

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Unit Features

TRANQUILITY® VERTICAL STACK (TRM HYBRID) SERIES WITH EARTHPURE® REFRIGERANT

The Tranquility® Vertical Stack (TRM) Series offers an innovative, labor-saving solution for spaces where individual, quiet control of the heating and cooling system is important. Units are pre-piped risers and pre-wired cabinets are especially ideal for multi-story buildings. Cabinets can operate as stand-alone "ductless" systems, or can be ducted to an adjacent room, making them convenient for low-rise buildings as well. The TRM Hybrid Series exceeds ASHRAE 90.1 efficiencies, yet maintains small cabinet dimensions. Using EarthPure® (HFC-410A) refrigerant, the TRM Hybrid Series not only protects the environment, it does so while delivering unprecedented comfort, efficiency, and reliability.

For use on water loop systems (boiler-tower). The TRM Hybrid Series offers compressor cooling or hydronic heating. Any unit in building can be cooling or heating with loop temperatures up to 125°F (52°C). If all units are in heating, loop temperatures can be up to 130°F (54°C). Loop controller is customer supplied.

Available in sizes 3/4 ton (2.6 kW) through 3 tons (10.6 kW) with numerous cabinet, water piping and control choices, the TRM Hybrid Series offers a wide range of units for most any installation. The TRM Hybrid has an extended range refrigerant circuit, capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Microprocessor controls, TXV metering device, galvanized steel cabinet, torsion-flex blower motor mounting, and (optional) ECM motor for all models are just some of the features of the innovative TRM Hybrid Series.

ClimateMaster's exclusive double isolation compressor mounting system makes the TRM Hybrid Series the quietest vertical stack units on the market. Compressors are mounted on specially engineered sound-tested EPDM grommets to a heavy gauge mounting plate, which is then isolated from the cabinet base with grommets for maximized vibration/sound attenuation.

The TRM Hybrid Series vertical stack water-source heat pumps are designed to meet the challenges of today's HVAC demands with a low cost/high value solution.

UNIT FEATURES

- Compressor cooling or hydronic heating
- Environmentally-friendly EarthPure® (HFC-410A) zero ozone depletion refrigerant
- High efficiency rotary and scroll compressors
- Exceeds ASHRAE 90.1 efficiencies
- Removable chassis allows staged installation and ease of maintenance
- Galvanized steel cabinet
- Unique double isolation compressor mounting for quiet operation
- UltraQuiet option
- Water diverting valve (energized for heating)
- TXV metering device
- Cabinet construction for unit or remote-mounted controls
- Microprocessor controls standard (DXM and/or DDC controls)
- LonWorks, BACnet, Modbus and Johnson N2 compatibility options for DDC controls
- Unit Performance Sentinel performance monitoring system
- Integrated drain pan with condensate overflow sensor
- Attractive return air panel with hinged access door ("G" panel)
- Multiple supply air discharge options
- Full port shut-off valves with memory stop, for supply and return, located opposite return air panel inside cabinet
- Stainless steel braided hose kits for connection from piping risers to chassis
- Eight Safeties Standard
- Wide variety of cabinet options including disconnect switch, breaker, stand, thermostat whip with molex connector, isolation pad, air vent, stainless steel drain pan, riser chase, and ECM motor (15-36)
- Wide variety of chassis options including stainless steel drain pan, coated air coil, insulated tubing for extended range operation, autoflow regulator, and cupro-nickel coaxial heat exchanger

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM09

325 CFM (Rated) Airflow

Performance capacities shown in thousands of Btuh

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	Sens/Tot Ratio	kW	HR	EER
		PSI	FT						
70	2.00	1.3	2.9	10,051	7,015	0.70	0.60	12,063	16.8
	2.50	3.5	8.0	10,248	7,071	0.69	0.57	12,168	17.9
	3.00	4.9	11.2	10,310	7,087	0.69	0.56	12,200	18.3
80	2.00	1.7	3.8	9,485	6,831	0.72	0.67	11,740	14.2
	2.50	3.4	7.8	9,723	6,914	0.71	0.64	11,880	15.2
	3.00	4.8	11.0	9,800	6,939	0.71	0.63	11,924	15.6
90	2.00	1.6	3.8	8,795	6,59	0.75	0.74	11,313	11.9
	2.50	3.3	7.7	9,073	6,676	0.74	0.71	11,89	12.7
	3.00	4.7	10.8	9,163	6,712	0.73	0.70	11,545	13.0
100	2.00	1.6	3.7	7,973	6,176	0.77	0.82	10,771	9.7
	2.50	3.3	7.6	8,287	6,331	0.76	0.79	10,982	10.5
	3.00	4.7	10.7	8,390	6,380	0.76	0.78	11,051	10.7
110	2.00	1.6	3.7	7,015	5,656	0.81	0.90	10,104	7.8
	2.50	3.3	7.6	7,357	5,851	0.80	0.88	10,346	8.4
	3.00	4.6	10.7	7,471	5,915	0.79	0.87	10,426	8.6
120	2.00	1.6	3.7	5,917	4,973	0.84	0.99	9,305	6.0
	2.50	3.3	7.6	6,277	5,208	0.83	0.96	9,571	6.5
	3.00	4.6	10.7	6,399	5,285	0.83	0.95	9,660	6.7

