

**freewatt®**



# Warm Air freewatt System, Model WAZ

**POWERED by HONDA™**

## User's Information Manual

Information and specifications in the manual were in effect at time of printing of this manual. ECR International reserves the right to discontinue, change specifications or system design at any time without notice and without incurring any obligation, whatsoever.

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Check our website frequently for updates: [www.freewatt.com](http://www.freewatt.com) [www.ecrinternational.com](http://www.ecrinternational.com)

## WARM AIR SYSTEM, MODEL WAZ

Use this manual with following manuals.

- Warm Air freewatt Installation, Operation and Maintenance Manual
- freewatt Furnace Installation, Operation and Maintenance Manual and User's Information Manual
- Honda MCHP Installation Manual and Owner's Manual
- HAI Thermostat Owner's Manual



As an Energy Star partner, ECR International has determined the Furnace included as part of **freewatt** System meets Energy Star guidelines for energy efficiency.



The Honda MCHP is an Underwriter's Laboratory (UL) Listed, "Utility Interactive, Cogeneration, Stationary Engine-Generator Assembly, File Number FTSR.AU2004 (U.S.) and FTSR7.AU2004 (Canada)."



Furnace assembly is design certified in US and Canada by Canadian Standards Association.



### NOTICE

Do not destroy this manual.

Read and keep in safe place for future reference by service technician.

## INTRODUCTION

### NOTICE

Read instructions thoroughly before attempting to operate this system.

#### Introduction

- Warm Air freewatt System User's Information Manual outlines safety information, operating instructions and maintenance information.
- Become familiar with warranty policy to fully understand coverage and your ownership responsibilities. Warranty policy is a separate document and should have been provided to you by your dealer.
- Your local freewatt dealer is specially trained and certified in specific servicing requirements of Warm Air freewatt System.
- For optimum performance and operation, your Warm Air freewatt System is capable of being connected to the internet and configured to allow your dealer to continuously monitor your system's operating characteristics. If system has any parameters outside of normal operating range, control module can notify dealer of abnormality. This internet connection will also allow you to contact the control module's webpage and monitor the system's operation as well as modify thermostat settings. This communication link can be configured to operate either from within or outside your home's local area network. Contact your dealer to inquire about connecting your freewatt system to the internet.

#### How Does freewatt Work?

- Warm Air freewatt System is a micro-combined heat and power system that replaces your standard home heating appliance.
- By integrating state-of-the-art Honda MCHP technology with a high efficiency Warm Air Furnace, **freewatt** offers homeowners the ability to make their own electrical power while heating their house.
- **freewatt** control module accepts data from communicating thermostat and outdoor temperature sensor and uses its custom-engineered heating algorithm to supply heat to the home.
- **freewatt** control module maximizes operating hours of Honda MCHP unit and power production, while continuously providing low level of heat to your home.
- Homeowners immediately feel improved comfort level. If additional heat is needed, high efficiency furnace starts and delivers required heat.

#### How freewatt Saves Money:

- Warm Air freewatt is designed to produce significant electric power annually, while heating your house. Reduces amount of power your home takes from electric grid and lowers your electric bill, during heating season.
- freewatt System also delivers heat to house more efficiently by using electronically commutated motor (ECM) with brushless DC technology. These motors are specially designed to be very efficient at lower speeds. Continuous low level heating stage (MCHP) uses under 100 watts of power to deliver heat, compared to 600-800 watts for heat delivered by a typical furnace

#### Any Questions?

- Visit **freewatt** website, [www.freewatt.com](http://www.freewatt.com), and check FAQ (Frequently Asked Questions) page for answers to common questions about **freewatt** System. To learn more about **freewatt** products contact your local **freewatt** dealer.

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### Safety Symbols

This manual contains important safety information, read carefully. Read all **freewatt** System manuals for safety information and warnings.

#### **DANGER**

Indicates a hazardous situation which, if not avoided, WILL result in death or serious injury.

#### **WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

#### **CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

#### **NOTICE**

Indicates information which should be followed to ensure proper installation and operation.

#### **WARNING**

If instructions are not followed exactly, fire or explosion could result in personal injury or loss of life causing or property damage.

#### **WARNING**

Furnace and engine exhaust from this system contain chemicals known to state of California to cause cancer, birth defects or other reproductive harm.

#### **WARNING**

Exhaust gases from this system contain chemicals which may include carbon monoxide (CO). Carbon monoxide is odorless, tasteless, clear colorless gas, which is highly toxic. Low concentrations are suspected of causing birth defects and other reproductive harm.

UL and ULC recognized CO detectors are required for all buildings equipped with freewatt plus system. Install CO detectors in accordance with manufacturer's instructions and applicable local building codes.

#### **WARNING**

Natural gas and propane are normally odorized by fuel supplier. Odorant may not be perceivable. Installation of UL and CUL recognized fuel gas detectors installed in accordance with manufacturer's instructions is recommended.

# 1 - IMPORTANT SAFETY INFORMATION

## WARNING

What to do if you smell gas:

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from neighbor's phone, or cellular phone from location well away from building. Follow gas supplier's instructions.
- If you cannot reach your gas supplier, call fire department.
- Do not re-enter the building until authorized to do so by gas supplier or fire department.

Do not store or use gasoline or other flammable vapors and liquids, or other combustible materials in vicinity of this or any other appliance.

Improper installation, adjustment, alteration, service or maintenance can cause injury, or loss of life. Installation and service must be performed by qualified installer, service agency or gas supplier

## WARNING

Should overheating occur or gas burners or internal combustion engine fail to shut off, close manual gas valves for furnace and MCHP before shutting off electrical power to furnace. Failure to do so can cause an explosion or fire resulting in personal injury or loss of life.

Before restarting furnace or MCHP, have freewatt dealer or service agency check all plastic vents, gas connectors and wiring for damage.

