

# Geothermal Indoor Split Heat Pump Product Data

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- R-410A Refrigerant
- 2, 3, 4, and 5 Tons Dual Capacity

## XL Series T2GN



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**022-1855-4**  
**SC2503SG4**



# T2GN Series Indoor Split

## General Introduction

T2GN Series splits are designed for indoor installations, and are connected to an indoor air handler via refrigerant lines and control wiring. T2GN Series units utilize the ozone-safe R-410A refrigerant to meet the most stringent EPA requirements now and for many years to come. Easily accessible controls and connections for refrigerant piping and water piping make this unit simple to install in a wide variety of applications. Heavy gauge metal cabinets are coated with durable polyester powder coat paint for long lasting beauty and protection. The T2GN Series split will provide exceptional performance and comfort for many years. And because there is no outdoor blower like ordinary air conditioners or heat pumps, the T2GN Series is very quiet.

T2GN Series units are performance-certified to AHRI ISO 13256-1 standards, are ETL safety listed, and are ENERGYSTAR® qualified.

As a leader in the industry, we are dedicated to innovation, quality and customer satisfaction. In fact, every unit built is exposed to a wide range of quality control procedures throughout the assembly process and is then subjected to a rigorous battery of computerized run tests to certify that it meets or exceeds performance standards for efficiency and safety, and will perform flawlessly at startup. As further affirmation of our quality standards, each unit carries our exclusive Quality Assurance emblem, signed by the final test technician.



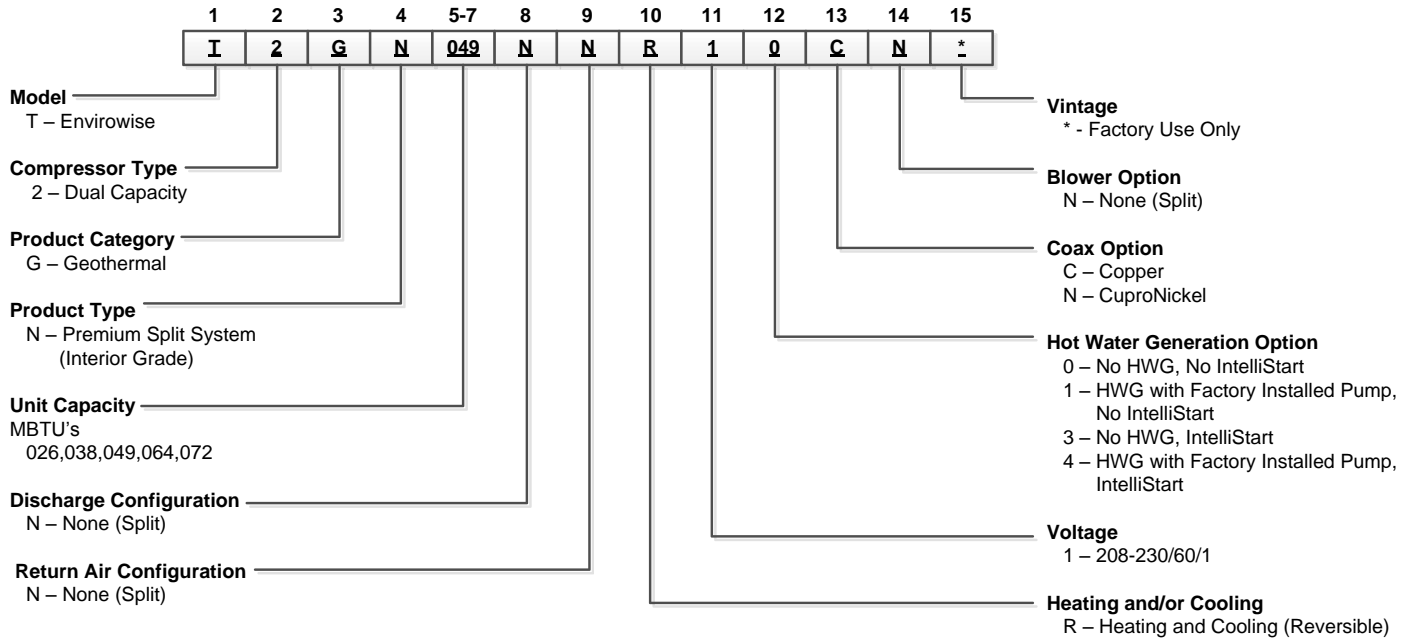
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# Model Nomenclature

## 2GN-Series

## Indoor Split Single & Dual Capacity (2-6 Tons)



Rev.: 12/6/2016

# AHRI Data

ARI/ASHRAE/ISO 13256-1  
English (IP) Units

Model	Capacity Modulation	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
				Cooling Brine EWT 86°F		Heating Brine EWT 68°F		Cooling EWT 59°F		Heating EWT 50°F		Cooling Brine Full Load 77°F Part Load 68°F		Heating Brine Full Load 32°F Part Load 41°F	
		GPM	CFM Clg/Htg	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
026	Full	8	825/900	23,500	16.1	28,000	5.0	27,100	23.9	23,200	4.5	24,600	18.6	18,600	3.8
	Part	7	625/700	17,600	17.6	21,000	5.5	20,600	31.1	17,300	4.7	19,600	26.2	15,400	4.2
038	Full	9	1100	37,100	16.3	40,200	4.8	39,400	24.0	33,100	4.3	38,100	18.9	26,500	3.8
	Part	8	800/900	27,300	19.1	28,900	5.3	31,300	33.1	23,900	4.5	29,900	27.8	21,700	4.1
049	Full	12	1400/1600	49,800	16.8	51,800	4.7	55,800	24.5	43,200	4.3	51,300	19.6	35,300	3.6
	Part	11	1000/1200	36,700	18.9	36,900	5.1	41,000	32.9	30,400	4.4	39,700	28.2	27,300	4.0
064	Full	16	2000	55,500	13.6	66,800	4.5	64,000	20.7	55,800	4.0	58,800	15.8	47,100	3.4
	Part	14	1600	41,800	15.9	47,600	5.0	49,600	28.3	38,900	4.2	47,000	23.4	34,500	3.8

1/14/2013

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature  
Heating capacities based upon 68°F DB, 59°F WB entering air temperature  
All ratings based upon operation at the lower voltage of dual voltage rated models.  
Refer to the air handler compatibility table for matching air handler.

## Energy Star Rating Criteria

In order for water-source heat pumps to be Energy Star rated they must meet or exceed the minimum efficiency requirements listed below. Please note there are 3 Tier levels that dictate minimum efficiency for water source pumps. Only one tier level is active at a given moment.

Tier 3: 1/1/2012 – No Effective End Date Published	EER	COP
Closed loop water-to-air	17.1	3.6
Open loop water-to-air	21.1	4.1
Closed loop water-to-water	16.1	3.1
Open loop water-to-water	20.1	3.5

## Energy Star Compliance Table

Model	Tier 3	
	Ground Water	Ground Loop
026	Yes	Yes
038	Yes	Yes
049	Yes	Yes
064	Yes	Yes

11/12/10



# AHRI Data cont.

The performance standard AHRI/ASHRAE/ISO 13256-1 became effective January 1, 2000 and replaces AHRI Standards 320, 325, and 330. This new standard has three major categories: Water Loop (comparable to ARI 320), Ground Water (ARI 325), and Ground Loop (ARI 330). Although these standards are similar there are some differences:

**Unit of Measure:** The Cooling COP  
The cooling efficiency is measured in EER (US version measured in Btuh per Watt). The Metric version is measured in a cooling COP (Watt per Watt) similar to the traditional COP measurement.

**Water Conditions Differences**  
Entering water temperatures have changed to reflect the centigrade temperature scale. For instance the water loop heating test is performed with 68°F (20°C) water rounded down from the old 70°F (21.1°C).

**Air Conditions Differences**  
Entering air temperatures have also changed (rounded down) to reflect the centigrade temperature scale. For instance the cooling tests are performed with 80.6°F (27°C) dry bulb and 66.2°F (19°C) wet bulb entering air instead of the traditional 80°F (26.7°C) DB and 67°F (19.4°C) WB entering air temperatures. 80.6/66.2 data may be converted to 80/67 using the entering air correction table. This represents a significantly lower relative humidity than the old 80/67 of 50% and will result in lower latent capacities.

**Pump Power Correction Calculation**  
Within each model, only one water flow rate is specified for all three groups and pumping Watts are calculated using the following formula. This additional power is added onto the existing power consumption.

- Pump power correction = (gpm x 0.0631) x (Press Drop x 2990) / 300 where 'gpm' is waterflow in gpm and 'Press Drop' is the pressure drop through the unit heat exchanger at rated water flow in feet of head.

**Blower Power Correction Calculation**  
Blower power is corrected to zero external static pressure using the following equation. The nominal airflow is rated at a specific external static pressure. This effectively reduces the power consumption of the unit and increases cooling capacity but decreases heating capacity. These Watts are significant enough in most cases to increase EER and COPs fairly dramatically over ARI 320, 325, and 330 ratings.

- Blower Power Correction = (cfm x 0.472) x (esp x 249) / 300 where 'cfm' is airflow in cfm and 'esp' is the external static pressure at rated airflow in inches of water gauge.

## ISO Capacity and Efficiency Calculations

The following equations illustrate cooling calculations:

- ISO Cooling Capacity = Cooling Capacity (Btuh) + (Blower Power Correction (Watts) x 3.412)
  - ISO EER Efficiency (W/W) = ISO Cooling Capacity (Btuh) x 3.412 / [Power Input (Watts) - Blower Power Correction (Watts) + Pump Power Correction (Watt)]
- The following equations illustrate heating calculations:
- ISO Heating Capacity = Heating Capacity (Btuh) - (Blower Power Correction (Watts) x 3.412)
  - ISO COP Efficiency (W/W) = ISO Heating Capacity (Btuh) x 3.412 / [Power Input (Watts) - Blower Power Correction (Watts) + Pump Power Correction (Watt)]

## Comparison of Test Conditions

	ARI 320	ISO/AHRI 13256-1 WLHP	ARI 325	ISO/AHRI 13256-1 GWHP	ARI 330	ISO/AHRI 13256-1 GLHP
<b>Cooling</b>						
Entering Air - DB/WB °F	80/67	80.6/66.2	80/67	80.6/66.2	80/67	80.6/66.2
Entering Water - °F	85	86	50/70	59	77	77
Fluid Flow Rate	*	**	**	**	**	**
<b>Heating</b>						
Entering Air - DB/WB °F	70	68	70	68	70	68
Entering Water - °F	70	68	50/70	50	32	32
Fluid Flow Rate	*	**	**	**	**	**

Note \*: Flow rate is set by 10°F rise in standard cooling test Part load entering water conditions not shown.

Note \*\*: Flow rate is specified by the manufacturer

WLHP = Water Loop Heat Pump; GWHP = Ground Water Heat Pump; GLHP = Ground Loop Heat Pump

## Conversions:

Airflow (lps) = CFM x 0.472;  
ESP (Pascals) = ESP (in wg) x 249;

Water Flow (lps) = GPM x 0.0631;  
Press Drop (Pascals) = Press Drop (ft hd) x 2990

## Design Features

### Application Flexibility

- Safe, efficient operation in a wide range of liquid temperatures (25°F to 110°F) and flow rates (as low as 1.5 GPM/ton in open loop applications when EWT >50°F).
- Easily accessible loop pump wiring.

### Operating Efficiencies

- Environmentally friendly R-410A refrigerant.
- LED fault and status lights with memory for easy diagnostics.
- Accumulator on all models for compressor reliability.
- AHRI 13256-1 rating for heating COPs, cooling EERs and low water flow requirements.
- Optional hot water generator creates hot water at considerable savings while improving overall system efficiency.
- High-stability expansion valve delivers optimum refrigerant flow over a wide range of conditions.
- Efficient Climatuff® scroll compressors in all units.
- Oversized coaxial tube water-to-refrigerant heat exchanger operates at low liquid pressure drops.
- Optional convoluted copper water tube functions efficiently at low flow rates, and provides freeze-damage resistance.

