

## Dedicated Outdoor Air System (DOAS) Sizing Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

### Air System Information

Air System Name ..... VRF T  
Equipment Class ..... TERM  
Air System Type ..... VRF

Number of zones ..... 15  
Floor Area ..... 455,8 m<sup>2</sup>  
Location ..... Brasilia, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

**NOTE: No other data is applicable for a Terminal Units air system without a Dedicated Outdoor Air System (DOAS).**

## Zone Sizing Summary for VRF T

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### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
T - ADM	3,5	2,3	25,9 / 19,9	15,8 / 15,3	-	Feb 1500	8,84
T - ADM 2	3,1	2,1	26,1 / 19,9	15,5 / 14,9	-	Feb 1500	12,66
T - BIBLI	3,0	2,5	25,0 / 18,5	15,2 / 14,6	-	Jan 1600	26,39
T - BIBLIOTECA	22,7	14,2	26,6 / 20,5	15,6 / 15,1	-	Jan 1600	11,29
T - CAIXA	2,3	1,5	26,1 / 20,1	15,5 / 14,9	-	Dec 1500	9,10
T - CEB	1,7	1,6	24,4 / 17,9	15,3 / 14,7	-	Jan 1400	18,19
T - COPA	3,4	2,3	26,0 / 19,9	15,8 / 15,2	-	Feb 1500	10,81
T - CPD	1,8	1,7	24,5 / 17,9	15,3 / 14,7	-	Dec 1700	17,57
T - DIREÇÃO	4,7	2,8	26,9 / 20,8	15,5 / 15,0	-	Dec 1500	11,54
T - FOYER	17,8	8,7	29,6 / 23,3	15,3 / 14,9	-	Feb 1500	5,40
T - REPOGRAFIA	1,5	1,0	26,1 / 20,2	15,5 / 15,0	-	Feb 1600	6,51
T - SALA DE ROBÓTICA	9,6	6,0	26,6 / 20,3	15,2 / 14,7	-	Feb 1600	12,95
T - SALA DOS TEC. DA CUL	2,0	1,3	26,6 / 20,4	15,4 / 14,9	-	Feb 1500	8,94
T - SEC	3,7	2,6	25,9 / 19,5	15,5 / 14,9	-	Feb 1600	13,53
T - SECRETARIA	8,1	5,6	26,1 / 19,7	15,4 / 14,9	-	Jan 1500	11,96

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
T - ADM	1,2	19,2 / 24,2	-	218	0,000	0,000	30
T - ADM 2	0,9	18,9 / 23,4	-	185	0,000	0,000	30
T - BIBLI	1,0	20,1 / 24,1	-	238	0,000	0,000	15
T - BIBLIOTECA	6,8	18,3 / 23,6	-	1207	0,000	0,000	263
T - CAIXA	0,8	18,8 / 24,2	-	131	0,000	0,000	23
T - CEB	0,5	21,0 / 24,1	-	162	0,000	0,000	0
T - COPA	1,2	19,3 / 24,8	-	211	0,000	0,000	30
T - CPD	0,7	20,8 / 24,4	-	172	0,000	0,000	0
T - DIREÇÃO	1,5	17,8 / 24,0	-	230	0,000	0,000	60
T - FOYER	5,5	14,7 / 23,7	-	573	0,000	0,000	300
T - REPOGRAFIA	0,6	18,7 / 25,3	-	86	0,000	0,000	15
T - SALA DE ROBÓTICA	2,6	18,1 / 23,1	-	494	0,000	0,000	113
T - SALA DOS TEC. DA CUL	0,6	18,4 / 23,4	-	107	0,000	0,000	23
T - SEC	0,7	19,3 / 22,1	-	237	0,000	0,000	30
T - SECRETARIA	2,7	19,2 / 24,4	-	493	0,000	0,000	70

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
T - ADM	2,2	Jan 1600	0,8	24,7
T - ADM 2	1,9	Jan 1600	0,6	14,6
T - BIBLI	2,4	Jan 1700	0,8	9,0