Performance Data – TRM12

350 CFM (Rated) Airflow

Performance capacities shown in thousands of Btuh

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	2.50	3.3	7.6	15,579	6,585	0.42	0.58	17,519	26.7
	3.00	5.7	13.2	12,907	7,845	0.61	0.71	15,299	18.1
	3.50	8.4	19.4	13,227	7,810	0.59	0.69	15,556	19.1
80	2.50	3.2	7.4	13,478	7,758	0.58	0.68	15,760	19.8
	3.00	5.5	12.7	11,636	7,592	0.65	0.79	14,317	14.7
	3.50	8.2	18.9	11,846	7,682	0.65	0.78	14,474	15.2
90	2.50	3.2	7.4	11,349	7,434	0.66	0.82	14,108	13.9
	3.00	5.5	12.7	10,700	6,942	0.65	0.87	13,653	12.3
	3.50	8.2	18.9	10,856	7,075	0.65	0.86	13,760	12.7
100	2.50	3.2	7.4	10,971	7,168	0.65	0.85	13,840	13.0
	3.00	5.4	12.5	9,854	6,190	0.63	0.95	13,072	10.4
	3.50	7.9	18.2	10,006	6,318	0.63	0.93	13,178	10.7
110	2.50	3.1	7.2	10,114	6,413	0.63	0.92	13,252	11.0
	3.00	5.2	12.0	8,834	5,516	0.62	1.02	12,325	8.6
	3.50	7.7	17.8	9,023	5,618	0.62	1.01	12,468	8.9
120	2.50	3.1	7.2	9,155	5,694	0.62	1.00	12,567	9.1
	3.00	5.1	11.8	7,410	4,948	0.67	1.11	11,194	6.7
	3.50	7.6	17.6	7,657	5,033	0.66	1.09	11,395	7.0

Interpolation is permissible; extrapolation is not.
 All entering air conditions are 80°F DB and 67°F WB in cooling.
 AHR/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling.
 Table does not reflect fan or pump power corrections for AHR/ISO conditions.
 All performance is based upon the lower voltage of dual voltage rated units.
 Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
 See performance correction tables for operating conditions other than those listed above.

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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM15

550 CFM (Rated) Airflow

Performance capacities shown in thousands of Btuh

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	3.50	1.5	3.5	16,600	11,824	0.71	0.90	19,626	18.4
	4.50	3.3	7.6	16,843	12,024	0.71	0.88	19,785	19.2
	5.50	5.1	11.8	17,013	12,137	0.71	0.86	19,899	19.8
80	3.50	1.5	3.5	15,773	10,825	0.69	1.00	19,134	15.8
	4.50	3.3	7.6	15,960	11,082	0.69	0.97	19,241	16.4
	5.50	5.1	11.8	16,083	11,244	0.69	0.96	19,311	16.8
90	3.50	1.4	3.2	14,945	9,802	0.66	1.10	18,653	13.6
	4.50	3.0	6.9	15,158	10,027	0.66	1.07	18,782	14.1
	5.50	4.7	10.9	15,287	10,179	0.67	1.06	18,858	14.5
100	3.50	1.4	3.2	13,791	9,057	0.66	1.21	17,884	11.4
	4.50	3.0	6.9	14,097	9,192	0.65	1.18	18,098	12.0
	5.50	4.6	10.6	14,280	9,291	0.65	1.16	18,223	12.3
110	3.50	1.3	3.0	12,040	8,658	0.72	1.33	16,576	9.0
	4.50	2.8	6.5	12,472	8,725	0.70	1.30	16,908	9.6
	5.50	4.4	10.2	12,737	8,771	0.69	1.28	17,109	9.9
120	3.50	1.3	3.0	9,501	8,215	0.86	1.48	14,553	6.4
	4.50	2.7	6.2	10,045	8,339	0.83	1.45	14,994	6.9
	5.50	4.3	9.9	10,390	8,407	0.81	1.43	15,272	7.3

Interpolation is permissible; extrapolation is not.
 All entering air conditions are 80°F DB and 67°F WB in cooling.
 AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling.
 Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
 All performance is based upon the lower voltage of dual voltage rated units.
 Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
 See performance correction tables for operating conditions other than those listed above.

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM18

600 CFM (Rated) Airflow

Performance capacities shown in thousands of Btu/h

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	3.50	2.6	6.0	17,935	10,422	0.58	1.15	21,832	15.5
	4.00	3.3	7.6	18,093	10,292	0.57	1.14	21,925	15.9
	5.50	5.8	13.4	18,369	10,108	0.55	1.10	22,070	16.7
80	3.50	2.5	5.8	16,731	11,427	0.68	1.26	21,009	13.2
	4.00	3.1	7.2	16,926	11,286	0.67	1.25	21,150	13.6
	5.50	5.6	12.9	17,292	10,989	0.64	1.22	21,409	14.2
90	3.50	2.4	5.5	15,372	11,889	0.77	1.36	19,992	11.3
	4.00	3.0	6.9	15,567	11,890	0.76	1.35	20,139	11.6
	5.50	5.7	13.2	15,948	11,821	0.74	1.32	20,426	12.1
100	3.50	2.4	5.5	14,064	11,027	0.78	1.46	19,025	9.7
	4.00	3.0	6.9	14,230	11,240	0.79	1.44	19,144	9.9
	5.50	5.6	12.9	14,565	11,564	0.79	1.42	19,389	10.3
110	3.50	2.3	5.3	13,017	8,340	0.64	1.57	18,358	8.3
	4.00	4.9	11.3	13,130	8,811	0.67	1.55	18,418	8.5
	5.50	5.6	12.9	13,370	9,611	0.72	1.52	18,560	8.8
120	3.50	2.3	5.3	12,487	3,126	0.25	1.70	18,288	7.4
	4.00	2.7	6.2	12,516	3,987	0.32	1.68	18,251	7.5
	5.50	5.5	12.7	12,606	5,452	0.43	1.64	18,222	7.7

Interpolation is permissible; extrapolation is not.
 All entering air conditions are 80°F DB and 67°F WB in cooling.
 AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling.
 Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
 All performance is based upon the lower voltage of dual voltage rated units.
 Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM24

