

**Design conditions for ABU DHABI/BATEEN, United Arab Emirates**

**Station Information**

| Station name            | WMO#          | Lat           | Long          | Elev     | StdP          | Hours +/- UTC | Time zone code | Period      |
|-------------------------|---------------|---------------|---------------|----------|---------------|---------------|----------------|-------------|
| 1a                      | 1b            | 1c            | 1d            | 1e       | 1f            | 1g            | 1h             | 1i          |
| <b>ABU DHABI/BATEEN</b> | <b>412160</b> | <b>24.43N</b> | <b>54.47E</b> | <b>3</b> | <b>101.29</b> | <b>4.00</b>   | <b>ARN</b>     | <b>8301</b> |

**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 |            |
|---------------|-------------|-------------|-------------------------------|------------|-------------|------------|------------|-------------|-----------------------|-------------|------------|-------------|-----------------------|------------|
|               | 99.6%       | 99%         | 99.6%                         |            |             | 99%        |            |             | 0.4%                  |             | 1%         |             | MCWS                  | PCWD       |
|               |             |             | DP                            | HR         | MCDB        | DP         | HR         | MCDB        | WS                    | MCDB        | WS         | MCDB        |                       |            |
| 2             | 3a          | 3b          | 4a                            | 4b         | 4c          | 4d         | 4e         | 4f          | 5a                    | 5b          | 5c         | 5d          | 6a                    | 6b         |
| <b>1</b>      | <b>13.0</b> | <b>14.1</b> | <b>3.0</b>                    | <b>4.7</b> | <b>28.8</b> | <b>5.2</b> | <b>5.5</b> | <b>25.7</b> | <b>10.0</b>           | <b>19.4</b> | <b>9.0</b> | <b>20.5</b> | <b>1.4</b>            | <b>170</b> |

**Annual Cooling, Dehumidification, and Enthalpy Design Conditions**

| Hottest month | Hottest month DB range | Cooling DB/MCWB |             |             |             |             |             | Evaporation WB/MCDB |             |             |             |             |             | MCWS/PCWD to 0.4% DB |            |
|---------------|------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|---------------------|-------------|-------------|-------------|-------------|-------------|----------------------|------------|
|               |                        | 0.4%            |             | 1%          |             | 2%          |             | 0.4%                |             | 1%          |             | 2%          |             | MCWS                 | PCWD       |
|               |                        | DB              | MCWB        | DB          | MCWB        | DB          | MCWB        | WB                  | MCDB        | WB          | MCDB        | WB          | MCDB        |                      |            |
| 7             | 8                      | 9a              | 9b          | 9c          | 9d          | 9e          | 9f          | 10a                 | 10b         | 10c         | 10d         | 10e         | 10f         | 11a                  | 11b        |
| <b>8</b>      | <b>9.9</b>             | <b>43.0</b>     | <b>23.8</b> | <b>41.6</b> | <b>24.0</b> | <b>40.2</b> | <b>24.3</b> | <b>30.8</b>         | <b>34.5</b> | <b>30.3</b> | <b>34.2</b> | <b>29.8</b> | <b>34.0</b> | <b>4.0</b>           | <b>340</b> |

  

| Dehumidification DP/MCDB and HR |             |             |             |             |             |             |             |             | Enthalpy/MCDB |             |              |             |             |             |      |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|--------------|-------------|-------------|-------------|------|
| DP                              | 0.4%        |             | 1%          |             |             | 2%          |             |             | Enth          | 0.4%        |              | 1%          |             | 2%          |      |
|                                 | HR          | MCDB        | DP          | HR          | MCDB        | DP          | HR          | MCDB        |               | MCDB        | MCDB         | Enth        | MCDB        | Enth        | MCDB |
| 12a                             | 12b         | 12c         | 12d         | 12e         | 12f         | 12g         | 12h         | 12i         | 13a           | 13b         | 13c          | 13d         | 13e         | 13f         |      |
| <b>30.0</b>                     | <b>27.3</b> | <b>33.4</b> | <b>29.3</b> | <b>26.1</b> | <b>33.2</b> | <b>28.9</b> | <b>25.4</b> | <b>33.0</b> | <b>104.9</b>  | <b>34.6</b> | <b>102.1</b> | <b>34.5</b> | <b>99.6</b> | <b>33.9</b> |      |

