UNI EN ISO 9001 QUALITY MANAGEMENT SYSTEM

MATERIALS/SUPPLIES APPROVAL (art. 6 d.m. 7 marzo 2018, n.49)

Client	VDC MXP11 S.r.l.- Vicolo San Giovanni sul Muro 9, 20121 Milano (MI)
Construction Manager	Architetto Luciano Franchi
Work of	Costruzione Nuovo Data Center da 16 MW e Opere Infrastrutturali annesse
Project prepared by	DBA Pro – Piazza Roma 19 – 32045 Santo Stefano di Cadore (BL)
Building Permit/Construction Authorization	
Contractual Amount of Work €	68.340.000,00 €
Contract Agreement	Stipulato in data 15 Settembre 2022
Contractor	Bouygues E&S Italia S.p.A. - Via Stephenson, 73 – 20157 Milano.
Director of Works	Ing. Sacha Busetti

Project: MXP11
Document N°: MXP11-BYE-XX-XX-SP-M-0016
Revision: C02
Revision Date: 14-Dic-2023
Stage: WS5
Status: A1
Document Title: DM-DOAS-2

Revision History

Date	Revision	Status	Revised Sections	Description
10-May-2023	P01	S3	/	Internal revision
18-May-2023	P02	S4	/	FIRST ISSUE
29-Nov-2023	C01	A1	Pag. 1,2-6/19	EDIT DATA SHEETS
14-Dic-2023	C02	A1	Pag. 1-6/19	EDIT DATA SHEETS

- General Data (Enterprise section)

Materials/Supply Approval Sheet Data to be entered for cataloging and archiving - by the Enterprise								
Categoria	STR		ARC		MEP		VVF	
Verifica Necessaria	Strutturale		Architettonico		Meccanico Elettrico Idrico		Sicurezza Antincendio	
	SI	NO	SI	NO	SI	NO	SI	NO
Campionatura Richiesta	SI				NO			

Materials/Project supply Data taken from Project documents - by the Enterprise	
Description	DM-DOAS-2
Computation ID reference	N.A.
Drawing ID reference	N.A.
Special Specification ID reference	MXP11-RHD-DC-ZZ-DR-M-0714 Schematic MXP11-RHD-DC-XX-CA-M-0027 Supply MXP11-RHD-DC-XX-CA-M-0028 Return
Materials/Supply Proposed Data taken from construction documents - by the Enterprise	
Description	DM-DOAS-2 Supply m3/h 4.320 Pa = 370; Return m3/h 3.670 Pa =220
Product ID reference	ROCCHEGGIANI

Sampling Available	SI	NO
Business Cards	SI	NO
Data Sheets	SI	NO
DOP Declaration of Performance	SI	NO
CE Marking	SI	NO
Supplementary Reports	SI	NO
Specialist Evaluatios	SI	NO

Contractor Evaluations		
Proposal as project	SI	NO

Cost variations	SI	NO
Stam/signature		

Attachments
Technical data sheet

Notes

- APPROVALS (Section Reserved for DL)

Specialist approvals

A- APPROVATO
B- APPROVATO CON NOTE – Ri Sottomissione NON NECESSARIA
C- APPROVATO CON NOTE – Ri Sottomissione NECESSARIA
D- NON APPROVATO

Data to be entered by Specialist Consultants and/or Construction Management

Fire Fighting Design	SI		NO	
Description				
Observations				
Type	A	B	C	D
Stamp/signature				
Dir. Lavori STR	SI		NO	
Description				
Observations				
Type	A	B	C	D

Stamp/signature				
Dir. Lav. ARC	SI		NO	
Description				
Observations				
Type	A	B	C	D
Stamp/signature				
Dir. Lav. MEP	SI		NO	
Description				
Observations				
Type	A	B	C	D
Stamp/signature				

Approvazione Generale

E- APPROVATO
F- APPROVATO CON NOTE – Ri Sottomissione NON NECESSARIA
G- APPROVATO CON NOTE – Ri Sottomissione NECESSARIA
H- NON APPROVATO

DLG	SI		NO	
Description				
Observations				
Type	A	B	C	D
Stamp/signature				

Attachments

Notes

Offer	**UTA 21001082.17**	Position	**3.0**	**MPX11-DM-DOAS-02**	
Project	**MXP11 Data Centre**			From date	**14/12/2023**
				User:	

Unit size	**CTA 12.8**	**C54TT**	Length [mm]	**6.650,0**	Net weight [kg] **~2.422,00**

Panel inside	**Galvanized prepainted**	**0,80 mm**	Simil RAL 9002
Panel outside	**Galvanized prepainted**	**0,80 mm**	Simil RAL 9002
Panel inside bottom	**AISI 304**	**0,80 mm**	
Profiles	**Aluminium - Thermal Break**		
Guides	**AISI 304**		
Insulation	**Mineralwool**	Thickness	**54,0 mm**
Corners	**Nylon**		

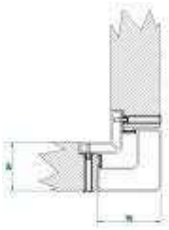
Panel reaction to fire class due to UNI 9177: **0 (ZERO)**

