Air Handler #1 - Uma-01 - Total Load Summary

Air Handler Description:	Uma-01 Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,48 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,93

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	4pm in August.
Outdoor Conditions:	Clg: 89° DB, 84° WB, 175,74 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Summer: Ventilation controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,974 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	108.107 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	1.190 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			109.298 Btuh
Cooling Supply Air: 109.298 / (,974 X 1,1 X 20) =		5.101 CFM	
Summer Vent Outside Air (18,2% of supply) =		930 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	16.931 Btuh	930 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			16.931 Btuh
Total sensible gain on air handling system:			126.229 Btuh
Room space latent gain:	7.700 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	70.675 Btuh		
Total latent gain on air handling system:			78.375 Btuh
Total system sensible and latent gain:			204.604 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	5.101	CFM
Total Air Handler Vent. Air (18,22% of Supply):	930	CFM
Total Conditioned Air Space:	2.846	Sq.ft
Supply Air Per Unit Area:	1,7924	CFM/Sq.ft
Area Per Cooling Capacity:	166,9	Sq.ft/Ton
Cooling Capacity Per Area:	0,0060	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	17,05	Tons

Air Handler #1 - Uma-01 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
1	Z-01 P1 Cubiculo Aislado 2 5pm August	169 2 1.656	0 0 0,00	4.131 300 1,78	440 300 300	2AC/Hr 0 0	2AC/Hr 55 55
2	Z-02 P1 Esclusa Aislado 5pm August	42 1 414	0 0 0,00	1.076 70 1,66	220 70 70	2AC/Hr 0 0	2AC/Hr 14 13
3	Z-03 P1 Cubiculo 8 Al 14 5pm August	130 2 1.274	0 0 0,00	3.737 170 1,31	440 0 0	2AC/Hr 0 0	2AC/Hr 42 31
The above Room occurs 7 times throughout this air system.							
4	Z-04 P1 Transfer De Camillas 2pm August	151 2 1.483	0 0 0,00	4.269 194 1,28	440 150 150	2AC/Hr 0 0	2AC/Hr 49 35
9	Z-09 P1 Esclusa 2pm August	108 2 1.060	0 0 0,00	3.669 167 1,54	440 0 0	2AC/Hr 0 0	2AC/Hr 35 30
10	Z-10 P1 Filtro Visitantes 2pm August	135 4 1.319	0 0 0,00	5.892 268 1,99	880 0 0	2AC/Hr 0 0	2AC/Hr 44 49
11	Z-11 P1 Deposito Material Esteril 2pm August	40 1 389	0 0 0,00	1.382 63 1,58	220 0 0	2AC/Hr 0 0	2AC/Hr 13 11
12	Z-12 P1 Ropa Limpia 2pm August	53 1 522	0 0 0,00	1.632 74 1,39	220 0 0	2AC/Hr 0 0	2AC/Hr 17 14
13	Z-13 P1 Tintos 2pm August	58 1 566	0 0 0,00	3.216 146 2,53	220 0 0	2AC/Hr 0 0	2AC/Hr 19 27
14	Z-14 P1 Trabajo Limpio 5pm August	59 1 581	0 0 0,00	1.248 57 0,96	220 0 0	2AC/Hr 0 0	2AC/Hr 19 10
22	Z-22 P1 Corredor 4pm August	471 2 4.615	0 0 0,00	33.974 1.545 3,28	440 270 270	2AC/Hr 0 0	2AC/Hr 154 282
23	Z-23 P1 Corredor 3pm August	650 4 6.372	0 0 0,00	22.617 1.028 1,58	880 0 0	2AC/Hr 0 0	2AC/Hr 212 187
	Room Peak Totals: Total Rooms: 18 Unique Rooms: 12	2.846 35 27.892	0 0 0,00	109.268 5.101 1,79	7.700 790 790	 0 0	 930 930

Air Handler #2 - Uma-02 - Total Load Summary

Air Handler Description:	Uma-02 Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,51 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,93

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	3pm in August.
Outdoor Conditions:	Clg: 90° DB, 84° WB, 174,75 grains
Indoor Conditions:	Clg: 72° DB, 50% RH

Summer: Ventilation controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,974 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	110.038 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	1.270 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	5.299 Btuh		
Total sensible gain on supply side of coil:			116.607 Btuh
Cooling Supply Air: 116.607 / (,974 X 1,1 X 20) =		5.443 CFM	
Summer Vent Outside Air (30,0% of supply) =		1.632 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	31.477 Btuh	1.632 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			31.477 Btuh
Total sensible gain on air handling system:			148.084 Btuh
Room space latent gain:	8.140 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	122.289 Btuh		
Total latent gain on air handling system:			130.429 Btuh
Total system sensible and latent gain:			278.513 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	5.443	CFM
Total Air Handler Vent. Air (29,99% of Supply):	1.632	CFM
Total Conditioned Air Space:	4.997	Sq.ft
Supply Air Per Unit Area:	1,0891	CFM/Sq.ft
Area Per Cooling Capacity:	215,3	Sq.ft/Ton
Cooling Capacity Per Area:	0,0046	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	23,21	Tons

Air Handler #2 - Uma-02 - Summary Loads

Rm No	Description / Room Peak Time	Area / People / Volume	Htg.Loss / Htg.CFM / CFM/Sqft	Sen.Gain / Clg.CFM / CFM/Sqft	Lat.Gain / S.Exh / W.Exh	Htg.O.A. / Req.CFM / Act.CFM	Clg.O.A. / Req.CFM / Act.CFM
15	Z-15 P1 Corredor	259	0	10.926	440	2AC/Hr	2AC/Hr
	8am August	2	0	372	150	0	85
		2.540	0,00	1,44	150	0	112
16	Z-16 P1 Cubiculo 1 Al 7	130	0	3.737	440	2AC/Hr	2AC/Hr
	5pm August	2	0	127	0	0	42
		1.274	0,00	0,98	0	0	38
	The above Room occurs 7 times throughout this air system.						
17	Z-17 P1 Cubiculo Aislado 1	169	0	4.131	440	2AC/Hr	2AC/Hr
	5pm August	2	0	300	300	0	55
		1.656	0,00	1,78	300	0	90
18	Z-18 P1 Esclusa Aislado	42	0	1.076	220	2AC/Hr	2AC/Hr
	5pm August	1	0	70	70	0	14
		414	0,00	1,66	70	0	21
19	Z-19 P1 Estacion Enfermeria	2.820	0	41.766	2.860	2AC/Hr	2AC/Hr
	5pm August	13	0	2.763	680	0	921
		27.632	0,00	0,98	680	0	829
20	Z-20 P1 Deposito Insumos	85	0	1.504	220	2AC/Hr	2AC/Hr
	5pm August	1	0	83	0	0	28
		829	0,00	0,98	0	0	25
21	Z-21 P1 Circulacion Visitantes	713	0	28.312	880	2AC/Hr	2AC/Hr
	6pm August	4	0	964	0	0	233
		6.986	0,00	1,35	0	0	289
	Room Peak Totals:	4.997	0	113.875	8.140		
	Total Rooms: 13	37	0	5.444	1.200	0	1.632
	Unique Rooms: 7	48.974	0,00	1,09	1.200	0	1.633

