

|               |             |        |
|---------------|-------------|--------|
| Supply air    | TW35P5BD    | P5     |
| Airflow       | l/s         | 11,300 |
| Ext. pressure | Pa          | 1,100  |
| Tot. pressure | Pa          | 1,918  |
| Motor power   | kW          | 30.00  |
| Power supply  | 380V/3/50Hz |        |
| PCW-cooling   | kW          | 739.70 |

|  |            |               |
|--|------------|---------------|
| SURFACE CASING   |            | External unit |
| Type of unit   |            | GI-P          |
| Panel outside  |            | GI            |
| Panel inside   |            | AL            |
| Profiles   |            |               |
| ALL RIGHTS RESERVED WITH RESPECT TO THE INFORMATION AND DESIGN DISCLOSED HEREIN. |            |               |
| DRAWN  | Date       | Name          |
| CHK  | 12/23/2013 | USBS          |
| STD.   |            |               |
| <b>Cooline</b><br>AIR CONDITIONERS   |            |               |
| ISSUE  | CHANGE     | DATE/NAME     |

|                       |  |
|-----------------------|--|
| All DIMENSIONS IN: mm |  |
| Project: AHU Project  |  |
| Location: AHU-1       |  |
| Tag-no: AHU-1         |  |
| DRAWING NO.           | Office<br>Cooline<br>Air Conditioners<br>Tel: +966 3 847 3333 Email: cooline@zamtlac.com |
| REP FOR               | REP BY   |

|           |       |
|-----------|-------|
| TOLERANCE | WN    |
|           | 95001 |
| Scale     | 1:32  |
| Sheet no. | 01    |



**Cooline**  
 P.O.Box 14440  
 Dammam  
 Phone **+966 3 847 3333**  
 Fax  
 e-mail **cooline@zamilac.co**

Page **1 / 5**  
 ClimCalc Vers. **3.8.23**  
 Offer  
 From date **12/18/2013**  
 Position **AHU-1** LV  
 Print data **12/23/2013**



Office / Agent **users**

Zamil Air Conditioners is participating in the Eurovent Certification Programm for Air Handling Units. The range TW & TW (H) is certified under the number 07.04.233 and presented in the Directory of Certified Air Handling Units.

EUROVENT – AHU Energy Efficiency Class **A**

|              |                      |              |          |
|--------------|----------------------|--------------|----------|
| Serie        | <b>TW</b>            | Sealevel [m] | <b>0</b> |
| Execution    | <b>Standard</b>      |              |          |
| Type of unit | <b>External unit</b> |              |          |

| Unit definition    |                   | General data        |                                    |
|--------------------|-------------------|---------------------|------------------------------------|
| Unit size          | <b>TW35P5BD</b>   | <u>Casing:</u>      |                                    |
| Type               | <b>Supply air</b> | Thickness           | <b>P5</b>                          |
| Airflow [l/s]      | <b>11,300</b>     | Panel inside        | <b>GI</b> Thick [mm] <b>0.75</b>   |
| Ext. pressure [Pa] | <b>1,100</b>      | Panel outside       | <b>GI-P</b> Thick [mm] <b>0.75</b> |
| Tot. pressure [Pa] | <b>1,918</b>      | Panel inside bottom | <b>GI</b> Thick [mm] <b>0.75</b>   |
|                    |                   | Profiles            | <b>AL</b>                          |
|                    |                   | Length [mm]         |                                    |
|                    |                   | Width [mm]          | <b>1,995.0</b>                     |
|                    |                   | Height [mm]         | <b>2,605.0</b>                     |

| Intake section       |                 |                                       |              |
|----------------------|-----------------|---------------------------------------|--------------|
| Door with turn-lever |                 | Dimensions [mm] <b>700.0 x 1,88.0</b> |              |
| <u>Damper:</u>       | Dimensions [mm] | <b>500 x 500 ROUND SPIGOT</b>         | QTY <b>6</b> |
| Actuated by          | <b>Lever</b>    | Manually Operated                     |              |
| Airflow [l/s]        | <b>11,300</b>   | Frame                                 | <b>AL</b>    |
|                      |                 | Blades                                | <b>AL</b>    |