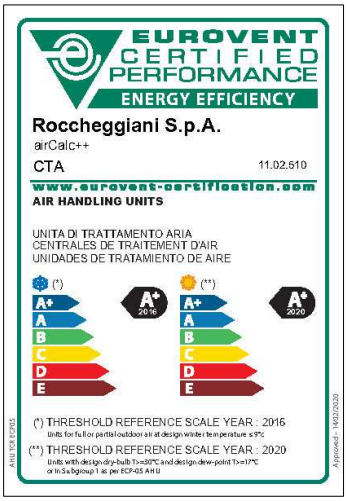
Certified mechanical performances due to EN 1886:2007

Mechanical stability	**D1(M)**
Casing leakage -400 Pa	**L1(M)**
Filter by-pass leakage	**F9**
Casing leakage +700 Pa	**L1(M)**

Certified thermal performances of casing due to EN 1886:2007

Thermal bridge class	**TB2**
Thermal transmittance class	**T2**





Reference city Milan

airCalc++ Vers. P 4.2.0

Sound power levels [dB]

Frq.[Hz]	63	125	250	500	1000	2000	4000	8000	Sum [dB(A)]
Total sound power level at the unit inlet [dB]	**68,0**	**63,0**	**74,0**	**67,0**	**64,0**	**60,0**	**57,0**	**53,0**	**70,2**
Total sound power level at the unit outlet [dB]	**72,0**	**68,0**	**80,0**	**74,0**	**75,0**	**73,0**	**70,0**	**66,0**	**79,3**
Break out airborne sound power [dB]	**49,0**	**49,0**	**59,0**	**50,0**	**51,0**	**49,0**	**35,0**	**27,0**	**56,0**

Internal frame material	**AISI 304**	Drain pan material	**AISI 304**
Dampers material	**Aluminium / Aluminium**	Drop eliminator material	**AISI 304 / PPTV**

Main data:

Supply	Airflow	**4.320 [m³/h]**	External static	**370 [Pa]**	Motor absorbed/nominal power	**2,000 /2,500 [kW]**
Return	Airflow	**3.670 [m³/h]**	External static	**220 [Pa]**	Motor absorbed/nominal power	**0,930 /2,500 [kW]**

Certification number		**11.02.510**	Specific fan power [W/(m3/s)]	**2.073**	**SFP4**
Model Box number		**Pr08/Zn08-54RW-TT**	Used lowest temp. [°C]	**-10,10**	
Type of unit		**External unit**	Recirculation [%]		
A.m.s.l. [m]		**0**	Air velocity [m/s]	**1,44**	
HRS Winter Thermal eff. (1:1)	(dry)	**81,40** (EN 308)	Specific weight [kg/m³]	**1,20**	
HRS Summer Thermal eff. (1:1)		**77,7** (EN 308)	Factor Fs-Pref (wint./summ. cond.)	**1 / 0,78**	
HRS Summer Humidity eff. (1:1)		**71,60** (EN 308)			

Energy label class designed for wet conditions

Supply air

Unit definition

Unit size	**CTA 12.8**		**C54TT**
Airflow [m³/h]	**4.320**	Length [mm]	**6.650,0**
Ext. pressure [Pa]	**370**	Width [mm]	**1.220,0**
Tot. pressure [Pa]	**1.160**	Height [mm]	**860,0**
Air velocity [m/s]	**1,44**	Net weight [kg]	**~1.876,0**
Class DIN EN 13053	**V1**		

Casing:

Thickness	**54,0 mm**	**Mineralwool**
Panel inside	**Galvanized prepainted**	**0,80 mm**
Panel outside	**Galvanized prepainted**	**0,80 mm**
Panel inside bottom	**AISI 304**	**0,80 mm**
Profiles	**Aluminium**	
Guides	**AISI 304**	

Thermal transmittance class	**T2**	Mechanical stability	**D1(M)**
Thermal bridge class	**TB2**	Filter by-pass leakage	**F9**
Casing leakage -400 Pa	**L1(M)**	Casing leakage +700 Pa	**L1(M)**

Filter — Supply air: **1.170,0 mm** | **4,45 m2** | **111 Pa**

Manufacture	**Roccheggiani**	Filter length [mm]	**535,0**
Type	**V-BF-M5-535-S**	Filter surface [m2]	**9,00**
Class (EN 779:2012)	**M5**	Cells pcs x size	**2** x **V-BF-M5-535-S** **490,0** x **592,0**
Class (ISO 16890)	**ePM10 65%**		
Clean dP [Pa]	**54**		
Dirty dP [Pa]	**154**		
Applied dP [Pa]	**104**		
Airflow [m³/h]	**4.320** **2,07 m/s**		
Filter handling	**Dirty air widthdrawal**		
Material frame	**AISI 304**	Filter energy class	

Door with hinge and single lever — Dimensions [mm] **500,0 x 720,0**

Damper: — Dimensions [mm] **780,0 x 510,0 x 125,0**

Actuated by	**actuator**	Airflow [m³/h]	**4.320**	Frame	**Aluminium**
Qta. Levers	**1**	Air velocity [m/s]	**3,02**	Blades	**Aluminium**
torque [Nm]	**3,220**	Pressure drop [Pa]	**7**	Type	**DP1**

Damper actuator **GMA161.1E**

Quantity	**1**	Mode	**modulating**	Voltage [V]	**24**
Supplier	**Siemens**	torque [Nm]	**7,000**	Current [A]	**0,21**
				Protection	**IP54**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**; Wiring Yes