Air Handler #10 - Umsp-01 - Total Load Summary

Air Handler Description: Umsp-01 Constant Volume - Proportion
Supply Air Fan: Draw-Thru with program estimated horsepower of 0,02 HP
Fan Input: 0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio: 0,86 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in August.
Outdoor Conditions: Clg: 87° DB, 84° WB, 178,39 grains
Indoor Conditions: Clg: 72° DB, 50% RH

Because of the diversity in room, plenum and ventilation loads, the room sensible peak time in August at 2pm is different from the total system peak time, hence the air system CFM was computed using a room sensible load of 5.613.

Summer: Ventilation controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,974 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	5.567 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	62 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			5.629 Btuh
Cooling Supply Air: 5.675 / (,974 X 1,1 X 20) =		265 CFM	
Summer Vent Outside Air (17,2% of supply) =		45 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	780 Btuh	45 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			780 Btuh
Total sensible gain on air handling system:			6.408 Btuh
Room space latent gain:	880 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	3.558 Btuh		
Total latent gain on air handling system:			4.438 Btuh
Total system sensible and latent gain:			10.846 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	265	CFM
Total Air Handler Vent. Air (17,17% of Supply):	45	CFM
Total Conditioned Air Space:	139	Sq.ft
Supply Air Per Unit Area:	1,9022	CFM/Sq.ft
Area Per Cooling Capacity:	154,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0065	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	0,90	Tons

Air Handler #10 - Umsp-01 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
5	Z-05 P1 Estar De Personal 2pm August	139 4 1.365	0 0 0,00	5.613 265 1,90	880 0 0	2AC/Hr 0 0	2AC/Hr 45 45
	Room Peak Totals: Total Rooms: 1 Unique Rooms: 1	139 4 1.365	0 0 0,00	5.613 265 1,90	880 0 0	 0 0	 45 45

Air Handler #11 - Umsp-02 - Total Load Summary

Air Handler Description: Umsp-02 Constant Volume - Proportion
Supply Air Fan: Draw-Thru with program estimated horsepower of 0,02 HP
Fan Input: 0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio: 0,84 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in August.
Outdoor Conditions: Clg: 87° DB, 84° WB, 178,39 grains
Indoor Conditions: Clg: 72° DB, 50% RH

Because of the diversity in room, plenum and ventilation loads, the room sensible peak time in August at 2pm is different from the total system peak time, hence the air system CFM was computed using a room sensible load of 4.458.

Summer: Ventilation controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,974 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	4.417 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	49 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			4.466 Btuh
Cooling Supply Air: 4.507 / (,974 X 1,1 X 20) =		210 CFM	
Summer Vent Outside Air (24,3% of supply) =		51 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	875 Btuh	51 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			875 Btuh
Total sensible gain on air handling system:			5.341 Btuh
Room space latent gain:	880 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	3.993 Btuh		
Total latent gain on air handling system:			4.873 Btuh
Total system sensible and latent gain:			10.213 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	210	CFM
Total Air Handler Vent. Air (24,26% of Supply):	51	CFM
Total Conditioned Air Space:	156	Sq.ft
Supply Air Per Unit Area:	1,3463	CFM/Sq.ft
Area Per Cooling Capacity:	183,6	Sq.ft/Ton
Cooling Capacity Per Area:	0,0054	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	0,85	Tons

Air Handler #11 - Umsp-02 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
6	Z-06 P1 Coordinacion	156	0	4.458	880	2AC/Hr	2AC/Hr
	2pm August	4	0	210	0	0	51
		1.531	0,00	1,35	0	0	51
	Room Peak Totals:	156	0	4.458	880		
	Total Rooms: 1	4	0	210	0	0	51
	Unique Rooms: 1	1.531	0,00	1,35	0	0	51

Air Handler #20 - Upa-01 - Total Load Summary

Air Handler Description:	Upa-01 Constant Volume - Proportion
Supply Air Fan:	Draw-Thru with program estimated horsepower of 0,19 HP
Fan Input:	0% motor and fan efficiency with 0 in. water across the fan
Sensible Heat Ratio:	0,82

--- This system occurs 1 time(s) in the building. ---

Air System Peak Time:	1pm in August.
Outdoor Conditions:	Clg: 87° DB, 84° WB, 178,39 grains
Indoor Conditions:	Clg: 72° DB, 55% RH

Summer: Ventilation controls outside air, ----- Winter: Exhaust controls outside air.

Room Space sensible loss:	0 Btuh		
Infiltration sensible loss:	0 Btuh	0 CFM	
Outside Air sensible loss:	0 Btuh	0 CFM	
Supply Duct sensible loss:	0 Btuh		
Return Duct sensible loss:	0 Btuh		
Return Plenum sensible loss:	0 Btuh		
Total System sensible loss:			0 Btuh
Heating Supply Air: 0 / (,974 X 1,08 X 0) =		0 CFM	
Winter Vent Outside Air (0,0% of supply) =		0 CFM	
Room space sensible gain:	41.141 Btuh		
Infiltration sensible gain:	0 Btuh		
Draw-thru fan sensible gain:	477 Btuh		
Supply duct sensible gain:	0 Btuh		
Reserve sensible gain:	0 Btuh		
Total sensible gain on supply side of coil:			41.618 Btuh
Cooling Supply Air: 41.618 / (,974 X 1,1 X 19) =		2.045 CFM	
Summer Vent Outside Air (10,3% of supply) =		210 CFM	
Return duct sensible gain:	0 Btuh		
Return plenum sensible gain:	0 Btuh		
Outside air sensible gain:	3.599 Btuh	210 CFM	
Blow-thru fan sensible gain:	0 Btuh		
Total sensible gain on return side of coil:			3.599 Btuh
Total sensible gain on air handling system:			45.217 Btuh
Room space latent gain:	8.820 Btuh		
Infiltration latent gain:	0 Btuh		
Outside air latent gain:	15.581 Btuh		
Total latent gain on air handling system:			24.401 Btuh
Total system sensible and latent gain:			69.619 Btuh