| Filter        | <b>350.0 mm</b>                     | <b>3.22 m2</b>            | <b>93 Pa</b> |
|---------------|-------------------------------------|---------------------------|--------------|
| Type          | <b>2" Aluminum</b>                  |                           |              |
| Class         | <b>G3</b>                           |                           |              |
| Clean dP [Pa] | <b>60</b>                           |                           |              |
| Dirty dP [Pa] | <b>125</b>                          |                           |              |
| Airflow [l/s] | <b>11,300</b>                       |                           |              |
|               | Bag length [mm]                     | <b>48.0</b>               |              |
|               | Filter surface [m2]                 | <b>4.20</b>               |              |
|               | Cells pcs x size [mm]               | <b>12 x 592.0 x 592.0</b> |              |
| <b>1</b> Pcs  | <b>Differential Pressure switch</b> |                           |              |

|          |       |                |            |
|----------|-------|----------------|------------|
| Offer    |       | Page           | 2 / 5      |
| Position | AHU-1 | From date      | 12/18/2013 |
|          |       | ClimCalc Vers. | 3.8.23     |

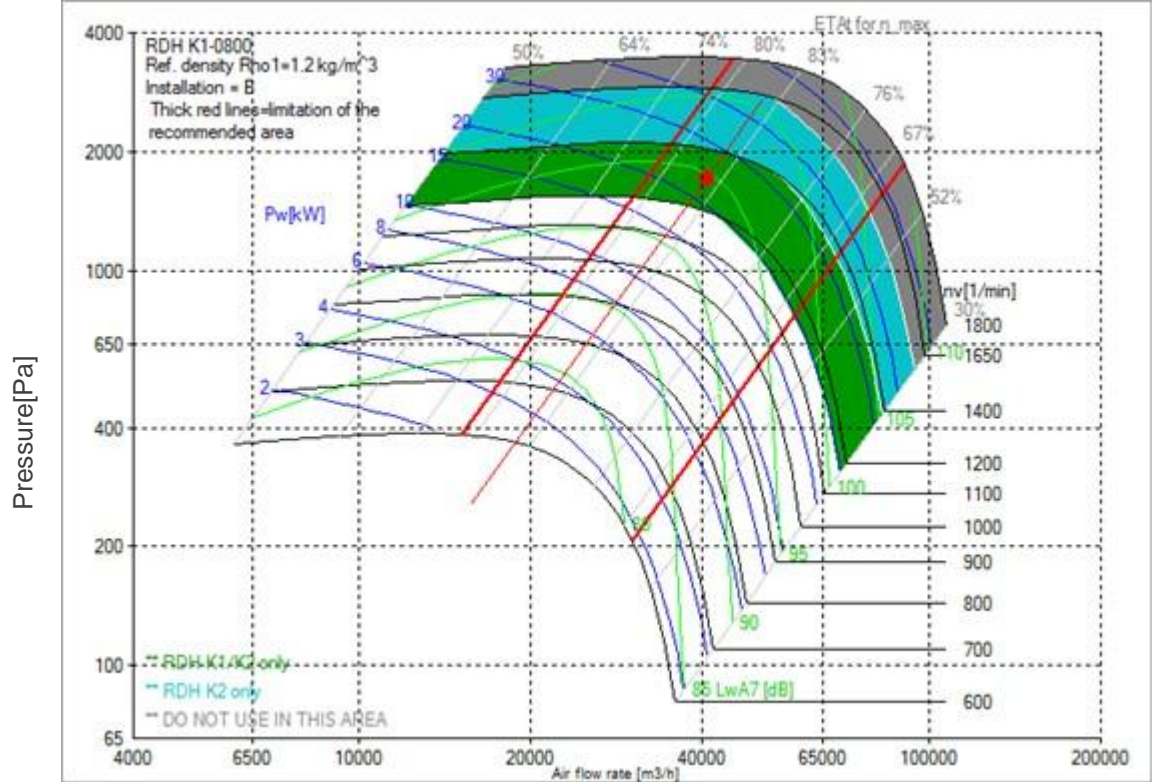
|                                    |                  |                               |               |               |
|------------------------------------|------------------|-------------------------------|---------------|---------------|
| <b>Cooling coil</b>                | <b>1240.0 mm</b> | <b>11.4 m2</b>                |               | <b>302 Pa</b> |
| total capacity [kW]                | <b>739.70</b>    |                               |               |               |
| Sens. capacity [kW]                | <b>401.69</b>    |                               |               |               |