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Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
T - BIBLIOTECA	12,1	Jan 1700	3,5	106,9
T - CAIXA	1,3	Jan 1700	0,5	14,4
T - CEB	1,6	Jan 1700	0,6	8,9
T - COPA	2,1	Jan 1600	0,9	19,5
T - CPD	1,7	Jan 1700	0,7	9,8
T - DIREÇÃO	2,3	Jan 1600	0,7	19,9
T - FOYER	5,7	Jan 1700	1,6	106,1
T - REPOGRAFIA	0,9	Jan 1600	0,4	13,2
T - SALA DE ROBÓTICA	5,0	Jan 1600	1,3	38,1
T - SALA DOS TEC. DA CUL	1,1	Jan 1600	0,3	12,0
T - SEC	2,4	Feb 1700	0,4	17,5
T - SECRETARIA	4,9	Jan 1500	1,8	41,2

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s.m²)
<b>T - ADM</b>							
T - ADM DIREITA	1	2,2	Jan 1600	218	0,8	24,7	8,84
<b>T - ADM 2</b>							
T - ADM ESQUERDA	1	1,9	Jan 1600	185	0,6	14,6	12,66
<b>T - BIBLI</b>							
T - BIBLI	1	2,4	Jan 1700	238	0,8	9,0	26,39
<b>T - BIBLIOTECA</b>							
T - BIBLIOTECA	1	12,1	Jan 1700	1207	3,5	106,9	11,29
<b>T - CAIXA</b>							
T - CAIXA	1	1,3	Jan 1700	131	0,5	14,4	9,10
<b>T - CEB</b>							
T - CEB	1	1,6	Jan 1700	162	0,6	8,9	18,19
<b>T - COPA</b>							
T - COPA	1	2,1	Jan 1600	211	0,9	19,5	10,81
<b>T - CPD</b>							
T - CPD	1	1,7	Jan 1700	172	0,7	9,8	17,57
<b>T - DIREÇÃO</b>							
T - DIREÇÃO	1	2,3	Jan 1600	230	0,7	19,9	11,54
<b>T - FOYER</b>							
T - FOYER	1	5,7	Jan 1700	573	1,6	106,1	5,40
<b>T - REPOGRAFIA</b>							
T - REP	1	0,9	Jan 1600	86	0,4	13,2	6,51
<b>T - SALA DE ROBÓTICA</b>							
T - SALA DE ROBÓTICA	1	5,0	Jan 1600	494	1,3	38,1	12,95
<b>T - SALA DOS TEC. DA CUL</b>							
T - SALA DOS TEC. DA CUL	1	1,1	Jan 1600	107	0,3	12,0	8,94
<b>T - SEC</b>							
T - SECRETARIA	1	2,4	Feb 1700	237	0,4	17,5	13,53
<b>T - SECRETARIA</b>							
T - ESPERA	1	4,9	Jan 1500	493	1,8	41,2	11,96

## Ventilation Sizing Summary for VRF T

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### 1. Summary

Ventilation Sizing Method ..... Sum of Space OA Airflows

### 2. Space Ventilation Analysis

#### 2.1 Zone: T - ADM

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - ADM</b>									
T - ADM DIREITA	1	24,7	4,0	218,2	7,50	0,00	0,0	0,0	30,0
<b>Totals (incl. Space Multipliers)</b>				<b>218,2</b>					<b>30,0</b>

#### 2.2 Zone: T - ADM 2

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - ADM 2</b>									
T - ADM ESQUERDA	1	14,6	4,0	184,9	7,50	0,00	0,0	0,0	30,0
<b>Totals (incl. Space Multipliers)</b>				<b>184,9</b>					<b>30,0</b>

#### 2.3 Zone: T - BIBLI

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - BIBLI</b>									
T - BIBLI	1	9,0	2,0	237,5	7,50	0,00	0,0	0,0	15,0
<b>Totals (incl. Space Multipliers)</b>				<b>237,5</b>					<b>15,0</b>