1 Pcs **Differential pressure switch PS500 (0-500Pa)** **-**

1 Pcs **A2G-10 Differential Pressure Gauge 0-500 Pa** **-**

Empty section — Supply air: **540,0 mm** | **1,87 m2** | **Pa**

Door with hinge and single lever — Dimensions [mm] **500,0 x 720,0**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**; Wiring Yes

1 Pcs **FTK+ 270 VVS NTC10K Temperature and humidity probe (0-10V)**

Position **MPX11-DM-DOAS-02**

Filter	Supply air	**670,0 mm**	**2,34 m2**	**158 Pa**

Manufacture	**Roccheggiani**	Filter length [mm]	**535,0**
Type	**V-BF-F8-535-S**	Filter surface [m2]	**7,60**
Class (EN 779:2012)	**F8**	Cells pcs x size	**2** x **V-BF-F8-535-S** **492,0** x **592,0**
Class (ISO 16890)	**ePM1 70%**		
Clean dP [Pa]	**108**		
Dirty dP [Pa]	**208**		
Applied dP [Pa]	**158**		
Airflow [m³/h]	**4.320** **2,06 m/s**		
Filter handling	**Dirty air widthdrawal**		
Material frame	**AISI 304**	Filter energy class	

1 Pcs	**Differential pressure switch PS1500 (200-1000Pa)**	**-**
1 Pcs	**A2G-10 Differential Pressure Gauge 0-500 Pa**	**-**

Empty section	Supply air	**230,0 mm**	**0,53 m2**	**Pa**

Door with hinge and single lever — Dimensions [mm] **540,0 x 720,0**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Heat wheel in casing	Supply air	**680,0 mm**	**2,94 m2**	**271 Pa**

EM1100x1100-1050V-016-2D0OO-BBPI-A

Heating mode

Supply [m³/h]	**4.320**		
Entering [°C]	**-10,10**	Humidity [%]	**76,5**
Leaving [°C]	**14,50**	Humidity [%]	**39,2**
Pressure drop [Pa]	**213**		
Standard pressure drop (1.2 kg/m3) [Pa]	**226**		
Exhaust [m³/h]	**3.670**		
Entering [°C]	**22,20**	Humidity [%]	**29,9**
Leaving [°C]	**-6,80**	Humidity [%]	**79,6**
Pressure drop [Pa]	**189**		
Standard pressure drop (1.2 kg/m3) [Pa]	**192**		
Tot. recovery capacity [kW]	**45,59**		
Sens. recovery capacity [kW]	**35,70**		

Cooling mode

Supply [m³/h]	**4.320**		
Entering [°C]	**37,90**	Humidity [%]	**55,9**
Leaving [°C]	**32,00**	Humidity [%]	**50,5**
Pressure drop [Pa]	**260**		
Standard pressure drop (1.2 kg/m3) [Pa]	**228**		
Exhaust [m³/h]	**3.670**		
Entering [°C]	**30,00**	Humidity [%]	**41,7**
Leaving [°C]	**37,00**	Humidity [%]	**52,6**
Pressure drop [Pa]	**221**		
Standard pressure drop (1.2 kg/m3) [Pa]	**194**		
Tot. recovery capacity [kW]	**39,87**		
Sens. recovery capacity [kW]	**8,58**		

thermal efficiency [%]	**76,3**	(EN 308)	thermal efficiency [%]	**75** (EN 308)
Humidity efficiency [%]	**74,1**		Humidity efficiency [%]	**67,6**
Energy efficiency class [%]	**H1**	(EN 13053)		
Energy efficiency [%]	**78,10**	(EN 13053)		

control type **SSTD** **Advance step drive**

Nominal data
Nominal power [kW] **0,040** nominal current [A] **0,39** nominal voltage [V] **3x230**

Pressure Door — Dimensions [mm] **540,0 x 1.580,0**

Drain pan Quality **AISI 304** Drain connection **1 1/4**

Circular air	Supply air	**450,0 mm**	**0,9 m2**	**Pa**

Mixed air calculation 1

Recircle air [m³/h]	Temp. [°C]	Humidity [%	Temperature mixed air [°C]	Humidity [%]
Fresh air [m³/h]	Temp. [°C]	Humidity [%		

Mixed air calculation 2

Recircle air [m³/h]	Temp. [°C]	Humidity [%	Temperature mixed air [°C]	Humidity [%]
Fresh air [m³/h]	Temp. [°C]	Humidity [%		

Removable panel — Dimensions [mm] **360,0 x 720,0**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Plug fan	Supply air	**720,0 mm**	**2,34 m2**	**53 Pa**

Fan	**GR35I-ZID.DC.CR**	Motor	**ECblue-IE5-50-116-0-2.5** **IE5**
Air volume [m³/h]	**4.320**	Protection	**IP55**
External static [Pa]	**370**	Insulation class	**F**
dynamic pressure [Pa]	**25**	Voltage	**3x400 V / 50 Hz**
Add. dynamic pressure [Pa]	**53**	Power [kW]	**2,500**
Total static pressure [Pa]	**1.083**		
Total pressure [Pa]	**1.160**	Speed [1/min]	**3.100**
Speed [1/min]	**2.843**	System absorbed power [kW]	**2,000**
efficiency %	**69,7**	nominal current [A]	**3,04**
Supplier	**Ziehl-Abegg**		
Code	**ZAB-116892/A01-3/400/50**		

K-factor [m³/h] **139** [ρ = 1,2 kg/m³] $(Q = k\sqrt{\Delta p})$ — K-factor [adim] **108** $(Q = k\sqrt{\Delta p \frac{2}{\rho}})$