800 CFM (Rated) Airflow

Performance capacities shown in thousands of Btu/h

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	4.50	3.3	7.6	26,720	17,730	0.66	1.48	31,700	18.0
	6.00	5.5	12.7	27,198	18,140	0.67	1.43	32,003	19.0
	8.00	8.9	20.6	27,566	18,401	0.67	1.39	32,238	19.8
80	4.50	3.2	7.4	25,350	16,286	0.64	1.63	30,855	15.5
	6.00	5.3	12.2	25,822	16,810	0.65	1.58	31,141	16.4
	8.00	8.8	20.3	26,178	17,192	0.66	1.54	31,361	17.0
90	4.50	3.2	7.4	23,919	14,734	0.62	1.80	30,026	13.3
	6.00	5.2	12.0	24,406	15,241	0.62	1.74	30,301	14.0
	8.00	8.7	20.1	24,769	15,637	0.63	1.70	30,511	14.6
100	4.50	3.2	7.4	22,361	13,391	0.60	2.01	29,198	11.1
	6.00	5.2	12.0	22,883	13,787	0.60	1.94	29,671	11.8
	8.00	8.6	19.9	23,269	14,116	0.61	1.89	29,671	12.3
110	4.50	3.1	7.2	20,611	12,482	0.61	2.27	28,356	9.1
	6.00	5.0	11.6	21,185	12,712	0.60	2.18	28,623	9.7
	8.00	8.5	19.6	21,608	12,923	0.60	2.12	28,825	10.2
120	4.50	3.0	6.9	18,603	12,107	0.65	2.60	27,485	7.2
	6.00	4.9	11.3	19,246	12,165	0.63	2.49	27,754	7.7
	8.00	8.4	19.4	19,717	12,242	0.62	2.41	27,957	8.2

Interpolation is permissible; extrapolation is not.
 All entering air conditions are 80°F DB and 67°F WB in cooling.
 AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling.
 Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
 All performance is based upon the lower voltage of dual voltage rated units.
 Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
 See performance correction tables for operating conditions other than those listed above.

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM30

1075 CFM (Rated) Airflow

Performance capacities shown in thousands of Btuh

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	5.00	3.5	8.1	30,561	22,668	0.74	1.80	36,632	17.0
	6.50	5.7	13.2	31,146	22,990	0.74	1.74	37,014	17.8
	8.00	9.1	21.0	31,515	23,152	0.73	1.71	37,259	18.4
80	5.00	3.4	7.9	28,781	21,365	0.74	1.99	35,509	14.5
	6.50	5.5	12.7	29,372	21,835	0.74	1.93	35,875	15.2
	8.00	9.0	20.8	29,743	22,115	0.74	1.89	36,108	15.8
90	5.00	3.4	7.9	26,908	19,809	0.74	2.21	34,396	12.2
	6.50	5.4	12.5	27,513	20,311	0.74	2.14	34,748	12.9
	8.00	8.9	20.6	27,892	20,628	0.74	2.09	34,972	13.3
100	5.00	3.4	7.9	24,911	18,283	0.73	2.46	33,283	10.1
	6.50	5.4	12.5	25,538	18,734	0.73	2.38	33,625	10.7
	8.00	8.8	20.3	25,930	19,030	0.73	2.33	33,842	11.1
110	5.00	3.3	7.6	22,763	16,984	0.75	2.75	32,160	8.3
	6.50	5.3	12.2	23,417	17,337	0.74	2.66	32,494	8.8
	8.00	8.7	20.1	23,825	17,576	0.74	2.61	32,706	9.1
120	5.00	3.2	7.4	20,433	16,007	0.78	3.10	31,020	6.6
	6.50	5.2	12.0	21,119	16,253	0.77	2.99	31,348	7.1
	8.00	8.6	19.9	21,547	16,422	0.76	2.93	31,556	7.4

Interpolation is permissible; extrapolation is not.
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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – TRM36

1250 CFM (Rated) Airflow

Performance capacities shown in thousands of Btuh

COOLING - EAT 80/67 °F									
EWT °F	GPM	WPD		TC	SC	S/T	KW	HR	EER
		PSI	FT						
70	5.00	1.9	4.4	35,429	24,280	0.69	2.14	42,626	16.6
	6.50	2.8	6.5	36,163	24,782	0.69	2.05	43,076	17.6
	8.00	3.7	8.5	36,624	25,060	0.68	2.00	43,358	18.3
80	5.00	1.7	3.9	33,502	22,752	0.68	2.36	41,466	14.2
	6.50	2.6	6.0	34,250	23,368	0.68	2.27	41,910	15.1
	8.00	3.5	8.1	34,718	23,742	0.68	2.22	42,193	15.7
90	5.00	1.7	3.9	31,477	21,059	0.67	2.61	40,316	12.1
	6.50	2.4	5.5	32,242	21,693	0.67	2.51	40,740	12.9
	8.00	3.3	7.6	32,721	22,095	0.68	2.45	41,012	13.4
100	5.00	1.7	3.9	29,336	19,406	0.66	2.90	39,216	10.1
	6.50	2.5	5.8	30,124	19,988	0.66	2.79	39,605	10.8
	8.00	3.2	7.4	30,616	20,368	0.67	2.72	39,858	11.3
110	5.00	1.5	3.5	27,059	17,943	0.66	3.27	38,209	8.3
	6.50	2.3	5.2	27,876	18,429	0.66	3.13	38,550	8.9
	8.00	3.0	6.9	28,385	18,754	0.66	3.05	38,774	9.3
120	5.00	1.5	3.5	24,628	16,761	0.68	3.72	37,335	6.6
	6.50	2.4	5.5	25,481	17,132	0.67	3.55	37,617	7.2
	8.00	3.2	7.4	26,011	17,386	0.67	3.45	37,805	7.5

Interpolation is permissible; extrapolation is not.
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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Performance Data – Correction Tables