## WARNING

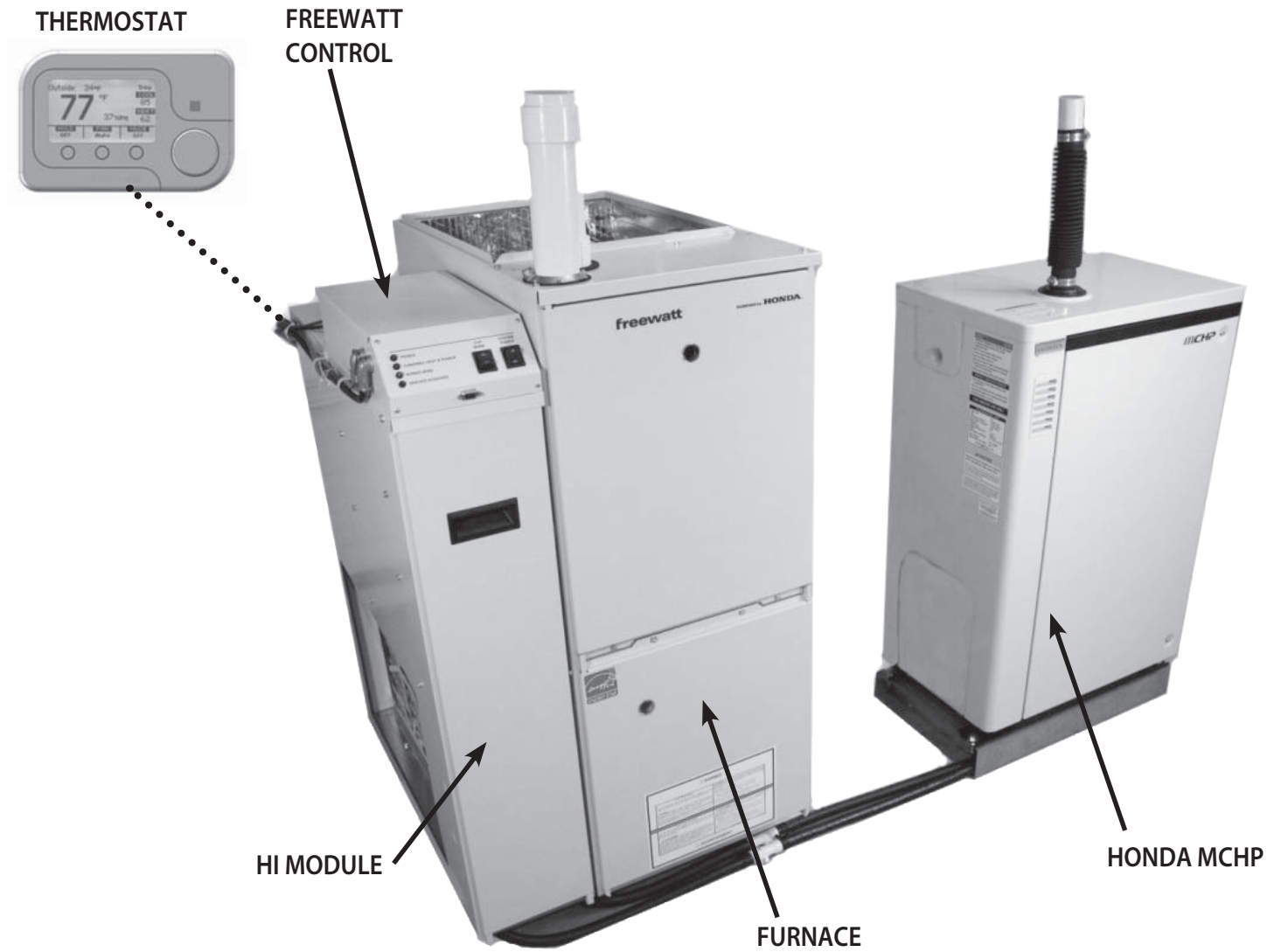
If instructions are not followed exactly, fire or explosion could result in personal injury or loss of life causing or property damage.

## 1.1 Safety Information

- **freewatt** System needs adequate amounts of combustion and ventilation air to operate properly. Do not block or obstruct air openings on Furnace or Honda MCHP, or air openings supplying combustion or ventilation air to area where system is installed. There are many areas from which your Furnace and Honda MCHP could be receiving combustion and ventilation air including from within the heated area (inside air), from outdoors, and attic or crawl space. If renovations are done, be sure air supply openings are not inadvertently covered over with insulation, vapor barrier, carpet, wood flooring or other similar construction material.
- All doors and panels must be in place during normal system operation. Attempting to operate system with missing doors or panels could lead to creation of carbon monoxide or allow moving parts to be exposed.
- If system is installed in confined space or if you intend to build Furnace room where insulation is present, be aware some insulating materials are combustible. Do not allow building insulating materials to come into contact with system.
- Any additions, alterations or conversions required in order for system to properly match application requirements must be done by qualified and certified **freewatt** dealer.
- Familiarize yourself with the location of manual gas shut-off valves and electrical switches, fuses or circuit breakers associated with system.
- If system has been subjected to flood conditions, i.e., if any part of system has been under water, call your **freewatt** dealer for complete inspection. Electronic controls and gas train components may become unstable and unreliable. System must not be used until it has been checked, and any affected parts have been replaced.
- Do not allow snow, ice or debris to accumulate around system's outdoor exhaust and combustion air intake terminals. Blockage of exhaust or combustion intake terminals can result in inadequate performance or nuisance shut-downs.
- Combustible materials should not be stored against or around the system. Keep the system area clear and free from all combustible materials such as newspapers, rags, cardboard, foam, plastic, paper-backed fiberglass insulation, clothing, etc. This applies especially to gasoline and other flammable vapors and liquids.

