



# Setting Up Your Hi-Velocity HE

New to the industry is automatic voltage and frequency recognition circuitry designed for the national and international market. This unique feature will automatically recognize and adjust to the voltage and frequency input, it doesn't matter if it is 115 or 230 volt, 50 or 60 cycle, our electronics will adjust to the input automatically.

## Unit Selection

To size a Hi-Velocity System for a residence, it is necessary to have an accurate heat loss/gain done for the structure. This will ensure the proper equipment is used for cooling and heating. A heat loss/gain is done for each room then all rooms added together which will give a total BTUH load for the structure. With the total load known for the structure, you no select the proper Hi-Velocity unit from **Page 2**. If you require further assistance in determining the unit selection please refer to our Design Assistance Manual.

## Unit Configuration

Energy Saving Products Ltd. New HE unit utilizes mass flow technology and will provide a constant CFM throughout the programming range; environmental conditions will no longer dictate how the system will run, our new controller will adjust voltage and frequency to maintain its programmed CFM. The new Hi-Velocity HE Systems are field programmable from 1.5 to 5 tons of cooling with the use of a single motor and controller assembly. The tonnage is set by the pin settings 1,2,3 and 4 on the controller board, see the Dip Switch Control graphic for reference. Detailed information on pin settings is supplied **Page 5**.

Dip Switch Control:



(Set for 1.5 tons)

Each programmed tonnage will have up to 5 adjustments for on-site fine tuning which is changed using pins 6,7 and 8. if you need to adjust the CFM output of your selected tonnage reference **Page 6** for pin settings to increase or decrease the output CFM.



(Factory Setting)

## Contents

### Hi-Velocity-HE Specifications

(Page 2)

Specification page for the new Hi-Velocity HE units.

### EPC Wiring Diagram

(Page 4)

This wiring diagram that is on all of the Hi-Velocity-HE models. The power inputs as well as the various connection terminals are identified, helping you to quickly wire in the required devices.

### Extended Wiring Diagrams

(Page 5)

Extended wiring diagrams for the various applications the Hi-Velocity-HE model can be used for, if you don't find the wiring configuration you require please call the technical department at Energy Saving Products Ltd. for further assistance.

### Detailed Information

(Page 6)

From this page you can select the required unit needed, a heat loss/gain must be done prior to selecting a Hi-Velocity-HE unit. Once a heat loss/gain is known based upon tonnage and vents required, select the appropriate HE unit and the correct pin settings. If further adjustments are required for the CFM please refer to the extended Pin Setting section.

### Extended Pin Settings for Fine Tuning

(Page 8)

The extended pin settings shows how to increase or decrease the required C.F.M. on the Hi-Velocity-HE fan coil for fine tuning. The chart illustrates the C.F.M. difference achieved changing pins 6, 7, and 8. Only these three pins are modified to increase or decrease the C.F.M. Based upon the selected tonnage of pins 1 through 4.

**Matching Coils****Refrigerant Coils**RPM-E-50, 70, 100  
RCM-50, 70, 100**Chilled Water Coils**WCM-50, 70  
WM-100**Hot Water Coils**HCA-50, 70, 100  
HCA-6-50, 70, 100**Electrical Coils**ESH - 650 (5-15 Kw)  
ESH - 750 (5 -18 Kw)  
ESH - 1100 (5 -23 Kw)

