the heat pump circuit

Aggregat:

Type of complete aggregate:

Serial number:

Heat pump / cooling circuit operation

Low refrigerant pressure

Bar

High refrigerant pressure

Bar

Compressor 1

Indicate the type of compressor installed

Working current compressor

A

Compressor 2

Indicate the type of compressor installed

Working current compressor

A

The amount of refrigeration

kg

Used refrigerant

Yes / No

Checking functions injection valve Refrigerants:

Functional

**Additional information on cooling circuits, condensing units, etc.:**

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**19. Check the condensate drain function from the unit**

		Yes / No	Note / Comment:
Installation of siphons	Without deffects	<input type="text"/>	<hr/> <hr/>
Filling siphons with water	Without deffects	<input type="text"/>	<hr/> <hr/>
Proper function of siphons	Without deffects	<input type="text"/>	

**20. Notes technician**

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**21. Next steps / planned repairs**

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**22. Client's statement / comments**

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**Work performed** **Date** **The deliveries and work took over:**