Cooling – Air Flow Correction Table

Percent of Rated Airflow	Total Capacity	Sensible	Power	Heat of Rejection
75%	0.934	0.833	0.974	0.952
80%	0.946	0.866	0.979	0.961
85%	0.958	0.899	0.985	0.970
90%	0.971	0.932	0.990	0.979
100%	1.000	1.000	1.000	1.000
105%	1.017	1.035	1.005	1.013

Cooling – Entering Air Flow Correction Table

Entering Air WB °F	Total Capacity	Sensible Cooling Capacity Multiplier - Entering Air DB °F							Power	Heat of Rejection
		70	75	80	80.6	85	90	95		
60	0.851	0.854	1.091	1.325	1.385	*	*	*	0.996	0.896
65	0.957	0.617	0.857	1.093	1.152	1.326	*	*	0.999	0.970
66.2	0.985	0.618	0.824	1.036	1.061	1.245	*	*	1.000	0.988
67	1.000	0.523	0.763	1.000	1.059	1.232	*	*	1.000	1.000
70	1.064		0.623	0.861	0.920	1.090	1.339	*	1.000	1.042
75	1.171			0.629	0.688	0.854	1.101	1.318	1.005	1.119

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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Hydronic Heating Performance Data

Model	Heating Pressure Drop		Hydronic Heating Capacity BTUH								
			CFM	GPM	Entering Water Temperature						
	PSI	FT			90°F	100°F	110°F	115°F	120°F	125°F	130°F
09	2.5	5.8	285	2.0	3,840	5,760	7,255	8,064	9,067	10,008	10,906
	3.2	7.4	305	2.5	4,128	6,240	7,825	8,755	9,726	10,559	11,508
	5.5	12.7	325	3.0	4,608	6,624	8,975	10,068	10,848	11,118	12,116
12	3.2	7.4	300	2.5	4,128	6,240	7,825	8,755	9,726	10,559	11,712
	5.5	12.7	350	3.0	4,800	6,912	9,167	10,260	11,352	11,592	13,536
	7.3	16.9	350	3.5	4,896	7,008	9,372	10,509	11,629	11,782	13,824
15	2.2	5.1	550	3.5	6,240	9,216	10,235	11,436	12,739	14,730	16,060
	3.0	6.9	550	4.0	6,336	9,408	10,412	11,605	12,981	14,956	16,306
	4.0	9.2	600	4.5	6,816	10,080	11,757	13,070	14,466	15,868	17,301
	6.3	14.6	600	5.5	6,912	10,272	12,011	13,373	14,816	16,501	17,628
18	2.2	5.1	550	3.5	6,240	9,216	10,235	11,436	12,739	14,052	16,060
	4.0	9.2	550	4.0	6,336	9,408	10,412	11,605	12,981	14,730	16,306
	2.2	5.1	600	3.5	6,528	9,696	11,344	12,661	14,026	15,482	16,654
	4.0	9.2	600	4.5	6,816	10,080	11,712	13,056	14,400	15,868	17,301
	3.0	6.9	700	4.0	7,104	10,560	13,459	15,061	16,586	16,521	18,015
	6.3	14.6	700	5.5	7,392	10,944	14,295	15,850	17,538	17,086	18,630
24	5.5	12.7	700	4.5	8,738	12,563	16,341	18,254	20,316	22,371	24,502
	5.8	13.3	700	5.0	8,818	12,797	16,661	18,588	20,684	22,692	24,852
	9.1	21.0	700	6.0	9,089	13,176	17,086	19,019	21,338	23,190	25,393
	15.4	35.6	700	8.0	9,418	13,694	17,662	19,765	21,862	23,839	26,099
	5.5	12.7	800	4.5	9,441	13,623	17,707	19,803	21,957	23,953	26,230
	5.8	13.3	800	5.0	9,644	13,908	18,084	20,134	22,383	24,325	26,636
	9.1	21.0	800	6.0	9,969	14,295	18,552	20,729	22,970	24,903	27,264
	15.4	35.6	800	8.0	10,394	14,775	1,973	21,499	23,843	25,661	28,088
30	5.8	13.4	1060	5.0	11,649	16,770	21,733	24,306	26,880	29,064	31,723
	9.1	21.0	1060	6.0	12,008	17,504	22,489	25,152	27,744	29,852	32,580
	12.7	29.3	1060	7.0	12,192	17,760	23,029	25,718	28,453	30,440	33,220
	15.4	35.6	1060	8.0	12,469	18,108	23,420	26,208	28,964	30,895	33,715
	5.8	13.4	1200	5.0	12,769	18,214	23,598	26,469	29,120	32,104	33,844
	9.1	21.0	1200	6.0	13,171	18,895	24,445	27,324	30,106	33,144	34,839
	12.7	29.3	1200	7.0	13,506	19,252	25,062	28,206	30,767	34,083	35,580
	15.4	35.6	1200	8.0	13,763	19,252	25,534	28,441	31,210	34,725	36,155
36	4.2	9.7	1060	5.0	11,649	16,770	21,733	24,306	26,880	29,064	31,723
	6.1	14.1	1060	6.0	12,008	17,504	22,489	25,152	27,744	29,852	32,580
	8.3	19.2	1060	7.0	12,192	17,760	23,029	25,718	28,453	30,440	33,220
	10.5	24.3	1060	8.0	12,469	18,108	23,420	26,208	28,964	30,895	33,715
	4.2	9.7	1200	5.0	12,769	18,214	23,598	26,469	29,120	32,104	33,844
	6.1	14.1	1200	6.0	13,171	18,895	24,445	27,324	30,106	33,144	34,839
	8.3	19.2	1200	7.0	13,506	19,252	25,062	28,206	30,767	34,083	35,580
	10.5	24.3	1200	8.0	13,763	19,252	25,534	28,441	31,210	34,725	36,155

Entering air temperature 70°F (21.1°C)
 Entering water temperature above 105°F (40.5°C) require additional field installed riser insulation to meet IECC section 503.2.8, check local codes.
 Entering water temperature above 130°F (54.4°C) will damage unit and void unit warranty.

