

M1218 Air Handler



Applications

The Unico System is a complete indoor comfort system that includes an indoor fan coil unit and small duct system. The fan coil unit and duct system were designed to operate together to provide the proper airflow in every installation. The conditioned air is supplied through a series of two-inch diameter ducts as a stream of air that entrains and mixes with the room air. This process of aspiration produces a more even temperature distribution in the room than a conventional system.

The Unico M1218 Fan Coil unit is a single packaged unit. The cooling and heating coils are contained within the same cabinet. The unit can be mounted in a vertical-upflow or horizontal-flow configuration. The coils can be combined as a heating-only, cooling-only, or heating and cooling fan coil unit.

For cooling, the M1218 is designed for R-410A refrigerant (both A/C and Heat Pump) or a chilled water coil. For heating, the M1218 offers an optional hot water, or you may use the installed heat pump coil or chilled water coil (using hot water), or you may use an electric heater (WON 0502 or WON 0752).

The M1218 is designed to deliver up to 350 CFM (0.17 m³/s) of air with a static pressure of 1.5 inches of water (373 Pa). The minimum airflow for refrigerant systems is 200 CFM per nominal ton (27 L/s per nominal kW)

Cabinet Construction

The cabinet is fully insulated with closed cell insulation. There is no exposed fiberglass inside the cabinet. The cabinet is constructed of 22 gauge (0.7-mm) galvanized steel with removable access panels on both sides for ease of service. See Dimension drawing.



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CONFORMS TO CAN/CSA STD
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FEATURES AND CONTROLS

The following table shows a comparison of the various features.

Control Box Configuration	STD	ACB	ECx
Balanced wheels	✓	✓	✓
Direct drive motor	✓	✓	✓
Shaft key connection	✓	✓	✓
Recessed control panel	✓	✓	✓
Control voltage transformer	✓	✓	✓
Screw terminal connections	✓	✓	✓
Heat pump AFS bypass	**	✓	✓
Boiler relay		✓	✓
Number of modes of operation	2	2	6
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 reature		✓	✓
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

Balanced wheels – All blower wheels are individually balanced.

Direct drive motor – The wheel is mounted directly to the motor shaft to improve drive efficiency and lower costs.

Shaft key – The wheel is attached to the motor shaft using a square keyway which is more secure than a simple set screws.

Recessed control panel – The control panel is recessed in the cabinet on the connection side. Knockouts are available for incoming power. All control panels include the following features:

Control voltage transformer – a 50VA 24-volt transformer which provides control voltage power to the thermostat, electric heaters, and other optional equipment.

Screw terminal connections – terminal blocks with large screws and wire washers to securely connect the control wires.

Heat pump AFS bypass – removes the anti-frost switch (AFS) from the circuit during heat pump heating mode which eliminates nuisance shutdowns during defrost mode.

Boiler relay (ACB, EC) – The ACB and SCB includes a separate dry-contact relay to turn on the boiler, boiler pump, or hot water coil valve. (The STD control box includes room for a relay to be added.)

Modes of operation – Both the STD and ACB controls allow for high and for low airflow modes. The EC control has 6 modes (FAN-ONLY, LOW-COOL, HIGH-COOL, LOW-HEAT, HIGH-HEAT, and EMERGENCY HEAT). The STD control allows the user to *adjust the low airflow* amount but is not very efficient. The EC control allows adjustability for every mode maintaining high efficiency. The ACB cannot be adjusted but provides *high efficiency ventilation*.

Adjustable restrictor plate (STD, ACB models only) – The patented restrictor plate provides a low cost solution to finely adjust the airflow using a single or two-speed motor. The movable restrictor plate is accessible from the exterior of the front of the unit even with the duct installed.

Point-to-point wiring (ACB and EC) – The control boards have separate terminals for the thermostat, electric heater, outdoor condenser, and other options for easy wiring and troubleshooting.

Electric heater stage 3 lockout (ACB and EC) – The control board includes a lockout feature to prevent the third stage of the electric heater from turning on if the heat pump is also on. This prevents nuisance shutdowns from overheating the electric heater. This feature is available with the STD control box by using an outside thermostat.

Chiller relay (ACB and EC) – The control box includes a separate dry-contact relay (ColdW) to turn on a chiller or zone pump.

Air cycle (ACB and EC) – The control board includes a separate switch to provide periodic cycling of the fan to reduce the chance for water to collect in the ducts if located in a cold space and not used, or to provide periodic fresh air if connected to a fresh air source.

