



# DFRA series

Desiccant rotor air dehumidifiers



**fisair**  
air humidity control 





# DFRA series

Desiccant rotor air dehumidifiers

## Index

|           |  |
|-----------|--|
| <b>03</b> | General description  |
| <b>04</b> | Operating principles of desiccant rotors                       |
| <b>05</b> | Coding product DFRA  |
| <b>08</b> | Specification<br>Key features                                  |
| <b>10</b> | Performance table for standard units                           |
| <b>11</b> | General dimensions of standard units                           |
| <b>13</b> | Optional mechanical components                                 |
| <b>13</b> | Pre-heating coils  |
| <b>13</b> | Pre-cooling coils  |
| <b>15</b> | Post-cooling coils   |
| <b>16</b> | Post-heating coils   |
| <b>16</b> | High efficiency filters  |
| <b>17</b> | Optional mechanical components<br>Gas burners                  |
| <b>18</b> | Diagram of steam coil installation                             |
| <b>19</b> | Control options  |
| <b>20</b> | Operational limits   |
| <b>22</b> | Functions provided by the microprocessor with advanced control |
| <b>24</b> | Fisair Selection Tool selection software                       |

### General description



The quality and efficiency requirements demanded by today's society in terms of human comfort, and the control and stability of production processes, have made humidity control increasingly necessary or even essential.

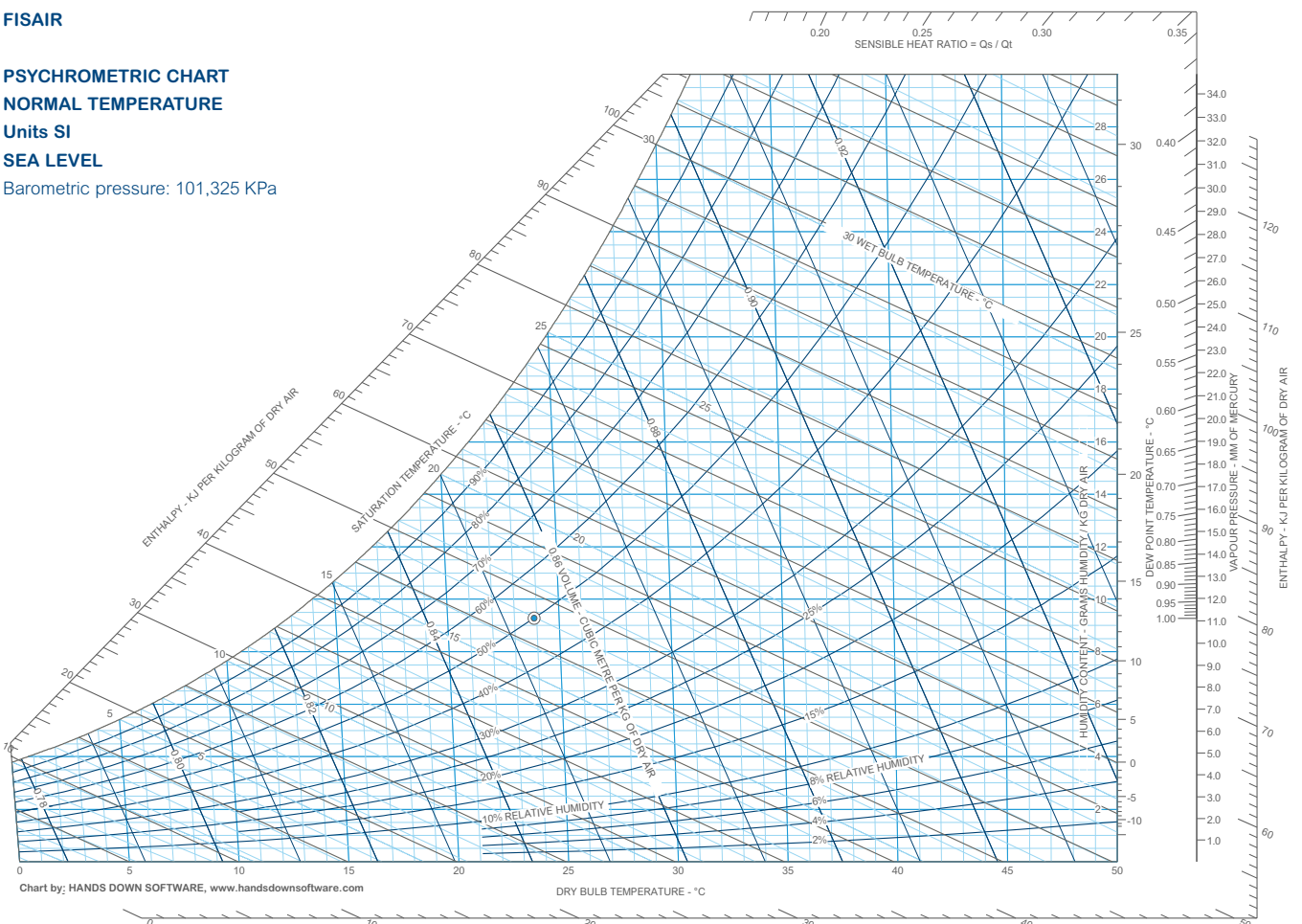
The fact that the water vapour content of air varies greatly, and relative humidity depends on this, means it is vital to employ a dehumidification system for the reduction and control of this value whenever the water vapour content exceeds the humidity content permitted by the process.

That is why Fisair, which has been manufacturing since 1994, designs air dehumidifiers that enable the constant attainment of required humidity levels in a simple and precise manner, for minimal investment and operating costs.

FISAIR

**PSYCHROMETRIC CHART**  
**NORMAL TEMPERATURE**  
**Units SI**  
**SEA LEVEL**

Barometric pressure: 101,325 KPa





## Operating principles of desiccant rotors

DFRA series Fisair air dehumidifiers work using a high performance silica gel desiccant rotor, which is chemically and thermally stable, to prevent the deliquescence of the material it is made of, as occurs with other desiccant materials. Its cylindrical shape with a large number of small channels provides a large surface area for contact between the air and the desiccant material, which enables high levels of dehumidification, with a minimal volume of material.

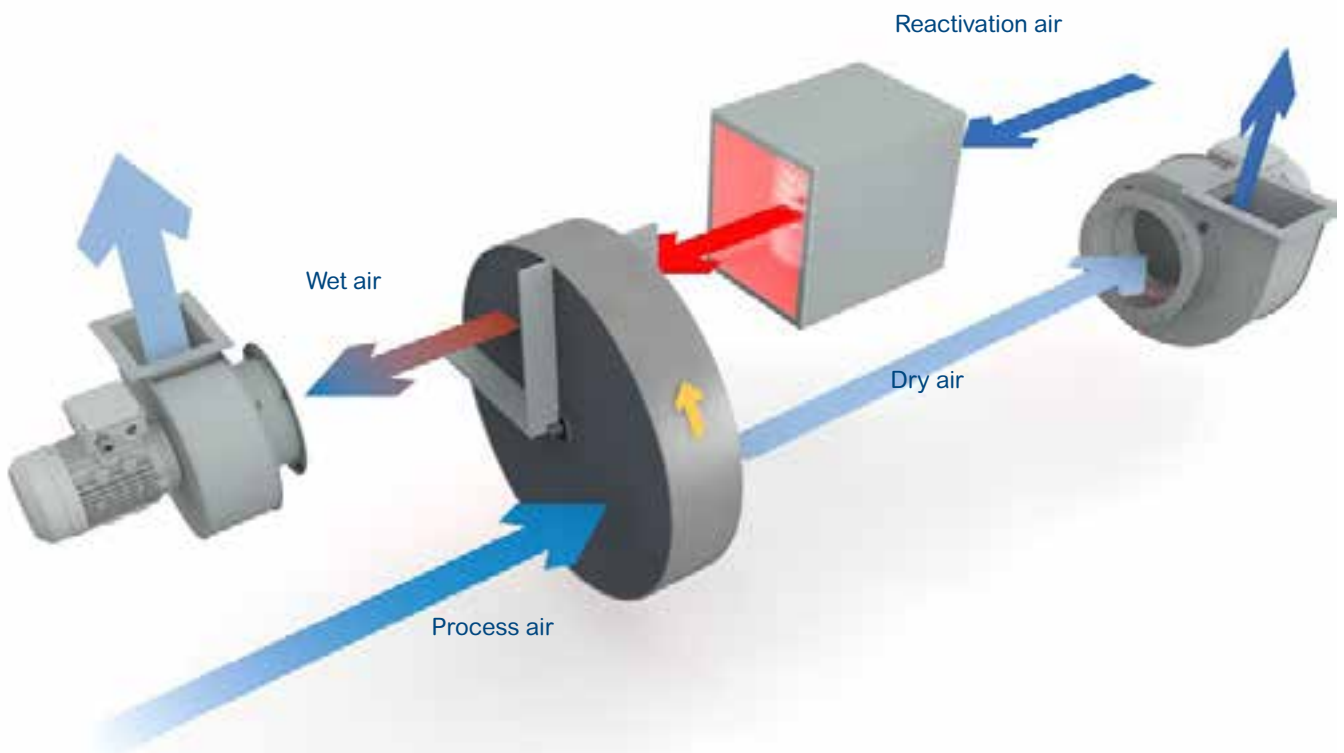
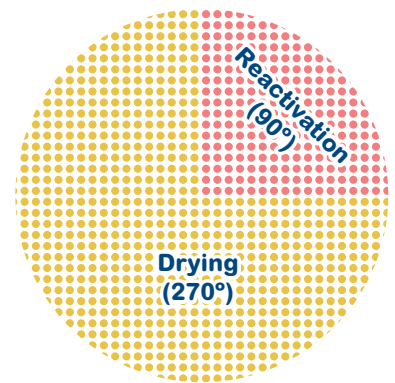
Its simple method involves two air flows moving continuously and simultaneously as counter-currents across the desiccant rotor. The desiccant rotor is equipped with a rotation device and a series of perimeter seals to make the drying process continuous and uniform, and to optimize performance.