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Blower Performance Data

Airflow in CFM with wet coil and clean air filter

Size	Fan Speed	Rated CFM	Min CFM	External Static Pressure (in. wg)															
				0.00	0.01	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	
09	High	325	285	367	346	325	292												
	Medium			297															
	Low																		
12	High	350	300	367	346	325													
	Medium			300															
	Low																		
15	High	550	416	647	638	620	600	579	529										
	Medium			561	551	539	516	427											
	Low			482															
18	High	600	480	713	707	699	690	679	671	647	638	620	600	579	529				
	Medium			618	615	603	595	591	583	574	561	551	539	516					
	Low			529	529	523	512	509	500	494	482								
24	High	800	600	811	811	808	802	784	765	740	717	693	661	620					
	Medium			719	715	713	700	693	666	655	634	606							
	Low			712	710	706	703	684	668	645	628								
30	High	1075	798	1220	1190	1153	1133	1097	1069	1039	1002	969	925	885	864				
	Medium			1094	1074	1054	1034	1014	986	960	935	910	878	835	800				
	Low			990	975	963	956	945	935	919	896	870	845						
36	High	1150	882	1170	1153	1133	1097	1069	1039	1002	969	925							
	Medium			1054	1034	1014	986	960	935	910									
	Low			956	945	935	919	896											

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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Physical Data

Model	09	12	15	18	24	30	36
Compressor (1 Each)	Rotary				Scroll		
Factory Charge HFC-410A (oz) [kg]	34 [.96]	34 [.96]	45 [1.28]	45 [1.28]	60 [1.70]	60 [1.70]	66 [1.87]
PSC Fan Motor & Blower Wheel							
Fan Motor (hp) [w]	1/30 [25]	1/15 [50]	1/6 [124]	1/6 [124]	1/5 [149]	1/2 [373]	1/2 [373]
Blower Wheel Size (dia x w) (in) [mm]	6.75 x 7.25 [174 x 184]	6.75 x 7.25 [174 x 184]	9.50 x 7.12 [241 x 181]	9.50 x 7.12 [241 x 181]	9.50 x 7.12 [241 x 181]	9.50 x 8.06 [241 x 205]	9.50 x 8.06 [241 x 205]
ECM-X Motor & Blower Wheel							
Fan Motor (hp) [w]	Not Available	Not Available	1/3 [248]	1/3 [248]	1/3 [248]	1/3 [248]	1/2 [373]
Blower Wheel Size (dia x w) (in) [mm]	Not Available	Not Available	9.50 x 7.12 [241 x 181]	9.50 x 7.12 [241 x 181]	9.50 x 7.12 [241 x 181]	9.50 x 8.06 [241 x 205]	9.50 x 8.06 [241 x 205]
Coax and Hydronic coil							
Internal Volume U.S. Gallon [L]	.57 [2.16]	.61 [2.31]	.82 [3.10]		1.23 [4.66]		
Hose Kit (AHH Series Required)							
FPT (in)	1/2	1/2	3/4	3/4	1	1	1
Drain Hose							
Internal Diameter In [mm]	.875 [22.2]						
Chassis Air Coil							
Air Coil Dimensions (h x w) - (in) [mm]	22 x 11.5 [559 x 292]	22 x 11.5 [559 x 292]	28 x 14 [711 x 356]	28 x 14 [711 x 356]	30 x 18 [762 x 457]	30 x 18 [762 x 457]	30 x 18 [762 x 457]
Standard Filter - 1" [25.4 mm], (w x h) - (in) [mm]	14 x 24 [356 x 610]	14 x 24 [356 x 610]	16 x 30 [406 x 762]	16 x 30 [406 x 762]	20 x 32 [508 x 813]	20 x 32 [508 x 813]	20 x 32 [508 x 813]
Weight							
Chassis - (lbs) [kg]	100 [45]	107 [49]	125 [57]	125 [57]	188 [85]	194 [85]	198 [90]
Cabinet - (lbs) [kg]	174 [79]	174 [79]	189 [86]	189 [86]	243 [110]	243 [110]	243 [110]

Unit Maximum Water Working Pressure	
Options	Max Pressure PSIG [kPa]
Base Unit (Hoses)	400 [2756]

*includes hoses and 3 way diverter valve

Notes:

1. Must use DMX option
2. Must use heat-cool thermostat
3. Can not order following chassis options - motorized 2 way valve and secondary pump

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Electrical Data

TRM with Hydronic Heat

Model with PSC Motor	Voltage Code	Voltage	Min/Max Voltage	Compressor		Fan Motor FLA	Standard Units		
				RLA	LRA		Total Unit FLA	Min Circuit Amps	Max Fuse/HACR
TRM09	G	208-230/60/1	197/254	3.7	23	0.41	4.11	5.04	15
TRM12	G	208-230/60/1	197/254	4.7	30	0.7	5.4	6.6	15
TRM15	G	208-230/60/1	197/254	5.6	29	1	6.6	8	15
TRM18	G	208-230/60/1	197/254	6.6	33	1	7.6	9.25	15
TRM24	G	208-230/60/1	197/254	12.8	58.3	1.1	13.9	17.1	30
TRM30	G	208-230/60/1	197/254	12.8	64	1.8	14.6	17.8	30
TRM36	G	208-230/60/1	197/254	14.1	77	1.8	15.9	19.4	30
TRM09	E	265/60/1	239/292	3.5	22.0	0.30	3.8	4.7	15
TRM12	E	265/60/1	239/292	4.2	22.0	0.60	4.8	5.85	15
TRM15	E	265/60/1	239/292	5.0	28.0	0.90	5.9	7.15	15
TRW18	E	265/60/1	239/292	5.6	28.0	0.90	6.5	7.9	15
TRM24	E	265/60/1	239/292	9.6	47.5	0.90	10.5	12.9	20
TRM30	E	265/60/1	239/292	10.9	52.0	2.00	12.9	15.8	25
TRM36	E	265/60/1	239/292	12.2	63.0	2.00	14.2	17.25	30

