CLIMATE MASTER 33 Series

WATER TO AIR **HEAT PUMPS** VERTICAL MODEL HORIZONTAL MODEL

Better Cooling...Better Heating...Economically

CHOOSE FROM VERTICAL AND HORIZONTAL MODELS

4 Electrical Options

Different Return Air Configurations

Ease of Installation

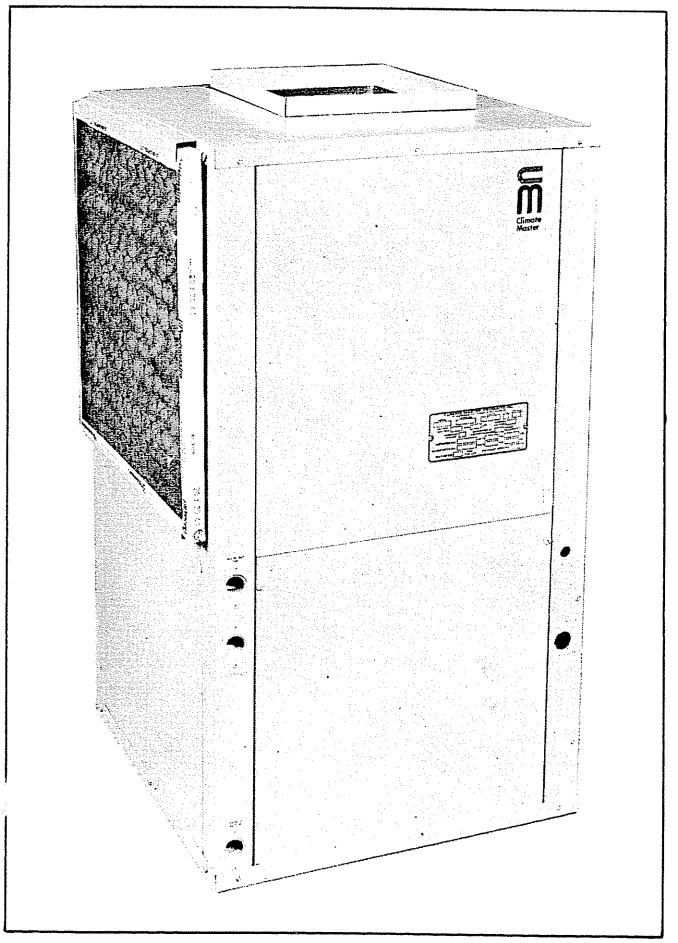
Versatility of Application

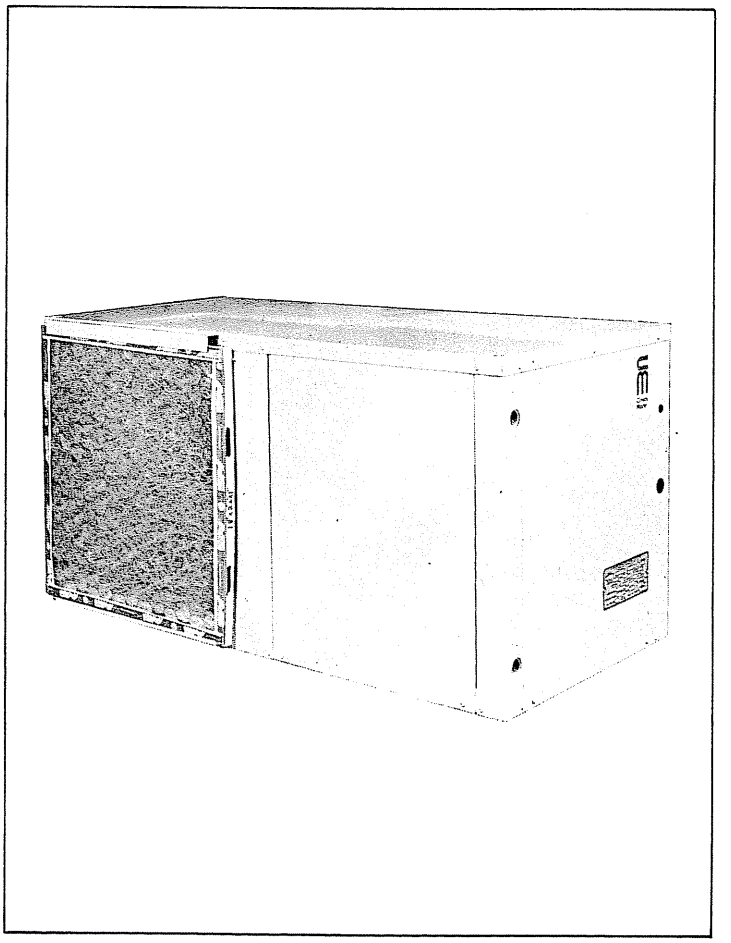
Compact, Space-Saving Design

Designed & Tested for High Efficiency

Superior Accessibility

Accoustically Improved





ADVANCED FEATURES and SPECIFICATIONS

MAKE CLIMATE MASTER YOUR BEST BUY IN ALL WEATHER COMFORT...

The Climate Master® is a complete factory-packaged water-to-air heat pump that provides total comfort. Each unit is designed and built per the specifications listed below:

Cabinet:

The cabinet is made of heavy gauge, galvanized steel, and painted electro-statically to prevent corrosion. The interior of the cabinet is lined with high density, coated insulation with improved thermal insulating and accoustical absorbtion characteristics. The units have access panels for ease of inspection and service to all components. The design incorporates externally stubbed water and drain (FPT) connections in the front of the unit for easy installation. The electrical power, control voltage wiring and control box are also accessible from the front of the unit. The supply air opening is provided with a duct collar and the return air incorporates a filter rack permitting removal of the filter in any direction (also optionally available is a flanged filter rack for ducted returns). The horizontal unit has threaded fasteners on the top for ceiling suspended installation.

Compressor:

The hermetic compressor is internally spring-mounted and mounted in the cabinet on rails with vibration isolators for quiet, smooth running operation. The compressor is furnished with internal (line break) motor protection and features an anti-slug device for extended life.

Reversing Valve:

The reverse cycle feature is provided by a four way electro-magnetic reversing valve designed for low pressure drops and reliable operation.

Refrigerant-To-Water Heat Exchanger:

