CLIMATEWORX
MISSION CRITICAL CLIMATE CONTROL

Series 8, Vertical Floor-Mount Units

Technical Data– 60 Hz

ClimateWorx International Inc.
14 Chelsea Lane, Brampton, Ontario, Canada L6T 3Y4

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Air-cooled System

Model no. 8AU_ _ /8AD_ _		**6**	**7**	**8**	**10**
Cooling Capacity *- Rated at standard air volume,95oF ambient temperature*					
75°F (24°C) DB, 50%rh					
Net Total	BTUH	65107	71349	99168	110009
Net Sensible	BTUH	61102	71050	96991	109062
THR	BTUH	83059	95941	132148	148484
75°F (24°C) DB, 45%rh					
Net Total	BTUH	64144	70431	97493	108027
Net Sensible	BTUH	64079	67814	97233	107910
THR	BTUH	82001	94870	130311	146268
72°F (22°C) DB, 50%rh					
Net Total	BTUH	61676	67987	94632	104780
Net Sensible	BTUH	60644	67732	94002	104309
THR	BTUH	79421	92292	127272	142835
72°F (22°C) DB, 45%rh					
Net Total	BTUH	60798	67196	93197	102958
Net Sensible	BTUH	60737	67196	93152	102958
THR	BTUH	78454	91359	125581	140794
68°F (20°C) DB, 50%rh					
Net Total	BTUH	57223	63639	88723	98023
Net Sensible	BTUH	57088	63525	88126	97598
THR	BTUH	74704	87570	120921	135540
68°F (20°C) DB, 45%rh					
Net Total	BTUH	56440	63134	87329	96372
Net Sensible	BTUH	56433	63134	83670	92515
THR	BTUH	73840	86948	119386	133685
Fan Section *- Two belts, variable pitch, single shaft centrifugal blower system*					
Standard Air Volume	CFM	3400	4800	5200	6000
External Static Pressure	in-H_2O	0.3	0.3	0.3	0.3
Quantity of Fans		1	1	1	1
Total Fan Motor Power	HP	1	2	3	5
Absorbed Power	HP	0.87	1.96	2.64	3.78
Compressor *- Refrigerant R407C*					
Quantity of Compressors		1	1	1	1
Type		Scroll	Scroll	Scroll	Scroll

Air-cooled System - (continued)

Model no. 8AU_ _ /8AD_ _		**6**	**7**	**8**	**10**
Evaporator Coil - Copper tube / aluminium fin - Stainless steel drain pan					
Face Area	ft²	13.42	13.42	13.42	13.42
Rows Deep		3	3	4	4
Fins per inch		14	14	14	14
Face Velocity	FPM	253	358	387	447
Refrigerant Charge	Lbs	7.7	7.7	10.3	10.4
Reheat Section					
Electric Reheat [1] - Single stage, finned tubular type heater, SCR Controlled					
Capacity	kW	6	6	6	6
Quantity of Heaters		3	3	3	3
Humidifier - Electrode boiler type, Serviceable Bottle					
Steam Generation Capacity	lb/hr	20	20	20	20
Humidifier Power	kW	6.8	6.8	6.8	6.8
Filter Section - Pleated disposable type					
Upflow models					
Quantity of Filters		3	3	3	3
Nominal Size	in	20x25x4	20x25x4	20x25x4	20x25x4
Downflow models					
Quantity of Filters		4	4	4	4
Nominal Size	in	16x25x4	16x25x4	16x25x4	16x25x4
Piping Connection Size					
Liquid Line	- ODM -in	1/2	1/2	5/8	5/8
Hot Gas Line	- ODM -in	7/8	7/8	1-1/8	1-1/8
Humidifier Water	- ODM -in	1/4	1/4	1/4	1/4
Condensate Drain	- ODM -in	3/4	3/4	3/4	3/4
Physical Details – Indoor unit - (Please see Appendix A for details)					
Width x Depth x Height	in		54 x 34 x 74		
Weight	lb	925	925	990	990
Matching Air-Cooled Condenser – Selected at 95° F Ambient					
Model		KS11-097-1	KS11-097-1	KS12-128-1	KS12-154-1
Width x Depth x Height	in	51 x 30 x 54	51 x 30 x 54	68 x 30 x 54	68 x 30 x 54
Weight	lbs	217	217	274	289

[1] Standard options

Water-cooled System

Model no. 8WU_ _ /8WD_ _		**6**	**7**	**8**	**10**
Cooling Capacity ***- Rated at standard air volume,95F ambient temperature***					
75°F (24°C) DB, 50%rh					
Net Total	BTUH	66374	74392	104022	114065
Net Sensible	BTUH	61371	74096	96973	108739
THR	BTUH	83564	97231	134378	150443
75°F (24°C) DB, 45%rh					
Net Total	BTUH	65307	73249	102115	111875
Net Sensible	BTUH	65243	73249	101967	111875
THR	BTUH	82467	96078	132436	148118
72°F (22°C) DB, 50%rh					
Net Total	BTUH	62549	70503	98758	108103
Net Sensible	BTUH	60798	70214	96666	108083
THR	BTUH	79755	93307	129110	144396
72°F (22°C) DB, 45%rh					
Net Total	BTUH	61586	69472	97026	106115
Net Sensible	BTUH	61513	66796	96897	106096
THR	BTUH	78762	92266	127342	142276
68°F (20°C) DB, 50%rh					
Net Total	BTUH	57629	65535	92028	100478
Net Sensible	BTUH	57486	65352	91727	100272
THR	BTUH	74857	88288	122373	136662
68°F (20°C) DB, 45%rh					
Net Total	BTUH	56770	64750	90462	98697
Net Sensible	BTUH	56755	64750	90462	98697
THR	BTUH	73968	87494	120770	134751
Fan Section ***- Two belts, variable pitch, single shaft centrifugal blower system***					
Standard Air Volume	CFM	3400	4800	5200	6000
External Static Pressure	in-H_2O	0.3	0.3	0.3	0.3
Quantity of Fans		1	1	1	1
Total Fan Motor Power	HP	1	2	3	5
Absorbed Power	HP	0.87	1.96	2.64	3.78
Compressor ***- Refrigerant R407C***					
Quantity of Compressors		1	1	1	1
Type		Scroll	Scroll	Scroll	Scroll