The flow of air for drying (process air), is filtered and passes through the desiccant rotor material (270°), and a proportion of the water vapour molecules in the air are adsorbed. This air (dry air) is supplied to the controlled humidity zone by means of a fan.

The regeneration air flow from the desiccant rotor (reactivation air), is filtered and heated using a steam heater coil. It then passes through the desiccant rotor material (90°), and the water vapour molecules retained in the desiccant rotor are adsorbed, which regenerates the rotor for a new drying cycle. This air (wet air) is expelled outside of the controlled humidity zone, by means of a fan.

Fisair dehumidifiers have a long operating life because of the chemical resistance of the rotor and the possibility of washing it in water.

Standard dehumidifiers can ensure dry air humidity reaches dew point temperatures of up to -20°C, or even lower on demand.







**Coding product**  
**DFRA**

|             | Reactiv. Syst. | Process Air Initial Filter | Reactiv. Air Initial Filter | PRE-Coils | POST-Coils | Fans | Dry Air Final Filter | Heat Recovery | Finishing | Electrical Power Supply | Control | Other Special |    |     |      |   |
|-------------|----------------|----------------------------|-----------------------------|-----------|------------|------|----------------------|---------------|-----------|-------------------------|---------|---------------|----|-----|------|---|
| DFRA series | DFRA-0900      | E                          | GF                          | GF        | WS         | WS   | WS                   | WS            | SF        | SF                      | H14     | R             | KR | 405 | AE04 | 0 |

**Pre-Cooling**

- 00 = No pre-cooling
- WE = ECO pre-heating coil for cold water.
- WS = STANDARD pre-cooling coil for cold water.
- WH = High-power pre-cooling coil for cold water.
- DS = STANDARD pre-cooling coil for direct expansion.
- CW = Custom pre-cooling coil

**Post-Cooling**

- 00 = No post-cooling
- WE = ECO post-cooling coil for cold water.
- WS = STANDARD post-cooling coil for cold water.
- WH = High-power post-cooling coil for cold water.
- DS = STANDARD post-cooling coil for direct expansion.
- CW = Custom Post-cooling coil

**Post-Heating**

- 00 = No post-heating
- WE = ECO post-heating coil using hot water.
- WS = STANDARD post-heating coil using hot water.
- WH = Water High power heating Coil
- CW = Custom Post-Heating coil

**Process Air / Dry Air Fan**

- 00 = No process/dry air fan
- SF = STANDARD fan
- PF = POWERED fan
- PS = Plug-Fan for DFRA serie
- PP = POWERED Plug-Fan

**Reactivation Air / Moist Air Fan**

- SF = STANDARD fan
- PF = POWERED fan

**Dry Air Filter**

- H13 = HEPA H13 (EN 1822:2011) filter fitted after the process air/dry air fan (requires a Plug-Fan ventilator)
- H14 = HEPA H14 (EN 1822:2011) filter fitted after the process air/dry air fan (requires a Plug-Fan ventilator)

**Sensitive Heat Recovery Unit**

- 0 = Without heat recuperator. No by-pass in desiccant rotor.
- R = Static heat recuperator installed in the discharge of wet air.
- D = By-pass air damper in descending rotor.
- M = Static heat recuperator installed in the discharge of wet air. By-pass air damper in descending rotor.

**Coding product**  
**DFRA**

|            |           | Reactiv. Syst. | Process Air Initial Filter | Reactv. Air Initial Filter | PRE-Coils | POST-Coils | Fans | Dry Air Final Filter | Heat Recovery | Finishing | Electrical Power Supply | Control | Other Special |     |      |   |
|------------|-----------|----------------|----------------------------|----------------------------|-----------|------------|------|----------------------|---------------|-----------|-------------------------|---------|---------------|-----|------|---|
| serie DFRA | DFRA-0900 | E              | GF                         | GF                         | WS        | WS         | WS   | WS                   | SF            | SF        | H14                     | R       | KR            | 405 | AE04 | 0 |

**Finishing**

- 00 = Standard production of components. Protection grade IP50 and finished with RAL7035 colour.
- 0R = Standard production of components. Protection grade IP50 and finished with specific colour (RAL\_\_\_).
- K0 = Standard production of components. Protection grade IP54 and finished with RAL7035 colour.
- KR = Standard production of components. Protection grade IP54 and finished with specific colour (RAL\_\_\_).

**Power Supply Options (Not included in mechanical drawings)**

- 405 = Standard electrical power supply at 400V ±5% /III/50Hz
- N05 = Electrical power supply at 400V ±5% /III/50Hz
- 406 = Electrical power supply at 400V ±5% /III/60Hz
- N06 = Electrical power supply at 400V ±5% /III+N/60Hz
- 445 = Electrical power supply at 440V ±5% /III/50Hz
- N45 = Electrical power supply at 440V ±5% /III+N/50Hz
- 446 = Electrical power supply at 440V ±5% /III/60Hz
- N46 = Electrical power supply at 440V ±5% /III+N/60Hz
- 466 = Electrical power supply at 460V ±5% /III/60Hz
- N66 = Electrical power supply at 460V ±5% /III+N/60Hz
- 235 = Electrical power supply at 230V ±5% /III/50Hz
- 236 = Electrical power supply at 230V ±5% /III/60Hz

**Control Options (Not included in mechanical drawings)**

- BE00 = Basic ON/OFF control with electric heater for reactivation
- BV00 = Basic ON/OFF control with saturated steam heater for reactivation
- AE13 = Advanced electrical reactivation control with one actuator. (Electrical . 0..10V)
- AE27 = Advanced electrical reactivation control with two actuators. (Electrical . 0..10V)
- AE49 = Advanced electrical reactivation control with four actuators. (Electrical . 0..10V)
- CE27 = Advanced electrical reactivation control with two actuators. (Electrical . (0..10V)+Communication
- CE49 = Advanced electrical reactivation control with four actuators. (Electrical . (0..10V)+Communication
- AV03 = Steam reactivation advanced control
- AV17 = Advanced steam reactivation control with one actuator. (Electrical . 0..10V)
- AV39 = Advanced steam reactivation control with three actuators. (Electrical . 0..10V)
- CV17 = Advanced steam reactivation control with one actuator (Electrical 0..10V)+Communication
- CV39 = Advanced steam reactivation control with three actuators. (Electrical . (0..10V)+Communication
- AG03 = Gas reactivation advanced control
- AG17 = Advanced gas reactivation control with one actuator. (Electrical . 0..10V)
- AG39 = Advanced gas reactivation control with three actuators. (Electrical . 0..10V)
- CG17 = Advanced gas reactivation control with one actuator (Electrical 0..10V)+Communication
- CG39 = Advanced gas reactivation control with three actuators. (Electrical . (0..10V)+Communication

**Other Special Options**

C = Accessories that can be built-in subject to specification and preliminary study

**[Note]** Not all code options are included in technical data.

Example: DFRA-0900H G0G0 0000 0000 SFSF 000 000 405BV000



## Specification

DFRA series, desiccant rotor air desiccant dehumidifier with high efficiency silica gel desiccant rotor for a long life and low energy consumption.

