

Redefine your comfort zone.™ | www.titus-hvac.com



underfloor air distribution



fire rated



wood grains



energy solutions



S



UNDERFLOOR AIR DISTRIBUTION PRODUCTS

UnderFloor Air Distribution Products	S4
--	----

UNDERFLOOR ROUND PRODUCTS

Underfloor Round Products	S8
TAF-R, TAF-R-FR	S8
Dimensions	S9
Performance Data	S10
TAFR-AA	S11
Dimensions	S12
Options	S13
Performance Data	S14
TAF-G	S16
Dimensions	S17

UNDERFLOOR TAF-L PERIMETER SYSTEM

Underfloor TAF-L Perimeter System	S18
TAF-L-V	S18
Dimensions	S19
TAF-L-W	S20
Dimensions	S21
TAF-L-E	S22
Dimensions	S23
TAF-L-F	S24
Dimensions	S25
TAF-L-R	S27
Dimensions	S28
CT-TAF-L	S29
Dimensions	S30
TAF-L Perimeter System Performance Data	S31

UNDERFLOOR LINEAR PRODUCTS

Underfloor Linear Products	S33
TAF-D	S33
Dimensions	S34
TAF-V	S35
Dimensions	S36
TAF-V Multi-4 Piece Core Option	S37
Dimensions	S38
TAF-HC	S39
Dimensions	S40
Performance Data	S41
CT-TAF-(480, 481, PP0, PP3)	S42
Dimensions	S43

UNDERFLOOR FAN POWERED TERMINAL

Underfloor Fan Powered Terminals	S44
LHK.....	S44
Dimensions.....	S45
Hot Water Coil Section.....	S46
Electric Water Coil Section.....	S46
Additional Accessories (Optional)	S46
Performance Data.....	S47
ALHK, DLHK - Sound Application Data - NC Values.....	S48
ALHK, DLHK - Radiated Sound Power Data.....	S48
ALHK, DLHK - Discharge Sound Power Data.....	S49
AHRI Directory of Certified Performance	S56

UNDERFLOOR FAN BOOSTER TERMINAL

Underfloor Fan Booster Terminals.....	S50
PFC	S50
Dimensions.....	S51
Hot Water Coil Section.....	S52
Electric Water Coil Section.....	S52
Additional Accessories (Optional)	S52
Performance Data.....	S53
DPFC - Sound Application Data - NC Values.....	S55
DPFC - Radiated Sound Power Data	S55
DPFC - Discharge Sound Power Data	S55

ICONS

Icons Key	S58
-----------------	-----

PAGES: S8-S17

underfloor round products



TAF-G

GROMMET

- Allows through-the-floor access for power, data and phone cables
- Constructed of a high impact polymeric material designed to resist damage from traffic
- Can be installed after flooring and carpet installation is complete



TAF-R

PRESSURISED UNDERFLOOR APPLICATIONS

- Available in fire rated polymer construction
- Architecturally appealing face design is available in standard gray or black
- Custom colors available
- Relocation to another area is simply by relocating the floor panel
- 24 VAC integral flow regulator actuator
- RJ-12 connections for easy plug and play installation
- Does not require sheet metal plenum with damper for simpler installation



TAFR-AA

PRESSURISED UNDERFLOOR APPLICATIONS

- Available in fire rated polymer construction
- Architecturally appealing face design is available in standard gray or black
- Custom colors available
- Relocation to another area is simply by relocating the floor panel
- 24 VAC integral flow regulator actuator
- RJ-12 connections for easy plug and play installation
- Does not require sheet metal plenum with damper for simpler installation

PAGES: S18-S32

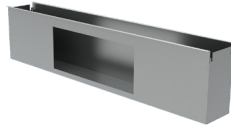
underfloor taf-l perimeter system



TAF-L-E

UNDERFLOOR PERIMETER HEATING APPLICATIONS

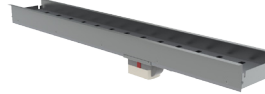
- Designed to be integrated with the CT-TAF-L linear bar grille
- Contains SCR electric fin tube assembly within the plenum
- ETL listed at 120V, 208V, 240V, and 277V



TAF-L-R

UNDERFLOOR PERIMETER RETURN APPLICATIONS

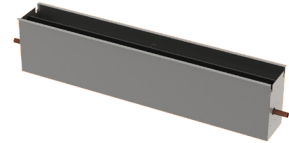
- Designed to be integrated with the CT-TAF-L linear bar grille
- 20" x 8" inlet can be used for ducted or non-ducted applications
- Constructed of galvanized steel



TAF-L-V

UNDERFLOOR PERIMETER SUPPLY APPLICATIONS

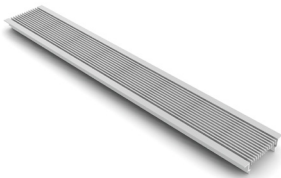
- Designed to be integrated with the CT-TAF-L linear bar grille
- Provides a uniform throw pattern regardless of damper position
- Installs under the CT-TAF-L from the top surface. Removal of the flooring is not required.



TAF-L-W

UNDERFLOOR PERIMETER HEATING APPLICATIONS

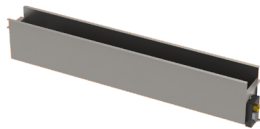
- Designed to be integrated with the CT-TAF-L linear bar grille
- Contains a copper fin tube heater assembly within the plenum
- Installs under the CT-TAF-L from the top surface. Removal of the flooring is not required.



CT-TAF-L

UNDERFLOOR PERIMETER RETURN APPLICATIONS

- Designed to be integrated with all the underfloor plenums
- All deflection bars are fixed and parallel to the long dimension
- Standard finish is #26 white
- CT frame drops into perimeter slot and sits on top of carpeting


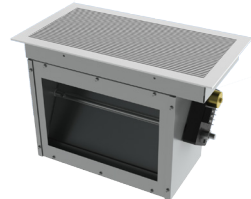
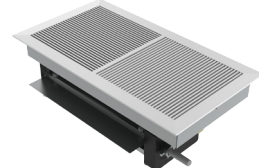
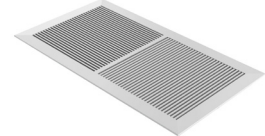


TAF-L-F

UNDERFLOOR PERIMETER RETURN APPLICATIONS

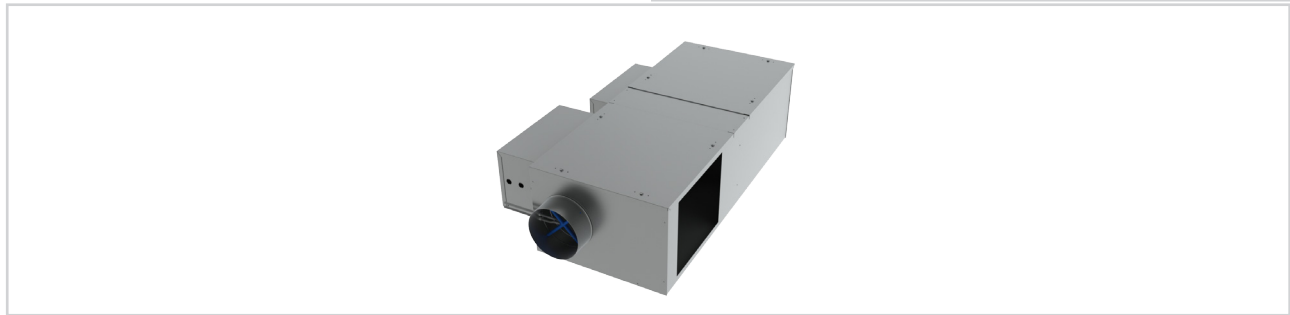
- Designed to be integrated with the CT-TAF-L linear bar grille
- 20" x 8" inlet can be used for ducted or non-ducted applications
- Constructed of galvanized steel

PAGES: S33-S43

underfloor linear products			
			
TAF-D	TAF-HC	TAF-V	CT-TAF
<p>UNDERFLOOR APPLICATIONS</p> <ul style="list-style-type: none"> • Heavy gauge steel plenum • Installs into access flooring from top surface • Utilized for ducted applications 	<p>UNDERFLOOR APPLICATIONS</p> <ul style="list-style-type: none"> • Utilized as a ducted supply or return • Heavy gauge steel plenum • Installs into access flooring from top surface • Integral heating & cooling • Available in multi-core option (2-piece & 4-piece) 	<p>UNDERFLOOR APPLICATIONS</p> <ul style="list-style-type: none"> • Designed for areas with frequent changes in heating loads • Heavy gauge steel plenum • Installs into access flooring from top surface • Available in multi-core option (2-piece & 4-piece) 	<p>UNDERFLOOR APPLICATIONS</p> <ul style="list-style-type: none"> • Designed to be integrated with all the underfloor linear plenums • All deflection bars are fixed and parallel to the long dimension • Standard finish is #26 white • CT frame drops into plenum slot and sits on top of carpeting

PAGES: S44-S59

underfloor fan powered terminals

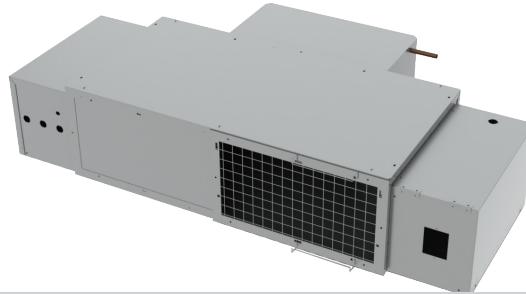


LHK

<p>UNDERFLOOR APPLICATIONS</p> <ul style="list-style-type: none"> • Optional ultra-high efficiency ECM motor available • Top access panels can be removed for service of damper, blower and filter sections • Leak resistant construction • Available with hot water or electric re-heat

PAGES: S50-S55

underfloor fan booster terminals



PFC

UNDERFLOOR APPLICATIONS

- Optional ultra-high efficiency ECM motor available
- Top access to unit high and low voltage controls for easy access from room above
- Single point electrical connections
- Available with hot water or electric re-heat

Underfloor Round Products

underfloor air distribution

TAF-R / TAF-R-FR

- Designed for applications in pressurized underfloor air distribution systems
- Constructed of a high impact, polymeric material, durable enough to resist foot traffic. Exceeds NFPA 90B requirements.
- External Open/Close indicator coupled with the internal Open/Close stop allow visual determination of damper position
- Architecturally appealing face design is available in standard gray or black color. Optional colors may be specified to match any building interior's color scheme.
- The trim ring's extra wide flange is designed to prevent carpet from pulling away from the diffuser
- Relocation to another area is simply by relocating that floor panel. Removal of the diffuser from the access floor panel is not required.
- Diffuser can be installed after flooring and carpet installation are complete
- Simply converts to a TAF-G without moving floor panels or trim and retainer ring
- TAF-R-FR is UL Listed and meets NFPA 90A



TAF-R / TAF-R-FR

- The spring clip attached to the trim ring is designed for rapid & secure press fit without the use of tools



fire rated



energy solutions



See website for Specifications

MODELS:

TAF-R
TAF-R-FR

FINISHES

Standard Finish - #84 Black or light gray
Optional Finish - Custom colors may be specified to match building's interior color scheme

OVERVIEW

TAF-R series diffusers allow easy occupant adjustment of the outlet airflow rate by simply rotating the face of the diffuser. All components are constructed of a high-impact polymer material that is designed to resist damage from traffic. The TAF-R diffuser is also a GreenSpec® Listed product and is available in standard light gray or black. Additional colors may be specified to match any building's interior scheme. This model can contribute toward achieving LEED Credits.

ADVANTAGES

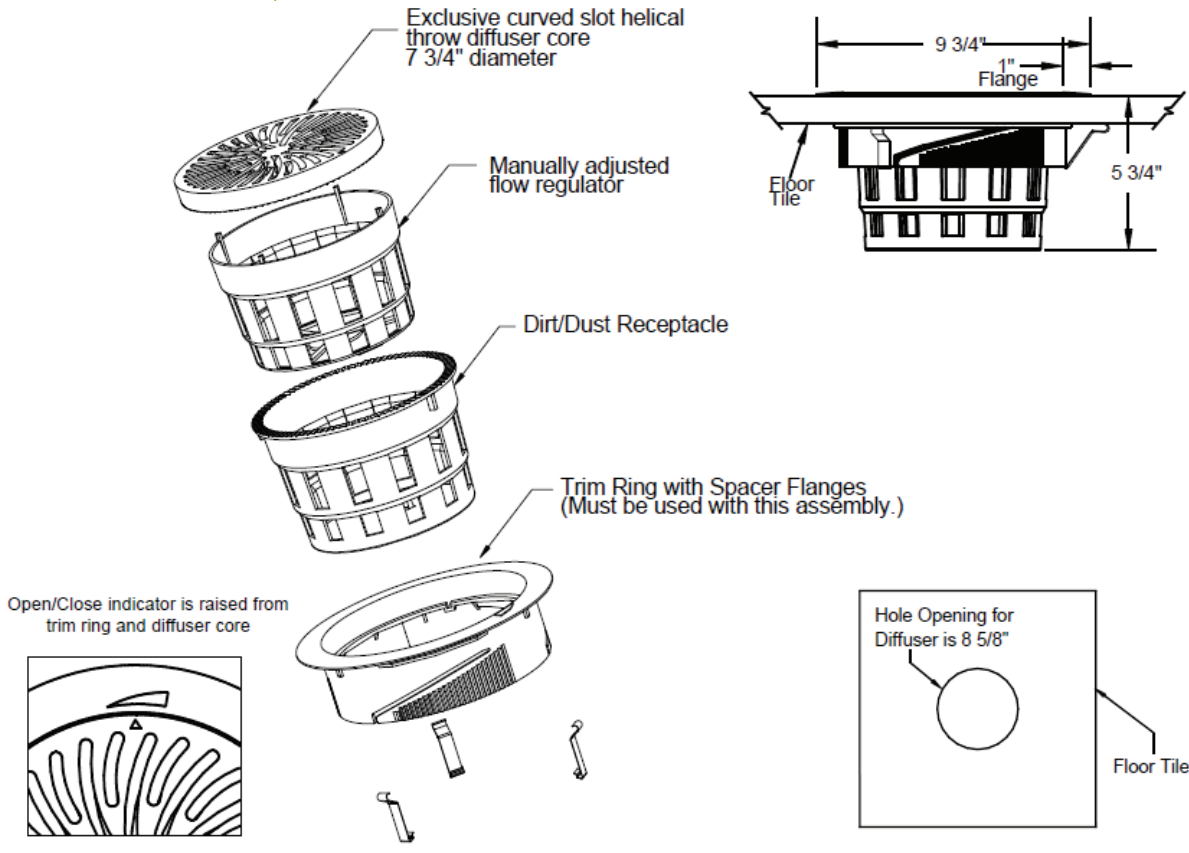
- The actuated option for the TAF-R & TAF-R-FR can have a maximum of six daisy chain units together utilizing the standard 12ft. plenum cable. This allows for a maximum of 12 units per power supply with six unit on each side of the power supply.
- High induction helical air pattern creates ideal circulation without excess inlet pressure requirements
- Removable flow regulator is manually operated without removing the core
- Dirt / dust collection receptacle can be easily removed for cleaning



TAF-R installed in a conference room

TAF-R / TAF-R-FR DIMENSIONS

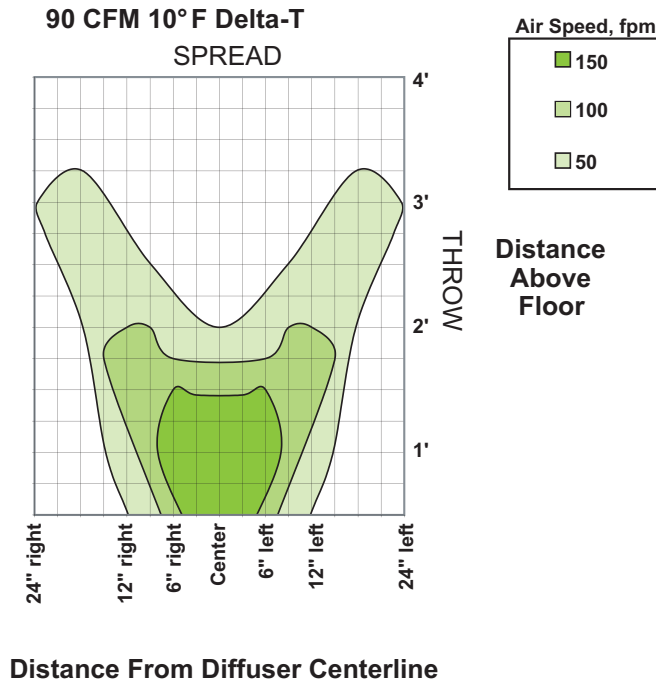
TAF-R / TAF-R-FR Diffuser Components



The TAF-R(-FR) can supply 100 cfm at 0.10-inch wg. of plenum pressure and generates a low NC of 19. The following charts show a favorable terminal velocity and temperature gradient in the comfort zone (range = 4 to 4.5 feet).

The HVAC system should be designed to operate at reduced capacity to avoid over cooling and excessive temperature swings. Significant 'passive' cooling may be experienced with underfloor air distribution systems.

Centerline Velocity Profile



	TAF-R										
	NC	-	-	10	12	14	16	17	19	20	21
	Airflow (cfm)	54	62	70	76	83	89	94	100	105	109
	Plenum Pressure (wc)	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12
10° F	Throw (ft)@ 150-100-50 fpm	1.2-1.8-3.2	1.4-2.1-3.4	1.6-2.3-3.7	1.7-2.5-3.8	1.8-2.8-4	2-2.9-4.1	2.1-3-4.2	2.2-3.1-4.4	2.3-3.2-4.5	2.4-3.2-4.6
ΔT	Spread ft @ 50 fpm	2.5	2.8	3.2	3.5	3.8	4	4.3	4.5	4.8	5

- NC values are based on octave band 2-7 sound power levels minus a room absorption of 10dB
- Dash (-) in space denotes an NC value of less than 10
- Data obtained from test conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Spread is the total width of the 50 fpm isovel. Projection is the maximum distance above the floor where the indicated terminal velocity was observed.
- Spread and Projection data is determined in a room with a 9-foot ceiling, and 10° ΔT between the supply and average occupied zone temperatures
- Ventilation efficiency (E_z) is 1.2 for floor supply of cool air and ceiling return, provided low-velocity displacement ventilation achieves unidirectional flow and thermal stratification or underfloor air distribution systems where the vertical throw is less than or equal to 50 fpm (0.25 m/s) at a height of 4.5 (1.4m) above the floor per ASHRAE 62.1-2013

TAFR-AA

- Designed for applications in pressurized underfloor air distribution systems
- All aluminum construction, durable enough to resist foot traffic
- External Open/Close indicator coupled with the internal Open/Close stop allow visual determination of damper position
- Architecturally appealing face designs are available in standard black or gray color. Optional special colors are available upon request. Woodgrain finish options also available.
- The trim ring's extra wide flange is designed to prevent carpet from pulling away from the diffuser
- Relocation to another area is simple by relocating that floor panel. Removal of the diffuser from the access floor panel is not required.
- Diffuser can be installed after flooring and carpet installation are complete
- Converts easily from a swirl pattern to a displacement pattern (and vice versa) without moving floor panels or trim rings
- TAFR-AA is UL Listed and meets NFPA 90A



TAFR-AA

- The spring clip and mounting gasket attached to the trim ring is designed for rapid & secure press fit without the use of tools



wood grains energy solutions

MODELS:

TAFR-AA / Swirl Pattern
TAFR-AA / Displacement Pattern

FINISHES

Standard Finish - #84 Black or light gray
Optional Finish - Custom colors may be specified to match building's interior color scheme

OVERVIEW

TAF-R series diffusers allow easy occupant adjustment of the outlet airflow rate by simply rotating the face of the diffuser. All components are constructed of aluminum, including the basket portion, making it ideal for all levels of office traffic. The TAFR-AA diffuser is also a GreenSpec Listed product and is available in standard black or light gray. Additional colors may be specified to match any building's interior scheme. This model can contribute toward achieving LEED Credits.