Check Figures

Total Air Handler Supply Air (based on a 19° TD):	2.045	CFM
Total Air Handler Vent. Air (10,27% of Supply):	210	CFM
Total Conditioned Air Space:	928	Sq.ft
Supply Air Per Unit Area:	2,2025	CFM/Sq.ft
Area Per Cooling Capacity:	160,0	Sq.ft/Ton
Cooling Capacity Per Area:	0,0062	Tons/Sq.ft
Heating Capacity Per Area:	0,00	Btuh/Sq.ft
Total Heating Required With Outside Air:	0	Btuh
Total Cooling Required With Outside Air:	5,80	Tons

Air Handler #20 - Upa-01 - Summary Loads

Rm No	Description Room Peak Time	Area People Volume	Htg.Loss Htg.CFM CFM/Sqft	Sen.Gain Clg.CFM CFM/Sqft	Lat.Gain S.Exh W.Exh	Htg.O.A. Req.CFM Act.CFM	Clg.O.A. Req.CFM Act.CFM
7	Z-07 P1 Sala De Espera 1pm August	864 40 8.471	0 0 0,00	38.423 1.909 2,21	8.400 190 190	5/P 0 0	5/P 200 196
8	Z-08 P1 Informacion 2pm August	64 2 627	0 0 0,00	2.726 135 2,12	420 0 0	5/P 0 0	5/P 10 14
	Room Peak Totals: Total Rooms: 2 Unique Rooms: 2	928 42 9.098	0 0 0,00	41.149 2.045 2,20	8.820 190 190	 0 0	 210 210

7.1.4 Anexo CALCULO EXTRACCIONES MECANICAS

	MEMORIA DE CÁLCULOS: EXTRACCIONES PUNTUALES			AG-MC 001	VERSIÓN 0
	PROYECTO	P19-46 HOSPITAL SARAVE	**UBICACIÓN**	SARAVENA - ARAUCA	**DISEÑADOR**	Ing Diego G Castro

ANOTACIONES		
FECHA	30/05/2019	
REVISION	1	D Castro
ANOTACIONES	Version Inicial	30/05/2019

TABLA DE DATOS

PISO	ZONA	ITEM	CANTIDAD	SISTEMA VE-XX	AREA EXTRACCION	AREA** mts 2	ALTURA** mts	UNIDADES*** Sanit y Orinales	CAMBIOS / HORA ****	CFM/UNID	CFM -CAMBIOS	CFM-UNIDAD	EXTRACCION DIRECTA	CFM	CFM AJUSTADOS	CFM POR CANTIDAD	OBSERVACIONES
		ZE-01 P1	1	0	CUBICULO AISLADO 2	15.61	3	0	10	70	279	0		279	300	300	0
		ZE-02 P1	1	0	ESCLUSA AISLADO	3.99	3	0	10	70	71	0		71	70	70	0
		ZE-03 P1	1	0	BAÑO AISLADO	3.69	3	1	10	70	66	70		70	70	70	0
		ZE-04 P1	1	0	ASEO	4.19	3	0	10	70	75	0		75	80	80	0
		ZE-05 P1	1	0	RESIDUOS	5.86	3	0	20	70	209	0		209	200	200	0
		ZE-06 P1	1	0	ROPA SUCIA	5.86	3	0	10	70	105	0		105	100	100	0
		ZE-07 P1	1	0	LAVADO DE PATOS	5.86	3	0	10	70	105	0		105	100	100	0
		ZE-08 P1	1	0	TRABAJO SUCIO	5.86	3	0	10	70	105	0		105	100	100	0
		ZE-09 P1	1	0	CUBICULO AISLADO 1	15.61	3	0	10	70	279	0		279	300	300	0
		ZE-10 P1	1	0	BAÑO AISLADO	3.7	3	1	10	70	66	70		70	70	70	0
		ZE-11 P1	1	0	ESCLUSA AISLADO	4	3	0	10	70	71	0		71	70	70	0
		ZE-12 P1	1	0	UNIDAD SANITARIA	5.39	3	1	10	70	96	70		96	100	100	0
		ZE-13 P1	1	0	BAÑO PUBLICO MUJERES	3.05	3	1	10	70	54	70		70	70	70	0
		ZE-14 P1	1	0	ASEO	1.75	3	0	10	70	31	0		31	50	50	0
		ZE-15 P1	1	0	BAÑO PUBLICO HOMBRES	3.05	3	1	10	70	54	70		70	70	70	0
		ZE-16 P1	1	0	BAÑO MUJERES	4.15	3	1	10	70	74	70		74	70	70	0
		ZE-17 P1	1	0	BAÑO HOMBRES	4.15	3	1	10	70	74	70		74	70	70	0
		ZE-18 P1	1	0	BAÑO	1.8	3	1	10	70	32	70		70	70	70	0
			0	0		0	3	0	10	70	0	0		-	0	0	0

* Basado en ANSI/ASHRAE st 62.1-2004
** Solo para calculos x Cambios Hora
**** Basado en ASHRAE Hospital and clinics