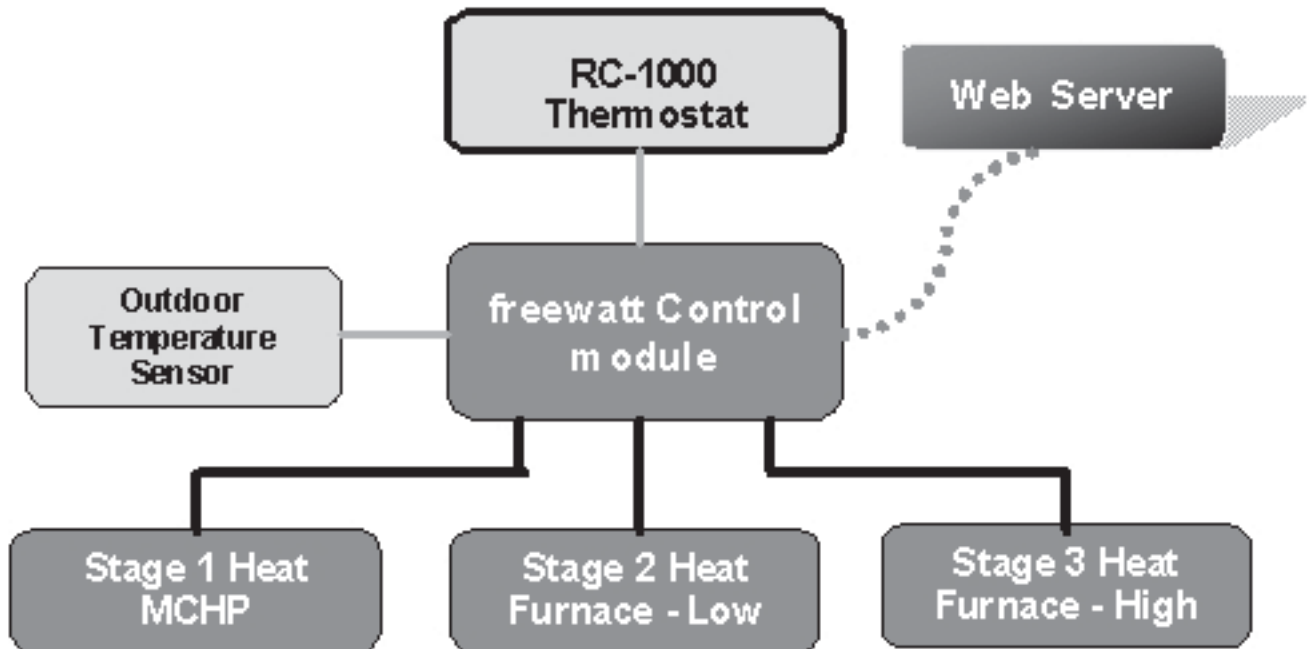
## 2 - SYSTEM COMPONENTS

Warm Air **freewatt** System includes integration of 5 main components: Hybrid Integration (HI) Module, **freewatt** Control module, Furnace (FW95V), Honda MCHP and Thermostat.



### 3 - CONTROLS & FEATURES

Warm Air **freewatt** System has several levels of controls and inputs in its design. Schematic below outlines major controls and inputs to system.



CONTROLS AND FEATURES	DESCRIPTION
<b>Thermostat</b>	<b>freewatt</b> thermostat is communicating, programmable thermostat. Sends settings and indoor temperature reading to <b>freewatt</b> control module. <b>freewatt</b> control module uses information with outdoor temperature measurement to maximize power production of <b>freewatt</b> System.
<b>Web Server</b>	Web Server resides on <b>freewatt</b> control module and allows homeowner to access system's operating information, including thermostat settings, operating hours, etc., over home's local network through standard web browser.
<b>freewatt control module</b>	<b>freewatt</b> control module is brain center for system's operation. Control module uses micro-processor to monitor and control system's operation and maximize its power production.
<b>Stage 1 Heat - MCHP</b>	First stage of heat is provided by Honda MCHP unit. During winter months, heat is delivered almost continuously at low air flow rate, greatly increasing comfort level within dwelling.
<b>Stage 2 Heat – Furnace</b>	Second stage of heat is provided by furnace in its low heat stage. Low stage of furnace is 60% of its maximum output.
<b>Stage 3 Heat – Furnace</b>	Third stage of heat is provided by furnace. High stage of furnace is maximum output of furnace.



## 3 - CONTROLS & FEATURES

### 3.1 Thermostat

#### NOTICE

Read RC-1000 HAI communicating thermostat User's Guide before proceeding.

RC-1000 HAI communicating thermostat is precision digital thermostat for single stage heating and cooling systems. Thermostat is designed with following features:

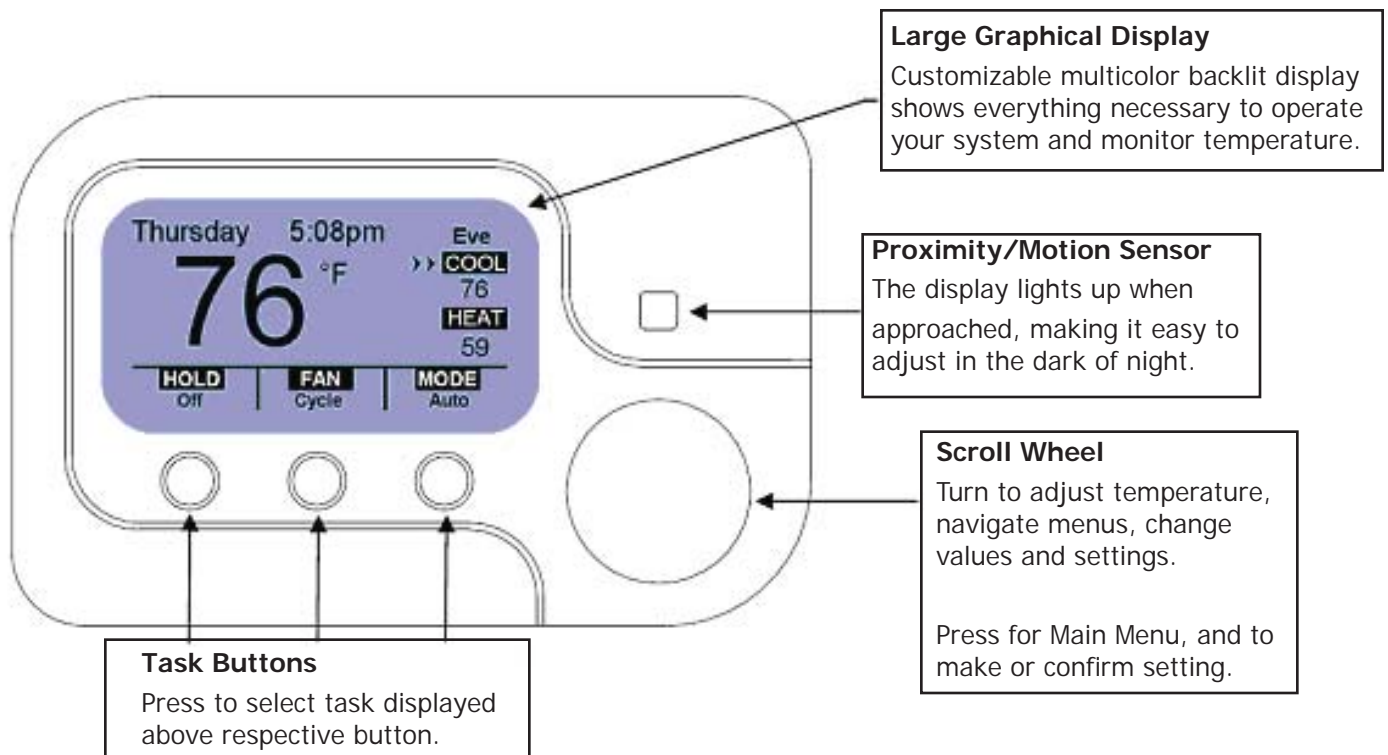
- Display shows current time, temperature, outdoor temperature and mode of operation
  - Local and remote control
  - Programmability, up to 4 periods of day for each day of the week
  - Energy Star qualified
  - Maintenance free
- 
- Warm Air **freewatt** System requires communicating thermostat to provide information, including thermostat setpoints, indoor temperature, etc., to system control module so heating algorithm can maintain thermal comfort in home.
  - Conventional thermostats, even programmable thermostats, are not necessarily communicating. **freewatt** System will not operate without communicating thermostat working properly. If your **freewatt** communicating thermostat is not working properly, please contact your service provider to service or replace it.

