

Residential Installation

Unique Flexible Small Ducts

2" i.d. (3.5" o.d.) or 2.5" i.d. (4.0" o.d.) supply tubes are so small and flexible they go around anything and fit almost anywhere. Design custom homes without HVAC system constraints or retrofit older homes without compromising the architecture.

Quiet Operation

Supply tubing is made of spun-bound nylon, wrapped in sound-dampening insulation for ultra-quiet operation.

Fit Anywhere Air Handlers

Compact, modular coils and blowers fit into existing cavities and eliminate the need for space-eating mechanical areas. The UNICO System air handlers can be installed horizontally or vertically for maximum flexibility.

Smaller Main Air Plenum

At typical 10" and 7" sizes, UNICO main air plenums are 66% smaller than conventional supply trunks. UNICO fits 12 nominal tons in the same built space that a 3 nominal ton conventional system requires. UNICO not only provides greater comfort, but more available built space for the end user.

Outdoor Unit

The UNICO System can be paired with single or multi-stage refrigerant based outdoor condensing units, air-to-water heat pumps, geothermal heat pump systems, or chilled water units.

Methods of Heating

The UNICO System can provide heat via heat pump coils, hot water coils, or the UNICO supplemental furnace. UNICO is also a perfect compliment to radiant heating.

Subtle, Blend-In Outlets

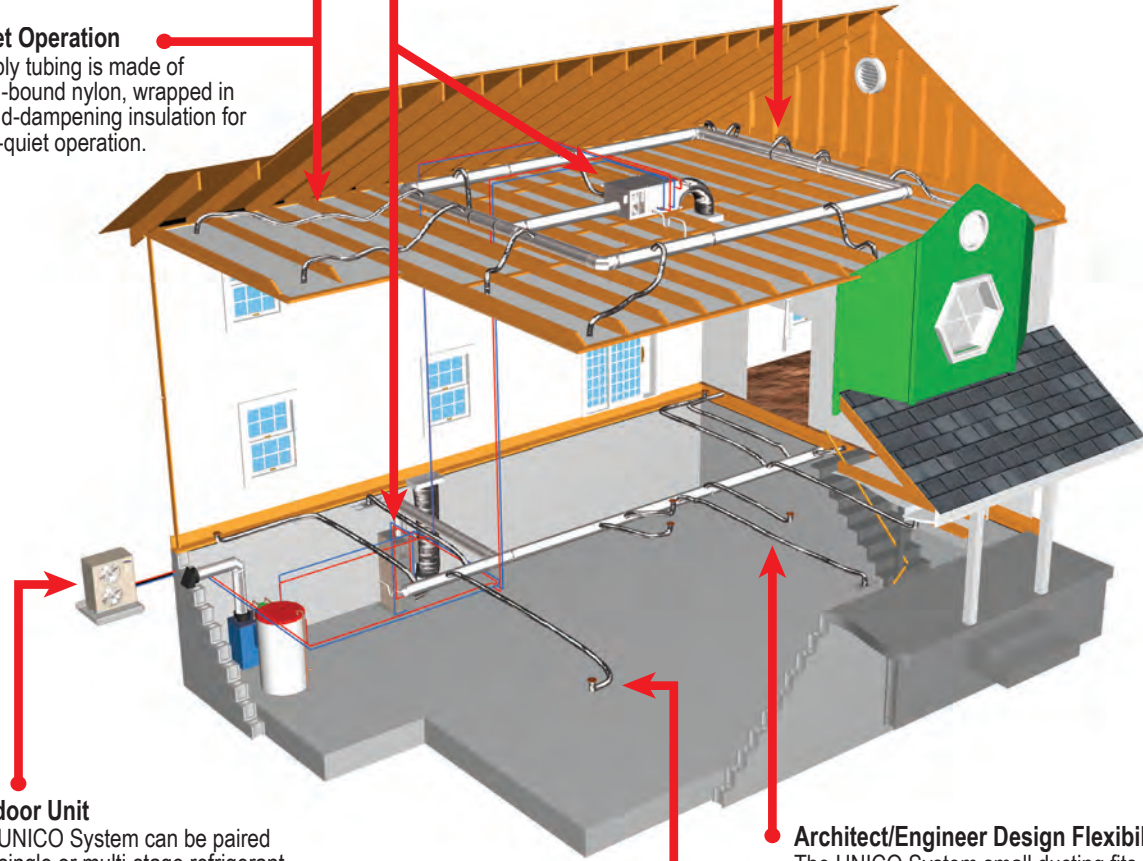
No big, ugly metal vents. Our outlets are round or slotted, and with dozens of standard finishes – plus available custom finishes – they will fit any décor. Install in ceiling, floors or sidewalls.

Architect/Engineer Design Flexibility

The UNICO System small ducting fits in wall and ceilings – no need for soffits. In basements, the plenum is no taller than the main support beam. In many cases, The UNICO System eliminates room build-outs for fan coils and ducting.

Free Design Services

UNICO provides free design services for architects, engineers, builders, installers and homeowners. All we ask is that you provide a heat gain/heat loss calculation and we'll provide a complete system design. In addition, UNICO specifications can also be downloaded from www.arcat.com.



