

### Models DAC2000 / WAC2000



WAC2000



DAC2000

### General Description

The Marvair DAC (Door Air Cooling) and WAC (Wall Air Cooling) units are direct air cooling units designed to provide free cooling for telecom shelters and cabinets. The DAC is designed for installation on a door and the WAC is designed to be mounted on a wall in place of a wallmount air conditioner unit and includes a door-mounted exhaust damper.

The units consist of a 48 VDC backward curved, single inlet electronically commutated centrifugal fan, an outside (intake) air assembly with a motorized damper, a 4" (102 mm) disposable MERV 13 filter, and the CoolLinks control board housed in a steel cabinet. Pressure relief is provided by a powered exhaust damper on the opposite side of the shelter or cabinet. An exhaust damper on the opposing wall ensures optimal air circulation throughout the building. An anti-corrosion protective coating on the cabinet and the internal components is available as an option.

#### ► Door Mounted Direct Air Cooling Unit

**DAC:** The Marvair Door Mounted Direct Air Cooling Unit (DAC) is designed to install in a standard shelter door. The DAC operates on 48 VDC and is installed in an opening in the door. The DAC unit provides free air cooling and the installation kit includes all necessary hardware and a wall-mounted exhaust air damper to relieve pressure within the building.

#### ► Wall Mounted Direct Air Cooling Unit

**WAC:** The Marvair Wall Mounted Direct Air Cooling Unit (WAC) is designed as a direct replacement for a standard sized wall mounted air conditioner unit. The WAC operates on 48 VDC and is installed using the existing supply air wall openings. When replacing an A/C unit, the WAC back panel covers/seals the existing return air opening. The WAC unit provides free air cooling and includes a door-mounted exhaust air damper to relieve pressure within the building.

Designed,  
Engineered  
&  
Assembled  
In the USA



### Features and Benefits

- 2,150 CFM Air Movers
- Standard 4" Pleated Filter
- Mist Eliminator Filters
- Internal Temperature Sensor
- CoolLinks NextGen Controller
- Motorized Exhaust Dampers with Hoods
- Complete Mounting Package
- Single Point Power Connection
- Simplified Control Wiring

## Safety Listed and Energy Certified

All Marvair products are built to UL 507 standard 2017, 10th edition and CAN/CSA C22.2, No. 0; 0.4; 113. Marvair DAC and WAC Direct Air Cooling Units are commercial products and are not intended for use in residential applications.

## Next Generation DAC/WAC Standard Features

### ➤ Reduced Installation Cost

- There is no need to cut new wall openings. The WAC uses existing cutouts.
- WAC uses existing supply air opening.
- No need to relocate power and control connections.
- DAC has less load/weight on the door than competing units.

### ➤ Rugged Construction

- Baked on neutral beige finish over galvanneal steel for maximum cabinet life. (Other finishes are available.)

### ➤ Dirty Filter Indicator

- Measures the difference in pressure across the internal filter and illuminates a LED when the pressure exceeds the desired difference.

### ➤ Improved Ventilation and Cooling

- WAC cross ventilation is achieved with louver in door.
- DAC configuration exhausts through original supply air opening in opposite wall.

### ➤ Ease of Installation

- Sloped top with flashing eliminates need of rainhood.
- Built-in mounting flanges facilitate installation and minimize chance of water leaks.
- Factory installed disconnect on all units.
- Single Point Power Entry complies with latest edition of U.L. Standards.

### ➤ Pre Filters In the WAC/DAC Door Hoods



## ► Controller Specifications

The next generation Marvair CoolLinks HVAC controller features a custom circuit board based on Raspberry Pi Compute Module 3 controller with the following characteristics:

- Two-line phosphorescent display
- Four Ethernet HVAC ports (WAC/DAC, ICE, external)
- Two hardwired HVAC ports
- Up to four temperature & humidity sensors
- Built-in 66-block for alarms
- Built-in relays for smoke, hydrogen, generator
- SNMP, Modbus, BACnet, flat-file interfaces
- Controls DX unit in fan mode for increased CFM
- Wi-Fi interface module
- Four 48VDC, 2A feeds for CoolLinks HVAC control boards.
- Optional remote temperature & humidity sensor
- Optional five port Ethernet expansion module



## Modes of Operation

- **Normal:** Upon a call for cooling from the CoolLinks NextGen controller, the outside air damper and exhaust vent will be fully opened and the indoor fan will be set to the speed determined by the controller. The fan speed will be variable between 5% and 100% of rated motor speed and will be calculated by the controller based on the inside and outside ambient air temperature and humidity conditions. An interlock will prevent operation of the indoor fan if the outside air supply damper is not open.
- **Standalone or Emergency Ventilation:** If the circuit board in the WAC unit is unable to communicate with the controller for a period of sixty seconds, the circuit board will automatically select standalone mode. In standalone mode, the outside air supply damper will be fully opened and the indoor fan will operate at the last speed determined by the controller. When communications with the controller is restored, the control board will automatically drop out of standalone mode and return to normal controller-defined operation.