#### NOTICE

*Setback Operation:* Although conventional heating equipment often suggests using setback as effective method of increasing energy efficiency, **freewatt** System delivers better savings, both financially and environmentally, when thermostat is set to your most comfortable temperature and not changed.

#### SET IT, FORGET IT & SAVE!

THERMOSTAT SETTING: **freewatt** System continuously delivers low level heat rather than cycling on and off, which has been found to result in increased comfort level. System benefit has resulted in homeowners lowering their thermostats.





## 3 - CONTROLS & FEATURES

### 3.2 Web Server

- Web server is factory-installed onto system control module. If your **freewatt** System is connected to internet, web server can be accessed through standard web browser (i.e. Windows Internet Explorer). Server displays status of your **freewatt** System, current indoor and outdoor temperatures, heating and cooling set points and ability to control programmable thermostat's schedule. Accessible from any computer on your home's network.
- As part of our installation services, **freewatt** product technician can set up **freewatt** to connect to your home router and allow for connectivity from outside your home's network. This will allow you to check your system from work, vacation or other remote locations.

Basic system status screen includes information about your **freewatt** System, including :

- model number,
- serial number,
- network information,

- operating information
- thermostat settings

Other screens include:

- Change Temp screen,
- Setup System screen,
- Company Website screen

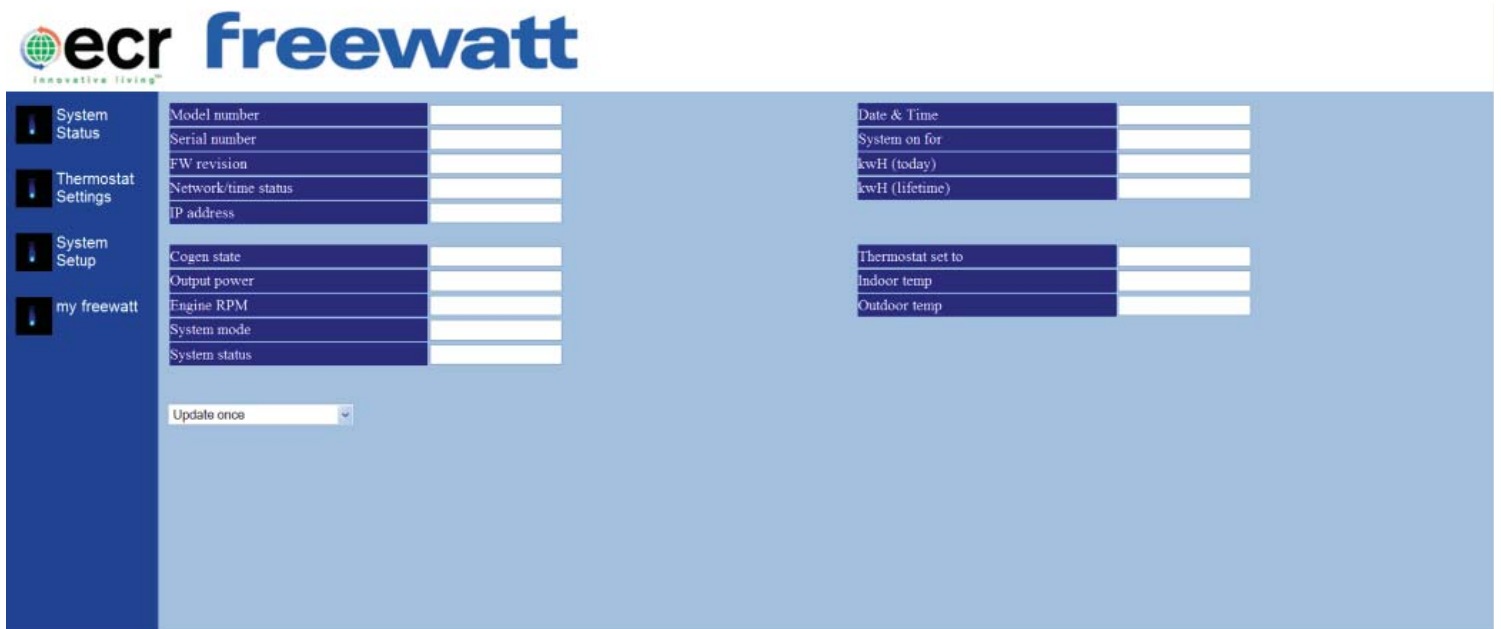
Change Temp and Setup System screens are secure screens and require passwords to enter. Ensures random users cannot change your settings.

Change Temp screen shows all programmable settings from communicating thermostat and allows user ability to modify settings as necessary.

Setup System screen should only be used by **freewatt** Product Technician or network professional to setup web browser on your local network.