EAC, ERV, or HRV (ACB and EC) – For the optimum in indoor equality, the control board includes a dry-contact relay to turn on an electronic air cleaner, energy recovery ventilator, or heat recovery ventilator any time the fan is on.

Potable water circulation (ACB and EC) – For improved health safety, the control provides a switch selectable feature to turn on the boiler pump periodically if installed

as part of a domestic water system to prevent the formation of stagnant water.

Humidifier compatibility (ACB and EC) – The control board includes the ability to connect a humidistat and a humidifier so that the humidistat turns on the humidifier when needed. The user may choose whether the fan with humidifier operates at high or low HEAT airflow setting.

UniChiller Leader/Follower control (ACB and EC) – The control allows one air handler to be set the UniChiller mode of operation as the ‘Leader’ with all other air handlers dependent (‘Follower’).

Soft-start and soft-stop (ACB and EC) – For quieter operation, the unit will slowly ramp the motor from stop to full speed, and vice versa.

Constant airflow (EC only) – The EC control will deliver the airflow requested without any user adjustments to the duct system, or requiring the user to measure the amperage.

Low airflow indicator (EC only) – The S.M.A.R.T. control board (SCB) includes an indicator light that informs the user that the desired airflow is not being met, usually caused by a restrictive duct system or too few outlets.

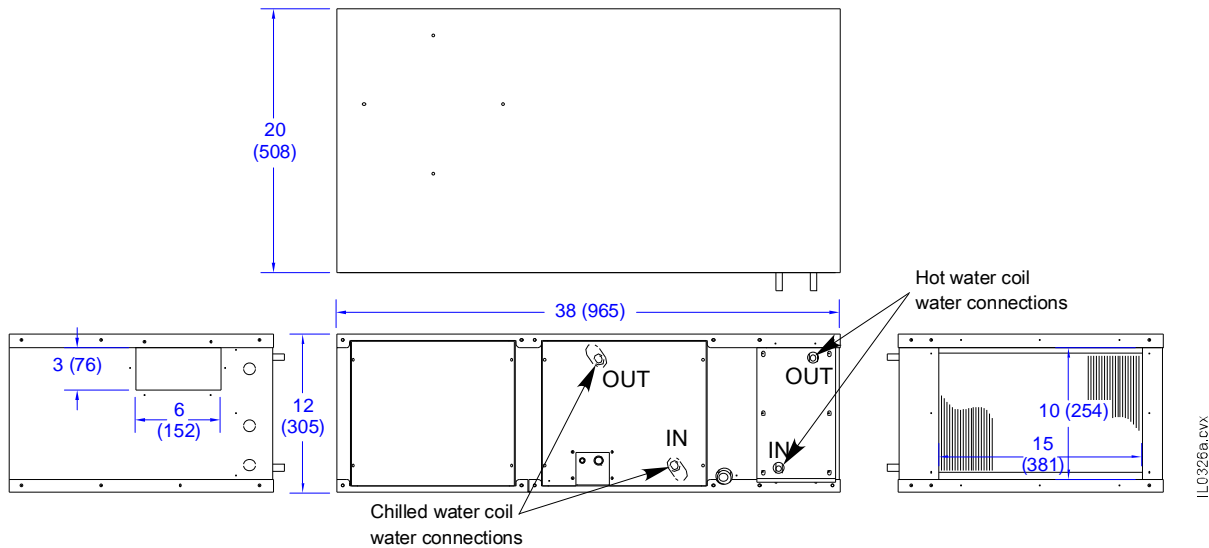
Pre-set air flow rate (EC only) – The SCB is pre-programmed for two different air flow rates for HIGH-COOL that can be selected with a board mounted switch. Each of the six different modes are a fixed percentage of this airflow.

Laptop adjustable (EC only) – The airflow for each mode of operation is adjustable to any value between the blower minimum and maximum using the ECMconfig software (available for download at www.unicosystem.com) and an ordinary USB cable.

Laptop troubleshooting (EC only) – The ECMconfig software will also provide the user with feedback indicating the actual airflow, motor speed, communications between the boards and the motor, and the state of various inputs and outputs.

Optimized for zoning with hydronic systems (EC only) – The ECMconfig software provides an additional feature that allows the user to specify the maximum motor speed so that the motor does not over speed when zone dampers are closed. This prevents the need for bypass loops and pressure switch controls and reduces noise at the outlets caused by the blower trying to maintain a constant airflow with fewer outlets. Setting a maximum airflow to approximate constant static pressure should not be used with a single speed condensing unit. Refer to the Unico Tech Bulletin on zoning for more information.