Indoor Product Information

Small Duct Central Heating & Air Conditioning



The UNICO SYSTEM can be used to cool or heat homes or buildings that have no ductwork, inadequate ductwork, or little space; or in any application where superior indoor comfort is desired. The UNICO SYSTEM adapts perfectly to any type of residential setting. It also adapts to many commercial and industrial applications.



UNICO, Inc.

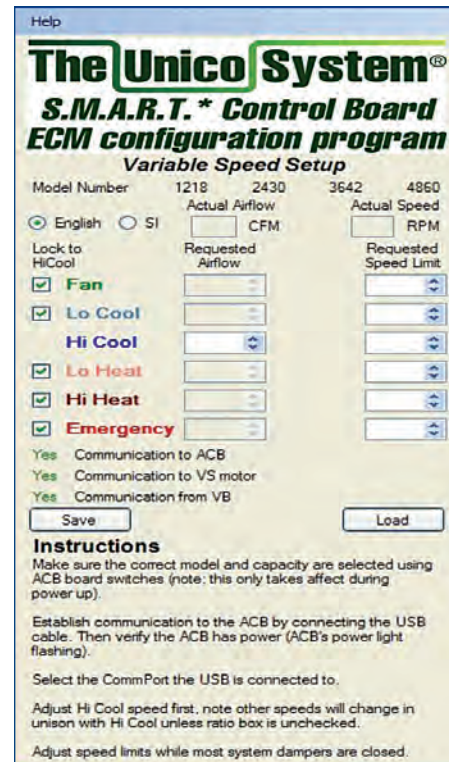
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October 1, 2012

UNICO, Inc.



With the new EC motor and SCB (S.M.A.R.T. Control Board) you have a high performance air distribution system that is a step above the SDHV industry standard. Our advanced software gives you unrivaled control of the EC motor, resulting in a constant CFM across a wide range of operating conditions. When compared to the industry, most EC motors are factory programmed for specific airflow and do not allow changes which limits your ability to provide a customized heating and cooling solution.

Features

- Precise airflow control
- Several pre-set options to choose from
- Customizable in six different modes of operation, from minimum and maximum CFM to maximum motor RPM
- Connect to a laptop or notebook to adjust the program through a USB cable
- Dedicated UNICO web page to download software
- Addition of Low Heat setting which was not available with the ACB

Motor and Control Options

The new Green Series EC motor is the heart of the new air handler series. The variable-speed fan motor adjusts speed to provide a consistent flow of comfortable conditioned air with quiet operation. It features advanced design characteristics for maximum efficiency, comfort, and reliability. Key features of the new motor are:

- At low speeds the new EC motor is up to two decibels quieter
- The new EC motor is 42% more energy efficient at full speed and 62% more efficient at low speed than our current PSC motor
- Can be used to upgrade existing air handlers manufactured after 2003

The new S.M.A.R.T. Control Board is the brains of the new air handler series. Combined with the EC motor it provides the highest level of Indoor Comfort that a homeowner demands.

Features of the SCB are:

- The ability to manage both airflow and motor speed according to the needs of the thermostat and or zoning needs.
- Two options to set airflow
 1. Programmable via a laptop by ordinary USB cable, or
 2. On board, switch selectable pre-programmed settings
- Diagnostic feedback
- An enhanced soft start and soft stop



Countermen and Inside Salespeople Training

This class covers the basics of how aspiration works, what are the parts that make up a UNICO System, basic questions to ask of their contractor and how to obtain additional help as needed. Time required: 45 minutes to an hour depending on interruptions. Equipment is not needed.

Introduction to UNICO

A shortened version of the all day class, primarily geared to contractors, this class may or may not require equipment that is the choice of the end user. We do not get into as much detail as the all day class on rules, examples and parts. Class is approximately two hours. Equipment is optional.

Outside Salesmen Training

(primarily for Wholesaler's Salesmen)

This covers the basics of UNICO, parts, pieces and rules. Identifies target characteristics for good UNICO contractor prospects as well as identifying end users. Class is approximately two hours in length. Equipment is not needed.

Sales Class for Contractors (NEW)

This assists the contractors to: Identify markets and ask the right questions of the end user, how to lay out and quote a UNICO system and how they can help to close the sale. We would also give tips and tricks our contractors have developed over the years. Class is approximately 1½ hours long. Equipment is not needed.

Single Day Hands-On Class

This is an all day class with a break for lunch. This class will cover the following:

- Basics of UNICO
- Parts and pieces that make up a UNICO System
- Rules of installation
- Break for lunch
- How to layout a UNICO System
(New for this year, incorporates the Wrightsoft demo program)
Not performed yet
- Applications
- Applications and Examples of UNICO
- Residential Retrofit

- Residential New Construction

- Light Commercial

- Spot Cooling

(Saved for the end, as it breaks a lot of rules on UNICO)

Assembly and testing of a two ton system This is a "hands-on" effort that requires the full participation of the class. We will see the consequences of what happens when rules are not applied.

Contractor Product Training

Contractor Product Training (CPT) includes lectures and extensive hands-on training. Emphasis on the new Green Series and S.M.A.R.T. control board will be a main part of this class. Lunch is included each day and the class will cover the following:

Day 1:

- Comparison, SDHV vs. Conventional, diffusion/throw/return vs. aspiration
- SDHV Principles of Operations
- System components, features and applications
- Duct design
- Plenum design
- System installation
- Balance, start and test, and troubleshooting

Day 2

- Chiller applications (benefits and load diversification)
- Components, performance, sizing and allowing for glycol
- Piping
- Start and testing
- Zoning basics for THE UNICO SYSTEM
- New electronic control module and installation



Installation Guide

This instruction is a summary of the basic rules and applies to most applications. For applications outside the scope of this guide refer to the detailed design rules in the UNICO catalog.