## Dry Contact Alarm Outputs

A dry contact is provided for each HVAC unit to indicate HVAC unit failure to the shelter alarm block. Unit failure is defined as 1) a high pressure lockout or 2) a low pressure lockout or 3) a loss of landline power. This dry contact is a normally open contact.

**Note:** Dry Contact Alarm Outputs are only applicable when using DX cooling HVAC units in addition to the DAC/WAC.

## Remote Access Data Points

Through the Ethernet connection, the network operations center can monitor and change various data points in the HVAC system and the shelter.

Data Points which can be monitored **and** changed:

- First Stage Cooling Set Point Temperature
- Second Stage Cooling Set Point Differential Temperature
- First Stage Heating Set Point Temperature
- Second Stage Heating Set Point Differential Temperature

Data points which can only be monitored:

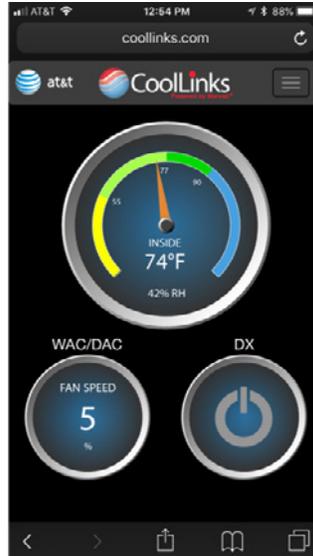
- Inside Temperature - Current
- Outside Temperature - Current
- Outside Humidity - Current

- Dew point - Current
- Inside Temperature - Average Last Hour
- Outside Temperature - Average Last Hour
- Outside Humidity - Average Last Hour
- Dew point - Average Last Hour
- Unit 1 & Unit 2 Mechanical Cooling Time - Last Hour
- Unit 1 & Unit 2 Mechanical Cooling Requests - Last Hour
- Unit 1 & Unit 2 DC Free Air Cooling Time - Last Hour
- Unit 1 & Unit 2 DC Free Air Cooling Requests - Last Hour
- Unit 1 & Unit 2 Heating Time - Last Hour
- Unit 1 & Unit 2 Heating Requests - Last Ho

➤ Remote Access Features



Wi-Fi SSID



Main Screen



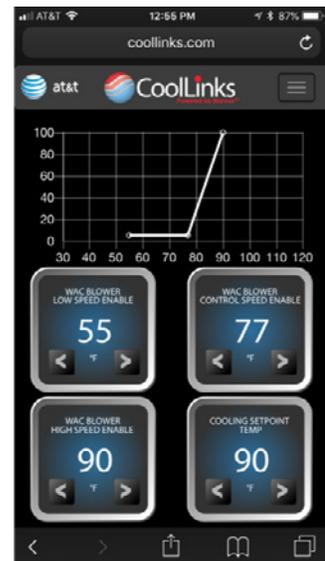
Set Points



WAC/DAC



HVAC DX



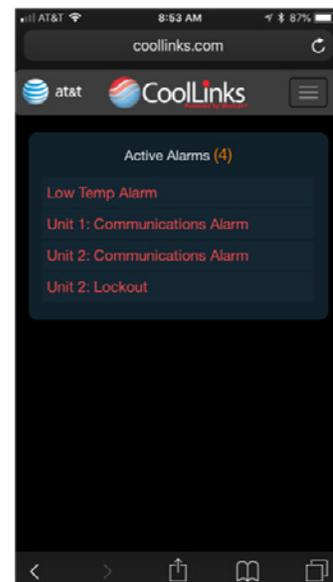
Blower Set Points



Configuration 1



Configuration 2



Alarms

## Shelter & System Alarms

In addition to the standard alarms, the CoolLinks controller also provides Shelter and System alarms. The alarm is displayed on the CoolLinks LCD in the shelter **and** also sent via SNMP trap to the network operations center.

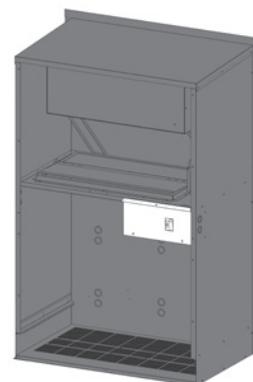
- **First Stage High Temperature Alarm** Inside temperature above 85°F (29.4°C).
- **Second Stage High Temperature Alarm** Inside temperature above 90°F (32.2°C).
- **Low Temperature Alarm** Inside temperature is below 45°F (7.2°C).
- **Smoke Alarm** If the smoke sensor input to the CoolLinks system is active, the Compressor, Heater, and Indoor Blower Motor on both HVAC units will be shut down and the damper will closed completely. This will stop air flow within the shelter.
- **Hydrogen Detector Alarm** If the hydrogen sensor input to the CoolLinks system is active, the damper(s) on units that are not currently in mechanically cooling will be fully opened and the Indoor Blower Motor(s) will be turned on. This will expel noxious gases and introduce outside air into the shelter. If one unit is in mechanical cooling, it will continue to run. The other air conditioner will turn on and operate in the emergency ventilation mode.
- **Generator Operation Alarm** If the generator running input to the CoolLinks system is active, only one HVAC unit will be permitted to run in mechanical cooling. As the generator is typically sized to run only one HVAC unit, this ensures that the generator load is not exceeded.

## Options

### ► Protective Coating Packages

The WAC is available with corrosion protection, which includes a protective coating on the entire cabinet inside and out (except for the control box and control box cover).

The DAC is also available with additional coating protection using pre-painted sheet metal instead of galvanizing.



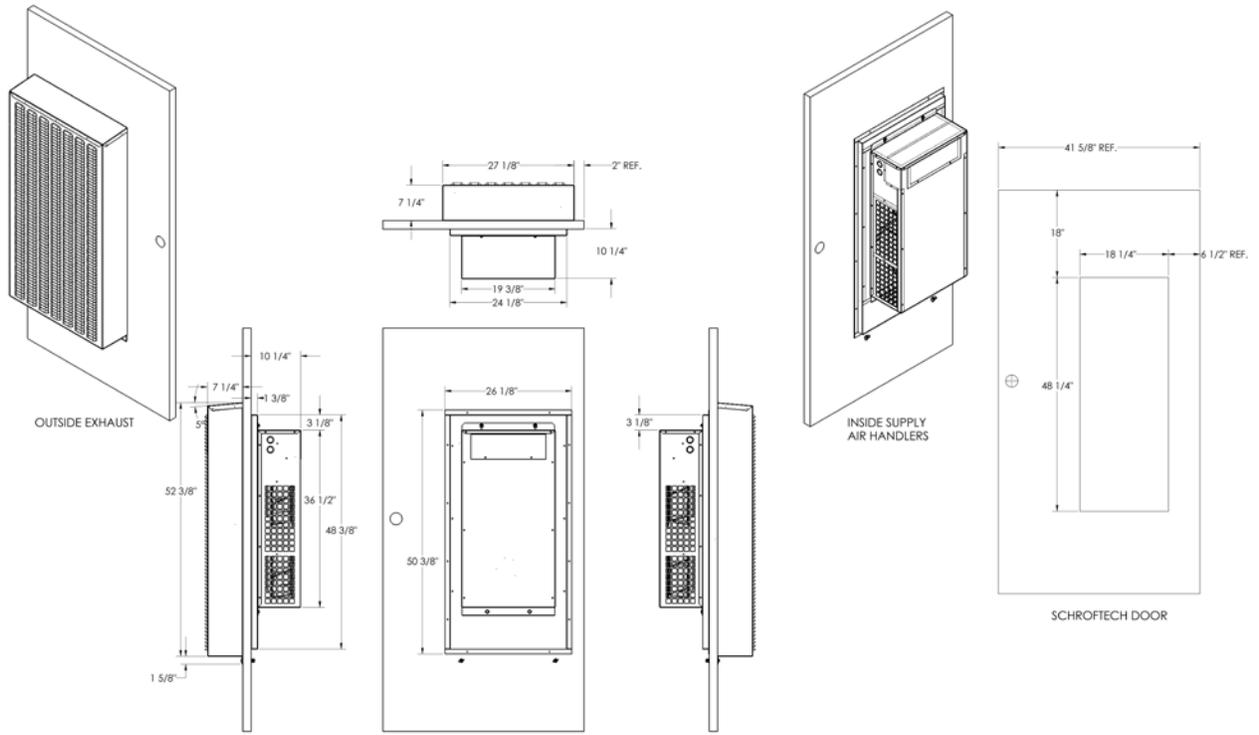
## Model Identification

●●●	<b>2000</b>	<b>S</b>	<b>000</b>	<b>H</b>	<b>1</b>	<b>+</b>	<b>A</b>	<b>1</b>	<b>9</b>
<b>DAC</b> = Door Mounted <b>WAC</b> = Wall Mounted	<b>Capacity</b> 2000 = 2,150 CFM	<b>Power Supply</b> S = -48VDC	<b>Heat Option</b> 000 = No Heat	<b>Hurricane</b> + = None H = Hurricane Louver	<b>Ventilation</b> 1 = 22 x 18 2 = 28 x 8 3 = 30 x 10	<b>Coating</b> + = None K = Coastal	<b>Revision Level</b> A B C	<b>Hood</b> 1 = With Hood 2 = Hood Separate (DAC Standard)	<b>Cabinet Color</b> 1 = Marvair Beige (STD) 2 = Gray (STD) 3 = Carlsbad Canyon (STD) 4 = White (STD) 5 = Stainless Steel Exterior 9 = Pebble Gray A = Stainless Steel - Unit \$ = Custom Color (Powder Coat)

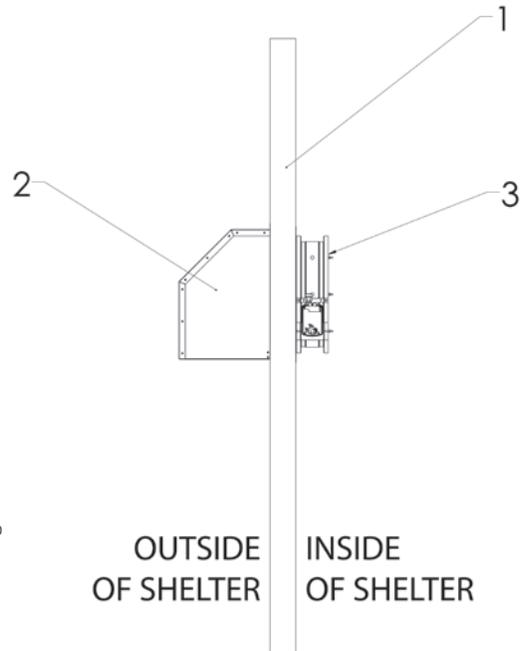
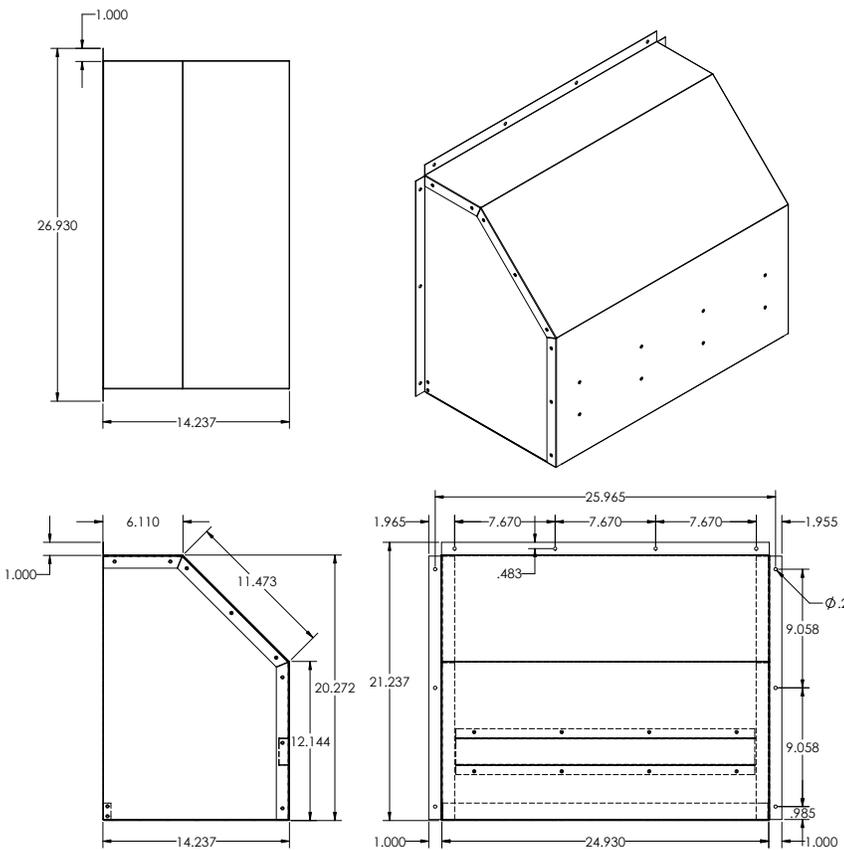
## Voltage Limitations

Electrical Rating Designations	VDC
Nominal Voltage	48
Minimum Voltage	36
Maximum Voltage	57