Water-cooled System *- (continued)*

Model no. 8WU_ _ /8WD_ _			**6**	**7**	**8**	**10**
Evaporator Coil ***- Copper tube / aluminium fin - Stainless steel drain pan***						
Face Area		ft²	13.42	13.42	13.42	13.42
Rows Deep			3	3	4	4
Fins per inch			14	14	14	14
Face Velocity		FPM	253	358	387	447
Reheat Section						
Electric Reheat [1] - Single stage, finned tubular type heater, SCR Controlled						
Capacity		kW	6	6	6	6
Quantity of Heaters			3	3	3	3
Humidifier ***- Electrode boiler type, Serviceable Bottle***						
Steam Generation Capacity		lb/hr	20	20	20	20
Humidifier Power		kW	6.8	6.8	6.8	6.8
Filter Section ***- Pleated disposable type***						
Upflow models						
Quantity of Filters			3	3	3	3
Nominal Size	LxWxD	in	20x25x4	20x25x4	20x25x4	20x25x4
Downflow models						
Quantity of Filters			4	4	4	4
Nominal Size	LxWxD	in	16x25x4	16x25x4	16x25x4	16x25x4
Condensing Water Requirement						
75°F EWT						
Flow Rate		GPM	6.0	5.9	8.2	9.5
Unit Pressure Drop		ft-H_2O	5.2	4.0	4.8	6.0
85°F EWT						
Flow Rate		GPM	8.4	10.3	14.3	16.8
Unit Pressure Drop		ft-H_2O	9.1	9.7	11.5	15.1
Water Regulating Valve ***- 2-way, head pressure controlled***						
Size		in	3/4	1	1	1
Model no. 8WU_ _ /8WD_ _			**6**	**7**	**8**	**10**
Piping Connection Size						
Liquid Line		- ODM -in	1/2	1/2	5/8	5/8
Hot Gas Line		- ODM -in	7/8	7/8	1-1/8	1-1/8
Humidifier Water		- ODM -in	1/4	1/4	1/4	1/4
Condensate Drain		- ODM -in	3/4	3/4	3/4	3/4
Condensing Water		- ODM -in	1 1/8	1 1/8	1-1/8	1-1/8
Physical Details ***- (Please see Appendix A for details)***						
Width x Depth x Height		in		54 x 34 x 74		
Weight		lbs	980	980	1045	1045

[1] Standard options

Glycol-cooled System

Model no. 8GU_ _ /8GD_ _		**6**	**7**	**8**	**10**
Cooling Capacity ***- Rated at standard air volume,95F ambient temperature***					
75°F (24°C) DB, 50%rh					
Net Total	BTUH	60975	68142	95306	104684
Net Sensible	BTUH	60359	67870	94162	103637
THR	BTUH	81589	94609	130387	145982
75°F (24°C) DB, 45%rh					
Net Total	BTUH	59929	67237	93474	102475
Net Sensible	BTUH	59864	67237	93408	102475
THR	BTUH	80516	93661	128457	143675
72°F (22°C) DB, 50%rh					
Net Total	BTUH	57291	64468	90249	98969
Net Sensible	BTUH	57160	64300	89270	98124
THR	BTUH	77931	90900	125341	140226
72°F (22°C) DB, 45%rh					
Net Total	BTUH	56344	63855	88524	97009
Net Sensible	BTUH	56329	63855	86630	97009
THR	BTUH	76958	90245	123584	138134
68°F (20°C) DB, 50%rh					
Net Total	BTUH	52556	59767	83754	91725
Net Sensible	BTUH	52423	59767	83176	91370
THR	BTUH	73202	86144	118856	132846
68°F (20°C) DB, 45%rh					
Net Total	BTUH	51693	59480	82532	90421
Net Sensible	BTUH	50790	59480	82532	90421
THR	BTUH	72347	85818	117602	131487
Fan Section ***- Two belts, variable pitch, single shaft centrifugal blower system***					
Standard Air Volume	CFM	3400	4800	5200	6000
Static Pressure	in-H_2O	0.3	0.3	0.3	0.3
Quantity of Fans		1	1	1	1
Total Fan Motor Power	HP	1	2	3	5
Absorbed Power	HP	0.87	1.96	2.64	3.78
Compressor ***- Refrigerant R407C***					
Quantity of Compressors		1	1	1	1
Type		Scroll	Scroll	Scroll	Scroll

Glycol-cooled System - *(continued)*

Model no. 8GU_ _ /8GD_ _			**6**	**7**	**8**	**10**
Evaporator Coil ***- Copper tube / aluminium fin - Stainless steel drain pan***						
Face Area		ft²	13.42	13.42	13.42	13.42
Rows Deep			3	3	4	4
Fins per inch			14	14	14	14
Face Velocity		FPM	253	358	387	447
Reheat Section						
Electric Reheat [1] ***- Single stage, finned tubular type heater, SCR Controlled***						
Capacity		kW	6	6	6	6
Quantity of Heaters			3	3	3	3
Humidifier ***- Electrode boiler type, Serviceable Bottle***						
Steam Generation Capacity		lb/hr	20	20	20	20
Humidifier Power		kW	6.8	6.8	6.8	6.8
Filter Section ***- Pleated disposable type***						
Upflow models						
Quantity of Filters			3	3	3	3
Nominal Size	LxWxD	in	20x25x4	20x25x4	20x25x4	20x25x4
Downflow models						
Quantity of Filters			4	4	4	4
Nominal Size	LxWxD	in	16x25x4	16x25x4	16x25x4	16x25x4
Glycol Solution Requirement						
95°F EGT						
Flow Rate		GPM	5.9	6.6	8.9	10.3
Unit Pressure Drop		ft-H_2O	2.7	2.7	1.9	1.7
105°F EGT						
Flow Rate		GPM	11.1	13.7	16.7	19.7
Unit Pressure Drop		ft-H_2O	6.6	9.1	4.3	4.5
Glycol Solution Regulating Valve ***- 2-way, head pressure controlled***						
Size		in	1	1	1-1/4	1-1/2
Model no. 8GU_ _ /8GD_ _			**6**	**7**	**8**	**10**
Piping Connection Size						
Liquid Line		- OD -in	1/2	1/2	5/8	5/8
Hot Gas Line		- OD -in	7/8	7/8	1-1/8	1-1/8
Humidifier Water		- OD -in	1/4	1/4	1/4	1/4
Condensate Drain		- OD -in	3/4	3/4	3/4	3/4
Glycol Solution		- OD -in	1 1/8	1 1/8	1-3/8	1-3/8
Physical Details ***- (Please see Appendix A for details)***						
Width x Depth x Height		in		54 x 34 x 74		
Weight		lbs	980	980	1045	1045

[1] Standard options

Chilled-Water System

Model no. 8CU_ _ /8CD_ _		**6**	**7**	**8**	**10**
Cooling Capacity *- Rated at standard air volume, 45F entering water & 10F temperature rise*					
80°F (26°C) DB, 50%rh					
Net Total	BTUH	102125	130269	168655	184410
Net Sensible	BTUH	73560	95534	117197	129379
Flow Rate	GPM	20.9	27.1	35.1	38.8
Unit Pressure Drop	ft-H_2O	13.8	22.7	43.9	28.2
80°F (26°C) DB, 45%rh					
Net Total	BTUH	91630	117399	152272	166720
Net Sensible	BTUH	75238	98406	119935	132920
Flow Rate	GPM	18.8	24.5	31.8	35.2
Unit Pressure Drop	ft-H_2O	6.1	9.8	21.4	20.7
75°F (24°C) DB, 50%rh					
Net Total	BTUH	71211	91413	121226	133134
Net Sensible	BTUH	61919	80978	99410	110261
Flow Rate	GPM	14.7	19.3	25.6	28.6
Unit Pressure Drop	ft-H_2O	7.1	11.9	24.2	16.2
75°F (24°C) DB, 45%rh					
Net Total	BTUH	66141	85530	111446	122921
Net Sensible	BTUH	65077	85530	103760	115684
Flow Rate	GPM	13.7	18.2	23.6	26.5
Unit Pressure Drop	ft-H_2O	6.2	10.6	20.8	14.1
72°F (22°C) DB, 50%rh					
Net Total	BTUH	56255	72921	96994	106653
Net Sensible	BTUH	55777	72921	89546	99534
Flow Rate	GPM	11.7	15.6	20.7	23.2
Unit Pressure Drop	ft-H_2O	4.6	7.9	16.3	11.2
72°F (22°C) DB, 45%rh					
Net Total	BTUH	54574	71121	92182	101697
Net Sensible	BTUH	54574	71121	92182	101697
Flow Rate	GPM	11.4	15.3	19.8	22.2
Unit Pressure Drop	ft-H_2O	4.3	7.6	14.8	10.3
Fan Section *- Two belts, variable pitch, single shaft centrifugal blower system*					
Standard Air Volume	CFM	3400	4800	5200	6000
External Static Pressure	in-H_2O	0.3	0.3	0.3	0.3
Quantity of Fans		1	1	1	1
Total Fan Motor Power	HP	1	2	3	5
Absorbed Power	HP	0.87	1.96	2.64	3.78