TRM with Hydronic Heat

Model with ECM-X Motor	Voltage Code	Voltage	Min/Max Voltage	Compressor		Fan Motor FLA	Standard Units		
				RLA	LRA		Total Unit FLA	Min Circuit Amps	Max Fuse/HACR
TRM15	G	208-230/60/1	197/254	5.6	30.0	2.80	8.4	9.8	15
TRM18	G	208-230/60/1	197/254	6.6	33.0	2.80	9.4	11.05	20
TRM24	G	208-230/60/1	197/254	12.8	58.3	2.80	13.4	15.8	25
TRM30	G	208-230/60/1	197/254	12.8	64.0	4.10	16.9	20.1	25
TRM36	G	208-230/60/1	197/254	14.1	77.0	4.10	18.2	21.725	30

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Tranquility® Vertical - TRM Series with Hydronic Heat Engineering Specifications – Page 1

General:

Furnish and install ClimateMaster Tranquility “Vertical Stack” Water Source Heat Pumps, as indicated on the plans with capacities and characteristics as listed in the schedule and the specifications that follow.

Units shall be a hybrid design with compressor cooling and hydronic heating. Loop water temperature shall be 85° to 125°F (29.4° to 51.7°C) for cooling and heating simultaneously in the building. If all units are in heating mode, maximum loop temperature can be 130°F (54°C). Equivalent units from other manufacturers may be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated and certified in accordance with Air-Conditioning, Heating and Refrigeration Institute/ International Standards Organization (AHRI / ISO 13256-1). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada, by Intertek Testing Laboratories (ETL). The units shall have ETL-US-C labels.

All units shall be fully quality tested by factory run testing under normal operating conditions as described herein. Quality control system shall automatically perform via computer: triple leak check, pressure tests, evacuation and accurately charge system, perform detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria. Detailed report card will ship with each unit displaying status for critical tests and components. **Note: If unit fails on any cross check, it shall not be allowed to ship. Serial numbers will be recorded by factory and furnished to contractor on report card for ease of unit warranty status. Units tested without water flow are not acceptable.**

Basic Construction:

The cabinet panels shall be fabricated from heavy gauge galvanized steel. The rigid one-piece cabinet assembly shall be constructed so that it is self-supporting, and can be installed prior to the chassis arrival, and to be able to avoid damage during construction. Top, base, fan deck, and other metal structural parts are to be 16 gauge construction, while exterior panels to be 20 gauge; unit further strengthened by structural breaks at corners. **Units not constructed of a minimum of these thicknesses are not acceptable.** Cabinet shall have a top panel and a bottom panel for structural rigidity of the cabinet; **no “open” top or “open” bottom designs allowed.**

The cabinet base shall contain a secondary drain pan fully insulated with a pressure differential drain trap connected to the condensate riser pipe, and guide rails for the slide in refrigeration chassis. Drain pan(s) shall be easily accessible for cleaning. All interior surfaces shall be lined with 1/2 inch (12.7mm) thick, 1-1/2 lb/ft³ (24 kg/m³) acoustic type fiberglass insulation. All fiberglass shall be coated and have exposed edges butted up to flanges to prevent the introduction of glass fibers into the air stream.

Standard insulation must meet NFPA Fire Hazard Classification requirements 25/50 per ASTM E84, UL 723, CAN/ULC S102-M88 and NFPA 90A requirements; air erosion and mold growth limits of UL-181; stringent fungal resistance test per ASTM-C1071 and ASTM G21; and shall meet zero level bacteria growth per ASTM G22. **Unit insulation must meet these stringent requirements or unit(s) will not be accepted.**

Cabinet arrangements shall allow symmetrical placement of riser piping on any one of the three sides of the cabinet not used for the chassis access. All Cabinet openings shall have dry wall flanges on all sides. Supply air openings shall be factory cut and flanged as shown on plans. For air noise attenuation purposes, the discharge air from fan shall discharge into insulated plenum that also contains insulated x-shape air baffle. **Units without supply air noise baffles are not acceptable.** Cabinet design shall allow a full height base board (4.50 inches/114mm) beneath the return air “G” panel. The cabinet shall contain an easily removable motor/blower assembly.

Electrical conduit shall be installed from electrical unit control compartment to top of cabinet for low voltage control wiring as well as separate conduit for main power wiring. **Units without these two factory installed electric conduits will not be accepted.**

Full-length supply, return, and insulated condensate water risers shall be type M copper. Supply and return risers have integral internal piping including ball valves (for shut off purposes at unit). Risers and piping shall be factory pressure tested to check for leaks. Field installed hose kits are required to connect the chassis piping to the cabinet ball valve. The condensate riser shall be insulated with 3/8” (9.5mm) Armaflex type insulation. The top of each riser shall be deeply swaged (3 inch/76.2mm) to accept connection to the riser above/below, allowing for a floor-to-floor dimensional variance of ± one inch (25.4mm). **Units without swaged riser-piping connections shall not be acceptable. Couplings and trim pieces shall not be allowed.**

Option: Type L riser piping.

Option: Supply and return risers insulated with 3/8” (9.5mm) ARMAFLEX type insulation.

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Tranquility® Modular - TRM Series Engineering Specifications – Page 2

Option: Unit mounted Thermostat provisions -- includes insulated junction box mounted inside discharge plenum that is connected to Molex-type connector wired to unit thermostat terminals, and having tile ring on cabinet for drywall installation to accept thermostat mounting.

Option: Low voltage 15 foot whip with molex-type connector for connection to remote thermostat.