# Specifications (Metric)

## HE Series

### Electronic Performance Controlled (EPC) Motors

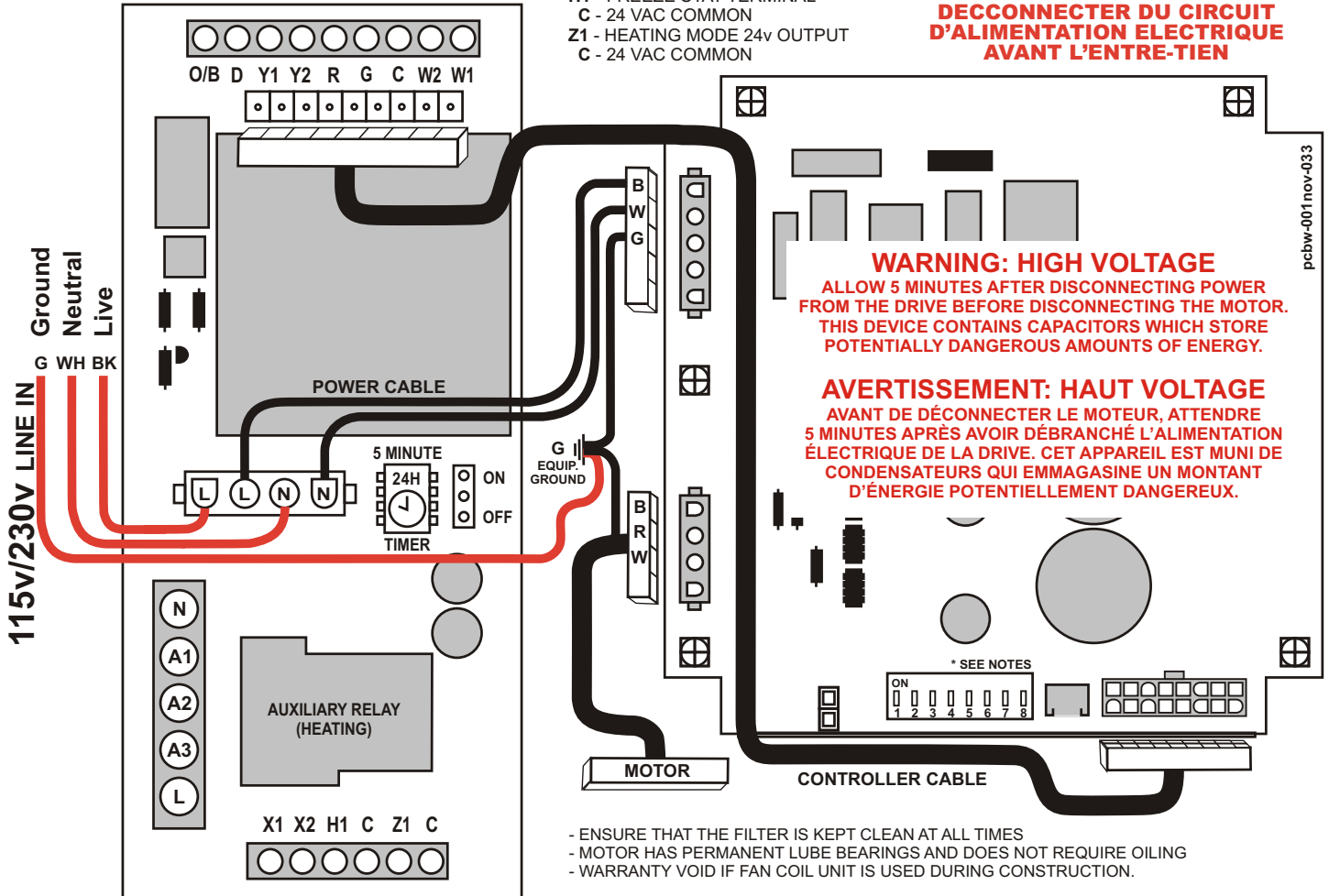
Model	HE-50		HE - 70		HE - 100		
<b>Hot Water Heating</b>							
Coil Type	HCA	HCA-6	HCA	HCA-6	HCA	HCA-6	
kW @ 88°C E.W.T.	14.9	17.4	21.8	26.1	32.9	39.3	
kW @ 82°C E.W.T.	13.7	16.0	20.0	24.0	30.2	36.0	
kW @ 77°C E.W.T.	12.5	14.5	18.1	21.8	27.5	32.8	
kW @ 71°C E.W.T.	11.2	13.1	16.3	19.7	24.7	29.5	
kW @ 66°C E.W.T.	10.0	11.6	14.5	17.5	22.0	26.3	
kW @ 60°C E.W.T.	8.7	10.2	12.7	15.2	19.2	23.0	
kW @ 54°C E.W.T.	7.5	8.7	10.8	13.1	16.4	19.7	
kW @ 49°C E.W.T.	6.2	7.3	9.0	11.0	13.7	16.5	
kW @ 43°C E.W.T.	5.0	5.9	7.3	8.9	11.1	13.3	
L/s Flow ratings	0.32	0.32	0.44	0.44	0.63	0.63	
Pressure Drop Meter H <sub>2</sub> O (KPa)	15.25	9.15	9.15	19.8	19.8	20.7	
L/s @ 20°C E.A.T	470	470	700	700	1120	1120	
<b>Chilled Water Cooling</b>							
(WCM Modules in cooling Mode)							
kW @ 8.9°C E.W.T.	5.7		7.9		12.3		
kW @ 7.8°C E.W.T.	6.1		8.6		13.4		
kW @ 6.7°C E.W.T.	6.6		9.3		14.5		
kW @ 5.6°C E.W.T.	7.1		10.0		15.6		
kW @ 4.4°C E.W.T.	7.6		10.7		16.6		
(WCM Modules in Heating Mode)							
kW @ 66°C E.W.T.	11.6		17.5		26.3		
kW @ 60°C E.W.T.	10.2		15.2		23.0		
kW @ 54°C E.W.T.	8.7		13.1		19.7		
kW @ 49°C E.W.T.	7.3		11.0		16.5		
kW @ 43°C E.W.T.	5.9		8.9		13.3		
L/s Flow ratings	0.32		0.44		0.63		
Pressure Drop Meter H <sub>2</sub> O (KPa)	9.15		19.8		20.7		
<b>Refrigerant Cooling</b>							
(RPM Modules) TX Cooling kWh	3.5 - 6.4		8.8 - 10.5		12.3 - 17.5		
<b>Electrical Heating</b>							
Kilowatt Range	5 - 15 Kw		5 - 18 Kw		5 - 23 Kw		
Max Rated L/s	245		363		595		
Horse Power	3/4		3/4		3/4		
R.P.M.	Variable		Variable		Variable		
Integral Surge and Fuse System	Yes		Yes		Yes		
Supply Air Size	20.3 cm (round plenum)		20.3 cm (round plenum)		25.4 cm (round plenum)		
Supply Maximum Length	21.3m		24.4m		30.5m		
Return Size Needed	30.5cm (729 cm <sup>2</sup> )		12" (113 in <sup>2</sup> )		14" (154 in <sup>2</sup> )		
Minimum Outlets	12		20		28		
Maximum Outlets	24		32		52		
Shipping Weight	36.3 Kg		43.1 Kg		52.2 Kg		
Fan Coil Size	Length	81.3cm		81.3cm		81.3cm	
	Width	35.6cm		48.3cm		63.5cm	
	Height	45.7cm		45.7cm		45.7cm	