Optimized for efficiency and sound (EC only) – The EC control will use the lowest motor speed to achieve the required airflow, which minimizes sound and maximizes electrical efficiency.



All dimensions in inches (mm)

Blower Capacity Data – 1 ph / 230V / 60 Hz

Motor Speed	Static Pressure, inches of water (Pa)									
	1.0 (248)		1.25 (310)		1.5 (372)		1.75 (435)		2.0 (496)	
	CFM (m ³ /s)	Amps	CFM (m ³ /s)	Amps	CFM (m ³ /s)	Amps	CFM (m ³ /s)	Amps	CFM (m ³ /s)	Amps
Standard										
High	450 (0.21)	1.82	420 (0.20)	1.73	385 (0.18)	1.65	345 (0.16)	1.56	300 (0.14)	1.44
Medium	400 (0.19)	1.55	372 (0.18)	1.46	340 (0.16)	1.36	300 (0.14)	1.24	226 (0.11)	1.05
Low	350 (0.17)	1.41	325 (0.15)	1.32	295 (0.14)	1.22	245 (0.12)	1.06	—	—
Two-Speed										
High	465 (0.22)	1.59	441 (0.21)	1.45	398 (0.19)	1.35	352 (0.17)	1.28	274 (0.13)	1.19
Low	Low-speed airflow is half of rated high speed airflow at 1.0 amp with static pressure less than 0.5 inches of water (125 Pa)									
EC	The EC Motor adjusts RPM to maintain a desired airflow. Refer to page 8 for the performance map.									

Hot Water Coil Performance

Entering Water Temperature °F °C		Water Flow rate GPM (L/s)		Airflow, SCFM (m ³ /s)						WPD ft. water (KPa)	
				200 (0.09)		300 (0.14)		400 (0.19)			
				Capacity MBH (KW)	Capacity MBH (KW)	Capacity MBH (KW)	Capacity MBH (KW)	Capacity MBH (KW)	Capacity MBH (KW)		
120 (48.9)	2 (0.13)	9.9 (2.87)	12.9 (3.74)	15.1 (4.38)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		10.5 (3.05)	14.3 (4.15)	17.4 (5.05)	3.2 (9.57)						
		10.6 (3.07)	14.8 (4.29)	18.2 (5.28)	7.0 (20.93)						
130 (54.4)	2 (0.13)	11.9 (3.45)	15.6 (4.52)	18.2 (5.28)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		12.6 (3.65)	17.3 (5.02)	20.9 (6.06)	3.2 (9.57)						
		12.8 (3.71)	17.8 (5.16)	21.9 (6.35)	6.9 (20.63)						
140 (60)	2 (0.13)	14.0 (4.06)	18.3 (5.31)	21.4 (6.21)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		14.7 (4.26)	20.2 (5.86)	24.5 (7.11)	3.1 (9.27)						
		14.9 (4.32)	20.8 (6.03)	25.7 (7.45)	6.9 (20.63)						
150 (65.5)	2 (0.13)	16.0 (4.79)	21.0 (6.50)	24.6 (7.75)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		16.9 (4.98)	23.2 (7.05)	28.1 (8.75)	3.1 (9.27)						
		17.1 (5.02)	23.9 (7.22)	29.4 (9.10)	6.8 (20.33)						
160 (71.1)	2 (0.13)	18.1 (5.25)	23.7 (6.87)	27.8 (8.06)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		19.0 (5.51)	26.1 (7.57)	31.7 (9.19)	3.1 (9.27)						
		19.2 (5.57)	26.9 (7.80)	33.2 (9.63)	6.8 (20.33)						
170 (76.7)	2 (0.13)	20.1 (5.83)	26.4 (7.66)	31.0 (8.99)	0.8 (2.39)	6	9	12	0.8 (2.39)	3.1 (9.27)	
		21.1 (6.12)	29.1 (8.44)	35.4 (10.27)	3.1 (9.27)						
		21.4 (6.21)	29.9 (8.67)	36.9 (10.70)	6.7 (20.03)						
Minimum Number of Outlets				6		9		12			

Chilled Water Coil Performance (Cooling Mode)

