

	REPORTE DE CARGAS TERMICAS CENTRO DE COMPUTO	
	CENTRO EMPRESARIAL SALITRE	
	CAMARA DE COMERCIO DE BOGOTA	

ANEXO 2.3

**REPORTE DE CÁLCULO DE CARGAS TERMICAS CENTRO DE
COMPUTO P.4 CCB SALITRE**



**REPORTE DE CARGAS TERMICAS
CENTRO DE COMPUTO**

CENTRO EMPRESARIAL SALITRE

CAMARA DE COMERCIO DE BOGOTA

Air System Sizing Summary for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

02/06/2020
12:11p. m.

Air System Information

Air System Name Data Center Rev2
Equipment Class UNDEF
Air System Type SZCAV

Number of zones 1
Floor Area 81.8 ft²
Location Bogota, Colombia

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load 10.8 Tons
Total coil load 129.7 MBH
Sensible coil load 129.7 MBH
Coil CFM at Jul 1500 8205 CFM
Max block CFM 8205 CFM
Sum of peak zone CFM 8205 CFM
Sensible heat ratio 1.000
CFM/Ton 759.3
ft²/Ton 7.6
BTU/(hr-ft²) 1585.3
Water flow @ 10.0 °F rise 25.95 gpm

Load occurs at Jul 1500
OA DB / WB 70.0 / 56.0 °F
Entering DB / WB 69.8 / 54.8 °F
Leaving DB / WB 49.8 / 47.7 °F
Coil ADP 47.6 °F
Bypass Factor 0.100
Resulting RH 43 %
Design supply temp. 48.0 °F
Zone T-stat Check 0 of 1 OK
Max zone temperature deviation 0.2 °F

Humidifier Sizing Data

Max steam flow at Des Htg 0.00 lb/hr
Airflow Rate 0 CFM

Air mass flow 0.00 lb/hr
Moisture gain00000 lb/lb

Supply Fan Sizing Data

Actual max CFM 8205 CFM
Standard CFM 6012 CFM
Actual max CFM/ft² 100.31 CFM/ft²

Fan motor BHP 0.00 BHP
Fan motor kW 0.00 kW
Fan static 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM 10 CFM
CFM/ft² 0.12 CFM/ft²

CFM/person 9.91 CFM/person



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CAMARA DE COMERCIO DE BOGOTA

Zone Sizing Summary for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

02/06/2020
12:11p. m.

Air System Information

Air System Name Data Center Rev2
Equipment Class UNDEF
Air System Type SZCAV

Number of zones 1
Floor Area 81.8 ft²
Location Bogota, Colombia

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	8205	8205	100.31	0.0	0.00	0.0	0.00	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	130.5	Jul 1500	0.0	81.8

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
<i>Zone 1</i>							
Data Center P4 Rev2	1	130.5	Jul 1500	8205	0.0	81.8	100.31



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CAMARA DE COMERCIO DE BOGOTA

Air System Design Load Summary for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

02/06/2020
12:11p. m.

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 70.0 °F / 56.0 °F			HEATING OA DB / WB 36.0 °F / 29.2 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft ²	0	-	0 ft ²	-	-
Wall Transmission	0 ft ²	0	-	0 ft ²	0	-
Roof Transmission	0 ft ²	0	-	0 ft ²	0	-
Window Transmission	0 ft ²	0	-	0 ft ²	0	-
Skylight Transmission	0 ft ²	0	-	0 ft ²	0	-
Door Loads	0 ft ²	0	-	0 ft ²	0	-
Floor Transmission	0 ft ²	0	-	0 ft ²	0	-
Partitions	957 ft ²	1662	-	957 ft ²	0	-
Ceiling	0 ft ²	0	-	0 ft ²	0	-
Overhead Lighting	123 W	419	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	1	206	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	122000	0	-	0	0
Safety Factor	5% / 5%	6214	10	5%	0	0
>> Total Zone Loads	-	130501	215	-	0	0
Zone Conditioning	-	129676	215	-	0	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	8205 CFM	0	-	8205 CFM	0	-
Ventilation Load	10 CFM	1	27	10 CFM	243	207
Supply Fan Load	8205 CFM	0	-	8205 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	129678	242	-	243	207
Central Cooling Coil	-	129678	0	-	0	0
Humidification Load	-	-	0	-	-	0
>> Total Conditioning	-	129678	0	-	0	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		



**REPORTE DE CARGAS TERMICAS
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CAMARA DE COMERCIO DE BOGOTA

Space Design Load Summary for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

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TABLE 1.1.A. Component Loads For Space "Data Center P4 Rev2" In Zone "Zone 1"						
DESIGN COOLING				DESIGN HEATING		
COOLING DATA AT Jul 1500 COOLING OA DB / WB 70.0 °F / 56.0 °F OCCUPIED T-STAT 68.1 °F				HEATING DATA AT DES HTG HEATING OA DB / WB 36.0 °F / 29.2 °F OCCUPIED T-STAT 67.0 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
SPACE LOADS						
Window & Skylight Solar Loads	0 ft ²	0	-	0 ft ²	-	-
Wall Transmission	0 ft ²	0	-	0 ft ²	0	-
Roof Transmission	0 ft ²	0	-	0 ft ²	0	-
Window Transmission	0 ft ²	0	-	0 ft ²	0	-
Skylight Transmission	0 ft ²	0	-	0 ft ²	0	-
Door Loads	0 ft ²	0	-	0 ft ²	0	-
Floor Transmission	0 ft ²	0	-	0 ft ²	0	-
Partitions	957 ft ²	1662	-	957 ft ²	0	-
Ceiling	0 ft ²	0	-	0 ft ²	0	-
Overhead Lighting	123 W	419	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	1	206	205	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	122000	0	-	0	0
Safety Factor	5% / 5%	6214	10	5%	0	0
>> Total Zone Loads	-	130501	215	-	0	0