Fan octave band sound power level (Lokt) [dB]

Frq.[Hz]	63	125	250	500	1000	2000	4000	8000
Inlet	**70,0**	**66,0**	**78,0**	**72,0**	**70,0**	**67,0**	**65,0**	**62,0**
Outlet	**72,0**	**72,0**	**84,0**	**78,0**	**79,0**	**77,0**	**74,0**	**70,0**

Control Signal (0-10V) **9,20**

Specific fan power [W/(m3/s)] **1.409** **SFP3**

1 Pcs **DPE2500 Flow LCD for airflow measurement** **-**

1 set **Tube for airflow measurement** **-**

Removable panel — Dimensions [mm] **630,0 x 720,0**

Opening **L** — Dimensions [mm] **365,0 x 365,0**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Cooling coil	Supply air	**450,0 mm**	**1,34 m2**	**98 Pa**

Evaporating coil

Airflow [m³/h]	**4.320**			Medium type	**R410A**
Air velocity [m/s]	**2,56**			Evaporating temp. [°C]	**7,00**
Air in [°C]	**33,50**	Humidity [%]	**55,0**	Overheating [°C]	**6,00**
Air out [°C]	**12,90**	Humidity [%]	**97,0**	SHR	**0,47**
Tot. capacity [kW]	**63,40**			Connection in [mm]	**28**
Air press. Drop [Pa]	**98/73**	(wet/dry)		Connection out [mm]	**54**
dp for energy eff. class [Pa]	**25**				

Heating mode

Air in [°C]		Condensing temp. [°C]	**45,00**
Air out [°C]	**29,70**	hot gas temp. in [°C]	**70,00**
Tot. capacity [kW]	**22,05**	hot gas temp. out [°C]	**40,00**

25 x 21.65 5/16 - CR 23NT 6NR 815A 2.1P 34NC

Rows	**6**
nos. of refr.circuits	**2 circuits**
Circuits	**34**
Fin space [mm]	**2,10**

Materials:

Fins	**Aluminium**
Pipes	**Copper**
Header	**Copper**
Frames	**AISI 304**
Fin protection	**-**

Drain pan Quality **AISI 304** Drain connection **1 1/4**

1 Pcs **AKF10+ NTC10k Temperature probe (-50/150°C)** **-**

1 Pcs **Technical cabinet TC** Dimensions [m] **1.74 x 1.858 x 0.8**

panel thickness	**25 mm**	Profiles	**Aluminium**
Panel inside	**Galvanized prepainted**	Insulation	**Polyurethane foam**
Panel outside	**Galvanized prepainted**	With support pins	**Yes**
Panel inside bottom	**No**	With baseframe	**No**

Anti frost frame	Supply air	**220,0 mm**	**0,67 m2**	**Pa**

Removable panel Dimensions [mm] **180,0 x 720,0**

1 Pcs **Technical cabinet connected to previous TC** **-**

1 Pcs **TF30 Antifreeze thermostat -10 to 10°C 3 m capillar** **-**

Heating coil	Supply air	**310,0 mm**	**1 m2**	**46 Pa**

Airflow [m³/h]	**4.320**			Medium	**Water**
Air velocity [m/s]	**2,46**			Med. Flow [l/s]	**0,6000**
Air in [°C]	**1,00**	Humidity [%]	**60,0**	Med. velocity [m/s]	**1,09**
Air out [°C]	**18,00**	Humidity [%]	**18,9**	Med. in [°C]	**45,00**
Capacity [kW]	**24,76**			Med. out [°C]	**35,00**
Air press. Drop [Pa]	**46**			Med. pres. drop [kPa]	**18,57**
				WT Content [l]	**6,300**

Inox304-Al-Inox304 P40AC 2R-14T-870A-2.5pa 3C 1" (.11- .6- 2)

RRows	**2**
Circuits	**3**
Fin space [mm]	**2,50**
Connection in	**1 0/0"**
Connection out	**1 0/0"**
Number of exchanger H/W	**1** / **1**

Materials:

Fins	**Aluminium**
Pipes	**AISI 304**
Header	**AISI 304**
Frames	**AISI 304**
Fin protection	**-**

1 Pcs **Technical cabinet connected to previous TC** **-**

Steam humidification section	Supply air	**760,0 mm**	**2,68 m2**	**22 Pa**

Steam humidifier - steam distributor codes **UR013HL004 - D061503000**

nos. of distributors	**1**	Temperature in [°C]	**18,00**	Humidification [kg/h]	**11,13**
lance length [mm]	**615,0**	Air On Relative humidity [%	**23,3**	Nominal power [kW]	**10,000**
		Air Off Relative humidity [%	**40,0**	Voltage [V]	**3x400**

Steam pipe not supplied

Removable panel Dimensions [mm] **450,0 x 720,0**

Drain pan Quality **AISI 304** Drain connection **1 1/4**

Drop eliminator Model **SE130** Frame **AISI 304** Fins **PPTV** **22 Pa**

Inspection window **Round** Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

1 Pcs **Technical cabinet connected to previous TC** **-**

Empty section	Supply air	**450,0 mm**	**1,77 m2**	**7 Pa**

Pressure Door Dimensions [mm] **360,0 x 720,0**

Damper: Dimensions [mm] **780,0 x 510,0 x 125,0**

Actuated by	**Axle**	Airflow [m³/h]	**4.320**	Frame	**Aluminium**
Qta. Levers	**1**	Air velocity [m/s]	**3,02**	Blades	**Aluminium**
torque [Nm]	**3,220**	Pressure drop [Pa]	**7**	Type	**DP1**