**Figure 2** shows System Status screen for **freewatt** System.

Figure - 2 Web Page System Status Screen



## 3 - CONTROLS & FEATURES

### 3.3 Front Panel of freewatt Control Module

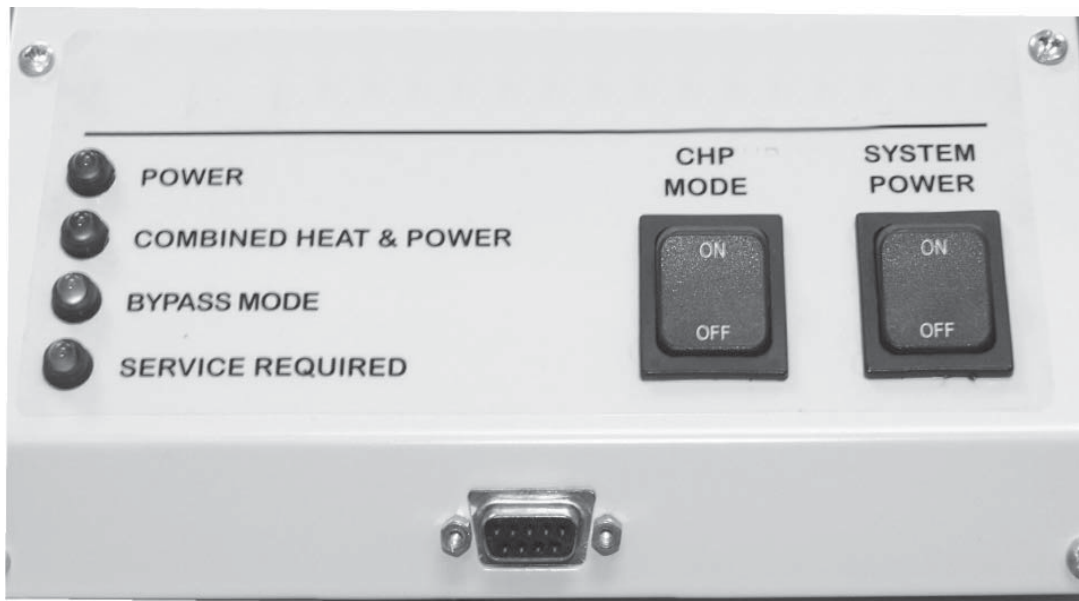
Front panel of **freewatt** control module has one switch, 4 display lights and serial connection port, shown in Figure 3. Switch is for CHP Mode.

Four display lights signal system's operating status:

- Power,
  - Combined Heat & Power,
  - Bypass Mode,
  - Service Required.
- Serial connection port is DB-9 specification and allows service technician to directly monitor and control **freewatt** System for diagnostics and troubleshooting procedures.
  - Field supplied 120 VAC power switch shuts off **freewatt** control module, zone controls and furnace for servicing and also allows for service to be performed on HI Module.
  - NOTE: If service is required on Honda MCHP, 240 VAC Honda MCHP service switch must be turned to OFF position.
  - CHP Mode switch notifies **freewatt** control module that Honda MCHP unit is not to be operated or is not installed. If Honda MCHP is installed, **freewatt** control module sends signal to Honda MCHP and shuts off unit.

- If Honda MCHP unit is not installed, switch signals the **freewatt** control module so only furnace will be operated. This switch effectively turns **freewatt** System into conventional heating appliance with furnace providing heat.
- Four display lights signal operating status of **freewatt** System and signal error/fault messages.
  - POWER light is green and signifies control module and furnace are receiving 120 VAC power.
  - COMBINED HEAT & POWER light is green and signifies Honda MCHP unit is operating.
  - BYPASS light is yellow and signifies Honda MCHP is being bypassed automatically or manually (check CHP mode switch).
  - SERVICE REQUIRED light is red and signifies **freewatt** System requires service.
- Front panel serial connection is used by your **freewatt** technician to investigate your system's operation and evaluate any operating issues. Cable connects technician's portable computer to **freewatt** System's service port and uses special diagnostic software for troubleshooting. Serial connection should only be used by your **freewatt** technician.

Figure - 3 Front Panel of freewatt System



## 3 - CONTROLS & FEATURES

### 3.4 Furnace

- **freewatt** furnace is 95% efficient Energy Star qualified gas furnace (FW95V) featuring ECM blower for variable speed and low power consumption.
- Furnace also offers two-stage combustion and heat delivery, increasing efficiency and comfort level of home.
- Furnace has sight hole located on top and bottom front panels. Sight hole on top panel allows service technician view of burner assembly in order to confirm proper light off of furnace.
- Sight hole on bottom panel is used to view fault/error LED on integrated furnace control board. If error or fault occurs on furnace, service technician will use this sight hole to diagnose cause of error.

### 3.5 Honda MCHP Unit

- Honda MCHP Unit is custom-engineered micro-combined heat and power unit that will only operate, after properly installed, when **freewatt** control module sends start signal to unit.
- All operating information and error codes from Honda MCHP unit are sent to system control module through MCHP communication cable and information is presented through our webpage or on front panel of control module.
- Alternatively, **freewatt** service technician can use service tool to diagnose or monitor Honda MCHP unit through system control module by connecting to service port on control module.

## **4 - SYSTEM OPERATION INFORMATION**

After **freewatt** System is commissioned by your **freewatt** dealer follow operating guidelines below:

### **4.1 Preparation**

**freewatt** System needs several utilities to be functioning before starting system:

<b>Utility</b>	<b>Description</b>
Electrical	Set dedicated electrical circuits for MCHP (240 VAC) and furnace (120 VAC) in ON position.
Gas	Turn natural gas supply valves for MCHP and furnace to ON position.
Thermostat	Set thermostat on AUTO or HEAT and set desired temperature.

### **4.2 Starting System**

- **freewatt** System will operate based on thermostat setting and outdoor temperature sensor, after system is commissioned by your **freewatt** dealer.
- If thermostat determines home needs heat, signal is sent to **freewatt** control module and Honda MCHP unit is turned on.
- If Honda MCHP unit's first stage of heat alone provides inadequate level of heat, furnace will be signaled to start.
- All operation should happen automatically based on thermostat's settings.

