# EarthLinked® Heating & Cooling System Commissioning Document

(Please print clearly)

Owner Name: _____ Date: _____
Address: _____ City: _____
Province / State: _____ ZIP: _____
Telephone: _____ Email: _____

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Installer Name: _____ License: _____
Address: _____ City: _____
Province / State: _____ ZIP: _____
Telephone: _____ Email: _____

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System Start-Up Date: _____
Compressor Unit Model: _____ Serial: _____
Refrigerant Type: _____ Charge _____ LB _____ Oz

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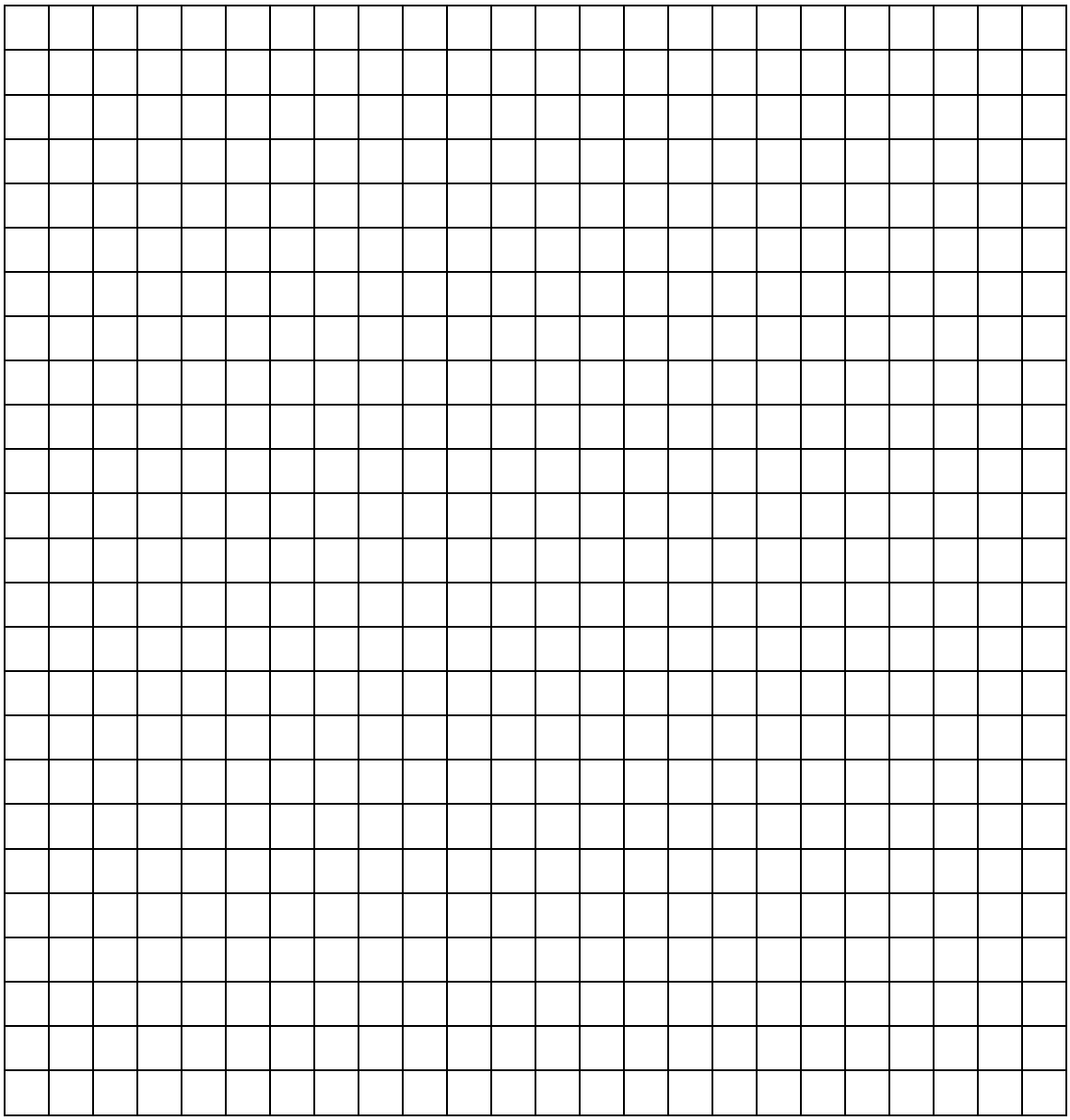
Air handler / Cased Coil Model: _____
Earth Loop Model: _____
Desuperheater Model: _____
Domestic Water Module Model: _____
Hydronic Water Module Model: _____
Auxiliary Cooling Module Model: _____

Show the locations and dimensions of the Earth Loop Field, manifolds, distributors, cathodic protection system, underground refrigerant controls, earth loop to compressor unit connection, etc. Indicate the scale on the drawing. Reference the building with key dimensions. (next page)

**IMPORTANT!**
**Be sure to identify and tag the vapor and liquid lines from the earth loop system where they enter the mechanical room, basement, etc. of the building.**



**System Air Flow Determination:** Turn on electric heat in air handler and measure the average inlet and outlet air temperatures. Measure voltage and amperes to the electric heater.