Duct Layout

Outlets

- **Minimum 6 - 2" outlet, Minimum 5 - 2.5" Per Ton (3.5 kW).** For refrigerant cooling applications the airflow must be between 200 and 250 CFM per nominal ton [27 to 33 L/s per nominal cooling kW]. For hot water or chilled water systems, refer to performance charts to determine the required airflow. The allowable airflow range per outlet is 20 to 40 CFM [9.4 and 19 L/s], where the typical outlet will deliver 35 CFM [17 L/s] if the plenum static pressure is 1.5 inches [0.37 kPa] and the branch duct length is 10-foot (3 meter) without any balancing orifices. Therefore, the average project will require about 6 2" outlets per nominal ton [6 outlets per 3.5 kW] although more will be needed if the branch ducts are longer, balancing orifices are used, the plenum static pressure is less than 1.5 inches of water [0.37 kPa], or it is desirable to make the system as quiet as possible. For example, two runs with 50% balancing orifices are equal to one branch run without any orifices.

- **10% Rule.** For supply ducts longer than 10 feet (3 meter), the air is reduced in that run by 10% for every 5 feet over 10 (every 1.5 meter over 3 meters). For example, a 30 foot [9 meter] run is 60% of an outlet that is 10 foot [3 m] yielding a reduction of 40% (30-10=20, 20÷5=4, 4×10=40%).

- **Consider Traffic Pattern.** Place outlets out of traffic pattern. A corner, 5-inch [127 mm] from each wall, is a good location, or along walls, or in soffits blowing horizontally. Consider floor outlets (with screens) for units located in basement. Slotted outlets can be used for high wall locations or in ceilings where there is insufficient room for bending tubing.

- **Allow for Aspiration.** Locate outlets so the air stream does not impinge on any objects or people – at least 3 feet [1 m] away. Use outlet deflectors and outlet balancing orifices sparingly as they disrupt the aspiration.

- **Minimize Length, Minimize Restriction.** Keep the supply duct length as close to 10 feet [3 m] as possible and never less than 6 feet [1.8 meters]. Use the fewest number of bends as possible. Maximize the radius of any bends making sure the bend in the sound attenuator tubing near the outlet is at least 6-inch [152 mm].

Plenum

- **Maximize Length, Minimize Restriction.** Run main trunk (plenum) as long as possible; it is better to lengthen the plenum if you can shorten even two outlet runs. Use full flow tees with turning vanes (when applicable) and full flow elbows. The maximum total plenum length is 150 ft [45 m]; consider the first tee equal to 30 ft [9 m] and elbows equal to 15 ft [4.6 m].

- **60/40 Rule.** When using a tee split the flow as close to 50/50 as possible – no more than 60/40. Always use a turning vane.

- **70/30 Rule.** Turn the tee 90° to make a side branch with no more than 30 percent of the air. Do not use a turning vane

- **Horseshoe Patterns. (Best Method).** Use a tee at least 24 inches [610 mm] off the unit. For the 4860 unit, use 10-inch [254 mm] metal up to and including tee; then use 9-inch [229 mm] in both directions. For the 3642 unit, use 9-inch [229 mm] insulated metal up to and including tee; then use 7-inch [178 mm] in both directions. If possible, close the horseshoe into a perimeter loop.

- **Shotgun Pattern.** For the 4860 unit, use 10-inch [254 mm] insulated metal or fiberglass duct for the first 30 percent; then reduce to 9-inch [229 mm] if desired. For the 3642 unit, use 9-inch [229 mm] insulated metal or fiberglass duct for the first 40 percent; then reduce to 7-inch [178 mm] if desired. For the 2430 unit, 7-inch [178 mm] may be run the entire length.

- **24-inch (610 mm) Rule.** Use at least 24-inch [610 mm] of straight plenum before any fitting, such as an elbow, tee, or takeoff. Electric duct heaters require 48 inches [1.2 m]. Avoid elbows directly off units.

- **Space Takeoffs Evenly.** Maintain distance between takeoffs as evenly as possible. Space the takeoffs at least 6-inch [152 mm] apart and 12-inch [305 mm] from end cap.

Sound

- **Sound Attenuators.** Always use at least 3 feet [1 m] of the UNICO supplied sound attenuator supply tubing (UPC-26C or 226C) at the end of each run. For runs up to 12 feet [3658 mm], you may use the sound attenuator for the entire run. For greater lengths, use the aluminum core supply tubing (UPC-25 or 225) with a 3 foot [1 m] sound attenuator at the end.

- **Return Air Duct Attenuation.** Use the UNICO Return Air Duct (UPC-04), duct-board, or sheet metal with acoustical duct liner. Never use flex duct with a solid plastic liner in place of UPC-04.

- **Isolation.** Isolate the air handler with foam rubber strips under the unit. Either hang the unit from the structure using angle iron framework under unit (do not hang directly with hooks in the cabinet) or set on a platform.