### Service Advantages

- Easily removable top, front and side access panels.
- Easily accessible thermal expansion valve.
- Brass, swivel-type water connections for ease of installation.
- High- and low-pressure service ports in refrigerant circuit.

### Factory Quality

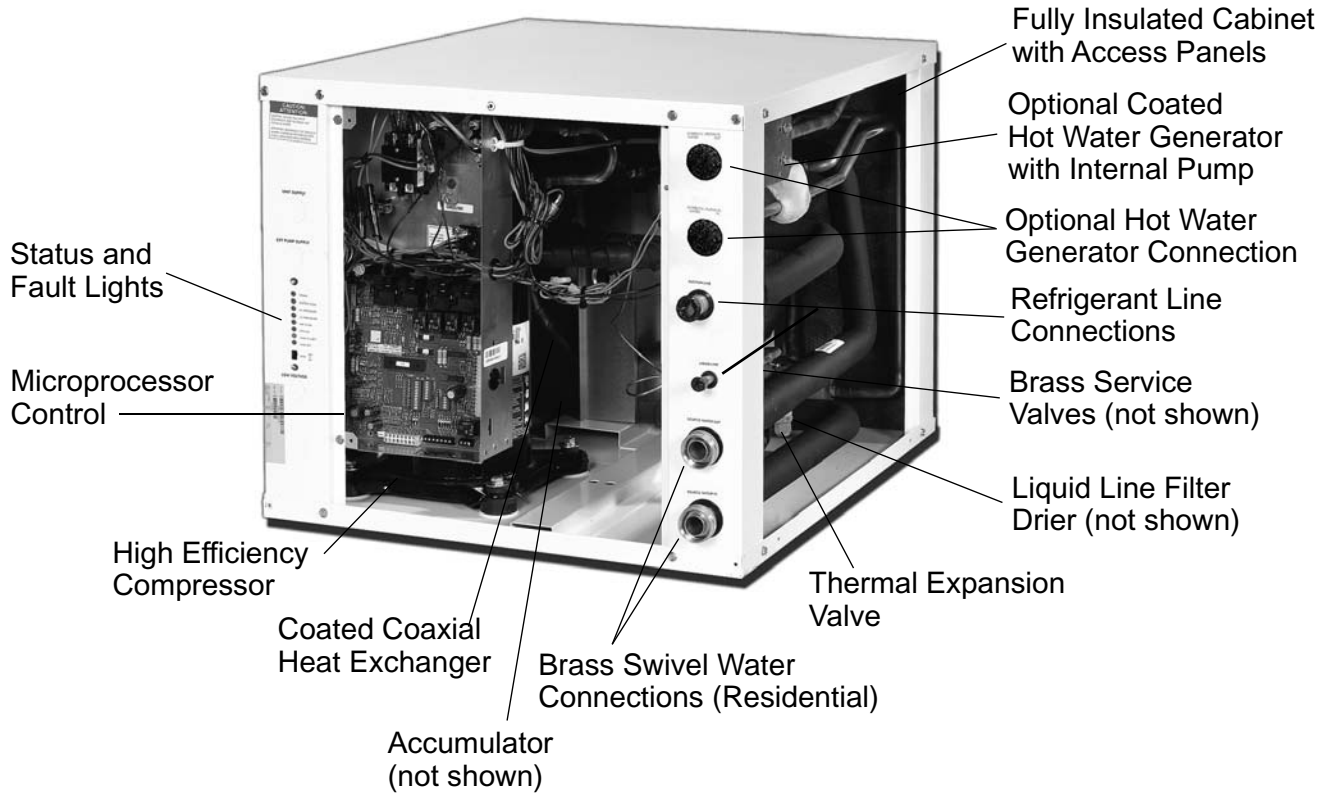
- All units are manufactured on an automated testing assembly line. This assembly line features monitoring and assembly processes that lead the industry such as:
  - Component verification through bar codes.
  - Multiple automatic leak and pressure tests.
  - Performance of a water-based run test measuring both functionality and performance of the unit.
  - Database management of all run test parameters for service analysis.
  - Integrated fail safe system that prevents packaging of a failed unit.
- Heavy-gauge steel cabinets are painted with durable polyester powder coat paint for long lasting beauty and service.
- All refrigerant brazing is performed in a nitrogen atmosphere.
- All units are deep evacuated to less than 150 microns prior to refrigerant charging.
- All joints are helium leak-tested to ensure an annual leak rate of less than 1/4 ounce.
- Refrigerant suction lines, hot water generator coil, and all water pipes are fully insulated to reduce condensation problems in low temperature operation.
- Noise reduction features: Double isolation mounted compressors, insulated cabinet using 1/2-inch coated glass fiber.
- Compressor sound blanket.
- Safety features include high- and low-pressure refrigerant controls to protect the compressor.
- Coaxial heat exchanger and optional hot water generator are coated.

### Options and Accessories

- Optional coated hot water generator with internally mounted pump and water heater plumbing connector
- Electronic auto-changeover thermostat with 3-stage heat/2-stage cool and indicator LEDs
- Closed loop flow center and loop circulating kits
- Hose kits
- Additional accessory relay
- Mounting pad
- Well water kits
- IntelliStart soft starter



# Indoor Split Features



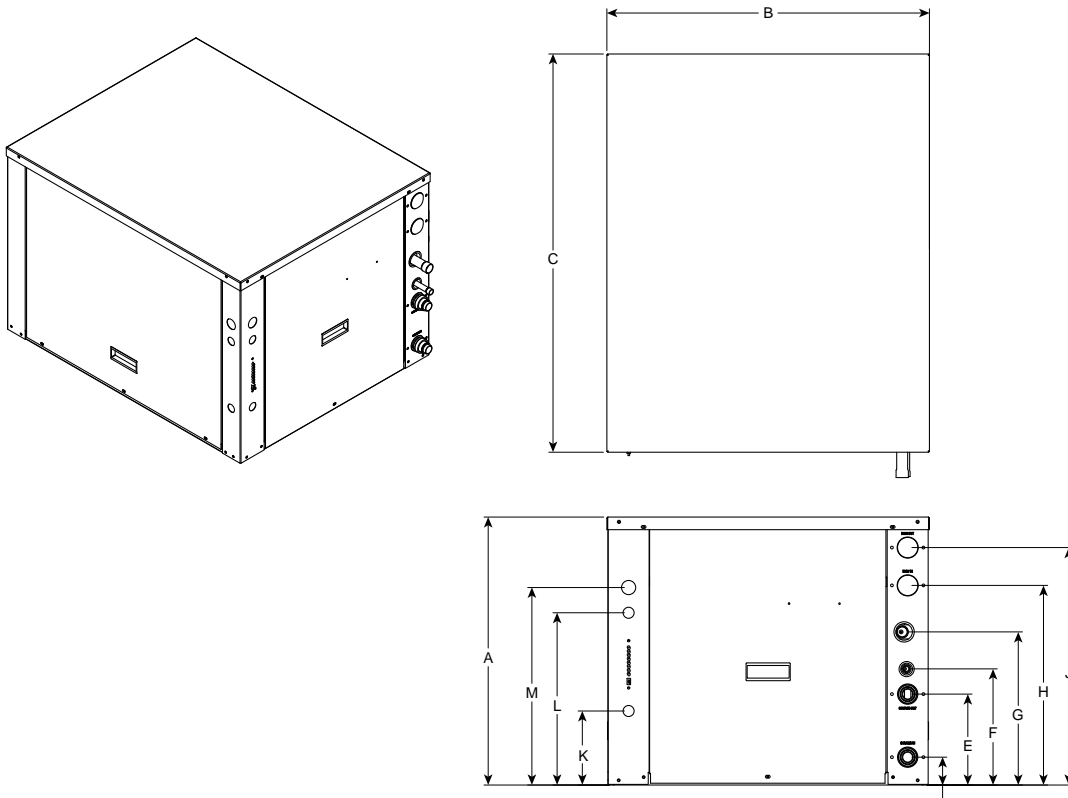
## Physical Data

Model	026	038	049	064
Compressor (1 each)	Dual Capacity Scroll			
Factory Charge R410a, oz [kg]	52 [1.47]	56 [1.59]	90 [2.55]	92 [2.61]
Coax and Water Piping				
Water Connections Size - Swivel- in [mm]	1 [25.4]			
HWG Connection Size - Sweat (I.D.) - in [mm]	1/2 [12.7]			
Brass Service Valve - Liquid Line - in [mm]	3/8" [9.525]			1/2" [12.7]
Brass Service Valve - Suction Line - in [mm]	5/8" [15.875]	3/4" [19.05]		7/8" [22.225]
Coax & Piping Water Volume - gal [l]	0.7 [2.6]	1.3 [4.9]	1.6 [6.1]	1.6 [6.1]
Weight - Operating, lb [kg]	189 [86]	236 [107]	250 [113]	271 [123]
Weight - Packaged, lb [kg]	209 [95]	256 [116]	270 [122]	291 [132]

NOTES: All units have expansion devices, and 1/2 in. [12.2 mm] and 3/4 in. [19.1 mm] electrical knockouts. Brass service valves are sweat type valves.

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# Dimensional Data



MODELS		HEIGHT	WIDTH	DEPTH	WATER IN	WATER OUT	SERVICE VALVE		HWG IN	HWG OUT	LOW VOLTAGE	EXTRNL PUMP	LINE VOLTAGE
		A	B	C	D	E	LIQUID	GAS					
026	IN.	19.50	22.50	26.50	1.93	6.93	8.44	11.55	13.43	16.43	5.87	13.66	15.66
	CM.	48.90	57.15	67.31	4.90	17.60	21.44	29.34	34.11	41.73	14.91	34.70	39.78
038-064	IN.	21.25	25.50	31.50	2.21	7.21	9.21	12.14	15.83	18.83	5.87	13.66	15.66
	CM.	54.00	57.15	80.01	5.61	18.31	23.39	30.84	40.21	47.83	14.91	34.70	39.78

Dimensions are in inches.

7/27/10

Refrigerant line connections extend 2 in. [50.8 mm] beyond the front of the cabinet.

Water lines extend 1.2 in. [30.5 mm] beyond the front of the cabinet.