The heat exchanger is coaxial (tube-in-tube) spirally wound with booster fins on the refrigerant side to provide optimum heat transfer. The inner (water) tube is available in copper or 90/10 cupro-nickel construction designed to withstand water pressures of 500 psi. The outer (refrigerant) tube is made of primed and painted steel. Design working pressure on the refrigerant side is 450 psi.

Air-To-Refrigerant Heat Exchanger:

The large face area, fin coil heat exchanger utilizes 5/16" staggered copper tubes with rippled and corrugated aluminum fins for added heat transfer. The refrigerant circuiting is designed for optimum pressure drops and efficiency.

Refrigerant Control:

The optimum factory charge of Refrigerant 22 is metered by precisely designed capillary tubes. The critical charge and sizing of capillary tubes is laboratory researched for balancing on the cooling and heating modes at varied conditions. The refrigerant piping is factory pressure and leak tested. Abnormal pressures within the refrigerant circuit are prevented with safety high and low pressure switches.
Charging and service ports are provided on the high and low pressure sides of the unit as standard equipment.

Blower and Motor:

The centrifugal type blower wheel and housing is custom designed for quiet operation and efficient air delivery. The blower is close-coupled to a PSC motor with inherent thermal overload protection. Each unit is provided with a high velocity type disposable filter.

Controls:

The control box, easily accessible from the front panel, includes a 24 volt control transformer, compressor contactor, blower and impedance relays. The single phase model is furnished with a run capacitor. Completely factory wired, the circuit features a lock-out relay to provide a manual reset at the thermostat in case of interrupted operation by the safety controls. The individual control components are designed for ease of inspection and serviceability. A terminal block is provided for convenient field wiring to the thermostat. A remote thermostat for comfort control is furnished with the unit.

SUPERIOR COOLING CAPACITIES AND PERFORMANCE

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 32,000 BTUH*.
Power Input: 3600 Watts.

