

Warm Rooms

Our warm rooms vary in size from small step-in units to large stability storage areas with multiple air handlers—and with a range of temperatures from +10°C to over 70°C (with uniformity of $\pm 0.5^\circ\text{C}$). They also can be equipped with RH set point-control that allows for humidity control down to $\pm 3\%$.

STANDARD FEATURES

- Modular, metal skinned panels with urethane-insulated tongue-and-groove construction for chamber enclosure
- “Cam-locking” construction with vinyl gasketed seams fitted on the interior and exterior of each panel to provide moisture and vapor-tight seal
- Low-height aluminum ceiling plenum housing of DX and chilled-water evaporator coils
- Totally accessible hinged drain pan for maintenance and cleaning of all interior plenum components
- ECM fan motors for energy efficiency, which are rated for operating temperatures and remoted from chamber interior when necessary
- Automatic defrosting with refrigerant hot gas a for quick and efficient operation set to 0.1°C unit resolution
- Semi-hermetic, continually operating compressors for extended equipment life and increased control and uniformity
- Air cooled or water-cooled condensing units
- Uniform horizontal and vertical air distribution through a lay-in ceiling air distribution system with anodized aluminum support
- Fully accessible control panel to efficiently and securely house all controls, alarms, recording devices and communication networks
- Bench-testing of complete control panel and electrical devices prior to shipment
- Control panel certification built to MET, UL 508A
- Conformance to FDA 21 CFR11 requirements for data recording, audit trails of controller settings modification, alarm history logs, operator event logs, and secure file transfers
- Touchscreen system control of chamber parameters with 0.1°C resolution for temperature and 0.1% resolution for RH
- Electrical wiring to National Electric Code (NEC)
- Vapor-proof LED, fluorescent, incandescent, or high-bay light fixtures
- Factory leak testing of all refrigeration assemblies prior to shipment
- Factory leak testing standards: Helium mass spectrometer to 1E-5, nitrogen leak testing unit coolers 300 pounds, condensing units 175 pounds, evacuations minimum 200 microns

**Infinitely
Precise.
Ultimately
Reliable.**

STRUCTURAL/ELECTRICAL OPTIONS

- Chamber panels including installation built to Factory Mutual 4880. (FM4880)
- Insulated panel finishes for walls and ceilings are embossed/smooth white galvanized steel and stainless steel. Available floor panel finishes are galvanized and stainless steel
- 4-20mA DC retransmission, RS 485, ethernet
- Control Panel certification built to CSA 22.2
- Controls such as Allen Bradley, Siemens, or others available as requested
- Complete 100-percent redundant control panel systems
- Electrical wiring to National Electric Code (NEC) standards for Class I Division I or II environments
- Maximum product security through dead-bolts or locking bars, and security locking mechanisms furnished with internal emergency relief
- Open wire free standing and top track shelving available
- Standard and custom shelving, casework, and chromatography support racking
- Heated Thermopane view window for door or wall panels
- Heated Access ports and pass throughs
- Surface mounted vapor proof duplex outlets, plug mold, or recessed outlets
- Vinyl floor mat runners in open areas or seamless floor covering over complete area
- Exterior/interior door ramps
- Emergency lighting systems

MECHANICAL OPTIONS

- Perforated Lexan ceiling designed to deliver low velocity air uniformly throughout the entire chamber
 - Approaches laminar flow
 - Lay-in tiles are prismatic for light diffusion
- Complete, stainless-steel finish for ceiling plenum and evaporator housing, including drain pan
- Copper, phenolic coil with coated evaporator-fin construction for corrosive environments
- Exhaust fans with stainless-steel filtered air intake or dampered connection ports for host building supply and return air
- Base level dehumidification with a proportional reheat package
- Extended range dehumidification by BES-developed and field-proven proportional air volume regenerative desiccant drier
- Extended range humidification by independent passivated stainless-steel steam generator, designed for pure water supply
- Point-of-use water purification systems for steam generator supply water
- Complete, 100-percent redundant backup refrigeration systems with automatic switch over
- Vertical wall plenum configuration for increased chamber loads requiring greater evaporator coil surface area typical of industrial applications
- Available designs for temperature uniformity down to $\pm 0.5^{\circ}\text{C}$
- Available designs for humidity control to $\pm 3\% \text{ RH}$
- Conditioning packages designed to use chilled water systems in host building for chamber cooling
- Non-refrigerated cooling using building ventilation available for certain applications
- Hermetic compressor packages for low-capacity cooling applications
- Remote air handlers to remove mechanical components from chamber interior and increase air volume