Fan and Motor Assembly:

The cabinet shall contain a removable motor/blower assembly. Units shall have a direct drive centrifugal fan. The fan motor shall be 3 speed, permanently lubricated, PSC type with thermal overload protection. The fan motor for small size units (09 and 12) shall be isolated from the fan housing by a torsionally flexible motor mounting system with rubber type grommets to inhibit vibration induced high noise levels associated with "hard wire belly band" motor mounting. The fan motor on medium and large units (15-36) shall be isolated with flexible rubber type isolation grommets only. Airflow/External static pressure rating of the unit shall be based on a wet coil and clean filter. **Ratings based on a dry coil and/or no air filter shall not be acceptable.**

Option: ECM-X Motor, high efficient, preprogrammed motor for constant torque. Utilize up to 2 of the 5 speed taps for optimum CFM and lowest starting sound.

Chassis:

The chassis, which incorporates the air coil, water coil, hydronic coil, 3 way diverter valve, drain pan, and compressor, shall be easily installed for quick jobsite installation and future servicing purposes. The slide in chassis shall have insulated panels surrounding the compressor. Compressors are not in the air stream. The chassis base shall be fabricated from heavy gauge galvanized steel formed to match the slide in rails of the cabinet. All electrical connections between the chassis and cabinet shall be made via locking quick-connects. Units shall have a factory installed 1 inch (25.4mm) thick filter bracket and throwaway type glass fiber filter. Furnish one spare set of filters.

Option: UltraQuiet package shall consist of high technology sound attenuating material that is strategically applied to the compressor (rotary only) and inside compressor compartment to dampen and attenuate sound transmissions. Compressor is mounted on specially engineered sound-tested isolators.

Water connections between chassis and the cabinet shall be accomplished via a hose kit consisting of Kevlar-reinforced EPDM core hose surrounded by a stainless-steel braid. Hose kit shall have brass fittings with stainless-steel ferrules. Hose ends shall be solid External MPT which connects to mating fitting on cabinet shut off ball valve(s), and Internal NPSM (National Pipe Straight Mechanical) swivel end with fiber or EPDM washer which connects to mating threaded end connection on chassis. The hose kit shall be rated for 400 PSIG (2756 kPa) design working pressure.

Refrigerant Circuit: (For Cooling Only)

All units shall contain an EarthPure® (HFC-410A) sealed refrigerant circuit including a high efficiency scroll or rotary compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, an enhanced corrugated aluminum lanced fin and rifled copper tube refrigerant to air heat exchanger, coaxial (tube in tube) refrigerant to water heat exchanger, and safety controls including a high pressure switch, low pressure switch (loss of charge), water coil low temperature sensor, and air coil low temperature sensor. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the contractor supplied disconnect switch. **Units that cannot be reset at the thermostat shall not be acceptable.**

Hermetic compressors shall be internally sprung and externally isolated. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on specially engineered sound-tested EPDM vibration isolation grommets to a large heavy gauge compressor mounting plate, which is then isolated from the cabinet base with grommets for maximized vibration attenuation. All units (except units with rotary compressors) shall include a discharge muffler to further enhance sound attenuation. Compressor shall have thermal overload protection.

Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 625 PSIG (4309 kPa) refrigerant working pressure. Refrigerant to water heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design, rated to withstand 625 PSIG (4309 kPa) working refrigerant pressure and 500 PSIG (3445 kPa) working water pressure. The refrigerant to water heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all external steel and copper tubing. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

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TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

Tranquility® Modular - TRM Series Engineering Specifications – Page 3

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced types with external equalizer for optimum refrigerant metering. Units shall be designed and tested for operating ranges of entering water temperatures from 20° to 120°F (-6.7° to 48.9°C).

Option: The unit will be supplied with cupro-nickel coaxial water to refrigerant heat exchanger.

Option: The unit will be supplied with internally factory mounted two-way water valve for variable speed pumping requirements. Valve to be normally closed type.

Option: The unit will be supplied with internally factory mounted automatic water flow regulators.

Hydronic water coil (for heating only):

When diverter valve is energized, loop water circulates through the hydronic water coil. Water coil shall be copper tube and aluminum fin, multi-circuited for low pressure drop. Rated for 500 PSIG (3445 kPa) working water pressure.

Cabinet Drain Pan:

The drain pan shall be constructed of galvanized steel and have a powder coat paint application to further inhibit corrosion. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Drain pan shall be fully insulated. Drain pan shall have at a minimum a doubled sloped surface to allow positive drainage to the outlet opening, which shall be at the lowest level of the entire pan surface. Drain outlet shall be connected from pan outlet to condensate riser (if supplied) with factory-installed trap inside of cabinet. The unit as standard will be supplied with solid-state electronic condensate overflow protection.

Mechanical float switches will NOT be accepted.

Option: Stainless steel drain pan

Electrical:

A control compartment shall be located within the cabinet and shall contain a 50VA transformer, 24 volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation.

Option: Disconnect Switch, Non-Fused, classified as motor disconnect.

Option: Circuit Breaker, all 208/230 volt and 265 volt, 15 and 20 amp - HACR rated, 265 volt 25 amp and higher - supplemental rated.

Solid State Control System (DXM):

This control system features two stage control of cooling and two stage control of heating modes for exacting temperature and dehumidification purposes.