## Key Features

**S:** Standard | **O:** Optional | **V:** Steam | **G:** Gas | **E:** Electric | **H:** Hygienic Steam

- S**
  - Basic module casing designed as a self-supporting and compact unit. Manufactured in galvanized steel plate with phosphate priming coat and RAL7035 enamel finish. Including sealing gaskets, component & manhole cover plates to easy unit maintenance and inspection. Double wall insulation panels (Th>25mm) all around plates in reactivation/wet air in contact with process/dry air. Corrosion protection according to C3 class as per ISO 12944.
  - Desiccant rotor made of inert, fire-resistant, hygienic, high performance silica gel material, which is thermally and chemically stable to prevent deliquescence. Including perimeter and radial sealing gasket.
  - Rotation driving system by gear motor for the rotor with a pulley and V belt dragging system for the perimeter transmission with tensioner.
  - Process air intake flow manual regulation damper made of aluminium.
  - Type V process air filter, synthetic fiber made, G4 classification (EN 779: 2012).
- O**
  - Rigid bag process air filter, glass micro fiber media with plastic frame, F9 classification (EN 779: 2012). Housing constructed using aluminium profiles, insulated by 25mm double wall panels.
  - Pre-heating coil by hot water. Made of copper tubes and aluminum fins. Housing constructed using aluminium profiles, insulated by 25 mm double wall panels. Condensates tray with threaded drainage coils and stainless steel material in all wet-parts.
- S**
  - Desiccant rotor made of inert, fire-resistant, hygienic, high performance silica gel material, which is thermally and chemically stable to prevent deliquescence. Including perimeter and radial sealing gasket.
  - Rotation driving system by gear motor for the rotor with a pulley and belt dragging system for the perimeter transmission with tensioner.
- O**
  - Pre-cooling coil by chilled water. Made of copper tubes and aluminum fins. Housing constructed using aluminium profiles, insulated by 25mm double wall panels. Droplet separator on a built-in glass-fiber panel. Condensates tray with threaded drainage coils and stainless steel material in all wet-parts.
  - Post-cooling coil by chilled water. Made of copper tubes and aluminum fins. Housing constructed using aluminium profiles, insulated by 25mm double wall panels in same finishing. Condensates tray with threaded drainage coils and stainless steel material in all wet-parts.
  - Post-heating coil by hot water. Made of copper tubes and aluminum fins. Housing constructed using aluminium profiles, insulated by 25mm double wall panels. Condensates tray with threaded drainage coils and stainless steel material in all wet-parts.



**S:** Standard | **O:** Optional | **V:** Steam | **G:** Gas | **E:** Electric | **H:** Hygienic Steam

|                                  |   |
|----------------------------------|---|
| <b>S</b>                         | <ul style="list-style-type: none"> <li>• Process air fan: Single inlet centrifugal fan direct driven. Forward curved centrifugal impeller, manufactured from galvanized sheet steel painted with epoxy polyester. Three phase motor with thermal protector.</li> <li>• Type V reactivation air filter, synthetic fiber made, G4 classification (EN 779: 2012).</li> </ul>   |
| <b>O</b>                         | <ul style="list-style-type: none"> <li>• Rigid bag process air filter, glass micro fiber media with plastic frame, F9 classification (EN 779: 2012). Housing constructed using aluminium profiles, insulated by 25mm double wall panels.</li> </ul>   |
| <b>S</b>                         | <ul style="list-style-type: none"> <li>• Reactivation air intake flow manual regulation damper made of galvanized steel. Differential pressure takes for manual regulation of exact air flow.</li> </ul>  |
| <b>E</b>                         | <ul style="list-style-type: none"> <li>• Rotor reactivation air heater by means of electrical stainless steel shielded resistances with operative and security cut-off.</li> </ul>  |
| <b>V</b>                         | <ul style="list-style-type: none"> <li>• C-Steel tube reactivation air heater with aluminium fins, for steam at a maximum operating pressure of 8 kg/cm<sup>2</sup> (7 bar[g]). Flanged connections, DIN2633.</li> </ul>  |
| <b>H</b>                         | <ul style="list-style-type: none"> <li>• Stainless Steel tube reactivation air heater with aluminium fins, for steam at a maximum operating pressure of 8 kg/cm<sup>2</sup> (7 bar[g]). Flanged connections, DIN2633.</li> </ul>  |
| <b>G</b>                         | <ul style="list-style-type: none"> <li>• Rotor reactivation air heater by means of low NO<sub>x</sub> line type gas burners constructed of cast iron burner bodies and diverging stainless steel air wings. Modulating combustion device including:             <ul style="list-style-type: none"> <li>• Ignition electrode with connector.</li> <li>• Ionization sensor with flame supervision.</li> <li>• Security pressure switch with air flow control by nozzle</li> </ul> </li> <li>Gas valves set, including:             <ul style="list-style-type: none"> <li>• Min. pressure switch</li> <li>• Max. Pressure switch</li> <li>• In-line double solenoid valve</li> <li>• Pilot solenoid valve</li> <li>• Gas flow control valve with modulating actuator by control signal 0-10VDC</li> </ul> </li> </ul>   |
| <b>S</b>                         | <ul style="list-style-type: none"> <li>• Reactivation air fan: Single inlet centrifugal fan direct driven for the continuous extraction of air stream up to 110°C. Forward curved centrifugal impeller, manufactured from galvanized sheet steel painted with epoxy polyester. Three phase motor with thermal protector.</li> </ul>   |
| <b>V</b><br>(depending on model) | <ul style="list-style-type: none"> <li>• Advanced Control panel with HMI display controller for real time monitoring and control of all components of the dehumidifier, prepared for all requested internal and external signals for setting a proportional humidity control, acting on a installed solid state relay resistances or reactivation fluid control valve. Electrical panel in galvanized steel IP54 epoxy painted assembled to the unit. Including isolator switch and appropriate internal magneto-thermal protection of receivers and internal wiring. All as per EU-CE security / electrical / EMC regulation, complete monitoring and easy service. Includes manual / auto selector, on / off remote switch, remote signaling card through 3 free dry contacts: On / Power / Fault (includes rotor stop alarm). Intelligent turning-off for electrical reactivation. 24 V voltage for control and supply. Communication option available.</li> <li>• Basic control panel in galvanized steel IP54 epoxy painted assembled to the unit. Interlock connections and external control all/nothing for ventilation and/or electric heater in one or two stages depending on model. All as per EU security regulation, complete monitoring and easy service. Control voltage 24 VAC. Prepared for external control. LED display supervision of main components. Includes manual / auto selector, on / off remote switch, remote signaling card through 3 free dry contacts: Power / Fault. 24 V voltage for control and supply. Intelligent turning-off system.</li> </ul> |



## Performance table for standard units

### DFRA-0000E G0G0 0000 0000 SFSF 000 000 405AE13

| Features (*)                 |                     | Tamaño (XXXX) |       |       |       |       |       |       |       |       |       |       |
|------------------------------|---------------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                              |                     | 0100          | 0130  | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Dehumidification capacity    | (kg/h)              | 4,31          | 6,01  | 7,28  | 8,39  | 9,92  | 11,41 | 14,37 | 18,32 | 24,47 | 29,47 | 41,50 |
|                              | (kg/24h)            | 103,4         | 144,2 | 174,7 | 201,4 | 238,1 | 273,8 | 344,9 | 439,7 | 587,3 | 707,3 | 996,0 |
| $\Delta x$ Specific capacity | (g/kg)              | 5,18          | 5,62  | 5,57  | 5,88  | 5,96  | 6,00  | 5,76  | 5,71  | 5,72  | 5,51  | 5,82  |
| $\Delta x$ Process air       | (°C)                | 19,9          | 21,6  | 25,2  | 25,7  | 24,7  | 24,0  | 21,5  | 23,7  | 21,9  | 22,3  | 22,1  |
| Dry air flow                 | (m <sup>3</sup> /h) | 700           | 900   | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Dry air available pressure   | (Pa)                | 340           | 590   | 401   | 329   | 649   | 575   | 830   | 834   | 203   | 438   | 672   |
| Wet air flow                 | (m <sup>3</sup> /h) | 210           | 270   | 330   | 360   | 420   | 480   | 630   | 810   | 1080  | 1350  | 1800  |
| Wet air available pressure   | (Pa)                | 314           | 300   | 163   | 305   | 193   | 119   | 166   | 446   | 300   | 472   | 589   |
| Heater power                 | (kW)                | 6,8           | 9,0   | 11,3  | 13,5  | 15,8  | 18,0  | 22,5  | 27,0  | 36,0  | 45,0  | 63,0  |
| Total power                  | (kW)                | 8,3           | 10,3  | 12,6  | 15,0  | 17,6  | 19,9  | 25,8  | 31,1  | 39,3  | 49,1  | 70,7  |