Entering Water Temperature °F °C		Water Flowrate GPM (L/s)		Airflow, SCFM (m ³ /s)						WPD ft. water (KPa)	
				200 (0.09)		300 (0.14)		400 (0.19)			
				Capacity MBH (KW)	SHR	Capacity MBH (KW)	SHR	Capacity MBH (KW)	SHR		
40	(4.4)	2	(0.13)	11.1 (3.25)	0.62	14.1 (4.13)	0.64	16.0 (4.68)	0.67	1.2 (3.60)	
		4	(0.25)	11.9 (3.48)	0.61	15.8 (4.63)	0.62	18.7 (5.47)	0.64	4.6 (13.80)	
		6	(0.38)	12.5 (3.66)	0.60	17.2 (5.04)	0.61	20.9 (6.11)	0.62	9.9 (29.70)	
45	(7.2)	2	(0.13)	8.6 (2.52)	0.66	10.7 (3.14)	0.71	12.2 (3.58)	0.75	1.1 (3.30)	
		4	(0.25)	10.1 (2.96)	0.63	13.3 (3.90)	0.65	15.7 (4.61)	0.68	4.5 (13.50)	
		6	(0.38)	10.6 (3.11)	0.62	14.5 (4.25)	0.64	17.5 (5.14)	0.65	9.9 (29.70)	
50	(10.0)	2	(0.13)	6.9 (2.02)	0.72	8.7 (2.55)	0.78	10.1 (2.96)	0.82	1.1 (3.30)	
		4	(0.25)	8.1 (2.37)	0.68	10.7 (3.14)	0.71	12.7 (3.72)	0.74	4.5 (13.50)	
		6	(0.38)	8.5 (2.49)	0.67	11.6 (3.40)	0.69	14.0 (4.09)	0.71	9.8 (29.40)	
55	(12.8)	2	(0.13)	5.3 (1.55)	0.83	6.9 (2.02)	0.88	8.2 (2.40)	0.92	1.1 (3.30)	
		4	(0.25)	6.0 (1.75)	0.77	8.0 (2.34)	0.81	9.7 (2.84)	0.85	4.5 (13.50)	
		6	(0.38)	6.3 (1.84)	0.76	8.6 (2.52)	0.79	10.5 (3.07)	0.82	9.7 (29.10)	
Minimum Number of Outlets				6		9		12			

*Entering Air Temperature 80°F (26.7°C) dry bulb / 67°F (19.4°C) wet bulb

Entering Water Temperature °F °C		Water Flowrate GPM (L/s)		Airflow, SCFM (m ³ /s)						WPD ft. water (KPa)	
				200 (0.09)		300 (0.14)		400 (0.19)			
				Capacity MBH (KW)	SHR	Capacity MBH (KW)	SHR	Capacity MBH (KW)	SHR		
40	(4.4)	2	(0.13)	9.1 (2.66)	0.67	11.7 (3.42)	0.70	13.5 (3.95)	0.72	1.2 (3.60)	
		4	(0.25)	9.7 (2.84)	0.66	12.9 (3.77)	0.68	15.3 (4.48)	0.70	4.6 (13.80)	
		6	(0.38)	10.1 (2.95)	0.65	14.0 (4.09)	0.66	17.0 (4.98)	0.68	9.9 (29.70)	
45	(7.2)	2	(0.13)	6.8 (1.99)	0.74	8.6 (2.52)	0.79	10.0 (2.93)	0.82	1.1 (3.30)	
		4	(0.25)	7.9 (2.37)	0.70	10.5 (3.07)	0.73	12.5 (3.66)	0.76	4.5 (13.50)	
		6	(0.38)	8.2 (2.46)	0.69	11.3 (3.30)	0.71	13.7 (4.01)	0.73	9.9 (29.70)	
50	(10.0)	2	(0.13)	5.2 (1.56)	0.83	6.8 (2.00)	0.88	8.1 (2.37)	0.92	1.1 (3.30)	
		4	(0.25)	5.9 (1.73)	0.78	8.0 (2.34)	0.82	9.6 (2.81)	0.85	4.5 (13.50)	
		6	(0.38)	6.2 (1.82)	0.77	8.5 (2.49)	0.79	10.4 (3.04)	0.82	9.8 (29.40)	
55	(12.8)	2	(0.13)	3.7 (1.09)	1.00	5.0 (1.47)	1.00	5.9 (1.73)	1.00	1.1 (3.30)	
		4	(0.25)	4.0 (1.18)	0.96	5.6 (1.65)	1.00	7.0 (2.05)	1.00	4.5 (13.50)	
		6	(0.38)	4.1 (1.21)	0.95	5.8 (1.71)	0.97	7.3 (2.14)	1.00	9.8 (29.40)	
Minimum Number of Outlets				6		9		12			