Piping

- **Secondary Drain Pan.** Always use a secondary drain pan wherever overflow of condensate can cause water damage. Do not trap secondary drain line or connect to primary drainpipe. Place secondary drain line exit so that it is apparent when being used. For example, pipe the drain line so it drips on an outdoor windowsill and causes splashing to be noticed.

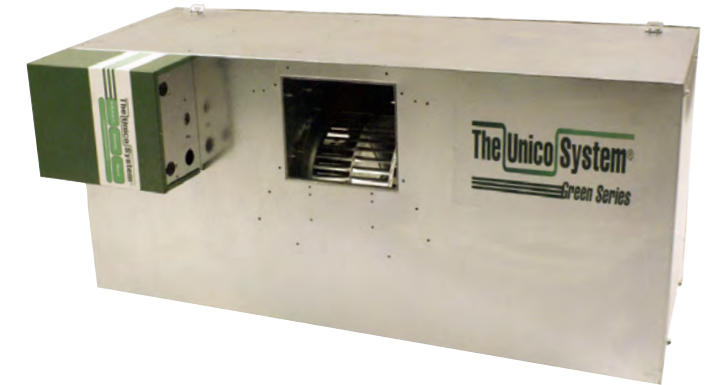
- **Primary Drain.** Always trap primary drain line and run drain line per local plumbing codes.

- **Refrigerant Lines.** Follow the outdoor section of manufacturer's instructions for running refrigerant lines. Size and trap per the instructions.

- **Check Total System Airflow.** Check the airflow at each outlet with a Turbometer centered over the outlet. Add up the cfm for all outlets – it should not differ by +/- 5% from the design airflow.

M Series Blower Module

The UNICO System modular blowers are designed for use with the UNICO System small-duct high velocity (SDHV) system. The blowers exceed the U.S. Department of Energy requirements for SDHV systems requiring a minimum external static pressure of 1.2 inches of water (298 Pa) at the rated airflow when installed with the compatible UNICO cooling module.



Typical Blower Module with Smart Control Board

Motor and Control Options

- **STD (standard model)** – is the most economical and readily available. It includes a single-speed motor with a variable speed controller to adjust the low air speed delivery.

- **S.M.A.R.T. Control Board** – is part of the UNICO Green Series. This control box includes a super efficient variable speed EC motor with the UNICO SCB. The airflow is completely configurable using a PC.



SCB



STD

Features and Controls

Control Box Configuration	SCB	STD
Balanced wheels	✓	✓
Direct drive motor	✓	✓
Shaft key connection	✓	✓
Quick motor replacement (QMR)	✓	✓
Separate control box	✓	✓
Control voltage transformer	✓	✓
Screw terminal connections	✓	✓
Heat pump AFS bypass	✓	**
Boiler relay	✓	
Number of modes of operation	6	2
Adjustable low airflow mode	✓	✓
Efficient ventilation mode	✓	
Adjustable restrictor plate		✓
Point-to-point wiring	✓	
Electric heater fan interlock	✓	
Electric heater stage 3 lockout protection	✓	
Chilled water relay	✓	
Air cycle feature	✓	
EAC, HRV, or ERV relay	✓	
Potable water circulation	✓	
Humidifier compatibility	✓	
UniChiller Leader/Follower control	✓	
Soft-start and Soft-stop	✓	
Constant airflow	✓	
Low airflow indicator	✓	
Preset airflow settings	✓	
Laptop configurable	✓	
Laptop troubleshooting	✓	
Optimized for zone damper systems	✓	
Optimized for efficiency and sound	✓	

** With separate relay included in cooling module

Model No.	2430	3036	3642	4860
Electrical Characteristics*	208–230Volts / 60 / 1 phase	208–230Volts / 60 / 1 phase	208–230Volts / 60 / 1 phase	208–230Volts / 60 / 1 phase
Motor Size, HP (kW)	1/2 (0.37)	1 (0.75)	1 (0.75)	1 (0.75)
Motor Type	-STD,	PSC	PSC	PSC
	-SCB	EC (variable speed)	EC (variable speed)	EC (variable speed)
Motor Speed, RPM	1700	1700	1700	1700
*Nominal Air Flow Rate, CFM (L/s)	-STD	600 (283)	800 (377)	900 (425)
	-SCB	400-1800	400-1800	400-1800
*Plenum Static Pressure, in. water (Pa)	1.5 (373)	1.5 (373)	1.5 (373)	1.5 (373)
Minimum Plenum Size, ID, inch (mm)	7 (178)	7 (178)	9 (229)	10 (254)
Dimensions (H x W x D)	17.5 x 25 x 13.75	17.5 x 30 x 13.75	17.5 x 38 x 13.75	17.5 x 38 x 13.75

*SCB is also available in 110 Volt / 60 / 1 phase

M Series Coil Module

Hot Water and Chilled Water Refrigerant/Coils for R-407C/R-410A/R22

UNICO System designed and built evaporator coil modules can be easily installed with the matching UNICO System blower modules. See coil/blower match-up table below. The evaporator can be matched to most types of remote condensing units or heat pumps. See ARI directory or call factory for capacities and ratings.

Features

- Unobstructed face area for better heat transfer and airflow
- Easily accessible and replaceable TX Valve
- Compatible with 407C/410A and R22 refrigerants
- Standard UNICO System 'latch' system

The coil is pressure tested and then factory leak tested. The drain pan is constructed of stainless steel for maximum corrosion protection with a 3/4" (19 mm) FPT drain connection. All refrigerant lines are sweat connections extending on the outside of the cabinet.

Applications

The UNICO System designed and built chilled water coil modules can be easily installed with the matching UNICO System blower modules (refer to table below). The chilled water coil module can be used for zone cooling in a central chiller system or in combination with a residential chilled water unit. For large applications, multiple systems can be installed to cool more than one zone. Capacities range from 15,400 BTU/hr to 52,400 BTU/hr (4.5 to 15kW) for cooling and 19,200 BTU/hr – 127,900 BTU/hr (56 to 37.5 kW) for heating. For smaller applications use the M1218 unit (See Bulletin 30-10). The chilled water coil module is compatible with ground source chillers for geothermal applications.

Construction

The cabinet is constructed of 22 gauge (0.030-in, 0.762-mm) galvanized steel with removable access panels on both sides for ease of service. The cabinet is fully lined with closed cell insulation. The cabinet does not contain fiberglass insulation. Easy snap latches are included for quick field assembly.

UNICO designed coils are constructed of evenly spaced aluminum fins mechanically bonded to copper tubes. The tubes are 3/8" (9mm) diameter. Full fin collars provide the greatest tube-fin contact for excellent heat transfer. All coils are slanted, except the MC4860C or H model, which feature an 'A' coil to provide the maximum amount of heat transfer surface.

Certified to UL Standard 1995 Conforms to CAN/CSA Standard C22.2 NO. 236



UNICO products comply with the European regulations that guarantee the safety of the product.



DX Coil



Hydronic Coil

Refrigerant Cooling Module

"C" Coil Mfr. No.	"H" Coil Mfr. No.	Nominal Tons	Dimensions
M2430CL1-B	M2430CL1-E	2 thru 2 1/2	17.5 x 25 x 13.75
M3036CL1-B	M3036CL1-E	2.5 thru 3	17.5 x 30 x 13.75
M3642CL1-B	M2430CL1-E	3 thru 3 1/2	17.5 x 38 x 13.75
M4860CL1-B	M4860CL1-E	4 thru 5	17.5 x 38 x 24.00

Includes R-410A refrigerant coil and expansion valve

Chilled Water Cooling Module (includes water coil*)

Mfr. No.	Max. Cooling Capacity, BTUH	Dimensions
M2430CL1-C	37,900	17.5 x 25 x 13.75
M3036CL1-C	46,100	17.5 x 30 x 13.75
M3642CL1-C	54,600	17.5 x 38 x 13.75
MC4860CL1-C	69,000	17.5 x 38 x 18.00

* Can be used with hot water for 2-pipe system

Unico Warranty

LIMITED WARRANTY FOR UNICO SYSTEM CENTRAL AIR CONDITIONING AND HEAT PUMP PRODUCTS

A. **ONE YEAR WARRANTY: UNICO, INC.** ("Unico") hereby warrants to consumers ("consumer") that Unico System® central air conditioning and heat pump products ("product") not previously sold to other consumers are free from defects in material or workmanship for a period of one (1) year from the date of original installation. This warranty is in effect only if the product remains at the place of original installation. Unico's obligation under the terms of this limited warranty shall be limited to repairing or replacing, at its option, free of charge f.o.b. its factory at St. Louis, MO any part or parts of the product, excluding air filters, which in Unico's sole judgment are found to be defective; and providing further the said part or parts be returned as provided below within one (1) year from the date of original installation.

B. **The foregoing warranty shall be null and void unless all of the following conditions have been fully satisfied:**

1. The product was properly installed by the installing contractor in accordance with the installation instructions supplied with the product.
2. The product has been properly operated and serviced at all times in strict accordance with all of the applicable provisions of the instructions furnished with the product.
3. The product has been used only for the purposes for which it was designed and has at all times been operated with the proper electrical characteristics.

C. **In order to make a warranty claim, and before Unico shall have any obligation under this warranty to a consumer, the consumer must:**

1. Notify the installer, who in turn should notify the distributor promptly upon discovery of a condition believed to be caused by a defect in manufacture or notify Unico, Inc., 7401 Alabama Avenue, St. Louis, MO 63111, in writing giving full particulars of the claim.
2. Make available for inspection by Unico, or its representative, the product or parts believed to be defective and if requested by Unico, ship the product or parts prepaid to Unico, Inc., 7401 Alabama Avenue, St. Louis, MO 63111. No product or parts are to be shipped to Unico without prior written authorization.
3. The replacement parts will be covered under this warranty only to the extent of the unused portion of the original warranty period.
4. The replacement part only will be provided without charge.

D. **This warranty is limited to the foregoing and does not cover or apply to any of the following:**

1. Product installed or operated outside the United States, Canada, or Puerto Rico, or product removed from the original installation site.
2. Product which was not properly installed by the installing contractor, or the workmanship of such contractor.
3. Product which has not been properly serviced and maintained or has been operated beyond its rated capacity or has been structurally altered.
4. Product which has been in unusual service or for purposes for which it was not designed, or whose performance has been impaired by the addition of unauthorized components.
5. Product which has been damaged or as a result of improper operation (such as inadequate voltage conditions or interruption of electrical service), corrosive atmosphere, floods, lightning, accidents, theft or any conditions beyond the control of Unico.
6. Components not manufactured by Unico.
7. The costs of labor, refrigerant, materials, or other expenses incidental to the repair, removal, installation or replacement of the product or any warranted parts.
8. Product that has been damaged during shipment or installation.

E. THIS WARRANTY IS IN LIEU OF ALL EXPRESSED AND/OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REMEDIES UNDER THIS WARRANTY AS SET FORTH HEREIN ARE AT THE EXCLUSION OF ALL OTHERS (EXCEPT AS TO THE EXTENT THEY ARE REQUIRED BY ANY APPLICABLE LAWS) AND UNICO NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER OBLIGATIONS. IN NO EVENT SHALL UNICO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE NO MATTER HOW ARISING OR FROM ANY CAUSE WHATSOEVER, OR ANY AMOUNTS IN EXCESS OF THE SELLING PRICE OF THE PRODUCT OR ANY PARTS FOUND TO BE DEFECTIVE. UNICO'S OBLIGATIONS TO THE CONSUMER SHALL BE LIMITED TO THOSE OBLIGATIONS SPECIFICALLY PROVIDED FOR IN THIS WARRANTY.

NOTICE TO OWNER: Upon completion of installation this warranty must be filled out by the installer and owner should keep in a safe place for future reference.

Supply Outlets

The UNICO System Supply Outlets are used to terminate and anchor the Supply Duct to a ceiling, floor, or wall and to provide quiet delivery of high velocity air to the conditioned space. The 0.25-inch (6 mm) raised face plate is the only part visible in the room. UNICO round outlets are available in a variety of colors and materials. The standard Supply Outlet (UPC-56B) comes in white plastic.

2.0" and 2.5" Round Outlets

The wood faced outlet (UPC-57) is identical in size to the standard outlet except for the unfinished solid wood face, which can be stained and finished to match your existing floor. The last two spaces (XX) in the part number for the wood outlet designate the wood type. Wood outlet faces are offered in a variety of wood types.

For use in vaulted ceilings, UNICO offers the 2" white UPC-58-1-XX outlet which includes an angled face. This outlet is available with the faceplate angled at either 15° or 25°.

All white outlets can be painted or stained to match any décor. The UPC-56B is available in black, brass, or chrome in addition to the standard white. It is shipped with toggles and screws. Standard installation and outlet kits include the white UPC-56B outlet.

Specifications

Recommended airflow:	2" outlet	30 to 35 CFM (14 to 16.5 l/s)
	2 1/2" outlet	40 CFM
Recommended number of outlets:	2" outlet	6 per nominal ton (1.7 outlets per kW)
	2 1/2" outlet	5 per nominal ton
Outlet material:	30% glass filled Polypropylene UL-94 Rating – HB (UPC-56B/57, UPC-58 base) wood, unfinished (UPC-57 faceplate)	
Size of opening:	2" outlet:	3-3/8" (86-mm)
	2 1/2" outlet:	4" (100-mm) or 4 1/2" (114-mm)



Slotted Outlets for 2" Duct



In addition to the round outlets, UNICO also manufactures rectangular outlets. The rectangular outlets feature a narrow width slot that gives a better appearance in a sidewall installation. There are four (4) different types of slotted outlets.

The UNICO System patented 90° slotted outlets (UPC-66 and UPC-67A) are specially designed to quietly turn the air inside a typical

wood frame stud wall cavity. The 90° outlets are particularly useful where there is insufficient room to provide the minimum sound attenuator bend radius. Other applications for the 90° outlet include placement near the perimeter of a low-pitched roof, and in applications with only a small cavity between a dropped ceiling and the roof.

The UPC-66 is made of cast aluminum and is designed for commercial applications that prohibit the use of plastic ducting. Most applications will use the UPC-67A which is identical to the UPC-66 but made of plastic and intended for residential use. Use of the UPC-66 or UPC-67A will depend on local code requirements. The UNICO System straight slotted outlet (UPC-68) with its patent pending contour shape is designed for use where placement of the standard round outlet is not practical. The straight slotted outlets are particularly useful where there is insufficient room for a round outlet at the desired termination point. A typical application for the straight slotted outlet would be placement in a cabinet soffit. The UPC-68 is made of plastic and is intended for residential use. Both the 90° and straight slotted outlets may also be used as ceiling outlets.

Specifications

Recommended airflow:	15 to 35 CFM
Recommended number of outlets:	6 per nominal ton
Slotted outlet material:	Aluminum, cast (UPC-66) plastic, HDPE, black (UPC-67A/68) UL-94 Rating - HB
Trim plate material:	Plastic, ABS, white, paintable

Firestop, Duct Outlet for 2" Duct, 1-hour, UL-555C*

Designed for floor, ceiling, or wall applications where the supply outlets are located in a 1-hour or less F-rated structure. The firestop is designed for static conditions, meaning that the fire suppression system should turn off the air flow in the event of a fire.

It is dimensionally identical to the standard UNICO round outlet (UPC-56B) and should be installed in the same manner as all other UNICO round outlets.

Part Number:	UPC-56FR – X (X = Quantity in box) Listed Duct Outlet, 1-hour F-Rating per UL 555C
Package Contents:	Firestop (White), 2 Toggles and Screws per outlet, Instruction sheet

*Patent Pending

U1218 Fan Coil Unit

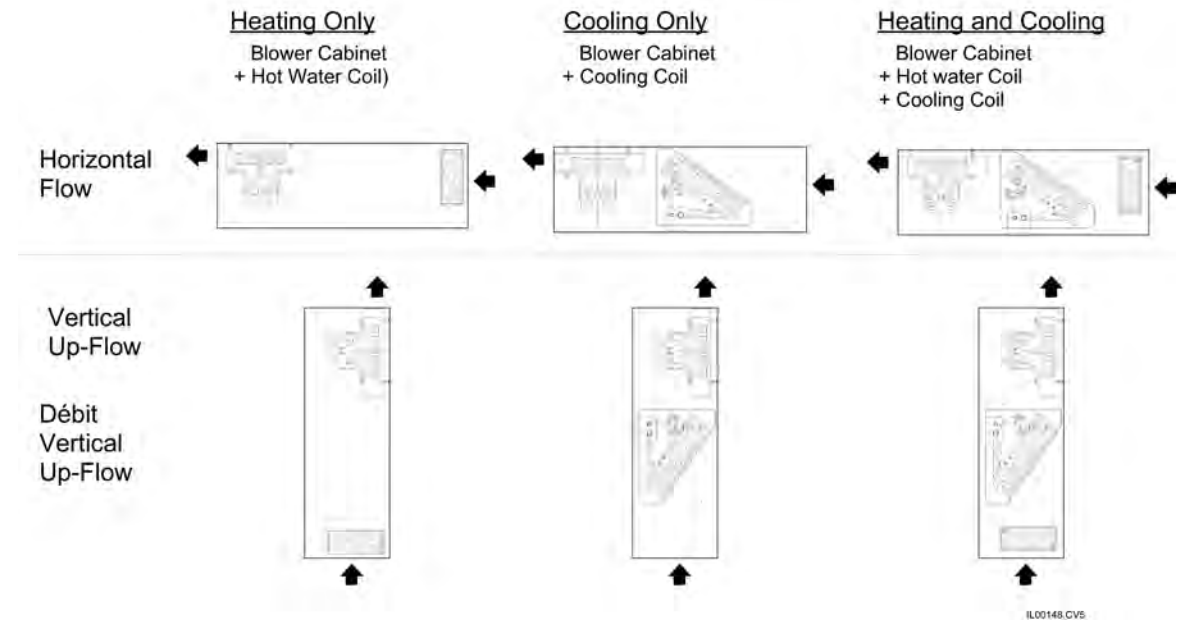
The UNICO System patented* 1218 Air Handler is designed for use with the UNICO System small-duct high velocity (SDHV) system. The blowers exceed the U.S. Department of Energy requirements for SDHV systems requiring a minimum external static pressure of 1.2 inches of water (298 Pa) at the rated airflow when installed with the compatible UNICO cooling module.



Model No.	1218	
Electrical Characteristics	208 – 230 Volts / 60 / 1 phase)	
Motor Size, HP (kW)	1/3 (0.25)	
Motor Type	-STD,	PSC (single speed)
	-SCB	EC (variable speed)
Motor Speed, RPM	-STD	1700
	-SCB	400/1800
*Nominal Air Flow Rate, CFM (L/s)	450 (0.212)	
*Plenum Static Pressure, in. water (Pa)	1.5 (373)	
Minimum Plenum Size, ID, inch (mm)	7 (178)	
Dimensions (H x W x D)	12 H x 20 W x 38 L	

Motor and Control Options

- **SCB (S.M.A.R.T. Control Board)** – is part of the UNICO Green Series. This control box includes a super efficient variable speed EC motor with the UNICO SCB (S.M.A.R.T. control board). The airflow is completely configurable using a PC.
- **STD (standard model)** – is the most economical and readily available. It includes a 3 speed motor.



Vertical Plenum (MV) Module

All UNICO System modular air handlers are shipped from the factory configured for horizontal airflow but may be also configured for vertical up-flow with the addition of a vertical conversion kit. Most applications designed for vertical configuration use a base plenum to elevate the unit for proper condensate drainage. The UNICO System MV module eliminates the need for the installer to build a base.

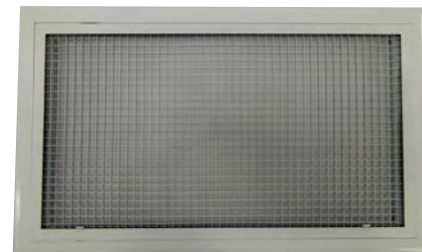
Features and Scope

The MV module features a built in secondary drain pan with a 3/4" PVC socket connection, pleated filter, and place for an optional hot water coil. The MV module features access panels on both sides so that the heating coil may be inserted from either side.

The module may be connected to a heating module return adapter, UPC-104, or operate as a free or "wild" return. If the air is filtered elsewhere, such as at a filter grille, then the central filter in the MV may be removed.

Return Grille & Filter

Includes throwaway filter, two duct bands, and clips. Rough-in dimensions are shown.



Return Grille

P/N	Duct Diameter	Dimensions		Filter Size
		A	B	
UPC-01-1218	12 (300)	20.25 (514)	14.25 (362)	14 x 20 (350 x 500)
UPC-01-2430	14 (350)	25.25 (631)	14.25 (362)	14 x 25 (350 x 625)
UPC-01-3642	18 (450)	30.25 (756)	14.25 (362)	14 x 30 (350 x 750)
UPC-01-3036	18 (450)	30.25 (756)	24.25 (594)	24 x 30 (610 x 750)
UPC-01-4860	20 (508)	30.25 (756)	24.25 (594)	24 x 30 (610 x 750)
UPC-01-4860NC	20 (508)	30.25 (756)	20.25 (514)	20 x 30 (500 x 750)

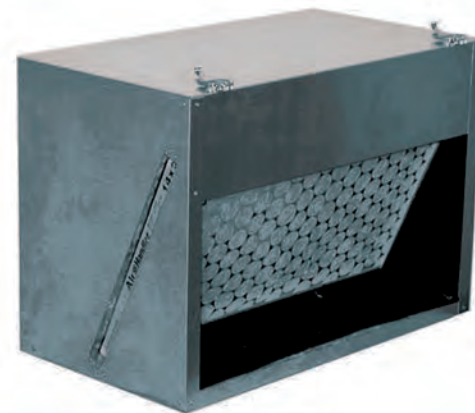
Return Air Plenum Module

Application

The UNICO System designed and built Return Air Plenum (RAP) is easily installed with the matching UNICO System modular air-handling units. The RAP is designed specifically for multiple return duct systems. The plenum comes without any return openings so the installer can cut whatever openings are necessary for any number of return ducts. The top and all three sides of the RAP can be used for return air connections. Plus, it includes a centrally located filter accessible from either side of the cabinet.

The RAP is also ideal for bringing in outside air and combining it with return air, effectively changing the RAP into a mixing box.

Return ducts can be any material so long as the duct is insulated, has acoustical properties, and is the correct size.



Model	Dimensions	Filter Size
M2430R1	17.5 x 25 x 13.75	14 x 25 (356 x 635)
M3036R	17.5 x 38 x 13.75	30 x 17 (762 x 432)
M3642R1	17.5 x 30 x 13.75	14 x 38 (356 x 965)

Electric Furnace



The electric furnaces are designed to provide primary heating or auxiliary heating in a heat pump system. The model numbers, kW, and UNICO System match-ups are shown in the table below:

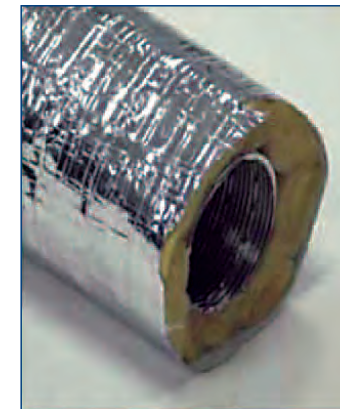
Features

- Galvanized insulated sheet metal cabinet enclosure
- Can be converted to a duct heater
- Magnetic de-energizing contactors for each element
- Line level auto limit primary safety set @ 165°F (74°C)
- Line level fuse link back-up safety
- Fan interlock control, fan signal proving switch
- Low air flow pressure switch
- Circuit breakers on all units
- Time delay sequencers for a gradual "stepped" power draw (softer start)
- Low voltage terminal strip (24 volt control)
- Specially designed tight cabinet for small duct, high velocity systems
- Single Supply (all units) or dual supply (15 and 20kW)

Electric Furnaces

Model Number	Nominal kW Rating	UNICO System Match-up	L Inch
WON0202-B	2	All sizes	13
WON0502-B	5	All sizes	13
WON0504-B	5	All sizes	21
WON0752-B	7.5	All sizes	16
WON0754-B	7.5	All sizes	21
WON1002-B	10	2430, 3642, and 4860	16
WON1004-B	10	2430, 3642, and 4860	21
WON1502-B	15	2430, 3642, and 4860	21
WON1504-B	15	2430, 3642, and 4860	21
WON2002-B	20	3642, 4860	24

Supply & Sound Attenuator Duct



The aluminum supply tubing and sound attenuator is an insulated flexible air duct. The insulation is designed to prevent condensation from forming on the outside of the duct and to minimize thermal losses to the surrounding environment.

Features

The supply and sound attenuator tubing is offered in two diameters with several different choices of insulation thickness. In most cases, the standard supply tubing should be used. However, for extremely cold or humid environments or where the local building code requires a specific R-factor and the duct is installed in an unconditioned space, use the R4, R6, or R8 products. The R4, R6, and R8 ducts have thicker and heavier insulation than the standard model to reduce thermal losses.

Construction

The aluminum supply tubing is supplied in 25-foot (7.7- m) lengths while the sound attenuator tubing is supplied in 12- foot lengths. Both the aluminum and sound attenuator tubing can be cut as needed. As shown in these images, both the standard and R-4 models have 3 components.

The inner layer/core is made of two-ply corrugated aluminum for the supply tubing or spun bound nylon for the sound attenuator. The outer jacket for both models are made of two-ply reinforced reflective mylar; providing a vapor seal to prevent leakage and moisture migration, and increases the insulation factor by reducing the radiant heat transfer. Fiberglass blanket insulation fills the void between the jacket and core of the tube.

The standard and the R-4 duct have one insulation layer and vapor barrier. The R6 and R8 ducts both have two layers of insulation and a double vapor seal for both supply and sound attenuator tubing.