ADVANTAGES

- The TAFR-AA diffuser, both swirl and displacement versions, are completely aluminum, including the basket under the floor
- The actuated option for the TAFR-AA can have a maximum of six daisy chain units together utilizing the standard 12ft. plenum cable. This allows for a maximum of 12 units per power supply with six units on each side of the power supply.
- The high induction helical air pattern of the swirl diffuser creates ideal circulation without excess inlet pressure requirements
- The horizontal air pattern of the displacement diffuser creates low velocity, non-mixing supply air that reduces occupant discomfort, allowing it to be placed closer to the occupant
- Removable flow regulator is manually operated without removing the core
- Dirt / dust collection receptacle can be easily removed for cleaning



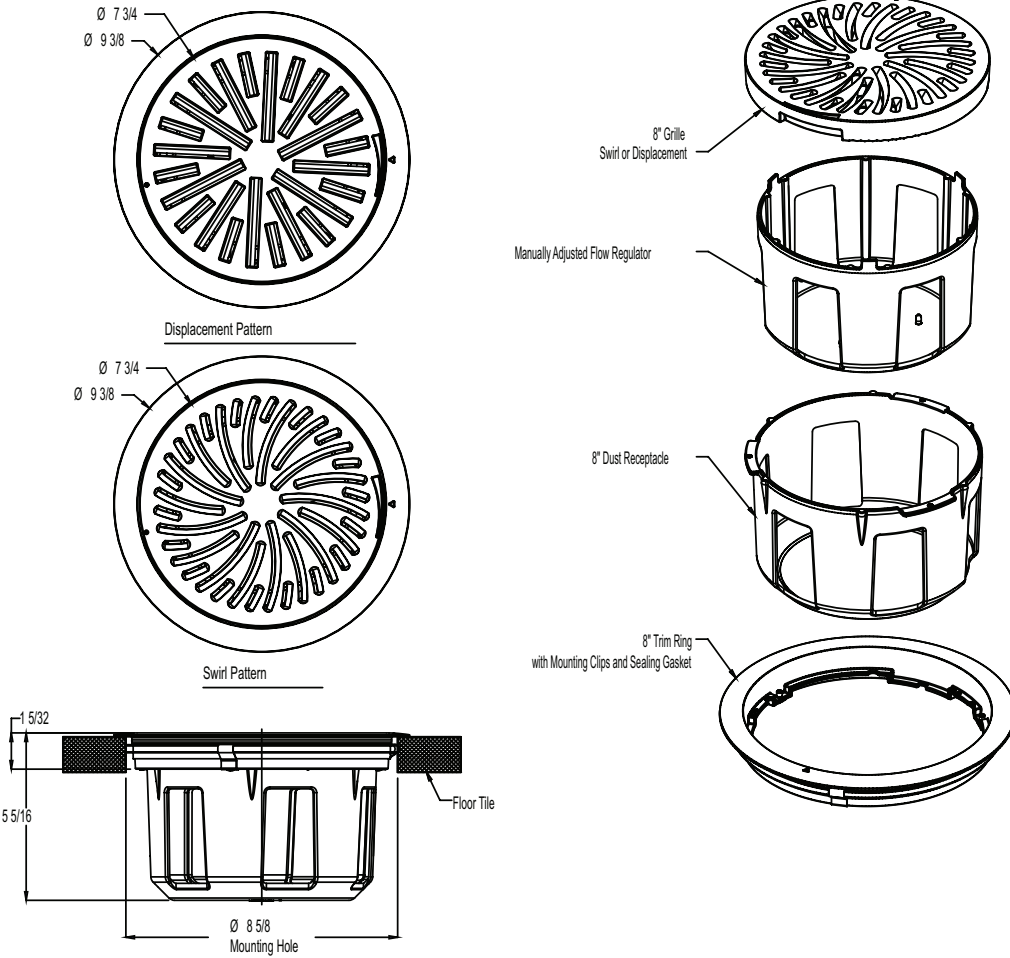
See website for Specifications



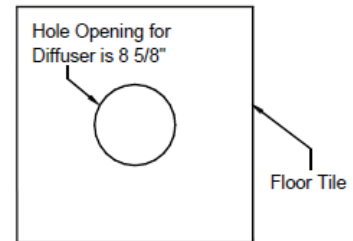
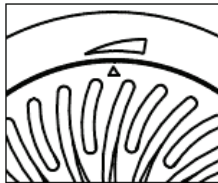
Displacement version TAFR-AA diffusers installed along the back edge in a training room environment

TAFR-AA DIMENSIONS

TAFR-AA Diffuser 8" Components

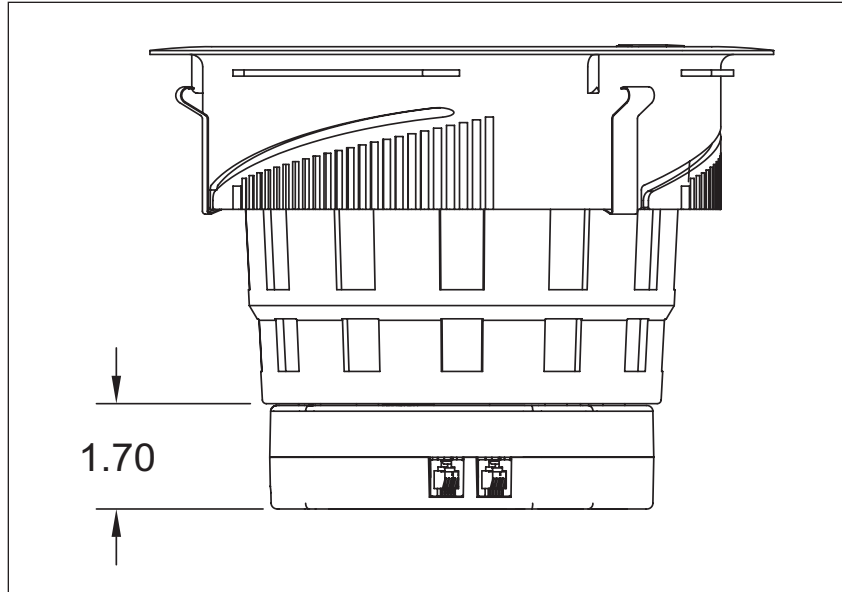


Open/Close indicator is raised from trim ring and diffuser core

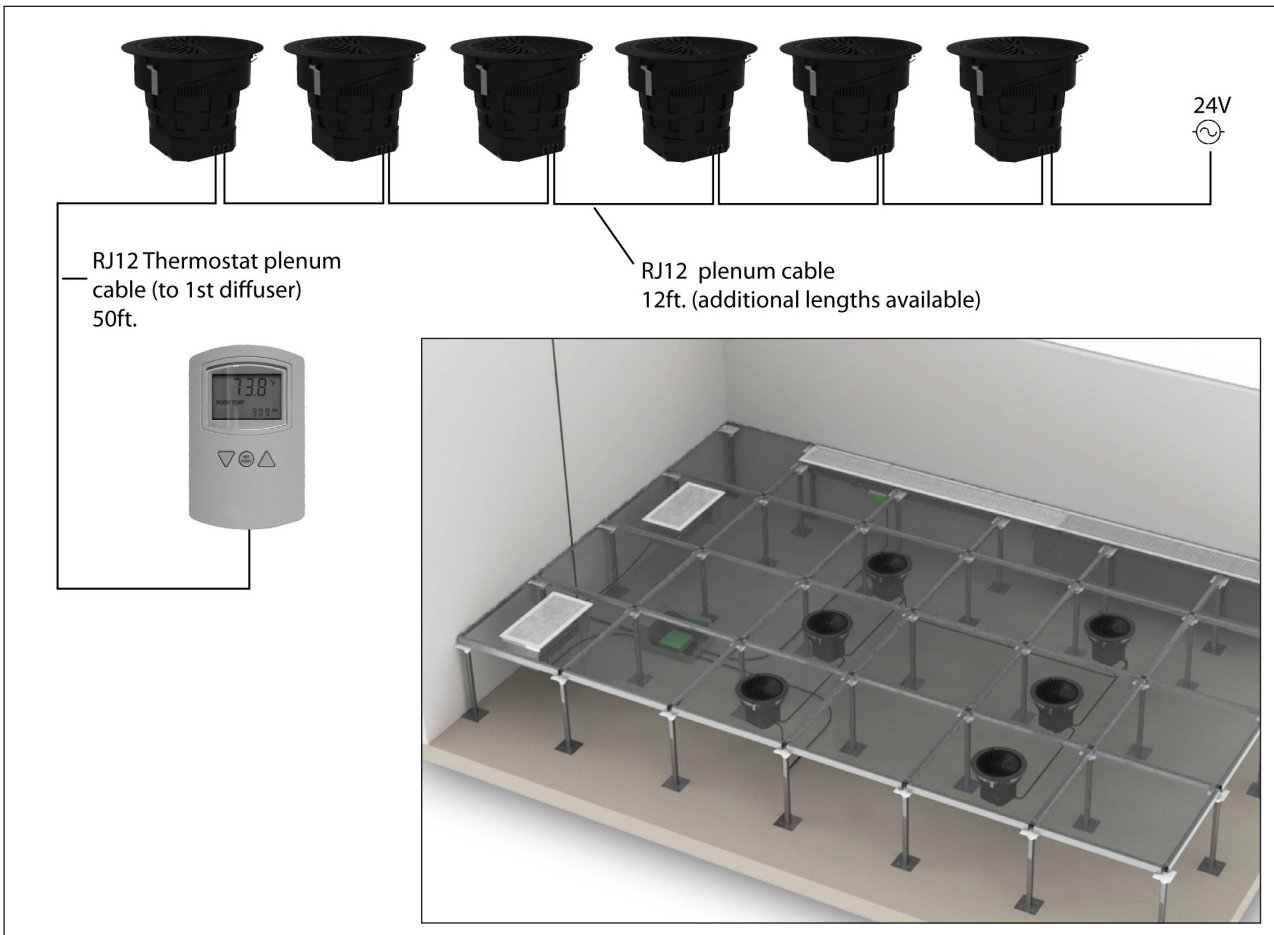


ACTUATED FLOW REGULATOR

- 24VAC electric flow regulator actuator is integral part of the assembly
- RJ12 cable connections for easy plug and play installation between units
- UL Rated
- 24VAC actuator is direct drive 0-10 VDC control signal
- Room sensor equipped with digital display for setpoint adjustment & PC data connection



TAF-R / TAFR-AA ACTUATED DAISY CHAIN



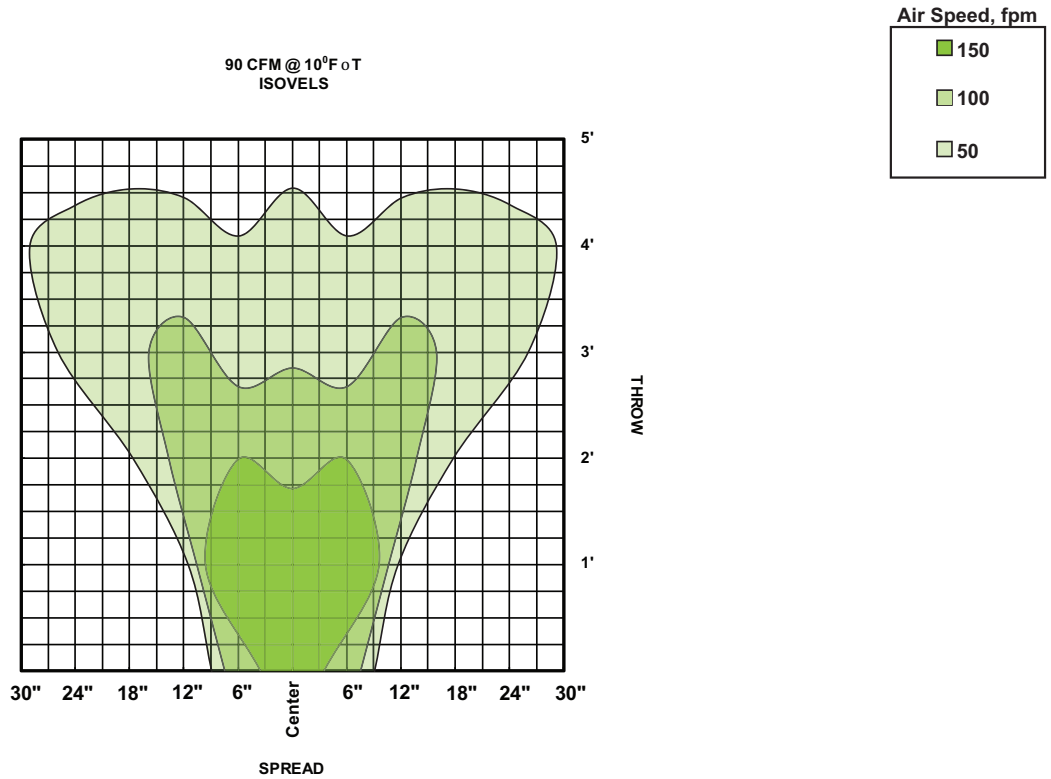
System Overview:

Actuated TAF-R and TAFR-AA diffusers can have a maximum of six units daisy chained to each other utilizing the standard 12 ft. plenum cable. This allows for a maximum of 12 units per power supply with six units on each side of the power supply.

The TAFR-AA can supply 90 cfm at 0.10-inch wg. of plenum pressure and generates a low NC of 19. The following charts show a favorable terminal velocity and temperature gradient in the comfort zone (range = 4 to 4.5 feet).

The HVAC system should be designed to operate at reduced capacity to avoid over cooling and excessive temperature swings. Significant 'passive' cooling may be experienced with underfloor air distribution systems.

Centerline Velocity Profile



TAFR-AA 8" Swirl Diffuser											
	NC	-	-	-	-	-	15	16	18	19	20
	Airflow (cfm)	49	56	63	69	75	80	85	90	94	98
	Plenum Pressure (wc)	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12
10° F	Throw (ft)@ 150-100-50 fpm	1.1-1.6-3.2	1.2-1.8-3.4	1.4-2.1-3.6	1.5-2.2-3.8	1.6-2.4-3.9	1.7-2.6-4	1.8-2.8-4.2	1.9-2.9-4.3	2-3.1-4.4	2.1-3.2-4.5
ΔT	Spread ft @ 50 fpm	2.7	3.1	3.5	3.9	4.2	4.5	4.6	4.8	4.9	5

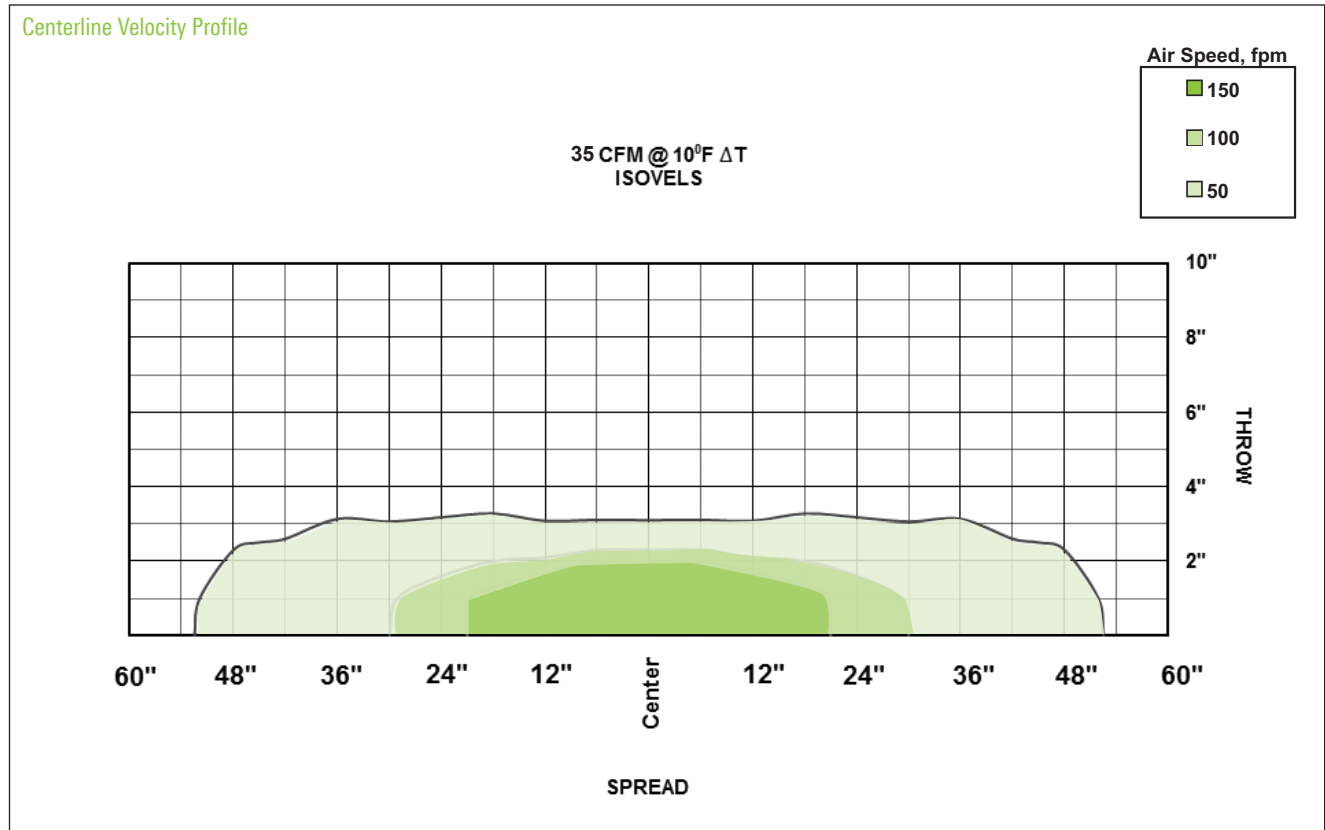
- NC values are based on octave band 2-7 sound power levels minus a room absorption of 10dB
- Dash (-) in space denotes an NC value of less than 10
- Data obtained from test conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Spread is the total width of the 50 fpm isovel. Projection is the maximum distance above the floor where the indicated terminal velocity was observed.

- Spread and Projection data is determined in a room with a 9-foot ceiling, and 10° ΔT between the supply and average occupied zone temperatures
- Ventilation efficiency (E_z) is 1.2 for floor supply of cool air and ceiling return, provided low-velocity displacement ventilation achieves unidirectional flow and thermal stratification or underfloor air distribution systems where the vertical throw is less than or equal to 50 fpm (0.25 m/s) at a height of 4.5 (1.4m) above the floor per ASHRAE 62.1-2016 Addenda a

The following charts show a favorable terminal velocity and temperature gradient in the comfort zone.

The HVAC system should be designed to operate at reduced capacity to avoid over cooling and excessive temperature swings. Significant 'passive' cooling may be experienced with underfloor air distribution systems.

Centerline Velocity Profile



TAFR-AA 8" Displacement Diffuser											
NC		-	-	-	16	18	20	21	23	24	26
Airflow (cfm)		28	32	36	39	42	45	48	51	53	55
Plenum Pressure (wc)		0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
5°F ΔT	Spread ft @ 50 fpm	6.1	7	7.9	8.6	8.9	9.3	9.6	9.9	10.1	10.2
10°F ΔT	Spread ft @ 50 fpm	6.2	6.7	7.1	7.4	7.7	7.9	8.2	8.5	8.6	8.8

- NC values are based on octave band 2-7 sound power levels minus a room absorption of 10dB
- Dash (-) in space denotes an NC value of less than 10
- Data obtained from test conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Spread is the total width of the 50 fpm isovel. Projection is the maximum distance above the floor where the indicated terminal velocity was observed.

- Spread and Projection data is determined in a room with a 9-foot ceiling, and 10° ΔT between the supply and average occupied zone temperatures
- Ventilation efficiency (E_v) is 1.2 for floor supply of cool air and ceiling return, provided low-velocity displacement ventilation achieves unidirectional flow and thermal stratification or underfloor air distribution systems where the vertical throw is less than or equal to 50 fpm (0.25 m/s) at a height of 4.5 (1.4m) above the floor per ASHRAE 62.1-2016 Addenda a

TAF-G

- Designed for use in underfloor systems
- It allows “through-the-floor” power/data/phone cable access
- All components are constructed of a high impact polymeric material designed to resist damage from traffic
- Architecturally appealing face complements Titus diffuser Model TAF-R and is available in standard light gray or black color. Optional colors may be specified to match any building interior’s scheme
- The TAF-G installs into the same trim ring and mounting ring as the TAF-R
- The trim ring’s extra wide flange is designed to prevent carpet from pulling away from the grommet
- With the grommet installed in the floor panel, relocation to another zone is simply done through relocating the floor panel
- Grommet can be installed after flooring and carpet installation is complete
- The spring clip attached to the trim ring is designed for rapid & secure press fit without the use of tools



TAF-G

MODEL:

TAF-G / Grommet

FINISHES:

Standard Finish - #84 Black or light gray
Optional Finish - Custom colors may be specified to match building’s interior color scheme

OVERVIEW

The TAF-G is designed for the use in underfloor systems. It allows “through-the-floor” power/data/phone cable access. All components are constructed of a high impact polycarbonate material designed to resist damage from traffic.