# Hi-Velocity Systems

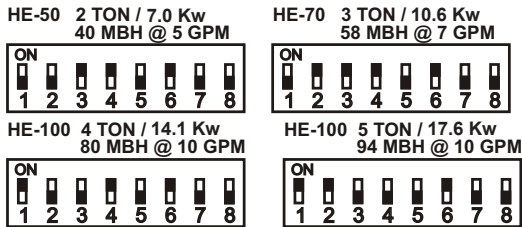
FOR SINGLE STAGE OPERATION  
USE W2 & Y2 TERMINALS

- N - NEUTRAL
- L - LINE VOLTAGE
- A1 - AUXILIARY NORMALLY OPEN
- A2 - AUXILIARY NORMALLY CLOSED
- A3 - AUXILIARY COMMON
- X1 - CONDENSING UNIT 24v OUTPUT
- X2 - CONDENSING UNIT
- H1 - FREEZE STAT TERMINAL
- C - 24 VAC COMMON
- Z1 - HEATING MODE 24v OUTPUT
- C - 24 VAC COMMON

**CAUTION**  
DISCONNECT THE ELECTRIC  
POWER BEFORE SERVICING  
**ATTENTION**  
DECONNECTER DU CIRCUIT  
D'ALIMENTATION ELECTRIQUE  
AVANT L'ENTRE-TIEN