Chilled-Water System - *(continued)*

Model no. 8CU_ _ /8CD_ _			**6**	**7**	**8**	**10**
Chilled-water Coil ***- Copper tube / aluminium fin - Stainless steel drain pan***						
Face Area		ft²	13.42	13.42	13.42	13.42
Rows Deep			3	3	4	4
Fins per inch			14	14	14	14
Face Velocity		FPM	253	358	387	447
Reheat Section						
Electric Reheat [1] ***- Single stage, finned tubular type heater, SCR Controlled***						
Capacity		kW	6	6	6	6
Quantity of Heaters			3	3	3	3
Humidifier ***- Electrode boiler type, Serviceable Bottle***						
Steam Generation Capacity		lb/hr	20	20	20	20
Humidifier Power		kW	6.8	6.8	6.8	6.8
Filter Section ***- Pleated disposable type***						
Upflow models						
Quantity of Filters			3	3	3	3
Nominal Size	LxWxD	in	20x25x4	20x25x4	20x25x4	20x25x4
Downflow models						
Quantity of Filters			4	4	4	4
Nominal Size	LxWxD	in	16x25x4	16x25x4	16x25x4	16x25x4
Chilled-water Valve ***- 2-Way modulating***						
Valve Size		in	1	1	1	1-1/2
Piping Connection Size						
Chilled-water		- OD -in	1-1/8	1-1/8	1-1/8	1-5/8
Humidifier Water		- OD -in	1/4	1/4	1/4	1/4
Condensate Drain		- OD -in	3/4	3/4	3/4	3/4
Physical Details - ***(Please see Appendix A for details)***						
Width x Depth x Height		in		54 x 34 x 74		
Weight		lbs	825	825	860	860

[1] Standard options

Electrical Data

*Air/Water/Glycol Cooled Systems*** -208V/3Ph/60Hz

Model	**8__06**			**8__07**			**8__08**			**8__10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	41.7	50.4	60	44.6	53.3	60	57.1	68.4	90	63.4	75.0	100
Electric (6kW)/None	39.5	47.7	60	42.4	50.6	60	54.9	65.6	90	61.2	72.2	90
Electric (12kW)/Boiler	56.1	68.5	70	59.0	71.4	80	71.5	86.4	100	77.8	93.1	110
Electric (12kW)/None	56.1	68.5	70	59.0	71.4	80	71.5	86.4	100	77.8	93.1	110
None, Non-electric/Boiler	41.7	50.4	60	44.6	53.3	60	57.1	68.4	90	63.4	75.0	100
None, Non-electric/None	22.8	26.9	45	25.7	29.8	45	38.2	44.8	70	44.5	51.4	80

Chilled Water Systems

Model	**8CU/CD06**			**8CU/CD/07**			**8CU/CD08**			**8CU/CD10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	39.7	44.7	50	42.6	48.4	60	44.9	51.2	60	49.9	57.5	70
Electric (6kW)/None	20.9	25.3	30	23.8	28.9	35	26.1	31.8	35	31.1	38.1	45
Electric (12kW)/Boiler	56.4	65.0	80	59.3	68.6	80	61.6	71.5	80	66.6	77.8	90
Electric (12kW)/None	37.5	46.1	50	40.4	49.8	60	42.7	52.6	60	47.7	58.9	70
None, Non-electric/Boiler	23.1	28.1	35	26.0	31.7	35	28.3	34.6	40	33.3	40.8	50
None, Non-electric/None	4.2	4.5	15	7.1	8.1	15	9.4	11.0	20	14.4	17.3	20

** Above FLA does not include air-cooled condenser and condensate pump amps.

- FLA is based on full load current of individual components that result in maximum electrical load condition during unit normal operation.
- FLA = Full Load Amps MCA = Minimum Circuit Ampacity MFS = Maximum Fuse Size

Electrical Data –(continued)

*Air/Water/Glycol Cooled Systems ** 460V/3Ph/60Hz*

Model	**8__06**			**8__07**			**8__08**			**8__10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	19.3	23.5	30	20.8	24.9	30	27.5	33.0	45	30.6	36.3	45
Electric (6kW)/None	18.4	22.3	25	19.8	23.6	30	26.5	31.8	40	29.6	35.0	45
Electric (12kW)/Boiler	25.9	31.7	35	27.3	33.0	35	34.0	41.2	50	37.1	44.5	50
Electric (12kW)/None	25.9	31.7	35	27.3	33.0	35	34.0	41.2	50	37.1	44.5	50
None, Non-electric/Boiler	19.4	23.5	30	20.8	24.9	30	27.5	33.0	45	30.6	36.3	45
None, Non-electric/None	10.9	12.1	20	12.2	14.2	20	19.0	22.4	35	22.0	25.6	40

Chilled Water Systems

Model	**8CU/CD06**			**8CU/CD/07**			**8CU/CD08**			**8CU/CD10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	17.9	20.2	25	19.3	21.9	25	20.3	23.2	25	22.6	26.0	30
Electric (6kW)/None	9.4	11.4	15	10.8	13.1	15	11.8	14.4	15	14.1	17.2	20
Electric (12kW)/Boiler	25.5	29.4	35	26.8	31.0	35	27.9	32.4	40	30.1	35.2	40
Electric (12kW)/None	16.9	20.8	25	18.3	22.5	25	19.3	23.8	25	21.6	26.6	30
None, Non-electric/Boiler	10.4	12.7	15	11.8	14.4	15	12.8	15.7	20	15.1	18.5	20
None, Non-electric/None	1.9	2.0	15	3.2	3.7	15	4.3	5.0	15	6.5	7.8	15

** Above FLA does not include air-cooled condenser and condensate pump amps.

- FLA is based on full load current of individual components that result in maximum electrical load condition during unit normal operation.
- FLA = Full Load Amps MCA = Minimum Circuit Ampacity MFS = Maximum Fuse Size

Electrical Data –(continued)

*Air/Water/Glycol Cooled Systems ** 575V/3Ph/60Hz*

Model	**8__06**			**8__07**			**8__08**			**8__10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	14.9	18.1	20	16.8	20.1	25	21.0	25.2	30	24.1	28.7	35
Electric (6kW)/None	14.1	17.1	20	16.0	19.1	25	20.2	24.2	30	23.3	27.7	35
Electric (12kW)/Boiler	20.2	24.6	30	22.0	26.7	30	26.3	31.8	35	29.4	35.2	40
Electric (12kW)/None	20.2	24.6	30	22.0	26.7	30	26.3	31.8	35	29.4	35.2	40
None, Non-electric/Boiler	14.9	18.1	20	16.8	20.1	25	21.0	25.2	30	24.1	28.7	35
None, Non-electric/None	8.1	9.6	15	10.0	11.6	15	14.2	16.7	25	17.3	20.1	30