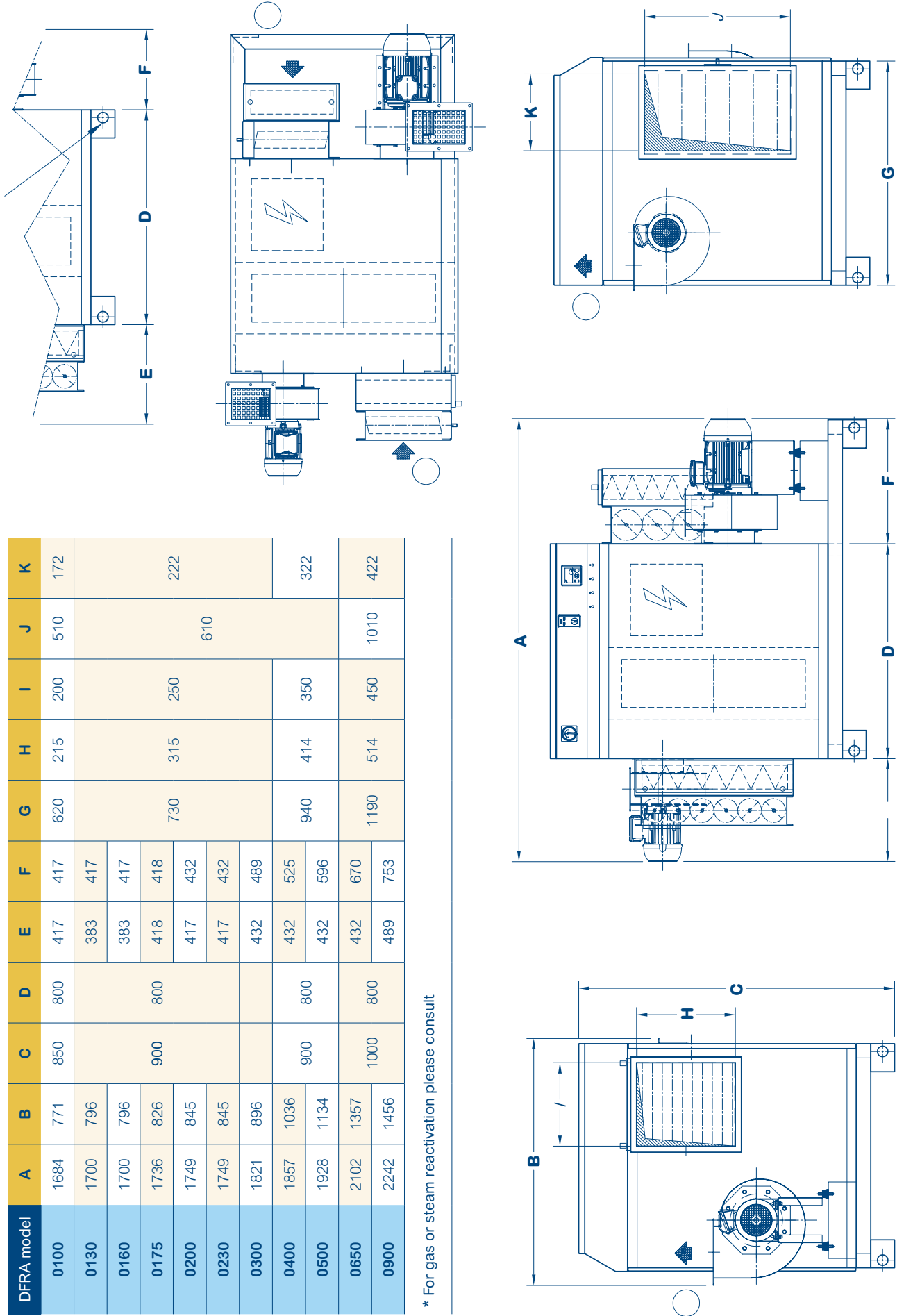
(\*)

- Nominal drying capacity (Wn) for process and reactivation air inlet conditions: 20° C & 60% RH. For different ones, please check specific model technical data sheet.
- Unit's efficiency under nominal reactivation built-in heater power, for reactivation heater by electrical resistance
- Technical data are subject to change without prior notice.
- Overall dimensions, weight and total power for electric heater reactivation. For steam coil or gas burner, please consult.
- Control voltage 24 VAC

**Overall dimensions of standard units\***

| DFRA model | A    | B    | C    | D   | E   | F   | G    | H   | I   | J    | K   |
|------------|------|------|------|-----|-----|-----|------|-----|-----|------|-----|
| 0100       | 1684 | 771  | 850  | 800 | 417 | 417 | 620  | 215 | 200 | 510  | 172 |
| 0130       | 1700 | 796  |      |     | 383 | 417 |      |     |     |      |     |
|            |      |      |      |     | 383 | 417 |      |     |     |      |     |
| 0160       | 1700 | 796  |      |     | 383 | 417 |      |     |     |      |     |
|            |      |      |      |     | 383 | 417 |      |     |     |      |     |
| 0175       | 1736 | 826  | 900  | 800 | 418 | 418 | 730  | 315 | 250 | 610  | 222 |
|            |      |      |      |     | 417 | 432 |      |     |     |      |     |
| 0200       | 1749 | 845  |      |     | 417 | 432 |      |     |     |      |     |
|            |      |      |      |     | 417 | 432 |      |     |     |      |     |
| 0230       | 1749 | 845  |      |     | 417 | 432 |      |     |     |      |     |
|            |      |      |      |     | 417 | 432 |      |     |     |      |     |
| 0300       | 1821 | 896  |      |     | 432 | 489 |      |     |     |      |     |
|            |      |      |      |     | 432 | 489 |      |     |     |      |     |
| 0400       | 1857 | 1036 | 900  | 800 | 432 | 525 | 940  | 414 | 350 |      | 322 |
|            |      |      |      |     | 432 | 596 |      |     |     |      |     |
| 0500       | 1928 | 1134 |      |     | 432 | 596 |      |     |     |      |     |
|            |      |      |      |     | 432 | 596 |      |     |     |      |     |
| 0650       | 2102 | 1357 | 1000 | 800 | 432 | 670 | 1190 | 514 | 450 | 1010 | 422 |
|            |      |      |      |     | 489 | 753 |      |     |     |      |     |
| 0900       | 2242 | 1456 |      |     |     |     |      |     |     |      |     |

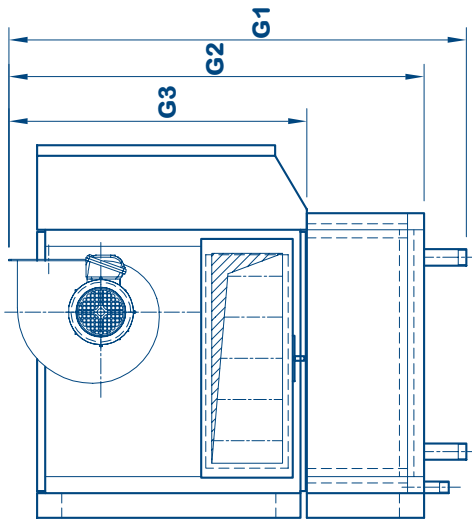
\* For gas or steam reactivation please consult



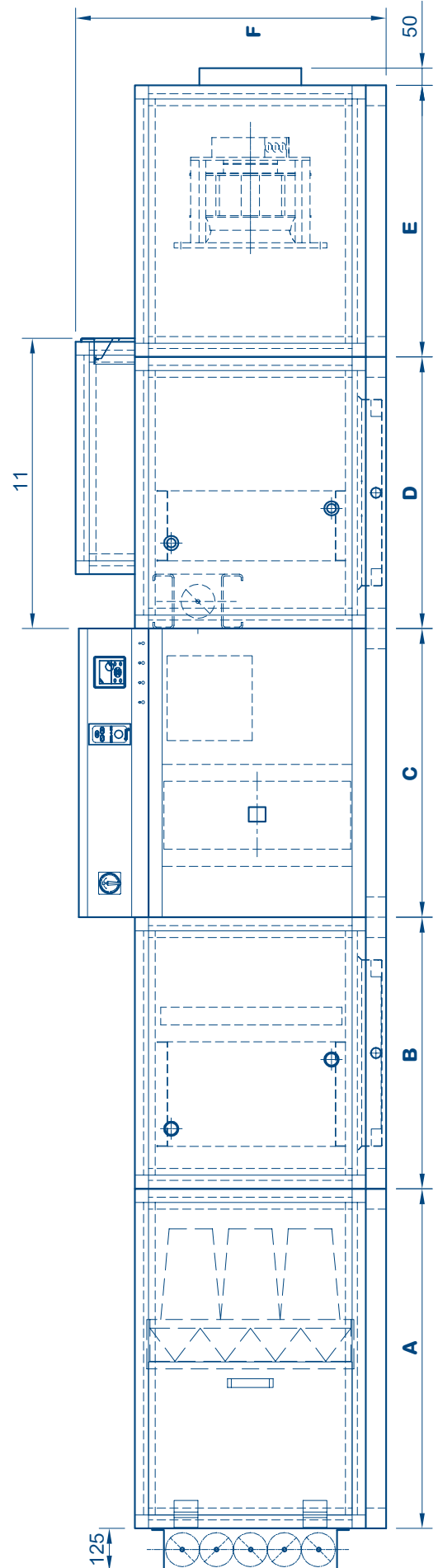


**Overall dimensions of modular units\***

| modelo DFRA | A    | B   | C    | D   | E   | F    | G1   | G2   | G3   | H   |
|-------------|------|-----|------|-----|-----|------|------|------|------|-----|
| 0100        | 1000 | 800 | 850  | 800 | 840 | 1015 | 1085 | 1050 | 765  | 855 |
| 0130        | 1000 | 800 | 900  | 800 | 840 | 1085 | 1210 | 1145 | 865  |     |
| 0160        |      |     |      |     |     |      |      |      |      |     |
| 0175        |      |     |      |     |     |      |      |      |      |     |
| 0200        |      |     |      |     |     |      |      |      |      |     |
| 0230        |      |     |      |     |     |      |      |      |      |     |
| 0300        |      |     |      |     |     |      |      |      |      |     |
| 0400        | 1000 | 800 | 900  | 800 | 840 | 1325 | 1405 | 1040 | 1390 |     |
| 0500        | 1000 | 800 | 1000 | 800 | 840 | 1545 | 1545 | 1470 | 1285 |     |
| 0650        |      |     |      |     |     |      |      |      |      |     |
| 0900        |      |     |      |     |     |      |      |      |      |     |



\* For gas or steam reactivation please consult



## Optional mechanical components

### PRE-HEATING COILS

With Pre-heating coils using hot water. Manufactured in copper tubes with aluminium wings.