7.1.5 Anexo CALCULO DE DUCTOS

Ductulator®

VariTrane™ Duct Designer

Duct ID	Airflow cfm	Length ft	Width in.	Height in.	Diameter in.	Velocity fpm	Friction Rate in H20/100 ft	Circular Equivalent in.	Pressure Drop in. wg	Section Area sq ft	Perimeter in.	Aspect Ratio	Reynolds Number	Altshul Friction Factor	Cole-Brook Friction Factor	Density lb/cu ft
0001	375	10.0	14.0	4.9		792	0.150	8.8	0.0119	0.47	37.7	2.88	62,273	0.02	0.02	0.077
0002	750	10.0	14.0	7.8		990	0.150	11.3	0.0130	0.76	43.6	1.80	100,687	0.02	0.02	0.077
0003	1,125	10.0	14.6	10.0		1,111	0.150	13.2	0.0133	1.01	49.2	1.46	131,446	0.02	0.02	0.077
0004	1,500	10.0	18.4	10.0		1,174	0.150	14.7	0.0129	1.28	56.8	1.84	154,921	0.02	0.02	0.077
0005	2,050	10.0	18.0	12.8		1,286	0.150	16.5	0.0133	1.59	61.5	1.41	191,066	0.02	0.02	0.077
0006	270	10.0	10.0	5.1		758	0.150	7.7	0.0128	0.36	30.3	1.95	52,709	0.02	0.02	0.077
0007	470	10.0	10.0	7.6		893	0.150	9.5	0.0134	0.53	35.2	1.32	76,343	0.02	0.02	0.077
0008	670	10.0	12.4	8.0		971	0.150	10.9	0.0132	0.69	40.8	1.55	94,680	0.02	0.02	0.077
0009	870	10.0	15.3	8.0		1,023	0.150	12.0	0.0129	0.85	46.6	1.91	109,996	0.02	0.02	0.077
0010	1,070	10.0	16.0	8.9		1,083	0.150	12.9	0.0130	0.99	49.8	1.80	125,794	0.02	0.02	0.077
0011	1,200	10.0	15.3	10.0		1,126	0.150	13.5	0.0132	1.07	50.7	1.53	136,522	0.02	0.02	0.077
0012	2,300	10.0	21.1	12.0		1,306	0.150	17.3	0.0130	1.76	66.3	1.76	202,728	0.02	0.02	0.077
0013	2,550	10.0	22.0	12.5		1,339	0.150	18.0	0.0129	1.90	68.9	1.77	216,117	0.02	0.02	0.077
0014	4,270	10.0	25.1	16.0		1,529	0.150	21.8	0.0131	2.79	82.3	1.57	299,934	0.02	0.02	0.077
0015	4,470	10.0	26.1	16.0		1,543	0.150	22.2	0.0131	2.90	84.1	1.63	307,955	0.02	0.02	0.077
0016	440	10.0	10.0	7.2		877	0.150	9.3	0.0133	0.50	34.5	1.38	73,117	0.02	0.02	0.077
0017	260	10.0	10.0	5.0		749	0.150	7.6	0.0128	0.35	30.0	2.00	51,364	0.02	0.02	0.077
0018	610	10.0	11.5	8.0		951	0.150	10.5	0.0133	0.64	39.1	1.44	89,592	0.02	0.02	0.077
0019	5,080	10.0	28.9	16.0		1,581	0.150	23.3	0.0129	3.21	89.8	1.81	331,144	0.02	0.02	0.077
0020	700	10.0	10.0	10.1		993	0.150	11.0	0.0135	0.70	40.3	1.01	98,495	0.02	0.02	0.077
0021	900	10.0	12.3	10.0		1,056	0.150	12.1	0.0134	0.85	44.5	1.23	114,995	0.02	0.02	0.077
0022	600	10.0	10.0	9.1		954	0.150	10.4	0.0135	0.63	38.1	1.10	89,345	0.02	0.02	0.077
0023	800	10.0	11.2	10.0		1,027	0.150	11.6	0.0135	0.78	42.4	1.12	107,008	0.02	0.02	0.077
0024	1,000	10.0	13.3	10.0		1,082	0.150	12.6	0.0134	0.92	46.6	1.33	122,545	0.02	0.02	0.077
0025	1,200	10.0	15.3	10.0		1,126	0.150	13.5	0.0132	1.07	50.7	1.53	136,522	0.02	0.02	0.077
0026	1,400	10.0	17.4	10.0		1,158	0.150	14.3	0.0130	1.21	54.8	1.74	148,982	0.02	0.02	0.077
0027	2,500	10.0	22.6	12.0		1,327	0.150	17.8	0.0128	1.88	69.2	1.88	212,492	0.02	0.02	0.077
0028	450	10.0	14.0	5.5		842	0.150	9.4	0.0122	0.53	39.0	2.55	70,810	0.02	0.02	0.077
0029	2,950	10.0	25.9	12.0		1,366	0.150	19.0	0.0126	2.16	75.8	2.16	232,829	0.02	0.02	0.077
0030	300	10.0			8.9	700	0.094	8.9	0.0094	0.43	27.8	1.00	55,723	0.02	0.02	0.077
0031	380	10.0	6.5	10.0		840	0.150	8.8	0.0132	0.45	33.0	1.54	66,360	0.02	0.02	0.077
0032	680	10.0	9.9	10.0		986	0.150	10.9	0.0135	0.69	39.9	1.01	96,704	0.02	0.02	0.077
0033	980	10.0	13.1	10.0		1,077	0.150	12.5	0.0134	0.91	46.2	1.31	121,066	0.02	0.02	0.077
0034	600	10.0	9.1	10.0		954	0.150	10.4	0.0135	0.63	38.1	1.10	89,345	0.02	0.02	0.077
0035	1,200	10.0	15.3	10.0		1,126	0.150	13.5	0.0132	1.07	50.7	1.53	136,522	0.02	0.02	0.077
0036	2,480	10.0	22.5	12.0		1,325	0.150	17.8	0.0129	1.87	68.9	1.87	211,543	0.02	0.02	0.077
0037	5,430	10.0	30.5	16.0		1,600	0.150	23.9	0.0128	3.39	93.1	1.91	343,721	0.02	0.02	0.077
0038	570	10.0	10.0	8.7		941	0.150	10.2	0.0134	0.61	37.4	1.15	86,460	0.02	0.02	0.077
0039	770	10.0	10.0	10.9		1,017	0.150	11.4	0.0135	0.76	41.8	1.09	104,506	0.02	0.02	0.077
0040	970	10.0	13.0	10.0		1,075	0.150	12.5	0.0134	0.90	46.0	1.30	120,330	0.02	0.02	0.077
0041	1,380	10.0	24.0	7.6		1,088	0.150	14.2	0.0116	1.27	63.2	3.15	139,153	0.02	0.02	0.077
0042	3,080	10.0	24.0	13.2		1,400	0.150	19.3	0.0129	2.20	74.4	1.82	242,545	0.02	0.02	0.077
0043	400	10.0	10.0	6.8		853	0.150	9.0	0.0132	0.47	33.5	1.48	68,660	0.02	0.02	0.077
0044	250	10.0	8.7	8.7		500	0.046	9.6	0.0046	0.53	34.9	1.00	42,991	0.02	0.02	0.077
0045	1,010	10.0	13.4	10.0		1,084	0.150	12.7	0.0133	0.93	46.8	1.34	123,268	0.02	0.02	0.077
0046	4,090	10.0	28.3	14.0		1,487	0.150	21.5	0.0127	2.75	84.6	2.02	286,917	0.02	0.02	0.077
0047	1,990	10.0	26.0	9.1		1,205	0.150	16.4	0.0119	1.65	70.3	2.84	177,020	0.02	0.02	0.077