*Entering Air Temperature 75°F (23.9°C) dry bulb / 63°F (17.2°C) wet bulb

Chilled Water Coil Performance (Heating Mode)

Entering Water Temperature °F °C		Water Flowrate GPM (L/s)		Airflow, SCFM (m ³ /s)						WPD ft. water (KPa)	
				200 (0.09)		300 (0.14)		400 (0.19)			
				Capacity		Capacity		Capacity			
°F	°C	GPM	(L/s)	MBH	(KW)	MBH	(KW)	MBH	(KW)	ft. water	(KPa)
95	(35)	2	(0.13)	4.9	(1.44)	6.7	(1.97)	8.0	(2.35)	1.1	(3.28)
		4	(0.25)	4.9	(1.44)	7.2	(2.12)	9.1	(2.67)	4.3	(12.84)
		6	(0.38)	4.9	(1.44)	7.3	(2.14)	9.3	(2.73)	9.3	(27.75)
110	(43)	2	(0.13)	7.9	(2.30)	10.9	(3.20)	13.1	(3.84)	1.1	(3.28)
		4	(0.25)	7.9	(2.30)	11.6	(3.39)	14.7	(4.30)	4.2	(12.43)
		6	(0.38)	7.9	(2.30)	11.7	(3.41)	14.9	(4.36)	9.2	(27.45)
120	(49)	2	(0.13)	9.8	(2.85)	13.7	(4.01)	16.6	(4.86)	1.1	(3.28)
		4	(0.25)	9.8	(2.85)	14.5	(4.21)	18.4	(5.34)	4.2	(12.43)
		6	(0.38)	9.8	(2.85)	14.6	(4.23)	18.7	(5.41)	9.1	(27.15)
140	(60)	2	(0.13)	13.8	(3.99)	19.4	(5.68)	23.5	(6.88)	1.1	(3.28)
		4	(0.25)	13.8	(3.99)	20.4	(5.92)	25.9	(7.51)	4.1	(12.19)
		6	(0.38)	13.8	(3.99)	20.5	(5.94)	26.4	(7.73)	8.9	(26.55)
160	(71)	2	(0.13)	17.7	(5.14)	25.1	(7.35)	30.4	(8.90)	1.1	(3.28)
		4	(0.25)	17.7	(5.14)	26.3	(7.63)	33.4	(9.70)	4.0	(11.98)
		6	(0.38)	17.7	(5.14)	26.4	(7.65)	34.0	(9.87)	8.7	(25.95)
180	(82)	2	(0.13)	21.8	(6.38)	30.8	(9.02)	37.4	(10.86)	1.1	(3.28)
		4	(0.25)	21.8	(6.38)	32.2	(9.34)	40.8	(11.85)	3.9	(11.60)
		6	(0.38)	21.8	(6.38)	32.3	(9.37)	41.6	(12.08)	8.6	(25.65)
Minimum Number of Outlets				6		9		12			

*Entering Air Temperature 70°F (21°C) dry bulb

WARNING – To prevent injury from high temperatures, do not install floor outlets when operating with water above 160°F.

Engineering Specifications

Unico Part No.

Construction

Dimensions, inch (mm):	12 H x 20 W x 38 L (305H x 508W x 965L)
Shipping weight, lb (kg):	92 (42)
Cabinet Type:	Galvanized
Insulation:	1 inch (25 mm) closed cell vinyl nitrile
Drain pan:	Stainless Steel
Drain pan connection:	1/2 inch FPT
Standard Return Duct ID, in (mm):	12 (305)
Standard Plenum ID, in (mm):	7.0 (178)

Electrical

Type:	PSC (STD & ACB)	1 ph - 60/50 Hz - 208/230V	A00175-G10
	EC (SCB)	1 ph - 60/50 Hz - 100/120V	A00175-G07
		1 ph - 60/50 Hz - 208/230V	A00056-G02
Fan Relay:		Snap acting with inherent time-delay	A00057-G02
Transformer:		50 VA, 230/208V-24V	

Motor

Size, hp (kW):	PSC	1/3 (0.25)	A00331-001 Standard
	EC (variable speed)	½ (0.37)	A00974-001 Two-speed
			A01426-002
Motor Speed, RPM	PSC	1700/1550/1350	
	EC (variable speed)	1800/VAR	
FLA:		1.9 (PSC), 5.6 (EC@120V), 3.2 (EC@230V)	
RLA:		Refer to Amperage Chart	
Bearing Type:		Permanently Lubricated Ball	