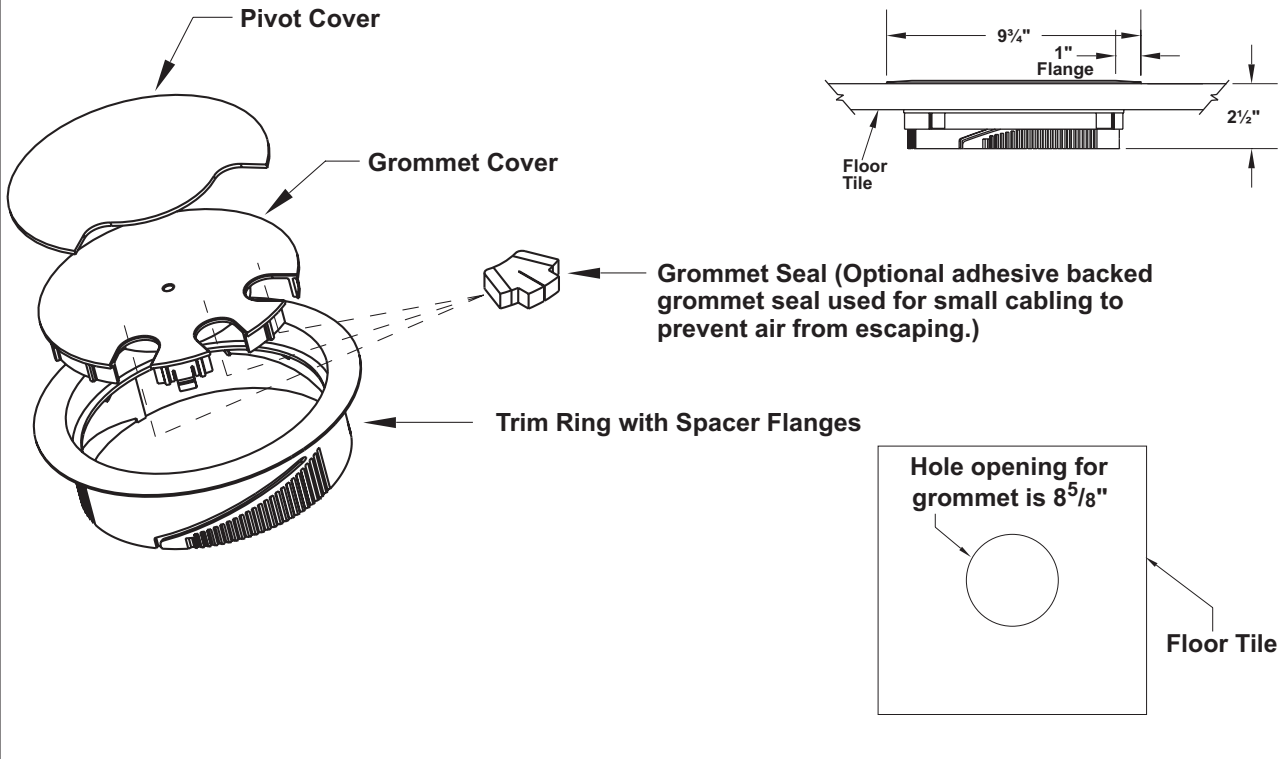
See website for Specifications



TAF-G diffuser installed in a cubicle

TAF-G DIMENSIONS

TAF-G Diffuser Components

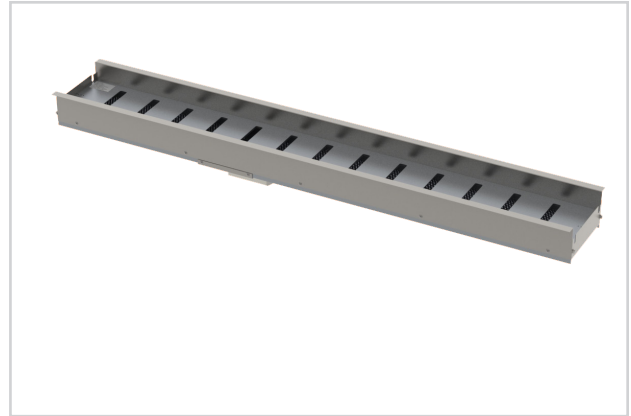


UnderFloor TAF-L Perimeter System

underfloor air distribution

TAF-L-V

- Titus TAF-L-V is a variable linear bar diffuser plenum for underfloor perimeter supply applications
- Designed to be integrated with the CT-TAF-L linear bar grille (see CT-TAF-L for more information)
- The TAF-L-V, when used with the CT-TAF-L is designed to provide a uniform throw pattern throughout its operating range, regardless of damper position
- Active four (4) foot sections of TAF-L-V can be placed anywhere within the continuous CT-TAF-L linear bar grille
- 24 Volt electric damper actuator is supplied with the assembly
- Removal of the floor tiles is not required



TAF-L-V



energy solutions



See website for Specifications

MODEL:

TAF-L-V / Linear Diffuser Plenum with Variable Aperture Plate

OVERVIEW

The TAF-L-V is a variable linear bar diffuser plenum for underfloor perimeter supply applications. The TAF-L-V cooling plenum has an engineered throw pattern that never breaks through the stratification layer created by the UFAD diffusers in the core. The dual aperture plate design allows the TAF-L-V/CT-TAF-L assembly to maintain this engineered throw pattern while modulating the airflow volume. This product saves energy and can contribute toward LEED certification.

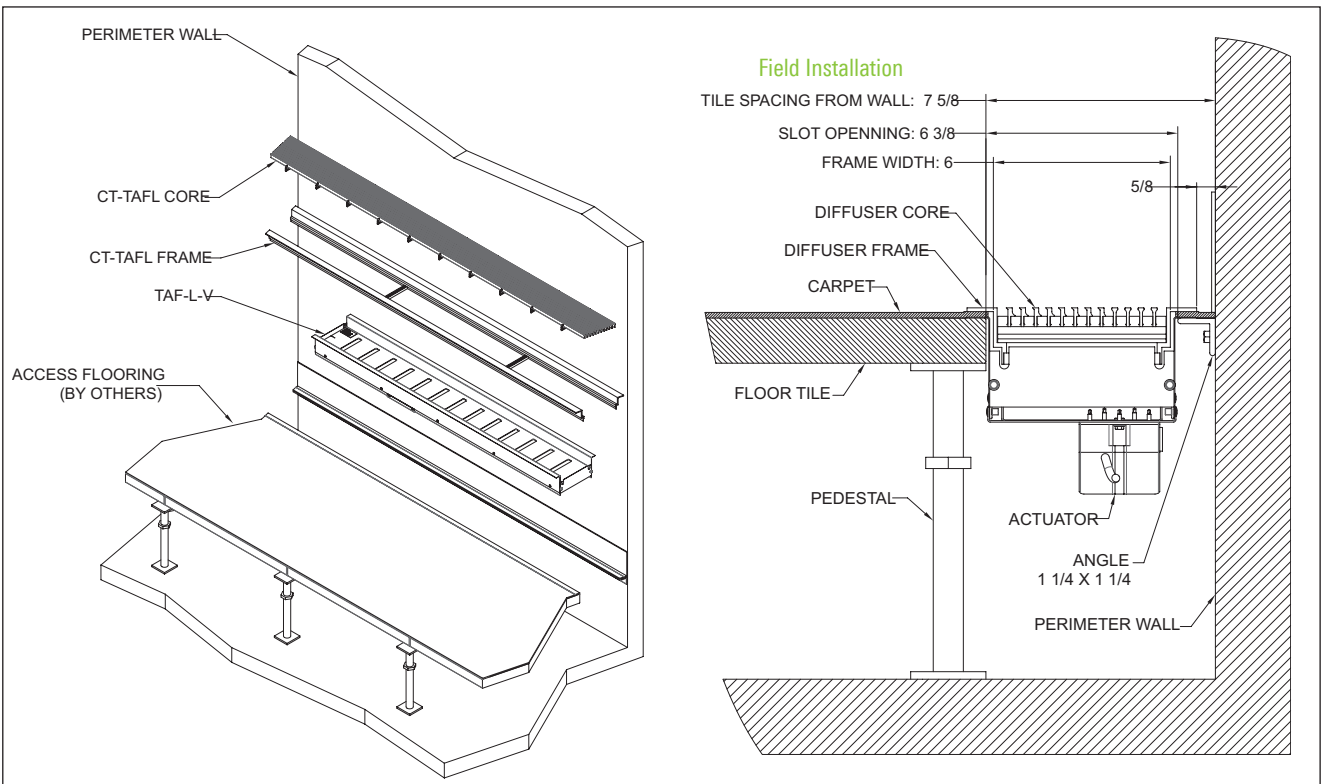
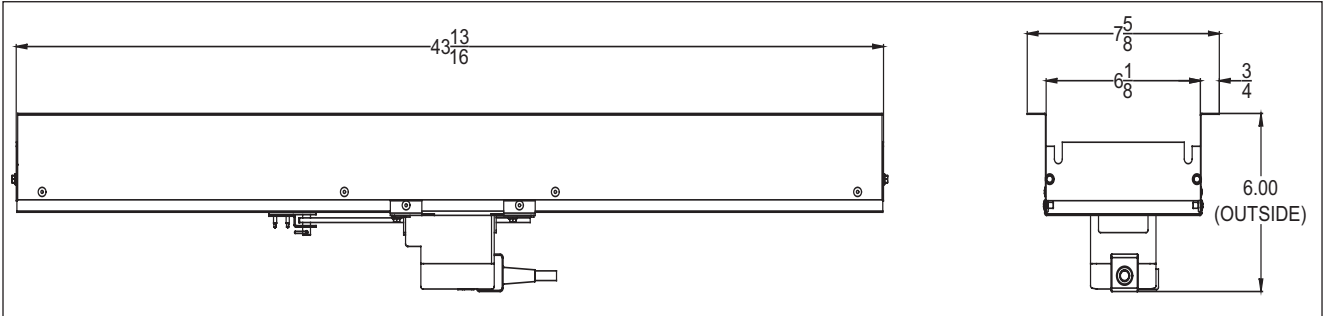


Cross section view of an installed TAF-L-V

DIMENSIONS

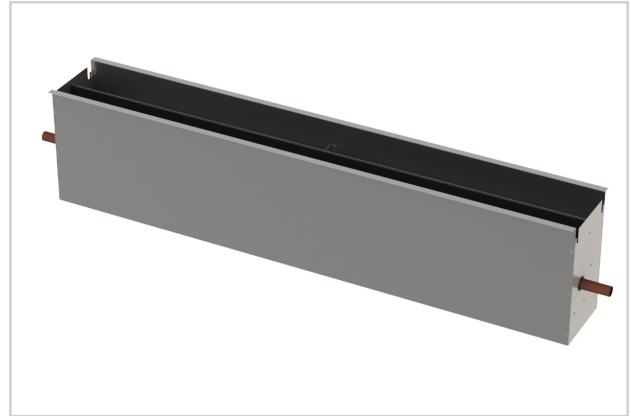
underfloor air distribution

TAF-L-V DIMENSIONS



TAF-L-W

- Titus TAF-L-W is a fixed linear bar diffuser plenum for underfloor perimeter heating applications
- The TAF-L-W is designed to be integrated with the CT-TAF-L linear bar grille (see CT-TAF-L for more information)
- Removal of the floor tiles is not required
- The TAF-L-W return plenum drops into perimeter slot and sits on top of the raised floor tile (by others) and a perimeter angle
- The TAF-L-W has a fin tube heater assembly in the plenum
- The TAF-L-W has 2 1/2" of copper tubing extending beyond both sides of the plenum for system connections
- The TAF-L-W plenum is constructed of galvanized steel



TAF-L-W



energy solutions



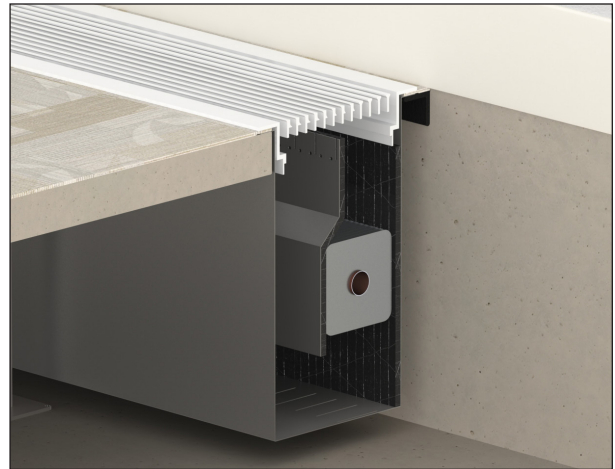
See website for Specifications

MODEL:

TAF-L-W / Linear Diffuser Plenum with Fin-tube Heat

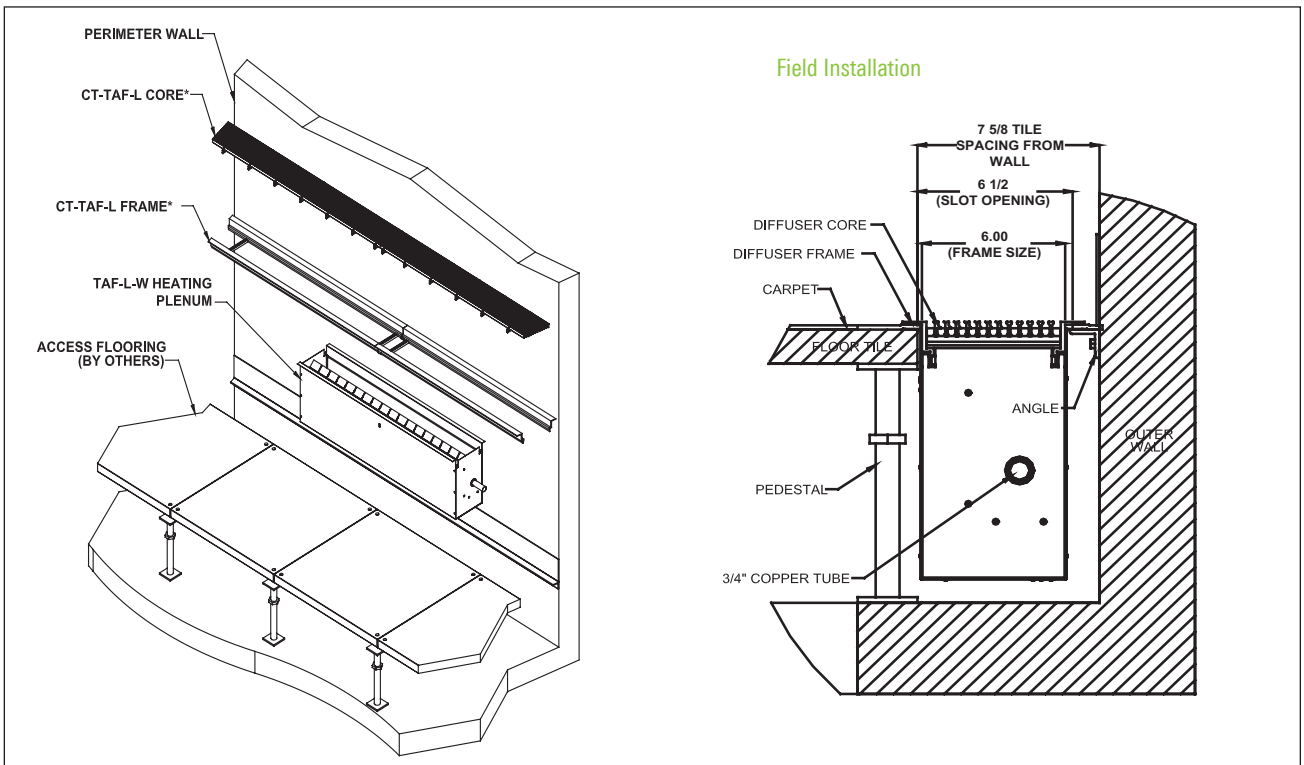
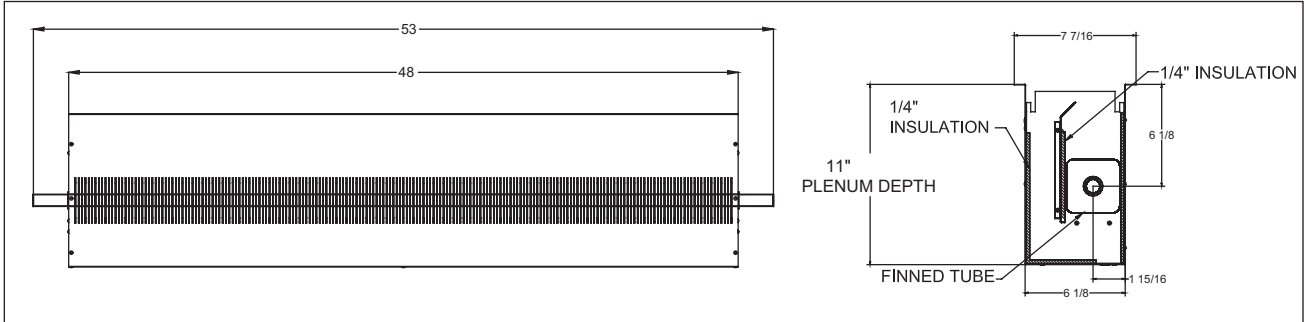
OVERVIEW

TAF-L-W is a fixed linear bar diffuser plenum for underfloor perimeter heating applications. The TAF-L-W's self-contained fin-tube heats the perimeter by utilizing primarily plenum air. By allowing the denser cold air to flow into the TAF-L-W plenum while simultaneously inducing room air into the plenum, the TAF-L-W returns the warmer air to the window or exterior wall through natural convection. This product saves energy and can contribute toward LEED certification.



Cross section view of an installed TAF-L-W

TAF-L-W DIMENSIONS



TAF-L-E

- Titus TAF-L-E is a fixed linear bar diffuser plenum for underfloor perimeter heating applications
- The TAF-L-E is designed to be integrated with the CT-TAF-L linear bar grille (see CT-TAF-L submittal for more information)
- Removal of the floor tiles is not required
- The TAF-L-E return plenum drops into perimeter slot and sits on top of the raised floor tile (by others) and a perimeter angle
- The TAF-L-E has an SCR electric heat fin tube assembly in the plenum
- The TAF-L-E plenum is constructed of galvanized steel
- ETL listed at 120V, 208V, 240V, 277V



TAF-L-E



energy solutions



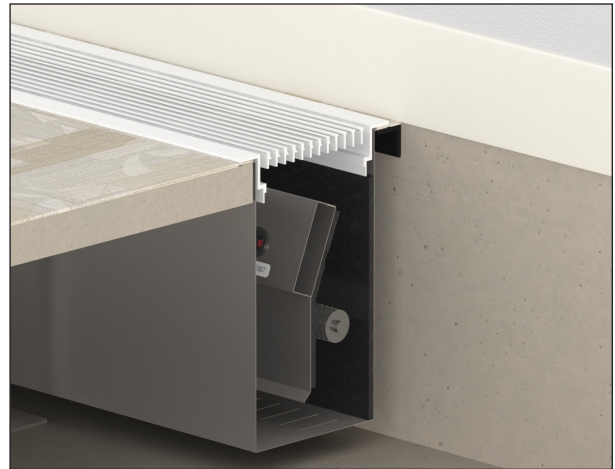
See website for Specifications

MODEL:

TAF-L-E / Linear Diffuser Heating Plenum with Fin-tube SCR Heat

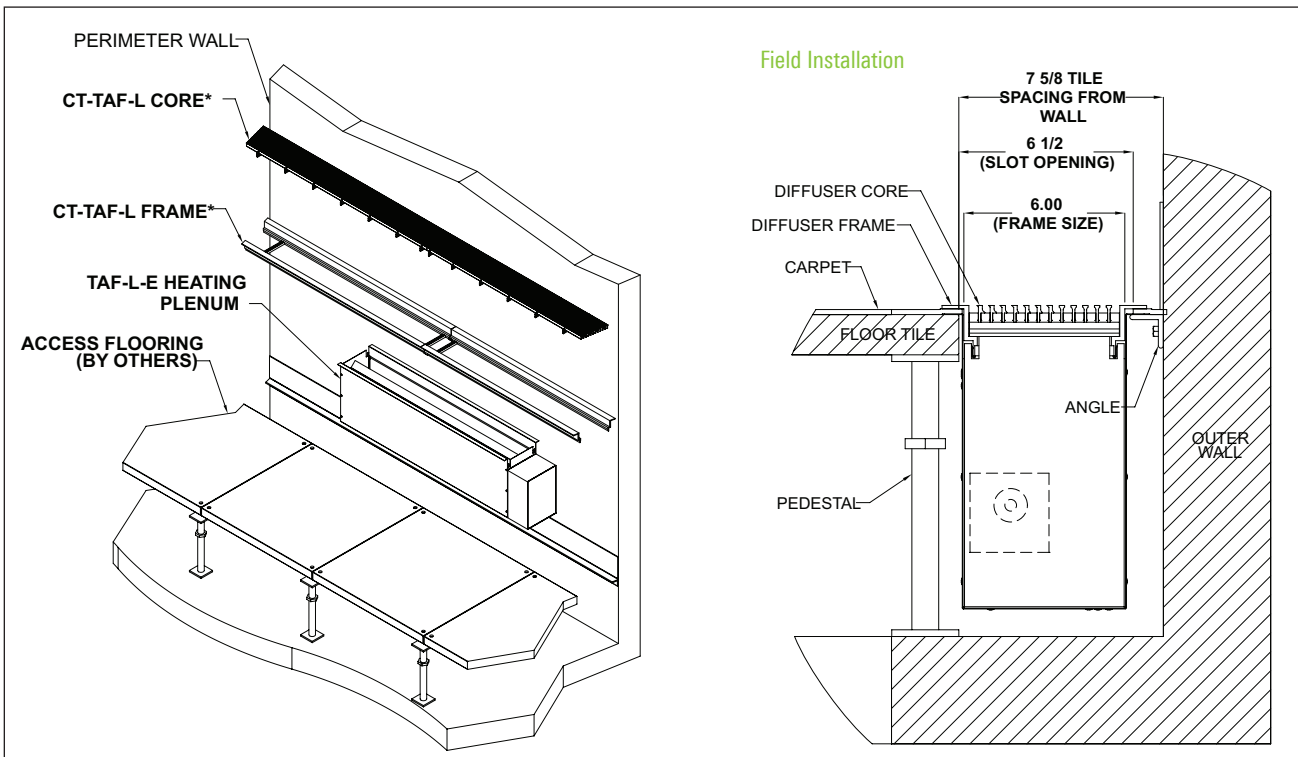
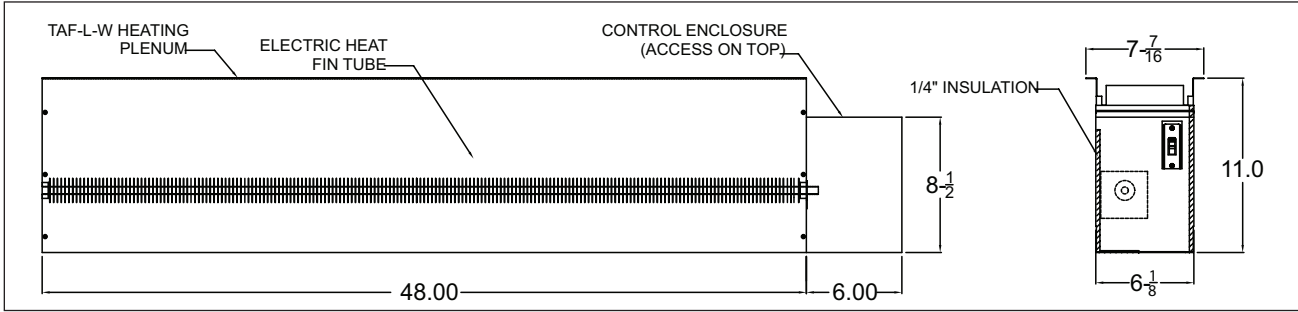
OVERVIEW

The TAF-L-E is a fixed linear bar diffuser plenum constructed of galvanized steel for underfloor perimeter heating applications. The heating plenum drops into the perimeter slot and sits on top of the raised floor tile. The TAF-L-E has a SCR electric heat fin tube heating element. The unit is available at 120V, 208V, 240V, 277V, and has an ETL listing. This product saves energy and can contribute toward LEED certification.