Ductulator®

VariTrane™ Duct Designer

Duct ID	Airflow cfm	Length ft	Width in.	Height in.	Diameter in.	Velocity fpm	Friction Rate in H20/100 ft	Circular Equivalent in.	Pressure Drop in. wg	Section Area sq ft	Perimeter in.	Aspect Ratio	Reynolds Number	Altshul Friction Factor	Cole-Brook Friction Factor	Density lb/cu ft
0048	2,120	10.0	20.0	11.9		1,285	0.150	16.8	0.0130	1.65	63.8	1.68	193,285	0.02	0.02	0.077
0049	4,460	10.0	30.4	14.0		1,509	0.150	22.2	0.0125	2.95	88.8	2.17	300,861	0.02	0.02	0.077
0050	660	10.0	9.7	10.0		978	0.150	10.8	0.0135	0.67	39.4	1.03	94,907	0.02	0.02	0.077
0051	760	10.0	10.8	10.0		1,014	0.150	11.4	0.0135	0.75	41.6	1.08	103,653	0.02	0.02	0.077
0052	1,420	10.0	17.6	10.0		1,162	0.150	14.4	0.0130	1.22	55.2	1.76	150,195	0.02	0.02	0.077
0053	2,080	10.0	24.1	10.0		1,241	0.150	16.6	0.0123	1.68	68.3	2.41	185,331	0.02	0.02	0.077
0054	1,780	10.0	26.0	8.5		1,162	0.150	15.7	0.0117	1.53	69.0	3.06	163,636	0.02	0.02	0.077
0055	580	10.0	10.0	8.8		946	0.150	10.3	0.0134	0.61	37.7	1.13	87,430	0.02	0.02	0.077
0056	680	10.0	12.6	8.0		974	0.150	10.9	0.0132	0.70	41.1	1.57	95,508	0.02	0.02	0.077
0057	1,080	10.0	14.1	10.0		1,101	0.150	13.0	0.0133	0.98	48.3	1.41	128,311	0.02	0.02	0.077
0058	440	10.0	12.0	6.2		858	0.150	9.3	0.0128	0.51	36.3	1.95	71,602	0.02	0.02	0.077

Number of Duct Sections Specified: 58

7.1.6 Anexo TUBERIAS DE REFIRGERACION

Refrigerant Line Sizing

Dataset Name: UMAE-01

Refrigerant : R410A
Pipe type : L - Copper Tubing

SUCTION LINE

Size in.	Velocity fpm	PD psig	Minimum[1] Tons
3/8	26,497	4,418.1	
1/2	13,869	847.0	0.3
5/8	8,632	216.8	0.5
3/4	5,780	91.5	0.9
7/8	4,161	38.7	1.3
1 1/8	2,440	10.4	2.6
1 3/8	1,602	3.7	4.3
1 5/8	1,132	1.6	6.7
2 1/8	651	0.2	13.3
2 5/8	422	0.0	22.9

DISCHARGE LINE

Size in.	Velocity fpm	PD psig	Minimum[1] Tons
3/8	9,266	1,593.7	
1/2	4,850	291.4	0.4
5/8	3,019	81.1	0.8
3/4	2,021	32.1	1.3
7/8	1,455	14.2	2.0
1 1/8	853	3.8	3.9
1 3/8	560	1.3	6.6
1 5/8	396	0.5	10.2
2 1/8	228	0.1	20.5

LIQUID LINE

Size in.	Velocity fpm	PD psig	Ref Charge lb of refrig	Subcooling °F
3/8	949	96.0	3	-
1/2	497	23.9	6	8.1
5/8	309	11.3	10	10.4
3/4	207	7.8	14	11.0
7/8	149	7.0	20	11.2
1 1/8	87	6.2	34	11.3
1 3/8	57	6.0	52	11.4
1 5/8	41	6.0	74	11.4
2 1/8	23	5.9	128	11.4

Suction Pressure: 118.47 psig
Saturated Suction: 40.0 °F
Suction Temperature: 48.0 °F
Specific Enthalpy: 123.7 Btu / lbm
Specfic Volume: 0.467 ft³ / lbm
Volumetric Flow Rate: 13.98 cfm
Superheat Temp: 8.0 °F

Condenser Pressure: 446.46 psig
Condensing Temperature: 125.0 °F
Specfic Volume: 0.163 ft³ / lbm
Volumetric Flow Rate: 4.9 cfm
Mass Flow Rate: 1,796.9 lbm / hr
Delta H: 66.8 Btu / lbm
Comp. Superheat Temp: 70.0 °F

Liquid Temperature: 110.0 °F
Specific Enthalpy: 57.0 Btu / lbm
Density: 59.79 lbm / ft³
Volumetric Flow Rate: 3.75 gpm
Specific Gravity: 0.958
Liquid Line Static Head: 0.0 psig
Evap Tonnage: 10.0 tons
Subcooling Temperature: 15.0 °F

Dataset Name: UMAE-02

Refrigerant : R410A
Pipe type : L - Copper Tubing

SUCTION LINE

Size in.	Velocity fpm	PD psig	Minimum[1] Tons
3/8	26,497	4,418.1	
1/2	13,869	847.0	0.3
5/8	8,632	216.8	0.5
3/4	5,780	91.5	0.9
7/8	4,161	38.7	1.3
1 1/8	2,440	10.4	2.6
1 3/8	1,602	3.7	4.3
1 5/8	1,132	1.6	6.7
2 1/8	651	0.2	13.3
2 5/8	422	0.0	22.9

DISCHARGE LINE

Size in.	Velocity fpm	PD psig	Minimum[1] Tons
3/8	9,266	1,593.7	
1/2	4,850	291.4	0.4
5/8	3,019	81.1	0.8
3/4	2,021	32.1	1.3
7/8	1,455	14.2	2.0
1 1/8	853	3.8	3.9
1 3/8	560	1.3	6.6
1 5/8	396	0.5	10.2
2 1/8	228	0.1	20.5

LIQUID LINE

Size in.	Velocity fpm	PD psig	Ref Charge lb of refrig	Subcooling °F
3/8	949	96.0	3	-
1/2	497	23.9	6	8.1
5/8	309	11.3	10	10.4
3/4	207	7.8	14	11.0
7/8	149	7.0	20	11.2
1 1/8	87	6.2	34	11.3
1 3/8	57	6.0	52	11.4
1 5/8	41	6.0	74	11.4
2 1/8	23	5.9	128	11.4