### **4.3 Shutting Down the System**

#### **⚠ WARNING**

Electrical shock may cause serious injury or death. Following procedures may expose you to dangerous line voltage use caution to avoid touching live electrical contacts. All service must be performed by trained, experienced service technician.

#### **Preferred Method:**

- Set CHP MODE switch on control module to OFF position.
- After shut down cycle of approximately three minutes is completed (coolant pump stops), turn SYSTEM POWER switch on control module to OFF and 240 VAC Honda MCHP service switch to OFF.
- Turn main breakers in service panel to the OFF position

if performing service inside furnace or Honda MCHP.

#### **Emergency Method:**

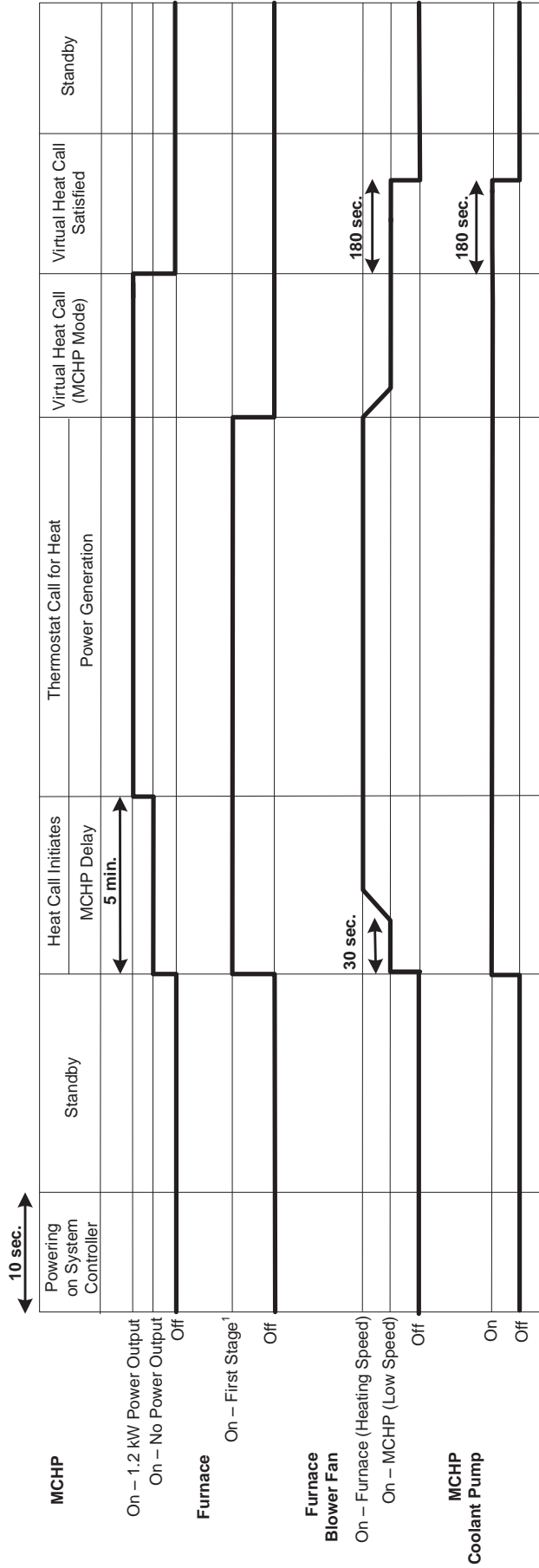
- Turn 120 VAC service switch and CHP MODE switch to OFF and 240 VAC Honda MCHP service switch to OFF. MCHP may overheat and flash error message if system is restarted soon after turning system OFF, due to coolant pump turning off.
- Turn main breakers in service panel to OFF position, if performing service inside furnace or Honda MCHP.

## 4 - SYSTEM OPERATION INFORMATION

### 4.4 Sequence of Operation

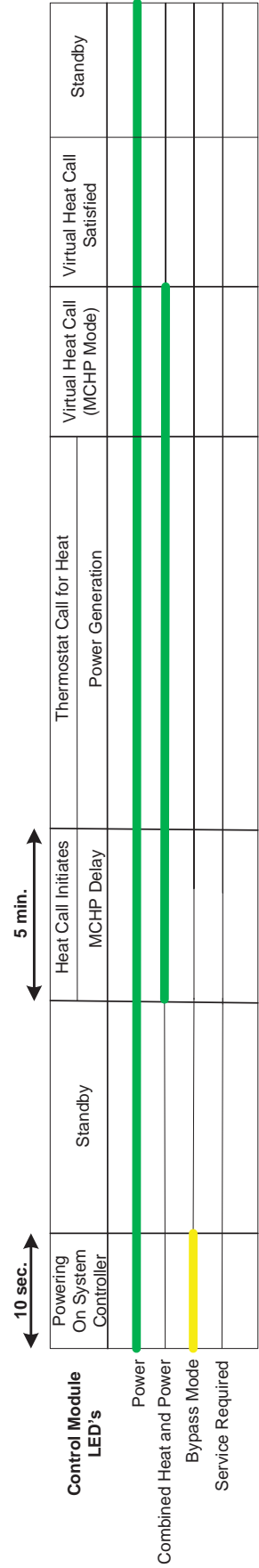
**WARM AIR FREEWATT SYSTEM**  
**Model WAZ**  
*Sequence of Operation/Timeline*

#### Mechanical Operations



<sup>1</sup>If the heat call lasts for longer than 10 minutes, the furnace will enter 2<sup>nd</sup> stage heating with a higher heat output and blower fan speed

#### LED Display



## 4 - SYSTEM OPERATION INFORMATION

### 4.5 In Event of Power Failure

- HI module, system control module and furnace will immediately shut down and MCHP generator will disconnect from grid automatically.
- Honda MCHP unit's engine will continue to operate for about 1 minute before complete shutdown. Although engine is operating, generator is not producing power and is completely disconnected from grid.
- Feature protects unit in case power failure was momentary event, allowing Honda MCHP to quickly reconnect to grid and make power for your home.

### 4.6 Alerts and Alarms

**freewatt** System has several ways to alert homeowner and **freewatt** dealer that system is not operating properly:

- LED signals on front cover of HI module
- LCD display on front of **freewatt** furnace
- Thermostat display
- Error messages found on webpage
- Remote monitoring, if system is properly internet connected and configured

If service or repair is required, please contact your **freewatt** dealer and have **freewatt** service technician check your system.