*Basis: 1040 CFM of 80° F DB/67° F WB entering air
4.4 GPM of Water entering at 75° F, leaving at 95° F.

APPLICATION DATA

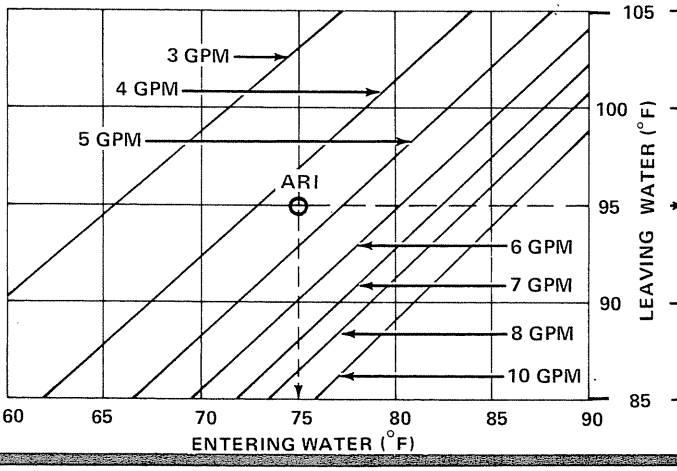
ENTERING AIR (° F) WET BULB	BASED ON 1040 CFM & 95° F LEAVING WATER					
	TOTAL CAPACITY (BTUH)	SENSIBLE CAPACITY (BTUH) ENTERING AIR (° F) DRY BULB				HEAT OF REJECTION (BTUH)
		75	80	85	90	
61	27400	21650	24660	–	–	39000
64	29900	20330	23620	26910	–	41700
67	32500	18850	21750	25700	28250	44000
70	34500	–	19320	23120	26910	47100
73	37000	–	–	20720	24790	51000

CORRECTION FACTORS

(A) VARIATION OF AIRFLOW

CFM	940	975	1010	1040	1070	1100	1125
TOTAL CAPACITY	.960	.976	.989	1.000	1.008	1.016	1.022
SENSIBLE CAPACITY	.948	.969	.986	1.000	1.013	1.026	1.036
HEAT OF REJECTION	.978	.987	.994	1.000	1.012	1.023	1.032

(B) VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.928	0.957	3800
0.966	0.977	3680
1.000	1.000	3600
1.028	1.024	3540
1.057	1.046	3500

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @AVAILABLE EXTERNAL STATIC PRESSURE (IWG)								
.1	.15	.2	.25	.3	.35	.4	.45	.5
1150	1125	1100	1070	1040	1010	975	940	900

SAMPLE PROBLEM (COOLING)

1100 CFM AIR ENTERING AT 85° DB/64° WB
6 GPM OF 75° F ENTERING WATER

		AIRFLOW CORRECTION		WATER FLOW CORRECTION		
TOTAL CAPACITY =	29900	X 1.016	X	1.028	=	31230 BTUH
SENSIBLE =	26910	X 1.026	X	1.028	=	28380 BTUH
HEAT REJECTION =	41700	X 1.023	X	1.024	=	43680 BTUH

SUPERIOR HEATING CAPACITIES AND PERFORMANCE

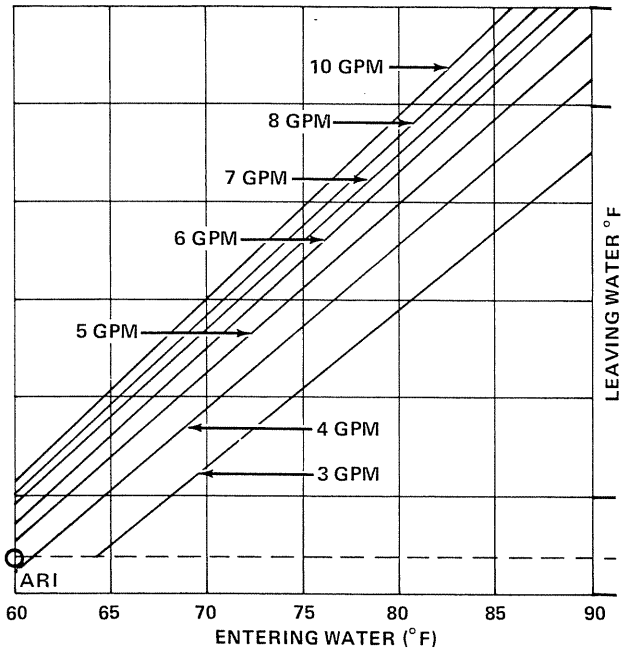
HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 30,000 BTUH*.
Power Input: 3400 Watts.