Chilled Water Systems

Model	**8CU/CD06**			**8CU/CD/07**			**8CU/CD08**			**8CU/CD10**		
Reheat/Humidifier Option	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Electric (6kW)/Boiler	14.4	16.2	20	15.4	17.5	20	16.3	18.6	20	18.1	20.8	25
Electric (6kW)/None	7.5	9.2	15	8.6	10.5	15	9.4	11.5	15	11.2	13.8	15
Electric (12kW)/Boiler	20.4	23.5	25	21.4	24.8	30	22.3	25.9	30	24.1	28.1	35
Electric (12kW)/None	13.6	16.7	20	14.6	18.0	20	15.5	19.1	20	17.3	21.3	25
None, Non-electric/Boiler	8.3	10.2	15	9.4	11.5	15	10.2	12.5	15	12.0	14.8	15
None, Non-electric/None	1.5	1.6	15	2.6	2.9	15	3.4	4.0	15	5.2	6.3	15

** Above FLA does not include air-cooled condenser and condensate pump amps.

- FLA is based on full load current of individual components that result in maximum electrical load condition during unit normal operation.
- FLA = Full Load Amps MCA = Minimum Circuit Ampacity MFS = Maximum Fuse Size

1. General

1.1 The intelligent precision air-conditioning system shall be a **ClimateWorx Series 8** model _____ .

1.2 The unit shall be designed specifically for telecommunication, computer and critical equipment room environmental control with automatic monitoring and control of cooling, heating, humidifying, dehumidifying and air filtration functions.

1.3 The unit shall be self-contained, factory assembled and tested, arranged for (downflow) / (upflow) air delivery.

1.4 The system shall have a total cooling capacity of _____ kW(Btu/h) and a sensible cooling capacity of _____ kW(Btu/h) rated at an entering air temperature of ___°C (___°F) dry bulb and ___% relative humidity.

1.5 The system shall be designed to operate on a _____ V _____ ph _____ Hz electricity supply.

2. Mechanical Parts
2.1 Housing

2.1.1 The housing of the unit shall be constructed based on a frame and panel principle with removable panels for maximum service access.

2.1.2 The housing shall be a modular design, which allows multiple units to be installed side by side.

2.1.3 All components shall be accessible through the front panels. **(Standard Units ONLY).**

2.1.4 All panels shall be formed and welded from 18 gauge steel and insulated with 25mm (1") thick, 24kg/m³ (1.5 lb/ft^3) density fiber-glass insulation.

2.1.5 Service panels shall be hinged and locked with ¼-turn captive fasteners to facilitate quick and easy access.

2.1.6 The entire unit shall be finished with epoxy powder paint to ensure proper surface adhesion. The panel colour shall be ClimateWorx standard off-white.

2.2 Blower and Motor

2.2.1 The unit shall have a double inlet, double width, forward curve, centrifugal type blower operating at a speed below 950 rpm to deliver _____ m³/h (cfm) of air at 75 Pa (0.3" w.g.) external static pressure.

2.2.2 The blower shall be statically and dynamically balanced.

2.2.3 All parts of the fan shall be painted, galvanized or corrosion treated.

2.2.4 The fan bearings shall have a minimum life span of 100,000 hours.

2.2.5 The fan shall be belt driven by dual drive belts that are sized for minimum 200% of the motor horsepower.

2.2.6 The speed of the fan shall be adjustable by means of a variable pitch motor pulley.

2.2.7 The fan motor shall be totally enclosed fan cooled type having class F insulation, IP55 standard.

2.3 Filter

2.3.1 The filter chamber shall be an integral part of the system, located at the entrance of return air path and should be serviceable from the top of the unit for downflow configuration and from the front for upflow configuration.

2.3.2 The filters shall be standard capacity, 100mm (4") deep, pleated type having 25-30% efficiency, >95% arrestance to ASHRAE 52.1 **(MERV 8)**.

2.3.3 The filters shall be listed by Underwriters' Laboratories as class 2.

2.3.4 The filter chamber shall have the provision to house 152mm (6") high efficiency filters.

2.4 Heater

2.4.1 Electric resistance heaters shall be provided to offset the sensible cooling effect brought about during dehumidification mode.

2.4.2 The electric heaters shall be controlled via a Silicon Controlled Rectifier (SCR), with an extruded aluminum heat sink to prevent room temperature gradient from exceeding 1.5°C (2.7°F) in 10 minutes.

2.4.3 The heating element shall have a total heating capacity of _____ kW (Btu/h).

2.4.4 The heating element shall be of low density, tubular finned construction with a non-corrosive metal sheath.

2.4.5 The heating element shall be electrically and thermally protected.

2.5 Humidifier

2.5.1 The humidifier shall be a self-contained electrode boiler type complete with water level control and auto-drain functions.

2.5.2 The humidifier shall have a steam generation capacity of _____ kg/h (lbs/h).

2.5.3 The humidifier shall be designed to operate on ordinary tap water and shall be equipped with automatic water supply and flushing system to reduce mineral precipitation.

2.5.4 The humidifier shall have an Auto-Adaptive control system to optimize water conductivity, control automatic drain/flush cycles, minimize energy waste and maximize cylinder life.

3. Refrigeration Parts- DX Systems

3.1 Refrigeration System

3.1.1 The refrigeration circuit shall be available for operation on non-ozone depleting R407C refrigerant.

3.1.2 The refrigeration circuit shall have the following components:

- **Thermal expansion valve with external equalizer**
- **Refrigerant distributor**
- **Liquid line solenoid valve**
- **Liquid line sight glass**
- **Access valve**
- **Liquid line filter-drier**
- **Liquid line shut-off valve**
- **Low pressure cut-out switch**
- **High pressure cut-out switch**

3.1.3 The refrigeration circuit shall be pre-piped and leak tested ready for field connection.

3.1.4 All refrigerant piping shall be of type L copper pipe.

3.1.5 All units shall be factory run tested using refrigerant to verify operation prior to shipping.

3.2 Compressor

3.2.1 The compressor shall be of the scroll type. Compressor casing shall have no gaskets or seals to eliminate the possibility of refrigerant or oil leakage into the facilities.

3.2.2 The compressor shall be equipped with the following items:

- **Suction rotolock valve**
- **Discharge rotolock valve**
- **Gauge ports**
- **Internal thermal overload**
- **Vibration isolators**

3.2.3 Compressor positive start feature shall be provided to avoid compressor short cycling and low pressure lockout during winter start-up.

3.3 Direct Expansion Evaporator Coil

3.3.1 The coil shall be of 3/8” OD copper tubes expanded into aluminium fins.

3.3.2 The coil shall have a face area _____ m^2 (ft^2) and _____ rows deep in the direction of the airflow and have a maximum face velocity of _____ m/s (fpm).