# Electrical Data

MODEL	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR				HWA PUMP FLA	EXT LOOP FLA	TOTAL UNIT FLA	MIN CIRC AMP	MAX FUSE/HACR
			MCC	RLA	LRA	LRA*					
026	208-230/60/1	187/253	18.2	11.6	58.3	21.0	0.4	5.4	17.0	19.9	30
038	208-230/60/1	187/253	23.8	15.2	83.0	30.0	0.4	5.4	20.6	24.4	40
049	208-230/60/1	187/253	33.0	21.1	104.0	37.0	0.4	5.4	26.9	31.8	50
064	208-230/60/1	187/253	42.3	27.1	152.9	54.0	0.4	5.4	32.5	39.3	70

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Rated voltage of 208-230/60/1

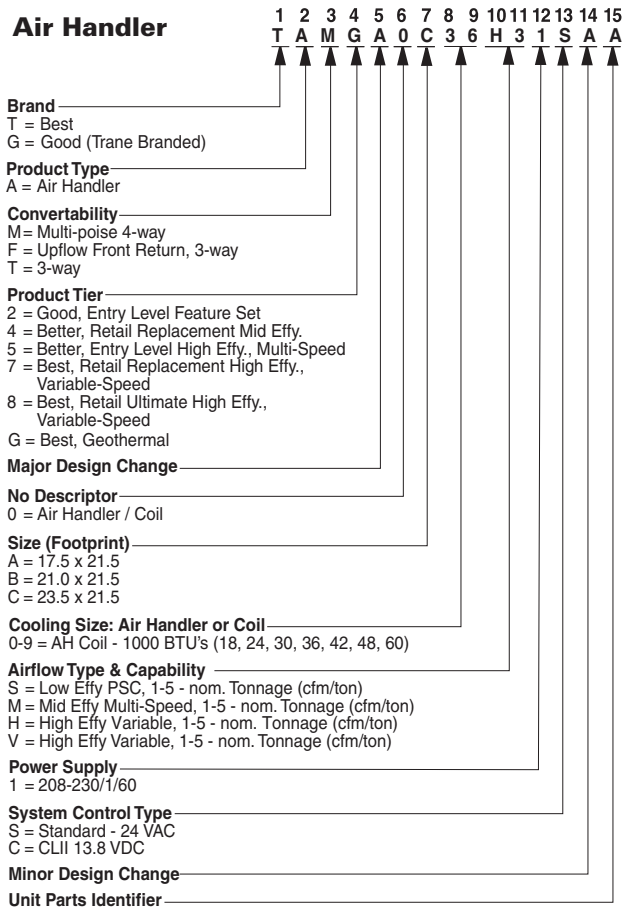
HACR circuit breaker in USA only

Min/Max Voltage of 187/253

All fuses Class RK-5

\* With optional IntelliStart

# Model Nomenclature - Air Handler



## Air Handler Compatibility

### Air Handler Sizing Selection

The TAMG Series Air Handlers are designed for R-410A refrigerant and should be matched with the XL Series Split compressor section according to the table below.

AIR HANDLER	INDOOR SPLIT MODEL (DUAL CAPACITY)	OUTDOOR SPLIT MODEL (DUAL CAPACITY)	AIRFLOW (CFM)	ELECTRIC HEAT SINGLE-PHASE (KW) 12	ELECTRIC HEAT 3-PHASE (KW) 3
TAMGA0A24	2GN026	2GE026	900	5, 8, 10	10
TAMGA0C36	2GN038	2GE038	1250	5, 8, 10, 15	10, 15
TAMGA0C48	2GN049	2GE049	1600	5, 8, 10, 15, 20, 25	10, 15
TAMGA0C60	2GN064	2GE064	1900	5, 8, 10, 15, 20, 25	10, 15

- 1.) 5, 8, and 10 KW Single Phase heaters available in breaker(BK) or lug(LG)
- 2.) 15, 20, and 25 KW Single Phase heaters available in breaker(BK)
- 3.) 10 and 15 KW Three Phase heaters available in lug (LG)

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## Physical Data - Air Handler

AIR HANDLER MODEL NUMBER (REFRIGERANT)		TAMGA0A24	TAMGA0C36	TAMGA0C48	TAMGA0C60
EVAPORATOR COIL	AIR COIL TOTAL FACE AREA, FT <sup>2</sup> [M <sup>2</sup> ]	3.67 [0.34]	5.50 [0.51]	5.96 [0.55]	5.96 [0.55]
	TUBE OUTSIDE DIAMETER - IN. [MM]	3/8 [9.52]			
	NUMBER OF ROWS	3	4		
	FINS PER INCH	14			
	SUCTION LINE CONNECTION - IN. [MM] SWEAT	3/4 [19.05]	7/8 [22.22]		
	LIQUID LINE CONNECTION - IN. [MM] SWEAT	3/8 [9.52]			
REFRIGERANT		R-410A			
NOMINAL COOLING CAPACITY - TONS [KW]		2.0 [7.03]	3.0 [10.55]	4.0 [14.07]	5.0 [17.58]
CONDENSATE DRAIN CONNECTION - (NPT) IN. [MM]		3/4 [19.05]			
BLOWER WHEEL SIZE (DIA X W), IN. [MM]		11 X 8 [279 X 203]	11 X 10 [279 X 254]		
BLOWER MOTOR TYPE/SPEEDS		ECM VARIABLE SPEED			
BLOWER MOTOR OUTPUT - HP [W]		1/2 [373]	3/4 [559]	1 [745]	
FILTER STANDARD - 1" [51MM] MERV3 DISPOSABLE, IN. [MM]		16 X 20 [406 X 508]	22 X 20 [559 X 508]		
ELECTRICAL CHARACTERISTICS (60HZ)		208/230 - 1PH			
SHIPPING WEIGHT - LBS. [KG]		127 [57.6]	157 [71.2]	175 [79.4]	
OPERATING WEIGHT - LBS. [KG]		116 [52.6]	146 [66.2]	163 [74.9]	

## Line Set Sizes

UNIT SIZE	AIR HANDLER	20 FEET		40 FEET		60 FEET		FACTORY CHARGE (OZ.)	*CHARGE AMOUNT WITH TAMG AIR HANDLER (OZ.)
		SUCTION	LIQUID	SUCTION	LIQUID	SUCTION	LIQUID		
026	TAMGA0A24	5/8" OD	3/8" OD	3/4" OD	3/8" OD	3/4" OD	1/2" OD	52	60
038	TAMGA0C36	3/4" OD	3/8" OD	3/4" OD	3/8" OD	3/4" OD	1/2" OD	56	82
049	TAMGA0C48	3/4" OD	3/8" OD	7/8" OD	3/8" OD	7/8" OD	1/2" OD	90	112
064	TAMGA0C60	7/8" OD	1/2" OD	7/8" OD	1/2" OD	1-1/8" OD	1/2" OD	92	111

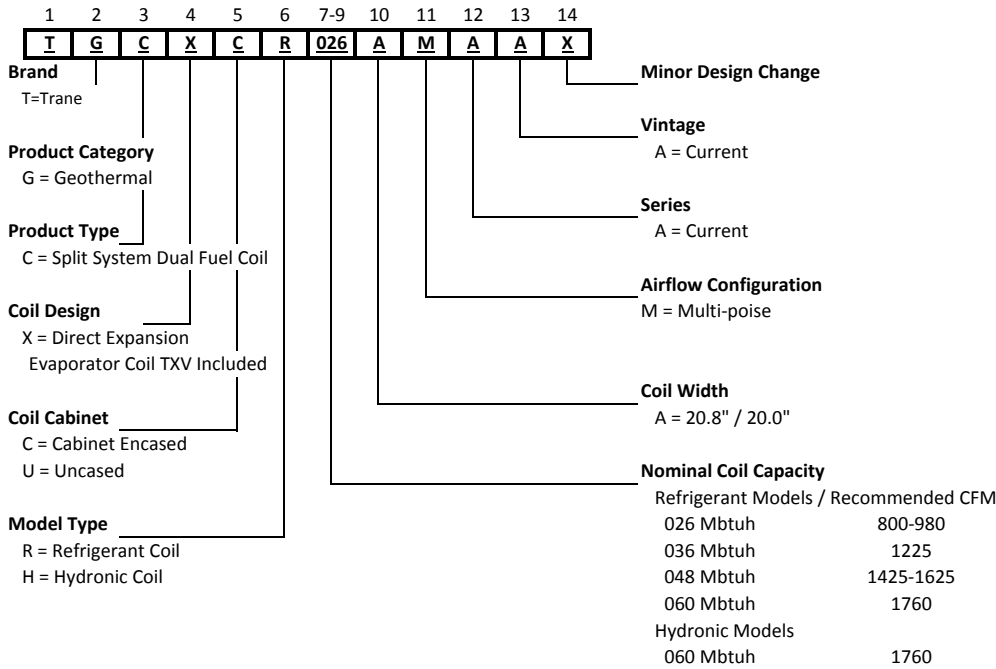
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### NOTES:

1. "Charge Amount with TAMG Air Handler" column is based on the total charge amount for an TAMG Air Handler + Compressor Section Split.
2. Add charge for length of line set length. Additional charge for R-410A is 0.50 oz. per ft. for 3/8 in. and 1.0 oz. per ft. for 1/2 in. tube.
3. After charge is added, adjustments can be made to get appropriate subcooling and superheat.
4. Longer line sets will reduce capacity and efficiency of the system as well as adversely effect system reliability due to poor oil return.
5. Line set sizes match split heat pump. Reducing coupling may be required at indoor unit connection.

# TAMG Series Coil Nomenclature

## GCX Coils



## REFRIGERANT COIL COMPATIBILITY

ENCASED/UNCASED COIL	INDOOR SPLIT MODEL (DUAL CAPACITY)	OUTDOOR SPLIT MODEL (DUAL CAPACITY)	RECOMMENDED AIRFLOW (CFM)
GCXC026*	2GN026	2GE026	925
GCXC036*	2GN038	2GE038	1225
GCXC048*	2GN049	2GE049	1625
GCXC060*	2GN064	2GE064	1760

7/14/08

## COIL PHYSICAL DATA

AIR COIL MODEL NUMBER (REFRIGERANT)		GCXC026	GCXC036	GCXC048	GCXC060
EVAPORATOR COIL	AIR COIL TOTAL FACE AREA, FT2 [M2]	5.83 [0.54]			
	TUBE OUTSIDE DIAMETER - IN. [MM]	3/8 [9.52]			
	NUMBER OF ROWS	2		3	
	FINS PER INCH	12			
	SUCTION LINE CONNECTION - IN. [MM] SWEAT	5/8 [15.87]		7/8 [22.22]	
	LIQUID LINE CONNECTION - IN. [MM] SWEAT	3/8 [9.52]			
REFRIGERANT		R-410A			
NOMINAL COOLING CAPACITY - TONS [KW]		2.1 [7.59]	3 [10.55]	4 [14.06]	5 [17.58]
CONDENSATE DRAIN CONNECTION - (FPT) IN. [MM]		3/4 [19.05]			

AIR COIL MODEL NUMBER (HYDRONIC)		GHAC060			
HYDRONIC COIL	AIR COIL TOTAL FACE AREA, FT2 [M2]	6.94 [0.64]			
	TUBE OUTSIDE DIAMETER - IN. [MM]	3/8 [9.52]			
	NUMBER OF ROWS	3			
	FINS PER INCH	13			
	WATER IN CONNECTION - IN. [MM] SWEAT	7/8 [22.22]			
	WATER OUT CONNECTION - IN. [MM] SWEAT	7/8 [22.22]			
NOMINAL COOLING CAPACITY - TONS [KW]		5 [17.58]			
CONDENSATE DRAIN CONNECTION - (FPT) IN. [MM]		3/4 [19.05]			

NOTE: Water connection dimensions are O.D.

## Reference Calculations

Heating Calculations:	Cooling Calculations:
$LWT = EWT - \frac{HE}{GPM \times 500}$	$LWT = EWT + \frac{HR}{GPM \times 500}$
$LAT = EAT + \frac{HC}{CFM \times 1.08}$	$LAT (DB) = EAT (DB) - \frac{SC}{CFM \times 1.08}$
$TH = HC + HW$	$LC = TC - SC$
	$S/T = \frac{SC}{TC}$

## Legend and Notes

### ABBREVIATIONS AND DEFINITIONS:

CFM = airflow, cubic feet/minute	HE = total heat of extraction, MBTUH
EWT = entering water temperature, Fahrenheit	HWC = hot water generator capacity, MBTUH
GPM = water flow in gallons/minute	EER = Energy Efficient Ratio = BTU output/Watt input
WPD = water pressure drop, PSI and feet of water	COP = Coefficient of Performance = BTU output/BTU input
EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)	LWT = leaving water temperature, °F
HC = air heating capacity, MBTUH	LAT = leaving air temperature, °F
TC = total cooling capacity, MBTUH	TH = total heating capacity, MBTUH
SC = sensible cooling capacity, MBTUH	LC = latent cooling capacity, MBTUH
kW = total power unit input, kilowatts	S/T = sensible to total cooling ratio
HR = total heat of rejection, MBTUH	

Hot water generator performance based on 0.4 GPM flow per nominal unit ton at 90°F entering hot water temperature. Performance data does not include water pumping watts and are based upon 15% (by volume) methanol antifreeze solution. Multiple Flow Rates (for EWT) are shown in the capacity data tables. The lowest flow rate shown is used for geothermal open loop/well water systems with a minimum 50°F. The second flow rate shown is the minimum geothermal closed loop flow rate. The third flow rate shown is optimum for geothermal closed loop and the suggested flow rate for boiler tower applications. Interpolation between EWT, GPM and CFM data is permissible. Extrapolation for heating data down to 25°F is permissible. Catalog illustrations cover the general appearance of products at time of publication. We reserve the right to make changes in design and construction at any time without notice.

