

Remak, a.s.

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Air handling unit "Aeromaster"							
Sales Order	Type and						
Number: (PO / OD):	size:				Position:		
	- -	For exa	mple XP 0	5; Cirrus 84	•		
The serial number of the		Desig	nation of	HVAC equipment	according to		
control unit:		specif	ications	(by the execution)	:		
If Remak control (VCS) is not used, fill in "without \	/CS control"						
Name of contract:							
Air handling unit with fan	power coi	ntrol	for co	nstant air pro	essure		
Commissioning			Oper	ating service	<u> </u>		
Check the box to indicate the type of work	to be performe	d					
1. Connection of main electrical supply, p	hasing, contr	ol of ma	ain swite	h			
Cable:		Fusing	g:		Connected from switchboard:		
					Switchbourd.	Yes / No	0
Check the power switch function					Without defects		
2. Checking the connection of the HMI co	ntrol module	to the	controll	er	Without defects		
3. Checking input circuit functions, temperature of the control of	erature measi	ıremen	t, Modb	us communication	า		
Temperature measurment					Without defects		
With the HMI-SG press the button \checkmark , scro	ll through "+" "-"	buttons	, press to	end 🏠			
Digital inputs					Without defects		
Modbus communication					Without defects		
4. Connect the air handling unit heater					Without defects		
Outdoor temperature at the time of exe	ecution of wor	ks [.]			°C		
4.1. Hot water heater							
Heating water parameters: (actual		$\rceil_{\circ_{C}}$	Operati	ng pressure of		kPa	
when commissioning)	Vac / Na] ~	heating	system:		ļ	_
Value actuator connection at CLIMV	Yes / No			Dlanding the heater	Done	Yes / No	5
Valve actuator connection at SUMX		1		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 A				Switching the	PWM	ON / OFF	
current:				section			
					Dane	Yes / No	D .
5. Inspection of flexible cuffs for air duct	connection				Done		
col lul 1 til		•-				Yes / No	<u>D</u>
6. Check the seal of the service panels an	a doors of the	e unit cl	nambers		Done		
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Checking the fan chambers Frekquency inverters	EC motors			
			Without defects	Yes / No
Check mechanical assemb	ly of the fan supply air, silent	blocks check		
Check mechanical assemb	ly of the fan exhaust air, silen	tblocks check	Without defects	
Air supply fan		OHz, VoltageV, Speed	/min, Curr	entA
	Fill in the data read fr	om the motor nameplate		
		rmm; "K" factor	.; Measuring range	Pa
Fill in the following data o	nly when controlling the fans			Yes / No
Check the Modbus signal o	control settings	Parameter 8-01=2	Set	. 55 / 115
encontaine measure signal.	,e	Parameter 8-02=1	Set	
		Parameter 8-30=2	Set	
Marking Francisco		Communication		Vac / Na
Working Frequency:	Hz	address: Parameter 8-31=1	Set	Yes / No
		Communication add second fan (for Cirru		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		OHz, VoltageV, Speed	/min, Curr	entA
		rmm; "K" factor	.; Measuring range	Pa
	•	om the fan nameplate		
Fill in the following data o	nly when controlling the fans	with frequency inverters:		Yes / No
Check the Modbus signal o	control settings	Parameter 8-01=2	Set	1637110
encok the intoudus signal (ontion sectings	Parameter 8-02=1	Set	
		Parameter 8-30=2	Set	
		Communication		
Working Frequency:	Hz	address: Parameter 8-31=5	Set	Yes / No
		Communication add		
		second fan (for Cirru		Yes / No
		Parameter 8-31=6	Set	
Minimum Frequency:	20 Hz	Ramp run up time	Parameter 3-41: .	sec

Protocol number:

Control for constant air pressure

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8. Setting parameters for constant air flow control 8.1. Unicon flow controllers Set Set Set Mode 4.00 Mode 4.00 Measuring Range Pa Pa

Pa

0

Pa

Pa

8.2. Setting the air flow control parameters in the controller

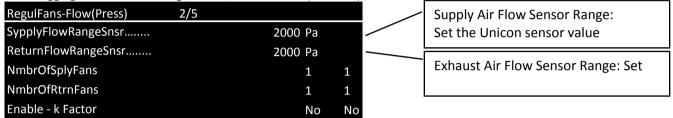
8.2.1. Setting parrametres using HMI-TM, DM module:

Offset (Sensor alignment)

In PLC parameter:

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

0



8.2.2. Setting parrametres using HMI-SG module:

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

Control - Air Pressure					
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 parrametres 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	2 s
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

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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	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