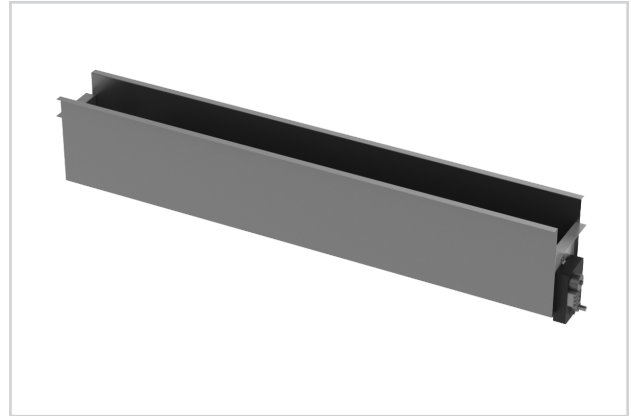
Cross section view of an installed TAF-L-E

TAF-L-E DIMENSIONS



TAF-L-F

- Titus TAF-L-F is a fixed linear bar diffuser plenum for underfloor perimeter supply applications
- Removal of the floor tiles is not required
- The TAF-L-F is designed to be integrated with the CT-TAF-L linear bar grille (see CT-TAF-L for more information)
- Damper design provides consistent air distribution across the full length of the TAF-L-F
- Optional 24VAC electric damper actuator may be supplied with the assembly
- The TAF-L-F plenum is constructed of galvanized steel



TAF-L-F



energy solutions



See website for Specifications

MODEL:

TAF-L-F / Linear Diffuser Plenum with Fixed Aperture Plate

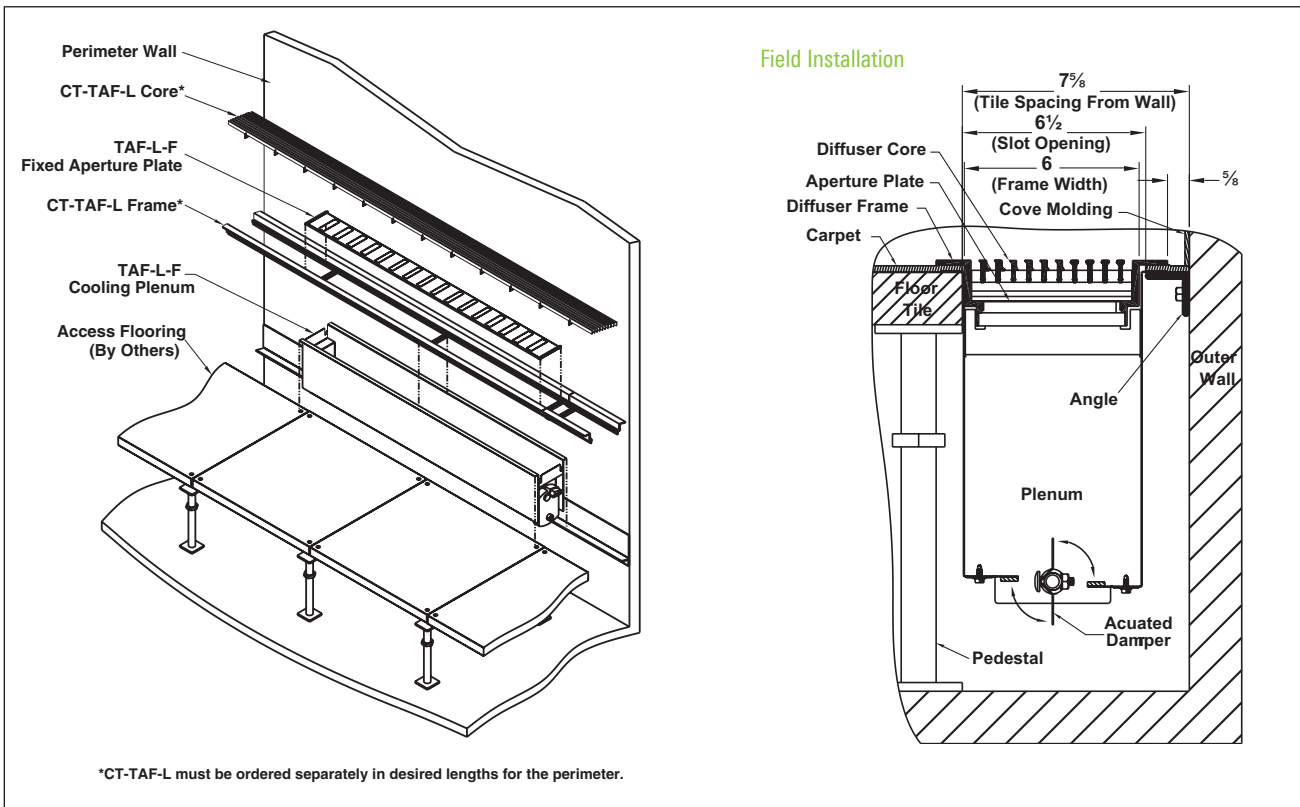
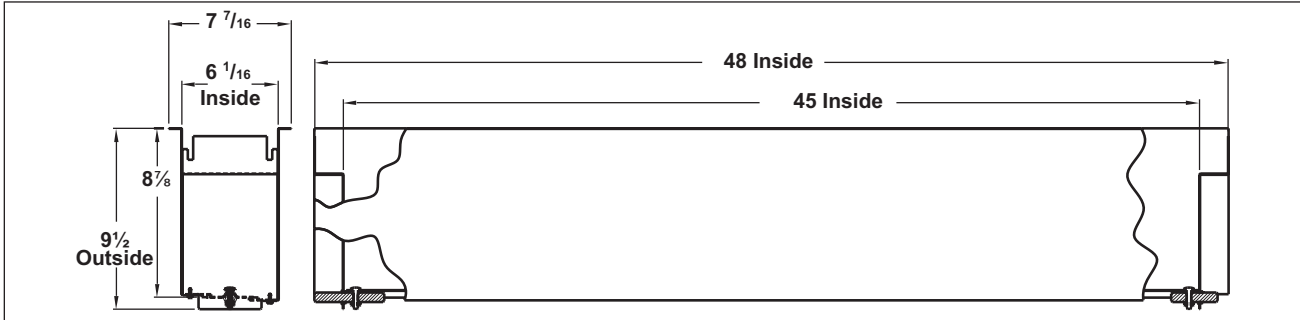
OVERVIEW

The TAF-L-F is a fixed linear bar diffuser plenum constructed of galvanized steel for underfloor perimeter supply applications. The plenum drops into the perimeter slot and sits on top of the raised floor tile. This product saves energy and can contribute toward LEED certification.



Cross section view of an installed TAF-L-F

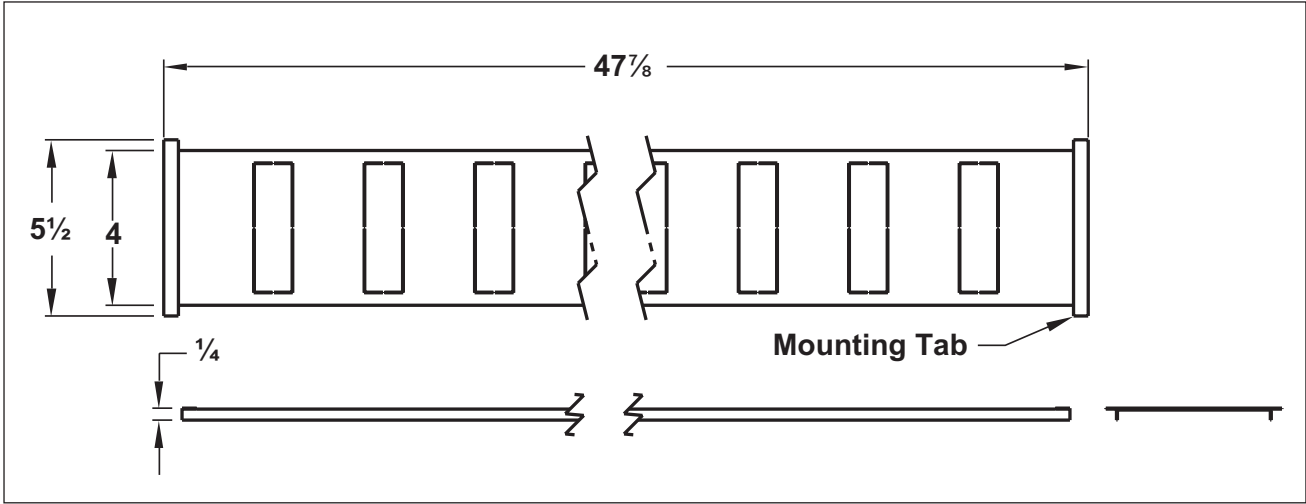
TAF-L-F DIMENSIONS



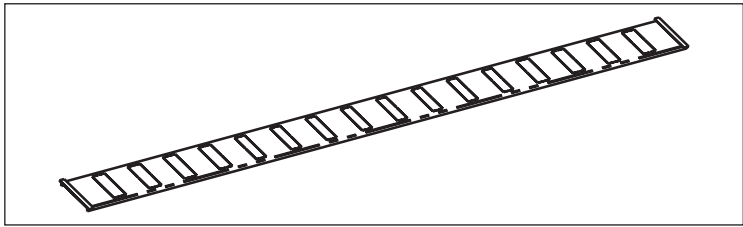
DIMENSIONS

Redefine your comfort zone.™ | www.titus-hvac.com

TAF-L-F DIMENSIONS

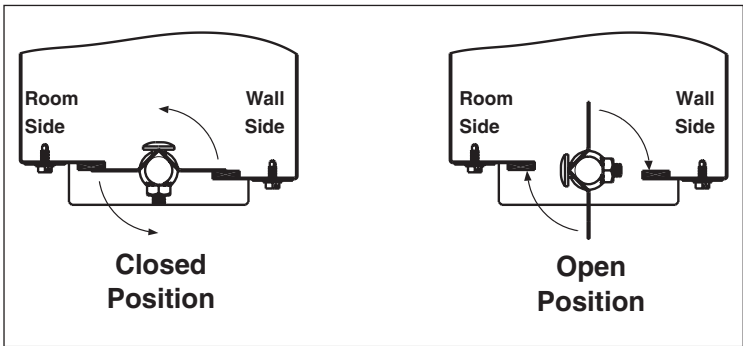


APERTURE PLATE



Flow Rate (cfm)	Total Open Apertures	Aperture Plate Pattern X = Closed, O = Open
115	8	XXXXO0000000XXXX
120	8	XXXXO0000000XXXX
130	10	XXXO0000000000XXX
160	12	XXO00000000000XX
180	12	XXO00000000000XX
185	14	XO00000000000000X
190	14	XO00000000000000X
215	16	O000000000000000
225	16	O000000000000000

DAMPER POSITIONS

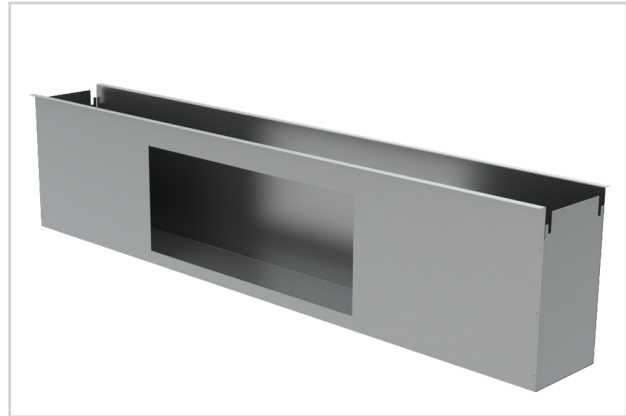


S

DIMENSIONS

TAF-L-R

- Titus TAF-L-R is a fixed linear bar diffuser plenum for underfloor perimeter return applications
- The TAF-L-R is designed to be integrated with the CT-TAF-L linear bar grille (see CT-TAF-L for more information)
- Removal of the floor tiles is not required
- The TAF-L-R return plenum drops into perimeter slot and sits on top of the raised floor tile (by others) and a perimeter angle
- 20 x 8 inches inlet can be used for ducted or non-ducted applications
- The TAF-L-R plenum is constructed of galvanized steel



TAF-L-R



energy solutions

MODEL:

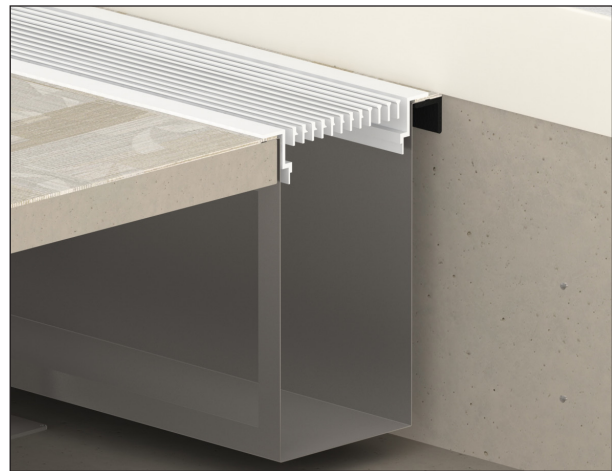
TAF-L-R / Linear Diffuser Return Plenum

OVERVIEW

The TAF-L-R is a fixed linear bar diffuser plenum constructed of galvanized steel for underfloor perimeter return applications. The return plenum drops into the perimeter slot and sits on top of the raised floor tile. This product saves energy and can contribute toward LEED certification.

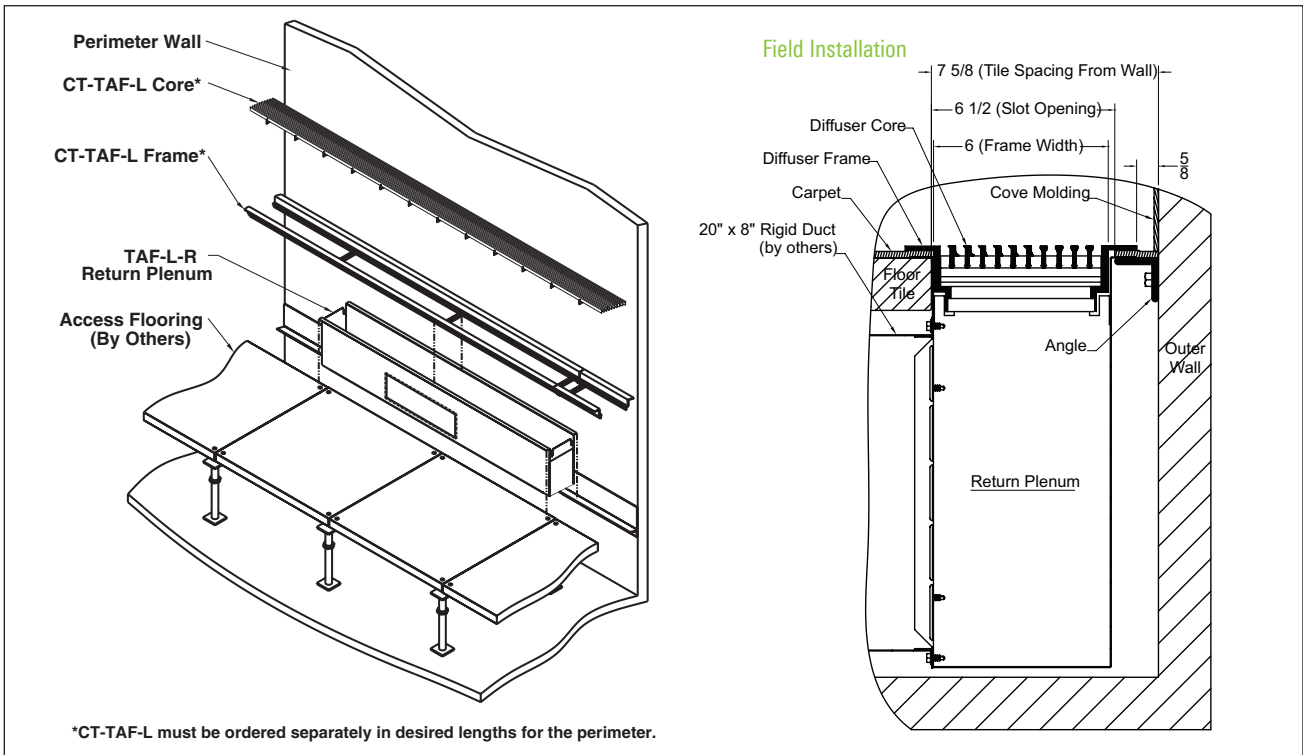
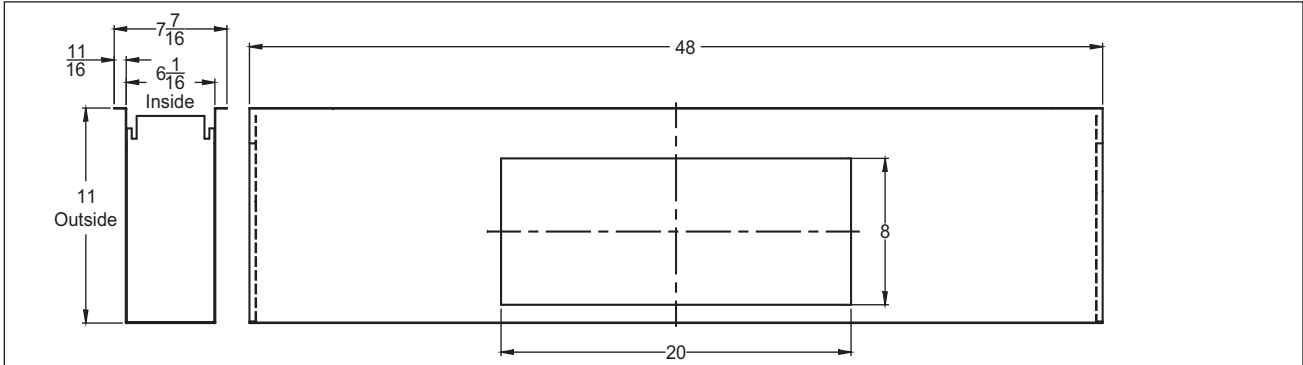


See website for Specifications



Cross section view of an installed TAF-L-R

TAF-L-R DIMENSIONS

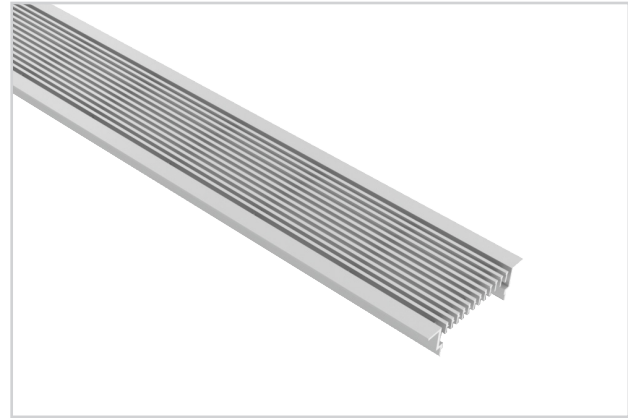


*CT-TAF-L must be ordered separately in desired lengths for the perimeter.



CT-TAF-L

- Titus CT-TAF-L is a fixed linear bar diffuser for underfloor perimeter return applications
- The CT-TAF-L is designed to be integrated with the TAF-L-V, TAF-L-E, TAF-L-R, and TAF-L-W plenums (see TAF-L-V, TAF-L-E, and TAF-L-R, and TAF-L-W submittals for more information)
- CT frame drops into perimeter slot and sits on top of carpeting
- CT-TAF-L Core drops into frame
- Installs into the TAF-L plenums from the top surface. Removal of the flooring is not required.
- ½-inch may be cut from the end of the frame and core to fit perimeter (NEVER cut off the last core support or frame support)
- Sections can be joined end-to-end for continuous appearance, using alignment clips
- Standard lengths are 1, 2, 3, 4, 5 and 6 feet, furnished as complete, welded assemblies
- Lengths greater than 6 feet are furnished in multiple sections, the number and size determined by the factory



CT-TAF-L

- All deflection bars are fixed and are parallel to the long dimension
- Fixed Bars are extruded aluminum



wood grains



energy solutions

MODEL:

CT-TAF-L / Perimeter Linear Bar Diffuser

FINISHES:

Standard Finish - #26 White

Optional Finish - Wood grains (See Wood grains Brochure for Finishes)

OVERVIEW

The Titus CT-TAF-L is a fixed linear bar diffuser for underfloor perimeter return applications. It is designed to be integrated with the TAF-L-V, TAF-L-E, TAF-L-R, and TAF-L-W plenums. The CT-TAF-L installs into the TAF-L plenums from the top surface. Removal of the flooring is not required. This product saves energy and can contribute toward LEED certification.