Housing constructed using aluminium profiles, insulated by double wall panels.

Please bear in mind that you need to deduct the loss of charge in air of the coils that are part of the system from the available fan pressure.

#### STANDARD (WS) pre-heating coils using hot water

| Features (*)           |                     | DFRA  |       |       |       |      |       |       |       |       |       |       |
|------------------------|---------------------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
|                        |                     | 0100  | 0130  | 0160  | 0175  | 0200 | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m <sup>3</sup> /h) | 700   | 900   | 1100  | 1200  | 1400 | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)                | 11,91 | 18,56 | 20,98 | 22,39 | 24,4 | 26,55 | 31,46 | 36,09 | 42,29 | 65,69 | 75,36 |
| Sensible power         | (kW)                | 11,91 | 18,56 | 20,98 | 22,39 | 24,4 | 26,55 | 31,46 | 36,09 | 42,29 | 65,69 | 75,36 |
| Air outlet temperature | (°C)                | 29,7  | 39,1  | 34,9  | 34,0  | 30,7 | 28,5  | 24,3  | 20,0  | 15,8  | 23,3  | 17,9  |
| Air outlet HR          | (%)                 | 3,6   | 2,1   | 2,7   | 2,8   | 3,4  | 3,8   | 4,9   | 6,3   | 8,3   | 5,2   | 7,2   |
| Pressure drop in air   | (Pa)                | 53    | 22    | 31    | 36    | 46   | 58    | 90    | 83    | 133   | 101   | 161   |
| Water flow             | (l/h)               | 512   | 798   | 902   | 963   | 1049 | 1142  | 1353  | 1552  | 1818  | 2825  | 3240  |
| Pressure drop in water | (kPa)               | 8,5   | 6,4   | 8,0   | 9,0   | 10,4 | 12,1  | 16,4  | 24,7  | 32,8  | 17,0  | 21,7  |

(\*) Performance figures at 0m above sea level for air entering at -15°C / 90% RH and water at 70°C and leaving at 50°C.

For pre-heating coils fitted with electrical resistances, please contact FISAIR.

### PRE-COOLING COILS

Pre-cooling coils for cold water. Manufactured in copper tubes with aluminium wings. Housing constructed using aluminium profiles, insulated by double wall panels. Droplet separator on a built-in fibre-glass panel. Condensates tray with threaded drainage coils and stainless steel frame in contact with wet parts.

Please bear in mind that you need to deduct the loss of charge in air of the coils that are part of the system from the available fan pressure.

For each size of DFRA there are 3 different configurations available with water pre-cooling coils:



**ECO water pre-cooling coils (WE)**

| Features (*)           |        | DFRA |       |       |       |       |       |       |       |       |       |       |
|------------------------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |        | 0100 | 0130  | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m3/h) | 700  | 900   | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)   | 7,54 | 11,77 | 13,56 | 14,36 | 15,90 | 17,19 | 19,85 | 24,78 | 28,52 | 40,95 | 46,87 |
| Sensible power         | (kW)   | 3,26 | 4,96  | 5,75  | 6,11  | 6,82  | 7,44  | 8,81  | 11,09 | 13,26 | 18,34 | 21,84 |
| Air outlet temperature | (°C)   | 16,5 | 13,8  | 14,8  | 15,2  | 15,9  | 16,6  | 18,0  | 18,3  | 19,6  | 18,4  | 19,7  |
| Air outlet HR          | (%)    | 99,3 | 99,8  | 99,7  | 99,6  | 99,4  | 99,2  | 98,8  | 98,7  | 98,0  | 98,6  | 97,8  |
| Pressure drop in air   | (Pa)   | 130  | 57    | 79    | 91    | 116   | 141   | 209   | 205   | 313   | 233   | 359   |
| Water flow             | (l/h)  | 1297 | 2024  | 2333  | 2470  | 2735  | 2956  | 3415  | 4262  | 4905  | 7043  | 8061  |
| Pressure drop in water | (kPa)  | 23,9 | 12,2  | 15,7  | 17,4  | 20,9  | 24,0  | 31,0  | 20,7  | 26,6  | 31,5  | 40,0  |

(\*) performance figures at 0m above sea level for air entering at 31°C / 68% RH and water at 7°C and leaving at 12°C

**STANDARD (WS) pre-cooling coils**

| Features (*)           |        | DFRA  |       |       |       |       |       |       |       |       |       |       |
|------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |        | 0100  | 0130  | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m3/h) | 700   | 900   | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)   | 9,39  | 14,17 | 16,86 | 18,08 | 20,57 | 22,73 | 27,48 | 35,41 | 42,62 | 56,48 | 67,60 |
| Sensible power         | (kW)   | 3,96  | 5,95  | 7,07  | 7,58  | 8,63  | 9,55  | 11,61 | 14,96 | 18,22 | 23,97 | 29,13 |
| Air outlet temperature | (°C)   | 13,4  | 10,4  | 11,0  | 11,3  | 11,8  | 12,4  | 13,8  | 13,8  | 15,3  | 14,5  | 15,9  |
| Air outlet HR          | (%)    | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 99,9  | 99,9  | 99,8  |
| Pressure drop in air   | (Pa)   | 170   | 78    | 106   | 120   | 151   | 184   | 278   | 271   | 445   | 313   | 524   |
| Water flow             | (l/h)  | 1615  | 2438  | 2900  | 3110  | 3538  | 3910  | 4726  | 6091  | 7330  | 9714  | 11628 |
| Pressure drop in water | (kPa)  | 9,4   | 9,1   | 12,4  | 14,0  | 17,6  | 21,1  | 29,5  | 27,5  | 38,2  | 24,6  | 33,8  |

(\*) performance figures at 0m above sea level for air entering at 31°C / 68% RH and water at 7°C and leaving at 12°C

**HIGH POWER (WH) water pre-cooling coils**

| Features (*)           |        | DFRA  |       |       |       |       |       |       |       |       |       |       |
|------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |        | 0100  | 0130  | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m3/h) | 700   | 900   | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)   | 11,34 | 15,30 | 18,41 | 19,87 | 22,84 | 25,50 | 31,79 | 40,62 | 50,39 | 65,78 | 81,14 |
| Sensible power         | (kW)   | 4,77  | 6,45  | 7,75  | 8,36  | 9,60  | 10,71 | 13,34 | 17,05 | 21,19 | 27,62 | 34,21 |
| Air outlet temperature | (°C)   | 9,7   | 8,7   | 9,1   | 9,3   | 9,7   | 10,1  | 11,2  | 11,4  | 12,7  | 11,9  | 13,3  |
| Air outlet HR          | (%)    | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| Pressure drop in air   | (Pa)   | 241   | 111   | 150   | 171   | 215   | 262   | 395   | 385   | 633   | 446   | 745   |
| Water flow             | (l/h)  | 1951  | 2632  | 3167  | 3418  | 3928  | 4386  | 5468  | 6986  | 8666  | 11314 | 13957 |
| Pressure drop in water | (kPa)  | 34,8  | 9,0   | 12,6  | 14,4  | 18,4  | 22,4  | 33,2  | 25,7  | 37,7  | 24,4  | 35,4  |

(\*) performance figures at 0m above sea level for air entering at 31°C / 68% RH and water at 7°C and leaving at 12°C

For direct expansion pre-cooling coils, please contact FISAIR.

## Optional mechanical components

### POST-COOLING COILS

Post-cooling coils using cold water. Manufactured in copper tubes with aluminium wings.  
Housing constructed using aluminium profiles, insulated by double wall panels.

Please bear in mind that you need to deduct the loss of charge in air of the coils that are part of the system from the available fan pressure.