## Operating Limits

OPERATING LIMITS	COOLING		HEATING	
	(°F)	(°C)	(°F)	(°C)
<b>Air Limits</b>				
Min. Ambient Air	45	7.2	45	7.2
Rated Ambient Air	80	26.7	70	21.1
Max. Ambient Air	100	37.8	85	29.4
Min. Entering Air	50	10.0	40	4.4
Rated Entering Air db/wb	80.6/66.2	27/19	68	20.0
Max. Entering Air db/wb	110/83	43/28.3	80	26.7
<b>Water Limits</b>				
Min. Entering Water	30	-1.1	20	-6.7
Normal Entering Water	50-110	10-43.3	30-70	-1.1
Max. Entering Water	120	48.9	90	32.2

NOTE: Minimum/maximum limits are only for start-up conditions, and are meant for bringing the space up to occupancy temperature. Units are not designed to operate at the minimum/maximum conditions on a regular basis. The operating limits are dependent upon three primary factors: 1) water temperature, 2) return air temperature, and 3) ambient temperature. When any of the factors are at the minimum or maximum levels, the other two factors must be at the normal level for proper and reliable unit operation.

# Pressure Drop

## Dual Capacity

Model	GPM	Pressure Drop (psi)				
		30°F	50°F	70°F	90°F	110°F
<b>026</b> Full Load	4	0.8	0.7	0.7	0.6	0.6
	6	2.4	2.2	2.1	1.9	1.8
	8	3.8	3.7	3.5	3.2	3.0
	10	5.2	5.0	4.9	4.4	4.2
<b>026</b> Part Load	3	0.3	0.3	0.3	0.2	0.2
	5	1.6	1.5	1.4	1.3	1.2
	7	3.0	2.8	2.6	2.4	2.3
	9	4.4	4.1	3.8	3.5	3.4
<b>038</b> Full Load	5	2.5	2.3	2.2	2.0	1.9
	7	4.4	4.2	3.9	3.6	3.4
	9	6.4	6.0	5.6	5.2	4.8
	11	8.3	7.9	7.3	6.8	6.2
<b>038</b> Part Load	4	1.8	1.7	1.6	1.5	1.4
	6	3.4	3.2	3.0	2.8	2.6
	8	5.0	4.7	4.4	4.1	3.8
	10	6.2	5.6	4.8	4.4	4.0
<b>049</b> Full Load	6	1.2	1.1	1.0	1.0	0.9
	9	2.5	2.4	2.2	2.1	1.9
	12	3.9	3.7	3.3	3.2	3.0
	15	5.7	5.4	4.9	4.7	4.4
<b>049</b> Part Load	5	1.0	1.0	0.9	0.8	0.8
	8	2.2	2.0	1.9	1.8	1.6
	11	3.3	3.1	2.9	2.7	2.5
	14	4.9	4.7	4.4	4.0	3.8
<b>064</b> Full Load	8	1.6	1.7	1.4	1.3	1.2
	12	3.6	3.4	3.2	3.0	2.8
	16	5.7	5.4	5.0	4.7	4.3
	20	8.9	8.6	1.9	7.5	6.9
<b>064</b> Part Load	6	0.8	0.7	0.7	0.7	0.6
	10	2.6	2.5	2.3	2.1	2.0
	14	4.4	4.1	3.8	3.6	3.3
	18	7.5	7.0	6.5	6.1	5.6

9/5/2012

## Compressor Resistance Table

MODEL	208-230/60/1	
	RUN (OHMS)	START (OHMS)
<b>026</b>	1.21 - 1.39	1.52 - 1.75
<b>038</b>	0.81 - 0.94	1.41 - 1.63
<b>049</b>	0.48 - 0.55	1.72 - 1.99
<b>064</b>	0.36 - 0.42	1.51 - 1.74

# T2GN026 High Speed - Performance Data

## 026 High Speed - 900 Rated CFM Heating, 850 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	4.0	0.8	1.9	Operation not recommended							Operation not recommended							
	6.0	2.4	5.7	Operation not recommended							Operation not recommended							
	8.0	4.1	9.4	900	16.3	1.56	11.0	86.8	3.06	1.8								
30	4.0	0.8	1.8	Operation not recommended							Operation not recommended							
	6.0	2.4	5.5	900	18.1	1.57	12.8	88.7	3.39	2.0	850	27.1	19.9	0.74	0.94	30.3	28.7	-
	8.0	4.0	9.1	900	18.7	1.61	13.2	89.2	3.40	2.0	850	27.5	19.7	0.72	0.88	30.5	31.3	-
40	4.0	0.8	1.8	Operation not recommended							Operation not recommended							
	6.0	2.3	5.3	900	22.2	1.63	16.7	92.9	4.00	2.2	850	28.4	20.2	0.71	1.03	31.9	27.7	-
	8.0	3.8	8.9	900	22.7	1.66	17.1	93.4	4.03	2.2	850	28.7	20.1	0.70	0.97	32.0	29.7	-
50	4.0	0.7	1.7	900	23.5	1.68	17.8	94.2	4.12	2.4	850	30.1	20.5	0.68	1.14	34.0	26.3	1.3
	6.0	2.2	5.2	900	24.2	1.69	18.4	94.9	4.18	2.4	850	30.1	20.7	0.69	1.12	33.9	26.8	1.2
	8.0	3.7	8.6	900	24.6	1.71	18.8	95.3	4.22	2.5	850	30.4	20.7	0.68	1.07	34.1	28.4	1.1
60	4.0	0.7	1.7	900	26.3	1.71	20.4	97.0	4.50	2.7	850	28.4	20.1	0.71	1.30	32.8	21.8	1.5
	6.0	2.2	5.0	900	26.9	1.73	21.0	97.6	4.55	2.7	850	28.5	20.2	0.71	1.26	32.8	22.6	1.4
	8.0	3.6	8.3	900	27.6	1.76	21.6	98.4	4.61	2.8	850	28.7	20.3	0.71	1.22	32.8	23.6	1.4
70	4.0	0.7	1.6	900	29.2	1.77	23.2	100.0	4.84	3.0	850	26.5	19.7	0.74	1.48	31.5	17.9	1.9
	6.0	2.1	4.8	900	29.6	1.76	23.6	100.5	4.92	3.1	850	27.8	19.7	0.71	1.38	32.5	20.1	1.8
	8.0	3.5	8.0	900	29.6	1.76	23.6	100.5	4.92	3.1	850	27.8	19.7	0.71	1.38	32.5	20.1	1.8
80	4.0	0.7	1.6	900	28.4	1.80	22.3	99.3	4.64	3.4	850	26.8	19.7	0.74	1.64	32.4	16.3	2.3
	6.0	2.0	4.7	900	29.4	1.81	23.3	100.3	4.78	3.5	850	27.1	19.7	0.73	1.56	32.4	17.3	2.2
	8.0	3.4	7.8	900	30.2	1.86	23.9	101.1	4.76	3.6	850	27.2	19.9	0.73	1.52	32.4	17.9	2.1
90	4.0	0.7	1.5	900	28.2	1.84	21.9	99.0	4.48	3.8	850	24.8	19.3	0.78	1.85	31.1	13.4	2.9
	6.0	1.9	4.5	900	29.5	1.84	23.2	100.4	4.70	3.9	850	25.0	19.3	0.77	1.75	31.0	14.3	2.8
	8.0	3.2	7.5	900	30.1	1.92	23.5	101.0	4.59	4.0	850	25.3	19.5	0.77	1.70	31.1	14.9	2.6
100	4.0	0.6	1.5	Operation not recommended							Operation not recommended							
	6.0	1.9	4.3	Operation not recommended							850	24.8	19.3	0.78	1.75	30.7	14.1	3.4
	8.0	3.1	7.2	Operation not recommended							850	25.0	19.5	0.78	1.70	30.8	14.7	3.2
110	4.0	0.6	1.4	Operation not recommended							Operation not recommended							
	6.0	1.8	4.2	Operation not recommended							850	22.2	18.1	0.81	2.18	29.6	10.2	4.1
	8.0	3.0	6.9	Operation not recommended							850	22.4	18.3	0.82	2.13	29.7	10.5	3.9
120	4.0	0.6	1.3	Operation not recommended							Operation not recommended							
	6.0	1.7	4.0	Operation not recommended							850	19.9	17.5	0.88	2.32	27.8	8.6	5.0
	8.0	2.9	6.7	Operation not recommended							850	20.2	17.7	0.88	2.25	27.9	9.0	4.8



# T2GN026 Low Speed - Performance Data

## 026 Low Speed - 700 Rated CFM Heating, 650 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	3.0	0.3	0.6	Operation not recommended							Operation not recommended							
	5.0	1.7	3.8	Operation not recommended							Operation not recommended							
	7.0	3.1	7.1	700	11.6	1.21	7.5	85.3	2.81	1.5								
30	3.0	0.3	0.6	Operation not recommended							Operation not recommended							
	5.0	1.6	3.7	700	13.2	1.21	9.1	87.4	3.20	1.5	650	20.2	14.8	0.74	0.59	22.2	34.3	-
	7.0	3.0	6.9	700	13.6	1.24	9.4	88.0	3.21	1.5	650	20.5	14.7	0.72	0.55	22.4	37.3	-
40	3.0	0.3	0.6	Operation not recommended							Operation not recommended							
	5.0	1.6	3.6	700	15.5	1.23	11.3	90.5	3.69	1.5	650	21.3	15.3	0.72	0.68	23.6	31.2	-
	7.0	2.9	6.6	700	15.9	1.25	11.6	91.0	3.71	1.6	650	21.5	15.2	0.71	0.64	23.7	33.4	-
50	3.0	0.2	0.6	700	17.2	1.24	13.0	92.8	4.06	1.6	650	22.7	15.6	0.69	0.72	25.1	31.6	1.1
	5.0	1.5	3.5	700	17.7	1.26	13.4	93.4	4.12	1.7	650	22.7	15.8	0.70	0.70	25.1	32.2	1.1
	7.0	2.8	6.4	700	18.0	1.27	13.7	93.8	4.15	1.7	650	22.9	15.8	0.69	0.67	25.2	34.2	1.0
60	3.0	0.2	0.5	700	19.2	1.25	14.9	95.4	4.50	1.8	650	21.4	15.2	0.71	0.95	24.6	22.6	1.4
	5.0	1.5	3.4	700	19.6	1.26	15.3	95.9	4.55	1.8	650	21.5	15.3	0.71	0.92	24.6	23.4	1.3
	7.0	2.7	6.2	700	20.2	1.28	15.8	96.7	4.61	1.9	650	21.6	15.3	0.71	0.88	24.6	24.4	1.2
70	3.0	0.2	0.5	700	21.4	1.28	17.0	98.3	4.90	2.0	650	19.8	15.1	0.76	0.99	23.2	20.0	1.7
	5.0	1.4	3.3	700	21.6	1.26	17.3	98.6	5.01	2.0	650	20.9	15.0	0.72	1.22	25.0	17.2	1.6
	7.0	2.6	6.0	700	22.4	1.29	18.0	99.6	5.09	2.1	650	20.9	15.2	0.73	1.18	24.9	17.7	1.5
80	3.0	0.2	0.5	700	22.9	1.26	18.6	100.3	5.35	2.2	650	20.1	14.8	0.74	1.24	24.3	16.2	2.1
	5.0	1.4	3.2	700	23.7	1.26	19.4	101.4	5.51	2.3	650	20.3	14.8	0.73	1.18	24.3	17.2	2.0
	7.0	2.5	5.8	700	24.4	1.30	19.9	102.2	5.49	2.3	650	20.4	15.0	0.73	1.15	24.3	17.8	1.9
90	3.0	0.2	0.5	700	24.7	1.26	20.4	102.7	5.76	2.5	650	18.4	14.2	0.77	1.29	22.8	14.3	2.6
	5.0	1.3	3.1	700	25.9	1.26	21.6	104.3	6.04	2.6	650	18.6	14.2	0.76	1.22	22.8	15.3	2.5
	7.0	2.4	5.6	700	26.4	1.31	21.9	104.9	5.91	2.6	650	18.8	14.3	0.76	1.18	22.8	15.9	2.4
100	3.0	0.2	0.5	Operation not recommended							Operation not recommended							
	5.0	1.3	2.9	Operation not recommended							650	17.8	13.9	0.78	1.48	22.9	12.1	3.1
	7.0	2.3	5.4	Operation not recommended							650	18.0	14.1	0.78	1.44	22.9	12.5	2.9
110	3.0	0.2	0.5	Operation not recommended							Operation not recommended							
	5.0	1.2	2.8	Operation not recommended							650	16.0	13.2	0.83	1.62	21.6	9.9	3.8
	7.0	2.3	5.2	Operation not recommended							650	16.2	13.4	0.83	1.58	21.6	10.3	3.6
120	3.0	0.2	0.4	Operation not recommended							Operation not recommended							
	5.0	1.2	2.7	Operation not recommended							650	14.5	12.8	0.88	1.83	20.8	7.9	4.5
	7.0	2.2	5.0	Operation not recommended							650	14.8	12.9	0.87	1.78	20.9	8.3	4.3

