

Modular Dryer Specification D41IM to D299IM

1. Purpose Statement

- 1.1. Scope of supply to provide one (1) **Ingersoll Rand** Model _____ Heatless Desiccant Air Dryer of Modular Construction. The compressed air drying, purification package shall be complete with the following equipment and features. The dryer shall have a capacity of _____scfm at _____psig and provide air quality as shown in 2.1 of the specification.

Technical Specifications

1. Flow Range @ 102 psi g (7 bar g):
24 scfm –176 scfm (41 – 299 nm³/hr)
2. Dew point: -40°F (-40°C)
3. Maximum Operating Pressure:
Up to and including D110IM: 232 psi g (16 bar g)
D150IM – D299IM: 189 psi g (13 bar g)
4. Minimum Inlet Pressure:
58 psi g (4 bar g)
5. Maximum Inlet Temperature:
122°F (50°C)
6. Minimum Inlet Temperature:
35°F (2°C)
7. Controls:
Solid State/Solenoid Controller
8. Standard Electrical Supply:
110-230V/1Ph/50-60Hz
9. Noise Level less than: 75 dB(A)
10. Pipe/Filter Connections:
Up to and including D110IM: 1/2" NPT or BSP
(Threaded Connections)
D150IM thru D299IM: 1" NPT or BSP
(Threaded Connections)



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2. Quality of Air

2.1. The quality of air provided shall meet or exceed the following when fitted with required filtration :

1. Maximum remaining oil content 0.01 mg/m³ at 70°F (21°C).
2. Particulate removal to 1 micron.
3. Dew point -40°F (-40°C) or [-94°F (-70°C)].
4. Air provided shall conform to ISO 8573.1 Standard Class 3.2.2 [3.1.2].

3. Materials of Construction

3.1. Vessel

- 3.1.1. The dryer shall be modular by design and made from an aluminum extrusion, incorporating the drying chambers, inlet and outlet manifolds.
- 3.1.2. The extrusion shall be alocromed for corrosion protection and coated with dry powder epoxy paint finish for external corrosion protection.

3.2. Drying Material

- 3.2.1. The drying material shall be activated alumina [-40°F/-40°C applications] or molecular sieve [-94°F/-70°C applications] and drying chambers shall be filled using “snowstorm” filling techniques to ensure consistent dew point and complete regeneration.

- 3.3. The dryer shall include (1) **Ingersoll Rand Model HE** coalescing type pre-filter, complete with borosilicate microfiber elements suitable for the removal of particulate, liquid and aerosols down to 0.01 micron – 0.01 ppm (Air Quality to ISO 8573.1 Class 2 Dirt, 2 Oil). The pre-filter shall be constructed of pressure die cast aluminum. The pre-filter shall be complete with an automatic drain valve. The element must be guaranteed to withstand a 145 psig (10barg) differential pressure without collapse. The initial saturated pressure drop must not exceed 3 psig (0.2 barg).

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3.4. The dryer shall include (1) **Ingersoll Rand Model DP** particulate type after-filter, complete with a borosilicate microfiber element suitable for the removal of particulate down to 100% at 1 micron (Air Quality to ISO 8573.1 Class 3 Dirt). The after-filter shall be constructed of pressure die cast aluminum. The after-filter shall be complete with a manual blowdown valve. The element must be guaranteed to withstand a 145 psig (10 barg) differential pressure without collapse. The initial saturated pressure drop must not exceed 1 psig (0.07 barg).

3.5. Each pre-filter and after-filter shall be shipped loose and equipped with a direct mounted differential pressure indicator.

4. Operation

4.1. Heatless or “Pressure Swing Adsorption” Operation

4.1.1. The heatless desiccant dryer shall operate on a 4 minute full cycle controlled by an electronic timer.

4.1.2. Air for regeneration (purge air) shall be provided by an adjustable purge system to maximize efficiency by matching purge flow to operational conditions.

4.1.3. Airflow through the dryer shall be controlled by inlet valves and outlet check valve housed in the inlet and outlet manifolds respectively.

4.1.4. Purge air shall be exhausted to atmosphere through the exhaust valve mechanism.

5. Instrumentation

5.1. The dryer instrumentation shall be housed in a shroud situated on the front of the dryer.

5.2. The instrumentation shall consist of:

1. Column Pressure Gauges

2. Power-On Indicator Light

3. Energy Savings Indicator – (Energy Management System – EMS (Optional))

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6. Documentation

6.1. General Arrangement Drawings – Drawings shall be made available upon request.

6.2. Instruction, Operation & Maintenance manuals – One copy shall be supplied with the dryer.

6.3. Spare parts manual – Shall be included in the O & M manual.

7. Testing Procedure

7.1. The dryer shall undergo a pressure decay test and operation/function test and certified documentation can be provided.

8. Quality Assurance

8.1. Dryer and filters shall be manufactured in accordance with ISO 9001 Quality Assurance Standard.

9. Warranty

9.1. The manufacturer's warranty shall be 12 months from commissioning or 18 months from date of purchase whichever is soonest.