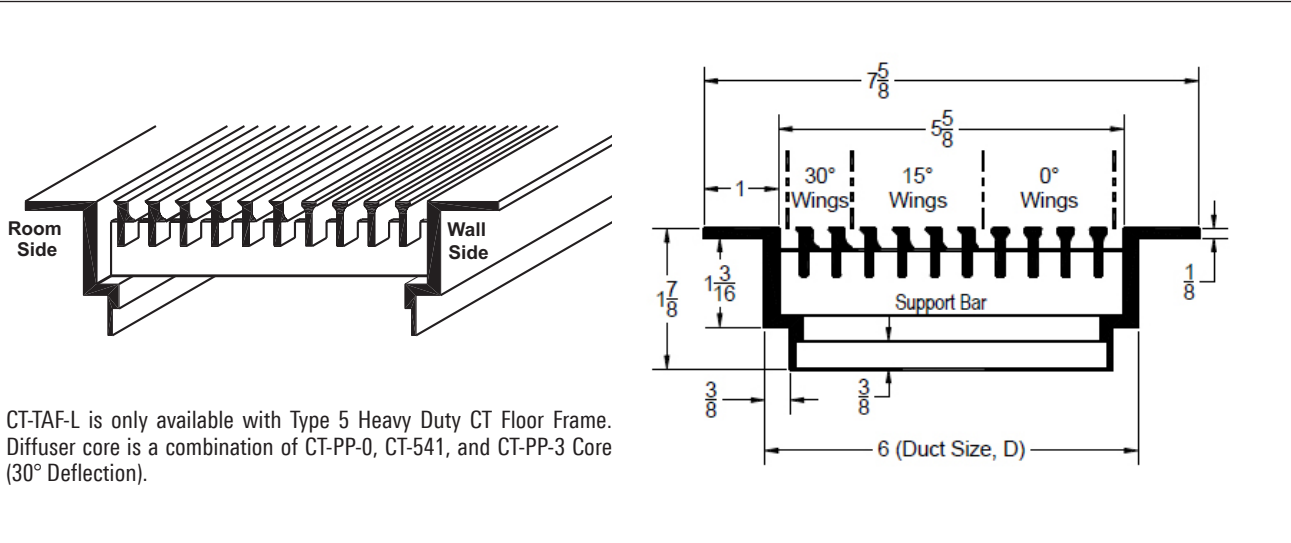


See website for Specifications

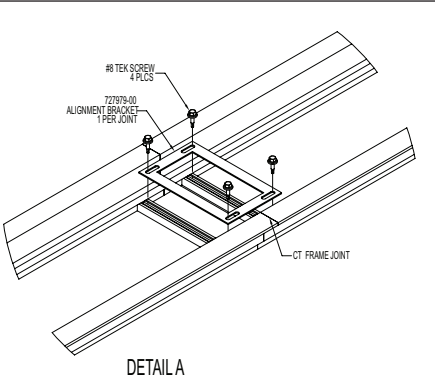


CT-TAF-L installed on top of the floor in a meeting/ conference room in a corporate environment

CT-TAF-L DIMENSIONS

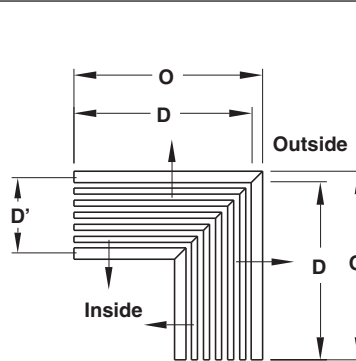


ALIGNMENT CLIP



Alignment clip model AC-500 is sold separately in quantities of 500

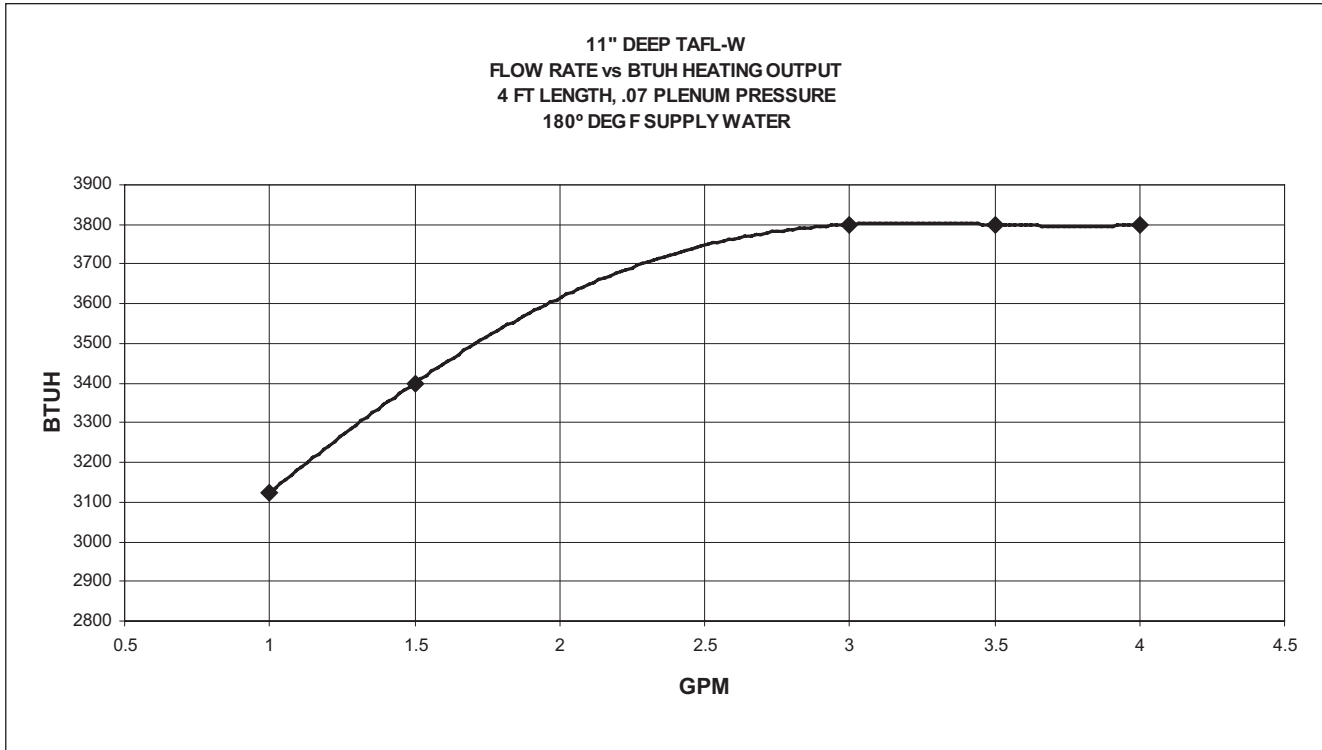
MITER CORNER - MC-TAF-L



Duct Width D'	Duct Length D	O
6"	18	$18\frac{13}{16}$

*Note: 0° deflection wings must be on wall side of frame when installed

TAF-L-W



TAF-L-W

11" TAF-L-W 180 Degree Water Supply		
BTUH	Ps	GPM
2827	0.03	2
3499	0.05	2
3629	0.07	2
4083	0.09	2
2875	0.03	4
3383	0.05	4
3693	0.07	4
4183	0.09	4
2557	0.03	6
3218	0.05	6
3492	0.07	6
4018	0.09	6

11" TAF-L-W 160 Degree Water Supply		
BTUH	Ps	GPM
2252	0.03	2
2669	0.05	2
3023	0.07	2
3182	0.09	2
1994	0.03	4
2451	0.05	4
2912	0.07	4
3165	0.09	4
1645	0.03	6
1963	0.05	6
2623	0.07	6
2843	0.09	6

11" TAF-L-W 120 Degree Water Supply		
BTUH	Ps	GPM
896	0.03	2
1088	0.05	2
1264	0.07	2
1497	0.09	2
448	0.03	4
720	0.05	4
926	0.07	4
1268	0.09	4
30	0.03	6
259	0.05	6
532	0.07	6
765	0.09	6

TAF-L-R

Nominal Duct Size (in.)	Nominal Duct Area (ft²)	Core Area (ft²)	Core Velocity								
			300	400	500	600	700	800	900	1000	
			Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.050	0.062
20 x 8	1.32	0.863	Neg. Static Pressure	0.017	0.030	0.047	0.067	0.091	0.119	0.151	0.186
			Air Flow, cfm	259	345	432	518	604	690	777	863
			NC	-	12	17	22	26	29	32	35

TAF-L-F

Number of Apertures Open		0.03	0.05	0.07	0.09	0.12	0.15
		cfm	51	60	70	79	92
4	NC	11	12	17	20	24	26
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	65	77	91	105	120	135
6	NC	12	13	18	21	25	27
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	83	98	115	130	149	167
8	NC	13	14	19	22	26	28
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	105	125	147	171	198	221
10	NC	14	15	20	23	27	29
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	118	141	168	193	219	242
12	NC	16	17	22	25	28	31
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	140	165	194	221	249	275
14	NC	17	18	23	26	30	33
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8
	cfm	159	183	208	242	269	294
16	NC	18	19	24	27	31	34
	Throw, ft 10° Delta	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	6-7-9
	Throw, ft 18° Delta	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-8

TAF-L-V

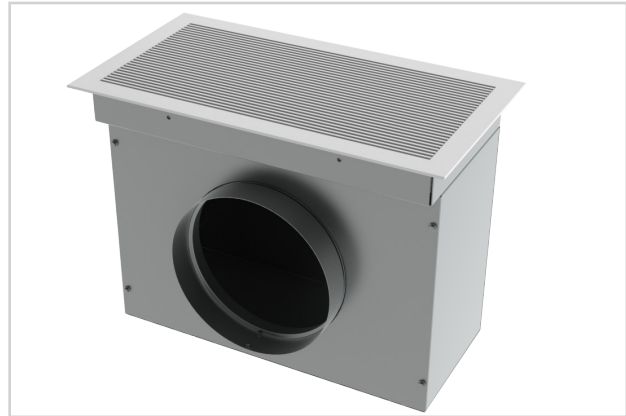
10°ΔT Aperture 25% Open	UnderFloor Pressure, Inches WG	0.05	0.07	0.09
	Airflow, cfm	128	140	157
	NC (Noise Criteria)	21	25	31
	Projection, ft, 150, 100, 50 fpm	2-3-4	3-4-6	4-5-7
10°ΔT Aperture 50%	Airflow, cfm	157	192	220
	NC (Noise Criteria)	25	30	33
	Projection, ft, 150, 100, 50 fpm	3-3-5	3-4-6	4-5-7
	Airflow, cfm	200	237	271
10°ΔT Aperture 75%	NC (Noise Criteria)	29	33	35
	Projection, ft, 150, 100, 50 fpm	3-4-6	3-5-7	4-5-8
	Airflow, cfm	218	264	300
	NC (Noise Criteria)	30	34	36
10°ΔT Aperture 100%	Projection, ft, 150, 100, 50 fpm	3-4-6	3-5-7	4-6-8

UnderFloor Linear Products

underfloor air distribution

TAF-D

- Designed for floor applications and utilized for ducted applications
- Heavy gauge steel plenum
- Installs into access flooring from top surface, removal of flooring is not required
- CT-TAF frame drops into plenum opening and sits on top of carpeting
- Can contribute toward achieving LEED certification



TAF-D



energy solutions

MODEL:

TAF-D / Diffuser Plenum with Inlet

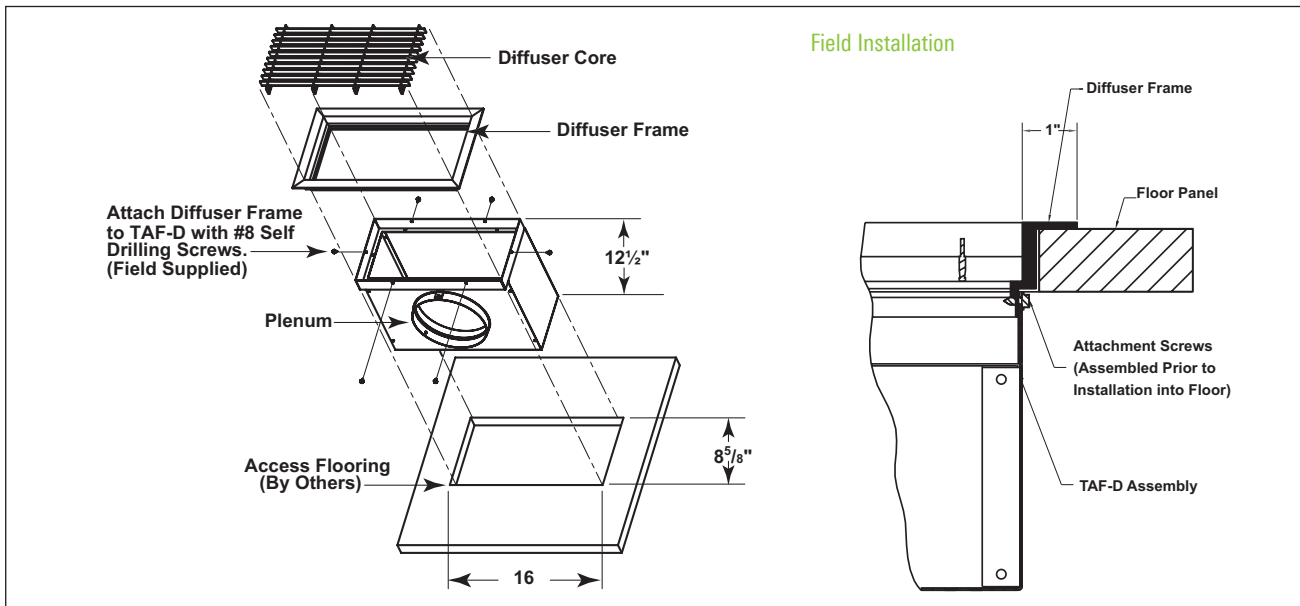
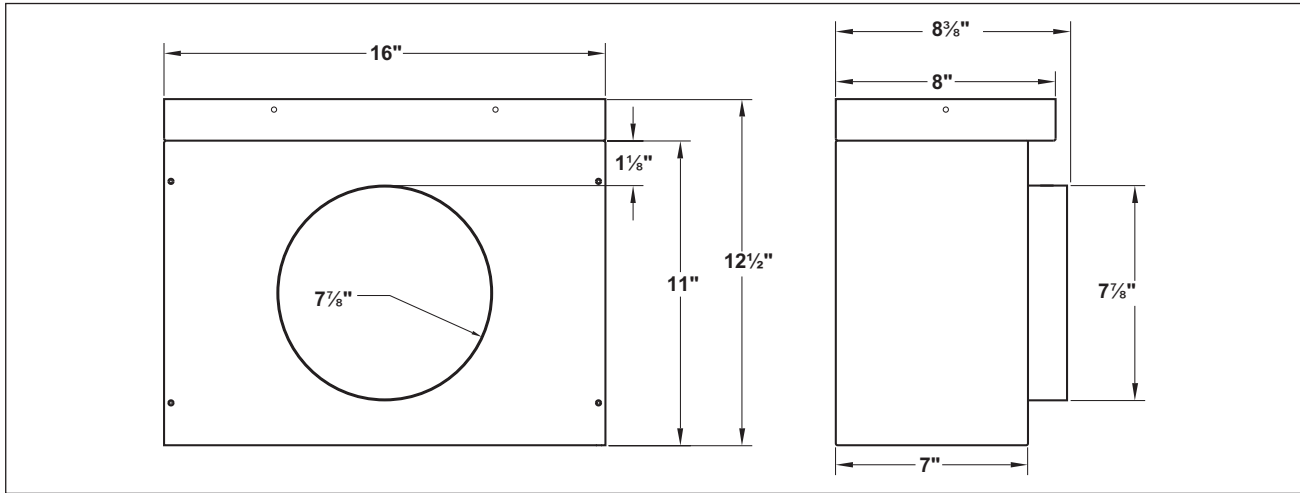
OVERVIEW

The TAF-D ducted plenum is constructed of a heavy gauge steel and is designed for application in underfloor air distribution systems. It is used as a ducted supply or return unit. This product saves energy and can contribute toward LEED certification.



See website for Specifications

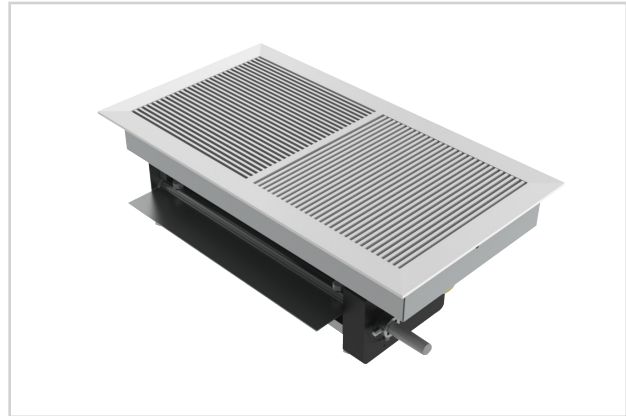
TAF-D DIMENSIONS



Note: CT-TAF diffuser and TAF-D are sold as separate units. The CT-TAF is available as a CT-TAF-480, CT-TAF-481, CT-TAF-PP0 and CT-TAF-PP3 in single or multiple core deflection patterns. See CT-TAF section for diffuser information.

TAF-V

- Provides variable air volume cooling only control for non-ducted applications
- Tight close-off damper with optional 24 VAC electric actuator
- Heavy gauge diffuser plenum designed for floor applications
- Available with single or multiple diffuser cores
- Installs into access flooring from top surface



TAF-V



energy solutions

MODEL:

TAF-V / Variable Volume Diffuser Plenum

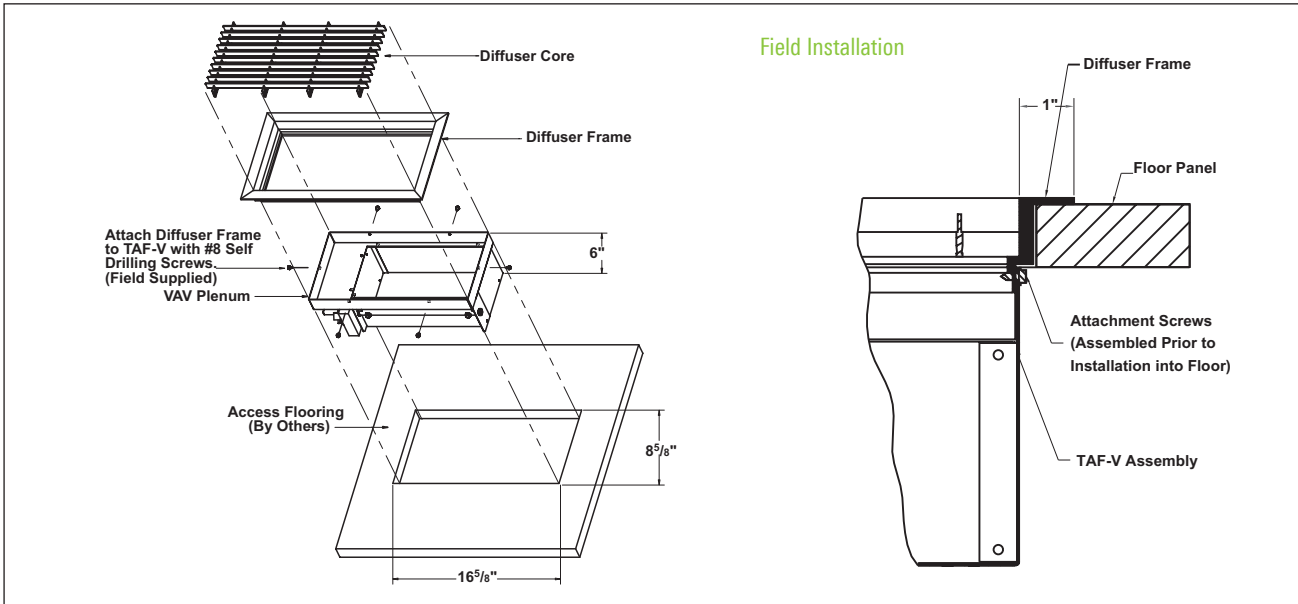
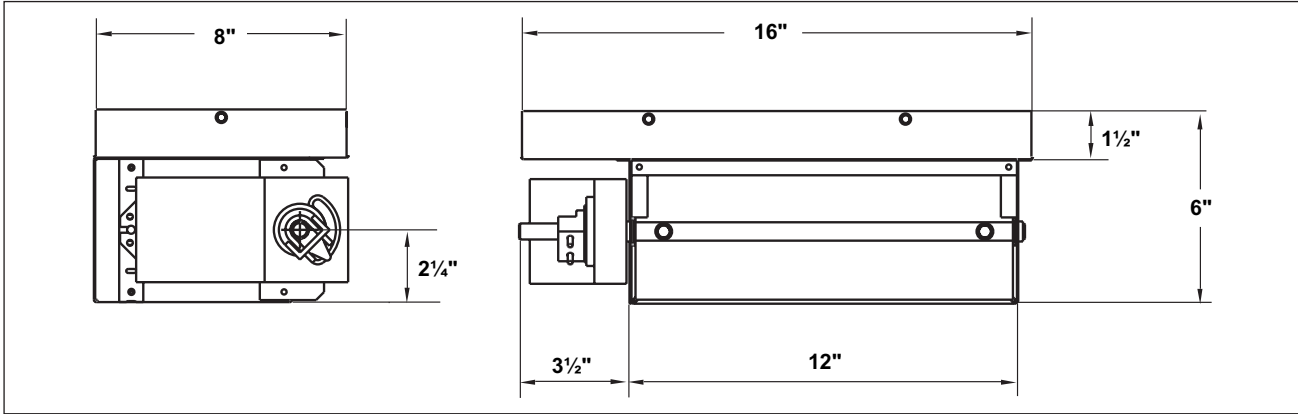
OVERVIEW

The TAF-V is a heavy gauge variable volume diffuser plenum designed for floor application in underfloor air distribution systems where frequent changes in heating loads occur. This product saves energy and can contribute toward LEED certification.