**FACTORY DIP SETTINGS / BLACK IS DIP SWITCH SETTING**



HEATING RATINGS BASED UPON 180°F EWT

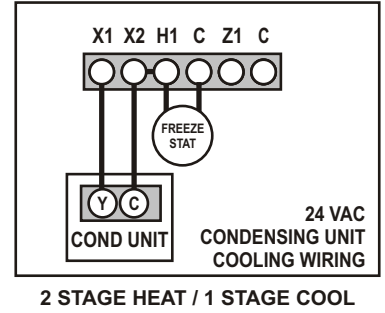
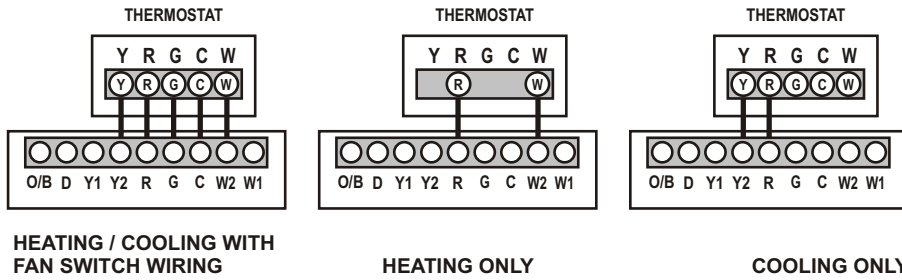
**NOTES:**

- 1) USE THERMOSTAT FAN SWITCH TO DISABLE/ENABLE CONTINUOUS FAN.
- 2) 'C' TERMINAL ON THERMOSTAT (COMMON) IS NOT NEEDED FOR SOME THERMOSTATS CONSULT THERMOSTAT INSTRUCTIONS FOR DETAILS.
- 3) A3 (AUXILIARY RELAY COMMON) CAN BE USED WITH A1 AND/OR A2 AS DRY CONTACTS, ARMED 24v FROM THE 'R' TERMINAL, OR ARMED FROM THE 'L' TERMINAL.
- 4) AUXILIARY RELAY TIMER ACTIVATES CIRCUIT FOR 5 MINUTES EVERY 24 HOURS STARTING WHEN POWER IS APPLIED TO THE UNIT.
- 5) SEE INSTALLATION MANUAL FOR MORE DETAILED WIRING DIAGRAMS AND DIP SWITCH SETTINGS.
- 6) FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

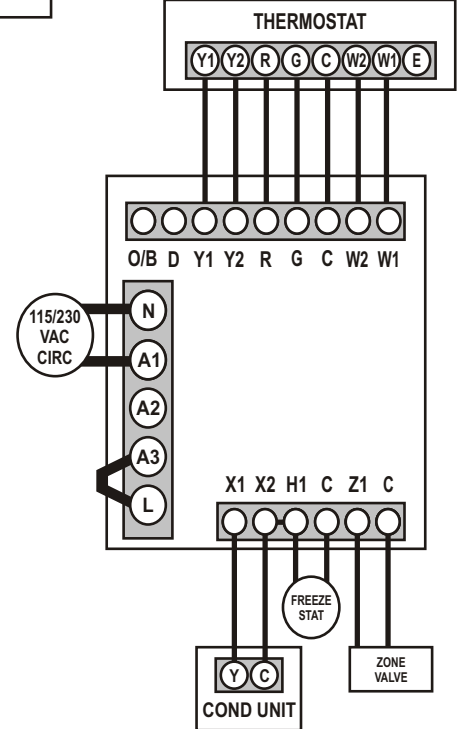
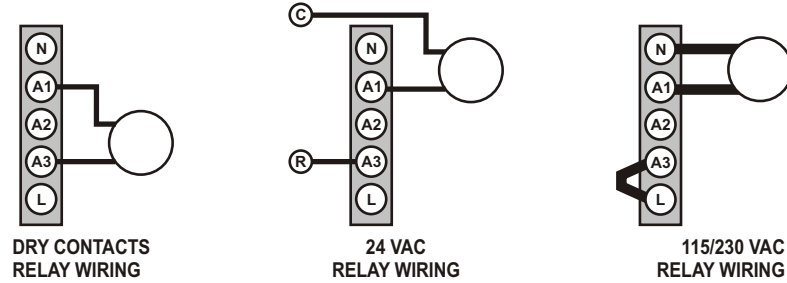
**HE WIRING**  
**Energy Saving**  
PRODUCTS LTD