Blower Wheel

Airflow, CFM (m ³ /s):	See table	A00137-003
Static Pressure**, in. wc (Pa)	See table	
Type:	SISW Forward Curved	
Nom. Diameter, inch (cm):	9.5 (24)	
Width, inch (cm):	1.5 (3.8)	

Refrigerant Coil (AC or HP option)

Nominal Capacity, tons (kW):	1 to 1.5 (3.5 to 5)	A00326-001
Rated Airflow, CFM (m ³ /s):	400 (0.189)	
Min. Airflow, CFM/ton (m ³ /s•kW):	200 (0.027)	
Refrigerant Type:	R407C, R410A	
Face Area, ft ² (m ²):	1.167 (0.108)	
Number of Rows:	6	
Number of Circuits:	3	
Fin Density, fins/in. (fins/cm):	15 (6)	
Fin Type and pattern, in. (mm):	Corrugated, 1 x 0.625 (25.40 x 15.88)	
Tube Diameter, in (mm):	3/8 (9.53)	
Tube Type:	Rifled	
Expansion Device:	TXV with Bleed Port and Check Valve	A00366-002 (R410A)
Liquid Line Connection OD, in. (mm):	3/8 (9.53)	
Suction Connection OD, in. (mm) :	5/8 (15.88)	

Chilled Water Coil (CW option)