Damper actuator **GMA126.1E**

Quantity	**1**	Mode	**on/off**	Voltage [V]	**24**
Supplier	**Siemens**	torque [Nm]	**7,000**	Current [A]	**0,21**
				Protection	**IP54**

Inspection window **Round** Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Noise calculation

sound power [dB]

Frq. Hz	63	125	250	500	1000	2000	4000	8000	Sum [dB(A)]
Inlet	**68,0**	**63,0**	**74,0**	**67,0**	**64,0**	**60,0**	**57,0**	**53,0**	**70,2**
Outlet	**72,0**	**68,0**	**80,0**	**74,0**	**75,0**	**73,0**	**70,0**	**66,0**	**79,3**
Casing	**49,0**	**49,0**	**59,0**	**50,0**	**51,0**	**49,0**	**35,0**	**27,0**	**56,0**

sound pressure level [dB]

Frq. Hz	63	125	250	500	1000	2000	4000	8000	Sum [dB(A)]
Inlet	**60,1**	**55,1**	**66,1**	**59,1**	**56,1**	**52,1**	**49,1**	**45,1**	**62,3**
Outlet	**64,1**	**60,1**	**72,1**	**66,1**	**67,1**	**65,1**	**62,1**	**58,1**	**71,4**
Casing	**41,1**	**41,1**	**51,1**	**42,1**	**43,1**	**41,1**	**27,1**	**19,1**	**48,1**

measuring point at **1 m** of distance

Exhaust air

Unit definition

Unit size	**CTA 12.8**		**C54TT**
Airflow [m³/h]	**3.670**	Length [mm]	**4.500,0**
Ext. pressure [Pa]	**220**	Width [mm]	**1.220,0**
Tot. pressure [Pa]	**632**	Height [mm]	**860,0**
Air velocity [m/s]	**1,22**	Net weight [kg]	**~545,00**
Class DIN EN 13053	**V1**		

Casing:

Thickness	**54,0 mm**	**Mineralwool**
Panel inside	**Galvanized prepainted**	**0,80 mm**
Panel outside	**Galvanized prepainted**	**0,80 mm**
Panel inside bottom	**AISI 304**	**0,80 mm**
Profiles	**Aluminium**	
Guides	**AISI 304**	

Thermal transmittance class	**T2**	Mechanical stability	**D1(M)**
Thermal bridge class	**TB2**	Filter by-pass leakage	**F9**
Casing leakage -400 Pa	**L1(M)**	Casing leakage +700 Pa	**L1(M)**

Filter — Exhaust air | **1.260,0 mm** | **4,79 m2** | **99 Pa**

Manufacture	**Roccheggiani**	Filter length [mm]	**535,0**
Type	**V-BF-M5-535-S**	Filter surface [m2]	**9,00**
Class (EN 779:2012)	**M5**	Cells pcs x size	**2** x **V-BF-M5-535-S** **490,0** x **592,0**
Class (ISO 16890)	**ePM10 65%**		
Clean dP [Pa]	**47**		
Dirty dP [Pa]	**141**		
Applied dP [Pa]	**94**		
Airflow [m³/h]	**3.670** **1,76 m/s**		
Filter handling	**Dirty air widthdrawal**		
Material frame	**AISI 304**	Filter energy class	

Door with hinge and single lever — Dimensions [mm] **540,0 x 720,0**

Damper: — Dimensions [mm] **780,0 x 510,0 x 125,0**

Actuated by	**actuator**	Airflow [m³/h]	**3.670**	Frame	**Aluminium**
Qta. Levers	**1**	Air velocity [m/s]	**2,56**	Blades	**Aluminium**
torque [Nm]	**3,220**	Pressure drop [Pa]	**5**	Type	**DP1**

Damper actuator **GMA126.1E**

Quantity	**1**	Mode	**on/off**	Voltage [V]	**24**
Supplier	**Siemens**	torque [Nm]	**7,000**	Current [A]	**0,21**
				Protection	**IP54**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**; Wiring Yes

1 Pcs	**Differential pressure switch PS500 (0-500Pa)**	**-**
1 Pcs	**A2G-10 Differential Pressure Gauge 0-500 Pa**	**-**

Empty section — Exhaust air | **800,0 mm** | **2,82 m2** | **Pa**

Electric panel

Empty section — Exhaust air | **130,0 mm** | **0,14 m2** | **Pa**

Position **MPX11-DM-DOAS-02**

Plug fan	Exhaust air	**720,0 mm**	**2,34 m2**	**38 Pa**

Fan	**GR35I-ZID.DC.CR**	Motor	**ECblue-IE5-50-116-0-2.5** **IE5**
Air volume [m³/h]	**3.670**	Protection	**IP55**
External static [Pa]	**220**	Insulation class	**F**
dynamic pressure [Pa]	**18**	Voltage	**3x400 V / 50 Hz**
Add. dynamic pressure [Pa]	**38**	Power [kW]	**2,500**
Total static pressure [Pa]	**577**		
Total pressure [Pa]	**632**	Speed [1/min]	**3.100**
Speed [1/min]	**2.183**	System absorbed power [kW]	**0,930**
efficiency %	**69,1**	nominal current [A]	**3,04**
Supplier	**Ziehl-Abegg**		
Code	**ZAB-116892/A01-3/400/50**		