# T2GN038 High Speed - Performance Data

## 038 High Speed - 1250 Rated CFM Heating, 1100 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	7.0	2.6	5.9	Operation not recommended							Operation not recommended							
	5.0	4.6	10.5	Operation not recommended							Operation not recommended							
	9.0	6.6	15.1	1250	25.9	2.36	17.8	89.2	3.22	2.5								
30	7.0	2.5	5.8	Operation not recommended							Operation not recommended							
	5.0	4.4	10.2	1250	28.1	2.38	20.0	90.8	3.47	2.7	1100	37.7	27.8	0.74	1.27	42.0	29.6	-
	9.0	6.4	14.7	1250	29.0	2.44	20.7	91.5	3.48	2.8	1100	38.3	27.5	0.72	1.19	42.4	32.2	-
40	7.0	2.4	5.6	Operation not recommended							Operation not recommended							
	5.0	4.3	9.9	1250	32.3	2.48	23.9	93.9	3.82	3.0	1100	37.3	26.3	0.71	1.55	42.5	24.1	-
	9.0	6.2	14.3	1250	33.1	2.52	24.5	94.5	3.84	3.1	1100	37.7	26.2	0.70	1.46	42.7	25.8	-
50	7.0	2.3	5.4	1250	35.0	2.56	26.3	95.9	4.01	3.3	1100	36.5	24.6	0.67	1.90	43.0	19.2	1.8
	5.0	4.2	9.6	1250	36.0	2.58	27.1	96.6	4.08	3.4	1100	36.5	24.8	0.68	1.87	42.9	19.5	1.7
	9.0	6.0	13.8	1250	36.6	2.61	27.7	97.1	4.11	3.5	1100	36.9	24.8	0.67	1.78	43.0	20.7	1.7
60	7.0	2.3	5.3	1250	37.8	2.63	28.8	98.0	4.22	3.7	1100	35.6	24.0	0.67	2.04	42.5	17.5	2.2
	5.0	4.0	9.3	1250	38.6	2.65	29.6	98.6	4.27	3.8	1100	35.8	24.1	0.67	1.98	42.5	18.1	2.1
	9.0	5.8	13.4	1250	39.7	2.69	30.5	99.4	4.32	3.9	1100	35.9	24.2	0.67	1.91	42.4	18.9	2.0
70	7.0	2.2	5.1	1250	40.9	2.73	31.6	100.3	4.39	4.2	1100	34.3	23.1	0.67	2.14	41.6	16.0	2.7
	5.0	3.9	9.0	1250	41.4	2.72	32.1	100.6	4.45	4.3	1100	34.8	22.9	0.66	2.20	42.3	15.8	2.6
	9.0	5.6	12.9	1250	42.9	2.78	33.4	101.8	4.52	4.4	1100	34.8	23.1	0.66	2.14	42.1	16.3	2.5
80	7.0	2.1	4.9	1250	42.9	2.77	33.4	101.7	4.54	4.7	1100	32.9	22.1	0.67	2.55	41.6	12.9	3.4
	5.0	3.8	8.7	1250	44.4	2.78	34.9	102.9	4.67	4.9	1100	33.2	22.1	0.67	2.43	41.5	13.7	3.2
	9.0	5.4	12.5	1250	45.6	2.87	35.8	103.8	4.65	5.0	1100	33.4	22.3	0.67	2.36	41.4	14.1	3.1
90	7.0	2.0	4.7	1250	45.0	2.84	35.3	103.3	4.64	5.3	1100	30.6	21.7	0.71	2.74	39.9	11.2	4.2
	5.0	3.6	8.4	1250	47.2	2.84	37.5	105.0	4.87	5.4	1100	30.9	21.7	0.70	2.59	39.7	11.9	4.0
	9.0	5.2	12.1	1250	48.1	2.96	38.0	105.6	4.76	5.6	1100	31.2	21.9	0.70	2.51	39.8	12.4	3.8
100	7.0	2.0	4.6	Operation not recommended							Operation not recommended							
	5.0	3.5	8.1	Operation not recommended							1100	29.6	20.4	0.69	2.91	39.6	10.2	5.0
	9.0	5.0	11.6	Operation not recommended							1100	29.9	20.6	0.69	2.83	39.6	10.6	4.7
110	7.0	1.9	4.4	Operation not recommended							Operation not recommended							
	5.0	3.4	7.8	Operation not recommended							1100	28.8	19.7	0.68	3.14	39.5	9.2	6.0
	9.0	4.8	11.2	Operation not recommended							1100	29.1	19.9	0.68	3.06	39.5	9.5	5.8
120	7.0	1.8	4.2	Operation not recommended							Operation not recommended							
	5.0	3.2	7.5	Operation not recommended							1100	24.6	18.7	0.76	3.44	36.3	7.1	7.3
	9.0	4.6	10.7	Operation not recommended							1100	25.0	18.9	0.76	3.34	36.4	7.5	6.9

# T2GN038 Low Speed - Performance Data

## 038 Low Speed - 900 Rated CFM Heating, 800 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	4.0	1.9	4.3	Operation not recommended							Operation not recommended							
	6.0	3.5	8.2	Operation not recommended							Operation not recommended							
	8.0	5.2	12.0	900	15.9	1.55	10.6	81.8	3.01	2.2								
30	4.0	1.8	4.2	Operation not recommended							Operation not recommended							
	6.0	3.4	7.9	900	18.6	1.55	13.3	83.8	3.52	7.1	800	25.7	19.6	0.76	0.82	28.5	31.2	-
	8.0	5.0	11.6	900	19.2	1.59	13.8	84.2	3.54	7.3	800	26.1	19.4	0.74	0.77	28.7	33.9	-
40	4.0	1.8	4.1	Operation not recommended							Operation not recommended							
	6.0	3.3	7.7	900	22.2	1.60	16.7	86.4	4.07	2.3	800	26.5	17.9	0.67	0.89	29.6	29.7	-
	8.0	4.9	11.3	900	22.7	1.63	17.2	86.8	4.09	2.3	800	26.8	17.8	0.66	0.84	29.7	31.8	-
50	4.0	1.7	3.9	900	23.8	1.62	18.3	87.7	4.32	2.4	800	27.5	16.6	0.60	1.01	31.0	27.4	1.1
	6.0	3.2	7.4	900	24.5	1.63	18.9	88.1	4.39	2.4	800	27.5	16.8	0.61	0.99	30.9	27.9	1.1
	8.0	4.7	10.9	900	24.9	1.65	19.3	88.4	4.42	2.5	800	27.8	16.8	0.60	0.94	31.0	29.6	1.0
60	4.0	1.7	3.8	900	26.1	1.64	20.5	89.3	4.67	2.6	800	26.1	15.6	0.60	1.14	30.0	22.8	1.4
	6.0	3.1	7.2	900	26.7	1.65	21.0	89.8	4.73	2.6	800	26.2	15.7	0.60	1.11	30.0	23.6	1.3
	8.0	4.6	10.6	900	27.4	1.68	21.7	90.3	4.79	2.7	800	26.4	15.8	0.60	1.07	30.0	24.7	1.2
70	4.0	1.6	3.7	900	28.4	1.68	22.7	91.0	4.95	2.9	800	24.9	15.9	0.64	1.31	29.4	19.0	1.7
	6.0	3.0	7.0	900	28.5	1.67	22.9	91.1	5.02	2.9	800	25.4	13.2	0.52	1.26	29.7	20.2	1.6
	8.0	4.4	10.2	900	29.6	1.70	23.8	91.9	5.10	3.0	800	25.4	13.3	0.52	1.22	29.6	20.8	1.5
80	4.0	1.5	3.6	900	28.0	1.65	22.4	90.7	4.99	3.2	800	24.2	14.4	0.60	1.50	29.4	16.1	2.1
	6.0	2.9	6.7	900	29.0	1.65	23.3	91.5	5.13	3.3	800	24.5	14.4	0.59	1.43	29.4	17.1	2.0
	8.0	4.3	9.9	900	29.8	1.71	24.0	92.1	5.11	3.4	800	24.6	14.6	0.59	1.39	29.3	17.7	1.9
90	4.0	1.5	3.4	900	27.9	1.64	22.3	90.7	4.98	3.6	800	22.3	15.8	0.71	1.72	28.2	13.0	2.6
	6.0	2.8	6.5	900	29.2	1.64	23.6	91.7	5.22	3.7	800	22.6	15.8	0.70	1.63	28.1	13.9	2.5
	8.0	4.1	9.5	900	29.8	1.71	24.0	92.1	5.11	3.9	800	22.8	16.0	0.70	1.58	28.2	14.4	2.4
100	4.0	1.4	3.3	Operation not recommended							Operation not recommended							
	6.0	2.7	6.3	Operation not recommended							800	21.3	14.1	0.66	1.86	27.7	11.5	5.0
	8.0	4.0	9.2	Operation not recommended							800	21.5	14.2	0.66	1.81	27.7	11.9	4.7
110	4.0	1.4	3.2	Operation not recommended							Operation not recommended							
	6.0	2.6	6.0	Operation not recommended							800	19.1	14.5	0.76	2.12	26.3	9.0	3.8
	8.0	3.8	8.8	Operation not recommended							800	19.3	14.7	0.76	2.07	26.4	9.3	3.6
120	4.0	1.3	3.1	Operation not recommended							Operation not recommended							
	6.0	2.5	5.8	Operation not recommended							800	17.3	13.9	0.80	2.38	25.4	7.3	4.5
	8.0	3.7	8.5	Operation not recommended							800	17.6	14.0	0.80	2.31	25.5	7.6	4.3

# T2GN049 High Speed - Performance Data

## 049 High Speed - 1600 Rated CFM Heating, 1550 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	6.0	1.2	2.8	Operation not recommended							Operation not recommended							
	9.0	2.6	6.0	Operation not recommended							Operation not recommended							
	12.0	4.0	9.2	1600	28.7	2.86	18.9	86.6	2.94	4.8								
30	6.0	1.2	2.7	Operation not recommended							Operation not recommended							
	9.0	2.5	5.8	1600	30.2	2.85	20.5	87.5	3.11	5.2	1550	45.7	31.3	0.68	2.14	53.0	21.4	-
	12.0	3.9	9.0	1600	31.1	2.92	21.1	88.0	3.12	5.3	1550	46.5	31.0	0.67	2.00	53.3	23.3	-
40	6.0	1.1	2.6	Operation not recommended							Operation not recommended							
	9.0	2.4	5.7	1600	39.2	3.06	28.7	92.7	3.75	5.7	1550	48.8	34.5	0.71	2.32	56.7	21.0	-
	12.0	3.8	8.7	1600	40.1	3.12	29.5	93.2	3.77	5.8	1550	49.3	34.4	0.70	2.20	56.8	22.5	-
50	6.0	1.1	2.5	1600	44.6	3.17	33.8	95.8	4.13	6.2	1550	51.4	37.5	0.73	2.58	60.2	19.9	3.2
	9.0	2.4	5.5	1600	45.8	3.20	34.9	96.5	4.20	6.4	1550	51.4	37.9	0.74	2.53	60.0	20.3	3.0
	12.0	3.7	8.4	1600	46.6	3.23	35.6	97.0	4.23	6.5	1550	51.9	37.9	0.73	2.41	60.1	21.5	2.9
60	6.0	1.1	2.4	1600	48.2	3.24	37.1	97.9	4.36	7.0	1550	49.6	36.7	0.74	2.78	59.0	17.8	3.9
	9.0	2.3	5.3	1600	49.2	3.27	38.1	98.5	4.41	7.2	1550	49.8	36.9	0.74	2.70	59.0	18.5	3.7
	12.0	3.5	8.2	1600	50.6	3.32	39.3	99.3	4.46	7.4	1550	50.1	37.1	0.74	2.59	58.9	19.3	3.5
70	6.0	1.0	2.4	1600	52.9	3.35	41.5	100.6	4.63	7.9	1550	51.1	37.8	0.74	3.12	61.7	16.4	4.9
	9.0	2.2	5.1	1600	53.5	3.36	42.0	101.0	4.67	8.1	1550	52.1	37.7	0.72	2.96	62.2	17.6	4.6
	12.0	3.4	7.9	1600	55.5	3.43	43.8	102.1	4.74	8.3	1550	52.1	38.1	0.73	2.87	61.9	18.2	4.4
80	6.0	1.0	2.3	1600	55.2	3.32	43.8	101.9	4.87	8.8	1550	47.5	36.9	0.78	3.32	58.8	14.3	6.1
	9.0	2.1	5.0	1600	57.1	3.34	45.7	103.0	5.01	9.1	1550	48.0	36.9	0.77	3.16	58.7	15.2	5.8
	12.0	3.3	7.6	1600	58.6	3.44	46.9	103.9	4.99	9.4	1550	48.2	37.3	0.77	3.07	58.7	15.7	5.6
90	6.0	1.0	2.2	1600	57.4	3.31	46.1	103.2	5.08	9.9	1550	41.4	34.3	0.83	3.58	53.6	11.6	7.7
	9.0	2.1	4.8	1600	60.1	3.31	48.8	104.8	5.32	10.2	1550	41.8	34.3	0.82	3.38	53.3	12.4	7.3
	12.0	3.2	7.4	1600	61.3	3.45	49.5	105.5	5.21	10.6	1550	42.2	34.6	0.82	3.28	53.4	12.9	7.0
100	6.0	0.9	2.1	Operation not recommended							Operation not recommended							
	9.0	2.0	4.6	Operation not recommended							1550	43.3	34.7	0.80	3.71	56.0	11.7	9.1
	12.0	3.1	7.1	Operation not recommended							1550	43.8	35.1	0.80	3.61	56.1	12.1	8.7
110	6.0	0.9	2.0	Operation not recommended							Operation not recommended							
	9.0	1.9	4.4	Operation not recommended							1550	39.5	32.1	0.81	3.96	53.0	10.0	11.2
	12.0	3.0	6.8	Operation not recommended							1550	39.9	32.5	0.81	3.86	53.1	10.3	10.6
120	6.0	0.8	2.0	Operation not recommended							Operation not recommended							
	9.0	1.8	4.3	Operation not recommended							1550	37.8	31.1	0.82	4.41	52.9	8.6	13.5
	12.0	2.8	6.6	Operation not recommended							1550	38.5	31.4	0.82	4.28	53.1	9.0	12.8

# T2GN049 Low Speed - Performance Data

## 049 Low Speed - 1200 Rated CFM Heating, 1050 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	5.0	1.1	2.4	Operation not recommended							Operation not recommended							
	8.0	2.2	5.2	Operation not recommended							Operation not recommended							
	11.0	3.4	7.9	1200	20.7	2.16	13.3	82.0	2.81	3.8	Operation not recommended							
30	5.0	1.0	2.4	Operation not recommended							Operation not recommended							
	8.0	2.2	5.0	1200	25.8	2.21	18.3	84.9	3.42	3.9	1050	35.6	23.8	0.67	1.16	39.6	30.8	-
	11.0	3.3	7.6	1200	26.6	2.27	18.9	85.4	3.43	4.0	1050	36.2	23.6	0.65	1.08	39.9	33.5	-
40	5.0	1.0	2.3	Operation not recommended							Operation not recommended							
	8.0	2.1	4.9	1200	29.4	2.25	21.8	87.0	3.84	4.2	1050	37.8	25.6	0.68	1.27	42.2	29.7	-
	11.0	3.2	7.4	1200	30.1	2.29	22.3	87.4	3.86	4.2	1050	38.3	25.5	0.67	1.20	42.4	31.8	-
50	5.0	1.0	2.2	1200	32.4	2.28	24.7	88.8	4.16	4.4	1050	40.5	26.9	0.67	1.38	45.2	29.3	1.7
	8.0	2.0	4.7	1200	33.3	2.31	25.4	89.3	4.23	4.5	1050	40.5	27.2	0.67	1.35	45.1	29.9	1.6
	11.0	3.1	7.2	1200	33.9	2.33	26.0	89.6	4.26	4.6	1050	40.9	27.2	0.67	1.29	45.3	31.7	1.5
60	5.0	0.9	2.2	1200	35.6	2.31	27.8	90.6	4.52	4.8	1050	38.0	26.5	0.70	1.83	44.2	20.8	2.4
	8.0	2.0	4.6	1200	36.4	2.33	28.5	91.1	4.58	5.0	1050	38.2	26.6	0.70	1.77	44.2	21.5	2.3
	11.0	3.0	7.0	1200	37.5	2.37	29.4	91.7	4.64	5.1	1050	38.4	26.8	0.70	1.71	44.2	22.5	2.2
70	5.0	0.9	2.1	1200	38.4	2.36	30.3	92.2	4.77	5.4	1050	36.4	25.5	0.70	1.88	42.8	19.4	3.4
	8.0	1.9	4.4	1200	38.8	2.33	30.8	92.4	4.87	5.5	1050	37.1	27.3	0.74	1.79	43.2	20.7	3.2
	11.0	2.9	6.7	1200	40.2	2.38	32.1	93.3	4.95	5.7	1050	37.1	27.6	0.74	1.74	43.0	21.3	3.0
80	5.0	0.9	2.0	1200	40.6	2.33	32.7	93.5	5.10	6.0	1050	35.6	26.2	0.74	2.41	43.8	14.8	4.6
	8.0	1.8	4.3	1200	42.0	2.34	34.0	94.3	5.25	6.1	1050	35.9	26.2	0.73	2.30	43.8	15.6	4.4
	11.0	2.8	6.5	1200	43.2	2.42	34.9	95.0	5.23	6.3	1050	36.1	26.5	0.73	2.23	43.7	16.2	4.2
90	5.0	0.8	1.9	1200	42.7	2.34	34.7	94.7	5.34	6.7	1050	32.3	24.1	0.74	3.19	43.2	10.1	6.2
	8.0	1.8	4.1	1200	44.7	2.34	36.7	95.9	5.60	6.9	1050	32.7	24.1	0.74	3.02	43.0	10.8	5.9
	11.0	2.7	6.3	1200	45.6	2.44	37.3	96.4	5.48	7.1	1050	33.0	24.3	0.74	2.93	43.0	11.3	5.6
100	5.0	0.8	1.9	Operation not recommended							Operation not recommended							
	8.0	1.7	4.0	Operation not recommended							1050	31.1	24.3	0.78	2.85	40.9	10.9	7.7
	11.0	2.6	6.0	Operation not recommended							1050	31.5	24.5	0.78	2.77	40.9	11.3	7.3
110	5.0	0.8	1.8	Operation not recommended							Operation not recommended							
	8.0	1.6	3.8	Operation not recommended							1050	27.5	22.3	0.81	3.00	37.8	9.2	9.7
	11.0	2.5	5.8	Operation not recommended							1050	27.8	22.6	0.81	2.93	37.8	9.5	9.2
120	5.0	0.7	1.7	Operation not recommended							Operation not recommended							
	8.0	1.6	3.7	Operation not recommended							1050	24.8	21.5	0.87	3.39	36.3	7.3	12.0
	11.0	2.4	5.6	Operation not recommended							1050	25.2	21.7	0.86	3.29	36.4	7.7	11.5

# T2GN064 High Speed - Performance Data

## 064 High Speed - 1800 Rated CFM Heating, 1800 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	8.0	1.6	3.7	Operation not recommended							Operation not recommended							
	12.0	3.7	8.7	Operation not recommended							Operation not recommended							
	16.0	5.9	13.6	1800	42.6	4.35	27.8	91.9	2.87	5.5								
30	8.0	1.6	3.6	Operation not recommended							Operation not recommended							
	12.0	3.6	8.4	1800	47.6	4.42	32.6	94.5	3.16	5.8	1800	57.5	41.5	0.72	3.18	68.4	26.9	-
	16.0	5.7	13.2	1800	49.1	4.53	33.6	95.3	3.18	6.0	1800	58.5	41.1	0.70	2.97	68.6	27.5	-
40	8.0	1.5	3.5	Operation not recommended							Operation not recommended							
	12.0	3.5	8.2	1800	53.4	4.58	37.8	97.5	3.42	6.5	1800	61.9	42.7	0.69	3.46	73.7	17.9	-
	16.0	5.5	12.8	1800	54.7	4.66	38.8	98.1	3.44	6.6	1800	62.7	42.6	0.68	3.27	73.8	19.2	-
50	8.0	1.5	3.4	1800	57.0	4.71	41.0	99.3	3.55	7.0	1800	65.6	43.5	0.66	4.08	79.5	16.1	4.2
	12.0	3.4	7.9	1800	58.6	4.76	42.3	100.1	3.60	7.2	1800	65.6	43.9	0.67	4.00	79.3	16.4	4.0
	16.0	5.4	12.4	1800	59.6	4.81	43.2	100.7	3.63	7.4	1800	66.3	43.9	0.66	3.81	79.3	17.4	3.8
60	8.0	1.4	3.3	1800	63.1	4.87	46.5	102.5	3.80	7.9	1800	65.1	43.7	0.67	3.99	78.7	16.3	5.1
	12.0	3.3	7.6	1800	64.5	4.92	47.7	103.2	3.84	8.1	1800	65.4	43.9	0.67	3.87	78.7	16.9	4.8
	16.0	5.2	12.0	1800	66.4	5.00	49.3	104.1	3.89	8.3	1800	65.8	44.1	0.67	3.72	78.5	17.7	4.6
70	8.0	1.4	3.2	1800	70.0	5.06	52.7	106.0	4.05	8.9	1800	64.0	43.6	0.68	3.87	77.2	16.5	6.4
	12.0	3.2	7.4	1800	70.4	5.08	53.1	106.2	4.06	9.1	1800	66.4	43.5	0.65	3.99	80.0	16.7	6.1
	16.0	5.0	11.6	1800	73.0	5.18	55.3	107.6	4.13	9.4	1800	66.4	43.9	0.66	3.87	79.6	17.2	5.8
80	8.0	1.3	3.1	1800	73.1	5.18	55.4	107.6	4.14	10.0	1800	63.6	43.7	0.69	4.72	79.7	13.5	8.0
	12.0	3.1	7.1	1800	75.7	5.21	57.9	108.9	4.26	10.3	1800	64.2	43.7	0.68	4.50	79.6	14.3	7.7
	16.0	4.9	11.2	1800	77.7	5.37	59.4	110.0	4.24	10.6	1800	64.5	44.1	0.68	4.37	79.4	14.8	7.3
90	8.0	1.3	2.9	1800	77.7	5.35	59.4	109.9	4.26	11.2	1800	59.5	43.4	0.73	5.07	76.8	11.7	10.1
	12.0	3.0	6.9	1800	81.4	5.35	63.2	111.9	4.46	11.6	1800	60.1	43.4	0.72	4.79	76.4	12.5	9.6
	16.0	4.7	10.8	1800	83.0	5.57	64.0	112.7	4.37	11.9	1800	60.7	43.8	0.72	4.65	76.6	13.1	9.2
100	8.0	1.2	2.8	Operation not recommended							Operation not recommended							
	12.0	2.9	6.6								1800	58.3	42.2	0.72	5.34	76.6	10.9	12.0
	16.0	4.5	10.4								1800	58.9	42.7	0.72	5.20	76.7	11.3	11.4
110	8.0	1.2	2.7	Operation not recommended							Operation not recommended							
	12.0	2.8	6.4								1800	53.1	40.8	0.77	5.87	73.1	10.1	14.6
	16.0	4.3	10.0								1800	53.6	41.3	0.77	5.72	73.1	10.3	13.9
120	8.0	1.1	2.6	Operation not recommended														
	12.0	2.7	6.1								1800	49.2	39.4	0.80	6.44	71.2	7.6	17.7
	16.0	4.2	9.6								1800	50.1	39.8	0.79	6.25	71.4	8.0	16.8

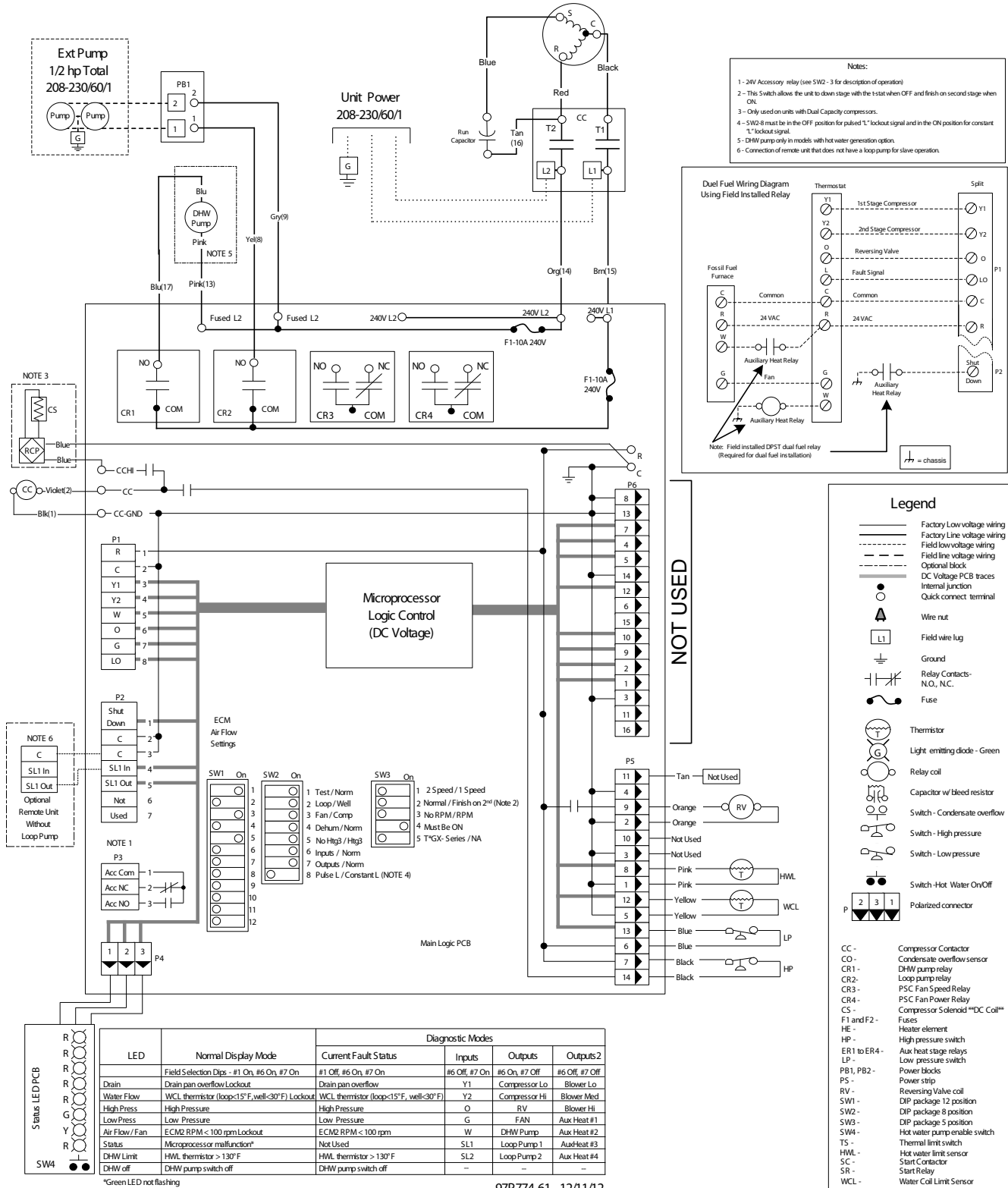
# T2GN064 Low Speed - Performance Data

## 064 Low Speed - 1500 Rated CFM Heating, 1400 Rated CFM Cooling

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F							COOLING - EAT 80/67 °F							
		PSI	FT	Airflow cfm	HC MBtuh	Power kW	HE MBtuh	LAT °F	COP	HWC MBtuh	Airflow cfm	TC MBtuh	SC MBtuh	S/T Ratio	Power kW	HR MBtuh	EER	HWC MBtuh
20	6.0	0.8	1.9	Operation not recommended							Operation not recommended							
	10.0	2.7	6.2	Operation not recommended							Operation not recommended							
	14.0	4.5	10.4	1500	29.4	3.17	18.6	88.1	2.72	4.4								
30	6.0	0.8	1.8	Operation not recommended							Operation not recommended							
	12.0	2.6	6.0	1500	33.2	3.15	22.4	90.5	3.09	4.5	1400	43.8	31.5	0.72	1.66	49.4	26.4	-
	14.0	4.4	10.1	1500	34.2	3.23	23.2	91.1	3.10	4.6	1400	44.5	31.2	0.70	1.55	49.8	28.7	-
40	6.0	0.8	1.8	Operation not recommended							Operation not recommended							
	12.0	2.5	5.9	1500	38.0	3.26	26.9	93.4	3.42	4.8	1400	48.1	33.7	0.70	1.81	54.2	26.5	-
	14.0	4.2	9.8	1500	38.9	3.31	27.6	94.0	3.44	4.9	1400	48.6	33.6	0.69	1.71	54.5	28.4	-
50	6.0	0.7	1.7	1500	41.2	3.32	29.8	95.4	3.63	5.0	1400	53.0	36.1	0.68	2.07	60.0	25.6	2.1
	12.0	2.5	5.7	1500	42.2	3.36	30.8	96.1	3.69	5.2	1400	53.0	36.5	0.69	2.03	59.9	26.1	2.0
	14.0	4.1	9.5	1500	43.0	3.39	31.4	96.5	3.72	5.3	1400	53.5	36.5	0.68	1.93	60.1	27.7	1.9
60	6.0	0.7	1.7	1500	45.3	3.35	33.9	98.0	3.96	5.5	1400	50.1	34.5	0.69	2.31	58.0	21.7	2.9
	12.0	2.4	5.5	1500	46.3	3.39	34.8	98.6	4.01	5.7	1400	50.4	34.7	0.69	2.24	58.0	22.5	2.8
	14.0	4.0	9.2	1500	47.7	3.44	35.9	99.4	4.06	5.8	1400	50.6	34.9	0.69	2.16	58.0	23.5	2.7
70	6.0	0.7	1.6	1500	49.9	3.45	38.1	100.8	4.24	6.1	1400	47.3	34.5	0.73	2.77	56.8	17.1	4.2
	12.0	2.3	5.3	1500	50.3	3.42	38.7	101.1	4.31	6.3	1400	49.8	34.5	0.69	2.51	58.4	19.8	4.0
	14.0	3.8	8.9	1500	52.2	3.49	40.3	102.2	4.38	6.5	1400	49.8	34.8	0.70	2.44	58.1	20.4	3.8
80	6.0	0.7	1.6	1500	52.3	3.42	40.7	102.3	4.49	6.8	1400	48.2	34.2	0.71	3.00	58.5	16.1	5.7
	12.0	2.2	5.1	1500	54.2	3.43	42.5	103.4	4.63	7.0	1400	48.7	34.2	0.70	2.86	58.5	17.0	5.5
	14.0	3.7	8.6	1500	55.7	3.54	43.6	104.4	4.61	7.3	1400	49.0	34.6	0.71	2.78	58.4	17.6	5.2
90	6.0	0.7	1.5	1500	55.4	3.44	43.7	104.2	4.72	7.6	1400	44.0	32.2	0.73	3.41	55.6	12.9	7.7
	12.0	2.1	5.0	1500	58.1	3.44	46.4	105.9	4.95	7.9	1400	44.5	32.2	0.72	3.22	55.5	13.8	7.3
	14.0	3.6	8.2	1500	59.2	3.58	47.0	106.5	4.85	8.1	1400	44.9	32.5	0.72	3.13	55.6	14.3	7.0
100	6.0	0.6	1.5	Operation not recommended							Operation not recommended							
	12.0	2.1	4.8	Operation not recommended							1400	43.1	32.2	0.75	3.66	55.6	11.8	9.5
	14.0	3.4	7.9	Operation not recommended							1400	43.6	32.6	0.75	3.56	55.7	12.2	9.1
110	6.0	0.6	1.4	Operation not recommended							Operation not recommended							
	12.0	2.0	4.6	Operation not recommended							1400	38.4	30.2	0.79	4.15	52.6	9.2	12.1
	14.0	3.3	7.6	Operation not recommended							1400	38.8	30.6	0.79	4.05	52.6	9.6	11.5
120	6.0	0.6	1.3	Operation not recommended							Operation not recommended							
	12.0	1.9	4.4	Operation not recommended							1400	35.1	29.4	0.84	4.65	50.9	7.5	14.9
	14.0	3.2	7.3	Operation not recommended							1400	35.7	29.7	0.83	4.51	51.1	7.9	14.2

# Wiring Schematics

## Split Wiring Schematic - 208-230/60/1





## Microprocessor Control

### Startup

The unit will not operate until all the inputs and safety controls are checked for normal conditions. At first power-up, a four-minute delay is employed before the compressor is energized.

### Component Sequencing Delays

Components are sequenced and delayed for optimum space conditioning performance.

### Accessory Relay

An accessory relay on the control board allows for field connection of solenoid valves, electronic air cleaners, etc. The accessory relay has a normally open output and a normally closed output.

### Short Cycle Protection

The control employs a minimum "off" time of four minutes to provide for short cycle protection of the compressor.

### Shutdown Mode

A 24VAC common signal to the "shutdown" input on the control board puts the unit into shutdown mode. Compressor, hot water pump and blower operation are suspended.

### Safety Controls

The XL Series control receives separate signals for a high pressure switch for safety, a low pressure switch to prevent loss of charge damage, and a low suction temperature thermistor for low source water temperature sensing. Upon a continuous 30-second measurement of the fault (immediate for high pressure), compressor operation is suspended, the appropriate lockout LED begins flashing. (Refer to the "Fault Retry" section below.)

### Testing

The XL Series control allows service personnel to shorten most timing delays for faster diagnostics.

### Fault Retry

All faults are retried twice before finally locking the unit out. An output signal is made available for a fault LED at the thermostat. The "fault retry" feature is designed to prevent nuisance service calls.

### Diagnostics

The XL Series control board allows all inputs and outputs to be displayed on the LEDs for fast and simple control board diagnosis.

### Hot Water High Limit

#### (Domestic Hot Water Option)

This mode occurs when the hot water input temperature is at or above 130°F for 30 continuous seconds. The DHW limit status LED on the unit illuminates and the hot water pump de-energizes. Hot water pump operations resume on the next compressor cycle or after 15 minutes of continuous compressor operation during the current thermostat demand cycle.

### Hot Water Justification

Since compressor hot gas temperature is dependant on loop temperature in cooling mode, loop temperatures may be too low to allow proper heating of water. The control will monitor water and refrigerant temperatures to determine if conditions are satisfactory for heating water. The DHW limit status LED on the unit illuminates when conditions are not favorable for heating water.

### Heating Operation

#### Heat, 1st Stage (Y1)

The blower motor is started immediately, the loop pump is energized 5 seconds after the "Y1" input is received, and the compressor is energized on low capacity 10 seconds after the "Y1" input. The hot water pump is cycled 30 seconds after the "Y1" input.

#### Heat, 2nd Stage (Y1,Y2) Dual Capacity Units

The second stage compressor will be activated 5 seconds after receiving a "Y2" input as long as the minimum first stage compressor run time of 1 minute has expired. The ECM blower changes from medium to high speed 15 seconds after the "Y2" input.

#### Heat, 3rd Stage (Y1,Y2,W) Dual Capacity Units

The hot water pump is de-energized which directs all heat to satisfy the thermostat. The 1st stage of resistance heat is energized 10 seconds after "W" input, and with continuous 3rd stage demand, the additional stages of resistance heat engage 90 seconds after the first stage.

#### Emergency Heat (W only)

The blower is started on high speed, and the first stage of resistance heat is energized 10 seconds after the "W" input. Continuing demand will engage the additional stages of resistance heat 90 seconds after the first stage.

## Cooling Operation

In all cooling operations, the reversing valve directly tracks the “O” input. Thus, anytime the “O” input is present, the reversing valve will be energized.

### Cool, 1st Stage (Y1,O)

The blower motor and hot water pump are started immediately, the loop pump(s) is energized 5 seconds after the “Y1” input is received. The compressor will be energized (on low capacity for Dual Capacity units) 10 seconds after the “Y1” input. The ECM blower will operate at 85% of medium speed if in dehumidification mode.

### Cool, 2nd Stage (Y1, Y2, O) Dual Capacity Units

The second stage compressor will be activated 5 seconds after receiving a “Y2” input as long as the minimum first stage compressor run time of 1 minute has expired. The ECM blower changes to high speed 15 seconds after the “Y2” input (85% of high speed if in dehumidification mode)

### Blower (G only)

The blower starts and operates on low speed.

**The following table shows the codes that will be displayed when the System Monitor (L) is connected to the F terminal of an A/TCONT802 or 803 Comfort Control.**

A/TCONT802 or 803 Thermostats	
Thermostat Display Lockout Code	Lockout Description
2 Flashes	High Pressure Fault
3 Flashes	Low Pressure Fault
4 Flashes	Not Applicable
5 Flashes	Water Flow Fault
6 Flashes	Not Applicable
7 Flashes	Condensate Fault
8 Flashes	Voltage out of Range
9 Flashes	RPM Fault

## Lockout Conditions

During lockout mode, the appropriate unit and thermostat lockout LEDs will illuminate. The compressor, loop pump, hot water pump, and accessory outputs are de-energized. The blower will continue to run on low speed. If the thermostat calls for heating, emergency heat operation will occur.

Lockout modes can be reset at the thermostat after turning the unit off, then on, which restores normal operation but keeps the unit lockout LED illuminated. Interruption of power to the unit will reset a lockout without a waiting period and clear all lockout LEDs.

### High Pressure

This lockout mode occurs when the normally closed safety switch is opened momentarily (set at 600 PSI).

### Low Pressure

This lockout mode occurs when the normally closed low pressure switch is opened for 30 continuous seconds (set at 40 PSI).

### Freeze Detection (Water Flow)

This lockout mode occurs when the freeze detection thermistor temperature is at or below the selected point (well 30°F or loop 15°F) for 30 continuous seconds.

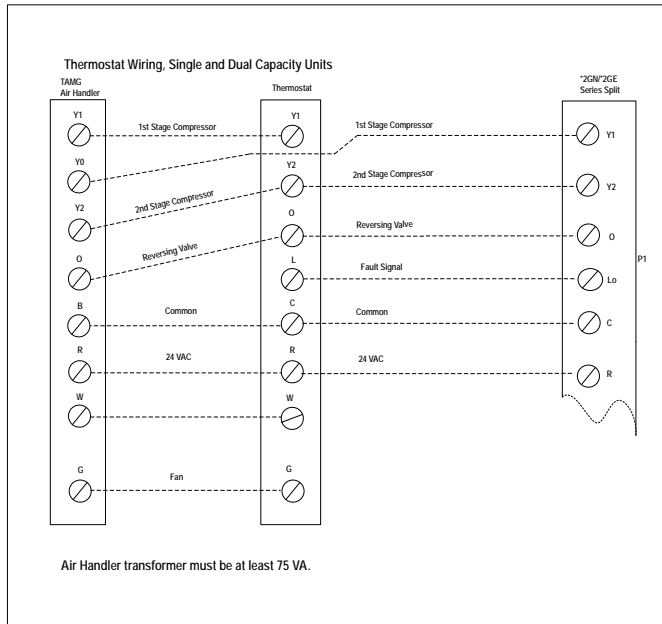
## Thermostat Displays

When using a fault monitor thermostat and SW2-8 is in the pulsing “L” position (off), the system monitor will enable a user to view the thermostat and count the fault indicator flashes to determine the lockout condition the unit is experiencing.

When using an A/TCONT802 or 803 thermostat and SW2-8 is in the pulsing “L” position (off), the system monitor will enable the user to view the thermostat and determine the fault. SW2-8 in the "on" position will send a constant signal to the fault indicator in the event of a system lockout condition. The LED board on the front of the

# Thermostat Wiring

## Indoor Split Dual Capacity Wiring Diagram



## Engineering Guide Specifications

### General

The geothermal heating/cooling units shall be reverse cycle split system configuration designed for use with DX heating and cooling coils. Units shall be AHRI/ISO Standard 13256-1 performance certified and listed by a nationally recognized safety-testing laboratory or agency, such as ETL Testing Laboratory. Each unit shall be computer run-tested at the factory using water and performance verified. Each unit shall be mounted on a pallet and stretch-wrapped for shipping protection. The geothermal units shall be designed to operate with entering liquid temperature between 25°F and 110°F as manufactured.

### Casing and Cabinet

The cabinet shall be fabricated from heavy-gauge steel and finished with corrosion-resistant powder coating. The interior shall be insulated with 1/2-inch thick, multi-density, coated glass fiber. The cabinet shall have three access panels for ease of installation and servicing. The internal layout shall provide for major component servicing through front service panel in restricted access installations.

### Refrigerant Circuit

All units shall contain an environmentally friendly R410A sealed refrigerant circuit including a hermetic motor-compressor, thermostatic expansion valve, reversing valve, coaxial tube water-to-refrigerant heat exchanger, and service ports. Compressors shall be high-efficiency scroll dual capacity or single speed type designed for heat pump duty and mounted on double, rubber vibration isolators on a metal core. Compressor motors shall be heat pump rated single-

phase PSC with internal overload protection. The coaxial water-to-refrigerant heat exchanger shall be designed for low water pressure drop and constructed of a convoluted copper (cupronickel optional) inner tube and a steel outer tube. The bidirectional thermostatic expansion valve shall provide proper superheat over the entire liquid temperature range with minimal "hunting". The refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures. An optional coated hot water generator coil shall be provided with integral internal pump and limit controls. All units shall have the source coaxial tube refrigerant-to-water heat exchanger coated.

### Electrical

The microprocessor control shall provide operational sequencing, high and low-pressure switch monitoring, thermistor based freeze detection temperature limit, current sensing compressor monitoring, compressor lockout mode control and hot water generator and loop pump control. A removable terminal connector with screw terminals shall be provided for field control wiring on the board. The control shall provide water valve control, test mode, diagnostic mode, short cycle protection, random startup, pump slaving, fault LEDs, status LEDs, and intelligent fault retry. Quick attach wiring harnesses shall be employed throughout to aid in troubleshooting or parts replacement. Line voltage box lugs shall be provided for both field power wiring connections for unit and the fused external loop pumps. All units shall have knockouts for entrance of low and line voltage wiring.

### Optional IntelliStart™

IntelliStart is a single phase soft starter which reduces the normal start current (LRA) by 60%. This allows the heat pump to more easily go "off grid." Using IntelliStart will also provide a substantial reduction in light flicker, reduce start-up noise, and improve the compressor's start behavior. IntelliStart is available as a factory option or field retrofit kit for all XL Series split units.

### Piping

Supply and return water connections shall be 1" FPT brass swivel fittings which provide a union and eliminate the need for backup wrenches or sealants when making field connections. All water piping shall be insulated to prevent condensation at low entering liquid temperatures. Hot water generator connections shall be 1/2" sweat type.

### Accessories and Options

#### Hot Water Generator

An optional hot water assist generator coil shall be provided with integral factory-mounted internal pump. The coil shall be of convoluted double construction and suitable for potable water. Limit controls shall monitor the compressor hot gas temperature and hot water temperature and disable operation during low compressor hot gas temperatures to prevent thermosiphoning from the water heater and limit high water temperatures to prevent scalding.

### Thermostat (field-installed)

A multi-stage auto-changeover electronic digital thermostat shall be provided. The thermostat shall offer three heating and two cooling stages with precise temperature control. An OFF-HEAT-AUTO-COOL-EMERG system switch, OFF-AUTO blower switch, and indicating LEDs shall be provided. The thermostat shall display in °F or °C. An optional remote outdoor sensor shall be available.

### Flow Center (field installed)

A self contained Flow Center shall provide all pumping, flushing and filling operations needed for residential geothermal earth loops up to 20 gpm. Two corrosion resistant composite 3-way valves shall be employed for loop valving. The flow center shall provide 1" FPT or special 'GL' composite union fittings for easy adaptation to connection options. The GL flow controller shall be encased in a corrosion proof polystyrene case (FPT case is powder coated metal) and fully insulated with urethane foam to prevent condensation.