| Sensible/Total Capacity Ratio      | <b>0.5534</b>    |                               |               |               |
| Exchange Surface [m <sup>2</sup> ] | <b>624.45</b>    |                               |               |               |
| <b><i>AIR SIDE</i></b>             |                  | <b><i>FLUID SIDE</i></b>      |               |               |
| Airflow [l/s]                      | <b>11,300</b>    | Medium                        | <b>Water</b>  |               |
| Mass Air Flow [Kg/h]               | <b>44455</b>     | Med. Flow [m <sup>3</sup> /h] | <b>88.93</b>  |               |
| Face Velocity on Coil [m/s]        | <b>2.97</b>      | Mass Fluid Flow [Kg/h]        | <b>88884</b>  |               |
| Air in [°C]                        | <b>46.00</b>     | Med. velocity [m/s]           | <b>1.96</b>   |               |
| Air out [°C]                       | <b>14.7</b>      | Med. in [°C]                  | <b>6.00</b>   |               |
| Air press. Drop [Pa]               | <b>250</b>       | Med. out [°C]                 | <b>13.00</b>  |               |
|                                    |                  | Med. pres. drop [kPa]         | <b>58.00</b>  |               |
| No. of Rows                        | <b>6</b>         | <u>Materials:</u>             |               |               |
| Fin space [mm]                     | <b>1.8</b>       | Fins                          | <b>AL</b>     |               |
| Connection in                      | <b>NPT 3</b>     | RRows                         | <b>CU</b>     |               |
| Connection out                     | <b>NPT 3</b>     | Header                        | <b>CU</b>     |               |
|                                    |                  | Frames                        | <b>GI</b>     |               |
|                                    |                  | Media (water) kg              | <b>113.65</b> |               |