3.3.3 A stainless steel corrosion free condensate drain pan shall be provided under the coil.

3.4 Air-Cooled Condenser (Air-Cooled System only)

3.4.1 The air-cooled condenser shall be low-profile and the cabinet will be constructed of heavy gauge galvanized steel.

3.4.2 The condenser shall be factory matched for _____ °C (°F) ambient.

3.4.3 The condenser shall be constructed of aluminum fins and copper tubes staggered in direction of airflow and arranged for vertical / horizontal air discharge.

3.4.4 The winter control system for the air cooled condenser shall be variable speed control / refrigerant head pressure control.

3.4.5 The winter control system shall utilize **ORI and ORD head pressure control (HPC) valves** to flood the condenser. This system shall include a receiver which is factory piped, heat traced, insulated and adequately sized to hold the charge of the condenser and the indoor unit.

3.4.6 The air cooled condenser shall be suitable for _____ V _____ ph _____ Hz power supply.

3.5 Water-Cooled Condenser (*Water/Glycol-Cooled system)*

3.5.1 The water/glycol-cooled condensers shall be unit mounted and piped.

3.5.2 Each condenser shall be completed with the following items:

- **Two-way pressure actuated water regulating valve. (Three-way optional)**
- **Receiver**

3.5.3 The unit shall require _____ l/s (US gpm) of 29.4°C (85°F) condensing water and have a maximum pressure drop of _____ kPa (psi).

3.6 Glycol Cooler *(Glycol-Cooled System only)*

3.6.1 The glycol cooler shall be low-profile, constructed of heavy gauge galvanized steel.

3.6.2 The glycol cooler shall be factory matched for _____ °C (°F) ambient.

3.6.3 The cooler shall be constructed of copper tubes expanded into aluminum fins and pressure tested to 425 psi.

3.6.4 The fan motor shall be drip-proof with permanently lubricated ball bearings and inherent overload protection.

3.6.5 The cooler shall be suitable for _____ V _____ ph _____ Hz power supply.

4. Mechanical Parts *- (Chilled-water system)*

4.1 Chilled-water valve

4.1.1 The chilled-water valve shall be a two-way modulating valve with pressure rating of _____kPa (psi) (Three way valve Optional).
4.1.2 The valve actuator shall be of an electric type with a totally enclosed dust and water proof enclosure.

4.1.3 The valve actuator shall have a manual operation facility and position indicator.

4.2 Cooling Coil

4.2.1 The coil shall be of 3/8" OD copper tubes expanded into aluminum fins.

4.2.2 The coil shall have a face area of _____ m^2 (ft^2) and _____ rows deep in the direction of the airflow and have a maximum face velocity of _____ m/s (fpm).

4.2.3 A stainless steel corrosion free condensate drain pan shall be provided under the coil.

4.2.4 The coil shall require _____ l/s (US gpm) of 7.2°C (45°F) chilled-water and the pressure drop across the coil shall not exceed _____ kPa (psi).

4.3 Dual Cooling – Optional – Consult Factory

4.3.1 Dual cooling unit shall consist of a chilled-water cooling coil as in 4.2.1 with the DX coil as in section 3.3.

4.3.2 Dual cooling shall automatically switch between the chilled water circuit and the DX circuit when commanded by remote chiller interlock.

4.3.3 Dual cooling units are available with any regular condenser option as detailed in section 3.4, 3.5 and 3.6.

5. Control System

5.1 System

5.1.1 The unit shall have a microprocessor based control system with automatic control and monitoring capability.

5.1.2 The control system shall use Proportional + Integral + Derivative (PID) control algorithm to maintain the temperature and humidity to a close tolerance of ±0.5°C (0.9°F) and 3%RH.

5.1.3 The control system shall have a fascia with 240x128 dot resolution touch screen graphical LCD display located on the front panel of the unit for the display and programming functions.

5.1.4 The control system shall display simultaneously the following information:

- **Room temperature in °C/°F**
- **Room humidity in %RH**
- **Unit no.**
- **On/Off mode indicator**
- **Operating status**
- **Active alarms**
- **Date & time**

5.1.5 System configuration and setting shall be stored in non-volatile memory and safeguarded in the event of power failure.

5.1.6 The system shall have at least three levels of programmable password access to prevent unauthorized changes of the system configuration and settings.

5.1.7 The control system shall have a built-in testing routine to simplify field testing and troubleshooting.

5.1.8 The system shall be capable of communicating with a Building Management System (BMS) via an RS485 serial link through a BMS Interface (Communications Bridge) for remote monitoring function.

5.1.9 The system shall have a manual disconnect switch of the locking type, which can be accessed outside of the unit while the door is closed. High voltage electrical components will not be accessible unless the switch is off.

5.2 Control Features

5.2.1 System set points and configuration shall be programmable only when access is gained by entering the correct password.

5.2.2 The following programmable control parameters shall be provided for fine tuning the system to suit the site conditions and requirements:

- **Temperature set point**
- **Temperature high limit**
- **Temperature low limit**
- **Cooling proportional band**
- **Heating proportional band**
- **Temperature dead band**
- **Temperature integral action time**
- **Humidity setpoint**
- **Humidity high limit**
- **Humidity low limit**
- **Humidifying proportional band**
- **Dehumidifying proportional band**
- **Humidity dead band**
- **Humidity integral action time**

5.2.3 The control system shall have the following programmable On/Off control mode options :

- **“Local” mode allows unit on/off control via the “I/O” key on the display**
- **“Remote” mode allows unit on/off control via a switch input**
- **“Timer” mode allows 4 event/day weekly automatic on/off/relax control**

5.2.4 For energy saving and extended system life, a “Relax” feature shall be provided in the “Timer” On/Off mode to allow wider temperature and humidity tolerances when the room is not operational.

5.2.5 A “Standby unit enable” input shall be provided to force the unit to start irrespective of the current On/Off status and On/Off mode setting.

5.2.6 The system shall have programmable, manual, or automatic restart option. A programmable startup delay shall be provided for the automatic restart option that allows multiple units to restart progressively when power resumes after a power failure.

5.2.7 The accumulated runtime of the following components shall be logged for energy analysis and planned maintenance:

- **Fan**
- **Compressor**
- **Heaters**
- **Humidifier**

5.2.8 Components shall be scheduled to activate sequentially to minimize inrush current.

5.2.9 The system shall have a temperature and humidity graph which shows the main temperature and humidity variation in the latest 24 hours. The data for the graph shall be logged in 15 minutes interval.

5.3 Alarms

5.3.1 The control system shall have the following standard alarms:

- **High/Low temperature, 1 and 2**
- **High/Low humidity, 1 and 2**
- **High/Low voltage**
- **Filter dirty**
- **Fan overload**
- **Low airflow**
- **Compressor high pressure**
- **Compressor low pressure**
- **Heater overheat**
- **Boiler dirty**
- **Fire**
- **Flood**

5.3.2 All alarms shall have programmable reporting / response options which include:

- **Polling enable / disable**
- **Unit shutdown**
- **Activate standby unit**
- **Activate common alarm output**
- **Log alarm event**
- **4 warning sound selection**

5.3.3 Alarm messages, when programmed, shall comprise text description and occurrence time. Messages shall be ranked in the sequence of occurrence for fault analysis.

5.3.4 When a programmed alarm condition exists, the audible alarm shall sound and the common alarm output shall close until acknowledged. Active alarm record shall remain until the alarm condition is cleared.