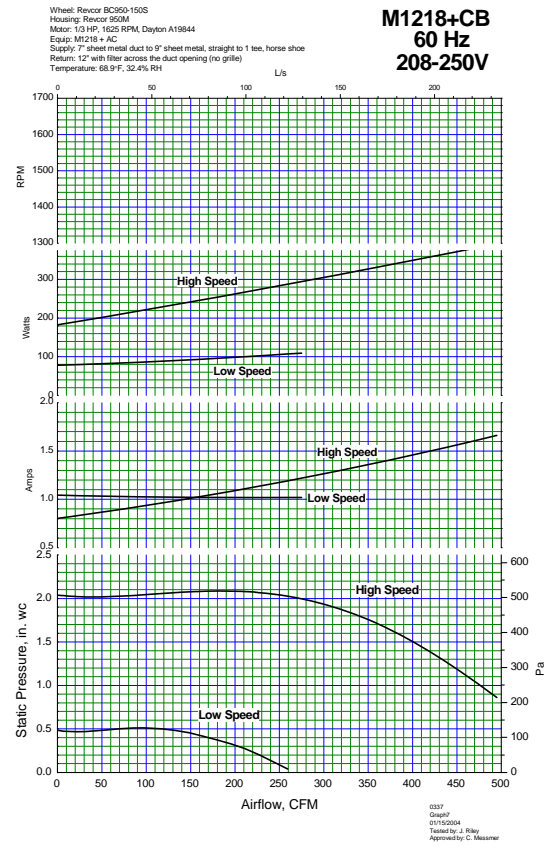
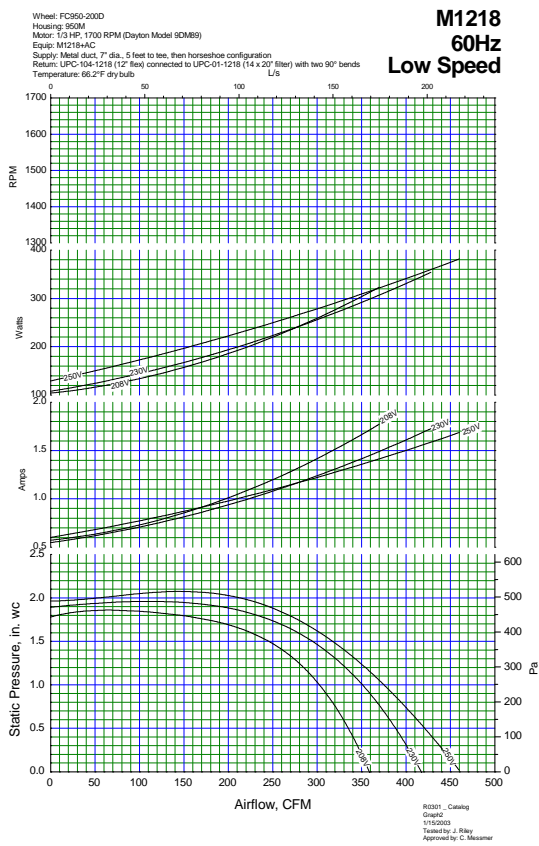
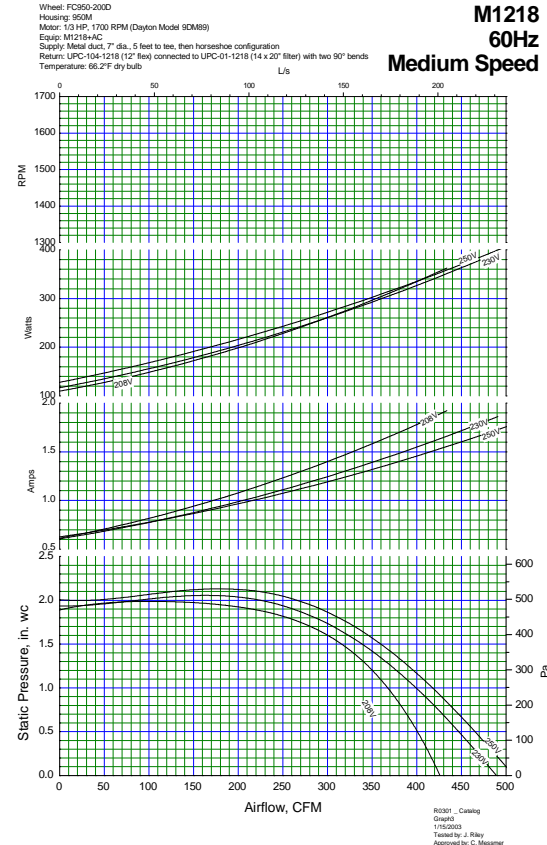
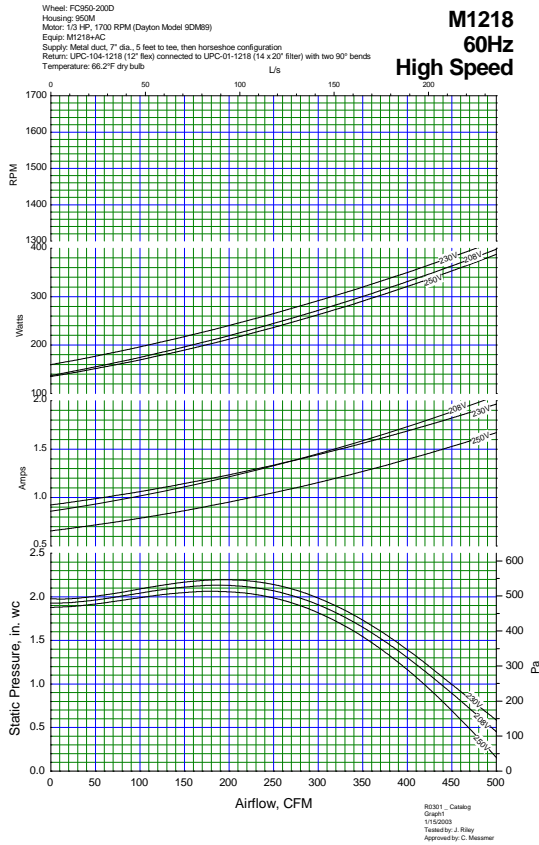
Fluid Type	Water or Glycol-Water Solution	A00397-001
Face Area, ft ² (m ²):	1.167 (0.108)	
Number of Rows:	6	
Number of Circuits:	6	
Fin Density, fins/in. (fins/cm):	15 (6)	
Fin Type and pattern, in. (mm):	Corrugated, 1 x 0.625 (25.40 x 15.88)	
Tube Diameter, in (mm):	3/8 (9.53)	
Connection OD SWT, in (mm):	5/8 (15.87)	

Hot Water Coil (HW option)

Fluid Type	Water or Glycol-Water Solution	HW-1218
Face Area, ft ² (m ²):	1.0 (0.093)	
Number of Rows	4	
Number of Circuits	6	
Fin Density, fins/in. (fins/cm):	10 (4)	
Fin Type and pattern, in. (mm):	Raised Lance, 1 x 0.866 (25.40 x 22.00)	
Tube Diameter, in (mm):	3/8 (9.53)	
Connection OD SWT, in (mm):	5/8 (15.87)	