*Basis: 1040 CFM of 70° F entering air
4.4 GPM of 60° F entering water.

APPLICATION DATA

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORBTION (BTUH)	POWER INPUT (WATTS)
44300	29200	4070
41500	27300	3950
39200	25500	3850
37000	23600	3750
34600	21600	3640
32100	19700	3510
30000	18000	3400

VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	.97	.94
HEAT OF ABSORPTION	1.07	1.04	1.00	.95	.94
POWER INPUT	.96	.98	1.00	1.04	1.08

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	940	975	1010	1040	1070	1100	1125
HEATING CAPACITY	.965	.978	.990	1.000	1.008	1.016	1.020
HEAT OF ABSORPTION	.945	.963	.987	1.000	1.011	1.022	1.031
POWER INPUT	1.045	1.030	1.016	1.000	.993	.986	.980

WATER PRESSURE DROP-PSIG.

WATER FLOW RATE (GPM)	3	4	5	6	7	8	9	10
PRESSURE DROP (PSIG)	1.3	2.0	2.9	4.0	5.2	6.5	8.0	9.6

SAMPLE PROBLEM (HEATING)

1100 CFM OF AIR ENTERING AT 75° F
6 GPM OF 73° F ENTERING WATER

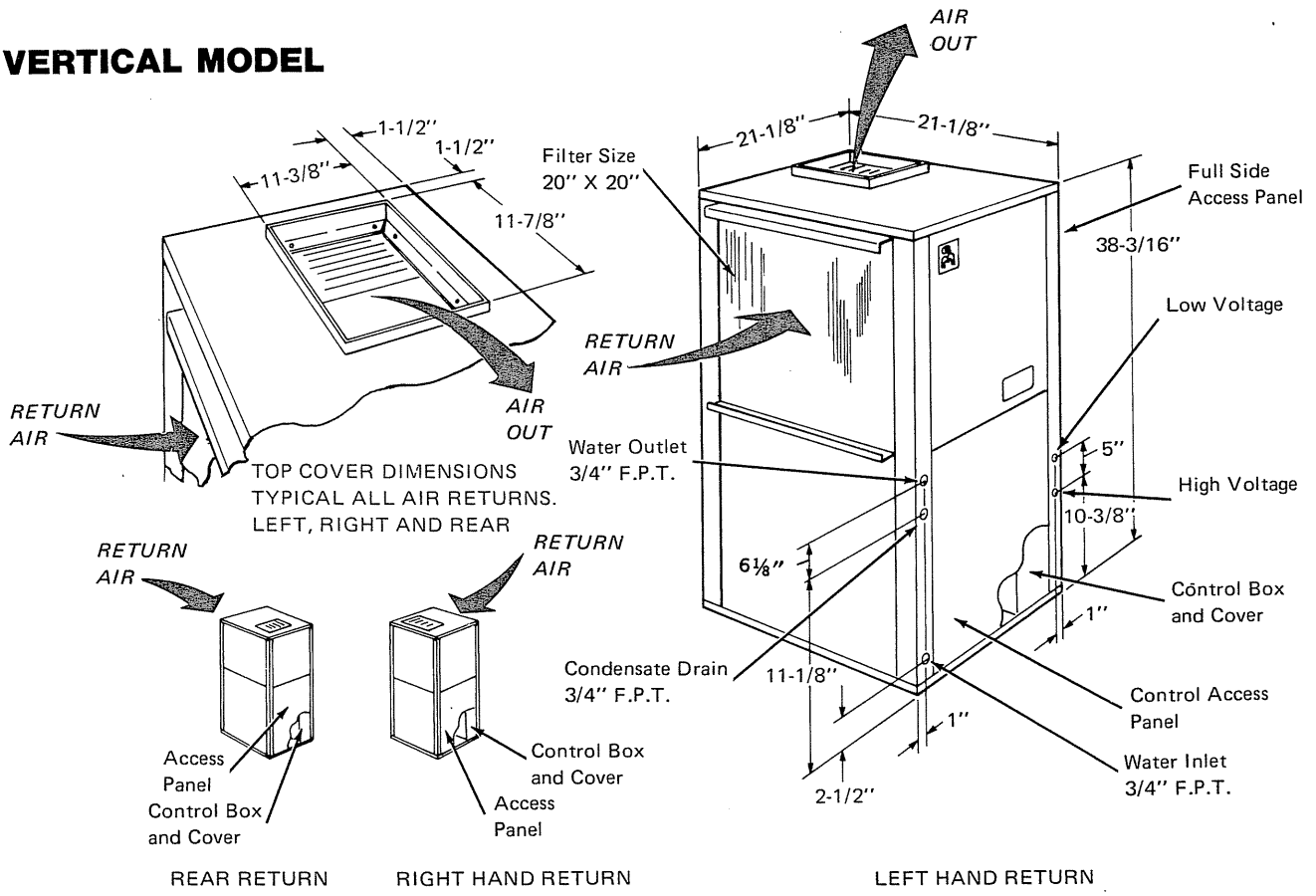
ENTERING AIR CORRECTION ▼ AIRFLOW CORRECTION ▼