#### 2.4 Zone: T - BIBLIOTECA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - BIBLIOTECA</b>									
T - BIBLIOTECA	1	106,9	35,0	1206,9	7,50	0,00	0,0	0,0	262,5
<b>Totals (incl. Space Multipliers)</b>				<b>1206,9</b>					<b>262,5</b>

#### 2.5 Zone: T - CAIXA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - CAIXA</b>									
T - CAIXA	1	14,4	3,0	131,1	7,50	0,00	0,0	0,0	22,5
<b>Totals (incl. Space Multipliers)</b>				<b>131,1</b>					<b>22,5</b>

#### 2.6 Zone: T - CEB

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Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - CEB</b>									
T - CEB	1	8,9	0,0	161,9	7,50	0,00	0,0	0,0	0,0
<b>Totals (incl. Space Multipliers)</b>				<b>161,9</b>					<b>0,0</b>

### 2.7 Zone: T - COPA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - COPA</b>									
T - COPA	1	19,5	4,0	210,9	7,50	0,00	0,0	0,0	30,0
<b>Totals (incl. Space Multipliers)</b>				<b>210,9</b>					<b>30,0</b>

### 2.8 Zone: T - CPD

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - CPD</b>									
T - CPD	1	9,8	0,0	172,2	7,50	0,00	0,0	0,0	0,0
<b>Totals (incl. Space Multipliers)</b>				<b>172,2</b>					<b>0,0</b>

### 2.9 Zone: T - DIREÇÃO

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - DIREÇÃO</b>									
T - DIREÇÃO	1	19,9	8,0	229,6	7,50	0,00	0,0	0,0	60,0
<b>Totals (incl. Space Multipliers)</b>				<b>229,6</b>					<b>60,0</b>

### 2.10 Zone: T - FOYER

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - FOYER</b>									
T - FOYER	1	106,1	40,0	572,7	7,50	0,00	0,0	0,0	300,0
<b>Totals (incl. Space Multipliers)</b>				<b>572,7</b>					<b>300,0</b>

### 2.11 Zone: T - REPOGRAFIA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
<b>T - REPOGRAFIA</b>									
T - REP	1	13,2	2,0	85,9	7,50	0,00	0,0	0,0	15,0
<b>Totals (incl. Space Multipliers)</b>				<b>85,9</b>					<b>15,0</b>

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### 2.12 Zone: T - SALA DE ROBÓTICA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
T - SALA DE ROBÓTICA									
T - SALA DE ROBÓTICA	1	38,1	15,0	493,5	7,50	0,00	0,0	0,0	112,5
<b>Totals (incl. Space Multipliers)</b>				<b>493,5</b>					<b>112,5</b>

### 2.13 Zone: T - SALA DOS TEC. DA CUL

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
T - SALA DOS TEC. DA CUL									
T - SALA DOS TEC. DA CUL	1	12,0	3,0	107,3	7,50	0,00	0,0	0,0	22,5
<b>Totals (incl. Space Multipliers)</b>				<b>107,3</b>					<b>22,5</b>

### 2.14 Zone: T - SEC

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
T - SEC									
T - SECRETARIA	1	17,5	4,0	236,8	7,50	0,00	0,0	0,0	30,0
<b>Totals (incl. Space Multipliers)</b>				<b>236,8</b>					<b>30,0</b>

### 2.15 Zone: T - SECRETARIA

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
T - SECRETARIA									
T - ESPERA	1	41,2	15,0	492,8	4,70	0,00	0,0	0,0	70,5
<b>Totals (incl. Space Multipliers)</b>				<b>492,8</b>					<b>70,5</b>