NOV.08  
ESP 317.06

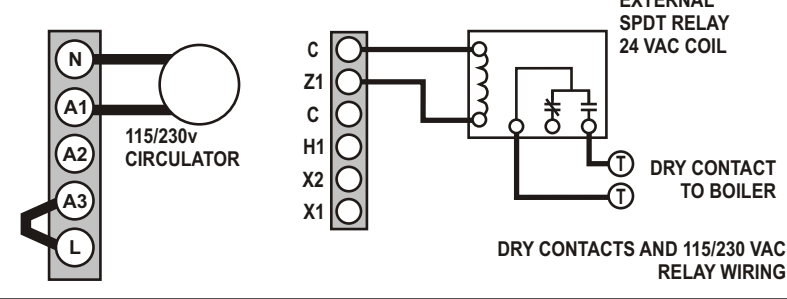
**FOR SINGLE STAGE OPERATION USE W2 & Y2 TERMINALS**



**SAMPLE AUXILIARY RELAY WIRING OPTIONS FOR HEATING**



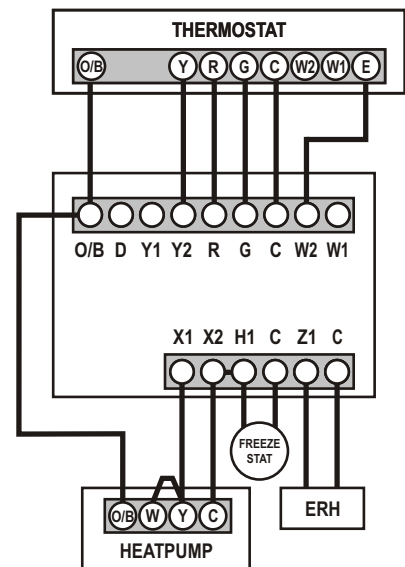
**SAMPLE AUXILIARY RELAY WIRING OPTIONS FOR HEATING**



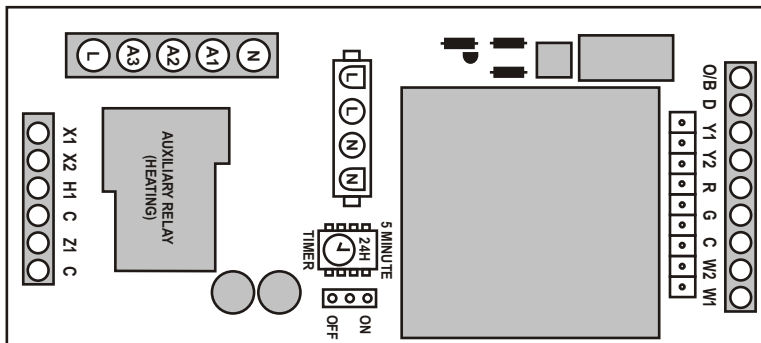
- R - 24VAC OUTPUT
- W1 - FIRST STAGE HEAT
- W2 - SECOND STAGE HEAT (OR SINGLE STAGE)
- Y1 - FIRST STAGE COOLING
- Y2 - SECOND STAGE COOLING (OR SINGLE STAGE)
- C - 24 VAC COMMON
- G - THERMOSTAT FAN SWITCH
- D - DEHUMIDIFICATION
- O/B - HEATPUMP REVERSING VALVE

