FAQ for ASHRAE Climatic Design Data License for Software Developers

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How do I purchase the Climatic Design Data License?

Do I need to renew my Climatic Design Data License every year?

Does my purchase of the Climatic Design Data License include access to the online Weather Data Viewer?

Does the Climatic Design Data License provide typical meteorological year (TMY) data or hourly time series for the weather stations?

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Will the Excel macro that converted the .wdv files supplied with the purchase of a license to use the raw data of previous versions of Weather Data Viewer work with the Climatic Design Data License .wdv files, or is there a new macro available?

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What information is included on the spreadsheets available to purchasers of the Climatic Design Data License?

Q: **What is the ASHRAE Climatic Design Data License for Software Developers?**

A: The ASHRAE Climatic Design Data License for Software Developers makes the raw climatic data for the 12,424 weather stations worldwide available to developers who wish to include some or all of the data in their own software/apps. It provides the data in Microsoft® Excel® spreadsheets (with each row representing a station [12,242 rows] and each column representing a climatic design condition [588 columns]) – one each in I-P units and SI units – that users obtain via download, as well as downloads of individual .tbl files, .wdv files, and NetCDF files; a list of ASHRAE 3-letter time zones; an example C++ WDV file parser; a Makefile (GCC/Linux) for tblxpand; a base92.py (Python) library to parse WDV files and a NetCDF library to parse NetCDF files; and example WDV and NetCDF files for testing.

More information and the terms of the license are available via the preview file on the product's page in the ASHRAE Bookstore.

Q: **How do I purchase the Climatic Design Data License?**

A: You can purchase or renew your Climatic Design Data License for a one-time fee via the ASHRAE Bookstore.

Q: **Do I need to renew my Climatic Design Data License every year?**

A: No, the Climatic Design Data License is not an annual subscription. A purchase of the license enables the user to download the climatic design data and use them in perpetuity.

However, the climatic design data are updated every four years, and a purchase of the license does not enable the user to access or use the updated data available with the next release of the data – a new license would need to be purchased to use the updated data available with the next release.

Q: **Does my purchase of the Climatic Design Data License include access to the online Weather Data Viewer?**

A: No, the Climatic Design Data License does not include access to the online Weather Data Viewer app.

Q: Does the Climatic Design Data License provide typical meteorological year (TMY) data or hourly time series for the weather stations?

A: No, the data obtained with a purchase of the license does not include this information. Please consult Chapter 14, Section 7, in *ASHRAE Handbook—Fundamentals* for "Other Sources of Climatic Information."

Q: How often are the ASHRAE climatic design data updated?

A: The ASHRAE climatic design data are updated every four years. This coincides with the publication of the updated climatic data in every new edition of *ASHRAE Handbook—Fundamentals.*

Q: Will the data I have access to via the Climatic Design Data License disappear when the revised climatic design data become available with the next release of updated data?

A: No, your access to and permission to use the climatic design data do not disappear. If you choose not to purchase a license to use the updated data available with the next release, you will still have access to and permission to use the data that you downloaded with the purchase of this release's license.

Q: If I have purchased the Climatic Design Data License and later purchase a license for the next release, how will I receive my updated data?

A: Each release of the ASHRAE climatic design data (every four years) is a new product and a new data download for the license. To obtain access to and permission to use the updated data available with the next release, you will need to purchase a new license for that year's release, and upon completion of that purchase you will be able to download the updated data for all of the stations.

Q: Can I get a .csv file of the frequency or bin data?

A: No, there is not a .csv file of the frequency or bin data for the Climatic Design Data License. Creating such a file by extracting all the required files would result in having to share millions of .csv files for each station/variable combination, which would take much time and effort to produce.

Users are encouraged to check with their company's staff engineers, who may have the background or ability to work with the provided tblxpand software or perhaps Python code to do what is needed.

Q: Will the Excel macro that converted the .wdv files supplied with the purchase of a license to use the raw data of previous versions of Weather Data Viewer work with the Climatic Design Data License .wdv files, or is there a new macro available?

A: That old macro will not work with the Climatic Design Data License files, and there is no new macro because the former Microsoft® Excel® version of Weather Data Viewer is no longer supported.

Options available for converting the data in the .wdv files include the following:

- The provided C++ file tblxpand.cpp provides an example on how to decode .wdv files. Your company's programmers will need to adapt the logic or incorporate the code into their workflows.
- The provided Python-based example library base92.py decodes .wdv files as an alternative to C++.

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Q: What are the available weather stations?

A: Users can search stations on a map by name or geographic location using StationFinder, a free online map of the weather stations as published in the 2001, 2005, 2009, 2013, 2017, 2021, or 2025 *ASHRAE Handbook—Fundamentals*.

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Q: How do I find the nearest weather station for a given latitude and longitude?

A: The specific steps to achieve this depend on the programming language or software being used, but a general brute force procedure is:

1. Calculate the great circle distance using the Haversine distance between your address and all 12,424 stations.
2. Take the minimum distance station.

Information on using Microsoft® Excel® to complete the Haversine equation is available in this article.

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Q: Is there any way to extract frequency matrices from the raw data WDV files provided as part of the Climatic Design Data License without using programming?

A: The short answer is: not really. Typically, purchasers of the license are able to extract the information from the .wdv files as necessary using the provided tblxpand software as a guide. *In theory*, someone could extract all the information into a .csv file format, but this would be millions of files and would be enormous in size and would require much time and effort.

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Q: What exactly are .tbl, .wdv, and .nc files?