K-factor [m³/h] **139** [ρ = 1,2 kg/m³] $(Q = k\sqrt{\Delta p})$ K-factor [adim] **108** $(Q = k\sqrt{\Delta p \frac{2}{\rho}})$

Fan octave band sound power level (Lokt) [dB]

Frq.[Hz]	63	125	250	500	1000	2000	4000	8000
Inlet	**67,0**	**68,0**	**68,0**	**67,0**	**64,0**	**60,0**	**58,0**	**56,0**
Outlet	**68,0**	**74,0**	**75,0**	**72,0**	**73,0**	**70,0**	**66,0**	**63,0**

Control Signal (0-10V) **7,00**

Specific fan power [W/(m3/s)] **782** **SFP1**

1 set **Tube for airflow measurement** **-**

1 Pcs **DPE2500 Flow LCD for airflow measurement** **-**

Removable panel Dimensions [mm] **630,0 x 720,0**

Opening **L** Dimensions [mm] **365,0 x 365,0**

Inspection window **Round** Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

1 Pcs **FTK+ 270 VVS NTC10K Temperature and humidity probe (0-10V)**

Circular air	Exhaust air	**450,0 mm**	**1 m2**	**21 Pa**

Mixed air calculation 1

Recircle air [m³/h] Temp. [°C] Humidity [% — Temperature mixed air [°C] — Humidity [%]
Fresh air [m³/h] Temp. [°C] Humidity [%

Mixed air calculation 2

Recircle air [m³/h] Temp. [°C] Humidity [% — Temperature mixed air [°C] — Humidity [%]
Fresh air [m³/h] Temp. [°C] Humidity [%

Removable panel — Dimensions [mm] **360,0 x 720,0**

Damper: — Dimensions [mm] **980,0 x 210,0 x 125,0**

Actuated by	**actuator**	Airflow [m³/h]	**3.670**	Frame	**Aluminium**
Qta. Levers	**1**	Air velocity [m/s]	**4,95**	Blades	**Aluminium**
torque [Nm]	**1,620**	Pressure drop [Pa]	**21**	Type	**DP1**

Damper actuator **GDB161.1E**

Quantity	**1**	Mode	**modulating**	Voltage [V]	**24**
Supplier	**Siemens**	torque [Nm]	**5,000**	Current [A]	**0,09**
				Protection	**IP54**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Heat wheel in casing	Exhaust air	**680,0 mm**	**2,94 m2**	**232 Pa**

Empty section	Exhaust air	**460,0 mm**	**1,63 m2**	**5 Pa**

Removable panel — Dimensions [mm] **320,0 x 720,0**

Damper: — Dimensions [mm] **780,0 x 510,0 x 125,0**

Actuated by	**actuator**	Airflow [m³/h]	**3.670**	Frame	**Aluminium**
Qta. Levers	**1**	Air velocity [m/s]	**2,56**	Blades	**Aluminium**
torque [Nm]	**3,220**	Pressure drop [Pa]	**5**	Type	**DP1**

Damper actuator **GMA161.1E**

Quantity	**1**	Mode	**modulating**	Voltage [V]	**24**
Supplier	**Siemens**	torque [Nm]	**7,000**	Current [A]	**0,21**
				Protection	**IP54**

Inspection window **Round** — Diameter [mm] **200,0**

Lamp **PVC-STD Lamp** — Nominal data **230 V** **9 W** **0,04 A** **IP65**
Wiring Yes

Position **MPX11-DM-DOAS-02**

Noise calculation

sound power [dB]

Frq. Hz	63	125	250	500	1000	2000	4000	8000	Sum [dB(A)]
Inlet	**67,0**	**68,0**	**68,0**	**67,0**	**64,0**	**60,0**	**58,0**	**56,0**	**69,2**
Outlet	**66,0**	**71,0**	**71,0**	**67,0**	**67,0**	**63,0**	**58,0**	**54,0**	**71,2**
Casing	**45,0**	**51,0**	**50,0**	**44,0**	**45,0**	**42,0**	**27,0**	**20,0**	**49,1**

sound pressure level [dB]

Frq. Hz	63	125	250	500	1000	2000	4000	8000	Sum [dB(A)]
Inlet	**59,1**	**60,1**	**60,1**	**59,1**	**56,1**	**52,1**	**50,1**	**48,1**	**61,3**
Outlet	**58,1**	**63,1**	**63,1**	**59,1**	**59,1**	**55,1**	**50,1**	**46,1**	**63,3**
Casing	**37,1**	**43,1**	**42,1**	**36,1**	**37,1**	**34,1**	**19,1**	**12,1**	**41,2**

measuring point at **1 m** of distance

Baseframe	**BF140**	Material	**Galvanized steel**	Thickness	**2,0 mm**
Lifting holes [mm]	**56,0**	Height [mm]	**140,0**	Welded	**No**