- N - NEUTRAL
- L - LINE VOLTAGE
- A1 - AUXILIARY NORMALLY OPEN
- A2 - AUXILIARY NORMALLY CLOSED
- A3 - AUXILIARY COMMON
- X1 - CONDENSING UNIT 24V OUTPUT
- X2 - CONDENSING UNIT
- H1 - FREEZE STAT
- C - 24 VAC COMMON
- Z1 - HEATING MODE 24V OUTPUT
- C - 24 VAC COMMON

**HEATPUMP 2 STAGE HEAT / 1 STAGE COOL**



**HE WIRING**  
NOV.06  
ESP 317.05



# EPC Circuit Board Pin Settings and Air Flow Data (Metric)

Model: HE-50			
<b>Cooling</b>	Outlets	12	16
	Mode	20	24
	Airflow in L/s	20	24
<b>Heating</b>	Hi Cooling	177	193
	Lo Cooling	106	116
	Dehumid	142	123
ESH: 5 - 10 kW	Hi Heating	160	168
	Lo Heating	130	132
<b>Pin Setting</b>	Constant	87	101

Model: HE-50			
<b>Cooling</b>	Outlets	16	20
	Mode	24	24
	Airflow in L/s	24	24
<b>Heating</b>	Hi Cooling	231	238
	Lo Cooling	139	144
	Dehumid	193	196
ESH: 5 - 15 kW	Hi Heating	217	222
	Lo Heating	168	160
<b>Pin Setting</b>	Constant	123	120

Model: HE-70			
<b>Cooling</b>	Outlets	20	24
	Mode	28	32
	Airflow in L/s	28	32
<b>Heating</b>	Hi Cooling	293	307
	Lo Cooling	177	184
	Dehumid	241	248
ESH: 5 - 18 kW	Hi Heating	269	283
	Lo Heating	210	217
<b>Pin Setting</b>	Constant	146	165

Model: HE-70			
<b>Cooling</b>	Outlets	24	28
	Mode	32	32
	Airflow in L/s	32	32
<b>Heating</b>	Hi Cooling	356	363
	Lo Cooling	215	219
	Dehumid	283	288
ESH: 5 - 18 kW	Hi Heating	321	328
	Lo Heating	255	257
<b>Pin Setting</b>	Constant	175	182

Model: HE-100			
<b>Cooling</b>	Outlets	28	32
	Mode	36	36
	Airflow in L/s	36	36
<b>Heating</b>	Hi Cooling	418	422
	Lo Cooling	252	255
	Dehumid	330	330
ESH: 5 - 18 kW	Hi Heating	375	385
	Lo Heating	295	295
<b>Pin Setting</b>	Constant	245	208

Model: HE-100			
<b>Cooling</b>	Outlets	32	36
	Mode	40	40
	Airflow in L/s	40	40
<b>Heating</b>	Hi Cooling	472	486
	Lo Cooling	283	293
	Dehumid	378	387
ESH: 5 - 20 kW	Hi Heating	427	439
	Lo Heating	340	347
<b>Pin Setting</b>	Constant	234	238