Atth stage Pa 149 Pa 159 Sth stage Pa 149 Pa 159 Yes / No 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 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 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 mechanical bearing and rotation of the heat exchanger exchanger Checking the heat exchanger drive belt Without defects Checking the heat exchanger drive belt Check the setting frequency inverter and the drive function of the heat exchanger Transmission drive PowerW, 50Hz, VoltageV, Speed/min, CurrentA Fill in the data read from the motor namepiate Yes / No Set Parameter 8-01=2 Set Parameter 8-02=1 Set Parameter 8-03=2 Set Communication Set Address: Parameter 8-30=2 Set Parameter 8-31=11 Yes / No Set Ramp run up time Parameter 3-41: 30 sec Yes / No Set Parameter 3-41: 30 sec Yes / No Set Parameter 3-42: 30 sec	3rd stage			Pa	14	45		Pa	155	
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 \$t.1.; HMI-SG: Briefly press button T1 Supply fan Exhaust fan Check the correct direction of treation 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 Check the correct direction of treation 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 Check 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 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	4th stage			Pa	14	47		Pa	157	
Set 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-5G: Briefly press button T1 Supply fan Exhaust fan 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 Unit 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 Checking the mechanical bearing and rotation of the heat exchanger exchanger Checking the mechanical bearing and rotation of the heat exchanger exchanger Without defects Checking the heat exchanger drive belt 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 PowerW, 50Hz, VoltageV, Speed/min, CurrentA Fill in the data read from the mater nameplate Yes / No Check the Modbus signal control settings Parameter 8-01=2 Parameter 8-01=2 Set Parameter 8-30=2 Set Communication address: Depending on the gearbox used, 50Hz or 85Hz Parameter 8-31=11 Yes / No Set Maximum Frequency: Depending on the gearbox used, 50Hz or 85Hz Parameter 3-41: 30 sec Yes / No Set Parameter 3-42: 30 sec	5th stage			Pa	14	49		Pa	159	
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Working Frequency: Parameter 8-30=2 Set	Check the Mo	odbus signal contr	ol settir	ngs		Pa	rameter 8-01=2	Set	·	
Working Frequency: Depending on the gearbox used, 50Hz or 85Hz		_				Pa	rameter 8-02=1	Set		
Working Frequency: Depending on the gearbox used, 50Hz or 85Hz Hz Communication address: Parameter 8-31=11 Yes / No Set Ramp run up time Parameter 3-41: 30 sec Yes / No Set Maximum Frequency: Depending on the gearbox used, 50Hz or 85Hz Hz Ramp run up time Parameter 3-42: 30 sec Parameter 3-42: 30 sec								Set		
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Minimum Frequency: 18 Hz time Parameter 3-41: 30 sec Yes / No Set Ramp run up time Parameter 3-42: 30 sec Parameter 3-42: 30 sec Parameter 3-42: 30 sec								Set	, , , , , ,	
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Maximum Frequency: Depending on the gearbox used, 50Hz or 85Hz Ramp run up time Parameter 3-42: 30 sec										
Ramp run up Maximum Frequency: Depending on the gearbox used, 50Hz or 85Hz Ramp run up time Parameter 3-42: 30 sec								Set	163 / 140	
					Hz				30 sec	
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11. Checking and adjusting the unit:

11.1- Off

Unit turn Off from HMI: Data point HMI-SG: 125=1 **Achieved statues Unit Off** Check Air supply damper Closed 0% 0 Air exhaust damper Closed 0% 0 Air mixing damper Open 100% 0 The damper of By-Passing the recuperator Open 100% common shaft (the opposite direction) Closed 0%