- 1 set **Resistec Coating**
- 1 Pcs **Air vent & drain connection**

|                        |                  |                        |
|------------------------|------------------|------------------------|
| screwed panel          | Dimensions [mm]  | <b>700.0 x 1,880.0</b> |
| <u>Drain pan</u>       | Quality          | <b>stainless steel</b> |
|                        | Drain connection | <b>1 1/4</b>           |
| <u>Drip eliminator</u> | Model            | <b>P400</b>            |
|                        | Frame            | <b>GI</b>              |
|                        | Fins             | <b>PPTV</b>            |
|                        |                  | <b>17 Pa</b>           |

|   |                                      |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
|---|--------------------------------------|----------------------------|--------------------------------|------------------------|----------------------------------|---------------------------|----------------------------|-------------------------|------------------------------|-------------------------------|---------------------------|------------------|------------------------------|--------------------------|-----------------------------------|--------------------------------|------------------------|--------------------------------------|--|--|--|--|
| <b>Centrifugal fan / belt driven</b>  | <b>2,440.0 mm</b>                    | <b>22.45 m<sup>2</sup></b> |                                | <b>273 Pa</b>          |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Fan <b>RDH 800 K1</b></td> <td style="width: 50%;">Motor <b>LS200LT-4</b></td> </tr> <tr> <td>Air volume [l/s] <b>11,300</b></td> <td>Protection <b>IP55</b></td> </tr> <tr> <td>External press [Pa] <b>1,100</b></td> <td>Insulation class <b>F</b></td> </tr> <tr> <td>Dyn. pres. [Pa] <b>108</b></td> <td>Power [kW] <b>30.00</b></td> </tr> <tr> <td>Tot. pres. [Pa] <b>1,918</b></td> <td>Speed +-2% [RPM] <b>1,454</b></td> </tr> <tr> <td>sound power dB <b>0.0</b></td> <td>Current +-5% [A]</td> </tr> <tr> <td>Speed [RPM] <b>1,401</b></td> <td>Supply <b>3x380 / 50</b></td> </tr> <tr> <td>Fan shaft power [kW] <b>26.01</b></td> <td>Efficiency +-2 [%] <b>91.5</b></td> </tr> <tr> <td>efficiency % <b>83</b></td> <td>Rated Power Input (kw) <b>26.198</b></td> </tr> </table> | Fan <b>RDH 800 K1</b>                | Motor <b>LS200LT-4</b>     | Air volume [l/s] <b>11,300</b> | Protection <b>IP55</b> | External press [Pa] <b>1,100</b> | Insulation class <b>F</b> | Dyn. pres. [Pa] <b>108</b> | Power [kW] <b>30.00</b> | Tot. pres. [Pa] <b>1,918</b> | Speed +-2% [RPM] <b>1,454</b> | sound power dB <b>0.0</b> | Current +-5% [A] | Speed [RPM] <b>1,401</b>     | Supply <b>3x380 / 50</b> | Fan shaft power [kW] <b>26.01</b> | Efficiency +-2 [%] <b>91.5</b> | efficiency % <b>83</b> | Rated Power Input (kw) <b>26.198</b> |  |  |  |  |
| Fan <b>RDH 800 K1</b>   | Motor <b>LS200LT-4</b>               |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Air volume [l/s] <b>11,300</b>  | Protection <b>IP55</b>               |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| External press [Pa] <b>1,100</b>  | Insulation class <b>F</b>            |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Dyn. pres. [Pa] <b>108</b>  | Power [kW] <b>30.00</b>              |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Tot. pres. [Pa] <b>1,918</b>  | Speed +-2% [RPM] <b>1,454</b>        |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| sound power dB <b>0.0</b>   | Current +-5% [A]                     |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Speed [RPM] <b>1,401</b>  | Supply <b>3x380 / 50</b>             |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Fan shaft power [kW] <b>26.01</b>   | Efficiency +-2 [%] <b>91.5</b>       |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| efficiency % <b>83</b>  | Rated Power Input (kw) <b>26.198</b> |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Fan pulley <b>SPA315</b></td> <td style="width: 25%;">Bush <b>3020-60</b></td> <td style="width: 25%;">Axle distance ca. [mm]</td> <td style="width: 25%;"><b>510</b></td> </tr> <tr> <td>Motor pulley <b>SPA300</b></td> <td>Bush <b>2517-55</b></td> <td></td> <td></td> </tr> <tr> <td>Belt <b>3 x 3150</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Anti Vibration Mounts</b></td> <td><b>Rubber</b></td> <td></td> <td></td> </tr> </table>   | Fan pulley <b>SPA315</b>             | Bush <b>3020-60</b>        | Axle distance ca. [mm]         | <b>510</b>             | Motor pulley <b>SPA300</b>       | Bush <b>2517-55</b>       |                            |                         | Belt <b>3 x 3150</b>         |                               |                           |                  | <b>Anti Vibration Mounts</b> | <b>Rubber</b>            |                                   |                                |                        |                                      |  |  |  |  |
| Fan pulley <b>SPA315</b>  | Bush <b>3020-60</b>                  | Axle distance ca. [mm]     | <b>510</b>                     |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Motor pulley <b>SPA300</b>  | Bush <b>2517-55</b>                  |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| Belt <b>3 x 3150</b>  |                                      |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |
| <b>Anti Vibration Mounts</b>  | <b>Rubber</b>                        |                            |                                |                        |                                  |                           |                            |                         |                              |                               |                           |                  |                              |                          |                                   |                                |                        |                                      |  |  |  |  |

Note: Fan discharge opening cutout location may vary by +-50 mm



|                      |   |
|----------------------|---|
| 1 Pcs                | <b>Motor ready for frequency drive connection</b> |
| 1 Pcs                | <b>belt guard</b>                                 |
| Door with turn-lever | Dimensions [mm] <b>700.0 x 1,880.0</b>            |

|          |              |                |                   |
|----------|--------------|----------------|-------------------|
| Offer    |              | Page           | <b>4 / 5</b>      |
| Position | <b>AHU-1</b> | From date      | <b>12/18/2013</b> |
|          |              | ClimCalc Vers. | <b>3.8.23</b>     |