5.3.5 A historical event log, which maintains the latest 50 system events, shall be provided. The text description and occurrence time of the following events shall be logged:

- **Power failure**
- **Power restore**
- **Unit start**
- **Unit stop**
- **Alarm raised**
- **Alarm acknowledged**
- **Alarm cleared**

5.4 Co-Work, Multiple unit configurations

5.4.1 The units shall have **built-in** master and slave inter-networking capability, **Co-Work**, which allows a combination of a maximum of 8 master or slave units to form a local area network without the need for external hardware.

5.4.2 To achieve the tightest control tolerance and minimize component on/off, the units shall have a built in control step expansion algorithm which uses a multi-step control scheme to coordinate the on/off of cooling, heating, humidifying and dehumidifying steps in multiple units.

5.4.3 The units shall have a sequential load activation control algorithm to minimize the inrush current when components among multiple units are activated at the same time.

5.4.4 The control of a slave unit shall not be limited to any particular master units. Any master unit can control any slave units. In case of a master unit failure or scheduled service, the remaining master units in the same network shall automatically take over the control.

5.4.5 The units shall have a duty sharing control algorithm that helps maintain the required number of duty units, balancing runtime by automatically coordinating units on/off and providing time based auto-changeover.

5.4.6 The units shall have a data synchronization feature. Operation data such as setpoints, time schedule, and alarm status shall be automatically synchronized among all the units under the same local area network.

5.4.7 To avoid hunting among multiple units, the units shall have a control value averaging algorithm that allows units to exchange sensor readings and control the room based on the common desired average values. Units shall be capable of displaying the network average temperature and humidity or individual unit temperature and humidity.

6.0 Optional Accessories
6.1 Capacity Control

6.1.1 Capacity control shall consist of pressure regulated hot gas by pass valve. The valve shall be factory set to bypass below 58 psig suction pressure. A solenoid activated shut off valve shall be used for positive shut off.

6.1.2 Each compressor shall have hot gas by pass to preserve the lead/lag functionality.

6.2 Reheat Options

6.2.1 Hot Gas Reheat

6.2.1.1 The unit shall have hot gas reheat activated by a three way refrigerant reclaim valve. This option shall provide reheat during dehumidification mode to offset the cooling effect.

6.2.1.2 Each compressor shall have hot gas reheat to allow maximum energy savings and preserve lead/lag functionality.

6.2.2 Hot Water/Steam Reheat

Hot water/ steam coil provides reheat during dehumidification mode or heating in heating mode. Unit is complete with two way modulating valve.

6.3 Liquid Detection

6.3.1 Liquid detection shall consist of a single point liquid sensor. Sensor wires directly into the microprocessor and includes 10 feet of wire for field placement.

6.3.2 Liquid detection shall consist of liquid cable sensor. Cable wires directly into the microprocessor and includes 10 feet of wire to extend to the bottom of the unit and 15 feet of sensing cable shall be supplied with the unit for field placement.

6.4 Floor Stand

6.4.1 Floor stand shall be a welded steel frame with corrosion resistant finish from 8 to 24 inches (in 2 inch increments) in height. The stands shall have adjustable legs for leveling with ± 1.5 inch of adjustment. Turning vanes are available for down discharge units. (**Minimum height for a floor stand c/w Turning Vane is 12 inches)** For floor stands greater than 24 inches please consult factory.

6.5 Discharge Plenum

6.5.1 Factory plenum matches unit and allows upflow units to supply air directly to space. Plenum has front double deflection grilles and is internally insulated.

6.6 Remote Supervisory Panel

6.6.1 ClimateWorx M52 remote monitoring and supervisory panel allows monitoring and control of up to **7 master units and 1 slave unit**. Panel is connected by way of communication cable.

6.7 Firestat

6.7.1 Factory mounted and wired firestat will shut the unit down in the event of high heat detection.

6.8 Smoke Detector

6.8.1 Smoke detector is factory mounted and wired to shut unit down in the event of the presence of smoke.

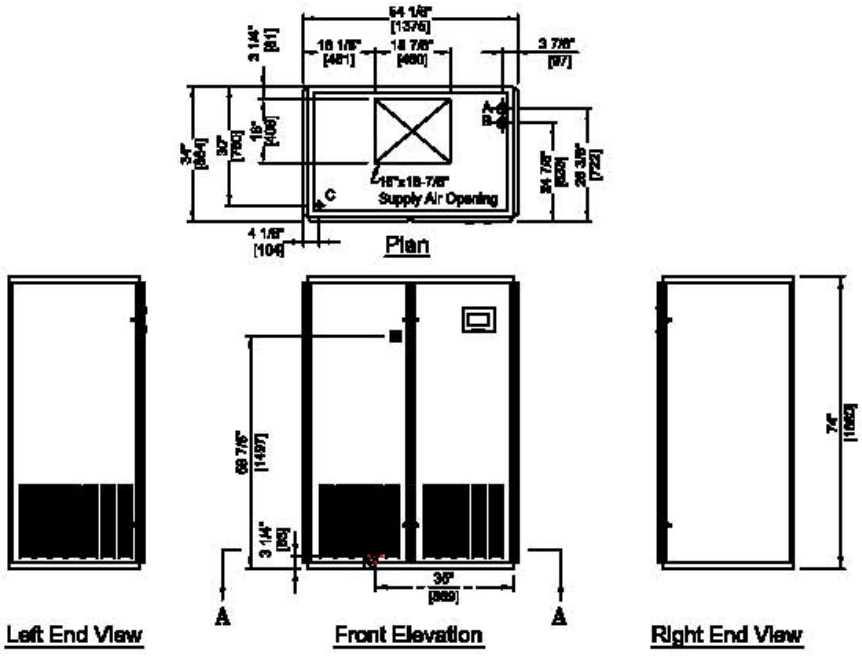
6.9 Condensate Pump

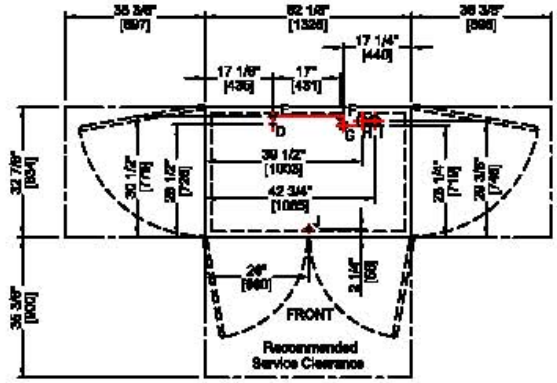
6.9.1 Condensate pump shall remove condensate from evaporator and humidifier when a drain is not available nearby. Pump is shipped loose for field installation. Pump shall be capable of 180 GPH at 24 ft. of head.