1 set **Roof** **Galvanized prepainted**

1 Pcs **U-24ME2E8 (Unità esterna VRF Eco-i Eco-eXtreme) -**
Eco-i Eco-eXtreme series high energy efficiency variable refrigerant flow (vrf) heat pump outdoor unit, equipped with DC Inverter regulation, having the following main technical characteristics:
- COP = 4.69
- EER = 3.93
- Inverter bi-compressor system
- Very low standard sound level: 60 dB(A)
- Silent mode
- Winter operation up to – 25°C.
- Summer operation up to +52°C
- VET system for managing the flow temperature of the indoor unit
- Demand control function for limitation of standard consumption peaks
- Nominal cooling capacity: 68.0 kW
- Nominal thermal potential: 76.5 kW
- 380 Volt power supply.
PAW-560MAH2 : UTA Advanced Series Kit for VRF
Advanced type AHU management kit with direct expansion for batteries with capacities up to 56 kW nominal. The kit, suitable for combination with VRF variable refrigerant flow systems, is made up of a LEV electronic expansion valve, thermistors, an IP 65 plastic box containing the control part and no. 1 electronic control with LCD display model CZ-RTC4. The control logic includes the cold draft prevention function, setpoint modulation according to the external temperature, and the possibility of external demand control management via 0-10V signal

1 Pcs **KRT00SMD.000A Rilevatore di fumo -**

Delivery sections

no.	Width	Height	Length	Net weight
1	**1.220,0**	**860,0**	**2.190,0**	**274,00**
2	**1.220,0**	**860,0**	**1.170,0**	**192,00**
3	**1.220,0**	**860,0**	**460,0**	**79,00**
4	**1.220,0**	**860,0**	**2.610,0**	**595,00**
5	**1.220,0**	**1.720,0**	**680,0**	**303,00**
6	**1.220,0**	**860,0**	**1.170,0**	**284,00**
7	**1.220,0**	**860,0**	**2.190,0**	**694,00**

Regulation 1253:14

Calculation valid	**Yes**
ErP Ready 2016	**Yes**
ErP Ready note 2016	**-**
ErP Ready 2018	**Yes**
ErP Ready note 2018	**-**
Specific fan power internal [W/(m3/s)]	**867**
effective electric power input [kW]	**2,930**
type of heat recovery system	**other HRS**
thermal efficiency [%]	**81,40**
directional unit type	**BVU - NRVU**
Motor and drive type	**variable speed**
external leakage rate at +400 Pa [%]	**3,74**
external leakage rate at -400 Pa [%]	**2,95**
internal leakage rate at 200 Pa [%]	**1,50**

Roccheggiani S.p.A.

Via I° Maggio, 10
IT 60021 Camerano (AN)
Tel.: 071 / 730023
Fax: 071 / 7304005

Offer	**UTA 21001082.17**
From date	**14/12/2023**
Project	**MXP11 Data Centre**
Position	**3.0**
LV-Position	
Quantity	**1**
Print data	**14/12/2023**
User	