## Air System Design Load Summary for VRF T

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	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600 COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING DATA AT DES HTG HEATING OA DB / WB 8,9 °C / 4,3 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	24 m²	5872	-	24 m²	-	-
Wall Transmission	87 m²	2523	-	87 m²	2525	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	24 m²	1180	-	24 m²	1794	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	5 m²	73	-	5 m²	110	-
Floor Transmission	456 m²	0	-	456 m²	0	-
Partitions	366 m²	2536	-	366 m²	4102	-
Ceiling	456 m²	3156	-	456 m²	5105	-
Overhead Lighting	7876 W	6596	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	14000 W	13088	-	0	0	-
People	139	7956	6255	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	4298	626	10%	1364	0
>> Total Zone Loads	-	47278	6881	-	15000	0
Zone Conditioning	-	45724	6881	-	14456	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Exhaust Fan Load	0 L/s	0	-	0 L/s	0	-
Ventilation Load	1001 L/s	9756	25911	1001 L/s	12814	0
Ventilation Fan Load	0 L/s	0	-	0 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	55480	32792	-	27270	0
Terminal Unit Cooling	-	55480	32829	-	0	0
Terminal Unit Heating	-	0	-	-	27270	-
>> Total Conditioning	-	55480	32829	-	27270	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

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T - ADM	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	25 m²	0	-	25 m²	0	-
Partitions	43 m²	299	-	43 m²	484	-
Ceiling	25 m²	171	-	25 m²	277	-
Overhead Lighting	427 W	357	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	935	-	0	0	-
People	4	229	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	199	18	10%	76	0
>> Total Zone Loads	-	2191	198	-	837	0

T - ADM 2	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	15 m²	0	-	15 m²	0	-
Partitions	31 m²	211	-	31 m²	342	-
Ceiling	15 m²	101	-	15 m²	163	-
Overhead Lighting	252 W	211	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	935	-	0	0	-
People	4	229	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	169	18	10%	51	0
>> Total Zone Loads	-	1856	198	-	556	0



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T - BIBLI	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	4 m²	1031	-	4 m²	-	-
Wall Transmission	13 m²	428	-	13 m²	382	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	4 m²	167	-	4 m²	269	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	9 m²	0	-	9 m²	0	-
Partitions	0 m²	0	-	0 m²	0	-
Ceiling	9 m²	58	-	9 m²	101	-
Overhead Lighting	156 W	132	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	250 W	235	-	0	0	-
People	2	117	90	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	217	9	10%	75	0
>> Total Zone Loads	-	2384	99	-	827	0

T - BIBLIOTECA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	14 m²	4122	-	14 m²	-	-
Wall Transmission	19 m²	755	-	19 m²	538	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	14 m²	667	-	14 m²	1077	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	107 m²	0	-	107 m²	0	-
Partitions	35 m²	226	-	35 m²	392	-
Ceiling	107 m²	689	-	107 m²	1197	-
Overhead Lighting	1847 W	1573	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	941	-	0	0	-
People	35	2042	1575	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	1101	158	10%	320	0
>> Total Zone Loads	-	12116	1733	-	3524	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - CAIXA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	7 m²	200	-	7 m²	208	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	14 m²	0	-	14 m²	0	-
Partitions	7 m²	46	-	7 m²	81	-
Ceiling	14 m²	93	-	14 m²	161	-
Overhead Lighting	249 W	212	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	500 W	470	-	0	0	-
People	3	175	135	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	120	14	10%	45	0
>> Total Zone Loads	-	1316	149	-	495	0

T - CEB	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	10 m²	283	-	10 m²	295	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	9 m²	0	-	9 m²	0	-
Partitions	10 m²	66	-	10 m²	114	-
Ceiling	9 m²	57	-	9 m²	100	-
Overhead Lighting	154 W	131	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	941	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	148	0	10%	51	0
>> Total Zone Loads	-	1626	0	-	560	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - COPA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	20 m²	0	-	20 m²	0	-
Partitions	50 m²	343	-	50 m²	555	-
Ceiling	20 m²	135	-	20 m²	218	-
Overhead Lighting	337 W	282	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	935	-	0	0	-
People	4	229	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	192	18	10%	77	0
>> Total Zone Loads	-	2117	198	-	851	0