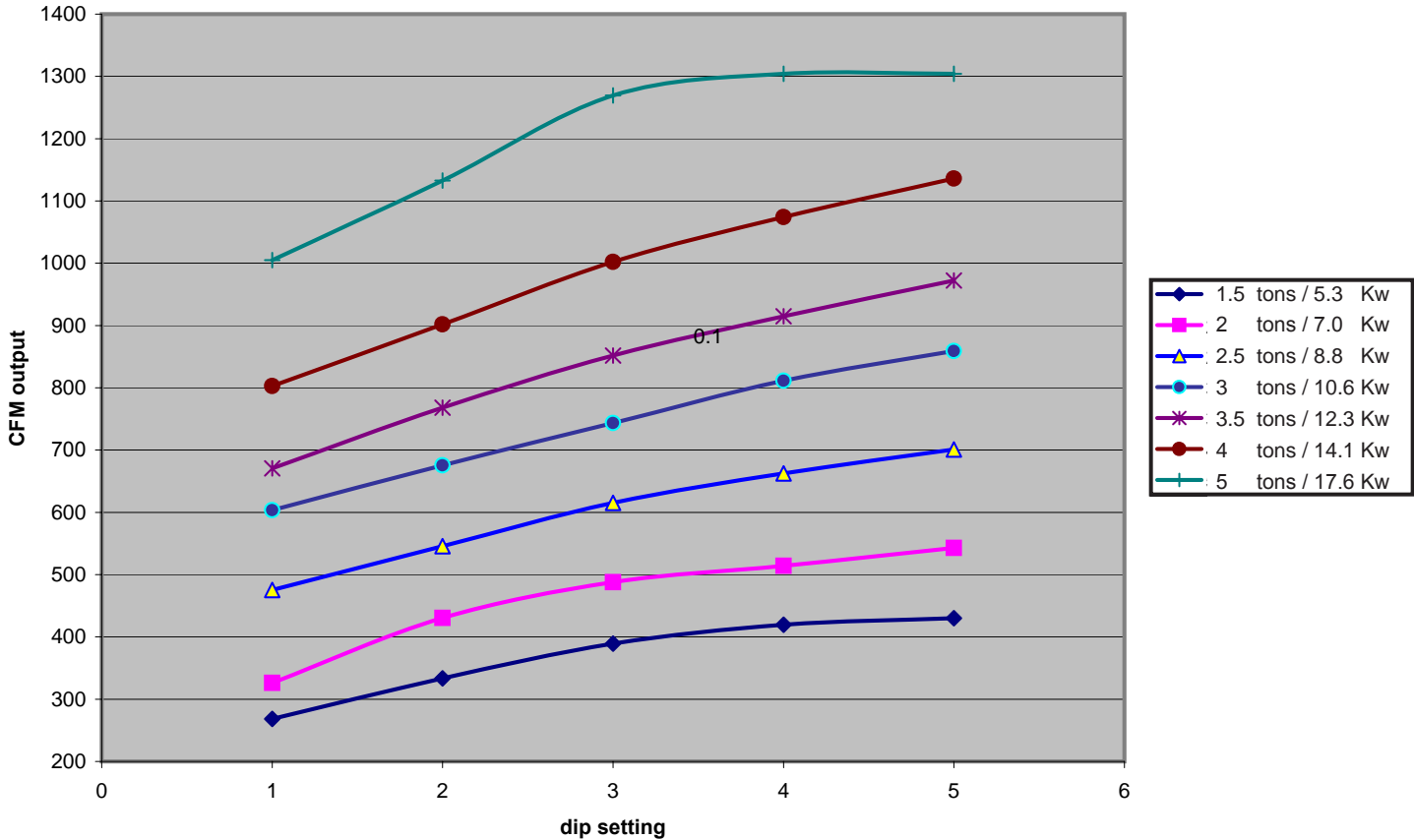
Model: HE-100			
<b>Cooling</b>	Outlets	36	40
	Mode	44	48
	Airflow in L/s	44	48
<b>Heating</b>	Hi Cooling	592	590
	Lo Cooling	356	354
	Dehumid	477	474
ESH: 5 - 23 kW	Hi Heating	529	529
	Lo Heating	434	425
<b>Pin Setting</b>	Constant	316	300

Model: HE-100			
<b>Cooling</b>	Outlets	36	40
	Mode	44	48
	Airflow in L/s	44	48
<b>Heating</b>	Hi Cooling	604	625
	Lo Cooling	363	378
	Dehumid	514	514
ESH: 5 - 23 kW	Hi Heating	580	578
	Lo Heating	472	467
<b>Pin Setting</b>	Constant	335	323

**Note:** Minimum of 8 outlets per ton for cooling  
 Heating ratings based upon 82°C EWT, with the HCA coil (4 row coil)  
 Black indicates dip switch position






ESH: Electrical Strip Heaters

# EPC Dip Ranges



# Extended Air Flow Adjustments

The extended pin setting applies to all HE fancoils and can be used to lower or raise CFM output, only PIN's 6,7,8 are changed in order to modify the CFM output

Pin Setting	Result
1. 	Decrease
2. 	↑
3. 	Ideal (default)
4. 	↓
5. 	Increase

Black indicates DIP switch position