**Extreme Annual Design Conditions**

| Extreme Annual WS |            |            | Extreme Max WB | Extreme Annual DB |             |                    |            |             |            | n-Year Return Period Values of Extreme DB |            |             |            |             |            |  |  |
|-------------------|------------|------------|----------------|-------------------|-------------|--------------------|------------|-------------|------------|---|------------|-------------|------------|-------------|------------|--|--|
| 1%                | 2.5%       | 5%         |                | Mean              |             | Standard deviation |            | n=5 years   |            | n=10 years                                |            | n=20 years  |            | n=50 years  |            |  |  |
| Max               | Min        | Max        |                | Max               | Min         | Max                | Min        | Max         | Min        | Max                                       | Min        | Max         | Min        | Max         | Min        |  |  |
| 14a               | 14b        | 14c        | 15             | 16a               | 16b         | 16c                | 16d        | 17a         | 17b        | 17c                                       | 17d        | 17e         | 17f        | 17g         | 17h        |  |  |
| <b>9.5</b>        | <b>8.4</b> | <b>7.5</b> | <b>35.5</b>    | <b>45.6</b>       | <b>10.7</b> | <b>1.5</b>         | <b>1.1</b> | <b>46.7</b> | <b>9.9</b> | <b>47.6</b>                               | <b>9.3</b> | <b>48.4</b> | <b>8.6</b> | <b>49.5</b> | <b>7.8</b> |  |  |

**Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures**

| %    | Jan         |             | Feb         |             | Mar         |             | Apr         |             | May         |             | Jun         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        |
|      | 18a         | 18b         | 18c         | 18d         | 18e         | 18f         | 18g         | 18h         | 18i         | 18j         | 18k         | 18l         |
| 0.4% | <b>28.2</b> | <b>17.4</b> | <b>32.1</b> | <b>17.8</b> | <b>35.8</b> | <b>18.2</b> | <b>40.5</b> | <b>19.9</b> | <b>42.3</b> | <b>21.9</b> | <b>43.7</b> | <b>22.1</b> |
| 1%   | <b>27.2</b> | <b>17.1</b> | <b>30.2</b> | <b>18.0</b> | <b>33.8</b> | <b>18.6</b> | <b>39.1</b> | <b>20.1</b> | <b>41.4</b> | <b>21.7</b> | <b>42.4</b> | <b>22.6</b> |
| 2%   | <b>26.1</b> | <b>17.3</b> | <b>29.0</b> | <b>17.5</b> | <b>32.2</b> | <b>18.3</b> | <b>37.6</b> | <b>20.2</b> | <b>40.4</b> | <b>21.9</b> | <b>41.3</b> | <b>23.1</b> |

  

| %    | Jul         |             | Aug         |             | Sep         |             | Oct         |             | Nov         |             | Dec         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        |
|      | 18m         | 18n         | 18o         | 18p         | 18q         | 18r         | 18s         | 18t         | 18u         | 18v         | 18w         | 18x         |
| 0.4% | <b>44.9</b> | <b>23.4</b> | <b>45.0</b> | <b>23.3</b> | <b>41.6</b> | <b>23.0</b> | <b>38.5</b> | <b>22.6</b> | <b>34.1</b> | <b>19.7</b> | <b>30.0</b> | <b>18.8</b> |
| 1%   | <b>43.8</b> | <b>23.7</b> | <b>44.0</b> | <b>24.2</b> | <b>40.7</b> | <b>23.3</b> | <b>37.2</b> | <b>22.7</b> | <b>33.0</b> | <b>21.0</b> | <b>29.0</b> | <b>19.1</b> |
| 2%   | <b>42.9</b> | <b>23.9</b> | <b>43.0</b> | <b>24.8</b> | <b>39.9</b> | <b>23.3</b> | <b>36.3</b> | <b>23.0</b> | <b>32.1</b> | <b>21.2</b> | <b>28.1</b> | <b>19.4</b> |

**Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures**

| %    | Jan         |             | Feb         |             | Mar         |             | Apr         |             | May         |             | Jun         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        |
|      | 19a         | 19b         | 19c         | 19d         | 19e         | 19f         | 19g         | 19h         | 19i         | 19j         | 19k         | 19l         |
| 0.4% | <b>20.4</b> | <b>23.6</b> | <b>21.2</b> | <b>24.3</b> | <b>22.5</b> | <b>27.5</b> | <b>25.0</b> | <b>30.8</b> | <b>28.1</b> | <b>33.4</b> | <b>30.4</b> | <b>34.6</b> |
| 1%   | <b>20.0</b> | <b>23.4</b> | <b>20.7</b> | <b>23.8</b> | <b>22.0</b> | <b>26.9</b> | <b>24.4</b> | <b>30.3</b> | <b>27.5</b> | <b>32.7</b> | <b>29.9</b> | <b>34.2</b> |
| 2%   | <b>19.6</b> | <b>23.0</b> | <b>20.3</b> | <b>23.8</b> | <b>21.5</b> | <b>26.1</b> | <b>24.0</b> | <b>29.8</b> | <b>27.0</b> | <b>32.2</b> | <b>29.5</b> | <b>33.8</b> |

  

| %    | Jul         |             | Aug         |             | Sep         |             | Oct         |             | Nov         |             | Dec         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        |
|      | 19m         | 19n         | 19o         | 19p         | 19q         | 19r         | 19s         | 19t         | 19u         | 19v         | 19w         | 19x         |
| 0.4% | <b>31.5</b> | <b>35.0</b> | <b>31.6</b> | <b>35.1</b> | <b>30.6</b> | <b>33.6</b> | <b>28.7</b> | <b>32.5</b> | <b>25.7</b> | <b>29.7</b> | <b>22.5</b> | <b>25.6</b> |
| 1%   | <b>31.0</b> | <b>34.9</b> | <b>31.3</b> | <b>34.9</b> | <b>30.2</b> | <b>33.5</b> | <b>28.2</b> | <b>32.3</b> | <b>24.9</b> | <b>29.0</b> | <b>22.0</b> | <b>25.6</b> |
| 2%   | <b>30.6</b> | <b>34.7</b> | <b>31.0</b> | <b>34.6</b> | <b>29.9</b> | <b>33.4</b> | <b>27.7</b> | <b>31.9</b> | <b>24.3</b> | <b>28.5</b> | <b>21.5</b> | <b>25.1</b> |

**Monthly Mean Daily Temperature Range**

| Jan        | Feb        | Mar        | Apr         | May         | Jun         | Jul        | Aug        | Sep         | Oct         | Nov        | Dec        |
|------------|------------|------------|-------------|-------------|-------------|------------|------------|-------------|-------------|------------|------------|
| 20a        | 20b        | 20c        | 20d         | 20e         | 20f         | 20g        | 20h        | 20i         | 20j         | 20k        | 20l        |
| <b>8.1</b> | <b>8.5</b> | <b>9.2</b> | <b>10.9</b> | <b>11.4</b> | <b>10.7</b> | <b>9.9</b> | <b>9.9</b> | <b>10.3</b> | <b>10.2</b> | <b>9.5</b> | <b>8.4</b> |

WMO# World Meteorological Organization number Lat Latitude, ° Long Longitude, °  
 Elev Elevation, m StdP Standard pressure at station elevation, kPa  
 DB Dry bulb temperature, °C DP Dew point temperature, °C WB Wet bulb temperature, °C  
 WS Wind speed, m/s Enth Enthalpy, kJ/kg HR Humidity ratio, grams of moisture per kilogram of dry air  
 MCDB Mean coincident dry bulb temperature, °C MCWB Mean coincident wet bulb temperature, °C MCWS Mean coincident wind speed, m/s  
 PCWD Prevailing coincident wind direction, °, 0 = North, 90 = East