For each size of DFRA there are 2 different configurations available with water post-cooling coils:

#### STANDARD (WS) water post-cooling coils

| Features (*)           |                     | DFRA |      |      |       |       |       |       |       |       |       |       |
|------------------------|---------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |                     | 0100 | 0130 | 0160 | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m <sup>3</sup> /h) | 700  | 900  | 1100 | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)                | 5,68 | 8,04 | 9,55 | 10,24 | 11,65 | 12,97 | 16,01 | 20,37 | 25,02 | 33,70 | 41,25 |
| Sensible power         | (kW)                | 5,68 | 8,04 | 9,55 | 10,24 | 11,65 | 12,97 | 16,01 | 20,37 | 25,02 | 33,70 | 41,25 |
| Air outlet temperature | (°C)                | 14,2 | 11,6 | 12,5 | 12,9  | 13,6  | 14,2  | 15,8  | 16,1  | 17,9  | 16,2  | 18,2  |
| Air outlet HR          | (%)                 | 45,8 | 54,3 | 51,3 | 50,0  | 47,7  | 45,7  | 41,4  | 40,7  | 36,1  | 40,2  | 35,6  |
| Pressure drop in air   | (Pa)                | 78   | 33   | 46   | 53    | 69    | 86    | 136   | 132   | 212   | 154   | 246   |
| Water flow             | (l/h)               | 976  | 1383 | 1642 | 1761  | 2004  | 2230  | 2753  | 3503  | 4304  | 5796  | 7095  |
| Pressure drop in water | (kPa)               | 14,4 | 6,2  | 8,4  | 9,5   | 12,0  | 14,5  | 21,1  | 14,6  | 21,0  | 22,3  | 31,9  |

(\*) performance figures at 0m above sea level for air entering at 40°C / 10% RH and water at 7°C and leaving at 12°C

#### HIGH POWER water post-cooling coils (WH)

| Features (*)           |                     | DFRA |      |       |       |       |       |       |       |       |       |       |
|------------------------|---------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |                     | 0100 | 0130 | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m <sup>3</sup> /h) | 700  | 900  | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)                | 6,49 | 8,88 | 10,74 | 11,64 | 13,42 | 15,17 | 19,32 | 24,86 | 31,65 | 40,68 | 51,69 |
| Sensible power         | (kW)                | 6,49 | 8,88 | 10,74 | 11,64 | 13,42 | 15,17 | 19,32 | 24,86 | 31,65 | 40,68 | 51,69 |
| Air outlet temperature | (°C)                | 10,5 | 8,7  | 9,1   | 9,2   | 9,6   | 9,9   | 10,8  | 10,8  | 12,1  | 11,3  | 12,7  |
| Air outlet HR          | (%)                 | 58,4 | 66,2 | 64,4  | 63,9  | 62,2  | 61,0  | 57,4  | 57,4  | 52,6  | 55,5  | 50,7  |
| Pressure drop in air   | (Pa)                | 132  | 59   | 80    | 92    | 117   | 144   | 228   | 222   | 354   | 258   | 411   |
| Water flow             | (l/h)               | 1116 | 1528 | 1847  | 2001  | 2308  | 2609  | 3323  | 4276  | 5444  | 6998  | 8890  |
| Pressure drop in water | (kPa)               | 4,9  | 4,0  | 5,5   | 6,4   | 8,2   | 10,3  | 15,8  | 14,6  | 22,5  | 13,7  | 21,0  |

(\*) performance figures at 0m above sea level for air entering at 40°C / 10% RH and water at 7°C and leaving at 12°C

For direct expansion post-cooling coils, please contact FISAIR.



### POST-HEATING COILS

Post-heating coils using hot water. Manufactured in copper tubes with aluminium wings. Housing constructed using aluminium profiles, insulated by double wall panels.

Please bear in mind that you need to deduct the loss of charge in air of the coils that are part of the system from the available fan pressure.

#### STANDARD (WS) water post-heating coils

| Features (*)           |                     | DFRA |       |       |       |       |       |       |       |       |       |       |
|------------------------|---------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                        |                     | 0100 | 0130  | 0160  | 0175  | 0200  | 0230  | 0300  | 0400  | 0500  | 0650  | 0900  |
| Airflow                | (m <sup>3</sup> /h) | 700  | 900   | 1100  | 1200  | 1400  | 1600  | 2100  | 2700  | 3600  | 4500  | 6000  |
| Total power            | (kW)                | 8,58 | 13,43 | 15,09 | 16,18 | 17,48 | 18,98 | 22,36 | 26,67 | 31,00 | 47,39 | 55,25 |
| Sensible power         | (kW)                | 8,58 | 13,43 | 15,09 | 16,18 | 17,48 | 18,98 | 22,36 | 26,67 | 31,00 | 47,39 | 55,25 |
| Air outlet temperature | (°C)                | 36,3 | 43,6  | 40,2  | 39,7  | 36,8  | 35,1  | 31,7  | 29,6  | 26,0  | 31,4  | 27,7  |
| Air outlet HR          | (%)                 | 10,5 | 7,1   | 8,5   | 8,8   | 10,2  | 11,2  | 13,6  | 15,3  | 18,9  | 13,8  | 17,1  |
| Pressure drop in air   | (Pa)                | 49   | 20    | 29    | 33    | 43    | 54    | 84    | 77    | 124   | 95    | 151   |
| Water flow             | (l/h)               | 369  | 577   | 649   | 696   | 752   | 816   | 961   | 1147  | 1333  | 2038  | 2376  |
| Pressure drop in water | (kPa)               | 4,7  | 3,6   | 4,4   | 5,0   | 5,8   | 6,7   | 8,9   | 14,4  | 18,9  | 9,5   | 12,5  |

(\*) Performance figures at 0m above sea level for air entering at 2°C / 90% RH and water at 70°C and leaving at 50°C.

For direct expansion pre-heating coils, please contact FISAIR.

### HIGH EFFICIENCY FILTERS

As an optional fitting, DFRA series dehumidifiers can be supplied with process filters and high-efficiency reactivation filters. These filters are fitted on specific frames that ensure maximum water-tightness and they are supplied with a housing built with aluminium profiles and insulated with sandwich panels.

The high-efficiency filters have built-in pressure switches for filter clogging as standard, so that they can be connected to the advanced control systems of DFRA units.

Filters can be supplied with the following kinds of filtering:

**G4** ----- **F9** ----- **H14**  
(Standard)



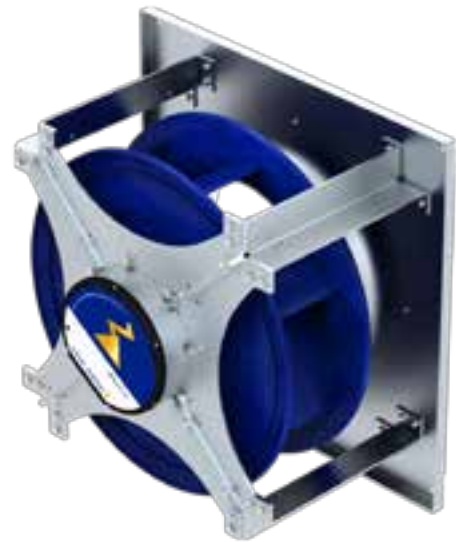


## Optional mechanical components

### PLUG-FAN DRY AIR FANS

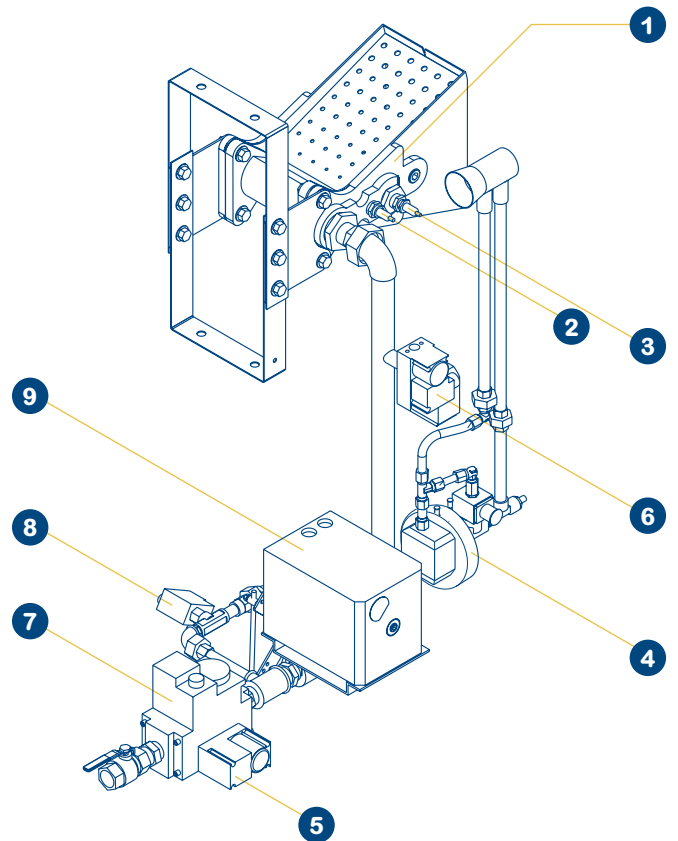
Thanks to these fans, setting up the installation is very simple, and they also allow you to maintain a constant flow/pressure as the process filters become clogged (as standard, they are fitted with a differential pressure probe that enables you to control the fan's electronics).

This control option is only available for units with advanced control.