|   |                 |  |              |
|---|-----------------|--|--------------|
| <b>Frequency inverter Data (VFD)</b>      |                 | Dimensions [mm] <b>1,007.0 x 1,007.0</b> |              |
| Description                               | <b>ZAMIL SK</b> | Voltage [V]                              | <b>3x380</b> |
| Type                                      | <b>SK3403</b>   | max. motor capacity [kW]                 | <b>30.00</b> |
|   |                 | Current [A]                              | <b>56.00</b> |
| <b>1 Pcs Differential Pressure switch</b> |                 | Frequency [Hz]                           | <b>50</b>    |

|                       |                 |                               |                   |
|-----------------------|-----------------|-------------------------------|-------------------|
| <b>Outlet section</b> |                 |                               |                   |
| <u>Damper:</u>        | Dimensions [mm] | <b>500 x 500 ROUND SPIGOT</b> | <b>QTY 6</b>      |
| Actuated by           | <b>Lever</b>    |                               | Manually Operated |
| Airflow [l/s]         | <b>11,300</b>   | Frame                         | <b>AL</b>         |
|                       |                 | Blades                        | <b>AL</b>         |

|                      |                    |             |             |
|----------------------|--------------------|-------------|-------------|
| noise calculation    | measuring point at | <b>2 m</b>  | Distance    |
| sound power          |                    |             |             |
| Frq. Hz              | 63                 | 125         | 250         |
|                      | 500                | 1000        | 2000        |
|                      | 4000               | 8000        | Sum (dbA)   |
| Inlet (db)           | <b>100.</b>        | <b>95.0</b> | <b>95.0</b> |
|                      | <b>81.0</b>        | <b>74.0</b> | <b>71.0</b> |
|                      | <b>65.0</b>        | <b>61.0</b> | <b>88.1</b> |
| Outlet (db)          | <b>101.</b>        | <b>101.</b> | <b>103</b>  |
|                      | <b>103</b>         | <b>95</b>   | <b>90</b>   |
|                      | <b>85</b>          | <b>82.0</b> | <b>78.0</b> |
| Casing (db)          | <b>79.8</b>        | <b>87.0</b> | <b>85.0</b> |
|                      | <b>71.8</b>        | <b>64.5</b> | <b>58.1</b> |
|                      | <b>46.5</b>        | <b>41.5</b> | <b>78.3</b> |
| sound pressure level |                    |             |             |
| Frq. Hz              | 63                 | 125         | 250         |
|                      | 500                | 1000        | 2000        |
|                      | 4000               | 8000        | Sum (dbA)   |
| Inlet (db)           | <b>86.0</b>        | <b>81.0</b> | <b>81.0</b> |
|                      | <b>67.0</b>        | <b>60.0</b> | <b>57.0</b> |
|                      | <b>51.0</b>        | <b>47.0</b> | <b>74.1</b> |
| Outlet (db)          | <b>87.0</b>        | <b>87.0</b> | <b>89</b>   |
|                      | <b>81</b>          | <b>76</b>   | <b>71</b>   |
|                      | <b>68.0</b>        | <b>64.0</b> | <b>89</b>   |
| Casing (db)          | <b>65.8</b>        | <b>73.0</b> | <b>71.0</b> |
|                      | <b>57.8</b>        | <b>50.5</b> | <b>44.1</b> |
|                      | <b>32.5</b>        | <b>27.5</b> | <b>64.3</b> |

|  |             |              |
|--|-------------|--------------|
| <u>Baseframe</u>                       | Material    | <b>GI</b>    |
|  | Height [mm] | <b>150.0</b> |
| <b>1 m<sup>2</sup> Foam Insulation</b> |             |              |
| <b>1 set Roof top-weather proof</b>    |             |              |

### OPTIONS INCLUDED

- Control Panel ( VFD for motor and Temperature controller with display. Fault alarm for motor and dirty filters).
- Coil with Anti Corrosion coating
- St.St Drain Pan.
- 3 Way Modulating Valve.
- Flanges 6" PN16
- Variable Frequency Drive for fan motor
- Light with Switch for filter and fan sections.
- Welded Structure Fram around unit.