	0	Heater circu	lation pump		Current state:	* 1)	
	0	Electric heat	er		Off	0%	
	0	Control valve	e heating		Current state:	* 1)	
	0	Integrated co	ooling		Off	0%	
		Heat pump					
	0	Fans			Off	0%	
*	1) Circulation	n heater pump and S	SUMX control valve	e position automaticall	y controlled by active frost pro	tection	
							Yes / No
11.	2 The dire	ction of rotation	n of compresso	ors		Done	
	In the cor	ntrol unit, activa	te the cooling	circuit / heat pump).		
	Compress	sor 1		Co	mpressor 2		
C	heck the corr	ect operation of the	compressor confir	rm record "correctly" in	the appropriate box		
12.	PLC Parar	meterization for	a given applic	ation.			
12.	1. Dampei	r adjustment wi	th activated ai	ir mixing function			Yes / No
Ν	⁄lain menu	/Settings/Contro	ol Parameters/	Sequence/Mixing		Set	
				Set value:			Data point
Ν	/lixing		1/8	Minimum fres	n air:	%	484
			===/			486	
Ν	/linFreshAi	ir	55%	Opening temp	erature setting:	°C	400
		empFullOp	55% 15,0°C	The activation		sec	488
N		empFullOp					
N	⁄lixDampTe	empFullOp mFullOp	15,0°C				
N N	ЛіхDampTe ЛіхDampTı 'alueOfMix	empFullOp mFullOp	15,0°C 60s 60%	The activation			488
N N	ЛіхDampTe ЛіхDampTı 'alueOfMix	empFullOp mFullOp king	15,0°C 60s 60%	The activation		sec	488
N V 12.	AixDampTo AixDampTo FalueOfMix 2. Setting	empFullOp mFullOp king	15,0°C 60s 60% air temperatu	The activation		sec	488 Yes / No
12.	AixDampTo AixDampTo AlueOfMix 2. Setting Ainimum s	empFullOp mFullOp king limit for supply	15,0°C 60s 60% air temperatu rature	The activation		Set	488 Yes / No Data point
M V 12.	AixDampTo AixDampTi AlueOfMix 2. Setting Ainimum s Aaximum o	empFullOp mFullOp king limit for supply upply air temper	15,0°C 60s 60% air temperature perature	The activation	time opening:	Set	488 Yes / No Data point 194
N N N N N	AlixDampTo AlixDampTo CalueOfMix 2. Setting Alinimum s Alaximum o	empFullOp mFullOp king limit for supply upply air tempe exhaust air temp	15,0°C 60s 60% air temperatu rature perature en room and in	The activation	time opening:	Set °C °C	Yes / No Data point 194 195
N N N N N	AlixDampTo AlixDampTo CalueOfMix 2. Setting Alinimum s Alaximum o	empFullOp mFullOp king limit for supply upply air tempe exhaust air temp	15,0°C 60s 60% air temperatu rature perature en room and in	The activation	time opening:	sec Set °C °C °C	488 Yes / No Data point 194 195 121
N N N N N	AlixDampTo AlixDampTo CalueOfMix 2. Setting Alinimum s Alaximum of Alinimum d	empFullOp mFullOp king limit for supply upply air tempe exhaust air temp	15,0°C 60s 60% air temperatu rature perature en room and in	The activation re:	time opening:	sec Set °C °C °C	488 Yes / No Data point 194 195 121 123

Blocking from the outside tempe		Data point		
Temperature for	heating mode:		°C	365
Temperature for		°C	378	
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12.4 Set the time s	schedules				Yes / No
Set the schedule	s according to user requ	uirements		Set	
12.5 Set the requir	red temperature:				Yes / No
				Set	
	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 requi	red humidity:				Yes / No
				Set	
	Operation mode		Humidity	HMI-SG data point	
	Full operatin "Comfort"		%	531	
	Mufled operation "Economic"		%	535	
					Yes / No
13. Set the filter cl	ogging sensors:	A: 1.72 1 .		Set	
Air supply (1st stage of	Pa	Air supply (2nd stage filtration)	e of Pa	Exhaust air	Pa
14. Other settings	made:				
15. Checking the p	rotection circuits of th	e unit			Yes / No
Frost protection	of the water heater / p	rotection of the electr	ic heater	Without defects	
Low pressure cire	cuit protection of the h	eat pump / cooling		Without defects	
High pressure cir	cuit protection of the h	neat pump / cooling		Without defects	
Circuit protection	n winding motor supply	Without defects			
Circuit protection	n winding motor exhau	Without defects			
					Yes / No
16. Test operation	of the unit in "Comfor	t" and "Economy" mo	odes	Done	
	eration of the unit, swit		ing the chambers, to closs conomy" mode and set the		anels!
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17. Testing the operation of the unit in the "Auto" mode	Done	
Air supply fan		
Parameters read in the control unit Fan speed Air flow m³/I	nod %	of power signal in VCS
Stage:		
Parameters read in the frequency inverter Frequency / Hz Power / W Current / A		
Trequency/ N2 Tower/ W		
Air exhaust fan		
Parameters read in the control unit		
Fan speed Air flow m³/l Stage:	10d %	of power signal in VCS
Parameters read in the frequency inverter		
Frequency / Hz Power / W Current / A		
A chicural page restance of the project of the countileted areas		
Achieved parametres of the microclimate of the ventilated space Air temperature in the room (in the exhaust duct) Air humidity in the	e room (in the exhaust d	uct)
°C	%	
		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
18. Check the integrated cooling circuit, the heat pump circuit	Without defects	
Aggregat: Type of complette aggr	regate:	
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 refrig	gerant	
		V = 1 N
Checking functions injection valve Refrigerants:	Functional	Yes / No

Protocol number:

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Yes / No

Control for constant air pressure

Check the condensate drain function	on from the unit	No Note / Comme	nt:
nstallation of siphons	Without deffects		
illing siphons with water	Without deffects Without		
Proper function of siphons . Notes technician	deffects		
Next steps / planned repairs			
Client's statement / comments			
		The delineates on	
Nork performed	Date		nd work took over:
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Additional information on cooling circuits, condensing units, etc.: