

Maxi-Kool

# RTU

Roof Top Units  
8–30 Ton



# MKA-3 034 -RTU

Maxi-Kool

## ***Type***

Air Cooled - **A**

Chilled Water Cooled - **C**

Glycol Cooled - **G**

Water Cooled - **W**

## ***Nominal Tonnage***

8 – 30 Ton

## ***Roof Top Unit***

## ***Voltage***

2 - 208

3 - 380

4 - 460

5 - 575

## ***Phase***

1- 1 phase

3 - 3 phase

# RTU

## *Maxi-Kool*

### Roof Top Units

The computer room environmental control system shall be COMPU-AIRE self-contained-packaged factory assembled, internally wired, piped, factory run tested, and fully charged with R-410A. Unit shall have Horizontal Supply and Return Air, and Horizontal condenser air intake and discharge. The unit shall be factory furnished with Remote Microprocessor Control Panel.

The System shall have a total and sensible cooling capacity as shown in the technical data sheet. Units shall be ETL listed as a package.

## Cabinet

Cabinet shall be constructed of heavy gage galvanized steel. Double Wall Access panels shall be provided for ease of service. Supply & Return air openings shall have 1" duct flanges(s) for ducting the evaporator air. Evaporator section shall be insulated with 1.5", 2 lb high density R-13 insulation and the condensate pan shall be stainless steel. Mounting rails shall be provided with the unit. Rubber and shear pads are to be by others.

## Double Wall Construction

Cabinet exterior access panels shall be constructed of double wall construction.

Each access panel shall be reinforced with additional heavy gauge metal with insulation on both panels. Allowing a maximum vibration, noise and thermal insulation (attenuation) during system operation.

DUCT CONNECTIONS: Evaporator section will have be provided in a bottom supply; bottom return configuration.

Note: Roof curbs shall be supplied by others.



## Unit Construction

The unit frame shall be of 14 gauge tubular steel MIG welded and QC inspected for rigidity and shape. The welding techniques shall be either T-joint or corner joint with a 1/16" bead. The unit frame shall be mounted on two 1/8" thick tubular steel mounting rails with fork lift cutouts. The cabinet construction shall be of 18 gauge sheet steel. The drain pan shall be of welded stainless steel construction.

## Weatherized Cabinet

RTU Unit Cabinet shall be weatherized for outdoor installation. The Hood and Bird Screen shall be installed on the Condenser Supply and Discharge. The Unit shall be painted with Compu-Aire Standard Enamel Finish.



## Evaporator Blower Section

The air conditioner shall be configured for draw-thru air pattern to provide uniform air flow over the entire face area of the coil. The unit shall have DWDI blower(s). Each shall be the centrifugal type with forward curved blades, both dynamically and statically balanced. The blower(s) shall operate in the Class-I range, shall be belt driven, and rated in accordance with AMCA Standard #210.

The speed of the blowers shall be adjustable by means of a variable pitch motor pulley. Drive and dual belts shall be sized for 200% of the motor horsepower rating, and shall be oil and heat resistant and static conducting.

The blower shall have permanently lubricated pillow block (L-10) bearings, with an average life span of 200,000 hours. The blower shaft shall be cold finished center-less ground heavy-duty steel, treated for rust protection. The shaft shall conform to ASTM A-108 specifications.

## Evaporator Blower Motor

The blower motor shall be Premium Efficiency Motor, shall have resilient base and mounted on the blower housing. The motor shall be 1725 RPM and shall have copper windings, phase isolation and shall be UL component.





## Air Flow Switch

Maxi-kool ROOF TOP UNIT is equipped with airflow switches that continuously monitor the supply airflow and turn the unit off with alarm in case of loss of airflow. The unit also monitors pressure drop across the air filters and provide dirty filter alarm (indication only). Field calibration is required for dirty filter alarm.

## Filtration

The air conditioners shall have Filter Rack with 30% efficient filters as measured by ASHRAE standard 52-76. The filters shall be 2" inches deep with full depth filter pleats. Filters shall be UL Class II. Filter access shall be from the side of the unit.



## Dehumidification Cycle

When MAXI-KOOL-ROOF TOP UNIT is switched to the dehumidification mode, a call for cooling is energized via the advanced microprocessor and moisture is condensed on the cooling coil. The condensate is then discharged through the primary condensate drain. The reheat provided shall offset sensible cooling during dehumidification and has sufficient capacity to maintain computer room dry bulb conditions.

## Electric Reheat

MAXI-KOOL-ROOF TOP UNIT standard reheat is provided in multi-stage two, three or four stages. The low-watt density, electrically enclosed elements are surrounded by fin tubular construction elements, thus extending the life of the elements, reducing sheath temperatures and eliminating ionization. Reheat operation is protected by dual temperature limit controls. In the dehumidification mode the system selected has ample reheat capacity to maintain dry-bulb conditions.



## Steam Generating Modulating Humidifier canister Type

MAXI-KOOL-ROOF TOP UNIT is provided with a pre-piped and pre-wired electronic, electrode self-generating steam type humidifier. The humidifier shall have an adjustable humidity output setting of the full rated humidifier capacity.

The pure steam method eliminates air contaminating mineral deposits and excessive humidity inherent with evaporative or infra-red humidifiers.

Pre-piped and prewired electronic, electrode self-generating steam modulating type humidifier. The humidifier has a modulating output control to match its output with humidity requirement signal. Humidifier shall come standard with an automatic flush cycle that senses the current consumption of the humidifier. The humidifier is equipped with disposable cylinder and an indicator that signals when the canister is to be changed which insures reliable, trouble free operation. The humidifier is complete with supply and drain valves, electronic controls and steam distributor. Vapor produced is piped directly into the bypass air for

## Evaporator Coil

The Evaporator Coils shall be slab design and have face area as listed in the technical data sheet. The Refrigerant flow shall be controlled by Thermostatic Expansion Valve. The prime surface shall be seamless copper tubes with aluminum fins. Return bends shall be made of seamless copper tube. Coils shall be tested at 350 psig. Coils are rated in accordance with ARI Standard #410. FINS Shall be aluminum plate type, die formed fin design to provide optimum strength and turbulence for maximum peak performance without objectionable high pressure drop.

## Condensate Drain Pan

The Condensate Drain Pan Shall be of stainless steel construction with nonferrous connections.

## **Water Overflow Sensor**

Condensate pan shall be provided with a moisture sensing device which when triggered (In the event the drain gets clogged), will shut the unit off and also send a signal to the remote MCP control panel.

## **Condenser Coil**

The condenser coil shall have aluminum fins bonded to copper tubes and shall have full collars that completely cover the copper tubes. The coil shall also be designed for counter flow application for high heat transfer efficiency. Headers and connections shall be copper and shall be factory split to provide an independent condenser circuit for each compressor. The coil shall be pressure tested, sealed and pressurized for shipment.

## **Condenser Fan**

The direct drive fan blades shall be aluminum, and shall be protected by a heavy gauge, steel wire, zinc plated, epoxy coated fan guard. Each fan section shall be separated by full width baffles to prevent bypass air.

## **Condenser Motor**

The condenser motors shall have permanently lubricated sealed ball bearings, with inherent overload protection. Motors shall be mounted inside the condenser casing for weather protection.

## **Low Ambient–Fan Speed Control**

The Propeller Fan Condensing Unit shall be provided with a VARISPEED PACKAGE FOR LOW AMBIENT DOWN TO -20°F: Consisting of factory installed solid state pressure control. The capillary sensor senses the head pressure of operating compressor and control the variable speed fan to properly maintain the head pressure. A single phase variable speed motor shall be factory installed on the condenser fan. The speed controller modulates air delivery in direct response to head pressure and maintain minimum head pressure required.



## Dual Refrigeration Circuits

MAXI-KOOL-ROOF TOP UNIT is equipped with two high efficiency Scroll Compressors located in a separate compartment, outside the air stream for ease of service access during unit operation. Scroll compressors high volumetric efficiency and a constant volume ratio give the scroll compressor an excellent EER. Moreover, the capacity, power and the current do not fall off as rapidly at high condensing and low suction temperatures as a typical reciprocating compressor.

Scroll compressor can also accommodate liquid slugging, both oil and refrigerant without causing compressor damage. Scroll compressors contain fewer parts resulting in greater reliability. Sound attenuation is also much easier since the dominant sound characteristics are in the higher octave band and the unit enclosure usually is adequate. Vibration in the system is greatly reduced by elimination of the reciprocating masses found in the semi-hermetic compressor.

The System 2200 Plus Microprocessor includes an automatic compressor sequencing which assures equal usage of the two compressors, each compressor is provided with:

- Built-in thermal overload protection
- Crankcase heaters
- Rotolock valves
- Internal Vibration Isolation
- Charging and service schraeder ports
- Internal Discharge gas vibration eliminator
- External vibration mounting isolation

## Refrigerant Circuit(S)

Each refrigerant circuit is provided with highly efficient refrigeration components.

- Externally equalized expansion valve
- Sight glass with moisture indicator
- Filter drier
- Pump down cycle (air cooled units)
- Schraeder fittings
- Hot gas bypass when required
- Suction accumulator when required

## Safety First!

Each compressor system has an automatic reset low pressure switch for loss of refrigerant charge protection and manual reset high pressure switch for high pressure protection. Audio and visual alarm shall be provided with system shut down in the event of high/low pressure system failure.

## Control Power Panel

Maxi-Kool ROOF TOP UNIT is equipped with a high voltage panel which is easily accessible from the front of the unit and can be accessed for full service without disrupting the air flow.

All wiring conforms to National Electrical Code (NEC) and UL 1995 requirements. Electrical components utilized in the control panel are UL Listed and recognized.

Each AC power circuit is individually branch circuit protected on all three phases. Each component (humidifier, compressors, motor, electric reheat stage)(if applicable) is provided with a factory mounted and wired definite purpose contactor.

The control wiring is 24 VAC low voltage.

The control panel has the following components:

Each electrical component such as fan motor, compressor shall be individually protected with branch circuit fuses.

- The Control Panel shall contain:
- Fuse-block with Fuses
- Transformers
- Circuit breakers for transformers
- Contactors
- Ground connection
- Low voltage terminal block.
- Power Block

## Disconnect Switch

MAXI-KOOL-ROOF TOP UNIT requires a single point main power supply connection.

UNIT DISCONNECT SWITCH (NON-FUSED)

The manual disconnect switch shall be mounted in the high voltage section of the electrical panel. Disconnect Switch shall be operational from the outside of the unit with the door closed.

The remote air cooled condenser shall be supplied with a factory mounted weather-proof control box, incorporating all the fan actuators, terminal boards and Ambient T-stat(s) required to provide head pressure regulation.



# COMPU-AIRE INC. 2200 + SERIES CONTROL

*Keeping the control in your hands*

Compu-Aire Inc. has always focused special attention on simplicity of use, while at the same time fully exploiting the potential for flexibility and power offered by microprocessor technology.

Compu-Aire Inc. offers a diverse range of programmable controls, with state of the art user interfaces, including touch screen displays.

**Compu-Aire Inc. 2200+ Series control** provides a versatile approach to monitor the precise cooling and heating needs of your critical applications. With the latest technology available to the customer, we are able to provide reliable and flexible features to allow the customer to manage even the most intricate application.

Compu-Aire Inc. user friendly controllers support a variety of communications and protocols, including BacNet, LonWORKS, FTP, HTML, and Modbus.

## *Graphical Touch Screen Display*



*Graphical status update with a touch of a button*

### ***pCO Web card interface provides:***

- Unit status with virtual information
- Room temperature/humidity
- Current set points for temp/humidity
- Mode of operation
- Current status for vital components such as compressors humidifiers, fan and reheat
- Current active alarms
- Setpoint control for alarms

The pCO web card configuration interface provides limited access to control room temp/humidity a log with the ability to reset alarms.

NOTE: Critical alarms will require manual reset at the unit level.



## Programmable Local Area Network

Local and remote monitoring can be achieved with our advanced microcontroller. Based systems are used to provide standalone supervision and control over a pLAN network giving the flexibility of a BMS system at the fraction of the cost.

The pLAN communication option allows two or more systems to talk to each other, pLAN can be programmed for system rotation and for system failure over redundancy.