See website for Specifications

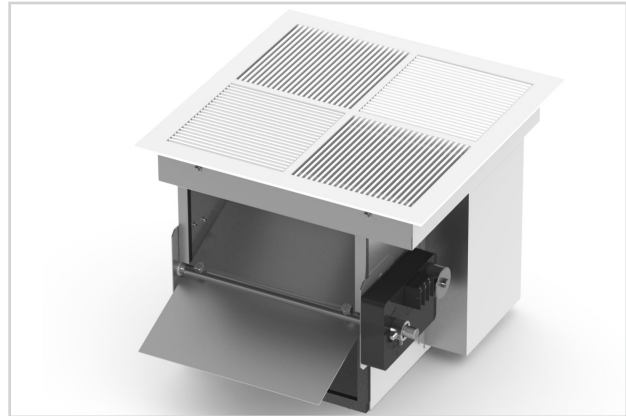
TAF-V DIMENSIONS



Note: CT-TAF diffuser and TAF-V are sold as separate units. The CT-TAF is available as a CT-TAF-480, CT-TAF-481, CT-TAF-PP0 and CT-TAF-PP3 in single or multiple core deflection patterns. See CT-TAF section for diffuser information.

TAF-V MULTI-4 PIECE

- Provides variable air volume cooling only control for non-ducted applications
- Tight close-off damper with optional 24 VAC electric actuator
- Heavy gauge diffuser plenum designed for floor applications
- Available with single or multiple diffuser cores
- Installs into access flooring from top surface
- Diffuser cores are field adjustable
- Tight close off damper with optional 24VAC electric actuator



TAF-V MULTI-4 PIECE



energy solutions

MODEL:

TAF-V Multi-4 Piece / Variable Volume Diffuser Plenum

OVERVIEW

The TAF-V is a heavy gauge variable volume diffuser plenum designed for floor application in underfloor air distribution systems where frequent changes in heating loads occur. This product saves energy and can contribute toward LEED certification.

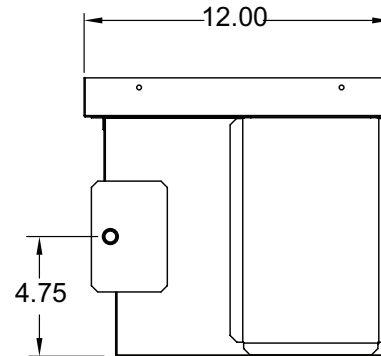
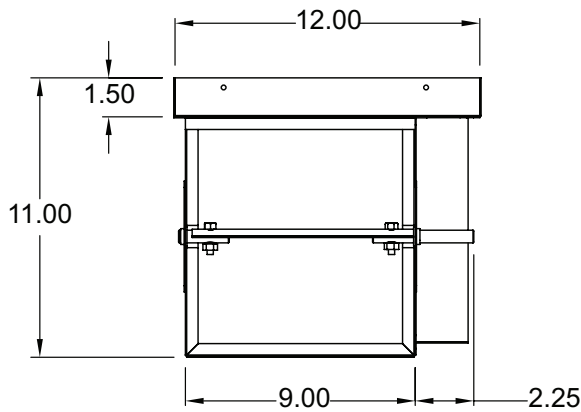
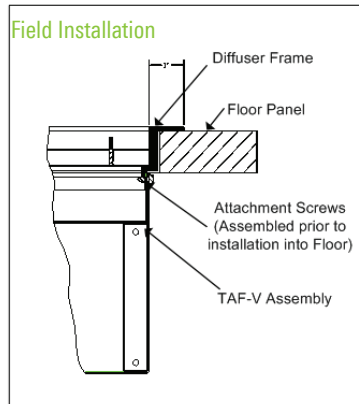
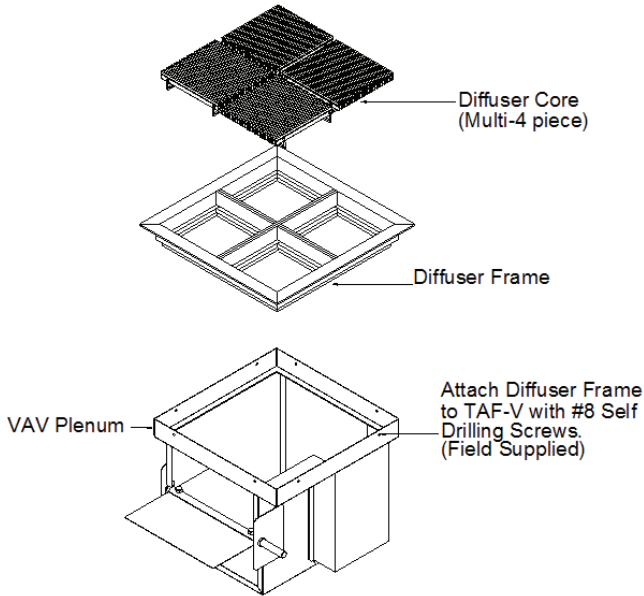


See website for Specifications

S

TAF-V MULTI-4 PIECE

TAF-V MULTI-4 PIECE DIMENSIONS

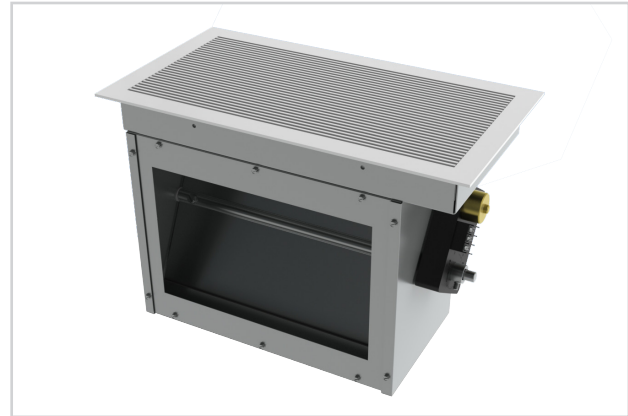


Note: CT-TAF diffuser and TAF-V are sold as separate units. The CT-TAF is available as a CT-TAF-480, CT-TAF-481, CT-TAF-PP0 and CT-TAF-PP3 in single or multiple core deflection patterns. See CT-TAF section for diffuser information.



TAF-HC

- The Titus model TAF-HC ducted plenum is designed for application in access floor air distribution systems for use as a ducted supply or return
- The TAF-HC delivers constant volume heating & VAV cooling within the same unit. It can be ducted for heating & provides variable air volume cooling control (from pressurized floor plenum).
- The TAF-HC plenum is constructed of a heavy gauge steel housing
- Diffuser core available in single or multi-piece configuration
- Installs into access flooring from top surface. Removal of flooring is not required.
- Optional 24 VAC actuator available



TAF-HC



energy solutions

MODEL:

TAF-HC / Diffuser Heating & Cooling Plenum, Dual Inlet with Damper

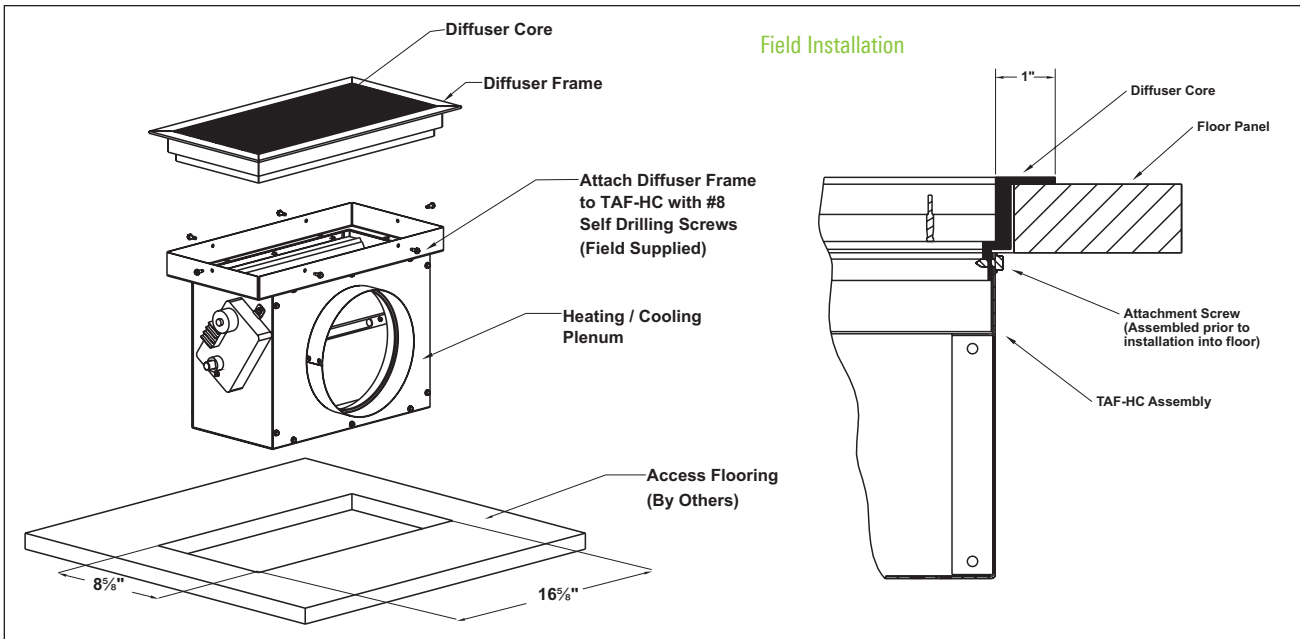
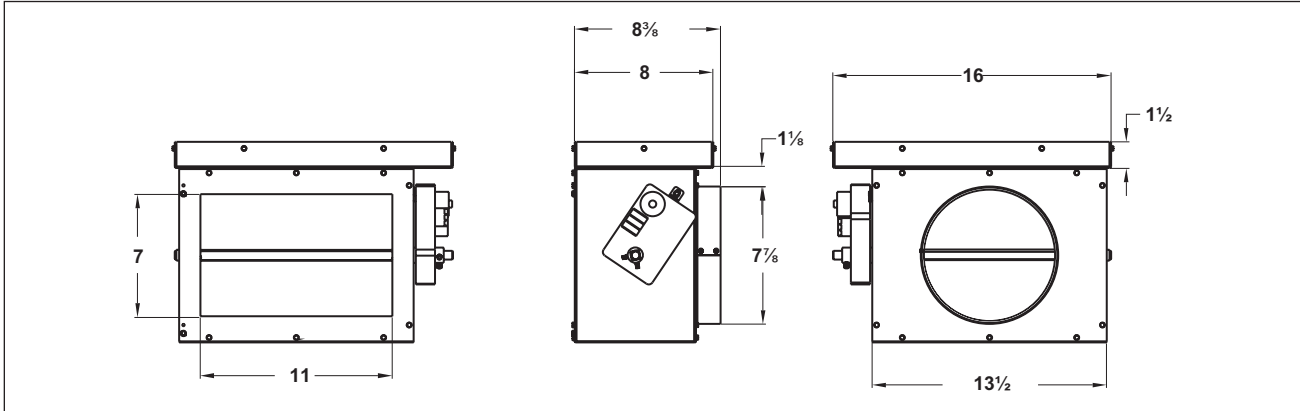
OVERVIEW

The TAF-HC ducted plenum is constructed of a heavy gauge steel and is designed for application in underfloor air distribution systems. These devices are designed to be ducted to perimeter fan terminals which only operate during heating and simultaneously serve as variable volume cooling supply outlets delivering air directly from the pressurized plenum. This product saves energy and can contribute toward LEED certification.



See website for Specifications

TAF-HC DIMENSIONS



Note: CT-TAF diffuser and TAF-HC are sold as separate units. The CT-TAF is available as a CT-TAF-480, CT-TAF-481, CT-TAF-PP0 and CT-TAF-PP3 in single or multiple core deflection patterns. See CT-TAF section for diffuser information.



TAF-D 8" x 16"	Total Pressure	0.01	0.02	0.03	0.05	0.07	0.1	0.13	0.17	0.21
	cfm	97	123	151	188	214	259	296	338	373
	NC (Noise Criteria)	-	-	14	20	24	29	33	37	40
	Throw	9-11-16	10-12-18	11-14-19	13-15-22	13-16-23	15-18-25	16-19-27	17-20-29	18-22-30
TAF-V 8" x 16"	Total Pressure	0.01	0.02	0.03	0.05	0.07	0.1	0.13	0.17	0.21
	cfm	36	80	87	123	147	178	204	236	264
	NC (Noise Criteria)	-	-	-	-	13	18	23	27	30
	Throw	3-5-9	7-10-14	8-10-15	10-12-18	11-13-19	12-15-21	13-16-21	14-17-24	15-18-26
TAF-HC 8" x 16"	Total Pressure	0.01	0.02	0.03	0.05	0.07	0.1	0.13	0.17	0.21
	cfm	97	123	151	188	214	259	296	338	373
	NC (Noise Criteria)	-	-	14	20	24	29	33	37	40
	Throw	9-11-16	10-12-18	11-14-19	13-15-22	13-16-23	15-18-25	16-19-27	17-20-29	18-22-30

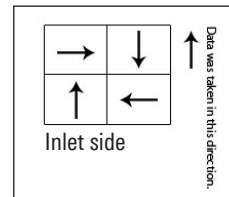
Data is based on CT-480

PERFORMANCE NOTES

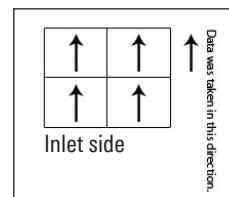
- The throw values are for vertical jet, blowing upwards from the floor for terminal velocities of 50, 100, & 150 FPM
- The throw values are for 10°F ΔT cooling between the supply and average occupied room temperature
- All data is with the damper in the full open position
- NC values are based on a room absorption of 10dB
- Data obtained per ASHRAE Standard 70-2006 and ANSI 51.51 procedures
- Dash (-) in space denotes NC level less than 10

TAF-V: 4-WAY

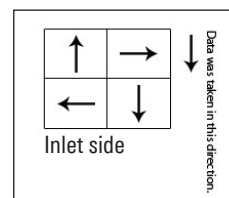
Core Direction	Total Pressure	0.02	0.035	0.06
Inward	Velocity, fpm	214	321	427
	Airflow CFM	100	150	200
	Vertical Throw Up, ft.	2-4-6	4-5-8	5-6-9



Core Direction	Total Pressure	0.02	0.035	0.06
One-way	Velocity, fpm	214	321	427
	Airflow CFM	100	150	200
	Vertical Throw Up, ft.	2-4-6	4-5-7	5-6-8



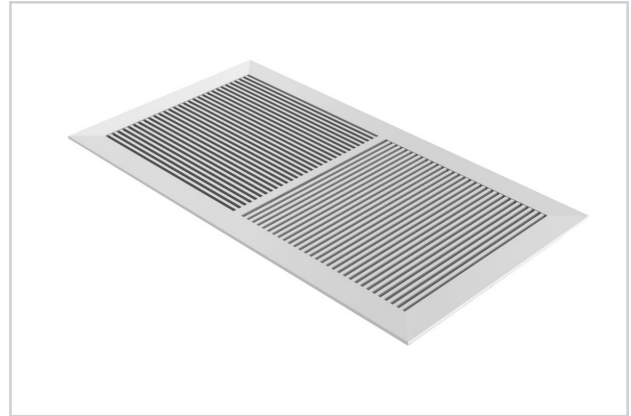
Core Direction	Total Pressure	0.02	0.035	0.06
Outward	Velocity, fpm	214	321	427
	Airflow CFM	100	150	200
	Vertical Throw Up, ft.	1-3-5	3-4-6	4-5-7



Data is based on CT-480-PP3

CT-TAF

- Titus CT-TAF diffusers are fixed linear bar diffuser for underfloor applications
- The CT-TAF is designed to be integrated with the TAF-HC, TAF-V and TAF-D plenums (see TAF-HC, TAF-V and TAF-D for more information)
- CT-TAF frame drops into plenum opening and sits on top of carpeting
- All deflection bars are fixed and are parallel to the long dimension
- Fixed Bars are extruded aluminum
- CT-TAF diffuser cores are available in single, dual & quad core configurations



CT-TAF



energy solutions



See website for Specifications

MODELS:

CT-TAF-480 / 1/4" Spacing / 1/8" Bars / 0° Deflection
 CT-TAF-481 / 1/4" Spacing / 1/8" Bars / 15° Deflection
 CT-TAF-PP0 / 7/16" Spacing / 7/32" Bars / 0° Deflection
 CT-TAF-PP3 / 7/16" Spacing / 7/32" Bars / 30° Deflection

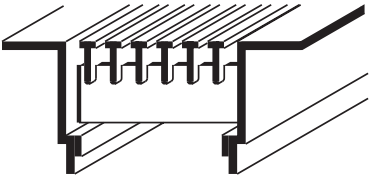
FINISHES:

Standard Finish - #26 White
 Optional Finish - Wood grains (See Wood grains Brochure for Finishes)

OVERVIEW

CT-TAF diffusers are fixed linear bar diffusers for underfloor applications. The CT-TAF is designed to be integrated with the TAF-HC, TAF-V, and TAF-D plenums.

CT-TAF DIMENSIONS

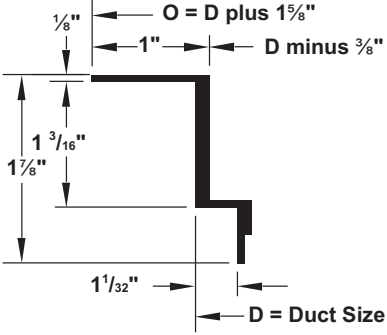


Type 5 heavy duty mounting frame is shown

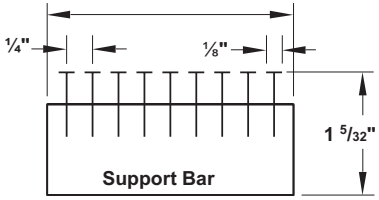
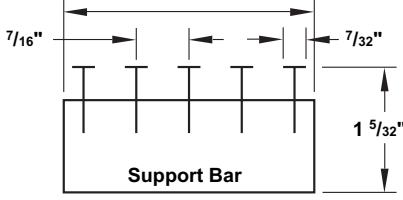
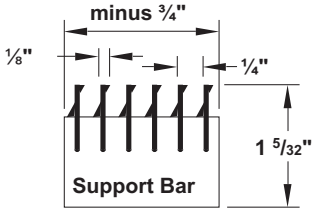
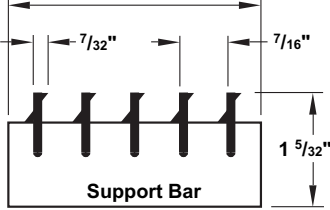
CT-TAF diffusers are designed to fit the dimensions of the TAF-HC, TAF-V and TAF-D plenums. See TAF-HC, TAF-V and TAF-D submittals for information on required hole size for access floor tile.