Volts: _____ Amps: _____ Fan Speed: Low ☐ Med ☐ Hi ☐

Power: $\frac{\text{(Volts X Amps)}}{1000}$ = _____ kW

Air Temperature In: _____ °F Air Temperature Out: _____ °F

CFM = (kW X 3413) / 1.08 X (Air Temp Out - Air Temp In) = _____ CFM

## Air Heating Performance

Compressor Amps: _____ Air Handler Fan Amps: _____

Compressor Volts: _____ Air Handler Fan Volts: _____

Compressor Power: Air Handler Power:

Single Phase:

$kW_{Comp} = \frac{\text{Amps X Volts}}{1000} =$ _____ $kW_{AH} = \frac{\text{Amps X Volts}}{1000} =$ _____

Three Phase:

$kW_{comp} = \frac{\text{Amps X Volts X 1.732}}{1000} =$ _____

Average Air Temperature out of Air Handler: _____ °F

Average Air Temperature into Air Handler: _____ °F

CFM = _____ (from above)

Heating Output = 1.08 X CFM (Air Temp Out – Air Temp In)

Heating Output = _____ BTU/Hr

$COP = \frac{\text{Heating Output}}{\text{BTU/Hr Input}} = \frac{\text{Heating Output}}{3413\ (kW_{comp} + kW_{AH})} =$ _____

Note: When a cased coil is applied to an existing fossil fuel furnace, use $kW_F$ in place of $kW_{AH}$, where $kW_F$ is the power input to the furnace blower motor.

## Hydronic Heating Performance

Compressor Amps: _____ Circulating Pump Amps: _____

Compressor Volts: _____ Circulating Pump Volts: _____

Compressor Power: Circul. Pump Power:

Single Phase:

$kW_{comp}$ = $\frac{\text{Amps X Volts}}{1000}$ = _____ $kW_{pmp}$ = $\frac{\text{Amps X Volts}}{1000}$ = _____

Three Phase:

$kW_{comp}$ = $\frac{\text{Amps X Volts X 1.732}}{1000}$ = _____ $kW_{pmp}$ = $\frac{\text{Amps X Volts X 1.732}}{1000}$ = _____

Water Solution Temperature out of Heat Exchanger: _____ °F

Water Solution Temperature in to Heat Exchanger: _____ °F

Water Solution Flow Rate (from flow meter): _____ GPM

Water Solution Multiplier Factor (from table): _____ WSMF

| Water Solution Propylene Glycol % | Water Solution Multiplier Factor (WSMF) |
|---|---|
| 20 | 1.03 |
| 30 | 1.07 |
| 40 | 1.11 |
| 50 | 1.16 |

Heating Output = $\frac{500 \text{ X GPM (HX Temp Out – HX Temp In)}}{\text{WSMF}}$

Heating Output = _____ BTU/Hr

COP = $\frac{\text{Heating Output}}{\text{BTU/Hr Input}}$ = $\frac{\text{Heating Output}}{3413\ (kW_{comp} + kW_{pmp})}$ = _____

## Air Cooling Performance

Compressor Amps _____ Air Handler Fan Amps _____

Compressor Volts _____ Air Handler Fan Volts _____

Compressor Power: Air Handler Power:

Single Phase:

$Watts_{Comp}$ = Amps X Volts _____ $Watts_{AH}$ = Amps X Volts _____

$Watts_{ACM}$ = Amps X Volts _____

Three Phase:

$Watts_{Comp}$= Amps X Volts X 1.732 = _____

Avge Air Temperatures Leaving Air Handler (Dry Bulb and Wet Bulb)

$T_{LDB}$ = _____ °F $T_{LWB}$ = _____ °F

Total Heat Leaving (from psychometric chart) = _____ BTU/Lb.

Avge. Air Temperatures Entering Air Handler (Dry Bulb and Wet Bulb):

$T_{EDB}$= _____ °F $T_{EWB}$= _____ °F

Total Heat Entering (from psychometric chart) = _____ BTU/Lb.

Total Cooling Capacity = 4.5 X CFM X ($TH_E$-$TH_L$) = _____ BTU/Hr

Where:
CFM = Air Flow Rate (from above)

$TH_E$ = Total Heat Entering
$TH_L$= Total Heat Leaving

$$EER = \frac{\text{Total Cooling Capacity}}{\text{Watts Input}} = \frac{\text{Total Cooling Capacity}}{(Watts_{COMP} + Watts_{AH} + Watts_{ACM})} = \_\_\_\_\_$$

## Chilled Water Cooling Performance

Compressor Amps: _____ Circulating Pump Amps: _____

Compressor Volts: _____ Circulating Pump Volts: _____

Auxiliary Cooling Module Model Power:

$Watts_{ACM}$ = Amps X Volts = _____

Compressor Power: Circulating Pump Power:

Single Phase:
$Watts_{comp}$ = Amps X Volts = _____ $Watts_{pmp}$ = Amps X Volts = _____

Three Phase:
$Watts_{comp}$ = Amps X Volts X 1.732 = _____ $Watts_{pmp}$ = Amps X Volts X 1.732 = _____

Water Solution Temperature out of Heat Exchanger: _____ °F
Water Solution Temperature in to Heat Exchanger: _____ °F
Water Solution Flow Rate (from flow meter): _____ GPM
Water Solution Multiplier Factor (from table): _____ WSMF

| Water Solution Propylene Glycol % | Water Solution Multiplier Factor (WSMF) |
|---|---|
| 20 | 1.03 |
| 30 | 1.07 |
| 40 | 1.11 |
| 50 | 1.16 |

$$\text{Total Cooling Capacity} = \frac{500 \times GPM\ (HX\ Temp\ In - HX\ Temp\ Out)}{WSMF}$$

Total Cooling Capacity = _____ BTU/Hr

$$EER = \frac{\text{Total Cooling Capacity}}{\text{Watts Input}} = \frac{\text{Total Cooling Capacity}}{(Watts_{comp} + Watts_{pmp} + Watts_{ACM})} = \_\_\_\_\_$$