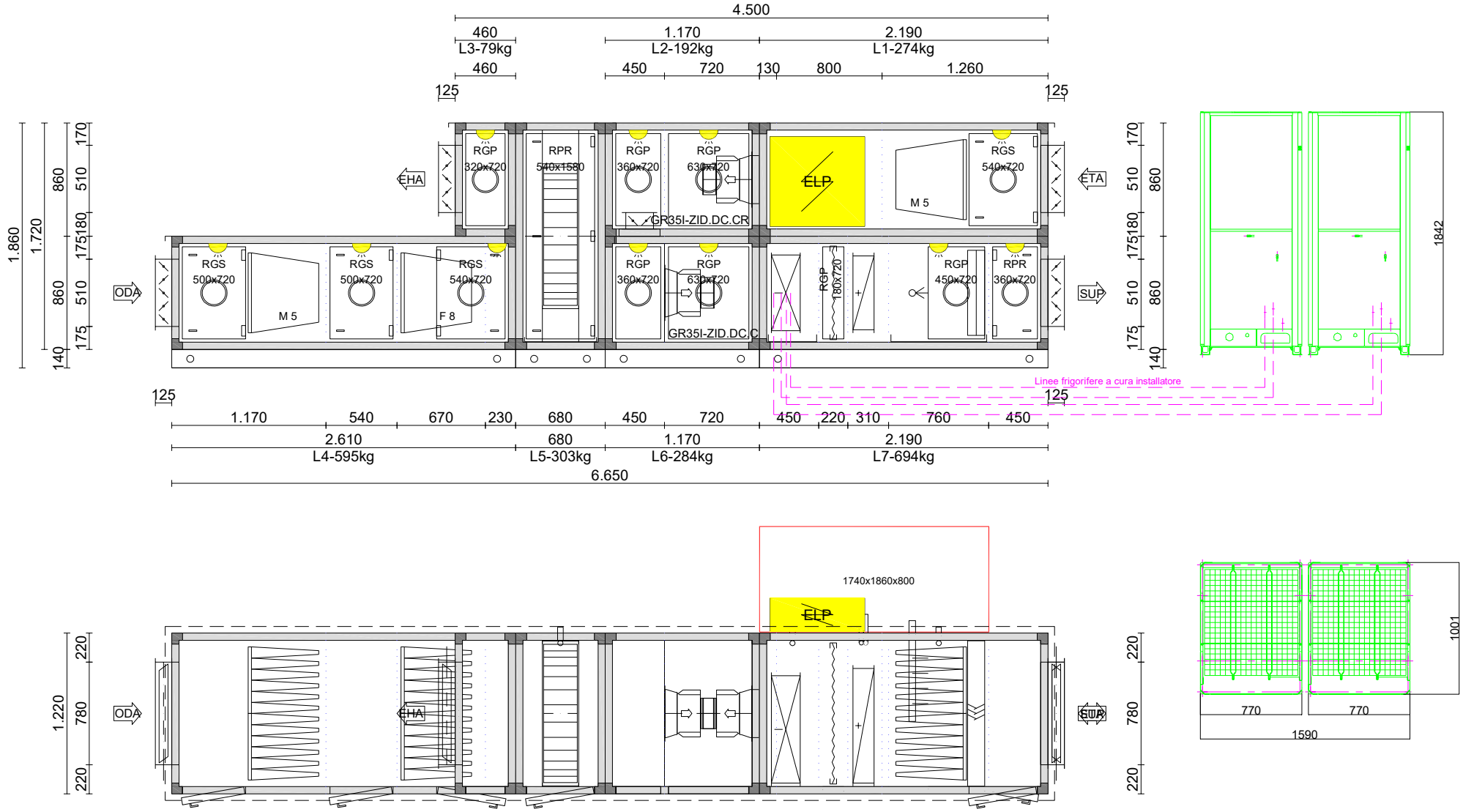
www.roccheggiani.it
ahu@roccheggiani.it

Regulation list

	Electric panel
n. 1	Power and regulation electrical panel. Power supply 400V/3F+N/50Hz
	Start and stop signal. Indication of dirty filters. Motor save protection.
	Performance of logical engineering of regulation and drafting of wiring diagrams
	AHU Calibration and functional factory testing included
	Control type External/ambient air
	Temperature and humidity control
	Control type Supply air
	Temperature and humidity control
	Freeze protection thermostat
	Saturation temperature probe
	Control type Return air
	Temperature and humidity control
	Additional options
	Room terminal with display, supplied not mounted
	Coil valves and actuators included
	Hydraulic assemblies and accessories included
	Start-up on site
	Included, by specialized technicians

Offer	**UTA 21001082.17**		airCalc Vers. P 4.2.0
Project	**MXP11 Data Centre**		
Position	**3.0**		
Description	**MPX11-DM-DOAS-02**	From date	**14/12/2023**

List of material mounted on board			
Pos.	**QTA**	**Code**	**Description**
1	1	**COM_CTD**	Power and regulation electrical panel. Power supply 400V/3F+N/50Hz. Start and stop signal. Dirty filters indication.
2	1	**C.PCO**	C.PCO Controller
3	1	**C.PCO-CON**	Removable connector kit for C.PCO
4	1	**SKIT1000.0001**	PGN1000F01 + PGN100FRM1 Display for panel mounting, connectable to the pCO by means of a cable with telephone connector
5	1	**PGN1000W00**	pGD__1__ LCD, 132x64 pixels
6	1	**TCONN6J000**	“T” connector for local network
7	1	**AKF10+ NTC10k Carel 250.06**	Temperature probe (-50/150°C)
8	1	**FTK + 270 VVS NTC10k**	Temperature and humidity probe (0-10V)
9	1	**FTK + 270 VVS NTC10k**	Temperature and humidity probe (0-10V)
10	1	**TF30**	Antifreeze thermostat -10 to 10°C 3 m capillar
11	1	**A2G-10**	Differential pressure gauge 0-500 Pa
12	1	**A2G-10**	Differential pressure gauge 0-500 Pa
13	1	**A2G-10**	Differential pressure gauge 0-500 Pa
14	1	**PS 500**	Differential pressure switch 0-500 Pa
15	1	**PS 500**	Differential pressure switch 0-500 Pa
16	1	**PS 1500**	Differential pressure switch 200-1000 Pa
17	1	**GMA161.1E**	Damper actuator, modulating, with spring return
18	1	**GMA161.1E**	Damper actuator, modulating, with spring return
19	1	**GMA126.1E**	Damper actuator, on-off, with spring return
20	1	**GMA126.1E**	Damper actuator, on-off, with spring return
21	1	**GDB161.1E**	Damper actuator, modulating, without spring return
22	1	**DPE2500**	Controller for differential pressure/airflow, 0-2500 Pa
23	1	**DPE2500**	Controller for differential pressure/airflow, 0-2500 Pa



Preliminary drawing

SUPPLY	CTA 12.8	C54TT
Airflow	m³/h	4.320
Ext. pressure	Pa	370
Tot. pressure	Pa	1.160
Motorpower	kW 1x	2,500
Power supply		400V/3/50Hz
PHW-heating	kW	24,76
DX-cooling	kW	63,40
Energy rec	kW	45,59 / 39,87
Humidification	kg/h	11,13

EXHAUST	CTA 12.8	C54TT
Airflow	m³/h	3.670
Ext. pressure	Pa	220
Tot. pressure	Pa	632
Motorpower	kW 1x	2,500
Power supply		400V/3/50Hz
Energy rec	kW	45,59 / 39,87

CLIENTE-CUSTOMER:	Bouygues E&S InTec Italia S.p.A.	REV. 0 DATA-DATE:	User:
CANTIERE-CONSTRUCTION.:	MXP11 Data Centre	POS.-ID:	3.0
RIFERIMENTO-REF.:	MPX11-DM-DOAS-02		
OGGETTO-OBJECT:	CTA 12.8	TIPO-TYPE:	PROJECT-ID.: UTA 21001082.17
ROCCHEGGIANI. care for air — ROCCHEGGIANI S.p.A?Via 1° maggio, 60021 Camerano (AN)Italy		scale: xx.xx / TOLL.: UNI.EN22768-V / .SHEET: - / -	DISEGNO-DRAW.: