

# ES Model

## Water Source Heat Pump

2 to 6 ton

The ES Model features a two-stage scroll compressor, an ECM constant airflow blower motor and enhanced features that provide the best all around value in the highly competitive commercial market place.

<b>ENHANCED</b>	<b>ES</b> MODEL	<b>PART LOAD</b>	<b>FULL LOAD</b>
		UP TO	UP TO
		<b>24.5</b>	<b>5.4</b>
		<b>18.7</b>	<b>5.0</b>
		EER GLHP	COP WSHP



Made in the U.S.A.



Commercial Sales Brochure  
fhp-mfg.com



**BOSCH**  
Invented for life

# Enhanced **ES Model**

The ES 2-stage, water-to-air heat pumps offer high efficiency, value added features and dual capacity with standard features like a two speed scroll compressor and a ECM constant airflow fan motor, giving you the flexibility, performance and quiet operation needed to exceed the expectations of your clients.

## Quiet Comfort

- ▶ **Floating Compressor Base** - Reduces vibration and noise transmission from the compressor to the structure
- ▶ **Closed-cell Foam Insulation** (option) - Helps to provide cleaner, fiber-free air and reduces sound transmission
- ▶ **Compressor Blanket** (option) - Offering optimum low sound levels

## Service Friendly

- ▶ **Blower Inlet Ring** - Allows quick servicing of blower fan motor without disassembly of blower housing
- ▶ **Insulated Bulkheads** - Separates the compressor and blower sections, allowing the unit to be serviced easily during operation
- ▶ **Schrader Charging Valves** - Facilitates **service** diagnosis by allowing the connection of refrigerant hoses quickly and securely

## Robust and Durable Construction

- ▶ **G90 Galvanized Steel Cabinet** - Provides strength and corrosion protection against the elements
- ▶ **Stainless Steel Drain Pan** - Resists cracking and corrosion which provides long-lasting reliability for condensate collection
- ▶ **Cupro-nickel Coaxial Heat Exchanger** (option) - Protects against corrosion when water conditions are of low quality

## Safety

- ▶ **Flow Proving Switch** (option) - Prevents the continued operation of the compressor should the water supply fail
- ▶ **Unit Protection Module (UPM)** - Monitors the unit operation and safety controls that protect the unit
- ▶ **Dual Refrigerant Freeze Sensors** - Monitors if refrigerant temperatures reach freeze limitations and disables unit to protect it

## Quality Design & Efficiency

- ▶ **LEED® Friendly Design** - Helps qualify for the most credits possible with a water source HVAC system
- ▶ **Boilerless Control** (option) - Disables the compressor and/or activates electric heater should the water temperature drop below set point
- ▶ **Water Side Economizer** (option) - Provides free-cooling without the use of mechanical cooling (compressors)
- ▶ **Extended Range** - Accommodates a wider range in temperature swings commonly found in geothermal projects
- ▶ **Heat Recovery Package** (option) - Allows part of the system dedicated to your air conditioning and heating and another portion to supplement your current hot water heating system to meet the building needs

# Options Designed for any Application

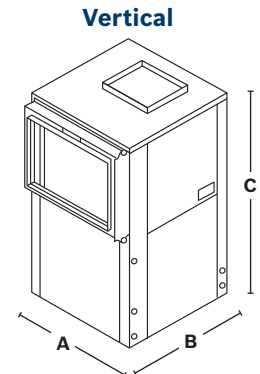
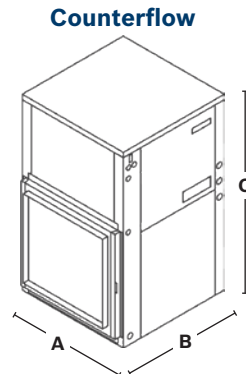
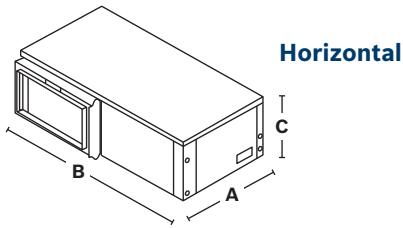
### Evaporator Coil

Air side refrigerant coils have copper tubes, aluminum fins and side plates to help prevent corrosion. The air coils are state-of-the-art, employing lanced fin and rifled tubing for maximum heat transfer giving the ES Model superb efficiencies. Large face areas result in lower face velocity reducing sound while ensuring high latent heat removal for maximum dehumidification in the cooling mode. Available as an option is our Tin-Plated evaporator coil protection; this will protect the evaporator coil from most forms of corrosive elements in the air stream and adds life expectancy to the entire system.

### ECM Constant Airflow Fan Motor (standard)

The high efficiency Electrically Commutated Motor (ECM), available in 1/3hp to 1hp, provides constant airflow in a wide static pressure range up to 1 in.w.g. Standard in all unit sizes, this motor is a great choice in high filtration applications. The motor has a soft start/stop feature, keeping noise to a minimum. Passive dehumidification can be achieved with the constant airflow ECM by reducing nominal airflow by 15%. This control feature lowers air coil temperature and prevents over-cooling of the space when in dehumidification mode. **The constant airflow ECM requires a neutral wire in a 460V application.**

# Technical Specifications



Model	Horizontal Unit Dimensions (in inches)		
	A (width)	B (depth)	C (height)
ES025	26.00	54.50	21.75
ES035	26.00	54.50	21.75
ES049	30.00	68.00	21.75
ES061	30.00	68.00	21.75
ES071	30.00	78.00	21.75

Model	Counterflow Unit Dimensions (in inches)		
	A (width)	B (depth)	C (height)
ES025	21.50	26.00	47.25
ES035	21.50	26.00	47.25
ES049	24.00	32.75	47.25
ES061	26.00	33.25	51.25
ES071	26.00	33.25	58.25

Model	Vertical Unit Dimensions (in inches)		
	A (width)	B (depth)	C (height)
ES025	21.50	26.00	47.25
ES035	21.50	26.00	47.25
ES049	24.00	32.75	47.25
ES061	26.00	33.25	51.25
ES071	26.00	33.25	58.25

NOTES: 1. All dimensions in inches unless otherwise noted. All dimensions within +0.125". Specifications subject to change without notice.  
2. For each configuration, add relevant dimensional information and drawings for units with Waterside Economizer.

AHRI/ANSI 13256-1 Performance Data														
Model	Load	GPM	Water Loop Heat Pump				Ground Water Loop Heat Pump				Ground Loop Heat Pump			
			Cooling 86 °F		Heating 68 °F		Cooling 86 °F		Heating 68 °F		Cooling 77 °F		Heating 32 °F	
			Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
ES025	Part	6	18800	17.5	20500	5.1	21000	30.0	18000	4.6	20000	24.5	15500	4.0
	Full	6	26000	16.0	30000	5.0	29000	24.0	25000	4.6	27500	18.7	19000	3.8
ES035	Part	9	24000	17.0	27000	5.3	27000	28.0	22500	4.5	27000	24.5	20500	4.0
	Full	9	36000	14.6	43000	4.8	42000	21.6	36000	4.2	38000	17.2	28000	3.8
ES049	Part	12	34000	16.0	39000	5.4	38000	24.0	32000	4.6	36000	21.8	28500	4.0
	Full	12	48000	12.6	58000	4.8	54000	19.0	48000	4.2	49000	15.5	38000	3.6
ES061	Part	14	42000	17.0	48000	5.4	48000	26.0	40000	4.6	45000	23.5	36500	4.0
	Full	14	60000	14.0	72000	4.7	68000	19.7	61000	4.3	62000	15.7	49000	3.6
ES071	Part	18	51000	15.8	55000	4.4	57000	25.2	47000	4.0	56000	21.8	42000	3.7
	Full	18	72000	14.5	80000	4.5	77000	19.6	68000	4.2	74000	16.3	53000	3.5

Ratings based upon AHRI/ANSI 13256-1 with 1" disposable filter.

## MERV-8 and MERV-13 Filters

The optional MERV-8 or -13 filter is most advantageous for premium air filtration on commercial HVAC projects. High efficiency filtration is a cost-effective way of upgrading air quality while maintaining low pressure drop and sustaining long service life. These filters effectively remove up to 98% of airborne matter, such as fine particulates, bacteria, smoke, gases and allergens including dust mites, pollen, mold spores, dust and smog. MERV-8 and MERV-13 rated filters are a minimum requirement for EQ credits 3.1 and 5 on LEED® projects. With the standard ECM constant airflow motor the ES is prepared to handle higher external pressure drops when utilizing the higher efficiency MERV-13 filters.

## DDC Controls

The optional factory mounted DDC Controller is preprogrammed and installed on the unit with the Unit Protection Module (UPM) to be job site ready. The unit will operate in a

100% stand-alone control mode or connect to a Building Automation System (BAS) using open protocols BACnet™, Modbus, N2 or LonWorks® (with an optional Lon card).

## DDC Room and Zone Sensors

To complement the controller, Bosch Thermotechnology Corp. offers a line of intelligent FHP space sensors, which provide precision measurement and communication capabilities in an attractive low profile enclosure.

## Additional Options

- ▶ 5, 10, 15, 20 kW electric heaters
- ▶ Relays - EMS, blower monitor, compressor monitor, and pump/valve
- ▶ Fire alarm/dual power
- ▶ Comfort alert module
- ▶ Automatic flow control valve\*

\*Available as a special option through application engineering.

# Electrical Data

## ECM Constant Airflow Motor

Model	Voltage Code	Voltage/Phase/Hz	Voltage Min/Max	Compressor			Total Unit with Constant Airflow Motor			Run Capacitor (µF/V)
				Quantity	RLA	LRA	FLA	Min Circuit Amps	Max Fuse/HACR	
ES025	1	208-230/1/60	197/253	1	11.7	58.3	2.8	17.4	25	35/370
	2	265-277/1/60	239/291	1	9.1	54.0	2.6	14.0	20	40/370
ES035	1	208-230/1/60	197/253	1	15.3	83.0	4.3	23.4	35	40/370
	3	208-230/3/60	197/253	1	11.6	73.0	4.3	18.8	30	-
ES049	4	460/3/60	414/506	1	5.7	38.0	4.1	11.2	15	-
	1	208-230/1/60	197/253	1	21.2	104.0	6.8	33.3	50	30/370
	3	208-230/3/60	197/253	1	14.0	83.1	6.8	24.3	35	-
ES061	4	460/3/60	414/506	1	6.4	41.0	5.5	13.5	15	-
	1	208-230/1/60	197/253	1	27.1	152.9	9.1	43.0	70	40/440
	3	208-230/3/60	197/253	1	16.5	110.0	9.1	29.7	45	-
ES071	4	460/3/60	414/506	1	7.2	52.0	6.9	15.9	20	-
	1	208-230/1/60	197/253	1	29.7	179.2	9.1	46.2	70	40/440
	3	208-230/3/60	197/253	1	17.6	136.0	9.1	31.1	45	-
ES071	4	460/3/60	414/506	1	8.5	66.1	6.9	17.5	25	-

NOTES: 1. Resistance value tolerance +/- 7%. All resistance values must be measured with compressor at room temperature.

2. 460/3/60 units will require a neutral wire for ECM constant airflow fan motor. The motor is 277V single phase.

**For units with a factory installed heater kit option, there will be two separate data plates for each electrical circuit. The 1st data plate will be for the compressor power connection, and the 2nd data plate will be for the electric heater, fan motor and UPM board and controls.**

Model	Voltage Code	Voltage/Phase/Hz	Voltage Min/Max	Compressor			Min. Circuit Amps	HARC Breaker
				Quantity	RLA	LRA		
ES025	1	208-230/1/60	197/253	1	11.7	58.3	14.6	25
ES035	1	208-230/1/60	197/253	1	15.3	83.0	19.1	30
	3	208-230/3/60	197/253	1	11.7	73.0	14.5	25
ES049	1	208-230/1/60	197/253	1	21.2	104.0	26.5	45
	3	208-230/3/60	197/253	1	14.0	83.1	17.5	30
ES061	1	208-230/1/60	197/253	1	27.1	152.9	33.9	60
	3	208-230/3/60	197/253	1	16.5	110.0	20.6	35
ES071	1	208-230/1/60	197/253	1	29.7	179.2	37.1	60
	3	208-230/3/60	197/253	1	17.6	136.0	22.0	35

208/230V units shipped with transformer wired for 230V—for 208V remove orange transformer primary lead and replace with red lead. All blower motors are single phase. UNIT POWER SUPPLY: A voltage variation of +/- 10% of nameplate rating is acceptable. Phase imbalance shall not exceed 2%.

### Bosch Thermotechnology Corp.

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