### Gas burners

|   |   |
|---|---|
| 1 | Gas injection ramp special cast iron                                  |
| 2 | Ignition electrode  |
| 3 | Ionization probe for flame monitoring                                 |
| 4 | Safety pressure switch for air circulation control with nozzle        |
| 5 | Minimum safety gas pressure switch                                    |
| 6 | Maximum safety gas pressure switch                                    |
| 7 | Double solenoid safety valve as standard                              |
| 8 | Pilot electrovalve  |
| 9 | Gas flow regulating valve with modulating servomotor via 0-10V signal |

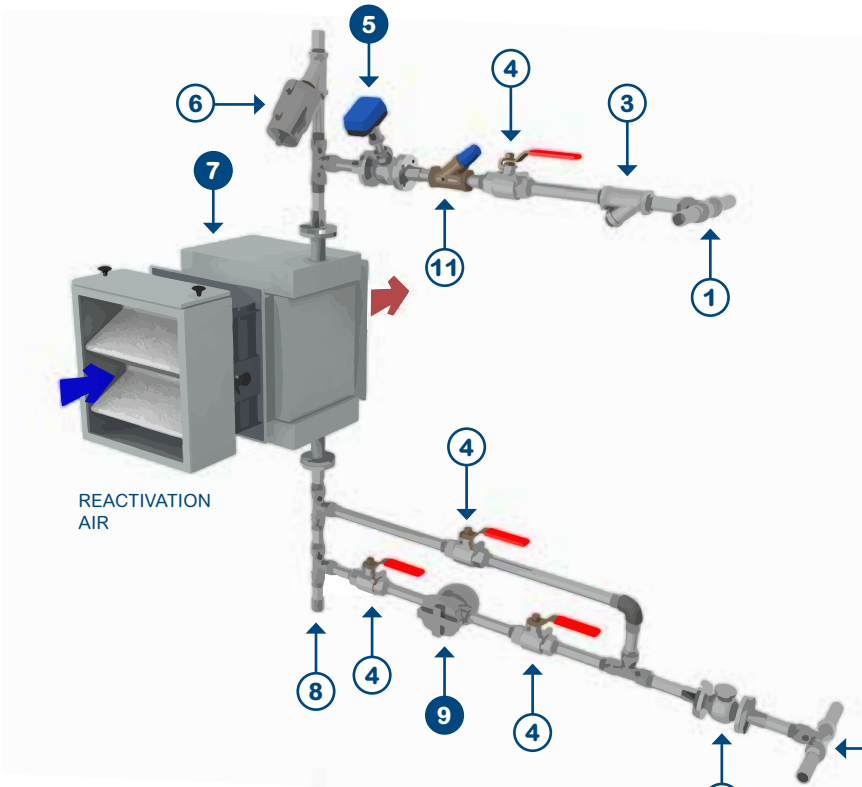


#### Atm Pressure 1013,25mbar-Pressure (Natural Gas) PCI 10,8kW/Nm³: 20-40 mbar

| Technical data of gas reactivated units |             | DFRA |      |      |      |
|---|-------------|------|------|------|------|
|   |             | 400  | 500  | 650  | 900  |
| Reactivation air flow                   | (Nm³/h ±5%) | 810  | 1080 | 1350 | 1800 |
| Gas consumption                         | (Nm³/h)     | 3,2  | 4    | 5    | 7    |
| Nominal Reactivation Power              | (kW)        | 28   | 38   | 48   | 68   |



## Diagram of steam coil installation



### Installation out of FISAIR supply

- ① Steam supply (\*)
- ② Condensate return
- ③ Y filter
- ④ Manual shut-off valves
- ⑥ Thermostatic deaerator
- ⑧ Droplet well
- ⑩ Retention valve
- ⑪ Steam regulating valve

### FISAIR supply

- ⑤ Proportional regulation valve (Optional supply)
- ⑦ Steam heater coil  
Battery for saturated steam. Available in two grades, Fe/Al and SST/Al. (FISAIR supply for reactivation heaters V H and X)
- ⑨ Steam trap (\*\*)  
(Optional supply)

(\*) Operating pressure: 5 bar (g).

For steam without anticorrosion protective additives we recommend a stainless steel reactivation air heater with aluminium flaps.

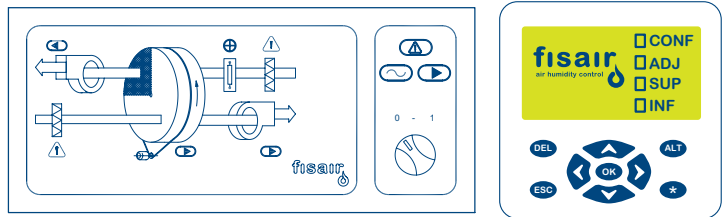
(\*\*) A float and thermostatic type steam trap or inverted bucket steam trap is recommended; safety factor for condensate load: 3 to 1.

### Atm pressure 1013,25 mbar- Steam pressure 5 bar.g

| DFRA                       |             |      |      |      |      |      |      |      |      |      |      |       |
|----------------------------|-------------|------|------|------|------|------|------|------|------|------|------|-------|
| Fe/Al V                    |             | 100  | 130  | 160  | 175  | 200  | 230  | 300  | 400  | 500  | 650  | 900   |
| Reactivation air flow      | (Nm³/h ±5%) | 210  | 270  | 330  | 260  | 420  | 480  | 630  | 810  | 1080 | 1350 | 1800  |
| Steam consumption          | (Kg/h)      | 14,5 | 19,0 | 23,1 | 25,0 | 28,8 | 33,1 | 42,5 | 56,8 | 74,1 | 93,9 | 121,7 |
| Nominal Reactivation Power | (kW)        | 8,4  | 11   | 13,4 | 14,5 | 16,7 | 19,2 | 24,6 | 32,9 | 42,9 | 54,4 | 70,5  |
| Inox/Al H                  |             |      |      |      |      |      |      |      |      |      |      |       |
| Inox/Al H                  |             | 100  | 130  | 160  | 175  | 200  | 230  | 300  | 400  | 500  | 650  | 900   |
| Reactivation air flow      | (Nm³/h ±5%) | 210  | 270  | 330  | 260  | 420  | 480  | 630  | 810  | 1080 | 1350 | 1800  |
| Steam consumption          | (Kg/h)      | 13,5 | 17,8 | 21,6 | 23,3 | 26,9 | 30,7 | 39,5 | 52,8 | 69,0 | 87,3 | 113,1 |
| Nominal Reactivation Power | (kW)        | 7,8  | 10,3 | 12,5 | 13,5 | 15,6 | 17,8 | 22,9 | 30,6 | 40   | 50,6 | 65,5  |

## Control options

DFRA dehumidifiers can have either basic 0 - 1 or advanced control. The main differences between the two are shown in the following table:



| Function   | Basic Control                | Advanced Control                         |
|--|------------------------------|--|
| <b>On/Off</b> <ul style="list-style-type: none"> <li>Manual</li> <li>Remote. Voltage free digital signal</li> </ul>  | yes<br>yes                   | yes<br>yes                               |
| <b>Drying capacity control</b> <ul style="list-style-type: none"> <li>Digital, external 1 or 2 stage hygrostat</li> <li>Analog, modulating from 0-10VDC external signal</li> <li>Via analog signal from optional sensor</li> </ul>                 | yes<br>no<br>no              | yes<br>yes<br>yes (1)                    |
| <b>Filter status</b> <ul style="list-style-type: none"> <li>Process air clogged filter alarm</li> <li>Reactivation air clogged filter alarm</li> </ul>   | yes (2)<br>yes (2)           | yes (3)<br>yes (3)                       |
| <b>Pre-treatment coils control</b> <ul style="list-style-type: none"> <li>Pre-heating control option</li> <li>Pre-cooling control option</li> </ul>  | no<br>no                     | yes (4)<br>yes (4)                       |
| <b>Post-treatment coils control</b> <ul style="list-style-type: none"> <li>Post-heating control option</li> <li>Post-cooling control option</li> </ul>   | no<br>no                     | yes (4)<br>yes (4)                       |
| <b>Dry air flow or pressure control</b> <ul style="list-style-type: none"> <li>Option to keep dry air flow or pressure at a certain level</li> </ul>   | no                           | yes (5)                                  |
| <b>Field elements connection</b> <ul style="list-style-type: none"> <li>0-10Vdc temp sensor connection</li> <li>0-10Vdc HR sensor connection</li> <li>0-10Vdc Absolute humidity sensor connection</li> <li>Rotation detector connection</li> </ul> | no<br>no<br>no<br>no         | yes (6)<br>yes (6)<br>yes (6)<br>yes (6) |
| <b>Fault finding</b> <ul style="list-style-type: none"> <li>Sensor fault alarm</li> <li>Motors fault alarm</li> <li>Power supply fault alarm</li> </ul>  | no<br>yes<br>no              | yes (7)<br>yes<br>yes                    |
| <b>BMS communication</b> <ul style="list-style-type: none"> <li>TCP/IP Modbus</li> <li>RTU-R5485 Modbus</li> <li>DP Profibus</li> <li>OPC Server</li> </ul>  | no                           | yes (8)                                  |
| <b>Other functions</b> <ul style="list-style-type: none"> <li>Rotation detector</li> <li>Controlled system shutdown</li> <li>Time counter</li> <li>LED's graphic display</li> <li>HMI display with sensors' values</li> </ul>                      | no<br>yes<br>no<br>yes<br>no | yes<br>yes<br>yes<br>no<br>yes (7)       |

- (1) Requires the optional humidity sensor 0-10Vdc and an analogue input available in the advanced control system.
- (2) Requires an optional pressure switch. LED alarm display.
- (3) Requires an optional pressure switch. Alarm can be viewed in the advanced control display.
- (4) Requires an analogue outlet which is available in the advanced control. In the case of water coils, a valve is required + 0-10VDC (optional) For other coil types please contact us.
- (5) Requires 1 analogue input available in the advanced control version, a plug-fan ventilator and optional differential pressure probe.
- (6) Requires an analogue output which is available in the advanced control.
- (7) Requires the optional probes to display its values.
- (8) Optional to be specified in the order.