T - CPD	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	11 m²	308	-	11 m²	321	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	10 m²	0	-	10 m²	0	-
Partitions	18 m²	115	-	18 m²	200	-
Ceiling	10 m²	63	-	10 m²	110	-
Overhead Lighting	169 W	144	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	941	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	157	0	10%	63	0
>> Total Zone Loads	-	1729	0	-	694	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - DIREÇÃO	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	20 m²	0	-	20 m²	0	-
Partitions	40 m²	277	-	40 m²	448	-
Ceiling	20 m²	138	-	20 m²	223	-
Overhead Lighting	344 W	288	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	935	-	0	0	-
People	8	458	360	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	210	36	10%	67	0
>> Total Zone Loads	-	2305	396	-	738	0

T - FOYER	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	106 m²	0	-	106 m²	0	-
Partitions	27 m²	177	-	27 m²	307	-
Ceiling	106 m²	684	-	106 m²	1188	-
Overhead Lighting	1833 W	1561	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	500 W	470	-	0	0	-
People	40	2334	1800	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	523	180	10%	149	0
>> Total Zone Loads	-	5749	1980	-	1644	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - REPOGRAFIA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	13 m²	0	-	13 m²	0	-
Partitions	22 m²	153	-	22 m²	247	-
Ceiling	13 m²	92	-	13 m²	149	-
Overhead Lighting	228 W	191	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	250 W	234	-	0	0	-
People	2	114	90	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	78	9	10%	40	0
>> Total Zone Loads	-	863	99	-	436	0

T - SALA DE ROBÓTICA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	38 m²	0	-	38 m²	0	-
Partitions	71 m²	493	-	71 m²	797	-
Ceiling	38 m²	264	-	38 m²	427	-
Overhead Lighting	658 W	551	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	2500 W	2337	-	0	0	-
People	15	859	675	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	450	68	10%	122	0
>> Total Zone Loads	-	4954	743	-	1346	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - SALA DOS TEC. DA CUL	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 33,8 °C / 26,8 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	0 m²	0	-	0 m²	0	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	12 m²	0	-	12 m²	0	-
Partitions	12 m²	83	-	12 m²	134	-
Ceiling	12 m²	83	-	12 m²	134	-
Overhead Lighting	207 W	174	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	500 W	467	-	0	0	-
People	3	172	135	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	98	14	10%	27	0
>> Total Zone Loads	-	1077	149	-	296	0

T - SEC	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Feb 1700			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 32,9 °C / 26,6 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	5 m²	146	-	5 m²	145	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	0 m²	0	-	0 m²	0	-
Floor Transmission	18 m²	0	-	18 m²	0	-
Partitions	0 m²	0	-	0 m²	0	-
Ceiling	18 m²	113	-	18 m²	196	-
Overhead Lighting	302 W	258	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1500 W	1411	-	0	0	-
People	4	233	180	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	216	18	10%	34	0
>> Total Zone Loads	-	2377	198	-	375	0

## Zone Design Load Summary for VRF T

Project Name: EDUSESC TAGUATINGA  
Prepared by: CBR ENGENHARIA SS LTDA

07/26/2023  
09:49

T - SECRETARIA	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jan 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 34,2 °C / 26,9 °C			HEATING OA DB / WB 8,9 °C / 4,3 °C		
	OCCUPIED T-STAT 23,9 °C			OCCUPIED T-STAT 21,1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	6 m²	892	-	6 m²	-	-
Wall Transmission	22 m²	592	-	22 m²	636	-
Roof Transmission	0 m²	0	-	0 m²	0	-
Window Transmission	6 m²	298	-	6 m²	449	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	5 m²	73	-	5 m²	110	-
Floor Transmission	41 m²	0	-	41 m²	0	-
Partitions	0 m²	0	-	0 m²	0	-
Ceiling	41 m²	289	-	41 m²	461	-
Overhead Lighting	712 W	585	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	929	-	0	0	-
People	15	840	675	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	450	68	10%	166	0
>> Total Zone Loads	-	4947	743	-	1822	0