Appendix A: Dimensional Drawings

CLIMATEWORX INTERNATIONAL

SERIES 8- VERTICAL FLOOR MOUNT UPFLOW UNIT
DIMENSIONAL DETAIL





Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

MODEL NO. SUFFIX		06	07	08	10
Liquid Line	-ODM in	1/2	1/2	5/8	5/8
Hot Gas Line	-ODM in	7/8	7/8	1-1/8	1-1/8
Humidifier Drain	-ODM in	3/4	3/4	3/4	3/4
Humidifier Water In	-ODM in	1/4	1/4	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4	3/4	3/4
Condensing Water (when req'd)	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8
Glycol Solution (when req'd)	-ODM in	1-1/8	1-1/8	1-3/8	1-3/8
Chilled Water (when req'd)	-ODM in	1-1/8	1-1/8	1-1/8	1-5/8
Hot Water	-ODM in	7/8	7/8	7/8	7/8
Steam	-ODM in	7/8	7/8	7/8	7/8

ODM - Outside Diameter of copper pipe in inches for soldering

PIPE ORIENTATION

A - Ø 2.60" Liquid Line/Chilled Water Supply (Top Access)
B - Ø 2.60" Discharge Line/Chilled Water Return (Top Access)
C - Ø 1.125" Electrical
D - Ø 0.60" Boiler Water Supply
E - Ø 1.60" Drain Outlet
F - Ø 1.25" Liquid Line (Bottom Access)
G - Ø 2.00" Discharge Line (Bottom Access)
G* - Ø 2.00" Hot Water Out (for Chilled Water Unit Only)
H - Ø 2.50" Chilled Water Return (Bottom Access)
H* - Ø 2.50" Hot Water In (for DX Unit Only)
I - Ø 2.60" Chilled Water Supply (Bottom Access)
I* - Ø 2.50" Hot Water Out (for DX Unit Only)
J - Ø 1.125" Electrical
K - Ø 1.375" Optional Rear Drain Outlet

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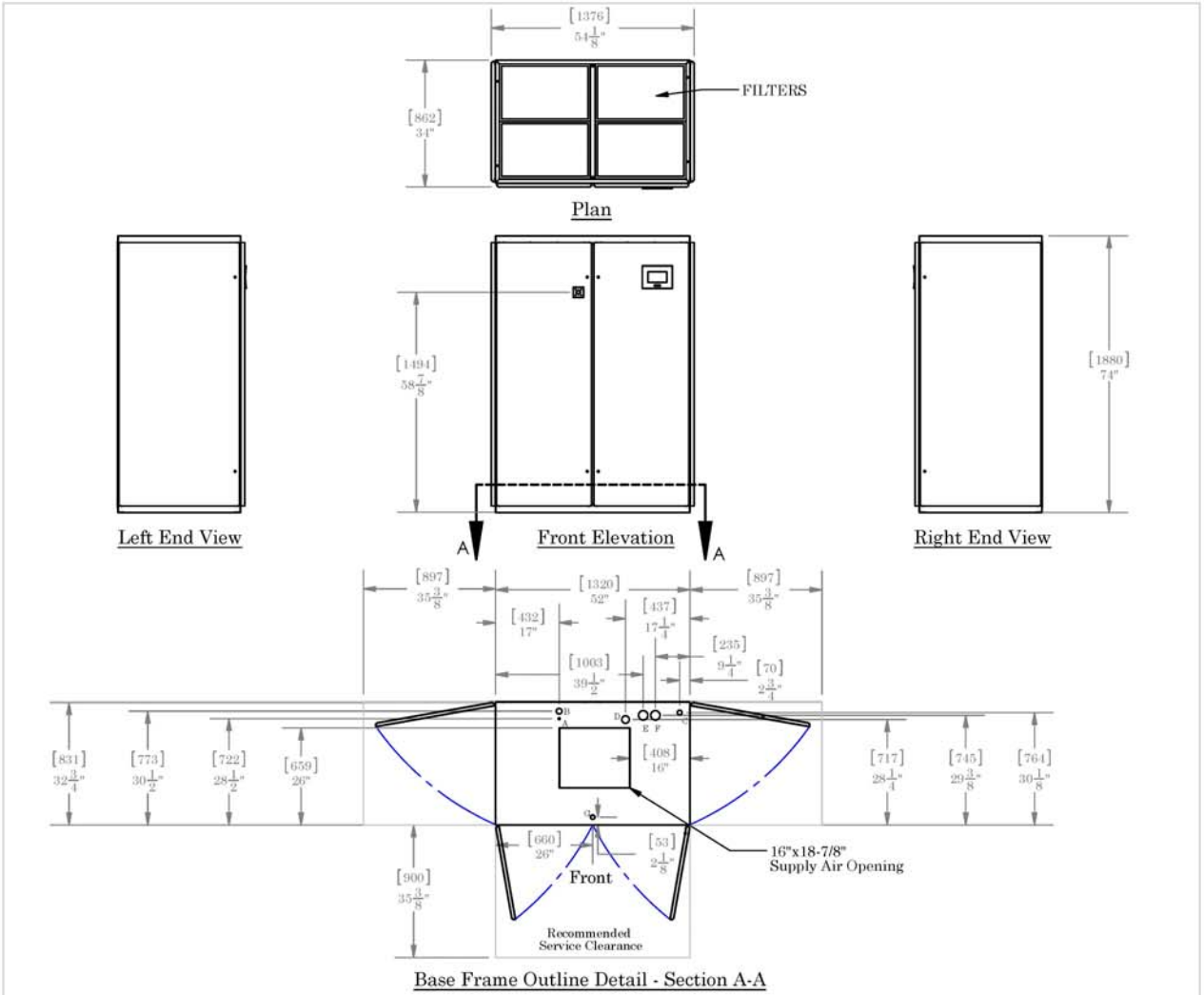
CLIMATEWORX INTERNATIONAL

SERIES 8 - VERTICAL FLR. MOUNT DOWNFLOW UNIT DIMENSIONAL DETAIL



Base Frame Outline Detail - Section A-A

PIPE CONNECTION SIZE

MODEL NO. SUFFIX		06	07	08	10
Liquid Line	-0DM in	5/8	5/8	5/8	5/8
Hot Gas Line	-0DM in	7/8	7/8	1-1/8	1-1/8
Humidifier Drain	-0DM in	3/4	3/4	3/4	3/4
Humidifier Water In	-0DM in	1/4	1/4	1/4	1/4
Condensate Drain	-0DM in	3/4	3/4	3/4	3/4
Condensing Water (when req'd)	-0DM in	1-1/8	1-1/8	1-1/8	1-1/8
Glycol Solution (when req'd)	-0DM in	1-1/8	1-1/8	1-3/8	1-3/8
Chilled Water (when req'd)	-0DM in	1-1/8	1-1/8	1-1/8	1-5/8
Hot Water	-0DM in	7/8	7/8	7/8	7/8
Steam	-0DM in	7/8	7/8	7/8	7/8