## 5 - SERVICE & MAINTENANCE

### **WARNING**

Disconnect electrical power supply before attempting any maintenance. Failure to do so can cause electrical shock resulting in personal injury or loss of life.

### **CAUTION**

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

Always verify proper operation after servicing.

### **NOTICE**

Maintenance should be performed by your **freewatt** Dealer or service agency. Instructions contained in this manual should be strictly followed

### **NOTICE**

It is recommended that your **freewatt** System be checked by your **freewatt** Dealer or service agency once a year.

- **freewatt** System does not have any user serviceable parts other than air filter. Do not modify or attempt to repair **freewatt** furnace, HI Module or MCHP unit. It is recommended that **freewatt** Dealer or service agency perform any repairs or routine maintenance.
- If your system is internet-connected and communicating properly, our **freewatt** service center will be monitoring operating hours on your **freewatt** System to determine when your next maintenance interval should occur. Your **freewatt** dealer should contact you to schedule maintenance visit and order any parts required.

## **5 - SERVICE & MAINTENANCE**

Regular service and maintenance by your freewatt Dealer or service agency must be performed to assure safe, trouble-free operation and maximum efficiency. It is recommended servicing or inspecting system at least once every 12 months.

It is recommended use of only new, genuine parts or equivalents for repair and replacement to ensure best quality and reliability.

Schedule annual service call by your **freewatt** dealer or service agency, which includes:

### **Beginning Of Each Heating Season**

- **Furnace:** Examine furnace per annual inspection/service procedures outlined in furnace Installation, Operation and Maintenance Manual. Inspections include, but are not limited to:
  - Heat Exchanger
  - Burners
  - Drainage
  - Combustion Air Blower
  - Circulation Air Fan
  - Electrical
  - Condensate Drain
  - Intake Air and Exhaust Piping
  - Furnace Operation (Safeties, Temperature Rise & Burner Ignition)
- **Control Module/Hybrid Integration (HI) Module:** Examine control module and HI Module per its annual inspection/service procedures outlined below:
  - System Control Module: Check system control module's functions through laptop computer or PDA. Detailed procedures are found in MINT Tool Supplemental.
  - Communication/Electrical Connections: Inspect connections to and within HI Module to verify they are secure and connected properly.
  - CHP Mode Switch: Turn OFF CHP Mode switch and operate furnace to verify bypass mode is working properly.
  - Coolant Level: Check coolant level in coolant tank and fill with coolant, if necessary.
  - Mixing Valve: Check coolant temperature being delivered by valve while system is operating. Check for leaks and fix.
  - Pump: Inspect pump and connections. Check for leaks and fix.

- Coolant Tubing and Connections: Inspect coolant tubing and connections for leaks and fix.
- Air Filter: Check air filter and replace, if necessary.
- Air Coil Heat Exchanger: Inspect heat exchanger for cleanliness and remove debris.

- **Honda MCHP unit:** Honda MCHP unit requires periodic inspection by **freewatt** service professional to maintain acceptable performance and ensure safe operation. Inspection/service procedures are outlined in unit's Installation, Operation and Maintenance Manual. Typically, services are required every 6,000 hours, so operating time of unit will directly impact service interval. Inspections include, but are not limited to:

- Starting Ease
- Oil Leakage
- Engine Coolant
- Breather Tube
- Condensate and Condensate Drain
- Air Cleaner Element
- Intake Air Supply and Exhaust Piping
- Ventilation Air Inlet and Outlet
- Coolant Tubing and Connections
- Electrical System and Connections
- Communication System and Connections
- Replace:
  1. Engine Oil and Drain Washer.
  2. Engine Oil Filter Cartridge.
  3. Spark Plugs.
  4. Adjust Clearance Between Tappets.
  5. Breather Separator.

MCHP Owner's Manual outlines specific maintenance intervals (6,000, 12,000, 18,000 & 24,000 hours) and requirements for each interval. Maintenance should be conducted by **freewatt** service professional to maintain acceptable performance and ensure safe operation of your Honda MCHP.



## 6 - ROUTINE MAINTENANCE BY HOMEOWNER

Warm Air **freewatt PLUS** System does not have any user serviceable parts other than air filter. Do not modify or attempt to repair **freewatt** furnace, HI module or Honda MCHP unit. It is recommended that **freewatt** Dealer or service agency perform any repairs or routine maintenance.

### 6.1 Air Filter (Located Inside HI Module)

#### **WARNING**

Disconnect electrical power supply to furnace before attempting any maintenance. Failure to do so can cause electrical shock resulting in personal injury or loss of life.

- Recommend filter be inspected frequently and replaced as necessary.
- Homeowner should perform monthly inspections upon initial system installation.
- Filter should be replaced after 90 days of continuous operation. Actual required frequency of air filter replacement will be specific to home's characteristics.
- Avoid use of 1" fiberglass filters, which can become blocked quickly and result in higher power consumption and higher operating temperatures.
- Recommend use of double wall, metal supported pleated filter (16" x 25" x 4") having MERV 8 rating and provides outstanding performance for indoor air quality such as Purolator FMEX40 or equivalent. 16" x 25" x 4" air filter will fit air filter bracket in HI Module.

#### **NOTICE**

If two return air inlets are used, both must be equipped with filters

#### **NOTICE**

Make sure to seat filter properly in air filter bracket to ensure no air can bypass filter when installing new filter.

#### **NOTICE**

Do not operate furnace for prolonged periods of time without air filter.

Portion of dust entrained in air may lodge in supply air ductwork and registers. Recirculated dust particles will be heated and charred by contact with furnace's heat exchanger. Residue will soil ceilings, walls, drapery, carpets, and other household articles.

### 6.2 Cleaning

- Before cleaning **freewatt** System, shutdown system following procedure found in Section 4.3. Allow system to adequately cool before attempting any cleanup activities.
- Outside of **freewatt** System may be lightly cleaned with soft cloth dampened with water and squeezed firmly.
- **Never attempt to wash system with water.**
- **Never use gasoline, thinner, benzene or polishing powder to clean system.**

## 7 - STORAGE (SHUTDOWN) FOR ONE MONTH OR MORE

It is suggested following precautions be followed when **freewatt** System is not used for one month or more:

- Shutdown system as specified in Section 4.3.
- Close gas valves for furnace and Honda MCHP unit.
- Make provisions to prevent any possible blockage (i.e. animals, birds, children's toys, etc.), depending on location of exhaust outlets.