## Optional field elements

| Description   |
|---|
| <b>Relative humidity sensor (DC 0...10V) for duct (1)</b><br>Measuring range: 0...100% HR. Measurement accuracy $\pm 2\%$ at 23°C   |
| <b>Combined relative humidity and temperature sensor (DC 0...10V) for duct (1)</b><br>Measuring range: 0...100% HR, -40 ... +70°C TBS<br>Measurement accuracy for HR $\pm 2\%$ at 23°C<br>Measuring accuracy for TBS $\pm 0.8$ K  |
| Temperature sensor (DC 0...10V) for duct (1). Measuring range: -50 ... +50 C. Measuring accuracy $\pm 0.9$ K  |
| <b>Combined relative humidity and temperature sensor (0-10V)</b><br>HR% accuracy:<br>-15...40 °C (5...104 °F) =90 % RH $\pm (1.3 + 0.003 \cdot \text{measured value})$ % RH<br>-15...40 °C (5...104 °F) >90 % RH $\pm 2.3$ % RH<br>Temperature measurement accuracy: Pt1000 (tolerance B, DIN EN 60751)<br>Execution of duct or environment.<br>Integrated calculation of related quantities: MOisture ratio (g/Kg), Tpr(°C) ...<br>Active transmitter with analog outputs 0..10V<br>Communication RS485 BACnet MS/TP or Modbus RTU |
| <b>Dew point temperature sensor 4-20mA for duct (1)</b><br>Measuring range: -60...+60°C TPR<br>Measurement accuracy: $\pm 2^\circ\text{C}$  |
| <b>Dew point temperature sensor 4-20mA for duct (1)</b><br>Measuring range: -100...+20°C TPR<br>Measurement accuracy: $\pm 2^\circ\text{C}$   |
| <b>Differential pressure switch for filter alarm blocked process. Measuring range: 50...500 Pa</b>  |
| <b>Differential pressure switch for filter alarm reactivation blocked. Measuring range: 50...500 Pa</b>   |
| <b>Differential pressure probe for dry air flow control in plug-fan. Range 0-2500Pa, DC 0...10V</b>   |
| <b>Valve + proportional actuator pre-heating coil</b>   |
| <b>Valve + proportional actuator pre-cooling coil</b>   |
| <b>Valve + proportional actuator post-heating coil</b>  |
| <b>Valve + proportional actuator post-cooling coil</b>  |
| <b>Ambient humidistat 2 stages for duct or wall mounting. IP54. Setpoint 10...100% RH, Hysteresis 3%HR at 45%HR</b>   |
| <b>Certificate of calibration of any element</b>  |

(1) Also available for measurement in room. Specify in order.

## Operational limits (1)

| Parameter  | DFRA                 |
|--|----------------------|
| Process inlet dry bulb temperature range                             | 2°C to 55°C (2)      |
| Process inlet relative humidity range                                | without restrictions |
| Reactivation inlet dry bulb temperature range                        | -10°C to 55°C        |
| Reactivation inlet relative humidity range                           | without restrictions |
| Designed to be installed under the direct action of the rain and sun | (3)                  |
| Temperature range in the area where you will install the unit        | -10°C to 50°C        |
| Relative humidity in the area where you will install the unit        | < 95%                |

- (1) The performances of the unit will be affected depending of the working conditions. If your unit needs to work under other operating conditions, please, get in touch with FISAIR.
- (2) Process inlet dry bulb temperature under 2 °C could be possible for units with pre-heating coils.
- (3) Standard not available. Consult according to need.



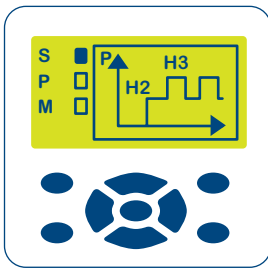
## Functions provided by the microprocessor with advanced control



### CONFIGURATIONS FOR DIFFERENT OPERATIONS (CONF)

#### 1<sup>a</sup>) STAGES (S)

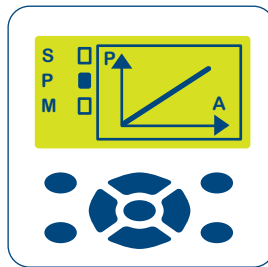
In order to control the reactivation coil BR by means of one/two external digital signal/s on/off (in two stages).



S

#### 2<sup>a</sup>) PROPORTIONAL (P)

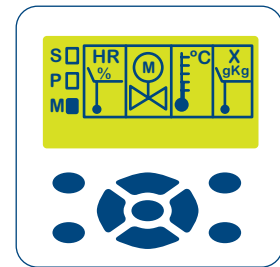
In order to control the reactivation coil BR by means of an external analogical signal 0... 10Vcc, from a regulator/humidity controller.



P

#### 3<sup>a</sup>) MEASUREMENT SIGNAL (M)

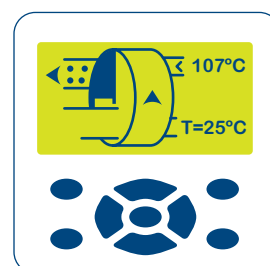
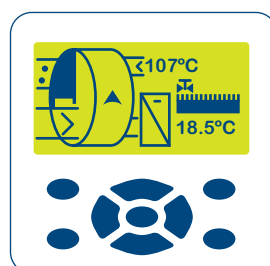
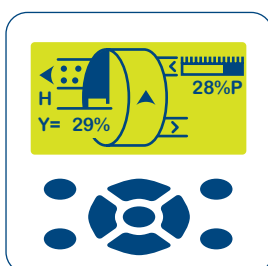
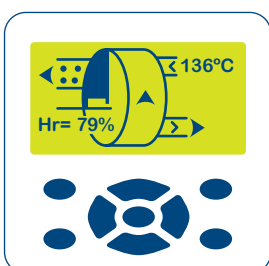
In order to act as a regulator/controller of the reactivation coil BR and possible pre or post cooling/heating coils (*on demand*), by means of 0... 10Vcc analogical signals from the humidity and temperature sensors.



M

### MEASUREMENT AND SUPERVISION (SUP)

- Reactivation air temperature measured after the reactivation coil BR.
- On-screen diagram of the working of the components (motor-fans and gear motor).
- Supervision of the power supplied by the reactivation coil BR.
- Supervision of the measurement of the humidity sensor.
- Supervision of the setpoint for humidity and temperature.
- Supervision of the setpoint for the maximum humidity alarm.
- Rotor rotation.
- Process air temperature measured after the pre or post (cooling or heating) coil (*on demand*).
- Supervision of the proportional opening of the valve of the pre or post (cooling or heating) coil (*on demand*).
- Pressure switches in filters (*on demand*).
- Flow rate of dry air (Plug-Fan versions)



### SECURITY AND ALARMS

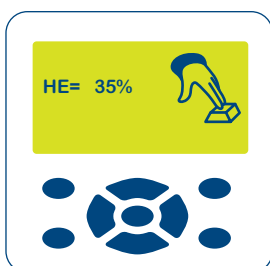


Space for the alphanumeric indicator for displaying unit faults.

- Timing of the disconnection of the motor-fan of the wet air and the dragging gear motor for cooling the equipment.
- Stoppage of the BR heater because of excessive temperature in the reactivation.
- Alarm and stoppage of the unit because of a lack of rotation in the desiccant rotor.
- Alarm and stoppage of the unit because any of the thermal switches of the motors are set off.
- Alarm because process and reactivation filters are blocked (on demand).
- Alarm because the maximum deviation for the humidity setpoint is exceeded.

### ADJUSTMENTS (ADJ)

- 1) Adjusting the power supplied by each stage when configuration by stages is selected (S).
- 2) Adjusting the humidity setpoint when configuration by measurement signal is selected (M).
- 3) Adjusting the maximum deviation of the humidity alarm when configuration by measurement signal is selected (M).
- 4) Adjusting the setpoint of the temperature of the range of pre/post cooling coils (BF1 and/or BF2) or pre/post heating coils (BC1 and/or BC2) (on demand).
- 5) Adjustment of the setpoint value for the dry air flow (requires Plug-Fan)



1



2 3



4



5



## Fisair Selection Tool selection software

FISAIR has the advanced selection software Fisair Selection Tool, which since version 3.0, also allows the selection of the entire range of FISAIR dehumidifiers for different operating conditions.