Dim 1 Length	Dim 2 Length
15 3/4"	7 3/4"

Removable core is furnished with frame



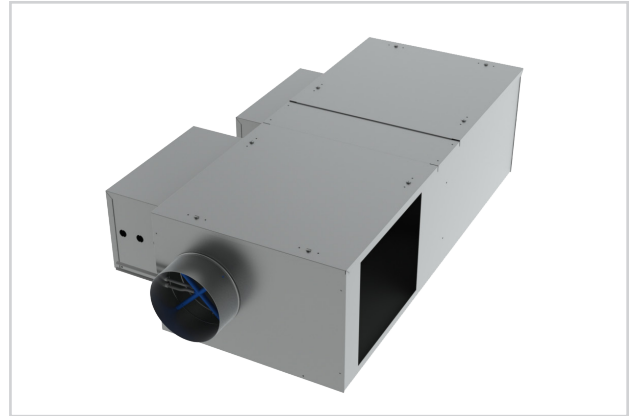
CORE SELECTIONS

1/4" Spacing	7/16" Spacing
1/8" Bars	7/32" Bars
<p style="color: green; margin: 0;">Model CT-TAF-480 - 0° Deflection</p> <p style="text-align: center; margin: 0;">Duct Size minus 3/4"</p>  <p style="text-align: center; margin: 0;">Support Bar</p>	<p style="color: green; margin: 0;">Model CT-TAF-PP0 - 0° Deflection</p> <p style="text-align: center; margin: 0;">Duct Size minus 3/4"</p>  <p style="text-align: center; margin: 0;">Support Bar</p>
<p style="color: green; margin: 0;">Model CT-TAF-481 - 15° Deflection</p> <p style="text-align: center; margin: 0;">Duct Size minus 3/4"</p>  <p style="text-align: center; margin: 0;">Support Bar</p>	<p style="color: green; margin: 0;">Model CT-TAF-PP3 - 30° Deflection</p> <p style="text-align: center; margin: 0;">Duct Size minus 3/4"</p>  <p style="text-align: center; margin: 0;">Support Bar</p>



LHK

- Designed to be installed within the grid structure of the UFAD plenums
- Heavy steel casing, with leak resistant construction
- Dual density insulation, coated to prevent erosion, meets requirements of NFPA 90A and UL 181
- Top access panels can be removed for service of damper, blower or filter sections
- Energy efficient fan motor, permanent split capacitor type, mounted in vibration isolators
- Ultra-high efficiency ECM motor available
- Adjustable SCR fan speed control, with minimum voltage stop
- Pressure independent primary airflow control
- Heating may be accomplished using either plenum or ducted room air
- Single point electrical connections
- Rectangular discharge opening is designed for flanged duct connections



LHK

- AeroCross™ multi-point velocity sensor with center averaging



wood grains energy solutions



See website for Specifications

MODELS:

ALHK / Analog Control
DLHK / Digital Control

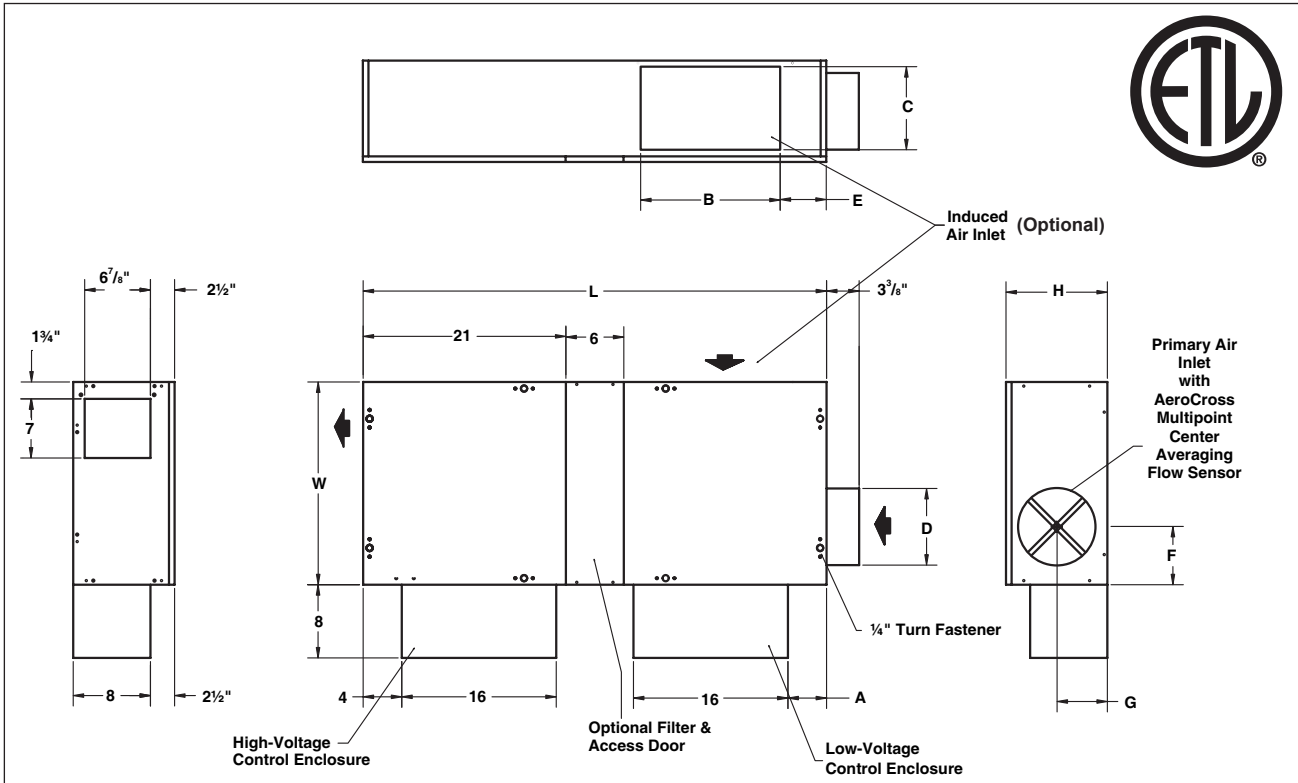
OVERVIEW

The LHK Underfloor Fan Powered Terminal Unit is designed to be installed in the underfloor plenum of an access floor grid system. Constructed of a heavy steel casing that is leak resistant, the LHK contains an energy efficient fan motor. Like the PFC, the LHK fits within the modular pedestal systems of the raised floor and is available in various heights to fit under 12" through 18" raised floors. This product saves energy and can contribute toward LEED certification.



LHK terminal unit installed in an underfloor application

LHK DIMENSIONS



Unit Size	Inlet Size	A	B	C	D	E	F	G	H	L	T	W	Filter Size
3	9" Diameter	5	14	8	8	3½	5	7	10½	48	10	21	18 x 10
4	9" Diameter	5	14	12	8	3	5	7	14	48	13½	21	18 x 14
	10" Diameter				9		6						

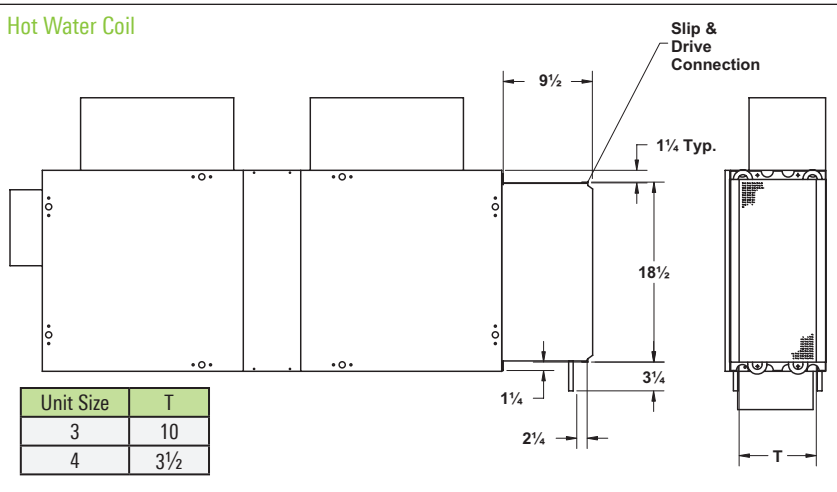
HOT WATER COIL SECTION

STANDARD FEATURES

- ½-inch copper tubes
- Aluminum ripple fins
- Connections: Male solder 5/8-inch for 1-row and 7/8"-2row Left or right hand connections
- Galvanized steel casing
- Slip & drive
- Coil is installed at discharge of unit

COIL ROWS

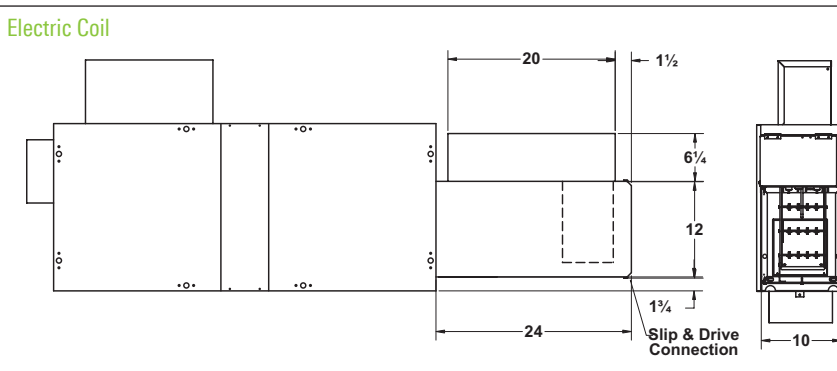
- 1-Row
- 2-Row



ELECTRIC COIL SECTION

STANDARD FEATURES

- Auto reset thermal cutouts (one per element)
- 80/20 Nickel chrome heating elements
- Airflow safety switch
- Line terminal block (277/1Ø, 208/240/3Ø, or 480/3Ø 4 wire)
- Flanged connection
- Control transformer for DDC or Analog electronic controls
- Fan relay for DDC fan terminals
- Magnetic contactor per step on terminals with DDC or analog electronic controls



OPTIONS

- Mercury contactor
- Fuse block
- Disconnect switch, door interlock type
- Manual reset cutout
- Dust tight construction
- Optional Lynergy Comfort Controlled SSR Electric Heat

SUPPLY VOLTAGE

- 208 V, 1 ph, 60 Hz
- 240 V, 1 ph, 60 Hz
- 277 V, 1 ph, 60 Hz
- 208 V, 3 ph, 60 Hz
- 480 V, 3 ph, 60 Hz (4 wire wye only)

See Electric Heating Coils in Section 0 for more information

ADDITIONAL ACCESSORIES

(OPTIONAL)

- Induced air filter, 1-inch thick, disposable construction type
- Fan disconnect switch (not available on units with optional electric coils)
- Fan unit fusing
- Foil face Liner (½")
- Fibre-free Liner (½")
- EcoShield (½")

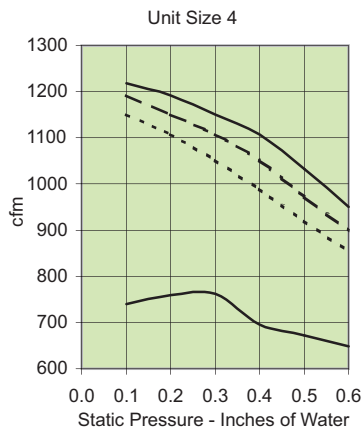
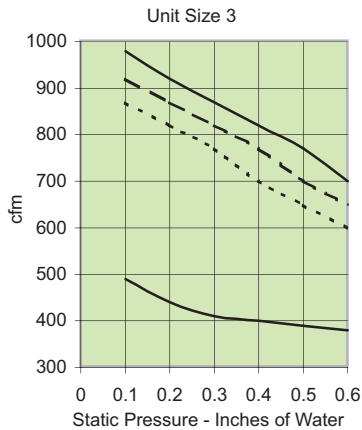
Electrical Data

Unit Size	Motor HP	Motor Amperage Ratings		
		120/1/60 FLA	208/240/1/60 FLA	277/1/60 FLA
3	1/4	5.8	2.5	1.8
4	1/3	6.4	3.0	2.5

ECM Electrical Data

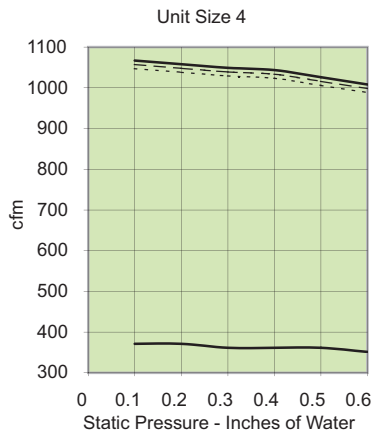
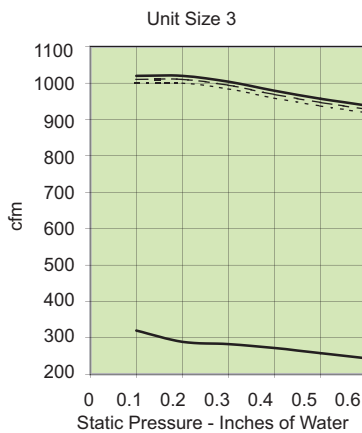
Unit Size	Motor HP	120V	208V	240V	277V
3	1/3	5.0	3.3	2.8	2.6
4	1/3	5.0	3.3	2.8	2.6

LHK FAN CURVES



No Coil or with Electric Coil ———
 1-Row Water Coil - - - - -
 2-Row Water Coil ·····

LHK ECM FAN CURVES



WATER COIL HEATING CAPACITY (MBH)

Unit Size	Rows	gpm	Head Loss	Airflow, cfm						
				380	450	520	660	730	800	870
3	One-Row	0.5	0.05	10.1	10.6	11.0	11.6	11.9	12.1	12.3
		1.0	0.15	13.5	14.5	15.3	16.6	17.2	17.7	18.1
		2.0	0.47	15.3	16.6	17.7	19.6	20.4	21.1	21.8
		4.0	1.76	16.3	17.8	19.1	21.4	22.3	23.2	24.1
		Airside ΔPs		0.02	0.03	0.03	0.05	0.06	0.07	0.07
	Two-Row	1.0	0.11	15.7	16.5	17.1	18.0	18.4	18.7	18.9
		2.0	0.30	21.8	23.6	25.1	27.4	28.4	29.3	30.0
		3.0	0.90	25.4	28.0	30.3	34.1	35.8	37.3	38.6
		4.0	3.29	27.5	30.6	33.4	38.2	40.4	42.3	44.2
		Airside ΔPs		0.04	0.05	0.06	0.09	0.11	0.13	0.15

- Hot Water capacities are in MBH
- Data based on 180°F entering water and 65°F entering air
- Head loss is in feet of water
- Air temperature rise = 927 x MBH / cfm
- Water temperature drop = 2.04 x MBH / gpm

Unit Size	Rows	gpm	Head Loss	Airflow, cfm						
				660	730	800	870	950	1010	1100
4	One-Row	0.5	0.05	11.6	11.9	12.1	12.3	12.5	12.7	12.9
		1.0	0.15	16.6	17.2	17.7	18.1	18.6	18.9	19.3
		2.0	0.47	19.6	20.4	21.1	21.8	22.5	23.0	23.7
		4.0	1.75	21.4	22.3	23.2	24.1	24.9	25.6	26.4
		Airside ΔPs		0.05	0.06	0.07	0.07	0.09	0.09	0.11
	Two-Row	1.0	0.31	27.4	28.4	29.3	30.0	30.8	31.4	32.1
		2.0	0.89	34.1	35.8	37.3	38.6	40.0	41.0	42.4
		3.0	1.91	36.8	38.7	40.5	42.2	43.9	45.2	46.8
		4.0	3.29	38.2	40.4	42.3	44.2	46.1	47.5	49.4
		Airside ΔPs		0.09	0.11	0.13	0.15	0.17	0.19	0.22

- Connection: All coils are ½-inch O.D. male solder

ALHK, DLHK / SOUND APPLICATION DATA / NC VALUES

Radiated Sound	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	29	33	33	35	35	36
Total dB reduction	31	34	33	35	35	36

Per AHRI 885-2008
Assumed effect for Double Gypsum Board roughly equal to access floor tile

Discharge Sound	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB reduction	24	28	39	53	59	40

Per AHRI 885-2008
Flex Duct - Vinyl Core Flex
End Reflection - 8-inch Termination to Diffuser
Fiberglass Flex Duct - 5-foot length, 1-inch duct work
Room Size - 2400 Cubic foot Room, 5 feet from sound source

The following dB adjustments are used, per AHRI 885-2008 for the calculation of NC above 300 cfm

	Octave Bands					
	2	3	4	5	6	7
300-700 cfm	2	1	1	-2	-5	-1
Over 700 cfm	4	3	2	-2	-7	-1

ALHK, DLHK / RADIATED SOUND POWER DATA

Size	CFM	Discharge Ps	Min ΔPs	Octave Band Sound Power, Lw																															
				Fan Only								0.5" ΔPs								1.0" ΔPs								1.5" ΔPs							
				2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC				
309	500	0.25	0.09	68	51	50	47	38	26	15	68	54	50	47	41	31	15	70	58	54	50	43	38	18	70	61	55	51	46	42	18				
	600		0.13	69	54	53	49	41	30	17	69	57	53	49	43	34	17	71	60	56	52	45	40	19	72	64	57	53	47	43	20				
	700		0.18	70	57	55	52	43	33	18	70	60	55	52	43	36	18	73	63	58	54	47	40	22	74	66	60	55	49	44	23				
	800		0.23	70	59	56	53	46	36	18	72	62	56	53	46	36	20	74	65	60	56	49	41	23	75	68	61	57	51	45	24				
	850		0.26	71	60	57	54	47	37	19	73	63	57	54	47	37	22	75	66	61	56	50	42	24	76	69	62	57	52	46	25				
410	800	0.25	0.08	65	57	56	52	46	38	17	73	66	61	56	50	43	22	75	69	65	59	54	48	26	77	72	67	62	56	51	28				
	875		0.10	66	58	58	54	48	41	19	74	67	62	57	52	45	23	76	70	66	60	55	49	27	78	73	68	63	58	52	29				
	950		0.12	67	60	59	56	50	42	20	75	68	63	59	53	46	24	77	71	67	61	55	50	28	79	74	69	63	58	52	30				
	1025		0.13	68	61	60	57	51	44	21	75	69	64	60	54	47	25	78	72	67	62	56	50	28	80	74	70	64	59	54	31				
	1100		0.15	69	62	61	59	53	46	22	76	69	65	61	55	48	26	79	73	68	63	57	51	29	80	75	71	64	59	54	32				

- Radiated sound is the noise transmitted through the unit casing and emitted from the induction port
- Min ΔPs is the difference between atmospheric pressure and the inlet static pressure with the primary damper full open and the unit fan set to match the primary flow
- Sound power levels are in dB, ref 10⁻¹² watts
- All performance based on tests conducted in accordance with ASHRAE 130-2008 and AHRI 880-2011
- All NC levels determined using the ceiling space effect of a double layer of 5/8 in gypsum (Ceiling Type 10 from Table D14, AHRI Standard 885-2008) to approximate the access floor panels
- Dash (-) in space denotes NC value less than NC10
- Only highlighted data points are AHRI certified. See page S68 for AHRI Certified Performance Listings.

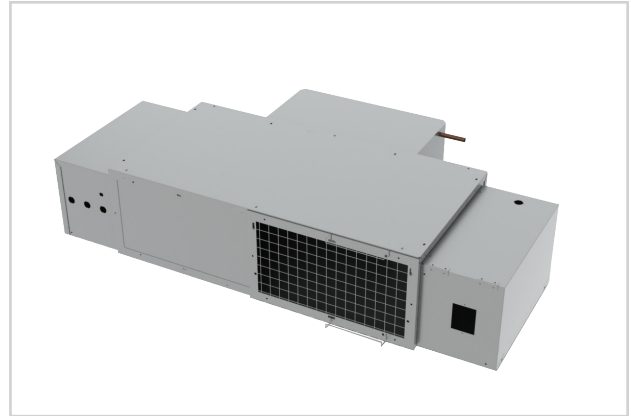
ALHK, DLHK / DISCHARGE SOUND POWER DATA

Size	CFM	Discharge Ps	Min ΔPs	Octave Band Sound Power, Lw																															
				Fan Only								0.5" ΔPs								1.0" ΔPs								1.5" ΔPs							
				2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC				
309	500	0.25	0.09	69	58	59	55	56	52	22	69	60	61	58	58	52	22	69	60	61	58	58	52	22	71	60	61	58	58	52	25				
	600		0.13	71	61	62	59	59	56	25	71	61	64	62	59	56	25	73	61	64	62	59	56	28	73	61	64	62	59	56	28				
	700		0.18	73	64	64	62	62	60	28	73	66	64	65	62	60	28	75	66	64	65	62	60	30	75	66	64	65	62	60	30				
	800		0.23	75	66	66	64	65	63	28	77	66	66	67	65	63	30	77	66	66	67	65	63	30	77	66	66	67	65	63	30				
	850		0.26	75	67	67	65	66	65	29	75	67	67	68	66	67	30	77	67	67	68	66	67	30	77	67	67	68	66	67	30				
410	800	0.25	0.08	78	72	71	71	70	68	31	81	74	71	71	70	68	35	81	75	73	71	70	68	35	81	75	73	71	70	68	35				
	875		0.10	78	73	72	72	71	69	32	81	75	72	72	71	69	35	81	76	74	72	71	69	36	81	76	75	72	71	69	36				
	950		0.12	79	74	73	73	72	71	34	82	76	75	73	72	71	36	82	77	76	73	72	71	37	82	78	76	73	72	71	38				
	1025		0.13	79	75	74	74	73	72	35	82	78	76	74	73	72	38	82	78	77	74	73	72	38	82	79	77	74	75	72	39				
	1100		0.15	79	76	75	75	74	73	36	82	79	77	75	74	73	39	82	79	78	75	76	73	39	82	80	78	75	76	75	40				

- Discharge sound is the noise emitted from the unit discharge into the downstream ductwork
- Min ΔPs is the difference between atmospheric pressure and the inlet static pressure with the primary damper full open and the unit fan set to match the primary flow
- Sound power levels are in dB, ref 10⁻¹² watts
- All performance based on tests conducted in accordance with ASHRAE 130-2008 and AHRI 880-2011
- All NC levels determined using AHRI 885-2008 Appendix E. See Terminal Unit Engineering Guidelines.
- Dash (-) in space denotes NC value less than NC10
- Only highlighted data points are AHRI Certified. See page S63 for AHRI Certified Performance Listings.

