

**Equipment**

oTherm				BEDES			
Field	Value	Type	Units	Term	Mapping	Units	Comments
manufacturer	[value]	string	None	Manufacturer	Manufacturer = [value]	None	
model	[value]	string	None	Model Number	Model Number = [value]	None	
type	ground source heat pump	string	None	Heat Pump	Heat Pump Sink Source Type = "Ground source heat exchanger" Heating type = "Heat pump" Cooling type = "Heat pump"	None	
	air source heat pump	string	None	Heat Pump	Heat Pump Sink Source Type = "Outside air" Heating type = "Heat Pump" Cooling type = "Heat Pump"	None	
COP_at_20F	[value]	decimal	None	Equipment Rating	Efficiency Metric Qualifier = "COP" Efficiency Metric = [value] [Source] Temperature = "20F"	None	Note 3
COP_at_30F	[value]	decimal	None	Equipment Rating	Efficiency Metric Qualifier = "COP" Efficiency Metric = [value] [Source] Temperature = "30F"	None	
COP_at_40F	[value]	decimal	None	Equipment Rating	Efficiency Metric Qualifier = "COP" Efficiency Metric = [value] [Source] Temperature = "40F"	None	
COP_at_50F	[value]	decimal	None	Equipment Rating	Efficiency Metric Qualifier = "COP" Efficiency Metric = [value] [Source] Temperature = "50F"	None	
EER_at_60F	[value]	decimal	Btu/W.hr	Equipment Rating	Efficiency Metric Qualifier = "EER" Efficiency Metric = [value] [Source] Temperature = "60F"	None	
EER_at_70F	[value]	decimal	Btu/W.hr	Equipment Rating	Efficiency Metric Qualifier = "EER" Efficiency Metric = [value] [Source] Temperature = "70F"	None	
EER_at_80F	[value]	decimal	Btu/W.hr	Equipment Rating	Efficiency Metric Qualifier = "EER" Efficiency Metric = [value] [Source] Temperature = "80F"	None	
backup_temperature	[value]	decimal	F	Heat Pump Backup Heating Switchover Temperature	Heat Pump Backup Heating Switchover Temperature = [value]	F	

## Groun Loop Specifications

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Field	Value	Type	Units	Term	Mapping	Units	Comments
formation_type	average rock	string	n/a	Thermal Medium	Thermal Medium = "Rock" Other = "Average"	None	
	dense rock	string	n/a	Thermal Medium	Thermal Medium = "Rock" Other = "Dense"	None	
	soil	string	n/a	Thermal Medium	Thermal Medium = "Common Soil"	None	
	sand and gravel	string	n/a	Thermal Medium	Thermal Medium = "Sand"	None	
formation_conductivity	[value]	decimal	Btu/(hr-ft-F)	Thermal Conductivity	Thermal Medium = "Unknown" Thermal Conductivity = [value]	Btu/(hr-ft-F)	
grout_conductivity	[value]	decimal	Btu/(hr-ft-F)	Thermal Conductivity	Thermal Medium = "Other" Thermal Conductivity = [value]	Btu/(hr-ft-F)	
pipe diameter	[value]	decimal	inches	Pipe	Diameter = [value]	ft	
freeze_protection	[value]	decimal	F	None	None	None	
antifreeze_type	Propylene Glycol	string	n/a	Thermal Medium	Thermal Medium = "Other" None	None	
	Methanol	string	n/a	Thermal Medium	Thermal Medium = "Other" None	None	
	Kilfrost GEO	string	n/a	Thermal Medium	Thermal Medium = "Other" None	None	
grout_type	[value]	string	n/a	Description	Description = [value]	n/a	

**oTherm**

Field	Value	Type	Units
name	[value]	string	n/a
description	[value]	string	n/a
city	[value]	string	n/a
state	[value]	constrained list	n/a
zip_code	[value]	string	na/
timezone	[value]	constrained list	n/a
latitude	[value]	decimal	DDD.DD
longitude	[value]	decimal	DDD.DD
weather_station_id	[value]	string	n/a
thermal_source	vertical ground heat exchanger	string	n/a
	horizontal ground heat exchanger		
	standing column well		
	open		
	outside air		
	pond		

**BEDES**

Term	Mapping	Units	Comments
Identifier Label	Premises = [value]	None	
Description	Description = [value]	None	
City	City = [value]	None	
State	State = [value]	None	
ZIP Code	ZIP Code = [value]	None	
Time Zone Code	n/a	None	Note 1
Latitude	Latitude = [value]	deg	Note 2
Longitude	Longitude = [value]	deg	Note 2
Weather Data Station ID	Weather Data Station ID = [value]	None	
Heat Pump Sink Source Type	Heat Pump Sink Source Type = "Ground source heat exchanger" Resource = "Geothermal" Geothermal Loop = "Closed" Tilt Angle = 90	None	
	Heat Pump Sink Source Type = "Ground source heat exchanger" Resource = "Geothermal" Geothermal Loop = "Closed" Tilt Angle = 0	None	
	Heat Pump Sink Source Type = "Ground source heat exchanger" Resource = "Well water" Geothermal Loop = "Other"	None	
	Heat Pump Sink Source Type = "Well" Geothermal Loop = "Open"	None	
	Heat Pump Sink Source Type = "Outside air"	None	
	Heat Pump Sink Source Type = "Lake"	None	

## Thermal Load

oTherm			
Field	Value	Type	Units
conditioned_area	[value]	decimal	ft2
heating_design_load	[value]	decimal	MBtuH
cooling_design_load	[value]	decimal	MBtuH
heating_design_oat	[value]	decimal	F
cooling_design_oat	[value]	decimal	F

BEDES			
Term	Mapping	Units	Comments
Area	Conditioning Status = "Conditioner Area = [value]	ft2	
None	None	Mbtu/hr	Note 4
None	None	Mbtu/hr	Note 4
Design Ambient Temperature	Design Ambient Temperature = [value]	F	Note 4
Design Ambient Temperature	Design Ambient Temperature = [value]	F	Note 4

## Weather Station

oTherm			
Field	Value	Type	Units
weather_station_id	[value]	string	n/a
latitude	[value]	decimal	DD.DDD
longitude	[value]	decimal	DD.DDD

BEDES			
Term	Mapping	Units	Comments
Weather Data Station ID	Weather Data Station ID = [value]	None	
Latitude	Latitude = [value]	deg	Note 2
Longitude	Longitude = [value]	deg	Note 2

### Notes

- 1 BEDES uses local time abbreviations not time zones
- 2 oTherm in decimal degree
- 3 source temperatures are not included in BEDES
- 4 BEDES capacities are integrated (units of MMBtu)