HEATING CAPACITY = 37000 X 0.97 X 0.99 = 35530 BTUH
HEAT OF ABSORPTION = 23600 X 0.95 X 0.987 = 22130 BTUH
POWER INPUT (WATTS) = 3750 X 1.04 X 1.016 = 3962 WATTS

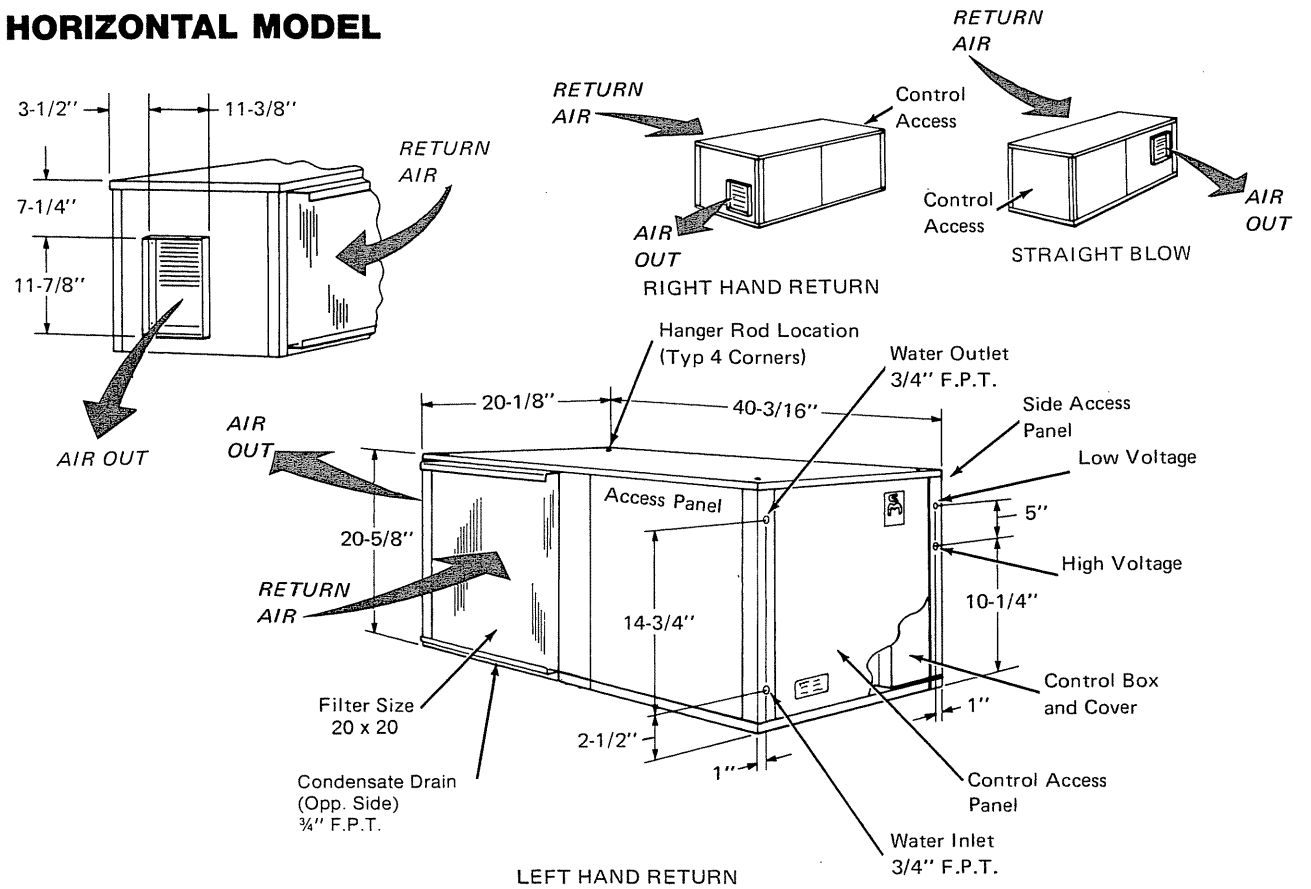
CHOOSE FROM VERTICAL AND HORIZONTAL STYLES

