

# Desiccant Air Dryers

HSHD series

**Hankison's HSHD Series Desiccant Air Dryers protect moisture sensitive applications requiring low pressure dew points.**

- Delivers dew points of ISO 8573-1:2010 Class 1 (-70°C) and Class 2 (-40°C) with flow rates of 12 to 68 m<sup>3</sup>/h.
- Critical applications include labs, hospitals, pharmaceutical manufacturing and other high-tech installations.
- Base mounting brackets.
- Constructed primarily of aluminum components.
- Ships fully assembled ready for installation.
- Factory charged with premium desiccant in an easy-to-replace bag.
- A filtration kit consisting of a coalescing pre-filter and particulate after-filter protect the dryer and downstream equipment for optimal performance and durability.
- Halon-free wiring.
- Consistent outlet pressure dew points.
- Minimum purge air usage saves energy - reduced 3,5% from prior models.
- Desiccant bed sized to prevent fluidization and slow/complete regeneration to prevent desiccant aging.
- Heavy duty internal exhaust muffler for quiet operation.
- Non-lubricated, soft-seated control valves for reliable operation.
- Flexible installation with multiple inlet and outlet options.
- Large flow diameters for optimal delta-p - reduced 20% from prior models.
- Selectable pressure dewpoint performance for maximum application flexibility.

**Options available:**

- PDP-sensor kit for dewpoint controlled operation (dewpoint reading).
- Wall mounting kit.



|         | Inlet & Purge Flows |         | Inlet/Outlet Connections | Dimensions |     |       | Purge Flow |         |
|---------|---------------------|---------|--------------------------|------------|-----|-------|------------|---------|
|         | -40°C*              | -70°C** |                          | H          | W   | D     | Average    | Maximum |
| Model   | m³/h                | m³/h    |                          | mm         | mm  | mm    | m³/h       | m³/h    |
| HSHD 7  | 12                  | 8       | PT 1/2"                  | 494        | 346 | 168,5 | 2,3        | 2,70    |
| HSHD 13 | 22                  | 15      | PT 1/2"                  | 666        | 346 | 168,5 | 4,5        | 5,05    |
| HSHD 18 | 31                  | 20      | PT 1/2"                  | 884        | 346 | 168,5 | 5,7        | 6,46    |
| HSHD 21 | 36                  | 23,5    | PT 1/2"                  | 1101       | 346 | 168,5 | 7,2        | 8,05    |
| HSHD 27 | 46                  | 30,5    | PT 3/4"                  | 994        | 386 | 188,5 | 8,3        | 9,21    |
| HSHD 40 | 68                  | 45,5    | PT 3/4"                  | 1244       | 386 | 188,5 | 15         | 16,12   |

\* Related to: +35°C compressed air inlet; 7 bar(g) operating pressure; pressure dew point -40°C

\*\* Related to: +35°C compressed air inlet; 7 bar(g) operating pressure; pressure dew point -70°C

| Specification     |                 |          |
|-------------------|-----------------|----------|
| Pressure dewpoint | Class 2 (-40°C) |          |
|                   | Class 1 (-70°C) |          |
| Working Pressure  | min             | 4 barg   |
|                   | max             | 15 barg  |
| Inlet Air Temp    | min             | 2°C      |
|                   | max             | 50°C     |
| Ambient Air Temp  | min             | 2°C      |
|                   | max             | 50°C     |
| Air Pressure Drop | min             | 0.10 bar |
|                   | max             | 0.20 bar |

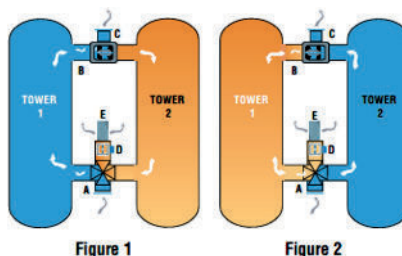
## How it works

**Figure 1.** Compressed air enters the dryer and is directed to Tower 1 by valve (A), and then to the dryer outlet through shuttle valve (B).

A portion of the dried air is throttled to near atmospheric pressure by means of orifice (C). This extremely dry, low pressure air flows through and regenerates the desiccant in Tower 2 and is exhausted through purge/repressurization valve (D) and exhaust muffler (E) to atmosphere. After a set time, the automatic solid state timer closes purge/repressurization valve (D) allowing Tower 2 to repressurize slowly.

At the end of 2 minutes, valve (A) shifts and purge/repressurization valve (D) reopens.

**Figure 2.** The main air flow is now dried by Tower 2 while Tower 1 is being regenerated.



| Inlet Pressure         |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Working Pressure (bar) | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   |
| K <sub>p</sub>         | 0,40 | 0,75 | 0,77 | 1,00 | 1,13 | 1,25 | 1,38 | 1,38 | 1,50 | 1,56 | 1,61 | 1,67 |

| Air Inlet Temperature                        |      |      |    |      |      |      |    |    |
|----------------------------------------------|------|------|----|------|------|------|----|----|
| Inlet Temperature C°                         | 30   | 35   | 38 | 40   | 45   | 50   | 55 | 60 |
| K <sub>Tin</sub> (DTP = -40°C / PDP = -40°F) | 1,07 | 1,07 | 1  | 0,93 | 0,82 | 0,72 | -  | -  |
| K <sub>Tin</sub> (DTP = -70°C / PDP = -94°F) | 1,20 | 1,00 | -  | -    | -    | -    | -  | -  |

| Purge air development at different inlet pressure conditions | ≤ 10 bar(g) / 145 psig<br>Purge: 3 Min. / 20 Sec. {-40°C DTP}<br>Purge: 1 Min. / 20 Sek. {-70°C DTP} |      |      |      |      |      |      | ≤ 10 bar(g) / 145 psig<br>Purge: 2 Min. / 20 Sec. {-40°C DTP}<br>Purge: 1 Min. / 00 Sek. {-70°C DTP} |      |      |      |      |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------------------------------------------------------------------------------------------------------|------|------|------|------|
|                                                              | 4                                                                                                    | 5    | 6    | 7    | 8    | 9    | 10   | 11                                                                                                   | 12   | 13   | 14   | 15   |
| K <sub>Purge</sub> (DTP = -40°C / PDP = -40°F)               | 0,63                                                                                                 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,38 | 1,09                                                                                                 | 1,19 | 1,28 | 1,37 | 1,46 |
| K <sub>Purge</sub> (DTP = -70°C / PDP = -94°F)               | 0,63                                                                                                 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,38 | 1,09                                                                                                 | 1,19 | 1,28 | 1,37 | 1,46 |
| K <sub>Purge</sub> (Max Purge)                               | 0,63                                                                                                 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,38 | 1,09                                                                                                 | 1,19 | 1,28 | 1,37 | 1,46 |



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