Suction Pressure: 118.47 psig
Saturated Suction: 40.0 °F
Suction Temperature: 48.0 °F
Specific Enthalpy: 123.7 Btu / lbm
Specfic Volume: 0.467 ft³ / lbm
Volumetric Flow Rate: 13.98 cfm
Superheat Temp: 8.0 °F

Condenser Pressure: 446.46 psig
Condensing Temperature: 125.0 °F
Specfic Volume: 0.163 ft³ / lbm
Volumetric Flow Rate: 4.9 cfm
Mass Flow Rate: 1,796.9 lbm / hr
Delta H: 66.8 Btu / lbm
Comp. Superheat Temp: 70.0 °F

Liquid Temperature: 110.0 °F
Specific Enthalpy: 57.0 Btu / lbm
Density: 59.79 lbm / ft³
Volumetric Flow Rate: 3.75 gpm
Specific Gravity: 0.958
Liquid Line Static Head: 0.0 psig
Evap Tonnage: 10.0 tons
Subcooling Temperature: 15.0 °F

Note: Optimum size is highlighted for all three lines
Note: In a heat pump unit the Vapor line is the suction line in cooling and becomes the discharge line in heating.
1 - Minimum refrigerant capacity for oil entrapment up risers
2 - Unrecognized Model Number
- Horiz. and Vert. Drops - Vertical Risers - Horizontal, Drops, and Vertical Risers

7.1.7 Anexo CALENDARIO ELECTRICO

IA INGENIERIA DEL AIRE S.A.S.	**MEMORIA DE CÁLCULOS: CALENDARIO ELECTRICO**	**AG-MC-002**	**VERSIÓN 0**

PROYECTO	P19-46 HOSPITAL SARAVE	**UBICACIÓN**	SARAVENA - ARAUCA	**DISEÑADOR**	Ing Diego Gonzalo Castro

ANOTACIONES		
FECHA	26/06/2019	
REVISION	1	D Castro
ANOTACIONES	Version Inicial	26/06/2019

TABLA DE DATOS

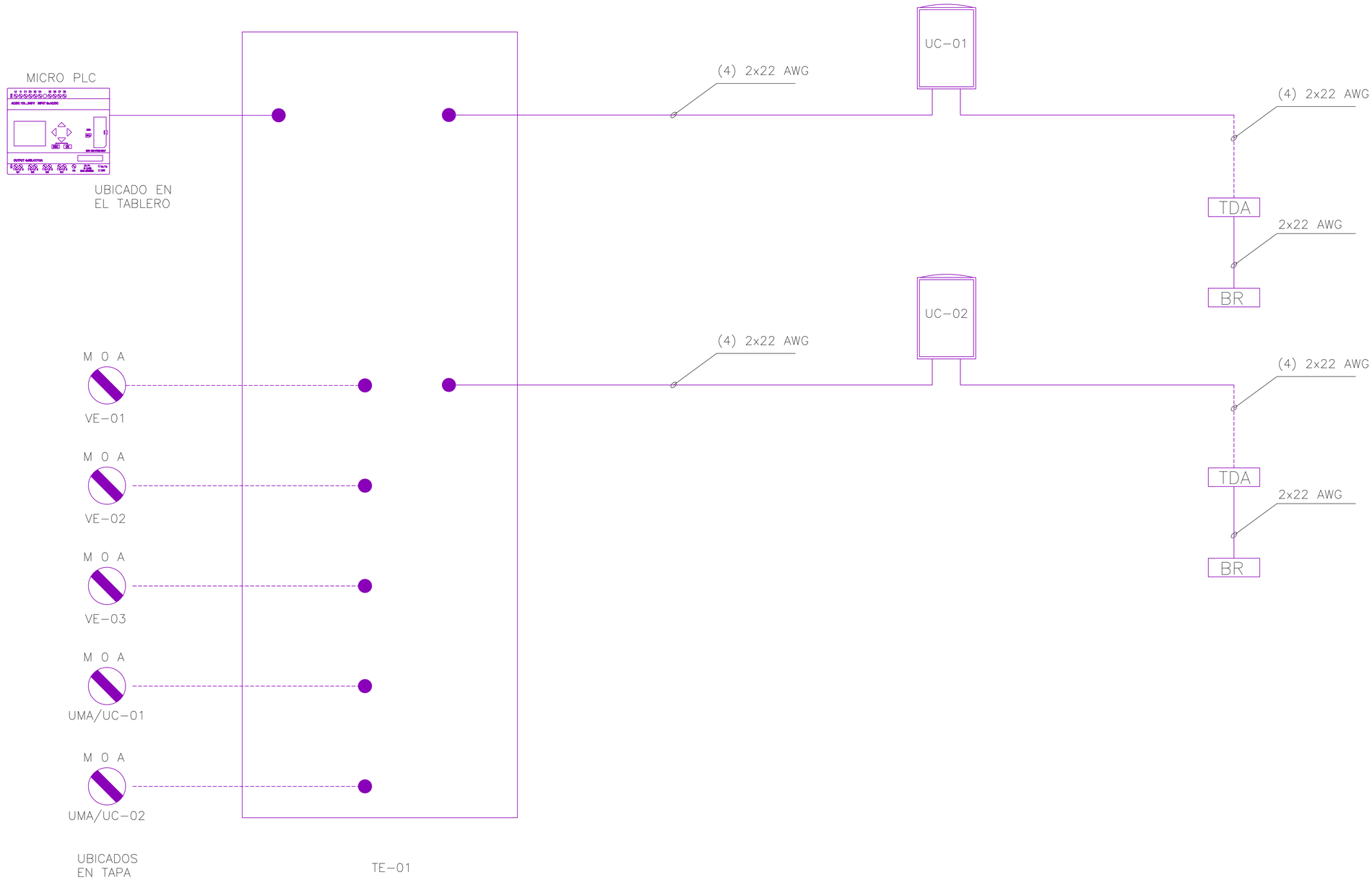
ITEM	UBICACIÓN	EQUIPO	TABLERO	DATOS (V/F/Hz)			DATOS PLACA		POTENCIA (Kwatt)	CONSUMO (A)	BRAKER (A)
UNIDAD MANEJADORA DE AIRE	CUBIERTA	UMAE-01	1	220	3	60	7,5	HP	5,60	24,0	3x30A
UNIDAD MANEJADORA DE AIRE	CUBIERTA	UMAE-02	1	220	3	60	7,5	HP	5,60	24,0	3x30A
UNIDAD PAQUETE	CUBIERTA	UPA-01	1	220	3	60	26	MCA	9,91	26,0	3x30A
UNIDAD CONDENSADORA	CUBIERTA	UC-01	1	220	3	60	98	MCA	37,34	98,0	3x100A
UNIDAD CONDENSADORA	CUBIERTA	UC-02	1	220	3	60	98	MCA	37,34	98,0	3x100A
UNIDAD DE EXTRACCION TIPO HONGO	CUBIERTA	VE-01	1	220	3	60	0,5	HP	0,37	2,4	3x3A
UNIDAD DE EXTRACCION TIPO HONGO	CUBIERTA	VE-02	1	220	3	60	0,25	HP	0,19	2,3	2x3A
UNIDAD DE EXTRACCION TIPO HONGO	CUBIERTA	VE-03	1	220	3	60	0,25	HP	0,19	2,3	2x3A
UNIDAD MINISPLIT	CUBIERTA	UCMPS/UMSP/01	1	220	2	60	1,2	KW	1,20	3,9	2x15A
UNIDAD MINISPLIT	CUBIERTA	UCMPS/UMSP/02	1	220	2	60	1,2	KW	1,20	3,9	2x15A