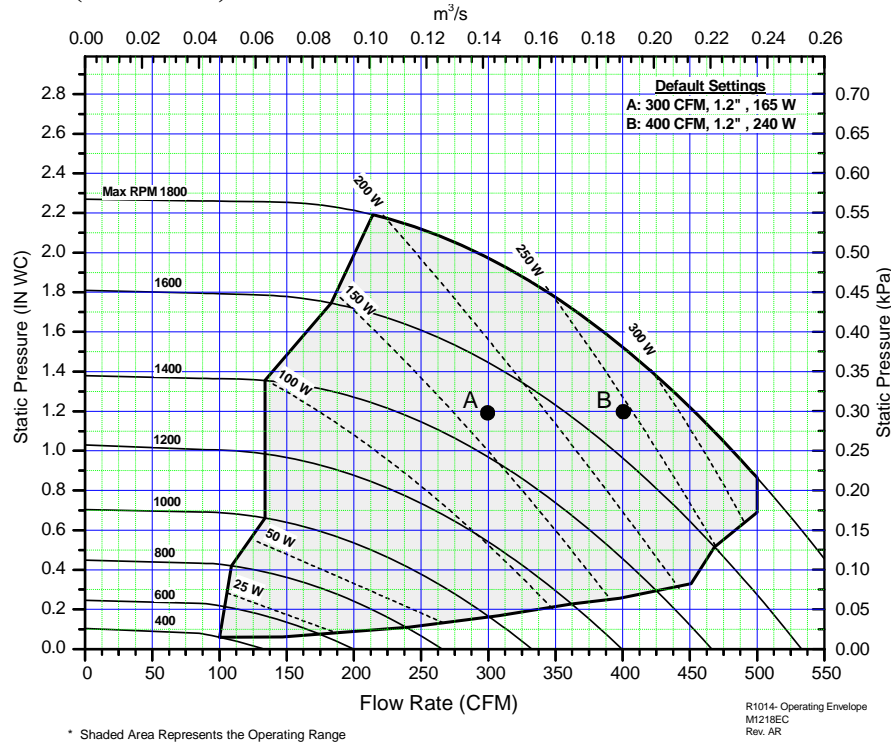
** Static pressure across unit without hot water coil, using 6 inch ID plenum. Motor speed factory default is medium. Static pressure will be greater when using 7 inch ID plenum.

Blower Capacity Data (PSC motors)



Blower Capacity Data (EC motor)

U1218L-1EC1,1EC2



ACOUSTICAL DATA

Sound is always present in our lives and is important to comfort. Understanding how sound is defined is essential to understanding how to design a proper Unico System. Sound is defined as a physical disturbance in pressure that is detectable by the human ear. Sound is usually presented as Sound Pressure Level (SPL) in decibels (dB), but can also be presented as Sound Power Level (SWL). Sound pressure is what you hear so it is the only value that is important to the occupant. However, determining the value is difficult because it is dependent on the surroundings and distance from the sound source. For instance, a carpeted room is much quieter than a room with wood floors.

For the Unico System, it is also important to consider sound transmission losses through ceilings and walls. The blower is never placed in the occupied room so the sound is always less than the published value. This reduction in sound level depends on the construction of the ceiling or wall. For instance, a ceiling structure made of gypsum board with insulation above it will have a much greater sound transmission loss (TL) than a dropped ceiling without insulation.

The data shown in this catalog was measured in a large room with hard surfaces for the walls and floor. It is considered to be the worst case (i.e. loudest) situation. The sound level in the occupied space will always be considerably less than this, depending on where the unit is located. To determine the actual sound level, subtract the TL for the barrier from the sound data of the unit. The table below shows typical TL values for common construction configurations. Subtract these values from the Unico air handler data.

Transmission Loss for Common Construction, dB

Frequency, Hz	125	250	500	1k	2k	4k	R
Sheet Metal, 24 GA	13	17	20	27	34	39	18
Ceiling Tile, mineral fiber	13	21	27	31	35	40	20
Gypsum Frame wall	12	23	31	38	42	37	20
Gypsum Frame wall, insul.	15	30	32	43	46	38	23
Wood Floor, uninsulated	22	28	37	43	46	43	25
Wood Floor, insulated	29	40	51	57	60	58	26
Concrete Block, 190-mm	38	41	43	50	55	61	26
Concrete, 100-mm (4 in.)	41	41	45	52	56	64	26

Ref: *Handbook of Acoustical Measurements and Noise Control*, 1998
 R = Overall Loss for typical Blower Module (based on MB4260H-50HZ)