This control system coupled with a multi-stage thermostat will better dehumidify room air by automatically running the heat pump's fan at lower speed on the first stage of cooling thereby implementing low sensible heat ratio cooling. On the need for higher cooling performance the system will activate the second stage of cooling and automatically switch the fan to the higher fan speed setting. This system may be further enhanced with a humidistat. **Units without automatic low sensible heat ratio cooling will not be accepted; as an alternate a hot gas reheat coil may be provided with control system for automatic activation.**

- a. Anti-short cycle time delay on compressor operation.
- b. Random start on power up mode.
- c. Low voltage protection.
- d. High voltage protection.
- e. Unit shutdown on high or low refrigerant pressures.
- f. Unit shutdown on low water temperature (cooling) and high water temperature (heating).
- g. Condensate overflow electronic protection.
- h. Option to reset unit at thermostat or disconnect.
- i. Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
- j. Ability to defeat time delays for servicing.
- k. Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low voltage, high voltage, low water/air temperature cut-out, condensate overflow, and control voltage status.

TRM SERIES WITH HYDRONIC HEAT 60HZ - HFC-410A

SUBMITTAL DATA ENG/I-P

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- l. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor start command to prevent nuisance safety trips.
- m. 24V output to cycle a motorized water valve or other device with compressor contactor.
- n. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.
- o. Water coil low temperature sensing (selectable for water or anti-freeze).
- p. Air coil low temperature sensing.
- q. Removable thermostat connector.
- r. Override temperature control with 2-hour timer for room occupant to override setback temperature at the thermostat.
- s. Ability to work with heat pump or heat/cool (Y, W) type thermostats.
- t. Emergency shutdown contacts.
- u. Boilerless system heat control at low loop water temperature.
- v. Ability to allow up to 3 units to be controlled by one thermostat.
- w. Relay to operate an external damper.
- x. Ability to automatically change fan speed from multistage thermostat.
- y. Relay to start system pump.
- z. 75 VA control transformer. Control transformer shall have load side short circuit and overload protection via a built in circuit breaker.

NOTE: Units not providing the 8 safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil high temperature cut-out, and condensate overflow protections will not be accepted.

Remote Service Sentinel (DXM):

Solid state control system shall communicate with thermostat to display (at the thermostat) the unit status, fault status, and specific fault condition, as well as retrieve previously stored fault that caused unit shutdown. The Remote Service Sentinel allows building maintenance personnel or service personnel to diagnose unit from the wall thermostat. The control board shall provide a signal to the thermostat fault light, indicating a lockout. Upon cycling the G (fan) input 3 times within a 60 second time period, the fault light shall display the specific code as indicated by a sequence of flashes. A detailed flashing code shall be provided at the thermostat LED to display unit status and specific fault status such as over/under voltage fault, high pressure fault, low pressure fault, low water temperature fault, condensate overflow fault, etc. **Units that do not provide this remote service sentinel shall not be acceptable.**

Option: Lonworks interface system

Units shall have all the features listed above and the control board will be supplied with a LONWORKS interface board, which is LONMark certified. This will permit all units to be daisy chained via a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm
- i. High pressure switch alarm
- j. Condensate sensor alarm
- k. Hi/low voltage alarm
- l. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied/occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON/AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

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Option: MPC (Multiple Protocol Control) interface system

Units shall have all the features listed above and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch. Protocol selection shall not require any additional programming or special external hardware or software tools. This will permit all units to be daisy chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm
- i. High pressure switch alarm
- j. Condensate overflow alarm
- k. Hi/low voltage alarm
- l. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied/occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON/AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

Return Panel/Supply Grilles:

The return panel shall be architecturally designed, acoustic type, flush mounted with hinged door for easy and quick access to filter and unit interior. Chassis shall be easily removed. The hinged return panel shall be made of heavy gauge die formed galvanized steel with a powder coat finish in "polar ice" color.

Return air panels that protrude from wall more than 5/8 inch (15.9mm) are not acceptable. Supply grille(s) shall be architecturally designed "brushed" aluminum or powder coated steel (color: polar ice).

Option: Style "G" return air panel with frame.

Option: Supply grille with double deflection style louvers.

Option: Supply grille with double deflection style louvers with opposed damper.

Option: Motorized fresh air damper for either "G" or "H" panel with frame - allows outside air to enter on right or left side.

Option: Style "H" return air panel with frame **(Note: This option eliminates unit-mounted thermostat option).**

Warranty:

ClimateMaster shall warranty equipment for a period of 12 months from start up or 18 months from shipping (which ever occurs first).

Option: Extended 4-year compressor warranty covers compressor for a total of 5 years.

Option: Extended 4-year refrigeration circuit warranty covers coils, expansion valve and compressor for a total of 5 years.

Option: Extended 4-year control board warranty covers the CXM/DXM control board for a total of 5 years.

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DDC Loop controller - field supplied. Must be able to limit entering water temperature to 130°F (54°C). Controller must have outdoor air sensor; relays to control 2 main pumps, heater pump, and alarm; shut down audible alarm; operator control panel; and connection for fluid flow monitoring pressure differential switch. Unit operation without loop controller is not acceptable and will void the warranty.

FIELD INSTALLED OPTIONS

Hose Kits - AHH Series (required for field water connections):

Water connections between chassis and the cabinet shall be accomplished via a hose kit consisting of Kevlar-reinforced EPDM core hose surrounded by a stainless-steel braid. Hose kit shall have brass fittings with stainless-steel ferrules. Hose ends shall be solid External NPT which connects to mating fitting on cabinet shut off ball valve(s), and Internal NPSM (National Pipe Straight Mechanical) swivel end with fiber or EPDM washer which connects to mating threaded end connection on chassis. The hose kit shall be rated for 400 PSIG (2756 kPa) design working pressure. This hose kit accessory is required for each cabinet.

Thermostats:

The thermostat shall be a mechanical or electronic type heat/cool thermostat.

DDC Sensors:

ClimateMaster wall mounted DDC sensor to monitor room temperature and interfaces with optional interface system described above. Several types as described below:

- a. Sensor only with no display (LON and MPC).
- b. Sensor with override (LON only).
- c. Sensor with setpoint adjustment and override (MPC only).
- d. Sensor with setpoint adjustment and override, LCD display, status/fault indication (LON and MPC).