DIMENSIONAL DATA

VERTICAL MODEL



HORIZONTAL MODEL



PHYSICAL DATA

SPECIFICATION CHART

FOR VERTICAL AND HORIZONTAL MODELS

MODEL		V33-12	H33-12	V33-13	H33-13	V33-32	H33-32	V33-34	H33-34
CONFIGURATION		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
VOLTAGE *		208/230	208/230	277	277	208/230	208/230	480	480
PHASE		1	1	1	1	3	3	3	3
MIN. CIRCUIT AMPACITY		23.1	23.1	15.8	15.8	14.2	14.2	6.8	6.8
MAX. FUSE SIZE **		35	35	25	25	20	20	15	15
COMPRESSOR F.L.A.		15.9	15.9	11.0	11.0	8.8	8.8	4.7	4.7
COMPRESSOR L.R.A.		76	76	69	69	65	65	27	27
BLOWER F.L.A.		3.2	3.2	2.0	2.0	3.2	3.2	.9	.9
BLOWER MOTOR-HP		1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
BLOWER WHEEL DIA.		9-1/2	9-1/2	9-1/2	9-1/2	9-1/2	9-1/2	9-1/2	9-1/2
BLOWER WHEEL LEN.		7-1/4	7-1/4	7-1/4	7-1/4	7-1/4	7-1/4	7-1/4	7-1/4
REF. TO AIR HEAT EXCHANGER	ROWS	4	4	4	4	4	4	4	4
	FACE AREA	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
	FINS/INCH	13	13	13	13	13	13	13	13
WATER INLET (FPT)		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
WATER OUTLET (FPT)		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
DRAIN (FPT)		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
FILTER SIZE		20 x 20	20 x 20	20 x 20	20 x 20	20 x 20	20 x 20	20 x 20	20 x 20
OPERATING, WT. (APPROX.)		265	275	265	275	260	270	260	270

* MIN. VOLTAGE ON 208/230 VOLT MODELS IS 197 VOLTS.

** TIME DELAY TYPE

NOTE: ALL UNITS ARE OPTIONALLY AVAILABLE WITH CONTROLS FOR AN AUTOMATIC CHANGEOVER THERMOSTAT.

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Climate Master

CLIMATE MASTER PRODUCTS

DIVISION OF WEIL - MC LAIN COMPANY, INC.

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DIVISION WEIL-McLAIN