A: A .tbl file represents the tab-delimited output of the processing program.

A .wdv file represents a compressed version of the frequency binned histograms (1D and 2D), which are used to generate the various design percentiles. An example C++ program and a Python library are also provided to purchasers for guidance on how to decode the base-92 compressed .wdv files.

A .nc file represents the same information as stored in a corresponding .wdv file but in the industry-standard NetCDF format. An example Python script is provided for guidance on how to parse these files. The NetCDF files also include a 3D frequency histogram not found in the .wdv files—dry-bulb temperature vs. wet-bulb temperature vs. hour of the day. You can also use the free Panoply viewer for viewing/visualizing these files.

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Q: What information is included on the spreadsheets available to purchasers of the Climatic Design Data License?

A: The following pages show the column headings of the information included on the I-P and SI spreadsheets provided to purchasers of the Climatic Design Data License.

(Note: There are 588 columns of data available for each station – the green bars indicate the topmost row over all 588 columns.

Specific data can also be obtained on a station-by-station basis from the .tbl files available to purchasers of the license.

Station Information														
Region	Country	Prov State	Station Name	WMO	WBAN	Lat	Lon	Elev	StdP	TZ Offset	TZ Code	Period	Climate Zone	Grade

Annual Heating and Humidification Design Conditions														
Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest Month WS/MCDB				MCWS/PCWD to 99.6% DB		Wind Shelter Factor
			99.6%			99.0%			0.4%		1%				
	99.6%	99.0%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD	

Annual Cooling, Dehumidification, and Enthalpy Design Conditions															
Hottest Month	Hottest Month DB	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB	
		0.4%		1%		2%		0.4%		1%		2%			
		DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD

Annual Cooling, Dehumidification, and Enthalpy Design Conditions															
Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Extreme Max WB
0.4%			1%			2%			0.4%		1%		2%		
DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	

Extreme Annual Design Conditions														
Extreme Annual WS			Extreme Annual DB				n-Year Return Period Values of Extreme DB							
			Mean		Standard		n=5 years		n=10 years		n=20 years		n=50 years	
1%	2.5%	5%	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max

Extreme Annual Design Conditions												
Extreme Annual WB				n-Year Return Period Values of Extreme WB								
Mean		Standard		n=5 years		n=10 years		n=20 years		n=50 years		
Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	

Temperatures, Degree-Days, and Degree-Hours												
Average Daily Temperature												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Temperatures, Degree-Days, and Degree-Hours												
Standard Deviation of Average Daily Temperature												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Temperatures, Degree-Days, and Degree-Hours												
Heating Degree Days 50°F												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Temperatures, Degree-Days, and Degree-Hours												
Heating Degree Days 65°F												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Temperatures, Degree-Days, and Degree-Hours												
Cooling Degree Days 50°F												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Temperatures, Degree-Days, and Degree-Hours												
Cooling Degree Days 65°F												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Wind Speed												
Average Wind Speed												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Precipitation												
Average Precipitation												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Precipitation												
Maximum Precipitation												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Precipitation												
Minimum Precipitation												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Precipitation												
Standard Deviation of Precipitation												
Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
0.4% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
Mean Wet Bulb Coincident with 0.4% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
2% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
Mean Wet Bulb Coincident with 2% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
5% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
Mean Wet Bulb Coincident with 5% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
10% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures											
Mean Wet Bulb Coincident with 10% Monthly Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
0.4% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
Mean Dry Bulb Coincident with 0.4% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
2% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
Mean Dry Bulb Coincident with 2% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
5% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
Mean Dry Bulb Coincident with 5% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
10% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures											
Mean Dry Bulb Coincident with 10% Monthly Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mean Daily Temperature Range											
Mean Daily Dry Bulb Temperature Range											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mean Daily Temperature Range											
Mean Daily Dry Bulb Temperature Range Coincident with 5% Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mean Daily Temperature Range											
Mean Daily Wet Bulb Temperature Range Coincident with 5% Design Dry Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mean Daily Temperature Range											
Mean Daily Dry Bulb Temperature Range Coincident with 5% Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mean Daily Temperature Range											
Mean Daily Wet Bulb Temperature Range Coincident with 5% Design Wet Bulb Temperature											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Clear-Sky Solar Irradiance											
Clear-Sky Optical Depth for Beam Irradiance (taub)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Clear-Sky Solar Irradiance												
Clear-Sky Optical Depth for Diffuse Irradiance (taud)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Clear-Sky Solar Irradiance												
Clear-Sky Noon Beam Normal Irradiance on 21st Day												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Clear-Sky Solar Irradiance												
Clear-Sky Noon Diffuse Horizontal Irradiance on 21st Day												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

All-Sky Solar Radiation												
All-Sky Average Monthly Global Horizontal Radiation												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

All-Sky Solar Radiation												
All-Sky Standard Deviation of Monthly Global Horizontal Radiation												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Historical Trends									
Station Trends									
DBAvg	Heating		Cooling			Degree-Days			
	99%	99%	1% DB	1% WB	1% DP	HDD50	HDD65	CDD60	CDD65

Historical Trends									
Station Variability									
DBAvg	Heating		Cooling			Degree-Days			
	99%	99%	1% DB	1% WB	1% DP	HDD50	HDD65	CDD60	CDD65

Historical Trends										
Regional Trends										
DBAvg	Heating		Cooling			Degree-Days				Neighbors
	99%	99%	1% DB	1% WB	1% DP	HDD50	HDD65	CDD60	CDD65	