TABLE 1.1.B. Envelope Loads For Space "Data Center P4 Rev2" In Zone "Zone 1"						
				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(ft ²)	(BTU/(hr·ft ² ·°F))	Coeff.	(BTU/hr)	(BTU/hr)	(BTU/hr)



**REPORTE DE CARGAS TERMICAS
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CAMARA DE COMERCIO DE BOGOTA

System Psychrometrics for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

02/06/2020
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July DESIGN COOLING DAY, 1500

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	70.0	0.00987	10	400	1	27
Vent - Return Mixing	Outlet	69.8	0.00909	8205	801	-	-
Central Cooling Coil	Outlet	49.8	0.00909	8205	801	129678	0
Supply Fan	Outlet	49.8	0.00909	8205	801	0	-
Humidifier	Outlet	49.8	0.00909	8205	801	-	0
Cold Supply Duct	Outlet	49.8	0.00909	8205	801	-	-
Zone Air	-	69.8	0.00910	8205	801	129676	215
Return Plenum	Outlet	69.8	0.00910	8205	801	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 0.791 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 3477.5 BTU/(hr-CFM)
Site Altitude = 8359.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	130501	Cooling	129676	69.8	8205	801	0	0



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System Psychrometrics for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

02/06/2020
12:11p. m.

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	36.0	0.00301	10	400	-243	-207
Vent - Return Mixing	Outlet	67.0	0.00900	8205	800	-	-
Central Cooling Coil	Outlet	67.0	0.00900	8205	800	0	0
Supply Fan	Outlet	67.0	0.00900	8205	800	0	-
Humidifier	Outlet	67.0	0.00900	8205	800	-	0
Cold Supply Duct	Outlet	67.0	0.00900	8205	800	-	-
Zone Air	-	67.0	0.00900	8205	800	0	0
Return Plenum	Outlet	67.0	0.00900	8205	800	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 0.791 BTU/(hr-CFM-F)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 3477.5 BTU/(hr-CFM)

Site Altitude = 8359.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	0	Deadband	0	67.0	8205	800	0	0



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CENTRO DE COMPUTO

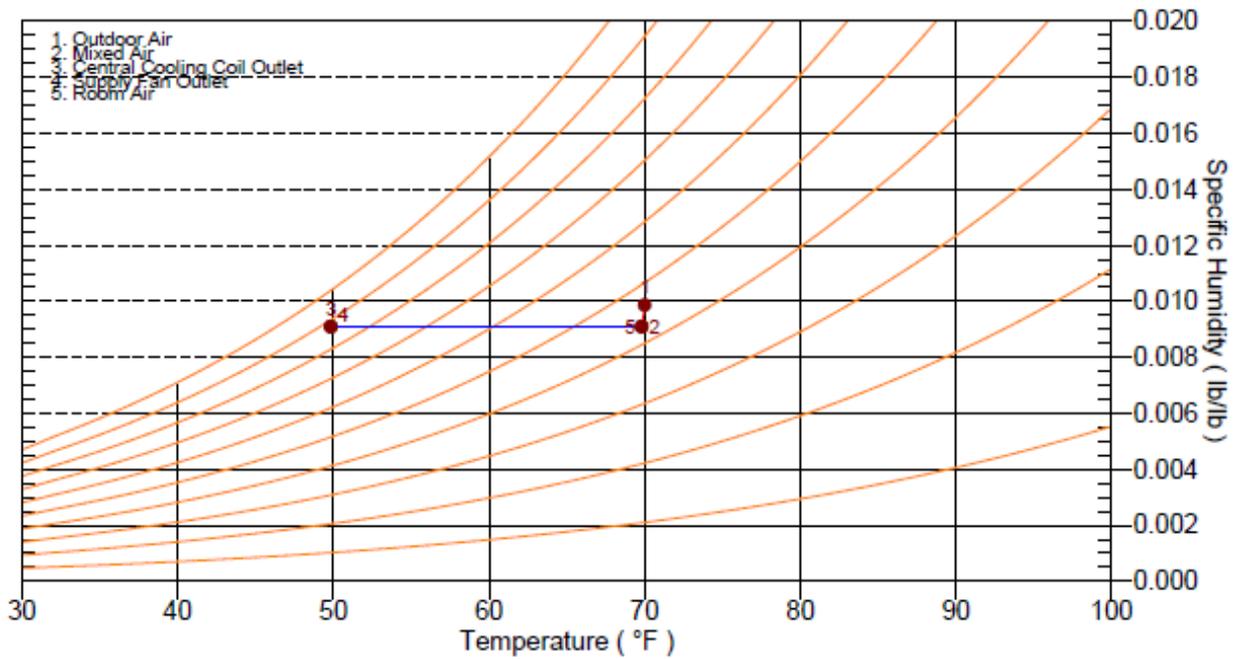
CENTRO EMPRESARIAL SALITRE

CAMARA DE COMERCIO DE BOGOTA

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

System Psychrometrics for Data Center Rev2

Location: Bogota, Colombia
Altitude: 8359.0 ft.
Data for: July DESIGN COOLING DAY, 1500





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CAMARA DE COMERCIO DE BOGOTA

System Psychrometrics for Data Center Rev2

Project Name: Data Center Camara de Comercio Bogota
Prepared by: Diseño y Presupuestos

Location: Bogota, Colombia
Altitude: 8359.0 ft.
Data for: WINTER DESIGN HEATING