MCA = MAXIMUN CURRENT AMPACITY
FLA = FULL LOAD AMPACITY
KW = KILO WATT
HP = CABALLOS DE FUERZA

RESUMEN EJECUTIVO

CARGA TOTAL Kw	**98,9**
NUMERO TABLEROS	**1,0**

7.1.8 Anexo SISTEMA DE CONTROL



INGENIERIA DEL AIRE S.A.S.

PROYECTO:

HOSPITAL DE SARARE
SARAVENA

CONTENIDO :

TOPOLOGIA DE RED
FUNCIONES DEL SISTEMA

LOCALIZACION:

SARAVENA

MODIFICACIONES

05/07/2019	VERSION PARA PROGRAMACION

NOTAS

DISEÑO:
Ing Diego Gonzalo Castro G.
CN230-44378

REVISO:

APROBO:

ESCALA :
SIN

VERSION :
R0

FECHA :
JULIO 2019

ARCHIVO :
IA-17-30 TOPOLOGIA DE RED

DIBUJO :
D.C

PLANO :
01

DE :
01

PLANO Nº :
AC-01

7.2.1 Anexo SELECCIÓN DE EQUIPOS

HOSPITAL SARAVENA

Cliente:

SOLER Y PALAU COLOMBIA, S.A. - Autopista Medellín Km 2.7, Parque Industrial Los Nogales - Bodega 10, Cota Cundinamarca (Colombia) / PBX: +57 01 8000 9157270 Móvil: +57 313 2400879 - 3132928853 Tel: +57 743 8021 Ext: 36113 / e-mail: comercial@solerpalau.co

Soler&Palau Ventilation Group

CRVL-T

CRVL-T-16-0,5HP/4-1025RPM-(208-230~3)

Los extractores centrífugos**CR** son una amplia gama de alta eficiencia para montaje en techo.
CRVL-T Extractor centrífugo de montaje en techo, baja Presión, marca S&P, con caudal 1.080 cfm y presión 1,00 Inwg, para aplicaciones de extracción de aire limpio descarga vertical, con transmisión poleas-bandas diseñadas y calculadas acorde a las necesidades requeridas.

Detalles constructivos:

- Fabricado en aluminio rechazado, brinda una apariencia estética, peso ligero y otorga una resistencia contra agentes corrosivos del medio ambiente.
- Los rodetes de álabes rectos atrasados balanceados dinámicamente, están fabricados con aleaciones especiales de aluminio.
- Su diseño aerodinámico, les permite guiar el aire dentro de la estructura del ventilador, sin turbulencia.

Rangos de trabajo:

- Caudal desde 1013 m^3 /hr (596 CFM) hasta 59666m3/hr (35139 CFM).
- Con presión máxima de hasta 47.64 mmca (1.87 inwg).

Aplicaciones: desde uso comercial a industrial, donde se requiere extraer aire limpio.

Proyecto: HOSPITAL SARAVENA (rev. 1 (2)) - Referencia producto: VE-01

Punto requerido

Caudal	1.080 cfm
Presión Estática	1,00 Inwg
Temperatura	20 °C
Altitud	223 m
Densidad	1,18 Kg / m^3
Frecuencia	60 Hz
Tensión	208-230~3

Punto de trabajo

Caudal	1.080 cfm
Presión estática	1,00 Inwg @ 1,18 kg/m^3
Presión dinámica	0,019 Inwg @ 1,18 kg/m^3
Presión total	1,02 Inwg @ 1,18 kg/m^3
Presión estática estándar	1,02 Inwg @ 1,2 kg/m^3
Presión dinámica estándar	0,020 Inwg @ 1,2 kg/m^3
Presión total estándar	1,04 Inwg @ 1,2 kg/m^3
Eficiencia	56
Pot Elect absorbida	0,471 hp
Rend Total	55,9 %
Potencia útil	0,311 Hp @ 1,18 kg/m^3
Potencia útill estándar	0,318 Hp @ 1,2 kg/m^3
Factor de Servicio Req	10
Rend Estático	54,8 %
Velocidad descarga	2,9 m/s
Velocidad aspiración	3,5 m/s
Velocidad ventilador	1025 rpm
Potencia específica	0,79 W/l/s