PFC

- Designed to be installed within the grid structure of the UFAD plenums
- Heavy steel casing with leak resistant construction
- Energy efficient fan motor, permanent split capacitor type, mounted on vibration isolators
- Adjustable SCR fan speed control with minimum voltage stop
- Ultra-high efficiency ECM motor available
- Steel inlet screen covers the inlet side of the unit to protect the fan from debris
- Top access to unit high and low voltage controls for easy access from room above
- Single point electrical connections
- Rectangular discharge opening is designed for flanged duct connections
- Optional fan inlet sensor for cfm monitoring



PFC



energy solutions



See website for Specifications

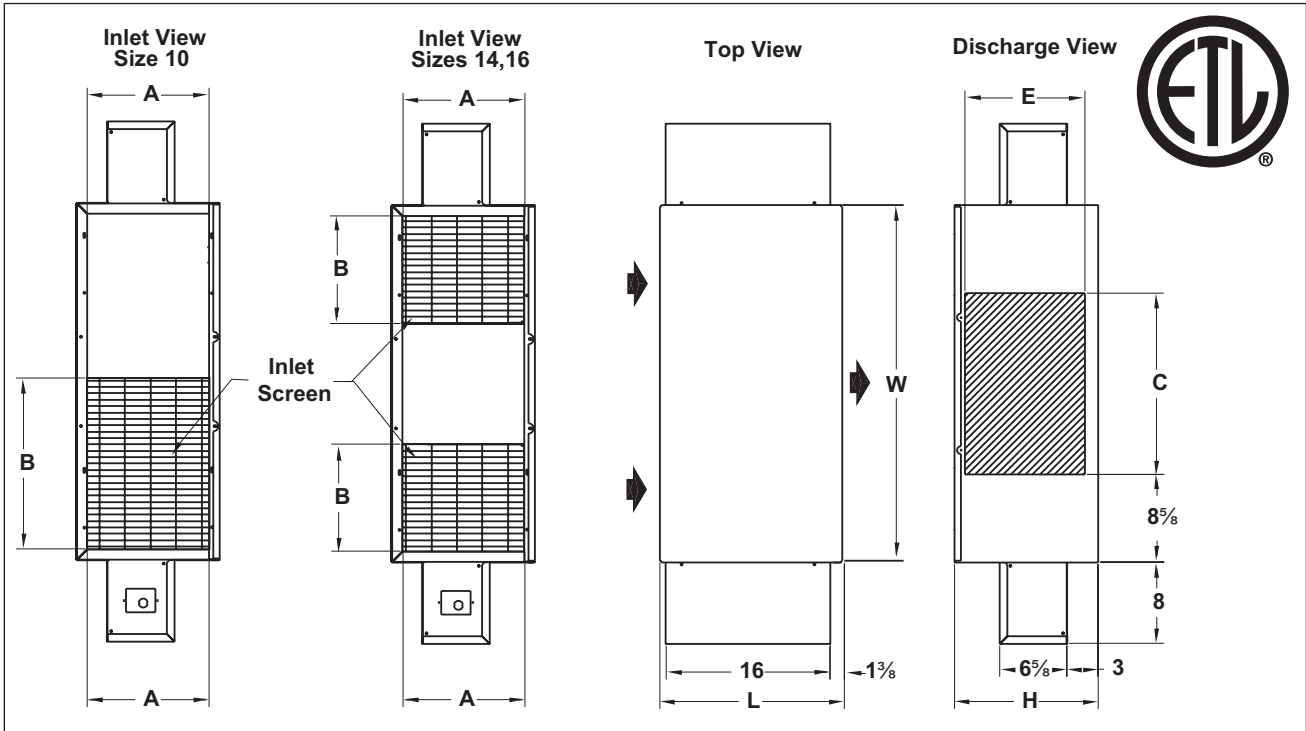
MODEL:

DPFC / Digital Control

OVERVIEW

The PFC was designed to be used as a booster unit for UFAD perimeter applications. The PFC fan powered terminal unit is designed to be installed between the pedestals in an underfloor system and installed in a floor 12" to 18" in height. This product saves energy and can contribute toward LEED certification.

PFC DIMENSIONS



Unit Size	A	B	C	E	H	L	W	Filter Size	Filter Per Unit
10	8 1/2	16 3/8	15 1/4	7 3/4	10 1/2	18	34 7/8	10 x 18	1
14	12	10 1/2	17 3/4	11 3/4	14	18	34 7/8	16 x 14	2
16	14	9 7/8	17 3/4	13 3/4	16	19	34 7/8	14 x 16	

HOT WATER COIL SECTION

STANDARD FEATURES

- ½-inch copper tubes
- Aluminum ripple fins
- Connections: Male solder
5/8-inch for both 1-row and 2-row
Left or right hand connections
- Galvanized steel casing
- Flanged duct connection
- Coil is installed at discharge of unit

COIL ROWS

- 1-Row
- 2-Row

ELECTRIC COIL SECTION

STANDARD FEATURES

- Auto reset thermal cutouts (one per element)
- 80/20 Nickel chrome heating elements
- Airflow safety switch
- Line terminal block (277/1Ø, 208/240/3Ø, or 480/3Ø 4 wire)
- Flanged connection
- Control transformer for DDC or Analog electronic controls
- Fan relay for DDC fan terminals
- Magnetic contactor per step

OPTIONS

- Mercury contactor
- Fuse block
- Disconnect switch, door interlock type
- Manual reset cutout
- Dust tight construction
- Optional Lynergy Comfort Controlled SSR Electric Heat

SUPPLY VOLTAGE

- 208 V, 1 ph, 60 Hz
- 240 V, 1 ph, 60 Hz
- 277 V, 1 ph, 60 Hz
- 208 V, 3 ph, 60 Hz
- 480 V, 3 ph, 60 Hz (4 wire wye only)

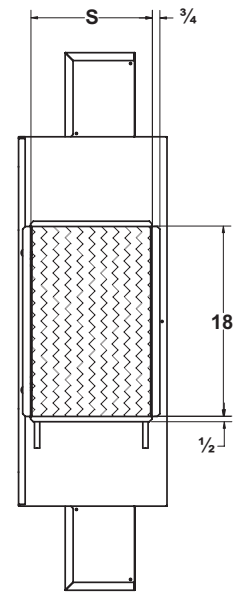
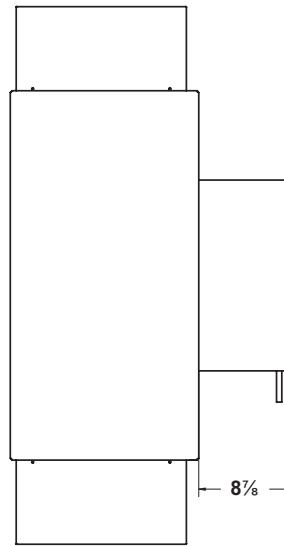
See Electric Heating Coils in Section O for more information

Hot Water Coil

Top View

Discharge View

Unit Size	S
10	10
14	11½
16	13⅞

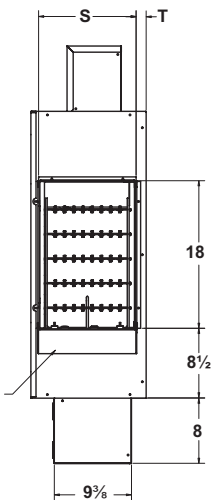
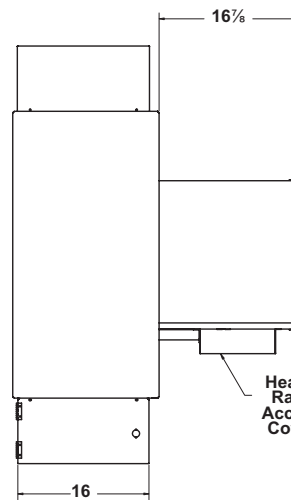


Electric Coil

Top View

Discharge View

Unit Size	S	T
10	9½	1
14	12	1¼
16	13½	1⅝



ADDITIONAL ACCESSORIES

(OPTIONAL)

- Induced air filter, 1-inch thick, disposable construction type
- Fan disconnect switch (not available on units with optional electric coils)
- Fan unit fusing

Electrical Data

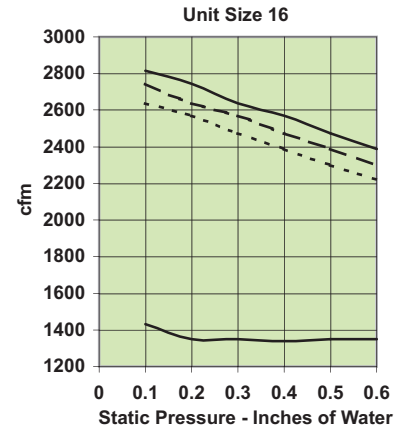
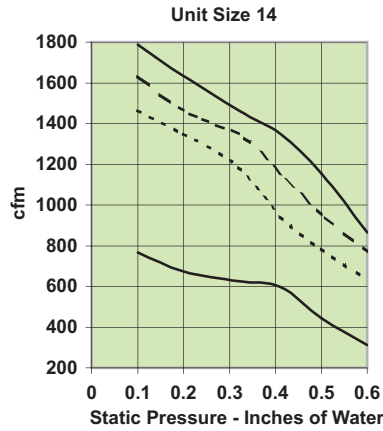
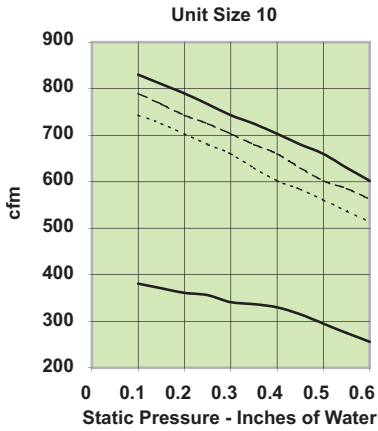
Unit Size	Motor hp	Motor Amperage Ratings		
		120/1/60 FLA	208/240/1/60 FLA	277/1/60 FLA
10	1/4	3.4	1.7	1.7
14	1/3	7.0	3.1	3.2
16	3/4	11.4	5.2	5.1

ECM Electrical Data

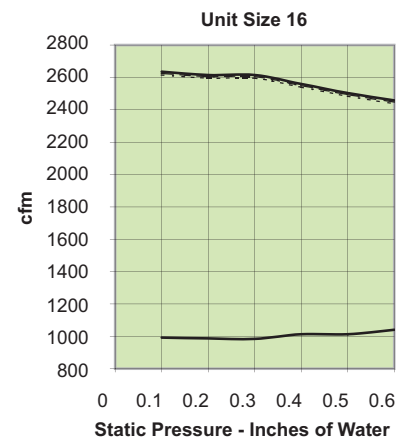
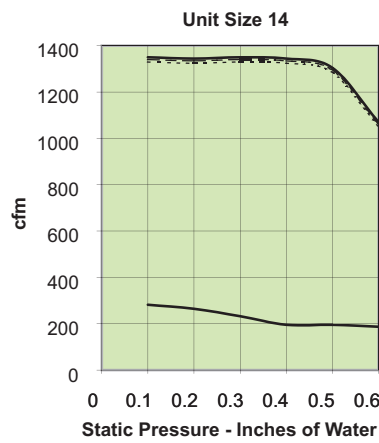
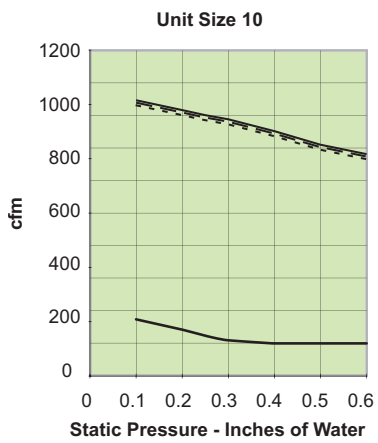
Unit Size	Motor HP	120V	208V	277V
10	1/3	5.0	3.3	2.6
14	1/2	7.7	5.0	4.1
16	1	12.8	10.5	6.9

All dimensions are in inches

DPFC FAN CURVES



DPFC ECM FAN CURVES



No Coil or with Electric Coil ———
 1-Row Water Coil - - - - -
 2-Row Water Coil ·····

DPFC / WATER COIL HEATING CAPACITY (MBH)

Unit Size	Rows	gpm	Head Loss	Airflow, cfm								
				400	450	500	550	600	650	700	750	800
10	One Row	0.5	0.24	10.5	10.9	11.2	11.5	11.8	12.1	12.3	12.5	12.8
		1.0	0.71	12.6	13.2	13.8	14.3	14.7	15.2	15.6	15.9	16.3
		2.0	2.60	13.9	14.6	15.3	16.0	16.6	17.1	17.7	18.1	18.6
		4.0	9.78	14.6	15.5	16.3	17.0	17.7	18.3	18.9	19.5	20.0
		Airside ΔPs		0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.10
	Two Row	0.5	0.08	13.9	14.3	14.7	15.1	15.4	15.6	15.8	16.0	16.2
		1.0	0.24	19.6	20.6	21.5	22.3	23.0	23.7	24.3	24.8	25.3
		2.0	0.71	23.0	24.5	25.9	27.1	28.3	29.3	30.3	31.2	32.1
		4.0	2.63	25.0	26.8	28.5	30.0	31.5	32.8	34.1	35.3	36.4
		Airside ΔPs		0.06	0.08	0.09	0.11	0.12	0.14	0.16	0.17	0.19

- Hot water capacities are in MBH
- Data based on 180°F entering water and 65°F entering air
- Head loss is in feet of water
- Air temperature rise = 927 x MBH / cfm
- Water temperature drop = 2.04 x MBH / gpm

Unit Size	Rows	gpm	Head Loss	Airflow, cfm								
				320	480	600	750	900	1000	1130	1280	1350
14	One Row	0.5	0.27	10.2	11.7	12.7	13.3	13.9	14.2	14.6	14.9	15.1
		1.0	0.79	12.0	14.3	15.6	16.9	17.9	18.5	19.2	19.9	20.2
		2.0	2.90	13.1	15.9	17.6	19.3	20.7	21.5	22.5	23.4	23.8
		4.0	9.77	14.3	15.9	17.7	19.5	21.0	21.8	22.9	23.9	24.4
		Airside ΔPs		0.02	0.04	0.05	0.07	0.10	0.11	0.14	0.17	0.18
	Two Row	0.5	0.55	15.5	17.8	19.0	20.0	20.7	21.1	21.5	21.9	22.0
		1.0	1.53	19.3	23.7	26.0	28.3	30.1	31.0	32.1	33.2	33.7
		2.0	5.60	21.6	27.4	30.8	34.3	37.2	38.8	40.7	42.6	43.4
		4.0	3.54	23.9	31.1	35.5	40.2	44.1	46.5	49.2	52.0	53.2
		Airside ΔPs		0.04	0.07	0.10	0.14	0.19	0.23	0.28	0.34	0.37

Unit Size	Rows	gpm	Head Loss	Airflow, cfm								
				1400	1550	1700	1850	2000	2150	2300	2450	2550
16	One Row	0.5	0.04	16.6	16.9	17.1	17.4	17.6	17.7	17.9	18.1	18.2
		1.0	0.14	22.6	23.2	23.8	24.3	24.7	25.1	25.5	25.9	26.1
		2.0	0.54	26.9	27.9	28.7	29.4	30.1	30.8	31.4	31.9	32.3
		4.0	2.04	24.7	27.9	26.4	27.1	27.8	28.4	28.9	29.5	29.8
		Airside ΔPs		0.14	0.17	0.19	0.22	0.25	0.28	0.31	0.35	0.37
	Two Row	0.5	0.08	19.9	20.1	20.3	20.4	20.6	20.7	-	-	-
		1.0	0.30	33.4	34.1	34.7	35.3	35.8	36.2	-	-	-
		2.0	1.14	45.5	47.0	48.4	49.6	50.7	51.7	-	-	-
		4.0	4.31	54.0	56.3	58.4	60.3	62.0	63.6	-	-	-
		Airside ΔPs		0.28	0.34	0.39	0.45	0.51	0.57	-	-	-



DPFC / SOUND APPLICATION DATA / NC VALUES

Radiated Sound	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	29	33	33	35	35	36
Total dB reduction	31	34	33	35	35	36

Per AHRI Standard 885-2008

Assumed effect for Double Gypsum Board roughly equal to access floor tile

Discharge Sound	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB reduction	24	28	39	53	59	40

Per AHRI 885-2008

Flex Duct - Vinyl Core Flex

End Reflection - 8-inch Termination to Diffuser

Fiberglass Flex Duct - 5-foot length, 1-inch duct work

Room Size - 2400 Cubic foot Room, 5 feet from sound source

The following dB adjustments are used, per AHRI 885-2008 for the calculation of NC above 300 cfm.

	Octave Bands					
	2	3	4	5	6	7
300-700 cfm	2	1	1	-2	-5	-1
Over 700 cfm	4	3	2	-2	-7	-1

DPFC / SOUND PERFORMANCE DATA

Size	CFM	Discharge Ps	Octave Band Sound Power, Lw													
			Radiated							Discharge						
			2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
10	400	0.25	64	58	56	55	47	49	18	76	65	60	57	54	51	31
	500		65	61	59	57	53	50	20	77	69	64	61	59	56	32
	600		67	63	62	60	57	51	23	77	72	67	64	62	61	32
	675		68	65	63	61	60	51	26	77	74	69	66	64	64	34
	750		68	65	63	61	60	51	26	77	74	69	66	64	64	34
14	800	0.25	69	63	61	62	62	59	28	74	65	65	63	63	60	25
	1000		71	66	64	65	65	63	31	76	69	68	66	67	64	28
	1200		72	69	66	68	68	66	34	77	73	70	70	70	68	31
	1350		73	71	67	69	70	68	36	79	75	72	72	71	70	34
	1500		74	73	68	71	71	70	37	80	77	73	74	73	72	36
16	1400	0.25	69	66	64	64	63	60	29	72	66	65	63	63	60	23
	1700		73	70	68	68	67	64	33	77	72	69	68	68	65	30
	2000		76	73	70	71	71	68	37	81	76	73	73	72	70	35
	2300		78	76	73	74	74	72	40	84	81	76	77	76	74	41
	2600		80	79	75	77	77	75	43	87	84	79	80	79	77	44

- Discharge ΔP_s , the difference in static pressure from the terminal discharge to the room
- Radiated sound power is the noise transmitted through the unit casing
- Sound power levels are in decibel, re 10^{-12} watts
- Ratings in accordance with AHRI Standard 880-2011

AHRI Directory of Certified Performance

Titus is a charter member company and current participant in the AHRI Directory of Certified Performance. This voluntary certification program was developed by participating manufacturers in conjunction with the former Air-Conditioning and Refrigeration Institute (ARI) in the 1990's. It is currently administrated by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). The purpose of this program is to provide for the independent verification of manufacturers' published performance data. Only participating products are authorized to bear the AHRI VAV Certification Mark. Certified data may be viewed and downloaded at www.ahrinet.org.

In order to participate in this program, member companies pay annual dues based on sales volume, submit published performance data for all applicable model types, and agree to provide a number of randomly selected product samples for annual rounds of independent testing at the manufacturers' expense. All verification testing is conducted in accordance with ASHRAE Standard 130 'Methods of Testing Air Terminal Units'. These tests are conducted to verify that a manufacturer's published certified ratings are within the test tolerances outlined in AHRI Standard 880 'Performance Rating of Air Terminals'. Any failure to demonstrate the certified performance is punished by additional testing requirements, mandatory performance re-rating, monetary penalties and possible expulsion from the Certified Directory.

Product samples provided for certification testing are standard production units with standard ½ in dual density fiberglass lining (unless otherwise specified) and no optional appurtenances such as add-on attenuators or heating/cooling coils. The certified ratings are measured at the standard operating points under the following test conditions:

- Rated airflow (cfm) – Based on lesser of an inlet velocity of 2000 fpm or the maximum fan flow with 0.25 in wg of downstream pressure
- Rated fan power (watts) – Based on fan operating at the rated airflow with 0.25 in wg of downstream pressure
- Rated Min ΔPs (in wg) – Min ΔPs is the difference between atmospheric pressure and the inlet static pressure at rated airflow with the primary damper full open and the unit fan set to match the primary flow
- Rated ΔPs (in wg) – A static pressure of 1.5 in wg applied to the inlet duct
- Rated sound power by octave band (dB, re 10⁻¹² watts) – Radiated and discharge sound performance conducted in a reverberation room that meets both the broadband and pure tone qualifications of AHRI Standard 220

ALHK / DLHK

Unit Size	Rated CFM	Fan Watts	Min ΔPs	Discharge		Fan Only							Fan Plus 100% Primary											
						Radiated Sound Power							Radiated Sound Power							Discharge Sound Power				
				H	W	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	
309	850	510	0.26	10	18.5	71	60	57	54	47	37	76	69	62	57	52	46	75	67	67	65	66	65	
410	1100	510	0.15	10	18.5	69	62	61	59	53	46	80	75	71	64	59	54	79	76	75	75	74	73	

Icons



contributes toward energy savings by reducing operating costs of air distribution devices

energy solutions



for use in all applications that require UL Fire Resistance products

fire rated



finish options that resemble wood grains, perfect for high-profile architectural applications

wood grains