0DM - Outside Diameter of copper pipe in inches for soldering

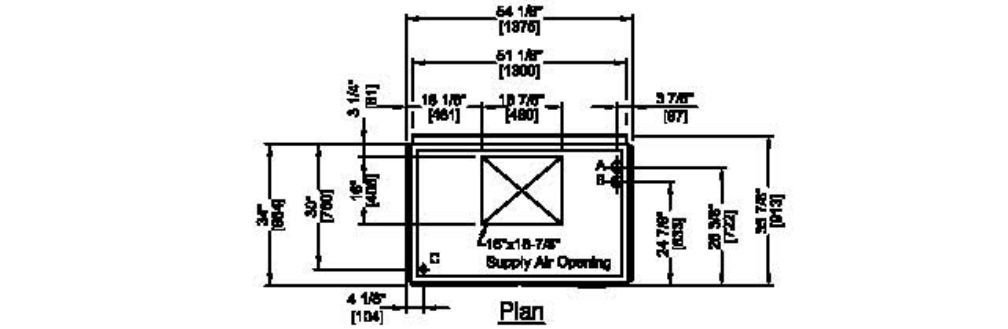
PIPE ORIENTATION

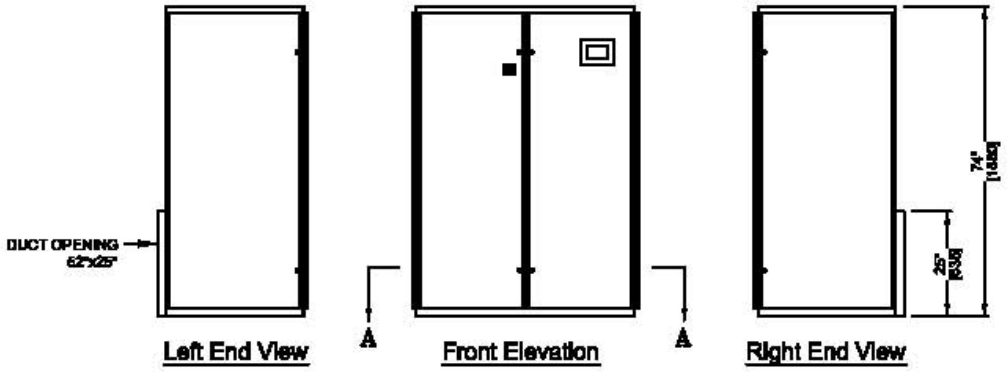
A-	Ø 0.50" Boiler Water Supply
B-	Ø 1.50" Drain Outlet
C-	Ø 1.25" Liquid Line (Bottom Access)
D-	Ø 2.00" Discharge Line (Bottom Access)
E-	Ø 2.50" Chilled Water Return (Bottom Access)
F-	Ø 2.50" Chilled Water Supply (Bottom Access)
G-	Ø 1.125" Electrical

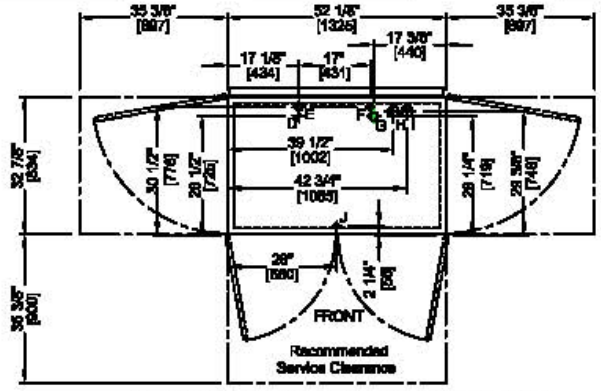
S8DD102B **10 JULY 2012** **NOT TO SCALE**

CLIMATEWORX INTERNATIONAL

SERIES 8- VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN DIMENSIONAL DETAIL







Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

MODEL NO. SUFFIX		06	07	08	10
Liquid Line	-ODM in	5/8	5/8	5/8	5/8
Hot Gas Line	-ODM in	7/8	7/8	1-1/8	1-1/8
Humidifier Drain	-ODM in	3/4	3/4	3/4	3/4
Humidifier Water In	-ODM in	1/4	1/4	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4	3/4	3/4
Condensing Water (when req'd)	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8
Glycol Solution (when req'd)	-ODM in	1-1/8	1-1/8	1-3/8	1-3/8
Chilled Water (when req'd)	-ODM in	1-1/8	1-1/8	1-1/8	1-5/8
Hot Water	-ODM in	7/8	7/8	7/8	7/8
Steam	-ODM in	7/8	7/8	7/8	7/8

ODM - Outside Diameter of copper pipe in inches for soldering

PIPE ORIENTATION

A - Ø2.60" LIQUID LINE/CHILLED WATER SUPPLY (TOP ACCESS)
B - Ø2.60" DISCHARGE LINE/CHILLED WATER RETURN (TOP ACCESS)
C - Ø1.125" ELECTRICAL
D - Ø0.50" BOILER WATER SUPPLY
E - Ø1.50" DRAIN OUTLET
F - Ø1.25" LIQUID LINE (BOTTOM ACCESS)
G - Ø2.00" DISCHARGE LINE (BOTTOM ACCESS)
H - Ø2.50"CHILLED WATER RETURN (BOTTOM ACCESS)
I - Ø2.50" CHILLED WATER SUPPLY (BOTTOM ACCESS)
J - Ø1.125" ELECTRICAL

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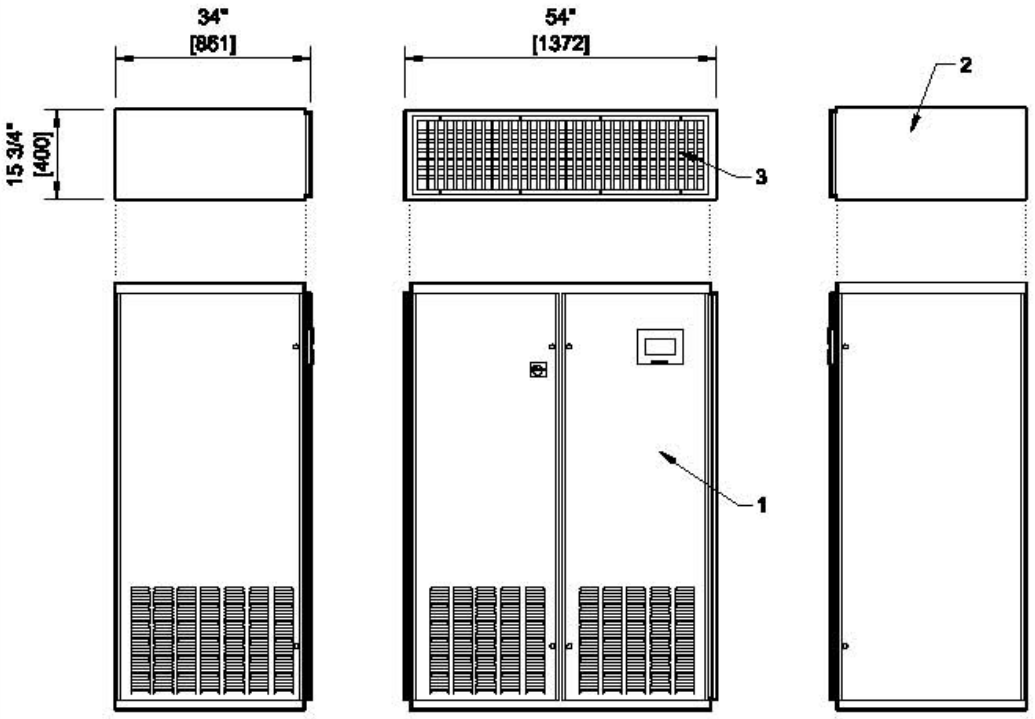
CLIMATEWORX INTERNATIONAL

SERIES 8 - SUPPLY AIR PLENUM DIMENSIONAL DETAIL



Left end view | Front elevation | Right end view

ITEM	DISCRIPTION
1	Precision Air Conditioning Unit
2	Supply Air plenum
3	Front Grille

S8DD200C | 18 JULY 2007 | NOT TO SCALE