## 8 - TECHNICAL INFORMATION

### Warm Air freewatt System

freewatt HEATING CAPACITIES - NATURAL GAS					
freewatt Model	Natural Gas	WAZ060N00A	WAZ080N00A	WAZ100N00A	WAZ120N00A
Honda MCHP	Input (Btu/hr) 0-3,300'	18,420	18,420	18,420	18,420
	Output (Btu/hr) 0-3,300'	12,300	12,300	12,300	12,300
Furnace	Input (Btu/hr) 0-2,000'	60,000/36,000	80,000/48,000	100,000/60,000	120,000/72,000
	Output (Btu/hr) 0-2,000'	57,000/34,200	76,000/45,600	95,000/57,000	114,000/68,400
	Furnace Efficiency (AFUE)	95%	95%	95%	95%
HYBRID INTEGRATION MODULE					
Pump Power (Watts)		12	12	12	12
Pump Voltage (VAC)		120	120	120	120
MAXIMUM VENTING LENGTHS (EACH ELBOW EQUALS FIVE FEET)					
Venting Length (ft.) – Furnace (3")		100 ft.	100 ft.	100 ft.	100 ft.
Venting Length (ft.) – Honda MCHP (2")		110 ft.	110 ft.	110 ft.	110 ft.

## 8 - TECHNICAL INFORMATION

### Furnace

<b>freewatt FURNACE CAPACITIES - NATURAL GAS</b>					
<b>freewatt Model</b>	Natural Gas	WAZ060N00A	WAZ080N00A	WAZ100N00A	WAZ120N00A
Furnace	Model	FW95V0603	FW95V0804	FW95V1005	FW95V1205
	Input (Btu/hr) 0-2,000'	60,000/36,000	80,000/48,000	100,000/60,000	120,000/72,000
	Output (Btu/hr) 0-2,000'	57,000/34,200	76,000/45,600	95,000/57,000	114,000/68,400
	Furnace Efficiency (AFUE)	95%	95%	95%	95%
HEATING AIRFLOW					
Airflow Range of Low Fire (CFM)		790-1050	1050-1400	1575-2100	1310-1750
Airflow Range of High Fire (CFM)		1050-1300	1405-1750	2110-2200	1755-2100
Motor – ECM Direct Drive		½ hp	¾ hp	1 hp	1 hp
CONTINUOUS FAN AIRFLOW					
Airflow (CFM)		600	750	875	875
COOLING CAPACITY AND AIRFLOW					
Cooling Capacity (tons)		1.5, 2, 2.5, 3	2, 2.5, 3, 4	2, 3, 4, 5	2, 3, 4, 5
CFM Range @ 0.50" WC		600 - 1200	800 - 1600	800 - 2000	800 - 2000
DUCTWORK CONNECTION DIMENSIONS					
Supply Air (F x G)		16 x 20	17.5 x 20	19.5 x 20	22.5 x 20
Return Air (D x E)		14 x 22	14 x 22	14 x 22	14 x 22
MAXIMUM VENTING LENGTHS (EACH ELBOW EQUALS FIVE FEET)					
Venting Length (ft.) – Furnace (3")		100 ft.	100 ft.	100 ft.	100 ft.



As an Energy Star partner, ECR International has determined the Furnace included as part of **freewatt** System meets Energy Star guidelines for energy efficiency.

## 8 - TECHNICAL INFORMATION

### Honda MCHP, Model MCHP1.2UK1, Type UCDJ

Honda MCHP (UCDJ) HEATING CAPACITIES – NG		
MODELS		
	NATURAL GAS	MCHP 1.2UK1
Honda MCHP (UCDJ) - MCHP Mode	Input (BTU) 0-3,300'	18,420
	Thermal Output (BTU) 0-3,300'	12,300
	Power Output (kW)	1.2
	Voltage (VAC)	240
	Current (A)	5
	Noise Level - dB(A) 1m	47
	MCHP Steady State Efficiency	89%
MAXIMUM VENTING LENGTHS (EACH ELBOW EQUALS FIVE FEET)		
Venting Length (ft.) – Honda MCHP (2")		110 ft.

### freewatt Thermostat (RC-1000WH-ECR)

<b>freewatt</b> THERMOSTAT Model RC-1000 WH-ECR	
Manufacturer	HAI
Model No.	RC-1000WH-ECR
Voltage	24Vac
Current	2 Amps
Maximum Current (any circuit/total)	2/3 Amps
Frequency	50/60 Hz
Cable Specification	Honeywell Genesis (22AWG 10/C STR CM-CL2)

### freewatt Air Filters

FILTER EFFICIENCY & APPLICATION GUIDELINES		
MERV8 Filter	Typical Applications:	Better Residential
	Typical Contaminants:	Allergens, Dust Mites, Hair Spray
	Arrestance:	> 90%
	Dust Spot Efficiency:	30 – 35%
MERV14 Filter	Typical Applications:	Hospital Grade, Superior Residential- Sustainable Component for a LEED/Green Building Initiative.
	Typical Contaminants:	All Bacteria, Most Smoke, Cooking Oil, Allergens, Dust Mites, Hair Spray
	Arrestance:	> 98%
	Dust Spot Efficiency:	90 – 95%
Source: ASHRAE Standard 52.2 - 1999		

# freewatt®

Your **freewatt** Dealer or Service Center is trained in service and maintenance of your **freewatt** System. This training includes equipment, servicing techniques, maintenance procedures and general operation of **freewatt** System. Please contact these trained professionals with any system questions.

**freewatt** Customer Relations Office

2201 Dwyer Avenue

Utica, NY 13501

Or call: 1-877-622-8934

Please have following information before calling:

- Model and Serial Number
- Name and address of **freewatt** Dealer who installed your system
- Name and address of **freewatt** Dealer who services your system
- Date of purchase
- Your name, address and telephone number
- A detailed description of the problem or issue



2201 Dwyer Ave.

Utica, NY 13501

[www.freewatt.com](http://www.freewatt.com)

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