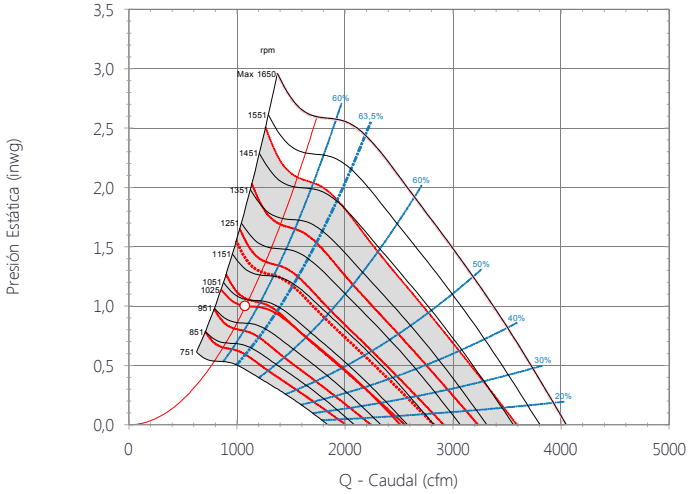
Construcción

Diámetro impulsión	16 mm
Tamaño ventilador	16
Peso	42,18 kg

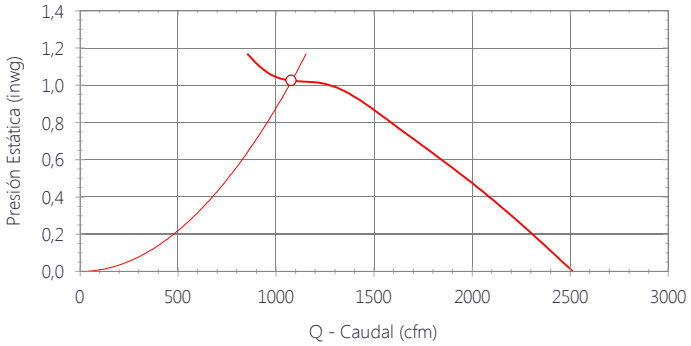
Características del motor

Número de Polos	4
Potencia motor	0,5 Hp
Tensión	3-208-230/460V-60Hz
Intensidad máxima absorbida	1,9 A / 1,0 A
Índice de protección	IP21
Clase motor	B

Curva



Curva (1,204 Kg / m^3)



Características acústicas

	63	125	250	500	1k	2k	4k	8k	Total
Descarga (LwA)	61	73	75	74	73	70	74	65	81
Descarga LpA @ 1,5m	46	58	60	59	58	55	59	50	67

Dimensiones

CRVL-T

CRVL-T-12-0,25HP/4-1300RPM-(208-230~3)

Los extractores centrífugos**CR** son una amplia gama de alta eficiencia para montaje en techo.
CRVL-T Extractor centrífugo de montaje en techo, baja Presión, marca S&P, con caudal 435 cfm y presión 0,978 Inwg, para aplicaciones de extracción de aire limpio descarga vertical, con transmisión poleas-bandas diseñadas y calculadas acorde a las necesidades requeridas.

Detalles constructivos:

- Fabricado en aluminio rechazado, brinda una apariencia estética, peso ligero y otorga una resistencia contra agentes corrosivos del medio ambiente.
- Los rodetes de álabes rectos atrasados balanceados dinámicamente, están fabricados con aleaciones especiales de aluminio.
- Su diseño aerodinámico, les permite guiar el aire dentro de la estructura del ventilador, sin turbulencia.

Rangos de trabajo:

- Caudal desde 1013 m^3 /hr (596 CFM) hasta 59666m3/hr (35139 CFM).
- Con presión máxima de hasta 47.64 mmca (1.87 inwg).

Aplicaciones: desde uso comercial a industrial, donde se requiere extraer aire limpio.

Proyecto: HOSPITAL SARAVENA (rev. 1 (2)) - Referencia producto: VE-02 Y 03

Punto requerido

Caudal	440 cfm
Presión Estática	1,00 Inwg
Temperatura	20 °C
Altitud	223 m
Densidad	1,18 Kg / m^3
Frecuencia	60 Hz
Tensión	208-230~3

Punto de trabajo

Caudal	435 cfm
Presión estática	0,978 Inwg @ 1,18 kg/m^3
Presión dinámica	0,011 Inwg @ 1,18 kg/m^3
Presión total	0,989 Inwg @ 1,18 kg/m^3
Presión estática estándar	1,00 Inwg @ 1,2 kg/m^3
Presión dinámica estándar	0,011 Inwg @ 1,2 kg/m^3
Presión total estándar	1,01 Inwg @ 1,2 kg/m^3
Eficiencia	38
Pot Elect absorbida	0,306 hp
Potencia útil	0,177 Hp @ 1,18 kg/m^3
Potencia útill estándar	0,182 Hp @ 1,2 kg/m^3
Factor de Servicio Req	10
Velocidad descarga	2,1 m/s
Velocidad aspiración	2,4 m/s
Velocidad ventilador	1300 rpm
Potencia específica	0,95 W/l/s

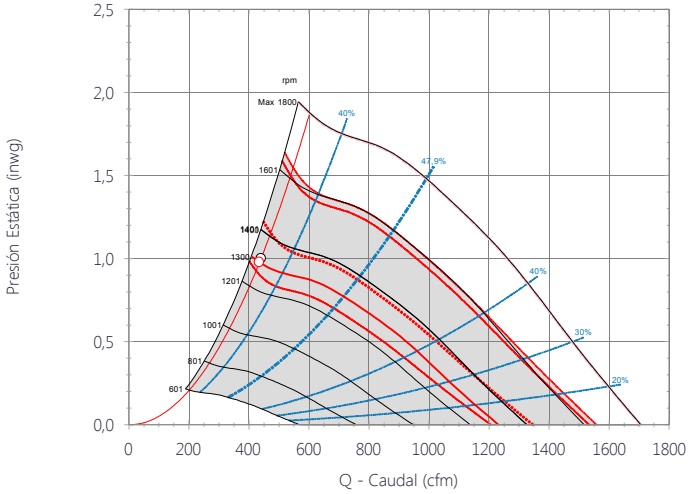
Construcción

Diámetro impulsión	12 mm
Tamaño ventilador	12
Peso	35,82 kg

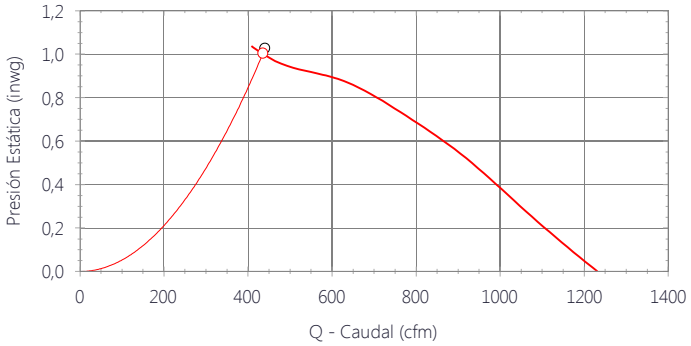
Características del motor

Número de Polos	4
Potencia motor	0,25 Hp
Tensión	3-208-230/460V-60Hz
Intensidad máxima absorbida	1,1 A / 0,6 A
Índice de protección	IP21
Clase motor	B

Curva



Curva (1,204 Kg / m^3)



Características acústicas

	63	125	250	500	1k	2k	4k	8k	Total
Descarga (LwA)	48	61	63	64	63	60	64	53	71
Descarga LpA @ 1,5m	33	46	48	49	48	45	49	38	56

Dimensiones