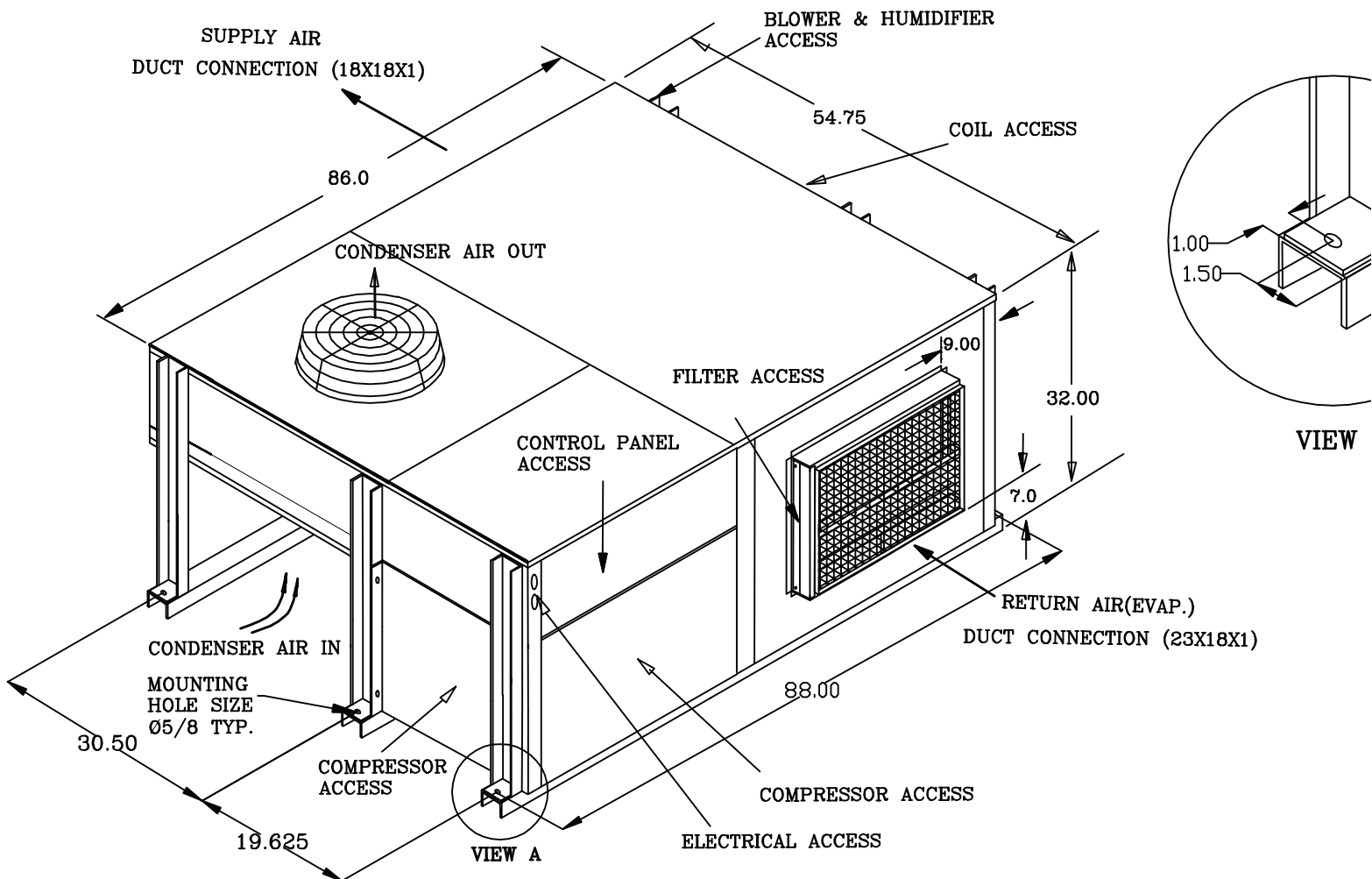
- Supports up to 16 units
- Lead/lag with multiple active & standby
- Unit rotation and auto changeover
- Alarm switchover to standby
- Assisted cooling
- Assisted heating
- Assisted humidification
- Dehumidification

Hello

Hello



# Dimensional Data





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