# Dimensional Data - DAC2000



**DAC Dimensional Drawing**



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	WALL	WALL	1
2	SD12500	HOOD ASSY DAC 22 X 18.25	1
3	80963	DAMPER 22 x 18.25 STEEL AIR FOIL ECUDA3	1

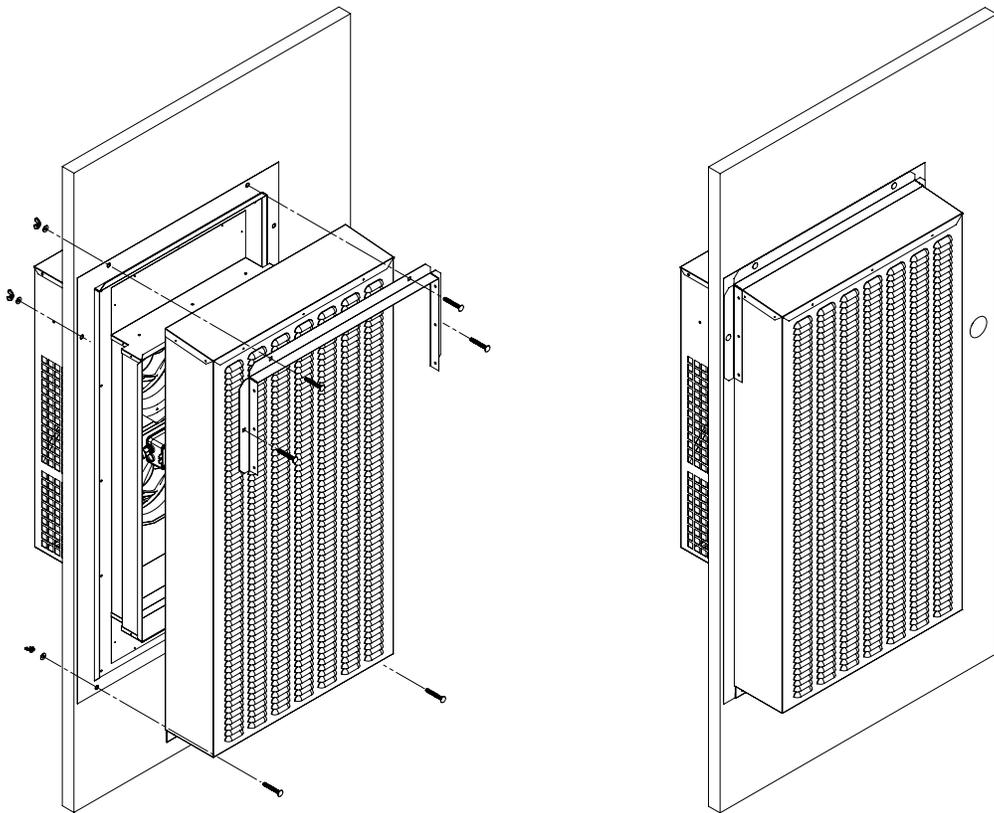
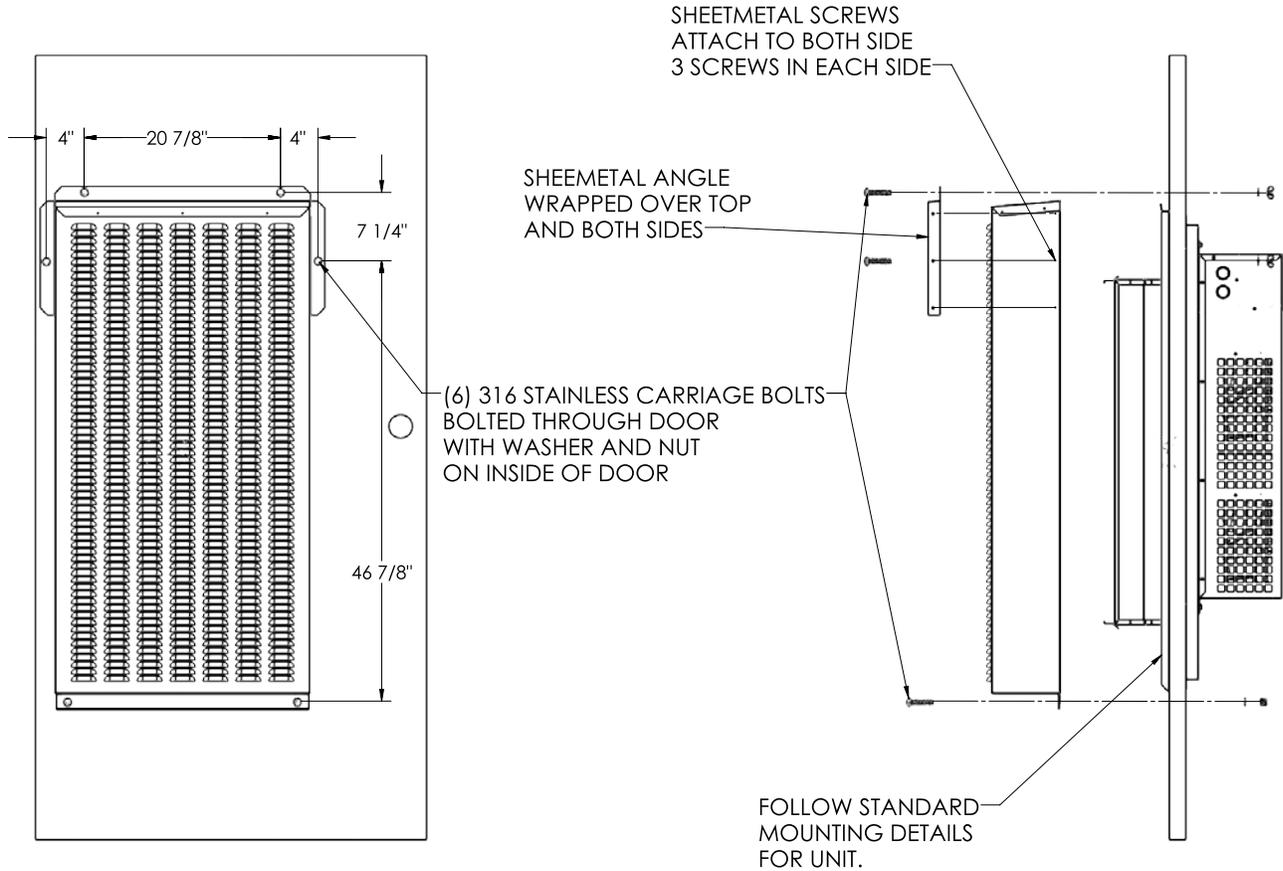
**DAC Damper Hood**

## Shipping Weight (Lbs/Kg) Filter Size

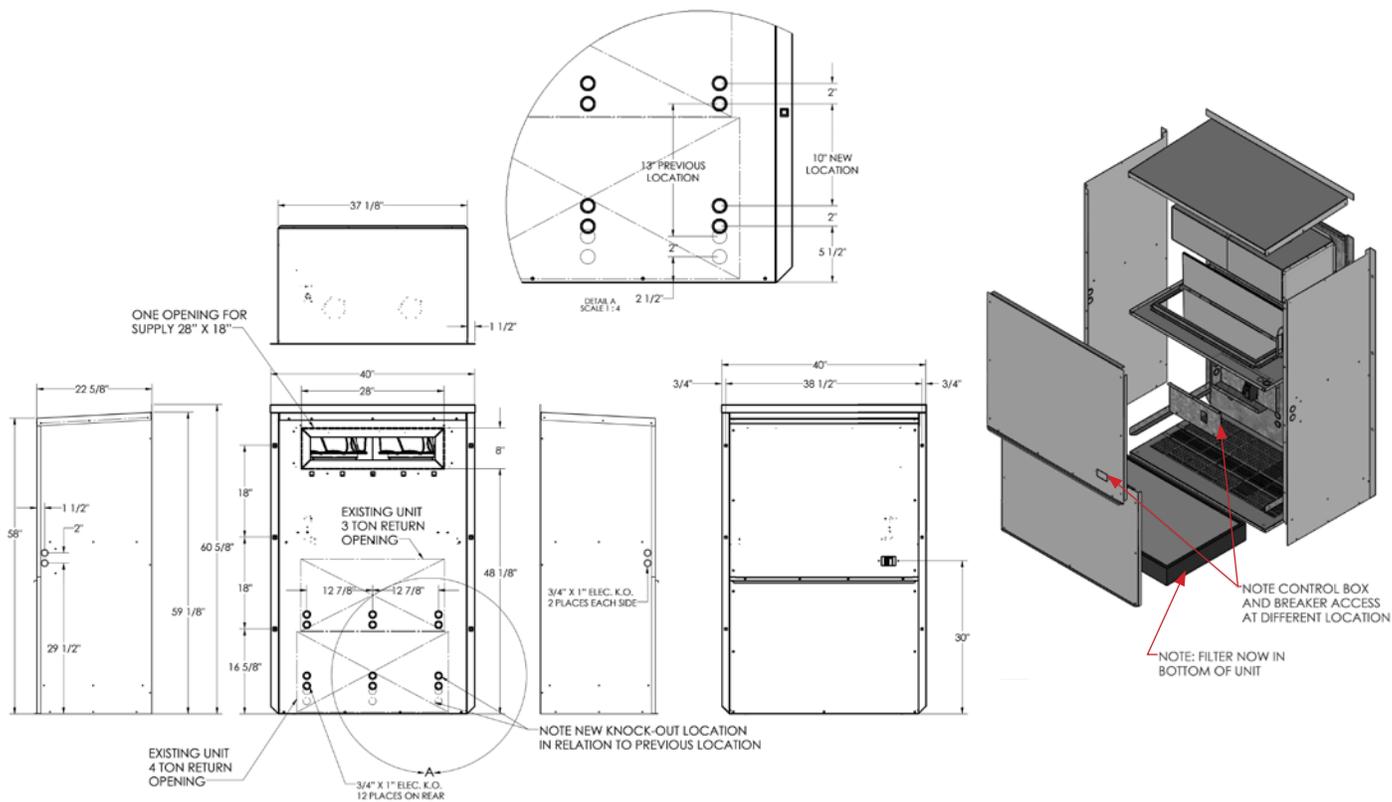
DAC	LBS/KGS
DAC	75/34

DAC	INCHES	MILLIMETERS	PART #	FILTERS PER UNIT	MERV RATING
SUPPLY AIR FILTER	36 1/2 x 22 x 4	927 x 559 x 102	93205	1	13

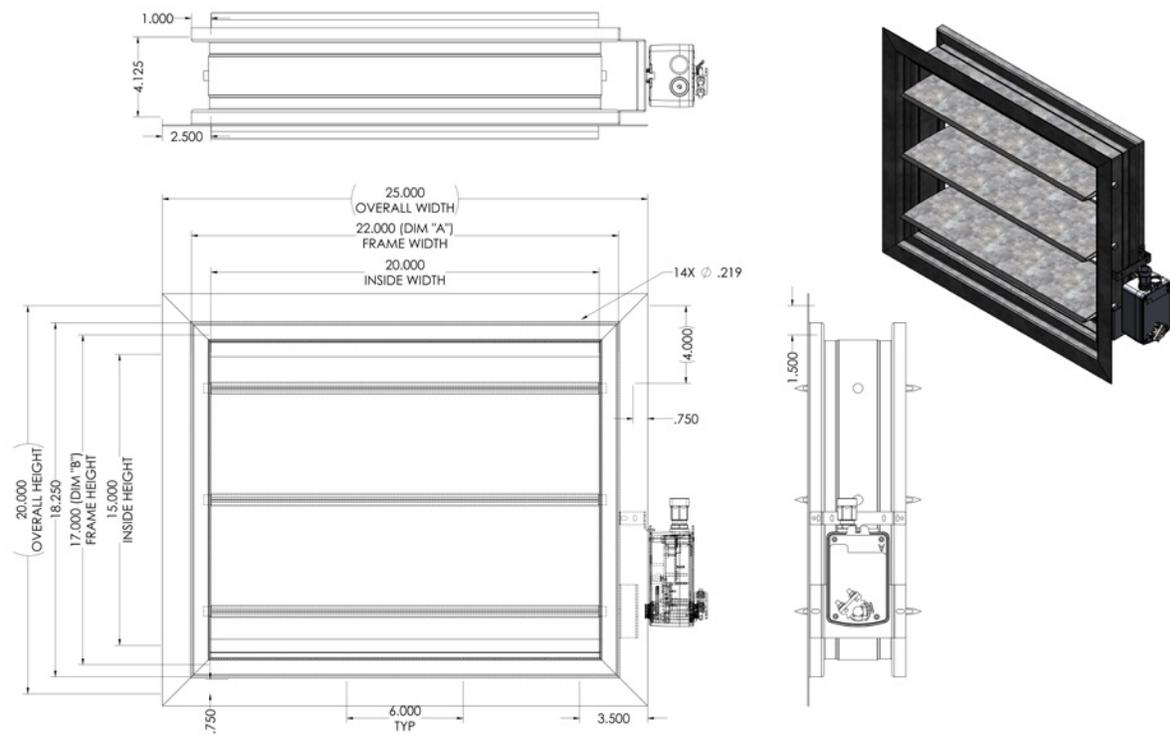
# DAC Florida Hurricane Kit Detail (Kit #K/11114)



# Dimensional Data - WAC2000



**WAC Dimensional Drawing**



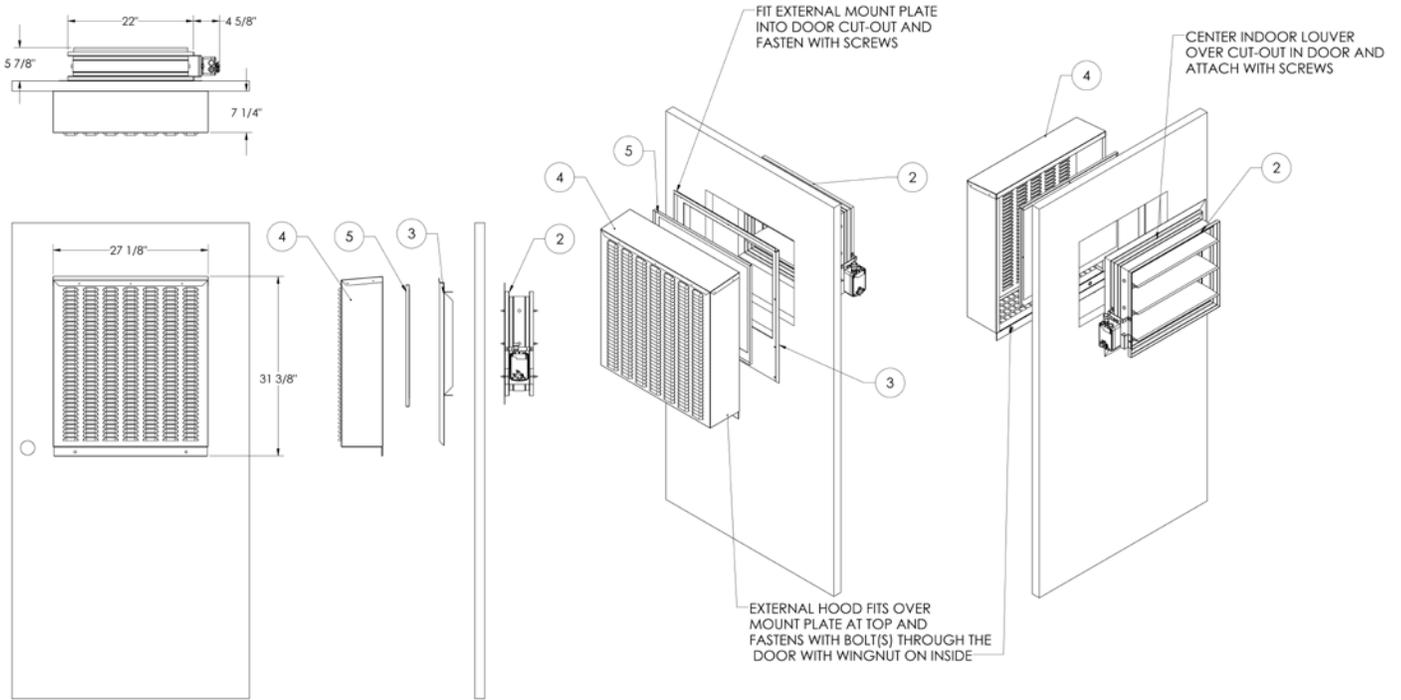
**WAC Damper Dimensional Drawing (Optional for DAC)**

## Shipping Weight (Lbs/Kg) Filter Size

WAC	LBS/KGS
WAC	275/125

DAC	INCHES	MILLIMETERS	PART #	FILTERS PER UNIT	MERV RATING
SUPPLY AIR FILTER	36 1/2 x 22 x 4	927 x 559 x 102	93205	1	13

## Dimensional Data - WAC2000 Installation Detail



Item Number	Part Number	Description	Quantity
1	N/A	Sample Door	1
2	80963	Damper 22x18.25 Steel Airfoil ECUDA3	1
3	MD14479	Mounting Panel - Exhaust Hood	1
4	S/12617-Color	Exhaust Hood Assembly	1
5	MD12840	Door Screen Frame Assembly	1

## WAC Damper Installation Detail



Please consult the Marvair® website at [www.marvair.com](http://www.marvair.com) for the latest product literature. Detailed dimensional data is available upon request. A complete warranty statement can be found in each product's Installation/Operation Manual, on our website or by contacting Marvair at 229-273-3636. As part of the Marvair continuous improvement program, specifications are subject to change without notice.



P.O. Box 400 • Cordele, GA 31010  
 156 Seedling Drive • Cordele, GA 31015  
 Ph: 229-273-3636 • Fax: 229-273-5154  
 Email: [marvair@airxcs.com](mailto:marvair@airxcs.com) • Internet: [www.marvair.com](http://www.marvair.com)