### PSYCHROMETRIC CHART

Normal Temperature  
SI Units

#### SEA LEVEL

BAROMETRIC PRESSURE: 101.325 kPa

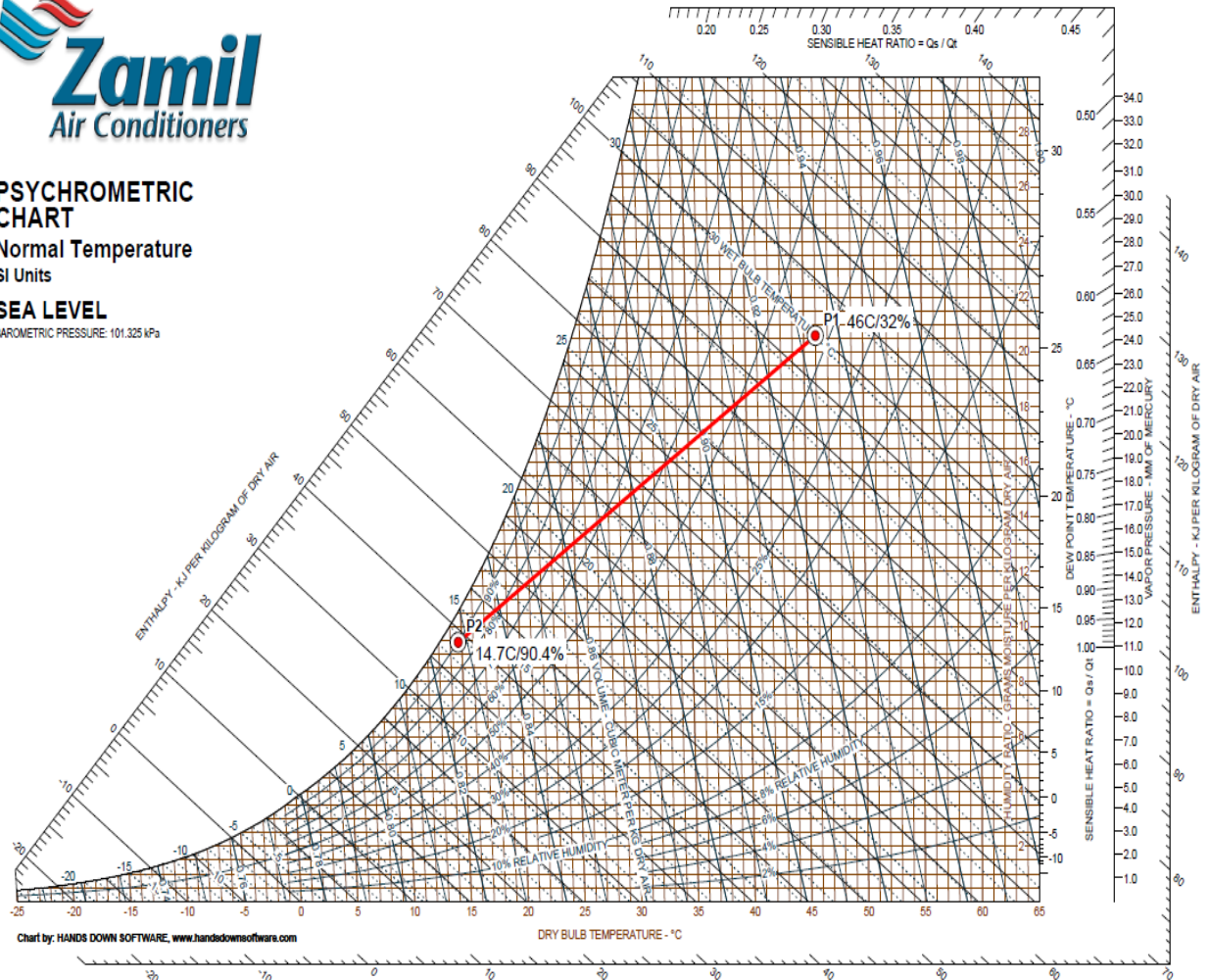


Chart by: HANDS DOWN SOFTWARE, [www.handsdownsoftware.com](http://www.handsdownsoftware.com)

P.O. Box 14440, Dammam 31424, Tel.: (+966-3) 8473333, Fax: (+966-3) 8471904, [www.zamilac.com](http://www.zamilac.com)